Tekla Structures glossary

2025

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Foreword

The Tekla Structures glossary is intended for technical writers, user interface designers, marketing people, trainers, and the end users of the software. The glossary aims to facilitate communications related to Tekla Structures by clarifying various concepts and terms.

The glossary covers the contents of 632 Tekla Structures related concepts explaining how they are used in Tekla Structures. The relations between concepts are illustrated by means of concept diagrams, and the definitions and supplementary notes offer an effortless way to familiarize oneself with Tekla Structures terminology. Additionally, the glossary gives recommendations on the usage of the English terms.

The terms have been compiled broadly, since the construction terminology is not fully established, but a number of synonyms (that is, words with the same meaning) exist. In such cases, the glossary gives first the terms used in the Tekla Structures user interface and the Tekla Structures related communication.

As the software evolves, the Tekla Structures glossary is updated. In November 2025, the glossary was revised with new and updated concepts that mainly relate to the latest updates in Tekla Structures.

The glossary was first published in 2009. In earlier revisions numerous concepts were updated to reflect the development of Tekla Structures and the established use of terms in the user interface, and on the basis of comments received from the glossary users.

Several people from Trimble and the Finnish Terminology Centre (Sanastokeskus) have participated in compiling the glossary and given their expertise to the project.

Any questions and comments related to the glossary can be sent to:

Email: tekla.documentation@trimble.com

Structure and layout of the glossary

Grouping of the glossary and searching for terms

The concepts in this glossary are **thematically** grouped into chapters, and within the chapters, related concepts are placed close to each other.

An **alphabetical index** can be found at the end of the glossary. The numbers in the index refer to the entry numbers used in the glossary. The index consists of preferred, admitted and deprecated terms in the glossary, and it also contains such search words that are closely related to certain concepts in the glossary. Each search word is marked with a reference to the related concept and its entry number.

Structure of the glossary

The concepts in the glossary are presented in terminological entries and for the most part also in diagrams illustrating concept systems. Concept systems and terminological entries are intended to complete each other.

A terminological entry includes first the **terms** followed by a **definition** and possible supplementary information, the **notes**. The concepts have consecutive numbers.

The following symbols and notations are used in the glossary:

Notation in terminological entry	**Explanation of notation**
1	concept number; the concepts in the glossary are given consecutive numbers
bold	the preferred one first, followed by admitted synonyms
link in italics	(in definition and note) term in italics is a reference to a concept defined in the glossary; in an electronic version of the glossary, the term works as a link
(1)	(number in parentheses after a term) homonym; indicates that the glossary contains two or more terms that have identical spellings but different meanings
rather than:	term whose use is not recommended, for example, on linguistic grounds
not:	deprecated term; the term does not have the same meaning as the preferred term and should therefore not be used in the defined meaning; or the term is linguistically erroneous or obsolete
(obsolete)	(text in parentheses after a term) obsolete term
/GB/	British English
/US/	American English
/IN/	Indian English
pl	term is used in plural form
verb	part of speech of the term is verb
>	the term refers to a concept that is narrower than the defined concept
(obsolete)	(text in parentheses under the entry number) the concept is obsolete
<Tekla Structures>	(text in angle brackets under the entry number) subject field for which the definition applies or the point of view from which the definition is drawn up
Concept diagram:	reference to one or more concept diagrams containing the concept; in an electronic version of the glossary, the name of the diagram works as a link

Interpreting the concept diagrams

Concept diagrams aim to visualise relations between concepts and help to show each concept as a part of a larger whole. The terminological relations are represented in UML (Unified Modeling Language) notation (see ISO 24156-1 Graphic notations for concept modelling in terminology work and its relationship with UML – Part 1: Guidelines for using UML notation in terminology work). All of the relations listed below do not necessarily appear in this glossary. The diagram at the end of this sub-chapter gives examples of how concept relations are illustrated.

Representing concepts in diagrams

- concept diagrams display the entry number, the preferred term, a possible homonym number in parentheses, and the definition of the concept in question
- concept diagrams may also include terms not in bold-type; they are there to make it easier to interpret the diagram but are not defined in the glossary

Generic relation (line that ends in a triangle —▷)

- between a broader superordinate concept (*associative annotation object*) and a narrower subordinate concept (*mark*)
- the subordinate concept has all the characteristics of the superordinate concept and at least one additional characteristic, and it covers a smaller set of objects than the superordinate concept
- a subordinate concept can be regarded as a special case of the superordinate concept
- the triangle points towards the superordinate concept

Partitive relation (line that ends in a diamond —◇)

- subordinate concepts are parts of the whole formed by the superordinate concept
- the characteristics of the superordinate concept are not included in the subordinate concept the same way as in the generic concept system
- for example, a *nested assembly* consists of a *parent assembly* and one or several *sub-assemblies*
- the diamond points towards the superordinate concept
- the number of parts in the partitive relation can be illustrated, when necessary, with the following notations:
    - 1..* denotes that the superordinate concept consists of one or more parts representing the subordinate concept
    - 2..* denotes that the superordinate concept consists of two or more parts representing the subordinate concept

Associative relation (line without any symbol at the end)

- a concept relation that cannot be classified as generic or partitive (for example, relations based on time, location, function, tool, or origin)
- the type of the relation is usually manifested in the linguistic form of the definition
- for example, the relation between *assembly, assembly hierarchy,* and *assembly level* are associative

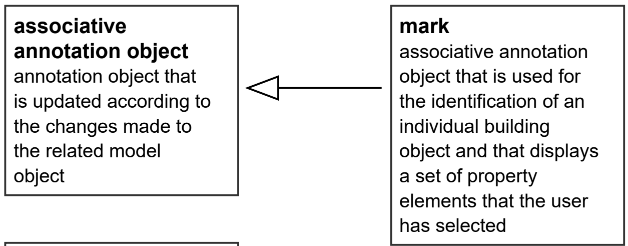
Multidimensional concept system (line connected to a text element showing a criterion of subdivision)

- both generic and partitive concept systems may be multidimensional
- a superordinate concept may be divided into different ranges of subordinate concepts (different dimensions) by applying different criteria of subdivision
- in a generic concept system subordinate concepts that belong to a certain dimension (those concepts shown under the same criterion of subdivision in a diagram) are always mutually exclusive (for example, a *drawing object* cannot be a *model object*) whereas subordinate concepts that belong to different dimensions can be combined to form new concepts
- the criterion of subdivision is often marked in the middle of the line (for example, *model object* has been divided into subordinate concepts on one hand based on the type of model the model object is created in and on the other hand based on the relationships between model objects)

Supplementary information to the definition (dashed line - - -)

- dashed lines illustrate concept relations that are not reflected in the wording of the definition (for example, the associative relation between the *model object* and *model information* is marked with a dashed line because their definitions have no direct reference to each other)
- concept relations marked with dashed lines provide information supplementary to the definition, and help the user to understand concepts
- dashed lines can be used to illustrate any concept relation: generic relation, partitive relation, or associative relation

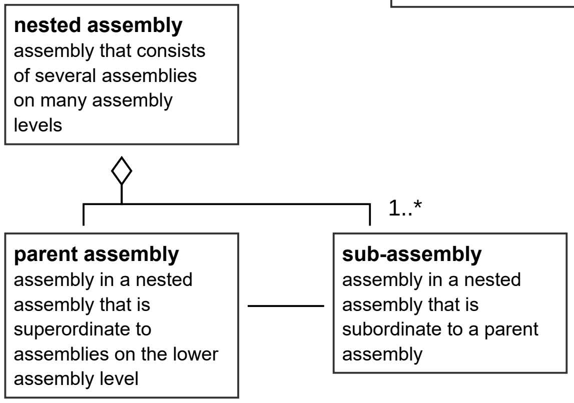
GENERIC RELATION



associative annotation object
annotation object that is updated according to the changes made to the related model object

mark
associative annotation object that is used for the identification of an individual building object and that displays a set of property elements that the user has selected

PARTITIVE RELATION

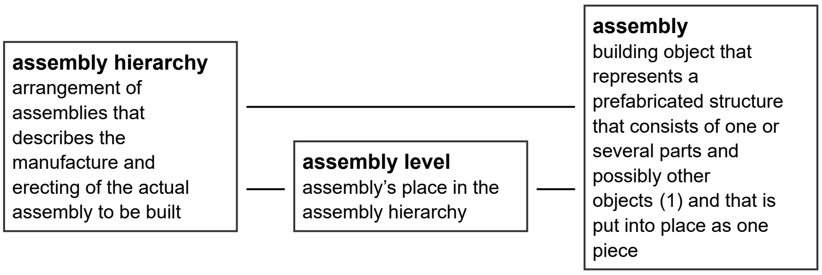


nested assembly
assembly that consists of several assemblies on many assembly levels

parent assembly
assembly in a nested assembly that is superordinate to assemblies on the lower assembly level

sub-assembly
assembly in a nested assembly that is subordinate to a parent assembly

ASSOCIATIVE RELATION

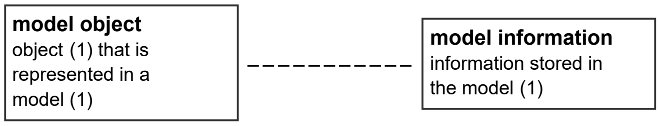


assembly hierarchy
arrangement of assemblies that describes the manufacture and erecting of the actual assembly to be built

assembly level
assembly's place in the assembly hierarchy

assembly
building object that represents a prefabricated structure that consists of one or several parts and possibly other objects (1) and that is put into place as one piece

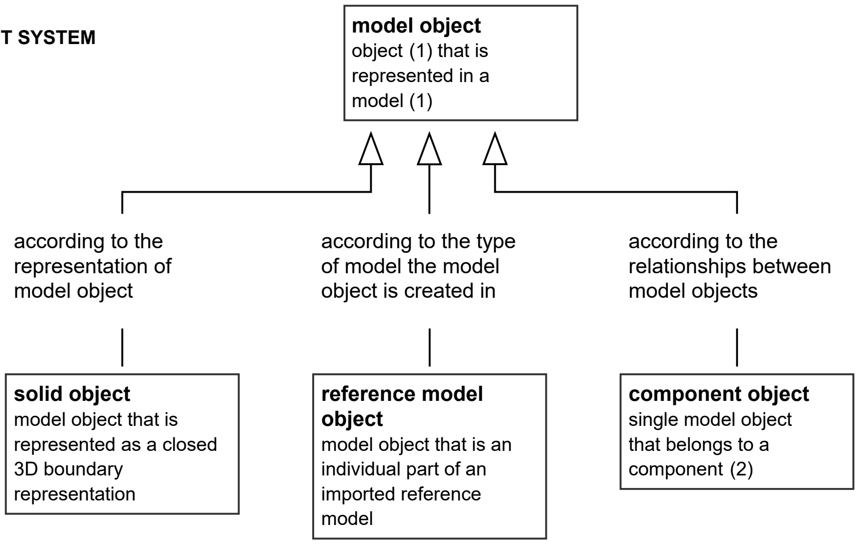
SUPPLEMENTARY INFORMATION TO THE DEFINITION



model object
object (1) that is represented in a model (1)

model information
information stored in the model (1)

MULTIDIMENSIONAL CONCEPT SYSTEM



model object
object (1) that is represented in a model (1)

according to the representation of model object

according to the type of model the model object is created in

according to the relationships between model objects

solid object
model object that is represented as a closed 3D boundary representation

reference model object
model object that is an individual part of an imported reference model

component object
single model object that belongs to a component (2)

1 General concepts

1.1 Building information modeling

1

Tekla Structures

definition

building information modeling software for organizations that operate in design, detailing, manufacturing, and construction

> note
>
> Tekla Structures is software for structural engineers, steel detailers and fabricators, precast concrete detailers and manufacturers, rebar detailers, as well as contractors.
>
> There are three *Tekla Structures configurations*, Tekla Structures Diamond, Tekla Structures Graphite, and Tekla Structures Carbon.

Concept diagrams: Modeling with Tekla Structures, Licensing and configuring, User interface and Online services related to Tekla Structures

2

building information modeling; BIM

definition

process of *modeling* and communicating the structure of a building in detail to benefit the entire construction life cycle

> note
>
> Building information modeling facilitates the exchange and use of building information in a digital format.

Concept diagram: Modeling with Tekla Structures

3

bridge information modeling; BrIM

definition

building information modeling for bridges and other civil structures

Concept diagram: Modeling with Tekla Structures

4

modeling

definition

simulation of an *object (1)*, a system, or a process that exists or will exist in the real world

> note
>
> The product of modeling is a *model (2)*.

Concept diagram: Modeling with Tekla Structures

5

model (2)

definition

pattern of an *object (1)*, a system, or a process that exists or will exist in the real world

Concept diagrams: Modeling with Tekla Structures and Model types

6

model (1); Tekla Structures model

definition

building information model that is built with *Tekla Structures* and that represents a structure to be constructed, containing information needed to manufacture and construct the structure, and other information related to the *project*

> note
>
> A model (1) is the single source of information for *drawings (1)* and other *model outputs*, such as *reports* and *NC files*. This ensures that the information in drawings (1) and reports is always up to date, since they react to modifications in the model (1) and are updated accordingly.
>
> Tekla Structures supports multiple users working concurrently on the same model (1), even in different locations.
>
> A model (1) can be utilized in other software.

Concept diagrams: Modeling with Tekla Structures, Model types, Objects and Filtering and visualization tools

7

model information

definition

information stored in the *model (1)*

> note
>
> Model information covers, for example, *model objects*, and *drawing (1)* and *project* information.

Concept diagrams: Modeling with Tekla Structures, Objects and Organizer

8

reference model

definition

model (2) which the designer can use as an aid when building another *model (2)*

> note
>
> A reference model is created in *Tekla Structures* or in other software and can be inserted into a Tekla Structures model. The reference model appears together with the *model (1)* but it is not modified by Tekla Structures. The user can *snap* to reference model *points (1)*.
>
> For example, an architectural model, a plant design model, or a heating, ventilating, and air-conditioning (HVAC) model can be a reference model.

Concept diagrams: Modeling with Tekla Structures, Model types and Modeling aids

9

comparison set

definition

set of *object properties* that are used for detecting changes in *reference models*

> note
>
> *Tekla Structures* compares different versions of the reference model based on a comparison set, which tells if a change in a property is considered a change.

Concept diagram: Modeling with Tekla Structures

10

overlay model

definition

lightweight *reference model* for viewing purposes that is stored in a *Trimble Connect* project

> note
>
> Overlay models can be used in a *Tekla Structures model (1)* through Trimble Connector if the Tekla Structures model (1) has been linked to a Trimble Connect project.
>
> Overlay models can be used in a Tekla Structures model (1) to show overlay *model objects* on top of the Tekla Structures model (1).

Concept diagram: Modeling with Tekla Structures

11

drawing (2)

definition

building contract document that shows, in graphic or pictorial form, the design, location, and dimension of the elements of a *project*

Concept diagrams: Modeling with Tekla Structures and Drawing types

12

drawing (1); Tekla Structures drawing

definition

drawing (2) that includes the output of the selected information in a *model (1)* or a part of the model (1) and other information related to the model (1) and the *project*

> note
>
> Drawings (1) react to modifications in the model (1) and are updated accordingly.
>
> *Tekla Structures* includes the following types of drawings (1): *single-part drawings*, *assembly drawings*, *cast unit drawings*, *general arrangement drawings*, and *multidrawings*. Tekla Structures creates drawings (1) using the drawing properties defined for each type of a drawing (1).
>
> Every drawing (1) is made up of a *drawing layout* and *drawing views*.

Concept diagrams: Modeling with Tekla Structures, Drawing types, Drawing layout and views, Drawing settings and properties, Independent annotation objects and Import and export

13

report

definition

model output that is represented as a list of information for the entire *model (1)*, selected *objects (1)*, or selected *drawings (1)*

> note
>
> Reports react to modifications in the model (1).
>
> Reports are for quantity surveying or any other measurement purpose.

Concept diagrams: Modeling with Tekla Structures, Editors and templates and Import and export

14

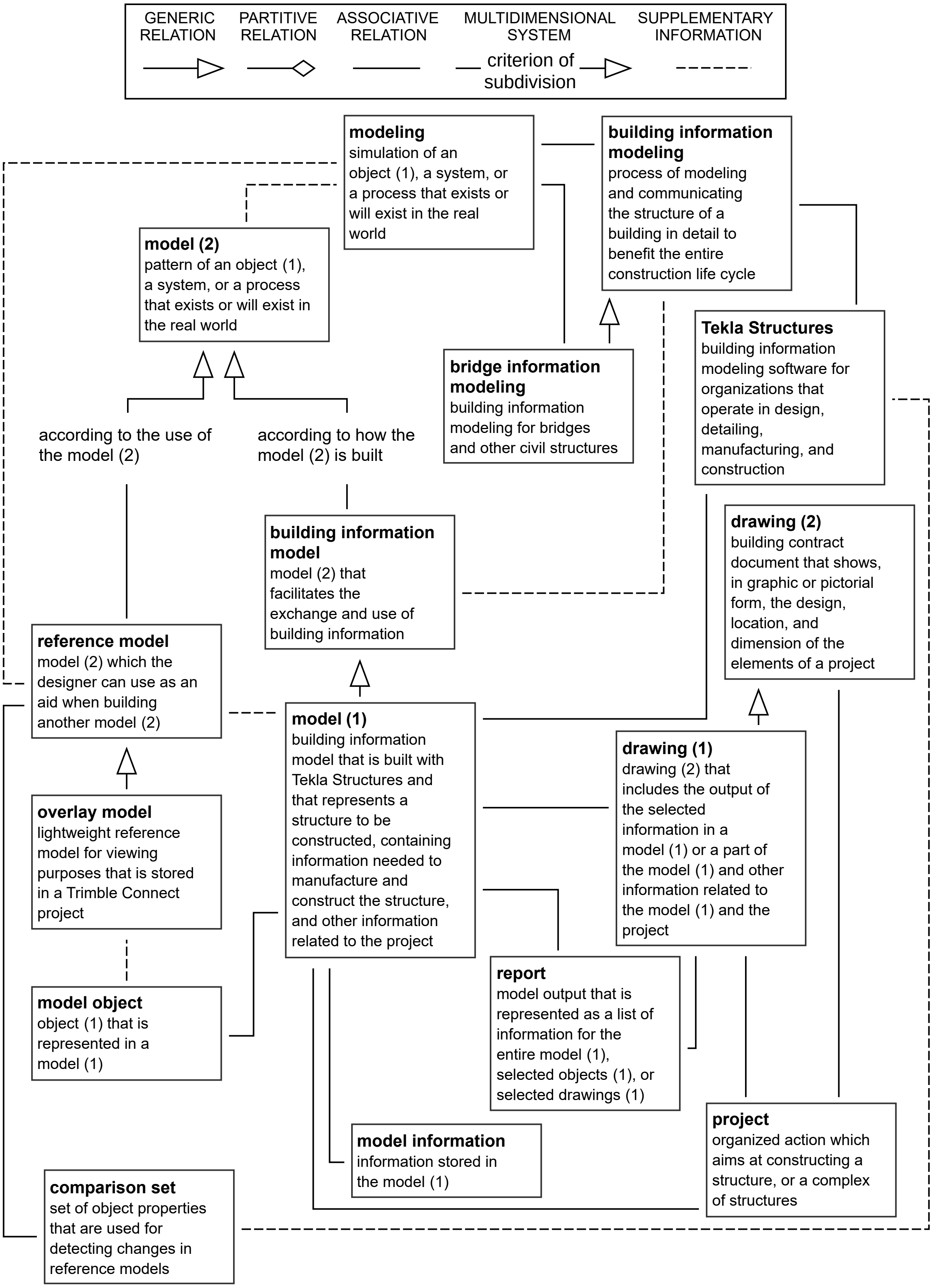
project

definition

organized action which aims at constructing a structure, or a complex of structures

> note
>
> A project can include several *models (2)*, for example *models (1)* created with *Tekla Structures*.

Concept diagrams: Modeling with Tekla Structures and Building hierarchy


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
modeling simulation of an object (1), a system, or a process that exists or will exist in the real world
building information modeling process of modeling and communicating the structure of a building in detail to benefit the entire construction life cycle
model (2) pattern of an object (1), a system, or a process that exists or will exist in the real world
Tekla Structures building information modeling software for organizations that operate in design, detailing, manufacturing, and construction
bridge information modeling building information modeling for bridges and other civil structures
according to the use of the model (2)
according to how the model (2) is built
building information model model (2) that facilitates the exchange and use of building information
drawing (2) building contract document that shows, in graphic or pictorial form, the design, location, and dimension of the elements of a project
reference model model (2) which the designer can use as an aid when building another model (2)
model (1) building information model that is built with Tekla Structures and that represents a structure to be constructed, containing information needed to manufacture and construct the structure, and other information related to the project
drawing (1) drawing (2) that includes the output of the selected information in a model (1) or a part of the model (1) and other information related to the model (1) and the project
overlay model lightweight reference model for viewing purposes that is stored in a Trimble Connect project
model object object (1) that is represented in a model (1)
report model output that is represented as a list of information for the entire model (1), selected objects (1), or selected drawings (1)
project organized action which aims at constructing a structure, or a complex of structures
model information information stored in the model (1)
comparison set set of object properties that are used for detecting changes in reference models

Concept diagram 1. *Modeling with Tekla Structures.*

1.2 Licensing and configuring

15

Tekla Structures configuration; configuration

definition

Tekla Structures software set-up for a specific user group

> note
>
> Tekla Structures *license* is a permission to activate and use certain Tekla Structures configurations. A Tekla Structures configuration consists of a set of *features* that the user is entitled to based on the license agreement, and is the commercial part of Tekla Structures.
>
> There are three Tekla Structures configurations. Tekla Structures Diamond is for detailing and production information, Tekla Structures Graphite is for modeling and design documentation, and Tekla Structures Carbon is for viewing and collaboration.

Concept diagram: Licensing and configuring

16

license

definition

grant given by the holder to use the object of the intellectual property rights

> note
>
> For example, in *Tekla Structures* license is a permission to activate and use a certain *Tekla Structures configuration*.

Concept diagram: Licensing and configuring

17

subscription

definition

offering that includes a *license* for selected software and related services for a specific period

> note
>
> *Tekla Structures* online license usage and subscription renewals are managed with the *Tekla Online Admin tool*.

Concept diagram: Licensing and configuring

18

Tekla Structures environment

definition

region- or company-specific *settings* and information that are predefined in *Tekla Structures* or that are defined by the user

> note
>
> To be able to use Tekla Structures, the user must install the software and for region-specific settings at least one Tekla Structures environment. The software installation includes the *common* and *blank project* environments and the global settings. The common environment and global settings form the basis for all other environments.
>
> *Property files* form the largest part of a Tekla Structures environment. A Tekla Structures environment consists of, for example, *profile catalogs*, *part* property files, and *drawing settings*.

Concept diagram: Licensing and configuring

19

common environment

definition

Tekla Structures environment that forms a basis for other environments

> note
>
> The common environment is included in the software installation and includes the global *settings*, *macros*, *symbols (2)*, and fonts, for example. The common environment and global settings form the basis for all other environments.

Concept diagram: Licensing and configuring

20
default environment

definition
Tekla Structures environment that contains basic example *settings* that are not related to any standards specific to a country or a region

Concept diagram: Licensing and configuring

21
local environment

definition
Tekla Structures environment that contains *settings* that are based on country- or region-specific standards and are different from the global settings

> note
> The local environment settings may override the global settings.

Concept diagram: Licensing and configuring

22
blank project

definition
Tekla Structures environment that contains only generic content and is used as a basis for customized environments

> note
> The blank project contains, for example, *parametric profiles* and undefined materials, and it can be used for gathering region-, company-, or project-specific *settings*, tools, and information. The blank project comes with *Tekla Structures* software installation.
>
> *Tekla Warehouse* can be used to download content to a blank project.

Concept diagram: Licensing and configuring

23
role

definition
user group profile in a certain *Tekla Structures environment* that limits the available files and *settings*

> note
> Different roles may be available in each *Tekla Structures* environment. For example, the following roles can be available: concrete contractor, general contractor, engineer, precast concrete detailer, rebar detailer, and steel detailer.

Concept diagram: Licensing and configuring

24
feature

definition
part of *Tekla Structures* functionality that is maintained and owned by Trimble and that is included in the Tekla Structures installation

Concept diagram: Licensing and configuring

25
extension

definition
part of *Tekla Structures* functionality that is developed in order to extend the capability of Tekla Structures but that is not included in the Tekla Structures installation

Concept diagram: Licensing and configuring

26
component (1)

definition
part of *Tekla Structures* functionality that is used for creating a group of *model objects* that are easy to model and modify as a single unit

> note
> Components (1) are located in the *applications and components catalog*.
>
> Components (1) can be used for creating, for example, *parts*, *bolts (1)*, and *reinforcing bars*.
>
> The created *component (2)* adapts to changes in the *model (1)*. For example, Tekla Structures automatically modifies a *connection* if the user modifies the parts it connects.

Concept diagrams: Licensing and configuring, Components (parts of Tekla Structures functionality) and Components (groups of model objects)

27
macro

definition
saved series of actions that includes instructions for a program

> note
> Macros are located in the *applications and components catalog*. They are recorded or created manually and stored as .cs file in a folder defined with the *advanced option* XS_MACRO_DIRECTORY.
>
> Macros can, for example, be used for creating *drawings (1)* or *reports*.
>
> Macros are sometimes used to run an application.

Concept diagram: Licensing and configuring

28
bridge tools

definition
group of tools used for designing bridges, road and rail structures, and other load bearing structures and complex shapes

> note
> Bridge tools include tools called bridge creator and beam extruder, and concrete bridge reinforcement tools.

Concept diagram: Licensing and configuring

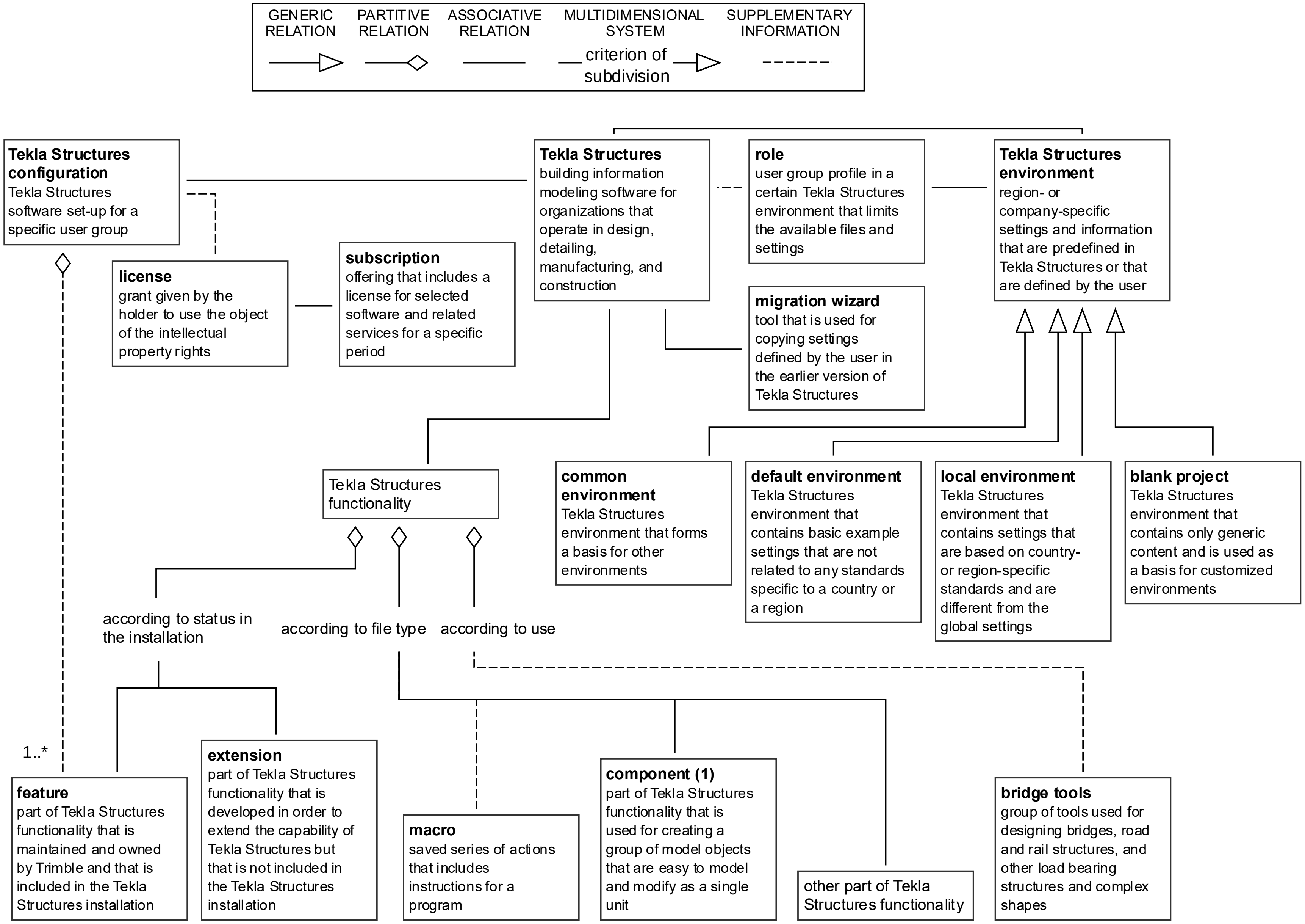
29
migration wizard

definition
tool that is used for copying *settings* defined by the user in the earlier version of *Tekla Structures*

> note
> Migration wizard is typically used when starting to use a new version of Tekla Structures. The migration wizard can be used to copy settings included in *initialization files*.

Concept diagram: Licensing and configuring

Concept diagram 2. *Licensing and configuring.*



Tekla Structures configuration
Tekla Structures software set-up for a specific user group

license
grant given by the holder to use the object of the intellectual property rights

subscription
offering that includes a license for selected software and related services for a specific period

Tekla Structures
building information modeling software for organizations that operate in design, detailing, manufacturing, and construction

role
user group profile in a certain Tekla Structures environment that limits the available files and settings

migration wizard
tool that is used for copying settings defined by the user in the earlier version of Tekla Structures

Tekla Structures environment
region- or company-specific settings and information that are predefined in Tekla Structures or that are defined by the user

Tekla Structures functionality

common environment
Tekla Structures environment that forms a basis for other environments

default environment
Tekla Structures environment that contains basic example settings that are not related to any standards specific to a country or a region

local environment
Tekla Structures environment that contains settings that are based on country- or region-specific standards and are different from the global settings

blank project
Tekla Structures environment that contains only generic content and is used as a basis for customized environments

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part of Tekla Structures functionality that is maintained and owned by Trimble and that is included in the Tekla Structures installation

extension
part of Tekla Structures functionality that is developed in order to extend the capability of Tekla Structures but that is not included in the Tekla Structures installation

macro
saved series of actions that includes instructions for a program

component (1)
part of Tekla Structures functionality that is used for creating a group of model objects that are easy to model and modify as a single unit

other part of Tekla Structures functionality

bridge tools
group of tools used for designing bridges, road and rail structures, and other load bearing structures and complex shapes

1.3 User interface

30

ribbon

definition

element in a user interface in the form of adjacent tabs that contain commands

> note
>
> In *Tekla Structures* the selection of commands on the ribbon may vary depending on the *Tekla Structures configuration*, *role*, or customization.
>
> The ribbon can be customized by using the *ribbon editor*.

Concept diagram: User interface

31

ribbon editor

definition

tool that is used for customizing the *ribbon* and adding user-defined commands to it

> note
>
> The ribbon editor can be used, for example, to add new buttons, to change the icons and texts of the buttons.

Concept diagram: User interface

32

command editor

definition

tool that is used for creating user-defined commands that can be included in the *ribbon* with the *ribbon editor*

Concept diagram: User interface

33

side pane

definition

element in a user interface in the form of an area on the side of the main window

> note
>
> In *Tekla Structures* the side pane can be used to show the *property pane* and the *instructor*, for example.

Concept diagram: User interface

34

property pane

definition

side pane window that is used to show and modify the *properties* of *Tekla Structures model objects*

> note
>
> The property pane can be customized by using the *property pane editor*.

Concept diagram: User interface

35

property pane editor

definition

tool that is used for customizing the *property pane* and adding *user-defined attributes* to it

> note
>
> The property pane editor can be used, for example, to organize *properties*, to create groups of properties, and to create nested property groups.

Concept diagram: User interface

36

instructor

definition

side pane window that shows instructions for the currently active *ribbon* command

> note
>
> In *Tekla Structures* instructor is available for all ribbon commands both in *modeling* and *drawing mode*.

Concept diagram: User interface

37

contextual toolbar

definition

floating toolbar that contains commands for modifying the most common *object properties*

> note
>
> The user can customize the contextual toolbar.

Concept diagram: User interface

38

model search toolbar

definition

toolbar that contains options for searching *model objects* in an entire *model (1)* or within selected model objects based on their property values

> note
>
> Depending on the model object it is possible to search with name, material, or *position number*, for example.

Concept diagram: User interface

39

work plane handler toolbar

definition

toolbar that contains options for selecting the active *work plane* in the *model (1)*

> note
>
> The work plane handler toolbar can be used if there are defined *base points* or saved work planes.

Concept diagram: User interface

40

selecting toolbar

definition

toolbar that contains *selection switches*

Concept diagram: User interface

41

snapping toolbar

definition

toolbar that contains *snap switches*

Concept diagram: User interface

42

quick launch

definition

element in the user interface that is used for quickly finding commands, dialogs, and other functions in *Tekla Structures*

Concept diagram: User interface

43

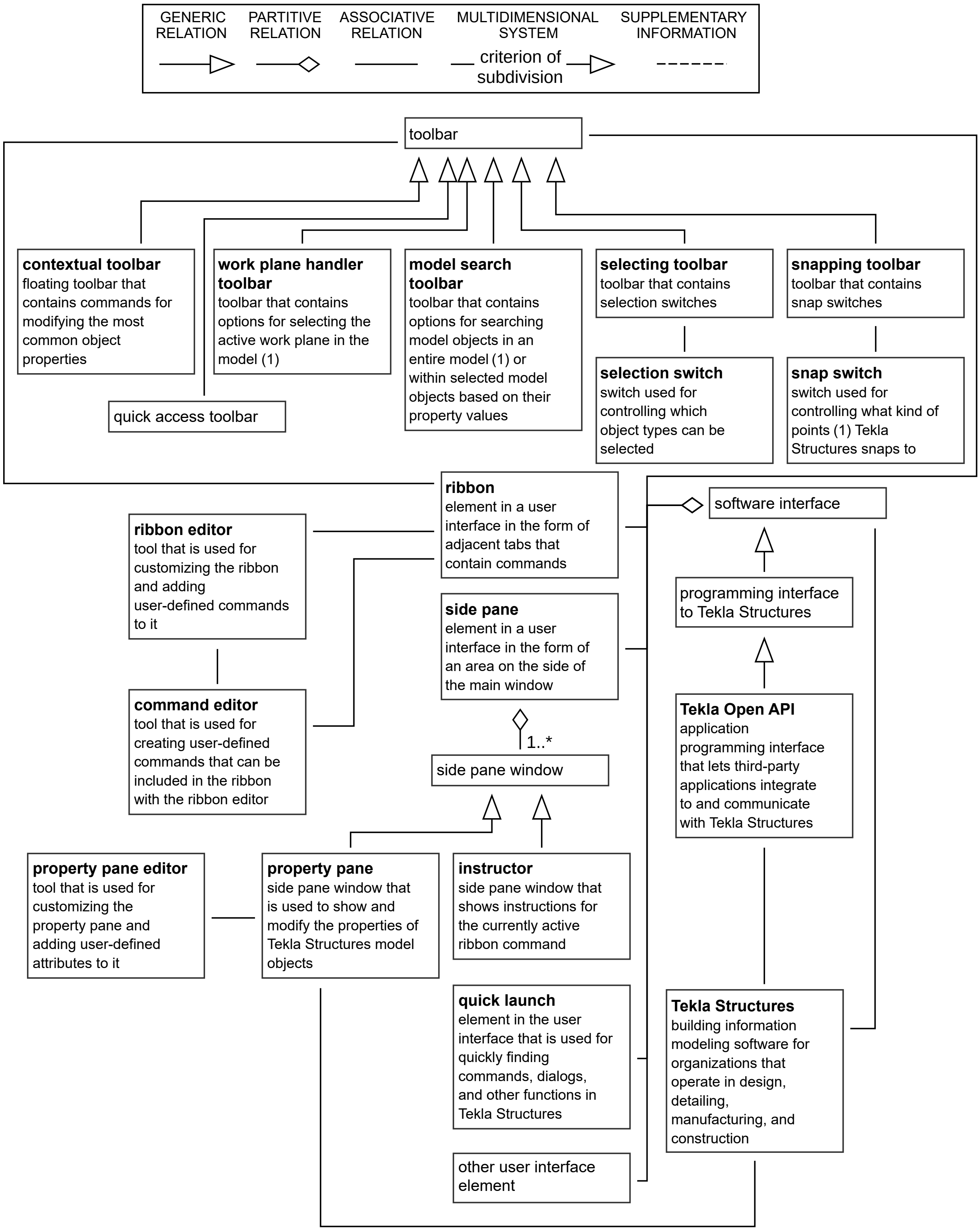
Tekla Open API

definition

application programming interface that lets third-party applications integrate to and communicate with *Tekla Structures*

> note
>
> Tekla Open API enables, for example, customizing Tekla Structures.

Concept diagram: User interface



contextual toolbar floating toolbar that contains commands for modifying the most common object properties

work plane handler toolbar toolbar that contains options for selecting the active work plane in the model (1)

model search toolbar toolbar that contains options for searching model objects in an entire model (1) or within selected model objects based on their property values

selecting toolbar toolbar that contains selection switches

snapping toolbar toolbar that contains snap switches

selection switch switch used for controlling which object types can be selected

snap switch switch used for controlling what kind of points (1) Tekla Structures snaps to

ribbon element in a user interface in the form of adjacent tabs that contain commands

ribbon editor tool that is used for customizing the ribbon and adding user-defined commands to it

side pane element in a user interface in the form of an area on the side of the main window

command editor tool that is used for creating user-defined commands that can be included in the ribbon with the ribbon editor

Tekla Open API application programming interface that lets third-party applications integrate to and communicate with Tekla Structures

property pane editor tool that is used for customizing the property pane and adding user-defined attributes to it

property pane side pane window that is used to show and modify the properties of Tekla Structures model objects

instructor side pane window that shows instructions for the currently active ribbon command

quick launch element in the user interface that is used for quickly finding commands, dialogs, and other functions in Tekla Structures

Tekla Structures building information modeling software for organizations that operate in design, detailing, manufacturing, and construction

Concept diagram 3. *User interface.*

1.4 Modes

44
modeling mode

definition
mode that is used for creating and analyzing a *model (1)*, and initiating the creation of a *drawing (1)* or a *report*

Concept diagram: Modes

45
drawing mode

definition
mode that is used for editing the appearance and content of a *drawing (1)*

> note
> *Tekla Structures* switches to drawing mode when the user opens any drawing (1).

Concept diagram: Modes

46
single-user mode

definition
mode in which only one user can work on a *model (1)*

Concept diagram: Modes

47
multi-user mode

definition
mode in which several users can work on the same *model (1)* using their own *working models*

Concept diagram: Modes

48
Tekla Structures multi-user server

definition
computer in a multi-user system set up as a server running the *Tekla Structures multi-user server program*

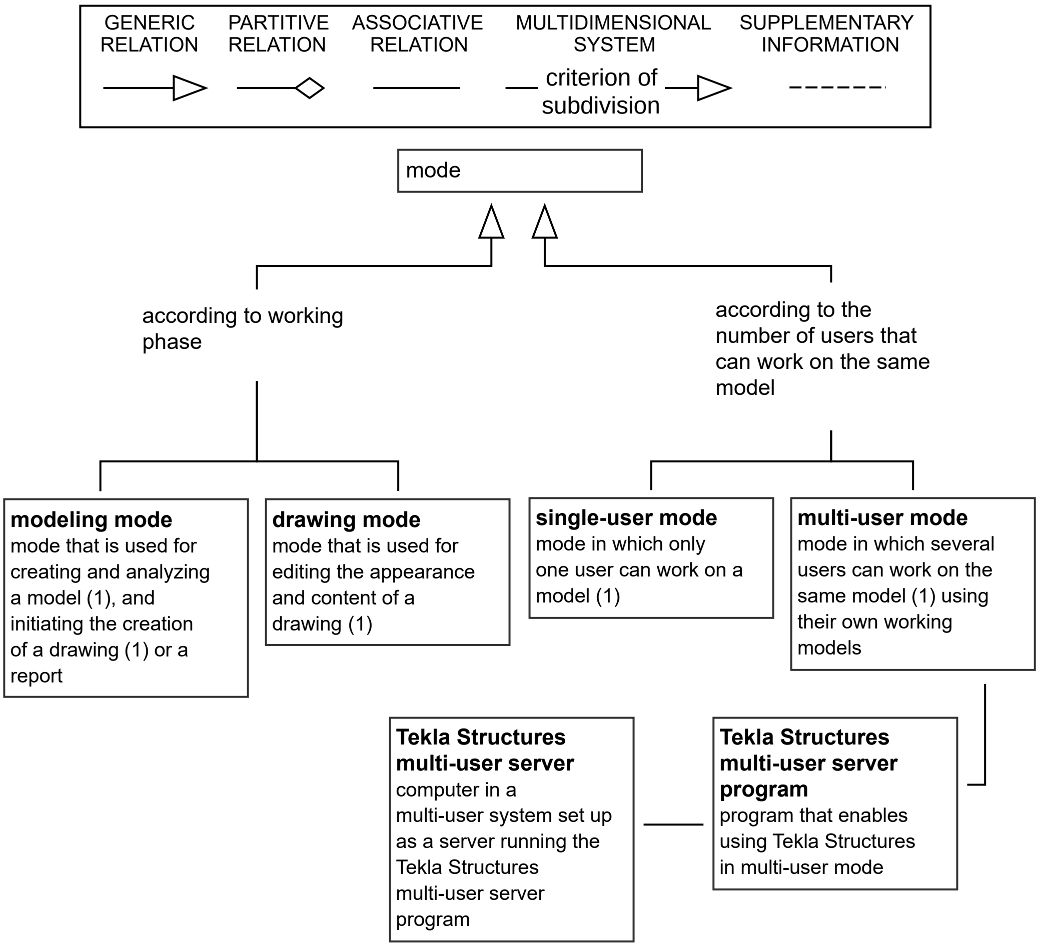
Concept diagram: Modes

49
Tekla Structures multi-user server program

definition
program that enables using *Tekla Structures* in *multi-user mode*

> note
> The Tekla Structures multi-user server program is xs_server.exe.
>
> The Tekla Structures multi-user server program’s main tasks are to distribute ID numbers for new *objects (1)*, to *lock* the *model (1)* when somebody saves or numbers the model (1), and to identify client computers.

Concept diagram: Modes


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
mode
according to working phase
according to the number of users that can work on the same model
modeling mode mode that is used for creating and analyzing a model (1), and initiating the creation of a drawing (1) or a report
drawing mode mode that is used for editing the appearance and content of a drawing (1)
single-user mode mode in which only one user can work on a model (1)
multi-user mode mode in which several users can work on the same model (1) using their own working models
Tekla Structures multi-user server computer in a multi-user system set up as a server running the Tekla Structures multi-user server program
Tekla Structures multi-user server program program that enables using Tekla Structures in multi-user mode

Concept diagram 4. *Modes.*

1.5 Model types

50
building information model

definition
model (2) that facilitates the exchange and use of building information

> note
> In the context of *Tekla Structures*, the term BIM is only used to refer to *building information modeling*.

Concept diagrams: Modeling with Tekla Structures and Model types

51
single-user model

definition
model (1) that is opened in *single-user mode*

Concept diagram: Model types

52
multi-user model

definition
model (1) that is used for collaboration and that is opened in *multi-user mode*

Concept diagram: Model types

53

master model

definition

multi-user model from and to which information is fetched and saved in *multi-user mode*, and into which *Tekla Structures* merges changes that individual users make in the *working models*

> note
>
> It is not possible to work on the master model.

Concept diagram: Model types

54

working model

definition

multi-user model that an individual user works on in *multi-user mode*

> note
>
> Working model is a local copy of a *master model* and the user's *current model*.

Concept diagram: Model types

55

shared model; Tekla Model Sharing model

definition

model (1) used for collaboration in *Tekla Model Sharing*

> note
>
> With a shared model, each user works with their own model (1) and the changes are shared through Tekla Model Sharing. A shared model requires the use of a *single-user model*. The same model (1) cannot be a shared model and a *multi-user model*.

Concept diagram: Model types

56

model template

definition

model (1) which is used as a basis for creating new models (1)

> note
>
> The user can save a model (1) including all its elements, such as *object properties*, certain *settings*, *parts*, and *components (2)*, in a model template.

Concept diagram: Model types

57

current model

definition

model (1) that is active in *Tekla Structures*

> note
>
> The current model can be a *single-user model*, a *shared model* or a *working model*.

Concept diagram: Model types

58

standard-part model

rather than: standard part model

definition

model (1) that contains *standard parts* and that is only used for defining *part* prefixes when *numbering* parts in the *current model*

Concept diagram: Model types

59

structural model

definition

model (2) that represents a structure to be constructed

Concept diagrams: Model types and Analysis objects

60

physical model

definition

structural model with a direct or indirect counterpart in the structure to be built

Concept diagrams: Model types and Analysis objects

61

analysis model; analysis and design model; analysis & design model

definition

structural model that is created from a *physical model* and used on the one hand for analyzing structural behavior and *load* bearing, and on the other hand for design

> note
>
> Analysis model can be viewed in *Tekla Structures* in a *model view*.
>
> Analysis model that is made with Tekla Structures can be worked on in other analysis and design software or application.

Concept diagrams: Model types, Analysis objects and Analysis settings

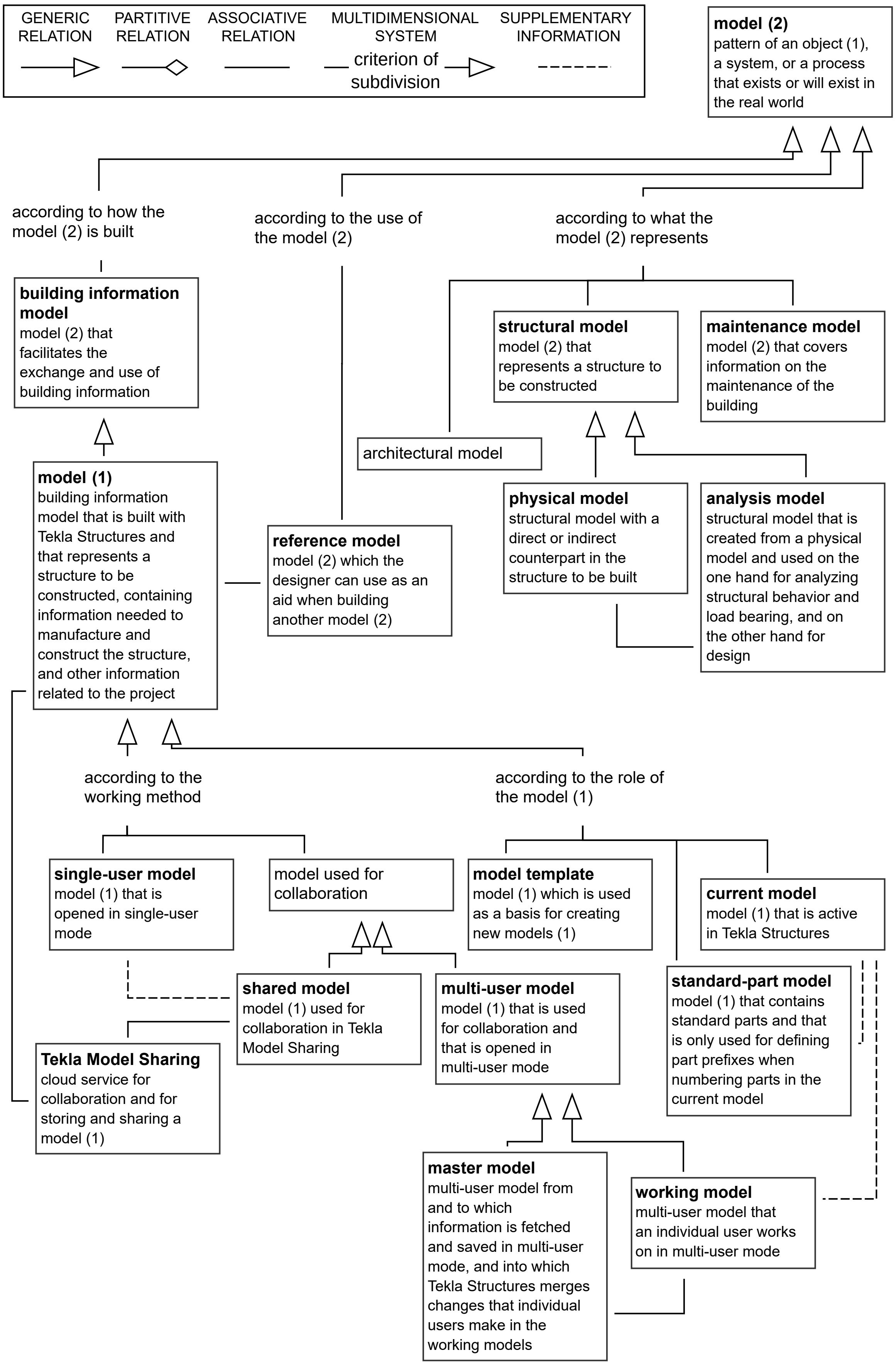
62

maintenance model

definition

model (2) that covers information on the maintenance of the building

Concept diagram: Model types


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
according to how the model (2) is built
according to the use of the model (2)
according to what the model (2) represents
according to the working method
according to the role of the model (1)

model (2)
pattern of an object (1), a system, or a process that exists or will exist in the real world

building information model
model (2) that facilitates the exchange and use of building information

structural model
model (2) that represents a structure to be constructed

maintenance model
model (2) that covers information on the maintenance of the building

architectural model

model (1)
building information model that is built with Tekla Structures and that represents a structure to be constructed, containing information needed to manufacture and construct the structure, and other information related to the project

reference model
model (2) which the designer can use as an aid when building another model (2)

physical model
structural model with a direct or indirect counterpart in the structure to be built

analysis model
structural model that is created from a physical model and used on the one hand for analyzing structural behavior and load bearing, and on the other hand for design

single-user model
model (1) that is opened in single-user mode

model used for collaboration

model template
model (1) which is used as a basis for creating new models (1)

current model
model (1) that is active in Tekla Structures

shared model
model (1) used for collaboration in Tekla Model Sharing

multi-user model
model (1) that is used for collaboration and that is opened in multi-user mode

standard-part model
model (1) that contains standard parts and that is only used for defining part prefixes when numbering parts in the current model

Tekla Model Sharing
cloud service for collaboration and for storing and sharing a model (1)

master model
multi-user model from and to which information is fetched and saved in multi-user mode, and into which Tekla Structures merges changes that individual users make in the working models

working model
multi-user model that an individual user works on in multi-user mode

Concept diagram 5. *Model types.*

1.6 Views and representation

63
representation

definition
the way that the information included in a *model (1)* is represented visually

Concept diagram: Views

64
object representation

definition
representation of a *model object* or an *object group* in a *model view* that is based on the color and transparency *settings* applied to the model object or the object group

Concept diagram: Views

65
view

definition
representation of a *model (1)* or a part of it, which is displayed inside the *Tekla Structures* window

Concept diagrams: Views and Drawing layout and views

66
view plane

definition
plane in a space that defines the *view*

> note
> In *Tekla Structures*, the *grids* are projected onto the view plane and the *grid lines* can be visible on it.
>
> *View depth* is defined starting from the view plane.

Concept diagrams: Views and Planes

67
view depth

definition
thickness of a slice of the *model (1)* defined starting from, and perpendicular to, the *view plane*

Concept diagram: Views

68
work area

definition
certain portion of the *model (1)* that is currently active for working on in a *view*

> note
> *Tekla Structures* indicates the work area using dashed lines. Since *objects (1)* outside the work area exist but are not visible the user can set a certain sized work area so that the views of the model (1) are simpler and quickly updated, for example.

Concept diagram: Views

69
view name

definition
name of an individual *view*

Concept diagram: Views

70

model view

definition

view that is represented in *modeling mode*

> note
>
> Model view is available also in *drawing mode* and it is represented in its own window.

Concept diagrams: Views and Drawing layout and views

71

basic view

definition

model view whose *view plane* is defined by two axes of the *global coordinate system* and the *distance (1)* from the global origin along the third axis

Concept diagram: Views

72

perspective

definition

view projection that displays *objects (1)* in a *model view* from a particular standpoint so that distant objects (1) appear smaller than close ones, as do text and *points (2)*

> note
>
> The user can zoom, rotate, pan, or fly through the *model objects*.

Concept diagram: Views

73

orthogonal

definition

view projection that displays *objects (1)* in right-angles projection

> note
>
> In orthogonal *model view* the size of the objects (1) is the same despite of their *distance (1)* to the viewing point and the zoom remains on *part faces*.

Concept diagram: Views

74

drawing view

definition

view that includes selected *model objects* or an area in the *model (1)*, that is represented in a *drawing (1)*

> note
>
> A drawing view is a container for model and *drawing objects*.
>
> A drawing (1) can include several drawing views, which usually are two-dimensional views, *plane views*, to the model (1).
>
> Examples of drawing views in *Tekla Structures* include *main views*, *section views*, *single-part views*, and *3D views*.

Concept diagrams: Views and Drawing layout and views

75

plane view; 2D view

definition

view that displays *objects (1)* two-dimensionally

Concept diagram: Views

76
3D view

definition
view that displays *objects (1)* three-dimensionally

> note
> 3D view is one of the *default views*.

Concept diagram: Views

77
default view

definition
view that is created for a selected *part* or *component (2)* and whose *view plane* is defined by the coordinate system of the selected part or component (2)

> note
> *Tekla Structures* creates four default views at the same time: *front*, *top*, *end (2)*, and *3D views*. Each default view can have its own view *properties*.

Concept diagram: Views

78
end view (2)

definition
default view that is created perpendicular to the *part's* or *component's (1) front* and *top view*

Concept diagram: Views

79
front view

definition
default view that is created using the *part's* or *component's (2)* coordinate system and that shows the part or component (2) from the front direction

> note
> Part's front view is a *view on part plane* created of the part's front *plane*.

Concept diagrams: Views and Drawing layout and views

80
top view

definition
default view that is created using the *part's* or *component's (2)* coordinate system and that shows the part or component (2) from the top direction

> note
> Part's top view is a *view on part plane* created of the part's top *plane*.

Concept diagrams: Views and Drawing layout and views

81
grid view; view along grid line

definition
view that is created along a specified *grid line* of a selected *grid* and whose *view plane* is the same as the specified *grid plane*

Concept diagram: Views

82
view on plane

definition
view that is created on the *work plane* or on any *plane* of an existing *part*

> note
> The plane can be selected by the user and it shows the selected part only.

Concept diagram: Views

83
view on part plane

definition
view that is created based on a selected *part* and using the part's coordinate system

> note
> The view on part plane is a *front*, *top*, *bottom*, or *back view*.

Concept diagram: Views

84
back view

definition
view on part plane that is created using the *part's* coordinate system and that shows the part from the back direction

Concept diagrams: Views and Drawing layout and views

85
bottom view

definition
view on part plane that is created using the *part's* coordinate system and that shows the part from the bottom direction

Concept diagrams: Views and Drawing layout and views

86
undeformed view

definition
view that shows a deformed *part* in undeformed form

Concept diagram: Views

87
pour view

definition
view that displays *cast-in-place concrete parts* merged into *pour objects*

> note
> The cast-in-place concrete parts are merged into one pour object if they have the same material grade and if they touch each other.

Concept diagrams: Views and Pour unit

88
clip plane

definition
tool that creates a single *plane* that cuts through a *model (1)*, allowing focus on specific details on a section of a model (1) and hiding the rest of the model (1) in a *model view*

> note
> Clip plane can be created in model views that show *model object faces*. The clip plane is aligned with the selected model object face or created based on the *view depth* settings.

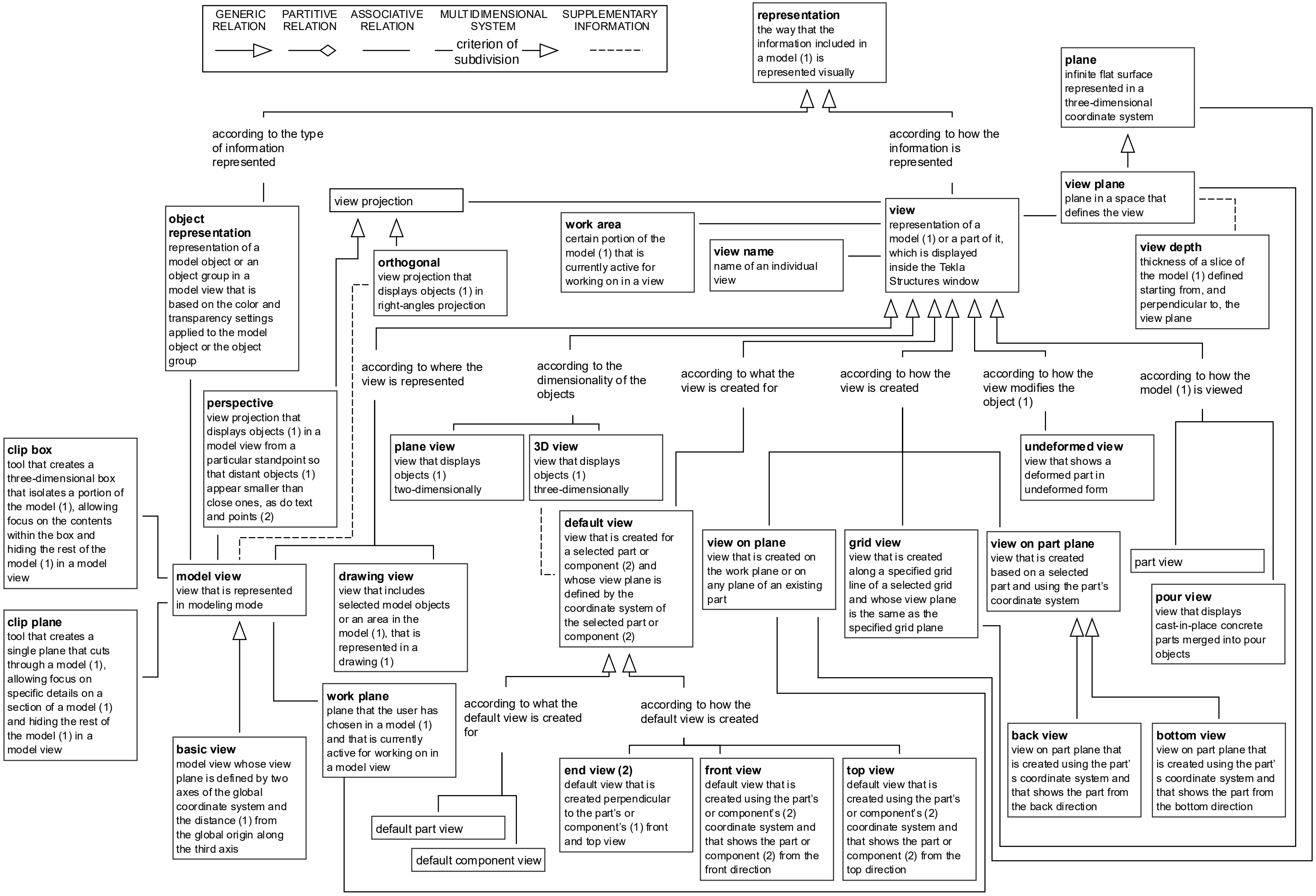
Concept diagram: Views

89
clip box

definition
tool that creates a three-dimensional box that isolates a portion of the *model (1)*, allowing focus on the contents within the box and hiding the rest of the model (1) in a *model view*

Concept diagram: Views

Concept diagram 6. Views.



GENERIC RELATION

PARTITIVE RELATION

ASSOCIATIVE RELATION

MULTIDIMENSIONAL SYSTEM
criterion of subdivision

SUPPLEMENTARY INFORMATION

representation
the way that the information included in a model (1) is represented visually

according to the type of information represented

according to how the information is represented

plane
infinite flat surface represented in a three-dimensional coordinate system

view plane
plane in a space that defines the view

view depth
thickness of a slice of the model (1) defined starting from, and perpendicular to, the view plane

view projection

object representation
representation of a model object or an object group in a model view that is based on the color and transparency settings applied to the model object or the object group

orthogonal
view projection that displays objects (1) in right-angles projection

perspective
view projection that displays objects (1) in a model view from a particular standpoint so that distant objects (1) appear smaller than close ones, as do text and points (2)

work area
certain portion of the model (1) that is currently active for working on in a view

view name
name of an individual view

view
representation of a model (1) or a part of it, which is displayed inside the Tekla Structures window

according to where the view is represented

according to the dimensionality of the objects

according to what the view is created for

according to how the view is created

according to how the view modifies the object (1)

according to how the model (1) is viewed

plane view
view that displays objects (1) two-dimensionally

3D view
view that displays objects (1) three-dimensionally

undeformed view
view that shows a deformed part in undeformed form

clip box
tool that creates a three-dimensional box that isolates a portion of the model (1), allowing focus on the contents within the box and hiding the rest of the model (1) in a model view

clip plane
tool that creates a single plane that cuts through a model (1), allowing focus on specific details on a section of a model (1) and hiding the rest of the model (1) in a model view

model view
view that is represented in modeling mode

drawing view
view that includes selected model objects or an area in the model (1), that is represented in a drawing (1)

default view
view that is created for a selected part or component (2) and whose view plane is defined by the coordinate system of the selected part or component (2)

view on plane
view that is created on the work plane or on any plane of an existing part

grid view
view that is created along a specified grid line of a selected grid and whose view plane is the same as the specified grid plane

view on part plane
view that is created based on a selected part and using the part's coordinate system

part view

pour view
view that displays cast-in-place concrete parts merged into pour objects

work plane
plane that the user has chosen in a model (1) and that is currently active for working on in a model view

basic view
model view whose view plane is defined by two axes of the global coordinate system and the distance (1) from the global origin along the third axis

according to what the default view is created for

according to how the default view is created

default part view

default component view

end view (2)
default view that is created perpendicular to the part's or component's (1) front and top view

front view
default view that is created using the part's or component's (2) coordinate system and that shows the part or component (2) from the front direction

top view
default view that is created using the part's or component's (2) coordinate system and that shows the part or component (2) from the top direction

back view
view on part plane that is created using the part' s coordinate system and that shows the part from the back direction

bottom view
view on part plane that is created using the part' s coordinate system and that shows the part from the bottom direction

1.7 Coordinates, planes, points, and lines

1.7.1 Coordinate systems

90

global coordinate system

definition

coordinate system that reflects the entire space of a *model (1)*

> note
>
> A green cube represents the global coordinate system and lies at the global *point of origin* in the *3D view*.

Concept diagram: Coordinate systems

91

local coordinate system

definition

coordinate system that reflects the current *work plane* or *drawing view plane*

> note
>
> The local coordinate system is represented in a *model (1)* by a symbol with three axes (x, y, and z). This symbol indicates the direction of the model (1). It is located in the lower right corner of the *model view*.
>
> In a *drawing (1)*, the local coordinate system symbol has two axes.

Concept diagram: Coordinate systems

92

user coordinate system; UCS

definition

local coordinate system defined by the user and used in a *drawing view*

> note
>
> User coordinate system makes it easier to place *drawing objects*, because the user can place the drawing objects relative to a *user-defined point of origin*, or a *base point* in the drawing view.
>
> *Tekla Structures* displays the user coordinate system symbol in the current drawing view when the user creates, copies, moves, or modifies drawing objects.

Concept diagram: Coordinate systems

93

point of origin

definition

center of the coordinate system where the axes intersect and form a fixed point of reference for the geometry of the surrounding space

Concept diagram: Coordinate systems

94

model origin

definition

global coordinate system point of origin used for the *model (1)*

> note
>
> Model origin is the default *project base point*.

Concept diagram: Coordinate systems

95

user-defined point of origin

definition

local *point of origin* defined by the user in the *user coordinate system* and used in a *drawing view*

Concept diagram: Coordinate systems

96

base point

definition

point (1) in a *model (1)* that is used to define a starting point (1) in surveying and that is used as an anchor point (1) in coordinate and height transformations

> note
>
> A *Tekla Structures project* can have several base points but only one of them can be the *project base point*.
>
> Base points allow the use of another coordinate system needed for interoperability and collaboration. Base points can also be used in *drawings (2)*, and in *reports* and *templates (1)*. *Model origin* is the default base point in Tekla Structures.
>
> Base points are also called control points.

Concept diagrams: Coordinate systems and Points and lines

97

project base point

definition

base point that sets the *point of origin* for a *project* if the *model (1)* has several base points

> note
>
> A project can have only one project base point.

Concept diagrams: Coordinate systems and Points and lines

98

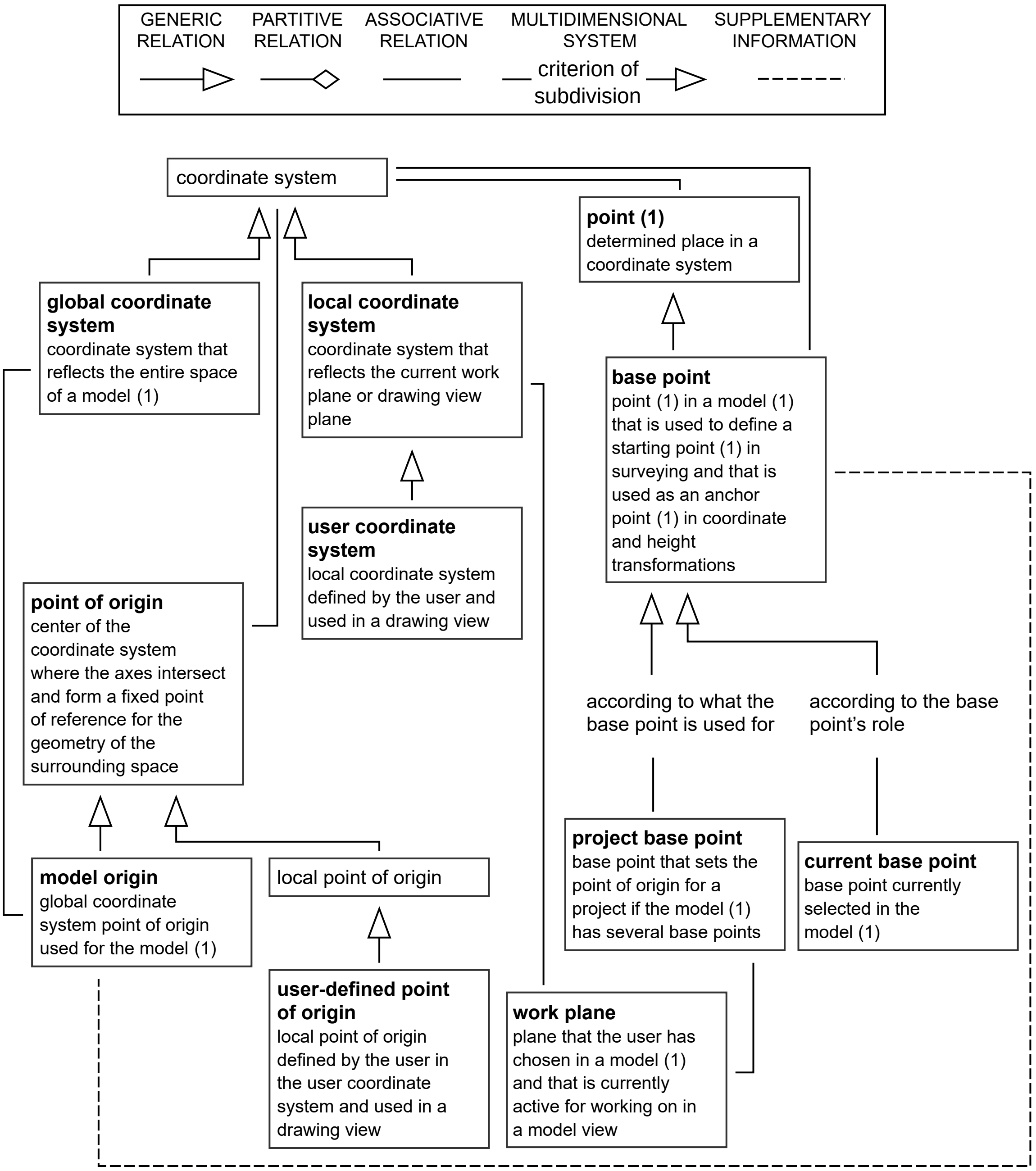
current base point

definition

base point currently selected in the *model (1)*

> note
>
> If the model (1) has no defined base points, the *model origin* is the base point.

Concept diagram: Coordinate systems


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
coordinate system
point (1)
determined place in a coordinate system
global coordinate system
coordinate system that reflects the entire space of a model (1)
local coordinate system
coordinate system that reflects the current work plane or drawing view plane
base point
point (1) in a model (1) that is used to define a starting point (1) in surveying and that is used as an anchor point (1) in coordinate and height transformations
user coordinate system
local coordinate system defined by the user and used in a drawing view
point of origin
center of the coordinate system where the axes intersect and form a fixed point of reference for the geometry of the surrounding space
according to what the base point is used for
according to the base point's role
model origin
global coordinate system point of origin used for the model (1)
local point of origin
project base point
base point that sets the point of origin for a project if the model (1) has several base points
current base point
base point currently selected in the model (1)
user-defined point of origin
local point of origin defined by the user in the user coordinate system and used in a drawing view
work plane
plane that the user has chosen in a model (1) and that is currently active for working on in a model view

Concept diagram 7. *Coordinate systems.*

1.7.2 Planes

99

plane

definition

infinite flat surface represented in a three-dimensional coordinate system

Concept diagrams: Views and Planes

100

face

definition

flat surface that forms part of a faceted representation object

> note
>
> Both *solid objects* and non-solid objects can have faces.
>
> Typically *parts* have faces.

Concept diagram: Planes

101

positioning plane

definition

plane that defines the position of a *model object* relative to the *part's reference points* or other *model objects*

Concept diagram: Planes

102

connection positioning plane

definition

positioning plane that defines the position of *component objects* in a *connection* relative to *component main parts*

Concept diagram: Planes

103

part positioning plane

definition

positioning plane that defines the position of a *part* relative to its *reference points*

Concept diagram: Planes

104

component plane

definition

plane that is in a *component (2)* and that defines the position of the *component objects* inside the component (2)

> note
>
> Component plane is used for *binding model objects* in *custom components*.

Concept diagram: Planes

105

outline plane

definition

plane whose position is defined by the outer and inner surfaces of a *part*

Concept diagram: Planes

106

boundary plane

definition

plane whose position is defined by the edge of a *bounding box*

Concept diagram: Planes

107

bounding box

definition

rectangular border with the smallest measure within which all the selected *points (1)* that position the *model objects* lie

> note
>
> In *Tekla Structures* two-dimensional bounding boxes are used in *drawings (1)* and three-dimensional bounding boxes in *models (1)*.

Concept diagram: Planes

108

center plane

definition

plane whose position is defined so that it passes through the midpoint of a *part cross section*

Concept diagram: Planes

109

cut plane

definition

plane whose position is defined by a cut surface

Concept diagram: Planes

110

work plane

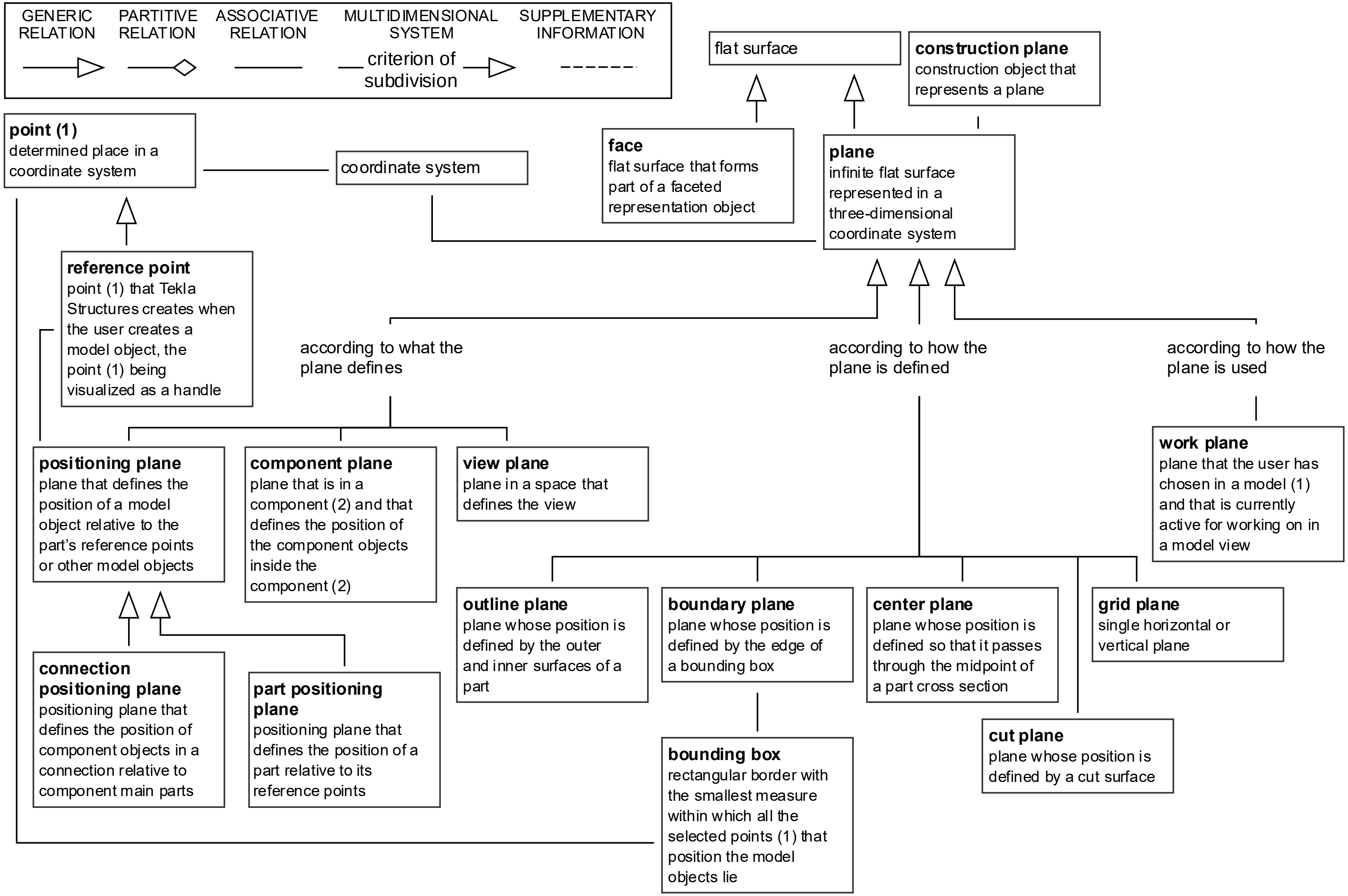
definition

plane that the user has chosen in a *model (1)* and that is currently active for working on in a *model view*

> note
>
> Newly created, copied, or moved *model objects* comply with the work plane. For example, shifting the work plane to follow a sloped plane makes it easier to model sloped structures.

Concept diagrams: Views, Coordinate systems and Planes

Concept diagram 8. *Planes.*


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
according to what the plane defines
according to how the plane is defined
according to how the plane is used

point (1)
determined place in a coordinate system

coordinate system

flat surface

face
flat surface that forms part of a faceted representation object

construction plane
construction object that represents a plane

plane
infinite flat surface represented in a three-dimensional coordinate system

reference point
point (1) that Tekla Structures creates when the user creates a model object, the point (1) being visualized as a handle

positioning plane
plane that defines the position of a model object relative to the part's reference points or other model objects

component plane
plane that is in a component (2) and that defines the position of the component objects inside the component (2)

view plane
plane in a space that defines the view

work plane
plane that the user has chosen in a model (1) and that is currently active for working on in a model view

outline plane
plane whose position is defined by the outer and inner surfaces of a part

boundary plane
plane whose position is defined by the edge of a bounding box

center plane
plane whose position is defined so that it passes through the midpoint of a part cross section

grid plane
single horizontal or vertical plane

connection positioning plane
positioning plane that defines the position of component objects in a connection relative to component main parts

part positioning plane
positioning plane that defines the position of a part relative to its reference points

bounding box
rectangular border with the smallest measure within which all the selected points (1) that position the model objects lie

cut plane
plane whose position is defined by a cut surface

1.7.3 Points and lines

111

point (1); location

definition

determined place in a coordinate system

> note
>
> The user can determine a point (1) by clicking it or by inputting numerical coordinates.

Concept diagrams: Coordinate systems, Planes, Points and lines, Snapping, Modeling aids and Dimensions

112

reference point

definition

point (1) that *Tekla Structures* creates when the user creates a *model object*, the point (1) being visualized as a *handle*

> note
>
> The reference points follow the model object if it is moved. They are only deleted if the related model object is deleted.
>
> Reference points can be selected as *snap points* in a *snap switch*.

Concept diagrams: Planes, Points and lines and Snapping

113

handle

definition

symbol that is shown if a *model object* is selected

> note
>
> Handles always appear at the *reference points* and *reference line* ends.
>
> Handles can be used to modify a model object’s shape or size.

Concept diagram: Points and lines

114

direct modification handle

definition

symbol that is shown if an *object (1)* is selected when *direct modification* is activated

> note
>
> Direct modification handles are used instead of *handles* when direct modification is on.

115

direct modification

definition

function that allows to resize, reshape, and move *objects (1)*

> note
>
> Direct modification enables *direct modification handles* and modification options.

116

reference line

definition

line between two *reference points*

> note
>
> For example, if the user *picks* two *points (1)* to position a *beam*, these points (1) form the reference line, and *handles* appear at the line ends.
>
> Reference lines can be used in snapping in a *snap switch*.

Concept diagrams: Points and lines and Snapping

117
geometry point

definition
point (1) on an *object's (1)* geometry determined by the object's (1) shape

> note
> Geometry points can be selected as *snap points* in a *snap switch*.

Concept diagrams: Points and lines and Snapping

118
geometry line

definition
line on an *object's (1)* geometry determined by the object's (1) shape

> note
> Geometry lines can be used in snapping in a *snap switch*.

Concept diagrams: Points and lines and Snapping

119
associativity point

definition
in a *drawing object*, a *point (1)* that follows the changes in the *model (2)*

> note
> For example, an end point (1) of a line or a start point of a *dimension* is an associativity point.

Concept diagrams: Points and lines and Parametric modeling

120
layout point

definition
point (1) that can be exported to a layout device

> note
> Layout point can be a *reference point*.

Concept diagram: Points and lines

121
design point

definition
layout point that is created in the *Tekla Structures model (1)*

Concept diagram: Points and lines

122
measured point

definition
layout point that has been measured on the construction site and imported to *Tekla Structures model (1)*

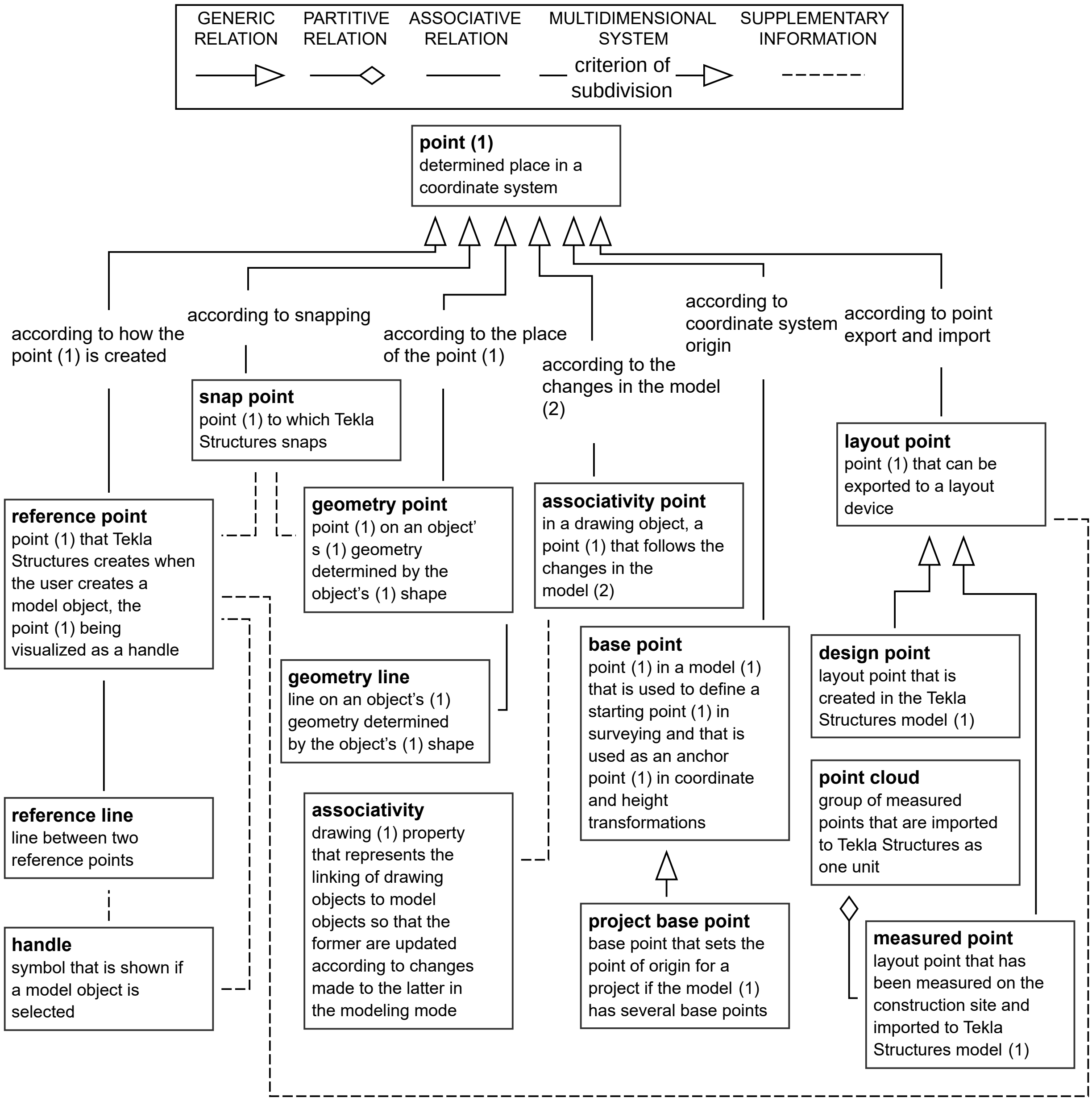
Concept diagram: Points and lines

123
point cloud

definition
group of *measured points* that are imported to *Tekla Structures* as one unit

> note
> Point clouds can be placed by the *model origin* or by a defined *base point*.

Concept diagram: Points and lines


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
point (1) determined place in a coordinate system
according to how the point (1) is created
according to snapping
according to the place of the point (1)
according to the changes in the model (2)
according to coordinate system origin
according to point export and import
snap point point (1) to which Tekla Structures snaps
reference point point (1) that Tekla Structures creates when the user creates a model object, the point (1) being visualized as a handle
geometry point point (1) on an object's (1) geometry determined by the object's (1) shape
associativity point in a drawing object, a point (1) that follows the changes in the model (2)
layout point point (1) that can be exported to a layout device
geometry line line on an object's (1) geometry determined by the object's (1) shape
base point point (1) in a model (1) that is used to define a starting point (1) in surveying and that is used as an anchor point (1) in coordinate and height transformations
design point layout point that is created in the Tekla Structures model (1)
point cloud group of measured points that are imported to Tekla Structures as one unit
reference line line between two reference points
associativity drawing (1) property that represents the linking of drawing objects to model objects so that the former are updated according to changes made to the latter in the modeling mode
handle symbol that is shown if a model object is selected
project base point base point that sets the point of origin for a project if the model (1) has several base points
measured point layout point that has been measured on the construction site and imported to Tekla Structures model (1)

***Concept diagram 9.** Points and lines.*

1.7.4 Snapping

124

verb

pick

definition

(performed by *Tekla Structures* user) to click one or more *points (1)* in a *model (1)* in order to execute an action using those points (1)

> note
>
> The user picks points (1) to position *model objects* when creating them, for example.
>
> Picking can be done by using the left mouse button, for example.

Concept diagram: Snapping

125
verb
snap

definition
(performed by Tekla Structures) to automatically hit an exact *point (1)* on a *model object* when the user moves the mouse pointer near it

Concept diagrams: Snapping and Modeling aids

126
snap point

definition
point (1) to which *Tekla Structures snaps*

Concept diagrams: Points and lines and Snapping

127
snap zone

definition
zone around one or more *snap points* inside which *Tekla Structures* hits the closest snap point corresponding to the active *snap switches*

Concept diagram: Snapping

128
snap priority

definition
property of a *snap point* that defines its ranking among the snap points inside a *snap zone*

> note
> *Tekla Structures* automatically *snaps* to the *point (1)* with the highest snap priority, but the user can also choose another point (1).

Concept diagram: Snapping

129
snap grid

definition
area covered with regularly spaced *snap points*

Concept diagram: Snapping

130
snap switch

definition
switch used for controlling what kind of *points (1) Tekla Structures snaps* to

> note
> The user needs to activate snap switches to be able to *pick* different points (1), for example, line ends and intersections.
>
> Snap switches help the user to pick points (1) in order to position *model objects* precisely without having to know the coordinates or create additional lines or *points (2)*.

Concept diagrams: User interface and Snapping

131
snap override

definition
tool that is used for temporarily bypassing the *snap switch* in use

> note
> Snap override only bypasses the snap switch *settings* for the next *point (1)* the user *picks*.

Concept diagram: Snapping

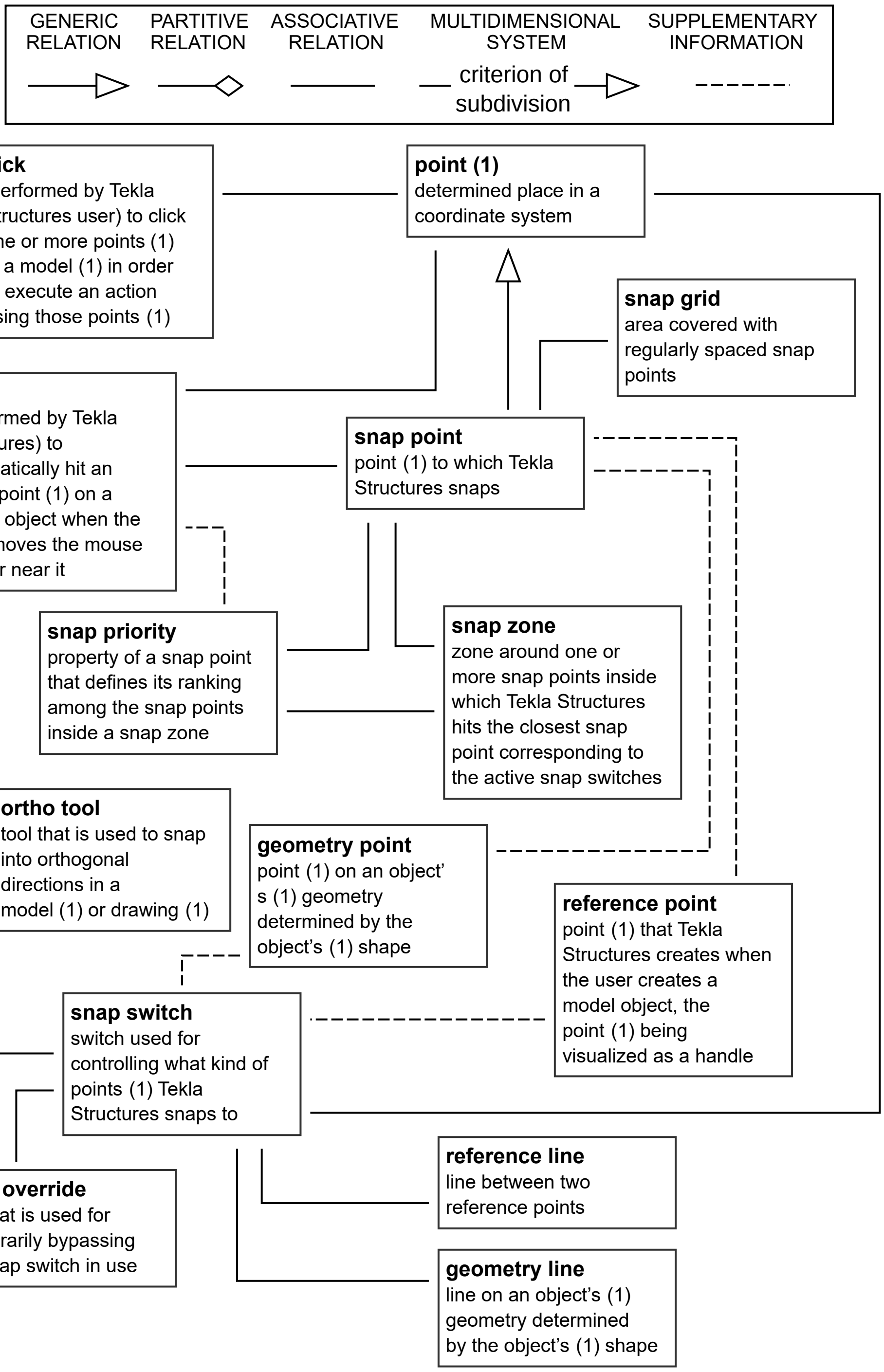
132

ortho tool

definition

tool that is used to *snap* into *orthogonal* directions in a *model (1)* or *drawing (1)*

Concept diagram: Snapping


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
pick (performed by Tekla Structures user) to click one or more points (1) in a model (1) in order to execute an action using those points (1)
point (1) determined place in a coordinate system
snap grid area covered with regularly spaced snap points
snap (performed by Tekla Structures) to automatically hit an exact point (1) on a model object when the user moves the mouse pointer near it
snap point point (1) to which Tekla Structures snaps
snap priority property of a snap point that defines its ranking among the snap points inside a snap zone
snap zone zone around one or more snap points inside which Tekla Structures hits the closest snap point corresponding to the active snap switches
ortho tool tool that is used to snap into orthogonal directions in a model (1) or drawing (1)
geometry point point (1) on an object' s (1) geometry determined by the object's (1) shape
reference point point (1) that Tekla Structures creates when the user creates a model object, the point (1) being visualized as a handle
snap switch switch used for controlling what kind of points (1) Tekla Structures snaps to
snap override tool that is used for temporarily bypassing the snap switch in use
reference line line between two reference points
geometry line line on an object's (1) geometry determined by the object's (1) shape

Concept diagram 10. *Snapping.*

1.8 Settings and properties

133

settings *pl*

definition

collection of choices defined by a software user or predefined in the software in order to control operations of the software

> note
>
> Settings may affect general functions of the software (see *general settings*) or a specific function. Examples of settings in *Tekla Structures* include display settings, *numbering* settings, and color settings. Also *advanced options* are a category of settings.
>
> The user can define settings, for example, by entering a value or by selecting a value among the available ones.
>
> Giving values to *properties* also influences operations of the software. Therefore, values given to properties are also regarded as settings. For example, values given to *grid* properties form part of general *modeling settings*.
>
> The term settings is sometimes used as a synonym for properties. The term properties is used to refer to real-world entities, such as *parts* or *details*. The term settings is used to refer to software operations, for example rotation settings and display settings. The term properties is used when the viewpoint is that of a single *object (1)* and the term settings is used when the viewpoint is more general.

Concept diagrams: Settings and properties and Databases and files

134

general settings *pl*; **options** *pl*

definition

settings that are used to control the general functions of the software

> note
>
> In *Tekla Structures* general settings include, for example, autosave interval and settings related to units and decimals. General settings can be saved for each *model (1)* or as a *standard file*.
>
> In Tekla Structures, general settings are defined in the Options dialog box.

Concept diagram: Settings and properties

135

advanced options *pl*

definition

settings used to customize *Tekla Structures* for specific companies, standards, users, or user groups

> note
>
> In Tekla Structures, advanced options are settings that are used, for example, in a specific *project* or geographical area, or by a specific company.
>
> In Tekla Structures, advanced options usually begin with the initials XS and are followed by the name of the function, for example XS_BACKGROUND_COLOR.

Concept diagram: Settings and properties

136

role-specific advanced options *pl*

definition

advanced options that work for all users with the same *role*

Concept diagram: Settings and properties

137

user-specific advanced options *pl*

definition

advanced options that affect all *models (1)* the user has

> note
>
> User-specific advanced options set the user’s personal preferences, for example, the background color of the *model views*.
>
> User-specific advanced options are saved in the options.bin file.

Concept diagram: Settings and properties

138
model-specific advanced options *pl*

definition
advanced options that affect the *current model*

> note
> Model-specific advanced options are saved in the *model options* and *drawing options databases*.

Concept diagram: Settings and properties

139
system-specific advanced options *pl*

definition
advanced options that affect all sessions and work for all users and in all *models (1)*

> note
> System-specific advanced options are read from *initialization files*.

Concept diagram: Settings and properties

140
modeling settings *pl*

definition
settings applied in the *modeling mode*

> note
> Examples of modeling settings include settings related to *model views* and *model objects*.

Concept diagram: Settings and properties

141
current properties *pl*
rather than: applied values *pl*

definition
properties related to an *object type* and applied to new *objects (1)* of this type

> note
> In *Tekla Structures*, properties related to an object type are activated in the *property pane* or in the dialog.

Concept diagram: Settings and properties

142
properties *pl*

definition
collection of characteristics of an *object (1)* in a software or application

> note
> The selection of properties related to each object (1) is usually predefined. For example, properties related to *parts* include name, *profile* and material. The software user can also create certain properties (see *user-defined attributes*).
>
> In *Tekla Structures* the values related to properties can be given in the *property pane* or in the dialog box.
>
> The term *settings* is sometimes used as a synonym for properties. The term properties is used to refer to real-world entities, such as parts or *details*. The term settings is used to refer to software operations, for example rotation settings and display settings. The term properties is used when the viewpoint is that of a single object (1) and the term settings is used when the viewpoint is more general.

Concept diagrams: Settings and properties and Drawing settings and properties

143
object properties *pl*

definition
properties associated with an *object type*

> note
> Usually a single *object property* includes a default value that the user can modify.

Concept diagram: Settings and properties

144
object property

definition
single characteristic associated with an *object type*

> note
> For example, *profile* and material are object properties.

Concept diagrams: Settings and properties, Part properties and Organizer

145
drawing hatch

definition
drawing *object property* that is used for filling part *faces*, part sections or *drawing shapes* in a *drawing (1)* with a pattern or color

Concept diagram: Settings and properties

146
user-defined attribute; UDA

definition
object property created by the user in order to widen the range of predefined *object properties*

> note
> User-defined attributes are used when the predefined object properties are not sufficient but more *properties* are needed. For example, comment, locked, and erection status are user-defined attributes.

Concept diagram: Settings and properties

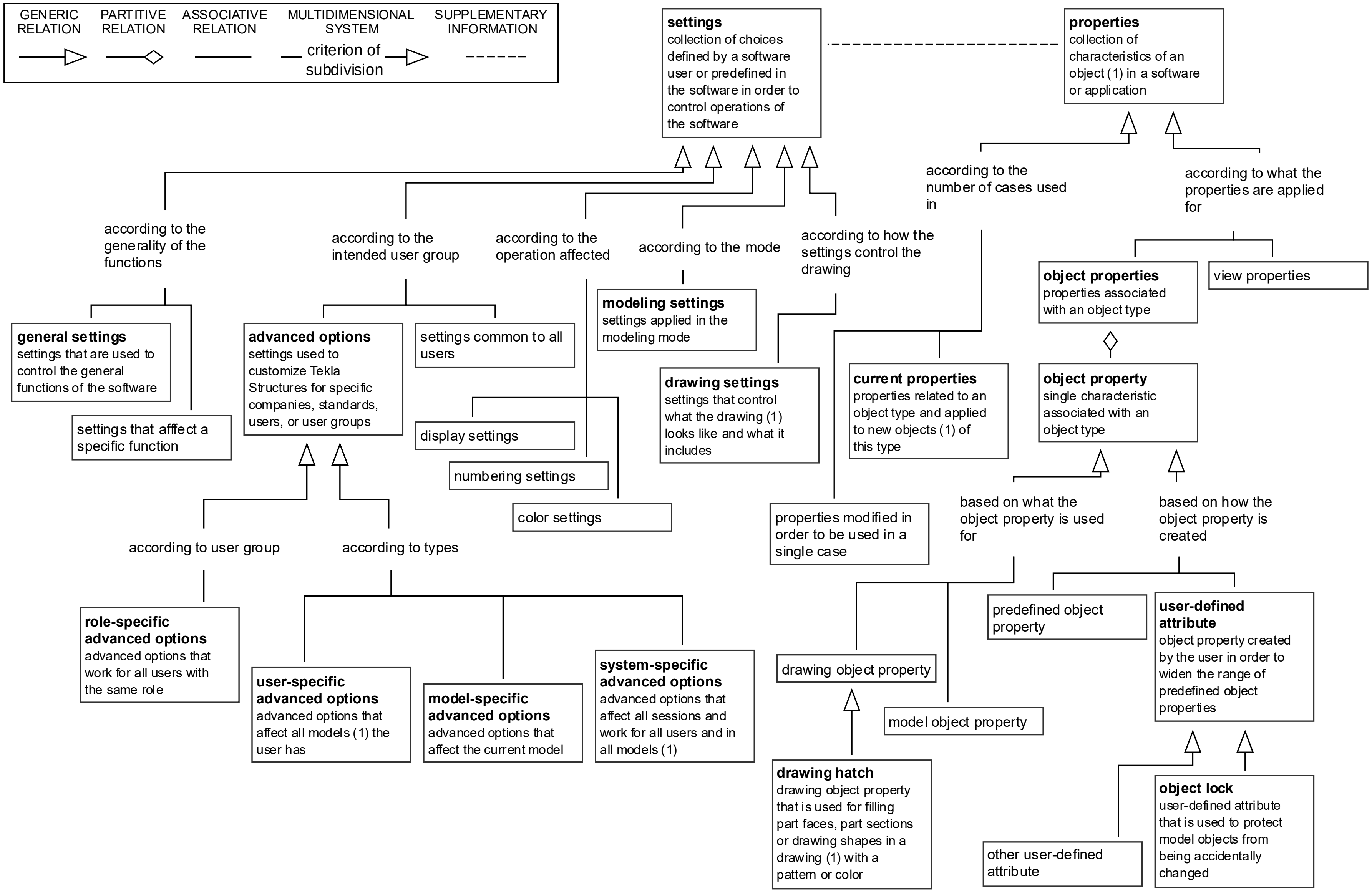
147
object lock

definition
user-defined attribute that is used to protect *model objects* from being accidentally changed

> note
> The model objects can be *locked* and unlocked in the object locks dialog and in the *phase manager*.

Concept diagram: Settings and properties

Concept diagram 11. *Settings and properties.*



GENERIC RELATION

PARTITIVE RELATION

ASSOCIATIVE RELATION

MULTIDIMENSIONAL SYSTEM
criterion of subdivision

SUPPLEMENTARY INFORMATION

settings
collection of choices defined by a software user or predefined in the software in order to control operations of the software

properties
collection of characteristics of an object (1) in a software or application

according to the generality of the functions

according to the intended user group

according to the operation affected

according to the mode

according to how the settings control the drawing

according to the number of cases used in

according to what the properties are applied for

general settings
settings that are used to control the general functions of the software

settings that afffect a specific function

advanced options
settings used to customize Tekla Structures for specific companies, standards, users, or user groups

settings common to all users

display settings

numbering settings

color settings

modeling settings
settings applied in the modeling mode

drawing settings
settings that control what the drawing (1) looks like and what it includes

current properties
properties related to an object type and applied to new objects (1) of this type

properties modified in order to be used in a single case

object properties
properties associated with an object type

view properties

object property
single characteristic associated with an object type

according to user group

according to types

role-specific advanced options
advanced options that work for all users with the same role

user-specific advanced options
advanced options that affect all models (1) the user has

model-specific advanced options
advanced options that affect the current model

system-specific advanced options
advanced options that affect all sessions and work for all users and in all models (1)

based on what the object property is used for

based on how the object property is created

drawing object property

model object property

predefined object property

user-defined attribute
object property created by the user in order to widen the range of predefined object properties

drawing hatch
drawing object property that is used for filling part faces, part sections or drawing shapes in a drawing (1) with a pattern or color

other user-defined attribute

object lock
user-defined attribute that is used to protect model objects from being accidentally changed

1.9 Parametric modeling

148
<Tekla Structures>
associativity

definition
drawing (1) property that represents the linking of *drawing objects* to *model objects* so that the former are updated according to changes made to the latter in the *modeling mode*

> note
> In *Tekla Structures*, associativity only relates to one type of drawing objects, namely *associative objects*. These can be *building objects* and *associative annotation objects*.
>
> In Tekla Structures, the term associativity has traditionally been used when referring to the linking of drawing objects to model objects. In other *modeling* contexts, however, the term associativity may refer to any kind of linking between model objects or *parts* of a *model (1)* by using *dependencies (1)*.

Concept diagrams: Points and lines and Parametric modeling

149
adaptivity

definition
automatic linking of *model objects* to another model object

> note
> For example, *reinforcement objects* and *surface treatment* automatically adapt to the changes made to the *part* they are linked with.

Concept diagram: Parametric modeling

150
<Tekla Structures>
parametric modeling

definition
modeling that uses *parametric variables* to define various *properties*

> note
> In *Tekla Structures*, parametric modeling is used in *custom components* and *parametric user-defined profiles*.
>
> Parametric modeling can be used for defining a *model object*'s geometry, *location*, and relationship to other model objects. Parametric modeling may also use *dependencies (1)* between the model objects to update the model objects.
>
> The term parametric modeling has traditionally been used in Tekla Structures as defined above. In other modeling contexts, the term associative parametric modeling may be used (see also how *associativity* is defined in Tekla Structures).

Concept diagram: Parametric modeling

151
magnetic; magnetism

definition
property of a rectangular *grid*, a *grid plane*, a *construction line*, and a *construction plane* that enables the *attached model objects* to follow when the object in question is moved

> note
> See also *adaptivity*.

Concept diagram: Parametric modeling

152
verb
attach

definition
to relate a *model object* to another model object or to a *point (1)* so that the related model object follows when the other model object or point (1) is moved or deleted

> note
> For example, *reinforcement objects* can be attached to a concrete *beam* and a *load* can be attached to a *part*.

Concept diagram: Parametric modeling

153
<Tekla Structures>
variable (1)

definition
string that is used to *bind model objects* or to set or store values

> note
> For example, variables (1) can be used in *custom components* and *sketched profiles*.

Concept diagram: Parametric modeling

154
reference distance variable; reference distance

definition
variable (1) used to pass on *distance (1)* information in order to define *properties*

Concept diagram: Parametric modeling

155
distance variable; distance (2)

definition
variable (1) used to *bind* the *model object* to the *object (1) planes* or *construction planes*

> note
> A distance variable includes a value and a *dependency (1)*.

Concept diagram: Parametric modeling

156
parametric variable
rather than: parameter

definition
variable (1) used to define a value for a *parametric property*

> note
> A parametric variable does not include a *dependency (1)*.
>
> For example, name, material grade, and bolt size are parametric variables.

Concept diagram: Parametric modeling

157
parametric property
rather than: variable (2)

definition
model object property that can include *dependencies (1)*

> note
> For example, length is a parametric property.

Concept diagram: Parametric modeling

158

dependency (1)

definition

rule that defines a *model object’s* relationship to other model objects so that the latter ones adapt to changes made in the former

> note
>
> A dependency (1) can be created between *parametric properties* or between *variables (1)*.

Concept diagram: Parametric modeling

159

verb

bind

definition

to relate a *model object point (1)* or *plane* to an *object (1)* plane or *construction plane* so that they change according to the changes made to the object (1) plane or construction plane

> note
>
> For example, *distance variables* can be used to bind *handles*, *fittings*, and *cuts* to construction planes, so that the *custom component* can adapt to different situations, such as different shapes and sizes of *component main part profile*.

Concept diagram: Parametric modeling

160

binding

definition

geometric *dependency (1)* between *model objects* and model object *planes* or *construction planes*

> note
>
> In *Tekla Structures*, bindings are used to define *locations* using *distance variables*.

Concept diagram: Parametric modeling

161

equation

definition

dependency (1) that determines that two things are equal

> note
>
> In *Tekla Structures*, equations are used to define values for *parametric properties*.

Concept diagram: Parametric modeling

162

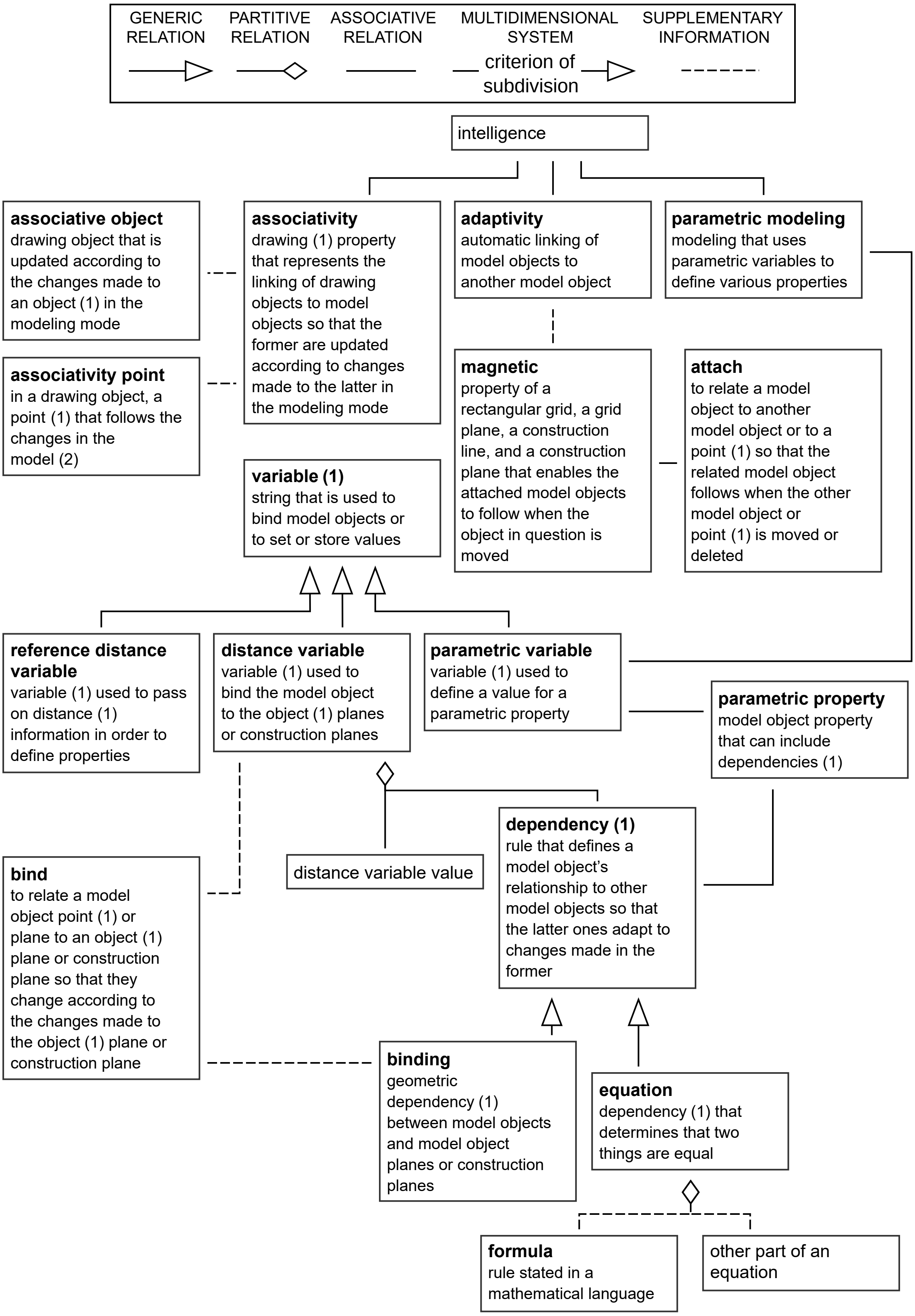
formula

definition

rule stated in a mathematical language

> note
>
> Formula is part of an *equation*.

Concept diagram: Parametric modeling


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
intelligence
associative object
drawing object that is updated according to the changes made to an object (1) in the modeling mode
associativity
drawing (1) property that represents the linking of drawing objects to model objects so that the former are updated according to changes made to the latter in the modeling mode
adaptivity
automatic linking of model objects to another model object
parametric modeling
modeling that uses parametric variables to define various properties
associativity point
in a drawing object, a point (1) that follows the changes in the model (2)
magnetic
property of a rectangular grid, a grid plane, a construction line, and a construction plane that enables the attached model objects to follow when the object in question is moved
attach
to relate a model object to another model object or to a point (1) so that the related model object follows when the other model object or point (1) is moved or deleted
variable (1)
string that is used to bind model objects or to set or store values
reference distance variable
variable (1) used to pass on distance (1) information in order to define properties
distance variable
variable (1) used to bind the model object to the object (1) planes or construction planes
parametric variable
variable (1) used to define a value for a parametric property
parametric property
model object property that can include dependencies (1)
distance variable value
dependency (1)
rule that defines a model object's relationship to other model objects so that the latter ones adapt to changes made in the former
bind
to relate a model object point (1) or plane to an object (1) plane or construction plane so that they change according to the changes made to the object (1) plane or construction plane
binding
geometric dependency (1) between model objects and model object planes or construction planes
equation
dependency (1) that determines that two things are equal
formula
rule stated in a mathematical language
other part of an equation

Concept diagram 12. *Parametric modeling.*

1.10 Online services related to Tekla Structures

163

Trimble Identity

definition

user account to sign in to and access both Trimble and Tekla products and services

> note
>
> For a *Tekla Structures* user, Trimble Identity is a single sign-on account which enables the user’s online identity management. Trimble Identity is needed, for example, to download a software package from *Trimble Downloads*, and to access content in *Tekla Warehouse*.

Concept diagram: Online services related to Tekla Structures

164

Online Profile

definition

user account providing personal preferences and access rights to the users signing in to Tekla products and services for Tekla products

> note
>
> *Trimble Identity* is used to generate the Online Profile. The users sign in using their Trimble Identity.
>
> The Online Profile can be connected to the *Tekla Online account* in order to grant the user access to the *licenses* purchased by the company.

Concept diagram: Online services related to Tekla Structures

165

Tekla Online account

definition

company account created for a customer that has purchased Tekla software *licenses*

> note
>
> The *Online Profile* can be connected to the Tekla Online account in order to grant the user access to the licenses purchased by the company. The licenses can be, for example, *Tekla Model Sharing* licenses or *Trimble Connect* licenses.

Concept diagram: Online services related to Tekla Structures

166

Tekla Online Admin tool

definition

tool that is used in a company to manage the users’ *licenses* and access rights to services for Tekla products

> note
>
> Each user must have a *Trimble Identity*. The users can be the company’s internal or external members.

Concept diagram: Online services related to Tekla Structures

167

Tekla Online administrator

definition

Tekla Online user who has the rights to use the *Tekla Online Admin tool*

> note
>
> The Tekla Online administrator manages the access of the company’s users to the *licenses* and services for Tekla products. The Tekla Online administrator can assign Tekla product specific roles. A company can have more than one Tekla Online administrator.

Concept diagram: Online services related to Tekla Structures

168

Tekla Warehouse

definition

service for collaboration and for storing and sharing *Tekla Structures* content

> note
>
> In Tekla Warehouse the *content items* are stored in *collections*.

Concept diagram: Online services related to Tekla Structures

169

collection

definition

group of *content items* that are organized and stored together in *Tekla Warehouse*

> note
>
> Collections can be private or public.

Concept diagram: Online services related to Tekla Structures

170

content item

definition

logical group of content files in *Tekla Warehouse*

> note
>
> A content item can be, for example, a product catalog or a *model template*. Content items can be labeled by type and use case to help find the content. Content items may have versions that work with different versions of *Tekla Structures*.

Concept diagram: Online services related to Tekla Structures

171

Trimble User Assistance

definition

online help and self-support service for Tekla products

> note
>
> Trimble User Assistance includes product guides, support articles, and instructional videos, and it offers a possibility for feedback.

Concept diagram: Online services related to Tekla Structures

172

Tekla Model Sharing

definition

cloud service for collaboration and for storing and sharing a *model (1)*

Concept diagrams: Model types and Online services related to Tekla Structures

173

Management Console for Tekla Model Sharing

definition

web-based tool for administrators to manage all the company’s *models (1)* shared with *Tekla Model Sharing*

> note
>
> The Management Console for Tekla Model Sharing requires administrator rights.

Concept diagram: Online services related to Tekla Structures

174

on-premises sharing service

definition

alternative service for *Tekla Model Sharing* that uses a local server

Concept diagram: Online services related to Tekla Structures

175

Trimble Downloads

definition

online portal service for downloading Trimble product software packages and applications

> note
>
> For example, *Tekla Structures* can be downloaded from Trimble Downloads.

Concept diagram: Online services related to Tekla Structures

176

Tekla Discussion Forum

definition

site where the users can have discussions and ask questions

> note
>
> Tekla Discussion Forum has a wish list for sending ideas and wishes.

Concept diagram: Online services related to Tekla Structures

177

Tekla Developer Center

definition

online service for providing *Tekla Open API* material

> note
>
> Tekla Developer Center includes Tekla Open API reference material and code examples, for example.

Concept diagram: Online services related to Tekla Structures

178

Trimble Connect

definition

Trimble’s cloud-based collaboration platform for information sharing and collaboration for construction *projects*

> note
>
> Trimble Connect can be used, for example, to view and share Trimble Connect project files, documents and 3D models, and to manage Trimble Connect project members.
>
> Trimble Connect is available on desktop, web and mobile.

Concept diagram: Online services related to Tekla Structures

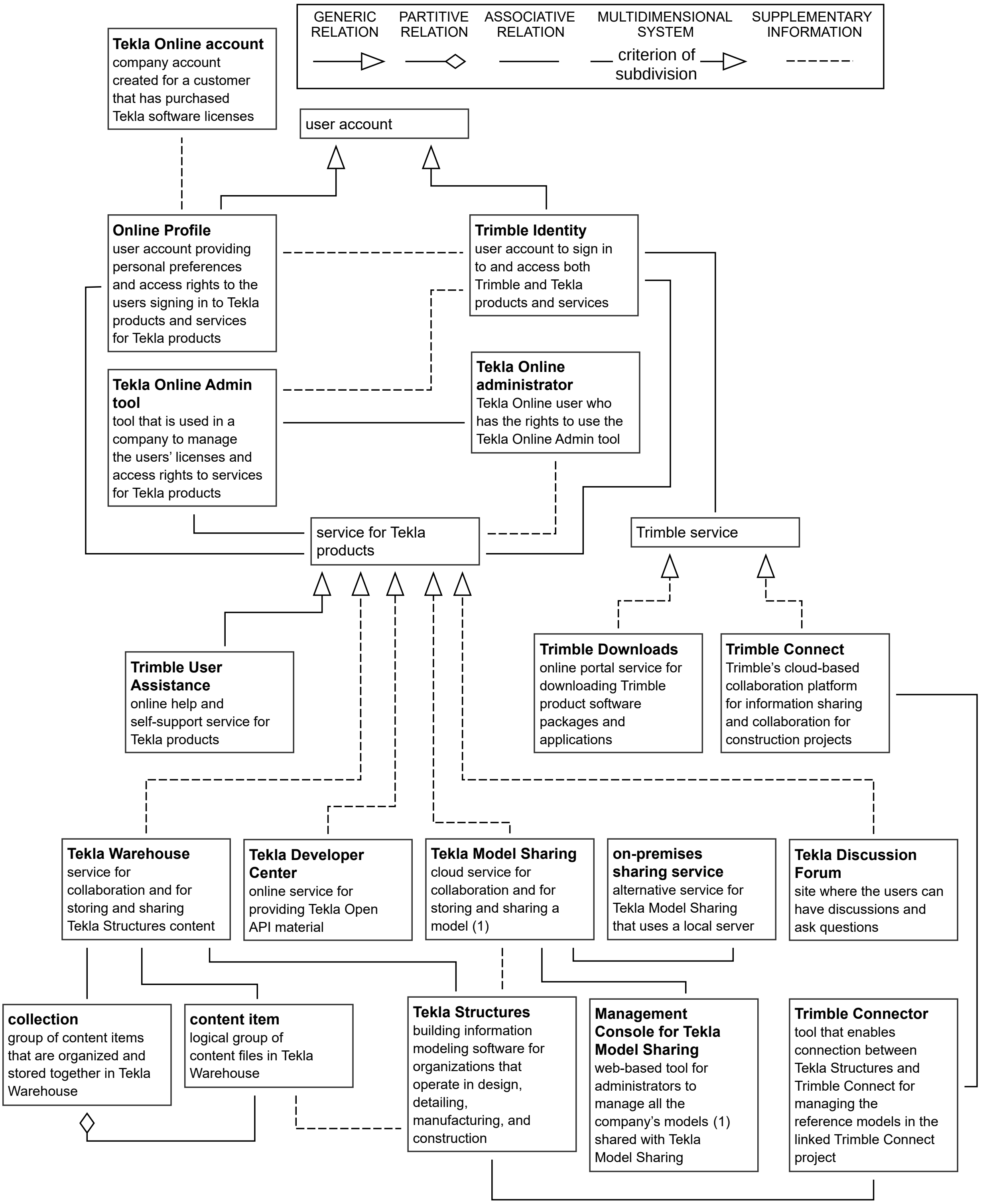
179

Trimble Connector

definition

tool that enables connection between *Tekla Structures* and Trimble Connect for managing the *reference models* in the linked *Trimble Connect* project

Concept diagram: Online services related to Tekla Structures


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
Tekla Online account company account created for a customer that has purchased Tekla software licenses
user account
Online Profile user account providing personal preferences and access rights to the users signing in to Tekla products and services for Tekla products
Trimble Identity user account to sign in to and access both Trimble and Tekla products and services
Tekla Online Admin tool tool that is used in a company to manage the users' licenses and access rights to services for Tekla products
Tekla Online administrator Tekla Online user who has the rights to use the Tekla Online Admin tool
service for Tekla products
Trimble service
Trimble User Assistance online help and self-support service for Tekla products
Trimble Downloads online portal service for downloading Trimble product software packages and applications
Trimble Connect Trimble's cloud-based collaboration platform for information sharing and collaboration for construction projects
Tekla Warehouse service for collaboration and for storing and sharing Tekla Structures content
Tekla Developer Center online service for providing Tekla Open API material
Tekla Model Sharing cloud service for collaboration and for storing and sharing a model (1)
on-premises sharing service alternative service for Tekla Model Sharing that uses a local server
Tekla Discussion Forum site where the users can have discussions and ask questions
collection group of content items that are organized and stored together in Tekla Warehouse
content item logical group of content files in Tekla Warehouse
Tekla Structures building information modeling software for organizations that operate in design, detailing, manufacturing, and construction
Management Console for Tekla Model Sharing web-based tool for administrators to manage all the company's models (1) shared with Tekla Model Sharing
Trimble Connector tool that enables connection between Tekla Structures and Trimble Connect for managing the reference models in the linked Trimble Connect project

Concept diagram 13. *Online services related to Tekla Structures.*

2 Modeling and detailing

2.1 Tekla Structures objects

180

object (1)

definition

collection of human and computer interpretable data that is needed to model, manufacture, and construct a structure

Concept diagrams: Objects and Modeling aids

181

model object; object (2)

definition

object (1) that is represented in a *model (1)*

> note
>
> A model object is either created in a model (1) or imported into it.

Concept diagrams: Modeling with Tekla Structures, Objects, Model objects, Filtering and visualization tools and Analysis objects

182

layer

definition

set of similar *model objects* assigned together by selected criteria to organize the *model (1)*

> note
>
> Each set of model objects forms one layer. With layers it is possible to show, hide, or export the model objects assigned to the same layer.

Concept diagram: Objects

183

drawing object

definition

object (1) that is represented in a *drawing (2)*

Concept diagram: Objects

184

associative object

definition

drawing object that is updated according to the changes made to an *object (1)* in the *modeling mode*

> note
>
> All the *associative annotation objects* and the *building objects* that are represented in *drawings (1)* are associative objects.

Concept diagrams: Parametric modeling, Objects and Indicators

185

annotation object

definition

drawing object that represents information that is only relevant in a *drawing (1)*

> note
>
> An annotation object can be either an *associative annotation object* or an *independent annotation object*.
>
> For example, *dimensions*, *marks*, texts, and *symbols (2)* are annotation objects.

Concept diagrams: Objects, Associative annotation objects and Independent annotation objects

186
leader line

definition
line that connects an *annotation object* to the related *object (1)* or *point (1)*

Concept diagram: Objects

187
building object

definition
object (1) that represents something that will exist in the real building or will be closely related to it

> note
> A building object is always created in a *model (1)*, but it is also represented as a *drawing object* in a *drawing (1)* in which its *properties* can be modified.

Concept diagrams: Objects, Building objects and Pour unit

188
modeling aid

definition
object (1) that represents information that is only relevant in building a *model (1)*

> note
> For example, *grids*, *points (2)*, *construction lines*, *construction circles*, and *reference models* are modeling aids.

Concept diagrams: Objects and Modeling aids

189
object type

definition
description of a group of *objects (1)* that share common characteristics

> note
> The objects (1) are grouped based on different characteristics in *models (1)* and in *drawings (1)*. Examples of *model object* types are *beams* and *rebar sets*. Examples of *drawing object* types are *parts* and *marks*.

Concept diagram: Objects

190
selection switch
not: select switch

definition
switch used for controlling which *object types* can be selected

Concept diagrams: User interface and Objects

191
area selection

definition
method of selecting *objects (1)* that are included in a certain rectangular area of a *model (1)*

> note
> In addition to the selected area, *selection switches* and *selection filters* control which *object types* are selected.

Concept diagram: Objects

192
verb
explode

definition
to ungroup the *objects (1)* that are parts of another object (1) or a *component (2)*

> note
> In *Tekla Structures*, it is possible to explode components (2), *cast units*, *assemblies*, *bent plates (1)*, *parts* that have attached parts, and *drawing shapes* and *plug-ins*.
>
> The exploded objects (1) cannot be reverted back to the original group.

Concept diagrams: Objects, Building objects and Components (groups of model objects)

193
reference model object

definition
model object that is an individual part of an imported *reference model*

> note
> The user can define *user-defined attributes* for a reference model object.
>
> The reference model objects can be moved to a *model (1)* that is currently being worked on.
>
> Information included in a reference model object can be saved in the *model database*.

Concept diagram: Model objects

194
component object

definition
single *model object* that belongs to a *component (2)*

> note
> Component objects created by a *component (1)* can be modified separately or as a group.

Concept diagrams: Model objects, Components (groups of model objects) and Component objects in steel components

195
solid object

definition
model object that is represented as a closed 3D boundary representation

> note
> Solid objects are based on solid modeling and they can be described as being watertight. Solid objects can be poured, detailed, and deformed, for example.

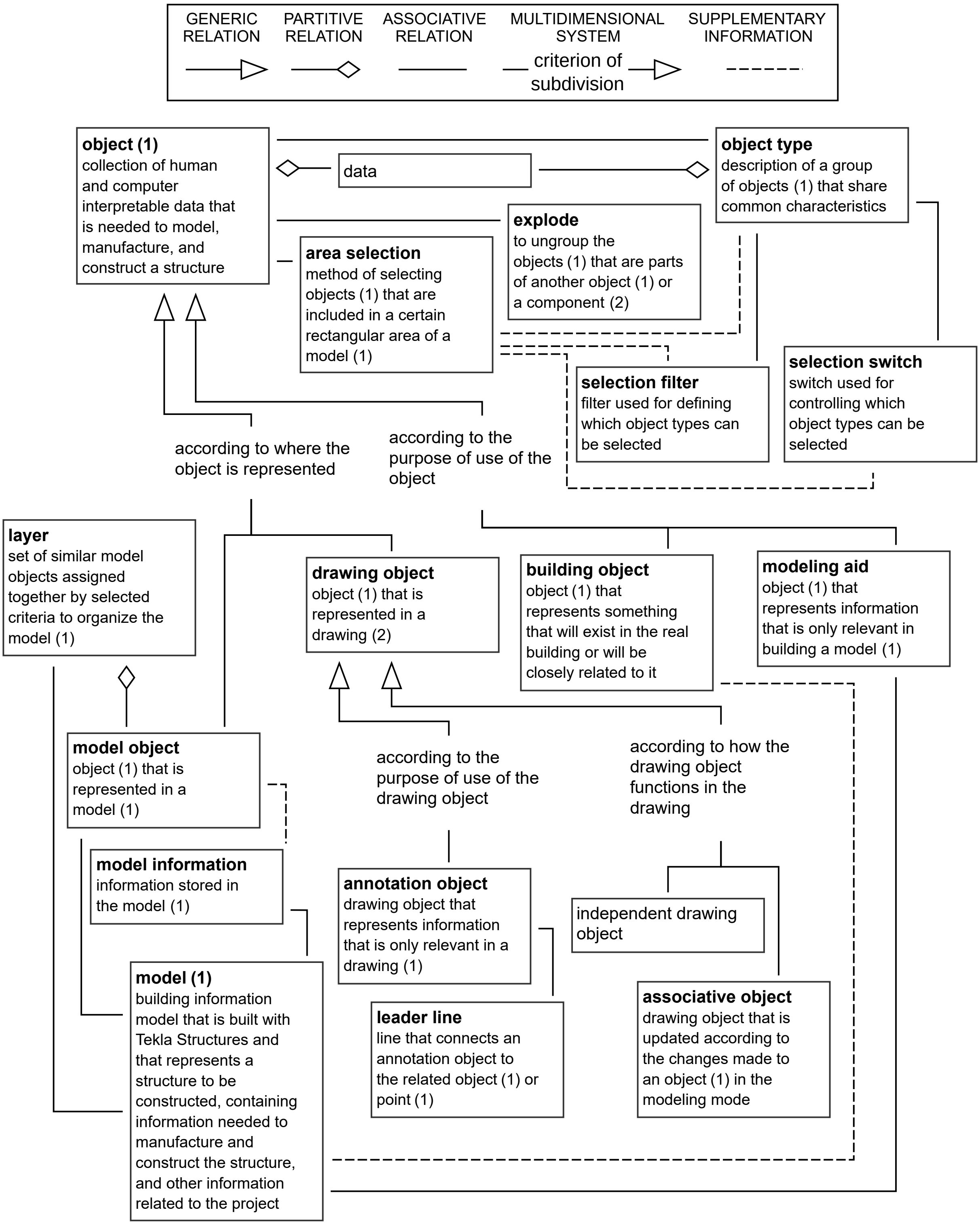
Concept diagram: Model objects

196
surface; surface object

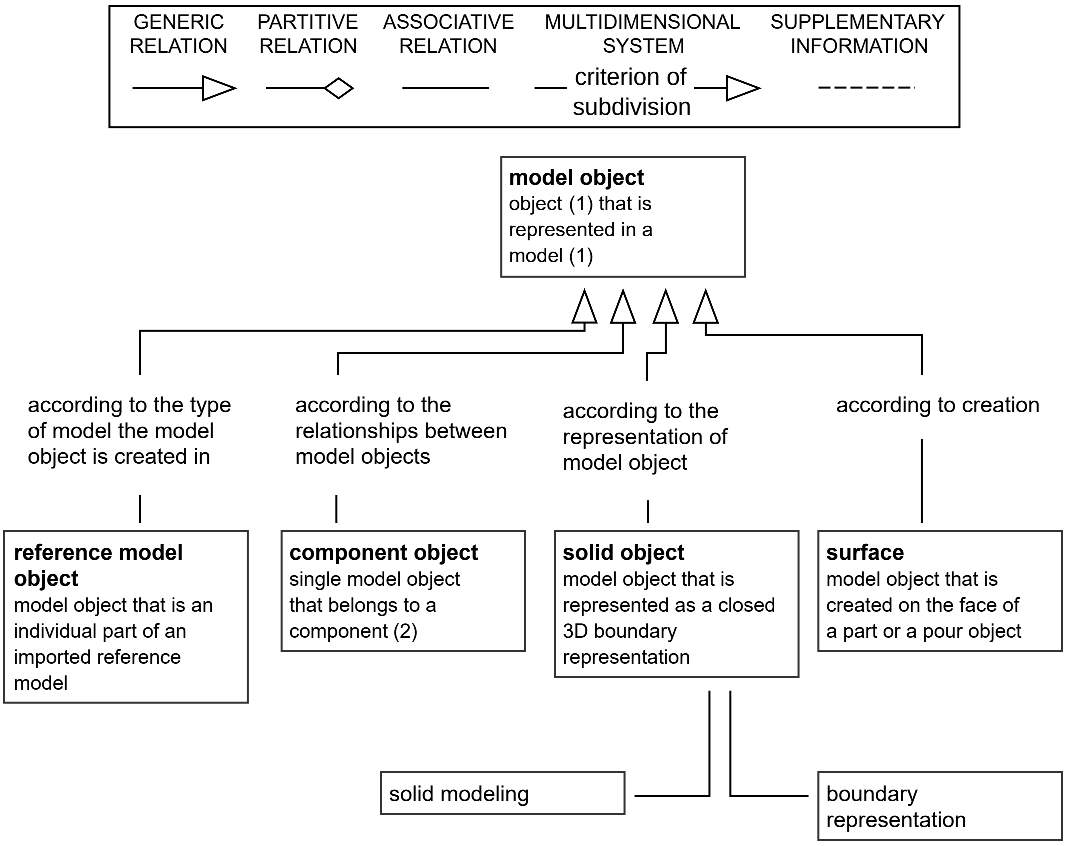
definition
model object that is created on the *face* of a *part* or a *pour object*

> note
> Surface can be used to calculate surface areas, such as formwork areas.

Concept diagram: Model objects


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
object (1)
collection of human and computer interpretable data that is needed to model, manufacture, and construct a structure
data
object type
description of a group of objects (1) that share common characteristics
explode
to ungroup the objects (1) that are parts of another object (1) or a component (2)
area selection
method of selecting objects (1) that are included in a certain rectangular area of a model (1)
selection filter
filter used for defining which object types can be selected
selection switch
switch used for controlling which object types can be selected
according to where the object is represented
according to the purpose of use of the object
layer
set of similar model objects assigned together by selected criteria to organize the model (1)
drawing object
object (1) that is represented in a drawing (2)
building object
object (1) that represents something that will exist in the real building or will be closely related to it
modeling aid
object (1) that represents information that is only relevant in building a model (1)
model object
object (1) that is represented in a model (1)
according to the purpose of use of the drawing object
according to how the drawing object functions in the drawing
model information
information stored in the model (1)
annotation object
drawing object that represents information that is only relevant in a drawing (1)
independent drawing object
model (1)
building information model that is built with Tekla Structures and that represents a structure to be constructed, containing information needed to manufacture and construct the structure, and other information related to the project
leader line
line that connects an annotation object to the related object (1) or point (1)
associative object
drawing object that is updated according to the changes made to an object (1) in the modeling mode

Concept diagram 14. *Objects.*


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
model object
object (1) that is represented in a model (1)
according to the type of model the model object is created in
according to the relationships between model objects
according to the representation of model object
according to creation
reference model object
model object that is an individual part of an imported reference model
component object
single model object that belongs to a component (2)
solid object
model object that is represented as a closed 3D boundary representation
surface
model object that is created on the face of a part or a pour object
solid modeling
boundary representation

Concept diagram 15. *Model objects.*

2.1.1 Building objects

197

part; piece /US/

definition

building object that is a basic element of a *model (1)* and that can be modeled and detailed further

> note
>
> The main concrete parts are: *column*, *beam*, *polybeam*, *spiral beam*, *panel*, *slab*, *lofted slab*, *pad footing*, *strip footing*, and *item*.
>
> The main steel parts are: column, beam, polybeam, *curved beam*, *twin profile*, *orthogonal beam*, spiral beam, *contour plate*, *bent plate (1)*, *lofted plate*, and item.
>
> The term piece is sometimes used to refer to part.

Concept diagrams: Building objects, Part types, Parts according to their roles in the model and Components (groups of model objects)

198

composite structure

definition

structure of *parts* that have been produced by combining different materials (such as steel and concrete, or *cast-in-place* and *precast concrete*) in such a way that the combined parts act together as a single part

> note
>
> Composite *beams* and composite *slabs* are examples of composite structures.

Concept diagram: Building objects

199

bolt (1)

definition

connecting *building object* that is defined in the *bolt assembly*, and that fastens *parts* or *assemblies* or attaches to them

> note
>
> Bolt (1) must belong to a bolt assembly before it can be used in *modeling*.

Concept diagrams: Building objects and Bolt assembly

200

bolt group

definition

group of *bolts (1)* that forms a connecting *building object* between an *assembly main part* and *secondary parts*

> note
>
> The number of bolts (1) in a bolt group depends on the bolt group shape and the values of bolt (1) *distances (1)*.

Concept diagram: Building objects

201

weld

definition

connecting *building object* that joins steel *parts* or *assemblies* to form an assembly, or attaches to them

Concept diagram: Building objects

202

cut length

definition

bolt (1) property that indicates the depth at which *Tekla Structures* searches for the sections of the bolted *parts*

> note
>
> Cut length determines whether the bolt (1) will go through one flange or two, for example.

Concept diagram: Bolt assembly

203

cutting part

definition

building object that creates a *part*-shaped *hollow*

Concept diagrams: Building objects and Cuts and fittings

204

embed

rather than: embedded object

definition

building object that represents an *object (1)* that is to be cast into a concrete structure and that is used to connect structures or as an aid when constructing a structure

> note
>
> For example, a cast-in socket is an embed that is placed in concrete structures to allow *parts* to be fastened together on site. In *Tekla Structures*, embeds are typically steel parts and they are added to *cast units* as *sub-assemblies*.

Concept diagrams: Building objects and Pour unit

205

grouting; grout

definition

building object that represents the filling of *seams* between *parts*, or *holes* or *voids* in a part with grout

> note
>
> Grouting can be used when connecting parts with anchor *bolts (1)* or rods, or in seams between *panels*, for example.
>
> Grout is flowing concrete that hardens after application.

Concept diagram: Building objects

206

surface treatment; surface finish

definition

building object that represents finishing of a *part*

> note
>
> The term surface treatment is used in concrete detailing. For concrete parts surface treatment includes surface mixes, tiles, and flat *finishes*, such as troweling and sandblasting.
>
> The term surface finish is used in steel detailing. For steel parts surface finishes include fire-proofing and unpainted areas.

Concept diagram: Building objects

207

batch editor

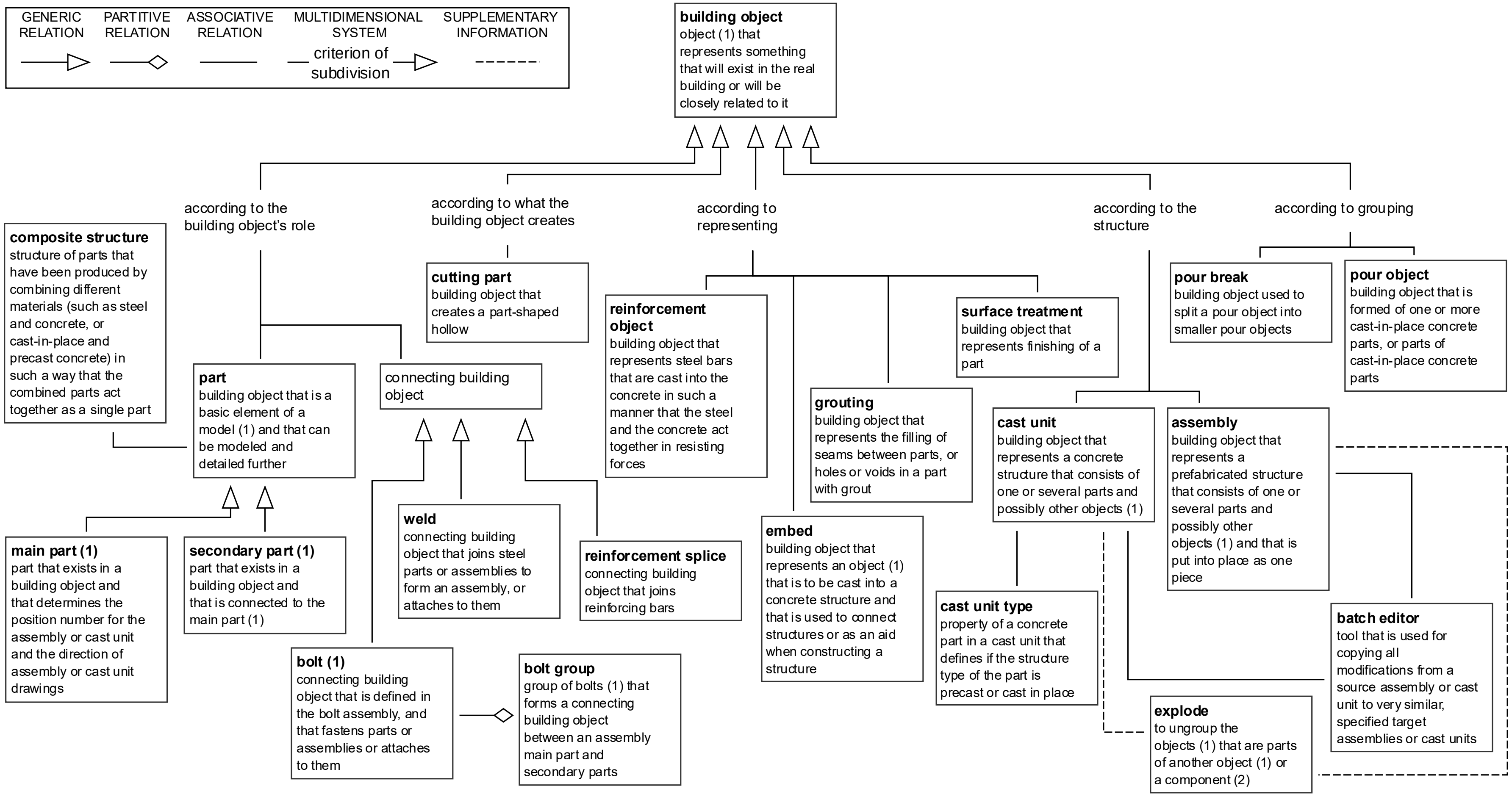
definition

tool that is used for copying all modifications from a source *assembly* or *cast unit* to very similar, specified target assemblies or cast units

> note
>
> The batch editor can be used with identical assemblies and cast units that have the same *position number*, or with very similar but differently numbered assemblies and cast units.

Concept diagram: Building objects

Concept diagram 16. *Building objects.*


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
according to the building object's role
according to what the building object creates
according to representing
according to the structure
according to grouping

building object
object (1) that represents something that will exist in the real building or will be closely related to it

composite structure
structure of parts that have been produced by combining different materials (such as steel and concrete, or cast-in-place and precast concrete) in such a way that the combined parts act together as a single part

part
building object that is a basic element of a model (1) and that can be modeled and detailed further

connecting building object

cutting part
building object that creates a part-shaped hollow

reinforcement object
building object that represents steel bars that are cast into the concrete in such a manner that the steel and the concrete act together in resisting forces

surface treatment
building object that represents finishing of a part

grouting
building object that represents the filling of seams between parts, or holes or voids in a part with grout

embed
building object that represents an object (1) that is to be cast into a concrete structure and that is used to connect structures or as an aid when constructing a structure

pour break
building object used to split a pour object into smaller pour objects

pour object
building object that is formed of one or more cast-in-place concrete parts, or parts of cast-in-place concrete parts

cast unit
building object that represents a concrete structure that consists of one or several parts and possibly other objects (1)

assembly
building object that represents a prefabricated structure that consists of one or several parts and possibly other objects (1) and that is put into place as one piece

main part (1)
part that exists in a building object and that determines the position number for the assembly or cast unit and the direction of assembly or cast unit drawings

secondary part (1)
part that exists in a building object and that is connected to the main part (1)

weld
connecting building object that joins steel parts or assemblies to form an assembly, or attaches to them

reinforcement splice
connecting building object that joins reinforcing bars

bolt (1)
connecting building object that is defined in the bolt assembly, and that fastens parts or assemblies or attaches to them

bolt group
group of bolts (1) that forms a connecting building object between an assembly main part and secondary parts

cast unit type
property of a concrete part in a cast unit that defines if the structure type of the part is precast or cast in place

batch editor
tool that is used for copying all modifications from a source assembly or cast unit to very similar, specified target assemblies or cast units

explode
to ungroup the objects (1) that are parts of another object (1) or a component (2)

2.1.2 Parts

208

beam

definition

part that represents a linear extruded structure in a mainly horizontal position

> note
>
> In *Tekla Structures*, beams are created with two *points (1)*.
>
> In some contexts, for example in *structural analysis*, the term beam object may be used to refer to beams and *columns*.

Concept diagram: Part types

209

orthogonal beam

definition

beam created perpendicular to a *work plane* in a *picked* location

> note
>
> Beam is only *orthogonal* in the creation stage. After its creation, an orthogonal beam can be modified as if it were a beam or *column*.

Concept diagram: Part types

210

spiral beam

definition

beam that follows the form of a helix and is defined by a start *point (1)*, center point (1) and the rotation axis

> note
>
> Spiral beams can be concrete spiral beams or steel spiral beams. They can be used to create spiral staircases, complex architectural structures, and concrete parking ramps, for example.
>
> Spiral beam can rise from the *work plane* or be flat. If the spiral beam rises, the total rise is defined between the start and the end point (1).

Concept diagram: Part types

211

curved beam

definition

beam that follows the form of an arc

> note
>
> Steel curved beams can be created by picking three *points (1)*, where a point (1) between the start point (1) and the end point (1) defines the arc. Both steel and concrete curved beams can be created by adjusting radius in beam *properties* or by using *polybeams*.

Concept diagram: Part types

212

column

definition

part that represents a linear extruded structure in a mainly vertical position

> note
>
> In *Tekla Structures*, columns are created with one *point (1)*.
>
> In some contexts, for example in *structural analysis*, the term beam object may be used to refer to *beams* and columns.

Concept diagram: Part types

213
pile

definition
slender *column* or pole that is put into the ground to carry *loads* or to provide support

> note
> Pile may be made of *precast* or *cast-in-place concrete*, or steel.

Concept diagram: Part types

214
footing

definition
part that represents a construction that is located under another part and used for distributing *loads* on the ground

Concept diagram: Part types

215
pile cap

definition
footing that covers the heads of a group of *piles*, tying them together so that the structural *load* is distributed and they act as a single unit

> note
> Pile caps usually include *reinforcement objects*.

Concept diagram: Part types

216
pad footing

definition
footing that supports a single point of contact

> note
> Pad footing usually supports one *column*.

Concept diagram: Part types

217
strip footing

definition
footing that supports several points of contact or a region of points of contact

> note
> Strip footing supports a length of wall or a line of closely spaced *columns*, for example.
>
> In *Tekla Structures*, strip footing has a polygon shape that the user defines by *picking points (1)*.

Concept diagram: Part types

218
plate (1)

definition
part that represents a flat structure

> note
> In some contexts, for example in *structural analysis*, the term plate object may be used to refer to plates (1).

Concept diagram: Part types

219
panel; > wall

definition
plate (1) that represents a structure such as a wall or roof panel

> note
> In *Tekla Structures*, a panel is created by *picking* two or more *points (1)*.
>
> In *cast-in-place concrete* the term wall refers to a concept similar to panel.

Concept diagram: Part types

220
slab

definition
plate (1) that represents a concrete structure

> note
> In *Tekla Structures*, a slab is created by *picking* three or more *points (1)*.
>
> Slab may be part of a floor, for example.

Concept diagram: Part types

221
lofted slab

definition
slab that is created by using *construction objects*

> note
> Lofted slabs can be used to model curved or double-curved slabs or walls, for example.

Concept diagram: Part types

222
plate (2)

definition
plate (1) that represents a steel structure

> note
> Plate (2) is mainly used as a connection piece or as a floor plate.

Concept diagram: Part types

223
bent plate (1)
not: folded plate /UK/

definition
part that is created from *contour plates*, or *beams* whose *profile* is a *plate (1)*

> note
> Bent plates (1) can include conical or cylindrical sections.
>
> *Curved beams*, *spiral beams*, or deformed parts cannot be used for creating a bent plate (1).

Concept diagram: Part types

224
stand-alone bent plate

definition
plate (2) that is created by picking *points (1)* and whose shape is conical or cylindrical

Concept diagram: Part types

225
lofted plate

definition
plate (2) that is created by using *construction objects*

> note
> Lofted plates can be used to model plates (2) with complex shape, for example, rolled plates (2) and plates (2) with double-curved form.

Concept diagram: Part types

226
polybeam

definition
part of a certain shape that is created as a continuous chain of *beams* passing through *points (1)* that the user *picks*

> note
> The segments of the polybeam are straight, but segment intersections can be curved. For example, a beam that follows a zigzag line is a polybeam.

Concept diagram: Part types

227
contour plate

definition
part whose outline form the user defines by *picking* three or more *points (1)*

> note
> The user can define the shape of the contour plate parallel to the *work plane*. The *profile* in use defines the thickness. The corners of the contour plate can be chamfered.

Concept diagram: Part types

228
twin profile

definition
part that represents two identical parts mirrored in relation to their position

> note
> Twin profile can be separated into two individual parts, after which it is no longer a twin profile.

Concept diagram: Part types

229
corbel

definition
concrete *part* representing a structure that projects from the *face* of a concrete part and that serves as a support for an overhanging part and connects the parts

Concept diagram: Part types

230
item

definition
part that has a three-dimensional *shape*

> note
> Items are an exception to other parts because they have a shape instead of a *profile*.

Concept diagram: Part types

231
main part (1)

definition
part that exists in a *building object* and that determines the *position number* for the *assembly* or *cast unit* and the direction of *assembly* or *cast unit drawings*

> note
> Main part (1) can be an *assembly main part* or a *cast unit main part*.

Concept diagrams: Building objects and Parts according to their roles in the model

232
secondary part (1)

definition
part that exists in a *building object* and that is connected to the *main part (1)*

> note
> Secondary part (1) can be an *assembly secondary part* or a *cast unit secondary part*.

Concept diagrams: Building objects and Parts according to their roles in the model

233

assembly main part

definition

main part (1) that exists in an *assembly*

> note
>
> The assembly main part in a steel assembly may have other *parts* welded or bolted to it. By default, the assembly main part is not welded or bolted to any other parts.
>
> The user can change the assembly main part.

Concept diagram: Parts according to their roles in the model

234

cast unit main part

definition

main part (1) that exists in a *cast unit*

> note
>
> The cast unit main part in a concrete cast unit is, by default, the *part* with the largest volume of concrete.
>
> The user can change the cast unit main part.

Concept diagram: Parts according to their roles in the model

235

assembly secondary part

definition

secondary part (1) that exists in an *assembly* and that is connected to an *assembly main part*

Concept diagram: Parts according to their roles in the model

236

cast unit secondary part

definition

secondary part (1) that exists in a *cast unit* and that is connected to a *cast unit main part*

Concept diagram: Parts according to their roles in the model

237

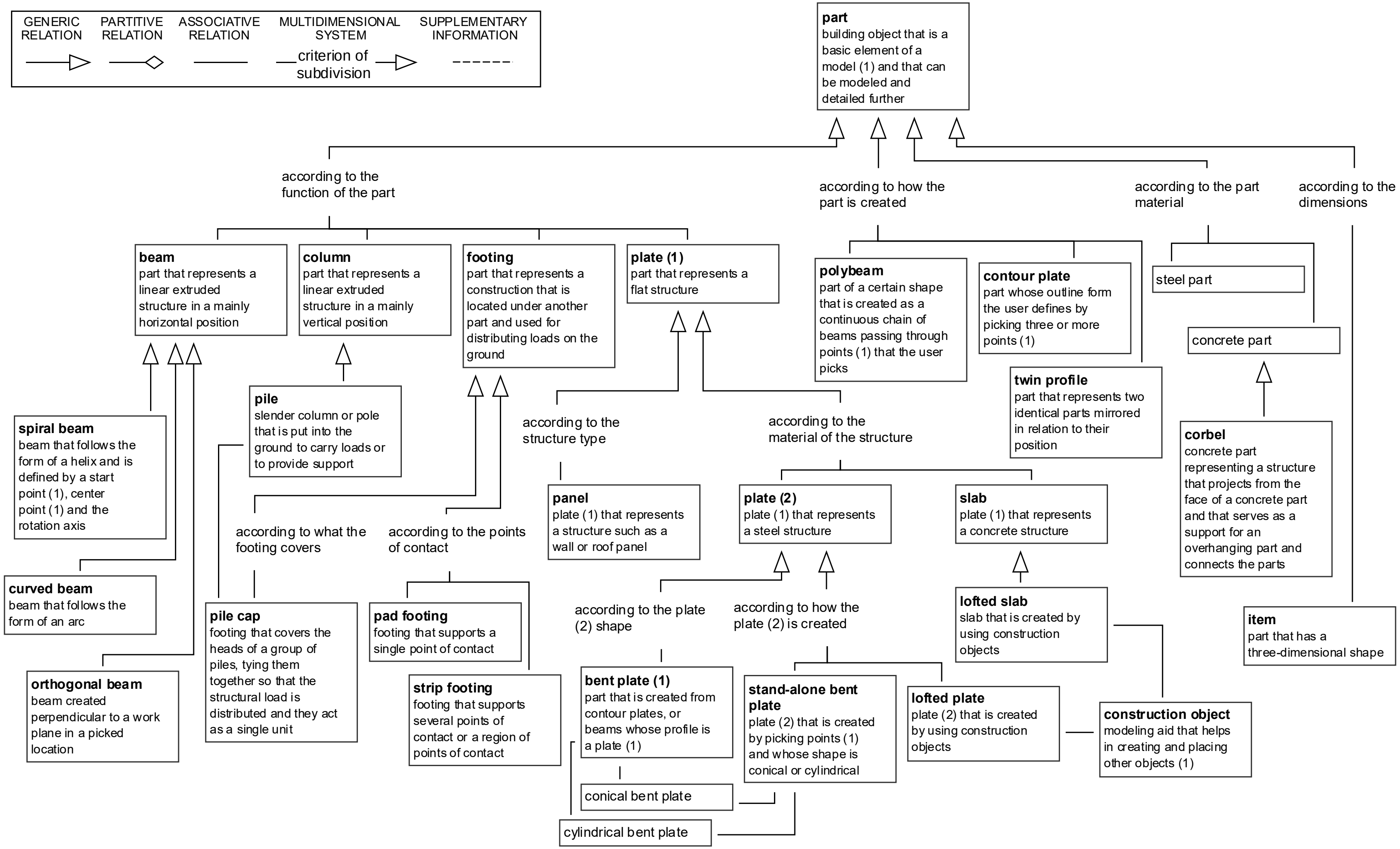
standard part

definition

steel *part* that *current model* parts are compared with in the *numbering* process in order to give them specific part prefixes

Concept diagram: Parts according to their roles in the model

Concept diagram 17. *Part types.*



GENERIC RELATION

PARTITIVE RELATION

ASSOCIATIVE RELATION

MULTIDIMENSIONAL SYSTEM

criterion of subdivision

SUPPLEMENTARY INFORMATION

part
building object that is a basic element of a model (1) and that can be modeled and detailed further

according to the function of the part

according to how the part is created

according to the part material

according to the dimensions

beam
part that represents a linear extruded structure in a mainly horizontal position

column
part that represents a linear extruded structure in a mainly vertical position

footing
part that represents a construction that is located under another part and used for distributing loads on the ground

plate (1)
part that represents a flat structure

polybeam
part of a certain shape that is created as a continuous chain of beams passing through points (1) that the user picks

contour plate
part whose outline form the user defines by picking three or more points (1)

twin profile
part that represents two identical parts mirrored in relation to their position

steel part

concrete part

corbel
concrete part representing a structure that projects from the face of a concrete part and that serves as a support for an overhanging part and connects the parts

item
part that has a three-dimensional shape

spiral beam
beam that follows the form of a helix and is defined by a start point (1), center point (1) and the rotation axis

curved beam
beam that follows the form of an arc

orthogonal beam
beam created perpendicular to a work plane in a picked location

pile
slender column or pole that is put into the ground to carry loads or to provide support

according to what the footing covers

according to the points of contact

pile cap
footing that covers the heads of a group of piles, tying them together so that the structural load is distributed and they act as a single unit

pad footing
footing that supports a single point of contact

strip footing
footing that supports several points of contact or a region of points of contact

according to the structure type

according to the material of the structure

panel
plate (1) that represents a structure such as a wall or roof panel

plate (2)
plate (1) that represents a steel structure

slab
plate (1) that represents a concrete structure

according to the plate (2) shape

according to how the plate (2) is created

lofted slab
slab that is created by using construction objects

bent plate (1)
part that is created from contour plates, or beams whose profile is a plate (1)

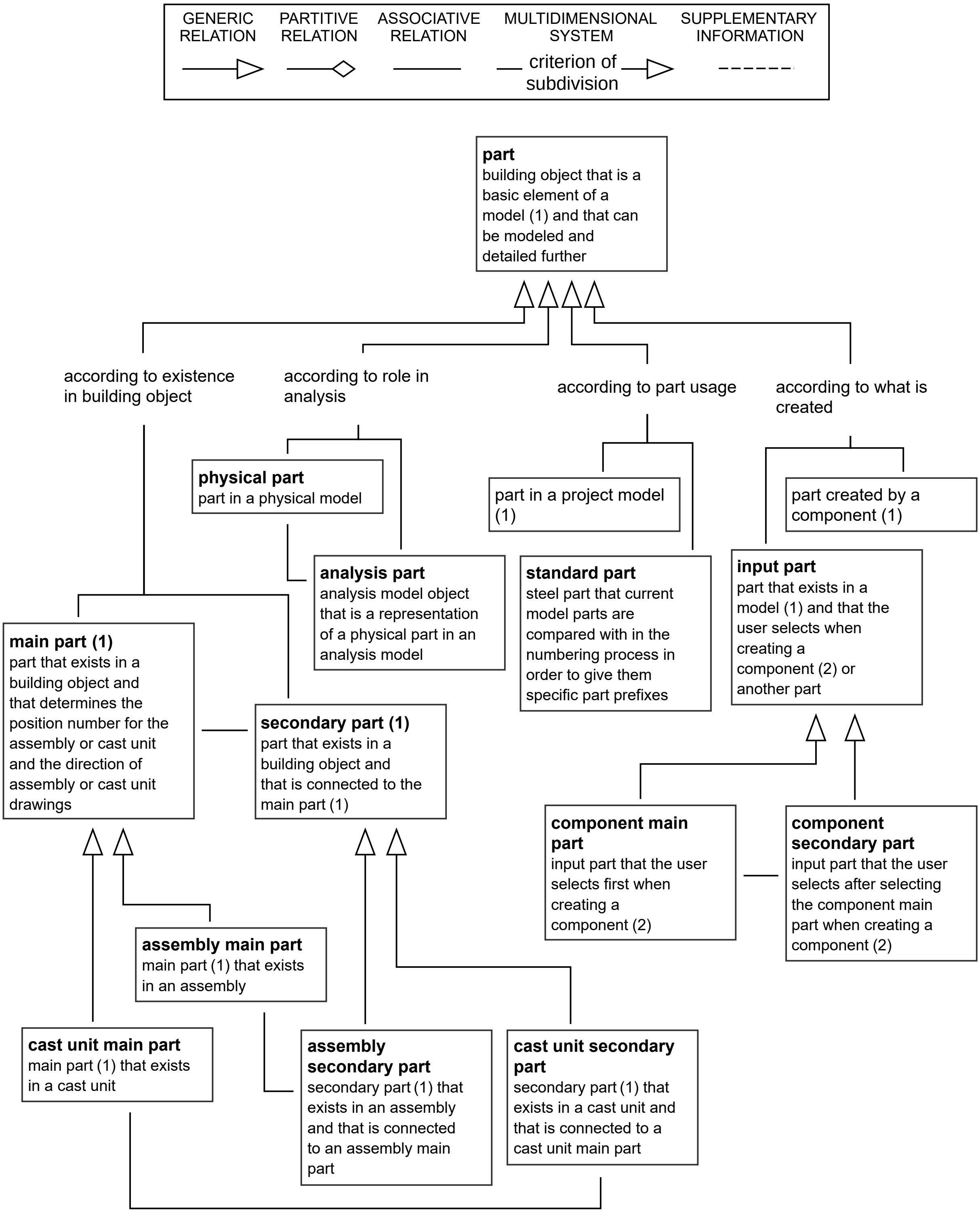
stand-alone bent plate
plate (2) that is created by picking points (1) and whose shape is conical or cylindrical

lofted plate
plate (2) that is created by using construction objects

construction object
modeling aid that helps in creating and placing other objects (1)

conical bent plate

cylindrical bent plate


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
part
building object that is a basic element of a model (1) and that can be modeled and detailed further
according to existence in building object
according to role in analysis
according to part usage
according to what is created
physical part
part in a physical model
analysis part
analysis model object that is a representation of a physical part in an analysis model
part in a project model (1)
standard part
steel part that current model parts are compared with in the numbering process in order to give them specific part prefixes
part created by a component (1)
input part
part that exists in a model (1) and that the user selects when creating a component (2) or another part
main part (1)
part that exists in a building object and that determines the position number for the assembly or cast unit and the direction of assembly or cast unit drawings
secondary part (1)
part that exists in a building object and that is connected to the main part (1)
component main part
input part that the user selects first when creating a component (2)
component secondary part
input part that the user selects after selecting the component main part when creating a component (2)
assembly main part
main part (1) that exists in an assembly
cast unit main part
main part (1) that exists in a cast unit
assembly secondary part
secondary part (1) that exists in an assembly and that is connected to an assembly main part
cast unit secondary part
secondary part (1) that exists in a cast unit and that is connected to a cast unit main part

Concept diagram 18. *Parts according to their roles in the model.*

2.1.3 Part properties and profiles

238

profile

definition

part property that specifies the *cross sections* of the whole length of the part

> note
>
> A profile can have one or more cross sections, and the separate cross sections can have different geometrical forms and dimensions. The cross sections are extruded to create the length of the part.
>
> In *Tekla Structures*, it is possible to use different functionalities for creating and managing profiles of different types.

Concept diagram: Part properties

239

cross section

definition

geometrical form of a *part* sectioned perpendicular to its axis

Concept diagram: Part properties

240

fixed profile

rather than: library profile

definition

predefined *profile* whose *cross section* dimensions the user cannot change

Concept diagram: Part properties

241

fixed user-defined profile

definition

fixed profile whose *cross section* dimensions the user has predefined from scratch, or by modifying an existing *parametric profile*

> note
>
> The user can create a fixed user-defined profile in several ways, for example, by importing a DWG file to a *model (1)*.

Concept diagram: Part properties

242

standard fixed profile

definition

fixed profile whose *cross section* dimensions are predefined in *Tekla Structures*

> note
>
> The standard fixed profiles are located in the *profile catalog*.

Concept diagram: Part properties

243

parametric profile

definition

predefined *profile* whose *cross section* dimensions the user can change by using *parametric variables*

Concept diagram: Part properties

244

predefined parametric profile

definition

parametric profile whose *cross section* dimensions are predefined in *Tekla Structures*

> note
>
> For example, ledger beams and fixed I-shaped profiles are predefined parametric profiles.

Concept diagram: Part properties

245
parametric user-defined profile

definition
parametric profile whose *cross section* dimensions the user has predefined

> note
> Parametric user-defined profiles are defined using the *sketch editor* or .clb files.

Concept diagram: Part properties

246
sketch editor
rather than: cross section sketch editor

definition
tool that is used for creating and editing *parametric user-defined profiles*

Concept diagram: Part properties

247
sketched profile

definition
parametric user-defined profile created in the *sketch editor*

Concept diagram: Part properties

248
class

definition
part property that groups parts according to identifiers given by the user

> note
> The identifiers of classes are usually numbers. Classes can be used for defining the color of parts in the *model (1)*, for example. Class does not influence the *numbering* of *model objects*.

Concept diagram: Part properties

249
finish

definition
part property that describes how the part surface will be treated

> note
> Finish influences *numbering*.

Concept diagram: Part properties

250
deforming

definition
part property that changes the geometry of the part

Concept diagram: Part properties

251
shortening

definition
deforming that decreases the modeled length of a *part* in a *drawing (1)* by a value the user has entered

> note
> Shortening is used when the parts are manufactured shorter than modeled.

Concept diagram: Part properties

252
warping

definition
deforming that twists the *part* by rotating the ends of the part

Concept diagram: Part properties

253
cambering

definition
deforming that curves a *part* to compensate for deflection which arises due to *loads* on the structure

> note
> Cambering is typically an upward curvature defined for a *beam*.

Concept diagram: Part properties

254
shape

definition
part property that specifies an *item's* three-dimensional geometry in space

> note
> Shapes can be modeled in *Tekla Structures* or by using other 3D modeling software, such as SketchUp.

Concept diagram: Part properties

255
geometry editing

definition
method that is used to modify an *item*'s *shape* or to create a new item shape based on an existing item

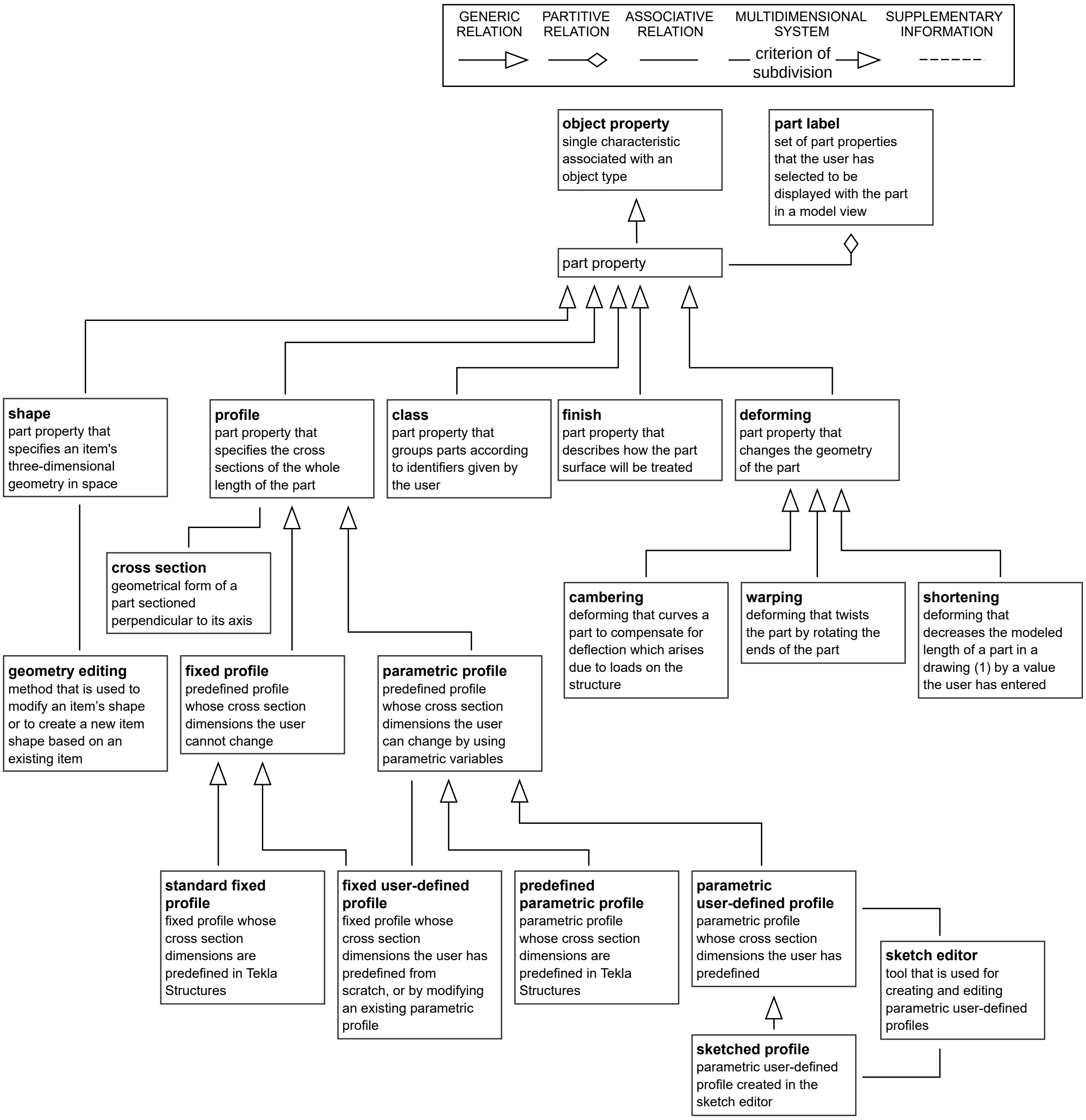
> note
> Geometry editing can be used to modify the items that are *solid objects*.

Concept diagram: Part properties

256
part label

definition
set of *part properties* that the user has selected to be displayed with the part in a *model view*

Concept diagram: Part properties


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
object property single characteristic associated with an object type
part label set of part properties that the user has selected to be displayed with the part in a model view
part property
shape part property that specifies an item's three-dimensional geometry in space
profile part property that specifies the cross sections of the whole length of the part
class part property that groups parts according to identifiers given by the user
finish part property that describes how the part surface will be treated
deforming part property that changes the geometry of the part
cross section geometrical form of a part sectioned perpendicular to its axis
cambering deforming that curves a part to compensate for deflection which arises due to loads on the structure
warping deforming that twists the part by rotating the ends of the part
shortening deforming that decreases the modeled length of a part in a drawing (1) by a value the user has entered
geometry editing method that is used to modify an item's shape or to create a new item shape based on an existing item
fixed profile predefined profile whose cross section dimensions the user cannot change
parametric profile predefined profile whose cross section dimensions the user can change by using parametric variables
standard fixed profile fixed profile whose cross section dimensions are predefined in Tekla Structures
fixed user-defined profile fixed profile whose cross section dimensions the user has predefined from scratch, or by modifying an existing parametric profile
predefined parametric profile parametric profile whose cross section dimensions are predefined in Tekla Structures
parametric user-defined profile parametric profile whose cross section dimensions the user has predefined
sketch editor tool that is used for creating and editing parametric user-defined profiles
sketched profile parametric user-defined profile created in the sketch editor

Concept diagram 19. *Part properties.*

2.1.4 Assemblies

257

assembly

definition

building object that represents a prefabricated structure that consists of one or several *parts* and possibly other *objects (1)* and that is put into place as one piece

> note
>
> Typically, an assembly is a steel structure, for example, a steel *beam* with *stiffeners* welded in a workshop.

Concept diagrams: Building objects and Assemblies

258
basic assembly

definition
assembly that is an independent unit on one *assembly level*

Concept diagram: Assemblies

259
nested assembly

definition
assembly that consists of several assemblies on many *assembly levels*

> note
> Nested assemblies include elements that are manufactured as *sub-assemblies*.

Concept diagram: Assemblies

260
parent assembly

definition
assembly in a *nested assembly* that is superordinate to assemblies on the lower *assembly level*

Concept diagram: Assemblies

261
sub-assembly

definition
assembly in a *nested assembly* that is subordinate to a *parent assembly*

Concept diagram: Assemblies

262
single-part assembly

definition
assembly that consists of one *part*

Concept diagram: Assemblies

263
assembly hierarchy

definition
arrangement of *assemblies* that describes the manufacture and erecting of the actual assembly to be built

Concept diagram: Assemblies

264
assembly level

definition
assembly's place in the *assembly hierarchy*

> note
> The assembly level is expressed as a number.

Concept diagram: Assemblies

265
lotting

definition
process of creating *lots* and adding *assemblies* to them

Concept diagram: Assemblies

266

lot

definition

consignment of *assemblies* for transportation to site

> note
>
> It is possible to use *lot numbers* and descriptions in *reports*.

Concept diagram: Assemblies

267

lot number

definition

numerical value that indicates a *lot*

Concept diagram: Assemblies

268

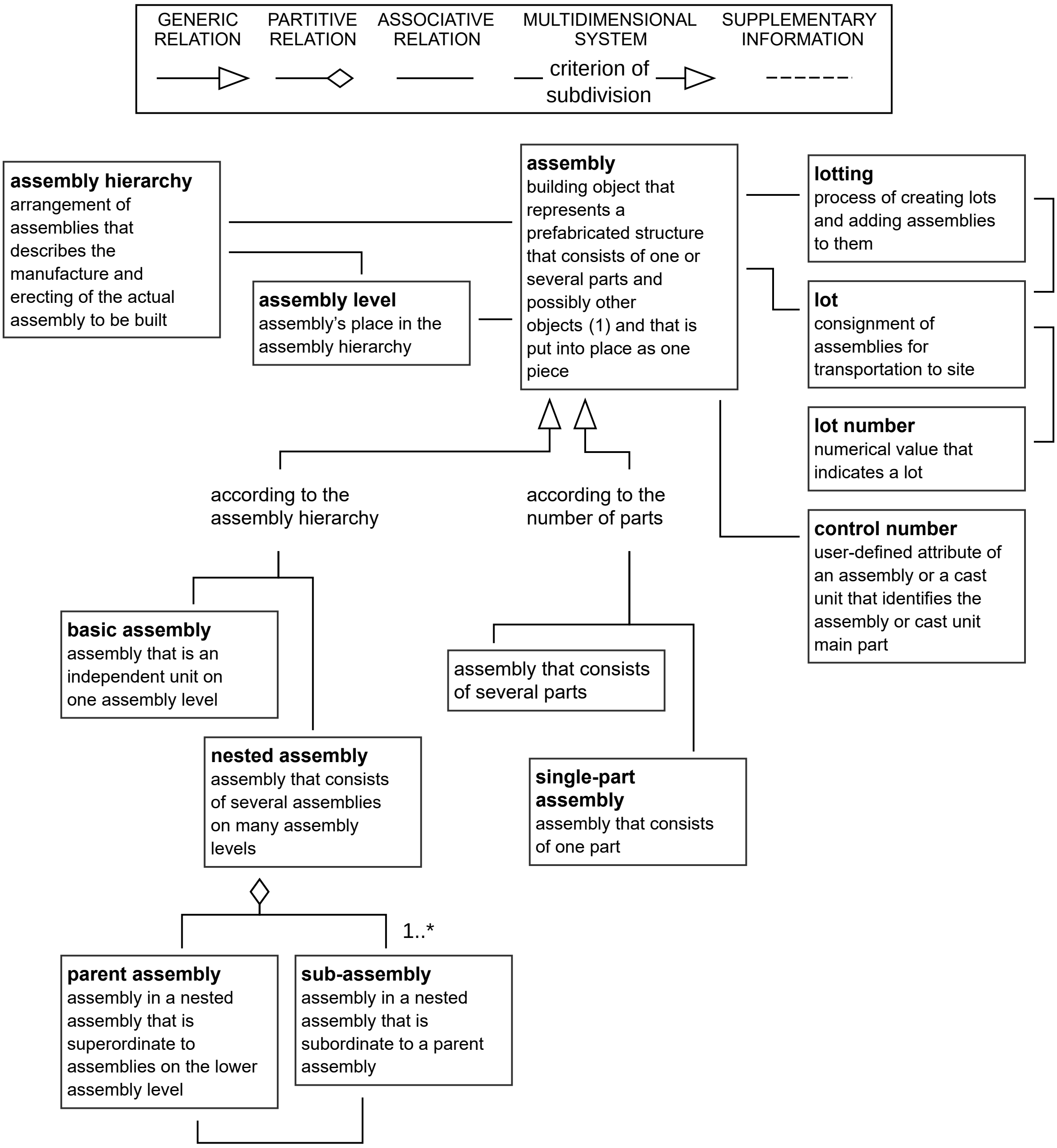
control number; ACN

definition

user-defined attribute of an *assembly* or a *cast unit* that identifies the *assembly* or *cast unit main part*

> note
>
> A control number does not affect *numbering*.
>
> Control numbers are running numbers.

Concept diagrams: Assemblies and Cast unit


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
assembly hierarchy
arrangement of assemblies that describes the manufacture and erecting of the actual assembly to be built
assembly level
assembly's place in the assembly hierarchy
assembly
building object that represents a prefabricated structure that consists of one or several parts and possibly other objects (1) and that is put into place as one piece
lotting
process of creating lots and adding assemblies to them
lot
consignment of assemblies for transportation to site
lot number
numerical value that indicates a lot
control number
user-defined attribute of an assembly or a cast unit that identifies the assembly or cast unit main part
according to the assembly hierarchy
according to the number of parts
basic assembly
assembly that is an independent unit on one assembly level
nested assembly
assembly that consists of several assemblies on many assembly levels
assembly that consists of several parts
single-part assembly
assembly that consists of one part
1..*
parent assembly
assembly in a nested assembly that is superordinate to assemblies on the lower assembly level
sub-assembly
assembly in a nested assembly that is subordinate to a parent assembly

Concept diagram 20. *Assemblies.*

2.1.5 Cast units

269

cast unit

definition

building object that represents a concrete structure that consists of one or several *parts* and possibly other *objects (1)*

note

Typically, a cast unit is a *precast concrete* element, for example, a *column* with *corbels* that is put into place as one piece.

Concept diagrams: Building objects and Cast unit

270
cast unit type

definition
property of a concrete *part* in a *cast unit* that defines if the structure type of the part is precast or cast in place

Concept diagrams: Building objects and Cast unit

271
precast concrete

definition
cast unit type where the concrete is formed, cast, and cured before moved to its final position

Concept diagram: Cast unit

272
precast planning tool

definition
tool used in process planning related to *precast concrete*

> note
> For example stacker and palletizer are precast planning tools.

Concept diagram: Cast unit

273
cast-in-place concrete; CIP; cast-in-situ concrete /UK/; poured concrete /US/; reinforced concrete (2) /IN/

definition
cast unit type where the concrete is formed, poured, and cured in its final position

Concept diagram: Cast unit

274
reinforced concrete (1)

definition
concrete structure which contains reinforcement designed on the assumption that the concrete and reinforcement act together in resisting forces

> note
> Reinforcement in reinforced concrete (1) is usually steel bars, wires, or welded wire fabric. It may also be structural fiber of some other material.
>
> In *Tekla Structures*, reinforced concrete (1) is modeled with *reinforcement objects*.

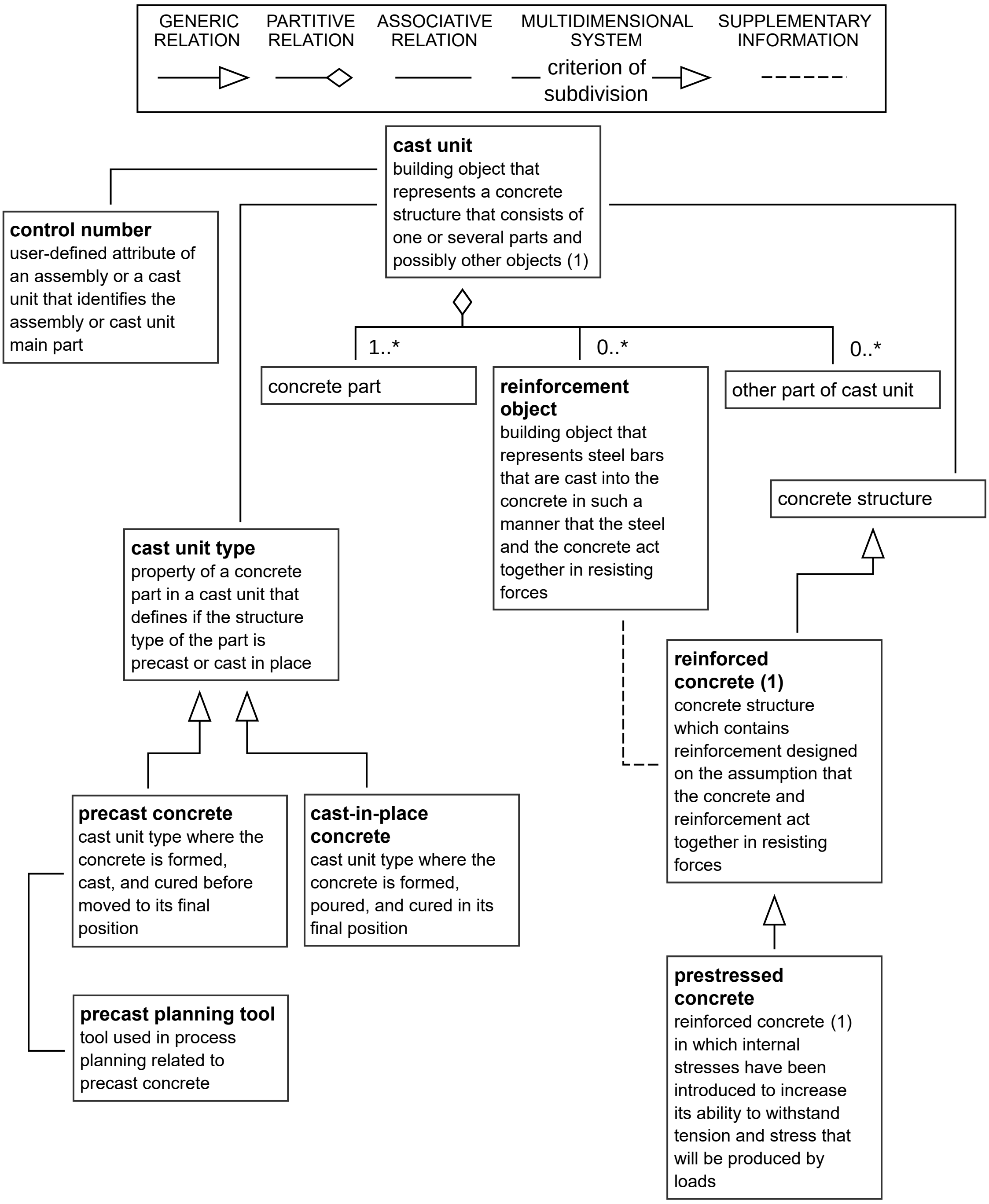
Concept diagrams: Cast unit and Reinforcement

275
prestressed concrete

definition
reinforced concrete (1) in which internal stresses have been introduced to increase its ability to withstand tension and stress that will be produced by loads

> note
> In reinforced concrete (1), prestressing is commonly introduced by tensioning the *tendons*.

Concept diagram: Cast unit


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
cast unit
building object that represents a concrete structure that consists of one or several parts and possibly other objects (1)
control number
user-defined attribute of an assembly or a cast unit that identifies the assembly or cast unit main part
1..*
0..*
0..*
concrete part
reinforcement object
building object that represents steel bars that are cast into the concrete in such a manner that the steel and the concrete act together in resisting forces
other part of cast unit
concrete structure
cast unit type
property of a concrete part in a cast unit that defines if the structure type of the part is precast or cast in place
reinforced concrete (1)
concrete structure which contains reinforcement designed on the assumption that the concrete and reinforcement act together in resisting forces
precast concrete
cast unit type where the concrete is formed, cast, and cured before moved to its final position
cast-in-place concrete
cast unit type where the concrete is formed, poured, and cured in its final position
prestressed concrete
reinforced concrete (1) in which internal stresses have been introduced to increase its ability to withstand tension and stress that will be produced by loads
precast planning tool
tool used in process planning related to precast concrete

Concept diagram 21. *Cast unit.*

2.1.6 Pour units

276

pour

definition

group of *pour objects* that is poured at the same time

Concept diagram: Pour unit

277
pour unit

definition
entity that combines together a *pour object* and the other *building objects* that need to be in place before *cast-in-place concrete* can be poured

> note
> The needed building objects can be *reinforcement objects* and *embeds*, for example.

Concept diagram: Pour unit

278
pour object

definition
building object that is formed of one or more *cast-in-place concrete parts*, or parts of cast-in-place concrete parts

> note
> The cast-in-place concrete parts are merged into one pour object if they have the same material grade and *pour phase*, and if they touch each other. Pour objects are visible in *pour view*.

Concept diagrams: Building objects and Pour unit

279
pour number

definition
property of a *pour object* that defines to which *pour* the pour object belongs

Concept diagram: Pour unit

280
pour type

definition
property of a *pour object* that uses a cast-in-place *part* name or a manually given value to describe the pour object

> note
> By default, the part name is used for pour type. The part name used is the name of the part with the largest volume in the pour object.

Concept diagram: Pour unit

281
pour break

definition
building object used to split a *pour object* into smaller pour objects

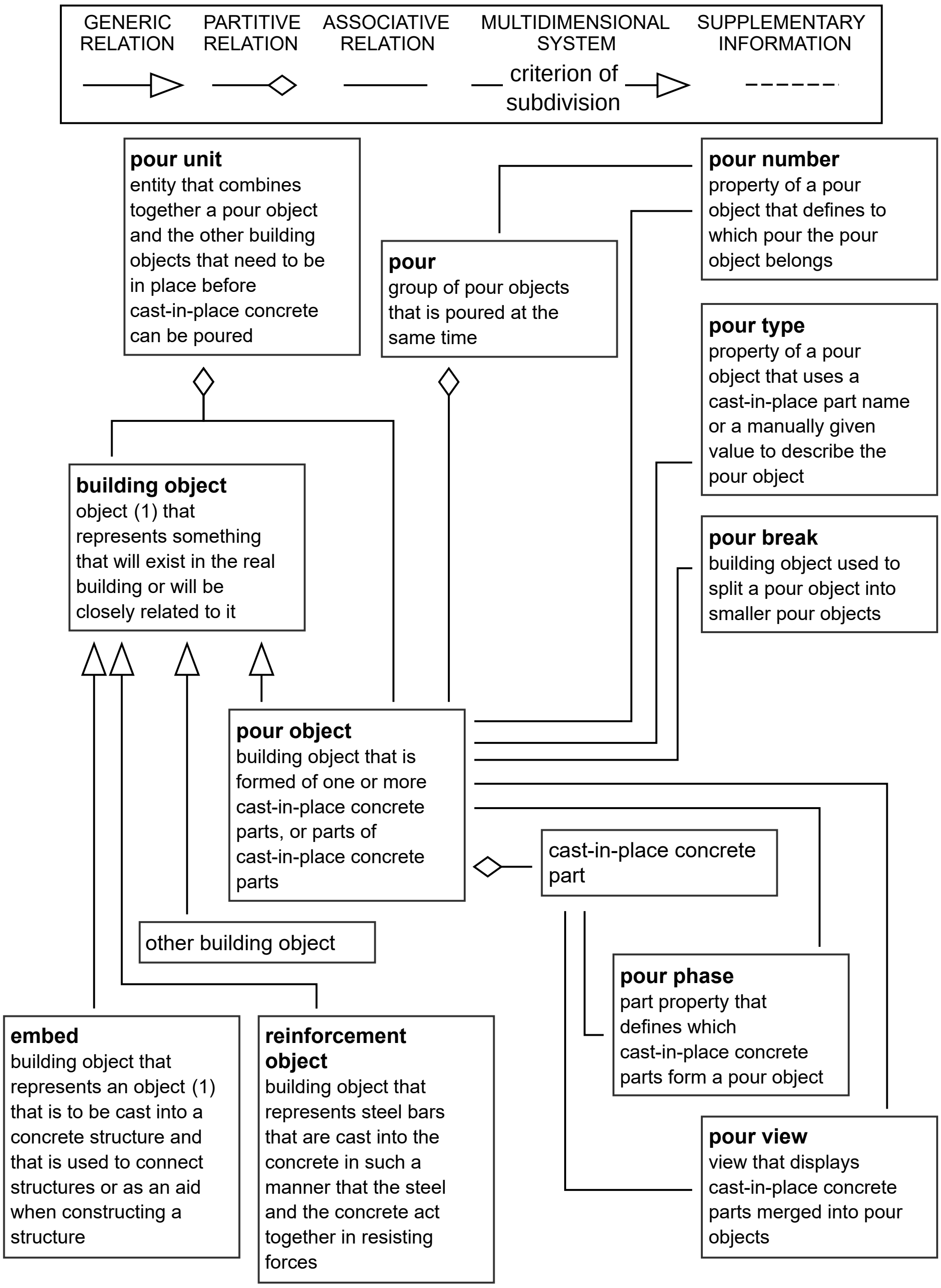
Concept diagrams: Building objects and Pour unit

282
pour phase

definition
part property that defines which *cast-in-place concrete* parts form a *pour object*

> note
> Pour phase can be used to prevent cast-in-place concrete parts from merging into one pour object.

Concept diagram: Pour unit


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
pour unit
entity that combines together a pour object and the other building objects that need to be in place before cast-in-place concrete can be poured
pour
group of pour objects that is poured at the same time
pour number
property of a pour object that defines to which pour the pour object belongs
pour type
property of a pour object that uses a cast-in-place part name or a manually given value to describe the pour object
pour break
building object used to split a pour object into smaller pour objects
building object
object (1) that represents something that will exist in the real building or will be closely related to it
pour object
building object that is formed of one or more cast-in-place concrete parts, or parts of cast-in-place concrete parts
cast-in-place concrete part
other building object
pour phase
part property that defines which cast-in-place concrete parts form a pour object
embed
building object that represents an object (1) that is to be cast into a concrete structure and that is used to connect structures or as an aid when constructing a structure
reinforcement object
building object that represents steel bars that are cast into the concrete in such a manner that the steel and the concrete act together in resisting forces
pour view
view that displays cast-in-place concrete parts merged into pour objects

Concept diagram 22. *Pour unit.*

2.1.7 Reinforcement

283

reinforcement object; rebar object; reinforcement

definition

building object that represents steel bars that are cast into the concrete in such a manner that the steel and the concrete act together in resisting forces

> note
>
> Reinforcement object types include single *reinforcing bars*, *reinforcing bar groups*, *reinforcement meshes*, *strands*, and *rebar sets*, for example.

Concept diagrams: Building objects, Cast unit, Pour unit and Reinforcement

284
rebar assembly

definition
prefabricated entity that consists of one or more *reinforcement objects* and possibly steel *parts*

> note
> For example, reinforcement cages can be modeled as rebar assemblies.
>
> Rebar assemblies can contain single *reinforcing bars*, different *reinforcing bar groups* and *rebar sets*, or *reinforcement meshes*, for example.

Concept diagram: Reinforcement

285
rebar set

definition
reinforcement object that represents multiple *reinforcing bars* that may have different geometries, spacings and properties

> note
> Rebar sets can be modified by using *direct modification* features and by adding *rebar set modifiers*.
>
> *Tekla Structures* automatically groups reinforcing bars in a rebar set when they fulfill the grouping criteria. Reinforcing bars can also be grouped manually by using *rebar set property modifiers*.

Concept diagrams: Reinforcement and Rebar set

286
reinforcing bar group; rebar group

definition
reinforcement object that represents multiple *reinforcing bars* that are side by side and have identical *properties*, except the possible variation in bar lengths

Concept diagram: Reinforcement

287
reinforcing bar; rebar

definition
reinforcement object that represents a steel bar used to reinforce a concrete structure

> note
> The steel bars are usually ribbed and they are used to increase the tensile strength of concrete.

Concept diagram: Reinforcement

288
stirrup

definition
reinforcing bar that is used in *parts* located in mainly horizontal position and that is transverse to the other reinforcing bars which is parallel to the part

> note
> Stirrups are used to take the shear force in the structure and prevent buckling of the main reinforcing bars in compressed structures.
>
> Typically, stirrup is a bar or a wire, either single leg or bent into an L, a U, or rectangular shape, and located perpendicular to or at an angle to a longitudinal main bars.

Concept diagram: Reinforcement

289
tie

definition
reinforcing bar that is used in *parts* located in mainly vertical position and that is transverse to the other reinforcing bars which is parallel to the part

Concept diagram: Reinforcement

290
lacer bar

definition
reinforcing bar that is placed at the sides of a *footing*

> note
> Lacer bars are used, for example, in *pile caps*.

Concept diagram: Reinforcement

291
shear reinforcement

definition
reinforcement provided to resist shear force

> note
> Shear reinforcement in *beams* is in form of *stirrups* and in *columns* in form of *ties*.

Concept diagram: Reinforcement

292
rebar shape manager

definition
tool that is used for customizing the bending shapes of *reinforcing bars*

> note
> Rebar shape manager can be used for bending shapes only and not for any other reinforcing bar properties.

Concept diagram: Reinforcement

293
reinforcement splice; rebar splice

definition
connecting *building object* that joins *reinforcing bars*

> note
> Reinforcement splices are used to extend reinforcing bars by lapping or welding them or by using couplers. With a reinforcement splice there is continuity of tensile stress in the reinforcing bars when concrete is subjected to a flexural or tensile load.

Concept diagrams: Building objects and Reinforcement

294
reinforcement mesh; mesh

definition
reinforcement object that represents a mesh of steel bars in two perpendicular directions

> note
> In *Tekla Structures*, the reinforcement mesh bars in one direction are called main bars and reinforcement mesh bars perpendicular to them are called crossing bars.

Concept diagram: Reinforcement

295
strand; prestressing strand; prestressed strand

definition
reinforcement object that represents a group of wires spun together

Concept diagram: Reinforcement

296

tendon

definition

reinforcement object that represents *reinforcing bars*, *strands*, or wires that are used to produce a compressive stress in *prestressed concrete*

> note
>
> Besides the actual reinforcing bars, strands, or wires, tendons may comprise an anchorage.
>
> Tendons can be prestressing or post-tensioning tendons.

Concept diagram: Reinforcement

297

rebar set leg face; leg face

definition

plane that defines where the *reinforcing bar* legs are created in a *rebar set*

> note
>
> *Tekla Structures* creates rebar set leg faces at the reinforced *faces* of concrete parts or *pour objects*, or according to the *points (1)* picked when creating a rebar set.

Concept diagram: Rebar set

298

rebar set leg surface; leg surface

definition

surface that inherits its geometry from one or more *faces* of a concrete *part* and that defines where the *reinforcing bar* legs are created in a *rebar set*

> note
>
> Rebar set leg surfaces are typically needed in curved structures.

Concept diagram: Rebar set

299

rebar set guideline; guideline

definition

definition of the distribution and direction of the *reinforcing bars* in *rebar sets*

> note
>
> The spacing of the reinforcing bars is measured along the rebar set guidelines. Rebar set guidelines can be lines, or polylines that may have corner *chamfers*.

Concept diagram: Rebar set

300

rebar set primary guideline; primary guideline

definition

rebar set guideline that is created automatically when a *rebar set* is created

Concept diagram: Rebar set

301

rebar set secondary guideline; secondary guideline

definition

rebar set guideline that can be used in addition to the *rebar set primary guideline* to modify the geometry, direction, and spacing of *reinforcing bars* in a *rebar set*

> note
>
> Rebar set secondary guidelines can be used to create curved reinforcing bars or to define a different spacing at the start and end of the rebar set reinforcing bars, for example.

Concept diagram: Rebar set

302

rebar set modifier; modifier

definition

line or polyline that can be used to locally modify *reinforcing bars* in a *rebar set*

> note
>
> Rebar set modifiers can be *rebar set property modifiers*, *end detail modifiers*, or *splitters*. Also *rebar set secondary guidelines* behave like rebar set modifiers.
>
> Polyline modifiers may have corner *chamfers*. Each rebar set modifier only affects those rebar set reinforcing bars that its projection touches.

Concept diagram: Rebar set

303

rebar set property modifier; property modifier

definition

rebar set modifier that can be used to locally change the *properties* of certain *reinforcing bars* in a *rebar set*

Concept diagram: Rebar set

304

rebar set end detail modifier; end detail modifier

definition

rebar set modifier that can be used to modify certain *reinforcing bar* ends in a *rebar set*

> note
>
> Rebar set end detail modifiers can be used to create hooks, *cranking*, or threading, for example.
>
> The rebar set end detail modifier affects the nearest end of the reinforcing bar.

Concept diagram: Rebar set

305

rebar set splitter; splitter

definition

rebar set modifier that can be used to split and splice certain *reinforcing bars* in a *rebar set*

Concept diagram: Rebar set

306

cranking

definition

rebar set end detail that creates cranks for certain *reinforcing bars* in a rebar set

> note
>
> Cranks refer to crank-shaped bends and they can be created with *rebar set end detail modifiers* or *rebar set splitters*.

Concept diagram: Rebar set

307

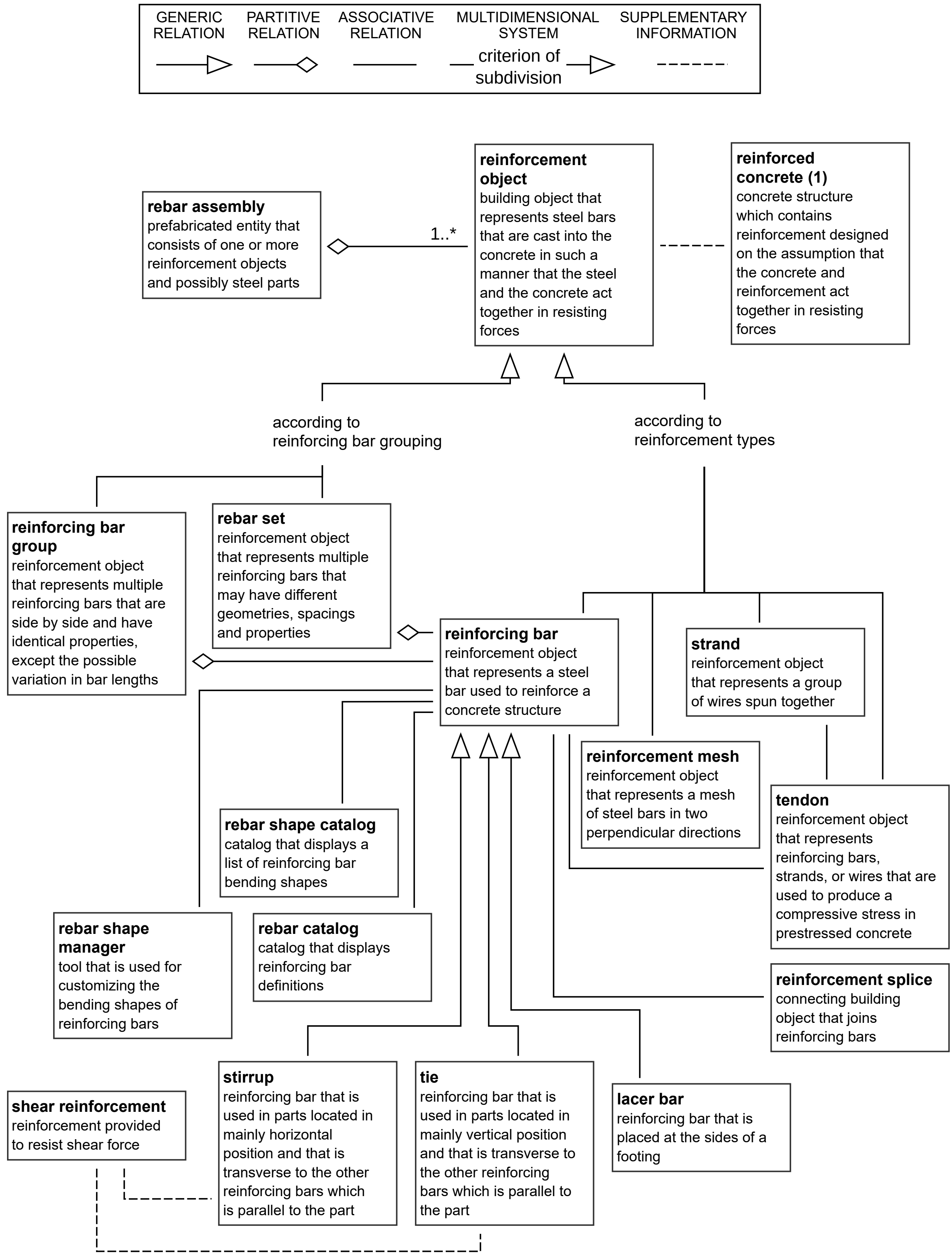
rebar shape placing tool

definition

tool that is used for creating *rebar sets* using predefined *reinforcing bar* bending shapes

> note
>
> Rebar shape placing tool for rebar sets is similar to *rebar shape catalog* for *reinforcing bar groups*.

Concept diagram: Rebar set



reinforcement object building object that represents steel bars that are cast into the concrete in such a manner that the steel and the concrete act together in resisting forces

reinforced concrete (1) concrete structure which contains reinforcement designed on the assumption that the concrete and reinforcement act together in resisting forces

rebar assembly prefabricated entity that consists of one or more reinforcement objects and possibly steel parts

reinforcing bar group reinforcement object that represents multiple reinforcing bars that are side by side and have identical properties, except the possible variation in bar lengths

rebar set reinforcement object that represents multiple reinforcing bars that may have different geometries, spacings and properties

reinforcing bar reinforcement object that represents a steel bar used to reinforce a concrete structure

strand reinforcement object that represents a group of wires spun together

reinforcement mesh reinforcement object that represents a mesh of steel bars in two perpendicular directions

tendon reinforcement object that represents reinforcing bars, strands, or wires that are used to produce a compressive stress in prestressed concrete

rebar shape catalog catalog that displays a list of reinforcing bar bending shapes

rebar shape manager tool that is used for customizing the bending shapes of reinforcing bars

rebar catalog catalog that displays reinforcing bar definitions

reinforcement splice connecting building object that joins reinforcing bars

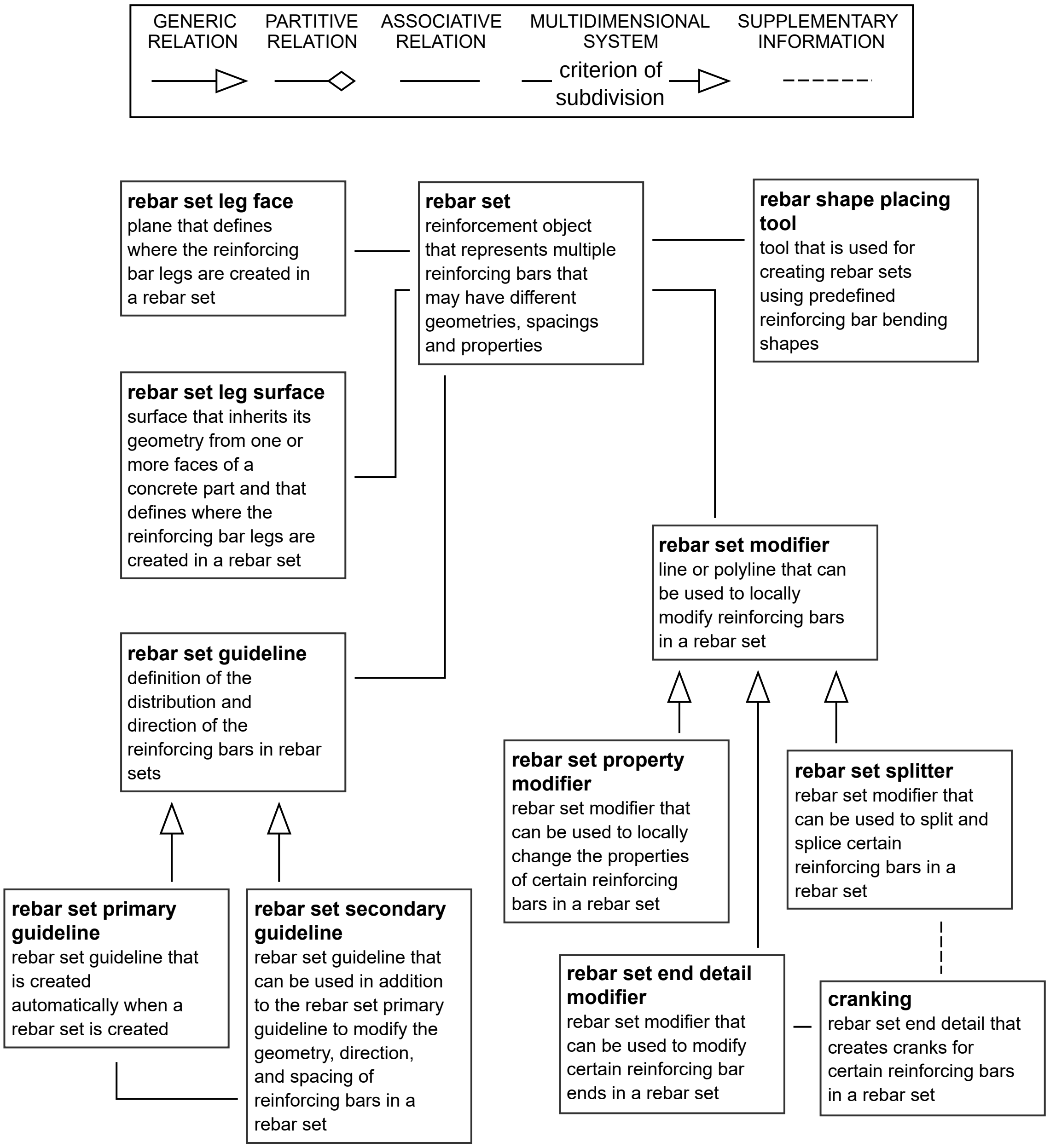
shear reinforcement reinforcement provided to resist shear force

stirrup reinforcing bar that is used in parts located in mainly horizontal position and that is transverse to the other reinforcing bars which is parallel to the part

tie reinforcing bar that is used in parts located in mainly vertical position and that is transverse to the other reinforcing bars which is parallel to the part

lacer bar reinforcing bar that is placed at the sides of a footing

Concept diagram 23. *Reinforcement.*



rebar set leg face
plane that defines where the reinforcing bar legs are created in a rebar set

rebar set
reinforcement object that represents multiple reinforcing bars that may have different geometries, spacings and properties

rebar shape placing tool
tool that is used for creating rebar sets using predefined reinforcing bar bending shapes

rebar set leg surface
surface that inherits its geometry from one or more faces of a concrete part and that defines where the reinforcing bar legs are created in a rebar set

rebar set modifier
line or polyline that can be used to locally modify reinforcing bars in a rebar set

rebar set guideline
definition of the distribution and direction of the reinforcing bars in rebar sets

rebar set property modifier
rebar set modifier that can be used to locally change the properties of certain reinforcing bars in a rebar set

rebar set splitter
rebar set modifier that can be used to split and splice certain reinforcing bars in a rebar set

rebar set primary guideline
rebar set guideline that is created automatically when a rebar set is created

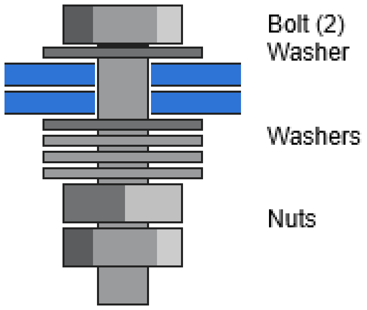
rebar set secondary guideline
rebar set guideline that can be used in addition to the rebar set primary guideline to modify the geometry, direction, and spacing of reinforcing bars in a rebar set

rebar set end detail modifier
rebar set modifier that can be used to modify certain reinforcing bar ends in a rebar set

cranking
rebar set end detail that creates cranks for certain reinforcing bars in a rebar set

Concept diagram 24. *Rebar set.*

2.1.8 Details



Picture 1. *Bolt assembly and bolt elements.*

308
bolt assembly

definition
set of bolt elements that consists of a *bolt (2)*, a *stud*, or a screw, and possibly the related washers and nuts

Concept diagram: Bolt assembly

309
bolt (2)

definition
bolt element that represents a metal rod or pin that has a head at one end and the other end is open and threaded

> note
> Bolts (2) and other bolt elements are listed in the *bolt catalog*.
>
> A bolt (2) is usually secured by a nut. A bolt (2) is part of the *bolt assembly*.

Concept diagram: Bolt assembly

310
stud

definition
bolt element that represents a metal rod or pin that is used to transfer *loads*

> note
> Studs and other bolt elements are listed in the *bolt catalog*.
>
> A stud can be secured with two or more nuts and have threading at both ends, or it can be welded to steel *parts*, for example.
>
> A stud is part of the *bolt assembly*.

Concept diagram: Bolt assembly

311
cut

definition
deletion of a portion of a *part* or a *rebar set*

Concept diagram: Cuts and fittings

312
line cut

definition
cut that is defined by a *cutting line*

Concept diagram: Cuts and fittings

313
cutting line

definition
straight line that is defined by *picking* two *points (1)* and used for shaping the *part* or a *rebar set*

Concept diagram: Cuts and fittings

314
polygon cut

definition
cut that is defined by a polygon

Concept diagram: Cuts and fittings

315
part cut

definition
cut that is defined by a *cutting part*

Concept diagram: Cuts and fittings

316
hollow

definition
cut in a *part*

Concept diagram: Cuts and fittings

317
hole; bolt hole

definition
small *hollow* open throughout a *part* or *assembly* that is usually used for fastening parts with *bolts (1)* or other such *objects (1)*

> note
> Hole is created in the same way as bolts (1) and hole *properties* are defined in the bolt properties.

Concept diagrams: Bolt assembly and Cuts and fittings

318
blind hole; partial-depth hole

definition
small *hollow* that does not extend completely through a *part*

> note
> Blind holes are used in aluminum curtain walls and light gauge steel construction, for example. Blind holes are created by using *bolt (1) properties*.

Concept diagram: Cuts and fittings

319
opening

definition
large *hollow* open throughout a wall, partition, roof, floor, ceiling or other such *part*

> note
> Opening can be created for a door, window or ductwork, for example.

Concept diagram: Cuts and fittings

320
recess

definition
hollow that does not extend through an *object (1)* or part of the construction

Concept diagram: Cuts and fittings

321
void

definition
hollow inside a *part*

Concept diagram: Cuts and fittings

322
<steel>
notch /UK/; cope /US/

definition
cut in one *component object* or *input part* for receiving another component object or input part

Concept diagram: Cuts and fittings

323
weld access hole; rathole

definition
small *cut* that is made on the *beam* web in order to enable welding by using an electrode

Concept diagram: Cuts and fittings

324
weld preparation
not: weld prep

definition
cut that is made on the *part* edge in order to enable a more complete weld penetration which provides a stronger joint

Concept diagram: Cuts and fittings

325
fitting

definition
adjustment of a *part* end

Concept diagram: Cuts and fittings

326
chamfer

definition
refining of the *part* corners and edges

> note
> Chamfers can be corner chamfers or edge chamfers.

Concept diagram: Cuts and fittings

327
distance (1)

definition
space that represents the degree or amount of separation between two *points (1)*, lines, *planes*, or *objects (1)*

Concept diagram: Cuts and fittings

328
setback distance; setback

definition
distance (1) between a *part* end and its *reference point*

> note
> In *Tekla Structures*, knock-off dimensions are an example of setback distances.

Concept diagram: Cuts and fittings

329

clearance

definition

set space between *objects (1)*

> note
>
> In bolted connections, clearance is required for entering and tightening the *bolts (2)* with an impact wrench. In addition to this, there may be a clearance for a fillet.
>
> In welded connections, clearances are required in order to allow a welder to lay a correct weld.
>
> Reinforcing bar clearance defines the minimum clearance or the allowed overlap for *reinforcing bars* when they are checked against other objects (1).

Concept diagram: Cuts and fittings

330

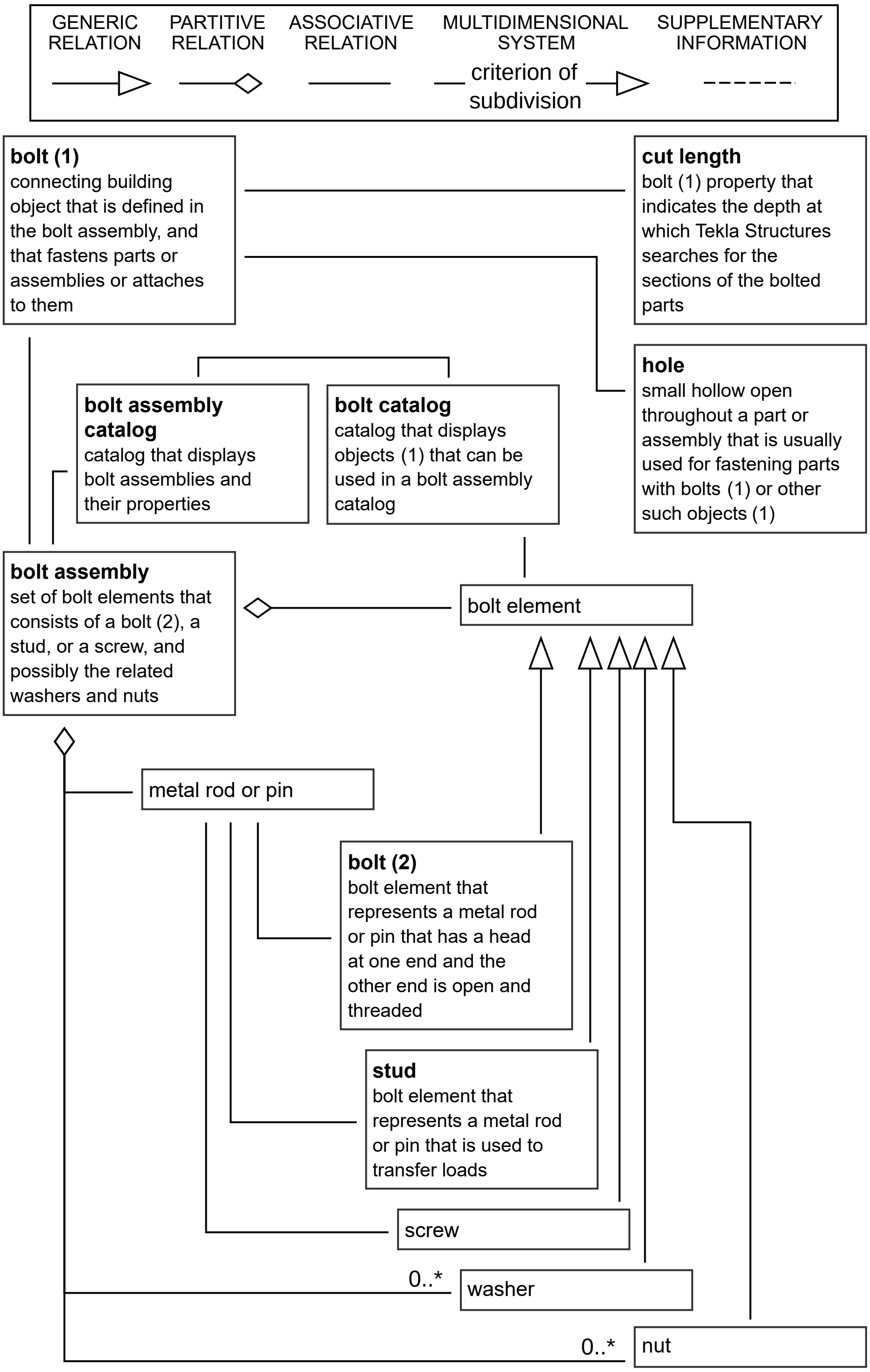
gap

definition

any space between two *objects (1)*

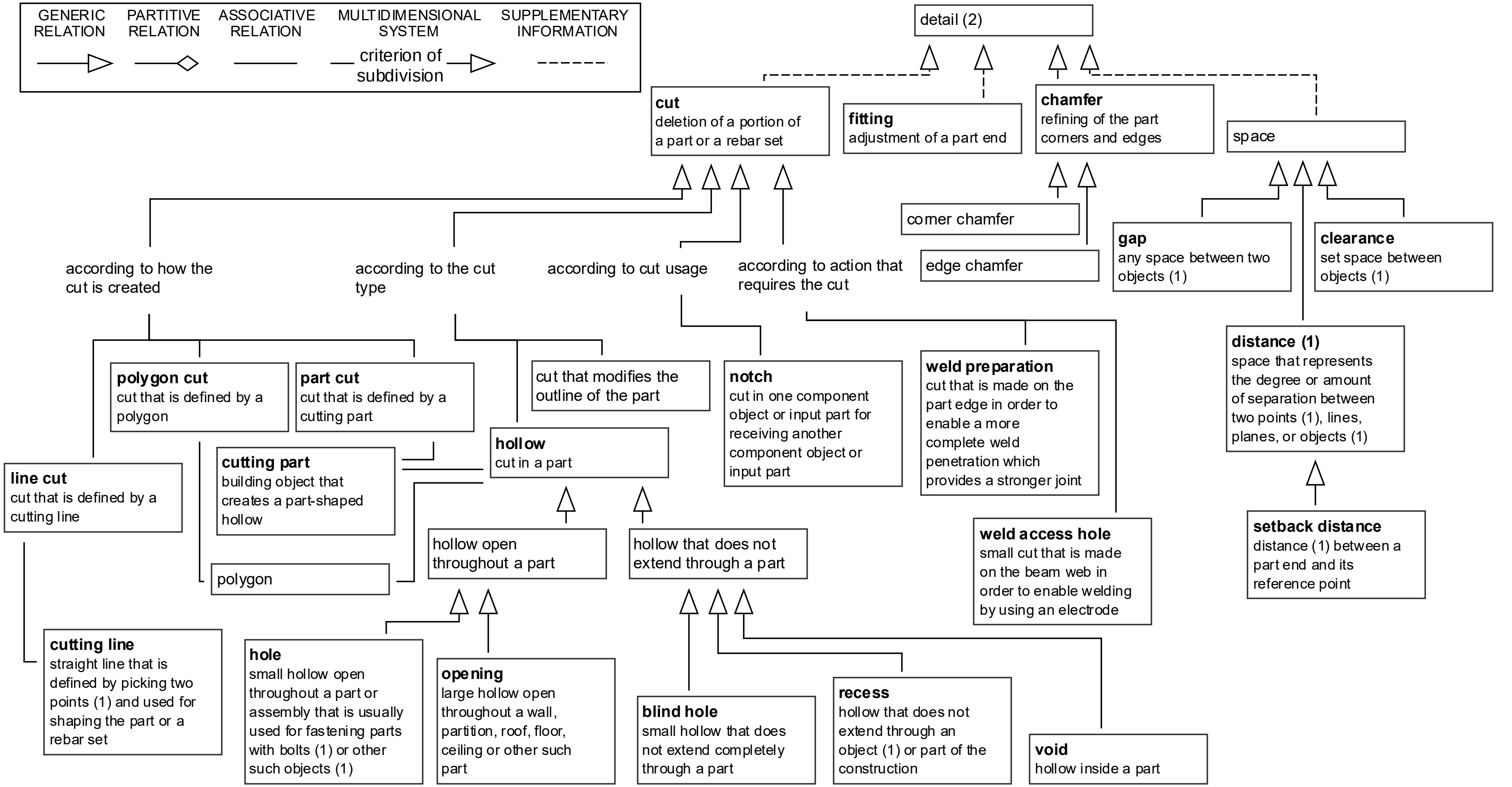
> note
>
> The term gap is used in its general sense in *Tekla Structures*.

Concept diagram: Cuts and fittings


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
bolt (1) connecting building object that is defined in the bolt assembly, and that fastens parts or assemblies or attaches to them
cut length bolt (1) property that indicates the depth at which Tekla Structures searches for the sections of the bolted parts
hole small hollow open throughout a part or assembly that is usually used for fastening parts with bolts (1) or other such objects (1)
bolt assembly catalog catalog that displays bolt assemblies and their properties
bolt catalog catalog that displays objects (1) that can be used in a bolt assembly catalog
bolt assembly set of bolt elements that consists of a bolt (2), a stud, or a screw, and possibly the related washers and nuts
bolt element
metal rod or pin
bolt (2) bolt element that represents a metal rod or pin that has a head at one end and the other end is open and threaded
stud bolt element that represents a metal rod or pin that is used to transfer loads
screw
0..*
washer
0..*
nut

***Concept diagram 25.** Bolt assembly.*

Concept diagram 26. *Cuts and fittings.*



GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
according to how the cut is created
according to the cut type
according to cut usage
according to action that requires the cut

detail (2)

cut deletion of a portion of a part or a rebar set

fitting adjustment of a part end

chamfer refining of the part corners and edges

space

corner chamfer

edge chamfer

gap any space between two objects (1)

clearance set space between objects (1)

polygon cut cut that is defined by a polygon

part cut cut that is defined by a cutting part

cut that modifies the outline of the part

notch cut in one component object or input part for receiving another component object or input part

weld preparation cut that is made on the part edge in order to enable a more complete weld penetration which provides a stronger joint

distance (1) space that represents the degree or amount of separation between two points (1), lines, planes, or objects (1)

hollow cut in a part

line cut cut that is defined by a cutting line

cutting part building object that creates a part-shaped hollow

hollow open throughout a part

hollow that does not extend through a part

weld access hole small cut that is made on the beam web in order to enable welding by using an electrode

setback distance distance (1) between a part end and its reference point

polygon

cutting line straight line that is defined by picking two points (1) and used for shaping the part or a rebar set

hole small hollow open throughout a part or assembly that is usually used for fastening parts with bolts (1) or other such objects (1)

opening large hollow open throughout a wall, partition, roof, floor, ceiling or other such part

blind hole small hollow that does not extend completely through a part

recess hollow that does not extend through an object (1) or part of the construction

void hollow inside a part

2.1.9 Modeling aids

331
grid

definition
modeling aid that represents a three-dimensional complex of intersecting *grid planes* or intersecting grid planes and *curved grid surfaces*

> note
> The grid is defined by coordinates in 3D space. It is shown two-dimensionally on the *view plane* by dash-and-dot lines. A grid can be rectangular or radial.
>
> It is possible to have more than one grid in a *model (1)*. For example, a large-scale grid for the entire structure, and smaller grids for some detailed sections.
>
> It is also possible to show grids and *grid line labels* in *drawings (1)*, and to modify how they are shown in the drawings (1).

Concept diagram: Modeling aids

332
grid line

definition
single line that visualizes a *grid plane* or a *curved grid surface* on a *view plane*

Concept diagram: Modeling aids

333
grid line label; grid label

definition
name of a *grid line*

Concept diagram: Modeling aids

334
grid label frame

definition
frame of a *grid line label* in a *drawing (1)*

Concept diagram: Modeling aids

335
grid plane

definition
single horizontal or vertical *plane*

> note
> Grid planes form a rectangular *grid* or, together with *curved grid surfaces*, a radial grid.

Concept diagrams: Planes and Modeling aids

336
curved grid surface

definition
single cylindrical surface

> note
> Curved grid surfaces and *grid planes* form a radial *grid*.

Concept diagram: Modeling aids

337
construction object

definition
modeling aid that helps in creating and placing other *objects (1)*

> note
> Construction object can represent a *point (1)*, line, arc, or *plane*, for example.

Concept diagrams: Part types and Modeling aids

338
construction line

definition
construction object that represents a line between two *points (1)*

Concept diagram: Modeling aids

339
construction plane

definition
construction object that represents a *plane*

Concept diagrams: Planes and Modeling aids

340
construction circle

definition
construction object that represents a circle

Concept diagram: Modeling aids

341
construction arc

definition
construction object that represents an arc defined by three points

Concept diagram: Modeling aids

342
construction polycurve

definition
construction object that represents a polycurve passing through several picked points

> note
> Construction polycurves can have straight and curved segments.

Concept diagram: Modeling aids

343
measure

definition
modeling aid that displays the *distance (1)* between *points (1)* in the *model (1)*, or the measurements of angles, arcs, or *bolt groups*

Concept diagram: Modeling aids

344
point (2)

definition
modeling aid that visualizes a determined place in a coordinate system, compare with *point (1)*

Concept diagram: Modeling aids

345
constraint

definition
modeling aid that represents a *dependency (1)* between two *model objects*

> note
> Constraints are used in *sketched profiles*, in *custom components*, and in a *model view*.
>
> With constraints in sketched profiles, it is possible to straighten lines, create 90-degree angles, force lines to meet, and add *chamfers* in corners, for example.

Concept diagram: Modeling aids

346

extension line (2)

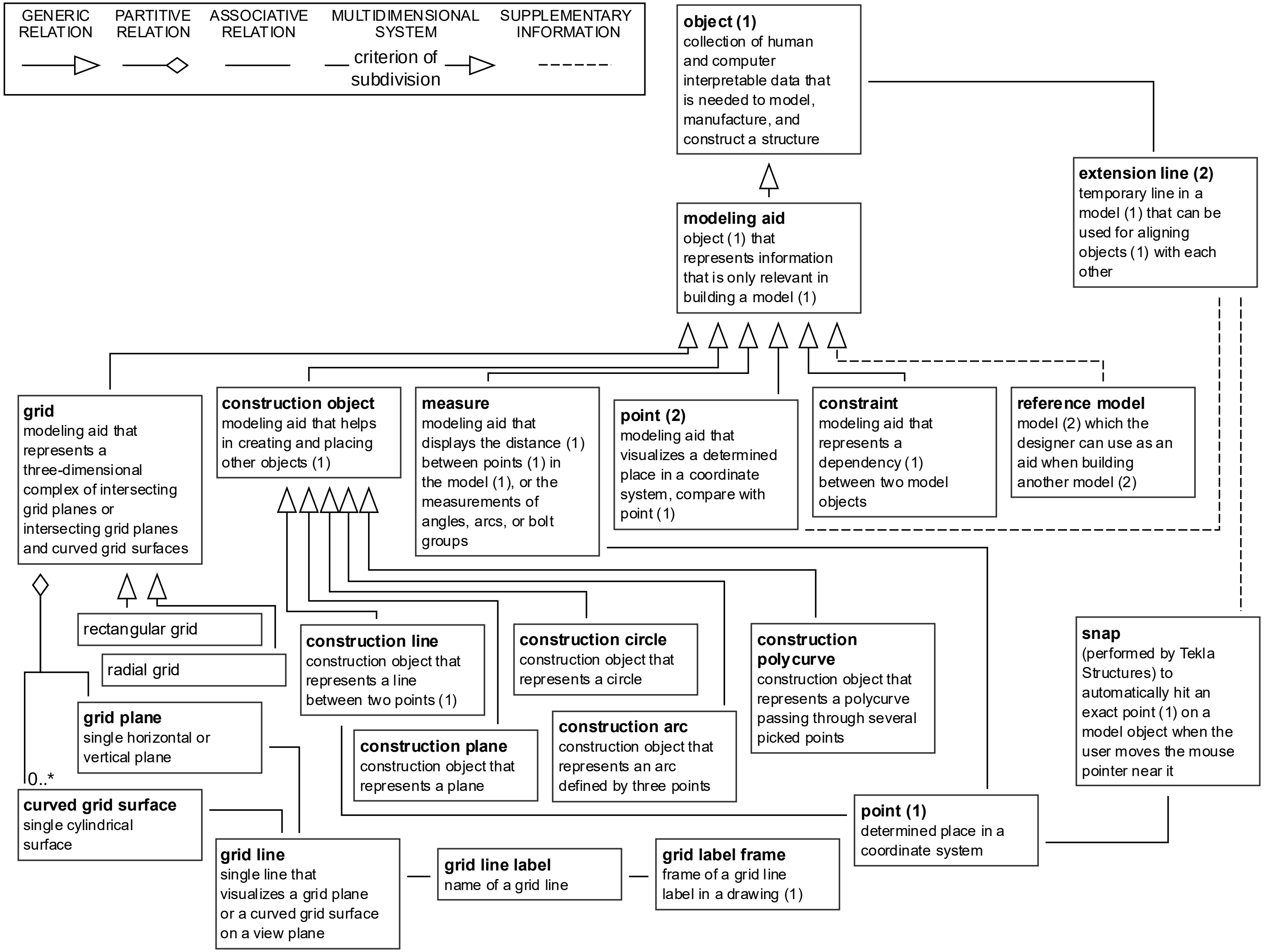
definition

temporary line in a *model (1)* that can be used for aligning *objects (1)* with each other

> note
>
> Extension lines (2) can be used when snapping or creating *points (2)*.

Concept diagram: Modeling aids

***Concept diagram 27.** Modeling aids.*



GENERIC RELATION

PARTITIVE RELATION

ASSOCIATIVE RELATION

MULTIDIMENSIONAL SYSTEM

criterion of subdivision

SUPPLEMENTARY INFORMATION

object (1)
collection of human and computer interpretable data that is needed to model, manufacture, and construct a structure

modeling aid
object (1) that represents information that is only relevant in building a model (1)

extension line (2)
temporary line in a model (1) that can be used for aligning objects (1) with each other

grid
modeling aid that represents a three-dimensional complex of intersecting grid planes or intersecting grid planes and curved grid surfaces

construction object
modeling aid that helps in creating and placing other objects (1)

measure
modeling aid that displays the distance (1) between points (1) in the model (1), or the measurements of angles, arcs, or bolt groups

point (2)
modeling aid that visualizes a determined place in a coordinate system, compare with point (1)

constraint
modeling aid that represents a dependency (1) between two model objects

reference model
model (2) which the designer can use as an aid when building another model (2)

rectangular grid

radial grid

grid plane
single horizontal or vertical plane

0..*

curved grid surface
single cylindrical surface

construction line
construction object that represents a line between two points (1)

construction circle
construction object that represents a circle

construction polycurve
construction object that represents a polycurve passing through several picked points

snap
(performed by Tekla Structures) to automatically hit an exact point (1) on a model object when the user moves the mouse pointer near it

construction plane
construction object that represents a plane

construction arc
construction object that represents an arc defined by three points

point (1)
determined place in a coordinate system

grid line
single line that visualizes a grid plane or a curved grid surface on a view plane

grid line label
name of a grid line

grid label frame
frame of a grid line label in a drawing (1)

2.2 System and custom components

347
system component

definition
component (1) that is included in a *Tekla Structures configuration* and whose *component objects* and composition the user can modify within the limits of the component (1) *properties*

Concept diagram: Components (parts of Tekla Structures functionality)

348
detailing component

definition
system component for creating and assembling *component objects* for building a structure

Concept diagram: Components (parts of Tekla Structures functionality)

349
custom component

definition
component (1) that the user creates and uses for creating *model objects* whose composition the user can modify as a group

Concept diagram: Components (parts of Tekla Structures functionality)

350
custom part

definition
custom component for creating a *part* that cannot be created by using any existing part command or part *profile*

> note
> Typically, custom parts are used to create parts that have a complex composition. For example, castellated *beams* and sandwich panels are often created as custom parts.

Concept diagram: Components (parts of Tekla Structures functionality)

351
custom component editor

definition
tool that is used for modifying *component (2)* that is created by a *custom component*, and for creating *dependencies (1)* between *component objects* and other *model objects*

Concept diagram: Components (parts of Tekla Structures functionality)

352
custom component dialog editor

definition
tool that is used for modifying the *custom component* dialog in *custom component editor*

> note
> The custom component dialog editor is used for adding and arranging the dialog elements, such as images, tabs, and lists.

Concept diagram: Components (parts of Tekla Structures functionality)

353
connection

definition
component (1) for creating such *component objects* that automatically connect *component secondary parts* to a *component main part* and create the necessary other *objects (1)*

> note
> A connection can be a *system* or a *custom component*. Other objects (1) can include *bolts (1)*, *welds*, *cuts*, and *fittings*.

Concept diagram: Components (parts of Tekla Structures functionality)

354

AutoConnection

definition

tool that creates connections with predefined *properties* in certain framing conditions

Concept diagram: Components (parts of Tekla Structures functionality)

355

AutoDefaults

definition

predefined *properties* that *AutoConnection* uses when creating connections

Concept diagram: Components (parts of Tekla Structures functionality)

356

up direction

definition

connection or *detail* property that indicates how the created connection is rotated around the *component secondary part*, or the created detail around the *component main part*, relative to the current *work plane*

> note
>
> The up direction options are +x, -x, +y, -y, +z, -z, and auto.

Concept diagram: Components (parts of Tekla Structures functionality)

357

detail

definition

component (1) for creating such *component objects* that automatically connect to a *component main part* at a *picked location*

> note
>
> A detail can be a *system* or a *custom component*. For example, an alignment hook or a steel *column base plate* is a detail.

Concept diagram: Components (parts of Tekla Structures functionality)

358

seam

definition

component (1) for creating such *component objects* that connect *parts* along a line *picked* using two *points (1)*

> note
>
> A seam can be a *system* or a *custom component*.

Concept diagram: Components (parts of Tekla Structures functionality)

359

plug-in

definition

component (1) that is developed using *Tekla Open API*

> note
>
> Plug-in is a .dll file and loaded inside *Tekla Structures* process.
>
> Plug-ins can be started from the *applications and components catalog*.

Concept diagram: Components (parts of Tekla Structures functionality)

360
component (2)

definition
group of *model objects* that is created by a *component (1)* and that *Tekla Structures* treats as a single unit

> note
> Components (2) adapt to changes in the *model (1)*. For example, Tekla Structures automatically modifies a connection if the user modifies the *parts* it connects.

Concept diagrams: Components (parts of Tekla Structures functionality) and Components (groups of model objects)

361
nested component

definition
component (2) that consists of several components (2)

> note
> Nested components include elements that are modeled as *sub-components*.

Concept diagram: Components (groups of model objects)

362
sub-component

definition
component (2) in a *nested component* that is subordinate to another component (2)

Concept diagram: Components (groups of model objects)

363
component hierarchy

definition
arrangement of *components (2)* that describes the internal structure of a *nested component*

Concept diagram: Components (groups of model objects)

364
component symbol

definition
symbol in a *model (1)* that indicates a *component (2)* type, functions as a link to component (2) *properties*, and can be used to control *component objects*

> note
> Component symbol of a *connection* or a *detail* also indicates the status of the connection or the detail using colors.

Concept diagram: Components (groups of model objects)

365
input point

definition
point (1) that the user *picks* when creating a *component (2)*

Concept diagram: Components (groups of model objects)

366
input part

definition
part that exists in a *model (1)* and that the user selects when creating a *component (2)* or another part

Concept diagrams: Parts according to their roles in the model and Components (groups of model objects)

367

component main part; main part (2)

not: primary part; supporting part

definition

input part that the user selects first when creating a *component (2)*

> note
>
> Connections and details always have a component main part.

Concept diagrams: Parts according to their roles in the model and Components (groups of model objects)

368

component secondary part; secondary part (2)

not: supported part

definition

input part that the user selects after selecting the *component main part* when creating a *component (2)*

> note
>
> A component (2) can have none, one or more component secondary parts.

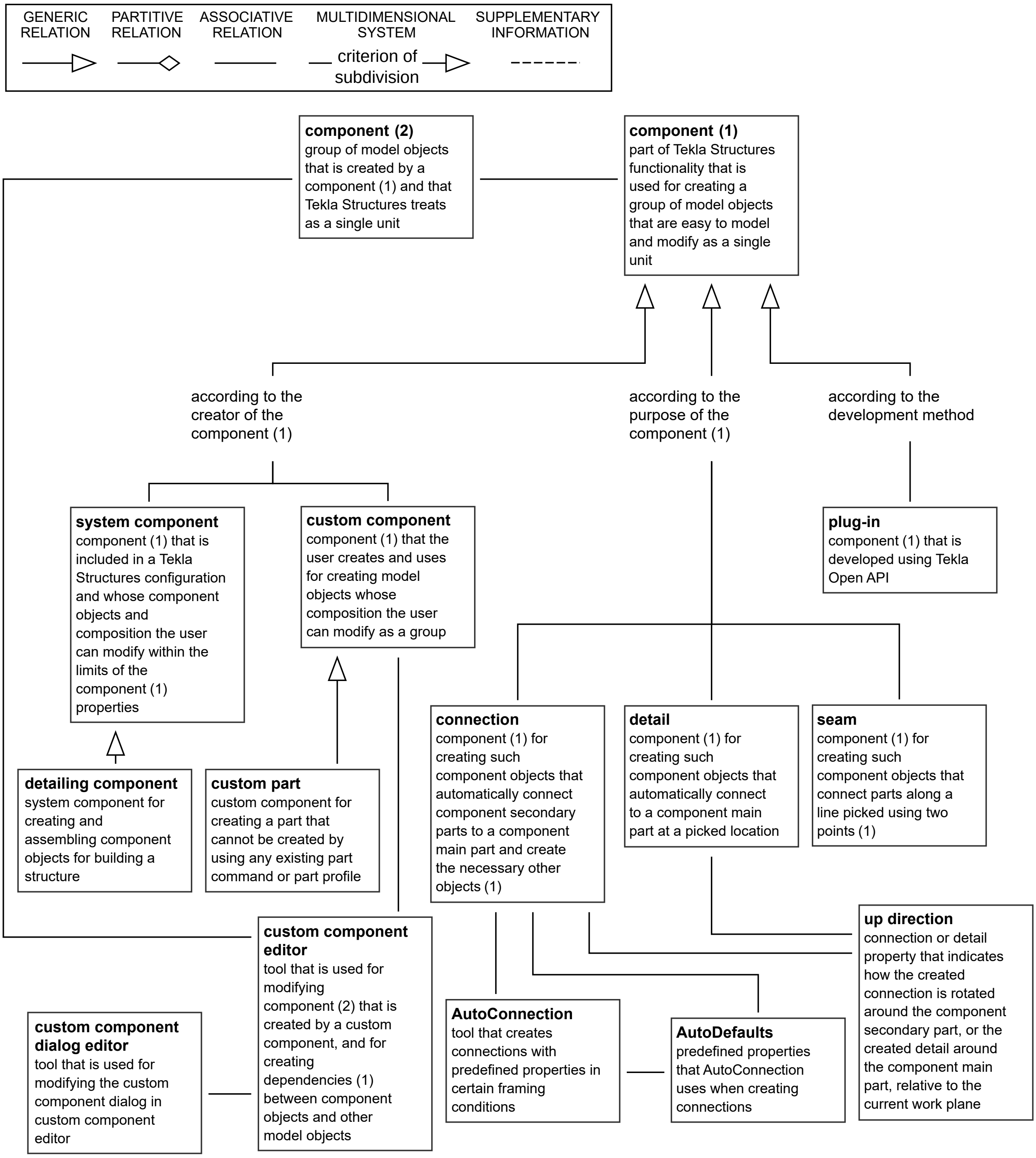
Concept diagrams: Parts according to their roles in the model and Components (groups of model objects)

369

applications and components catalog; component catalog

definition

collection of all *system components* and *custom components*, and the *macros* and applications



GENERIC RELATION

PARTITIVE RELATION

ASSOCIATIVE RELATION

MULTIDIMENSIONAL SYSTEM

criterion of subdivision

SUPPLEMENTARY INFORMATION

component (2)
group of model objects that is created by a component (1) and that Tekla Structures treats as a single unit

component (1)
part of Tekla Structures functionality that is used for creating a group of model objects that are easy to model and modify as a single unit

according to the creator of the component (1)

according to the purpose of the component (1)

according to the development method

system component
component (1) that is included in a Tekla Structures configuration and whose component objects and composition the user can modify within the limits of the component (1) properties

custom component
component (1) that the user creates and uses for creating model objects whose composition the user can modify as a group

plug-in
component (1) that is developed using Tekla Open API

connection
component (1) for creating such component objects that automatically connect component secondary parts to a component main part and create the necessary other objects (1)

detail
component (1) for creating such component objects that automatically connect to a component main part at a picked location

seam
component (1) for creating such component objects that connect parts along a line picked using two points (1)

detailing component
system component for creating and assembling component objects for building a structure

custom part
custom component for creating a part that cannot be created by using any existing part command or part profile

up direction
connection or detail property that indicates how the created connection is rotated around the component secondary part, or the created detail around the component main part, relative to the current work plane

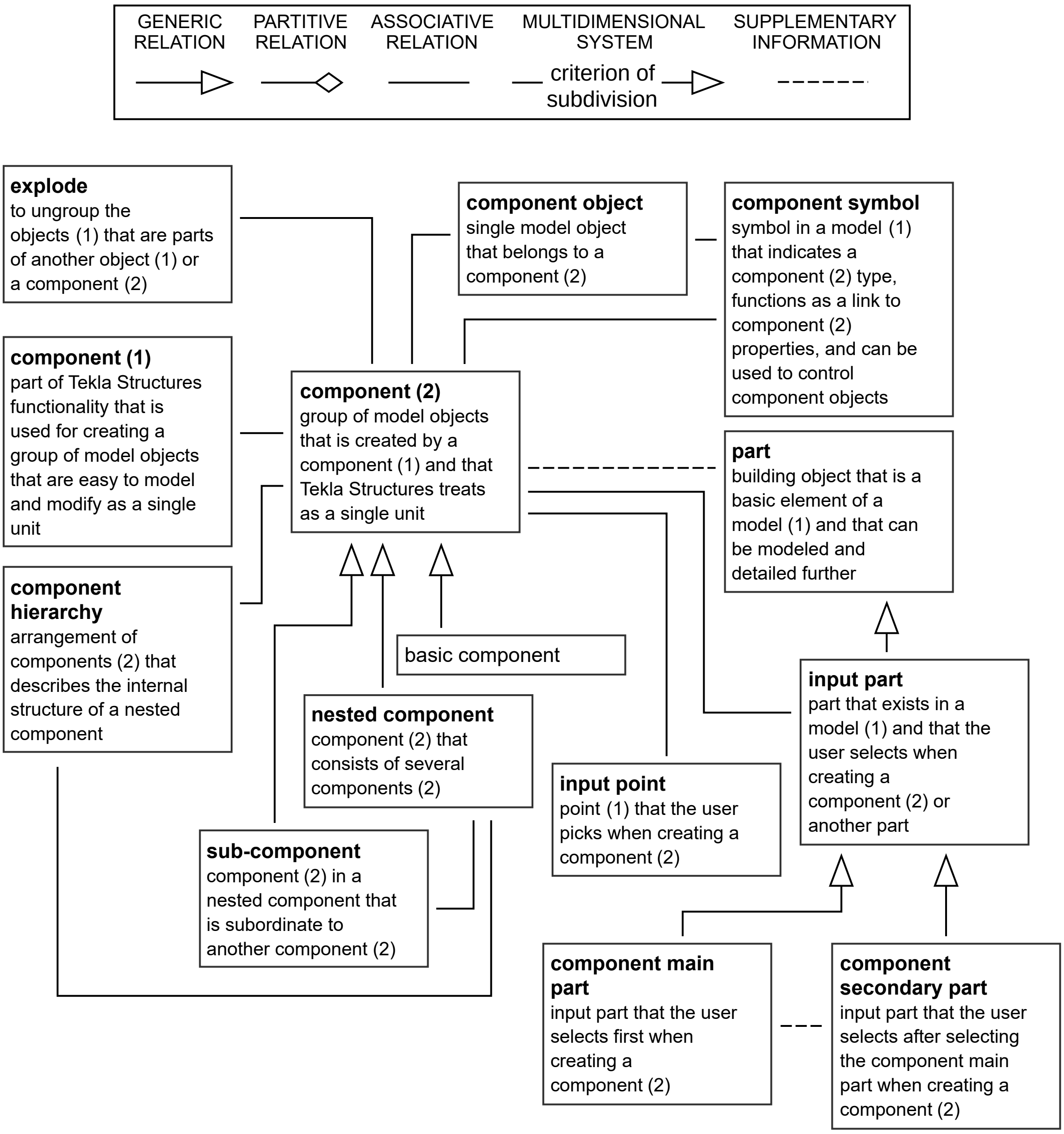
custom component editor
tool that is used for modifying component (2) that is created by a custom component, and for creating dependencies (1) between component objects and other model objects

AutoConnection
tool that creates connections with predefined properties in certain framing conditions

AutoDefaults
predefined properties that AutoConnection uses when creating connections

custom component dialog editor
tool that is used for modifying the custom component dialog in custom component editor

Concept diagram 28. *Components (parts of Tekla Structures functionality).*


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
explode
to ungroup the objects (1) that are parts of another object (1) or a component (2)
component (1)
part of Tekla Structures functionality that is used for creating a group of model objects that are easy to model and modify as a single unit
component hierarchy
arrangement of components (2) that describes the internal structure of a nested component
component object
single model object that belongs to a component (2)
component symbol
symbol in a model (1) that indicates a component (2) type, functions as a link to component (2) properties, and can be used to control component objects
component (2)
group of model objects that is created by a component (1) and that Tekla Structures treats as a single unit
part
building object that is a basic element of a model (1) and that can be modeled and detailed further
basic component
nested component
component (2) that consists of several components (2)
sub-component
component (2) in a nested component that is subordinate to another component (2)
input point
point (1) that the user picks when creating a component (2)
input part
part that exists in a model (1) and that the user selects when creating a component (2) or another part
component main part
input part that the user selects first when creating a component (2)
component secondary part
input part that the user selects after selecting the component main part when creating a component (2)

Concept diagram 29. *Components (groups of model objects).*

2.2.1 Component objects in steel components

370
<steel>
shear tab /US/
rather than: shear plate /UK/

definition
component object that represents a *plate (2)* welded to the *component main part* and bolted to the web of the *component secondary part*

Concept diagram: Component objects in steel components

371
<steel>
gusset

definition
component object that represents a *plate (2)* that connects braces to a *beam*, *column*, or *base plate*

Concept diagram: Component objects in steel components

372
<steel>
base plate

definition
component object that represents a *plate (2)* welded to a *column* base

> note
> Base plates are used to distribute the concentrated *load* of the column over a wider area.

Concept diagram: Component objects in steel components

373
<steel>
end plate

definition
component object that represents a *plate (2)* welded perpendicular to the end of the *component secondary part*

Concept diagram: Component objects in steel components

374
<steel>
seat

definition
component object that represents a structure upon which a *component secondary part* rests

Concept diagram: Component objects in steel components

375
<steel>
seat angle
rather than: angle seat

definition
seat that represents an angle

Concept diagram: Component objects in steel components

376
<steel>
seat plate

definition
seat that represents a *plate (2)*

Concept diagram: Component objects in steel components

377
<steel>
clip angle /US/; angle cleat /UK/

definition
component object that represents a right angle that is made of a standard L-shaped profile and that connects *parts*

Concept diagram: Component objects in steel components

378
<steel>
bent plate (2)

definition
component object that represents an angle that is bent from a *plate (2)* and that connects *parts*

Concept diagram: Component objects in steel components

379
<steel>
haunch

definition
component object that represents a wedge-like structure that strengthens a *beam* at its end

Concept diagram: Component objects in steel components

380
<steel>
weld backing bar; backing bar

definition
component object that represents a structure that facilitates the welding process

> note
> Weld backing bars are used, for example, to help contain the weld metal or suspend the structure.

Concept diagram: Component objects in steel components

381
<steel>
shim plate; shim
rather than: fitting plate; filler plate

definition
component object that represents a *plate (2)* that is used for filling *clearances* and *gaps* on the construction site

Concept diagram: Component objects in steel components

382
<steel>
finger shim; comb

definition
shim plate with slots cut through the edge

Concept diagram: Component objects in steel components

383
<steel>
strip shim

definition
shim plate with round punched *holes*

Concept diagram: Component objects in steel components

384
<steel>
stiffener

definition
component object that represents a structure that strengthens a steel *beam* or *column*

> note
> Stiffeners are usually *plates (2)*.
>
> Stiffeners are used to prevent web buckling at supports or concentrated *loads*.

Concept diagram: Component objects in steel components

385
<steel>
web doubler plate; doubler plate

definition
component object that represents a structure that strengthens a steel *beam* web or steel *column* web by thickening it

Concept diagram: Component objects in steel components

386
<steel>
flange plate

definition
component object that represents a *plate (2)* that connects the flanges of a *beam* to a *column*

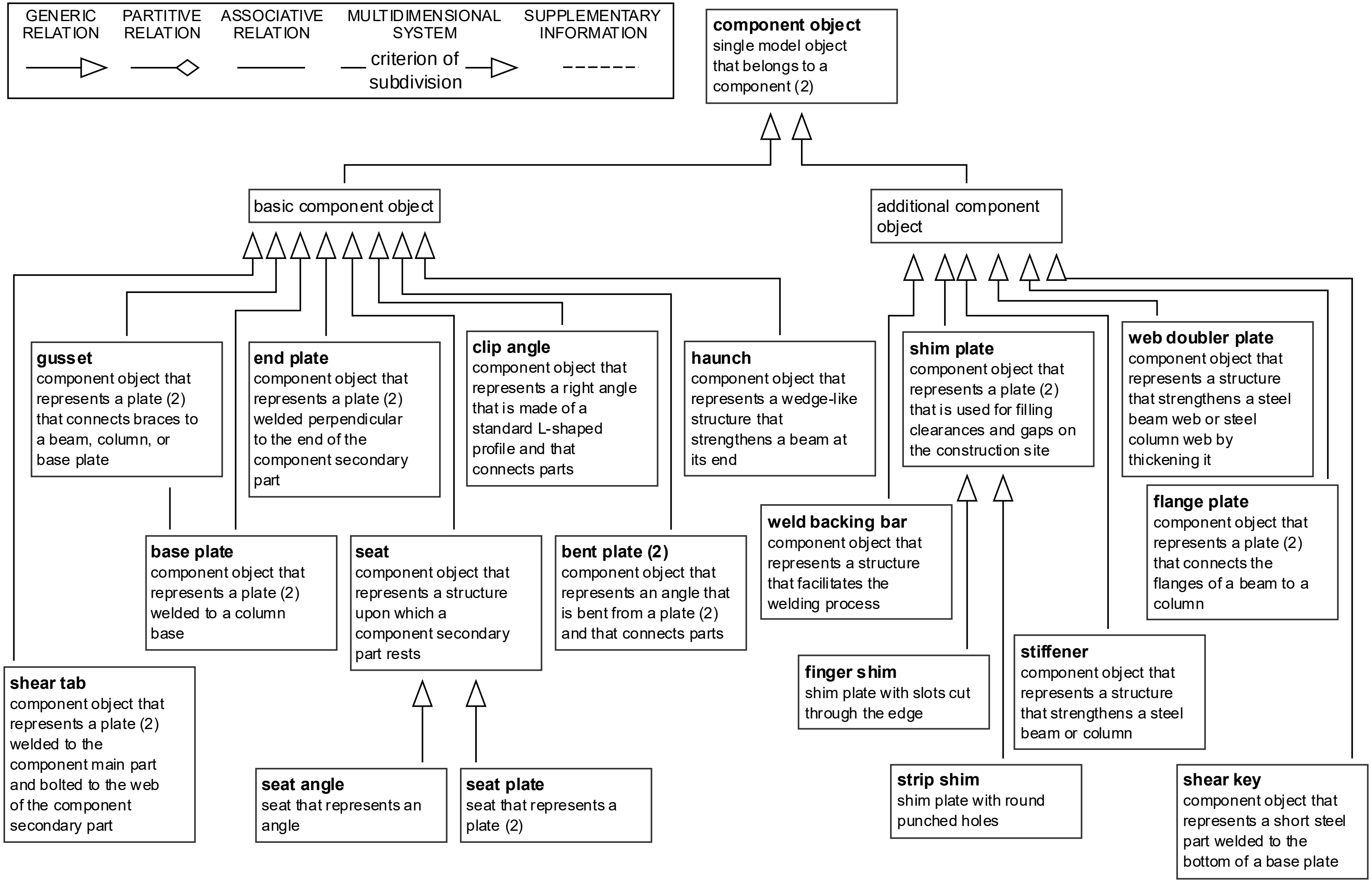
> note
> Flange plates are used in moment connections, for example.

Concept diagram: Component objects in steel components

387
<steel>
shear key

definition
component object that represents a short steel *part* welded to the bottom of a *base plate*

Concept diagram: Component objects in steel components



component object
single model object that belongs to a component (2)

basic component object

additional component object

gusset
component object that represents a plate (2) that connects braces to a beam, column, or base plate

end plate
component object that represents a plate (2) welded perpendicular to the end of the component secondary part

clip angle
component object that represents a right angle that is made of a standard L-shaped profile and that connects parts

haunch
component object that represents a wedge-like structure that strengthens a beam at its end

base plate
component object that represents a plate (2) welded to a column base

seat
component object that represents a structure upon which a component secondary part rests

bent plate (2)
component object that represents an angle that is bent from a plate (2) and that connects parts

shear tab
component object that represents a plate (2) welded to the component main part and bolted to the web of the component secondary part

seat angle
seat that represents an angle

seat plate
seat that represents a plate (2)

shim plate
component object that represents a plate (2) that is used for filling clearances and gaps on the construction site

web doubler plate
component object that represents a structure that strengthens a steel beam web or steel column web by thickening it

flange plate
component object that represents a plate (2) that connects the flanges of a beam to a column

weld backing bar
component object that represents a structure that facilitates the welding process

finger shim
shim plate with slots cut through the edge

stiffener
component object that represents a structure that strengthens a steel beam or column

strip shim
shim plate with round punched holes

shear key
component object that represents a short steel part welded to the bottom of a base plate

Concept diagram 30. *Component objects in steel components.*

2.3 Filtering and visualization tools

388

filter

definition

tool that is used for displaying, modifying, or selecting only the desired information in a *model (1)* or in a *drawing (1)*

> note
>
> For example, *part properties* can be used as criteria in filters. The user can select, modify, or hide parts based on their properties.

Concept diagram: Filtering and visualization tools

389

view filter

definition

filter used for defining which *objects (1)* are displayed in a *model view* or *drawing view*

> note
>
> View filter chooses objects (1) according to *object properties*. The user can filter objects (1) according to their *profile* or material, for example.

Concept diagram: Filtering and visualization tools

390

selection filter

not: select filter

definition

filter used for defining which *object types* can be selected

> note
>
> Selection filter chooses *model objects* or *objects (1)* in *drawings (1)* according to *object properties*.
>
> Selection filters can be standard or user-defined.
>
> For example, selection filters can be used to select *parts* for drawings (1) or *structural analysis*.

Concept diagrams: Objects and Filtering and visualization tools

391

object group

definition

model objects whose *settings* match the settings that the user has defined for a certain purpose

> note
>
> In *Tekla Structures*, an object group is defined by rules and conditions, for example, to control the transparency and coloring of model objects in the *views*. Object groups can also be used in filtering tools, for example in *selection filter*, to select all *objects (1)* that match certain *properties*.

Concept diagram: Filtering and visualization tools

392

project status visualization

definition

tool that is used in *modeling mode* for visualizing the status of *model objects* in a specific time frame

> note
>
> The project status visualization tool can be used, for example, to show model objects related to different phases of a *project* in different colors. A typical example of using the project status visualization tool is creating an erection schedule.

Concept diagram: Filtering and visualization tools

393

Trimble Connect Visualizer; Visualizer

definition

tool that creates photorealistic renderings of the *model (1)* or selected *model objects* and can be used for taking screenshots and creating animations that demonstrate the design and build options of the model (1)

> note
>
> Trimble Connect Visualizer shows the model’s (1) material types and sets it in a scene.

Concept diagram: Filtering and visualization tools

394

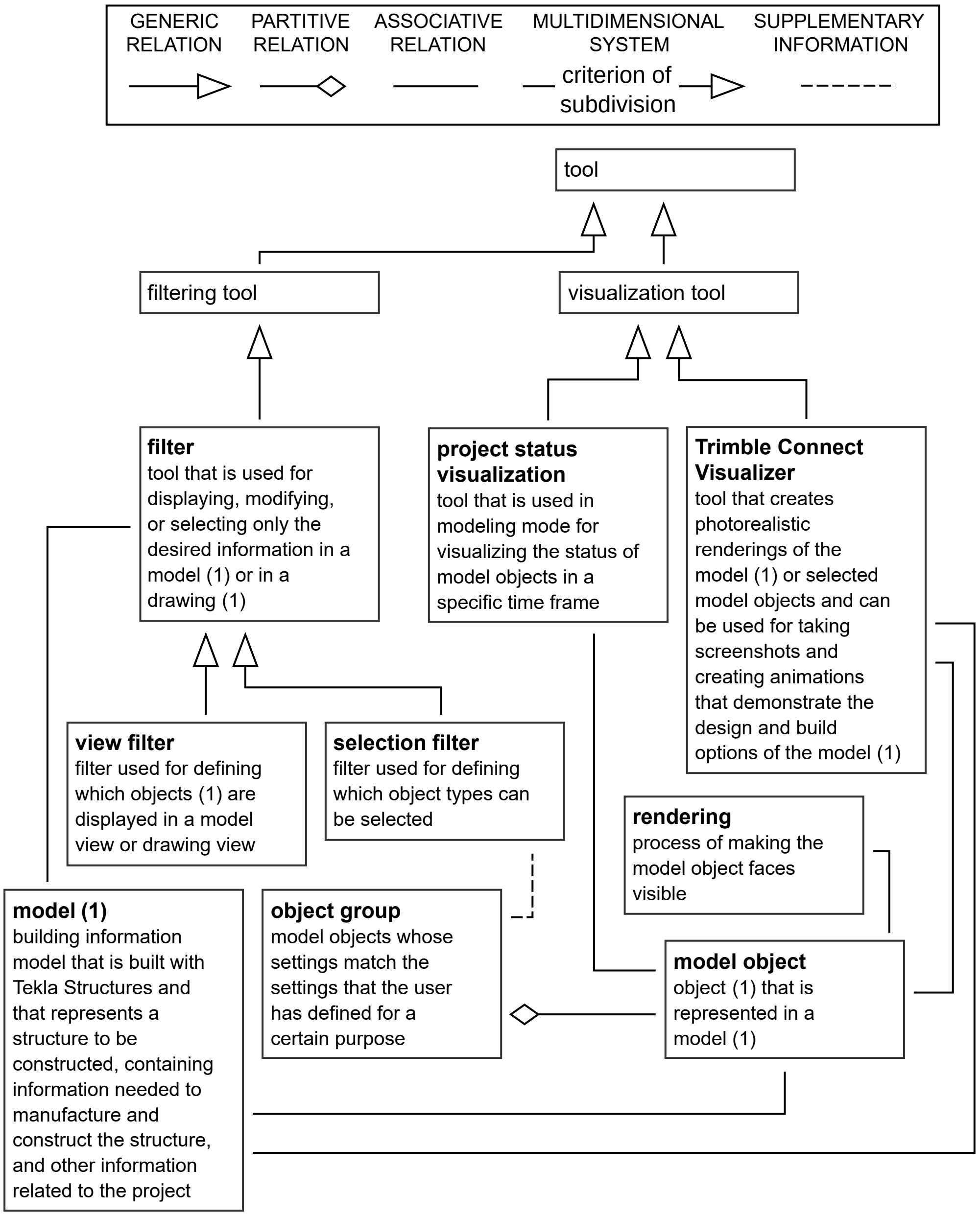
rendering

definition

process of making the *model object faces* visible

> note
>
> The rendered model object faces can be transparent or non-transparent

Concept diagram: Filtering and visualization tools


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
tool
filtering tool
visualization tool
filter
tool that is used for displaying, modifying, or selecting only the desired information in a model (1) or in a drawing (1)
project status visualization
tool that is used in modeling mode for visualizing the status of model objects in a specific time frame
Trimble Connect Visualizer
tool that creates photorealistic renderings of the model (1) or selected model objects and can be used for taking screenshots and creating animations that demonstrate the design and build options of the model (1)
view filter
filter used for defining which objects (1) are displayed in a model view or drawing view
selection filter
filter used for defining which object types can be selected
rendering
process of making the model object faces visible
model (1)
building information model that is built with Tekla Structures and that represents a structure to be constructed, containing information needed to manufacture and construct the structure, and other information related to the project
object group
model objects whose settings match the settings that the user has defined for a certain purpose
model object
object (1) that is represented in a model (1)

Concept diagram 31. *Filtering and visualization tools.*

2.4 Numbering

395
numbering

definition
process of assigning *position numbers*

note
In *Tekla Structures*, the position numbers assigned in the numbering are shown in *marks* and *templates (1)*, for example.

Concept diagram: Numbering

396
position number

definition
identifier that is assigned to *parts*, *assemblies*, *cast units*, *reinforcement objects*, and *rebar assemblies* within the whole *model (1)*

> note
> Position number consists of a prefix, separator, and running number. The prefix is part of the position number, identifying a *numbering series* with a start number. The running number is part of the position number, and is the assigned number in the numbering series, based on the *start number*. The separator is an optional character, such as a slash, that separates the prefix and the running number.
>
> In *Tekla Structures*, the position numbers assigned in the *numbering* are shown in *marks* and *templates (1)*, for example.
>
> In the US, the term piece mark or ship mark is used to refer to a position number.

Concept diagram: Numbering

397
part position; part position number

definition
position number that is assigned to a *part*

Concept diagram: Numbering

398
preliminary number

definition
user-defined attribute of a *part* that defines the part’s *part position* before the structure is detailed

Concept diagram: Numbering

399
assembly position; assembly position number

definition
position number that is assigned to an *assembly*

Concept diagram: Numbering

400
cast unit position number

definition
position number that is assigned to a *cast unit*

Concept diagram: Numbering

401
rebar assembly position number

definition
position number that is assigned to a *rebar assembly*

Concept diagram: Numbering

402
reinforcement position number; rebar position number

definition
position number that is assigned to a *reinforcement object*

Concept diagram: Numbering

403
numbering series

definition
set of identifiers defined by the user, based on which *Tekla Structures* compares *parts*, *assemblies*, *cast units*, *reinforcement objects*, or *rebar assemblies* with each other during the *numbering* and gives *position numbers*

> note
> Numbering series is defined by a prefix and a *start number*.
>
> The user can, for example, allocate separate numbering series to different *phases* or part types.

Concept diagram: Numbering

404
start number; starting number

definition
first number of a *numbering series*

Concept diagram: Numbering

405
family numbering

definition
process of assigning *family-based numbers* to *cast units* or *assemblies*

Concept diagram: Numbering

406
family

definition
group of *cast units* or *assemblies* within the same *numbering series* created based on the criteria selected by the user

Concept diagram: Numbering

407
family-based number; family position number

definition
identifier that *Tekla Structures* assigns to *cast units* or *assemblies* based on a *family*

> note
> Family-based number consists of a *family number* and a *qualifier*.

Concept diagram: Numbering

408
family number

definition
family-based number component that refers to a *numbering series*

> note
> Family number is typically used to identify *cast units* that can be cast using the same mold.

Concept diagram: Numbering

409
qualifier

definition
family-based number component that refers to a group of similar *cast units* or *assemblies* within a *family*

> note
> Qualifier is a running number. It is used to describe cast units that contain, for example, the same *embeds*.

Concept diagram: Numbering

410
reinforcement sequence numbering

definition
process of assigning *reinforcement sequence numbers*

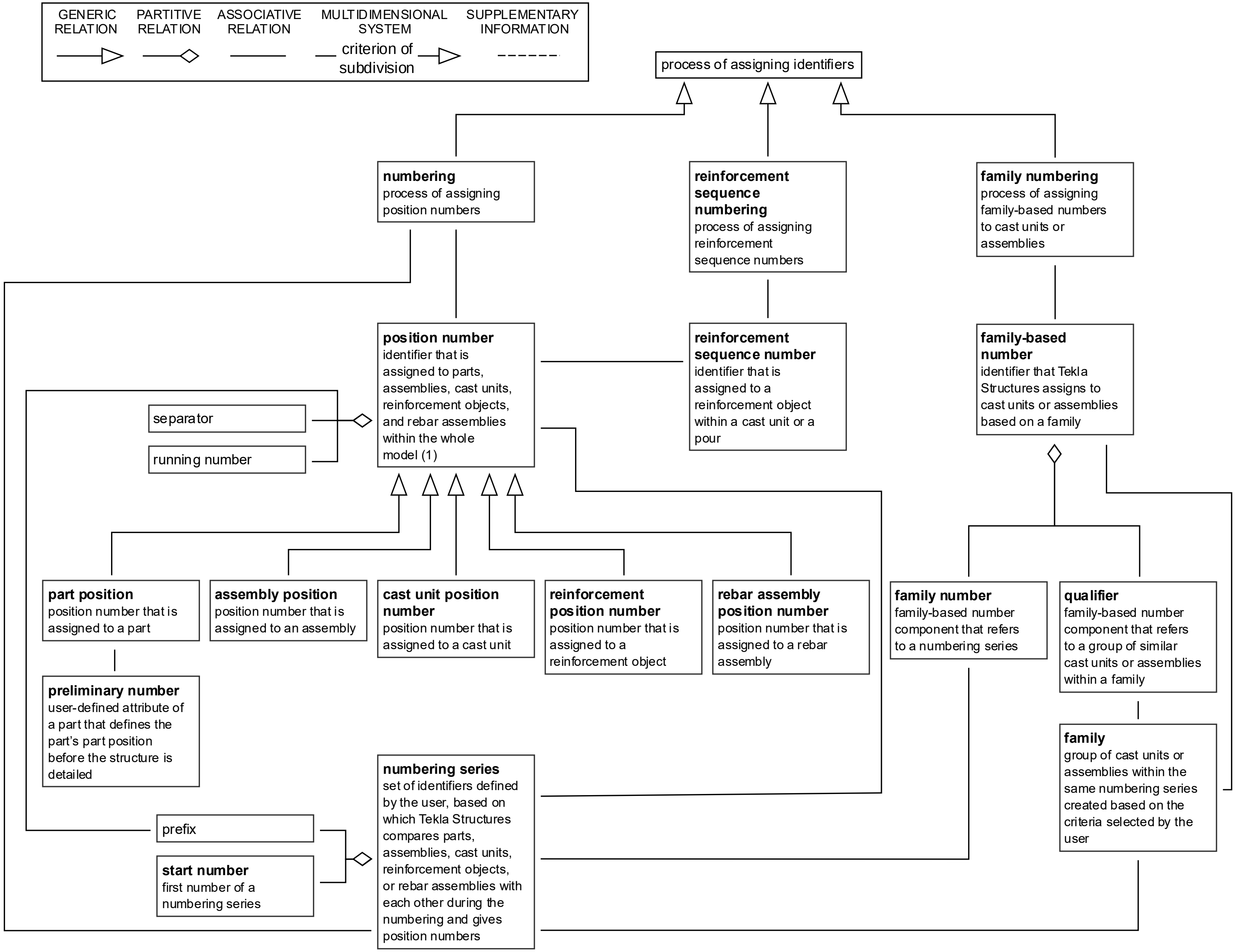
Concept diagram: Numbering

411
reinforcement sequence number

definition
identifier that is assigned to a *reinforcement object* within a *cast unit* or a *pour*

Concept diagram: Numbering

Concept diagram 32. *Numbering.*



process of assigning identifiers

numbering process of assigning position numbers

reinforcement sequence numbering process of assigning reinforcement sequence numbers

family numbering process of assigning family-based numbers to cast units or assemblies

position number identifier that is assigned to parts, assemblies, cast units, reinforcement objects, and rebar assemblies within the whole model (1)

reinforcement sequence number identifier that is assigned to a reinforcement object within a cast unit or a pour

family-based number identifier that Tekla Structures assigns to cast units or assemblies based on a family

separator

running number

part position position number that is assigned to a part

assembly position position number that is assigned to an assembly

cast unit position number position number that is assigned to a cast unit

reinforcement position number position number that is assigned to a reinforcement object

rebar assembly position number position number that is assigned to a rebar assembly

family number family-based number component that refers to a numbering series

qualifier family-based number component that refers to a group of similar cast units or assemblies within a family

preliminary number user-defined attribute of a part that defines the part's part position before the structure is detailed

family group of cast units or assemblies within the same numbering series created based on the criteria selected by the user

numbering series set of identifiers defined by the user, based on which Tekla Structures compares parts, assemblies, cast units, reinforcement objects, or rebar assemblies with each other during the numbering and gives position numbers

prefix

start number first number of a numbering series

3 Drawings

3.1 Drawing types

412

general arrangement drawing; GA drawing

definition

drawing (1) that is created from one or more *model views* and that shows information needed to understand the general arrangement of structural elements on a *project*

> note
>
> General arrangement drawings show how *parts*, *assemblies*, *cast units*, or *pour objects* are located in a building.

Concept diagram: Drawing types

413

anchor bolt plan

definition

general arrangement drawing that displays the anchor bolt layout

Concept diagram: Drawing types

414

fabrication drawing

definition

drawing (1) that shows information needed to fabricate or construct a structure

Concept diagram: Drawing types

415

single-part drawing

definition

fabrication drawing that shows fabrication information for one *part*

Concept diagram: Drawing types

416

assembly drawing

definition

fabrication drawing that shows fabrication information for a *basic* or a *nested assembly*, including *bolts (1)* and *welds*

> note
>
> Assembly drawings show how *parts* are located in an *assembly*. They contain the parts of the assembly presented in one or more *views*.

Concept diagram: Drawing types

417

cast unit drawing
rather than: cast-unit drawing

definition

fabrication drawing that displays information on concrete *parts*, including *reinforcement objects*, cast-in *embeds*, edge *chamfers*, and insulation, in a *cast unit*

> note
>
> Cast unit drawings are generally used either at the element factory or at the construction site.

Concept diagram: Drawing types

418
multidrawing

definition
drawing (1) that gathers together several *fabrication drawings* on one sheet

> note
> A multidrawing consists of fabrication drawings or their *views*.

Concept diagram: Drawing types

419
multinumber

definition
identifier of a *part* or *assembly* in a *multidrawing*

> note
> Multinumbers can include, for example, the multidrawing number and an identifier that indicates the order of parts or assemblies in the multidrawing.

Concept diagram: Drawing types

420
drawing snapshot

definition
image of a *drawing (1)* that shows the drawing (1) as it was at a certain point in time

> note
> Drawing snapshots make it possible to have a quick look at any drawing (1) without opening the drawing (1). Snapshots are used, for example, for finding a certain drawing (1) edition. Snapshots can be viewed in *Tekla Structures* but they cannot be edited.

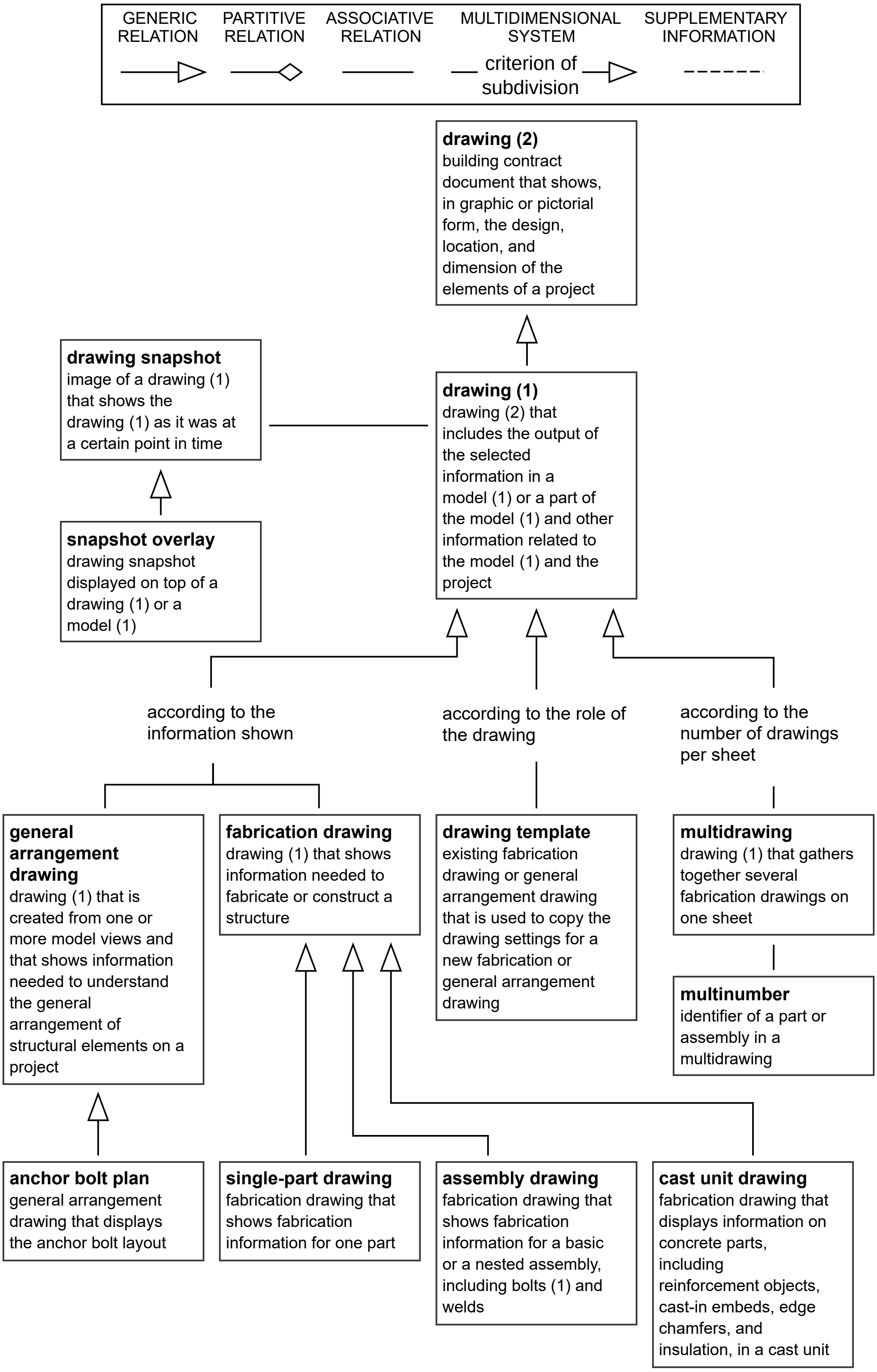
Concept diagram: Drawing types

421
snapshot overlay

definition
drawing snapshot displayed on top of a *drawing (1)* or a *model (1)*

> note
> Snapshot overlays can be used to view the contents of the drawings (1) directly in a *model view* without opening the actual drawing (1). Drawing snapshots can also be shown against the latest version of a drawing (1), or against another drawing (1) in *drawing mode*.

Concept diagram: Drawing types


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
according to the information shown
according to the role of the drawing
according to the number of drawings per sheet

drawing (2)
building contract document that shows, in graphic or pictorial form, the design, location, and dimension of the elements of a project

drawing snapshot
image of a drawing (1) that shows the drawing (1) as it was at a certain point in time

drawing (1)
drawing (2) that includes the output of the selected information in a model (1) or a part of the model (1) and other information related to the model (1) and the project

snapshot overlay
drawing snapshot displayed on top of a drawing (1) or a model (1)

general arrangement drawing
drawing (1) that is created from one or more model views and that shows information needed to understand the general arrangement of structural elements on a project

fabrication drawing
drawing (1) that shows information needed to fabricate or construct a structure

drawing template
existing fabrication drawing or general arrangement drawing that is used to copy the drawing settings for a new fabrication or general arrangement drawing

multidrawing
drawing (1) that gathers together several fabrication drawings on one sheet

multinumber
identifier of a part or assembly in a multidrawing

anchor bolt plan
general arrangement drawing that displays the anchor bolt layout

single-part drawing
fabrication drawing that shows fabrication information for one part

assembly drawing
fabrication drawing that shows fabrication information for a basic or a nested assembly, including bolts (1) and welds

cast unit drawing
fabrication drawing that displays information on concrete parts, including reinforcement objects, cast-in embeds, edge chamfers, and insulation, in a cast unit

Concept diagram 33. *Drawing types.*

3.2 Drawing layout and drawing views

422

drawing layout

definition

plan of a *drawing (1)* that includes the *table set* and definitions of the sheet size

> note
>
> *Tekla Structures* includes several predefined drawing layouts, which are drawing-type specific. The user can also create new drawing layouts.

Concept diagram: Drawing layout and views

423

table set

not: table layout (obsolete)

definition

plan that defines the selection, placing, and scale of *tables (1)* in a *drawing (1)*

Concept diagram: Drawing layout and views

424

drawing layout editor; layout editor

definition

tool that enables editing the *table set* directly on a *drawing (1)*

> note
>
> In the drawing layout editor, it is possible select which *tables (1)* are included in the table set and where they are placed. The table (1) scale, and rotation and overlapping with *drawing views* can be adjusted.

Concept diagram: Drawing layout and views

425

table (1)

definition

element in a *drawing (1)* that may include information on the *building objects* in the drawing (1), and information on the *project*

> note
>
> In *Tekla Structures*, the term table (1) is used to refer to various elements of a drawing (1), such as revision tables, title blocks, bills of material, lists, general notes, *key plans*, and DWG and DXF files.
>
> When the user makes changes to a *model (1)*, Tekla Structures updates the drawing (1) and the contents of the affected tables (1). This means that not only drawings (1) are associative but also the tables (1).

Concept diagram: Drawing layout and views

426

table (2)

rather than: template (2)

definition

table (1) created with the *template editor*

> note
>
> In template editor tables (2) are called templates (2).

Concept diagrams: Drawing layout and views and Editors and templates

427
key plan

definition
small-scale *view* in a *drawing (1)* that indicates the location of an *assembly*, a *cast unit*, or a *part* in the *model (1)*

> note
> A key plan contains the model (1) *grid* and the assembly, cast unit, or part shown in the included *drawing view*.

Concept diagram: Drawing layout and views

428
drawing view frame

definition
solid frame around all the contents of a *drawing view*

> note
> Drawing view frame can be used when modifying *properties* of a single drawing view. Drawing views can be dragged using the drawing view frame.

Concept diagram: Drawing layout and views

429
drawing view boundary; view boundary
not: view extrema *pl*

definition
dashed frame inside a *drawing view*

> note
> Drawing view boundary can be used when cropping the contents of a drawing view. For example, it is possible to resize drawing views so that there is no unnecessary empty space in them, or to show just a specific part of the drawing view contents.

Concept diagram: Drawing layout and views

430
main view

definition
drawing view that shows all *parts* in an *assembly*, *cast unit*, or *single-part drawing* from the selected viewing direction

> note
> Main view can be *front view*, *top view*, *back view*, or *bottom view*. The user can create several main views.

Concept diagram: Drawing layout and views

431
single-part view

definition
drawing view that is in an *assembly drawing* and that shows an individual *part* in the *assembly*

Concept diagram: Drawing layout and views

432
detail view

definition
drawing view that is created from an existing drawing view and that shows a selected area of that view in the same viewing direction

> note
> Detail view is usually in a larger scale than the source view.
>
> The *view plane* of the detail view is the same as the view plane of the source view.

Concept diagram: Drawing layout and views

433
section view

definition
drawing view that shows a selected area as a cross section

> note
> A section view can be created of the *parts* in a drawing view. A section view can be created manually or automatically.

Concept diagram: Drawing layout and views

434
curved section view

definition
section view that is created based on a curved *view plane*

Concept diagram: Drawing layout and views

435
end view (1)

definition
section view that shows a selected area of an end of a *part* in a *drawing (1)*

> note
> An end view (1) can be created manually or automatically. Automatic end views (1) represent the part from one end of the part or also from the other end of the part, depending on the *settings*.

Concept diagram: Drawing layout and views

436
automatic drawing view

definition
drawing view that *Tekla Structures* creates when it creates a *drawing (1)*

Concept diagram: Drawing layout and views

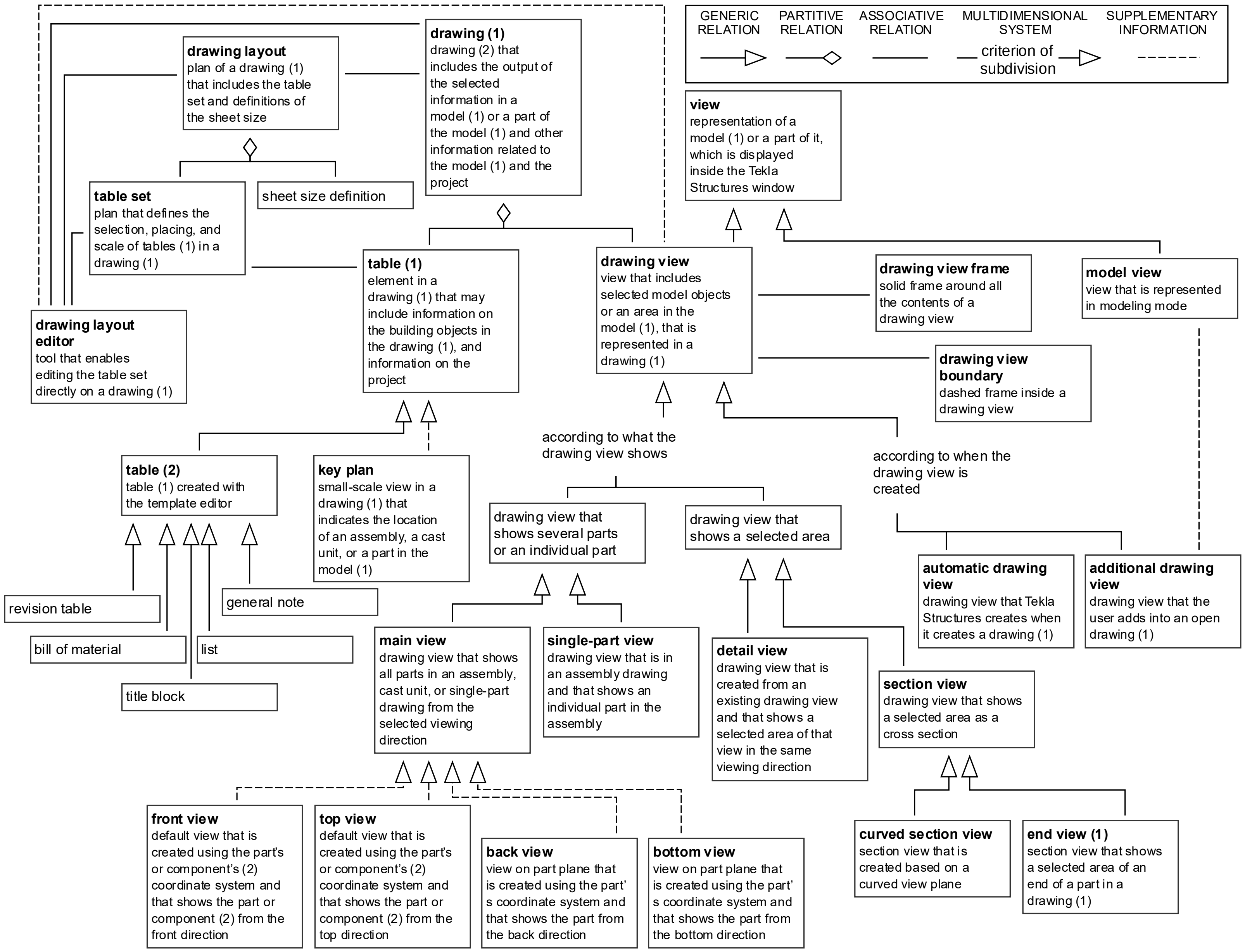
437
additional drawing view

definition
drawing view that the user adds into an open *drawing (1)*

> note
> It is possible to create additional drawing views in the open drawing (1) of a *model view* or to add *section views* or *detail views*.

Concept diagram: Drawing layout and views

***Concept diagram 34.** Drawing layout and views.*



GENERIC RELATION

PARTITIVE RELATION

ASSOCIATIVE RELATION

MULTIDIMENSIONAL SYSTEM

criterion of subdivision

SUPPLEMENTARY INFORMATION

drawing layout
plan of a drawing (1) that includes the table set and definitions of the sheet size

drawing (1)
drawing (2) that includes the output of the selected information in a model (1) or a part of the model (1) and other information related to the model (1) and the project

view
representation of a model (1) or a part of it, which is displayed inside the Tekla Structures window

table set
plan that defines the selection, placing, and scale of tables (1) in a drawing (1)

sheet size definition

table (1)
element in a drawing (1) that may include information on the building objects in the drawing (1), and information on the project

drawing view
view that includes selected model objects or an area in the model (1), that is represented in a drawing (1)

drawing view frame
solid frame around all the contents of a drawing view

model view
view that is represented in modeling mode

drawing layout editor
tool that enables editing the table set directly on a drawing (1)

drawing view boundary
dashed frame inside a drawing view

according to what the drawing view shows

according to when the drawing view is created

table (2)
table (1) created with the template editor

key plan
small-scale view in a drawing (1) that indicates the location of an assembly, a cast unit, or a part in the model (1)

drawing view that shows several parts or an individual part

drawing view that shows a selected area

automatic drawing view
drawing view that Tekla Structures creates when it creates a drawing (1)

additional drawing view
drawing view that the user adds into an open drawing (1)

revision table

general note

bill of material

list

title block

main view
drawing view that shows all parts in an assembly, cast unit, or single-part drawing from the selected viewing direction

single-part view
drawing view that is in an assembly drawing and that shows an individual part in the assembly

detail view
drawing view that is created from an existing drawing view and that shows a selected area of that view in the same viewing direction

section view
drawing view that shows a selected area as a cross section

front view
default view that is created using the part's or component's (2) coordinate system and that shows the part or component (2) from the front direction

top view
default view that is created using the part's or component's (2) coordinate system and that shows the part or component (2) from the top direction

back view
view on part plane that is created using the part' s coordinate system and that shows the part from the back direction

bottom view
view on part plane that is created using the part' s coordinate system and that shows the part from the bottom direction

curved section view
section view that is created based on a curved view plane

end view (1)
section view that shows a selected area of an end of a part in a drawing (1)

3.3 Creating and modifying drawings

438

drawing settings *pl*

definition

settings that control what the *drawing (1)* looks like and what it includes

> note
>
> Drawing settings can be defined in *modeling mode* when creating a drawing (1), and they can be modified in *drawing mode*.
>
> The range of the *objects (1)* and elements that drawing settings affect may vary.

Concept diagrams: Settings and properties and Drawing settings and properties

439

object level settings *pl*

definition

drawing settings that affect the *representation* of selected *drawing objects*

> note
>
> Object level settings can be defined when creating a new *drawing (1)* or when modifying an open drawing (1).
>
> Object level settings can be use in a drawing (1) or in a *drawing view* in order to change the representation of the chosen drawing objects.

Concept diagram: Drawing settings and properties

440

view level settings

definition

drawing settings that affect the *properties* of all *building objects*, *marks*, and *dimensions* in a selected *view*

Concept diagram: Drawing settings and properties

441

drawing level settings

definition

drawing settings that affect the *properties* of all *building objects*, *marks*, and *dimensions* in all *drawing views*

> note
>
> Depending on the drawing type, drawing level settings are defined in the *property pane* or in the drawing properties dialog.

Concept diagram: Drawing settings and properties

442

master drawing

definition

collection of *properties* and *drawing settings* that are used for creating a new *drawing (1)*

Concept diagram: Drawing settings and properties

443

master drawing catalog

definition

collection of *master drawings*

> note
>
> Master drawing catalog can be used for searching for master drawings usually in the *current model* and saving the search results.

Concept diagram: Drawing settings and properties

444
saved settings *pl*

definition
master drawing where the *drawing settings* are saved in a drawing *property file* and used when creating a new *drawing (1)* of a specific drawing type

Concept diagram: Drawing settings and properties

445
rule set

definition
master drawing that contains model *selection filters* and where the *properties* and *drawing settings* vary based on the selected *model objects*

Concept diagram: Drawing settings and properties

446
drawing wizard file; wizard file

definition
rule set that is saved in a file

> note
> The rule sets in drawing wizard files are modified by editing the file in a text editor.

Concept diagram: Drawing settings and properties

447
drawing template
not: template drawing

definition
existing *fabrication drawing* or *general arrangement drawing* that is used to copy the *drawing settings* for a new fabrication or general arrangement drawing

> note
> In fabrication drawings and general arrangement drawings, the term drawing template is used.
>
> In the *master drawing catalog* and *cloning*, the term cloning template is used.

Concept diagrams: Drawing types and Drawing settings and properties

448
verb
clone

definition
(performed by Tekla Structures) to create a new *drawing (1)* by using a *cloning template*

> note
> Cloning aims at using the drawing (1) properties, *view properties*, and *object properties* from the cloning template in a new drawing (1).
>
> Drawings (1) can be cloned from the *current model* or another *model (1)*.
>
> Cloned drawings (1) need some manual checking.

Concept diagram: Drawing settings and properties

449
automatic cloning

definition
process of creating a *drawing (1)* that *Tekla Structures* carries out for a *part* or *assembly* when its *position number* changes and the original drawing is no longer valid for that part or assembly

> note
> In automatic cloning, Tekla Structures creates a new drawing (1) using the original drawing (1) as a *cloning template*, and the original drawing (1) is saved for other, similar parts or assemblies.

Concept diagram: Drawing settings and properties

450

document manager

definition

tool that is used for listing and managing *drawings (1)* and other types of documents

> note
>
> With the document manager the user can, for example, reorganize, update, *freeze*, *lock*, and delete drawings (1).
>
> The user can also organize file documents, such as PDF, NC, and DWG files, and drawings (1), in document categories, and search documents and open drawings (1).

Concept diagram: Drawing settings and properties

451

verb

freeze

definition

to prevent *Tekla Structures* from updating *annotation objects* and certain *drawing view properties* in a *drawing (1)* when it updates the drawing (1) as the *model (1)* changes

> note
>
> When a drawing (1) is frozen, only *part* geometry is updated when the model (1) changes.

Concept diagram: Drawing settings and properties

452

verb

lock

definition

to prevent unwanted action in a *model (1)* or a *drawing (1)*

> note
>
> It is possible to lock *model objects*, *reference models*, and drawings (1), for example.

Concept diagram: Drawing settings and properties

453

verb

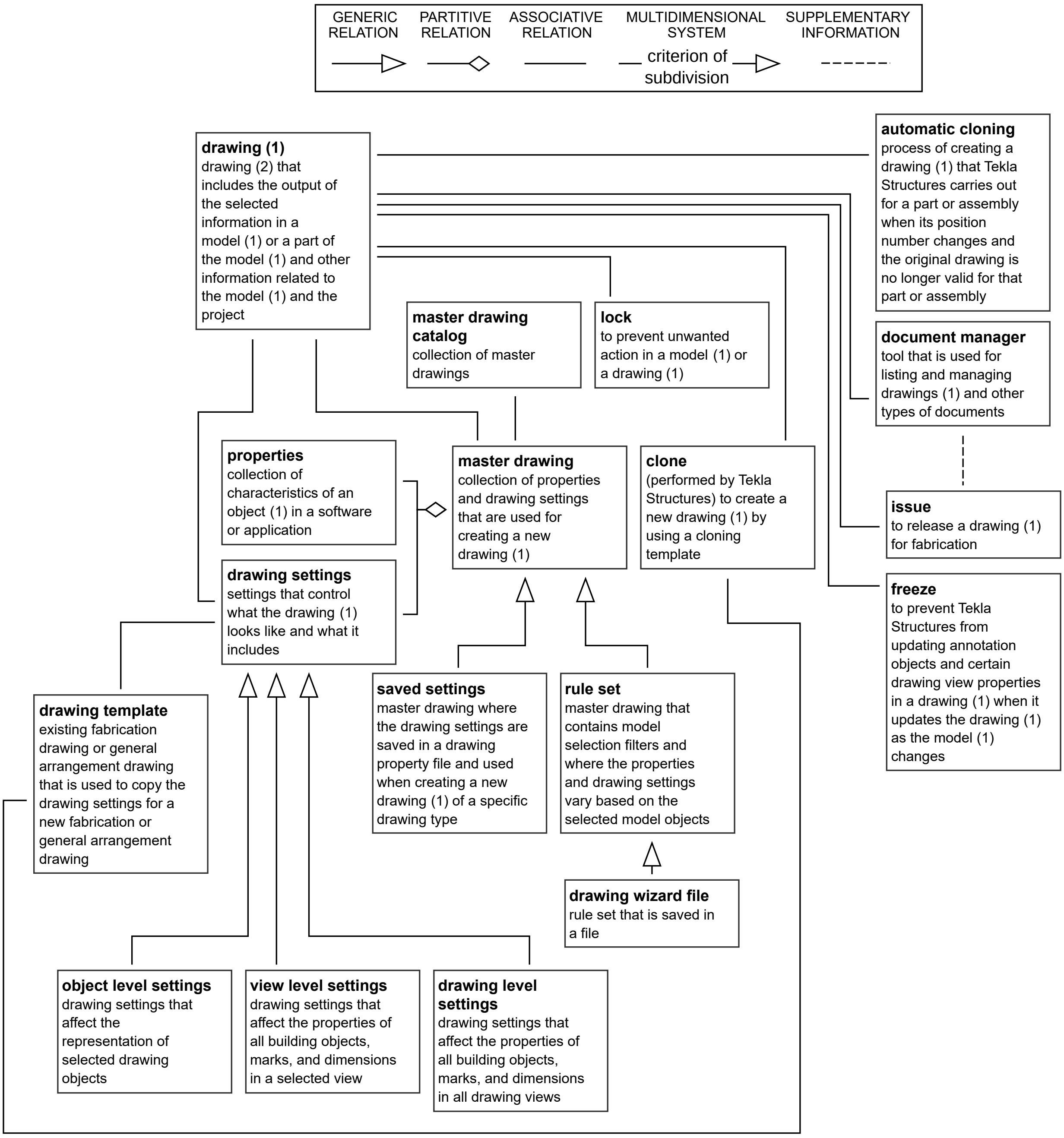
issue

definition

to release a *drawing (1)* for fabrication

> note
>
> Issued drawings (1) are marked with a flag in the *document manager*.

Concept diagram: Drawing settings and properties


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
drawing (1) drawing (2) that includes the output of the selected information in a model (1) or a part of the model (1) and other information related to the model (1) and the project
automatic cloning process of creating a drawing (1) that Tekla Structures carries out for a part or assembly when its position number changes and the original drawing is no longer valid for that part or assembly
master drawing catalog collection of master drawings
lock to prevent unwanted action in a model (1) or a drawing (1)
document manager tool that is used for listing and managing drawings (1) and other types of documents
properties collection of characteristics of an object (1) in a software or application
master drawing collection of properties and drawing settings that are used for creating a new drawing (1)
clone (performed by Tekla Structures) to create a new drawing (1) by using a cloning template
issue to release a drawing (1) for fabrication
drawing settings settings that control what the drawing (1) looks like and what it includes
freeze to prevent Tekla Structures from updating annotation objects and certain drawing view properties in a drawing (1) when it updates the drawing (1) as the model (1) changes
drawing template existing fabrication drawing or general arrangement drawing that is used to copy the drawing settings for a new fabrication or general arrangement drawing
saved settings master drawing where the drawing settings are saved in a drawing property file and used when creating a new drawing (1) of a specific drawing type
rule set master drawing that contains model selection filters and where the properties and drawing settings vary based on the selected model objects
drawing wizard file rule set that is saved in a file
object level settings drawing settings that affect the representation of selected drawing objects
view level settings drawing settings that affect the properties of all building objects, marks, and dimensions in a selected view
drawing level settings drawing settings that affect the properties of all building objects, marks, and dimensions in all drawing views

Concept diagram 35. *Drawing settings and properties.*

3.4 Objects in drawings

3.4.1 Associative annotation objects

454

associative annotation object

definition

annotation object that is updated according to the changes made to the related *model object*

> note
>
> An associative annotation object can be automatic or additional. *Tekla Structures* creates the automatic associative annotation objects based on the *drawing's (1)* properties when it creates the drawing (1). The user adds the additional associative annotation objects in a drawing (1).

Concept diagrams: Associative annotation objects and Independent annotation objects

455
dimension

definition
associative annotation object that represents *building object* measurements

> note
> A dimension consists of *dimension lines*, *extension lines (1)*, a *dimension mark*, *dimension tags*, and possibly other elements.

Concept diagrams: Associative annotation objects and Dimensions

456
automatic dimension

definition
dimension that *Tekla Structures* creates in a *drawing (1)* based on the dimensioning properties of the drawing (1)

Concept diagrams: Associative annotation objects and Dimensions

457
additional dimension

definition
dimension that the user adds in an open *drawing (1)*

Concept diagrams: Associative annotation objects and Dimensions

458
neighbor part; neighboring part

definition
part that is close to a part that the *drawing (1)* is made for but that is not in the same *assembly* or *cast unit*

> note
> The *representation* of neighbor parts is usually different from that of the part.
>
> Neighbor parts can be used as reference in dimensioning.

Concept diagram: Associative annotation objects

459
level mark

definition
associative annotation object that represents the elevation of a *point (1)*

Concept diagram: Associative annotation objects

460
view label

definition
associative annotation object that is displayed in an individual *drawing view* and that includes information about the view

Concept diagram: Associative annotation objects

461
mark

definition
associative annotation object that is used for the identification of an individual *building object* and that displays a set of property elements that the user has selected

> note
> Examples of marks are *part mark*, *bolt mark*, and *reinforcement mark*.

Concept diagram: Associative annotation objects

462

part mark; piece mark /US/

not: part number

definition

mark that includes a set of selected property elements related to a *part*

> note
>
> Part marks are used for identifying constructions, for giving information about welding, for giving information about *assemblies* to a workshop, for giving information about how parts should be connected to each other, and for creating bills of quantities, for example.
>
> In the US, the term piece mark is used to refer to *position number*.

Concept diagram: Associative annotation objects

463

bolt mark

definition

mark that includes a set of selected property elements related to a *bolt (1)* or *bolt group*

Concept diagram: Associative annotation objects

464

weld mark

definition

mark that includes a set of selected property elements related to a *weld*

Concept diagram: Associative annotation objects

465

connection mark

definition

mark that includes a set of selected property elements related to a *connection*

Concept diagram: Associative annotation objects

466

reinforcement mark

definition

mark that includes a set of selected property elements related to a *reinforcement object*

Concept diagram: Associative annotation objects

467

pull-out; pull-out picture

definition

small graphic in a *reinforcement mark*, *table (1)*, or *report template* that shows the shape and dimensions of a *reinforcing bar*

Concept diagram: Associative annotation objects

468

pour object mark

definition

mark that includes a set of selected property elements related to a *pour object*

Concept diagram: Associative annotation objects

469

surface treatment mark

definition

mark that includes a set of selected property elements related to *surface treatment*

Concept diagram: Associative annotation objects

470
automatic mark

definition
mark that *Tekla Structures* creates in a *drawing (1)* based on the mark *properties* of a *building object*

Concept diagram: Associative annotation objects

471
additional mark

definition
mark that the user adds in an open *drawing (1)*

> note
> Additional marks are typically used for temporary, revision-related, or other similar types of information. Examples of the additional marks that the user can add in a drawing (1) include *part marks*, *bolt marks*, *connection marks*, *level marks*, *revision marks*, and *weld marks*.

Concept diagram: Associative annotation objects

472
associative note

definition
associative annotation object that can include any additional information about the *building object* it is attached to

> note
> One building object can have several associative notes.

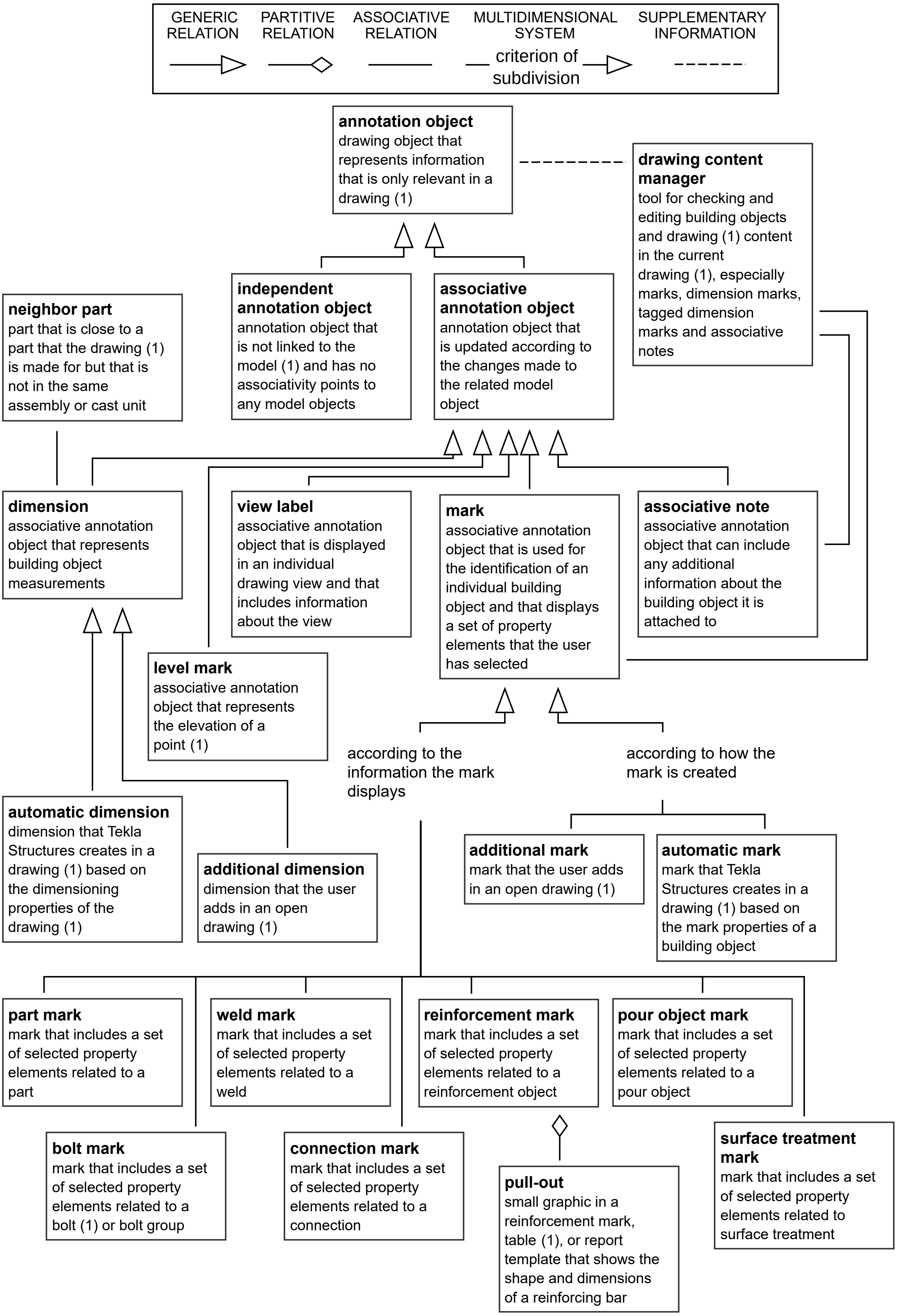
Concept diagram: Associative annotation objects

473
drawing content manager

definition
tool for checking and editing *building objects* and *drawing (1)* content in the current drawing (1), especially *marks*, *dimension marks*, tagged dimension marks and *associative notes*

> note
> The building object categories available in drawing content manager include, for example, *assemblies*, *parts*, *welds* and *bolts (1)*.

Concept diagram: Associative annotation objects



GENERIC RELATION

PARTITIVE RELATION

ASSOCIATIVE RELATION

MULTIDIMENSIONAL SYSTEM

criterion of subdivision

SUPPLEMENTARY INFORMATION

annotation object
drawing object that represents information that is only relevant in a drawing (1)

drawing content manager
tool for checking and editing building objects and drawing (1) content in the current drawing (1), especially marks, dimension marks, tagged dimension marks and associative notes

neighbor part
part that is close to a part that the drawing (1) is made for but that is not in the same assembly or cast unit

independent annotation object
annotation object that is not linked to the model (1) and has no associativity points to any model objects

associative annotation object
annotation object that is updated according to the changes made to the related model object

dimension
associative annotation object that represents building object measurements

view label
associative annotation object that is displayed in an individual drawing view and that includes information about the view

mark
associative annotation object that is used for the identification of an individual building object and that displays a set of property elements that the user has selected

associative note
associative annotation object that can include any additional information about the building object it is attached to

level mark
associative annotation object that represents the elevation of a point (1)

according to the information the mark displays

according to how the mark is created

automatic dimension
dimension that Tekla Structures creates in a drawing (1) based on the dimensioning properties of the drawing (1)

additional dimension
dimension that the user adds in an open drawing (1)

additional mark
mark that the user adds in an open drawing (1)

automatic mark
mark that Tekla Structures creates in a drawing (1) based on the mark properties of a building object

part mark
mark that includes a set of selected property elements related to a part

weld mark
mark that includes a set of selected property elements related to a weld

reinforcement mark
mark that includes a set of selected property elements related to a reinforcement object

pour object mark
mark that includes a set of selected property elements related to a pour object

bolt mark
mark that includes a set of selected property elements related to a bolt (1) or bolt group

connection mark
mark that includes a set of selected property elements related to a connection

pull-out
small graphic in a reinforcement mark, table (1), or report template that shows the shape and dimensions of a reinforcing bar

surface treatment mark
mark that includes a set of selected property elements related to surface treatment

Concept diagram 36. *Associative annotation objects.*

3.4.2 Independent annotation objects

474

independent annotation object

definition

annotation object that is not linked to the *model (1)* and has no *associativity points* to any *model objects*

> note
>
> Independent annotation objects are added to *drawings (1)* by the user.
>
> Types of independent annotation objects that can be added to drawings (1) include text, text files, *symbols (2)*, links, hyperlinks, DWG and DXF files, and *reference models*.

Concept diagrams: Associative annotation objects and Independent annotation objects

475

symbol (1)

definition

independent annotation object that the user has added in a *drawing view* and that is related to a certain *point (1)* in the drawing view

Concept diagram: Independent annotation objects

476

plate side mark

definition

user-created *symbol (1)* that indicates whether a *dimension point* is to the *face* or center of a *part*

> note
>
> Plate side mark can be found on the *dimension extension line (1)*.

Concept diagram: Independent annotation objects

477

section mark

definition

user-created *symbol (1)* that includes a set of *mark* elements, identifies a section, and is displayed in the source view

Concept diagram: Independent annotation objects

478

detail mark

definition

user-created *symbol (1)* that includes a set of *mark* elements, identifies the point of creation of the *detail view*, and is displayed in the source view

Concept diagram: Independent annotation objects

479

revision mark

definition

user-created *symbol (1)* that indicates a change in the *model (1)* or in the *drawing (1)*, and in which information about the change is enclosed

> note
>
> Information enclosed in a revision mark is shown in a revision *table (1)*.

Concept diagram: Independent annotation objects

480
drawing 2D library

definition
tool that can be used to quickly select *objects (1)* in *drawings (1)* and save them as 2D drawing details

> note
> With drawing 2D library the user can insert drawing details in *drawing views* and drawings (1). It is possible to create drawing details out of many kinds of *drawing objects*, such as *parts*, texts, notes, drawing sketch objects, or DWG files. In addition to details, the user can browse and insert DWG files and images directly to the drawings (1) from the drawing 2D library.

Concept diagram: Independent annotation objects

481
orientation mark; north mark

definition
symbol (1) that indicates the construction direction of an *assembly*

Concept diagram: Independent annotation objects

482
symbol (2)

definition
independent annotation object in graphical format

> note
> Symbols (2) are saved in *symbol files*. It is possible to create new *symbol files*, and to create and modify symbols (2) in the *symbol editor*.

Concept diagrams: Independent annotation objects and Editors and templates

483
drawing shape

definition
independent annotation object that represents a graphic form or outline

> note
> Examples of drawing shapes are clouds, lines, and rectangles.

Concept diagram: Independent annotation objects

484
pattern line

definition
drawing shape that consists of one or several blocks of elements and that may include *symbols (2)*, lines, and spacings.

> note
> Pattern lines can be used to indicate cut lines, foundations, weld paths, or electrical wiring, for example.

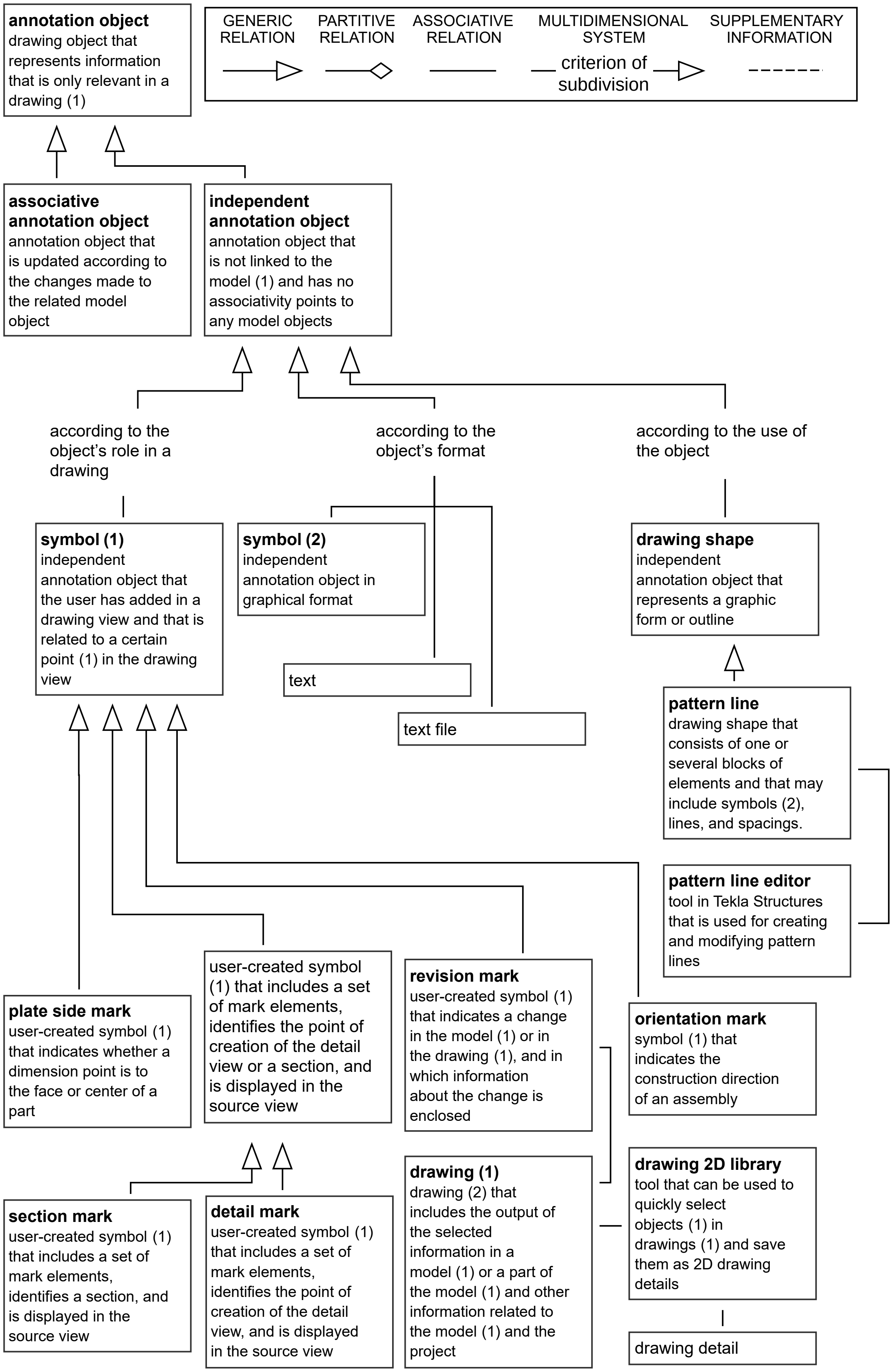
Concept diagram: Independent annotation objects

485
pattern line editor

definition
tool in *Tekla Structures* that is used for creating and modifying *pattern lines*

> note
> Pattern line editor can be used in a *model (1)* or in an open *drawing (1)*.
>
> The created pattern lines are added to drawings (1) with the pattern line command.

Concept diagram: Independent annotation objects



annotation object
drawing object that represents information that is only relevant in a drawing (1)

associative annotation object
annotation object that is updated according to the changes made to the related model object

independent annotation object
annotation object that is not linked to the model (1) and has no associativity points to any model objects

according to the object's role in a drawing

according to the object's format

according to the use of the object

symbol (1)
independent annotation object that the user has added in a drawing view and that is related to a certain point (1) in the drawing view

symbol (2)
independent annotation object in graphical format

text

text file

drawing shape
independent annotation object that represents a graphic form or outline

pattern line
drawing shape that consists of one or several blocks of elements and that may include symbols (2), lines, and spacings.

pattern line editor
tool in Tekla Structures that is used for creating and modifying pattern lines

plate side mark
user-created symbol (1) that indicates whether a dimension point is to the face or center of a part

user-created symbol (1) that includes a set of mark elements, identifies the point of creation of the detail view or a section, and is displayed in the source view

revision mark
user-created symbol (1) that indicates a change in the model (1) or in the drawing (1), and in which information about the change is enclosed

orientation mark
symbol (1) that indicates the construction direction of an assembly

section mark
user-created symbol (1) that includes a set of mark elements, identifies a section, and is displayed in the source view

detail mark
user-created symbol (1) that includes a set of mark elements, identifies the point of creation of the detail view, and is displayed in the source view

drawing (1)
drawing (2) that includes the output of the selected information in a model (1) or a part of the model (1) and other information related to the model (1) and the project

drawing 2D library
tool that can be used to quickly select objects (1) in drawings (1) and save them as 2D drawing details

drawing detail

***Concept diagram 37.** Independent annotation objects.*

3.4.3 Graphical symbols in drawings

486

change symbol

definition

graphic that *Tekla Structures* creates in a *drawing (1)* and that indicates that an *associative annotation object* has been changed

> note
>
> Change symbols are created for *dimensions*, *marks*, and *associative notes*, for example.
>
> Examples of change symbols include mark change symbols and dimension change symbols.

Concept diagram: Indicators

487

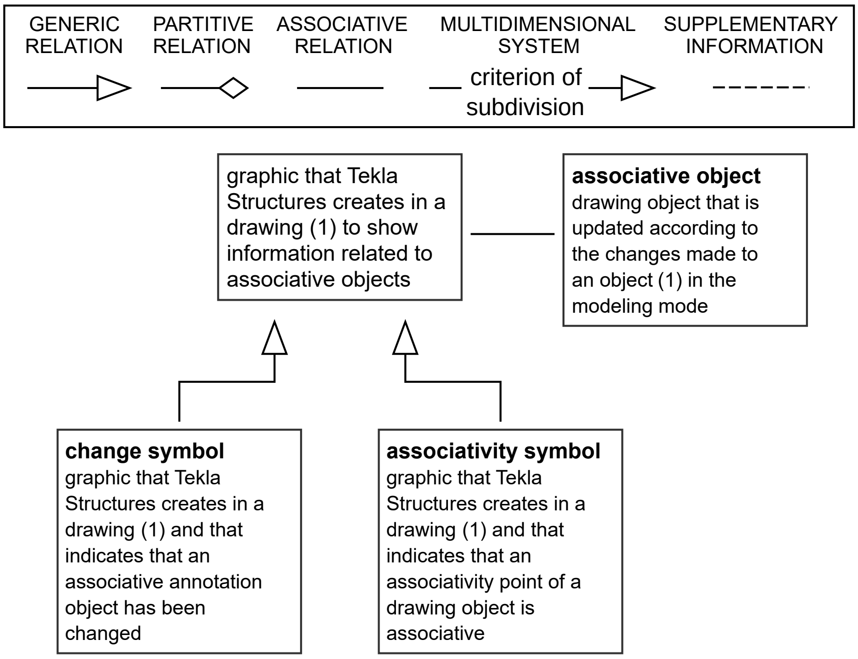
associativity symbol

definition

graphic that *Tekla Structures* creates in a *drawing (1)* and that indicates that an *associativity point* of a *drawing object* is associative

> note
>
> The associativity symbol changes if the associativity point is not associative.

Concept diagram: Indicators


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
graphic that Tekla Structures creates in a drawing (1) to show information related to associative objects
associative object
drawing object that is updated according to the changes made to an object (1) in the modeling mode
change symbol
graphic that Tekla Structures creates in a drawing (1) and that indicates that an associative annotation object has been changed
associativity symbol
graphic that Tekla Structures creates in a drawing (1) and that indicates that an associativity point of a drawing object is associative

Concept diagram 38. *Indicators.*

3.4.4 Dimensions

488

check dimension

definition

dimension used for checking detailing

> note
>
> *Tekla Structures* uses *work points* to create check dimensions.

Concept diagram: Dimensions

489
dimension mark

definition
part of a *dimension* that displays the basic information about the *building object* measurements

> note
> A dimension mark can consist of a prefix, numerical value, and postfix.

Concept diagram: Dimensions

490
dimension tag

definition
part of a *dimension* that displays additional information about the *building object*

Concept diagram: Dimensions

491
extension line (1); dimension extension line

definition
line in a *drawing (1)* that is perpendicular to a *dimension line* and that connects the dimension line to the *building object*

Concept diagram: Dimensions

492
dimension line

definition
line that visualizes the *distance (1)* between the defined *dimension points*

> note
> Separate *dimensions* can be combined into a longer dimension line.

Concept diagram: Dimensions

493
dimension point

definition
point (1) that *Tekla Structures* or the user has used for dimensioning

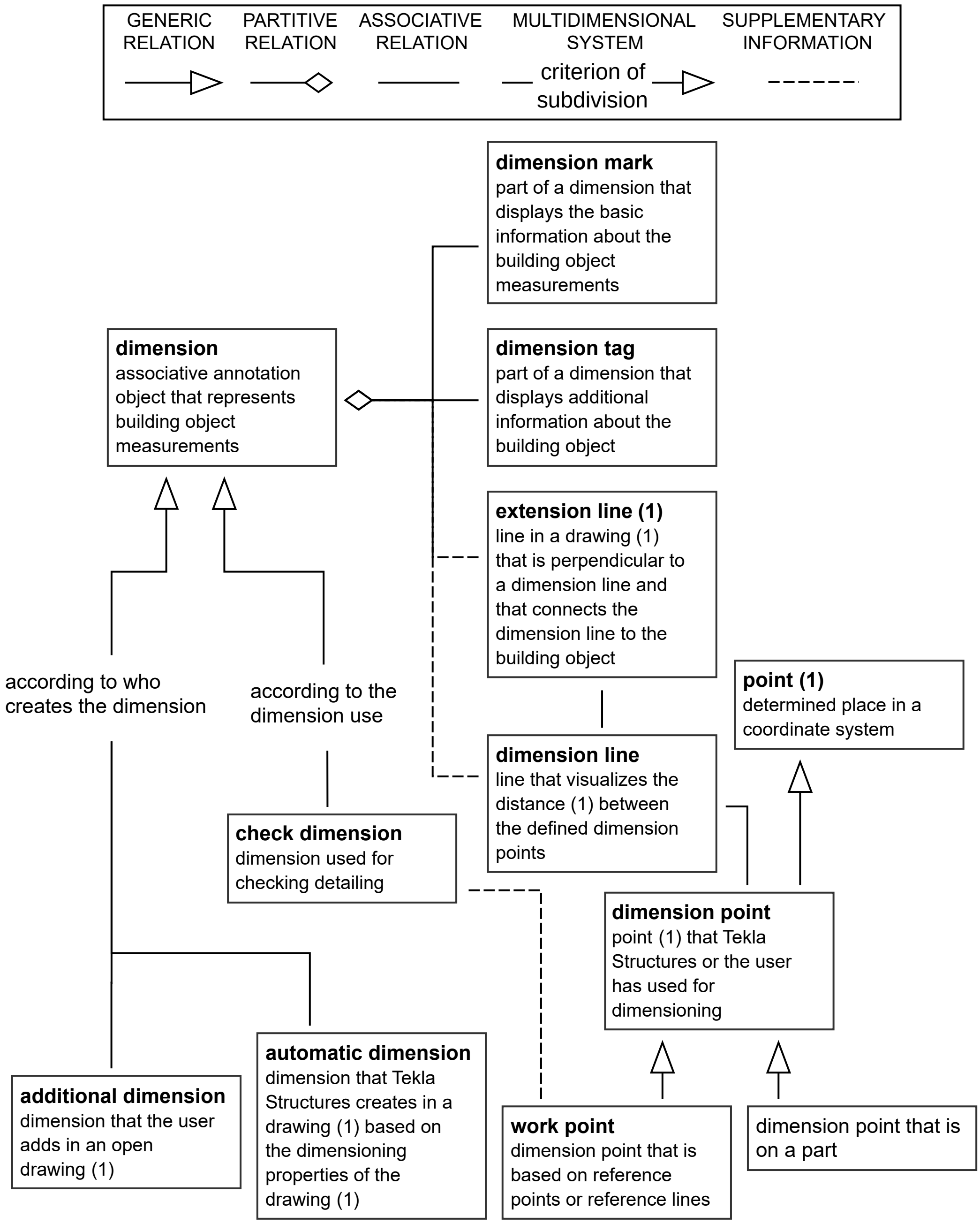
Concept diagram: Dimensions

494
work point

definition
dimension point that is based on *reference points* or *reference lines*

> note
> A work point can be either a *part* reference point, or an intersection of reference lines.
>
> In bracings, for example, the work point is where the brace reference line intersects the main *beam* or *column* reference line. For example, the location of *bolts (1)* is then dimensioned from this work point.

Concept diagram: Dimensions



GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
dimension mark
part of a dimension that displays the basic information about the building object measurements
dimension
associative annotation object that represents building object measurements
dimension tag
part of a dimension that displays additional information about the building object
extension line (1)
line in a drawing (1) that is perpendicular to a dimension line and that connects the dimension line to the building object
point (1)
determined place in a coordinate system
according to who creates the dimension
according to the dimension use
dimension line
line that visualizes the distance (1) between the defined dimension points
check dimension
dimension used for checking detailing
dimension point
point (1) that Tekla Structures or the user has used for dimensioning
additional dimension
dimension that the user adds in an open drawing (1)
automatic dimension
dimension that Tekla Structures creates in a drawing (1) based on the dimensioning properties of the drawing (1)
work point
dimension point that is based on reference points or reference lines
dimension point that is on a part

Concept diagram 39. *Dimensions.*

4 Templates and reports

495

symbol editor; SymEd

definition

tool in *Tekla Structures* that is used for creating and modifying *symbols (2)* to be used in *drawings (1)*, *reports*, and *templates (1)*

> note
>
> The symbols (2) are saved in *symbol files*.

Concept diagram: Editors and templates

496

template editor; TplEd

definition

tool in *Tekla Structures* that is used for creating and modifying *templates (1)* to be used in *drawings (1)* and *reports*

Concept diagram: Editors and templates

497

template (1)

definition

file that gathers information to be output in a defined format

> note
>
> Templates (1) can be viewed and printed.
>
> The properties of *template components*, *template objects*, and the template (1) itself determine the final appearance of the template (1) output.

Concept diagram: Editors and templates

498

textual template

definition

template (1) that may contain only text

> note
>
> Textual templates are used for creating *reports* or listings of *objects (1)*, for example, material lists of *assemblies*.

Concept diagram: Editors and templates

499

graphical template

definition

template (1) that may contain text, graphics, and bitmaps

> note
>
> Graphical templates are primarily used in *drawings (1)* but they can also be used in HTML *reports*. Graphical templates display *project* and company information, for example. In addition to text, they can contain graphics, such as *table (1)* outlines, bitmaps or *symbols (2)*.

Concept diagram: Editors and templates

500

report template

definition

template (1) that is used for creating a *report*

Concept diagram: Editors and templates

501
template component

definition
building block of a *template (1)* that is used for displaying data in a defined format

> note
> Template components define the template (1) layout.
>
> Templates (1) can contain the following template components: header, page header, row, page footer, and footer. Not all of the template components need to be present in a template (1).

Concept diagram: Editors and templates

502
template object

definition
entity in a *template component* that is used to add either graphical or textual data

> note
> The *template (1)* type determines what kinds of template objects can appear inside its template components. Template objects can be basic geometric shapes, text objects, *symbols (2)*, bitmaps, imported files, or field objects.
>
> Template objects are represented as rows in the template components.

Concept diagram: Editors and templates

503
template attribute

definition
attribute in a *template object* that *Tekla Structures* uses to calculate and display information from a *model database*

> note
> Template attributes represent *object properties*.

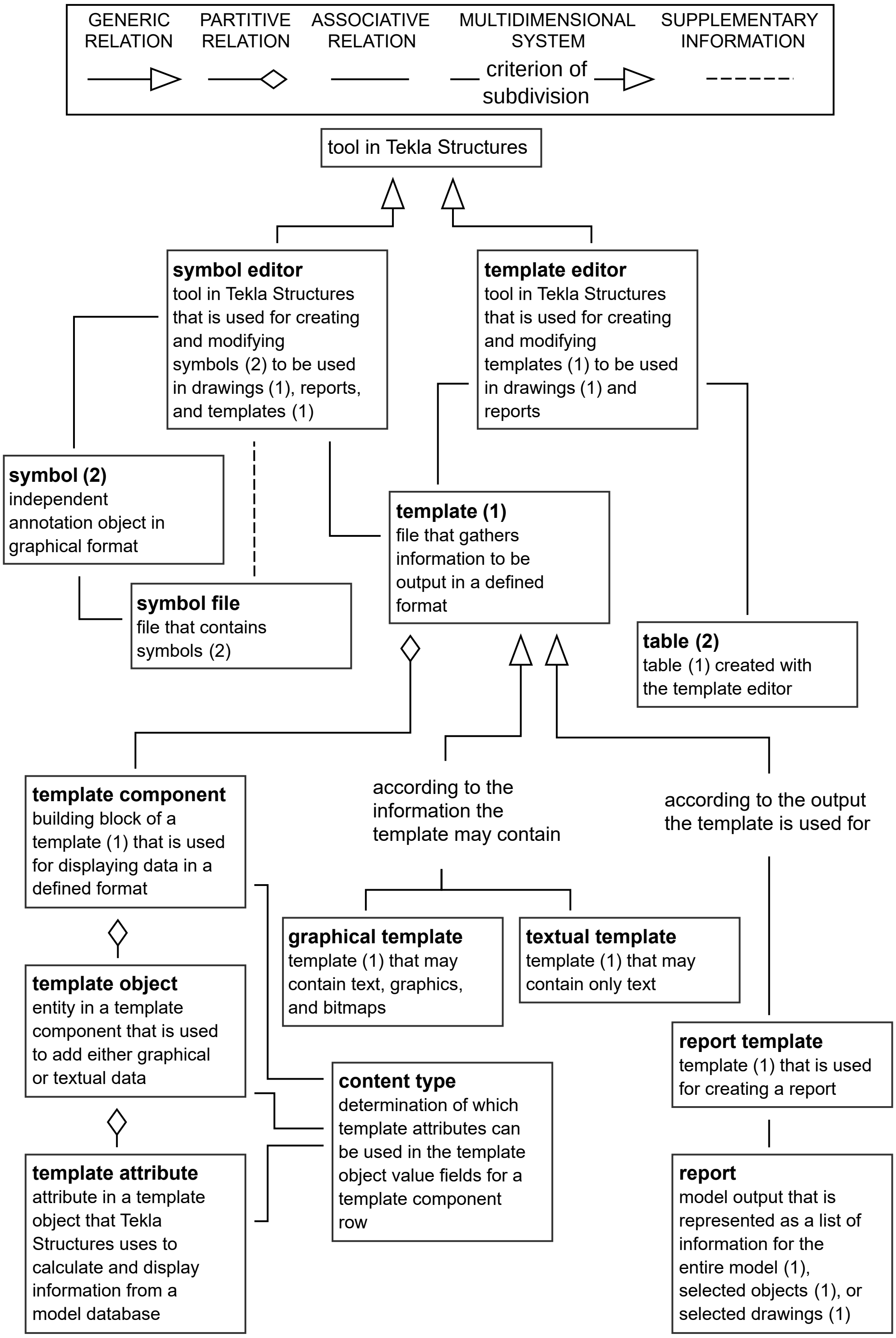
Concept diagram: Editors and templates

504
content type

definition
determination of which *template attributes* can be used in the *template object* value fields for a *template component* row

> note
> Content types are mainly based on *object types*.

Concept diagram: Editors and templates



GENERIC RELATION

PARTITIVE RELATION

ASSOCIATIVE RELATION

MULTIDIMENSIONAL SYSTEM

criterion of subdivision

SUPPLEMENTARY INFORMATION

tool in Tekla Structures

symbol editor
tool in Tekla Structures that is used for creating and modifying symbols (2) to be used in drawings (1), reports, and templates (1)

template editor
tool in Tekla Structures that is used for creating and modifying templates (1) to be used in drawings (1) and reports

symbol (2)
independent annotation object in graphical format

template (1)
file that gathers information to be output in a defined format

symbol file
file that contains symbols (2)

table (2)
table (1) created with the template editor

template component
building block of a template (1) that is used for displaying data in a defined format

according to the information the template may contain

according to the output the template is used for

graphical template
template (1) that may contain text, graphics, and bitmaps

textual template
template (1) that may contain only text

template object
entity in a template component that is used to add either graphical or textual data

report template
template (1) that is used for creating a report

content type
determination of which template attributes can be used in the template object value fields for a template component row

template attribute
attribute in a template object that Tekla Structures uses to calculate and display information from a model database

report
model output that is represented as a list of information for the entire model (1), selected objects (1), or selected drawings (1)

Concept diagram 40. *Editors and templates.*

5 System

5.1 Databases and files

505

model database

definition

database file that contains a *model (1)*

> note
>
> Model database file has the file name extension .db1. In addition, other files, such as the corresponding *numbering database* .db2, are needed in order to obtain the functionality of the model database.

Concept diagrams: Databases and files and Folders

506

model history database

definition

database file that collects *model (1)* history on the actions in the model (1)

Concept diagram: Databases and files

507

numbering database

definition

database file that contains *numbering* information and *family numbering settings* and *reinforcement sequence numbering* settings

> note
>
> Numbering database file has the file name extension .db2.

Concept diagram: Databases and files

508

Organizer database

definition

database file that contains *object properties*, *category* information and rules, and *property templates*

> note
>
> The Organizer database is created when *Organizer* is started for the first time.

Concept diagrams: Databases and files and Organizer

509

drawing file

definition

file that contains a *drawing (1)*

> note
>
> Drawing files have the file name extension .dg.
>
> Drawing files cannot be used without a *model (1)*.

Concept diagram: Databases and files

510

catalog file

definition

file that contains *catalog items*

> note
>
> Catalog files can have different file name extensions, for example, .bin, .db, or .inp.

Concept diagrams: Databases and files and Catalogs

511
symbol file

definition
file that contains *symbols (2)*

> note
> The symbol file in use can be changed in the symbol files dialog.

Concept diagrams: Editors and templates and Databases and files

512
property file
not: properties file

definition
object type specific file that contains values of *properties* or *settings* used in the *property pane* or in a dialog

> note
> Property files are saved in the current *model folder*. The user can create and modify property files and copy them to the *project* or *firm folders* for future use.
>
> *User-defined attributes* related to a specific object type are stored in a separate property file.

Concept diagram: Databases and files

513
standard file

definition
property file that *Tekla Structures* uses by default

> note
> Standard file name is standard.* where the symbol * is the file name extension. For example, standard.clm file is used for *column properties* and standard.clm.more file is used for column *user-defined attributes*.

Concept diagram: Databases and files

514
data file

definition
file that contains options for *object properties*

> note
> Data files contain information used by certain *components (1)* or the *rebar shape manager*, for example.
>
> Data files have the file name extension .dat.

Concept diagram: Databases and files

515
reference file

definition
file that contains information that can be used in a *model (1)* or a *drawing (1)*

> note
> A reference file can contain a *reference model* or a reference drawing, for example.

Concept diagram: Databases and files

516
log file

definition
file that contains information related to changes, actions, and errors in the *model (1)* or *drawing (1)*

> note
> *Tekla Structures* writes information in log files when the model (1) is saved, numbered or checked for clashes, for example.

Concept diagram: Databases and files

517

initialization file

definition

text file that contains user interface definitions, start-up parameters, default *settings*, or *advanced options*

> note
>
> Initialization files are used when starting *Tekla Structures* and they can contain *system-specific* and *user-specific advanced options* that are used to configure Tekla Structures for different standards and the user's individual style of working.
>
> Initialization files have the file name extension .ini.

Concept diagram: Databases and files

518

environment database

definition

database file that contains the definitions of *user-defined attributes* used in a *model (2)*

> note
>
> The file name of the environment database is environment.db.

Concept diagram: Databases and files

519

options database

definition

database file that contains the *settings* of model-specific *general settings* and *advanced options*

> note
>
> There are two options databases, the *model options database* (options_model.db) and the *drawing options database* (options_drawings.db).

Concept diagram: Databases and files

520

model options database

definition

options database that contains *settings* specific to a *model (2)*

> note
>
> The file name of the model options database is options_model.db.

Concept diagram: Databases and files

521

drawing options database

definition

options database that contains *settings* specific to *drawings (2)* belonging to a *model (2)*

> note
>
> The file name of the drawing options database is options_drawings.db.

Concept diagram: Databases and files

522

input file

definition

file that contains data used as input to a program

> note
>
> Input files are used for different purposes, for example, for managing *user-defined attributes* and for defining certain reinforcement-related *settings*.
>
> Input files have the file name extension .inp, for example rebar_config.inp.

Concept diagram: Databases and files

523

Tekla Structures extension package file

definition

file for collecting, sharing and installing *extensions* and *Tekla Structures* content

> note
>
> For example, Tekla Structures extension package file can be used for installing additional environment content or for sharing applications created with *Tekla Open API*.
>
> Tekla Structures extension package files have the file name extension .tsep.

Concept diagram: Databases and files

524

Tekla Structures extension manager; extension manager

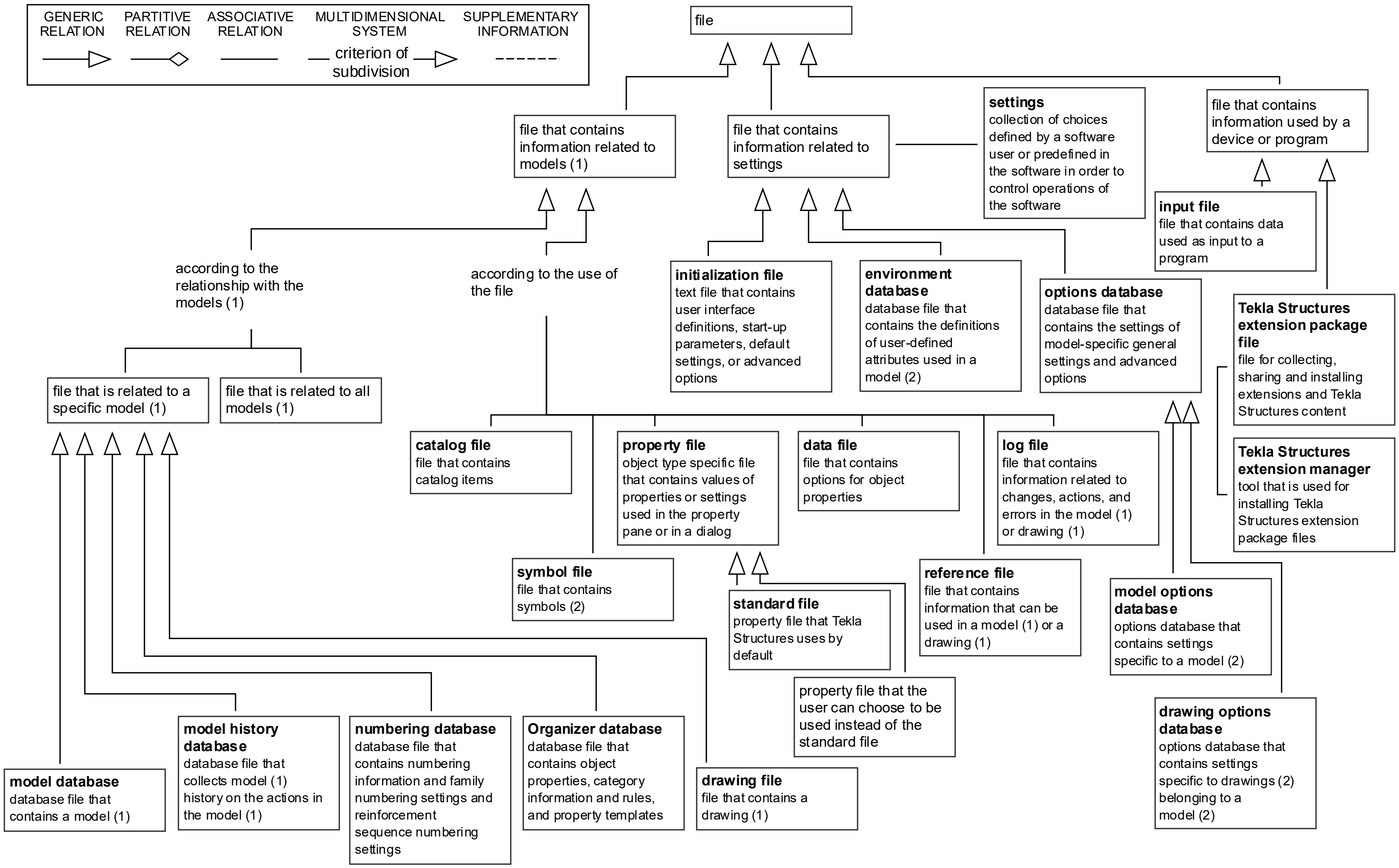
definition

tool that is used for installing *Tekla Structures extension package files*

> note
>
> Tekla Structures extension manager can be accessed through *applications and components catalog*.

Concept diagram: Databases and files

Concept diagram 41. *Databases and files.*


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
according to the relationship with the models (1)
according to the use of the file

file

file that contains information related to models (1)

file that contains information related to settings

settings
collection of choices defined by a software user or predefined in the software in order to control operations of the software

file that contains information used by a device or program

input file
file that contains data used as input to a program

initialization file
text file that contains user interface definitions, start-up parameters, default settings, or advanced options

environment database
database file that contains the definitions of user-defined attributes used in a model (2)

options database
database file that contains the settings of model-specific general settings and advanced options

Tekla Structures extension package file
file for collecting, sharing and installing extensions and Tekla Structures content

Tekla Structures extension manager
tool that is used for installing Tekla Structures extension package files

file that is related to a specific model (1)

file that is related to all models (1)

catalog file
file that contains catalog items

property file
object type specific file that contains values of properties or settings used in the property pane or in a dialog

data file
file that contains options for object properties

log file
file that contains information related to changes, actions, and errors in the model (1) or drawing (1)

symbol file
file that contains symbols (2)

standard file
property file that Tekla Structures uses by default

reference file
file that contains information that can be used in a model (1) or a drawing (1)

model options database
options database that contains settings specific to a model (2)

property file that the user can choose to be used instead of the standard file

drawing options database
options database that contains settings specific to drawings (2) belonging to a model (2)

model database
database file that contains a model (1)

model history database
database file that collects model (1) history on the actions in the model (1)

numbering database
database file that contains numbering information and family numbering settings and reinforcement sequence numbering settings

Organizer database
database file that contains object properties, category information and rules, and property templates

drawing file
file that contains a drawing (1)

5.2 Folders

525

Tekla Structures software folder; Tekla Structures folder; Tekla Structures software installation folder

definition

folder that is created when *Tekla Structures* is installed and that contains folders related to Tekla Structures software

> note
>
> The location of the Tekla Structures software folder can be selected in the software installation wizard.

Concept diagram: Folders

526

Tekla Structures environments folder; Tekla Structures environment installation folder

definition

folder that is created when *Tekla Structures* or any *Tekla Structures environment* is installed and that contains folders related to the Tekla Structures environments

> note
>
> The location of the Tekla Structures environments folder depends on the location of the *Tekla Structures software folder*.

Concept diagram: Folders

527

system folder

definition

folder that is used for storing *Tekla Structures*-related files that define default *settings*

Concept diagram: Folders

528

firm folder

definition

folder that is used for storing *Tekla Structures*-related files customized for a particular organization or company

> note
>
> A Tekla Structures user can, for example, customize a company's *settings* and save them in a sub-folder located under the firm folder. After this, the customized settings can be used in all *projects* carried out for the company.

Concept diagram: Folders

529

project folder

definition

folder that is used for storing *Tekla Structures*-related files customized for a particular *project*

Concept diagram: Folders

530

model folder

definition

folder that is used for storing files associated with a *model (1)*

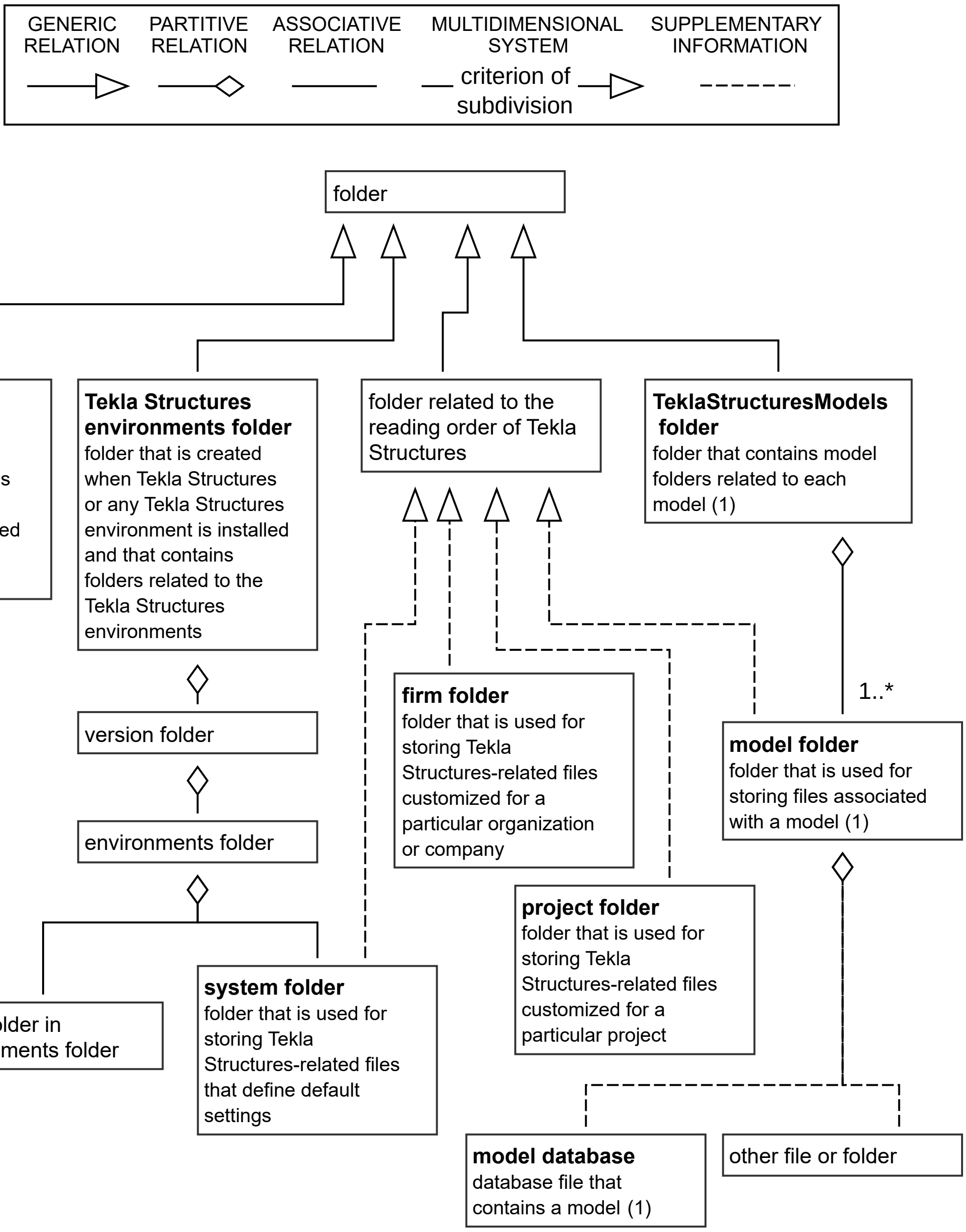
> note
>
> *Tekla Structures* stores all files associated with a model (1) in a folder it creates with the same name as the *model database* (.db1).
>
> In *multi-user mode* all users access the same model folder.

Concept diagram: Folders

531
TeklaStructuresModels folder

definition
folder that contains *model folders* related to each *model (1)*

Concept diagram: Folders


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
folder
Tekla Structures software folder folder that is created when Tekla Structures is installed and that contains folders related to Tekla Structures software
Tekla Structures environments folder folder that is created when Tekla Structures or any Tekla Structures environment is installed and that contains folders related to the Tekla Structures environments
folder related to the reading order of Tekla Structures
TeklaStructuresModels folder folder that contains model folders related to each model (1)
version folder
environments folder
other folder in environments folder
system folder folder that is used for storing Tekla Structures-related files that define default settings
firm folder folder that is used for storing Tekla Structures-related files customized for a particular organization or company
project folder folder that is used for storing Tekla Structures-related files customized for a particular project
1..*
model folder folder that is used for storing files associated with a model (1)
model database database file that contains a model (1)
other file or folder

Concept diagram 42. *Folders.*

5.3 Catalogs

532

catalog

definition

database that contains information that is dispayed in categorized lists in the user interface

> note
>
> For example, *profile catalog* and *shape catalog* are catalogs.
>
> In *Tekla Structures* it is possible to import or export an entire catalog or part of the catalog content to a *model (1)*.

Concept diagram: Catalogs

533

catalog item

definition

entry in a *catalog*

> note
>
> Catalog items can be, for example, *profiles* or *shapes* or material grades.

Concept diagram: Catalogs

534

profile catalog

definition

catalog that displays *profiles* and their properties

> note
>
> In addition to the available profiles in the respective *Tekla Structures environment*, the user can add *fixed* or *parametric user-defined profiles* to the profile catalog. It is also possible to import profiles to the profile catalog.

Concept diagram: Catalogs

535

material catalog

definition

catalog that displays material grades and information on them

> note
>
> By default, the material catalog contains standard, environment-specific materials. The user can add, modify, and delete material grades.

Concept diagram: Catalogs

536

shape catalog

definition

catalog that displays information on *item shapes*

> note
>
> For example, *Tekla Structures* shows the shape solidity and a preview of the selected shape.
>
> Shapes can be modeled in Tekla Structures or by using other software, such as SketchUp, or they can be downloaded from *Tekla Warehouse*.

Concept diagram: Catalogs

537

rebar catalog; reinforcing bar catalog

definition

catalog that displays *reinforcing bar* definitions

Concept diagrams: Reinforcement and Catalogs

538

rebar shape catalog; reinforcing bar shape catalog

definition

catalog that displays a list of *reinforcing bar* bending shapes

> note
>
> The reinforcing bar bending shapes can be defined in the *rebar shape manager*.

Concept diagrams: Reinforcement and Catalogs

539

mesh catalog

definition

catalog that displays standard *reinforcement mesh properties*

Concept diagram: Catalogs

540

bolt assembly catalog

definition

catalog that displays *bolt assemblies* and their *properties*

> note
>
> The user can add, modify, and delete bolt assemblies.

Concept diagrams: Bolt assembly and Catalogs

541

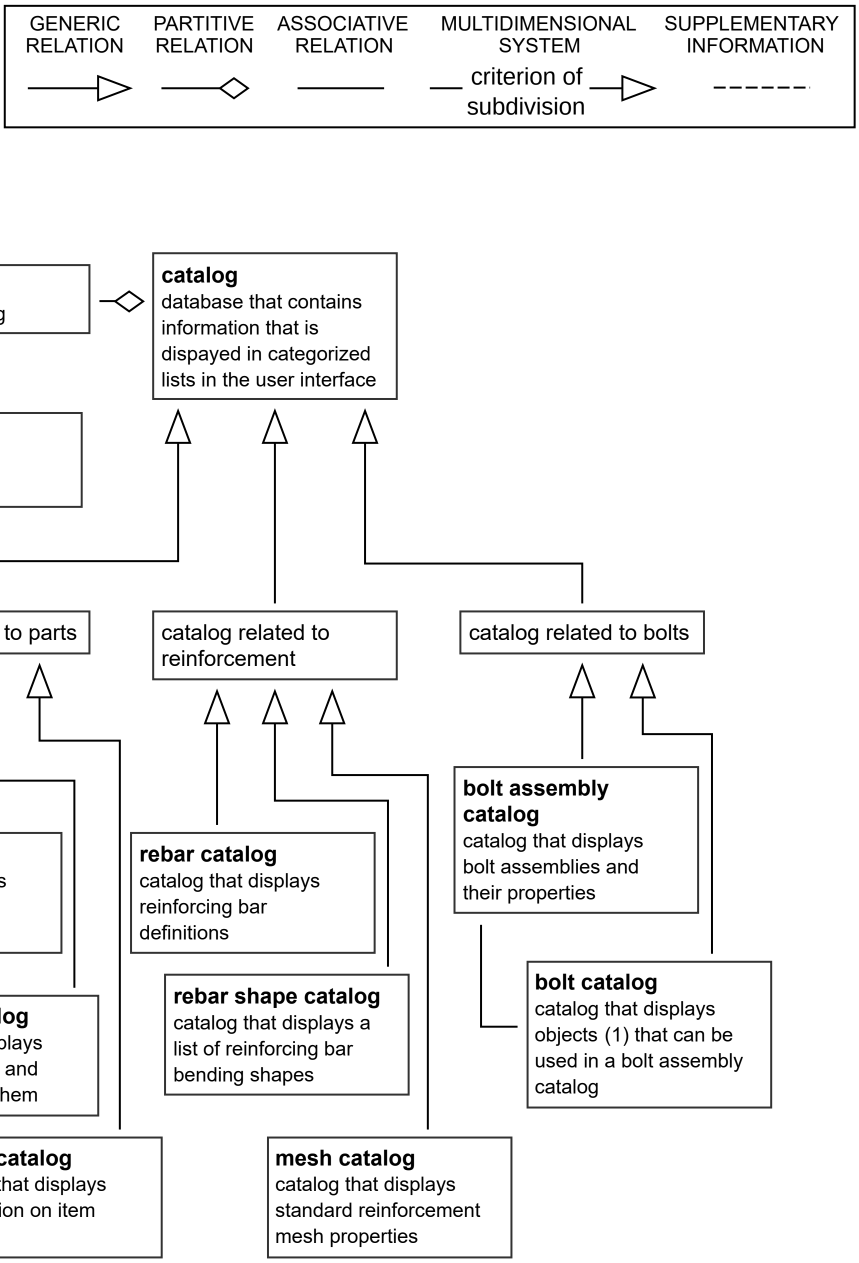
bolt catalog

definition

catalog that displays *objects (1)* that can be used in a *bolt assembly catalog*

> note
>
> Objects (1) in the bolt catalog are bolt elements, for example, *bolts (2)* of different sizes and lengths, washers, and nuts.

Concept diagrams: Bolt assembly and Catalogs


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
catalog item
entry in a catalog
catalog
database that contains information that is dispayed in categorized lists in the user interface
catalog file
file that contains catalog items
catalog related to parts
catalog related to reinforcement
catalog related to bolts
profile catalog
catalog that displays profiles and their properties
rebar catalog
catalog that displays reinforcing bar definitions
bolt assembly catalog
catalog that displays bolt assemblies and their properties
material catalog
catalog that displays material grades and information on them
rebar shape catalog
catalog that displays a list of reinforcing bar bending shapes
bolt catalog
catalog that displays objects (1) that can be used in a bolt assembly catalog
shape catalog
catalog that displays information on item shapes
mesh catalog
catalog that displays standard reinforcement mesh properties

Concept diagram 43. *Catalogs.*

5.4 Import and export

542

model transfer

definition

moving the *model (2)* in a selected format from another software to *Tekla Structures* or from Tekla Structures to another software

> note
>
> Model transfer refers to the use of both import and export. Model transfer may include the use of conversion files.

Concept diagram: Import and export

543
model output

definition
representation of information included in a *model (1)* exported into the desired format

> note
> In *Tekla Structures*, for example, *drawings (1)*, *reports*, lists, and *NC files* are model output.
>
> Some common output formats of Tekla Structures are, for example, *IFC*, DWG, DGN, and SDNF.

Concept diagram: Import and export

544
precast automation file

definition
file that contains precast information gathered from the *model (1)* and exported for management and production software

> note
> *Tekla Structures* produces precast automation files in several formats, for example, Unitechnik, ELiPLAN, and BVBS.

Concept diagram: Import and export

545
NC file

definition
file that contains information gathered from a *model (1)* and exported to *computer numerical controlled* fabrication machinery

> note
> *Tekla Structures* produces NC files in several formats, for example, DSTV.

Concept diagram: Import and export

546
hard stamp

definition
information written in an *NC file* that sets the NC machine to create a text mark, containing information on the *part* or *assembly*, in a part

> note
> Hard stamp can contain, for example, a *project* and *lot number*, *phase*, or part and *assembly position*.

Concept diagram: Import and export

547
pop mark

definition
information written in an *NC file* that sets the NC machine to drill a small hole in the surface of the material, which is used to weld or bolt *assembly secondary parts* to the right location on an *assembly main part*

Concept diagram: Import and export

548
contour marking

definition
information written in an *NC file* that passes information to the NC machine on the layout and the *parts* that are welded together

> note
> *Tekla Structures* contour marking does not work on *polybeams*.

Concept diagram: Import and export

549

computer numerical control; CNC

definition

operation of a machine tool with a computer controlling the manufacturing process

> note
>
> During the computer numerical control manufacturing process, a machine tool or machining center drills, *cuts*, or shapes the piece of material.
>
> The terms numerical control and NC refer to the method used prior to computer numerical control. However, the abbreviation NC is often used in the term *NC file*.

Concept diagram: Import and export

550

layout manager

definition

tool that is used to import and export layout data between *Tekla Structures* and field layout devices

> note
>
> Layout manager enables the use of accurate *model (2) point (1)* and line data on the construction site.

Concept diagram: Import and export

551

IFC; Industry Foundation Classes

definition

file format commonly used in *building information modeling* that facilitates software interoperability

> note
>
> IFC is an open specification developed by the IAI (International Alliance for Interoperability).
>
> *Model (1)* can be exported into an IFC file.

Concept diagram: Import and export

552

model import

definition

import of a *model (2)* from another software to *Tekla Structures*

> note
>
> Tekla Structures supports several different formats to import models (2).

Concept diagram: Import and export

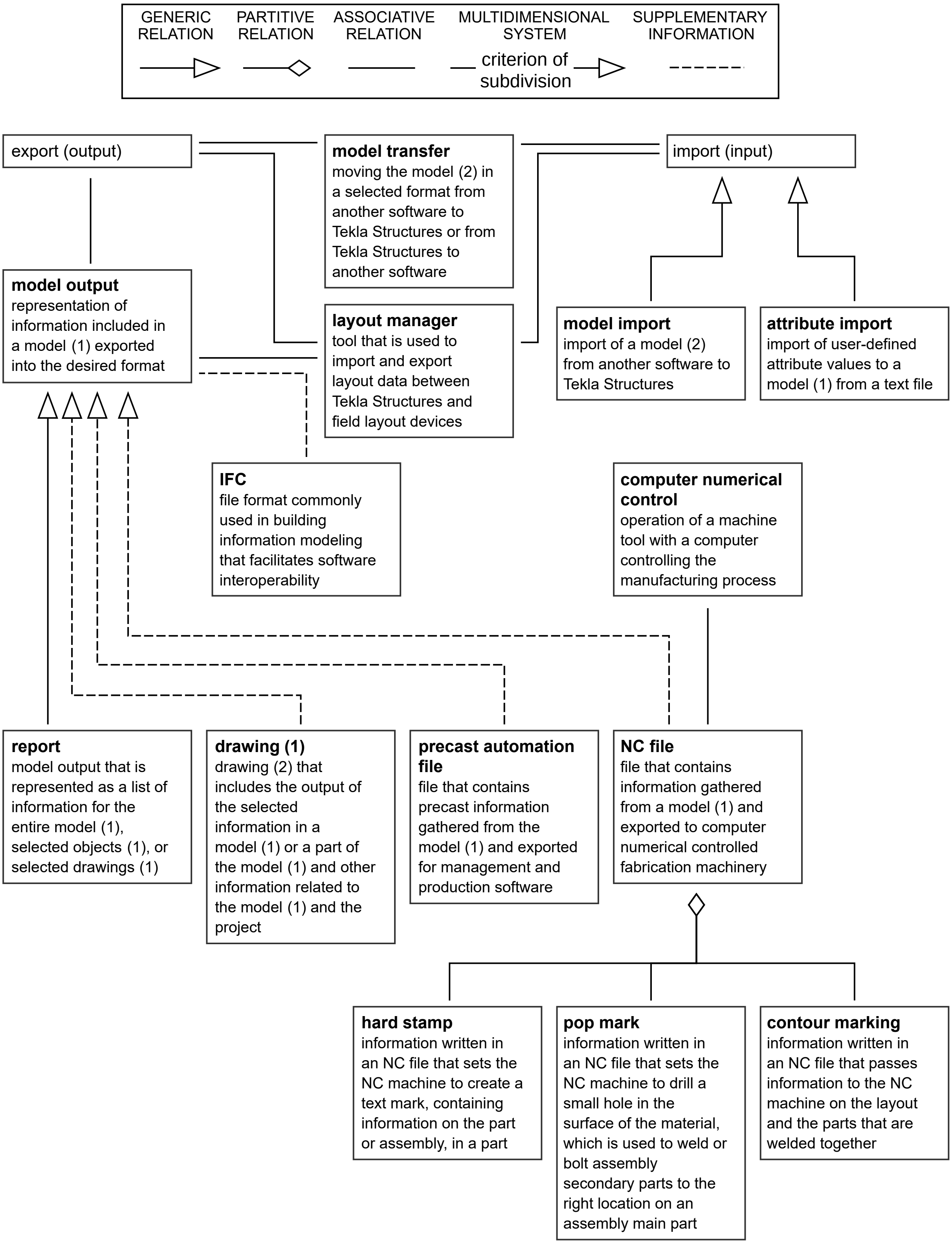
553

attribute import

definition

import of *user-defined attribute* values to a *model (1)* from a text file

Concept diagram: Import and export



model transfer
moving the model (2) in a selected format from another software to Tekla Structures or from Tekla Structures to another software

model output
representation of information included in a model (1) exported into the desired format

layout manager
tool that is used to import and export layout data between Tekla Structures and field layout devices

model import
import of a model (2) from another software to Tekla Structures

attribute import
import of user-defined attribute values to a model (1) from a text file

IFC
file format commonly used in building information modeling that facilitates software interoperability

computer numerical control
operation of a machine tool with a computer controlling the manufacturing process

report
model output that is represented as a list of information for the entire model (1), selected objects (1), or selected drawings (1)

drawing (1)
drawing (2) that includes the output of the selected information in a model (1) or a part of the model (1) and other information related to the model (1) and the project

precast automation file
file that contains precast information gathered from the model (1) and exported for management and production software

NC file
file that contains information gathered from a model (1) and exported to computer numerical controlled fabrication machinery

hard stamp
information written in an NC file that sets the NC machine to create a text mark, containing information on the part or assembly, in a part

pop mark
information written in an NC file that sets the NC machine to drill a small hole in the surface of the material, which is used to weld or bolt assembly secondary parts to the right location on an assembly main part

contour marking
information written in an NC file that passes information to the NC machine on the layout and the parts that are welded together

Concept diagram 44. *Import and export.*

6 Tools related to managing models

6.1 Building hierarchy

554
building hierarchy (1)

definition
spatial structure of a *model (1)* that can be displayed as a hierarchical tree-structure in the *Building hierarchy (2)* tool

Concept diagram: Building hierarchy

555
Building hierarchy (2)

definition
tool that is used for defining a spatial structure of a *model (1)*

> note
> See also *building hierarchy (1)*.

Concept diagrams: Building hierarchy and Managing the model

556
building hierarchy element

definition
element in the *building hierarchy (1)* that can be managed as a single unit with the *Building hierarchy (2)* tool

> note
> In *Tekla Structures*, *project*, *site*, *building*, *building section*, *building storey*, and *space* are building hierarchy elements.
>
> Building hierarchy elements are shown as boxes in *model views*, except for project and site, which are not visualized. All the building hierarchy elements are shown as a tree-structure in the *side pane*.

Concept diagram: Building hierarchy

557
site

definition
part of a spatial structure of the *model (1)* that refers to a defined area of land for construction work

> note
> Site is not visualized in the in *model views*.

Concept diagram: Building hierarchy

558
building

definition
part of a spatial structure of the *model (1)* that represents the boundaries of a spatial volume of a structure that provides shelter for its occupants or contents and stands in one place

Concept diagram: Building hierarchy

559
building section

definition
part of a spatial structure ot the *model (1)* that represents a specific portion of a *building*

Concept diagram: Building hierarchy

560
building storey

definition
part of a spatial structure of the *model (1)* that represents a subdivision of a *building* or a *building section*, defined by its level within the structure

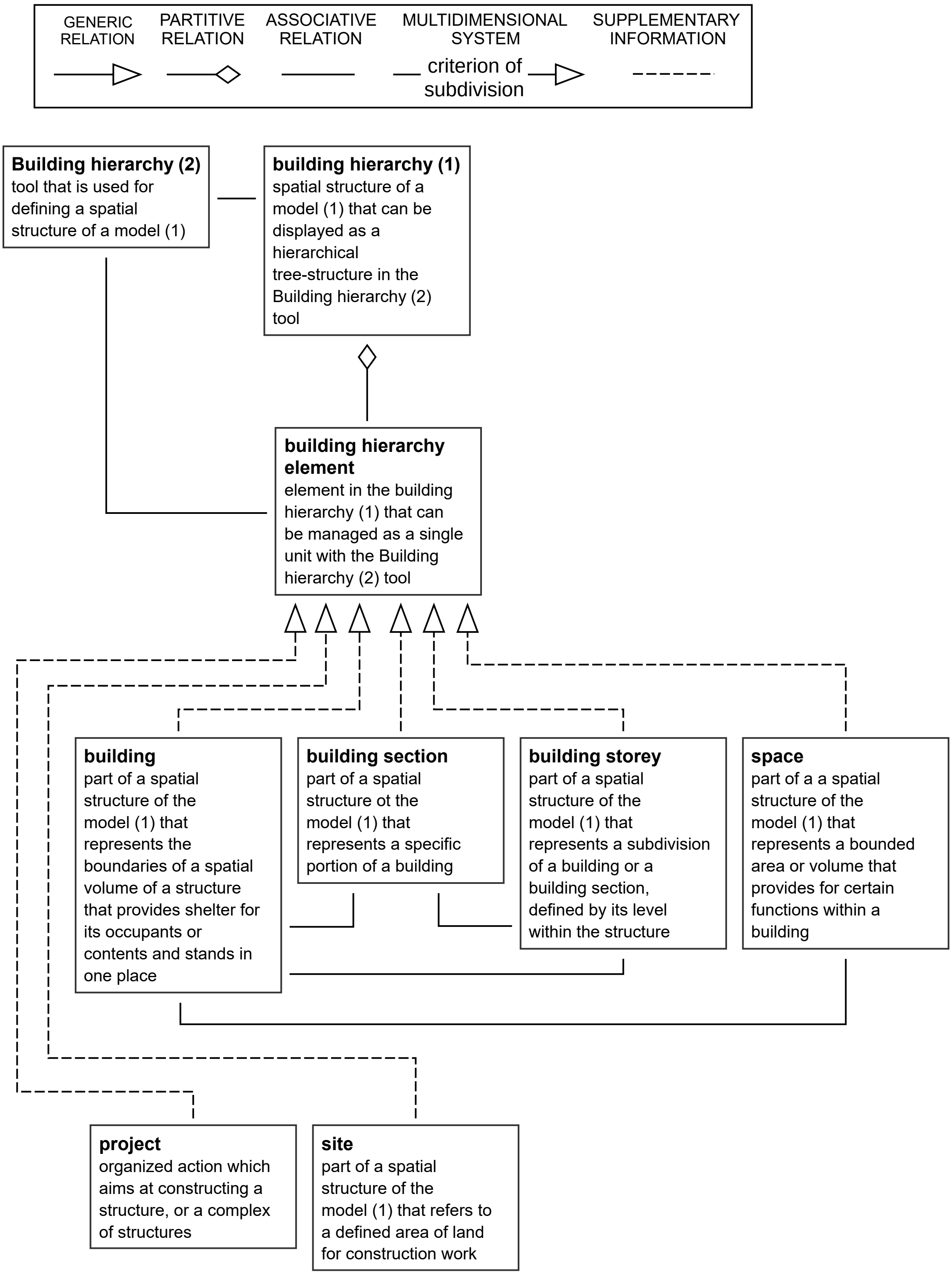
Concept diagram: Building hierarchy

561
space

definition
part of a a spatial structure of the *model (1)* that represents a bounded area or volume that provides for certain functions within a building

> note
> A space defines rooms, halls, or corridors, for example.

Concept diagram: Building hierarchy


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
Building hierarchy (2)
tool that is used for defining a spatial structure of a model (1)
building hierarchy (1)
spatial structure of a model (1) that can be displayed as a hierarchical tree-structure in the Building hierarchy (2) tool
building hierarchy element
element in the building hierarchy (1) that can be managed as a single unit with the Building hierarchy (2) tool
building
part of a spatial structure of the model (1) that represents the boundaries of a spatial volume of a structure that provides shelter for its occupants or contents and stands in one place
building section
part of a spatial structure ot the model (1) that represents a specific portion of a building
building storey
part of a spatial structure of the model (1) that represents a subdivision of a building or a building section, defined by its level within the structure
space
part of a a spatial structure of the model (1) that represents a bounded area or volume that provides for certain functions within a building
project
organized action which aims at constructing a structure, or a complex of structures
site
part of a spatial structure of the model (1) that refers to a defined area of land for construction work

Concept diagram 45. *Building hierarchy.*

6.2 Organizer

562

Organizer

definition

tool that is used for categorizing and managing *model information*, *object properties* and *object property* queries, and *model object* classification

> note
>
> Organizer consists of two tools, *object browser* and *categories*.

Concept diagrams: Organizer and Managing the model

563

object browser

definition

tool in *Organizer* used to inquire, view, and report *model information* based on selected *model objects*

Concept diagram: Organizer

564

property template

definition

definition of *object property* layout for the *property table* in *object browser*

> note
>
> The property template is saved in an .xml file or in the *Organizer database*.

Concept diagram: Organizer

565

property table

definition

view in *object browser* that shows the values of selected *model object properties*

> note
>
> The property table is created based on a selected *property template*.

Concept diagram: Organizer

566

categories *pl*

definition

tool in *Organizer* that is used to define *location*, *property*, and *custom categories*

> note
>
> The defined *categories* and their combinations can be used to highlight or select *model objects*, or to apply *user-defined attributes* and their values to model objects.

Concept diagram: Organizer

567

category

definition

in *Organizer*, a set of *model objects* that is formed based on rules or by selecting the model objects manually

> note
>
> The rules can be based on model object location, *object properties*, the content of other categories or *filters*.

Concept diagram: Organizer

568

property category

definition

category in *Organizer* based on adding *user-defined attributes* to *model objects*

> note
>
> Within a property category, a model object can belong to only one lowest level category at a time.

Concept diagram: Organizer

569

custom category

definition

category in *Organizer* based on user-defined rules or manually selected *properties*

> note
>
> A custom category can be created based on any property or other *model information*. Custom categories can be used to group the *model objects* based on other than location-based information.

Concept diagram: Organizer

570

custom property

definition

object property that the user can manually include in *Organizer*

> note
>
> Some *properties* are not automatically available in the Organizer, for example the properties of *reference model objects*.

Concept diagram: Organizer

571

location category

definition

category based on location rules in *Organizer*

> note
>
> Location categories divide the *model (1)* into *projects*, sites, buildings, sections, and floors. Location category can be defined automatically based on the *boundary box* or manually.

Concept diagram: Organizer

572

boundary box

definition

user-defined box that defines which *model objects* are placed in the same *location category* in *Organizer*

Concept diagram: Organizer

573

location breakdown structure

definition

logical subdivision of the *model (1)* into work units based on the location of the *model objects*

> note
>
> In *Organizer*, location breakdown structure forms a hierarchical tree-structure and it can be used, for example, to divide the model (1) into *projects*, *sites*, *buildings*, sections and floors.

Concept diagram: Organizer

574

location property; location category property

definition

object property that reports the *model object* location in the *location breakdown structure* in *Organizer*

Concept diagram: Organizer

575

uncategorized category

definition

category where the *model objects* are automatically placed in *Organizer* if they are not inside a defined *boundary box*

> note
>
> The uncategorized category shows that the *location breakdown structure* is incomplete. The model objects can be manually moved from the uncategorized category to a chosen *location category*, or boundary boxes can be changed to move the model objects to the wanted location category.

Concept diagram: Organizer

576

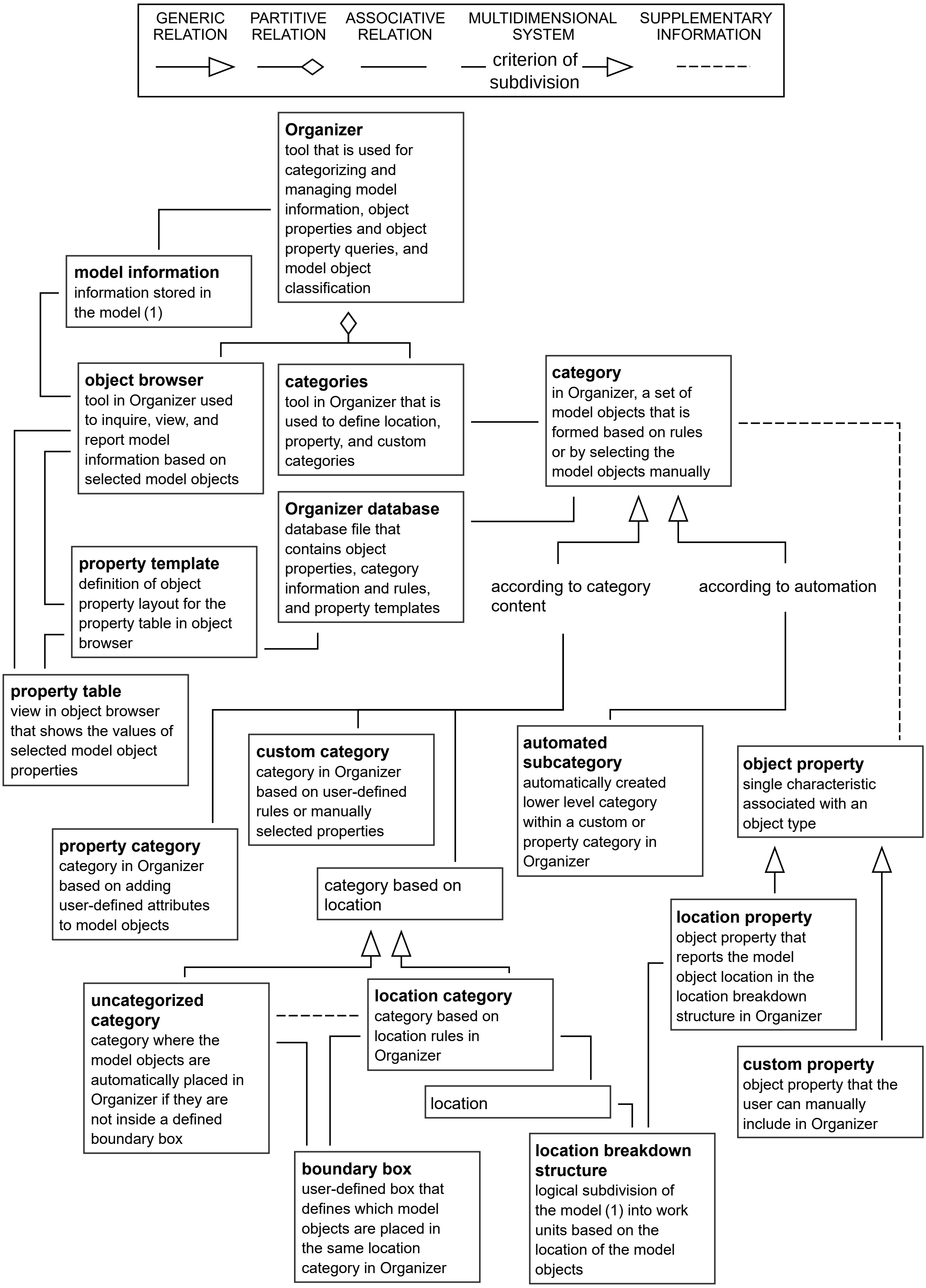
automated subcategory

definition

automatically created lower level *category* within a *custom* or *property category* in *Organizer*

> note
>
> Subcategories can also be created manually.

Concept diagram: Organizer



Organizer tool that is used for categorizing and managing model information, object properties and object property queries, and model object classification

model information information stored in the model (1)

object browser tool in Organizer used to inquire, view, and report model information based on selected model objects

categories tool in Organizer that is used to define location, property, and custom categories

category in Organizer, a set of model objects that is formed based on rules or by selecting the model objects manually

Organizer database database file that contains object properties, category information and rules, and property templates

property template definition of object property layout for the property table in object browser

property table view in object browser that shows the values of selected model object properties

custom category category in Organizer based on user-defined rules or manually selected properties

automated subcategory automatically created lower level category within a custom or property category in Organizer

object property single characteristic associated with an object type

property category category in Organizer based on adding user-defined attributes to model objects

category based on location

location property object property that reports the model object location in the location breakdown structure in Organizer

uncategorized category category where the model objects are automatically placed in Organizer if they are not inside a defined boundary box

location category category based on location rules in Organizer

location

custom property object property that the user can manually include in Organizer

boundary box user-defined box that defines which model objects are placed in the same location category in Organizer

location breakdown structure logical subdivision of the model (1) into work units based on the location of the model objects

Concept diagram 46. *Organizer.*

6.3 Managing the model

577

clash check manager

definition

tool that is used for finding *model objects* and *point clouds* that collide on a selected area and managing information related to the collisions

> note
>
> Clash check manager finds clashes in both *Tekla Structures models (1)* and *reference models*.
>
> Model objects included in clash check can be *parts*, *bolts (1)*, *welds*, *pour objects*, or *reinforcement objects*.
>
> In addition to finding and highlighting clashes, clash check manager classifies them according to their type, and allows the user, for example, to sort the detected clashes and save clash check sessions.

Concept diagram: Managing the model

578

task manager

definition

tool that enables the linking of temporal data to a *model (1)*

> note
>
> The task manager can be used to create, save, and manage *tasks* that are used to create a schedule.
>
> *Model objects* can be added to the tasks. *Organizer categories* can be used to select the model objects that will be added to the tasks.

Concept diagram: Managing the model

579

task

definition

in the *task manager*, a representation of a piece of work that needs to be carried out in order to complete a *project*

Concept diagram: Managing the model

580

task information

definition

data related to a *task*

> note
>
> Task information includes properties related to a task, such as task name, *task type*, planned and actual start and end dates, and task completeness.

Concept diagram: Managing the model

581

task type

definition

task information that reflects the category into which *tasks* can be classified in order to apply the same *settings* to all of them

> note
>
> Examples of task types in the *task manager* include formwork, reinforcement, and pour.

Concept diagram: Managing the model

582
production rate

definition
task information that reflects the quantity produced in a given amount of time

> note
> The *task manager* is able to count the production rate automatically on the basis of the values given to quantity and duration, or the user may define the rate.

Concept diagram: Managing the model

583
task dependency; dependency (2)

definition
task information which expresses that starting or finishing a *task* requires that a certain other task has been started or finished

> note
> Task dependency types in *Tekla Structures* are start-to-start, start-to-finish, finish-to-start, and finish-to-finish.
>
> Changes made to a task's schedule may cause automatic changes to the schedules of the tasks that depend on it.
>
> Task dependency is represented as a symbol in the *Gantt chart*.

Concept diagram: Managing the model

584
task list

definition
list that displays *task information* belonging to a certain *scenario*

Concept diagram: Managing the model

585
Gantt chart

definition
diagram that displays the schedule related to a *scenario* in a graphic form

Concept diagram: Managing the model

586
scenario

definition
view in the *task manager* which includes the *tasks* chosen and the *task information* defined by the user for a certain purpose

> note
> In different scenarios users can define alternative workflows by adding different tasks or dependencies between the tasks.
>
> A scenario may include the tasks belonging to an entire *project* or a certain project phase, such as design, fabrication, or erection. In addition, a scenario may be related to certain deliverables, such as *footings*, a frame, or an HVAC (heating, ventilating, and air-conditioning) system.

Concept diagram: Managing the model

587
phase manager

definition
tool that is used for assigning *model objects* to *phases*

> note
> The phase content can be viewed and modified in the phase manager.
>
> The phase manager can be used to *lock* and unlock model objects.
>
> See *object lock*.

Concept diagram: Managing the model

588
phase

definition
selection of *model objects* in a *model (1)* that the user can create for a desired purpose

> note
> Model objects have a *phase number* that indicates the phase they belong to.

Concept diagram: Managing the model

589
phase name

definition
description that indicates a *phase*

Concept diagram: Managing the model

590
phase number

definition
numeric value that indicates a *phase*

> note
> For example, it is possible to create *reports*, to *filter* and *lock model objects*, and to copy model objects from other *models (1)*, according to their phase number.
>
> New model objects are given the current phase number.

Concept diagram: Managing the model

591
sequencer

definition
tool that is used for creating named sequences for *parts* and assigning *sequence numbers* to the parts

> note
> Sequencer is used for defining erection sequences, for example.

Concept diagram: Managing the model

592
sequence number

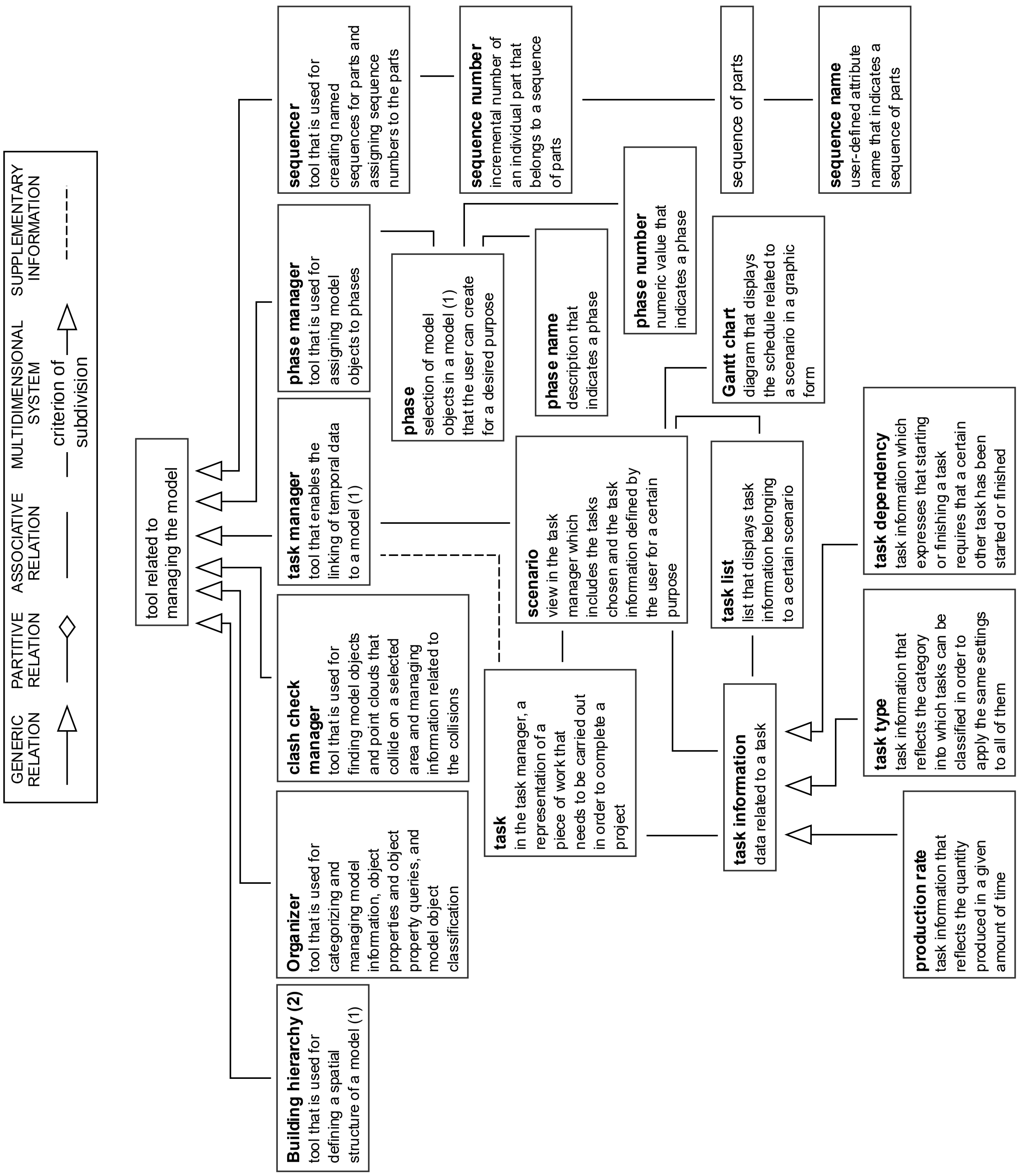
definition
incremental number of an individual *part* that belongs to a sequence of parts

Concept diagram: Managing the model

593
sequence name

definition
user-defined attribute name that indicates a sequence of *parts*

Concept diagram: Managing the model


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
tool related to managing the model
Building hierarchy (2)
tool that is used for defining a spatial structure of a model (1)
Organizer
tool that is used for categorizing and managing model information, object properties and object property queries, and model object classification
clash check manager
tool that is used for finding model objects and point clouds that collide on a selected area and managing information related to the collisions
task manager
tool that enables the linking of temporal data to a model (1)
phase manager
tool that is used for assigning model objects to phases
sequencer
tool that is used for creating named sequences for parts and assigning sequence numbers to the parts
phase
selection of model objects in a model (1) that the user can create for a desired purpose
sequence number
incremental number of an individual part that belongs to a sequence of parts
task
in the task manager, a representation of a piece of work that needs to be carried out in order to complete a project
scenario
view in the task manager which includes the tasks chosen and the task information defined by the user for a certain purpose
phase name
description that indicates a phase
phase number
numeric value that indicates a phase
task information
data related to a task
task list
list that displays task information belonging to a certain scenario
Gantt chart
diagram that displays the schedule related to a scenario in a graphic form
sequence of parts
sequence name
user-defined attribute name that indicates a sequence of parts
production rate
task information that reflects the quantity produced in a given amount of time
task type
task information that reflects the category into which tasks can be classified in order to apply the same settings to all of them
task dependency
task information which expresses that starting or finishing a task requires that a certain other task has been started or finished

Concept diagram 47. *Managing the model.*

7 Analysis and design

7.1 Structural analysis and design

594

structural analysis; analysis

definition

method that calculates the forces, moments, and stresses on a structure

> note
>
> Structural analysis also calculates the displacements, deflections, rotations, and warping of objects under various loading conditions.

Concept diagram: Analysis

595

seismic analysis

definition

structural analysis that determines a set of forces for which it is statistically expected that the structure will not collapse in an earthquake

Concept diagram: Analysis

596

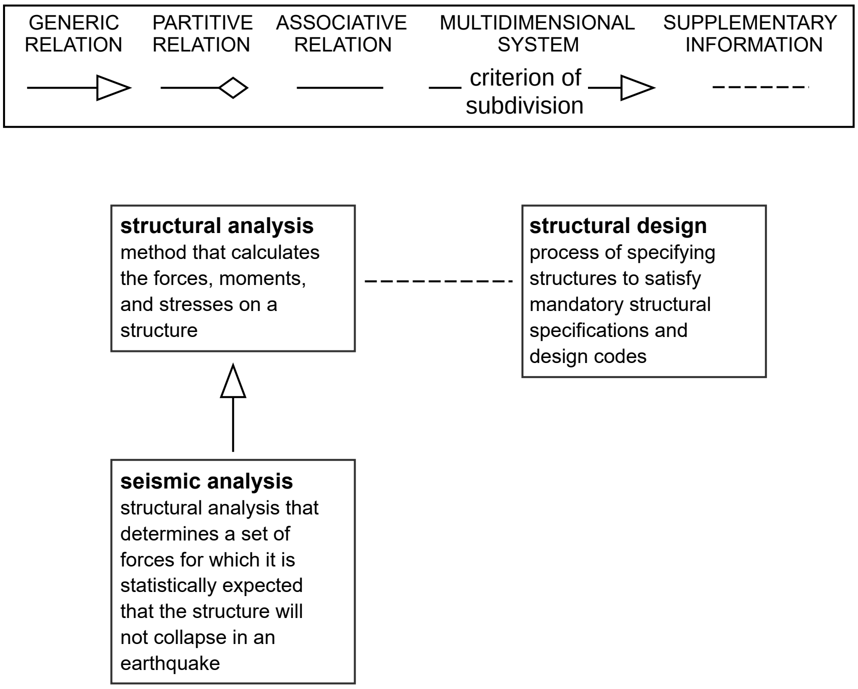
structural design; design

definition

process of specifying structures to satisfy mandatory structural specifications and design codes

> note
>
> Structural design is the methodical investigation of the stability, strength and rigidity of structures. The basic objective in both *structural analysis* and structural design is to produce a structure capable of resisting all applied *loads* without failure during its intended life.

Concept diagram: Analysis


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
structural analysis
method that calculates the forces, moments, and stresses on a structure
structural design
process of specifying structures to satisfy mandatory structural specifications and design codes
seismic analysis
structural analysis that determines a set of forces for which it is statistically expected that the structure will not collapse in an earthquake

Concept diagram 48. *Analysis.*

7.2 Loads

597

load modeling code

definition

information about the building or design code, and about the *load group types*, safety factors, and *load combination (1)* factors used in the *load combination (2)*

Concept diagram: Load in analysis

598

load group type

definition

load group property that indicates the action that causes a *load* and that is used as a basis for a load group

> note
>
> Load group types are, for example, wind loads, thermal loads, snow loads, traffic loads, dead loads, and live loads.

Concept diagram: Load in analysis

599

load combination (1)

definition

set of *load groups* multiplied by their partial safety factors that is created in the *load combination (2)* process

> note
>
> Each load combination (1) represents a loading situation to be checked according to the design code.

Concept diagram: Load in analysis

600

load combination (2); load combination process

definition

process in which some simultaneously acting *load groups* are multiplied by their partial safety factors and combined with each other according to specific rules

> note
>
> Load combination (2) rules are specific to a design process and are defined in design codes.

Concept diagram: Load in analysis

601

load group

definition

set of *loads* and *loadings* that are caused by the same action and to which the user wants to refer collectively

> note
>
> Loads belonging to the same load group are treated alike during *load combination (2)*.

Concept diagram: Load in analysis

602

loading

definition

analysis part property that represents a force or system of forces carried by a structure

> note
>
> Forces can be self-weight or area *loads*.

Concept diagrams: Load in analysis and Analysis settings

603
load

definition
model object that represents a force or system of forces carried by a structure or part of a structure

Concept diagram: Load in analysis

604
load type

definition
collection of data describing a *load* that represents the common characteristics shared by a number of individual loads, see also *object type*

> note
> The basic load types are point load, line load, area load, uniform load, and temperature load.

Concept diagram: Load in analysis

605
compatibility; load group compatibility

definition
property of a *load group* that indicates that load groups having the same compatibility indicator can act together and need to be considered in the *load combination (2)*

> note
> The compatible load groups act together with or separately from other load groups.

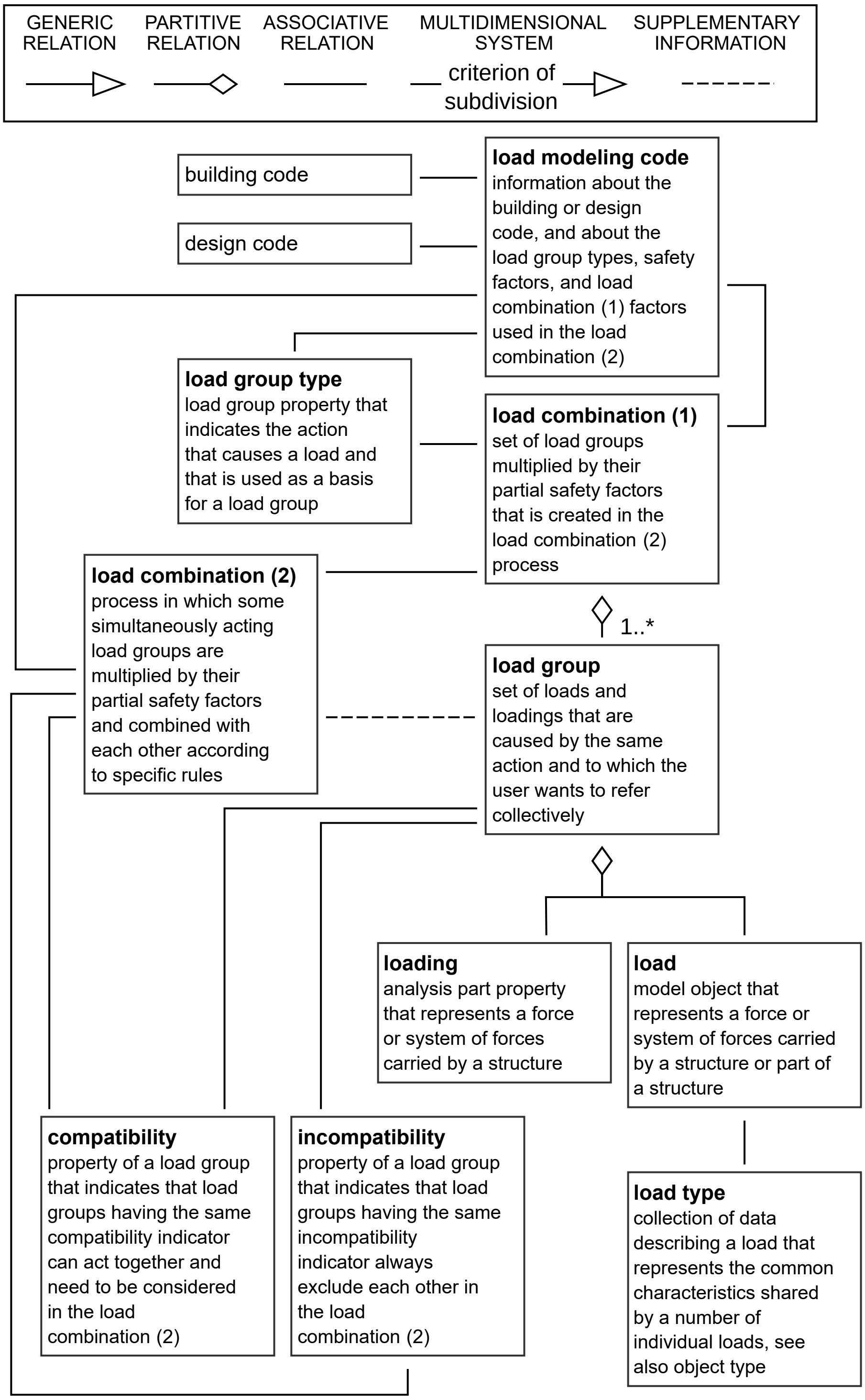
Concept diagram: Load in analysis

606
incompatibility; load group incompatibility

definition
property of a *load group* that indicates that load groups having the same incompatibility indicator always exclude each other in the *load combination (2)*

> note
> Only one incompatible load group can exist in a given *load combination (1)*.

Concept diagram: Load in analysis


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
building code
design code
load modeling code
information about the building or design code, and about the load group types, safety factors, and load combination (1) factors used in the load combination (2)
load group type
load group property that indicates the action that causes a load and that is used as a basis for a load group
load combination (1)
set of load groups multiplied by their partial safety factors that is created in the load combination (2) process
load combination (2)
process in which some simultaneously acting load groups are multiplied by their partial safety factors and combined with each other according to specific rules
1..*
load group
set of loads and loadings that are caused by the same action and to which the user wants to refer collectively
loading
analysis part property that represents a force or system of forces carried by a structure
load
model object that represents a force or system of forces carried by a structure or part of a structure
compatibility
property of a load group that indicates that load groups having the same compatibility indicator can act together and need to be considered in the load combination (2)
incompatibility
property of a load group that indicates that load groups having the same incompatibility indicator always exclude each other in the load combination (2)
load type
collection of data describing a load that represents the common characteristics shared by a number of individual loads, see also object type

Concept diagram 49. *Load in analysis.*

7.3 Analysis objects

607

physical model object; physical object

definition

model object in a *physical model*

> note
>
> For example, *physical parts* are physical model objects in *Tekla Structures*.

Concept diagram: Analysis objects

608
physical part

definition
part in a *physical model*

Concept diagrams: Parts according to their roles in the model, Analysis objects and Analysis settings

609
analysis model object; analysis object

definition
model object that *Tekla Structures* creates from a *physical model object* or on the basis of *analysis part connectivity* into an *analysis model*

Concept diagram: Analysis objects

610
analysis part

definition
analysis model object that is a *representation* of a *physical part* in an *analysis model*

> note
> In different analysis models, a physical part is represented by different analysis parts.

Concept diagrams: Parts according to their roles in the model, Analysis objects and Analysis settings

611
analysis area

definition
analysis part that is a representation of a *plate (2)*, a *slab*, or a *panel*

> note
> Analysis area consists of one or more *analysis elements*.

Concept diagram: Analysis objects

612
analysis bar

definition
analysis part that *Tekla Structures* creates from a *beam*, a *column*, or a brace, or from a segment of these *parts*

> note
> Tekla Structures creates more than one analysis bar from a *physical part* if the part is a *polybeam* or if the part *cross section* changes non-linearly. An analysis bar consists of one or more *analysis members*.
>
> Some analysis applications use analysis members whereas others use analysis bars.

Concept diagram: Analysis objects

613
node; analysis node

definition
analysis model object that *Tekla Structures* creates at a defined *point (1)* of an *analysis model* based on *analysis part connectivity*

> note
> Tekla Structures creates nodes at ends and intersection points (1) of *analysis parts*, and the corners of *analysis areas*.

Concept diagram: Analysis objects

614

analysis member

definition

analysis model object that *Tekla Structures* creates between two *nodes* of an *analysis bar*

> note
>
> Every *physical part* that the user selects for inclusion in the *analysis model* produces one or more analysis members. A single physical part produces several analysis members if the physical part intersects with other physical parts. Tekla Structures splits the physical part at the intersection *points (1)* of the member axes. For example, a *physical model beam* that supports two other beams is split into three analysis members between nodes.
>
> Some analysis applications use analysis members whereas others use analysis bars.

Concept diagram: Analysis objects

615

analysis element

definition

analysis model object that the analysis application creates between three or more *nodes* in an *analysis area*

Concept diagram: Analysis objects

616

rigid link

definition

analysis model object that connects two *nodes* so that they do not move in relation to each other

Concept diagram: Analysis objects

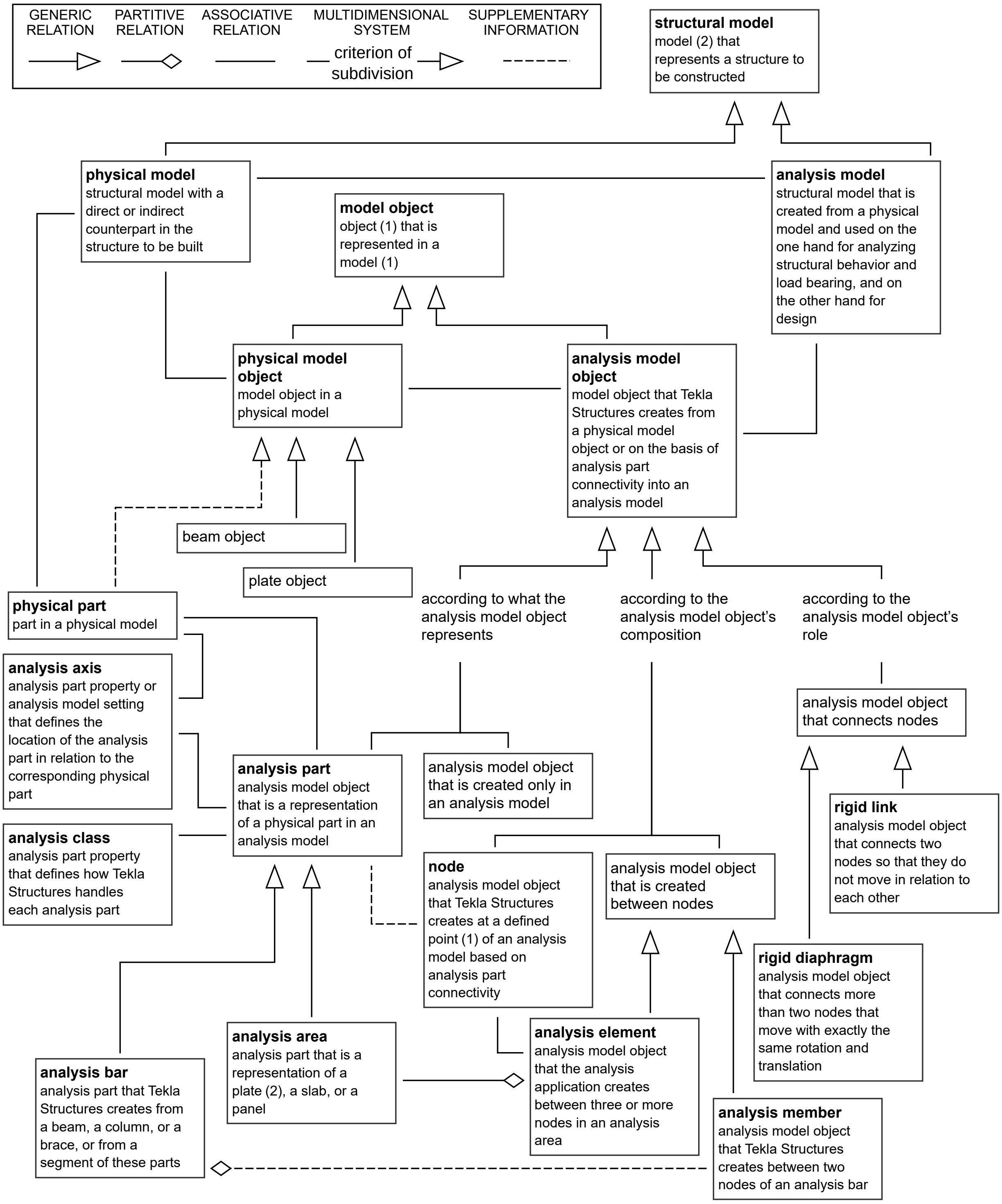
617

rigid diaphragm

definition

analysis model object that connects more than two *nodes* that move with exactly the same rotation and translation

Concept diagram: Analysis objects


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
structural model
model (2) that represents a structure to be constructed
physical model
structural model with a direct or indirect counterpart in the structure to be built
analysis model
structural model that is created from a physical model and used on the one hand for analyzing structural behavior and load bearing, and on the other hand for design
model object
object (1) that is represented in a model (1)
physical model object
model object in a physical model
analysis model object
model object that Tekla Structures creates from a physical model object or on the basis of analysis part connectivity into an analysis model
beam object
plate object
physical part
part in a physical model
according to what the analysis model object represents
according to the analysis model object's composition
according to the analysis model object's role
analysis axis
analysis part property or analysis model setting that defines the location of the analysis part in relation to the corresponding physical part
analysis model object that connects nodes
analysis part
analysis model object that is a representation of a physical part in an analysis model
analysis model object that is created only in an analysis model
rigid link
analysis model object that connects two nodes so that they do not move in relation to each other
analysis class
analysis part property that defines how Tekla Structures handles each analysis part
node
analysis model object that Tekla Structures creates at a defined point (1) of an analysis model based on analysis part connectivity
analysis model object that is created between nodes
rigid diaphragm
analysis model object that connects more than two nodes that move with exactly the same rotation and translation
analysis area
analysis part that is a representation of a plate (2), a slab, or a panel
analysis element
analysis model object that the analysis application creates between three or more nodes in an analysis area
analysis bar
analysis part that Tekla Structures creates from a beam, a column, or a brace, or from a segment of these parts
analysis member
analysis model object that Tekla Structures creates between two nodes of an analysis bar

***Concept diagram 50.** Analysis objects.*

7.4 Analysis settings

618

analysis model settings *pl*; **analysis model properties** *pl*

definition

settings that are defined by giving values to the *properties* associated with an *analysis model*

> note
>
> Analysis model settings can be defined in the *physical model* or in the analysis model.

Concept diagram: Analysis settings

619

analysis results *pl*

definition

results that concern forces and stresses and that an analysis application generates after it has analyzed an *analysis model*

> note
>
> Analysis results are stored in *Tekla Structures* in an analysis results database.

Concept diagram: Analysis settings

620

utilization ratio

definition

ratio of the actual to maximum allowable performance values of structural *building objects*

> note
>
> Utilization ratio is an *analysis result*. In *Tekla Structures* utilization ratio is calculated for steel *parts*.

Concept diagram: Analysis settings

621

design group

definition

group of *physical parts* that *Tekla Structures* uses when it searches for optimal *profiles* for steel *parts* and optimal reinforcement for concrete parts

Concept diagram: Analysis settings

622

design properties *pl*

definition

properties that concern *physical part* design

> note
>
> Design properties vary depending on the analysis application that is used.
>
> Design properties may be applied to the entire *model (1)* or to individual *objects (1)*.
>
> For example, buckling length is a design property.

Concept diagram: Analysis settings

623

design results *pl*

rather than: optimization results *pl*

definition

results that concern *physical part* design and that an analysis application generates after it has analyzed an *analysis model*

Concept diagram: Analysis settings

624

design check; check design

definition

option that checks if criteria of the selected design code are fulfilled for the *analysis part*

> note
>
> The design check is activated in the *analysis part properties* or in the *analysis model properties*. Design check might check whether *cross sections* are adequate, for example.

Concept diagram: Analysis settings

625
analysis part properties *pl*

definition
object properties associated with an *analysis part*

> note
> Analysis part properties can be defined in the *physical model* or in the *analysis model*.

Concept diagram: Analysis settings

626
analysis part property

definition
single characteristic in *analysis part properties*

Concept diagram: Analysis settings

627
analysis axis

definition
analysis part property or *analysis model setting* that defines the location of the *analysis part* in relation to the corresponding *physical part*

> note
> The analysis axis can be defined on the analysis part or the *analysis model* level. For example, the analysis axis can be the neutral axis or the *reference line* of the physical part.

Concept diagrams: Analysis objects and Analysis settings

628
analysis part connectivity; connectivity

definition
analysis part property that defines the *analysis part's* relationship to other analysis parts

> note
> For example, an analysis part automatically *snaps* or connects with *rigid links* to other parts based on the analysis part connectivity.

Concept diagram: Analysis settings

629
analysis class

definition
analysis part property that defines how *Tekla Structures* handles each *analysis part*

Concept diagrams: Analysis objects and Analysis settings

630
support condition

definition
analysis part property that describes if the *analysis part* is supported or not

> note
> If an analysis part end is supported, the *physical part* end is the ultimate support for a superstructure (for example, the foot of a *column* in a frame), and some of the part end's degrees of freedom result in zero translation and/or rotation.

Concept diagram: Analysis settings

631
start releases *pl*

definition
analysis part properties that define the *support conditions* and describe the degrees of freedom at the start of the *part*

Concept diagram: Analysis settings

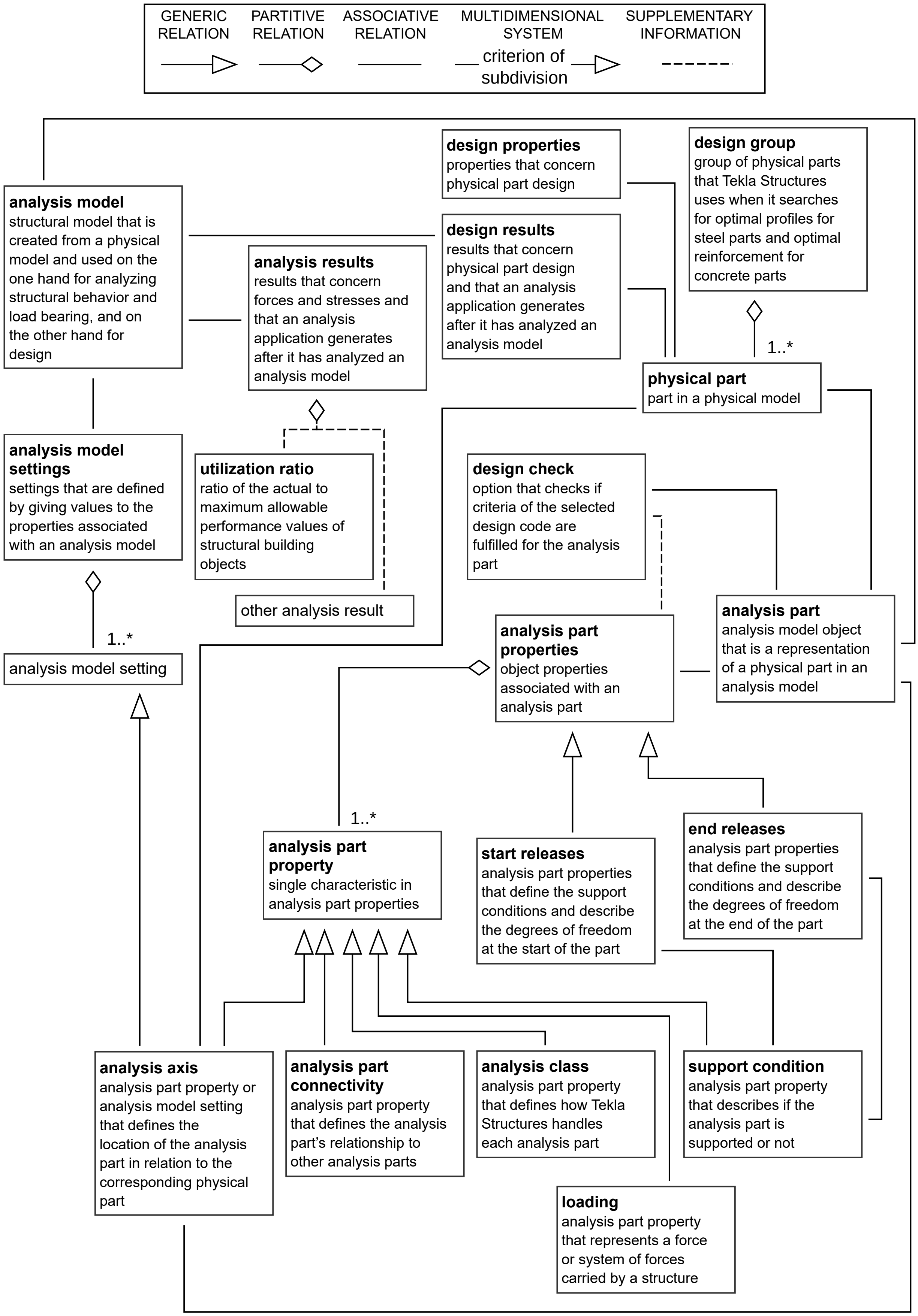
632

end releases *pl*

definition

analysis part properties that define the *support conditions* and describe the degrees of freedom at the end of the *part*

Concept diagram: Analysis settings


GENERIC RELATION
PARTITIVE RELATION
ASSOCIATIVE RELATION
MULTIDIMENSIONAL SYSTEM
criterion of subdivision
SUPPLEMENTARY INFORMATION
design properties properties that concern physical part design
design group group of physical parts that Tekla Structures uses when it searches for optimal profiles for steel parts and optimal reinforcement for concrete parts
analysis model structural model that is created from a physical model and used on the one hand for analyzing structural behavior and load bearing, and on the other hand for design
design results results that concern physical part design and that an analysis application generates after it has analyzed an analysis model
analysis results results that concern forces and stresses and that an analysis application generates after it has analyzed an analysis model
1..*
physical part part in a physical model
analysis model settings settings that are defined by giving values to the properties associated with an analysis model
utilization ratio ratio of the actual to maximum allowable performance values of structural building objects
design check option that checks if criteria of the selected design code are fulfilled for the analysis part
other analysis result
analysis part analysis model object that is a representation of a physical part in an analysis model
1..*
analysis model setting
analysis part properties object properties associated with an analysis part
1..*
end releases analysis part properties that define the support conditions and describe the degrees of freedom at the end of the part
analysis part property single characteristic in analysis part properties
start releases analysis part properties that define the support conditions and describe the degrees of freedom at the start of the part
analysis axis analysis part property or analysis model setting that defines the location of the analysis part in relation to the corresponding physical part
analysis part connectivity analysis part property that defines the analysis part's relationship to other analysis parts
analysis class analysis part property that defines how Tekla Structures handles each analysis part
support condition analysis part property that describes if the analysis part is supported or not
loading analysis part property that represents a force or system of forces carried by a structure

Concept diagram 51. *Analysis settings.*

Index

Numbers in the index refer to the term record numbers.

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