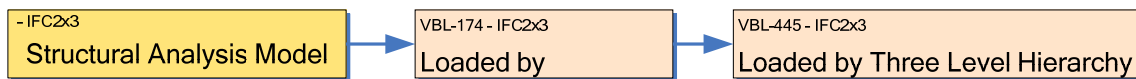


IFC Release Specific Concept Description (IFC2x3)

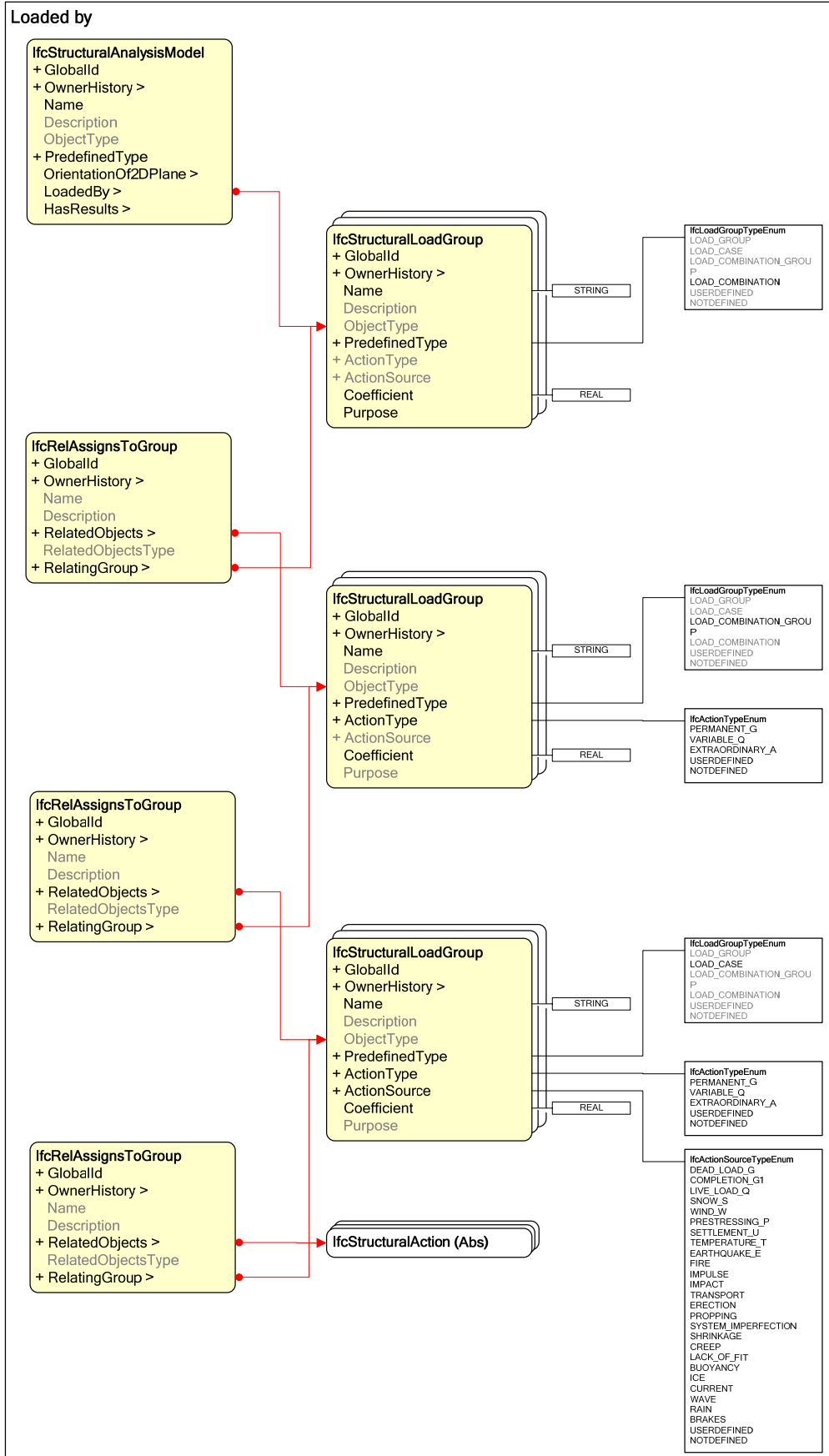
Loaded by Three Level Hierarchy

Reference	VBL-445	Version	3	Status	Proposal
Relationships	Implements general concept VBL-116 "Structural Loaded by"				
History	Created 23.10.2006, improved 27.9.2007, definition of the hierarchy improved 11.11.2007, Old Loaded by –concept is now this one 17.1.2008				
Authors	Sakari Lehtinen				
Document Owner	Virtual Building Laboratory @ TUT (sakari.lehtinen@tut.fi)				

Usage in view definition diagram



Instantiation diagram



Implementation agreements

IfcStructuralAnalysisModel

Attribute	Implementation agreements
GlobalId	N/A
OwnerHistory	N/A
Name	N/A
Description	N/A
ObjectType	N/A
PredefinedType	N/A
OrientationOf2DPlane	N/A
LoadedBy	<i>LoadedBy</i> . Must be list of IfcStructuralLoadGroups, which have LOAD_COMBINATION for PredefinedType
HasResults	N/A

IfcStructuralLoadGroup

Attribute	Implementation agreements
GlobalId	N/A
OwnerHistory	N/A
Name	N/A
Description	N/A
ObjectType	N/A
PredefinedType	Different values must be used in the different levels of the hierarchy. See the instantiation diagram above.
ActionType	Different values must be used in the different levels of the hierarchy. See the instantiation diagram above.
ActionSource	Different values must be used in the different levels of the hierarchy. See the instantiation diagram above.
Coefficient	N/A
Purpose	For 'load combination' the allowed values are: 'ULS', 'SLS', 'ALS'. 'ULS' is for Ultimate Loading System. 'SLS' is for Service Loading System. 'ALS' is for Accident Loading System. This only used for IfcStructuralLoadGroup, which has LOAD_COMBINATION for PredefinedType.

IfcRelAssignsToGroup

Attribute	Implementation agreements
GlobalId	N/A
OwnerHistory	N/A
Name	N/A
Description	N/A
RelatedObjects	For instances which are related to IfcStructuralLoadGroups having LOAD_COMBINATION for PredefinedType, these must be IfcStructuralLoadGroups having LOAD_COMBINATION_GROUP as PredefinedType. For instances which are related to IfcStructuralLoadGroups having LOAD_COMBINATION_GROUP for PredefinedType, these must be IfcStructuralLoadGroups having LOAD_CASE as PredefinedType. For instances which are related to IfcStructuralLoadGroups having LOAD_CASE for PredefinedType, these must be IfcStructuralActions.
RelatedObjectsType	N/A
RelatingGroup	N/A

Note that the whole hierarchy must always be implemented, when supporting this concept. If the exchanged load combination doesn't need all the levels of the hierarchy, then dummy levels has to be modeled.

Additional information

P21 example

```
#28=IFCSTRUCTURALANALYSISMODEL('2uRpA0c3HFLcw0f7ywxmPv', #2, $, $, $, .LOADING_3D., $, (#16, #8, #33), $);

#8=IFCSTRUCTURALLOADGROUP('3o8YgqQiTAnr_inVK7zuUk', #2, 'wind west', $, $, .LOAD_COMBINATION., .NOTDEFINED., .NOTDEFINED., $, 'ULS');
#5=IFCRELASSIGNSTOGROUP('0AuJ8TqP5074IBcmw_cony', #2, $, $, (#6, #7, #4), $, #8);
#4=IFCSTRUCTURALLOADGROUP('18BcrV7eT4570iFRtYfeDT', #2, 'west wind group', $, $, .LOAD_COMBINATION_GROUP., .PERMANENT_G., .NOTDEFINED., 1.0, $);
#6=IFCSTRUCTURALLOADGROUP('17j21LDEF56b1H56Y6YKot', #2, 'Dead group', $, $, .LOAD_COMBINATION_GROUP., .PERMANENT_G., .NOTDEFINED., 1.0, $);

#48=IFCSTRUCTURALLOADGROUP('0XQWfHCwb8$Mj40o8GIJen', #2, 'Live load', $, $, .LOAD_CASE., .VARIABLE_Q., .LIVE_LOAD_Q., 1.05, $);
#47=IFCRELASSIGNSTOGROUP('1NiOLPxp14RLAoEIV28uZc', #2, $, $, (#48), $, #7);
#1619=IFCLOCALPLACEMENT(#10, #80);
#1620=IFCSTRUCTURALLOADPLANARFORCE($, $, $, 2000.0);
#50=IFCSTRUCTURALPLANARACTION('2sz9$Tnfn0_MlwyqkZ3IH', #2, $, $, $, #1619, #1623, #1620, .LOCAL_COORDS., .F., .TRUE_LENGTH., $);
#49=IFCRELASSIGNSTOGROUP('1CvJJH7Of8w5Sm83GvYJua', #2, $, $, (#50), $, #48);
#52=IFCSTRUCTURALLOADGROUP('2WxGuYDQHAjt_CbfUVKc2M', #2, 'Dead load', $, $, .LOAD_CASE., .VARIABLE_Q., .DEAD_LOAD_G., 1.35, $);
#51=IFCRELASSIGNSTOGROUP('37N6Cd4BD7fSkC2sezRbCv', #2, $, $, (#52), $, #6);

#7=IFCSTRUCTURALLOADGROUP('0vEmI3geXBCrbBU17Pr3Q', #2, 'Live group', $, $, .LOAD_COMBINATION_GROUP., .PERMANENT_G., .NOTDEFINED., 1.0, $);
#1=IFCRELASSIGNSTOGROUP('1kQX$XACI3u7Ta3_Tpu6xp', #2, $, $, (#3), $, #4);
#3=IFCSTRUCTURALLOADGROUP('1eZWYewL9EfDqMZe4RIE1D', #2, 'west wind load', $, $, .LOAD_CASE., .VARIABLE_Q., .WIND_W., 1.05, $);
#9=IFCRELASSIGNSTOGROUP('08uWZebKL6xNaymvWATv$S', #2, $, $, (#10, #11), $, #3);
#10=IFCSTRUCTURALLINEARACTION('2u6Aq3yejD94UEDv_Q34kp', #2, $, $, $, #1560, #1590, #1562, .LOCAL_COORDS., .F., .TRUE_LENGTH., $);
#1562=IFCSTRUCTURALLOADLINEARFORCE($, $, $, 1000.0, $, $);
#11=IFCSTRUCTURALLINEARACTION('3FsqEdybn8w5mb1oia5f0T', #2, $, $, $, #1563, #1585, #1565, .LOCAL_COORDS., .F., .TRUE_LENGTH., $);
#1565=IFCSTRUCTURALLOADLINEARFORCE($, $, $, 1000.0, $, $);

#16=IFCSTRUCTURALLOADGROUP('3bl076Iaj5ucfBVInJRGuC', #2, 'wind north', $, $, .LOAD_COMBINATION., .NOTDEFINED., .NOTDEFINED., $, 'ULS');
#15=IFCRELASSIGNSTOGROUP('2mwq0IyOzByaw9JwectemC', #2, $, $, (#6, #7, #14), $, #16);
#14=IFCSTRUCTURALLOADGROUP('3E0JRnLfB8NC7ozeMuQZ$g', #2, 'North wind group', $, $, .LOAD_COMBINATION_GROUP., .PERMANENT_G., .NOTDEFINED., 1.0, $);
#12=IFCRELASSIGNSTOGROUP('0q9qcwpOz3Y6VMFh16J0F8', #2, $, $, (#13), $, #14);
#13=IFCSTRUCTURALLOADGROUP('0G1jZxQe14osxsKXcrXbZR', #2, 'North wind load', $, $, .LOAD_CASE., .VARIABLE_Q., .WIND_W., 1.05, $);

#33=IFCSTRUCTURALLOADGROUP('14pc1HkCn1h6yy0OLp$hvW', #2, 'Snow', $, $, .LOAD_COMBINATION., .NOTDEFINED., .NOTDEFINED., $, 'ULS');
#32=IFCRELASSIGNSTOGROUP('3qs5ex1FHCEdtC_QzdtNXh', #2, $, $, (#6, #7, #31), $, #33);
#30=IFCSTRUCTURALLOADGROUP('0BwhsvBeLACT3kXI052tZe', #2, 'Snow load', $, $, .LOAD_CASE., .VARIABLE_Q., .SNOW_S., 1.0, $);
#31=IFCSTRUCTURALLOADGROUP('18eDeuJYH714uTbnVq1LJo', #2, 'Snow group', $, $, .LOAD_COMBINATION_GROUP., .PERMANENT_G., .NOTDEFINED., 1.0, $);
#29=IFCRELASSIGNSTOGROUP('0w7oUpDCZe74$K_2PwYma5', #2, $, $, (#30), $, #31);
```

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The content of this document has to be certified by the IAI before becoming part of an official IFC Model View Definition.