

Flow of Events for Use Case – Apply Regulations Or Applications

Change Log	
09/06/2004	Created This use case replaces the previous use cases ‘Apply Regulations’ and ‘Apply Waiver’.
29/09/2004	Replaces previous use case ‘Apply Planning Applications’ Renamed from uc_apply_regulations_or_waiver
31/10/2004	Finalized for pre-integrated model

Overview

Captures planning applications that are in place for a physical property or construction.

Captures the regulations and waivers of regulations that are applicable to an area, a physical property or a construction. These are the regulations that would be shown on a situation map (i.e. a map showing the current situation with regard to areas, properties and constructions) or on a situation plan (a plan of proposed changes and additions to area, properties and constructions).

For the purposes of a model, applications, regulations and waivers are captured as objects and attributes rather than as annotations on a drawing as is the current CAD/GIS approach.

If it is appropriate to show applications, regulations and waivers on a presentation of the model (drawing), approaches to determining the text string defining the regulation and using it as annotation would have to be determined. This would be dealt with using the Presentation resources of the IFC model.

Process

Preconditions

Area, property or construction to which applications or regulations apply must exist either in an actual or proposed state.

Regulations that are to be applied must be able to be referenced and applied to the model in an appropriate format.

Applicable regulations are applied to objects (in the case of ‘waive regulations’)

Actors

Authority

Main Flow

1. Where a planning application is to be applied or modified, then <S1>
2. Regulations may be applied or alternatively, the requirement to comply with an applicable regulation may be waived.
 - If applicable regulations are to be applied then <S2>
 - If applicable regulations are to be waived then <S3>

Subflows

S1: Apply Applications

Flow	Entity
1. Select the physical property or construction for which the planning applications are to be captured.	
2. Get the list of planning applications for the physical property or construction.	IfcProjectOrderRecord.RecordTyp→PLANNINGAPPLICATION
<p>3. Relevant information for each planning application should be captured as an instance of IfcDocumentInformation. Attributes to be used (minimally) should include:</p> <p>DocumentId Planning application identifier</p> <p>Name Name applied to the planning application</p> <p>Description Short description of the planning application</p> <p>DocumentReferences Pointer to a complete document(s) outlining the planning application that can be referenced through a URL</p> <p>Purpose Purpose of the planning application</p> <p>IntendedUse Intended use of the result of the planning application</p> <p>Scope Brief description of the scope of the planning application</p> <p>Revision Revision number of the current planning application</p> <p>DocumentOwner Person or Organization for whom the planning application is made. This should also include address of the property or construction that is the subject of the planning application (by reference to IfcAddress).</p> <p>CreationTime When the planning application was made</p> <p>LastRevisionTime When the last revision of the planning application was made</p> <p>Status Gives the current status of the planning application</p>	IfcDocumentInformation
4. Each instance of IfcDocumentInformation should be associated with the object through the use of an instance of the relationship class IfcRelAssociatesDocument.	IfcDocumentInformation IfcRelAssociatesDocument

S2: Apply Regulations

Flow	Entity
1. Regulations that might be applied should be defined as a reference in a form that enables them to be applied to objects within the model.	
2. Determine the object(s) to which regulations are to be applied	
3. Determine the regulations that are to be applied	
4. Determine the breakdown of the regulation into objectives (where an objective is one purpose of a regulation) and capture each objective as an instance of IfcObjective.	IfcObjective
5. Set the value of the attribute IfcObjective.ObjectiveQualifier as CODECOMPLIANCE ¹	IfcObjective.ObjectiveQualifier→CODECOMPLIANCE
6. Determine any metrics (values) that are associated with an objective and capture these through using an instance of IfcMetric. Apply a benchmark to the metric using the IfcBenchmarkEnum (captures if value should be equal to, greater than, less than etc.) the metric.	IfcMetric IfcBenchmarkEnum
7. Determine all of the objectives that define constraints in an AND situation (i.e. subject to objective A AND subject to objective B AND subject to objective C)	
8. Determine situations where objective might be subject to OR (i.e. subject to objective D OR subject to objective E)	
9. Either <ul style="list-style-type: none"> • Compose a single constraint (defined through the IfcObjective subtype) that is an aggregation of all objectives using the IfcConstraintAggregationRelationship with the value of the attribute LogicalAggregator set to LOGICALAND or LOGICALOR as appropriate. • Apply each instance of IfcObjective individually to the object as below 	IfcObjective IfcConstraintAggregationRelationship
10. Apply constraints (instances of IfcObjective) to the object using the relationship class IfcRelAssociatesConstraint.	IfcObjective IfcRelAssociatesConstraint
11. Set a value for the IfcRelAssociatesConstraint.Intent attribute and apply it. Suggested usage is 'Applicable Regulations'.	IfcRelAssociatesConstraint.Intent→'Applicable Regulations'

¹ Values of IfcObjectiveEnum may be subject to variation to handle more values of ObjectiveQualifier.

S3: Waive Regulations

Flow	Entity
1. Determine the object(s) for which a waiver is to be applied	
2. Determine the objectives (instances of IfcObjective) applied to the object for which the waiver is to be requested or granted.	IfcObjective
3. Copy the instances of IfcObjective and the related instances of IfcMetric.	IfcObjective IfcMetric
4. Set the value of the attribute IfcObjective.ObjectiveQualifier as CODECOMPLIANCE	IfcObjective.ObjectiveQualifier→ CODECOMPLIANCE
5. Associate the copied objectives to the object using IfcRelAssociatesConstraint	IfcRelAssociatesConstraint
6. Set the value for the IfcRelAssociatesConstraint.Intent attribute and apply it. Suggested usage is 'Waiver Regulations'. <ul style="list-style-type: none"> Note that since it is anticipated that waivers will be limited, it is suggested that waivers be applied as constraints to objects by individual instances of IfcRelAssociatesConstraint. 	IfcRelAssociatesConstraint.Intent→'Waiver'

Post Conditions

For planning applications:

- All planning applications are associated with an object
- Metadata about the planning application can be determined from the attributes asserted for the object
- Complete planning applications can be viewed by reference to their URL through the DocumentReferences attribute (which inherits from the IfcExternalReference entity).

For regulations and waivers

- Regulations that are applicable to an object are captured as constraints.
- Waivers to regulations that are applicable to an object are captured as constraints.

IFC Usage and Extension Requirements

Existing Entity/Class Usage

Entity Class Name	Usage
IfcActorSelect	SELECT datatype allows for an IfcPerson or an IfcOrganization to be selected. In either case, a postal address of the physical property or construction should be asserted.
IfcBuilding	For building constructions to which applicable regulations are to be applied
IfcDocumentInformation	Provides metadata for the planning application
IfcDocumentReference	Provides URL pointer to the complete planning application
IfcPostalAddress	The address to be asserted for the physical property or construction
IfcObjective	Defines an objective within a regulation that has a particular purpose and for a which a metric may be set
IfcSite	For physical properties to which applicable regulations are to be applied
IfcMetric	Defines the metric against which actual values may be tested to confirm satisfactory compliance with a regulation.
IfcConstraintAggregationRelationship	Aggregates individual objectives into a single constraint that can be associated to an object.
IfcRelAssociatesConstraint	Associates a constraint with one or more objects
IfcRelAssociatesDocument	Relationship class that associates a document with one or more objects.

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Existing Entity/Class with Proposed Modification

<i>Entity Class Name</i>	<i>Usage</i>
IfcConstraint	Needs to be extended so that it has a referencing attribute that can be used to link to a URL where the full text of a constraint or regulation is available. Typically, it is anticipated that such text would be available in XML format and might be in a similar form to a property set. *** NOTE (1) : Because a constraint is a resource entity, it cannot have an associated property set. There a modification is required such that the constraint is moved out of the resource area or a further capability is added to the IfcConstraintResource such that property sets can be mimicked. *** NOTE (2): If the IfcConstraintResource is moved out of the resource level, regulatory text could be referenced via a subtype of IfcExternalReference which already has a 'Location' attribute generally considered to be a URL

<i>A R M</i>	<i>Attribute</i>	<i>Cardinality</i>	<i>Datatype</i>	<i>Definition</i>
M	ObjectiveQualifier	1:1	IfcObjectiveEnum	Extend enumeration list inside IfcObjectiveEnum

<i>A R M</i>	<i>#</i>	<i>Type (DER, U, WHERE)</i>	<i>Proposition</i>

<i>Entity Class Name</i>	<i>Usage</i>
IfcDocumentInformation	Critical review of attributes needed to determine if these are fully appropriate to planning applications, whether they need to be extended or whether a further subtype of IfcExternalReference needs to be used for submitted planning applications.

<i>A R M</i>	<i>Attribute</i>	<i>Cardinality</i>	<i>Datatype</i>	<i>Definition</i>

New Entity/Class Requirement

<i>Entity Class Name</i>	<i>Usage</i>

<i>Attribute</i>	<i>Cardinality</i>	<i>Datatype</i>	<i>Definition</i>

<i>#</i>	<i>Type (DER, U, WHERE)</i>	<i>Proposition</i>

Issue List

<i>Question</i>	<i>Answer</i>
To what extent are performance based regulations in use whereby there may be approved solutions and	Performance based regulations may be used.

deemed to satisfy solutions to planning requirements	
Are the attributes of IfcDocumentInformation identified sufficient to deal with planning applications. Are they too much/too little?	