

Facility Management information exchange

Status – March 2013

By

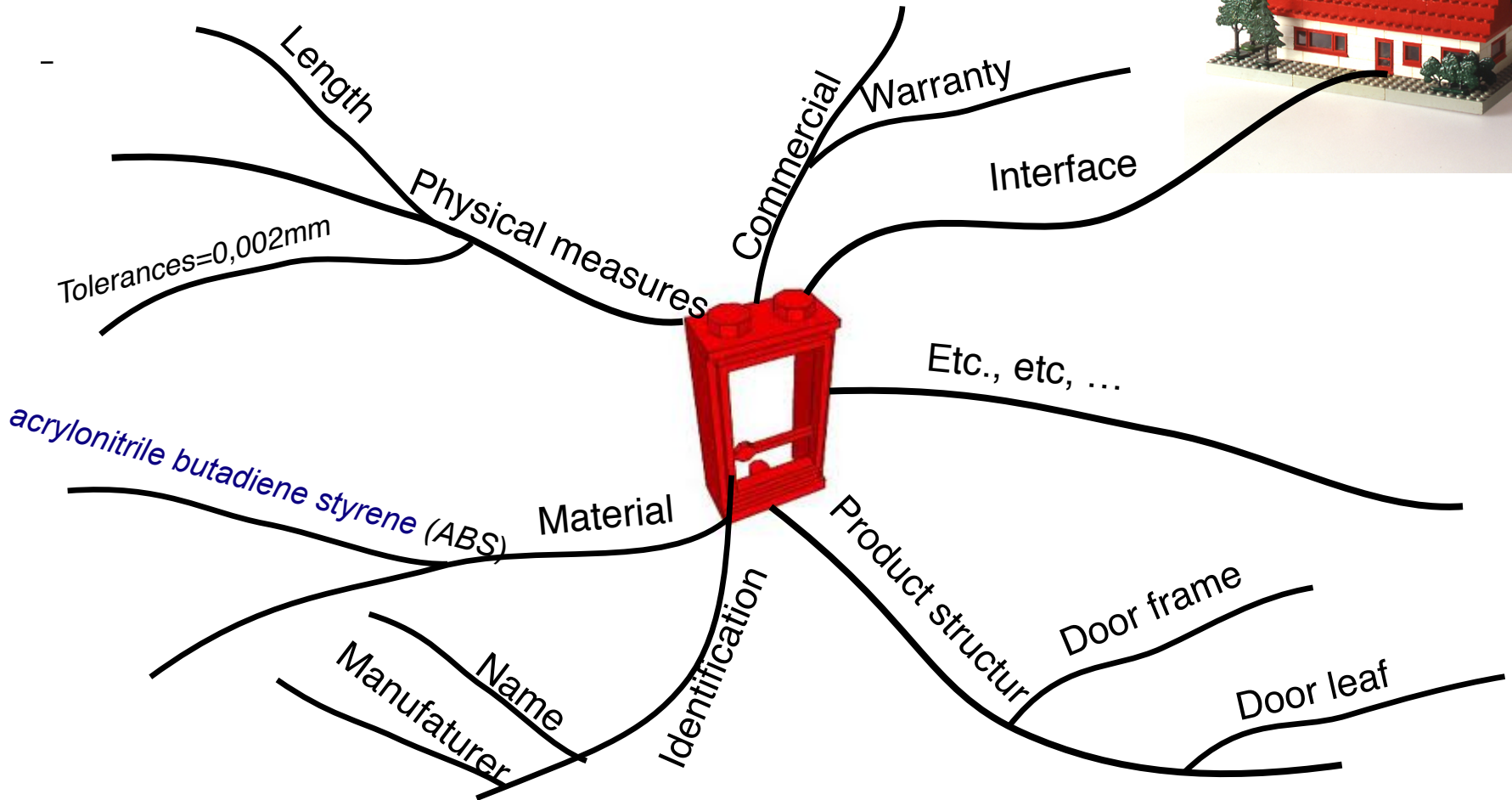
Inge Aarseth

Project Manager

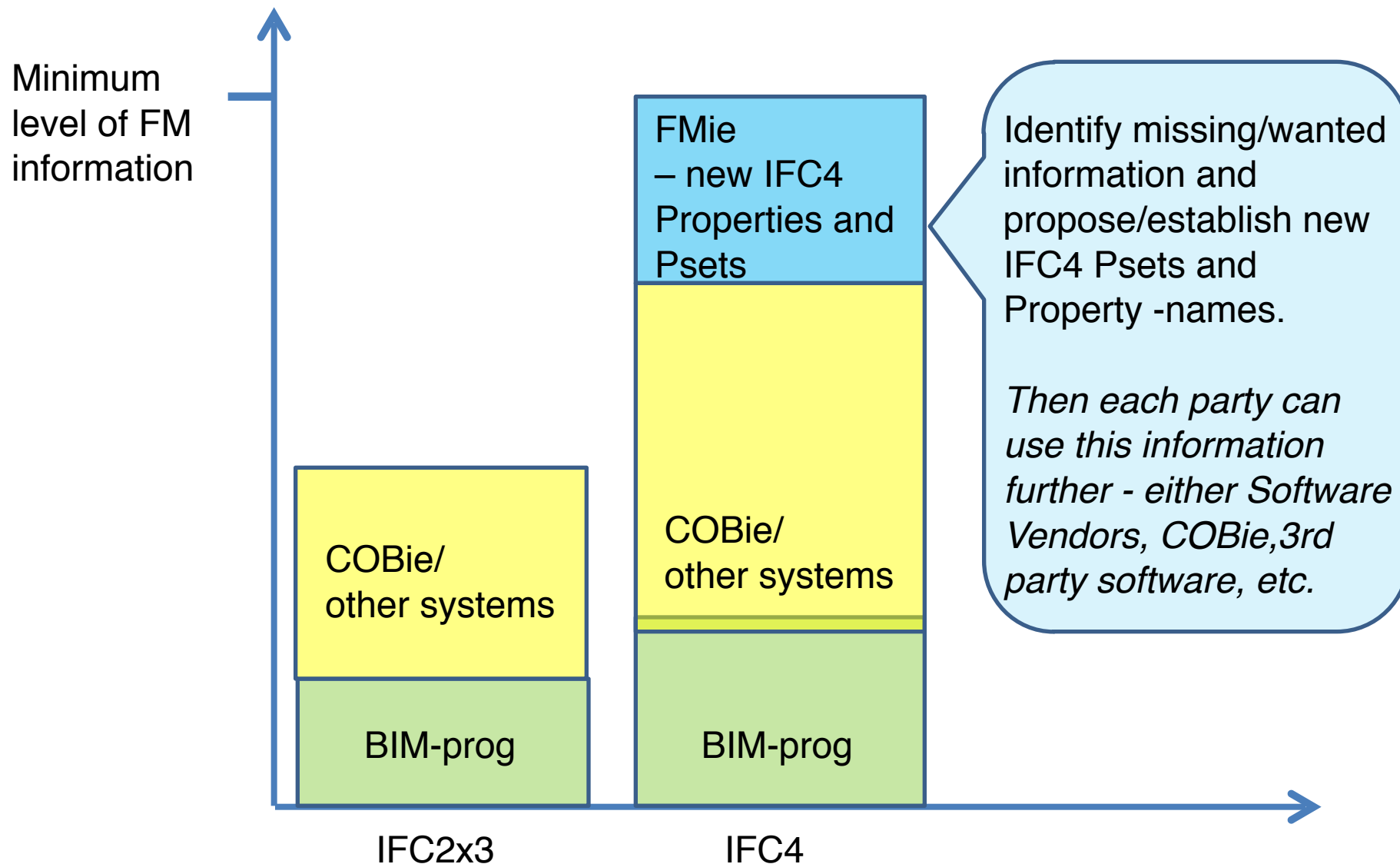
Waltham, 13.03.2013

FMie - Product information in BIM

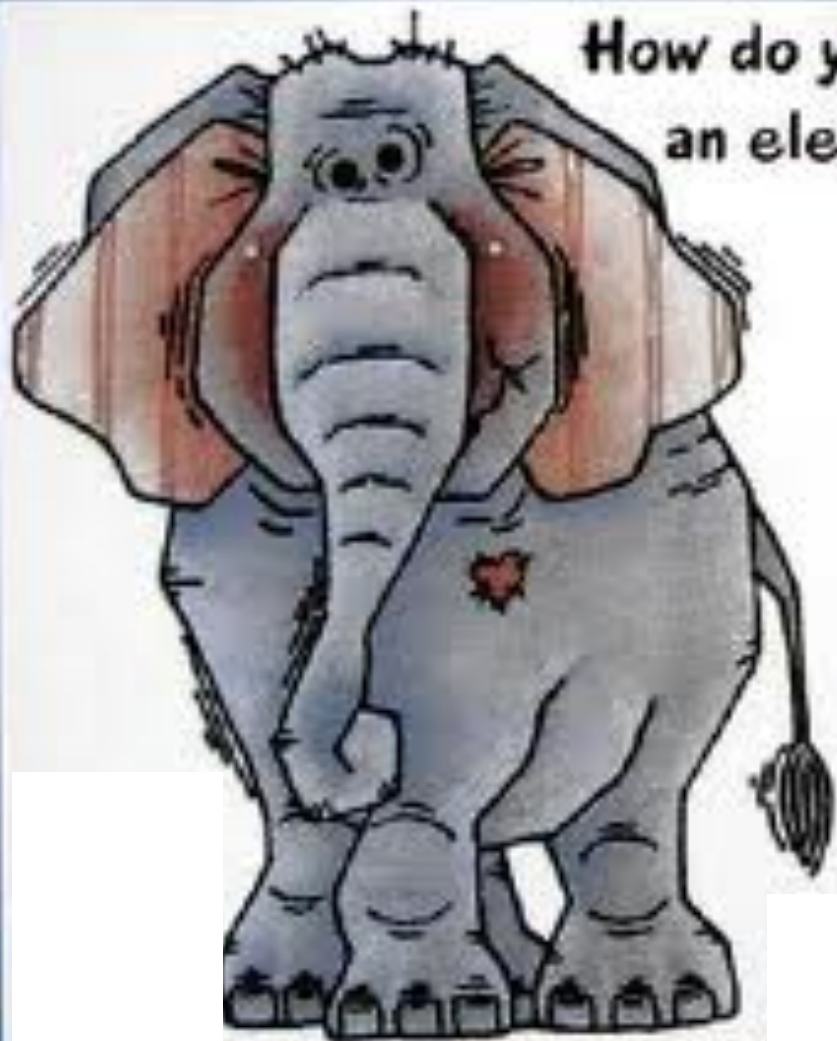
Which information do the Facility Management- and Operational personell need in the FM - handover?

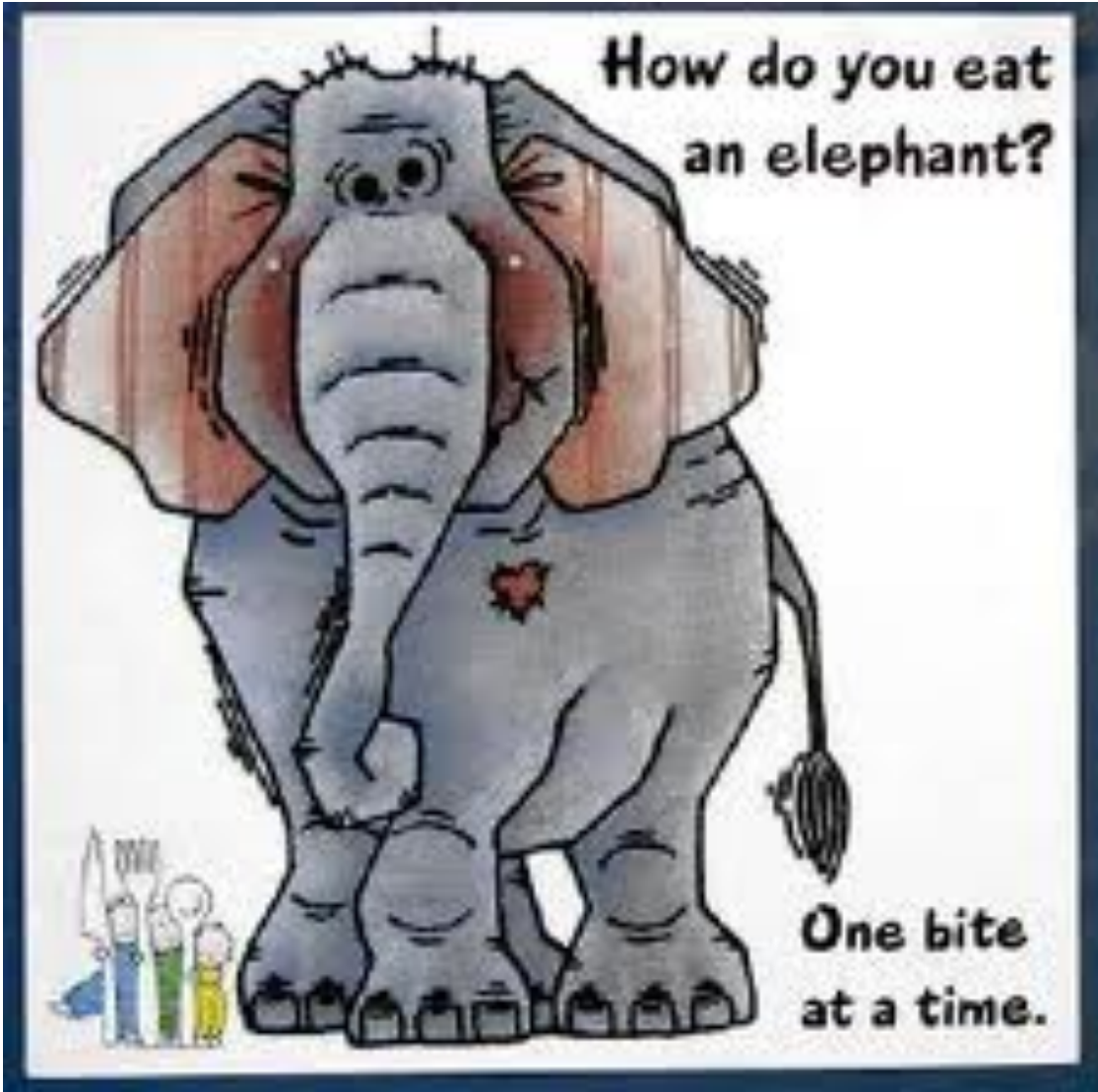


Present situation – as we see it, Information level – FM Information



How do you eat
an elephant?





How do you eat
an elephant?

One bite
at a time.

Project scope: FMie

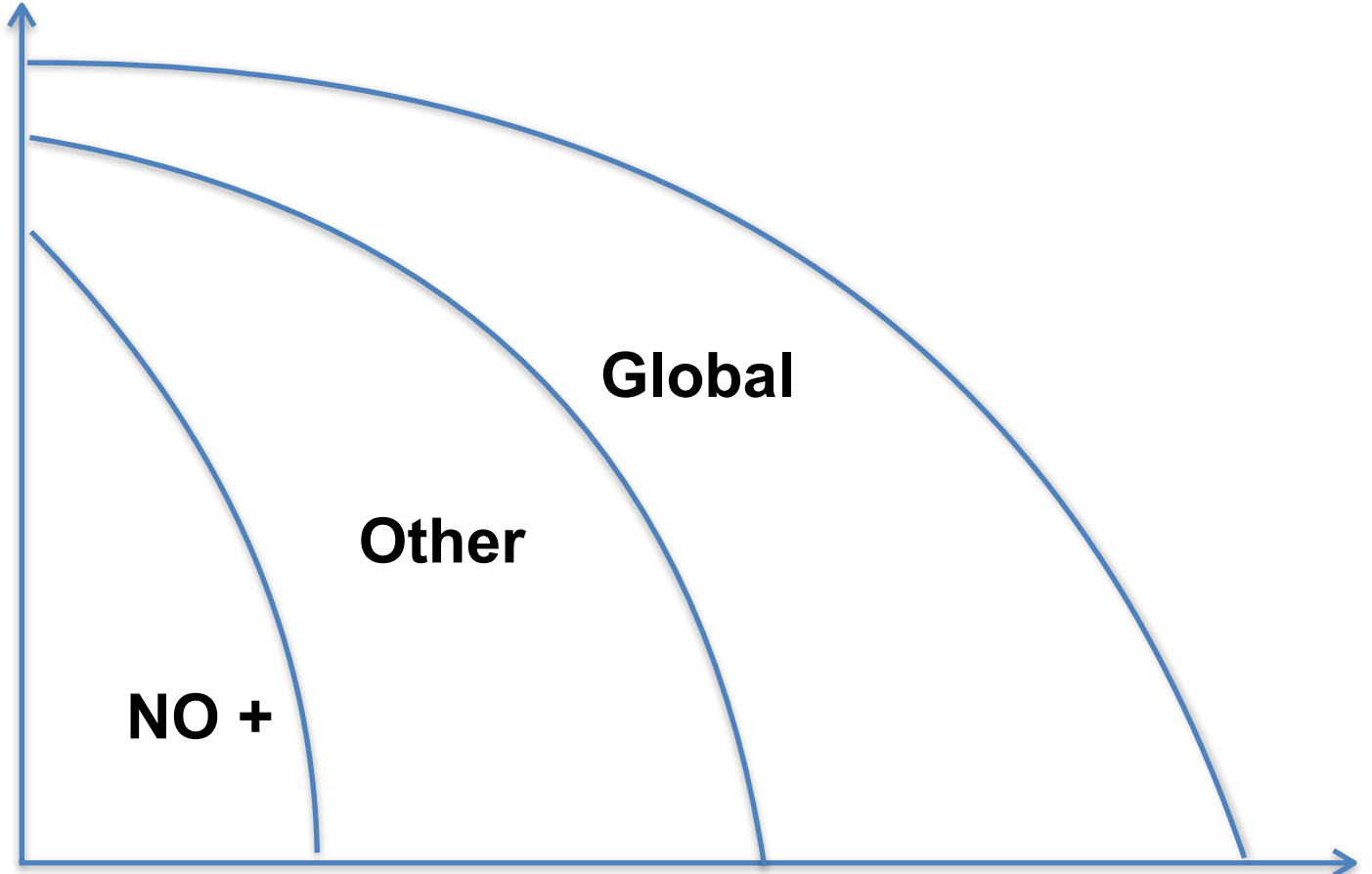
Scope of work:

- From a Facility Management perspective, we want to identify and map relevant IFC4 Property Sets, Quantity Sets and Properties.
- Identify the minimum level of information for Facility Management, in relations to property sets and property names, of a representative selection of building objects.
- Enrich the openBIM IFC4 standard by producing and delivering a list of proposed new Property names and Property Sets which is necessary from a Facility Management perspective.

openBIM FM / FMie, what do we want to achieve?

- (We have focus on the “I” in BIM, not geometry)
- **Enrich the IFC4 standard - in order to handle the FM-handover and to use the BIM for FM and Operation, during the buildings lifespan.**
- Establish standardized building object information on property field level based on the need from Facility Management, which is not already in IFC4.
- Build upon the existing Psets and property fields within IFC4.
- Establishing Psets and Property fields for a representative selection of building objects.
- Allowing information to have different values in different building phases.
- Contribute to solve the problems with round-trip between software vendors. The information gets the same name in all software (avoiding “spam” sets).

Level of information



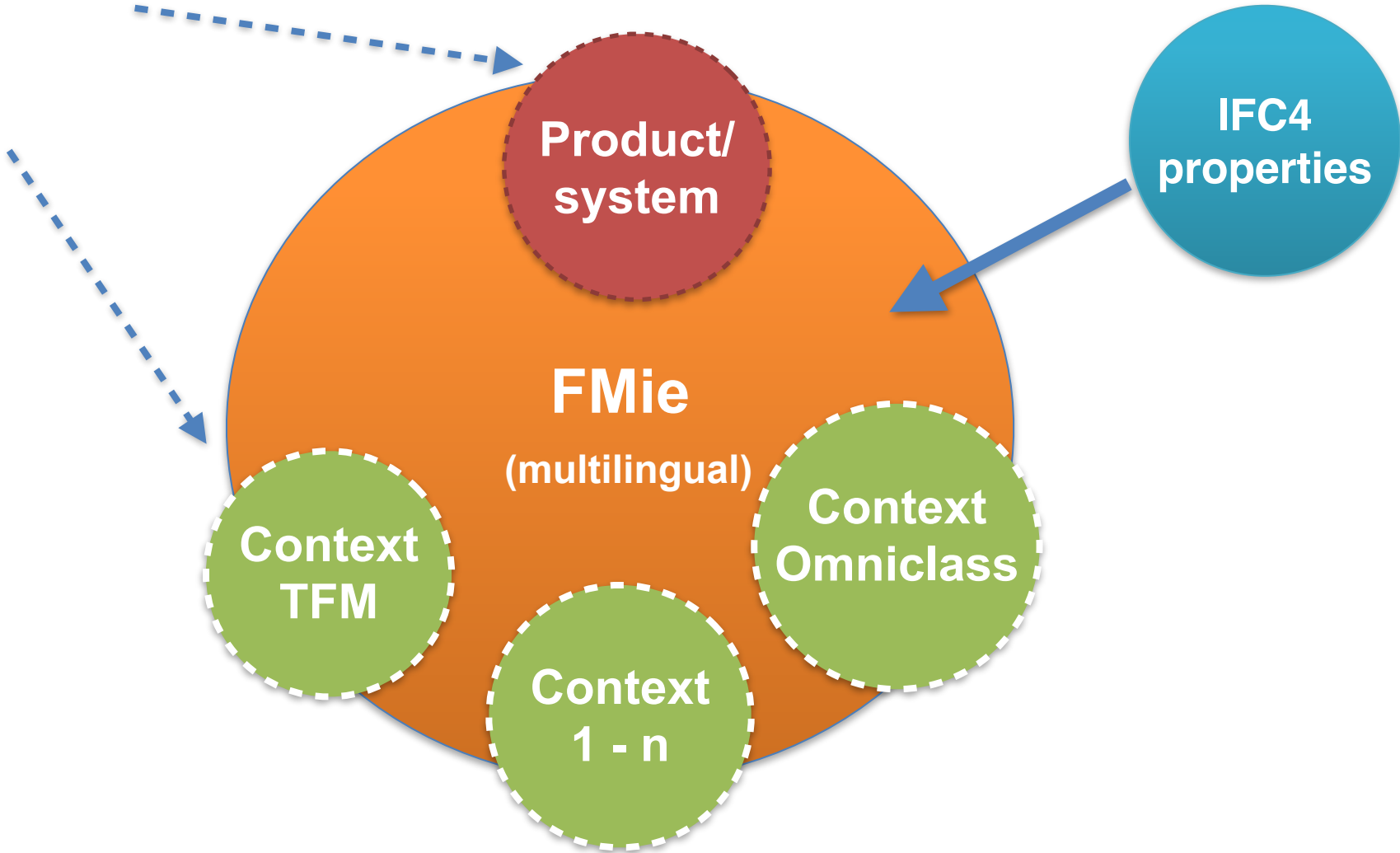
Global

Other

NO +

Number of components

How to work with FMie - through contexts?



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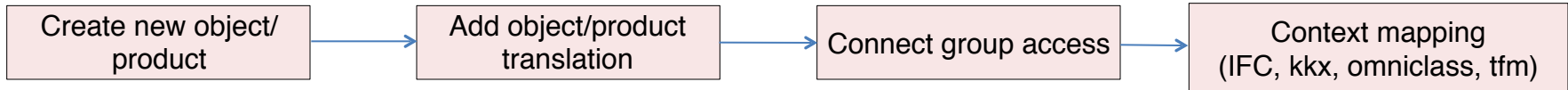
- Partly funded by the Norwegian building public clients (enough to start the process - but not to finish it).
- Establishing a web-tool (database):
 - Registration of the proposed property fields
 - Rebuilt completely since last year. Built to be multilingual (easy to add new language), but the basis is english.
 - Will help bSDD, since the proposed property fields description can be in both english and local language.
 - Prototype-testing now. We are currently planning to release the final database in April/May.
- bS Norway has funded most of the work to establish the IDM /MVD
- 12 months (?) registration/work group period (July 13 - June 14) followed by a 6 -12 months periode for MSG to implement this into IFC4 - by a technical addendum
- We invite other countries to participate, both for the registration/ group work and funding.

FMie - database

- Unique user sign-in, customizable role access and easy participant invitation for selected roles.
- User Group definition to group sets of users
- Different users and roles (suppliers, contractors, vendors etc.)
- IFC, TFM, KMX, OmniClass, Uniclass, etc. context mapping, viewing and overview
- Multilingual system with user profile language selection
- Multilingual GUI-elements, database-outputs and product and property definition.
- Show relationship between registered products and mapped IFC4 Entity-properties.
- Give an overview over existing and needed properties for a registered object/product. Easy search within mapped IFC properties and proposed properties for each object/product.
- Easy registration of new proposed properties
- Easy selection and/or registration of new proposed property groups
- Export and report templates extracting product property overview with proposed properties and mapped IFC4 properties

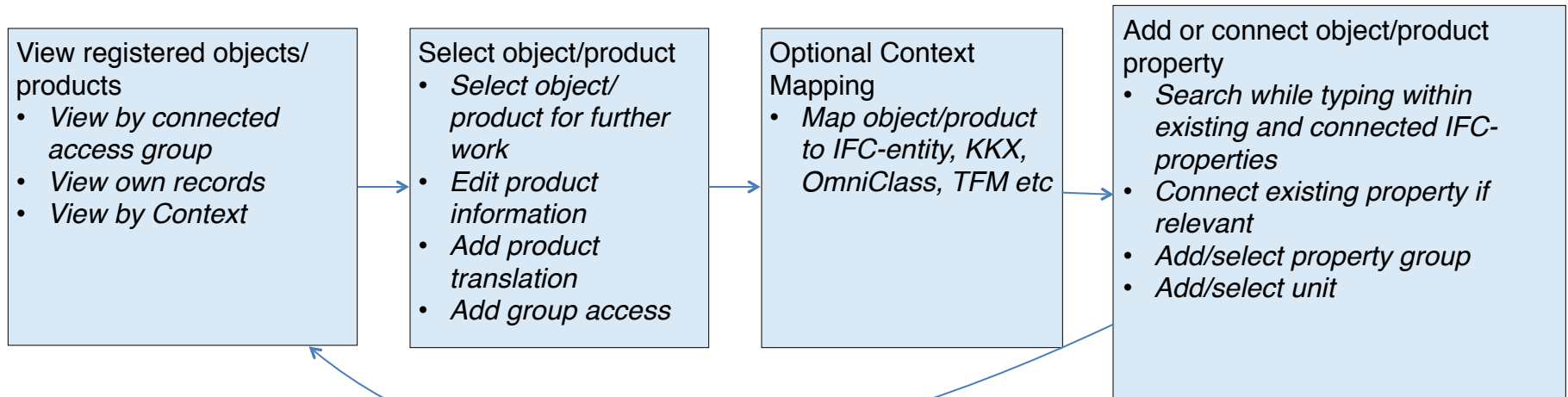
FMie, simplified process

• Adding new objects/products

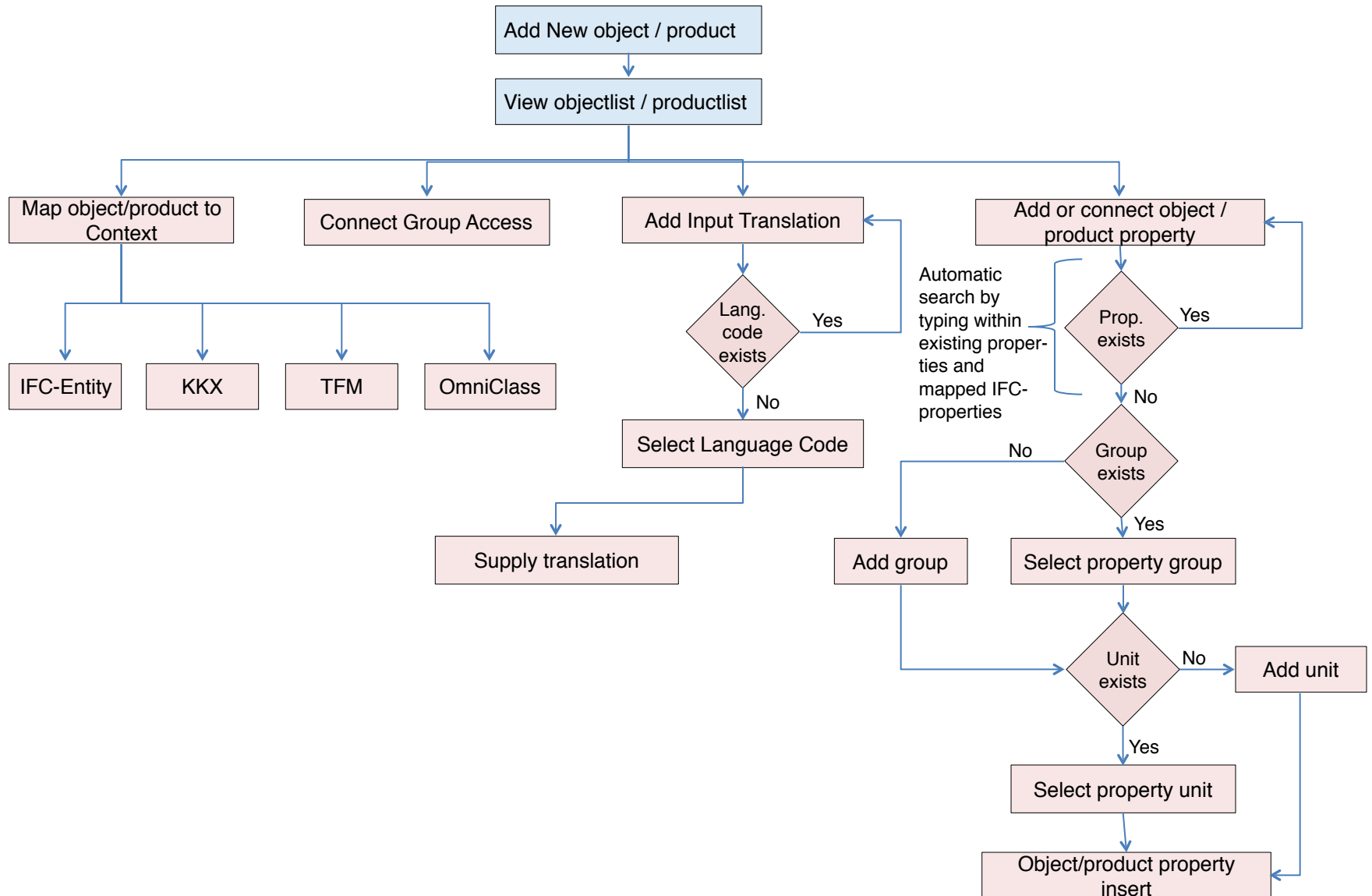


(Create your own products and add language translations. Give User group access for specific products. Perform IFC-entity mapping for your product. I.e: TFM product "Pump" maps to IFC-Entity "ifcPump". When adding properties to your product all mapped IFC-Entity-properties will show.

• Working with existing objects/products



FMie, simplified flow

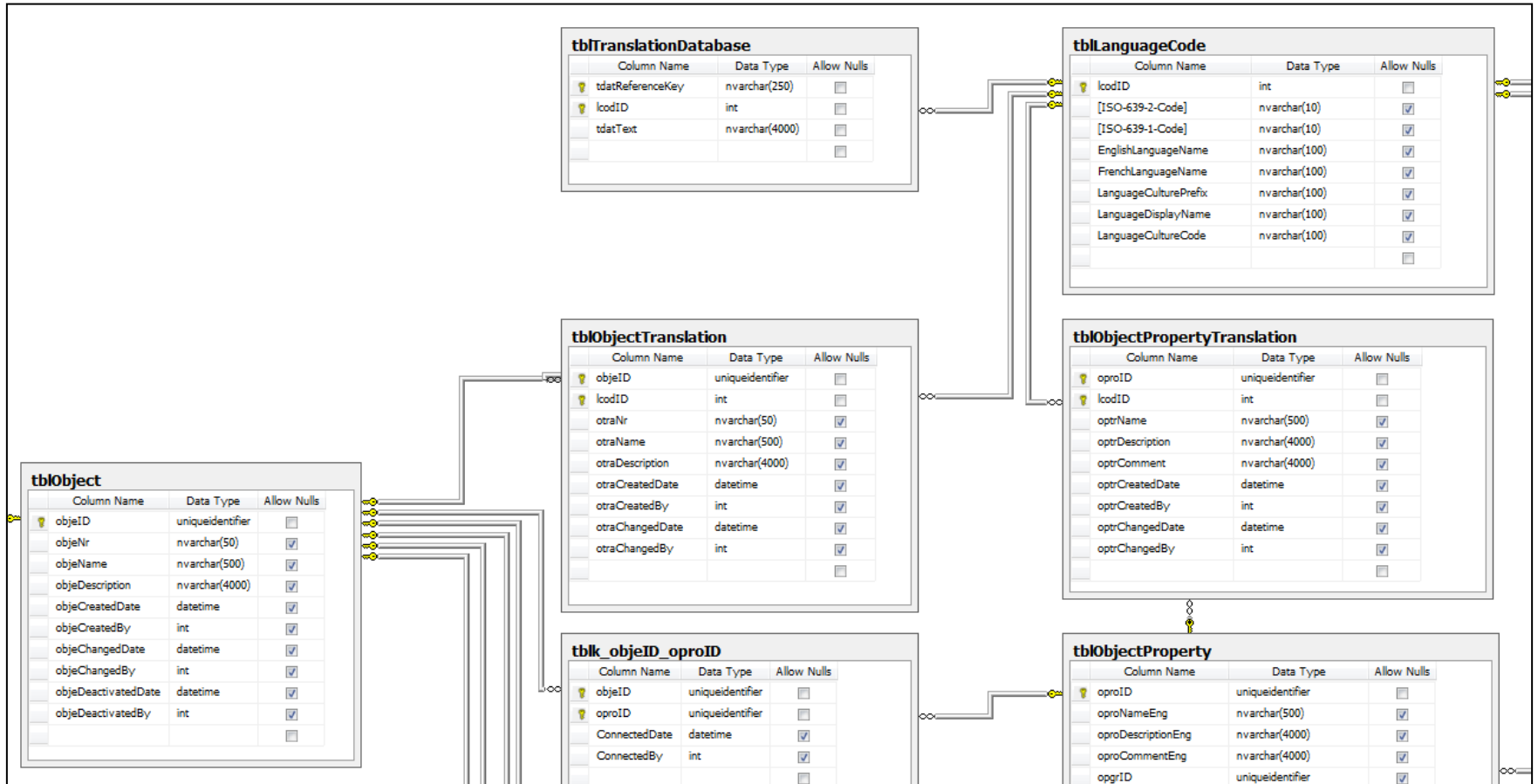


FMie, extract, ER



ER-extract showing the relationship between an object (i.e. product) and an objectproperty (i.e. product property). The extract is also showing the translation-entity for user-input. Each added object (i.e. product) is connected to one or more object properties (i.e. product property), avoiding redundand property-inserts.

FMie, extract, ER



ER-extract showing the relationship between an object (i.e. product) and its (input) translation table.

FMie, extract, ER



ER-extract showing the relationship between an object (i.e. product) and its mapping to an IFC-entity (imported entities)

Snapshots from the Access-based pilot DB,
where we test out relationships and "user interface"

UI example



The image shows a web browser window titled "Log in". The browser's address bar is empty. The page content features a header with "FMie" on an orange background and "login" on a dark grey background. Below the header, there are two input fields: "User name" and "Password". A blue "Log in" button is positioned below the password field. The browser window includes standard window control buttons (minimize, maximize, close) in the top right corner.

Log in

FMie login

User name

Password

Log in

UI example

FMie

Proof of concept

About FMie

Menu

Reports

What FMie wants to achieve is to supply the IFC4 with properties for technical systems or products. This will without a doubt extend the usage value of BIM and IFC. To achieve this, new unique defined properties for Facility management has to be defined and related to a relevant IFC object, Property set or quantity set. A clear and unique property definition is also crucial for the different software vendors to have their software easily communicate on the same model at the same time without having to map different context together. The project has now developed a web-application for use in producing and delivering a list of proposed new Property names for Facility Management.



UI example

FMie

Proof of concept

About FMie

Menu

Reports

Objects and IFC 4 entities

Objects and properties



UI example

FMie

Objects and properties

Search property: 

Objects	
Object name	Object description
Pump	Water pump
Fan	Ventilation fan
Lamp	Lamp with light ball
*	

Available object property		
Property name	Property group	Unit
Power	Electricity	W
Air flow	Air	m ³ /h
Waterflow	Water	l/s
*		

Connected property IFC4			
EntitetIFC4	BuildingSmartEgenskap	BuildingSmartEgenskap	BuildingSmartEgei
IfcPump	Pset_Condition	AssessmentDescription	Determines the state
IfcPump	Pset_Condition	AssessmentDate	Determines the state
IfcPump	Pset_Condition	AssessmentCondition	Determines the state
IfcPump	Pset_PumpPHistory	RotationSpeed	Pump performance hi
IfcPump	Pset_PumpPHistory	Flowrate	Pump performance hi
IfcPump	Pset_PumpPHistory	OverallEfficiency	Pump performance hi
IfcPump	Pset_PumpPHistory	PressureRise	Pump performance hi
IfcPump	Pset_PumpPHistory	MechanicalEfficiency	Pump performance hi
IfcPump	Pset_PumpPHistory	Power	Pump performance hi
*			

Connected object property FMie	
Property	Property group
Current	Electricity
Surface temperature	Temperatur
Voltage	Electricity
*	



UI example

FMie

FMie objects and IFC4 entities

Search IFC4 entity: 

FMie objects	
Object name	Object description
Pump	Water pump
Fan	Ventilation fan
Lamp	Lamp with light ball
*	

IFC4 entities	
IFC4 entity	Pset
IfcDistributionPort_SEWAGE	Pset_DistributionPortTypeSewage
IfcDistributionPort_SEWAGE	Pset_DistributionPortTypeSewage
IfcDistributionPort_SEWAGE	Pset_DistributionPortTypeSewage
IfcDistributionPort_SEWAGE	Pset_DistributionPortTypeSewage
IfcDistributionPort_SEWAGE	Pset_DistributionPortTypeSewage
IfcFurniture_TABLE	Pset_FurnitureTypeTable
IfcFurniture_TABLE	Pset_FurnitureTypeTable
IfcRailing	Pset_RailingCommon
IfcRailing	Pset_RailingCommon
IfcRailing	Pset_RailingCommon
IfcRailing	Pset_RailingCommon
IfcRailing	Pset_RailingCommon
IfcFan	Pset_FanTypeCommon
IfcFanType	Pset_FanTypeCommon
IfcFan	Pset_FanTypeCommon
IfcFanType	Pset_FanTypeCommon
IfcFan	Pset_FanTypeCommon
IfcFanType	Pset_FanTypeCommon
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