

European forum for energy Business Information eXchange

August 28<sup>th</sup>, 2020

ETC – ebIX® Technical Committee

# Minutes ETC meeting, August 25th, 2020

Date: Tuesday August 25th, 2020 10:00 - 12:00 and 13:00 - 15:00 Time: Place: GoToMeeting **Present:** Fre, TenneT Jan (NL), EDSN Jan (SE), Svenska kraftnät Kees, TenneT Ove, Edisys Appendixes: Appendix A, MRs for WG16; Appendix B, Status for new BIMs from EBG; Appendix C, Proposed/agreed changes to the ebIX<sup>®</sup> Business Information Model 2020.A; Appendix D, Suggestions for handling renaming MP-terms into AP-terms;

Attachment: ETC workplan (see ebIX<sup>®</sup> file manager at <u>https://filemanager.ebix.org/#</u>)

## 1 Approval of agenda

The agenda was approved with the following additions:

- Status report from IEC meeting, from Jan (SE), see item 3.3.
- Request from EBG for a new Response Reason Description Code, see item 12.1 under AOB.

During this item Ove informed that Andreas Holmquist from the Norwegian Elhub has been added to the ETC mailing list as an observer.

## 2 Minutes from previous meeting

The minutes from previous meeting were approved with the following comments:

• We should be better to make (write down) conclusions after our discussions.

#### 3 Resolve ebIX<sup>®</sup>/IEC issues

- 3.1 Making a European Style Downstream Market Profile (ESDMP)
- 3.1.1 Status for the Dutch pilot projects.

From Kees July 1<sup>st</sup>:

This week's wg16-meeting has been cancelled and I nevertheless had a need to discuss with others how to proceed with regard to the two alternative approaches we have now on the table (one the original making use of TimeSeries and Time\_Period and the second based on Jan (SE) investigation based on Series and using TimeSeries to inherit from for the top root-class). So, I have used this morning's ENTSO-E CIM EG ESMP-subgroup for trying to get some comments and/or preferences. The conclusion this morning was, that the group prefers option 2 (based on Series). So, although personally I still prefer option 1, because it allows for a similar timeseries for up- and downstream in case of one-to-one relations, I suggest we go for option 2 based on the reactions so far. The consequence will be a continued split between up- and downstream formats, but so be it. We have been talking about a separate ESDMP already anyhow.

So, in The Netherlands we will propose an XML-schema based on option 2 in line with this morning's ESMP meeting and with our ebIX ETC last week Friday.

Looking forward to your reactions!

# Consequences:

- Time series will be different in the downstream market and the upstream market. I.e. the ESMP TimeSeries class is not used in the downstream market, only the Series class, that may be repeated for each "type of time series" for an AP.
- One advantage with using the Series class is that we can use the same structure for a response to a request for measure data, i.e. that we are able to reference an earlier received document.

There was a discussion if we shall decide to always use the Series class in the downstream market measure exchanges, and then have different structure in the downstream and the upstream markets (which anyway is unavoidable when there is a requirement to be able to have an extra level in the document structure to be able to handle several time series for an Accounting Point).

## Action:

- Jan (SE) and Ove will try convincing the Nordic NMEG to agree to always using Series for measure data;
- Kees will try getting a written confirmation from CIM EG that they also prefer using Series for measure data.

# 3.1.2 Proposal for ebIX<sup>®</sup> principles for Message Assembly based on IEC CIM ABIEs

Kees presented a Dutch proposal for ebIX<sup>®</sup> principles for Message Assembly based on IEC CIM ABIEs, which is expected to be 99% of what is needed, i.e. the major part of what was presented will be implemented in the Netherlands. When doing this Dutch project, they stumbled over some questions. They think that the answer to these questions require some (new) ebIX<sup>®</sup> answers:

- How do we qualify an associated IEC object when needed?
  - ABIE-class: qualified by an additional qualifying name in front of the existing name + an underscore.

## Decision:

 Yes, but we need some rules for when to qualify an «ABIE», an «ASBIE» or an "Type attribute" • ASBIE-role name: qualified by an additional qualifying name in front of the existing name + an underscore

#### Decision:

 Yes, but we need some rules for when to qualify an «ABIE», an «ASBIE» or an "Type attribute"

We should have some rules for when to qualify classes, associations and/or using a "Type attribute". There are however already some rules in the "CIM Modeling Guide" and Becky (and more) have homework on investigation this.

Jan (SE) noted that he in general prefer using an attribute instead of qualifying «ASBIE» and/or «ASBIE», such as for the classes WeekMax\_Quantity, Max\_Quantity, RestVolume\_Quantity and Volume\_Quantity, where the attribute Type could be used instead of the qualifier. However, an argument for using the qualifier, as done in the Dutch proposal, is that you can have different associations and different cardinality for each class.

#### Action:

- o Jan (SE) and Kees will ask Becky for a status before the ETC meeting September 10<sup>th</sup>.
- How do we create a message assembly?
  - Do we keep following the UN/CEFACT way of creating a message out of Core Components as we agreed to do in our meetings in June? (use a message assembly as the root class, added to the payload)

## Discussion:

 There was a question if we can use CIMConteXtor and CIMSyntaxGen if we add to the «MA» Contextual model.

#### Decision:

- To be further investigated, including how this comply with the IEC 62325 standards.
- Jan (SE) and Kees will bring the question on how to use the «MA» to WG16.
- How do we specify an Acknowledgement and an Error Report as a response to notifications?
  - Do we use the structure of the sent message? Or we reserve this for request-response transaction patterns?
  - Do we use the anomaly report and the confirmation report (maybe in our own slightly different/simplified way)?
  - Do we create an own version for these responses?

#### Action:

 Jan (NL) and Kees will come up with a proposal for an Acknowledgement report to be used for both positive and negative response, before next meeting.

Jan (NL) mentioned that the Dutch implementation is using UN/CEFACT NDR, except that all code lists is joined in one schema, however not imported to the payload schema.

## Conclusion:

• We will have a discussion at the next meeting on how to implement code lists. A solution must be approved by ebIX<sup>®</sup> Forum.

## 3.1.3 <u>Status for the Nordic pilot projects.</u>

The Nordic NMEG CIM-XML Subgroup has made CIM mapping documents for the Danish downstream market, completed for three documents and including code list schemas for all relevant codes:

- 1. AP characteristics (master data)
- 2. Measure Data for a Metering Point
- 3. Aggregated Time Series

Further, Ove informed that non-flattened xml schemas can be generated with CIMSyntaxGen if generated from the contextual model instead of from the assembly model.

#### 3.2 New MRs to WG16 based on Dutch and Nordic CIM pilot projects

Due to lack of time, the item was postponed until next meeting.

#### 3.3 Status report from IEC meeting, from Jan (SE)

This item is a status report from Jan (SE). The item was not handled during the meeting but is included in the minutes for information – not to be continued.

#### From Jan (SE) July 9th:

The ebIX<sup>®</sup> maintenance request was reviewed at the WG16 meeting July 9<sup>th</sup>, and the result of the discussion was this:

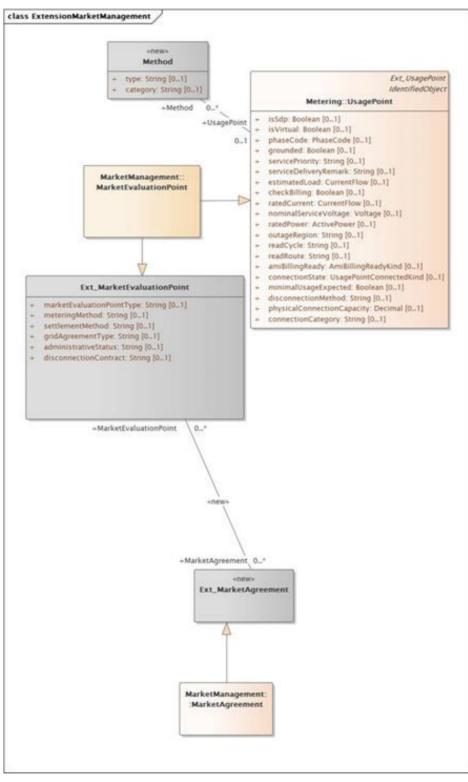
- Add a new class, called xxxxMethod, with two attributes telling the category and type of method (category = settlement, metering, disconnection; type = non-profiled, profiled, continuous, noncontinuous, not metered, ...)
  - a. Associate that class to UsagePoint (many xxxxMethods, but just 0..1 UsagePoint)
  - b. I.e. remove settlementMethod and meteringMethod from the MarketEvalutationPoint
  - c. And remove disconnectionMethod from UsagePoint
  - d. Question: What should be the prefix before Method in order to be more specific than just "Method"? (And what should be the description of the new class and its attributes.)

#### *Comment from Ove:*

- Sound like a good idea but bear in mind that the "type" will include a mixture of codes that cannot be used for all "categories". We had earlier within ebIX® a "Reason" code list that combined "Reason for transaction codes" and "Response reason codes", which after a while became so messy that we split it into two code lists "Response Reason Description Code" and "Business Reason Code".
- If kept, Usage Point Methods (plural) may be an alternative for name.

## Reply from Jan (SE):

 The class name cannot be plural, that would be against one of the rules in the (preliminary) CIM Modelling guide ("Rule 42: All class names shall be singular form of a utility domain concept").



- 2) Addition of marketEvaluationPointType was agreed (however not discussed perhaps it just should be an attribute called "type"?)
- 3) Addition of a administrativeStatus was agreed, however the description should be more clarified telling that for instance that there could be a physical connection, but the status of the MarketEvaluationPoint is (for a short time of period) "inactive", and meanwhile the energy volumes will be handled as losses.
- 4) Instead of adding an attribute disconnectionContract to MarketEvaluationPoint, the class MarketAgreement will be associated with MarketEvaluationPoint. However, it was not time enough to look into the details of which attribute to use.

The item was further discussed at a WG16 meeting July 17<sup>th</sup>. The result is that Becky will go further and ask WG14 about adding the class with the (preliminary) name UsagePointMethod. It will be brought up at a joint modelling meeting (probably) in September. And/or at a joint WG13-14-16 meeting preliminary scheduled for the week starting September 28 (or perhaps the week before – but I suggested the second week of the two).

Jan (SE) suggestions for definitions of the class and its attributes:

- Category: would be "settlement, metering, disconnection, ..."
  - The "type" will, in implementations, contain codes telling if the type is:
    - o continuous, non-continuous, not-metered, calculated, profiled, non-profiled, remote, manual, ...
    - It is not obvious which type code that may be used together with which category code it is a mixture of fruits, vegetables and berries in the same box...
- Draft definitions: A set of characteristic methods for a UsagePoint.
  - Category: Specifies the different categories of Method for an associated UsagePoint, like disconnection, settlement and metering.
  - Type: Specifies, together with the category, the type of Method for an associated UsagePoint, like remote (*disconnection*), manual (*disconnection*), profiled (settlement), and continuous (metering).

Jan (SE) suggestions for definitions of the attributes that remains within MarketEvaluationPoint:

- marketEvaluationPointType
  - Probably just called type
  - Suggested definition: Specifies the direction of the active energy flow for the Market Evaluation Point(*s*), such as consumption, production or combined.
- administrativeStatus

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- Suggested definition: Specifies whether (or not) the MarketEvaluationPoint is active part of the imbalance settlement. E.g. if still physically connected, but inactive in the market, the energy volume for the MarketEvaluationPoint will be part of the losses in the grid.
- ExtensionMetering

   ExtensionMarketManagement::

   Ext\_MarketEvaluationPoint

   +
   marketEvaluationPointType: String [0..1]

   +
   administrativeStatus: String [0..1]
- [The physical status is given by the attribute connectionState in UsagePoint.]

And, finally, Jan (SE) suggestions for new attribute in class MarketAgreement (disconnectionContract -> MarketAgreement):

• Add an association from MarketAgreement to MarketEvaluationPoint

- Suggested definition was: Indicates if there is a contract at the MarketEvaluationPoint for disconnection as a result of the demand side management or the load management for the MarketEvaluation-Point. The element is Boolean and is used for both gas and electricity.
- There is no existing boolean attribute within MarketAgreement
  - Suggestion: add a new boolean "disconnectionContract"
  - Draft definition: "Indicator if there is a contract at the MarketEvaluationPoint associated with this MarketAgreement for disconnection ... [etc.]

There were no objections to what Jan presented.

See also PowerPoint presentation from Jan (SE).

The result is added to Appendix A.

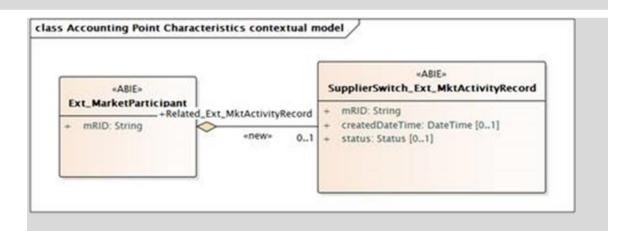
Item closed.

# The meeting concentrated on item 3.1, hence the rest of the agenda until item 11 was postponed, probably until the ETC GoToMeetings planned on September 15<sup>th</sup>.

#### 3.4 Energy Supplier and related Supply Start Date

In the Nordic countries we see the need to relate a "Supply Start Date" to the Energy Supplier in an AP in the Alignment of AP characteristics process, hence the following is proposed to be discussed:

• Within ebIX<sup>®</sup> ETC let us look at the UseCases behind the suggested association between MarketParticipant and MktActivityRecord. Do we find many-to-many-relations?



- Typically, we find need to specify both an Energy Supplier and a Balance Responsible Party for a MktActivityRecord.
- And I would guess a datahub has a list of e.g. active events per a Market Participant i.e. several MktActivityRecord per actor. But is that sent? Or, a better question: is that kind of relation used in an exchange? I.e. will we need the many-to-many relation in CIM?

0

See also "Associating a supplier switch date with the supplier.pptx".

# 3.5 Status for MRs to WG16, see 0

Should these be added to 0?

Item	Date					
#	Requested	Class	Attribute	Description	Discussion Status	Model Status
			MunicipalityDetail; use datatype of "TownDetail". Description "May be used for local addressing"	Need to associate multiple towns with an address; question is how many; one or more, need to clarify		Next step, participate in
16	3/5/2020 - Folsom	Street- Address	TownDetail; Description update "Town detail.	the true/final requirements. Fulfills a need for multiple taxing entities per address.	<b>Discussed in WG14</b> Jun 2nd Mtg: Proposal coming from Part 6	joint virtual session where Part 6 will present their proposal.
					Use of PersonRole could represent the various different types of Contacts (Person).	
			streetAddress; datatype (StreetAddress)		Confirmed with Kees diagram. Discussed in WG14	Next step, participate in joint virtual session where
17	3/5/2020 - Folsom	Person	postal Address; datatype (Street Address)	Add street address and postal address to the class Person.	Jun 2nd Mtg: Part 6 needs to provide a proposal	Part 6 will present their proposal.

# 3.6 Where to put the ebIX<sup>®</sup> element Energy Industry Classification Type (Electricity or Gas)?

Continued action:

• Jan (SE) will make an ebIX<sup>®</sup> MR to WG16 for addition of Energy Industry Classification Type (Electricity or Gas) to the Market Document class (or another class) in 62325.

## 3.7 How to add additions to CIM

Status for "how to add additions to CIM".

#### 3.8 Procedures for how to align IEC MRs between EBG and ETC

At the EBG meeting June 15<sup>th</sup>, ETC was asked to draft procedures for how to align IEC MRs between EBG and ETC. The request is based on a MR from NMEG to EBG.

## 4 Problems with TT (Eclipse)

Continued action:

• Ove will send a reminder to Paweł at In4Mate.

#### 5 Review of BIMs from EBG

See status in Appendix B.

#### 6 Resolve HG issues

- 6.1 Status for new project for alignment of Area configuration
- 6.2 BRP vs Energy Trader

Kees suggest we "should think again on the inheritance relations. Now we pretend that a Trader is different from a Balance Responsible Party and the Trader is explicitly used for not being a Balance Responsible Party, but also when you look at the characteristics of a Trader in UML, it is everything a BRP is".

## 6.3 Issues with the HRM module of the ebIX<sup>®</sup> model

How to show which roles an «Initiator» or «Entitled Party» is a generalisation of?

- 7 Status for harmonisation of the electricity and gas role models
- 8 ebIX<sup>®</sup> Business Information Model 2020.A
- 8.1 Use of XOR in combination with cardinalities

#### Action:

- Kees will make a proposal for update the "ebIX<sup>®</sup> introduction to Business Requirements and Information Models" with a chapter explaining the relationship between cardinalities and OR/XOR, including:
  - o XOR and cardinality of [1] lead to a required choice in the XML schema;
  - o XOR and cardinality of [0..1] lead to an optional choice in the XML schema.

#### 8.2 Reporting interval

From Jan (SE):

In Sweden we are reporting (currently in the PRODAT messages, and in the future to/from the datahub) several things about the accounting point. Four or five things of those that we intend to report to/from the datahub I don't find in ebIX.

One of these things is the "Reporting interval" that we today send in PRODAT. I.e. the values are typically collected daily or monthly. But when are they reported? You are, depending on some rules, allowed just to send the hourly values once a month.

For accounting points part of the imbalance settlement, they must be reported daily (i.e. quarterly values or hourly values). For accounting points part of the reconciliation, hourly values might be reported daily, but you are allowed to send them once a month. But: as a supplier I want to know that. Will I get the values once a month, or will I get them daily? For accounting points part of the reconciliation, monthly values will be sent once a month. (Perhaps we also have some rules when sending values to the customer – perhaps using the same standard and format as sending to suppliers – that those values might be sent more seldom.)

Anyhow, we then have an attribute that can be translated into "Reporting interval" or "Reporting frequency". Has this been discussed in ebIX? Perhaps it is only we in Sweden that informs the supplier how often he will get timeseries for a specific accounting point. If so, this attribute – and some others – will be of the kind "local extension to CIM" (whenever we will use CIM....).

# Reply from Ove:

I believe we have these elements:

Scheduled Meter Reading Date	The indication of when the regular meter reading is scheduled.
Meter Reading Periodicity	The length of time between the regular meter readings.

## Reply from Jan (SE):

In today's PRODAT messages we have:

- First meter reading Date, optional. And I don't think in use.
- Report start date, optional (will tell when you first start to send the metered values). I don't think it is in use.
- Meter reading frequency, required. Back in 2005 we changed this from telling how often you read the values to how often you send them.

## In the datahub we will (at least) have

- Metering interval
- Reporting interval

I.e. how often will you do the metering (every 15 minutes, once an hour, monthly). And, how often will you send those values (once a day, every month...).

If "Meter Reading Periodicity" in ebIX<sup>®</sup> is used for telling how often you report the values, the name is not good. But perhaps then it is implemented differently in different countries... And how can we in the ebIX<sup>®</sup> model tell that we e.g. have quarterly values? (or hourly, monthly, yearly).

#### 8.3 Comment to Settlement Method Code E15

Gerrit has noted that the descriptions of Settlement Method Codes are not very clear:

•201¤	Flex·settled¤	Consumption or production from small continuously read Accounting Points
•E15¤	Non-profiled· <del>netted</del> ·with·special· rules¤	Metering Accounting point with both consumption and /or production with special settlement rules.

The first says it is consumption or production, the latter states it is an AP. I at least would expect that it is something with settlement and the way how it is done. The current definitions do not make much sense.

## 8.4 Continue review and update of version 2020.A

Review of proposed updates in Appendix C and Appendix D.

#### 9 Code lists from Magic Draw model in Word format

Review of proposal for introduction - Some questions:

- 1. What does the text of the code list "ebIX Aggregated for Maintenance" mean?
- 2. Why do we have an Agreement Type Code both under "ebIX Aggregated for Maintenance" and "ebIX<sup>®</sup> Subset"?
- 3. There are some deprecated code lists, e.g. from the Netherlands should these be removed?
- 4. How to deal with deprecated codes in the Word code list?
- 5. How to deal with "used by"?
- 6. How to deal with national customisation of codes do we need a rule stating that national codes should avoid an "E" as a prefix?

#### **10** Review of ETC workplan

See ebIX<sup>®</sup> File Manager.

#### 11 Next meetings

- Thursday September 3<sup>rd</sup>, 2020, 13:00 14:30, GoToMeeting
- Thursday September 10<sup>th</sup>, 2020, 13:00 14:30, GoToMeeting
- Tuesday September 15<sup>th</sup>, 2020, 10:00 11:30 and 13:00 14:30, GoToMeeting
- Wednesday and Thursday November 18<sup>th</sup> and 19<sup>th</sup>, 2020, BDEW's offices in Berlin.

All meeting starts 09:00 the first day and end at 16:00 unless otherwise explicitly stated.

# **12 AOB**

12.1 Request from EBG for a new Response Reason Description Code

Due to lack of time, the item was postponed.

# Appendix A MRs for WG16

# A.1 Event class

The request for an Event class has been submitted as PowerPoint presentation and is part of the TR.

# To be followed up.

#### A.2 MRs related to new class MarketEvaluationPointCharacteristic

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
ebIX® 2019/1	Market Evaluation Point Characteristic	Add a new MarketEvaluationPointCh aracteristic class	The relevant administrative characteristics of a Market Evaluation Point.	Submitted to WG16 <b>20200219:</b> Will be withdrawn. Instead of creation of a new class MarketEvaluationPointCharacteristic, we will ask for addition of the attributes to MarketEvaluationPoint <b>20200221:</b> Withdrawn. Item closed
ebIX® 2019/2	Balance Group ID	Add new association from MarketEvaluationPoint class [01] to the Domain class [01], where the association end name at the Domain side is BalanceGroup		TBD

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
ebIX® 2019/3	Metering Point Type	Add marketEvaluation- PointType attribute (string) to the MarketEvaluation- PointCharacteristic class	A code specifying the direction of the active energy flow for the Market Evaluation Point(s), such as consumption, production or combined.	Submitted to WG16 <b>20200219:</b> Instead of creation of a new class MarketEvaluationPointCharacteristic, we will ask for addition of the attributes to MarketEvaluationPoint.
				20200221:
				MR sent to WG16.
				20200709:
				Reviewed at the WG16 meeting:
				Addition of marketEvaluationPointType was agreed (however – not discussed – perhaps it just should be an attribute called "type"?)
				20200717:
				Further discussed at a WG16 meeting. Jan (SE) suggestions for definitions of the attributes that remains within MarketEvaluationPoint:
				<ul> <li>marketEvaluationPointType         <ul> <li>Probably just called type</li> <li>Suggested definition: Specifies the direction of the active energy flow for the Market Evaluation Point(s), such as consumption, production or combined.</li> </ul> </li> <li>administrativeStatus</li> </ul>

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
				<ul> <li>Suggested definition: Specifies whether (or not) the MarketEvaluationPoint is active part of the imbalance settlement. E.g. if still physically connected, but inactive in the market, the energy volume for the</li> <li>ExtensionMarketManagement:: Ext_MarketEvaluationPoint</li> <li>marketEvaluationPoint</li> <li>+ marketEvaluationPointType: String [01]</li> <li>+ administrativeStatus: String [01]</li> <li>MarketEvaluationPoint will be part of the losses in the grid.</li> <li>[The physical status is given by the attribute connectionState in UsagePoint.]</li> </ul>
ebIX® 2019/4	Metering Method	Add new meteringMethod attribute (string) in the MarketEvaluation- PointCharacteristic class [01]	A code specifying how the energy volumes are established for the Market Evaluation Point(s), such as continuous- non-continuous- or not-metered.	Submitted to WG16 <b>20200219:</b> Instead of creation of a new class MarketEvaluationPointCharacteristic, we will ask for addition of the attributes to MarketEvaluationPoint. <b>20200221:</b> MR sent to WG16.

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
ebIX® 2019/5	Settlement Method	Add new settlementMethod attribute (string) in the MarketEvaluation- PointCharacteristic class [01]	A code specifying how the energy volumes are treated for settlement for the Market Evaluation Point(s), such as profiled or non-profiled.	Submitted to WG16 <b>20200219:</b> Instead of creation of a new class MarketEvaluationPointCharacteristic, we will ask for addition of the attributes to MarketEvaluationPoint.
		[0.1]		<b>20200221:</b> MR sent to WG16.
				20200709:
				Reviewed at the WG16 meeting:
				Add a new class, called xxxxMethod, with two attributes telling the category and type of method (category = settlement, metering, disconnection; type = non-profiled, profiled, continuous, non-continous, not metered,)
				<ul> <li>a. Associate that class to UsagePoint (many xxxxMethods, but just 01 UsagePoint)</li> <li>b. I.e. remove settlementMethod and meteringMethod from the MarketEvalutationPoint</li> <li>c. And remove disconnectionMethod from UsagePoint</li> <li>d. Question: What should be the prefix before Method in order to be more specific than just "Method"? (And what should be the description of the new class and its attributes.)</li> </ul>
				20200717:
				Further discussed at a WG16 meeting. The result is that Becky will go further and ask WG14 about adding the class with the (preliminary) name UsagePointMethod. It will be brought up at a joint modelling meeting (probably) in September. And/or at a joint WG13-14-16 meeting preliminary scheduled for the week starting September 28 (or perhaps the week before – but I suggested the second week of the two).
				Jan (SE) suggestions for definitions of the class and its attributes:
				<ul> <li>Category: would be "settlement, metering, disconnection,"</li> </ul>

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
ebIX® 2019/6	Scheduled Meter Reading Date	Add new scheduledMeterReadingD ate attribute (string) in the MarketEvaluation- PointCharacteristic class [01]	The indication of when the regular meter reading is scheduled.	<ul> <li>The "type" will, in implementations, contain codes telling if the type is:         <ul> <li>continuous, non-continuous, not-metered, calculated, profiled, non-profiled, remote, manual,</li> <li>It is not obvious which type code that may be used together with which category code – it is a mixture of fruits, vegetables and berries in the same box</li> </ul> </li> <li>Draft definitions: A set of characteristic methods for a UsagePoint.         <ul> <li>Category: Specifies the different categories of Method for an associated UsagePoint, like disconnection, settlement and metering.</li> <li>Type: Specifies, together with the category, the type of Method for an associated UsagePoint, like remote (disconnection), manual (disconnection), profiled (settlement), and continuous (metering).</li> </ul> </li> <li>Submitted to WG16     </li> <li>20200219:         <ul> <li>Instead of creation of a new class MarketEvaluationPoint-Characteristic, we will ask for addition of the attributes to MarketEvaluationPoint.</li> </ul> </li> <li>20200221:         <ul> <li>MR sent to WG16.</li> <li>20200326:</li> <li>Will be discussed with WG14 in future weekly meeting(s). Suggested to be a string.</li> </ul> </li> <li>20200526:         <ul> <li>WG14: Agreed on the addition of a new attribute in UsagePoint; nextReadingDate.</li> </ul> </li></ul>

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
ebIX® 2019/7	Meter Reading Periodicity	Add new meterReading- Periodicity attribute	The length of time between the regular meter readings.	Submitted to WG16 20200219:
		(string) in the MarketEvaluation- PointCharacteristic class [01]		Instead of creation of a new class MarketEvaluationPointCharacteristic, we will ask for addition of the attributes to MarketEvaluationPoint.
		[]		20200221:
				MR sent to WG16.
				20200326:
				Will be discussed with WG14 in future weekly meeting(s). Probably readCycle in UsagePoint can be used.
				20200520:
				<i>Jan (SE):</i> To be verified: Can the attribute readCycle from UsagePoint be used?
ebIX®	Metered Data	Add new meteredData-	A code specifying how a	Submitted to WG16
2019/8	Collection Method	CollectionMethod attribute (string) in the MarketEvaluation- PointCharacteristic class [01]	Metered Data Collector	20200219:
	Method		collects data from the Meter for the Market Evaluation Point, such as Automatic or	Instead of creation of a new class MarketEvaluationPointCharacteristic, we will ask for addition of the attributes to MarketEvaluationPoint.
		[]	Manually.	20200221:
				MR sent to WG16.
				20200326:
				The attribute, amrSystem, in class EndDevice, is an alternative. To be further discussed.
				20200526:
				WG14: AMR is linked to a meter, not to a UsagePoint. amiBillingReady - refers to the meter is ami ready for billing purposes. amrSystem indicates the EndDevice is an AMR (ITRON AMR System).
				Boolean flag could be added to EndDevice - isAMR.

MR # eblX	K <sup>®</sup> element	To do	Definition	Status
ebIX® Grid 2019/9 Agree Type	eement	Add new gridAgreementType attribute (string) in the MarketEvaluation- PointCharacteristic class [01]	Specification of type of grid contract, such as if the contract is directly between the Grid Company and the Grid Customer, or through the Energy Supplier.	Submitted to WG16 20200219: Instead of creation of a new class MarketEvaluationPointCharacteristic, we will ask for addition of the attributes to MarketEvaluationPoint. 20200221: MR sent to WG16. 20200403: Suggest a new attribute to UsagePoint called "Agreement type", but with the description suggested form ebIX. Calling it "Agreement type" makes it a bit more general than "Grid Agreement Type". 20200526: Use inherited "type" attribute from Document. Add a new attribute "agreementType" in UsagePoint to describe the type of CustomerAgreement (Contract) associated with the UsagePoint. This new attribute would have a String datatype - with the capability of using a coded string (outside of UML) defined as "DSO" or "Supplier". Within IEC62325 the class MarketEvaluationPoint will inherit the new "agreementType" from UsagePoint. No model changes necessary.

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
ebIX® 2019/10	Administrative Status	Add new administrativeStatus attribute (string) in the MarketEvaluation- PointCharacteristic class [01]	A code specifying whether (or not) the Market Evaluation Point is active part of the imbalance settlement.	<ul> <li>Submitted to WG16</li> <li>20200219: <ul> <li>Instead of creation of a new class</li> <li>MarketEvaluationPointCharacteristic, we will ask for addition of the attributes to MarketEvaluationPoint.</li> </ul> </li> <li>20200221: <ul> <li>MR sent to WG16.</li> </ul> </li> <li>20200709: <ul> <li>Reviewed at the WG16 meeting:</li> <li>Addition of a administrativeStatus was agreed, however the description should be more clarified telling that for instance that there could be a physical connection, but the status of the MarketEvaluationPoint is (for a short time of period) "inactive", and meanwhile the energy volumes will be handled as losses.</li> </ul> </li> </ul>
ebIX® 2019/11	Contracted Connection Capacity	Add new contracted- ConnectionCapacity attribute (string) in the MarketEvaluation- PointCharacteristic class [01]	Quantitative information about the capacity of the connection that is contracted for the Market Evaluation Point.	Submitted to WG16 20200219: Instead of creation of a new class MarketEvaluationPointCharacteristic, we will ask for addition of the attributes to MarketEvaluationPoint. 20200221: MR sent to WG16. 20200602: WG14: New attribute contractedConnectionCapacity (DecimalQuantity) Description: "It is the contractually agreed capacity that the affiliated party reasonably expects to need at most at any point in the year for this metering point. The attribute ContractedCapacity is for large consumption metering points only." Add the new attribute to CustomerAgreement.

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
ebIX® 2019/12	Contracted Connection Capacity Measure Unit	Add new contracted- ConnectionCapacity MeasureUnit attribute (uncefactUnitCode) in the MarketEvaluation- PointCharacteristic class [01]	The unit of measure used for the Contracted Connection Capacity.	Submitted to WG16 20200219: Instead of creation of a new class MarketEvaluationPointCharacteristic, we will ask for addition of the attributes to MarketEvaluationPoint. 20200221: MR sent to WG16. 20200326: Could be discussed with WG14 to change cardinality between UsagePoint and CustomerAgreement to use the inherited Document.type attribute. 20200520: Jan (SE): Use a data type for contractedConnectionCapacity having a unit, the suggestion would be DecimalQuantity

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
ebIX® 2019/13	Disconnection Contract	Add new disconnection- Contract attribute (Boolean) in the MarketEvaluation- PointCharacteristic class [01]	Disconnection Contract indicates if there is a contract at the Market Evaluation Point for disconnection as a result of the demand side management or the load management for the Market Evaluation Point. The element is Boolean and is used for both gas and electricity.	<ul> <li>Submitted to WG16</li> <li>20200219: <ul> <li>Instead of creation of a new class</li> <li>MarketEvaluationPointCharacteristic, we will ask for addition of the attributes to MarketEvaluationPoint.</li> </ul> </li> <li>20200221: <ul> <li>MR sent to WG16.</li> </ul> </li> <li>20200709: <ul> <li>Reviewed at the WG16 meeting: <ul> <li>Instead of adding an attribute disconnectionContract to MarketEvaluationPoint, the class MarketAgreement will be associated with MarketEvaluationPoint. However, it was not time enough to look into the details of which attribute to use.</li> </ul> </li> <li>20200717: <ul> <li>Further discussed at a WG16 meeting. Jan (SE) suggestions for new attribute in class MarketAgreement (disconnectionContract -&gt; MarketEvaluationPoint)</li> <li>Add an association from MarketAgreement to MarketEvaluationPoint</li> <li>Suggested definition was: Indicates if there is a contract at the MarketEvaluationPoint. The element is Boolean and is used for both gas and electricity.</li> <li>There is no existing boolean attribute within MarketAgreement -&gt; Suggestion: add a new boolean "disconnectionContract"</li> <li>Draft definition: "Indicator if there is a contract at the MarketEvaluationPoint associated with this MarketAgreement for disconnection [etc.]</li> </ul> </li> </ul></li></ul>

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
ebIX® 2019/14	Energy Label	Add a new EnergyTechnology- AndFuel class in the MarketManagement package.	A class indicating the origin of the energy produced at the related Market Evaluation Point(s).	Planned submitted to WG16 Q1/2020
ebIX® 2019/15	Energy Label	Add a new association from MarketEvaluationPoint class [0*] to the Energy- TechnologyAndFuel class [0*]		Planned submitted to WG16 Q1/2020
ebIX® 2019/16	Technology	Add new technology attribute (string) in the EnergyTechnologyAnd- Fuel class [01]	An indication of the technology of the energy production, or part of the energy production, that is potentially fed into the grid at the related Market Evaluation Point(s). It is advised to use codes from the AIB-EECS-FS05 code list.	Planned submitted to WG16 Q1/2020
ebIX® 2019/17	Fuel	Add new fuel attribute (string) in the Energy- TechnologyAndFuel class [01]	An indication of the fuel used for the energy production, or part of the energy production, that is potentially fed into the grid at the related Market Evaluation Point(s). It is advised to use codes from the AIB-EECS-FS05 code list.	Planned submitted to WG16 Q1/2020

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
ebIX® 2020/18	Metering Grid Area	Add new association from MarketEvaluationPoint class [01] to the Domain class [01], where the association end name at the Domain side is MeteringGridArea	A Metering Grid Area is a physical area where consumption, production and exchange of (electrical) energy can be metered. It is delimited by the placement of meters for period measurement (continuous metering) for input to, and withdrawal from the area. It can be used to establish the sum of consumption and production with no period measurement (profiled Market Evaluation Point s) and network losses.	TBD
ebIX <sup>®</sup> 2020/19	Identification	Use mRID attribute in the Domain class	The unique identification of the Metering Grid Area to which this Market Evaluation Point belongs.	TBD
ebIX® 2020/20	MGA Name	Use name attribute in the Domain class	The name, in clear text, of the Metering Grid Area.	TBD
	Aggregated Reception Station	Add new association from MarketEvaluationPoint class [01] to the Domain class [01], where the association end name at the Domain side is Aggregated- ReceptionStation. <b>Remark</b> : The ARS is expected to be replaced by the CVA, hence to be deprecated from the ebIX® business	An administrative entity that represents one or more reception (and distribution) stations for gas (which are physical installations). This entity functions as the exchange point between grids where calorific value and volumes are established.	TBD

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
		requirements and NOT to be added to CIM.		
	Identification	Use mRID attribute in the Domain class. <b>Remark:</b> The ARS is expected to be replaced by the CVA, hence to be deprecated from the ebIX <sup>®</sup> business requirements and NOT to be added to CIM.	The unique identification of the Aggregated Reception Station to which this Market Evaluation Point belongs.	TBD
ebIX® 2020/21	Calorific Value Area	Add new association from MarketEvaluationPoint class [01] to the Domain class [01], where the association end name at the Domain side is CalorificValueArea	A Calorific Value Area is a predefined set of Market Evaluation Points for which the same established calorific value is applied.	TBD
ebIX® 2020/22	Identification	Use mRID attribute in the Domain class	The unique identification of the Calorific Value Area to which this Market Evaluation Point belongs.	TBD

# A.3 MRs related to additions to the class Usage Point

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
	Connection Status	Already there; Use connectionState attribute in UsagePoint	State of the usage point with respect to connection to the network.	Already approved Item closed.
	Disconnection Method	Already there; Use disconnectionMethod attribute in UsagePoint	Is an indication of how the usage point is physically connected or disconnected.	Already approved Item closed.
	Capacity of the Accounting Point	Already there; Use physicalConnection- Capacity attribute in UsagePoint	Quantitative information about the maximum physical capacity of the connection for the UsagePoint.	Already approved Item closed.
ebIX® 2020/23	Capacity of the Accounting Point	Change the datatype for physicalConnection- Capacity from "Decimal" to "StringDecimal" (to include the unit)		<ul> <li>Action: Jan (SE) will send the DMR to WG16 to be handled at the meeting March 2<sup>nd</sup>.</li> <li>20200221: MR sent to WG16.</li> <li>20200326: Approved, but changed from "StringDecimal" to "DecimalQuantity".</li> <li>Item closed.</li> </ul>
ebIX® 2020/24	Number of phases	Add new numberOfPhases attribute (integer) in the UsagePoint class [01] <b>Remark:</b> We have noted the phaseCode, but it is not clear how it serves our purpose.	The number of phases in the UsagePoint, either 1 or 3.	<ul> <li>Action: Jan (SE) will send the DMR to WG16 to be handled at the meeting March 2<sup>nd</sup>.</li> <li>20200221: MR sent to WG16.</li> <li>20200326: Approved, the attribute phaseCount will be added to UsagePoint. Item closed.</li> </ul>

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
ebIX® 2020/25	Current limitation	Add new currentLimitation attribute (CurrentFlow) in the UsagePoint class [01]	The current limitation, i.e. maximum current or fuse size, for the UsagePoint in Ampere.	<ul> <li>Action: Jan (SE) will send the DMR to WG16 to be handled at the meeting March 2<sup>nd</sup>.</li> <li>20200221: MR sent to WG16. Most likely this change request can be withdrawn.</li> <li>20200326: We will use the existing attribute "ratedCurrent" in UsagePoint". Item closed.</li> </ul>
	Current limitation Measure Unit	Implicit given by the data type (CurrentFlow), which always is Ampere	The measure unit used for the current limitation, i.e. Ampere	
ebIX® 2020/26	connectionCat egory	Rephrase the definition: "A code used to specify the connection category, e.g., low voltage or low pressure, where the usage point is defined."		<ul> <li>Action: Jan (SE) will send the DMR to WG16 to be handled at the meeting March 2<sup>nd</sup>.</li> <li>20200221: MR sent to WG16.</li> <li>20200326: The definition will be updated: "A code used to specify the connection category, e.g., low voltage or low pressure, where the usage point is defined".</li> <li>Item closed.</li> </ul>
<del>ebIX®</del> <del>2020/27</del>	Pressure level	Add new pressureCategory attribute (integer) in the UsagePoint class [01] Remark: In Europe level (high, medium, low) is used,	A code specifying the gas pressure in the grid to which the installation of the UsagePoint is connected.	

MR #	ebIX <sup>®</sup> element	To do	Definition	Status
<del>ebIX<sup>®</sup> 2019/28</del>	MarketEvaluat ionPointChara cteristic	Add new association from MarketEvaluation- Point class [0*] to the MarketEvaluation- PointCharacteristic class [0*]		Submitted to WG16. 20200221: Withdrawn.

# A.4 Candidates for new MRs related to MktActivityRecord

We should make MRs from what still are valid from figure 122 from the TR:

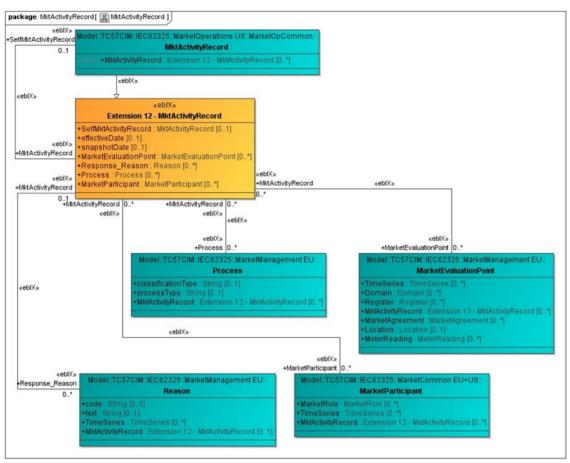


Figure 122 – MktActivityRecord, suggested extensions in CIM

# Appendix B Status for new BIMs from EBG

See draft BIMs, approved BIMs and workplan at the ebIX<sup>®</sup> File Manager.

- 1. Alignment of characteristics for a Customer linked to an AP:
  - o At this meeting we will finalising the associations not yet added:
    - Association from «ABIE» Customer Party to «ABIE» Contact;
    - Association from «ABIE» Customer Party to «ABIE» Domain Location (AP);
    - Association from «ABIE» Customer Party to «ABIE» Metering Point Address;
    - Association from «ABIE» Customer Party to «ABIE» Communication;
    - Association from «ABIE» Contact «ABIE» Communication;
    - Association from «ABIE» Communication to «ABIE» Communication Preference;
- 2. Change of TCR:
  - o The BIM is ready for review.
- 3. Alignment of Metering Configuration Characteristics:
  - o The Business Choreography View is ready for review, but Ove has some questions regarding the Business Information View:
    - How to map Snap Shot Date?
    - Most of the attributes in Meter, Register, Conversion factor, Placement Information and Gateway are missing.
    - We mis a Role Code for ESCO.
    - ....
- 4. Alignment of AP Characteristics:
  - o Notify AP Characteristics:
    - We must remove Voltage Level, Pressure Level and Physical Status Type from «ABIE» AdministrativeMeteringPoint\_Characteristic.
    - The Capacity of AP Measurement Unit in AP Physical Characteristics and Contracted Connection Capacity Measurement Unit in AP Administrative Characteristics are currently mapped to the Energy Product Characteristics Quantity Unit, which requires a Product Code, but since we also use the Energy Product Characteristics in the Reconciliation Information with several Product Types this seems a bit strange (six different Product Types instead of one; Connection Capacity). Should we add MeasurementUnitCommon\_CodeType to unitCode in «BDT» MeasureType instead?
    - Where to map the Capacity of the Accounting Point (in «ABIE» PhysicalMeteringPoint\_Characteristic)?

 The content of the MeteredDataCollectionMethod\_CodeType shoul be MeteredDataCollectionMethodCode (from ebIX<sup>®</sup> Original) and not AdministrativeStatusCode (from ebIX<sup>®</sup> Subset)

MeteredDataCollectionMethod\_CodeType «BDT»
 O +content : ebix:org::Codes::ebIX Assembled::AdministrativeStatusCode [1] «CON»
 O +listIdentifier : ebix:org::Codes::ebIX Assembled::CodeListIdentificationCode [0..1] «SUP»
 O +listAgencyIdentifier : ebix:org::Codes::ebIX Assembled::CodeListResponsibleAgencyCode [1] «SUP»

- Missing a «BBIE» for MGA Name.
- o Request AP Characteristics:
  - How to map Initiator ID?
- o Reject Request AP Characteristics:
  - Ready for review.
- o Request Change AP Characteristics from GAP:
  - Same comments/questions as for Notify MP Characteristics
- o Request Change AP Characteristics from BS:
  - Missing the ID Scheme Type Code + the Reference code qualifier (CEFACT) + the Assembled ID Scheme Type Code (Kees' homework).
- o Request Creation of new AP
  - Missing an association for GAP from MP\_Event to Energy Party
  - Missing an association from MP\_Event to MP Address
  - Document Name Code is missing for all connection documents (Create, Connect, Disconnect and Decommission)
  - The Reason Code should be reviewed for all connection documents (Create, Connect, Disconnect and Decommission)
- o Confirm Request Creation of new AP
  - Missing an association for GAP from Response\_Event to Energy Party

# Appendix C Proposed/agreed changes to the ebIX® Business Information Model 2020.A

# C.1 UN/CEFACT DMR

1) Verify that addition of an ASCC between the ACC Event and the ACC Address is on the list of ebIX® changes to UN/CCL

## Status 20190424:

o Postponed

## C.2 General question for later elaboration

Can we remove the Document Name Code from the ebIX® models?

## Status:

• The question will be kept for later elaboration

# C.3 BRS for Request Change grid responsibility

- a) ETC is asked to find Document Name codes for:
  - o Request change grid responsibility;
  - o Response change grid responsibility;
  - o Notify change grid responsibility;
- b) And Business Reason codes for Change grid responsibility.

# C.4 Requests from EMD

a) How to represent the exchange of calorific value in ABIEs

# C.5 General model updates

- a) Replace the ACCs, BCCs etc. in the current CEFACT Profile with the "CEFACT Profile\_Recast.mdzip" from Belgium and add generalisation from the "ebIX<sup>®</sup> assembled code list" to the related Belgian code list, received from Thibaut.
- b) Make the usage of "Time of Use" and "Meter Time Frame" consistent
  - o Check what is agreed with IEC in the TR
  - o Check what is the significance of "Time of Use"/"Meter Time Frame" in the proposal from Atrias
  - o Make the ebIX® model (Business requirements view and BIES) in line with the Atrias proposal
- c) At previous meeting, the ABIE MeteringPoint\_Characteristic was split into AdministrativeMeteringPoint\_Characteristic and PhysicalMeteringPoint\_Characteristic. Due to this change, both the MDS and the EMD part of the ebIX<sup>®</sup> model must be corrected. Ove had corrected the MDS part, but noted that also the EMD document "Mapping Validated Data for Labeling for Certificate Issuer" needs to be corrected.

#### Homework 20190612:

- o Kees will review the "BRS for Validated Data for Labeling for Certificate Issuer" and prepare a discussion for ETC.
- d) Clean up of not used national enumerations

AdministrativeMeteringPoint_Characteristic
«BBIE»+MeteringPoint_Type : ebix:org::BDT::MeteringPointType_CodeType
«BBIE»+MeteringMethod_Type : ebix:org::BDT::MeteringMethod_CodeType
«BBIE»+SettlementMethod_Type : ebix:org::BDT::SettlementMethod_CodeType
«BBIE»+GridConnectionContract_Type : ebix:org::BDT::GridAgreementTypeDescription_CodeType [01]
«BBIE»+Tax_Type : ebix:org::BDT::CodeType [01]
«BBIE»+AdministrativeStatus_Type : ebbc:org::BDT::Administrative_Status_CodeType [01]
«BBIE»+ContractedConnectionCapacity_Value : ebix:org::BDT::MeasureType [01]
«BBIE»+ScheduledMeterReading_Date : ebix:org::BDT::DateTimeType [01]
«BBIE»+MeterReadingFrequency_Duration : ebix:org::BDT::DurationType [01]
«BBIE»+StandardLoadProfile_Type : ebix:org::BDT::StandardLoadProfile_CodeType [01]
<u>«BBIE»+MeteredDataCollectionMethodCode_Type : ebix:org::BDT::MeteredDataCollectionMethod_CodeType [01]</u>
+MeteringGridArea_Used : ebix:org::ABIE::Domain_Location [01]
+BalanceGroup_Used : ebix:org::ABIE::Domain_Location [01]
+ContractedConnectionCapacity_Included : ebix:org::ABIE::Product_Characteristic [01]
+AggregatedReceptionStation_Used : ebix:org::ABIE::Domain_Location [01]
+CalorificValueArea_Used : ebix:org::ABIE::Domain_Location [01]
+Labelling_Included : ebix:org::ABIE::Generation_Characteristic [0.*]
BBIEs+PhysicalStatus_Type
BBIEs+VoltageLevel_Type
BBIEs+PressureLevel_Type

e) In the file generic\ebIX\_ValidatedDataForBillingEnergy\_2016pA.xsd I read

xsd:schema xmlns:xsd="<u>http://www.w3.org/2001/XMLSchema</u>" xmlns:<mark>rsm</mark>="un:unece:260:data:EEM" ...

and later

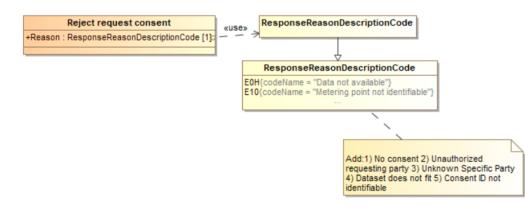
<xsd:element name="ValidatedDataForBillingEnergy" type="crs:ValidatedDataForBillingEnergyType"/>...

<xsd:element ref="crs:Header" minOccurs="0" maxOccurs="1"/>

The namespaces doesn't match. Should be "rsm" or "crs" in both places, not different.

# C.6 Code request from EBG

- 1) For all Reason codes, change (added at ETC meeting 20190212):
  - o Balance Supplier to Energy Supplier;
  - o Metering Point to Accounting Point.
- 2) Add remining Reason codes, ref BRS for Customer consent:
  - a. Dataset does not fit
  - b. Consent ID not identifiable



- 3) ETC will be asked to rename the following Response Reason Description Codes:
  - o E10: "Metering Point ..." to "Accounting Point ...."
  - o E16: "Unauthorised Balance Supplier" to "Unauthorised Energy Supplier"
  - o E18: "Unauthorised Balance Responsible" to "Unauthorised Balance Responsible Party"
- 4) ETC will be asked to rename the Business Role Code Transport Capacity Responsible Party to Shipper:

## ETC – ebIX® Technical Committee

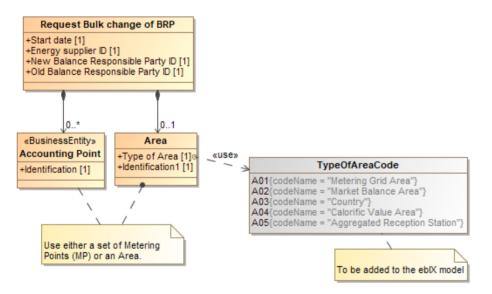
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BusinessRoleCode
DDQ{codeName = "Balance power supplier"} TCR{codeName = "Transport capacity responsible party"]

5) For ETC: Can we rename Balance power supplier to Energy Supplier?

BusinessRoleCode			
DDQ{codeName = "Balance power supplier"}			
***	L		

6) Add a Type of Area code, ref BRS for Bulk change of BRP:



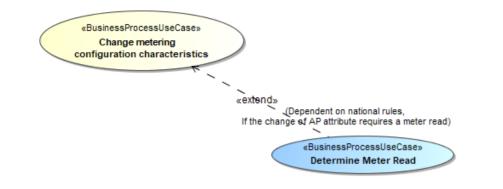
7) New Document Name Codes

- a. Request consent
- b. Response request consent
- c. Notify consent
- d. Termination of consent

- e. Notify withdrawal of consent
- f. Request termination of consent
- g. Response request termination of consent
- h. Request withdrawal of consent
- i. Response request withdrawal of consent
- j. Notify termination of consent
- k. Request valid consent
- I. Response request valid consent
- 8) New Business Reason Codes
  - a. Consent administration
  - b. Change of Shipper
- 9) New Document Name Codes
  - a. Specific Party

# C.7 «extend» request from EBG

- 1) Add an extension from UC "Change metering configuration characteristics" to "Determine Meter Read";
- 2) Add an extension from UC "Bulk change of BRP" to "Determine Meter Read";
- 3) Remove one out of two extensions from UC "Bulk change of Shipper" to "Determine Meter Read".

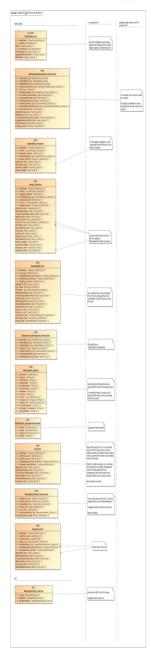


# C.8 New codes from Sweden

1. In 6.1.1.2 in the (soon) published code list I find the list of Swedish "Document Name Code". A new code will be used now in April 2019: **S08** Accepted bids. (We are using this code in UTILTS messages sent in Operation phase. Earlier we have just used UTILTS in the metering and settlement phases.)

# C.9 Codes without a code name

1. All codes without a code name should be deprecated.



# Appendix D Suggestions for handling renaming MP-terms into AP-terms