



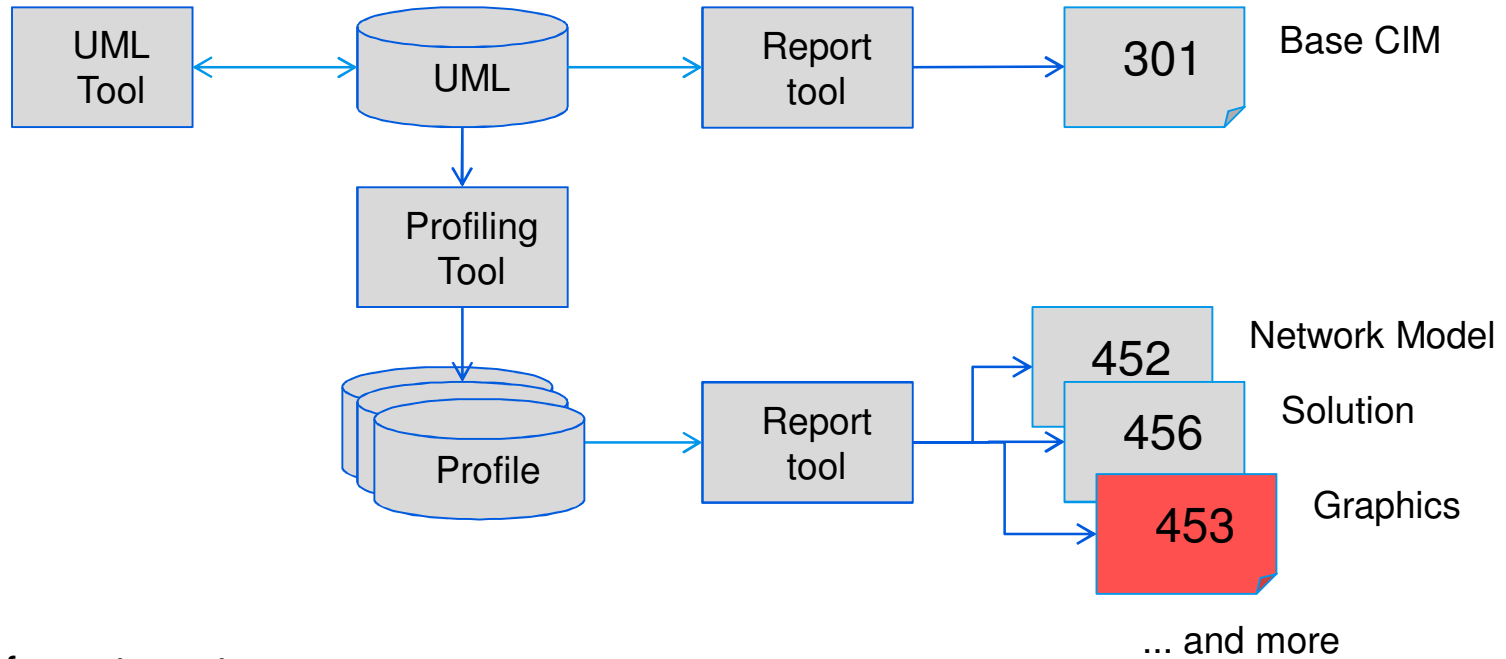
Lars-Ola Österlund, 2010-06-15

IEC 61970-453

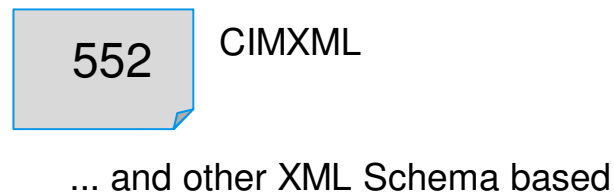
CIM Based Graphics Exchange

IEC 61970 CIM Overview

Data model, semantics



Data format, syntax



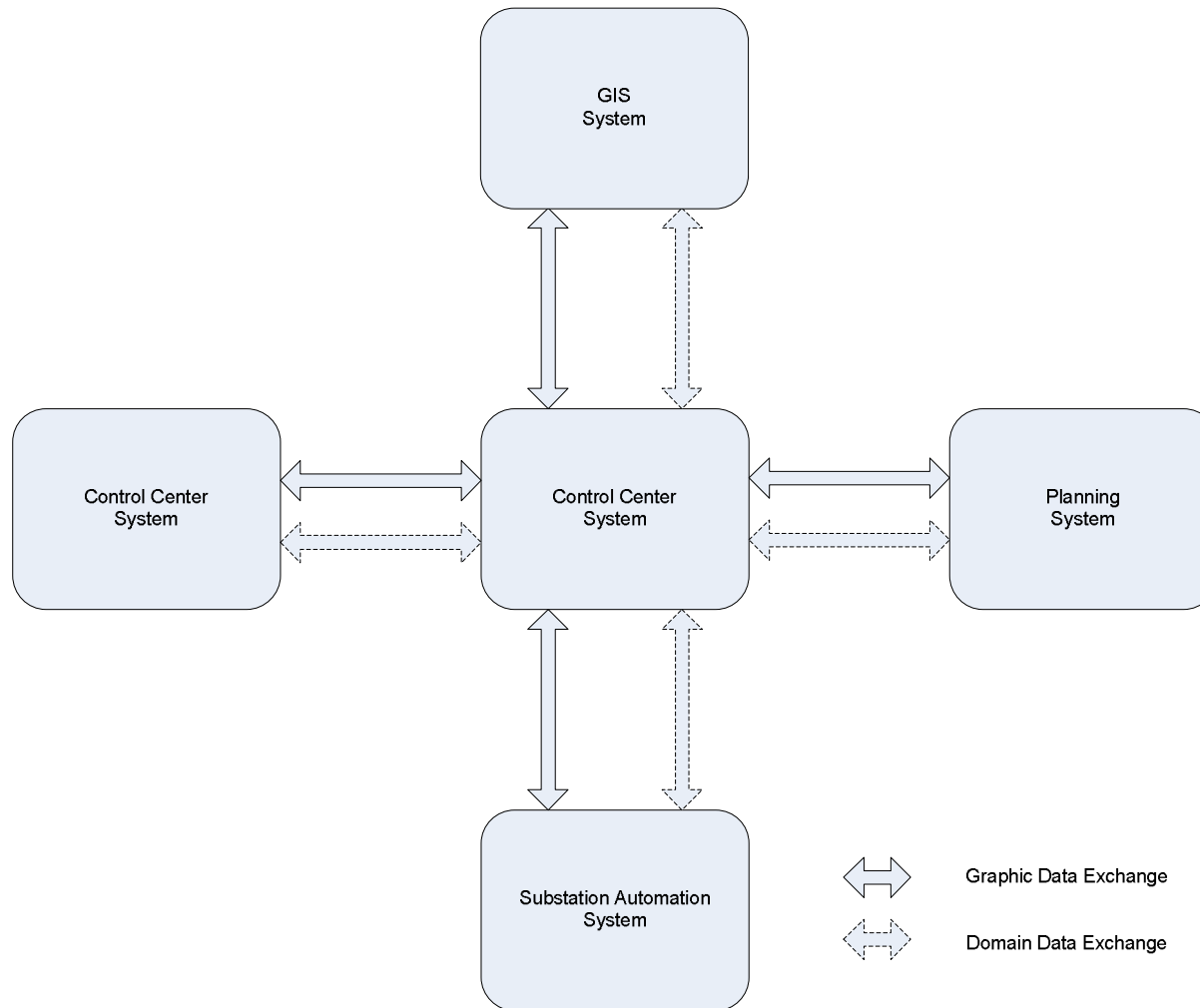
History Of CIM Based Graphics Exchange

- Started back in 2003 on initiative by Siemens Erich Wurgler
- Was initially based on SVG
 - 61970-453 ed1.0 described the data model, released 2008-06-24
 - 61970-553 described an extended SVG xml format
- At an on paper IOP 2008-01-21 in Santa Clara a debate on the format took off
- 2009 it was agreed not to exchange exact format but layout only
 - Layout
 - Drawing co-ordinates with no detailed rendering
 - Object presentation style
- Layout based specifications
 - 61970-453 described the data model
 - 61970-552 CIMXML format for the exchange
- Persons that worked on the layout based spec
 - Erich Wurgler, Alan McMorran, Jay Britton, Hans Diehl, Lars-Ola Österlund

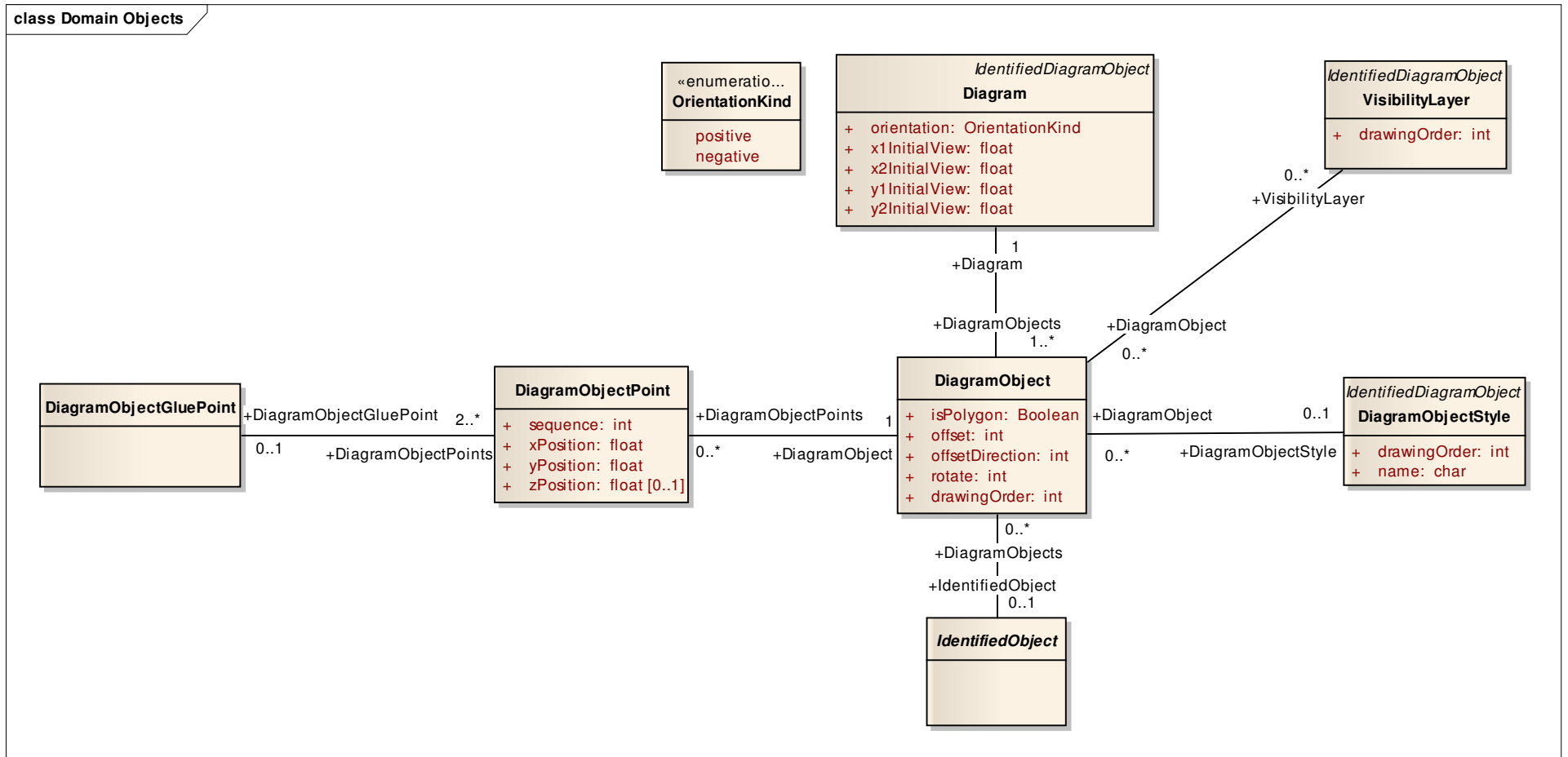
Use Cases

- Network model exchange does not include network diagrams, a problem
 - Visualization of network is useful and labor saving
 - Diagrams are required in operation and planning
- Avoid redrawing network diagrams at exchange of network models
 - TSO – RTOs, e.g. ERCOT
 - TSOs – TSOs, e.g. ENTSO-E members
 - RTOs – RTOs
 - ...
- Reuse of existing network diagrams at system upgrade

More Use Case Actors

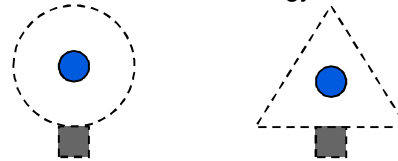


UML model

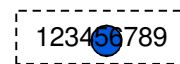


A Graphical Notation Of The UML Point Objects




SynchronousMachine EnergyConsumer



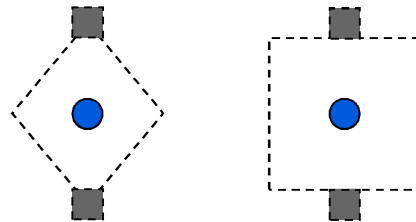
PowerSystemResource
DiagramObject
with single DiagramObjectPoint
and single Terminal



MeasurementDiagramObject

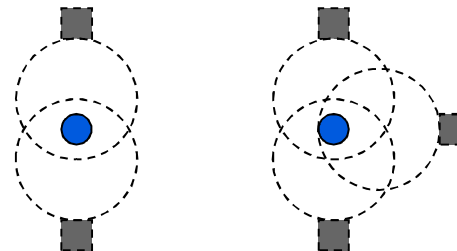
-  Terminal
(CIM Base)
-  DiagramObjectGluePoint
(CIM Graphics)
-  DiagramObjectPoint
(CIM Graphics)

Disconnecter Breaker

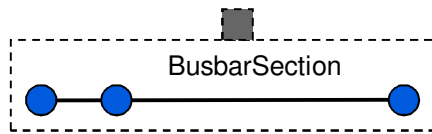


PowerSystemResource
DiagramObject
with single DiagramObjectPoint
and two or three Terminals

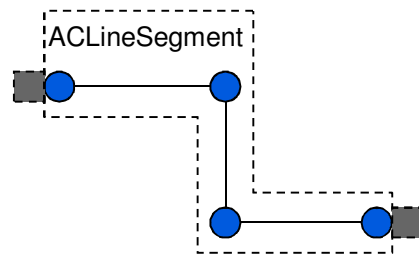
PowerTransformer 2 wdg PowerTransformer 3 wdg



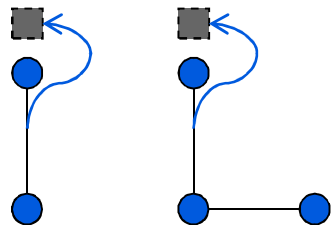
A Graphical Notation Of The UML Polygon Objects



PowerSystemResource DiagramObject
with multiple DiagramObjectPoints
and single Terminal

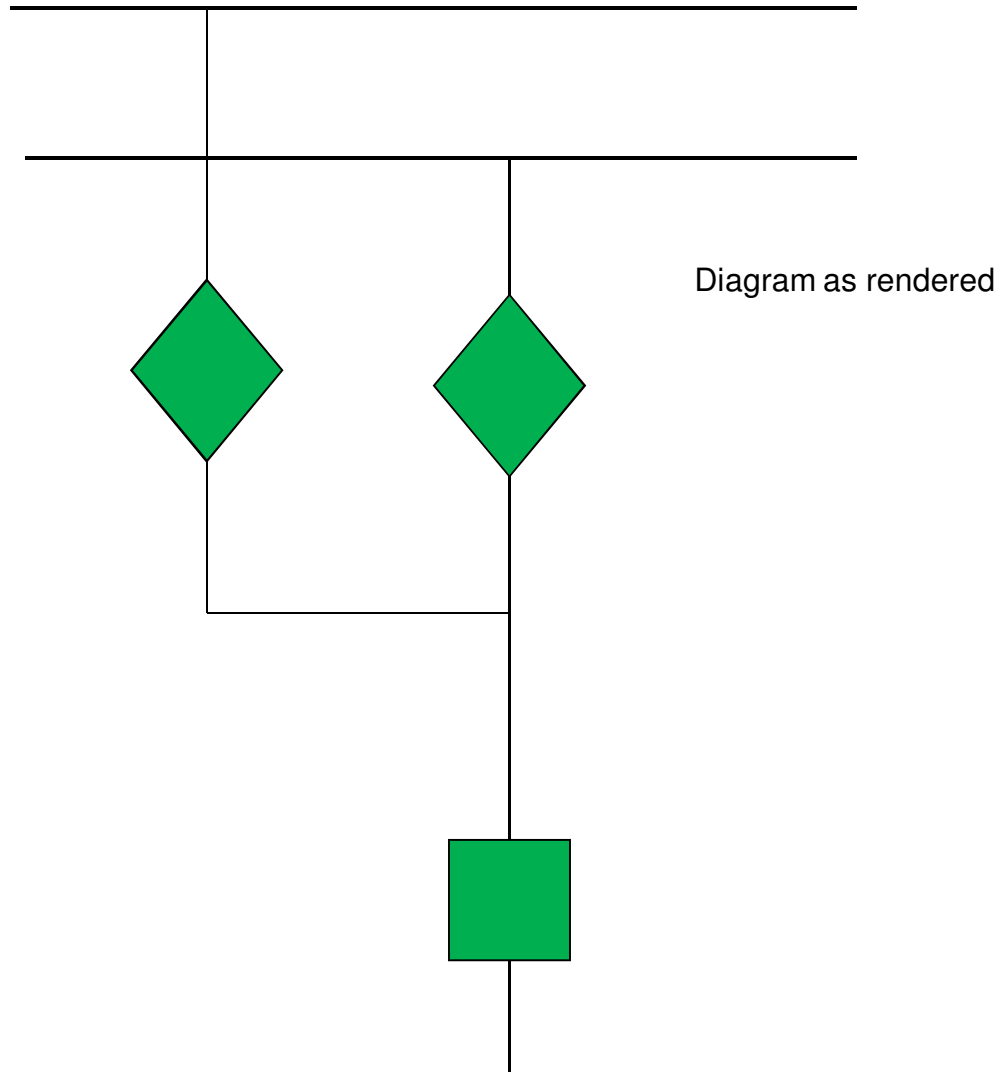


PowerSystemResource DiagramObject
with multiple DiagramObjectPoints
and two Terminals

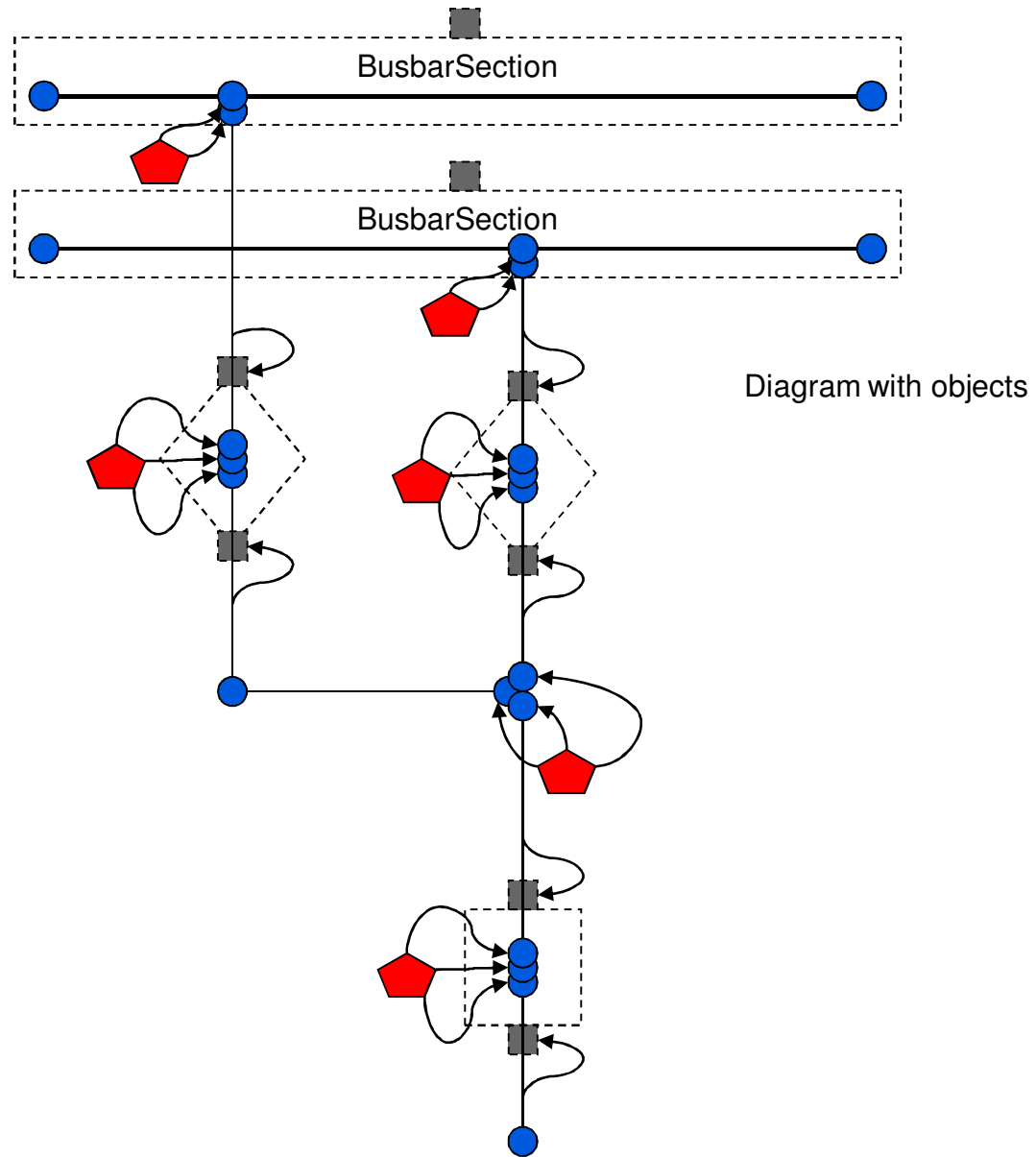


Terminal DiagramObject

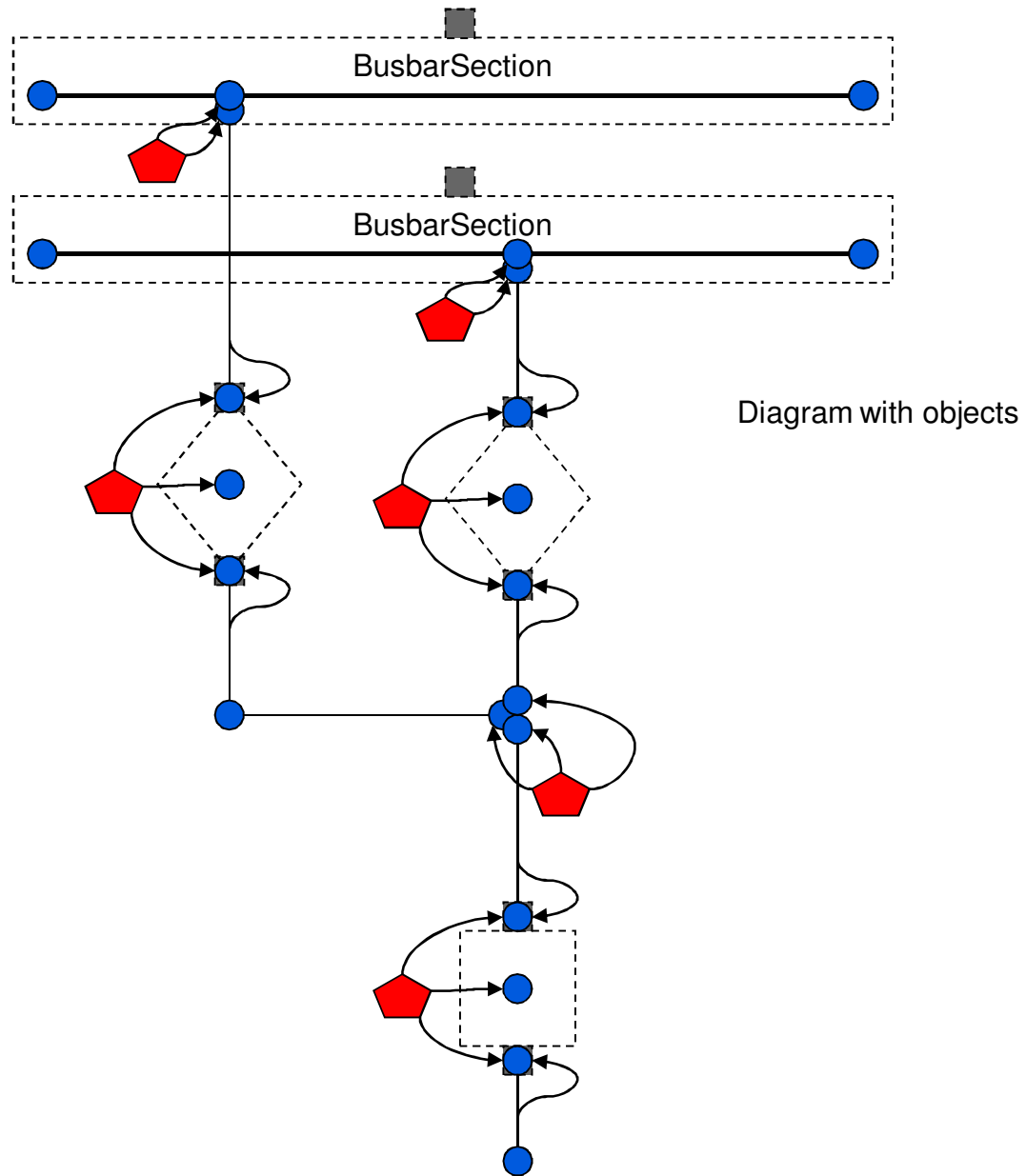
Simple Bay Example



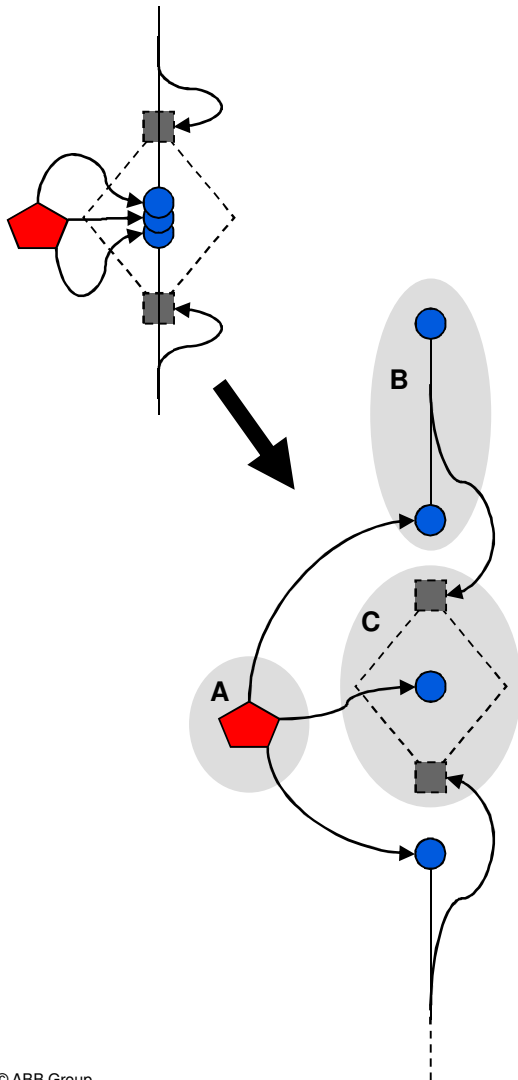
GIS Style Rendering



EMS Style Rendering



CIMXML Example



A

```

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```

B

```

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  <cim:DiagramObject.Style rdf:about="#TerminalStyle1"/>
</cim:DiagramObject>
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  <cim:DiagramObjectPoint.DiagramObject rdf:resource="#_600"/>
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  <cim:DiagramObjectPoint.xPosition>x</cim:DiagramObjectPoint.xPosition>
  <cim:DiagramObjectPoint.yPosition>y</cim:DiagramObjectPoint.yPosition>
</cim:DiagramObjectPoint>
<cim:DiagramObjectPoint rdf:ID="_602">
  <cim:DiagramObjectPoint.DiagramObject rdf:resource="#_600"/>
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  <cim:DiagramObjectPoint.xPosition>x</cim:DiagramObjectPoint.xPosition>
  <cim:DiagramObjectPoint.yPosition>y</cim:DiagramObjectPoint.yPosition>
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```

C

```

<cim:DiagramObject rdf:ID="_300">
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  <cim:DiagramObject.Style rdf:about="#DisconnecterStyle1"/>
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  <cim:DiagramObjectPoint.DiagramObject rdf:resource="#_300"/>
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