



The new point-of-reference tool for Electricity
Transmission Asset and Operation Management





Briefly Presenting the Presenters

by Informi GIS



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The ELVIS Project Background and Objectives

by Fingrid

Existing system custom developed over 20-30 years

- Ø Old legacy application that is difficult use (old technology) and not fulfilling today's business needs
- Ø Lack of agility when responding to new requirements.
- Ø Fingrid's IT strategy is to use standard applications

Prior to significant grid investments in the coming years
Fingrid has tendered a new solution for designing and managing the grid and projects.

Prior to European regulations (ENTSO-E) requirement for grid model management





ELVIS High Level Objectives

by Fingrid

- Ø **Increasing operative efficiency**
 - Increasing proactivity in calculations, monitoring and maintenance
 - Reduce on-going costs of asset/grid planning and maintenance system
 - Ensure efficient support of workflows and business processes
- Ø **Single source for power system information**
 - Improving information access and usability within stakeholders
 - Allow integration with internal and external IT systems by CIM compliance
- Ø **Adding cost aspect to operation and power system components**
 - Enhanced business planning through cost operational analytics
- Ø **Implement solution based on standard systems with a minimum of customization**



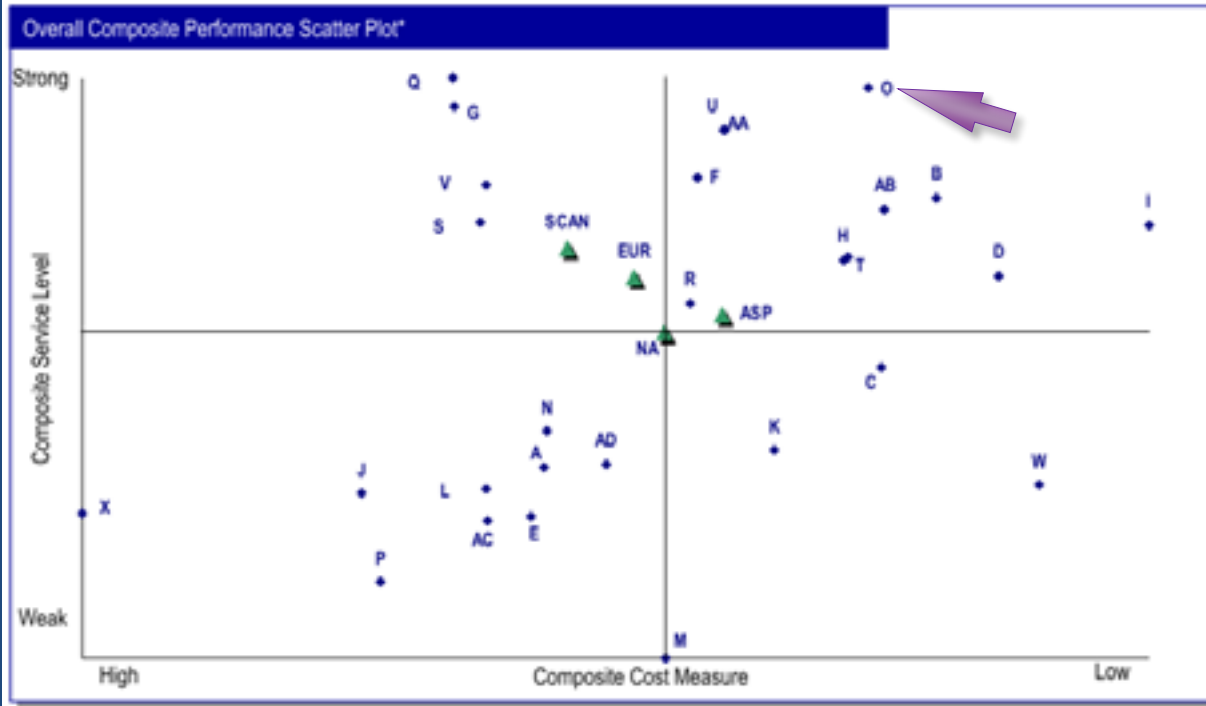
A more efficient tool for Fingrid's asset and operation management by replacing existing tailor-made grid information systems by integrated best-of-breed standard software products



Fingrid Among the Best in ITOMS* Study

by Fingrid

Overall Composite Benchmark – Weighted Average**



Ø28 participants delivering to 1/3 of the world population

ØA highly respected study

ØVery detailed

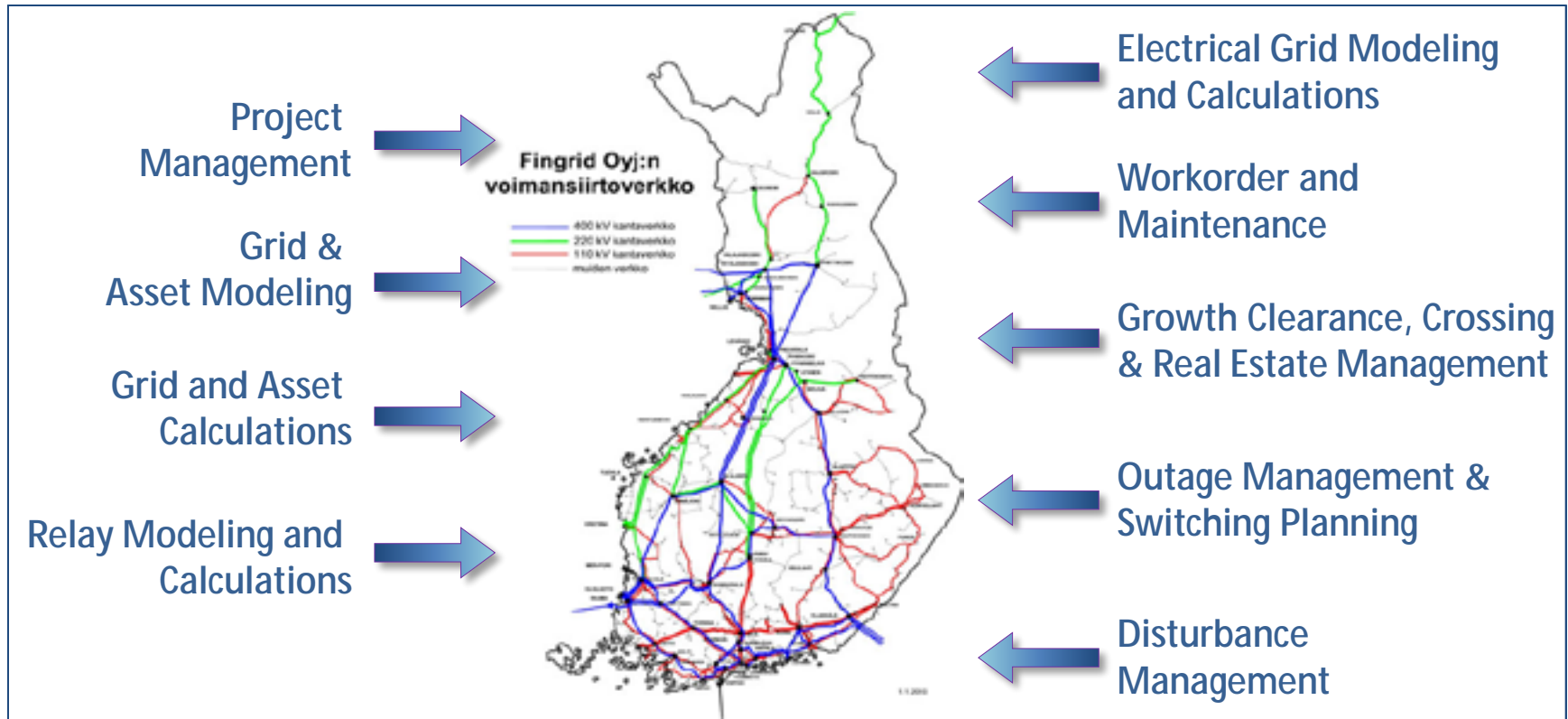
*ITOMS: International Transmission Operations & Maintenance Study





ELVIS Business Process Support

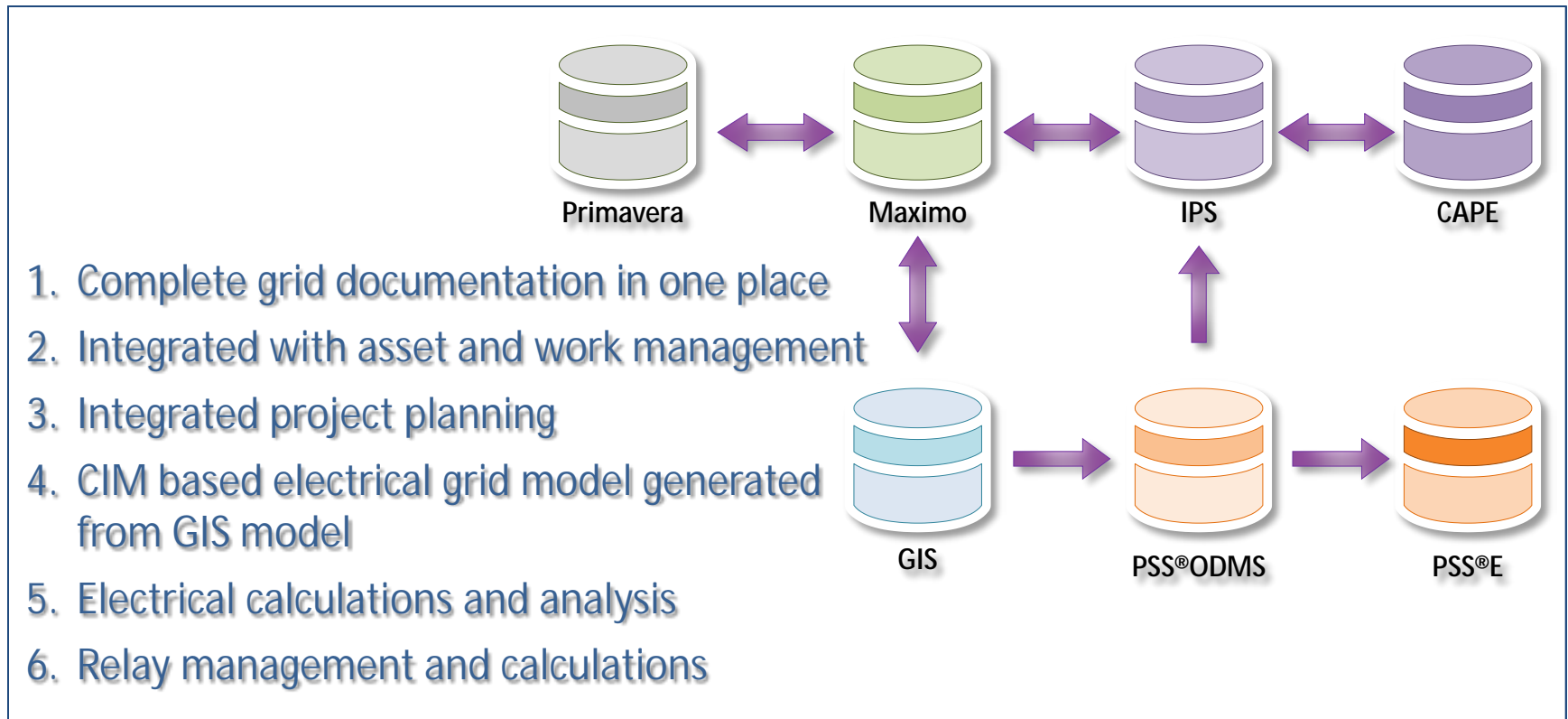
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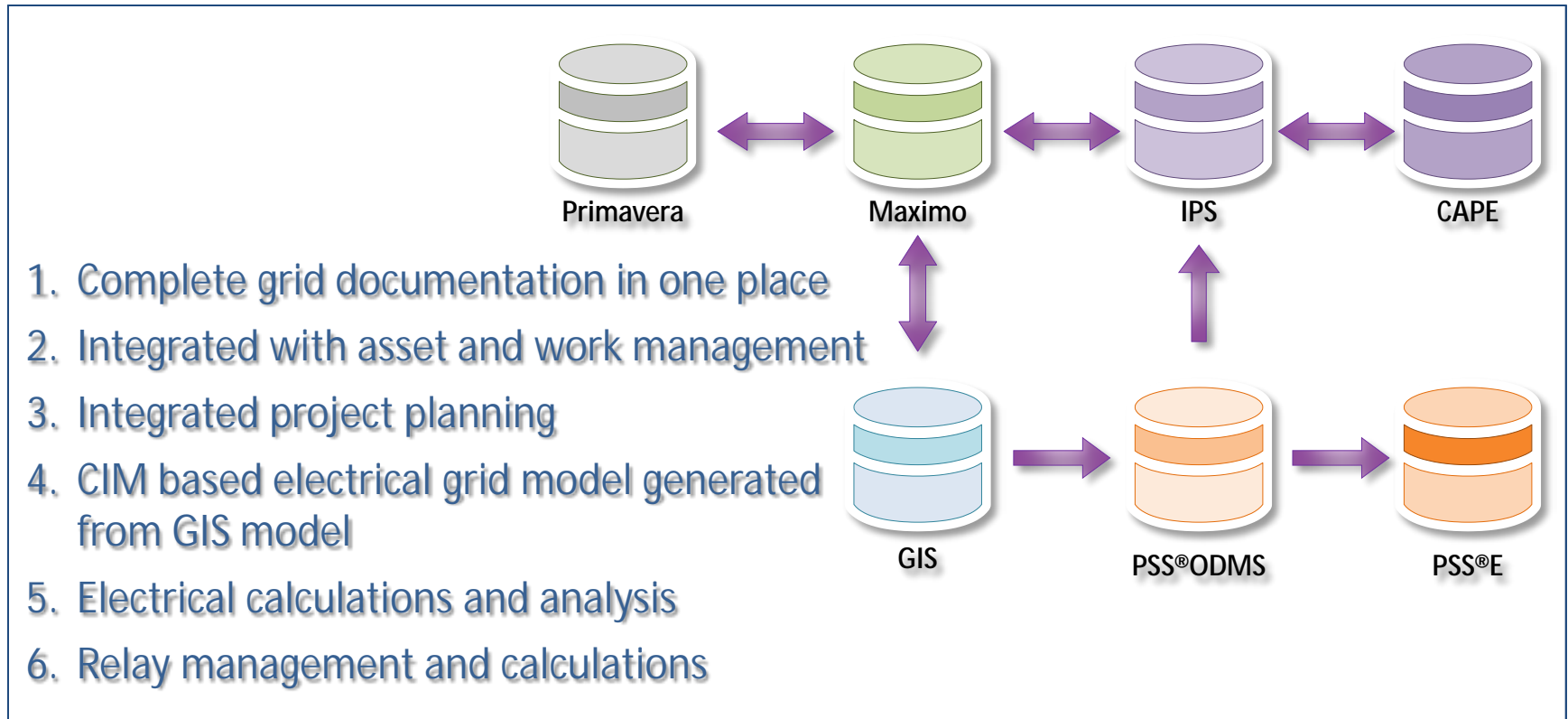
An Overview of the ELVIS Solution

by IBM



Our Focus in This Presentation

by IBM





The PowerGrid Data Model in GIS

by Informi GIS

The objectives / requirements behind the PowerGrid data model are:

- ü Must hold complete and topologically correct documentation of the grid
- ü Must support asset management in cooperation with Maximo
- ü Must support extract to CIM for subsequent complex analyses
- ü Must support life cycles from planning till decommissioning
- ü Must require a minimum of customization compared to standard ArcGIS/ArcFM





The PowerGrid Data Model in GIS

by Informi GIS

Ø Inspired by the CIM standard

- ü Easing extract to CIM
- ü Easing the dialogue with and use by power engineers

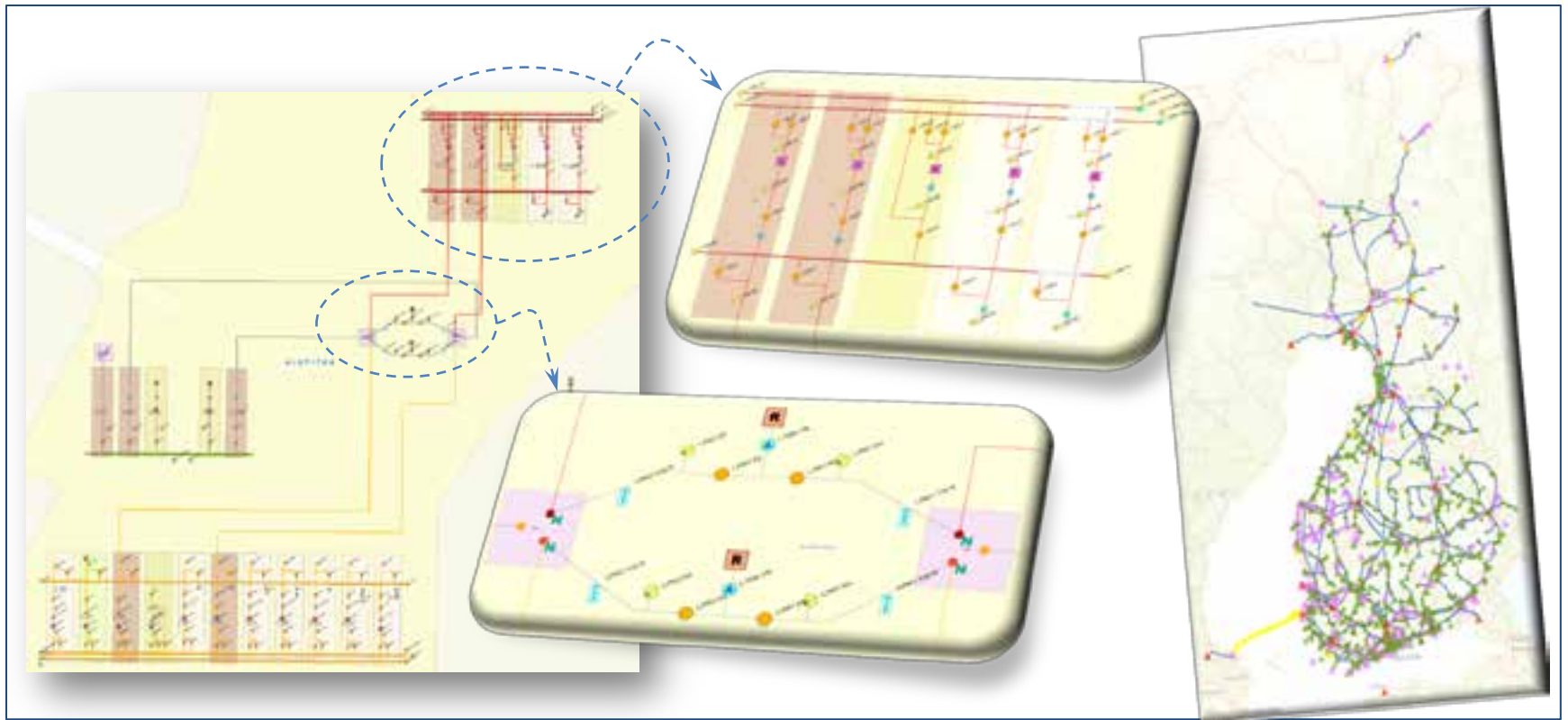
Ø Supports consolidated documentation of the entire grid

- ü Towers, overhead lines, earth wires, spans, cables, phase sequence and transpositioning, grouping as transmission lines, line sections, branches..., loadability, pi equivalent data, mutual coupling, substations, bus bars, bays, circuit breakers, disconnectors, ground switches, capacitor banks, reactors, current and potential transformers, power transformers, neutral network...



The PowerGrid Data Model in GIS

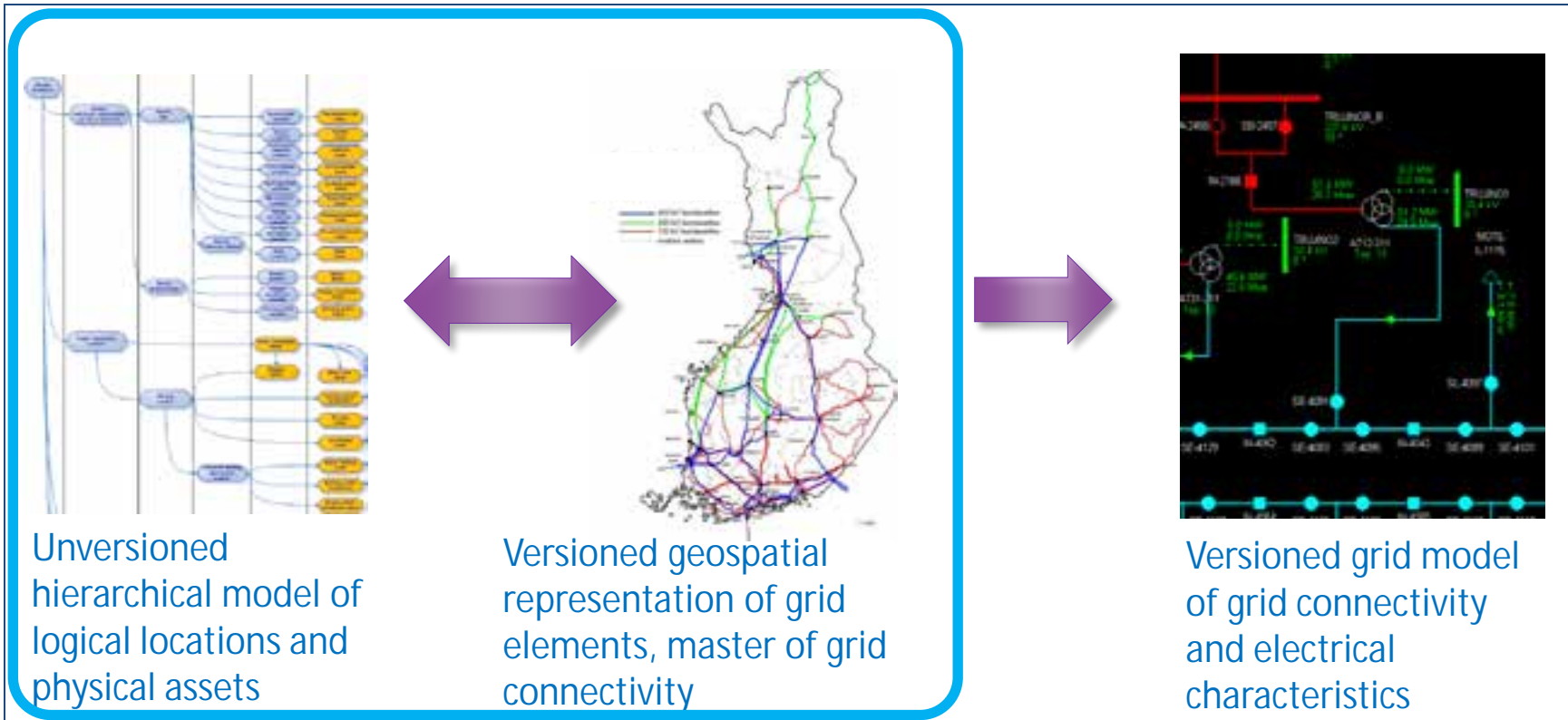
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Critical Integration Points



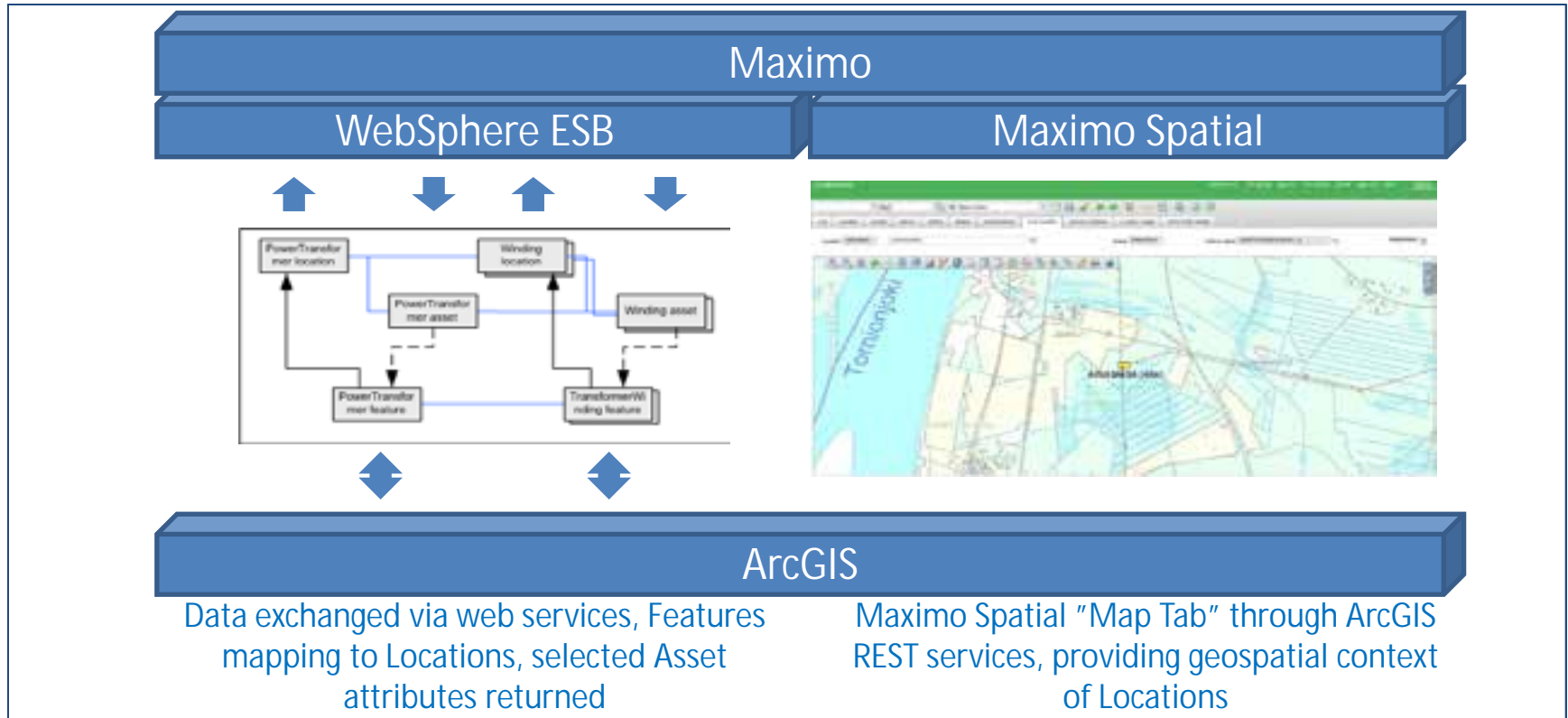
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ArcGIS – Maximo Data Flow



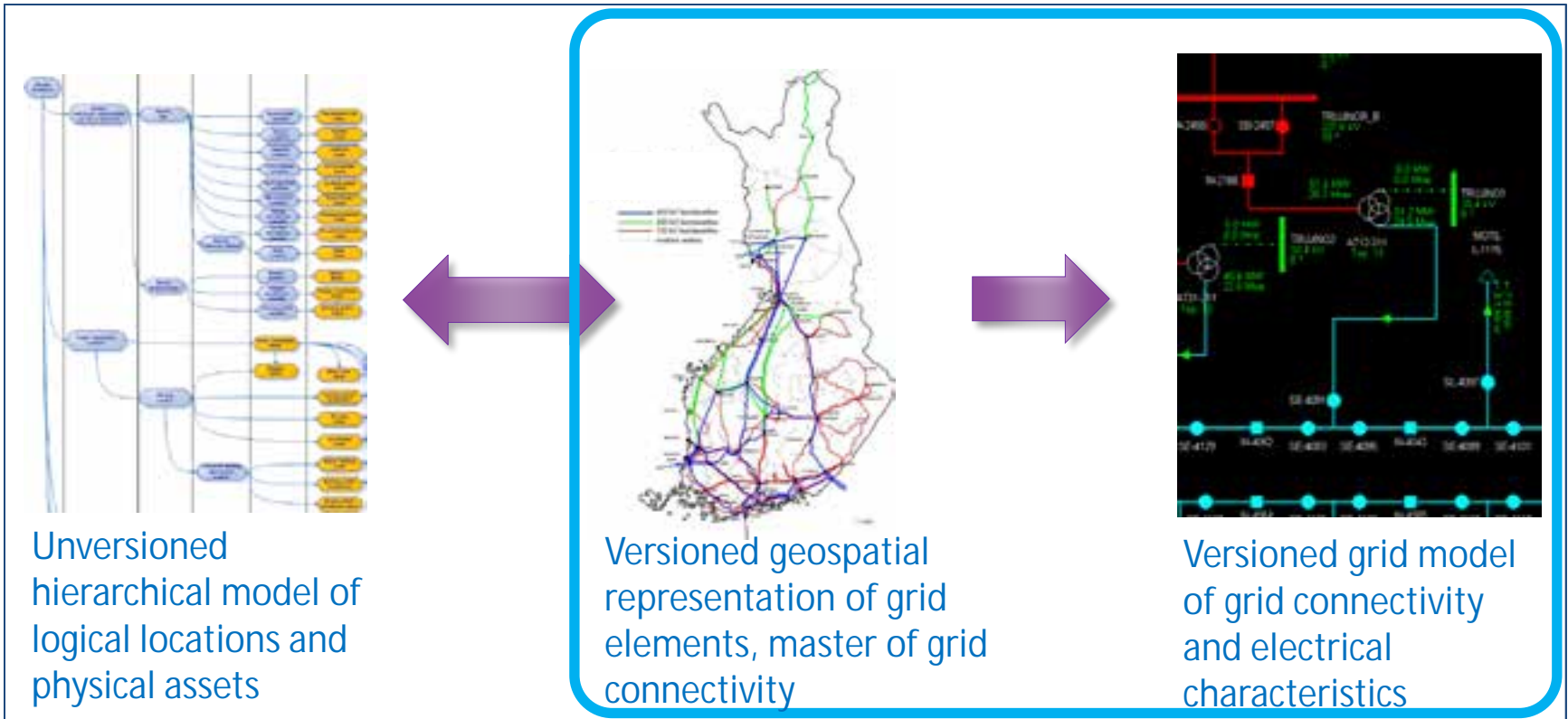
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Critical Integration Points



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GIS-ODMS Integration

IEC-CIM Mapping



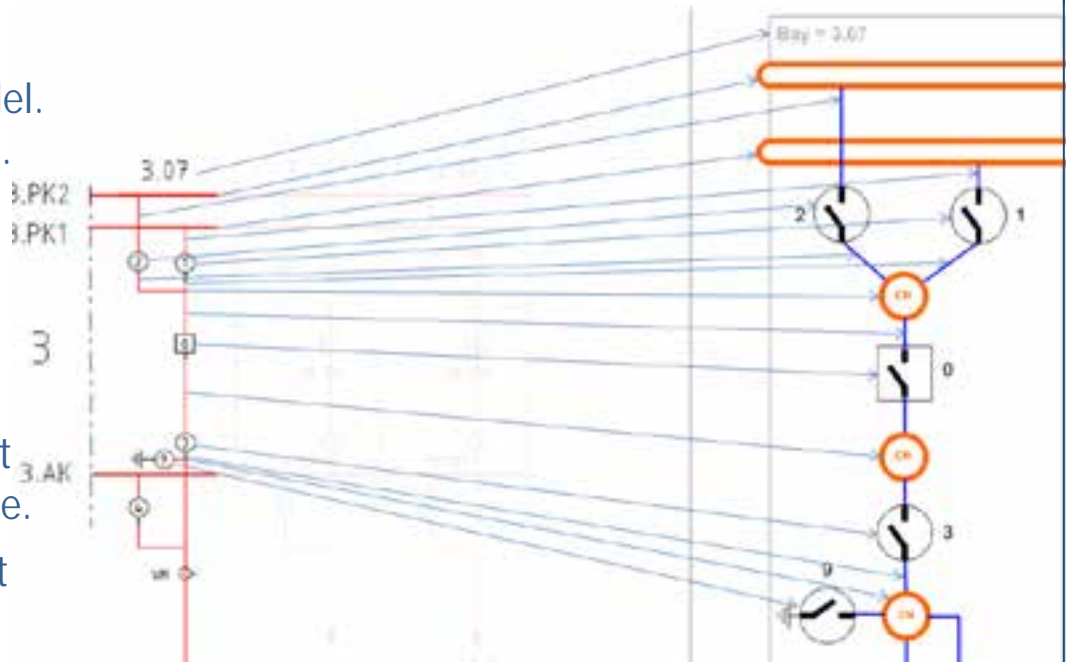
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The GIS Powergrid model is a CIM adaption, but must still first and foremost serve as a GIS network model. By contrast, ODMS is pure CIM-based.

Mapping of the connectivity model is needed.

Particular complex details include:

- Ø Mapping of switches from a point feature into a two-terminal device.
- Ø The necessity of creating abstract elements (Terminals and some ConnectivityNodes) out of a more crude model.





Summary and Conclusion

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- Ø In order to maintain its position among the most reliable and lean Electricity Transmission System Operators, Fingrid needed a robust, flexible and fully integrated grid, asset and work management system – data should be entered once and distributed as needed.
- Ø The most fundamental data is the electrical grid model. Based on the PowerGrid data model ArcGIS provides the one version of the truth – both for the operational grid as well as the future changes. One model – designed and maintained in ArcGIS - is shared across applications.
- Ø Integration between GIS and Maximo ensures optimized grid design and maintenance processes and ensures data consistency throughout the asset life cycle.
- Ø Utilizing CIM, the GIS – ODMS integration provides a standard way of delivering GIS grid models to electrical design, analysis and calculation systems used throughout the industry - ensuring that electrical grid models are maintained centrally and distributed efficiently using a common format
- Ø Any transmission or large distribution company looking at ways of optimizing processes across GIS, Enterprise Asset Management and Electrical Grid Calculation / Design should have a look at the Fingrid ELVIS solution.





Thank You for Your Interest



The new point-of-reference tool
for Electricity Transmission
Asset and Operation
Management

Please feel free to contact us after the session

