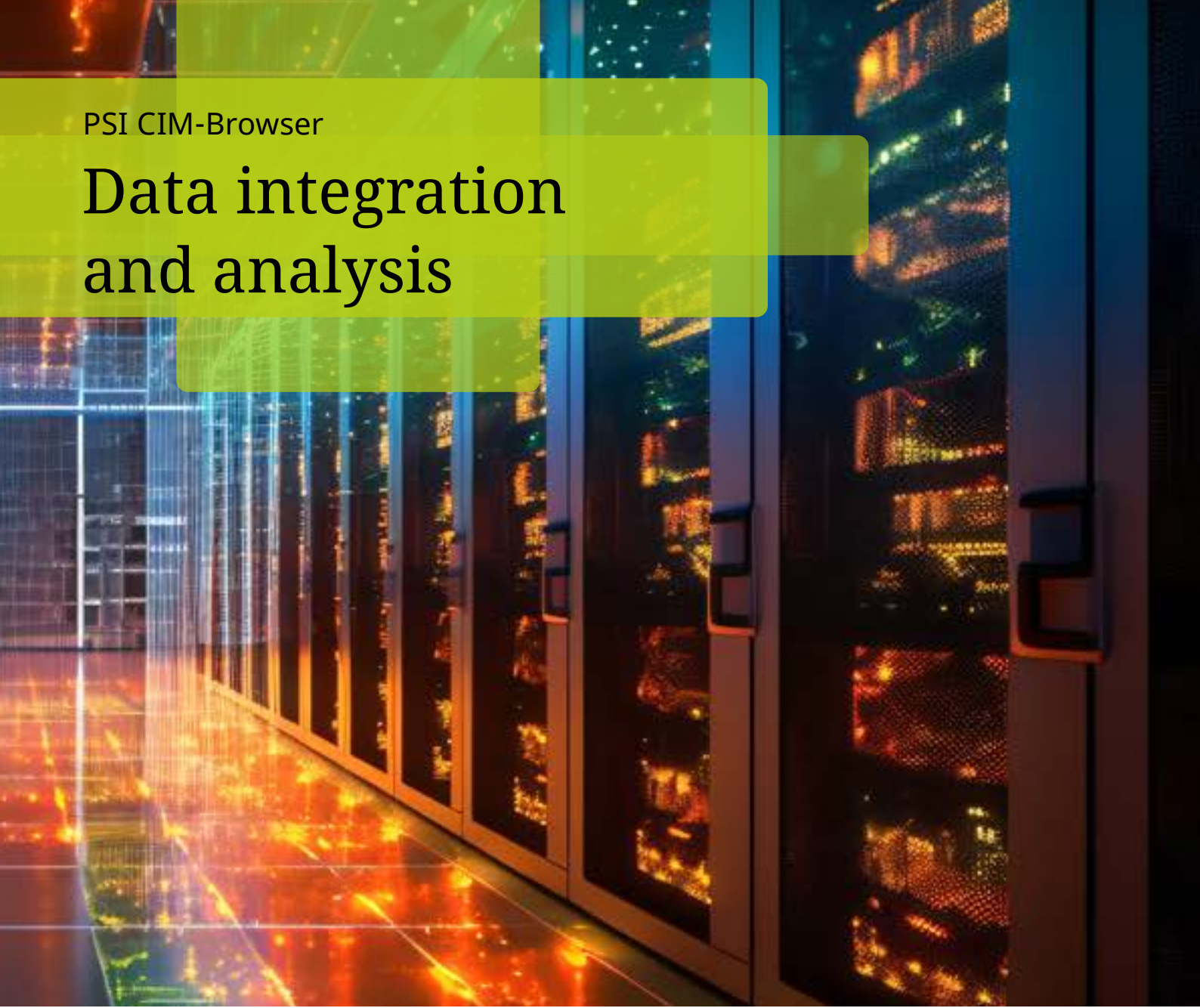PSI CIM-Browser

Data integration and analysis

PSI

PSI CIM-Browser

Efficiently mastering the Energy Transition using CIM/CGMES standards.

The Energy Transition is steadily advancing in Germany and Europe. Supporting this transition requires close cooperation of system operators. A central part thereof is data exchange. The international standards CIM (EC 61970) and CGMES (IEC 61970-600) have been designed to facilitate such data exchange. Ensuring a high-quality data exchange is paramount , as it not only bolsters grid safety but also results in significant cost reduction.

In the past, system operators have maintained the network model at least twice – for system operations and network planning. This parallel approach can give rise to errors, which might be costly to address and inevitably leads to redundant efforts. Given this backdrop, it is imperative to adopt a uniform grid-modeling framework based on a renowned standard, i.e., the CIM/CGMES standards.

The CIM Browser: Your all-in-one tool for data integration and analysis in the CGMES environment

Our CIM Browser has been crafted with this very objective in mind. It serves as a comprehensive tool for data integration, modification, validation, and analysis

1 **The concept**

The CIM Browser is generically designed and applicable for all CIM/ CGMES versions. Key features of the browser include:

- Automatic generation of diagrams for components such as overview, substations, power lines and transformers.
- Graphic support for integration / merging, tracing, validation, comparison, and export tasks.
- Dynamic customization options for views and tables.
- Efficient correlation of objects and attributes displayed in lists, tables, and diagrams.
- Predefined menus for specific processes and use-cases.

2 **Architecture**

Your Choice: The CIM Browser is available in two formats: as a standalone desktop application and as a client/server solution.

The CIM Browser is developed in Python allowing for quick and easy, cost-efficient adaptation to specific user requirements. Such daptations may be, for example, automatic validation and data integration .

The CIM Browser is well suited for different use cases related to CGMES ranging from automatic processing and integrating of data to user friendly data exploration and editing.
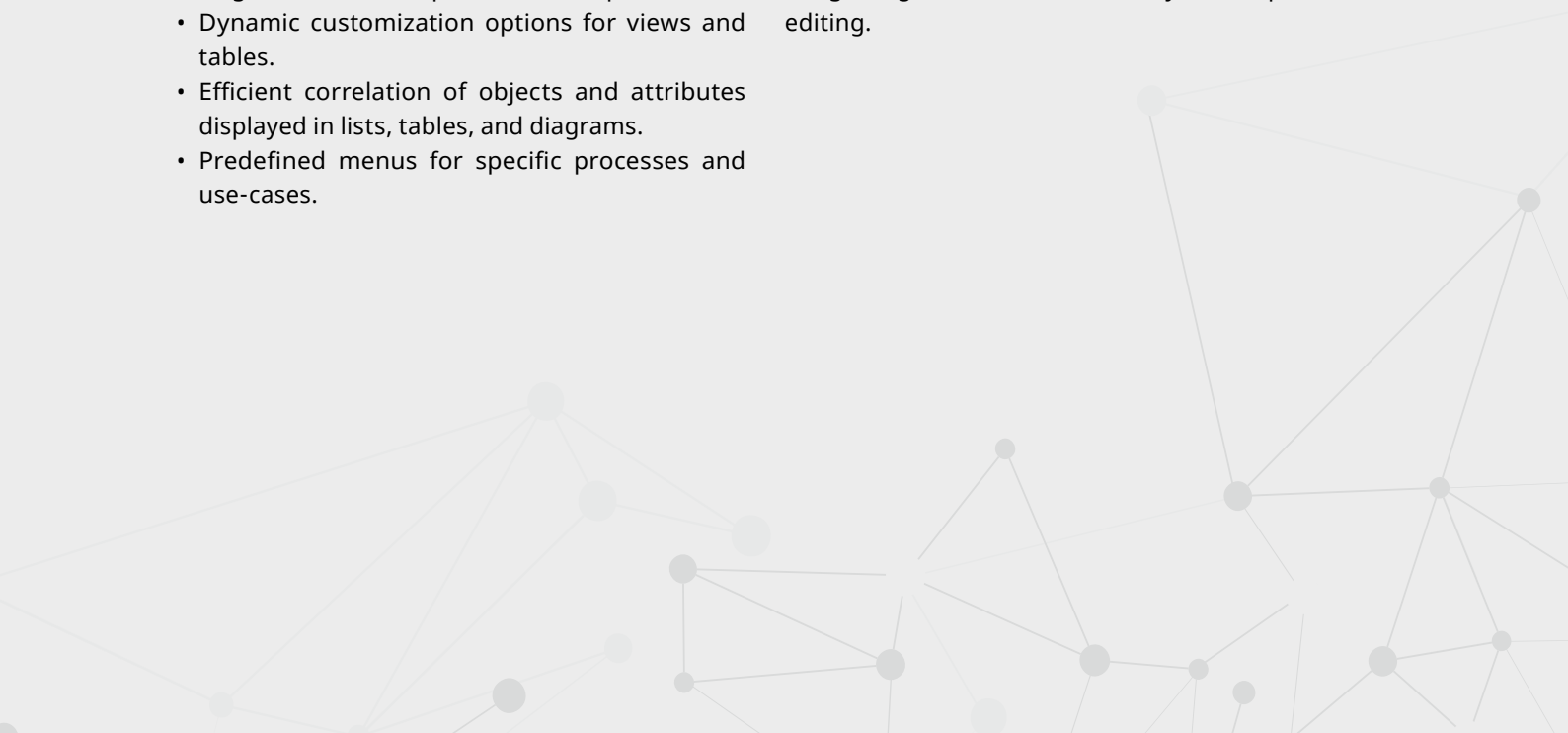
# Application examples

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Integration/merging
The example shows three CIM/CGMES files for a transmission net work with two underlying distribution networks. They are merged and colored according to the system operator identifier provided in the file. The system supports integrating node breaker and bus branch models.
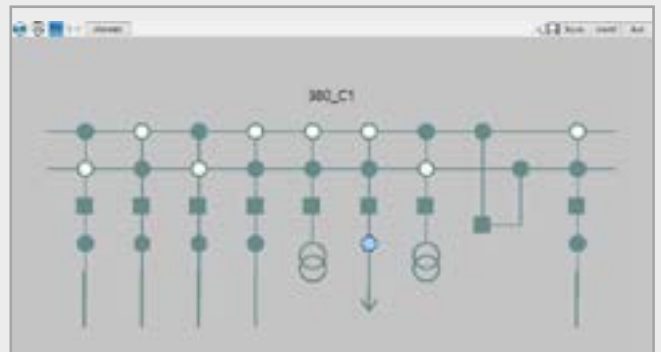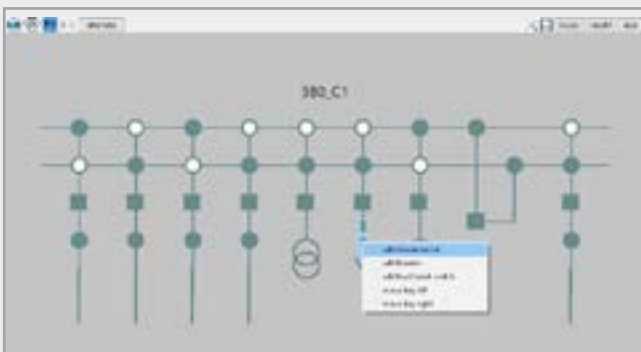

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Validation
CIM/CGMES model can be validated against Meta Model, OCL and SHACL rules. The errors can be displayed graphically.

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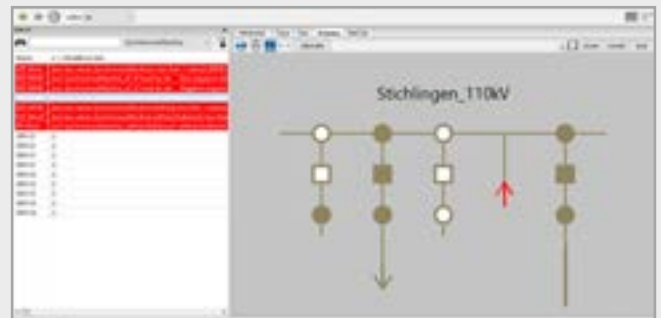
Modification
After validation, errors can be provisionally corrected in urgent cases. The object is identified by its name and the respective attribute is changed or a switch is deleted or added.
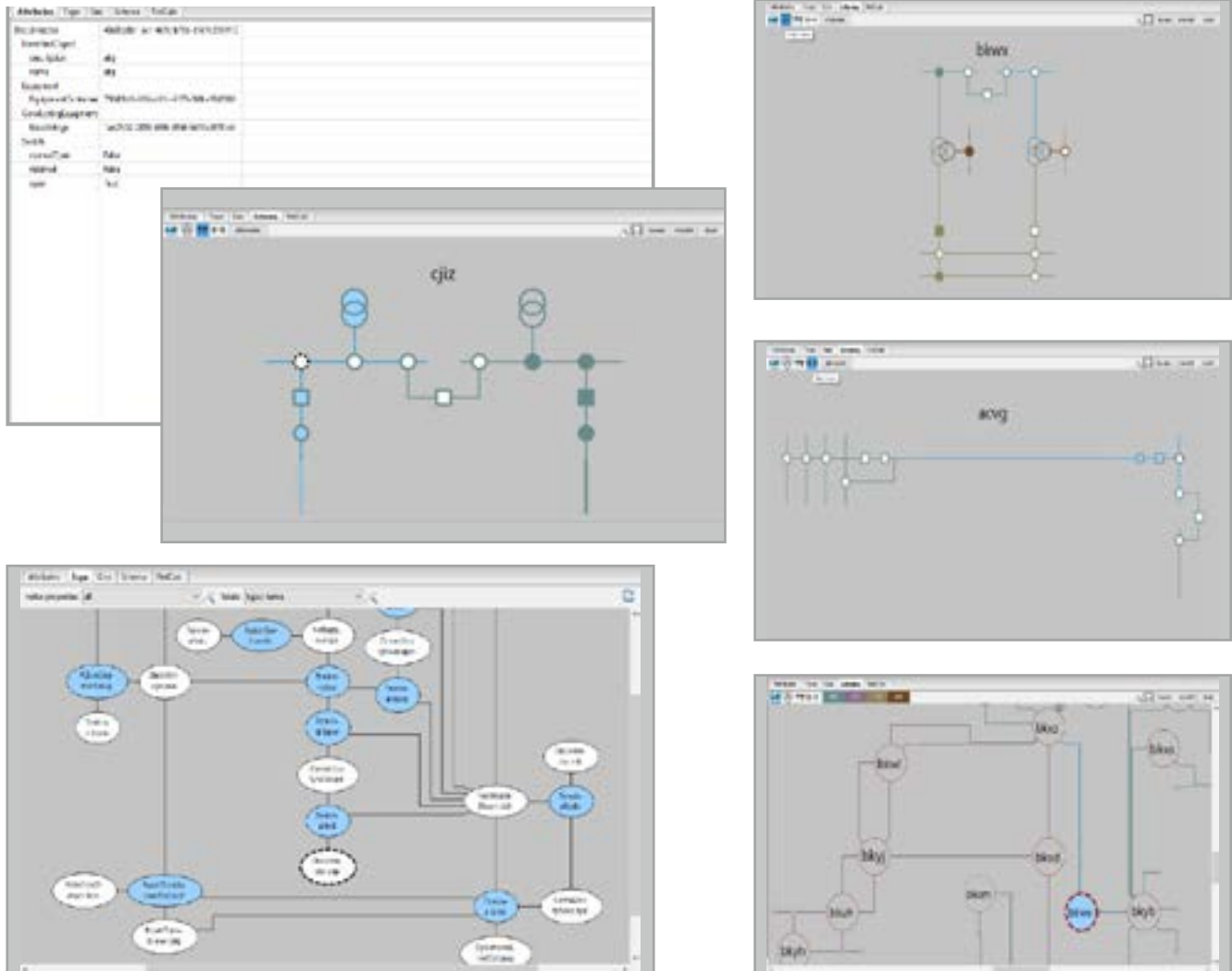
Analysis/tracing

In the error analysis, the affected objects can be examined from different aspects, e.g. topology connection view, station view, line view (switching view), transformer view and overview.
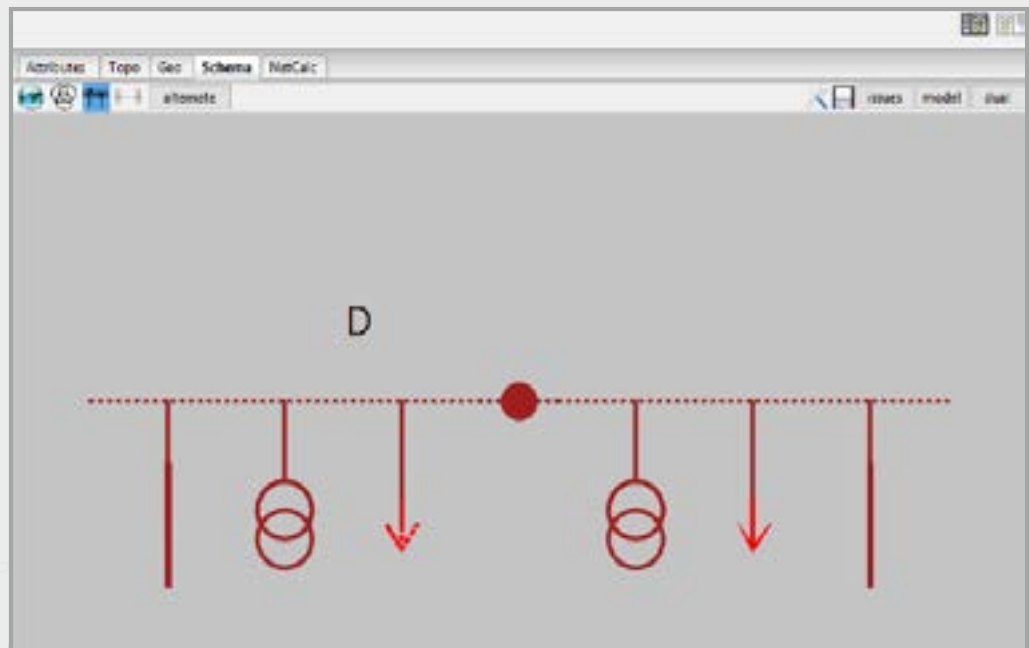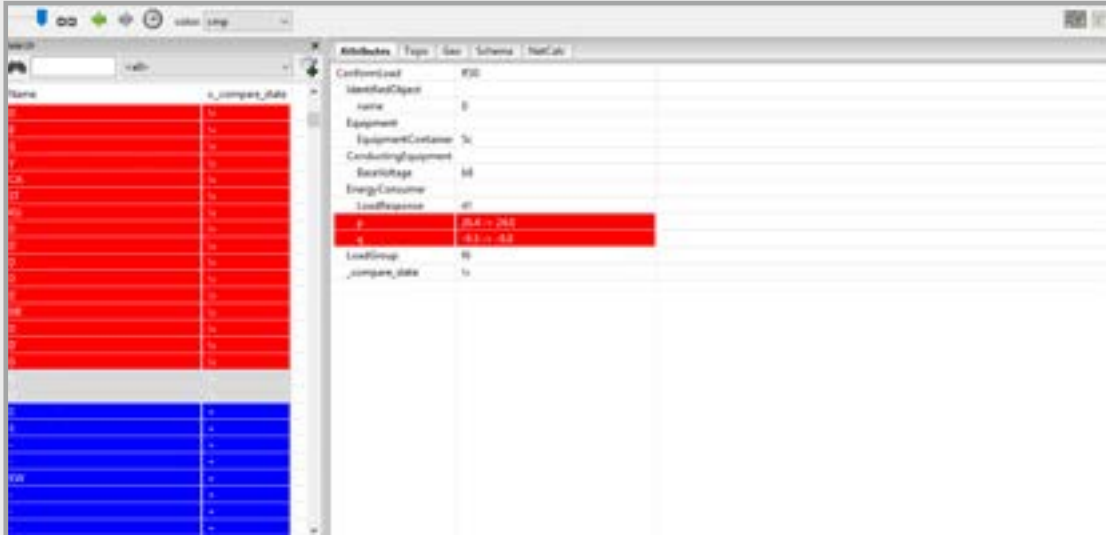

The results of the load flow calculation can be displayed in form of a heat map/ISO surface. Shown in the example are displays for voltage and phase angle.

Practical examples for comparison

When comparing models, all objects are listed according to the category of differences. The value difference is displayed in the attribute page and station display.

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