FESA Graph Editor

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3rd Developers@CERN Forum

15/02/2017

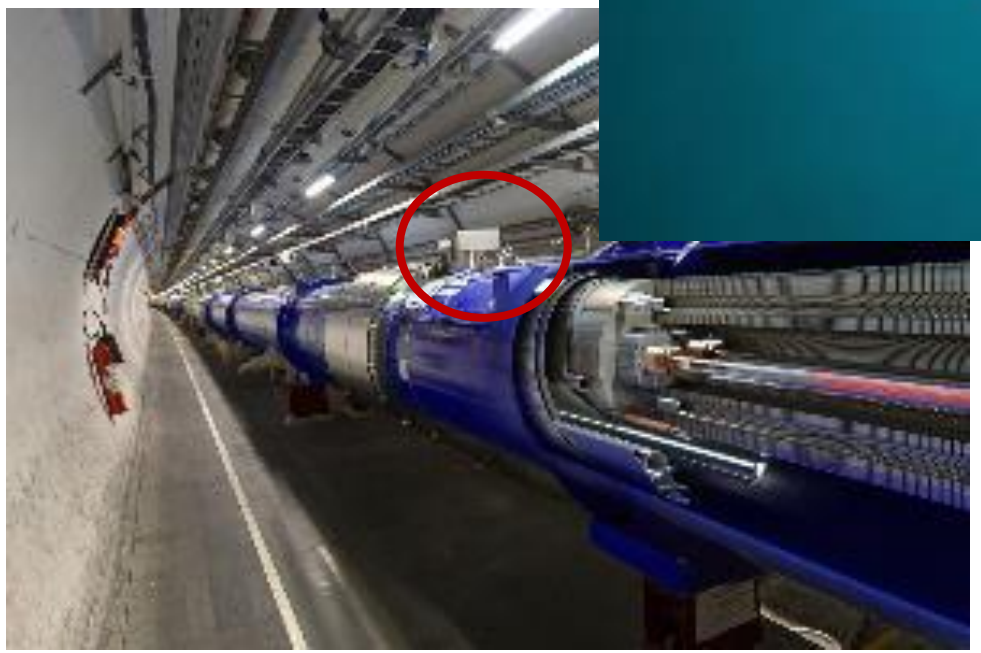
Background – What is FESA?

- Front End Software Architecture *is*
- A Framework *that was*
- Developed at CERN *for*
- Real-time SW for front-end computers

Background – What is FE?

Front End Computer with Acquisition Cards

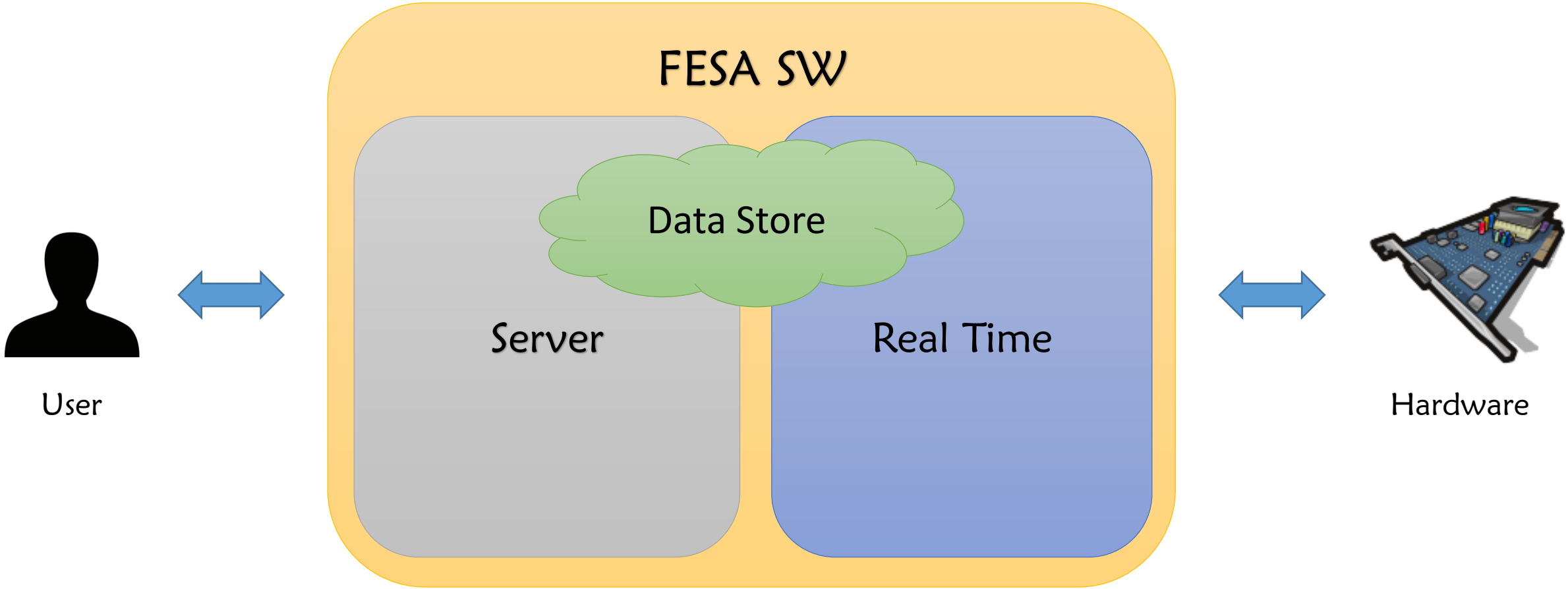
Accelerator Tunnel



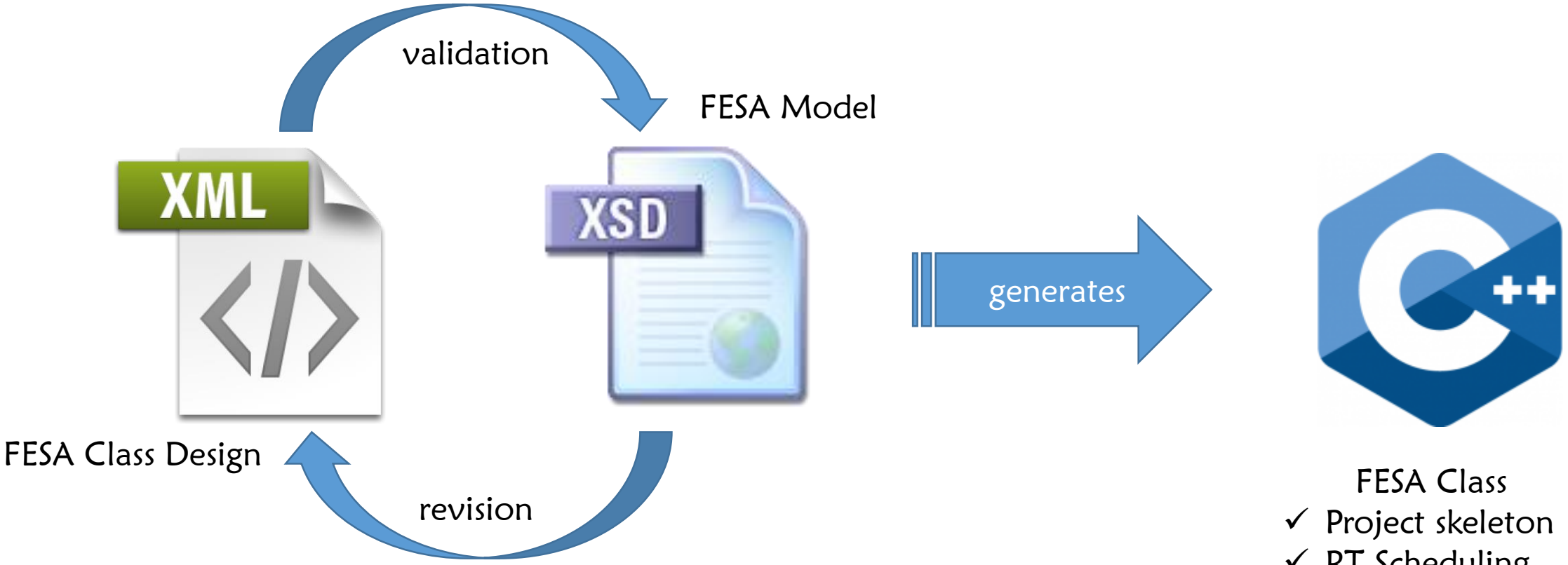
HW Equipment

Optical Link

Background – What is FESA SW?

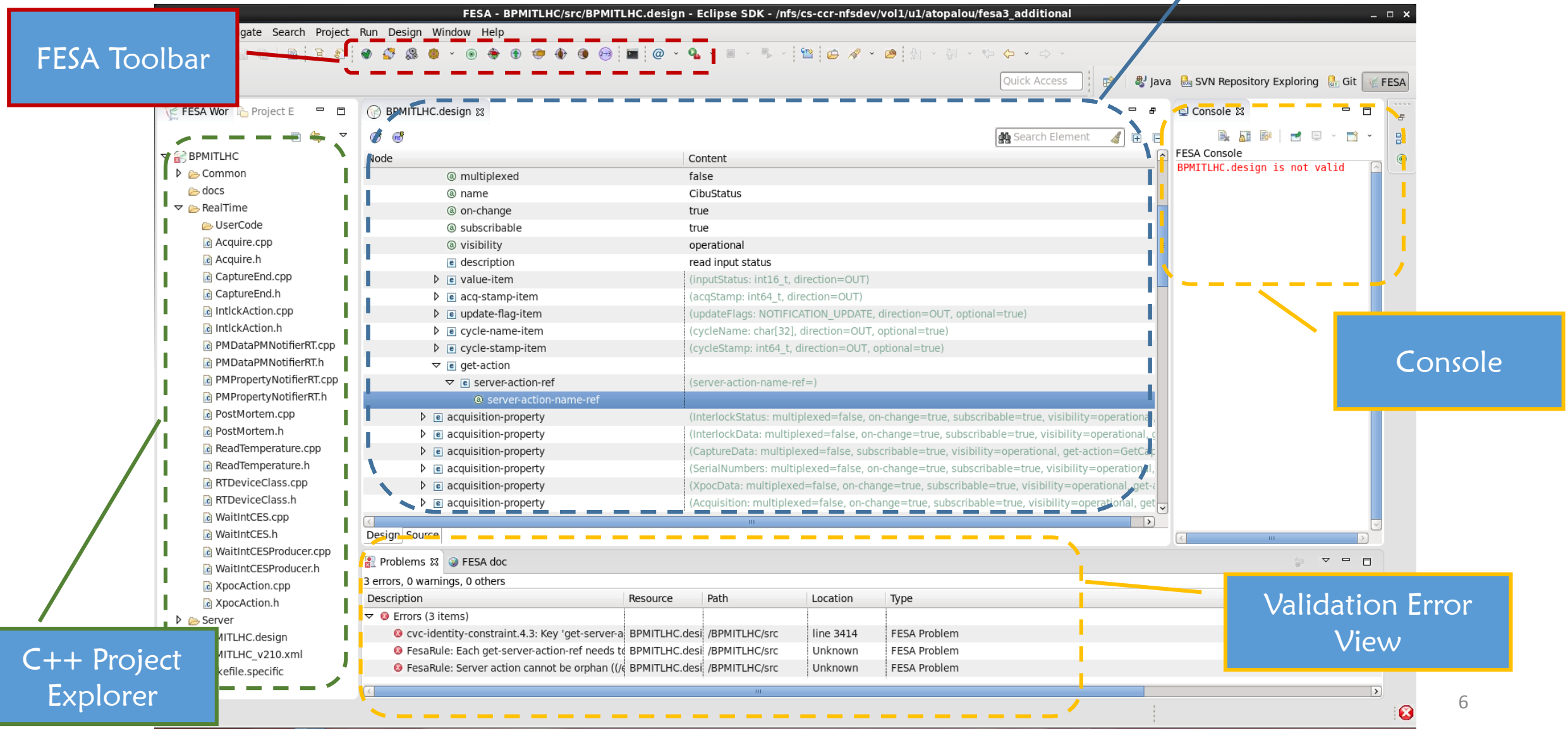


Background – How does it work?



FESA Class
- ✓ Project skeleton
- ✓ RT Scheduling

Background – User Interface



Background – Summary FESA

- Essential framework for real-time SW development
- C++ code generation based on XML document
- RT scheduling
- Comes as an Eclipse plugin

- Impossible overview of the SW
- Connection among components is not obvious
- Design editing can be cumbersome

- Let's do something about it…

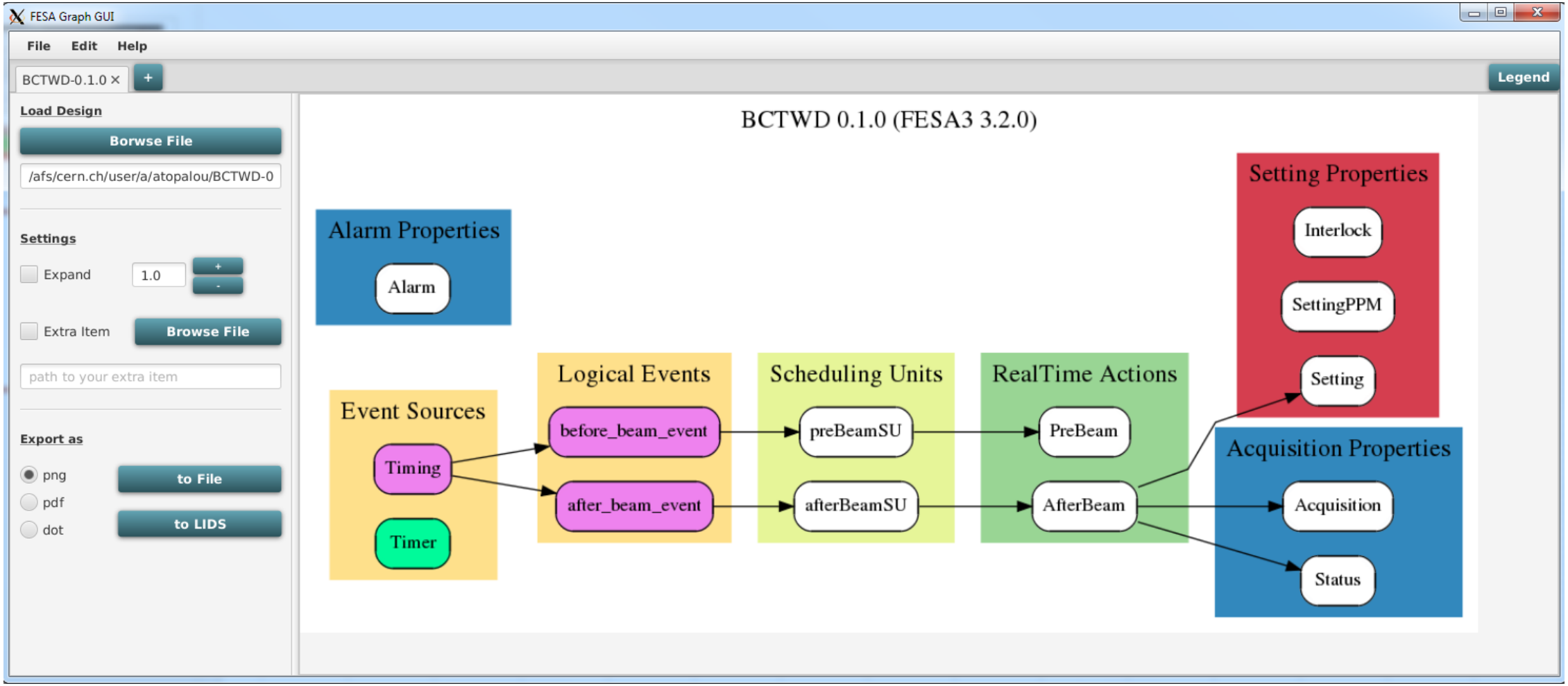
Users – Tools Improvement – Round 1

Design Analysis

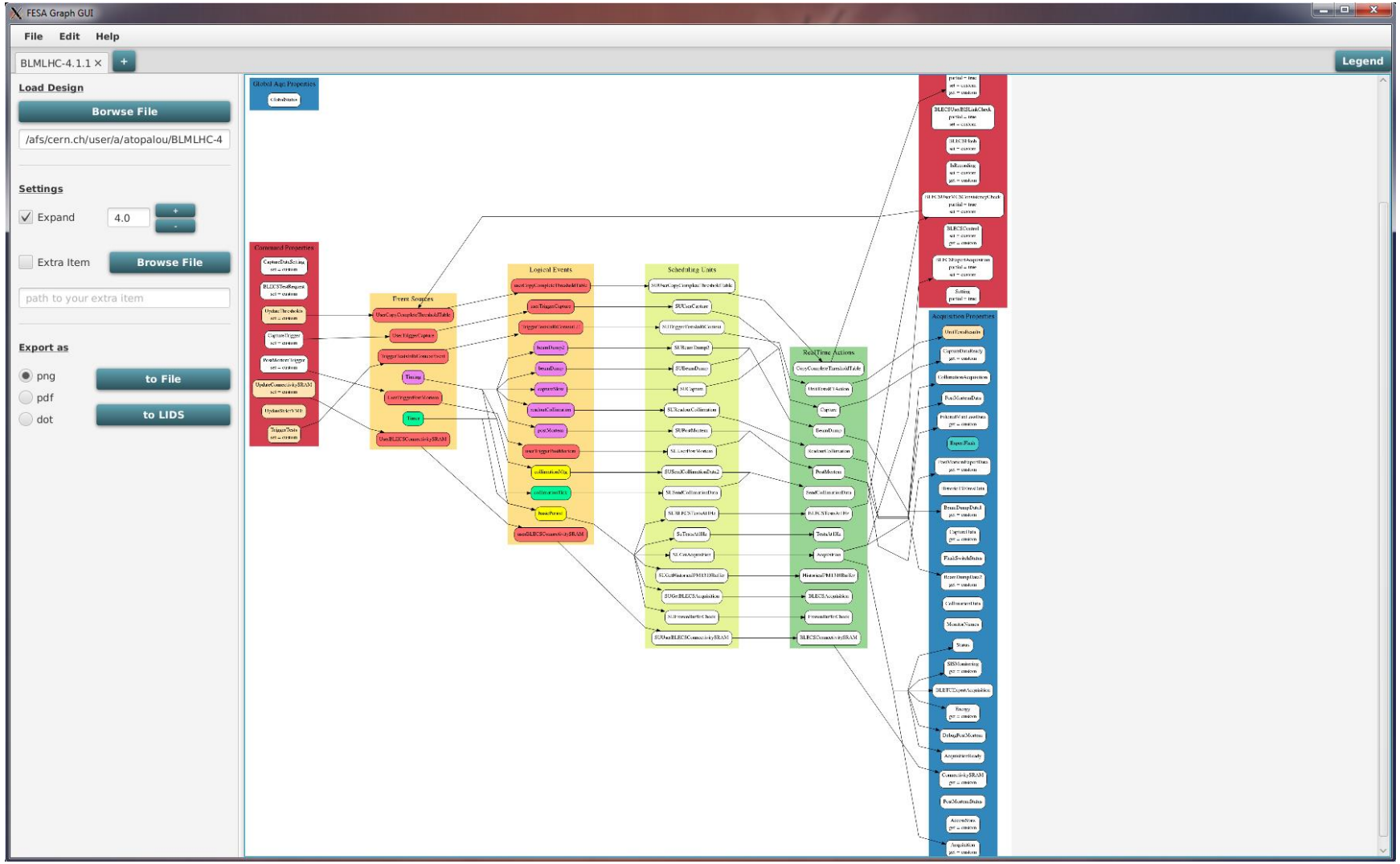
Graph Library

Output

Graph Viewer – Design Overview



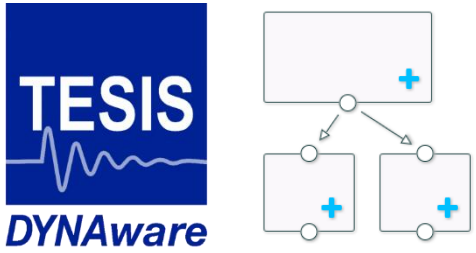
Graph Viewer – Design Overview



Users – Tools Improvement – Round 2

Dynamic Model

- ✓ XML parsing
- ✓ DOM tree
- ✓ Use of FESA model
- ✓ Design Fragmenting (Server, RT, Data Store)
- ✓ Command Stack (*undo/redo*)



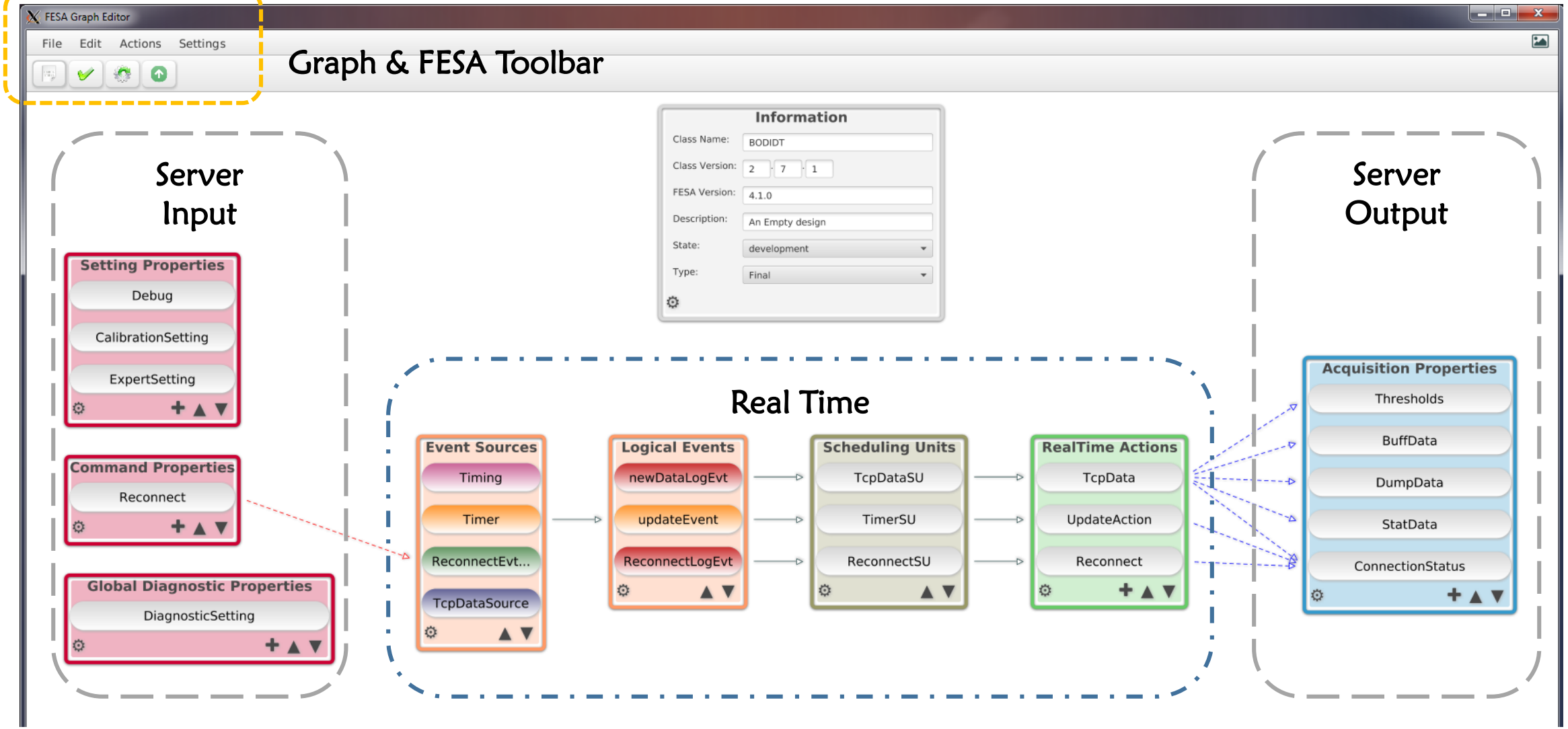
Graph Editor Library

- ✓ MVC
- ✓ CSS custom view
- ✓ Drag 'n Drop
- ✓ Large Graph Support
- ✓ Zoom

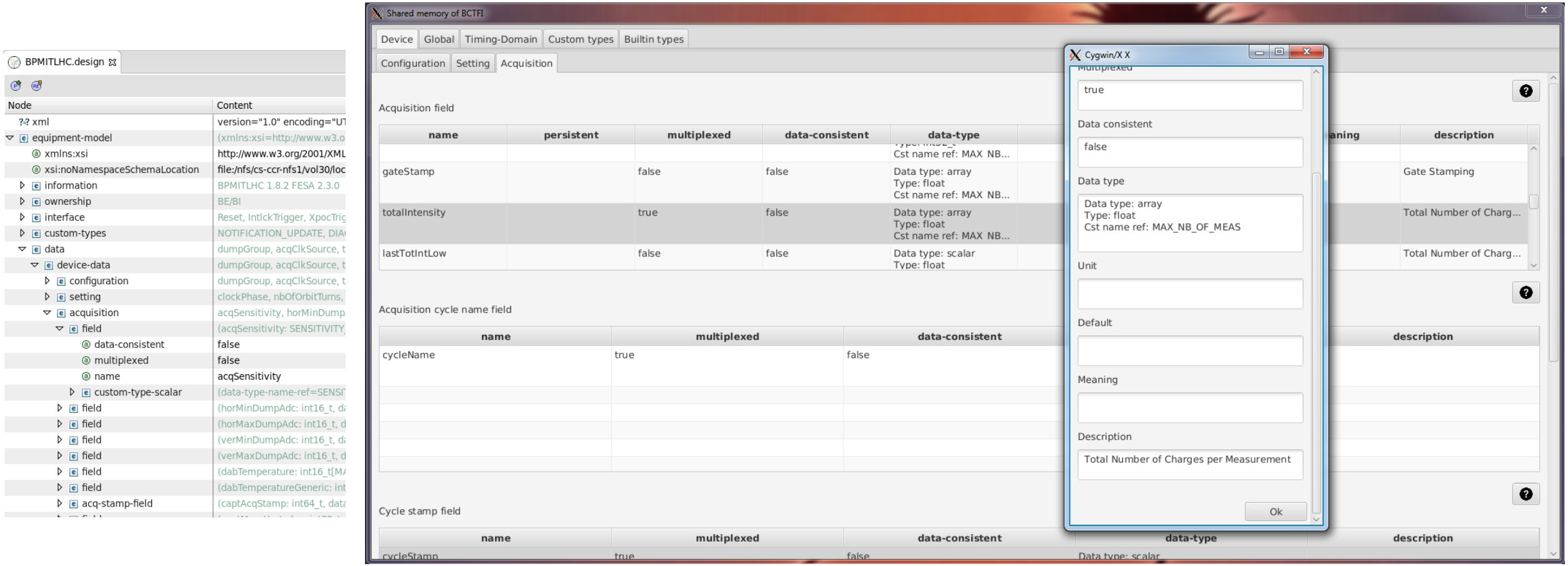
FESA API

- ✓ FESA Model
- ✓ Validation
- ✓ Code Generation
- ✓ Design Editing

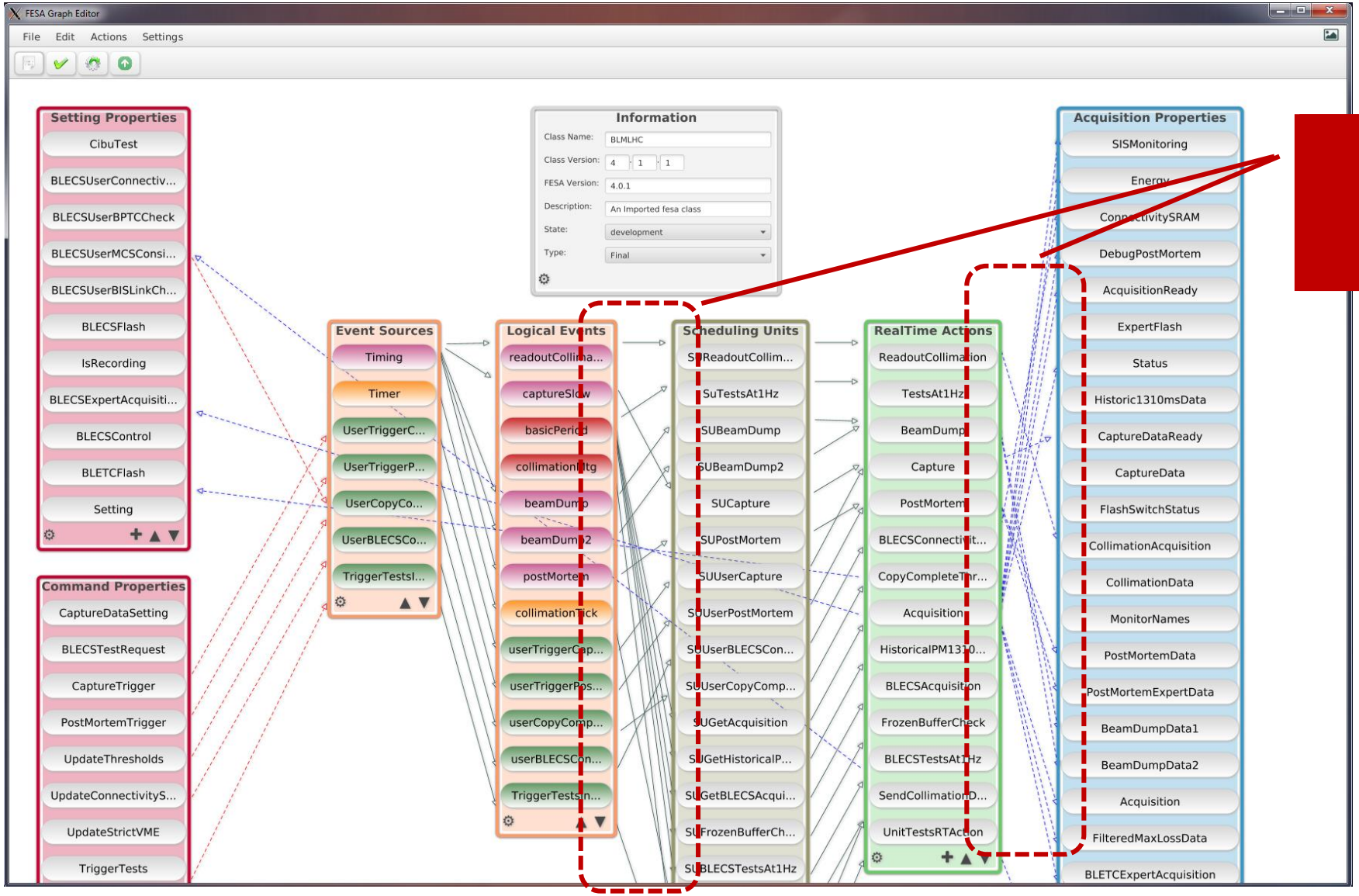
Graph Editor – Overview



Graph Editor – Data Store

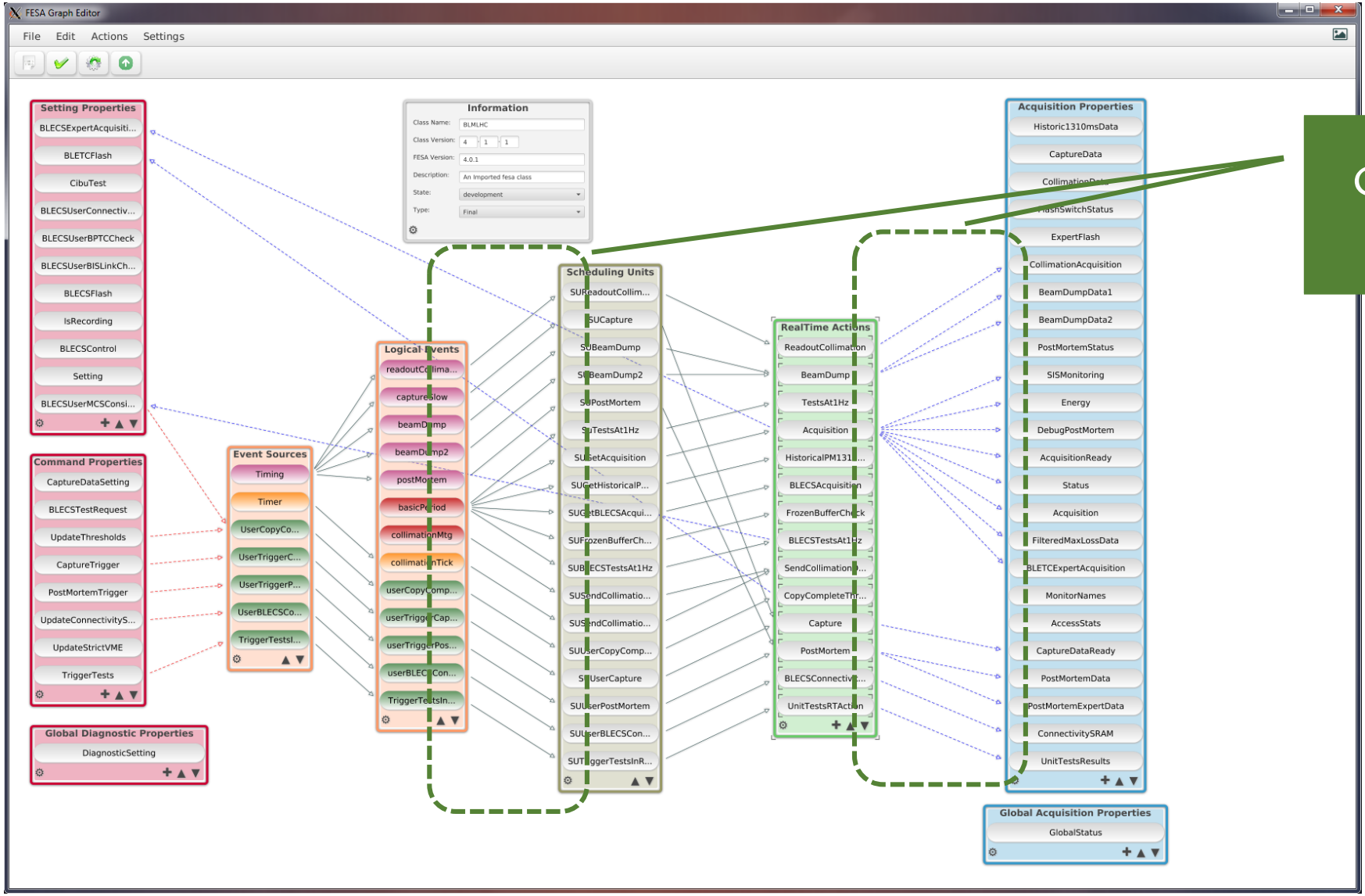


Graph Editor – Design Overview



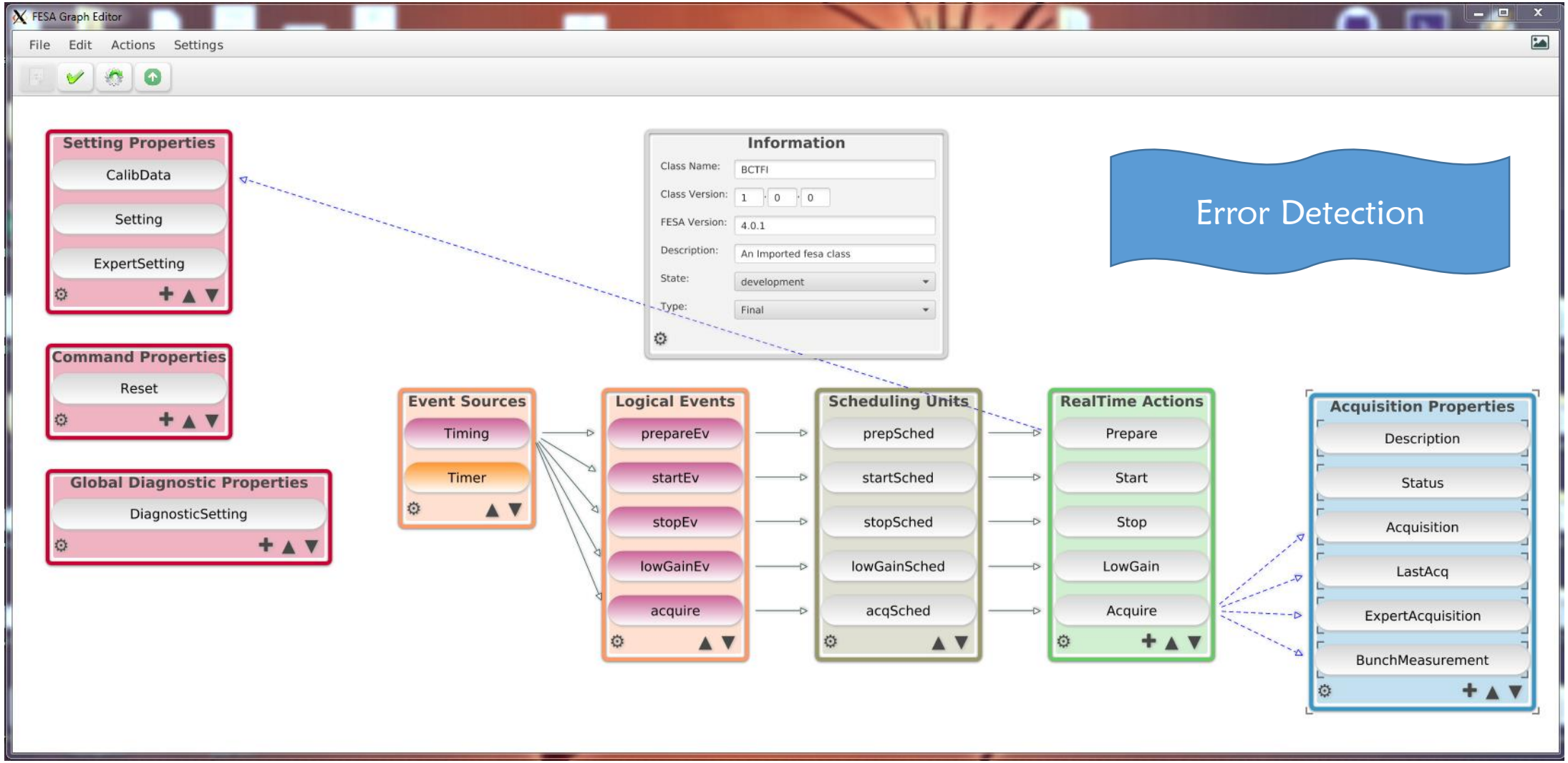
Complex & Messy

Graph Editor – Design Overview

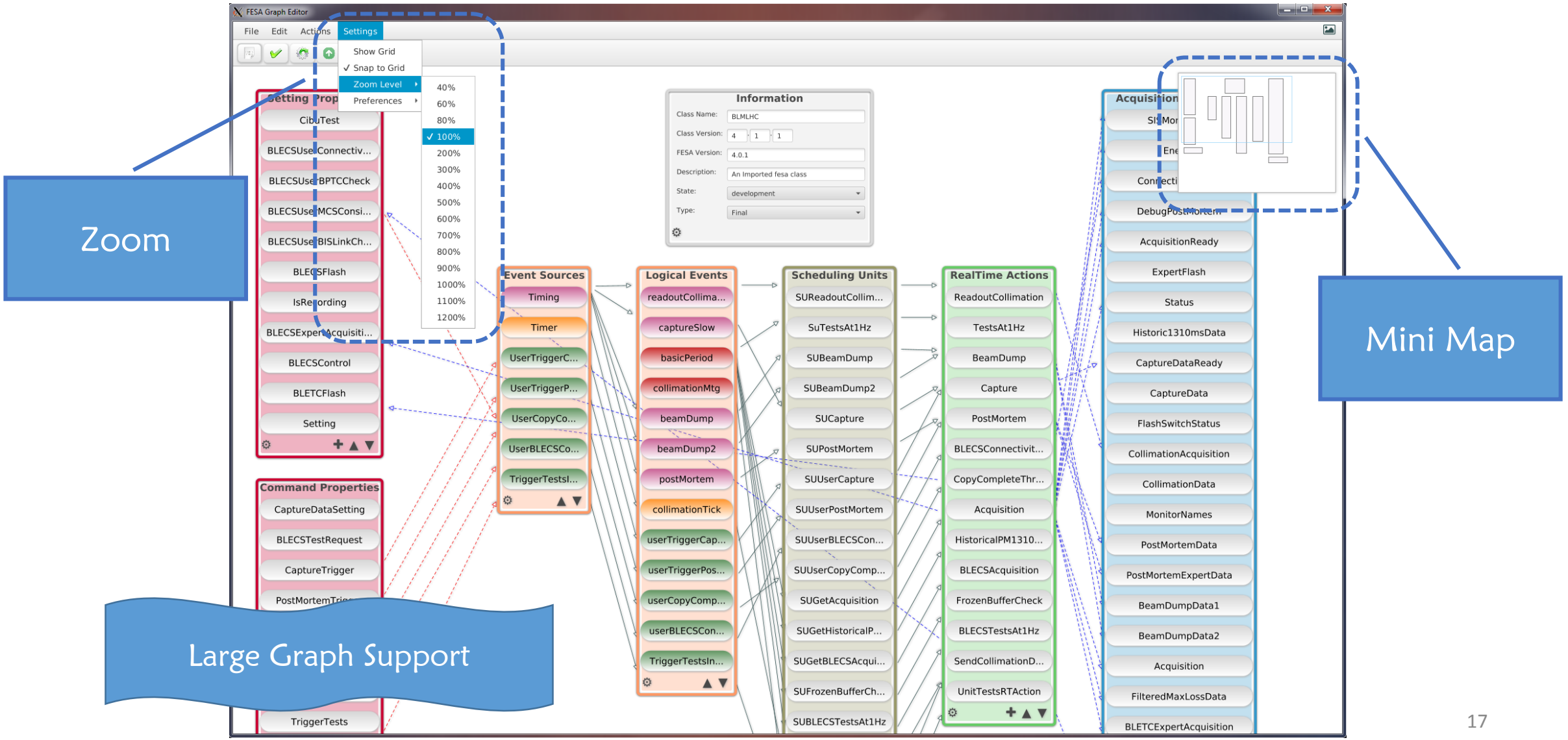


Complex but Clean

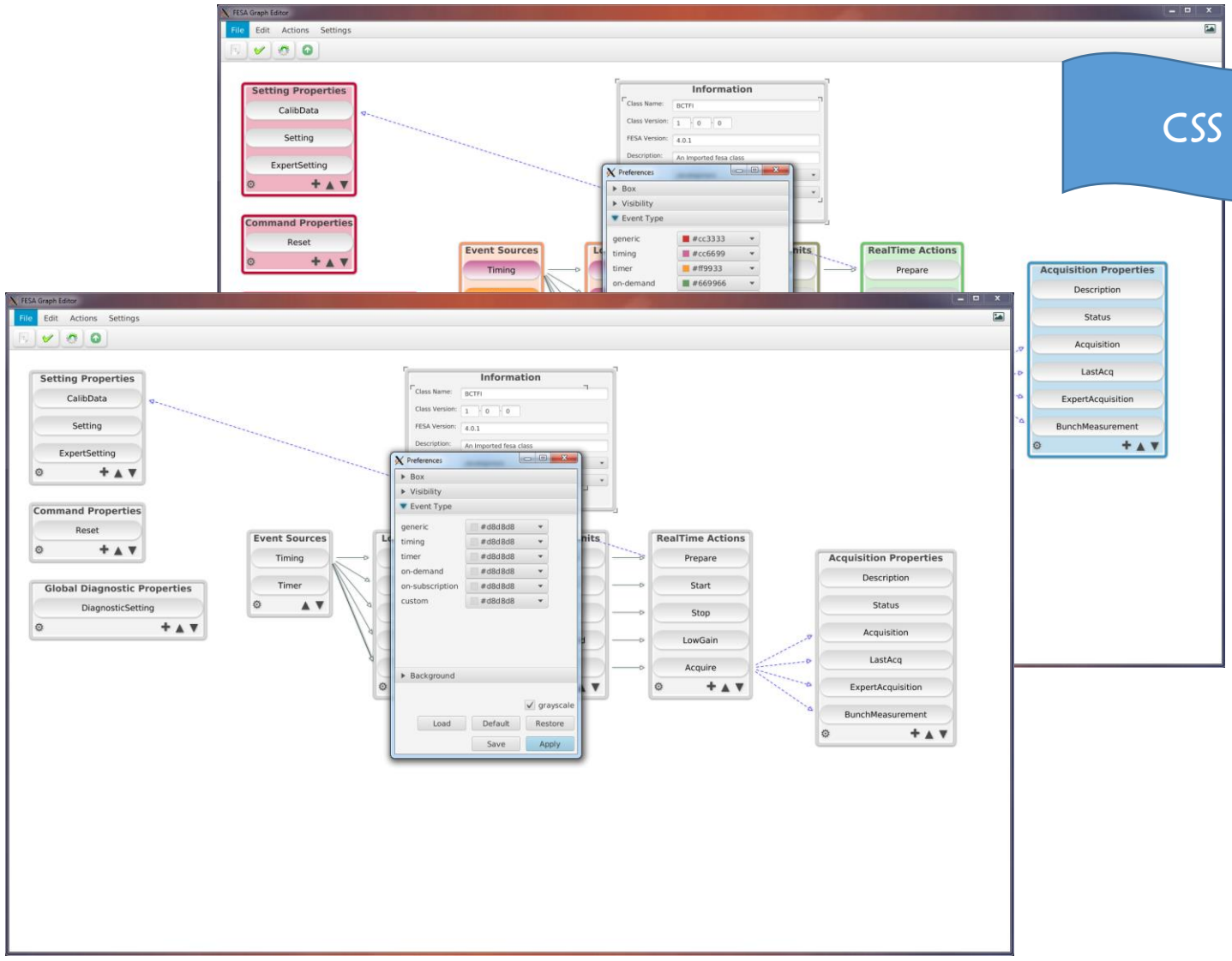
Graph Editor – Components Connection



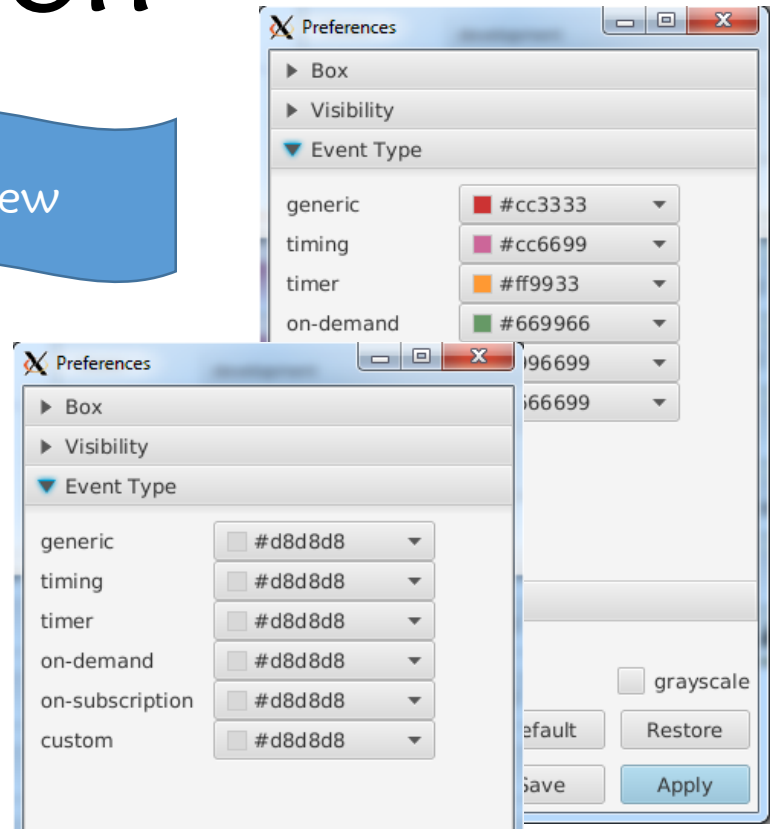
Graph Editor – Additional Functionality



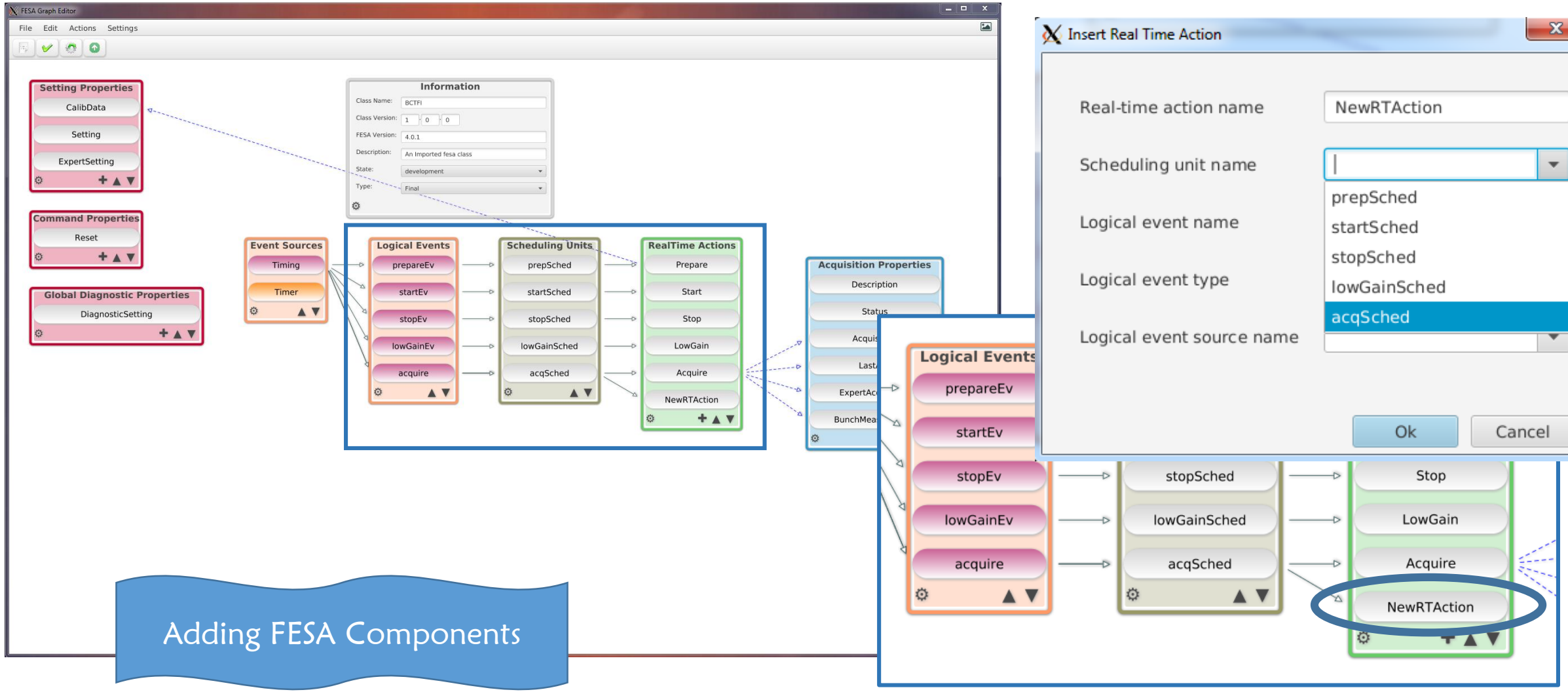
Graph Editor – Customization



CSS Based View



Graph Editor – Design Editing



Adding FESA Components

Graph Editor

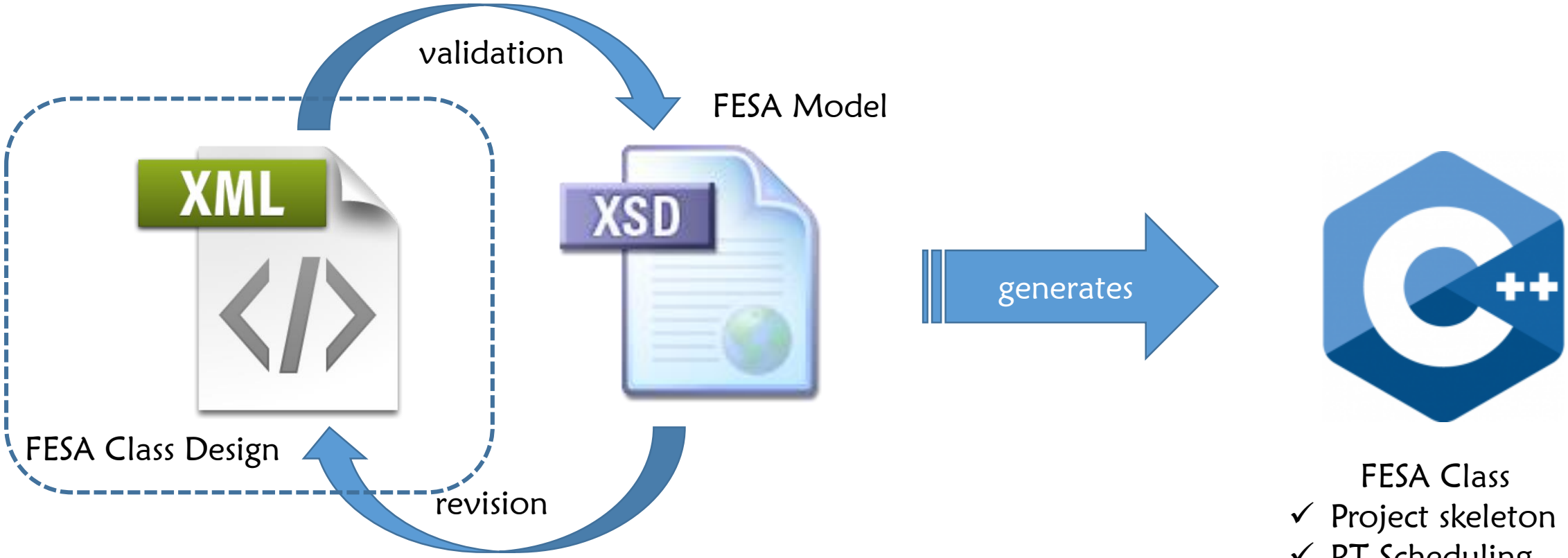
Wrap Up:

- Standalone JavaFX application
- Graphical abstraction of low level XML
- FESA SW Design overview – Easy Documentation!
- Fragmentation of the FESA design
- Made by Users… for Users

Future:

- Included in the plugin
- Included in the release process
- Fully editable design

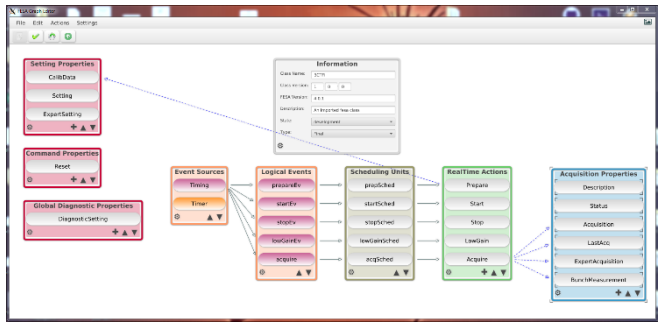
Graph Editor – The whole picture



Graph Editor – The whole picture

validation

FESA Model



FESA Class Graph

revision

generates

FESA Class

- ✓ Project skeleton
- ✓ RT Scheduling