OPEN SCIENCE DATA CLOUD

Multi-Workflow Systems and Editors

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Workflow Systems

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- Different workflow concepts
- Different workflow languages
- Different workflow constructs

Workflow Editors

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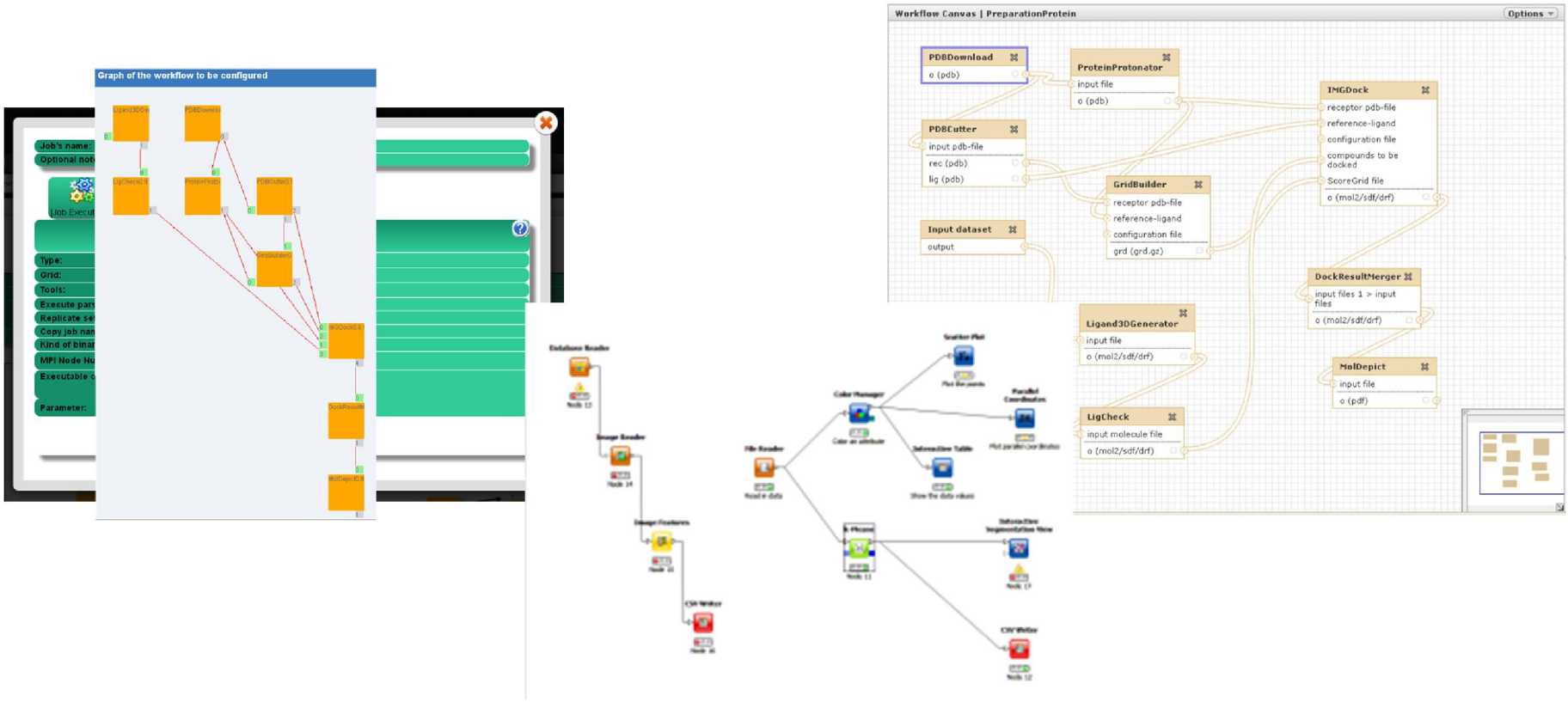
- Different technologies (workbenches, web-based)
- Different look-and-feel



Heterogeneous Communities

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- Diverse research areas
- Diverse workflow engines and editors established

Logical workflows are often the same inside a community

Heterogeneous Communities

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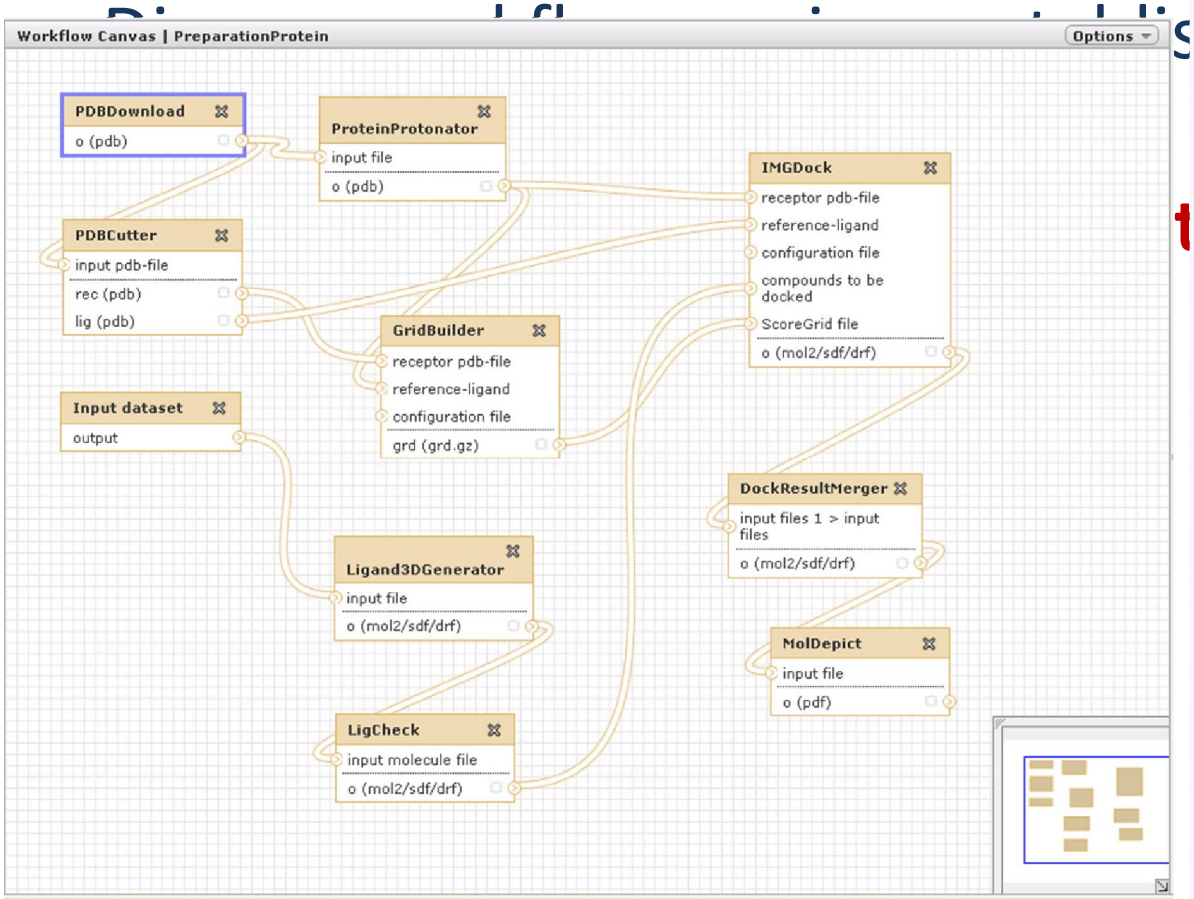
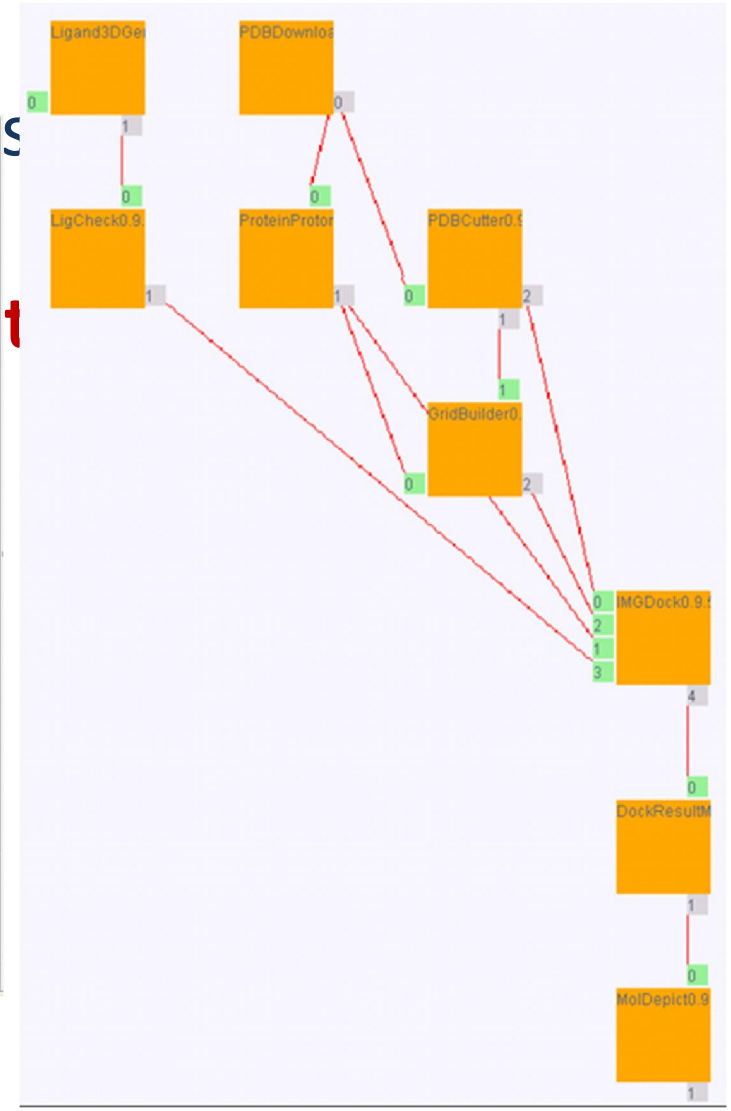
- Diverse research areas





Heterogeneous Communities

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- Diverse research areas
- Diverse workflow engines established

Logical workflows are often the same inside a community

⇒ Re-usability of workflows needed for communities

⇒ Workflow Interoperability

Workflow Engine-based Approach

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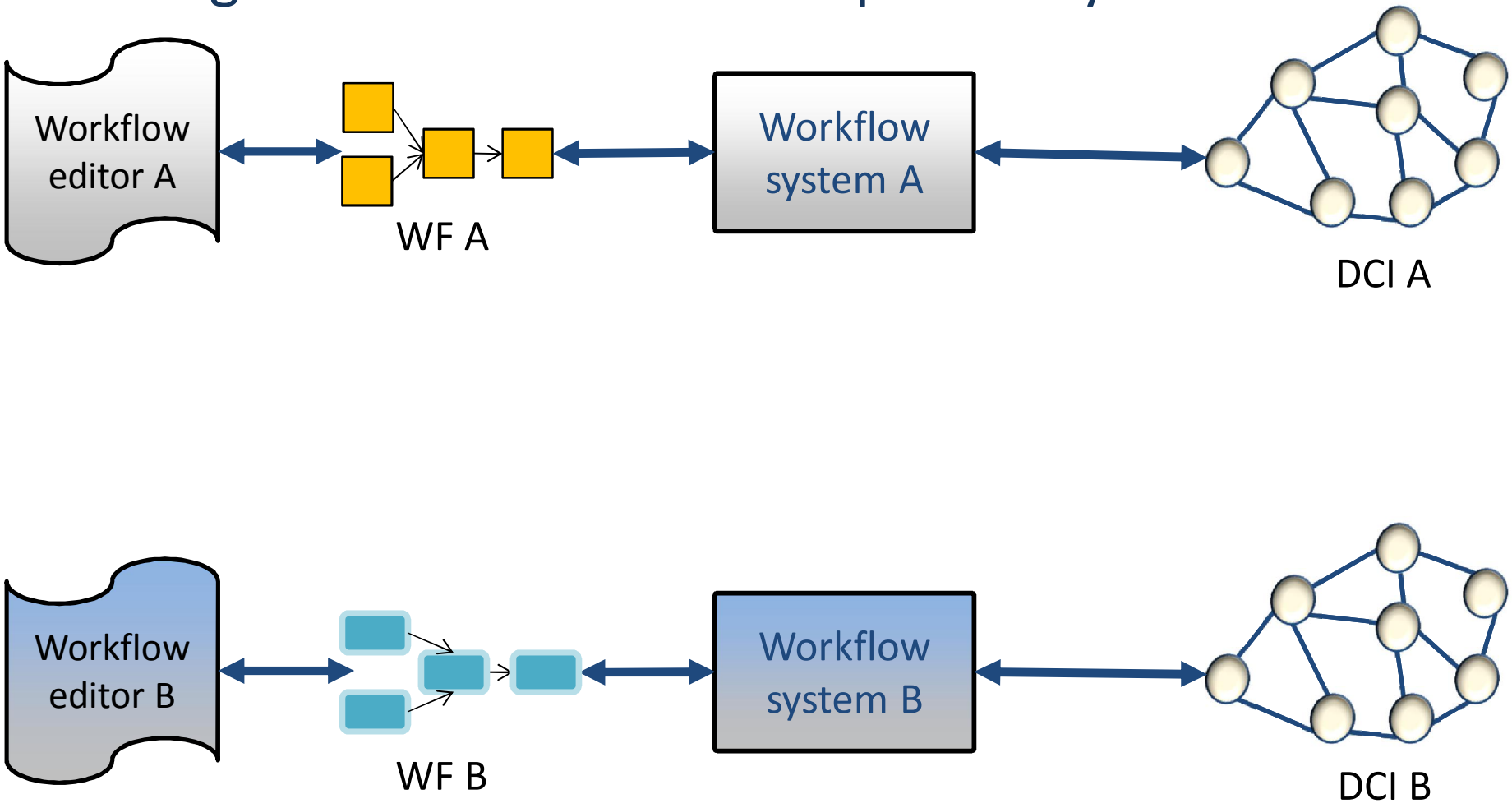
Coarse-grained workflow interoperability



Workflow Engine-based Approach

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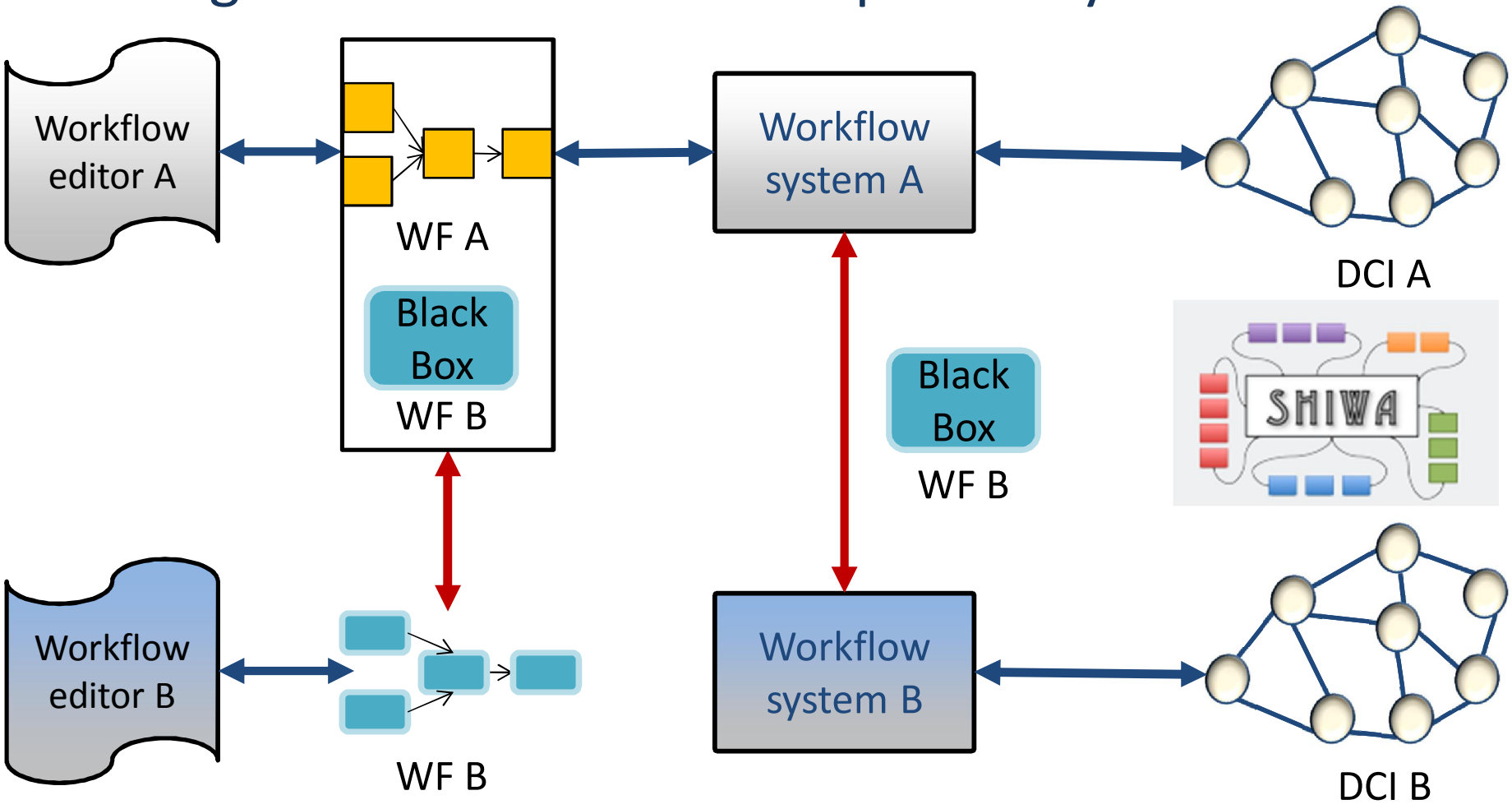
Coarse-grained workflow interoperability



Workflow Engine-based Approach

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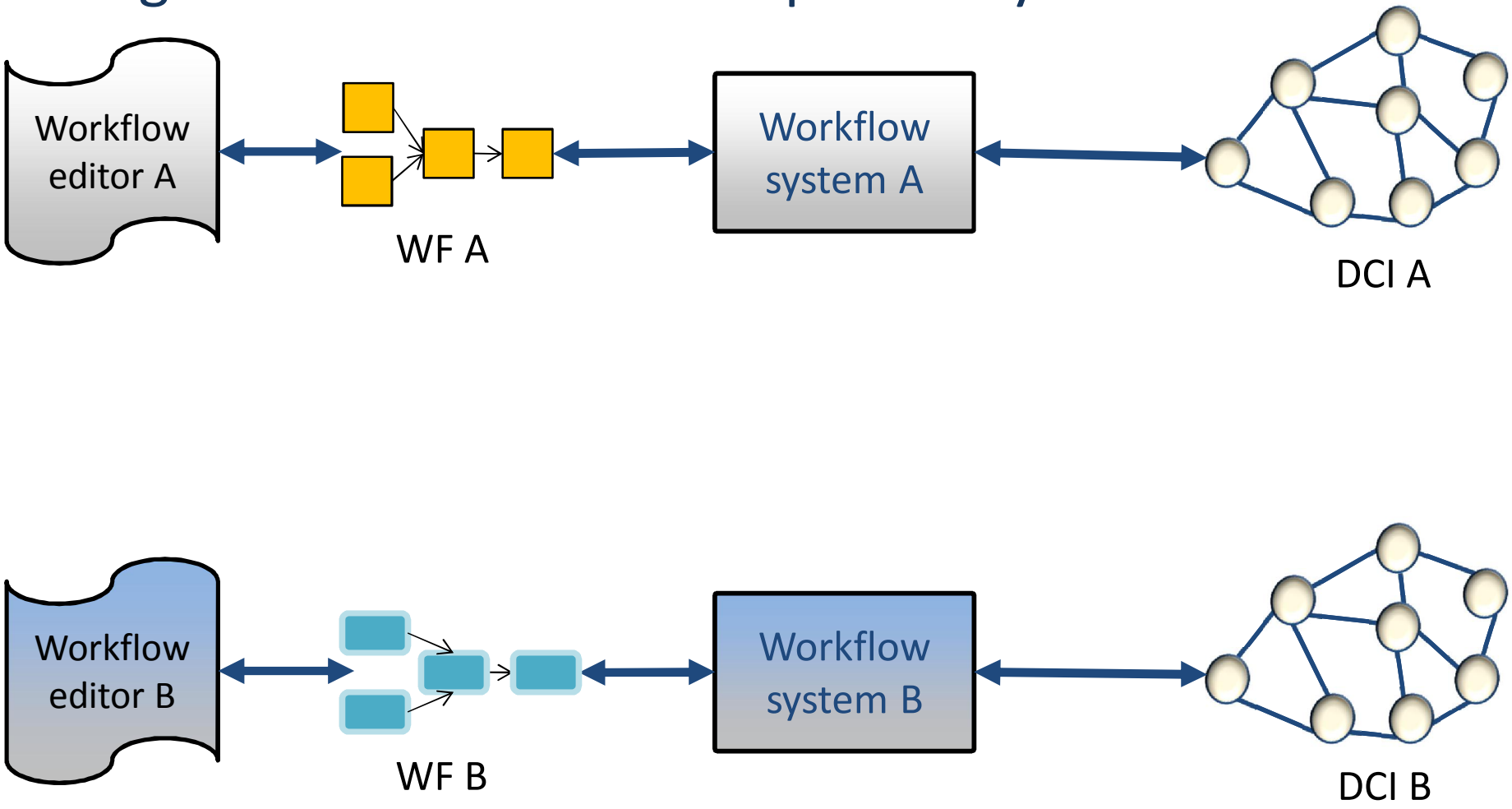
Fine-grained workflow interoperability



Workflow Engine-based Approach

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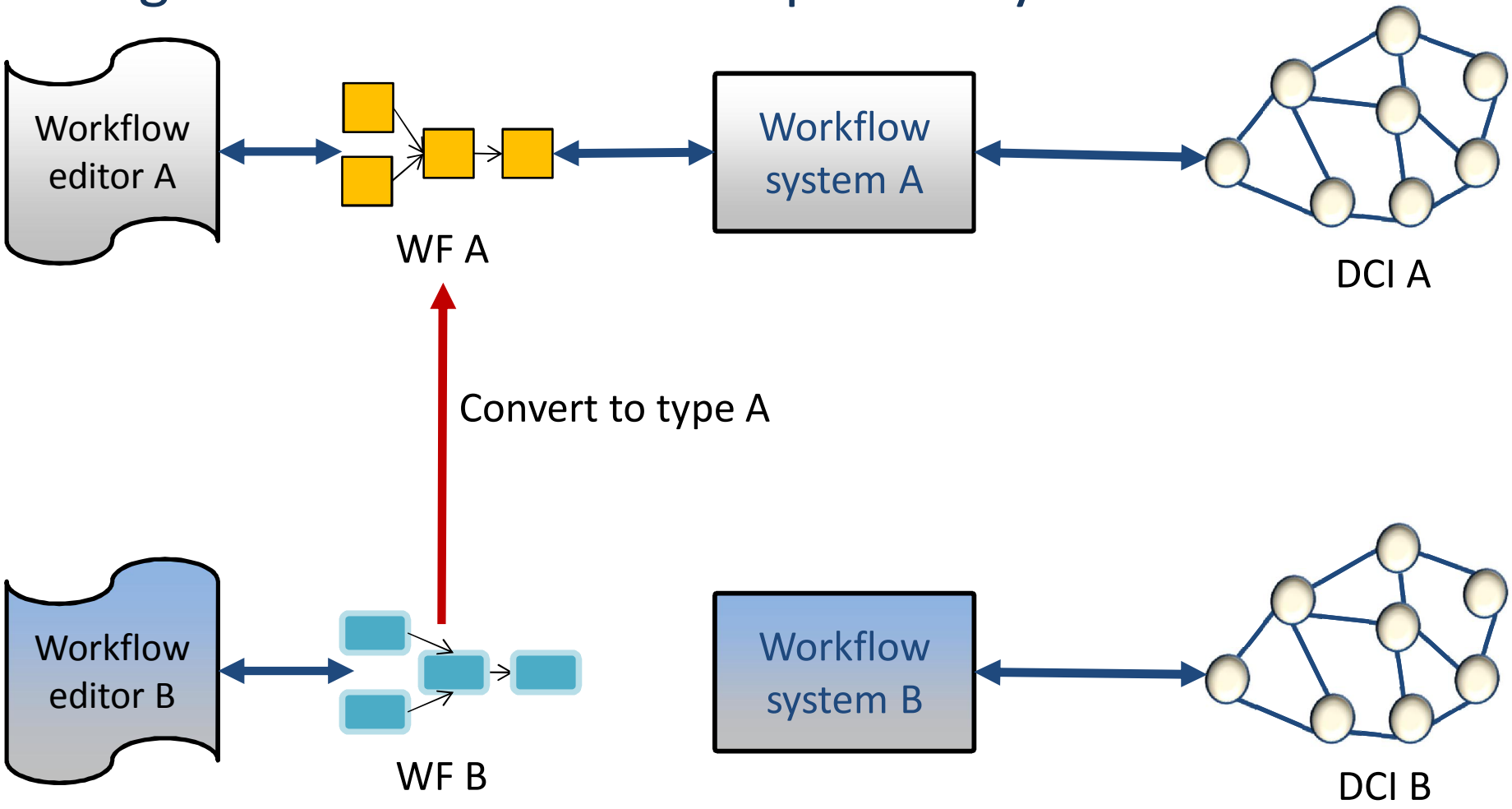
Fine-grained workflow interoperability



Workflow Engine-based Approach

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- SHIWA based on gUSE
  supporting ,e.g., Triana, Taverna, Kepler, MOTEUR
- Tavaxy based on Galaxy
  supporting Galaxy and Taverna
- MoSGrid based on gUSE
  supporting Galaxy to gUSE, UNICORE in gUSE

Excellent solutions but can be extended…

What happens if a workflow changes?

⇒ **Coarse-grained: users need access to the origin workflow editor**

⇒ **Fine-grained: users needs to change the workflow in the origin and in the targeted workflow editor**

Workflow Editor-based Approach

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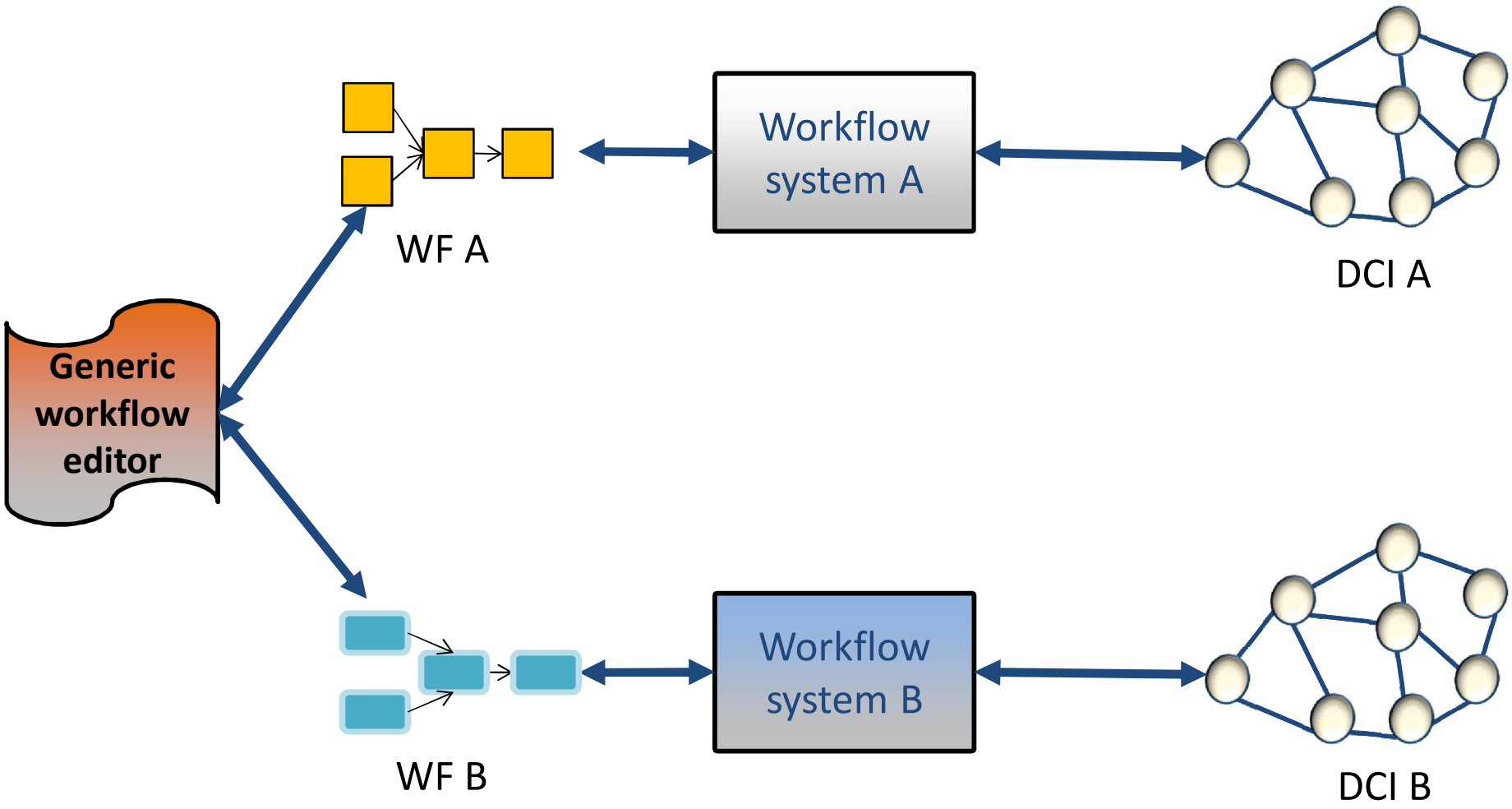
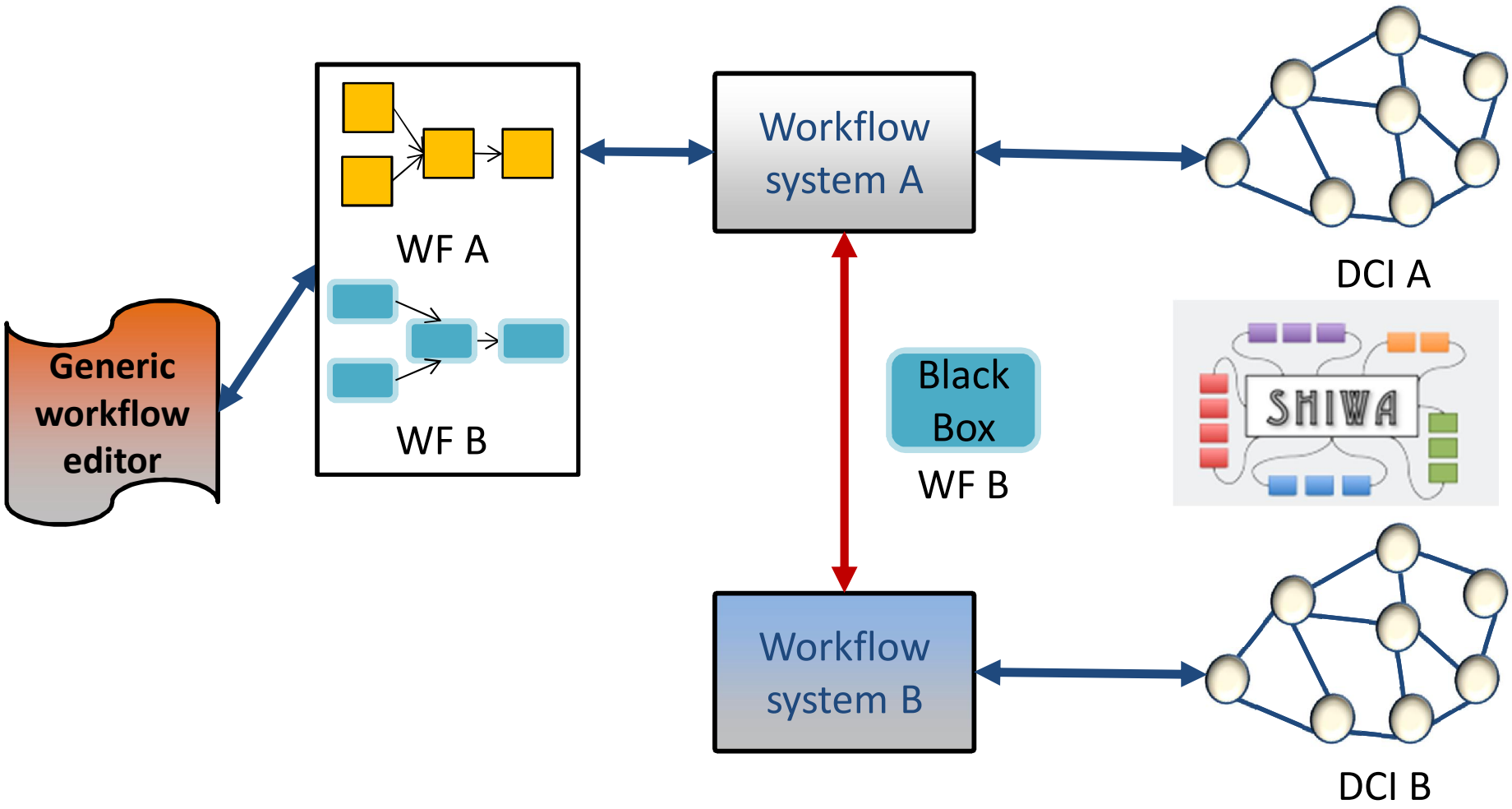


Workflow Editor-based Approach



Workflow Editor-based Approach

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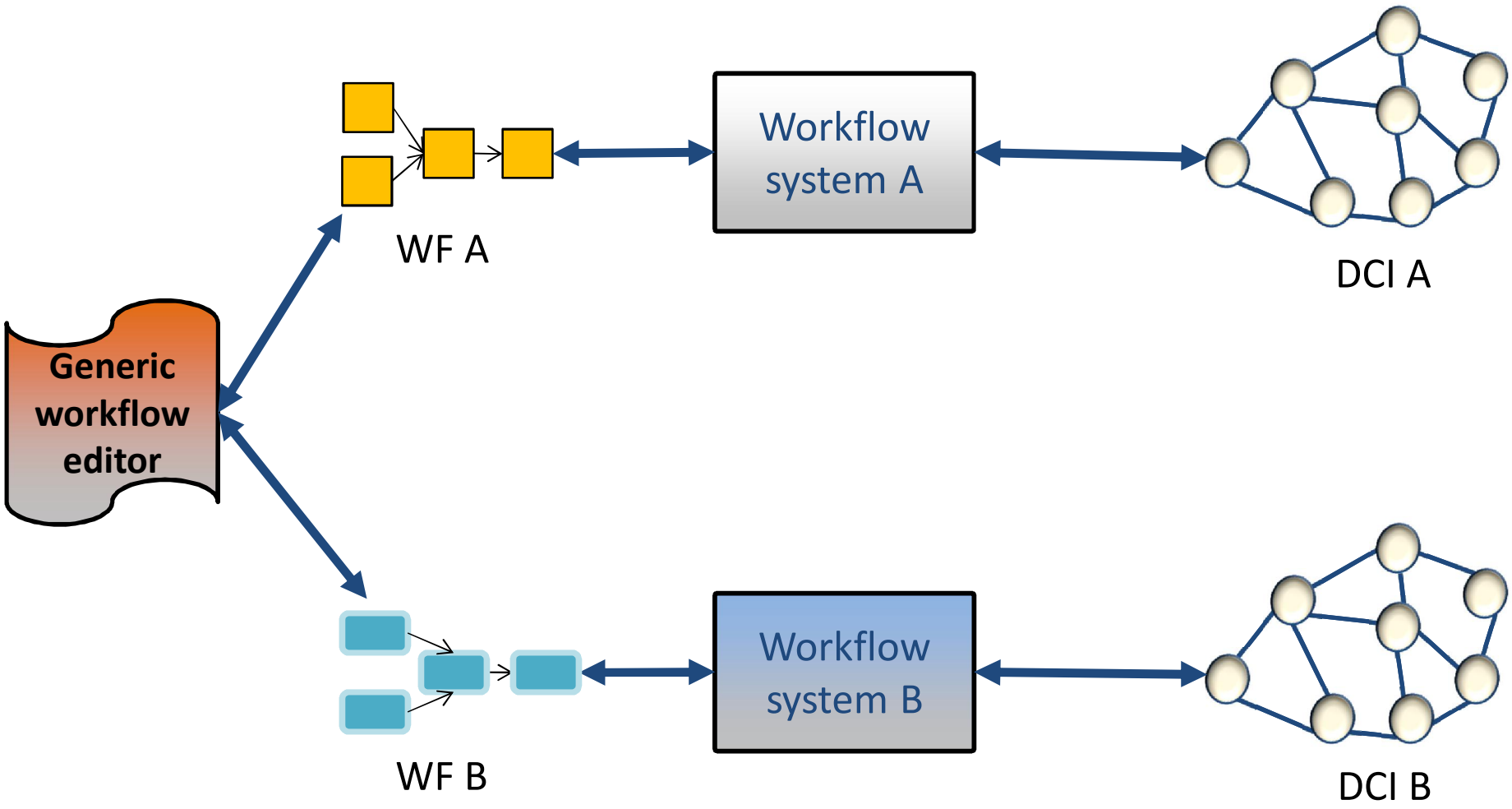

Workflow Editor-based Approach

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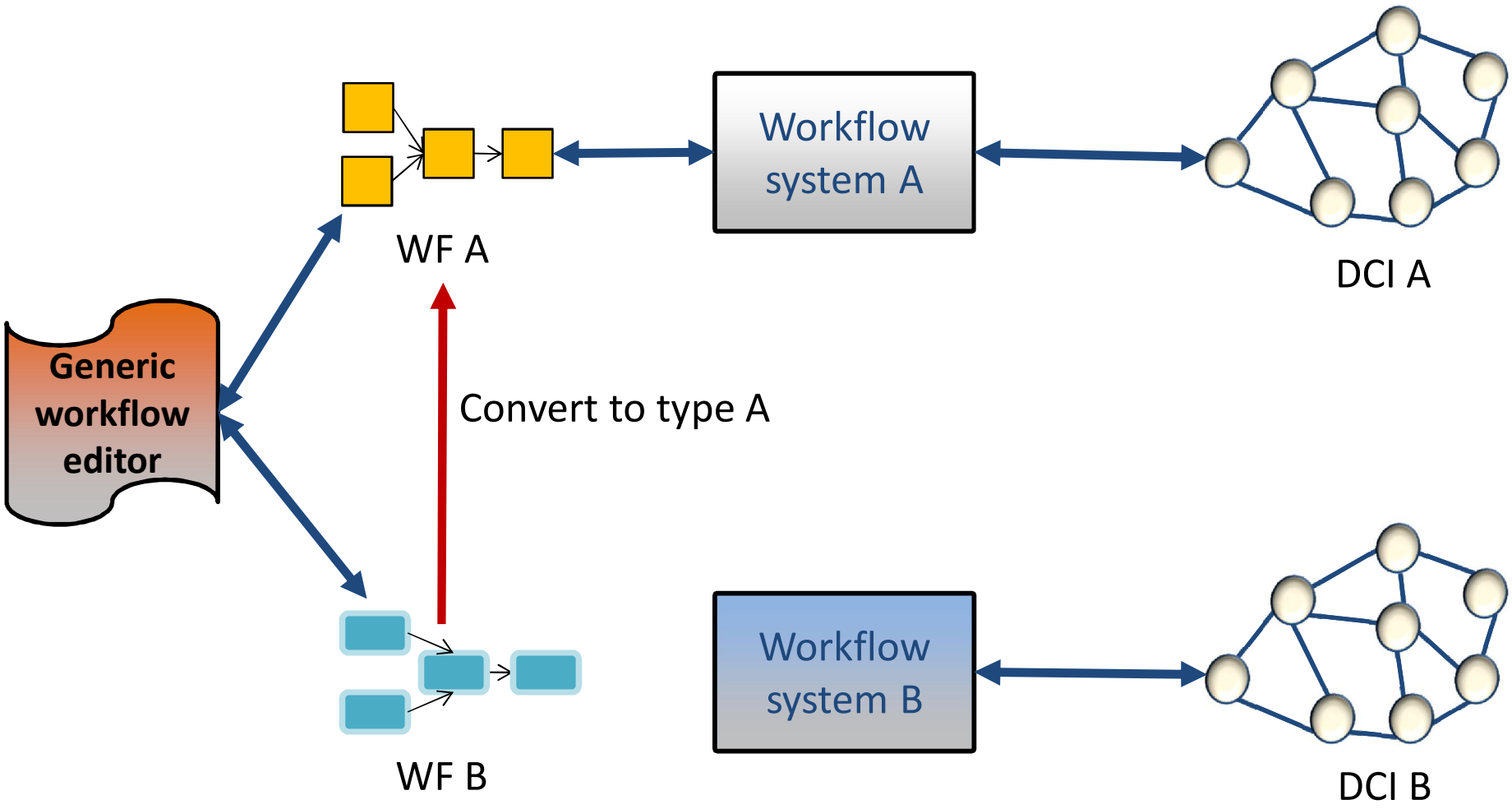

Workflow Editor-based Approach

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GeWWE (Generic Web-based Workflow Editor)

Goal

- One editor for diverse workflow languages
- Visual representation of workflows is the same as in the origin workflow editor
- Easy integration of new workflow languages

⇒ **Same look-and-feel for editing diverse workflows**

⇒ **One platform for the whole life cycle of editing workflows**

Life Cycle of Editing Workflows

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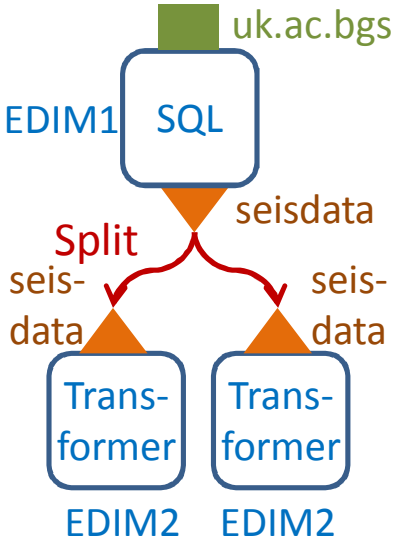
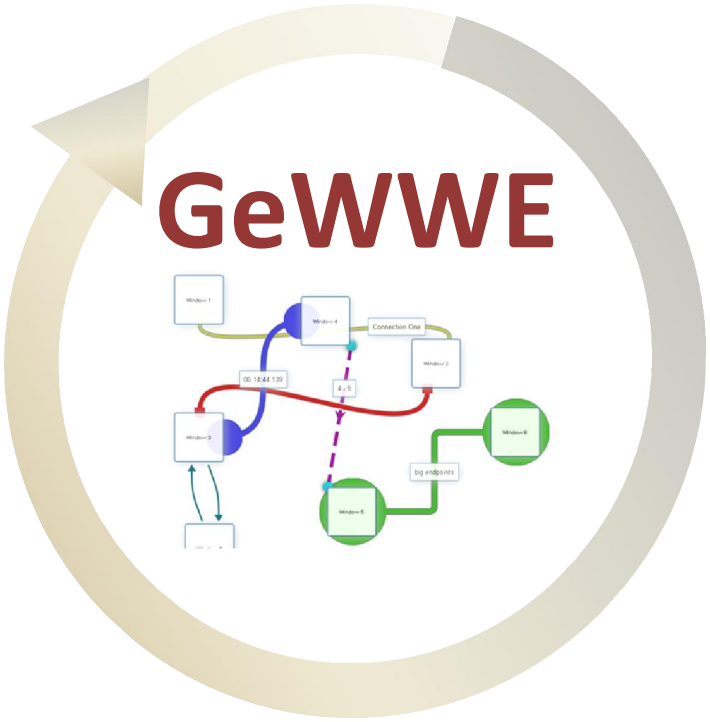
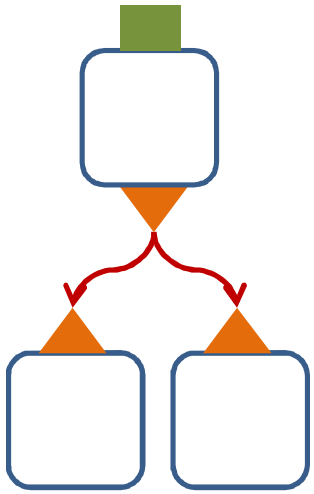
Ready-to-process workflow

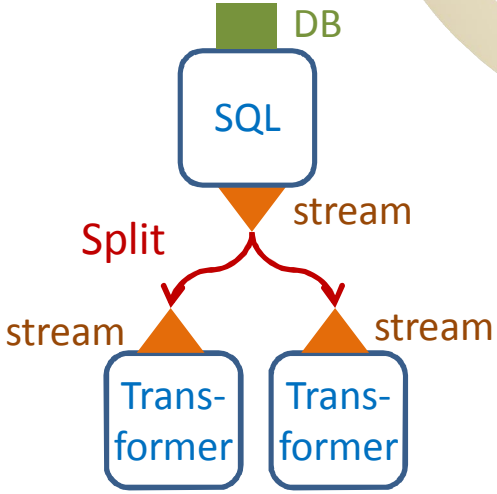




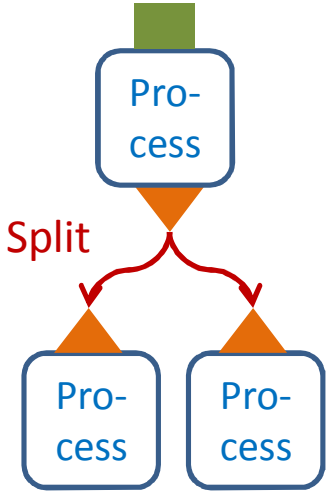
Visual representation



Workflow instance



Logical representation



GeWWE

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Following the Model-View-Controller (MVC) concept

Model
Process Connection Connector Text Registry

View
Icon library Process Connection Connector Text

Controller
Features for the model and the view

GeWWE – Main Features

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- Visualisation of workflows
- Selection of workflow language
- Support of meta nodes
- Selection of processes, connections, and connectors
- Parameterisation of processes
- Annotation
- Registry for internal and external resources
  - processes
  - compute and data resources
- Import and export text

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