



ClusterDesign

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Cluster Design Toolbox for integrated Cluster design (WP5)

ERA DTOC workshop June 2013

FP7-ENERGY-2011
283145 / ClusterDesign





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Presentation Outline

- WP5 objectives & toolbox overview
- Design/ Operation and use in real-life applications
- IT infrastructure

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Presentation Outline

- **Objectives/
Overview**
- Use
- IT infrastructure

Objectives

- Toolbox specification (functionality)
- Integration of models
 - IT platform
 - Models interaction
 - Measurements and simulations DB
- User interface
 - Data import/export
 - User summary view
 - Farm/cluster layout(s)

Presentation Outline

- Objectives/
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- Use
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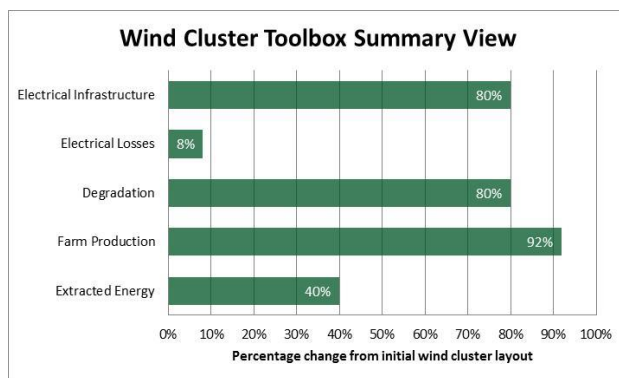
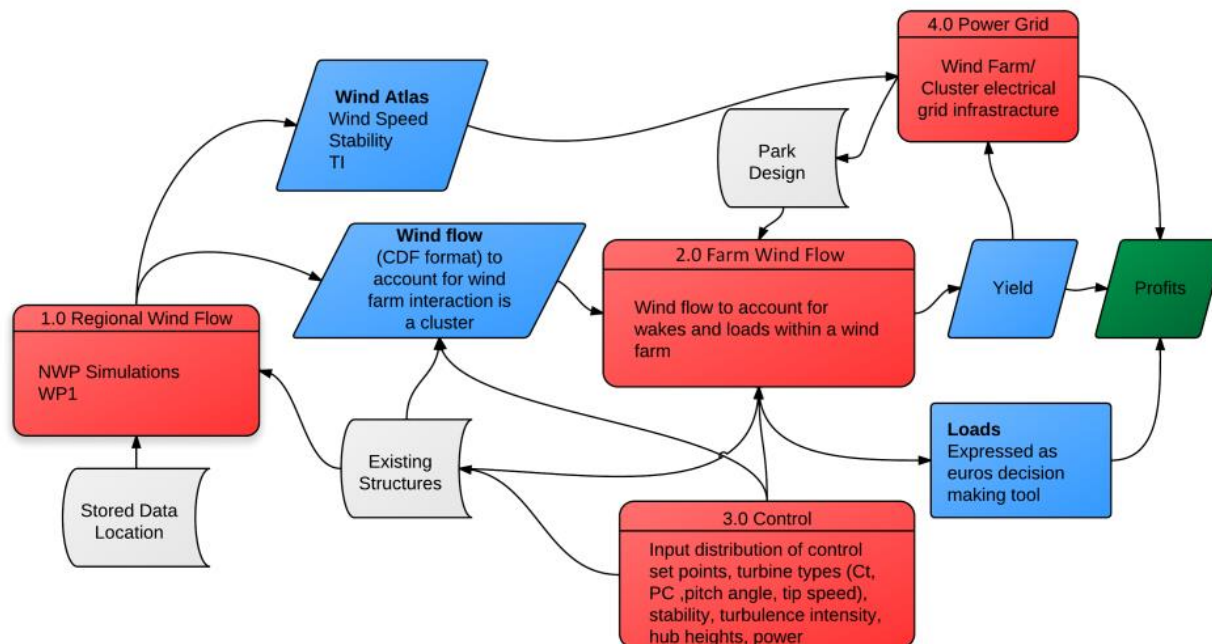


- Wind farms interaction within a cluster (Wakes)
- Farm topology (Yield vs loads & control)
- Grid connection (topology & losses)
- Operations (Control)

Cluster design toolbox

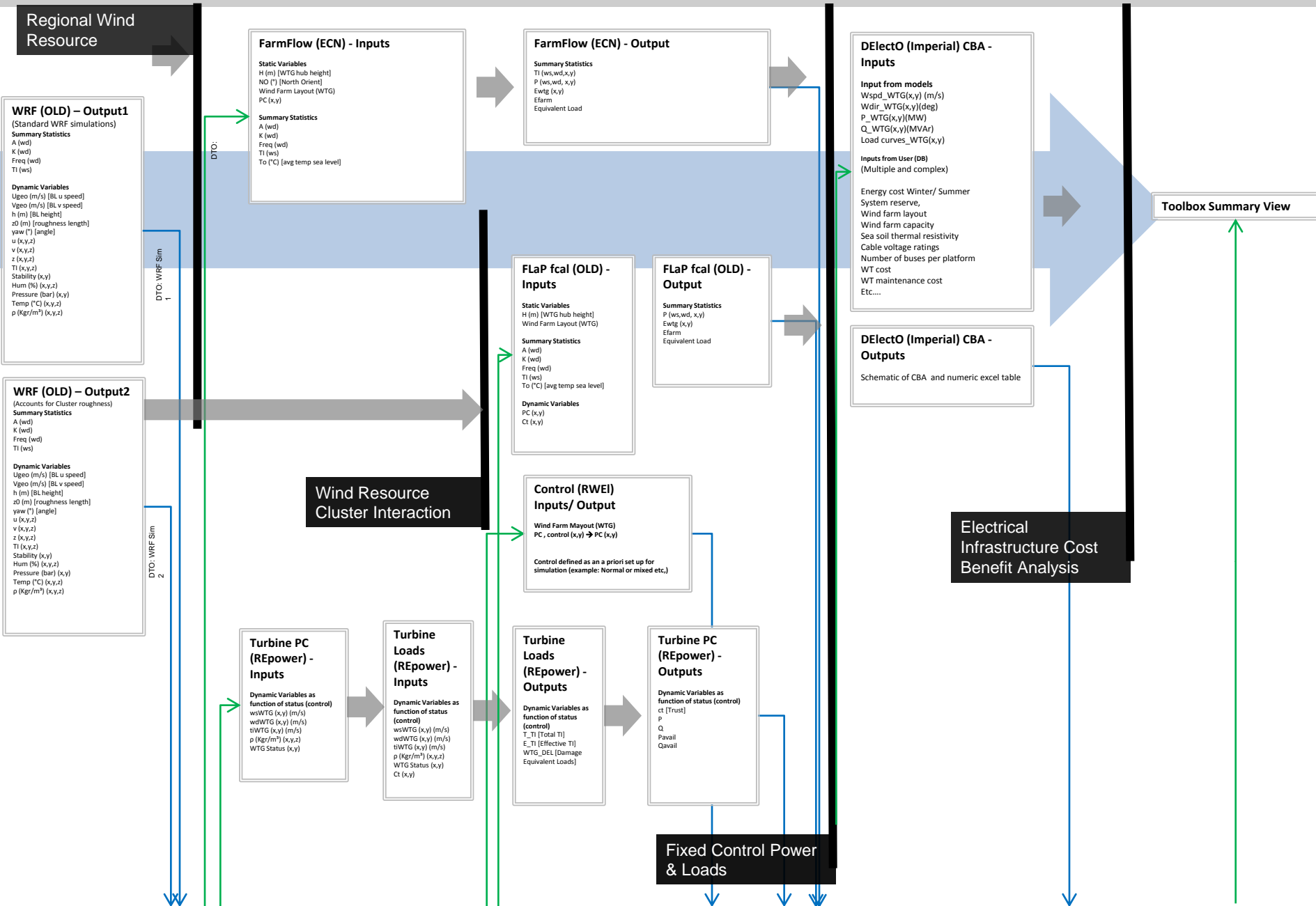
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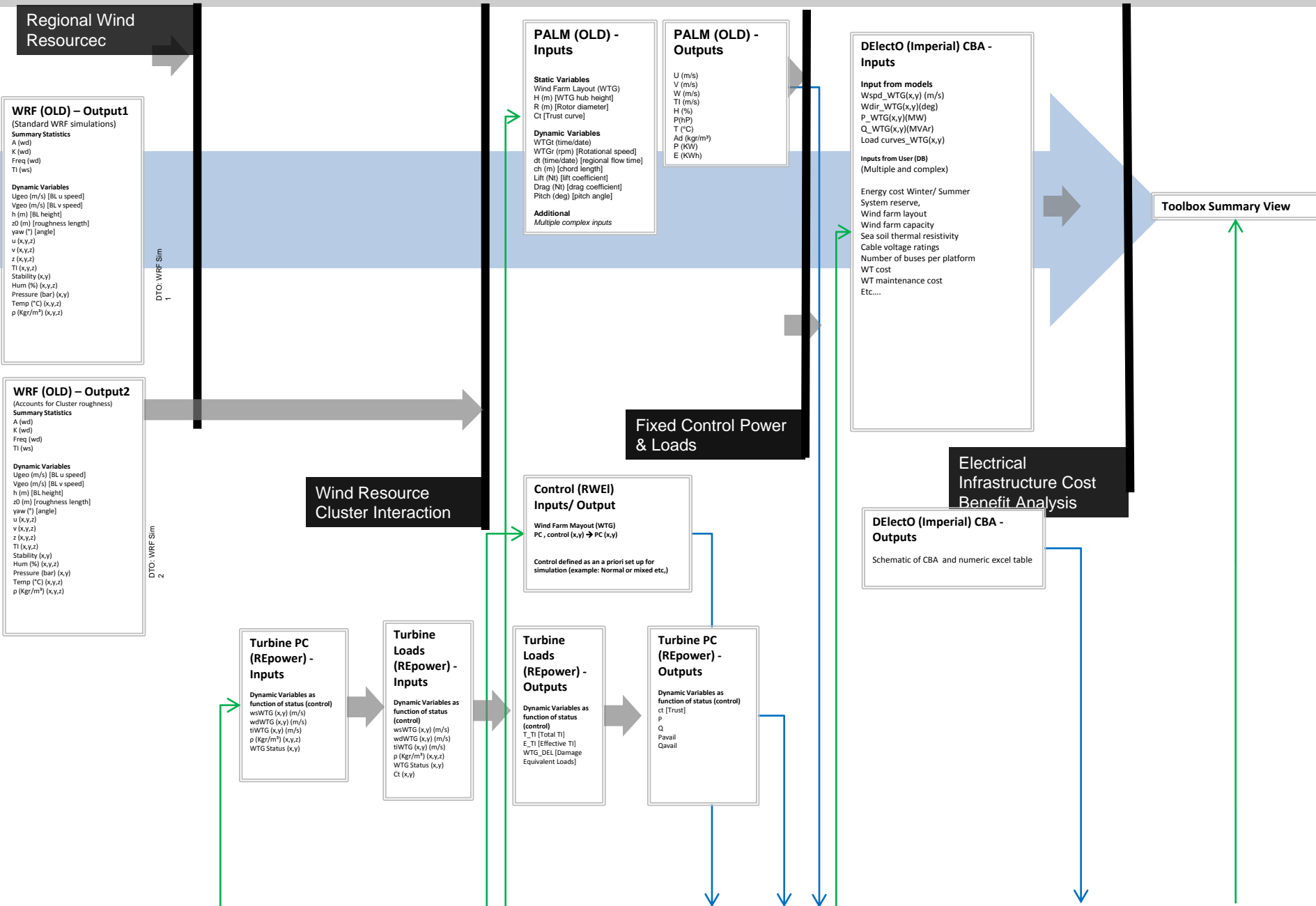


Design Mode
Operations Mode

Cluster Design Toolbox – Variables and computational flow – Design mode A



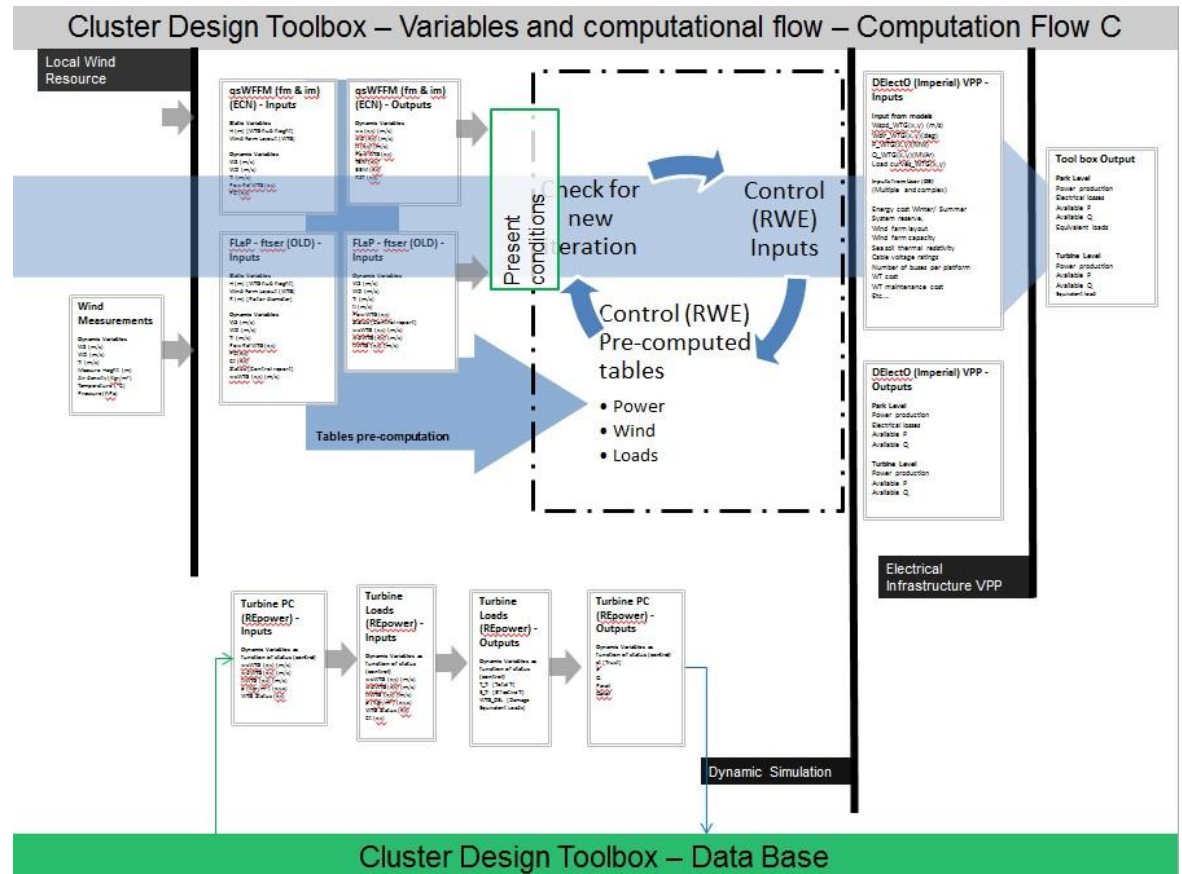
Cluster Design Toolbox – Variables and computational flow – Design mode B



Operations mode

Presentation Outline

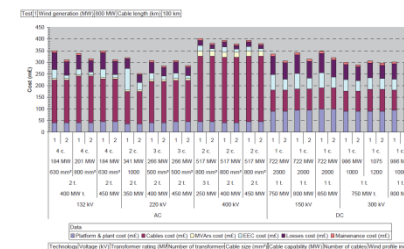
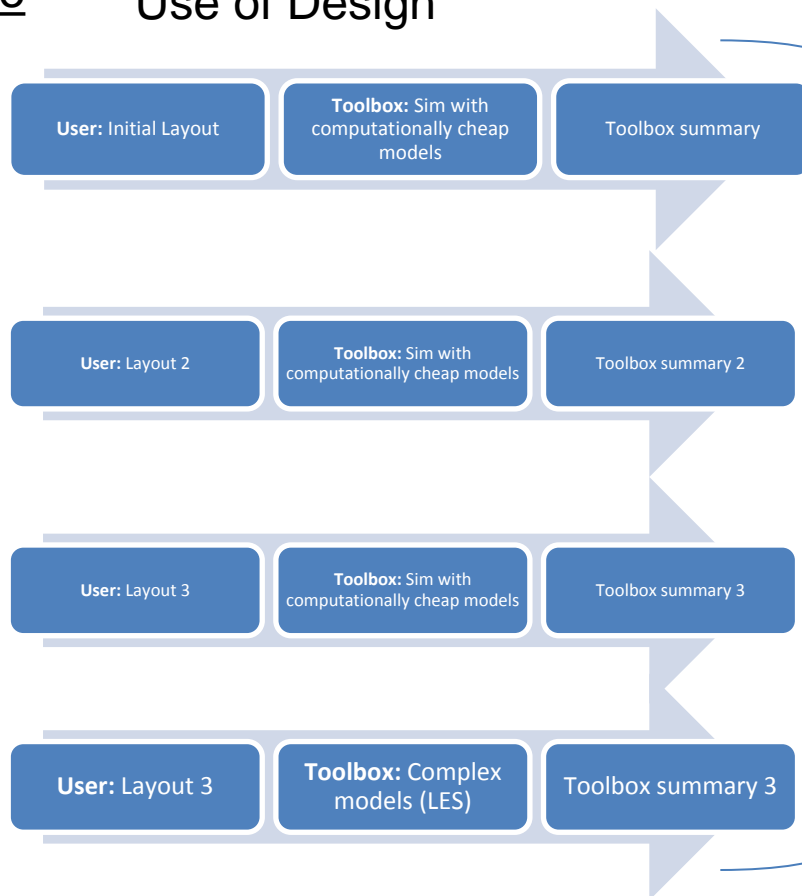
- WP5 objectives
- Design
- Operation
- Use
- IT infrastructure



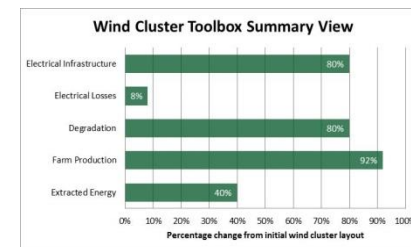
Presentation Outline

- Objectives/ Overview
- Use
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Use of Design



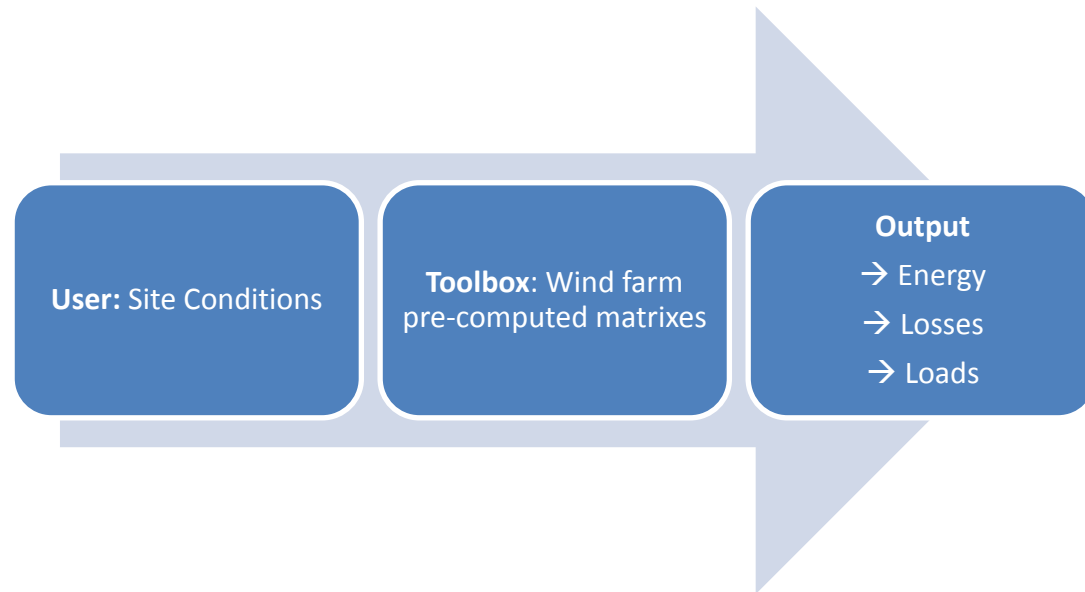
User: decision on optimal solution based on summary reports



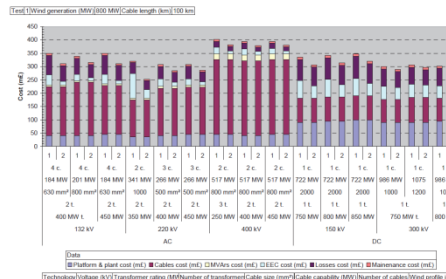
Presentation Outline

- Objectives/
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Use of Operations



Optimize selection of WTG operation modes

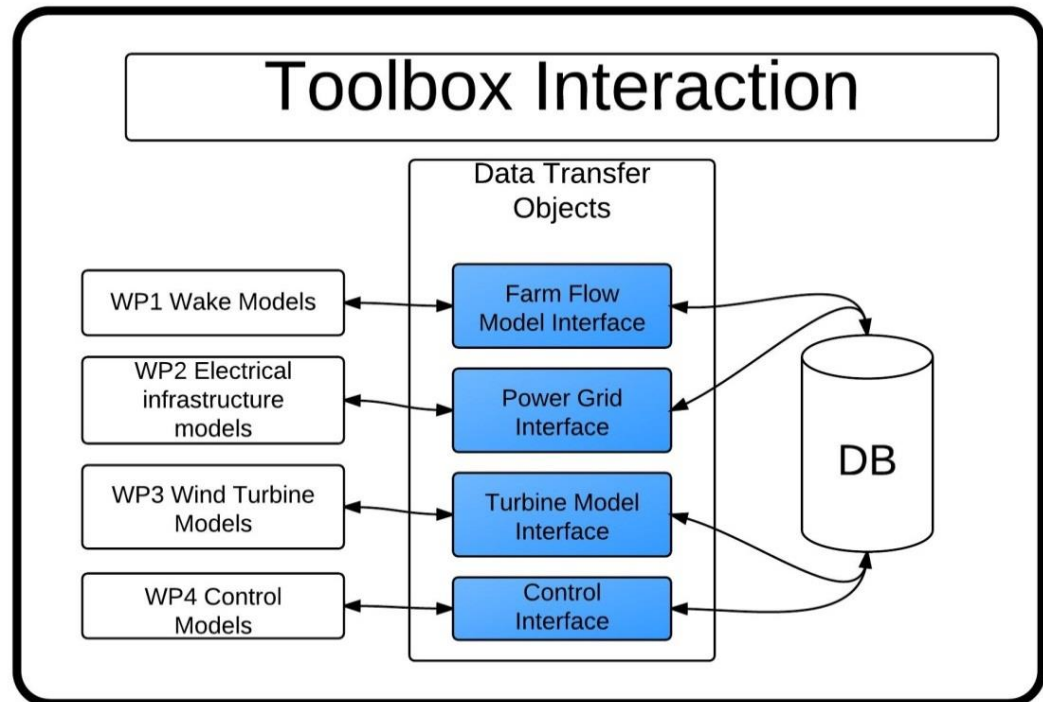


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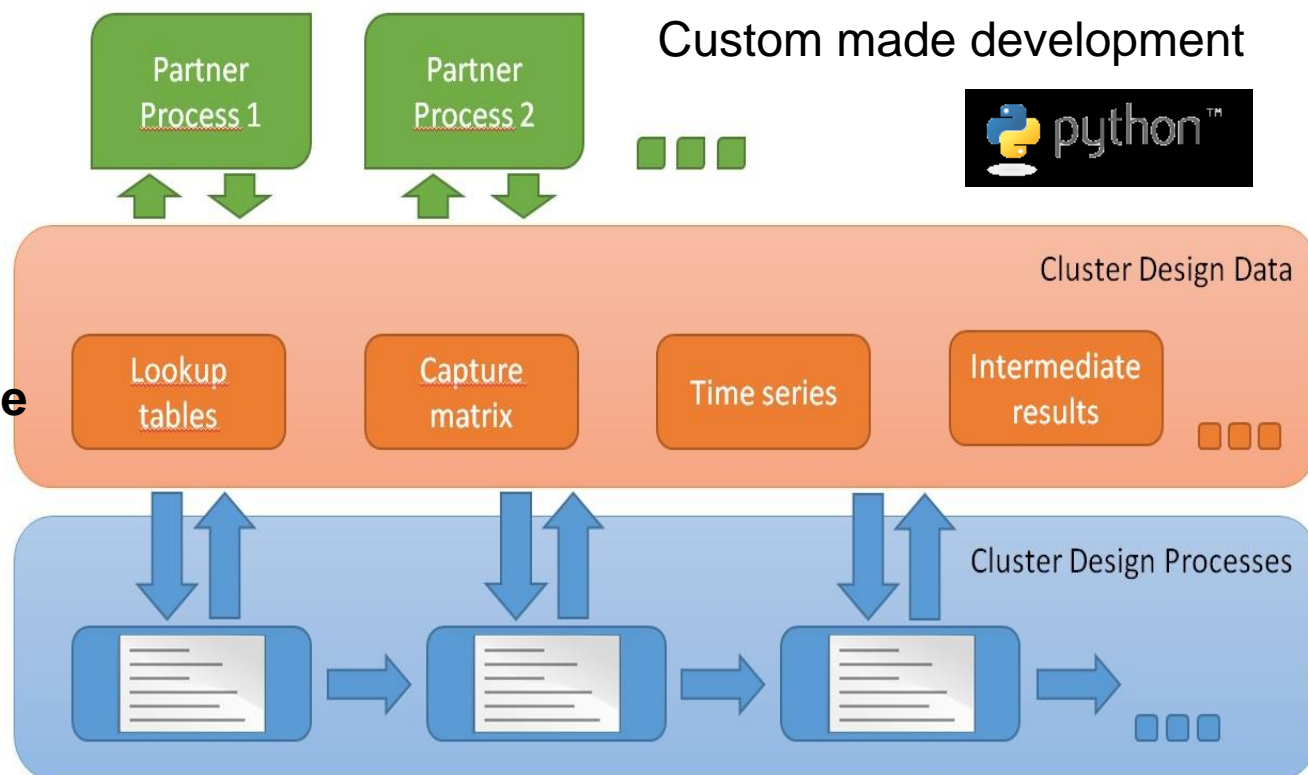
- Objectives/
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Models are host in dispersed locations (partners)

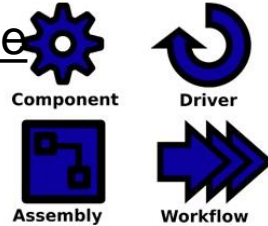


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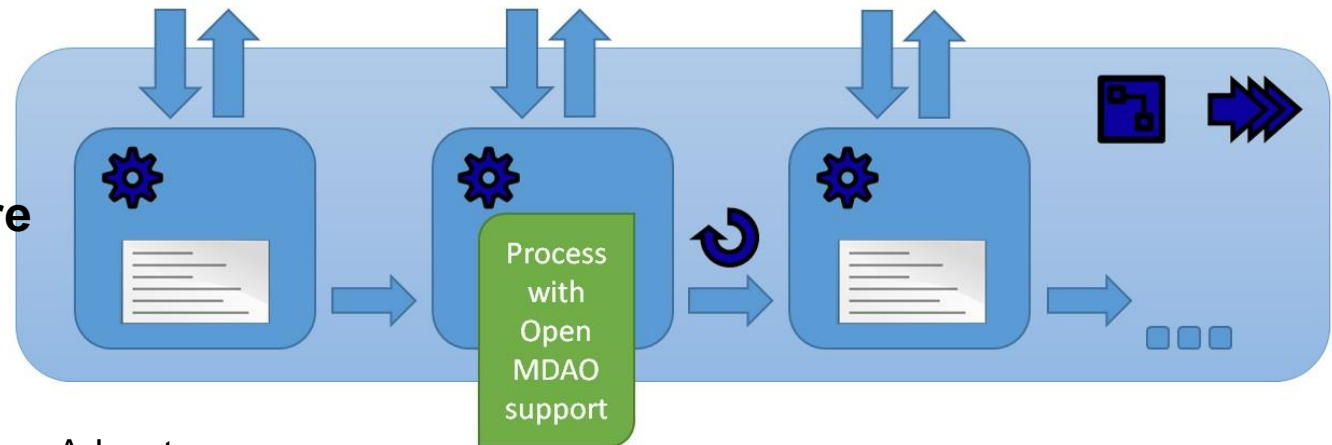


Presentation Outline



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OpenMDAO components instead of custom code modules
OpenMDAO Assembly / Workflow instead of custom made processes



Advantages:

- Standardization / documentation
- GUI Workflow editing
- Inter-changeability of components
- Solver/ optimization
- Open source

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Cluster Design Toolbox for integrated Cluster design

Pilot release – June 2014

Thank you for your attention

Q&As / discussion