



# TOWARDS PERSONALIZED CHANGE PROPAGATION FOR COLLABORATIVE MODELING

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# CONTEXT

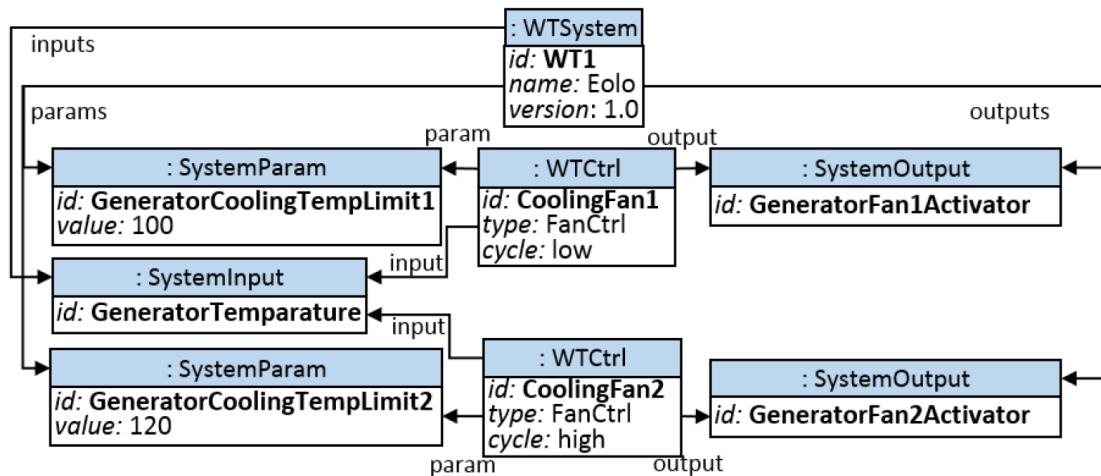
- Complex software development requires teams of stakeholders with varying expertise
- In MDE, stakeholders work in a coordinated manner on models of different aspects
- Multi-view modeling helps users work on different aspects of the system concurrently
- Change propagation is essential to let users aware of modifications and progress





# MOTIVATION

- Simple model of a wind turbine that describes the cooling of the Generator subsystem



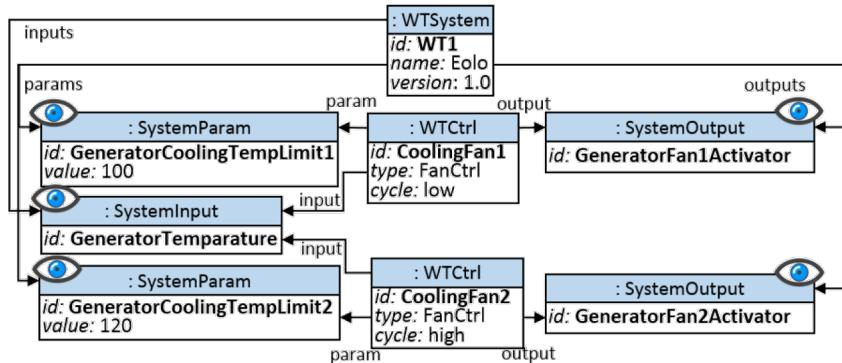
- Design of control units relates to the specifications by three stakeholders of the different domains:
  - WT Manager
  - WT IO Manager
  - System Manager



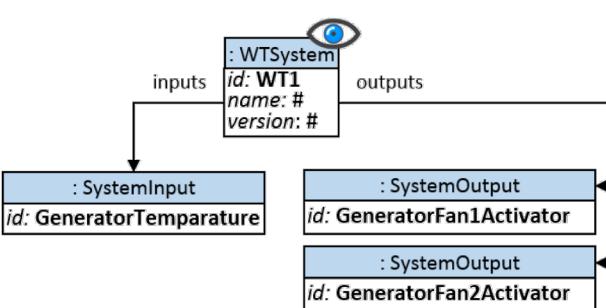


# MOTIVATION - CONT

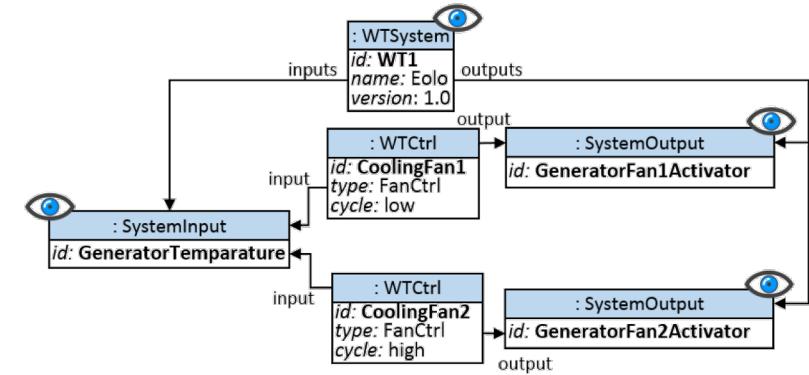
- The model views are filtered related to their permissions
- All stakeholders do not need to immediately send their changes and receive those applied by others
- We must allow the stakeholders to personalize the propagation of change operations according to their needs and common resources among them



(c) System Manager view



(a) WT IO Manager view



(b) WT Manager view





# PROBLEM STATEMENT

- Having users from different domains and expertise, the framework should be able to adapt its environment specifically to the needs and habits of the user
- There is no proper support for personalized change propagation in collaborative multi-view modeling environments
- How could we help modelers with their needs, interests, and habits to propagate changes?





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# PERSONALIZED CHANGE PROPAGATION

- Personalized change propagation refers to the solutions in which each user is able to customize the fundamental features of change propagation according to its needs
- Features that are concerned with propagating change operations when multiple users work on models:
  - Collaboration Scenario
  - Collaboration Type
  - Push Method
  - Undo/Redo





# APPROACH OVERVIEW

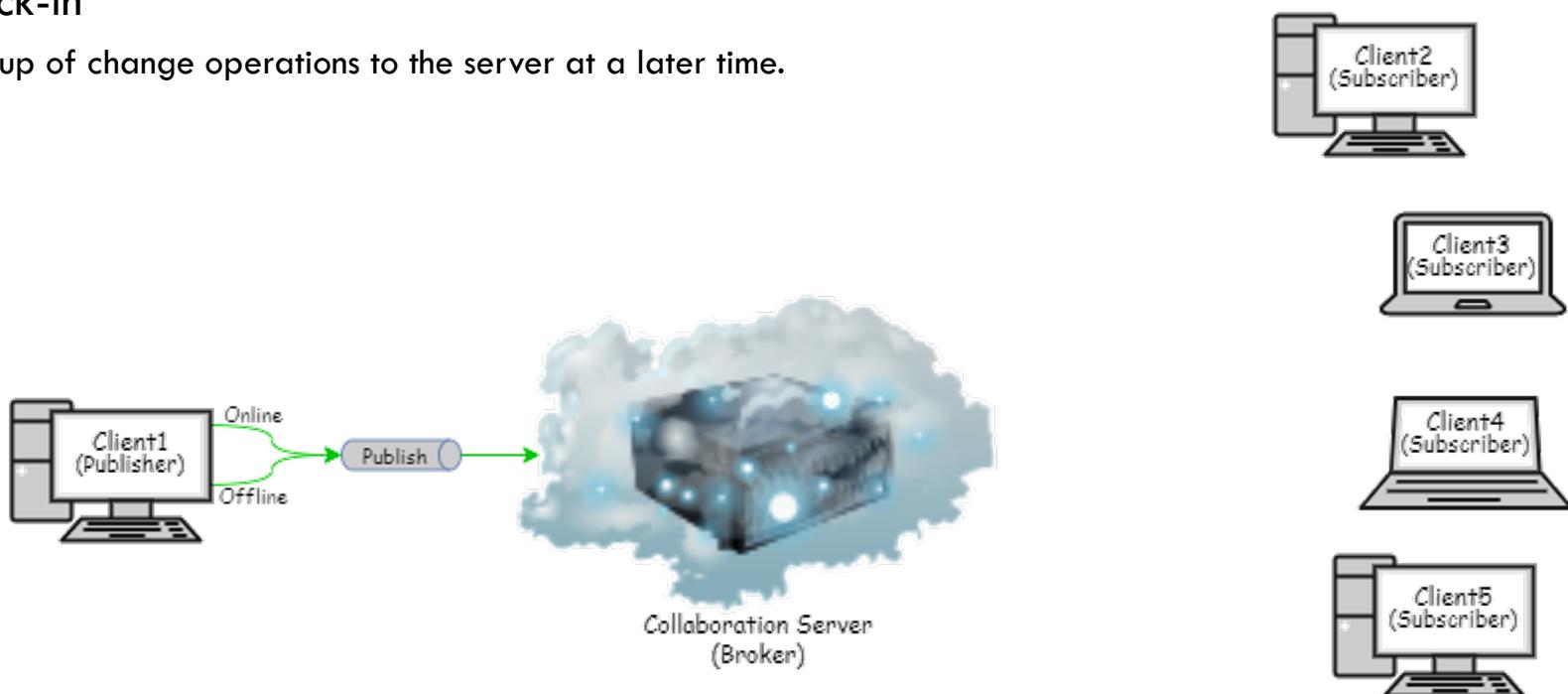
- Personalized change propagation based on two patterns:
  - Publish-Subscribe pattern
  - Request-Response pattern





# APPROACH OVERVIEW: PUBLISH-SUBSCRIBE PATTERN

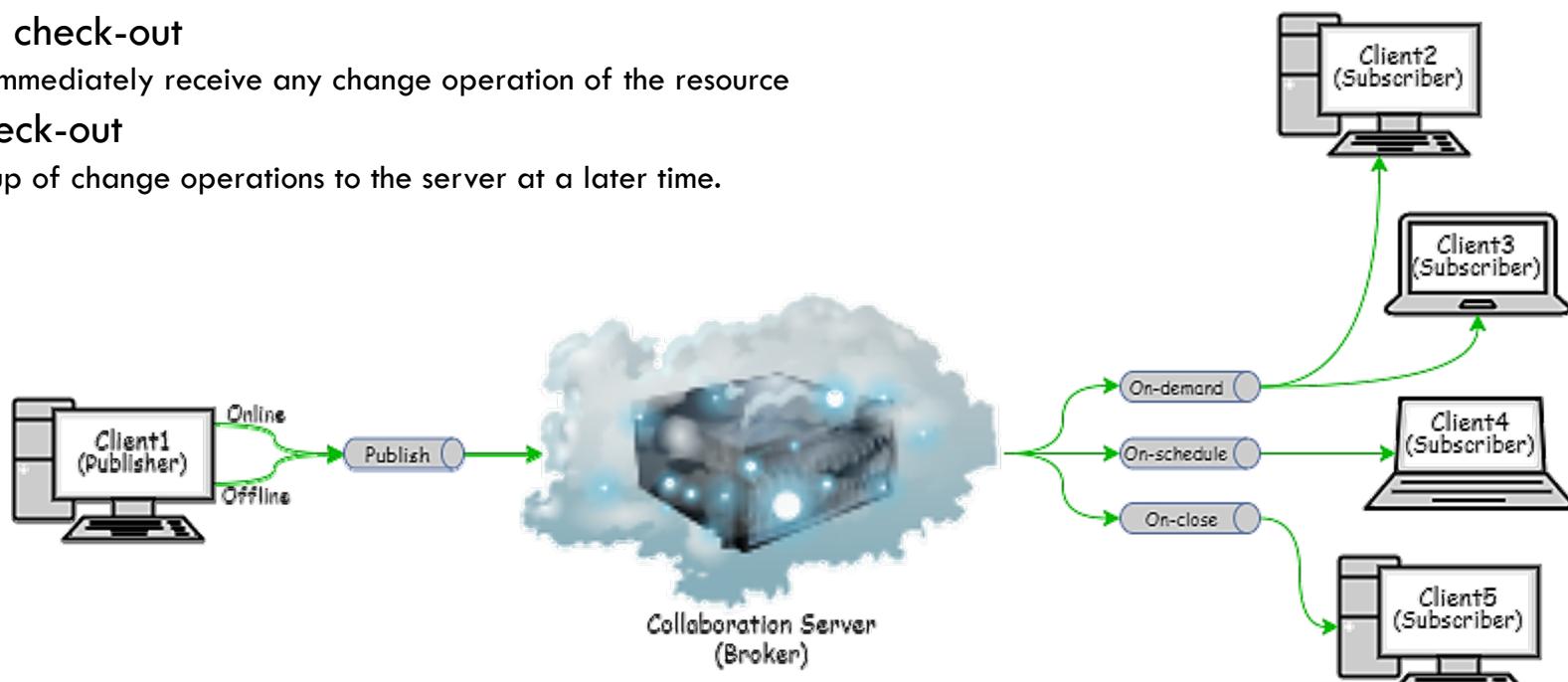
- Check-in methods
  - Online check-in
    - Sends each change operation to the server immediately
  - Offline check-in
    - Sends a group of change operations to the server at a later time.





# APPROACH OVERVIEW: PUBLISH-SUBSCRIBE PATTERN

- Define check-out channels for each resource
- Check-out methods
  - On-schedule check-out
    - Subscribers receive existing change operations of the resource in a Specific Time, in a Period, Threshold
  - On-demand check-out
    - Subscribers immediately receive any change operation of the resource
  - On-close check-out
    - Sends a group of change operations to the server at a later time.

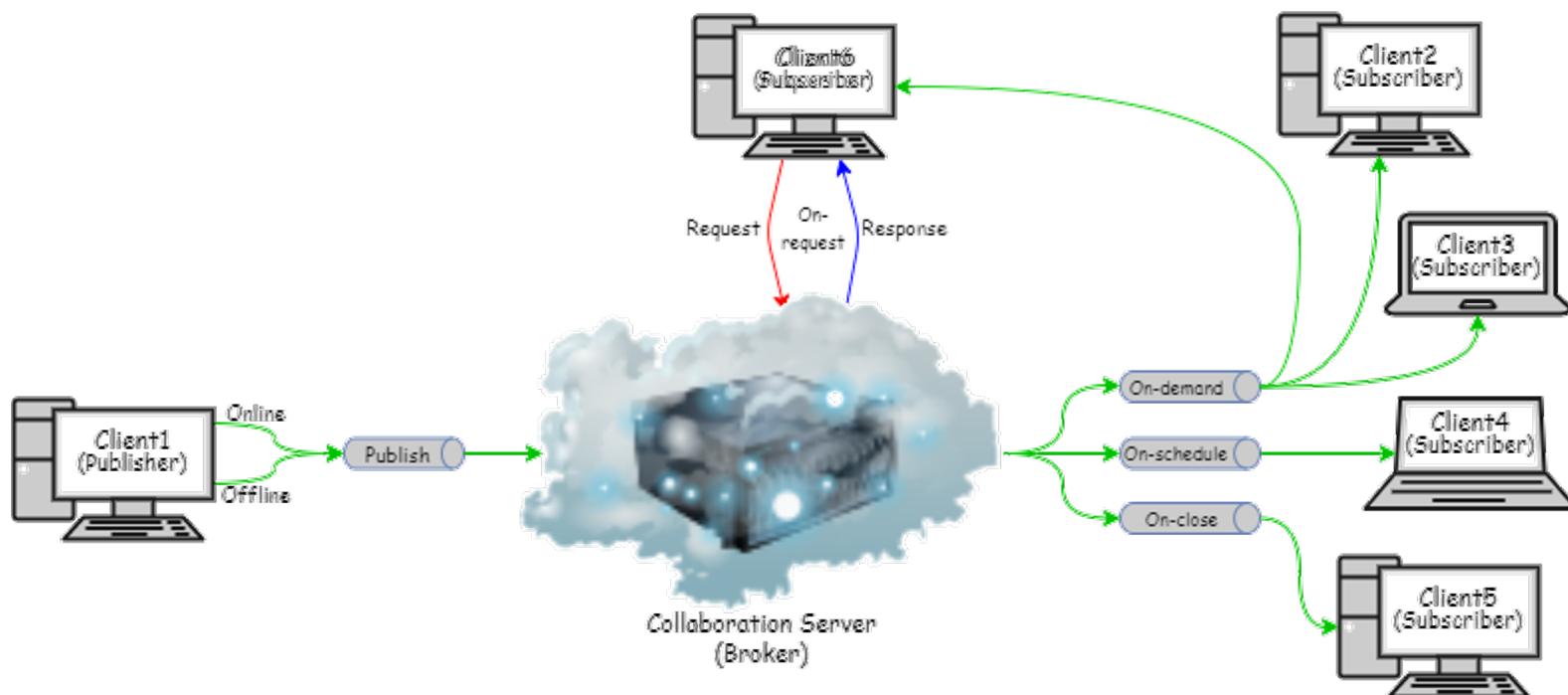




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# APPROACH OVERVIEW: REQUEST-RESPONSE PATTERN

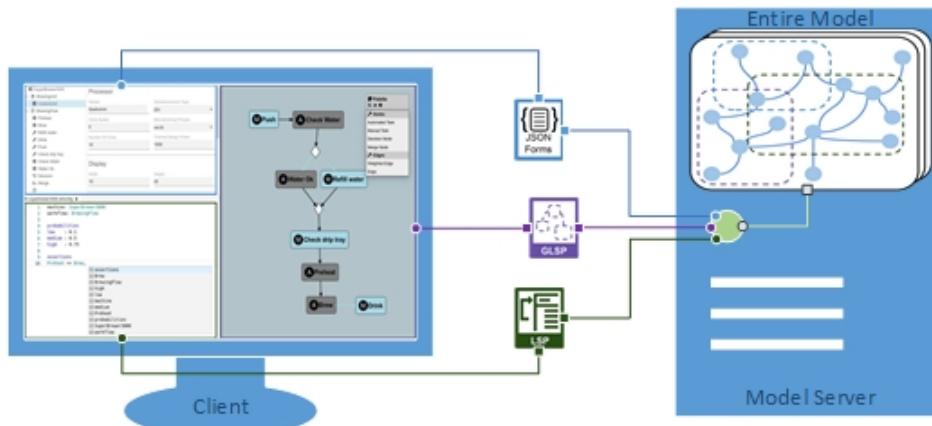
- To receive the latest version of a resource from server
- Position number
  - Specifying the last change operation that the collaboration server applied to the resource





# EMF.CLOUD

- What is EMF.cloud?
  - A generic, open-source, and application independent framework
  - For editing, processing, and managing EMF-based models in a browser-based client



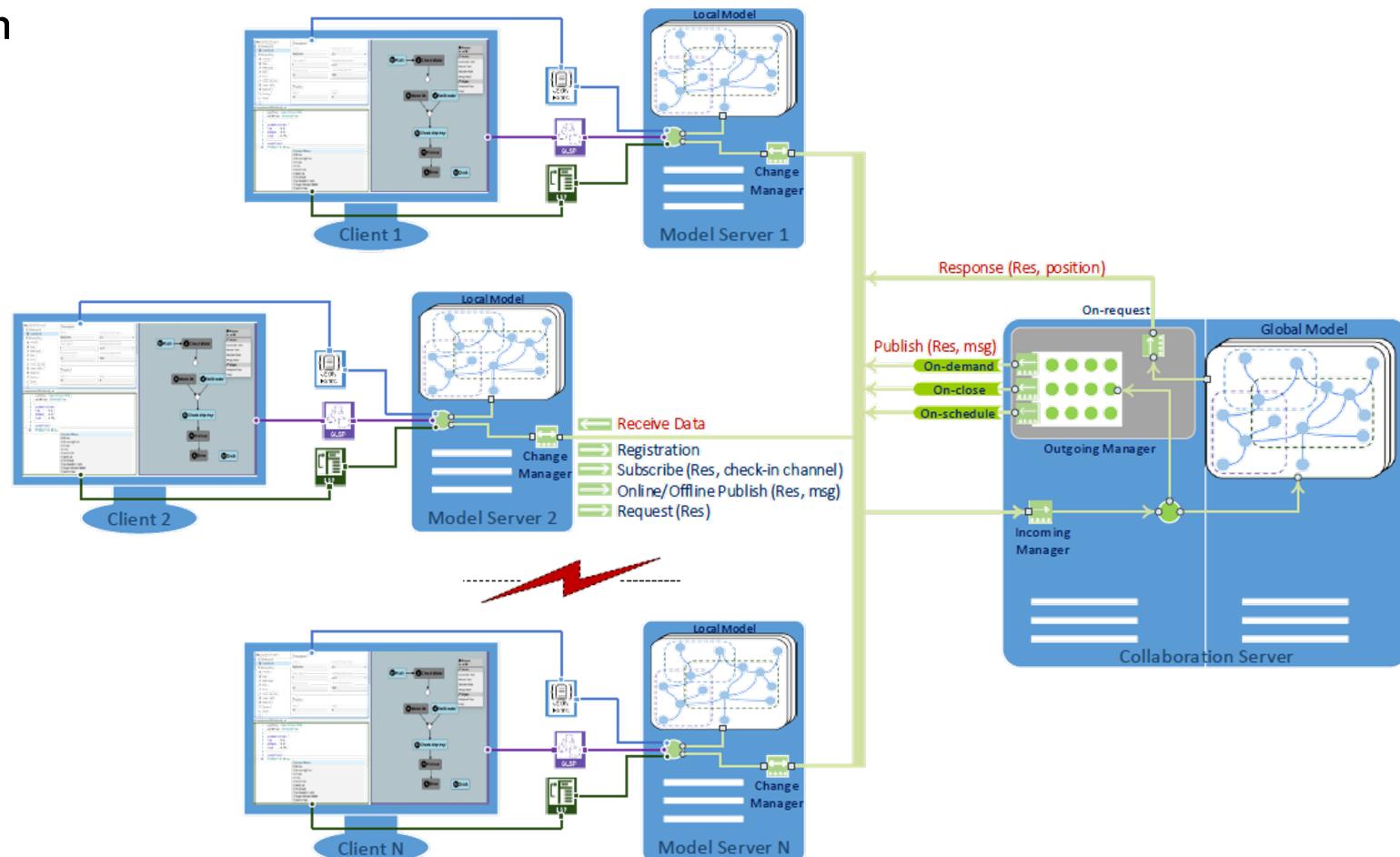
- However, the current implementation of EMF.cloud does not support multiuser modeling





# MULTI-USER EMF.CLOUD

- Collaborative architecture for multi-user modeling in EMF.cloud based on the personalized change propagation





# CONCLUSION

- **Contribution**
  - Introduce personalized change propagation as a new research roadmap
  - Propose a general solution to support personalized change propagation in collaborative modeling environments
  - Provide an architecture for multi-user modeling with EMF.cloud
- **Future directions**
  - Multi-View Branching
  - Conflict Management
  - Traceability





*THANK YOU FOR YOUR ATTENTION*

*QUESTIONS?*

**“ We Discover  
what's possible ”**

