

**Faculty of Computer Science** RoSI RTG: Role-Based Software Infrastructures for Continuous-Context-Sensitive Systems

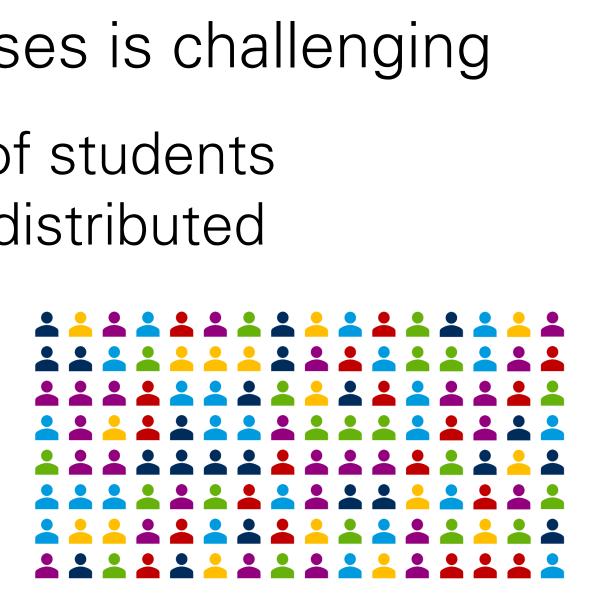
# **Role-based Group Formations and Interactions to foster Collaborative Learning in Large Classrooms**

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# **Problem Definition**

Collaboration in large or virtual classes is challenging

- Group formation of a high number of students that are spatially, or geographically distributed
- High noise levels and distraction, or high resource demands



 $\rightarrow$  Short-term group activities

## **Usage of the Role-Concept** [1]

### Pro

- + More intuitive implementation of *different behavior for current user role / group* (e.g., moderator assignment)
- + Separation between data provided by the metamodel and runtime: Extend functionality by extending metamodel

Contra

- Less "*conventional*" implementation

[1] T. Kühn, M. Leuthäuser, S. Götz, C. Seidl, and U. Aßmann. A metamodel family for role-based modeling and programming languages. SLE'14, ACM, 2014. [2] N. Lasry, E. Mazur, and J. Watkins. *Peer instruction: From harvard to the two-year college*. American journal of Physics, 2008. [3] T. Kubica, I. Shmelkin, and A. Schill. Towards a Development Methodology for Adaptable Collaborative Audience Response Systems. ITHET'19, IEEE, 2019.



**RoSI - Research Training Group** Funding: Spokesman: Project Website:

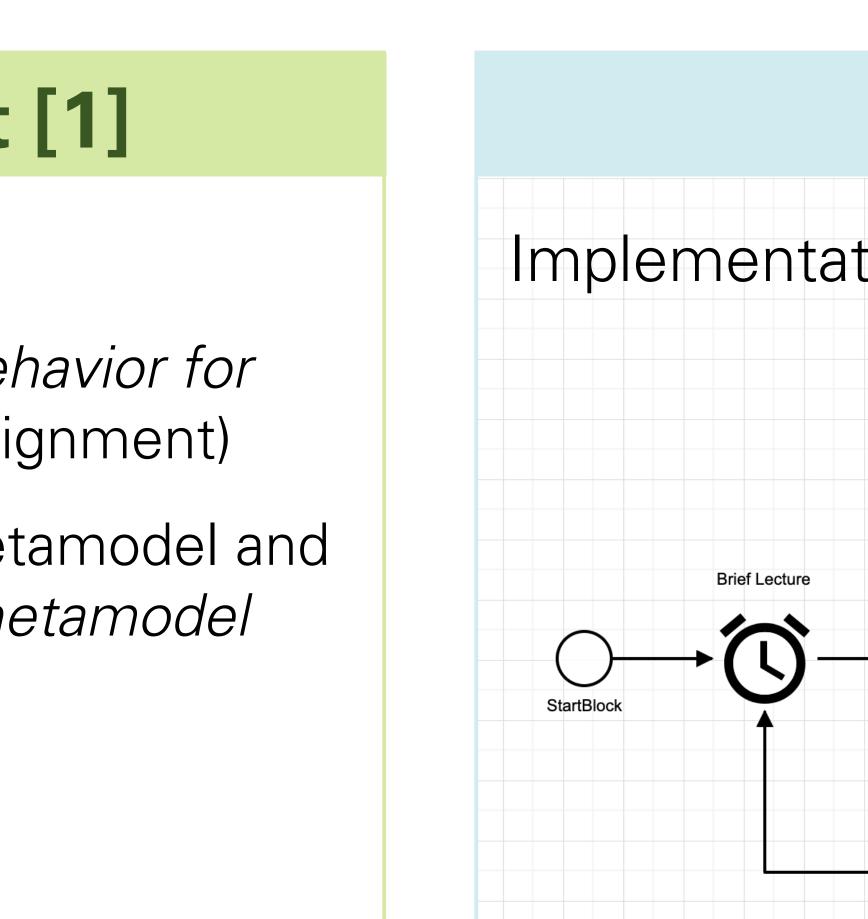
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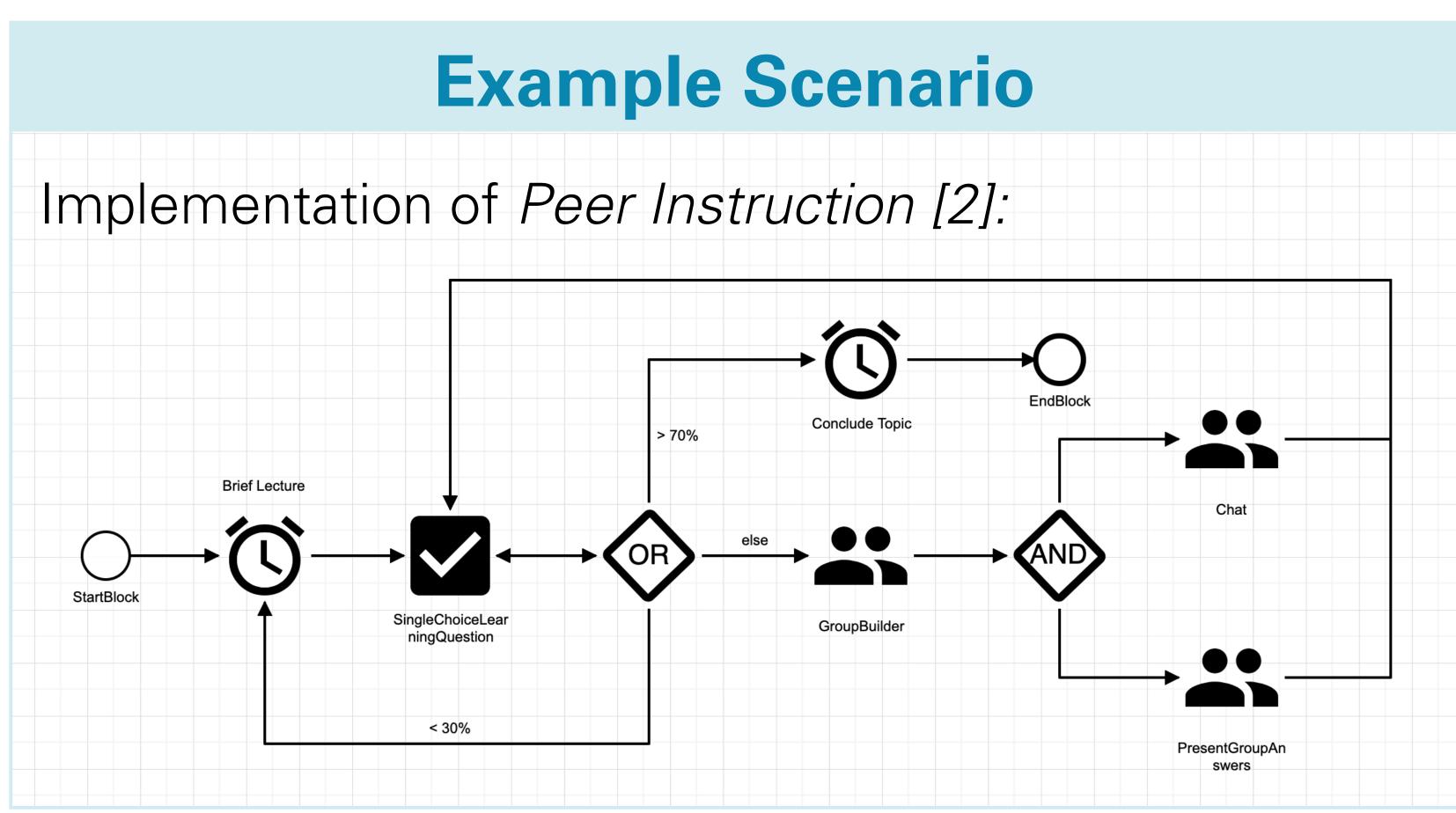
# **Group Formation**

Choose between five group formation algorithms

random, bestToWorst, similar, sameAnswer, differentAnswer

Set one of the following settings • groupSize or numberOfGroups







- Execution in both virtual and traditional settings
- CL is an essential part in Software Engineering: *Prepare* students for teamwork, even during COVID-19 pandemic

- Investigation of further use cases AudioVideoChat
- Implementation of *Jigsaw Learning*



oup Interaction Blocks						
grou	up interactions					
Present Group Answers		Group Voting				
NS or		Vote for a Group Answer				
	Group Answers for: Which transport protocol is used by HTTP?	<ul> <li>TCP (Transmission Control Protocol) Voted by 2 members.</li> <li>TCP or UDP (both possible) Voted by 0 members.</li> <li>Abstention Voted by 0 members.</li> </ul>				
4	<ul> <li>TCP (Transmission Control Protocol) Select by 1 member.</li> <li>TCP or UDP (both possible) Select by 1 member.</li> </ul>					

# **Lessons Learned & Future Work**

Create customized collaborative group scenarios [3]

1 1 1 1	2 2 2 2	1 2 3 4	1 2 3 4
3 3	4 4	1 2	1 2
3 3	4 4	3 4	3 4

