



Heterogeneous Synchronization in Software Engineering

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Who am I?

- Yingfei Xiong [i:ŋfei ʃiɔŋ] (熊英飞 | 熊 英飛)
- I am a third-year Ph.D. student at
 - Information Processing Laboratory, 
 - University of Tokyo 
- I am from China, speaking only a little Japanese
- Advisors



Zhenjiang Hu

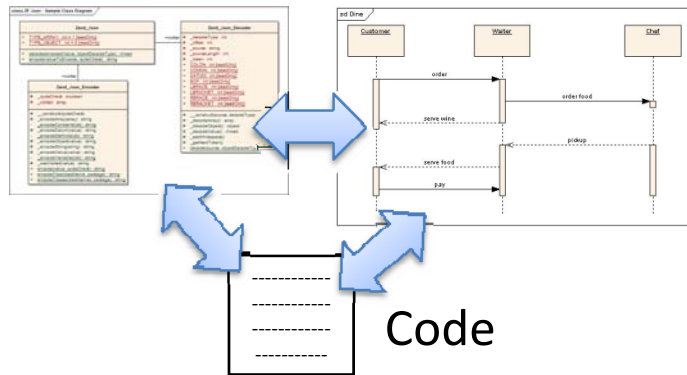


Masato Takeichi

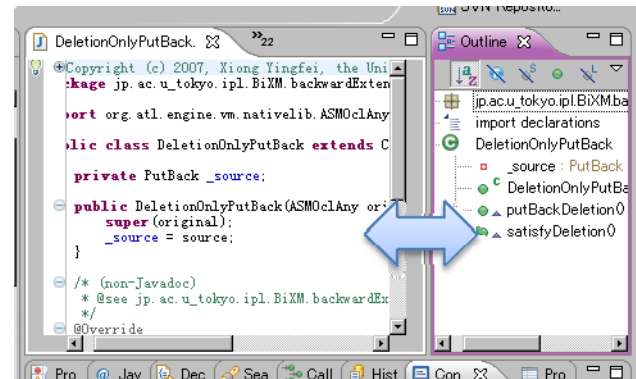
What do I work on?

- Heterogeneous Synchronization in Software Engineering

UML Class Diag. Sequence Diag.

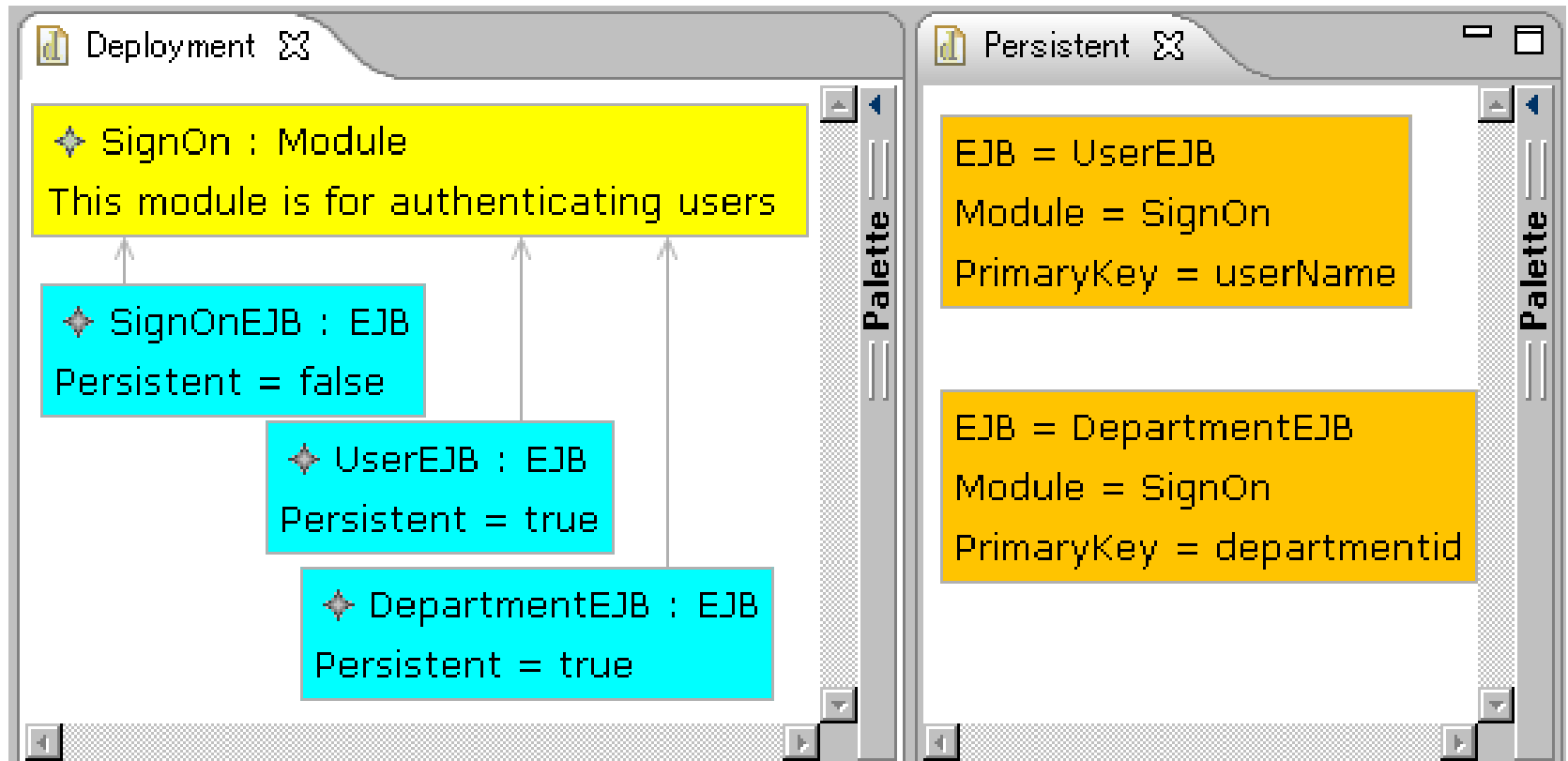


Eclipse Views

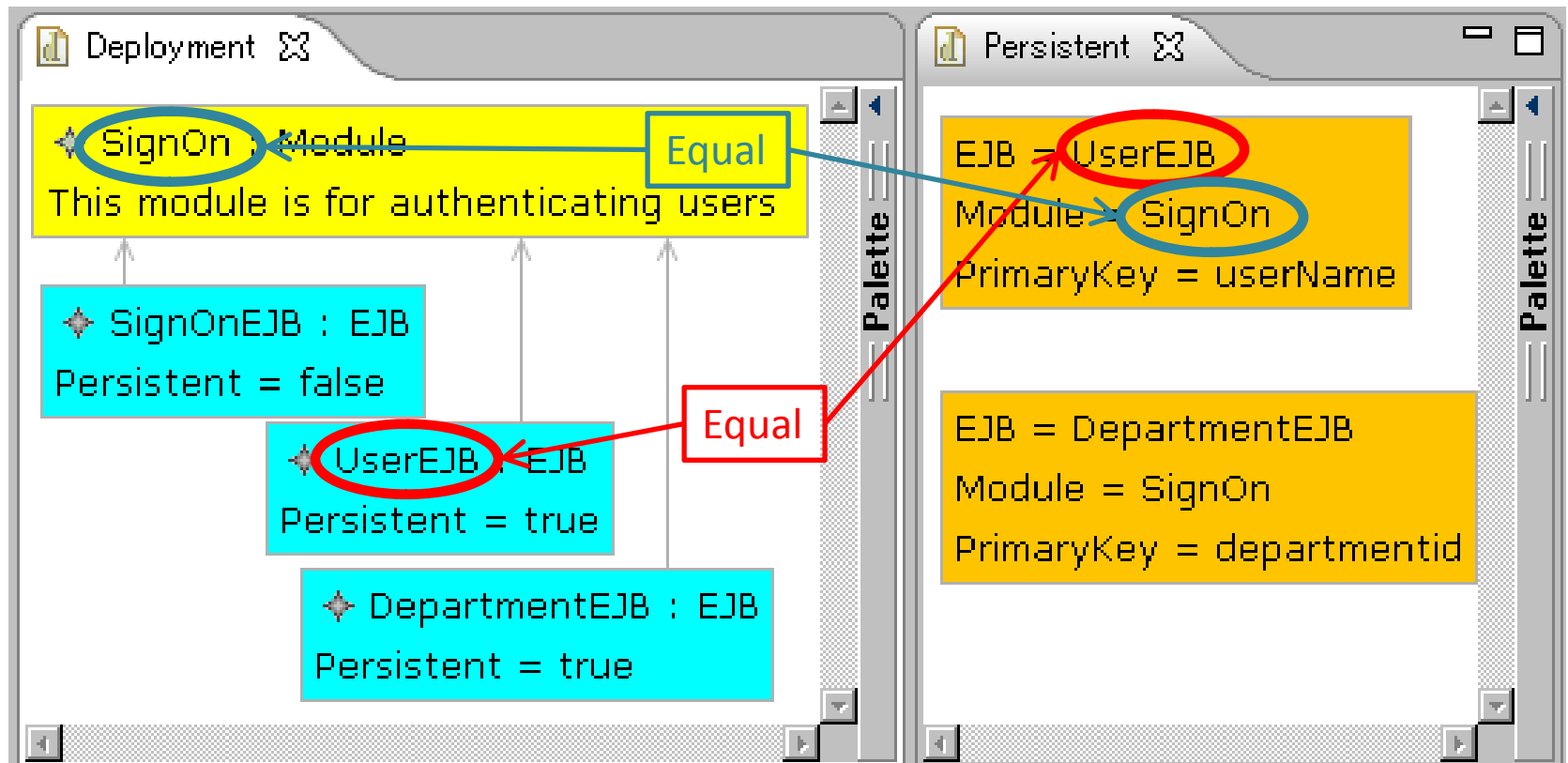


- Try to provide fundamental support for synchronization in software engineering applications

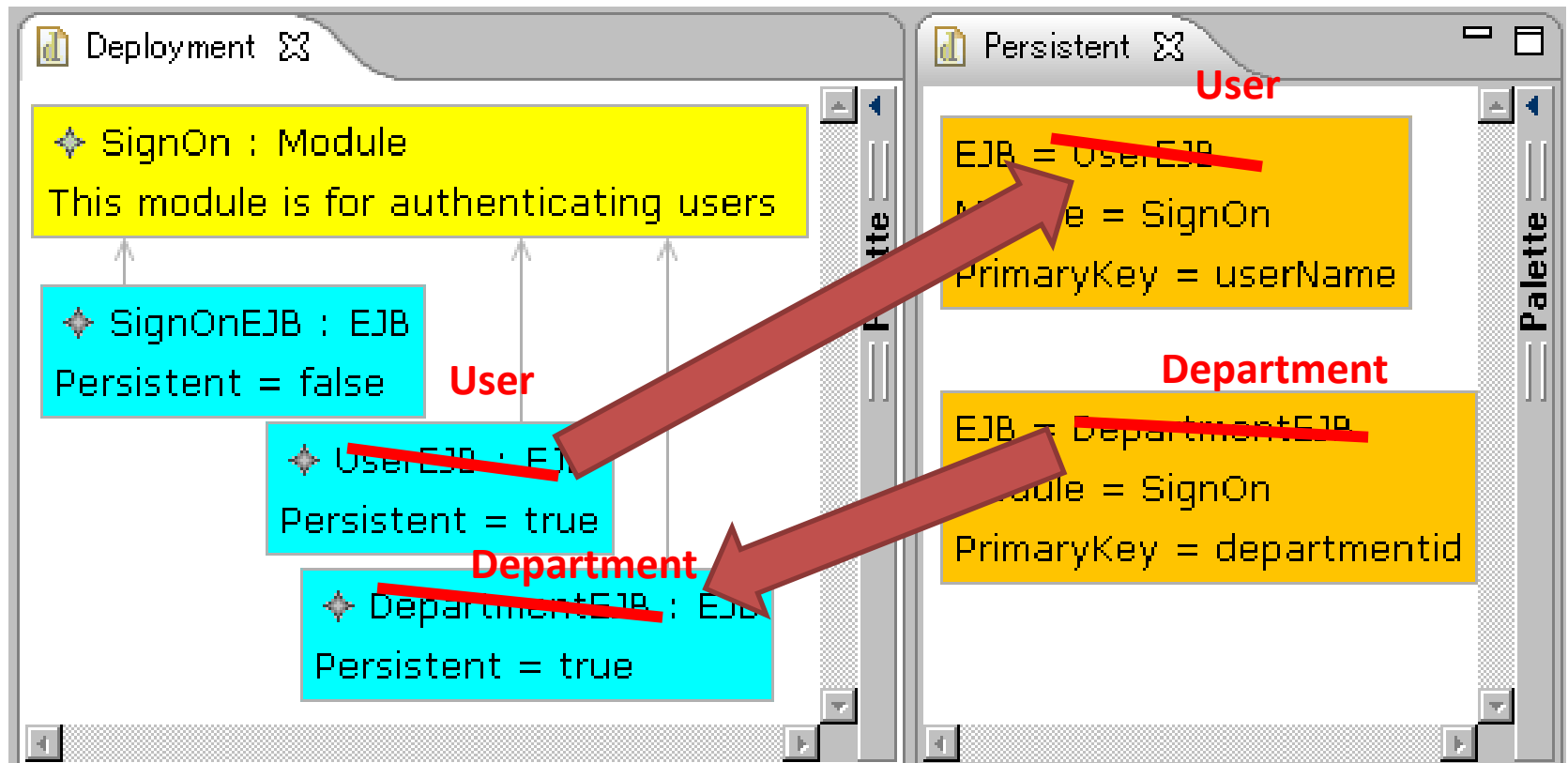
An EJB Modeling Application (Enterprise JavaBeans)



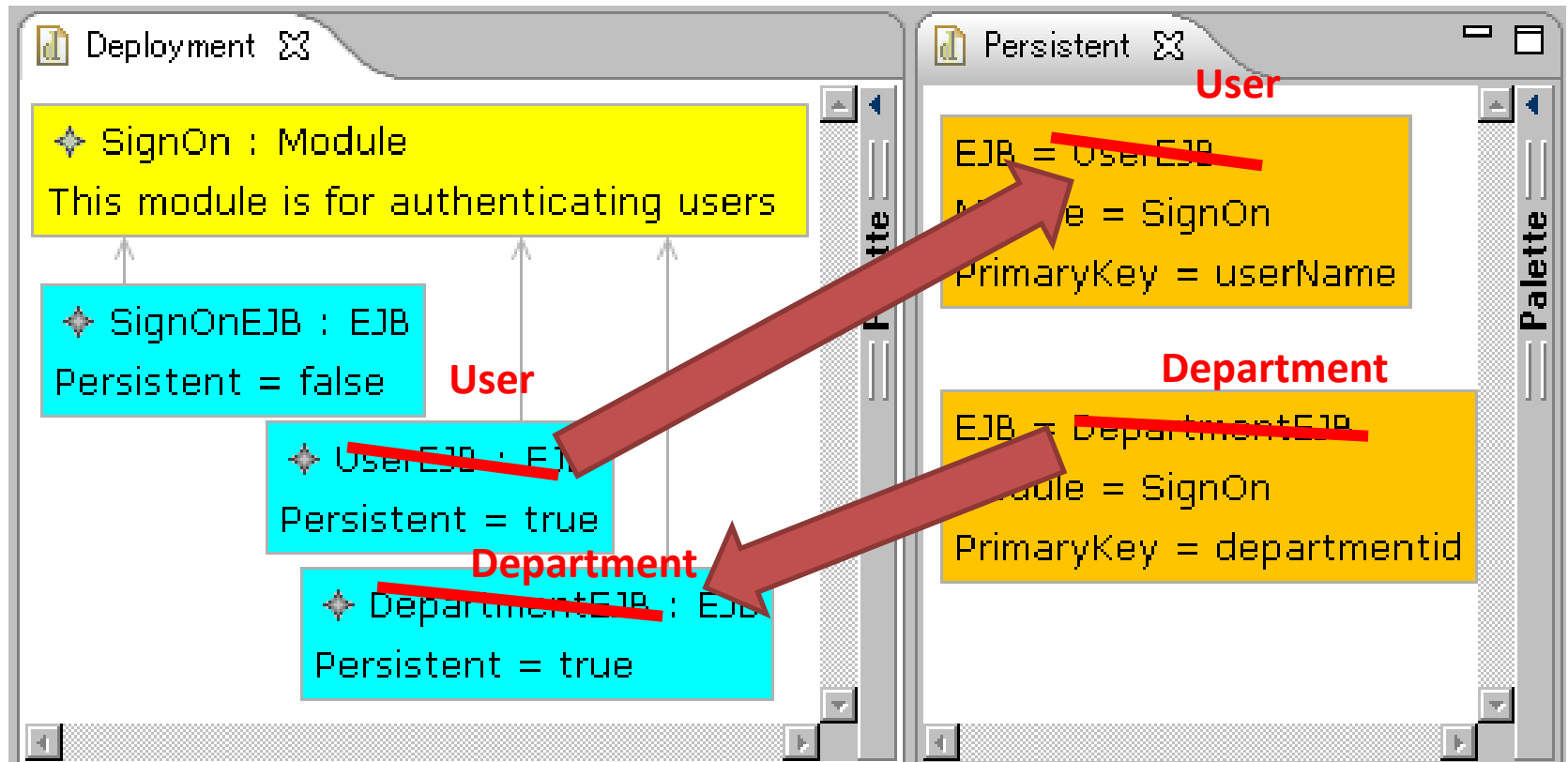
Consistency relations on data



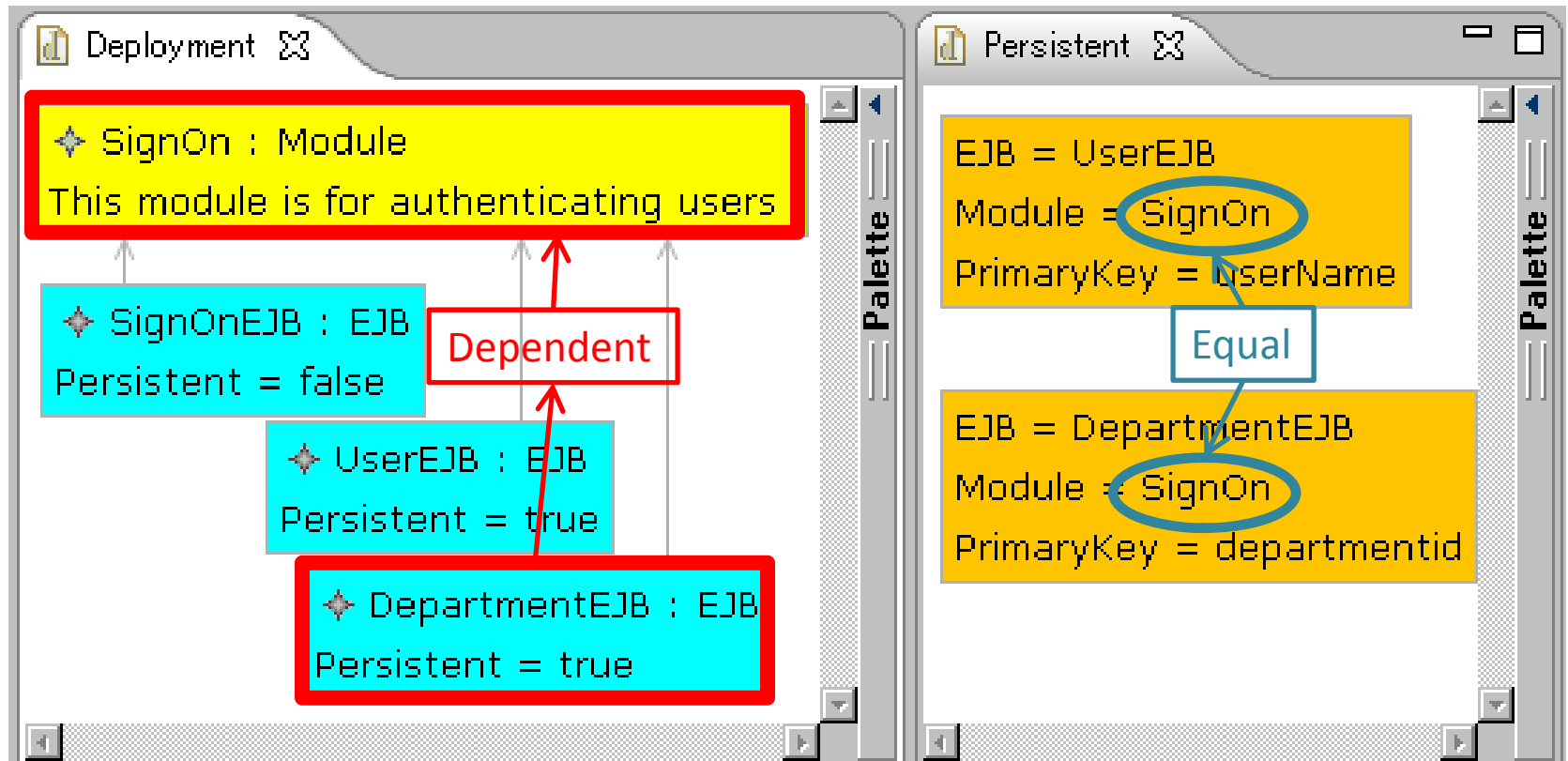
Update Propagation in Both Directions



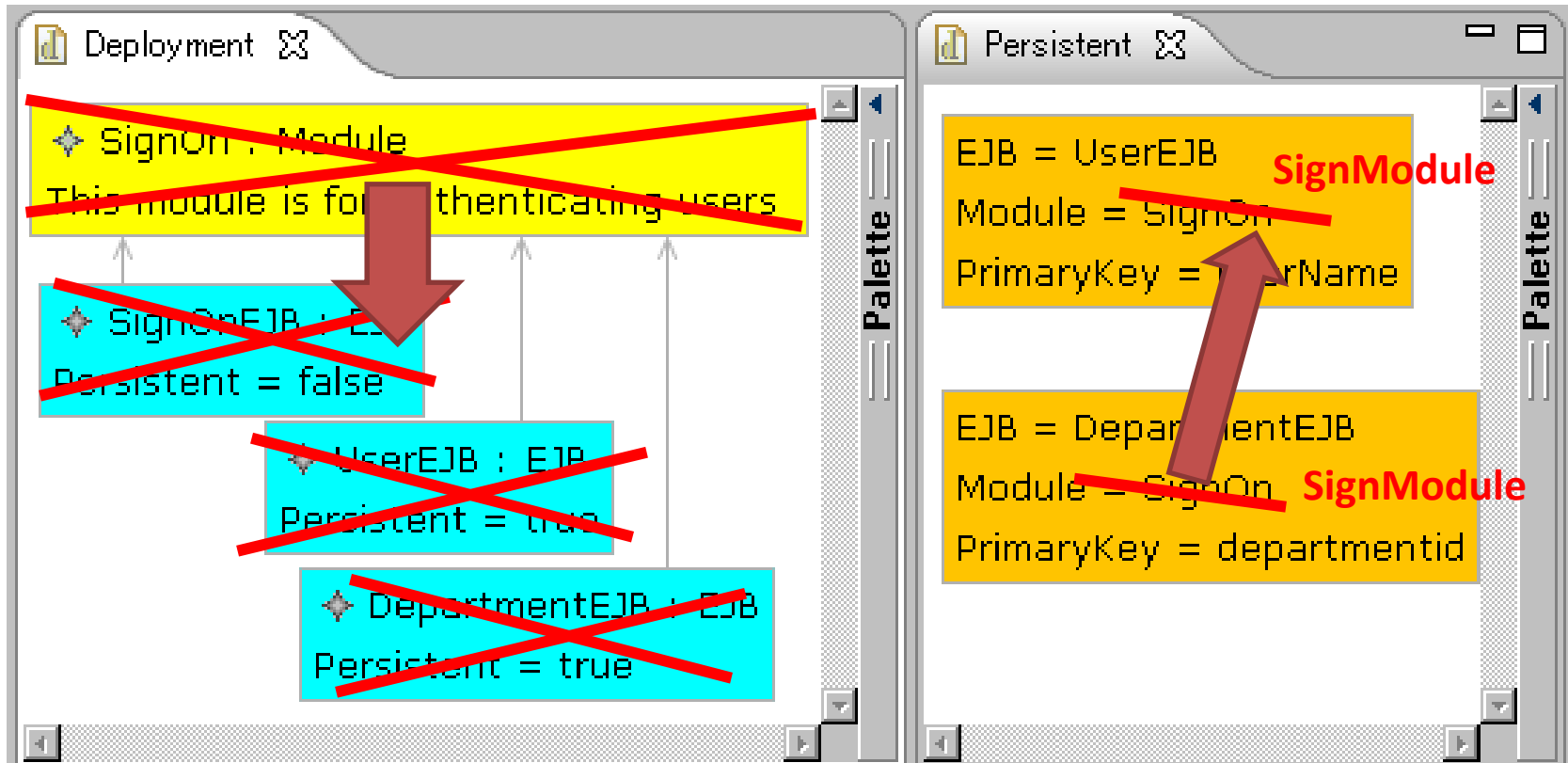
Simultaneous Updates



Intra-relations on data



Intra-relations on data



My Research

- Operation-based Synchronization



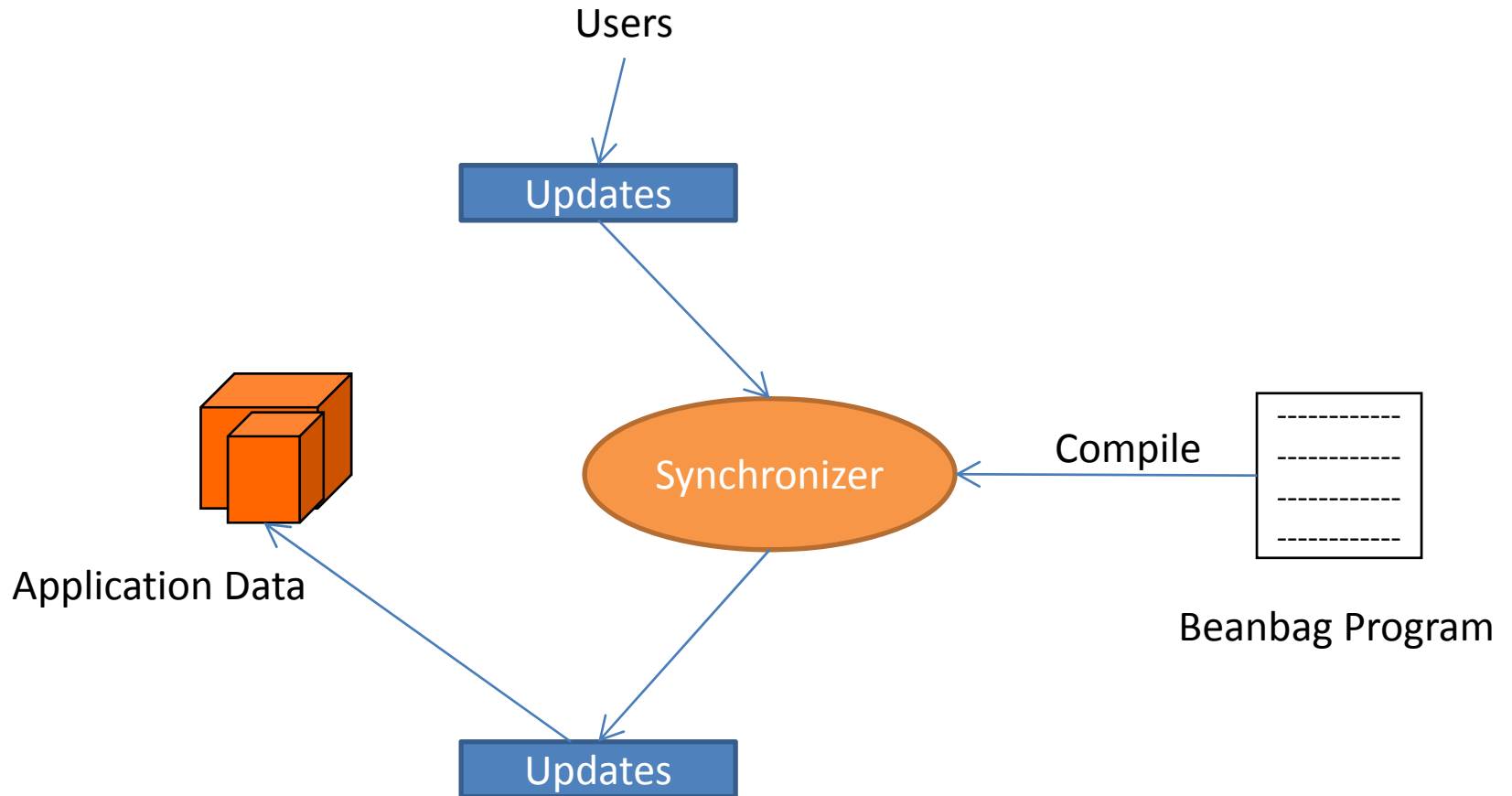
- State-based Synchronization
 - no intra-relation support



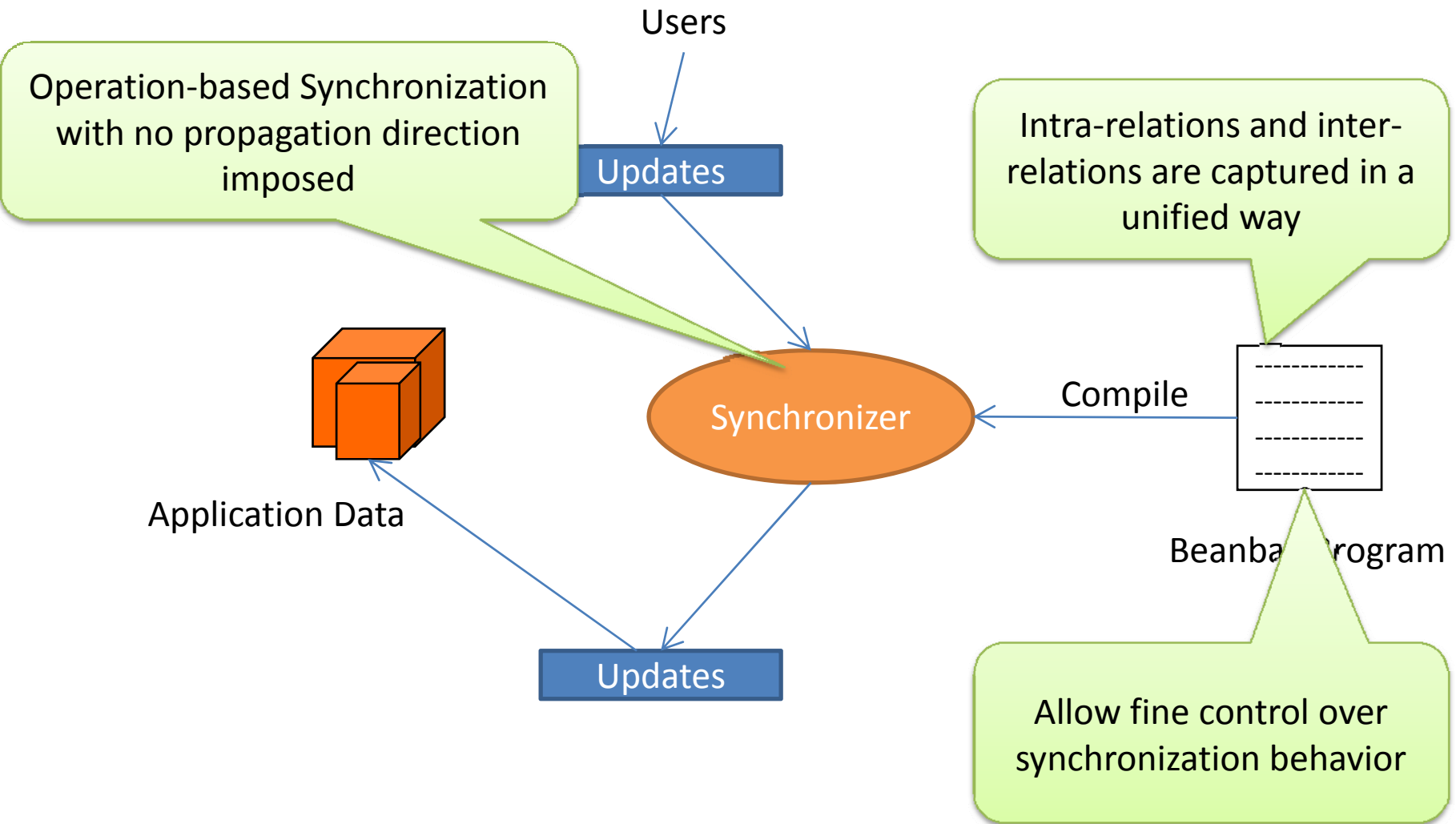
Operation-based Synchronization

- Beanbag
 - a new language for operation-based synchronization
 - support intra-relations

An Overview of Beanbag



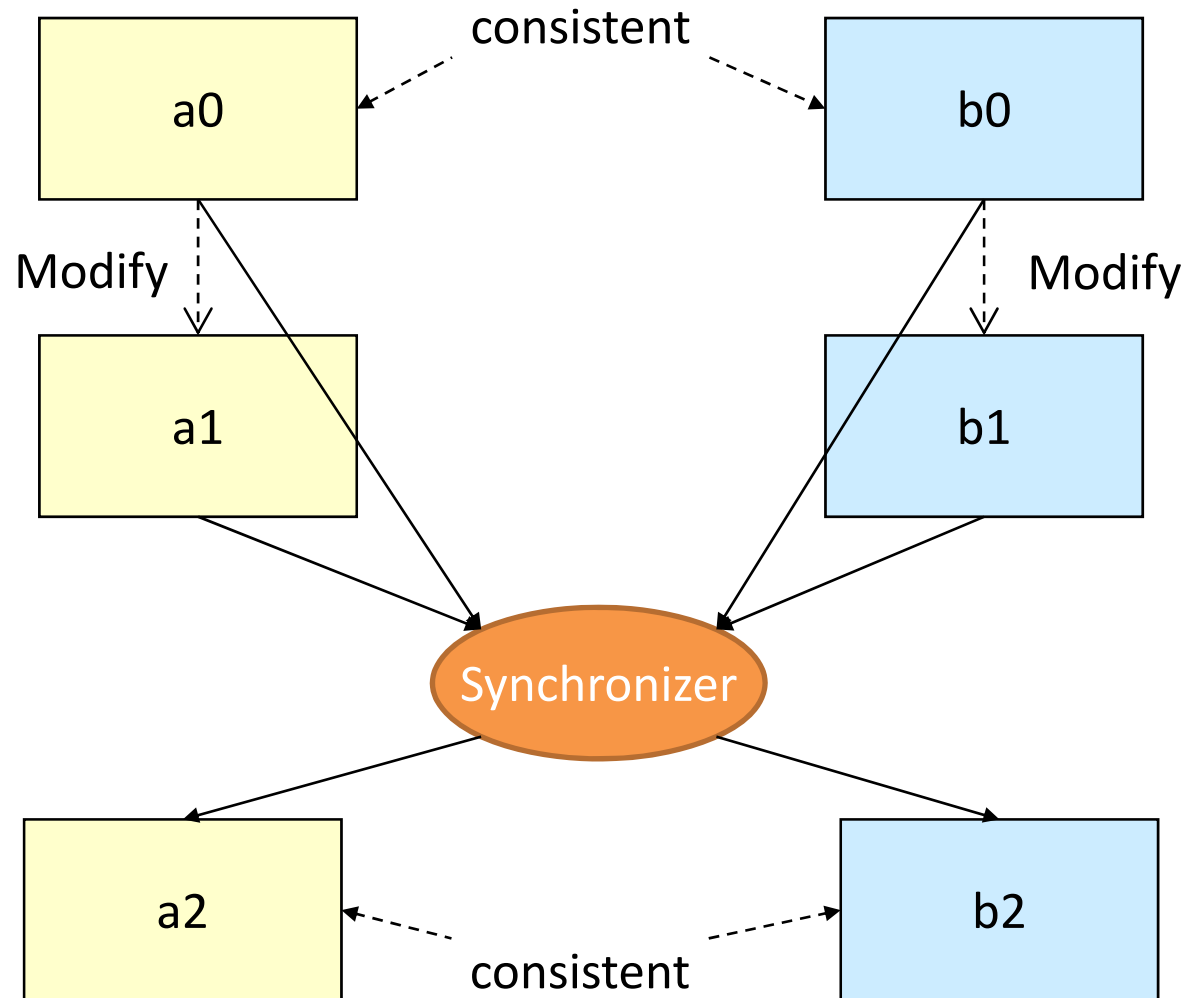
Features of Beanbag



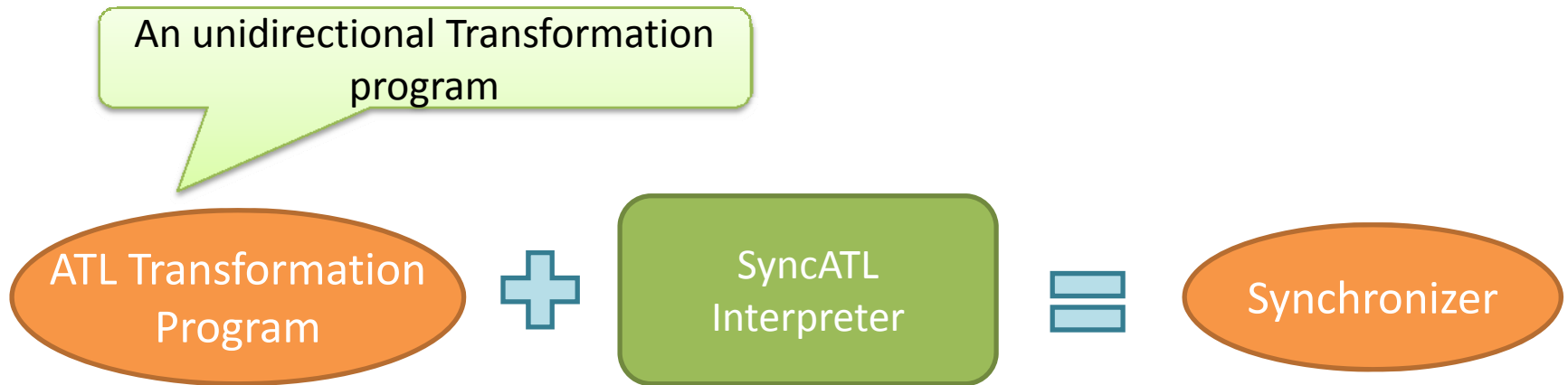
Find out more

- Technique Report
 - Beanbag: Operation-based Synchronization with Intra-relations. GRACE-TR-2008-04.
- Web site
 - <http://www.ipl.t.u-tokyo.ac.jp/~xiong/beanbag.html>
 - You may find the link on my homepage

State-based Model Synchronization



From Unidirectional Transformation

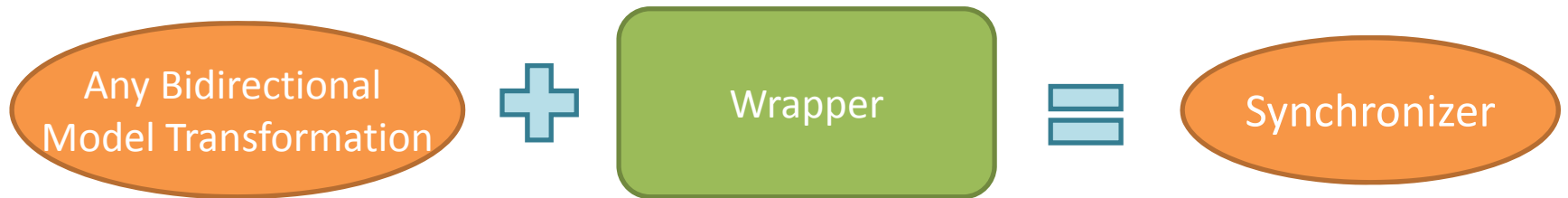


- propagates updates on the target model back to the source
- allows simultaneous updates on the two models

Find out more

- Conference paper:
 - Towards Automatic Model Synchronization from Model Transformations. In Proc. ASE 2007
- Web Site:
 - <http://www.ipl.t.u-tokyo.ac.jp/~xiong/modelSynchronization.html>
 - The link can be found on my homepage

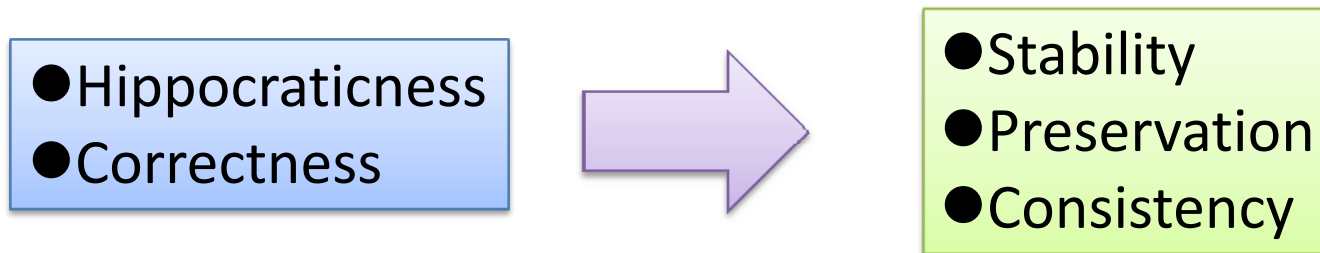
From Bidirectional Transformation



- allows simultaneous updates on the two models

Properties

- We prove that bidirectional transformation properties [Stevens07] lead to synchronization properties [Xiong07].



- On going work. No publication yet.

Tentative Topics

- Long Talk (30+ mins, fine if tomorrow morning)
 - Beanbag: Operation-based Synchronization with Intra-relations
- Short Talks / Informal Discussion
 - From Unidirectional Model Transformation to(towards) Model Synchronization
 - From Bidirectional Model Transformation to Model Synchronization
- Tool Demos
 - Beanbag and SyncATL