

# Behavior Based Integration of Composite Business Processes.

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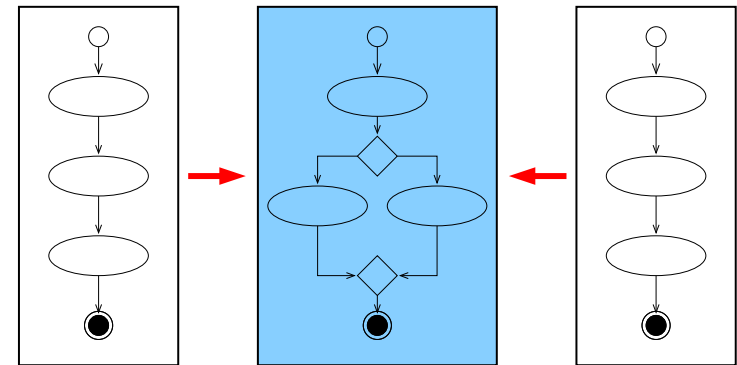


# Overview

- Project overview
- Type of business process relations
- Composite business process
- Semantic relationships and their integration in composite business processes
- Future work

# Project overview

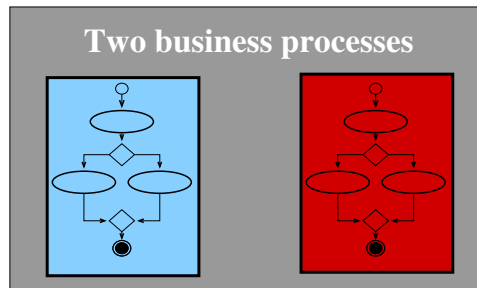
- Behavior based integration of business processes
- Graphical notation
- Diagram notation
  - **UML activity diagram:**  
accepted standard in softw. engineering
  - **UML state machine diagram:**  
only one object of a class
  - **Petri net based:**
    - \* activities do not consume time
    - \* used in research for verification



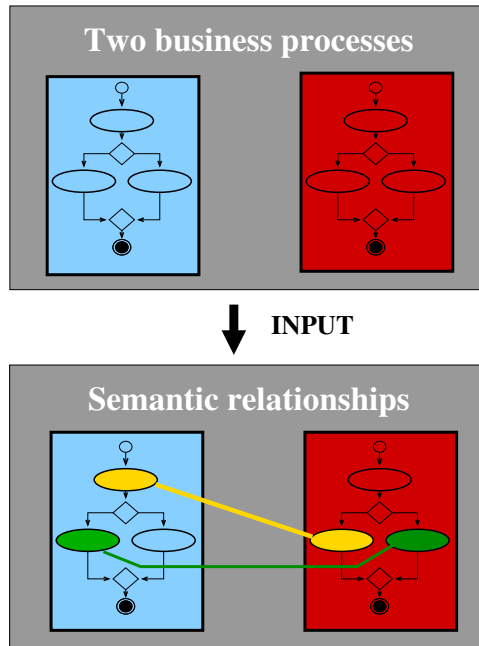
## Project goal

- Integration framework
- Based on semantic relationship and integration options
- Meta model architecture

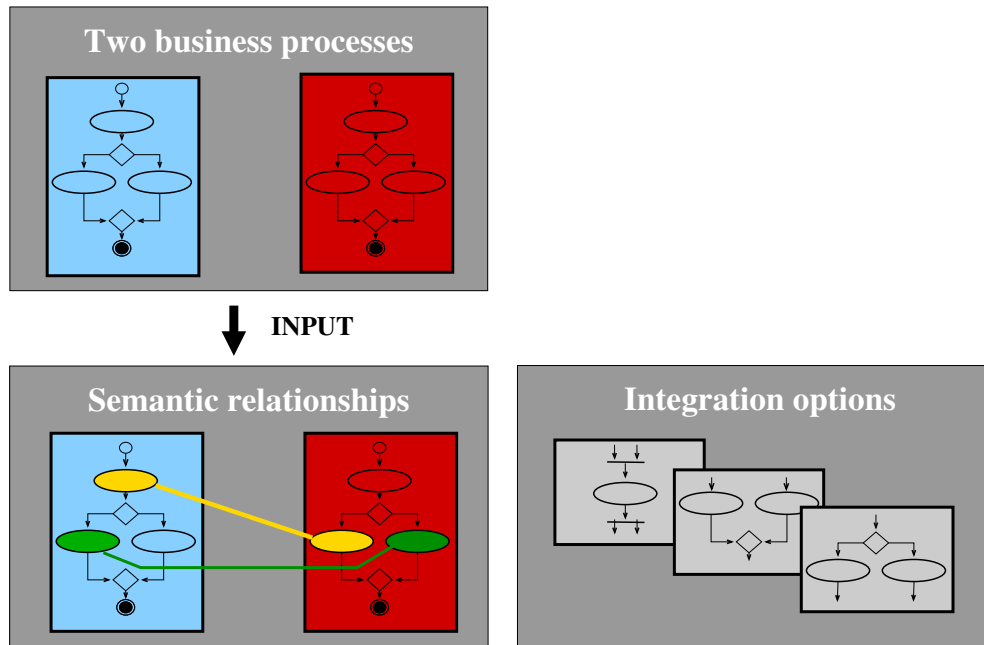
# Project goal



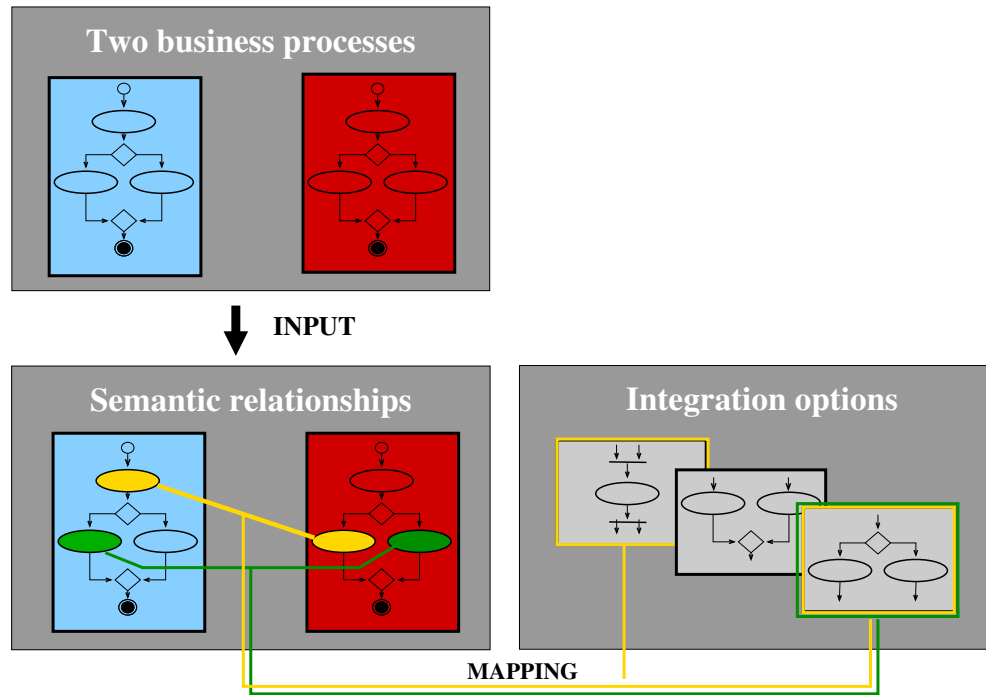
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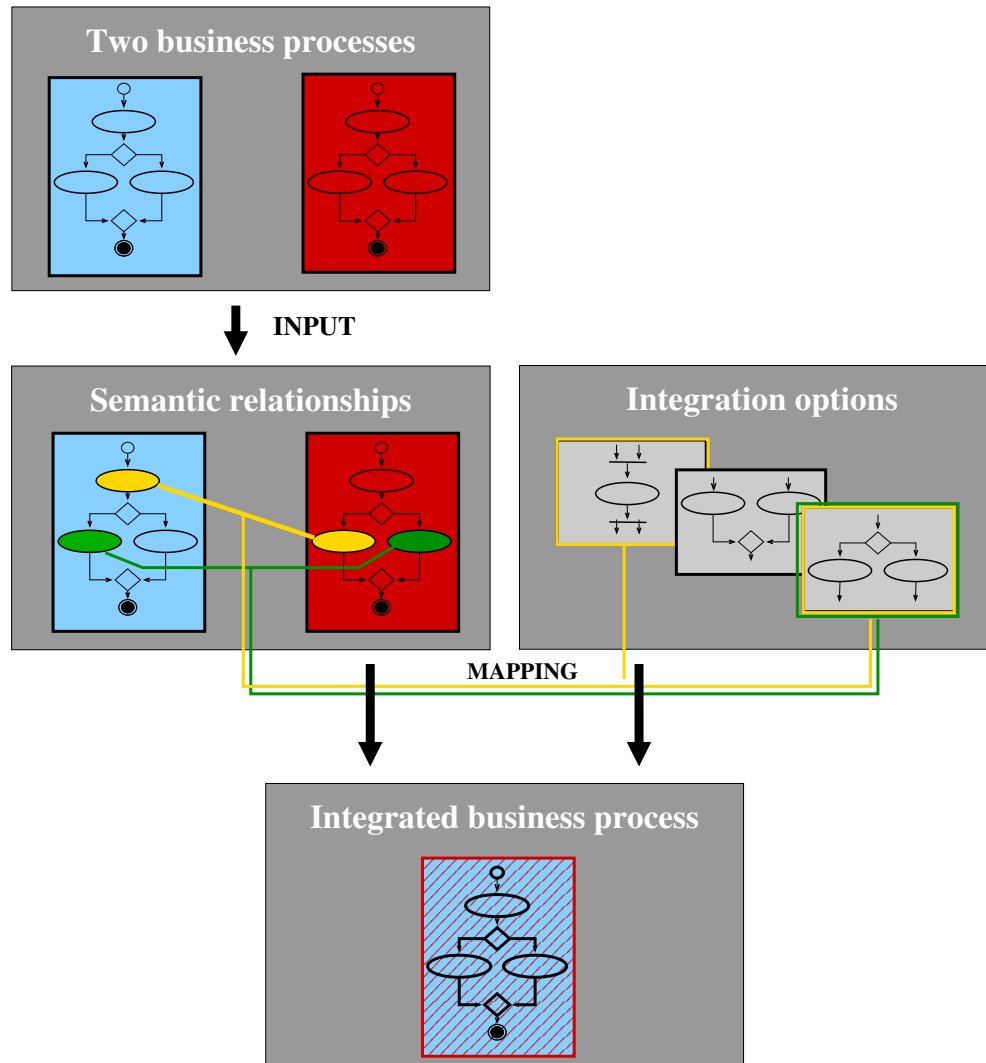


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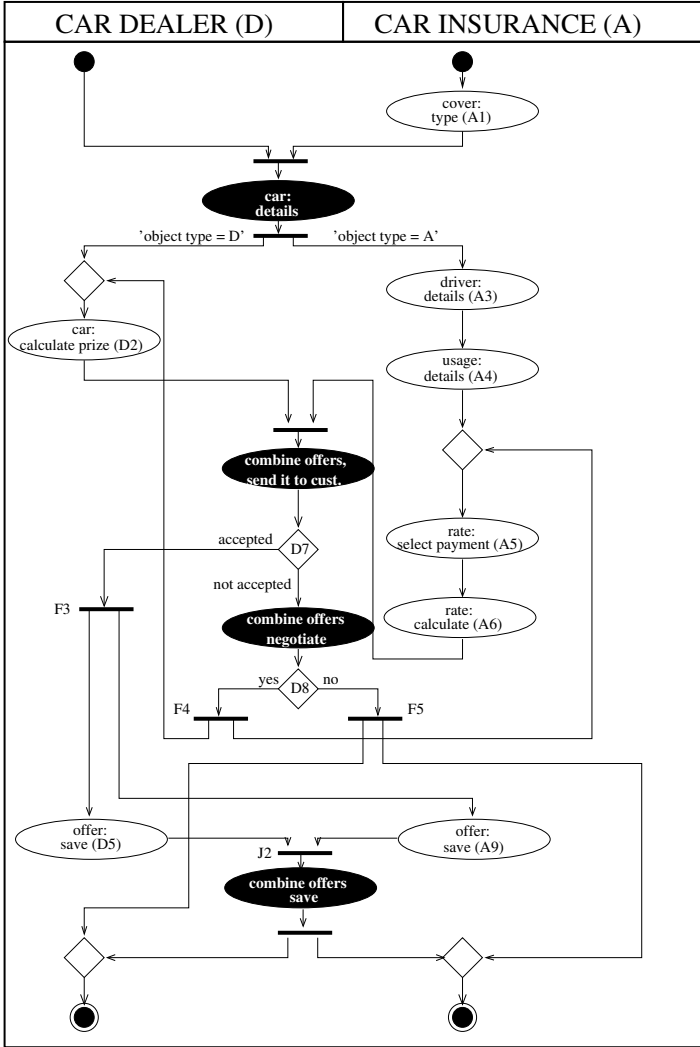
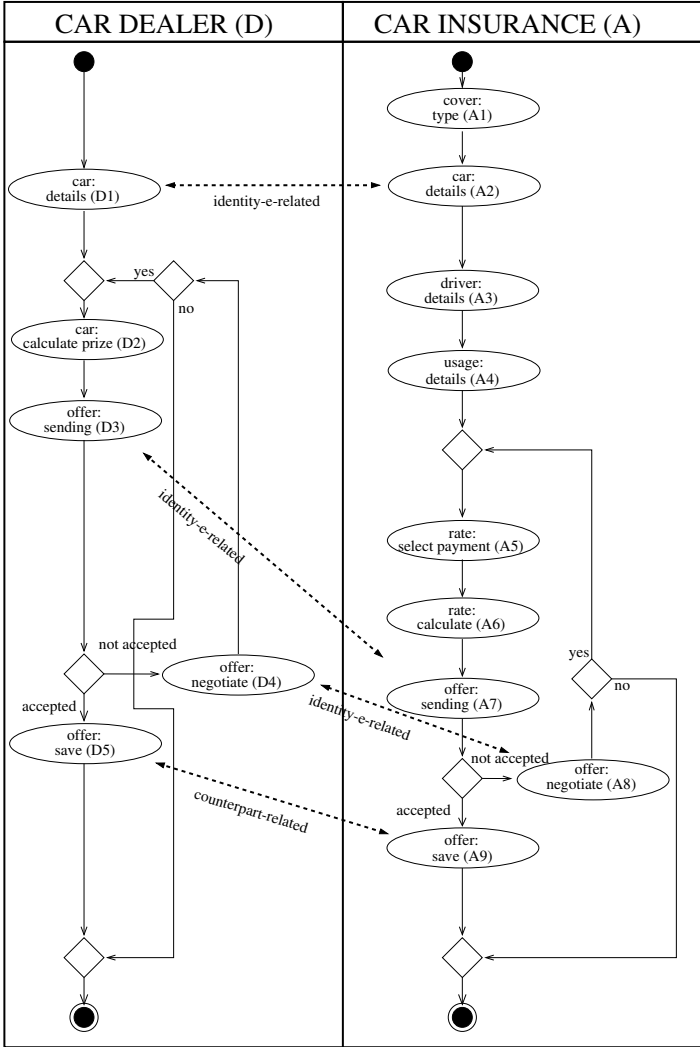




# Project goal



# Example



# Business process relations

- Generalization:

There exists a business process which combines the behavior of two input business processes as shown in the car dealer/insurance example.

- Association:

A simple connection between two business processes, e.g., sending a message from one business process to another. Input business processes stay autonomous.

- Composition:

Like an association but more restrictive. One business process consists of several other business processes.

# UML-AD 2.0 simplification and extension

- Simplified subset of the standard
- Enhance Petri-net semantics

## Extensions:

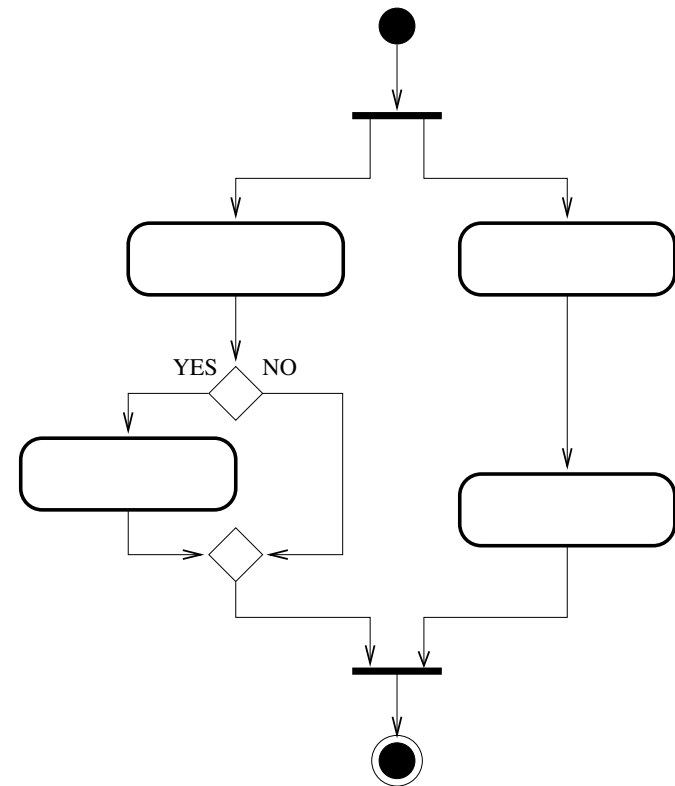
- States:
  - State between activities
  - Event-based
  - Interrupt business process
- Links:
  - Composition on the same layer

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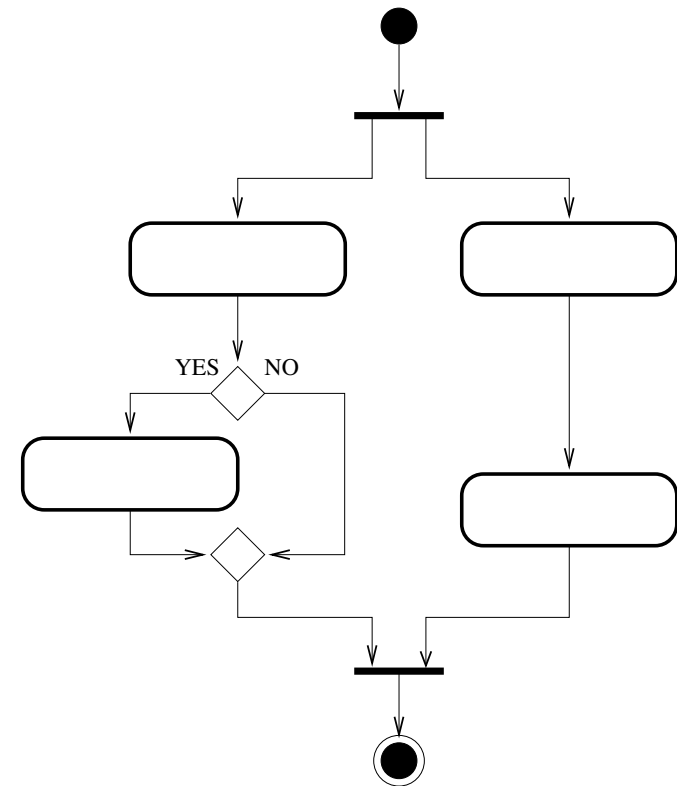


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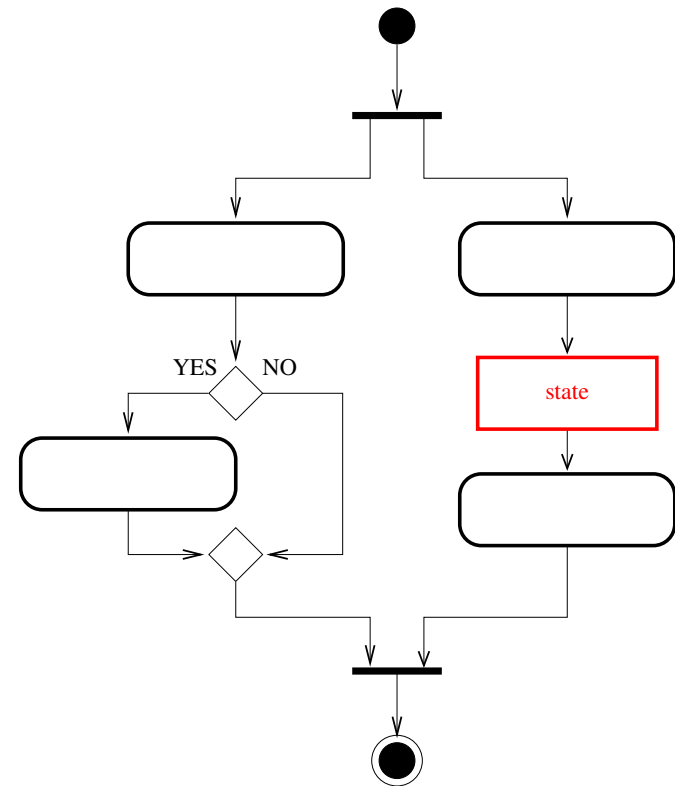


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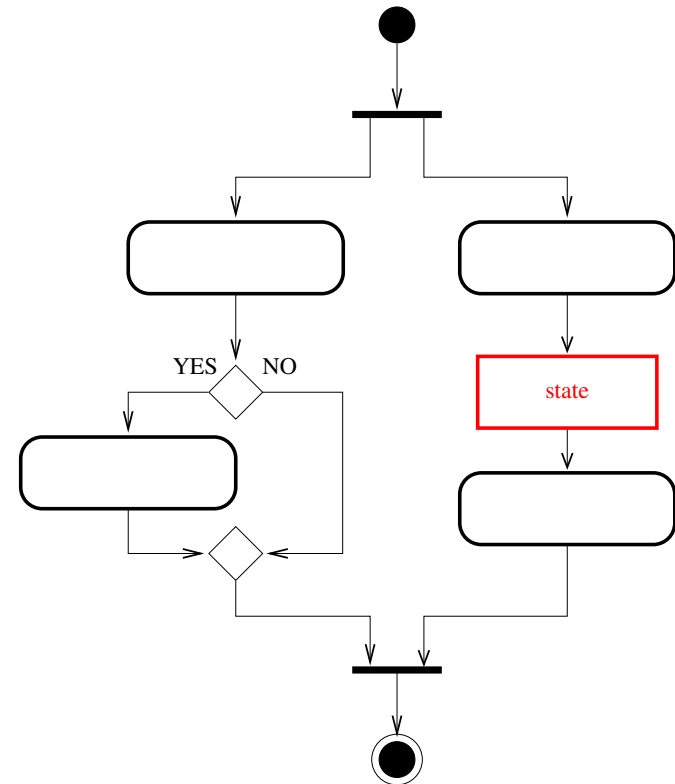


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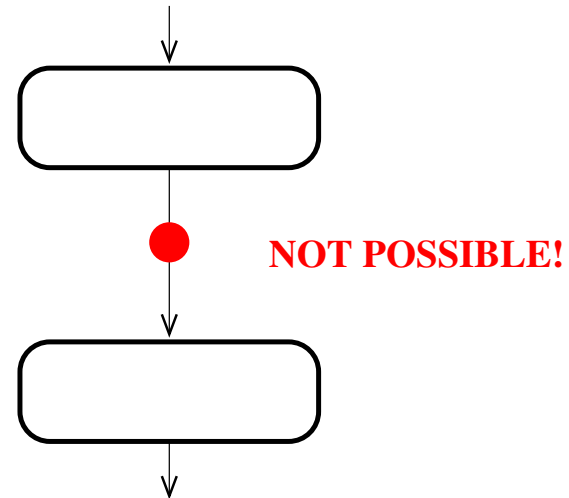


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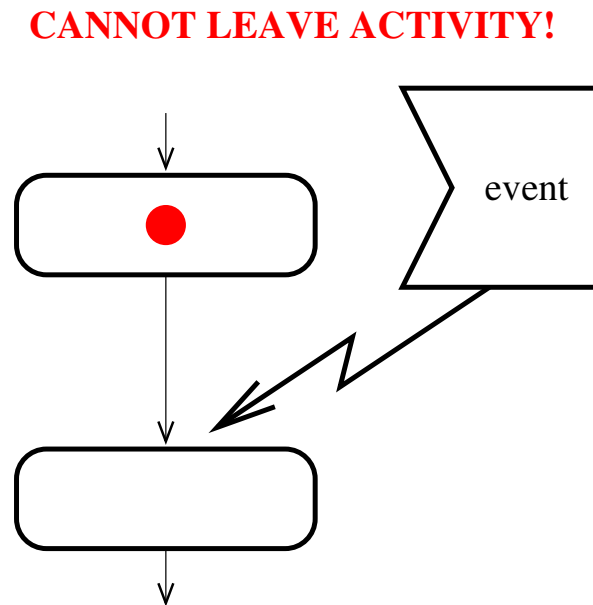


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  - Interrupt business process
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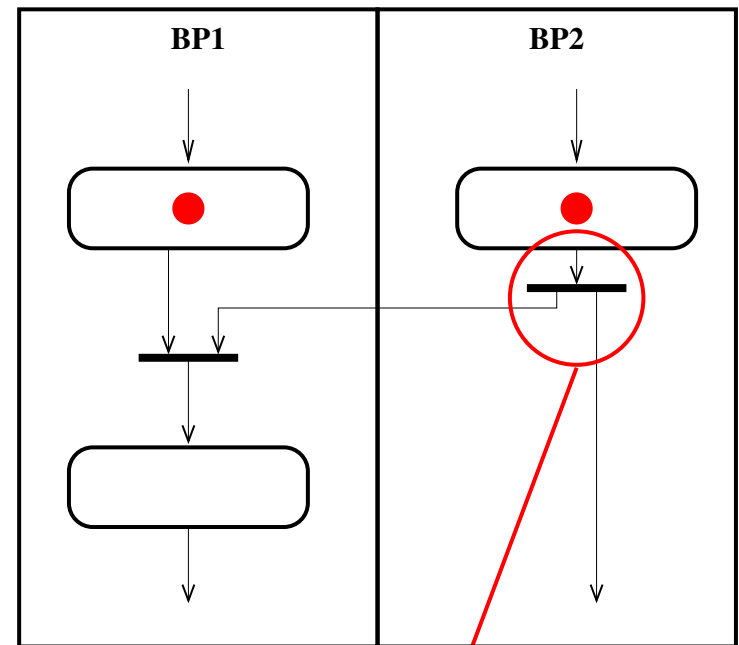


# UML-AD 2.0 simplification and extension

- Simplified subset of the standard
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## Extensions:

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  - **Interrupt business process**
- Links:
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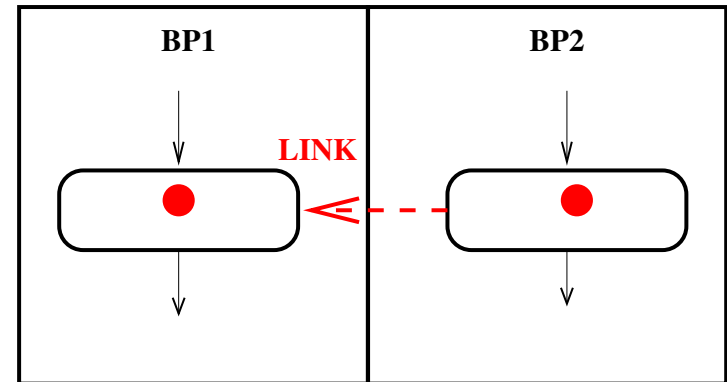
**TWO TOKENS ARE NEEDED!**

# UML-AD 2.0 simplification and extension

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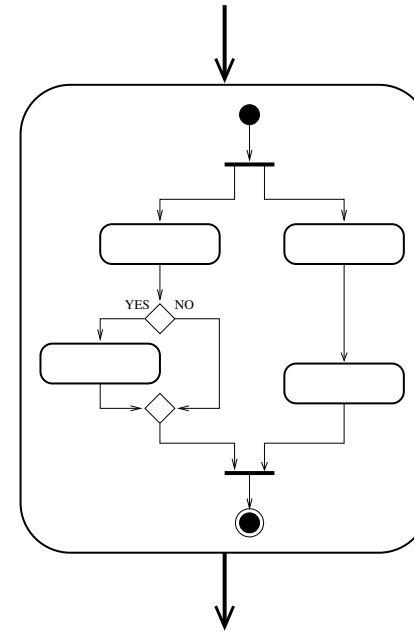
*“A link is an individual connection among two or more objects and may be used for navigation and sending messages.”*

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**COMPOSITION IS ONLY  
SUPPORTED ON  
DIFFERENT LAYERS!**

# Composite business process

- Example: **Computer retailer**

A computer retailer buys PC components at the cheapest vendors, assembles them together and sells the complete PCs. He also offers a support for hardware and software problems.

- Life cycle:

- **Construction**:

Create the composite object (computer).

- **Coordination**:

Coordination of component and composite behavior during the lifetime of the composite object.

- **Destruction**:

Dismantle the components from the composite object. Destroy separate objects afterwards.

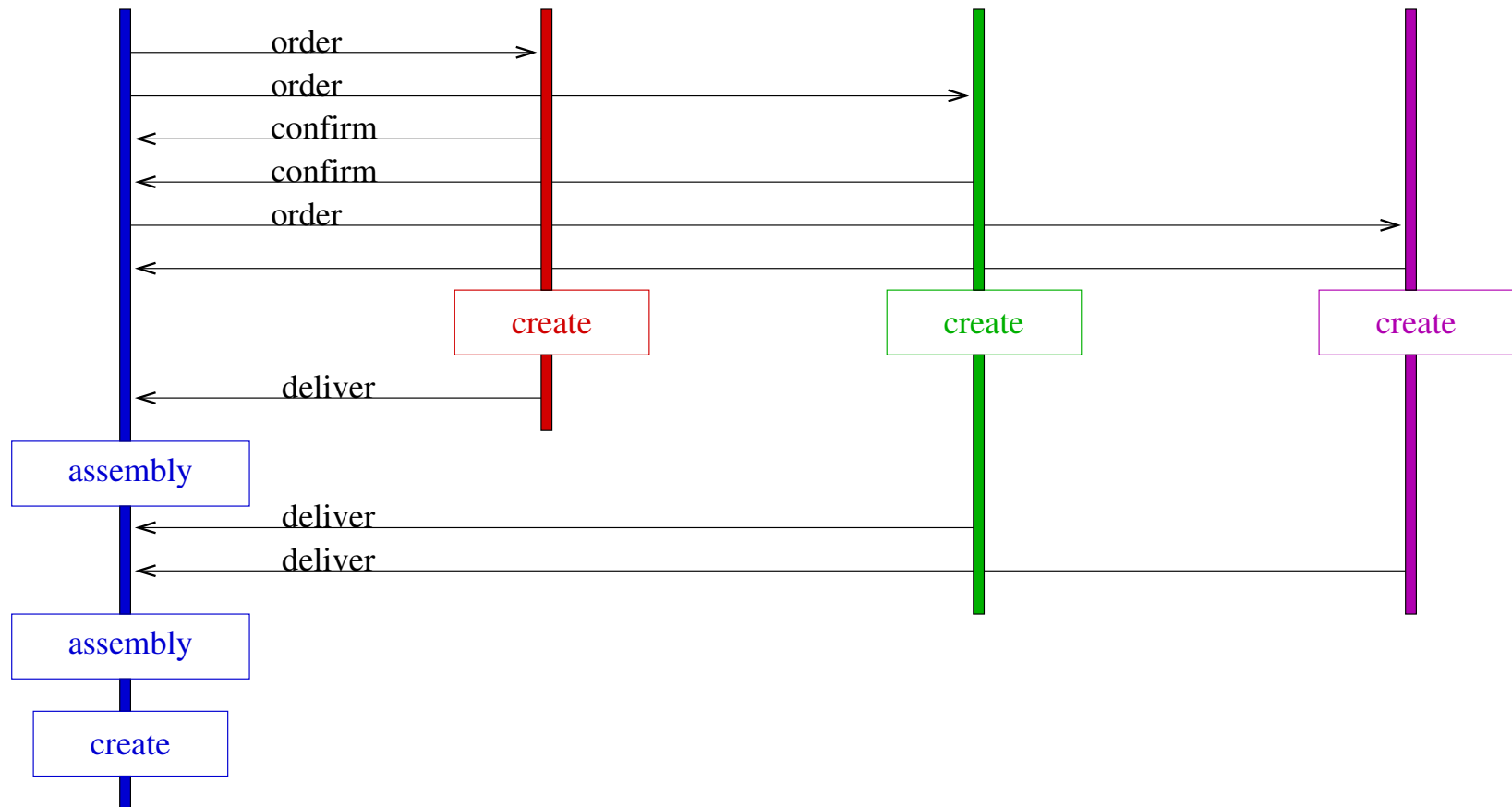
# Construction - overview

computer retailer

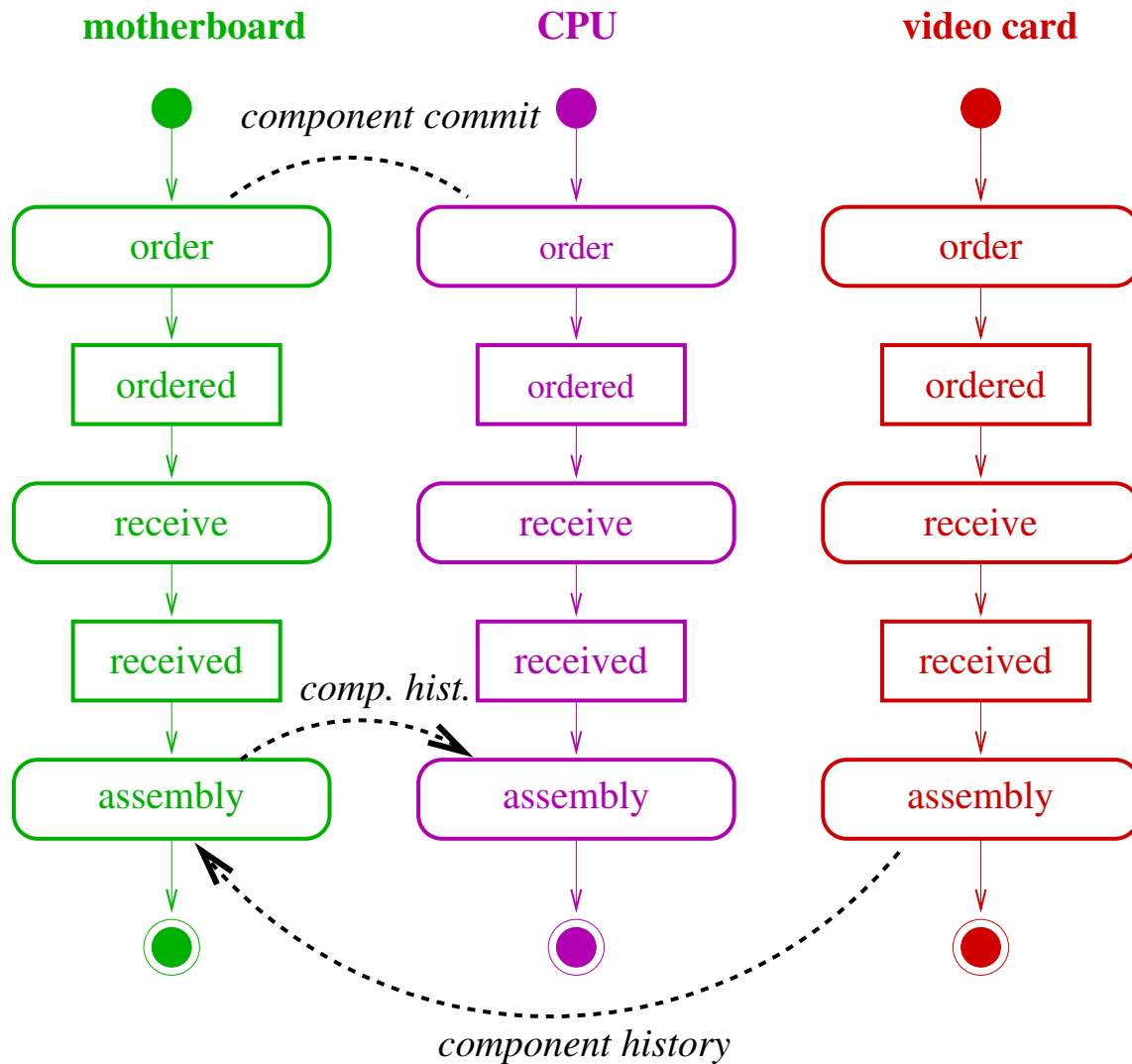
motherboard manufacture

video card manufacture

CPU manufacture

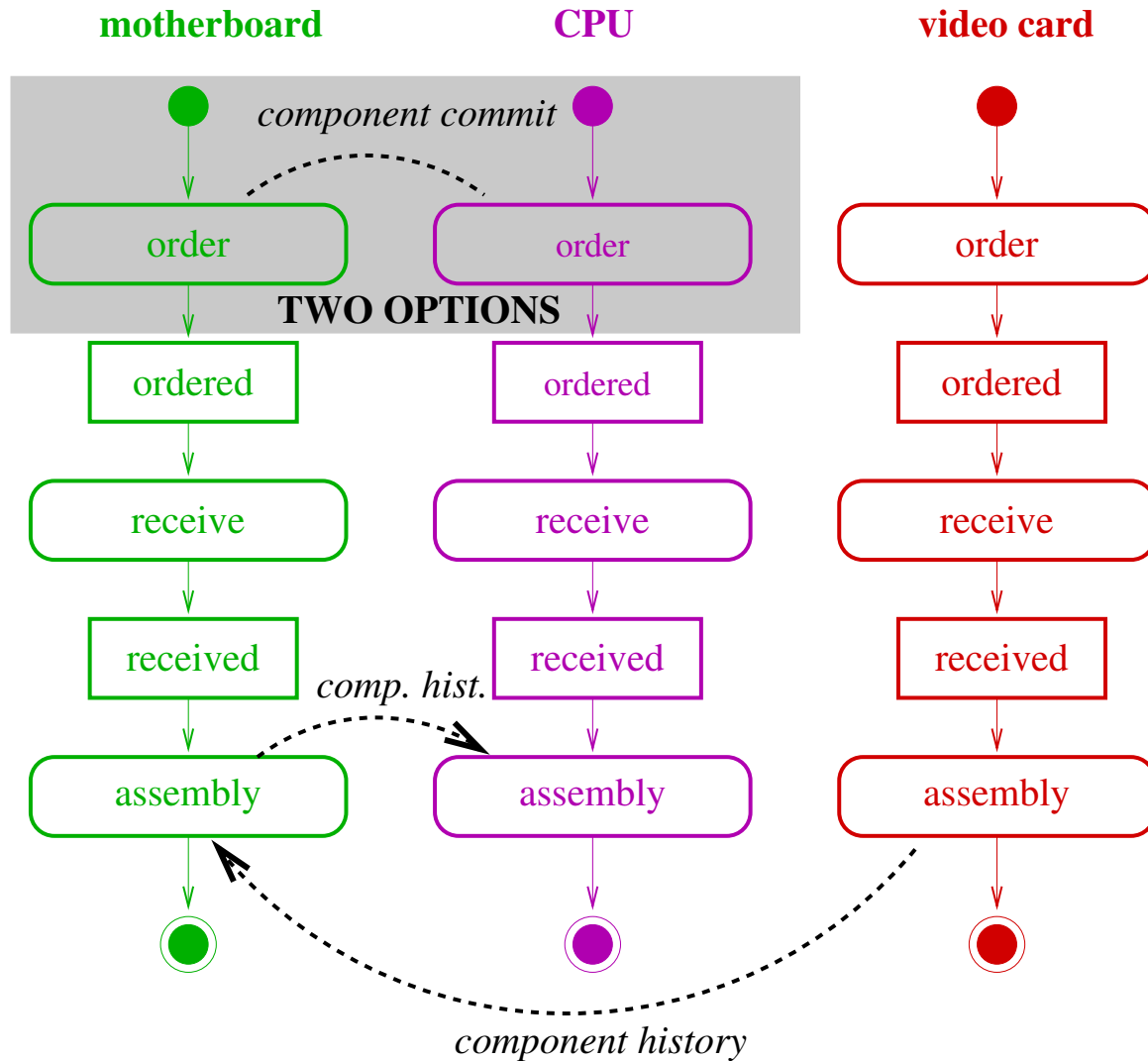


# Construction - component commit/history

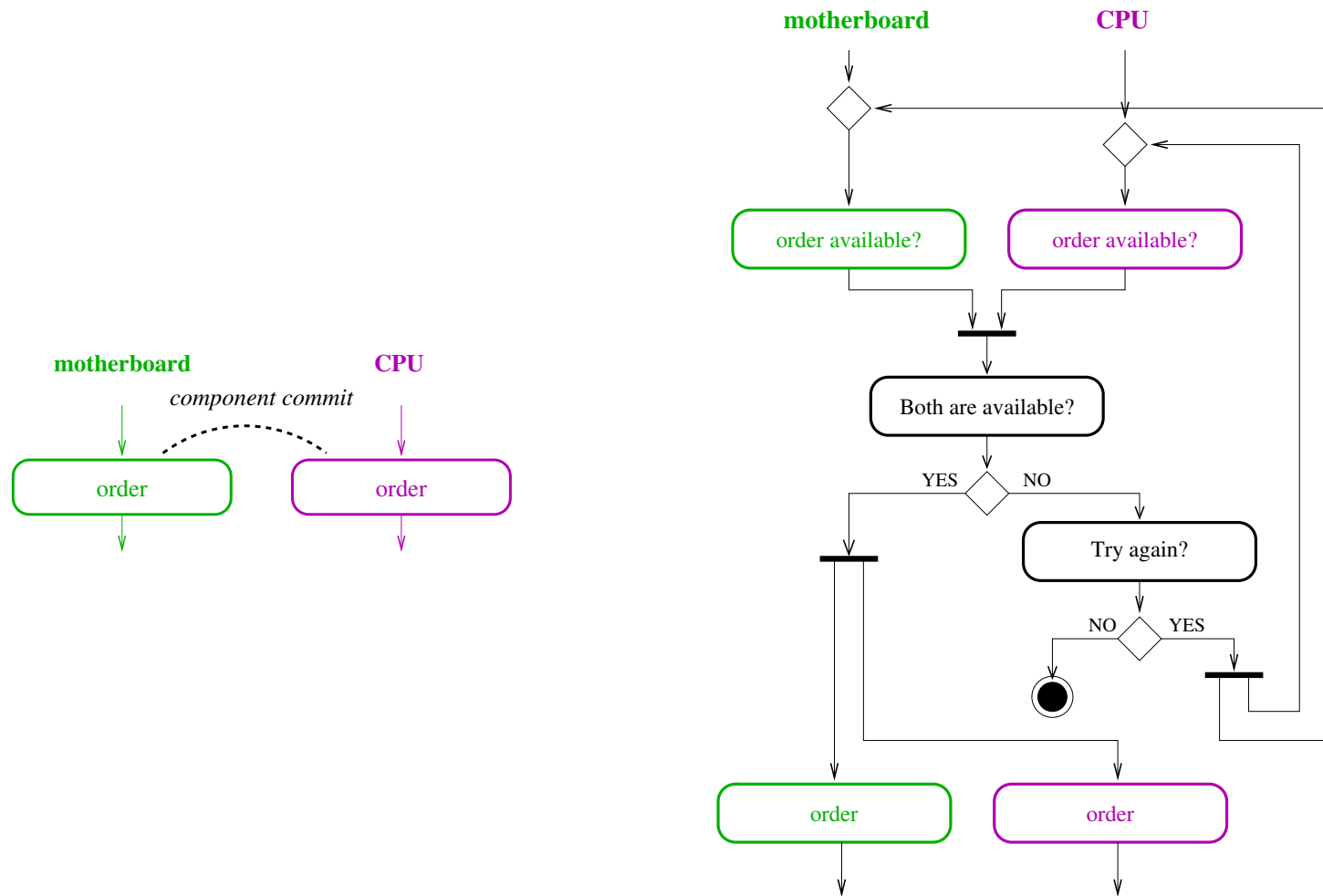




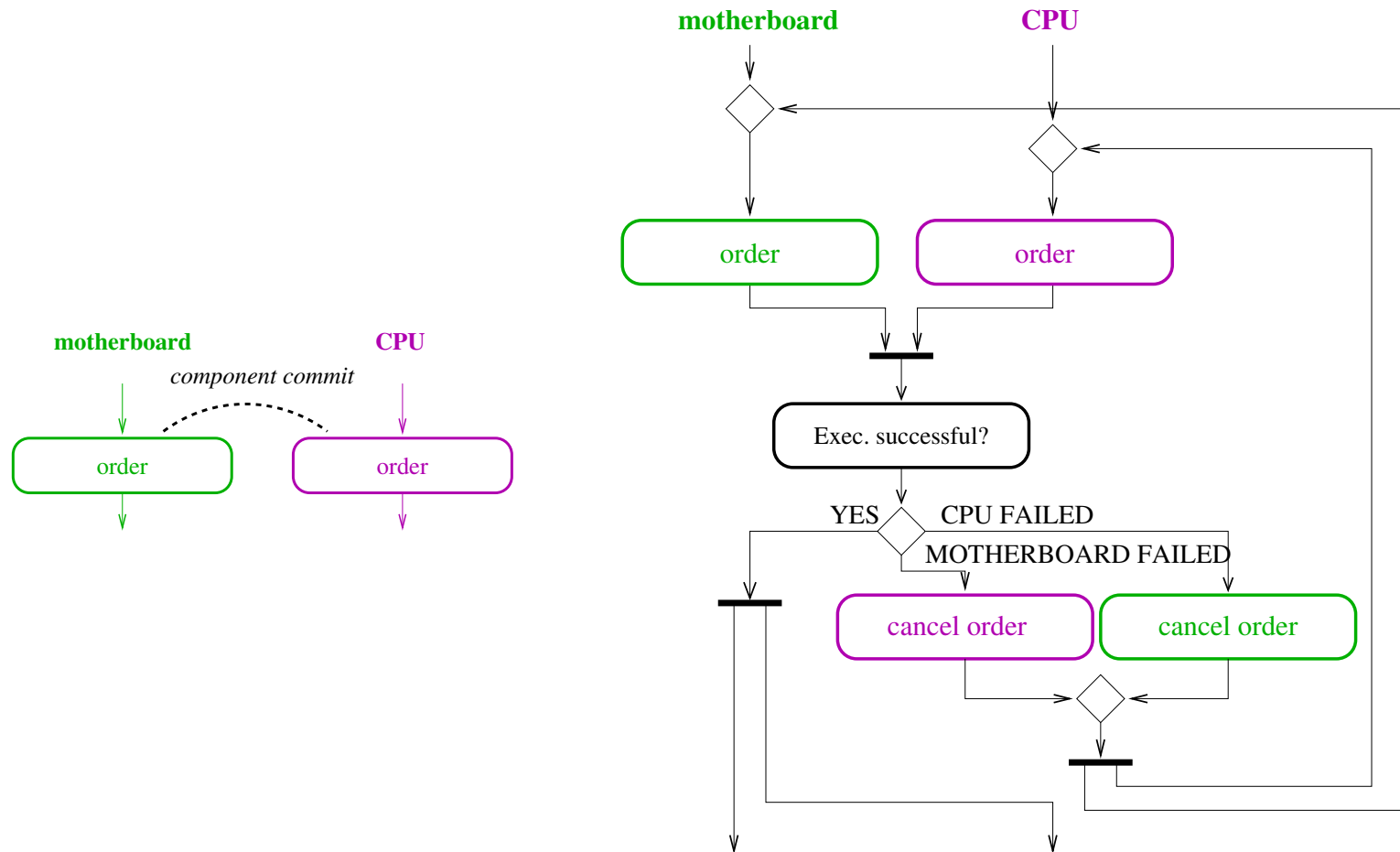
# Construction - component commit/history



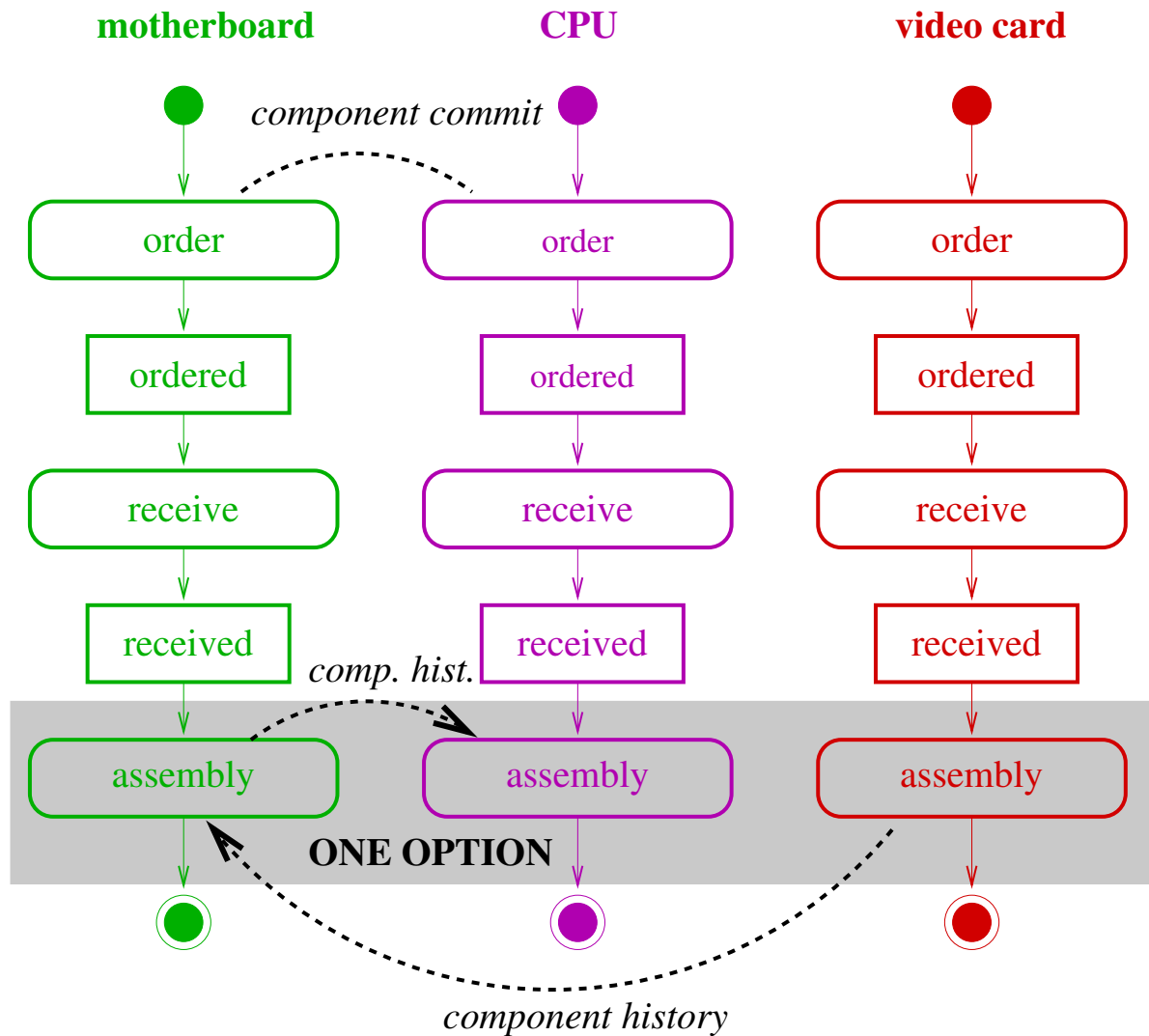
# Construction phase - “Execute if available”



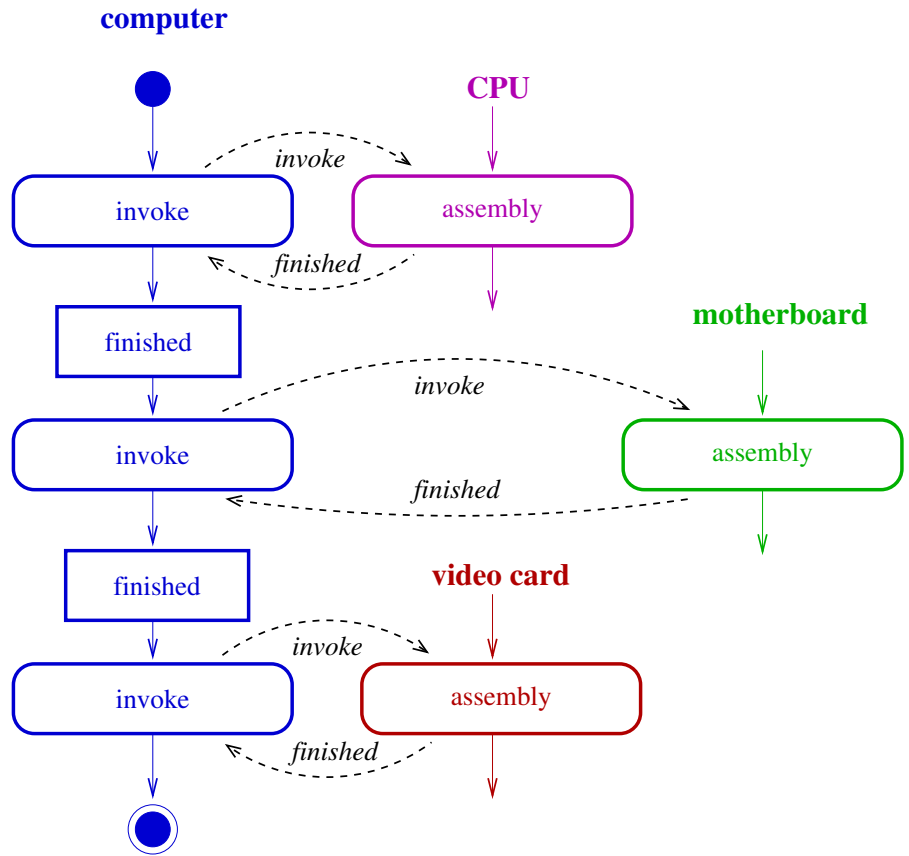
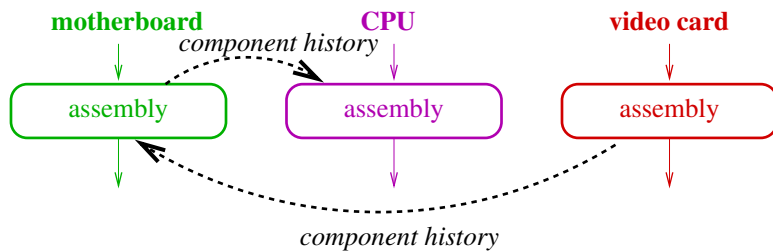
# Construction - "Cancel if unsuccessful"



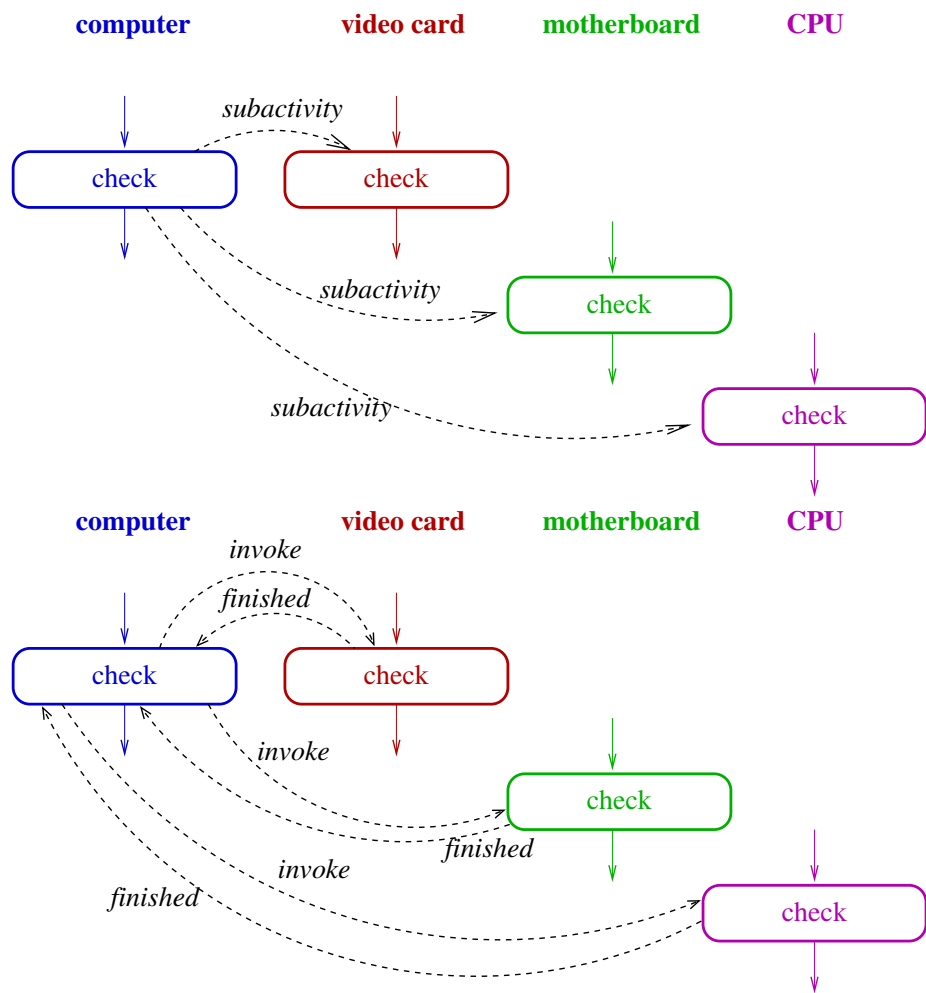
# Construction - component commit/history



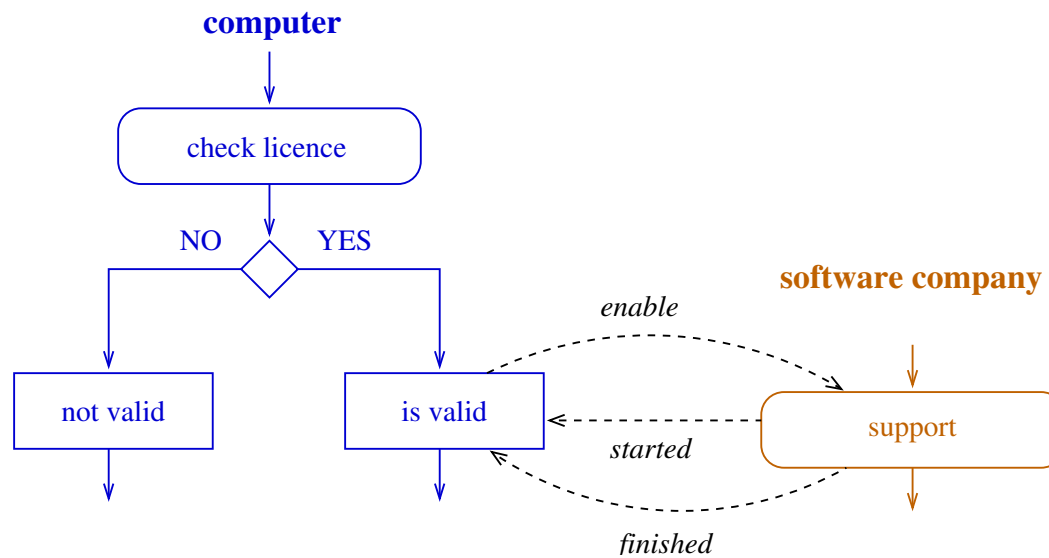
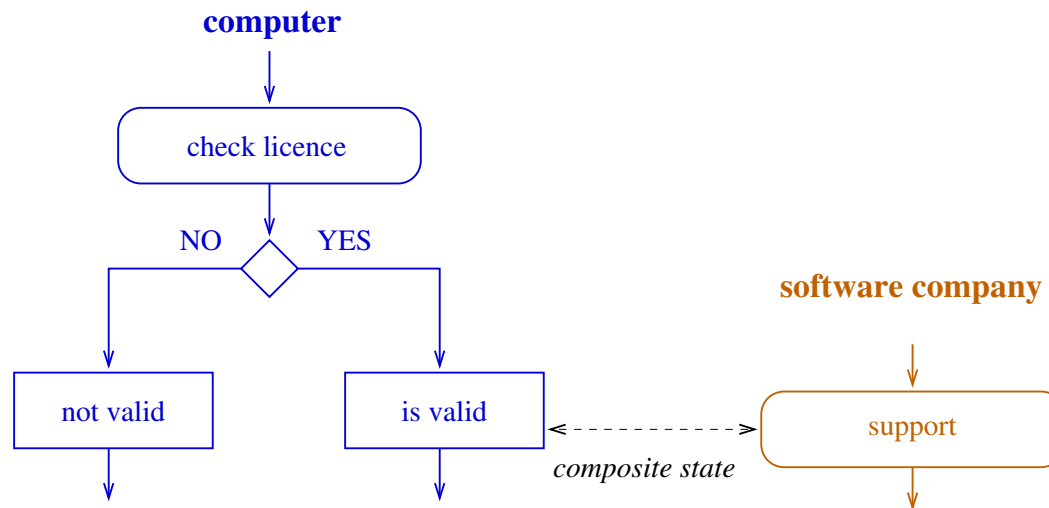
# Construction - ordering



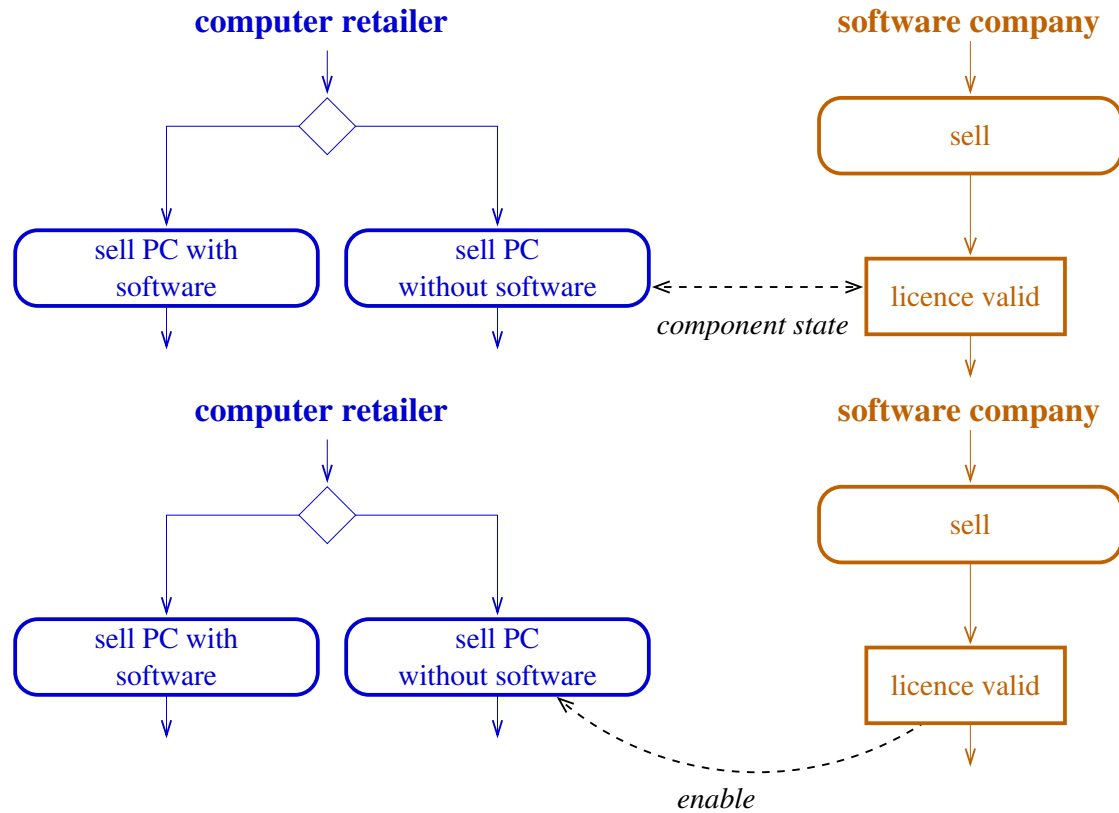
# Coordination between activities



# Coordination between state and activities

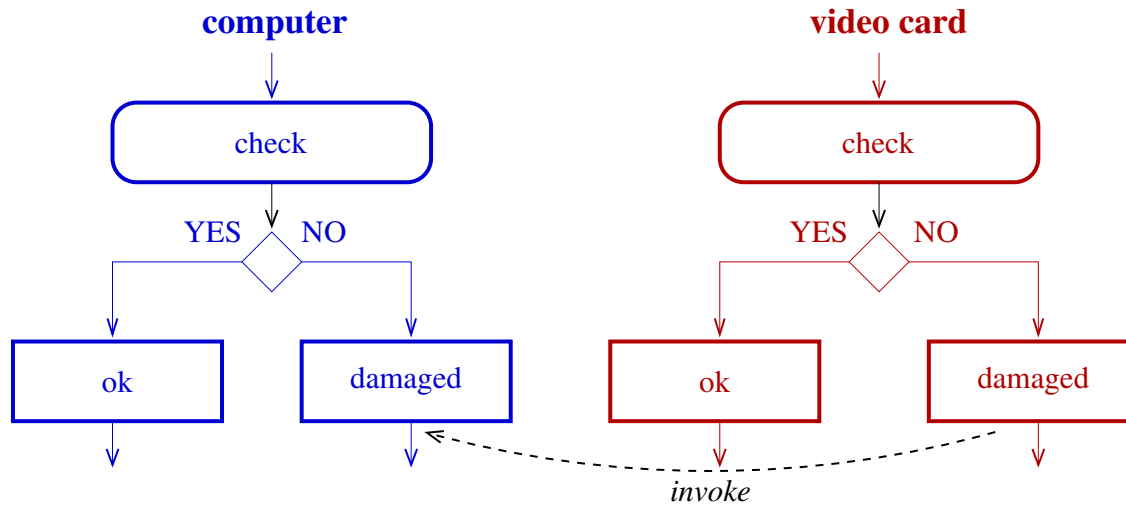
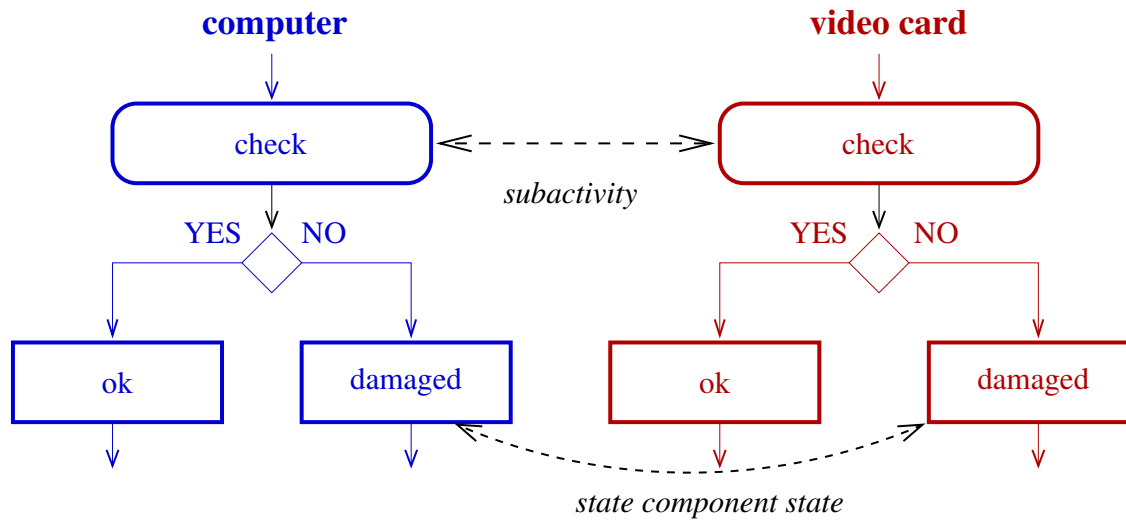


# Coordination between activity and states

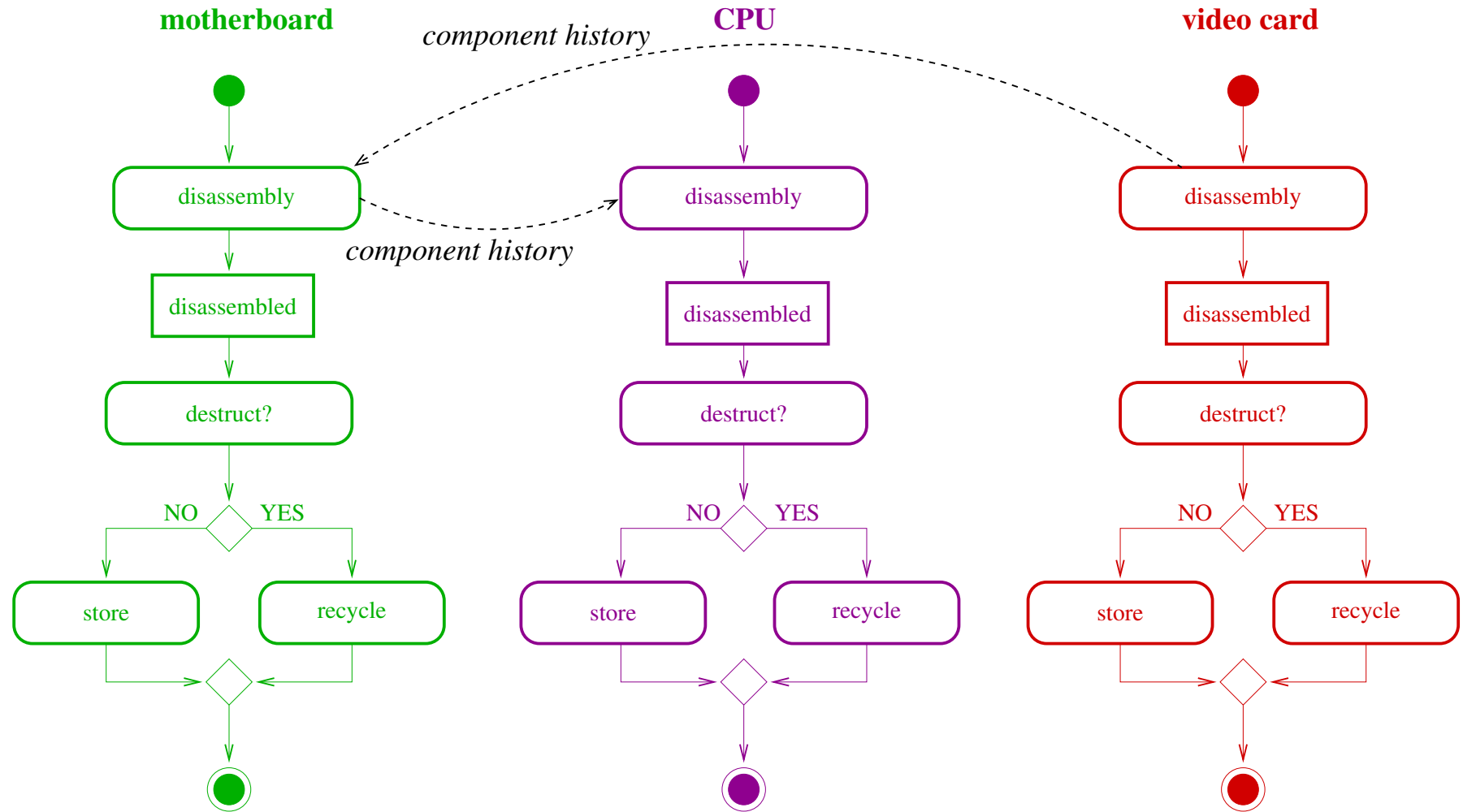




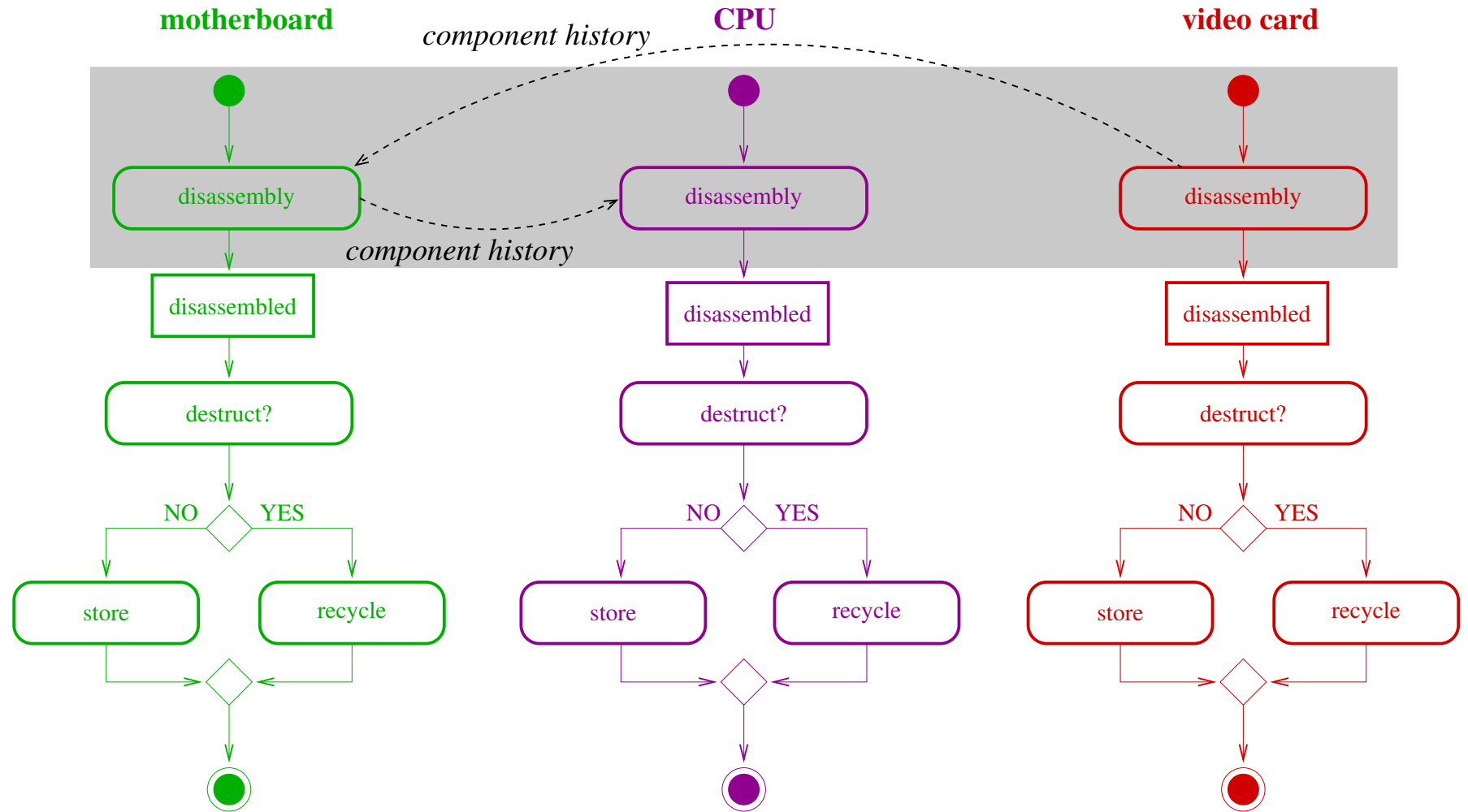
# Coordination between states



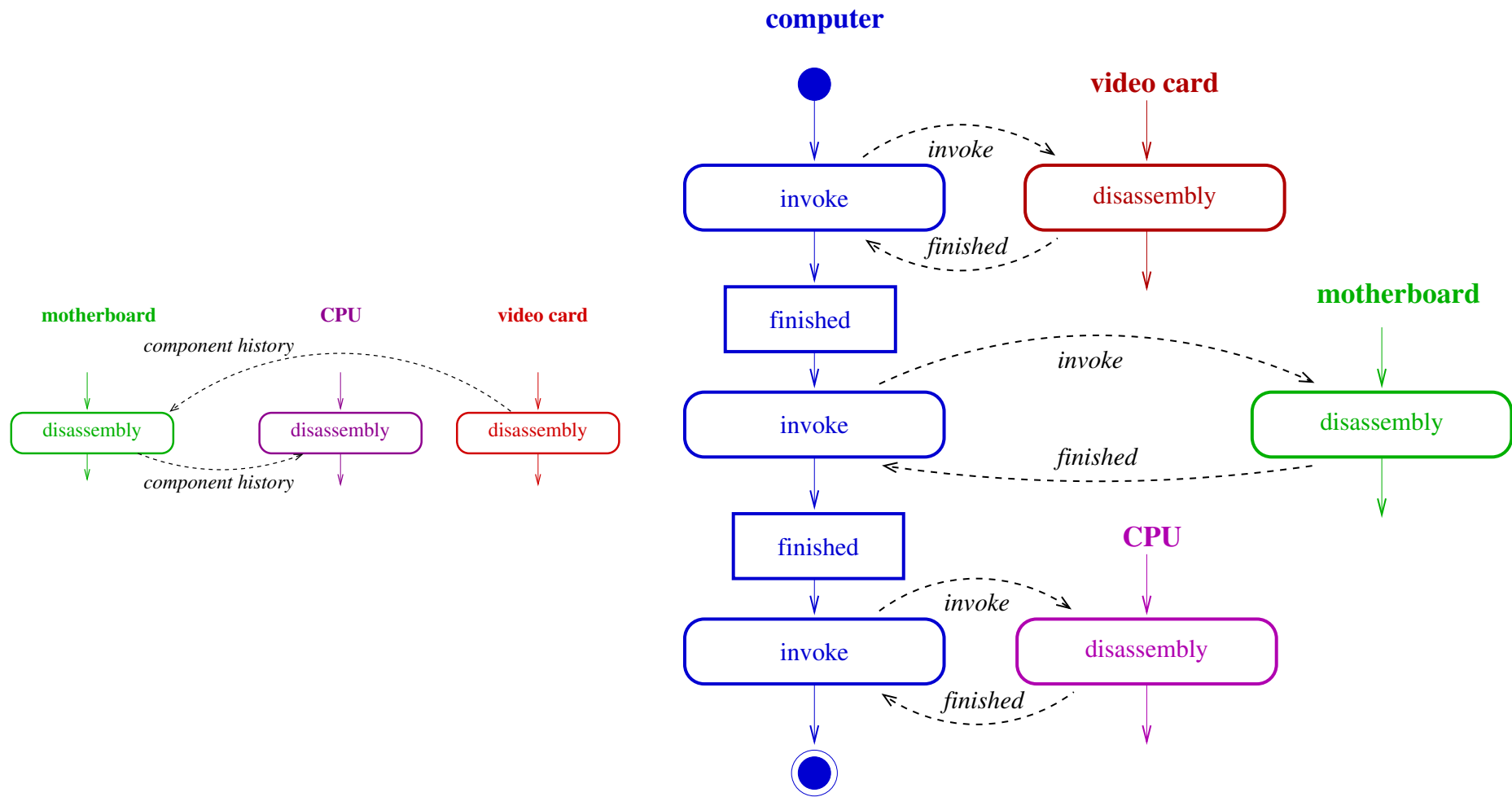
# Destruction



# Destruction



# Destruction



# Conclusion

- Integration framework based on semantic relationships and integration options
- Extension of UML-AD

## Future Work:

- Implementation in a meta modeling tool
- Verification
- Application of results to Web Services