BP Patterns

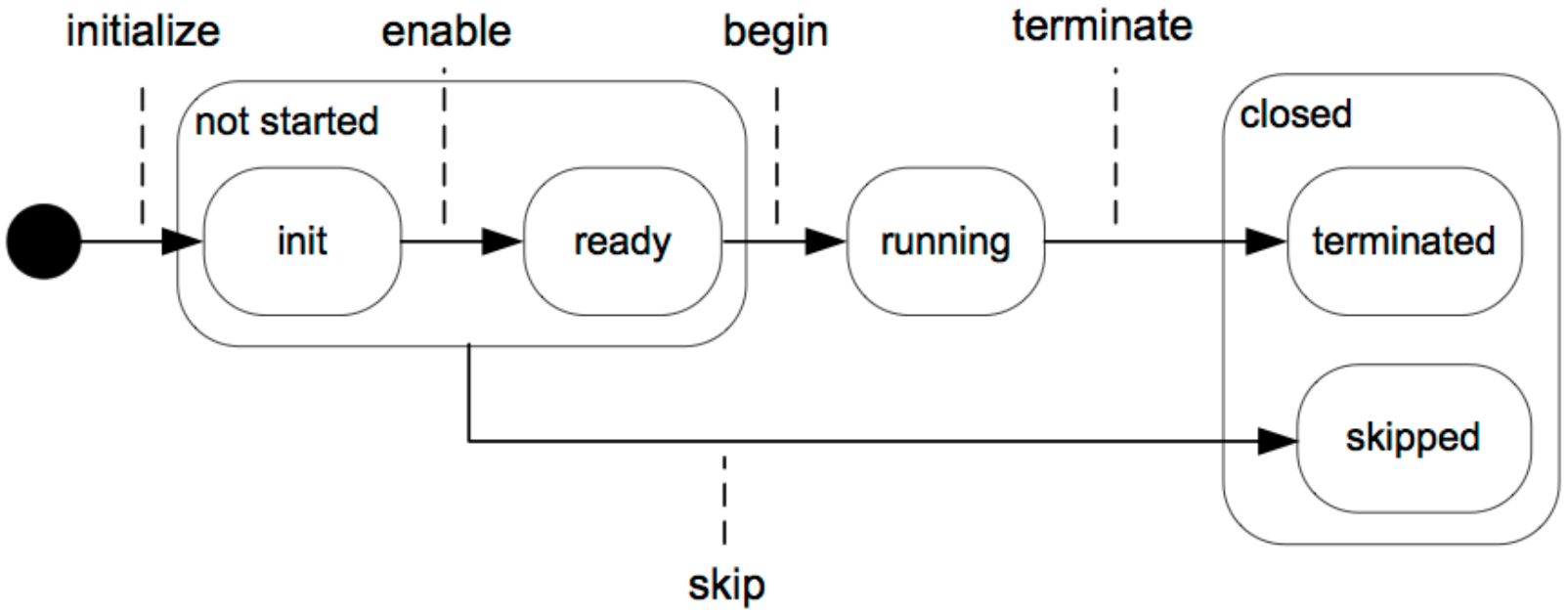
Business Process Management and Flexibility

Barbara Re, Phd

Control flow patterns

- Control flow patterns provide a way for expressing process orchestrations
- Control flow patterns are **independent of concrete process languages**, so that each pattern can be expressed in **different process languages**
- Control flow patterns can also be **used to compare the expressiveness of process languages**
- **Basic control flow patterns** include *sequence*, *and split*, and *and join*, as well as *exclusive or split* and *exclusive or join*
- These control flow patterns are supported by virtually any process meta-model
- Control flow patterns are **defined at the process model level** and their **execution semantics is applies at process instances**

State transition diagram for activity instance



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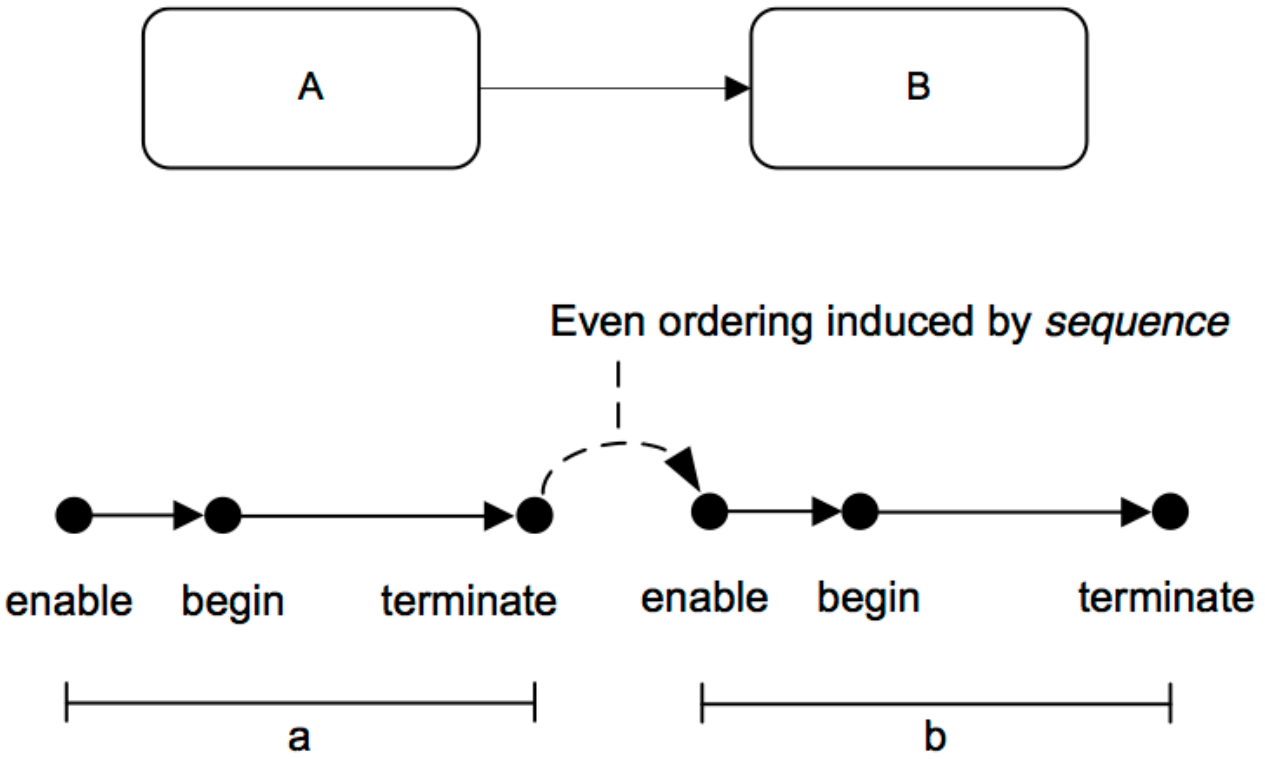
Sequence pattern, with event diagram process instance



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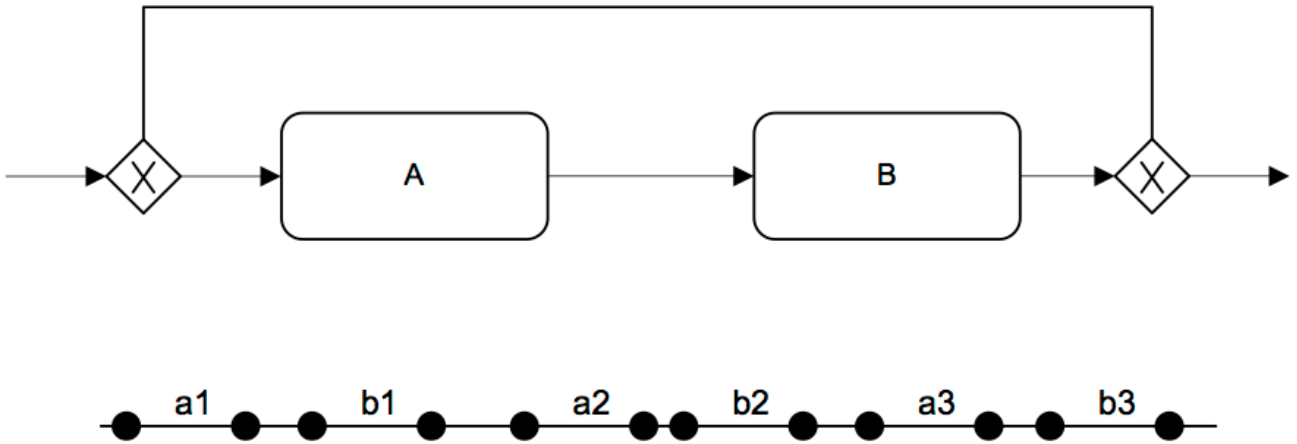
Sequence pattern as part of loop



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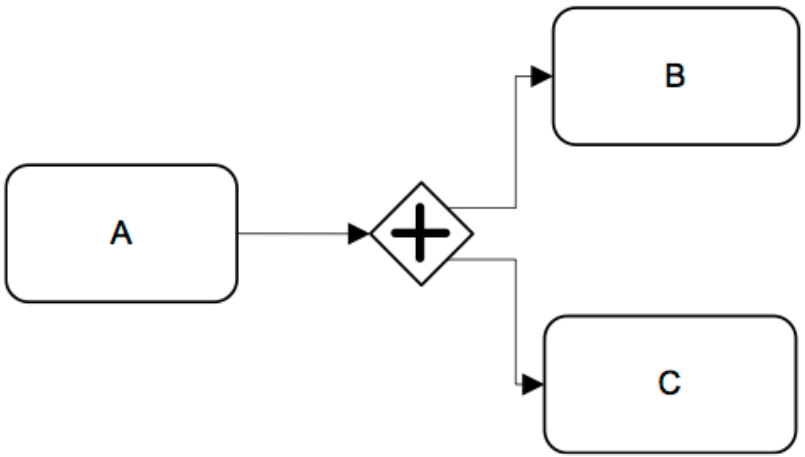
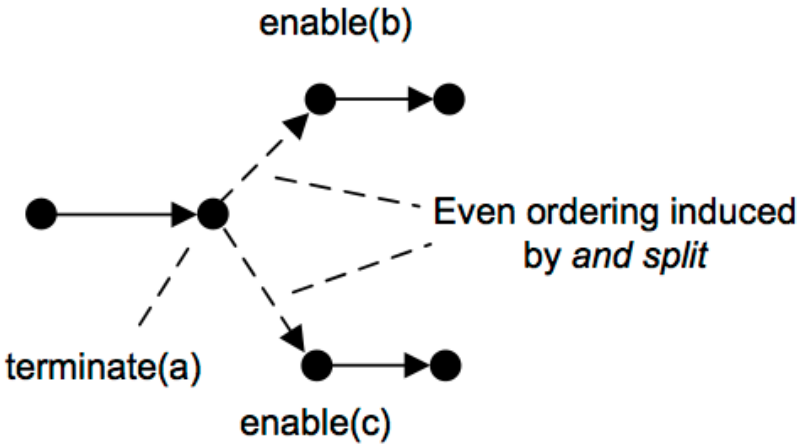
And-split pattern





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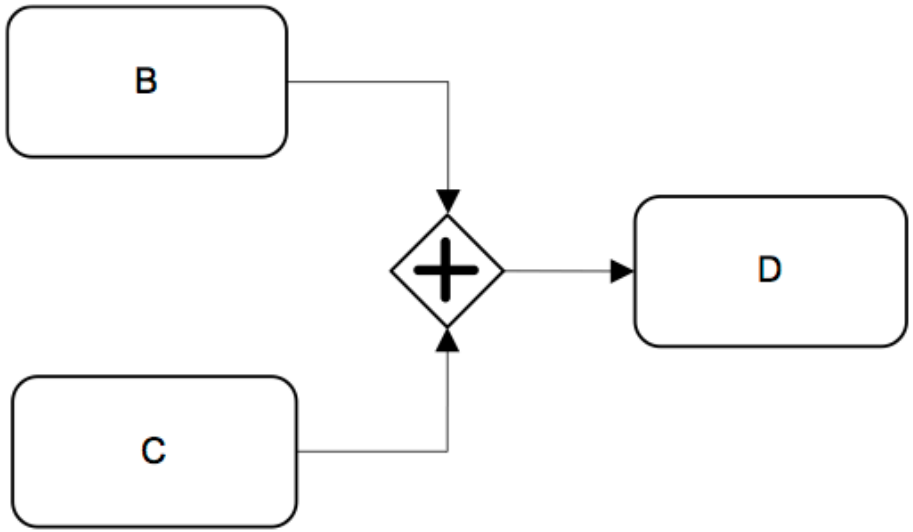
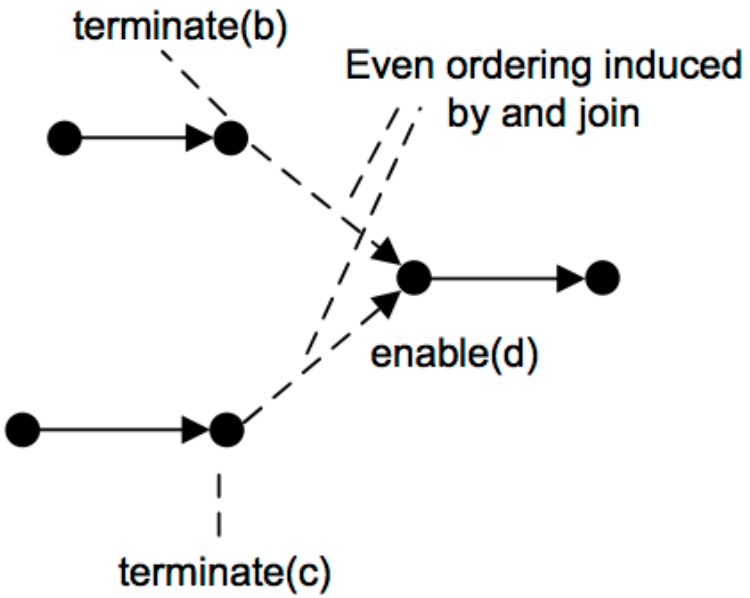
And join pattern





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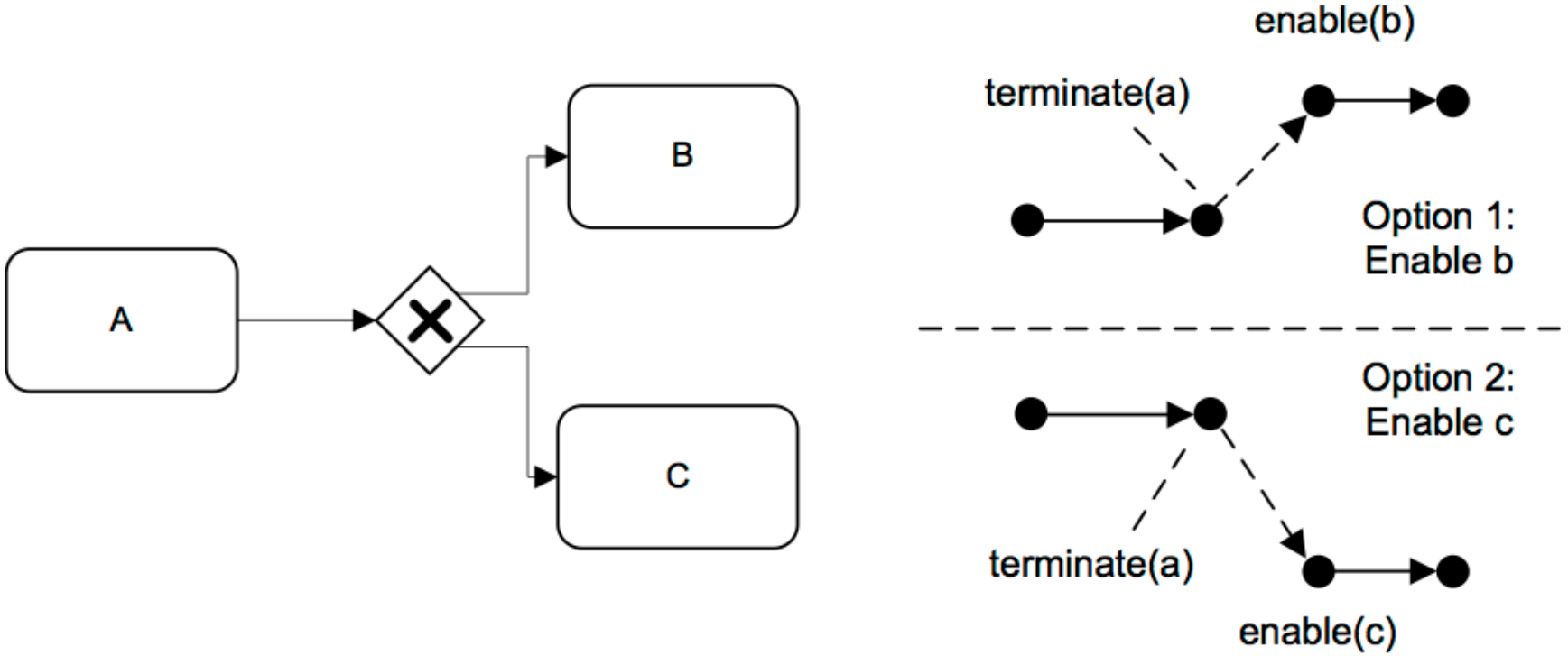
Xor split pattern



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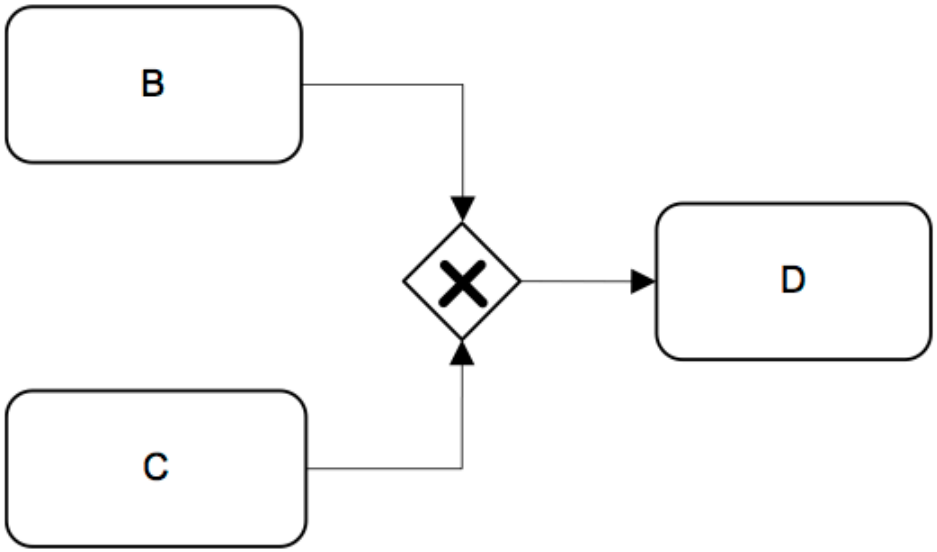
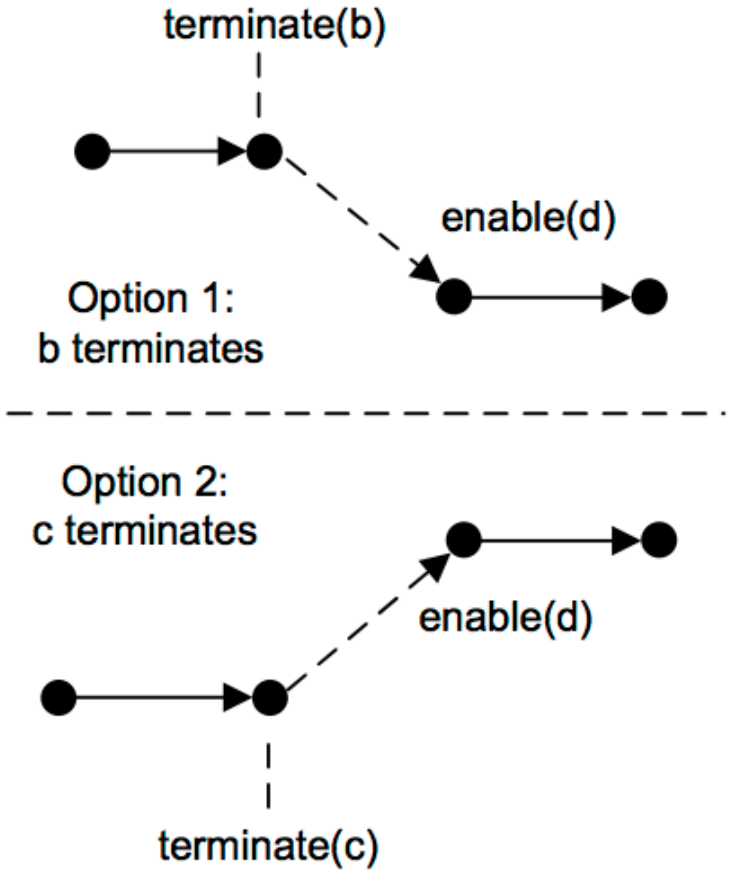
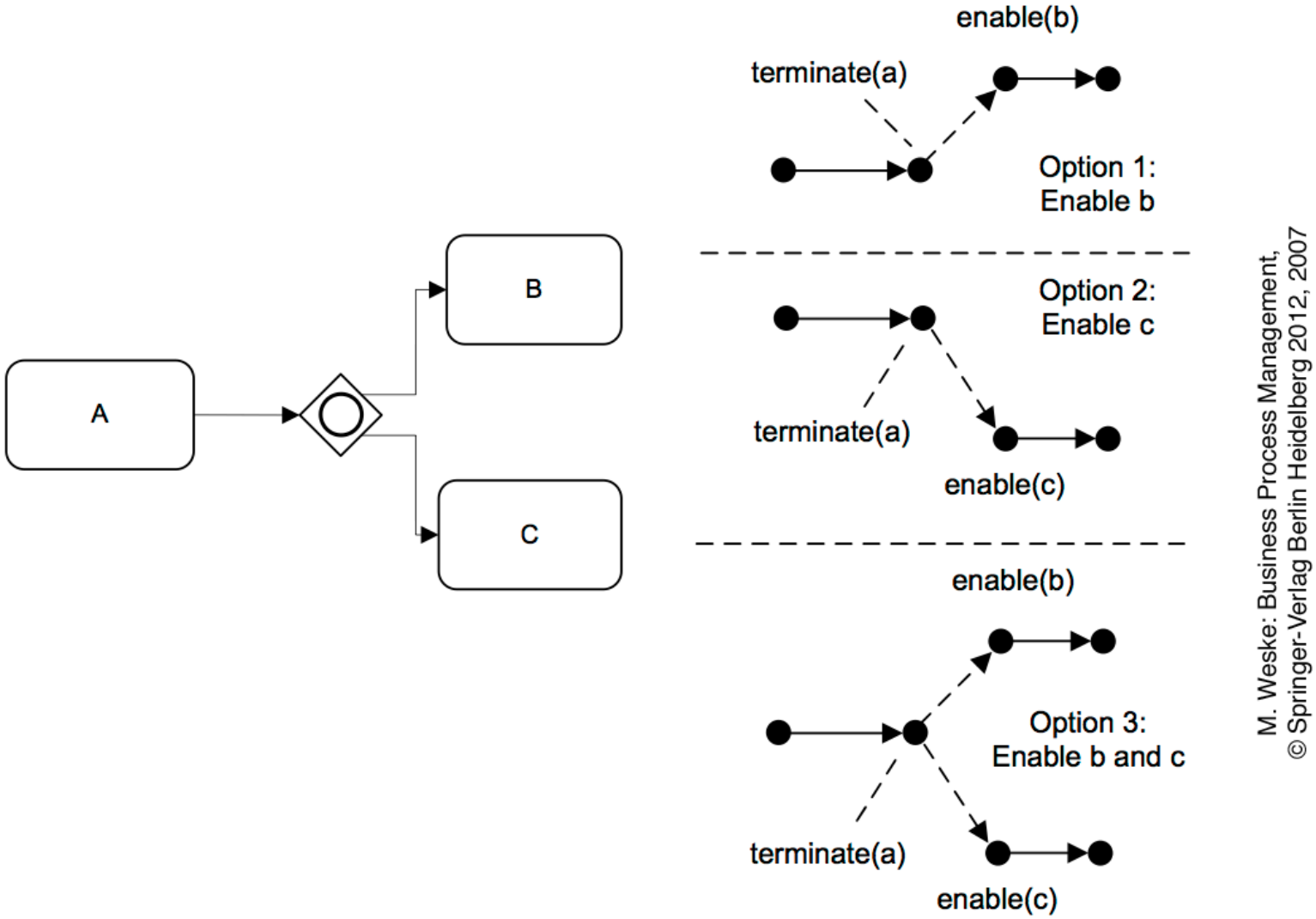
Xor join pattern

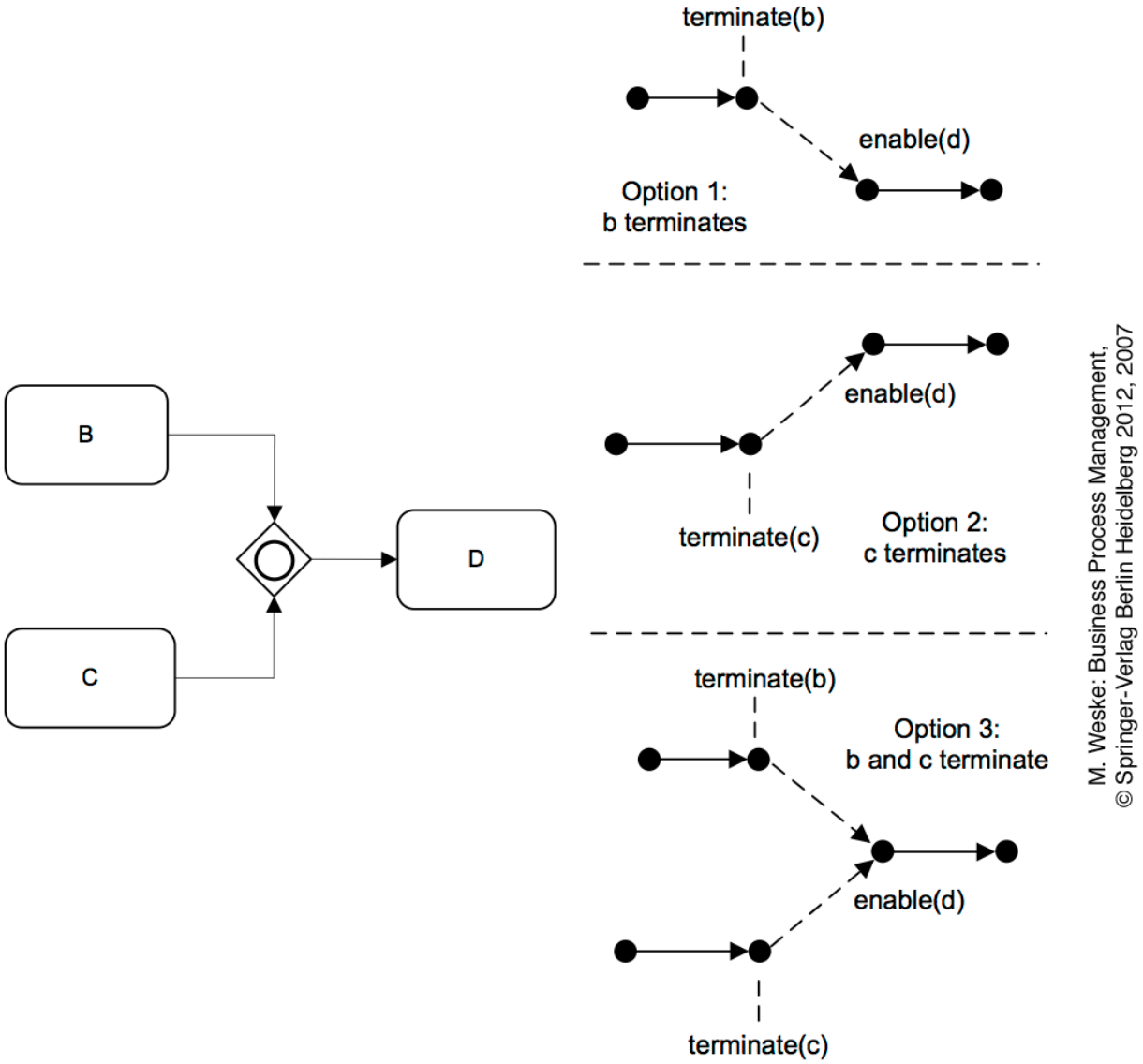




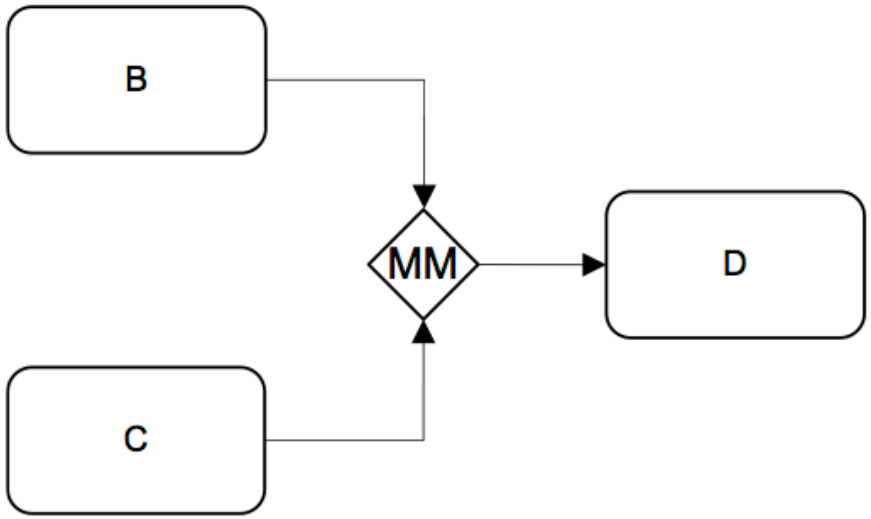
Or split pattern

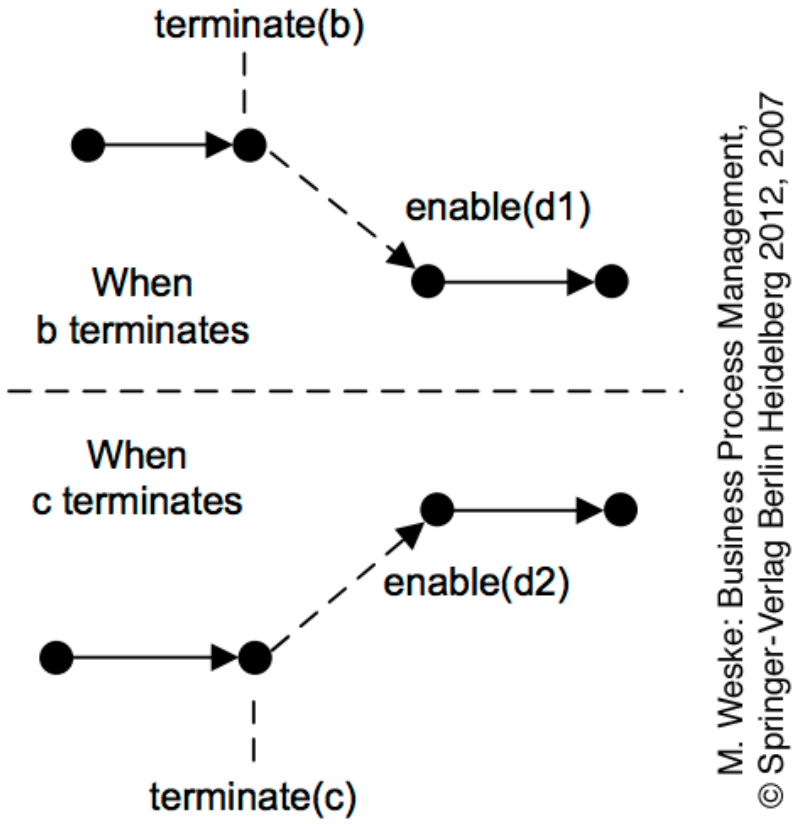


Or join pattern



Multi-merge pattern

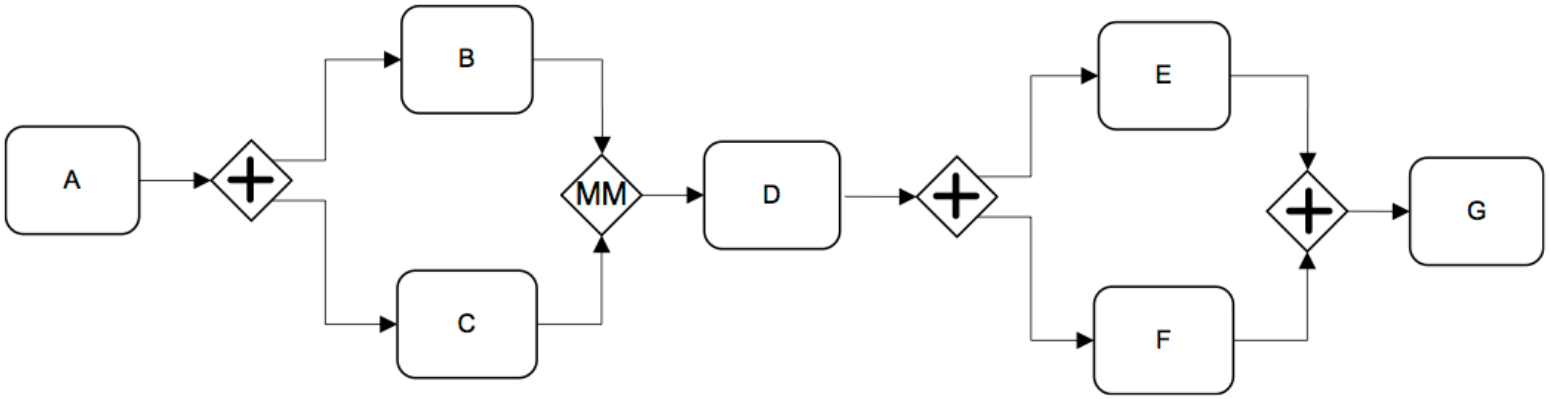




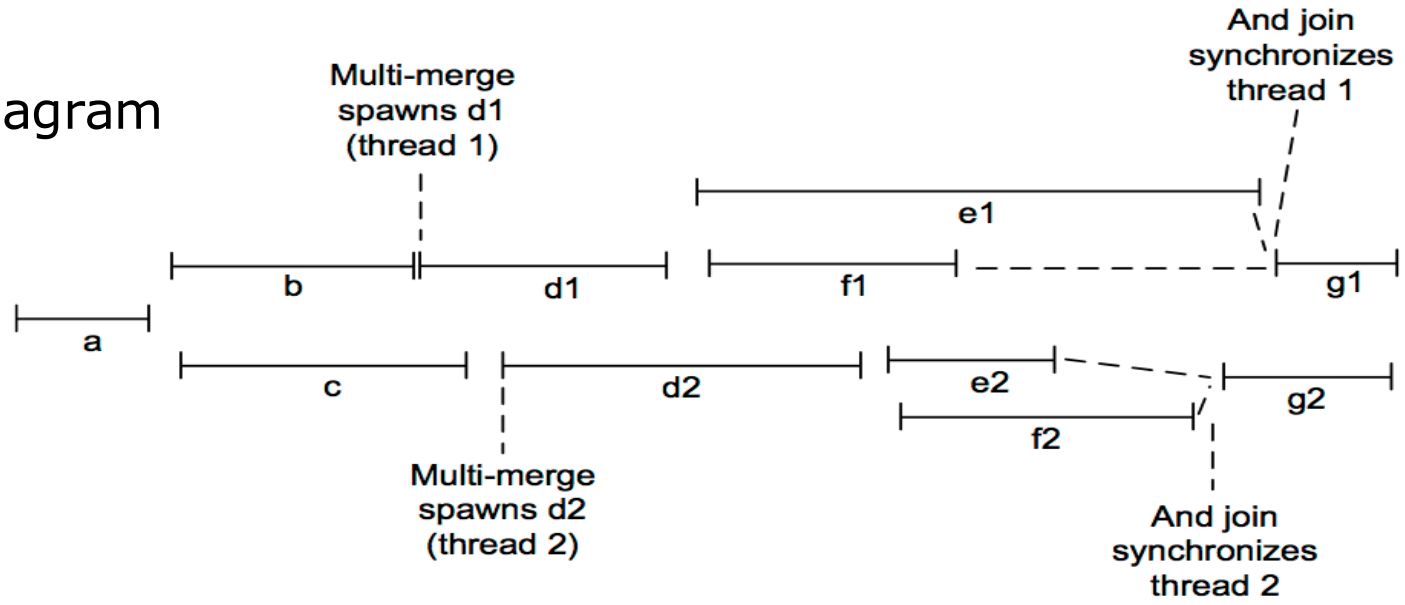
The activity following the merge is started for every activation of every incoming branch

Multi-merge example

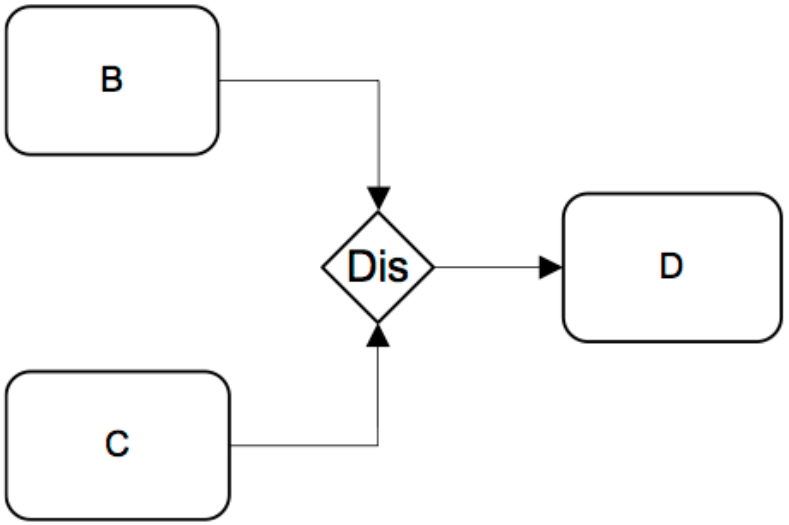
Process Model

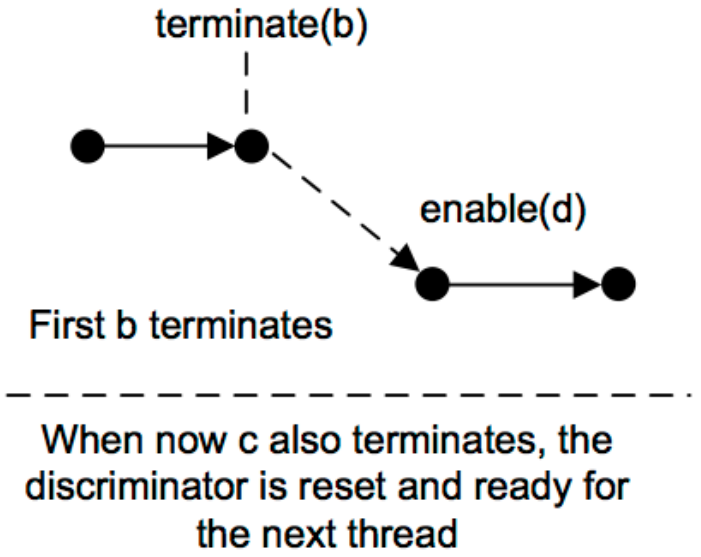


Event Diagram



Discriminator pattern





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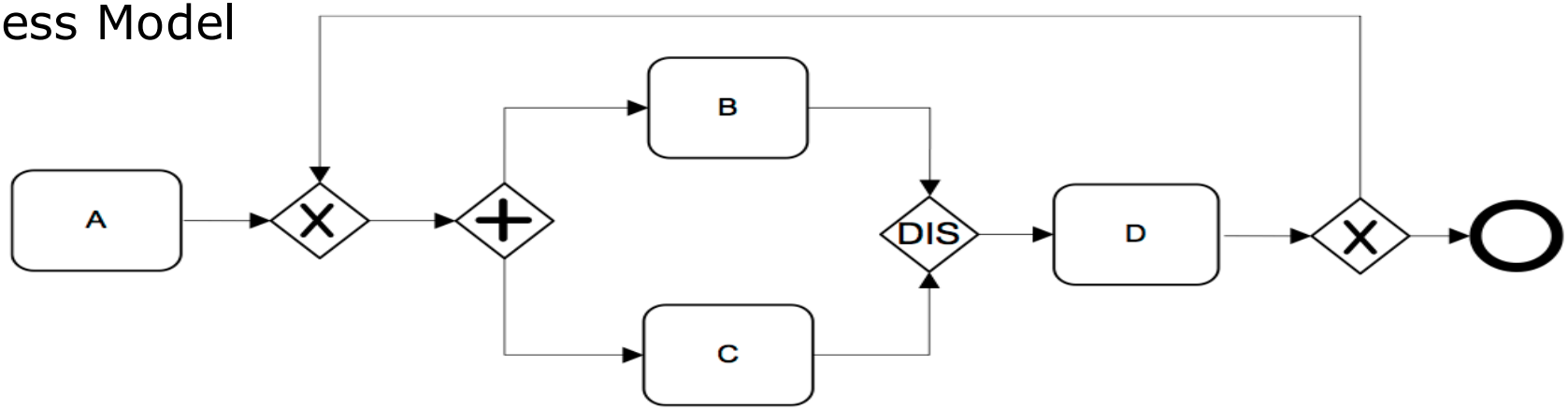
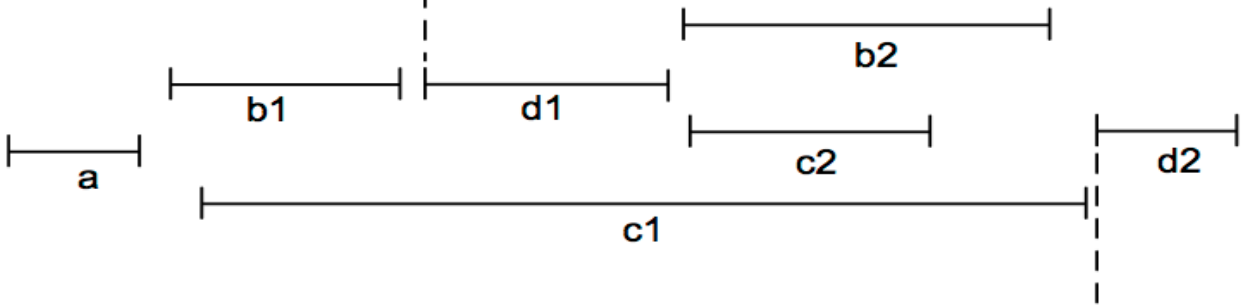
Discriminator Example

Process Model



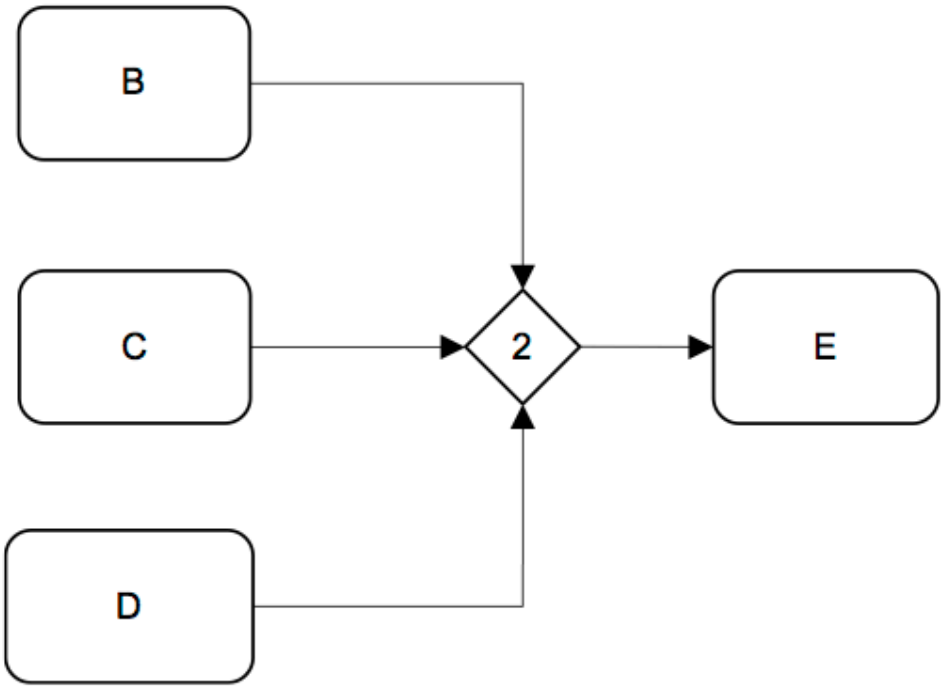
Discriminator spawns off d1 on termination of b1, while c1 is still running

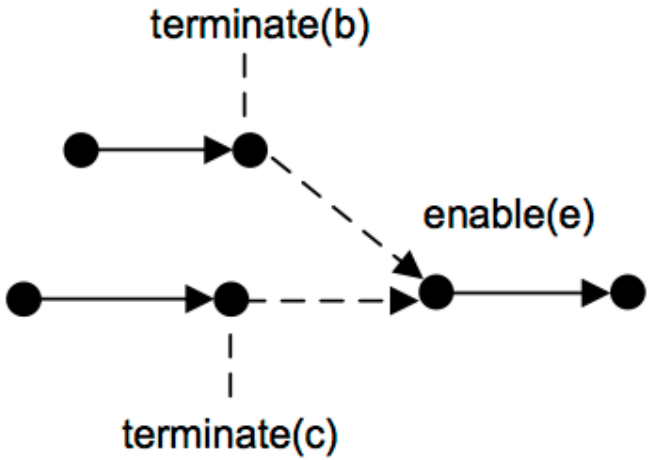
Event Diagram



Discriminator makes sure that d2 only enabled after c1 of first iteration completes

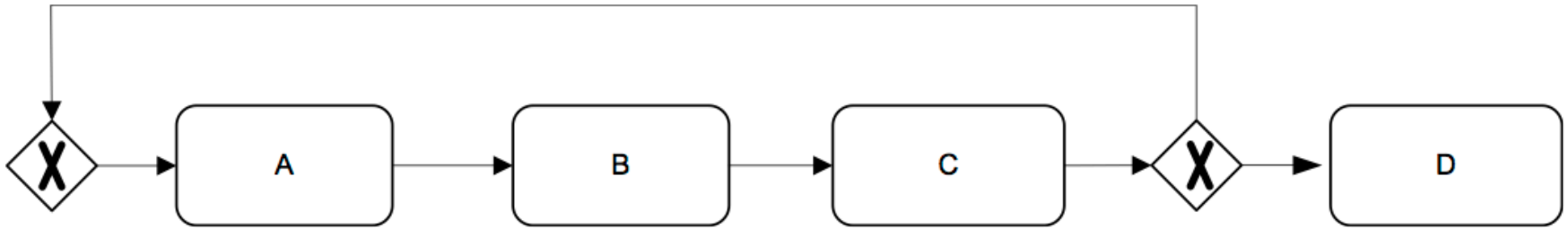
N-out-of-M join pattern





When any 2 activity instances in {b,c,d} have terminates, e can be enabled
(in the example b and c terminated)

Arbitrary cycles pattern – graphical representation



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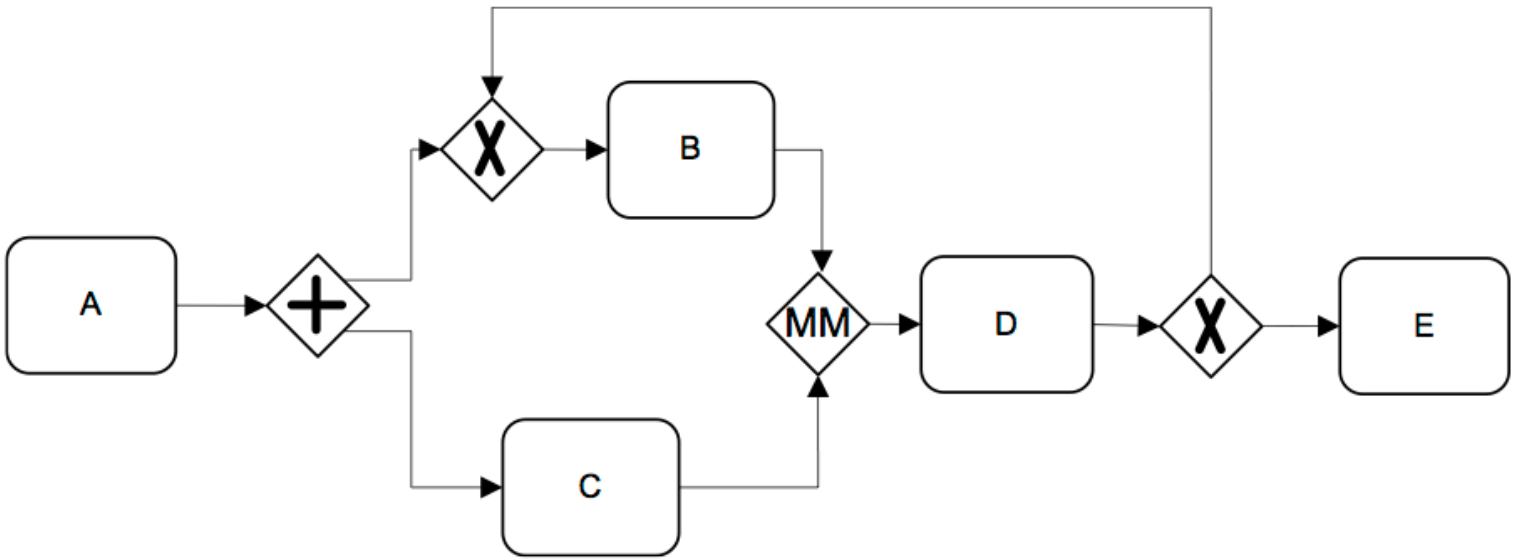
Arbitrary cycles example – using multiple merge pattern



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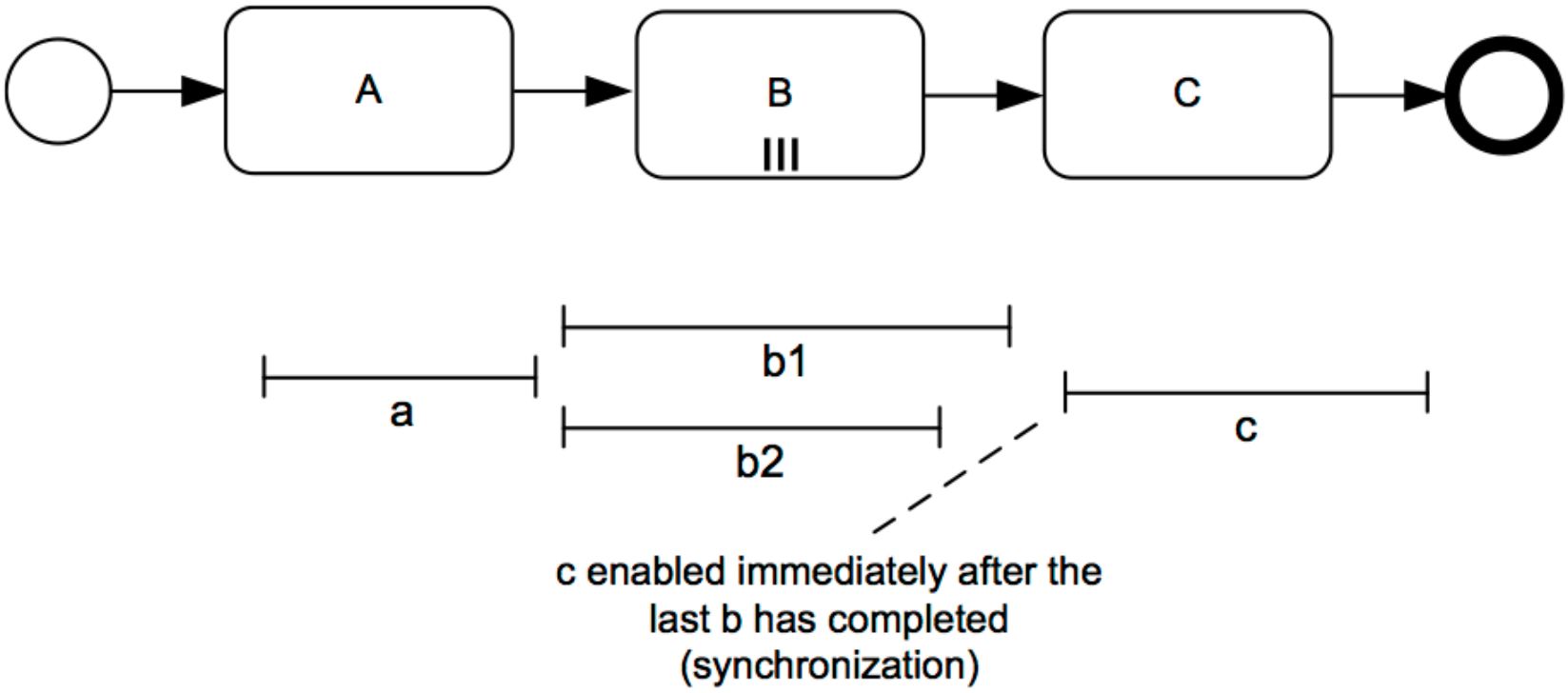
Example for multiple instances with a priori design time knowledge



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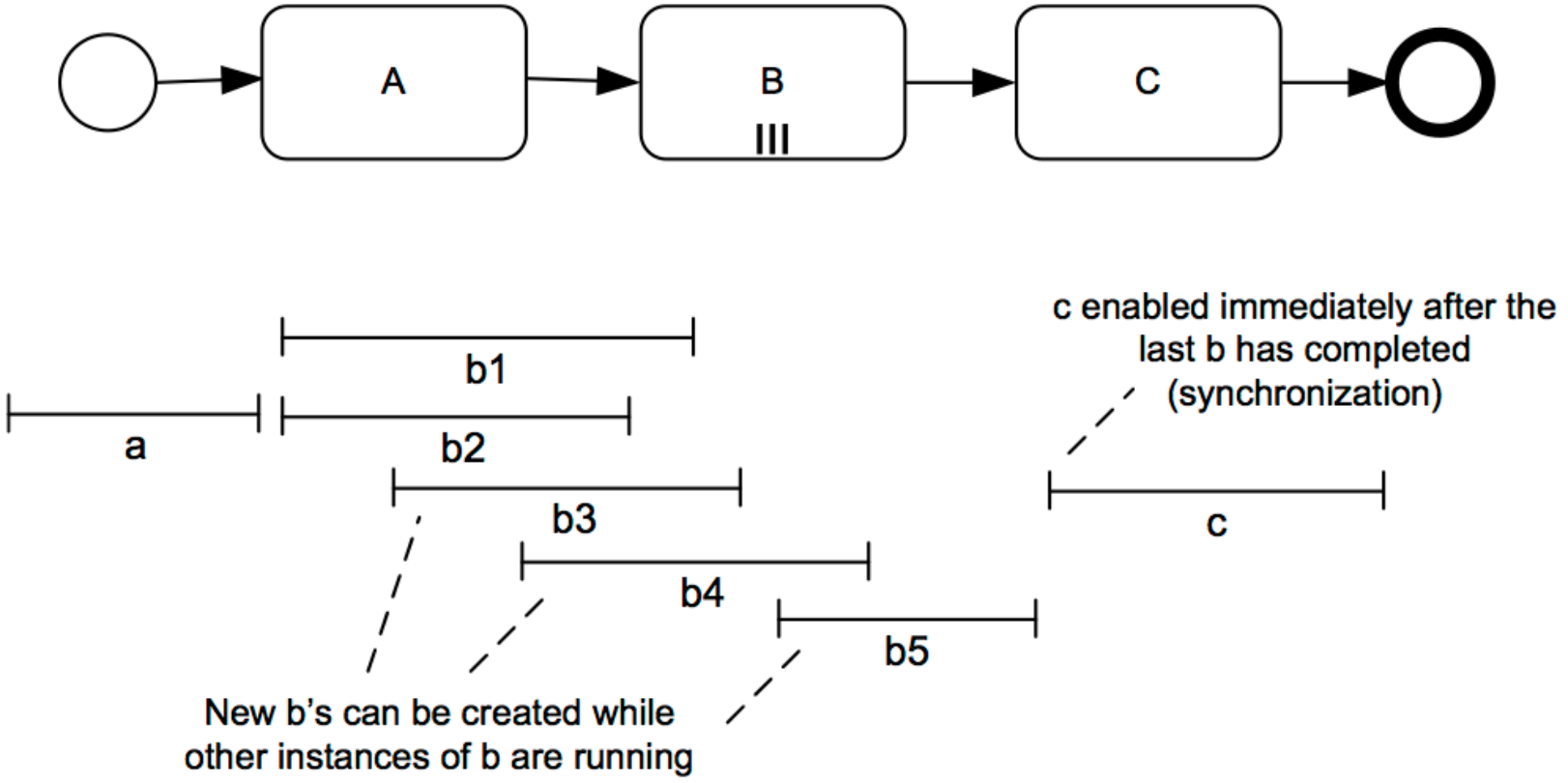
Example for multiple instances without a priori run time knowledge pattern



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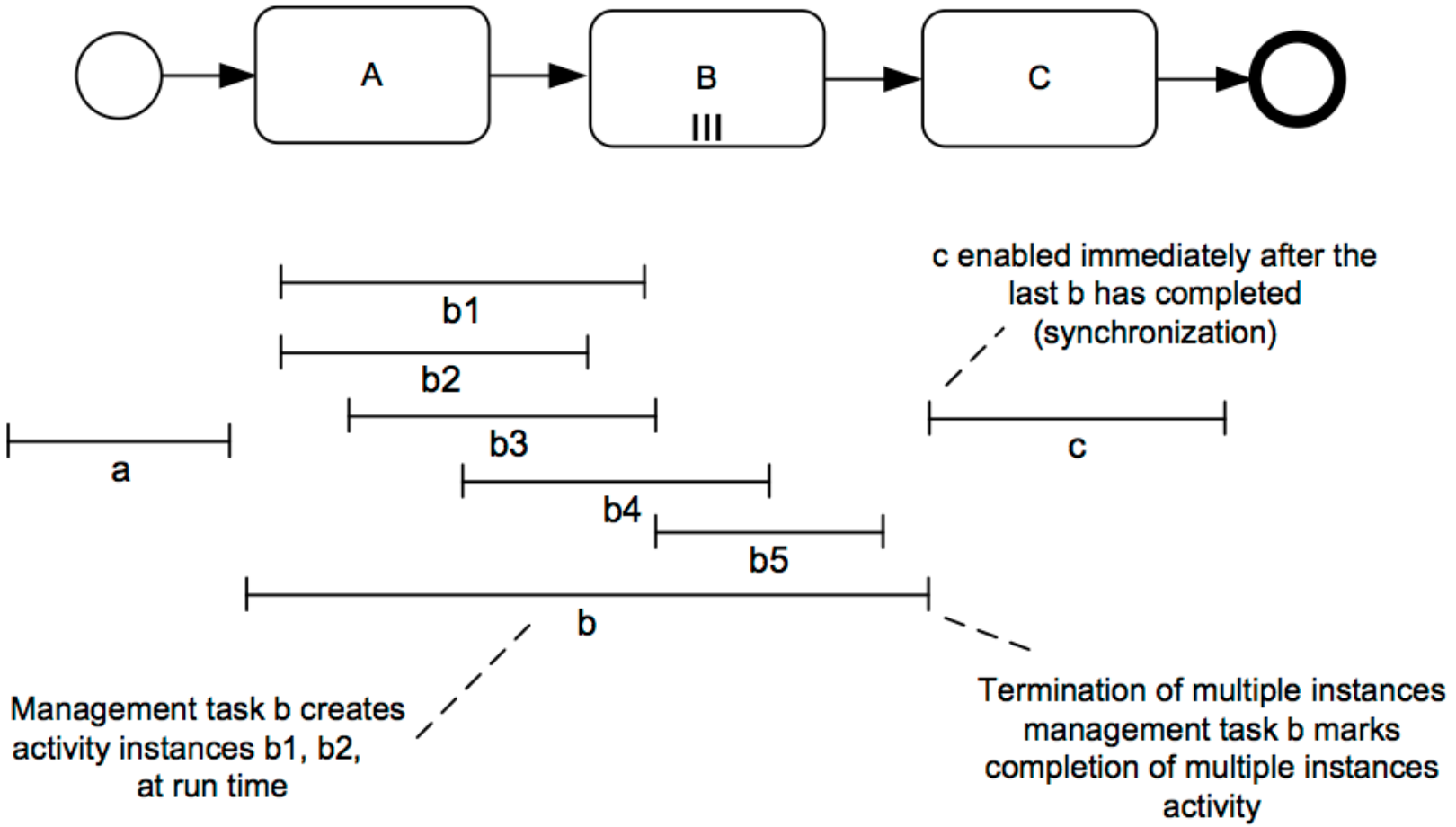
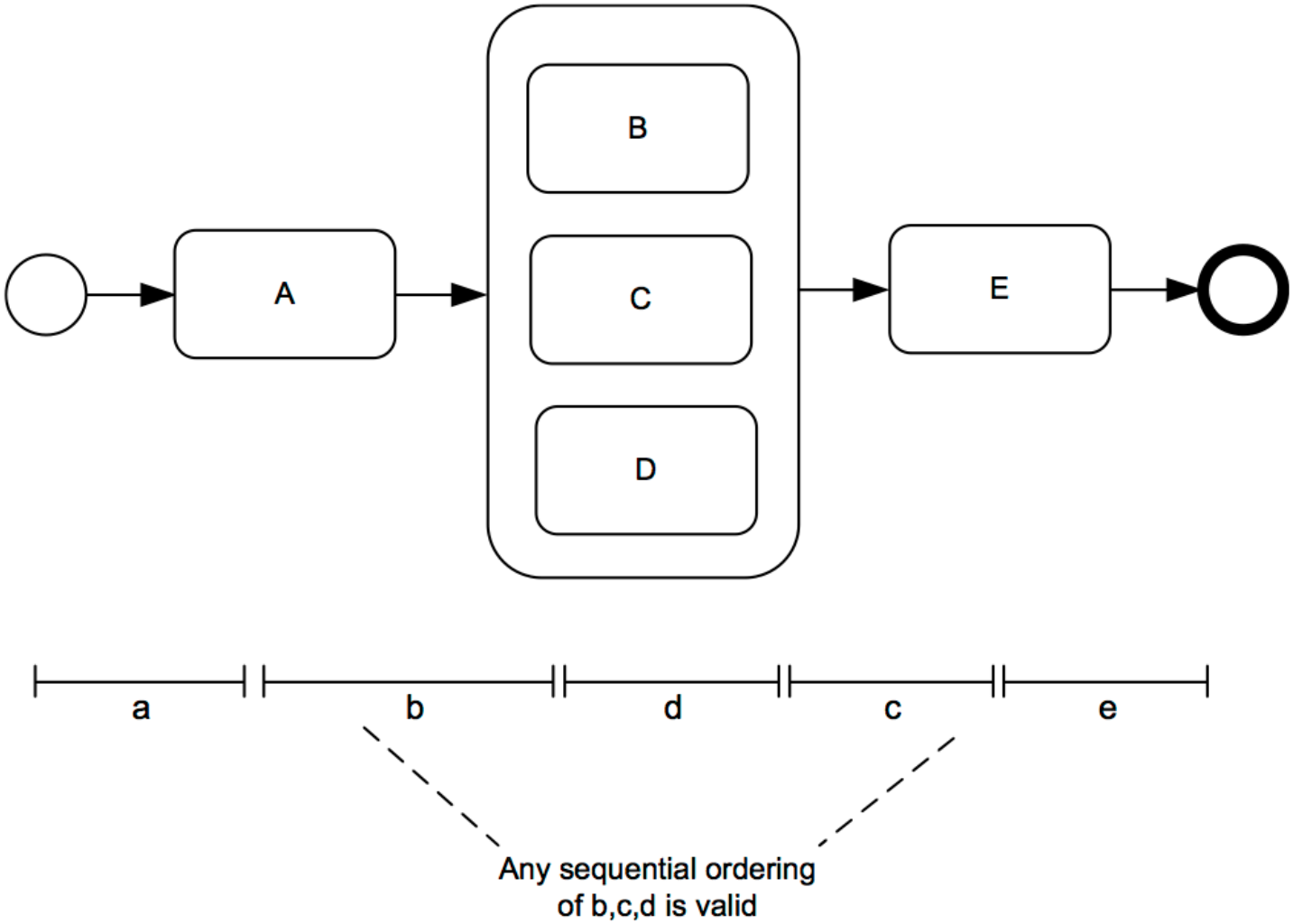
Multiple instance without a priori run time knowledge pattern, including management task



Sequential execution without a priori design time knowlede



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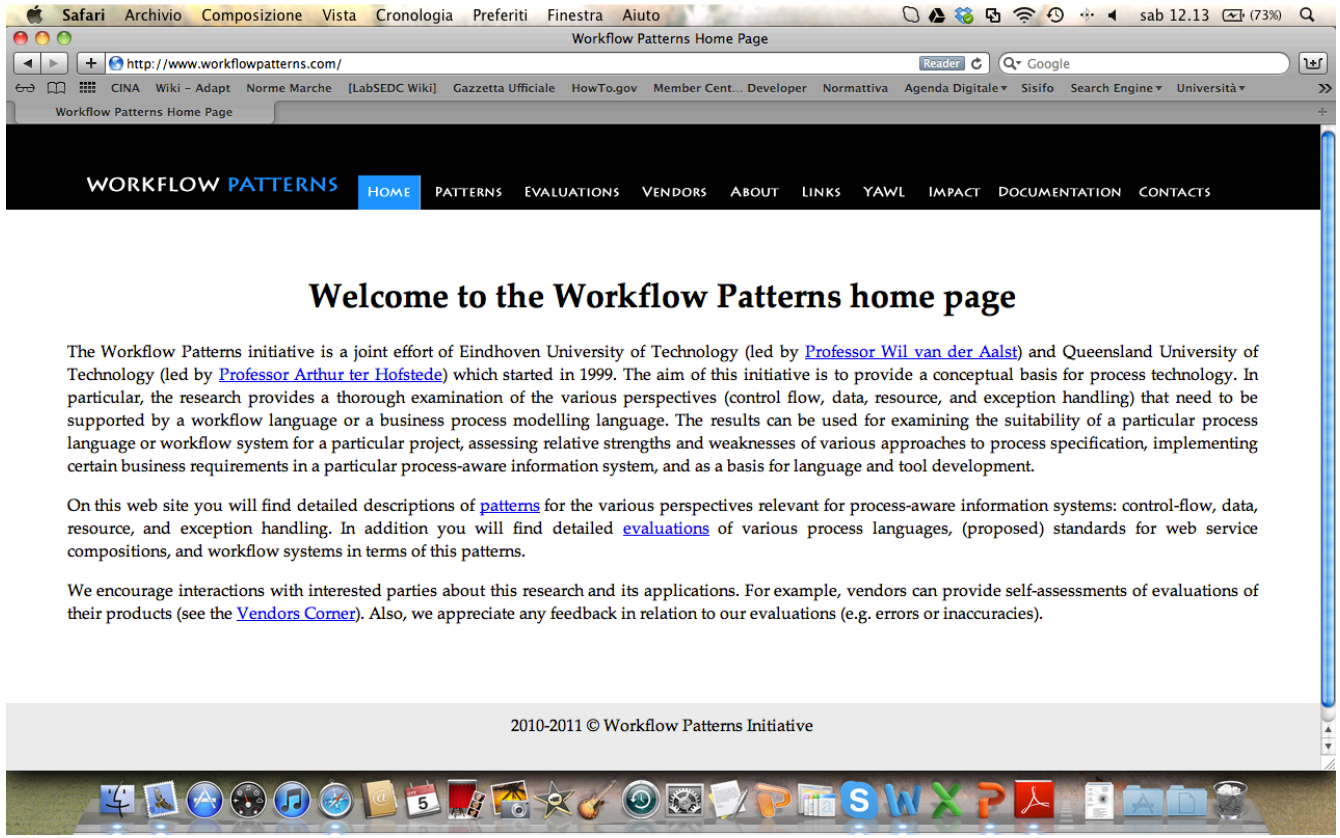
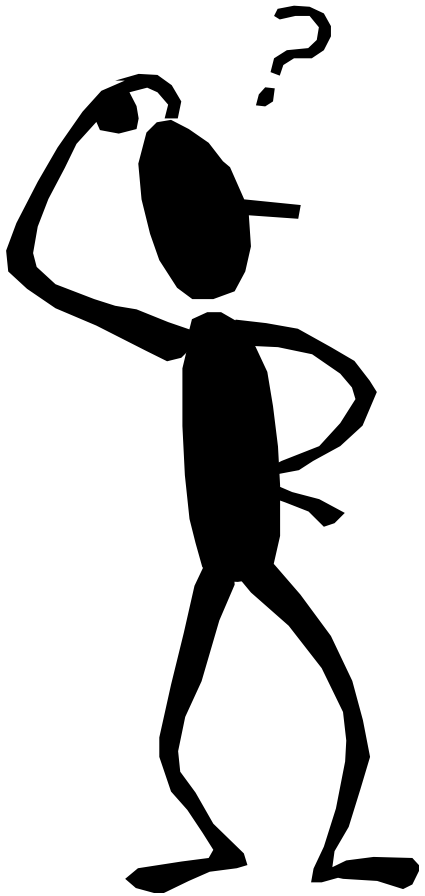
Other types of patterns

- Resource
- Data
- Exception Handling
- Presentation
- …

More on pattern



http://www.workflowpatterns.com/



Questions?