Lezione 16 – Modeling BP for Execution with Intalio's BPMS Designer

Ingegneria dei Processi Aziendali

Modulo 1 - Servizi Web

Unità didattica 1 – Protocolli Web

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Modeling Business Processes for Execution with Intalio's BPMS Designer

Modeling applications with BPMN

- workflow
- service orchestration

Transforming BPMN into BPEL

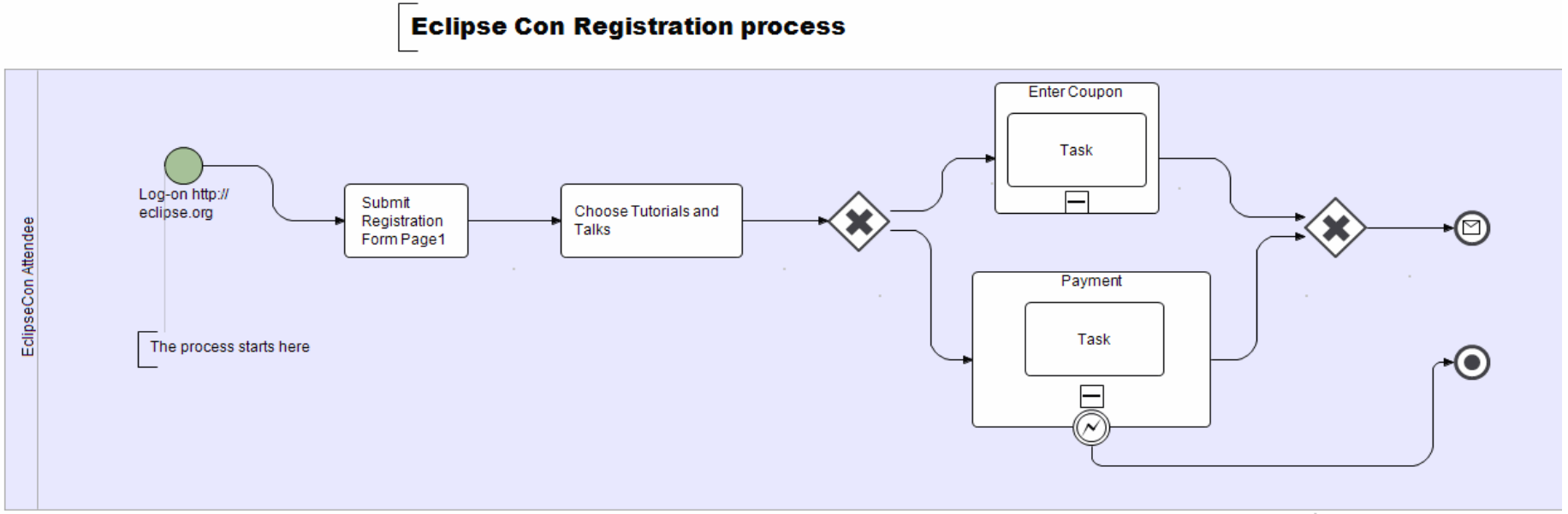
- flow
- data
- services

based on the BPMN modeler:

http://bpms.intalio.com

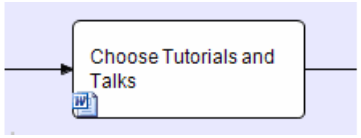
Workflow : Modeling with BPMN

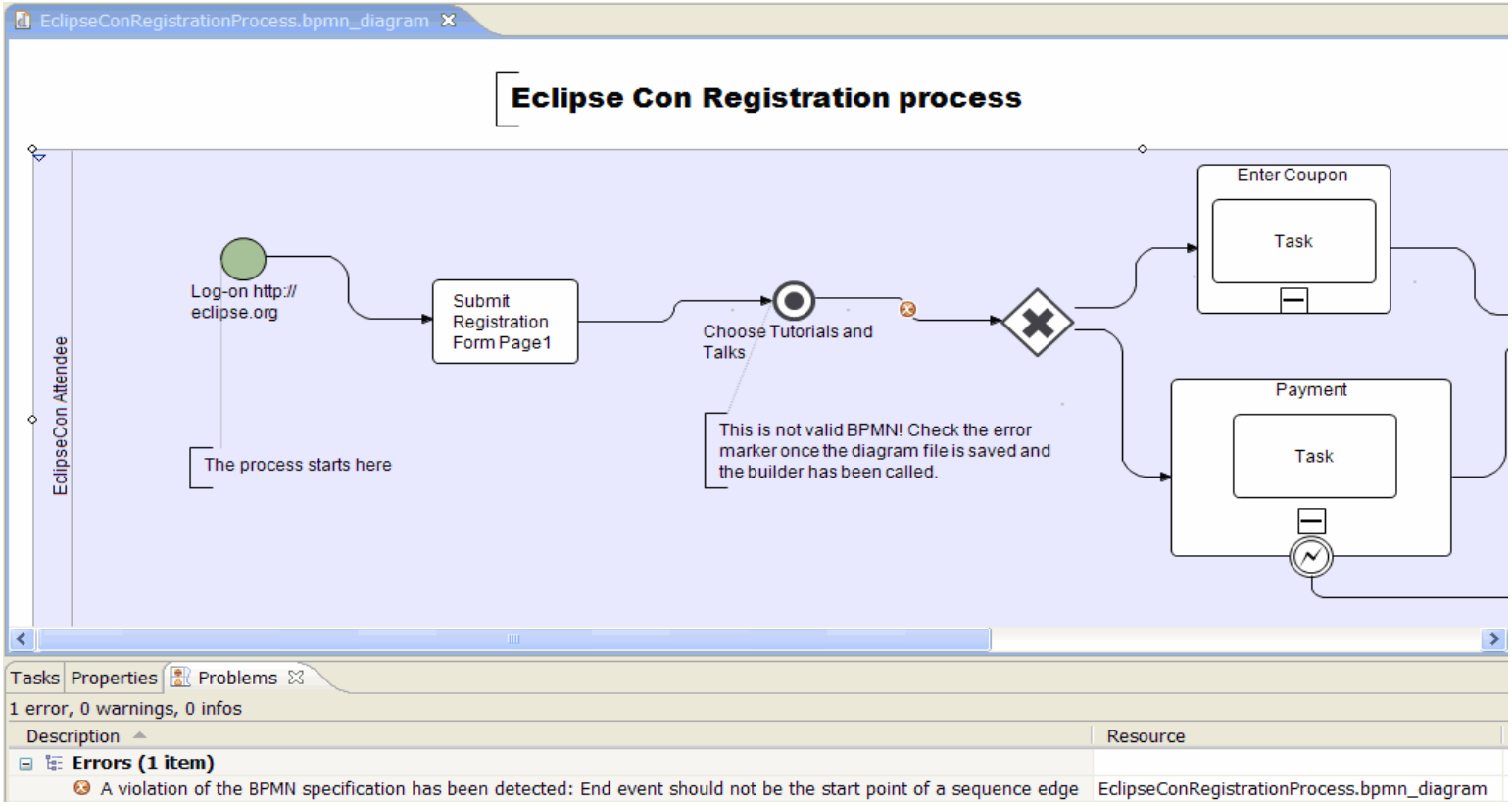
- **A graph that describes the chronology of the execution of a process**
- **Single user-participant point of view**



Workflow : Modeling with BPMN (2)

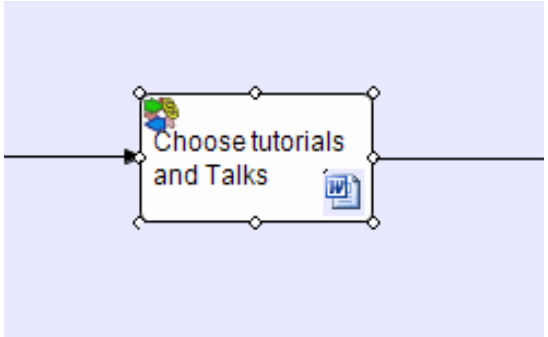
- **Attaching documentation**
- **BPMN validation**





Workflow: Path to execution (1)

- **Add the services on the shapes**



- Add the data manipulation on the shapes

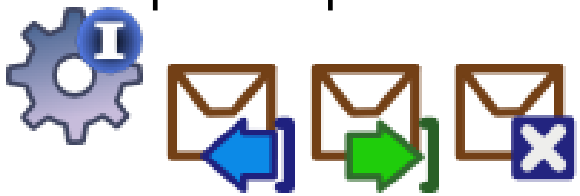
- Collaboration between business and IT: one tool to rule them all.

Path to execution: Services in BPEL4WS

WSDL operation: structure

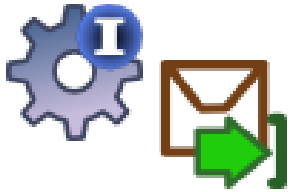
- Request-Response: consumer

- Request-Response: provider

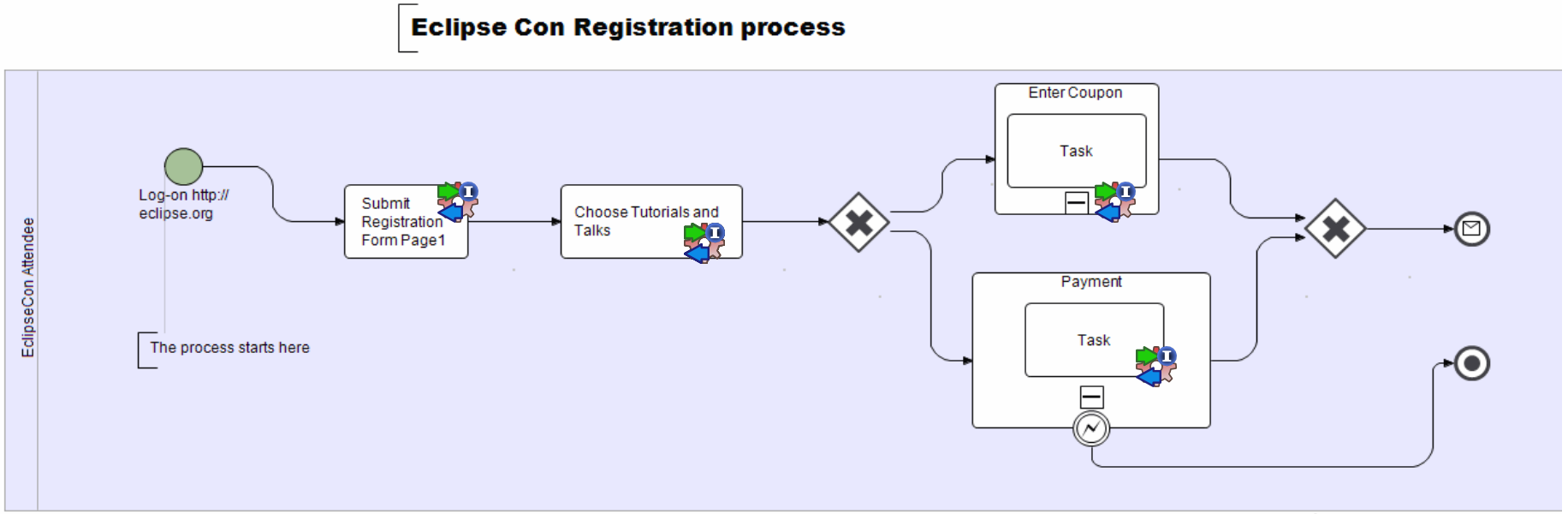


- One-way: consumer

- One-way: provider



Workflow ready to be executed

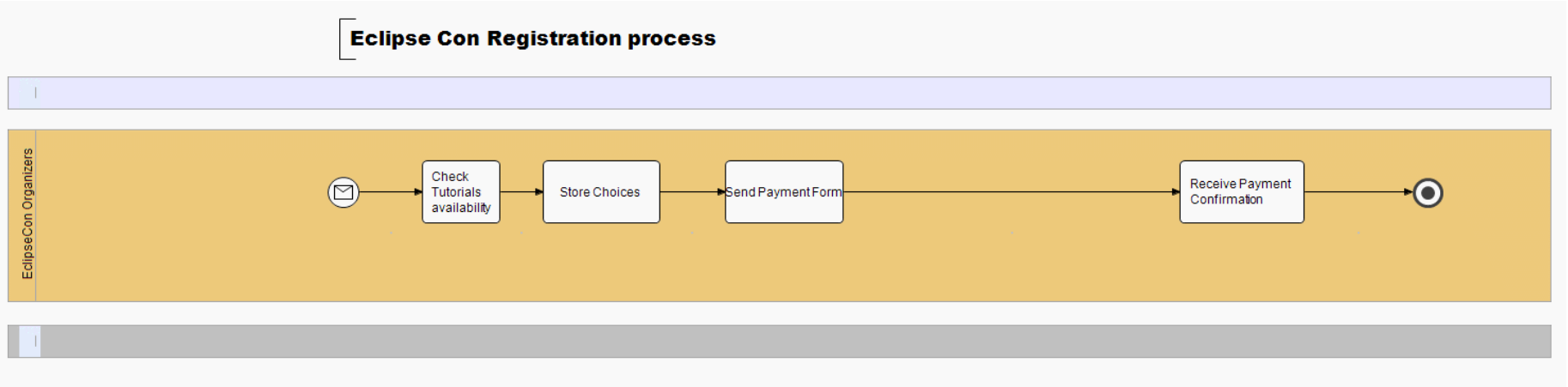


Modeling workflow

Business and IT are working on the same tool

Path to execution: all services are defined

Introducing another related workflow: how do they collaborate?



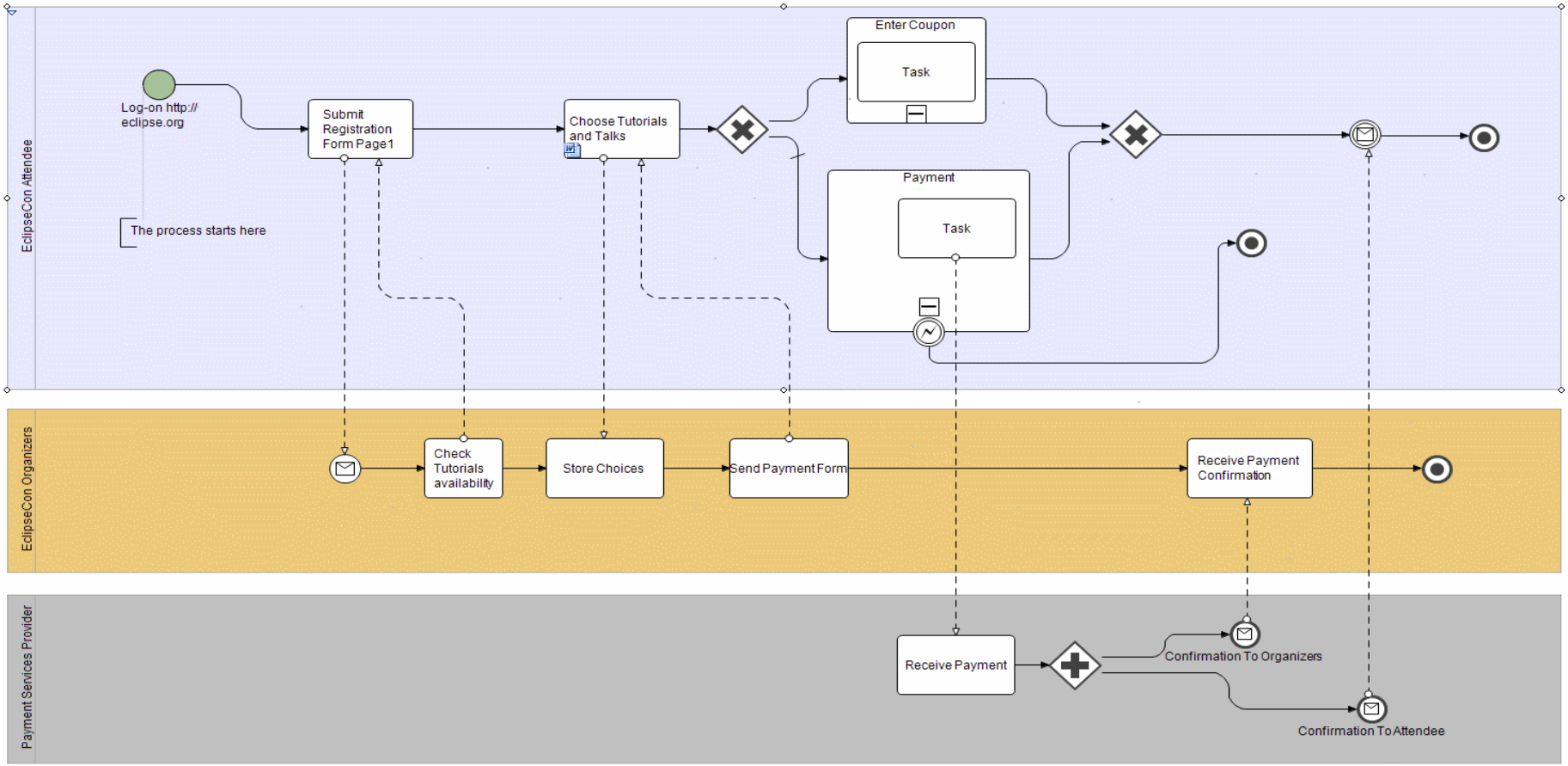
Service Orchestration Modeling

Workflow diagrams are similar to a project management tool where only a single person schedule can be visualized at once

One pool for each workflow

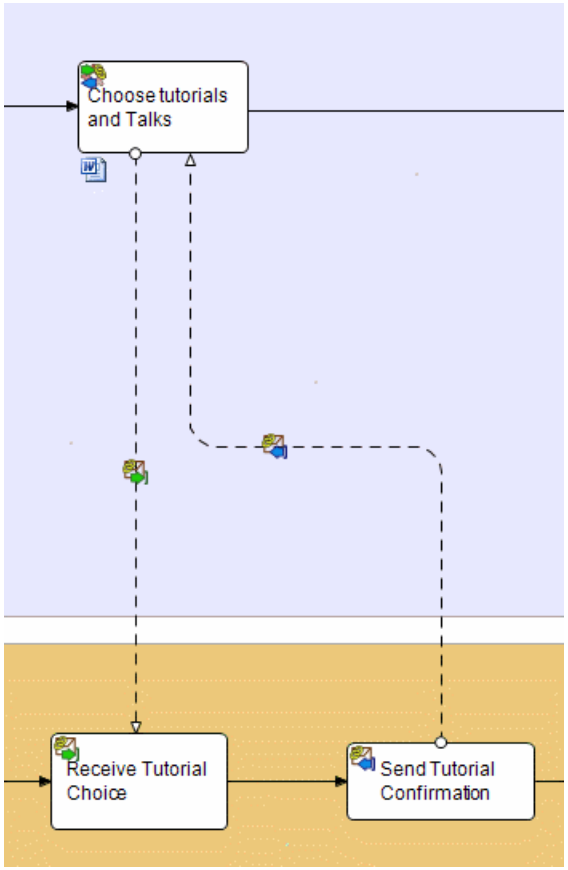
Show them side-by-side when the service invoked by a task is the service provided by another task

Service Orchestration Modeling (2)



Service Orchestration: Path to execution

Add the annotations



BPMN 2 BPEL

Graph of the flow in BPMN transformed to BPEL Tree

Data Manipulation

BPMN 2 WSDL

Transforming BPMN Flow to BPEL Tree

Solve the cycles: get a Directed Acyclic Graph

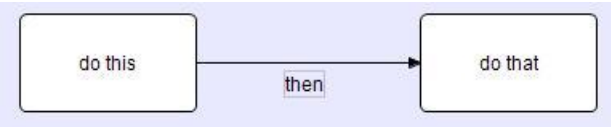
Label the branches of Directed Acyclic Graph

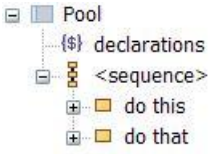
Walk the labeled-branches they are a tree

Map the shapes to the BPEL elements

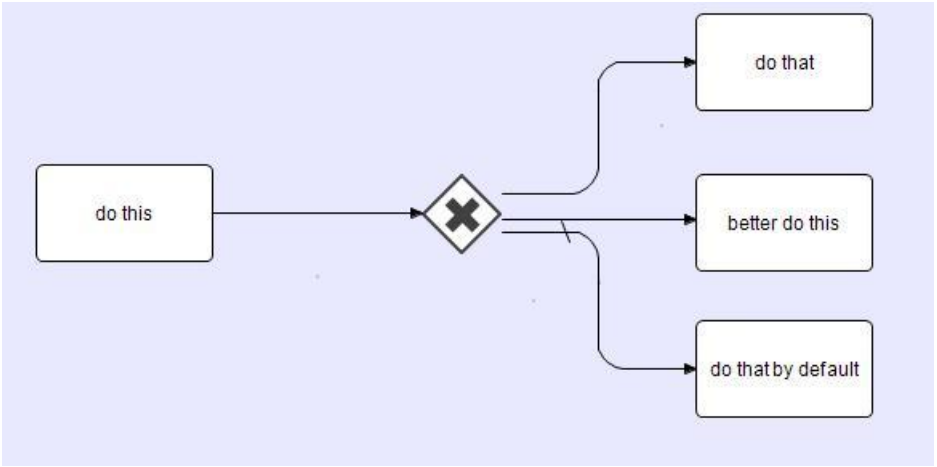
Simple examples

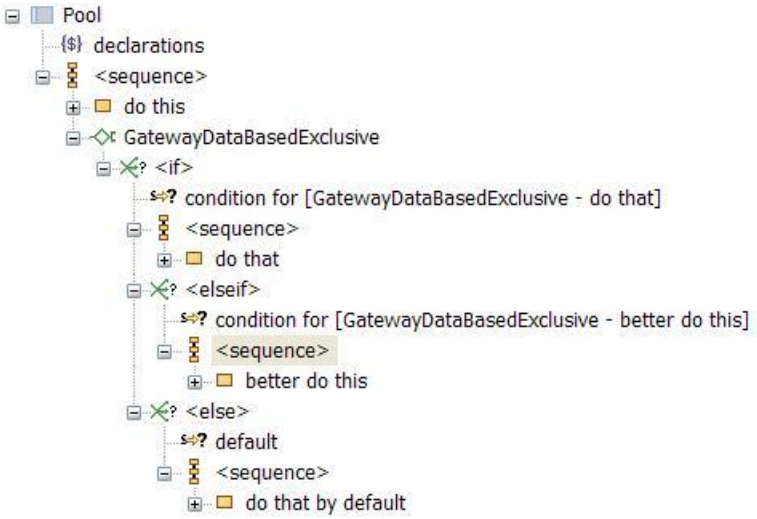
Simple diagram with one flow

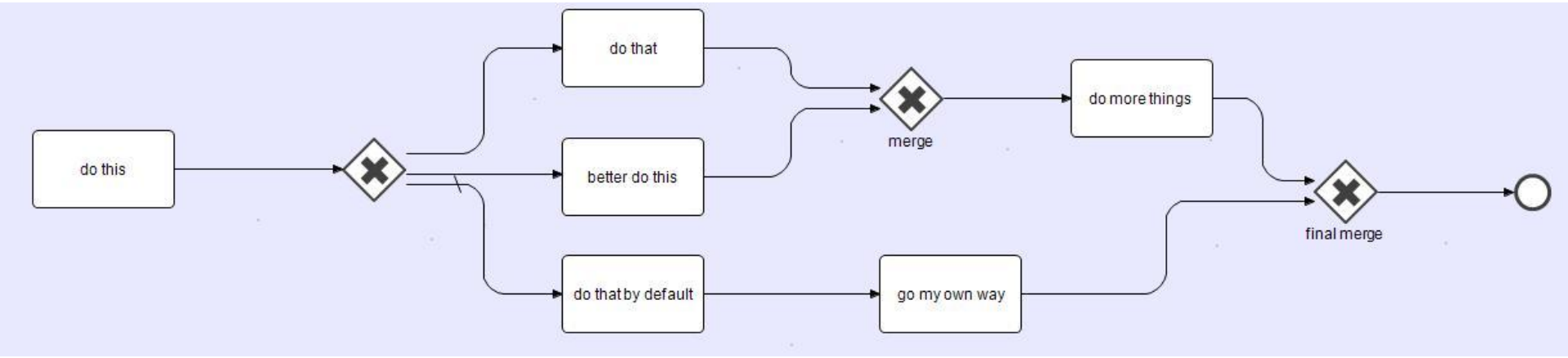




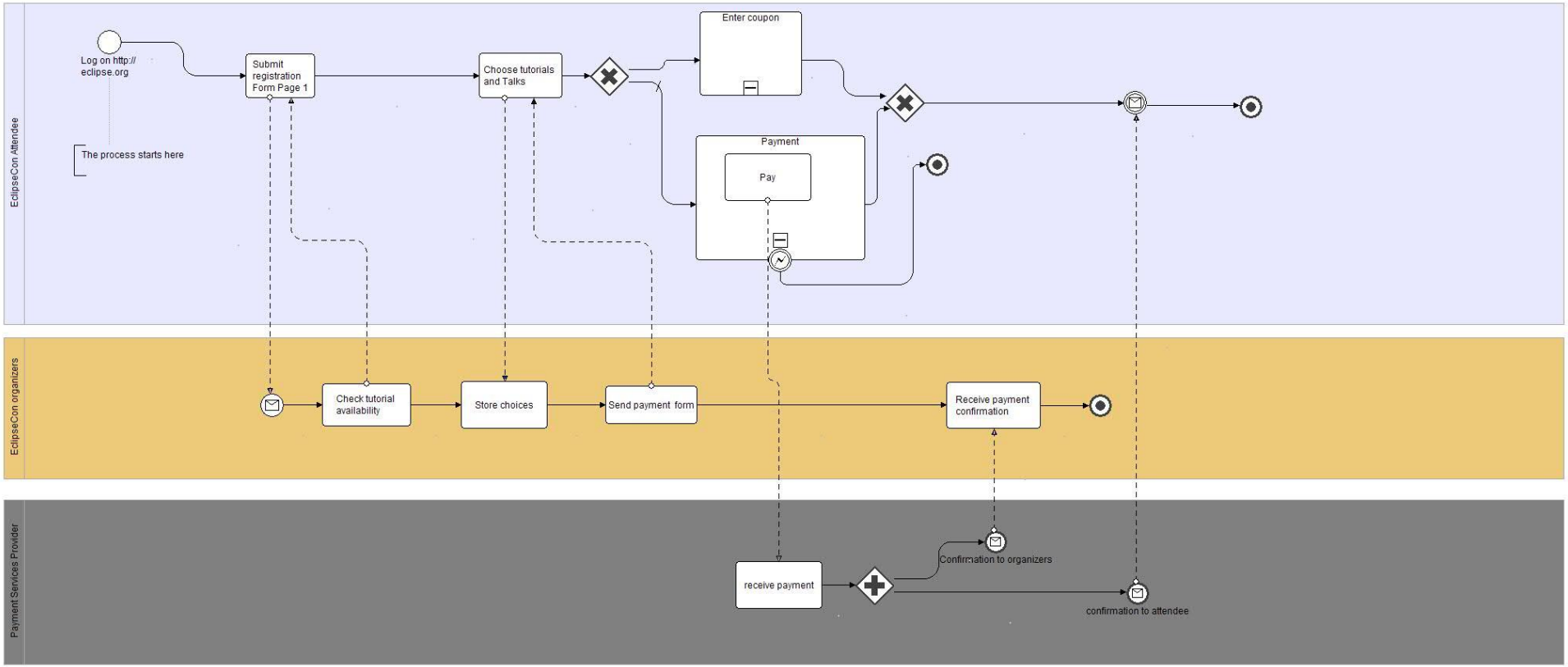
The gateway as a fork







- Pool
  - {$} declarations
  - <sequence>
    - do this
    - GatewayDataBasedExclusive
      - <if>
        - condition for [GatewayDataBasedExclusive - do that]
        - <sequence>
          - do that
          - merge
          - do more things
        - <elseif>
          - condition for [GatewayDataBasedExclusive - better do this]
          - <sequence>
            - better do this
            - merge
            - do more things
        - <else>
          - default
          - <sequence>
            - do that by default
            - go my own way
      - final merge
    - EventEndEmpty


EclipseCon Attendee
Log on http://
eclipse.org
The process starts here
Submit
registration
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Choose tutorials
and Talks
Enter coupon
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EclipseCon organizers
Check tutorial
availability
Store choices
Send payment form
Receive payment
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Payment Services Provider
receive payment
Confirmation to organizers
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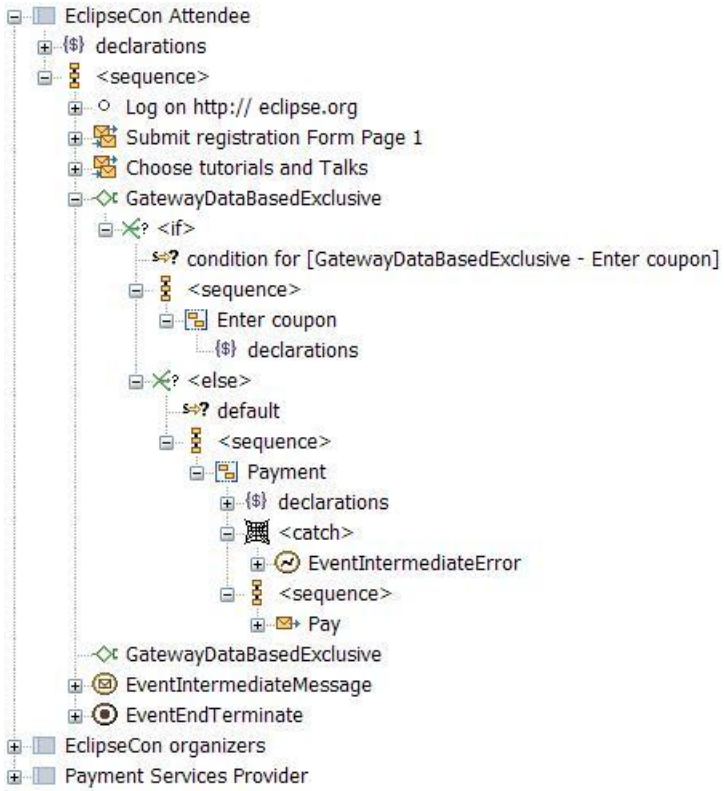
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<sequence>
Enter coupon
declarations
<else>
default
<sequence>
Payment
declarations
<catch>
EventIntermediateError
<sequence>
Pay
GatewayDataBasedExclusive
EventIntermediateMessage
EventEndTerminate
EclipseCon organizers
Payment Services Provider

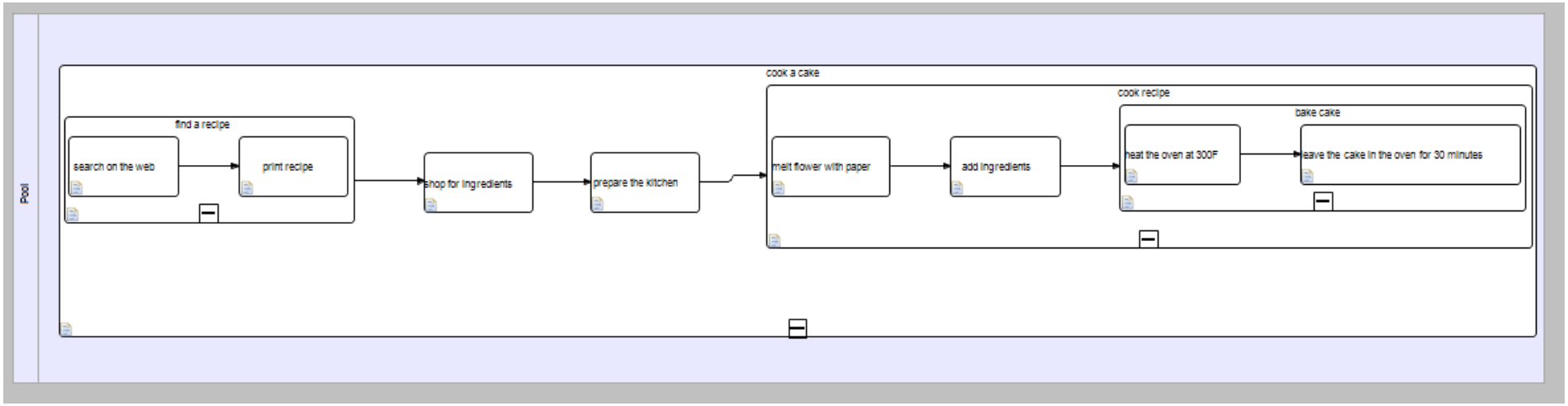
BPEL 2 BPMN: the reverse transformation

Instrument the flow of a BPEL process with BPMN:

http://wiki.eclipse.org/index.php/STP_BPMN_Presentation_%28Part_2%29#Generating_BPMN

```
<?xml version="1.0" encoding="utf-8"?>
 <bpel:process >
  <bpel:scope name="cook a cake">
   <bpel:sequence>
    <bpel:scope name="find a recipe">
     <bpel:sequence>
      <bpel:assign name="search on the web"/>
      <bpel:assign name="print recipe"/>
                </bpel:sequence>
    </bpel:scope>
            ......
   </bpel:sequence>
  </bpel:scope>
```

In this example, sequence elements are represented as sub-processes so the tree structure of BPEL is reflected in the diagram.



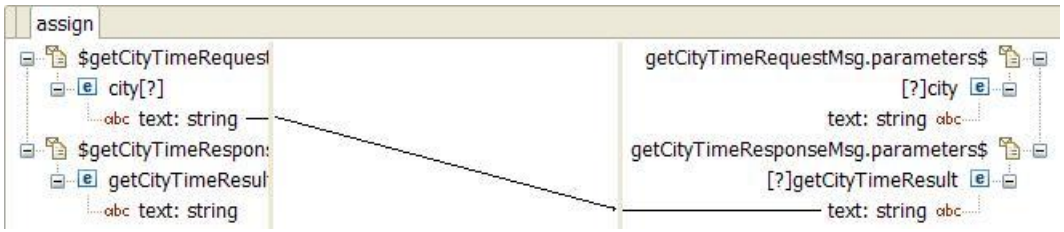
Data Manipulation

Receive message A in a given format

Send message B in a different format

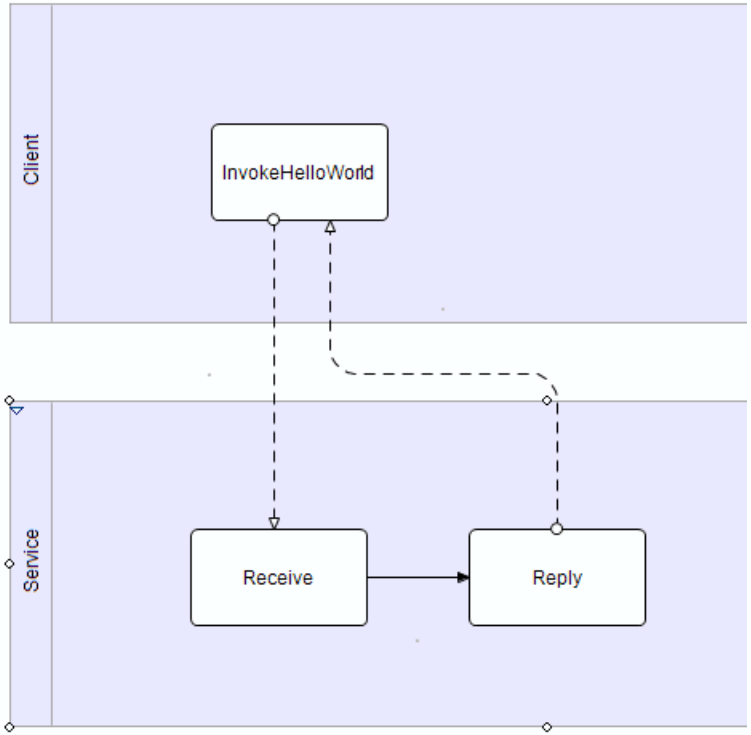
Someone needs to specify a transformation

bpel:assignment, xsl



BPMN 2 WSDL: generating operations

- BPMN message exchange transformed in WSDL objects for BPEL



BPMN 2 WSDL: generating operations

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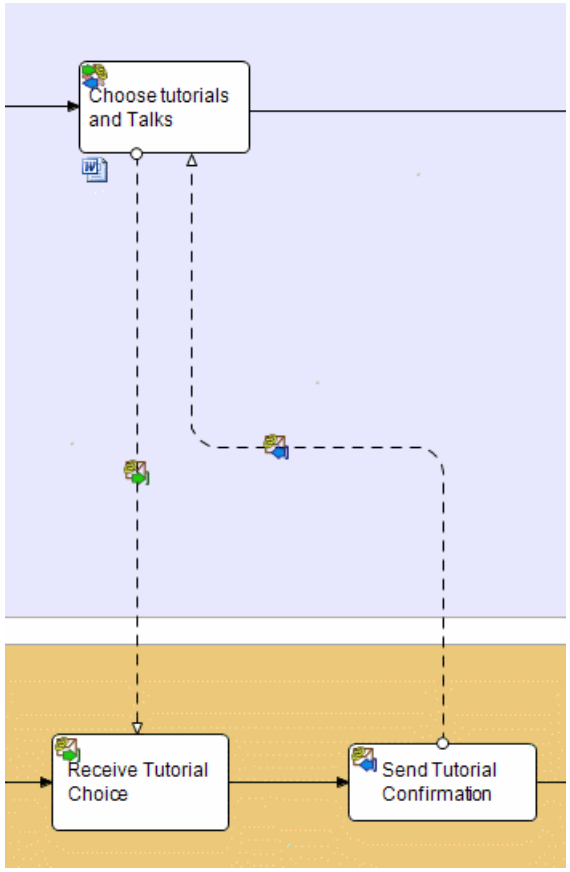
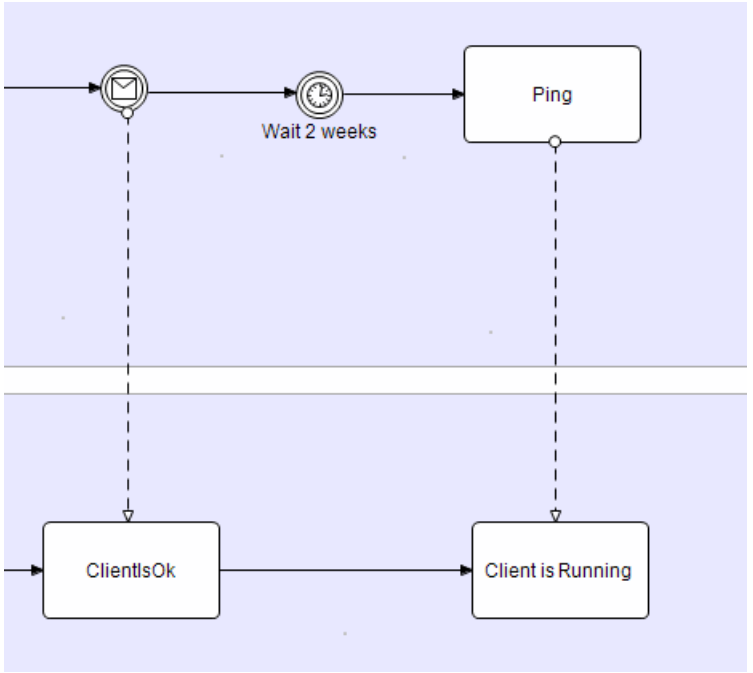


BPMN 2 WSDL: the BPEL-UFOs challenge

- Some objects necessary at the execution don't have a place in the diagram
- Where are the correlations?
- Where are the partnerLinks?



Conclusion

A lot of work to do

A reliable and extensible modeler with an object model made to be easyly traversed in terms of graph

Ambition: resolve for eclipse the modeling of BPMN to focus on the real hard part to bring those diagrams to execution:

- Resolve SOA problems with todays framework
- Provide a use case for projects focusing on Model 2 Model transformations