Business Processes and Their Participants: An Ontological Perspective

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1. Proliferation of business process modelling languages adopt different perspectives and approaches, such as:

- BPMN 2.0
- UML-AD
- CMN
- DECLARE

2. Different intuitive notions of business process
3. Business process modelling languages adopt similar symbols with different semantics

PROBLEMS OF INTERPRETATION

- How to clarify the ontological implications hidden within business process modelling languages and their elements?

**Characteristics of business processes**

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>BPMN</th>
<th>UML-AD</th>
<th>EPC</th>
<th>CMN</th>
<th>DECLARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set of activities</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Clear Input/Output</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Sometimes</td>
<td>Sometimes</td>
</tr>
<tr>
<td>Good/Value</td>
<td>No</td>
<td>No</td>
<td>Sometimes</td>
<td>Sometimes</td>
<td>No</td>
</tr>
<tr>
<td>Organizational boundaries</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Different types of relations between activities</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Sometimes</td>
</tr>
<tr>
<td>State of the world</td>
<td>Somewhere</td>
<td>Somewhere</td>
<td>Yes</td>
<td>No</td>
<td>Somewhere</td>
</tr>
<tr>
<td>Aggressive or non-aggressive</td>
<td>Somewhere</td>
<td>Somewhere</td>
<td>Somewhere</td>
<td>Somewhere</td>
<td>Somewhere</td>
</tr>
<tr>
<td>Information vs. carrier</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Object vs. role</td>
<td>Somewhere</td>
<td>Somewhere</td>
<td>Somewhere</td>
<td>Somewhere</td>
<td>No</td>
</tr>
</tbody>
</table>

**Approach**

1. Comparison between languages
2. Business process elements and properties

- Representation of state of the world
- Different relations between activities
- Roles
- Types of participants

**Comparison of business process languages**

- Task
- Subprocess
- Intermediate
- Signal
- Control node
- Control flow
- Message flow
- Event
- Guard on entry
- Guard on control node
- Pre-condition on activity
- Event
- StartEvent
- Data input, data output, data store
- Object node
- Entity
- Property
- Activity
- Activity Participation
- Organization
- Activity Owner

**Examples**

- Representation of state of the world
- Different relations between activities
- Roles
- Types of participants

**Process participants: an ontological analysis**

- Physical Participant
- Non-physical Participant
- Aggressive Participant
- Non-Aggressive Participant
- International Participant
- Human
- Cyber-physical system

**Context**

- Do different business process modelling languages rely on different ontological commitments?

- Can we swap A and B?

https://camunda.org bpmes/