„From a family of state based PAIS to a configurable and parameterized business process architecture"

by Andreas Rulle (Nexoma GmbH)
and Juliane Siegeris (HTW Berlin)

BPM 2014

Eindhoven 10.9.2014

Goal:

pragmatic application of BPMN for specific application domains, namely master data management.

Characteristics:

- state based
- long living process instances

Here at the example of product master data management.

Application domain:
Product **Master Data Management**

is concerned with the life-cycle of product data:

Product description
of a a circulation pump

Application domain:
Product **Master Data Management**

is concerned with the life-cycle of product data:
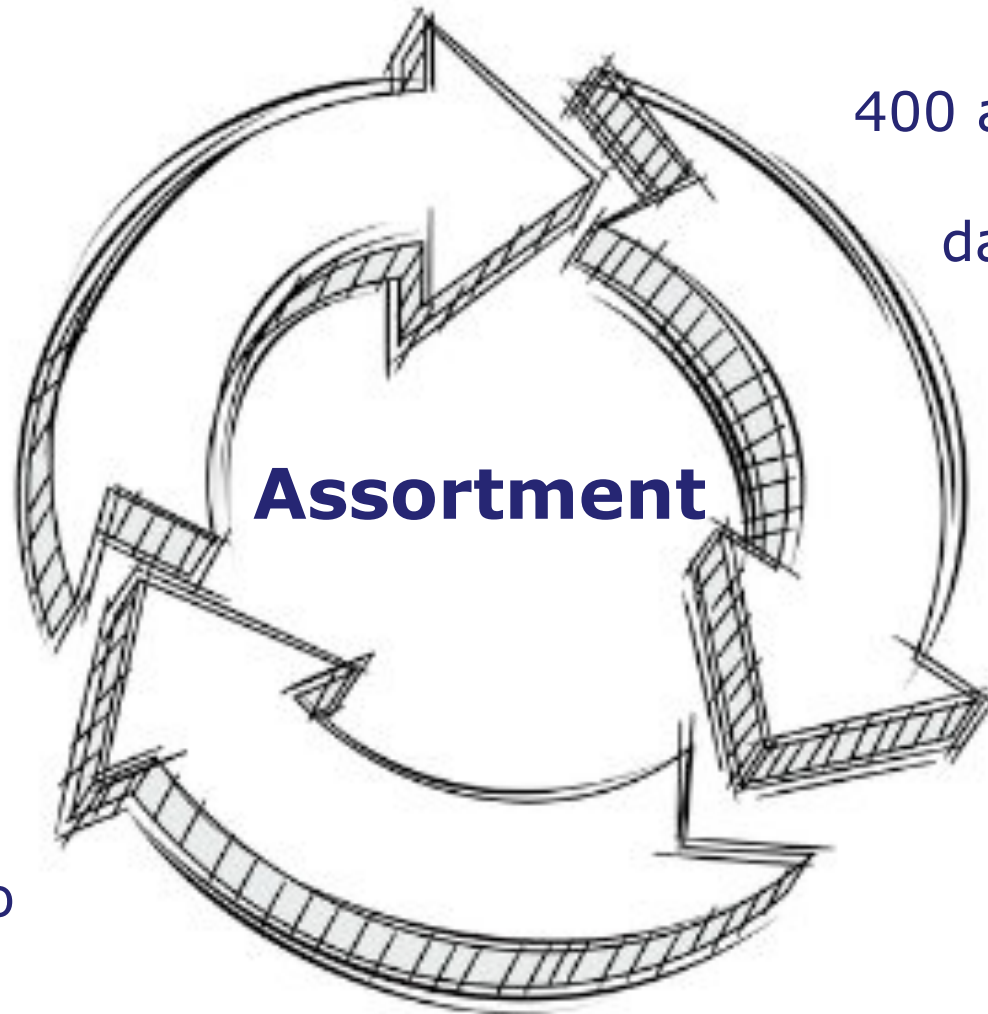
A supplier might produce such catalogs

- for different groups of products,
- countries and
- in different languages.

the grouping of such product descriptions is denoted as an **assortment.**

Application domain:
Product **Master Data Management**

→ In order to guarantee high quality of the product data

Assortment

400 audits automatically test the products data / the media files

Human data editors manually check the quality of the product data.

Approved changes are taken over to the shared area

Application domain:
Product **Master Data Management**

Key characteristic:

→ An assortment in a MDS usually has **a long lifetime**.

→ Activities are triggered by external events / state change

Assortment

Scenario / Application domain:
Product **Master Data Management**

Key characteristic:

→ An assortment in a MDS usually has **a long lifetime**.

→ Activities are triggered by external events / state change

Assortment

Challenges:

• Model state centric-process with BPMN2.0

• Use BPMS for execution support

→ **but avoid long running transactions!**

Modeling paradigms

activity driven

Focus is on **activities** and there (predefined) **order** relation

→Suitable to describe business processes, i.e set of activities that contribute towards a common business goal within a certain time.

↔

state driven

Focus is on **states** and **events** which entail changes of the state.

→Suitable to describe the **life cycle** of (possible very long living) **objects**

Challenge I:
Model state centric-process with BPMN2.0

Main alternatives for modeling state /event information in BPMN

ID	BPMN element used to depict state	BPMN element used to model events	Literature
A1	Data objects with state information	-	[13, Fig. 152], [17, p. 32]
A2	Conditional event		BPMN 2.0 Spec. [14, p.251—254]
A3	-	Catching event, e.g. following an event based gateway	See pattern "deferred choice" [16, pp. 17–18]
A4	Edge-labels of XOR-gateway	-	BPMN 2.0 Spec. [14, p. 290]
A5	Activities/Sub-processes	Consecutive XOR gateways for different events	[2, pp. 48–50, 85–98]
A6	Activities/Sub-processes	Attached interrupting events	[17, pp. 83–106, pp. 119–144], [14, pp. 254-257]

Challenge I:
Model state centric-process with BPMN2.0

Main alternatives for modeling state /event information in BPMN

ID	BPMN element used to depict state	BPMN element used to model events	Literature
A1	Data objects with state information	-	[13, Fig. 152], [17, p. 32]
A2	Conditional event		BPMN 2.0 Spec. [14, p.251—254]
A3	-	Catching event, e.g. following an event based gateway	See pattern "deferred choice" [16, pp. 17–18]
A4	Edge-labels of XOR-gateway	-	BPMN 2.0 Spec. [14, p. 290]
A5	Activities/Sub-processes	Consecutive XOR gateways for different events	[2, pp. 48–50, 85–98]
A6	Activities/Sub-processes	Attached interrupting events	[17, pp. 83–106, pp. 119–144], [14, pp. 254-257]

Challenge I:
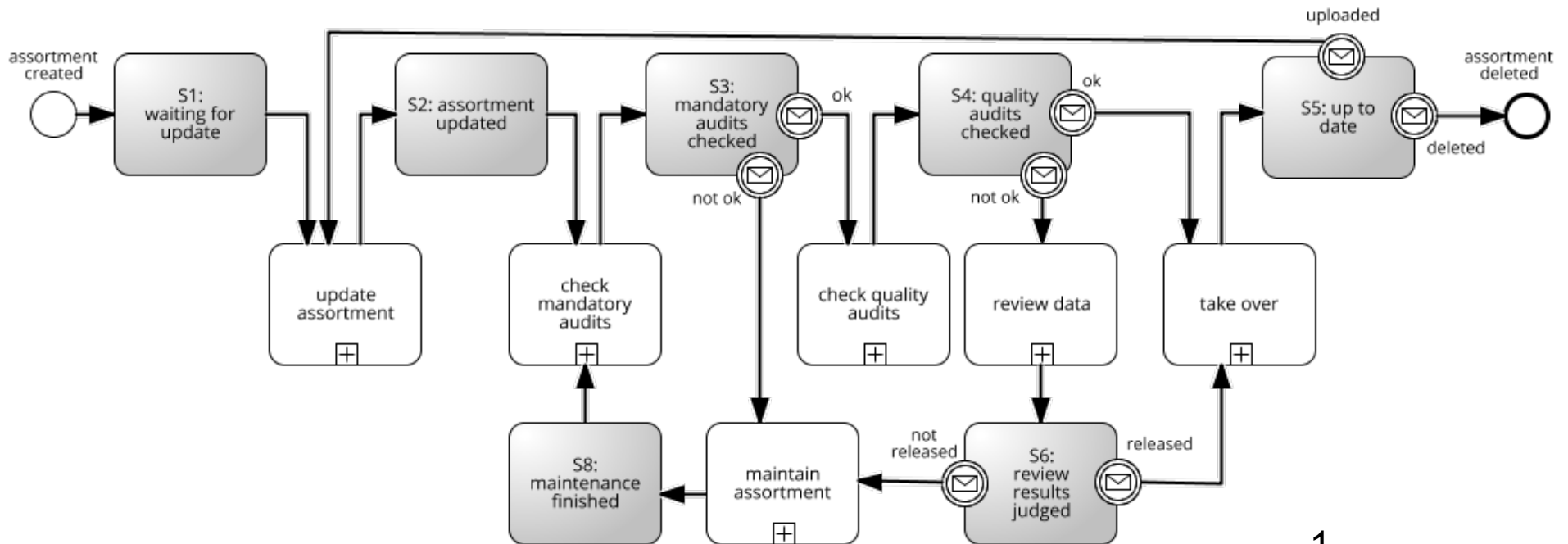## Model state centric-process with BPMN2.0
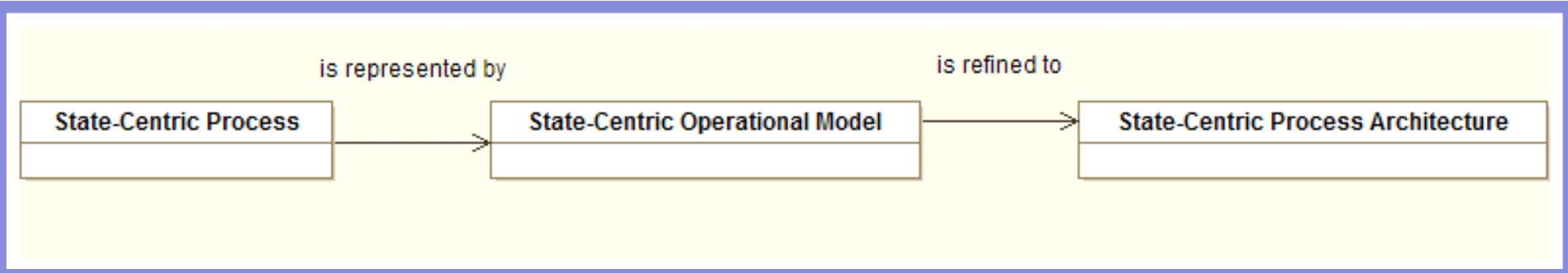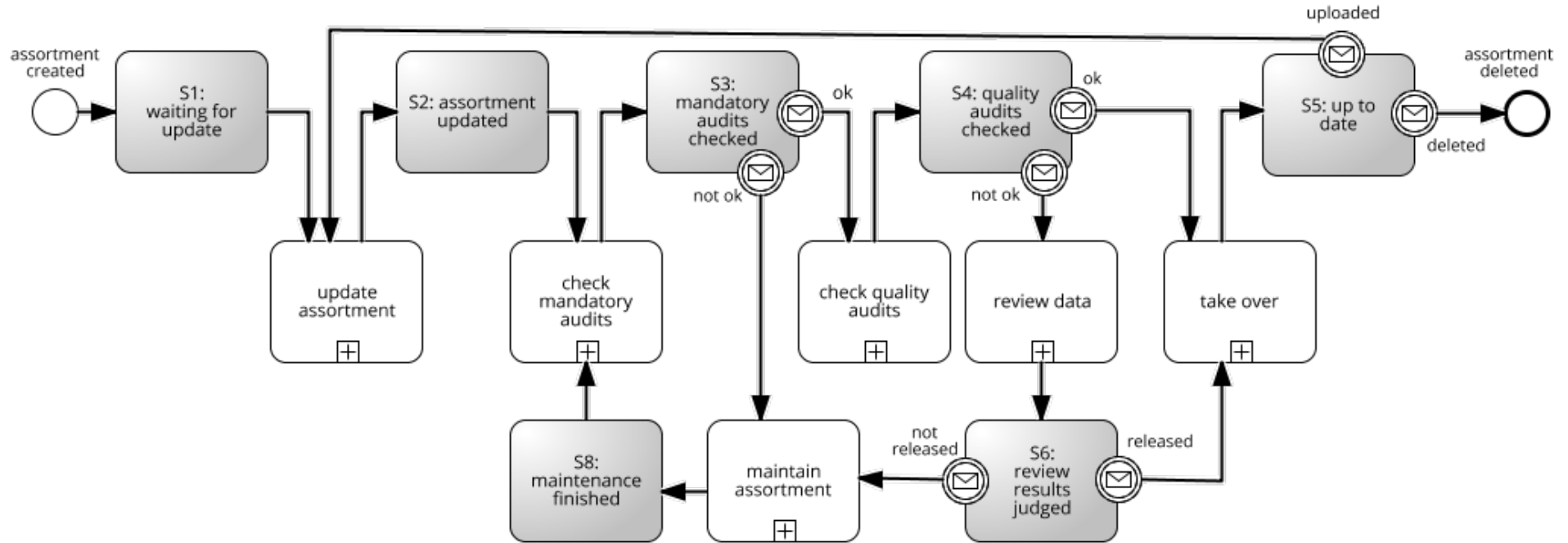
Our Solution:

States **modeled with** → BPMN-Activities

Events
that entail state changes **modeled with** → attached BPMN-Events
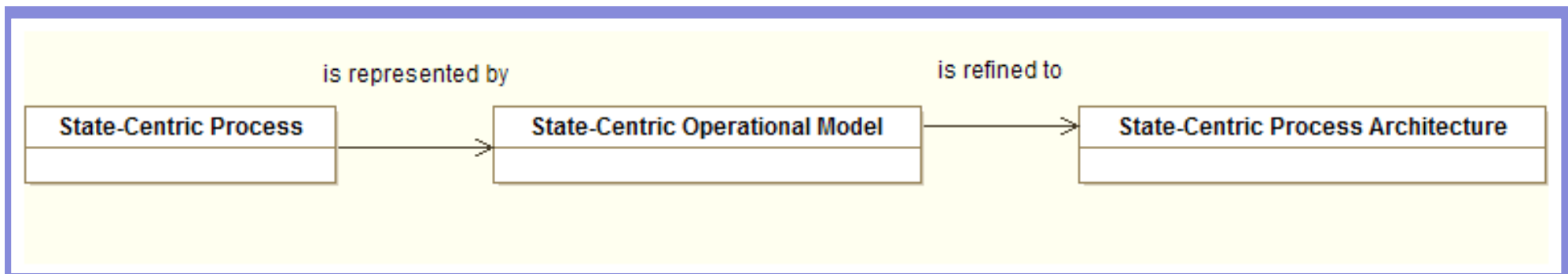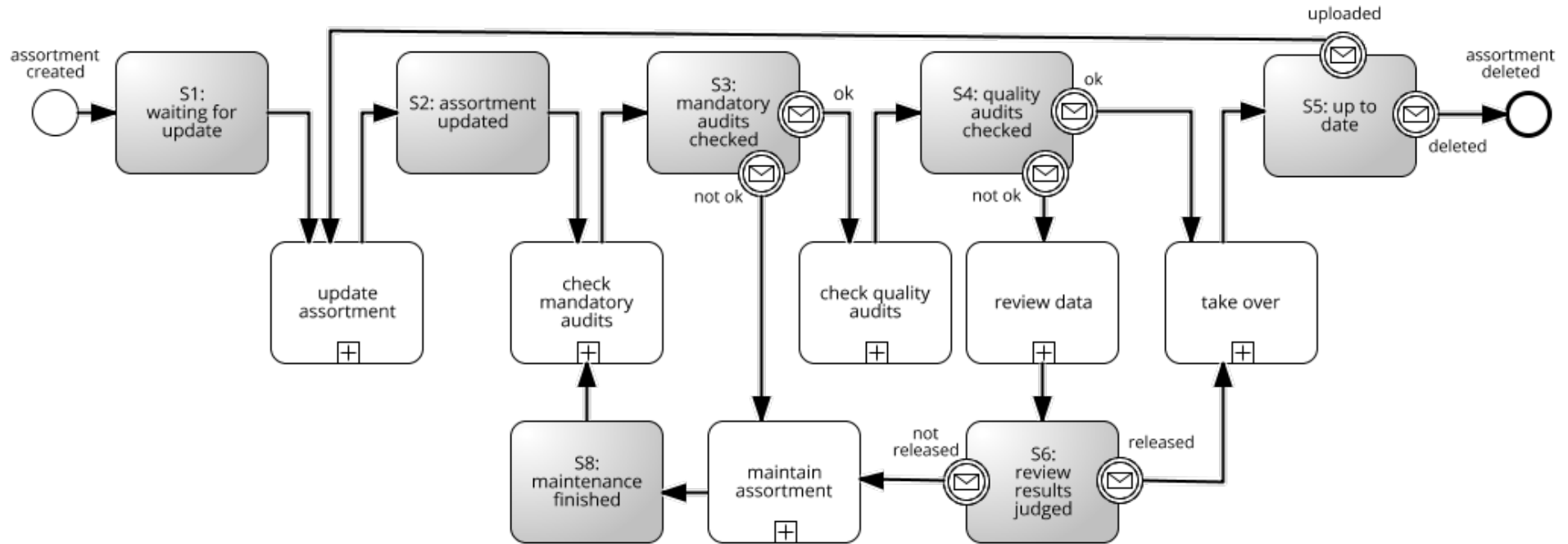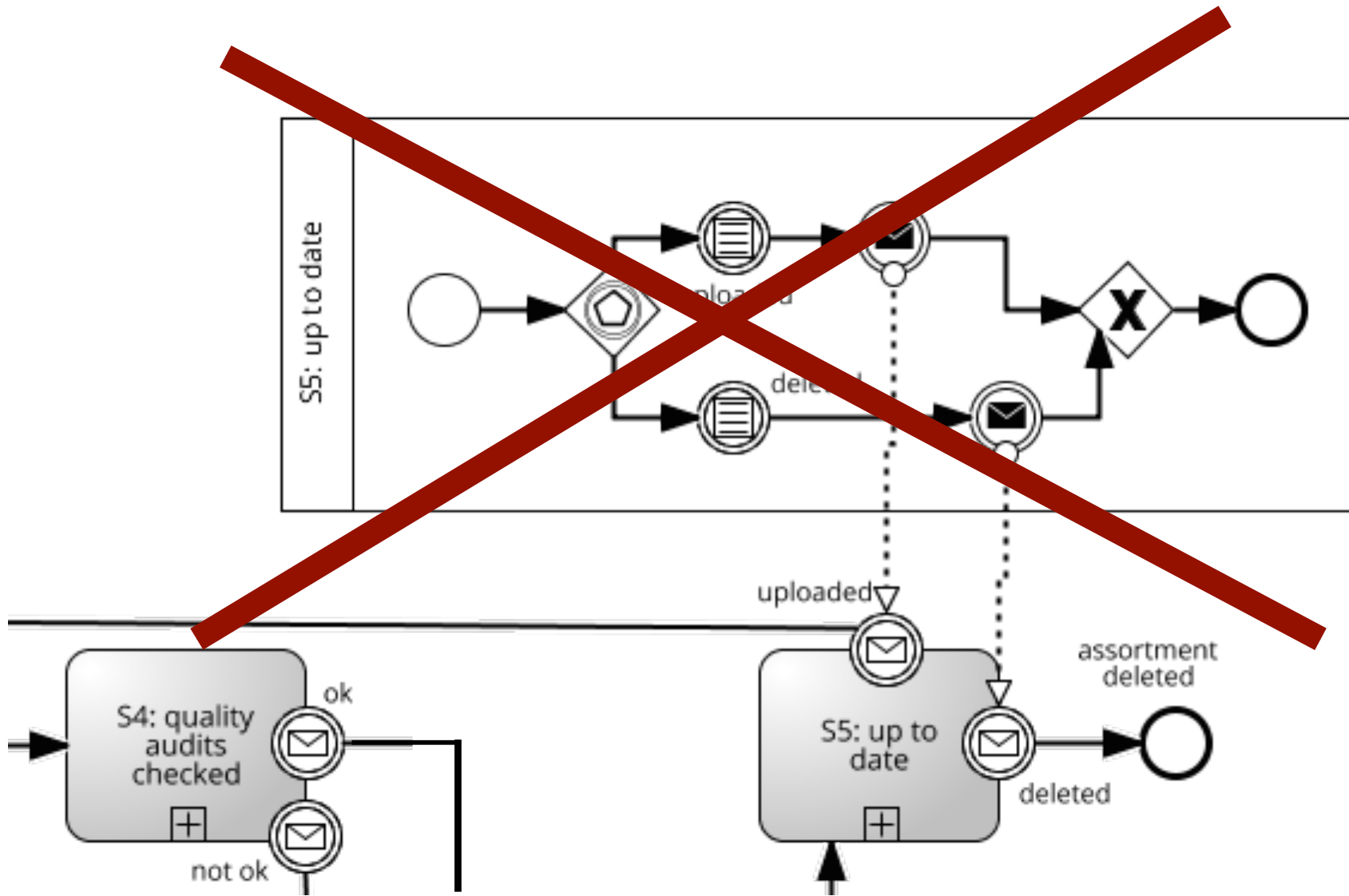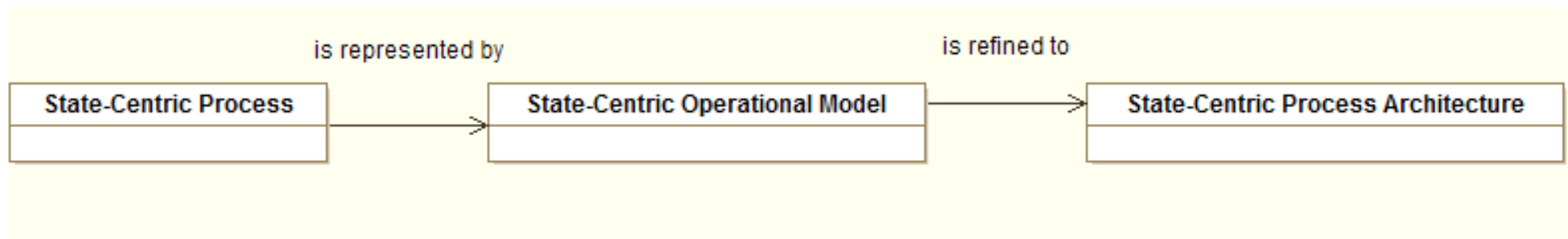
State-Centric Operational Model (SCOM)

Challenge II:
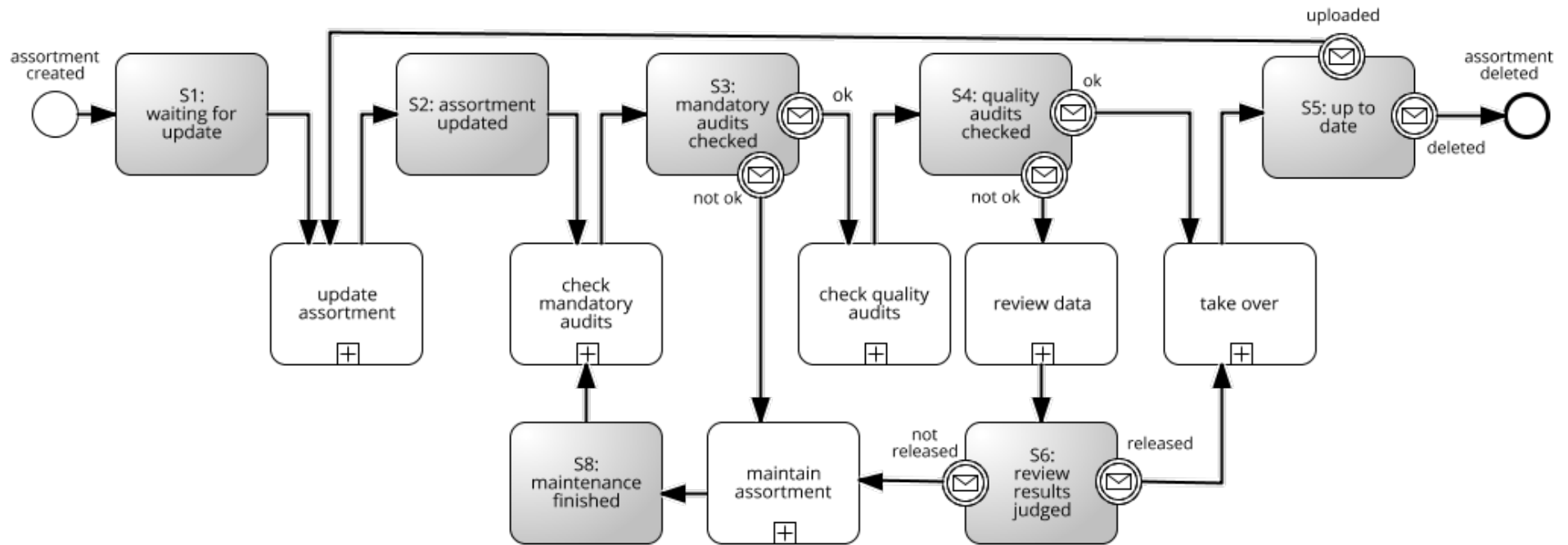# Use BPMS for execution support
→ but avoid long running transactions!

Possible refinement of state representing activity

Challenge II:
Use BPMS for execution support
→ but avoid long running transactions!
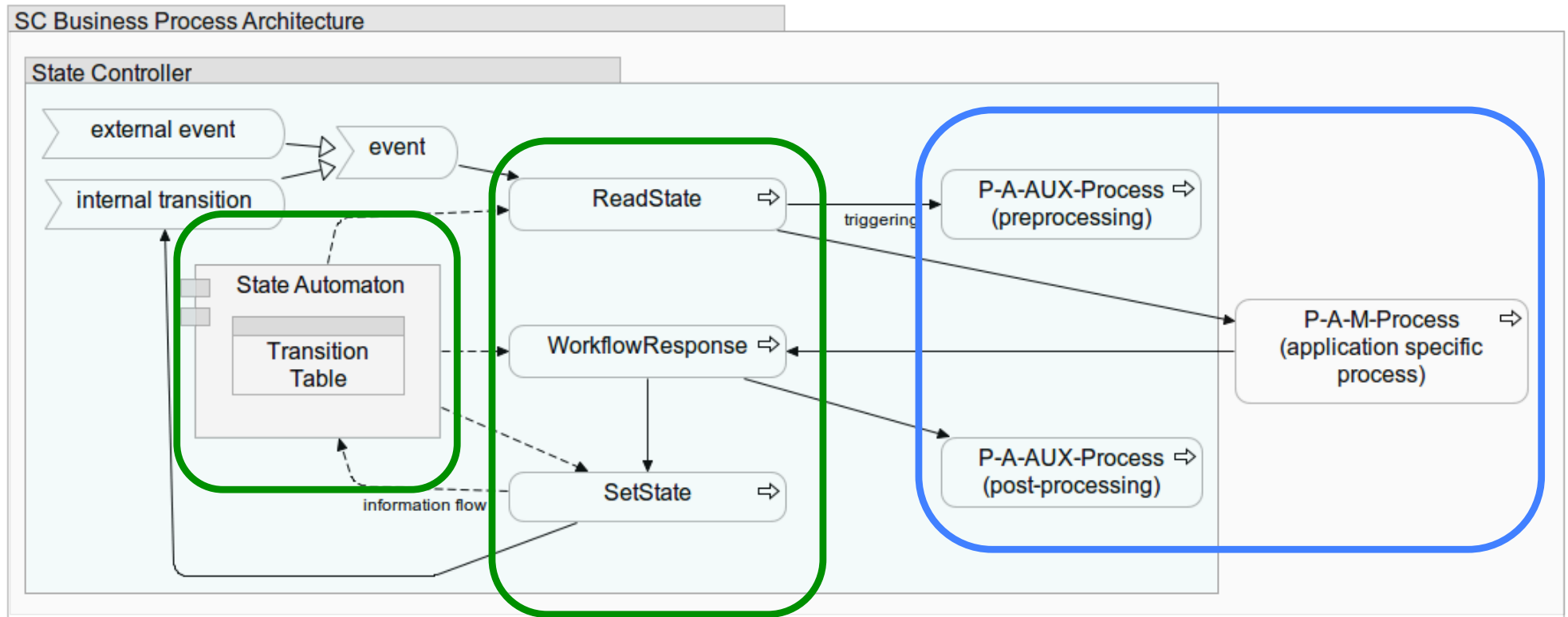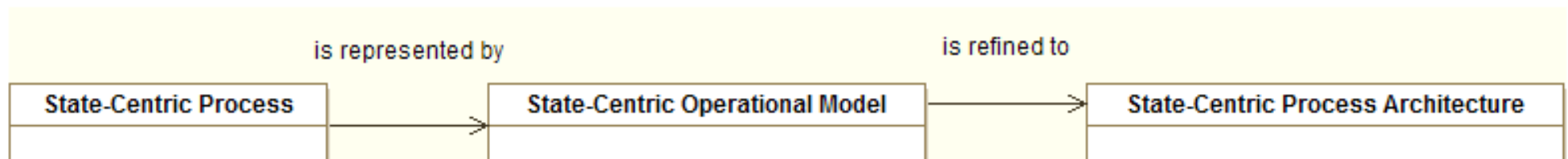
State Centric Process Architecture

Fig: architecture described within ArchiMate
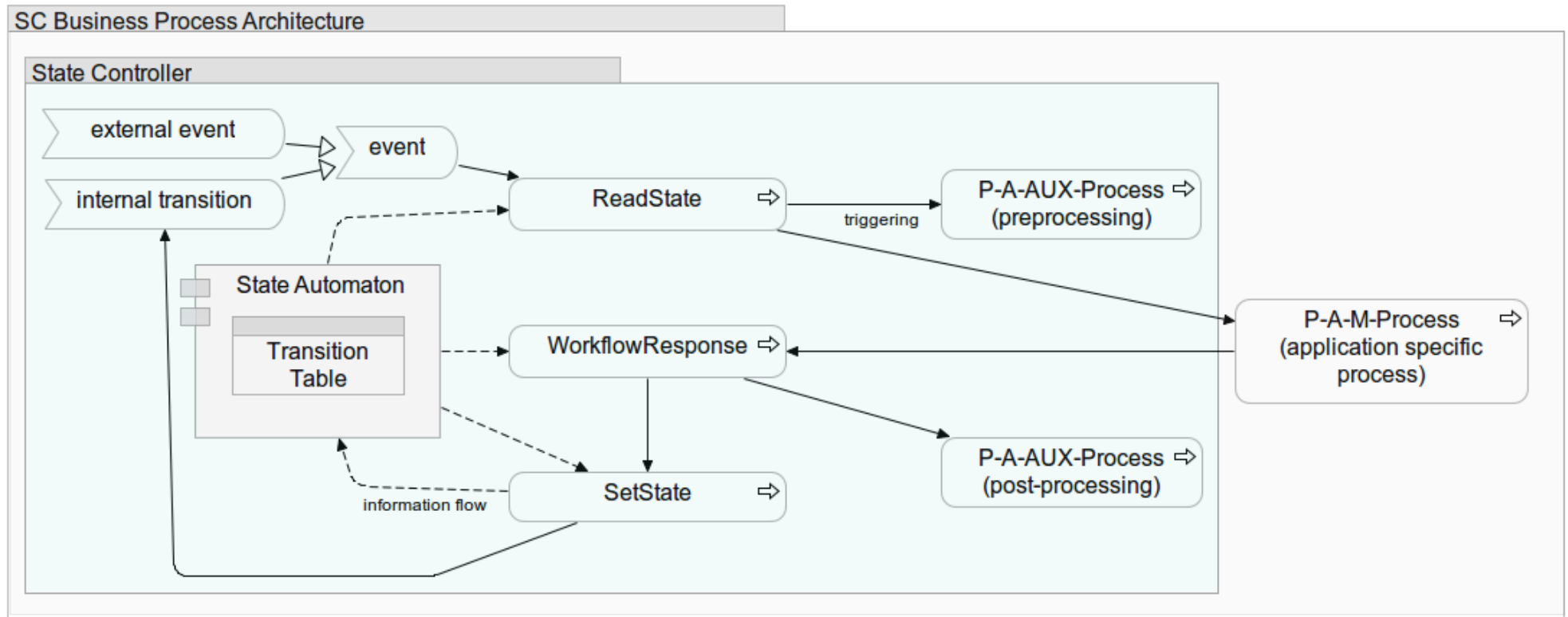
State Centric Process Architecture

Fig: architecture described within ArchiMate
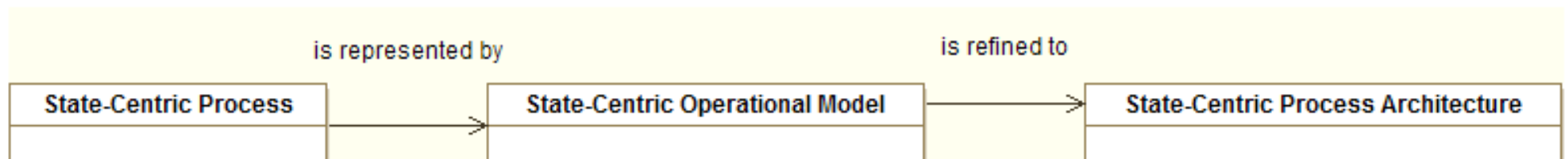
Software Produkt Line for Product Master Data Management Systems
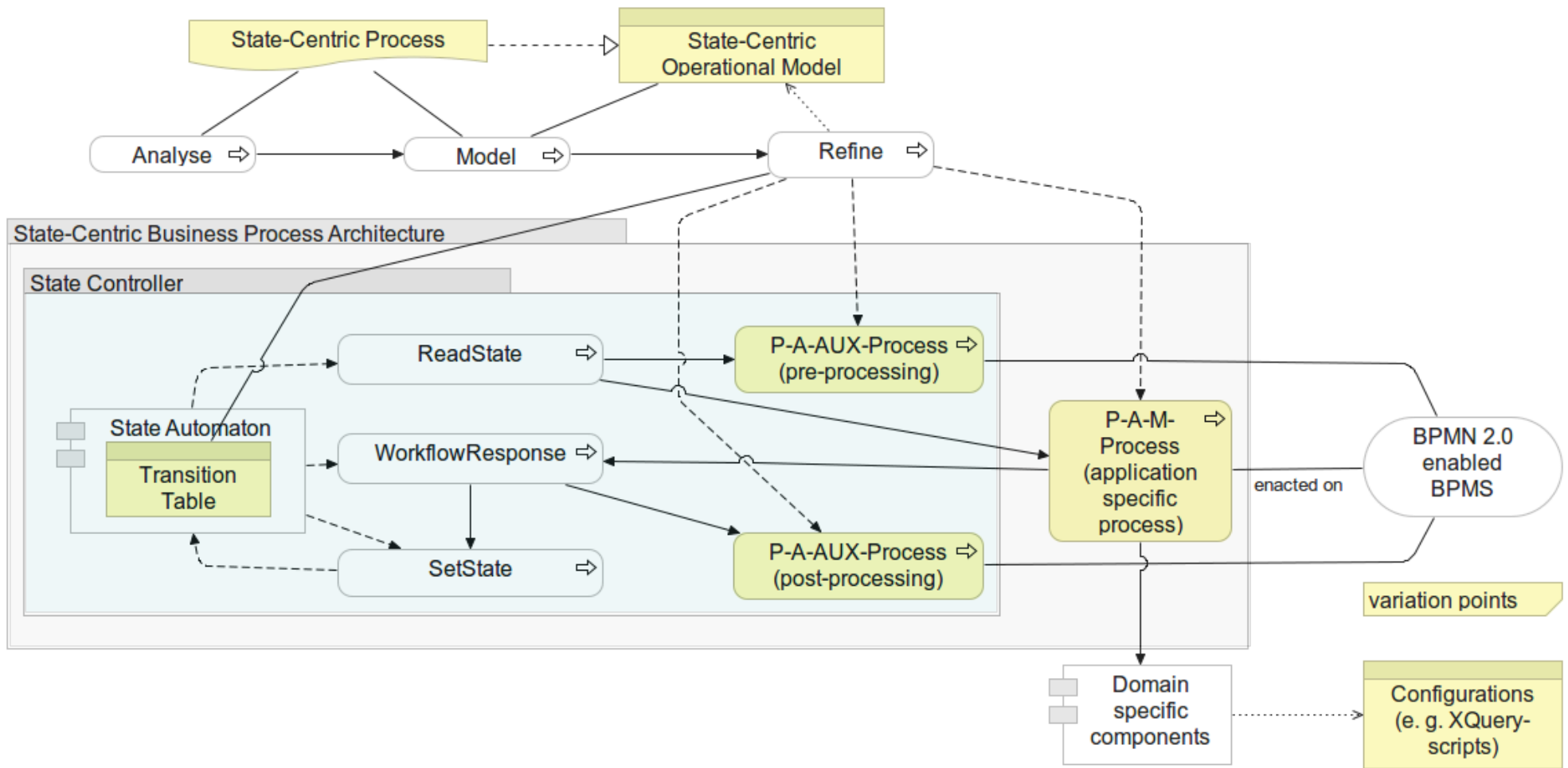
Benefits of the proposed architecture

1. **Reuse:** The controller processes are stable, in a way that the product family of different applications that are realized with the proposed architecture share the same set of control processes.

2. **Runtime changes:** Modifications to the state automata influence the process execution at runtime. Changing the state automata other (or even new) application specific processes can be invoked.

3. **Governing of long-living objects:** Instances of the application specific processes are invoked only if a state change has taken place and a state transition is possible. Long-living transactions are avoided.

Current project

VdZ-Information

Ökodesign und Verbrauchskennzeichnung von Raum- und Kombiheizgeräten, Warmwasserbereitern und -speichern und Produktkombinationen

26.09.2015 STICHTAG 26.09.2015

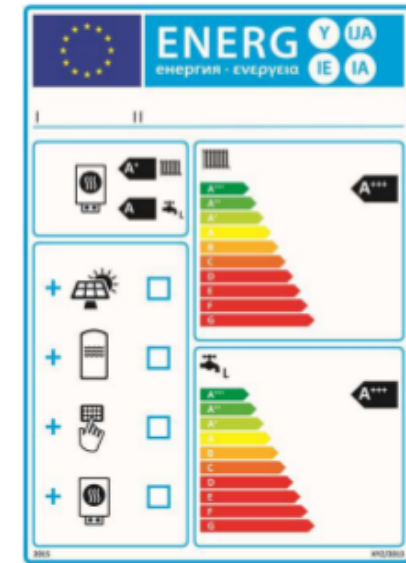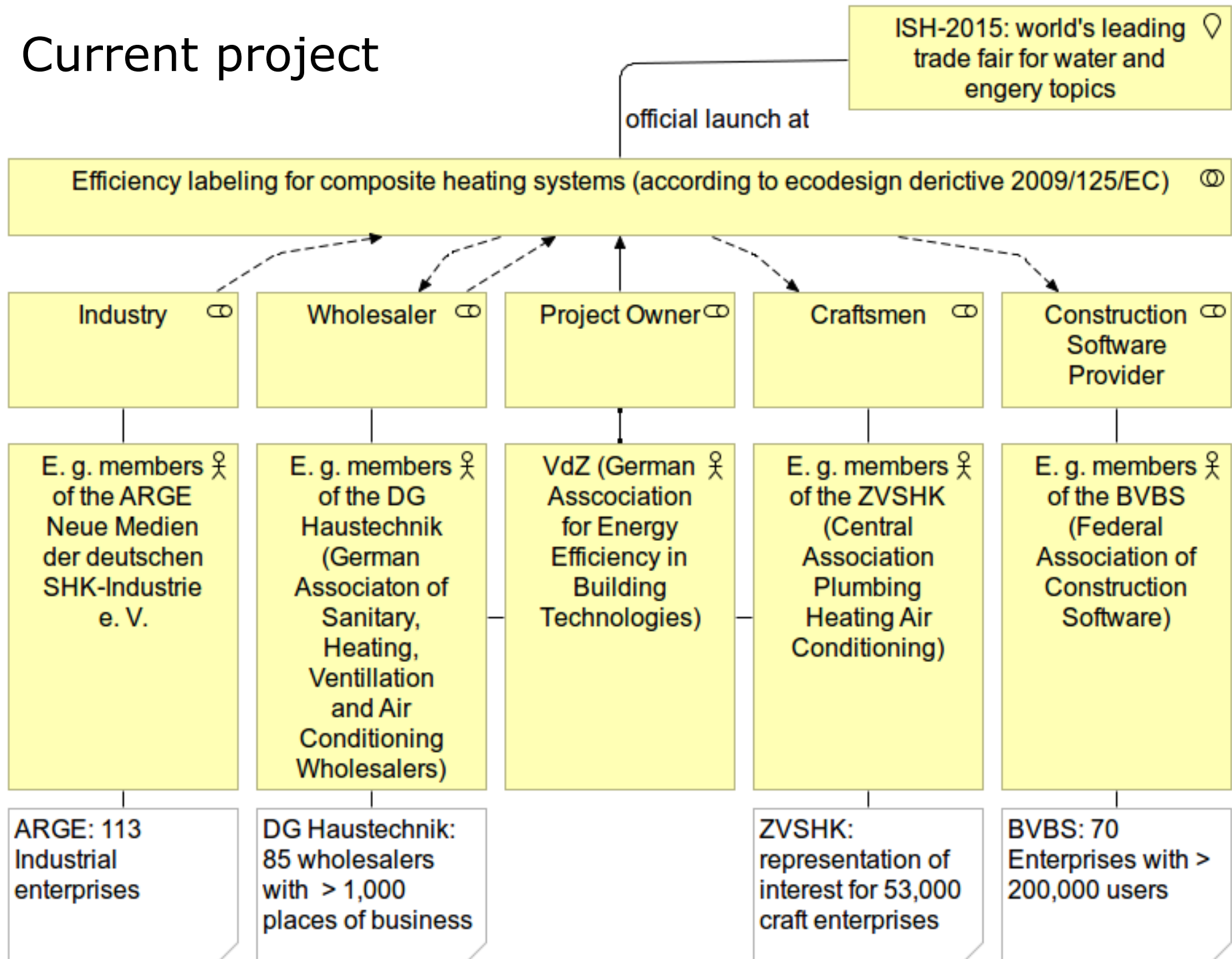Label (Heizgeräte)

first component (traditional combustion technology)

+

second component (e.g. solar thermal energy and control devices)

→

mandatory heating label for compound heatings

Current project

ISH-2015: world's leading trade fair for water and engery topics ♡

official launch at

Efficiency labeling for composite heating systems (according to ecodesign derictive 2009/125/EC) ⊚

Industry ⚭	Wholesaler ⚭	Project Owner ⚭	Craftsmen ⚭	Construction Software Provider ⚭
E. g. members ⚲ of the ARGE Neue Medien der deutschen SHK-Industrie e. V.	E. g. members ⚲ of the DG Haustechnik (German Associaton of Sanitary, Heating, Ventillation and Air Conditioning Wholesalers)	VdZ (German ⚲ Asscociation for Energy Efficiency in Building Technologies)	E. g. members ⚲ of the ZVSHK (Central Association Plumbing Heating Air Conditioning)	E. g. members ⚲ of the BVBS (Federal Association of Construction Software)
ARGE: 113 Industrial enterprises	DG Haustechnik: 85 wholesalers with > 1,000 places of business		ZVSHK: representation of interest for 53,000 craft enterprises	BVBS: 70 Enterprises with > 200,000 users

Goal:

pragmatic application of BPMN for specific application domains, namely master data management.

Characteristics:

- state based
- long living process instances

Here at the example of product master data management.