IBM Research - Zurich GmbH

Saeumerstrasse 4
8803 Rueschlikon
Switzerland

Author: Bernhard Jansen
email: bja@zurich.ibm.com
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Subject: Input to Use Case discussion for the 7th Framework project EcoGrid EU
Task 1.7 as discussed in teleconference on 18.10.2011 13:00-14:00
Use Case - Price-responsive control
Use Case - Price-distribution

1. Introduction

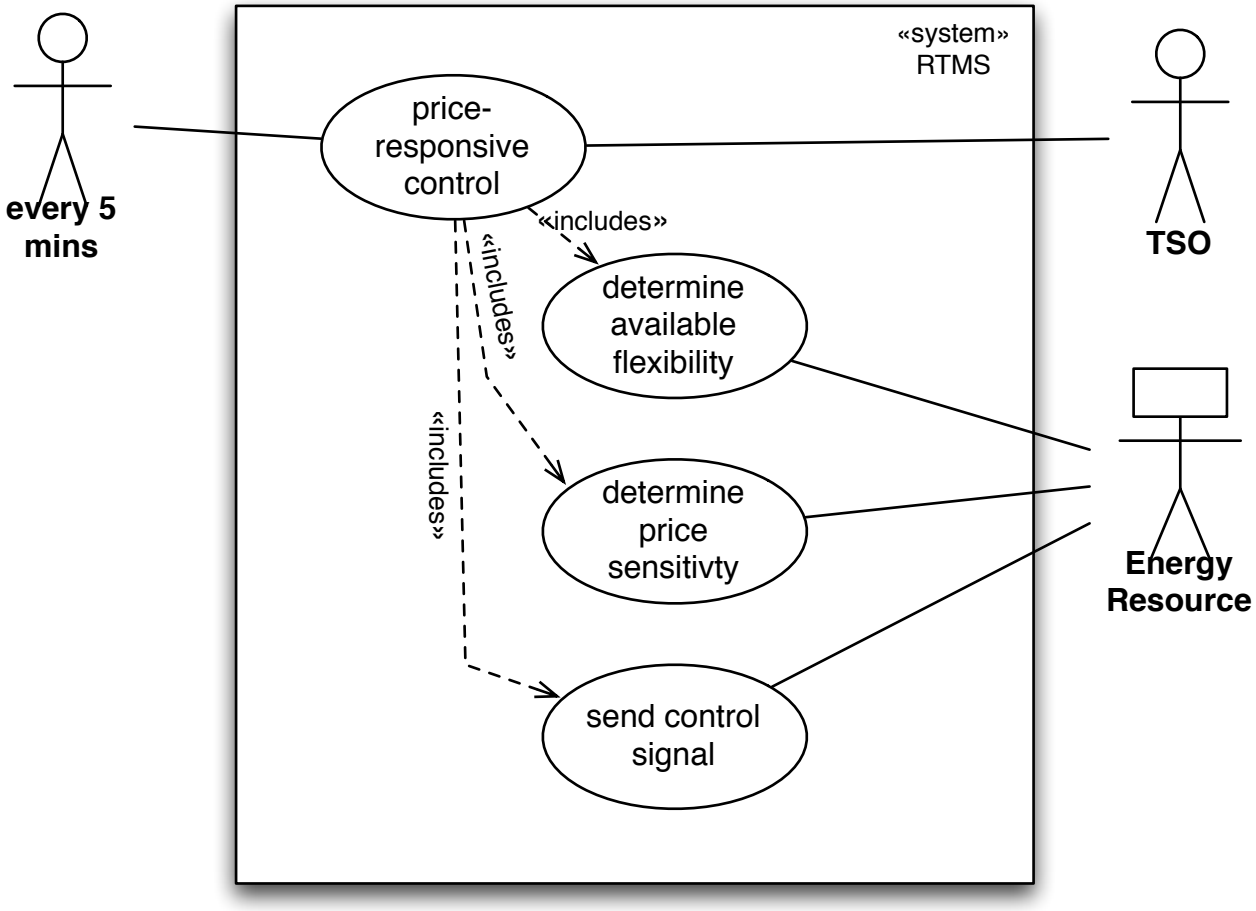
This document gives a first discussion input on the use cases *price-responsive control* and *price-distribution* as discussed in the teleconference on the 18th of October. It is targeted for Task 1.7 of WP1 of the 7th Framework Program EU project EcoGrid EU. Roles, use case format, quality and security requirements are based on the draft of the deliverable D1.7.

2. Use Cases

2.1. Price-responsive control

The use case price-responsive control only describes automatic price-responsive control as sketched in figure 3.6 of D1.7 as *React automatically on RTM price.* It leaves the *React manually on RTM price* intentionally open.

2.1.1. Graphical Overview



2.1.2. **Textual description**

Price-responsive control	
Involved Actors	Transmission System Operator, Energy Resource
Preconditions	price-calculation completed for the next 5 minutes
Trigger	starting of the next 5 minute time slot
Success Condition	An adjusted consumption profile implemented by the Energy Resources within the available flexibility to fulfill the Transmission System Operators needs
Quality Requirements	Efficiency / Time Behavior - control must be completed within 30 seconds Reliability / Maturity - system must run in stable state to support productive system
Scenario	1. read delivered price for this 5 minute slot from Transmission System Operator 2. *determine the available flexibility* *3. determine price sensitivity* 4. down select the Energy Resources to control *5. send control signal*

sub use case - determine available flexibility	
Involved Actors	Energy Resource
Preconditions	target set point set in energy resource
Trigger	price-responsive control
Success Condition	An flexibility plan for the next 5 minute periods
Quality Requirements	Efficiency / Time Behavior - control must be completed within 10 seconds Reliability / Maturity - system must run in stable state to support productive system
Scenario	1. read the current state of the energy resource 2. predict the state in the future 3. create a flexibility plan 4. deliver flexibility plan

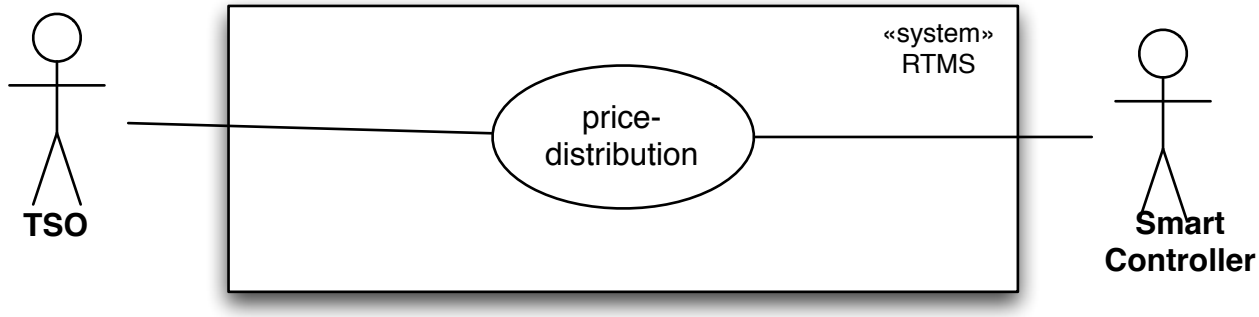
sub use case - determine price sensitivity	
Involved Actors	Energy Resource
Preconditions	determination of available flexibility completed, price sensitivity set for Energy Resource
Trigger	price-responsive control
Success Condition	a plan of price sensitivity for this Energy Resource
Quality Requirements	Efficiency / Time Behavior - control must be completed within 10 seconds Reliability / Maturity - system must run in stable state to support productive system
Scenario	1. read the available flexibility plan 2. read the price thresholds for the Energy Resource 3. create create price flexibility plan 4. deliver the price flexibility plan

sub use case - send control signal	
Involved Actors	Energy Resource
Preconditions	down selected the Energy Resources to Control
Trigger	price-responsive control
Success Condition	Acknowledgment of the Energy Resource to control
Quality Requirements	Efficiency / Time Behavior - control must be completed within 10 seconds Reliability / Maturity - system must run in stable state to support productive system
Scenario	1. send the control signal 2. wait for acknowledgement 3. finish control transaction

2.2.Price-distribution

2.2.1. Graphical Overview

2.2.2.



2.2.3. Textual Description

Price-distribution	
Involved Actors	Transmission System Operator, Smart Controller
Preconditions	price-calculation price-calculation completed
Trigger	new available price signal
Success Condition	price signal acknowledged by the RTM Participant
Quality Requirements	Efficiency / Time Behavior - control must be completed within 10 seconds Security / Authenticity - the price must be from the correct entity Security / Integrity - the price must not be altered in transport Security / Non-Repudiation - the publisher must not be able to challenge its statement
Scenario	1. The Transmission System Operator digitally signs the price telegram 2. the Smart Controller receives the price telegram 3. the Smart Controller proves the authenticity and integrity of the price telegram 4. the Smart Controller latches the price telegram for until *price-responsive control is triggered*