# IoT Conference 2023

# H2020 Interconnect: Delayed start of smart appliances using SAREF4ENER

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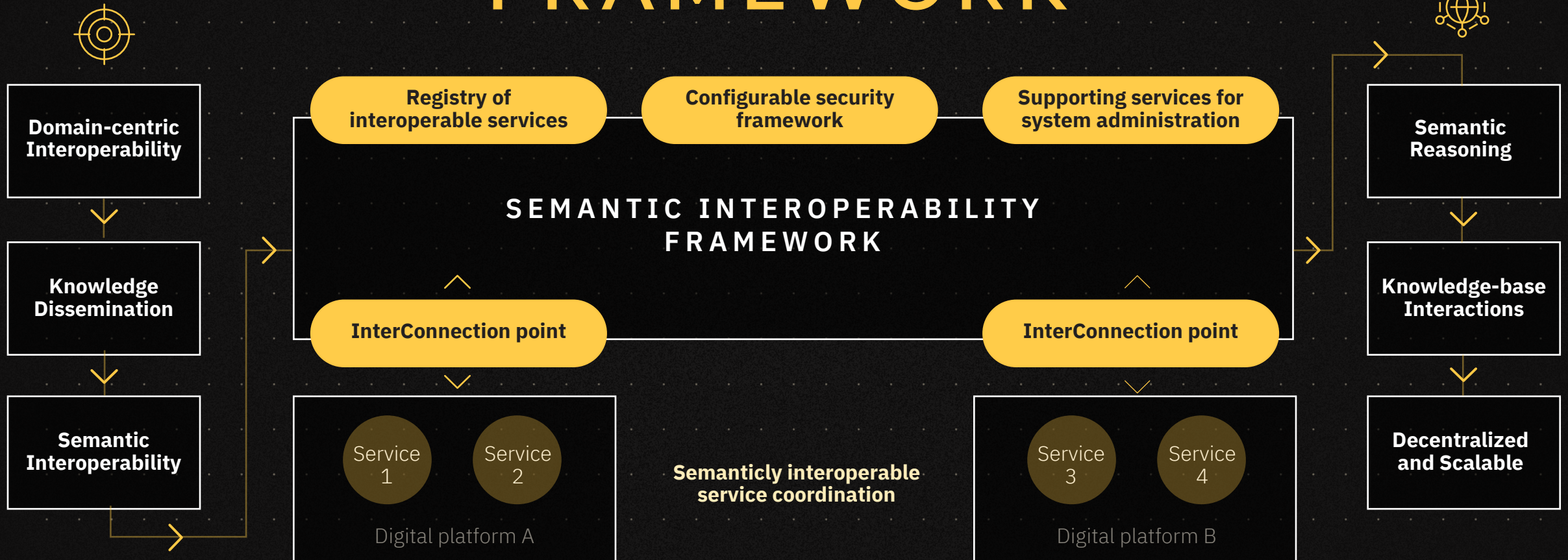
# The Knowledge Engine

- The Knowledge Engine is composed out of Smart Connectors and the Knowledge Directory

- The Knowledge Base is your application

- Each Knowledge Base has its own Smart Connector

- The Smart Connector is a generic piece of software, that facilitates communication and reasoning



Graph Patterns / RDF triplets
Knowledge Directory query/update

interconnect
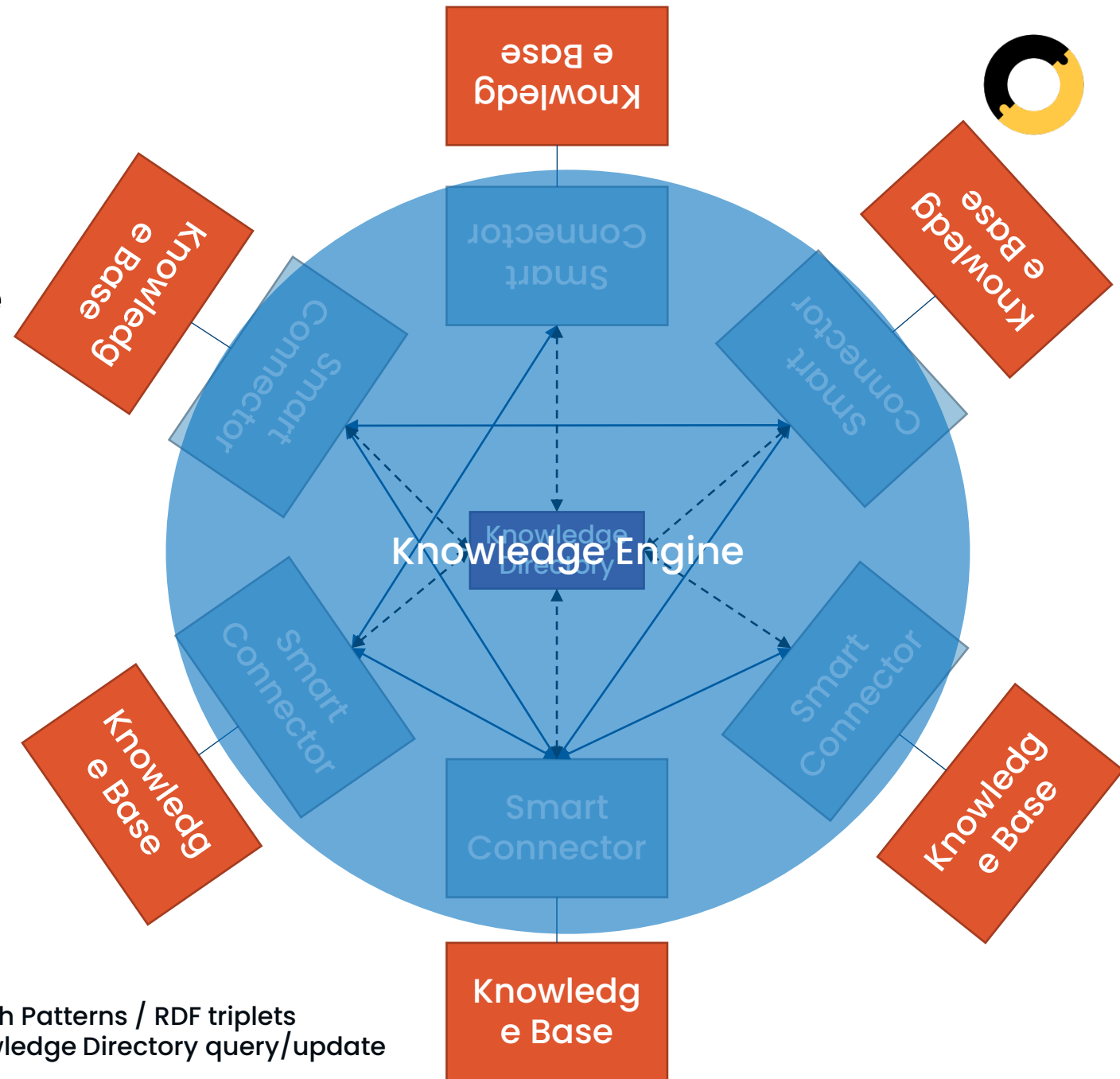
# Knowledge Dissemination



Graph Pattern

Graph Pattern

**Service Logic**

**Service A - SSA**

**Smart Connector**

**Semantic Interoperability Framework**

*SAREF*

**Smart Connector**

**Service B - SSA**

**Service Logic**

Knowledge Base

Knowledge Base

Proprietary (e.g. REST API, Query API, …)

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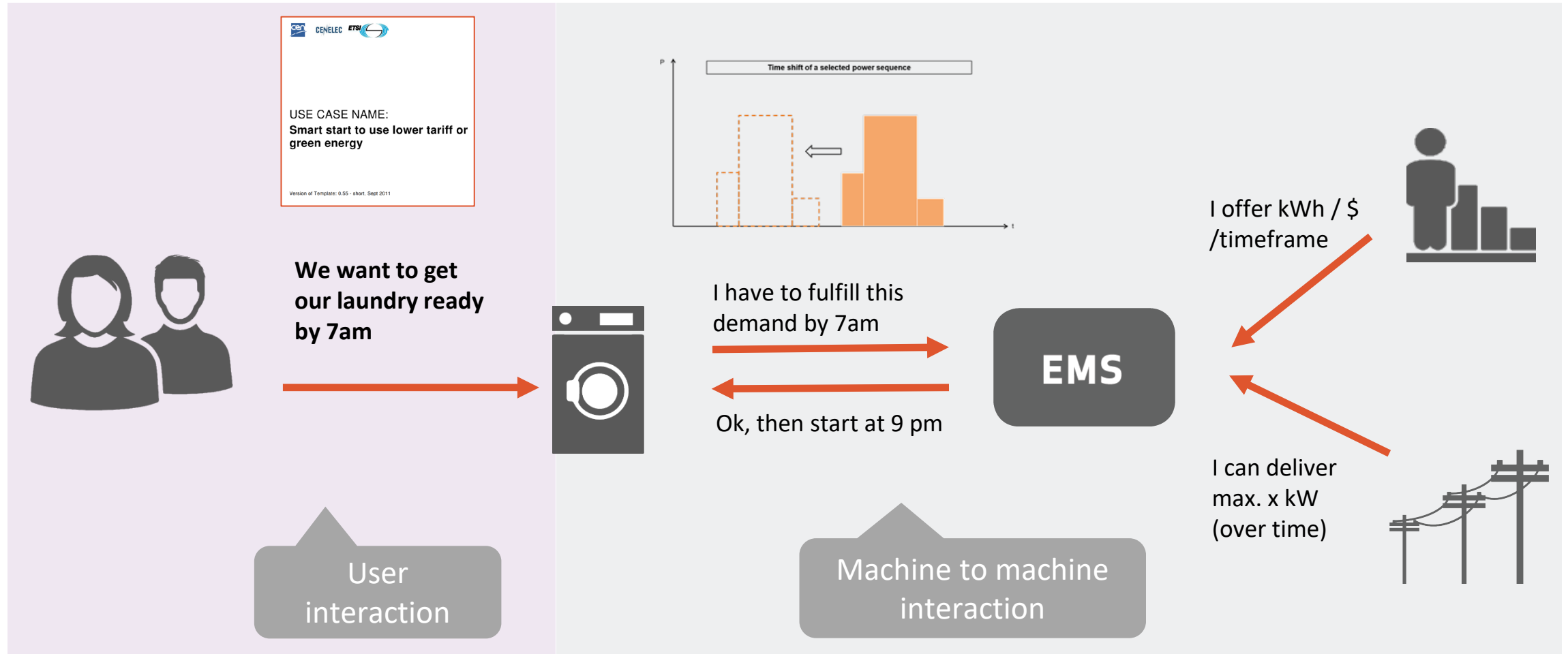**ASK**

**POST**

**ANSWER**

**REACT**
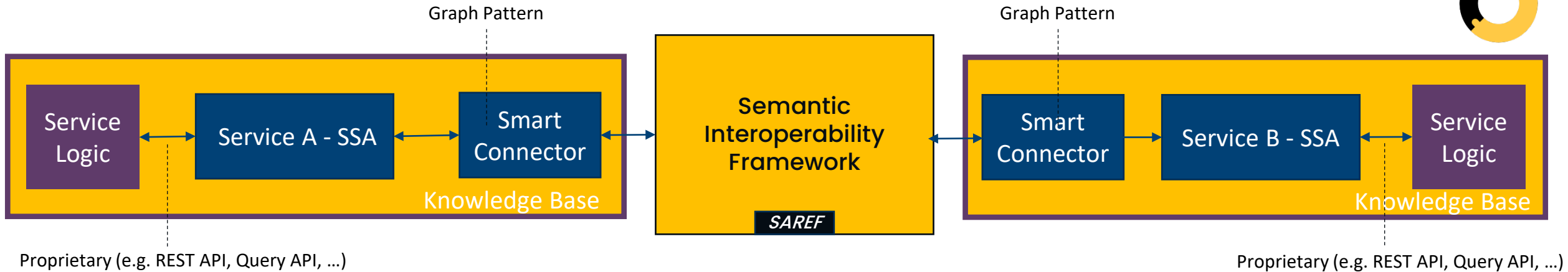
*?f rdf:type ic-fc:PointForecast .*

*?f saref:hasTime ?sd .*

*?sd rdf:type time:Interval .*

*?sd saref:hasBeginning ?bsd .*

*?bsd time:inXSDDateTimeStamp ?start_date .*

*?f saref:hasTime ?ed .*

*?ed rdf:type time:Interval .*

*?ed saref:hasEnd ?eed .*

*?eed time:inXSDDateTimeStamp ?end_date .*

*?f ic-data:hasDataPoint ?hdp .*

*?hdp rdf:type ic-data:TimeSeries .*

*?hdp ic-data:hasTopologicalAssociation ?installation_code .*

*?installation_code rdf:type saref:device .*

**interconnect**

# Use case: users allow smart appliances to offer flexibility managed by an Energy Management System



USE CASE NAME:
**Smart start to use lower tariff or green energy**

Version of Template: 0.55 - short, Sept 2011

Time shift of a selected power sequence

**We want to get our laundry ready by 7am**

I have to fulfill this demand by 7am

Ok, then start at 9 pm

**EMS**

I offer kWh / $ /timeframe

I can deliver max. x kW (over time)

User interaction

Machine to machine interaction

interconnect

# Plug & play Energy Management Service



B/S/H/

EN50631 standard
(EEBUS SPINE-IoT)

cen CENELEC

Cloud

SAREF data

SIF

SAREF data

Energy Management Service 1

SAREF data

Energy Management Service 2

EN 50491-12-2
standard (S2)

cen CENELEC

Miele

Whirlpool

interconnect