BEAM FOR SMART ENERGY / Task 4.1

CODE BEAM STO, Paul Valckenaers, Stockholm

17.05.2019

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BEAM FOR SMART ENERGY

Lessons learned in STORY on ICT in smart energy

- horizon2020-story.eu
  - 6 demo sites across Europe
  - when there is no sun and no wind, people still need/consume energy
  - store energy close(r) to the end user e.g. in smart buildings, not Norwegian fjords

➢ Project outcome: added value of energy storage in energy distribution systems (=> smaller scale)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 646426

BEAM FOR SMART ENERGY

Lessons learned in STORY on ICT in smart energy

- Industrial automation / ICT
  - Not a lot of progress during the last decade
  - Successful installation really requires skilled and experienced personnel
  - Unable to find for roll-out in large numbers
  - Unaffordable for small(er) installations
- BEAM to the rescue

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BEAM FOR SMART ENERGY

STORY

Imaging your smart home was done by underqualified …

- 10 years from now you are living in a smart home
  - Because your government (you?) cared about climate change
  - Imagine industrial automation provided the smartness
  - The personnel issues remained unaddressed
- Energy savings have been underwhelming
- Comfort levels are only just bearable
- Judges are taking forever (since more then 2 years) to decide
  - Who shall solve which problems within your smart energy installation
  - Who will pay for all these extra efforts, device replacements, penalties
  - Fees for legal counseling are costing you a small fortune already

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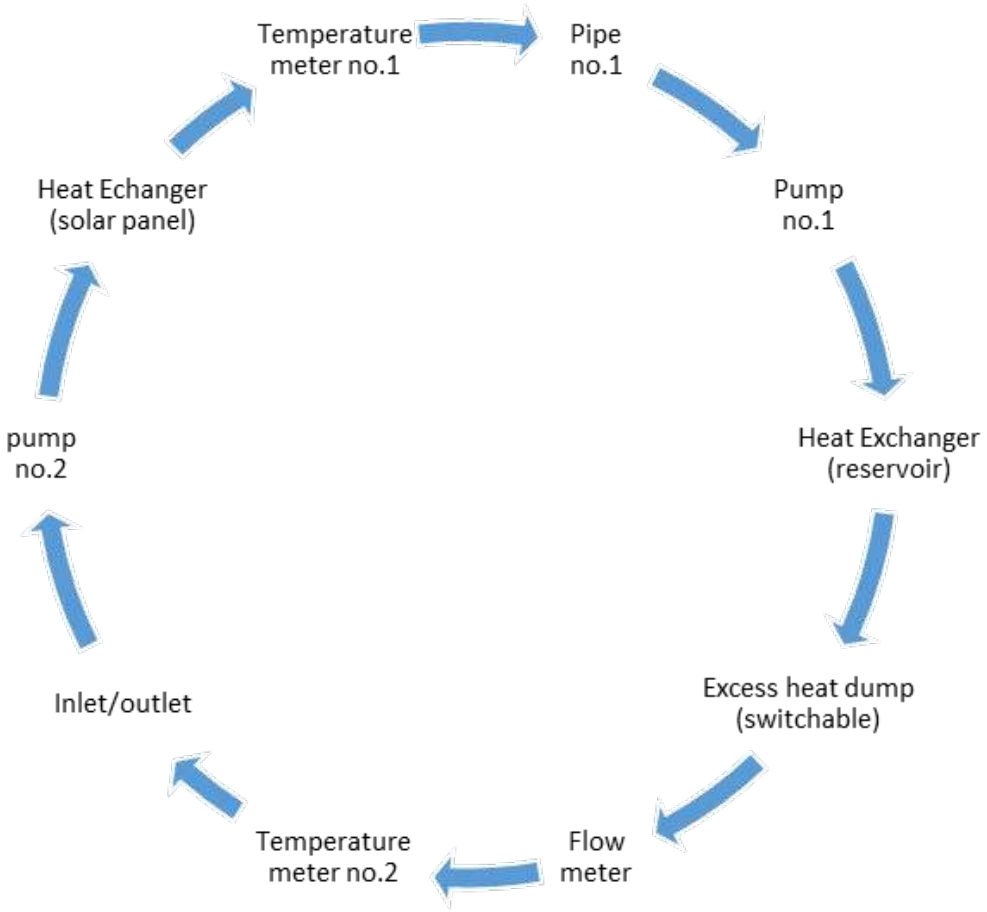

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BEAM FOR SMART ENERGY

STORY

BEAM to the rescue …

- Ingela decided to have the BEAM handle her smart home
  - Peer and Adam provided advice and assistance on hardware connectivity
  - NERVES handled ModBus and …
  - A lot of her colleagues volunteered their viewpoints and opinions
  - Ingela studied deliverables D3.7 and D3.8 from STORY
  - Blue collar digital twins provided embodied and embedded intelligence
- Expertise and skill level of the installers was moderate; mistakes were made and equipment broke after some time
  - Pump too close to a flow meter (and turbulence ruins the measurements)
  - A €20 temperature sensor broke behind 30 cm insulation material …

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From: Topi Mikkola
Sent: dinsdag 30 april 2019 14:31
To: Ala-Juusela Mia
Subject: Re: STORY D3.8

Hi,

To ease your worries at least a bit: this is the deliverable I will send to several people as soon as it becomes public and appears on the STORY website. It summarizes many problems to which people keep hitting their heads time after time. And even gives some answers, too.

cheers,
Topi

> On 30 Apr 2019, at 15.26, Ala-Juusela Mia wrote:
>
> Dear Francesco, Paul and Topi,
> Thank you for your efforts, I will now submit this final version attached. I must fully trust Topi's and Francesco's content review, as I don't have time for that, nor much competence, either.
>
> Best regards,
> Mia

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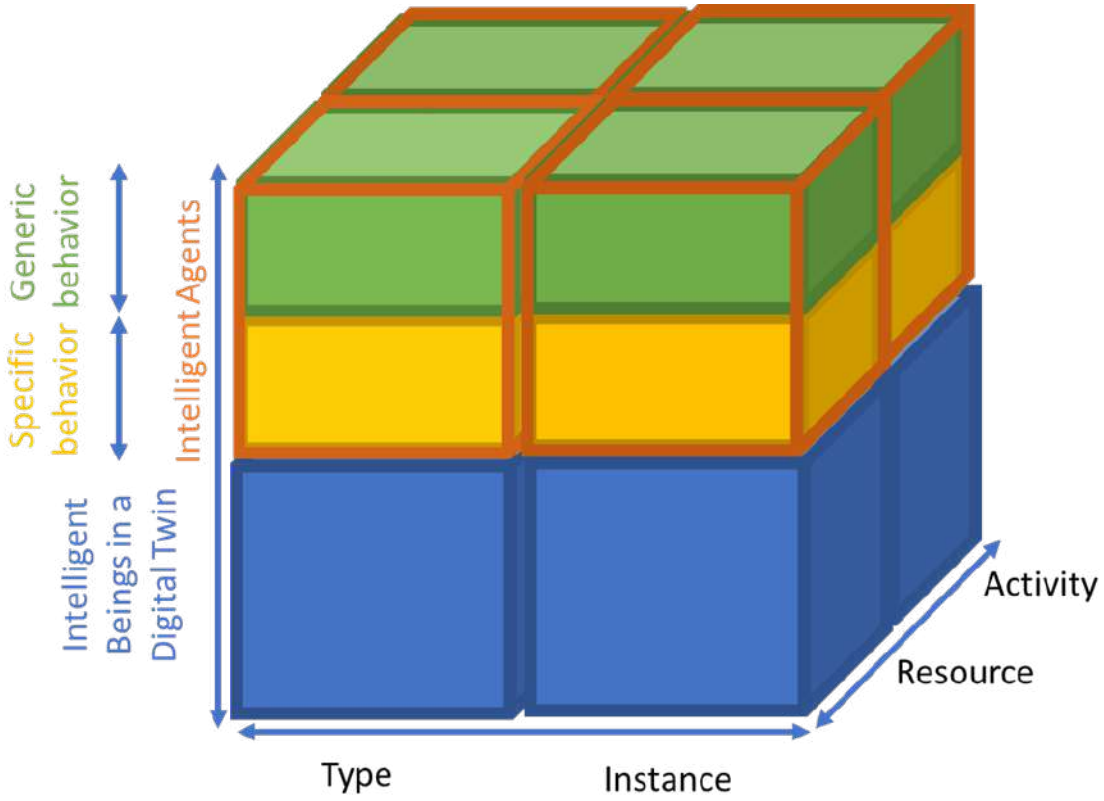

Assumptions

- Bounded rationality
- Narrow Artificial Intelligence

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Project STORY - H2020-LCE-2014-3

From: Topi Mikkola
Sent: donderdag 18 april 2019 10:19
To: Paul Valckenaers <paul.valckenaers@ucll.be>
Subject: STORY: D3.8 comments

Hi,

To summarize what we talked about. Like I said, I like the doc a lot, but it is quite heavy reading. And for later considerations/replication, this would make a good course for people working in industry doing system design work.

- Exec summary and introduction should probably contain at least blue collar twin and maybe also something about different twin types - to really grab reader's attention and to give a quick summary.
- ...
- In chapter 5 example, make really sure that resource type vs instance is easily noticed
- At least from programmer's point of view, might be better to start with resource types and then proceed to instances
- ...
- For replication, you don't only need skilled personnel, but you need them to locate ech other, too. As communication through well meaning managers does not work that well.

br,
Topi

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BEAM FOR SMART ENERGY

Lessons learned in STORY on ICT in smart energy

- Industrial automation / ICT
  - Needs skilled and experienced personnel
  - Unable to find in large numbers
  - Unaffordable for smaller installations
- BEAM to the rescue

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BEAM FOR SMART ENERGY

Lessons learned in STORY on ICT in smart energy

- BEAM to the rescue
  - Small semantic gap, embedded applications, high availability, …
  - Blue collar digital twins
  - Embodied and embedded (artificial) intelligence
  - D3.7 (public 4Q2019) and D3.8 (public 3Q2019)

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BEAM FOR EMBODIED TWINS

Opportunities and responsibilities for the BEAM

- DIGITAL TWIN for HUMAN BEINGS
  - Work-Life balance, healthcare, …
  - Address over-solicitation in terms of attention
  - Privacy
  - …
- *Javascript cloaking* for those well meaning managers
  - E.g. IEC 61499 for PLC programming
  - Prototyping with the BEAM, which becomes permanent
  - Device drivers to access devices (application independent)

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THANK YOU!

Paul.Valckenaers@ucll.be

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Project STORY - H2020-LCE-2014-3