

BME ICT and H2020

Dr. Hassan Charaf
BME, ICT



1

2014.06.17.

Excellent Science • Industrial Leadership • Societal Challenges



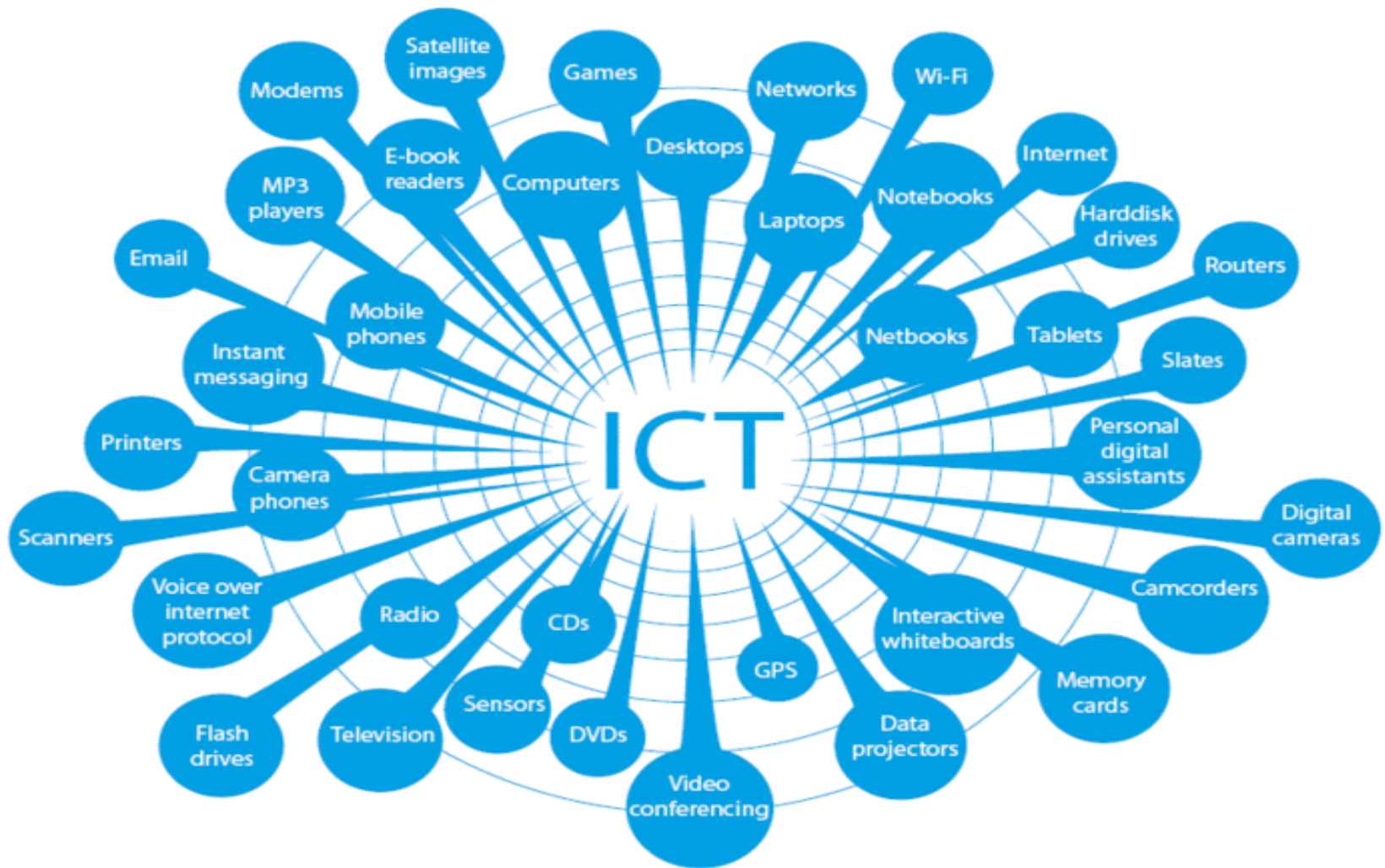
Three priorities

H2020



BME-Research Strategy, 2010





Horizon 2020 - ICT

Information & Communication
Technologies in Horizon 2020



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ICT

- A total of 1645 proposals were submitted in response to this call:
<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/calls/h2020-ict-2014-1.html#tab1>
- ICT brings unique responses to society's challenges such as the growing needs for sustainable healthcare and ageing well, for better security and privacy, for a lower carbon economy and for intelligent transport.
- ICT in Horizon 2020 supports
 - > ICT in Science,
 - > ICT in industrial leadership and
 - > ICT in societal challenges

ICT in 'Leadership in Enabling and Industrial Technologies'

1. A new generation of components and system,
2. Advanced Computing,
3. Future Internet,
4. Content technologies and information management,
5. Robotics,
6. Micro- and nano-electronic technologies, Photonics.

ICT topics in LEIT WP 2014-15

- **A new generation of components and systems**
 - > ICT 1 – 2014: Smart Cyber-Physical Systems
 - > ICT 2 – 2014: Smart System Integration
 - > ICT 3 – 2014: Advanced Thin, Organic and Large Area Electronics (TOLAE) technologies
- **Advanced Computing**
 - > ICT 4 – 2015: Customised and low power computing
- **Future Internet**
 - > ICT 5 – 2014: Smart Networks and novel Internet Architectures
 - > ICT 6 – 2014: Smart optical and wireless network technologies
 - > ICT 7 – 2014: Advanced Cloud Infrastructures and Services
 - > ICT 8 – 2015: Boosting public sector productivity and innovation through cloud computing services
 - > ICT 9 – 2014: Tools and Methods for Software Development
 - > ICT 10 – 2015: Collective Awareness Platforms for Sustainability and Social Innovation
 - > ICT 11 – 2014: FIRE+ (Future Internet Research & Experimentation)
 - > ICT 12 – 2015: More experimentation for the Future Internet
 - > ICT 13 – 2014: Web Entrepreneurship
 - > ICT 14 – 2014: Advanced 5G Network Infrastructure for the Future Internet

ICT topics in LEIT WP 2014-15

- **Content technologies and information management**

- > ICT 15 – 2014: Big data Innovation and take-up
- > ICT 16 – 2015: Big data - research
- > ICT 17 – 2014: Cracking the language barrier
- > ICT 18 – 2014: Support the growth of ICT innovative Creative Industries SMEs
- > ICT 19 – 2015: Technologies for creative industries, social media and convergence
- > ICT 20 – 2015: Technologies for better human learning and teaching
- > ICT 21 – 2014: Advanced digital gaming/gamification technologies
- > ICT 22 – 2014: Multimodal and Natural computer interaction

- **Robotics**

- > ICT 23 – 2014: Robotics
- > ICT 24 – 2015: Robotics

- **Micro- and nano-electronic technologies, Photonics**

- > ICT 25 – 2015: Generic micro- and nano-electronic technologies
- > ICT 26 – 2014: Photonics KET
- > ICT 27 – 2015: Photonics KET
- > ICT 28 – 2015: Cross-cutting ICT KETs
- > ICT 29 – 2014: Development of novel materials and systems for OLED lighting

ICT topics in LEIT WP 2014-15

- **ICT Cross-Cutting Activities**

- > ICT 30 – 2015: Internet of Things and Platforms for Connected Smart Objects
- > ICT 31 – 2014: Human-centric Digital Age
- > ICT 32 – 2014: Cybersecurity, Trustworthy ICT
- > ICT 33 – 2014: Trans-national co-operation among National Contact Points

- **Horizontal ICT Innovation actions**

- > ICT 34 – 2015: Support for access to finance
- > ICT 35 – 2014: Innovation and Entrepreneurship Support
- > ICT 36 – 2015: Pre-commercial procurement open to all areas of public interest requiring new ICT solutions
- > ICT 37 – 2014-15: Open Disruptive Innovation Scheme (implemented through the SME instrument)

- **Fast track to Innovation – pilot**

- > Fast track to Innovation – ICT topic

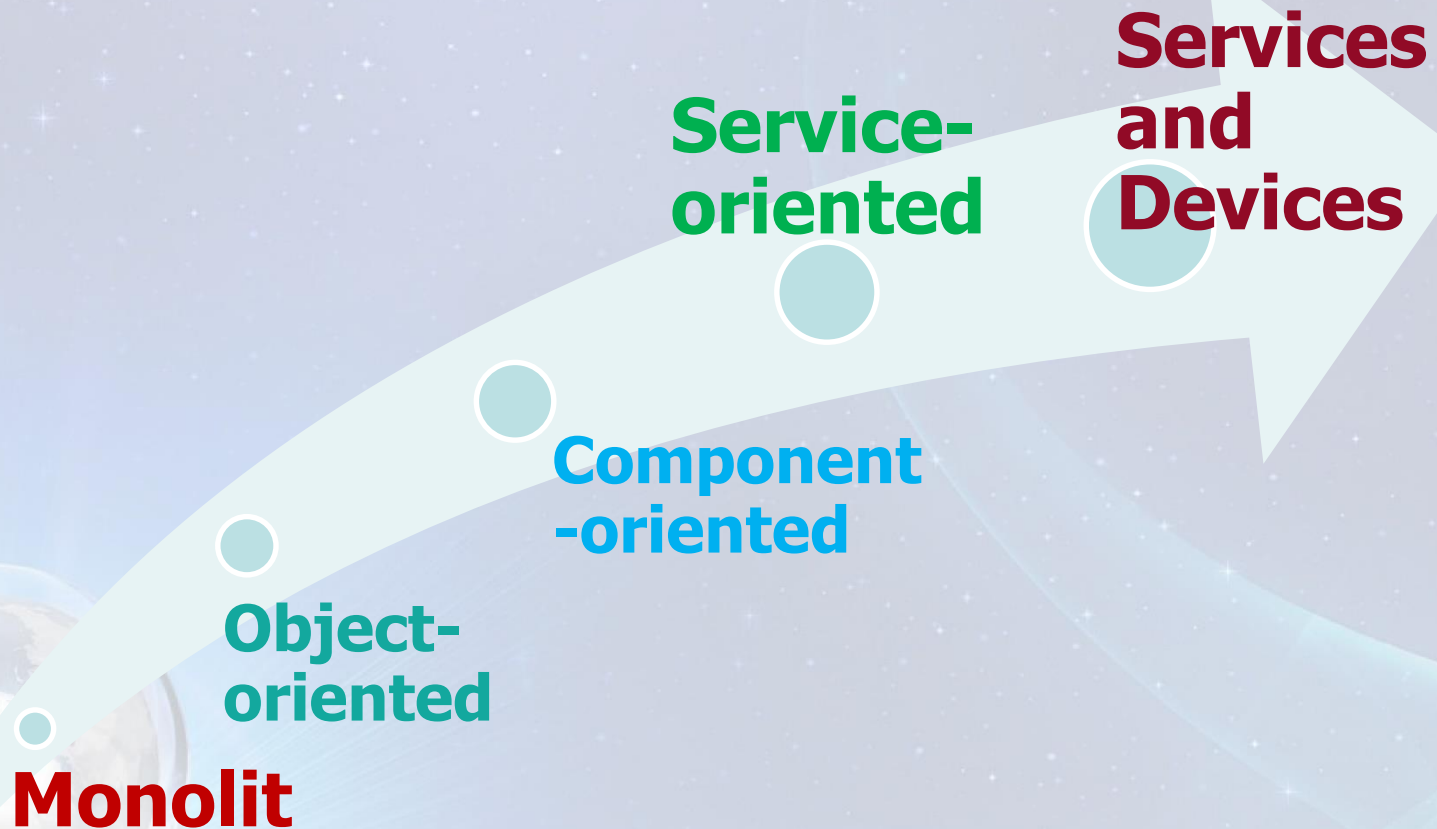
- **International Cooperation actions**

- > ICT 38 – 2015: International partnership building and support to dialogues with high income countries
- > ICT 39 – 2015: International partnership building in low and middle income countries

Trends, ICT Directions

- Sw Development Methodology
- Services and Devices
- Communication Intensive
- Convergence
- „Consumer“-centric
- Big Data
- Cloud Computing

1. Sw Methodologies



2. Services and Devices



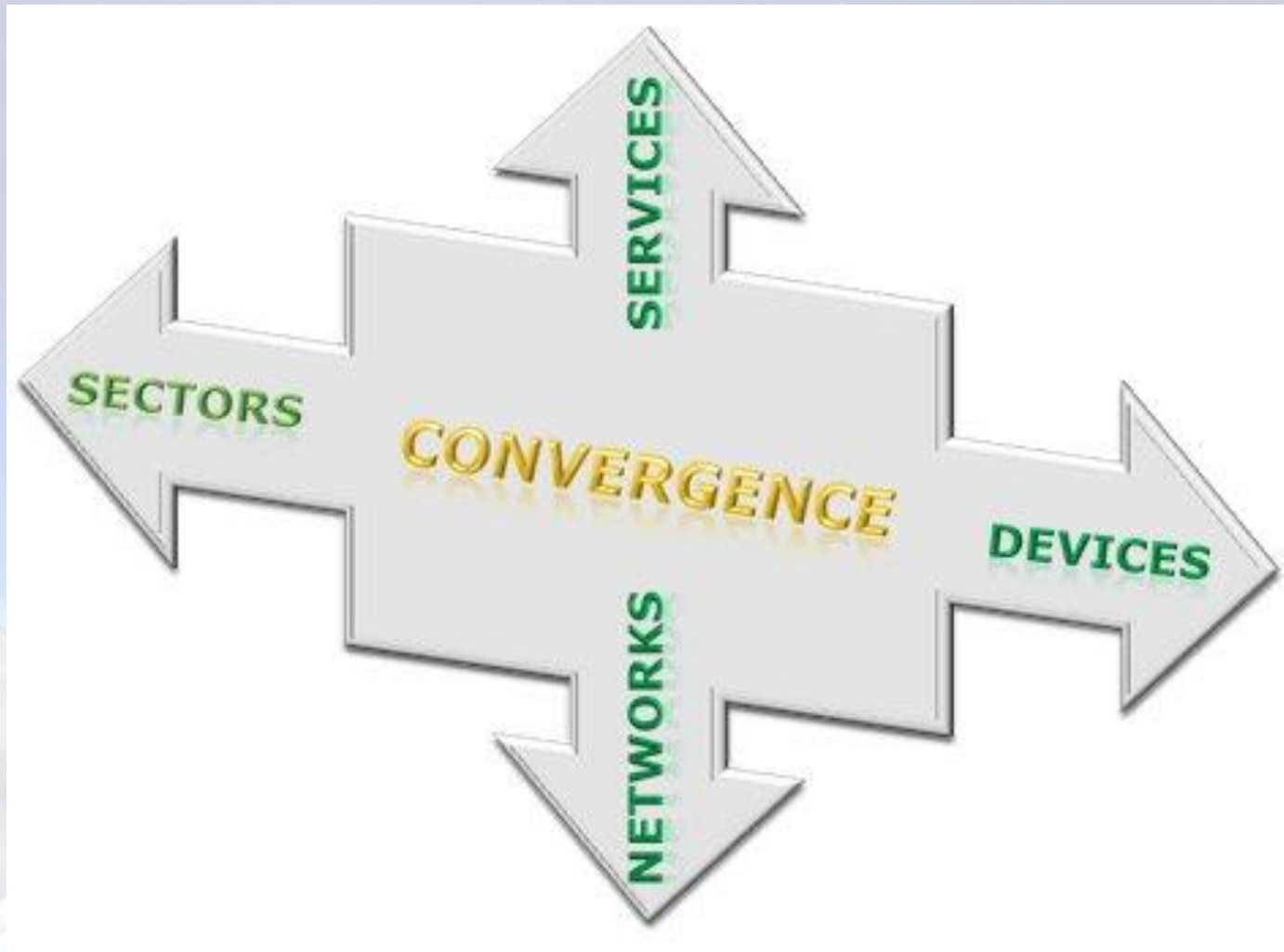
Service-oriented Business model



3. Computing → Communications

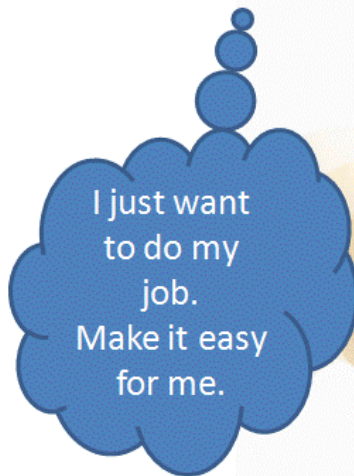


4. Convergence



5. Consumer – centric model

Users



I just want
to do my
job.
Make it easy
for me.

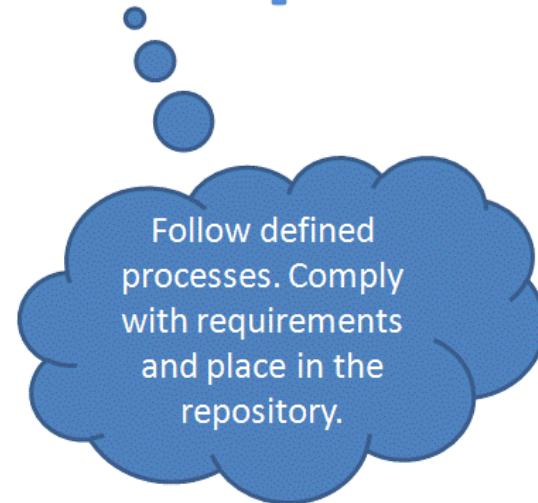
Traditional

- Email
- Share file drives/SharePoint

Now

- Webmail (e.g. Gmail)
- DropBox etc.

Enterprise



Follow defined
processes. Comply
with requirements
and place in the
repository.

To bring the Pendulum back

- Ease-of-use
- Global mobility
- Multi-device support

6. Big Data



7.Cloud- infrastructure



Windows Azure™



Google Cloud Platform



Horizon 2020 - ICT

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Key Areas and Competences

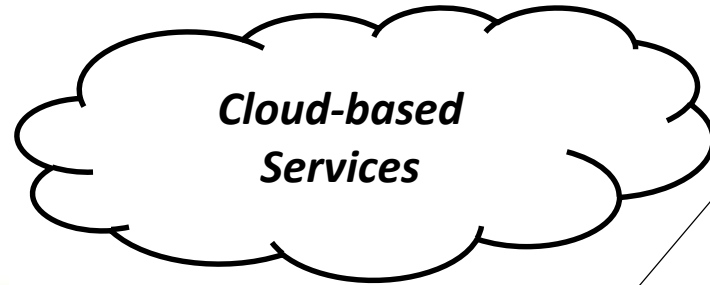
- Network and Communication Protocols
- Domain-Specific Modelling, Model Processing, Software Design, Development, Testing, Integration and Maintenance
- Mobile (all platform) Design and Development, Enterprise Systems,
- Cyber-Physical Systems (next generation embedded systems)
- Cloud Computing
- Security and Secure Communication
- Data Management, Data Mining
- Portal Technologies, Performance Analysis

Application Areas

- Industrial Internet, Smart Industry
- Cyber-Physical Systems
- Future Cloud
- Future Networking Solutions
- Health & Wellbeing
- Privacy, Security & Trust in Information Society
- Smart Energy Systems
- Smart Spaces
- Urban Life and Mobility

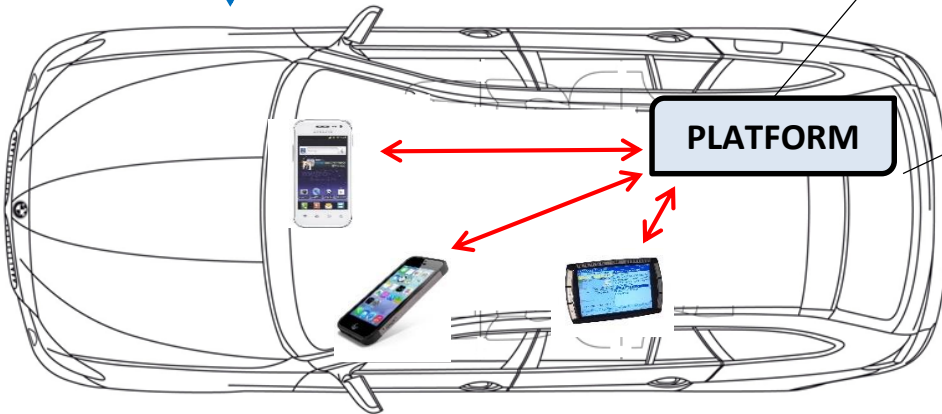
ICT in Road Vehicles – Services and Devices

B. Connected Vehicle Services

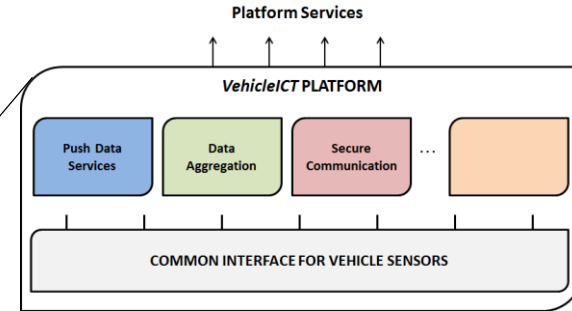


V2V

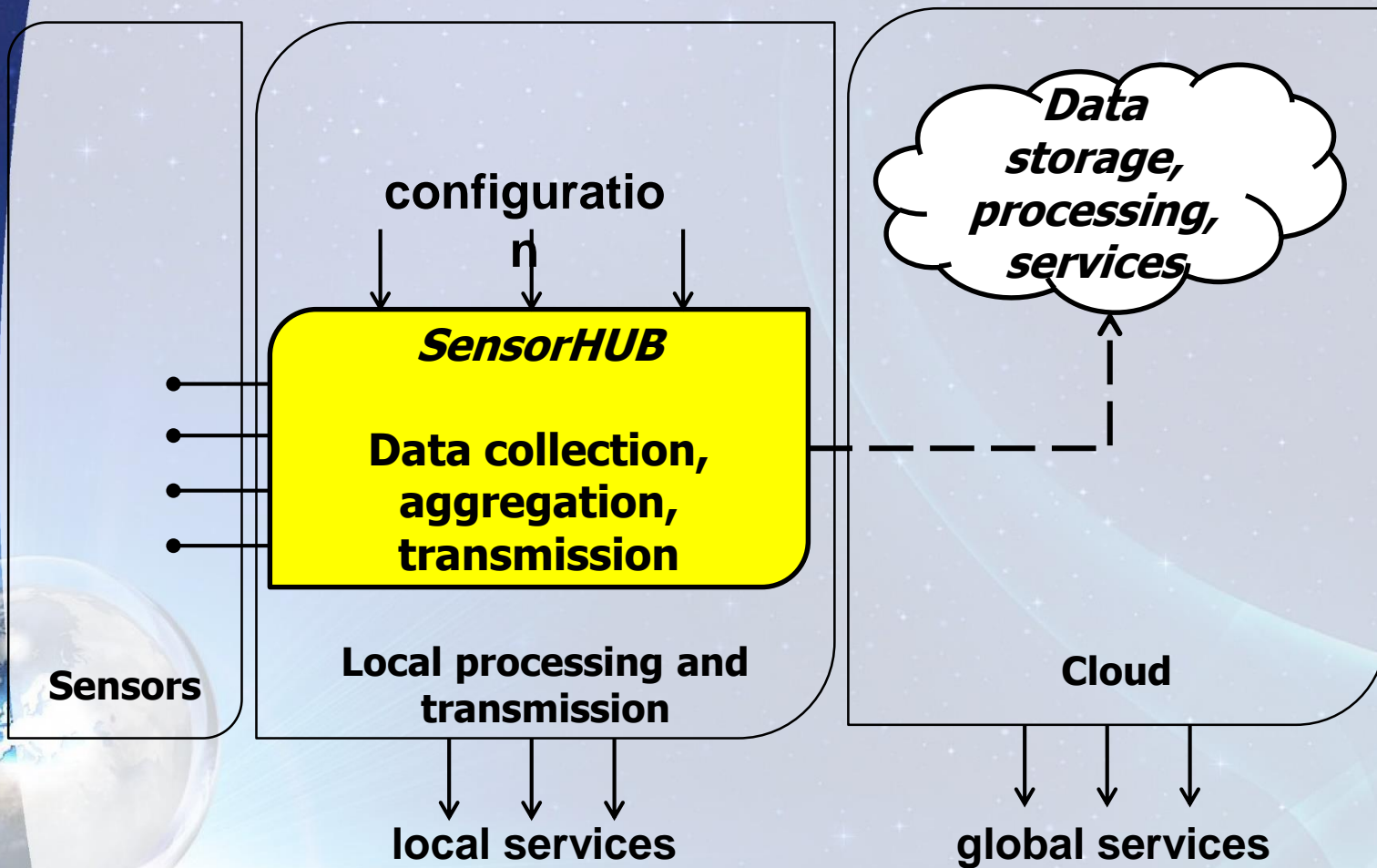
V2I



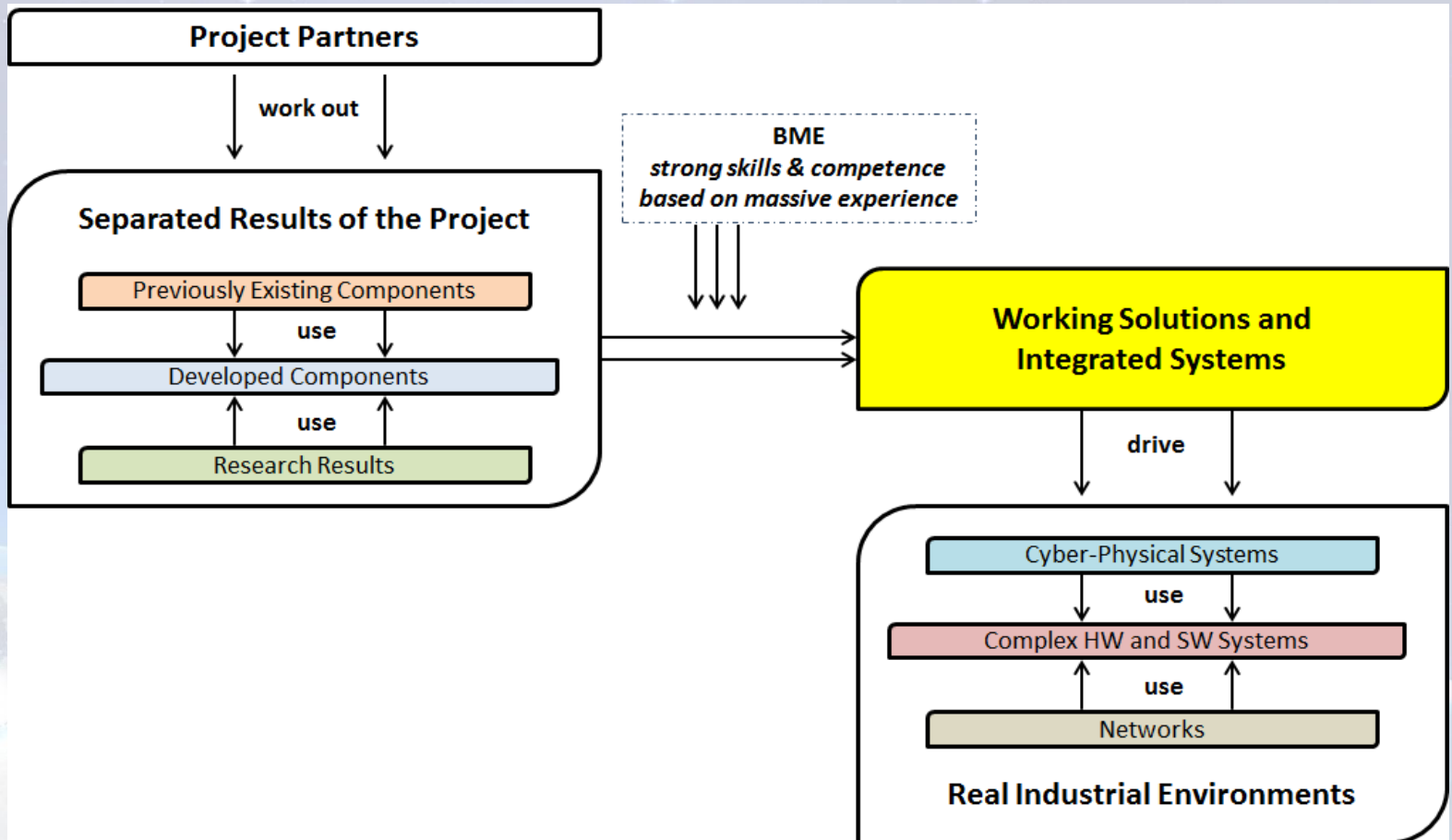
A. On-board Services



SensorHUB



Integration Role



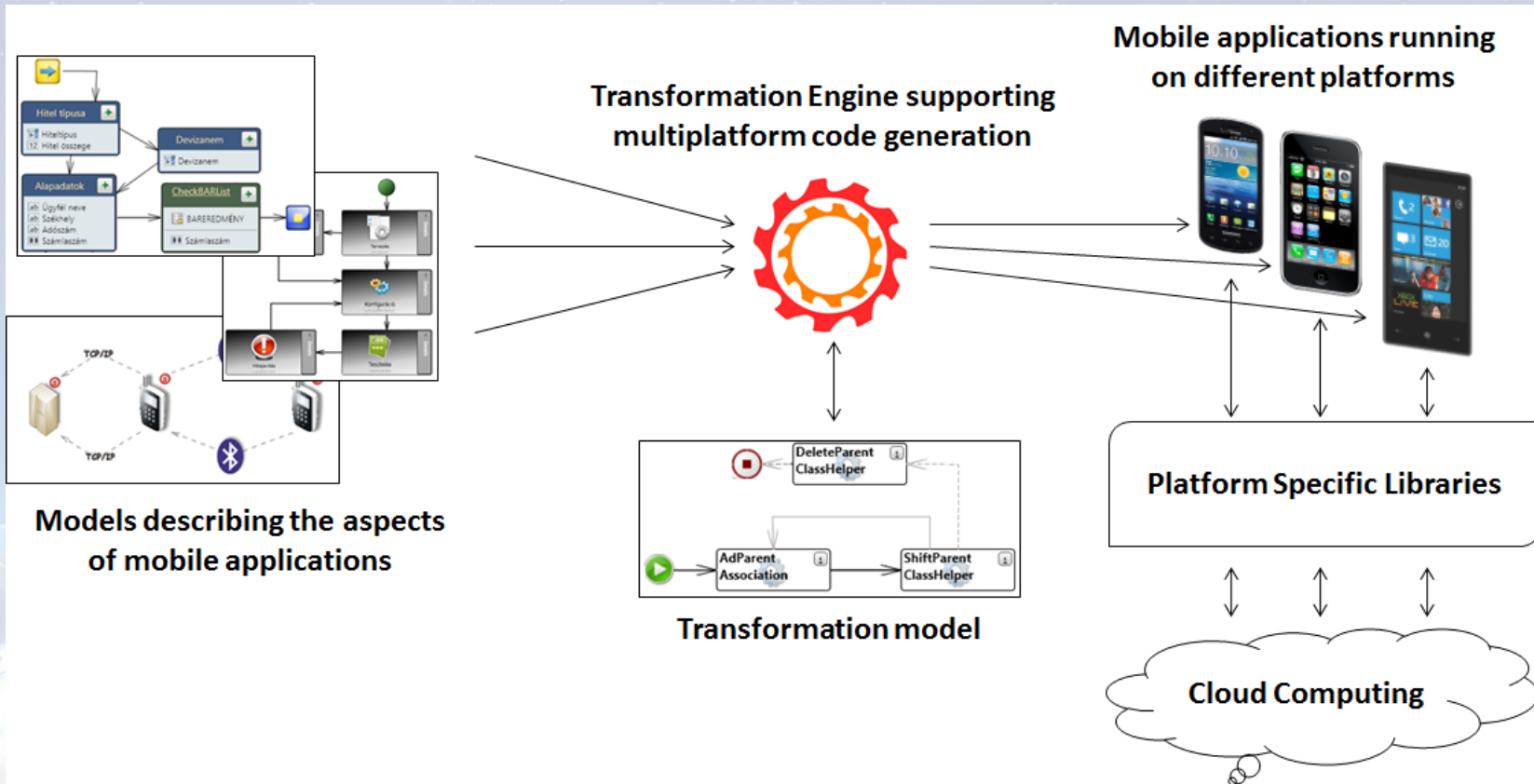
Domain-Specific Modeling

The screenshot displays the GrafEC software interface. The main window shows a ladder logic diagram titled "FBD: Interlock*" in a "Simulating..." state. The diagram consists of several logic gates and input/output elements:

- Inputs:** "Primer fész.k", "Fok. kapcs. k", "Tercier fész.k", and "Tr. meleg.hu".
- Logic Gates:**
 - An AND gate with inputs IN1 (connected to "Primer fész.k") and IN2 (connected to "Fok. kapcs. k").
 - A NOT gate with input IN1 (connected to the output of the AND gate).
 - Another NOT gate with input IN1 (connected to "Tercier fész.k").
 - An OR gate with inputs IN1 (connected to the output of the first NOT gate), IN2 (connected to the output of the second NOT gate), and IN3 (connected to "Tr. meleg.hu").
- Output:** "Return", which is connected to the output of the OR gate.

The interface includes a menu bar (Home, Help), a toolbar with icons for file operations (Open, Save, New, Close, Generate doc.), simulation control (Start, Pause, Step, Stop), and utilities (Validate, Default routing, Auto route). A "Model explorer" on the left shows a tree view of the project structure, including "InterlockTest2", "Elements", "Device_ITSZ", "FBDResource", "Global variables", "Library", "Interlocks", "Interlock", "Local variabl", and "Resource files". At the bottom, there are tabs for "Output" and "Error list", and a status bar showing "vm: koba".

Multiplatform Support



Smart House



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eMagazine, eBook Framework

my Nuggets

recently | by Time | by Type

2012 | October | #1


2012 | October 1, Monday

Did you know?

German secret agents operating in Great Britain tried to murder Churchill with an exploding chocolate bar.

The Castle of Tintagel, where according to legend King Arthur was born, is among the few sites of the Arthurian Legend that truly exist in Cornwall, England.

Germany's largest fair, the Oktoberfest was first held in 1810. The Märzenbier, the traditional beer of Oktoberfest, debuted in 1872.



my HISTORY DIGEST

the great

(singer)

The entangled art of jazz and architecture of the Eiffel Tower. Paris, January 1948.

Last read article

my Nuggets

Picture of the week

Battle of Hastings

The battle (14 October 1066) ended in the defeat of Harold II of England by William, duke of Normandy, and established the Norman rule in England.

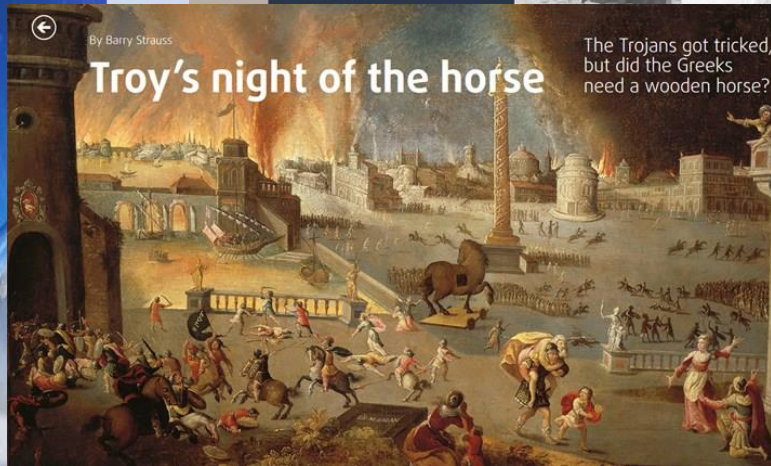
read more

Ready to read

By Barry Strauss

Troy's night of the horse

The Trojans got tricked, but did the Greeks need a wooden horse?




Communion of both elements. According to alternative interpretations bread and wine are types of spiritual drugs, which connect devotees to the mystical infinity, the souls of people long dead, the great beyond and supply them with information on the afterlife. However, for this the bread in itself is not enough, it only creates a mild hypnosis and does not lead to any enlightenment. What more radical Hussite groups were interested in were the secrets in letting loose the wild forces of nature. They renounced the cross as a symbol, which locked the gateway to the afterlife and went on

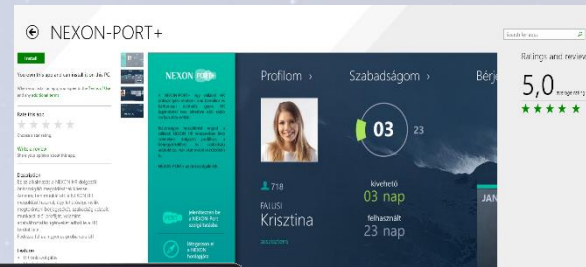
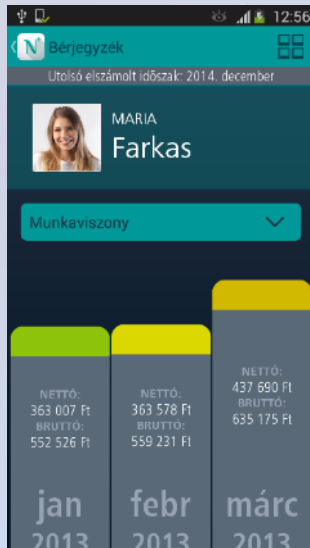
The rare late 15th century Jena Codex, a bible of the Hussite movement that promoted a church reform in Bohemia in the first half of the 15th century.

Did you know?

The Hussites believed that the final judgement would follow the second coming of Christ. All enemies of Jesus would die by the sword. All true soldiers would have to wash their hands in the blood of their enemies. All sinning cities would be obliterated; only six chosen ones would survive. Then God's thousand year kingdom would begin, in which men would share everything – including women. There would be no need for marriage, conception would occur without men's semen and women would give birth without pain. The children and their children would form a new, pure regeneration.




Mobile Applications



University based
innovation, knowledge transfer,
entrepreneurship, business development ...

DEMOLA
BUDAPEST



The project is supported by the European Union and co-financed by the European Social Fund.

BME Knowledge and Technology Transfer Office

Direct goals:

- Transparent processes and policies
- Shape up the appropriate organizational condition
- Providing services (IP protection and exploitation)
- Measuring and registering knowledge-pool and innovative results.
- Attractive research employment (workplace) in BME
- Competitive education
- Encouraging entrepreneurship
- Promoting start-up and spin-off setups
- Ensuring long-term collaboration with industry



Astaray
2151 1222

ImagineCup



Imagine Cup Academy

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www.imaginecup.com



Microsoft




European
Entrepreneurship
Foundation

DEMOLA
CONTEST





ImagineCup 

STARTUPVIP





Summary

We believe that these competences, the deep industrial experience, furthermore, the capabilities to integrate different research and development results and realize working systems, can make BME a really useful partner in 2020 ICT Lab projects.