Mobile speed in automotive
Mobile speed in automotive

Content

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What is BOSCH in Lund
BOSCH in numbers - Associates

RECORD 2015: 375,000 ASSOCIATES
17,600 NEW FACES AT BOSCH

Europe
230,000
+10,000 \(^1\)
of which
Germany
132,000
+3,600 \(^1\)

Americas
41,000
+2,700 \(^1\)

Asia Pacific \(^5\)
104,000
+4,900 \(^1\)

Source – Bosch Media Service

\(^1\) Change from previous year  \(^2\) Including other regions  \(^3\) Share of total headcount
BOSCH Divisions and Subsidiaries

Divisions

- Mobility Solutions
- Industrial Technology
- Consumer Goods
- Energy and Building Technology

Subsidiaries

- Bosch Energy and Building Solutions
- Bosch SensorTec
- Bosch Solar Services
- Bosch Connected Device and Solutions
- ESCRYP'T Security Consulting
BOSCH Lund Office

Divisions

- Mobility Solutions
- Industrial Technology
- Consumer Goods
- Energy and Building Technology

Subsidiaries

- Bosch Energy and Building Solutions
- Bosch SensorTec
- Bosch Solar Services
- Bosch Connected Device and Solutions
- ESCRYP'T Security Consulting

Lund Office:

- AE-EB
- AE-BE
- CM-C11
- CM-C12
- CM-C13
- CM-NE
- BDS
- ESCRYP'T
Examples of products Lund is developing
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- Accelerometer
- Gyroscope
- Magnetometer
- Humidity sensor
- Pressure sensor
- Temperature sensor
- Acoustic sensor
- Digital light sensor
Paradigm shift in automotive
Paradigm shift in automotive

Same paradigm shift as mobile industry happens in automotive:

- Increased use of software
- Increasing need of connectivity including software updates
- Increasing need of speed in development

http://www.informationisbeautiful.net/visualizations/million-lines-of-code/

http://www.techeconomy.it/2014/10/09/connected-car-rischi-legali-prossima-curva/
Paradigm shift in automotive

Using software development best practices

Waterfall

Monolithic architecture

Manual review and testing

Scaled agile framework

Modularized with API governance

Continuous Integration

http://www.scaledagileframework.com
Paradigm shift in automotive

Does not always work in automotive
Modularization Example

Monolith

HW
Modularization Example

User Interface

MW

HW
Modularization Example

User Interface

User Interface

MW

Bug

HW

Functional Safety Standards
Modularization Example

User Interface

MW

User Interface

MW

HW
Modularization Example
Modularization Example

Functional Safety Standards

- User Interface
- MW
- GPU
- HW

GPU

MW

User Interface

MW

GPU

HW
Benefits of Academia collaboration
2015: GROWTH THROUGH INNOVATION

- 5,422 first-filed patents in 2015
- 22 per working day
- EUR 6.3 bn spent on research and development (approx. 9% of sales)
- 55,000 associates in research and development
- 4,300 additional associates in research and development
- 118 research and development locations worldwide

*Includes all locations with at least 50 associates (as per Dec. 31, 2015)

Source – Bosch Media Service
The project consortium analyzed thoroughly the multicore challenges and suggested various solutions for the field of safety-critical and mixed-critical systems, for instance within software architecture.

http://www.projekt-aramis.de/
The project consortium analyzing and suggesting solutions for highly automated driving.

http://www.ko-haf.de
Project UR:BAN

The project consortium is researching and developing advanced driver assistance and traffic management systems for cities. The focus is on the human element in all aspects of mobility and traffic.

http://urban-online.org
Examples of research areas

- Project Steering
- Requirement Engineering
- Architecture
- Verification and Validation
- Toolchain and Automation
- Documentation and Traceability
Thank you!