The GAL Middleware Platform for AAL
A Case Study

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The GAL Middleware Platform for AAL - Agenda

- Introduction: Research network
- Use cases
- Architecture overview: MSHP
- Infrastructure services
- Summary
- Future work

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What the hell means "GAL"?

German Project "GAL"

- **G** estaltung
- **A** ltergerechter
- **L** ebenswelten

"Design of Environments for Aging"

- Research project
- Funded by the state of Lower Saxony
- Interdisciplinary approach

Quality of Life in the Aging Society

- Independence within one's own residence

- Identification of threats

- Development of systems for assisting
  - Elderly people
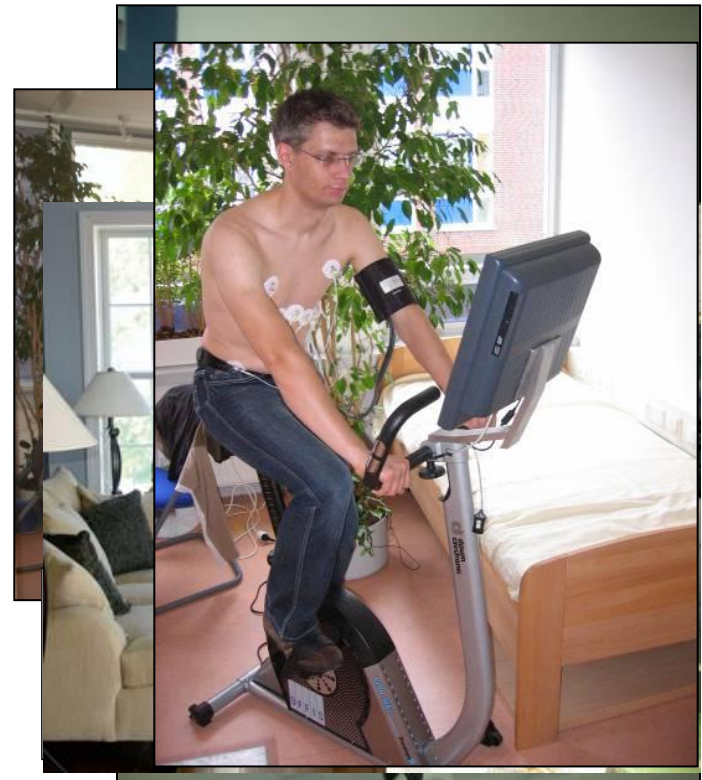 - Relatives
  - Caregivers

- Support of care structures

Exemplary Assisting Systems

1. Personal Activity and Household Assistant
2. Monitoring of Sports Activities
   in Prevention and Rehabilitation
3. Sensor-based Activity Determination
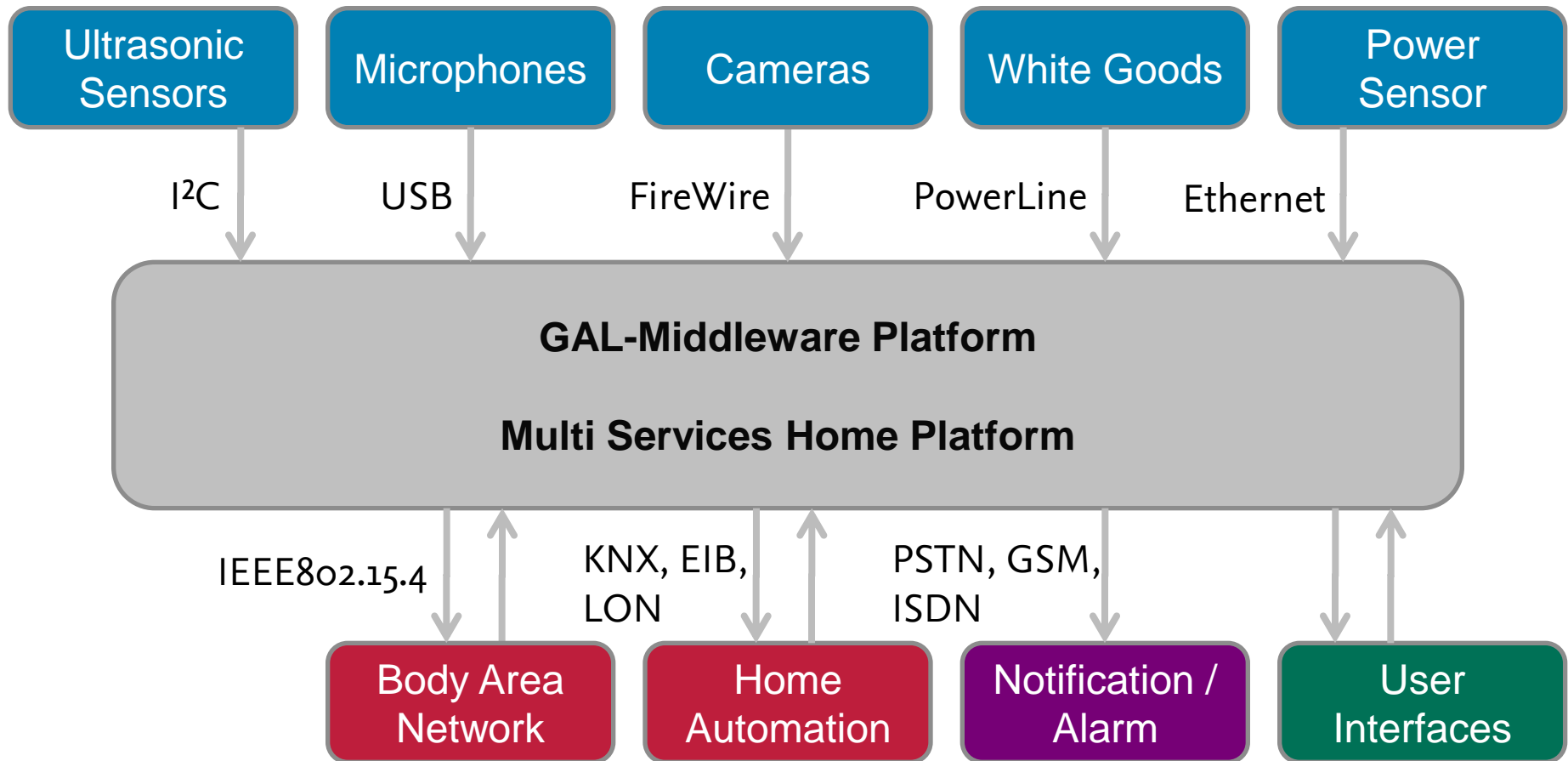4. Sensor-based Fall Prevention
   and Fall Recognition

All running on the same platform

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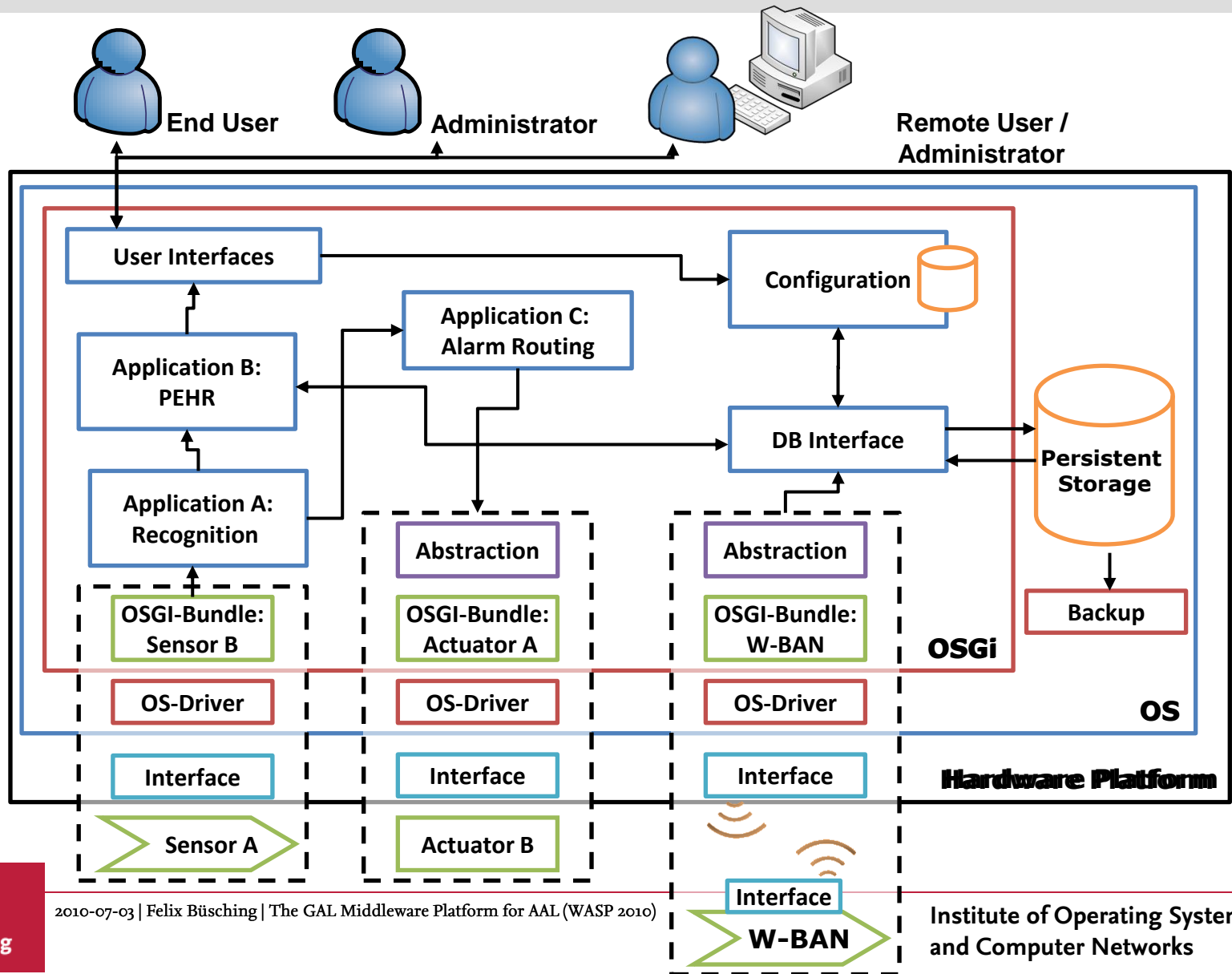and Computer Networks**

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2010-07-03 | Felix Büsching | The GAL Middleware Platform for AAL (WASP 2010)

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The GAL Middleware Platform:
Multi Services Home Platform (MSHP)

Ultrasonic Sensors	Microphones	Cameras	White Goods	Power Sensor
I²C	USB	FireWire	PowerLine	Ethernet

GAL-Middleware Platform

Multi Services Home Platform

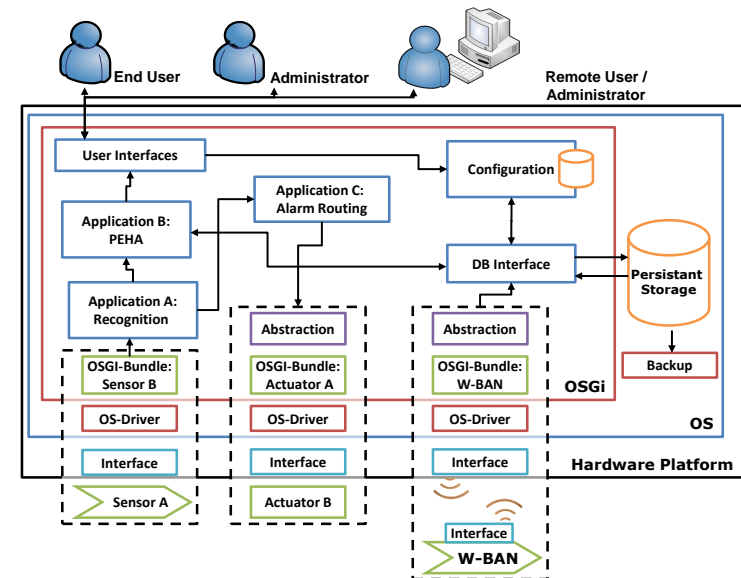| IEEE802.15.4	KNX, EIB, LON	PSTN, GSM, ISDN	
Body Area Network	Home Automation	Notification / Alarm	User Interfaces

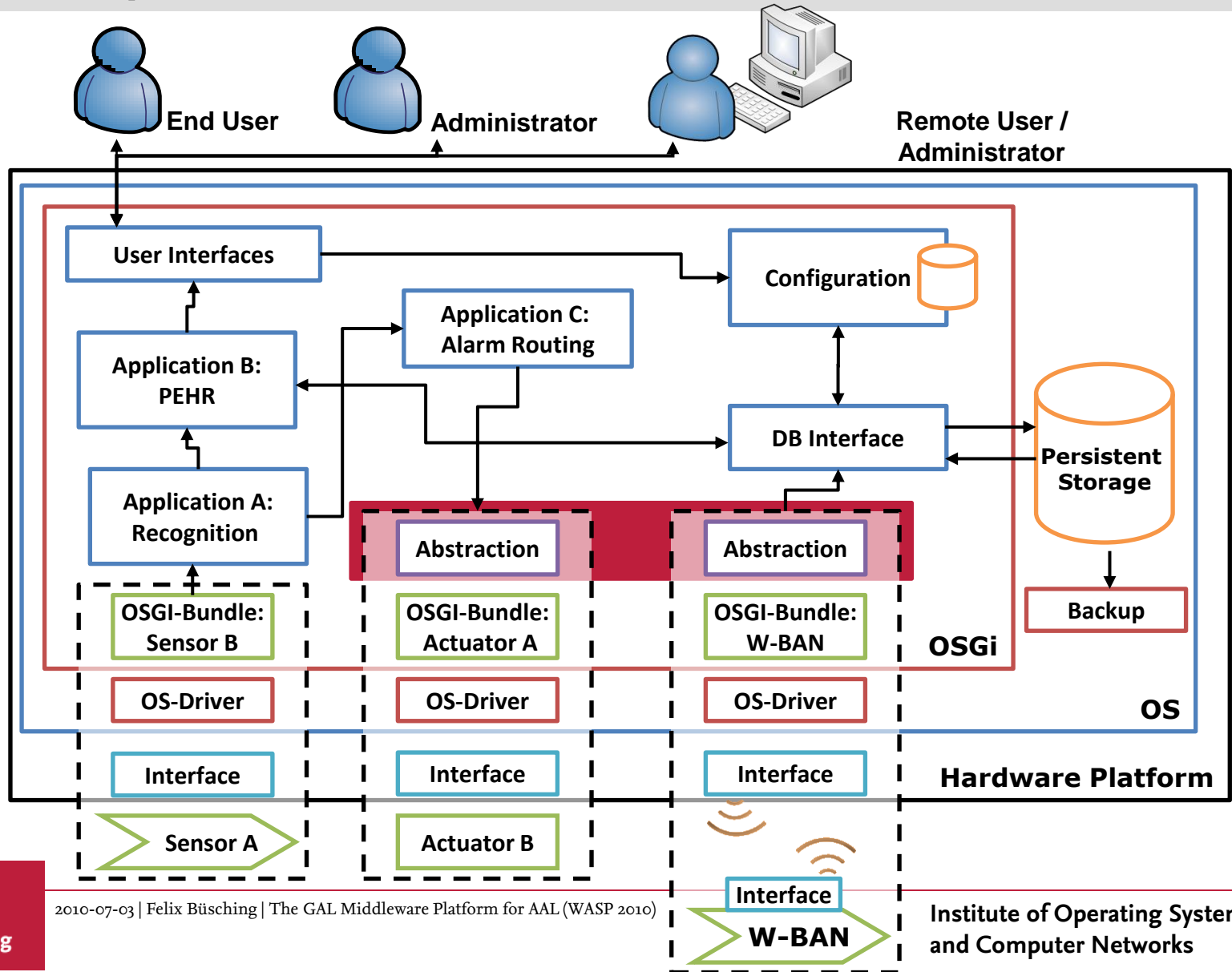# Inside the MSHP:
System Architecture

System Architecture

- Center of Integration: OGSi Service Platform
  - Service oriented
  - Requires JAVA-VM
  - Operating-system independent

- Functionality realized through bundles
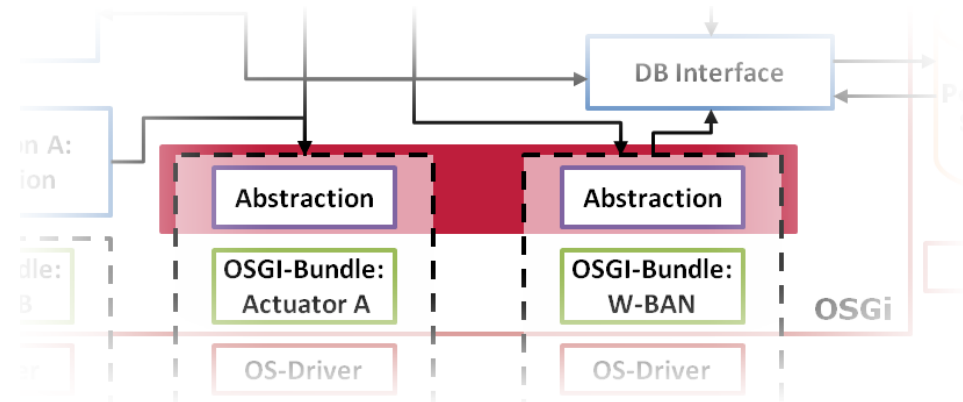 - Modular
  - Flexible

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Abstraction Layer

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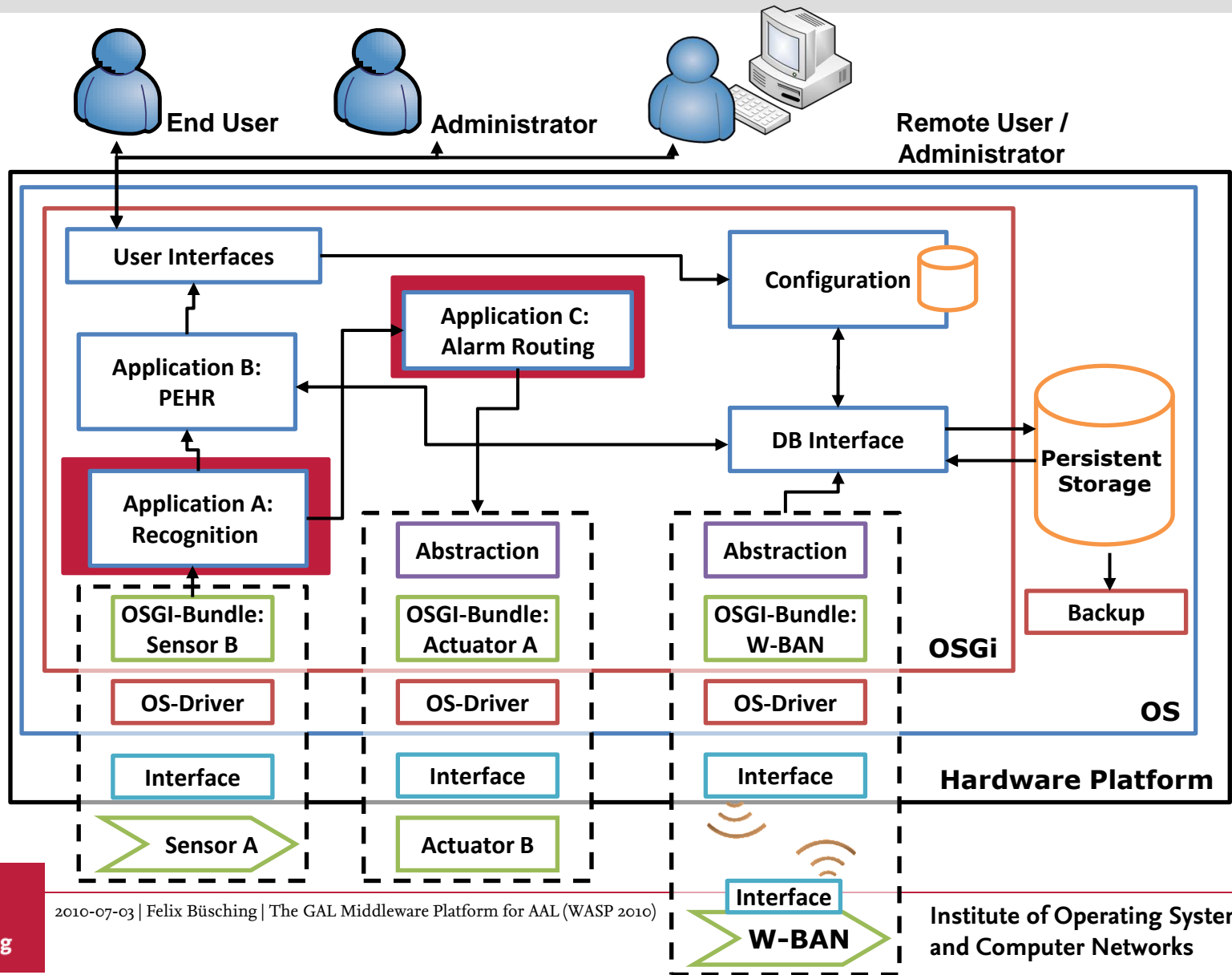and Computer Networks

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Abstraction Layer

- **Standardized set of values**
  - Applications don't care about specific
    - Instruction sets
    - Data formats

- **Handles vendor specific peculiarities**

- **Combined localization**
  - IR-Detectors
 - Cameras
  - Ultrasonic sensors
  - etc.

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Infrastructure Services I: Recognition and Treatment of Events

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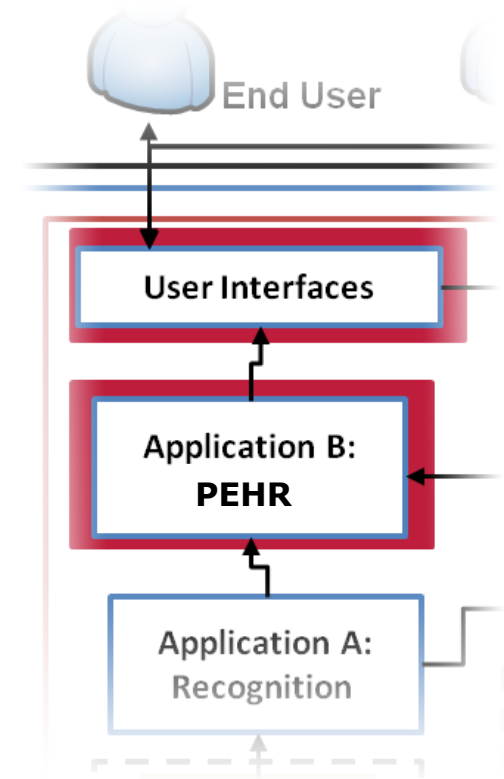# Infrastructure Services II: Persistent Storage and Backup
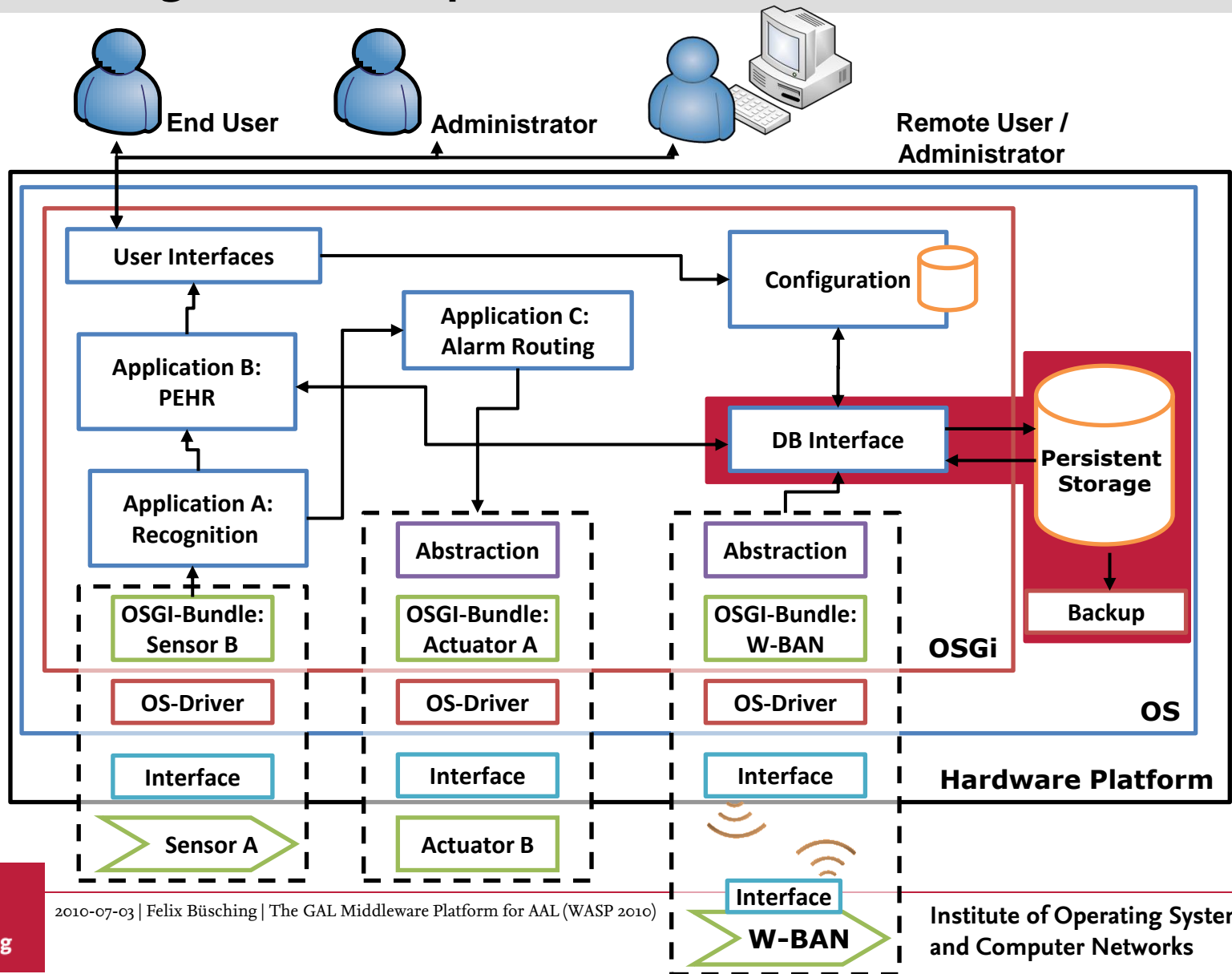
Infrastructure Services III:
Personal Electronic Health Record (PEHR)

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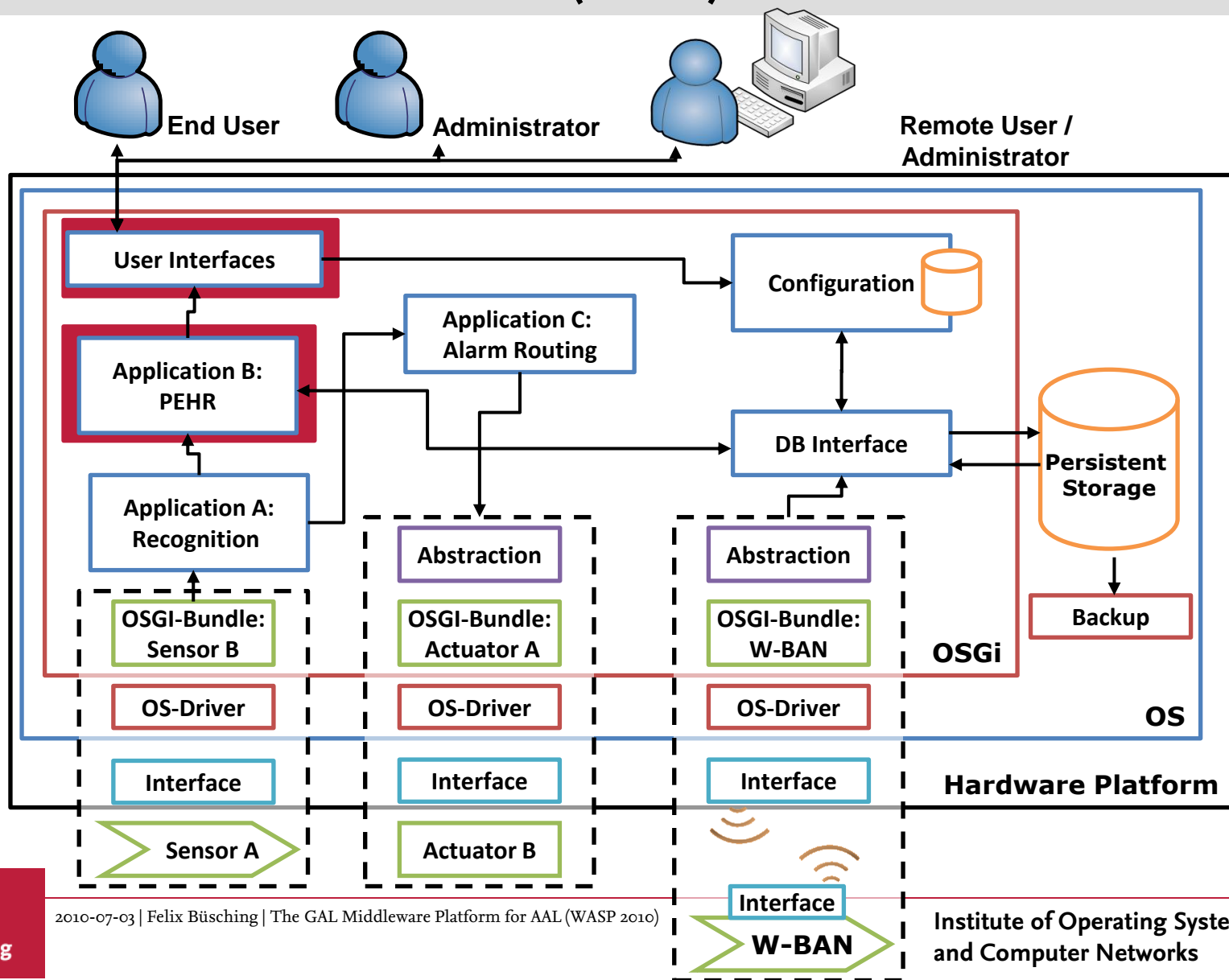
Infrastructure Services III:
Personal Electronic Health Record (pEGA)

- All data stays inside the system

- User decides what happens with the data
  - Privacy
  - Security

- Different views for different applications

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Summary

The GAL Middleware Platform for AAL

- OSGi-based

- Modular

- Service oriented

- Many functionalities integrated

  - Abstraction layer
  - Recognition of events and alarm routing
  - Persistent storage
  - Personal electronic health record with rights management

- Shown on CeBIT 2010 in Hanover
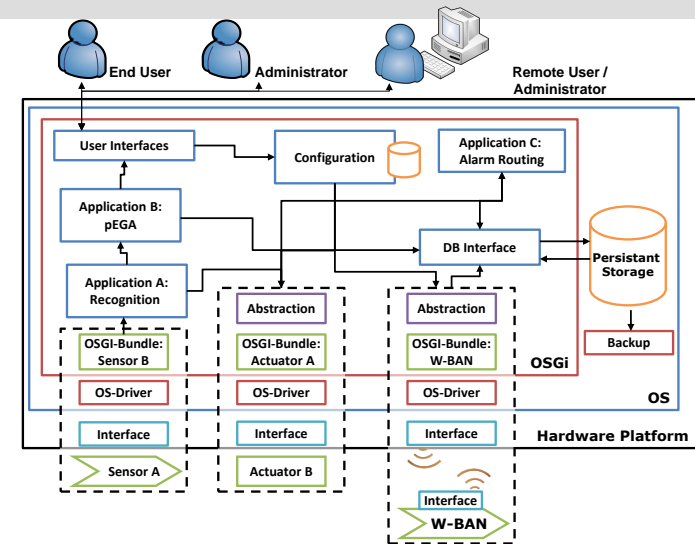
Future Work

Integration

- Set up full demonstrators for presented use cases

Evaluation

- Verify practicability and use
- Define a suitable set of sensors

Thank you for your attention!
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