

Smart Homes – From Research-Ideas to Market-Success

The Integration Concept of the inHaus-Center

HOW SMART IS SMART ?

Critical success factors for smart surroundings,
ambient intelligence and embedded systems

Netherlands Science & Technology
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Klaus Scherer scherer@ims.fraunhofer.de

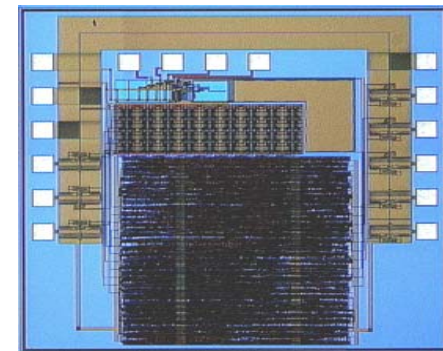
Head of Systems & Applications Department Fraunhofer-IMS Duisburg
www.ims.fraunhofer.de
and Fraunhofer inHaus-Center Intelligent House Systems
www.inhaus-duisburg.de

Complicated calculations
for fresh air for a good working
atmosphere !?

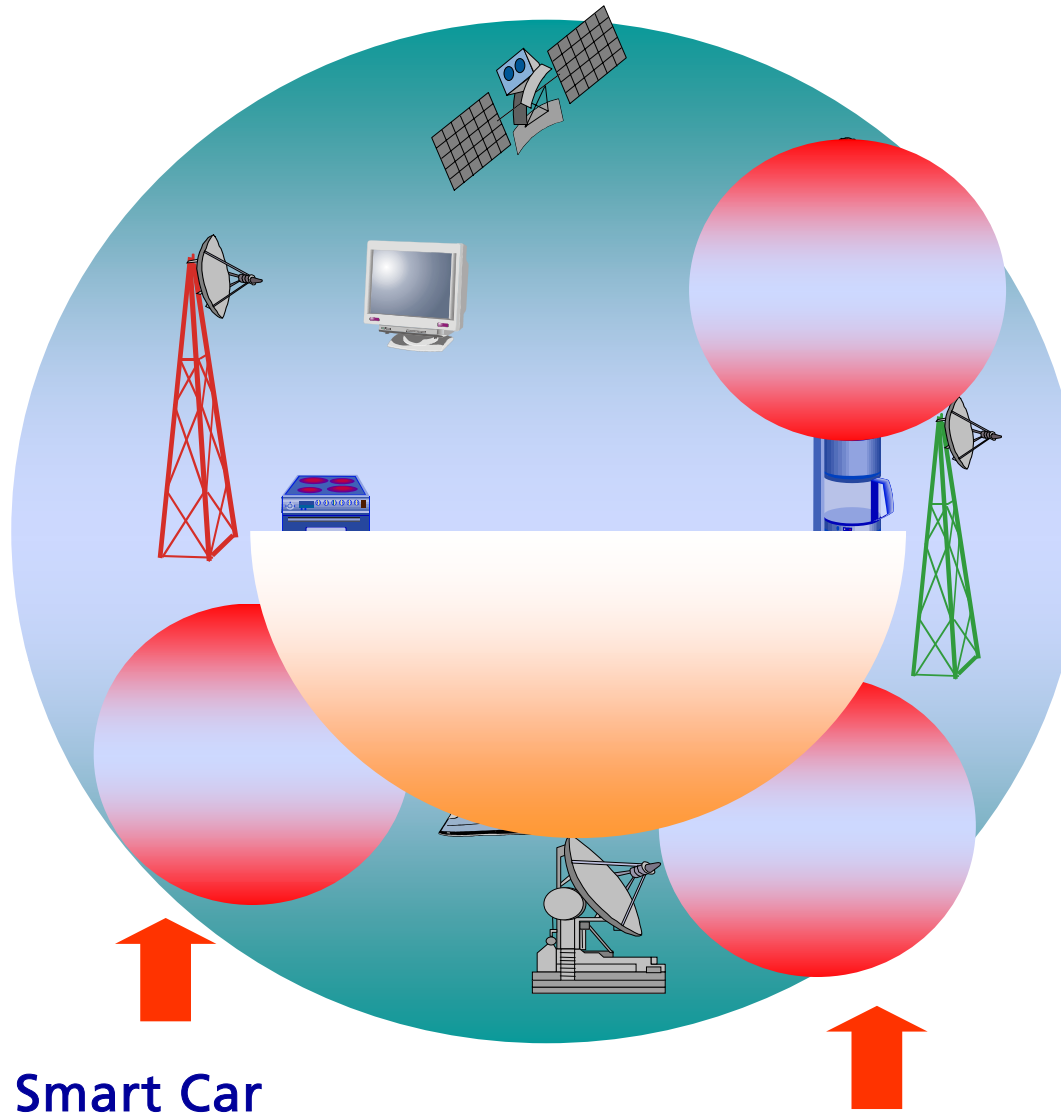


The smart
alternative:

**embedded
networked
intelligence**
in windows by
microelectronics



Multisphere-Concept for SmartEnvironments & Ambient Intelligence

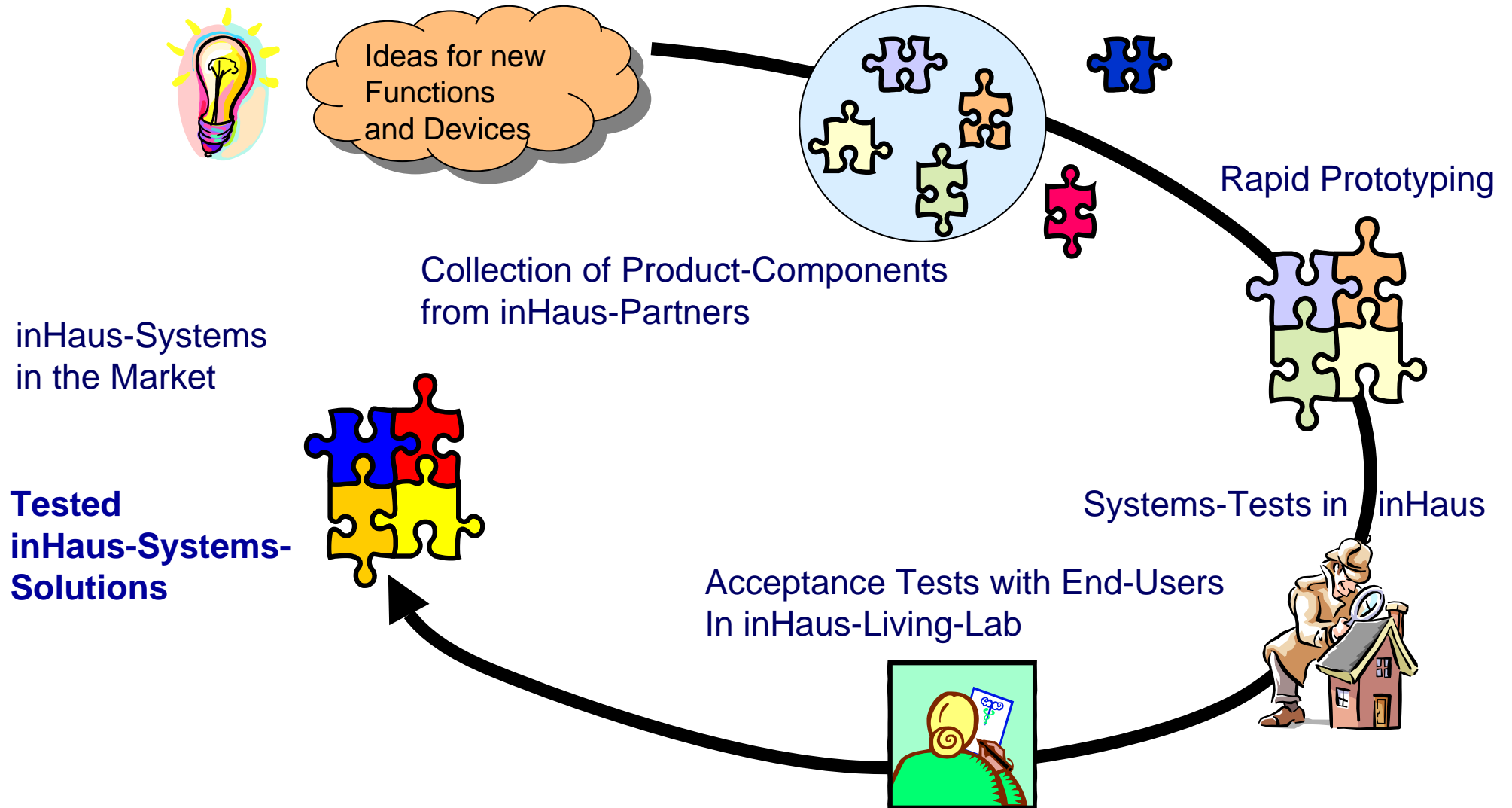


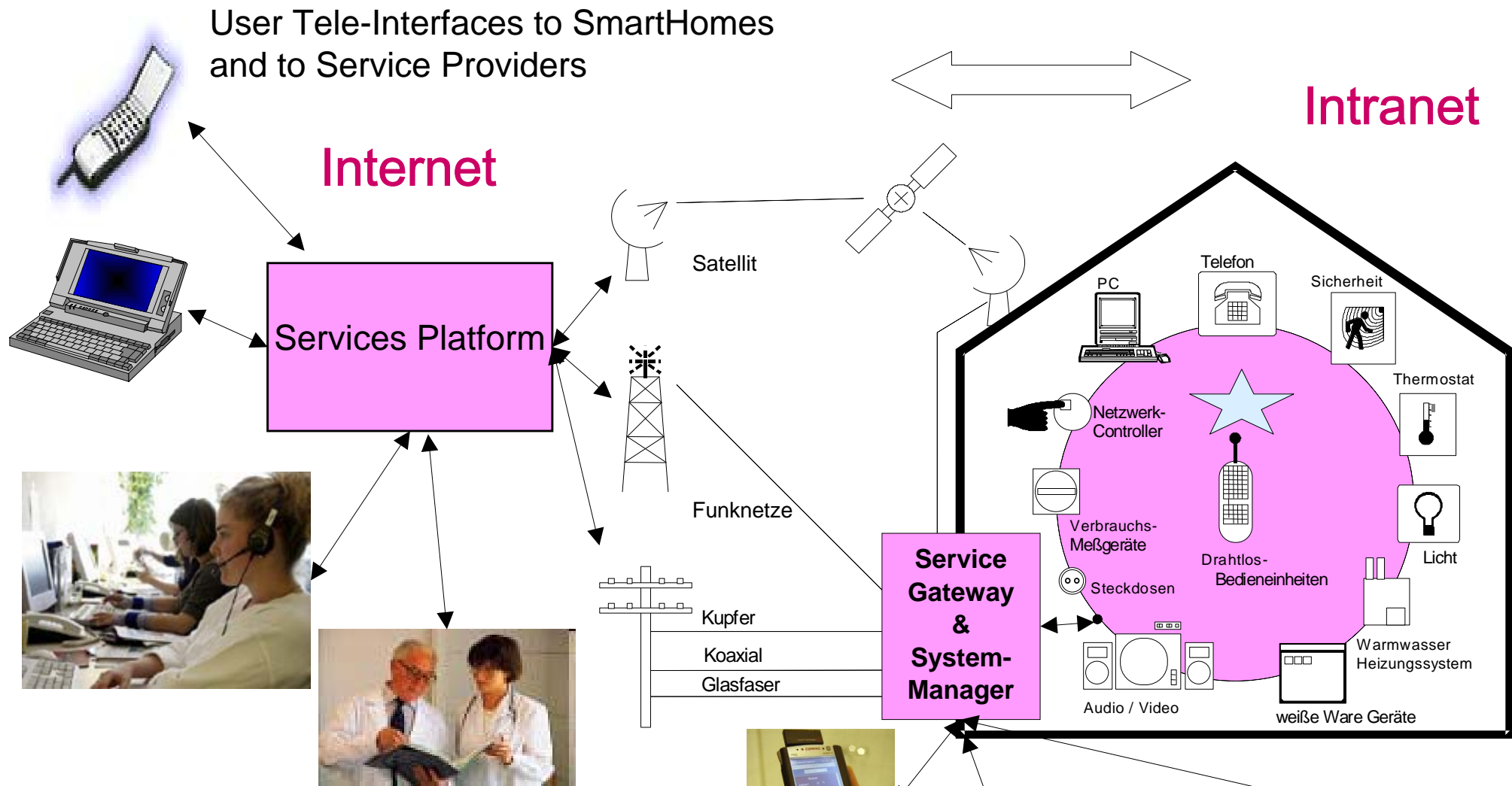
Smart Car

Smart House

- MultiSphere Level ①:*
The PAN (Personal Area Network)
- MultiSphere Level ②:*
The Immediate Environment
- MultiSphere Level ③:*
Instant Partners
- MultiSphere Level ④:*
Tele Accesses
- MultiSphere Level ⑤:*
Cyber World

inHaus-Design-Cyclus for Systems-Integration





Tele Assistance-Service-Functions

Local Assistance-Service-Functions



Source: Fraunhofer-IMS

Living Workshop

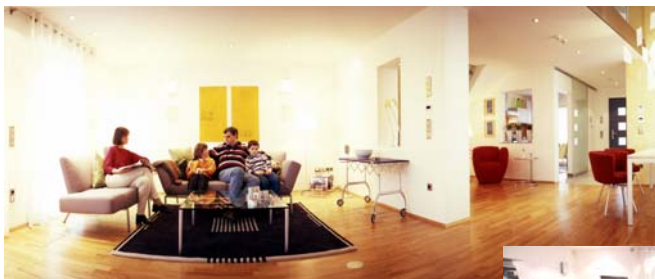
- **SmartHome-Lab** with 7 living rooms, home office, smart car, smart garden
- Application and acceptance tests of novel networked devices **in real life**



Technical Service-Workshop

- **Operation and maintenance center**
- **Development and test labs** for novel networked smart devices

in Duisburg

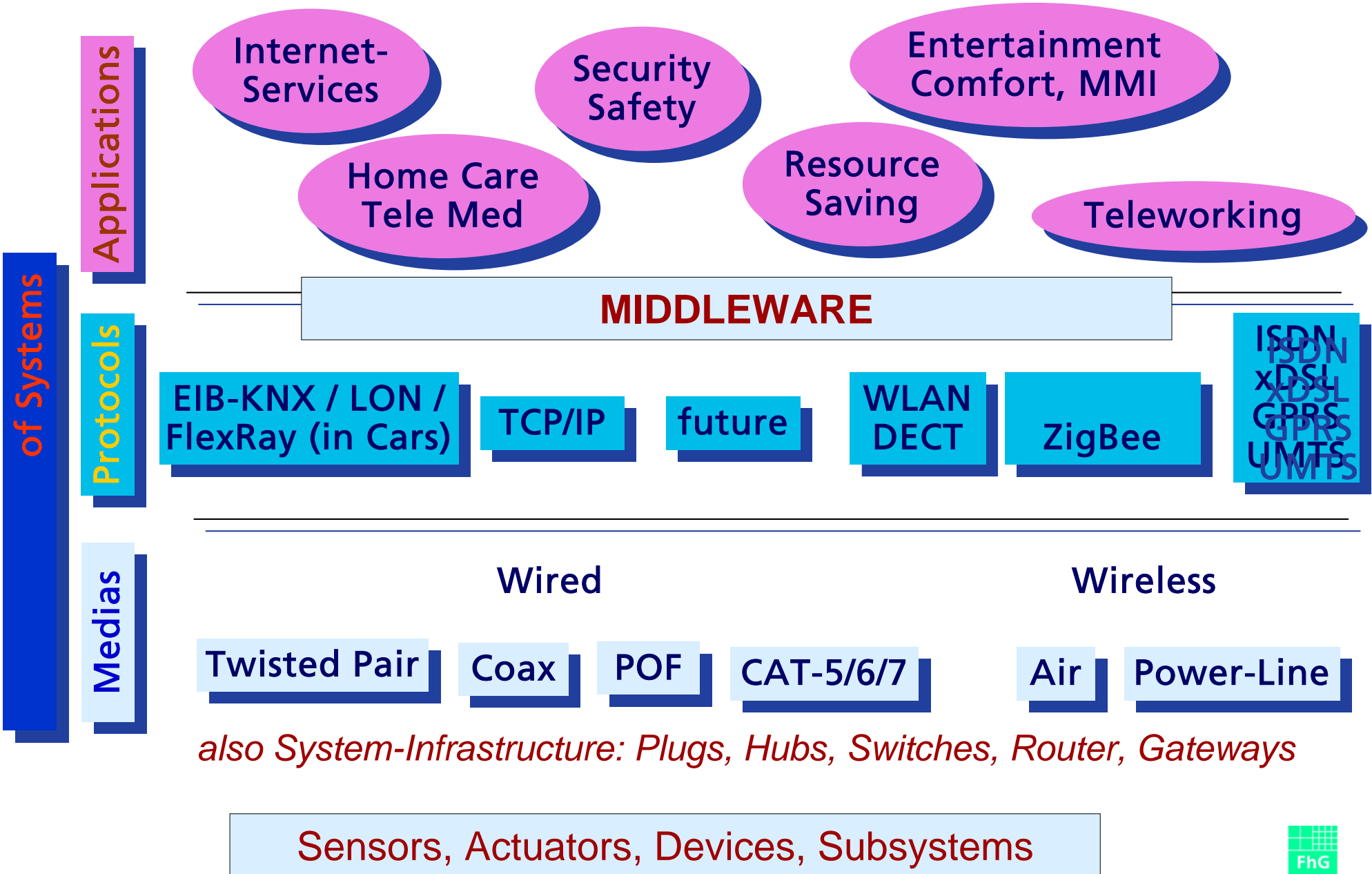


Additionally Test- & Demo-Facilities:

- SmartGarden
- SmartCar

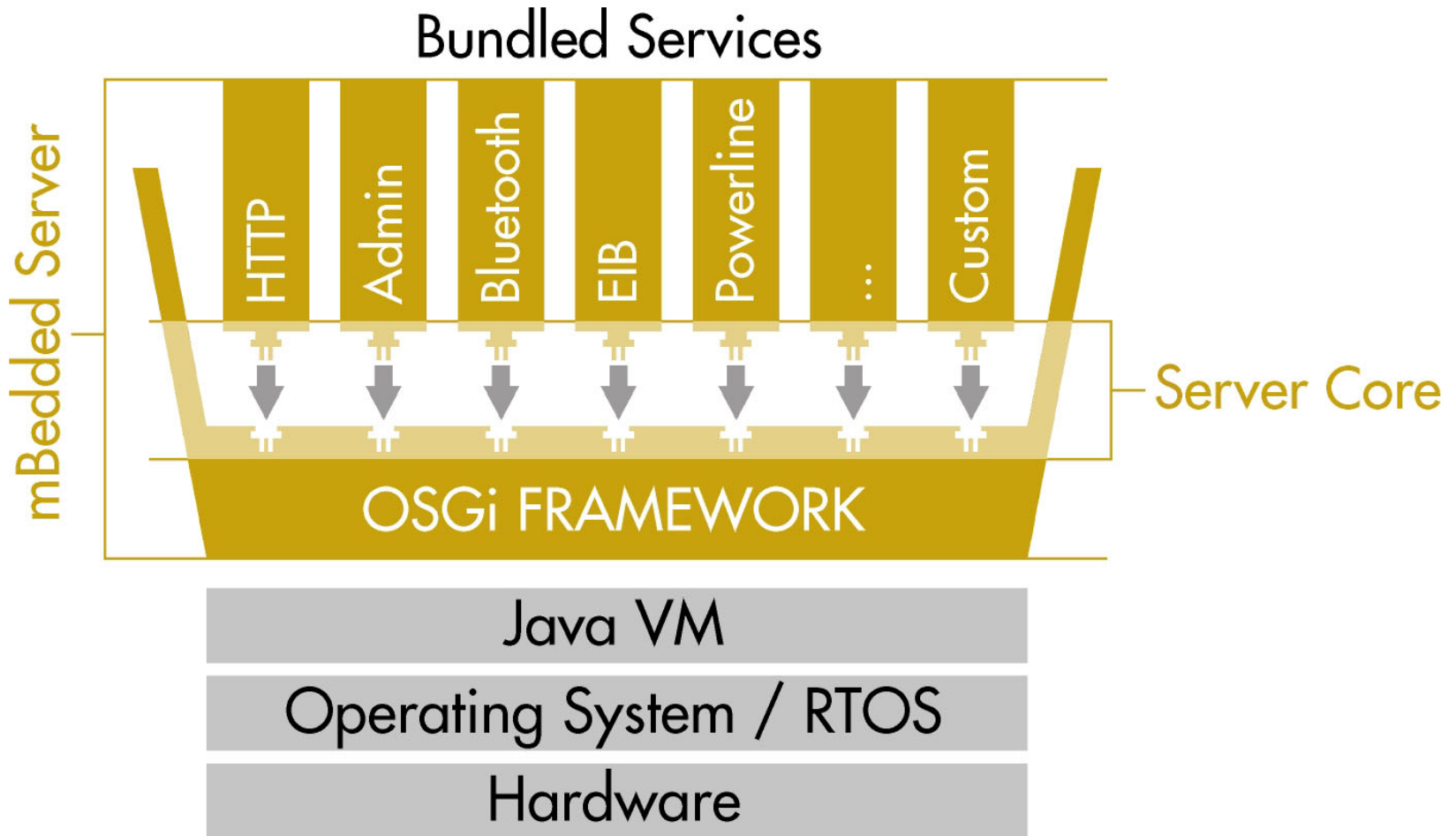


inHaus-Systems-Architecture from Network to Application

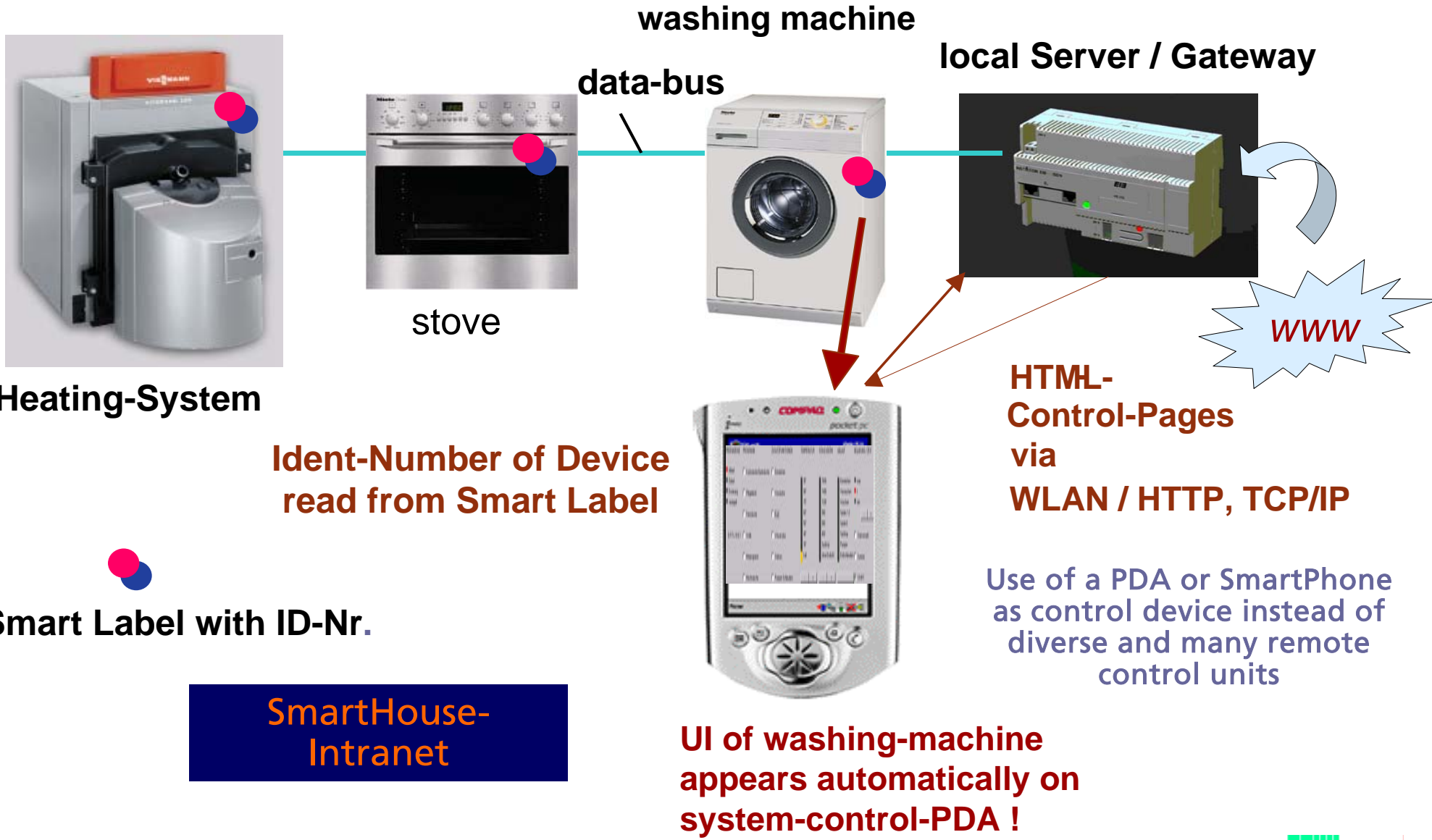


Open-Communication-Bundles

Custom: Local Application and Tele-Service-Bundles

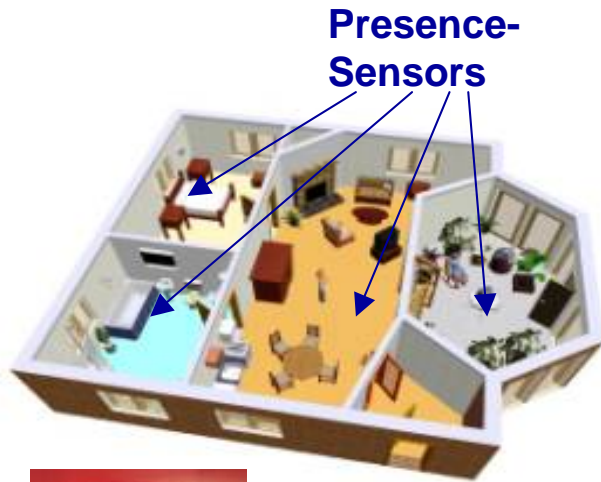


Appl.- Example: Intranet und Smart Label based System-Control



SmartHouse-Intranet

Example: Emergency-Detection for Senior-Apartments



System-Equipment

- networked Presence-Sensors in all Rooms
- Home-Server / Service-Gateway for Movement-Profile-Monitoring of Persons
- real-time Comparison of actual with typical Profile for smart Emergency-Detection

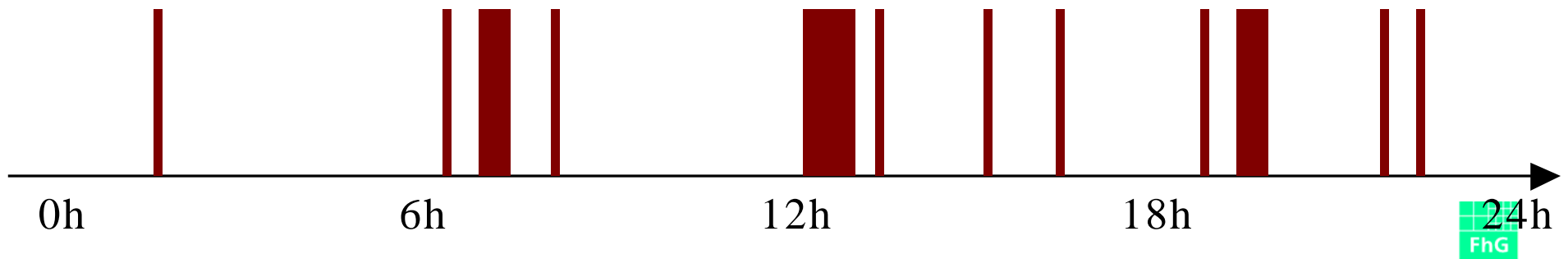


Applications:

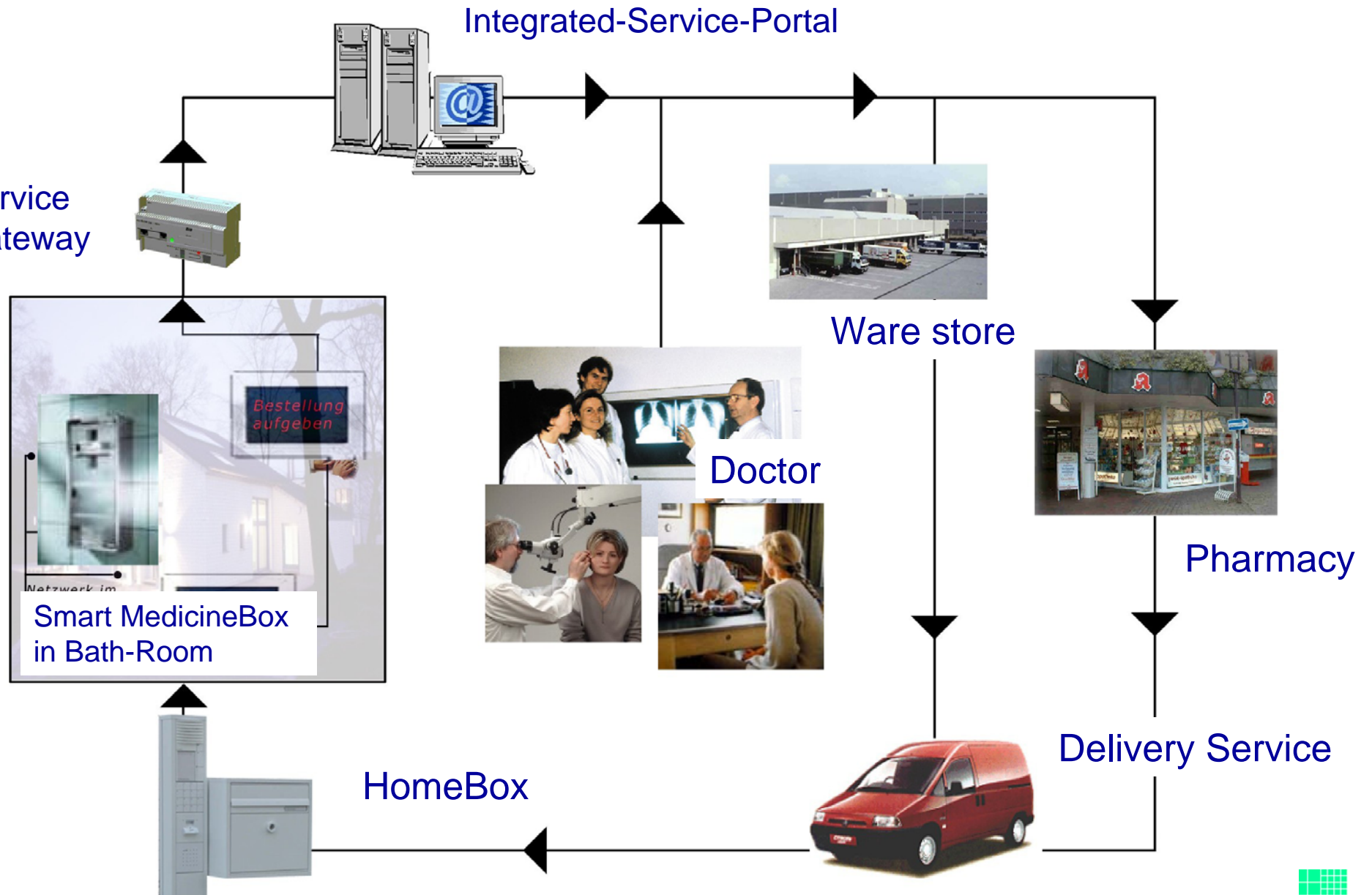
- automatic Emergency-Detection and Notification
- additional application: support of single-room temperature management



Typical 24 hrs. Movement-Profile for the Kitchen



inHaus-Example SmartService for Senior-Care: Medicine Supply



- ❑ Intelligent homes, cars, etc. are parts of the connected lifestyle (Networked Living); assistive functions and services will play the main role (ambient intelligence)
- ❑ The market has a high potential but is not well developed today
- ❑ Integrated service platforms are required for network based service delivery
- ❑ Open integration standards, open competition, and free choice for the end-user will drive this market
- ❑ inHaus is to overcome the former market barriers with an integrated concept of cooperative, integrated R&D and marketing
- ❑ The main goal of inHaus-Center is to serve as a market opener, technology driver, R&D provider and as a coordinator for the cooperative system marketing
- ❑ In the first years of operation since 2000 a lot of progress in this direction has been made
- ❑ **Potential partners in NL, EU, USA, Asia are welcome to cooperate with Fraunhofer-inHaus-Center !**

- **Research:**

Fraunhofer-Institutes: IMS, ISST, IBP, ISE, IAO, IML, UMSICHT, IPA, IDMT;

Universities: Duisburg, Dortmund, TU Munich, TU Berlin, TU Dresden,

Industry: Philips, Microsoft, France Telekom, Telefonica, Intel, VW, Deutsche Telekom, Miele, Fagor,

- **Product Development:**

Miele, Viessmann, Merten, Busch-Jäger, Winkhaus, Siedle, Siemens, VW ...

- **Testing, Demonstration, Market Research:**

Sony, VW, Intel, Deutsche Telekom, Honeywell, Siedle, Viessmann, Miele, Honeywell,

- **Application and Pilot-Market:**

Intel, Microsoft, 20-Firms-Marketing-Network, mostly SME; Real-Estate-Economy Germany; inHaus: spin-offs: inHaus GmbH, serWo GmbH

inHaus-Homepages:

www.inhaus-duisburg.de
(R&D-Innovation-Center)
www.inhaus.de
(Realisation, inHaus GmbH)

inHaus-Contact:

Dipl.-Ing. Klaus Scherer
scherer@ims.fhg.de
Dr.-Ing. Viktor Grinewitschus
grinewit@ims.fhg.de

inHaus-Center

Integrated Research, Development, Testing, Marketing
for Integrated & Intelligent Room- & House Systems in the Fields of Working and Living

inHaus-Innovation-Center

Column 1 Research



New Ideas, Concepts,
for Technologies,
Demonstrators, Products
and Applications

Column 2 Development



New Prototypes, Products,
Systems-Solutions,
Applications

Column 3 Test- & Demo



Smart
Living
-Lab
Smart
Working
-Lab

Test & Demo of new
Products, Systems-Solutions,
Applications, Services
in real
Living & Working Environments

Column 4 Marketing & PR



Marketing for Systems-
Solutions, Planning- &
Installation-Services,
further Education, PR,
Coordination of Partners

