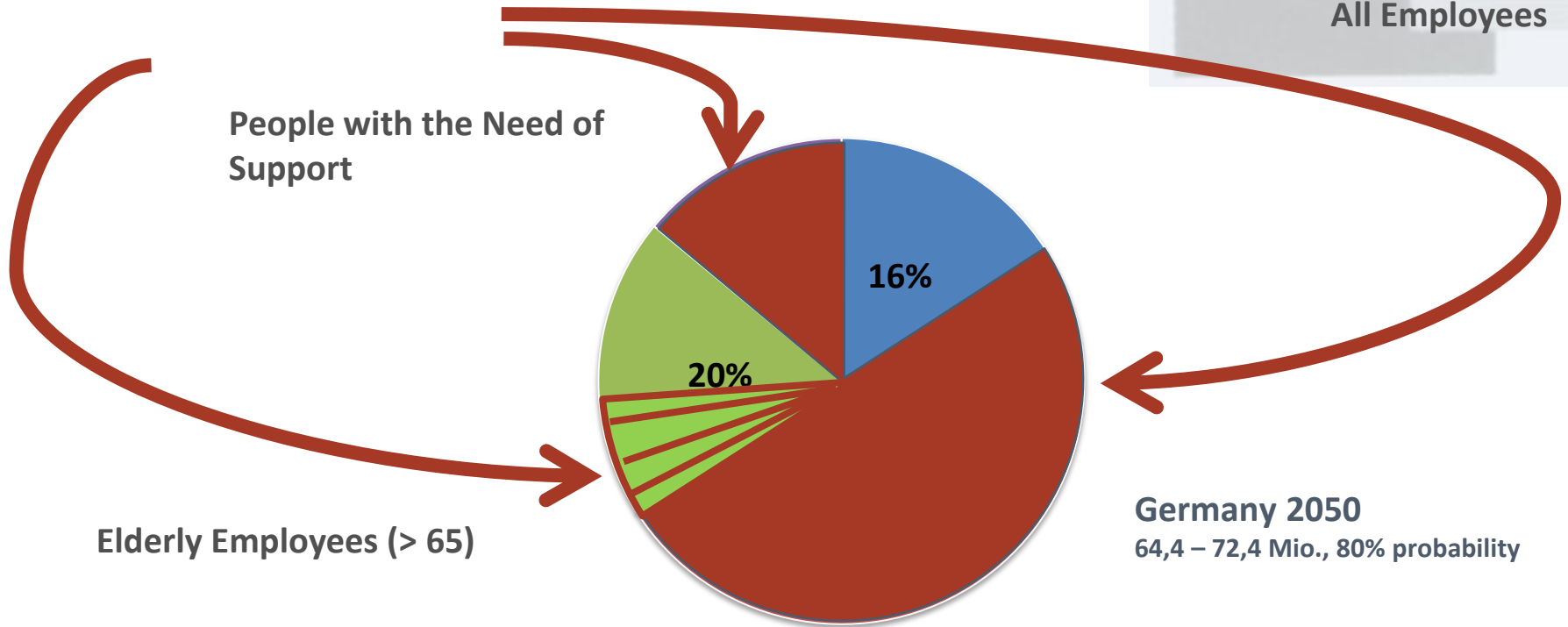## Technology

Well-being in Ageing Societies: Perspectives from China, Germany and Japan

23. – 25. October 2013, Beijing

Birgid Eberhardt
(Sibylle Meyer)

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Addressing Assisting Technologies

Informal and professional Care Givers All Employees

People with the Need of Support

16%

20%

Elderly Employees (> 65)

Germany 2050
64,4 – 72,4 Mio., 80% probability

Statistisches Bundesamt (2009): 12. koordinierte Bevölkerungsvorausberechnung
G. Dobelhammer (2012): in J. W. Vaupel (Hrsg.): Demografische Forschung aus Erster Hand, Max-Planck-Institut für demografische Forschung, Rostock
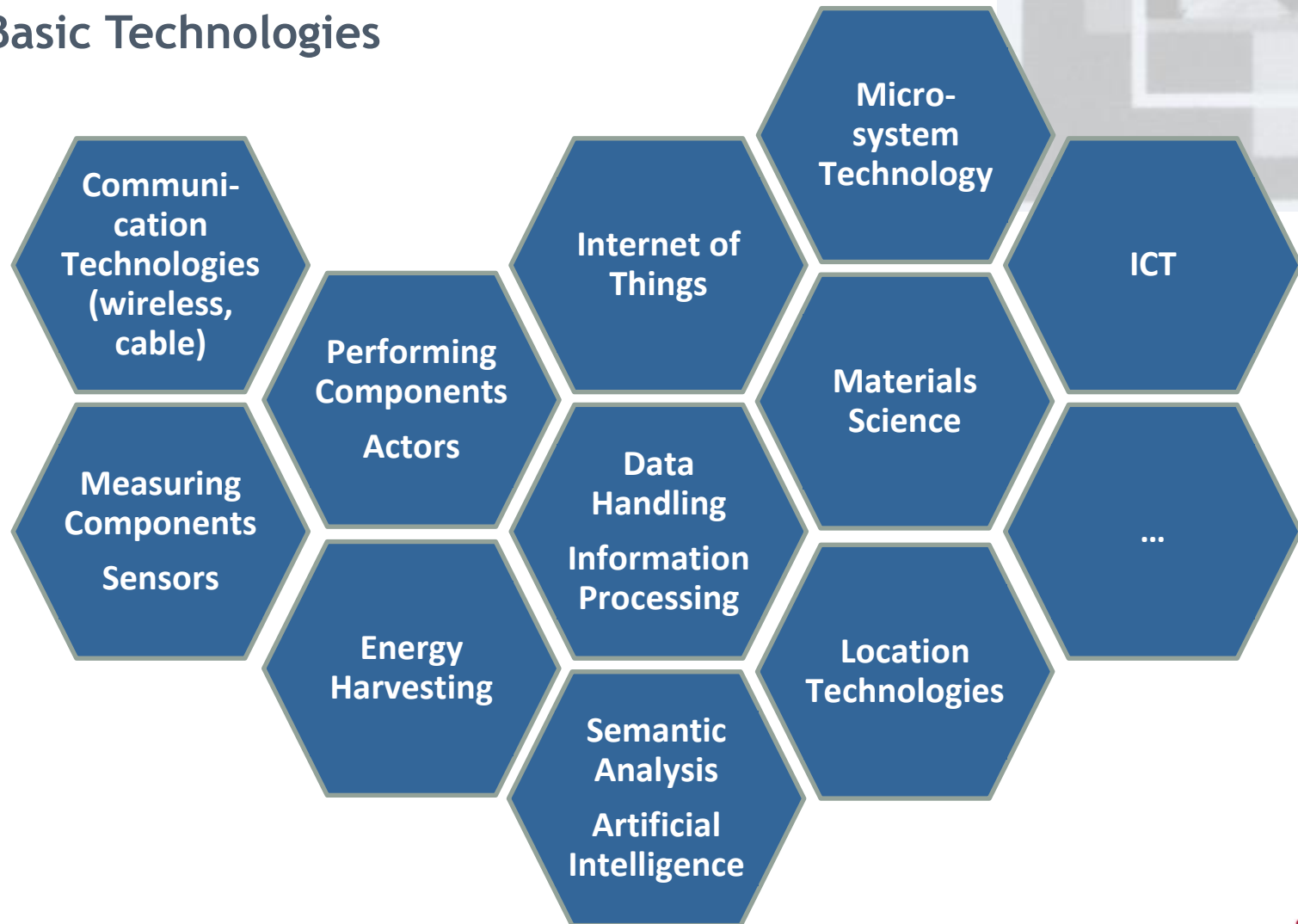Statistisches Bundesamt (2013): ZENSUS 2011.,Wiesbaden

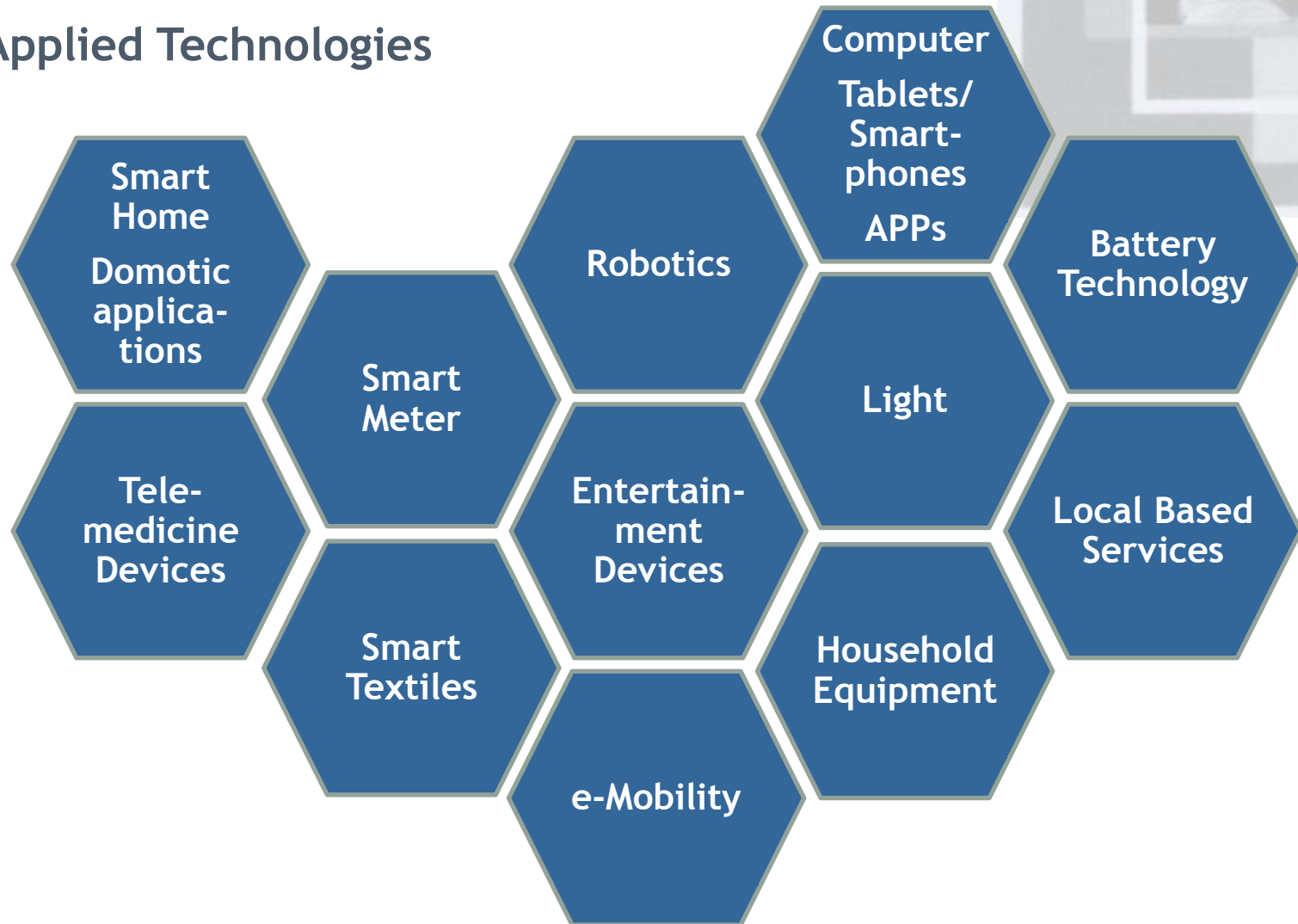# Technologies in a Concert of Approaches Easing the Societal Changes

Encourage-ment of Volun-teering

Prevention Support for Self-Help

Acquisition of Foreign Professio-nals

New Forms of Habitation

Health in High Age

Company Health Manage-ment

Compati-bility of Family, Care and Job

Encourage of Work-Life-Balance Concepts

Technology Based Assisting Solutions

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What kind of technologies can contribute to successful ageing and/or active ageing?

1. Basic Technologies

- Communication Technologies (wireless, cable)
- Measuring Components — Sensors
- Performing Components — Actors
- Energy Harvesting
- Internet of Things
- Data Handling — Information Processing
- Semantic Analysis — Artificial Intelligence
- Micro-system Technology
- Materials Science
- Location Technologies
- ICT
- …

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What kind of technologies can contribute to successful ageing and/or active ageing?

2. Applied Technologies

- Smart Home Domotic applica-tions
- Computer Tablets/ Smart-phones APPs
- Battery Technology
- Robotics
- Smart Meter
- Light
- Tele-medicine Devices
- Entertain-ment Devices
- Local Based Services
- Smart Textiles
- Household Equipment
- e-Mobility

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What kind of technologies can contribute to successful ageing and/or active ageing?

3. Adoption and Services

Pyramid 1	Pyramid 2
(Human) Services	**Who will come to help?**
Individual Rules	When is person normally getting up? Who should be informed?
Technology	Is measuring time. Is able to discover a fallen person.

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What kind of technologies can contribute to successful ageing and/or active ageing?

4. Design, Acceptance, Interoperability, Availability in the Market

- **Solutions** (including technology and services) designed from the **requirements** and **needs** of the potential **users**: **Acceptance** through the recognition of the **benefit**!
- **Interoperability** is necessary for complex solutions.
- **Point of Information, Point of Sale** with a presentation of solutions
  - Not single goods: More "Living Room" than "Bookshelves", "Sofa", "Arm Chairs"
  - Specialized sales people
  - With a chance to see, touch, try, smell, being amazed, being emotional affected

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What kind of technologies can contribute to successful ageing and/or active ageing?

5. Solutions for different fields

Safety

Support in Daily Life

Communi-cation
Social Participation

Handling Diseases
Support of Rehabilitation

Mobility

Fun
Wellness
Fitness
Prevention

Foster Care

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What kind of technologies can contribute to successful ageing and/or active ageing?

5. Range of Solutions

Gadgets, Devices (cheap, easy)

- **Orientation light**
- **Automatically switching off Iron**
- **e-book-reader**

Devices with the Need of Configuration

- **Systems for disorientated people (Geo fencing)**
- **Pill/Medication dispenser**

Devices with Need of Support for Installation (Craftsman)

- **Self extinguishing cooking stove**
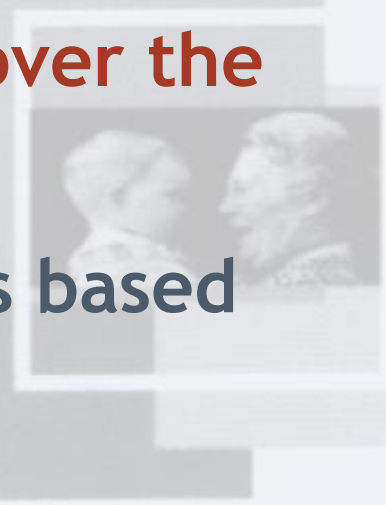- **House automation systems, central switch off**
- **Washlets**
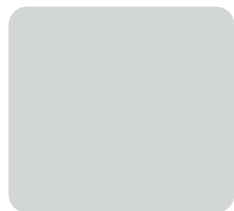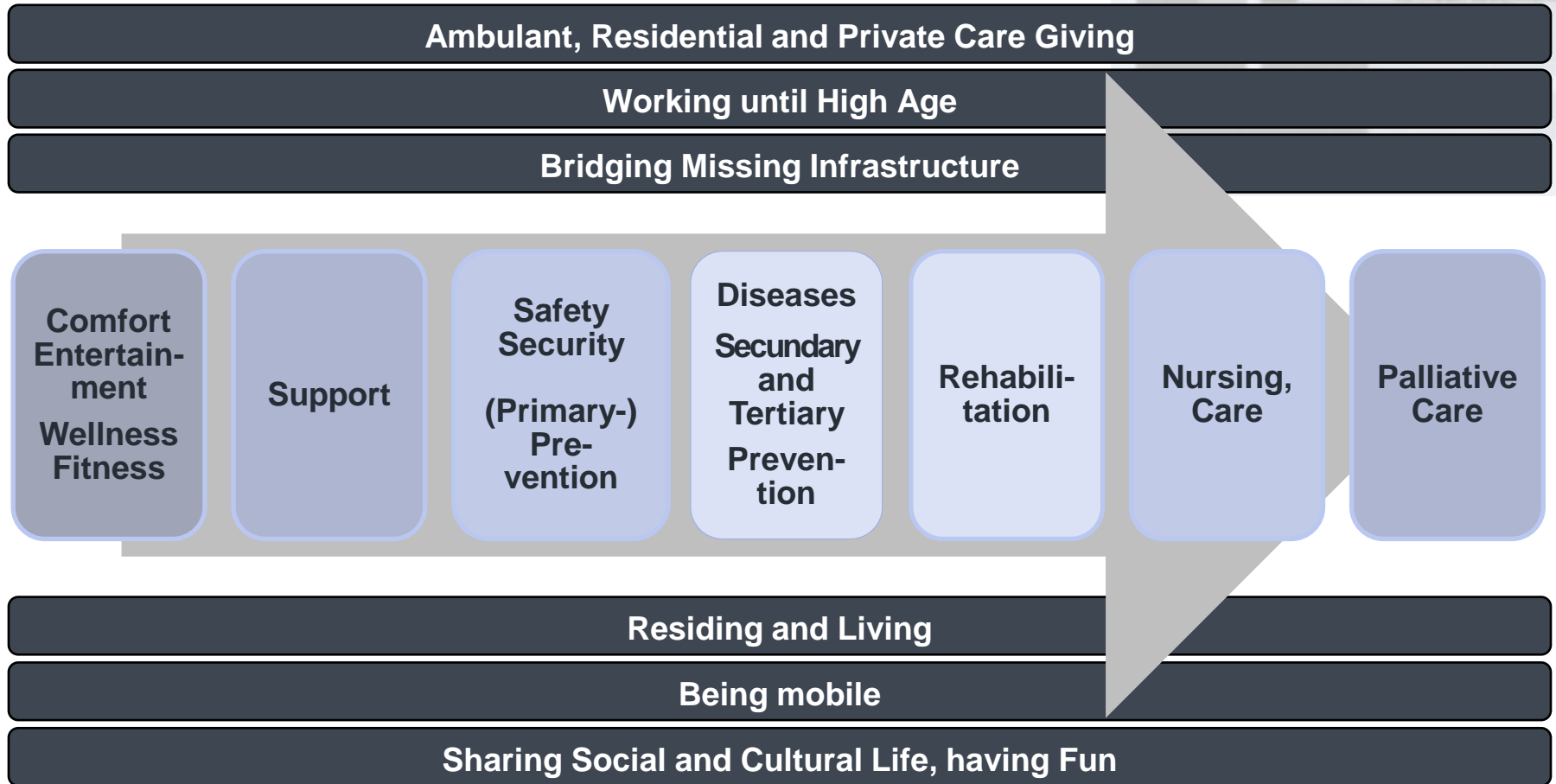
Devices with Need of Services

- **All sorts of Emergency Alarms**
- **Telemedicine Devices**

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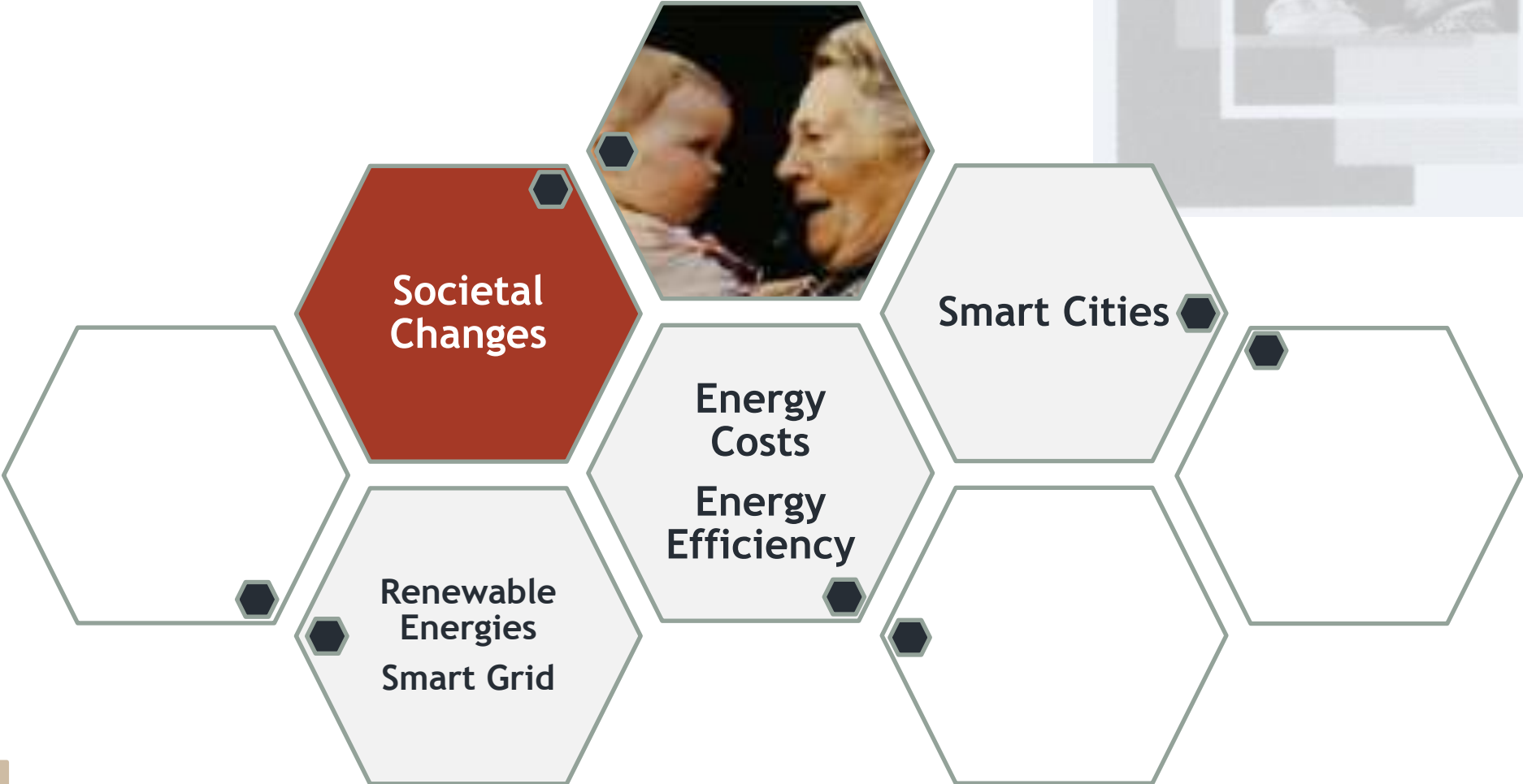# How do technologies affect well-being over the life course?

- **To serve over the life course solutions based on technology have to be**
  - Modular: add components, add services
  - Adaptable to changing requirements: change configuration, add more or change to different components
  - Requirements: interoperability between components and even services; data security and safety
  - Development of answers to ethical questions
- **Perspective for solutions: Cross Generation, supporting the life course.**

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How do technologies affect well-being over the life course?

Ambulant, Residential and Private Care Giving
Working until High Age
Bridging Missing Infrastructure

Comfort Entertain-ment Wellness Fitness	Support	Safety Security (Primary-) Pre-vention	Diseases Secundary and Tertiary Preven-tion	Rehabili-tation	Nursing, Care	Palliative Care

Residing and Living
Being mobile
Sharing Social and Cultural Life, having Fun

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Drivers for Smart Technologies

Societal Changes

Smart Cities

Energy Costs

Energy Efficiency

Renewable Energies

Smart Grid

Birgid Eberhardt 2013 ©

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Summary

- **Approaches to deal with challenges caused by the demographical and societal changes are addressing not only the aged but all societal groups.**

- **Major solutions are based on new or adopted technologies, often in combination with new or optimized services.**

- **Technology based solution have a better chance (acceptance, market, …) when implemented as cross generation solutions.**

- **There are different driver for smart solutions that influence each other.**

Herzlichen Dank für Ihre Aufmerksamkeit
Thank you for your attention!

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Appendix

TECHNOLOGY RESEARCH IN GERMANY

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Research Programms in Germany and Europe

Europe

Framework Programmes
- FP6 2002-2006
- FP7 2007-2013
- Horizon2020 2014 to 2020

AAL Joint Programme
- Call 1 2008
- Call 2
- Call 3
- Call 4
- Call 4
- Call 6 2013

Germany

Federal Ministries
- Education and Research
  - Microsystems
  - Human Services
  - ...
  - → Demografical Change: humans and technology interaction
- Family, Senior Citizens, Women and Youth
- Economics and Technology
- Transport, Building and Urban Development
- Health

State Ministries
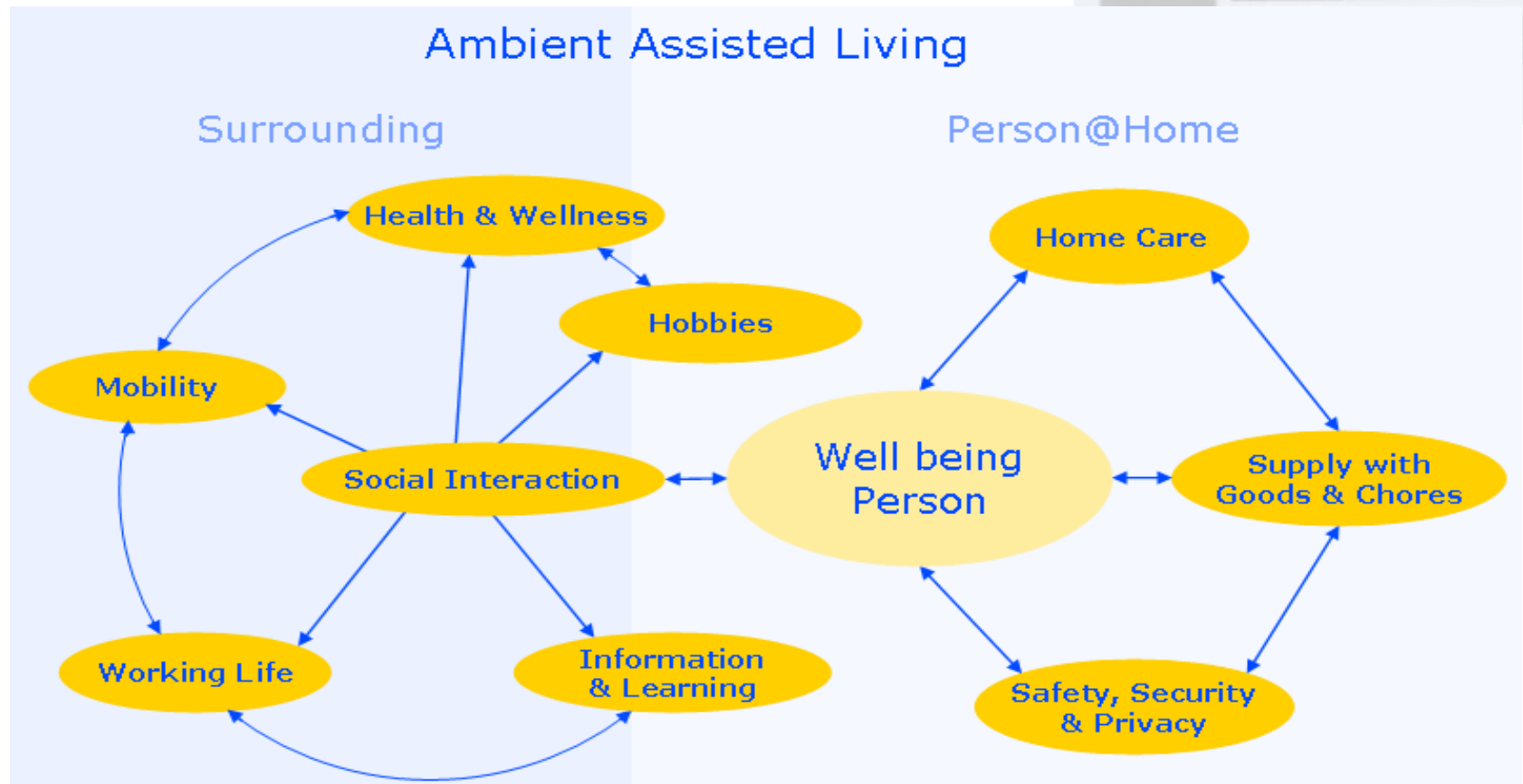- Lower-Saxony
- Hessen
- ...

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Research Themes

- **AAL Joint Programme: Themes to addressed**

Ambient Assisted Living

Surrounding — Person@Home

Health & Wellness, Hobbies, Mobility, Social Interaction, Working Life, Information & Learning, Well being Person, Home Care, Supply with Goods & Chores, Safety, Security & Privacy

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Research Themes

- ## AAL Joint Programme: Calls
  - Call 1 – **Chronic Conditions**: ICT for the Management and Prevention of Chronic Conditions of Older Adults
  - Call 2 – **Social Interaction**: ICT based Solutions for Advancement of Social Interaction of Elderly People
  - Call 3 - **Self-serve Society**: ICT-based Solutions for Advancement of Older Persons' Independence and Participation in the "Self-Serve Society"
  - Call 4 – **Mobility**: ICT based solutions for Advancement of Older Persons' Mobility
  - Call 5 – **Daily Life Activities**: ICT-based Solutions for (Self) Management of Daily Life Activities of Older Adults at Home
  - Call 6 – **Supporting occupation in life for older adults**: ICT-based Solutions for Supporting Occupation in Life of Older

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Research Themes

- **Federal Ministries**
  - **Family, Senior Citizens, Women and Youth:** Long-term care, „Intelligent Nursing Homes", promotion of volunteer work, multigenerational houses
  - **Economics and Technology:** Design for All, Studies about Telemedicine, Mobility
  - **Transport, Building and Urban Development:** Funding program „age-appropriate renovation", urban redevelopment (barrier free)
  - **Health:** Aging and staying healthy; Health in high Age

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Federal Ministry of Health

- **Funded 6 Research Networks „Health in (High) Age" with 35 Mio.**
  - AMA: Autonomy with multi morbidity
  - ESTER-Net: Prevention before and care with frailty.
  - KORA-Age: Develop and stay in social contacts as important factor for well being
  - LUCAS: Counseling, early recognition and health promotion
  - MultiCare: Recognition and compliance of interactions between single diseases
  - PRISUS Study: List of medication not valid for people in high age

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Research Themes

- **Federal Ministry for Education and Research: Funding Themes**
  - **Work and Competences**
  - **Health and Quality of Life**
  - **Mobility and Participation**
  - **Habitation and Safety**
  - **Fostering and Support**
  - **Municipalities and Elderly**

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Research Themes

■ Federal Ministry for Education and Research: Calls

- **Interdisciplinary Constitution of Competence (Open)**
- **Adaptive, Learning Systems (Open)**
- **Small and Medium-sized Enterprises' Innovation (Permanent)**
- **Central Knowledge Base for Technology Solutions** (2014‑2015)
- **Municipal Advice Center „Better Living through Technology"** (2014‑2015, 25 Projects)
- **Elderlies' Technology Messengers** (2013-2014, 360.000 Euro, 18 Projects
- **Technology Adopting to Humans** (2013-2016)
- **Being age 60+ and in the middle of the work Live** (2013-2016, 17 Mio. Euro, 12 Projects)
- **Tomorrow's Assisted Care** (2012-2014, 17 Mio. Euro, 12 Projects)
- **Being Mobile until High Age** (2011-2014, 20 Mio. Euro, 14 Projects)
- **Humans and Technology Cooperation** (2011-2014, 15 Mio. Euro, 10 Projects)
- **Advanced Training in the Field of Age-appropriate Assisting Systems** (2011-2013, 5 Mio. Euro, 9 Projects)
- **Age-appropriate Assisting Systems for a Healthy and Independent Living** (2009-2013, 45 Mio. Euro, 18 Projects)
- **Energy-self-sufficient Mobility** (2012-2016, 15 Mio. Euro)
- **Mobile Diagnostic Systems** (2010-2013, 15 Mio. Euro, 11 Projects)
- **Intelligent Implants (**2009-2012, 15 Mio. Euro, 9 Projects)

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Research Themes

- ## Federal Ministry for Education and Research: Accompanying Research

  - User Dependent Innovation Barriers Concerning Age-appropriate Assisting Systems

  - Legal Questions Concerning Age-appropriate Assisting Systems

  - Economic Potentials and New Business Models Concerning Age-appropriate Assisting Systems

  - Ethical Questions Concerning Age-appropriate Assisting Systems

  - Reasons for Referrals to Hospitals of People living in Long Term Care Houses

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