# Costs and Benefits of AAL Solutions
# High Benefits for Low Costs?

**Rainer Planinc**, Martin Kampel

# Motivation

- Broad variety of end-user (primary, secondary, tertiary)
- Benefits are not always obvious
  - E.g. only indirect benefits for insurances
- Incorporation of all stakeholder essential

- **Who will pay for the AAL solution?**
  - Public health sector? Insurances?
    Awareness rising is needed!
  - Stakeholder who benefits most
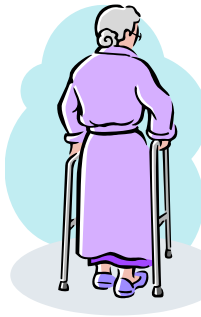
# Benefit vs. Costs

- AAL solutions show a high benefit...

...but are not affordable

**Why?**

- Developing highly specialized hardware
  - High accuracy

- Re-inventing the wheel

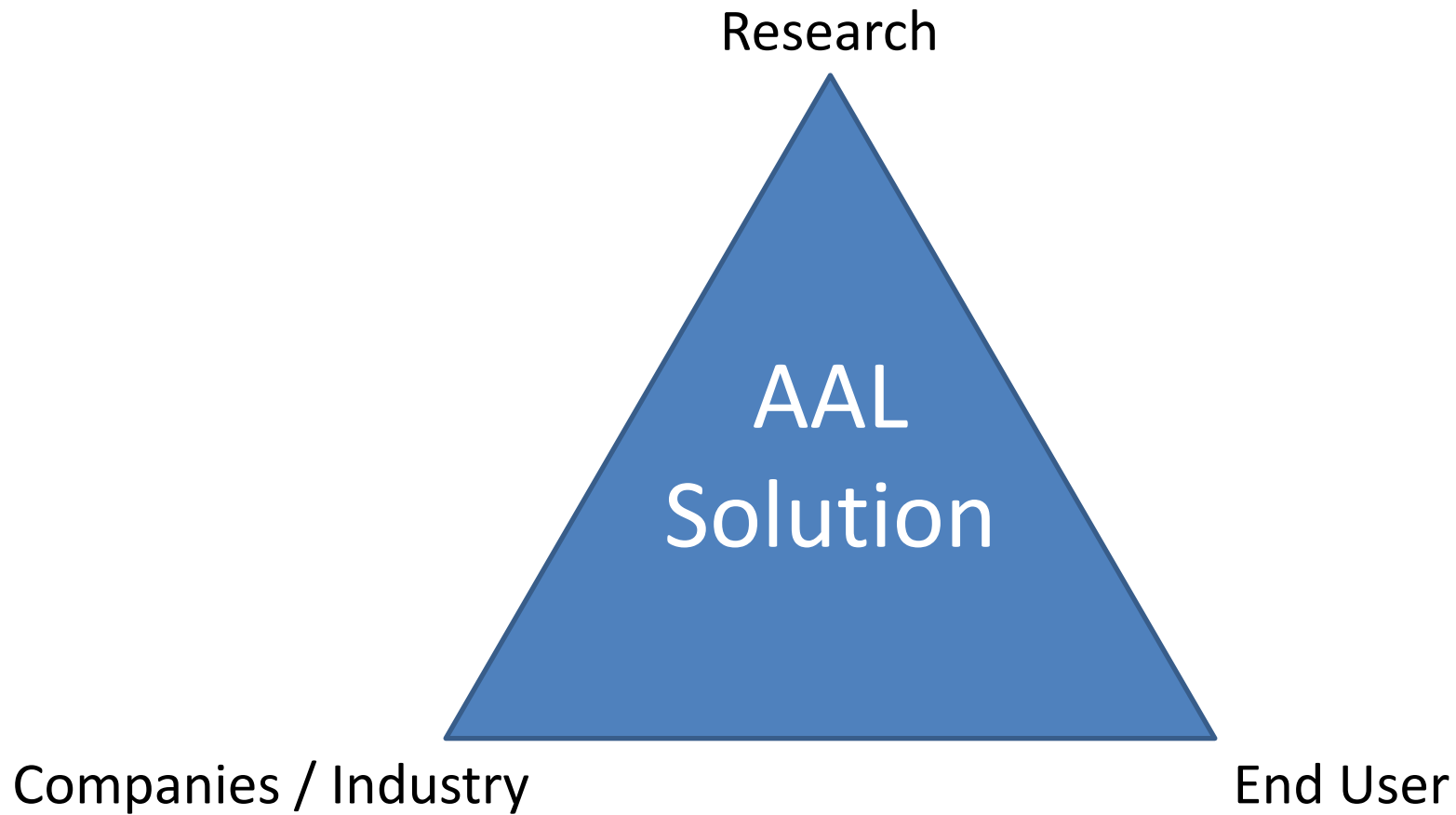- Not using off-the-shelf products
  - Lower accuracy

# Analyse your requirements

- Do you really need high-end hardware?

| Mac Mini | Pandaboard |
|---|---|
| 2,5 GHz Dual-Core i5 | Dual-core ARM Cortex-A9 (1,2 GHz) |
| 4 GB RAM | 1 GB RAM |
| 500 GB HDD | 16 GB SD card |
| 600 € | 200 € |

# Area of Conflict

Research

AAL
Solution

Companies / Industry
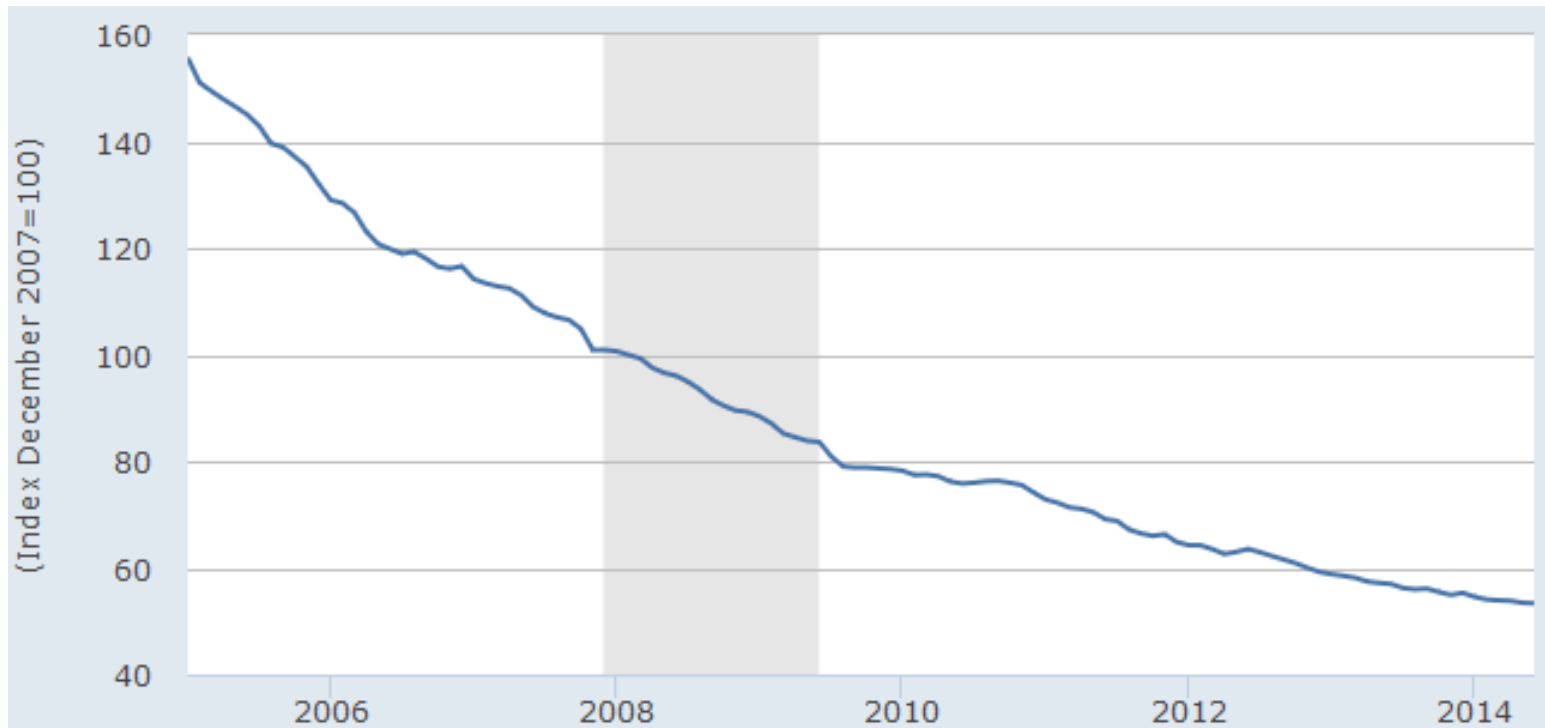
End User

Costs and Benefits of AAL Solutions

# Research

- Improve the State-of-the-Art

- Use State-of-the-Art hardware

- Focus is on developing new hardware/software/etc.
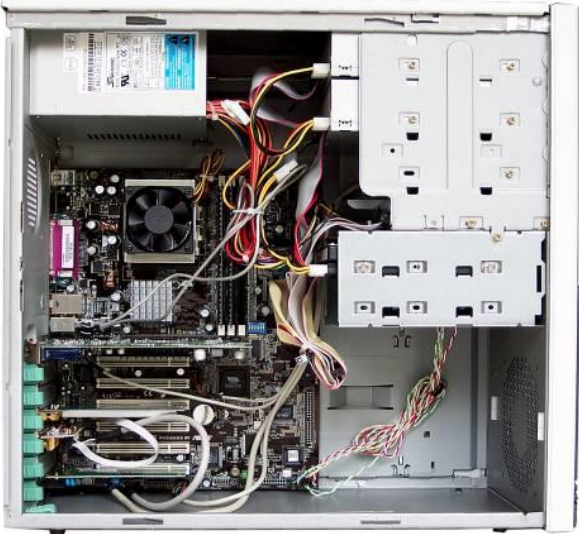
- Not on hardware costs

# Hardware Costs

- Hardware costs are continously dropping
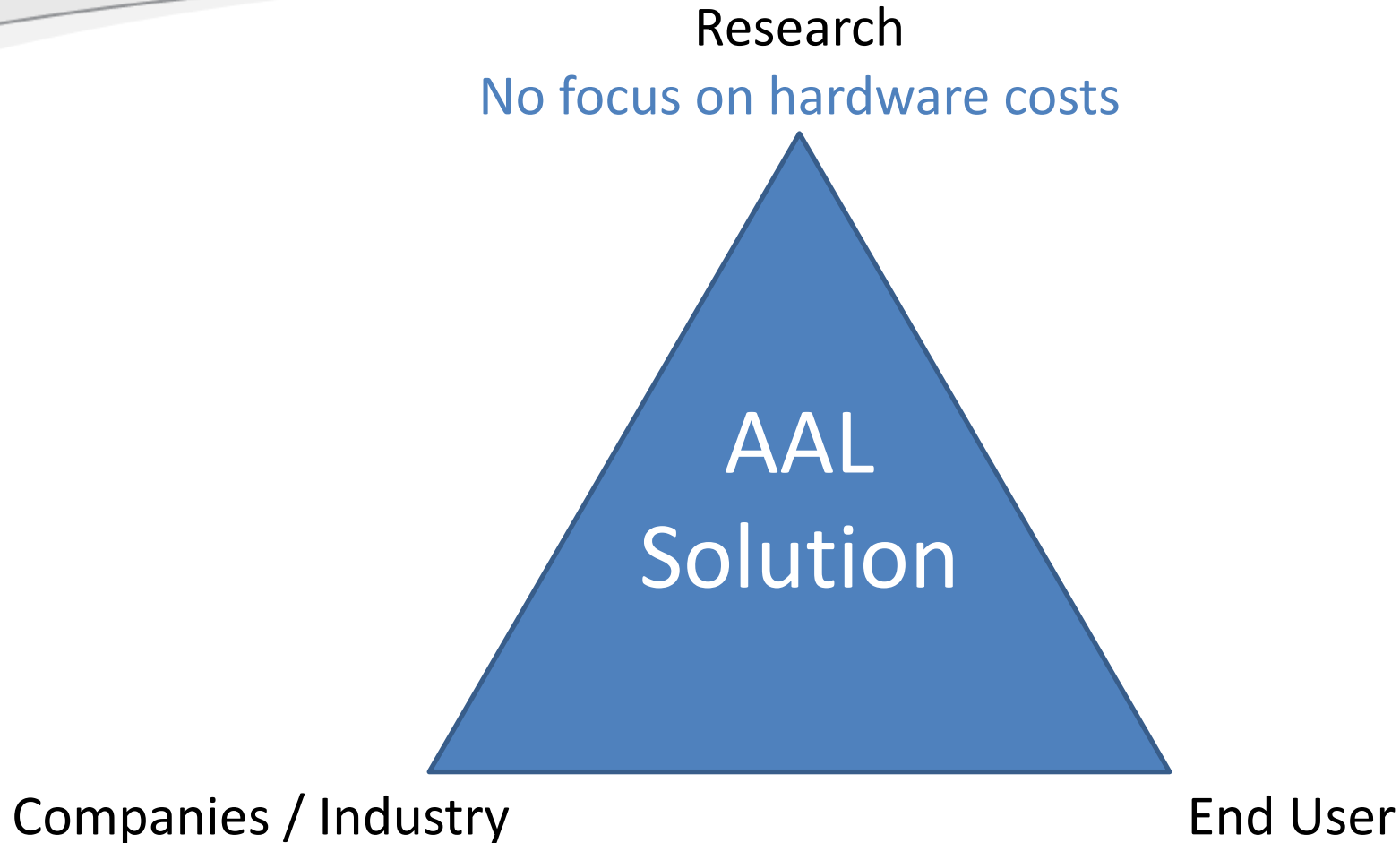  - Consumer Price Index (PC and peripheral equipment)



Source: U.S. Department of Labour: Bureau of Labor Statistics

Costs and Benefits of AAL Solutions

# Example

| PC (2002) | Odroid (2014) | Factor |
|:---:|:---:|:---:|
| 1.8 GHz (Single-Core) | 1.7GHz Quad-Core processor | x4 |
| 256 MB RAM | 2 GB RAM | x10 |
| 1000 € | 50 € | x1/20 |



Costs and Benefits of AAL Solutions

# Area of Conflict

Research

No focus on hardware costs

AAL Solution

Companies / Industry

End User

Costs and Benefits of AAL Solutions

# Companies / Industry

- Higher focus on hardware costs

- Small focus on new hardware developments

- Often lack of innovation to change to new systems

- Contracts with hardware vendors/manufactorer
  - Cannot change the hardware arbitrarily

# Area of Conflict

Research
No focus on hardware costs

AAL
Solution

Companies / Industry
Focus on hardware costs
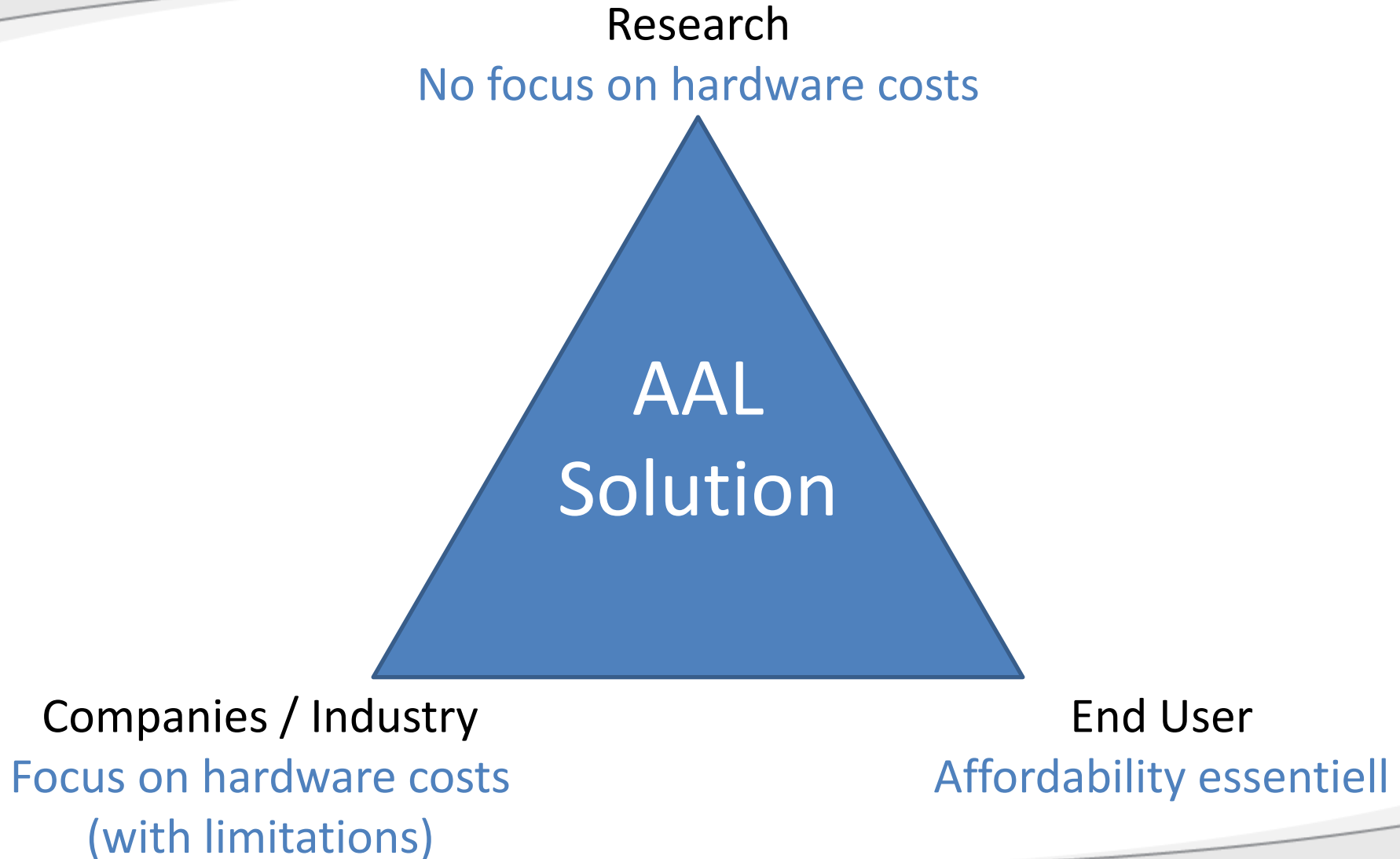(with limitations)
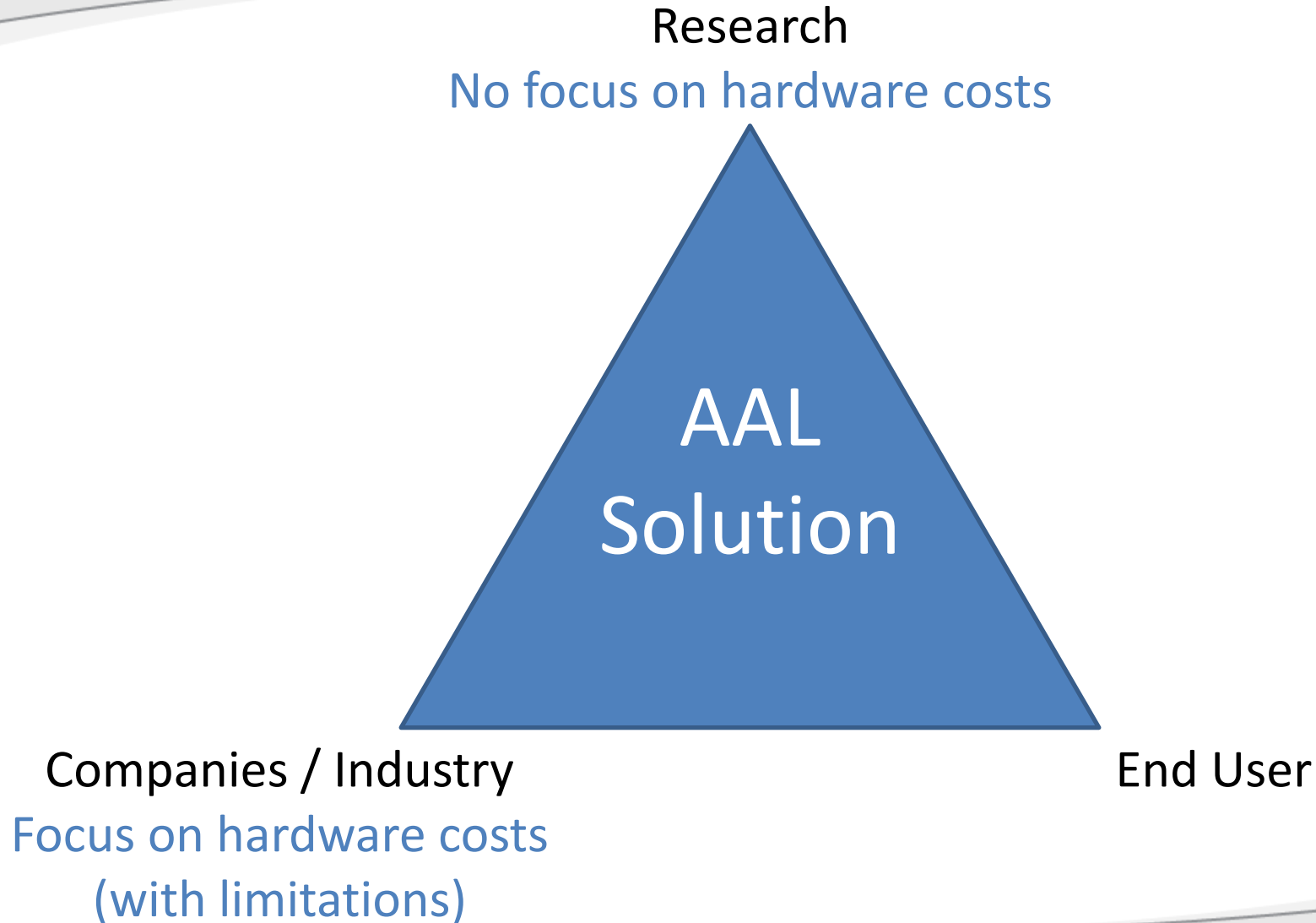
End User

# End User

- Benefit need to be provided

- Focus on benefit rather than technical accuracy

- Affordability is important

- Independent from the type of end user
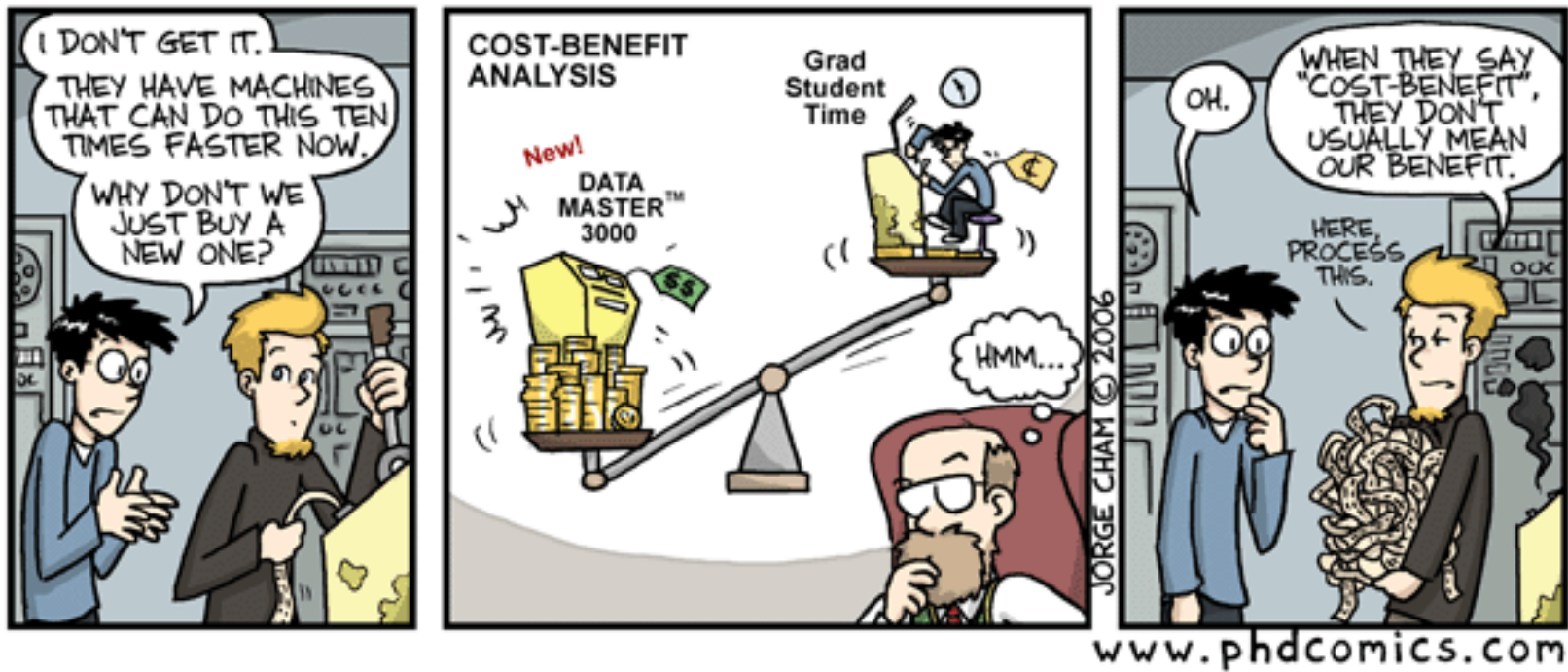  - Elderly, care taker, insurances, public sectors,…

# Area of Conflict

Research
No focus on hardware costs

AAL
Solution

Companies / Industry
Focus on hardware costs
(with limitations)
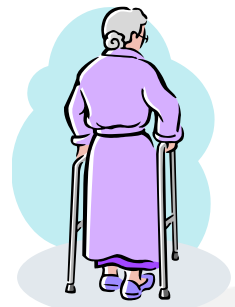
End User
Affordability essentiell

# Strategies

- ## Strategy 1 (current)

  - Develop highly innovative systems

  - Focus on high accuracy

  - Find someone to support / fund the hardware

    (since it is not affordable for the end-user)

- ## Strategy 2 (desired)

  - Develop innovative systems using off-the-shelf devices

  - Focus on the benefit

    (can be provided even with lower accuracy)

  - Sell it to the end-user

Thank you for your attention!