T-93.850 Seminar on Knowledge Engineering

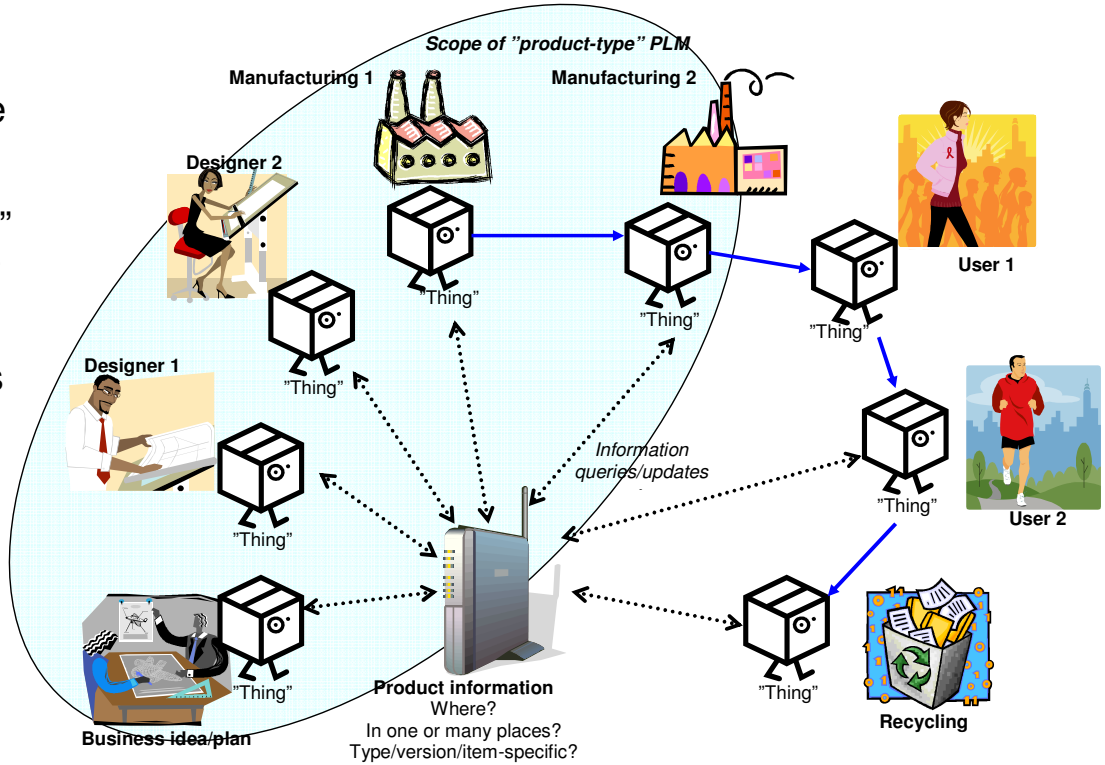
Spring 2007:
Internet of Things

Outline

- What is Internet of Things?
- How to connect ”things” to Internet
  - EPCglobal
  - ID@URI, DIALOG project at TKK
  - Trackway
- PROMISE EU project
- TraSer EU project
- Practical arrangements

Internet of Things

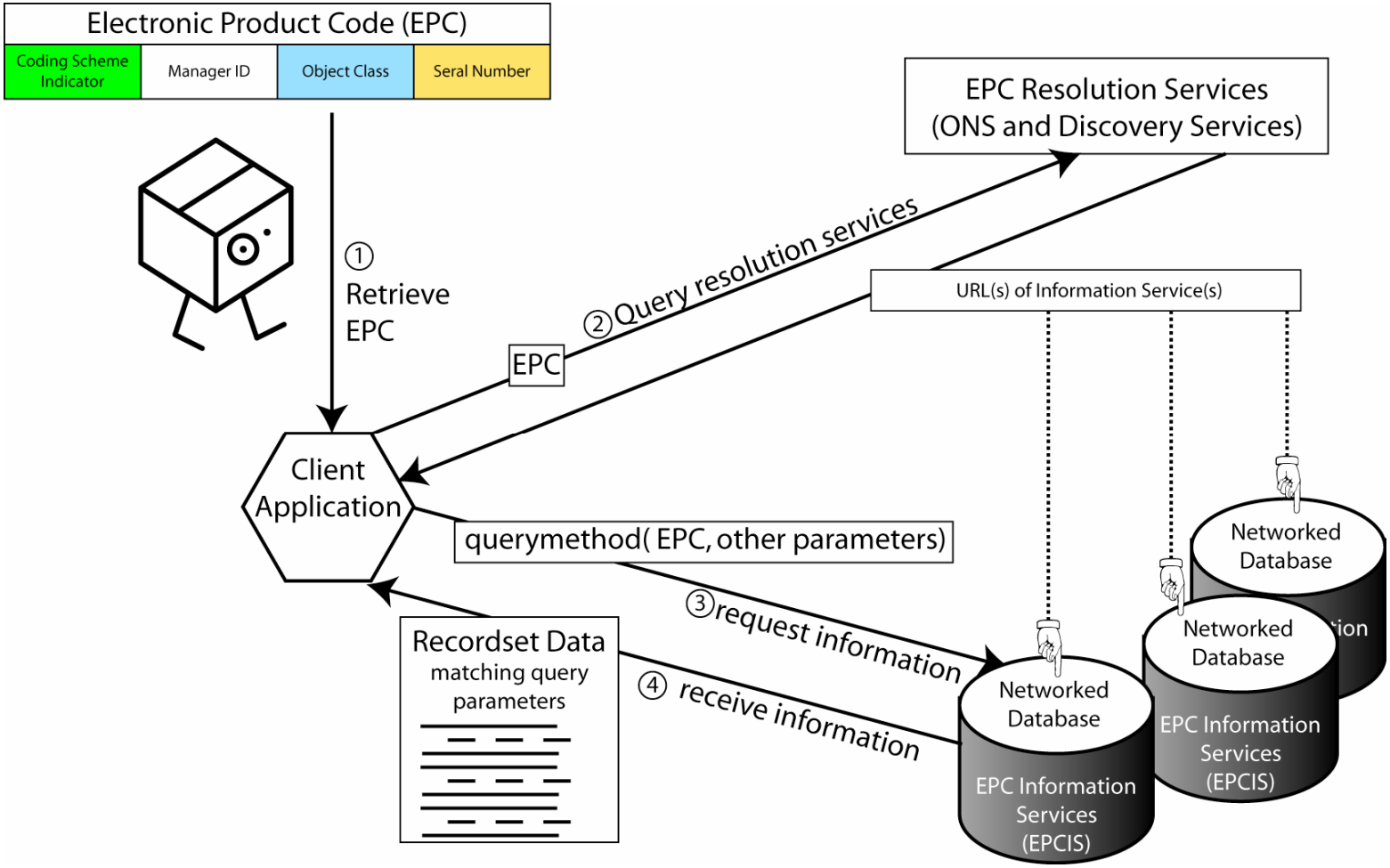
- Internet of Things is about:
  - Connecting (query/update) tangible ”things” to information about them on the Internet
  - Allowing ”things” to communicate directly without human intervention
  - Making information about ”things” accessible whenever and where-ever the information is needed
  - Intelligent products, sensor networks and MANY other things
- Not a very well-defined concept yet!
- RFID and supply chain management
  - Focus of MIT Auto-ID Centre, EPCglobal
- Embedded computing devices, ”intelligent products”, product lifecycle management, ...



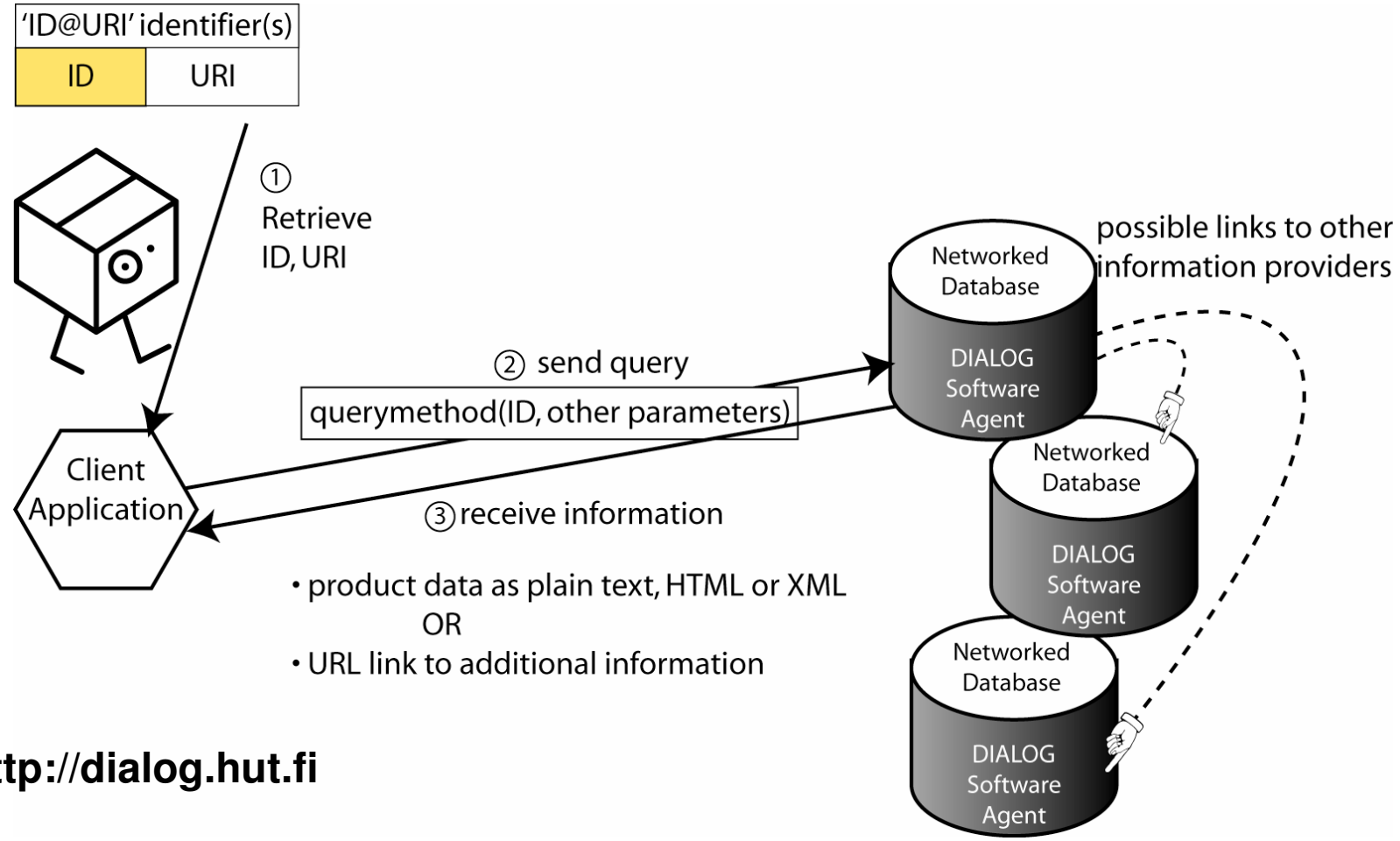
How to connect ”things” to Internet

- Presentation from 2002 about EPCglobal, DIALOG: it doesn’t go as fast as we imagine!
- Globally unique product identifiers are cornerstone:
  - Globally unique (obviously)
  - Have to provide a way to identify access point(s) to additional information about the product on the Internet

Product information lookup with EPC Network approach

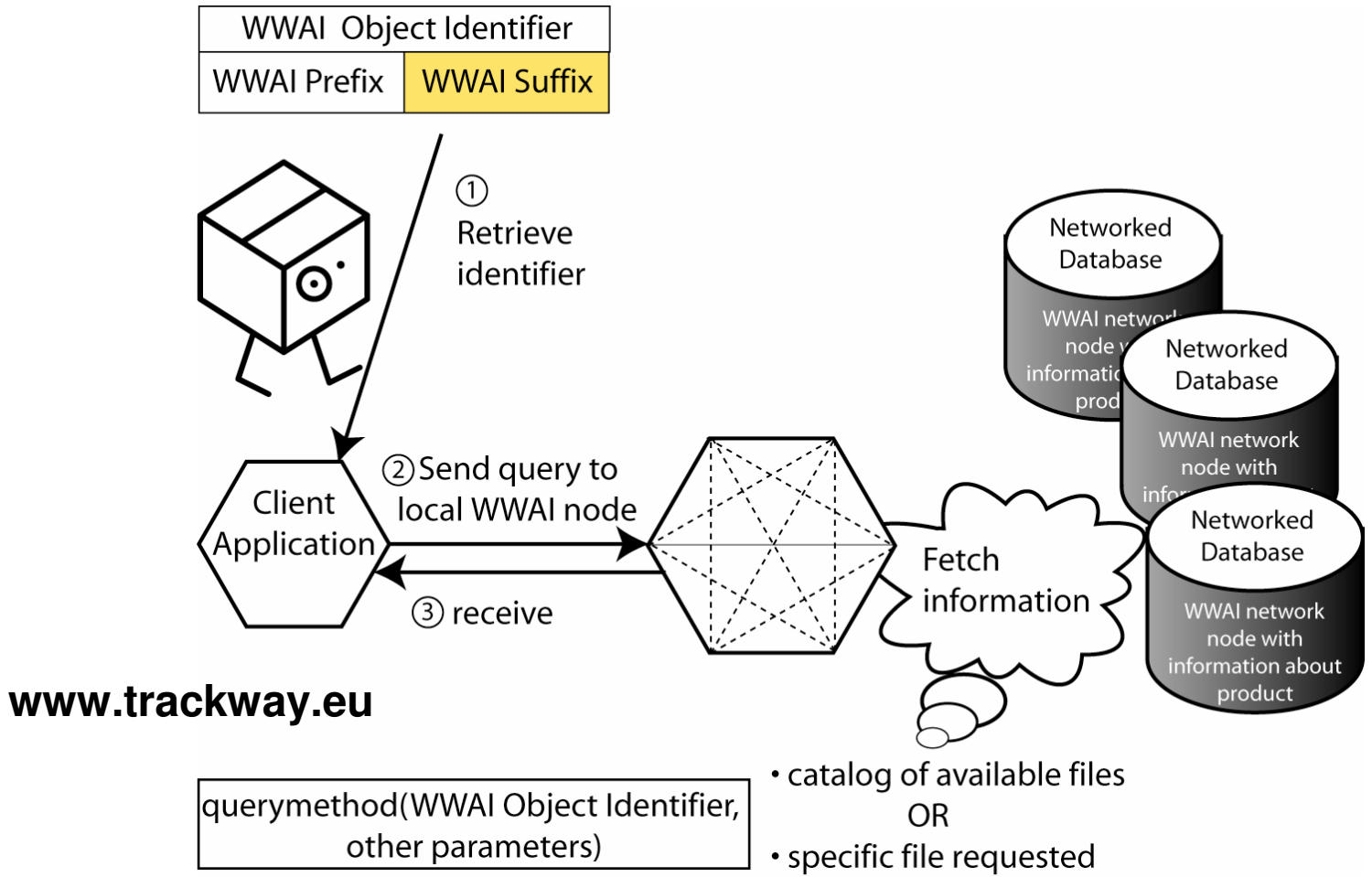


Product information lookup with ID@URI, DIALOG implementation



http://dialog.hut.fi

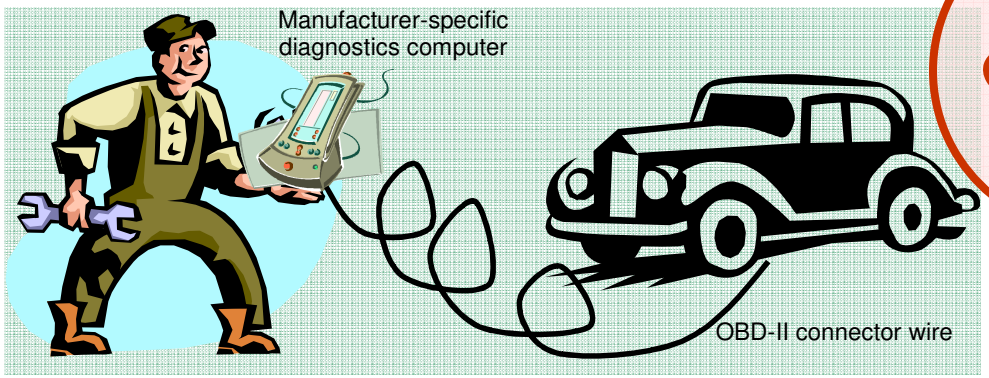
Product information lookup with WWAI approach



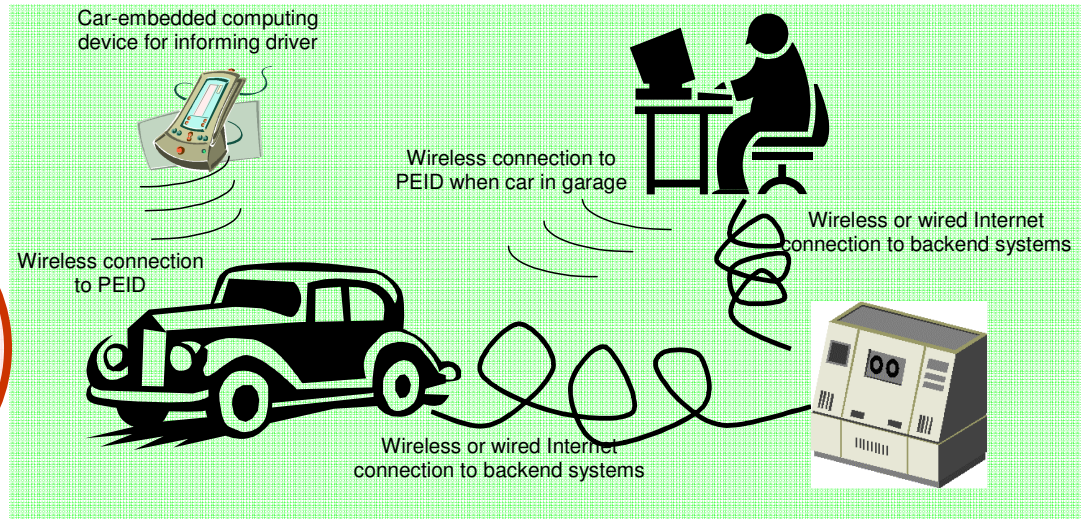
PROMISE EU project

- PROMISE: *Product Lifecycle Management and Information Tracking using Smart Embedded Systems*
- www.promise-plm.eu, www.promise.no
- Started in November 2004
- SAAB demonstration
- WRAP films: http://www.wraphome.com/

Car maintenance scenario from PROMISE



Current situation



Proposed system

TraSer EU project

- TraSer: *Identity-Based Tracking and Web Services for SMEs*
- http://www.traser-project.eu/
- Started in June 2006
- Originally designed for further development of ID@URI, DIALOG concepts with a focus on tracking and tracing
- Emphasis on managing relations between items using semantic nets, ontologies, RDF, OWL etc.

Practical arrangements (1)

- First presentation, two alternatives:
  1. Choose article(s) from article list:
     - Read, analyse article(s)
     - Search related material, background information on Internet of Things
     - Presentation of article conclusions and how the article(s) relates to Internet of Things
  2. Choose implementation task from proposed ones or propose your own:
     - Define implementation scope and extent
     - Search related tools, background information
     - Explain the role of your project for the Internet of Things, what new information or tools it will produce
- Own views and opinions are required!

Practical arrangements (2)

- Second presentation, two possibilities:
  1. Bibliographic study:
     - Comparing different concepts, technologies etc. for creating Internet of Things
     - May also include installation of tools, other practical work
  2. Implementation project:
     - Describe results
     - Demonstration
- In both cases, the goal is to ”brainstorm” the Internet of Things as much as possible based on the presented results!