

ICT Solutions & Business Models for Industrial Value Webs

Hans Akkermans

Forrester: "Business Modeling for the CxO"

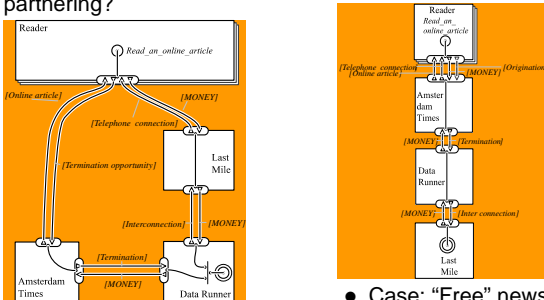


Henry Peyret, Forrester, 21 Aug 2007

- Forrester on strategic or high-level business modelling:
- "Jaap Gordijn from the Vrije Universiteit in Amsterdam has developed a methodology — *e³value* — along with models and a simulation tool to calculate economic value across enterprises. This is particularly useful for validating new business models for networked enterprises — such as those in the music industry, in the deregulated European energy sector, or in the telecom industry — where firms need to explore revenue-sharing opportunities with service providers."*)
- *) For interesting customer stories of using *e³value* for the telecom, electricity, and music industries, visit <http://www.e3value.com>.

e³value = Business Case Analysis for ICT-enabled Networked Enterprises

- New e-business *design* and development: how to do partnering?



• Case: "Free" news

ICT: The Major Trends

- Everything will become Internet-connected
 - Universal connectivity; ubiquitous/pervasive computing
- Intelligence will become built-in
 - Two forms: local & global (network)
 - Smart equipment & distributed control
- Internet & Web will become service infrastructure
 - Active, not passive: Semantic Web, Web Services
 - Distributed information systems, ontologies, architectures
 - Networked e-business and e-service applications

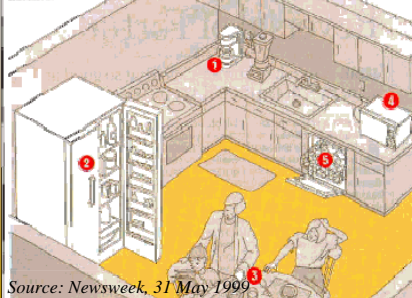


Strategic Role of ICT

- Universal IP connectivity at home (>> computers)
- "Intelligent" devices
- Basis for new service bundles: energy, security, comfort, media, entertainment, ...
- New opportunities for large-scale control, real-time, at-a-distance

A Really Smart House

The house of the future will be loaded with appliances that talk to the Internet — and to each other. A high-speed Internet connection links to set-top boxes, smart TVs, devices — even washing machines — that can be controlled through a local wireless network. Through the technology isn't intrusive.



Source: Newsweek, 31 May 1999

Internet and Power Networks

CRISP EU Project Objective:

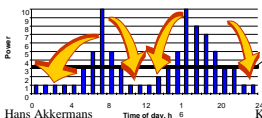
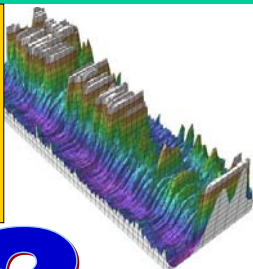
- Design and test new strategies for distributed power generation
- As enabled by recent advances in ICT technologies for **distributed intelligence**



Field Experiment in Öland, Sweden
Other experiments in NL and France

Energy eServices for Customers: Demand Response

- Link ICT and power networks
- Improve match of need, price, consumption *dynamically*
 - Demand Response: cost and energy savings
- Use *real-time knowledge* of
 - Prices, customer preferences
 - Resource needs, state forecasts



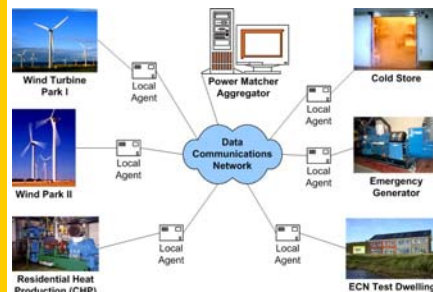
Average Value

Hans Akkermans Kumasi, Ghana, 07 November 2007

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Field Tests to Achieve Smart Power Networks

- DBS e-service industrial field tests
- Distributed Control by eMarket technologies
- Automatic imbalance reduction in real time
- Result > 40% imbalance reduction



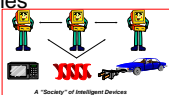
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What is an Agent?

- Is **self-contained software program**
 - Modular component of distributed & networked IS
- Acts as **representative** of something or someone (e.g. device or user)
- Is goal-oriented: carries out a **task**, and embodies **knowledge** for this purpose
 - Relative independence or "autonomy"
- Is able to **communicate** with other IS entities (agents, systems, humans) for its tasks
 - info exchange, negotiation, task delegation
- Principle of **local information and action**
- Agent task types: information management, transactions, **distributed control strategies**

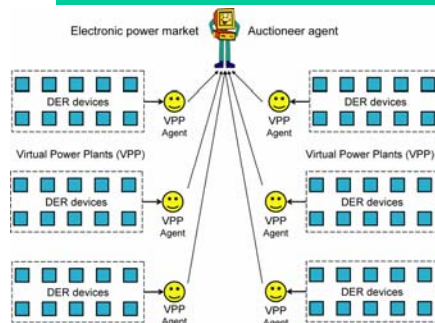


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Agents and Electronic Markets



- e-Markets are auction-like mechanisms that achieve large-scale optimization and control in a **distributed** fashion

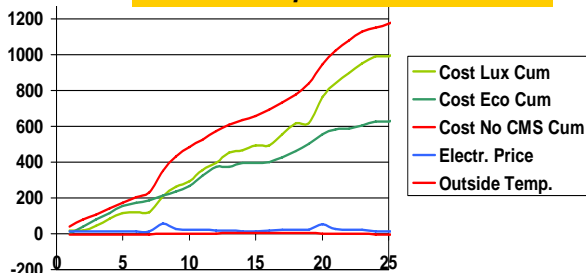
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Real-time Dynamic Pricing: Cost Reduction, No Loss of Functionality

Demand Response via e-market



"Yuppie" vs. "poor student" scenario simulations of a home on Dutch Winter day

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OBELIX in Business

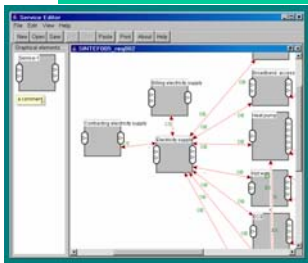
- Clearly, one needs a solid business model to start with
- How does one get to such a business model?
- What is the business case?



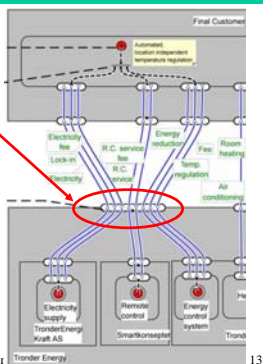
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Energy Service Bundling (in Trondheim)



Service Bundle



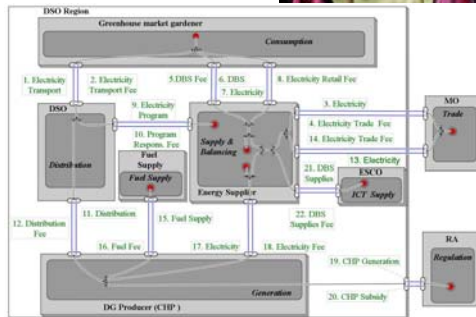
- What new service bundles are attractive to both customer and supplier?

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Tulips (from Amsterdam)



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The Power of ICT: Strategic Observations

- **Information:** key fabric of today's society and economy
 - Intensive and dynamic use of info pervades all activities in life
 - Strategic asset in a networked world: how to exploit it best
- ICT and power networks are essential **critical infrastructures**
 - Convergence: increasing interdependence
- Interactivity: two-way communication interconnects the entire value chain
 - including the customer
- ICT technologies: lots of capabilities are already out there
 - Strong drivers of innovation originate outside energy industry
 - Energy: absorb, and "just" grab the opportunities (example: DER)
- Expansion of ICT capabilities continues
 - Knowledge-based intelligence built in components and systems
 - ICT for real-time dynamic tasks at distance: **Distributed Intelligence**

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Conclusions from DER Business Model Studies



- Electricity bill of customer can be reduced >15 % by demand response in competitive market
- The business case for DER improves if small local producers can sell directly to the market
- DER revenues derive from a well designed **bundle** of services
- Distributed Balancing Services are profitable for both clients and ESCO
- Regulatory policies directly influence attractiveness of DG business models
- For market confidence in long-term DG business viability, stable regulatory framework must be in place

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Further Information

Boosting the e-service economy

Towards Smart Power Networks

www.e3value.com

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