ConSerWe Configurable Services on the Web Results and insights

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Outline

- Background
  - Mass customisation and configuration
  - Customised vs. standard products
- Idea of configurable services
- Ultimate ConSerWe goal & issues to investigate
- ConSerWe viewpoints to service mass-customisation
  - Business, Customer, Services, Processes, IT support
  - Results by viewpoint
- Discussion
- Future work
- Summary & conclusions

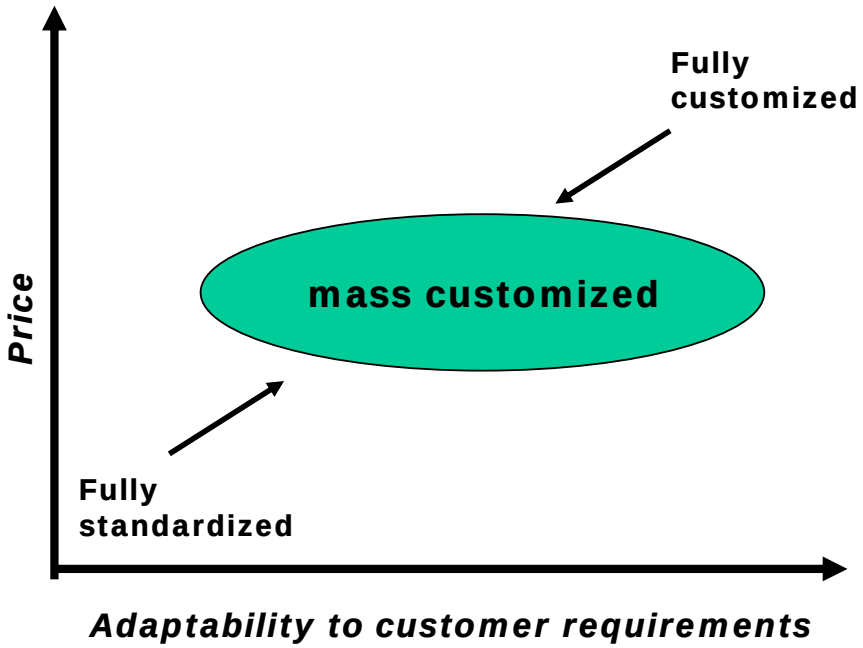
Background

- Mass-customization of physical products by configuring is well established
- Long research tradition on configurable products, related processes, and their IT support
  - Can we apply the successful idea of configurable products to services
- ConSerWe idea: Could services be offered as configurable products?

Mass customization & configuration

- Customer view: Opportunity for customers to acquire anything they want, any time they want it, anywhere they want it, in any way they want it (adapted from Hart 1995)
- Supplier view: ability to provide products tailored to individual customer needs on a large scale at, or close to, mass production efficiency (da Silveira et al. 2001)
- *Product configuration* and *configurable products* are one **way to implement mass customization**

Customised vs. standard products



- Benefits and challenges vary by direction
  - Literature review in [Heiskala et al. 2007]
- Which benefits and challenges of MC, configurable products, and configurators do and do not apply in service settings?
  - See [Heiskala et al. 2005b]

Adapted from Tiihonen & Soininen (1997), Svensson & Barfod (2002)

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Ultimate ConSerWe goal

- Configurable services: “Products with a significant service dimension, which can be adapted to individual specifications from a set of elements designed to meet a pre-determined range of customer needs”
- Configure a service solution specified as a composition of service elements
  - Containing all “what”, “how” and “when”, also “by whom” and possibly “in what order”
  - using information technology support
  - with as little human intervention as possible in the ”technical” specification part
- Help our partner companies to work towards being able to apply configurable services in their business
  - Consider business, customer, process, IT, and service views
- Create new knowledge and disseminate it to both practitioners and academics

Configurable Services on the Web

- Web-based services are abundant: eBooking, amazon.com, spares-on-line, on-line banking…
  - straight-forward, contain limited number of options and interdependencies, therefore not truly configurable
- Services, which are *more complex* or which entail a *significant process dimension*, have traditionally been either customised or unable to meet any customer's diverse needs fully
- Such services include e.g. equipment maintenance, complex financial services and telecommunications services
  - a valid service solution customized to customer requirements must be specified; contracts typically complex
  - often cannot be sold on the web without experts and their knowledge

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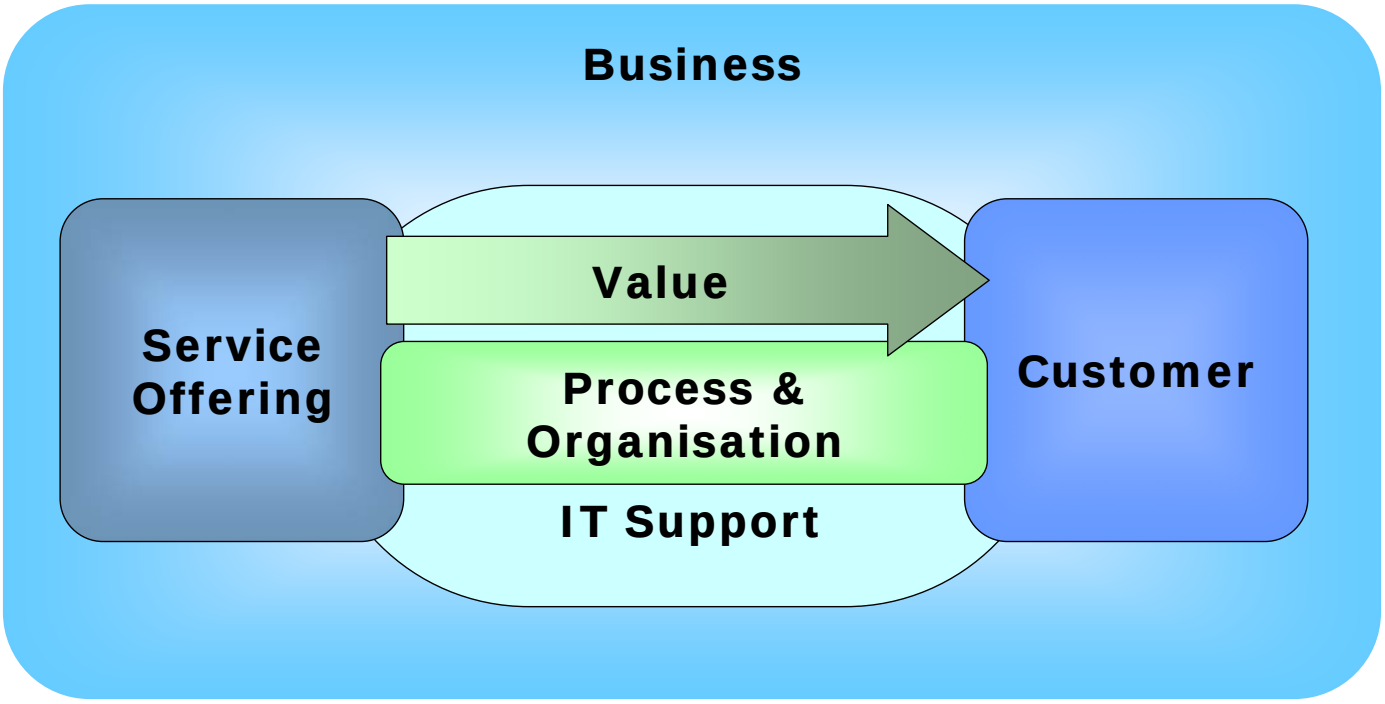
Important issues to investigate

- Can services be modeled and managed as configurable products?
  - What is varied in configurable services?
- What are benefits and challenges of service configuration
- What processes are related to configurable services?
- Modeling & IT
  - How to model configurable services?
  - Can advanced configuration support be provided on basis of this?
  - Are there special requirements on configurators?
  - Develop a service configurator prototype

Viewpoints to services



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Business

- When is systematic service customisation indicated?
  - need for more cost-efficient long term customer interface
  - heterogeneous customer base, diverse, unique or quickly changing needs
  - highly competitive market
  - product proliferation and new introductions high; portfolio too complex to manage
  - need to battle price sensitivity with improved fit
- Issues to consider:
  - expected revenues, profitability
  - cost of adaptation of such services, do they undermine or cannibalize current offering
  - competitor reactions, capabilities of the company
- Exposing systematic offering at customer interface increases imitability

Customers

- What and when must be known about the customer(s) and their needs to be able to construct and manage appropriate service configurations?
- What and when does the customer need to know about the service offering, delivery, and provider?
- Important to identify relevant customer stakeholders: recipient, payer, beneficiary, managers, operatives etc.
- Configurability enables identification and taking into account stakeholder interests?
- Customer needs are influenced by customer situation, accountabilities, and relation to other stakeholder groups – change with time
- Customer willingness to participate in service specification and value co-production – at what cost?
- Configurable services can influence customer satisfaction – explication of processes affects quality perception?
- Configurability vs. consistency, reliability, predictability
- Willingness of customers to pay premium for convenience, ease, flexibility?
- Customer strategy: who do we want to serve

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Services (structural view)

- Systematisation to manage uncertainty and inconsistent performance
- Create a bundle of basic services everyone values and offer value-added options on aspects interesting for customer
- Service delivery process modules
  - Should be easily combined “like lego”, repeatable, replicable, predictable, measurable, switching efficient
  - Benefits: learning effects, cost-quality control, more accurate pricing, justifying costs to customers, easier selling, easier training
- Design and create capabilities for efficient, systematic delivery
  - Information flows must be designed and supported
  - Using a configurator without this background is not beneficial
- Pricing principles and decisions

➔ Systematic management of variation based on pre-designed offering with pre-defined pricing model

Services / What is varied?

- Empirical findings from 4 case companies
- Service products can be varied on a broad spectrum of issues
  - The classical WH's, including what, when, who, where, how, by whom, and (NOT explicit in our cases: why)
- Some sources of variation probably more common for services than for goods
  - Information and reporting
  - Paying and billing (of course, possible with goods, too)
  - Service quality attributes (e.g. performance, dependability (availability))
  - Loyal customer benefits!
  - Ownership and intellectual property rights (IPR) (potential)
- Number of variation points varied from less than 10 to dozens
- Three basic types of price (instead of one)
  - One-time, recurring (periodic), and pay-per-use & combinations
  - Pricing is a complex issue with lots of variation

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Processes

- Separate processes
  - Development
  - Sales-order (+ reconfiguration)
  - Service delivery
- The service solution exists only through the processes
  - Processes are key to the quality perception of the customer
- Management of information flows to manage individual solutions is very important

Processes: Sales-order (specification)

- Key: specifying a promise to deliver
  - Specification as self service --- driven by frontline employee?
  - Several sales channels, especially in B2C
  - Different customers want different levels of control
- Genuine customer participation is beneficial
  - More correct choices; customer may “take blame”
  - Important for customer to know in advance how expected to participate
  - Customer trust could be enhanced by showing process descriptions
  - → Managing expectations, more predictable customer behavior (?)
- Potential to improve specification process (from cases)
  - Sales process tends to be product-centric rather than consultative
  - Available configurable options are not always offered actively
  - Potential to configure payment (e.g. direct-debit) underused
  - Show and have available relevant information!

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Production (service delivery process)

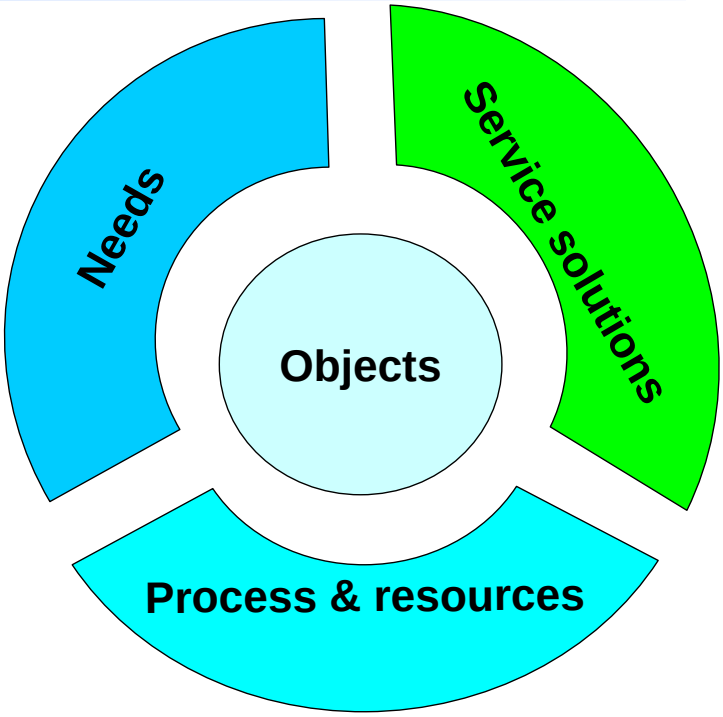
- Key: Delivering what was promised
- Configuration decisions affect delivery process
  - How to deliver individualised service solutions efficiently?
  - Information flows important – service delivery process must act based on what was agreed in the specification phase.
  - What; when; who (does, manages or decides something); what information must be delivered and where?
  - A case: core service delivery process (what) little affected by configuration
- Integration is required
  - Organisational vertical “silos” a hindrance, different business units, sharing resources across borders; IT integration
- Customer involvement is an unpredictable element
- Contrary to traditional service definitions, customer participation does not always take place
- Significant organizational and cultural implications

Reconfiguration

- Reconfiguration needs are frequent:
  - Customer often needs to change service product to match new needs
  - Customer needs change during relationship, also through learning
- Challenge – how and when to proactively do/provide this?
  - Without customer contact challenging to identify changing needs
- Reconfiguration is a part of a bigger picture: how to learn from customer feedback

Modeling: Four-worlds model

- **Objects-of-service world:** describe the service recipient (often includes the customer, can be persons or physical systems) and its environment
- **Needs world:** describe the reasons *why* a customer would want to buy the service
- **Service solutions world:** *what* is to be delivered; agreement or contract options
- **Process world:** describes the delivery process and resources used in it; *how* and *with what* the service is put into practice
- Afternoon: more details



IT support: 4-worlds model configurator implementation

- It is possible to model case offerings as configurable products with concepts & relationships designed for physical products
  - ➔ But: more advanced modeling support would be beneficial
- Specified 4-worlds model to a more detailed level
  - E.g. defaults, constraint language, what is a complete configuration, etc.
  - Conceptualisation underlying WeCoTin supports these
  - Defined a service configuration modelling language
- Implementation
  - translates service configuration models to modelling language of WeCoTin

➔ WeCoTin can configure services modelled with the 4-worlds configuration modelling language

- Design of a 4-wm configurator user interface
- Afternoon: More details & demonstration

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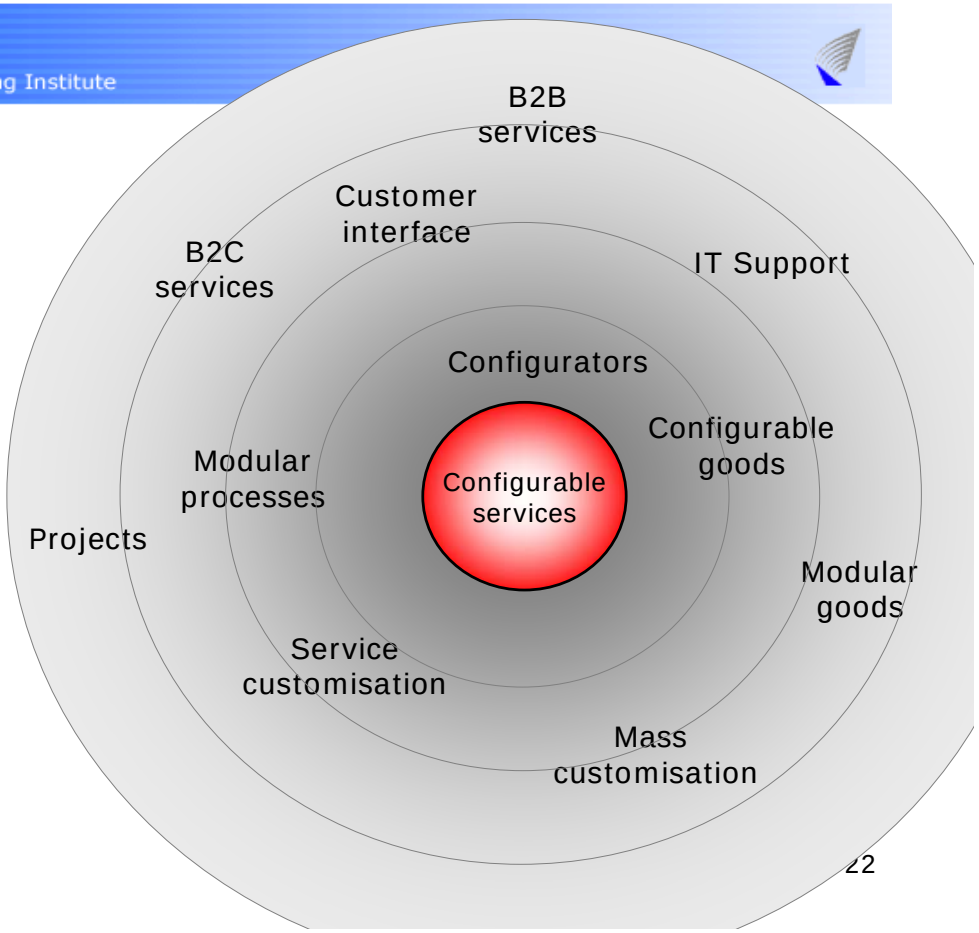
Links at process and system level

- Integration?
- Information transfer?

Discussion

- Discovered many new issues
  - The importance of was not realized in the beginning
- "Service logic"
  - To support the customers' various processes in order to help them create value in their business processes
  - Make things easy for your customer
- Multidisciplinary research co-operation was invaluable in bringing out diverse views to configurable services
  - Four worlds model would not have been possible without that
- Processes even more important than expected

Literature



Future

- Definition and documentation of services for systematically managed offerings
- Knowledge and information management of configurable services
- Implementation processes as part of service require special attention
- More advanced IT Support
  - Recommender technologies to support configurable offerings
  - Integrate configurator & enhanced recommender technologies
- Cost and profitability management
- Widely applicable theory on service mass customization and configurable services is needed
- “Cosmos – Customer-oriented systematically managed service offerings”

Summary and conclusions

- ConSerWe aimed to facilitate business based on configurable services
  - Business concept: “what”, “how” and “when”, also “by whom” and possibly “in what order”
  - Provide advanced information technology support
- Intensive cooperation with companies
- Configurable services
  - exist and can help managing systematically mass-customized services
  - can benefit both customers and suppliers
- Effective development and deployment of configurable services requires simultaneous consideration of many viewpoints
- Advanced IT support may enable a new and more efficient way of doing business, and may even generate new business potential
  - Developed an initial version of advanced IT support
  - Recommendation support is called for

ConSerWe publications

- [Heiskala et al. 2007] Heiskala, M., Tiihonen, J, Paloheimo,K-S. Anderson, A; **Mass Customization with Configurable Products and Configurators: A Review of Benefits and Challenges**, in Blecker T., Friedrich G. (eds); Mass Customization Information Systems in Business, 2007 (accepted, to appear)
- [Tiihonen et al. 2006] Tiihonen, J, Heiskala, M., Paloheimo,K-S., Anderson, A; **Configuration of Contract Based Services,** Proceedings of the ECAI 2006 Workshop on Configuration, pp. 25-30, August 28-29, 2006, Riva del Garda, Italy
- [Heiskala et al. 2006] Heiskala, M. Tiihonen J., Soininen T., Anderson A. **Four-worlds Model For Configurable Services**; International Conference on Economic, Technical and Organisational Aspects of Product Configuration Systems (PETO'06) (presented 22.6.2006).
- [Heiskala et al. 2005b] Heiskala, M. Paloheimo, K-S., Tiihonen, J. **Mass Customization of Services: Benefits and Challenges of Configurable Services**. Proceedings of eBRF 2005 - Frontiers of e-Business Research (FeBR 2005), pp. 206-221, 2006. ISBN: 951-44-6556-3.
- [Heiskala et al. 2005a] Heiskala, M., Tiihonen, J., Soininen, T. **A Conceptual Model for Configurable Services**, Proceedings of the IJCAI 2005 Workshop on Configuration, July 30, Edinburgh, Scotland.
- [Paloheimo 2004] **Exploring the quality of relationships: Case study on expectations of and experiences from process industry.** 8th Internaional Seminar in Service Management, La Londe les Maures, Ranska, July 8-11, 2004. Puyricard, France 2004, IAE Aix-en-Provence, pp. 603-618.
- [Heiskala 2005] Heiskala, M. **A Conceptual Model for Modeling Configurable Services from a Customer Perspective**, Master's Thesis, Helsinki University of Technology, Department of Electrical and Communications Engineerings, June 2005.
- [Anderson 2005] Anderson A, **Towards Tool-Supported Configuration of Services**, Master's Thesis, Helsinki University of Technology, Department of Electrical and Communications Engineerings, December 2005.

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ConSerWe Publications in process

- Tiihonen J.; **Long-Term Management Of Configurable Telecommunications Service Offering: A Case** (abstract accepted, full paper to be written and subject to double blind review), submitted to Joint Conference 2007 International Mass Customization Meeting 2007 (IMCM'07) & International Conference on Economic, Technical and Organisational Aspects of Product Configuration Systems (PETO'07), Hamburg, Germany June 21-22, 2007
- Heiskala M.; **Dimensions for Classifying Service Mass Customisers** (abstract accepted, full paper to be written and subject to double blind review) IMCM/PETO 2007.
- Sarinko K.; **A Documentation Method for Describing Product Variability in Product Development of Two Case Companies**, (abstract accepted, full paper to be written and subject to double blind review) IMCM/PETO 2007).
- Heiskala M., Paloheimo K-S., Tiihonen J, Anderson A., Sarinko K, Soininen T.; **Towards configurable services - a review of systematic service mass customization**, Accepted with minor revisions, TKK/SoberIT publication series
- Talja T.; **Neljän maailman malli sopivan palvelun löytämistä tukevassa käyttöliittymässä**", Pro Gradu tutkielma, valmistuu helmikuussa 2007.
- Doctoral dissertations: Paloheimo K-S, Tiihonen J