„Ohne Software gibt es kein Wachstum mehr.“
Philipp Rösler, Bundesminister für Wirtschaft und Technologie, 21.5.2013

Part IV. Scalable Software Business Models
40. Scalable Software Business Models

Prof. Dr. Uwe Aßmann
Softwaretechnologie
Fakultät Informatik
Technische Universität Dresden
2020-0.3, 21-1-16
http://st.inf.tu-dresden.de/teaching/saab

1) Different Driving Factors
2) Service-based Business Models
3) Product-Based B2B Models

Obligatory

- ► [Cusumano] Michael A. Cusumano. Staying Power: Six Enduring Principles for Managing Strategy and Innovation in an Uncertain World. Clarendon Lectures in   Management Studies. Oxford University Press, 2010.
    - ▪ Try to buy this book second hand, it is revolutionary.
    - ▪ Spend 20€ to win your lifetime's income!
- ► http://www.drkarlpopp.de/VeroeffentlichungenPublications.html

References

- ▶ Karl Popp. Software industry business models. IEEE Software, 28(4):26-30, 2040.
- ▶ [MassCustomization] Charles Krüger. Software Mass Customization. Biglever Software White Paper. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.84.6997&rep=rep1&type=pdf
- ▶ [Scheer] August-Wilhelm Scheer. Unternehmen gründen ist nicht schwer. Springer. 2000. Honest book about ups and downs of ARIS.
- ▶ Klaus Schmid, Frank van der Linden. Software Product Lines in Action. Springer.

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40.1 Different Factors Drive Business Models – How to Vary a Business Model Canvas
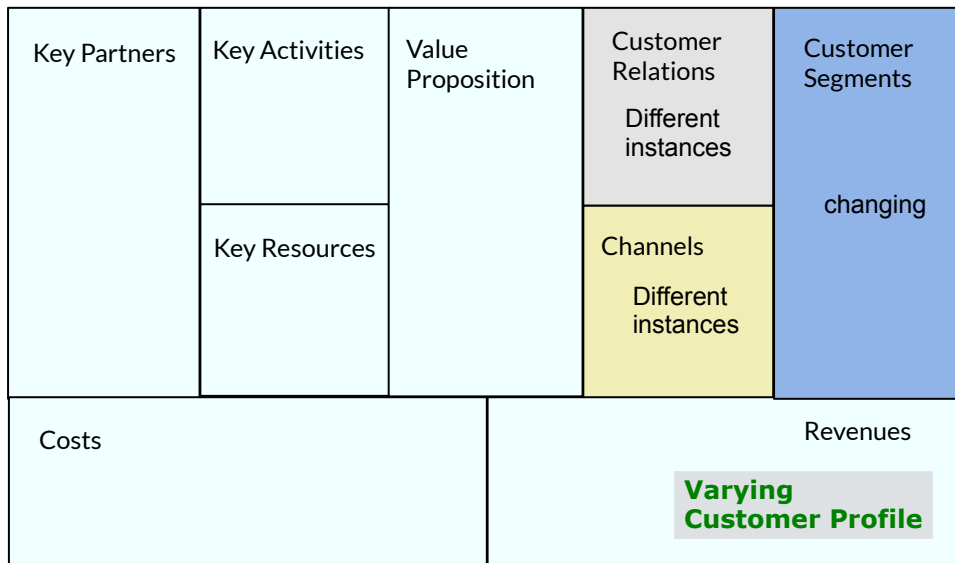
[BMG p 142]

Customer-Driven Business Models

- ▶ From customers to value proposition and the rest
- ▶ Many Software BM use *product specialization* for disjoint groups of costumers
    - ▪ Setting up a customizable product or product line
    - ▪ Setting up a second product line in a product matrix
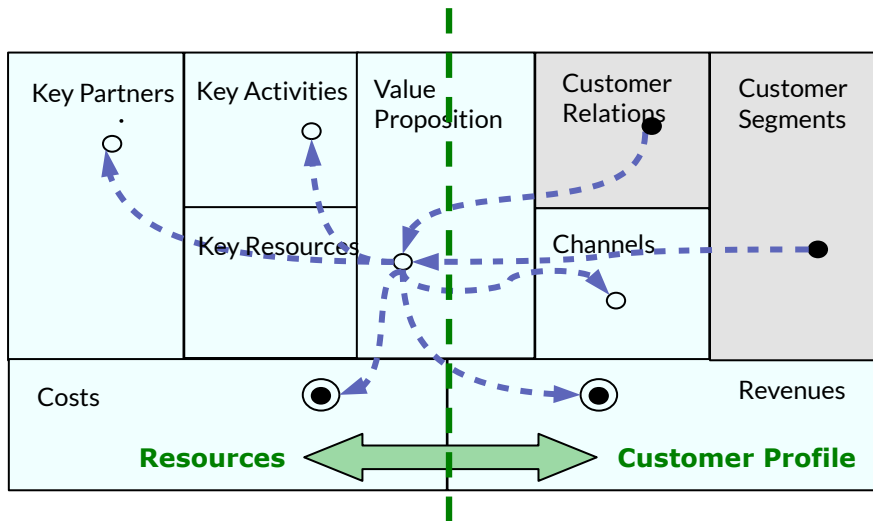
Customer-Varying Business Models
for Services, Software Products and Product Lines

► Customers live in different domains, with different communities, habits, histories

Key Partners	Key Activities	Value Proposition	Customer Relations Different instances	Customer Segments changing
	Key Resources		Channels Different instances	
Costs			Revenues **Varying Customer Profile**	

Scale by
Variation of Customer Segments for Product Variation

- ► One of the most *scalable* software business models is **customer segmenting via domain-specific, regional, or customer-group specific product lines.**
- ► **Software reuse factors** should be high
  - ▪ To sell the reused components many times
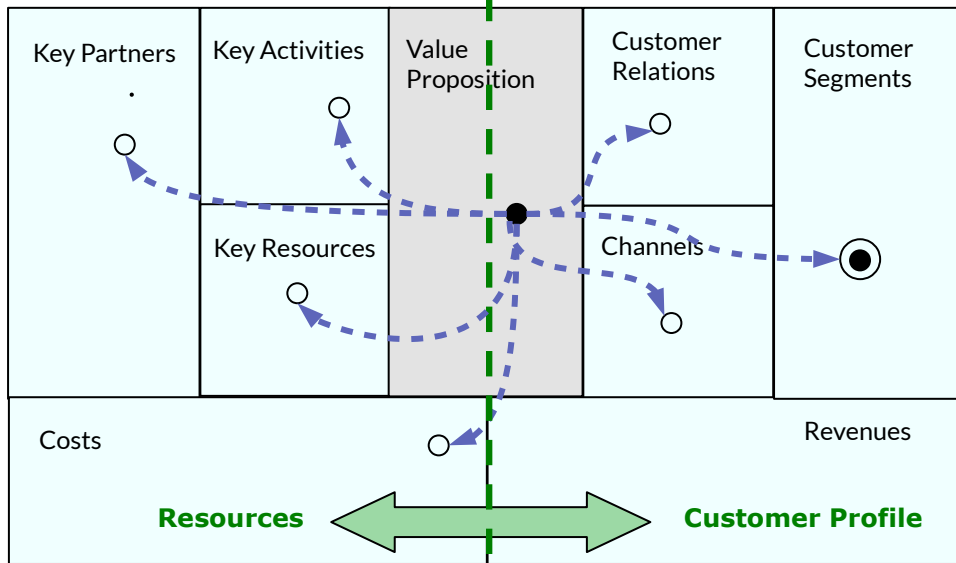 - ▪ → Component-based Software Engineering, Frameworking, Product Line Engineering

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> *Always attempt to derive a product variation*
> *with a new customer segment*
> *and a good software reuse.*

Value-Driven Business Models

- ▶ From value proposition to resource and customer map
- ▶ [iPod]

Key Partners

Key Activities

Value Proposition

Customer Relations

Customer Segments

Key Resources

Channels

Costs

Revenues

Resources ⟷ **Customer Profile**

[Osterwalder-BMG]

Scaling in Value-Driven Networks (Internet Marketplaces, Social Platforms)

- ▶ https://en.wikipedia.org/wiki/Metcalfe%27s_law
- ▶ If the value proposition affects the *relation* of the customers, n^2 business opportunities result
- ▶ This is the business model of Facebook, Twitter, XING etc:
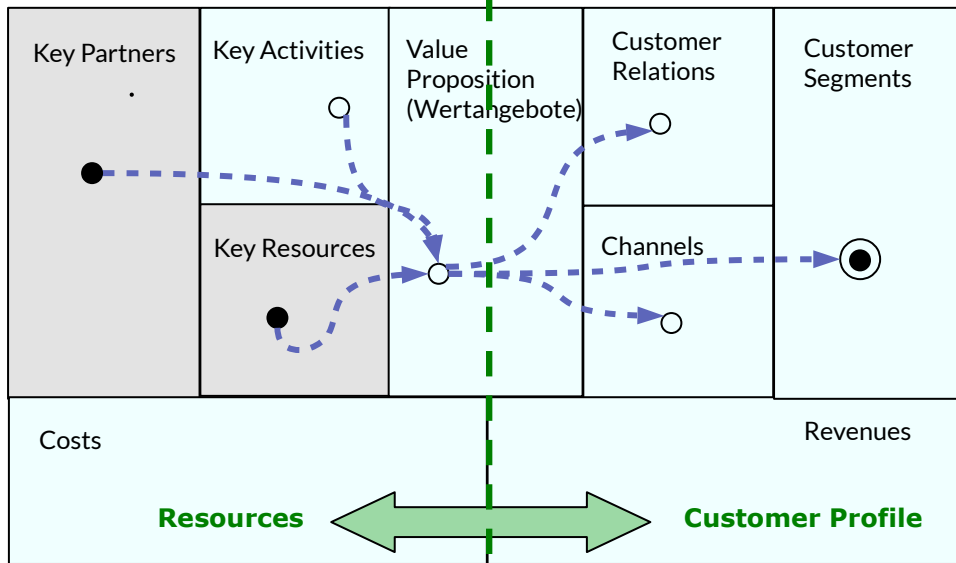- ▶ Create a network first, sell later
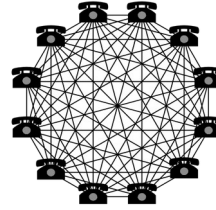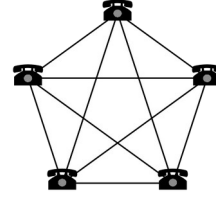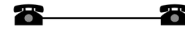
Business models based on Value-Driven Networks are among the best-scaling business models

Resource-Driven Business Model

- ▶ From Resource map to customer map
- ▶ [Amazon Web Services]

[Osterwalder-BMG]

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# Technical Domains – Technology Variation-Driven Business Models

- ▶ The same user group can be reached by different technologies
- ▶ A **technical domain** is a technology which can be crossed with the **business domain (customer segment).**
- ▶ Product matrix models result (variation in 2 dimensions: business domain and technology)

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> *Always attempt to derive another business model*
> *based on a technology variation*
> *crosscutting the customer segments.*

Finance-Driven Business Models

▸ From costs and revenues to value proposition and customers

▸ [Leasing Cars] [Placing ads]

[Osterwalder-BMG]
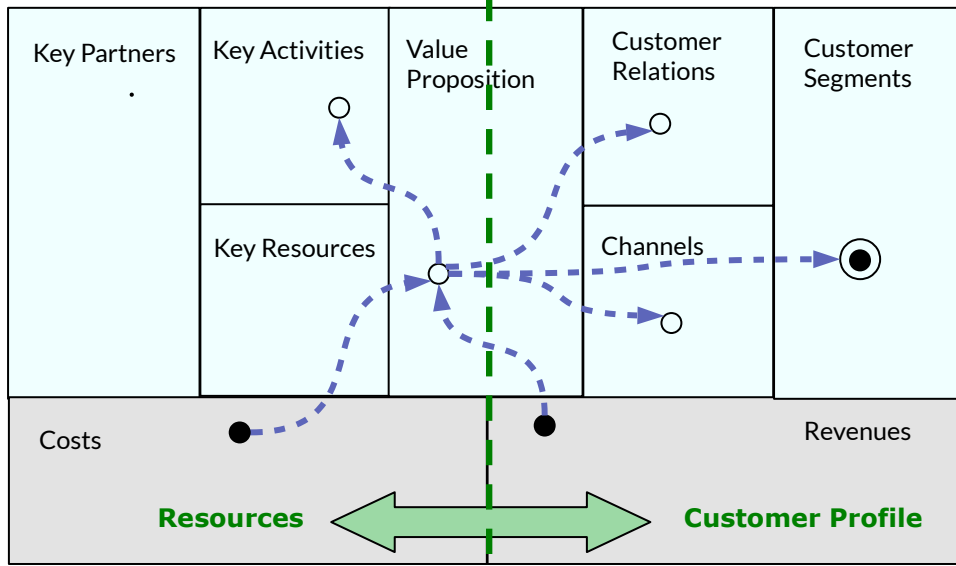
Finance Drives Variation

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▶ A **finance-driven variation** sells a product with different pricing models (3rd dimension of variation):

- Teaser for free, but with advertisement
- Pay-per-use with paypal
- Computer-based license
- Flatrates
- Location-based services with base product

Always attempt to derive a finance variation crosscutting the customer segments and the technology.

Finance: Instead of Sell Binaries
Closed-Source Software Business Models

- ▶ Leasing (where others buy)
- ▶ Rent (where others buy)
- ▶ Sell advertisements [Opera, Google]
- ▶ Sell directly, order via internet [Dell, Amazon]
- ▶ Sell later, hope to use the Metcalfe network effect [Twitter, Facebook]
- ▶ Sell via auction [ebay]

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Open Source Software (OSS) Business Models

- http://en.wikipedia.org/wiki/Open_source
- **Free product** ("free taste", "Versucherle", "Köder")
    - Give the product for free and **sell services, consulting, or apps**
    - Mould a market with the product
    - Ex. Adobe pdf with Acrobat Reader
- **Free framework**
    - Give the framework for free, create a community, and sell applications
    - Ex. IBM gives Eclipse for free, fosters a community, and many sell
- Release Politics
    - with union-fs (overlay); with browser; with portal
- **Micropayment**
    - Use micropayment companies for installation or run of a software (PayPal, ..)
    - Use Telecom billing
- Choose licences carefully
    - http://creative-commons.org
    - GPL is a virus that infects all extensions; LGPL not
    - EPL

Open Source Business Model "Free Taste" (dual-licensing, fremium)

- ► Free "taster" versions
  - ▪ Give out earlier version of the product for free
  - ▪ Sell the new or premium version ("fremium")
- ► Examples
  - ▪ www.gentleware.com
  - ▪ NatSpec
- ► Free "community" versions
  - ▪ Give out a stripped version (e.g., only for 1 user, 1 database, ..)
  - ▪ Sell full version
- ► Free time-restricted versions
  - ▪ 1 month

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Business Model "Versucherle"/"Köder":
Plugins under Dual Licensing

- ▶ Fremium: [BMG] p. 108
- ▶ Companies can make plugins for OSS tools under dual licensing
  - ▪ Thunderbird, Firefox, OpenOffice, Eclipse, ...
- ▶ Example: Quicktext Thunderbird extension http://extensions.hesslow.se/
  - ▪ QuickText is free
  - ▪ QuickText Pro is commercial
- ▶ Advantage: Platform has already many users and a large market

Deriving Secondary from Primary Business Models

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▶ From a primary value-driven or customer-driven business model, secondary ones can be derived

- **Customer-driven models** vary the customer segment
- **Resource-driven models** can be derived to use the resources more efficiently
- **Finance-driven models** can be derived to re-use a good value proposition with other pricing and costs
- [Hilty drilling machines]

Always attempt to derive a secondary BM from your primary one by varying along one of the variation dimensions.

Basic Forms of Business Models

- ▶ Product (with maintenance contract)
- ▶ Product with parameterization and mass configuration
- ▶ Product with piggy-pack Service

- ▶ Product Line (variation in 1 dimension)
- ▶ Product Matrix (variation in 2 dimensions)
- ▶ Product Cube (variation in 3 dimensions)
- ▶ Product Platform with Apps/Complements/Plugins and Services

- ▶ Individual software solution (with maintenance contract)

- ▶ Service
- ▶ Service Family
- ▶ Service based on Value Driven Network
- ▶ Service Matrix (variation in 2 dimensions)
- ▶ Service Cube (variation in 3 dimensions)

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Buy and install   Buy and use a cloud   Pay-per-use Rent

40.2 Service-Based Business Models

40.2.1. Services ("Leistungen", "Solutions") can be based on Products

▶ http://www.tracetronic.de/leistungen/

▶ TraceTronic (Gittersee) has several products for motor tests

▶ On top, they offer test projects, construction and integration into further test systems, function development for motors

▶ Testing uses the automotive V-model: lots of spots for service projects

- Requirements engineering (elicitation, checking…)
- Specification
- Design and Testing
- Seminars (Schulung)
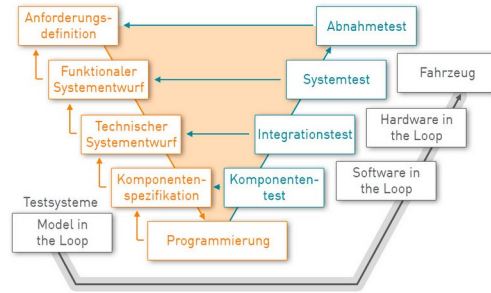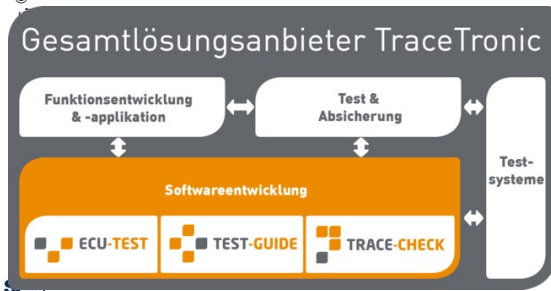
Business Model "Service Family along V-Model"
Salt Solutions

- ▶ For any software company, services can be structured along the typical tasks of the V-model
- ▶ https://www.salt-solutions.de/leistungen.html
    - ▪ Quality management
        - · Requirements engineering
        - · Testing
        - · Certification
    - ▪ Consulting
    - ▪ Conception (Design, Processes, Specification)
    - ▪ Implementation
    - ▪ Support

- ▶ http://www.tracetronic.de/leistungen/
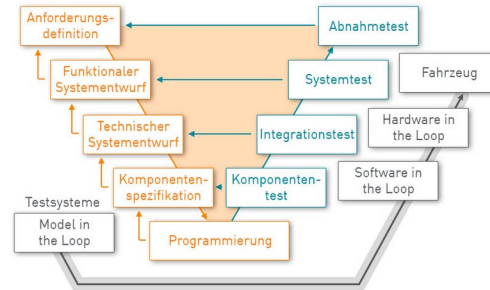
40.2.2 Business Model "Regional Service Family"

- ▶ One dimension to vary can be the region of sales
  - ▪ Develop a service in a region (regional business model, regional customer segments)
  - ▪ Replicate the service to other regions (regional porting)
- ▶ Example: www.Morgengold.de, www.it-sax.de (pludoni.de), www.lieferando.de
- ▶ Franchising can be used to spark small enterprises
- ▶ The same software can be used in every region, if customized appropriately
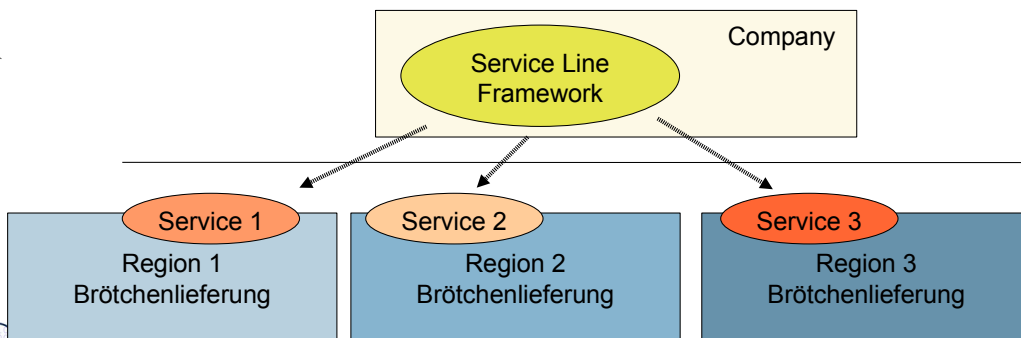
40.2.3. Business Model "Domain-Region Service Matrix"

▶ Develop a service in a two or three dimensions

- Region
- Business Domain
- Technical Domain
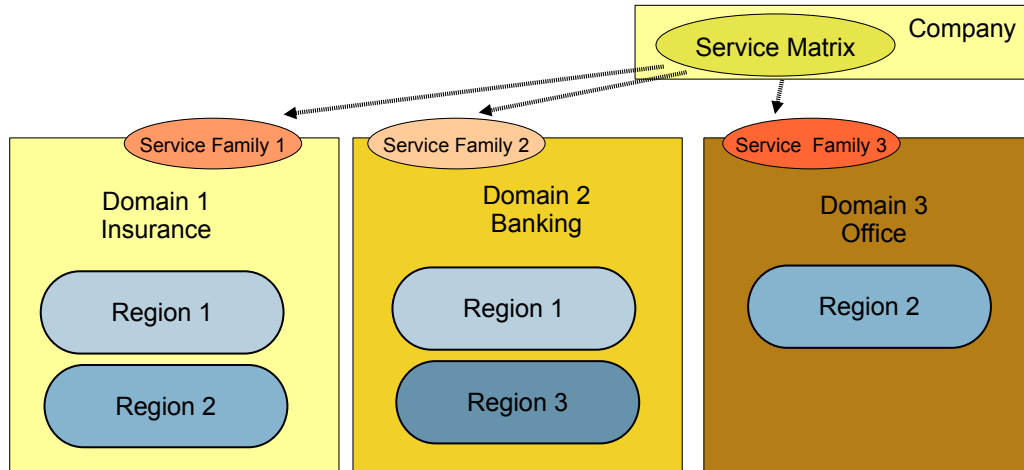
Pludoni's Business Model "Domain-Region Service Matrix" with "Smart Companies"

▶ www.it-sax.de (www.pludoni.de): a portal for mediating (brokering) applications and job offers in a region (regional business model)

▪ Trusted web community ("club of companies") with recommendations

▶ Founder Jörg Klukas ported it to many other regions and professional domains

▶ Start: 2010; now about 8 portals

▶ Dimensions of Service Matrix: **DOMAIN x REGION**

Service Matrix Job Mediation

Pludoni

Service 1

Domain 1
IT Jobs

•Itsax.de: Dresden IT
•Itmitte.de Mitteldeutschland
•Itbbb.de Berlin-Brandenburg
•Itbavaria.de Bavaria

Service 2

Domain 2
MINT Jobs
•MINTsax.de

Service 3

Domain 3
Office Jobs
•OFFICEsax.de
•OFFICEmitte.de

Service 4

•SanoSax.de Domain 4
Health Jobs

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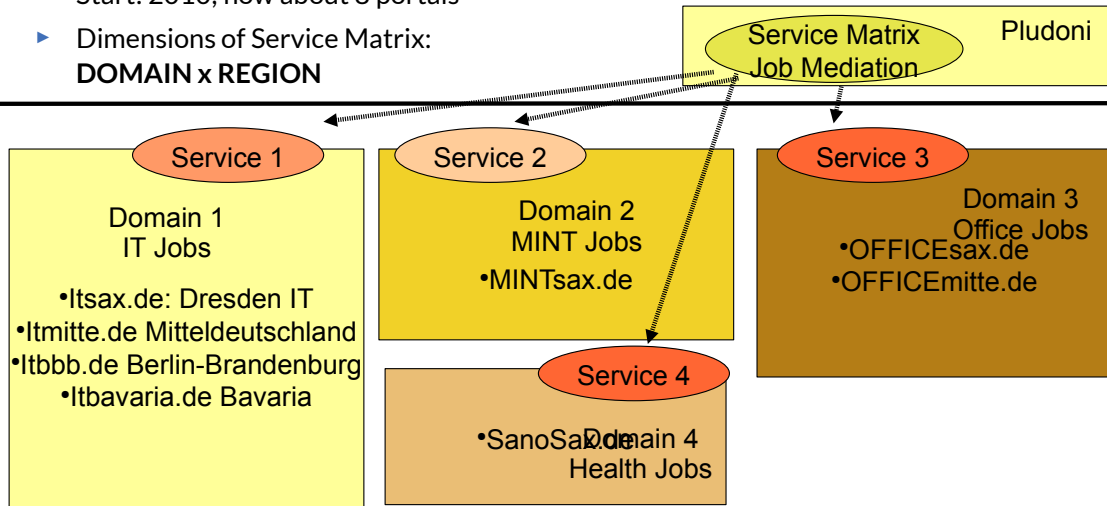
40.3 Product-Based B2B Business Models

Business Model "Mass-Customizable Product"

- ▶ Make the product **customizable (by end user)** [MassCustomization]
  - ▪ Customize by interactive Wizard simplifying the customization
  - ▪ Keep the product customization technique as company secret
- ▶ Intense interaction with customers required to ensure that the mass customization is simple enough
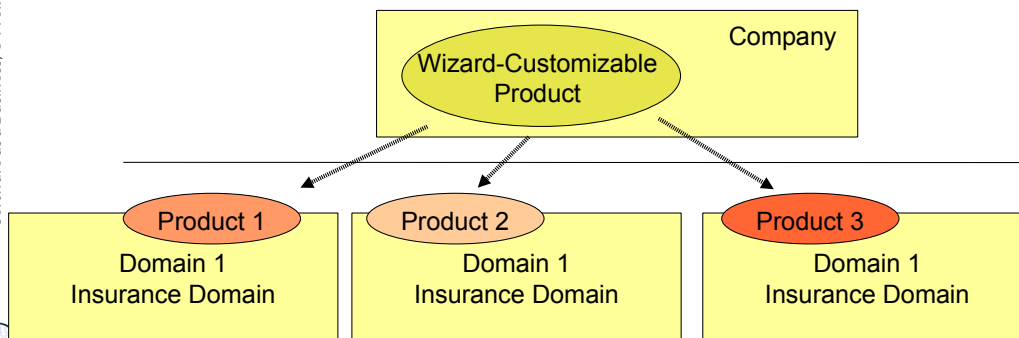
Business Model "Parameterizable Software Product"

- ▶ Design an extensible product in-house, **parameterizable by experts**
    - ▪ Parameterize by scripts in a scripting language, domain-specific language, or complex form mechanism (XML)
    - ▪ **Extend** by Plugin (Extension, Complement); Requires a *component model*
- ▶ Extension by product owner or third party (partner or supplier)
- ▶ Know how: instantiate new products with *different extended functions (features)*
    - ▪ Keep the product extension technique as company secret
- ▶ This is the standard way for product-oriented companies, how to scale their business to more than 15 people
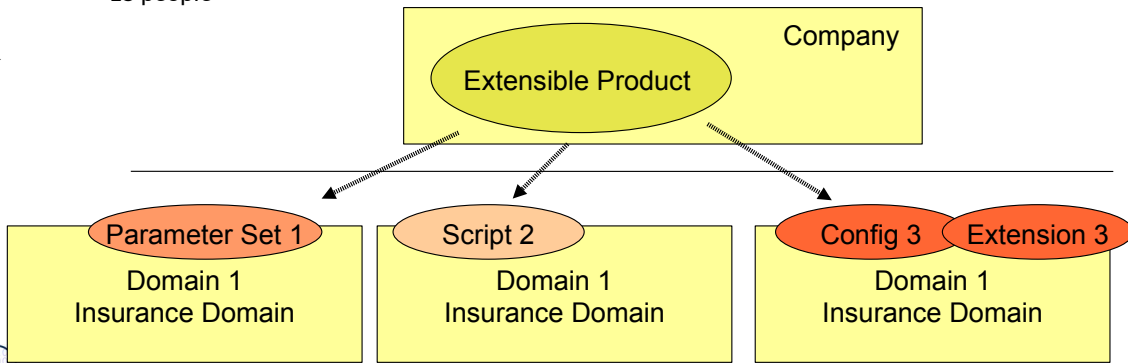
Tracetronic ECU-Test, a Parameterizable Domain-Specific Product

- ▶ Gittersee, Dresden, Germany
- ▶ http://www.tracetronic.de/produkte/ecu-test/
- ▶ Motor testing software
    - ▪ Writing and composing test scripts for motor runs in simulators or cars
    - ▪ Test script libraries
- ▶ Model-in-the-loop (MIL), Hardware-in-the-loop (HIL), Software-in-the-loop (SIL)
- ▶ Adapters for other test tools
- ▶ Growth: 1->100 employees in 10 years

> **Domain-specific products and product lines fill a domain-specific need
> (a need of a domain-specific customer segment)!**

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Tracetronic ECU-Test

Tracetronic ECU-Test

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Tracetronic 2nd Product: Trace-Check

- ▶ Monitoring and evaluating test traces with temporal logics (path expressions over time, see model-checking courses)
- ▶ Modular trace analysis
- ▶ Reporting
- ▶ Works with EXAM of VW
- ▶ https://www.exam-ta.de/

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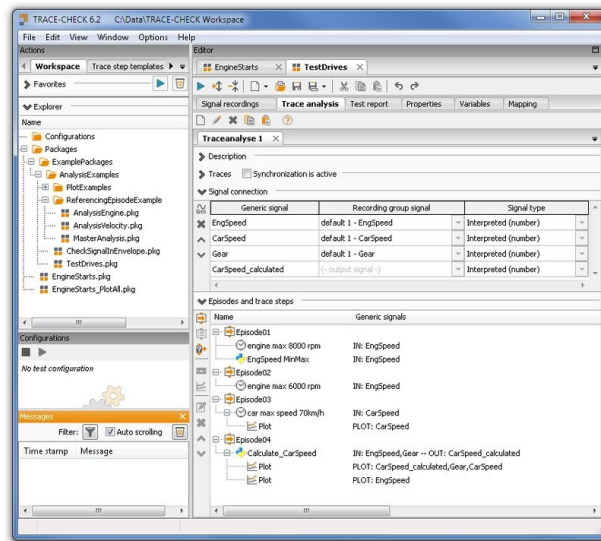
Tracetronic Customer Channels

- ▶ http://www.tracetronic.de/cms/data/docs/pdf/Datenblatt_ECU-TEST.pdf
- ▶ Tracetronic is a domain-specific company (automotive domain)
  - ▪ supplier to big car OEM (such as BMW)
  - ▪ It collaborates with other suppliers, such as ETAS or Vector
  - ▪ Many adaptors to other tools

> **Domain-specific products and product lines fill a domain-specific need**
> **(a need of a domain-specific customer segment)!**

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Carl Zeiss Innovationszentrum für Messtechnik
Product: ZEISS Involute

- ▸ Dresden product for data analysis of gearwheels, e,g. wind power plant gearwheels
- ▸ First ZEISS software product, more than 100k customers worldwide
- ▸ http://www.zeiss.de/izm/involute.html
- ▸ Every year, ZEISS Dresden sponors the Diplompreis Informatik for the department:
- ▸ http://www.zeiss.de/izm/diplompreis.html
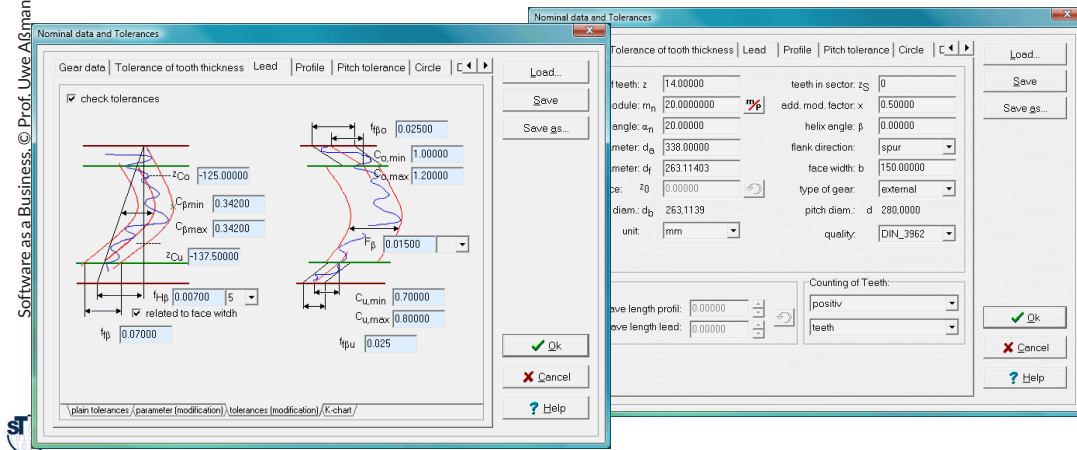
Business Model
## "Parameterizable Domain-Portable Technical Product"

▶ Produce your product for several domains

▶ Make it **parameterizable, customizable, extensible (by experts of different domains)**

- Offer a domain-unspecific scripting language
- A *technical component model*

▶ Problems: hard to sell, because customers appear in different domains (no closed customer group

- CRM is very important to memorize the details of the customer
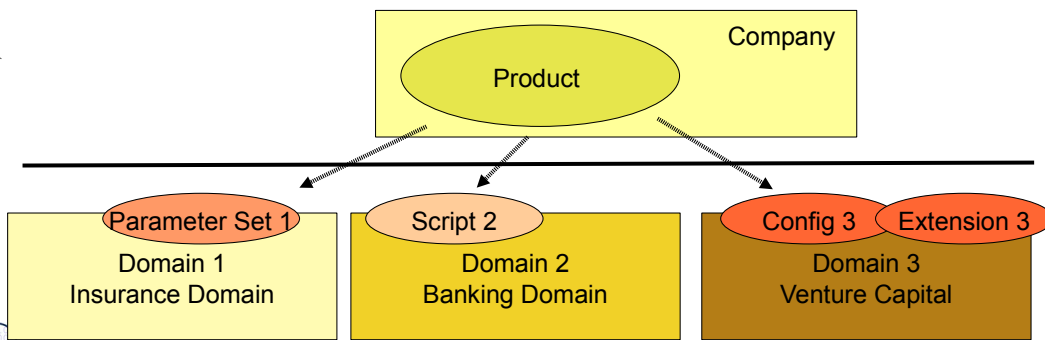
SQL AG Transconnect Integration Suite

- ► http://www.sql-ag.de/transconnect.html Dresden, Franklin-Strasse
- ► Non-domain-specific, technical product: can be applied in many domains
    - ▪ Does not imply a domain-specific customer binding
- ► Data connector (integrator) between systems; many adapters
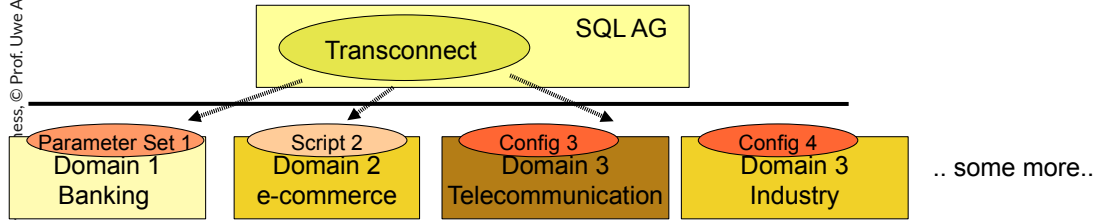
The End

- ▶ Explain the business model "domain-region service matrix"
- ▶ Explain the steps how to arrive from a product to an extensible product
- ▶ Explain how the BMC and the LeanCanvas help to find customer segments for a product line
- ▶ Compare the concepts of a Product Line, Product Matrix, and a Product Cube
- ▶ Explain how the products of a product line can be assessed with the BMC assessment process

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