

From an e-Business revenue model to its software reference architecture

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- e-Business characteristics
 - Information Technology
 - innovative business models
 - innovative revenue models
- realization of business models in practice highly dependent on underlying software system
 - design of software architecture crucial
- revenue model is fundamental part of a business model
 - definition
 - 1:n relation

- there are other aspects of business models, too!
 - but our focus!
- requirements of the revenue model have to be considered in software architectures
- idea: deliver a set of software architectures for revenue models of the e-Business
 - support faster and better design of business model's overall software architecture
 - usable in many use cases
 - serve as reference architectures in that domain

- business models
 - ‚A business model is defined as
 - the organization (or ‚architecture‘) of product, service and information flows,
 - including a description of the various business actors and their roles; and
 - a description of the potential benefits for the various business actors; and
 - a description of the sources of revenues‘ (Timmers 1999)
- revenue model
 - ‚determination of sources of revenue‘ (Zerdick et.al. 1999)
 - origin-related
 - defines what to pay for
 - offer-related (Skiera, Lambrecht 2000)

- software architecture
 - ‚a collection of computational components [...] together with a description of the interactions between these components – the connectors‘
(Gerlan, Shaw 1993)
 - different structures represent different aspects (e.g. static, dynamic)
(Bass, Clements, Kazman 1997)
- software reference architecture
 - a standard decomposition of a known problem into parts that cooperatively solve the problem, mapped onto software components
(following Bass, Clements, Kazman)

- 1st: Identifying revenue models of the e-Business
 - defining *appropriate* classification criteria
 - applying the Classification Cycle
 - identifying types plus variations
- 2nd: Identifying appropriate software architectures
 - derivation based on instances of the Classification Cycle
- 3rd: Validation in a real-live use case

Classification criteria

- Requirements to the classification of revenue models
 - should be based on non-technical descriptions
 - should be usable to define different types and variations
 - should be used to derive design decisions of software architectures
- Categories in accordance with the definition of a business model
 - actor-related criteria
 - offer-related criteria
 - revenue-related criteria
 - benefit-related criteria

Classification criteria

- actor-related criteria
 - customer role
 - informant
 - buyer
 - seller
 - value integrator
 - customer relation
 - anonymous
 - identified
 - identified and authenticated

Classification criteria

- offer-related criteria
 - consistency
 - services
 - digital goods
 - physical goods
 - information
 - pricelevel
 - nano ($\leq 0,1$ €)
 - micro ($>0,1$ to 5)
 - medium (>5 to 1000)
 - macro (>1000)
 - origin
 - self-determined or over-directed

Classification criteria

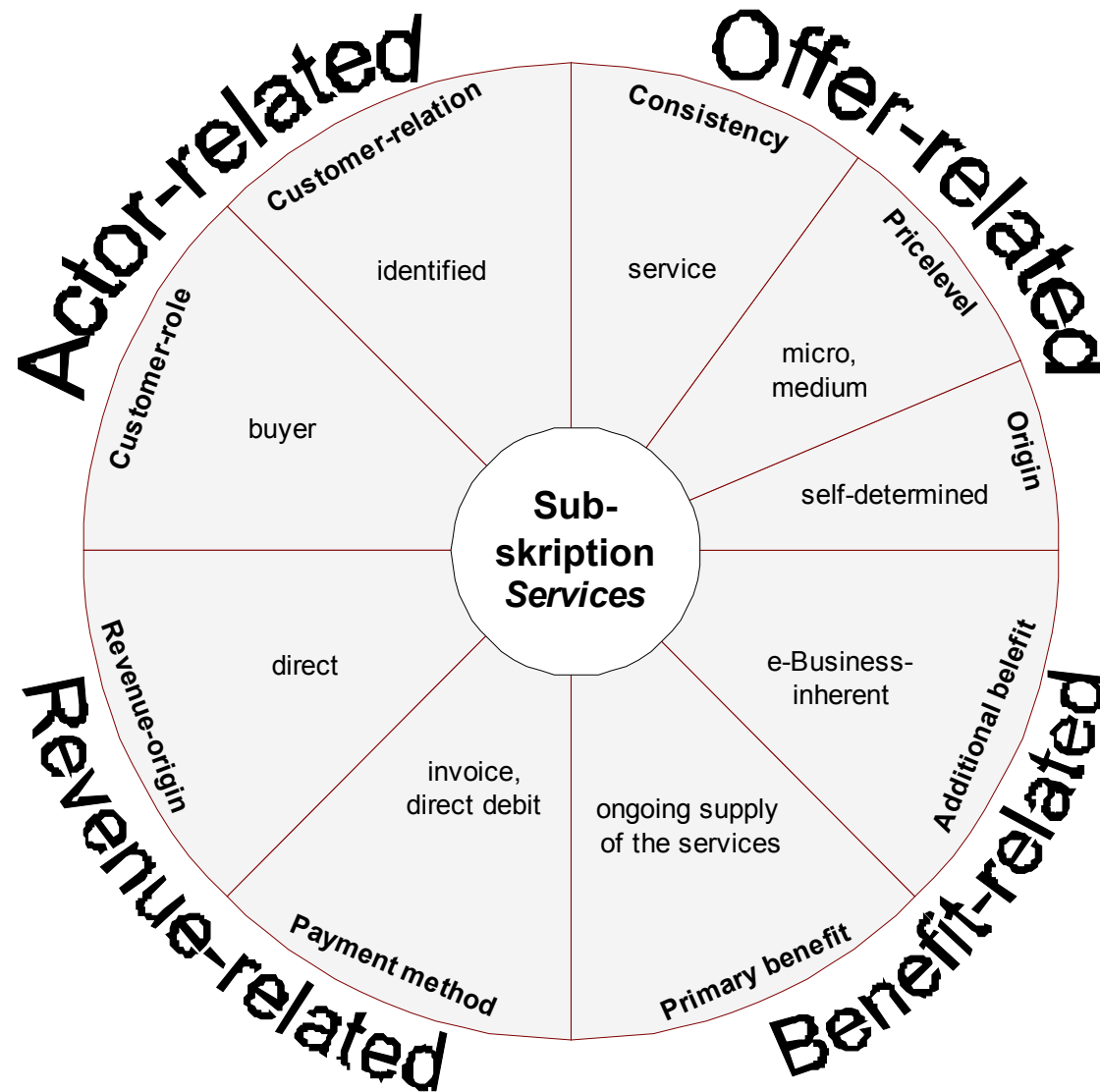
- revenue-related criteria
 - revenue-origin
 - direct
 - indirect
 - payment method
 - invoices
 - direct debits
 - credit cards
 - external payments

Classification criteria

- benefit-related
 - primary benefit
 - ‚what is the customer willing to pay for?‘
 - additional benefit
 - e-Business inherent
 - personalization
 - anonymity

Classified e-Business revenue models

- Single Transaction
 - physical goods / digital goods / services
- Subscription
 - services / digital or physical goods
- Transaction fees
 - paid by buyer / paid by seller / paid by buyer and seller
- Profiling
 - identified customer / anonymous customer
- Provision
 - identified customer / anonymous customer
- Advertisement
 - AdImpression / AdClick

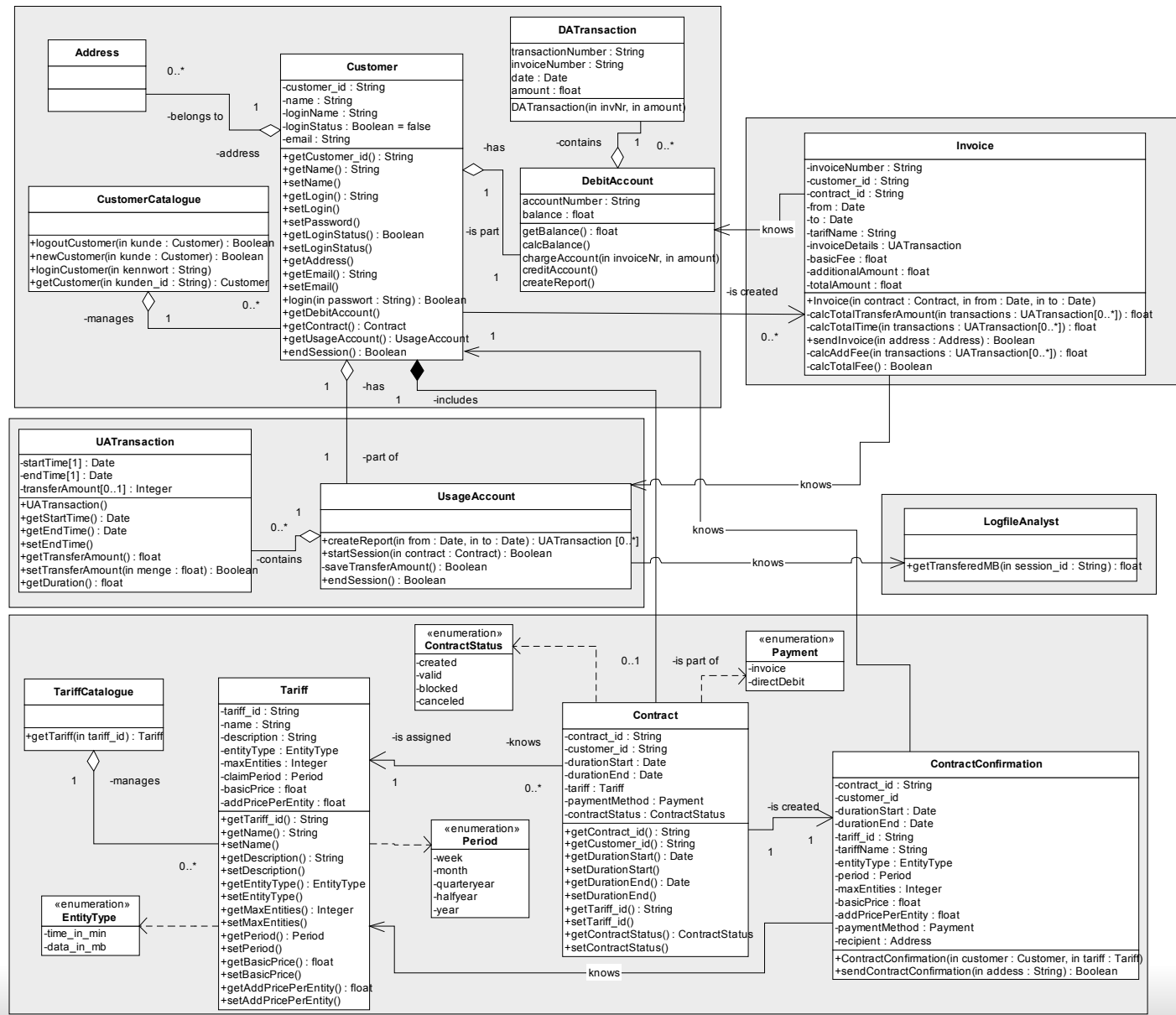


Classification Cycle for the revenue model subscription of services

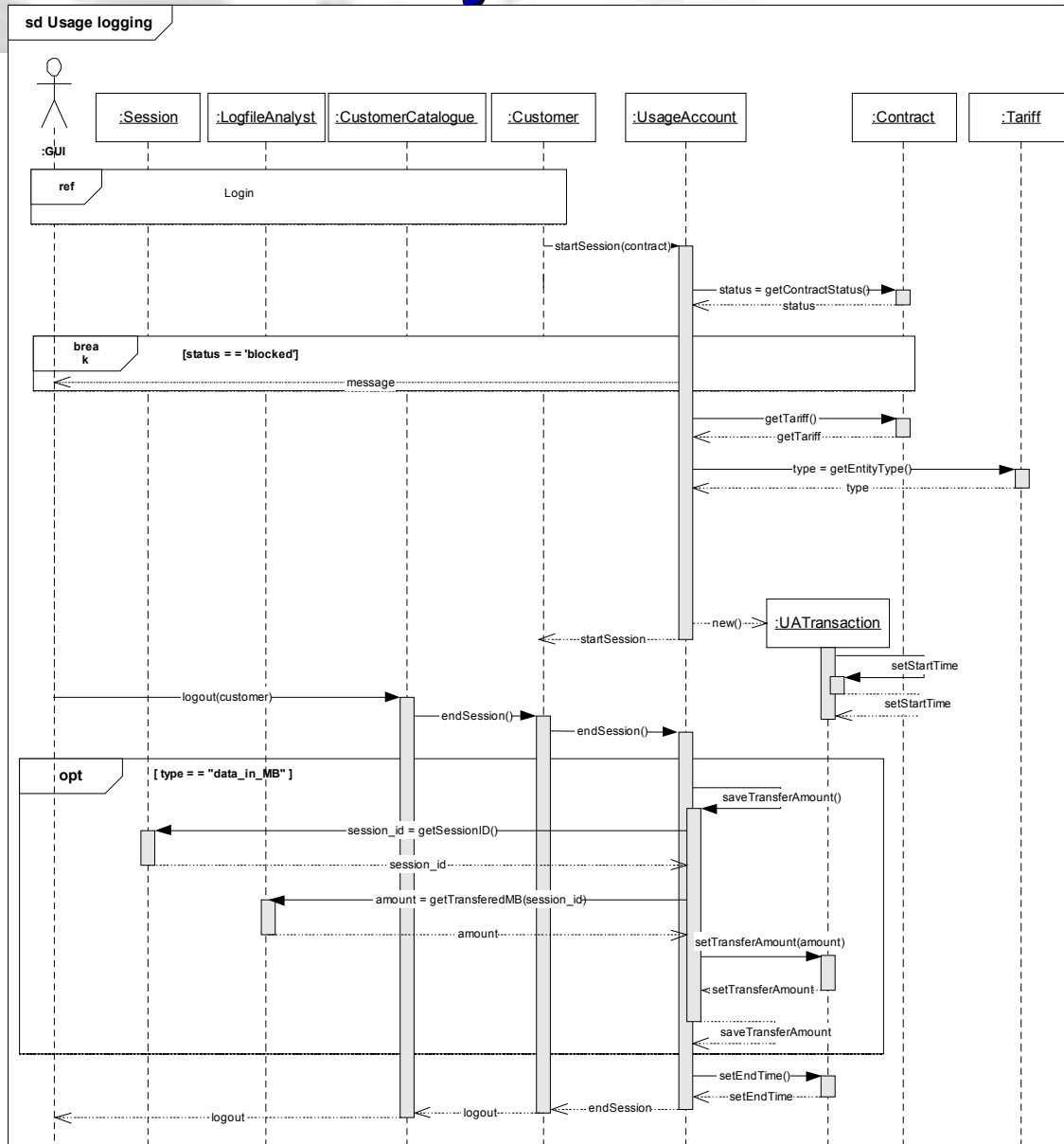
Derivation of software architecture

- No algorithm!
- Still creative process
- But: Guidance by using the values of the Classification Cycle
- Examples:
 - subscription / identified user relation act as buyer / direct origin of revenues using invoices or direct debits
 - influences components UserManagement, Contract and Invoicing
 - user pay for ongoing supply of services on a micro-medium-level
 - influences UsageAccount component to register real usage
 - subscription of self-determined services
 - need of flexible tariffs (Contract component)

Software architecture: Static structure



Software architecture: Dynamic structure



- launch of a German Lottery portal in 2004
- products can be played in a subscription mode
- very specific characteristics of products

- software architecture was used as a template
- components had to be adapted
- successful approach

- Architecture optimization
 - complete the set of software reference architectures for the identified revenue models
 - identifying re-usable components (including variations) for different revenue models
- Evaluation
 - suitability of approach for more real-world projects

Thank you!

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