Architecturing Component Based Systems with XML Technologies and Standards

XML Finland 2002

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Agenda

- What is architecture
- Current approaches
- Emerging trends
- A new vision
- Wrap up

What is architecture

Architecture.

Originates in greek.

Assisting buildmaster in getting full value for the money

In ancient Greece, the notion was:

Creates a harmonic structure for the house

What is IT architecture

IT Architecture.

Ensure a ”harmonic” IT structure, that is balanced between ”now and here” demands as well as future demands.

Harmonic defined as a platform that is good for all participants; Business, Software development, IT operations, Helpdesk and Architectural department

Harmonic defined as a platform that is ”in tune”, in the meaning that it can be ”played” by the director of business, and respond in tune.

How is harmony achieved?

Build an adaptible infrastructure. (Systemzones, HW-, SW-, network-, data-level).

Must be loosely coupled in order to be adaptible.

Architecture consist of overall plan, and several subdomains:
Technical, information, application and process

Document, enforce and maintain it.

Key point is adaptible!

Adaptible = Able to facilitate change in ”business time space”

Changes needed done in Biz-time?

Changes that I’ve endured:

- We need a web-shop
- We need the salesforce online, so they allways have the latest price&product information available – anywhere
- Support WAP phones – now!!!
- Outphase expensive old Unix servers, but keep the applications running
- Create a unified customer profile for CRM (across many customerdatastores)
- I want the same color green, as in the new logo

Without plan?

Without maintenance?

Different layers

Several levels of architecture

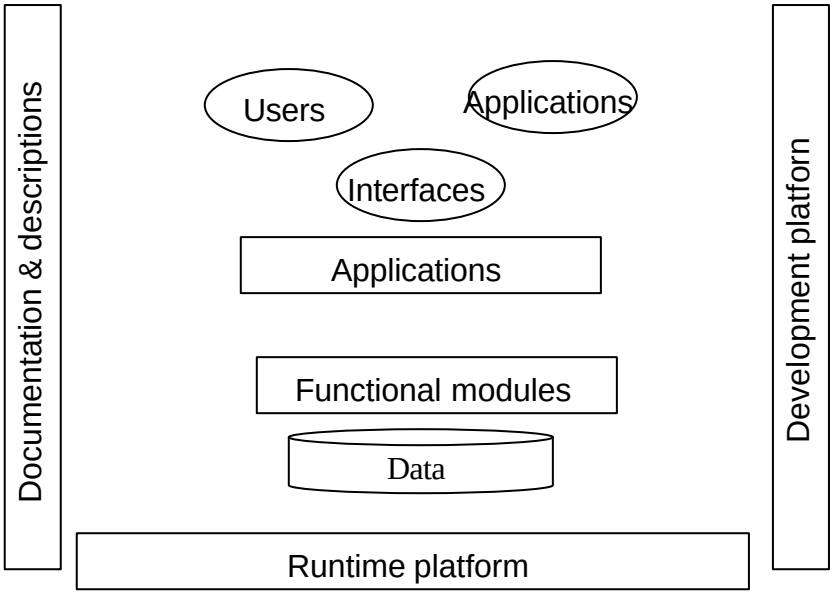
- Landscape – where to place agricultural zones, city zones, nature zones
- Cityscape – where to place industrial zones, business zones, office zones, housing zones
- Building architecture – layout of the rooms, expression of the building etc.
- Technical architecture – where to place wiring, pipes etc.

A harmonic architecture?

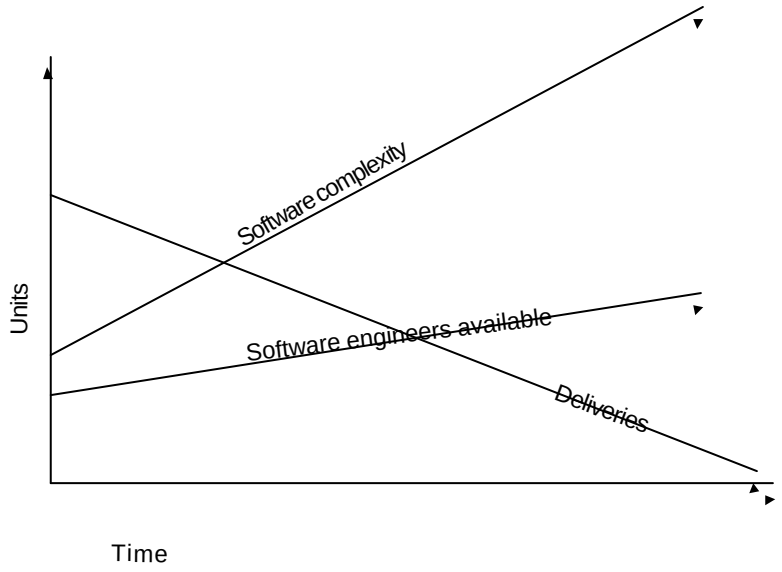
Time has learned us some basic rules:

- Expect the unexpected
- Keep data separate from application layer Mainframe lesson
- Keep presentation separate from logic layer www lesson

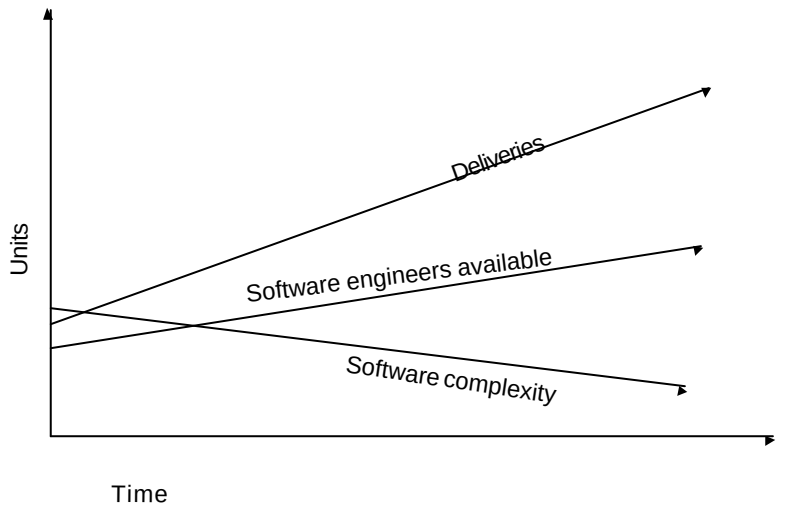
Architectural model



Complexity graph



Solution - 1



How - 1?

Reusable components

- Costs 150% to 250% more to develop
- Solutions build on reusable components cost only 20% to build
- Components are today build to a certain programming platform.
- Components can only be connected and reused on that platform
- Component librarian and component resuse analyst are key to reuse
- Components can be data as well as functions

How - 2?

Loosely coupled reusable components.

With Web services and Semantic web concepts, we have now in hand the initial buidling blocks for building reusable components (web-services), abstracted datamodels (ontologies) and we have the first few elements of the building blocks to weave this into applications – flow languages and models

Emerging trends -functions

Web services flow languages

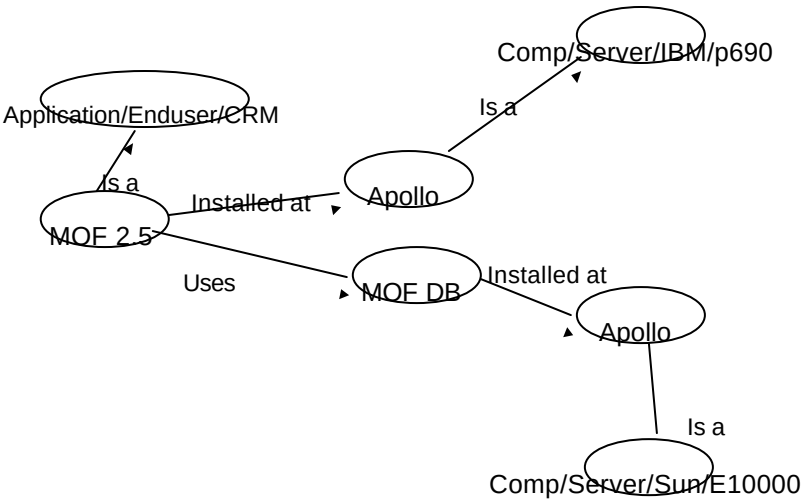
- Standards for ”orchestrating” the flow between web-services
- Evolving area – follow it closely
- WSFL, Xlang, DAML-S, BPEL4WS and more

Emerging trends - data

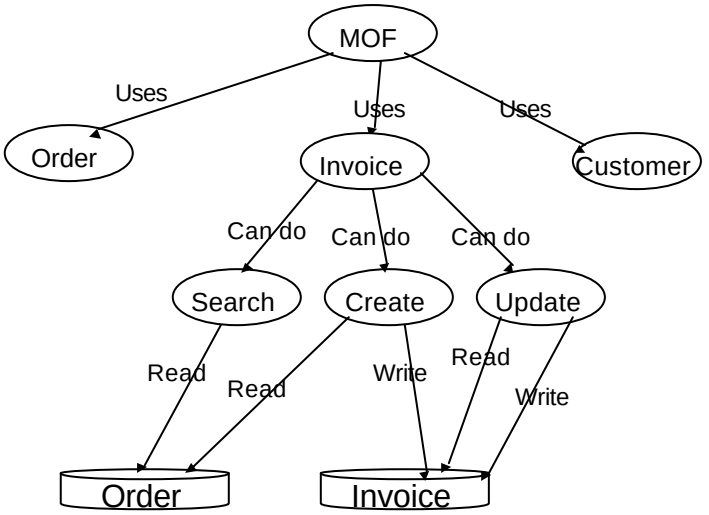
XML, XML Schema, RDF, RDF Schema.

Standards that gives us the foundation to model data in both syntactical and semantic ways

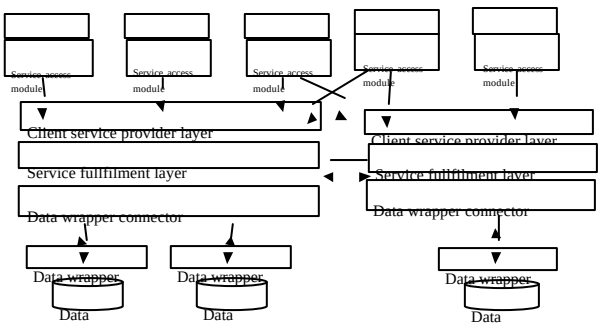
System architecture model in RDF[-S]



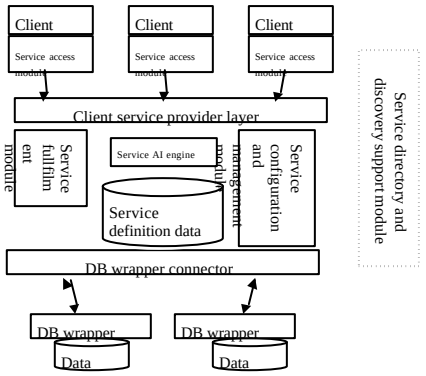
Application architecture model in RDF[-S]



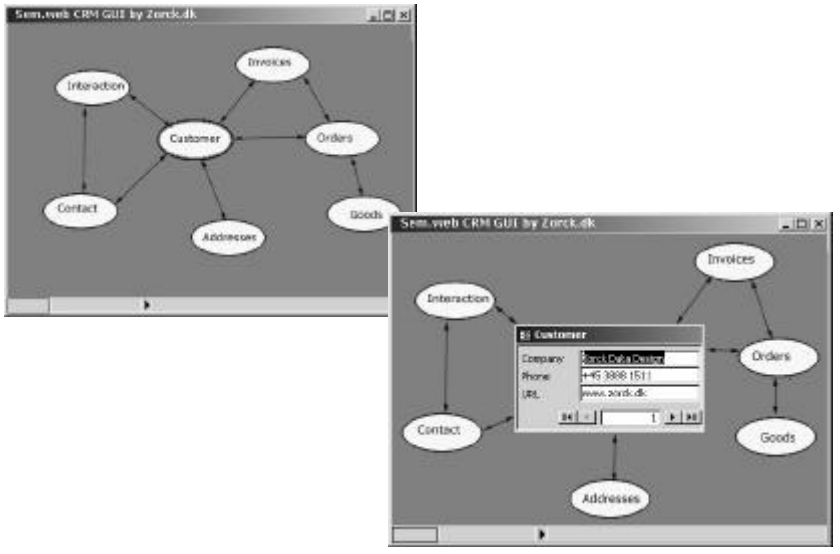
Tight logic connections



Loosely coupled logic



Virtual GUI



Virtual applications

Virtual function libraries (WS + functional ontologies)

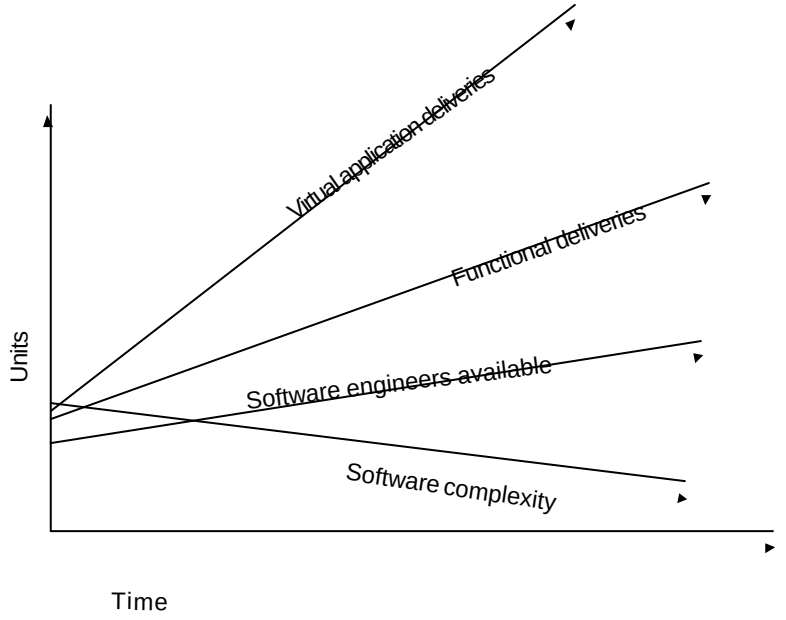
Virtual data concepts (Datamodelling via ontologies)

Virtual GUI with:

- End user customization
- Navigation of concepts
- Interaction with concepts via virtual functions

Enables us to build not just A2A integrations, but also applications on top of Semantic Web

Future – 2006?



Creativity is exploring new areas