

# Making a living in IT

## Making a living in IT

Staufen 02/21/2003

Walter Kriha

## Disclaimer

The following statements about working in IT – especially software development – are based on MY experiences and should be generalized with care. Your mileage may vary.

walter@kriha.de

Office: + 41 61 2890937

## Roadmap

- A project example: Building an internet portal
- An overview of special areas in IT
- Women in IT
- Education and Skills
- Resources

3



**Common:** customize, filter, contact etc.



**Portfolio:** Siemens, Swisskom, Esso,

Dynamic and personalized homepage

Welcome Mrs. Rich, we would like to point you to our New Instrument X that fits nicely To your current investment strategy.

**Messages:** 3 new From foo: hi Mrs. Rich

**Common:** Banner

**News:** IBM invests in company Y

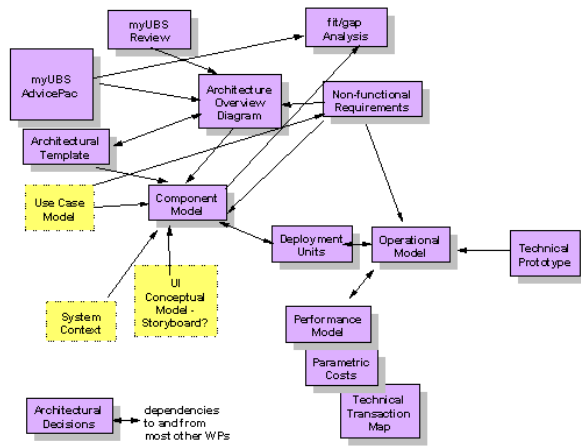
**Quotes:** UBS 500, ARBA 200

**Research:** asian equity update

This is a rough sketch of an internet portal for a large bank. Together with business people a user interface is derived from requirements analysis. This is your main communication platform with business people.

4

## Architecture Domain

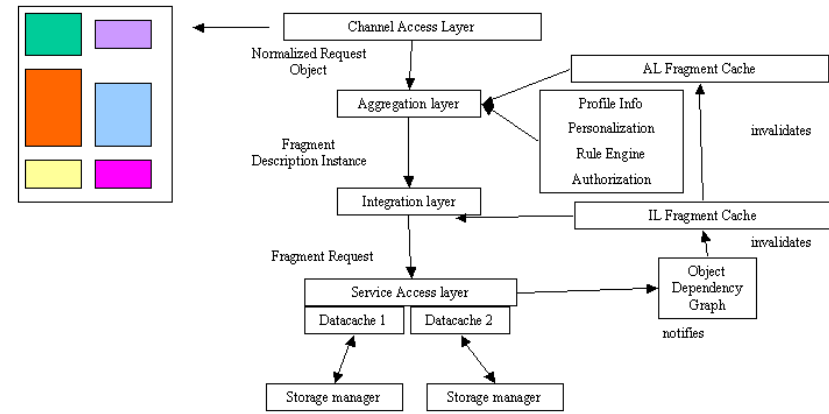


The next step is to develop an architecture for your project. This is an extremely important step and leads to a number of documents which are reviewed. Don't start programming without it! But also don't get lost in diagrams.

5

## homepage

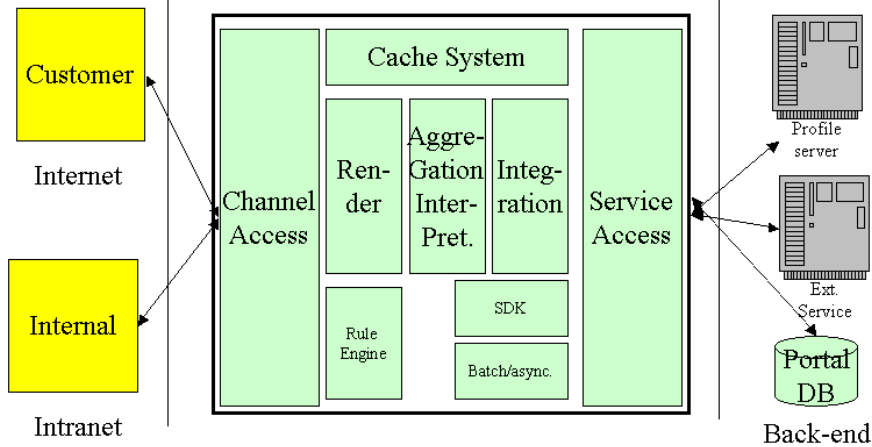
## Fragment Based Information Architecture



Sometimes a solution requires advanced research. The basic idea came from IBM Watson Research. Goal: minimize backend access

7

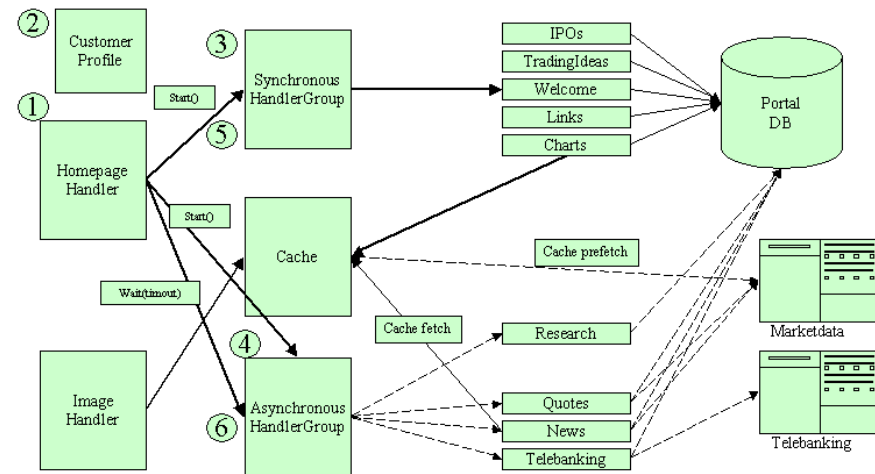
## Portal Conceptual Model



A good conceptual model ensures that everybody in the development team understands the architecture and its consequences. Costly mistakes are avoided

6

## Portal Request Flow and Assembly



How a customer request is processed. Concurrent designs ensure performance. Correctness is nice but not sufficient. System software knowhow is needed

8

## Design Patterns and Idioms: Double Checked Locking

```
// Single threaded version
class Foo {
private Helper helper = null;
public Helper getHelper() {
if (helper == null)
helper = new Helper();
return helper;
}
// other functions and members...
}
```

```
// Broken multithreaded version
// "Double-Checked Locking" idiom
class Foo {
private Helper helper = null;
public Helper getHelper() {
if (helper == null)
synchronized(this) {
if (helper == null)
helper = new Helper();
}
return helper;
}
// other functions and members...
}
```

```
Symantec JIT compiled code:
0206106A mov    eax,0F97E78h
0206106F call  01F6B210
; allocate space for
; Singleton, return result in eax
02061074 mov    dword ptr
[ebp],eax
; EBP is &singletons[i].reference
; store the unconstructed object here
02061077 mov    ecx,dword ptr
[eax]
; dereference the handle to
; get the raw pointer
02061079 mov    dword ptr
[ecx],100h
```

Yes, you will need to program on expert level!

9

## Tools and Technologies

- Apache Web Server
- Web Application Server
- Visual Age Java IDE
- Oracle Database
- CVS
- Twiki collaboration tool
- Photoshop/Dreamweaver
- TogetherJ
- Object Oriented Development
- Design Patterns
- Java Idioms
- Web (http, html)
- SQL, XML, JSP
- TCP/IP, SSL,

You will be permanently forced to learn new tools and technologies! Don't expect the next project to use the same toolchain

10

## Is this all there is?

- Security analysis and design to make sure there are no external or internal attacks
- Scalability: build a cluster solution for high performance
- Life-cycle: how are new business requirements integrated?
- New data sources from external providers
- New user groups
- Better personalization with a rule engine
- Upgrade to new Java versions.

and so on....

11

## But the most important thing: your team

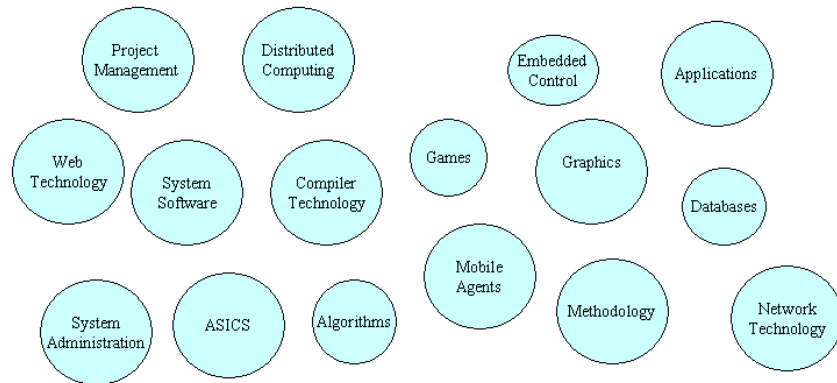
My current team: around 20 people from

- Vietnam
- Hawaii
- Turkey
- France
- India
- Switzerland
- Lebanon
- South-Africa
- Great Britain
- Spain
- Germany

All these people have different cultural and technological backgrounds. Creating a team from those individuals is an absolute requirement for a successful project.

12

## Computer Science: Areas of Interest



You can choose from a seemingly endless array of technologies to specialize in. But don't forget that real systems need many different technologies to work.

13

## Women in IT – why girls don't compute

before

- girls had no PCs at home
- they were not encouraged to investigate and play with technology
- the IT role models of semi-autistic hackers mindlessly wasting time with computers was not attractive
- computer science education at schools was targeted at males.

now

- girls have their own PCs and know how to use them
- they are expected to know technology and handle it.
- Communication skills in IT are key.
- Emphasis on modelling and clear goals during education

Women are extremely underrepresented in IT. This is changing now. If you consider working in IT, read this first:

- Institut für Informatik und Gesellschaft, Freiburg ([http://modell.iig.uni-freiburg.de/publikationen/publik\\_online.html](http://modell.iig.uni-freiburg.de/publikationen/publik_online.html))
- Wired Magazine: Women in Tech (<http://www.wired.com/news/women/>)

14

## Education

- PC with internet access
- Studying computer science at a university
- Coming from physics, mathematics, engineering etc.

A completed university education was not really necessary in the last 15-20 years. This is changing due to the current crisis in information technology jobs. Studying computer science is definitely an advantage.

15

## Technical and Social Skills

- High social competence, teamplayer attitude
- fluency in english as most documents are in this language
- Internship or regular work in the USA (mandatory if you want to work in large projects)
- Interested in new technologies because IT is far from being a mature area
- Programming language(s)
- Math is important while studying, afterwards rarely used.
- And please: learn to type with 10-fingers

16

## Money Talk

- employed
- via an agency
- own company

Many people in IT work as self-employed consultants with a higher risk/profit ratio. The need for IT-specialists is far from over, just think about the possibilities in embedded control (PDAs, wireless and ubiquitous computing etc.)

17

## Interested?

Take a look at [www.kriha.de](http://www.kriha.de) for more information on what's hot in computer science and how to study it.

18