The Future of Software Engineering as seen with SEMAT Glasses

Ivar Jacobson
Yesterday and to most people also Today
Creating winning teams.

We all became Agile

Big branded methods getting out of fashion

‘Engineers’ -> Craftsmen

Challenges to ensure you have the best method

Dave Thomas: The word ‘agile’ ... is effectively meaningless

Challenges with methods being passive (just books)

Acknowledging the poor state of art of SE

Resulting in the SEMAT-Call for Action
We learnt from books? Here some Rational books

Authors: Ivar Jacobson | Grady Booch | Jim Rumbaugh | Walker Royce
Philippe Kruchten | Dean Leffingwell | Agneta Jacobson
Nasser Kettani | Magnus Christerson | Maria Ericsson | Brian White
Terry Quatrani | Jim Conallen | Gunnar Overgaard | Murray Cantor
The New Method Architecture

Method Architecture

Methods
- In-House Development
- Outsourced Development
- Legacy Development

Practices
- Scrum
- User Stories
- Kanban
- Some other practices
- Your own other practices

Kernel
- Essence Kernel

Language
- Essence Language

Process engineers are secondary

Analysts

Developers

Leaders

Testers

Creating winning teams.
Creating winning teams.

**Essence defining the Common Ground**

- **Customer**
  - Opportunity
  - Stakeholders
  - Opportunity provides Stakeholders
  - Stakeholders helps to address Opportunity

- **Solution**
  - Requirements
  - Software System
  - Requirements demand Software System
  - Software System fulfills Requirements

- **Endeavor**
  - Work
  - Team
  - Work performs and plans Team
  - Team applies Way of Working

- **Way of Working**
  - guides Work
  - applies Team

Software System uses and consumes Requirements, and Requirements focuses on set up to address.
Creating winning teams.

We got Essence – a common ground of software engineering

Craftsmen & Engineers
No polarized view

Methods focused on the essence expressed through superlight user experience

Comparing Methods by comparing Practices

For all of us: developers, executives, teachers, researchers

Methods are active supporting the team in doing (not just reading)

We have the Whats of SE
Now we need the Hows
Creating winning teams.

Good Knowledge Base Promotes Professionalism

Knowledge

www.semat.org

Semat
Universal, Structured Knowledge

Islands of Knowledge

Professionalism

Competence in best practices

This way is better, faster and happier

This way is slower and more costly

Use Cases

UML, Agile, CMMI/SPICE, Component Based

Java, C#

manifesto.softwarecraftsmanship.org
Creating winning teams.

Tomorrow
Creating winning teams.

Now we are getting the Hows.

We will get Practice Libraries

Tools of many kinds: Essence tools, practice specific tools

100s of composable Practices

Expert Systems/Intelligent agents

Practices are First-Class citizens, Methods are just compositions of Practices

Methods are active supporting the team in doing (not just in reading)

Tomorrow
Bill Gates: The Road Ahead

Newsweek December 19, 2005:
“How ‘intelligent agents’ and mind-mappers are taking our information democracy to the next stage.”
Smart Practices are intelligent agents for software development

I do use cases
I do architecture
I do iterative planning
I do Embedded Systems
I do Business Systems

Active Guidance
provides expert advice just when needed

Virtual Pair
- Programmers
- Analysts
- Designer
- Tester
- Project Managers

Active Review
monitors status, progress and quality (individual/mgmt)

Active Automation
delegates mundane tasks
Creating winning teams.

We have refounded Software Engineering -- What’s next?

Agile – from Craft to Engineering

Software companies need many practices – powered by Essence

What is in it for the developers?

What is in it for the teachers?

What is in it for the executives?

What is in it for the researchers?

More on Tomorrow
Pain to Essence Value Mapping

Wasted millions when a method went out of fashion?

Had a nasty surprise when a software project went badly wrong with no warning?

Resent paying to re-skill people as they flow between different parts of your IT organisation?
System engineering

Generic endeavors

Project/Business engineering

Innovation practices getting more important than development practices

Industry adoption

Academic adoption

We have made a paradigm shift!

More on Tomorrow
Summary

• Watts Humphrey said ahead of the first SEMAT meeting in Zurich, March 2010, when he said: “This meeting in Zurich is likely to be a historic occasions much like the 1968 NATO session in Garmish.”