Challenges and Opportunities for SW Development

ANDERS CASPÄR
Director, Ericsson Software Research
Ericsson Research

The Pitch
Everything is connected
Challenges
Trends and needs

THE PITCH
THIS IS ERICSSON

The prime driver in an all communicating world

Ericsson is a world-leading provider of telecommunications equipment and related services to mobile and fixed network operators globally.

Founded in 1876 in Stockholm, Sweden
Present in 175 countries.
~82,000 employees

Never left a market, never left a customer

WE ARE A FULL SERVICE VENDOR
FROM SERVICES TO PRODUCTS AND SOLUTIONS

- Service delivery and provisioning
- Managed services
- Education
- Customer support
- Systems & Network integration

Products
- Mobile & Wireline systems
- Transmission & Transport
- Enriched communications
- Consumer and business applications
- Revenue management

Solutions
- Business and technology consulting
- Operations efficiency
- Network efficiency
- Service delivery and provisioning

CHARACTERISTICS FOR TELECOM

- World standards
- 99.999% incl sw upgrade
- Req planned down time 0 min/year
- Investments 10,000’s of manyears
- “re-utilization” 100%
- Long product life cycle
- Shake out
- Cost pressure
CHARACTERISTICS OF ERICSSON SYSTEMS

Highly distributed
Large-scale
Event-driven
Concurrent
Embedded
Technically challenging
Significantly different challenges than development of IT systems

DID YOU KNOW THAT...

...more than 40% of all mobile traffic and 50% of all WCDMA traffic goes through Ericsson’s networks

...Ericsson delivers a new radio base station every 90 seconds

...Ericsson supports networks that together serve more than one billion subscribers

...over 1,000 networks in more than 175 countries utilize our network equipment

...Ericsson has one of the industry’s strongest patents portfolios with 24,000+ patents
SOFTWARE, SOFTWARE, SOFTWARE

- Around 80% of our development costs are related to software. Software is ubiquitous in our systems – it is our heart and soul.
- Since the software solutions we develop are by nature complex we need to be smart and efficient about how we do this.
- Our ability to remain profitable is a very strong function of our ability to develop software efficiently and with the right quality.

More calls with less HW…

'Everything is connected'
Internet of the future

**Today**
- Mobile
  - >4B subscribers
    - Connecting Individuals
- Fixed
  - >400M subscribers
    - Connecting Household

**Tomorrow**
- 50B devices
  - Everything connected

---

**EVERYTHING THAT BENEFITS FROM A CONNECTION WILL HAVE ONE**

- **PEOPLE**
  - Lifestyle
  - Health
  - Convenience
  - Safety

- **BUSINESS**
  - Productivity
  - Cost efficiency
  - Assets

- **SOCIETIES**
  - Sustainability
  - Safety
  - Security

- **TECHNOLOGY**
  - Cost efficient broadband

---

**MILLIONS OF OPPORTUNITIES**

- Smartphones
- Devices
- Connected tags
- Mobile data traffic
- Applications and services

- **5B**
- **10X**
- **100X**
- **1000X**
- **1000 000X**
VISION - KEY AREAS

SUSTAINABILITY
EVERYONE CONNECTED
EVERYTHING CONNECTED
EVERYDAY INTERACTION

CHALLENGES

TRANSITIONAL MARKETS

WHEN THE RATE OF CHANGE OUTSIDE A COMPANY IS GREATER THAN THE CHANGE INSIDE THE COMPANY – THE END IS NEAR

Jack Welch,
CEO & Chairman General Electric 1981-2001

THE ABILITY TO LEARN AND ADAPT FASTER THAN YOUR COMPETITION MAY BE THE ONLY SUSTAINABLE COMPETITIVE ADVANTAGE

Arie De Geus,
Shell Strategy director
THE DEMANDING CONSUMER

Customization
Transparency
Involvement
Combinations of benefits
Trust
Good value
Sharing of opinions

CHALLENGES IN ORDER TO MEET ERICSSON BUSINESS CHALLENGES

How should we manage keeping our architecture up to date and consistent?

How can we enable our distributed development teams to cooperate efficiently?

How do we compete with global competition?

How can we ensure world class quality in our future systems, without sacrificing TTM?

How can we meet the performance requirements of tomorrow?

How do we secure corporate memory within our products?

TRADITIONAL SOFTWARE ENGINEERING

global software development
software ecosystems
causing
unacceptable complexity and coordination cost
SW TRENDS & NEEDS

DRIVING FORCES

- Customer first
- Speed
- Diversification / adaptability
- Architecture / Componentization
- Cost pressure
- Total value chain
- Reuse
- Functionality implemented in SW
- SW delivery and support model
- Quality
- Legacy

OBSERVATIONS & TRENDS

- Consolidation
- Responsiveness
- Flexibility
- Speed
- New Business models
**DRIVER: OPEN EVERYTHING**

Open source, open innovation, open competence, open … Can we achieve enough competitive momentum from only internal know-how and creativity?

---

**DRIVER: ARCHITECTURE EVOLUTION**

The industrial revolution

- Rigid/inefficient/inevitable silos
- Streamlined • Cost Efficient • Flexible • Configurable • Adaptive

**SOA, SPL and COMPOSITION**

---

**SW REUSE**

- Consistent handling and look and feel
- Strong & focused technology effort
- More RAD capabilities available for features, product differentiations and customizations
- Large reuse across products & solutions
- Faster responsiveness to specific needs

---