

8th Central and Eastern European
Software Engineering Conference
in Russia - CEE-SECR 2012

November 1 - 2, Moscow



Software Engineering
Conference in Russia

Demography of the software development industry — past and future

Jan Sliwa

Bern University of Applied Sciences



Berner Fachhochschule

Technik und Informatik

Motivation – my personal experience

- 1977 (23)  job offer in Poland
- 1981 (27)  invitation to Switzerland
- 1991 (37)  management position
- 1994 (39)  first mass unemployment in Switzerland
- 1999 (45)  job found in 3 weeks
- 2002 (48)  crisis: low demand, large supply
- 2006 (52)  job at the University
- 2012 (58)  still there 😊

Motivation – my personal experience

2002



And me ?

Outline

- Motivation
- Software industry demography – flows and processes
- IT specialist as a human
- IT areas
- Demand
- Supply
- Offshoring, nearshoring, rightshoring
- Conclusions – lessons learned

Software industry demography

- Flows and processes – basic model

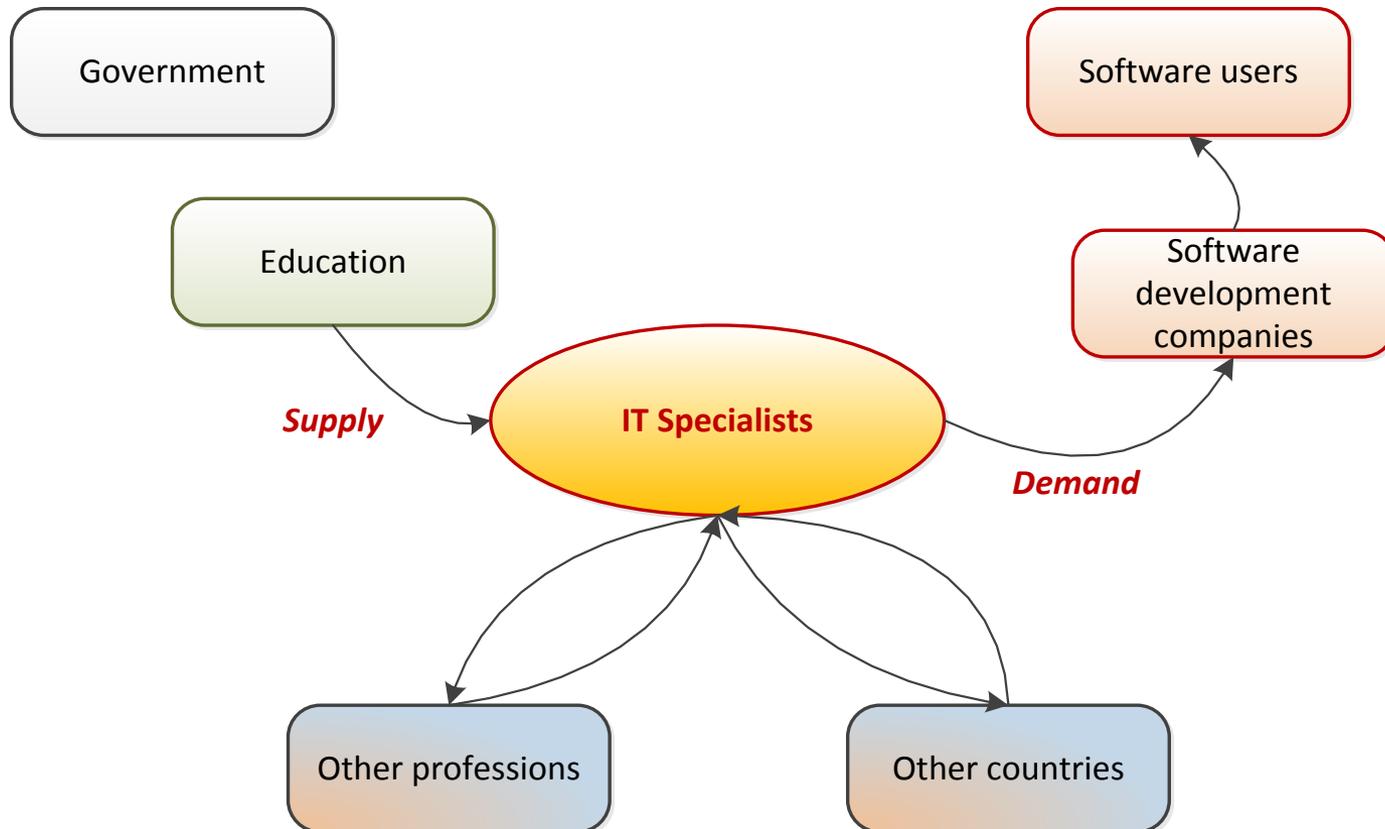
□



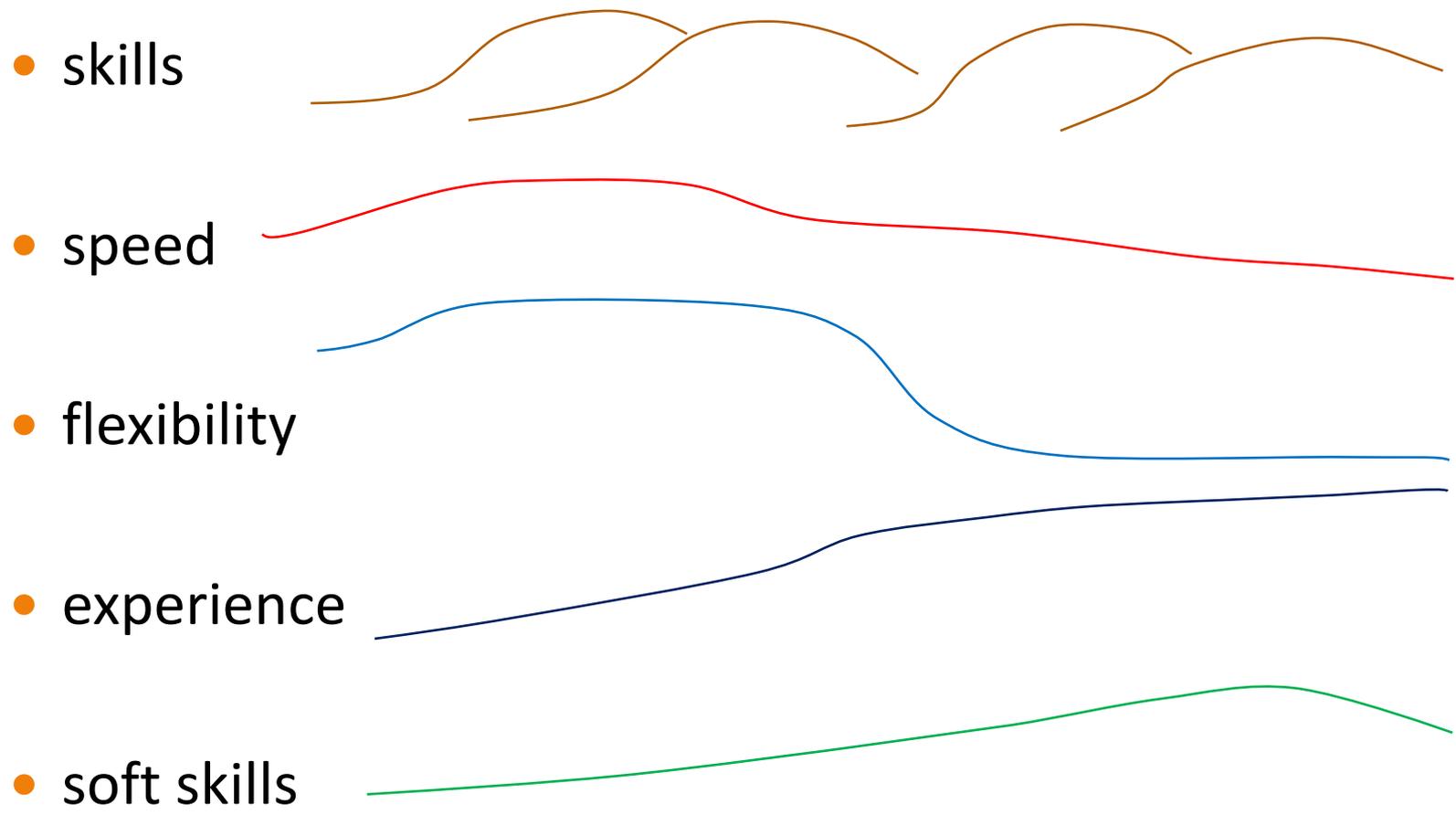
□

Software industry demography

- Flows and processes – fine model



IT specialist as a human - evolution



IT specialist as a human - personality

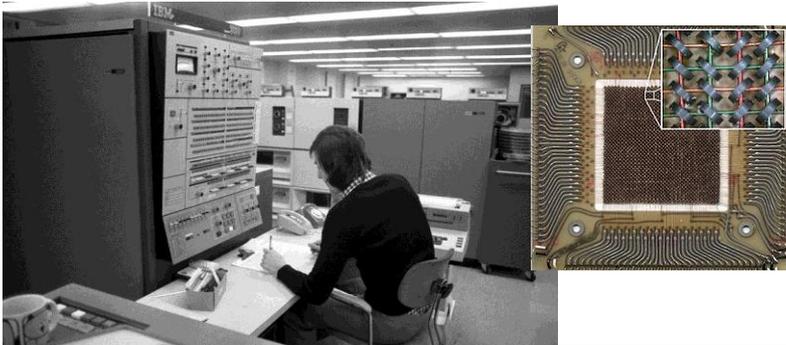
- Temperament type (Keirsey)



- Skills
 - writing code (quantity, quality) ... ominous ~~skill list~~
 - understanding requirements
 - understanding customer's problems
 - reading code
 - working in team
- Productivity from **-1** (yes!) to **10** and more
→ “expensive” programmer is a bargain !

40 years career – my younger days

1972



1977



1982



40 years career – past and future

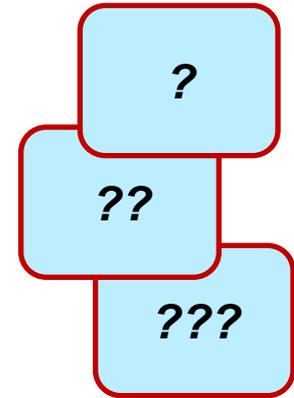
1977

2007 *now* 2019

2047



← *Me*



You →

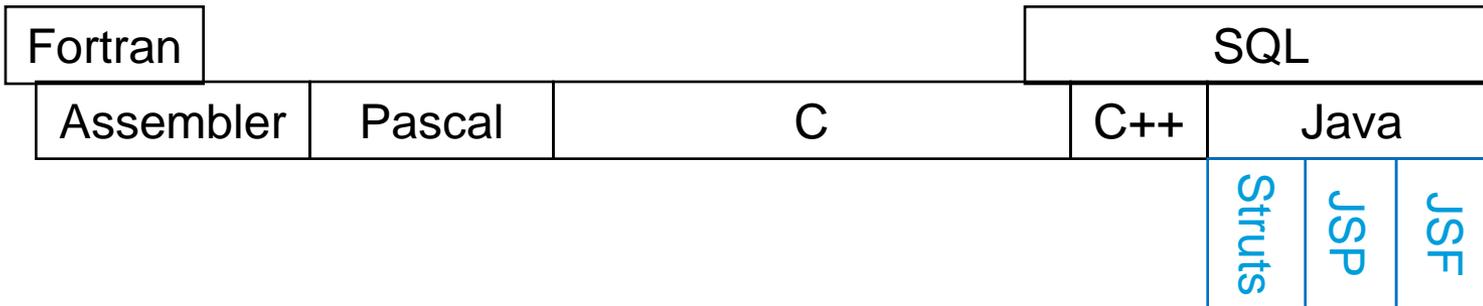


Skills – short term, long term

1977

now

2019



Skills – short term, long term

1977

now

2019



Structured

Event-driven

Object-oriented

Fortran

SQL

Assembler

Pascal

C

C++

Java

Struts

JSP

JSF

Skills – short term, long term

1977

now

2019



Logical thinking

Structured

Event-driven

Object-oriented

Fortran

SQL

Assembler

Pascal

C

C++

Java

Struts

JSP

JSF

Skills – short term, long term



1977



now



2019



Logical thinking

Structured

Event-driven

Object-oriented

Fortran

SQL

Assembler

Pascal

C

C++

Java

Struts

JSP

JSF

Experience...

Programming an infusion pump



Infusion mode

Bolus duration

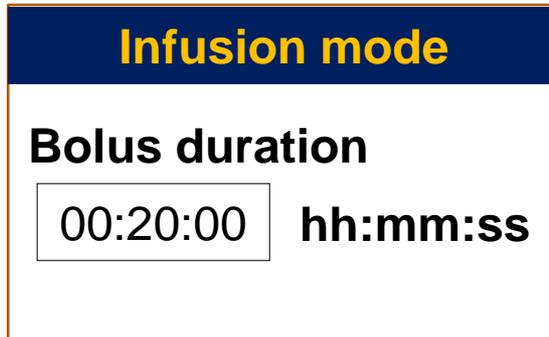
00:20:00 hh:mm:ss



Just a numerical value?

Experience...

Programming an infusion pump



← Just a numerical value?

- unclear description
- no validation
- small letters



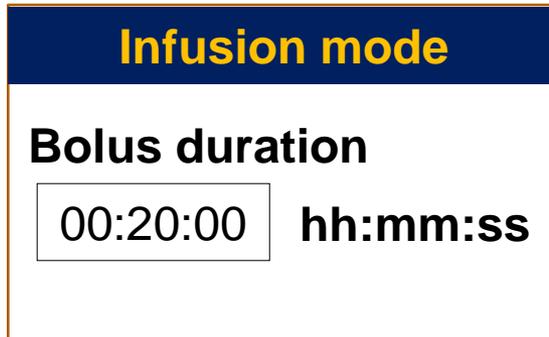
Programming errors
(minutes instead hours)



Death cases

Experience...

Programming an infusion pump



← Just a numerical value?

- unclear description
- no validation
- small letters



Programming errors
(minutes instead hours)



Death
cases

Being quick is not everything

Understand what are you doing, why and for whom

... and this is experience

Demand

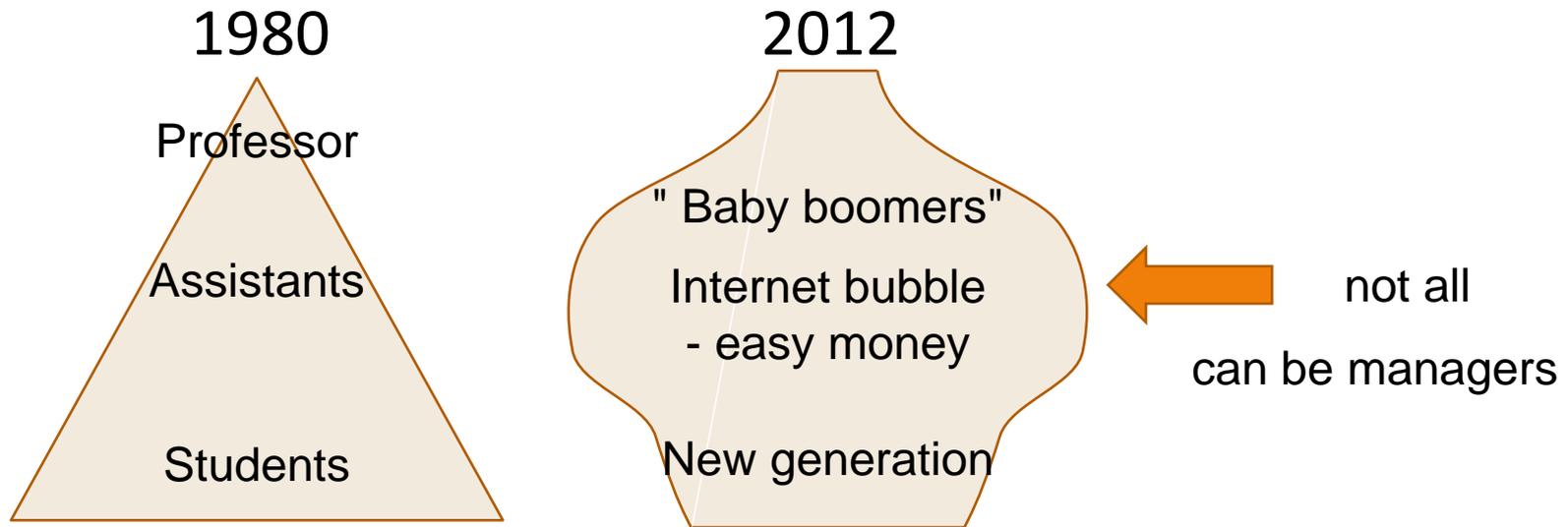
- Nothing grows exponentially forever
- Saturation – 1000 apps in your smartphone?
- Technical catastrophe
 - satellites destroyed by solar flares
 - radio waves causing cancer
 - breaking the hard cryptography
- Major disruptive events:
 - Earthquakes, floods, wars, terrorist attacks, asteroids...
- Lost interest



Supply – various skills

- Development
 - Web
 - Java, JEE
 - C#, .NET
 - mobile
 - embedded
- Support
 - Microsoft
 - Linux
 - DBA
 - Oracle
 - MySQL
- Legacy skills
 - COBOL
 - Smalltalk
 - C, C++
 - ...
- Other cultures
 - PHP
 - Visual Basic
 - ...

Supply – demographical structure



Cool profession:

- conquistadors
- rocket scientists
- computer geeks

Now: just a profession like any else?

- lower social status
- do girls like nerds?

Supply - productivity

- Software development: older days
 - tedious technical means, slow compilation, difficult testing
 - all code hand-written
- Software development: now
 - Integrated Development Environments
 - flexible frameworks, but more complex applications
- Software development: future (unknown)
 - better and better efficiency
 - manual work still necessary
- There is no silver bullet



Offshoring, nearshoring, reshoring, rightshoring

- Original enthusiasm
 - all development in India / Soviet Union / Eastern Europe...
- Reflection
 - frequent, personal contact necessary
 - understanding the customer
 - cultural barriers
 - data protection
- Migrations of jobs, migrations of engineers
- And in the future?
 - rightshoring

IT is like ... Formula 1

Managing human resources (including your own) in IT is like driving a Formula 1 racing car, but with:

- changing circuit
- changing rules
- new participants entering the race
- changing goal



Conclusions – lessons learned

- IT specialists
 - develop technical skills
 - develop soft skills
 - adapt working style
 - geographical / cultural flexibility
 - make your tasks evolve (consider changing profession)

Conclusions – lessons learned

- Companies
 - match flexibly supplied and required skills
 - select / keep / promote best workers
 - observe market demand evolution
 - plan carefully use of new and old technologies

Conclusions – lessons learned

- Universities
 - teach a balanced skill mix
 - ready to use
 - long term basis
 - teach how to adapt in a changing world

Conclusions – lessons learned

- IT specialists
- Companies
- Universities

Be flexible!

Будь гибким!

Thank you for attention !

Спасибо за внимание !

Jan Sliwa

Bern University of Applied Sciences

jan.sliwa@bfh.ch



Berner Fachhochschule

Technik und Informatik