

Challenges and Opportunities of Big Software-based Innovation

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Big Software Matchmaking Day
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Go Big Software!



[onsoranje.nl]

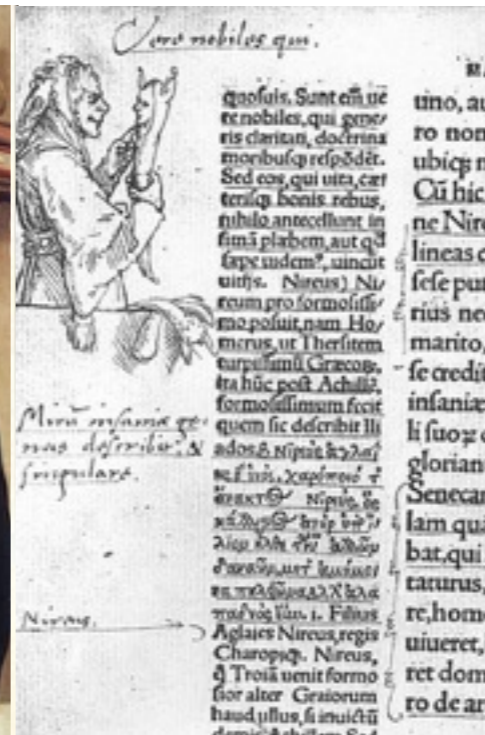
The Software Medium



Printing Press



Erasmus



Book

The Software Medium

Computer



Dijkstra



Shortest-path



The Software Medium

Internet



Tim
Berners-Lee



Web



The Software Medium

yesterday's ICT inventions

+

more and better software

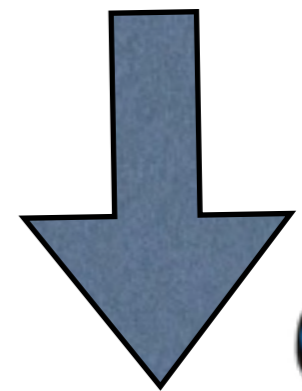
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tomorrow's product/services

Software

The Innovation Engine

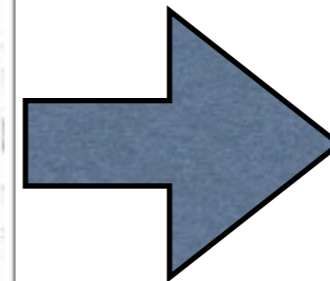
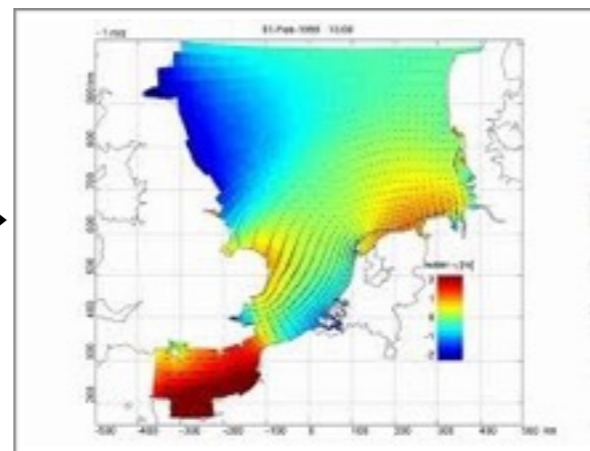
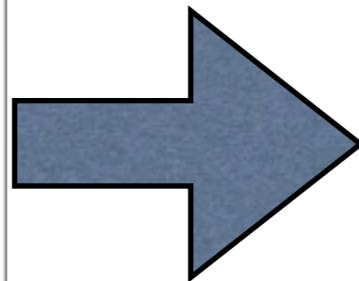
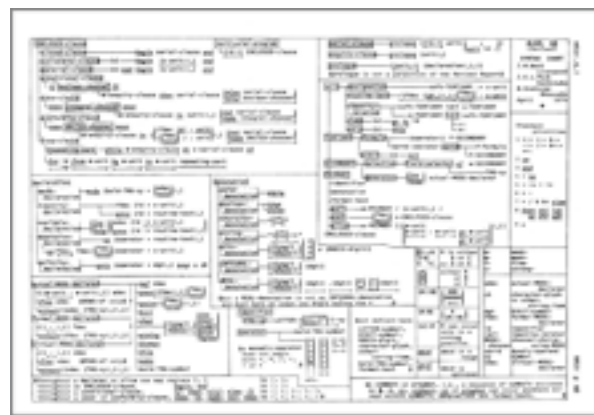
- from risky products to exploitable services
 - cost-of-development -> cost-of-ownership
 - big bang release -> incremental update
- from pricy consultants to valuable experts
 - outsourcing -> core business
- from quantity & complexity to quality & flexibility
 - constraining people -> supporting people
 - data input -> data discovery



Netherlands = Software

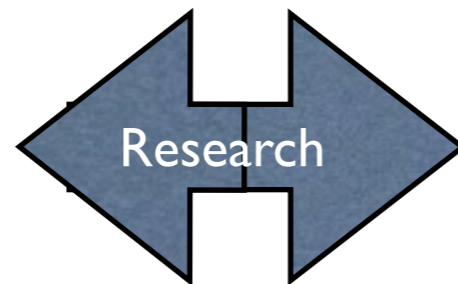
- Programming Languages
- Formal Methods
- Components & Modules
- Agile Processes
- Operating Systems
- Distributed Computing
- Domain Specific Languages
- Model Driven Engineering
- Software Architecture
- Database technology
- Software Analytics
- Software Testing

The Netherlands:
a global leader in
software and software
engineering



Big Software

- Big Code
- Big Process
- Big Logs



- Better Code
- Better Process
- Better Products

Complexity => Opportunity

Contextual Software Research



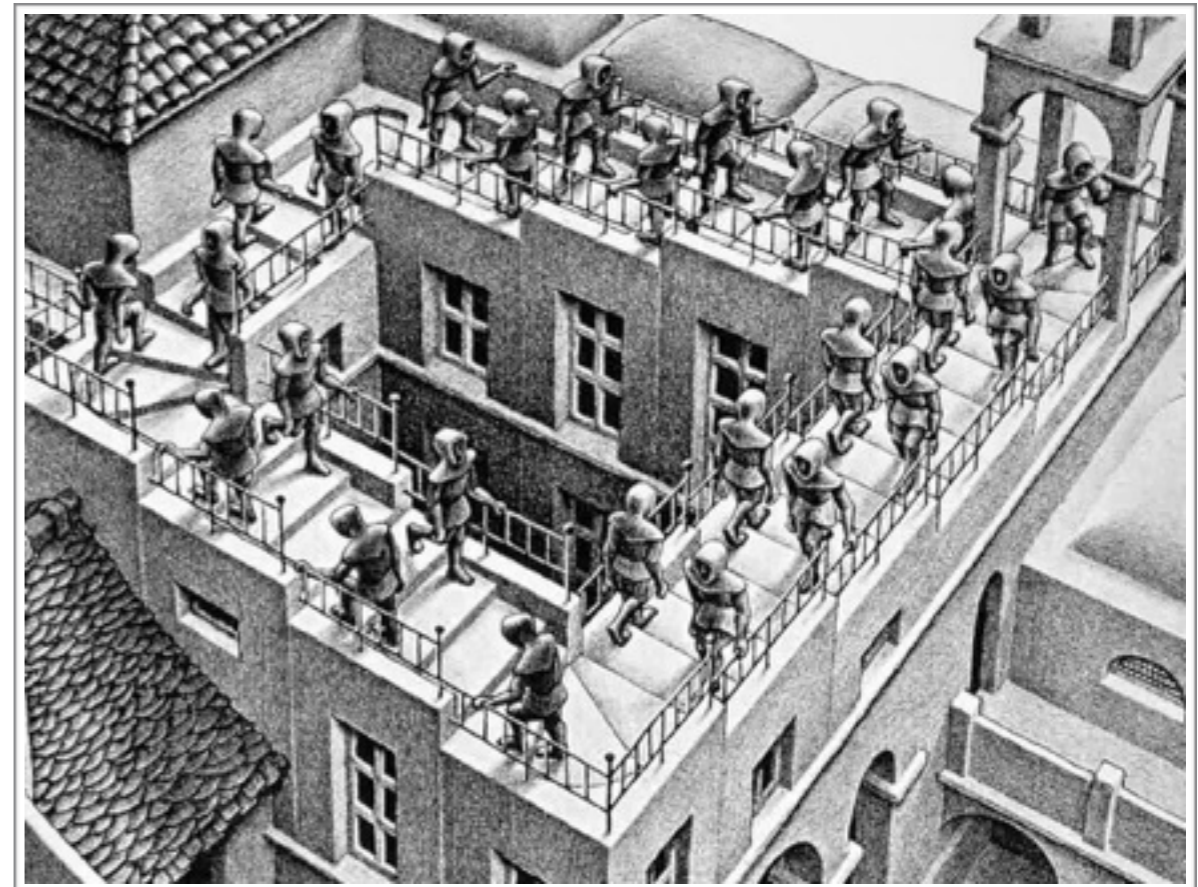
[<http://comphacker.org/comp/eng1338/2015/01/28/visuals-of-wicked-problems/>]

Contextual Software Research

- Great software and software research is contextual, tailor-made
- Expert, local, domain knowledge is key to success
- “Premature [generalization] is the root of all evil”
- Focus on local urgency and local success factors

[Escher]

collaborate
for the
content

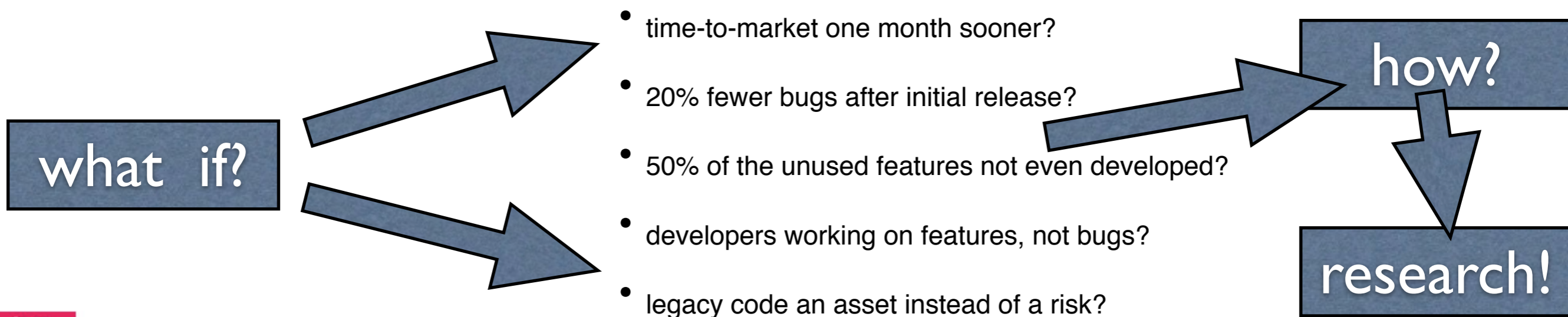


Contextual Software Research



[Jon Sullivan]

- Building up general SE theory & methods as we go
 - The goal is incremental, but definite, improvement in SE
- Disruptive innovation is **enabled** by better software engineering
 - Back to common sense; *stop following the hype*
 - Use yesterday's and today's assets and experience



Cross-cutting Contexts

- Software Contexts are not silo'ed in industrial or public sectors
- *Example:* High-end Financial Services and Embedded Systems
 - High efficiency
 - High integration complexity (third-party)
 - High product/service variability
- *Example:* Distributed (Big) Data and Meta Programming Systems
 - Intermediate formats
 - Marshalling and transformation
 - Co-evolution of I/O formats and processors

Software for Software

- Research methods built as (re)usable software
 - automated data collection, analysis, reporting
 - code, process, trace analyses
 - questionnaires & monitors
- Proof-of-concepts built as software
 - analyzing, transforming, generating, visualizing
 - integrated into existing environments & processes
- **There is no field like ours where knowledge transfer {c,sh,w}ould be organized so directly and faithfully, in either direction**
 - only if research has **access** to the real code, real processes and real logs
 - only if industry has **access** to full and automated methods and experiments



[Willy Vandersteen]



CWI SWAT



- Preventing and curing software complexity to enable higher quality software systems, using automated software engineering methods
- Know-how
 - language engineering
 - source-to-model
 - model-to-source
 - source-to-source
 - mining repositories
 - continuous delivery
 - distributed components
- Domains
 - embedded systems
 - administrative
 - financial
 - games
- Connected & collaborative
 - research & education
 - industry & government



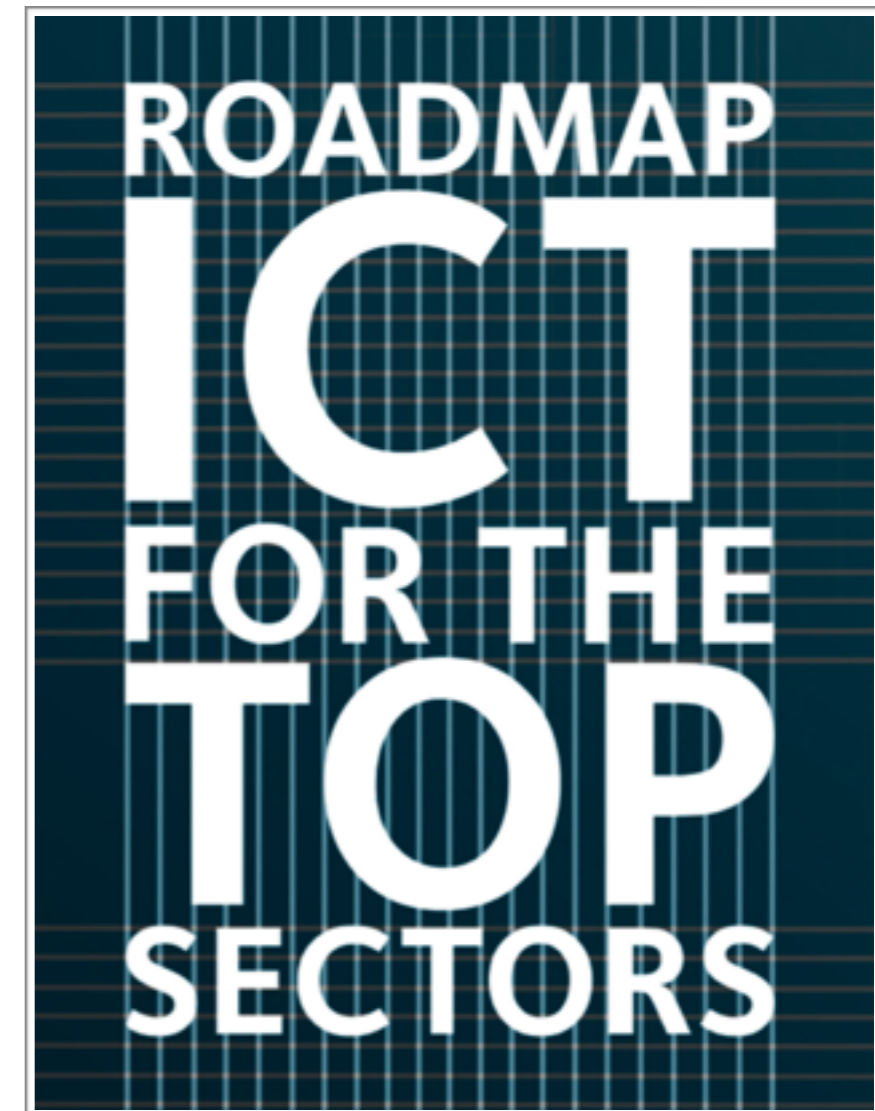
UvA/HvA/VU/CWI master
software engineering



TU Eindhoven: “Automated
Software Analysis”

Roadmap ICT

- Roadmap ICT draft has a *first class software theme*
 - “reliable & flexible software systems”
- Needs your voiced support
- Stake our claim that software is a leading factor
 - economically
 - socially
 - academically
- Contact to enlist support of CIO, CTO, CEO



SEN Symposium

- **Yearly**
- **Inclusive**
- **Excellent speakers**
- **Topical posters**
- **Discussion**
- **Networking**

Save the date

Thursday
December 3rd
Amsterdam

Big Software

a new start for long term collaboration

"NO!

Try not!

DO or DO NOT,

There is no try."

