

Challenges in High-Tech, illustrated in the medical domain

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Abstract

A short description is given of the medical domain, which is used to illustrate what technical challenges are present in high-tech development organizations.

A top list of technical challenges: Market dynamics, reliability, interoperability, security, power and creativity is presented and every challenge is briefly discussed.

The potential roles for new technical people are described and the future career possibilities.

Distribution

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Conventional X-ray systems



EasyDiagnost URF



Integris Allura Cardio-Vascular

Typical X-ray results



Thorax rad-image



Cardio Vascular images on monitors

Magnetic Resonance Imaging, MRI scanners



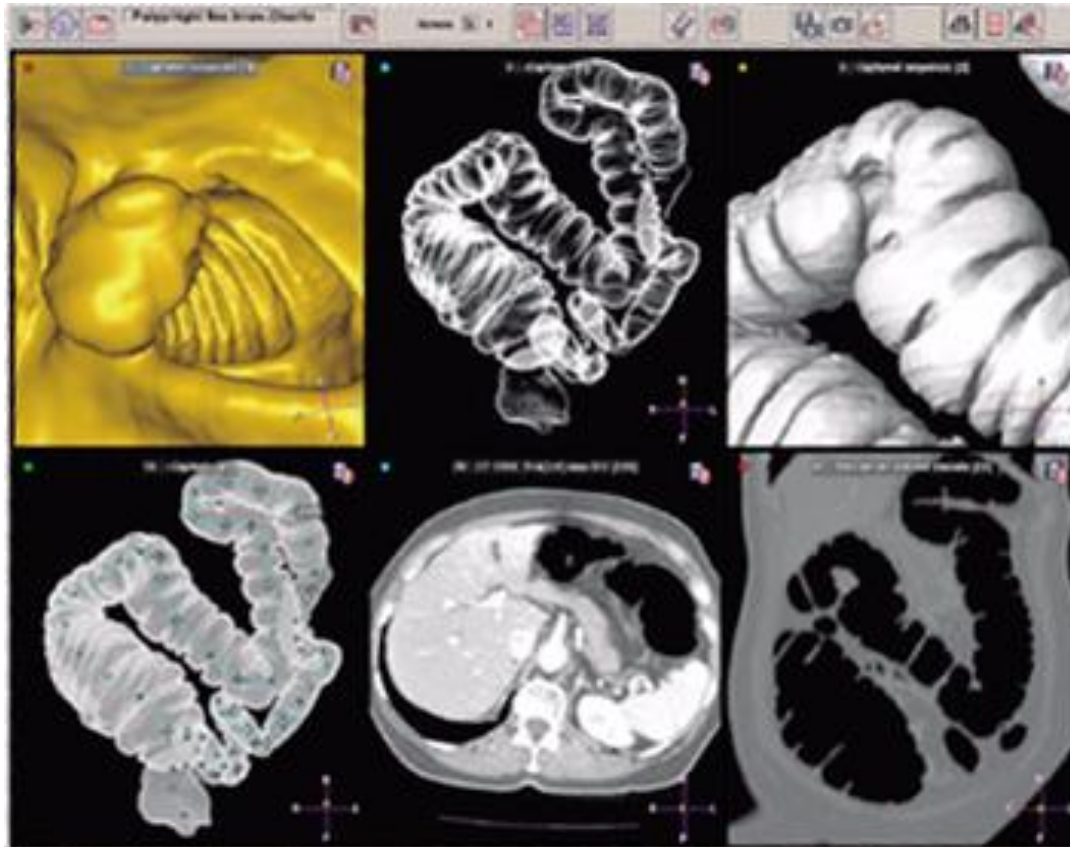
Intera MR scanner



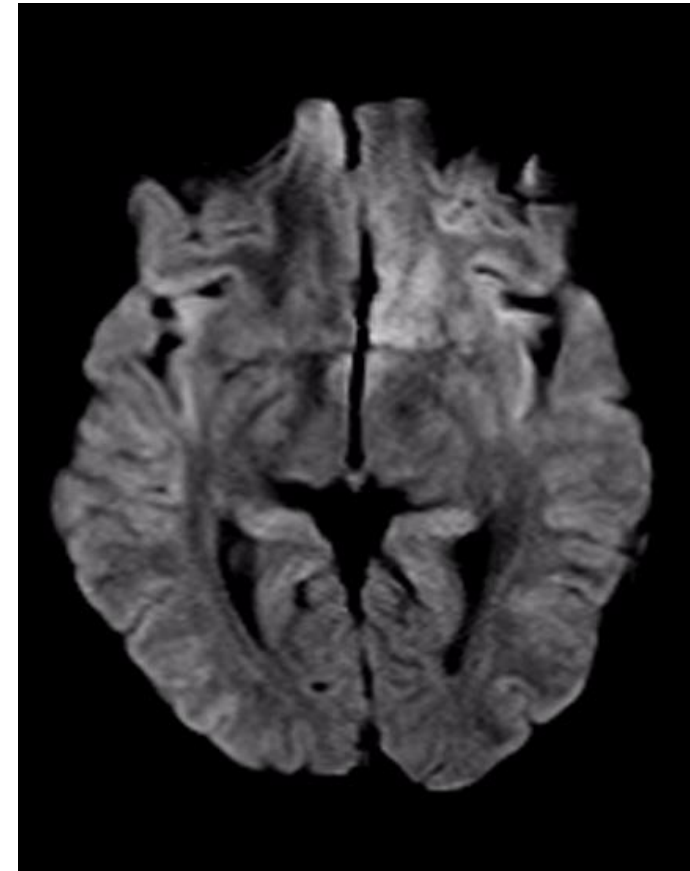
Gyroscan NT



Results from CT and MRI scanners

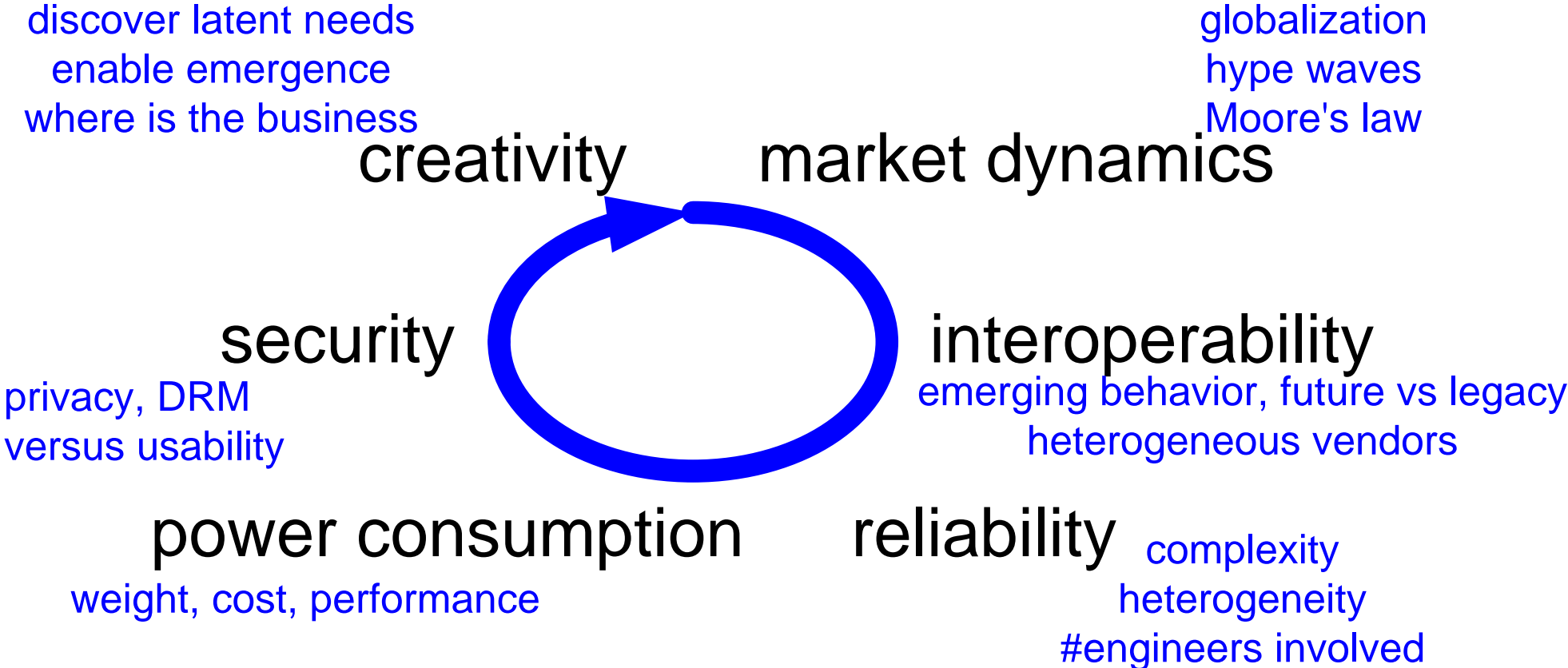


virtual endoscopy based
on CT images

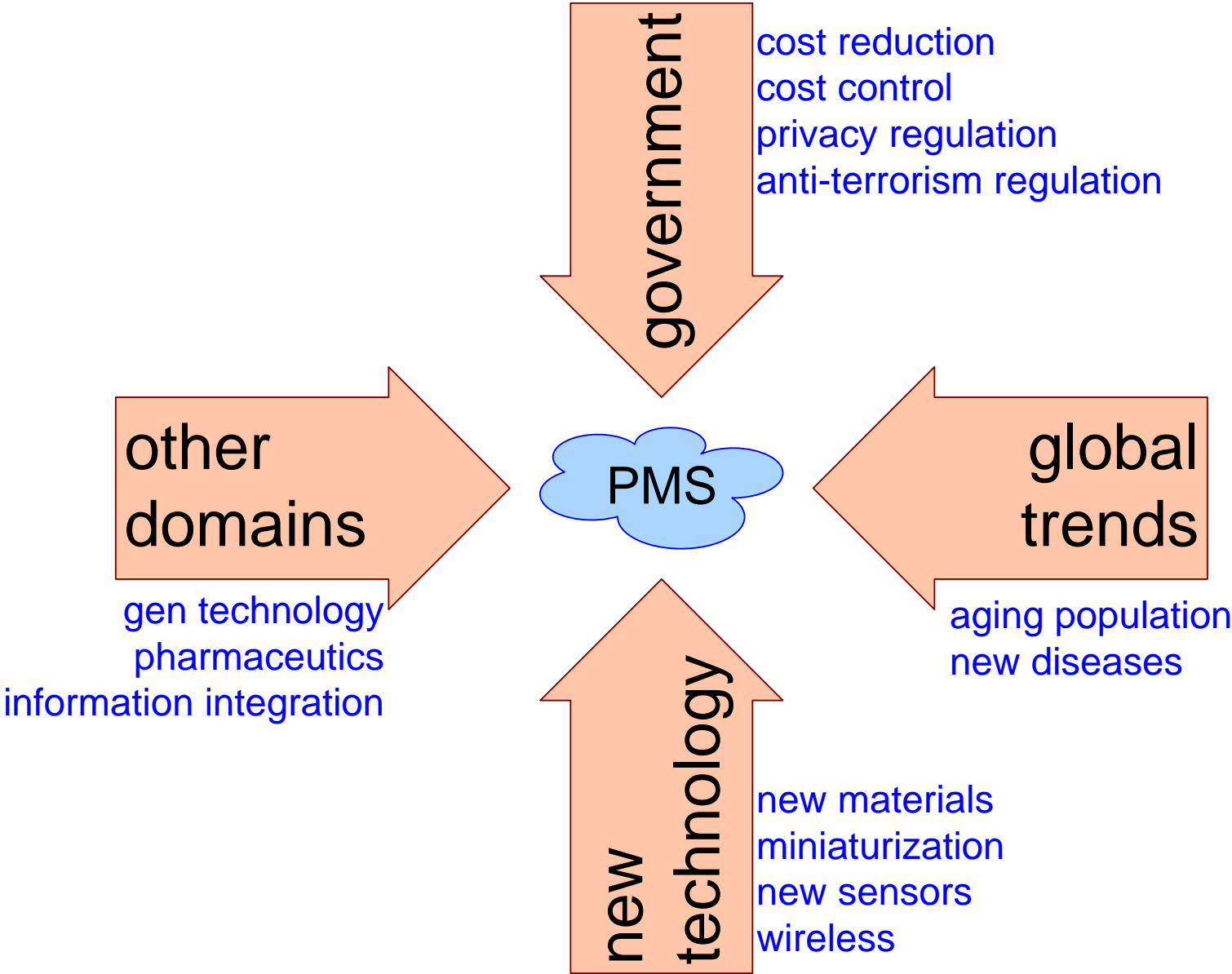


MRI image
of the brain

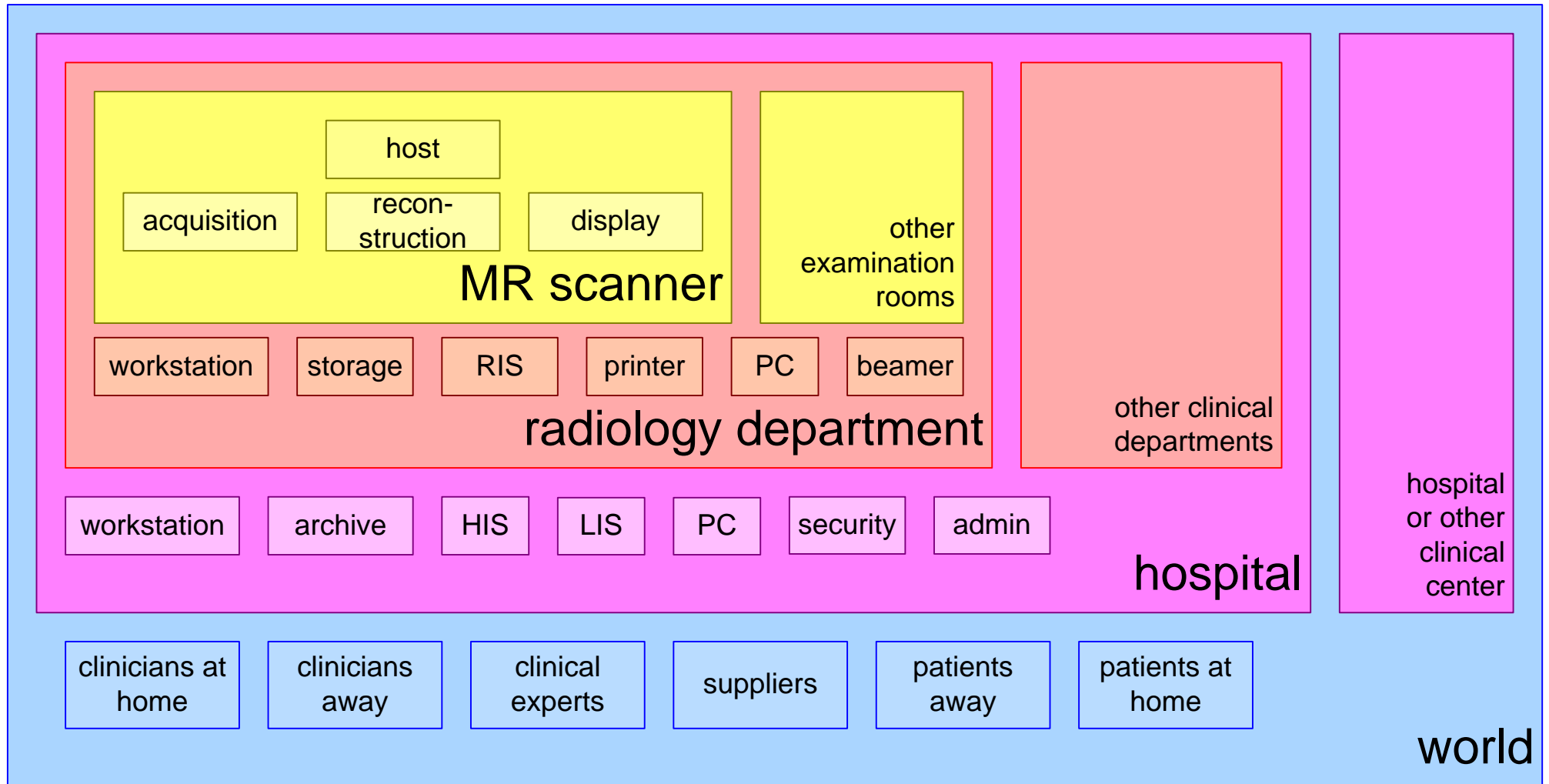
Hit list of challenges



Market dynamics in medical



Interoperability: systems get connected at all levels



Multi dimensional interoperability

integrating **multiple**

applications

clinical analysis
clinical support
administrative
financial
workflow

in **multiple**

languages

cultures

USA, UK,
China, India,
Japan, Korea
France, Germany
Italy, Mexico

delivered by **multiple**

vendors

Philips
GE
Siemens

based on **multiple**

media, networks

DVD+RW
memory stick
memory cards
bluetooth
11a/b/g
UTMS

and **multiple**

standards

Dicom
HL7
XML

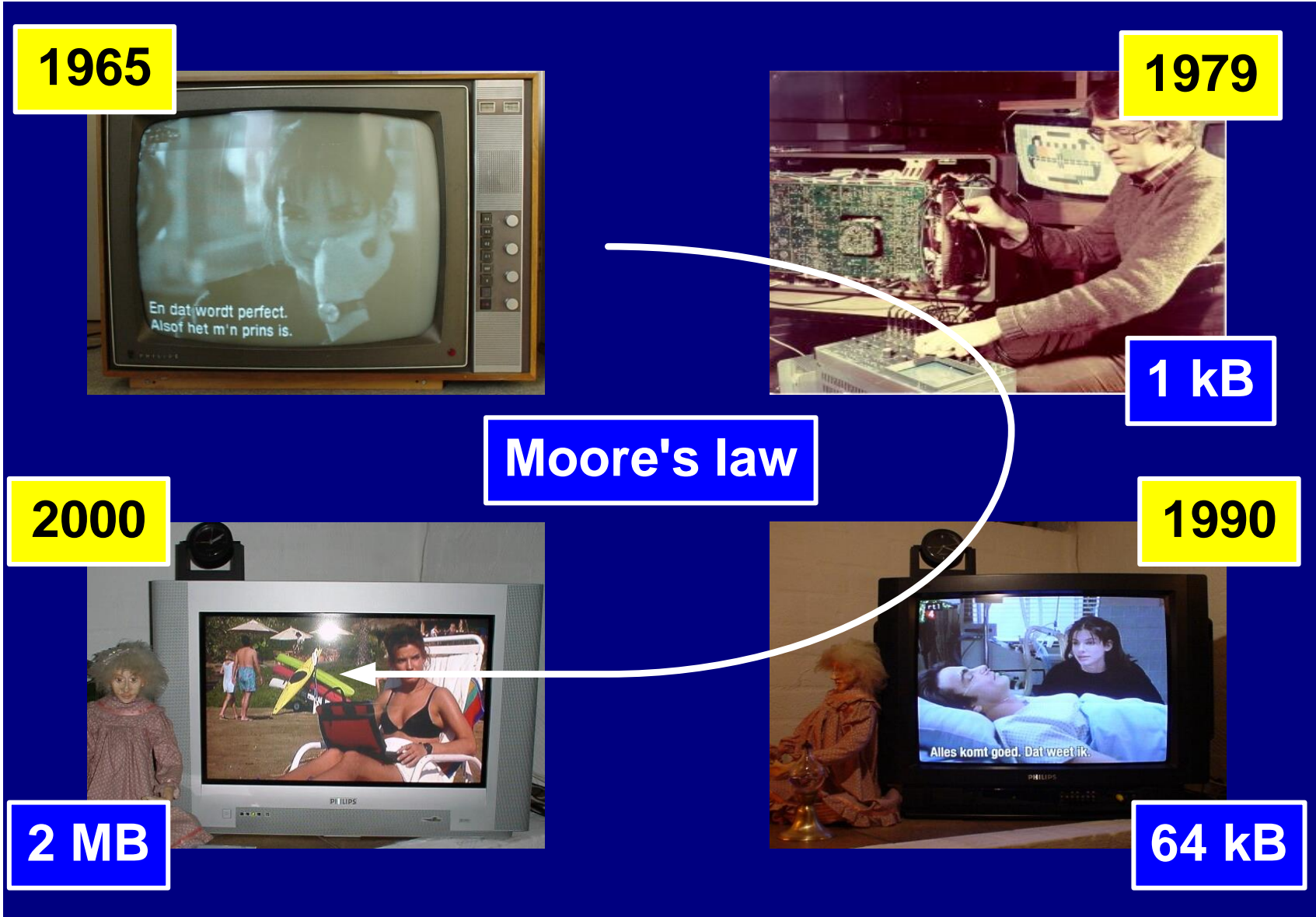
and **multiple**

releases

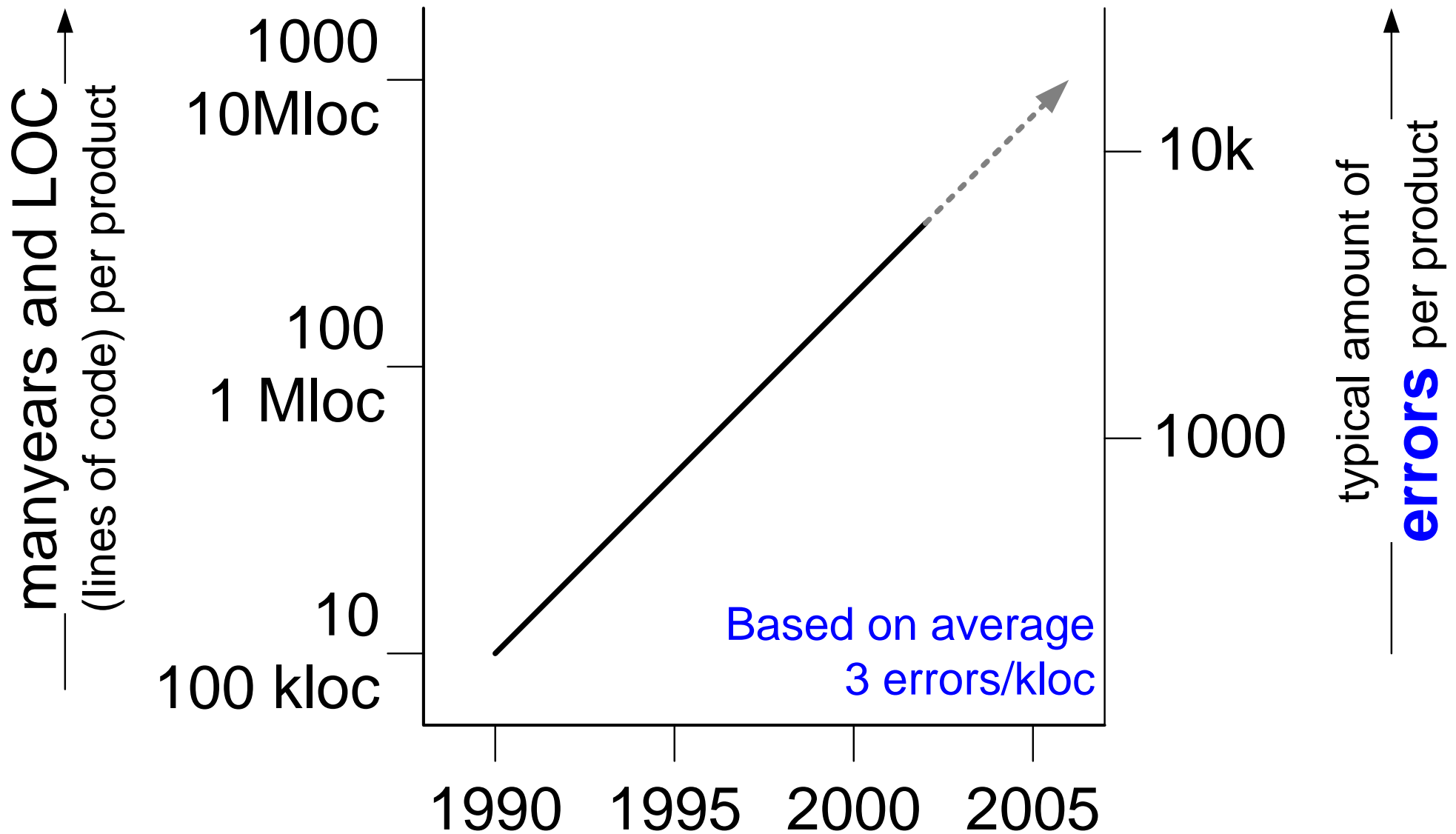
R5
R6.2
R7.1

SW increase in televisions

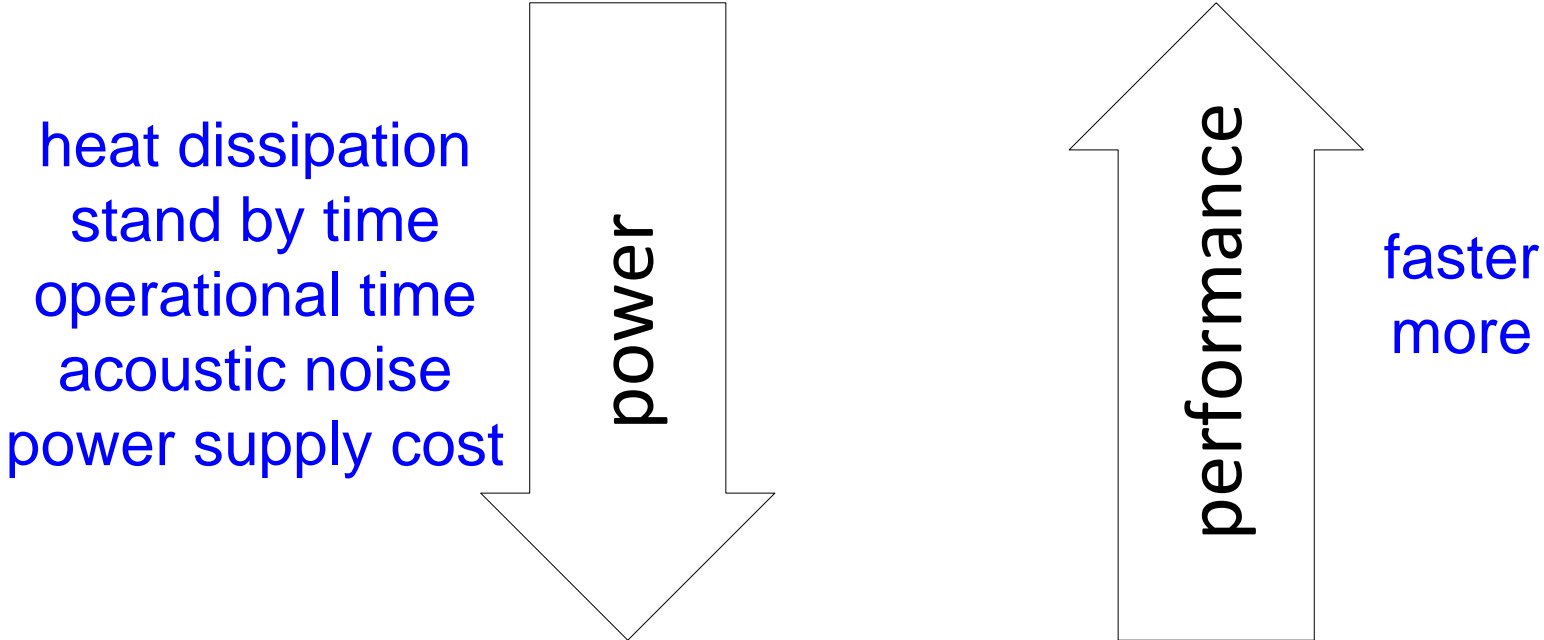
From: COPA tutorial, Rob van Ommering



Increase of software threatens Reliability

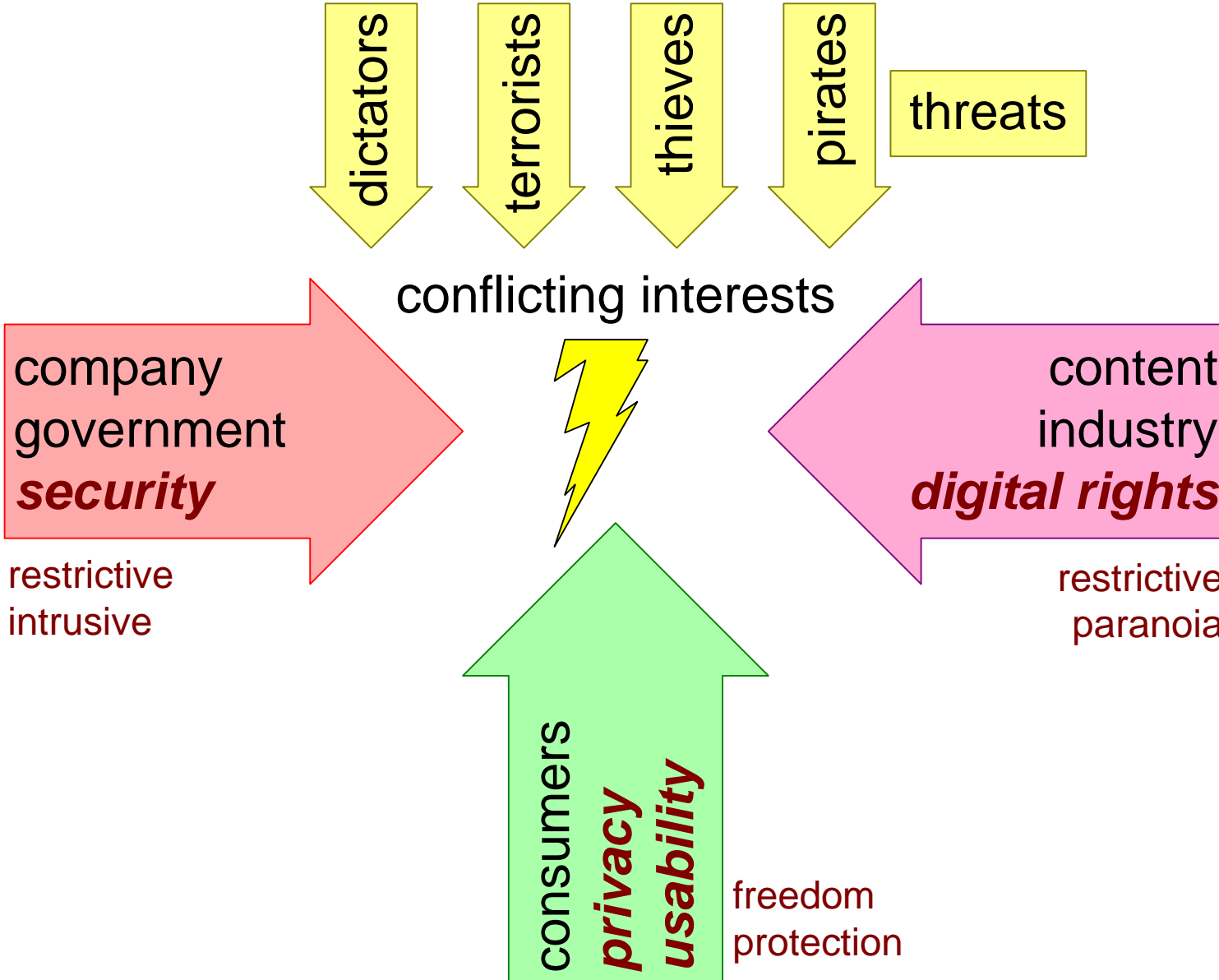


Power consumption and dissipation

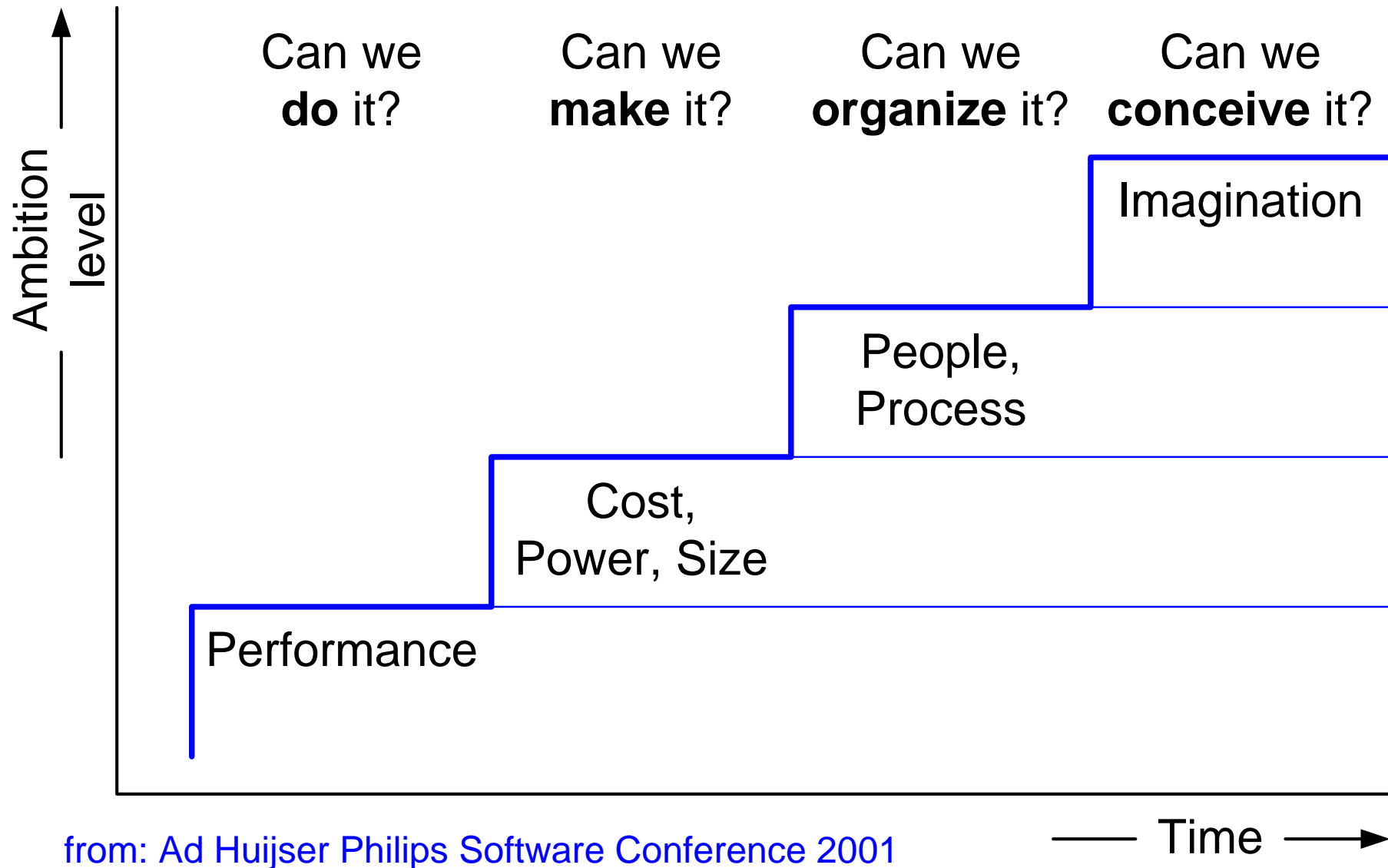


| <i>3G phone</i> | examples | <i>desktop</i> |
|--|---|--|
| standby time operational time wireless video | <i>data centers</i> insufficient power in Amsterdam | silent fanless <i>MRI gradients: 66 mT/m</i> kWatts: cost, noise, heat |

Security conflicting interests



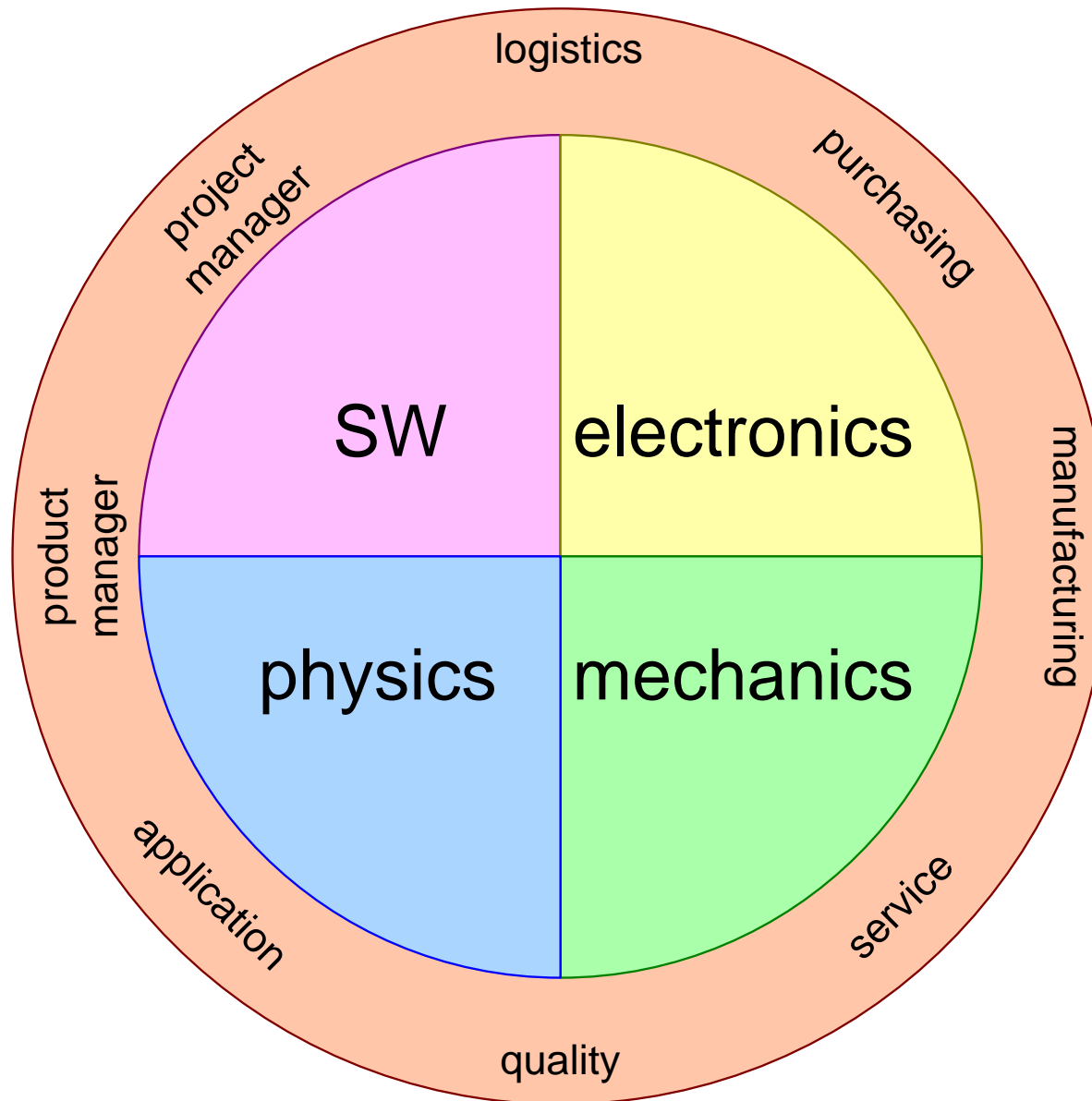
Creativity as limiting factor



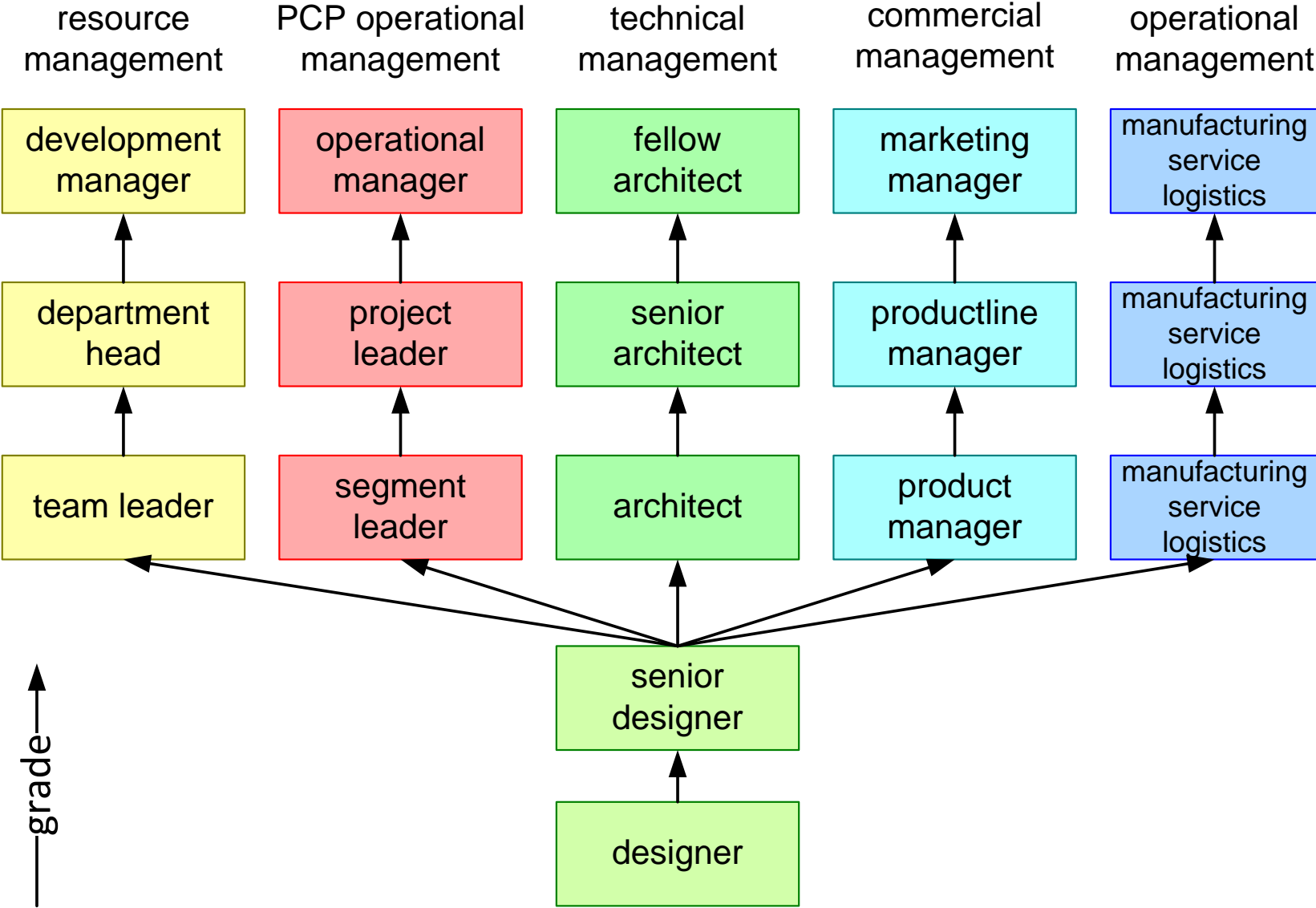


What can **You** do
for our ~~country~~ ?
company

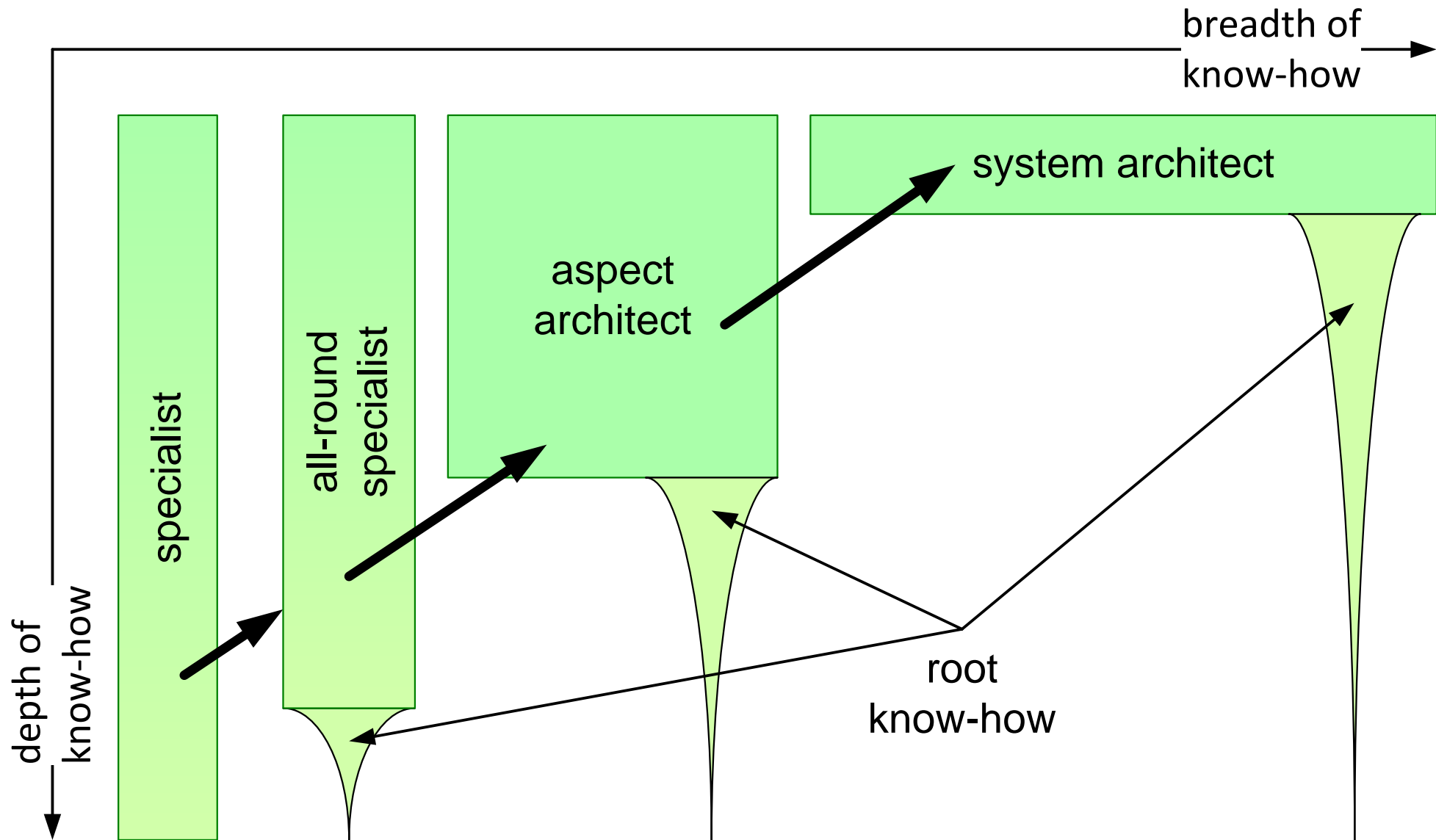
Multi disciplinary teamwork



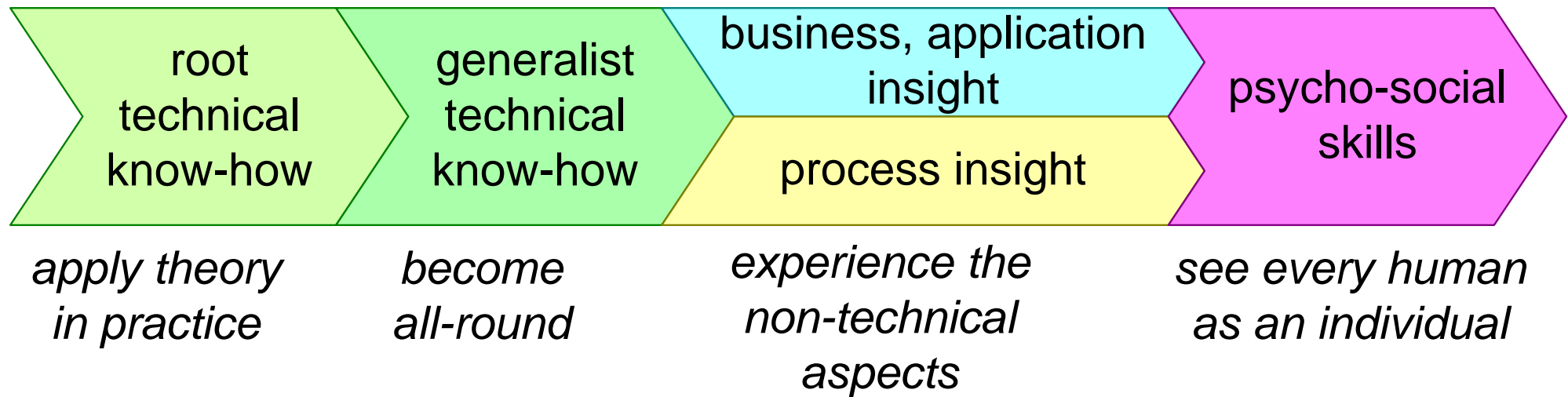
Multi ladder career paths



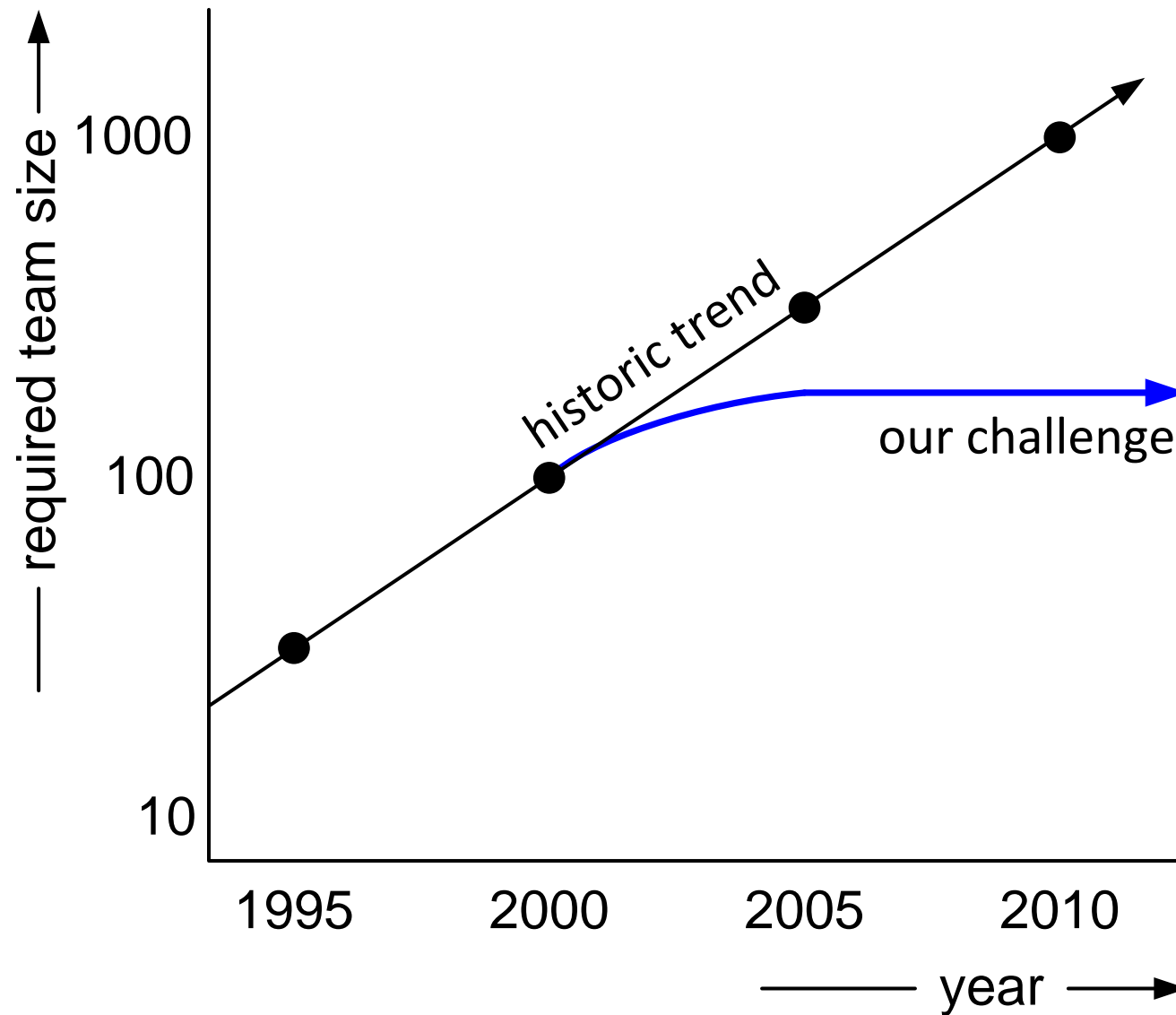
Technical specialists and generalists are needed



Growth Path Architect



More designers are needed all the time (unless..)



Use your brains to **Design Your Own Future**



We can use your brains!