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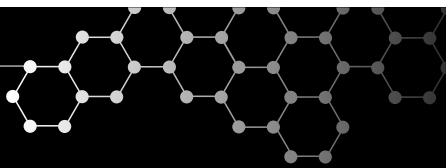
Nyindustrin

Professor Johan Stahre

Avdelningen för Produktionssystem, Chalmers
Ordf. Svenska Produktionsakademien



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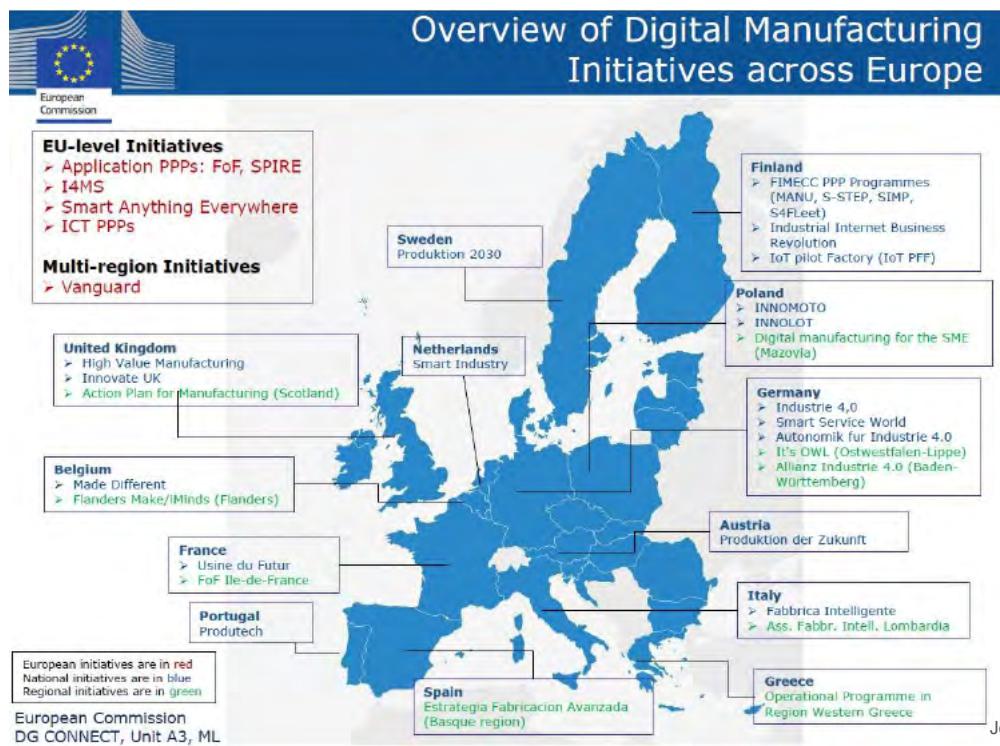
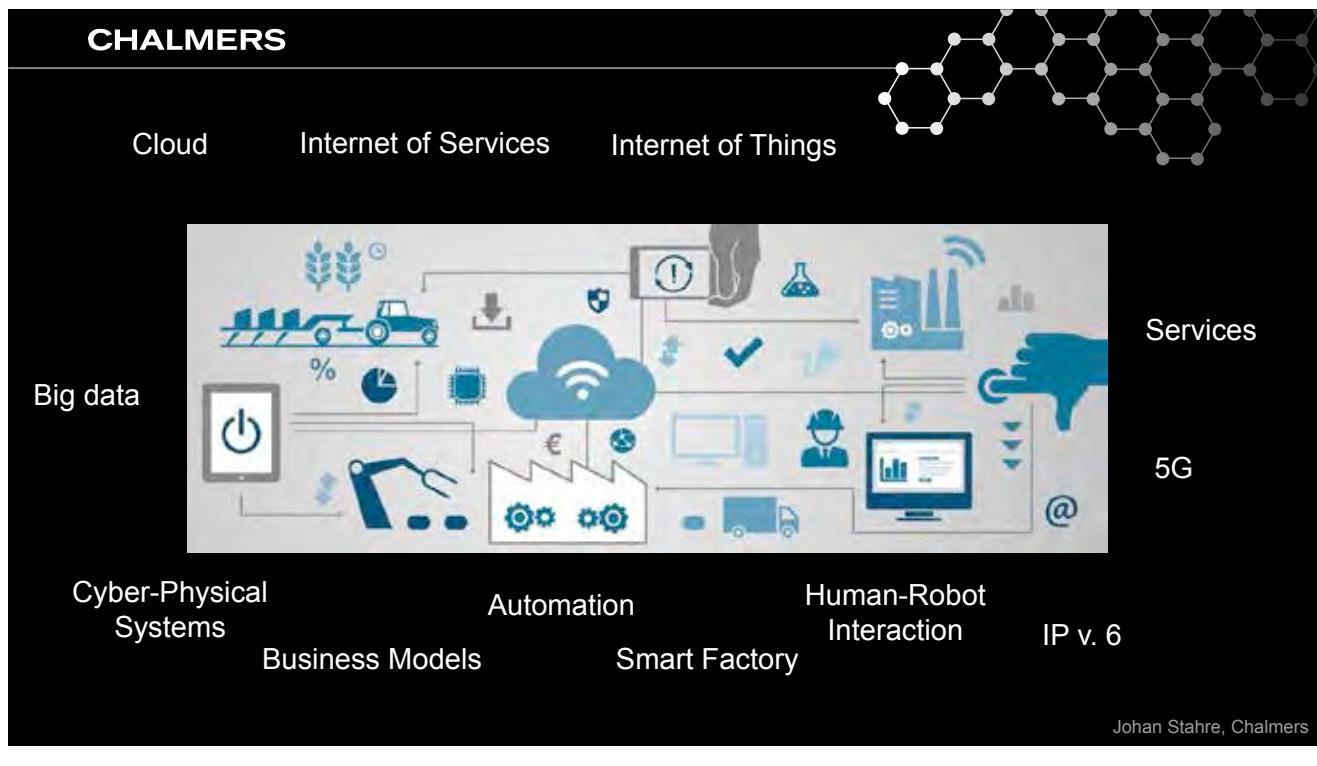


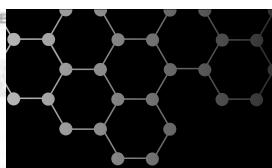
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Produktion
Digitalisering
Konkurrenskraft
Jobb
Hållbarhet
Nya processer
Nyindustrialisering
Nya kunskaper
Automatisering
Nya material

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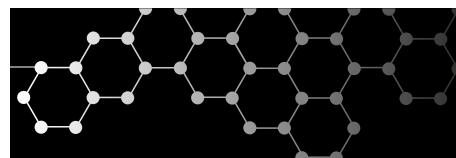
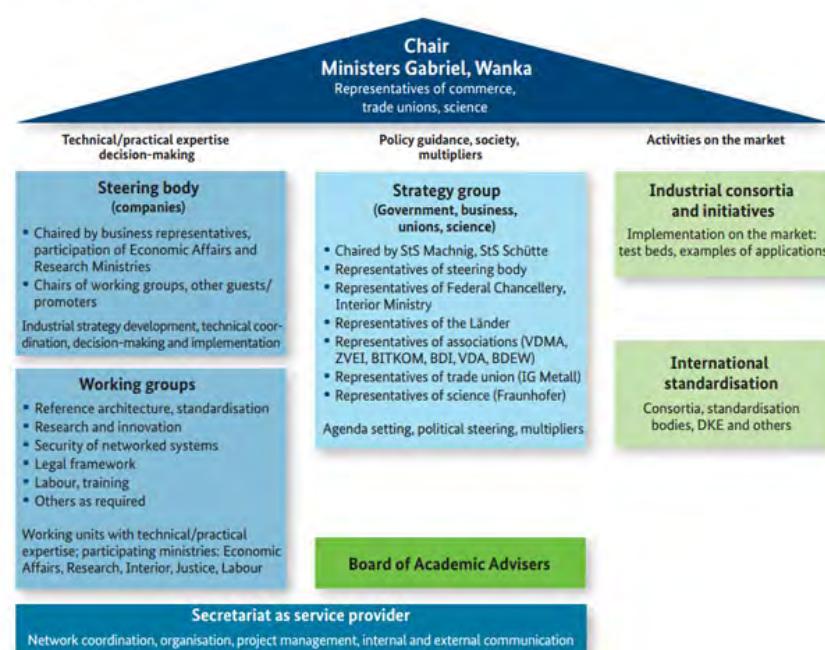
Industrie 4.0 Tekno-politisk satsning som startade 2011 Stattlig satsning €200 M ++

Identifierade utmaningar/problem

- Investeringar. € 40 Mdr/år (ind)
- Datasäkerhet
- Legala problem
- Standarder
- Kompetens och anställbarhet

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"Industrie 4.0" Platform



Industrie 4.0 Ministerledd satsning

"The 'Industrie 4.0' research programme aims to enable German industry to be prepared for tomorrow's production"

(German Minister of Research)

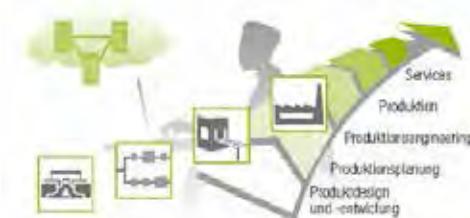
Plattform Industrie 4.0 – Four main aspects of Industrie 4.0



Horizontal integration across value networks



Vertical integration and networked production systems

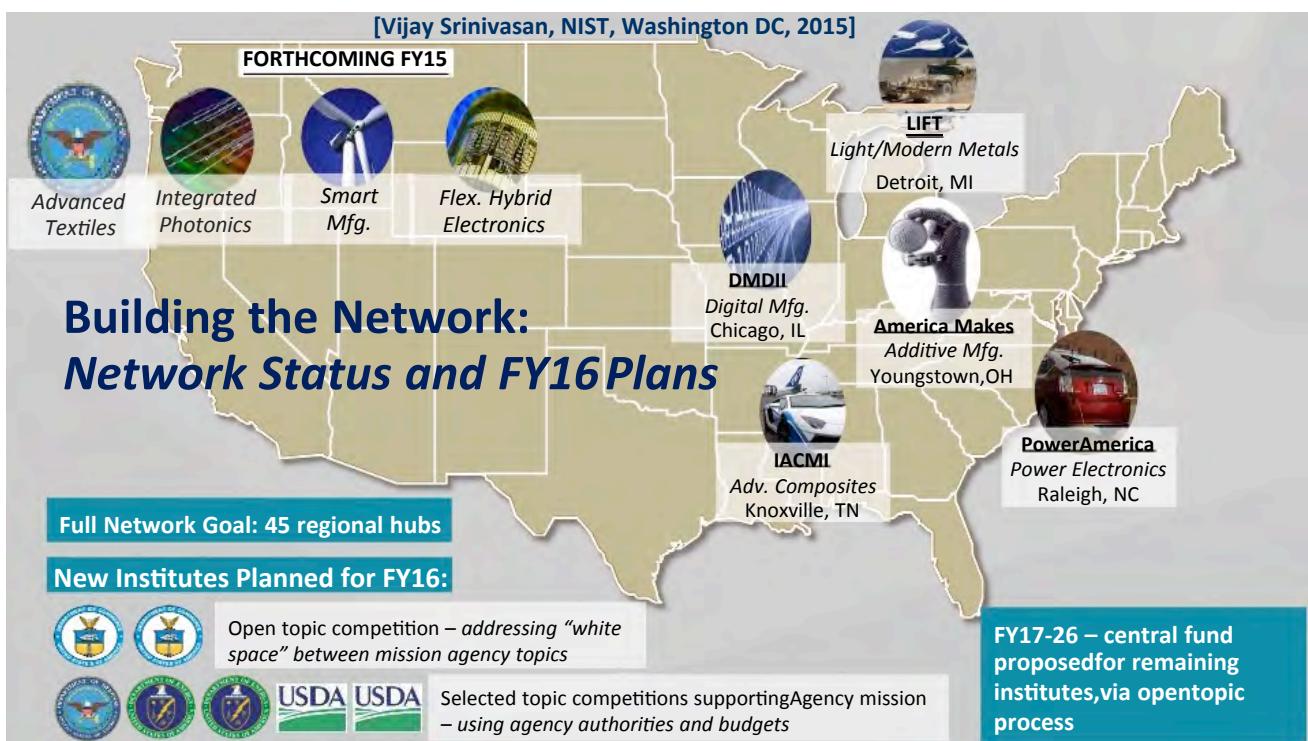


Digital consistency of the engineering across value chain



Man as a conductor of the value

⁹
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A MAJOR NEW NATIONAL PROGRAM, DESIGNED TO FACILITATE INVESTMENT,
FOSTER INNOVATION, ENHANCE SKILL DEVELOPMENT, PROTECT INTELLECTUAL
PROPERTY, AND BUILD BEST-IN-CLASS MANUFACTURING INFRASTRUCTURE.
THERE'S NEVER BEEN A BETTER TIME TO MAKE IN INDIA.



Make in India target = Increase of the manufacturing sector >12%/year

Digital India budget = 350 M€ for 2015/2016

Skill India target = Skill training of a minimum of 300 million people 2015 - 2022

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**Det svenska, strategiska forsknings- och
innovationsprogrammet för industriell produktion**

Programchef: Cecilia Warrol

Vice programchef: Johan Stahre

Supported by:



STRATEGISKA
INNOVATIONS
PROGRAM

Instrument

01 Forsknings- och innovationsprojekt



02 Kunskaps- och tekniköverföring till SMF



03 Utbildning



04 Mobilitet



05 Internationalisering



 PRODUKTION2030

Styrkeområden

01 Hållbar och resurseffektiv produktion

02 Flexibla tillverkningsprocesser

03 Virtuell produktionsutveckling och simulerings

04 Människan i produktionsystemet

05 Produkt- och produktions-tjänster

06 Integrerad produkt- och produktionsutveckling

 PRODUKTION2030

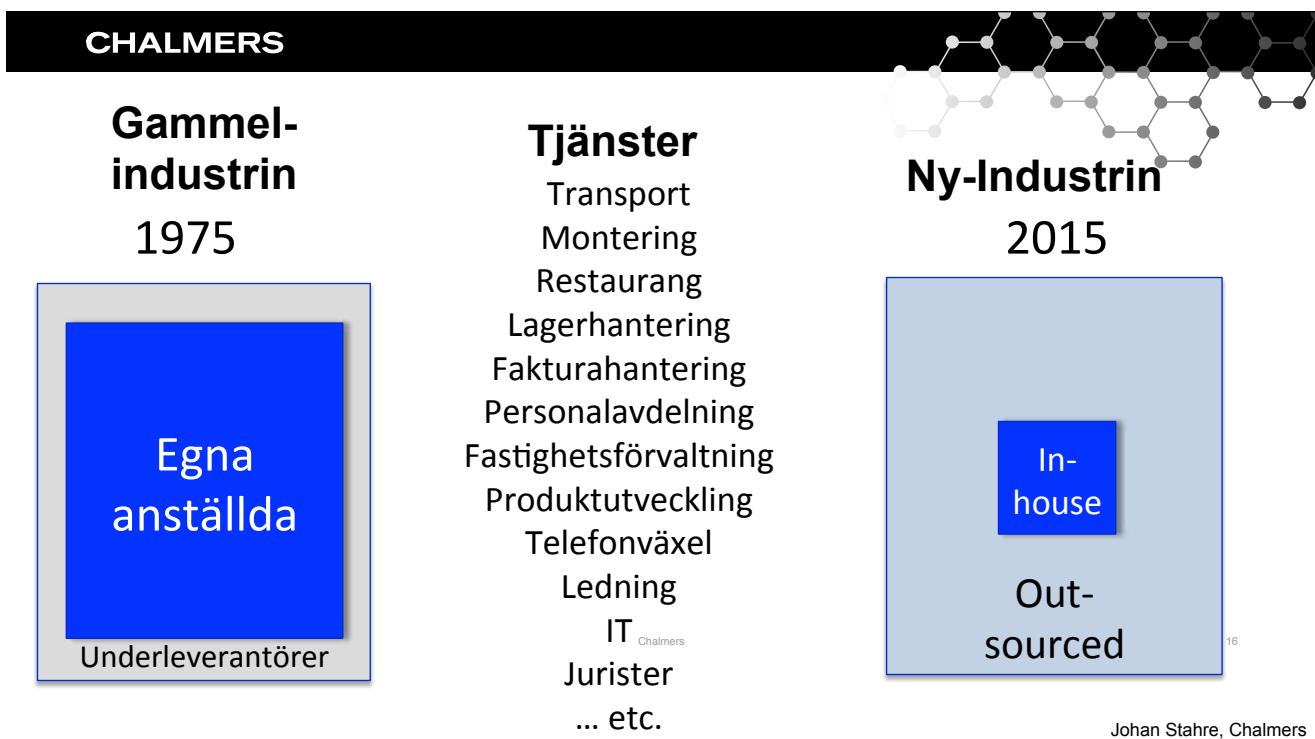
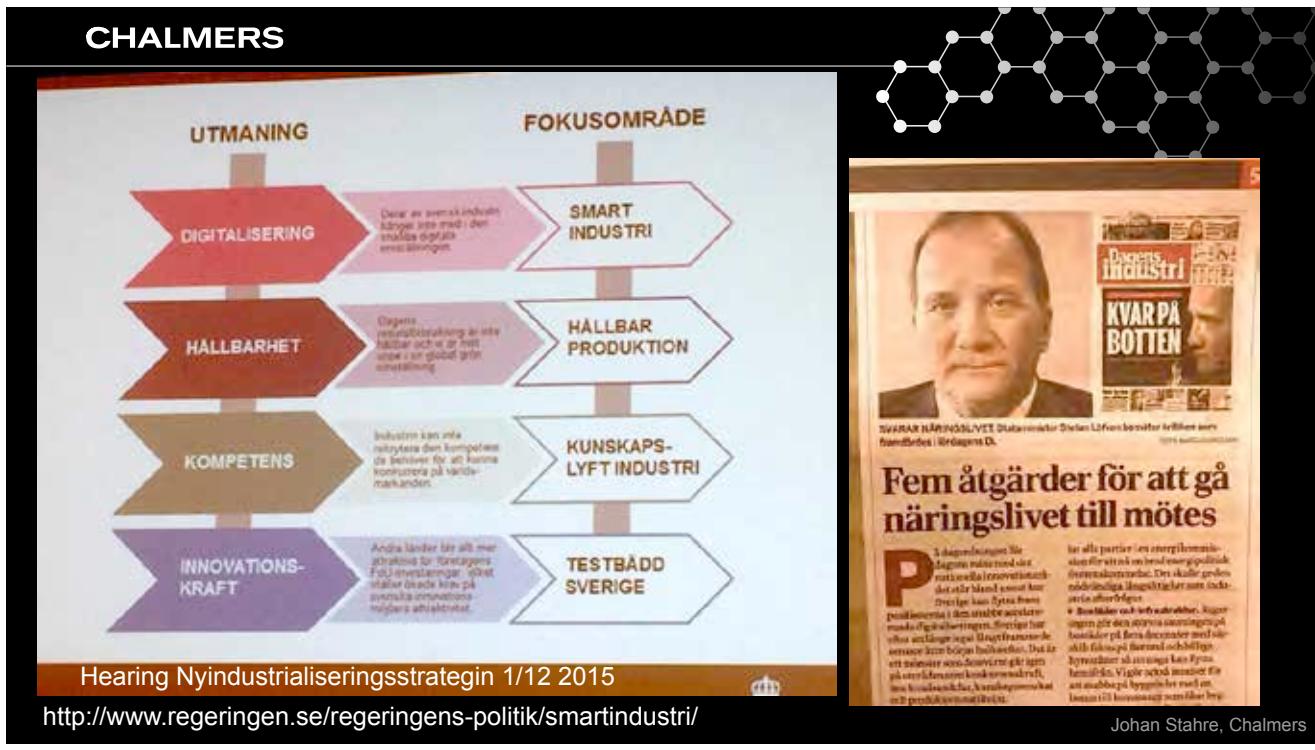
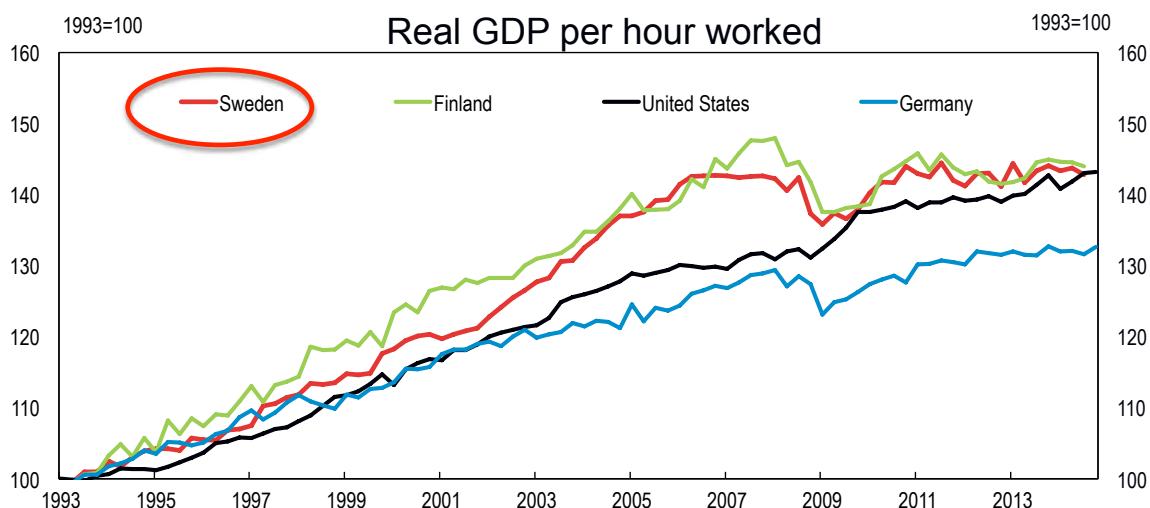


Diagram 3:
Andelar av dem som sysselsätts med att producera företagstjänster som insats
i andra branschers produktion, år 2010

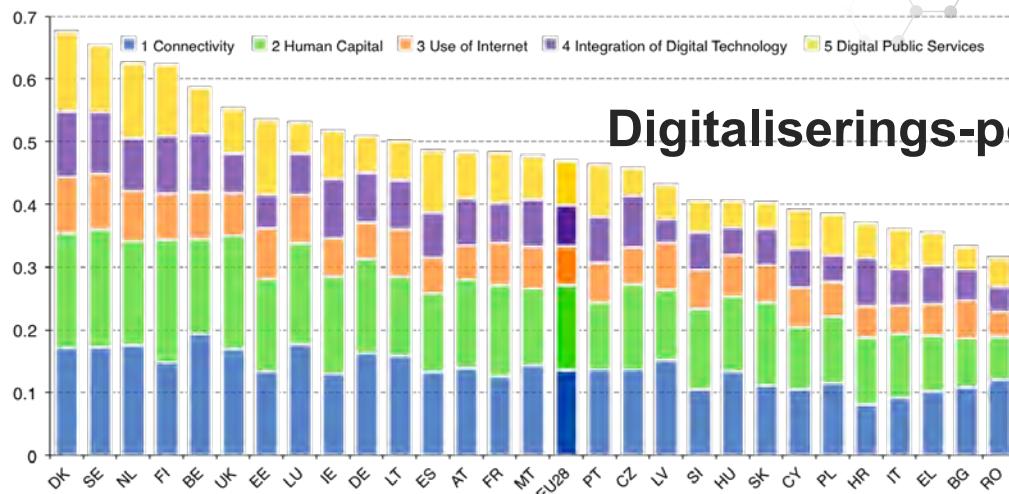
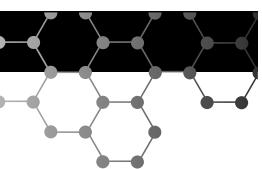


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Produktivitet ?!



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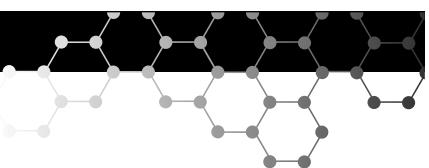


Digitaliserings-potential ✓

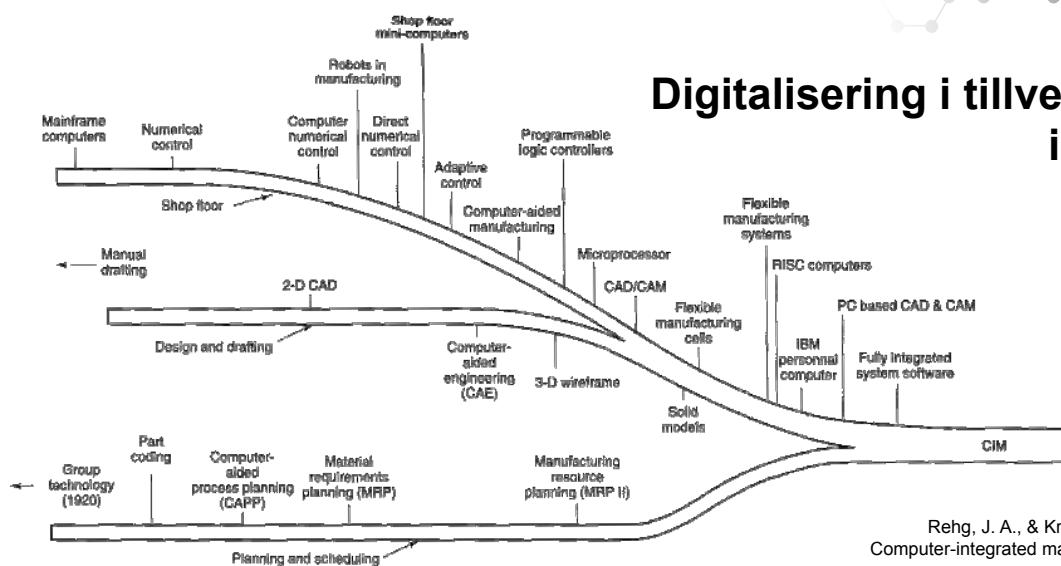


European Commission (2015) Digital Economy and Society Index 2015

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Digitalisering i tillverkningsindustrin



Rehg, J. A., & Kraebber, H. W. (2005). Computer-integrated manufacturing (3rd ed.).

1950

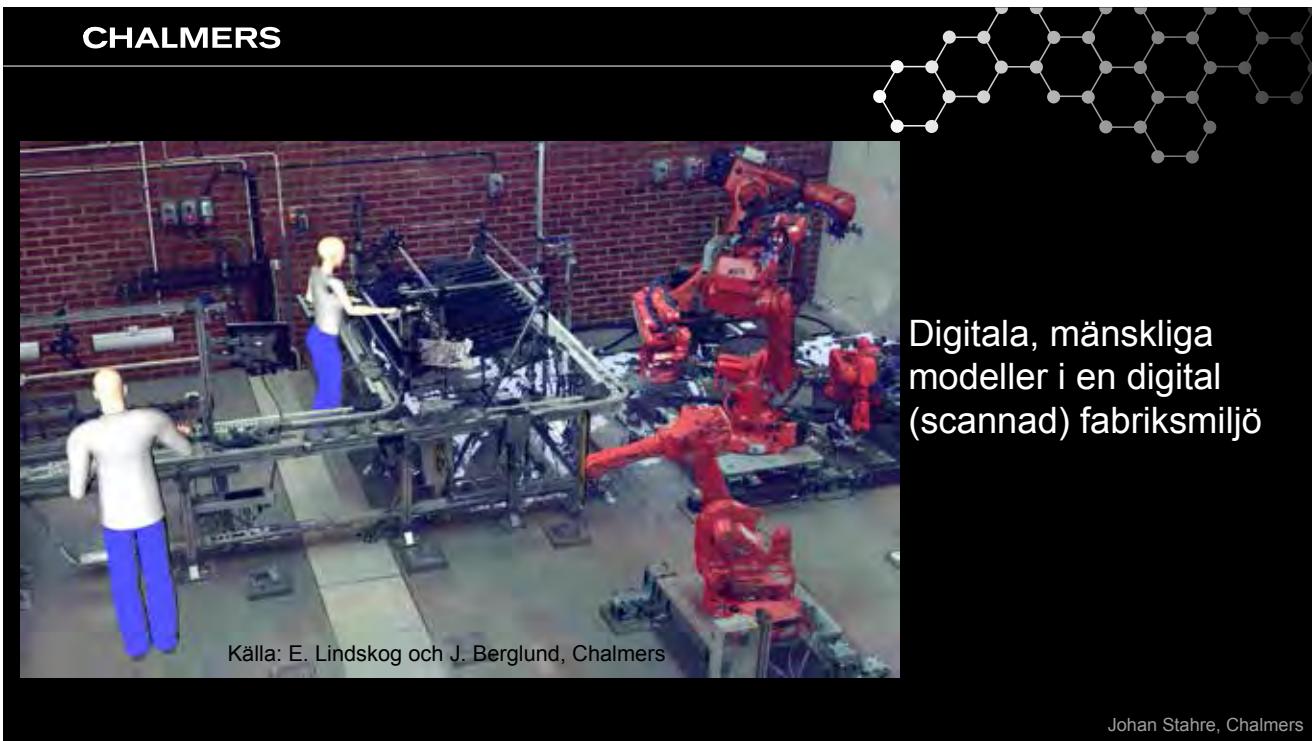
1960

1970

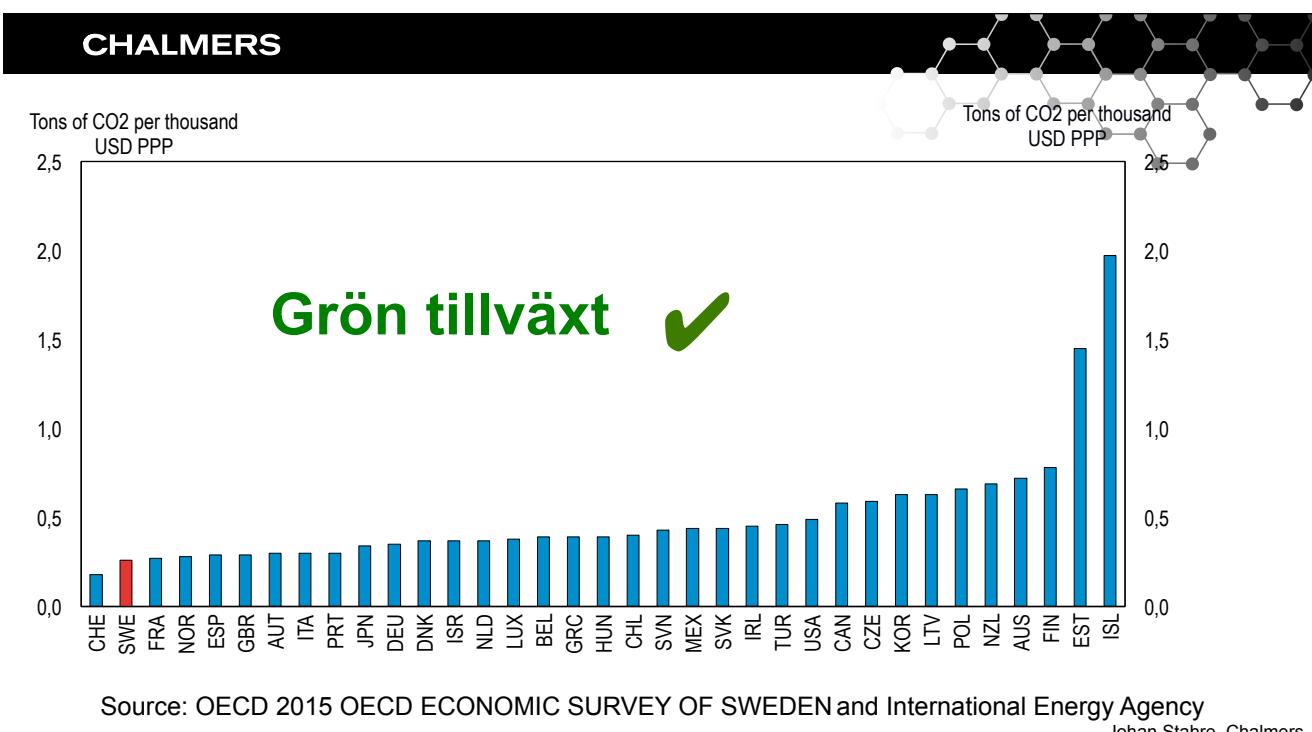
1980

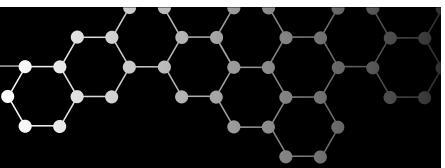
1990 –

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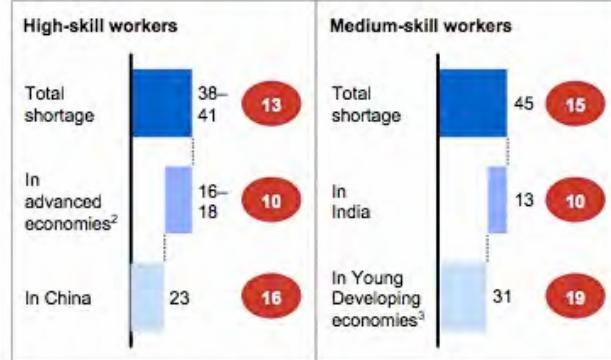


Matchnings-/kunskapsgapet ökar

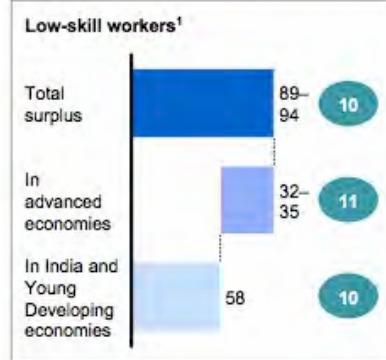
Gap between demand and supply of workers by educational attainment, 2020E
Million workers

% of supply of skill cohort
% of demand for skill cohort

Shortages

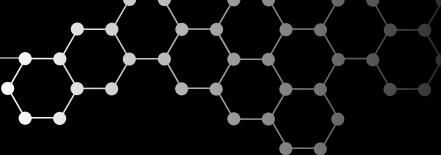


Surpluses

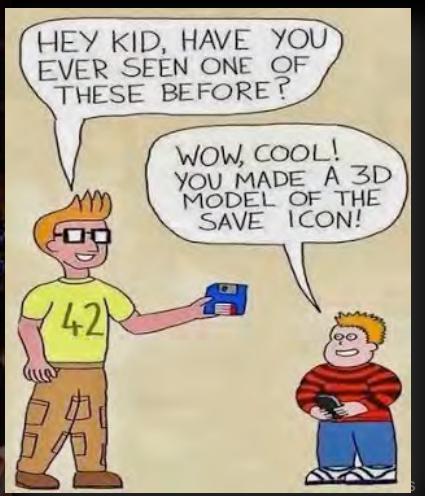


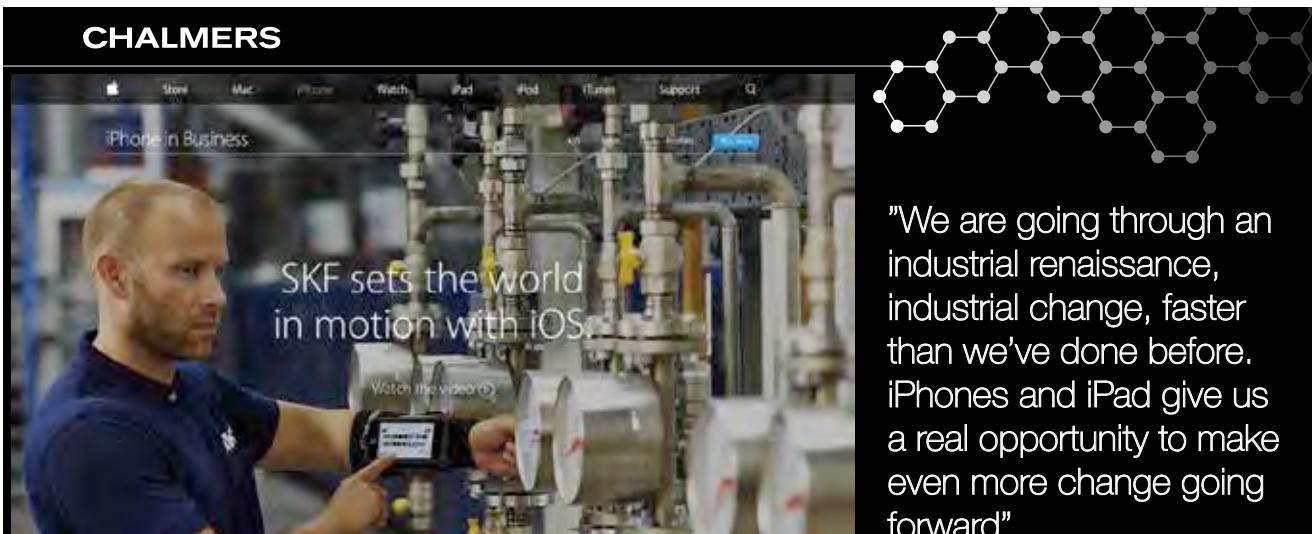
[McKinsey Institute (2012) The world at work: Jobs, pay, and skills for 3.5 billion people]

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Intressegapet ökar





<http://www.apple.com/iphone/business/profiles/skf/>

"We are going through an industrial renaissance, industrial change, faster than we've done before. iPhones and iPad give us a real opportunity to make even more change going forward"

Tom Johnstone, SKF CEO

Nya, attraktiva jobb i Nyindustrin

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- **Samarbetsplattform**
- **Testbädd och demo**
- **"Learning Factory"**

CSI LAB
CHALMERS SMART INDUSTRY LAB

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Will a robot take your job?

Automation

11 September 2015 Technology

Type your job title into the search box below to find out the likelihood that it could be automated within the next two decades.

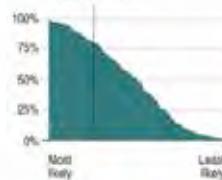
About 35% of current jobs in the UK are at high risk of computerisation over the following 20 years, according to a study by researchers at Oxford University and Deloitte.



I am a...

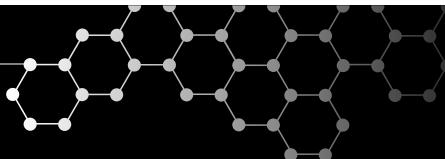
Likelihood of automation?
It's quite likely (80%)

How this compares with other jobs:
93rd of 386

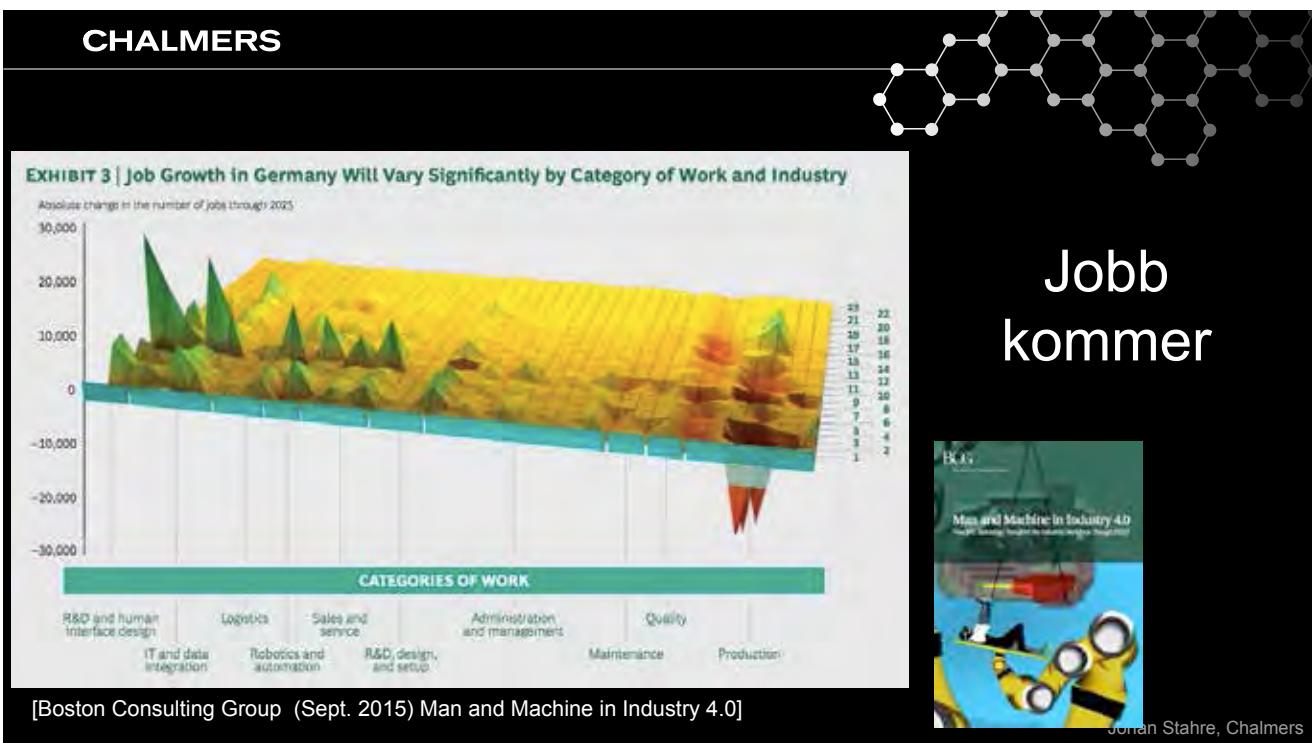
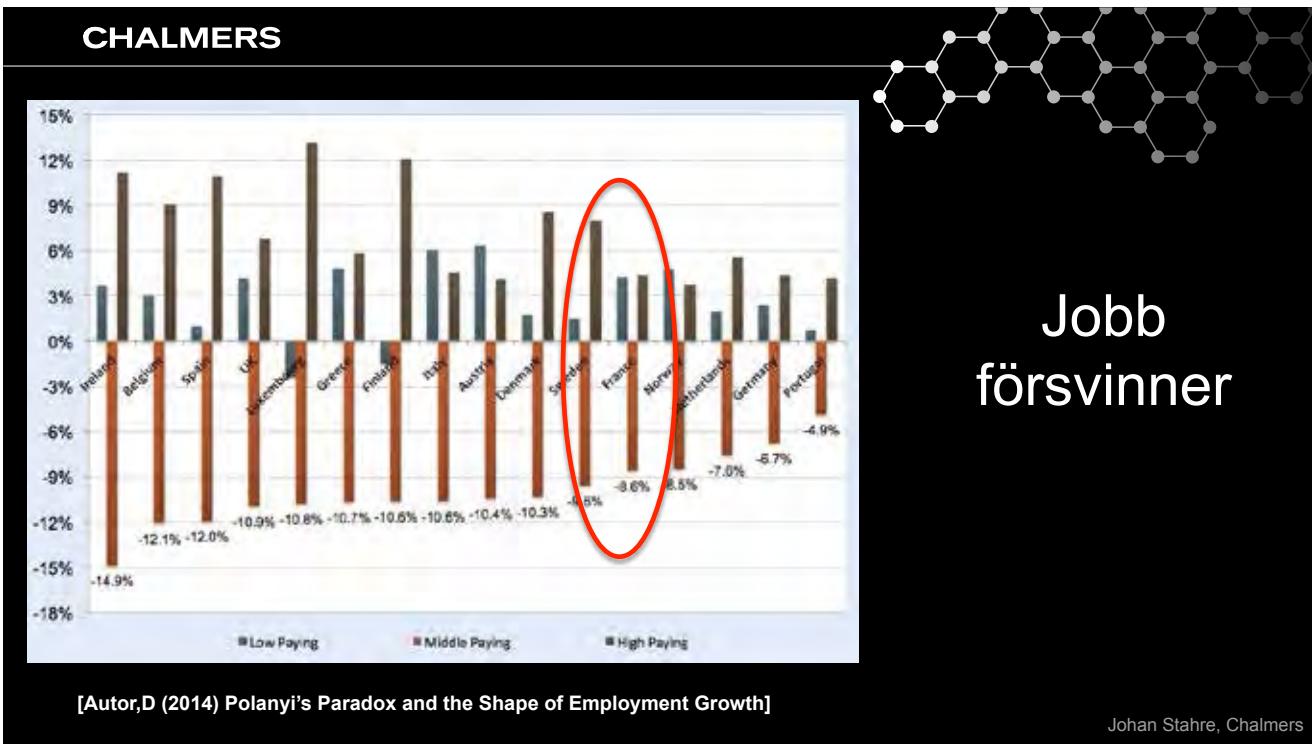


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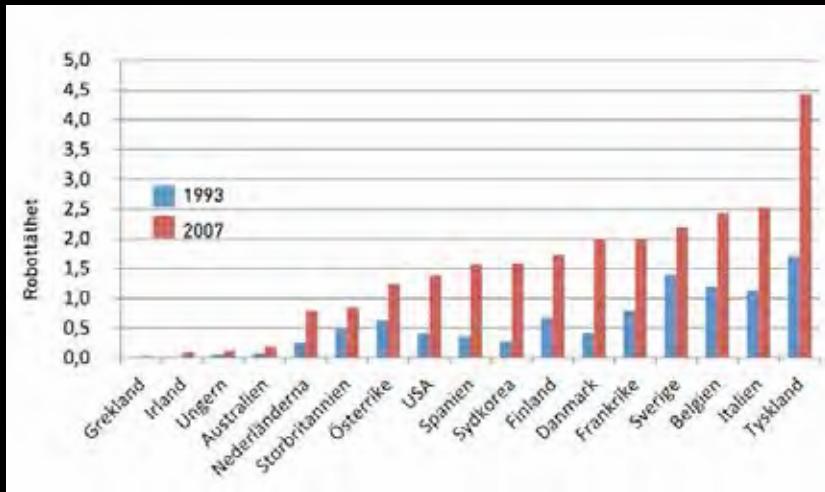
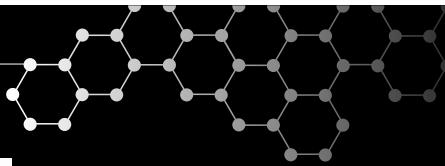
Framtidsfabriken 1990



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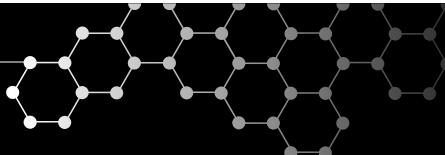
Robotarna ?!



[Graetz , G. och Michaels, G. (2015) "Robotar som jobbar", SNS Analys, 2015:32]
Robottäthet mätt i antal robotar per miljon arbetade timmar, 1993 och 2007.

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Summering



- Hård, global konkurrenssituation
- Svensk potential för en Nyindustri
 - Digitalisering +
 - Hållbarhet +
 - Automation +
 - Demografi -
 - Intresse -
- Nya jobb i Nyindustrin

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