UNIVERSITÄT DUISBURG ESSEN

Offen im Denken

IAQ

Institut Arbeit und Qualifikation

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Comment les partenaires sociaux doivent-ils s'y prendre pour assurer la transition numérique et l'avenir du travail? Le cas allemand

AMÉLIORER LA PRODUCTIVITÉ LA MÉTALLURGIE À L'ÈRE DU NUMÉRIQUE

États Généraux de la Métallurgie 2018

Boucherville 4 Octobre 2018

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Structure of presentation

1. Work 4.0 in the German High-Tech Strategy
2. Pro-active trade union policy
3. Modernization of the dual system of vocational training

1.1 High-Strategy in Germany since 2010

- **Until 2010 R&D-policy focus on speficic technologies**
- **Since 2010 focus on society‘s needs to develop forward looking solutions in 6 fields:**
  - ***The digital economy and society***
  - ***The sustainable economy and energy***
  - ***Healthy living***
  - ***Intelligent mobility***
  - ***Civil security***
  - ***<u>And since 2015 due to union pressure:</u> The innovative workplace***
- **Main pillar in the field „innovative workplace“ „Future of work program“ with 1 Billion € for seven years**

1.2 High-Strategy in Germany since 2010

- **Goal 3% of GDP in R&D: 1% state / 2% companies**
- **Strength of Germany – high road strategies in the core of the economy: High own R&D investments**

„*Future of Work“ projects:*

- **Yearly tenders on specific themes like „competencies for digital work“, „new forms of internal flexibility“ etc.**
- **Only support of applied projects with innovations in more than one company + plausible ideas of dissemination + own contributions of companies**
- **All projects: cooperation agreements between researchers + companies + works councils**

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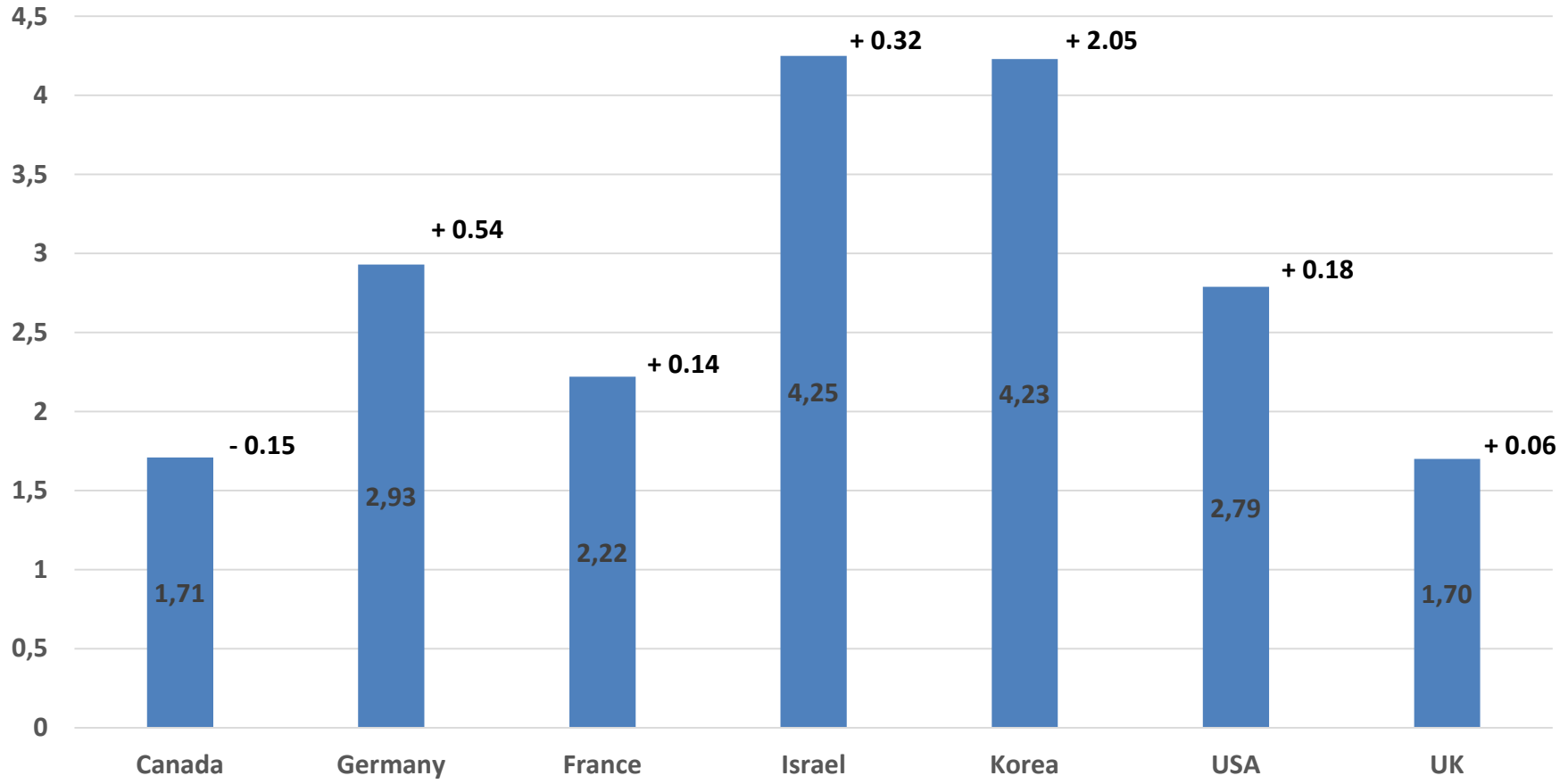
1.3 R&D as percentage of GDP 2016 (change 2000-2016 in pct. points)



Source: OECD

1.4 Example: The technology network it‘s OWL in figures

24 core companies with innovation projects*

- Revenue: 11.8 billion euros
- Percentage of R&D employees: 14.7%
- R&D investment as a percentage of turnover: 8.4%
- Export quota: 56%
- 230 production sites and 782 branches worldwide

6 universities and 18 research institutes

- External funding: 100 million euros per year
- Investment in research infrastructure (2006 to 2012): approx. 300 million euros

More than 100 associated companies and 30 economy-oriented institutions

*The figures refer to revenue and employees for the 24 core companies in OWL in 2012.

New research centres provide perfect conditions for cutting-edge applied research in collaboration with businesses all over OstWestfalenLippe:
Zukunftsmeile Fürstenallee Paderborn, Research Building "Interactive Intelligent Systems" of Bielefeld University, Centrum Industrial It (CIIT) Lemgo and Bielefeld University Campus

Source: it‘s OWL Clustermanagement GmbH (2016)

2.1 Pro-active trade union policy

- German unions see industry 4.0 as a necessary innovation push: help to secure jobs and improve working conditions
- Pro-active approach proposed: to avoid job risks through underinvestment in skills and to improve working conditions

- What do unions do?
  - Influence national and regional R&D priorities
  - Encourage/coordinate „Future of Work“ projects
  - Innovative collective agreements on further training or working time
  - Own projects on Work 4.0

2.2 Project „Work 4.0 - North-Rhine-Westphalia 2020“

- **Ressources: (1) Own „Work 4.0“ team (IG Metall 5 FT officials), (2) State money for consultants, (3) HansBöckler-Foundation financed evaluation of IAQ**
- **„Work 4.0“ team identified companies with pro-active works councils and interested management**
- **6 - 8 all day workshops in 30 companies with the help of consultants (another 30 in 2019/20):**
  - **Stock-taking of digitalisation of 4.0 in all departments**
  - **Involvement of employees as *„experts of their workplaces“***
  - **Mapping of problems and chances**
  - **Development of pro-active strategies (if promissing additional strategic workshops are financed)**

2.3 Company map of industry 4.0

2.4 Some intermediate results

- **Works councils – more participation of employees**
- **Management impressed by professional approach / high interest in results: I 4.0 also for them a journey in unknown waters**

- **Big themes: Job security, intensification of work, initial and further training, working time**
- **Until 9/2018 in 9 companies „Future Agreements“ signed:**
  - **joint working groups / regular meetings**
  - **joint monitoring of changes: especially skill development, working time …….**
- **<u>Clear intensification of social partnership</u>**

3.1 Modernization of vocational training

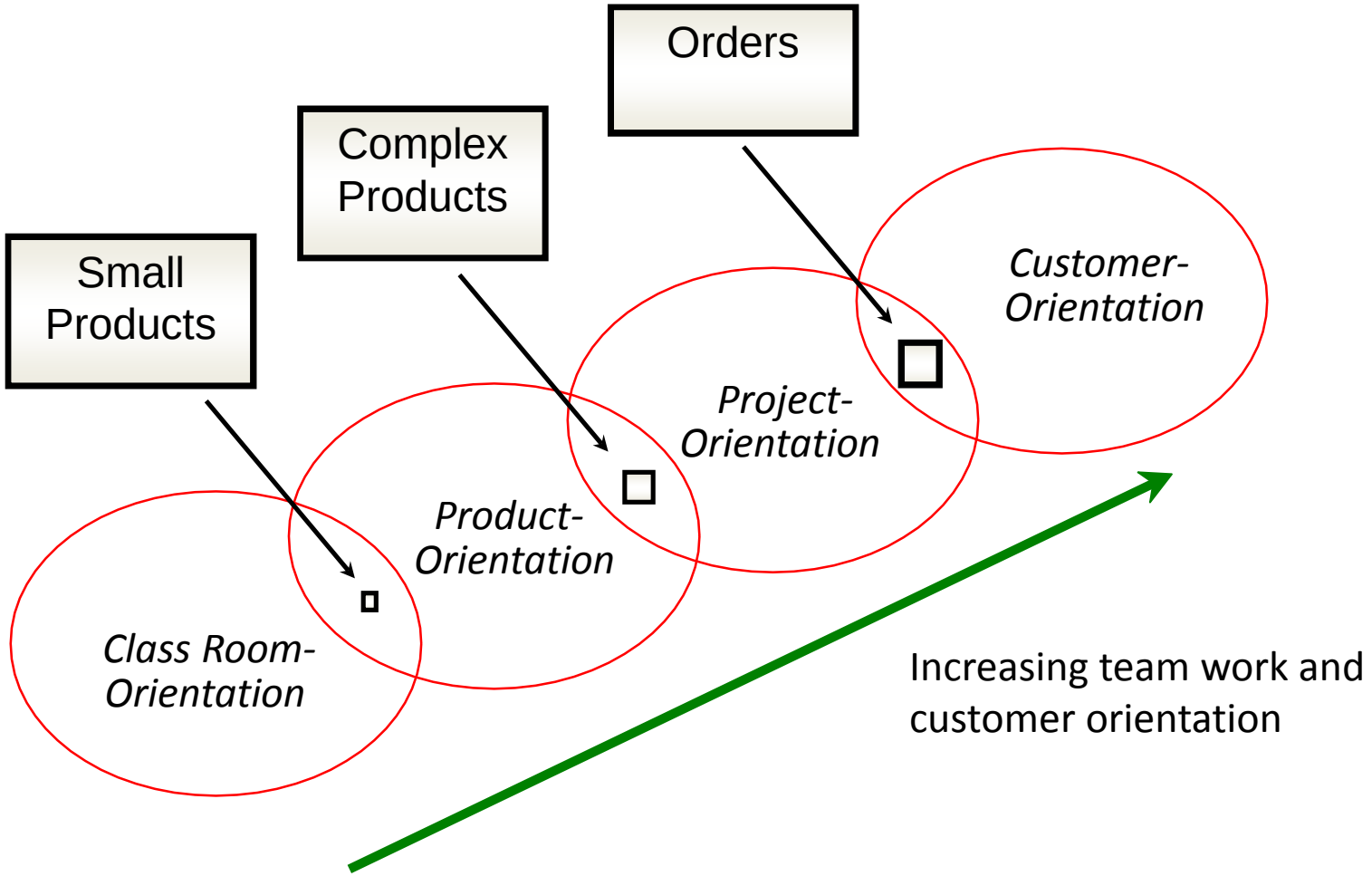
- Between 5 and 6 % of the employees apprentices in the dual system of vocational training
- Training in around 350 national white and blue collar occupations
- Most employees in manufacturing skilled (VET or tertiary education)
- Broad skill base supports learning on the job – rapid changes require more learning on the job
- Job tenure increasing since companies rely more than in the past on the tacit knowledge of the employees

3.2 Example of Modernization of vocational training

- **Most occupations modernized in the last decade**
  - **Occupational profiles broader than in the past and technology open**
  - **Learning in teams and in real business processes to acquire social skills and understand the context of their work**
- **August / 2018: Fast track modernization of 11 engeneering and electronic occupation with agile methods (step by step modernization) – creation of optional modules like programm or IT-Security for initial or further training**

- **Ongoing: Social partners check the impact of industry 4.0 on 20 occupational national profiles – Ambitious goal: joint module „media competence“ across all occupations**

3.3 New learning forms: From product towards team work and customer-or business process orientation



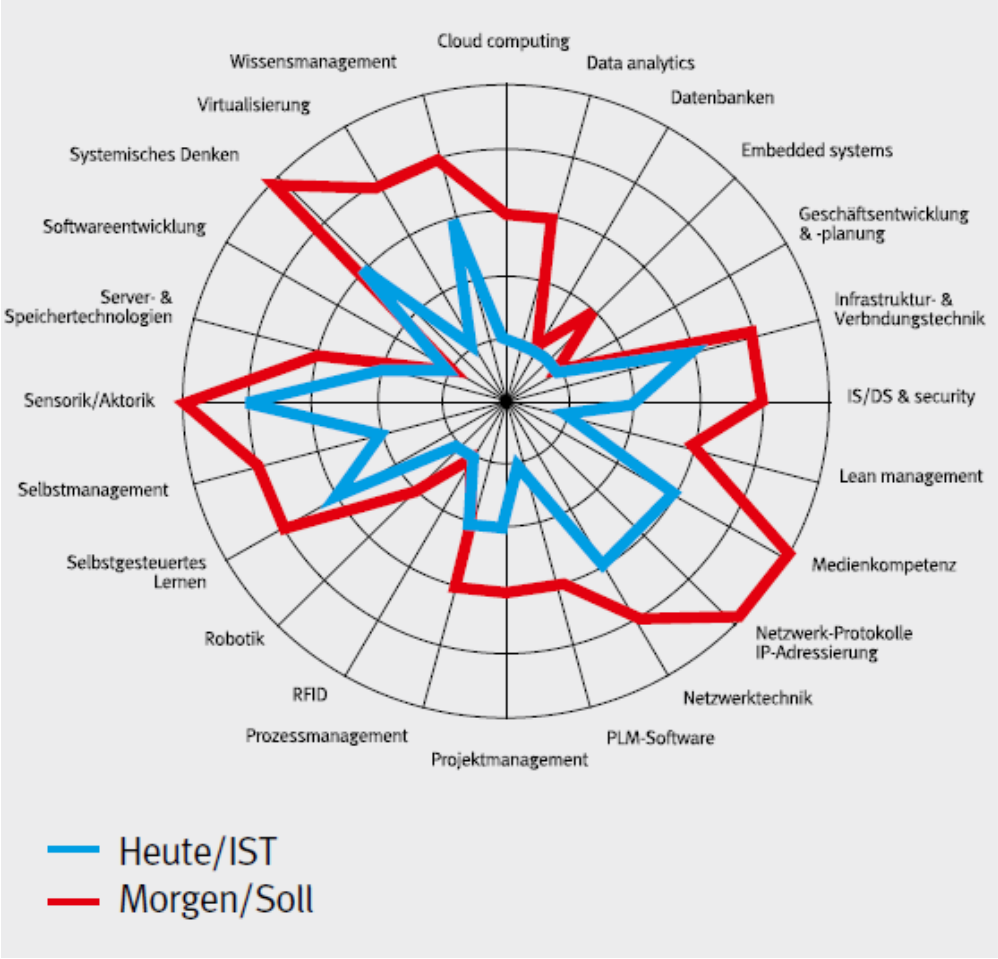
Source: Bosch 2000a

3.4 Example of modernization with agile methods (Red=new, Blue=modernized)

Mécanicien industriel/Mécanicienne industrielle (42 mois)

- Organisation et contrôle des flux de finition et de fabrication
- Fabrication de composants et de sousgroupes et montage sur des systèmes techniques
- Détection et documentation d'erreurs et de leurs causes sur des systèmes technique
- Remise en état de systèmes techniques
- Modification de machines et de systèmes
- Exécution de travaux de maintenance et d'inspection
- Sélection de procédés et de moyens de contrôle
- Remise de systèmes et de produits techniques aux clients et instructions sur le fonctionnement de l'installation
- Maintien du bon état de fonctionnement de systèmes techniques
- Vérification et développement de composants électrotechniques du domaine de la technique de commande
- Prise en considération de processus commerciaux et application de principes de gestion de la qualité
- Exécution des tâches de façon autonome, en respectant les règlements et les dispositions de sécurité en vigueur
- Coordination du travail avec les personnels en amont et en aval
- Installation de postes de travail
- Communication avec des clients internes et externes en fonction de la situation, travail en équipe
- Contrôle et documentation de travaux d'entretien et de montage en prenant en considération les systèmes de gestion de la qualité de l'entreprise
- **Utilisation de systèmes informatiques également pour les processus numérisés, application de la législation sur la protection des données et sur la sécurité des information**

3.4 Occupational profile of a repairperson today (blue) and tomorrow including further training (red) (Siemens)



Quelle: IGM (2016) Berufsbildung 4.0: Lernen im digitalen Wandel Fünf Betriebe zeigen ihre Praxi, p. 17s

Conclusions

- I-4.0 not new – digitalisation started earlier but I 4.0 hype creates a culture of department
  - Helps focussing R&D priorities, employer and union strategies
- Work was appendix to I-4.0, but increasingly important
  - unions succeeded to implement the „Future of Work“ program as well as own industry and company initiatives
- Many speculations on „The Future of Work in 2030“ - the formation of „Work 4.0“ an experimental process – small steps and agile methods needed
- Social partnership in this process crucial for economic and social reasons