HOE GEEFT DIGITALISERING, INDUSTRY 4.0, VORM AAN DE INKOOPFUNCTIEPROFIELEN EN VAARDIGHEIDSEISEN?

Nevi Procurement Day 2022

Ronde 1 | 11.30 - 12.15

Plenaire zaal Promenade

Vincent Delke

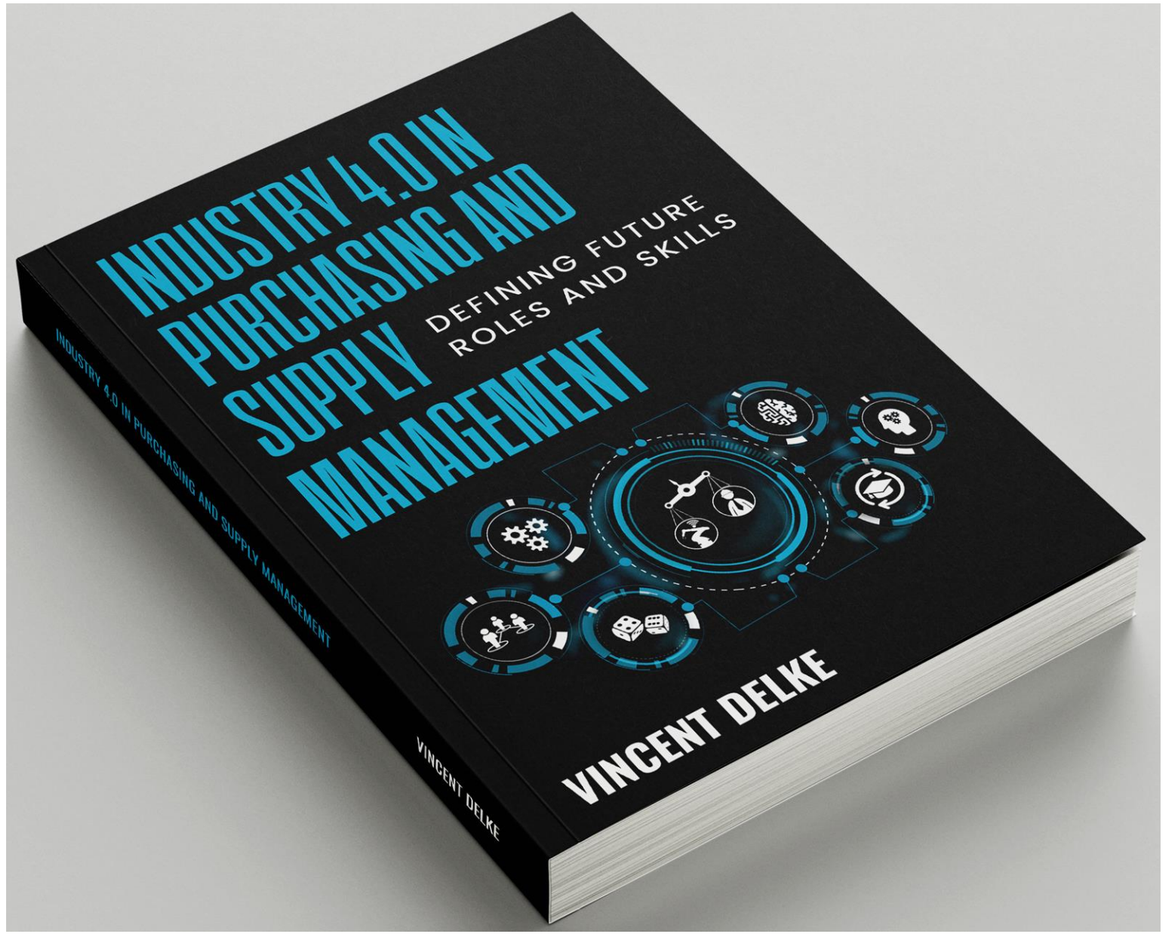
UNIVERSITY OF TWENTE.

On the 28th of October I successfully defended my dissertation at the University of Twente

Dr. Vincent Delke

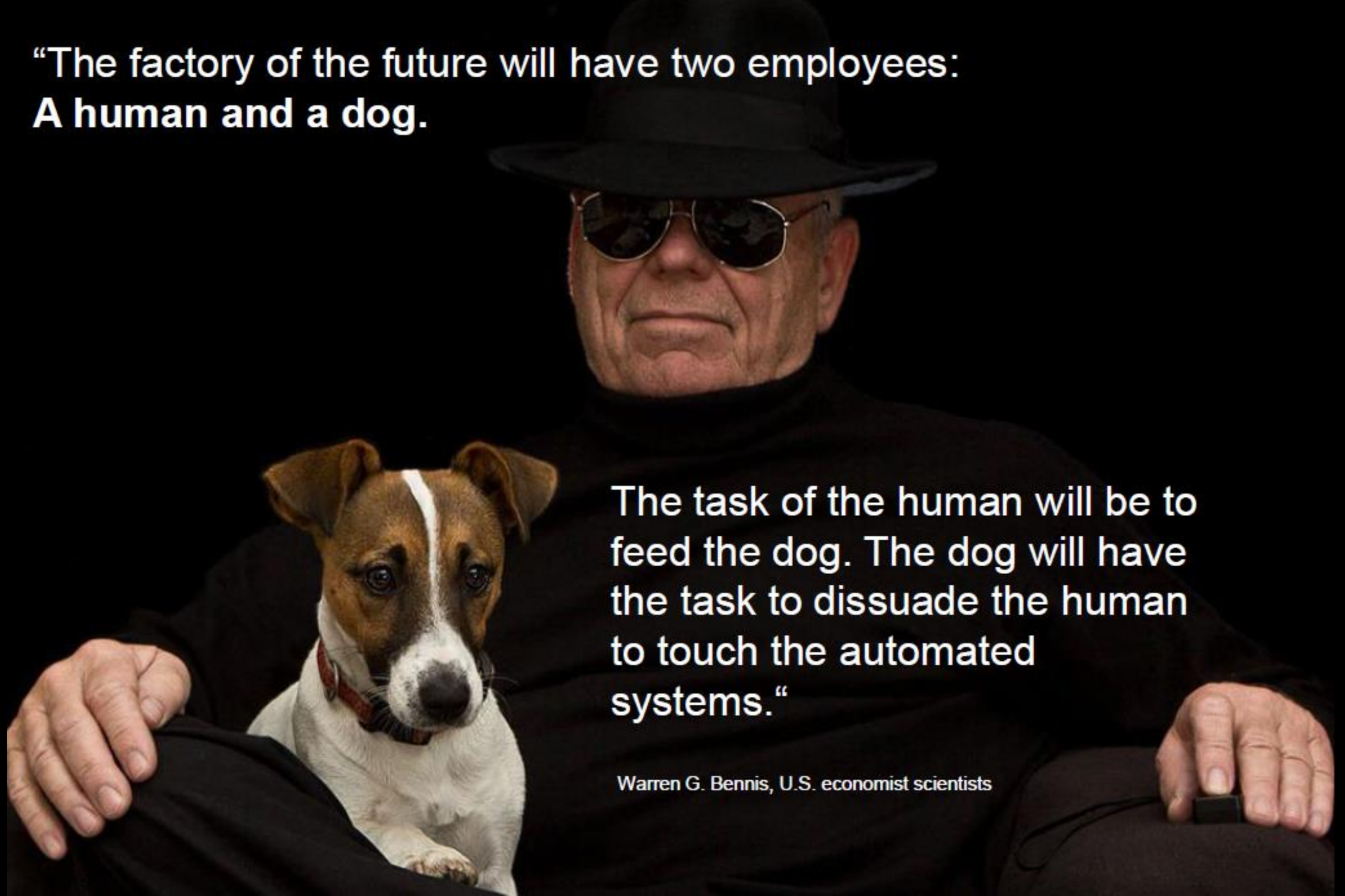
PhD

- University of Twente, Netherlands - Department Technology Management & Supply (TMS)
  - Promotor, Prof. Dr. Holger Schiele
- Fachhochschule Münster, Germany - Institute for Process Management and Digital Transformation (IPD)
  - Supervisor, Prof. Dr. Wolfgang Buchholz



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“The factory of the future will have two employees:
A human and a dog.

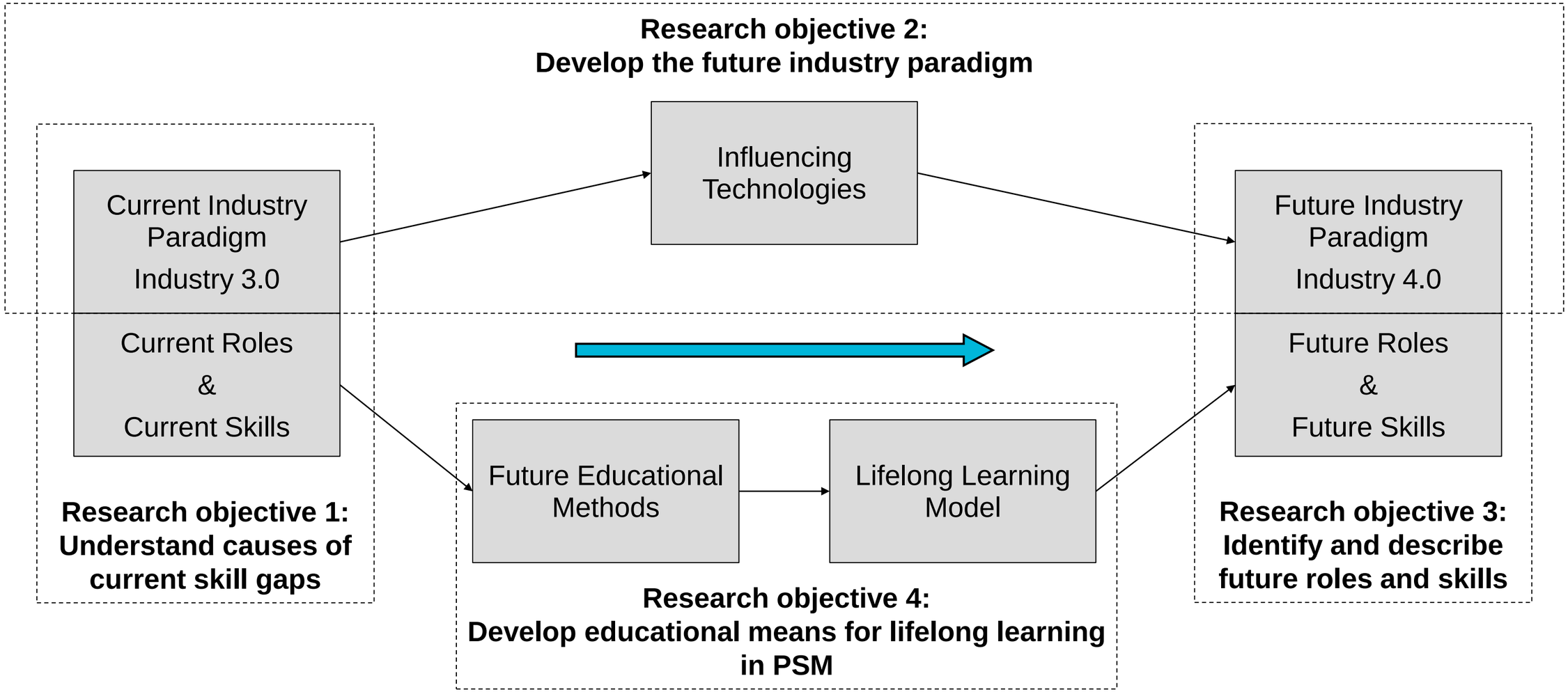


The task of the human will be to feed the dog. The dog will have the task to dissuade the human to touch the automated systems.“

Warren G. Bennis, U.S. economist scientists

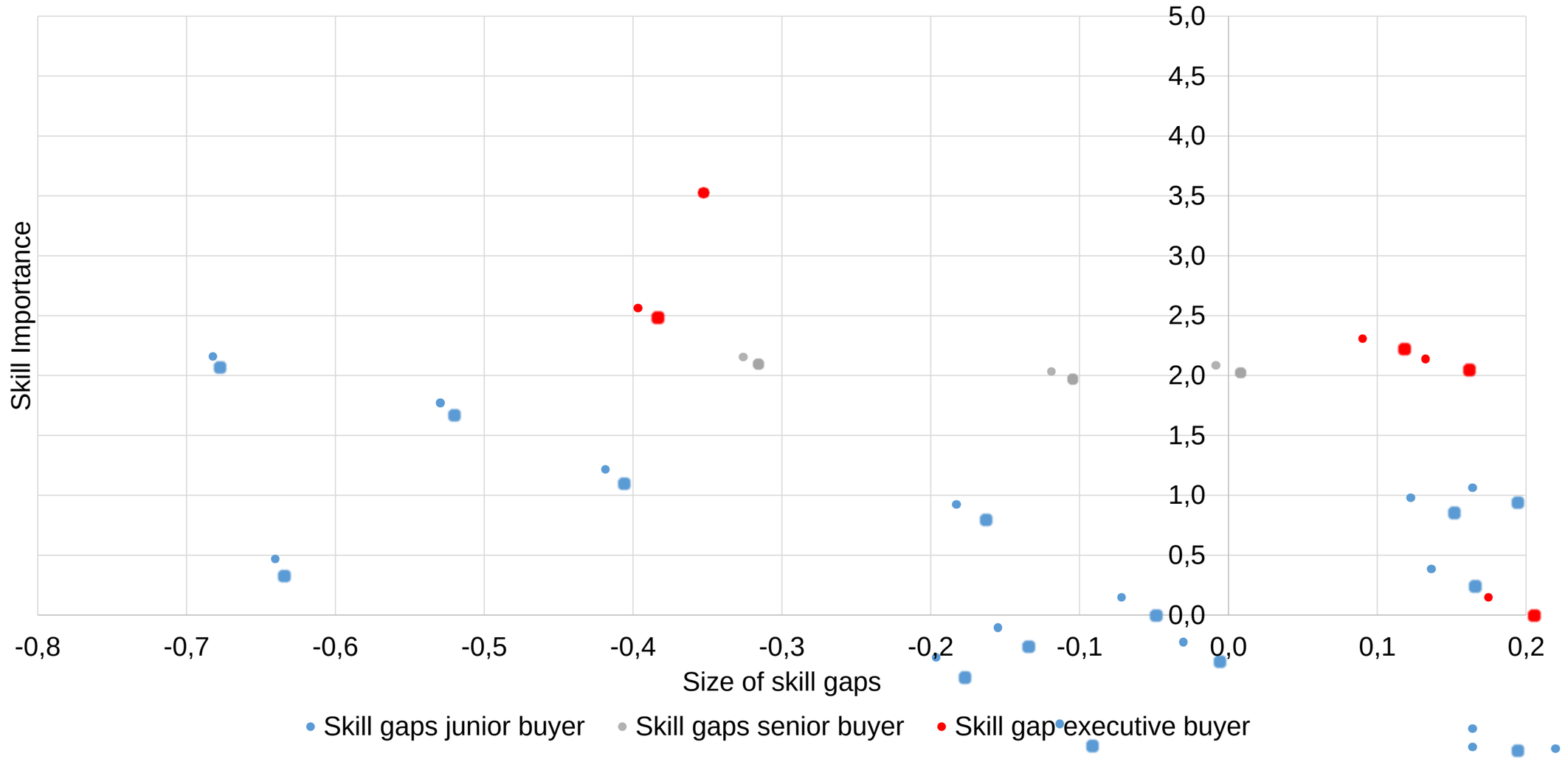
My research objective was to identify the skills future purchasing professionals need and find a method to teach them

Research objectives



Skill gaps in purchasing and supply management evolving around innovation, sustainability, and Industry 4.0

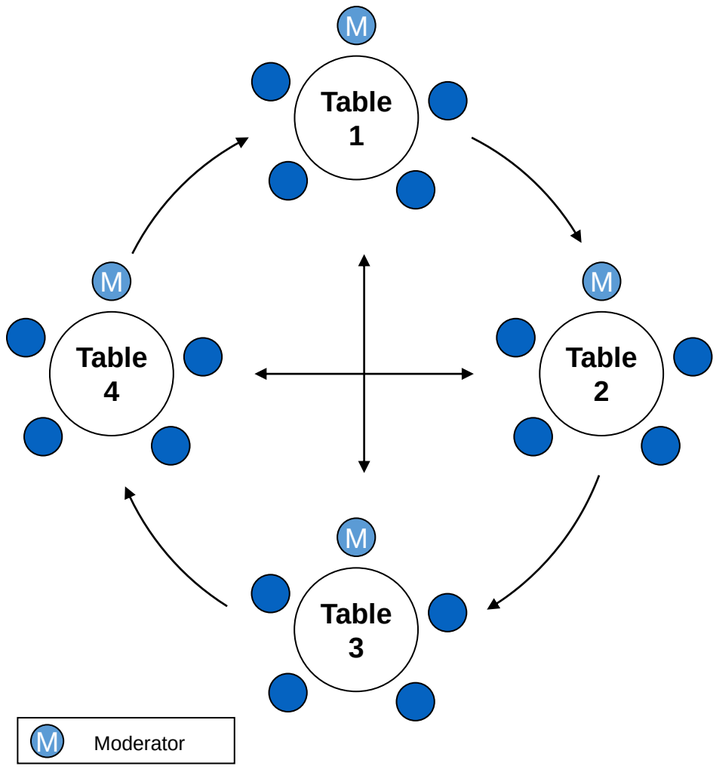
Chapter 2 - Skill gaps based on the PERFECT project



Source: Delke, V., Schiele, H., & Buchholz, W. (2022). Mind the Gap: Skill Gaps in Purchasing and Supply Management Evolving Around Innovation, Communication and I4.0. In Supply Management Research, Springer Gabler

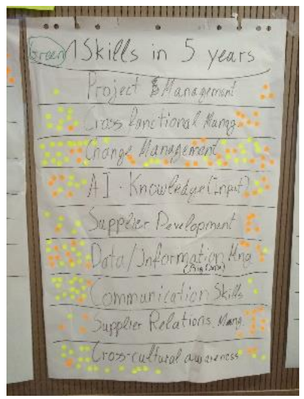
World-Café method used during a firm's purchasing week, addressing the purchasing development in five years'

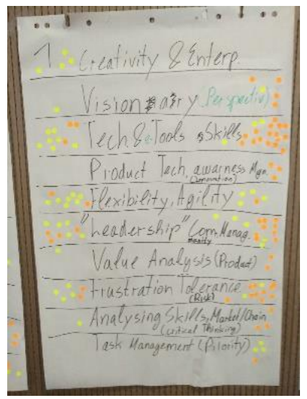
Chapter 3 – direct and indirect procurement



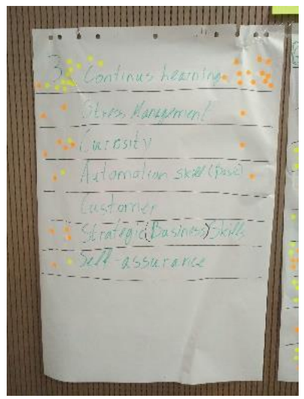
Topics:
1. How do we better communicate with the suppliers in 5 years?
2. How do we work together with other functions?
3. Which skills does the I4.0 purchaser need in 5 years?
4. Which new / improved tools do we need?







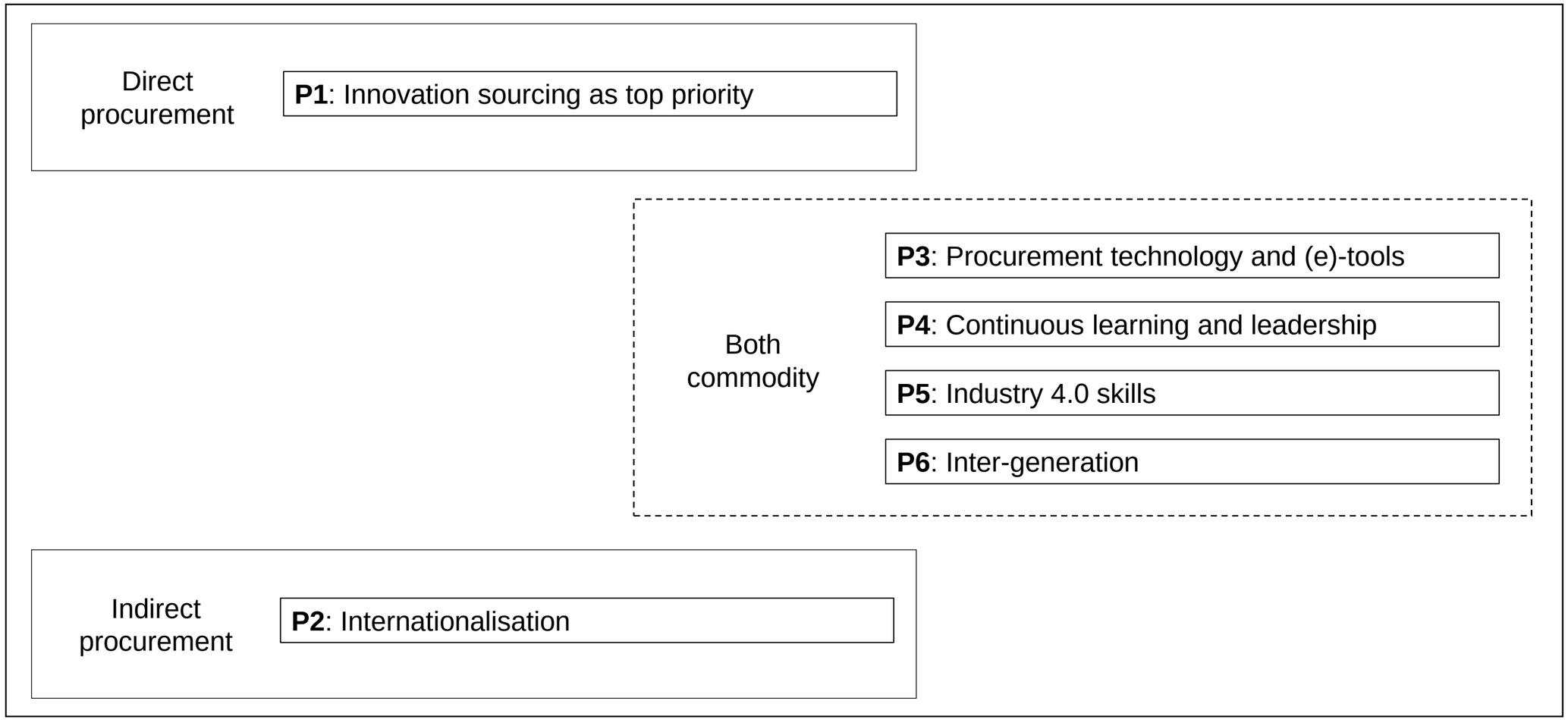




Source: Delke, V., Schiele, H., & Buchholz, W. (2022). Differentiating Between Direct and Indirect Material Purchasers to Identify Professional Profiles in Digitally Transformed Purchasing and Supply Management. International Journal of Procurement Management

The World Café Yielded a Distinction Between Future Skills Needed for Direct Purchasing and Indirect Purchasing

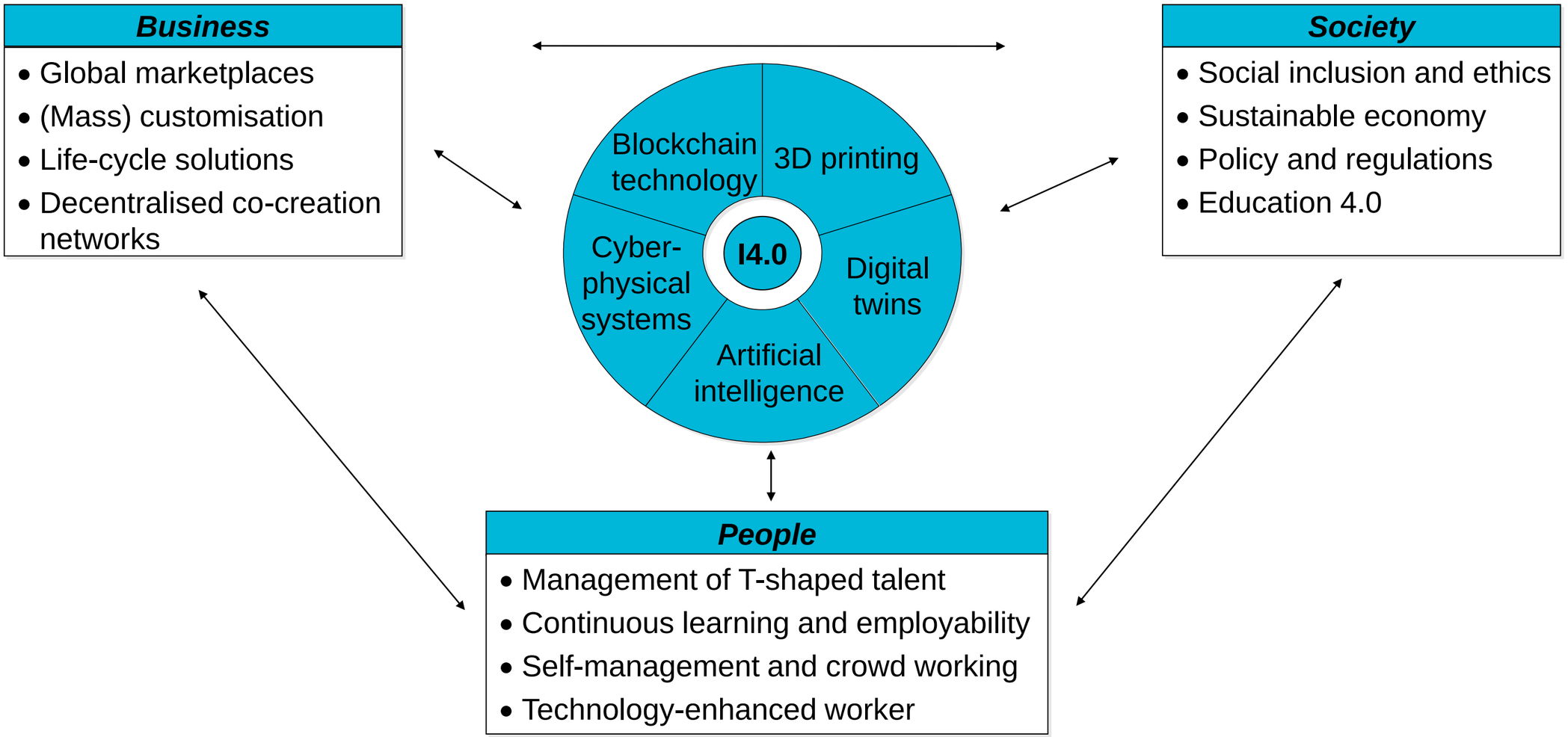
Chapter 3 – direct and indirect procurement



Source: Delke, V., Schiele, H., & Buchholz, W. (2022). Differentiating Between Direct and Indirect Material Purchasers to Identify Professional Profiles in Digitally Transformed Purchasing and Supply Management. International Journal of Procurement Management

Rather than focusing on technology alone, the integration of technology, business, society, and people is a necessity

Chapter 4 - Industry 4.0 paradigm



Source: Schiele, H., Bos-Nehles, A., Delke, V., Stegmaier, P., & Torn, R. J. (2021). Interpreting the industry 4.0 future: technology, business, society and people. *Journal of business strategy*.

The purchasing role is changing from a generalist to a technology-enabled specialist

Chapter 5 – future purchasing roles

Past



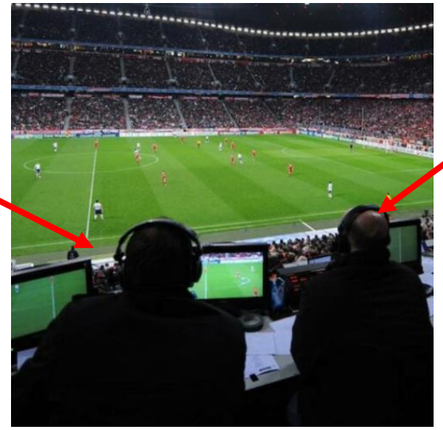
Generalist

– One person
– Multiple roles
– Low specialisation
– Wider rage of skills

Present

Analyst

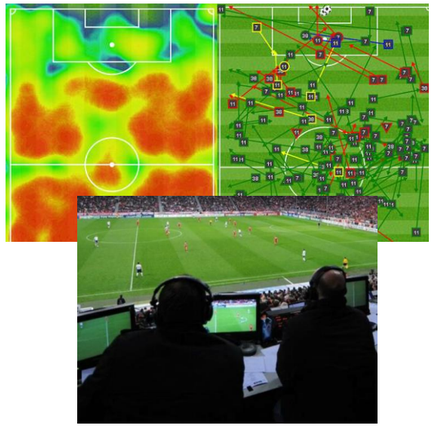
Commentator



Specialists

– Multiple persons
– Allocated to specific roles
– High specialisation
– T-shaped talent with a basic understanding (skills) of the field and specialised skills for their role

Future



Technology-enabled specialists

– Multiple persons
– Allocated to specific roles
– High specialisation
– T-shaped talent with a basic understanding (skills) of the field and specialised skills for their role and technology

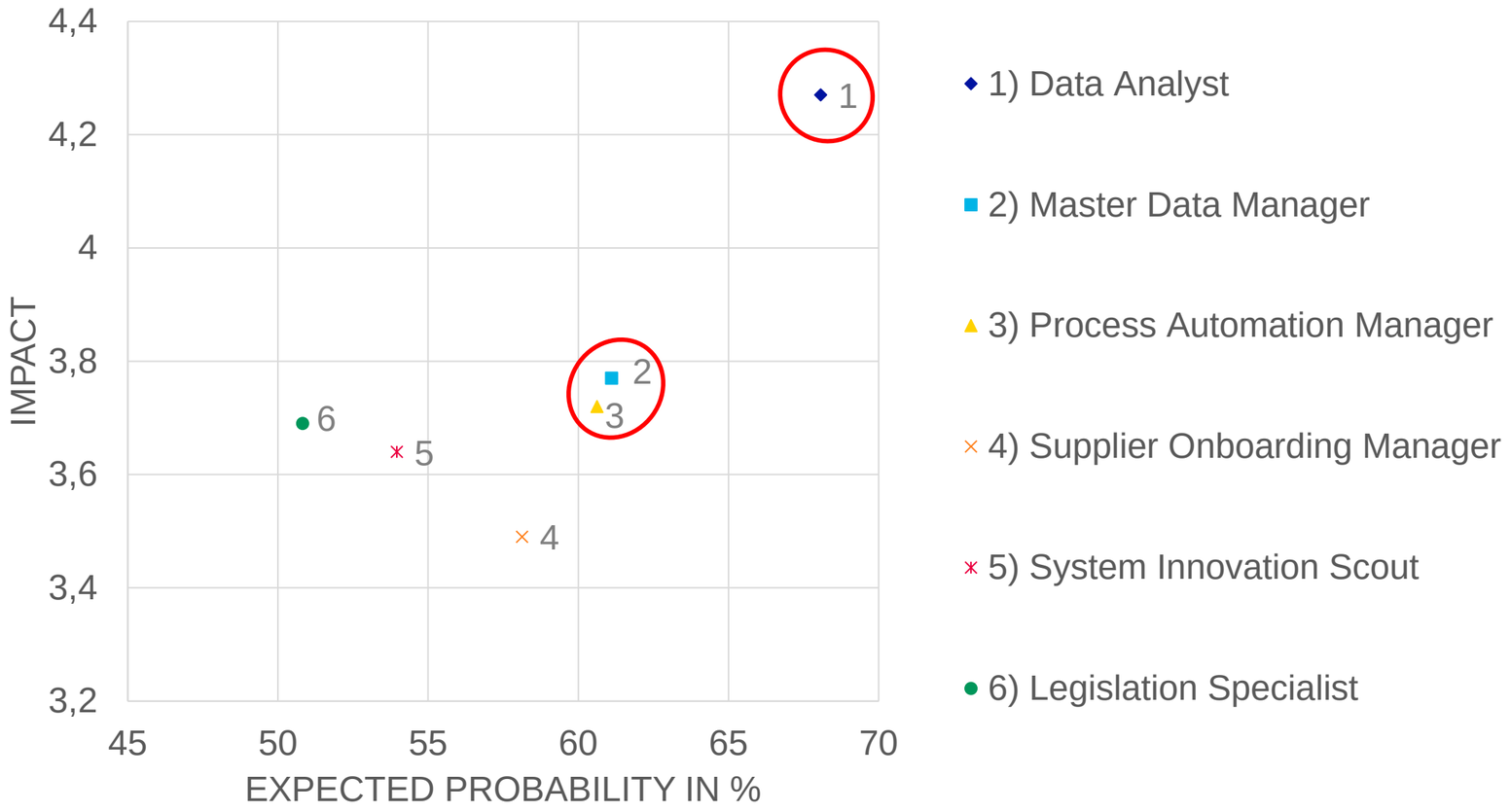
Increasing professionalisation and maturity in the field

Source: Delke, V., Buchholz, W., & Schiele, H. (2021). Specifying roles in purchasing and supply management in the era of Industry 4.0: A Delphi study. Proceedings of the 28th EurOMA Conference

Within the Delphi study six new purchasing roles in the era of Industry 4.0 were identified, described and assessed

Chapter 5 – future purchasing roles

1. **Data Analyst**
2. **Master Data Manager**
3. **Process Automation Manager**
4. **Supplier Onboarding Manager**
5. **System Innovation Scout**
6. **Legislation Specialist**



Source: Delke, V., Buchholz, W., & Schiele, H. (2021). Specifying roles in purchasing and supply management in the era of Industry 4.0: A Delphi study. Proceedings of the 28th EurOMA Conference

The increasing availability of data will shape two fundamental Industry 4.0 roles within the purchasing domain

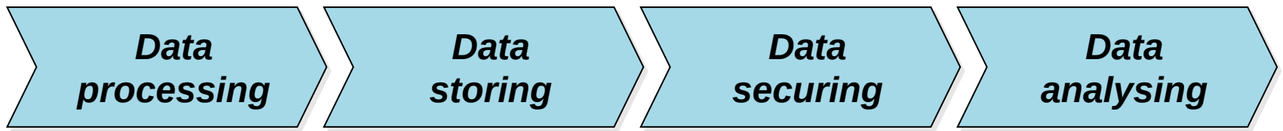
Chapter 5 – future purchasing roles

1. Data Analyst

- **responsible for extraction and analysis of purchasing data** to support the preparation of commodity strategies and complex purchasing projects
- implemented on an organizational level, corporate purchasing level or shared resource
- within Industry 4.0 involves utilization of Artificial Intelligence

2. Master Data Manager

- responsible for the alignment between the physical and digital world and **ensuring data correctness and up-to-dateness**
- procurement-oriented systems are currently introduced, which require experts to manage the alignment between all systems
- interface responsibility becomes especially clear by addressing the newly created digital link to suppliers and customers



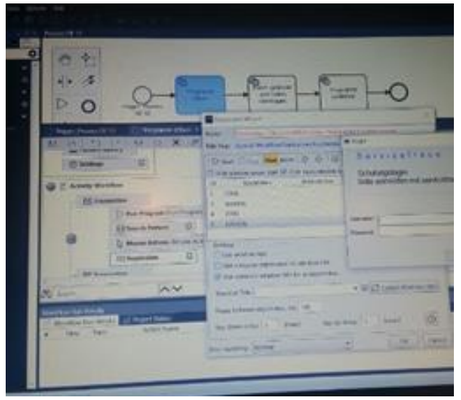
Source: Delke, V., Buchholz, W., & Schiele, H. (2021). Specifying roles in purchasing and supply management in the era of Industry 4.0: A Delphi study. Proceedings of the 28th EurOMA Conference

To utilize the full potential of technologies, suppliers need to be integrated within the transformation process and processes aligned

Chapter 5 – future purchasing roles

3. Process Automation Manager

- works at the interface between purchasing and IT, **responsible for implementing and operative running of automation** in purchasing
- having one person responsible for end-to-end processes, is a clear benefit in automation projects
- in Industry 4.0 towards autonomous systems, a wider range of activities can be automated and run without human intervention



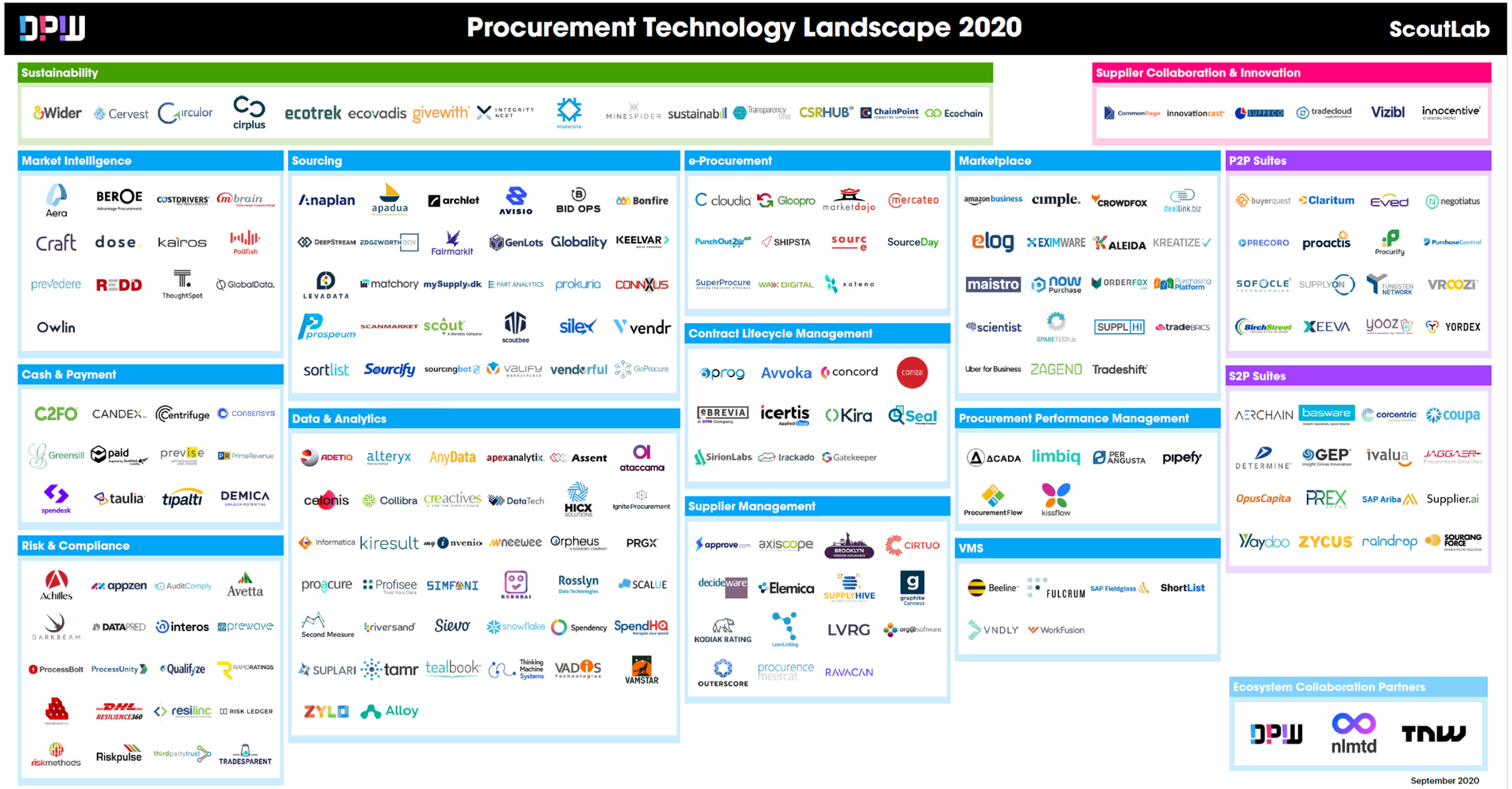
4. Supplier Onboarding Manager

- responsible for **setting up the digital interface between the buying firm and suppliers**, involving the harmonization of data and effective stakeholder communication
- is especially needed during the first phase of supplier integration, where the link between the supplier and buyer is created
- setting up digital interface is an IT job and ensuring all interface fits well is purchasing responsibility

Source: Delke, V., Buchholz, W., & Schiele, H. (2021). Specifying roles in purchasing and supply management in the era of Industry 4.0: A Delphi study. Proceedings of the 28th EurOMA Conference

Also in purchasing, the innovation process has changed

Chapter 5 – future purchasing roles



Source: Delke, V., Buchholz, W., & Schiele, H. (2021). Specifying roles in purchasing and supply management in the era of Industry 4.0: A Delphi study. Proceedings of the 28th EurOMA Conference

Roles are needed to identify an implement future technologies or systems within purchasing and ensure legal compliance

Chapter 5 – future purchasing roles

5. System Innovation Scout

- responsible for **identifying and implementing new Industry 4.0 technologies or systems within purchasing**
- the development of procurement towards Industry 4.0 can be seen as a step-by-step approach, incremental changes, e.g., the implementation of new technologies

6. Legislation Specialist

- responsible for **ensuring that digital purchasing processes and sourcing projects comply with any relevant laws and regulations**, including their implementation into the purchasing systems
- more processes are automated, and there is a need to comply with the law
- compliance in purchasing is more important today

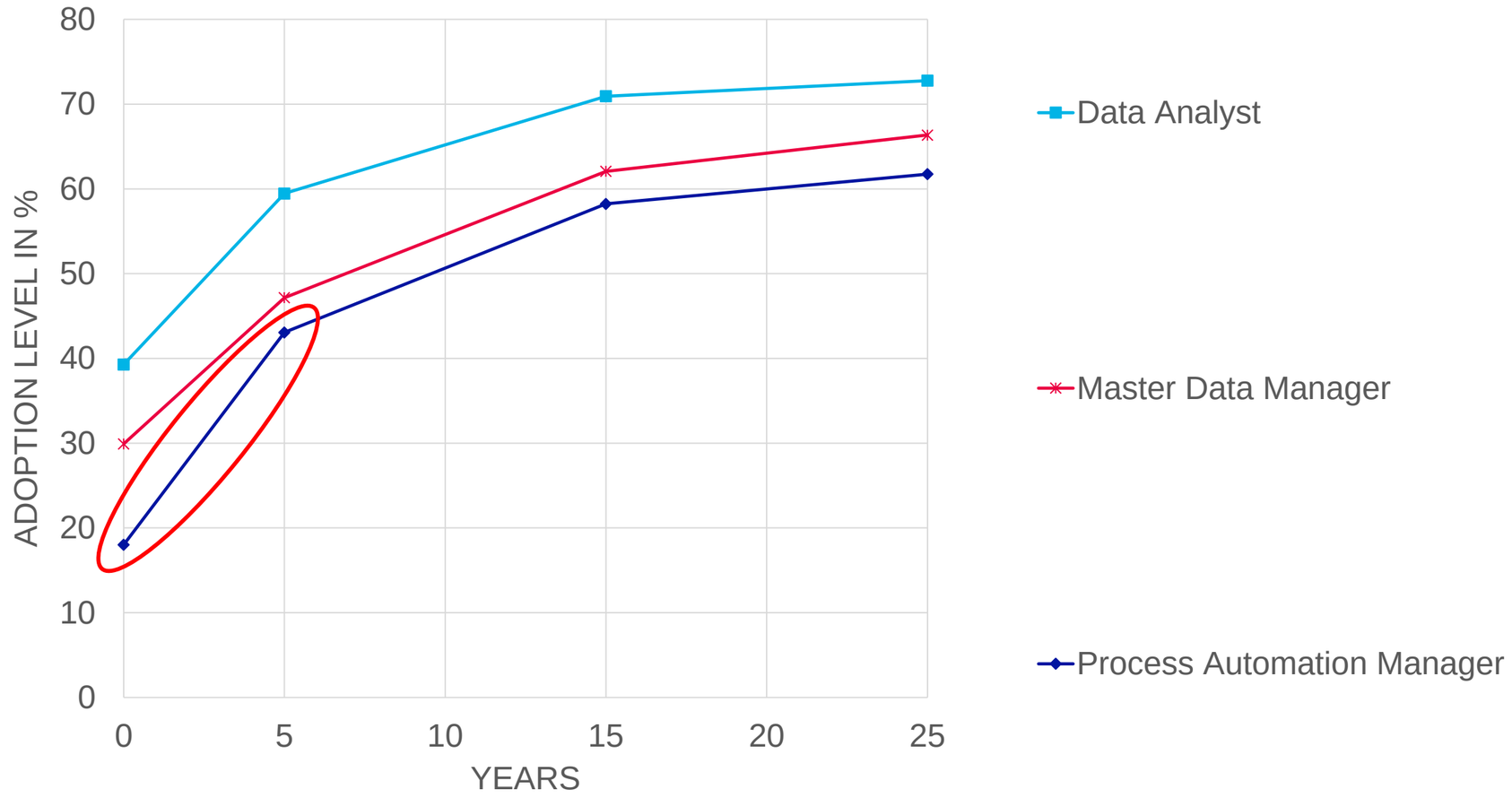


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Source: Delke, V., Buchholz, W., & Schiele, H. (2021). Specifying roles in purchasing and supply management in the era of Industry 4.0: A Delphi study. Proceedings of the 28th EurOMA Conference

Experts assume that multiple roles already exist today and the role of the Process Automation Manager will be implemented in the short term

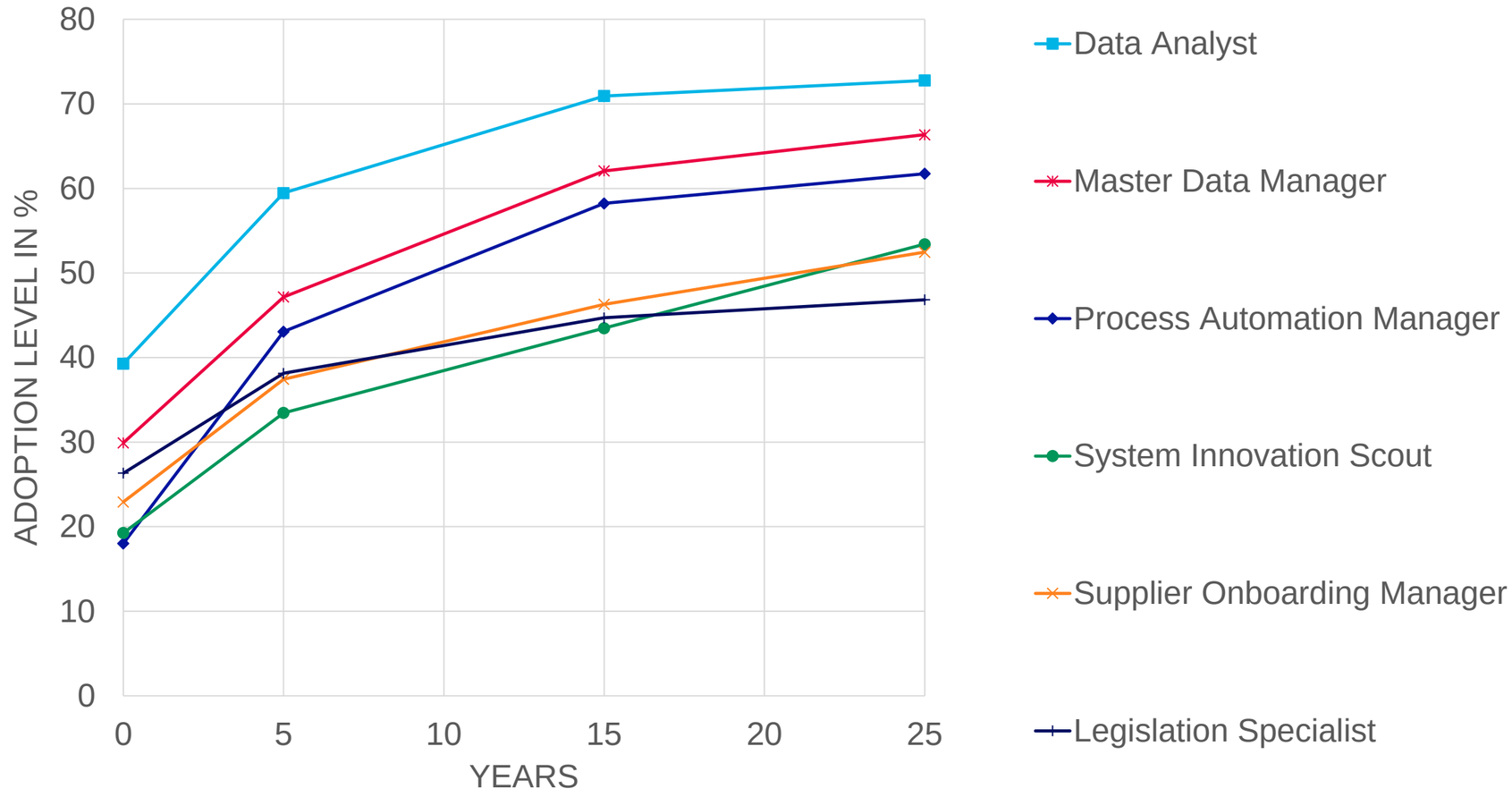
Chapter 5 – future purchasing roles



Source: Delke, V., Buchholz, W., & Schiele, H. (2021). Specifying roles in purchasing and supply management in the era of Industry 4.0: A Delphi study. Proceedings of the 28th EurOMA Conference

Highly specialized roles will be implemented within purchasing

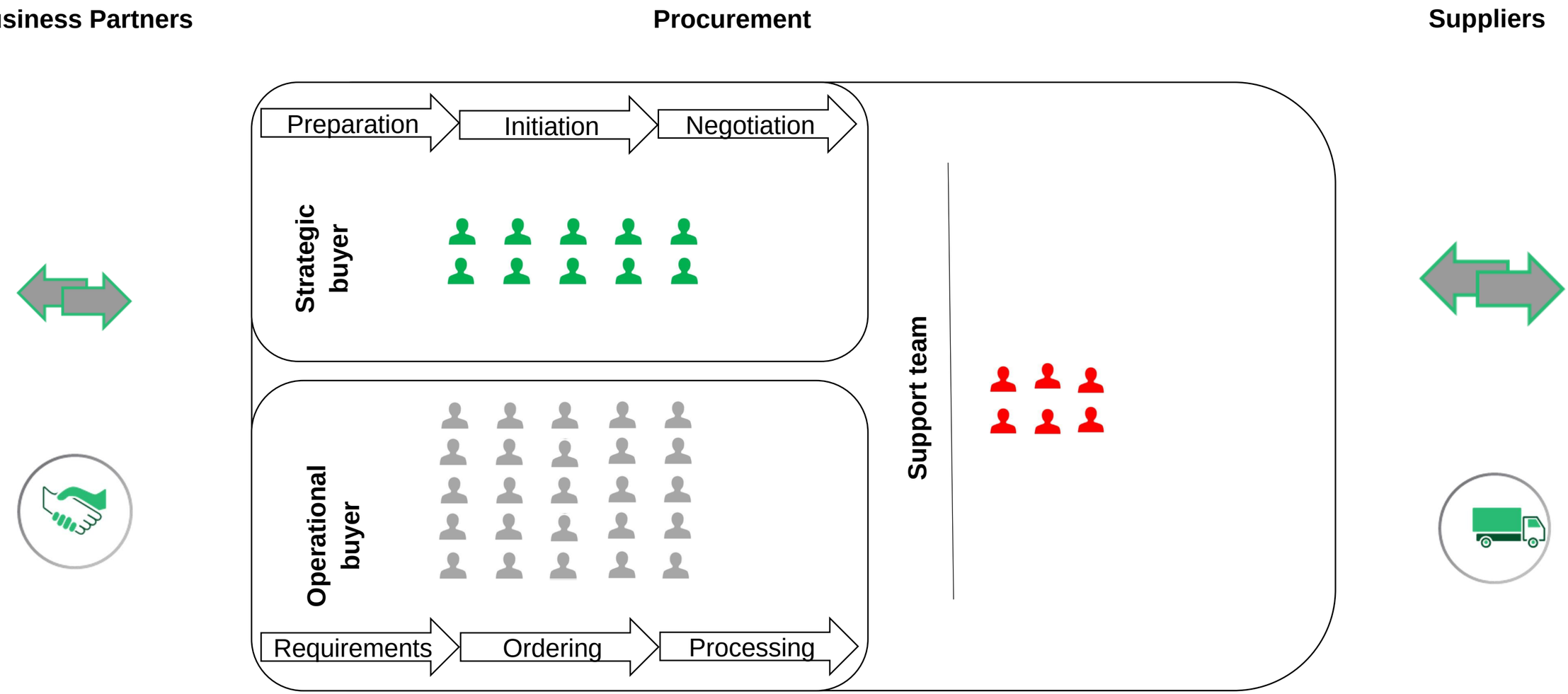
Chapter 5 – future purchasing roles



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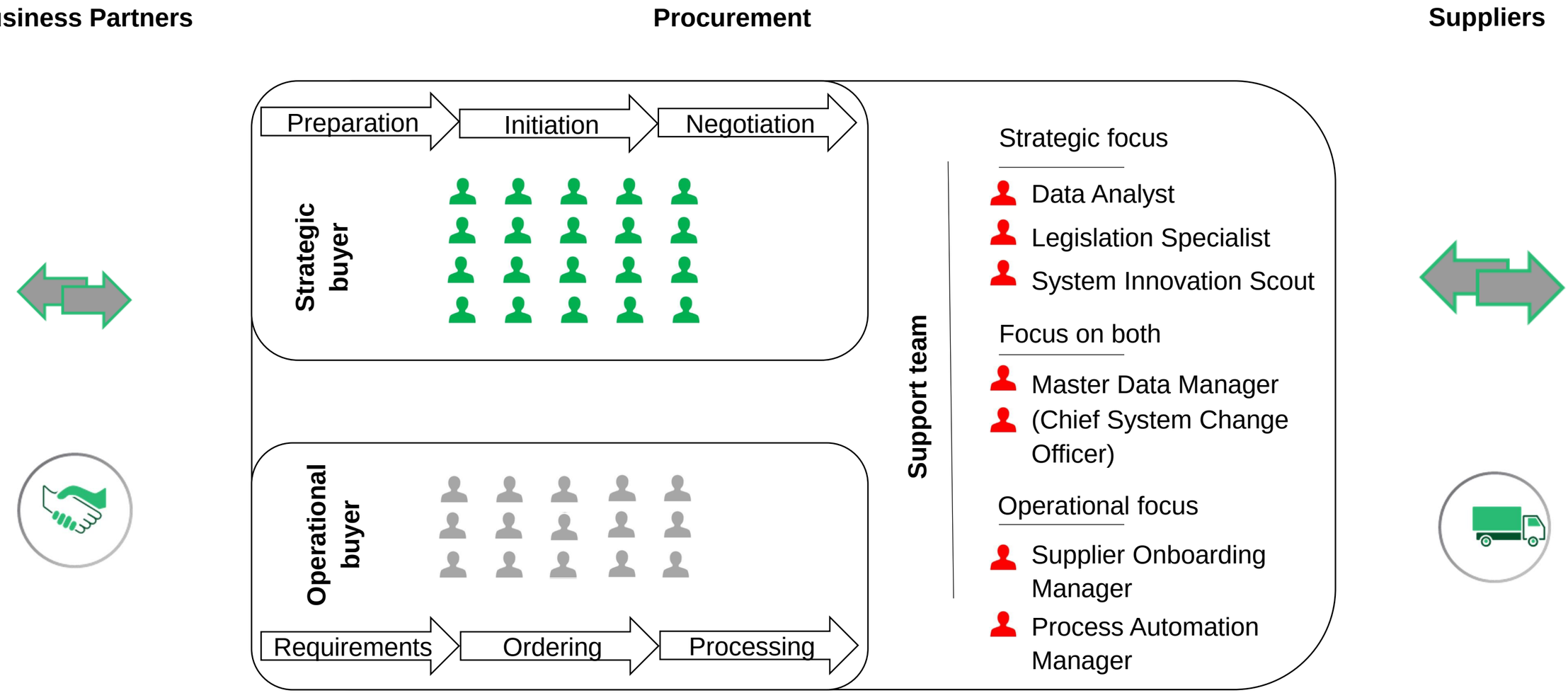
The digitised procurement function can focus on strategic elements by using specific supporting roles

Digitised procurement function



The digitised procurement function can focus on strategic elements by using specific supporting roles

Digitised procurement function



T-shaped talent with a basic understanding (skills) of the field and specialised skills for their role and technology

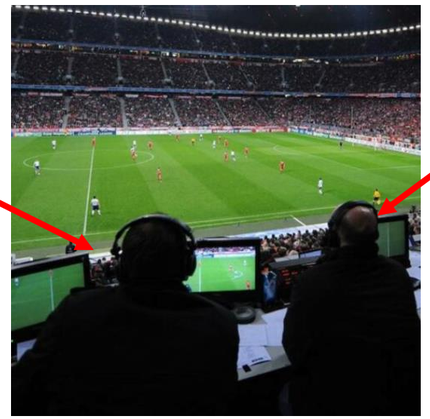
Chapter 5 – future purchasing roles

Past



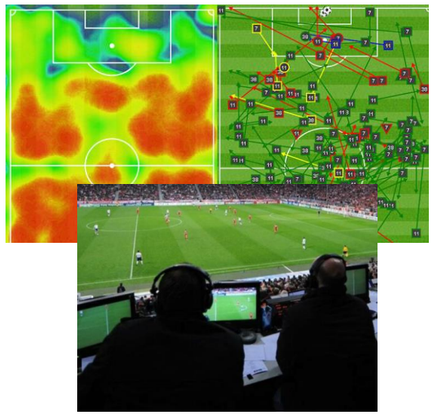
Generalist
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Specialists
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Future



Technology-enabled specialists
- Multiple persons
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Increasing professionalisation and maturity in the field

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Source: Delke, V., Schiele, H., Buchholz, W., & Stek, K. (2021). Defining Industry 4.0 skills in purchasing and supply management. Proceedings of the 28th EurOMA Conference

Based on the Delphi method, nine future purchasing skills were defined and assessed as critical to develop towards Industry 4.0 in purchasing

Chapter 6 – future purchasing skills

1. **Data Analytics skills**
2. **E-Procurement Technology skills**
3. **Digital Leadership skills**
4. **Robotic Process Automation (RPA) skills**

- **Handling, analyzing, and interpreting large amounts of data** by using data mining and visualization to identify and solve problems, which allows for understanding the potential and impact of decisions
- Based on the growing functionality and scope of operational purchasing technologies, e.g., catalog-based purchasing. These skills focus on **working with these systems** and define future system development requirements
- Ability to **organize and manage people within a digital environment** based on activities and performance indicators that are provided by digital systems
- **Implementing RPA in purchasing** by configuring software bots to capture and interpret applications for processing a transaction, manipulating data, triggering responses, and communicating with other digital systems

Source: Delke, V., Schiele, H., Buchholz, W., & Stek, K. (2021). Defining Industry 4.0 skills in purchasing and supply management. Proceedings of the 28th EurOMA Conference

Based on the Delphi method, nine future purchasing skills were defined and assessed as critical to develop towards Industry 4.0 in purchasing

Chapter 6 – future purchasing skills

5. Supply Network Management skills

6. Digital Negotiation skills

7. Strategic Management skills

8. Digital Contract Management and Legal skills

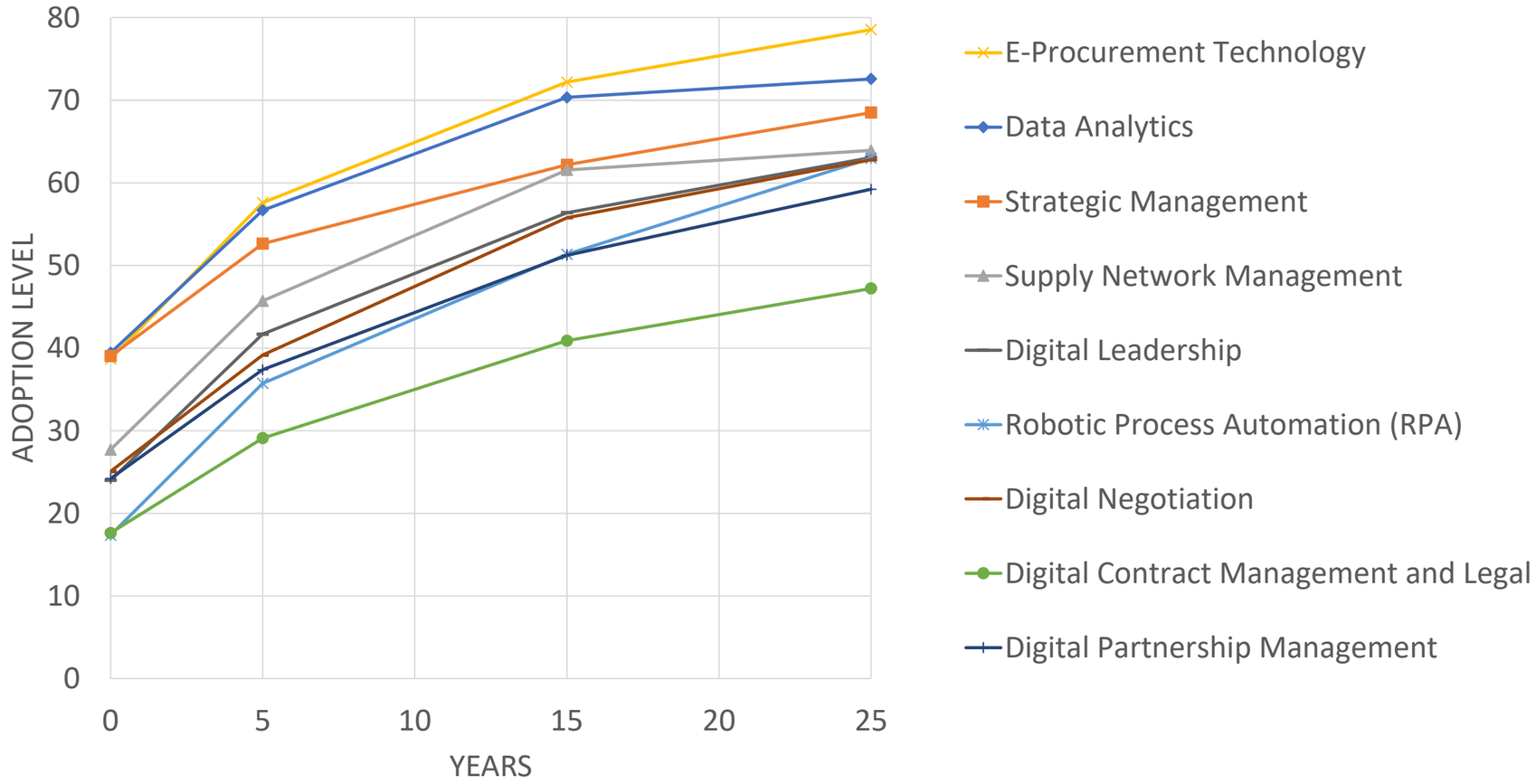
9. Digital Partnership Management skills

- Relate to a coherent and integrated **understanding of the vertical and horizontal supply chain** of goods and services, which allows management of the supply chain from economic, social, and environmental perspectives
- **Negotiating within a digital environment**, e.g., E-Sourcing technologies and auctions, where Industry 4.0 negotiation focuses on machine negotiation and digital marketplaces
- **Up-to-datedness with current global trends**, e.g., Industry 4.0, and **assessing their contribution** for competitive advantage, considering them in commodity strategy development and corporate strategizing
- To **implement legislative and other legal requirements into automated purchasing processes**, utilizing, for example, blockchain technology and smart contracts to create and maintain transparency in the supply chain
- Personal communication to **solve issues with internal and external stakeholders in the Industry 4.0 environment** that goes beyond electronic system communication

Source: Delke, V., Schiele, H., Buchholz, W., & Stek, K. (2021). Defining Industry 4.0 skills in purchasing and supply management. Proceedings of the 28th EurOMA Conference

Based on the graphical illustration of future skills adoption the E-Procurement Technology, Data Analytics and Strategic Management skills will dominate

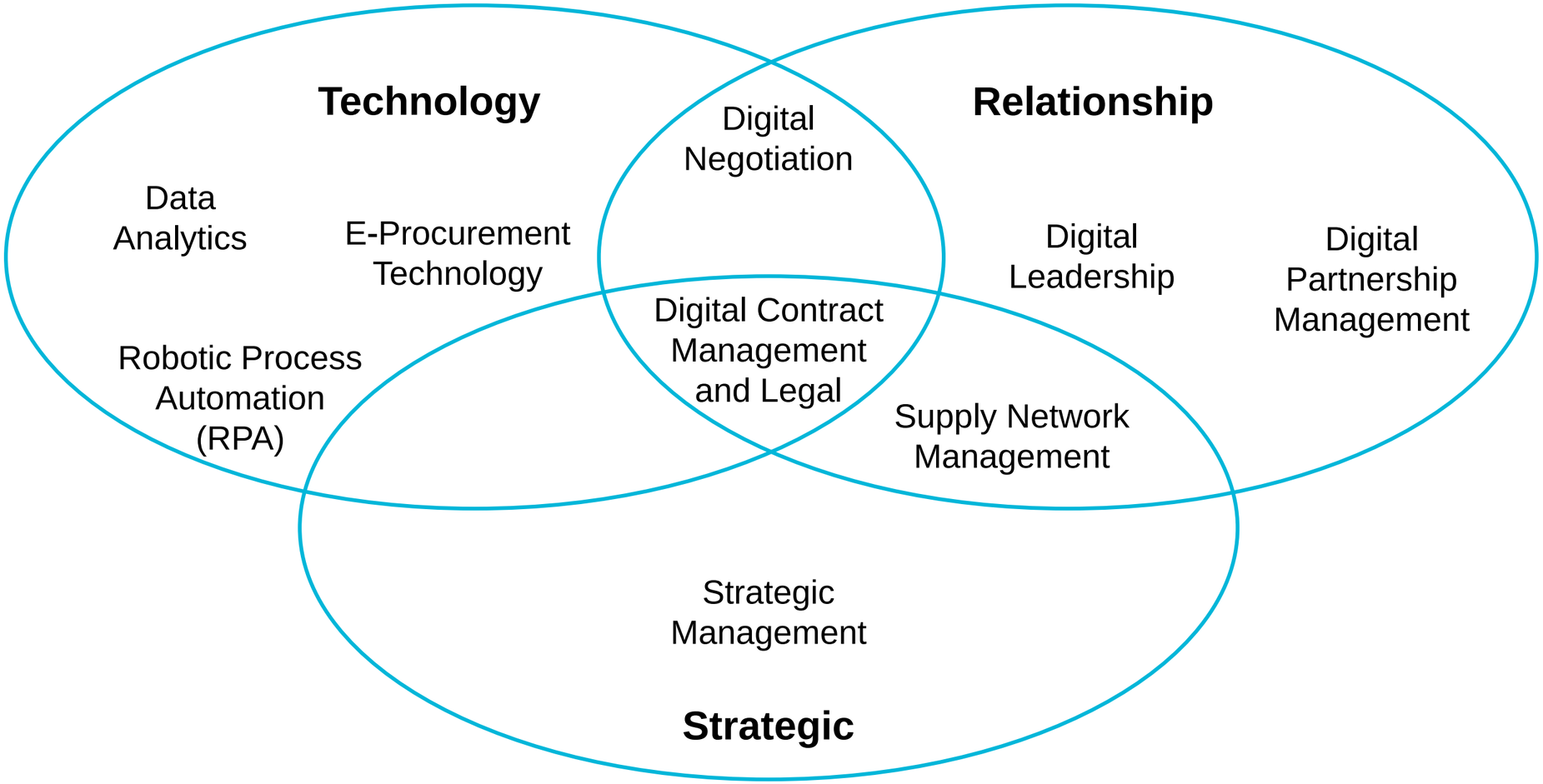
Chapter 6 – future purchasing skills



Source: Delke, V., Schiele, H., Buchholz, W., & Stek, K. (2021). Defining Industry 4.0 skills in purchasing and supply management. Proceedings of the 28th EurOMA Conference

Three groups of changing skill requirements in PSM are needed by the future roles

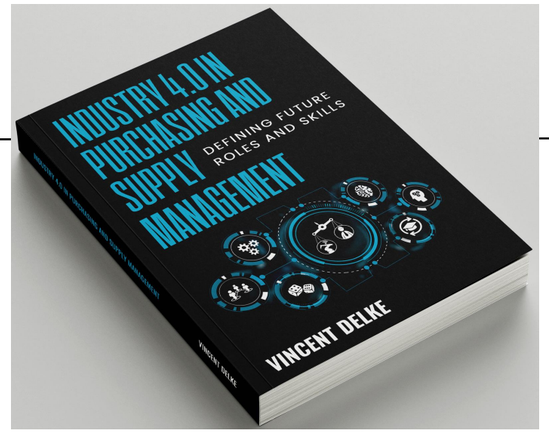
Chapter 6 – future purchasing skills



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Approaching Industry 4.0 in Purchasing and Supply Management: Defining Future Professional Roles and Skills

Structure of the cumulative dissertation



Chapter 1: Introduction

Chapter 2:
Current PSM skill gaps

Chapter 3:
Current roles and future skills

Chapter 4:
Interpreting the Industry 4.0 future

Chapter 5:
Industry 4.0 roles in PSM

Chapter 6:
Industry 4.0 skills in PSM

Chapter 7:
Future educational methods

Chapter 8:
Lifelong learning in PSM

Chapter 9: Discussion

Thank you!



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