



# Industrie 4.0 - 독일은 지금?



2016.3.8

김은

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# VDI Konvergenz (2016.1.27~28) in Düsseldorf



4. VDI-Fachtagung mit Fachaussstellung

# Industrie 4.0

## Reference Visit: 2016.2.1 ~ 2.5



4<sup>th</sup> Industrial Revolution

in Davos  
World Economic Forum  
2016

## FOURTH INDUSTRIAL REVOLUTION

스위스 다보스포럼을 주관하는 세계경제포럼(WEF)은 18일(현지 시간) 발표한 '일자리의 미래' 보고서에서 "인공지능·로봇기술·생명과학 등이 주도하는 4차 산업혁명이 닥쳐 상당수 기존 직업이 사라지고 기존에 없던 새 일자리가 만들어질 것"이라며 이같이 내다봤다.

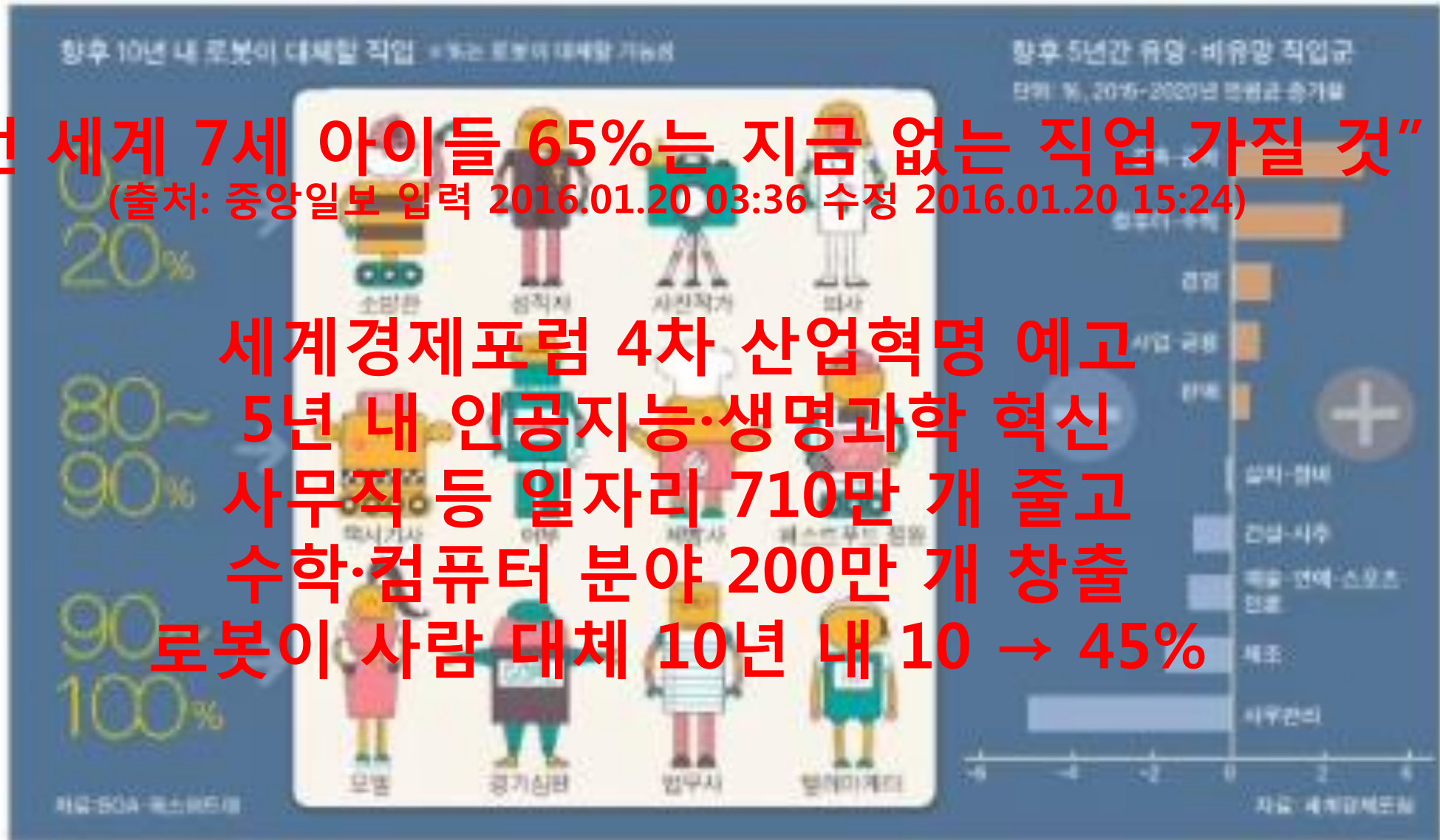
WEF는 20~23일 세계의 저명 기업인·정치인·언론인·경제학자 등 2000여 명이 모이는 다보스포럼의 주제를 '4차 산업혁명의 이해'로 잡았다.

## 4<sup>th</sup> Industrial Revolution in Davos World Economic Forum 2016

**“전 세계 7세 아이들 65%는 지금 없는 직업 가질 것”**

(출처: 중앙일보 입력 2016.01.20 03:36 수정 2016.01.20 15:24)

**세계경제포럼 4차 산업혁명 예고  
5년 내 인공지능·생명과학 혁신  
사무직 등 일자리 710만 개 줄고  
수학·컴퓨터 분야 200만 개 창출  
로봇이 사람 대체 10년 내 10 → 45%**





# 4<sup>th</sup> Industrial Revolution in Davos World Economic Forum 2016



[https://www.youtube.com/watch?v=cJABVTNB\\_e4](https://www.youtube.com/watch?v=cJABVTNB_e4)



<http://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond>

## 4<sup>th</sup> Industrial Revolution in Davos World Economic Forum 2016



0:28



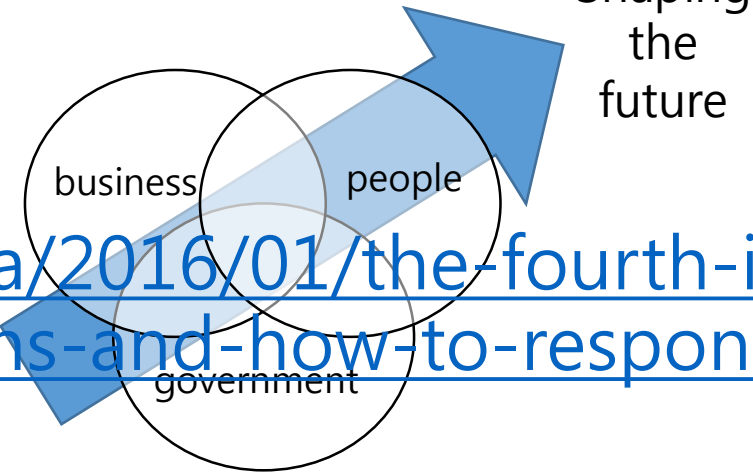
# The Fourth Industrial Revolution: what it means, how to respond

- Challenges and opportunities
- The impact on business
- The impact on government
- The impact on people

<http://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond>

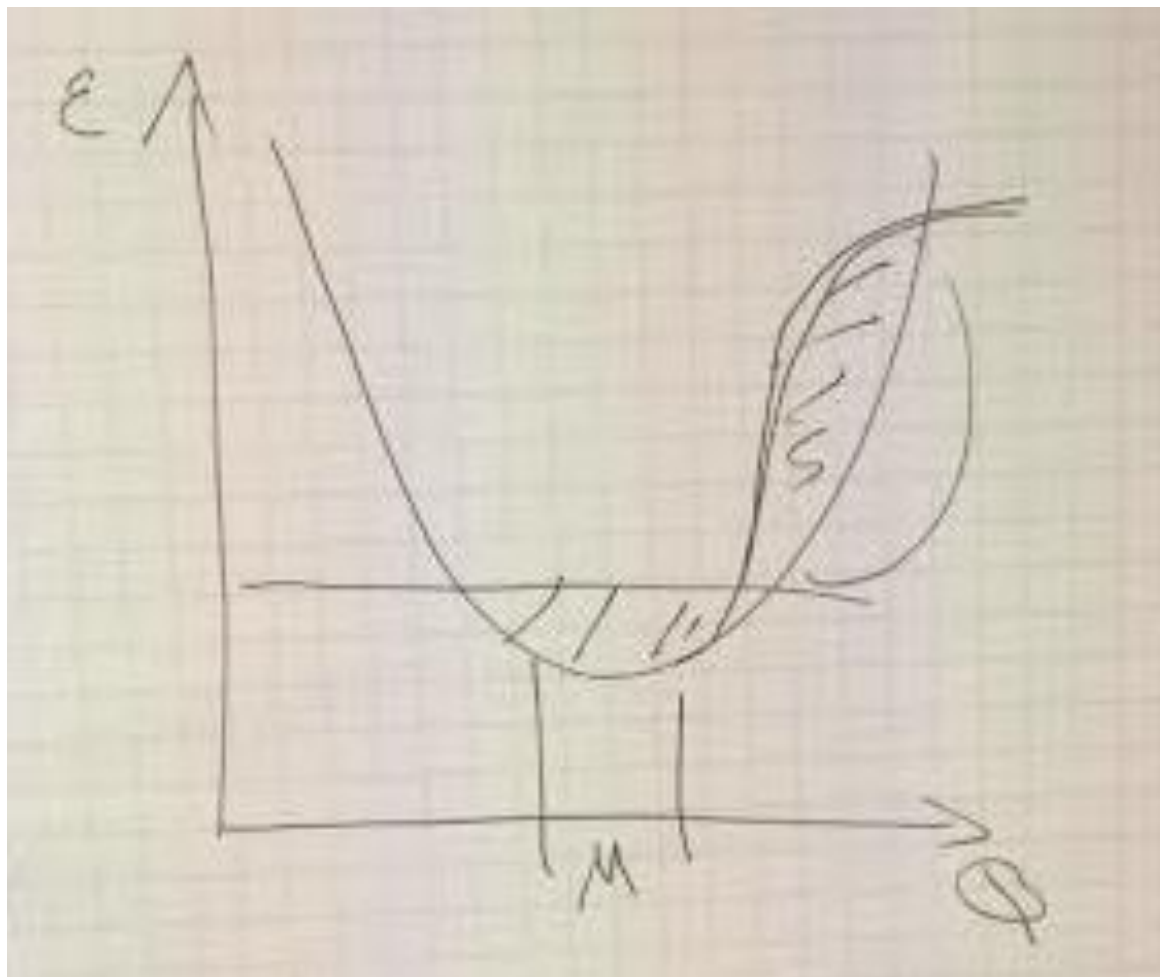
Shaping the future

Challenges  
And  
opportunities



Author: [Klaus Schwab](#), Founder and Executive Chairman, World Economic Forum. Klaus Schwab was born in Germany in **1938**. He holds two doctoral degrees, one in mechanical engineering and another in economics and social sciences, and started his professional life as the youngest professor at the University of Geneva. He is the recipient of numerous awards and holds honorary professorships and doctorates from universities around the world. Schwab founded the Forum in 1971. In 1998, he and his wife Hilde created the Schwab Foundation for Social Entrepreneurship, which supports social initiatives that significantly improve people's lives and can be reproduced on a global scale. In 2014, hoping to integrate more young people into global decision-making processes, Schwab established the Forum of Young Global Leaders for leaders under the age of 40. Seven years later, he created the Global Shapers Community, for potential leaders between the ages of 20 and 30.

## 소요 인력의 변화



# VDI konferenz (2016.1.27~28) in Düsseldorf



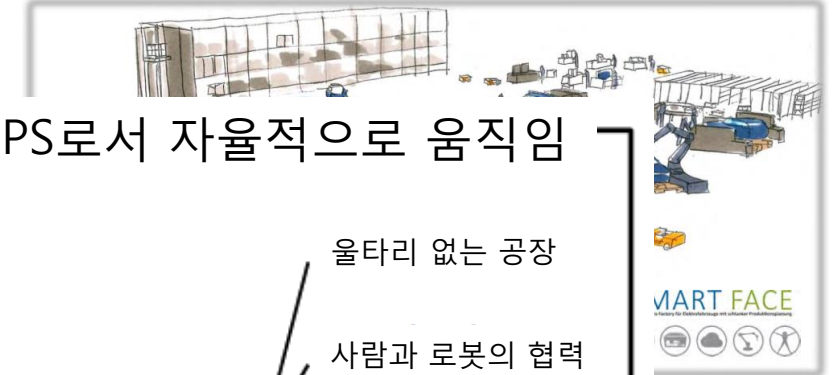
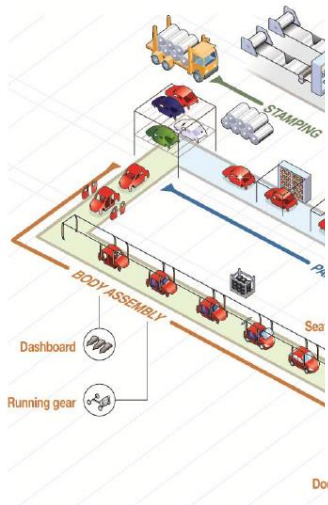
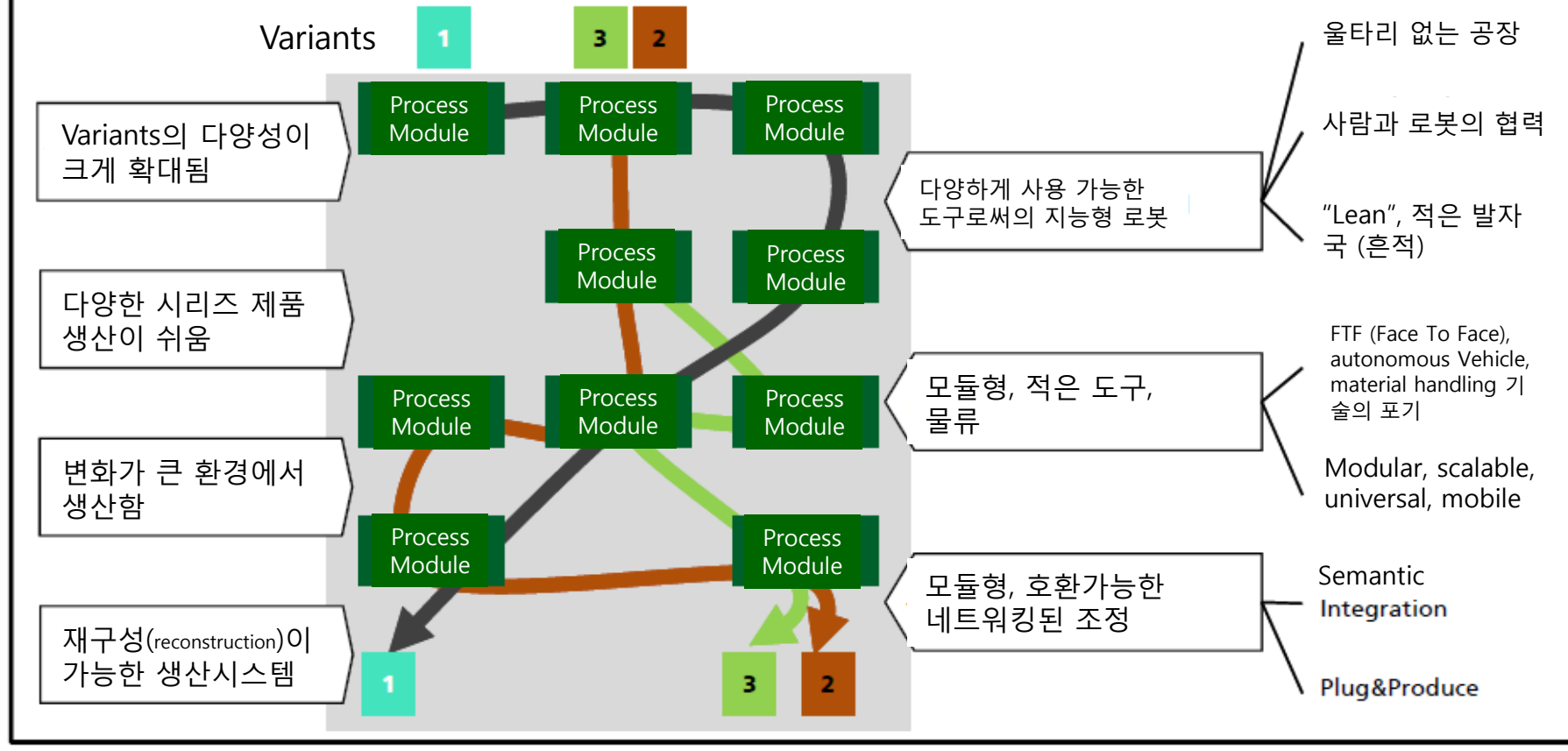
4. VDI-Fachtagung mit Fachaussstellung

# Industrie 4.0



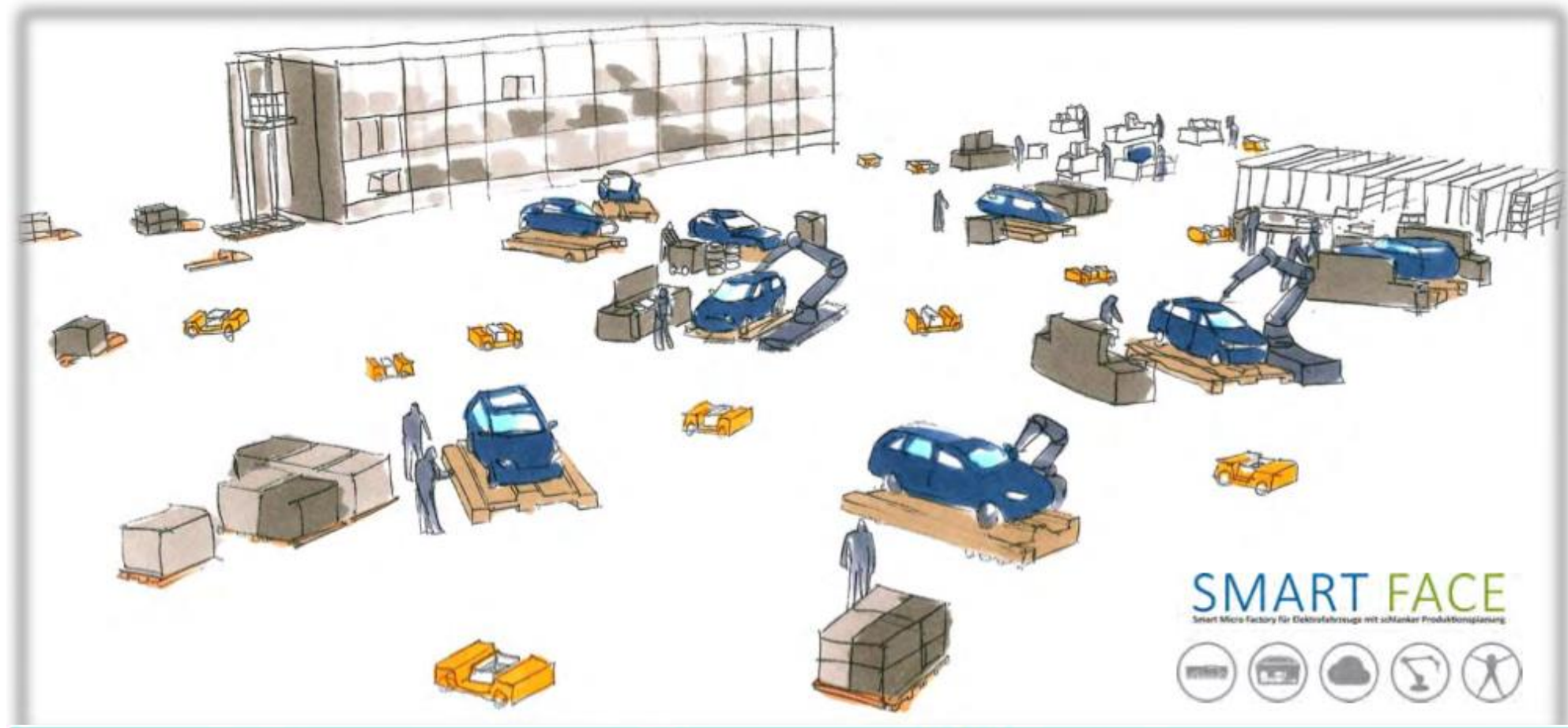
# 예: 자동차 공장의 변화

미래: 자동차가 조립 공간의 프로세스 모듈을 통해 CPS로서 자율적으로 움직임



# Next Practice in Smart Factory & CPS

automated decentralized manufacture

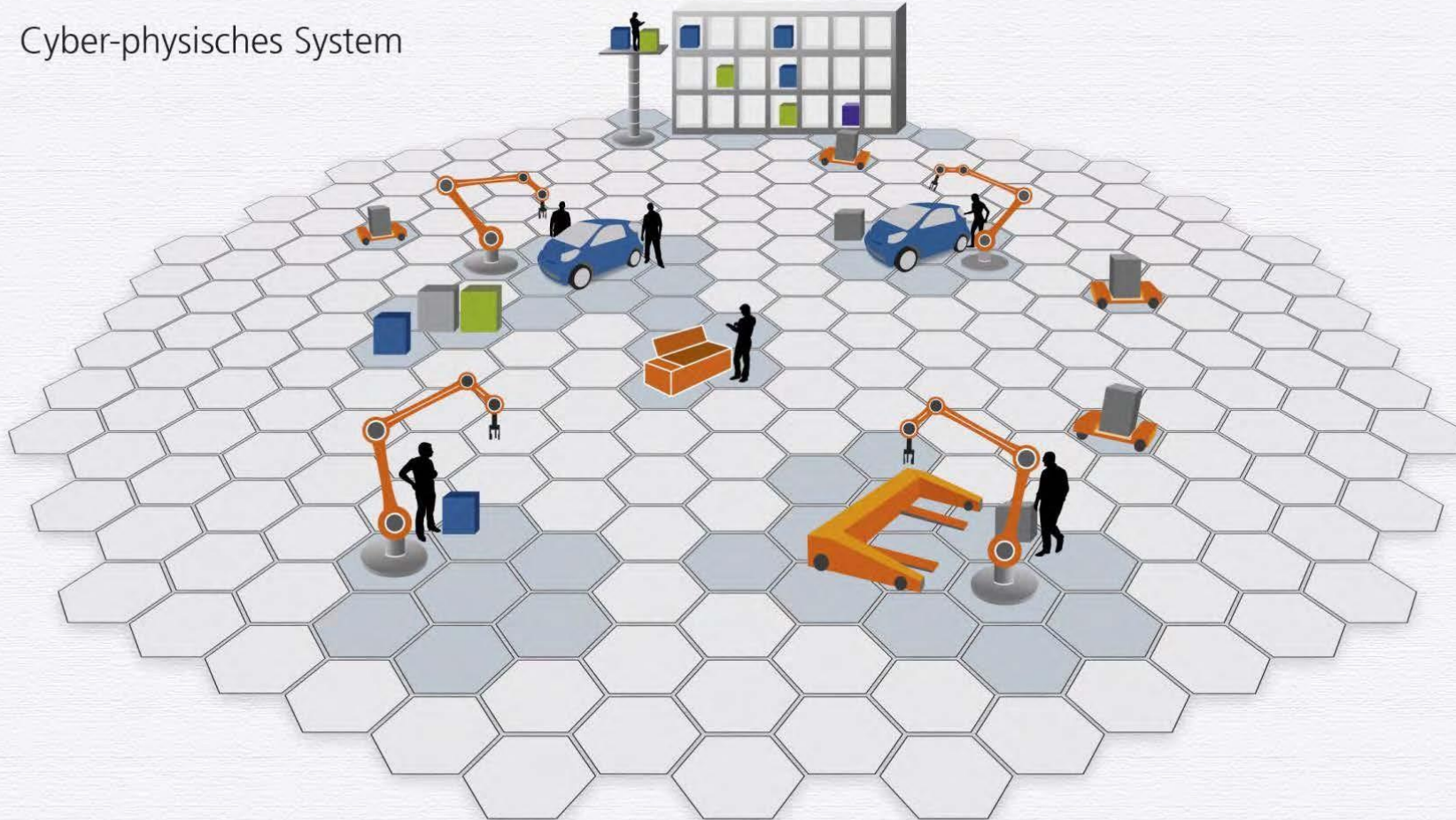


Decentralization  
Autonomy  
Networking



# SmartFace – Vision „Autonomous Manufactory“

Cyber-physisches System

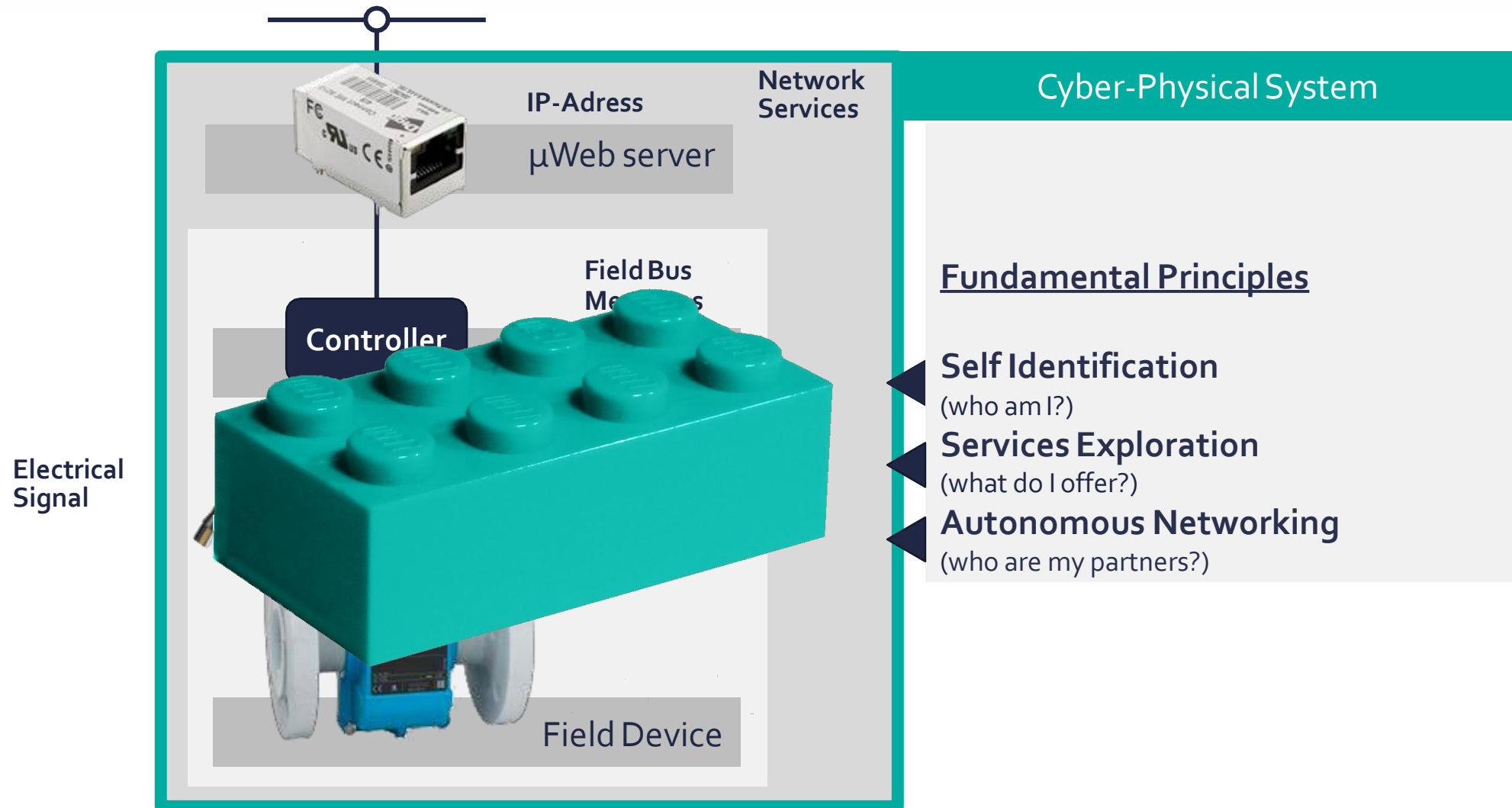


# INTERNET OF SERVICES – SUPPLY CHAIN

Intelligenz in allen Dingen –  
das »Internet of Things«



## Towards smart modules





# 미국의 반격: Industrial Internet Consortium

<https://www.iiconsortium.org/members.htm>

237 members as of 2 February 2016

## Industrial Internet Consortium

### Mission

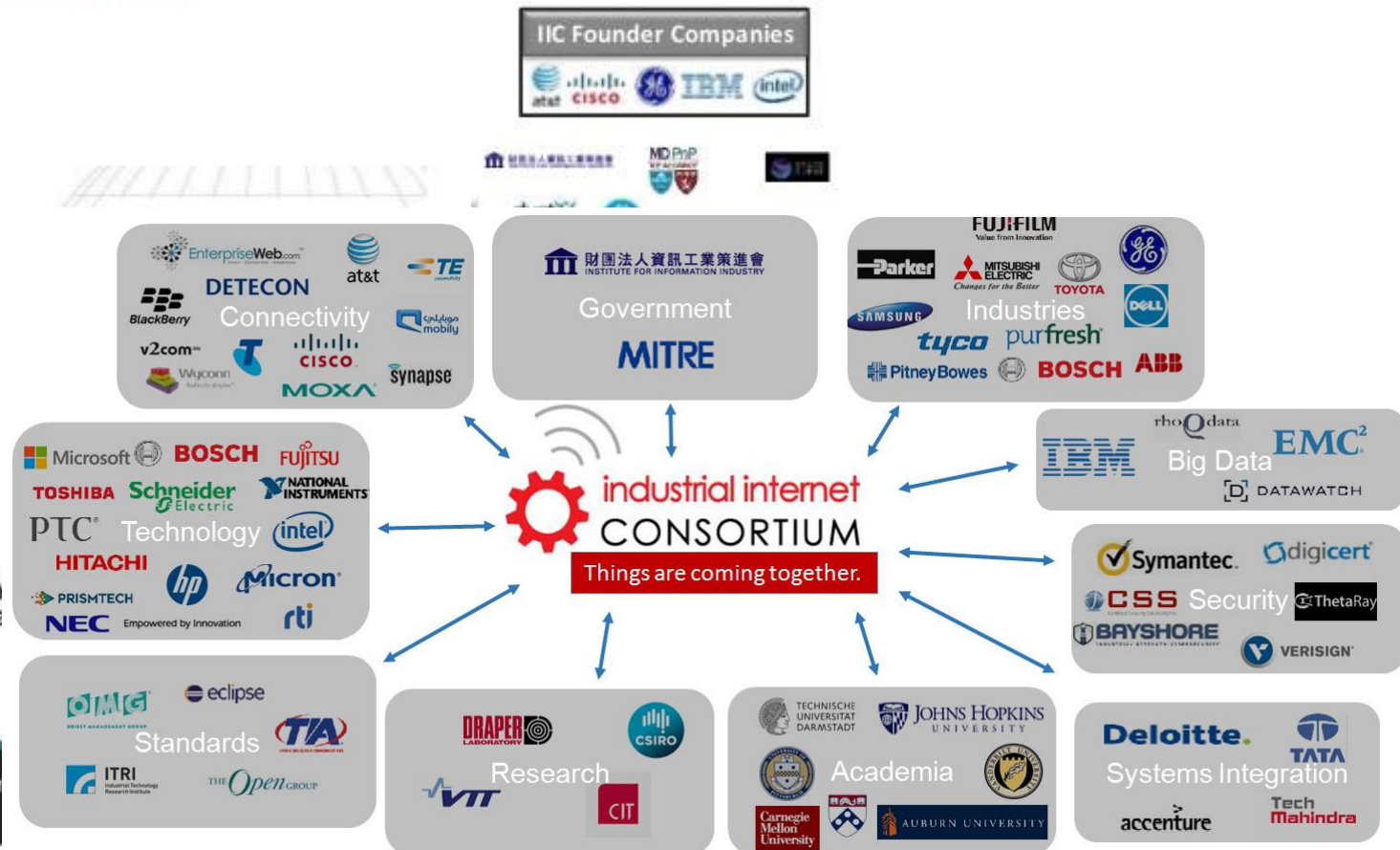
To **accelerate growth** of the Industrial Internet by **coordinating ecosystem** initiatives to connect and integrate objects with **people, processes and data** using common architectures, interoperability and open standards that lead to **transformational business outcomes**.

- Launched in March 2014 by five founding members:



The IIC is an open, neutral “sandbox” where industry, academia and government meet to collaborate, innovate and enable.

Using the Industrial Internet to Move From Planned Maintenance to Predictive Health Maintenance  
March 11, 2015



# Referenzarchitekturmodell Industrie 4.0 (RAMI4.0)



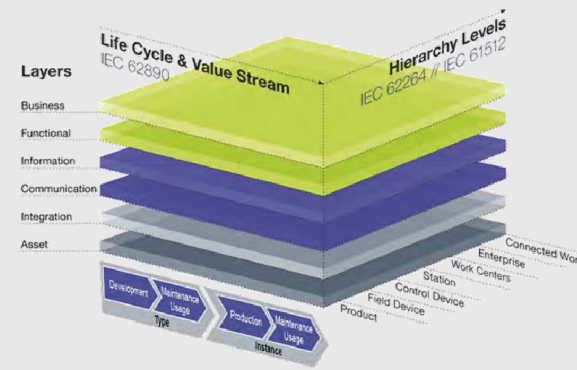
# Industrie 4.0 (표준) 관련 최신 동향



# Agenda

## RAMI4.0

- Example
- Compare: IIC
- Compare: China 2025

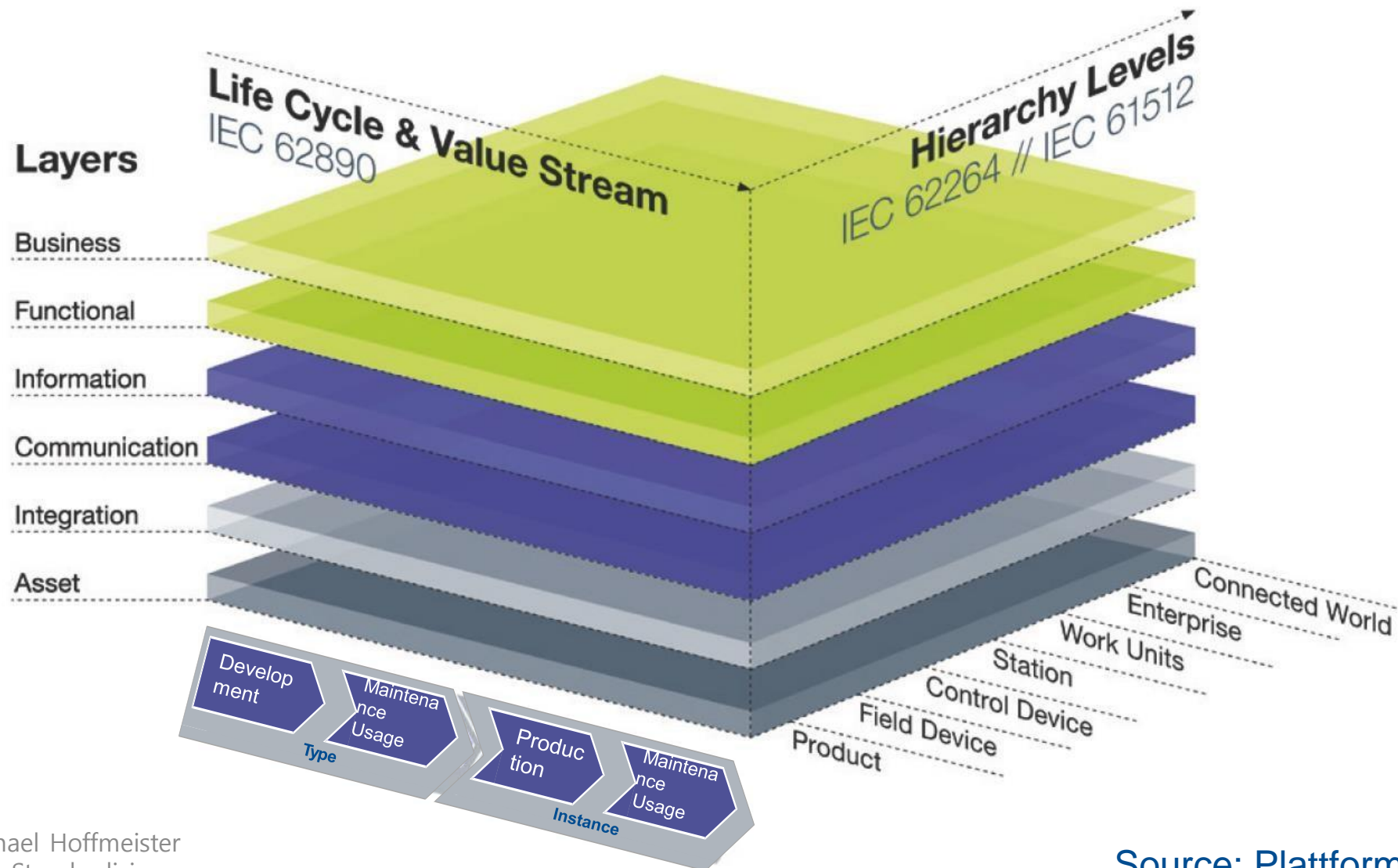


## Industrie 4.0 Components

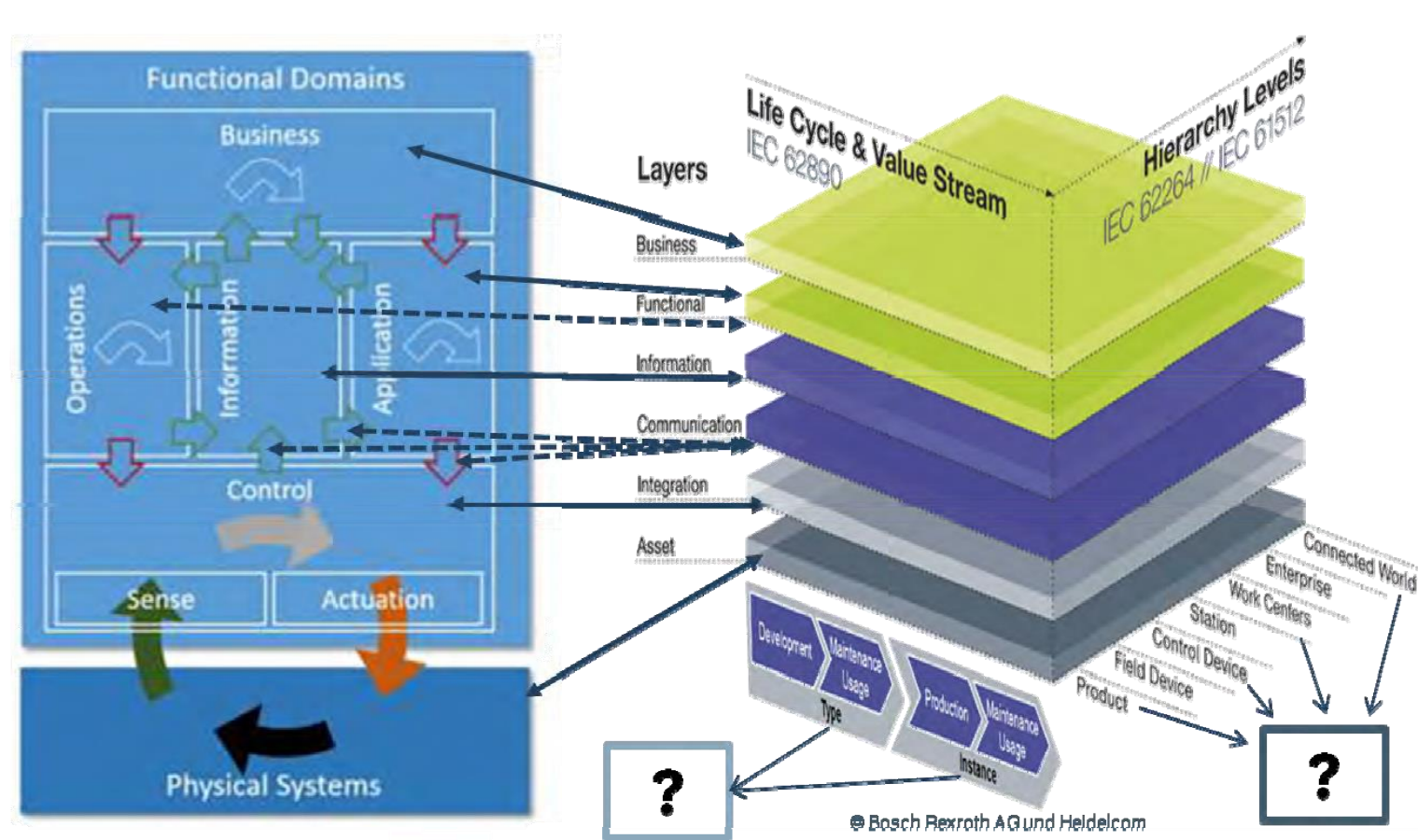
- Introduction
- Characteristics
- Part Models



# Referenzarchitekturmodell Industrie 4.0 (RAMI4.0)



# Vergleich RAMI 4.0 – IIRA: Beispiel Functional Viewpoint



In Zusammenarbeit mit Hr.  
Heidel (Heidelcom)



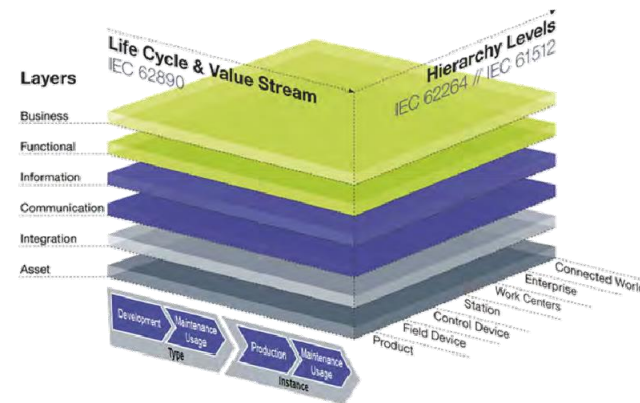
## Comparison RAMI 4.0 – IIRA: Summary

	IIC	Platform 4.0
Alignment	Internet of Things	Connected Industry/Industrie 4.0
Members	Mainly Information Technik	Cross 전기/전자산업 , 기계 산업, IT, 학계
Product lifecycle		전체 Lifecycle (Type 및 Instance 포함)
Value Chain	Production	전체 Value Chain <ul style="list-style-type: none"> <li>- 주문, 개발, 생산, ... 및 서비스</li> <li>- 공급자/기계제작자/최종 고객</li> </ul>
Functional Hierarchy	IT Structure	Functional Hierarchy의 확장 <ul style="list-style-type: none"> <li>- Connected World, Product, Field Device</li> </ul>
Information Layer	Big Data & Analytics	Virtual World <ul style="list-style-type: none"> <li>- unique ID, Simulation, digital Engineering</li> </ul>
		Data <ul style="list-style-type: none"> <li>- Model, Semantics</li> </ul>
Communication	Specification, all approved	Focusing/preferred communication for I4.0
Integration Layer	"Control" for Process	Connection to digital world and Functions in Functional Layer
Things/Assets	Physic	Physic, IP, Documents, Software, Human, ...

# Agenda

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## Industrie 4.0 Components

- Introduction
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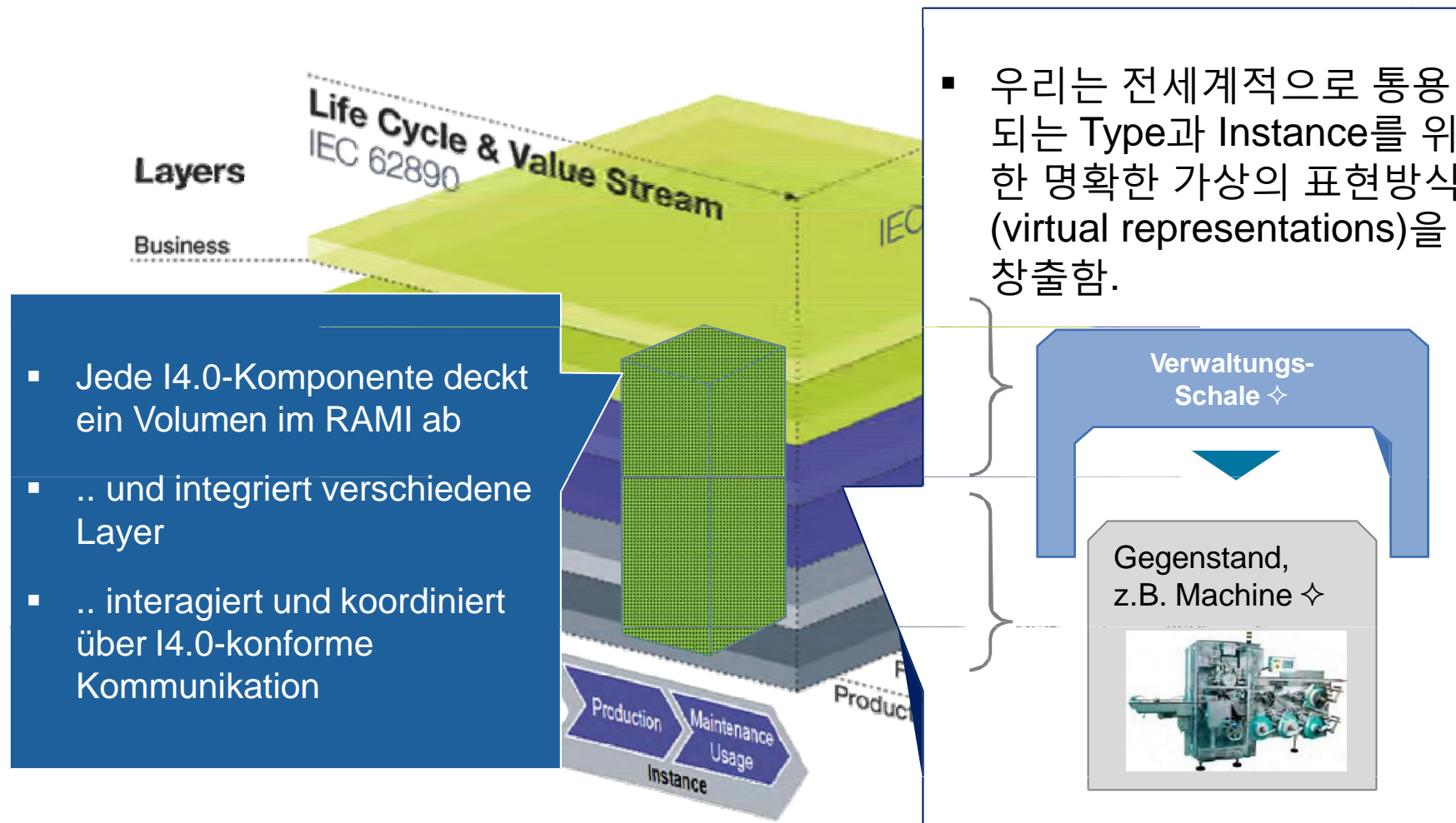


# Administration shell as a virtual representation of an object

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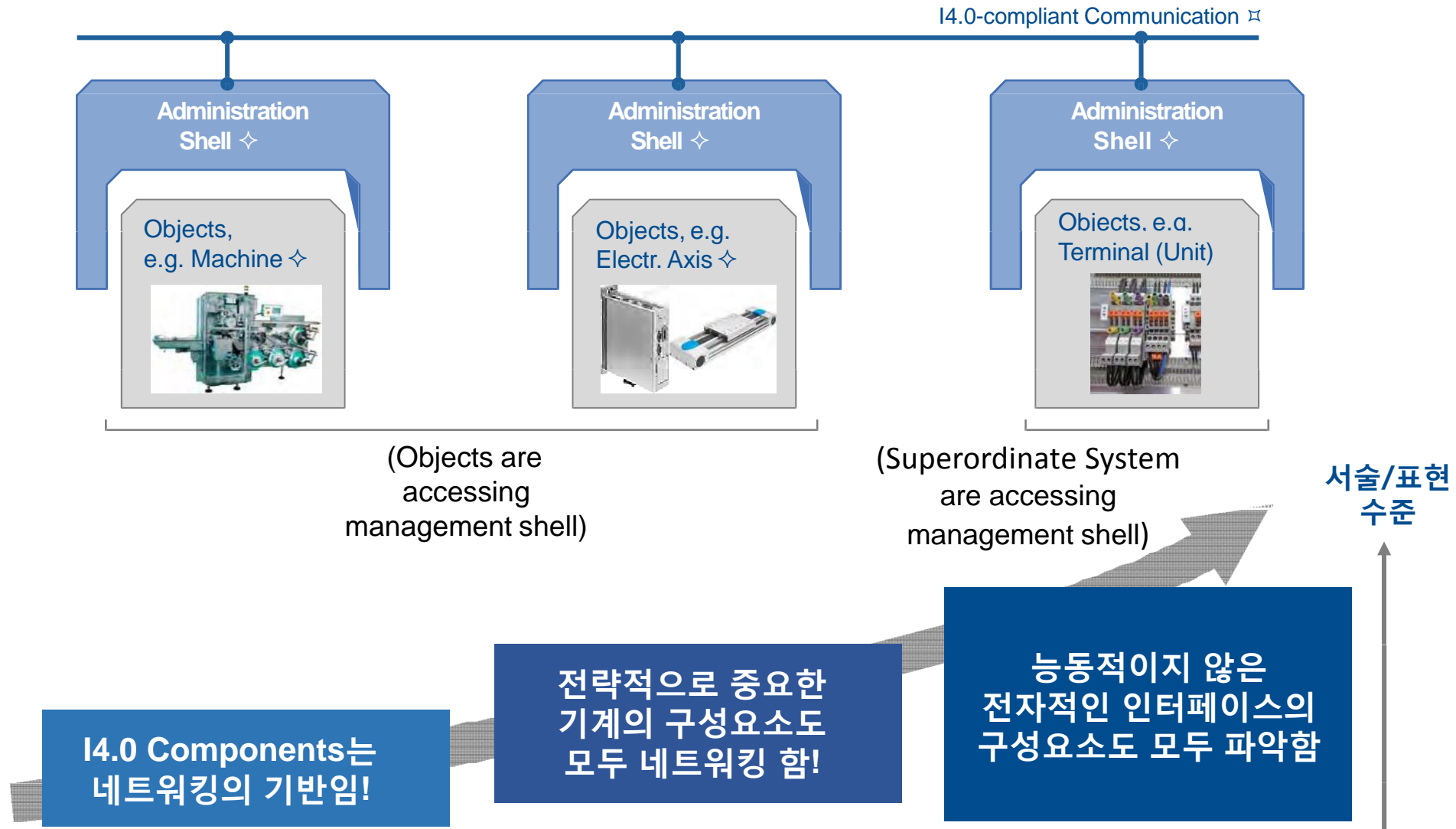


# Ansatz der Industrie 4.0 - Components

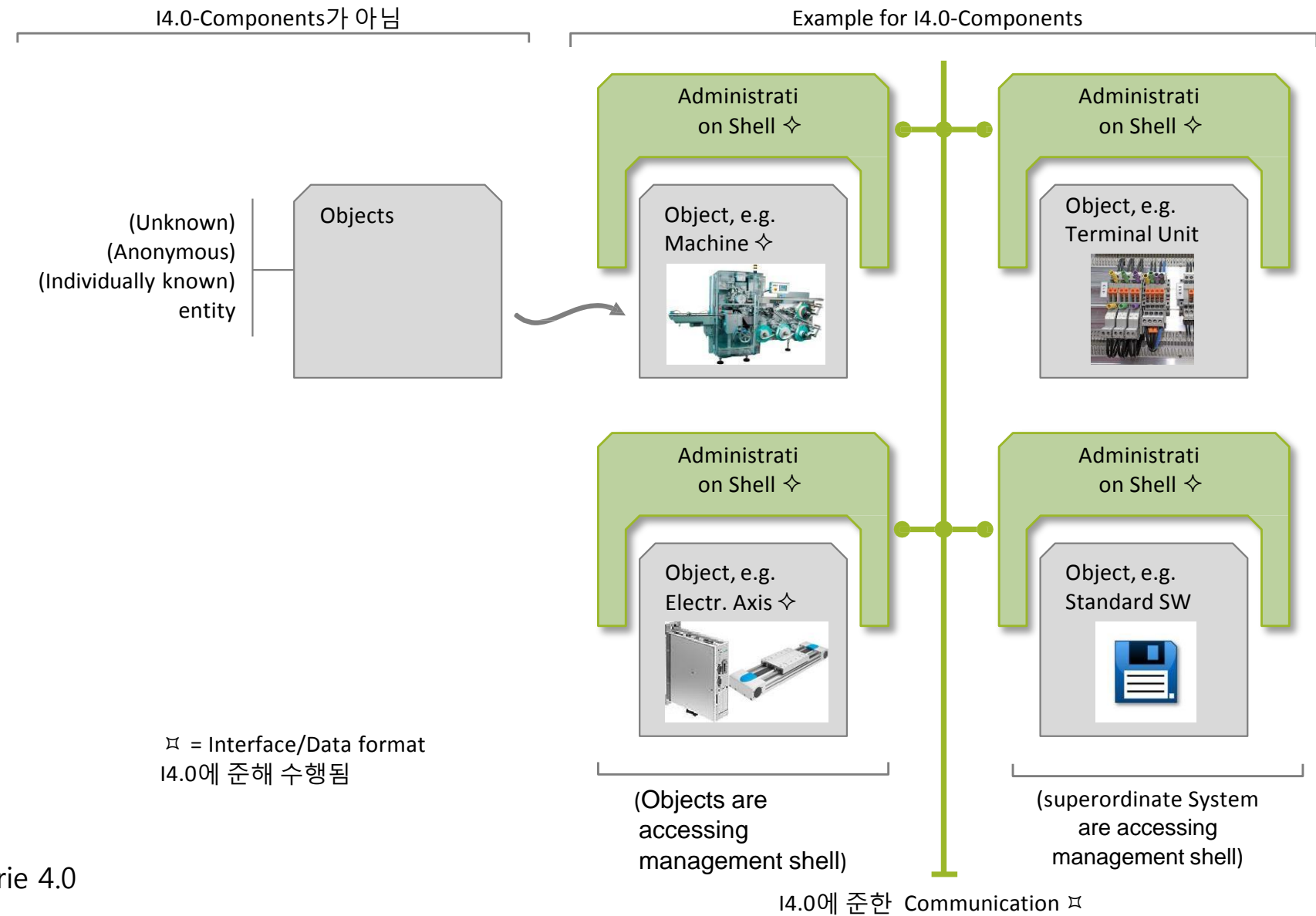




# I4.0 Components와 함께 우리는 기계의 모든 중요한 부품을 파악함



# 전략적으로 중요한 기계/설비의 부품은 I4.0의 구성요소가 됨



# Jazz Performance



즉흥 연주/연주 중심  
VS  
작곡중심



<https://www.youtube.com/watch?v=Evb31p5vFs4>

