Navigating the Digital Wave: a Collaborative Course for Japan and Europe

EJEA CONFERENCE 2023
OCTOBER 24-25

DR. LORENZ GRANRATH

Prof. Ishiguro,
Osaka University Intelligent Robot Lab

Introduction

1980s Information Agencies

KIT Karlsruhe Institute of Technology: 1990 Dipl.-Wirtschaftsing. (Business/Engineering/Informatics)

Fraunhofer Institute for Systems and Innovations Research (ISI), Assistant Researcher (1986-1990)

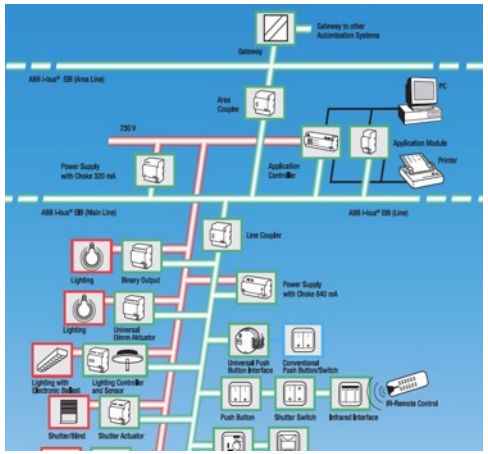
Project: *Online Database use at SME*

Publication: "Information Agencies in Regional-, Geoscience and Environmental Disciplines – Volume 2 Online-Databases with Regional Relevance", K.G. Saur Publisher, 1989

1990s: ABB i-bus® EIB vs GMD Cooperative Rooms

ABB STOTZ KONTAKT GMBH
(Project Manager New Technologies 1995-1997)

Internet >1993



GMD – German National Research Centre for Information Technology
(Liaison Officer Japan 1997-2001)

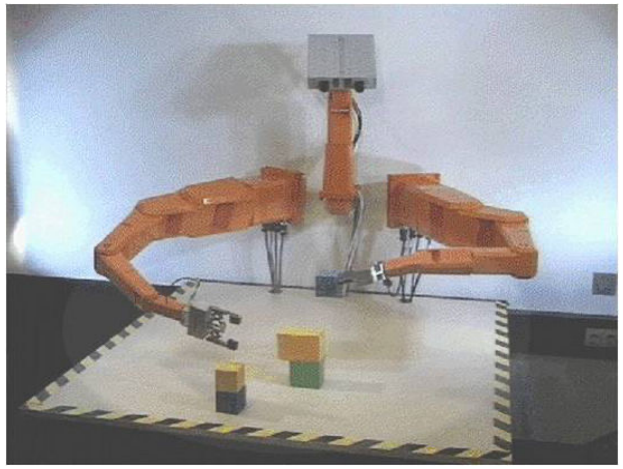
1990s: Human like Information Processing

GMD – German National IT Research Center, St. Augustin

(Liaison Officer Japan 1997-2001)

Japanese National Project “**Real World Computing Partnership RWCP**” (1993-2002)

- GMD Theory Lab (Hand-Eye Robot)
- GMD Parallel and Distributed Systems Laboratory (PROMISE language)



RWCP組合員の推移

※順不同

組合員名	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13
沖電気工業株式会社	6/18									
三洋電機株式会社										
シャープ株式会社										
住友金属工業株式会社										
住友電気工業株式会社										
株式会社東芝										
日本板硝子株式会社										
日本電気株式会社										
日本電信電話株式会社	10/14									
株式会社日立製作所										
株式会社フジクラ										
古河電気工業株式会社										
富士通株式会社										
松下技研株式会社										
松下電器産業株式会社										
株式会社三菱総合研究所										
三菱電機株式会社										
社団法人日本鉄鋼連盟										
シンガポール・ケントリッジ・デジタル研究所(KRDL)		シンガポール大学 システム・サイエンス研究所(ISS)				H10/1月 組織変更				
スウェーデン・コンピュータ・サイエンス研究所(SICS)		5/24								
ドイツ・フラウンホーファー研究機構(FhG)	10/14					ドイツ国立情報研究所（GMD）				H13/7月 組織変更
オランダ・ニューラル・ネットワーク協会(SNN)										

組合員メンバーとしての加盟期間

2000s: Environment - Robotics

Fraunhofer-Gesellschaft (Japan Representative 2001-2013)

Life-Cycle-Engineering

Joint Workshop
Fraunhofer-Gesellschaft
The University of Tokyo

In cooperation with
NPO EcoDesign Promotion Network

November 22. 2002
9:00 - 16:30
Hilton Tokyo 4F
Kikka / Kikuyo Room

simultaneous interpretation
English - Japanese

Fraunhofer Gesellschaft
東京大学

Fraunhofer Gesellschaft

Service Robot Technologies and Applications

A Japanese-German Workshop

Oct. 21, 2008
German Cultural Center, Tokyo

Supported by the German Embassy Tokyo

ドイツ連邦共和国大使館 東京
Botschaft der Bundesrepublik Deutschland Tokyo

Care-O-Bot 2004

Fraunhofer jdzb Japanisch-Deutsches Zentrum Berlin ベルリン日独センター Japanese-German Center Berlin NEDO

German-Japanese Solar Day

on October 5th, 2010 (Tue.) 10:00-18:15 at Tokyo Internati

Participation free, pre-registration needed (max. 300 seats availa

Organized by: Fraunhofer-Gesellschaft, Fraunhofer-Institute for Solar Energy S Center Berlin (JDZB), New Energy and Industrial Technology Develo

In cooperation with: German Ministry of Education and Research (BMBF), German Nature Conservation and Nuclear Safety (BMU), Ministry of Econo

Fraunhofer

with **renewed** energy

Fraunhofer - Symposium Tokyo

Green Technology made in Germany
Efficient Use of Energy and Resources

9. November, 2011, Wed. 10:00 ～ 17:00
Tokyo International Forum, Hall D7 (Registration desk on the 6th floor)
Participation: free of charge, Pre-registration required

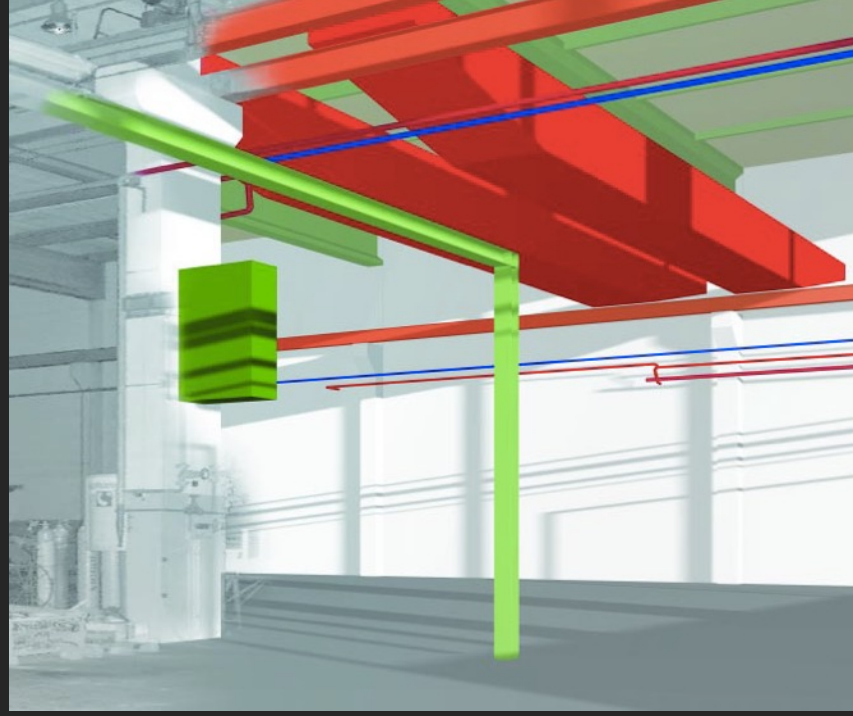
Program
※ Simultaneous interpretation provided (English - Japanese)
※ This program is subject to change.

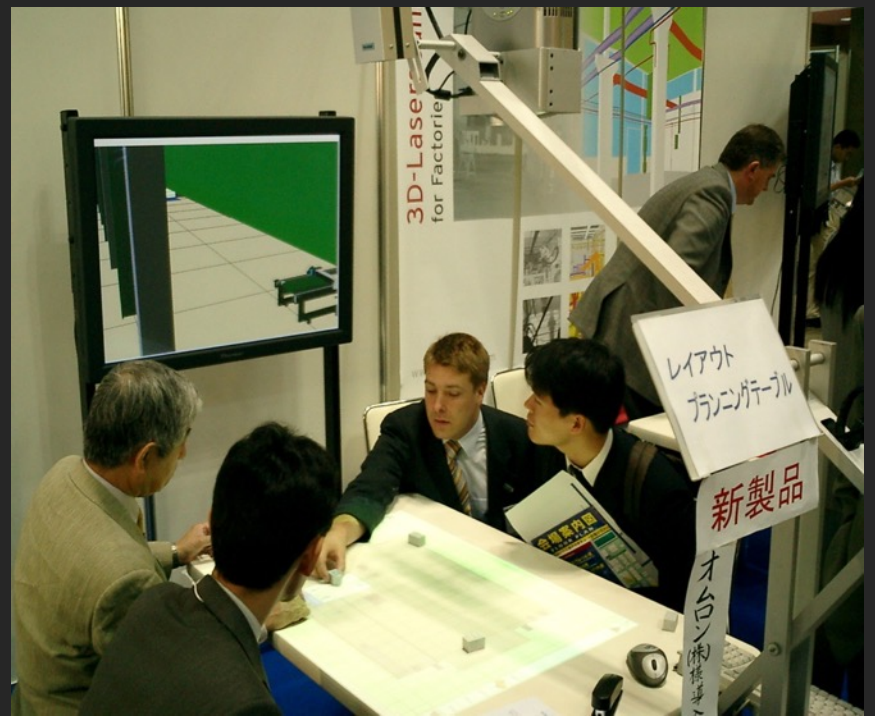
9:30 Registration
10:00 Opening Remarks
Dr. Lorenz Granrath / Representative, Fraunhofer Representative Office Japan

iREX 2009

2000s: Object Digitalisation

Fraunhofer Start-up IQvolution @Atomic Dome and Industrial Virtual Reality Expo 2003





2010s: Industry 4.0 / Society 5.0 / AI

AIST (Supervisory Innovation Coordinator 2014-2021)

AIST
NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY (AIST)

Energy and Environment | Life Science and Biotechnology | Information Technology and Human Factors | Materials and Chemistry | Electronics and Manufacturing | Geological Survey of Japan | National Metrology Institute of Japan

2016: start of Artificial Intelligence Research Center AIRC @ AIST!!

CPS Research Center

AIBC

2010s: AI / Industry 4.0 / Society 5.0

I 4.0 workshop in Fiji 2018,
HMI 2019 talk with NICT, DFKI
"Human-Machine-AI -> Co-creaative Factories"
I4.0 workshop in India 2018

verata: Industry 4.0 a 'Game Changer'

Front from left: Lorenz Granrath an industry advisor with the Asian Productivity Organisation and National Training and Productivity Centre director Isimeli Tagicakiverata with workshop participants at the Fiji Commerce and Employers Federation in Suva on June 20, 2018. *Photo:* Sheldon Chanel

ing the manufacturing industry by switching from centralised to de-centralised networks under which connected devices communicate with each other to analyse and respond to information received.

"It incorporates advance censors, machine-to-machine com-

demand for quality and convenience is pushing quality to greater heights," he said.

"Those organisations that are determined to be competitive must adopt strategies to increase efficiency and productivity in line with global trends and technology."

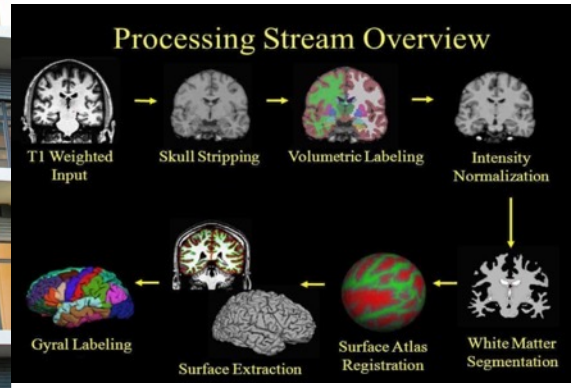
nical problems, and issues with maintaining the integrity of the production process with less human oversight.

The workshop in Suva was facilitated by Lorenz Granrath, an industry advisor based in Tokyo, Japan with the Asian Productivity Organisation.

2020s: AI

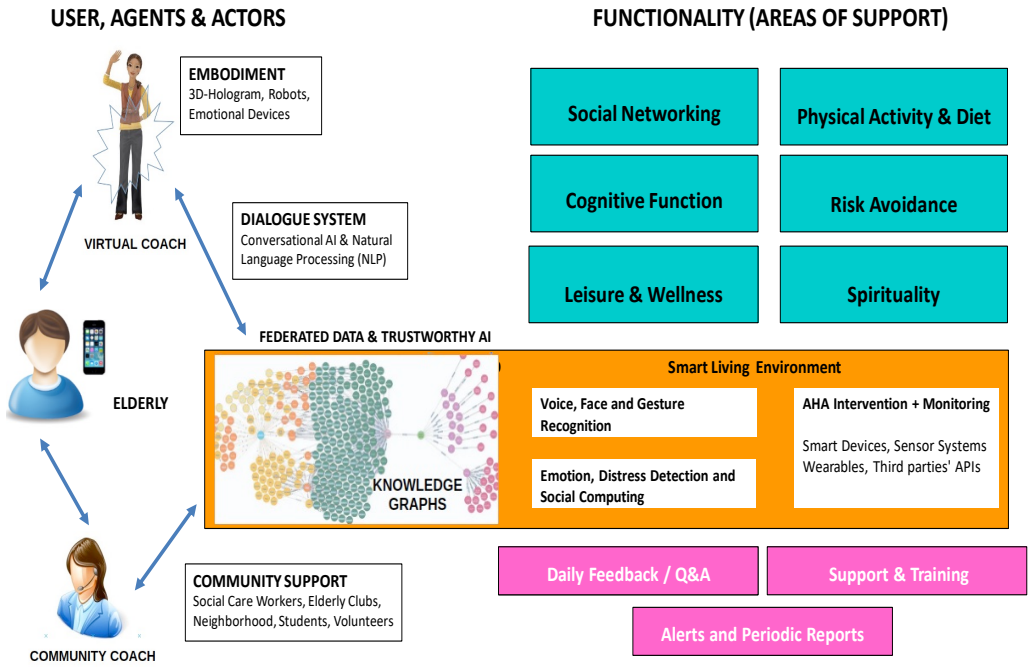
Project Assistant Professor, Tohoku University SARC (2021-22)

Major Research Divisions and Centers	
Aging Science	Cancer Science
Brain Science	Cognitive Science
Cell Resource Center for Biological Research	
Pre-Clinical Research Center	
Environmental Response Center	

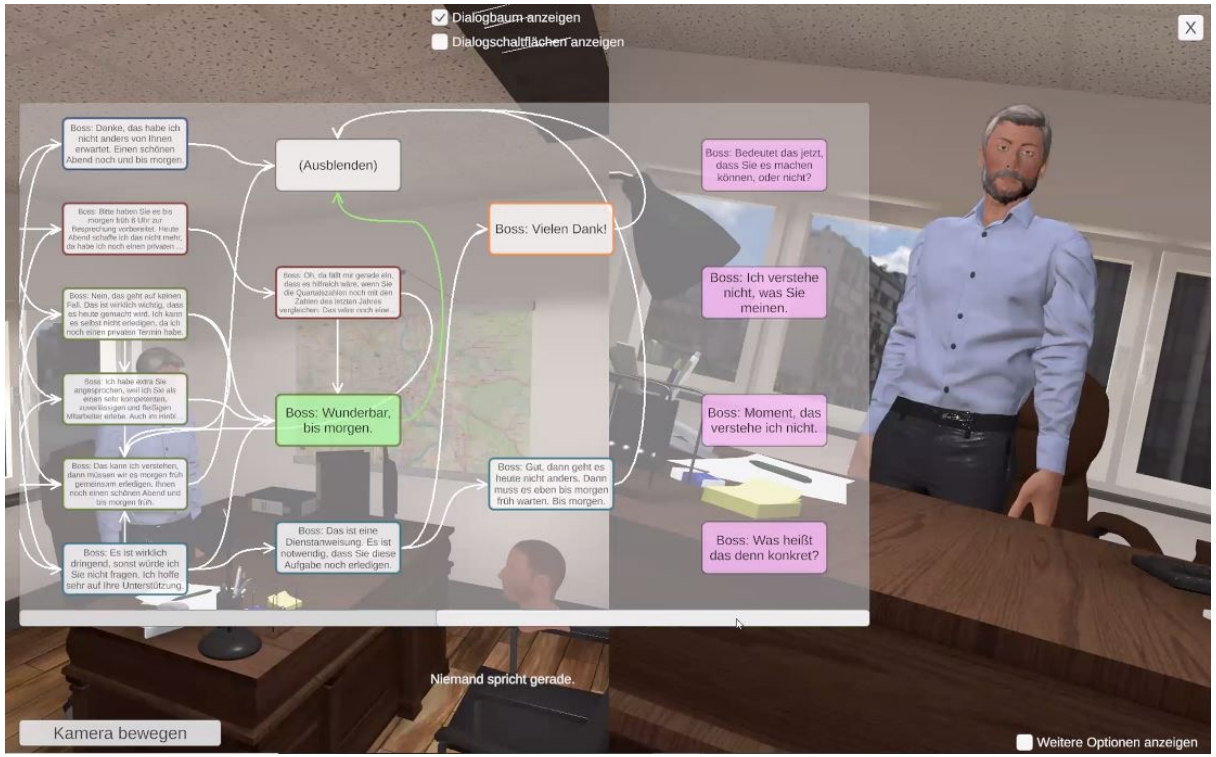


At forefront of brain science research

2021-23: EU-Japan Project e-VITA Virtual Coach for Smart Aging



2020s: AI (IXP DeepVR: Develop & Test Digital Psychotherapy Content)



[ ] Promotion-Magazin

ANZEIGE

KOMNO

Digitaler **Vorreiter NRW**

Die Digitalisierung der Medizin wird seit einigen Jahren stetig vorangetrieben, auch in Nordrhein-Westfalen. Zahlreiche Entwicklungen aus dem Bundesland sollen den medizinischen Sektor in Zukunft bereichern.

von Laura Barbist

Bei „DeepVR" kommen VR-basierte Programme zur Unterstützung der Akuttherapie gegen Depressionen und zur Rückfallprophylaxe zum Einsatz.

Digitale Medizin made in NRW: Gerade im Bereich der Life Sciences gibt es im Bundesland inzwischen einige Förderprojekte, die von Akteuren und Unternehmen aus Wirtschaft, Wissenschaft und Politik umgesetzt werden. Dazu gehören etwa die beiden wegweisenden Projekte „go4cognition" und „DeepVR".

Spielend gegen Demenz

Spielerisch die Mobilität und soziale Fähigkeiten verbessern, um so das Auftreten oder Fortschreiten von Demenz zu verhindern oder zu verzögern: Das ist die Idee hinter dem Projekt „go4cognition". Entwickelt wurde dieses Konzept von einem interdisziplinären Spezialistenteam, gefördert wird es durch die EU und das Land Nordrhein-Westfalen im Rahmen des Leitmarktes Life Sciences, um Menschen eine Möglichkeit für ein zielgerichtetes Training gegen Demenz zu bieten. Mithilfe von Spielen, bei denen sich Senioren (insbesondere Patienten mit leichten kognitiven Störungen – Mild Cognitive Impairment) bewegen und unterhalten, werden Kognition, Sozialität und Motorik stimuliert.

Virtual Reality gegen Depression

Depressionen zählen zu den häufigsten Erkrankungen in Deutschland, weshalb Behandlung und Beratung laufend optimiert werden. Bei dem ebenfalls im Rahmen des Leitmarktes Life Sciences geförderten Projekt „DeepVR" kommen VR-basierte Programme zur Unterstützung der Akuttherapie und zur Rückfallprophylaxe zum Einsatz. Die Software-Module, die während der Sitzungen mit dem Therapeuten, aber auch alleine zuhause eingesetzt werden können, konzipiert das Universitätsklinikum Düsseldorf in Kooperation mit dem Düsseldorfer institute of experimental psychophysiology und der Kölner Software-Engineering-Firma Nuromedia GmbH.

Medizinische Zukunft aus NRW

Weitere Gesundheitsanwendungen aus NRW befinden sich derzeit im Aufbau. Mit dem Telemedizinischen Lebensstil-Interventions-Programm (TeLIPro) soll Typ-2-Diabetikern per telefonischer Beratung sowie Nutzung einer App und von Wearables bei der Umstellung ihres Lebensstils geholfen werden. Im Erfolgsfall kann TeLIPro durch die Anwendung von Informations- und Kommunikationstechnologien ortsunabhängig und flächendeckend bundesweit auch für weitere chronische Erkrankungen außer Diabetes genutzt werden. Das Projekt wird durch die AOK Rheinland/Hamburg durchgeführt und durch den Innovationsfonds des Gemeinsamen Bundesausschusses gefördert. ■

2 STARKES LAND Nordrhein-Westfalen

Wave or Tsunami?

Yesterday

Digital Collaboration for

July

German Uni in Japan

June

Leading AI Scientists in Japan

May

Find customers for UX.

April

DE vs JP Wind Potenzial.

AI Education in Japan.

chirmfoto

No consciousness in AI.

February

Machine vs Monkeys

AI Ethics Presentation.

LO

Please suggest one of several keynote speech for the conference: "Riding the Digital Wave into the Future - Chances, Risks and Actions for Japan and Europe"

Title: "Navigating the Digital Tsunami: Charting a Collaborative Course for Japan and Europe"

Ladies and gentlemen, distinguished guests,

I am truly honored to stand before you today to discuss a topic of utmost importance, one that affects us all, regardless of borders or boundaries – the digital wave that is shaping our future. In the ever-changing landscape of technology, it is imperative that we not only ride this digital wave but also harness its power to secure a prosperous future for Japan and Europe.

Introduction

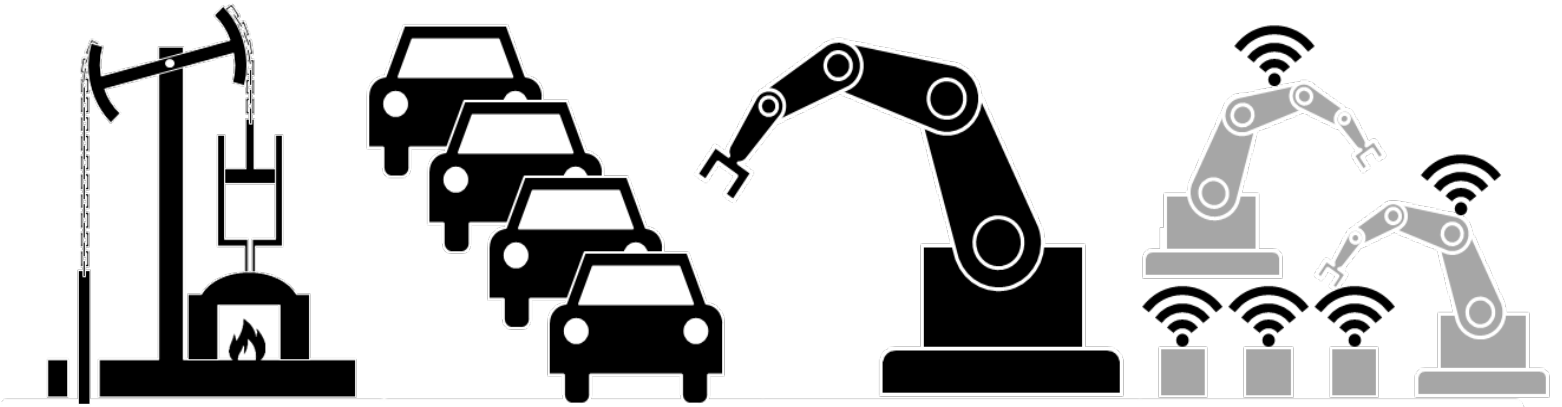
We find ourselves at a pivotal moment in history, where the digital revolution has transcended beyond the confines of technology and is now reshaping the very fabric of our societies, economies, and cultures. From artificial intelligence to blockchain, from big data to the

Regenerate

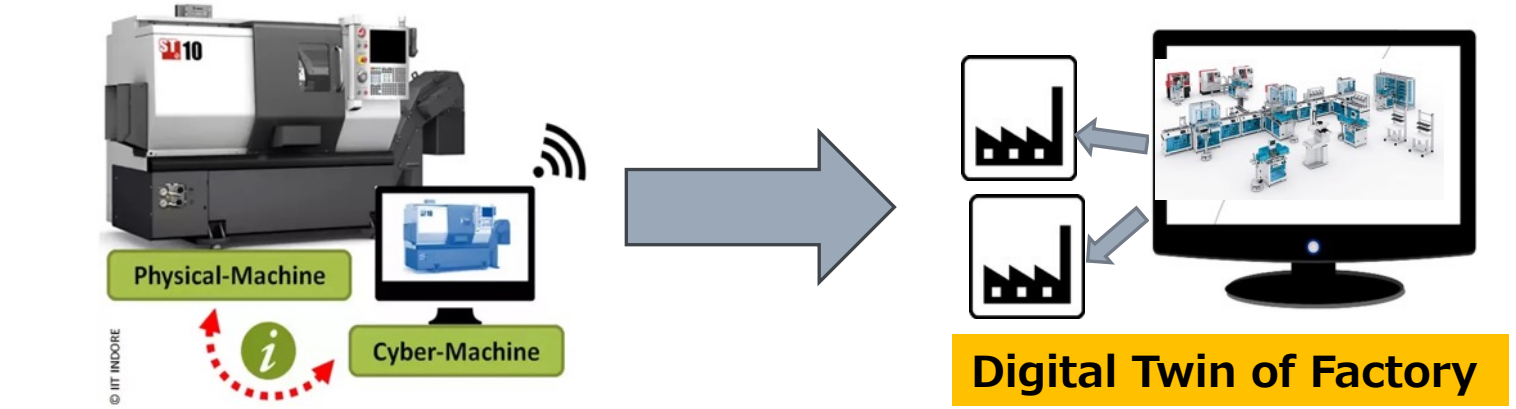
Digitalisation in Germany: Industry 4.0

Part of German High-Tech Strategy, first at Hannover Messe 2011 (Kagermann, Wahlster,..)

The 4th Industrial Revolution



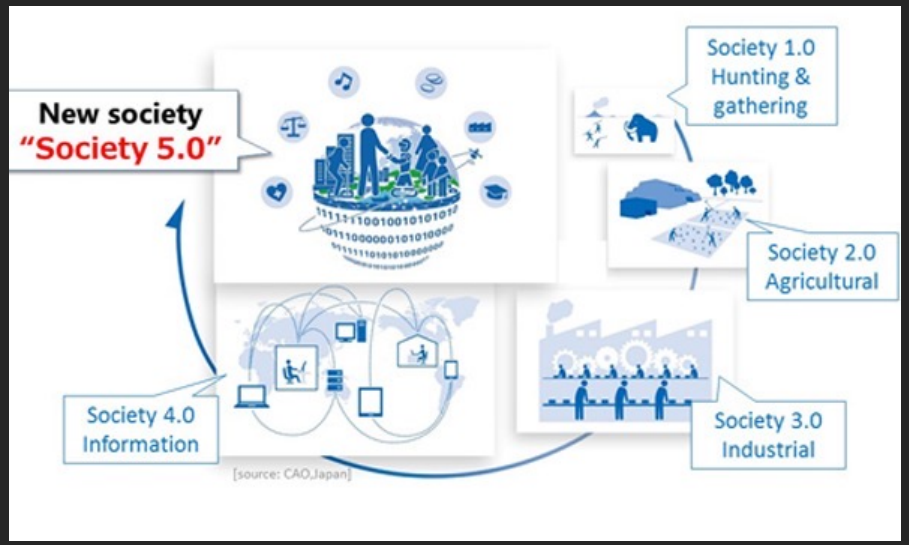
1st	2nd	3rd	4th
Mechanization, water power, steam power	Mass production, assembly line, electricity	Computer and automation	Cyber Physical Systems



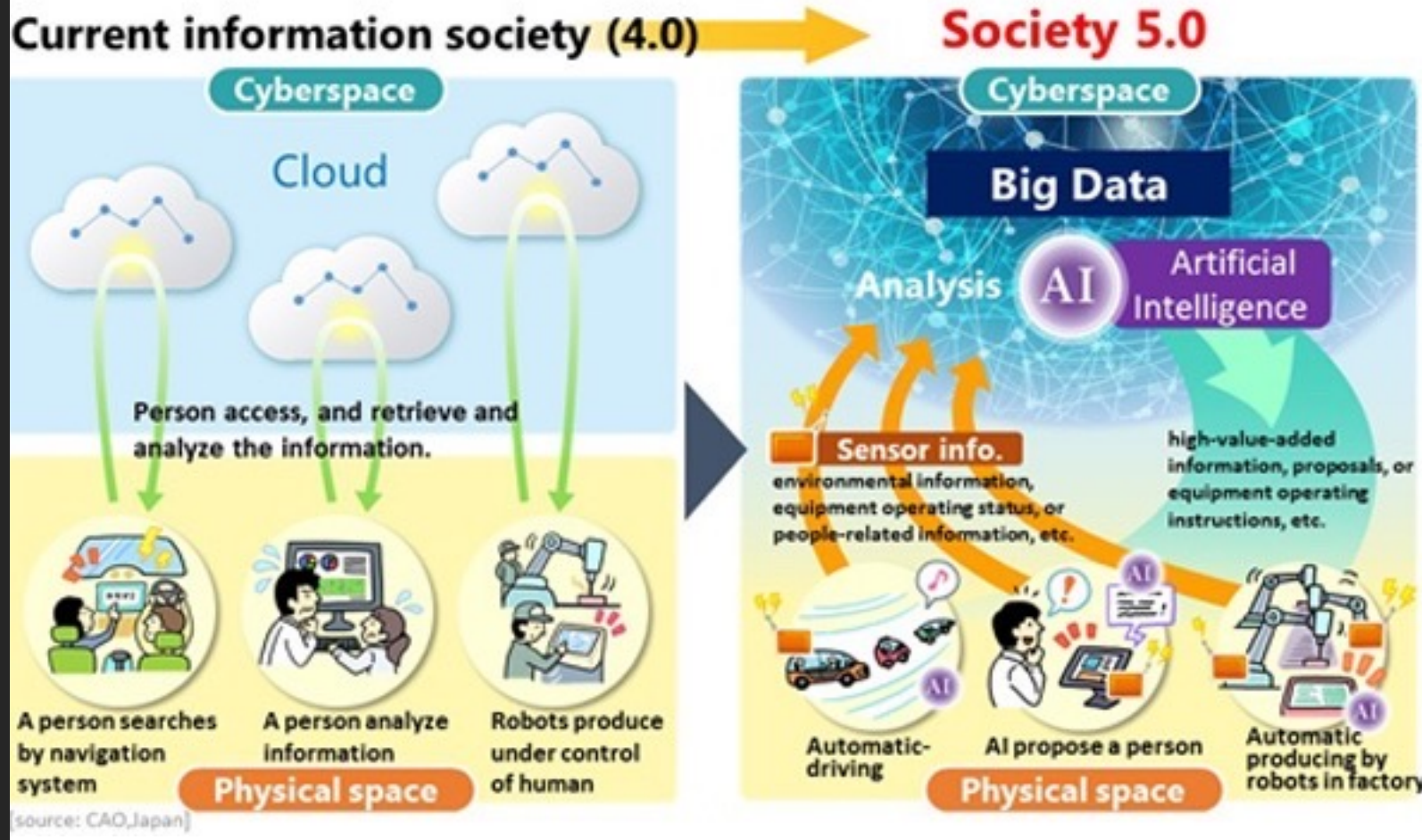
Source: Plattform Industrie 4.0; Prof. Christian ROSER, KIT

Digitalisation in Japan, same idea: Society 5.0 Good and AI Ready!

2016: 5th S&T Basic Plan



Advanced Fusion Cyber & Physical Space



Courtesy of CAO Cabinet Office

Economy Change: 3rd Industrial Revolution -> new business models

- Sellers & Buyers -> Providers & Users
- Markets -> Networks
- Ownership -> Access
- Consumerism -> Sustainability
- Capitalism -> Sharing Economy

=> based on the usage of BIG DATA

Jeremy Rifkin: Zero Marginal Cost Economy

-> convergence between energy, mobility, communication

	Communication	Energy	Mobility
19th century	Steam powered Book printing Telegraph	**Cheap coal** Steam engines	Steam trains
20th century	Telephone TV Radio	**Cheap Oil** Centralised Electricity	Cars
21st century	Communication **Internet** (5G, IoT)	Renewable Energy **Internet**	Automated Transportation **Internet**

Central power

Lateral power

⇒ **Democratization of economic life; new business models**

Source: businessinsider, Interview with Jeremy Rifkin, 6/2017

Smart Production

Digitze for batch size 1

- düspohl produces profile wrapping machines
- RoboWrap world's first robot-supported wrapping system designed for highly automated production

Digital Twin

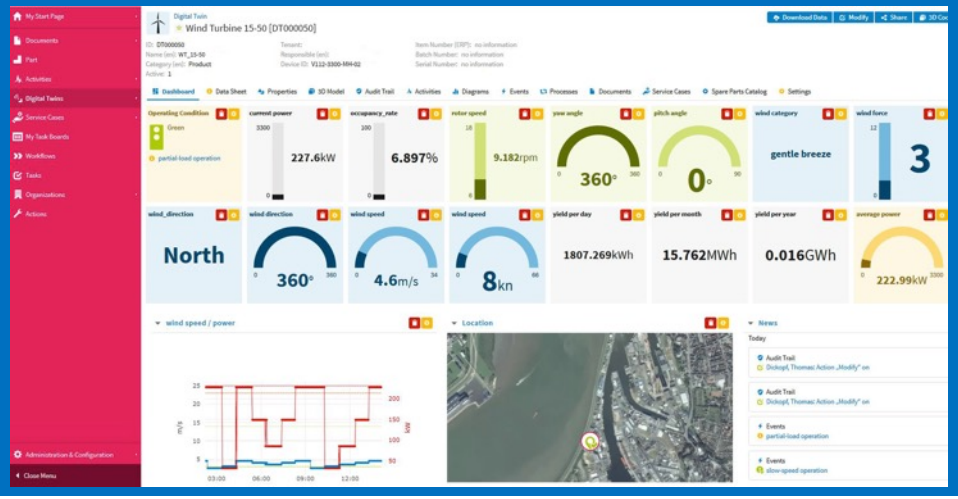
- Digital Twin simulates the production processes close to reality as possible
- Key to increase the efficiency of the robot-supported production and to minimize cost-intensive changeover and downtimes.

Smart Product

Wind IO Project

Autonomeous control of wind turbines

- German Ministry for Economy, Energy (BMWi), Bremen University, Julich Research Center
- Wind turbines / farms determine maintenance
- Automatic adaption to weather conditions.



CONTACT Software

Smart Product / Smart Business Model

MIXACO® MASCHINENBAU

Condition Monitoring

- Added value for plant operator
- Predictive Maintenance
- Zero Downtime

New Business Model: Pay-Per-Use

- Customer does not buy the machine
- Mixaco owns machine, collects data
- Mixaco does (predictive) maintenance and secures availability
- Customer pays per mixed amount of material

CONTACT Software

Digitalisation

Gartner Glossary > Information Technology Glossary > D > Digitalizatio

Digitalization

Digitalization is the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business.


PRODUCTS SERVICES INDUSTRIES ABOUT US NEWSROOM

Press realease - September 22, 2022

CONTACT Software listed as Representative Vendor in 2022 Gartner® Market Guide for PLM Software in Discrete Manufacturing Industries

CONTACT Software has been mentioned as a Representative Vendor in this year's PLM Market Guide. The report also provides an outlook on the development of the PLM market.

Examples from CONTACT Software show, it is on the move

Gartner executive insight

G20 Country Ranking for Digital Competitiveness

Methodology Digital Riser:

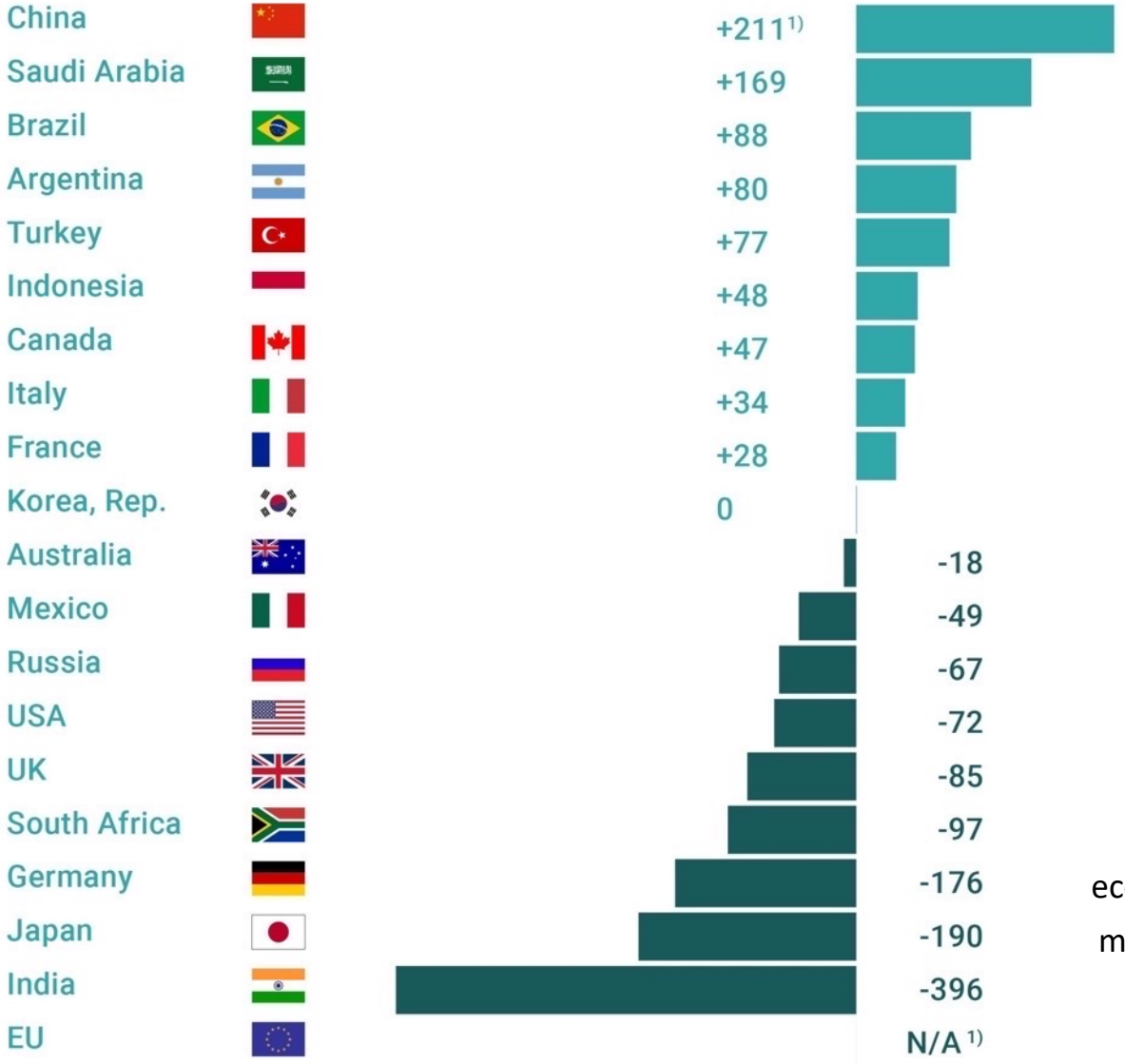
1. Ecosystem

- Venture capital availability
- Cost to start a business
- Time to start a business
- Ease of hiring foreign labour
- Skillset of graduates

2. Mindset

- Digital skills among active population
- Attitudes towards entrepreneurial risk
- Diversity of workforce
- Mobile-broadband subscriptions
- Companies embracing disruptive ideas

Position and change last three years (2021)



Digital Riser Report 2021, European Center for Digital Competitiveness. Based on WEF

1) Due to missing data for China on the qualitative indicators used in the study changes in these dimensions represent changes between 2020 and 2017. However given the magnitude of changes observed in China these differences in time do not alter the rankings.

2) The EU is not included since it is a collection of countries.

Good Example: France

Lighthouse Initiative: La French Tech

- platform promoting entrepreneurship: regulations , investments and international image campaigns.
- MoU with Aichi Prefectural government to support startups and businesses through connections and exchanges between French and Japanese startups

Regulations

- TECH.GOUV programme 2019: acceleration of the digital transformation of public services
- 2019, Action Plan for Business Growth and Transformation (PACTE): simplify business creation and enable SMEs to grow and conquer external markets & closer public r&D and companies
- In 2020, French telecom providers launched the first commercial 5G networks in the country

Investment

- in 2020, digital investments of €7 billion to promote technology and innovation announced
- in 2020, a €4 billion liquidity support plan for startups and ensuring investments during the Covid-19 crisis
- The digital inclusion strategy in 2018 aims to improve access to digital skills and infrastructure. The programme sets out to help 1.5 million citizens every year, and leverages a budget of up to €100 million

*Source: Digital Riser Report 2021, European Center for Digital Competitiveness

US, China, EU compete; Japan has good potential

ZDNET

tomorrow
belongs to those who embrace it
today

trending tech innovation business security advice buy

/ innovation

Home / Innovation / Artificial Intelligence

US, China or Europe? Here's who is really winning the global race for AI

A new report shows that in the ever-more competitive race for AI, the US has a strong lead that China is catching up with, while the EU is falling behind little by little.

Written by **Daphne Leprince-Ringuet,** Contributor
on Jan. 29, 2021

McKinsey Digital

How Japan can make digital 'big moves' to drive growth and productivity

February 24, 2021 | Executive Briefing

The country could build digital talent and applications across major areas of industry and government to improve digital competitiveness.

PATENT FILINGS BY GEOGRAPHY

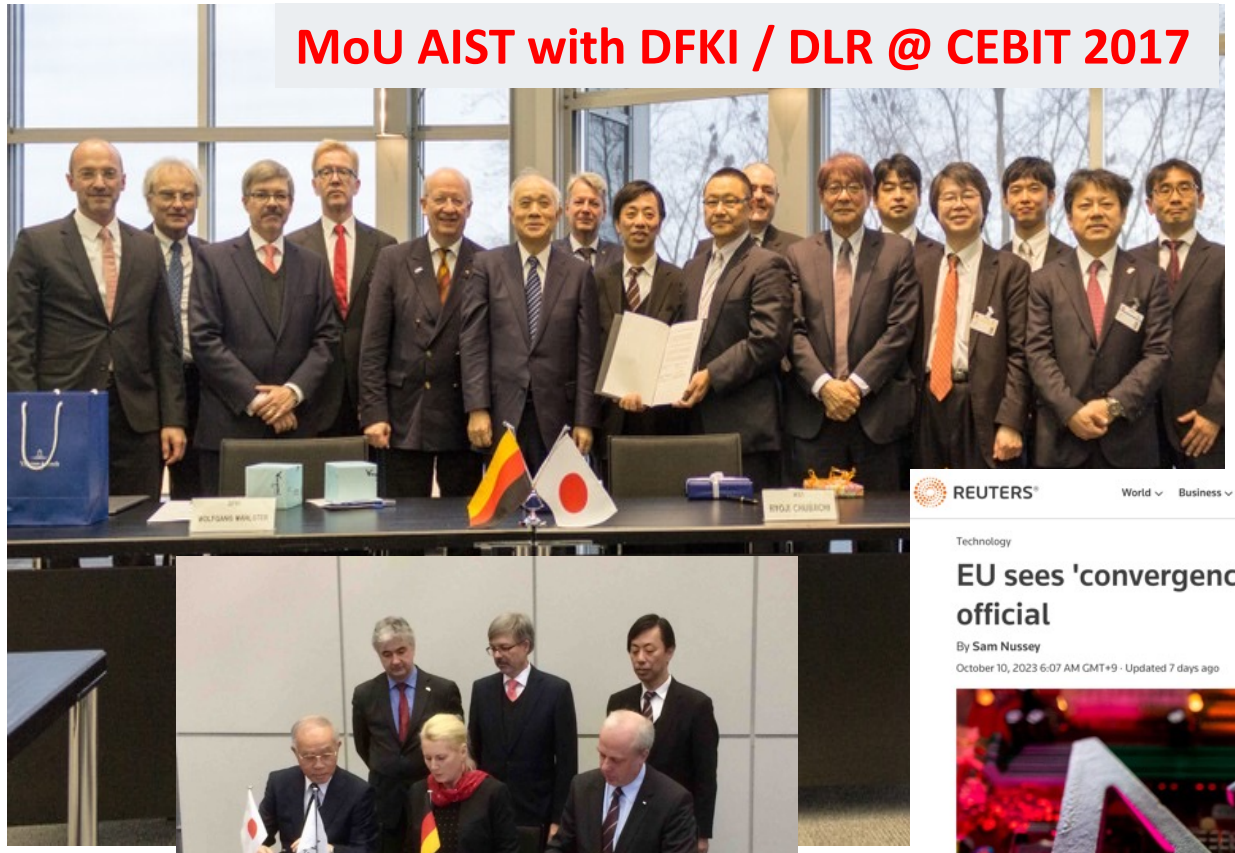
As of 2014, the top three patent offices for AI patent filings are, in order:

1. China
2. United States
3. Japan

Source: Henry, Patent Law Firm 2019

Course for Europe and Japan

More Collaboration EU Japan in AI



MoU AIST with DFKI / DLR @ CEBIT 2017

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The unique forum convening public and private sector leaders for networking, intelligence and debates on research and innovation.

More info »

EU and Japan agree to share supercomputers in groundbreaking deal

10 Oct 2023 | News

European and Japanese scientists will fine tune their scientific models on each other's machines, hopefully boosting performance and future-proofing code. It's the latest push from Brussels to create stronger research links with 'like-minded' democracies

By David Matthews

The Japanese supercomputer Fugaku. Photo: RIKEN Center for Computational Science

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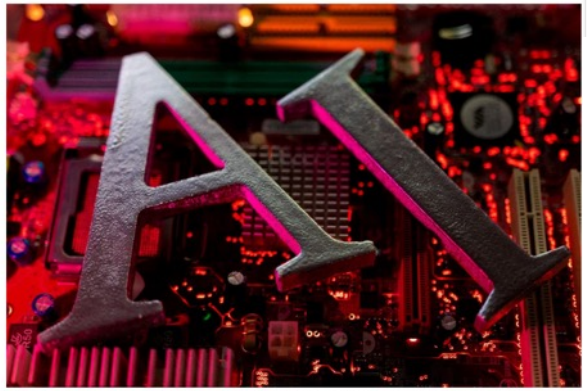
Technology

EU sees 'convergence' with Japan on AI - official

By Sam Nussey

October 10, 2023 6:07 AM GMT+9 · Updated 7 days ago



AI (Artificial Intelligence) letters are placed on computer motherboard in this illustration taken June 23, 2023. REUTERS/Dado

Forbes

FORBES › MONEY › HEDGE FUNDS & PRIVATE EQUITY

Europe And Japan Are Leading The Race To Build AI Rules

Mike O'Sullivan Senior Contributor

I cover the economic and financial world outside the USA, for the USA.

Follow

0 Oct 14, 2023, 11:03am EDT

EU-Japan Digital Partnership

Digital Partnerships in Action (DPA)

Chips and Skills Roundtable with EU Commissioner Thierry Breton

9:30 – 11:00, 3 July 2023,

Delegation of the European Union to Japan

COMMISSIONER BRETON IN JAPAN

TO DISCUSS DIGITAL PARTNERSHIP, SEMICONDUCTOR, INDUSTRIAL AND TECHNOLOGY COOPERATION

Commissioner Thierry Breton, travelled to Japan at the end of September to engage with officials and industry leaders. This was an opportunity to discuss the upcoming European Chips Act and develop contacts on the broader digital partnership agreement with Japan which was announced in the EU Indo-Pacific Strategy.

On 28 September, Commissioner Breton met the Minister for Internal Affairs and Communications, the Minister for Economy, Trade and Industry, the Minister for Digital Transformation, the Chairman of the Board of NEC, and the CEO of Fujitsu.

The following day, on 29 September, Commissioner Breton met with the CEO of Tokyo Electron (TEL), one of the major Japanese semiconductor companies, and attended a round table discussion with 15 European and Japanese business representatives,

Roundtable in July on the occasion of Thierry Breton's visit to Japan for the Digital Partnership

Organized by AI Japan R&D Network · Ambassade de France au Japon · DWIH Tokyo

Home Program Speakers Venue & Access Organizers & Supporters

1st J-G-F AI Symposium 2019

The 3rd Japanese-German-French AI Symposium

– AI for Planetary Challenges in the Anthropocene –

October 27-28, 2022
10:00-18:00 (Japan time)
Miraikan, Tokyo

Organized by
AI Japan R&D Network
DWIH Tokyo
(German Centre for Research and Innovation Tokyo)
Embassy of France in Japan

Live stream on YouTube
(Sessions in Miraikan Hall only)

Event in English
Free lunch and coffee to all onsite participants

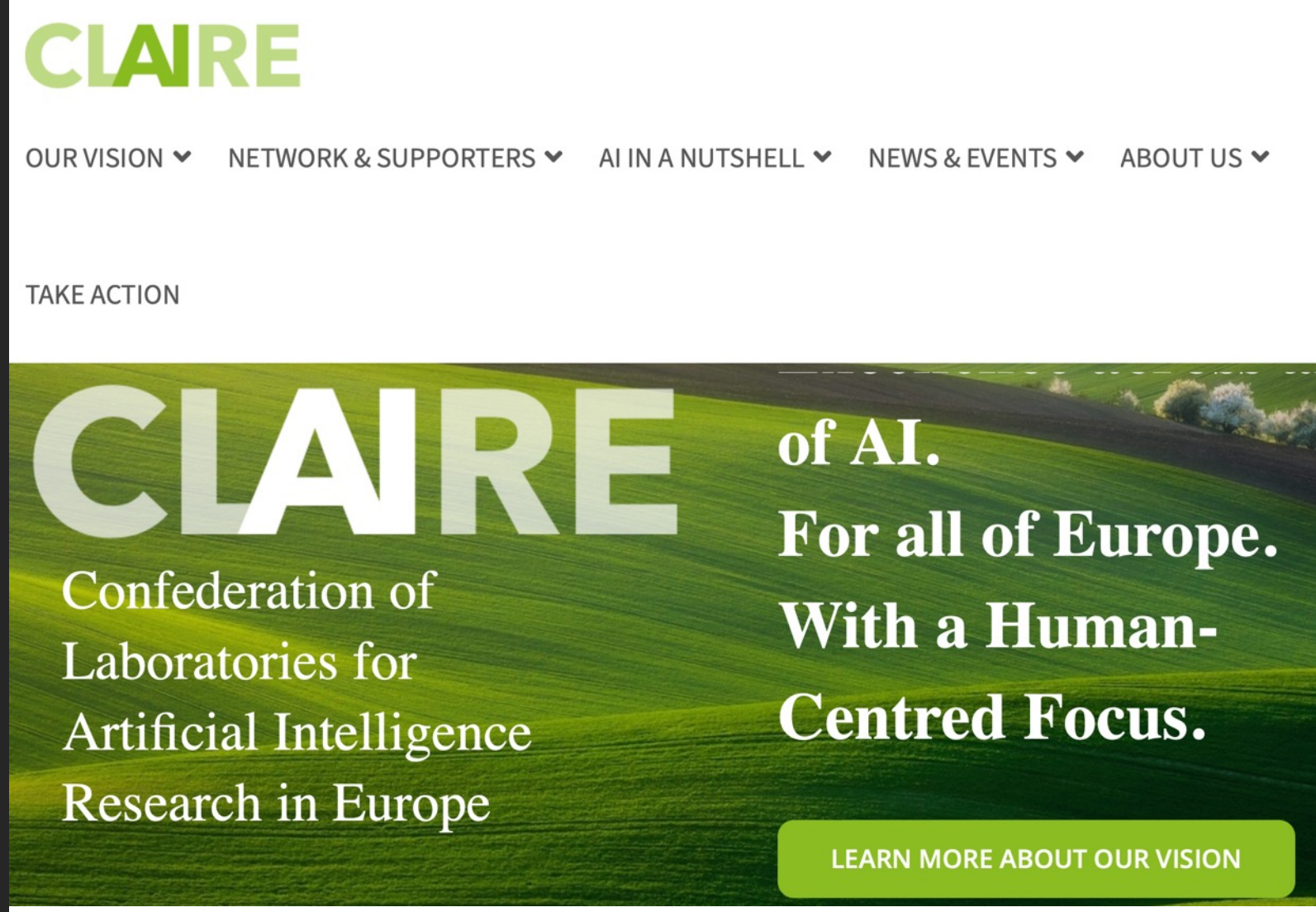
#Trilateral_AI

Registration closed

Joint AI Workshops

GREAT START, FINAL ONE IN 2022 BUT NOW RESTART IN 2024!!

Involve EU Organisations



Conclusion

CONCLUSION

"The machine is not the problem, its the monkeys behind the machine!" (Kasparov?)

- Japan and Europe are not Internet Economies like US and China, but product/production focused and fit together.
- Production needs different AI, data security and ownership.
- In AI, companies are now pushing new developments, however it should be carefully monitored to avoid faults!
- EU and Japan need to collaborate more with organisations like CLAIRE. Both need to improve education, workforce development, foster public-private partnerships, startups and SME support.
- Transparent data practices, strong privacy laws, and AI Ethics can ensure that technology serves humanity and not the other way around.