INNOVATION PROGRAM

Factory of the Future

Brainport Industries Campus

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Industries
Campus
S::DK

Technology Update “Innovation projects & fieldlabs @BIC”

1. Introductie Team & Innovatie Programma “Factory of the Future” @BIC

2. Toelichting huidige Projecten / fieldlabs & actuele ontwikkelingen

3. Sneak preview “Roadmap Factory of the Future 2020-2024”

Brainport Industries Campus

PERSONAL / TEAM INTRODUCTION

Michel Weeda

- Manager Innovation Program “Factory of the Future”
- Member MT Brainport Industries Campus
- Sr. Program Manager High Tech & Services

Brainport Industries

Brainport Industries Campus

Brabantse Ontwikkelings Maatschappij BOM

POINTS OF CONTACT | “INNOVATIE KERNTEAM” FABRIEK VAN DE TOEKOMST

Erik Vermeulen
(Logistiek)

Luuk Wissink
(3D Metal printing)

Gerald van Santen
(Multi Material 3D)

Laurens Meijering
(Digitale Fabriek)

Maarten van Teeffelen
(Educatie Industrie 4.0)

Onno Ponfoort
(Robotics & Automation)

Rutger van der Male
(Digital Supply Chain)

Wim Renders
(High Tech Software Cluster)

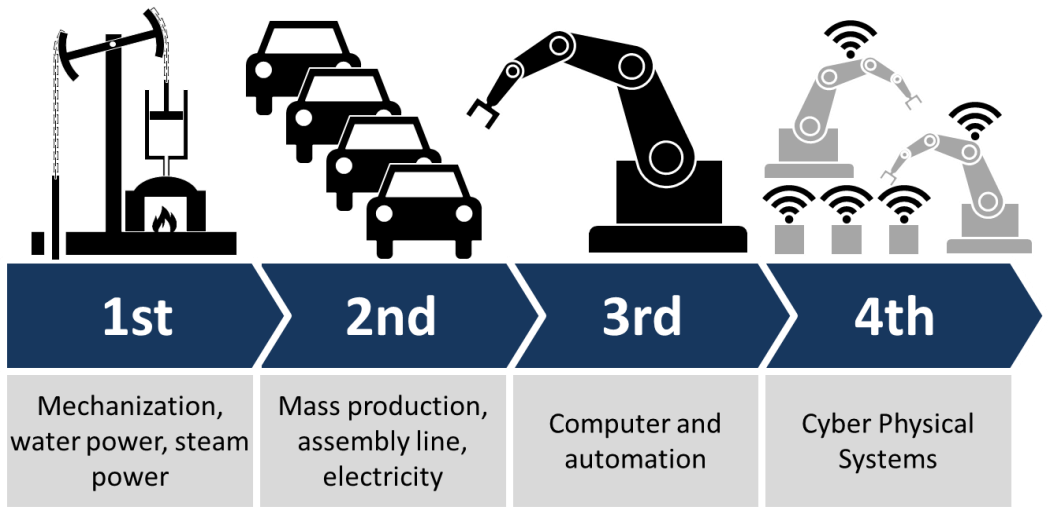
Program Lines

Brainport Industries initiates & develops projects in the field of:

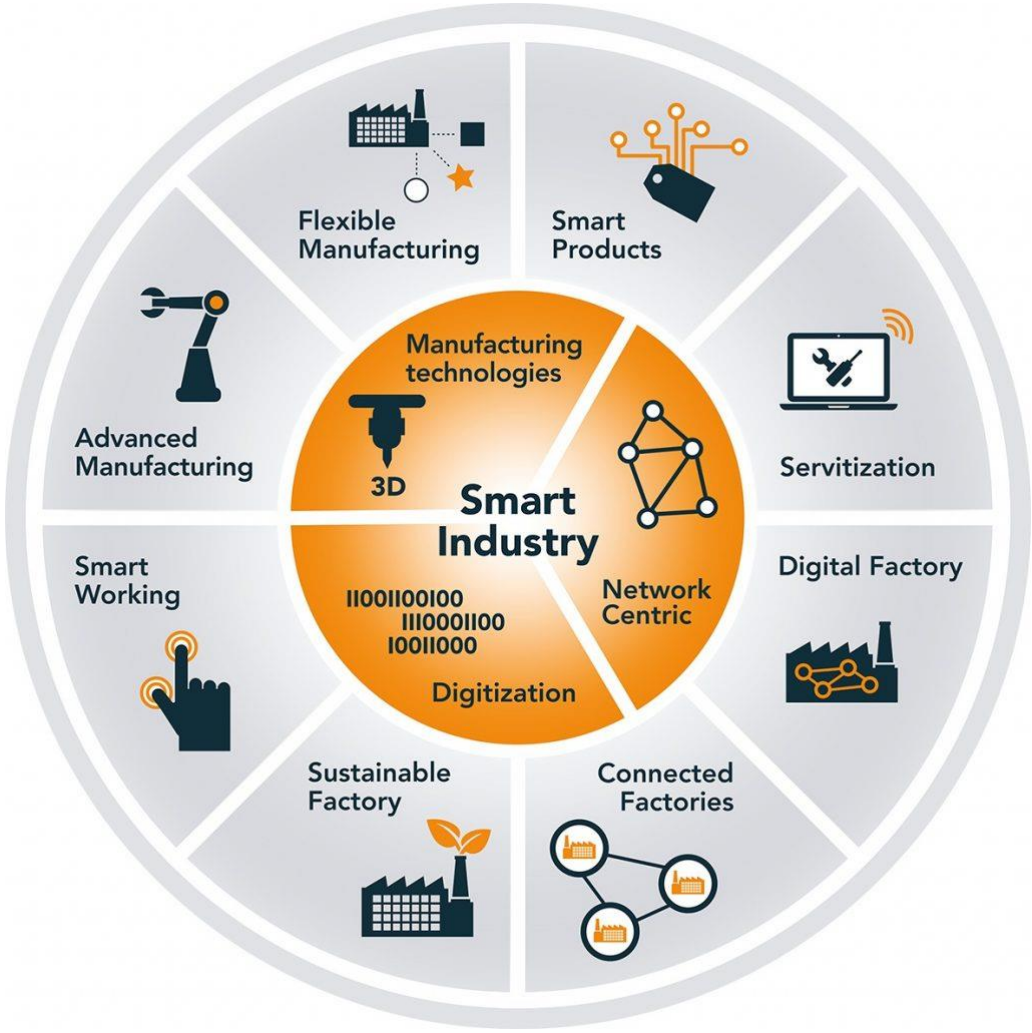
- Human capital / Talent & Cooperation
- International Markets & Supply chain
- Technology & Manufacturing processes

Goal is to accelerate innovation power & improve competitiveness of Dutch (high tech) supply chain network.

Technology & Manufacturing processes

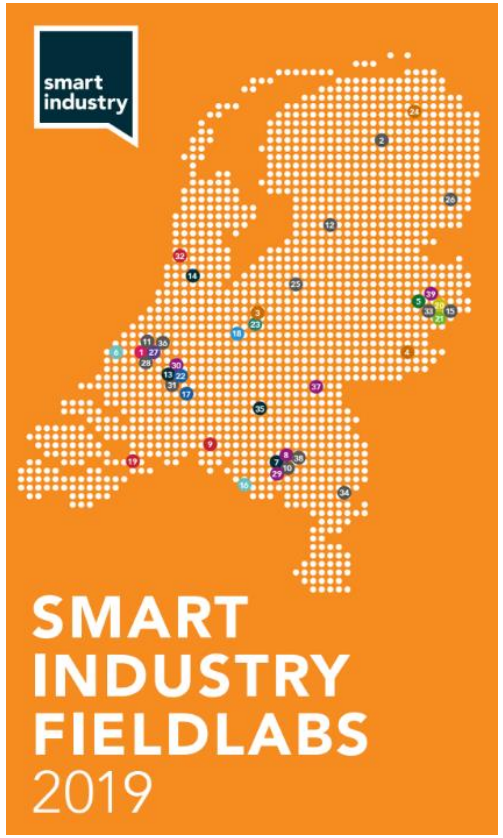


Industrie 4.0



Smart Industry

National & Regional Smart Industry Program



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Brabantse Ontwikkelings Maatschappij BOM

Provincie Noord-Brabant

Projectpartners

SUMMA College, Fontys, machinefabriek DE VALK, KMWE, SMART ROBOTICS, TU/e, AAE, CORDIS, infor, Acknowledge, Brainport Industries College, DEMCON, SUPLACON, TNO, FAESGROUP, SIOUX, OMRON, NextDent, ALTRAN, LOGIC, norma, mkg, Erasmus, RIDDER, BOM, NEWAYS, Euro-Techniek, rexroth A Bosch Company, teclab, signify, DOMICRO, ADMATEC, YASKAWA, total productivity improves your productivity, pwc, Bronkhorst Flow Technology, ACCERION, BEMET, RUBIX, kloeckner metals ODS Nederland, IJSSEL, Brainport Industries, de cromvoirtse, tradeInterop, ICT, isah, ATTRIBUTES, FUJITSU FUJITSU GLOVIA, PERFECT ASSEMBLAGEGROUP, Additive Industries, HIT, KE-works, VANRAAKSTAAL, ERTEC, avans hogeschool, DMG MORI, data streams.io, FESTO, Berenschot, Etteplan | tedopres, ALTEN, FESTA solutions, UNIT040, Profit, TOPIC, NTS GROUP, TOMTOM, CNC CONSULT, océ A CANON COMPANY, GRENZEBACH, VinciTech BV, Delphino, PULSE DC CO, KetenlinK, luminis, INAD easy trade, MaromeTech, Fraunhofer, FOURTRESS, Compumatica, SUPPLYDRIVE, Author-e, tradecloud, VISCON GROUP, INTERNATIONAL DATA SPACES ASSOCIATION, ECN, verum

BIC INNOVATION PROGRAM & PROJECTS

- High Tech Software Cluster

- Fieldlab Advanced Manufacturing Logistics
- Fieldlab Flexible Manufacturing

- 5G High Tech Application Center

- K3D-AddFab (3D metal printing)
- Fieldlab Multi Material 3D

- Data Value Center – SI

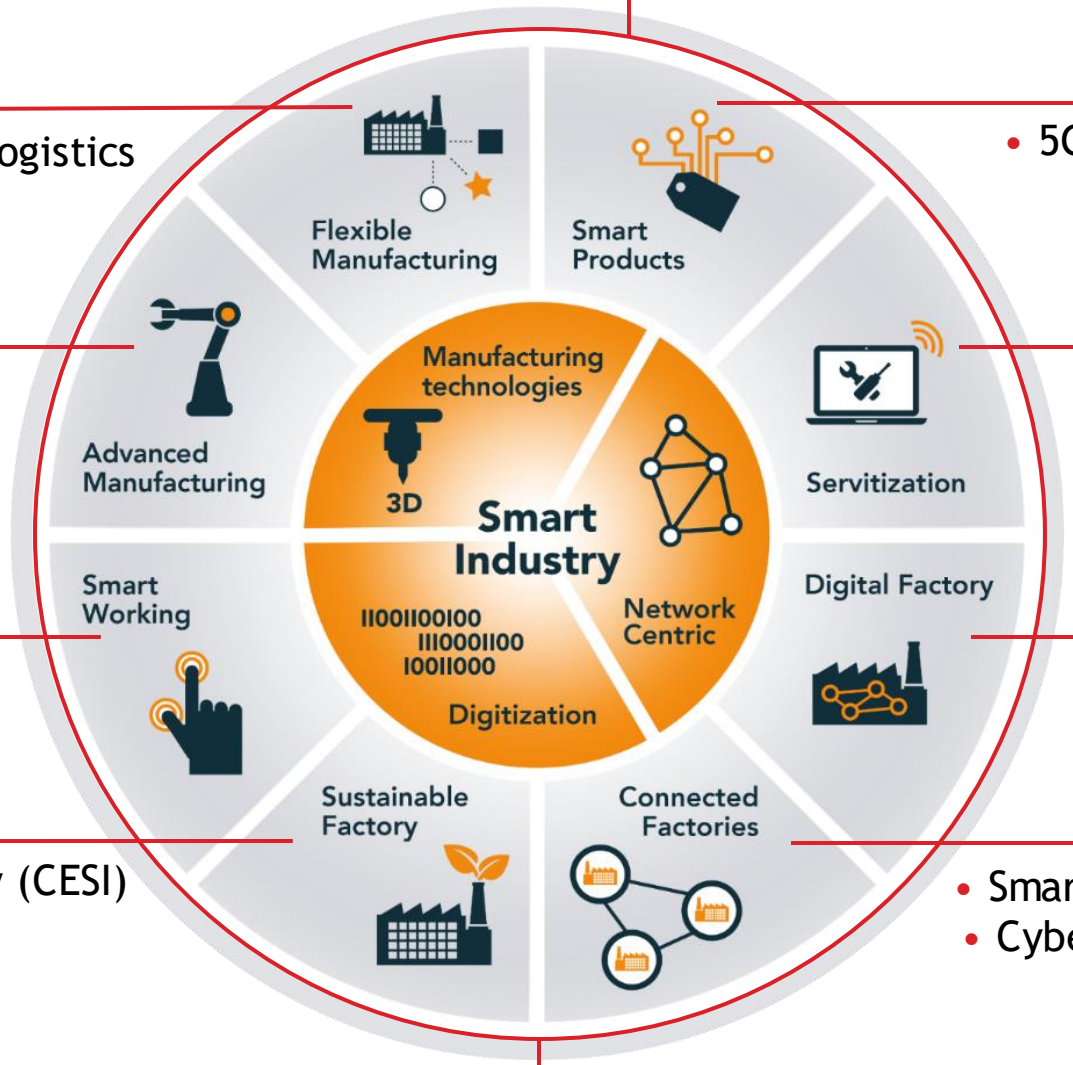
- FutureTec (Education & Training)

- Digital Factory of the Future

- Circular Economy in Smart Industry (CESI)

- Smart Connected Supplier Network
- Cyber Resillience Center Brainport
- Digital Innovation Hub AI

- New / Work in Progress: Pilot Manufacturing Center



7. De locatie

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ATRIUM

- Main entrance for the building clusters
- Location for shared services and facilities
- Space for education and knowledge institutes
- Location for start-ups
- Logistics zone + storage under the atrium
- Meeting & inspiration place for employees, visitors and students
- Showrooms & Service boulevard

Multiple use of Assets in the ‘Fieldlabs’

Education, Skills & Training

Demonstration, Inspiration, Interaction & Exposition

Pilot Production & Guest Use of Facilities

Testing, Experiments & Applied Research

INNOVATION PROGRAM

Fieldlab Flexible Manufacturing

An eco-system that focusses on capitalising opportunities through flexible manufacturing and assembly solutions.

- Flexible production and assembly solutions
- Automated and flexible fieldlab
- Robotization of manufacturing processes

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MOTOMAN®
"You Teach Me" robot
YASKAWA
SICK
YASKAWA

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Industries
FABRIEK VAN DE
TOEKOMST • FOKUS
TNO innovation
for life
Interreg
Vlaanderen-Nederland

Fieldlab Flexible Manufacturing

PARTNERS

TNO
NEWAYS
KMWE
MaromeTech
making robotics & mechatronics work for you!
avans hogeschool
Berenschot
Brabantse Ontwikkelings Maatschappij BOM
Brainport Industries
ACCERION
YASKAWA
SMART ROBOTICS
MASTERS IN FLEXIBLE AUTOMATION
PERFECT ASSEMBLAGEBEDRIJF
rexroth A Bosch Company
Bronkhorst Flow Technology
FESTO
OMRON
TU/e
TEGEMA
de cromvoirtse
snel metaal op maat
total productivity
improves your productivity
Fontys
VinciTech
Implementers of Innovation

INNOVATION PROGRAM

Smart Connected Supplier Network

Platform for information exchange to accomplish an increase in productivity in the supply chain

- Data standard
- Information exchange
- Higher productivity in the supply chain

smart connected supplier network

SCSN DEVELOPMENT TIMELINE

https://smart-connected.nl/

	2020	2021	2022	
Organisation	**Transition from project to SCSN Foundation.**	NL: Strategic partnerships with branche organisations. EU: Strategic partnerships to accelerate growth.		
Services	**Comprehensive SCSN message set for manufacturing industry.**	EU: Develop and integrate additional (AI) products and services for supply chain optimisation, condition based maintenance, etc.		
Infrastructure	**Fully operational IDS infrastructure for Service Providers.**	EU: Extend trusted network with advance security features e.g. usage control and ensuring interoperability with other data spaces.		
Connections	**Growth to 400 connected manufacturing companies.**	NL: 1.000 connections EU: 250 connections	NL: 2.000 connections EU: 1.000 connections	
Service providers	**Growth to 10 approved SCSN Service Providers.**	NL: 15 Service Providers EU: 5 Service Providers	NL: 20 Service Providers EU: 20 Service Providers	

INNOVATION PROGRAM

Fieldlab Smart Connected Supplier Network

smart connected supplier network

PARTNERS

= exact
AAE PUSHING TECHNICAL BOUNDARIES
FUJITSU FUJITSU GLOVIA
VISCON GROUP
SUPLACON plaatbewerking
KetenlinK
Brainport Industries
RIDDER
TNO innovation for life
THALES
KMWE
mkg
FAESGROUP
infor
NTS NORMA
Fraunhofer
isah BUSINESS SOFTWARE
add-it software solutions
NTS
VANRAAKSTAAL
NEWAYS
INAD easy2trade
INTERNATIONAL DATA SPACES ASSOCIATION
tradecloud supply chain platform
Euro-Techniek
océ A CANON COMPANY

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FutureTec

Innovative education in the eco-system of the High Tech manufacturing industry

The development of educational content and the implementation of innovative technical education & in the Brainport region

- Collaboration
- Education
- Industry

FUTURETEC

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Industries

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FutureTec

PARTNERS

SUMMA College

Brainport Industries College

DMG MORI

Fontys

CNC CONSULT

Brainport Industries

HEIDENHAIN

Mitutoyo

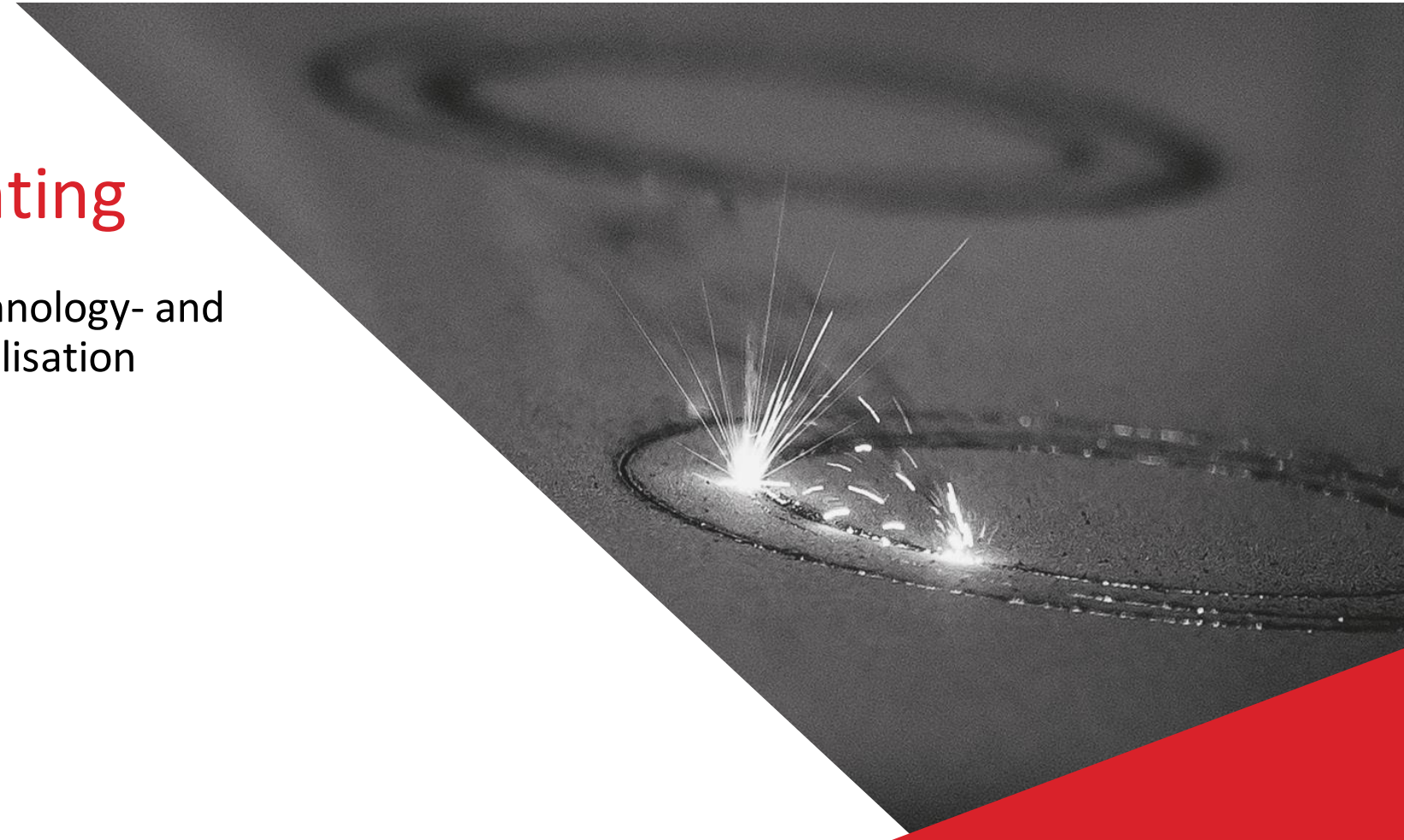
RENISHAW apply innovation™

HAIMER

ERTEC Handling & Automation

INNOVATION PROGRAM

K3D Addfab metal printing



3D Metal Additive Manufacturing technology- and expertise centre focussed on industrialisation of 3D metal printing

- Industrialisation
- Quality management
- Industrial applications

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INNOVATION PROGRAM

K3D Addfab metal printing

PARTNERS

KMWE

NTS

SUMMA College

DE VALK value added metals

Additive Industries

Brainport Industries

Wat kan K3D-AddFab voor u betekenen?

- Kennis en inspiratiesessies
- Trainingen en opleidingen
- Begeleiding bij het vinden en zoeken naar de businesscase
- Een groot ecosysteem
- Productie van prototypes, kleine series of middelgrote series
- 3D printen in RVS, Aluminium en Gereedschapstaal
- Korte levertijden

INNOVATION PROGRAM

Fieldlab
Multi Material 3D

Een eco-systeem dat zich richt op industriële multi-materiaal 3D geprinte mogelijkheden.

- Applicaties
- Pilotlijnen binnen een fieldlab
- Onderzoek
- Automatisering van 3D print processen

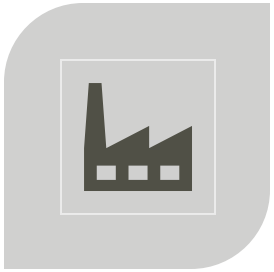
MM3D

INDUSTRIO

TU/e

AMPC SOLUTIONS.COM

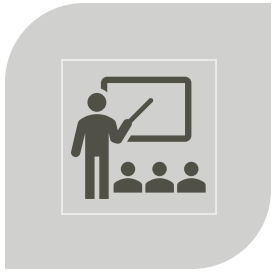
Fieldlab MM3D



CO-CREATIE PLATFORM VAN INDUSTRIËLE PARTNERS EN KENNIS ORGANISATIES

GEZAMENLIJKE RESEARCH

BUSINESSCASE EN APPLICATIE ONTWIKKELING OP HET GEBIED VAN MATERIALEN, PROCESSEN, PRODUCTIE MACHINES EN DESIGN METHODOLOGIEËN



AM PILOTLIJNEN VOOR DEMONSTRATIES, EXPERIMENTEN, VALIDATIE, TESTEN, TRAINING EN EDUCATIE

INNOVATION PROGRAM

Fieldlab High Tech Software Cluster

Digitization of industrial products and processes

- Virtual Prototyping and Design
- Artificial Intelligence and Machine Learning
- Big Data Analytics and Data Services
- Industrial 5G and Wireless Communication
- Model-based Software Engineering
- Industrial Internet of Things

HIGH TECH SOFTWARE CLUSTER

INNOVATION PROGRAM

Fieldlab High Tech Software Cluster

HIGH TECH SOFTWARE CLUSTER

PARTNERS

DEMCON

ALTRAN

kpn

Beltech
Industrial Automation with Vision

Author-e

SIOUX
SOURCE OF YOUR TECHNOLOGY

Delphino
Consultancy

LAKANA
Smart Software Strategy

Profit
professionals in technology

CORDIS
INNOVATIVE CONTROL SOLUTIONS

luminis
Conversing worlds

Etteplan | tedopres

KE-works

Compumatica
SECURE NETWORKS

TU/e

PULSE DC

LOGIC
TECHNOLOGY

Fontys

ICT
smarter solutions

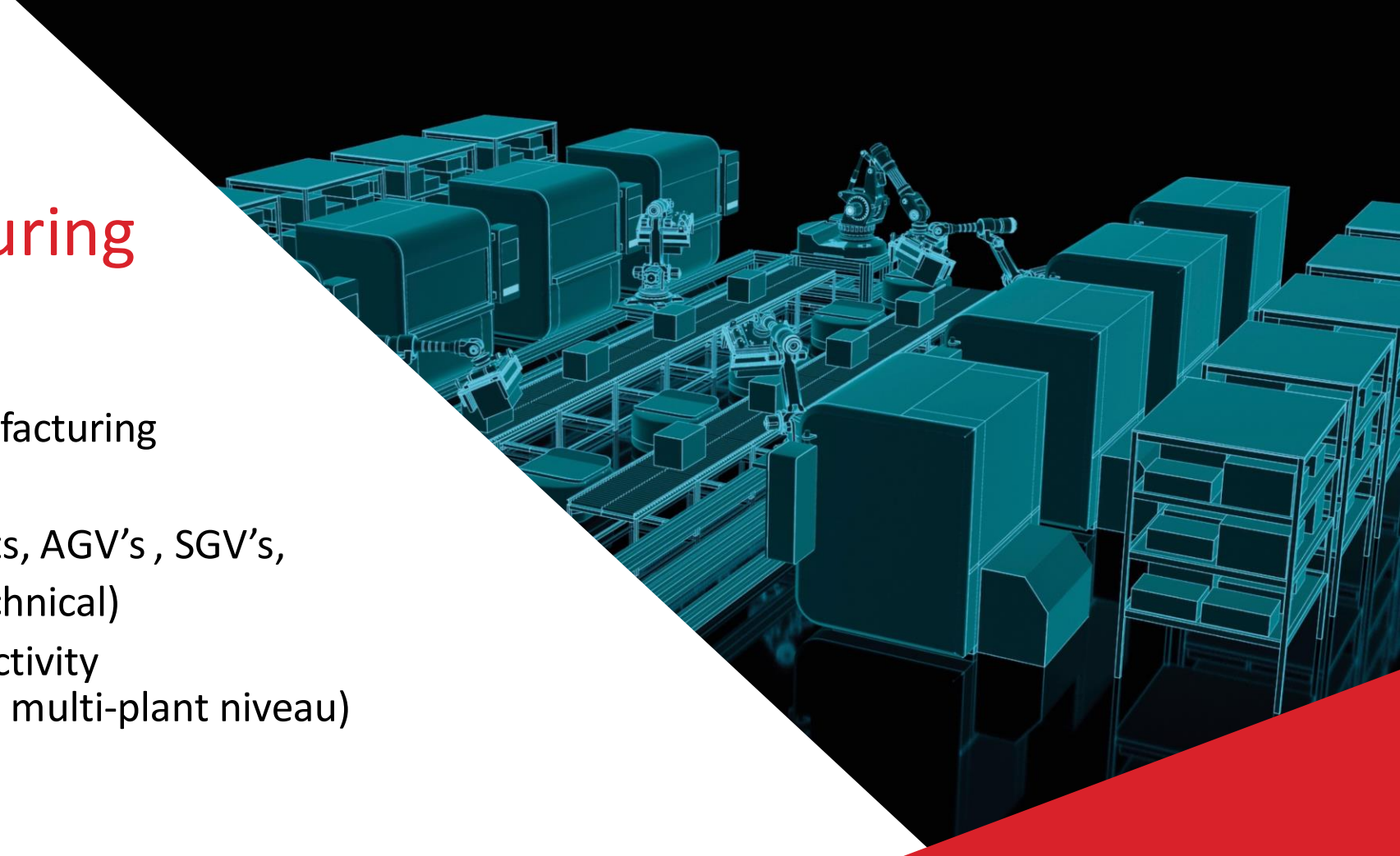
TOPIC
EMBEDDED SYSTEMS

verum

Brainport
Industries
smart industry
Fieldlab
High Tech Software Competence Centre
YASKAWA
WELCOME
HIGH TECH
SOFTWARE
CLUSTER

INNOVATION PROGRAM

Advanced Manufacturing Logistics



Hotspot for smart logistics in manufacturing

- Smart logistics
- Mobile robots, mobile cobots, AGV's , SGV's,
- Simulation (business and technical)
- Smart automation (IT connectivity and integration on plant and multi-plant niveau)
- Supply chain orchestration

AML
Advanced Manufacturing Logistics

Advanced Manufacturing Logistics

WP 1: INDUSTRIAL AUTOMATION	Mobile Robotics (warehouse logistics, generic)
	Mobile Robotics (manufacturing logistics, usecase-specific)
WP 2: SIMULATION	Digital Twinning, Manufacturing Design
	Smart Planning & Control
WP 3: INTERCONNECTIVITY	Horizontal- & Vertical Integration
WP 4: INDUSTRIAL LOGISTICS	Tracking & Tracing
	Smart Packaging

INNOVATION PROGRAM

Advanced Manufacturing Logistics

AML
Advanced Manufacturing Logistics

PARTNERS

RUBIX

Brainport Industries

IJSSEL technologie

TU/e

KMWE

ERASMUS UNIVERSITEIT ROTTERDAM

EXTENDED PARTNERS

FPC beyond packaging

YASKAWA

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Digital Factory

- Access to data at BIC and other locations
- Development of a blueprint for the Digital Factory of the Future, focussing on:
  - Collecting and using data within one factory
  - Controlled sharing of data in the chain with customers, suppliers and providers of new services
- Testing, research and development environment
- Development of new business models

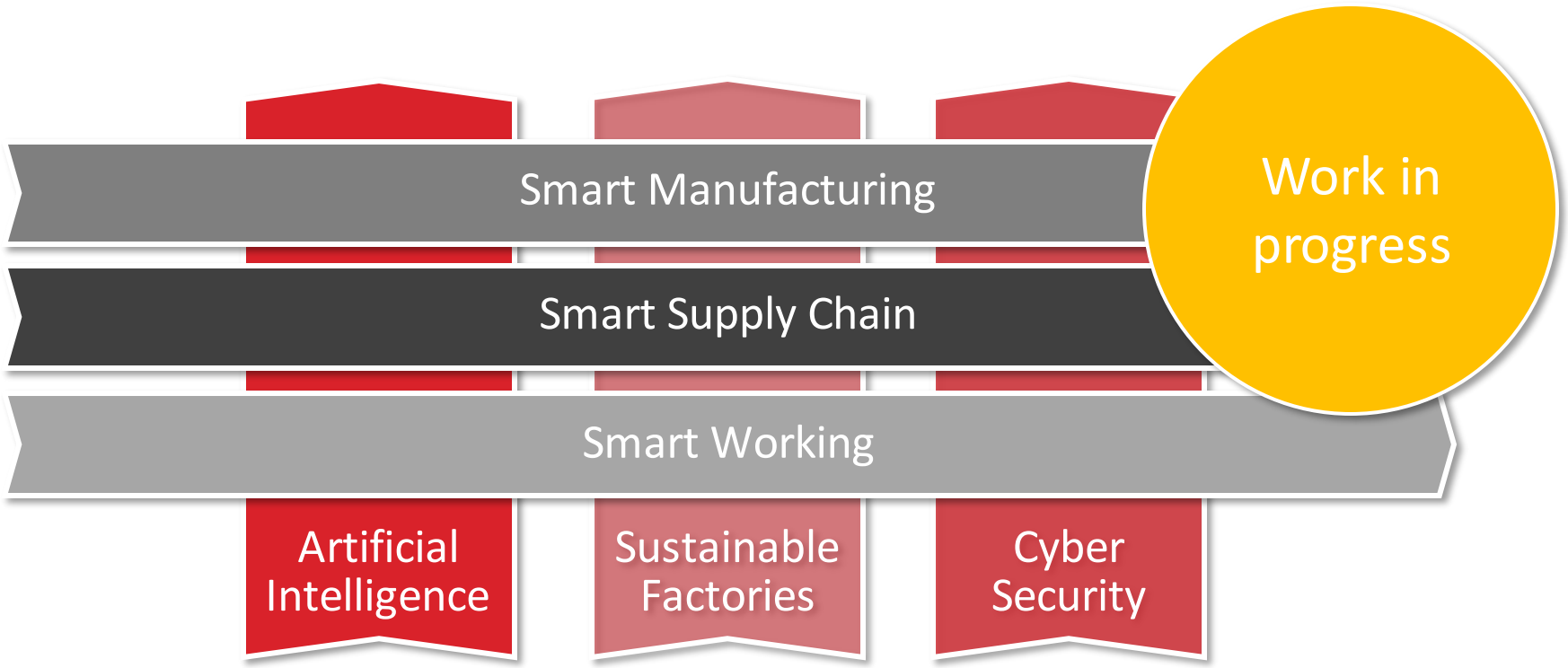
DATA SHARING
Smart Connected Suppli Network
International Data Spac
Connecting customers and suppliers
Powered by
Brainport Industries
DIGITAL FACTORY
Smart manufacturi equipment
Zero programming
Human-robot collaboration
Powered by
Brainport Industries
DIGITAL TWINNING
Simulation of equipment and product lines
Equipment effectiveness and KPIs
Powered by
Brainport Industries
Brainport Industries

Digital Factory

PARTNERS

Additive Industries
OMRON
utility
YOUR UTILITY IT PLATFORM
TNO
Brainport Industries
KMWE
TU/e
FUJITSU
FUJITSU GLOVIA
BOM
DMG MORI
pdm
de cromvoirtse
snel metaal op maat
NEWAYS
Fontys
IJSSEL

Sneak preview:
Roadmap based on Smart Industries Transformations



PHILIPS
Innovation Services
Industry Consulting
Brainport Industries

DRAFT ROADMAP FACTORY OF THE FUTURE 2020-2024

Cluster / Theme	Goal	How and focus technology areas
Smart Manufacturing Smart Production Technologies	***Develop new applications with emerging Production Technologies***	• *Demonstrate and innovate on existing production technologies with focus on industrializing Additive Manufacturing technologies and applications including (future integration) Electronics & Materials* • *Develop Augmented Reality standards to support production, assembly and logistics*
Smart Manufacturing Smart Assembly & Robotisation	***Implement flexible Automation and Robotisation for high mix low volume assembly***	• *Innovate in fieldlabs and implement Human/Robot collabo* • *Develop standards to enable Modular Manufactu* • *Apply Digital Twinning of Manufacturin*
Smart Supply Network *Smart Factory Logistics*	***Implement Digitization and AI to optimize factory Operations***	• *Develop*
Smart Supply Network *Smart Connected Supplier Network*	***Create an Agile, Global and Connected supply Network to shorten time to market***	*…bal)*
Smart Working *Data analytics & Artificial Intelligence*	***Optimize End-to-End production and supply chain Work flows via Digitization***	*…tion techniques* *…odel Based Engineering platforms* *… support platforms for monitoring/analytics*
Smart Working *Training & Education*	***Deploy smart industry related Skills and Competences (life long learning)***	• *U… & VR for operator (or student) training and instructions* • *Develop a Toolbox for (human) Operator 4.0 andexplore needs, roles & tools for the I4.0 operation (including digitization skills, human-robot cooperation, factory automation)* • *Deploy Circular Design thinking*

Presentation & Publication: November 26, 2020

PHILIPS Innovation Services Industry Consulting

Brainport Industries

Upcoming Technology Updates 2020 / 2021

Events	Date
Brainport Industries conference 2020	October 1, 2020 (ONLINE, invitation only)
Technology Update XL (all fieldlabs / projects @BIC)	**November 26, 2020 (ONLINE, free after registration)**
Technoloy Update “Multi Material 3D Printing”	December 17, 2020 (ONLINE, free after registration)
Technoloy Update “Flexible Manufacturing”	January 21, 2021 (ONLINE, free after registration)

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www.brainportindustries.com/nl/innovatieprogramma

www.brainportindustriescampus.com/nl/home

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