

Gør tanke til handling
VIA University College



Interreg
North Sea Region
GrowIn 4.0

European Regional Development Fund



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GrowIn 4.0 - The most important learnings...

Final Conference 2021



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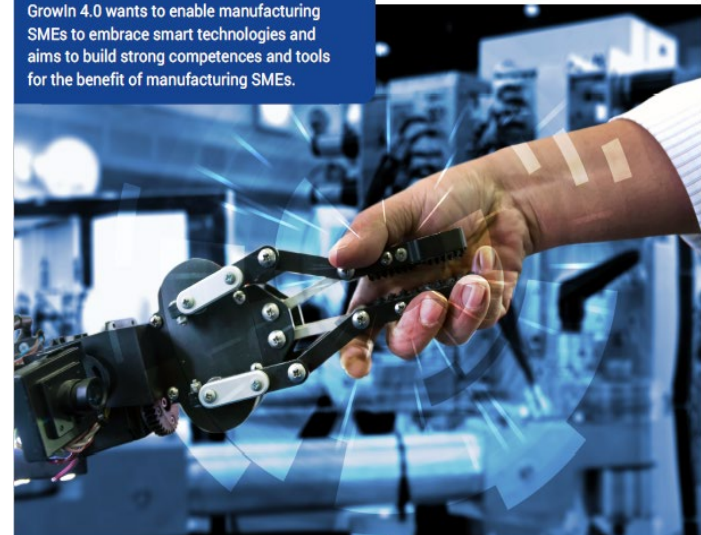


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Have you made the transition?

GrowIn 4.0 is taking you into the digital era!

GrowIn 4.0 wants to enable manufacturing SMEs to embrace smart technologies and aims to build strong competences and tools for the benefit of manufacturing SMEs.



Total budget received from the Interreg North Sea Region (2017-2020):
€ 1.803.797million.

Total Project Budget: €3.607.589 million www.northsearegion.eu/growin4

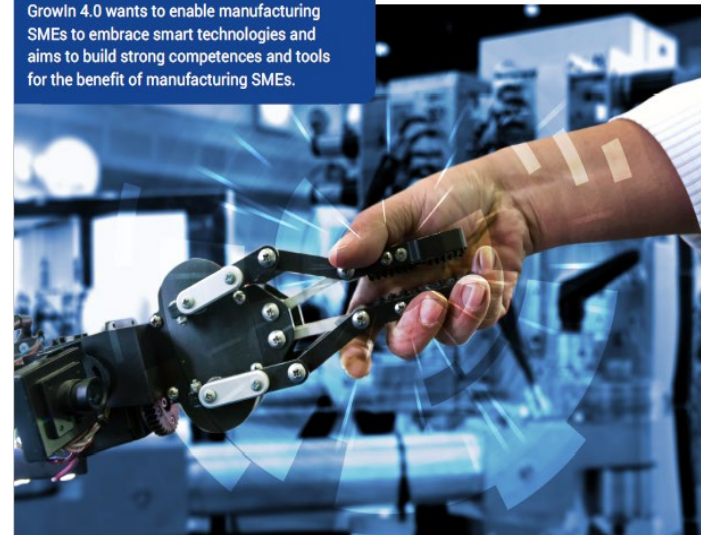
Agenda for the next 20 minutes

- ✓ Some interesting points of barriers
- ✓ The project GrowIn 4.0
- ✓ The project model
- ✓ Results and Findings
- ✓ Questions and Comments



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1 point



Most of the SMEs know they have to digitalize, but they do not know which processes they have to digitalize and when!





The degree of digitalization among SMEs is low. Most of the SMEs haven't started their digital journey yet, or are just in the beginning of it





The companies ask for:

- *a sense of perspective*
- *technological insight*
- *guidance*
- *facilitated processes*





*A lot of companies are looking towards consultants
but
do not forget your own resources and competences*



The key for success is often found among your own employees.....

GrowIn 4.0

Is a project which aims to build competences in SMEs concerning digitalization in 5 north sea regions



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GrowIn 4.0

The overall purpose is to increase the innovation within Industry 4.0 and in this way increase the possibility for growth in the SME segment.

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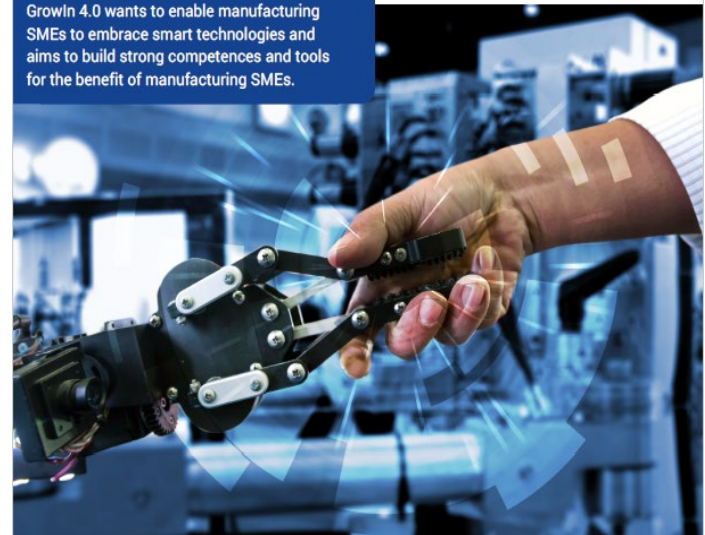
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GrowIn 4.0

The GrowIn 4.0 project is a cooperation between universities, local business associations and public authorities i from BEL, DEN, GER, NL and UK

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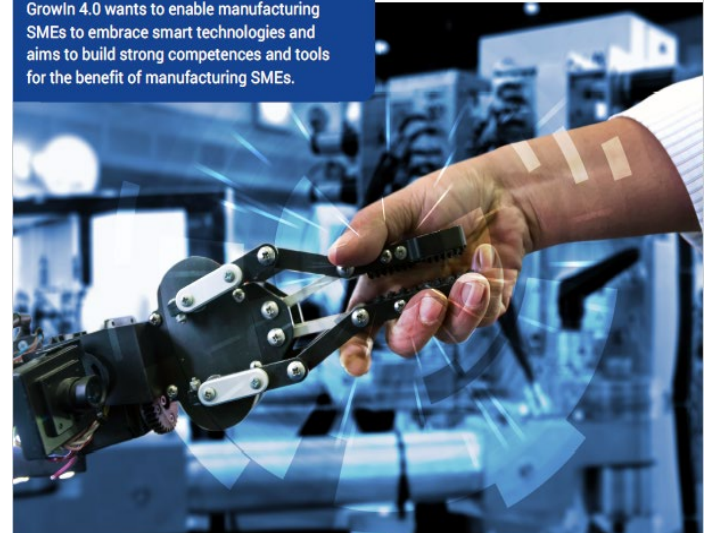
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The project aims to develop and test tools which can help SMEs in their digital journey

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5 work packages:

- ✓ *Administration & management: VIA (DEN)*
- ✓ *Dissemination: VOKA (BEL)*
- ✓ *Business models: Anglia Ruskin (UK)*
- ✓ *Technology: Ostafria University (GER)*
- ✓ *Competence development/organisational learning: Hanze (NEL)*



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Ostafria
SNN
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TWI
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Total project budget is 3,6 mio. Euro (50% self financing)



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The project period is four years until Oct. 31st 2021

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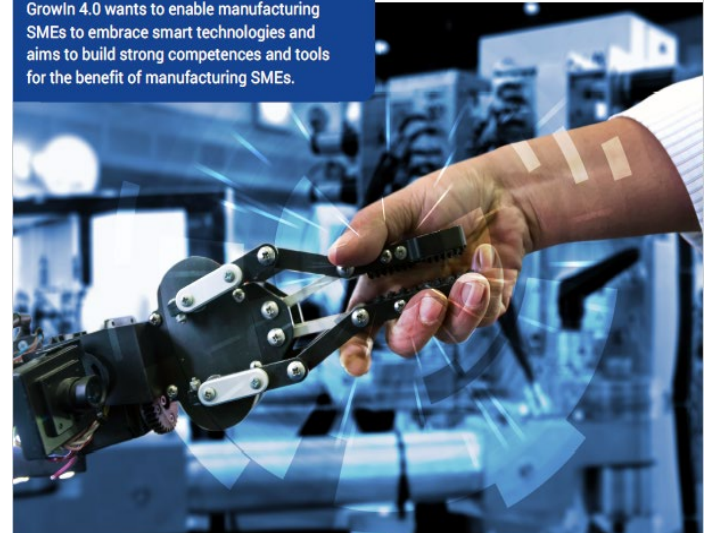


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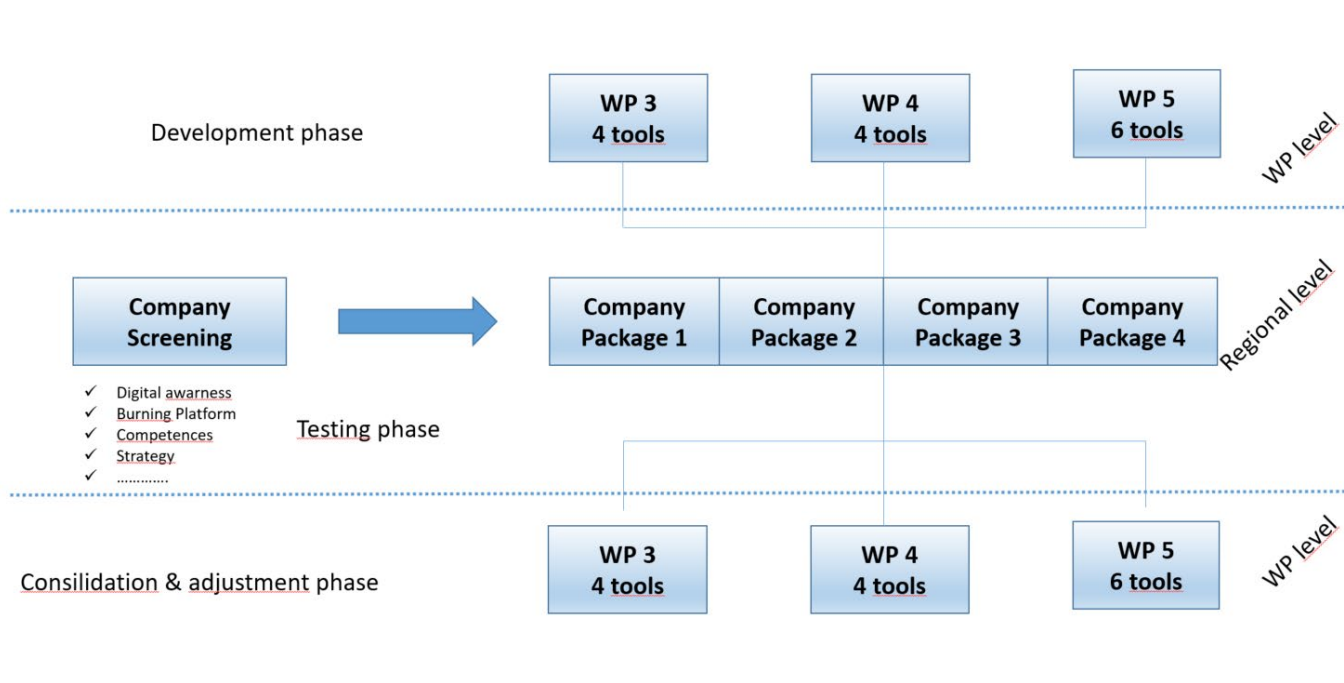
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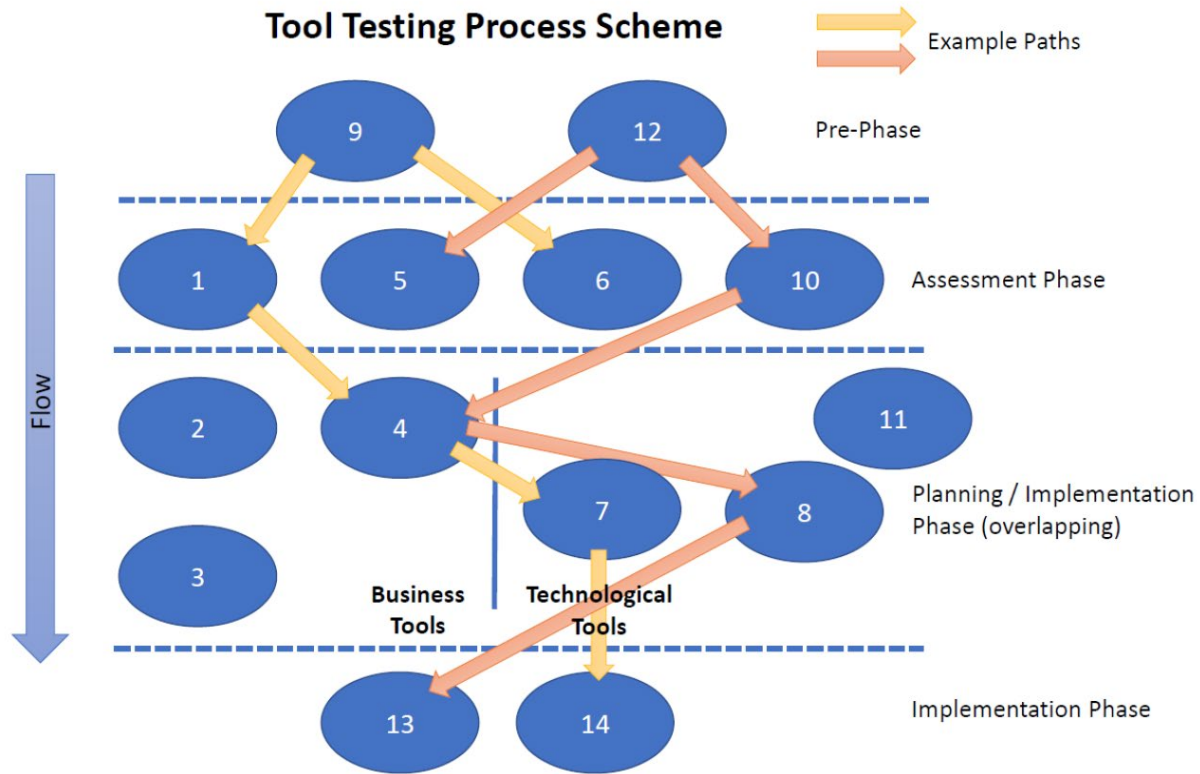
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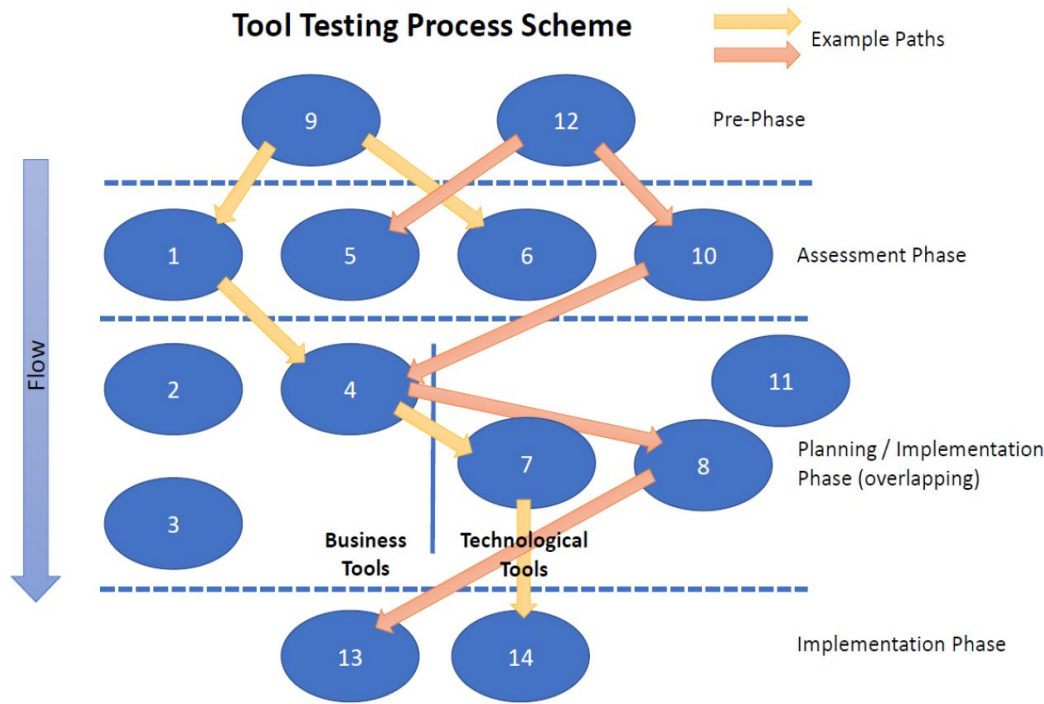
The "GrowIn 4.0 model"



THE TOOLS WAS MADE FOR DIFFERENT PHASES



14 tools



Tools Index:

WP 3 (Forretningsudvikling)

- 1) Combined PMG & PwC Tool
- 2) Benefits Identification
- 3) Benefits Monetising / EVA
- 4) Benefits Tracking & Management

WP 4 (Technologi)

- 5) Made Different
- 6) IMPULS industry 4.0 Readiness OSC
- 7) Innovation Camps
- 8) CDR Facilitation (Collab.)

WP 5 (Integration)

- 9) RoSF Game
- 10) RoSF Assessment
- 11) Big Data Game
- 12) Transition Workshop
- 13) Job Openings
- 14) Career Up

The selection proces



Original tools

- 1) Assessment & readiness
- 2) Benefits Identification
- 3) Monetising benefits
excel
- 4) Economic Valued Added
- 5) Made Different
- 6) IMPULS industry 4.0
Readiness OSC
- 7) Innovation Camps
- 8) CDR Facilitation (Collab.)
- 9) RoSF Game
- 10)RoSF Assessment
- 11)Big Data Game
- 12)Transition Workshop
- 13)Job Openings
- 14)Career Up

Test and selection

Net list of tools (Oct. 31 2021):

- 1) Assessment & readiness
- 2) Benefits
identification/tracking
- 3) Rate of Investment
- 4) Made Different
- 5) IMPULS industry 4.0
Readiness OSC
- 6) Innovation camps
- 7) Technology catalogue
- 8) RoSF Game
- 9) RoSF Assessment
- 10)Big Data Game
- 11)Transition Workshop
- 12)HR tool

Examples

IMPULS

Industrie 4.0-Readiness-Check
15.11.2019 11:38

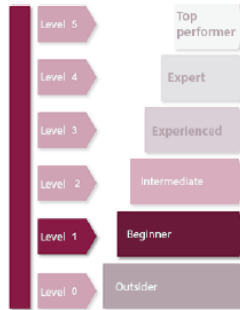
Evaluation of Industry 4.0 Readiness Check

Thank you for taking the time to complete the VDMA Industry 4.0 Readiness Check. Your results and your comparison group are outlined below. We also highlight specific measures you can take to improve and expand your Industry 4.0 readiness.

Overall evaluation

Your company is ranked at level 1 in the overall evaluation.

Your readiness scores in the six dimensions of Industry 4.0 are as follows:



- Strategy and organization: Level 2
- Smart factory: Level 0
- Smart operations: Level 0
- Smart products: Level 0
- Datadriven services: Level 0
- Employees: Level 2

Overall (weighted): 0.866 in keeping with level 1

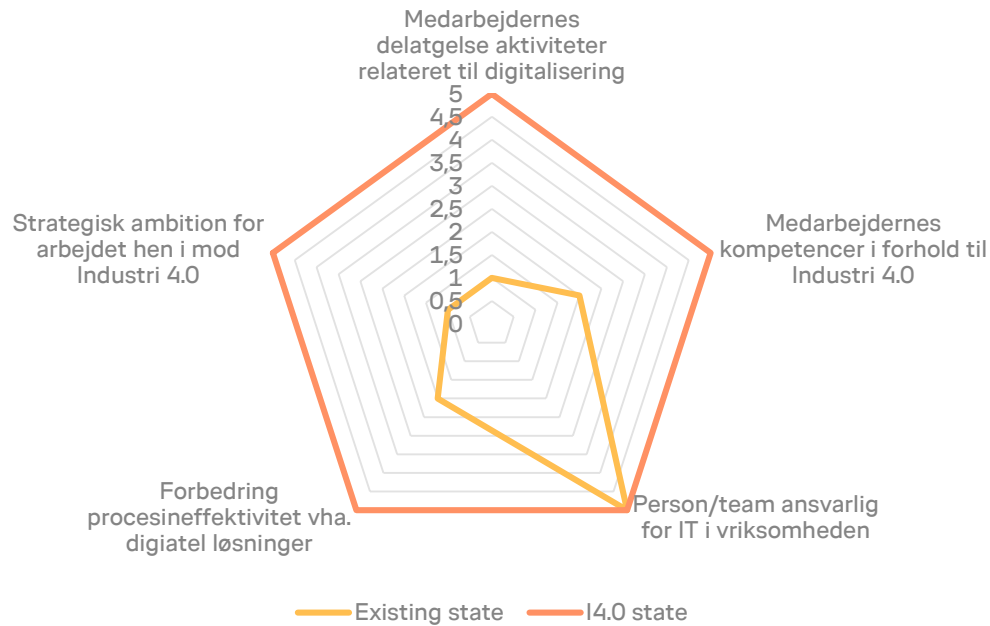


ADMA, Smart Factory Assessment

SMART FABRIKSUVURDERING - Gør din fabrik til en SMARTERE fabrik.					
Industri 4.0, GrowIn 4.0 Digital Assessment, Northern Netherlands Region of SMART Factories, version 2.0, Dezent 15 Dansk of VIA University College /@vha.dk, @vha.dk, Date: 10.11.2018					
-----Firma----- -----Kompetence-----	Traditionel firma som er ophøvet digitaliseret/automatiseret uden integreret kontrol	Avanceret firma som er digital/automatiseret uden integreret kontrol	Avanceret firma som er digital/automatiseret med formaliseret integreret kontrol (EDI)	SMART (Intelligent) firma som er digital/automatiseret hvor leverandør og produkt vil blive digitalt forbundet	SMART (Intelligent) firma som er digital/automatiseret hvor leverandør og produkt er digitalt forbundet
Foretægsmodel Hvad er din foretægsmodel?	Konvuls salg. Kunden køber dit produkt. Eventuelle ekstra ydelser (såsom vedligeholdelse eller ændringer) faktureres separat.	Salg og opfølgning. Kunden køber dit produkt (med en serviceniveauaftale (SLA), hvorved der skrives tilgængelighed).	Sælg og del. Kunden køber dit produkt og får en service til brug af brugerdatabaser og brugerdatabaser.	Produkt som en ydelse. Kunden betaler for at bruge dit produkt som om det var en tjeneste (f.eks. af dig på basis af brugerdatabaser og brugerdatabaser). (Baseret på reelt forbrug).	Funktion som en ydelse. Kunden betaler en licensafgift for den funktion, som du leverer baseret på den bedste tilgængelige teknologi.
Produkt intelligent Hvor smart er dine produkter og /eller tjenester?	Modificerbart produkt: Produktet kan kun ændres af en specialist inden for den definerede funktionalitet.	Konfigurerbart produkt: Produktet kan ændres eller omkonfigureres lokalt af brugeren til de specifikke funktionskrav som brugeren har.	Tilsluttet produkt: Produktet kan overvåges og ændres online via IoT (fjernsupport), men den proces er ikke automatiseret.	Intelligent produkt: Produktet registrerer afviklingen og overdrager data til brugeren via IoT. Indgreb er stadig manuelt.	Autonomt produkt: Produktet tilpasser sig løbende til skiftende omstændigheder og tilslutning til IoT. Det er smart og intelligent via IoT.
Produktudviklingsproces Hvordan organiseres udviklingen af produkter og fremstillingsprocesser?	Ad hoc, udført af håndværkere. Ingen gode ideer til standardisering af produkt og digitale værktøjer.	Planlagt, baseret på forslag og /eller, men professionelt udført. Standardiseret, dokumenteret, udnyttede produktmoduler mv.	Planlagt, baseret på systemisk oplysning om forskning og udvikling på strukturerede data. Understøttet af avancerede værktøjer, f.eks. Design af eksperter.	Kontinuerlig og digitaliseret proces, baseret på modelbaseret systemteknik. Validering ved prototyper.	Kontinuerlig, præcisionsorienteret fremstillingsproces, selv-lærende produkter og digitale tvillinger. Rigtige objekter og processer.
Relationer Hvor godt er forsyningskæden forberedt og afstemt internt / eksternt?	Interne processer er kun delvist digitalt forbundet. Så der er ingen integreret kontrol.	På virksomhedsniveau, er alle processer (planlægning, produktion mv.) digitalt forbundet, men uden integreret kontrol.	På virksomhedsniveau: 100% siren tilslutning, integreret drift og oplysning.	Tilsluttet forsyningskæde. Alle aktører (såsom leverandører og producenter) er digitalt forbundet, med det ledende selskab.	Hjælp forsyningskæden er optimalt integreret i cyber (internet) fysisk system, som er decentralt styret.
Flexibilitet Hvor fleksibel er din organisation?	Processer er fastlagt. Ændringer er ikke realistiske på grund af høje omkostninger.	Ufleksibel. Ændringer er komplekse og skal udføres manuelt af eksterne specialister.	Flexibelt og automatisk. Ændringer er nemme at tilpasse sig egne specialister.	Flexibelt automatiseret. Ændringer anvendes autonomt.	Ingen begrænsninger. Selv-lærende struktureret produktionssystem.
Produktionsteknologi Hvor smarte er de produktionsværktøjer, der bruges?	Produktionsværktøjer er manuelt opstillet og programmeret. Optimeringer foretages ad hoc. Kæver ekspert hjælp.	Programmerne indlæses manuelt, hvorefter maskinen overtager konfigurationen. Processoptimering er planbaseret, men analyser / indsigter fra eksperter er styrende.	Produktionsværktøjer konfigureres og selv programmerer sig selv. Programmeringen er fudatormæssig baseret på tilgængelige digitale produktionsdata. Processoptimering udføres af eksperter baseret på tilgængelige procesdata.	Produktionsværktøjer konfigurerer sig selv, programmering er fudatormæssig baseret på den tilgængelige digitale produktionsdata. Processoptimering fremkaldes i realtid som et system, der via standardbyggede værktøjer.	Færdige (Autonome) maskiner og transportmidler er i stand til at genkende produktet selv. Konfigurerer sig selv baseret på den tilgængelige digitale produktionsdata og optimerer sig kontinuerligt og i realtid.
Produktion Hvordan produktionen styres og kontrolleres.	Planlægningen opdateres regelmæssigt. Store afvigelser er en daglig begivenhed. Processen er uforudsigelig.	Operationer baseret på feedback, men ikke i realtid. Uacceptabelt store afvigelser fortolkes manuelt, så udføres det er muligt.	Realtid operations management. Hurtig, pålidelig og fleksibel. Men analyse og justering skal udføres manuelt af specialister.	Realtid operations management. Hurtig, pålidelig, afviklingsforudsigelse og justering.	Realtid, autonome og selv-lærende operationer i hele forsyningskæden.
Dataindsamling Hvordan styres data og hvilken rolle spiller data i din virksomhed.	Transaktionsdata. Basale, procesdata samles lokalt ad hoc, og bruges kun til justering af processer. Adgang for specialister.	Databaserede. Basale procesdata hentes lokalt på projektbaseret (ad hoc) basis og analyseres for at løse specifikke problemer. Processer for understøttede indsigter fra specialister.	Data-drevne. Data optages struktureret pr. proces. Data er centraliseret lagrede. Data er funderet på en platform, på ad hoc (rigtige) baseret på formål af den enkelte organisation. Data håndteres ikke kun om af problemer.	Intelligent. Fuld automatiseret scanning og analyse af høj kvalitet data. Central Intelligence (AI) rapporter og beslutninger og brugere bag dem. Koncepter er er klart og afvikles af specialister på grundlag af maskinlæring. Data træffer beslutninger baseret på konstant læring.	Intelligent-drevet. Færdige (Autonome) og tilsluttede data-besidlere (Acquisitions), analyse og feedback (præviser fra normen) udføres automatisk for alle forretningsprocesser, og forbundet med andre lag i forsyningskæden (AI) Cyber Physical System er næste fase.
Kvalitet Hvordan kontrolleres og garanteres kvaliteten?	Efterfølgende offline kontrol eller kvalitetskontrol i slutningen af produktionen.	Prøvebaseret, kvalitetskontrol på produktionen.	100% inline kontrol. Korrektioner anvendes til efterfølgende produkt / batch.	Fuld inline kontrol. Korrektioner anvendes til hele produkt / batch.	Kontrol af forventninger til at en given begivenhed vil ske (Færdigvare kontrol), modelbaseret og online. Så "nul fejl" opnås.
Vedligehold Hvordan udføres service og vedligehold?	Reparationer i stedet for vedligeholdelse. Forebyggende service ved faste intervaller for kritiske processer/komponenter.	Forebyggende vedligeholdelse på alle delprocesser baseret på faktiske brug- og serviceniveauaftaler (SLA).	Tilstandbaseret vedligeholdelse på de mest kritiske proceskomponenter.	Realtidstøttet baseret vedligeholdelse. Baseret på overvågning i realtid over alle delprocesser.	Forebyggende vedligehold. Baseret på fuld skala realtid, tilstand, overvågning og central intelligent.



Strategi & erfaring med Industri 4.0



The results



- ✓ *We have developed/tested 15 tools. 12 have survived*
- ✓ *We have made 256 tests in 118 companies*
- ✓ *We have been testing until the very end of the project. Testing is the same as learning*
- ✓ *We still work with how we can anchor our knowledge and the tools, so these can continue to make a difference for SMEs.*

Due to covid, we haven't quite reached the finishing line for the project. We have applied for a ½ year continuation.

We have learned that



The digital readiness and matureness by the individual company is essential for the choice of tools and methods

We have learned that



The tools have to be in the native language.

We have learned that



*Digitalising is good and necessary,
but
in the learning phase, it is the personal
contact and hands on which is important*

We have learned that



*Results are important
but
the process towards the results gives the learning*

We have learned that



*Interests and choice of methods/tools depends on,
in which region the company is situated*



<https://northsearegion.eu/growin4/>

Thank you and do you have any questions?

