Digital Readiness Program

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CSIRO Smart agri-food supply chain of the future

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Typical questions along Digital Transformation journey

How do we identify suitable partners for collaboration ?

How do we create buy-in on this digital change from everyone involved ?

Should we build in-house skills on digital technologies ?

What skills do we need ?

Should we buy a digital solution or build in-house ?

How much will it cost ?

How do we quantify the benefits ? How do we justify return on investment ?

Where do we start ?

How do we priortise opportunities ?

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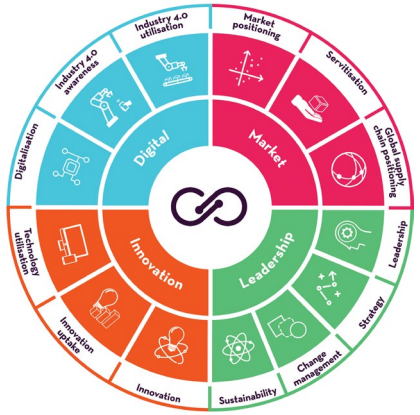
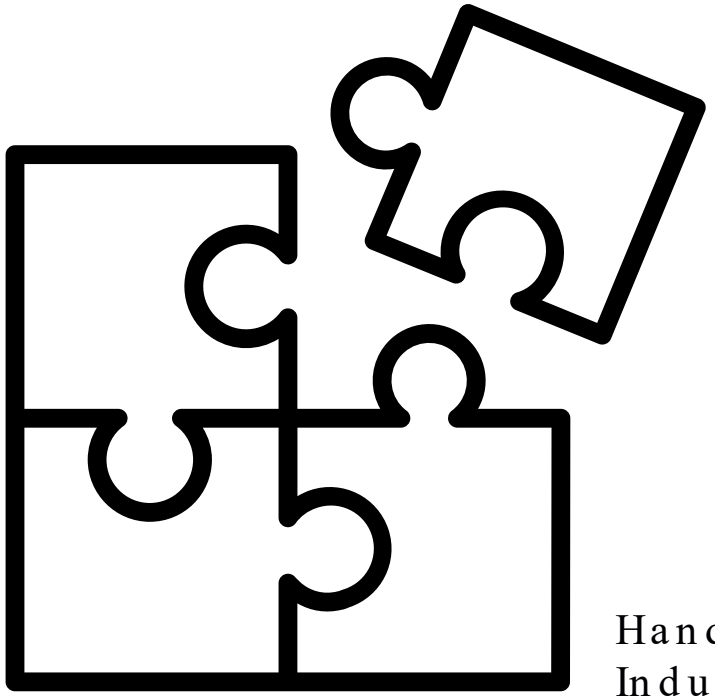
Industry 4.0 Business Readiness program



futuremap® Industry 4.0 awareness workshops



Industry 4.0 training webinars

Hands-on experiential Industry 4.0 training

futuremap® Industry 4.0 Business Readiness modules

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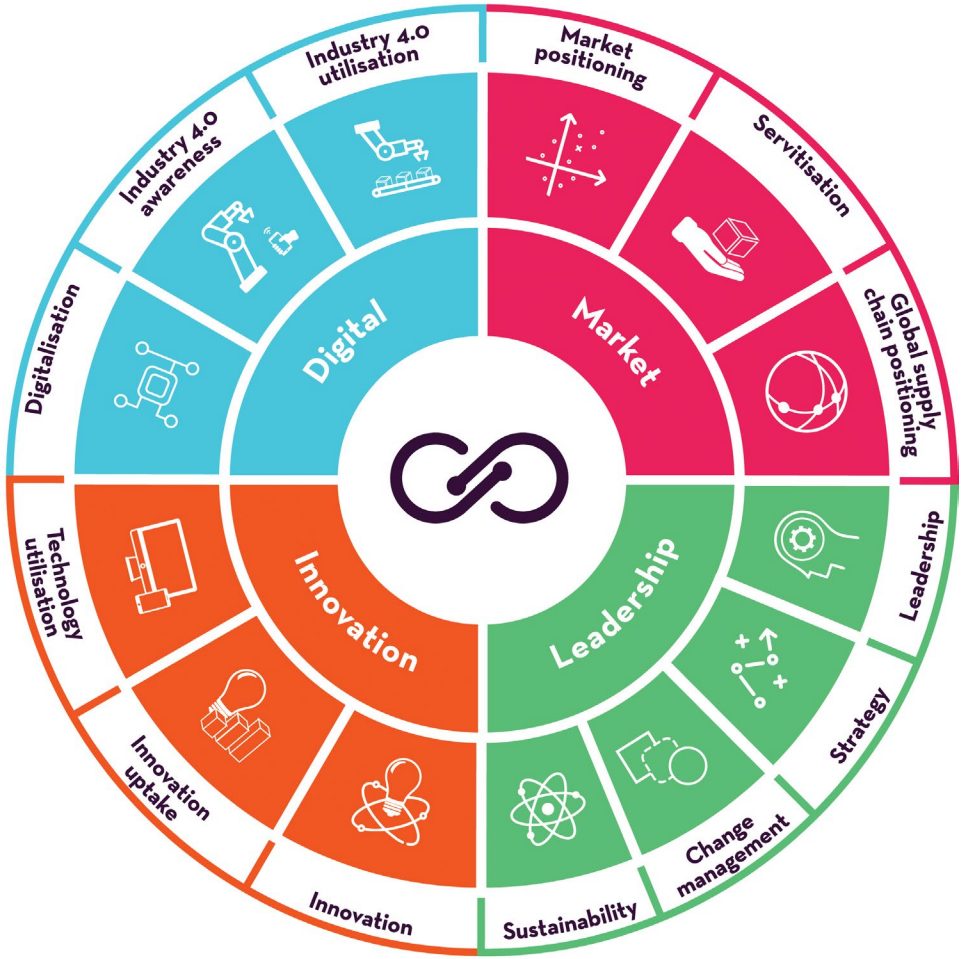
futuremap® Industry 4.0 awareness workshop

A self-diagnostic tool designed to help you assess your business' current capabilities and raise your awareness and understanding about the opportunities Industry 4.0 and digitalisation can create for your business in relation to the following areas:

- Market positioning
- Leadership, strategy and change management
- Innovation and use of technology
- Digital manufacturing (Industry 4.0)

Typically delivered through an interactive workshop, futuremap® generates a point-in-time assessment and report that identifies opportunities for growth and potential investment. The report also outlines educational materials and a broad ecosystem of supporting organisations and programs.



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Industry 4.0 Business Readiness modules

Module A

Smart Factory

helps to increase your Industry 4.0 process & production readiness

Module B & C

Smart Products & Strategy road- mapping

Module D

Servitization

attaching Advanced services with your manufactured products

Best results are achieved by engaging with each of the three modules, however each module can be completed individually.

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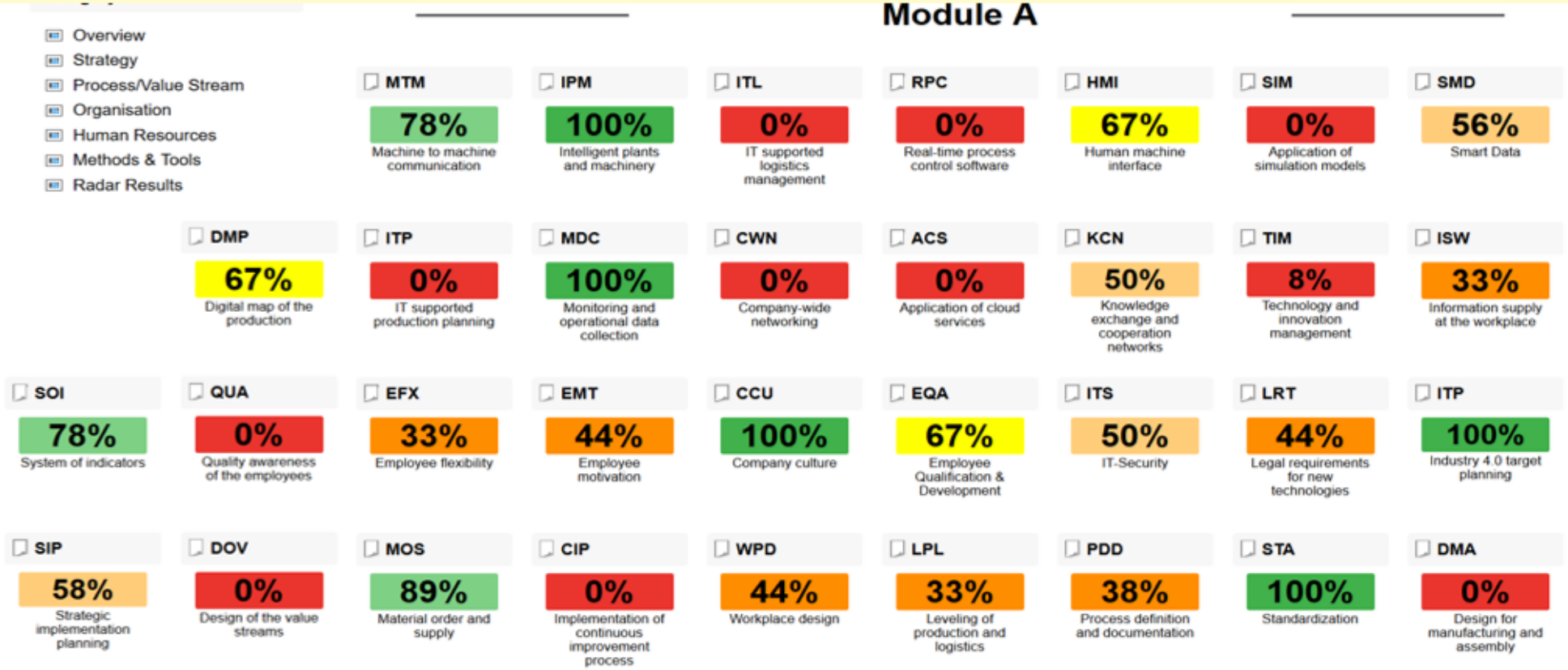
Industry 4.0 Readiness Assessment Module-A

The **5 overarching lenses** are broken down into 33 smaller lenses (called main-indicators). These are shown in the dashboard below. The results of the assessment are represented in the dashboard below.



33 Main-indicators

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Industry 4.0 Readiness Assessment Module-A

Each of the 33 main-indicators is further broken down into sub-indicators. Overall, there are **more than 100 indicators** a businesses maturity is assessed on. In the example below, we reveal the sub-indicators for main – indicator **DMP** (Digital Map of Production).

Me	Title	Digital map of the production		Maturity Level 1	2	3	4		
	Definition	Digital image of machines, material flows and production orders							
	Specific Target	Complete transparency of production orders and means of production							
1	Machine status	Display of different machine-relevant features	1	The status of a machine has to be read manually at the machine.	The status of a machine is apparent from outside or easily apparent, e.g. by Andon.	The status of a machine can be checked digitally and with a time lag.	The status of a machine can be checked digitally and can be retrieved by different terminals.		67%
2	Digital factory layout	There is a digital factory layout.	2	There is no digital factory layout.	There is a digital factory layout with low level of detail.	There is a digital factory layout with high level of detail.	There is a digital factory layout with high level of detail. Automatic updating of the digital image takes place regularly.		
3	Transparency of material flows in real time	Material is locatable within production process	4	Material flow is intransparent. Movements between storage and line are not tracked.	Slightly intransparent material flow since the material is not scanned consistently or scanning processes are incorrect.	Material flow is more transparent, sometimes the status is indicated by the system with delay.	Material flow is transparent. The material as well as semi finished products can be localized at any time in manufacturing.		
4	Progress of customer order	Customers can track the status of work progress	2	No insight into order status is possible.	The customer can find out the status of his order only by manual request.	The customer can retrieve the status of order processing on a daily basis.	The customer can query a near real-time status of the order at any time.		
5	Research & Development	Evaluation of production data within the context of feedback loops for new product development	4	There is no backflow of production data into development department.	Production data are almost exclusively evaluated in case of problems and only sporadically passed to the development department.	Feedback loops are conducted at longer intervals (e.g. once a year).	Feedback loops are conducted after every new product development to guarantee CIP.	Feedback loops are employed after every product development Fortnightly meeting, 6 monthly meeting also employed	
6	External data availability	Availability of data out of the company	4	Data and information can only be retrieved from the company location.	Few, uncritical data and information can be retrieved also from outside the company location.	Almost all data and information can be retrieved by selected employees also from outside of the company location.	All data and information can be retrieved by the majority of employees also from outside of the company location.		
7	Short-term possibilities of modification	Change of product features after incoming order during production	4	Customer orders can only be changed up to the freeze point and the freeze period is one month or more.	Customer orders can be changed within a moderate freeze period, at least on a small scale.	Customer orders can be changed significantly within a short freeze period.	Freeze times are reduced to a minimum and changed of the customer order are always possible until the start of particular production steps.		

Sub-Indicators

Indicator score

Maturity score

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Industry 4.0 Readiness Assessment Module-A

- A **guided** and **qualitative** Assessment
- **Interview and Observation** based
- Realisation and analysis is conducted in **close cooperation** with the company
- A **high level of detail**
- **Company specific and holistic** evaluation

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Industry 4.0 Readiness Assessment Module-A

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DMP: Digital map of the production

Short Description

Digital image of the machineries, material flows and production orders

Objectives:

Complete transparency of production orders and production materials

Criteria

- Status of machinery
- Digital corporate layout
- Transparent material flows in real-time
- Progress of customer orders
- Research and development
- External data availability

Impact

Description
Longer reaction times due to missing
Tracking and tracing of material and transparency of flow.
Local machine displays limit potential of visual management.
Increased efforts to manage change and make decisions with an outdated detail layout. Simulation possibilities limited with a static layout.
High manual effort to service customer queries on product availability.

Observations

Description
Some equipment has capability for remote monitoring, however it is not utilised.
Machine status, in general, is discernible at the machine only. Few equipment has remote status viewing.
Plant layouts are available in digital format, but are generally outdated.

Name	Description	option 1	option 2	option 3	option 4
Title	**Digital map of the production**				
Machine status	Display of different machine-relevant features	The status of a machine has to be read manually at the machine.	The status of a machine is apparent from outside or easily apparent, e.g. by Andon.	The status of a machine can be checked digitally and with a time lag.	The status of a machine can be checked digitally and can be retrieved by different terminals.
Digital factory layout	There is a digital factory layout.	There is no digital factory layout.	There is a digital factory layout with low level of detail.	There is a digital factory layout with high level of detail.	There is a digital factory layout with high level of detail. Automatic updating of the digital image takes place regularly.
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External data availability	Access to data from outside of the company	Data and information can only be retrieved from within the company environment.	Few, uncritical data and information can be retrieved also from outside the company environment.	Almost all data and information can be retrieved by selected employees also from outside of the company environment.	All data and information can be retrieved by the majority of employees also from outside of the company environment.
Short-term possibilities of modification	Change of product features after incoming order during production	Customer orders can only be changed up to the freeze point and the freeze period is one month or more.	Customer orders can be changed within a moderate freeze period, at least on a small scale.	Customer orders can be changed significantly within a short freeze period.	Freeze times are reduced to a minimum and changed of the customer order are always possible until the start of particular production steps.

This is a one-page snapshot of the overall report provided to businesses, showing a **summary of one main-indicator**; in this case for **DMP**.

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Industry 4.0 Readiness Assessment Module-A

Another output of the report provided to businesses, is the identification of **strategic action areas**. We aim to provide **4 to 6 areas of focus**, which if implemented, will raise the overall maturity of the business with respect to the main-indicators.

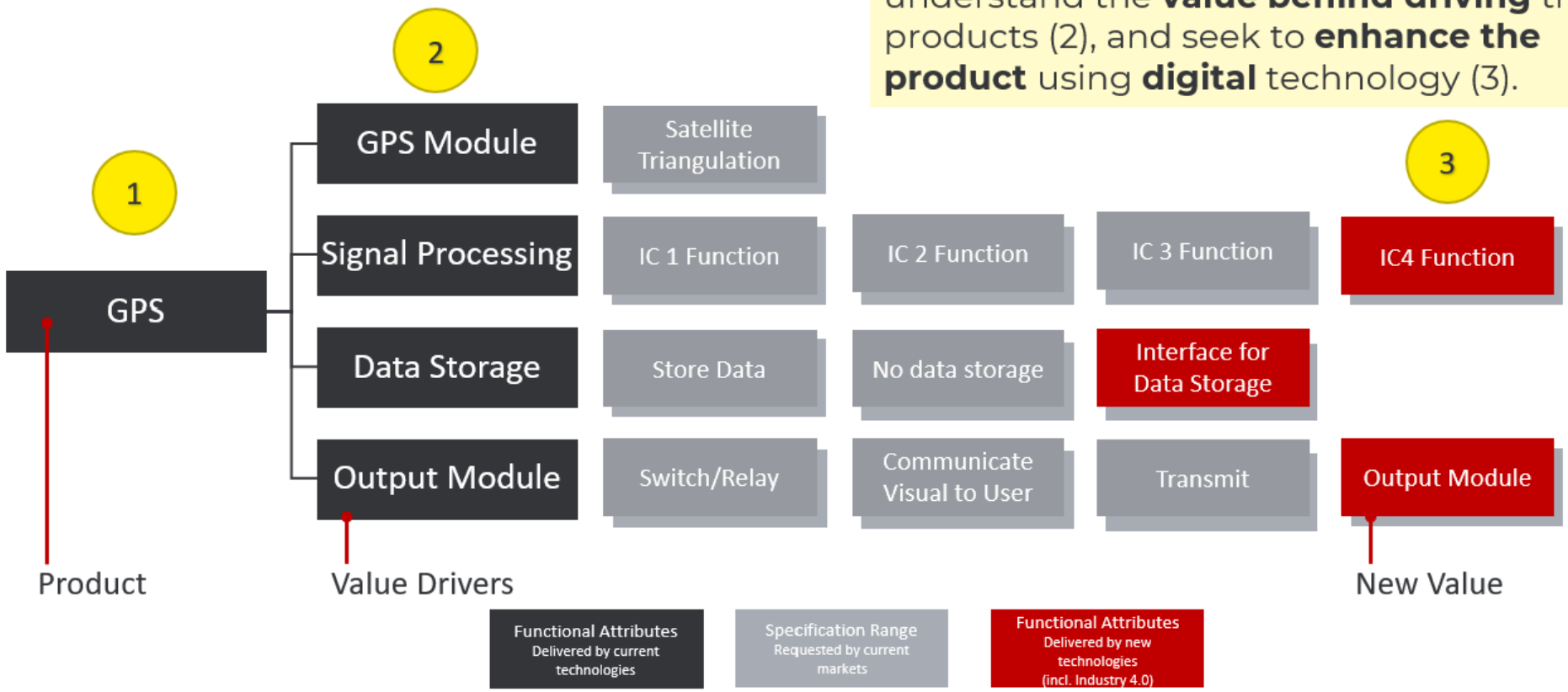
Shown here is an example of what an area might look like.

Strategic Action Area

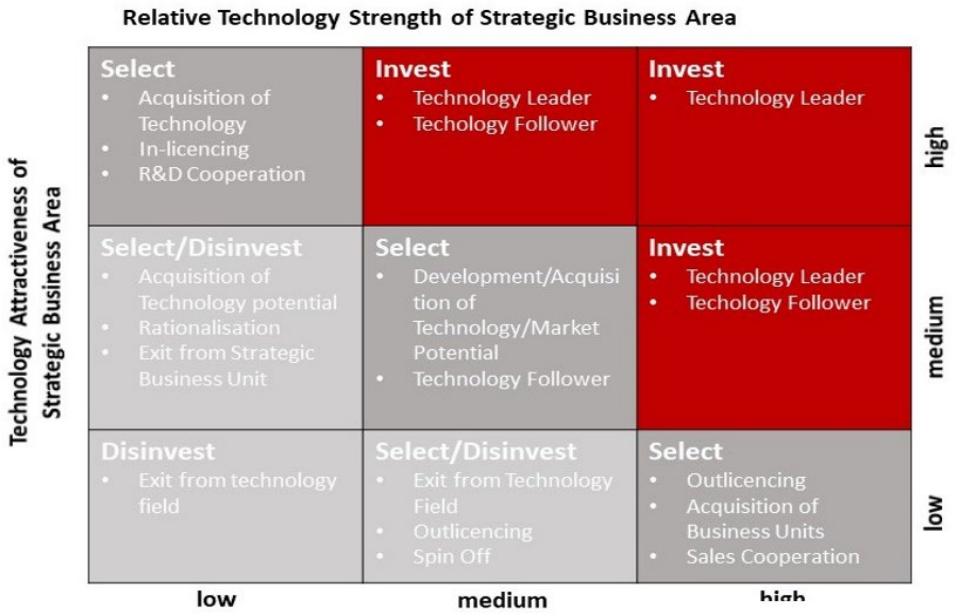
- Monitor & root cause **manufacturing waste** on a continuous basis
- **Improve resource utilisation**/next day rostering in production facility using real time production information
- **Optimise business operations** by adopting comprehensive levelling strategies
- **Reduce inventory & improve DIFOT** for consumables by monitoring and controlling productivity on a continuous basis through the use MES and expand the use of dashboard screens for improved transparency
- Install smart tracking and storage solutions to ensure **traceability** of work in progress

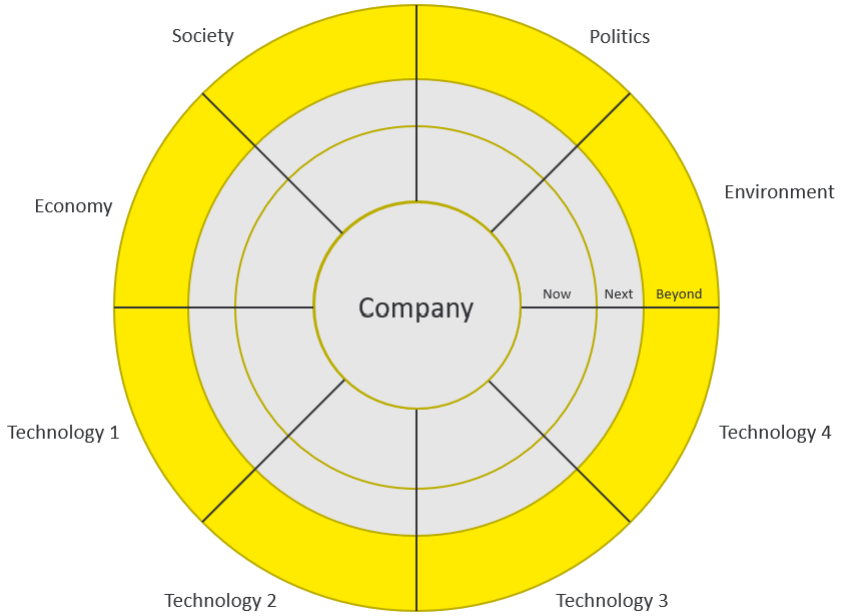
Module B & C overview

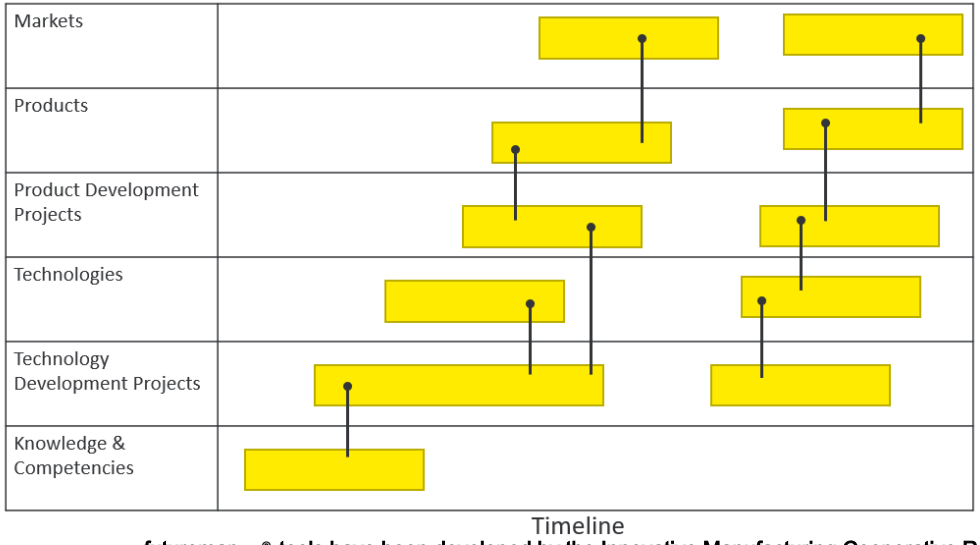
We examine a businesses' **product** (1), understand the **value behind driving** those products (2), and seek to **enhance the product** using **digital** technology (3).



Module B & C overview







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futuremap ® tools have been developed by the Innovative Manufacturing Cooperative Research Centre (IMCRC)

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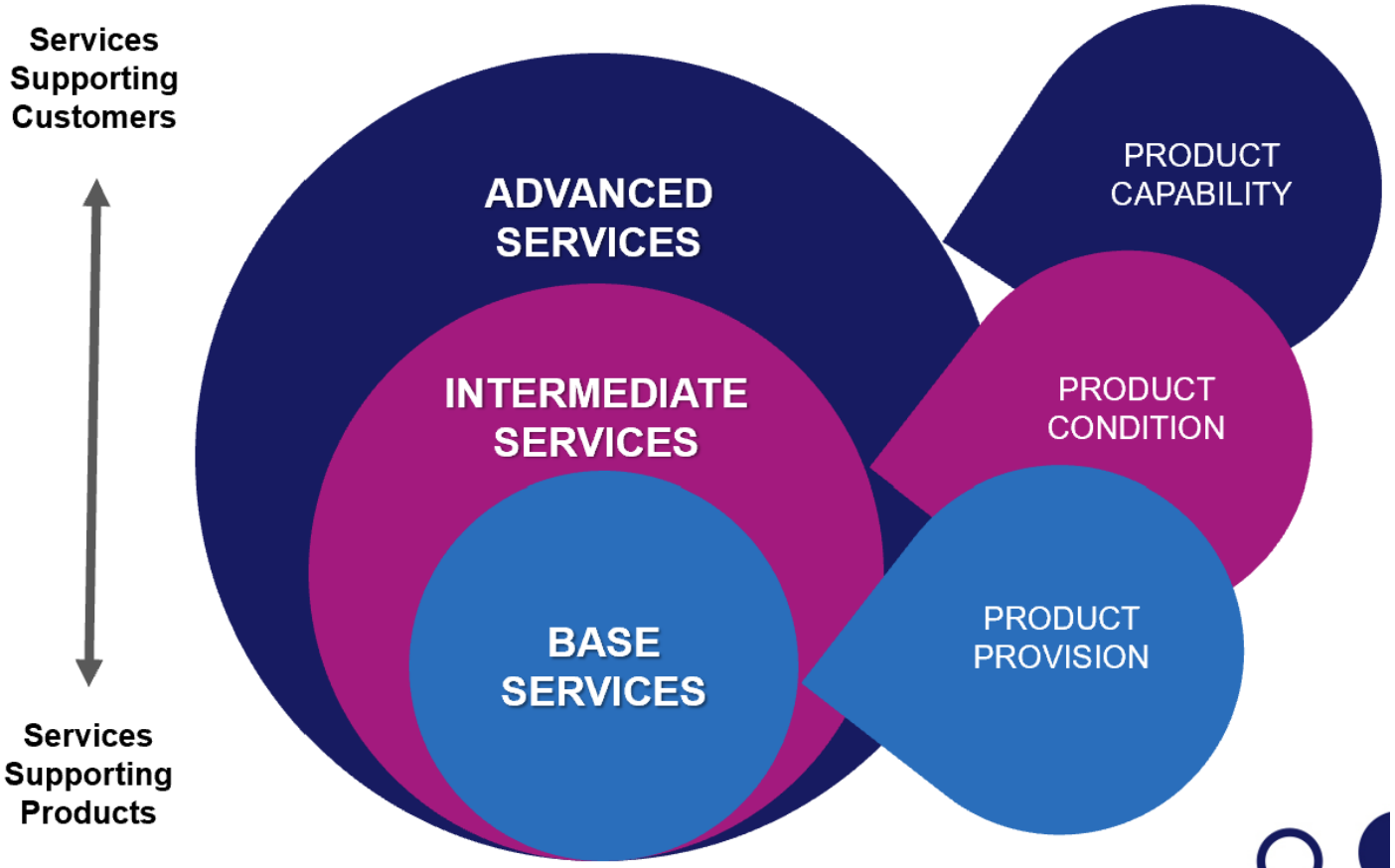
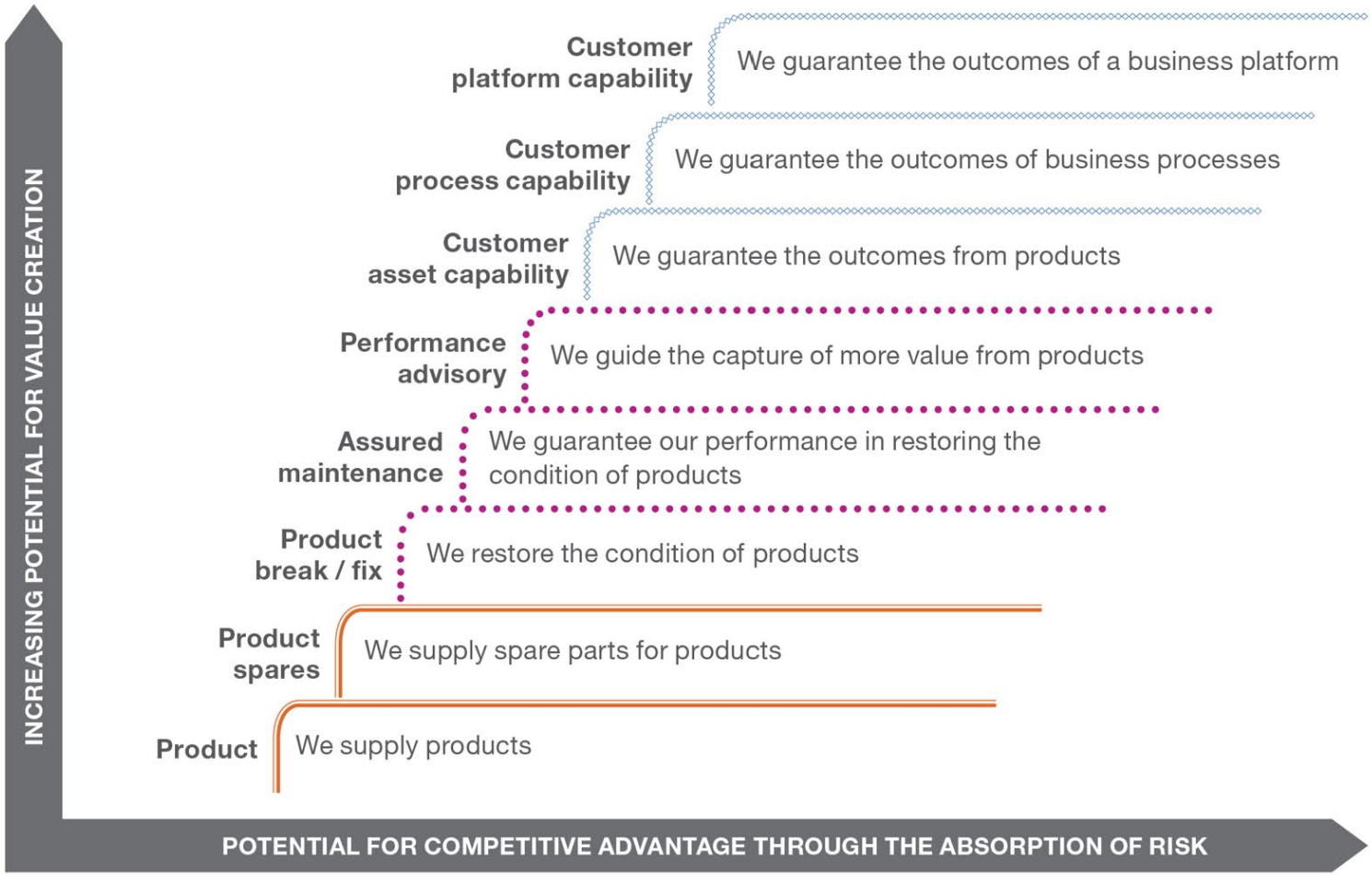
Module D – Servitization overview

How can we make our customers more successful?



Module D – Services staircase



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