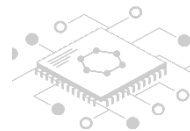


INDUSTRY 4.0 MATURITY INDUSTRY SURVEY INSIGHTS

CONDUCTED BY BECA AS PART OF THE CALLAGHAN INNOVATION
INDUSTRY 4.0 DEMONSTRATION NETWORK PROGRAMME

NOVEMBER 2020



CallaghanInnovation
New Zealand's Innovation Agency

 **Beca**

EMA+

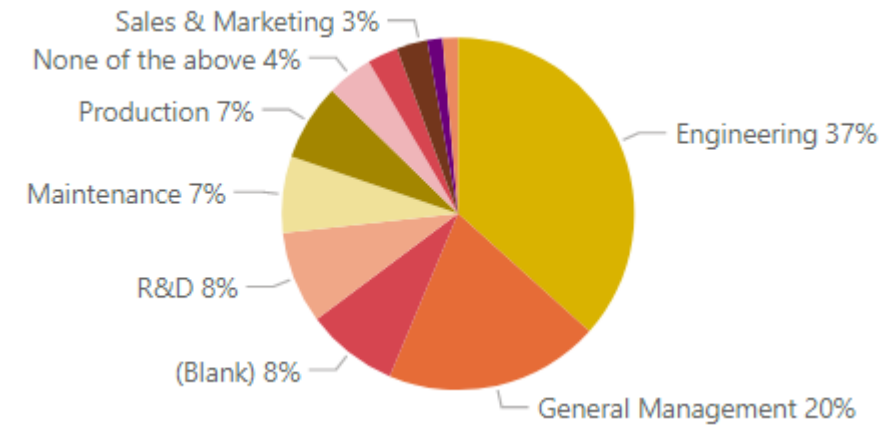
INTRODUCTION

Callaghan Innovation has partnered with Beca and the EMA to deliver their Industry 4.0 Demonstration Network Programme. The purpose of the programme is to **drive uptake of Industry 4.0 technologies** among New Zealand manufacturers and producers, as well as their future workforce, with the aim of **increasing productivity and global competitiveness.**

The purpose of this survey was to understand the barriers that NZ manufacturers and producers face when adopting new technologies, and the support they need to succeed. The results will inform the design of a 'Mobile Showcase' as part of the Callaghan Innovation Industry 4.0 Demonstration Network Programme. A similar survey is also being sent to schools and educators to map the digital maturity of NZ's future manufacturing workforce.

Beca has been engaged to lead and deliver the 'Mobile Showcase' aimed at increasing knowledge and interest in Industry 4.0 through a relevant and inspirational hands-on experience that encourages a broad range of people to engage, learn and imagine what might be possible through Industry 4.0.

Business function of respondents



Location of respondents



SURVEY DESIGN & STRATEGY BEHIND THE ANALYSIS

Industry uptake of Industry 4.0 (digital / emerging technology) solutions has observably widened over the past three years, with some New Zealand manufacturing/production companies actively adopting while others have yet to engage. We needed to understand the current state of industry maturity better if we were to design a Mobile Showcase experience that would allow companies to see a clear path to incorporating these technologies and realising the benefits they provide.

In designing the survey we set out to understand the following:

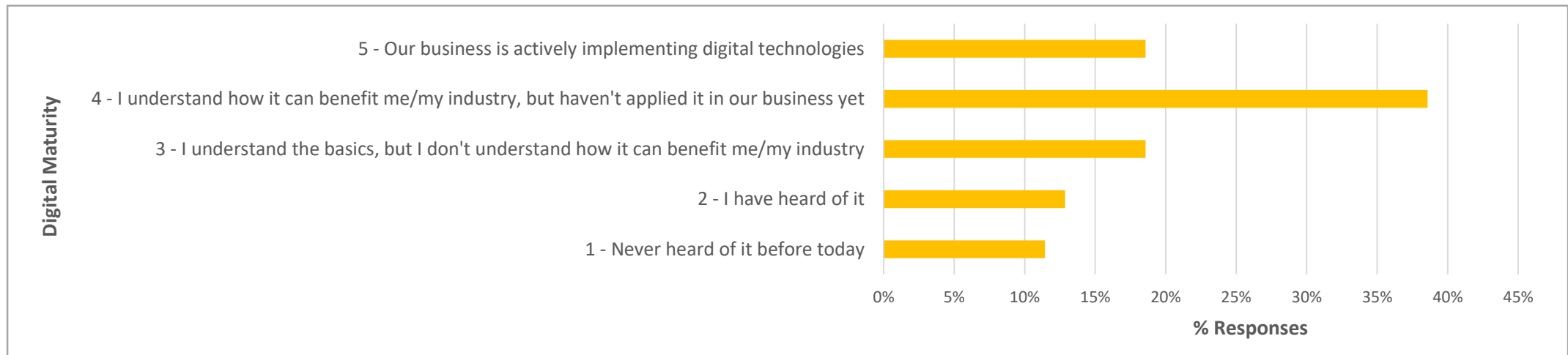
- **Existing level of adoption** of Industry 4.0 solutions
- **Existing level of awareness** of Industry 4.0 technologies and use cases (where in the business it could be used)
- **Barriers and support required** to adopt Industry 4.0 solutions
- Level of **confidence that the Company Strategy, Technology, and People are enablers** of successful implementation of Industry 4.0 solutions.

In compiling this analysis, in addition to informing our own Mobile Showcase design, we have sought to provide sufficient information to allow people to broadly align the maturity of their own organisation against a spectrum and thus start to understand the activities needed to increase their maturity based on what is working for others.



Current State – Existing Levels of Adoption

Our survey has shown significant differences in 'Digital Maturity' across the industry – of 71 respondents, the greatest number of people (around 40%) understood how Industry 4.0 could provide benefits but had not yet implemented it (described as 'Level 4' digital maturity below). A further 18% understood the basics (Level 3) and only 18% were actively implementing Industry 4.0 solutions (Level 5):



Although the remainder of survey questions provide industry-average metrics such as least/most adopted technologies or business function least/most-likely to adopt, the **greatest insights come from understanding the perspectives and needs of each digital maturity level.**



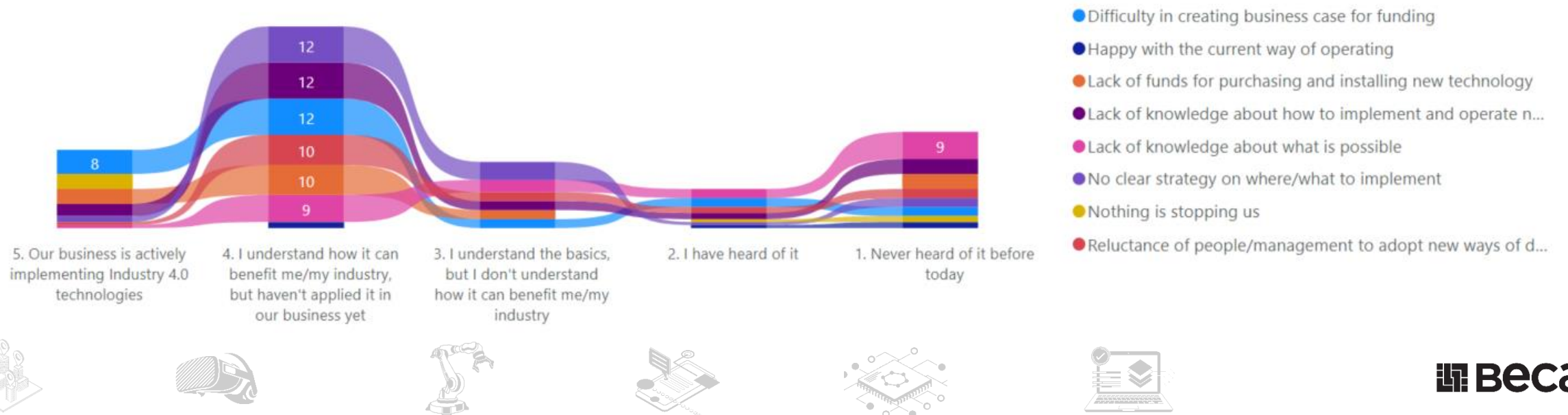
Current State – Factors Preventing Adoption

Assessing barriers to adoption (vertical axis below) relative to digital maturity level (horizontal axis below) reveals that each maturity level has very different needs that require addressing if they are to progress, for example:

50% of responses by people at **Level 5 digital maturity cite difficulty in creating business cases or obtaining funds** (although arguably this is also related to demonstrating business benefit), compared with only 33% of responses by people at the lower Level 4 digital maturity.

By contrast **49%** of responses by people at **Level 4 digital maturity are concerned that they have no clear strategy and a lack of knowledge**. Difficulty in creating business cases and obtaining funds are 3rd and 5th priority for them, suggesting it is not as simple as “throwing money at it”.

A lack of knowledge is of much less concern for those who are actively implementing Industry 4.0 compared to others



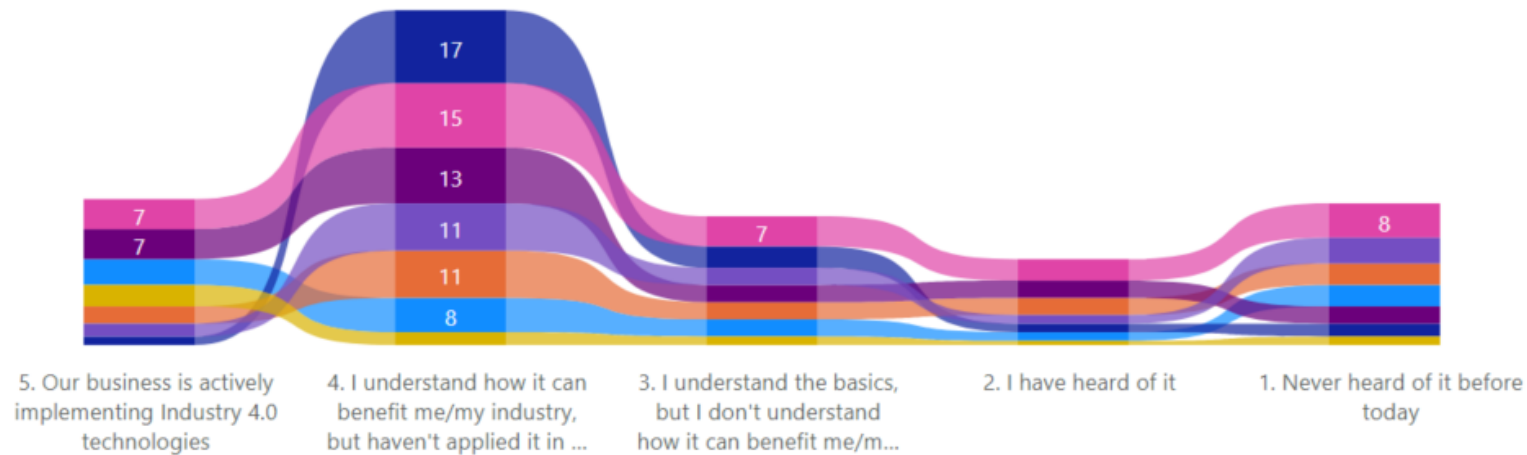
Current State – Support Required

When assessing the support required (vertical axis below) relative to digital maturity level (horizontal axis below) again we see that each group has very different needs:

- The **highest priority for people at Level 4 digital maturity is an assessment of the organisation's current state**, and advice on where to focus and what to implement
- **Both Level 4 and 5 want examples of successful case studies and the ability to experiment** in their own business (**41%** and **36%** respectively)

Access to funding (or ability to articulate business benefit) was a higher priority for people who are actively implementing Industry 4.0 compared to others

- Access to finance/funding
- Assessment of your organisation's current state and advice ...
- Education and training to your business
- Experimenting with new technologies within your business
- Highlighting successful Industry 4.0 implementations in NZ...
- Meetings and workshops with your senior leadership team ...
- Support for students and polytechnic institutes/Universities...



Current State – People, Strategy & Technology As Enablers

The level of confidence that a company's Strategy, Technology, and People can support successful implementation of Industry 4.0 solutions also differs significantly by digital maturity:

	Business strategy	Technology	People
Level 5 – Actively implementing	81% Confident	77% Confident	69% Confident
Level 4 – Understand the benefits but are not yet applying	39% Confident	46% Confident	39% Confident
Level 3 & 2 – Understand the basics/heard of it	47% Confident	50% Confident	44% Confident

All levels of digital maturity were least confident about the **ability of their people** to adopt Industry 4.0

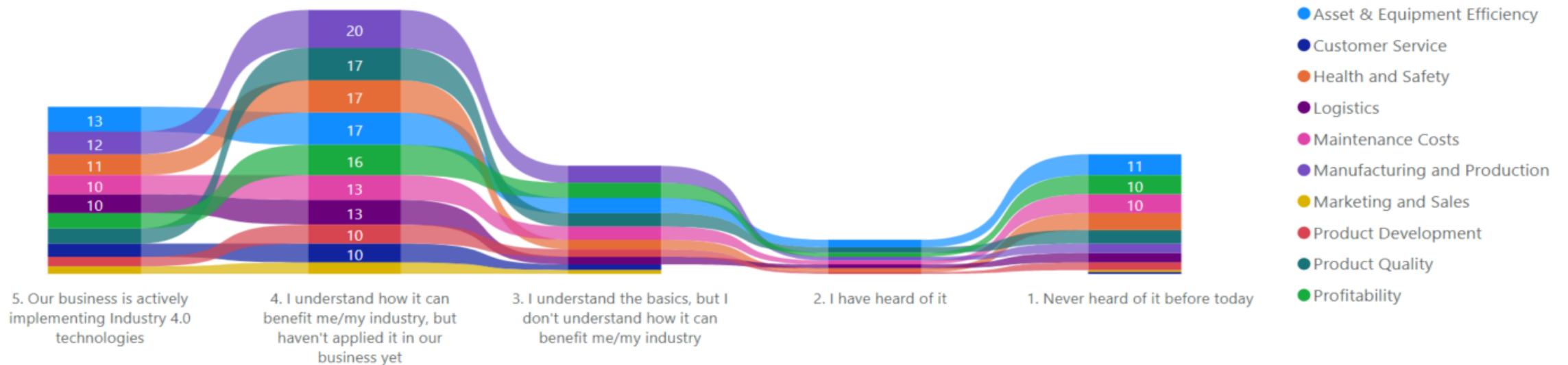
Most notably, those at Level 5 were **significantly more confident across ALL three factors**, suggesting that the age-old adage that "success breeds success" is a reality.



Current State – Applicability by Business Function or Metric

Responses to the question “Which business function/metric would you hope to improve by implementing Industry 4.0” were the most consistent regardless of digital maturity level:

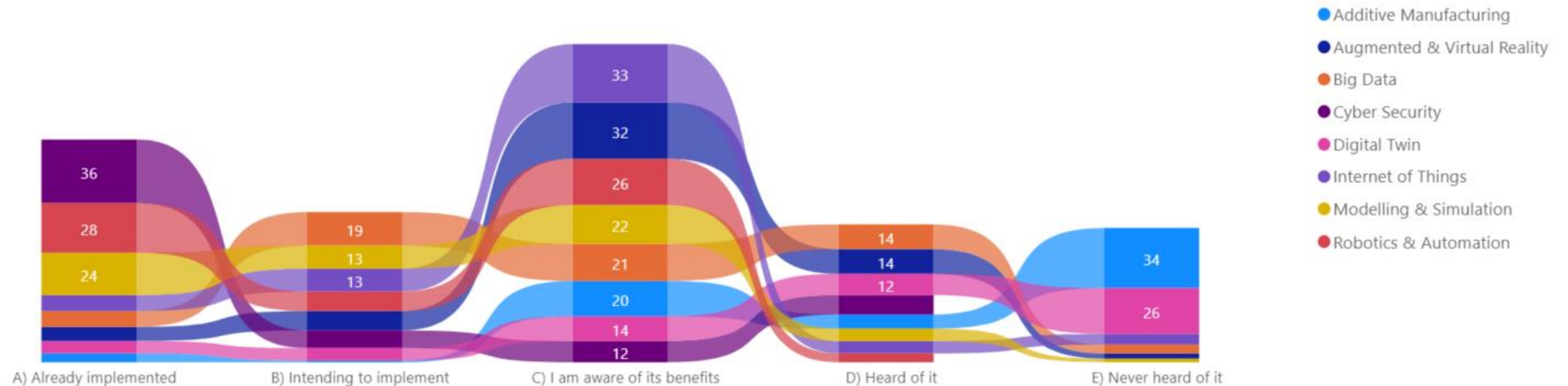
- **Most hope to improve engineering functions** (asset and equipment efficiency, manufacturing and production, health and safety) regardless of maturity, with maintenance improvement achieving mid-level support
- **Customer-facing functions (marketing and sales, customer service, product development) score lowest** – this may be due to the dominance of respondents with engineering-related roles, or alternatively a lower level of understanding of how Industry 4.0 solutions can be used to support revised business models. (Note that [CSIRO's Advanced Manufacturing Roadmap](#) “smile curve” suggests that focussing on pre- and post-production processes will yield the highest value.)



Current State – Familiarity With Technologies

In this question, respondents were asked to rate their level of familiarity for each Industry 4.0 technology, thus illustrating the “adoption maturity” of various technologies. This graphic shows the adoption maturity of the technology, rather than the digital maturity of the respondent, for example:

- 50% of respondents have implemented cyber security technologies
- Only 13% of respondents have implemented Internet-of-Things solutions, although nearly half of respondents are aware of the benefits
- 47% and 37% of respondents have never heard of Additive Manufacturing and Digital Twins respectively



Moving Forward – Preferred Learning Methods

Learning preferences were similar across all levels of digital maturity:

	Face-to-face sessions at site	Learning material with online facilitator	Live webinars	Personalised online content
Level 5 – Actively implementing	69% Effective	54% Effective	54% Effective	50% Effective
Level 4 – Understand the benefits but are not yet applying	82% Effective	42% Effective	52% Effective	48% Effective
Level 3 & 2 – Understand the basics/heard of it	82% Effective	38% Effective	41% Effective	38% Effective

All levels of maturity favoured face-to-face sessions at their site

37% of respondents said Yes to participating further in the design of the Mobile Showcase



TAKEAWAYS

Foremost there are significant differences in 'Digital Maturity' across the industry. Understanding the perspectives and needs of each digital maturity level yields important insights into how to successfully drive the uptake of Industry 4.0 solutions.

CURRENT STATE Only 18% of respondents are implementing Industry 4.0 solutions (described herein as Level 5 digital maturity). Nearly 40% of respondents understand the benefits but are not yet implementing Industry 4.0 solutions (described as Level 4 digital maturity).

FACTORS PREVENTING ADOPTION People at Level 5 are most concerned with the difficulty in creating business cases and obtaining funds. By contrast Level 4 is more concerned that they have no clear strategy and a lack of knowledge – throwing money at them isn't enough.

SUPPORT REQUIRED Correspondingly, for Level 4 the highest priority was an assessment of the organisation's current state, and advice on where to focus and what to implement. ALL levels want examples of successful case studies and the ability to experiment in their own business.

PEOPLE, STRATEGY & TECHNOLOGY READINESS ALL levels of digital maturity were least confident about the ability of their people to adopt Industry 4.0. Most notably, those at Level 5 were significantly more confident across ALL three factors, suggesting that the age-old adage that "success breeds success" is a reality.

ADOPTION BY BUSINESS FUNCTION Most hope to improve engineering functions, whilst improvement of customer-facing functions scored lowest. This may be due to the dominance of respondents with engineering-related roles, or alternatively a lower level of understanding of how Industry 4.0 solutions can be used to support revised business models.

PREFERRED LEARNING METHOD GOING FORWARD ALL levels favoured face-to-face sessions at their site. There was a high level of engagement in participating further in the design of the Mobile Showcase, indicating high levels of engagement by industry.



APPENDIX – SURVEY QUESTIONS

1. What is your level of awareness of Industry 4.0?
2. Which of the following technologies have you heard of before?
3. Which business function/metric would you hope to improve by implementing Industry 4.0?
4. How confident are you that your business has what it takes for successful Industry 4.0 adoption (strategy, people, technology)?
5. What is preventing your organisation from implementing Industry 4.0 technologies?
6. What sort of support would help you engage with Industry 4.0?
7. How effective do you think the following methods are in learning about new technology and the possibilities for your organisation?



ABOUT

Beca: One of Asia Pacific's largest independent advisory, design and engineering consultancies, we empower innovation to help our clients shape communities, optimise their assets and streamline their operations. Beca has been delivering Industry 4.0 solutions across New Zealand, Australia and Singapore for over 5 years, using our own practical experience to drive digital transformation to significantly improve business performance.

Sue Bradley, GM Industrial Digital: Sue leads Beca's global Industry 4.0 Advisory Team, with business operations and services in Australia, New Zealand and Singapore. Sue works regularly with client groups to help them on their journey to a digital future. She has 20 years' experience in business operations, project advisory and emerging technologies. Sue is currently Project Director for the Callaghan Innovation I4.0 Mobile Showcase.



**make
everyday
better.**