

PLOTTING YOUR INTELLIGENT SYSTEMS JOURNEY

The DNA of successful intelligent systems thinking, development, deployment, operations and business models for the new machine economy.

Forbes

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PROLOGUE

Plot a pathway to your intelligent systems world

Research with leaders in seven major industries illustrated the desire, the design, and the pressure to put into place intelligent systems capabilities for their products, services, and customers.

This intelligent systems mapping system is based on algorithms derived from 506 in-depth interviews with the C-suite, executives, and leaders in companies that are on their intelligent systems journey.

The models you will see in this report will enable you to do five distinctive things in near real time:

- Get a simple way of seeing which segment best illustrates where you are across hundreds of appropriate variables.
- Start to understand the importance of all the components necessary for building your intelligent systems success.
- Calibrate on multiple variables to see where you are compared to peers on this journey.
- Understand where you should be thinking about starting, developing, increasing, or even decreasing investments over time.
- Build a basic blueprint based on data, models, and comparative choices in near real time.

USING THIS MODEL

Mapping where you are on this journey to an intelligent systems world

Executive leaders' opinions

Forbes interviewed 500+ executives and leaders in major corporations in manufacturing, aerospace and defense, telecommunications, medical technologies, technology hardware, energy and utilities, and automotive industries. These leaders described where they are on their intelligent systems journey.

Detailed research design

Through strict research screeners and discrete choice modeling we were able to determine the right behaviors, investment models, and sequence of intelligent systems technologies to show what that successful journey could look like.

Actionable insights

Using a range of economic, behavioral, and other outcome-based measures (for example, innovation) we were able to segment the world into six distinctive groups. The most successful segment gets an ROI of over three times that of its peers.

Segmenting the world

Before you look through the indexes to see where you fall across hundreds of variables, check out the summaries of each of the six segments.

Hundreds of variables

Using an index system, you can see where your segment over- or under-registers against any of the more than three hundred variables in the research. An easy color coding system allows for an instant scan or a deeper review.

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56. THE FAR EDGE & MISSION-CRITICAL INTELLIGENT SYSTEMS FUTURE

THE WORLD

The intelligent systems revolution is making Industry 4.0 a reality

Over 50% of data will be collected on the intelligent edge by 2022 (Gartner). Imagine, then, what data collection will look like by 2025 – or 2030. How many business models will be rewritten by the growth of intelligent systems companies that are computing, connecting, sensing, automating, predicting, and learning in near-latency-free time on the edge? By 2030, 70% of growth in the global economy will come from AI, robotics, and automation (PwC and the OMB), all of which sit at the heart of the intelligent systems concept.

In our data-centric world, the idea of intelligent systems is intrinsically understood but not extensively practiced. For companies in industries such as aerospace or defense, manufacturing, medical technology, energy, and telecommunications, the challenges lie in determining the right characteristics for success. The characteristics of a successful intelligent system are more than just the technologies deployed; they cover how leaders think about intelligent systems, business drivers, and deployment of the necessary process changes for embedded intelligent systems design.

We have surveyed 650+ leaders across six major industries in the U.S. and Japan, who walked us through the deep details of their thinking, actions, processes, metrics for success, and beliefs.

CORE DESIGN

Carefully screened executives based on six criteria

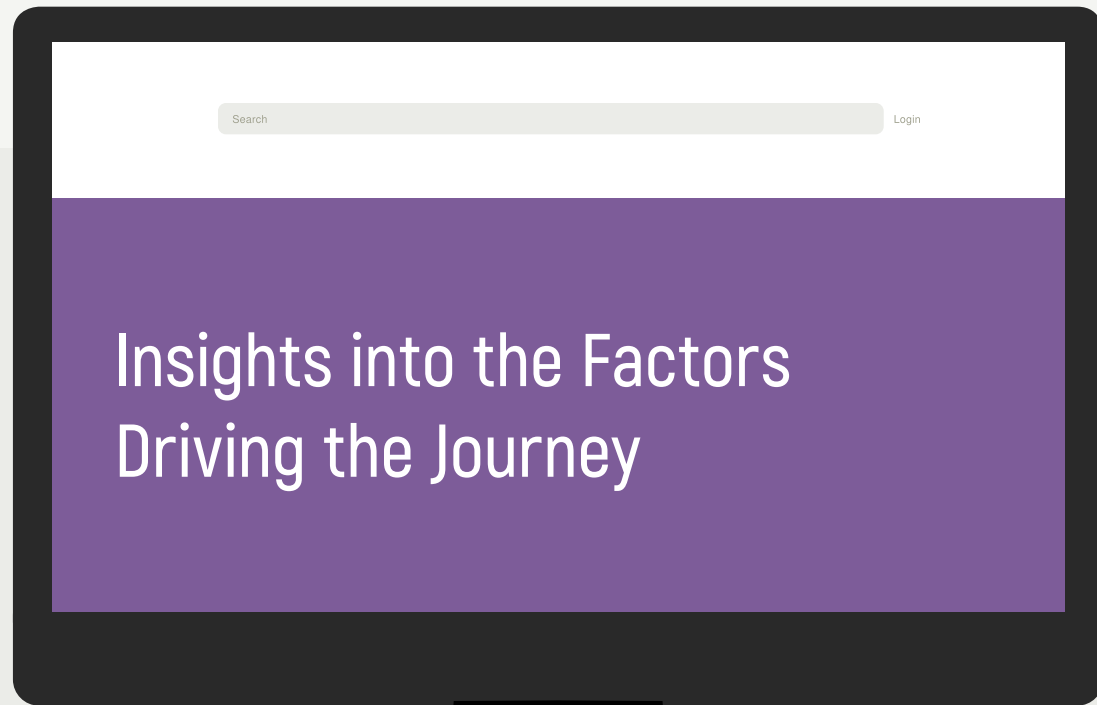
Key components of successful intelligent systems include the implied power of digital feedback loops, automation, machine learning, and security. Measuring the relative importance of these components and their sequencing helps define the waypoints and investment needs of companies making the intelligent systems journey.

Research respondents were chosen according to six criteria:

- Executives and leaders from large organizations who have significant knowledge of and influence over the organization's embedded devices or systems, both used and sold
- From target industries: aerospace and defense, automotive manufacturing, energy, industrial manufacturing, medical technology, technology hardware manufacturing, and telecommunications
- From organizations that have an indicator of the level of digital transformation achieved
- From organizations that sell products or offer services built on custom-designed embedded software, devices, and/or applications
- From organizations that use or sell embedded products and services designed to operate on the intelligent edge (minimum 10%)
- Engaged in some level of conversation about implementing intelligent systems across the organization (measured across five levels, from beginning conversations to fully moving to an intelligent systems business model)

Forbes interviewed 506 executives online in Q1 2021. An additional study was fielded in Japan at the end of Q1 2021. These research results are not included in this report and will be reported separately. Interviews were held online to enable easier completion of the complex discrete choice models; respondents were asked to judge trade-offs between specific characteristics of intelligent systems as used by their organizations (each answering 12 trade-off choices across 4 characteristics, for over 24,000 decisions).

INSIGHTS



The research design focused on sets of questions about where the organization was positioned on a range of concepts such as the role of embedded devices, far edge compute, cybersecurity needs, and mission-critical requirements into the future. Questions were asked about factors driving the journey to an intelligent systems world as well as the desired outcomes for the companies.

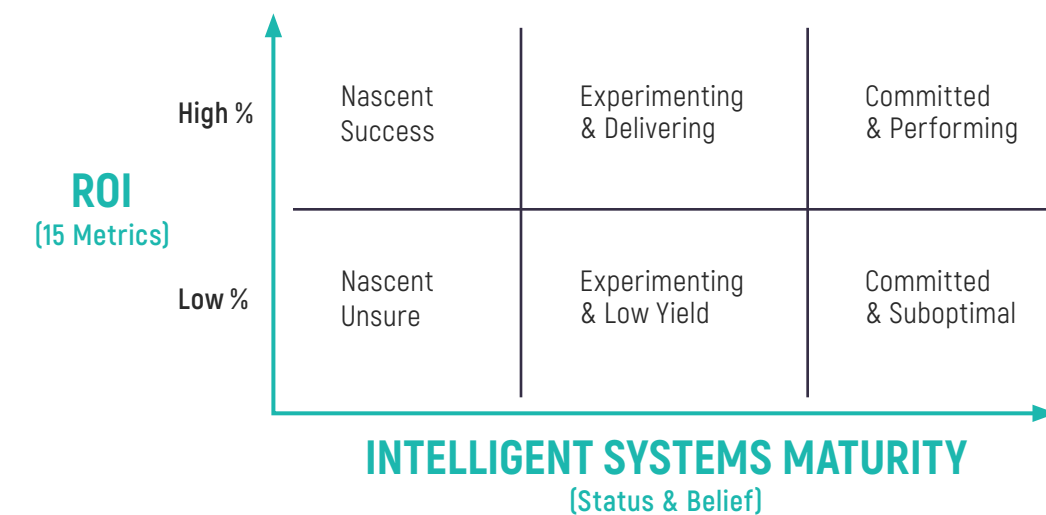
SEGMENTING THE INTELLIGENT SYSTEMS WORLD

Thinking about where your company is on this journey

The model resulting from this research shows the blueprint for architecting successful intelligent systems, as well as the critical waypoints for behaviors, metrics, and investments as organizations move from an experimental state to a complete state of intelligent systems transformation.

SEGMENTATION METHODOLOGY

A 3x2 segmentation was based on two levels of expected ROI in executing intelligent systems and three levels of maturity in the pursuit of intelligent systems:



Calculating ROI

Respondents were asked to estimate the impact of deploying intelligent systems on 15 metrics encompassing sales/profit, product/service delivery, innovation/business processes, and employee productivity/satisfaction. ROI results emerged from a factor analysis of respondents' estimations. This analysis allowed for the division into two segments: those expecting a high impact to overall ROI and those expecting a low impact to overall ROI.

Defining Maturity

To define levels of maturity with respect to the organization's embrace of intelligent systems, the model looked to a combination of questions, including:

1
The status of the organization's familiarity with or pursuit of intelligent systems, ranging from having minor conversations but no real plans to making some core changes in business practices to fully moving toward an intelligent systems business model

2
Beliefs regarding the ROI of intelligent systems and the ability to extract incremental value from continued optimization of intelligent systems

This analysis yielded three distinctive levels of maturity – starting out (nascent), experimenting, and committed – each showing different behaviors across the survey questions. The net results divided the study respondents as follows:

US	ROI	High %	15%	26%	16%
		Low %	12%	22%	10%
		Nascent	Experimenting	Committed	
Momentum					

COMMITTED AND PERFORMING (16%)

They hold a deep belief in the Teslification of their business and the idea that they outperform peers 4:1.

They are investing in a unique sequence of characteristics for success that are focused on the foundationals that have high value.

THEY HOLD A DEEP BELIEF IN THE TESLAFICATION OF THEIR BUSINESS: THEY BEAT THEIR PEERS BY 4 TO 1.

THEIR VIEW ON WHEN SPECIFIC INTELLIGENT SYSTEM CHARACTERISTICS MATTER

Compared to their less-performing peers, their results are four times higher. They consider themselves significantly more able to deliver new business models with intelligent systems, including seamless connections between suppliers and customers and connecting business processes with new forms of sensors, than all their peers. Their prime investments in intelligent systems focus on five key characteristics and an ability to get everybody on one real-time workflow process now. In the medium term (five years), the ideas of automated learning and the ability to detect events and resolve them autonomously are key. They see their embedded systems future as critical and dependent on the ability to monitor, manage, and maintain these devices on the far edge. They see themselves as rich visionaries and believe their embedded device businesses will be increasingly innovative. Their metrics of success are strongly focused on revenue production, sales, and customer and employee KPIs.



- 11.6% Characteristics that are nice to have but not important
- 24.1% Characteristics that are critical for success in five years
- 18.4% Characteristics that are needed now to build the right infrastructure
- 55.3% Characteristics that are foundational for success in three and five years' time

To learn about the specific intelligent systems characteristics go to [WINDRIVER.COM/INTELLIGENT-SYSTEMS](https://www.windriver.com/intelligent-systems)

COMMITTED AND SUBOPTIMAL (10%)

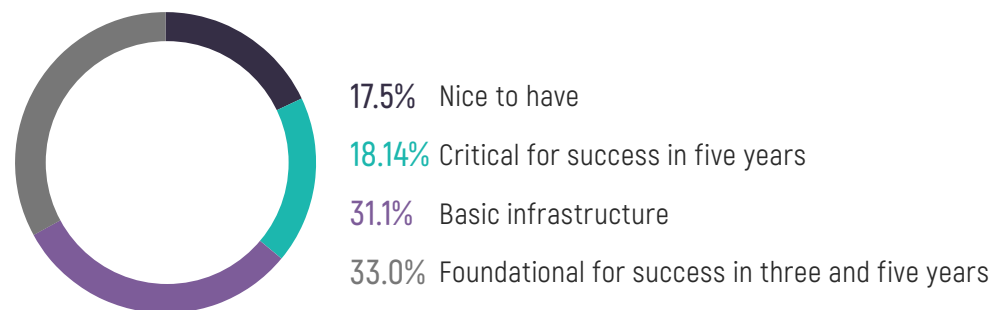
They believe in a data-driven future and the ability to predict and manage system stresses and failures and create real-time, seamless ecosystems of applications with real-time simulation characteristics. They see the ability to compute on the edge as a nice-to-have only.

THEY BELIEVE IN A DATA-DRIVEN FUTURE BUT HAVE TOO NARROW A PROCESS VISION THAT LIMITS POTENTIAL RETURNS.

The key for this group is to move the company to a data-driven decision process at its core. They see themselves as behind their peers in their digital transformation, and they perceive themselves as behind on concepts such as artificial intelligence (AI) and machine learning (ML). They are ahead of their peers on the idea that designing in the cloud is the future, but they lag in areas such as 5G on the far edge and the future importance of mission-critical capabilities. Their core focus for success is on three areas: the ability to simulate and emulate during development and operations, to do so via public cloud, and to have intelligent systems as a “copilot” for employees.

The big barriers are cybersecurity, finding specific industry solutions, and a lack of momentum that would come from a shining example in their industry.

THEIR VIEW OF INTELLIGENT SYSTEM CHARACTERISTICS



To learn about the specific intelligent systems characteristics go to [WINDRIVER.COM/INTELLIGENT-SYSTEMS](https://www.windriver.com/intelligent-systems)

EXPERIMENTING AND DELIVERING TO GET TO SCALE (23%)

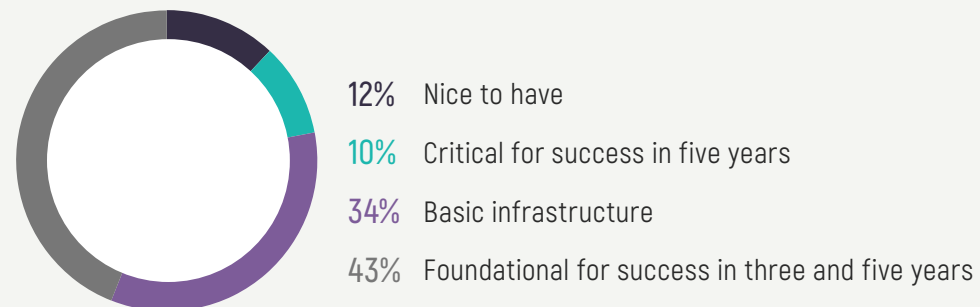
They believe in a data-driven future and the ability to predict and manage system stresses and failures and create real-time, seamless ecosystems of applications with real-time simulation characteristics. They see the ability to compute on the edge as a nice-to-have only.

THEY BELIEVE IN THE IDEA OF DIGITAL BUSINESS MODELS AT THEIR CORE. THEY NEED TO BUILD FROM THEIR SUCCESSES WITH THE FAR EDGE AND MISSION-CRITICAL CAPABILITIES IN ORDER TO GROW.

The key for this group is to move the company to a data-driven decision process at its core. They see themselves as behind their peers in their digital transformation and behind on concepts such as AI and ML. They are ahead of their peers on the idea that designing in the cloud is the future, but they lag in areas such as 5G on the far edge and the future importance of mission-critical capabilities. Their core focus for success is on three areas: the ability to simulate and emulate during development and operations, to do so via public cloud, and to have intelligent systems as a "copilot" for employees.

The big barriers are cybersecurity, finding specific industry solutions, and a lack of momentum that would come from a shining example in their industry.

THEIR VIEW OF INTELLIGENT SYSTEM CHARACTERISTICS



EXPERIMENTING AND GETTING LOW YIELDS (22%)

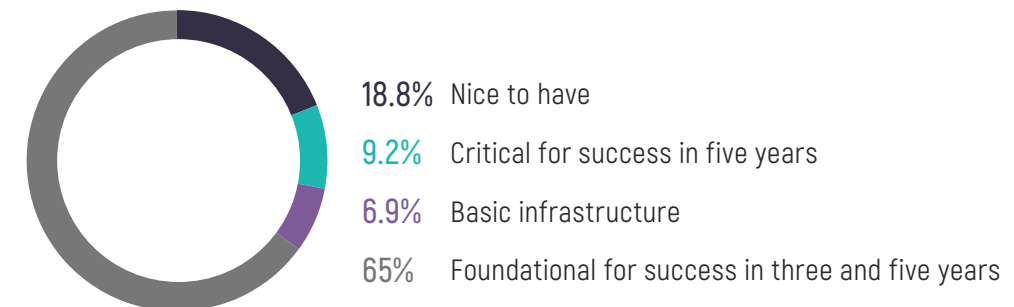
Not fully committed, they get the ideas but are not organizing for success yet, and they have a narrow construct about what success could be. A large range of characteristics are low-impact nice-to-haves that are needed in five years for some, while for others they are the same characteristics that are essential to infrastructure.

NOT FULLY "IN" ON ANYTHING, BUT THEY GET THE BIGGER IDEA. THEY JUST DON'T SEE THE RETURNS YET.

These companies see themselves as early adopters, and the idea that technology leads their organizational strategy is at their core. They see themselves as digital businesses and are moving to an organizational level of commitment to intelligent systems. They are concerned about the potential difficulty for the organization to deliver, but on balance they believe that the organization does see where the value is. They do not expect a lot of hurdles, but they do believe more than other groups that seeing higher levels of employee satisfaction will drive better adoption.

These companies are extremely centered on embedded devices on the far edge as vital for the business (providing 80%+ of their revenue, they believe). They more strongly believe in the importance of mission-critical performance and more often see a growing significance for mission-critical capabilities in both the three-year and five-year time spans, compared to their peers in other segments.

THEIR VIEW OF INTELLIGENT SYSTEM CHARACTERISTICS



NASCENT WITH SOME SUCCESS (18%)

The aspiration is there, especially around revenue creation and product sales. They focus on the need for cybersecure and agile development for their compute on the far edge. This group understands many of the key characteristics, but they may underestimate the impact of characteristics such as real-time workflows.

ASPIRATIONS ARE THERE, AND THE BASIC CHARACTERISTICS ARE BEING BUILT FOR SCALE NOW.

This group of companies displays specific differences from their peers on a number of fronts. They see medium-to-high ROI in revenue creation opportunities and increased product sales as well as customer- and employee-based KPIs. Their distinctive focus is on making sure the building blocks are cybersecure, and they see a critical need for agile embedded development. Their top priority is to move the company to a more data-centric decision-making style, and they clearly do not underestimate the challenges ahead in terms of building sustained success. These companies see a lack of application areas for ML, a lack of clear industry leadership examples, and a lack of clear articulation of how to handle intelligent systems from an ethical standpoint, and all these are impediments to further development. Evidence of the shift in performance (economic and/or innovative) for them and others is a crucial trigger for increased confidence and further investment.

THEIR VIEW OF INTELLIGENT SYSTEM CHARACTERISTICS



NASCENT AND UNSURE (12%)

These are the one in eight who do not really believe in the big meta trends behind intelligent systems and so are not architecting for an intelligent systems future. They underestimate the potential impact of true compute on the edge, the ability to predict and solve failures, and real-time workflows.

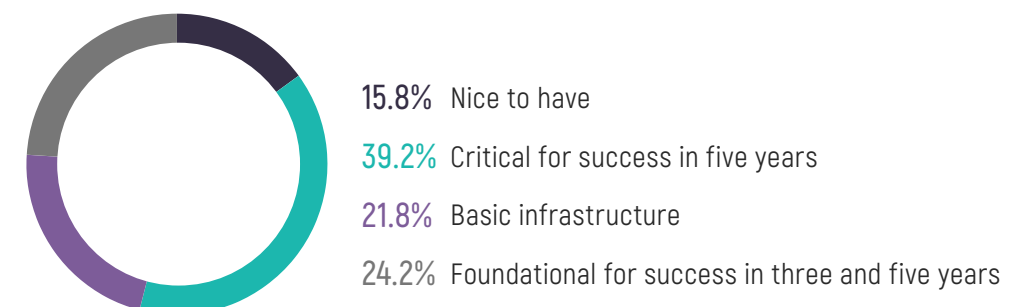
THEY DO NOT REALLY BELIEVE IN THE META TRENDS, SO LACK VISION AND MOTIVATION.

This group of companies, as expected for organizations on the lowest levels of return and also on the lowest levels of belief in intelligent systems, are significantly behind other companies on most of the variables measured. They generally believe they are behind their peers on a range of performance metrics and ideas about the importance of technology to changing strategy and performance. For example, they do not believe that companies are becoming software enterprises, that digital models should be at their core, that mission-critical capabilities are going to be more important in the future, or that cybersecurity and security are building blocks for all sectors.

They do not see especially tough barriers to success, but their general lack of belief in the major trends (software enterprises, new business models, digital feedback loops, etc.) is probably holding back their desire to experiment and learn, as they do not see where the possible results could come from.

This group of companies does believe that they are ahead on the idea that evidence of an optimized workflow evolving from use of intelligent systems would be a catalyst for adopting such systems. The characteristics they believe will be needed right now involve the ability to reprogram embedded devices in the cloud and the ability to detect and resolve events.

THEIR VIEW OF INTELLIGENT SYSTEM CHARACTERISTICS



INTELLIGENT SYSTEMS COMPARATIVE INDEX

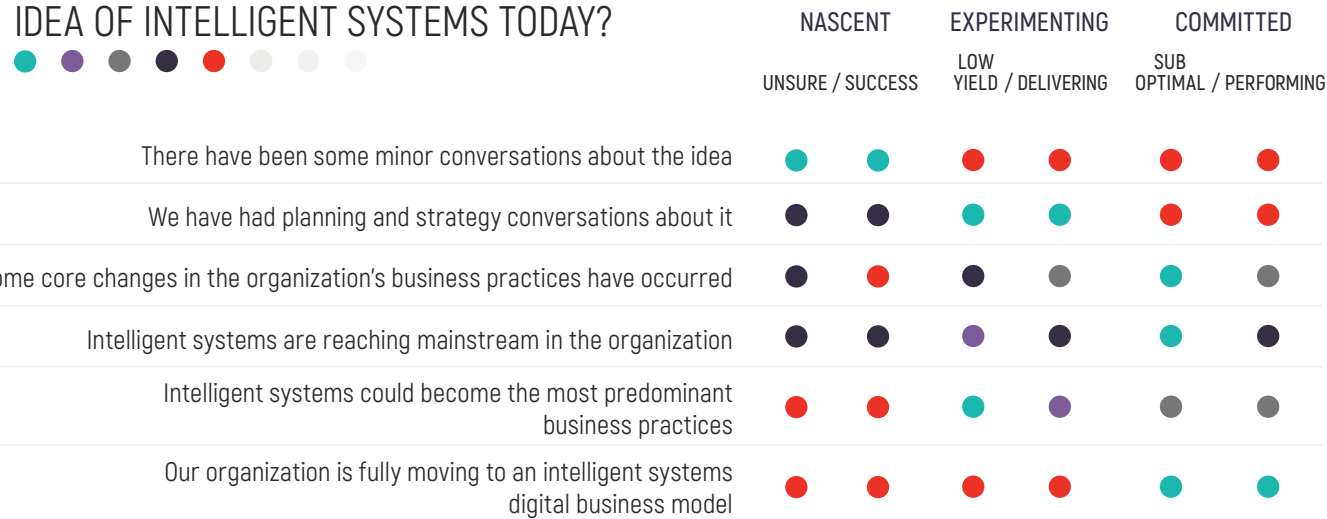
INTELLIGENT SYSTEMS COMPARATIVE INDEX

When reviewing these comparative index scores please note the color coding below. This code shows, for any specific factor, where each of the six segments performs below average (a range of choices), on average, or above average (a range of choices) for the total responses to that factor or particular question. You can choose to compare segments to segments, or you can look for a segment you believe is where you are or would like to be for comparison.

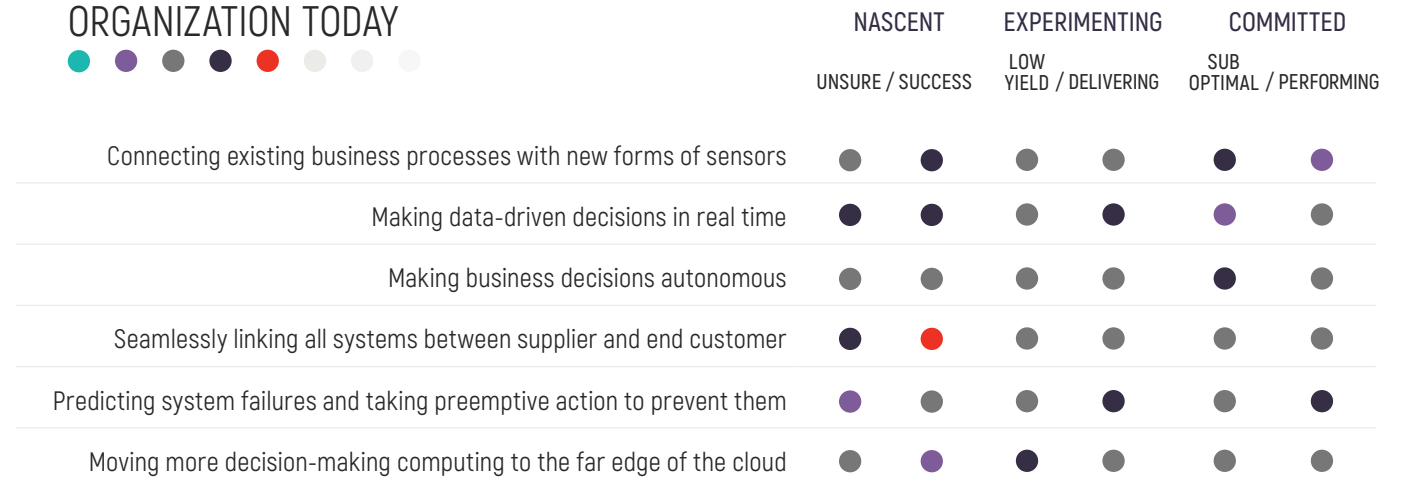


DEFINING INTELLIGENT SYSTEMS NOW AND IN THE FUTURE

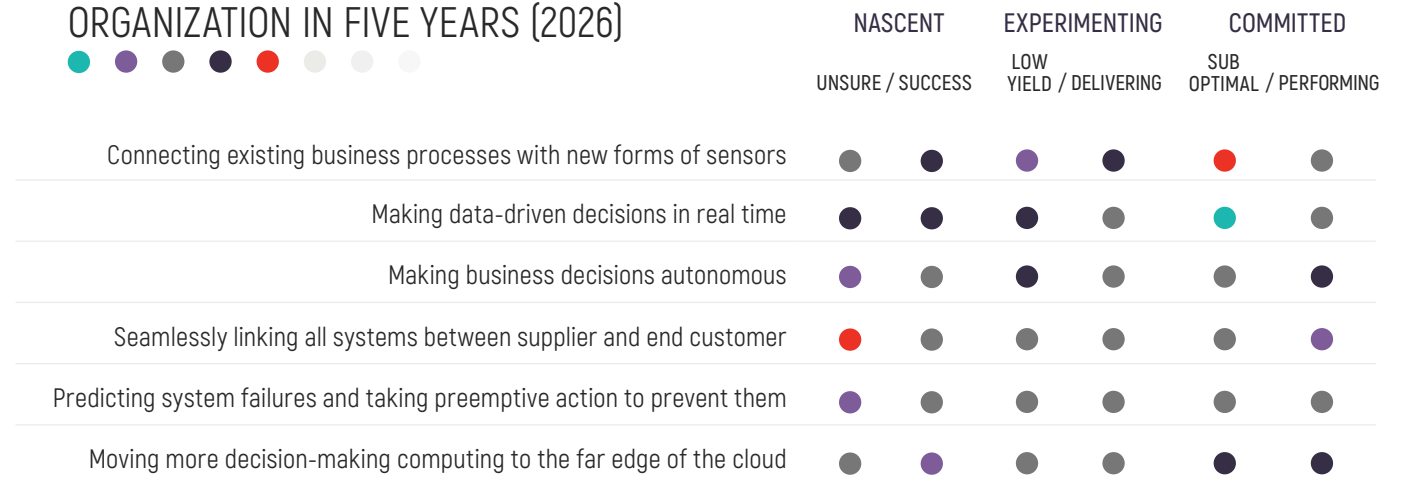
HOW WOULD YOU DESCRIBE YOUR ORGANIZATION'S UNDERSTANDING OF THE IDEA OF INTELLIGENT SYSTEMS TODAY?



TOP PRIORITIES FOR INTELLIGENT SYSTEM DEVELOPMENT IN THE ORGANIZATION TODAY



TOP PRIORITIES FOR INTELLIGENT SYSTEM DEVELOPMENT IN THE ORGANIZATION IN FIVE YEARS (2026)



ORGANIZATIONS' PERSPECTIVES ON THEMSELVES AND INTELLIGENT SYSTEMS

16 WAYS TO COMPARE YOURSELF TO PEERS – ATTITUDES & BELIEFS

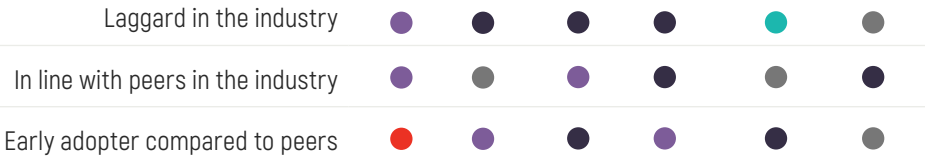
INNOVATOR IN NEW DIGITAL TECHNOLOGIES



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



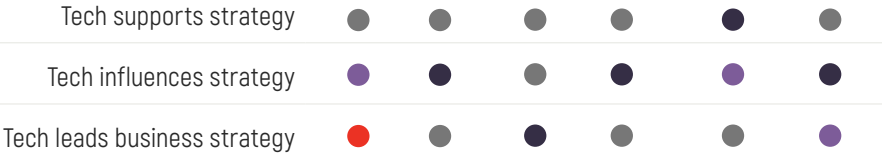
ROLE OF TECHNOLOGY AS A STRATEGY ENGINE



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



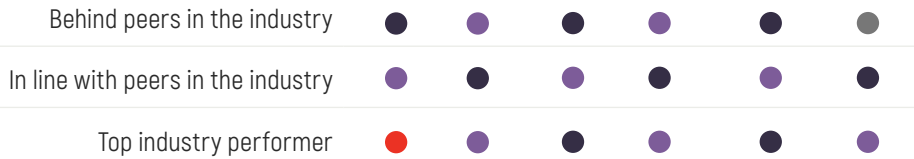
INDUSTRY LEADER (ECONOMICS/ PRODUCT PERFORMANCE)



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



DIGITAL BUSINESS MODELS ARE AT OUR CORE



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



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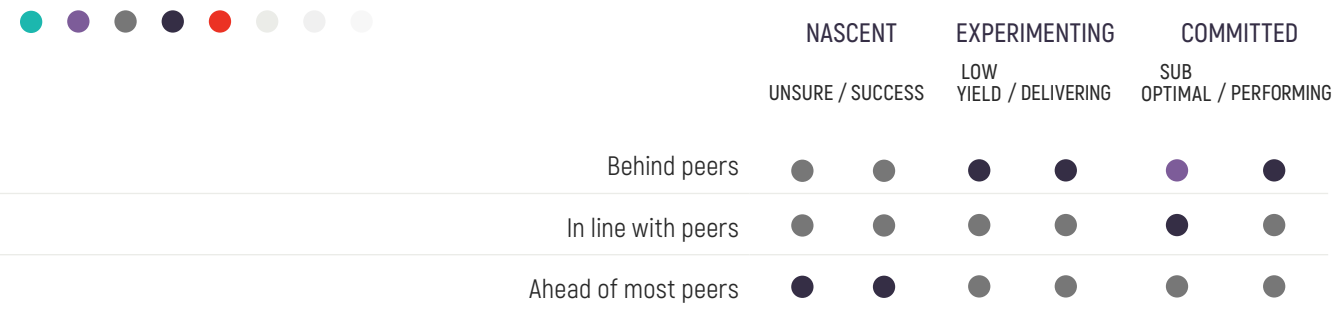
ORGANIZATIONS' PERSPECTIVES ON THEMSELVES AND INTELLIGENT SYSTEMS



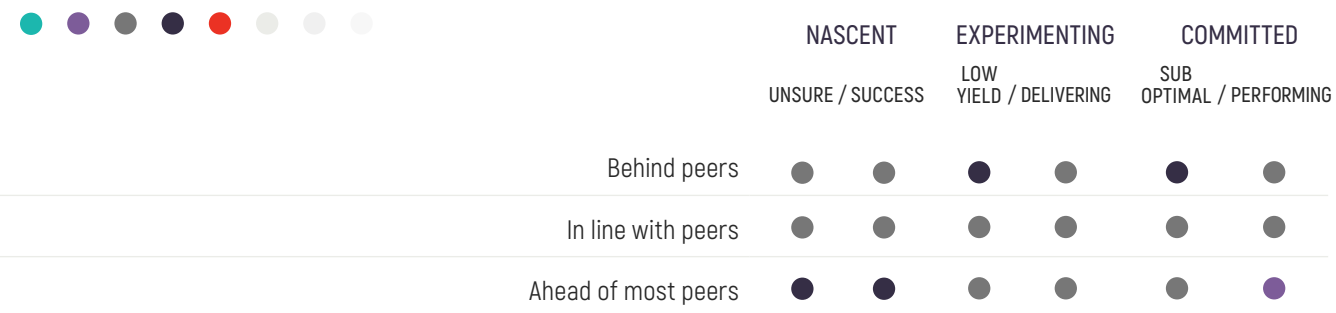
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16 WAYS TO COMPARE YOURSELF TO PEERS – ATTITUDES & BELIEFS

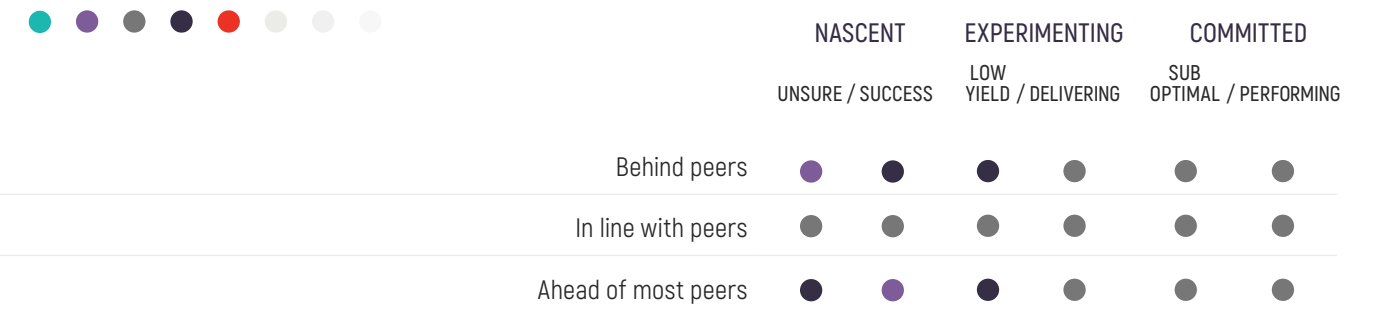
ALIGNMENT WITH PEERS ON AI AND ML



ALIGNMENT ON DELIVERING PRODUCTS AND SERVICES INTO NEW BUSINESS SECTORS



ALIGNED ON THE IDEA THAT CYBERSECURITY AND SECURITY ARE CRITICAL AS BUILDING BLOCKS FOR ALL BUSINESS SECTORS



ALIGNED ON THE IDEA THAT CLOUD DESIGN AND DELIVERY IS THE FUTURE



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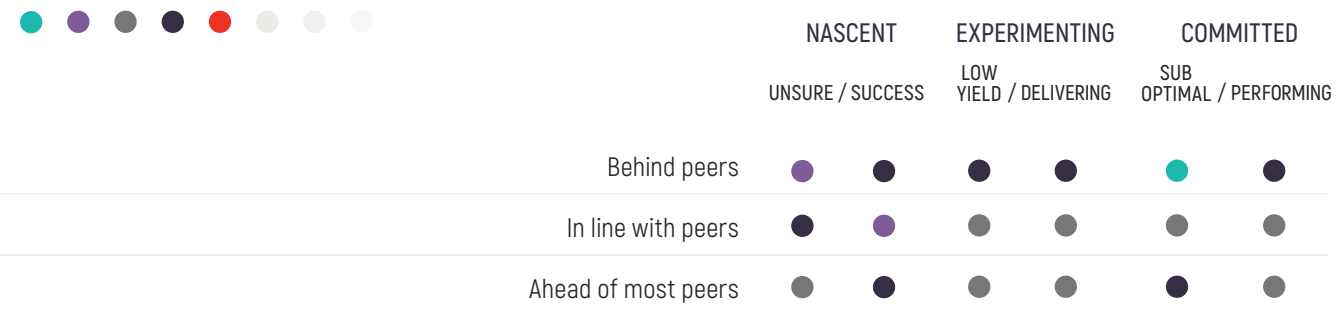
ORGANIZATIONS' PERSPECTIVES ON THEMSELVES AND INTELLIGENT SYSTEMS



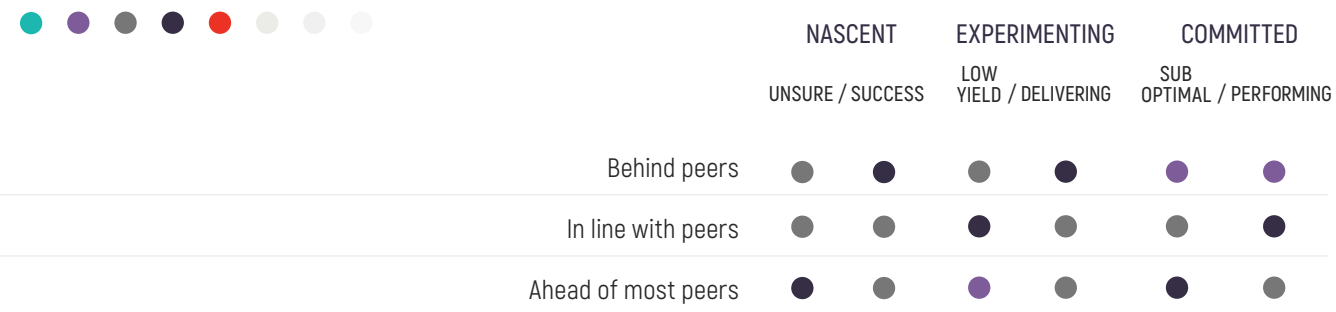
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16 WAYS TO COMPARE YOURSELF TO PEERS – ATTITUDES & BELIEFS

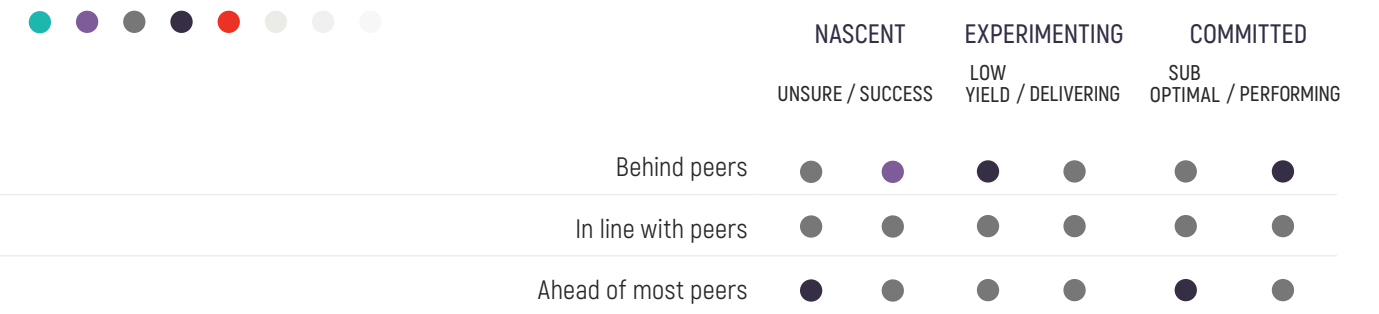
ALIGNED ON THE IDEA THAT MISSION-CRITICAL EMBEDDED DEVICES ARE CRITICAL FOR THE FUTURE



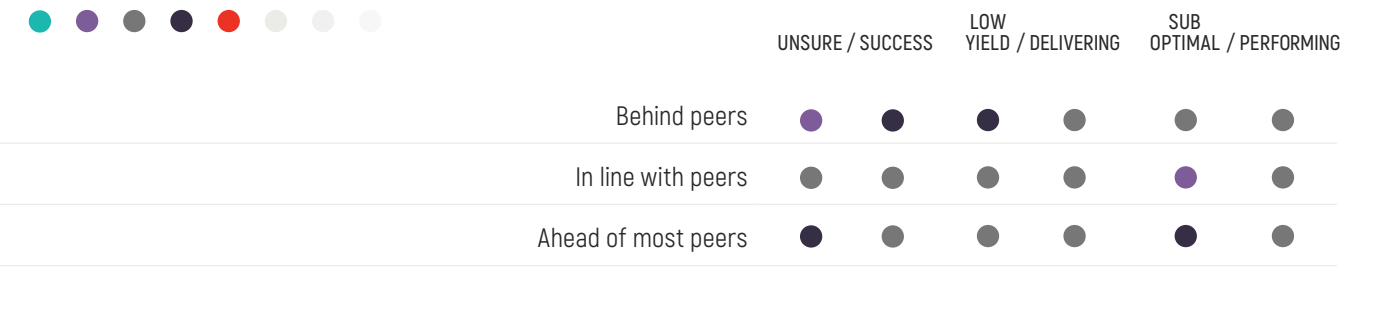
ALIGNED ON THE IDEA THAT THE INTELLIGENT EDGE AND 5G ARE THE FUTURE



ALIGNED ON THE IDEA THAT REAL-TIME DATA TO DRIVE DECISION-MAKING WILL BE KEY FOR PRODUCTS AND SERVICES



ALIGNED ON THE IDEA THAT DIGITAL FEEDBACK LOOPS WILL DRIVE ONGOING DECISION-MAKING



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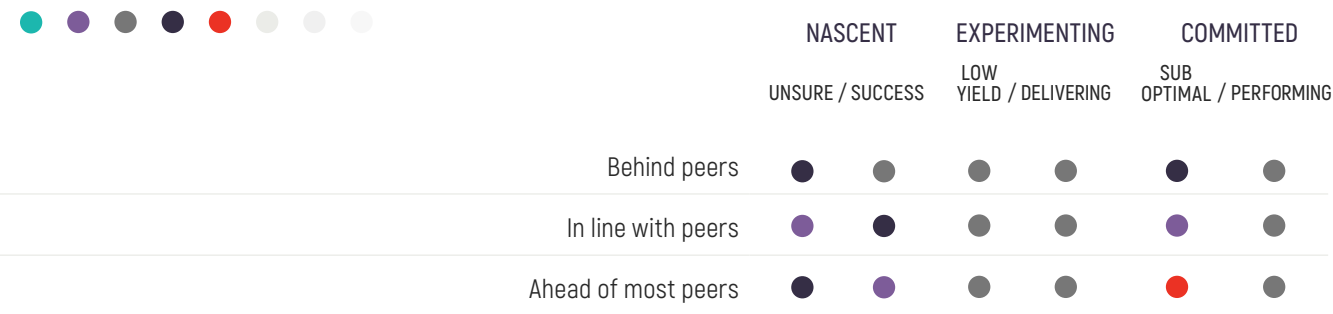
ORGANIZATIONS' PERSPECTIVES ON THEMSELVES AND INTELLIGENT SYSTEMS



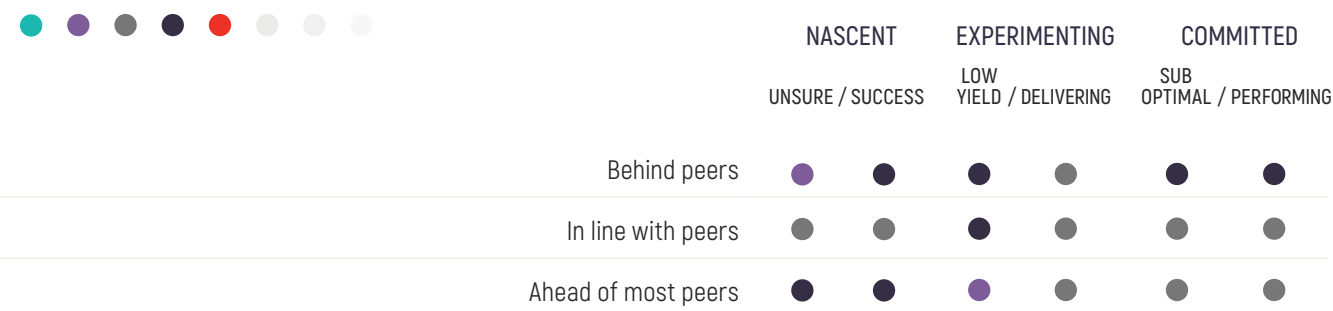
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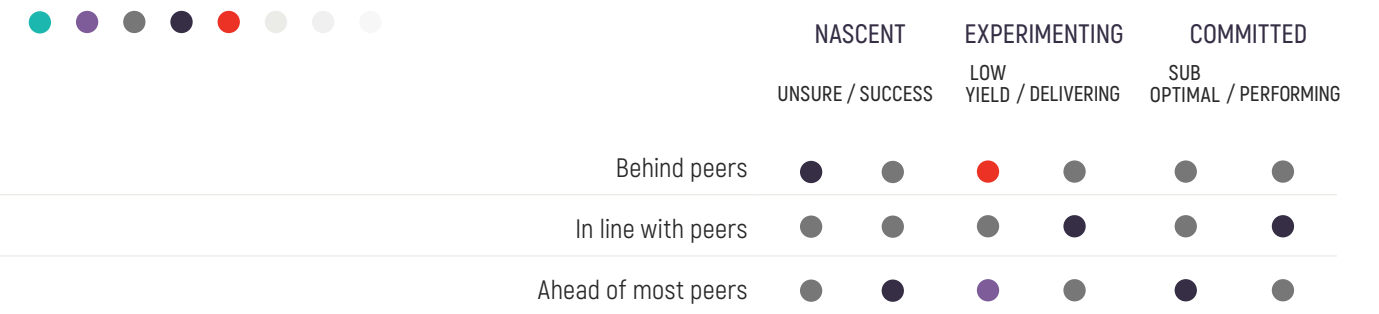
ALIGNED ON THE IDEA THAT AGILE DEVELOPMENT METHODS ARE CRITICAL FOR EMBEDDED DEVICES AND SERVICES IN THE NEAR FUTURE



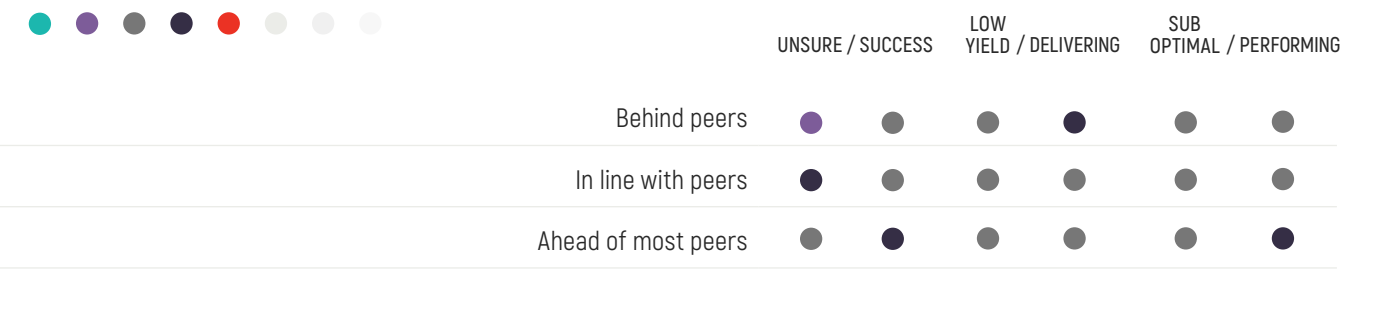
ALIGNED ON THE IDEA THAT COMPANIES ARE INCREASINGLY BECOMING SOFTWARE ENTERPRISES



ALIGNED ON THE IDEA THAT SYSTEMS – FROM CUSTOMER TO SUPPLIER PRODUCTS AND SERVICES – ARE HIGHLY CONNECTED IN REAL TIME



ALIGNED ON THE IDEA THAT EMBEDDED SYSTEMS CAN RUN MUCH OF THEMSELVES AUTONOMOUSLY



ORGANIZATIONS' PERSPECTIVES ON THEMSELVES AND INTELLIGENT SYSTEMS



POTENTIAL SOCIETAL IMPACT OF INTELLIGENT SYSTEMS

TOP THREE CHOSEN: SOCIETAL IMPACT OF INTELLIGENT SYSTEMS



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING

	NASCENT UNSURE / SUCCESS		EXPERIMENTING LOW YIELD / DELIVERING		COMMITTED SUB OPTIMAL / PERFORMING	
Change how we think about infrastructure, more adaptive and efficient ways	●	●	●	●	●	●
Transform how we use resources in the environment, more efficient/adaptive	●	●	●	●	●	●
Evolve how we govern society as real-time info and systems give quick feedback	●	●	●	●	●	●
Help to improve healthcare with preventive medical care at a patient level	●	●	●	●	●	●
Transform how to govern corporations as they become more real time and data-centric	●	●	●	●	●	●
Revolutionize industry dynamics because they break down barriers to access	●	●	●	●	●	●
Widen global opportunities as traditional barriers are broken down	●	●	●	●	●	●
Evolve how people are involved in the working world, more value, personalized	●	●	●	●	●	●
Help to better protect civil liberties	●	●	●	●	●	●

THE DNA OF INTELLIGENT SYSTEMS



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING

	NASCENT UNSURE / SUCCESS		EXPERIMENTING LOW YIELD / DELIVERING		COMMITTED SUB OPTIMAL / PERFORMING	
True compute on the far edge	●	●	●	●	●	●
Automated learning functionality; machine learning	●	●	●	●	●	●
Near-real-time seamless multiple ecosystems	●	●	●	●	●	●
Real-time synthesized workflow process	●	●	●	●	●	●
Connecting data into new product development	●	●	●	●	●	●
Predicting stresses/failures	●	●	●	●	●	●
Personalized embedded device experience via cloud	●	●	●	●	●	●
Simulating and emulating in near real time	●	●	●	●	●	●
Detection of events/resolution	●	●	●	●	●	●
Total automation	●	●	●	●	●	●
Acting based on sensory data and algorithms	●	●	●	●	●	●
Adapting tasks based on reprogramming via cloud	●	●	●	●	●	●
Experimenting as a learning system	●	●	●	●	●	●

INTELLIGENT SYSTEMS COMPARATIVE INDEX

151+ / 121-150 / 91-120 / 61-90 / 60 or less

INTELLIGENT SYSTEM DESIGN AND CHARACTERISTICS

IN THE NEXT THREE YEARS, WHICH WILL BE THE MOST IMPORTANT FOR THE SUCCESS OF YOUR ORGANIZATION?



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING

Built, developed, operated using simulations to increase productivity	●	●	●	●	●	●
Developed, deployed, and operated through private clouds	●	●	●	●	●	●
Developed, deployed, operated through mixed public/private clouds	●	●	●	●	●	●
Built, developed, operated using simulations to increase quality	●	●	●	●	●	●
Designed to be mission critical to protect data against cyberattacks	●	●	●	●	●	●
Designed mission critical in nature to protect against infrastructure failure	●	●	●	●	●	●
Technically advanced machines that react based on goal-based algorithm	●	●	●	●	●	●
Deliver real-time digital data feedback loops for business decision-making	●	●	●	●	●	●
Scale digital solutions more efficiently than purely adding people/capital	●	●	●	●	●	●
Technically advanced machines that react based on predefined rules	●	●	●	●	●	●
Ability to dynamically load new tasks/workflows into device over lifecycle	●	●	●	●	●	●
Communicate securely w/heterogenous ecosystem of devices/services	●	●	●	●	●	●
Developed, deployed, and operated through public clouds	●	●	●	●	●	●
Can react to unplanned situations using machine learning	●	●	●	●	●	●
Can complete tasks with oversight using autonomous capabilities	●	●	●	●	●	●
Help create new business opportunities and business models	●	●	●	●	●	●
Have the capacity to be monitored, managed, and maintained	●	●	●	●	●	●
Can work side by side with humans in shared tasks	●	●	●	●	●	●

INTELLIGENT SYSTEMS COMPARATIVE INDEX



WHERE WILL YOUR ORGANIZATION BE IN THE DEVELOPMENT OF THE IDEA OF INTELLIGENT SYSTEMS IN THE NEXT THREE YEARS?



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING

Discussing the possibilities of intelligent systems at a strategic level	●	●	●	●	●	●
Having a clear focus on creating an intelligent systems future for the company	●	●	●	●	●	●
Seeing current experiments in practice in certain areas of the company	●	●	●	●	●	●
Having some bus. practices that contribute to an intelligent systems future	●	●	●	●	●	●
Having core bus. processes that contribute to an intelligent systems future	●	●	●	●	●	●
Our embedded products/services are being partially developed for this	●	●	●	●	●	●
Our embedded products/services are being completely developed for this	●	●	●	●	●	●

PREDICTING EMBEDDED DEVICES AND INTELLIGENT SYSTEMS

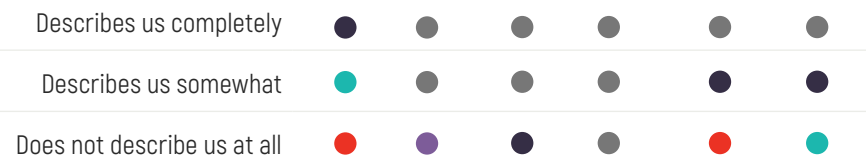
EMBEDDED BECOMES A KEY PART OF THE EVOLVING DIGITAL BUSINESS FUTURE IN THE NEXT THREE YEARS



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



OUR EMBEDDED DEVICES WILL INCREASINGLY COMPUTE IN MORE COMPLEX WAYS ON THE INTELLIGENT EDGE



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



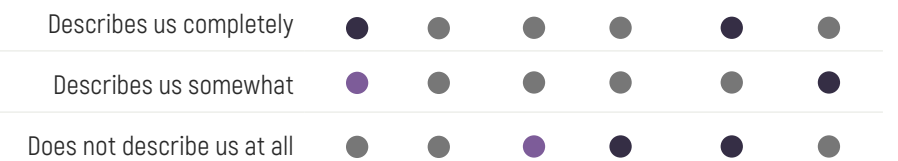
OUR EMBEDDED DEVICES WILL INCREASINGLY CONNECT DATA AND INSIGHTS FOR NEW PRODUCTS AND SERVICES



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



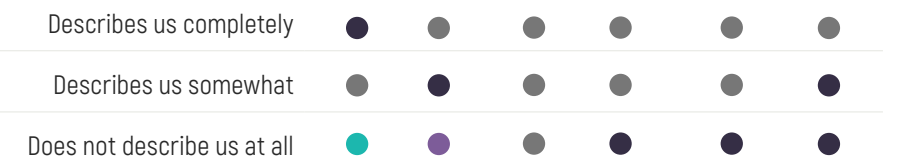
OUR EMBEDDED DEVICES WILL INCREASINGLY CONNECT CUSTOMERS, PRODUCT, AND OURSELVES, AND OUR PRODUCTS AND SERVICES (TESLAFICATION)



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



Continued on the next spread ...

INTELLIGENT SYSTEMS COMPARATIVE INDEX



[Continued from the previous spread]

PREDICTING EMBEDDED DEVICES AND INTELLIGENT SYSTEMS

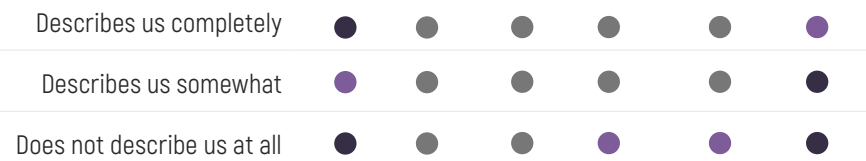
OUR EMBEDDED DEVICES WILL INCREASINGLY BE DEVELOPED, DEPLOYED, AND OPERATED THROUGH THE CLOUD



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



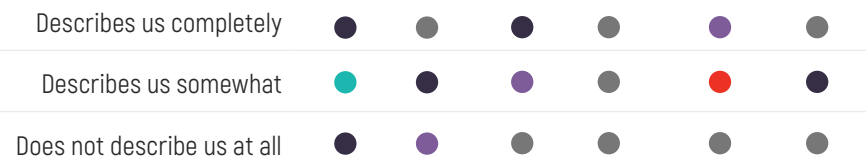
OUR EMBEDDED DEVICES WILL INCREASINGLY BE INFUSED WITH AI (AUTOMATION) AND MACHINE LEARNING



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



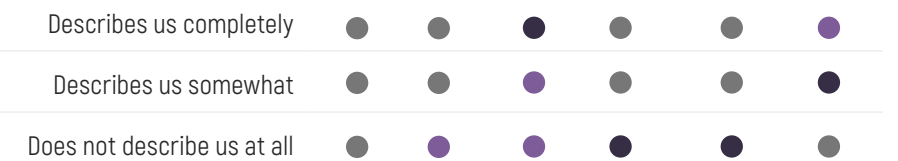
OUR EMBEDDED DEVICES WILL INCREASINGLY BE USED IN NEW AND INNOVATIVE WAYS NOT YET DISCOVERED



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



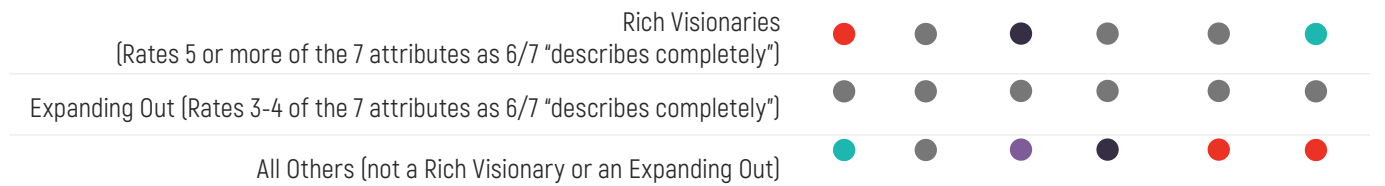
INDUSTRY VISIONARIES



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



INTELLIGENT SYSTEMS COMPARATIVE INDEX



EMBEDDED DEVICE BUSINESS MODELS AND USAGE

PERCENT OF SALES THAT ARE EMBEDDED SOFTWARE/DEVICES/APPLICATIONS



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING

SUBTOTAL: 40% or less	●	●	●	●	●	●
SUBTOTAL: 50%-70%	●	●	●	●	●	●
SUBTOTAL: 80%-100%	●	●	●	●	●	●

PRODUCTS DESIGNED TO WORK ON THE INTELLIGENT EDGE FOR INTERNAL USE



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING

0%-20%	●	●	●	●	●	●
21%-50%	●	●	●	●	●	●
51%-100%	●	●	●	●	●	●

BY 2026 WHAT PERCENT OF PRODUCTS WILL BE DESIGNED TO WORK ON THE INTELLIGENT EDGE FOR INTERNAL USE?



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING

0%-20%	●	●	●	●	●	●
21%-50%	●	●	●	●	●	●
51%-100%	●	●	●	●	●	●

BY 2026 WHAT PERCENT OF PRODUCTS WILL BE SOLD TO WORK ON THE INTELLIGENT EDGE FOR EXTERNAL USE?



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING

0%-20%	●	●	●	●	●	●
21%-50%	●	●	●	●	●	●
51%-100%	●	●	●	●	●	●

Continued on the next spread ...

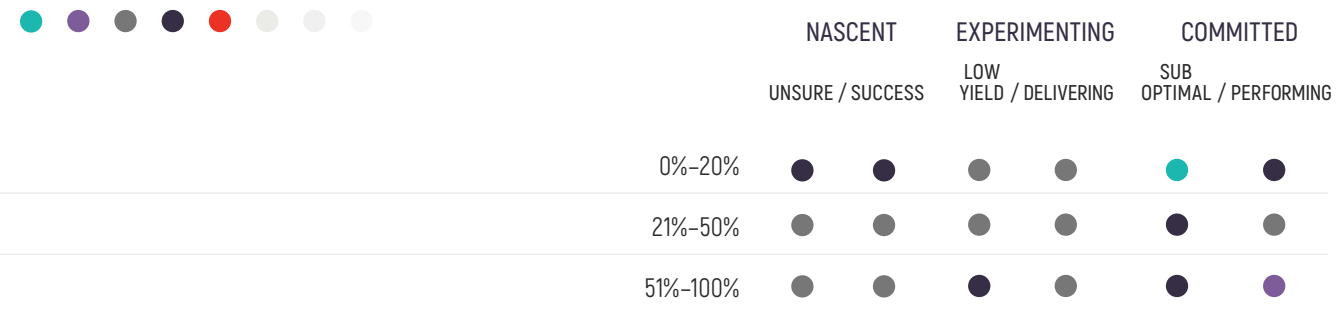
INTELLIGENT SYSTEMS COMPARATIVE INDEX



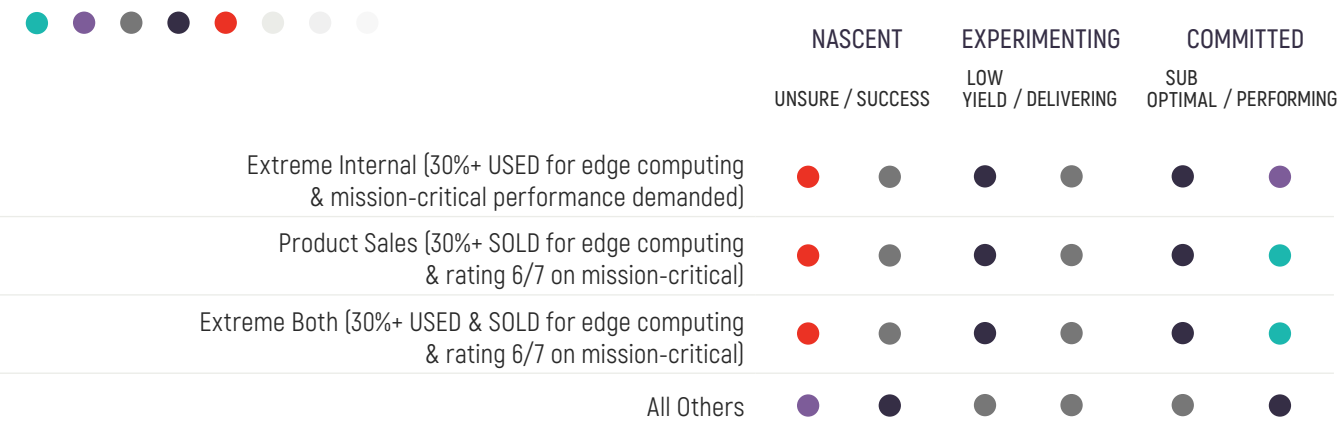
[Continued from the previous spread]

EMBEDDED DEVICE BUSINESS MODELS AND USAGE

PRODUCTS SOLD TO WORK ON THE INTELLIGENT EDGE FOR INTERNAL USE



MISSION-CRITICAL/BUSINESS-CRITICAL FOCUS

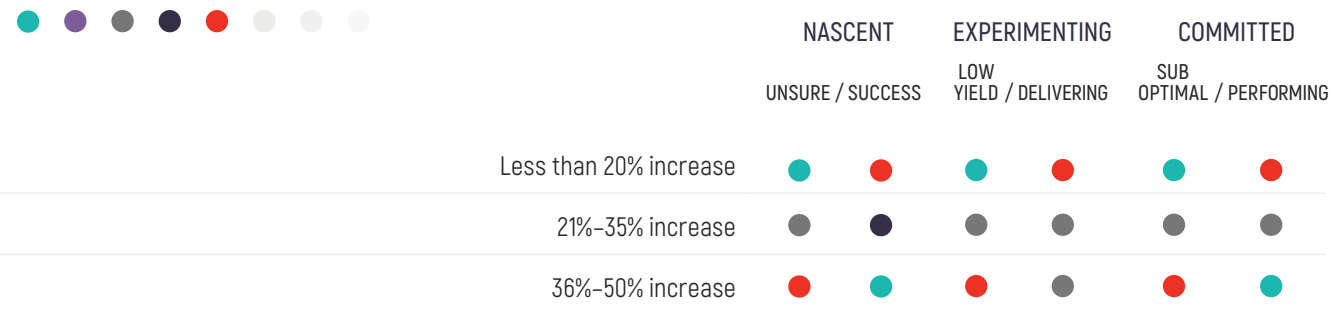


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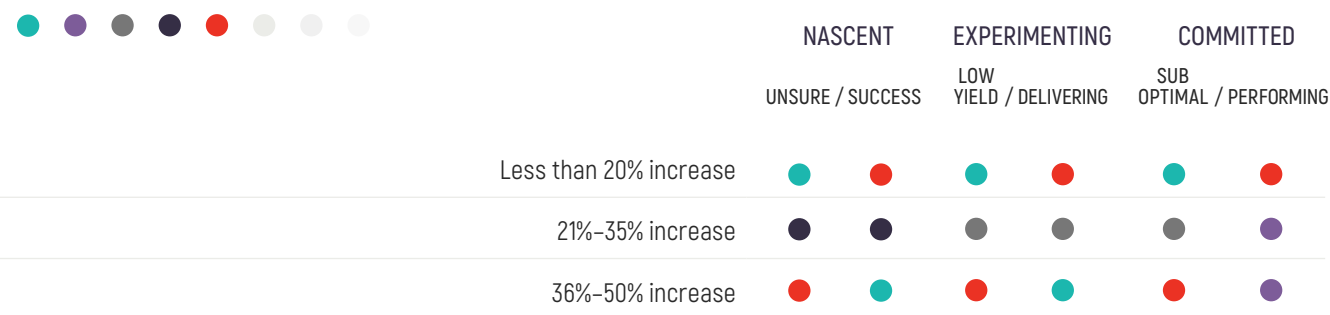


METRICS FOR INTELLIGENT SYSTEMS

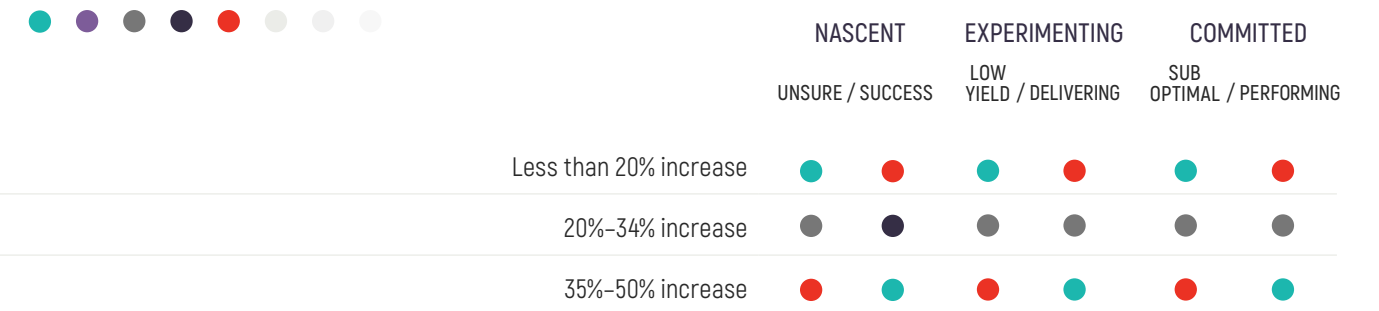
ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: OPEX IMPROVEMENTS



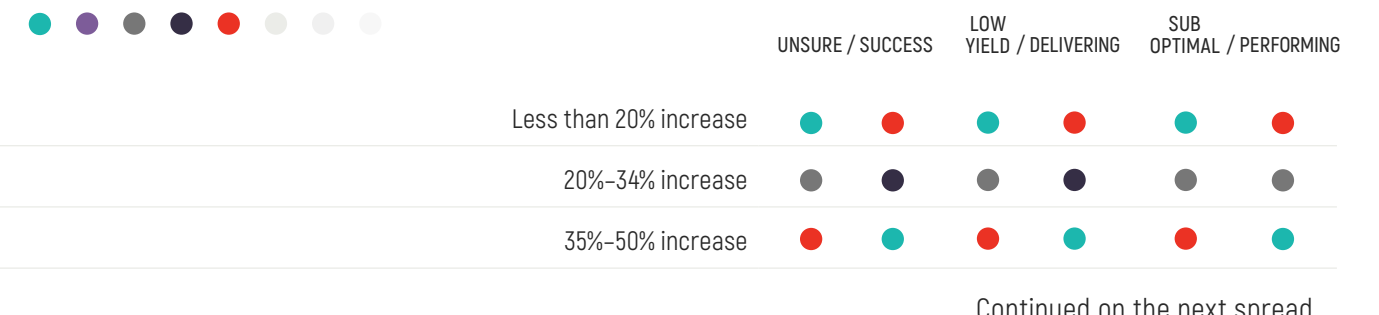
ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: CAPEX IMPROVEMENTS



ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: TOTAL REVENUE CHANGES



ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: PROFIT MARGIN CHANGES



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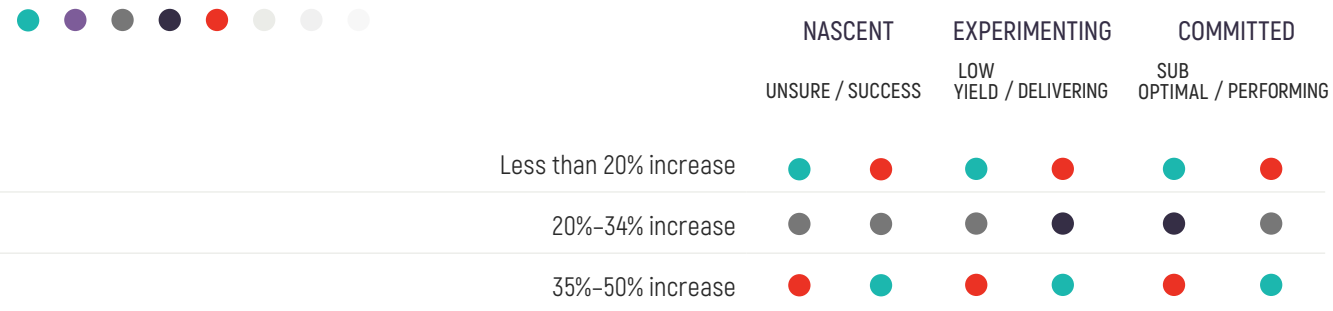
INTELLIGENT SYSTEMS COMPARATIVE INDEX



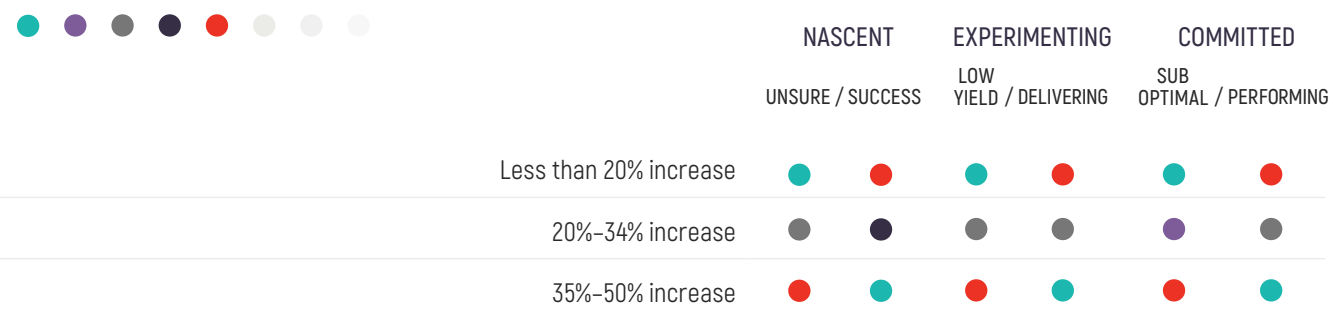
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METRICS FOR INTELLIGENT SYSTEMS

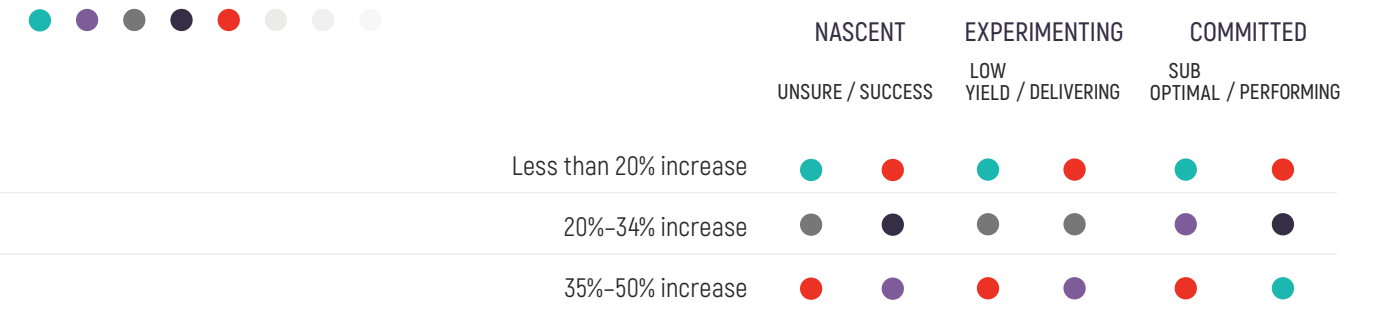
ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: CHANGES IN EMPLOYEE RETENTION



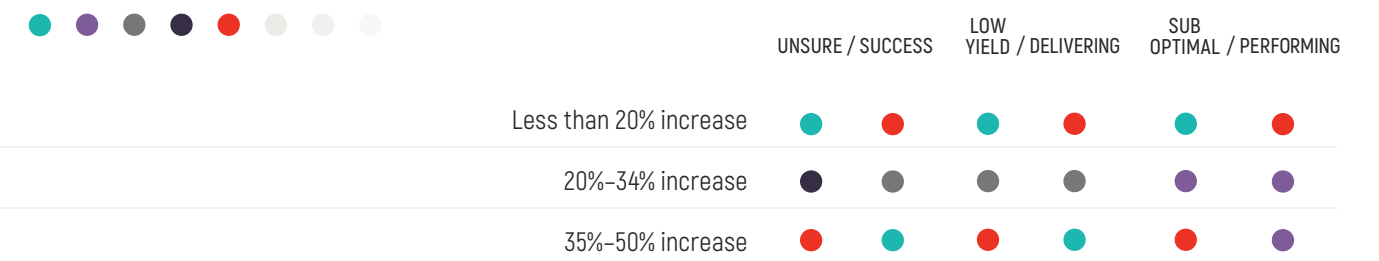
ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: CHANGES IN EMPLOYEE RECRUITMENT



ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: CHANGES IN PRODUCT/SERVICE DELIVERY



ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: CHANGES IN THE TYPE OF MARKET INSIGHTS WE CAN USE



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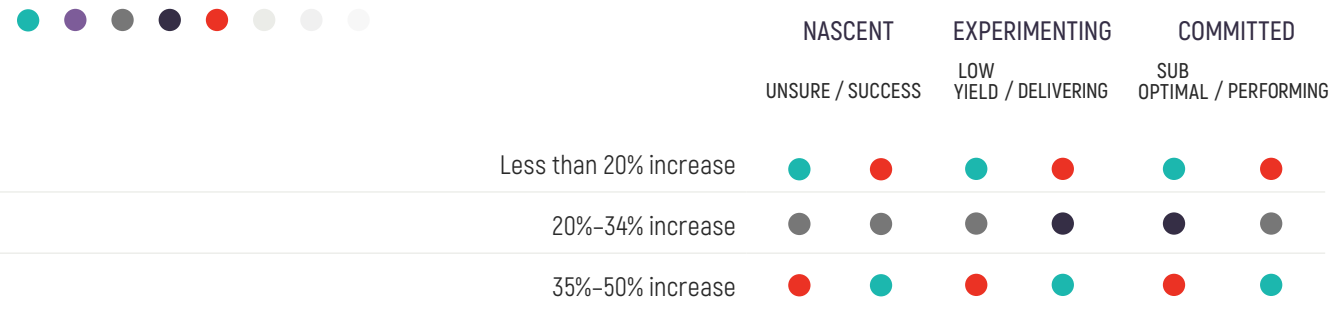
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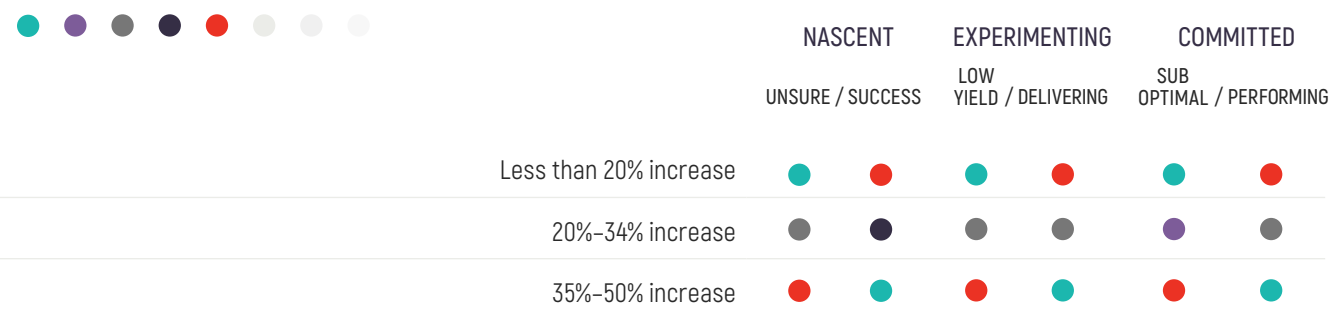
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METRICS FOR INTELLIGENT SYSTEMS

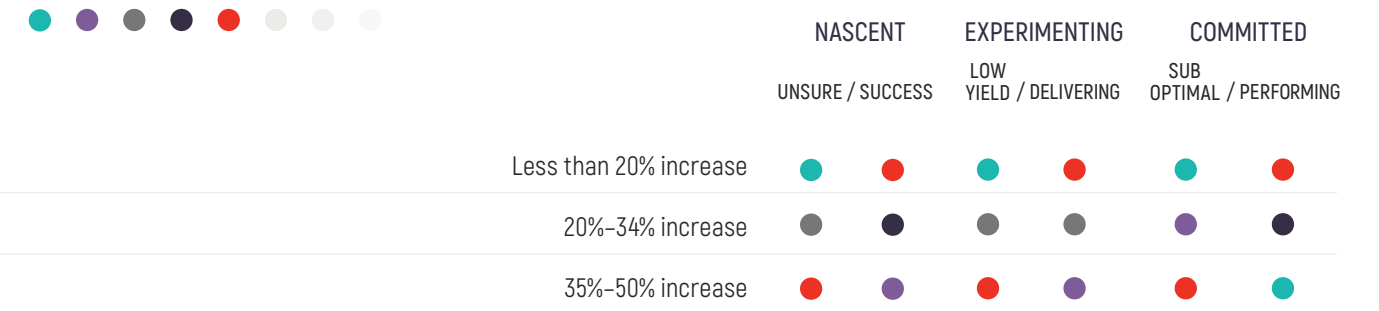
ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: CHANGES IN OVERALL CONFIDENCE IN THE ORGANIZATION



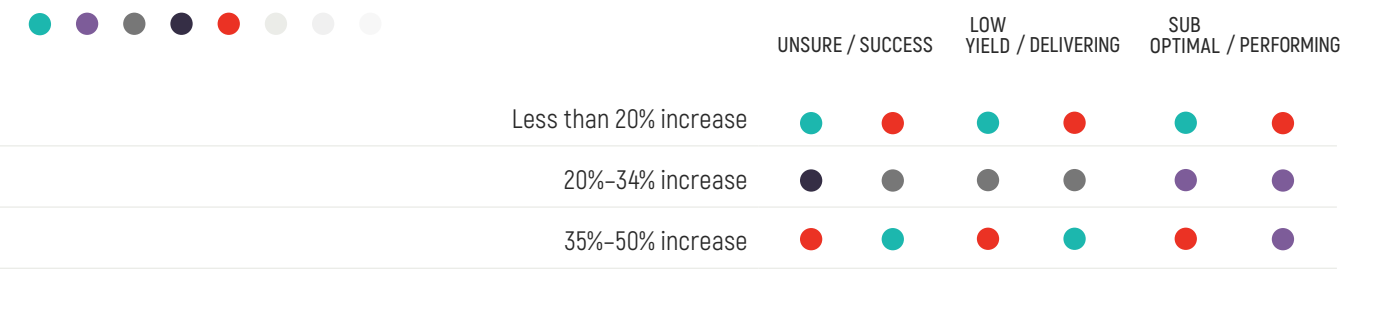
ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: MARKET VALUATION CHANGES



ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: CHANGES IN DIGITAL WORKING PRACTICES



ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: CHANGES IN THE TYPE OF MARKET INSIGHTS WE CAN USE



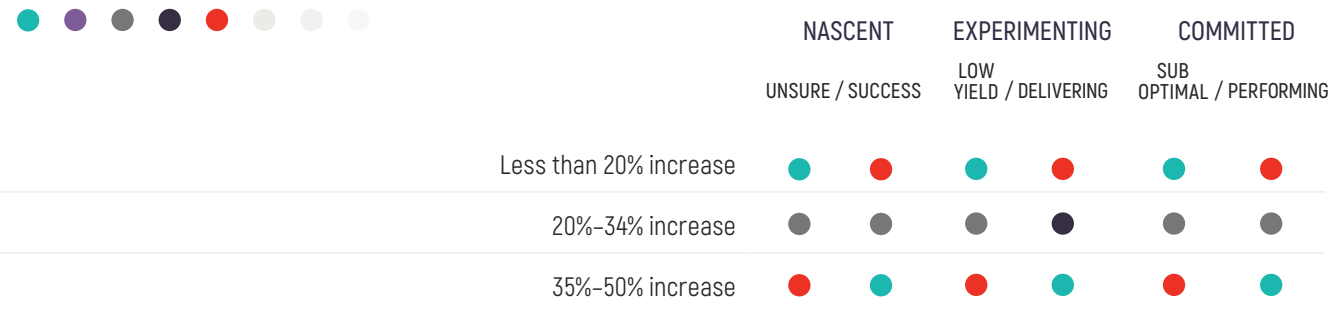
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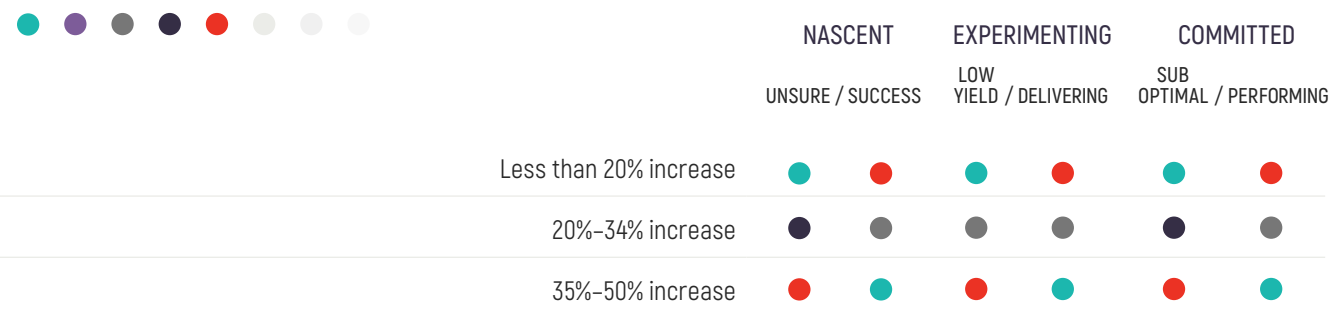
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METRICS FOR INTELLIGENT SYSTEMS

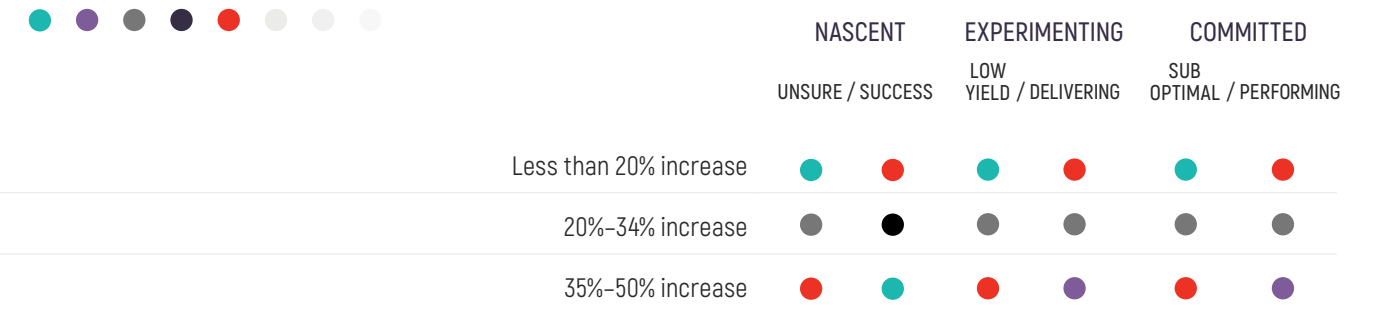
ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: ORGANIZATION'S CAPACITY TO INNOVATE



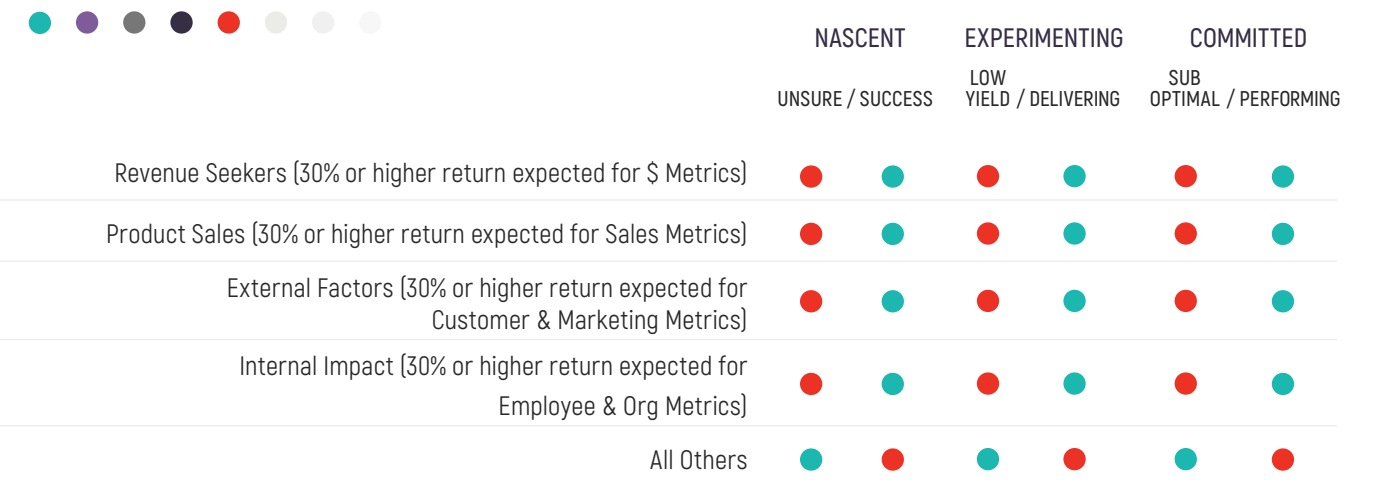
ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: CHANGES IN COMPETITIVE ADVANTAGES IN ESTABLISHED SECTORS



ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: CHANGES IN INTERNAL CONFIDENCE



INTELLIGENT SYSTEM HIGH PERFORMERS



INTELLIGENT SYSTEMS COMPARATIVE INDEX



BARRIERS AND DRIVERS FOR INTELLIGENT SYSTEMS

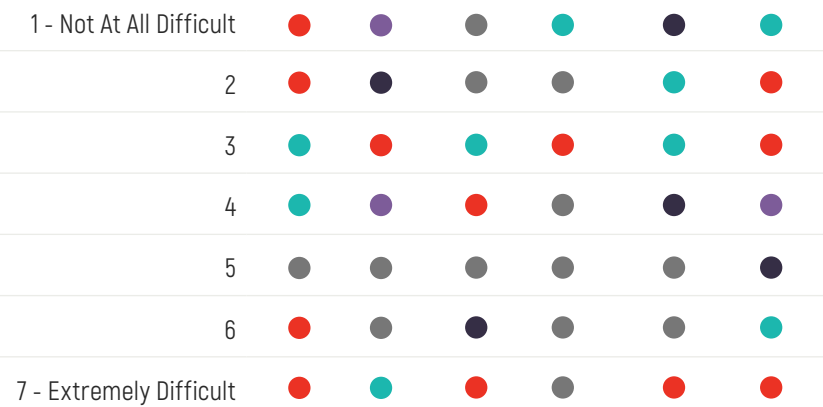
ESTIMATED LEVEL OF DIFFICULTY/ COMPLEXITY INTEGRATING INTELLIGENT SYSTEMS INTO THE BUSINESS WORKFLOW



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



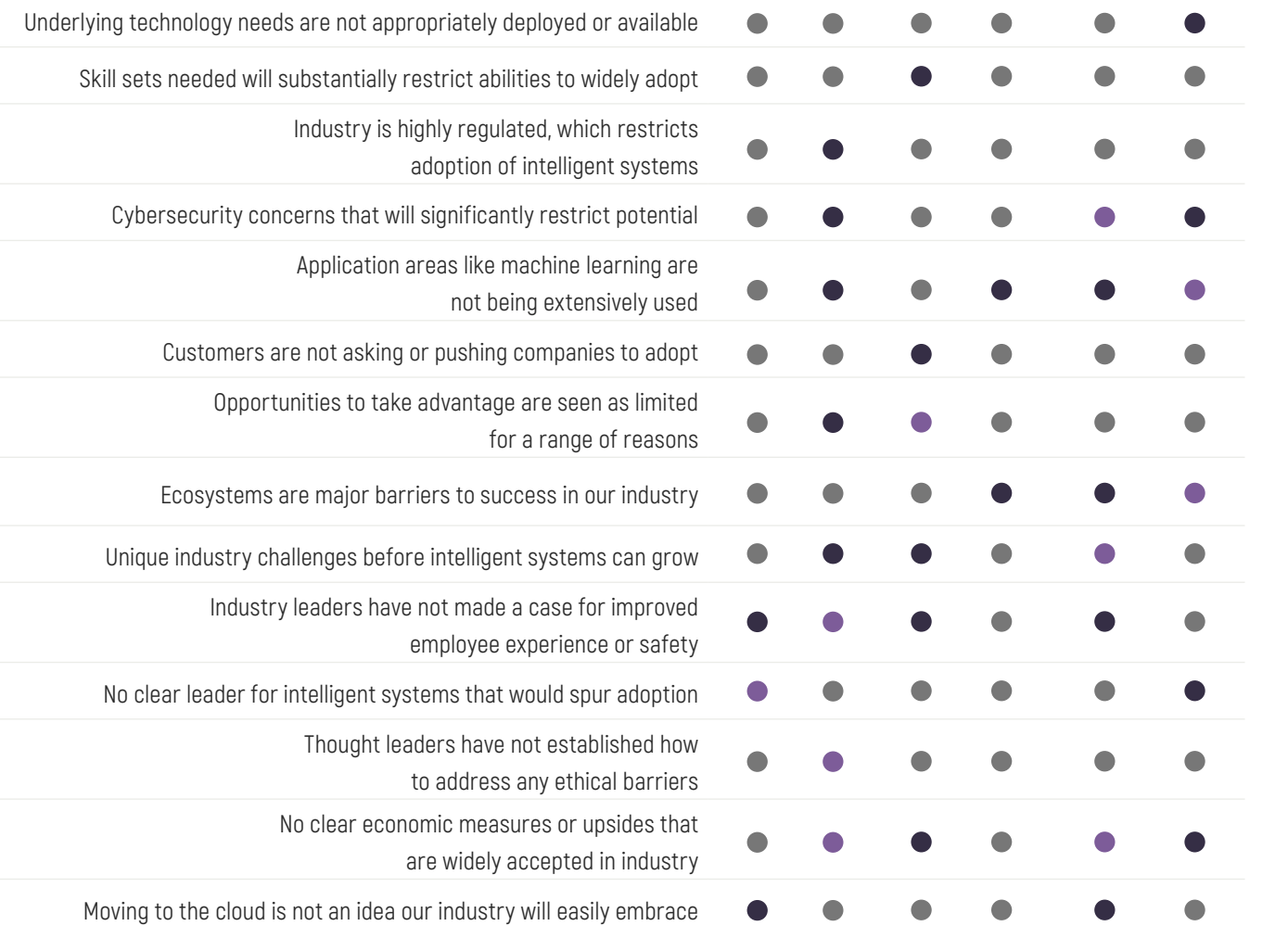
KEY BARRIERS TO THE WIDESPREAD ADOPTION OF INTELLIGENT SYSTEMS



NASCENT
UNSURE / SUCCESS

EXPERIMENTING
LOW YIELD / DELIVERING

COMMITTED
SUB OPTIMAL / PERFORMING



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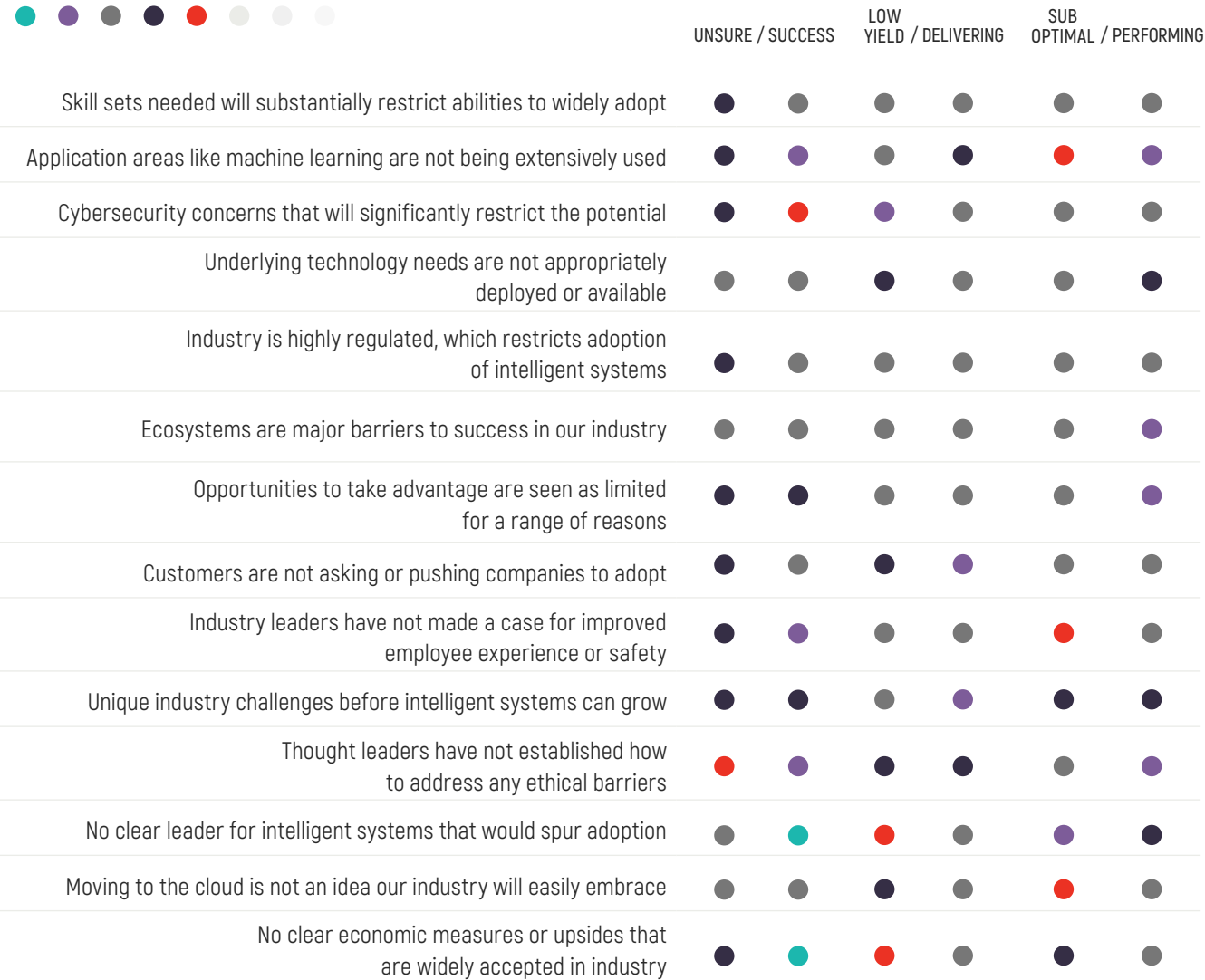
INTELLIGENT SYSTEMS COMPARATIVE INDEX



[Continued from the previous spread]

BARRIERS AND DRIVERS FOR INTELLIGENT SYSTEMS

KEY BARRIERS THAT ARE IMPORTANT TO OVERCOME TO ACHIEVE WIDESPREAD ADOPTION OF INTELLIGENT SYSTEMS



WHAT WILL ACCELERATE INVESTMENT IN AND THE ADOPTION OF INTELLIGENT SYSTEMS?

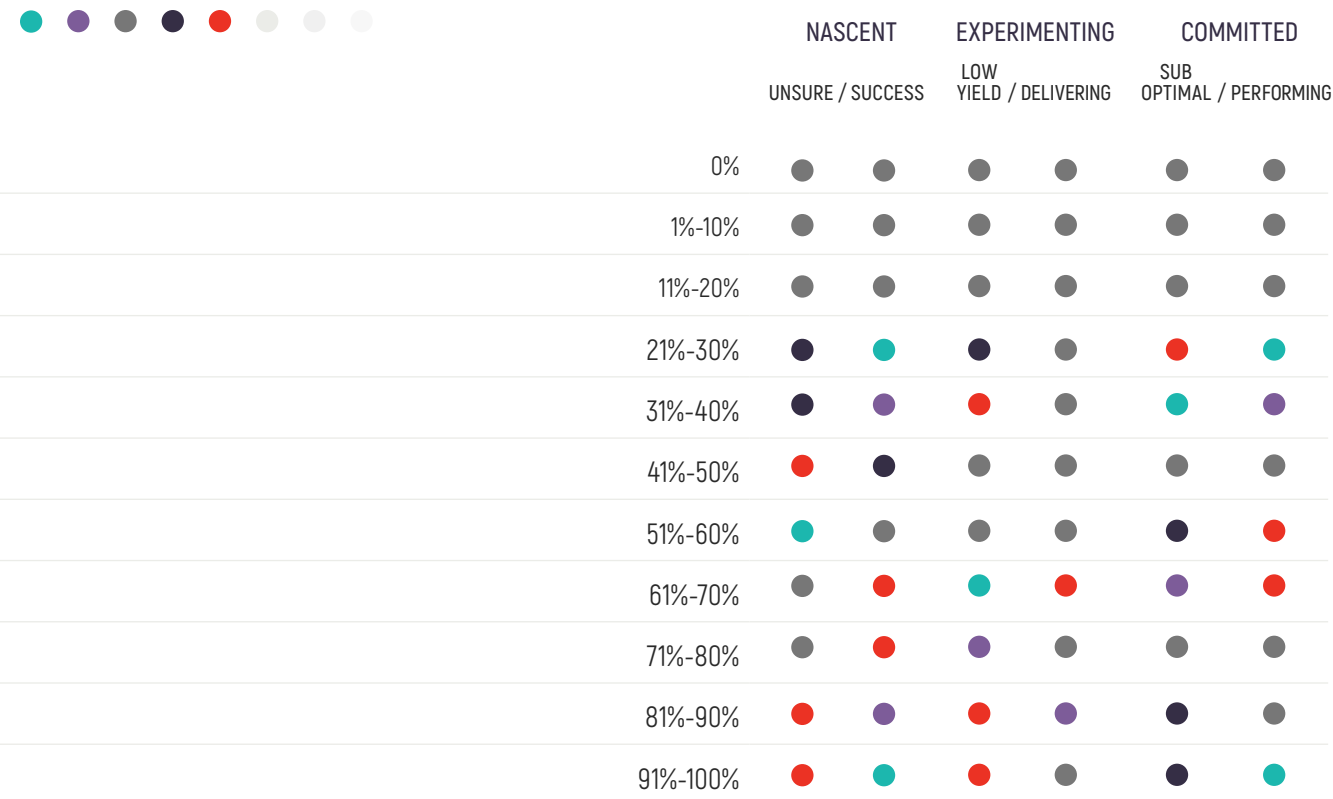


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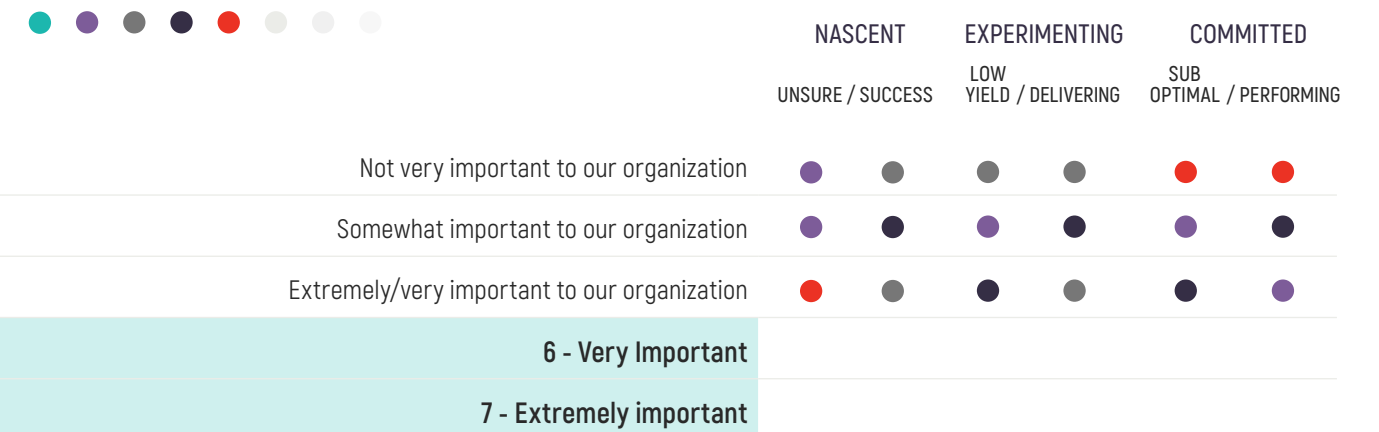


THE FAR EDGE & MISSION-CRITICAL INTELLIGENT SYSTEMS FUTURE

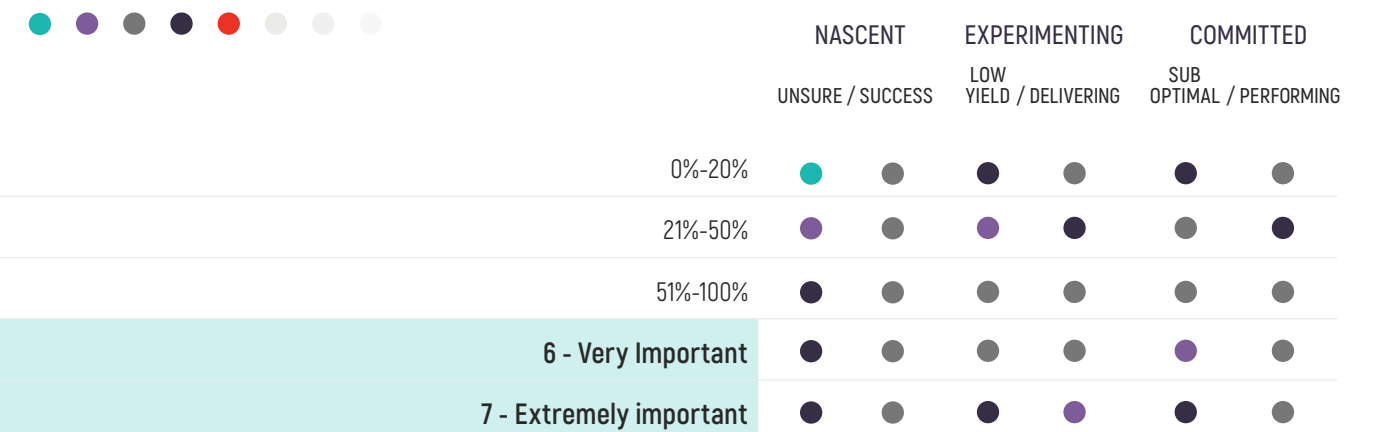
THINKING OF THE INTELLIGENT EDGE, HOW MUCH OF YOUR EMBEDDED PRODUCTS AND SERVICES WILL BE DESIGNED TO BE USED ON A FAR EDGE CLOUD?



TO WHAT EXTENT DOES YOUR ORGANIZATION CONSIDER MISSION-CRITICAL CAPABILITIES FOR YOUR EMBEDDED PRODUCTS AND SERVICES TODAY?



TO WHAT EXTENT DOES YOUR ORGANIZATION CONSIDER MISSION-CRITICAL CAPABILITIES FOR YOUR EMBEDDED PRODUCTS AND SERVICES FIVE YEARS FROM TODAY?



Continued on the next spread ...

INTELLIGENT SYSTEMS COMPARATIVE INDEX



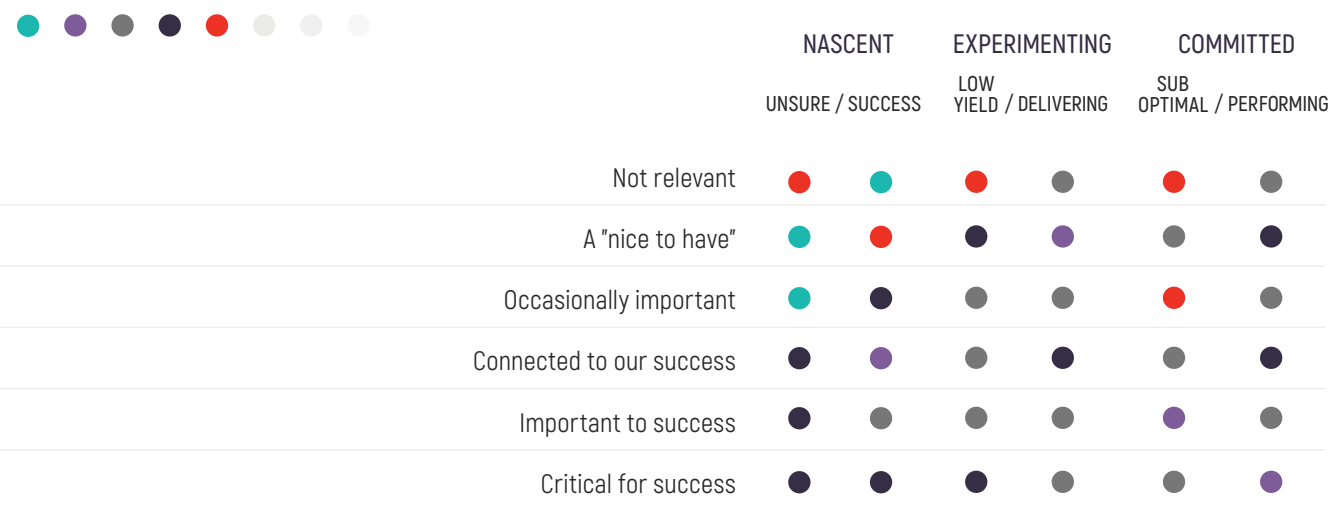
[Continued from the previous spread]

THE FAR EDGE & MISSION-CRITICAL INTELLIGENT SYSTEMS FUTURE

HOW IMPORTANT FOR MISSION-CRITICAL PERFORMANCE ARE SAFETY PROTOCOLS FOR YOUR EMBEDDED PRODUCTS AND SERVICES SO THAT THEY CAN FUNCTION IN A REAL WORLD MISSION-CRITICAL MATTER?



HOW IMPORTANT FOR MISSION-CRITICAL PERFORMANCE ARE LEVELS OF GUARANTEED RELIABILITY THAT WOULD BE AT THE VERY UPPER END OF RELIABILITY OVER A LONG TIME?



HOW IMPORTANT FOR MISSION-CRITICAL PERFORMANCE IS IT THAT THE EMBEDDED PRODUCTS AND SOLUTIONS ARE CAPABLE OF COMPUTING IN NEAR-LATENCY-FREE REAL TIME?



HOW IMPORTANT FOR MISSION-CRITICAL PERFORMANCE IS IT THAT THE EMBEDDED PRODUCTS AND SOLUTIONS HAVE LEVELS OF SECURITY SO THEY CAN FUNCTION IN A MISSION-CRITICAL SECURE MANNER FROM CYBER INTRUSIONS?



Continued on the next spread ...

INTELLIGENT SYSTEMS COMPARATIVE INDEX



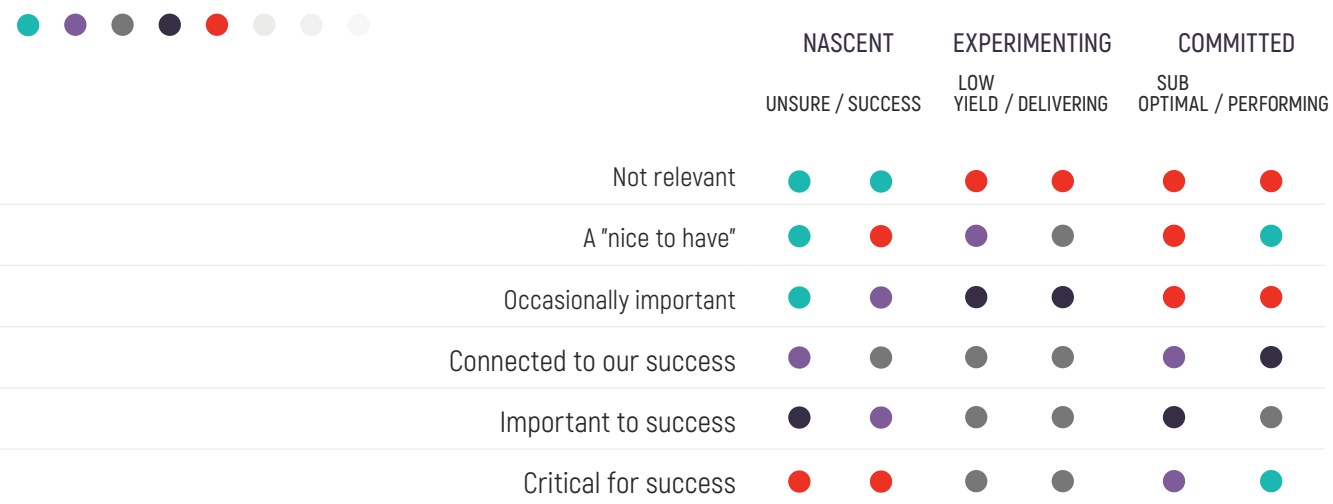
[Continued from the previous spread]

THE FAR EDGE & MISSION-CRITICAL INTELLIGENT SYSTEMS FUTURE

HOW IMPORTANT FOR MISSION-CRITICAL PERFORMANCE IS IT THAT THE EMBEDDED PRODUCTS AND SOLUTIONS CAN DELIVER NEAR-LATENCY-FREE COMPUTE FOR MISSION-CRITICAL NEEDS?



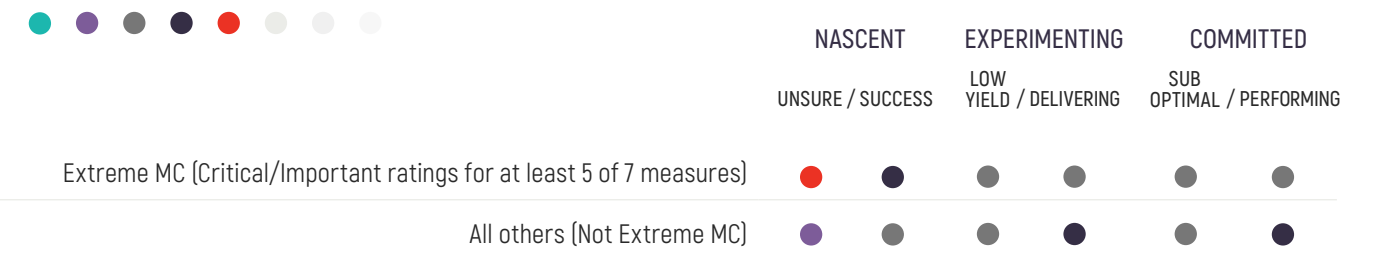
HOW IMPORTANT FOR MISSION-CRITICAL PERFORMANCE IS IT THAT THE CODE INSIDE THE EMBEDDED PRODUCTS AND SERVICES IS FULLY CERTIFIED FOR MISSION-CRITICAL PERFORMANCE?



HOW IMPORTANT FOR MISSION-CRITICAL PERFORMANCE IS IT THAT THE CODE INSIDE THE EMBEDDED PRODUCTS AND SERVICES ARE ABLE TO USE AI IN NEAR REAL TIME TO DELIVER INSIGHTS AND ACTIONS FOR MISSION-CRITICAL SUCCESS?



EXTREME MISSION-CRITICAL NEEDS



INTELLIGENT SYSTEMS COMPARATIVE INDEX



EPILOGUE

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- [Automotive & Transportation](#)
- [Industrial Manufacturing](#)
- [Medical Technology](#)
- [Energy & Utilities](#)
- [Telecommunications](#)

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- World of Intelligent Systems
- Eight in Ten Leaders Want Intelligent Systems Success in Five Years But the Time to Start Blueprinting Is Now
- Crossing the Chasm for Industry 4.0
- Open Source Brings Collective Creativity to the Intelligent Edge
- Opening Up New Economic Realities with Open RAN
- Three Changes That Will Make Rural 5G Access a Reality. The Dream of a Workforce Empowered to Thrive No Matter Where It Lives
- Perseverance on Mars. A Giant Leap in Intelligent Systems, 130 Million Miles from Earth
- Accelerate Change or Lose: Gaining the OODA Edge
- In the Inevitable Machine Economy, Intelligent Systems Free Limited Human Resources for Creative Problem Solving at Scale

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Vodfaone news release



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