## PLOTTING YOUR INTELLIGENT SYSTEMS JOURNEY

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

# Forbes

# WNDRVR

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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.

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## **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

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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.

## INTELLIGENT SYSTEMS COMPARATIVE INDEX 22. DEFINING INTELLIGENT SYSTEMS NOW & IN THE FUTURE 24. 16 WAYS TO COMPARE YOUSELF TO PEERS – ATTITUDES & BELIEFS **32. POTENTIAL SOCIETAL IMPACTS OF INTELLIGENT SYSTEMS 34. INTELLIGENT SYSTEMS DESIGN & CHARACTERISTICS 36. PREDICTING EMBEDDED DEVICES & INTELLIGENT SYSTEMS** 40. EMBEDDED DEVICE BUSINESS MODELS & USAGE 44. METRICS FOR INTELLIGENT SYSTEMS 52. BARRIERS & DRIVERS FOR INTELLIGENT SYSTEMS 56. THE FAR EDGE & MISSION-CRITICAL INTELLIGENT SYSTEMS FUTURE

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## 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 ex

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

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).

### Carefully screened executives based on six criteria

- 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)

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## INSIGHTS

## Insights into the Factors Driving the Journey

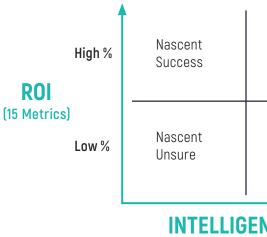
The research design focused on sets of questions about where the organization was positioned on a range of concepts such as the role of embedded devices, far edge compute, cycbersecurity needs, and mission-critical requirements into the future. Questions were asked about factors driving the journey to 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:



Experimenting	Committed
& Delivering	& Performing
Experimenting	Committed
& Low Yield	& Suboptimal

### INTELLIGENT SYSTEMS MATURITY (Status & Belief)

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## 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:

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:



26%	16%
22%	10%
Experimenting	Committed
Momentum	
	22%

## COMMITTED AND PERFORMING (16%)

They hold a deep belief in the Teslafication 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.

and five years' time

To learn about the specific intelligent systems characteristics go to WINDRIVER.COM/INTELLIGENT-SYSTEMS

- 11.6% Characteristics that are nice to have but not important
- 24.1% Characteristics that are crtical 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

## 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

17.5% Nice to have
18.14% Critical for success in five years
31.1% Basic infrastructure
33.0% Foundational for success in three and five years

To learn about the specifc intelligent systems characteristics go to 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



12% Nice to have

- **10%** Critical for success in five years
- **34%** Basic infrastructure
- 43% Foundational for success in three and five years

## EXPERIMENTING AND GETTING LOW YIELDS (22%)

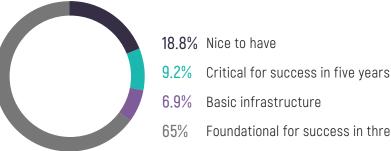
Not fully committed, they get the ideas but are not organizing for success yet, and they have a narrow construct about what success could be. A large range of characteristics are low-impact nice-to-haves that are needed in five years for some, while for others they are the same characteristics that are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



Foundational for success in three and five years

## 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-tohigh 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



10.6% Nice to have

- **19.4%** Critical for success in five years
- 33.2% Basic infrastructure
- **36.9%** Foundational for success in three and five years

## 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.

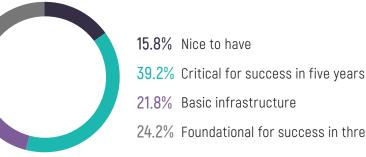
### THEY DO NOT REALLY BELIEVE IN THE META TRENDS, SO LACK VISION AND MOTIVATION.

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



24.2% Foundational for success in three and five years

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## 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? NASCENT EXPERIMENTING COMMITTED low Yield / Delivering SUB OPTIMAL / PERFORMING UNSURE / SUCCESS There have been some minor conversations about the idea We have had planning and strategy conversations about it Some core changes in the organization's business practices have occurred Intelligent systems are reaching mainstream in the organization Intelligent systems could become the most predominant business practices Our organization is fully moving to an intelligent systems digital business model

### TOP PRIORITIES FOR INTELLIGENT SYSTEM DEVELOPMENT IN THE **ORGANIZATION TODAY**

Connecting existing business processes with new forms of sensors

Making data-driven decisions in real time

Making business decisions autonomous

Seamlessly linking all systems between supplier and end customer

Predicting system failures and taking preemptive action to prevent them

Moving more decision-making computing to the far edge of the cloud

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

Connecting existing business processes with new forms of sensors

Making data-driven decisions in real time

Making business decisions autonomous

Seamlessly linking all systems between supplier and end customer

Predicting system failures and taking preemptive action to prevent them

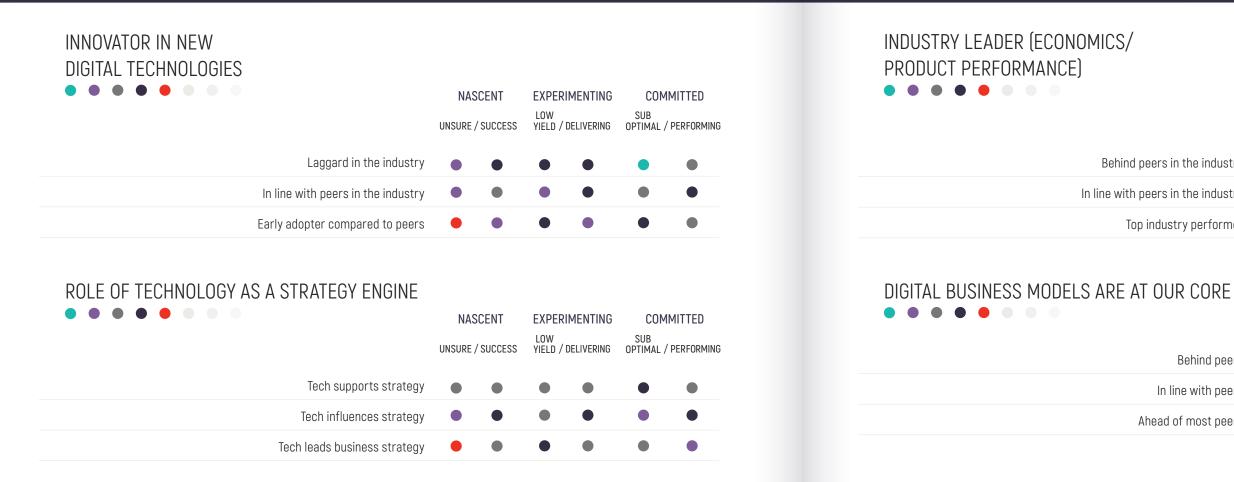
Moving more decision-making computing to the far edge of the cloud





## **ORGANIZATIONS' PERSPECTIVES ON THEMSELVES AND INTELLIGENT SYSTEMS**

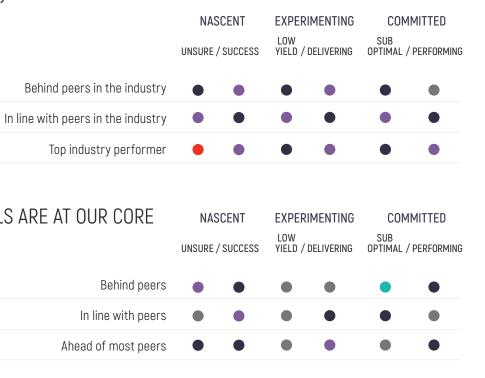
### **16 WAYS TO COMPARE YOURSELF TO PEERS – ATTITUDES & BELIEFS**



ORGANIZATIONS' PERSPECTIVES ON THEMSELVES AND INTELLIGENT SYSTEMS

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Continued on the next spread ...



### **16 WAYS TO COMPARE YOURSELF TO PEERS – ATTITUDES & BELIEFS**

### ALIGNMENT WITH PEERS ON AI AND ML

$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$		NASCE	INT ICCESS	LOW	MENTING	SUB	IMITTED ' Performing
Behind peer	rs (		•	•	•		•
In line with peer	rs		•		•	•	
Ahead of most peer	rs (		•		•		

## ALIGNMENT ON DELIVERING PRODUCTS AND SERVICES INTO NEW BUSINESS SECTORS

	NASCENT		LOW	IMENTING DELIVERING	SUB	IMITTED / Performing
Behind peers		•			•	•
In line with peers		•			•	•
Ahead of most peers	•	•			•	•

ORGANIZATIONS' PERSPECTIVES ON THEMSELVES AND INTELLIGENT SYSTEMS

AS BUILDING BLOCKS FOR ALL BUSINESS
Be
In line
Ahead of r

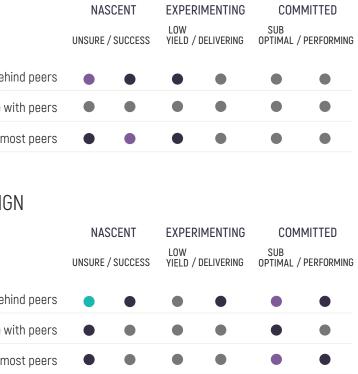
### ALIGNED ON THE IDEA THAT CLOUD DESIGN AND DELIVERY IS THE FUTURE

		•		
Behir				
In line wi				
Ahead of mo				

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



Continued on the next spread ...

### **16 WAYS TO COMPARE YOURSELF TO PEERS – ATTITUDES & BELIEFS**



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

$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$	NAS	SCENT	EXPER	IMENTING	COM	IMITTED
	UNSURE /	/ SUCCESS	LOW YIELD /	DELIVERING	SUB OPTIMAL /	PERFORMING
Behind peers		•		•	•	•
In line with peers		•	•	•	•	•
Ahead of most peers	٠		٠		•	•

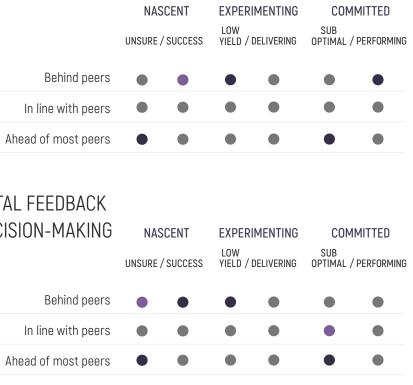
ALIGNED ON THE IDEA THAT DIGITAL FEEDBACK LOOPS WILL DRIVE ONGOING DECISION-MAKING 

Behind
In line with
Ahead of mos

ORGANIZATIONS' PERSPECTIVES ON THEMSELVES AND INTELLIGENT SYSTEMS







Continued on the next spread ...

### **16 WAYS TO COMPARE YOURSELF TO PEERS – ATTITUDES & BELIEFS**

### ALIGNED ON THE IDEA THAT AGILE DEVELOPMENT METHODS ARE CRITCAL FOR EMBEDEED DEVICES AND SERVICES IN THE NEAR FUTURE

$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$	NASCENT		EXPERIMENTING		COMMITTED	
	UNSURE / SUCCESS		LOW YIELD /	DELIVERING	SUB OPTIMAL /	PERFORMING
Behind peers					•	•
In line with peers	٠	•			•	•
Ahead of most peers					•	•

### ALIGNED ON THE IDEA THAT COMPANIES ARE INCREASINGLY BECOMING SOFTWARE ENTERPRISES

$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$	NAS	SCENT	EXPER	IMENTING	COM	MITTED
	UNSURE / SUCCESS		LOW YIELD /	DELIVERING	SUB OPTIMAL /	PERFORMING
Behind peers		•			•	•
In line with peers						•
Ahead of most peers	٠	•	٠		•	•

ORGANIZATIONS' PERSPECTIVES ON THEMSELVES AND INTELLIGENT SYSTEMS



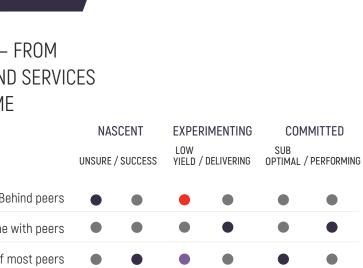
ALIGNED ON THE IDEA THAT SYSTEMS -
CUSTOMER TO SUPPLIER PRODUCTS AN
– ARE HIGHLY CONNECTED IN REAL TIM
$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$
В

In line
Ahead of r

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

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### **POTENTIAL SOCIETAL IMPACT OF INTELLIGENT SYSTEMS**

### TOP THREE CHOSEN: SOCIETAL IMPACT OF INTELLIGENT SYSTEMS

$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$	UNSURE / SUCCESS		LOW YIELD /	DELIVERING	SUB OPTIMAL /	PERFORMING
Change how we think about infrastructure, more adaptive and efficient ways		•		•	٠	•
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	•	٠		٠	٠	•
Transform how to govern corporations as they become more real time and data-centric	٠	•	•	•	٠	•
Revolutionize industry dynamics because they break down barriers to access	•	٠	•		•	•
Widen global opportunities as traditional barriers are broken down	•	•				•
Evolve how people are involved in the working world, more value, personalized	•	•		•	٠	•
Help to better protect civil liberties	•	•			•	•

NASCENT

EXPERIMENTING

COMMITTED

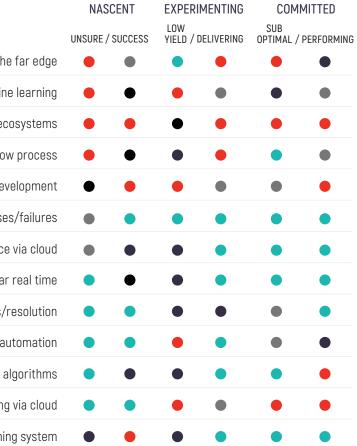
### THE DNA OF INTELLIGENT SYSTEMS

True compute on the
Automated learning functionality; machin
Near-real-time seamless multiple ec
Real-time synthesized workflow
Connecting data into new product dev
Predicting stresse
Personalized embedded device experience
Simulating and emulating in near
Detection of events/
Total a
Acting based on sensory data and a
Adapting tasks based on reprogramming

Experimenting as a learning system

### INTELLIGENT SYSTEMS COMPARATIVE INDEX





### INTELLIGENT SYSTEM DESIGN AND CHARACTERISTICS

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

Built, developed, operated using simulations to increase productivity <ul> <li>Developed, deployed, and operated through private clouds</li> <li>Developed, deployed, operated through mixed public/private clouds</li> <li>Developed, deployed, operated through mixed public/private clouds</li> <li>Built, developed, operated using simulations to increase quality</li> <li>Designed to be mission critical to protect data against cyberattacks</li> <li>Designed mission critical in nature to protect against infrastructure failure</li> <li>Deliver real-time digital data feedback loops for business decision-making</li> <li>Cale digital solutions more efficiently than purely adding people/capital</li> <li>Communicate securely w/heterogenous ecosystem of devices/services</li> <li>Developed, deployed, and operated through public clouds</li> <li>Can react to unplanned situations using machine learning</li> <li>Can work side by side with humans in shared tasks</li> </ul> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Maintaine</li>	$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$	UNSURE / SUCCESS		low Yield /	DELIVERING	SUB OPTIMAL /	PERFORMING
Developed, deployed, operated through mixed public/private clouds <ul> <li>Built, developed, operated using simulations to increase quality</li> <li>Designed to be mission critical to protect data against cyberattacks</li> <li>Designed mission critical in nature to protect against infrastructure failure</li> <li>Technically advanced machines that react based on goal-based algorithm</li> <li>Technically advanced machines that react based on goal-based algorithm</li> <li>Technically advanced machines that react based on goal-based algorithm</li> <li>Scale digital solutions more efficiently than purely adding people/capital</li> <li>Technically advanced machines that react based on predefined rules</li> <li>Technically advanced machines that react based on predefined rules</li> <li>Technically advanced machines that react based on predefined rules</li> <li>Technically advanced machines that react based on predefined rules</li> <li>Technically advanced machines that react based on predefined rules</li> <li>Technically advanced machines that react based on predefined rules</li> <li>Technically advanced machines that react based on predefined rules</li> <li>Technically advanced machines that react based on predefined rules</li> <li>Technically advanced machines that react based on predefined rules</li> <li>Technically advanced machines that react based on goal-based algorithm</li> <li>Technically advanced machines that react based on predefined rules</li> <li>Technically advanced machines that react based on predefined rules</li> <li>Technically advanced machines that react based on predefined rules</li> <li>Technically advanced machines that react based on predefined rules</li> <li>Technically advanced ma</li></ul>	Built, developed, operated using simulations to increase productivity						•
Built, developed, operated using simulations to increase quality <ul> <li></li></ul>	Developed, deployed, and operated through private clouds		•			•	
Designed to be mission critical to protect data against cyberattacks <ul> <li></li></ul>	Developed, deployed, operated through mixed public/private clouds	٠		•			
Designed mission critical in nature to protect against infrastructure failure <ul> <li>Technically advanced machines that react based on goal-based algorithm</li> <li>Eliver real-time digital data feedback loops for business decision-making</li> <li>Eliver real-time digital data feedback loops for business decision-making</li> <li>Eliver real-time digital solutions more efficiently than purely adding people/capital</li> <li>Echnically advanced machines that react based on predefined rules</li> <li>Echnically advanced machines that react based on predefined rules</li> <li>Echnically load new tasks/workflows into device over lifecycle</li> <li>Ecommunicate securely w/heterogenous ecosystem of devices/services</li> <li>Econ react to unplanned situations using machine learning</li> <li>Econ complete tasks with oversight using autonomous capabilities</li> <li>Econ complete tasks with oversight using autonomous capabilities</li> <li>Econ complete tasks upportunities and business models</li> <li>Econ complete tasks with oversight using autonomous capabilities</li> <li>Econ complete tasks with oversight using autonomous capab</li></ul>	Built, developed, operated using simulations to increase quality				•		
Technically advanced machines that react based on goal-based algorithm <ul> <li></li></ul>	Designed to be mission critical to protect data against cyberattacks		•			•	•
Deliver real-time digital data feedback loops for business decision-making       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       • <td>Designed mission critical in nature to protect against infrastructure failure</td> <td></td> <td></td> <td>٠</td> <td></td> <td></td> <td>•</td>	Designed mission critical in nature to protect against infrastructure failure			٠			•
Scale digital solutions more efficiently than purely adding people/capital <ul> <li>Technically advanced machines that react based on predefined rules</li> <li>Ability to dynamically load new tasks/workflows into device over lifecycle</li> <li>Ability to dynamically load new tasks/workflows into device over lifecycle</li> <li>Communicate securely w/heterogenous ecosystem of devices/services</li> <li>Developed, deployed, and operated through public clouds</li> <li>Can react to unplanned situations using machine learning</li> <li>Can complete tasks with oversight using autonomous capabilities</li> <li>Technically to be monitored, managed, and maintained</li> <li>May the capacity to be monitored, managed, and maintained</li> </ul> <ul> <li>Ability to be monitored, managed, and maintained</li> <li>Ability to dynamically to a provide the capacity to be monitored, managed, and maintained</li> </ul> <ul> <li>Ability to dynamically load new tasks/workflows</li> </ul>	Technically advanced machines that react based on goal-based algorithm		•				•
Technically advanced machines that react based on predefined rules <ul> <li>Ability to dynamically load new tasks/workflows into device over lifecycle</li> <li></li></ul>	Deliver real-time digital data feedback loops for business decision-making					•	•
Ability to dynamically load new tasks/workflows into device over lifecycle <ul> <li></li></ul>	Scale digital solutions more efficiently than purely adding people/capital	٠			•	٠	
Communicate securely w/heterogenous ecosystem of devices/services <ul> <li>Developed, deployed, and operated through public clouds</li> <li>a</li> <li>a</li></ul>	Technically advanced machines that react based on predefined rules	٠	•	٠	٠	•	•
Developed, deployed, and operated through public clouds <ul> <li></li></ul>	Ability to dynamically load new tasks/workflows into device over lifecycle					•	
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	Communicate securely w/heterogenous ecosystem of devices/services				•		•
Can complete tasks with oversight using autonomous capabilities <ul> <li></li></ul>	Developed, deployed, and operated through public clouds						
Help create new business opportunities and business models <ul> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> </ul> <ul> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> <li>Have the capacity to be monitored, managed, and maintained</li> </ul>	Can react to unplanned situations using machine learning		٠	٠		•	
Have the capacity to be monitored, managed, and maintained	Can complete tasks with oversight using autonomous capabilities			٠			٠
	Help create new business opportunities and business models	•				•	
Can work side by side with humans in shared tasks 🔹 🔍 🔍 🔍 🗨 🖤	Have the capacity to be monitored, managed, and maintained		•				٠
	Can work side by side with humans in shared tasks		•				•

NASCENT

EXPERIMENTING

COMMITTED

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

Discussing the possibilities of intelligent systems at a stra

Having a clear focus on creating an intelliger future for the

Seeing current experiments in practice in certain areas of th

Having some bus. practices that contribute to an intelligent syste

Having core bus. processes that contribute to an intelligent syste

Our embedded products/services are being partially develop

Our embedded products/services completely develop

INTELLIGENT SYSTEMS COMPARATIVE INDEX

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	NAS	CENT	EXPERI	MENTING	COM	MITTED
					SUB OPTIMAL /	PERFORMING
rategic level						
ent systems he company	•		•		•	•
he company						•
tems future				٠	•	•
tems future		•			•	•
ped for this	٠				•	•
es are being oped 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		EXPERIMENTING		COM	MITTED	Ð
	UNSURE /			DELIVERING	SUB OPTIMAL /	PERFORMING	
Describes us completely	•			•		•	
Describes us somewhat	•			•	•	•	
Does not describe us at all	•	•	•	•	•	•	

### OUR EMBEDDED DEVICES WILL INCREASINGLY CONNECT DATA AND INSIGHTS FOR NEW PRODUCTS AND SERVICES $\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$

Describes us
Describes us
Does not descri

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

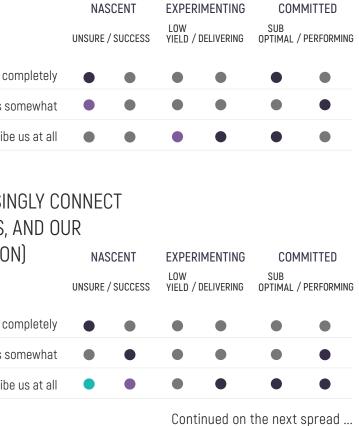
Describes us co			Describes us co
Describes us so			Describes us so
Does not describe			Does not describe

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

$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$	NASCENT		LOW	IMENTING Delivering	SUB	IMITTED / performing
Describes us completely		•		•		
Describes us somewhat		•	٠	•		•
Does not describe us at all		•	•	•	•	•

### INTELLIGENT SYSTEMS COMPARATIVE INDEX







### PREDICTING EMBEDDED DEVICES AND INTELLIGENT SYSTEMS

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

		NASCENT		EXPERI	EXPERIMENTING		MITTED	
		UNSURE /	SUCCESS	low Yield / I	DELIVERING	SUB OPTIMAL /	PERFORMING	
Describes us com	npletely	•			•		•	
Describes us son	newhat		•		•		•	
Does not describe u	us at all	•					•	

NACOFNE

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

Describes us c
Describes us s
Does not describ

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

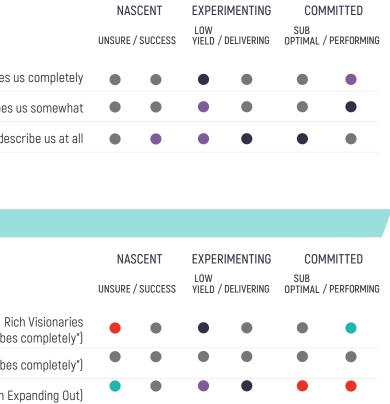
$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$	NASCENT UNSURE / SUCCESS		EXPER	IMENTING	COM	IMITTED
			LOW YIELD /	DELIVERING	SUB OPTIMAL ,	PERFORMING
Describes us completely		•			•	•
Describes us somewhat		•		•	•	•
Does not describe us at all	٠					•

### **INDUSTRY VISIONARIES**

(Rates 5 or more of the 7 attributes as 6/7 "describes completely" Expanding Out (Rates 3-4 of the 7 attributes as 6/7 "describes completely") All Others (not a Rich Visionary or an Expanding Out)

### INTELLIGENT SYSTEMS COMPARATIVE INDEX





### **EMBEDDED DEVICE BUSINESS MODELS AND USAGE**

### PERCENT OF SALES THAT ARE EMBEDDED SOFTWARE/DEVICES/APPLICATIONS

$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$	NASCENT UNSURE / SUCCESS		EXPERIMENTING		COMMITTED	
			LOW YIELD / I	DELIVERING	SUB OPTIMAL /	PERFORMING
SUBTOTAL: 40% or less		•		•		•
SUBTOTAL: 50%-70%	٠	•		•	•	•
SUBTOTAL: 80%-100%	٠	•	•	•	•	٠

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

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

### PRODUCTS DESIGNED TO WORK ON THE INTELLIGENT EDGE FOR INTERNAL USE

$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$	NASCENT UNSURE / SUCCESS				LOW	IMENTING DELIVERING	SUB	MITTED Performing
0%-20%	•				•	•		
21%-50%					•	•		
51%-100%					•	•		

### INTELLIGENT SYSTEMS COMPARATIVE INDEX









Continued on the next spread ...



### EMBEDDED DEVICE BUSINESS MODELS AND USAGE

### PRODUCTS SOLD TO WORK ON THE INTELLIGENT EDGE FOR INTERNAL USE

$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$		NASCENT UNSURE / SUCCESS		NASCENT		EXPER	MENTING	COM	IMITTED
				LOW YIELD /	DELIVERING	SUB OPTIMAL /	PERFORMING		
	0%-20%		•		•	•	•		
	21%-50%				•	•	•		
	51%-100%				•	•	•		

## MISSION-CRITICAL/BUSINESS-CRITICAL FOCUS NASCENT EXPERIMENTING COMMITTED LOW VIELD / DELIVERING SUB OPTIMAL / PERFORMING Extreme Internal (30%+ USED for edge computing & mission-critical performance demanded) • • • • • • • • • • • Product Sales (30%+ SOLD for edge computing & rating 6/7 on mission-critical) • • • • • • • • • • • Extreme Both (30%+ USED & SOLD for edge computing & rating 6/7 on mission-critical) • • • • • • • • • • All Others • • • • • • • • • • • • • • • • •

### INTELLIGENT SYSTEMS COMPARATIVE INDEX





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

$\bullet$ $\bullet$ $\bullet$ $\bullet$ $\bullet$ $\bullet$	NASCENT		CENT	EXPER	IMENTING	COM	IMITTED
		UNSURE / SUCCESS		LOW YIELD /	DELIVERING	SUB OPTIMAL /	PERFORMING
	Less than 20% increase		•		•	•	•
	21%-35% increase		•		•	•	•
	36%-50% increase	•		•	•	•	•

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

	NASCENT UNSURE / SUCCESS				LOW	IMENTING Delivering	SUB	IMITTED / Performing
Less than 20% increase	•	•		•	•	•		
21%-35% increase	•	•		•		•		
36%–50% increase	٠	•	٠	•	•	•		

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

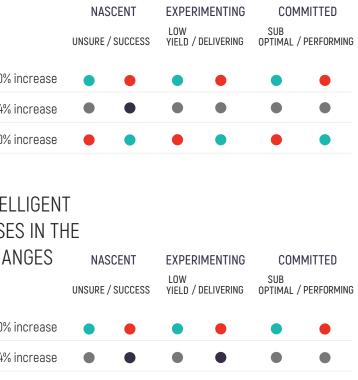
Less than 20%
20%-34%
35%-50%

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

Less than 20% increase
20%–34% increase
35%–50% increase

### INTELLIGENT SYSTEMS COMPARATIVE INDEX





Continued on the next spread ...



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

$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$	● ● ● ● ● ■ ■ ■ NASCENT		CENT	EXPER	IMENTING	COM	MITTED	
		UNSURE / SUCCESS		LOW YIELD /	DELIVERING	SUB OPTIMAL /	PERFORMING	
	Less than 20% increase	•	•		•	•	•	
	20%–34% increase				•	•	•	
	35%–50% increase	•	•	٠	•	•	٠	

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

Less than 2	:0%
20%-3	i4%
35%-5	0%

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

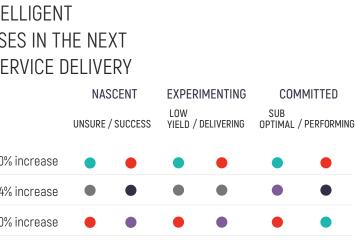
$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$	NASCENT		LOW	IMENTING Delivering	SUB	IMITTED ' performing
Less than 20% increase	•	•	•	•	•	•
20%-34% increase	•	•		•	٠	•
35%-50% increase	•	•	٠	•	•	•

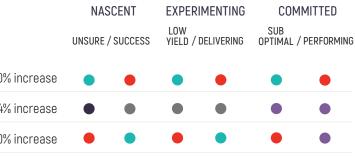
ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: CHANGES IN THE TYPE OF MARKET INSIGHTS WE CAN USE  $\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$ 

Less than 20% i
20%-34% i
35%-50% i

### INTELLIGENT SYSTEMS COMPARATIVE INDEX







Continued on the next spread ...

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

			LOW		SUB	MITTED	
					UPTIMAL /	PERFORMING	
Less than 20% increase	•	•	•	•		•	
20%–34% increase				•	•	•	
35%–50% increase	•	•	•	•	•	•	

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

Less than 20%
20%-34%
35%-50%

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

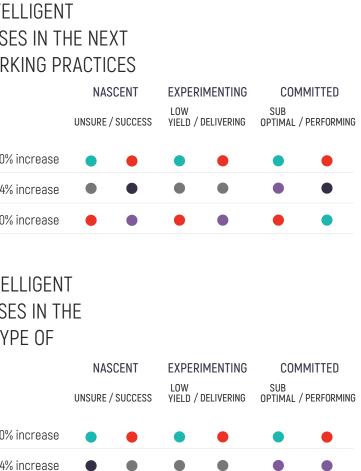
$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$		NASCENT		EXPERIMENTING			MITTED	D
		UNSURE /	SUCCESS	LOW YIELD /	DELIVERING	SUB OPTIMAL /	PERFORMING	
	Less than 20% increase	•	•		•	•	•	
	20%–34% increase		•					
	35%–50% increase	•		٠	•	•	•	

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 

Less than 20% increase	ļ
20%–34% increase	!
35%-50% increase	

### INTELLIGENT SYSTEMS COMPARATIVE INDEX





### 協 WNDRVR 49

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

	NASCENT UNSURE / SUCCESS		LOW		SUB			
Less than 20% increase	•	•	•	•	•	•		
20%–34% increase		•		•	٠	•		
35%–50% increase	•	•	•	•	•	•		

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

NASCENT UNSURE / SUCCESS		LOW		SUB	MMITTED / Performing
٠	•		•		•
٠			•	٠	•
•	•	•	•	•	•
	UNSURE	UNSURE / SUCCESS	UNSURE / SUCCESS VIELD /	LOW UNSURE / SUCCESS YIELD / DELIVERING	UNSURE / SUCCESS LOW YIELD / DELIVERING OPTIMAL

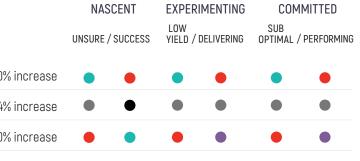
### ESTIMATE THE IMPACT FROM USING INTELLIGENT SYSTEMS IN YOUR BUSINESS'S PROCESSES IN THE NEXT THREE YEARS: CHANGES IN INTERNAL CONFIDENCE $\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$

Less than 20%
20%-34%
35%-50%

INTELLIGENT SYSTEM HIGH PERFORMERS						
	NASCENT UNSURE / SUCCESS		LOW	IMENTING Delivering	SUB	IMITTED / performing
Revenue Seekers (30% or higher return expected for \$ Metrics)	•	•		•	•	•
Product Sales (30% or higher return expected for Sales Metrics)	•	•		•	•	•
External Factors (30% or higher return expected for Customer & Marketing Metrics)	•	•	•	•	•	•
Internal Impact (30% or higher return expected for Employee & Org Metrics)	•	•	•	•	•	•
All Others	•	•		•	•	•

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### 份 WNDRVR 51

### KEY BARRIERS TO THE WIDESPREAD

IMITTED / Performin	SUB	EXPERIMENTING LOW YIELD / DELIVERING		NASCENT UNSURE / SUCCESS		
•		•				Underlying technology needs are not appropriately deployed or available
		•		•		Skill sets needed will substantially restrict abilities to widely adopt
	•	•	•	•	•	Industry is highly regulated, which restricts adoption of intelligent systems
				•		Cybersecurity concerns that will significantly restrict potential
•	•	•	•	•	•	Application areas like machine learning are not being extensively used
		•	•			Customers are not asking or pushing companies to adopt
•	•	•	٠	•	•	Opportunities to take advantage are seen as limited for a range of reasons
•	•	•	•	•		Ecosystems are major barriers to success in our industry
		•		•		Unique industry challenges before intelligent systems can grow
•	•	•	•	•	٠	Industry leaders have not made a case for improved employee experience or safety
٠	•	•		•		No clear leader for intelligent systems that would spur adoption
•	•	•	•	•	٠	Thought leaders have not established how to address any ethical barriers
•	•	•	•	•	•	No clear economic measures or upsides that are widely accepted in industry
	•					Moving to the cloud is not an idea our industry will easily embrace

### BARRIERS AND DRIVERS FOR INTELLIGENT SYSTEMS

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

	UNSUF	RE / SUCCESS	LOW YIELD /	DELIVERING	SUB OPTIMAL /	PERFORMING
1 - Not At All Difficult	•	•		•	•	•
2	•	٠			٠	٠
3	•	•	•	•	•	•
4	•		•	•	•	•
5				•	•	•
6	•		٠	•	•	•
7 - Extremely Difficult	•	•	•	•	•	•

NASCENT EXPERIMENTING

COMMITTED

INTELLIGENT SYSTEMS COMPARATIVE INDEX



Continued on the next spread ...

### BARRIERS AND DRIVERS FOR INTELLIGENT SYSTEMS

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

	UNSURE / SUC	CESS	LOW YIELD /	DELIVERING	SUB OPTIMAL /	PERFORMING
Skill sets needed will substantially restrict abilities to widely adopt	•			•		
Application areas like machine learning are not being extensively used	•			•	•	•
Cybersecurity concerns that will significantly restrict the potential	•			•		
Underlying technology needs are not appropriately deployed or available	•		•	•	•	•
Industry is highly regulated, which restricts adoption of intelligent systems	•			•	•	•
Ecosystems are major barriers to success in our industry	•			•	٠	•
Opportunities to take advantage are seen as limited for a range of reasons	•		•	•	•	•
Customers are not asking or pushing companies to adopt	•			•		
Industry leaders have not made a case for improved employee experience or safety	•			•	•	•
Unique industry challenges before intelligent systems can grow	• •			•	•	•
Thought leaders have not established how to address any ethical barriers	•		•	•	•	٠
No clear leader for intelligent systems that would spur adoption	•			•		
Moving to the cloud is not an idea our industry will easily embrace	•			•	•	
No clear economic measures or upsides that are widely accepted in industry	•		•			•

NASCENT

EXPERIMENTING

COMMITTED

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

Evidence of optimized workflows that evolve from using intelligen
Progressively improved feeling of cor the results we a
Evidence of ability to innovate new products from intelligen
Evidence that competitors are thri with their intelligen
Evidence of improved customer satisfa their desire to wo
Evidence that industry experts in believe it is the wa
Evidence of the economic impact to c
Evidence this allows customers to do our products an

INTELLIGENT SYSTEMS COMPARATIVE INDEX





### 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?

$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$			EXPER	IMENTING	COM	IMITTED
			LOW YIELD /	DELIVERING	SUB OPTIMAL ,	PERFORMING
0%						•
1%-10%						•
11%-20%					•	
21%-30%		•	٠		•	•
31%-40%	•		•	٠	٠	
41%-50%	٠	٠	٠			
51%-60%					•	•
61%-70%		٠	٠	٠	•	٠
71%-80%		٠	٠	٠	•	
81%-90%	٠	٠	٠	٠	•	٠
91%-100%	٠	•			•	٠

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

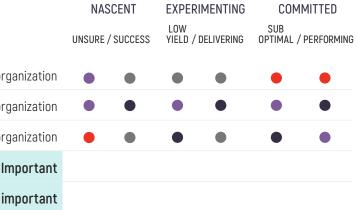
Not very important to our org
Somewhat important to our org
Extremely/very important to our org
6 - Very In
7 - Extremely in
O WHAT EXTENT DOES YOUR ORGANIZAT

PRODUCTS AND SERVICES FIVE YEARS F
MISSION-CRITICAL CAPABILITIES FOR YC
TO WHAT EXTENT DOES YOUR ORGANIZA

6 - Very 7 - Extremely

INTELLIGENT SYSTEMS COMPARATIVE INDEX

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### TION CONSIDER OUR EMBEDDED FROM TODAY?

	NAS	CENT	EXPERIMENTING		COM	MITTED		
	UNSURE / SUCCESS		low Yield /	DELIVERING	SUB OPTIMAL / PERFORMING			
0%-20%					•			
21%-50%				•		•		
51%-100%	•				•	•		
Important	•	•			•	•		
, important	٠	•	٠		•	•		

Continued on the next spread ...

### THE FAR EDGE & MISSION-CRITICAL INTELLIGENT SYSTEMS FUTURE

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

REAL WURLD MISSION-GRITICAL MATTER?	NAS	CENT	EXPERIMENTING		COMMITTED	
$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$	UNSURE /	SUCCESS	LOW YIELD /	DELIVERING	SUB OPTIMAL /	PERFORMING
Not relevant		•	•	•	•	•
A "nice to have"				•	•	•
Occasionally important				•	•	•
Connected to our success				•	•	•
Important to success	•			•	٠	
Critical for success	•	٠	٠	•	•	٠

### 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?

	NASCENT		IOW		SUB	1MITTED / Performing
Not relevant	UNSURE / SUCCESS     LOW YIELD / DELIVERING     OPT       Not relevant     Image: Comparison of the second seco	•	•			
A "nice to have"	•	•	٠	٠	•	•
Occasionally important	•	٠		•	•	•
Connected to our success	•	•		•		•
Important to success	•	•		•	٠	٠
Critical for success	٠	•	٠	•	•	•

### INTELLIGENT SYSTEMS COMPARATIVE INDEX



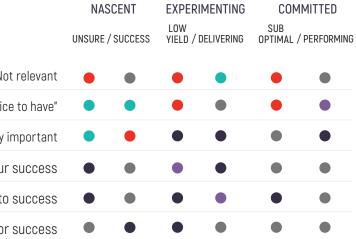
REAL TIME? 

Not
A "nice
Occasionally i
Connected to our
Important to
Critical for

HOW IMPORTANT FOR MISSION-CRITICAL PERFORMANCE IS IT THAT THE FUNCTION IN A MISSION-CRITICAL SECURE MANNER FROM CYBER INTRUSIONS?

		NASCENT		LOW	MENTING	SUB	MITTED
Not	t relevant	•		•		•	•
A "nice	e to have"	•			•	•	•
Occasionally i	mportant			•	•	•	•
Connected to our	success	•				•	•
Important to	success	•			•	•	•
Critical for	success					•	•

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



# EMBEDDED PRODUCTS AND SOLUTIONS HAVE LEVELS OF SECURITY SO THEY CAN

Continued on the next 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?

		CENT SUCCESS	LOW	IMENTING DELIVERING	SUB	1MITTED / performing
Not relevant	•	•	•	•	•	•
A "nice to have"		•		•	•	•
Occasionally important	٠		٠	٠	٠	•
Connected to our success						•
Important to success	٠				•	•
Critical for success		٠				•

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

$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$			CENT SUCCESS	LOW	IMENTING Delivering	SUB	IMITTED / Performing
Not releva	nt		•	•	•	•	•
A "nice to hav	e"		•		٠	•	•
Occasionally importa	nt	•		٠	•	•	•
Connected to our succes	SS				•		•
Important to succes	SS	٠				٠	٠
Critical for succes	SS	٠	•			•	•

### INTELLIGENT SYSTEMS COMPARATIVE INDEX

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

### 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?

No
A "nic
Occasionally
Connected to our
Important to
Critical for

### **EXTREME MISSION-CRITICAL NEEDS**

Extreme MC (Critical/Important ratings for at least 5 of 7

All others (Not Extreme MC)

	NASCEN	EXPERIMENTING LOW YIELD / DELIVERING		COMM SUB OPTIMAL / P	
Not relevant	•	•	•	•	•
nice to have"	•	•	•	•	•
ly important	•			•	•
ur success	•		•	•	
to success	•	•	•	•	
or success	•		•		
	NASCEN UNSURE / SUC	EXPERIMENTING Low Yield / Delivering		COMM SUB OPTIMAL / P	
7 measures)	•				
vtromo MC)					

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