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IOT204

The ROI of IoT: Understanding and driving strategic business value

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Agenda

Business impact of AWS IoT Core

ROI and its components

Getting confidence on the results

Summary



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Business impact of AWS IoT

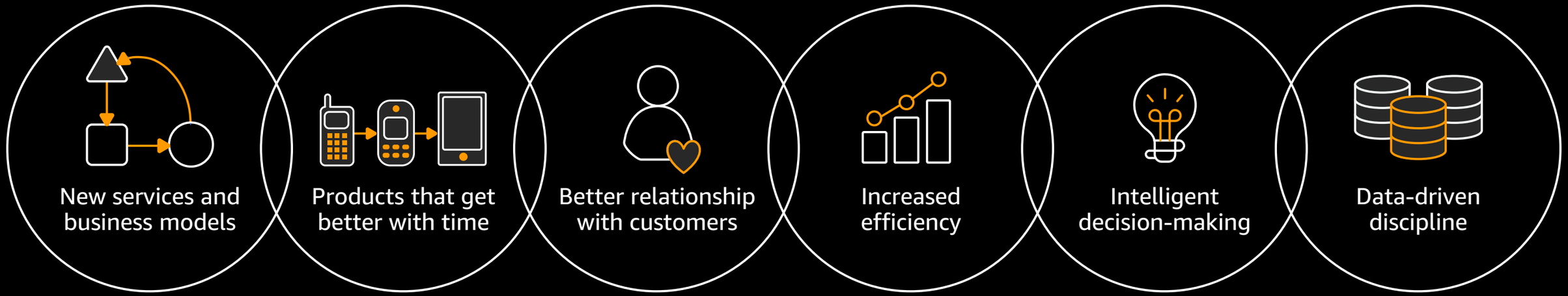


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Main reason for investing in AWS IoT

WE DO NOT FOCUS ON THINGS, BUT RATHER ON GENERATED VALUE



Revenue growth

IoT data drives business growth

Operational efficiency

IoT data decreases operational expenditure (opex)

Business impact of IoT

"FEW EMERGING TECHNOLOGIES OFFER MORE TRANSFORMATIVE POTENTIAL FOR FORWARD-THINKING COMPANIES THAN THE INTERNET OF THINGS"

74% of global executives say IoT will become a competitive differentiator within two years

48% of survey respondents rank enhancements to customer service and satisfaction as top IoT business benefits

45% say they see the potential of IoT but don't know where to begin to adopt the technology

Source: "Accelerating the Internet of Things Timeline," Harvard Business Review Analytic Services, *Pulse Survey,* 05/2019



Problem

CEPSA is a global energy company which operates in the five continents with businesses in Exploration and Production, Refining, Chemicals, Marketing, Gas and Electricity, and Trading. Current Industrial systems have proven to be limited for ML-based analytic processes that require integration of plant data with external sources like lab data and weather information.

Solution

CEPSA is standardizing IoT protocols to enable the creation of a low-cost data lake for operational data integrated to AI / ML and analytics. This has been achieved by deploying managed services like AWS IoT as MQTT messaging central broker, AWS IoT Greengrass in the edge, Amazon Kinesis, Amazon Simple Storage Service (Amazon S3), Amazon Athena, and more.

Impact

The data lake is capable of ingesting and processing an average of 2,000 signals per second, with capacity to store several years of data with projected growth at the petabyte-level.
By enabling the data for machine learning, CEPSA was capable to increase production by 2.5% (or 5,500 tons/year) on phenol line 3 at the Palos Chemical Plant in Huelva, CA.

PointGrab



Problem

PointGrab is committed to delivering flexible and efficient solutions that improve customer business performance. Companies are operating more and more with decentralized teams with further individualized freedoms and flexible work patterns. This (and continuous pressure from costs and workers' security required from workplace and facility management areas) means more accurate real-time information about occupants' space usage inside buildings is needed.

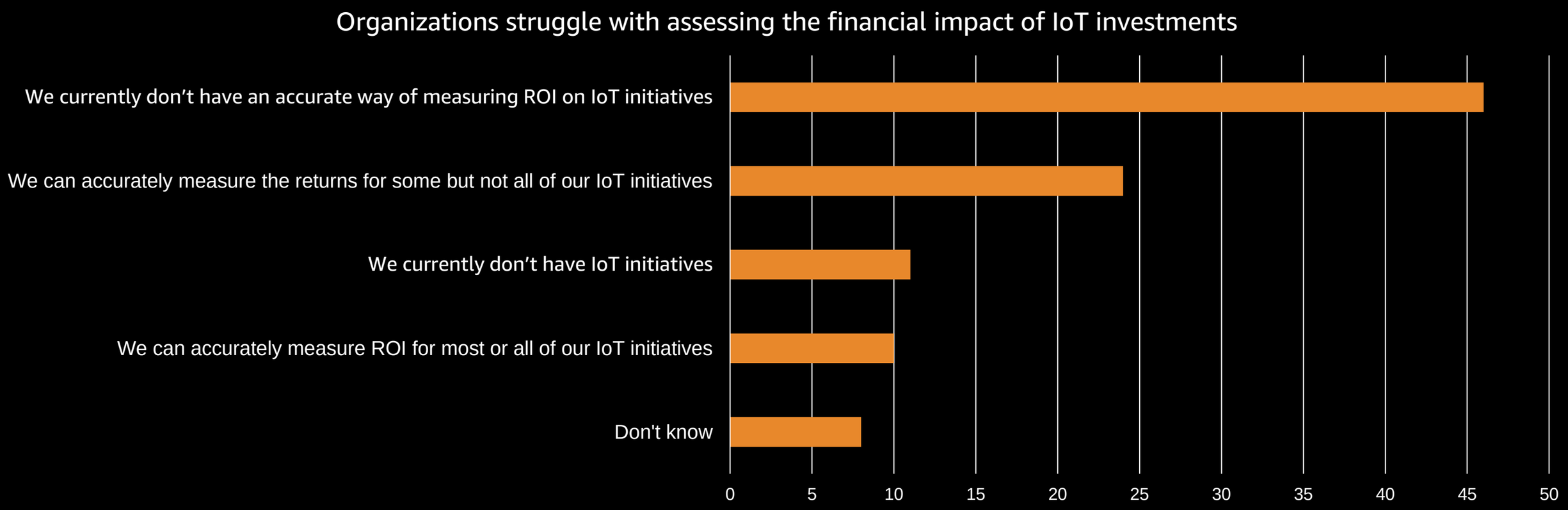
Solution

CogniPoint™ from PointGrab is an image-based solution that leverages AWS IoT Core and image analytics at the edge to ingest anonymous data to the AWS cloud. The solution includes real-time visualization of room occupancy, as well as tracking of foot traffic and integration of common building management systems in the market. Kiosks on the entrance to the floor indicate free spaces at workstations and meeting rooms.

Impact

PointGrab helps customers manage their real-estate costs effectively. With CogniPoint™, customers have observed an increase of 30% in office capacity with 3% less space, while optimizing space for employees' wellbeing and productivity.

Estimating ROI for IoT investments is a challenge



Source: “Accelerating the Internet of Things Timeline,” Harvard Business Review Analytic Services, *Pulse Survey,* 05/2019

Benefits of the ROI estimation

- Qualifies the expected financial benefits
- Sets up success criteria for the IoT project
- Allows comparison between different options
- Brings data for evaluation of transformation costs
- Helps identify challenges and project risks



ROI and its components

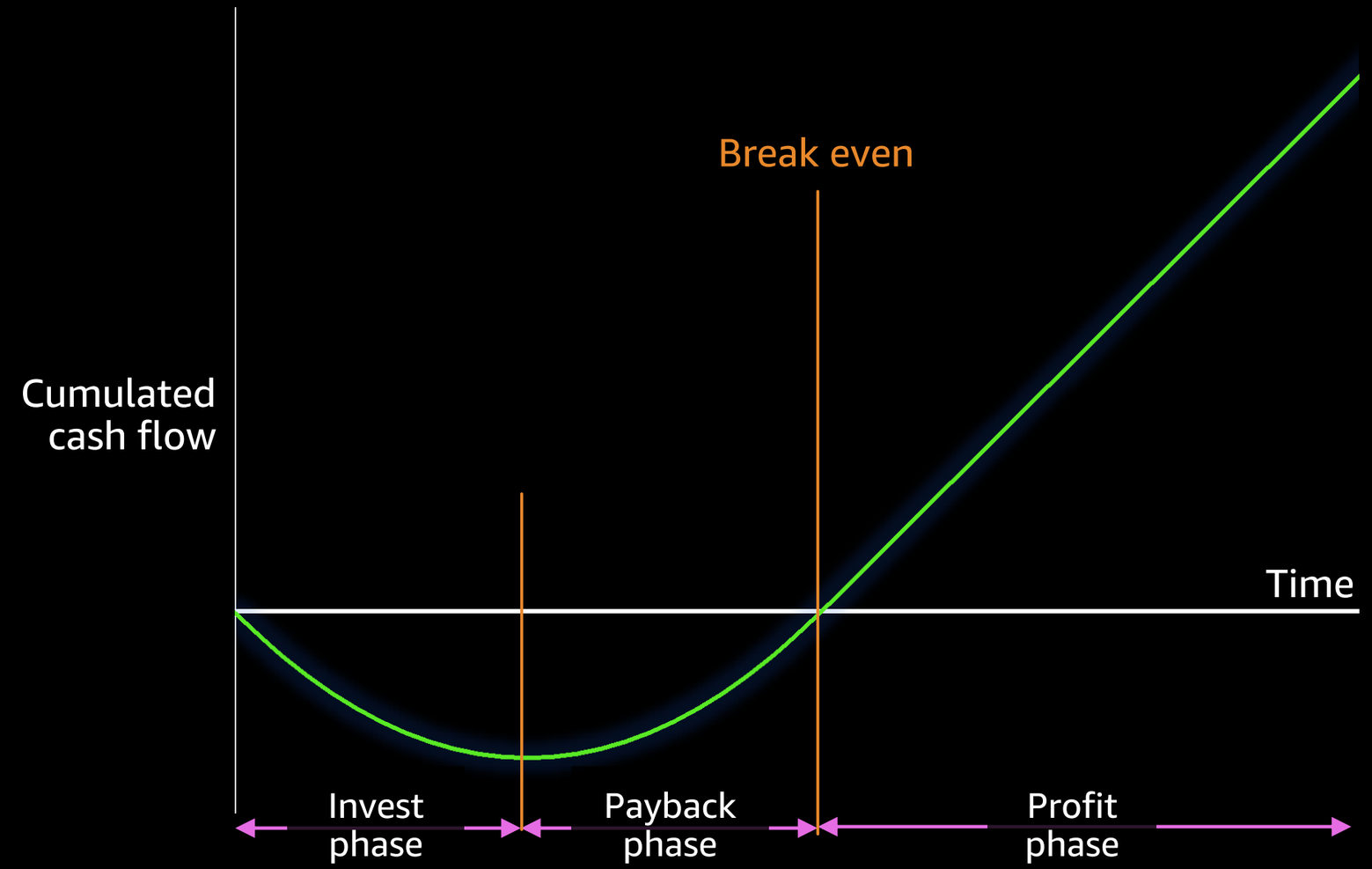


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ROI and cumulative cash flow

$$ROI = \frac{Profit}{Investment}$$

- Investments with higher projected ROI are often prioritized
- The spread over the time period must be considered



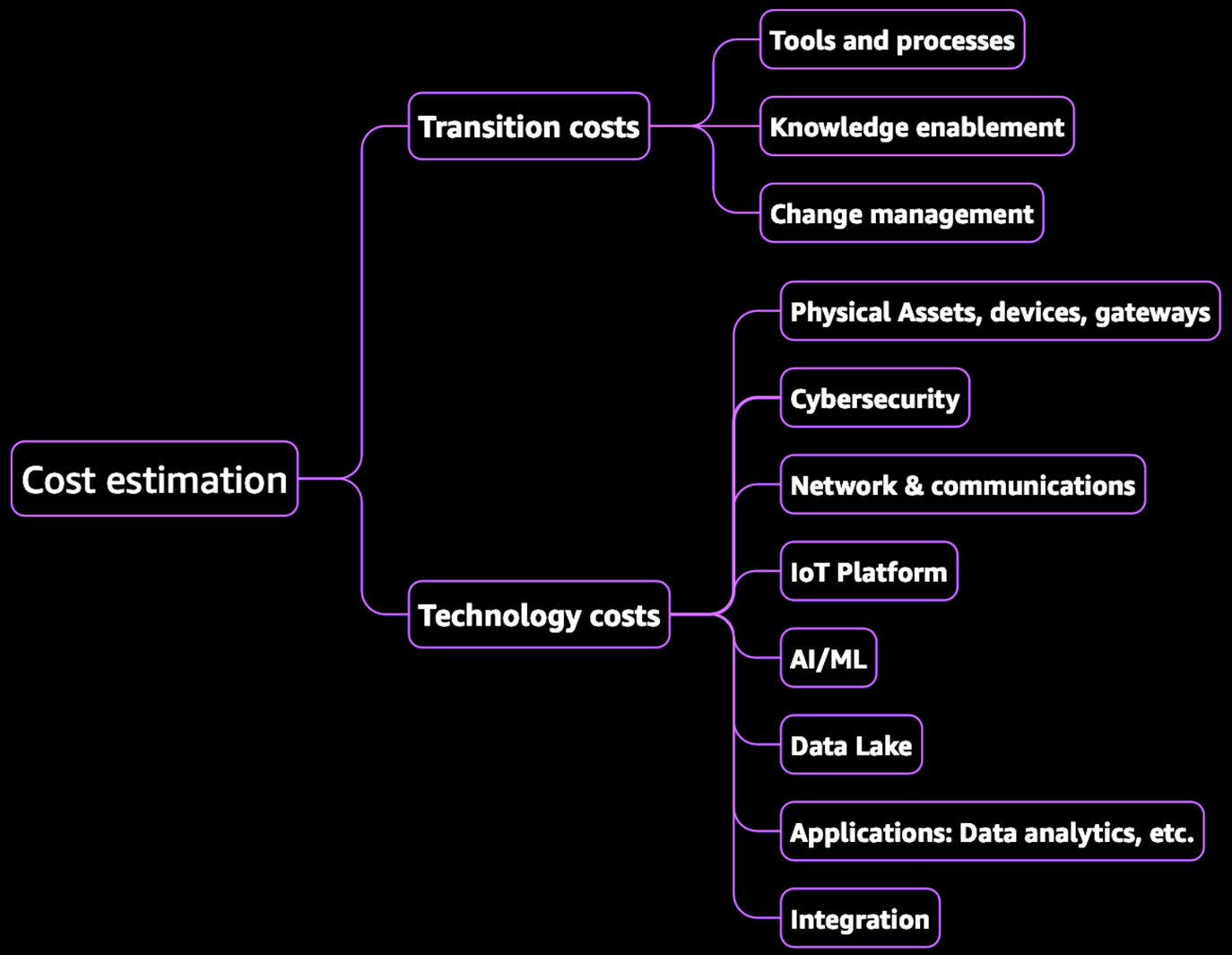
Source: “Internet of Things – From Buzzword to Business Case,” Siemens

We start from the costs

Cost estimations require well-defined work packages

IoT projects are not limited to physical assets — it impacts processes and business models, and it requires different competences

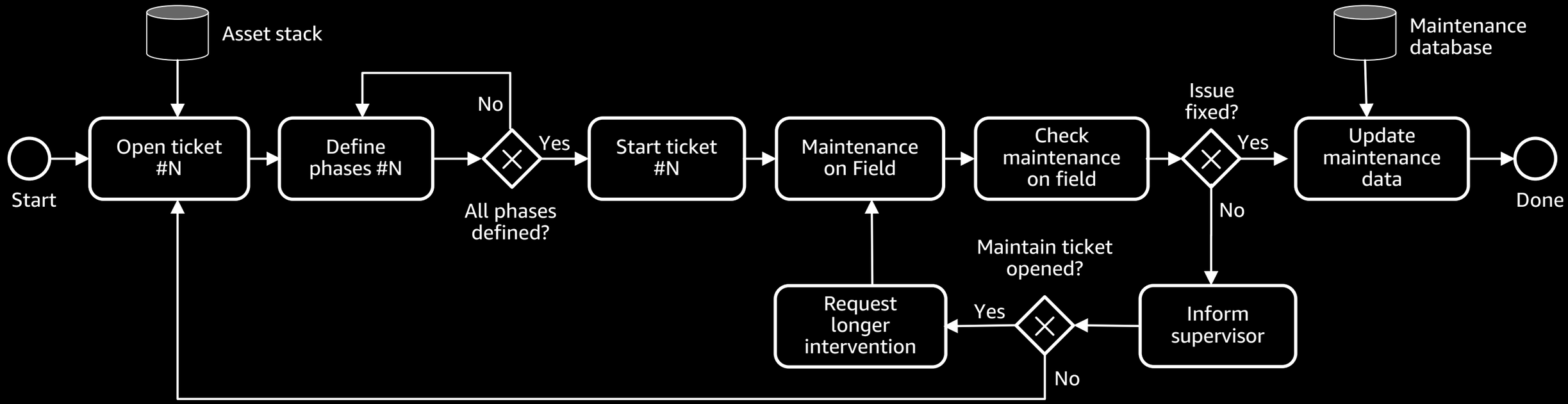




Model the business impact

START FROM THE BUSINESS PROCESS MODEL

Sample BPM model for corrective maintenance for a wind farm

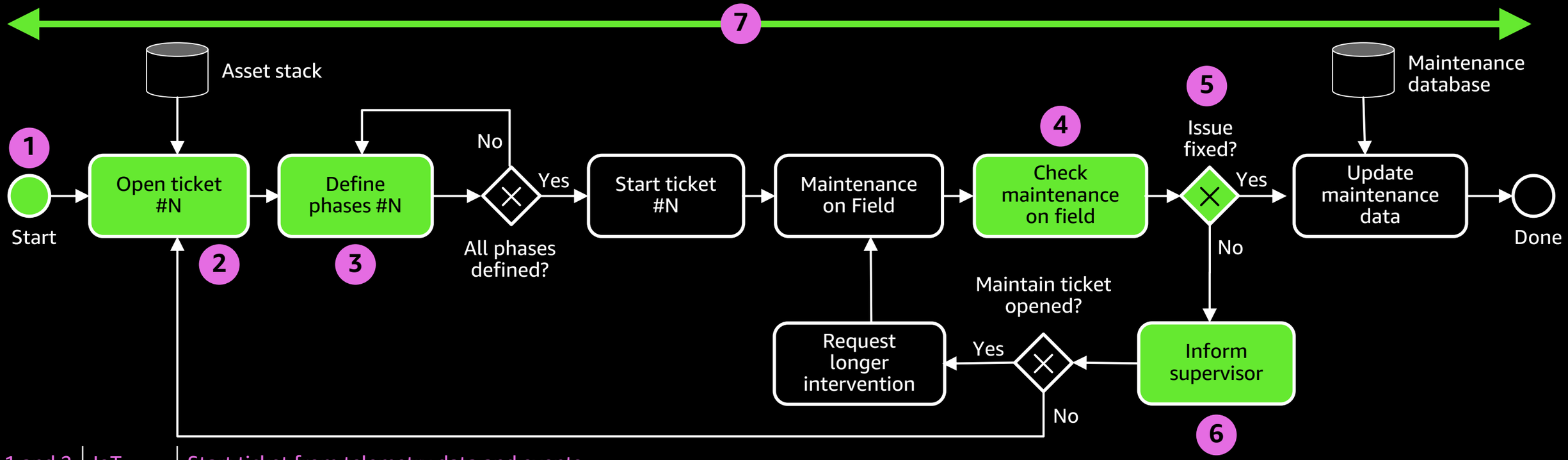


Source: “Proceedings of the Federated Conference on Computer Science and Information Systems,” ACSIS, Vol. 18

Model the business impact

IDENTIFY THE IMPACTED ACTIVITIES

Sample BPM model for corrective maintenance for a wind farm



1 and 2	IoT	Start ticket from telemetry data and events
3	AI / ML	Define required phases and resources
4 and 5	IoT	Use remote monitoring to check fix
6	IoT	Launch events to inform supervisor
7	All	Economical impact of reducing downtime

Source: “Proceedings of the Federated Conference on Computer Science and Information Systems,” ACSIS, Vol. 18

Quantify business impact from key performance indicators (KPIs)

IDENTIFY THE OVERALL IMPACT OF OF THE TO-BE SCENARIO



Economical KPIs

- Total maintenance cost / asset replacement value
- Total maintenance cost / quantity of output

Technical KPIs

- Total operating time / (total operating time + maintenance downtime)
- Preventive maintenance time causing downtime / total maintenance downtime

Source: “Proceedings of the Federated Conference on Computer Science and Information Systems,” ACSIS, Vol. 18

Quantify business impact from KPIs

IDENTIFY THE OVERALL IMPACT OF OF THE TO-BE SCENARIO



Operational KPIs

- Number of internal maintenance personnel / total internal employees
- Number of indirect maintenance personnel / number of internal maintenance personnel
- Number of indirect maintenance personnel / number of direct maintenance personnel
- Corrective maintenance people-hours / total maintenance people-hours
- Preventive maintenance people-hours / total maintenance people-hours
- Work orders performed as scheduled / total scheduled work orders

Source: “Proceedings of the Federated Conference on Computer Science and Information Systems,” ACSIS, Vol. 18

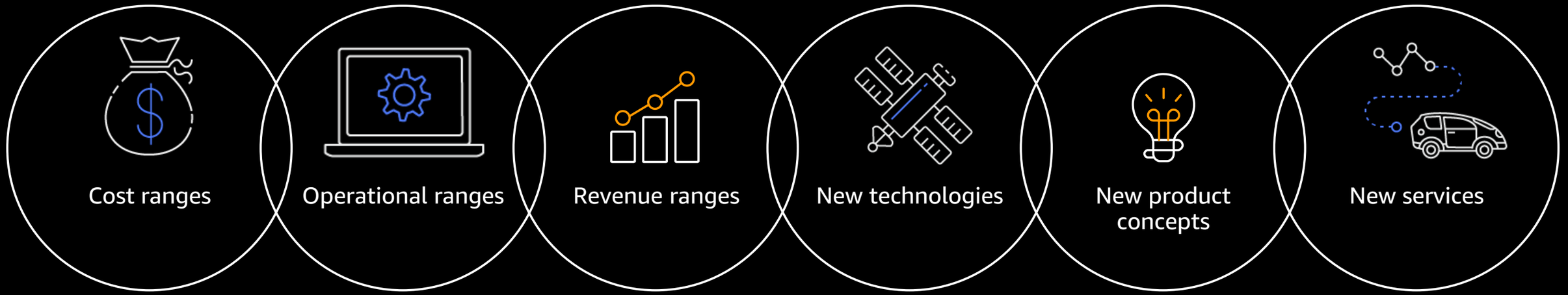
Getting confidence on the results



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Confidence in a new IoT investment requires



Including uncertainty in the ROI calculation

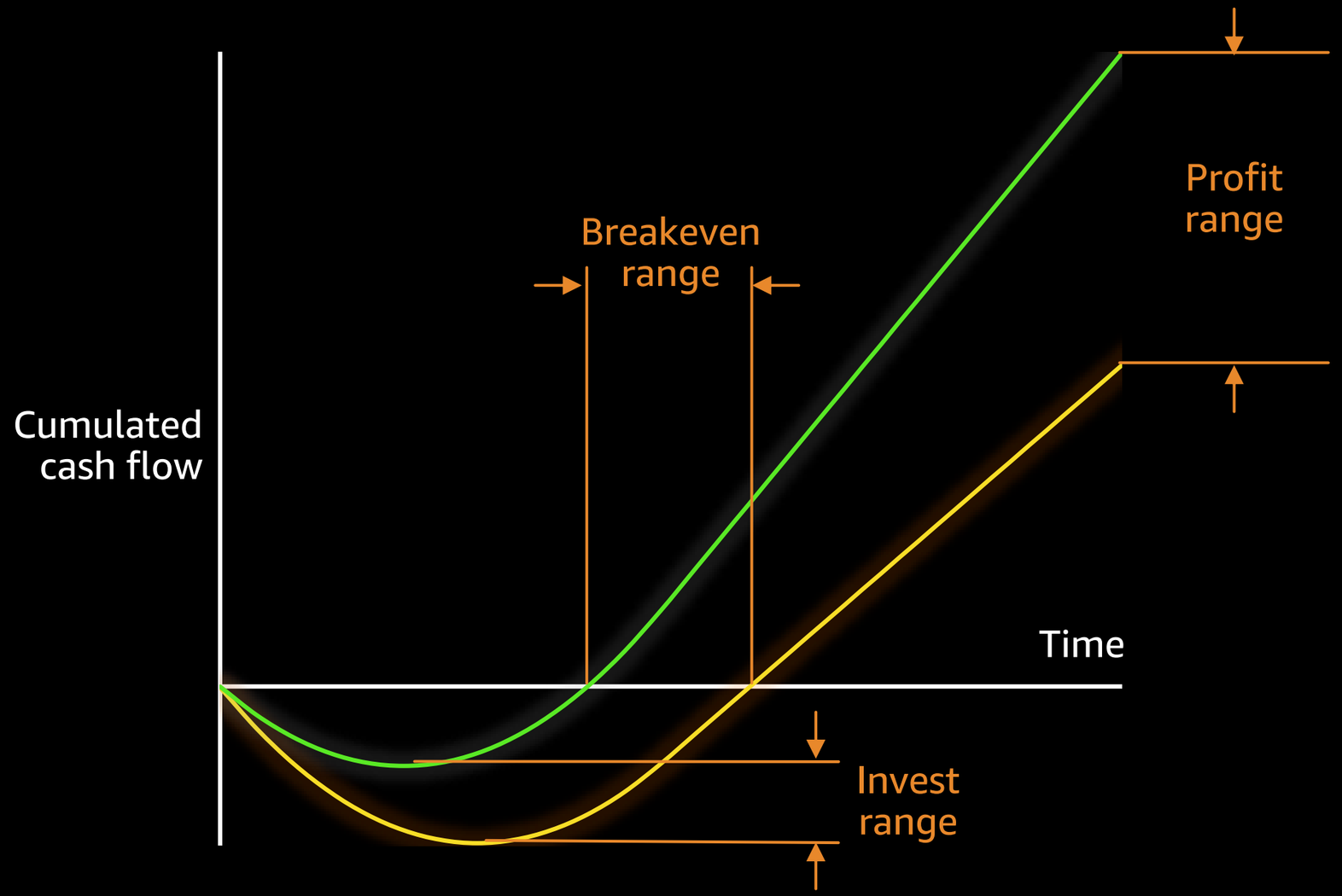
From statistical fluctuations and historical data

Capturing the impact of innovation

From the so-called “real options method”

Uncertainty in the ROI calculation

- Include uncertainty ranges for all components that are used for ROI calculation
- Statistical and historical information needs to be considered



Source: “Internet of Things – From Buzzword to Business Case,” Siemens

Real options method

WHAT IF WE DID NOTHING; WHERE WOULD MY BUSINESS BE IN 2, 5, 10 YEARS' TIME?
WORK BACKWARDS FROM WHAT YOU WANT THAT TO LOOK LIKE

- Determine how new products or services establish a sustainable market advantage
- Consider a cloud-based IoT platform foundation for reducing investment costs
- A mature innovation-oriented culture gives an organization a higher confidence in selecting and exercising future options
- Use proofs of concept, prototypes, or pilots to enable and evaluate multiple options of future growth



Source: Joe Barkai
http://joebarkai.com/roi-of-iot/

Summary

BUSINESS LEADERS NEED CREDIBLE ROI ESTIMATIONS TO MAKE DECISIONS ABOUT INVESTMENTS IN IOT

- Run cost estimations that include both technical and transition aspects
- Invest in process models that capture existing processes, and evaluate the impact of IoT technology and AI / ML
- Mobilize your workforce to generate in-house innovation, process optimizations, and capture key challenges
- Move quickly and fail fast with experimentation and low cost of elastic AWS pricing
- Ask yourself where your business will be in 2, 5, 10 years' time – capture market opportunities and work backwards from there to establish priorities

See more customer stories



Learn how Volkswagen Group is building the Industrial Cloud with AWS



Learn how Pentair uses AWS IoT to improve beer filtration processes and boost performance by 10%



Learn how Bayer Crop Science drives innovation in precision agriculture using AWS IoT



Learn how Woodside Energy uses AWS to power IoT and big data operations

See customer stories at

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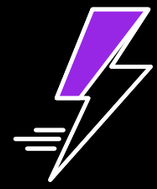
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