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# *Looking into the Future*

Leveraging the Power of AI and Robotics

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July 2018

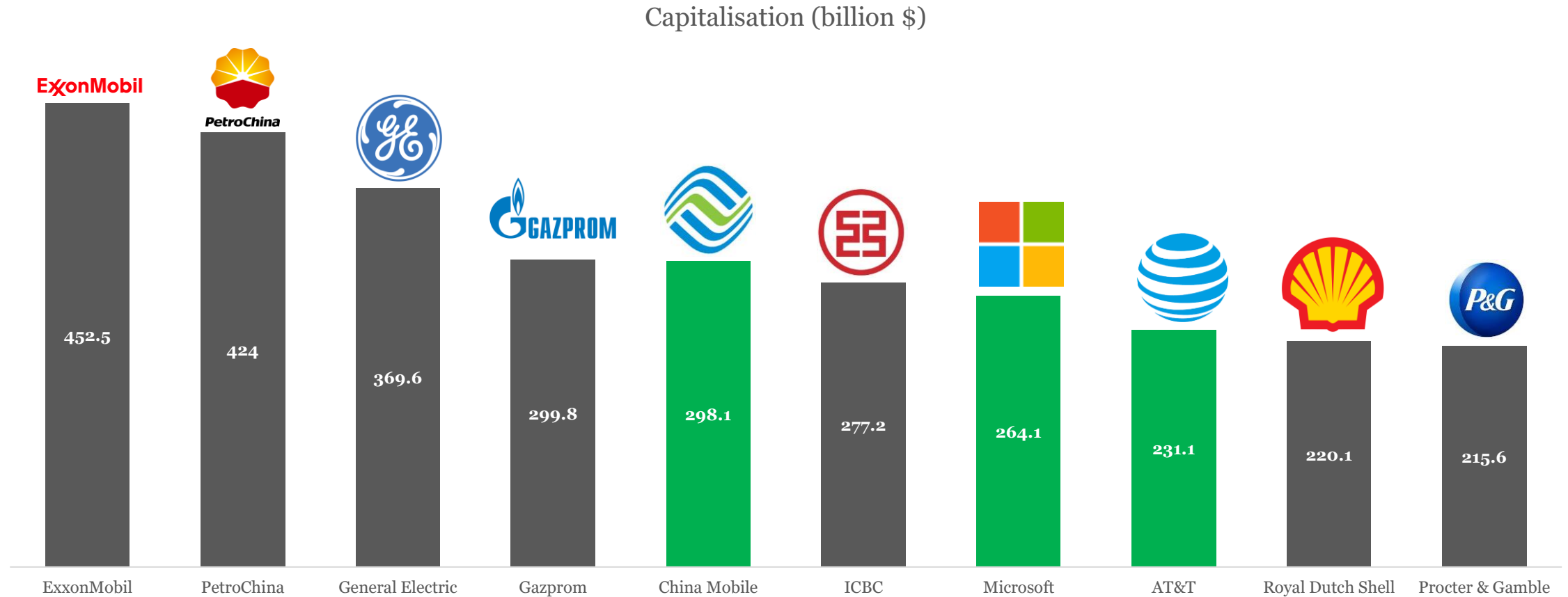


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***“At least **40%** of all businesses **will die** in the next **10 years...** if they don’t **figure out how to change** their entire company to **accommodate new technologies.**”***

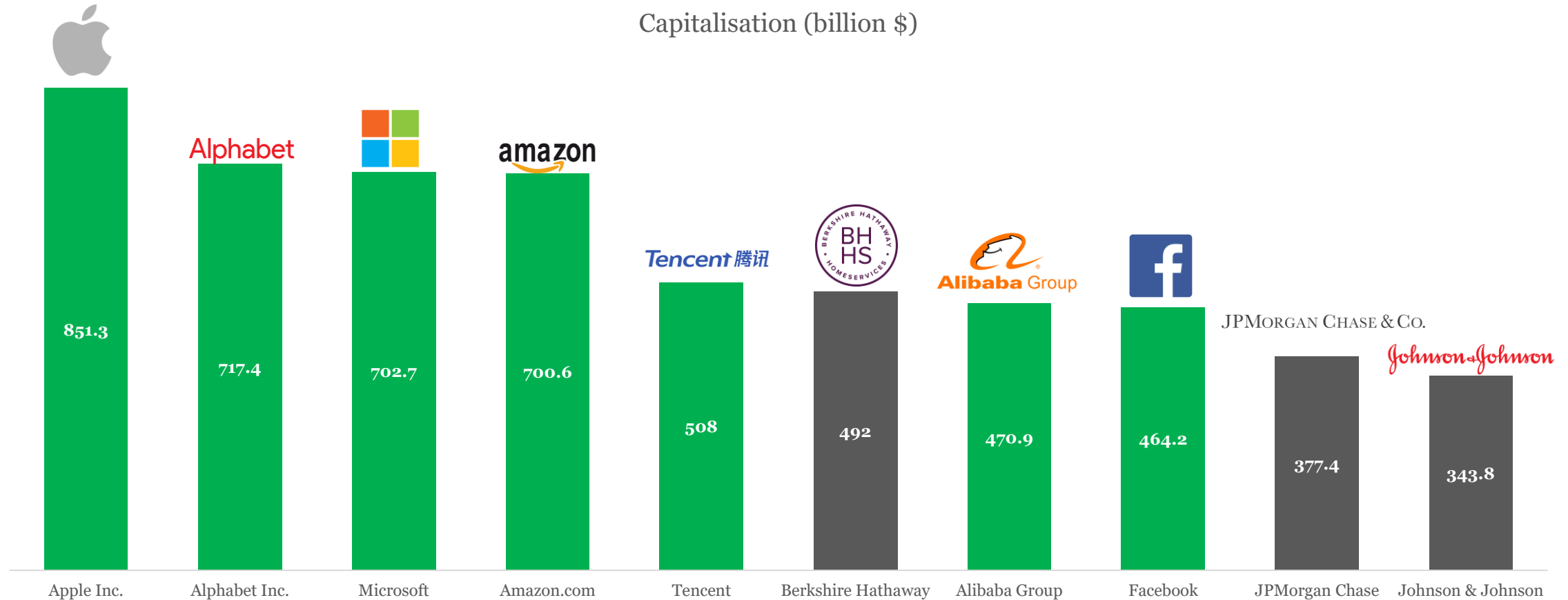
*— John Chambers, Executive Chairman, Cisco System*

## Digital Disruption: Business: Top 10 Global Companies by capitalisation (March 2008)



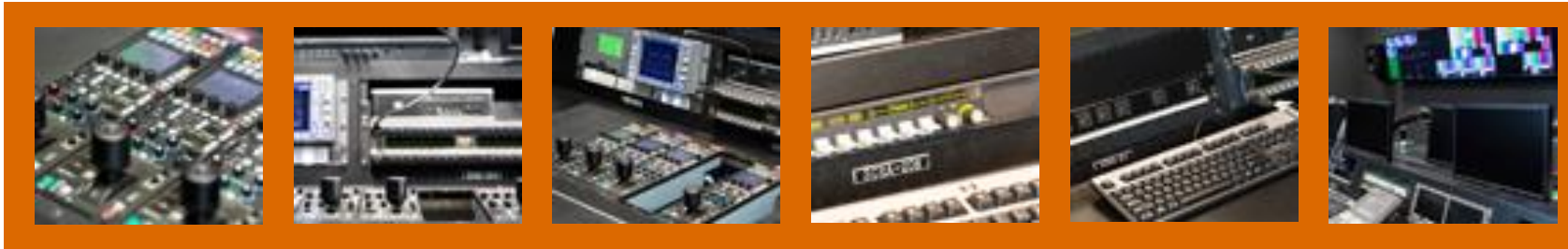
Source: PwC's Global Top 100 Companies by Market Capitalisation

## Digital Disruption: Business: Top 10 Global Companies by capitalisation (March 2018)



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## *What makes technological breakthroughs a megatrend?*



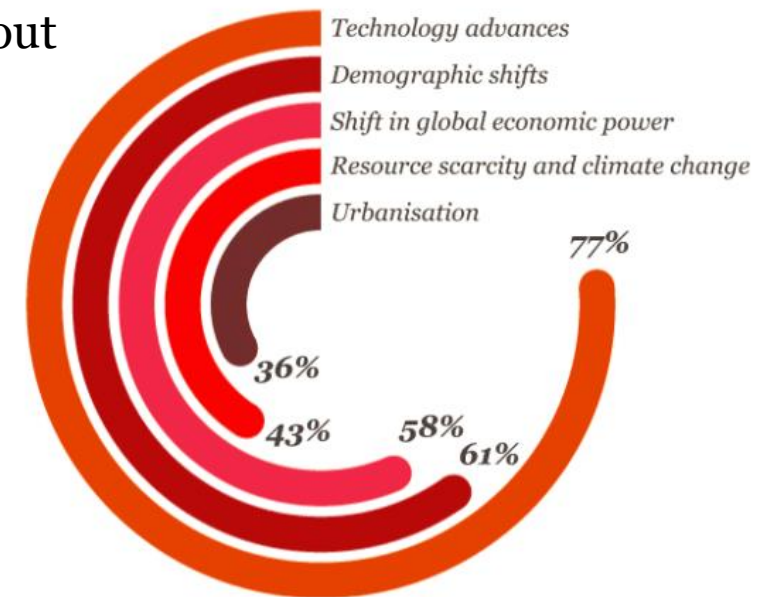
Technological disruption is transforming markets and societies in ways that wouldn't have been possible even five years ago.

And this opens up huge and still largely untapped commercial potential for domestic and international businesses.

CEOs surveyed as part of our annual Global CEO Survey identified technological advances as the most important trend impacting their business.

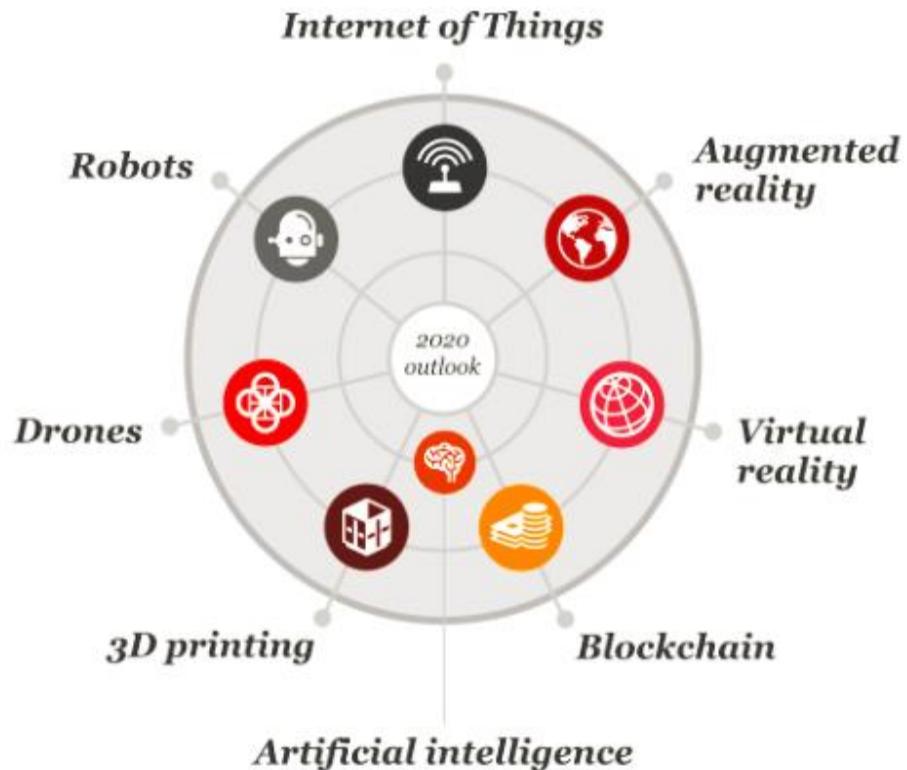
They are also concerned about the pace of change.

***The top global trends which CEOs believe will transform their business over the next five years.***



## *There are eight emerging technologies leading this trend...*

The trends and innovations that will shape the technology industry over the next several years are coming into sharper focus.



Leveraging the power of **Data & Analytics** and **Artificial Intelligence** is at the core capability for emerging technologies.

Emerging technologies focuses on the end-to-end digitization of all physical assets and processes as well as integration into digital ecosystems with value chain partners.

## Augmented Reality



Addition of information or visuals to the physical world, via a graphics and/or audio overlay, to improve the user experience for a task or a product.



This “augmentation” of the real world is achieved via supplemental devices that render and display said information.



AR is distinct from Virtual Reality (VR); the latter being designed and used to re-create reality within a confined experience.



AR-enabled smart glasses help warehouse workers fulfill orders with precision, airline manufacturers assemble planes, and electrical workers make repairs.



We’re currently seeing mainstream gaming examples of AR that reach across age demographics.



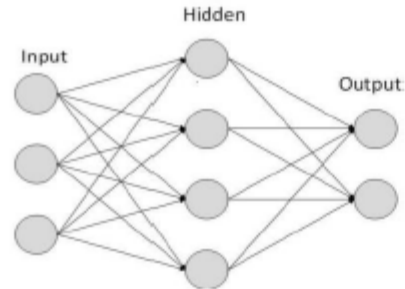
The power of bringing information to the point of action in a seamless, unobtrusive manner is undeniable. This blending of the physical and virtual world is cracking open a new realm for businesses across the board to explore.

# What is artificial Intelligence?

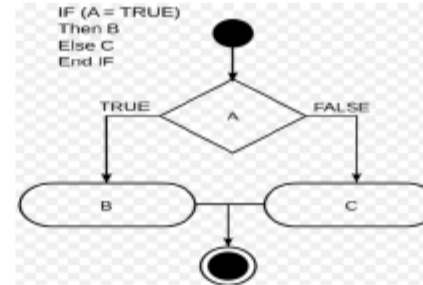
*Artificial Intelligence definition: The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.- The New Oxford American Dictionary*

Artificial Intelligence works with the help of

**Artificial neural network**  
(programming constructs that mimic biological neurons)



**Scientific theorems(If-Then Statements, Logics)**



## Artificial Intelligence **Pros:**

- Be able to simulate human behavior and cognitive processes
- Capture and preserve human expertise
- Fast response.
- The ability to comprehend large amounts of data quickly.

## Artificial Intelligence **Cons:**

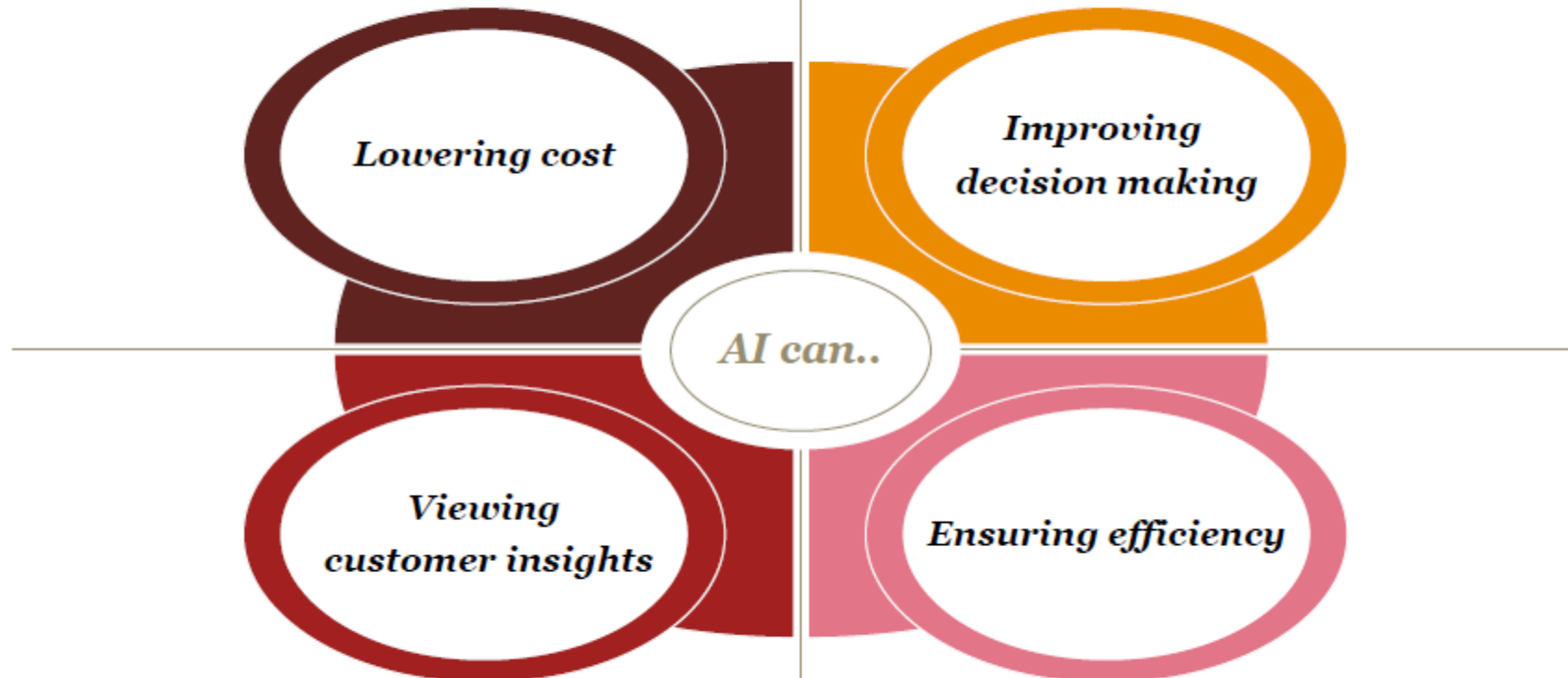
- No “common sense”
- Cannot readily deal with “mixed” knowledge
- May have high development costs
- Raise legal and ethical concerns



## *Why artificial Intelligence?*

For manufacturing, Artificial Intelligence (AI) optimizes various functions with robotics and automation beyond normal human capabilities and increases productivity by eliminating downtime due to unpredictable changes in the schedule.

With Artificial Intelligence, companies can take more logical decisions by removing human biases and errors. Decision making not only gets free from biases, but will also be faster and more efficient.



Advances in AI can significantly enhance customer analytics to give companies speedier insights into individual buying patterns and a host of other consumer habits.

AI has been widely adopted to increase efficiency across multiple functions – risk management, compliance, and securities trading and monitoring, with an extension into customer relationship management (CRM).

# Is Artificial Intelligence a threat or opportunity?

## Opportunity



"It is hard to think of any problem that a **superintelligence** could not either solve or at least help us solve. **Disease, poverty, environmental destruction**, unnecessary suffering of all kinds: these are things that a superintelligence equipped with advanced nanotechnology would be capable of eliminating."

-Ray Kurzweil, The Singularity Is Near



## Threat



Photo: Corbis

"**Humans**, who are limited by slow biological evolution, couldn't compete, and **would be superseded.**" -Stephen Hawking, professor and scientist



## Possible solutions



Bill gates talks about why Artificial Intelligence is nearly here and how to solve two big problems it creates

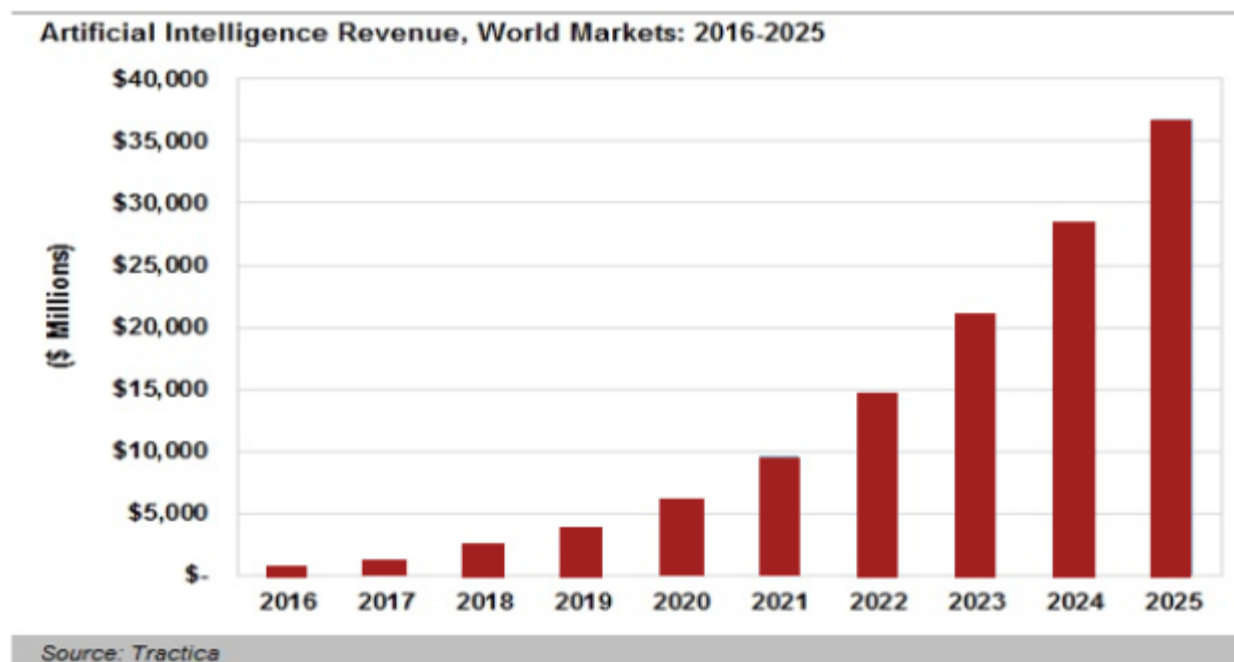
- Job loss
- Human can't control AI

High added value job created and enjoy more quality of life

Working with various communities/experts for human stay in control

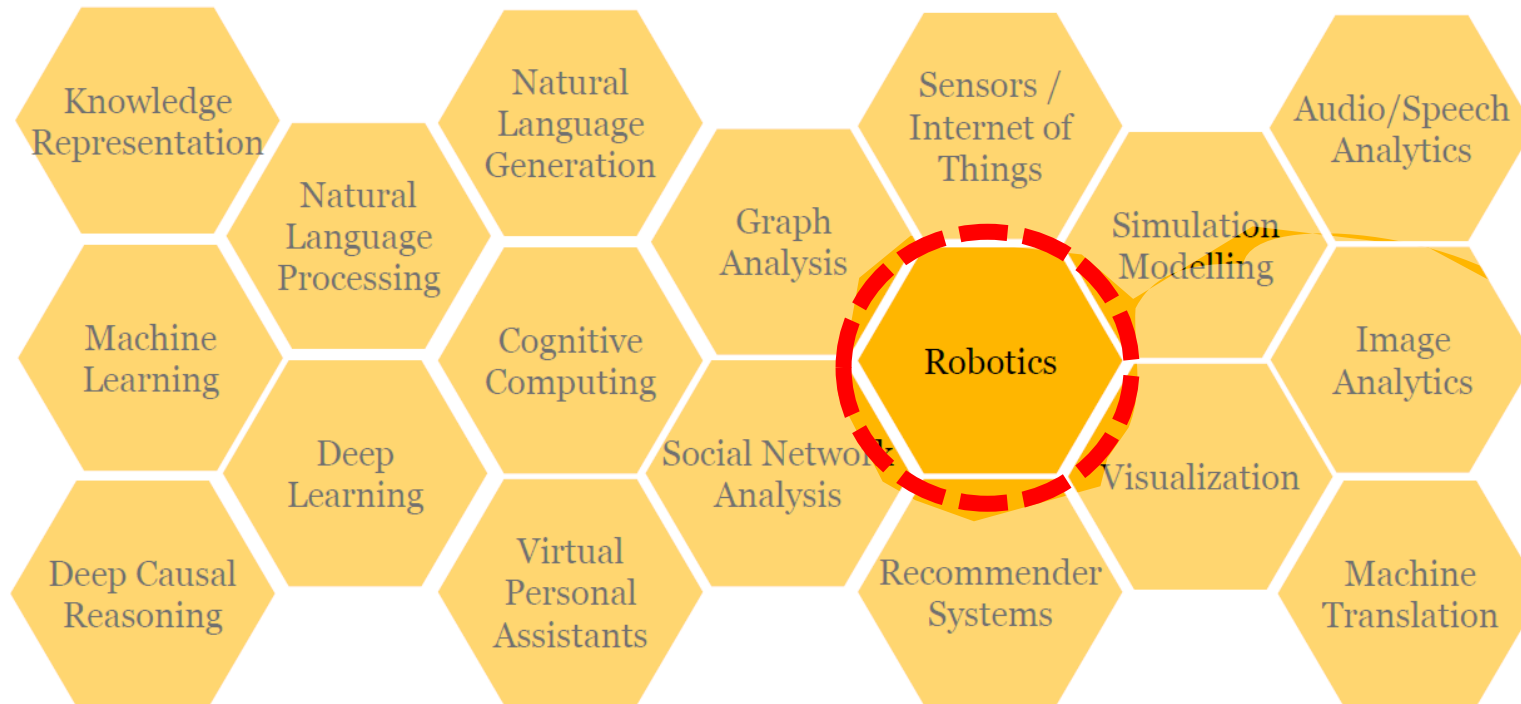
## The global Artificial Intelligence market

- Artificial Intelligence Revenue: \$643.7 million in 2016 and \$36.8 billion worldwide by 2025
- Consumer products, business services, advertising, finance & investment, media & entertainment, and defense applications will drive significant revenue for AI software implementations in addition to AI-driven hardware and service sales.
- The global cognitive computing market (machine learning) is expected to reach \$12.5 billion in 2019, up from 2.5 billion in 2014, at a CAGR of 38%.
- **Image recognition is forecasted to be the fastest growing segment by application** due to the increasing demand for affective computing technology in several end-use sectors for better study of systems that can recognize, analyze, process, and simulate human effects



# Emerging Technologies grouped under the term Artificial Intelligence

## Topic Areas within Artificial Intelligence (non-exhaustive)



 Key focus

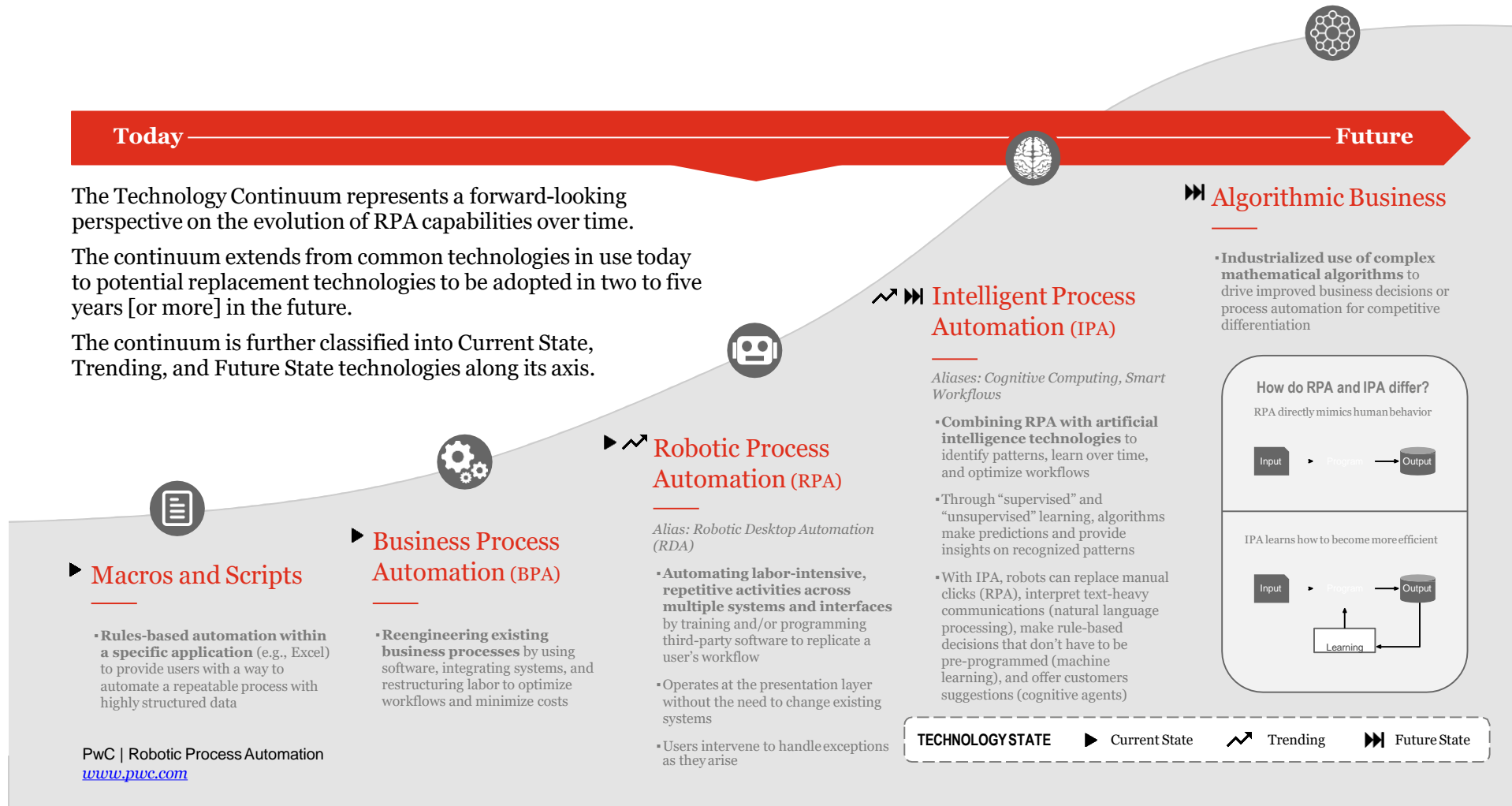
“  
RPA is the beginning  
of AI in the  
enterprise.”

**Emer Ging, PhD**  
The Artificial Intelligence Institute

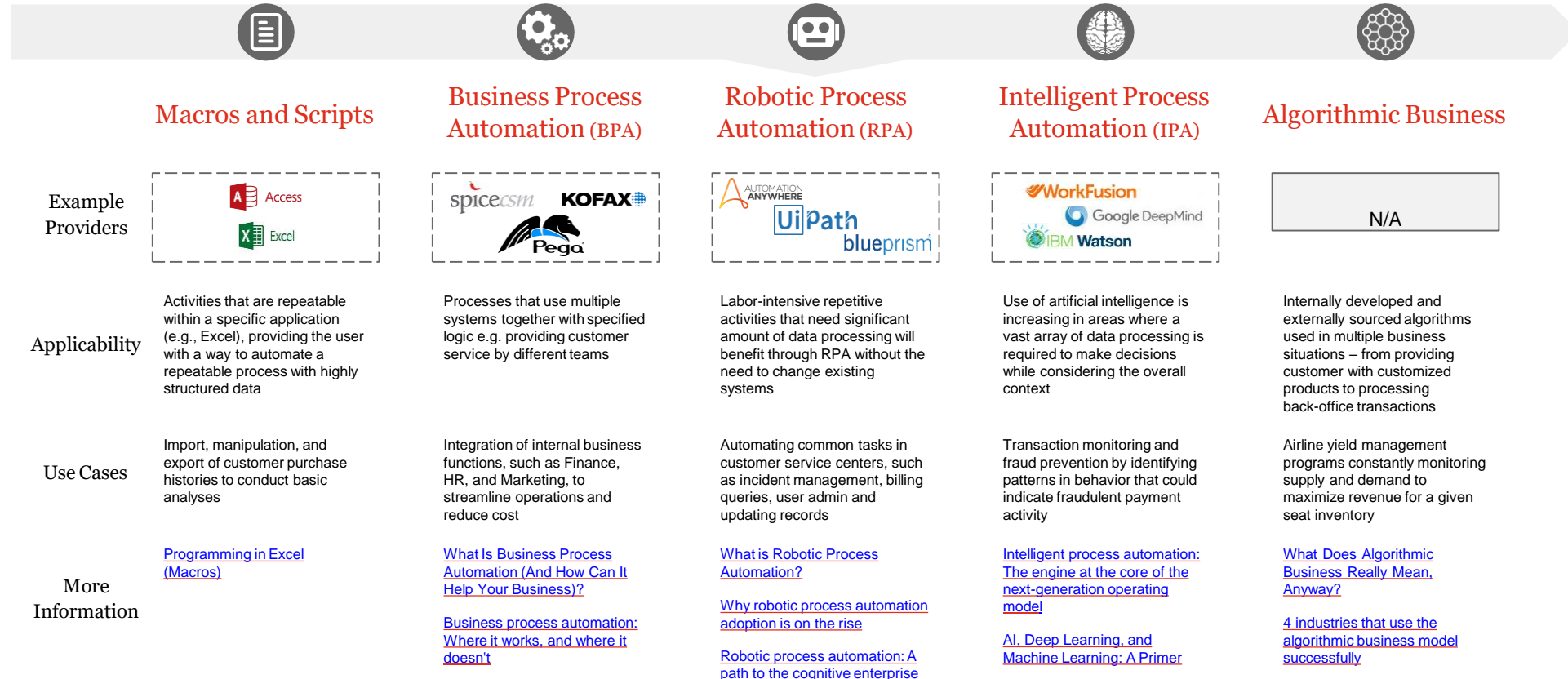
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# The RPA and AI Technology Continuum



# The RPA and AI Technology Continuum



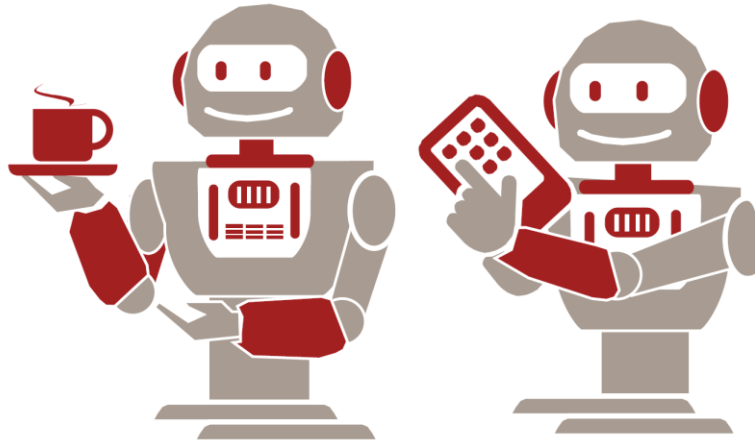
# ***Robotic Process Automation***



# Robotics

Robotics is described as Robotic Process Automation (RPA), humanoid robots or virtual agents, which automate, improve and/or assist human activities. Furthermore they may analyze applications for processing transactions, manipulating data, triggering responses and communicating with other digital systems.

Robotics can either operate in compliance with a set of predefined instructions or autonomously. Once viewed as quite costly, the technology is increasingly affordable and user-friendly for businesses today.



## Benefits

- Automate business operations
- Boost efficiency
- Quality and repeatability
- Free up humans for higher-value tasks
- Replace or augment humans in jobs where there are no labour shortages

## Risks

- Lack of expertise and support
- Fallout from job losses
- Regulatory compliance
- Costs

## Potential Applications

- Manufacturing
- Hazardous industries
- Hotels and tourism
- Service industry
- Automation of predictable tasks
- Data management

# RPA - In a nutshell

## Robots are...



### Computer coded software

- Non-invasive, zero change integration on target system and security
- Operate on top of other existing software



### Mimic interactions of users

- Record and automate user interactions with one or more software applications
- Interact with the user interface (UI) of existing applications in the same way that an everyday user would



### Work cross-functional and cross-applications

- Are entirely technology agnostic and can be used with any application (e.g. ERP, DB, MS Suite, ASCII file, structured PDF, thin clients such as Citrix)
- Use a central repository for easy management of automation scripts and processes



### Enable the automation of repetitive, rule-based processes

- Build workflows with dynamic decision/branch points and loops for scaling (up/down)
- Ability to granulize processes into smaller components to allow reusability

# Technological breakthroughs and automation will significantly change our work life

Automation will significantly change today's jobs

**Technological breakthroughs** - The impacts of digital disruption are now so pervasive that no business in any sector is immune from them (PwC)

**53%** of all occupations are estimated to be replaced by digital technology within the coming twenty years. That is almost 300 million jobs within the OECD-region (Swedish Foundation for Strat. Research)

**15 million** U.K. jobs are in danger of being taken over by robots (Bank of England)

About **35%** of current jobs in the UK are at high risk of computerization over the next 20 year (BBC)

“In the near future, managed services offerings leveraging autonomics and cognitive platforms will permanently remove head count to drive a **60%** reduction in the cost of services (Gartner)

**Eighty million** U.S. jobs at risk from automation (US Central bank)

Oxford University predicts that **45%** of jobs will be automated by 2030

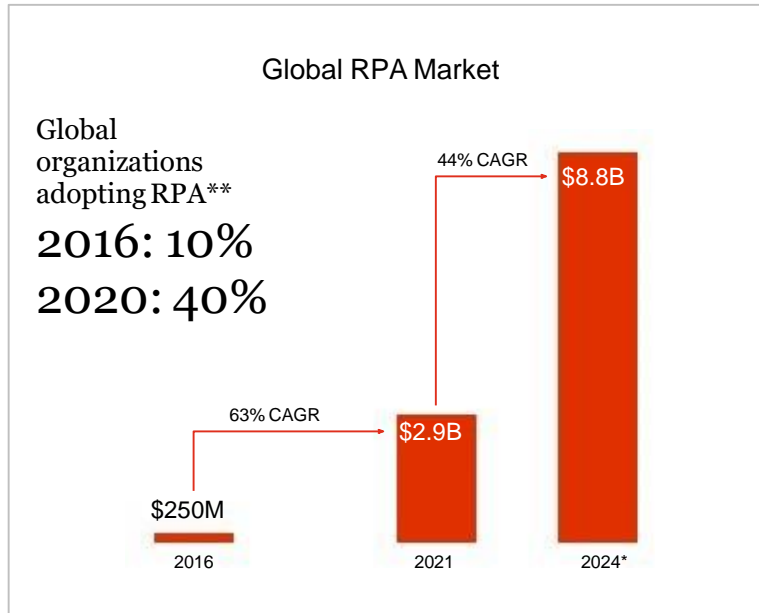
# *Understanding RPA*

What can it do?	What does it need?
<ul style="list-style-type: none"><li>• Match invoices to PO's</li></ul>	<ul style="list-style-type: none"><li>• Electronic documents</li></ul>
<ul style="list-style-type: none"><li>• 'Read' contracts</li></ul>	<ul style="list-style-type: none"><li>• Structured Data</li></ul>
<ul style="list-style-type: none"><li>• Continuously check if transactions are still 'in compliance'</li></ul>	<ul style="list-style-type: none"><li>• Rules-based processes</li></ul>
<ul style="list-style-type: none"><li>• Send and receive messages</li></ul>	<ul style="list-style-type: none"><li>• Reprogramming when circumstances change</li></ul>
<ul style="list-style-type: none"><li>• Compare records or tables across multiple applications</li></ul>	<ul style="list-style-type: none"><li>• User access rights across applications</li></ul>
<ul style="list-style-type: none"><li>• 'Learn' how to respond to events or occurrences</li></ul>	<ul style="list-style-type: none"><li>• Programming on how to deal with events or occurrences</li></ul>
<ul style="list-style-type: none"><li>• Automate activities across an end-to-end process</li></ul>	<ul style="list-style-type: none"><li>• Re-engineering of processes to efficiently apply the 'bot'</li></ul>

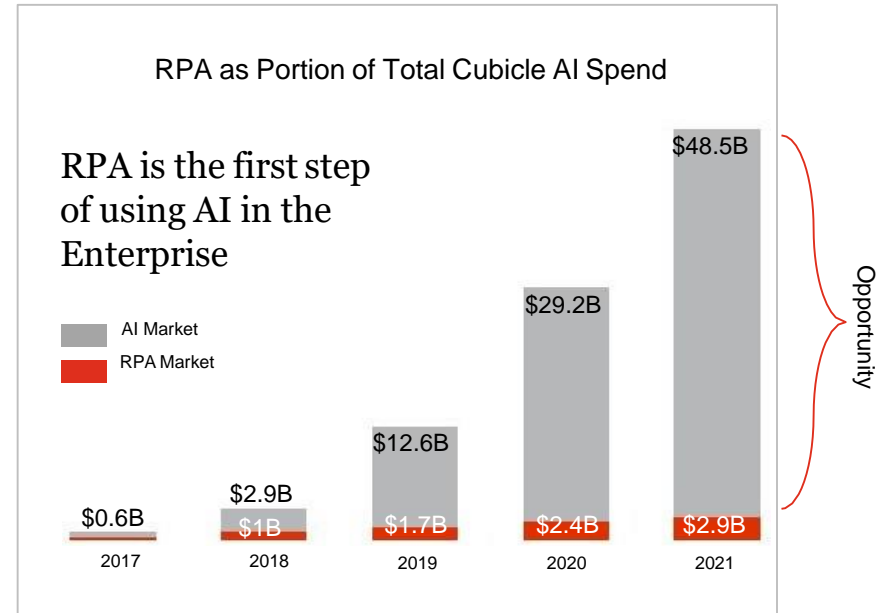
# ***Global market statistics and value proposition***

# Global RPA and AI Market Statistics

Breakneck RPA growth is expected...



... but it's only the tip of the iceberg.



# RPA shows significant cost savings and business benefits

## Benefits of Robotic Process Automation

-  Cost saving potential
-  Productivity - 24/7 with high-speed
-  Accuracy - Improve quality with 100% accuracy on automated cases
-  Scalability –scalable automations, with the ability to handle increased volumes at marginal cost
-  Compliance – Robots follow defined rules and have same rights as humans
-  Security – data protection and audit trail proved



# ***RPA has some distinctive value propositions compared to other automation solutions***

## **The case for RPA**

- Short-term realization of efficiencies
- Interim solution for quick fixes and improvements
- No requirements for business case and expertise of large ERP changes and/or existing IT landscape

## **RPA value proposition**

- Easy and fast to implement
  - Low investment required (compared with large ERP/system initiatives)
  - Fast go-live (weeks rather than months)
  - Less effort to design the robot (about 1 week)
- IT landscape agnostic
  - Non-invasive - no changes or additional coded interfaces in existing IT landscape/apps (on-top layer)
- Cross-functional applicability
  - Interaction between multiple systems, apps and communication tools
- Short payback
  - Between 12-18 months



# *Existing PwC business development and services*

# Sample RPA Business Development and Services

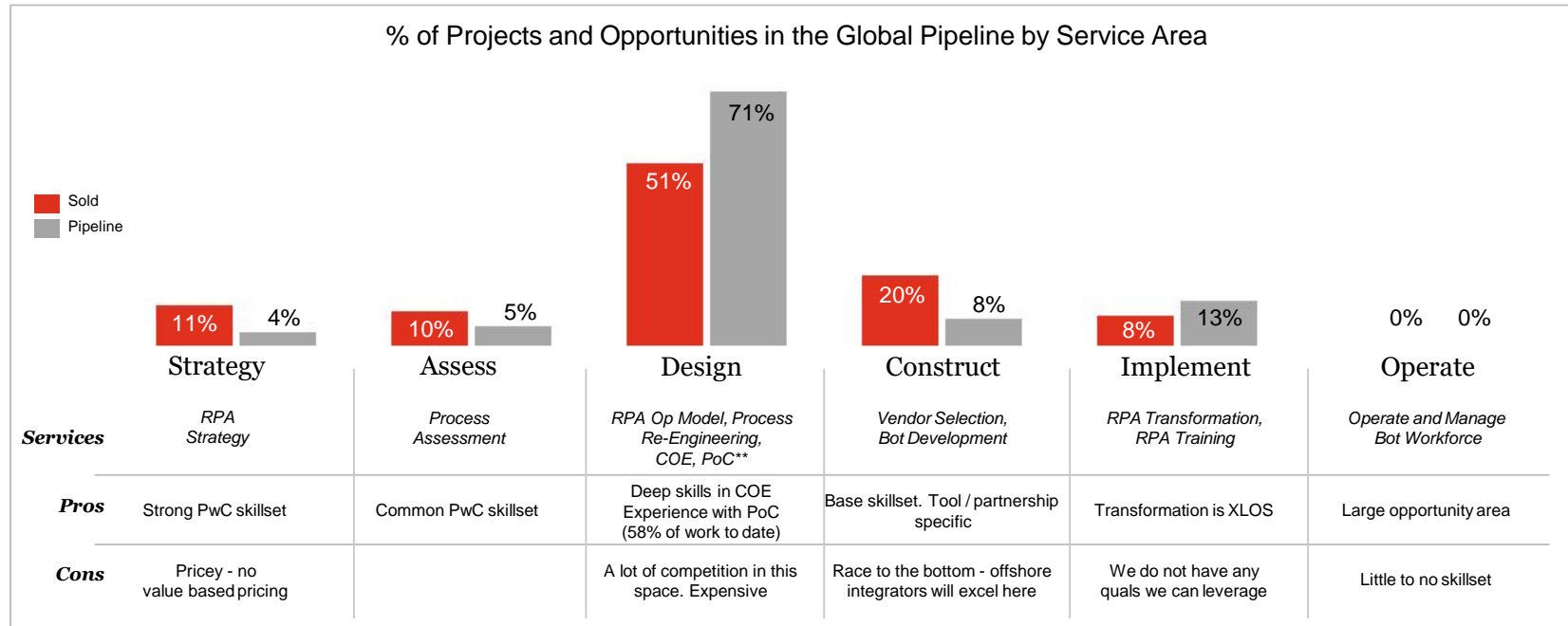


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Examples - not exhaustive

# Existing PwC RPA Business Development and Services Offered

To date, PwC has sold 75 RPA projects with estimated revenues of \$8-15M

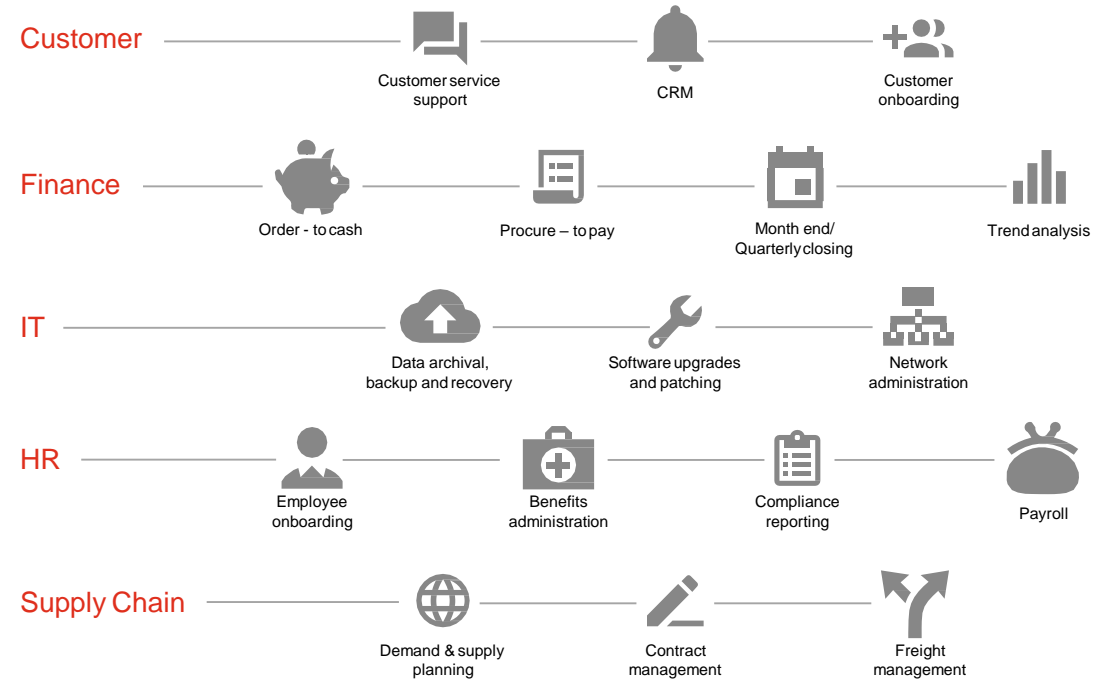


# *Automation focus areas and examples*

# Automation Focus Areas - Horizontal

## Attributes of good process automation candidates:

- Combine steps **across multiple software applications** that are not integrated (“swivel chair” processes)
- Are highly standardized and rules-based with **limited complexity and exceptions**
- Require a high degree of **consistency and quality**
- Have a **high volume**, requiring large commitment of time or people to repetitively execute

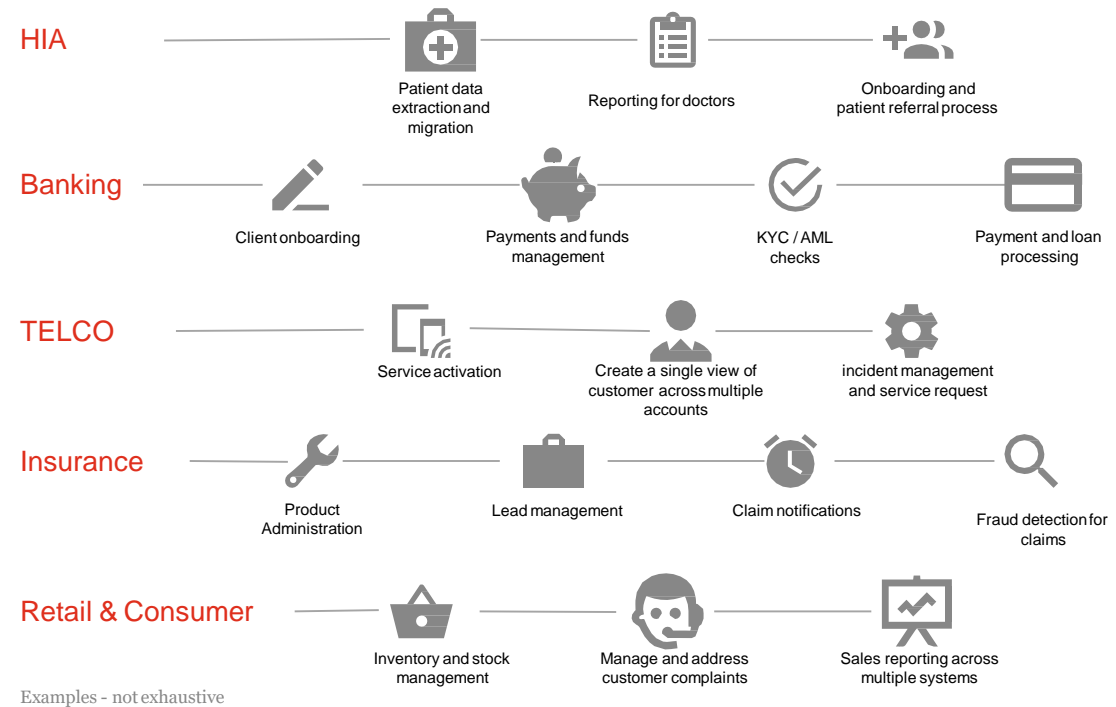


Examples - not exhaustive

# Automation Focus Areas - Vertical

## Attributes of good process automation candidates:

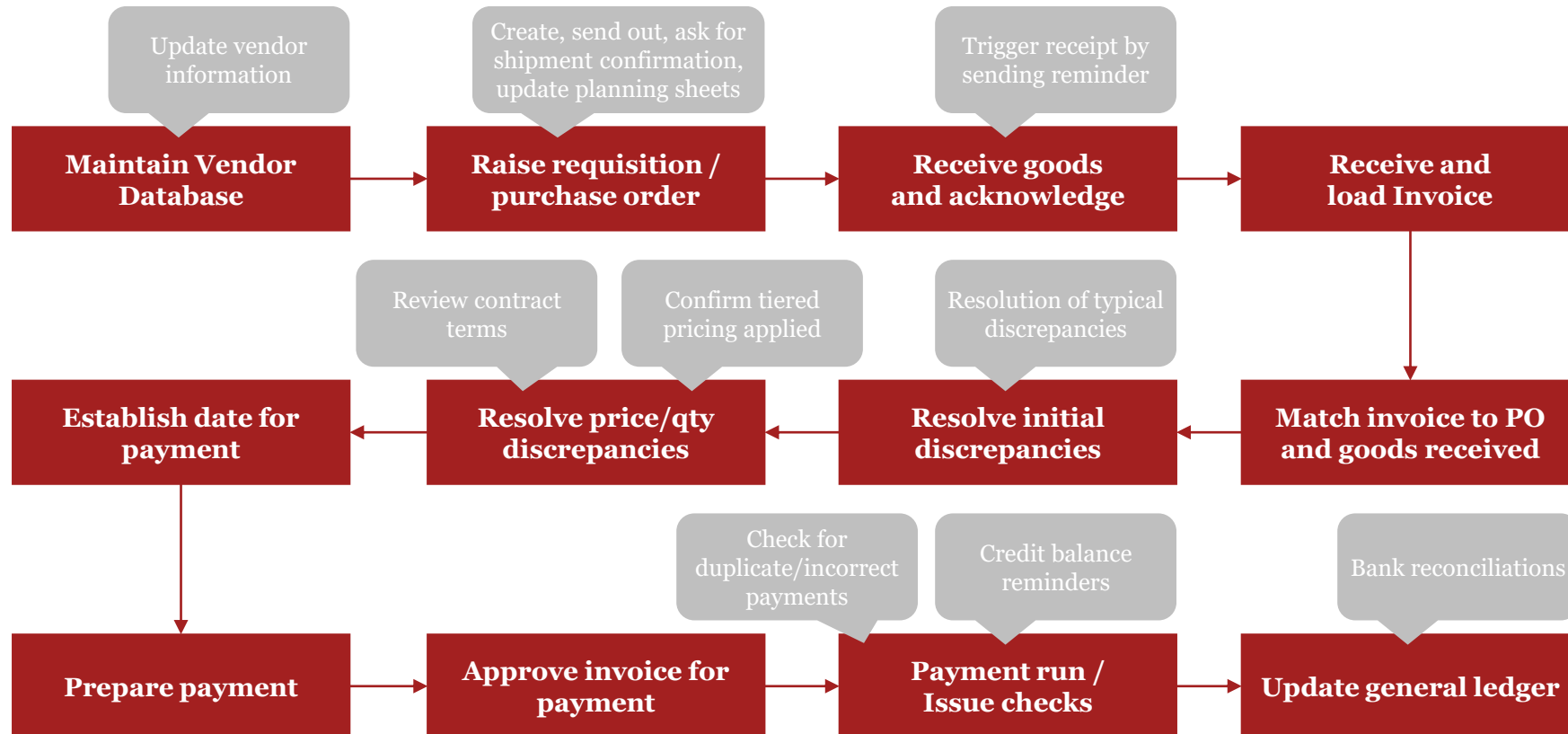
- Processes where there is a **defined workflow** with manual inputs that can be replaced with digitization
- Processes where **more than 10 FTEs** are performing the same activity
- **Stable IT systems** that are not expected to change in the mid-long term



# Accounts Payable Example

RPA

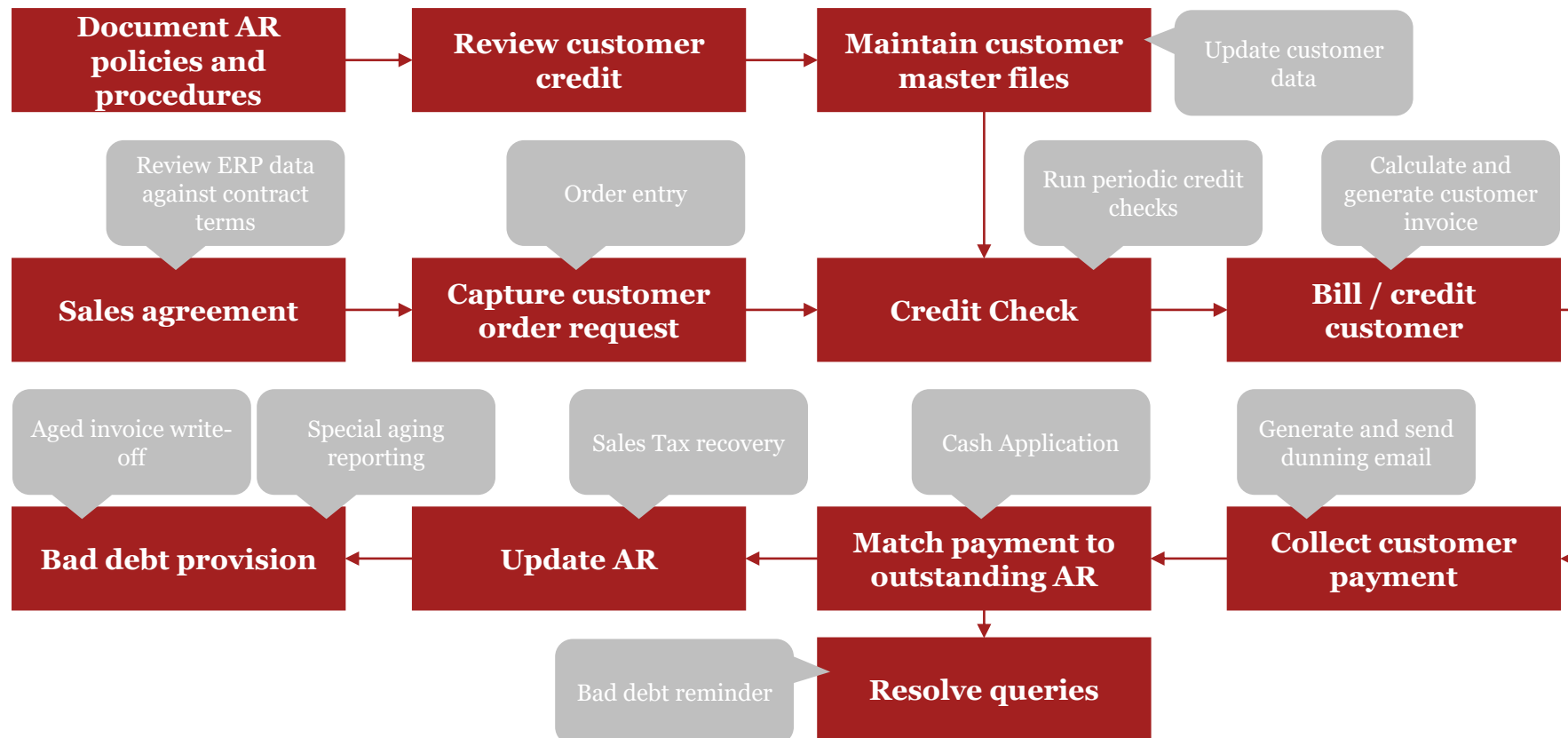
Look for activities that are : **labor-intensive**, require **accessing multiple systems**, are **repetitive** or can be audited for **compliance** periodically



# Accounts Receivable Example

RPA

Look for activities that are : **labor-intensive**, require **accessing multiple systems**, are **repetitive** or can be audited for **compliance** periodically

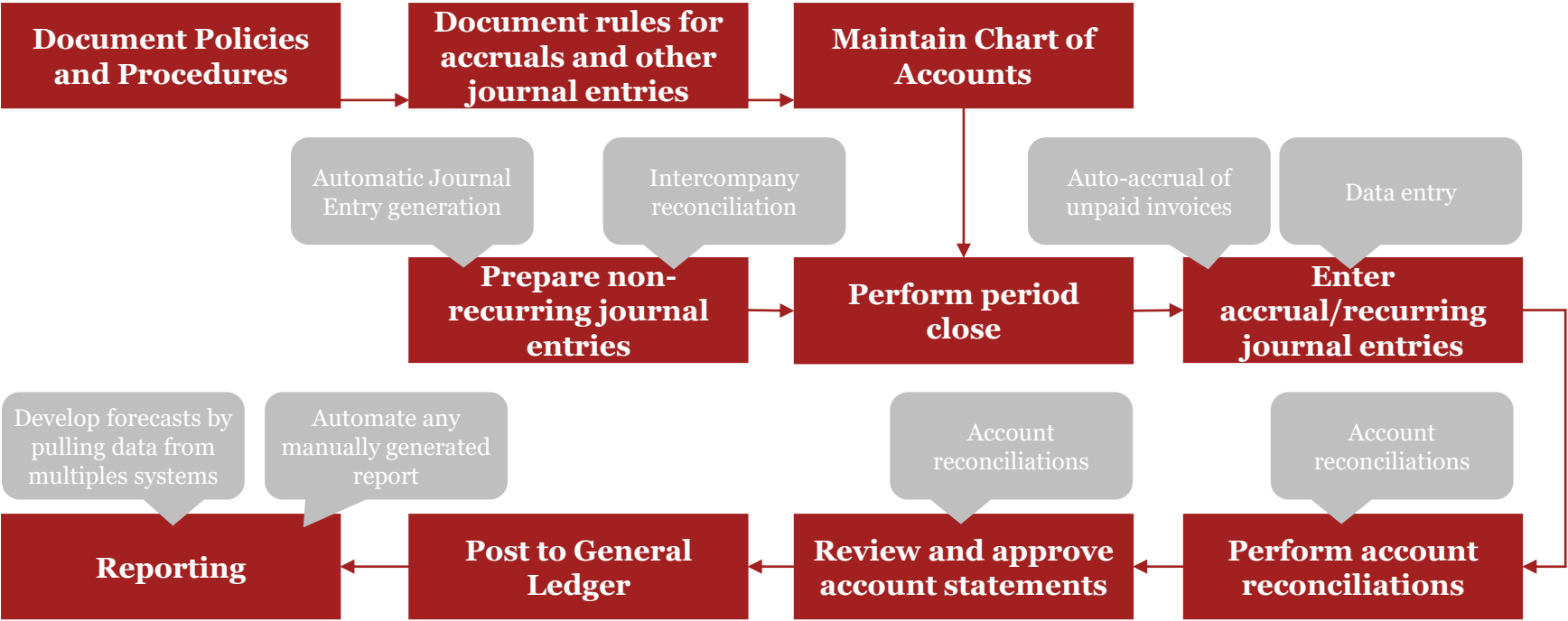




# General Accounting Example

RPA

Look for activities that are : **labor-intensive**, require **accessing multiple systems**, are **repetitive** or can be audited for **compliance** periodically



# Emerging technologies are shaking things up across the enterprise...



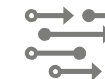
## Strategy

These technologies are opening up a slew of new opportunities and corresponding considerations.



## Operations

Artificial intelligence, robots, drones, and 3D printing can all improve operational efficiency and provide significant competitive advantage



## Customer Engagement

These technologies are already reshaping almost every dimension of companies' interactions with their customers, from sales and marketing to billing and after-sales support.



## Compliance

This is an often overlooked aspect of the business model. We believe these emerging technologies will see many companies scrambling to adapt to - and trying to influence - the resulting regulatory landscapes. The regulators themselves are likely to be in a catch-up mode for a while.



## People and Talent

The eight technologies are creating brand-new job categories, but a worrying consequence may be slower job growth. Concurrently, new technologies beget new companies and new job categories.

# Benefits of Emerging Technologies Adoption

## Reduced costs

Using data to truly understand the business and leveraging automation to drive efficiency across business processes.

## Increased quality

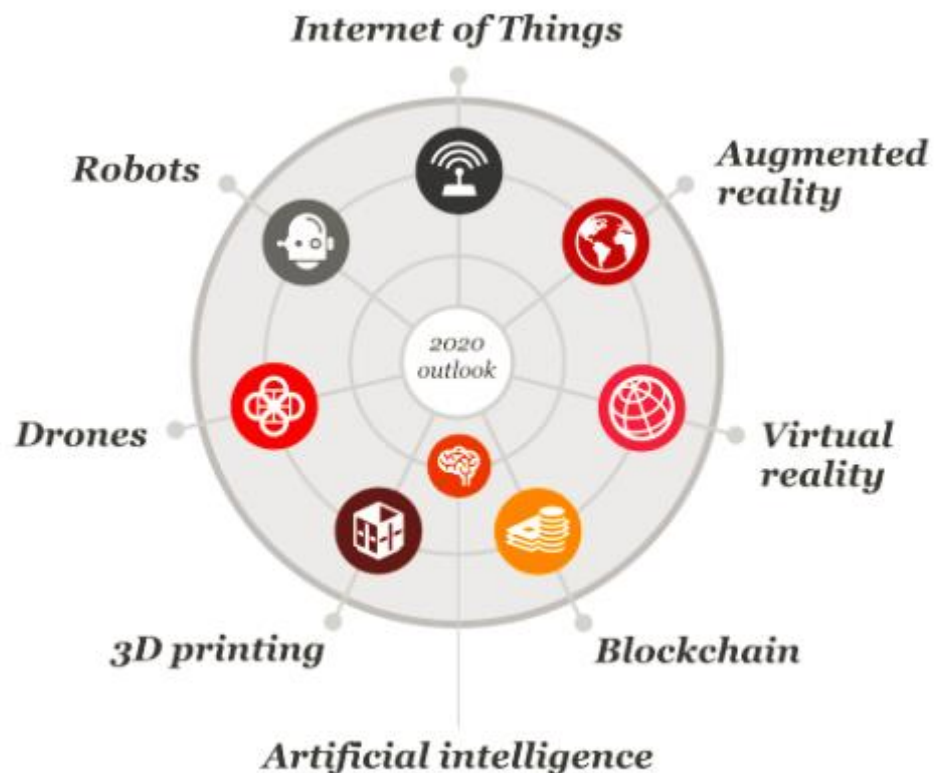
Leveraging the power of RPA, is the best way to go, when you have to get it right every time.

## Available 24/7

Capable of processing around the clock completing the work that, up until now, humans have been doing

## High scalability

An easily expandable workforce, instantly trained and deployed



## Increased Productivity

Resources can now focus on more value-added tasks as RPA can take up the time-consuming and repetitive tasks

## Increased Compliance

RPA tool provides full audit trail of processes performed and are rule-based

## Non-invasive Technology

There is no need to change the underlying systems or technology as RPA is deployed on top of the systems and applications

## Insights and Analytics

Insights to drive and transform the business can be generated from the increasing data footprints both internally & externally.

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## *The future of work video*

## Conclusion

### The winning formula



#### Strategy formulation

Knowing where to apply RPA and D&A is the key to success.

This starts with formulating an **enterprise-wide strategy**, develop a **roadmap** and **governance framework**.



#### Implementation

Having a laid out plan is just the beginning of the journey.

Next is to **develop & implement** the **Analytics & Digital strategy**.



#### Quality Assurance

To ensure you realize the benefits of your digital strategy.

**Assurance** that current **RPA initiatives/projects** are carried out in line with **best practices** to achieve management's expectations is also very key.

# *Thank you*

