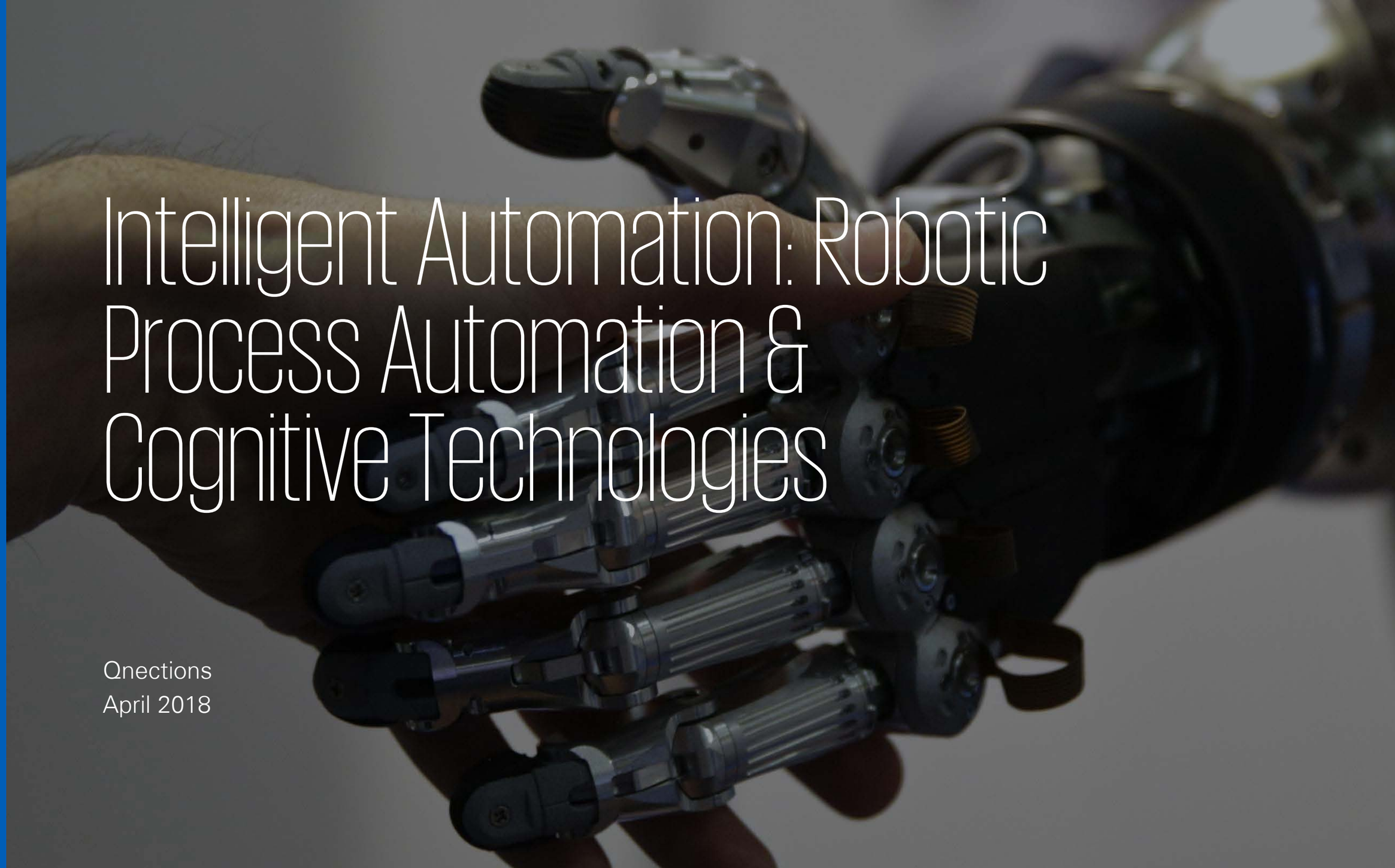
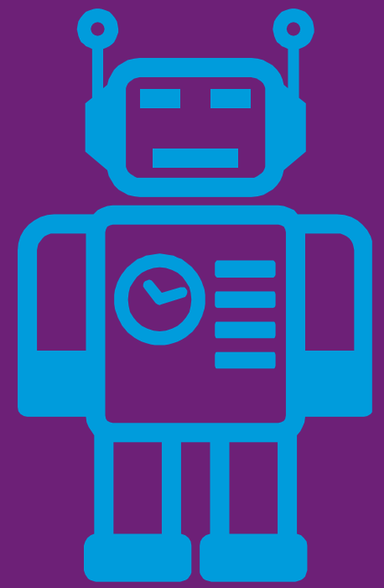


Intelligent Automation: Robotic Process Automation & Cognitive Technologies

Qnections
April 2018

Introduction



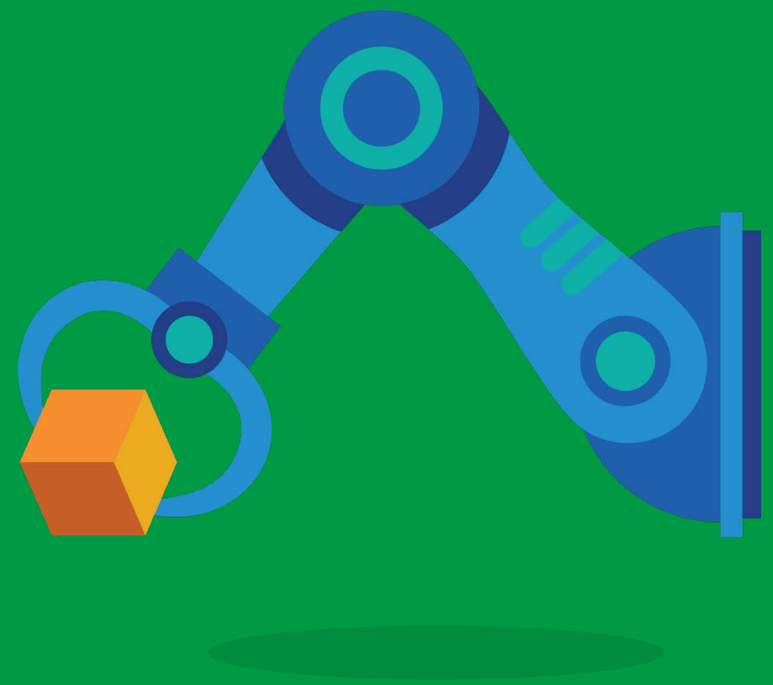
From our experience we found that on average...

40-75%

cost savings can be achieved by implementing Intelligent Automation for relevant functions.

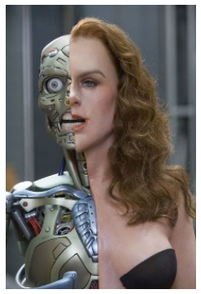
The Bigger Picture

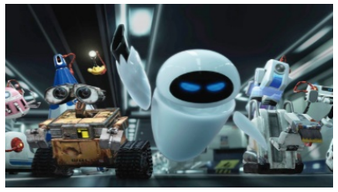
Humans have been simplifying tasks since their existence

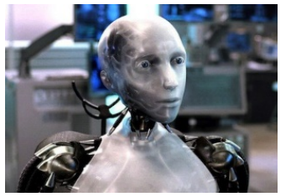


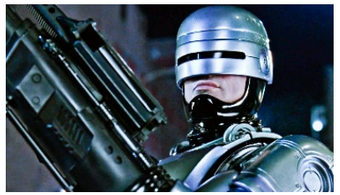
Humans have an inherent fascination for robots

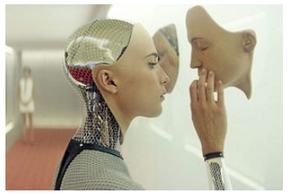
Who recognizes any of the following robots?









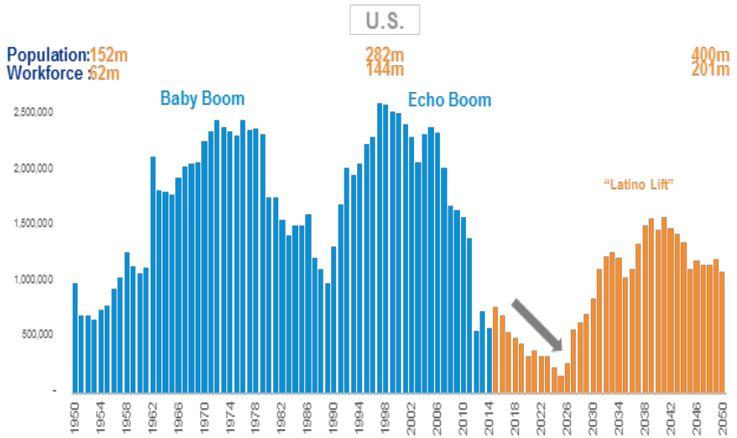


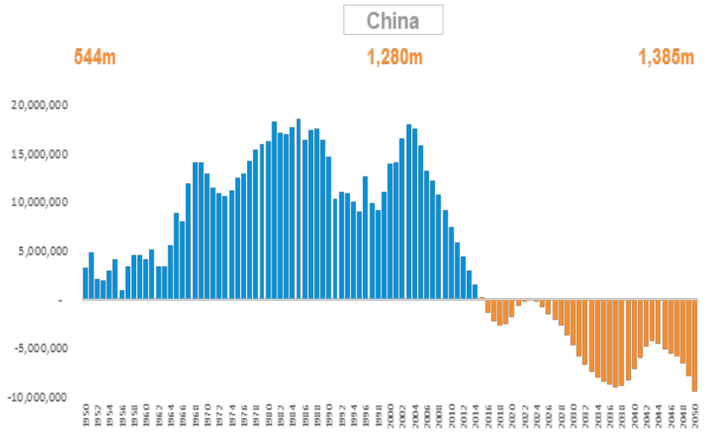
Robots: Fact or Fiction?

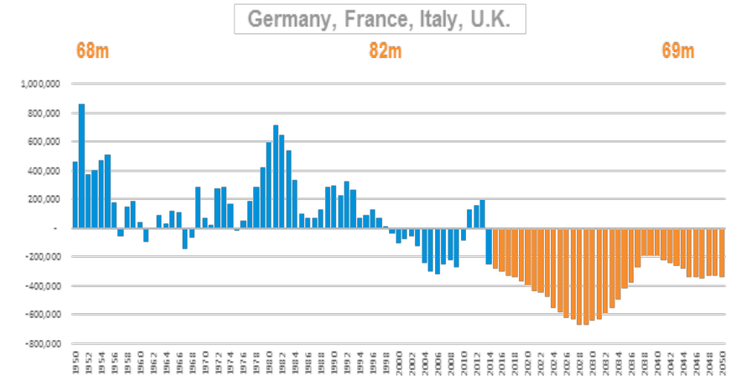
"As technology improves, robots will be able to do more sophisticated tasks faster and more efficiently than human workers. Businesses that don't start taking steps now will not only find themselves at a huge disadvantage, they likely will be as obsolete as the employees that the robots have replaced" – Cliff Justice

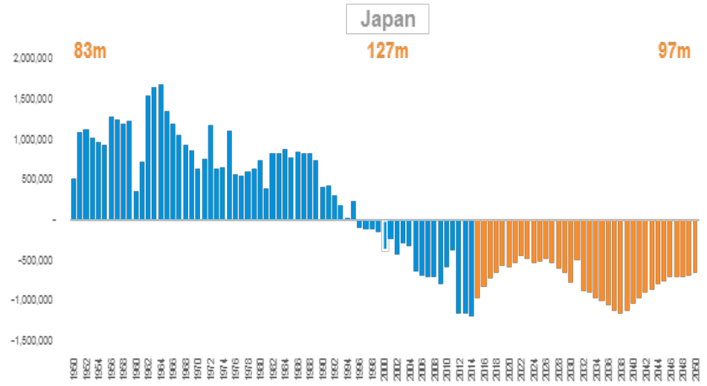
Demographic developments force us to innovate

The net annual growth in the working-age population between 1950 and 2050:









The global workforce is shrinking:

By automating low-level activities, employees will be freed to focus on higher-value work or discover innovative ways to provide value -- potentially creating a new class of high-paying jobs.

Intelligent Automation by means of robotics and automation is already all around us

It’s not a matter of “if” it’s a matter of “how”

Anna: IKEA’s Digital Assistant

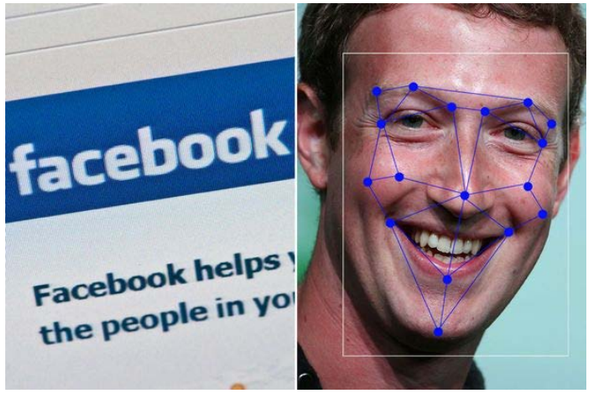
wealthfront

- **Account minimum:** $500
- **Accounts offered:** IRAs, taxable accounts and trusts
- **Management fees:** First $10,000 managed free; 0.25% annual advisory fee after that
- **Investments used:** ETFs
- **Investment expenses:** Average 0.12%

Betterment

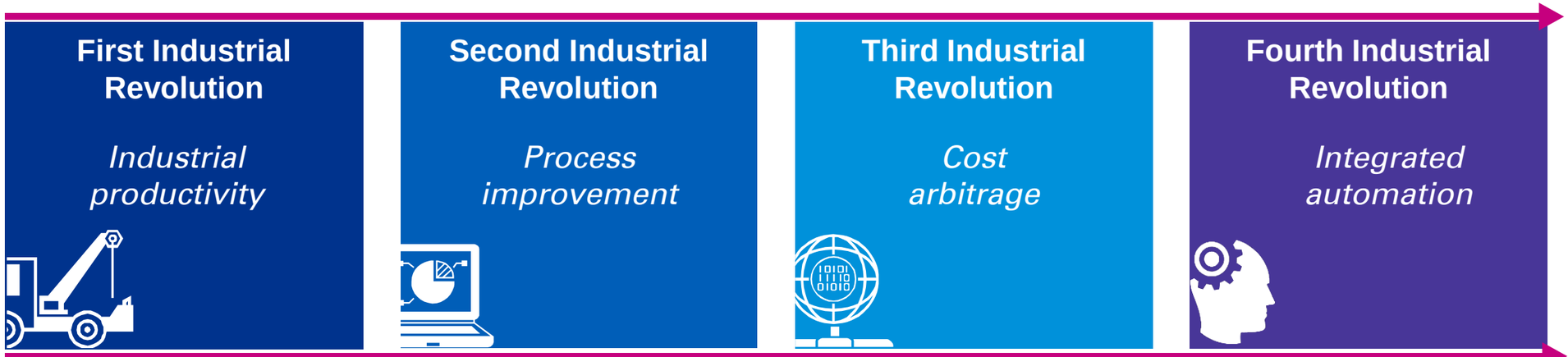
- **Account minimum:** $0
- **Accounts offered:** IRAs, taxable accounts and trusts
- **Management fees:** Three tiers: Under $10,000: 0.35% with minimum of $100/month auto deposit or $3 a month without auto deposit; $10,000 to $100,000: 0.25%; $100,000+: 0.15%.

Automated wealth management by Wealthfront / Betterment



Facebook’s photo tagging based on facial recognition

Intelligent Automation is one of the technologies driving the fourth industrial revolution



Introduction of mechanical production

Using water and steam power

First mechanical loom in 1784

Division of labor and mass production

Using electrical energy

First assembly line Cincinnati slaughter houses, 1870

Systems introduced to further automate

IT- and Advanced electrical systems

First programmable logic controller, 1969

Shifting boundaries of virtual and physical worlds

Connected, self-interacting and self-adjusting systems

Happening today

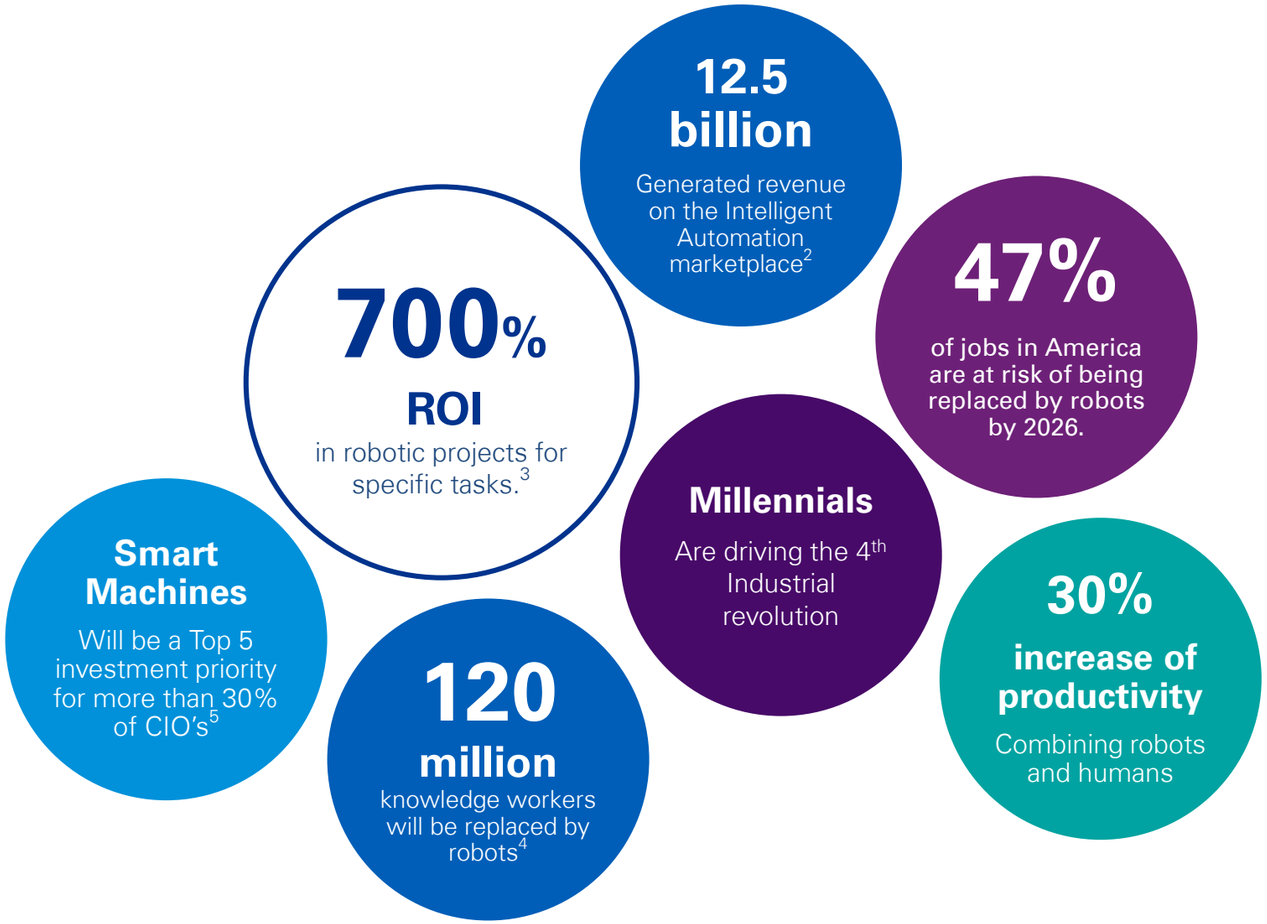
"Its easy to predict technology that will replace jobs. What's harder to foresee are the innovations that create jobs"

– Ray Kurzweil

Intelligent Automation will dramatically impact the way work is done today

The expected market size for Intelligent Automation by 2020,[1]

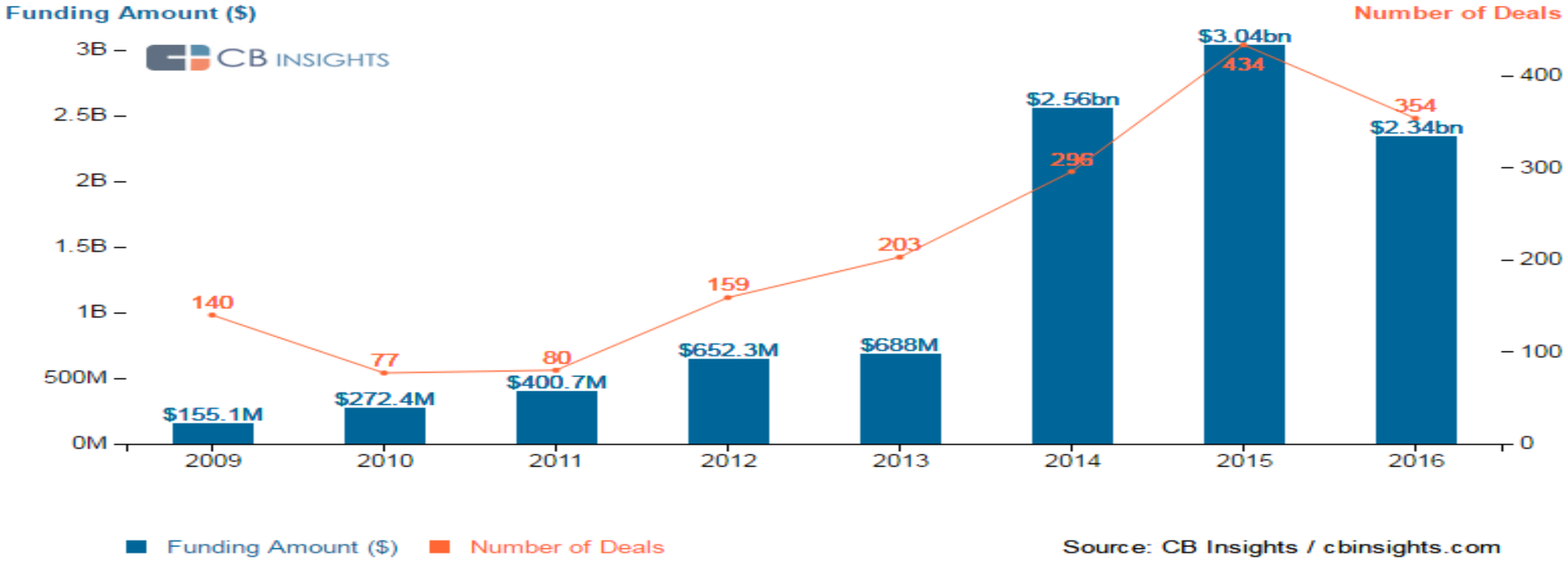
$152B+



The space is booming and large amounts of investment are entering the space

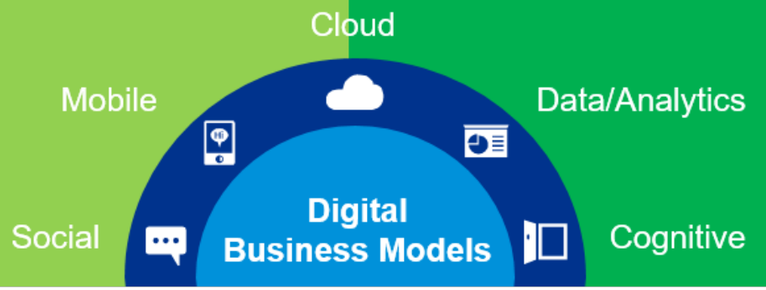
$10.1bn
Total Funding since 2009

1,743
Deals since 2009



Intelligent Automation = Better, Cheaper, Faster, Broader = death of legacy BPO

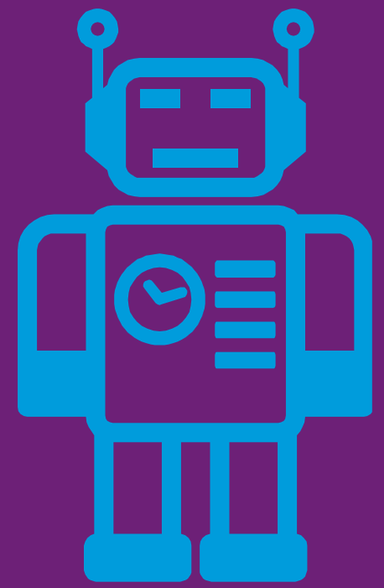
Wave 1: Labor arbitrage	Wave 2: Labor automation
15 – 30 percent Cost take out	**40 – 75 percent** Cost take out for relevant functions
Model is scalable to the extent that you can scale labor	Model is scalable, and is **largely independent of labor growth**
Custom/complex, **legacy**: "Your Mess for Less"	**Transformative** – new way of doing business
Access to **low cost labor** necessary to provide continuous value	Access to "**rocket scientists**" who can codify manual processes
Revenue/profit correlated to people	Revenue/profit **not** correlated to people



Source: The Outsourcing Institute, Three Secrets Your Traditional Service Providers Are Not Telling You, June 2014
KPMG analysis

Intelligent Automation

A brief walkthrough of what it is and how it works



Emerging technologies in the digital space have an amplifying effect

Business process as a service

Business process management outsource using data, tools, and simulators

Business Intelligence/ Analytical tools

Big data and analytics; warehouse tools being replaced with predictive modeling technologies

Mobility solutions

Internet enabled devices; virtualization of workforce; enabling greater variability in supply and greater responsiveness to demand

Cloud services

Computer applications or services delivered over the network or Internet

Social media and collaborative technologies

Crowdsourcing technologies; Enterprise collaboration technologies; Social media platforms

Advanced competencies in data science

Skills in rapid sequencing and computing that has been married with industry-based data and analytics

Robotic process automation

Replacing labor-based processing with machine-based processing at dramatically reduced costs

Cognitive technologies

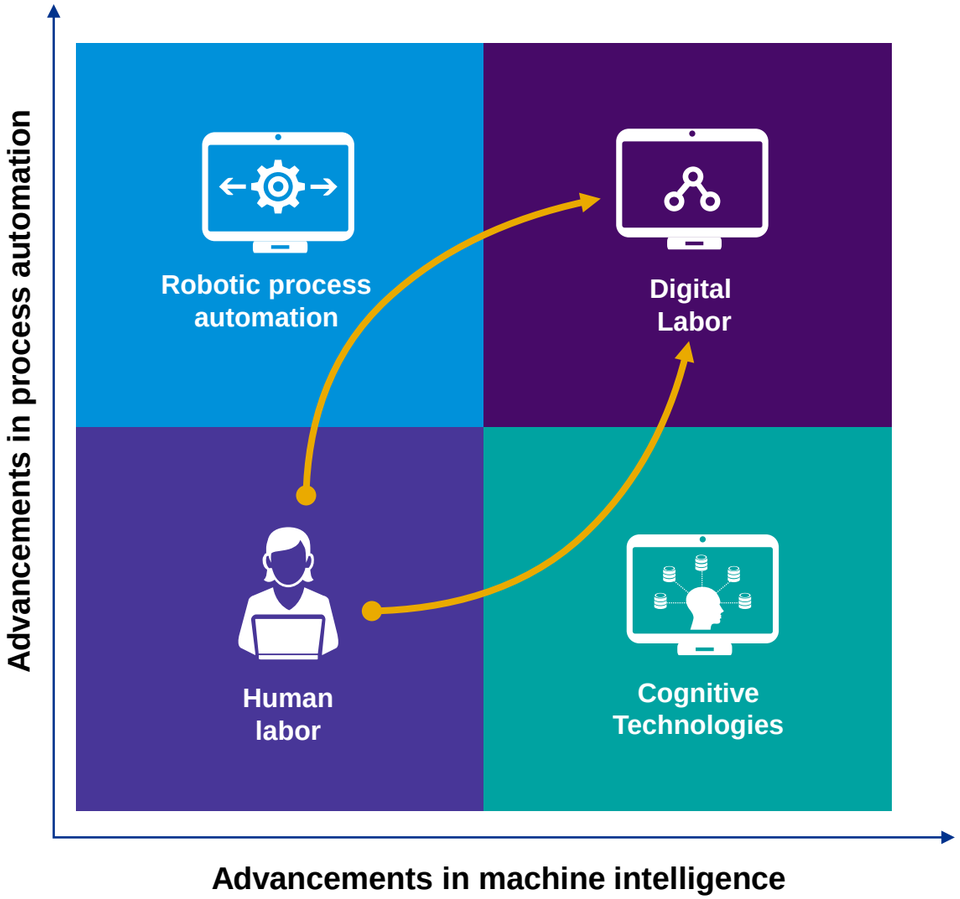
Automating decision-making process; natural language processing; pattern recognition and hypothesis generation

Internet of things

Embedded sensors and actuators in machines or other physical objects

KPMG

Intelligent Automation is a continuum of technologies that allows you to achieve improvement and change



Robots vs Robotics:

A common cause of confusion often results from the term "robotic" in Robotic Process Automation; and the question that is often verbalized is, "Why call it 'robotic' if the automation isn't actually using physical robots?"

The short answer to this question is to first consider the term robotic as a descriptor of the underlying process and not the automation.

The spectrum of Intelligent Automation can be divided into three classes

One or a combination of these three classes can, together with human capital, drive organizational transformation and meet changed or new business goals

BASIC PROCESS AUTOMATION (RULES)

- Macro-based applets
- Screen level and OCR data collection
- Workflow automation
- Process mapping
- Self executing

Potential applications: Trade entry, Service Desk Ticket registration, Reconciliations, Report generation, Copy-Paste actions

ENHANCED PROCESS AUTOMATION (LEARNING)

- Built-in knowledge repository
- Learning capabilities
- Ability to work with unstructured data
- Pattern recognition
- Reading source data manuals
- Natural language processing

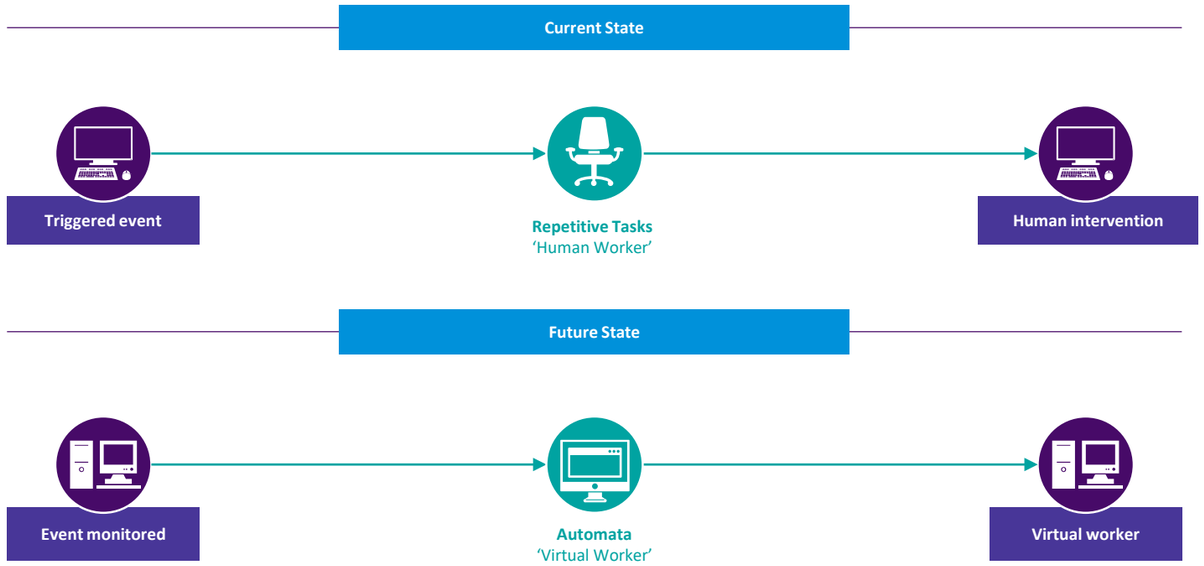
Potential applications: Exception handling (i.e., trade failures, escalated service requests, basic call center resolution)

COGNITIVE AUTOMATION (REASONING)

- Artificial intelligence
- Natural language recognition and processing
- Self-learning (sometimes self optimizing)
- Processing of super data sets
- Predictive analytics/hypothesis generation
- Evidence-based learning

Potential applications: Break reporting and analysis, advanced call center work, request evaluation and acceptance

With Basic RPA we can automate manual, repetitive tasks and apply rules based decisions

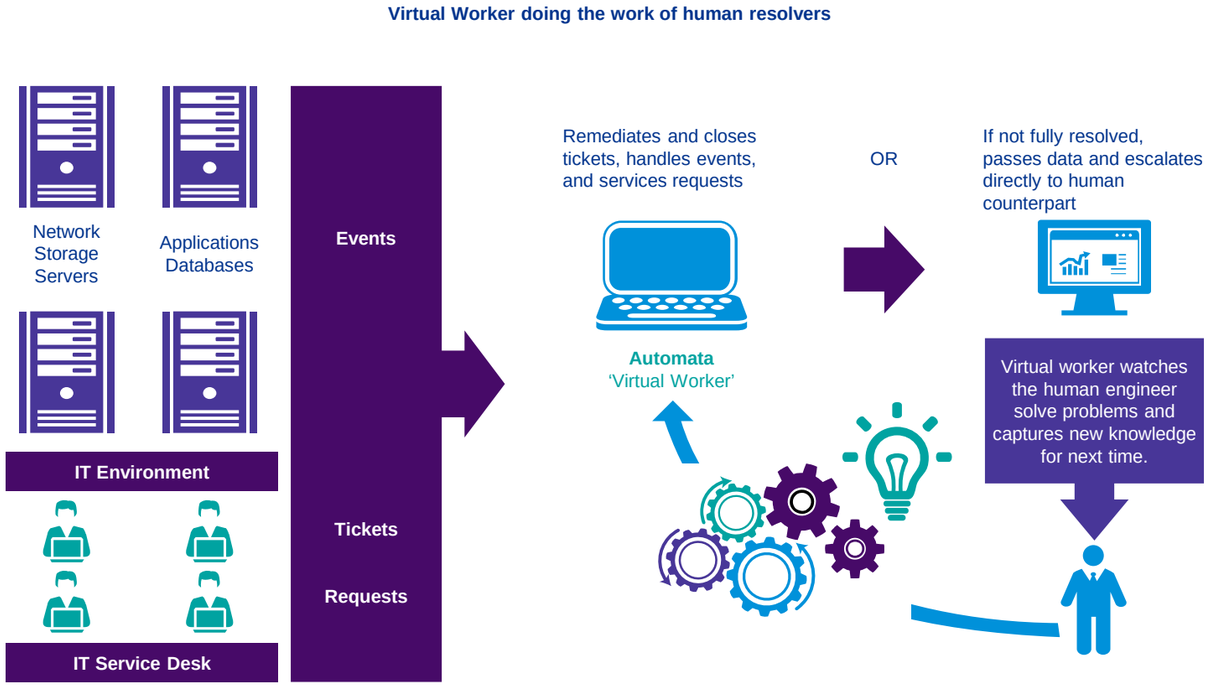


A great start:

In general, RPA tools are easy to implement and provide a rapid payback and high ROI. RPA can be combined with BPM, NLP, Cognitive, and human operations to expand addressable scope.

Our portfolio of 100s of horizontal (finance, hr, contact center, procurement, etc) and industry vertical use cases is unequaled, often accompanied with demos to make the art of the possible understandable.

Enhanced RPA deals with complex process transactions that require a deeper level of analytics

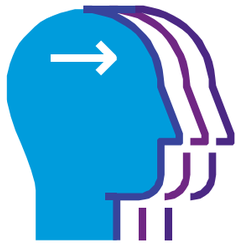


The next step:

After the basic step of RPA more complex solutions can be rolled out that then can form the basis for a cognitive automation project.

Also depending on the business goals you want to achieve a combination of both RPA and Enhanced RPA may fit the purpose.

Cognitive automation mimics human activities such as perceiving, inferring, hypothesizing, and reasoning



1 Perceive
(interpret sensory input beyond traditional data)

2 Reason
(hypothesize, weigh supporting evidence)

3 Learn
(improve confidence levels with experience)

A new partnership between humans and machines

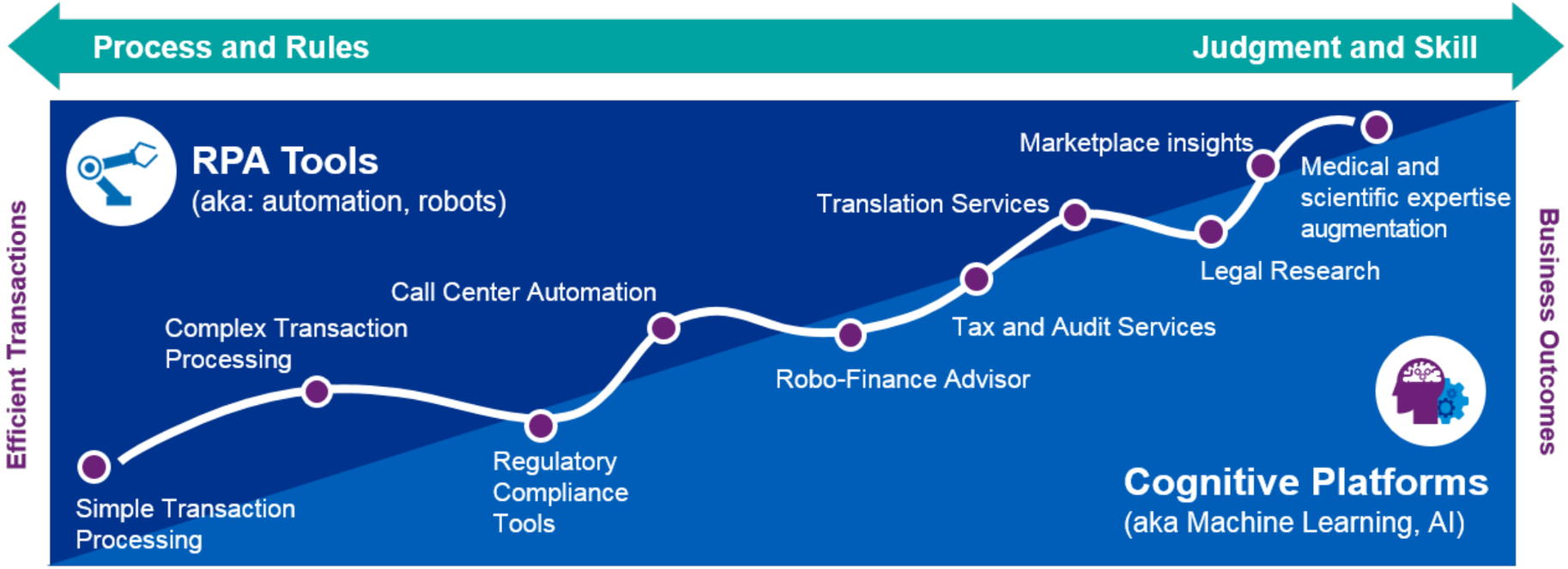
A continuing journey:

The role of cognitive automation in the business world is still evolving. This is the beginning.

We are in the early days of the evolution, and much has to be learned, developed, and tested—and these are not inexpensive endeavors.

KPMG's pioneering leadership in all components of Intelligent Automation positions us to help our clients – and ourselves – navigate this journey and cope with digital disruption.

Summarized Intelligent Automation is the combination of different technologies to achieve new and changing business goals



The Intelligent Automation Marketplace is developing fast for all three types

RULES
BASIC PROCESS AUTOMATION

LEARNING
ENHANCED PROCESS AUTOMATION

REASONING
COGNITIVE AUTOMATION

Intelligent Automation comes with a large number of advantages

Productivity/Performance

Software robots work 24/7, and 365 days a year; do not take vacations, get sick, suffer from work/life balance issues; and perform tasks at digital speeds.

Employee Satisfactions

Eliminating the mundane repetitive tasks allows employees to focus on strategic initiatives, thereby impacting the business in a more profound way and experiencing more job satisfaction.

Scalability

Software robots scale instantaneously at digital speeds to respond to fluctuating workloads. There is also no overtime, no hiring challenges, no training, and no severance.

Consistency/Predictability

Software robots do not make inconsistent decisions or elect to “turn right” one day and “left” the next. They are configured to solve a problem the same way every time.

Quality/Reliability

Software robots always do what you tell them to do— when properly configured they do not make mistakes and thereby eliminate human error. Having said that, when not properly configured and/or maintained, a robot will fail, and fail at digital speeds.

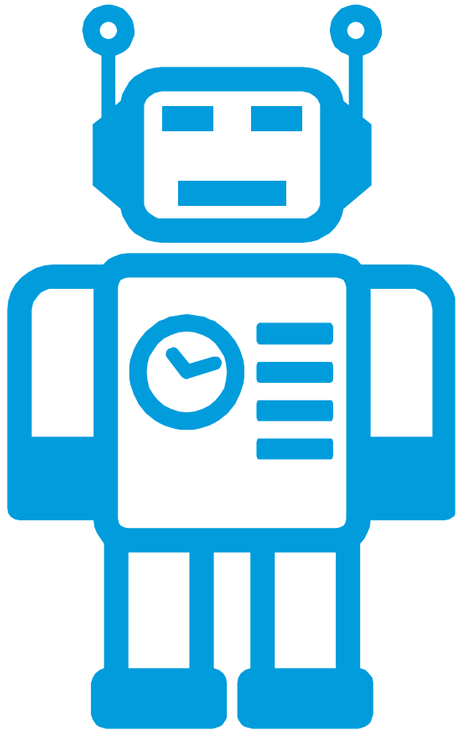
Auditability

Software robots keep the perfect audit trail—the software log—a file built by the software that documents every action it took and the corresponding resulting outcome.

Cost Efficiency

Estimates thus for show a software robot is approximately one-third the price of an offshore full-time employee (FTE), and about one-fifth the cost of onshore FTE.[3] Intelligent Automation savings are estimated to be between three and ten times the cost of implementing the automation.[4]

However As you consider the future, ask yourself these six key questions



Where can you pilot the use of RPA?

How to manage fallout from displaced Labor?

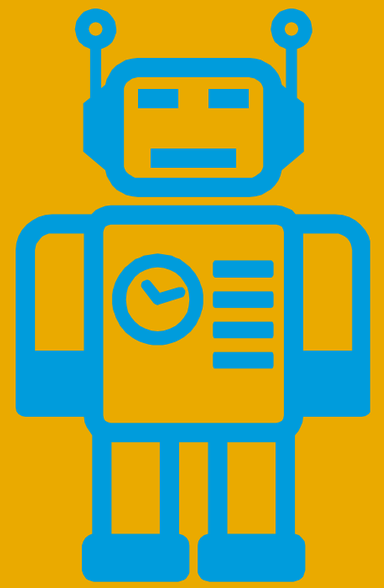
How to win the war for digital talent?

Do we understand how to develop and manage digital processes?

What capital investment strategy to follow?

How to manage risk?

Use Cases



Example Use Cases for Intelligent Automation

RPA in Action: AFE balloting letter creation

- An upstream oil and gas client experiences significant growth and anticipates doubling their well count over the next 9-12 months
- Land Administration team manually copies data from four different applications and pastes it into word documents to be mailed for partner elections
- The bot automated these mundane, repetitive, rules-based tasks to enable higher-value work
- Estimated return on investment of 7x over 3 years

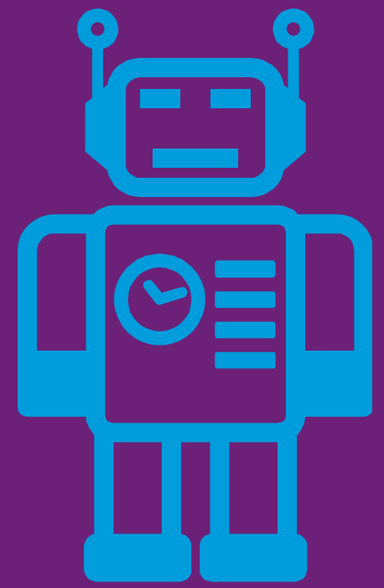
Cognitive in Action: Automate oilfield maintenance

- Maintenance technicians often struggle to diagnose problems with legacy oilfield equipment that has been modified over the years
- Using Amelia, a cognitive platform agent, engineers can quickly get their questions answered, helping to improve safety and productivity by reducing equipment downtime
- Amelia instantaneously reviews machine manuals, company policies, and maintenance records for each piece of equipment
- Amelia has ability to read natural language, understands context, applies logic, and makes inferences

RPA in Action: Validate water truck movements & invoices in Permian

- An operator in the Permian experiences large number of invoices from multiple water trucking vendors each month
- Dedicated team manually validates invoices based on GPS location coordinates
- The bot accelerated the invoice validation process by 240% and enabled the company to double the invoice activity without adding headcount to the team

Questions?



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