

The upside of disruption

Megatrends shaping 2017 and beyond



Building a better
working world

Key questions for discussion

What is
disruption?




What is
driving it?

How should
companies
respond?

Eight megatrends generate key questions to answer:

1. **Industry Redefined.** Is every industry now your industry?
2. **The future of smart.** What intelligence will we need to create a smart future?
3. **The future of work.** When machines become workers, what is the human role?
4. **Behavioral revolution.** How will individual behavior impact our collective future?
5. **Empower customer.** How will you change buyers into stakeholders?
6. **Urban perspective.** In a fast-changing world, can cities be built with a long-term perspective?
7. **Health reimaged.** With growing health needs, is digital the best medicine?
8. **Resourceful planet.** Can innovation make the planet resource rich instead of resource scarce?

Disruption drivers

			
Where we've been	Industrial revolution eliminated guilds and created massive labor displacement.	Age of discovery and colonialism discovered the “new world”	Most of the world's population lived in rural communities with powerful nation states.
Where we are	IT revolution (PC, online, mobile, social) have democratized data, empowered consumers and spawned new industries.	Trade liberalization and emerging market growth created new competitors, reordered the supply chain and lowered prices	Migration and immigration combined with aging population transforming everything from healthcare to real estate.
Where we're going	The next waves – the Internet of Things (IoT), virtual reality, AI, robotics – promise to be even more revolutionary.	The emergence of Africa and a more multipolar world will drive a global shift	Birth-rates, urbanization and a millennial-dominated workforce will have a profound impact on economic development.

Responding is critical

1

Everyone is affected

- If you think you won't be affected, you just don't know how yet

2

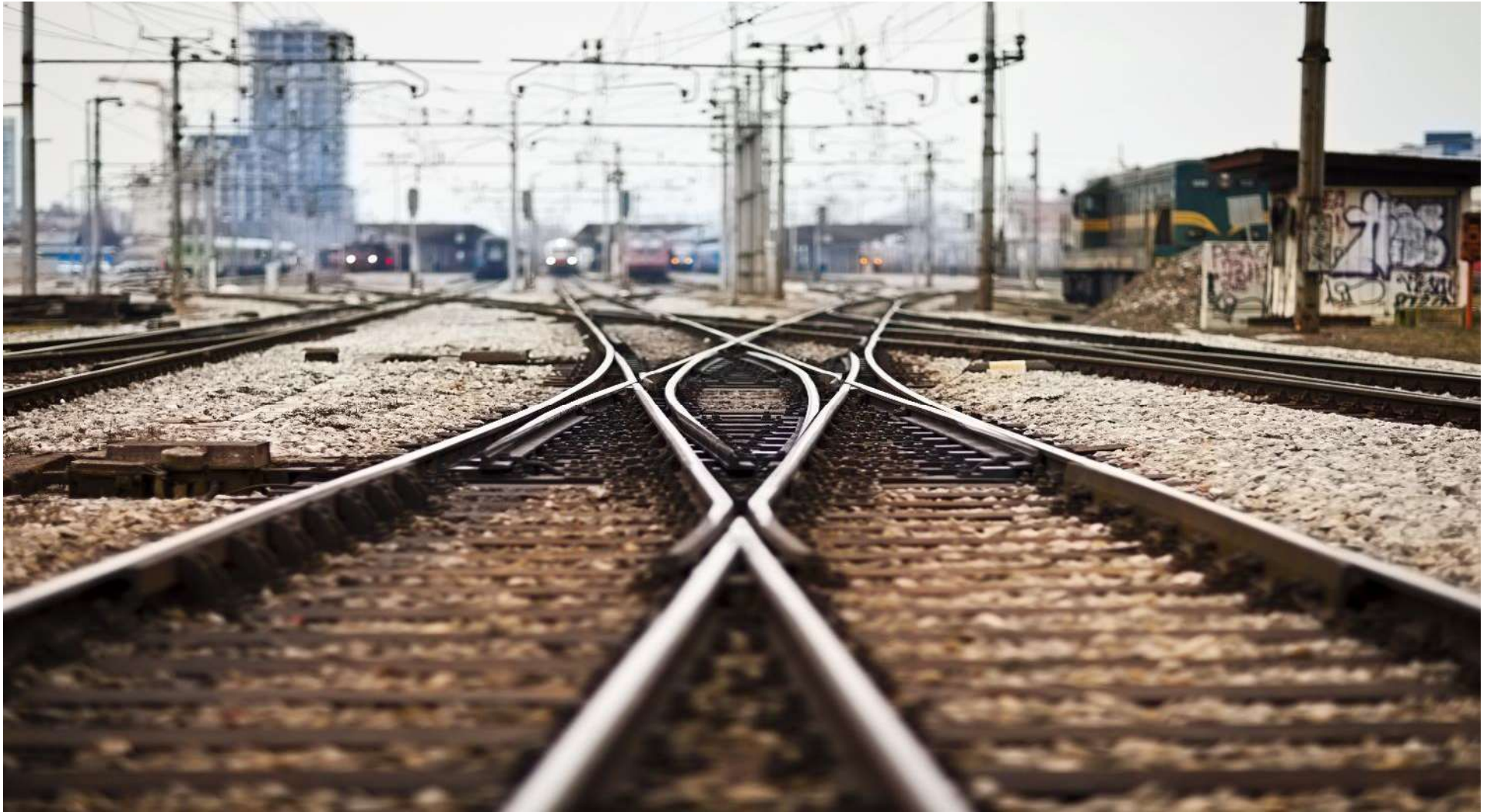
It's easy to underestimate the pace of change

- Time is not on your side

3

Strategy and execution are not enough

- The strategy that got you here may not be the one you'll need tomorrow



Industry redefined

Industry convergence is blurring previously distinct industries and sets of participants

With traditional consolidation and diversification ...



... key industry characteristics stay the same

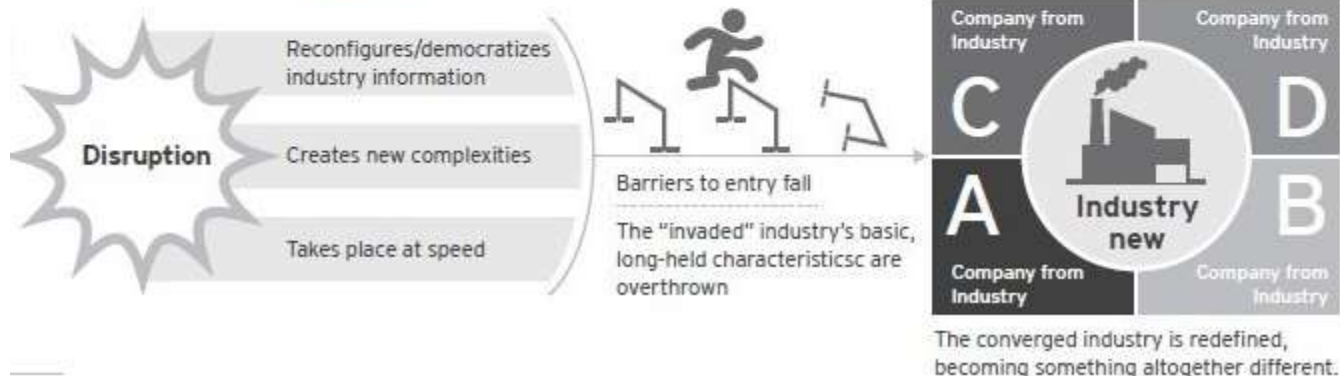
Core industry activities

Value chain fundamentals

Customer proposition

Dominant economic characteristics

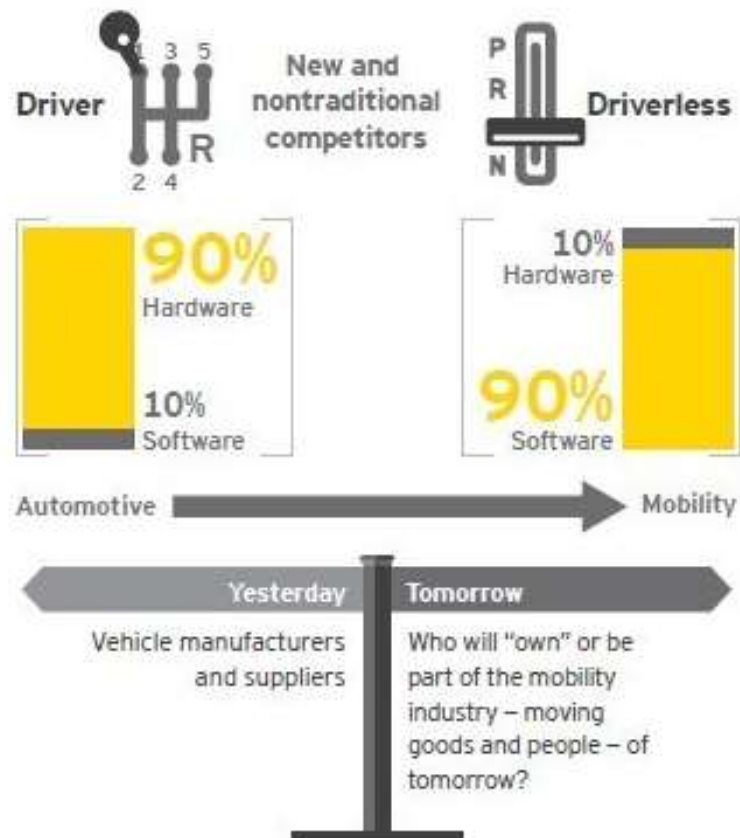
Disruptive convergence **redefines** the "invaded" industry



Case studies - areas ripe for industry disruption

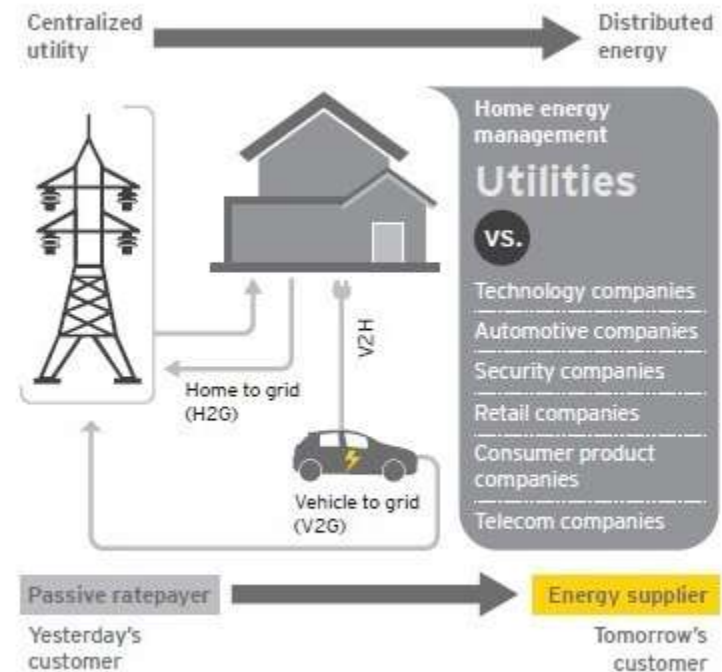
Technology companies are disrupting industry spaces and uprooting incumbents

Example: Industry redefined



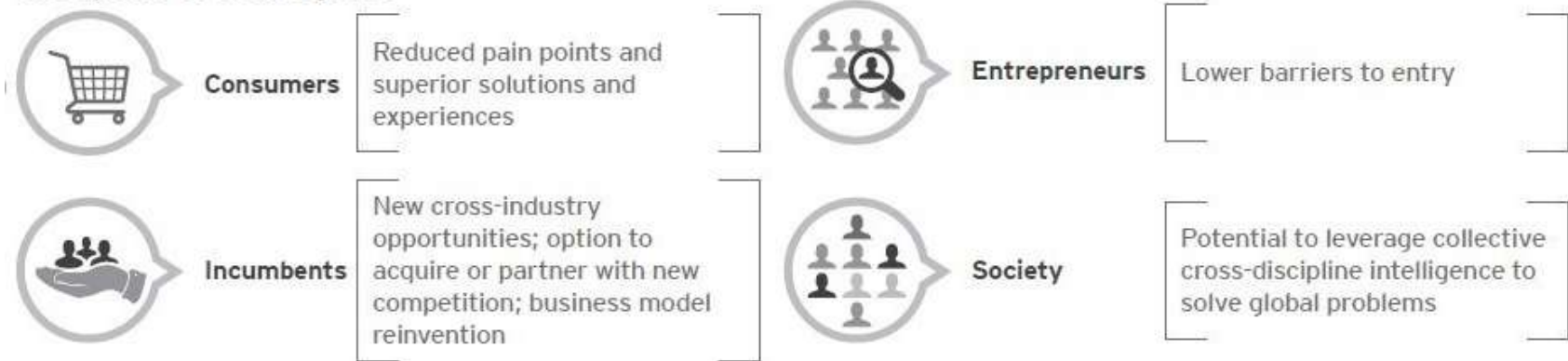
Traditional industries with high customer pain points are vulnerable to convergence

Example: Industry redefined



Companies should seek opportunities beyond their own industry walls

The upside of convergence



Alphabet is competing hard to win the race to driverless transport, logging more than **3 million miles** per day in simulation and 10,000–15,000 autonomous miles per week on public streets.³



The US retail chain CVS eliminated tobacco products from its stores, changed its corporate name to CVS Health, and now operates over **1,100** retail-based health care clinics across the country.⁴



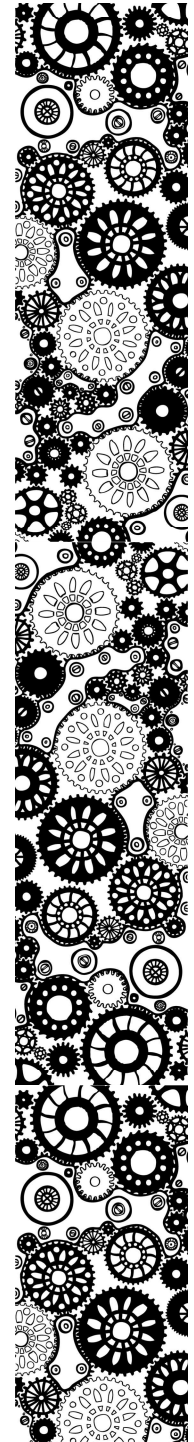
Industry redefined

Better questions to drive better answers:

1. Do you understand who your competitors are? Would your customers agree?
2. What are the fault lines to indicate your industry is ripe for convergence?
3. Putting aside what you do or make today, what new problems could your company help solve?



The better the question. The better the answer.
The better the world works.





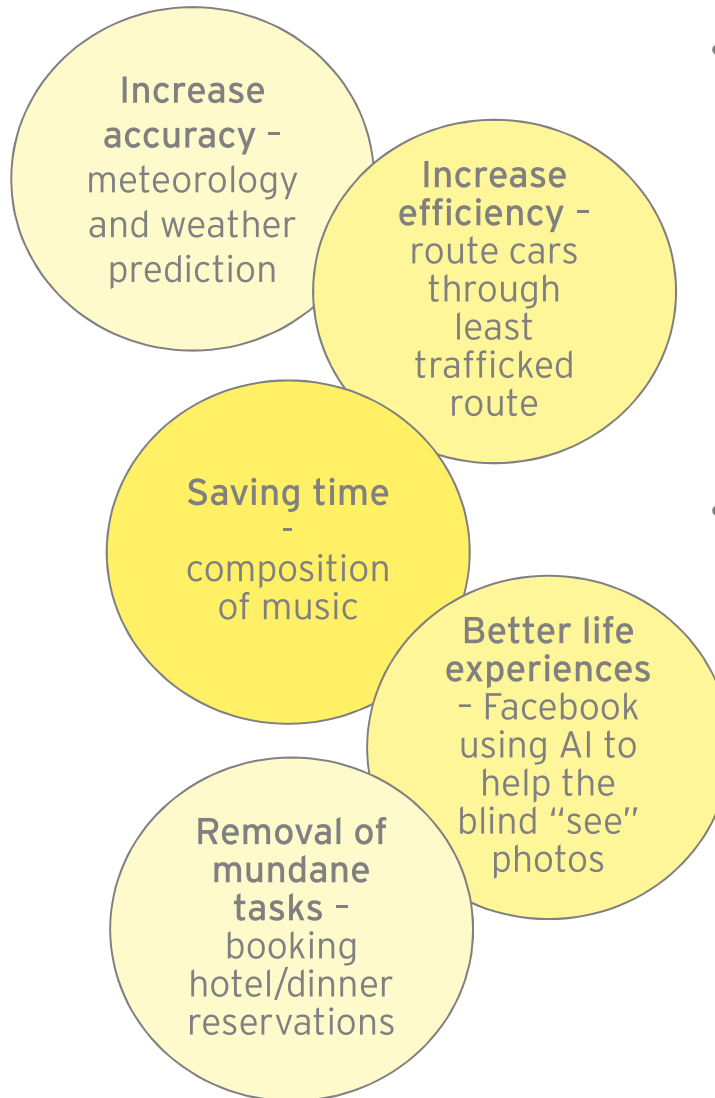
The future of smart

What, exactly, makes technology smart?

Smart is a term that has come to describe everything from health and banking to entire cities.

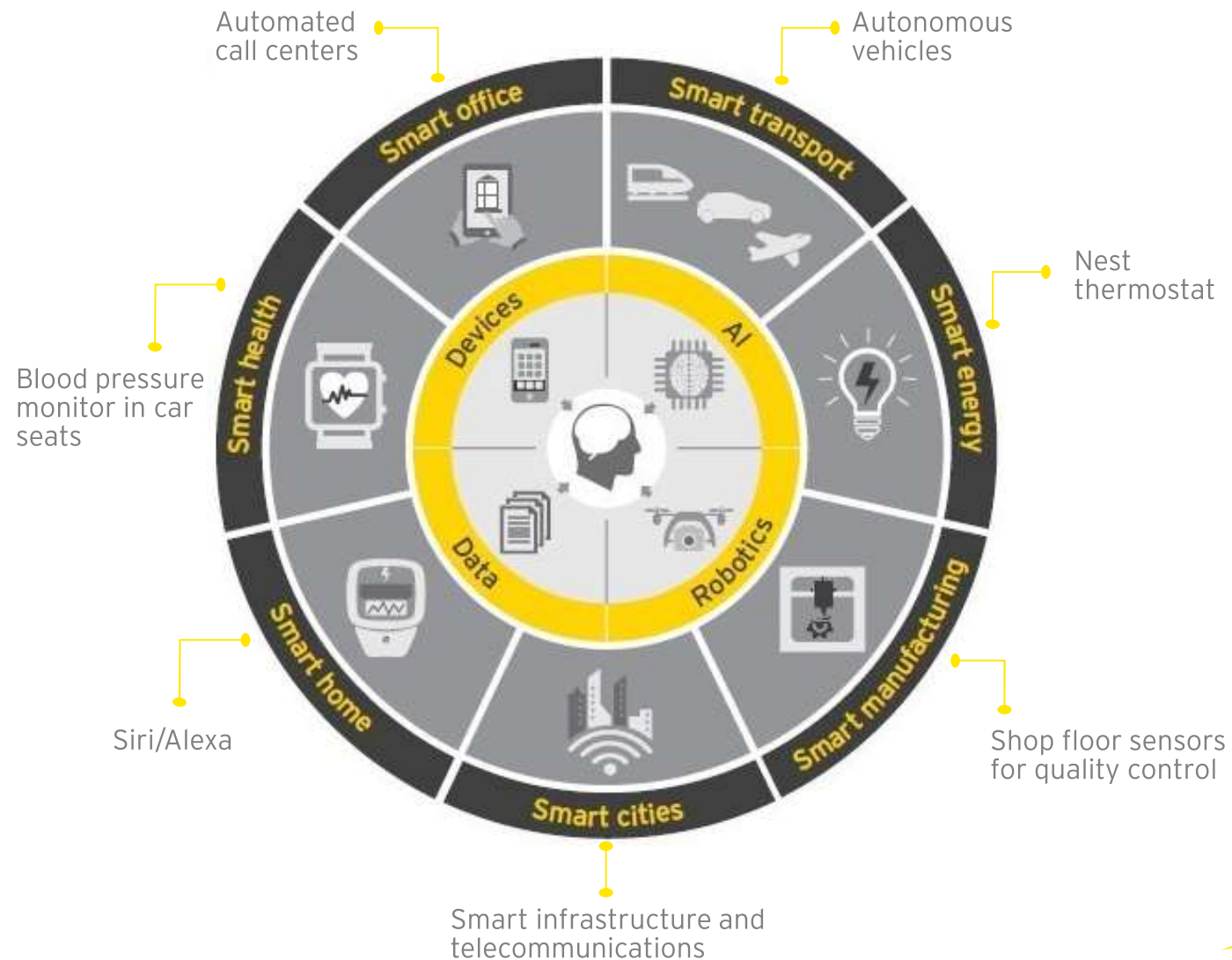
It takes an asset, infrastructure, or even transaction, ensures it is connected, analyzes its data and makes it more autonomous and effective.

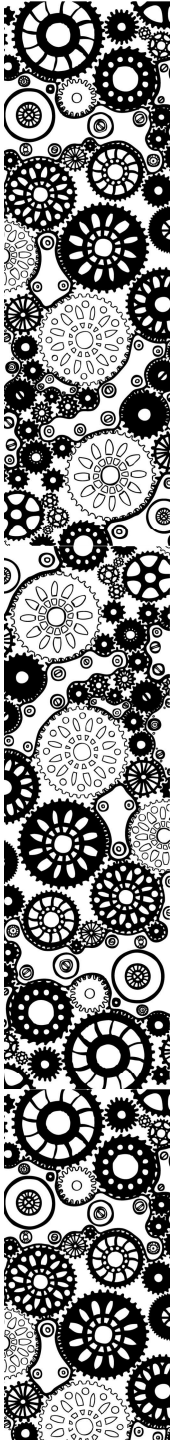
Smart is the layer of insight and decision-making above the interactions between connected things.



- The use of AI is significantly increasing. Investor funding in AI has risen from US\$45 million in 2010 to US\$310 million in 2015.
- Across industries, the widespread rollout of robotics is already under way, with spending expected to reach US\$67 billion annually by 2025.

We are just beginning to explore the art of the possible as we invest in technology, such as AI and robotics





Smart solutions need to be holistic - success is measured far beyond the implementation of technology

Smart requires holistic change encompassing three core elements:

1 Setting the change agenda

The business case for smart needs to be clarified and repeatedly tested.



2 Transforming beyond the core

An effective smart strategy requires an end-to-end redesign of organizational models. It requires us to evaluate and leverage the power of our systems and tools to drive better insights.



3 Activating inside and out

Smart goes far beyond technological implementation and organizational change.

Smart requires activation - it is activated through educating customers about what to do with the data and what actions to take.

“

There's the notion that AI is something that will enhance, make people and businesses more productive – that's the notion of AI working alongside humans. It can help free people up to be more productive and effective in the roles they're in, improving quality of work and access to information.

Chris Mazzei, EY Global Chief Analytics Officer

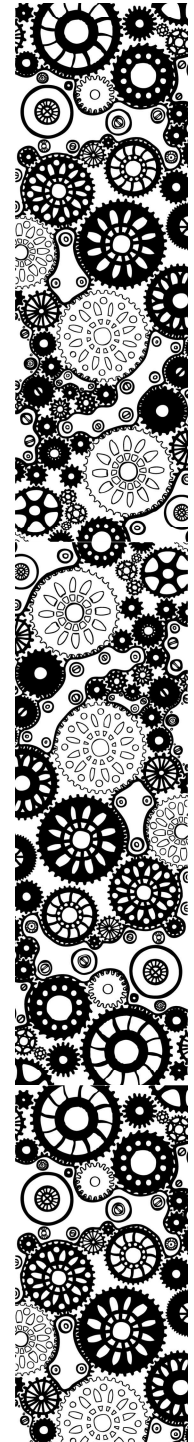
The future of smart

Better questions to drive better answers:

1. With data and insight in the hands of the individual worker, what will the demands on these workers be in the future? Where will they work?
2. Does your organization know enough to be 'smart'?
3. If AI control's decision-making, who controls the company?



The better the question. The better the answer.
The better the world works.



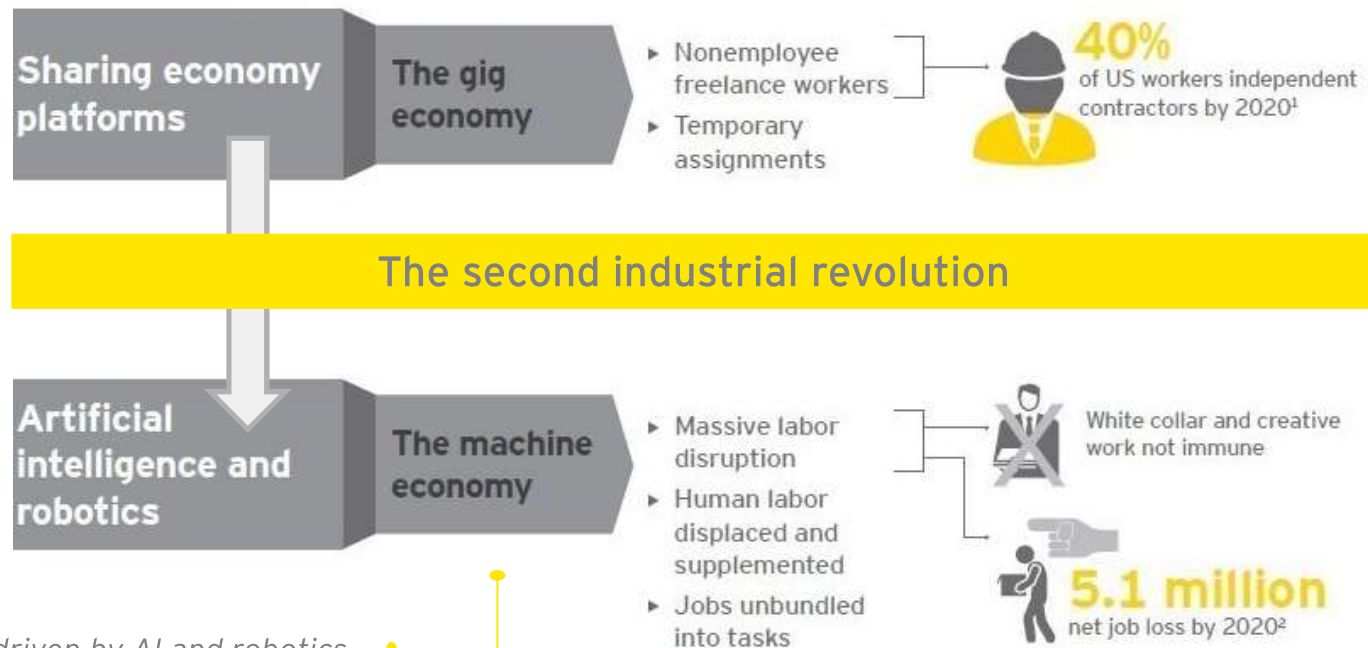
The future of work



Are we going to turn into the Jetsons?

The future of work will move in a phased approach, first to the gig economy and then to the machine economy

Non-employee freelancers provide labor in temporary assignments (Airbnb, Etsy, Uber)



An economy driven by AI and robotics.

The future of work will disrupt business, government and society



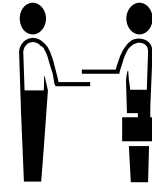
Disrupting business

- Disruptive entrants (Uber, Lyft) have caused auto manufacturers to reinvent traditional models (GM's partnership with Lyft).
- Labor-intensive firms will need to reinvent their business models, deploying smart technologies and using labor more productively.
- Work will be unbundled. Just as disruption unbundled music albums into songs, it will unbundle jobs into tasks, with each task performed in the most efficient manner.



Disrupting government

- Gig economy start-ups are already challenging regulations everywhere (hotels, restaurants, taxis and more).
- Workplace protections will be challenged. Hard won rights that have become commonplace (the five-day workweek, paid time off, insurance against workplace injuries) could come under threat. Independent contractors in a gig economy have none of these protections.



Disrupting society

- The machine economy promises to deliver a “leisure dividend” unlike anything we have seen before.
- Will we use this spare time to enrich our lives culturally and intellectually? Or will the loss of work deprive us of something elemental that gives our lives a sense of purpose?

• **How do you build a better working world in a world with less work?**

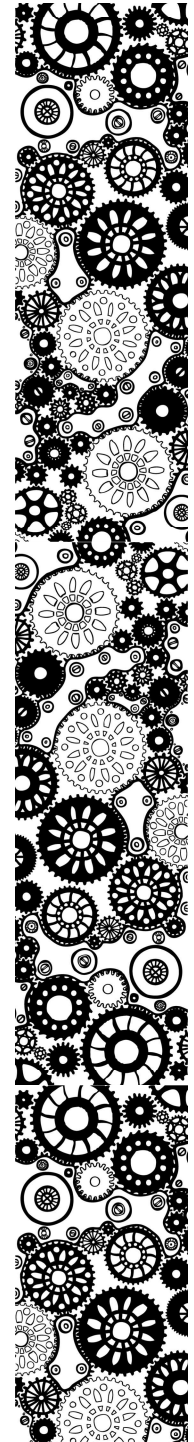
The future of work

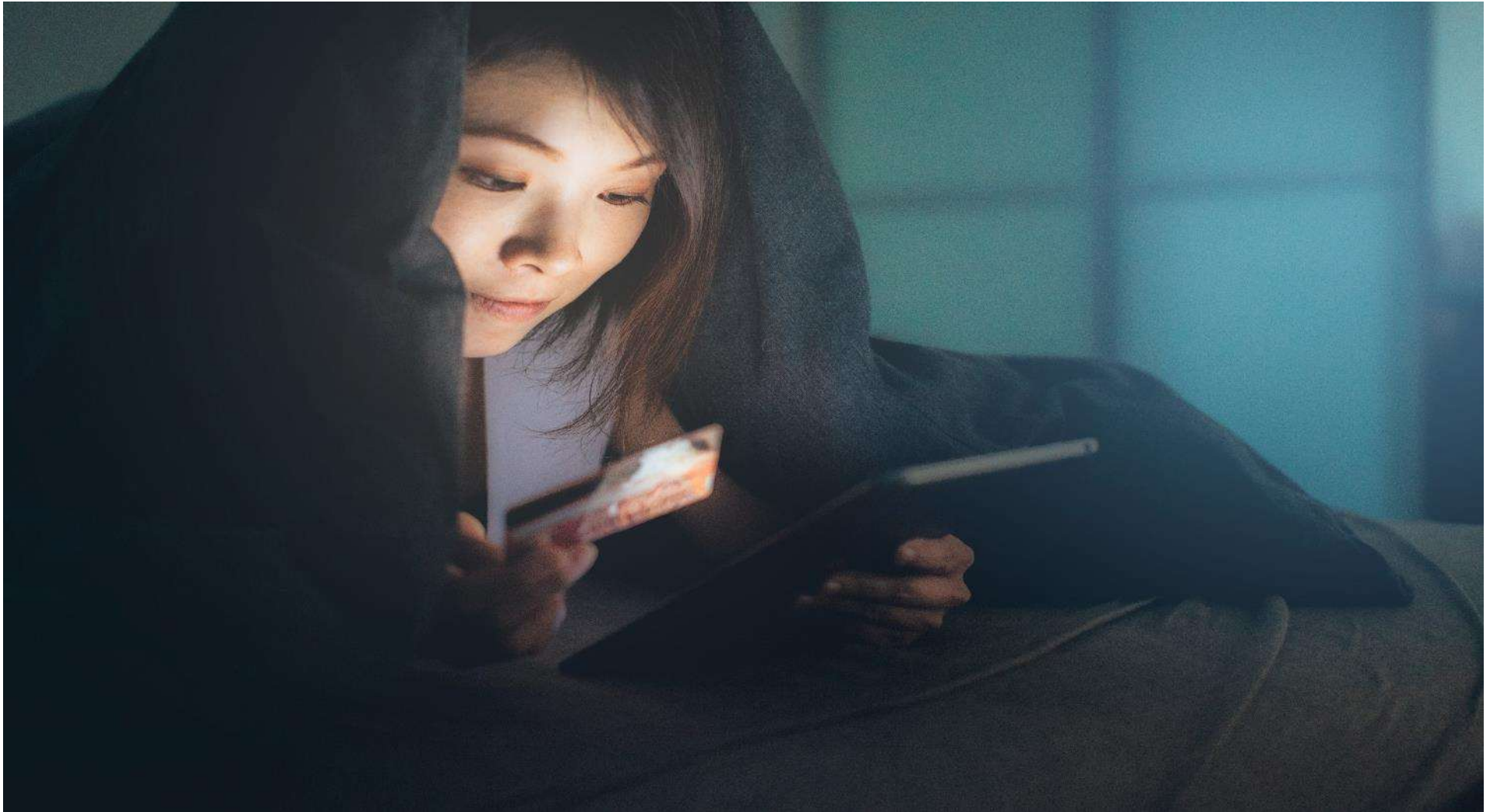
Better questions to drive better answers:

1. How will governments respond to the displacement of workers?
2. How will your organization engage with their human workforce in a task-driven economy?
3. How will the relative pressure from different stakeholder groups change when the employee base of manufacturing companies is much smaller?



The better the question. The better the answer.
The better the world works.





Behavioral revolution

We act in our best interest, right?

High-cost societal challenges threaten our future:



Climate change¹

US\$44 trillion

(by 2060, global cumulative cost)



Chronic disease²

US\$47 trillion

(2010-2030, global cumulative cost)



Retirement savings gap³

US\$14 trillion

(US single-year cost)

These problems are not new...

...Demographics and globalization increase the urgency...

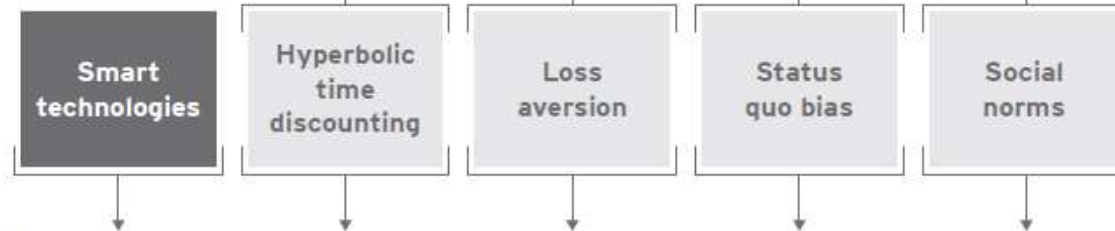
...Incentives to improve are everywhere...

...But assume we will act rationally

The problem with human behavior

Universal behavioral biases drive these challenges:

"Homo Economicus"	Consider the future impact of our decisions	Utility from gaining \$100 = Disutility from losing \$100	Participate in a plan based on preferences	Motivated by economic sticks and carrots
Behavioral economics	Excessively discount the future	Utility from gaining \$100 < Disutility from losing \$100	Higher participation if choice is opt-out than if it is opt-in	Social norms often more powerful than market norms



Pact	GPS verifies gym attendance	Weekly rewards make payback immediate and tangible	Weekly pact commits money to exercising	Prior week's pact carried forward unless changed	
Save More Tomorrow		Commit to start saving "tomorrow," not today	Increase in contributions tied to future raises	Enrolled until individual opts out	
Opower	Online and mobile customize messaging and nudges				Customized messages comparing energy use to that of peers

We need long-term behavioral change to make our society sustainable

1 Maintain free will

Governments and organizations must adjust without taking away individual freedom. It is critical that incentives be designed to preserve individual freedom, even as they nudge (not force) people toward better choices.

2 Unproven track record

Behavioral economists don't yet know enough about whether nudges that work in the short term will lose their impact over time, and practitioners will need to experiment and learn along the way.

“

Las Vegas is busy every day, so we know that not everyone is rational

- Charles Ellis

3 Important not urgent

Lastly, businesses and organizations need to realign short-term institutional incentives, such as election cycles and quarterly earnings expectations, toward the long-term focus needed to address our biggest collective challenges.

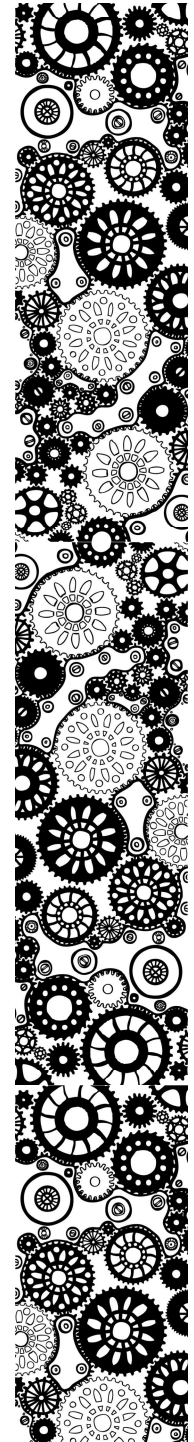
Behavioral revolution

Better questions to drive better answers:

1. How can your organization be motivated to focus on the long term?
2. How will societies improve collective behaviors without restricting individual freedoms?



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The better the world works.




Empowered customer



One size does NOT fit all (anymore) - the customer profile is changing

1



Today's customers understand their commercial value ...

... but they can ignore you if they're disinterested or displeased.



Ad **US\$21.8 billion**
in global ad revenue was lost through
ad blocking software in 2015¹

2

Customers are willing to pay for what they value ...



What do you have for me?

... but need to be appealed to in their full complexity.

Shoe store
vs.
customized
Nikes

Curated
purchases -
Stitchfix,
Birchbox

Radio vs.
Spotify

Blockbuster
DVDs vs.
Netflix

Blue Apron,
Hello Fresh

Today's customers:

- Seek differentiated experiences
- Want to feel empowered
- Will pay for what they value
- Cannot be conveniently categorized

The B2C world is significantly impacted by the empowered customer ...

In this culture of niche, everything must be personalized ...

3

69% of shoppers are willing to trade their personal information for more personalized services.²



69%
Age 25-34

... putting a premium on data collection and analysis.

Annual spending on data and analytics³



23% CAGR

2019
US\$48.6b

How do companies personalize their services and products?

- The effort to personalize is forcing companies to harness the power of analytics (big data) to understand consumer behavior and eventually influence it
- Companies must balance privacy and confidentiality issues with the quest to gather intel

Customers build brands ...

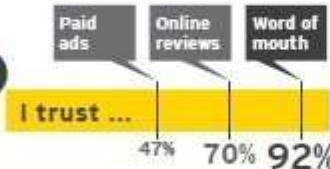
Consumers trust earned media over any form of paid advertising⁴



70%

70% want to learn about products through content vs. through traditional advertising⁵

4



... companies must effectively manage a mix of media channels.

How do companies market to their customers, once they've analyzed their behaviors and spending patterns?

- Customers trust each other more than they trust brands or businesses. Online shoppers have more faith in peer recommendations and customer tweets than they do in traditional paid advertising.
- Today's customers are disrupting traditional supply chains. They want it now and they want it fast!

... which in turn, causes a ripple effect on the impact to businesses

Business customers also want to be empowered ...

5

65% of B2B customers say their experience doesn't match their experience on Amazon and similar sites.⁸



... disrupting existing supply chains and raising the bar on delivering differentiated B2B experiences.

If customers get used the level of service from Amazon, they raise the bar for how companies interact with other companies. But can all businesses keep up with a supply chain to distribute goods that is on par with Amazon?

Today's customers co-create ...

6

Crowdsourced innovation produces 65% more actionable ideas.⁹



... speeding time to market, improving quality and reducing false starts.

Crowdfunding platforms such as Indiegogo and Kickstarter provide access to capital and visibility for entrepreneurs who can customize their products to differentiated needs.

The growing affinity for small, local, craft products has had an impact on big companies - customers are not just buyers, but stakeholders.

Better questions to drive better answers:

1. If power has shifted to your customers, what will they do with it?
2. When the customer experience is at least as influential as the product, how will you appeal to your customers?
3. Would a re-focus on your customer effect your value chain?

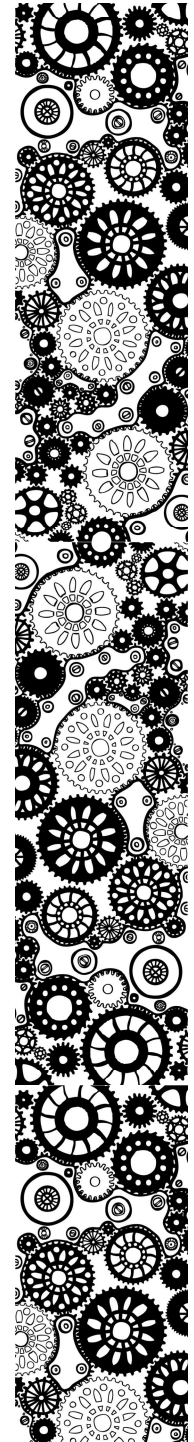
Empowered Customer

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The better the world works.





Urban World

huge city
I was born in a ~~small town~~



Different cities require different approaches

	Innovative infrastructures ⁵	Existing infrastructures ⁶	Developing infrastructures ⁷
Model	Build from scratch or embed latest technologies and thinking	Invest in and develop infrastructure around existing constraints	Invest nationally in infrastructure to help drive economic growth
Examples	<ul style="list-style-type: none"> ▸ Masdar City, UAE ▸ Shenzhen, China ▸ Singapore ▸ Hong Kong 	<ul style="list-style-type: none"> ▸ London, UK ▸ New York, US ▸ Sydney, Australia ▸ Tokyo, Japan 	<ul style="list-style-type: none"> ▸ Rio de Janeiro, Brazil ▸ Mumbai, India ▸ Lagos, Nigeria ▸ Jakarta, Indonesia
Biggest upside	To create smart, competitive, eco-friendly cities	To stay competitive as legacy trade, commerce and cultural hubs	To become more competitive and attract foreign investment
Biggest threat	<p>Overdevelopment</p> <p>Data: Current urban housing plans in China geared to accommodate 3.4 billion people - 2015 population is only 1.4 billion and expected to slow.</p>	<p>Aging infrastructure and sustained underinvestment</p> <p>Data: EY survey: 82% of public and private sector respondents said public's willingness or ability to pay for infrastructure will have a dramatic or significant impact on future of urban RE and infrastructure</p>	<p>Congestion, pollution and slums</p> <p>Data: Over 30% of city dwellers in 2050 will live in slums</p>

The upside of urbanization is innovation

Compact strategies



US\$3t in capital investment in urban infrastructure can be saved in the next 15 years by pursuing more compact strategies.¹⁰

Optimization



Optimizing vehicle flows can achieve carbon and energy savings of 10% to 15%.¹¹

Cap and trade



Tokyo's cap-and-trade program has achieved 25% reduction in greenhouse gas (GHG) emissions of covered facilities after its 5th year.¹²

Driverless



Autonomous electric cab in 2030 could emit up to 94% fewer emissions per mile than a conventional gasoline car.¹³

Resiliency



Bristol (UK), New Orleans (US), Medellin (Colombia), and Melbourne (Australia) are among the cities that have appointed a Chief Resiliency Officer.¹⁴

Net zero energy



Net zero energy – where the renewable energy generated by a building in a given year equals the total energy the building uses – has become a goal for many buildings around the world.

Cities must be smart in order to sustain their growth

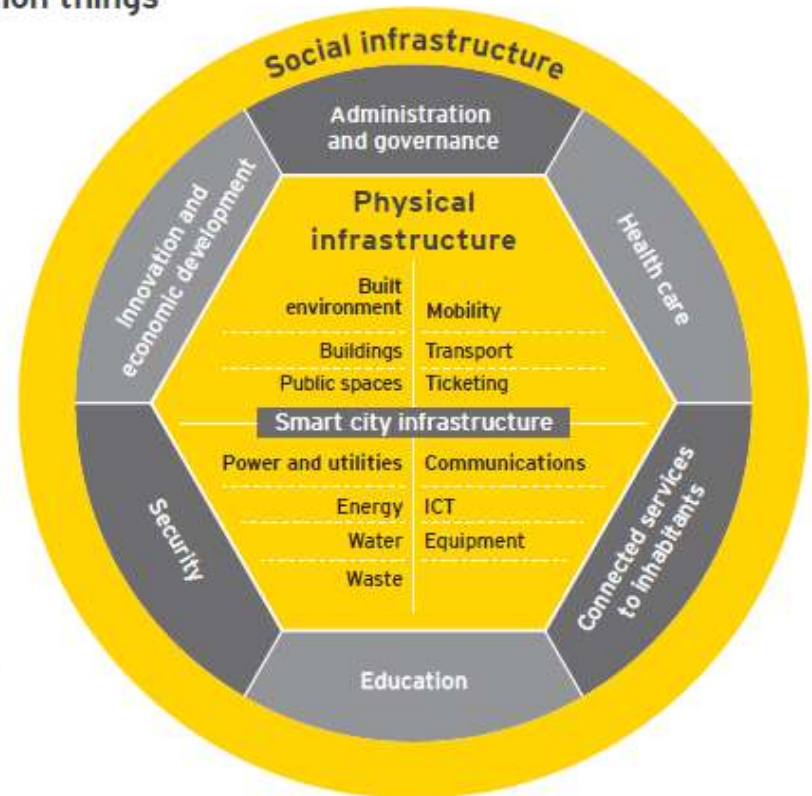
The upside is cities become "smarter" ... the promise of 10 billion things

Number of smart city IoT units

1B ^{9x} **10B**



Cities will become "smarter" when they leverage data from ICT systems, sensors, devices and other connected assets to improve decision-making across multiple urban challenges related to the physical and social infrastructure.¹⁵



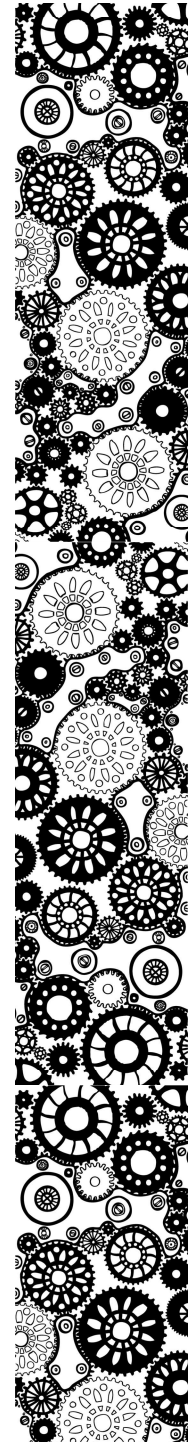
Urban World

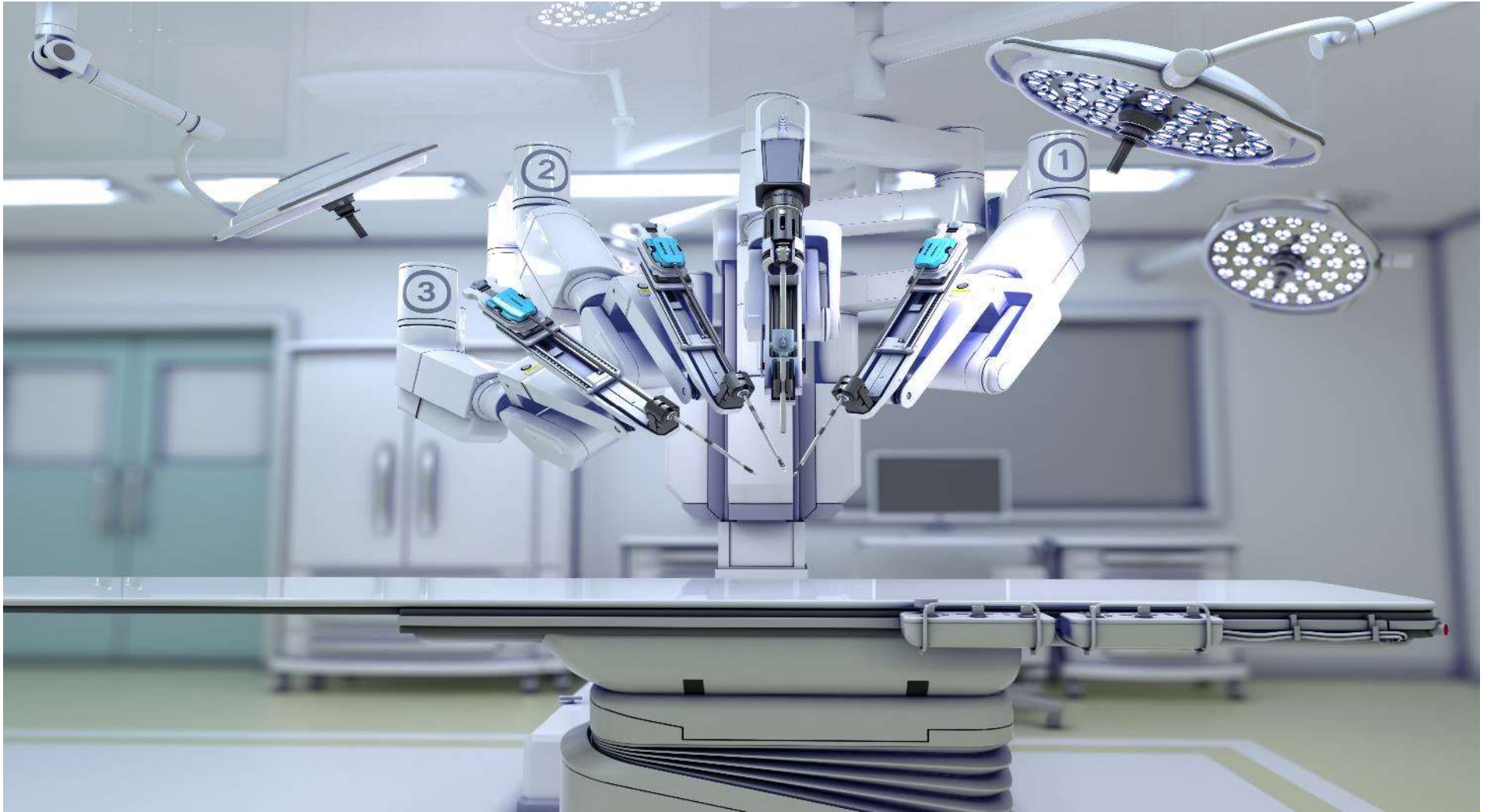
Better questions to drive better answers:

1. How can cities be made resilient to the future's known and unknown stressors?
2. New cities are built with "brains," but how will they develop their hearts and souls?
3. How will the public and private sector co-author this century's urban story?



The better the question. The better the answer.
The better the world works.





Health reimagined

Health is being disrupted by two trends

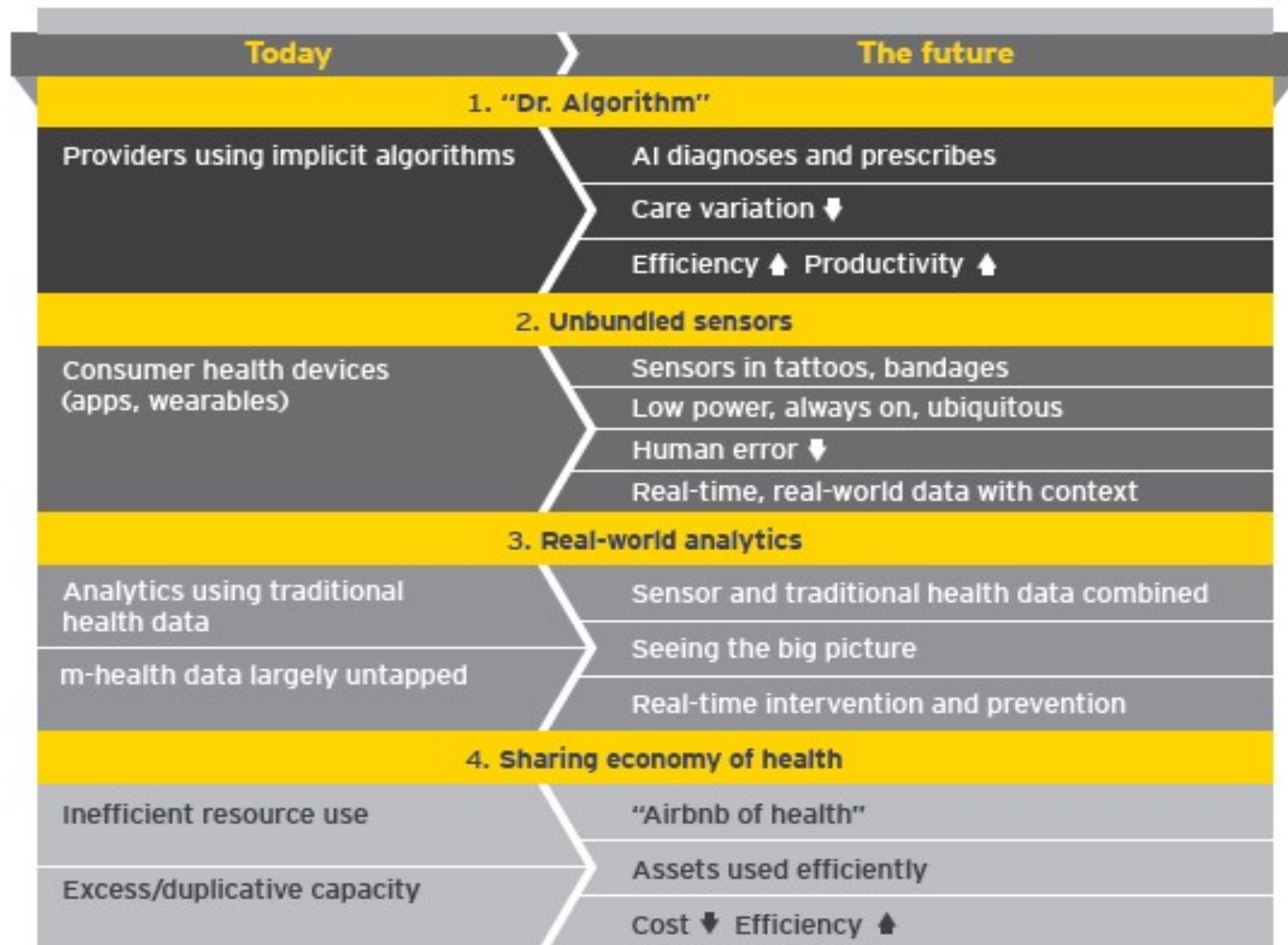
1 Seeking sustainability



































2 Digital Health



It's time to reimagine health



Disruption will shift the “balance” of power

	Traditional	New World		Drivers
 Patients/Consumers	Low 	 High		<ul style="list-style-type: none"> » Rise of the “Super consumer” » Patient empowerment » Participatory health
 Providers - Specialists	Low 	 High		<ul style="list-style-type: none"> » Patients now more informed » Payer mandated treatment protocols » Growth in personalised medicine
 Providers – Primary Care	Low 	 High		<ul style="list-style-type: none"> » Payer mandated treatment protocols » AI, improved diagnostics » Digital support services
 Providers - Pharmacists	Low 	 High		<ul style="list-style-type: none"> » Blurring of where care is delivered » Need for convenience » Primary care cost reduction
 Payers	Low 	 High		<ul style="list-style-type: none"> » Unsustainable cost burden » Balancing budget certainty vs improving outcomes
 Policy makers	Low 	 High		<ul style="list-style-type: none"> » Ensuring patient protection, product quality and security » Grappling with the impact of digital
 Pharma, bio, med tech	Low 	 High		<ul style="list-style-type: none"> » Pressure to prove and deliver better health outcomes » Pricing pressure
 Other Sectors*	Low 	 High		<ul style="list-style-type: none"> » Growing importance of data and analytics in healthcare » Own platforms and relationships

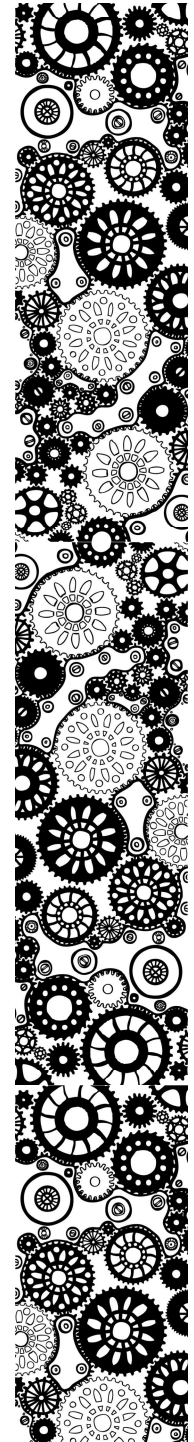
Health reimaged

Better questions to drive better answers:

1. When algorithms prescribe and diagnose, how will providers adapt?
2. While everyone in health care is focused on the short term, how do we incentivize the long-term behavioral changes needed for tackling chronic disease?
3. In a world of fragmented health data, how do we see the big picture?



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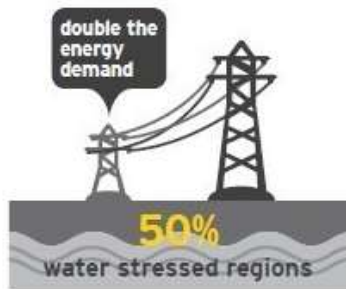
Resourceful planet

What if we are actually on the precipice of a resource-rich planet, rather than a resource-scarce planet?

Demographics and climate disruption create natural resource constraints – our future must be ...

Resource efficient

2050 – 9.7b people; 50% in water stressed regions; **double** the energy demand¹



- Water sensors and smart meters will enable more resource-efficient operations

Carbon constrained

2015 **hottest year** recorded; by 2100, unchecked climate disruption could **reduce** global GDP by 23%



- Low-carbon energy transmission is gaining traction - developing innovations in carbon capture, reuse and sequestration

Resilient

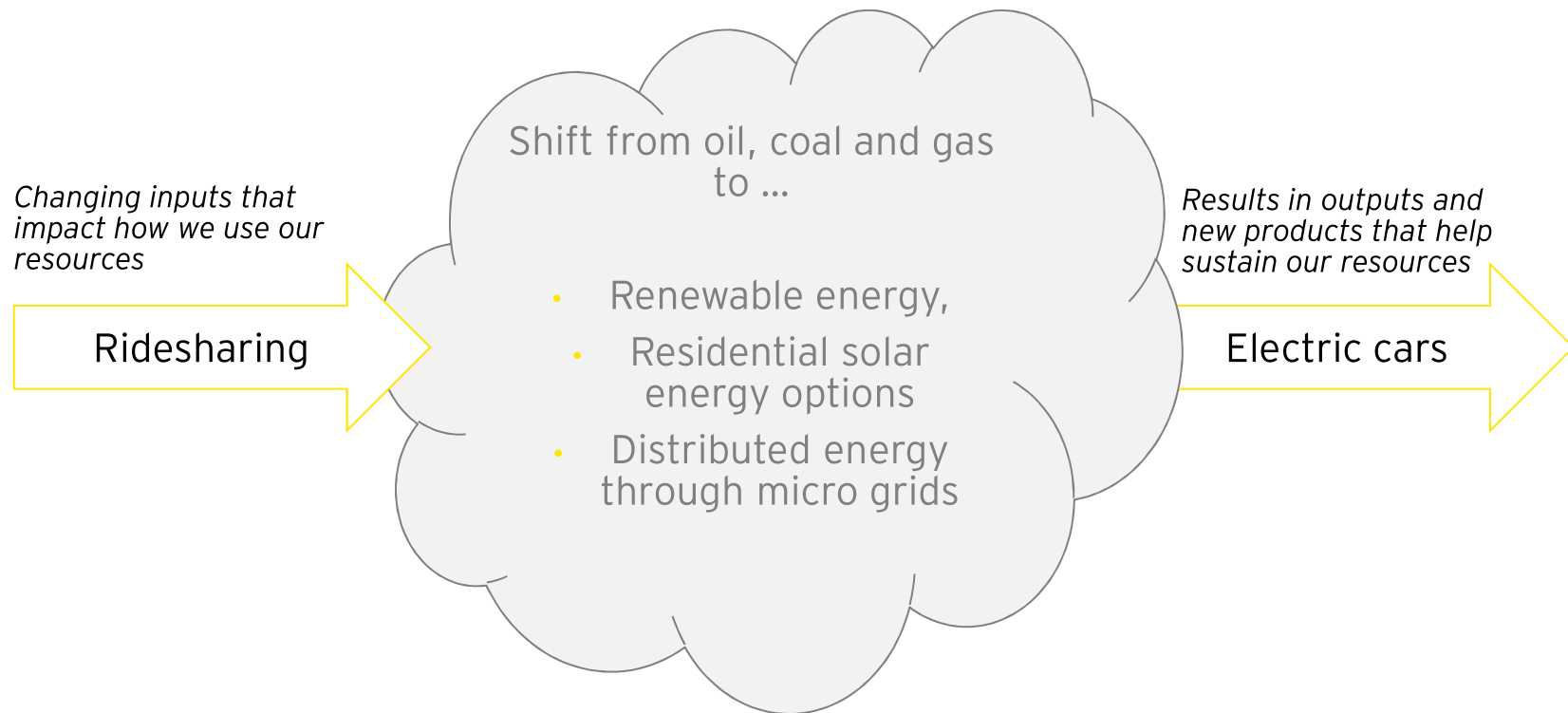
250 million people are **at risk** of displacement from **rising seas** by 2100



- Distributed water systems are being integrated with centralized systems to avoid expensive infrastructure build-out
- Modular water treatment systems and innovative models are helping to bring water to remote and underserved communities

How can we overcome our resource challenges?

We must innovate outside of resources as we currently know them ...



... so we can shift our approach in how we will preserve them

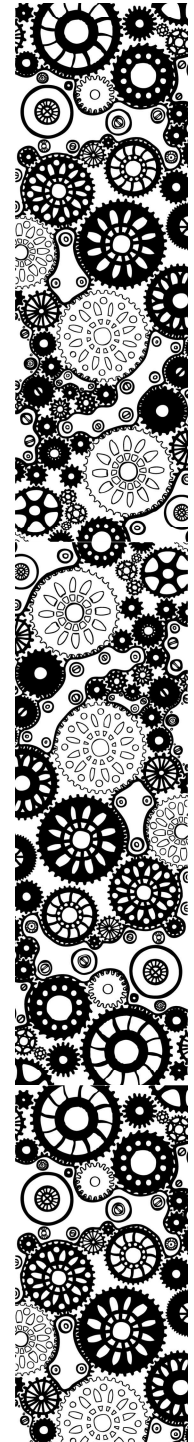
Resourceful planet

Better questions to drive better answers:

1. In the same way that oil companies have reinvented themselves as energy companies, how would a mining company reinvent itself as a supplier of raw materials?
2. With an emphasis on smart grids, renewable power sources and power storage solutions, what does this mean for the next wave of mineral investment?

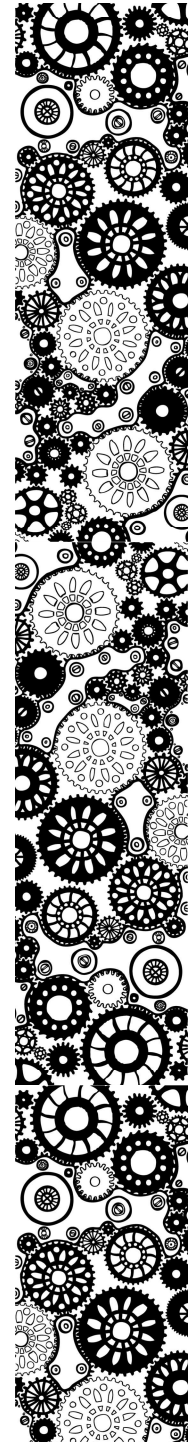


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How will you seize the upside?

www.ey.com/megatrends

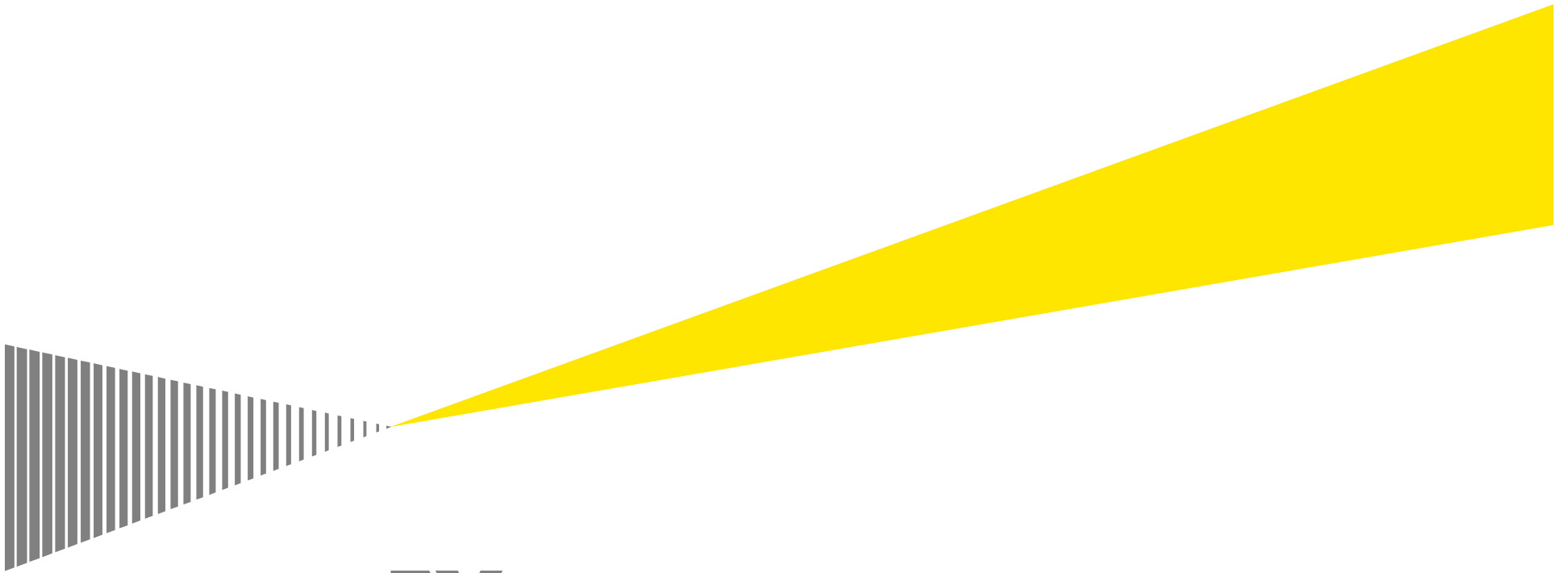


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Robotics Process Automation

- Transforming the way we do business

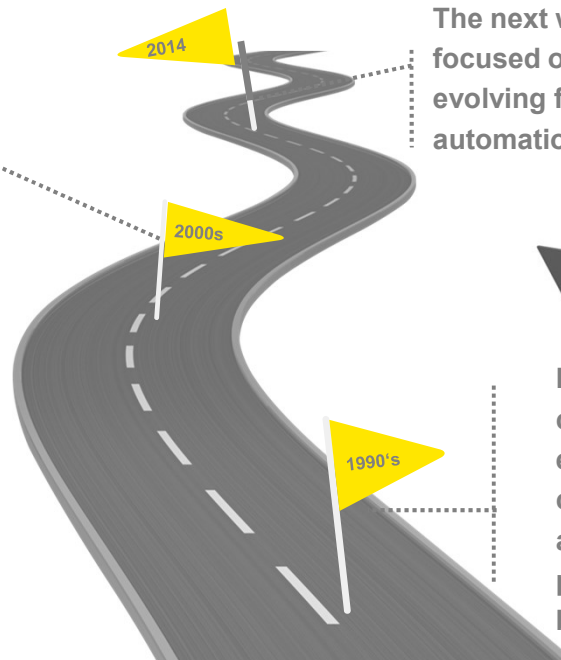
May, 2017



Building a better
working world

Understanding mega trends

Offshore labour arbitrage and outsourcing has driven a new round of cost savings by lowering the human costs of performing the associated services.



The next wave of cost savings is gathering pace, focused on replacing manpower with technology evolving from desktop automation to RPA to cognitive automation.



ERP and shared services concepts fuelled the emergence and growth of centralized finance and accounting, HR, procurement, and other business functions



What is Robotic Process Automation (RPA)?

Robotic Process Automation (RPA) is the **rules based automation** of human activity using specific software applications. RPA 'bots' act as virtual workers through the use of **software to manipulate** existing application software to **process a transaction or complete a process***

Robots are..



Software applications



Human substitutes for processing for performing repetitive rules-based tasks



Multi-functional, cross-application

Robots are not..



Physical, walking, talking machines



Physical paper processors



Learning machines with two-way voice communication (yet)

*Source: IRPA (Institution for Robotic Process Automation)

Why should you care?

30%–40%

of existing business process services are likely to be impacted by RPA

Gartner



Cost reduction of
35%–65% for onshore operations and 10-30% for offshore operations

Institute for Robotic Process Automation

RPA is estimated to lead to **30%–35%** reduction in entry level roles and increase mid level roles

Everest Group

Estimated that **85%** of a typical firm's **900+** processes can be automated. **110 to 140m** FTEs could be replaced by **2025**

McKinsey & Company

How Does it Work?

RPA integrates with other technology to significantly reduce manual work:

RPA can provide advanced solutions to eliminate manual work – especially if used with other complementary technologies

Robotics process automation (RPA):

A software solution that runs unattended, working like a virtual employee with legacy applications performing repetitive tasks reliably at the UI level

Comparing data sets

Composing and sending emails

Automation of clicks, data entry

Completion of auditable activity logs

Reading, copying, aggregating data

Rules-based processing and decision making

Entering data into a system

Other automation technologies:

A broad set of complementary technologies that can be brought together to automate a process

Keyword-based character recognition

Machine learning

Adaptive behavior

Optical character recognition (OCR)

Variable format processing

Mathematical validations

Divide up a task into pieces to be solved by technology, low-cost resources, and high-skill resources

RPA in action

Data movement



Sourcing, lightly transforming and loading data for reporting, analytics, data profiling, and system testing and migration

Digital enablement



Adding digital/mobile to application(s), such as customer preference/profile, sales or service transactions







Virtual handling



Rapidly performing repetitive tasks otherwise done by humans to reduce cost, accelerate timing, improve reliability and reduce risk

▶ Video Demos. <http://bit.ly/EYrobotics>

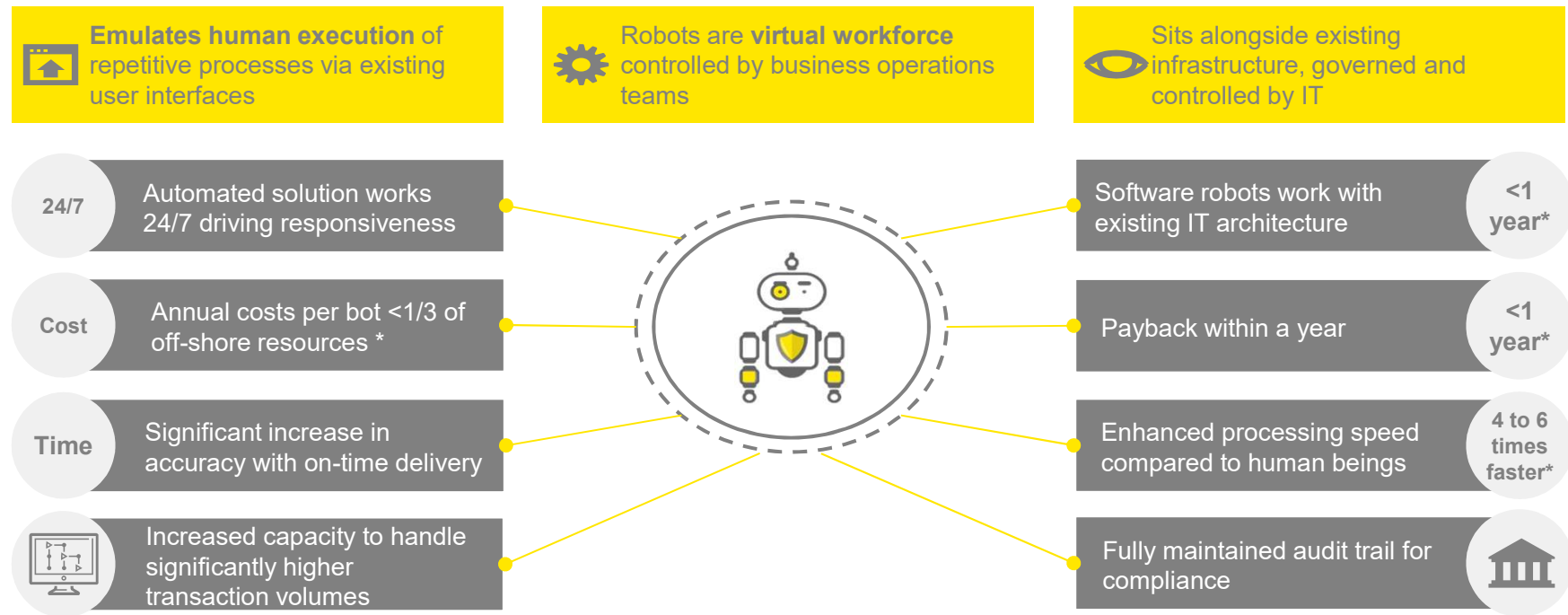
Clear, traceable benefits from RPA

Benefits of RPA	Examples
 Savings in human efforts	Reduce people expense by automating frequent manual repetitive tasks, improving exception handling and moving work to best location
 Increased value-add talent	Improve knowledge worker value-add by increasing focus on highest return activities (e.g., focus on high value/core competencies - Innovation; Customer analytics; Competitor analysis; Product origination) and improve their satisfaction/retention by eliminating dull routines
 Increased agility for transformation	Enable quick wins and rapid value realization to expand margins or generate funding for existing or new initiatives (e.g. Lean, BPR, implementations, process improvement)
 Reduced errors (for automated process steps)	Improve auditability (every step could be logged), consistency, and control over error-prone manual activities that elevate risk, non-compliance, financial or reputational harm
 Increase in speed of delivery	Reduce end-to-end time to handle peak periods, meet deadlines, and smooth post-M&A integration by virtually connecting disparate systems and data sources
 Customer satisfaction/advocacy	Delighting the customer with differentiated and enhanced servicing and journey experiences, therefore improving retention and satisfaction

Robotics improves data security, reduces impact of labor regulations, and strengthens control and governance

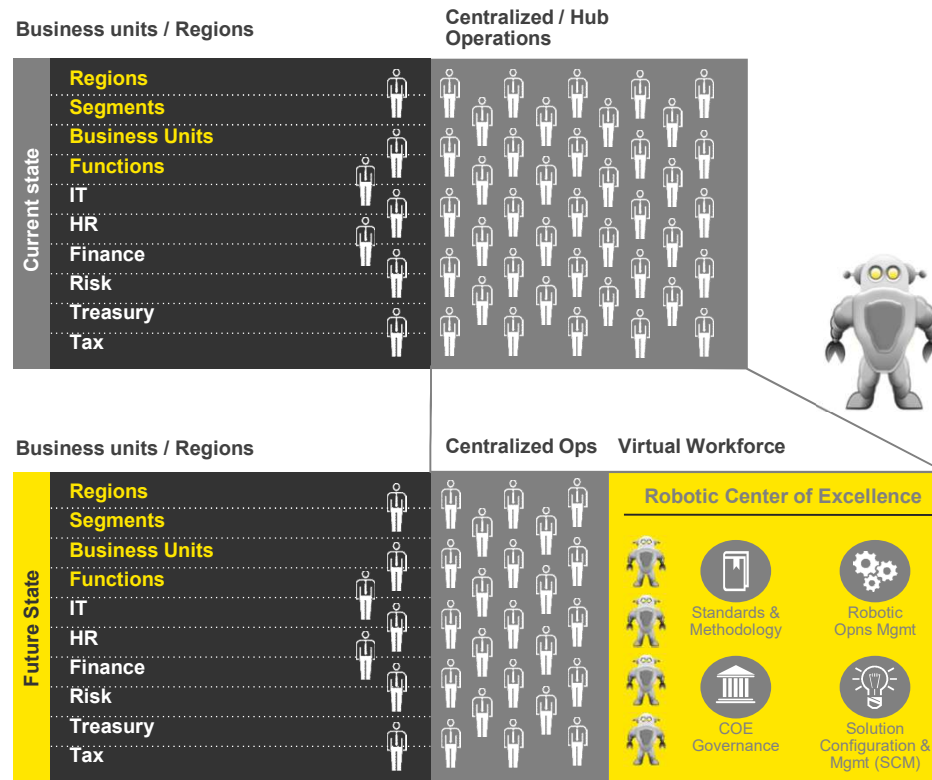
In addition RPA drives enterprise value

With RPA, the software “bot” performs the activities its human predecessor used to by moving through and across the relevant applications with its own user name and passwords.



*EY experience

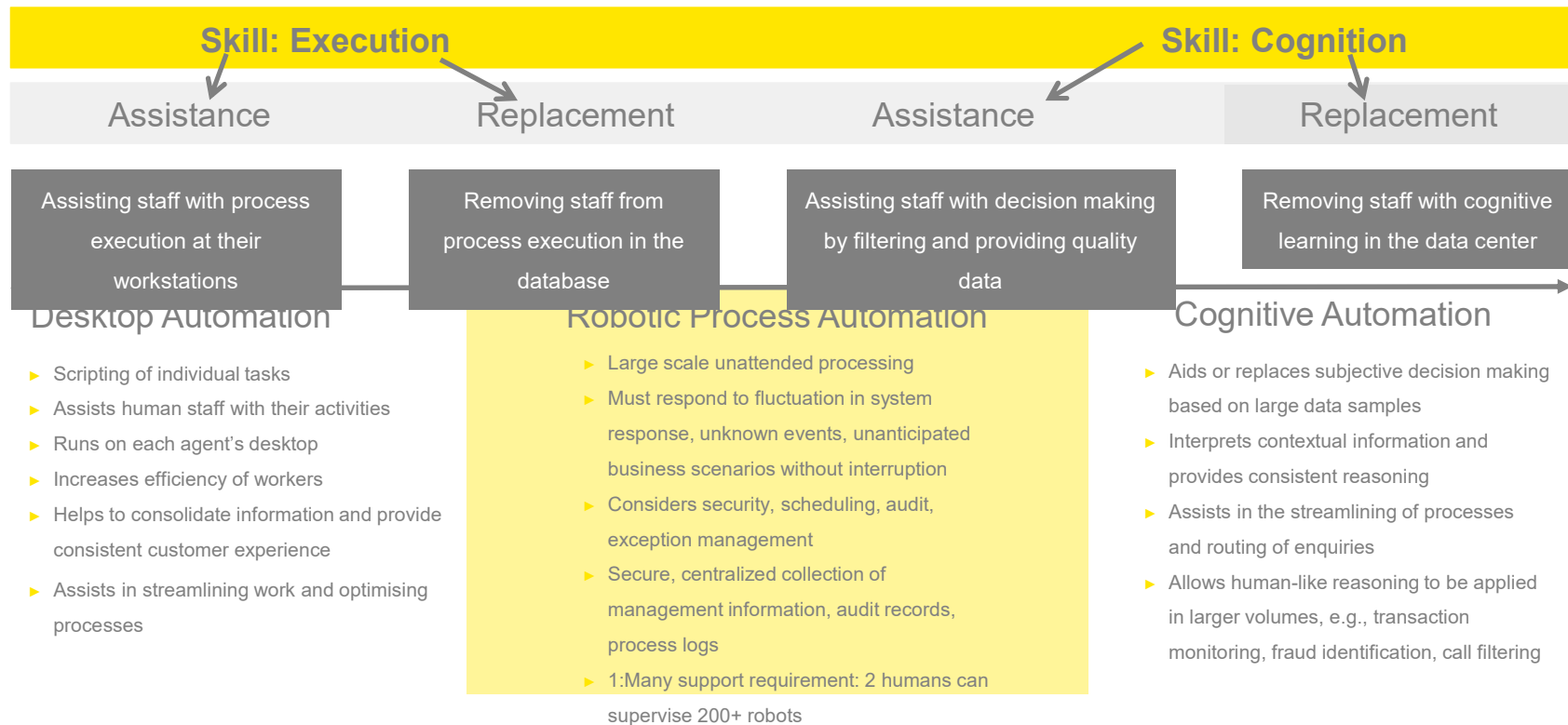
Moving towards a new operating model enabled by a virtual workforce



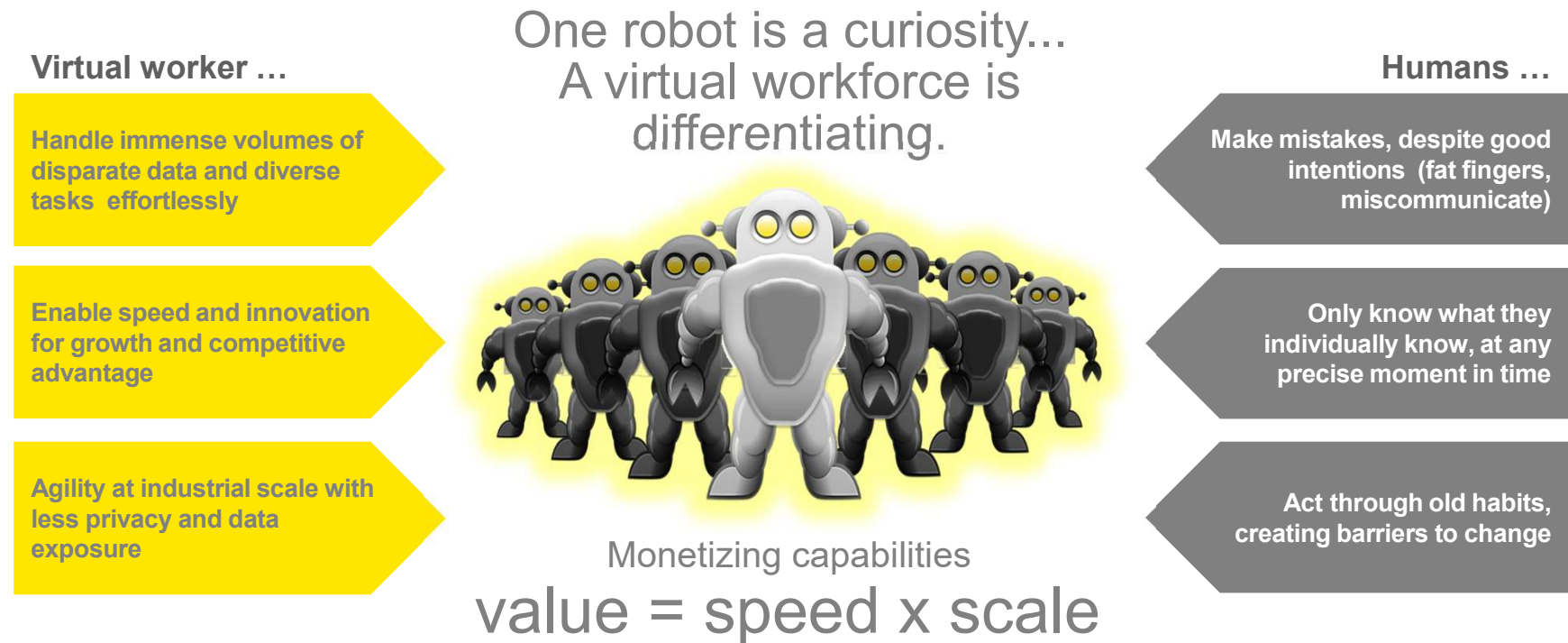
Moving towards “Workforce of the Future”

- ▶ Emergence of “virtual workforce” capable of rapid scale up or down
- ▶ Clear separation of tasks between physical and virtual workforce
- ▶ Enablement of current teams to take on more or new tasks
- ▶ Change in org structure & metrics in line with new operating model
- ▶ Robotic COE will add cognitive capabilities to virtual workforce

Evolution of RPA & cognitive automation



Going forward, your strategy must include virtual workforce



Ways to put RPA into use



Ways to put robotics to work inside the business processes

Process characteristics to consider for RPA

- ▶ High volume repetitive transactions
- ▶ High levels of manual data capture and entry
- ▶ Interaction with multiple applications or systems
- ▶ Multiple tasks to perform a process
- ▶ Definable business rules and exceptions

- ▶ Data entry, validation and manipulation
- ▶ Data transfer between applications
- ▶ Automated formatting
- ▶ Copy and paste operations
- ▶ Login and logout of applications and emailing

Activities typically performed by RPA

The application scope is broad — penetrating for example finance and accounting, human resources, IT and Supply Chain

F&A

- ▶ Sales order
- ▶ Order to cash
- ▶ Collection
- ▶ Procure to pay
- ▶ Incentive claim
- ▶ Record to report
- ▶ Vendor setup
- ▶ Trend tracking

60%

Reduction in
cost to process
invoice

Supply chain

- ▶ Master data mgmt.
- ▶ Work order mgmt.
- ▶ Demand and supply planning
- ▶ Quote, invoice and contract management
- ▶ Returns processing
- ▶ Freight management

9-20%

of the cost to
companies arise
from supply chain
problems

HR

- ▶ Payroll
- ▶ Benefits administration
- ▶ Pay slip management
- ▶ Time and attendance management
- ▶ Recruiting process
- ▶ Education and training
- ▶ Compliance reporting

80%

Reduction in payroll
processing cost

IT

- ▶ Installation
- ▶ File transfer protocol download, upload and backup
- ▶ Server application and monitoring
- ▶ Synchronizing, deleting and emptying folders
- ▶ File & email mgmt.

30%

of the time spent by
IT is almost on low
level tasks

Application of RPA on finance processes

	A	B	C	D	E	F	G	H	I	J	K	L
	Operational Accounting	Procure to Pay	General Accounting	Financial & External Reporting	Performance & Management Reporting	Budgeting, Planning and Forecasting	Policy, Controls, Governance & Compliance	Internal Audit	Treasury	Capital Management & Investments	Tax Planning & Accounting	Investor Relations
1	Loan Accounting 	Strategic Sourcing	Chart of Accounts Maintenance	Financial Reporting 	Responsibility Reporting	Strategic Planning	Accounting Policy & Gov.	Risk & Control Framework	Debt/Equity Management	Capital Planning	Tax Planning	Stakeholder ID and Analysis
2	Investment Accounting 	Vendor Administration	Allocations & Adjustments 	Regulatory Reporting 	Org profit reporting	Annual Budget 	Regulatory Policy & Gov.	Functional Auditing	FX Management 	Capital Structure and Asset level	Tax Accounting / Tax data management 	Stakeholder engagement
3	Insurance Accounting 	Contract Negotiations	Journal Entry Processing 	Reporting 	Product Profitability 	Quarterly/ Rolling forecast 	Statutory Policy & Gov.	Consultation	Liquidity Management 	Business Case Support	Tax accounting / Analysis 	Stakeholder relations
4	Reinsurance Accounting	Accounts Payable 	Reconciliations 	Statutory Reporting 	Customer Profitability 	Earnings Forecast	Mgmt. Accounting Policy & Gov.		Cash Management 	Acquisitions & Divestitures	Tax accounting / Preparation and review 	Corporate Communications
5	Fund Accounting	Requisitions & PO Processing 	Inter-company Transactions 	Audit Support	Fund Profitability 		Internal Process & Controls		Capital Strategy 	Project Accounting	Tax compliance 	Rating Agency Relations
6	Accounts Receivable 	Payroll	Consolidation		Cost Development		SOX Compliance 		Bank Relations 		Tax controversy/ tax audits	
7	Billing & Collections 	Exp Accounting & Reimbursement 	Close 		Cost Allocations 		Tax & Treasury Policy		Treasury Strategy			
8	Dispute Resolution		Fixed Asset Accounting		Funds Transfer Pricing		Finance Master Data Governance 		Global Economics 			
9	Policy Accounting		Securities Pricing & Product Control		Ad hoc Reporting							
10			Legal Entity Mgmt/ maintenance 		Analytics & Decision Support 							

Situationally valuable

Eliminate Material Human Effort

Shorten critical path; Accelerate activities

Reduce costly errors; improve quality

Get more value from knowledge workers

Specific use cases to consider for finance

EXAMPLE

Finance Process	Automation Opportunity	Illustrative Use Case
Accounts Payable 		<ul style="list-style-type: none"> • Invoice data entry • Error / hold resolution • Draft emails for resolutions
Journal Entry Processing 		Automated Journal Entries: <ul style="list-style-type: none"> • Prepare and enter corporate and consolidated GAAP journal entries to close the company books during quarterly closing process • Prepare and enter journal entries for other regulatory process needs - e.g. for Tax ledger
Reconciliations 		Intercompany Difference Reconciliation : <ul style="list-style-type: none"> • Triage and action exception items from intercompany differences regionally and aggregating into parent • Support intracompany match and elimination for multi-national reinsurance business • Match and reconcile operating expenses eliminating duplicated controls and charges Bank Reconciliation : <ul style="list-style-type: none"> • Reconciliation of balances and transactions on the bank statements to GL/cash flow systems. This could also include creating balancing journal entry to handle discrepancies.
SOX Compliance 		Population Gathering, Sample Selection, Attribute Gathering, Testing, Results Formatting: <ul style="list-style-type: none"> • Identify and gather key population source information from system of record • Derive relevant sample from population and gather attribute evidence from various information systems sources • Tie evidence attributes to sample and format results into workpaper-ready format with exceptions identified for follow-up
Close 		Controller focused management review deck preparation: <ul style="list-style-type: none"> • Prepare management review deck by collecting data from GL & multiple systems for non-operating expenses and cash balances. Builds confidence in data lineage. Mock close & mock conversions: <ul style="list-style-type: none"> • Support mock close, mock conversions and testing during system implementation of a new GL System Implementation project (e.g. automate process flow from mock conversion to mock close to balance reconciliation - to be repeated of all involved entities)



Eliminate Material Human Effort



Shorten critical path; Accelerate activities



Reduce costly errors; Improve quality



Get more value from knowledge workers

Vendors and risks



RPA software tools are a diverse and continuously evolving market

RPA technology vendors

Not Exhaustive

blueprism® UiPath

AUTOMATION
ANYWHERE
Go be great.

openspan
where people and technology meet

winautomation

IPSOFT

EX!LANT

Celaton

javada
Customer Service. Simplified.

- ▶ The landscape is **rapidly developing**
- ▶ An **innovative, high growth technology**; EY expects to see the marketplace continue to change as it reaches maturity in the coming years
- ▶ The software **bots will grow increasingly smarter and more capable** as artificial intelligence and machine learning become more mainstream

RPA Risk and Control

Top Risks and Related Control Activities

Top RPA Risks

- 1 A lack of robotics governance can lead to ineffective and inefficient process automation and an inability to support and meet business requirements.
- 2 Robotics access management is ineffectively managed leading to the compromise of systems, applications and their associated data.
- 3 Process automation requirements are not appropriately or accurately identified and documented leading to robotics developments that do not meet business needs or support the business/IT strategy resulting in a negative impact on business processes and financials.
- 4 Robotics implementations are not appropriately designed and tested leading to requirements not being met or a negative impact on production systems resulting in a negative impact on the business and financial losses.
- 5 Automation problems are not timely identified and managed leading to a delay in their resolution and resulting in a negative impact to business processes.
- 6 Risks are not effectively mitigated for robotics vendor relationship and outsourced services, leading to financial and reputation exposure.

Illustrative Controls for Top Risks

A Robotics Governance framework is defined and maintained, including leadership, processes, roles and responsibilities, information requirements and organizational structure required to ensure support is aligned to business objectives.

Robotics access control is managed and proper authentication methods are implemented and consistently enforced to prevent unauthorized access.

Robotics change and development requirements are clearly and concisely documented and mapped to business needs to ensure that the changes agree with the business strategy.

Implementation, testing, and support requirements are developed and communicated to both business and IT stakeholders.

Automation problems and errors are evaluated, corrected, tracked and communicated in a timely manner through resolution.

Due diligence is performed over robotics vendors to evaluate the risk of the vendor at the onset of the relationship and on a periodic basis