IBM **Cognitive Process Transformation**

The Future of Finance
Impact of Disruptive Technologies

June 23, 2017

Jim Collins - IBM

Performance Management Strategy Executive

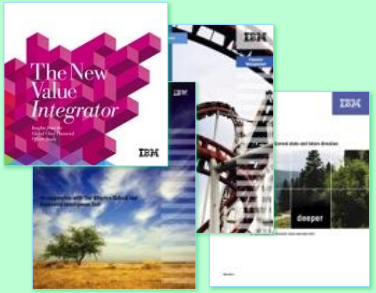
Business Factors Covered by Performance Management

Increase Revenue

Decrease Costs Increase Profitability

Manage Risk

IBM's Global C-suite Study series draws on a decade of research with over 28,000 interviews

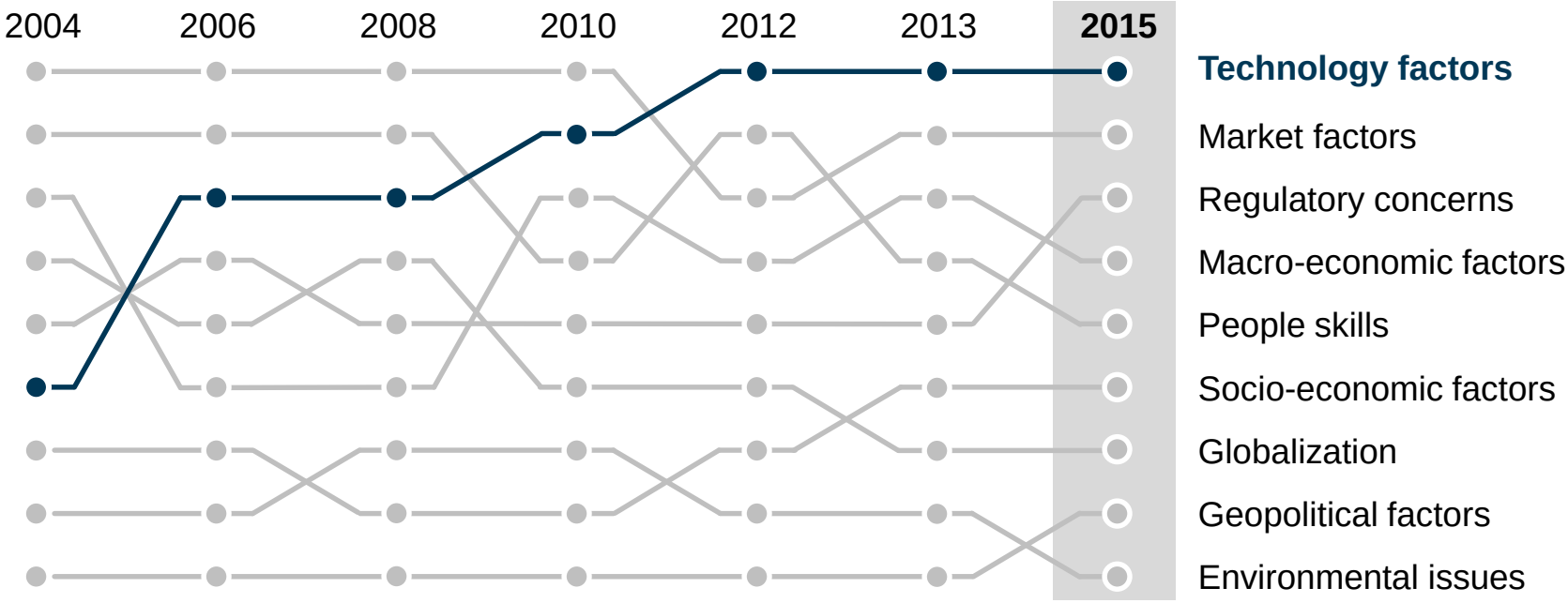


4,000+
interviews in 2013

5,000+
interviews in 2016

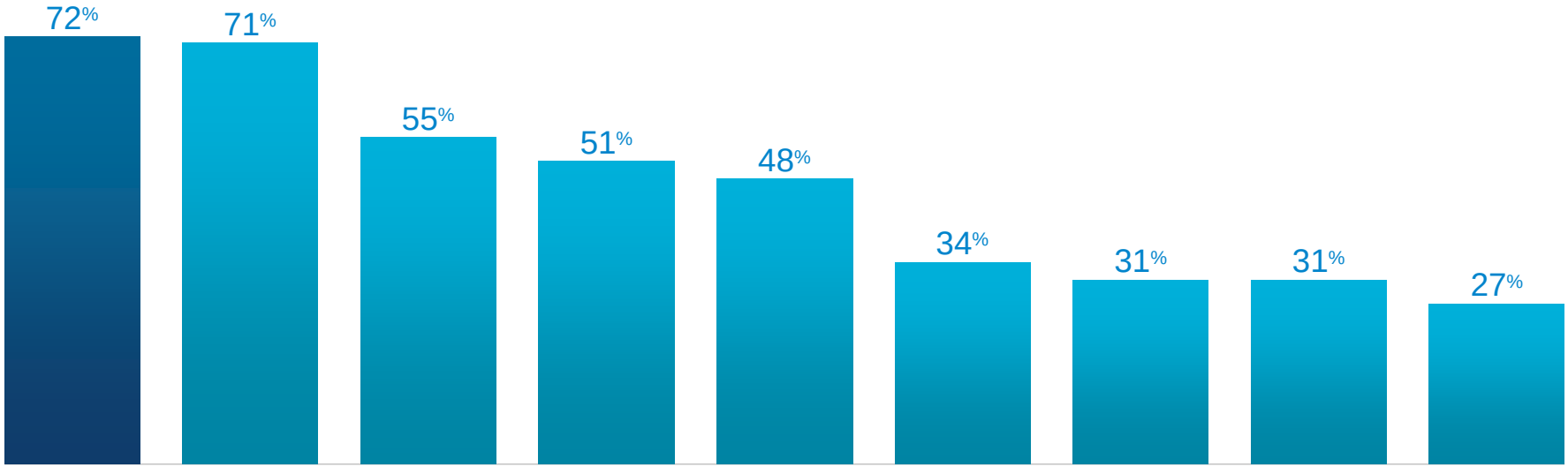
CEOs again selected technology as the most important external force that will affect their enterprise

External forces impacting the enterprise (in 3 to 5 years)



For the first time, the entire C-suite selected technology as the main game changer

External forces impacting the enterprise (in 3 to 5 years)



Multiple forces are disrupting enterprises and impacting Finance

Economic uncertainty / volatility

- Systemically lower global growth - new normal?
- New competitors
- Globalization and demographic shifts

Structural complexity

- Lack of common processes, data and applications
- Explosion of data
- New technology – analytics, cloud, social, mobile, robotics

Expanded enterprise role

- Trusted CEO advisor
- Stewards of innovation and growth
- Need for enhanced relationships with other C-suite members / functions

Changing regulations

- Increasing cost of compliance
- Cybersecurity / information security regulations
- Focus on corporate governance

Continued cost pressures

- Need to increase operational efficiency
- Reductions in budgets and staff
- Shortage of analytical talent

The future of Finance and Accounting…

… is linked to the increasing pace of change brought about by technology.

100 years ago we had comptometers

Then:

Computing Electronic Calculators

Personal Computers Networking Connectivity

The Internet Smartphones Big Data

Cloud

And now we face some significant enablers which will further disrupt the mechanics of the finance and accounting…

Finance Digital Reinvention – the new enablers

- Digitization / Process Automation / Robotics
- Cloud / Business Process as a Service… rise of ‘as a service’.
- Advanced Analytics / Predictive / Report Automation
  - Rules based accounting processes and analytics / exception reporting
  - CFO as the ‘Chief Analytics Officer’
- Intelligent Automation / path to Cognitive
- Cognitive Finance
- Blockchain
- All these activities serve to increase the efficiency of traditional activities, reducing their cost and decreasing the amount of manual (human) activity involved.

There are 5 key challenges Finance teams face:

1 Geo political reality and risk mitigation	Will pressurize companies to add more finance jobs in market. Finance roles will continue to evolve rapidly and skills shortages will increase
2 Transactions processing standardization increases	For finance functions i.e. collections and credit management. These functions will find it increasingly difficult to attract/retain human talent
3 Trust and Visibility	Trusted partnerships become a defining part of a company's ecosystem. All involved need to solve this to make the ecosystem more efficient
4 Deeper insights for Finance	Driving deeper insights from across all data sources, (structured, unstructured, blind data) gives a competitive advantage for companies
5 Business outcomes	Organizations will demand more, and the Finance function needs to adjust, for the leap forward that technology enables

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Pressure is increasing on CFO's to digitally reinvent finance

1	Long-term, incremental transformation not acceptable	Digital disruption	• Rapidly transform cost structures • Allocate more resources to build analytic and cognitive capabilities.
2	Business as usual is not an option	Geopolitical factors	• Accelerate pace of innovation, • Adopt agile methods to design, pilot and iterate
3	No sacred cows - nothing is off the table	Activist pressures	• Evaluate all facets of the operating model enabled with new digital technologies

Companies face new challenges

Digital disruption

Amazon is a very real example of the impact of digital disruption on consumers and our clients in this sector, increasing awareness at senior levels that ***"digital" can be a sword that cuts both ways***.

Carl Icahn

Performance pressures and acquisitions

The impact of 3G Capital, Pershing Square, Carl Icahn (and others) illustrates performance pressure facing our clients. Lower growth is leading to ***increased interest in "pay as you go" options***.

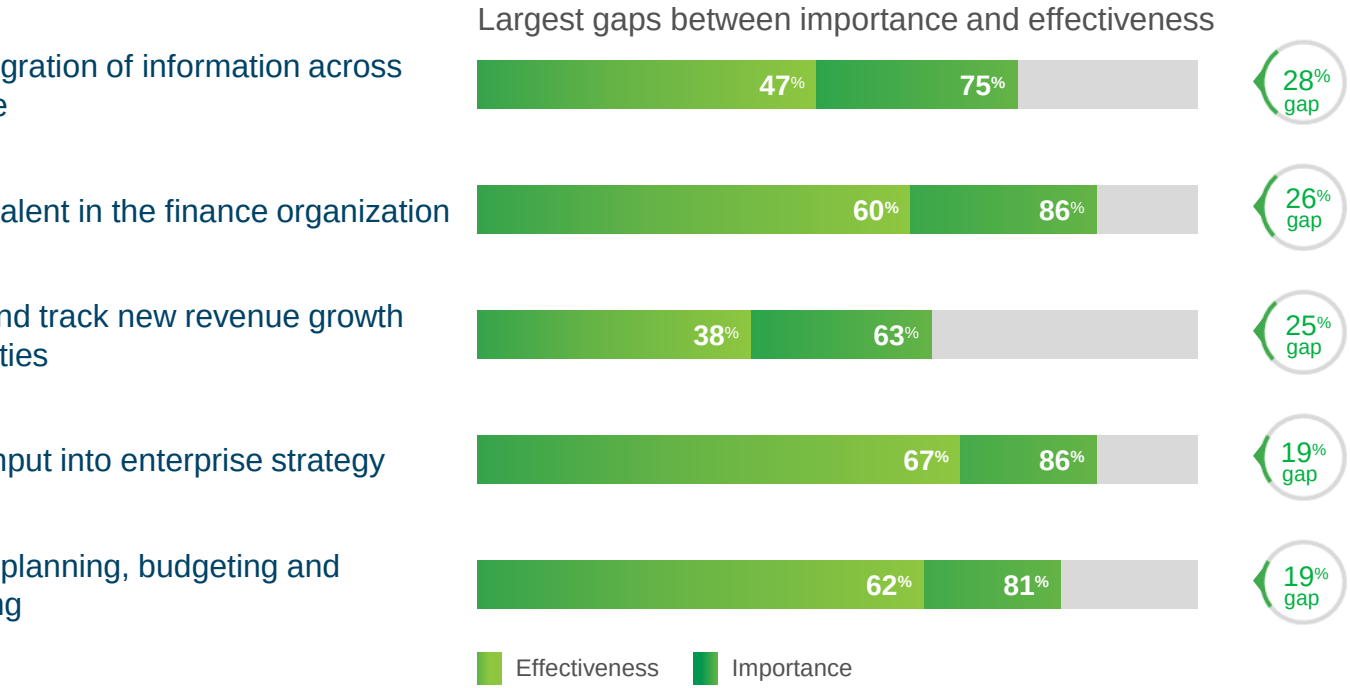
Geopolitical factor

Many clients are experiencing ***political and social pressure related to types and numbers of jobs onshore.*** This at a time when performance pressure is intense for senior leaders.

The changing role of the CFO

- **Challenges**
  - Tempestuous times
  - Disruption of the status quo
  - Huge turbulence
  - Industry convergence
  - New competitors
- **Over 80% of Finance teams expect to use analytics to drive performance, manage risk/compliance and optimize processes within two years**
- **About half of Finance organizations plan to implement cognitive computing within the next two years and nearly two-thirds within five years**

Many CFOs feel their organizations are not sufficiently ready for the disruptive market trends of the cognitive era



Source: IBM Redefining CFO Performance

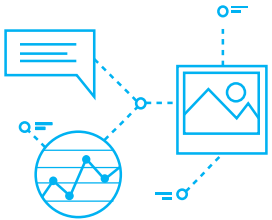
Transformation through cognitive technologies

- Enterprises farthest along the analytics journey are best positioned to leverage cognitive computing opportunities
- Bridge the gap between unknown opportunities and current capabilities
- Cognitive computing has the potential to radically change the enterprise.
- Drive commonality with data, process and technology through standardization, governance and rationalization

What is Cognitive computing?

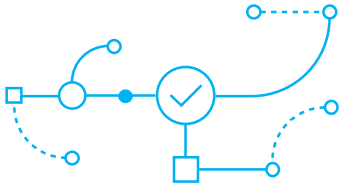
Cognitive systems **understand**, **reason, learn** and **interact:**

Understand



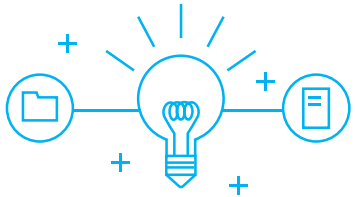
Cognitive systems understand imagery, language and other unstructured data like humans do.

Reason



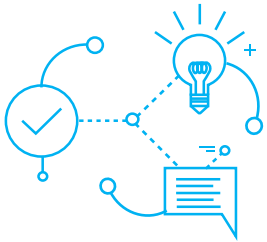
They can reason, grasp underlying concepts, form hypotheses, and infer and extract ideas.

Learn



With each data point, interaction and outcome, they develop and sharpen expertise, so they never stop learning.

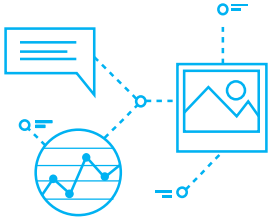
Interact



With abilities to see, talk and hear, cognitive systems interact with humans in a natural way.

Why is cognitive computing important now?

Data

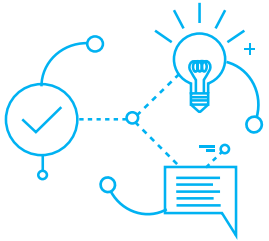


The **volume, variety and veracity of data** – 80% of it unstructured – is growing at a rate impossible to keep up with.

Choice

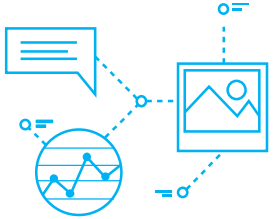
Companies have a wider range of choices than ever before and are expecting **innovative**, **relevant** and **personalized** engagement

Capabilities

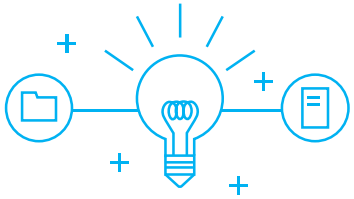


Gaps in organizational capability are emerging as cognitive computing fundamentally **changes the way companies leverage technology to conduct business**.

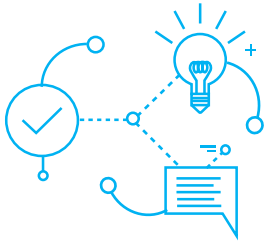
What is possible with cognitive computing?



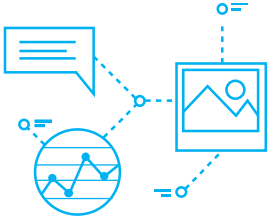
Deeper human engagement



Elevated expertise

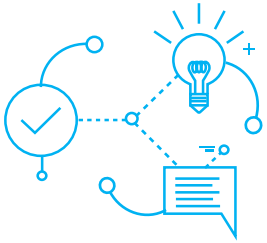


Cognitive products and services



Cognitive processes and operations

Intelligent exploration and discovery



Cognitive infrastructure

Cognitive computing extends traditional analytics by creating a value continuum

Analytics	Cognitive computing
▪ Addresses predefined problems	▪ Addresses ambiguous problems
▪ Provides accurate and definitive answers	▪ Provides answers with a margin of error
▪ Handles information with known semantics	▪ Handles information without explicitly knowing semantics
▪ Interacts in formal digital means (e.g. commands, screens) with human users	▪ Interacts in natural language with human users

Cognitive
understand, reason, learn

Predictive
predict, decide, act

Descriptive
discover, report, analyze

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AI ethics: Transparency and trust in the Cognitive era

Purpose

To augment human intelligence

Transparency

Your data is yours
Know who trained your AI and why

Skills

New skills
Higher impact

Becoming a cognitive enterprise requires a thoughtful strategy

Design thinking session

- Establish a vision
- Frame your journey

Benefits case development

- Focus on value

Cognitive environment assessment

- People: awareness, capability, readiness
- Process: governance, implementation, sustenance
- Technology: data, content, computing platform

Value demonstration / proof-of-concept

- Execute a cognitive pilot

Deploy and scale

- Measure the impact

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A focus on talent and skills underpins a company's ability to enable a digital operating model

- **CFO as the 'Chief Analytics Officer'**
- **Keep members of the team relevant with training and exposure to new methods and technology**
- **Rebalance resources to meet changing talent and skills**
- **Need for strong transformational leadership, to embrace technology not fear it**
- **Expand roles outside traditional accounting to become valued and trusted advisors**

Cognitive technology WILL be embedded into our professional and personal lives

an average performer can enhance their performance to become

Superhuman

With digital, it is all about the experience.

Design Thinking helps:

Engage and deeply empathize with the end user	Co-design an exemplary solution	Align teams on direction and next steps	Deepen relationships and collaboration

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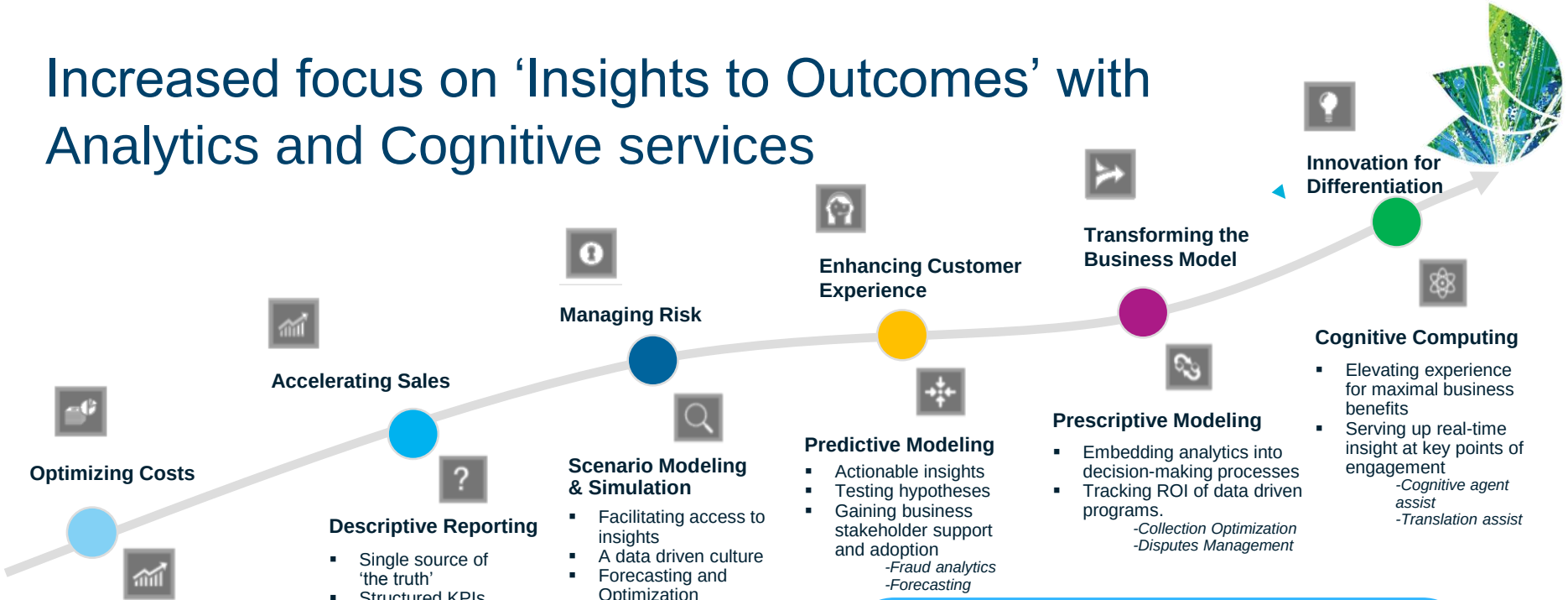
Increased focus on ‘Insights to Outcomes’ with Analytics and Cognitive services



Having reliable data and processes is foundational. Agreeing key metrics to evaluate and report performance builds on this.

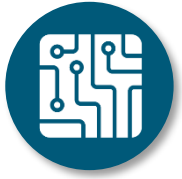
- **Get all stakeholders from end users to senior management on board – this is a business wide initiative**
- **Need a manageable set of 30 - 40 balanced metrics for reporting and evaluation**
- **Agree Corporate metrics first, then flex by line of business**
- **Change Management / Culture / Communication**
- **Agree how changes link to compensation plans**

Time 1 to 5+ years depending on organizational maturity and culture

And, of course,

Robotics!!!

What is Robotic Process Automation (RPA)?



“Doing with technology what humans would normally do … but faster and better”

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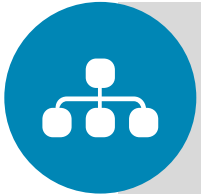
Robotics value drivers

Cost savings	▪ Automation of processes using robotic tools can deliver up to 50% savings when combined with process standardization opportunities.
Productivity	▪ Automation tools can be up to 5X faster than human resource ▪ Can function 24x7 ▪ Enables people to focus on more important tasks
Accuracy	▪ Accuracy in processing can reach 100% when manual intervention is eliminated via robotic tools.
Compliance	▪ Geographic data storage requirements can be accommodated. ▪ Rules driven transaction processing is consistently applied for fiscal requirements.
Security	▪ Data are more secure without risk of loss due to human intervention.
Scalability and flexibility	▪ RPA tools can be adapted to multiple geos and processes. ▪ Can scale to accommodate seasonality

What makes a good process candidate?

Informally speaking, a good process is simply rules-based / repetitive / mundane – one that requires the operator to “turn the mangle”



- Well-structured activities
- Clearly defined rules
- Visible and measurable outcomes

Processes should take feeds from well structured data sources and systems

The Intelligent Automation Continuum supports processes across all stages of maturity

Desktop Automation

- ERP Scripting
- Workflow
- Macros
- Screen scraper
- Auto e-mailer

Simple Transactional Data

Robotic Process Automation

(Rules-based)

- Composable pre-built objects supporting business processes
- Extensible & adaptive object libraries
- Global Robotics Command Centers
- Dedicated Robotics & Process SMEs
- IBM / partner resilient, secured virtualized infrastructures

Structured Data

Autonomic Process Automation

(Knowledge-based)

- Continuous monitoring of process environment
- Robots apply insight-driven knowledge and learns from experience
- E.g. **Watson Policy Manager** (WPM), piloting automation of key decision points
- E.g.. **Blockchain**, secure end-to-end hyperledger platform

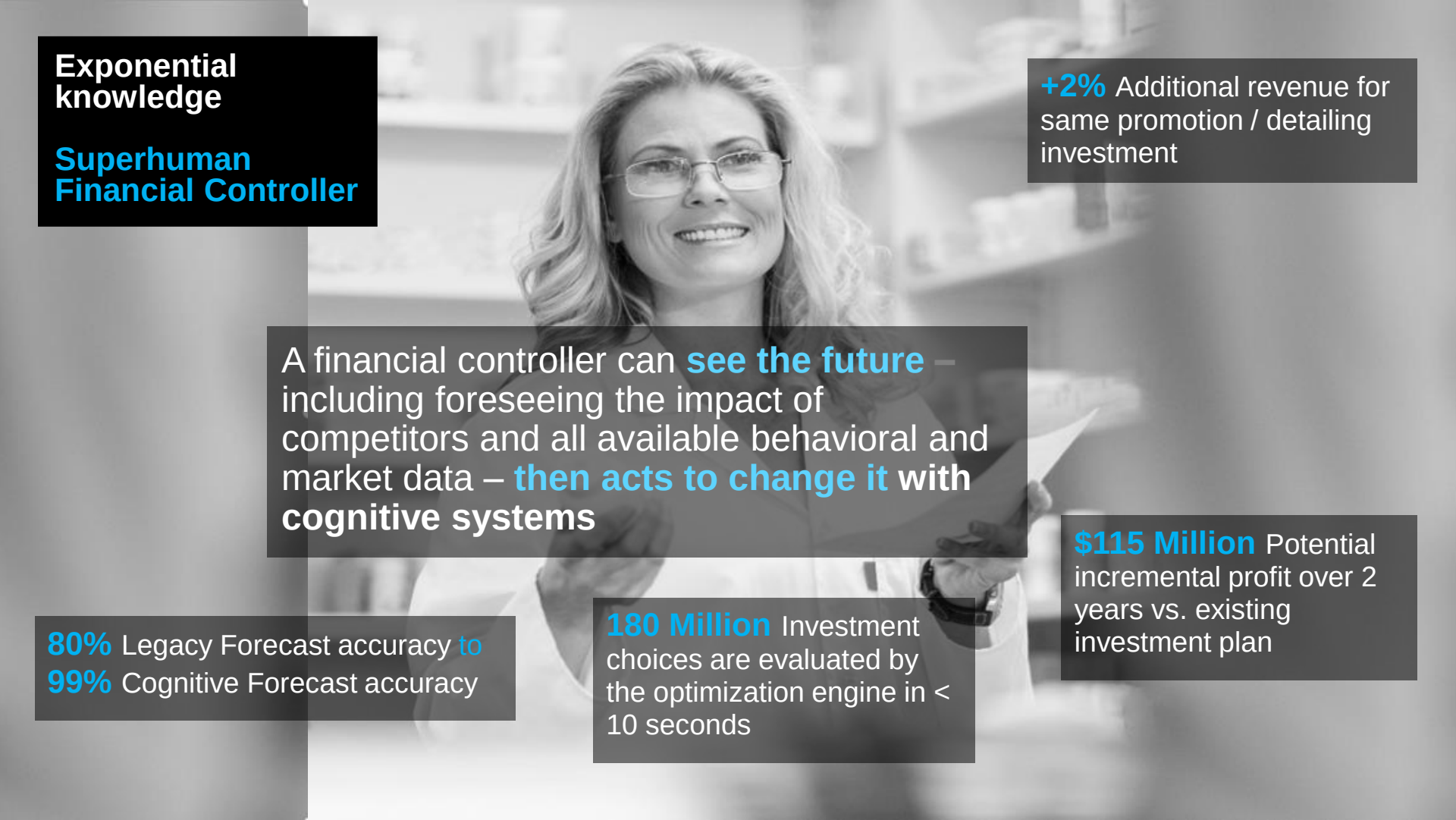
Unstructured Data

Cognitive Automation

(Artificial Intelligence–based)

- Autonomous decision making *('reasoning & remembering')*
- New insights and data discovery *('learning')*
- Personal and interactive support *('engagement')*
- Insight-driven knowledge
- E.g. **Industry-specific-Cognitive Assist** enables new ways of business processes

Unstructured Data



Exponential knowledge

Superhuman Financial Controller

+2% Additional revenue for same promotion / detailing investment

A financial controller can **see the future** – including foreseeing the impact of competitors and all available behavioral and market data – **then acts to change it** **with cognitive systems**

$115 Million Potential incremental profit over 2 years vs. existing investment plan

80% Legacy Forecast accuracy to **99%** Cognitive Forecast accuracy

180 Million Investment choices are evaluated by the optimization engine in < 10 seconds

Process friction makes business transactions inefficient, expensive and vulnerable

Time

Many business transactions:

- are time sensitive
- require much settlement and reconciliation time
- are process-delay prone

Source: IBM Institute for Business Value analysis

Cost

Many business transactions:

- include overheads from multiple intermediaries
- are costly to manage and execute
- require extensive documentation

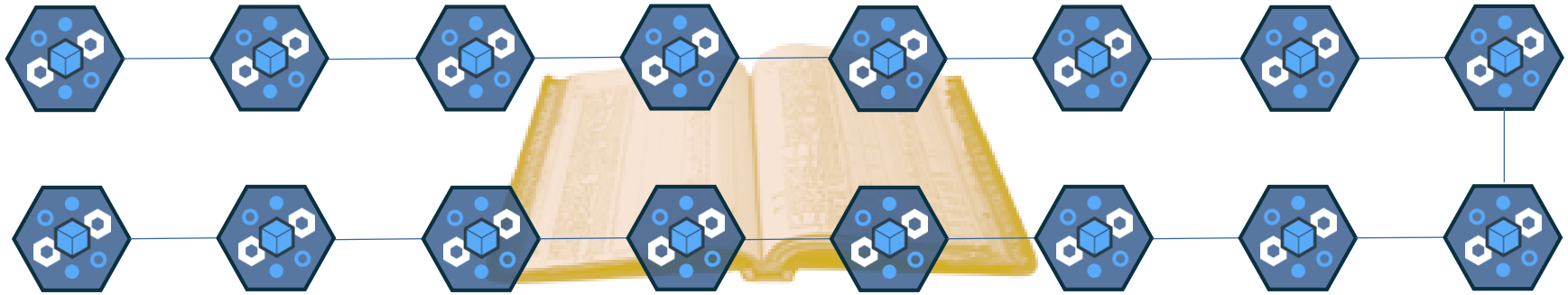
Risk

Many business transactions:

- are ambiguous and non-verifiable
- are prone to errors and tampering
- have no single source of truth

What is Blockchain?

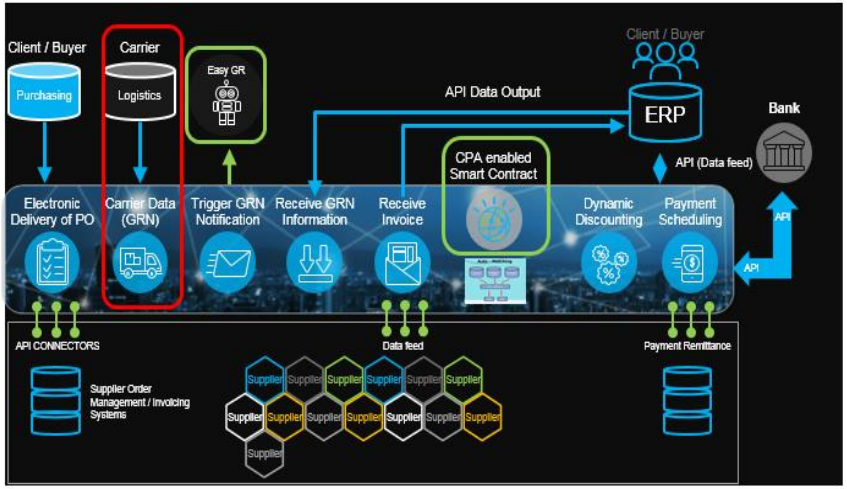
- A shared ledger technology allowing any participant in the business network to see the system of record (ledger)
- Each transaction or asset transfer is digitally signed and encrypted, forming a block
- Each block is put one after another, forming a unique data structure, or an immutable, irreversible chain



Blockchain is the next disruptor for finance operations

Blockchain for invoice processing could enable companies to reduce cost per invoice by 60% - 80%

Accounts Payable Platform on Blockchain



The benefit:

- Reduced **Operational Costs**
- Reduced **Disputes** and associated inefficiency
- Reduced **Risk** of fraud
- Favorable **Working Capital** impact

The problem:

Average cost to process an invoice is ~$4-6 due to significant process inefficiencies

The disruption:

- Common platform and one version of the truth
- Smart contracts settle most invoices
- E2E transparency for buyers and suppliers

Blockchain for business reduces process friction

- A shared ledger technology allowing any participant in the business network to see the system of record (ledger)
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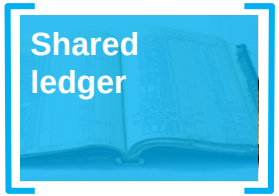
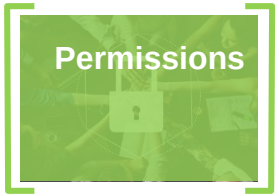
Key Concepts:

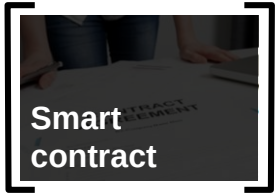
Append-only distributed system of record shared across business network





Ensuring appropriate visibility; transactions are secure, authenticated & verifiable

Business terms embedded in transaction database & executed with transactions



All parties agree to network verified transaction

Benefits:

Saves Time

Transaction time from days to near instantaneous

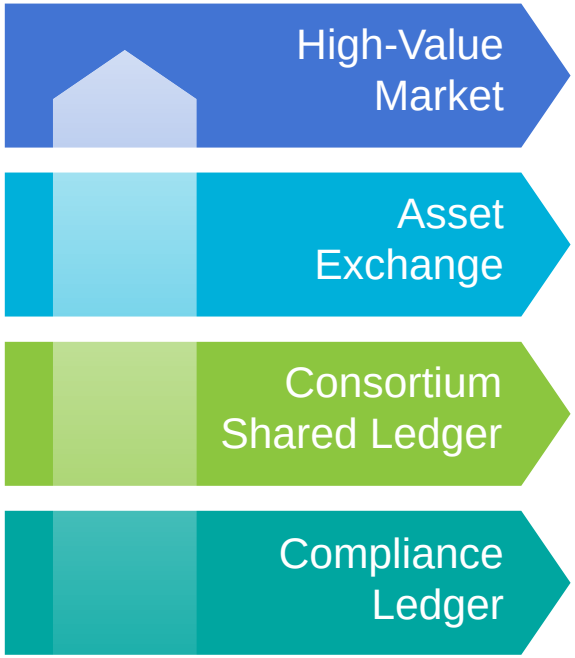
Removes Cost

Overheads and cost intermediaries

Reduces Risk

Tampering, fraud & cyber crime

Patterns for customer adoption



- **Transfer of high-value financial assets**
- **Many participants in one market**
- **Regulatory timeframes**

- **Sharing of assets (voting, dividend notification)**
- **Assets are information, not financial**
- **Provenance, immutability and finality are key**

- **Created by a small set of participants**
- **Share key reference data**
- **Consolidated, consistent real-time view**

- **Real-time view of compliance, audit and risk data**
- **Provenance, immutability and finality are key**
- **Transparent access to auditor and regulator**

Source: IBM Institute for Business Value analysis

Blockchain examples

Walmart

- Digitally track the movement of pork in China on a blockchain.
- The goal is to better control food sourcing and contamination tracing to prevent prevent disaster scenarios

MÆRSK

- Industry-wide cross-border supply chain solution to manage and track millions of shipping containers
- Digitize the process to enhance transparency and the secure sharing of information among partners.
- Reduce fraud & errors and time products spend in the transit; improve inventory management; and ultimately reduce waste and costs.

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- IBM Global Finance has over 4,000 suppliers and partners worldwide. 25,000+ disputes every year.
- Approx. $100 million is tied up in disputes with an average of 44 days to resolve
- Blockchain solution enabled dispute resolution in less than 10 days. 35% improvement in capital efficiency and material administrative expense savings for all parties

FDA

- Research initiative with the FDA aimed at defining a secure, efficient and scalable exchange of health data using blockchain technology.
- Explore the exchange of owner mediated data from several sources

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Blockchain – how to get started

Get Educated

- Review videos (search for ‘blockchain’ on youtube)
- Read whitepapers https://www.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=MBW03045USEN
- Discuss with others (who are working with blockchain)

1

Assign Ownership

- Clear point of contact, authority, resources
- Explore opportunities, build a team, run a workshop

2

Act

- Agree priorities, design and act
- Deliver improved finance operations

3

Promote

4

The future of Finance

Key takeaways for Finance professionals

The “Future of Finance” as we embrace disruptive technologies, accelerates capabilities, allowing us to:

- Create trusted insights
- Protect enterprise viability
- Deliver efficient Finance operations

World-class organizations will need Finance to stay active as a strategic partner, anticipating new opportunities enabled by integrated information and predictive / cognitive models.

AI ethics: Transparency and trust in the Cognitive era. Our profession needs to lead and set the example.


Thank you!