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Actuaries Joint Regional Seminar, Sydney, Friday 3 August 2019

The
NEW
REALITIES of
WORK.

Deloitte.

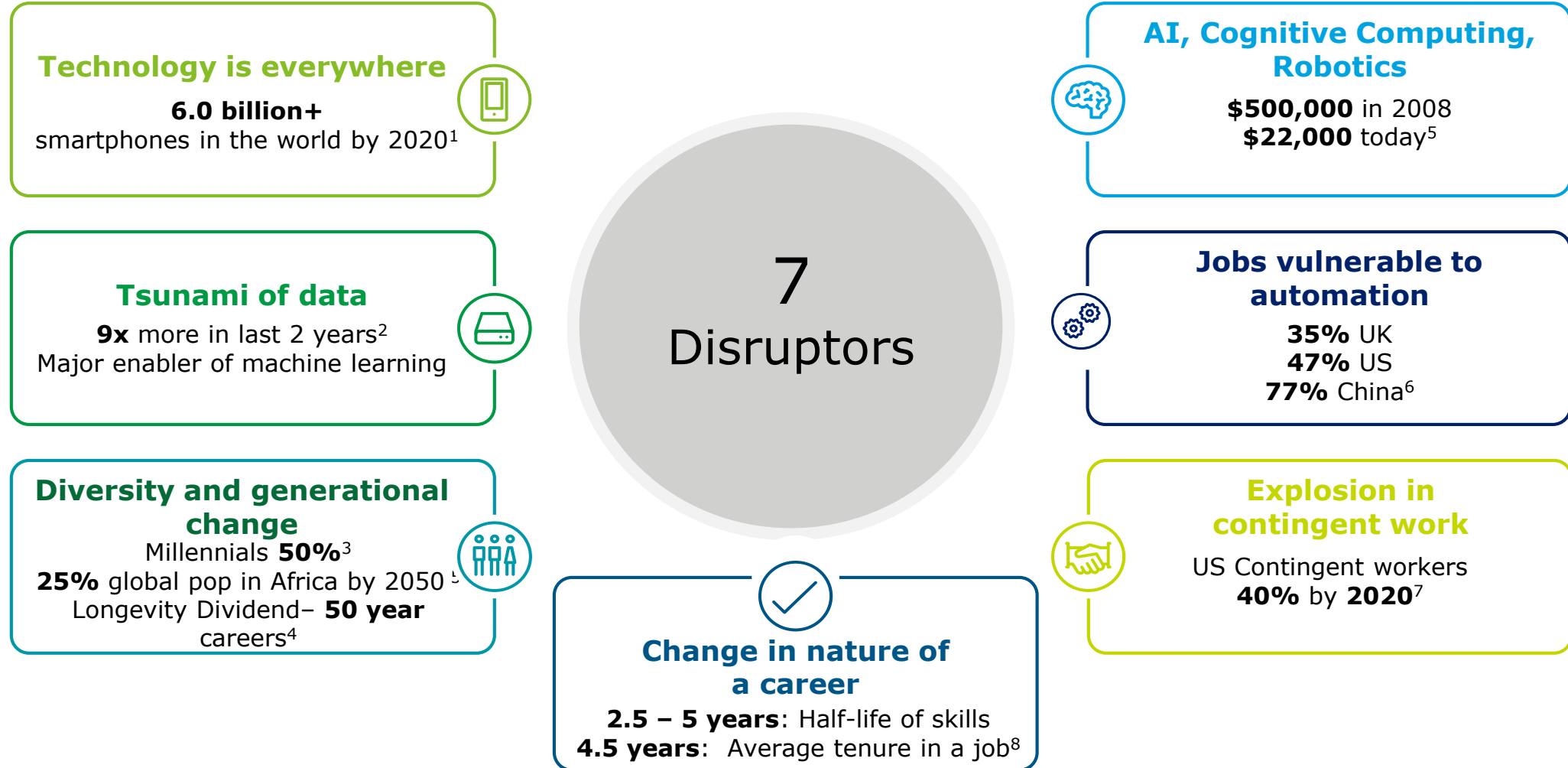
CONTENTS

• A changing world	4
• Reasons to change	11
• The tools available	22
• How to start	29
• The future is bright	38



A CHANGING WORLD

WE ARE LIVING IN A TIME OF UNPRECEDENTED CHANGE AND OPPORTUNITY



1 <https://www.cnn.com/2017/01/17/6-billion-smartphones-will-be-in-circulation-in-2020-ifs-report.html>

2 <https://www-01.ibm.com/software/data/bigdata/what-is-big-data.html>

3 Annual Global Millennial Study, <https://www2.deloitte.com/uk/en/pages/about-deloitte-uk/articles/millennial-survey.html>

4 <https://www.newscientist.com/article/mg23130810-800-the-100-year-life-how-should-we-fund-our-lengthening-lives/>

5 https://www2.deloitte.com/content/dam/Deloitte/il/Documents/human-capital/Thriving_in_times_of_digital_disruption.pdf

6 http://www.oxfordmartin.ox.ac.uk/downloads/reports/Citi_GPS_Technology_Work_2.pdf

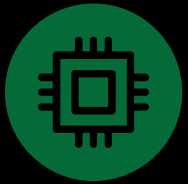
7 Intuit 2020 Report: Twenty Trends that will Shape the next Decade https://http-download.intuit.com/http.intuit/CMO/intuit/futureofsmallbusiness/intuit_2020_report.pdf

8 <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/HumanCapital/dttl-hc-english-opentalentconomy.pdf>

Shifting Nature of Work.

The future brings new realities which significantly change how we think about work

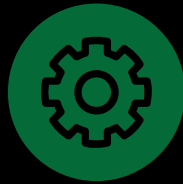
7 Drivers



1. Technology is everywhere



2. Massive growth of AI, cognitive, robotics



3. Jobs & tasks are vulnerable to automation



4. Tsunami of data



5. Change in nature of careers



6. Diversity, demographic, and generational change



7. Explosion in contingent work

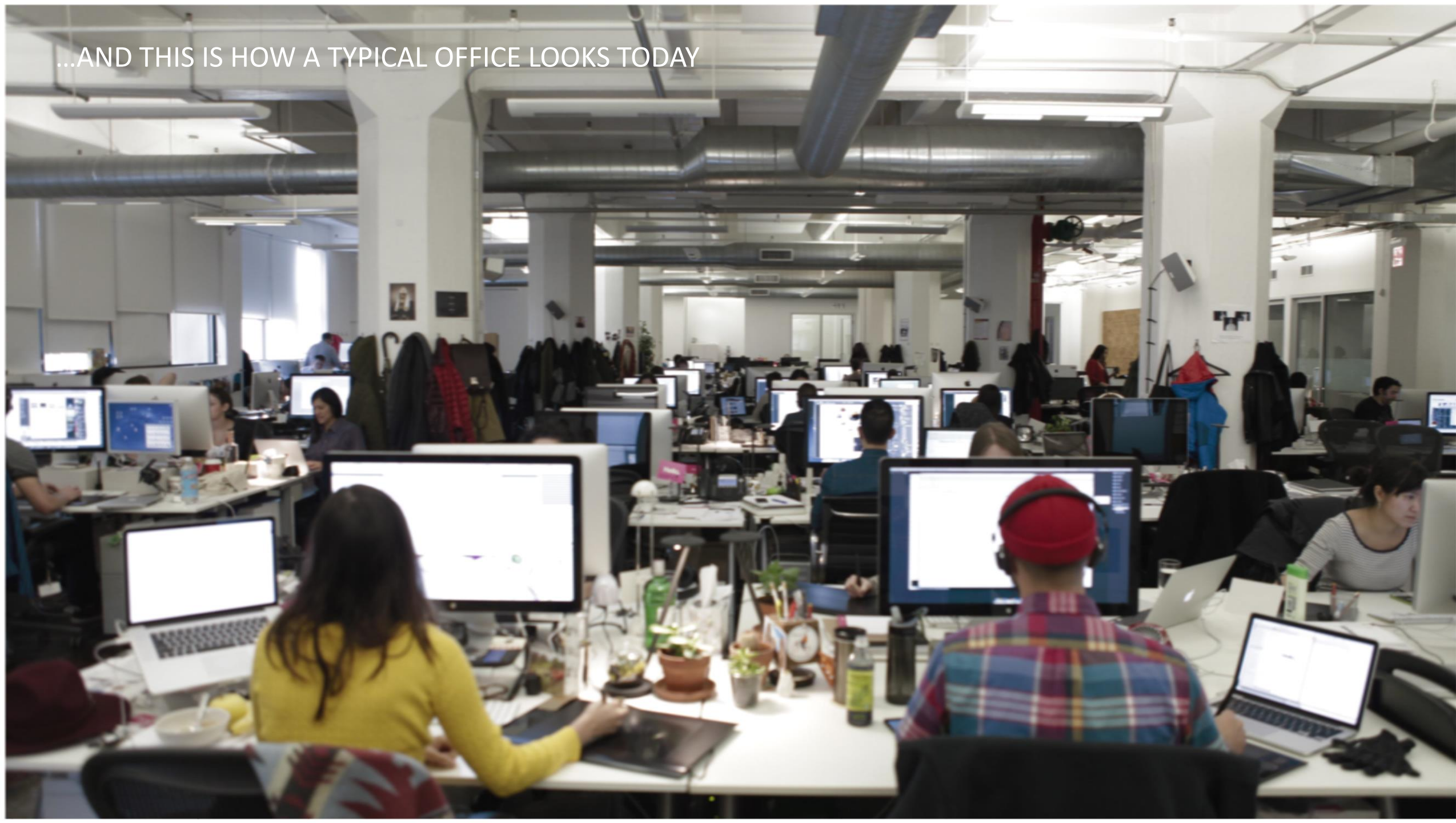
5 New Realities

1. Technology learns faster than we do
2. Work to learn, not learn to work
3. Everything is on the table
4. The new workforce is highly diverse
5. Public policy needs to catch up

THIS IS WHAT A FACTORY LOOKS LIKE TODAY

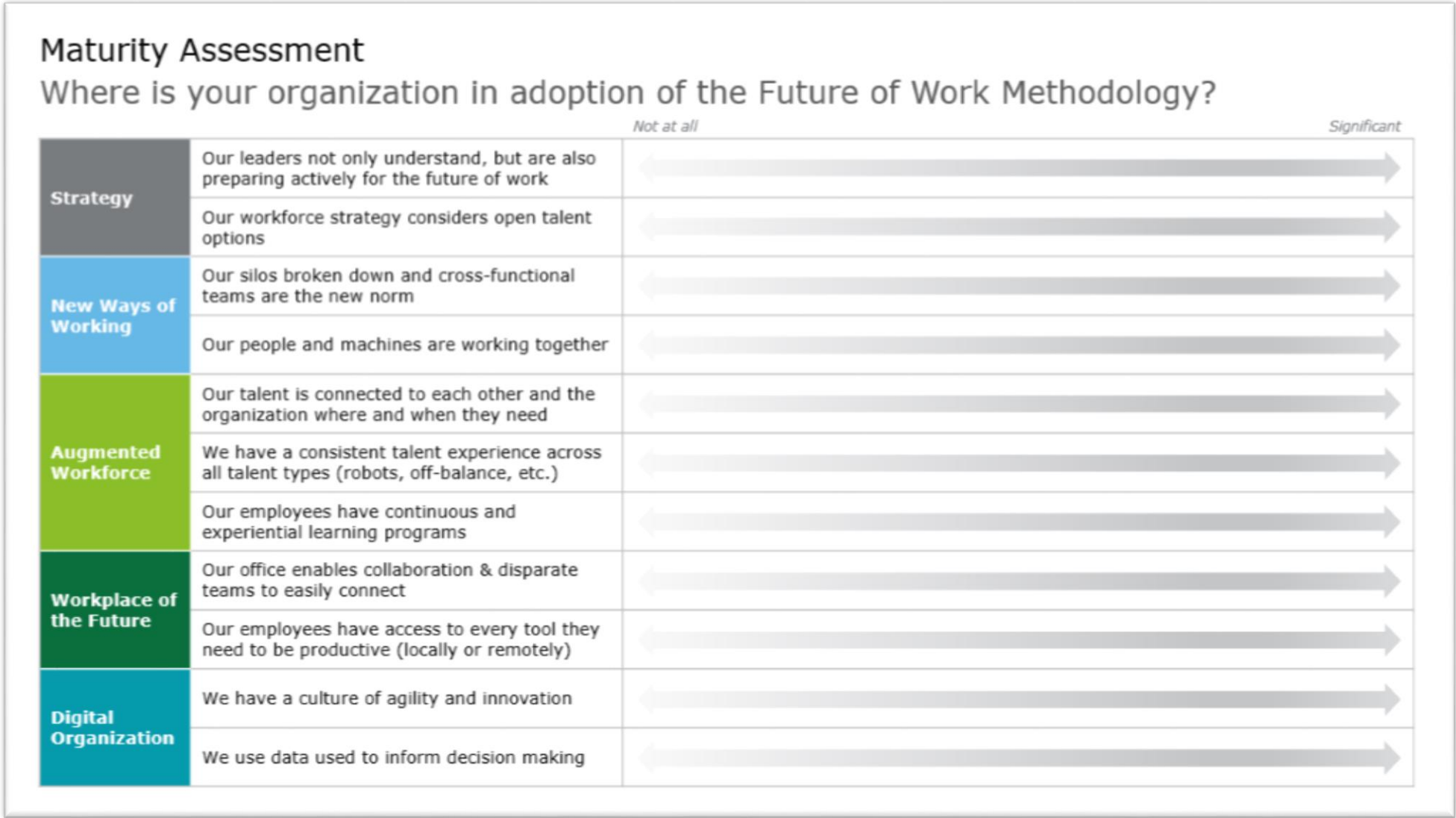


...AND THIS IS HOW A TYPICAL OFFICE LOOKS TODAY



MATURITY ASSESSMENT

Where are we today and where do we aspire to be?



MATURITY ASSESSMENT

Where is your organisation today?

Go to www.menti.com and use the code **52 37
80**

HOW WILL ACTUARIES WORK A FEW YEARS FROM NOW?



REASONS TO CHANGE

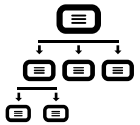
Disrupt or be disrupted....



Disruption will impact Actuaries and other white-collar professionals, in addition to those blue collar professions that we typically associate with disruption (e.g. Uber/Taxis)



Examples of change/disruption are manifold and include technology enablers such as robotics and cognitive automation



Pixelating the opportunity set is important, which requires breaking the spectrum of work and entire end-to-end process into bite sized chunks



Professionals need to continue to meet **professional and accountability standards** and how these are met will evolve as processes change



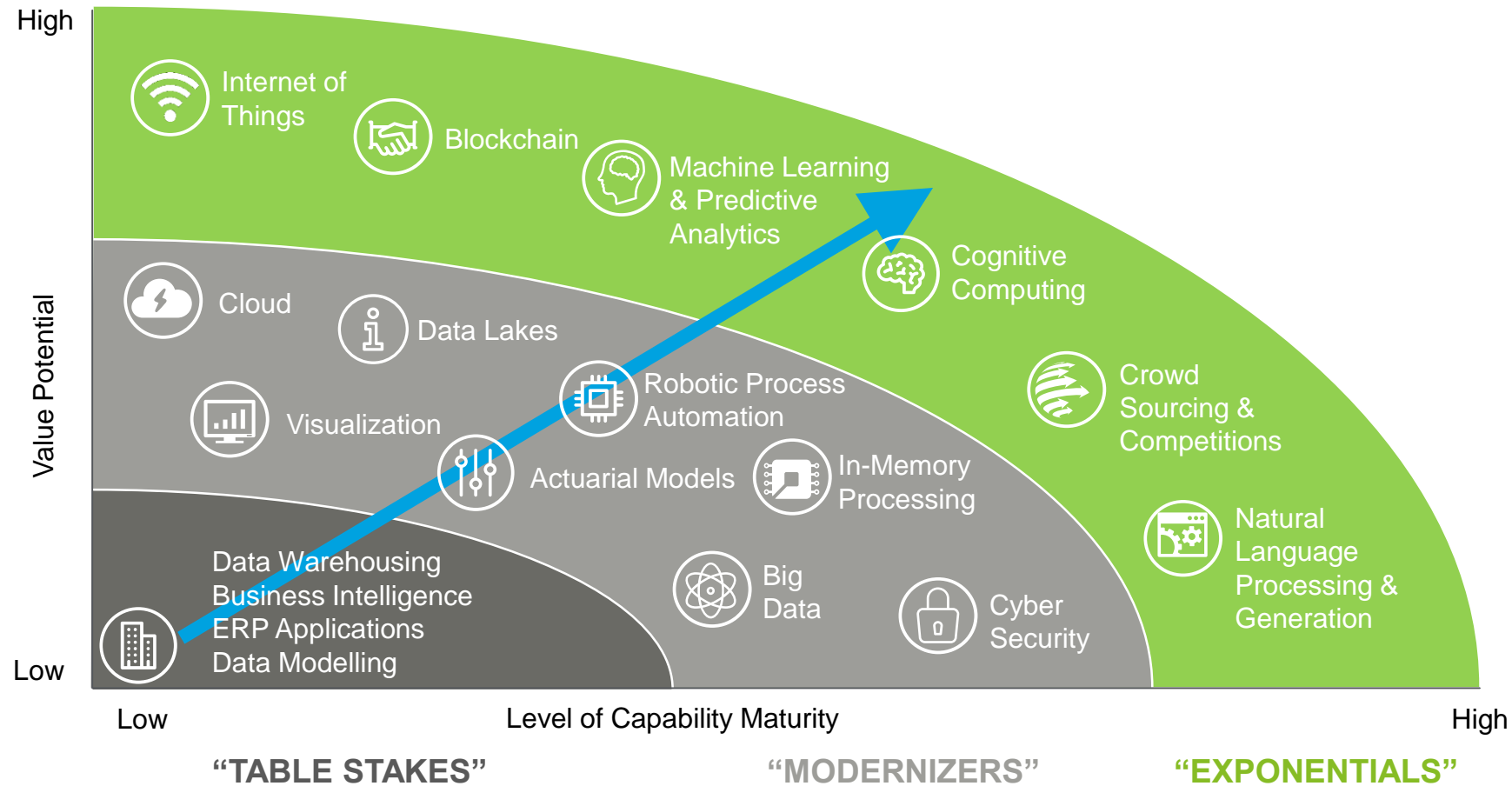
There are **significant implications for professional operating and talent models**, such as the change in how we source talent and design organisations – encompassing an array of resources, both internally and externally



The **outlook for the future is bright** and will enable professionals with the right skillsets to add more value to organisations through more strategic activities

Because we can...

In the future, machines will augment and interact with professionals to a degree never seen before. We call this the Exponential Professional™



THE ACTUARY OF TODAY

Ability to provide deep business insight is negated by overwhelming Operational and Stewardship Activities performed today

Representative Pain Points



Many spreadsheets linked together to calculate, capture, and allocate investment income



Company produces **hundreds of product filings** every year



Thousands of unique tools and spreadsheets required for monthly actuarial and financial reporting processes



Many people involved in a **6 month** process of updating regulatory filings



Hundreds of Actuarial models all need to be maintained, updated, and launched manually and reconciled



Life Insurance company **doesn't know** how many 90+ year olds they insure



Thousands of hours spent annually **drafting hundreds** of reports after analysis has been completed



Users wake up at **2:00 a.m.** to confirm models have successfully completed and to kick-off next job

The roles of the Actuary needs to be redefined and refocused on more value added and strategic activities

"IT systems are so outdated. It comes from many systems and even people."

DATA WRANGLING: UPSTREAM ALIGNMENT

"It's like a bomb."

"The problem of this is that we don't have enough control on the data. Data quality is quite poor."

"The most difficult part comes into the model maintenance and coding of new products, or any bug fix or enhancements. You have to test and figure out what goes wrong and you have to fix it. This is the most difficult part of the whole process."

EXISTING TOOLS AND PROCESSES ARE NOT SCALABLE

"[Under IFRS 17] the traditional or current way of handling calculations just will not work. [Valuation teams] cannot cope with just Prophet models and Excel sheets."

"Will IFRS 17 have hundreds or thousands of requirements? And will Prophet only be able to cater to 30-40% of them? We still don't know. Overall, the calculations are going to be far more complex and granular."

AN OPEN SOURCE ACTUARIAL PRACTICE?

"[The process of analysing results] is not generally standardised. There is a lot of 'what if' type work. This will be very manual."

"The process they [insurers] go through every 6 months [for data reconciliation] would be very similar [from insurer to insurer]."

"I think [assumption setting] can be put into a formula quite easily and it will make it a lot easier for actuaries to communicate to business why they changed assumptions"

CHANGE IN ACTUARIAL TEAMS MUST TAKE INTO ACCOUNT REGULATORY FRAMEWORK

"A lot of change happens when you mix people of different attributes together... or put people in a situation and they are forced to change."

"Actuaries have a very good foundation in helping companies gain a competitive advantage in the new world – IFRS 17, big data and with higher technology."

"When it comes to technical things, you need 3 types of people: red, purple and blue. Red are very technical (they do coding, they cannot communicate and work in their own world. Blue are business people, users of what the red people produce. And you need the purples who can speak both languages. Consulting people tend to be the purple. People at life companies are very red. Deep red."

ACTUARIAL PARTNERSHIPS: THE EVOLVING ROLE OF ACTUARIES?

"Once you free up the actuaries' time from financial reporting they're in a much better position to communicate what's coming out of the data and analysis than anyone else in the organisation. Because actuaries should be able to link it to the P&L and the balance sheet impact more so than others."

"What will happen when we have all the data managed properly? I believe there will be a lot of insights. I don't think the actuarial training has given them enough in that space."

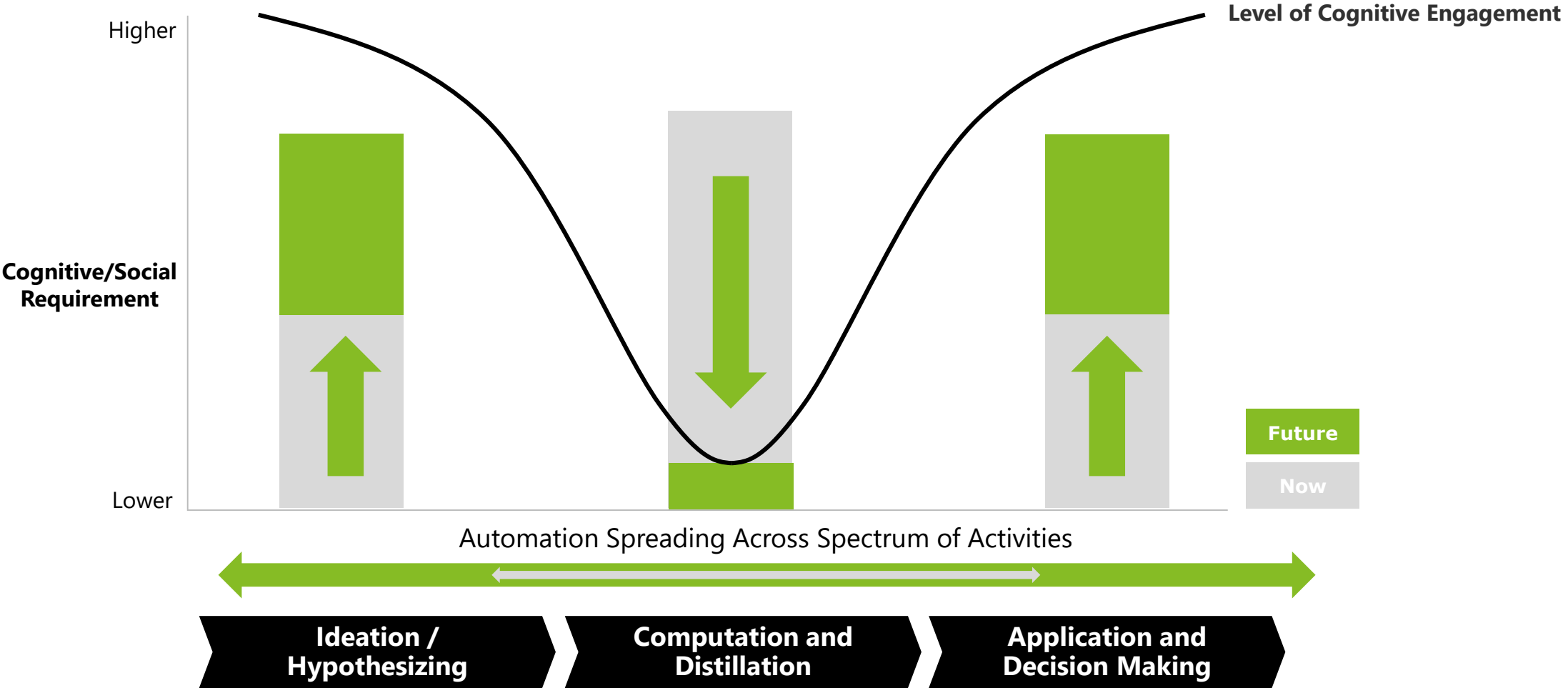
ACTUARIAL INSIGHT IS THE KEY VALUE DRIVER BUT CURRENTLY UNDERUTILISED

"Businesses are interested in exploring [how actuarial teams can] give them more insights on how to manage the business, how to give more sales."

TOOLS AVAILABLE

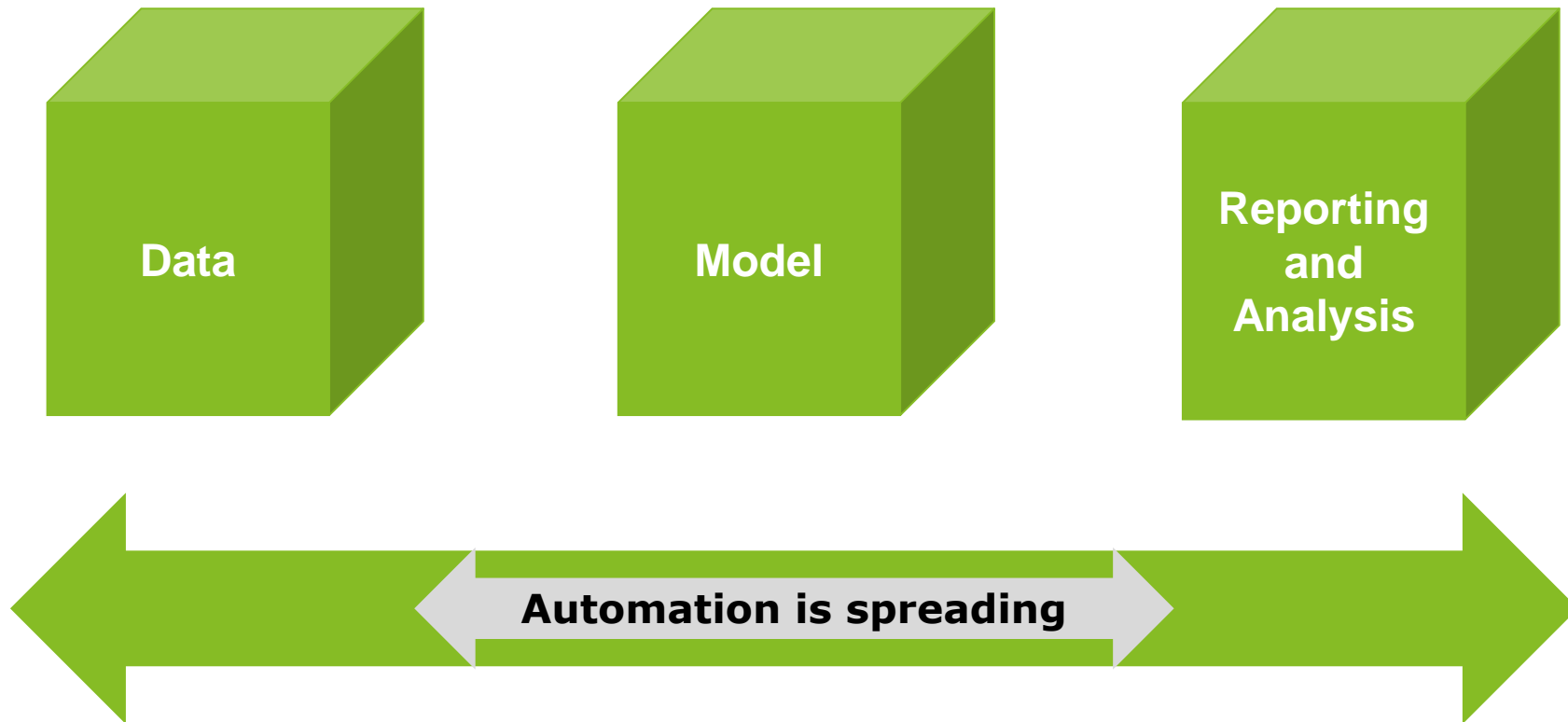
FUTURE STATE OF FUNCTIONS

The nature of analytical functions e.g. Actuarial and Finance and their activities is being disrupted due to technological and talent/operating innovation. This will shift human work towards higher cognitive and value-add activities.



VARIOUS PARTS OF ACTUARIAL PROCESSES CAN BE EXPONENTIATED

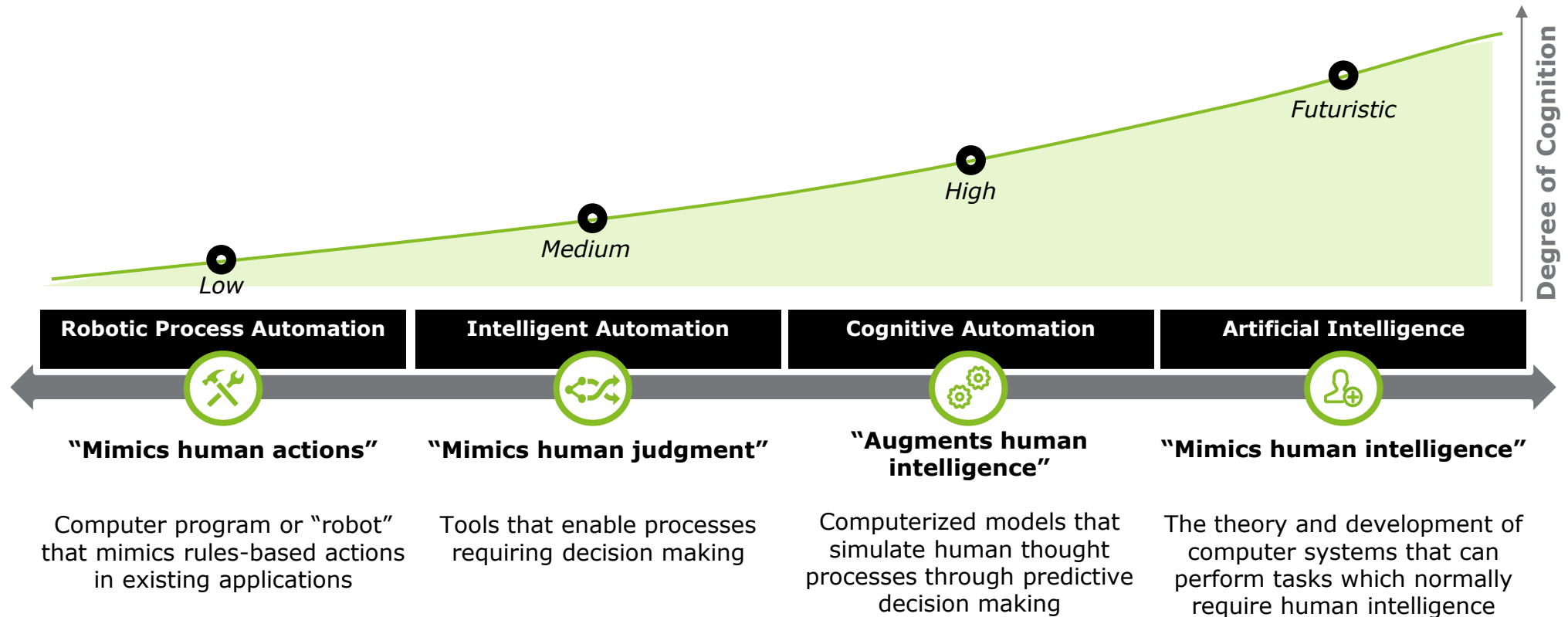
End-to-End Actuarial Process





SPECTRUM OF ROBOTIC AND COGNITIVE TECHNOLOGIES

The automation continuum ranges from enabling strategies that improve business processes to sophisticated technologies with cognitive elements



As the appetite for automation grows, the interplay of emerging technologies will lead to fundamental changes in how actuaries operate and deliver services to stakeholders

A selection of tools available now

There is a spectrum of automation and cognitive technologies that are being deployed in the marketplace to augment the workforce

Robotic Process Automation (RPA)



- Process Configuration
- Structured and Pattern Based Decisions
- Fixed Movement Automation

Natural Language Processing



- Text Analysis
- Speech Synthesis / Speech Recognition
- Natural Language Generation

Intelligent Automation



- Knowledge Capture
- Rules Automation
- Advanced Decision Systems

Machine Learning (ML)



- Supervised, Semi & Unsupervised learning
- Computer Vision
- Probabilistic Interfaces

Analytics



- Behavioral Sciences
- Cognitive Data Stewards
- Digital Concierge



HOW TO START

ENABLING ACTUARIES TO FOCUS ON HIGHER VALUE ACTIVITIES.



Productivity



Continue to meet existing requirements, **but perform them faster and cheaper**



Focus Actuarial judgement and analysis on high risk issues



Address financial “what if” **questions live** through interactive dashboards



Business Insight



Assess individual customer potential and **upsell or manage out**



Strategize solutions to diversify or mitigate exposure



Innovate strategies to empower new business models



Performance



Identify expense drivers and redesign products to minimize costs



Drive management action by moving from “Why” to **explaining “So What”**



Drive shareholder value through **forward looking analysis** to identify and manage risk

Example:
Actuary



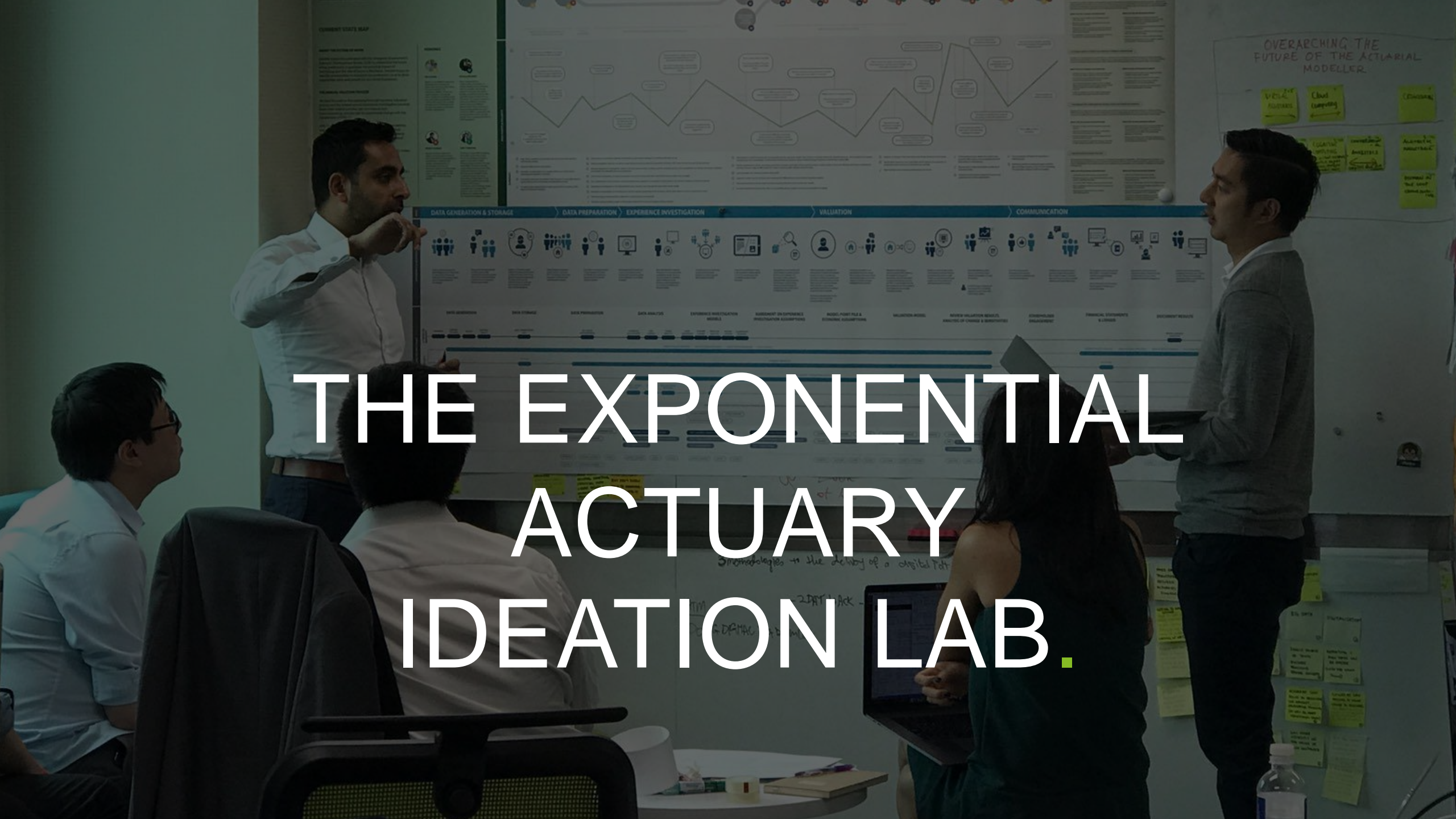
Automation of pricing models and analysis reduces time required and increases reporting frequency



More frequent reporting and capacity to analyze and recommend opportunity leads to real time insights



Identify expense drivers to redesign products to minimize costs

A group of people are gathered around a large wall display in a meeting room. The display features a complex diagram with various sections and icons. The text 'THE EXPONENTIAL ACTUARY IDEATION LAB.' is overlaid in large white letters. The background shows a man pointing at the display, another man standing to the right, and several people seated in the foreground. The display includes a line graph at the top, a central section with icons and text, and a bottom section with more text and icons. The overall atmosphere is collaborative and focused on data analysis.

THE EXPONENTIAL ACTUARY IDEATION LAB.

RESEARCH PERSONAS.



**DATA
DANIEL**



**MODELING
MARY**



**RESULTS
RONALD**



**CHIEF
CHRISTINE**

WHAT'S THE ACTUARIAL OPPORTUNITY?



CHIEF CHRISTINE

I KNOW ACTUARIAL TRANSFORMATION IS ON THE HORIZON AND CAN BRING GREAT BENEFITS BUT WHERE DO I BEGIN? AND WHAT ROLE WILL TECHNOLOGY PLAY?



DEMANDS

- Data, systems, processes
- Quality control (e.g. errors, consistency)
- Cost reduction, efficiency improvement
- Evolving Regulatory Change (e.g. implementing IFRS 17 by 2021)



DESIRES

- More proactive strategic capacity
- Implement new technologies
- As a catalyst for change and an industry pioneer
- Struggles to know where to start, but wants to lead and share knowledge with team and senior management

TASK REDESIGN.

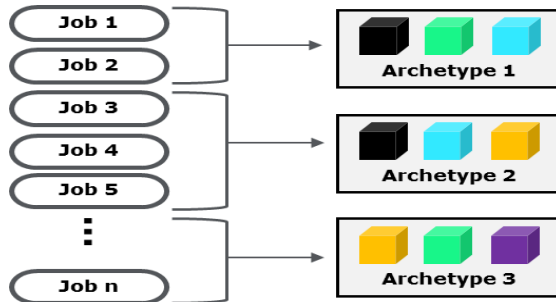
Explore the components of each person's role, identify the discrete elements that can be augmented with technology or open talent models, and reassemble work elements

1

DECOMPOSITION

WORK PIXELATION

- Translate work into activity (ex. prepare data, analyze, validate & report)
- Bucketing exercise helps understand activity goals and objectives and identify necessary cognitive ability

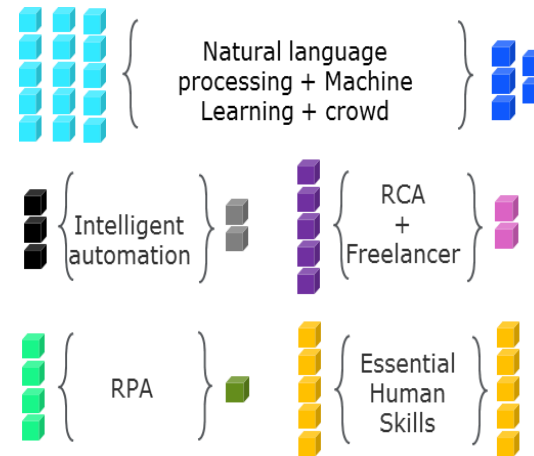


2

REIMAGINATION

WORK AUGMENTATION

- Identify opportunities for applying technology and open talent models to the professional's activities

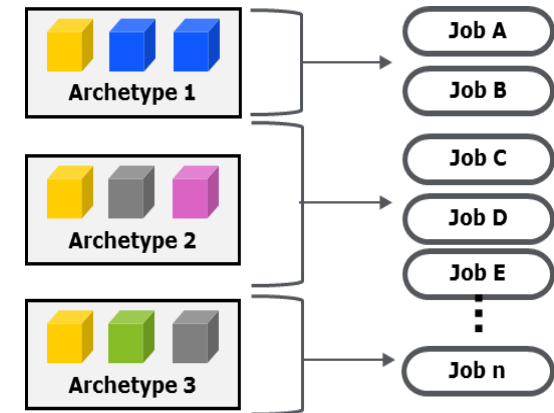


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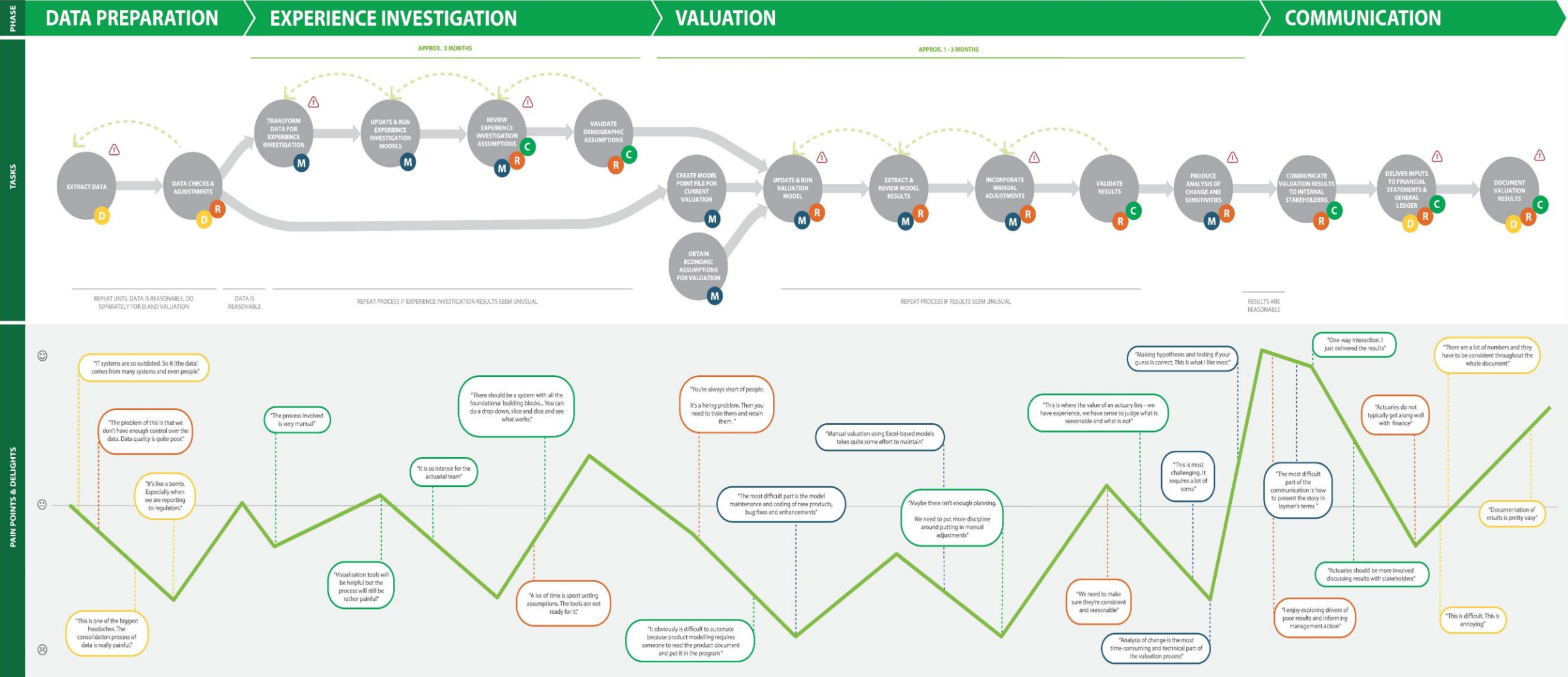
RECOMPOSITION

EXPONENTIAL ACTUARY

- Piece together the technology, talent models, and the professional back together to show the future state of the Exponential Actuary

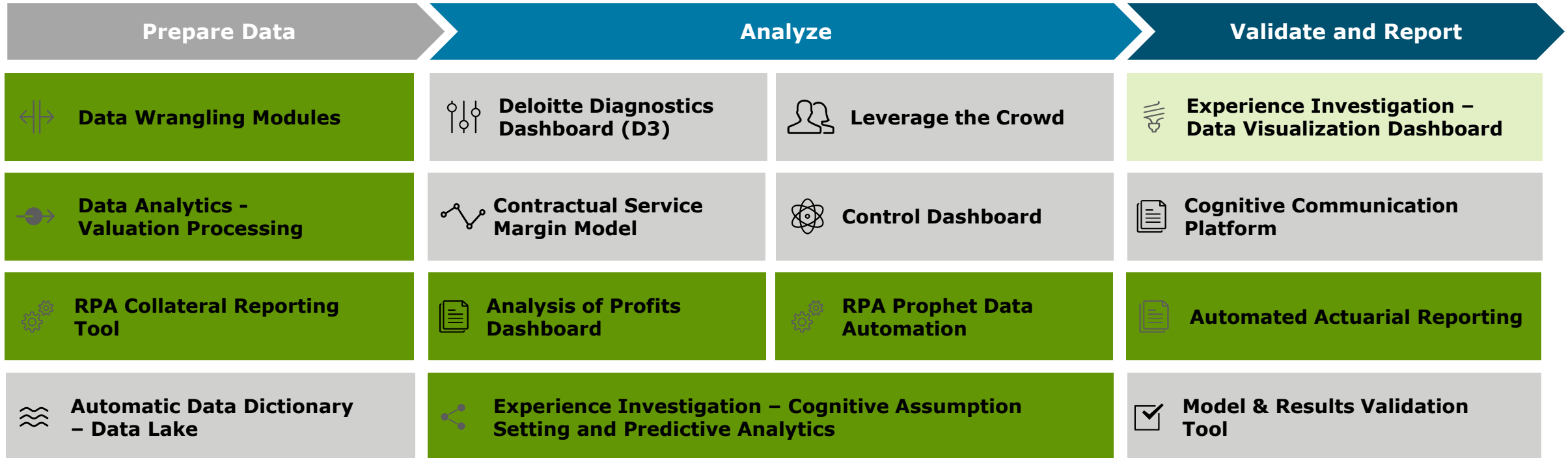



Current actuarial valuation process.

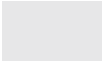


Exponential Actuary™ Solutions

A design approach coupled with a suite of solutions can address all aspects of the work of actuaries



 Proof of Concept Complete

 Proof of Concept In Development



THE FUTURE IS BRIGHT...


KEY TAKEAWAYS



Demands and Opportunities for Finance Professionals and Actuaries are increasing as the business landscape transforms



How professionals do their work is fundamentally changing and will continue to change



Change is happening at an increasing rate, led by Exponential Technologies



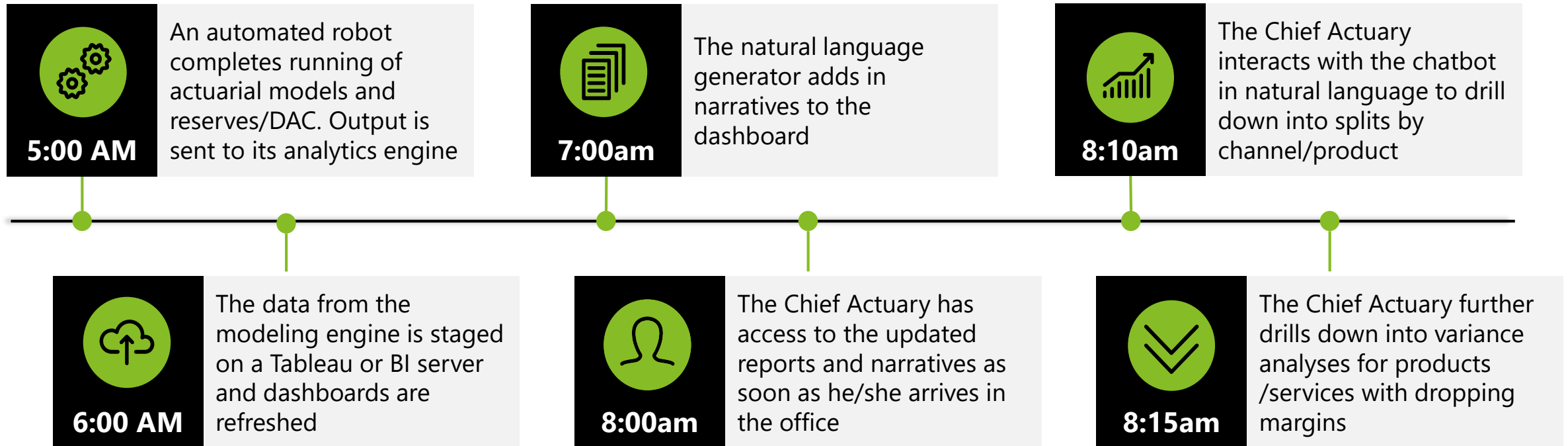
The future of work will be fundamentally different from today



Technical skills and enduring skills will be valuable despite this change

IN THE NEXT FEW YEARS, ORGANIZATIONS WILL LOOK VERY DIFFERENT

Imagine A World Where...



All of the technologies required to realize this vision of the future exist today

If everything is on the table, **how**
will you and your business
respond?

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Example.

Introduction.

Why target the Experience Investigation Process?

Time consuming and iterative

Affects valuation, pricing, and other insurance business processes

Regularly performed

Very dependent on judgement

With IFRS17 coming up, we are looking at a skills shortage

Repetitive work with limited ability to conduct insightful analysis

The Dashboard seeks to enhance this process to generate insight efficiently

Implications.

Key potential impacts from this POC

IFRS17

- Measures of uncertainty of lapse rates can be related to the Risk Adjustment for Insurance Contract Liabilities*
- Improved efficiency frees up Actuarial resources to address changes from IFRS17 and other business issues

Strategy and Operations

- Ability to deep dive into experience data allows improved targeting of segments of the market for sales or retention initiatives as well as monitoring of campaigns that have already occurred

Risk Management

- Improved efficiency and speed allows the more frequent investigation (e.g. monthly) of experience, closing the distance between when trends start and when the company may take action

Capital Management

- The percentiles of lapse rates observed can inform the selection of 1 in 200 year sensitivity or scenario analyses*

User Story POC1 – Current State.

The current state is time consuming and iterative taking up to 2 months at times

