Robotics for Actuarial

Singapore Actuarial Society

24 March 2017

EY

Building a better working world

Origin of robots

- The word “Robot” was first used by Czech writer Kael Capek in 1921. It comes from a Czeck word “robota” meaning servitude.
- The first digitally operated and programmable robot was invented iby George Devol in 1954 and was called Unimate.
- The first Unimate was sold to General Motors in 1960 and used to lift hot metal pieces from a die casting machine and stack them.

What is RPA?

Robotic Process Automation ("RPA") mimics human actions associated with a variety of business processes. It may conjure images of machines on a shop floor building cars, but the robots involved in RPA aren't robots in the physical sense. They rather are software that reside on a PC and interact with business applications.

Robotics Process Automation

Is a Software

Performs rule-based tasks on the computer that a human traditionally does, with no need for judgment

Works across application and across functions

It is not

A walking or talking auto-bot

Voice recognition or Artificial Intelligence

A physical machine processing paper

The future of employment (from a study at Oxford University)

- A study conducted by Carl Benedikt Frey and Michael A. Osborne (Oxford University) in 2013 examined how susceptible jobs are to computerization
- They examined 702 occupations. Some results:
  - 99%: Insurance Underwriters
  - 98%: Insurance Claims and Policy Processing Clerks, Insurance Appraisers, Auto Damage
  - 20%: Actuaries
  - 10%: Chemists
  - 0.39%: Dietitians and Nutritionists
  - 0.28%: Recreational therapists

- In this short presentation, I would like to introduce you to benefits and applications of robotics in actuarial functions

Many Financial Institutions have started the journey to robotics

There's significant demand on actuaries' time from key stakeholders

Actuaries are facing increasing demands from key internal (CFO, CRO, CEO, Head Office) and external (regulators, auditors, standard setters) stakeholders and are looking for ways to increase efficiency of their operations.

1 **Fast Close** - Finance and Actuarial Departments are increasingly required to provide accurate month-end statements at increasingly short times (2-5 days) putting strain on existing manual processes.

4 **New Regulations and Requirements** from Regulators, Group, Regional and Management, eg RBC-2, IFRS 17 are all coming within the next 5 years.

2 **Accuracy** - concerns arising from increased workload, complexity of required process to generate the results, updating of various tables and run settings.

5 **HR Retention** arising from monotone of process, continuity of processes leading to Key Person Risks on relatively junior staff.

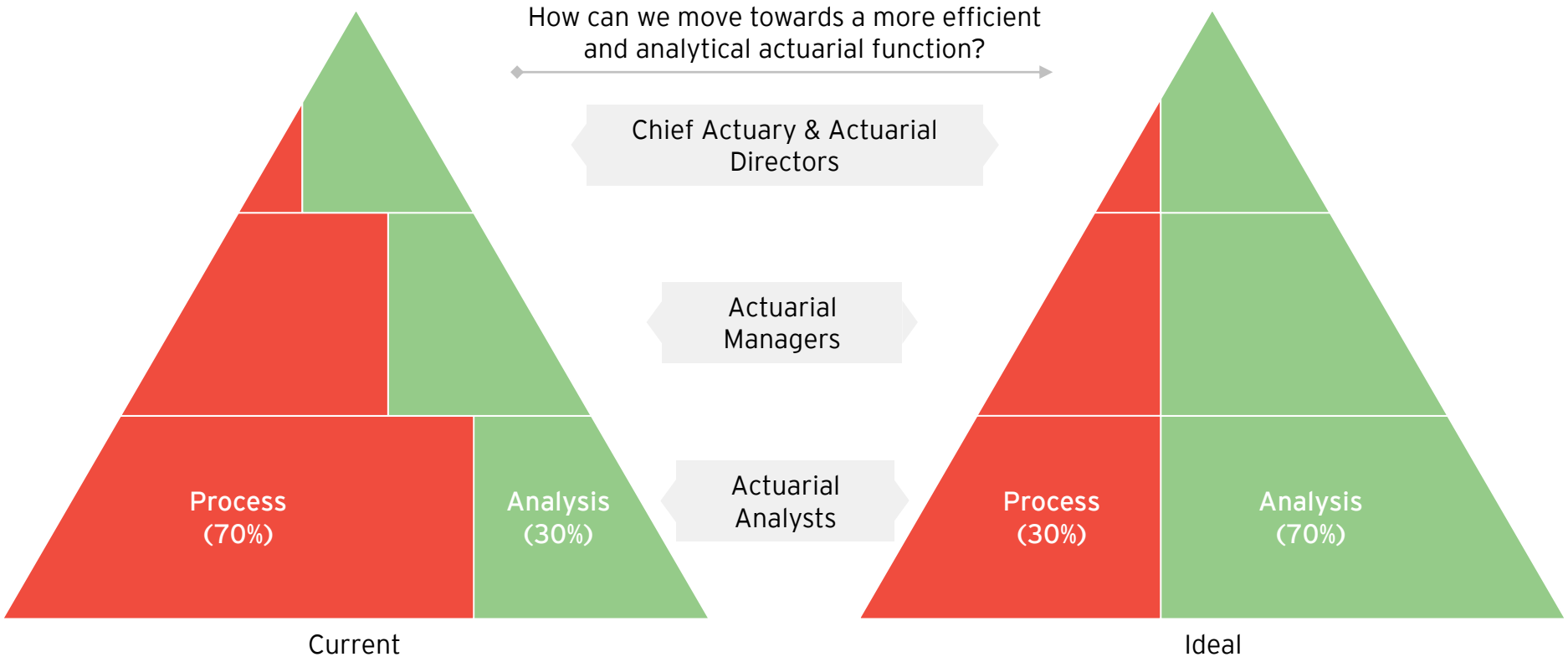
3 **Value Adding Analysis** to various stakeholders, dashboards, analysis of surplus and deep dives into various financial and non-financial information.

6 **Disruption** to insurance industry from digitization and big data, and actuaries as the core of the insurance company need to react and help shape to recent developments.

Solution: Optimize Actuarial Processes using automation and process reengineering on existing processes, to improve control and free up scarce resources to focus on more value adding requirements

Current and Ideal Actuarial Time Spend

Actuaries are highly skilled resources whose main value add is to provide Analysis, and to bring insights into the business performance of insurance companies. However, current actuarial functions are struggling under a barrage of new regulations and requirements, and diverting resources to running processes using various actuarial tools.



Up to 70% of actuarial team members' time can be spent on process related work – this is neither Economical, Efficient nor Effective

Benefits of applying robotics to actuarial functions

1 **Cost** - Process Improvement and automation technologies can pay for themselves and provide overall ongoing cost savings. For example, for certain cases robotics can break even within 6 months.

2 **Accuracy** - Current reliance on Excel and/or manual Prophet updates is frequently flagged as a key control risk. Automation reduces the risk of accidental error", such as updating wrong values or overwriting essential formulae.

3 **Speed** - Automation technologies are able to work 24/7, run manual tasks faster thus alleviating current bottlenecks – human time – thus reducing time-stress.

4 **Insights** - Free up actuaries to focus on more value adding analysis or on new areas (digital, analytics, UBI), thus generating insights for the insurer.

5 **Auditability & Control**
Process Mapping end to end process, and implementing improvements and automation provides clarity to all parties and enables Chief Actuaries, CFOs, and auditors are able to know exactly what is going on!

6 **Staff Satisfaction**
Actuaries are typically more motivated focusing on analytical. Reducing time spent on processes will result in increased job satisfaction.

7 **Key Person Risk**
Documenting and automating actuarial process, reduce dependency on any single staff member having "process in ones head".

8 **Future Proof** - Automation technology is software agnostic, eg Robotics can be used on any systems, therefore provides a flexible platform that can be extended for future use when conditions change.

How RPA helps on actuarial functions of an insurance company

Robots provide flexibility and connectivity between applications, increase the effectiveness of applications, and complete routine activities that previously required manual effort, but they do not replace existing computing capabilities, and they do not generally replace entire roles.

For Actuarial functions, Robotics will increase productivity of existing Actuaries and Actuarial Systems / Spreadsheets by:

- Taking on the bulk of manual work, resulting in increased speed and accuracy needed for fast closing
- Redeploying skilled actuaries to more value-adding analysis to provide insights into the business

Identify where teams are manually …

- Accessing and gathering data from multiple systems
- Moving data from one system to another
- Checking data consistency in multiple systems
- Updating the same info in multiple systems
- Remediating data across several accounts

Select processes that are …

- Well-defined, relying on rules rather than judgment
- Time consuming, while being time-critical
- Executed very often (i.e., daily or weekly)
- Using multiple systems that are not fully integrated
- Needing improvements in quality and control

Preliminary ideas to apply robotics for actuarial processes

- Data download and manipulation across multiple systems
- Data checks against various sources
- Internal and external regulatory form submission
- Actuarial system parameter update and runs
- Automation of result reporting
- Preparation of Management Info dashboards
- Analyses of surplus
- Policy movement analyses
- Benefit illustrations
- Automation of various runs for stress testing

And there are many more applications…

RPA software tools are a diverse and continuously evolving market

RPA technology vendors

Not Exhaustive

Best in class

blueprism

UiPath

AUTOMATION ANYWHERE Go be great.

openspan where people and technology meet

winautomation

IPSOFT

EXLANT

Celaton

Jacada Customer Service. Simplified.

Current state of the RPA market:

- Tools fall into **two main categories**:
  - **Attended automation,** where bots prompt humans to take actions in a workflow, such as next best action in a call centre
  - **Unattended automation,** where bots operate independently in 'lights out' style
- The landscape is **rapidly developing** with more firms becoming top of class

EY | Assurance | Tax | Transactions | Advisory

About EY
EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization, and may refer to one or more, of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit ey.com.

This material has been prepared for general informational purposes only and is not intended to be relied upon as accounting, tax, or other professional advice. Please refer to your advisors for specific advice.

ey.com