AR-7: Reserve Developments, New technologies and Higher Demands

Exploring the Evolution of the Reserving Team

Casualty Loss Reserve Seminar

September 2019

Willis Towers Watson

Antitrust Notice

- The Casualty Actuarial Society is committed to adhering strictly to the letter and spirit of the antitrust laws. Seminars conducted under the auspices of the CAS are designed solely to provide a forum for the expression of various points of view on topics described in the programs or agendas for such meetings.
- Under no circumstances shall CAS seminars be used as a means for competing companies or firms to reach any understanding – expressed or implied – that restricts competition or in any way impairs the ability of members to exercise independent business judgment regarding matters affecting competition.
- It is the responsibility of all seminar participants to be aware of antitrust regulations, to prevent any written or verbal discussions that appear to violate these laws, and to adhere in every respect to the CAS antitrust compliance policy.

This session will look at how ***financial transformations*** are being applied in the reserving world. We'll explore how the demands for ***more control*** and ***quicker closing*** interact with the availability of ***more data*** and the desire for ***greater insight***.

Attendees will learn how ***new technologies***, use of ***robotic automation***, and implementation of ***new approaches*** will change how the reserving team ***deploys resources***. We'll discuss the ***changing skills*** required and some of the ***challenges*** that this may introduce.

Liberty Mutual. INSURANCE | Willis Towers Watson

Part 1

The future of reserving: The Vision

Joseph Milicia
Snr Director

Willis Towers Watson

Part 2

The reality of the Chief Actuary

Timothy Pratt
Chief Actuary, GRS

Liberty Mutual INSURANCE

Part 3

Getting started with RPA

Jamie Mackay
Director

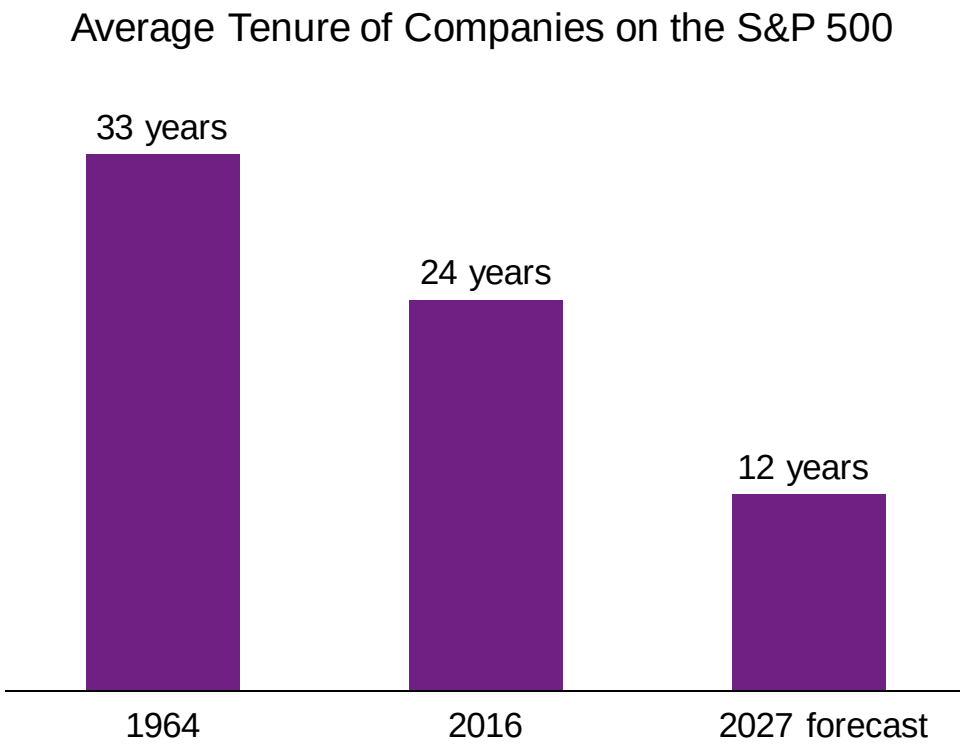
Willis Towers Watson

Part 1: The future of reserving: The Vision

Joe Milicia
Snr Director
Willis Towers Watson

Company lifespans are getting shorter

Template



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Change drivers

Organizational Goals

Market Pressure
Competition and economic environment

Profitable **Sustainable**

Regulatory Pressure
Customer, Capital and accounting standards

Finance, Risk and Actuarial Goals

Internal Reporting

External Reporting

The need for faster Management Information for timely decisions	**Real Time Management Information**	Reporting time line constraints and convergence
Better quality Management Information for business steering	**More Effective**	More granular regulatory and accounting standards
Give more back to the business with less resources	**More Efficient**	Cover more regulation with less resources

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Operating model constraints

Operating Models tend to be inflexible and become constrained by:

- **People**
  Skills and knowledge for certain tasks
- **Process**
  Locked into fulfilling historic requirements
- **Technology**
  Point solutions and siloes
- **Data**
  Disparate and redundant

Overcome the constraint by:

- Understanding what need or demand you are servicing and build to that
- Be process led and technology enabled
- Breaking with custom and practice

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

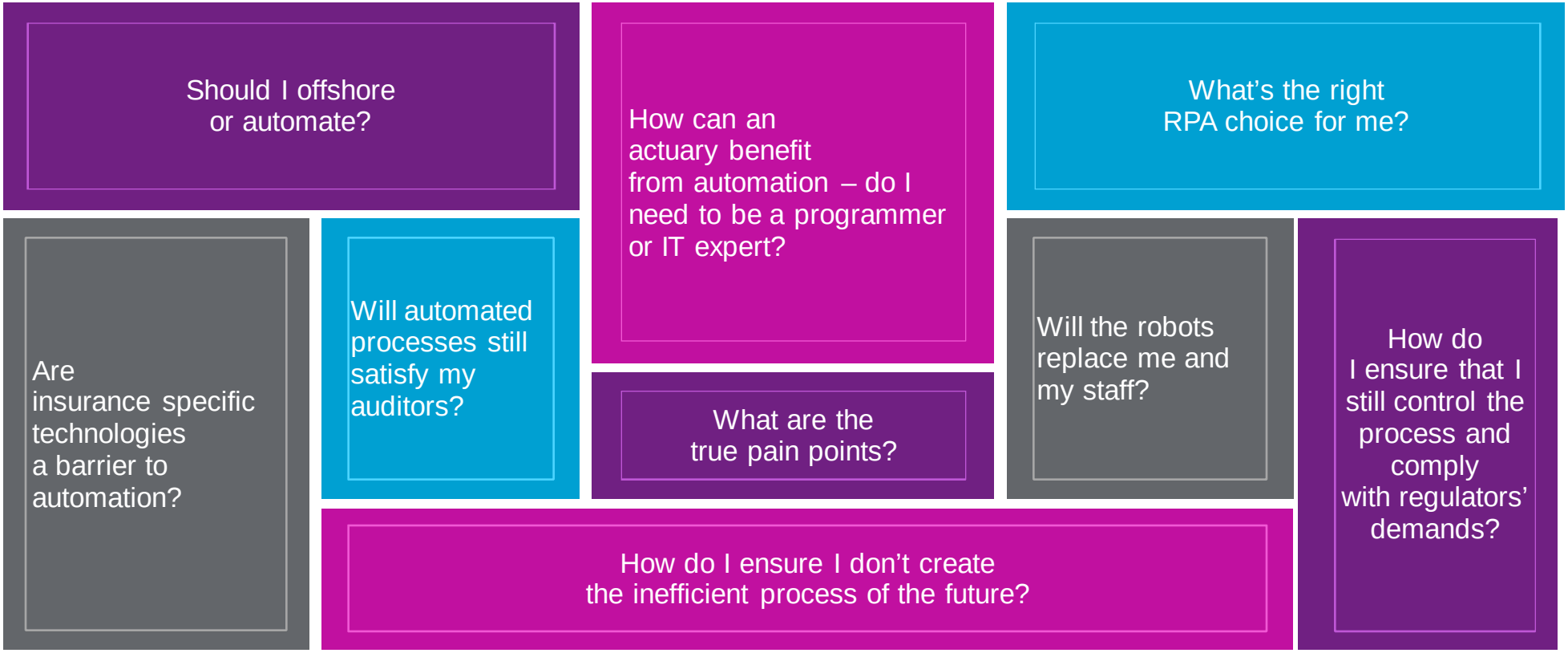
Desired future state

- Improve results quality and reduce operational risk
  - Controlled and auditable process
  - Reduced opportunity for errors
- Improve timing and frequency
  - Shorter reporting cycle to meet management and regulatory demands
  - More detailed reporting and metrics
  - Report more frequently
- Free up time for more critical tasks
  - Analysis/Review of results
  - Recommendations to the business
  - Assuring board and senior management fully understand results
- Reduce expenses

Unify

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

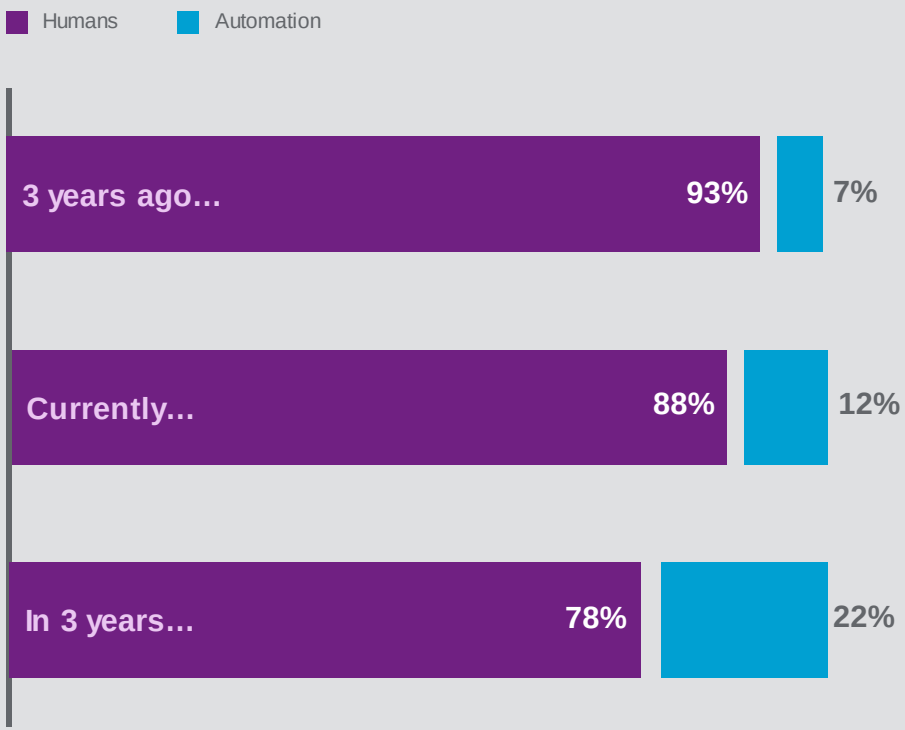
Automation changes everything



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Use of automation will continue to expand

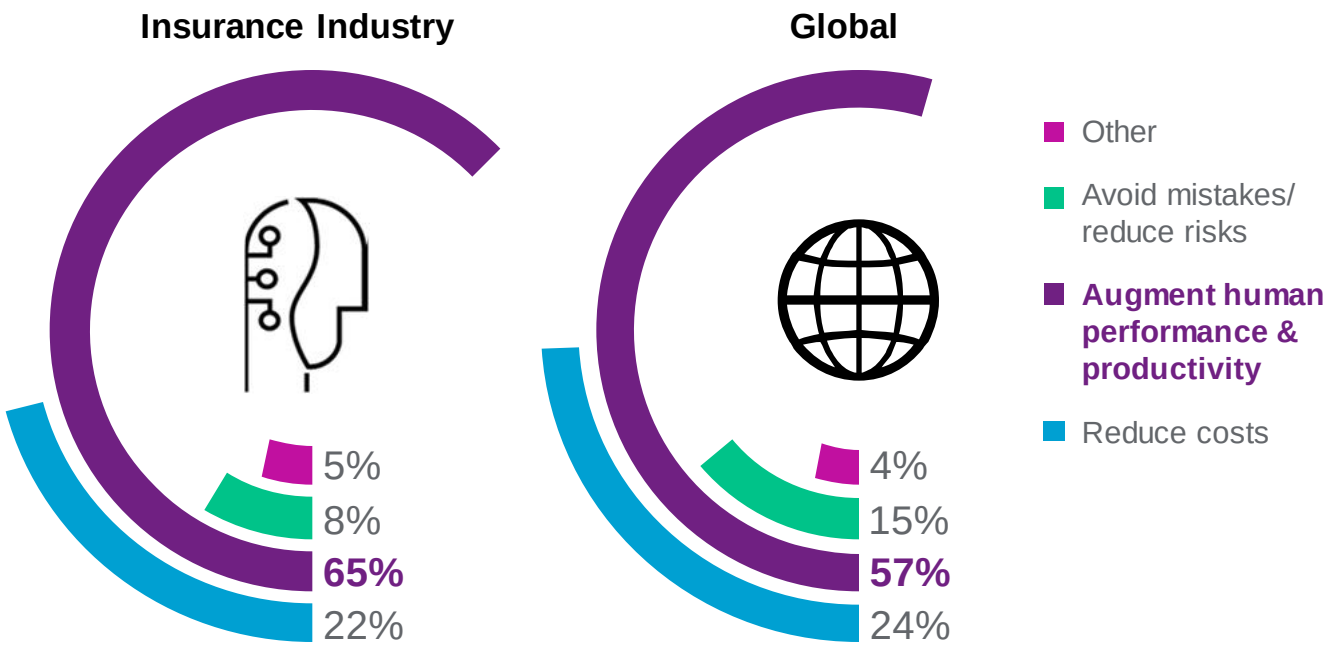
Expected to nearly double over the next three years



Source: December 2017 Willis Towers Watson FOW Global Survey

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Automation augments human capability

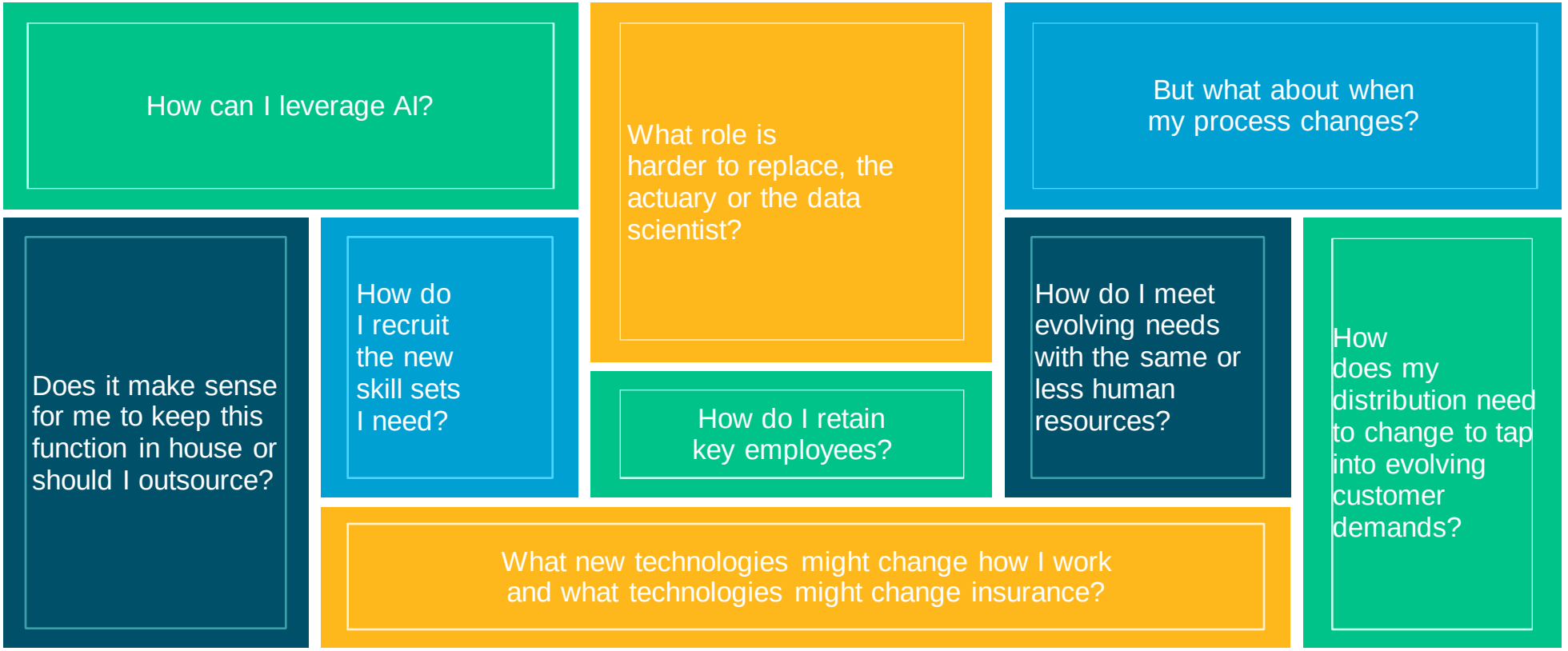


Source: December 2017 Willis Towers Watson FOW Global Survey, Insurance

Note: Percentages may not add up to 100% due to rounding

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

What does the future hold?



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential.

Part 2: The reality of the Chief Actuary

Timothy Pratt
Chief Actuary, GRS
Liberty Mutual INSURANCE

Agenda

- Who is Global Risk Solutions
  - Types of Insurance
  - Geographical Spread
- What do I do at GRS
- What does the Reserving Team do at GRS
- How are we currently doing?
- Where are we heading?

Global Risks Solutions

Who is GRS, what do we look like?

- Four Major Business Units
  - National Insurance
  - North America Specialty
  - Liberty Specialty Markets
  - Surety
- Wide Geographical Spread
- Multiple types of exposure
  - Cats (Hurricanes, Typhons, Cyclones)
  - Short Tail
  - Long Tail liability
  - Long Tail Workers Compensation
- Multiple Currencies

Who is GRS, what do we look like?

- Global Risks Solution … unpaid claims reserves ~$30b
- Reserving Team
  - Mixture of centralized (~15 FTE) and decentralized (~35 FTE)
  - Centralized for …
    - Approach
    - Software
    - Data Gathering
    - Review
    - Reporting
    - Cross pollination
  - Decentralized for …
    - First Review
    - Local input
    - Claims input into process
    - Reporting to local management
    - Local statutory reporting

Why am I here?

Consultants

- Jamie … consultant
  - Solution providers
- Joe … consultant
  - Solution providers

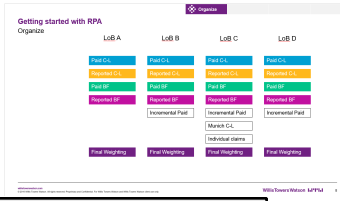
Industry Input

- Tim … industry perspective
  - Jamie & Joe hope that I can give you an industry perspective
  - I can and will do that
  - But my secret mission is to challenge Jamie / Joe to show that their software can really(!!) help me

GRS ResQ Information

- ResQ Information
  - 4 Instances
  - 10 Projects
  - 4k Reserve Classes
  - Triangles
    - 90k Calc + Data
    - 40k Data
  - Vectors
    - 220k Calc + Data
    - 100k Data

My Reserving Situation …



GRS ResQ Consistency

- ResQ Gross Methods
  - 01 Gross Paid DFM
  - 02 Gross Reported DFM
  - 03 Gross Case DFM
  - 04 Gross Paid BS SRA DFM
  - 05 Gross Reported BS CRA DFM
  - 06 Gross Reported BS SRA CRA DFM
  - 10 Gross Paid BF
  - 11 Gross Reported BF
  - 12 Gross Paid BS SRA BF
  - 13 Gross Reported BS CRA BF
  - 14 Gross Reported BS SRA CRA BF
  - 15 Gross ELR Expected
  - 20 Gross Paid BT
  - 21 Gross Reported BT
  - 30 Gross Paid CC
  - 31 Gross Reported CC
  - 40 Gross Avg. Cost Per Claim
  - 42 Gross External Manual Method

Current Process

- EOQ Day 1
  - Systems still processing EOQ
- EOQ Day 12
  - ResQ Projects rolled forward from prior
  - New quarter data imported
- EOQ Day 15
  - Released to local reserving actuaries
  - AvE released
- EOQ Day 35-45
  - Local review complete
  - Back to central team for review and reporting
- EOQ Day 65
  - Report to SBU Chief Exec & Corporate

Current Process Comments

- With 4k reserve classes to look at …
  - We fall back on process
  - What else can we do?
- We look at LDFs once a year
  - To be fair, is one new quarter of information going to have much of an impact?
- Use ELR values from our pricing / planning cycle
- If our assumptions were ‘good enough’ last quarter, they should be ‘good enough’ this quarter

My Reserving Situation …

Current Process Comments

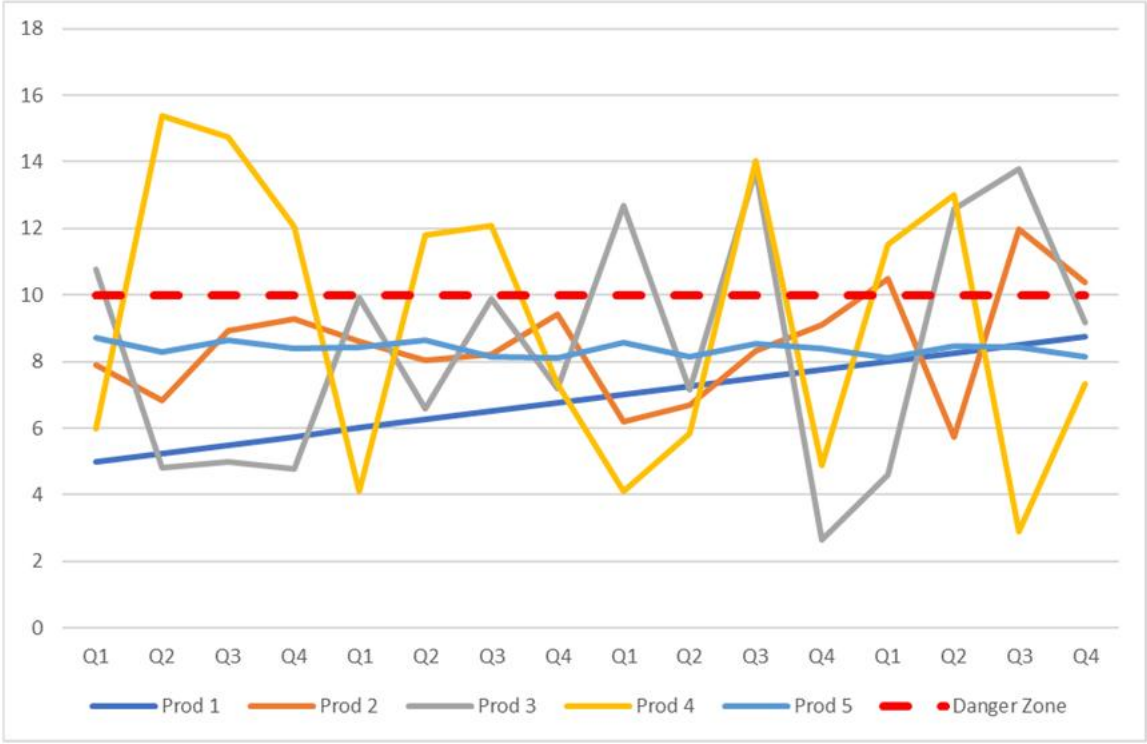
- Maths …
  - 40k data triangles
  - 50 reserving FTEs
  - Say … 10 minutes to look at a triangle to see if any adjustment is needed
  - Need 8k minutes, 133 hrs or over 16 days just to review the new triangles
- I haven't got that amount of time
- So we light touch (or skip) some reserving classes each quarter

Good Tools

- Extract the data that we need
- Run validation checks to ensure our process isn't broken
  - Tech Review
- Track any assumption changes
- Split the change in IBNR over the quarter into buckets
  - Data
  - LDF Assumptions
  - ELR Assumptions
  - etc

GRS Reserving …

- I have been with Liberty Mutual just under 10 years
  - Started with Liberty International Underwriters in New York
  - A specialty insurer
- During that time, I have been heavily involved with reserving
  - My mantra is process, process, process
- 10 years … 40 quarters
  - Each quarter, something blows up on you
  - Not always the same thing
- But … if you spend all your spare time just on things that are blowing up this quarter
  - You miss the sleepers that are coming



Where to from here?

Current Process

- EOQ Day 0
  - Systems complete EOQ processing
- EOQ Day 12
  - ResQ Projects rolled forward from prior
  - New quarter data imported
- EOQ Day 15
  - Released to local reserving actuaries
  - AvE released
- EOQ Day 35-45
  - Local review complete
  - Back to central team for review and reporting
- EOQ Day 65
  - Report to SBU Chief Exec & Corporate

Future Process

- Day 0 = System Data Available
- Day ½
  - ResQ Projects rolled forward from prior
  - New quarter data imported
  - Initial control reports released
- Day 1
  - Released to local reserving actuaries
  - AvE released
  - Triangle Quality dashboard updated
  - Other diagnostic tools updated
- Day 5(?)
  - Control ‘All Clear’ released
- Day 5+
  - Actuarial reviews leading to more actionable information

Where to from here?

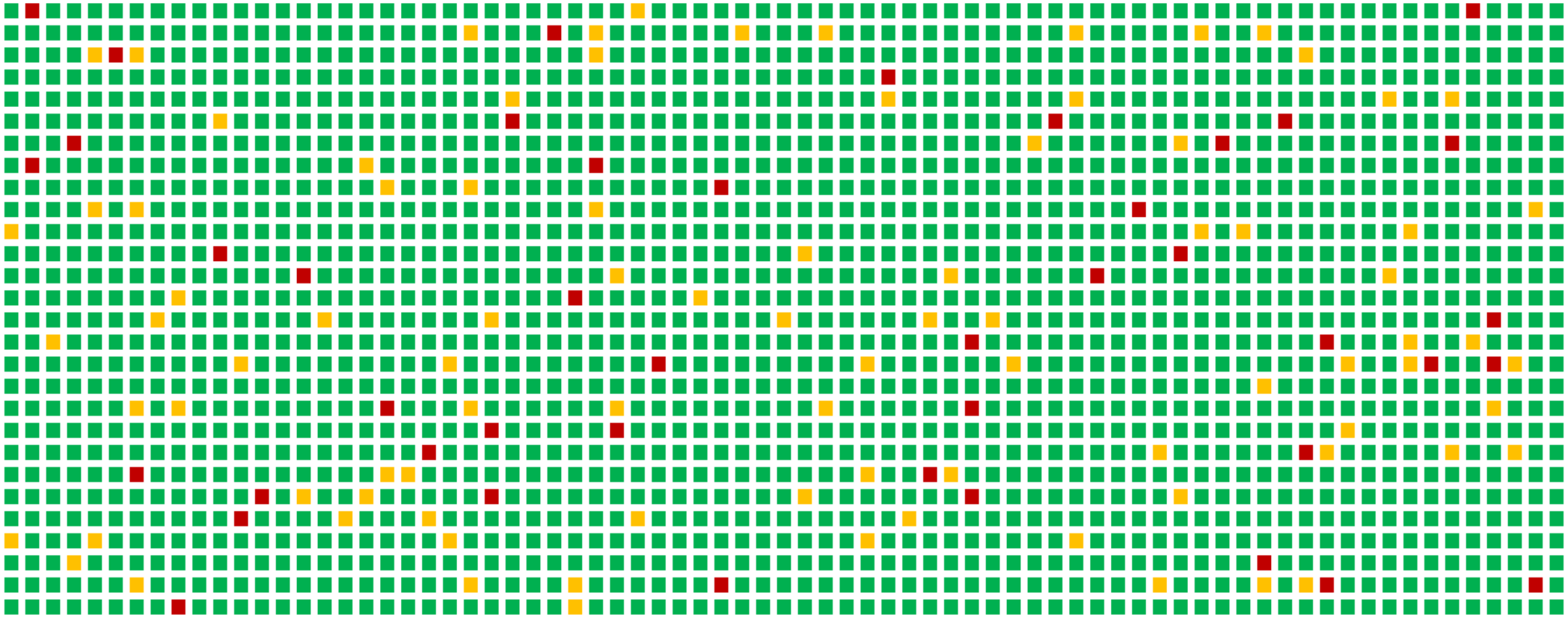
Future Process

- Day 0 = System Data Available
- Day ½
  - As in … over-night processing
  - Ready for work the next morning
- Day 1
  - Release of diagnostic tools
- Day 5(?)
  - Control ‘All Clear’ released
- Day 5+
  - Actuarial reviews leading to more actionable information

But how?

- Over-night processing
  - Options are other side of the world?
  - A night-owl employee (or multiple)?
  - Robot?
- Release of diagnostic tools
  - This implies that they are already ‘ready to go’ and just need a human ‘once over’
  - How do I do this?
  - A robot can crunch the numbers … but we have to come up with what we mean by diagnostic tools

GRS 2020Q2 Triangle Dashboard



What else could I do with a Triangle Quality Dashboard?

- Develop a way of 'scoring' a triangle
  - Low value means stable, reliable, 'nice' triangle
  - High value means unstable, unpredicable, 'bad' triangle
- Score each triangle
  - Set 'green', 'yellow' and 'red' boundaries
  - If you get 50% red, you have set your red boundary too low
- But this dashboard doesn't have to be 'current quarter' only
- Consider a triangle that was 'green' for the last 6 quarters but had an increasing score
  - This might be something to look at

Qtr	Tri Score	
2018Q1	650	
2018Q2	675	
2018Q3	680	
2018Q4	698	
2019Q1	702	
2019Q2	709	

But how do I get from where I am to where I want to be …

Current Process

- EOQ Day 0
  - Systems complete EOQ processing
- EOQ Day 12
  - ResQ Projects rolled forward from prior
  - New quarter data imported
- EOQ Day 15
  - Released to local reserving actuaries
  - AvE released
- EOQ Day 35-45
  - Local review complete
  - Back to central team for review and reporting
- EOQ Day 65
  - Report to SBU Chief Exec & Corporate

Future Process

- Day 0 = System Data Available
- Day ½
  - ResQ Projects rolled forward from prior
  - New quarter data imported
  - Initial control reports released
- Day 1
  - Released to local reserving actuaries
  - AvE released
  - Triangle Quality dashboard updated
  - Other diagnostic tools updated
- Day 5(?)
  - Control ‘All Clear’ released
- Day 5+
  - Actuarial reviews leading to more actionable information


Liberty Mutual®
INSURANCE

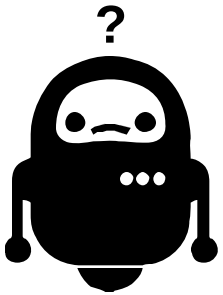
Part 3: Getting started with RPA

Jamie Mackay
Director
Willis Towers Watson

Organize

Getting started with RPA

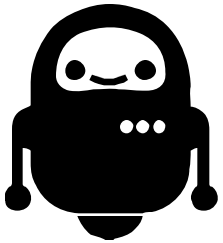
Organize



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

Organize



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

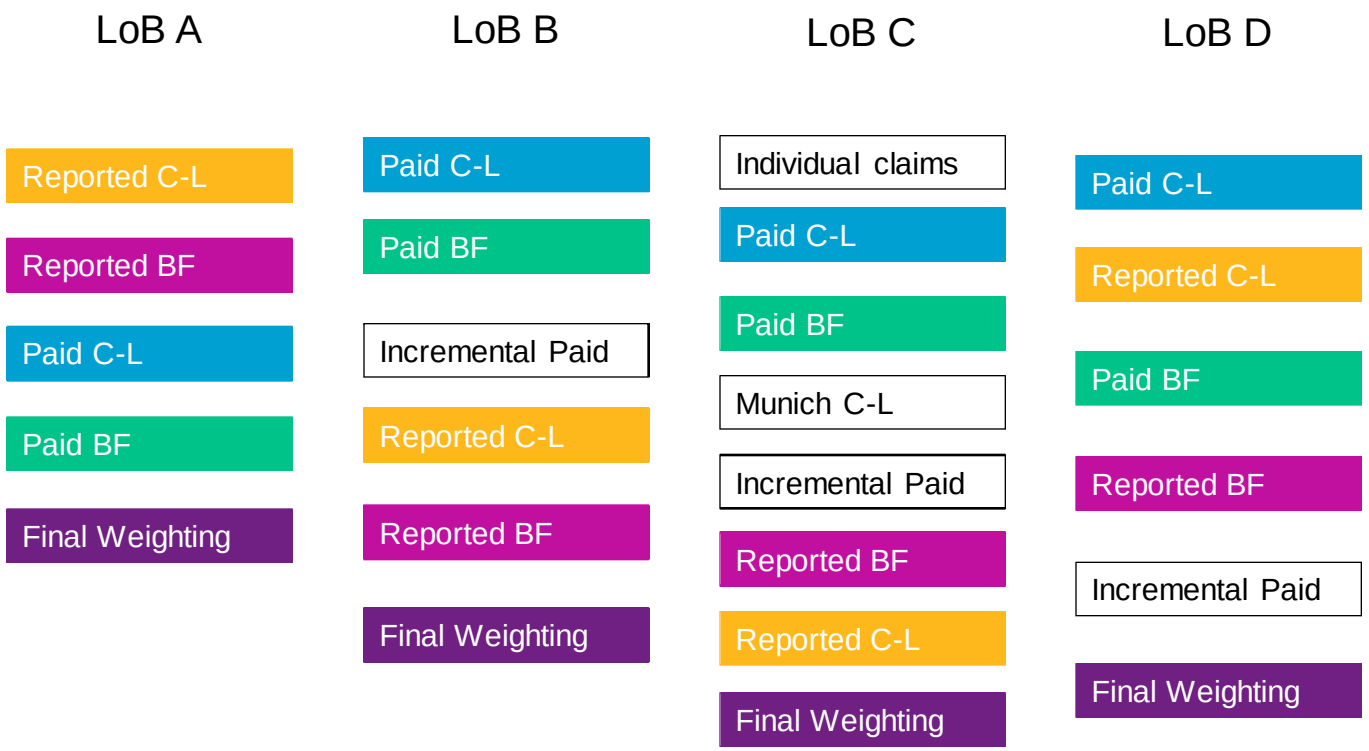
Organize

LoB A	LoB B	LoB C	LoB D
Reported C-L	Paid C-L	Individual claims	Paid C-L
Reported BF	Paid BF	Paid C-L	Reported C-L
Paid C-L	Incremental Paid	Paid BF	Paid BF
Paid BF	Reported C-L	Munich C-L	Reported BF
Final Weighting	Reported BF	Incremental Paid	Incremental Paid
	Final Weighting	Reported BF	Final Weighting
		Reported C-L	
		Final Weighting	

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

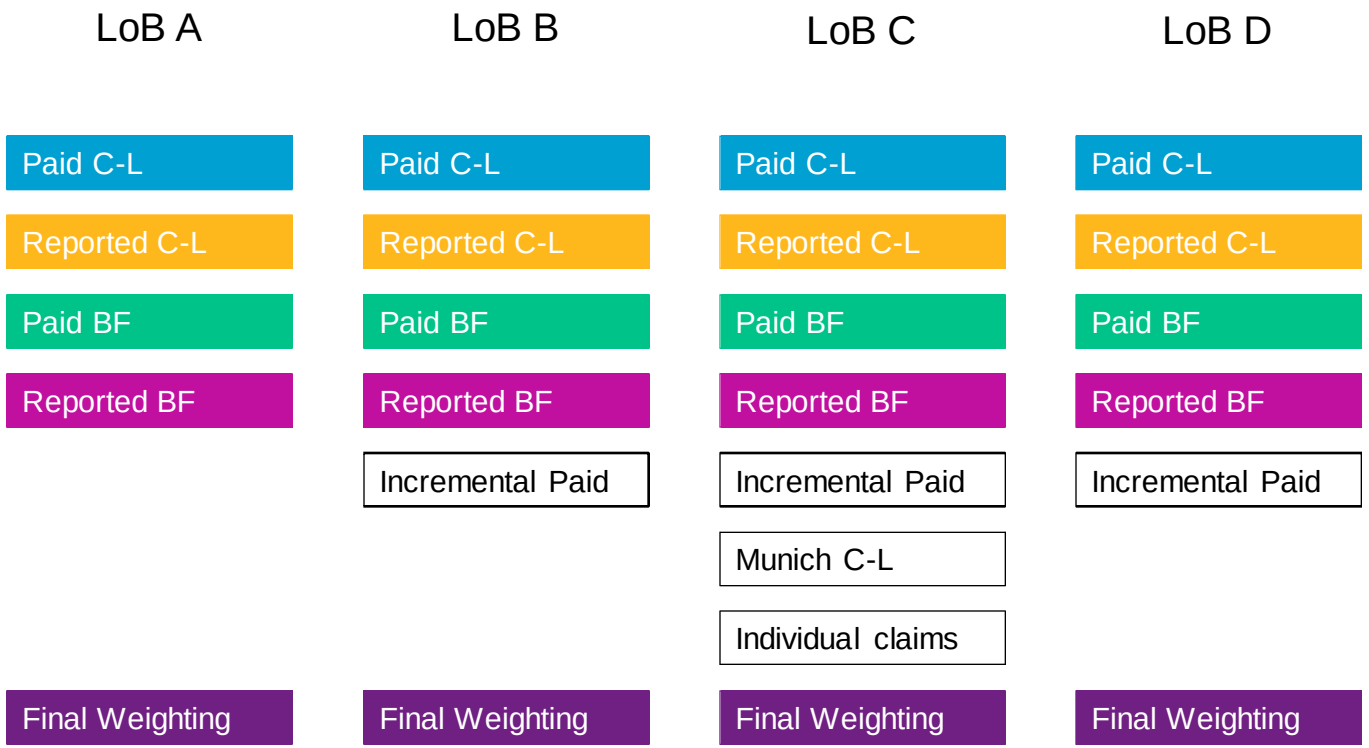
Organize



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

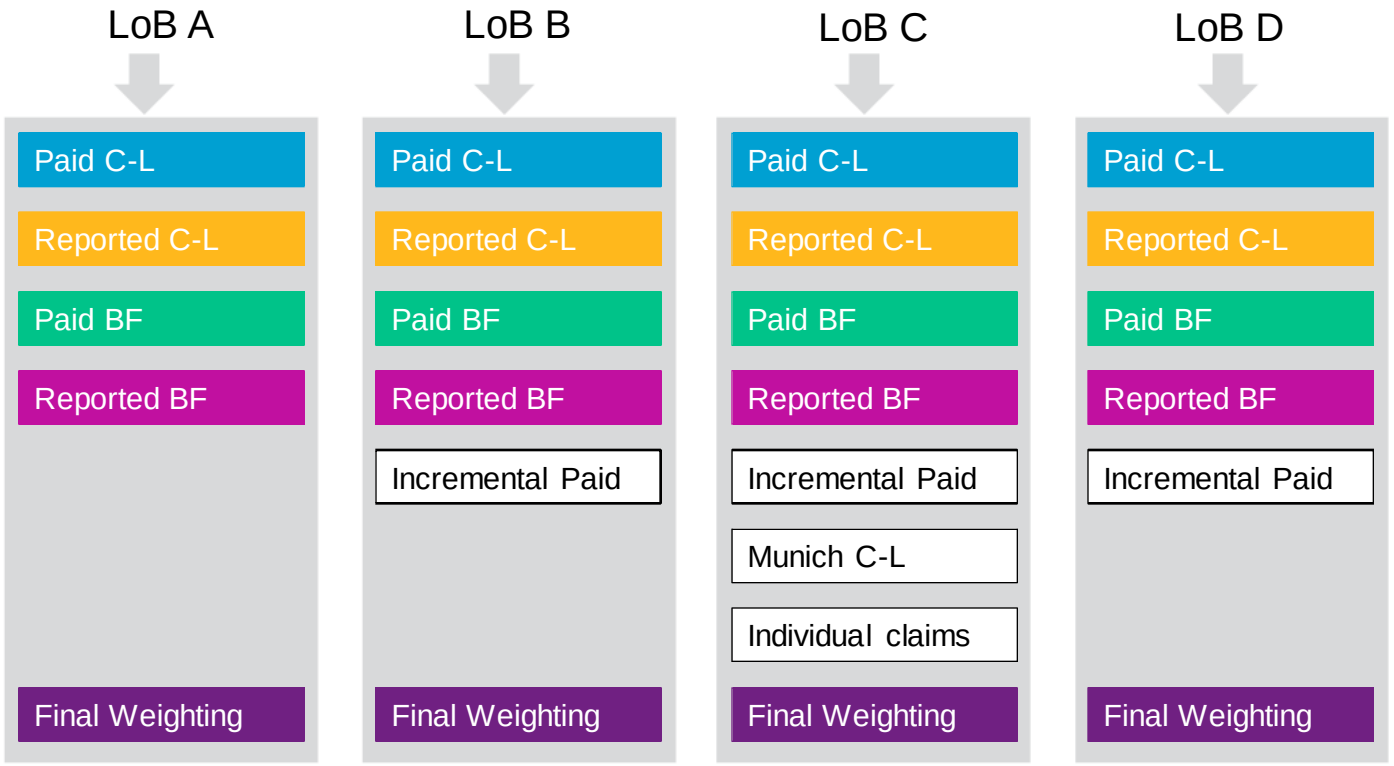
Organize



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

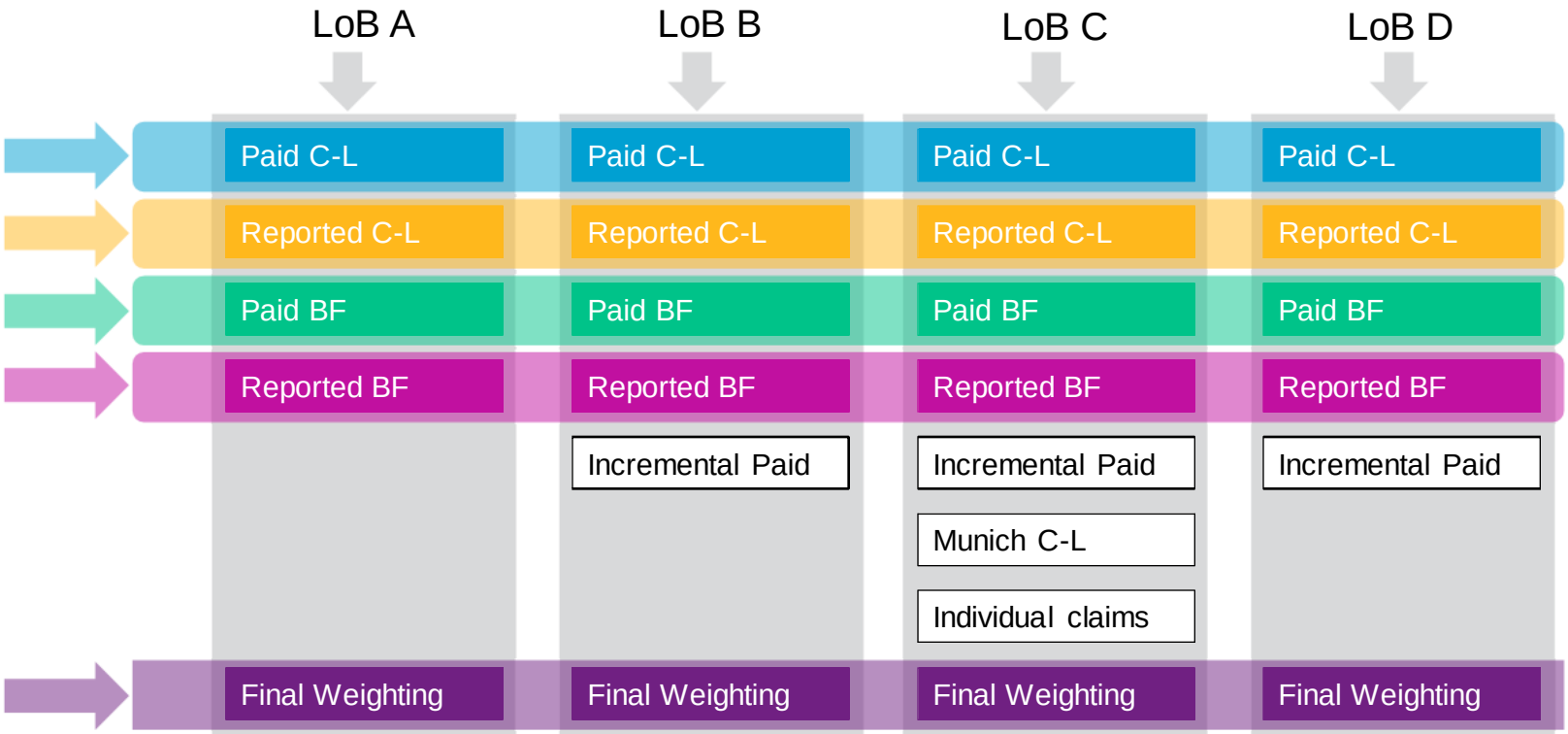
Organize



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

Organize



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

Organize

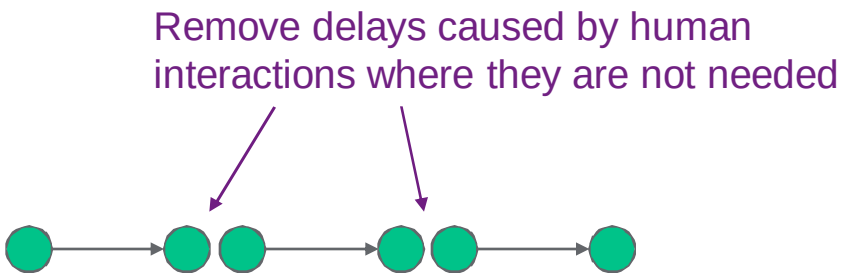
- This can be difficult, as we're not dealing with just badly-organized commodities. Oftentimes, with big companies, we're dealing with complex analyses designed and maintained by highly qualified individuals with strong opinions on their expertise
- Challenging these values and approaches can cause friction
- Important to make clear that we are not working towards the lowest common denominator: rather we are organizing and simplifying where appropriate and allowing more complex customization where it adds value.
- This is far less about being a cost-saving exercise than it is a shift towards enabling more sophisticated analysis

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Automate

Getting started with RPA

Automate



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

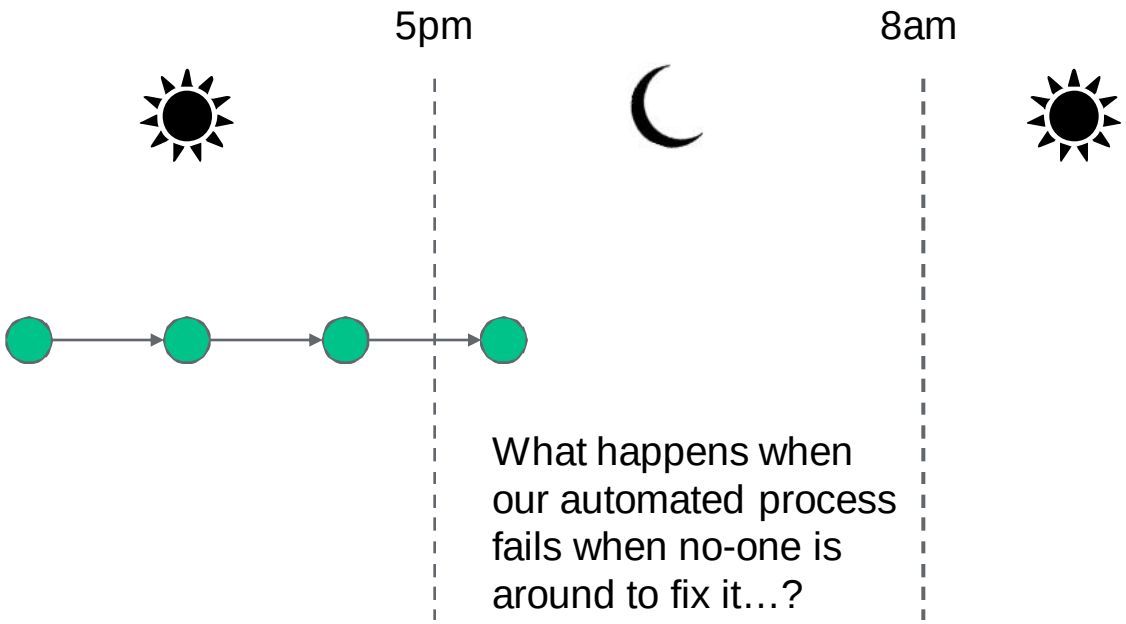
Automate

Remove delays caused by human interactions where they are not needed

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

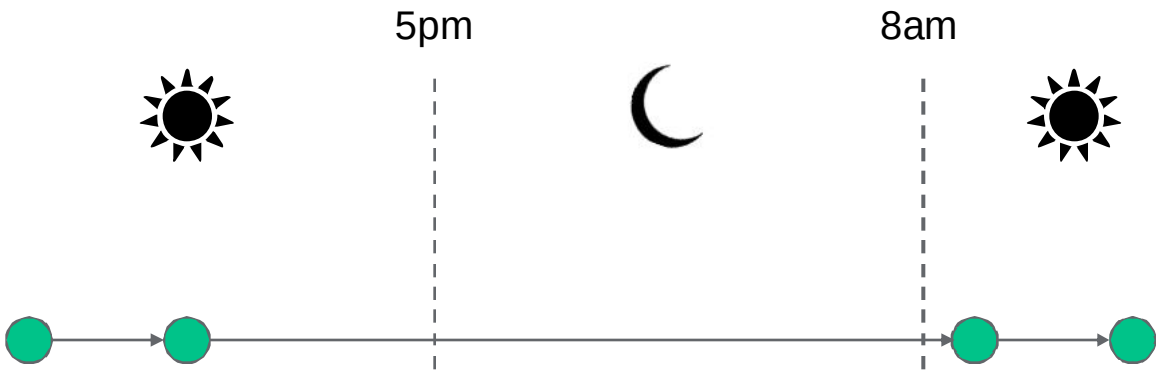
Automate



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

Automate



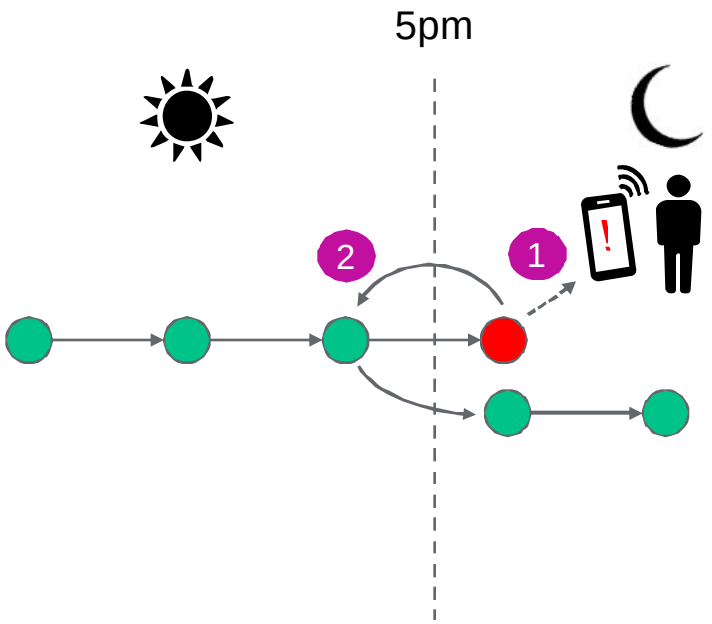
What happens when our automated process fails when no-one is around to fix it…?

…a one hour problem could turn into a 15 hour delay

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

Automate



To avoid this we need:

1. Notifications delivered to stakeholders in process
2. A robust approach to error-catching with step-backs built into our process

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

Automate

Delays caused by human interaction isn't simply a result of the speed at which a human works. It's exacerbated by:

- The length of the working day and their availability
- How attention and focus are affected by long waits
- Whether or not the human even knows something is going wrong

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

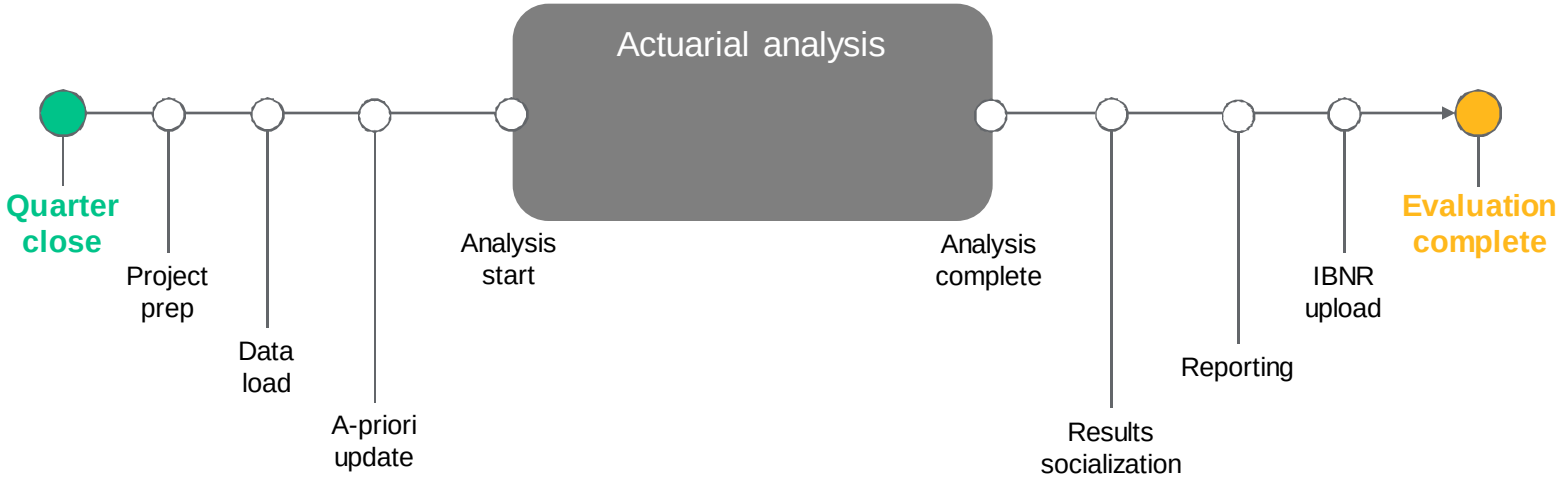
Automate

Classify each activity on the following continuums

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

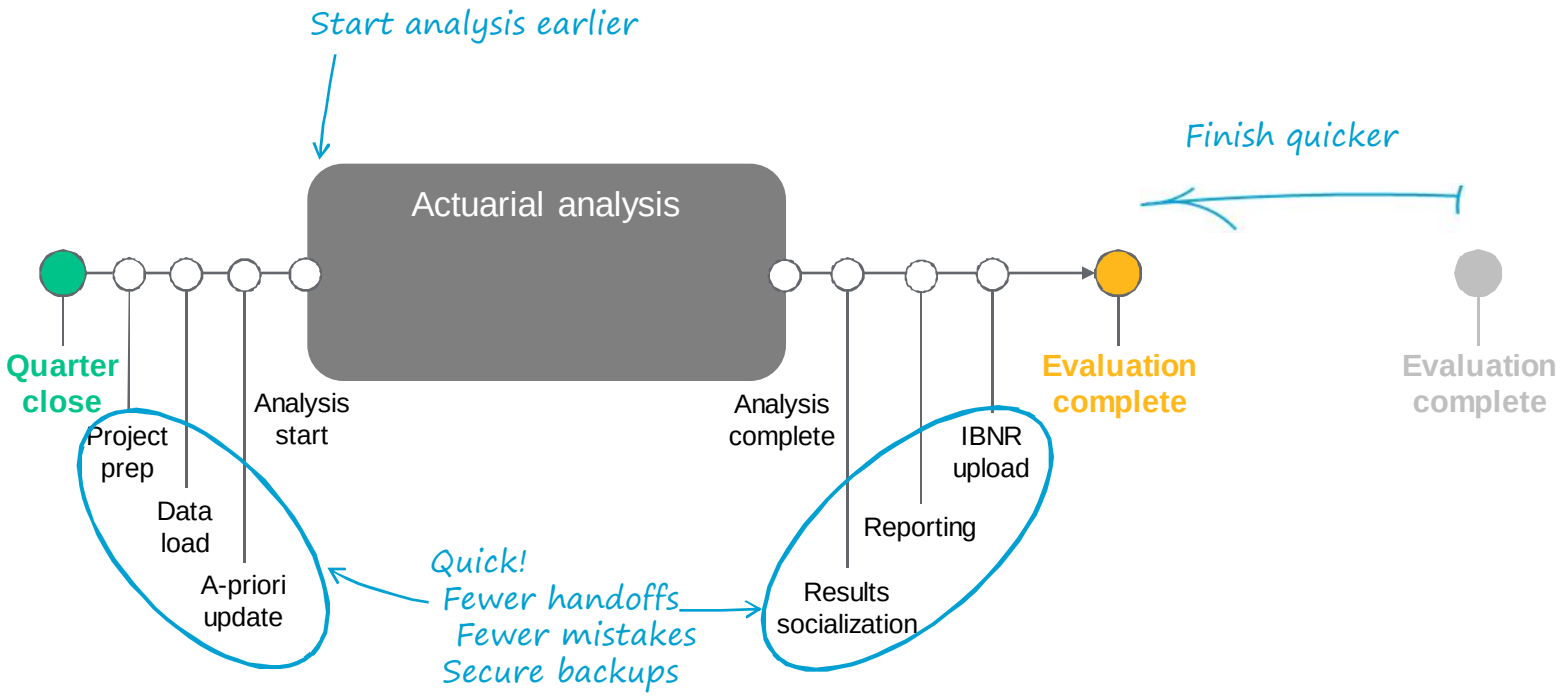
Automate



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

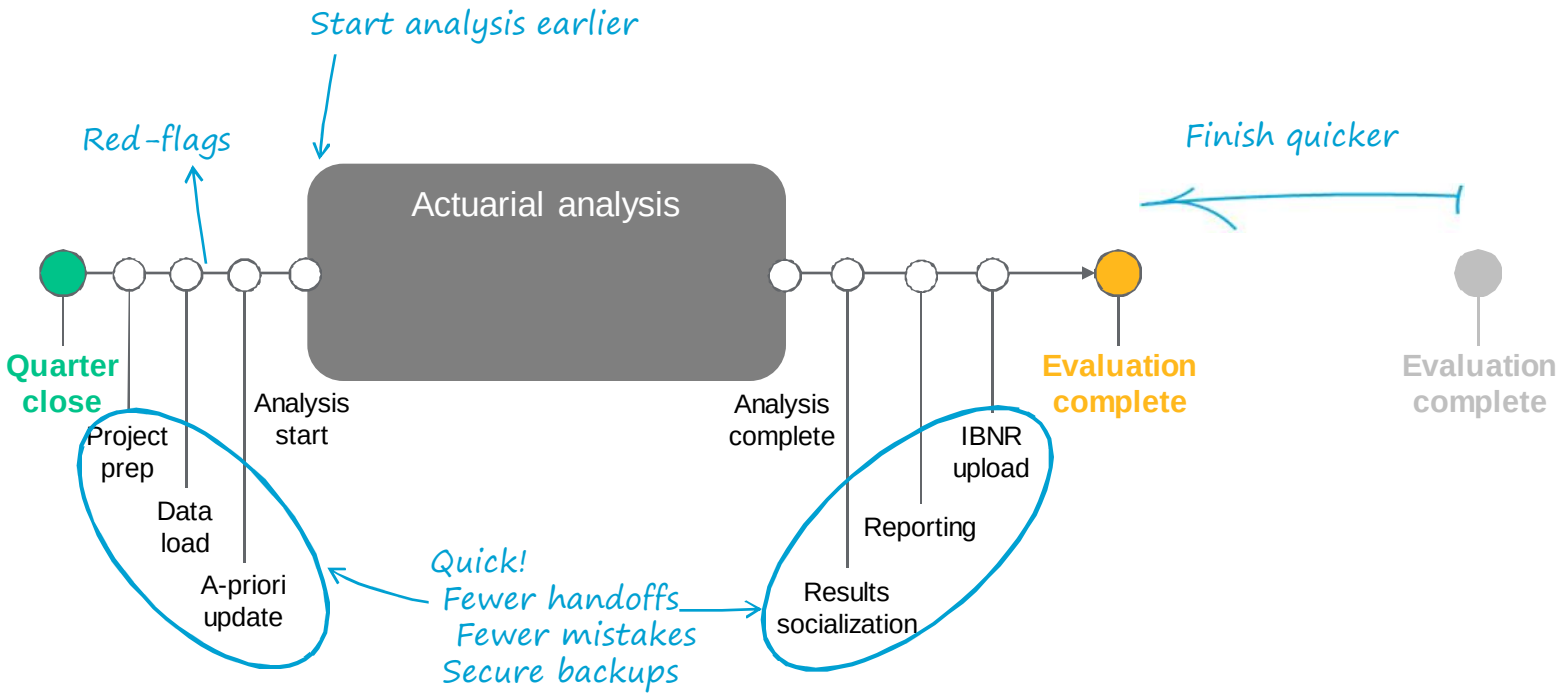
Automate



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

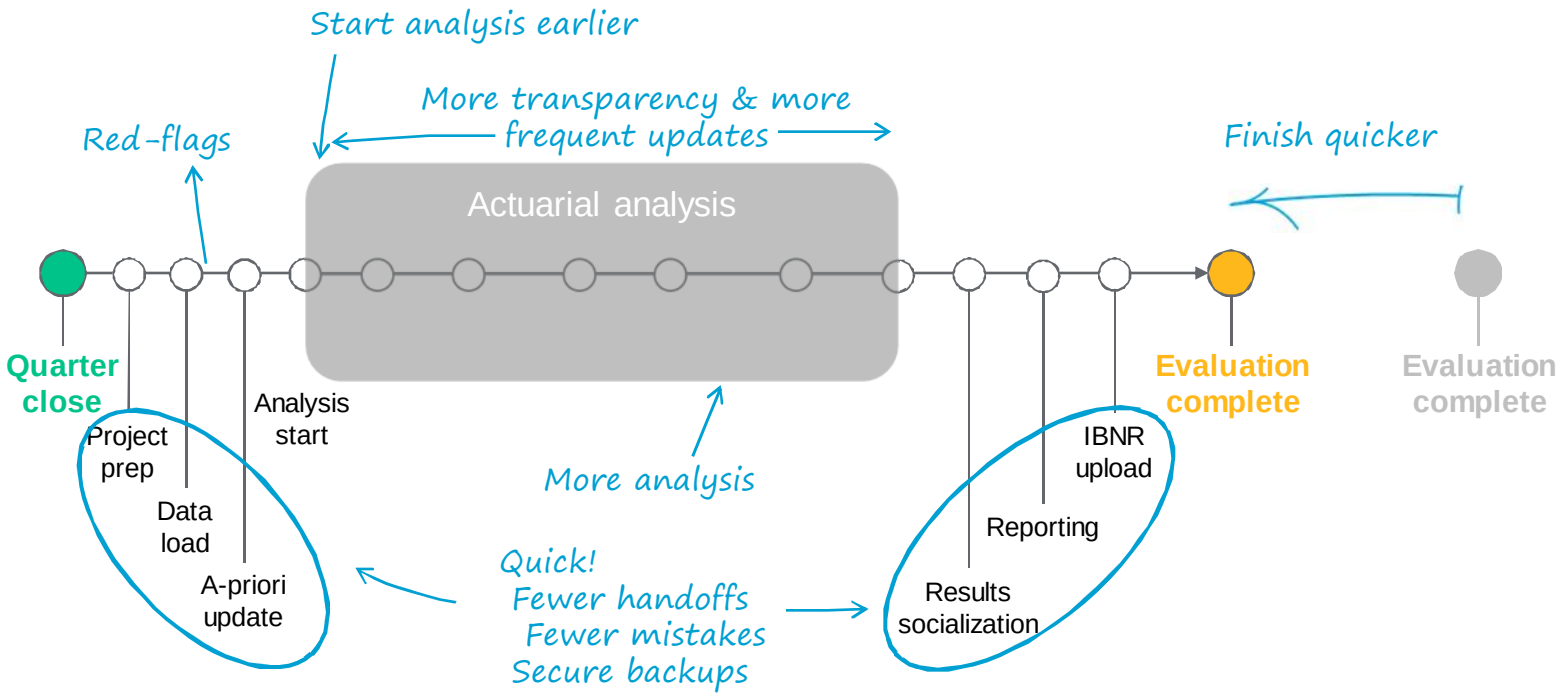
Automate



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

Automate



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

Automate

Use automation to:

- Optimize human interaction: ***Decrease*** human interaction is happening where it isn't required and ***increase*** human interaction where and when it is required
  - What do you wish your actuaries to be doing *less* of?
  - What do you wish them to be doing *more* of?
- Increase analysis, but also think about using it to:
  - Increasing transparency and improve communication
  - Extract more from what you're already doing: your assumptions *are* data points
  - Improve control, saving back-ups and recording change

Control the risk in automated processes:

- What typically could go wrong?
- Who needs to know when it does?
- How do we communicate that?

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

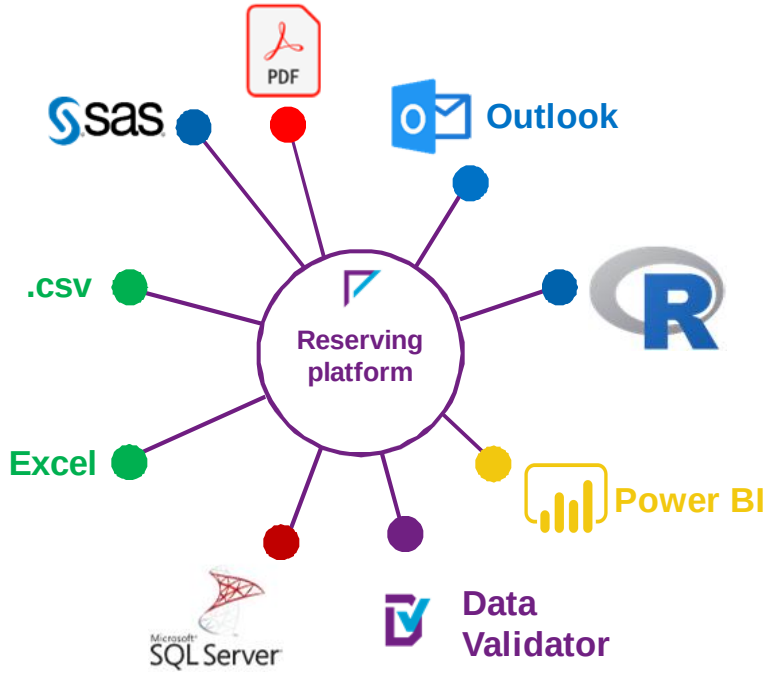
Orchestrate

Getting started with RPA

Orchestrate

- With so many applications required to interact during the reserving process, there is not one tool to rule them all
- While a strong robust reserving platform sits at the heart of all good reserving processes, it never exists in isolation
- Consider the following:
  - Data loading
  - Individual claims analysis
  - Production of reserve summaries

- When done well:
  - The right tool for the job is used
  - Data and information are delivered securely and quickly
  - We record hand-offs and version at key milestones and stakeholders are notified
  - We deliver the information at the right level of detail in the right format



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

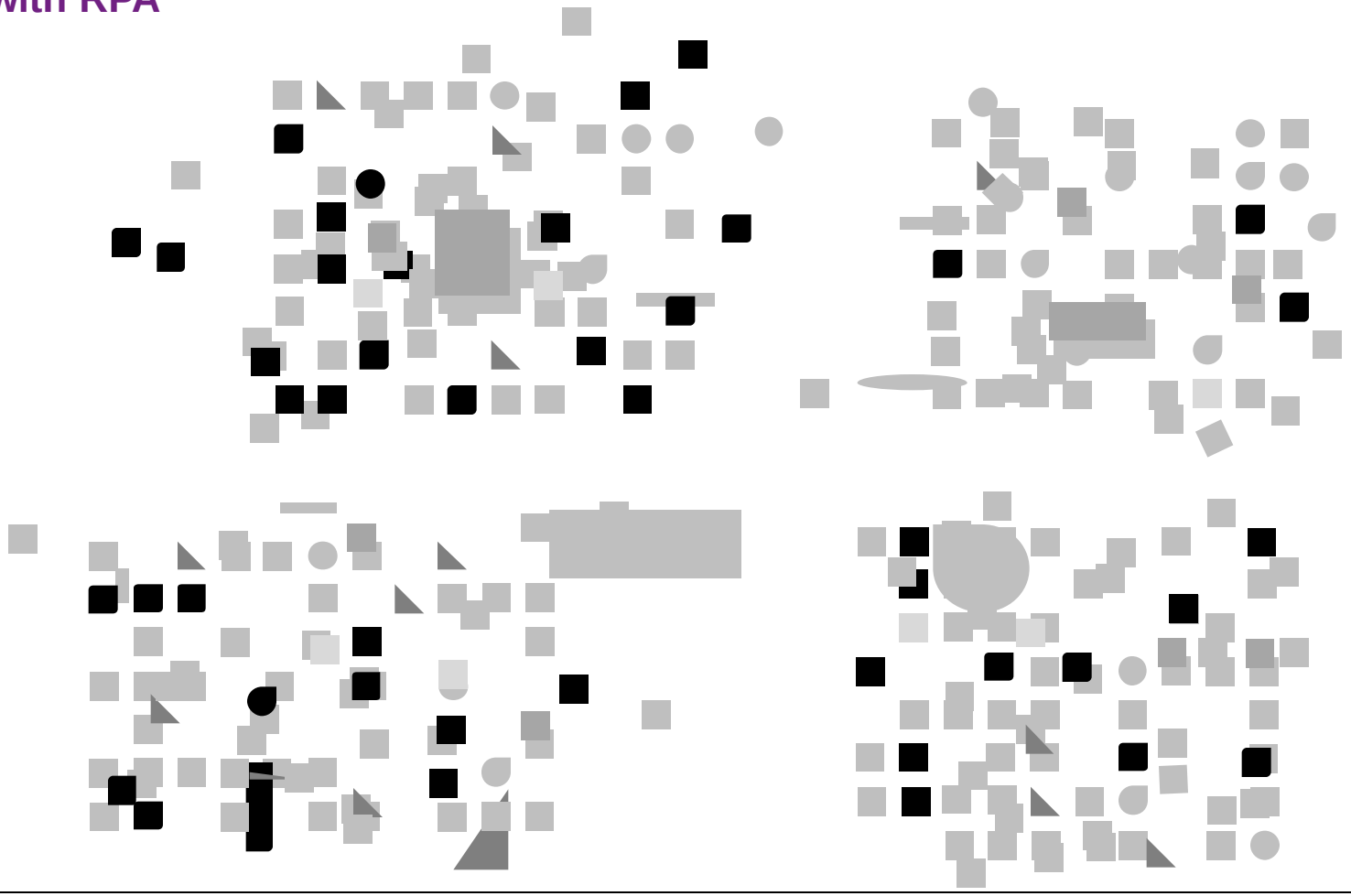
Getting started with RPA

Summary

- Organize and optimize before you expand
- Fewer errors, but they are more tricky to identify and manage when they do occur. Who can fix them? Maintenance going forward.
- The answer is not ‘how do we remove the actuary from the picture?’, but rather:
  - What more information can we get out what we’re already doing?
  - How can we direct the actuary to where their insight matters the most?
  - How can we provide the actuary more tools and resources to do more analysis?
  - How can we better support our ability to communicate what we’re seeing and doing?
  - In other words, ***how can we better increase the confidence in our forecast?***
- Using automation to deploy new approaches such as using individual claims, machine learning, neural nets, etc *is* our future. However, we need to lay a solid foundation upon which to build these analysis
- A good place to start is to expand the value and insight from data and methods that are already available. We can basically bootstrap not just a triangle, but an entire analysis. Test which LoBs are more in need of attention, test which assumptions are most influential, etc.
- Again – the tricky is not to remove the actuary, but to arm them with the best information, delivered at the right time and in the right format.

© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

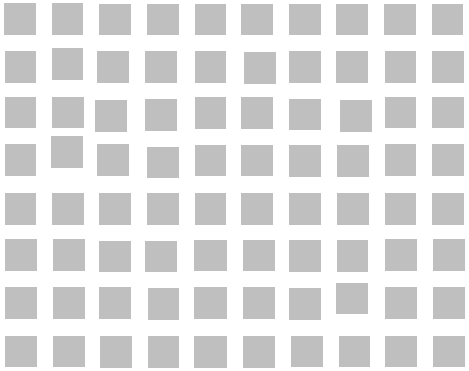


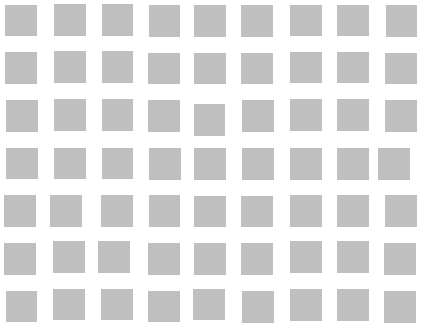
© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

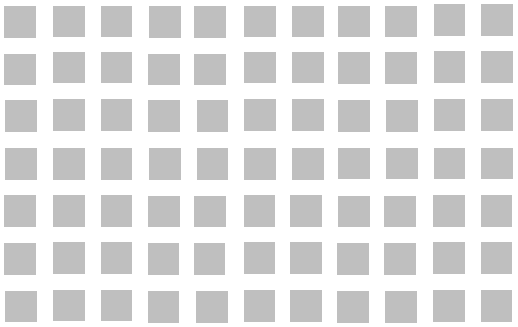
Getting started with RPA

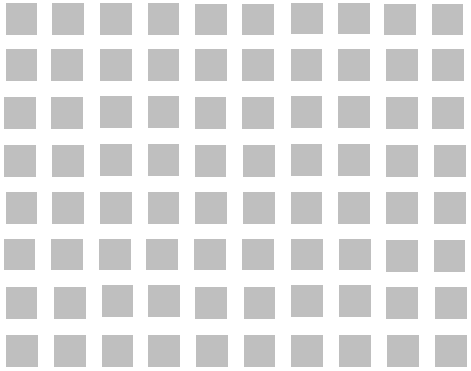
First

Organize *your current analysis*









© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

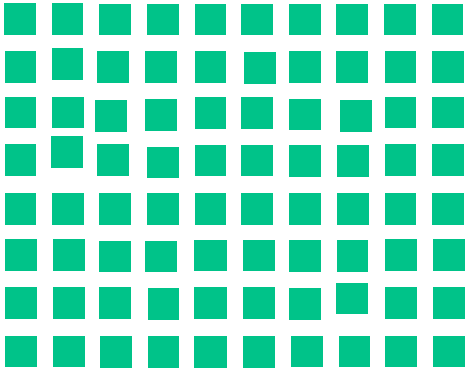
Getting started with RPA

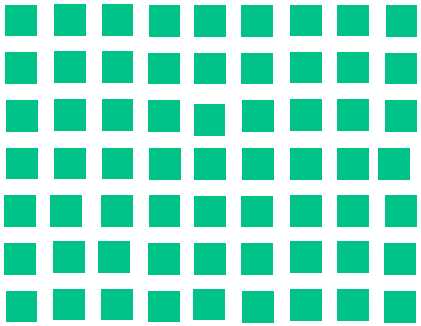
First

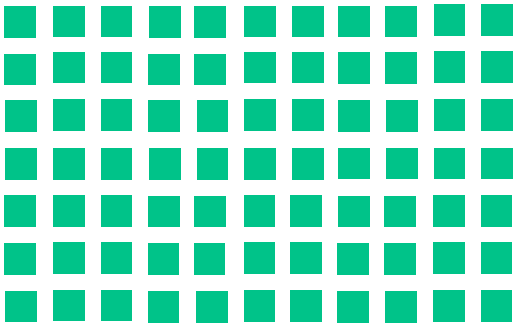
Organize *your current analysis*

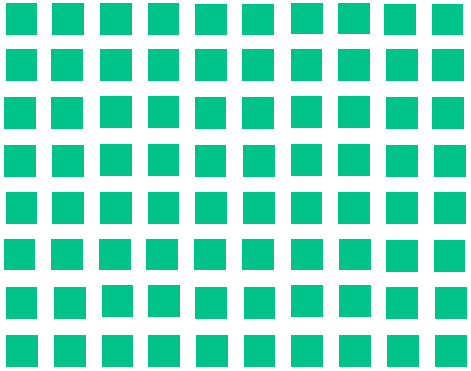
then

Use Automation *to focus your resources*









© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

First

Organize *your current analysis*

then

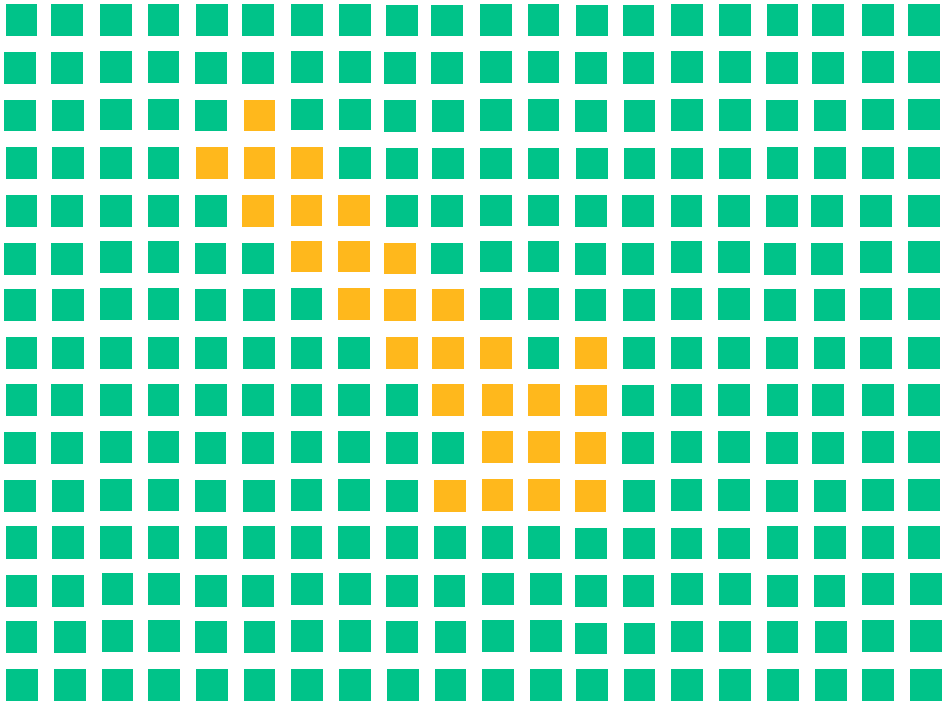
Use Automation *to focus your resources*

and

Orchestrate *your tools*

until

the result is obvious



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.

Getting started with RPA

First

Organize *your current analysis*

then

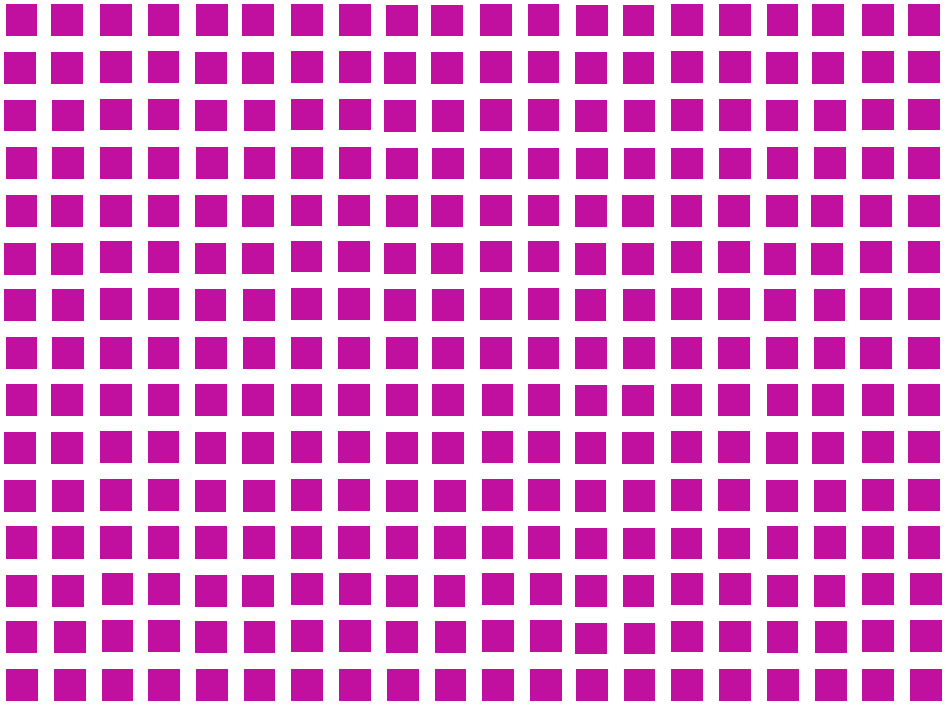
Use Automation *to focus your resources*

and

Orchestrate *your tools*

until

the result is obvious



© 2019 Willis Towers Watson. All rights reserved. Proprietary and Confidential. For Willis Towers Watson and Willis Towers Watson client use only.