ACTUARIAL TRANSFORMATION

State of the industry

November 2023

A business of Marsh McLennan

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WHAT

are we hearing from peers who transform? capabilities are they establishing?

HOW

do we get there?

DEEPER DIVES

On lessons learned from implementation.

RESULTS FROM TRANSFORMATION EFFORTS



SAVE TIME

- 40% shorter month-end
- 100 days of effort automated
- AI-powered data fixes

CREATE CAPABILITIES

- Pricing with industry data sources
- Drill-downs in management reporting
- New “what-if” scenarios and R&D options

GROW YOUR BUSINESS FASTER

- Scale models to new business faster
- Manage computing with on-demand cloud capacity
- Enable new product features

SETTING THE OPERATING MODEL

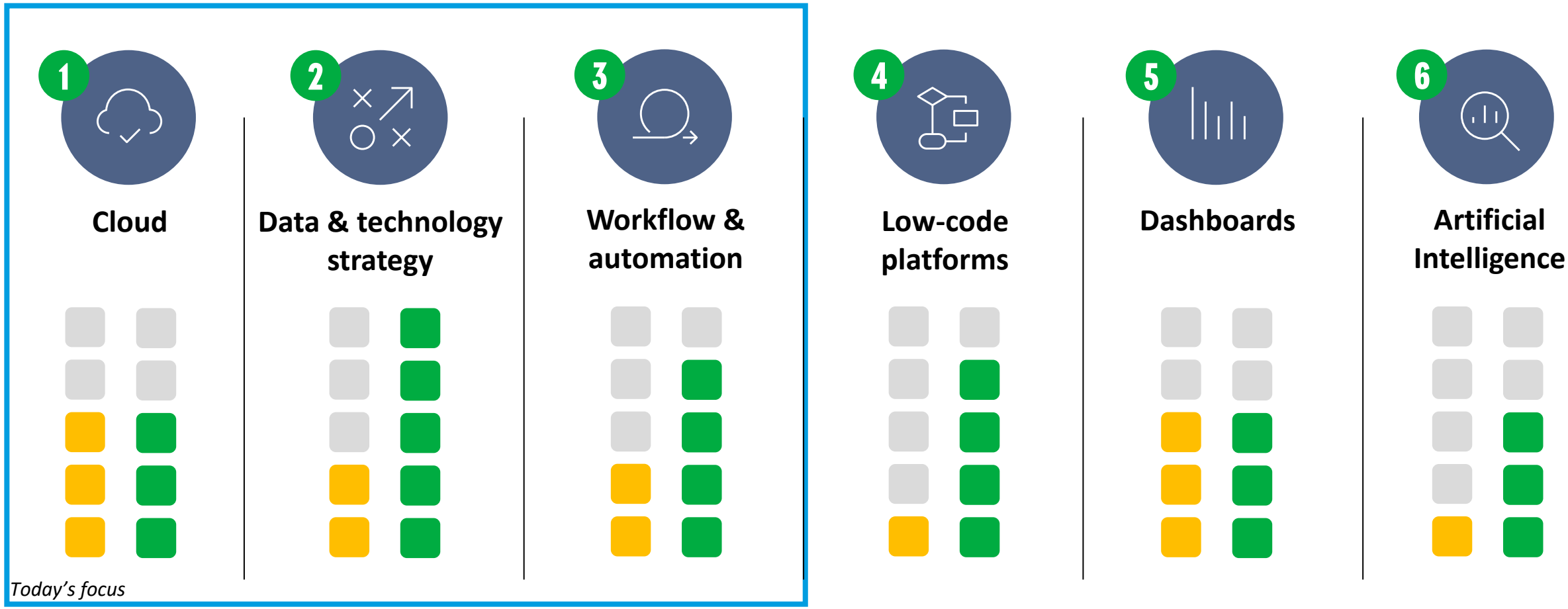
How we collaborate with other functions can have material implications on our talent, resourcing, and the way we work

	Traditional	Hybrid	Strategic
Actuarial interactions *(illustrative)*	*"Can I have this by Thursday?"*	*"What is the best way to deploy this solution?*	*"Let's discuss automated reporting and how to make it happen"*
Organization	Each function executes on specific business goals	Partner around flagpole initiatives	Co-ownership of all initiatives and projects
Delivery Model	Sequential and driven by requirements	Hybrid (waterfall or agile), depending on specific needs	Fully agile and centered around products
Governance	Timelines and budgets based	Milestones and portfolio based	Continuous improvement culture and experimentation is encouraged

Implications

Siloed processes	Shared patterns
High SME dependency	Minimal SME dependency
Many handoffs	Few handoffs
Misaligned roles & responsibilities	Responsibilities aligned with expertise
Unbalanced teams (high number of actuaries)	Well balanced teams
Higher $ wastage	Minimum $ wastage
Low change management risk (status quo)	Significant change management risk

WHAT IS THE CURRENT-STATE MATURITY AND WHAT ARE THE FUTURE-STATE PRIORITIES

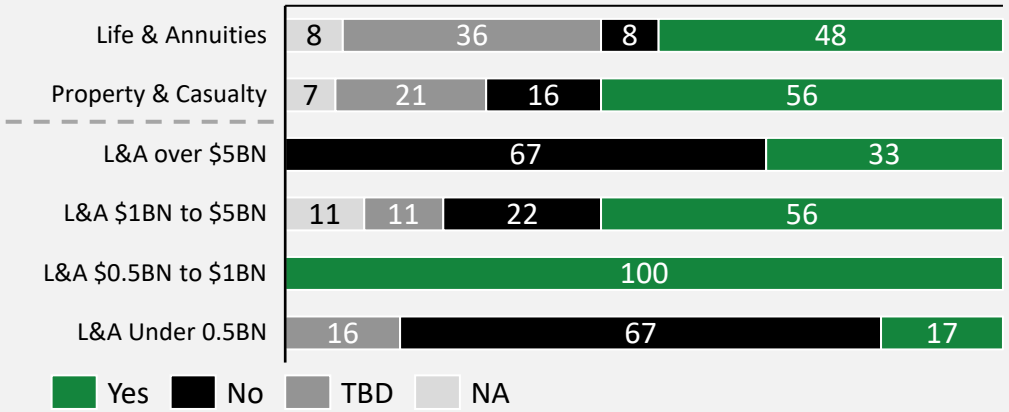


Dashboards are in relatively good shape at a majority of peers, with some starting to focus on cloud and workflows; maturity in no-code platforms and effective data cataloging are still relatively rare

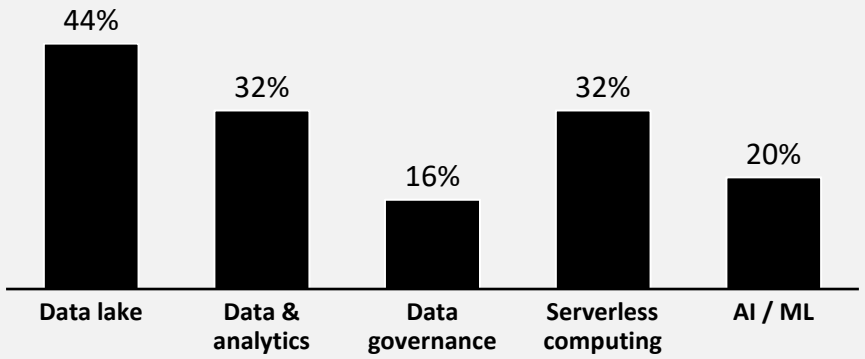
1 CLOUD

Trends

Is moving to the cloud worth it?



Are you using the cloud beyond Infrastructure (L&A insurers)?



Source: Celent research (an Oliver Wyman company)

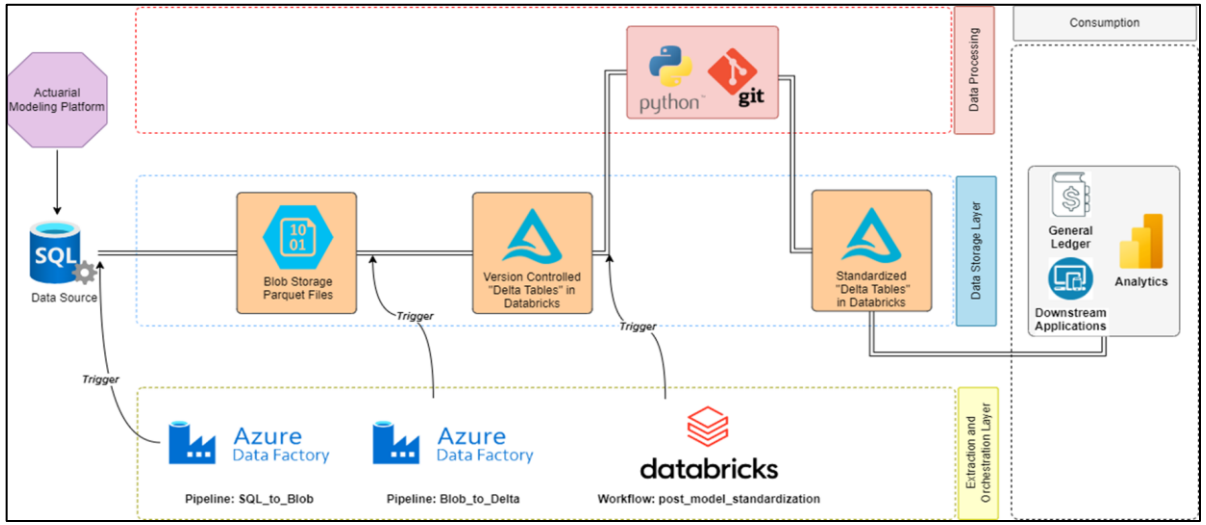
What defines success

- Using the cloud as a platform for integrated services instead of a compute-only usage
- Choose a technology stack aligned with the business-IT operating model (think end-user flexibility vs. control)

Mitigating risks

- Use open-source technology as much as possible to avoid a lock-in into specific services
- Set up environments to comply with internal & jurisdictional policies (data security & privacy)

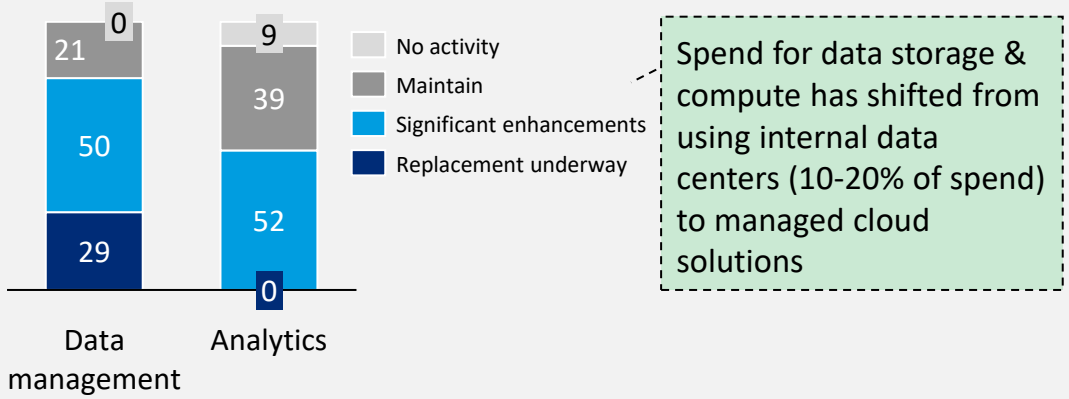
An illustrative cloud-based architecture for a post model processes



2 DATA & TECHNOLOGY STRATEGY

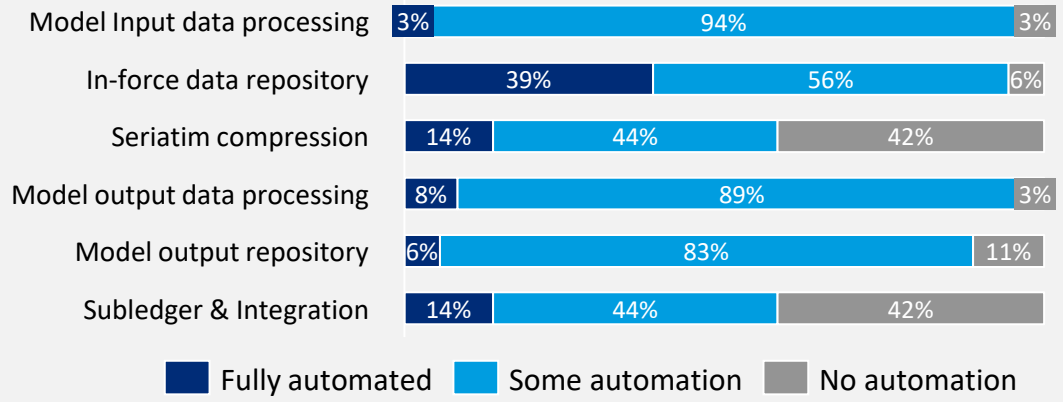
Trends

Life Insurance CIO technology focus (data and analytics)



Spend for data storage & compute has shifted from using internal data centers (10-20% of spend) to managed cloud solutions

Degree of automation in pre and post model data

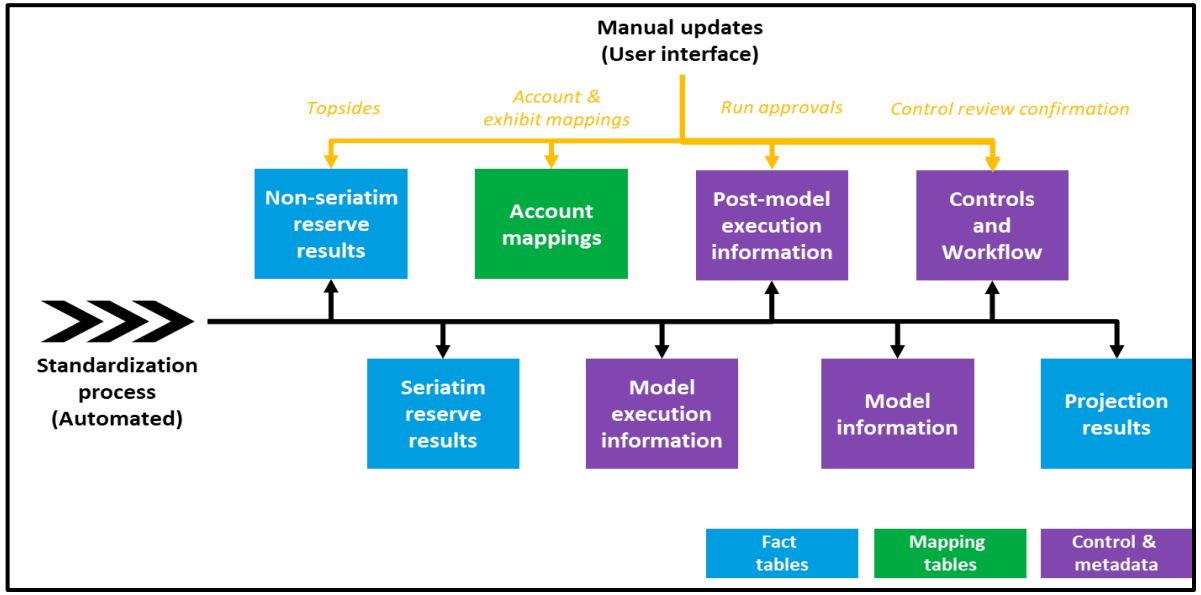


Source: Celent research (an Oliver Wyman company), Oliver Wyman modeling survey

Lessons learned when embarking on transformative data strategies

1	Work back from reporting requirements, often we find upstream implementation fall short of what is actually needed
2	Ask for "more" and "granular" data early from upstream providers to limit risk to changes in downstream needs
3	Business needs to be a key participant in the strategy implementation, avoiding risks to user adoption

An illustrative actuarial data model



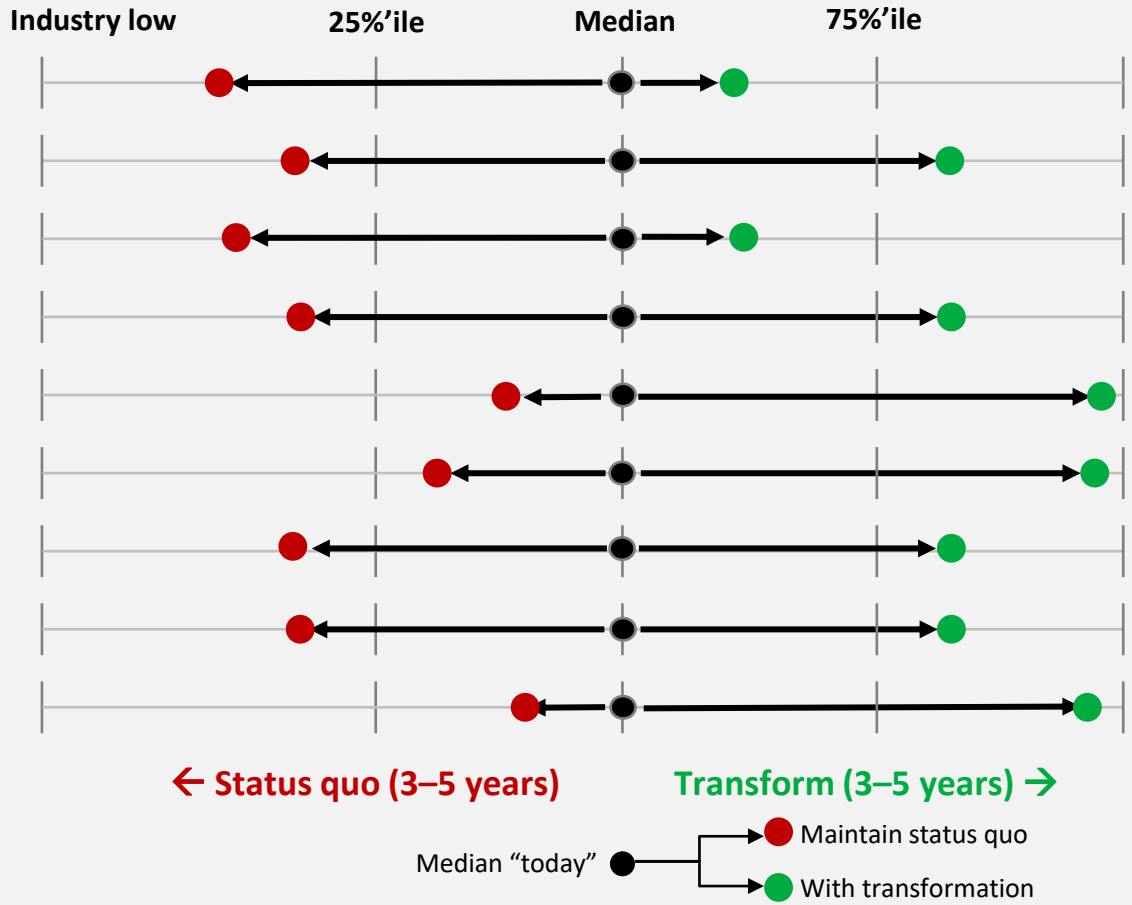
2 DATA & TECHNOLOGY STRATEGY – COMPETITIVE POSITIONING

Several life insurers are embarking on a transformation initiative, generally driven by accounting standard guidelines which will help them move ahead of the industry

Industry competitive positioning
(based on OW maturity model and survey)

Intelligence	1	Centralized data management
	2	Analytical maturity
Speed to market	3	Automated data curation
	4	Seamless data scalability
	5	Change deployment ease
	6	Workflow automation
Data governance	7	Data cataloging
	8	Controls & security
	9	Data traceability

Illustration for 1: A "median" company investing in **centralized data management** will only keep up with competition, not create competitive advantage. Since most peers are investing in centralized data management, not investing (i.e., maintaining status quo) will move the "median" company to the bottom quartile in 3-5 years.



3 WORKFLOW AND AUTOMATION

Trends

Current state

- Until recently, life insurers have had limited automation capabilities to orchestrate workflows for running model, pre & post model processes.
- Actuarial & finance functions have a history of using an incessant amount of Excel and Access DBs to manage all their processes (while using SQL based databases just as a source)

Evolving

- As actuaries move on from Excel & Access, they still need flexibility in the process (such as to adjust, review and approve results)
- Over the past several year's we have seen an evolution from traditional job schedulers towards more **modern workflow management solutions**

Robotic process automation

blueprism
UiPath
AUTOMATION ANYWHERE

Full suite software

IBM
PEGA
bmc Control-M

Open source / cloud based

Apache Airflow
databricks

Low code solutions

alteryx
data iku

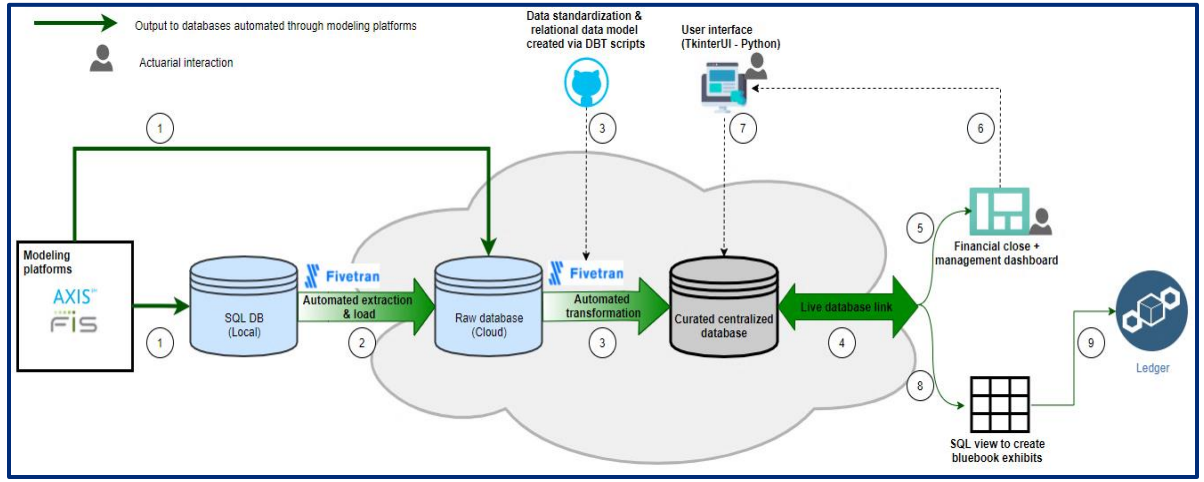
What defines success

- Well-designed orchestration should balance efficiency, user experience, and controls, to provide the most value
- User interface layer (front-end) is generally needed to enable workflow adoption for most business users

Mitigating risks

- User interaction, notifications, and logging functionality are critical to ensure workflow doesn't become a black box overtime
- During iterative development, any error messages should be shared automatically with developers to help understand user patterns and improve quickly

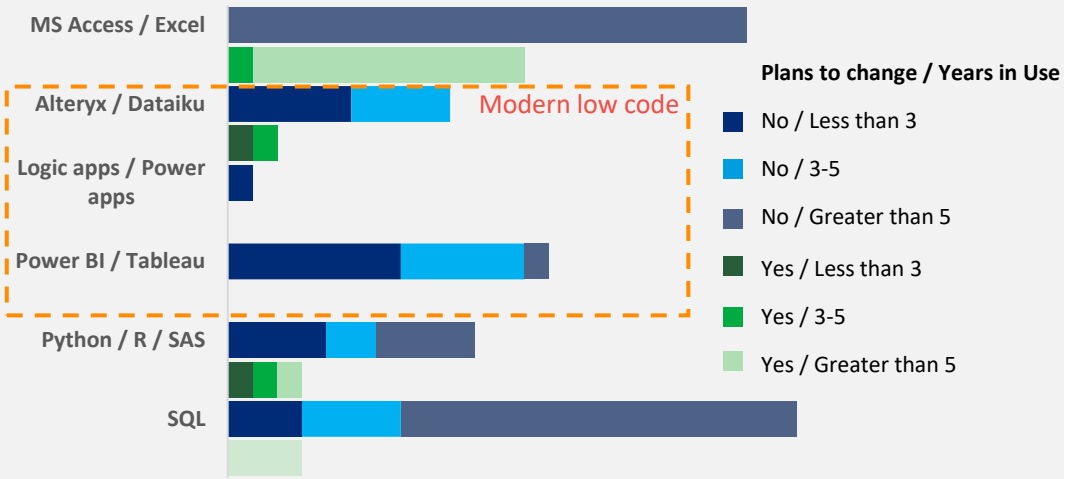
Orchestrating a post model workflow



4 LOW CODE PLATFORMS

Trends

Plans to change software and years in use for pre and post model actuarial processes



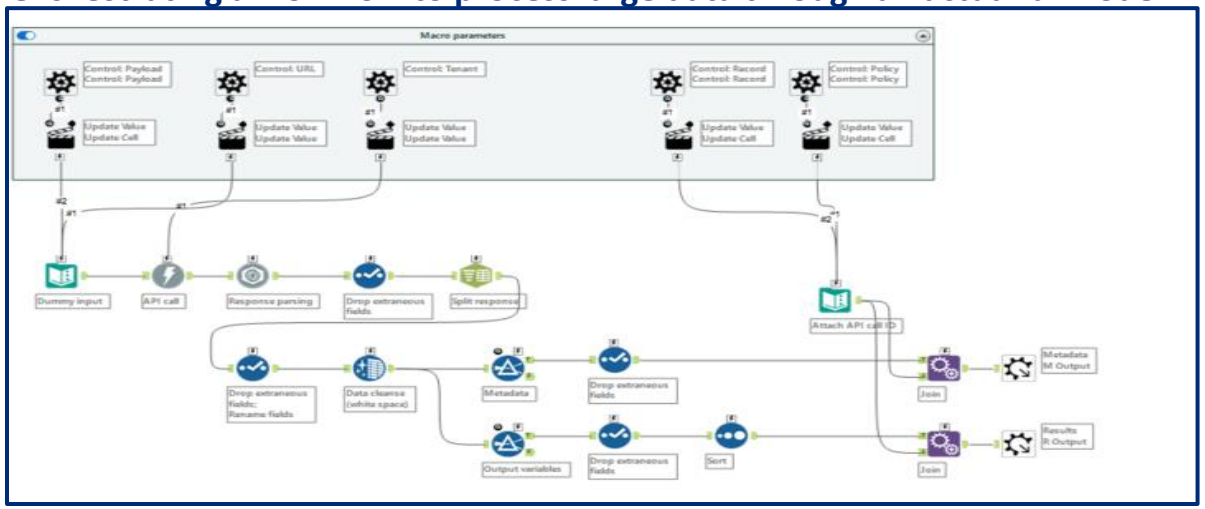
- Actuarial users are gravitating towards low code solutions to enable higher flexibility while managing governance & control for various processes (e.g. valuation, experience studies and pricing)
- Actuarial and IT teams are using low-code solutions to bridge the gap between actuarial business requirements and technical implementation

Source: Oliver Wyman modeling survey

Common pitfalls to avoid

Complexity	• Overcomplicating workflows with redundant steps • Improper modularization leading to cramped single canvas
Governance standards	• Absence of collaboration standards, leading to inconsistent workflows • Lack of clarity on data ownership and change management
User experience	• Cluttered UI makes it difficult to focus on essential tasks • Inadequate error handling leads to substantial investigation effort

Orchestrating a workflow to process large data through an actuarial model



4 LOW CODE PLATFORMS – SOFTWARE STRATEGY

Companies with lower technical expertise or IT support can substantially increase development speed using low code options

Low Code		Code
Higher actuarial ownership	Operating model	Higher IT ownership
More frequent updates		Infrequent changes
Low standardization		High standardization
Software: $100–$5000/user/year **Initial development: Low**	Cost	**Software: Generally open source and free** Initial development: High
Low	Learning curve	Medium
Medium – new libraries and online resource availability varies by provider	Future proofing	**High – extensive libraries and online resources available**
Low – may require starting from scratch	Portability	**High – easier to port across infrastructure**
Version control maintained on server installations	Controls	**Version control via GIT/Azure DevOps etc.**

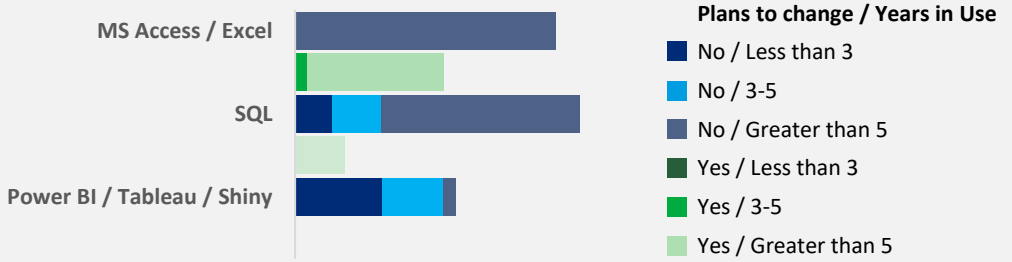
alteryx dataiku DataRobot ← Data → SQL Spark

tableau Qlik ← Analytics → R Shiny plotly, matplotlib

5 DASHBOARDS AND VISUALIZATION

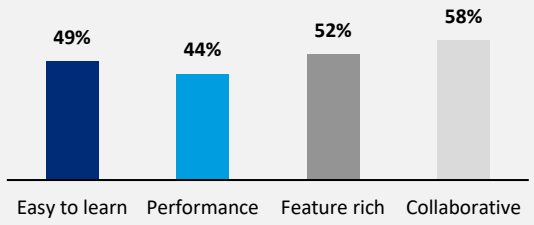
Trends

Plans to change software and years in use for non-model actuarial processes



Analytics and data visualization technology is seeing increased adoption by providing an edge over Excel with better reporting capabilities

Key features actuaries consider important in a dashboarding tool



- Collaboration features enabling team-work such as ability to publish, embed reports in sharepoint, creating shared datasets is key to actuarial analytics

Source: Oliver Wyman modeling survey, Oliver Wyman flash survey at SOA IMPACT 2022

Lessons learned from prior implementations

1	Complex data transformations & standardization should take place in backend databases rather than in the dashboard tool to enable the right IT support model
2	Matured reporting processes where data needs to be viewed and analyzed via multiple dimensions make good candidates for data visualization exercise
3	A dual focus on front-end development (what end users see) and back-end development (i.e., data model within the tool) is required to create dashboards that will more easily scale to user needs in the future

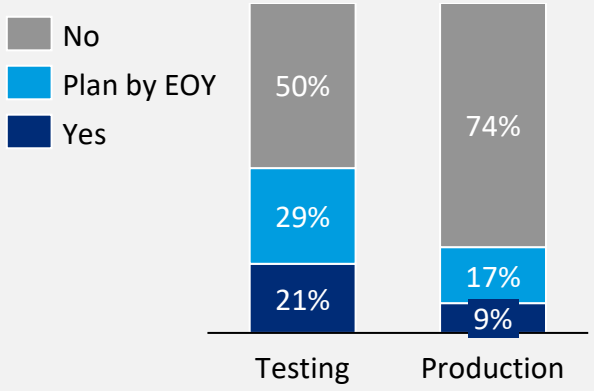
Illustrative roll-forward analysis dashboard

6 ARTIFICIAL INTELLIGENCE

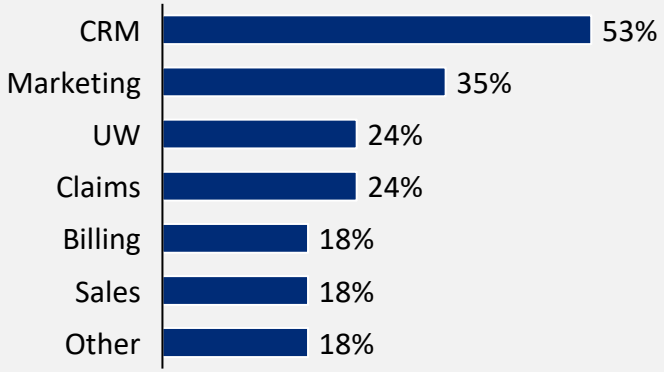
Generative AI solutions represent a new transformation and adoption challenge for a range of reasons

Trends

US insurers developing Gen AI solutions in testing and production environments

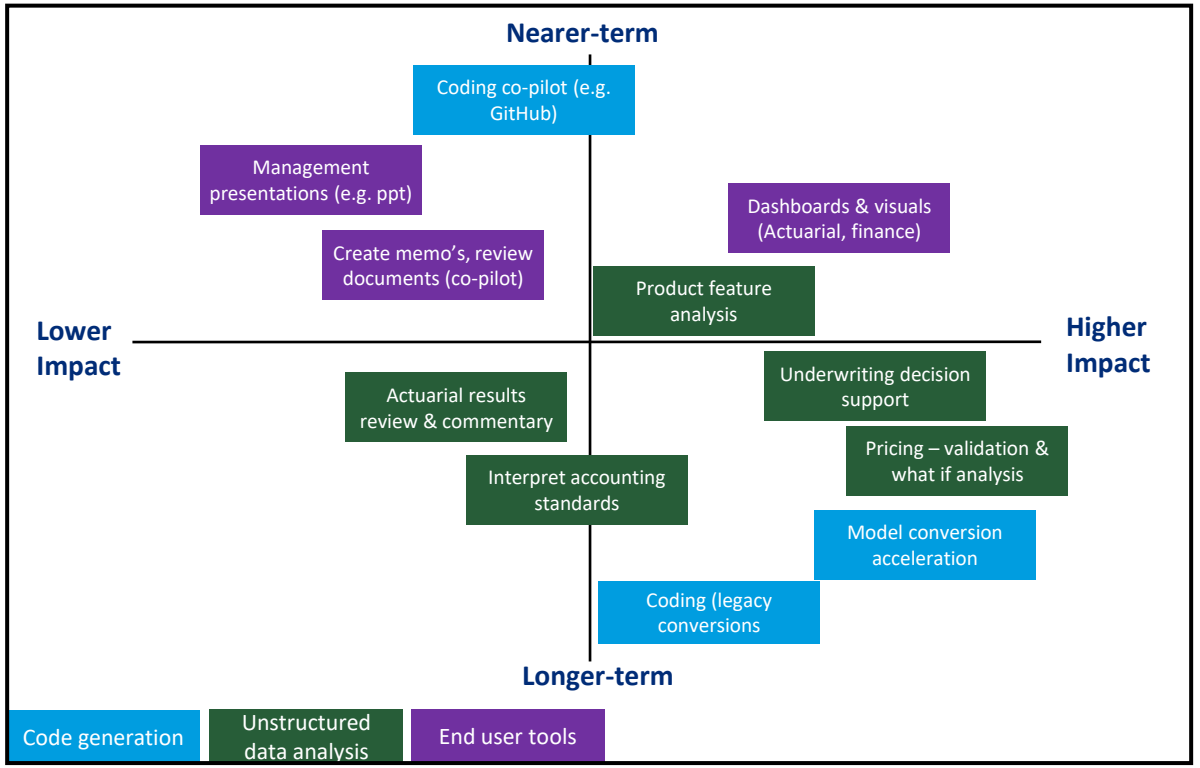


Where is the investment being made?



- By year-end, 50% of all and 85%+ of large insurers will have tested Gen-AI solutions. 25% will have solutions in production
- Many large players have released beta GPT / Copilot solutions
- Focus is on experimenting, with major compliance, privacy and technology considerations yet to be resolved

Impact vs time to implementation *(illustrative actuarial / finance examples)*



To succeed, we think you should

1. Focus on business value by working from specific problems / needs back
2. Take risks into account – AI holds uncertainties and is dynamically evolving
3. Engage the organization to gradually build conviction and engagement – all functions, all levels

Source: Celent research (an Oliver Wyman company)

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