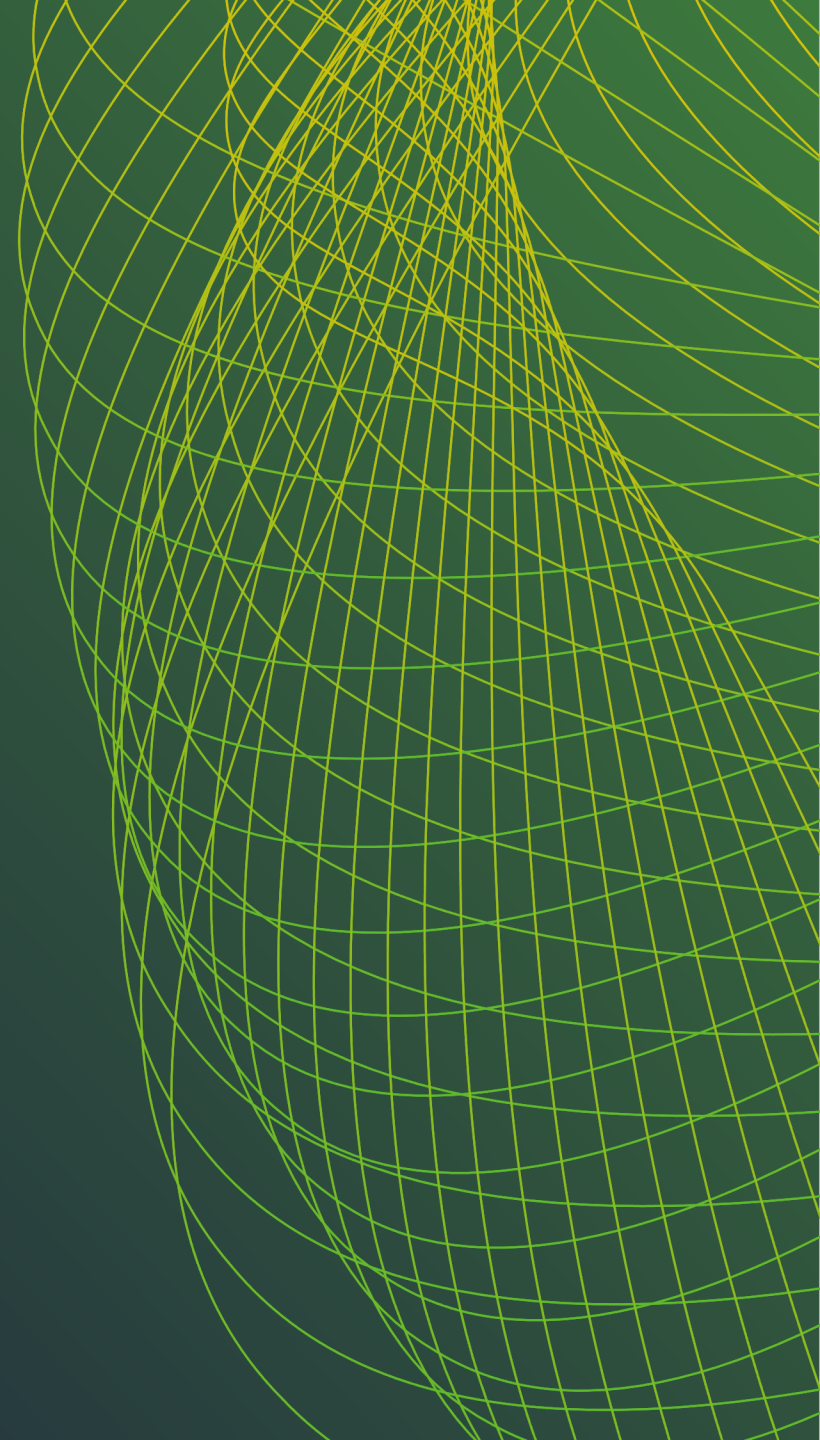




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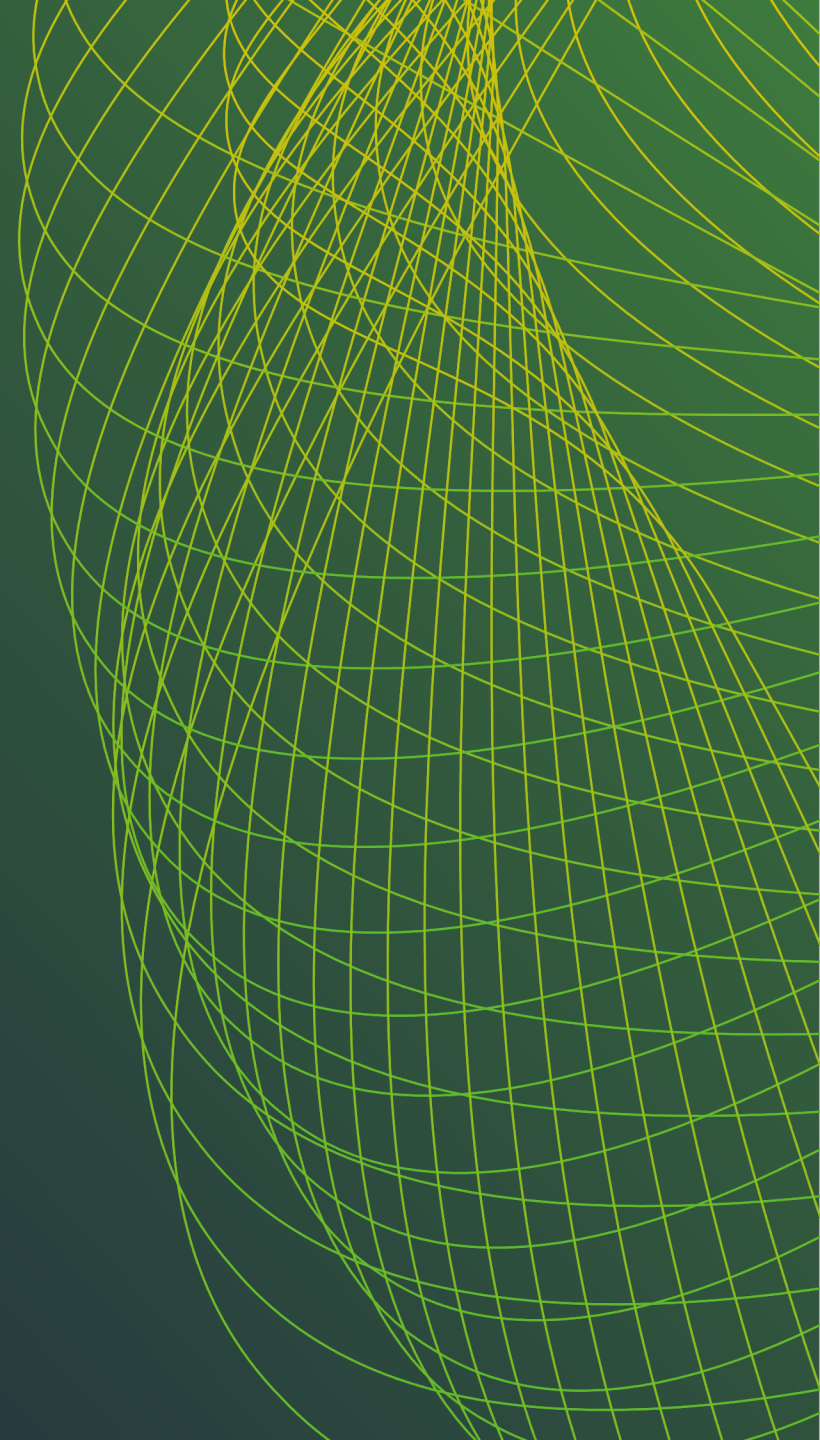
# Driving innovation in Insurance with data analytics at Sun Life Financial

**David Atkinson**

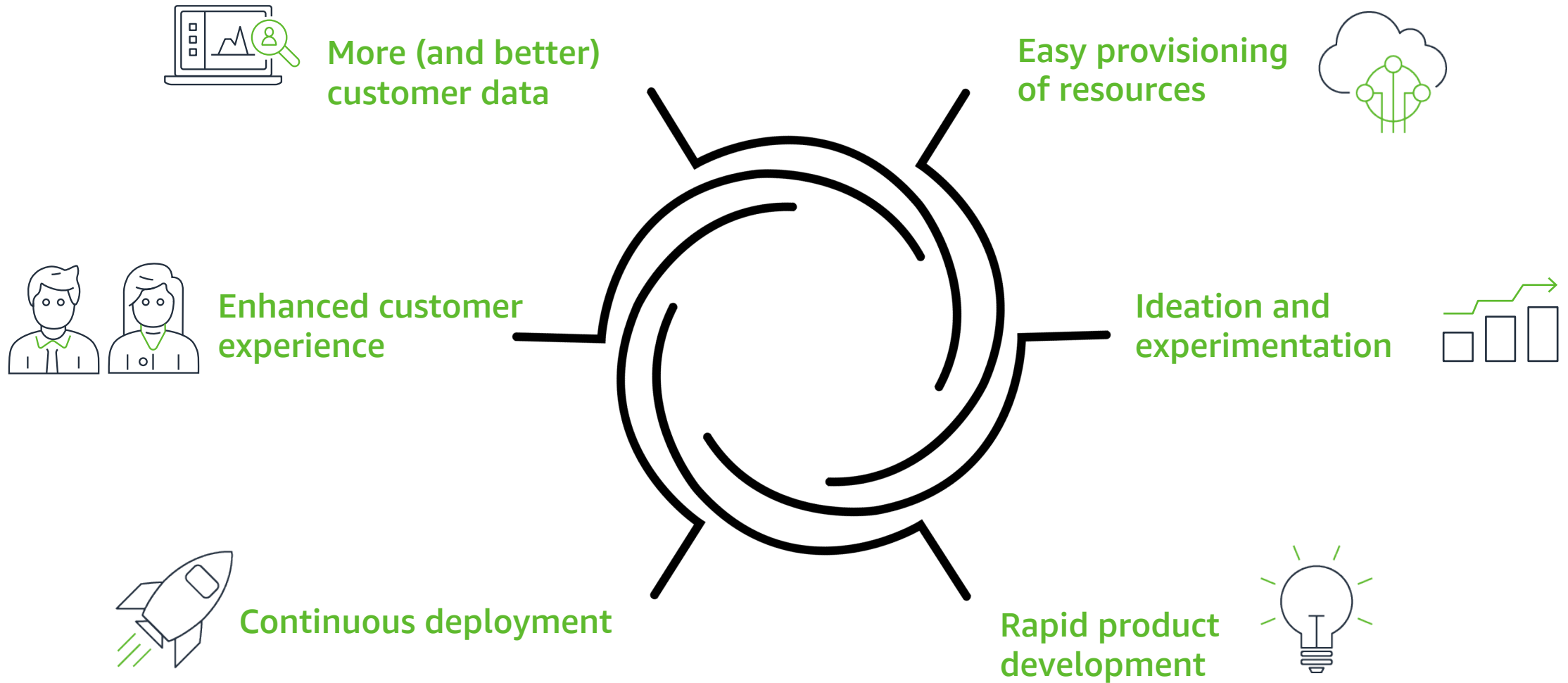
Sun Life Financial  
VP, Data & Analytics

**Jayme Hart**

AWS  
Industry Specialist, Insurance



# Across the insurance industry, AWS is enabling agility



# Insurance carriers are a data-driven financial services business

## Customer Experience



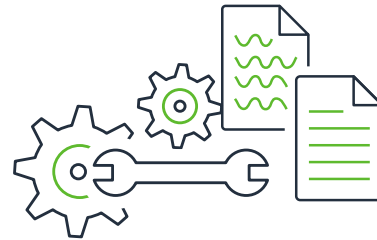
Carriers collect information from customers or agents about the insurable assets

## Underwriting & Pricing



Rating and pricing compares customers against predefined rating models

## Policy Administration



New business and renewals leverage data for risk assessment and loss run analysis and enable straight-through processing

## Claims & Redemptions



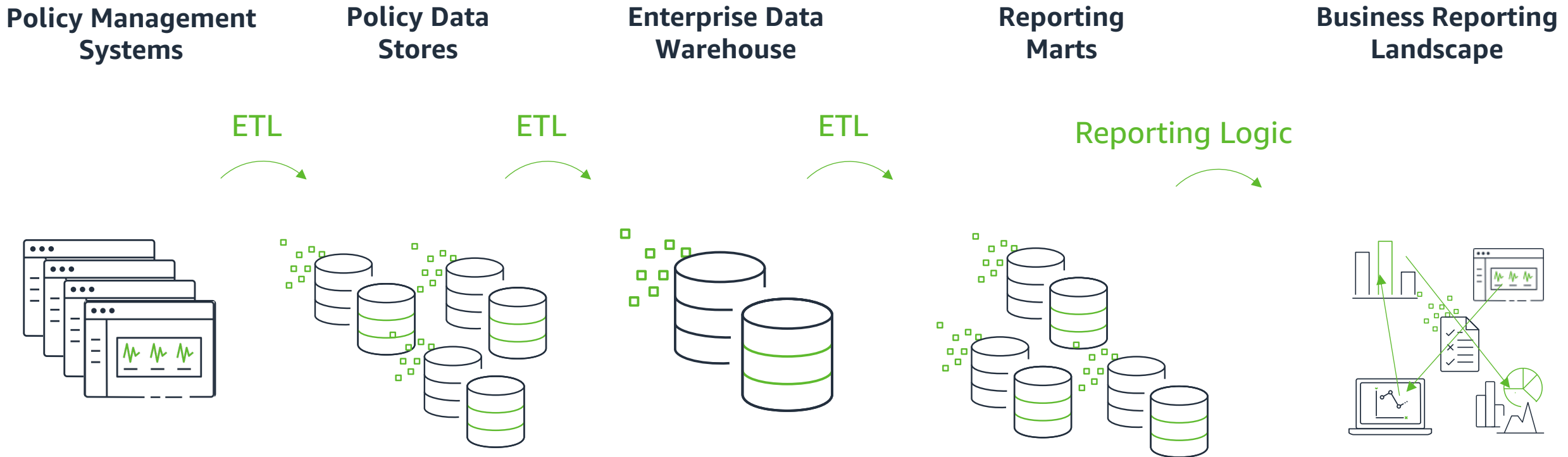
Adjusters collect FNOL information and pay claims based on losses

## Risk & Actuarial Modeling



Actuaries create pricing models, calculate IBNR, and set reserve requirements

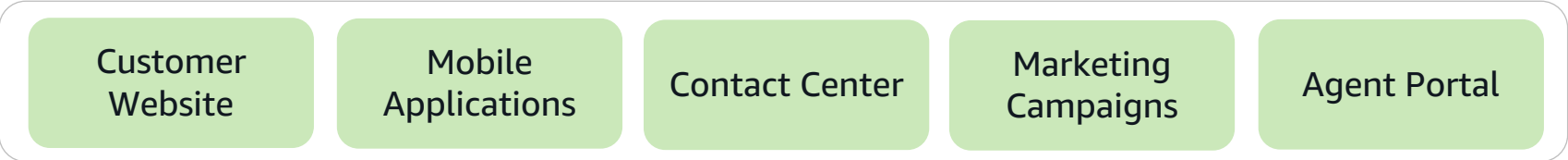
# Legacy data technology often hinders insight-driven analytics



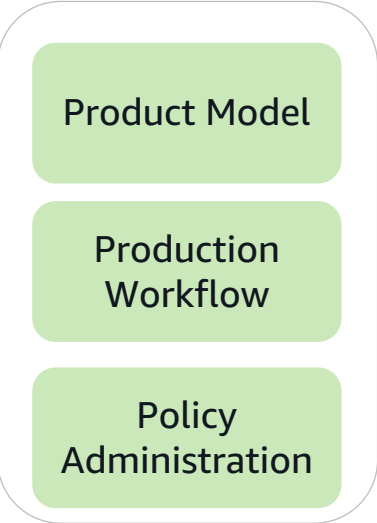
Traditional ETL and relational data models have created a data environment that is difficult to maintain, and the resultant technical debt presents a significant barrier to change and innovation.

# AWS provides the data and analytics foundation for insurance carriers to enable digital innovation

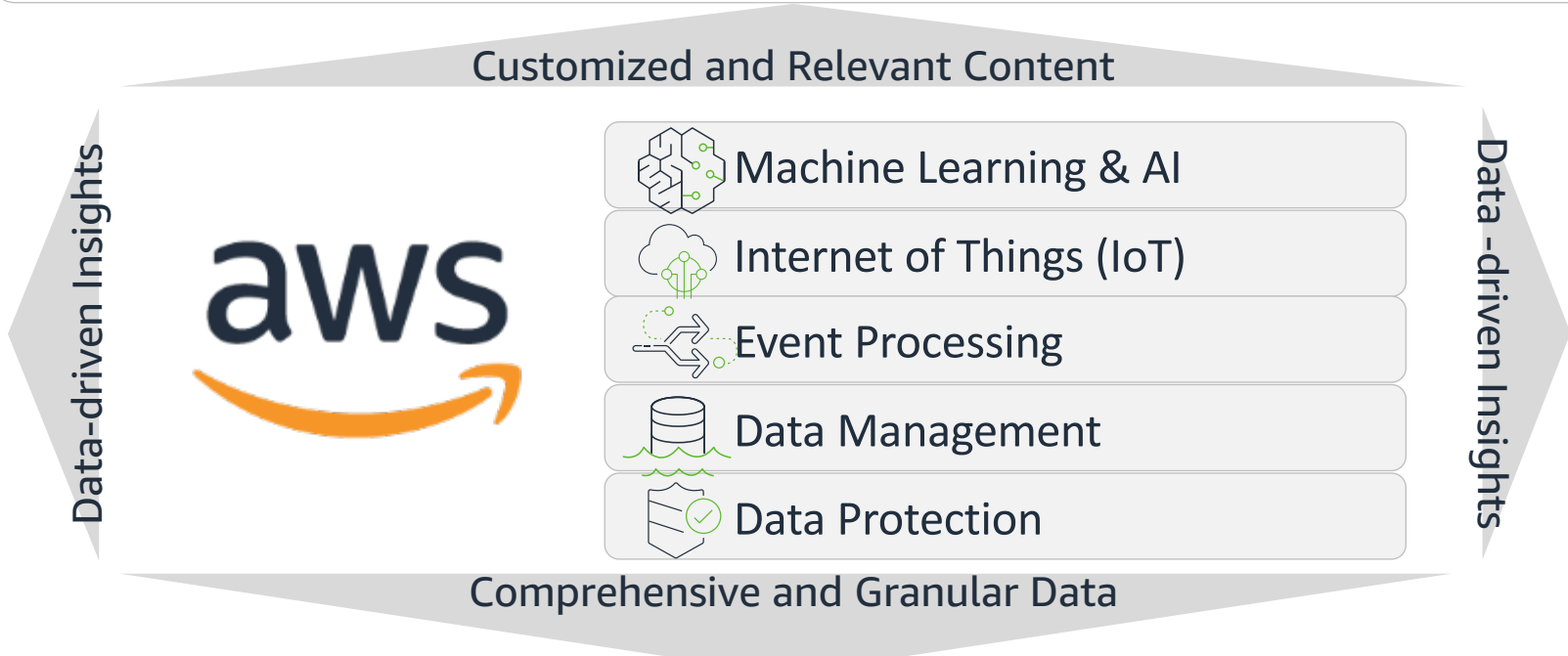
## Customer and Agent Platforms



## Underwriting



## Claims



## Finance and Risk Management Platforms



# Data lakes built on Amazon S3 provide the foundation for better record management, advanced analytics, and innovation through data science

**Structured Data**

Policy Admin, CRM, Claims Admin

**Semi-structured Data**

Mobile, Social, Sensors, Documents

**Unstructured Data**

Phone calls, Images, Videos, Email

**Batch Load**

Amazon EMR, AWS Glue

**Real Time**

Amazon Kinesis, Amazon MSK

**Universal Data Lake**

Amazon S3

Bronze Raw Data | Silver Validated Data | Gold Cleansed Data

**Records**

Amazon DocumentDB, Amazon DynamoDB

**Analytics**

Amazon Redshift, Amazon EMR, Amazon Athena, Amazon QuickSight

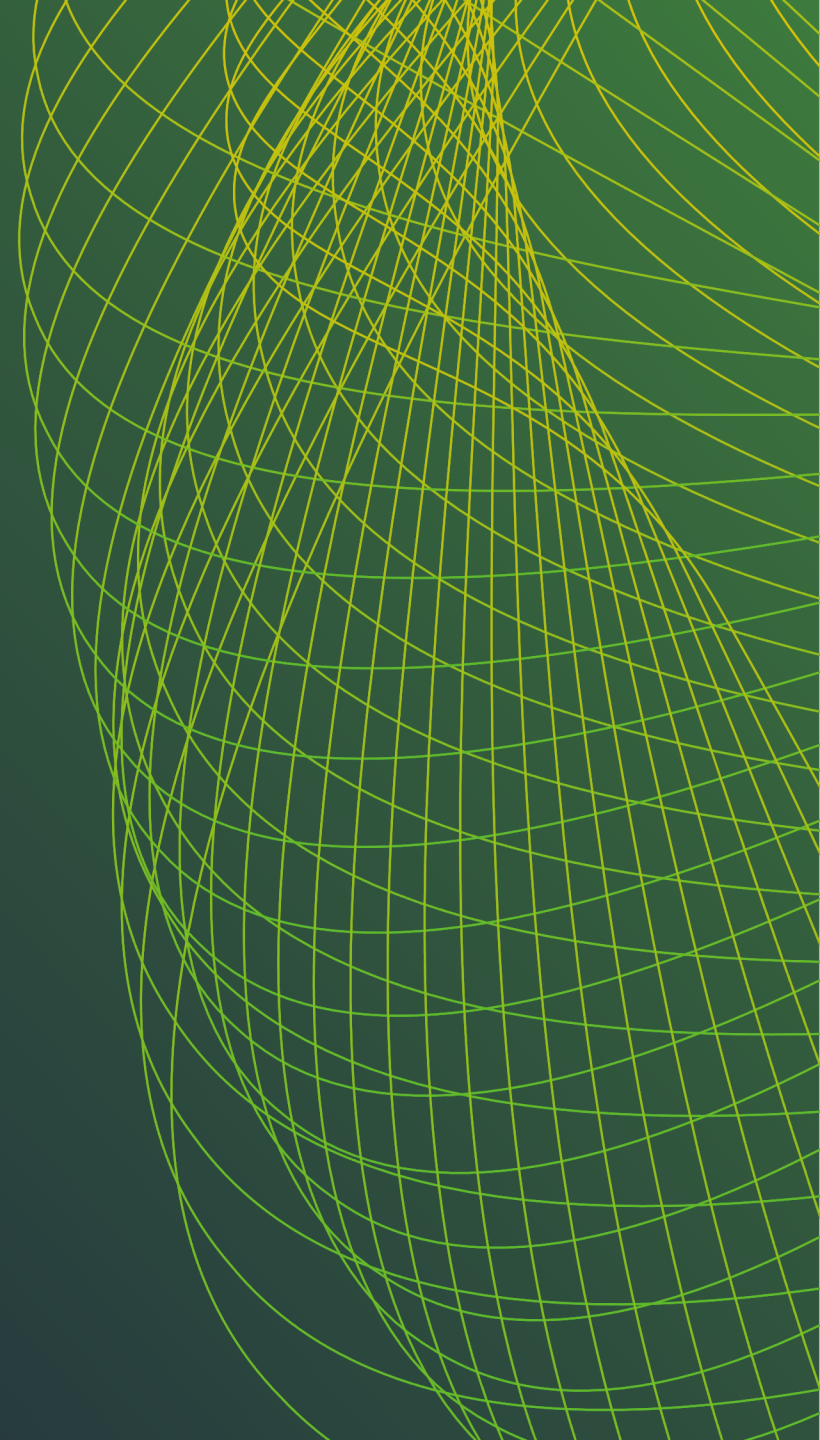
**Data science**

Amazon SageMaker



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Next:  
David Atkinson  
Sun Life Financial





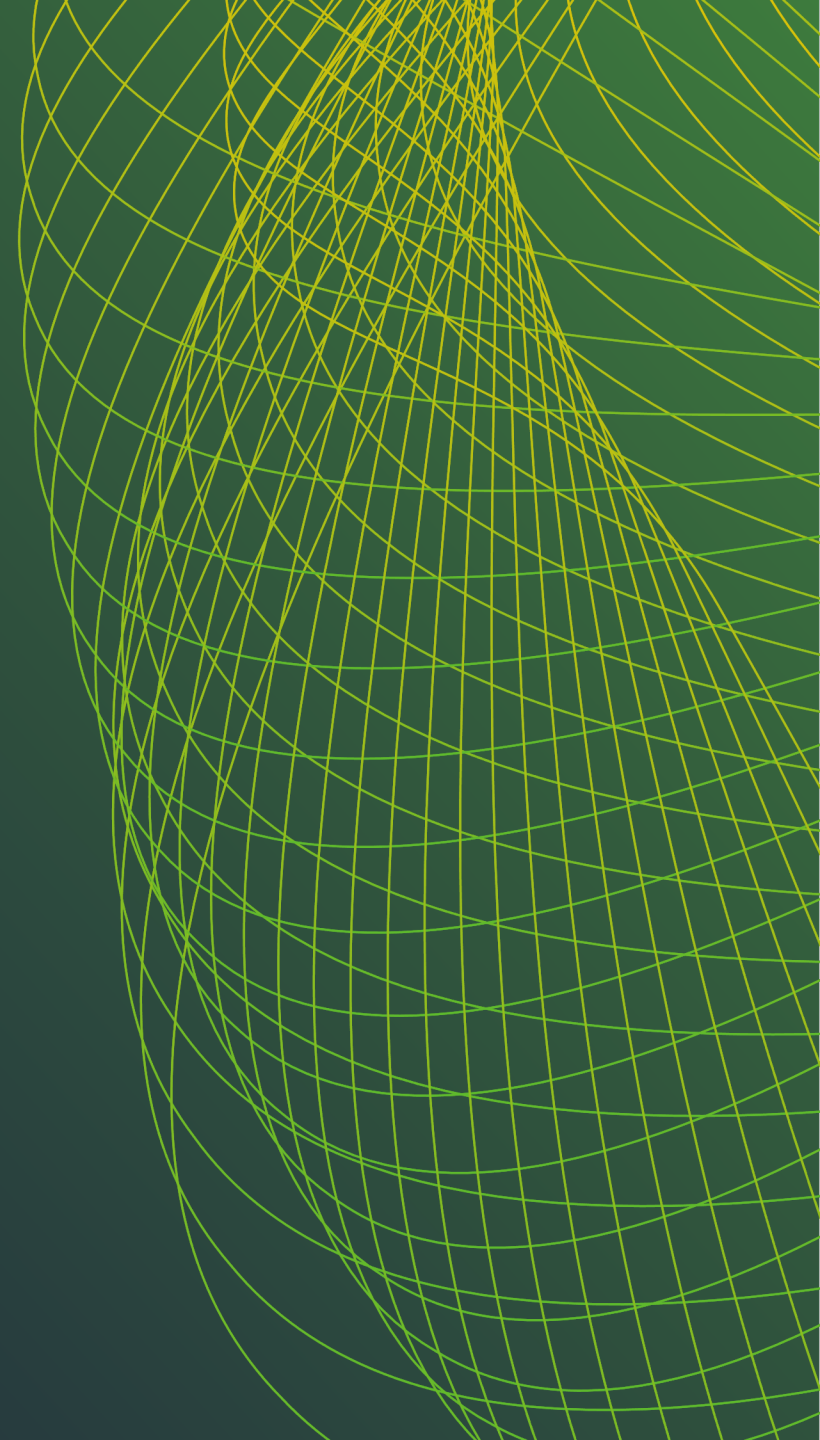


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# Driving innovation in Insurance with data & analytics at Sun Life Financial

**David Atkinson**

VP, Data & Analytics



# Introduction to Sun Life

**Sun Life Financial** is a leading financial services company that helps our Clients achieve lifetime financial security and live healthier lives.

Sun Life offers a broad range of protection and wealth products and services to individuals, businesses, and institutions, including:

- ❖ Insurance
- ❖ Investments
- ❖ Advice
- ❖ Asset management

Our purpose: to help Clients achieve lifetime financial security and live healthier lives.



Achieve lifetime financial security



Live healthier lives



# Data & Analytics – Team Overview

We are a global team that enables Sun Life to be a data-driven organization.



## Our Services:



- Data & Analytics Solutions Delivery
- Data Platform Engineering & Design
- Data Enablement & Data Science



- Data Management Services
- Data Access Middleware & ESB support
- Global Database Security
- B2B services



- Data Governance, Risk & Compliance
- Metadata Management & Data Classification
- Data Quality Program

# Analytics as a Strategic Enabler



## Sun Life is focused delivering personal and proactive Client service

- Next Best Action for Client Engagement
- Advisor Optimization
- Fraud Detection and Prevention
- Insurance Product and Pricing Optimization
- Automated Underwriting



## Capabilities identified to drive business analytics

- Access to multiple business data assets
- Modern analytics ecosystem
- Self service ability
- Access to advanced analytics libraries
- Faster path to production

# Legacy Tools, Processes, and Systems hinder progress



## Tools available to the Analytics community:

- End user managed statistical analytics application
- Advanced modeling performed using Matlab, R, Python – locally installed or VMs
- Limited visualization tools



## Data Accessibility:

- Fragmented data environments for analytics (multiple data repositories)
- End user managed data stores and data sets with limited data sharing
- Extracting data from legacy systems is expensive and requires access to SMEs



## Limitations of Legacy platform & tools:

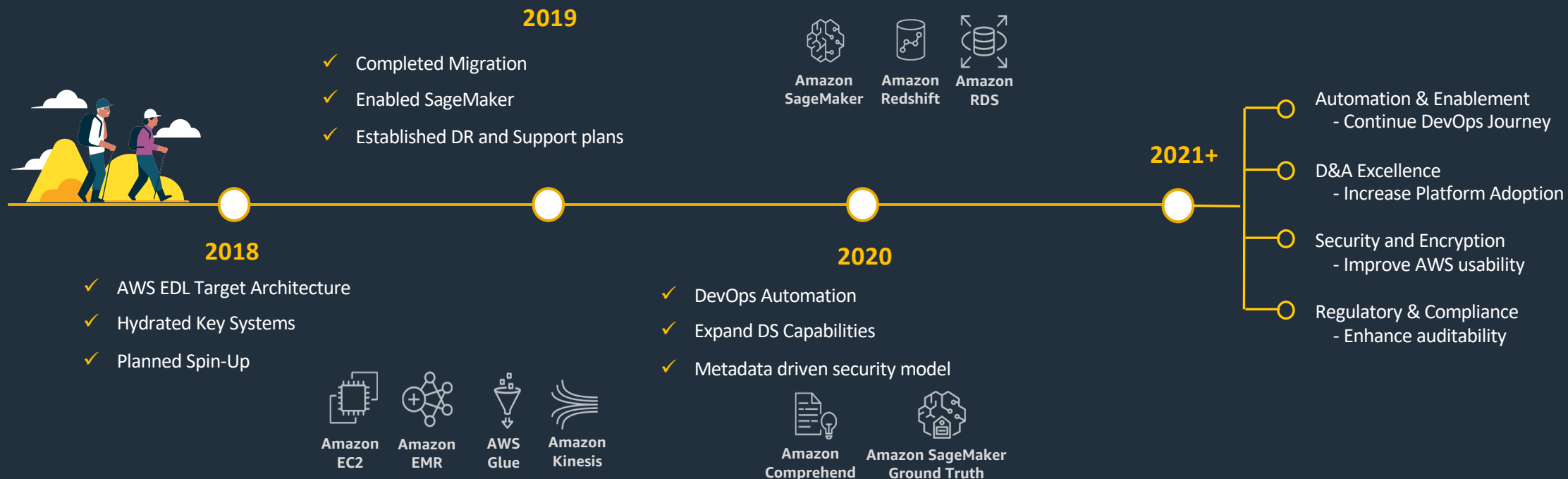
- Scaling up the on-prem Enterprise Data Lake was expensive
- Laptops, on-prem servers, and VMs have compute limitations

# The Shift to AWS Cloud & Services

AWS Cloud services let us scale quickly, create a flexible data platform with robust data ingestion, and standing up leading edge analytics and data management capabilities.

## Architectural guiding principles:

- Cloud First
- Data Lake First
- Cost optimization
- Cloud and AWS Native



# Business Outcomes and Early Wins



## Migrate on-prem Claims fraud model to AWS Sagemaker

- 95% reduction in run time, 92% reduction in run costs
- Increased frequency of model runs, help reduce additional fraud
- **Benefits:** Fraud detection and prevention would improve by a factor of 175%



## Predictive models help improve life insurance claims adjudications

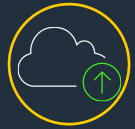
- Amazon S3 and Sagemaker to run analytics on a large data set from multiple geographies
- Tableau on AWS S3 for visualization
- Predict whether a life insurance claim would be approved or denied
- **Benefits:** Improves risk management and decision making



## Enterprise Data Lake enabled the development of a Centralized Client Profile

- Common client profile built for centralized marketing platforms
- Allows for self-service data exploration and analysis capabilities
- **Benefits:** Agile and DevOps supported practices enables faster data provisioning for campaigns

# Lessons Learned



## Pure 'Lift and Shift' doesn't work

- Some data pipelines have to be re-engineered



## Performance and cost-saving benefits

- 'Pay as you go' service helps align business and IT



## Start with Security

- Design for security from day one



## Skill and Talent Development

- Developed internal AWS training to upskill employees



## Culture

- Cloud changes to technology, operations and culture



## Opportunities:

- Improve automation and self-service using DevOps, DataOps and MLOps



## Challenges:

- Reduce data debt
- Develop data engineering and data science talent
- Apply global AWS patterns to regional application architecture



# What's next on our Analytics Maturity Journey

**Adapt to evolving AI / ML  
Regulatory requirements**

**Analytics on Unstructured  
data**

- Voice Analytics
- Document Management and workflow analytics

**Develop and implement MLOps  
practices**

**Deploy Model  
Monitoring capabilities**

**Consistent deployment  
across geographies**

**Consolidate on-prem  
analytics capabilities to  
the cloud**





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# Thank you!

David Atkinson

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