



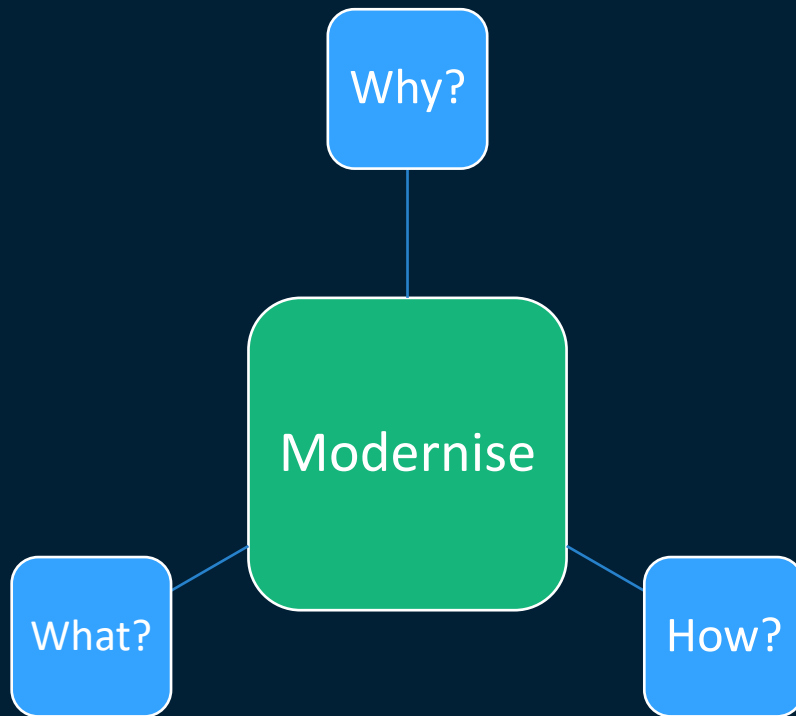
Modernising to SAS Viya - Why, What & How?

SUNZ October 2022



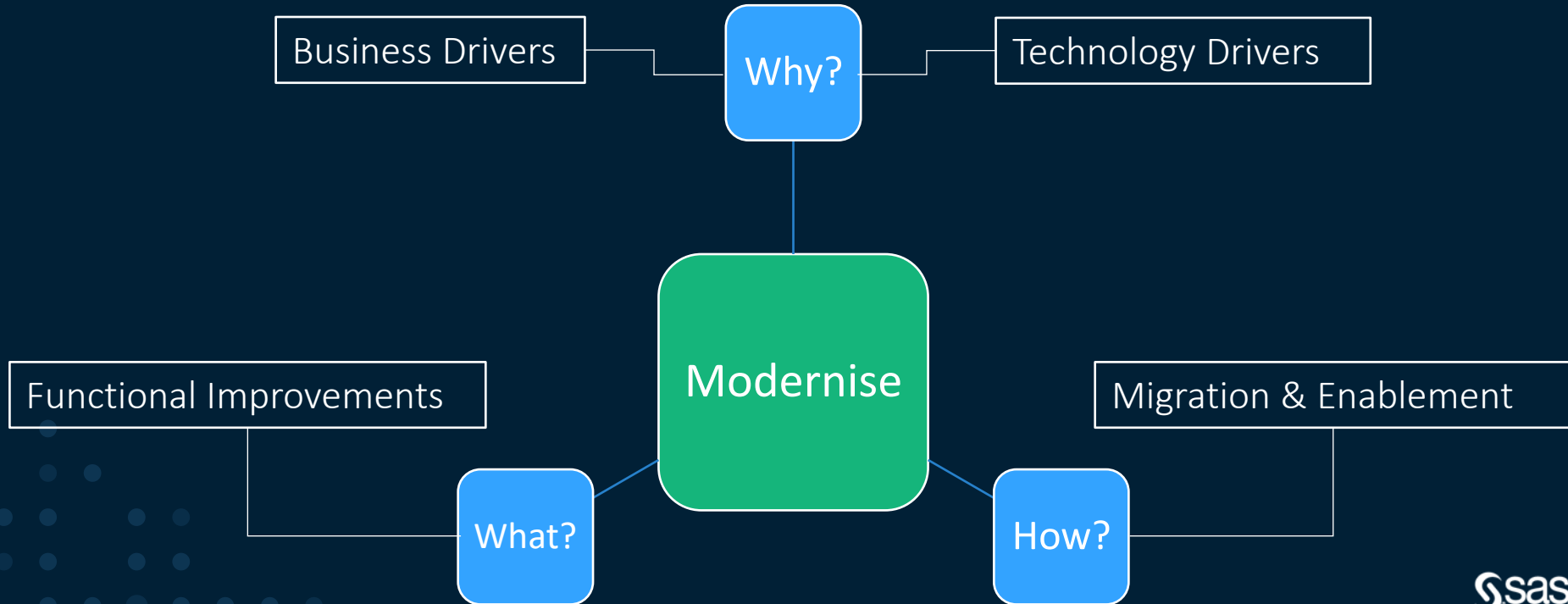
Modernising to SAS Viya - Why, What & How?

Introduction



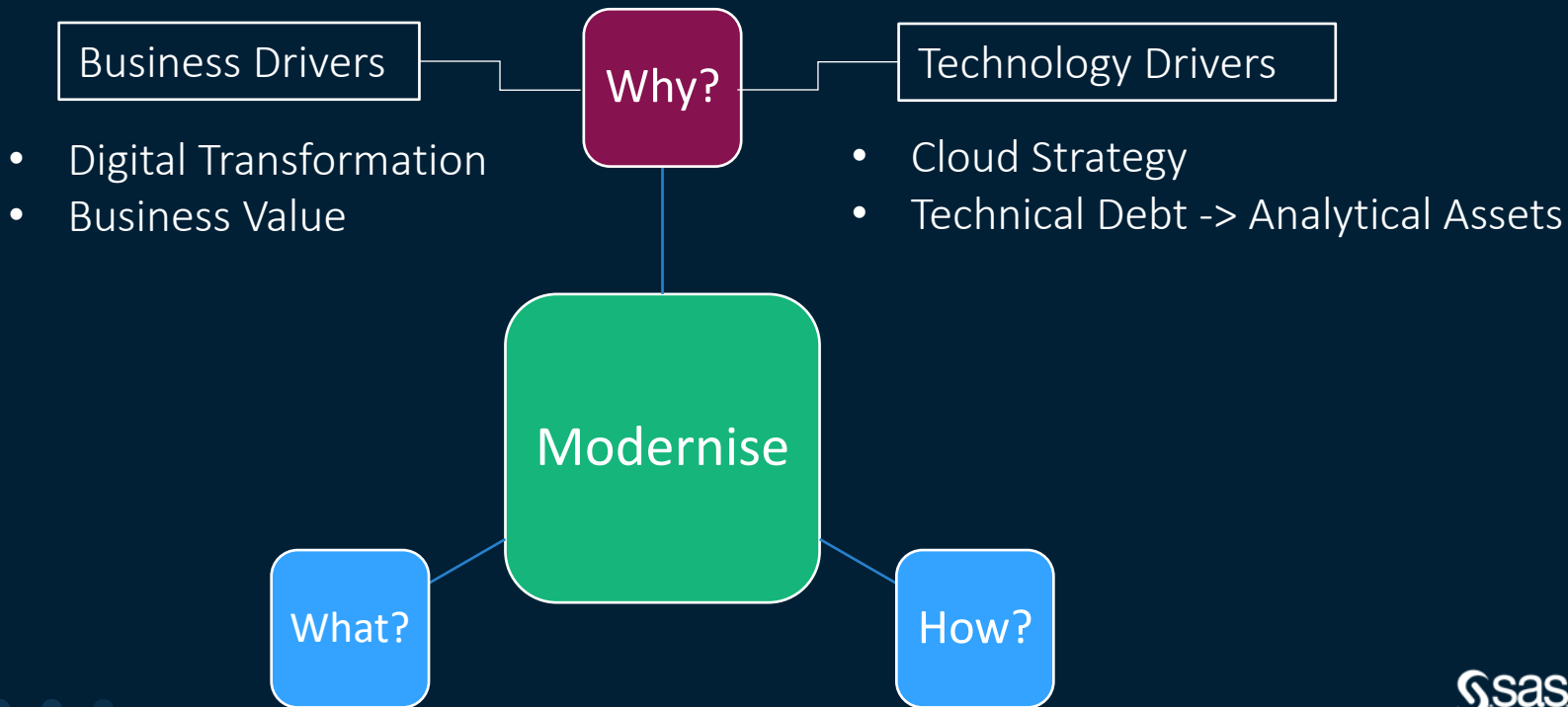
Modernising to SAS Viya - Why, What & How?

Overview



Why Modernise?

Section #1/3



Digital Transformation

Why Modernise? – Business Drivers



Batch

- Initiated at a single point of origin – Table
- Scored for an entire population or segment

On-Demand

- Initiated by requests from multiple end-points of consumption – Row
- Scored at a single transaction level

Loan Application

What is your Customer ID?

What is your current job role?

How much do you want to borrow?

What is the value of your home?

How much do you earn?

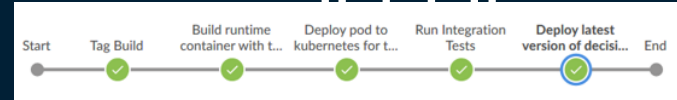
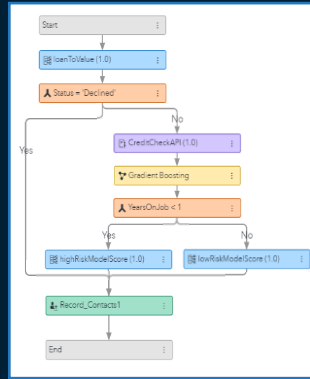
How long have you worked at your current job?

Approval Status

Model Probability

Digital Transformation

Why Modernise? – Business Drivers



- Decisioning

- Drive to improve interactive communications with customers / clients
- Accelerated during the pandemic
- Organisational maturity

- Integration

- Between communications channels & operational systems
- Results in an intersection of
 - DevOps / DataOps / ModelOps
- Operational maturity

Cloud Strategy

Why Modernise? – Technology Drivers



Cloud Strategy

Organisational Cloud Strategy
Complexity Favours Hosting
Cloud Ready -> Cloud Native



- Organisational Cloud Strategy
 - From if / when to how
 - Public / Private / Hybrid / Multi / models
 - More mature / complex
- Complexity Favours Hosting (SAS HMS)
 - Containers / Orchestration / Version Control / CI/CD
 - Security / Regulatory / Auditing requirements
 - Require advanced skills

Cloud Strategy

Why Modernise? – Technology Drivers



Cloud Ready (SAS9)

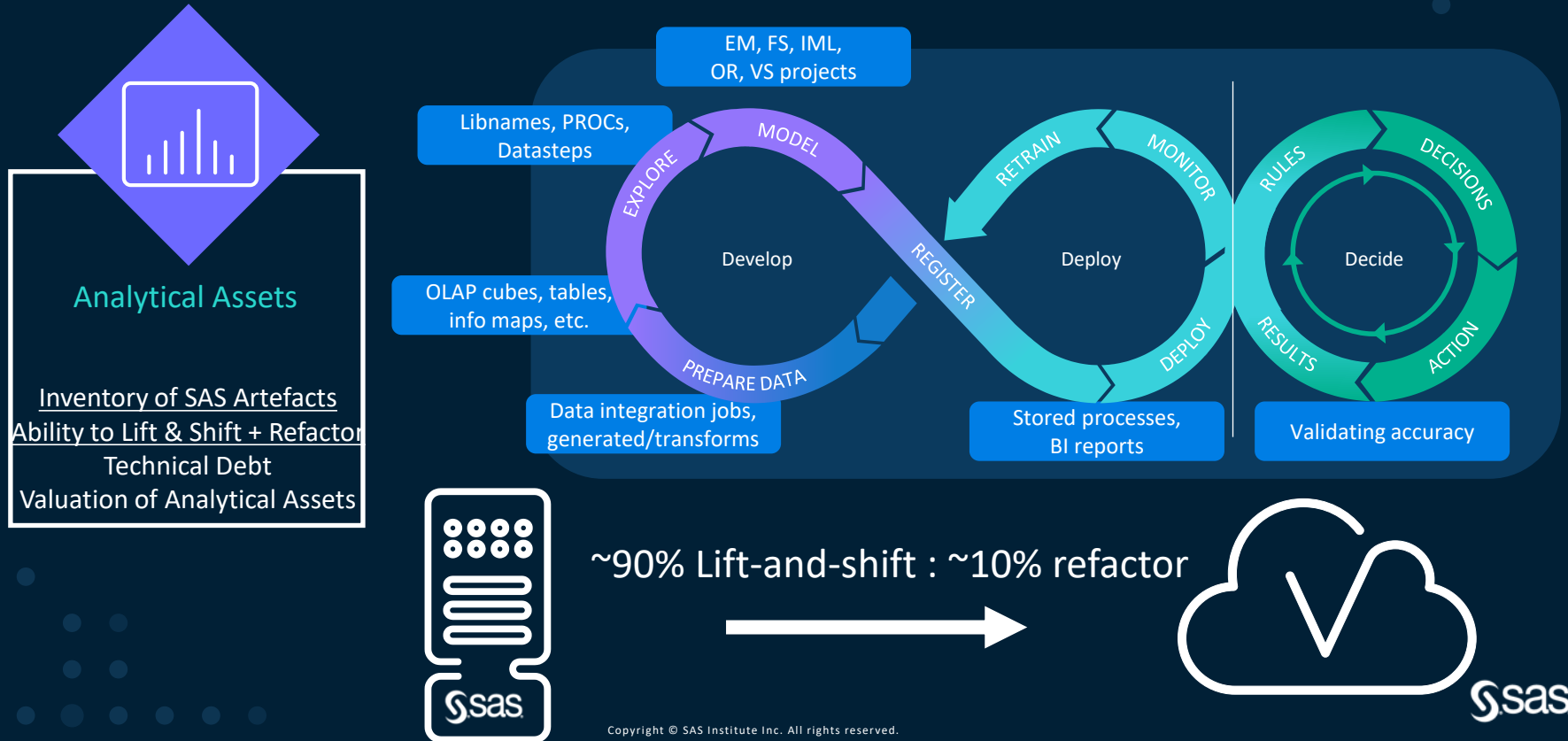
- Designed to be locally hosted (need to be tweaked)
- Maintenance & upgrades may require significant downtime
- Less scalable

Cloud Native (Viya4)

- Designed to be deployed on the cloud
- Maintenance & upgrades can be performed without service interruption
- More scalable

Convert Technical Debt into Analytical Assets

Why Modernise? – Technology Drivers



Convert Technical Debt into Analytical Assets

Why Modernise? – Technology Drivers



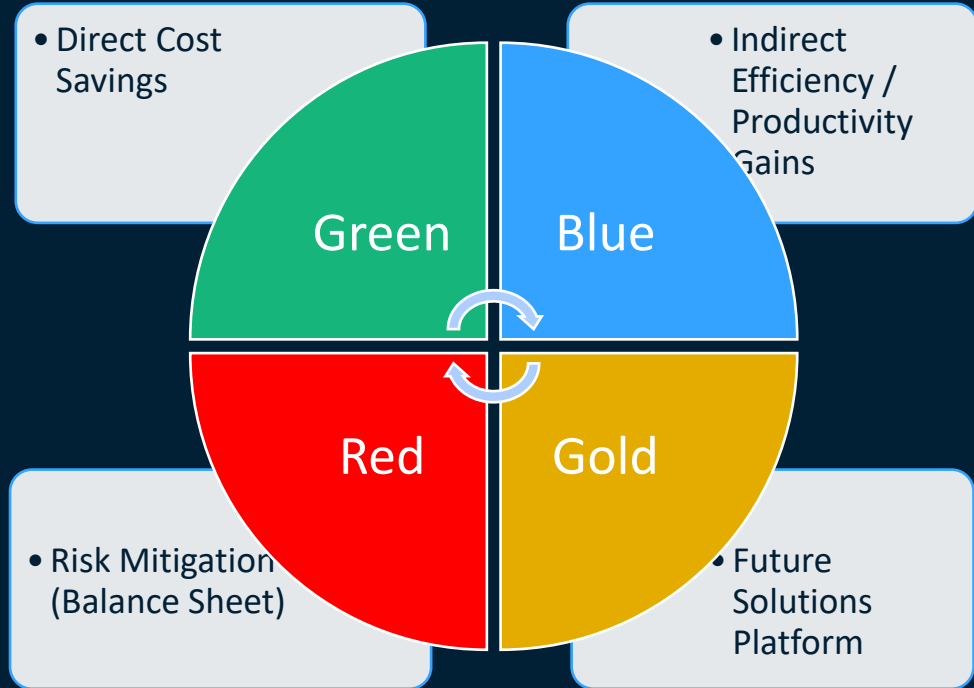
600,000 Lines of SAS9 Code
250,000 Statements

Value = \$3.5m

- Technical Debt
 - Limited by previous technology decisions
 - Significant cost to rewrite
 - Cost to rewrite = valuation (replacement cost vs income generation)
- Analytical Assets on SAS Viya
 - SAS Viya Preserves Intellectual Property (IP)
 - 90% Lift-and-shift : 10% refactor
 - Cumulative value of all previous code / projects
 - Migration generates an inventory and renewal of valuable Assets
 - Provides ongoing governance

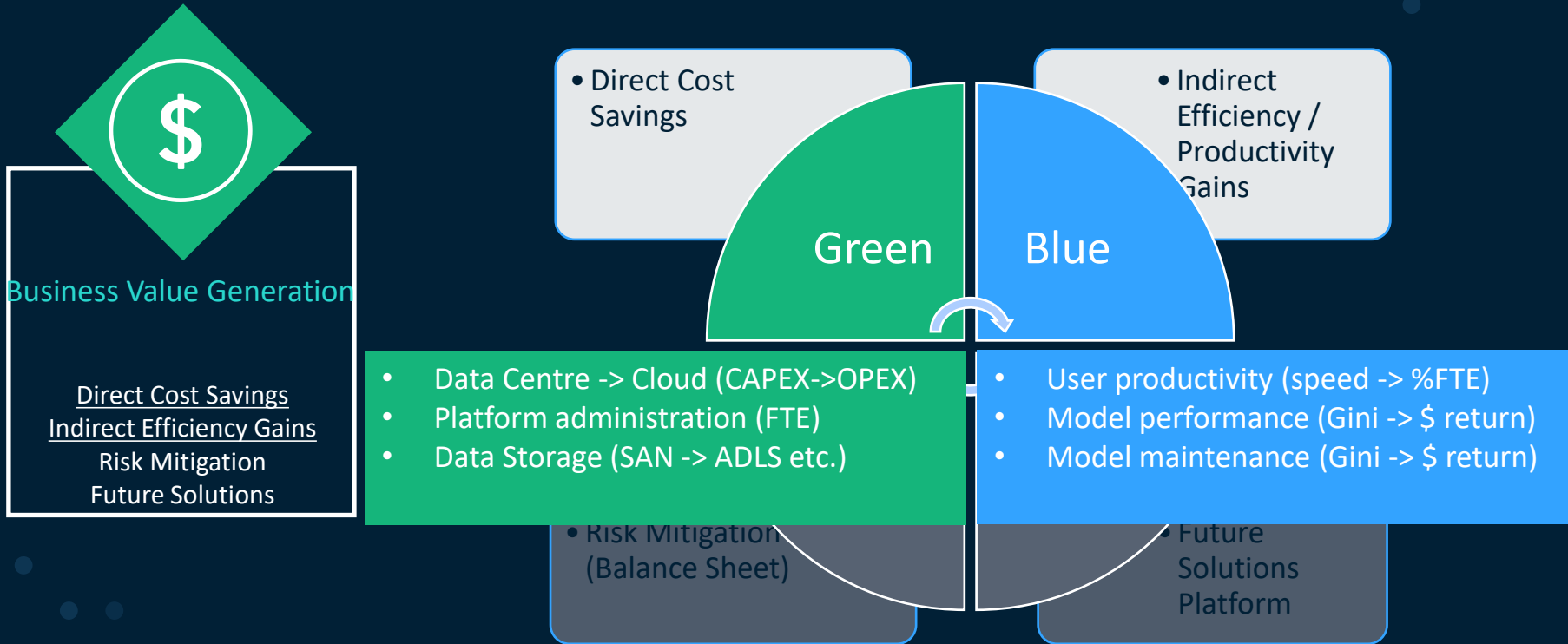
Business Value Generation

Why Modernise? – Business Drivers



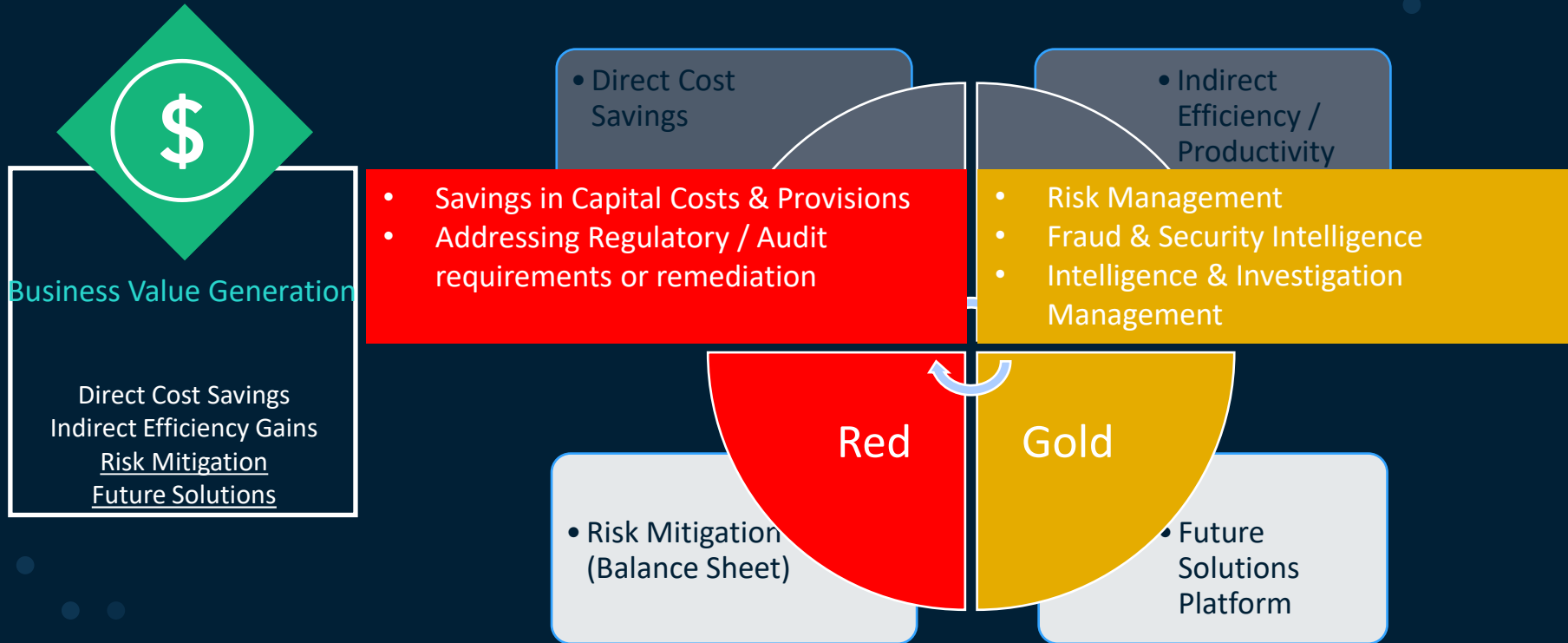
Business Value Generation

Why Modernise? – Business Drivers



Business Value Generation

Why Modernise? – Business Drivers

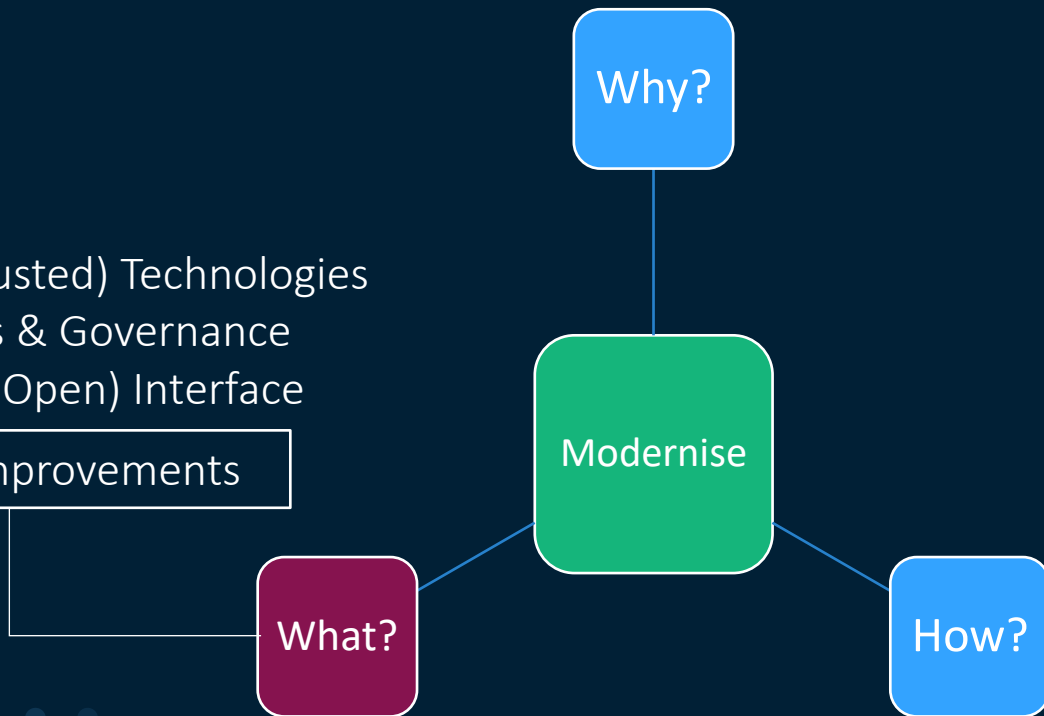


What does Modernisation Look Like?

Section #2/3

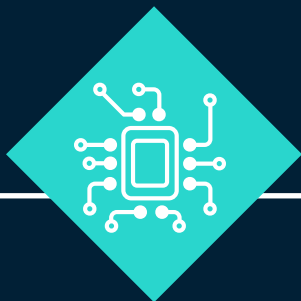
- New (& Trusted) Technologies
- Algorithms & Governance
- Central (& Open) Interface

Functional Improvements



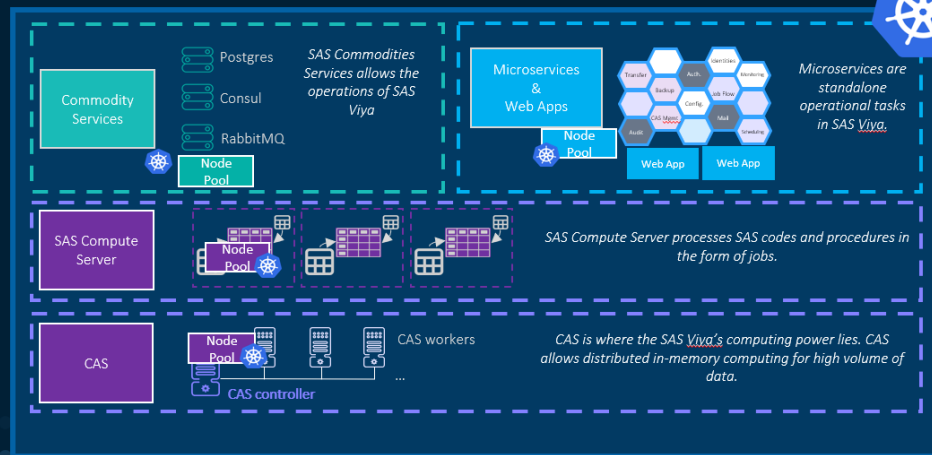
New & Trusted Technologies

What Does Modernisation Look Like?



New/Trusted Technologies

Key Execution Engines
APIs
Containerisation



CAS (Cloud Analytics Services)

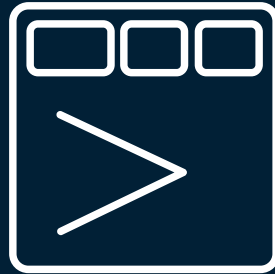
- In-Memory Distributed Analytics Engine
- Enables new algorithms
- Ideal as a Development / Innovation Engine

SAS Compute Server

- ~SAS9 equivalent (lift-and-shift) engine
- Preserves SAS9 analytical assets
- Ideal as a Transitional Operational Engine

New Technologies

What Does Modernisation Look Like?



APIs



- Interactions between components (microservices)
- Interfaces & integration (API vs GUI)
- Consumption of Resources (URI)

Containerisation

- Software deployment
- Run-time environments (e.g. implementing open-source models governed by SAS Viya)

Governance of New ML/AI Algorithms

What Does Modernisation Look Like?



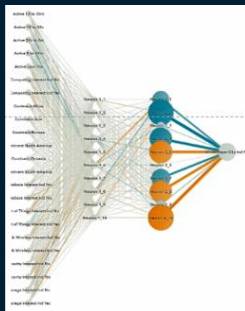
Algorithms & Governance

ML/AI Algorithms
Automation
Governance



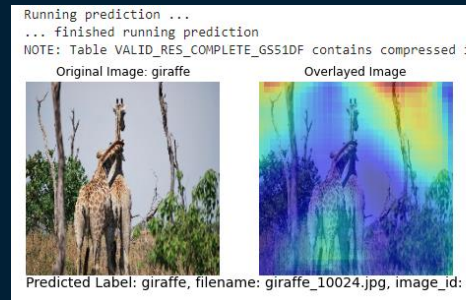
Machine Learning (ML)

- Gradient Boosting
- Random Forest
- Support Vector Machines
- Neural Networks
- Network Analytics



Artificial Intelligence (AI)

- Convolutional Neural Networks (CNN)
- Recurrent Neural Networks (RNN)
- Robust Principal Components Analysis (RPCA)



Governance of New ML/AI Algorithms

What Does Modernisation Look Like?



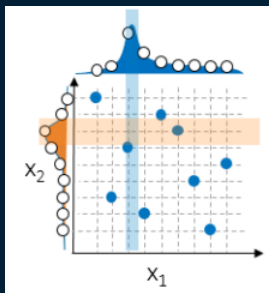
Algorithms & Governance

ML/AI Algorithms
Automation
Governance



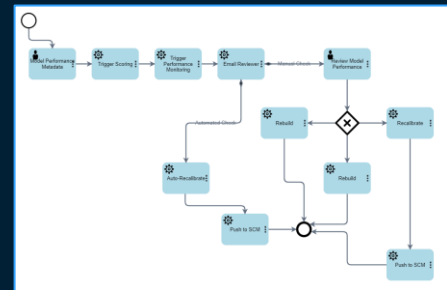
Automation

- Hyper-parameter tuning
- Auto Machine Learning



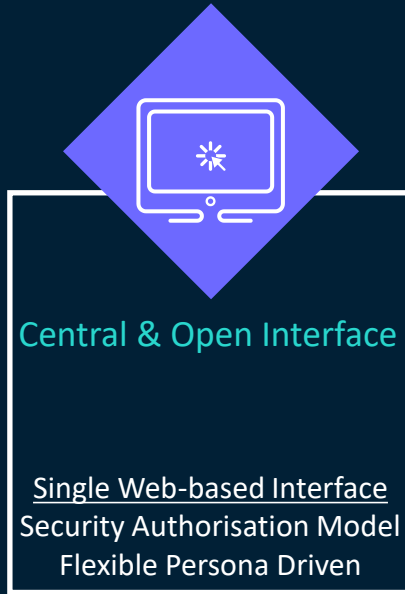
Governance

- Open (API) Model Registration
- Model Dashboards, Diagnostics & Monitoring
- Decisioning & Workflows
- Responsible AI



Central & Open Interface

What Does Modernisation Look Like?



Thick Clients (SAS9)

- SAS Enterprise Guide
- SAS Enterprise Miner
- SAS Forecast Server
- SAS Data Integration Studio
- ...

Web-based Interface (Viya)

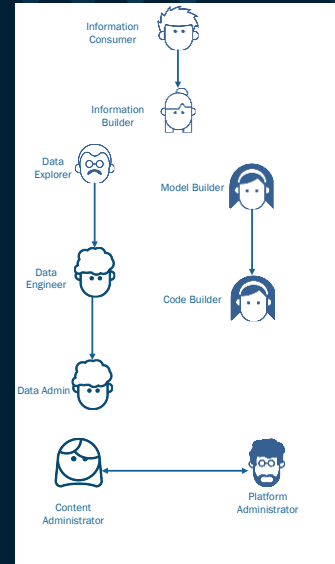
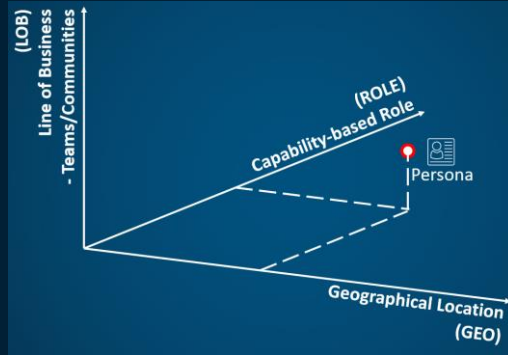
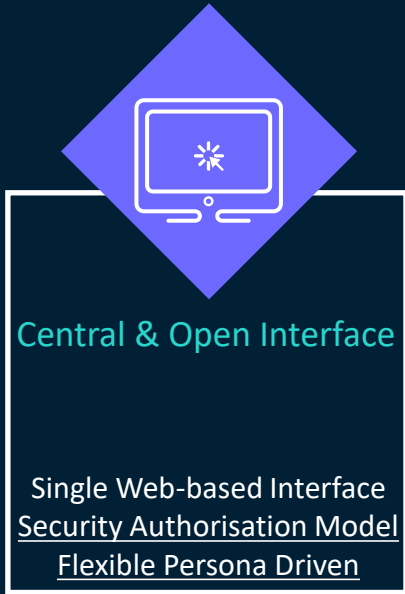
- Removes the need for numerous client applications

Application Programming Interface (API)

- Accessibility from Integrated Development Interfaces (IDEs) via API

Central & Open Interface

What Does Modernisation Look Like?



Customisable SecAuth model

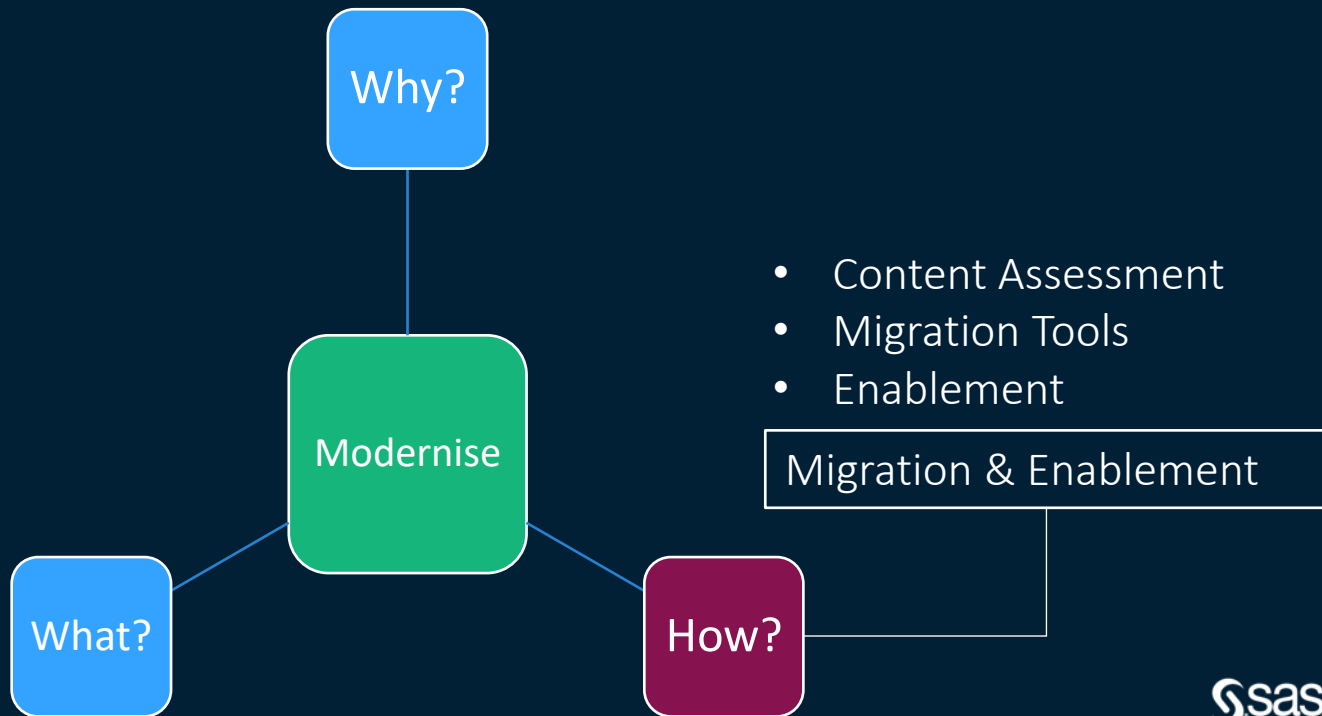
- Control / customisation of functional access
- Opportunity to review operational model

Flexible Persona Driven

- No-code guided (Visual Analytics)
- Low Code pipelines (Model Studio)
- SAS Coding with optional tasks & flows (SAS Studio)
- Open APIs (open-source)
- Workflows (governance)

How to Modernise?

Section #3/3



SAS9 Content Assessment

How to Modernise?



Content Assessment

Counts Artifacts
Details Content
Determines Compatibility
Identifies Potential Issues



SAS 9 Inventory

Counts artifacts
and content on
your SAS 9.4
system



SAS 9 Profile

Details the artifacts
and content



SAS 9 Code Check

Examines SAS
programs and
determines their
compatibility in
SAS Viya



SAS 9 System Evaluation

Identifies potential
issues when
upgrading from
SAS 9.4

Migration Support

How to Modernise?

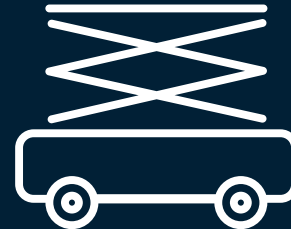


Migration Support

Migration Tools
Migration Assessment
Enablement & Education

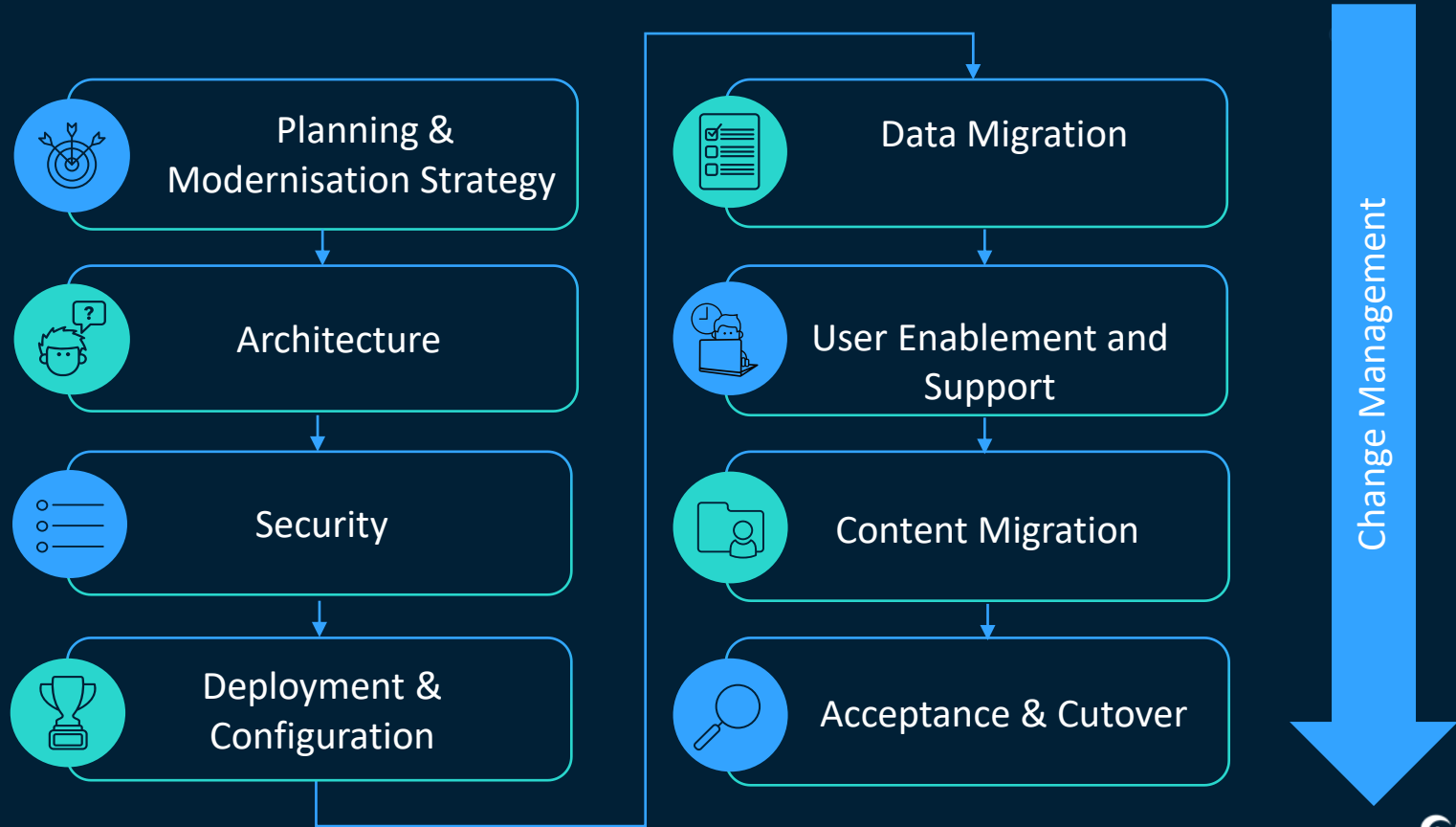


- Migration Tools
 - SAS EG to SAS Studio Flows
 - SAS EM to Model Studio (via .SPK)
 - Stored Processes
 - ...



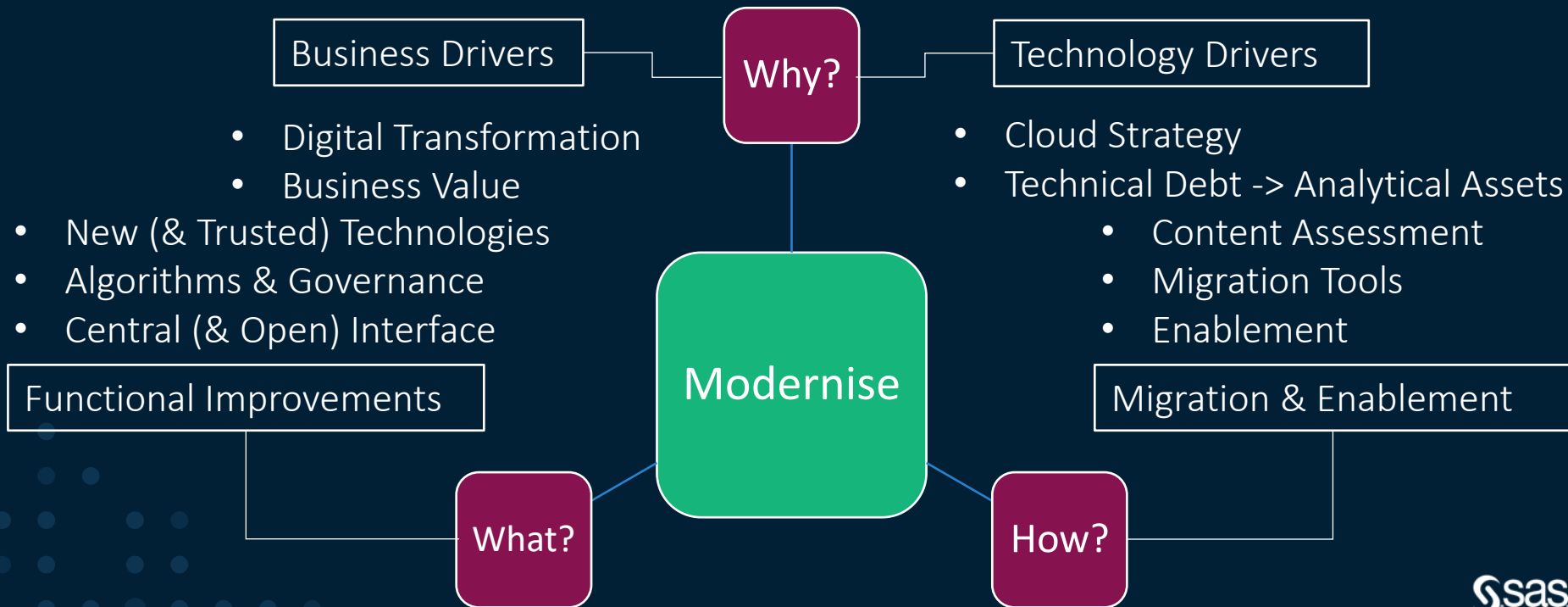
- SAS PSD Led Migration
 - Migration Assessment
 - Additional Partner Support
- Enablement via SAS Customer Success
- SAS Education Portal

Viya Modernisation Approach



Modernising to SAS Viya - Why, What & How?

Summary





Q&A

sas.com

