



Muhammad Ehsan

MSc, Master of Eng, P.Eng, Bachelor of Engineering

[HTTP://MEHSANULLAH.BLOGSPOT.COM](http://MEHSANULLAH.BLOGSPOT.COM)



DEPARTMENT OF
COMPUTER AND INFORMATION
SYSTEMS ENGINEERING





My Enterprise Data Engineering
& Advance Analytics Journey
and Transformation experience.
From theory to real life

MUHAMMAD EHSAN
Senior Manager
Continuous Improvement & Transformation
Nov 2024

Who am I ?

My Data Engineering & Advance Analytics experience

MUHAMMAD EHSAN

MANAGER DATA ENGINEERING & ADVANCE ANALYTICS
B.E. , M.Sc., M Eng, PMP, P.Eng,

With over :20+ Year of experience in Data Architecture, Data Modeling,
INFODATA 02

Data Warehousing, focusing on Business Analysis.

Consulting **Enterprise** solutions, Data Ops, **FinOps**, DevOps, MLOPS
experience and a Lean Six Sigma Green Belt certification, I am a
Transformation Expert who has led transformation programs in over 5
countries across 3 continents.

I am passionate about creating value-focused environments, identifying
and removing waste, and providing development programs to learn
and apply lean thinking on real-life projects.



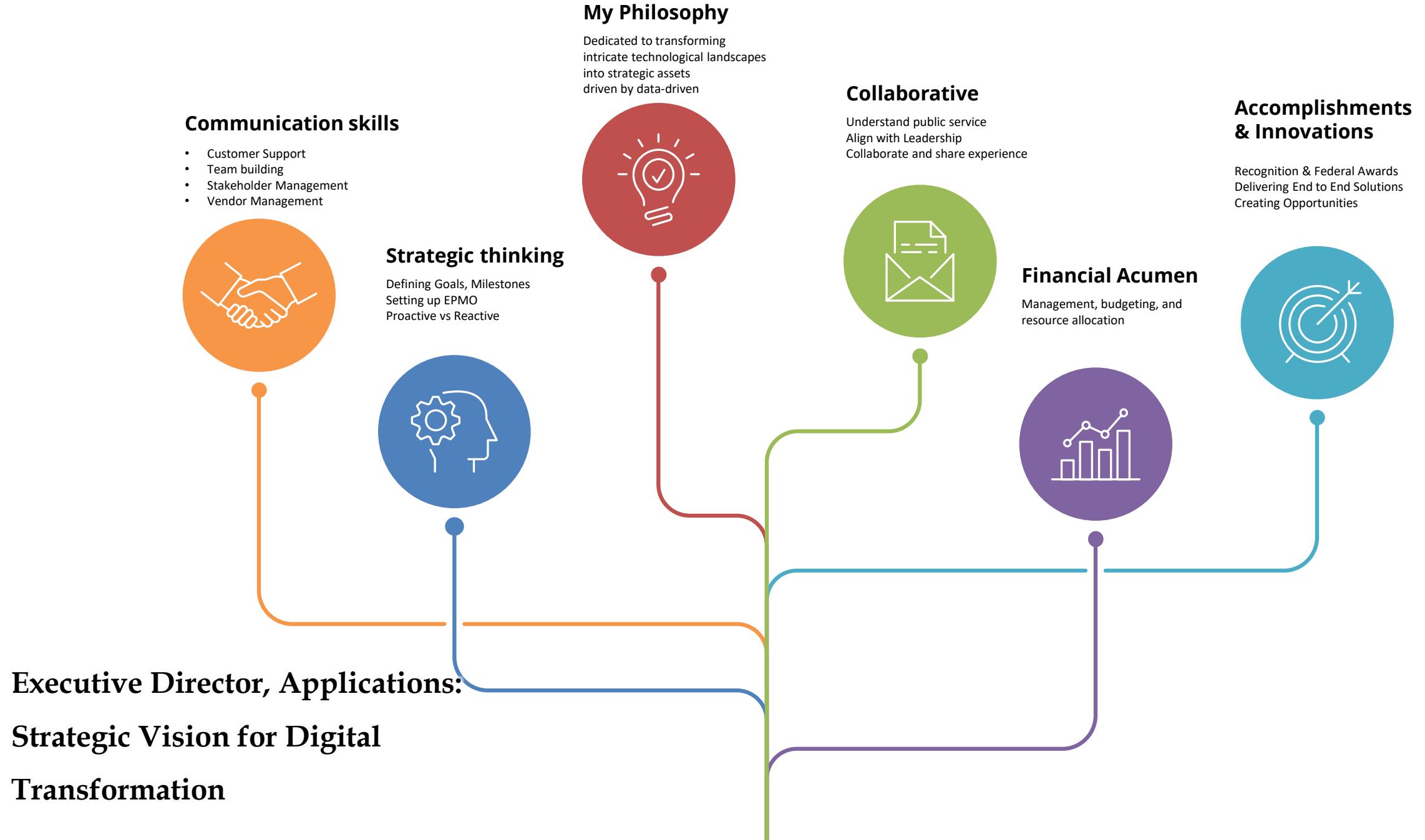


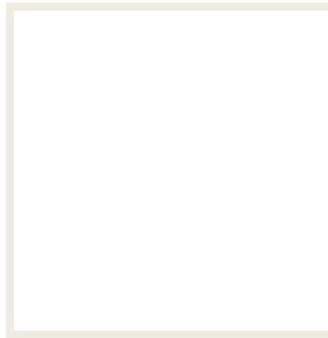
DTS

Digital and Technology Solutions

Manitoba 

We exist to inspire a brighter **Manitoba** for all





Awards & Achievements

Celebrate Excellence: Where Achievements Shine and Success Takes the Spotlight!

Sheikh Hamdan award by Abu Dhabi, Gov. of UAE **2007**

Innovation in Healthcare Award the Innovation in Healthcare Award is presented to projects that demonstrate outstanding innovation in the field of healthcare.

Deputy Minister – Award of Excellence by Federal Gov. of Canada **2021**

Excellence in Innovation, recognizes individuals who have accomplished outstanding & significant contribution to the furtherance of Government of Canada.

Deputy Minister – Award of Excellence by Federal Gov. of Canada

2021

Celebrate Excellence: Where Achievements Shine and Success
Takes the Spotlight!



Ehsan Ullah

Excellence en innovation Excellence in Innovation

Having core values as a group will be able to achieve our Mission



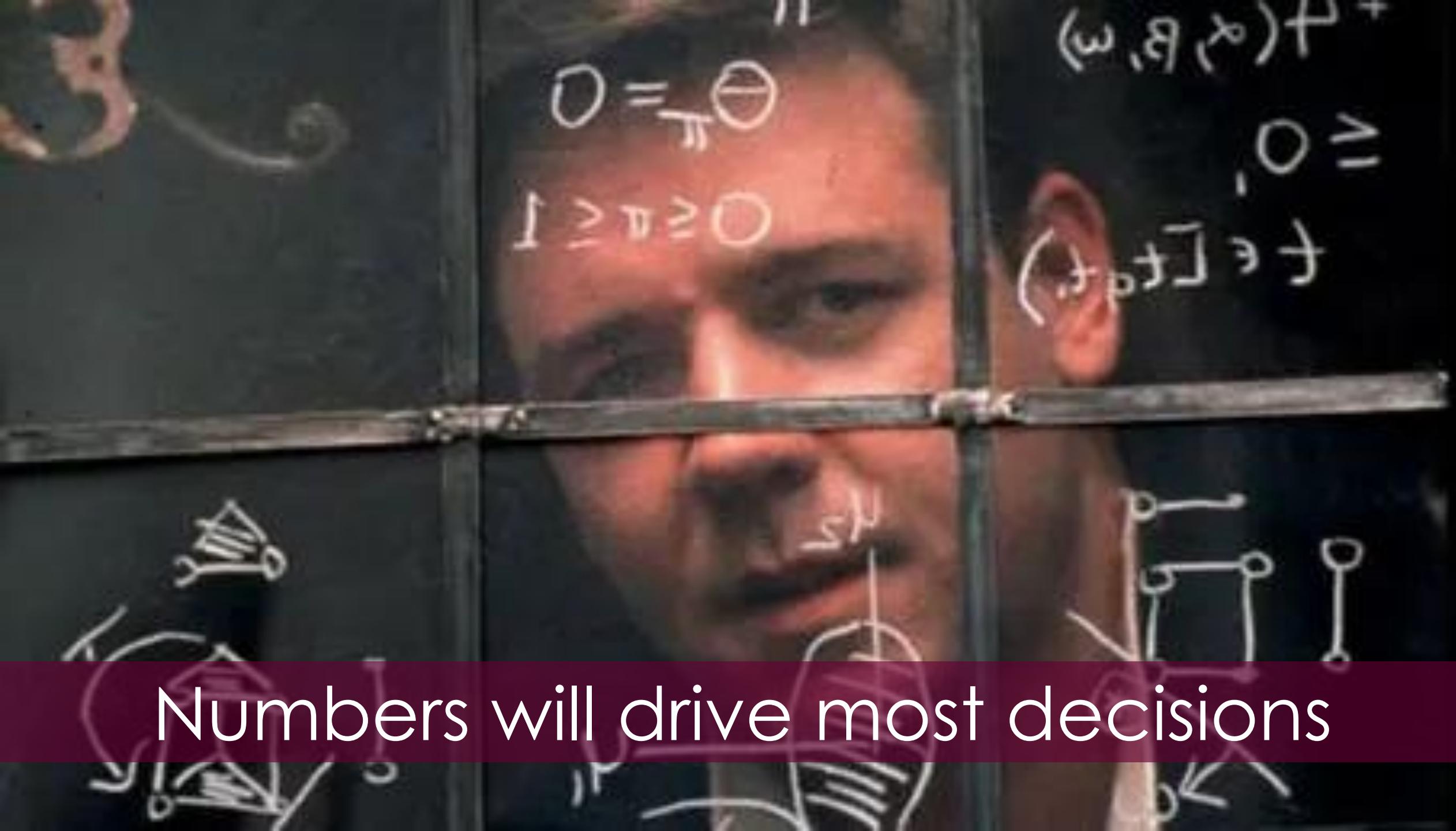
Trust and Respect

A photograph of a lioness and her two cubs walking through tall, golden-brown grass. The lioness is in the foreground, slightly behind the cubs, looking directly at the camera. The cubs are following closely behind her. The lighting is warm, suggesting either sunrise or sunset.

Empower and
Delegation



Focus on Solutions not on Problems



Numbers will drive most decisions



Speed over perfection

A close-up photograph of a cat's face, focusing on its large, vibrant green eyes. The cat has dark, mottled fur. The background is a solid dark red color.

I don't care the colour of the cat, as
long as the cat catches the mouse!

Safety Message

Safety begins with you and continues to me



Project
WAHED

ERP Transformation



Career History

20+ Year of experience in Digital Transformation ERP, Data Governance, Data Engineering, Data Analytics



Canada

Government of Canada
(2015) Manager
Solution Architect

- Technical Advisor Business
- Solution & Data Lake Architect
- Lead Data Engineer

- 13 data engineers, 2 business analysts



Kellogg, Brown and Root Inc
(2013) Senior IT Customer
Support Manager

- ERP Migration Strategy & Planning, Execution
- Governance Risk & Compliance
- Coordinate cross-functional teams

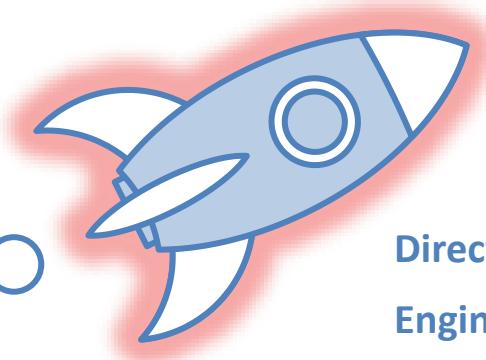
Pratt & Whitney

(2020) Associate Director Data Engineering

(2019) Senior Manager Data Engineering



- Lead Data lake Migration
- Data Architect, Supervisor data engineers
- Data Governance Council Facilitator Administrator



Director Data Engineering



Qatar Airways

Finance Business Intelligence Manager

- Product Owner
- Data Architect (Consultant)
- Data Engineer (Consultant)
- Automation (Consultant)

MANAGER FINANCE BUSINESS INTELLIGENCE

Qatar Airways



Providing **accurate** and **on-time** analytical content in terms of data and dashboards,
ensuring **single source of truth** and universal data definition, in line with Finance
Vision and enabling Agility and Self Service Analytics across the QR network



Key Achievements in this role

- Leading Data Migration from on premise Oracle DWH to Big Query
- Data Governance & Data Classification
- Project priority matrix
- Delivered 85 Data products for Business Finance Technical, Treasury, GBS, CI&T
- Developed Data Ingestion Design Patterns for Internal and External Data Sources
- EPMO Dashboard



FBI Manager

- Technical Advisor to Business & Stakeholders
- Product Owner
- Data Product Development
- Automation
- Analytical Dashboards (Tableau)
- Project Management



Product Owner

- Platform Architect
- Business Analyst
- Data Architect
- Data Engineer
- Quality Engineer
- Monitoring and Scheduling



Resource Management

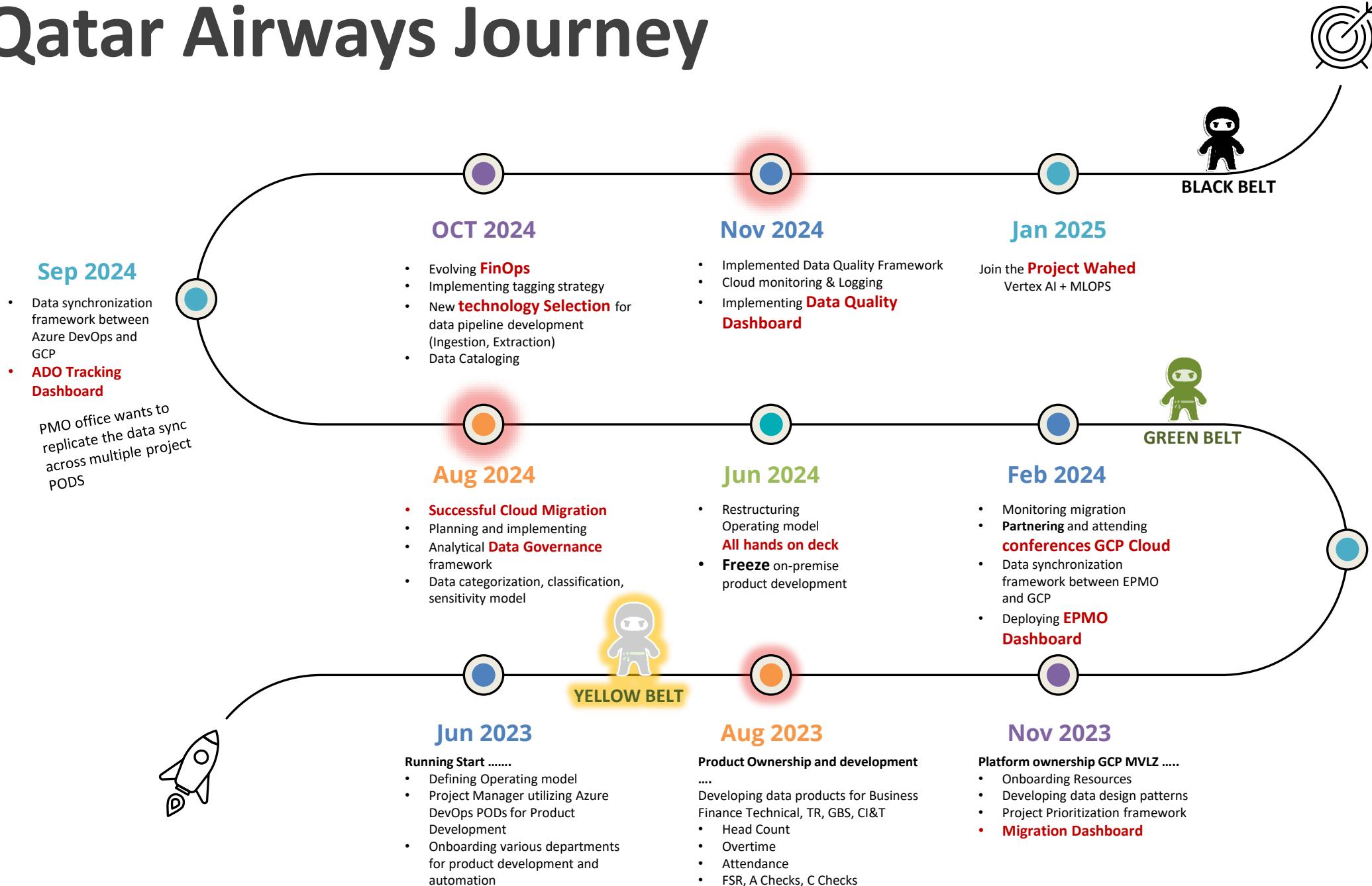
- Working & Partnering with Vendors (GCP, OOREDOO)
- Hiring, Planning, Scheduling Data Engineers & Tableau developers
- Working with Consultants from EPAM, COGNIZENT
- Costing Projects, Cloud Platform



Continuous Improvement and Transformation

- Induct Projects from Idea to implementation
- Identify Quick Wins
- Project prioritization matrix

Qatar Airways Journey



Core Business Skills & Expertise

Expertise built learning, practicing and sharing across various industries



Accelerated DSP

Leadership & stakeholder engagement

I have keen ability to motivate and inspire others, take initiative, collaborate with stakeholders and guide teams towards achieving goals

Financial Acumen

Firm grasp on financial concepts budgeting, and financial analysis across industries like healthcare, **manufacturing**, telecom, oil & gas and **airline industry**

Technical Proficiency empowered with Problem-Solving and Critical Thinking

Ability to analyze complex issues, identify root causes, and develop effective solutions. Highly proficient in relevant software, tools, or technologies

Time Management with Effective Communication

Strong familiarity with prioritization of projects, tasks, manage deadlines, and work efficiently under pressure. Strong verbal and written communication skills, including the ability to articulate ideas clearly and persuasively

Teamwork, Customer Service and Collaboration

Ability to work effectively with others, share ideas, and contribute to a positive team environment, build strong relationships with clients or customers, understand their needs, and provide excellent service

Strong Work Ethic with Adaptability

Commitment to excellence, reliability, and a positive attitude towards work. ability to embrace change, learn new skills, and adapt to evolving circumstances

Core Data Lake Skills & Expertise

Expertise built learning, practicing and sharing across various industries



Accelerated DSP

Cloud Data Solution Architect focused on data strategy & design patterns & engineering

Collaborating with data architects, data engineers, business analyst, developers and business stakeholders to design and deliver scalable economical data solutions

Data Governance focused on data profiling, classification & clearance

Providing a data governance framework that creates a classification & security model leveraging on scoring and tagging strategy. Creating a sustainable access control process to provide access with defined program

Data Processing & Advance Analytics

Harvesting, Analyzing, transforming RAW data into meaningful insights using advance analytical tools, ETL(Extract, Transform, Load) and machine learning models. Leveraging on data processing frameworks to enable real-time, batch processes

Data Discovery, Data Quality & Metadata Management

Creating a data discovery, manage metadata associated with the data lake. Creating a runtime catalog and enabling lineage and security. Measuring data quality dimensions and performing comparison with catalog services

Data Security & Compliance

Safeguarding data while the data is rest and in motion, by enabling encryption. Defining role-based access controls (RBAC), and assuring compliance with regulations like PII, GDPR and HIPAA

Assessment & Prioritization

Challenge: A large portfolio of legacy, business-critical applications, ongoing modernization, and cloud migration.



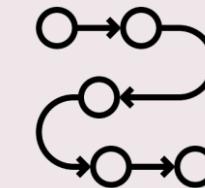
Portfolio & Tools

- ✓ Identifying all the applications & create attribute **matrix**
- ✓ Classifying: Legacy vs Criticality
- ✓ **Transformation & Modernization**
- ✓ Prioritization **Matrix**



People

- ✓ Stakeholders
- ✓ DTS Team
- ✓ **ERP, CRM, Finance Team**
- ✓ IT Leadership Team
- ✓ Support Team
- ✓ Vendor (3rd Party)

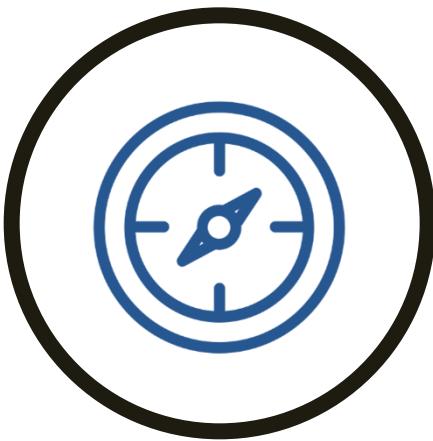


Approach

- ✓ A Holistic 360-Degree Assessment
- ✓ Phase 1: Deep Dive Discovery & Inventory
- ✓ Application Portfolio Mapping
- ✓ Business Impact Analysis
- ✓ Technical Health Check

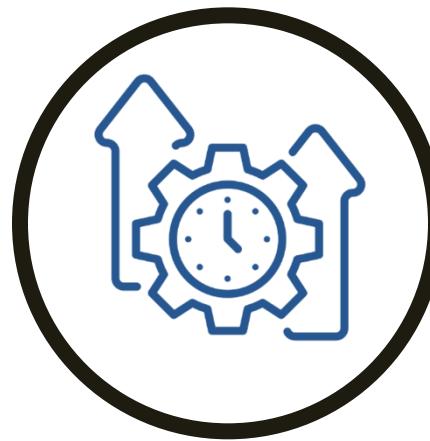
What is in it for me?

Benefits and value delivered to the business



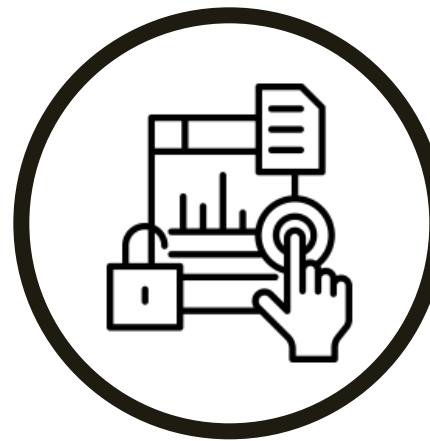
Phase 2: Capability & Vendor Audit

Internal team capabilities
External vendor performance



Prioritization Framework: Value-Driven Roadmap

Value vs. Effort Matrix
Risk Mitigation
Strategic Alignment

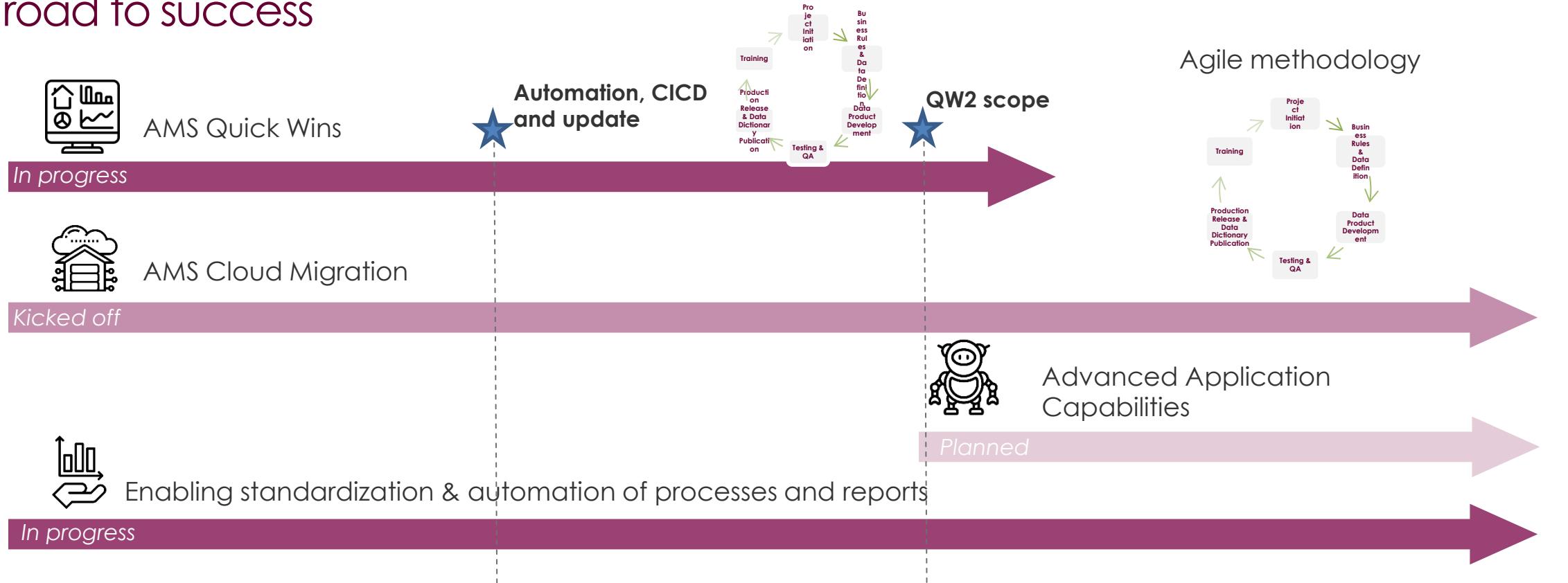


Framework & Endorsements

Modernization roadmap
that balances immediate
needs with long-term
strategic objectives

Application Management Services (DTS->AMS)

A road to success



- Application Portfolio Mapping **AMS Quick Wins**
- Kick off of requirements gathering for **AMS Cloud migration**

- Business Impact Analysis
- understand **critical** business processes
- Potential impact of outages or **modernization**
- Technical Health Check

- Phase 2: Capability & Vendor Audit
- **Prioritization Framework**
- Application Managed Services

- Introduce advanced operation capabilities for select use cases using the data from
- **DTS Cloud DW**
- **modernize infrastructure**

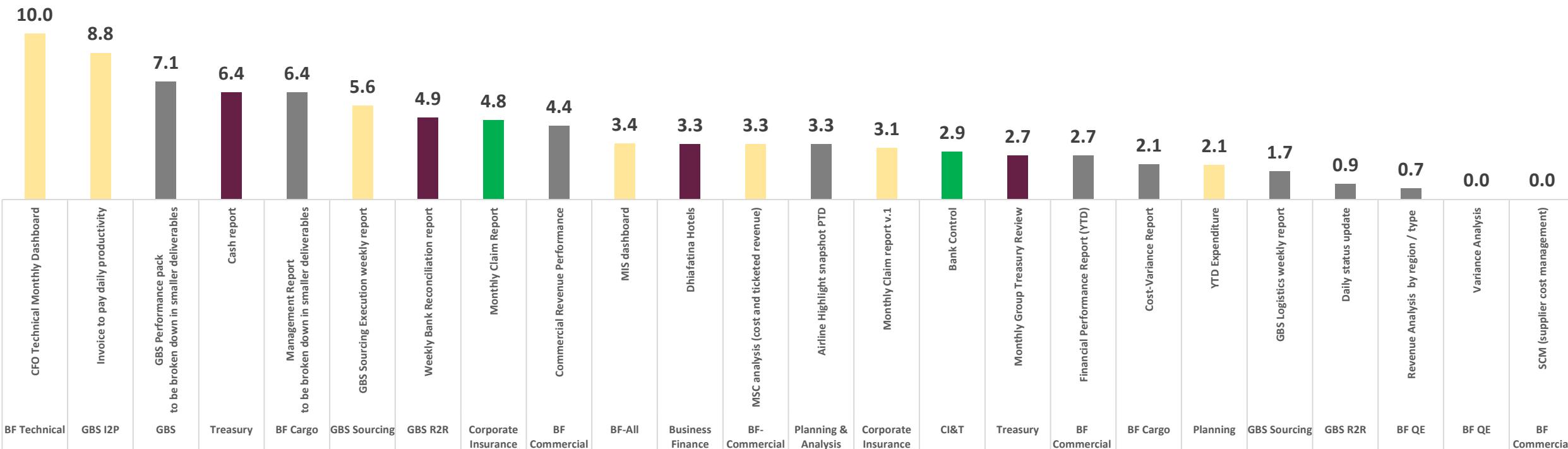
DTS – Projects Development Cycle



Quick Win – Delivery

Prioritized content

█ Delivered
█ On Delivery (\$23)
█ To be Delivered
█ New Addition



Building Interactive KPI(s), Prioritization Framework , Dashboards

Manitoba AMS System



Enterprise Project Management Office (EPMO)

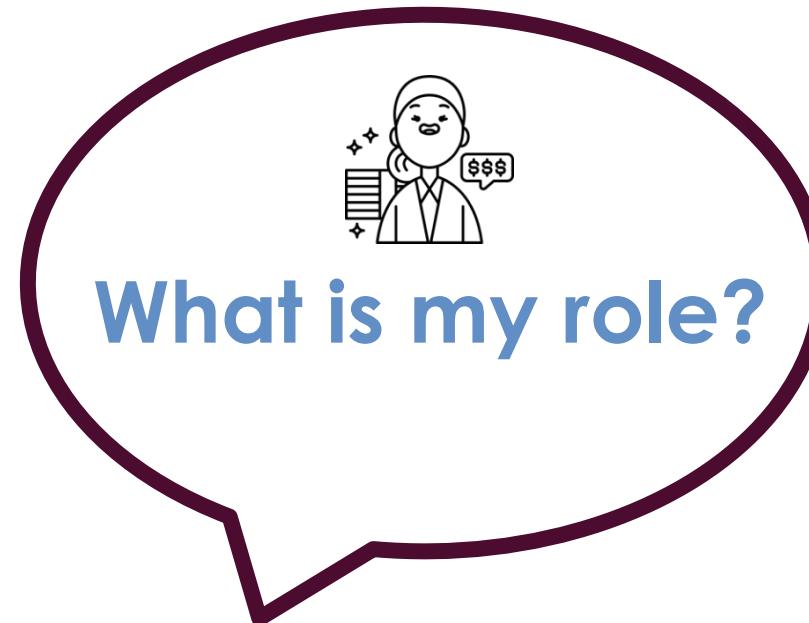
Projects By Divisions Delivering Financial Benefits On FY 2024/2025											
Project	Division	Budget (\$)	Actual (\$)	Variance (\$)	Status	Last Update	Last Status	Last Progress	Last Cost	Last Duration	Last Manager
Project A	Division A	1000000	950000	-50000	On Track	2024-01-15	Green	85%	900000	100000	Manager A
Project B	Division B	800000	750000	-50000	At Risk	2024-01-10	Yellow	70%	700000	100000	Manager B
Project C	Division C	600000	550000	-50000	On Track	2024-01-05	Green	65%	500000	100000	Manager C
Project D	Division D	400000	350000	-50000	At Risk	2024-01-05	Yellow	50%	300000	100000	Manager D
Project E	Division E	300000	250000	-50000	At Risk	2024-01-05	Yellow	40%	200000	100000	Manager E
Project F	Division F	200000	150000	-50000	At Risk	2024-01-05	Yellow	30%	100000	100000	Manager F
Project G	Division G	100000	80000	-20000	At Risk	2024-01-05	Yellow	20%	50000	100000	Manager G
Project H	Division H	50000	40000	-10000	At Risk	2024-01-05	Yellow	10%	20000	100000	Manager H
Project I	Division I	30000	20000	-10000	At Risk	2024-01-05	Yellow	5%	10000	100000	Manager I
Project J	Division J	20000	10000	-10000	At Risk	2024-01-05	Yellow	0%	5000	100000	Manager J
Project K	Division K	10000	5000	-5000	At Risk	2024-01-05	Yellow	0%	2000	100000	Manager K
Project L	Division L	5000	2000	-3000	At Risk	2024-01-05	Yellow	0%	1000	100000	Manager L
Project M	Division M	3000	1000	-2000	At Risk	2024-01-05	Yellow	0%	500	100000	Manager M
Project N	Division N	2000	1000	-1000	At Risk	2024-01-05	Yellow	0%	300	100000	Manager N
Project O	Division O	1000	500	-500	At Risk	2024-01-05	Yellow	0%	200	100000	Manager O
Project P	Division P	500	200	-300	At Risk	2024-01-05	Yellow	0%	100	100000	Manager P
Project Q	Division Q	300	100	-200	At Risk	2024-01-05	Yellow	0%	50	100000	Manager Q
Project R	Division R	200	100	-100	At Risk	2024-01-05	Yellow	0%	30	100000	Manager R
Project S	Division S	100	50	-50	At Risk	2024-01-05	Yellow	0%	20	100000	Manager S
Project T	Division T	50	20	-30	At Risk	2024-01-05	Yellow	0%	10	100000	Manager T
Project U	Division U	30	10	-20	At Risk	2024-01-05	Yellow	0%	5	100000	Manager U
Project V	Division V	20	10	-10	At Risk	2024-01-05	Yellow	0%	3	100000	Manager V
Project W	Division W	10	5	-5	At Risk	2024-01-05	Yellow	0%	2	100000	Manager W
Project X	Division X	5	2	-3	At Risk	2024-01-05	Yellow	0%	1	100000	Manager X
Project Y	Division Y	2	1	-1	At Risk	2024-01-05	Yellow	0%	0.5	100000	Manager Y
Project Z	Division Z	1	0.5	-0.5	At Risk	2024-01-05	Yellow	0%	0.2	100000	Manager Z

AMS Engagement model

I am an Internal
Stakeholder
expert...

Challenge: Bringing internal stakeholders along, especially those accustomed to legacy systems.

"Co-Creation and Continuous Learning"



Application Champions

- Responsible for business rules, definitions and quality guidelines.
- Acts as the main point of contact for all governance related work e.g. validation, usage, quality objectives.
- Participate and contribute in meetings with AMS | DTS as SMEs of their business units and provide guidance on any related questions

AMS Engagement model

Compelling Vision & Consistent Communication



I am a Legacy
expert...



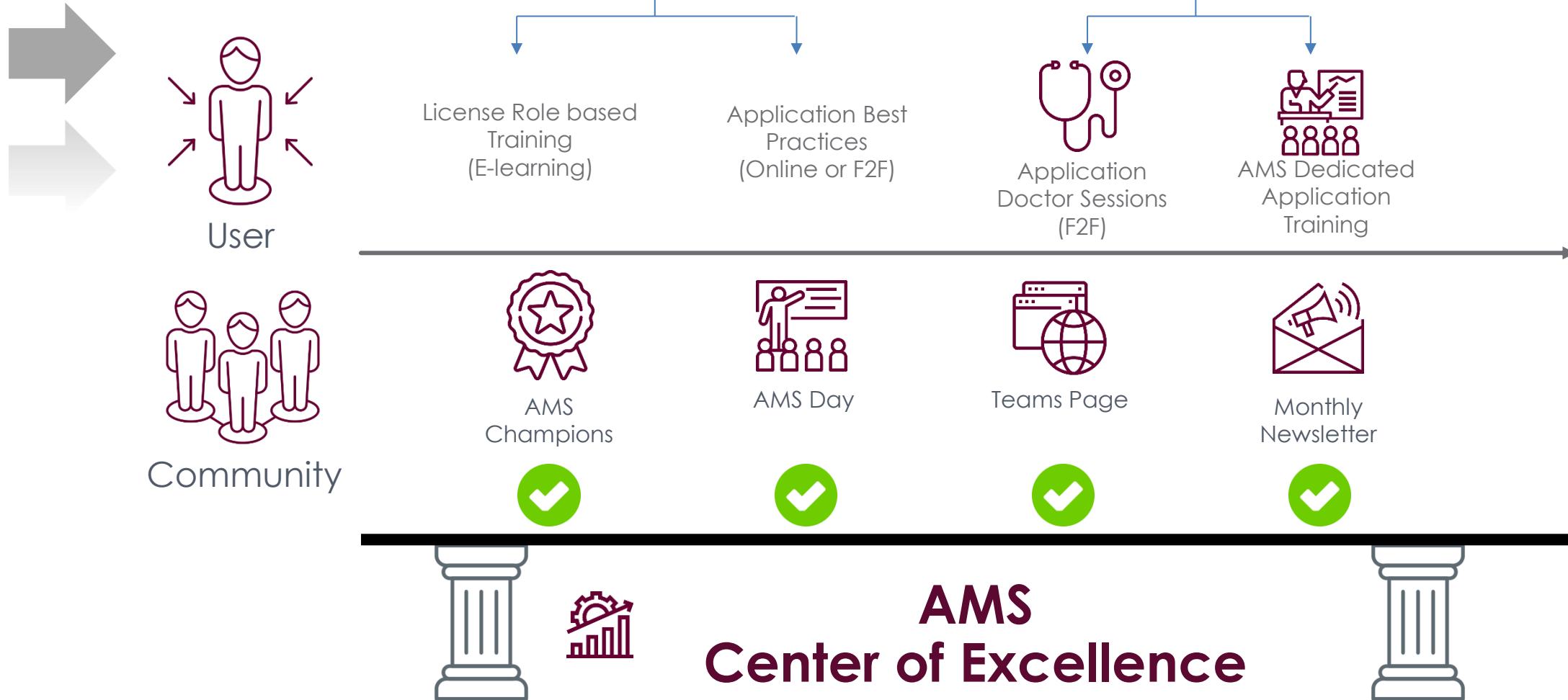
Application Consumer

- Access to reliable and timely application
- Automated insights
- Governed application with clear guides
- Access to application

Training approach

Investment in Upskilling & Training

Outcome: A highly engaged, adaptable workforce that embraces change and actively contributes to the organization's digital future.

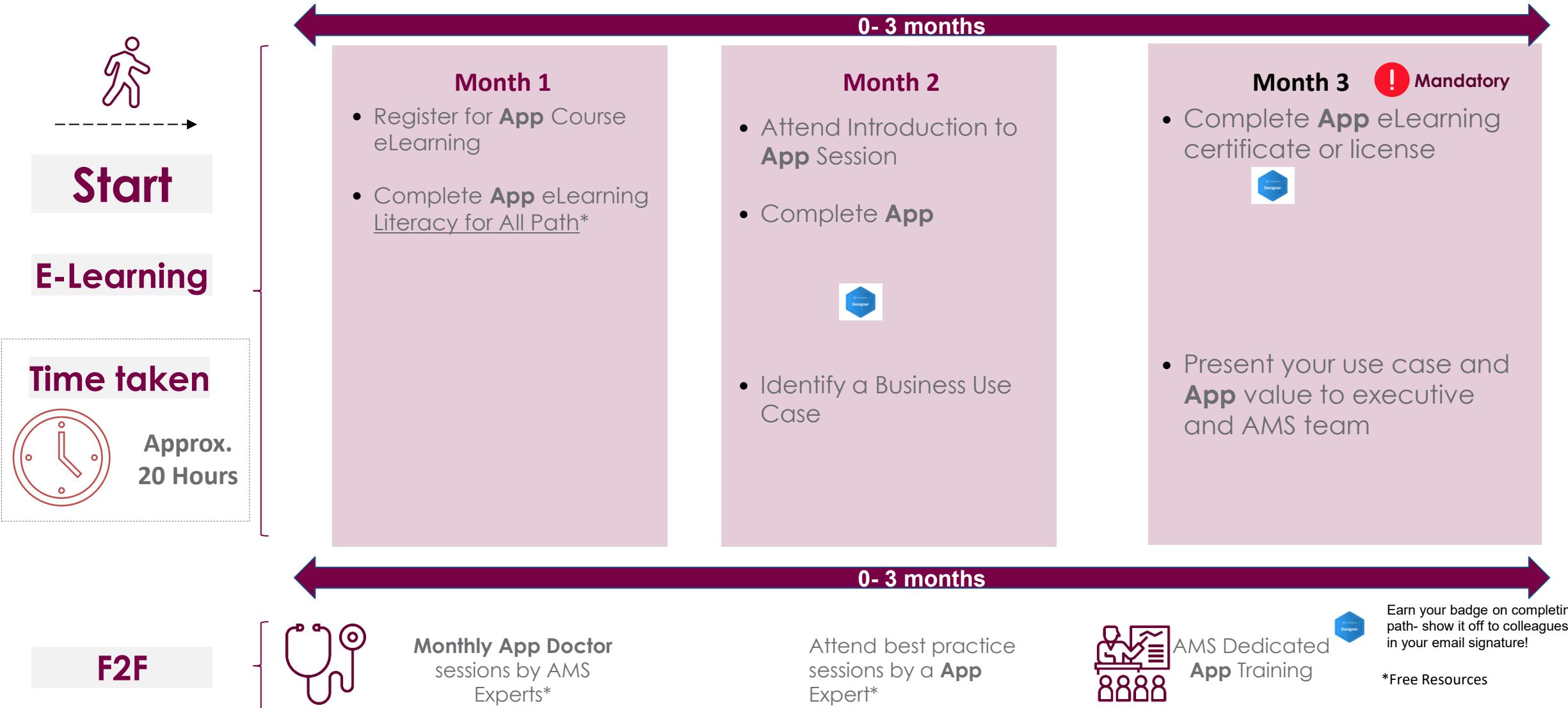


Role based learning journeys | AMS

Users will be trained once relevant applications that are exposed to their department



Mandatory Training



AMS Developments Standards & Best Practices

Pillars

1 Requirement Gathering

Topics

Application purpose & objective
Integration availability
Accessibility design

Deliverables

Application Development Pack

Communication Templates
Manitoba's Style Guide
AMS Development Checklist

2 Visualization

Branding Security
& Visualization Model

Best Practices Series (Training) (YE 2024)

3 Roadmap to Good Performance

EPMO Template
POD Template
Documentation & Guides Template

4 Testing & Documentation

Communications
Applications permissions
Peer review
User feedback
Application Definitions

5 Training & Adoption

Training videos
Adoption Analytics
Guides

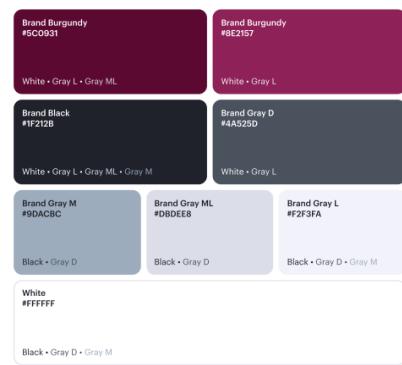
AMS Developments Standards & Best Practices

Colors for internal presentations & infographics

Brand Colors

Our brand colors should be the primary palette used for infographics. Our black, grays and white should account for 80% of the color usage, with our brand burgundies only being used for details and graphs, not for titles.

Text color pairings have been indicated at the bottom of each color chip.

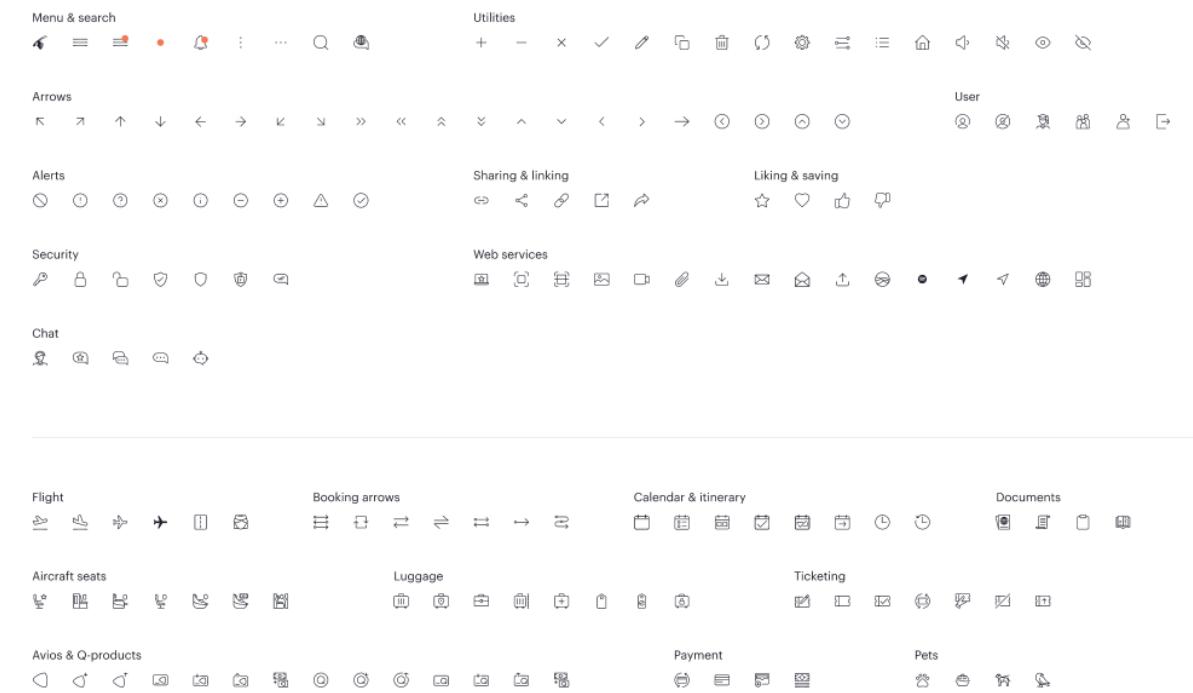


Tertiary Colors

The top row of tertiary colors come directly from our digital brand guidelines, but should be used sparingly for details in infographics. The bottom row of darker shades should only be used for text on the lightest shade of its corresponding color. Text color pairings have been indicated at the bottom of each color chip.



Standard icons 24px × 24px



WIKI: Government of Manitoba: Overview



Structure and Mandate

provincial government

Lieutenant Governor

Key Government Departments

Health, Seniors and Long-Term Care

Education and Early Childhood Learning

Indigenous Reconciliation and Northern Relations

Labour, Consumer Protection and Government Services

Workforce

14,000–18,000 people

civil service, Crown corporations

healthcare agencies, schools, and municipal partners

diversity, equity, reconciliation, and public service excellence

Community

Urban centers like Winnipeg and Brandon

Rural and agricultural communities

Indigenous communities (First Nations, Métis, Inuit)

immigrant populations

Seniors, youth, and people with disabilities

Northern populations

Aim & Core Values

Promote economic opportunity

Ensure social support and health equity

Advance reconciliation with Indigenous peoples

Provide education, safety, and justice

Support environmental sustainability and infrastructure development

Innovation and New Technology / Digital and Technology Solutions



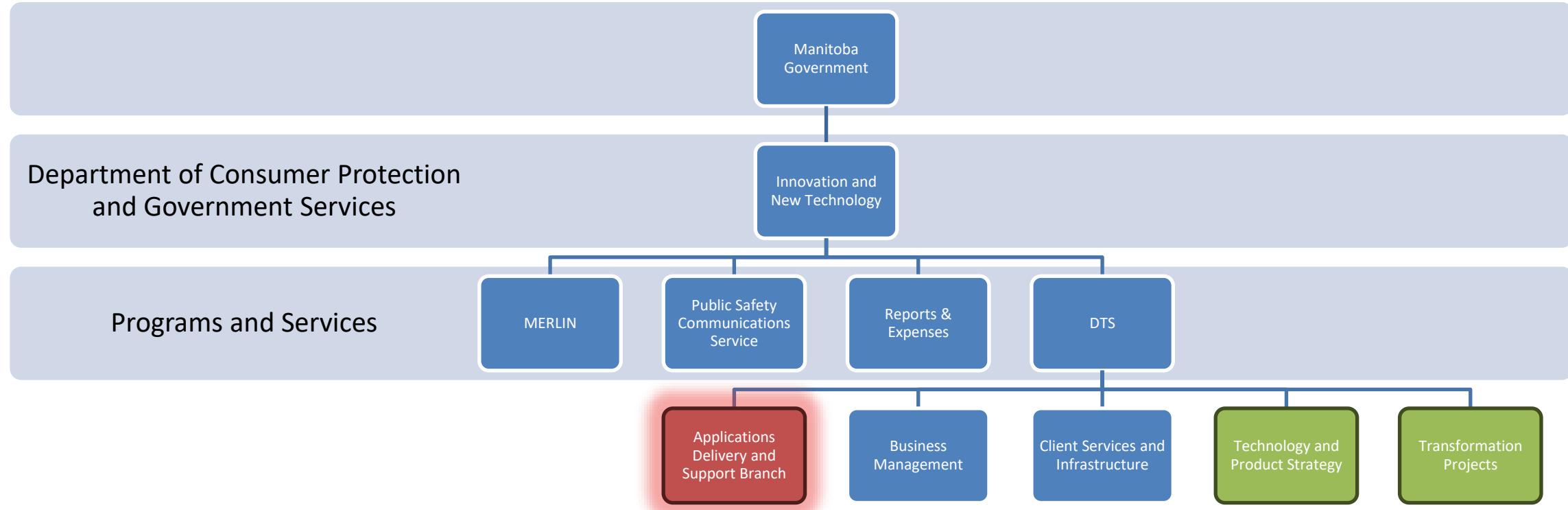
We aim for innovation not only in our Development organization, but also in the way we approach every aspect of our business



Managed Services in an organization with a highly complex application environment. This includes:
A large portfolio of legacy applications, many of which are business critical.
Numerous vendor contracts supporting different parts of the environment.
Internal teams also providing support, often overlapping with vendor responsibilities.
Ongoing efforts to modernize infrastructure, migrate to cloud platforms, and improve service delivery.

Organization Structure

Digital Technology Services (DTS)



Key Branches/Areas within DTS

Applications Delivery & Support

Crucial for managing the entire lifecycle of applications

- Delivery of applications
- Project Management Office

Business Management

Focuses on business operations, financial management, strategic sourcing, talent management, and performance

Client Services & Infrastructure

Design, transformation, and growth of service availability and support, enhancing customer experience improving service performance



Technology and Product Strategy

cohesive technology and product strategy for DTS, setting standards, selecting technology, and converting solutions into products

Transformation Projects

planning and implementation of large-scale, multi-year projects impacting the entire government

Manitoba Government Sites

	Description	Profile	Security & Reports	Services
Innovation and New Technology https://www.gov.mb.ca/int/dts.html	These are the most critical data products, essential for the organization's core operations. A failure or delay in these products can result in significant financial loss, legal issues, or disruption of business continuity	<ul style="list-style-type: none"> Adobe Dreamweaver 	Near-zero downtime, immediate recovery plans in place	Severe disruption, high financial or reputational damage
Manitoba Education, Research & Learning Information Networks MERLIN https://www.merlin.mb.ca/	These data products are vital for maintaining business operations and ensuring smooth performance, but their failure might not result in an immediate disaster. However, long-term failure will significantly affect the organization	<ul style="list-style-type: none"> Wordpress (6.8), WooCommerce (10.0.4) Twitter, Facebook, Instagram, YouTube, LinkedIn Flipbook 3d Php 	Penetration Audit (BDO) Annual Report Financial Reports & Analysis	Office 365 Hosting - Application - Backup Internet Library Training
https://manitoba.ca/				
manitobaparentzone.ca				
mbbuildingrenewalplan.ca				
mbladmz.ca				
servicemanitoba.ca				
manitobaefp.com				
rccv.ca				

The "One Team" Imperative

Challenge: Numerous vendor contracts, internal teams, and overlapping responsibilities

Vendor & Internal Support Strategy

My Approach: Fostering a Unified, Accountable Ecosystem

Outcome: A highly efficient, transparent, and accountable support ecosystem that maximizes value from both internal and external resources.



Unified Command Center



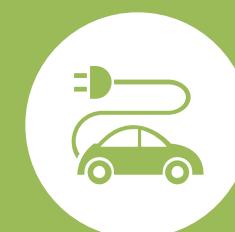
Role Clarity & RACI Matrix



Integrated Governance & Joint Planning



Contract Optimization



Knowledge Transfer & Internal Empowerment

LEADING INNOVATION

Crafting Scalable Solutions

- Providing systems support real-world decision-making
- Building pipelines that handle millions of transactions without breaking

Enabling Data-Driven Decisions

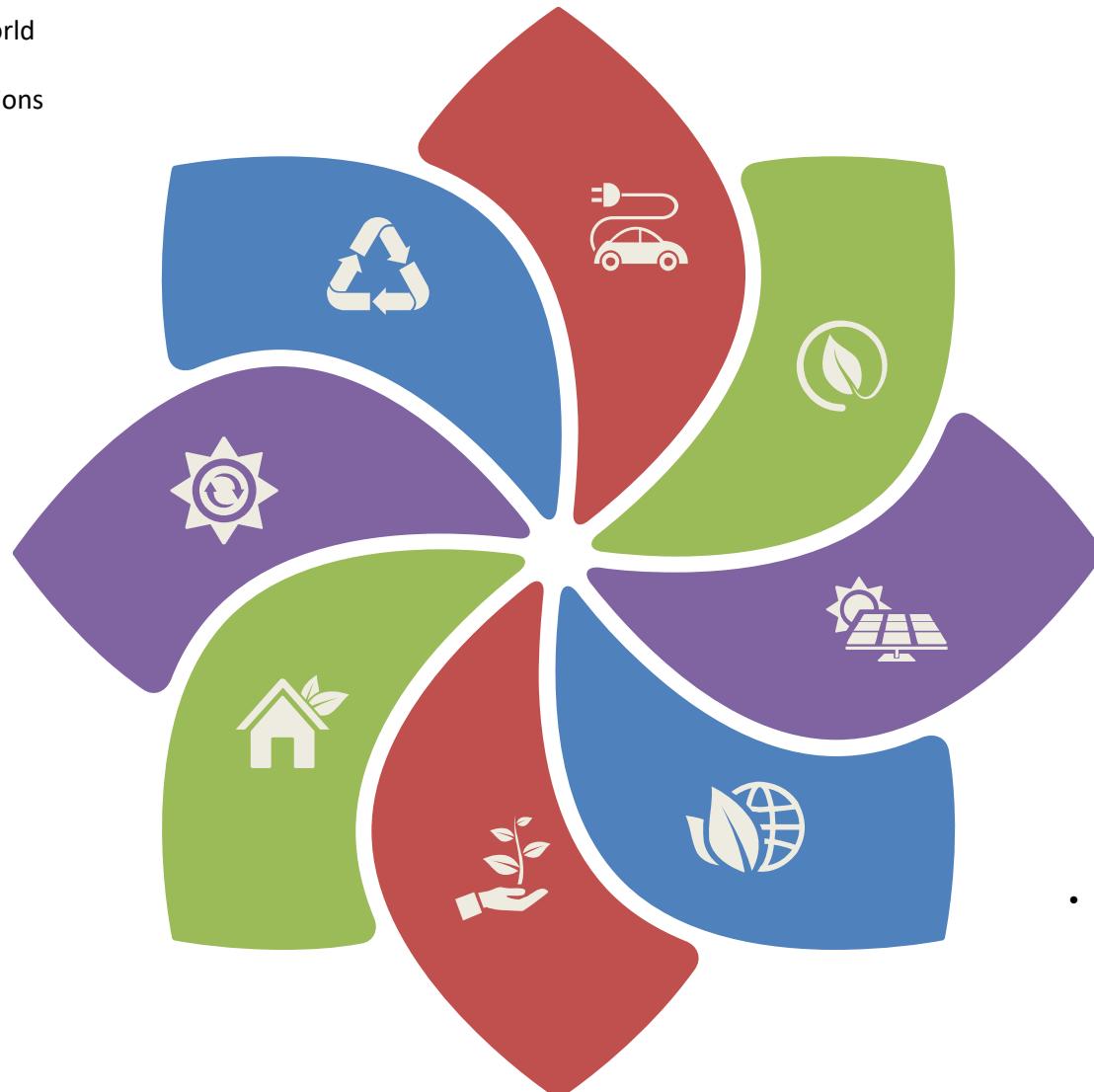
- Empowering teams with the right data at the right time
- Creating key impacts business outcomes, such as customer experience or operational efficiency

Mastery of Tools & Technologies

- Migrating from legacy systems to modern cloud solutions
- Automating repetitive tasks with orchestration tools

Continuous Learning & Problem-Solving

- Curiosity about new ways to process and integrate data
- Resilience when debugging complex pipelines or optimizing performance



Building for the Future

- Implementing data governance frameworks to ensure compliance
- Building flexible architectures that allow seamless integration of new data sources

Collaboration Across Teams

- Collaborating with data scientists, analysts, and business stakeholders
- Passionate engineers enjoy being the bridge that connects technical infrastructure with business strategy

Creating Order from Chaos

- The art of ETL (Extract, Transform, Load)
 - Organizing complex data ecosystems into logical data warehouses or lakes

A Sense of Purpose

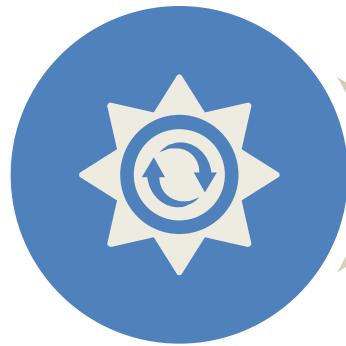
- Work as a contribution to something bigger
 - Enabling scientific research, improving academia, manufacturing, healthcare systems, or driving sustainable practices

Risk & Continuity Management

Challenge: Ensuring operational continuity while transitioning from legacy systems.

- My Approach: Proactive Resilience & Phased Transition
- Comprehensive Risk Register & Mitigation
- Phased Modernization & Parallel Runs
- Disaster Recovery & Business Continuity Planning (DR/BCP)
- Security by Design

Outcome: A secure and resilient application environment that ensures uninterrupted service delivery during and after transformation.



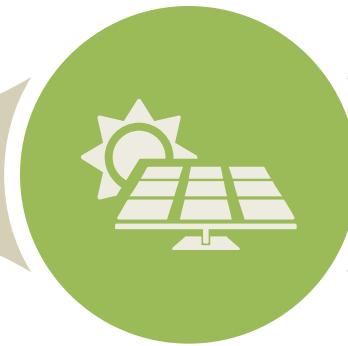
Own the Charge

Lead our AMS Platform Team, driving innovation in app management within our secure development environments



Build and Optimize

Design and oversee large-scale Apps, ensuring integrity and security



Collaborate

Partner with product teams, app engineers to drive innovation and deliver outstanding results

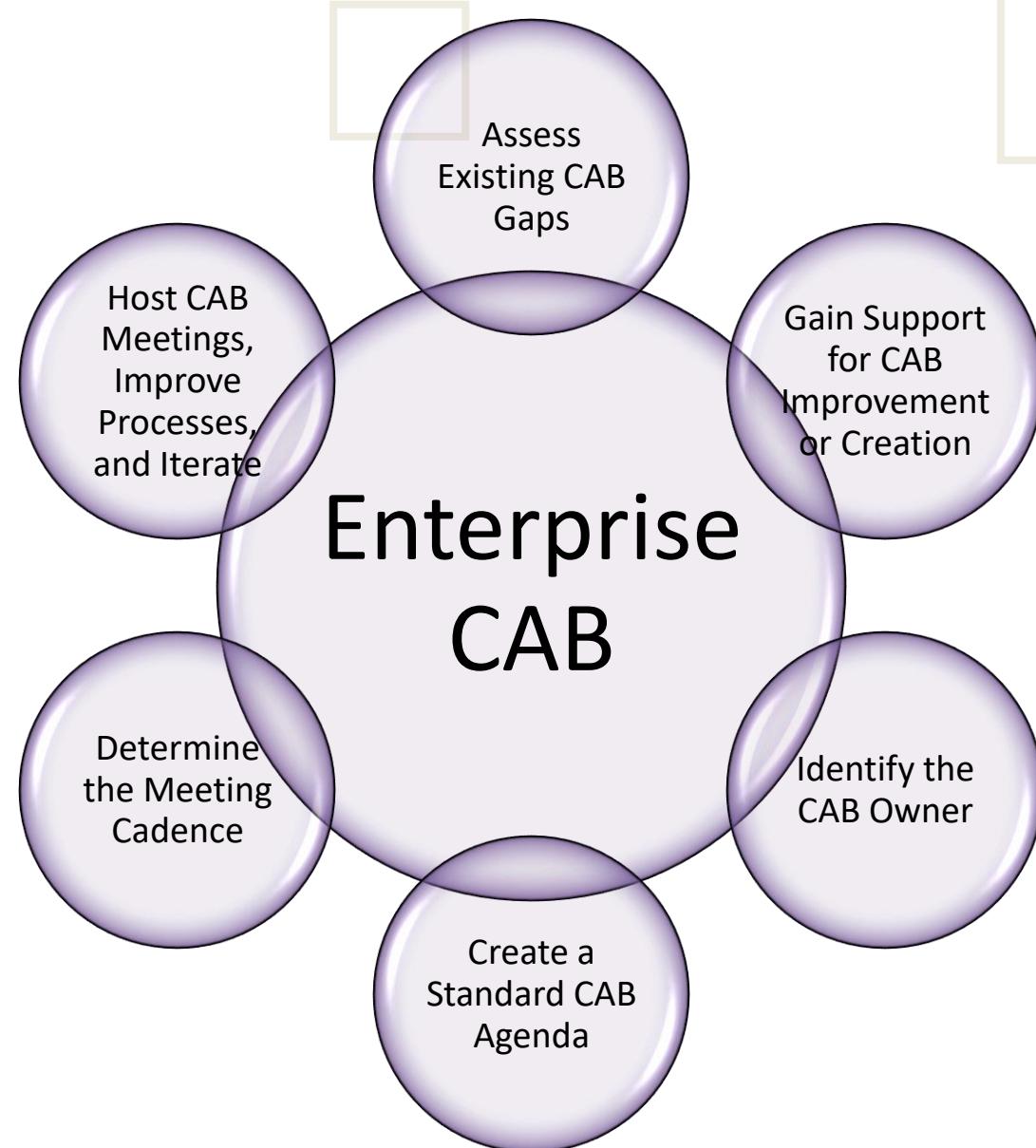


Mentor and Encourage

Foster a culture of technical excellence, empowering your teams to reach new heights

Enterprise Change Advisory Board (CAB)

Strategic process that involves careful planning and consideration changes to the ERP



"Value Realization Metrics" Framework

- Beyond traditional KPIs

Governance Structures

- Steering Committees
- Contract Governance Boards
- Project Management Office (PMO)
- Policy Alignment

Driving Continuous Improvement

- Post-Implementation Reviews
- Agile and DevOps Practices
- Vendor Performance Feedback Loops
- Capacity Building & Talent Development:

Driving Continuous Improvement



Balanced Scorecard & KPI Implementation

- Establish clear, measurable Key Performance Indicators (KPIs) and a Balanced Scorecard approach for application performance, project delivery, and team effectiveness

Performance Frameworks

- KPIs and SLAs
- Balanced Scorecards
- Benefits Realization Tracking
- Data-Driven Reviews

Reimagining Modern Infrastructure

- Enables Workday to operate on cutting-edge platforms that can efficiently process large-scale data
- Future-proofs the organization by adopting best practices and technologies that evolve with industry trends

Outcome: A transparent, outcome-driven governance structure that ensures accountability and fosters a culture of continuous improvement.

DEVELOPER VELOCITY

Drive innovation and business performance by empowering your developer



Outperform the market.
Increase innovation
Increasing Developer Velocity is critical to driving business performance



Collaborate globally and securely
Create an environment where developers collaborate and contribute to software development securely.



Build productively
Ensure that your developers have the right tools and the right skills for the job.



Scale innovation
Support the changing needs of your business including expanding to new geographies and responding to spikes in customer demand.



Developer Velocity is a framework that emphasizes empowering technical teams with the right tools, processes, culture, and autonomy to maximize innovation and delivery speed

MY JOURNEY

2013-16 KBR Inc

Spear heading ERP
Migration
Data Governance
Master metadata
management



2017

Evolving the lake by
bring GEOMATICS (**ARC
GIS**) eco system
Data Discovery using
IBM Watson **Catalog**



2019 Pratt & Whitney

Migration Data lake
Data Governance
Data Quality
Adoption of Data
Lakehouse



2023 Qatar Airways

Migration Data lake
Data Governance
Adoption of Data Mesh
Methodology in Data
warehouse



2016 Gov. Canada

- Executing Gartner's data lake vision leveraging **Oracle Big Data Appliance**
- Storage & Services using Cloudera **CDP** platform



2018

Evolving to Modular
support for Archetypes
(hub and spoke model)



2021

Building **AI Evolution Lab**
Scaling the use of **AI**
across its engineering
and operational
domains



2024

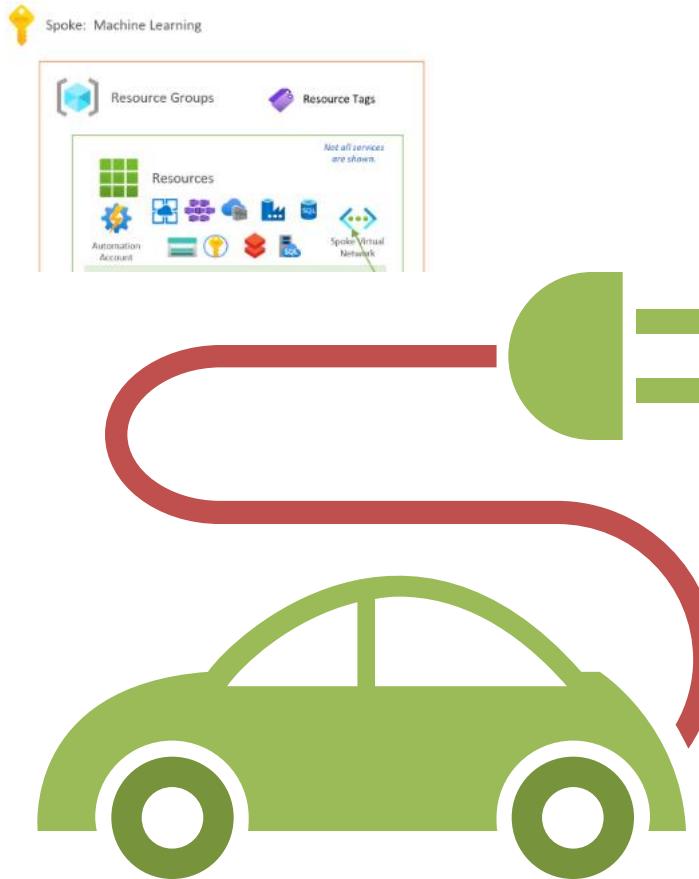
AI Virtual Cabin Crew
QR Pulse show casing
organization level KPIs real time
Aircraft Suite profiling inventory
Spend Analytics proving
business finance insights



Adoption of modern Data lake

Modern

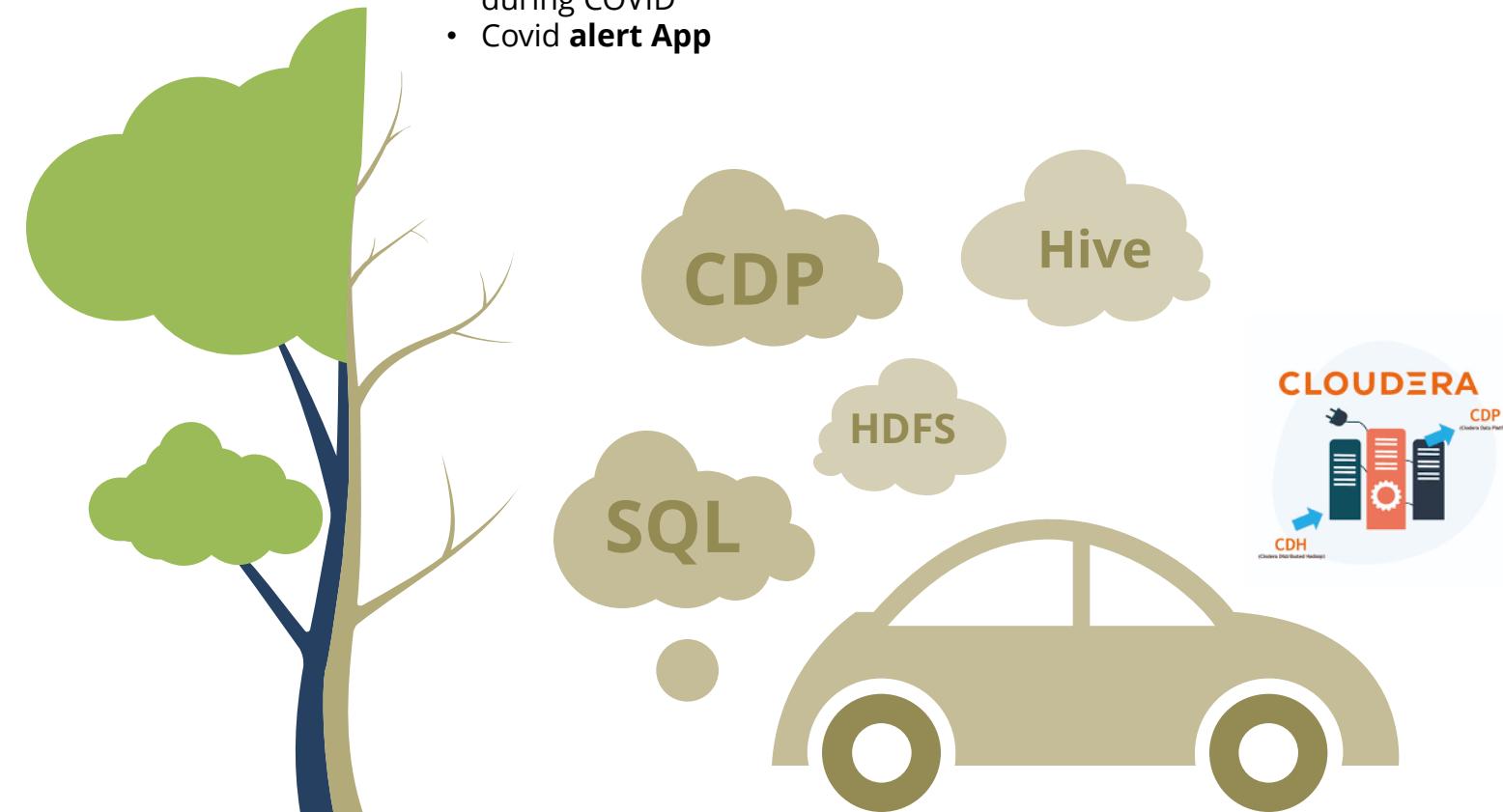
Journey from ITS to CDS (Canadian Digital Service) is accompanied by adopting **Modular support for Archetypes**



Legacy

Building a data lake during the covid emergency to assist in various governmental projects

- Statistics Canada – Collaborative Analytics Environment (**CAE**)
- The Canada Emergency Response Benefit (**CERB**) program during COVID
- Covid **alert App**



Data Exploration



ETL



Sandbox



Scheduling



STREAMING



MEASURE

01

Data points, Environment, Sandbox, Tools & Technology Selection



CREATIVE

ANALYZE



02

Define (Problem , Opportunity, Idea, POCs) Alignment with Business Goals

AI LAB

Identify root causes, statistical, trends and patterns

03

Optimize processes, automation for repetitive

IMPROVE

Monitoring and controls, reduce deviations, Alerting Mechanisms

04

Change management, promote to Production, Iterative Feedback Cycles



CONTROL



PROMOTE



Delivering a promising future



AI Evolution Lab

Using the modern AI Lab PWC was able achieve key milestones

- AI, to step up the capabilities of its oil analysis technology
Enhancing P&WC Engine Maintenance



Legacy On-premise

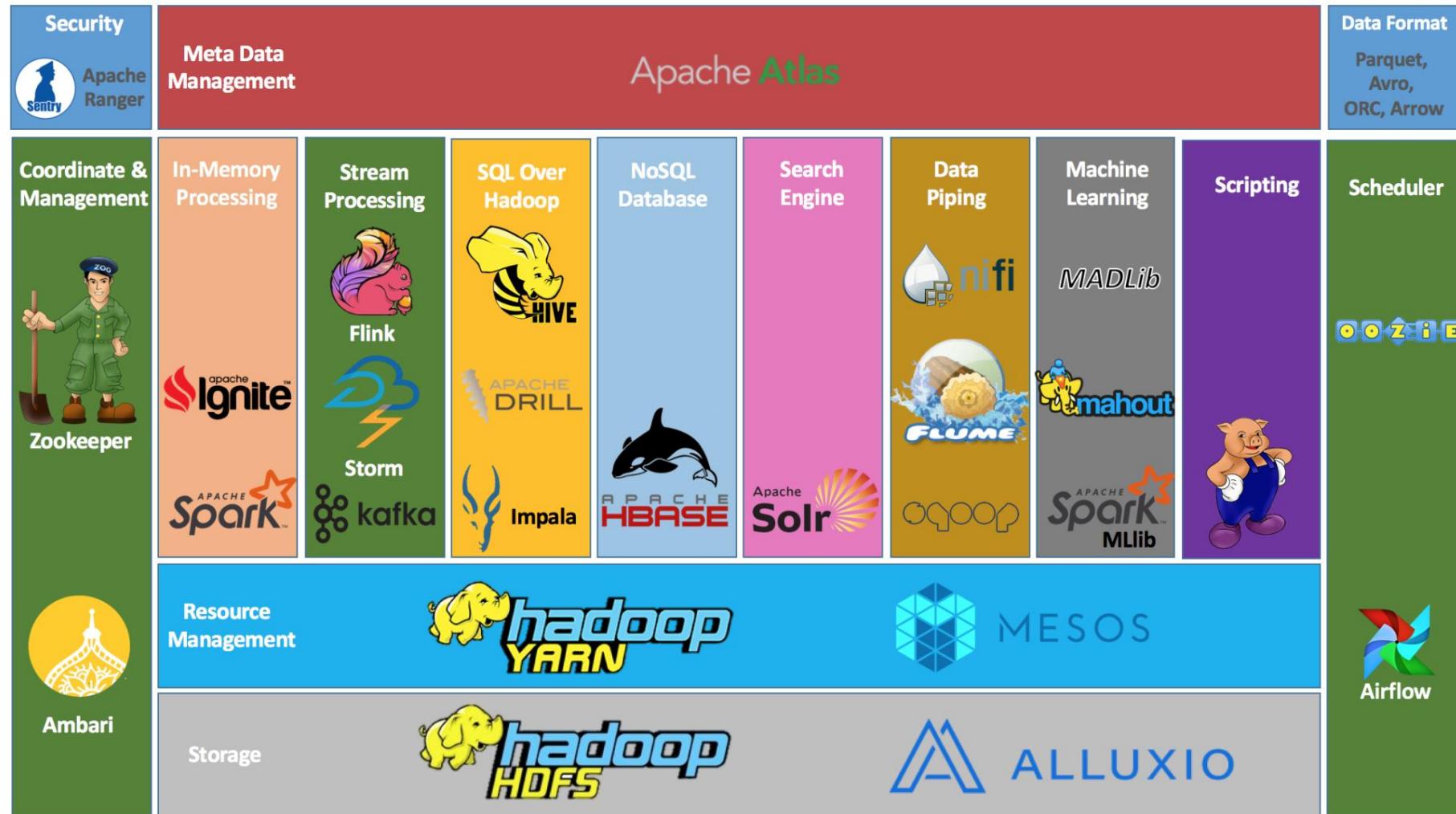
Maintaining Horton works solution to continue building POCs for the ongoing innovation reaching baseline projects

- Predict Engine Maintenance Frequency and Planning

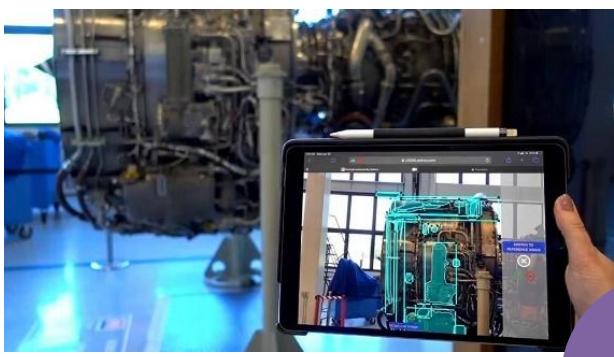




AI LAB – Legacy



PWC key achievements



Pratt & Whitney Launches AI-Powered Engine Inspection Tool



Predict Engine Maintenance Frequency and Planning



Boosts Pratt & Whitney Canada's Oil Analysis Technology to Deliver Proactive and Preventative Maintenance



AI Evolution Factory, focusing on scaling the use of AI across its engineering and operational domains



QR Journey to the Cloud & AI

Adoption



GCP Cloud Adoption

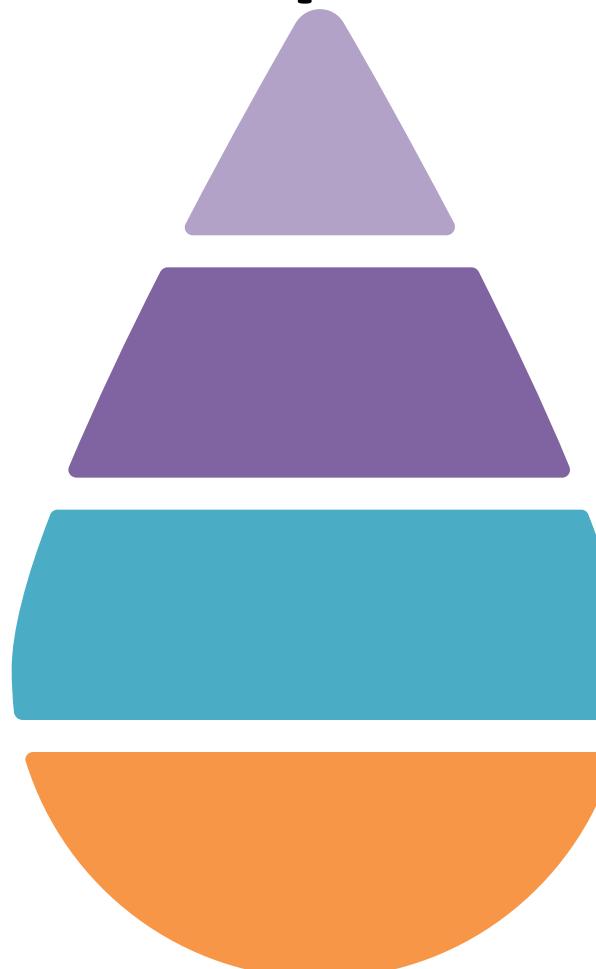
Evolving legacy warehouse to **Data mesh** warehouse on the cloud with features enabled like **FinOps**

Operational Improvements



AI systems are used to streamline various processes, such as flight scheduling, dynamic pricing, and predictive maintenance for aircraft

QR Pulse, QR Aircraft Suite, Spend Analytics, Supply Chain



AI Virtual Digital Human Cabin Crew



Sama 2.0, powered by innovative conversational AI Accessible through **QVerse**, Qatar Airways' immersive digital platform

Scalable AI Adoption



AI capabilities across multiple customer touchpoints, from pre-flight booking to in-flight and post-flight experiences

AI Evolution Road Map



CI&T
Vision

Accelerated DSP

AI Education

Early in your AI journey, we can deliver insights and advice to raise awareness and education internally among business or technical leaders.



01



AI Strategy & Assessment

We identify where and how AI can be used within your business and IT operations.

Formalize a strategy & develop a plan of how to evaluate AI opportunities and build them into your

AI Preparation

Selecting or designing an effective AI solution and prepping data and governance environment in advance of AI execution.



03



04

05



AI Execution

Execution focuses on the activities around AI implementation. We provide tailored AI development or software implementation, as well as implementation activities such as change management and process

Artificial Evolution Lab to Factory

Journey to the future



CI&T
Vision

Accelerated DSP

1. Building up the environments



Factory



Lab

2. Orchestrate a data lake house



3. Research & Develop Models



4. Onboard R&D Roles & Functions



5. Productionize ML Models & Analytics in the Factory



7. Productionize solutions to Factory & develop CONOPS



8. Collaborate, Share & Evolve



9. Reinvest in future & continuous growth



PILLARS of FinOps



Visibility

near-real-time visibility into cloud costs
Detailed reporting and dashboards for stakeholders

Accountability

ownership of cloud costs
budgets management & optimizing spending

Optimization

Continuously optimizing cloud usage by right-sizing resources
eliminating waste

Collaboration

Encouraging cross-functional collaboration between finance, engineering, and operations teams



Automation

Automating repetitive tasks
Reduces manual effort and human error

Governance

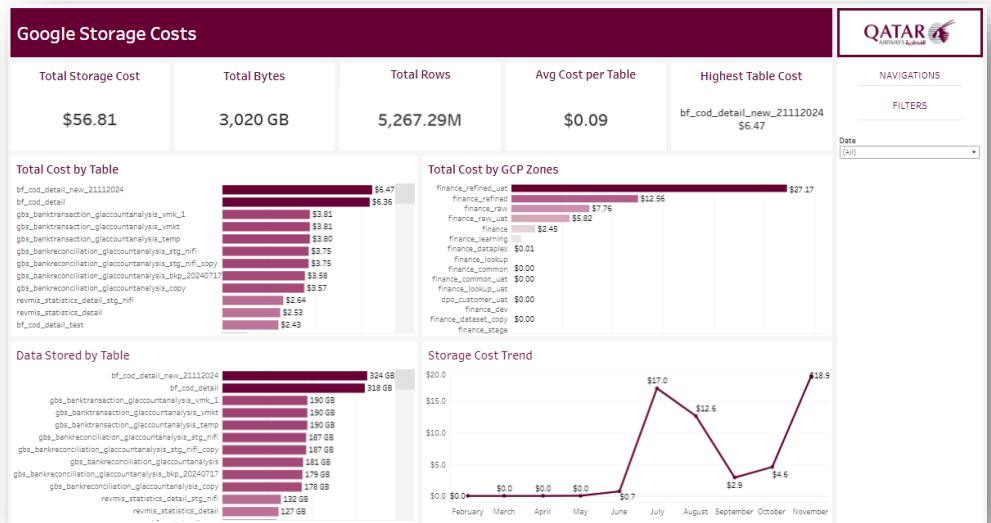
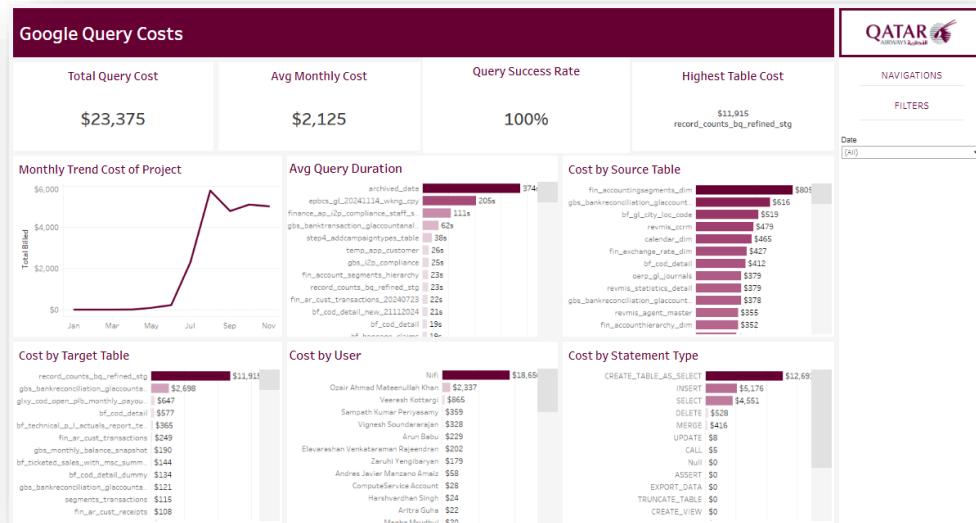
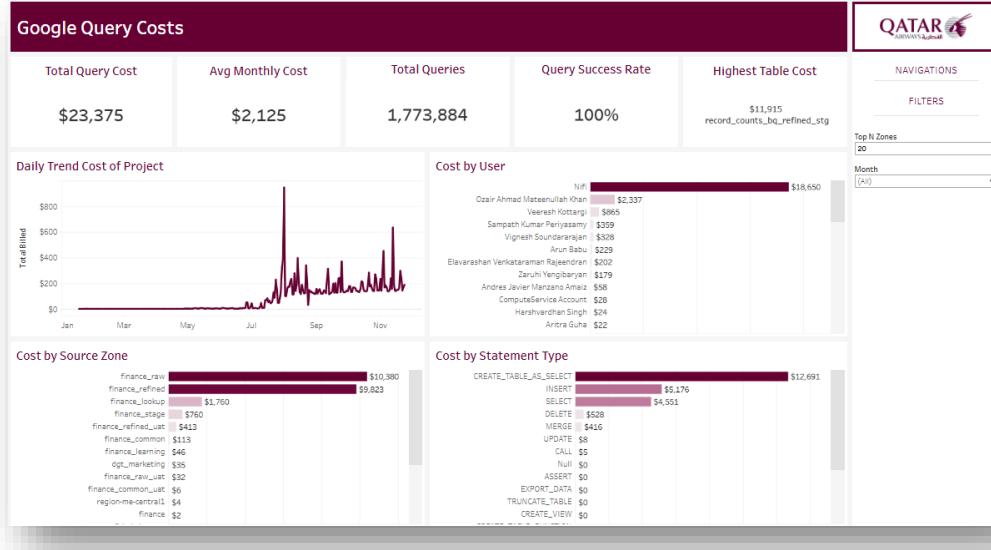
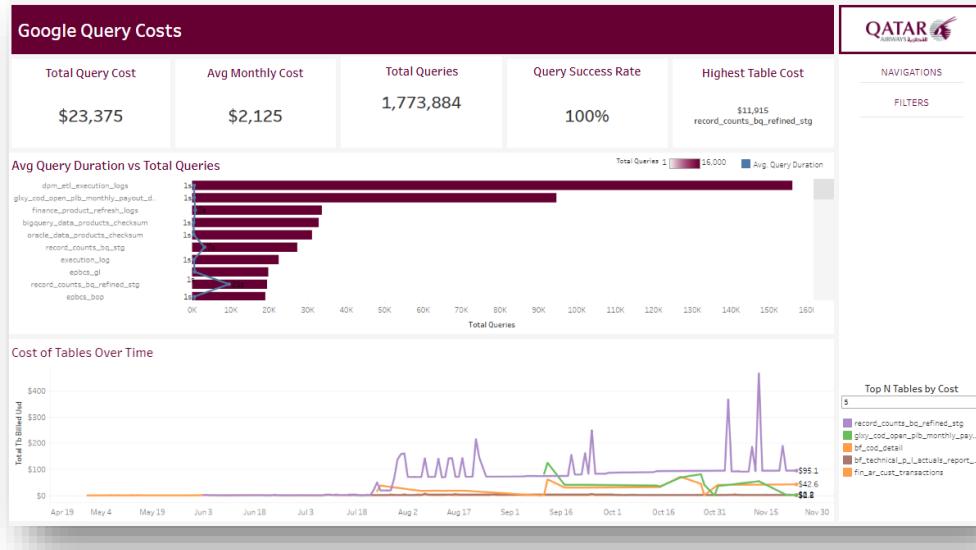
Establishing policies and guardrails
tagging policies, spend thresholds, and usage quotas

Measurement & Benchmarking

Measuring cloud cost performance and benchmarking it against industry standards or internal goals

Why FinOps

Cost Control, Maximizing ROI
Improved Collaboration
Scalability and Agility
Competitive Advantage
Risk Mitigation
Data-Driven Decisions



Finance Business Intelligence Manager

Multiple Roles in QR Family

Enterprise Data warehouse Designing, Planning & Executing (Google BigQuery)

Data Migration (Oracle to BigQuery)

Data Pipelines - Extraction Transform Load (ETL/ELT) , Continuous Integration and Continuous Delivery (CICD)

Data Quality

Data Product Development (BF Technical, BF Supply Chain)

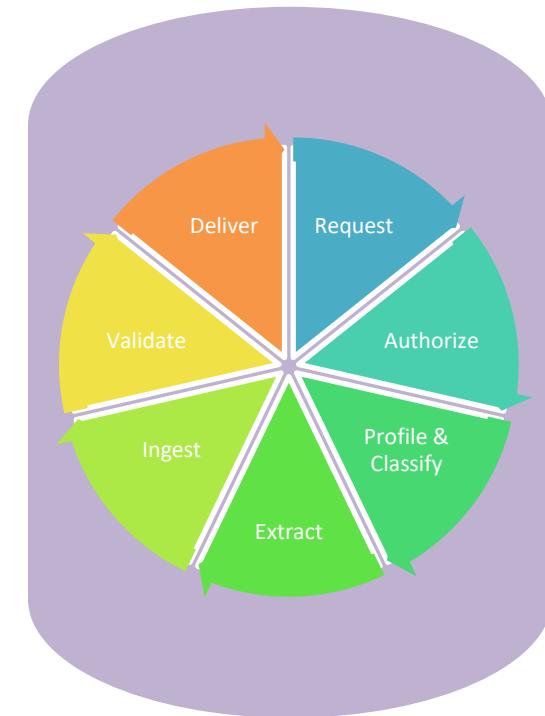
Data Catalog (Identifying Data Sources – AMR, Microsoft Purview)

Data Governance, Data governance council (TBD)

Audit & Lineage (Custom, Dataplex | Data Unity Catalog)

Automation (Alteryx, Microsoft Power Automate)

Advance Analytics (Tableau, Alteryx, Anaconda)



Manager Data Engineering

Pratt and Whitney Canada

Enterprise Data lake, Data warehouse Planning (AWS Data bricks, Redshift)

Execution (Azure, On premise Cloudera Data lake, Data bricks on , AWS cloud)

Data Catalog (Identifying Data Sources, Business and Technical)

Data Governance, Data governance council

Audit & Lineage

Security Assessment & Penetration Testing

Concept of Operation Development

Data Pipelines - Extraction Transform Load (ETL/ELT) , Continuous Integration and Continuous Delivery (CICD)

Data Quality

Advance Analytics (Microsoft Power BI – on premise and cloud)



databricks



Pratt & Whitney
A United Technologies Company



servicenow

Manager Solution Architect

Employment & Social Development Canada

Enterprise Data lake Planning

Execution (Azure, On premise Oracle Cloud)

Data Catalog

Data Governance & Lineage

Security Assessment & Penetration Testing

Concept of Operation Development

Extraction Transform Load (ETL/ELT)

Advance Analytics



Government
of Canada

Gouvernement
du Canada

Canada

ManageEngine

Senior Technical Advisor – Government of Canada

PROJECT MANAGEMENT

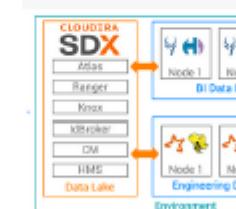


SUPPORT AND TESTING



DATA LAKE OPERATIONS

CLOUDERA



Microsoft



Arc
ESRI
GIS





Manager Solution Architect

KBR Inc
Engineering

Enterprise ERP

Migration from Oracle ERP to SAP ERP

SAP Business Object Business Intelligence Suite

Data Governance & Lineage

Extraction Transform Load (ETL/ELT)



My Career + Families

Manager Solution Architect
Senior Technical Advisor

Federal Government of Canada

Senior Solution and Data Architect Public Health Ontario

Manager Enterprise Support KBR Inc
Engineering company

Manager Web and Database Services UAE
University (Ministry of Education)



Middle East
UAE, Saudi Arabia
OMAN, Egypt

Canada/America



Government
of Canada

Gouvernement
du Canada

Canada



Australia + Canada
Middle East (Saudi Arabia
UAE)

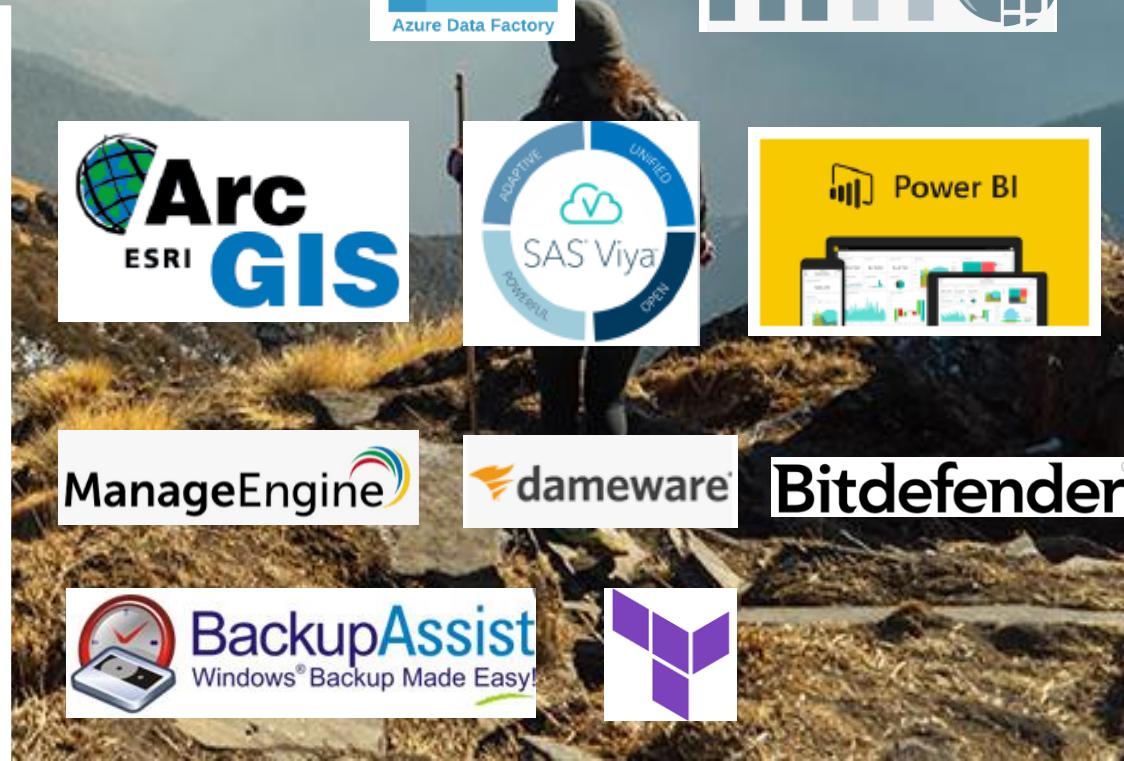


Middle East
UAE



Technologies

Project Management
Identity & Access Management (IAM)
Data Access Management (DAM)
Enterprise Management & Support
Data Lake Storage & Advance Analytics
Infrastructure on Cloud and On-Premise
(Hybrid)
Research and Operation
Open source + Enterprise



Questions

Feel free to ask any questions that would help you understand how can I serve your organization

Passionate about overcoming digital transformation challenges in designing, development, management by bringing transformation, innovation and evolution of emerging solutions across various industries by bringing alternative viewpoints and driving digital transformation through data and analytics. Motivated, organized, proactive performance driven professional with technological and diverse experience in Software and IT Infrastructure related products and services. Knowledgeable in applications of DevOps, scrum and agile methodologies. Providing organizations with different possibilities to create business value and, data and analytics which are key to a successful digital business.



Senior Solution and Data Architect

Public Health Ontario

IT Strategy

Effectively align IT to enterprise business objectives

Build the foundation to prepare IT strategy development

Adopt agile methodologies for IT and enterprise strategy development

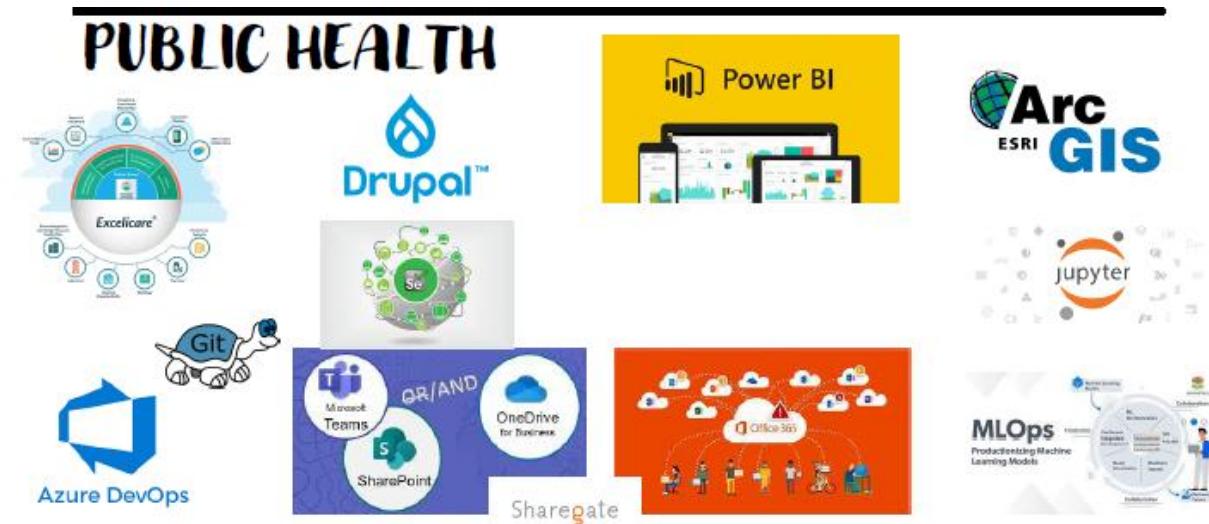
IT Audit (Penetration testing, IT Security Campaigns)

ITIL

Enterprise ERP (Microsoft Dynamic 365)

Migration (Office365, Power Apps, Microsoft Power BI, Servers, Analytics) to Cloud (Azure),

Machine Learning and Artificial Intelligence





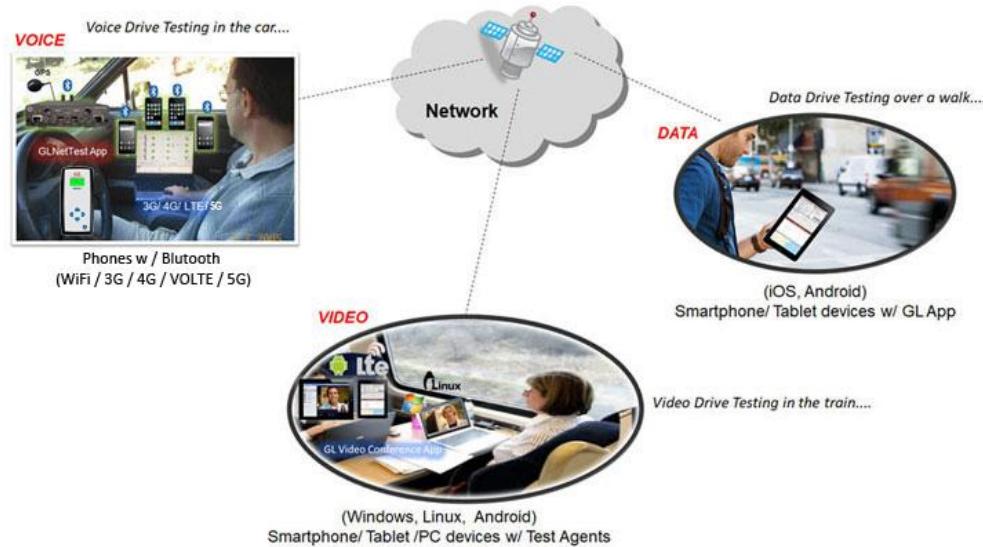
Past Experience

Radio Frequency planning and drive testing



Etisalat

Nokia Networks



ERICSSON





THANK YOU

[HTTP://MEHSANULLAH.BLOGSPOT.COM/](http://MEHSANULLAH.BLOGSPOT.COM/)

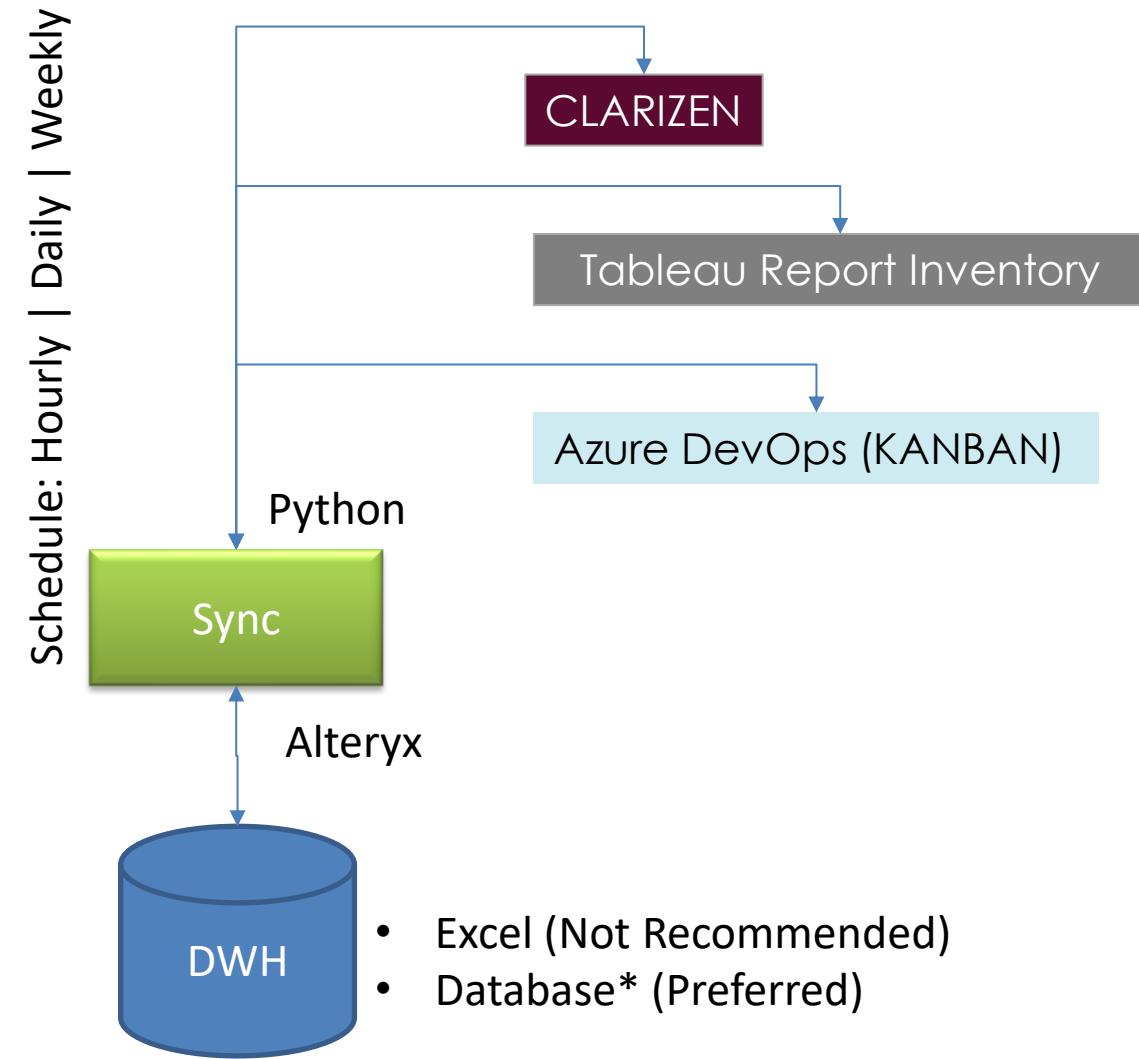
 MUHAMMAD EHSAN

 +1 571-554-4040

 ehsan4u@gmail.com

Issue: Source of Truth

- **Description:** organization may miss out on opportunities to improve its products, services, or processes
- **Problem:** Data inconsistency, Data duplication, Data governance challenges, Increased costs
- **Mitigation:**
 - Define and consolidate a single source of truth
 - Option A: Synchronize the data from single source of truth to other entities
 - Option B : Link the single source of truth to all the other applications
 - Implement measures



Data Synchronization

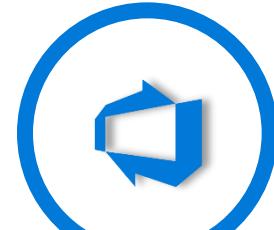
Tableau

create visualizations, and share across business units



Azure DevOps

provides users to plan, track progress, and collaborate on building software solutions



Planview

Enterprise Project Management Office



Active Directory

Services that connect users with the network resources they need to get their work done



Other Applications

All applications across the organization



Alteryx

Alteryx powers actionable insights
Alteryx to automate analytics to improve revenue performance, manage costs



Data

Engineering Team

Technical Proficiency

Understanding,
Knowledge, Experience,
Curiosity



1

Strategic Thinking

Business acumen, Data-driven
decision making, Future-
proofing data infrastructure



2

Leadership & Communication

Effective communication,
Team leadership,
Stakeholder management



3

Problem-Solving & Analytical Skills

Troubleshooting, Root
cause analysis, Data
analysis



4

Cloud Expertise

Cloud platforms, Cloud
services, Cost
optimization



5



Build a Strong Team. Foster Skill Matrix.

Cultivating these skills, data engineering leaders can effectively drive data-driven innovation, improve business outcomes, and position their organizations for success

Engineering



Leadership and Communication Skills

Cloud Expertise

Technical Proficiency

Problem-Solving & Analytical Thinking

Strategic Thinking

Transformation Skills

Implementation Skills

Leadership Strengths

Business Skills

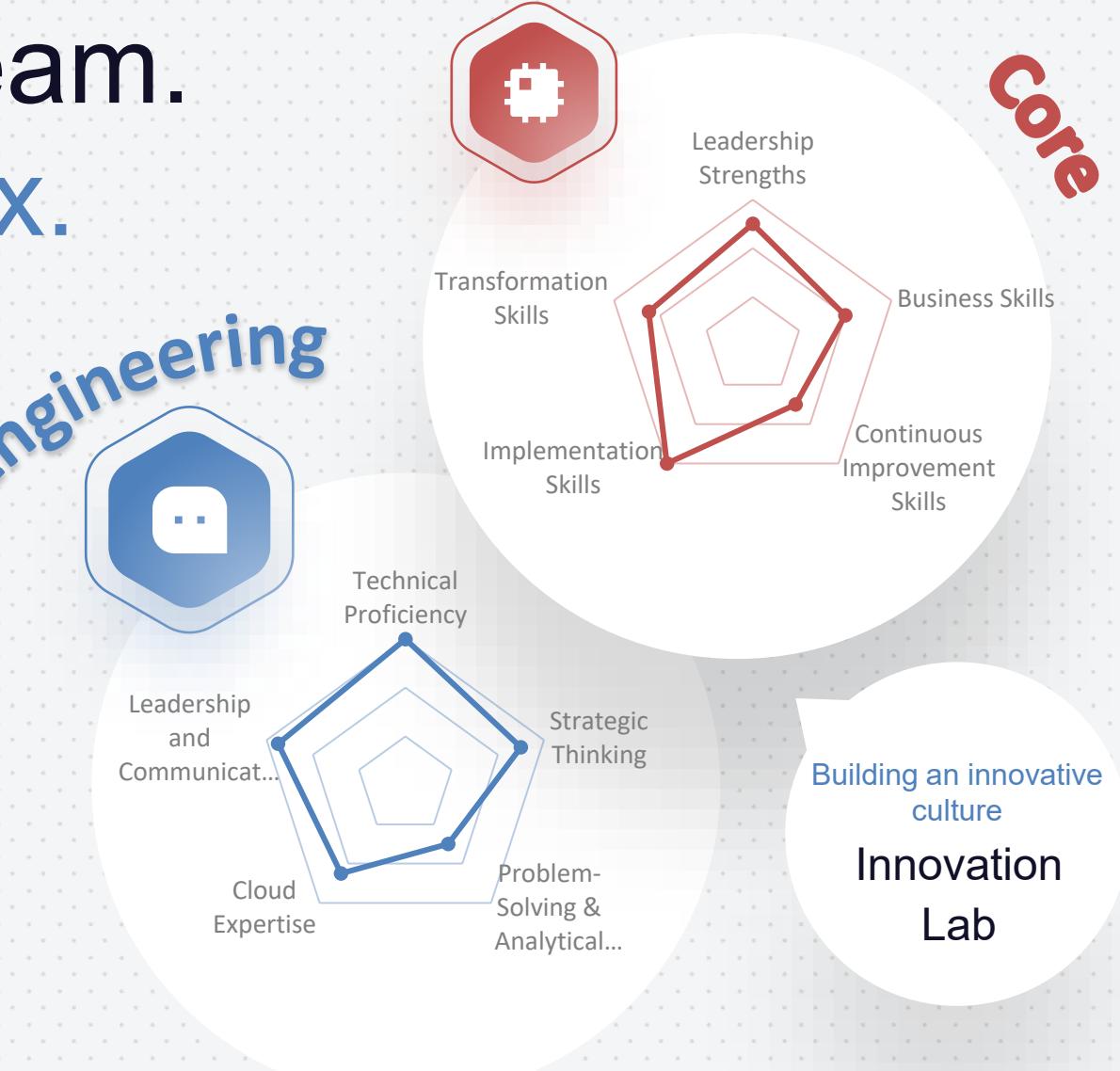
Continuous Improvement Skills



Building an innovative culture

Innovation Lab

Core



Six Sigma

Core Transformation

01

White Belt

Basic awareness of Six Sigma
Support team efforts
A few hours to 1 day

02

Yellow Belt

Understanding of tools and DMAIC framework
Assist in projects
1-3 days.

03

Green Belt

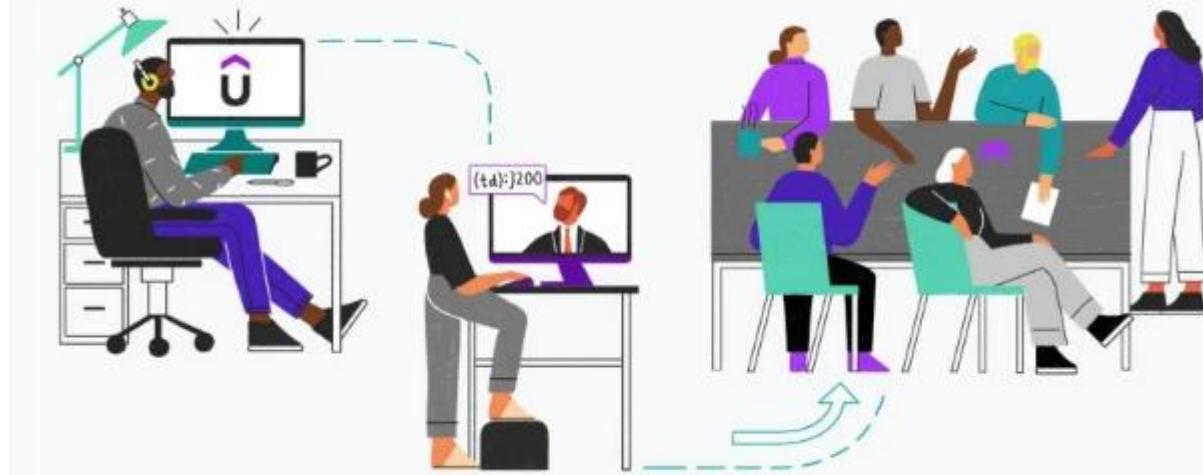
Intermediate tools, DMAIC leadership
Lead smaller projects
2-4 weeks

04

Black Belt

Advanced tools, leadership, and mentoring
Lead complex projects, mentor others
4-6 weeks

Training & Certification



Project Management.



— essentials.

Team Collaboration. Essentials.



Monitor and Optimize



Performance Monitoring

PPM

Projects

Support

Training

Mandatory,
Compliance

Self
Development

Drive Innovation
& Research

Emerging Technologies

Proof of
Concepts

Data Science

Collaborating with Internal & External Partners

Create a community &
partnership

- ✓ Knowledge share across partners
- ✓ Standardize best practices

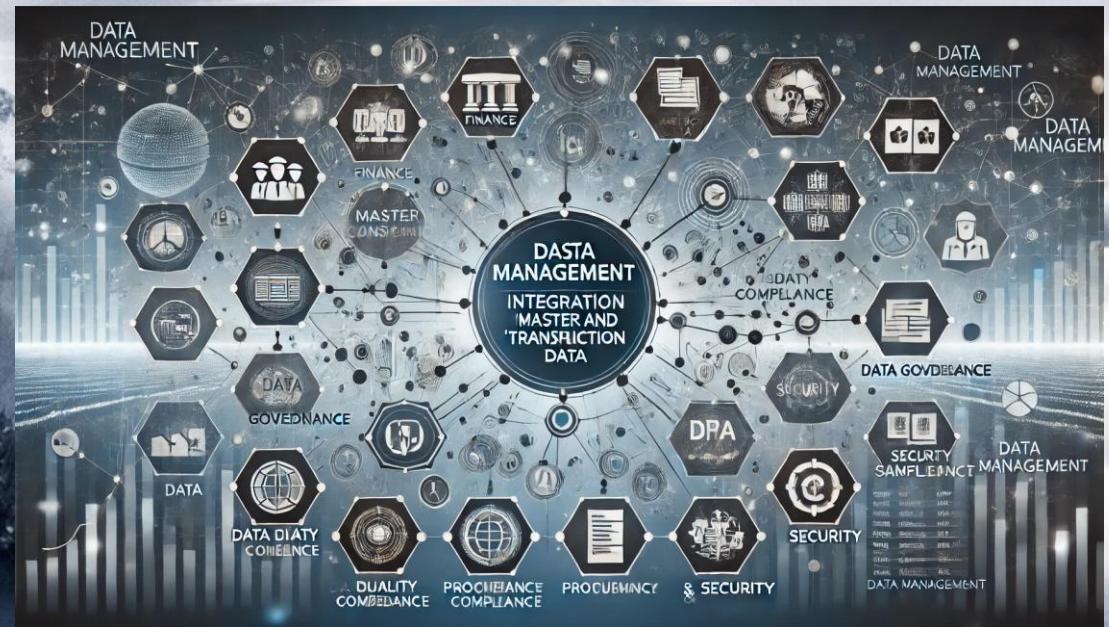


Thank You.





ERP Transformation



Transforming Today for a Smarter Tomorrow