How to become a data-driven public sector organization

Carlos Rivero (he, him)

Executive Government Advisor
Amazon Web Services

Data driven public sector organization

A QUICK CHAT

The Basics
What do I need to know?

Accountability
How do you ensure responsibility?

Transparency
How do the operating and governance models support data sharing?

Visibility
Who is using what data and how?

Use Cases
Real world implementations support the public sector mission

AWS Public Sector Enablement
How are you thinking of leveraging your data assets and how can AWS help?

A data-driven organization is imperative for the future

68%

unable to realize value from data

Accenture, "Closing the Data-value Gap," https://accntu.re/33V6sU3

28%

have a data strategy in place

Accenture, "Closing the Data-value Gap," https://accntu.re/33V6sU3

24%

a data driven organization

New Vantage Partners LLC (2021). Big Data and AI Executive Survey 2021

> *"The public sector is flush with opportunities for leveraging AI and data because our purpose is to provide services to the citizens of our state. We have a lot of data and many problems to help solve. Staff resources can be a challenge, so leveraging machine learning, AI, and Natural Language Processing can help us meet many of these challenges, but at a scale that we otherwise would not be able to address."*
>
> Patrick McLouglin, Executive Director – MD Think

Why are public sector organizations becoming data-driven?

- Improve **Operational Efficiency**
- More Customer-centered **Services**
- Right Data, Right Time, **Right People**
- Better **Outcomes** for Constituents
- **Visibility** of Outcomes for Decisions

What is a data-driven public sector organization?

- Data is valued as a **strategic asset** not a by-product of business processes
- Data is **FAIR** (Findable, Accessible, Interoperable, and Reusable)
- Stakeholders throughout the organization are **empowered** to make actionable decisions

The data-driven government

Culture
Align business and technology leaders

People and process
Build the right organization and process model

Technology
Empower leaders with an end-to-end data strategy

Using a modern data strategy to become data-driven

Mindset

Beliefs, values, and behaviors that create a data-driven culture with use-cases aligned to strategic objectives

People / Process

Structure and roles that accelerate data-driven outcomes and processes that enable and scale effective use of data

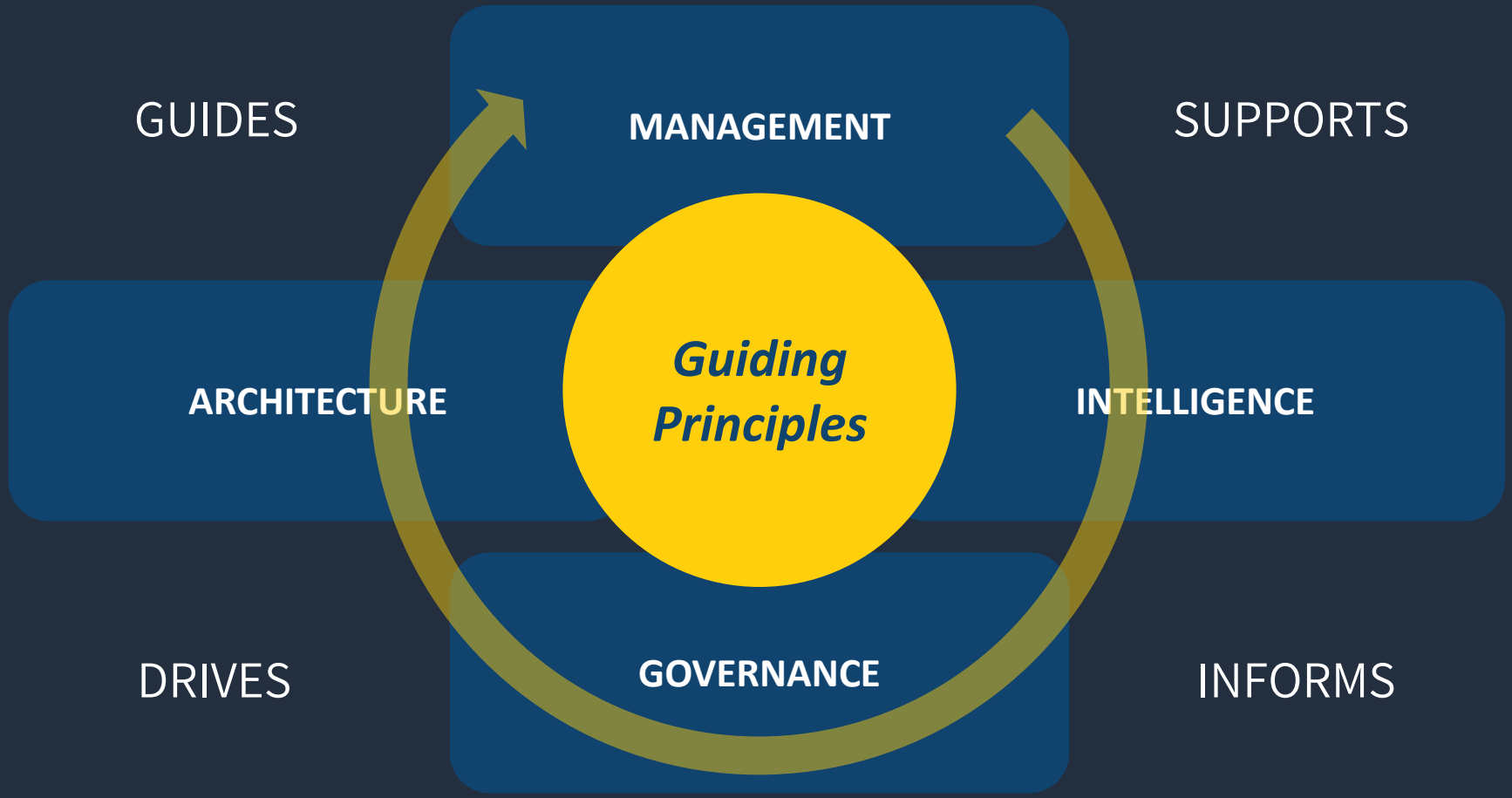
Technology

A “North Star” vision for a future data architecture to support priority use-cases

Mobilize

Execution approach and tools to rapidly unleash the value of data by deploying innovations

Components of a modern data strategy



Establish guiding principles to communicate from the top

These represent the key tenets for your data strategy

Examples:

Empower the service agencies and divisions to solve their specific problems

Only move data when it is absolutely essential for supporting a specific use case.

Abstract technical complexities so teams can move fast.

Decentralized governance to improve agility while still protecting the data.

Data sharing and integration produces results

65%

reduced risk of lawsuits, data breaches, and data errors

30%

reduced effort to launch new services/adhere to new requirements

85%

were able to decommission legacy technologies

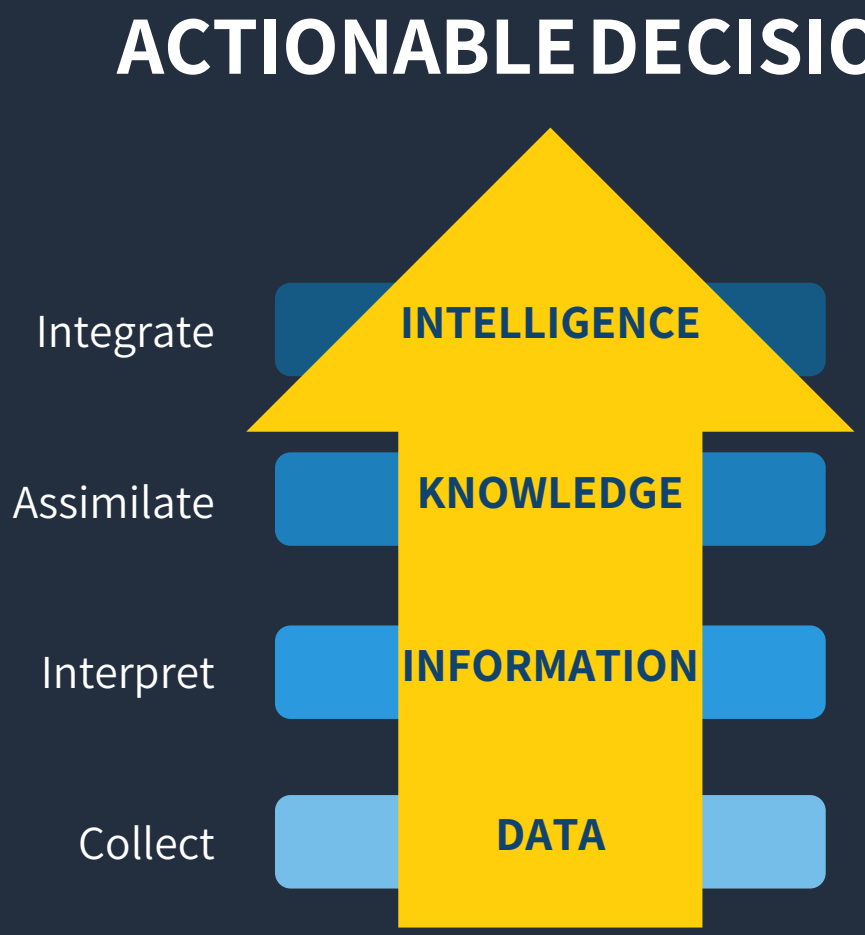
Forrester Research, Inc., "The Total Economic Impact of Data Integration for the Public Sector: Cost Savings and Socioeconomic Benefits Enabled by Data Integration."

AWS Public Sector Blog, "Forrester study commissioned by AWS estimates an ROI of 33% from data integration"

"Public sector organizations realize exponential benefits from incremental investments when they leverage mission-critical use cases to iteratively build foundational capabilities that facilitate data sharing, integration, analytics, and intelligence throughout the enterprise."

Carlos Rivero, former Chief Data Officer for the US Commonwealth of Virginia

Transforming data to intelligence increases its value



Supporting multiple use cases exponentially increases the value of your data

Public sector organizations see the value in sharing data with a trusted community of organizations, but face challenges

Data siloes

Lack of standards

Lack of trust

How can a public sector organization build trust?

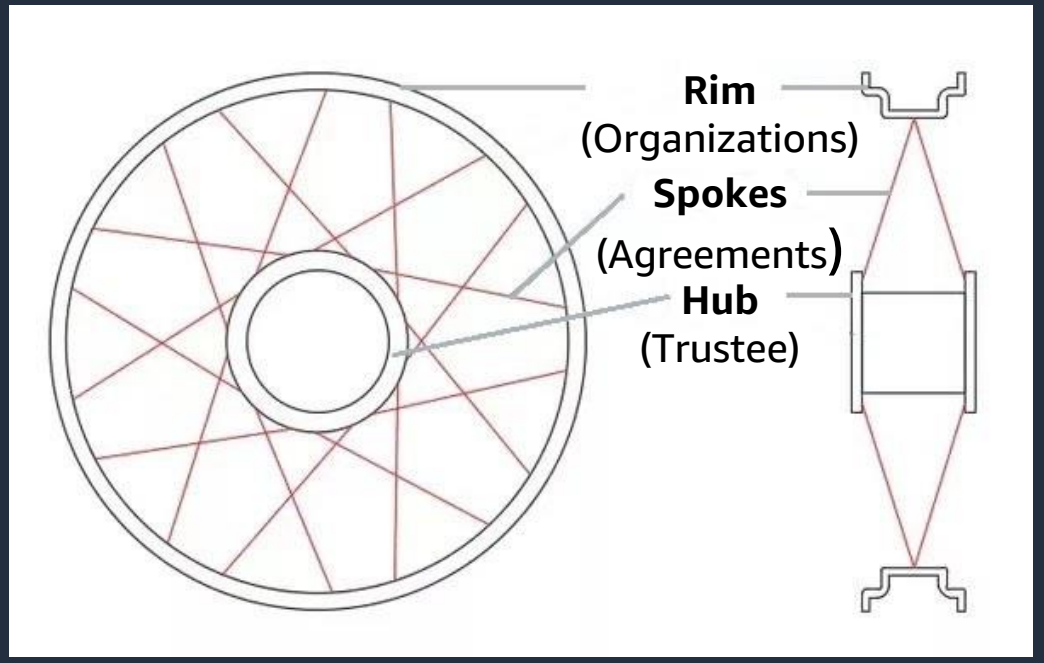
- Establish **accountability**
- Operate **transparently**
- Promote **visibility**

Accountability

Building trust begins with the right legal framework

Safe, secure, and legally compliant information sharing environment

- Establish consistent requirements for trust members through a standardized data sharing agreement process
- Provide a scalable alternative to multiple “point-to-point” sharing agreements
- Promote trust among members through common rules for data security, privacy, and confidentiality
- Reduce technical costs by onboarding to a single environment using standard NIEM protocols
- Start small with focused project-based data trusts and evolve into enterprise implementation



Key relationships facilitate accountability

Data-driven organizations enable agility by pushing responsibility to the edges, to the producers and consumers of data

Producers

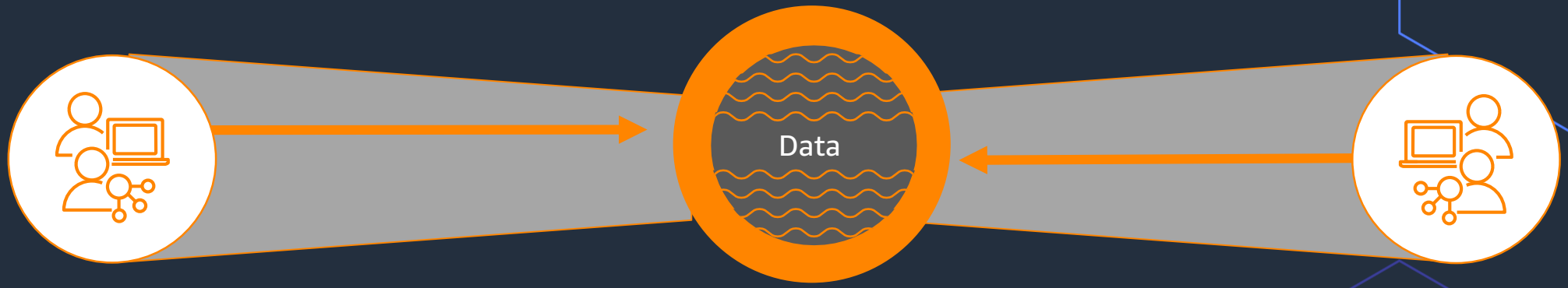
"Teams that want to share data"

Trustee

"Team that operates the platform"

Consumers

"Teams that want to use data"



- Domain expertise
- Data ownership and governance
- Data quality
- Metadata Management

- Build security controls
- Build and run the platform
- Simplify on-boarding
- Enterprise datasets
- Training and community

- Execute business priorities
- Business analytics development
- Data Discovery
- Data pipeline development
- Creation of new insights

Level of decentralization depends on maturity of skills, complexity of business, domain knowledge required, and pace of tech change

“Organizations are not putting their data in the trust, they are making data available through the trust.”

Transparency

Government Agency

Law Enforcement

Medical Professional

Policy Maker

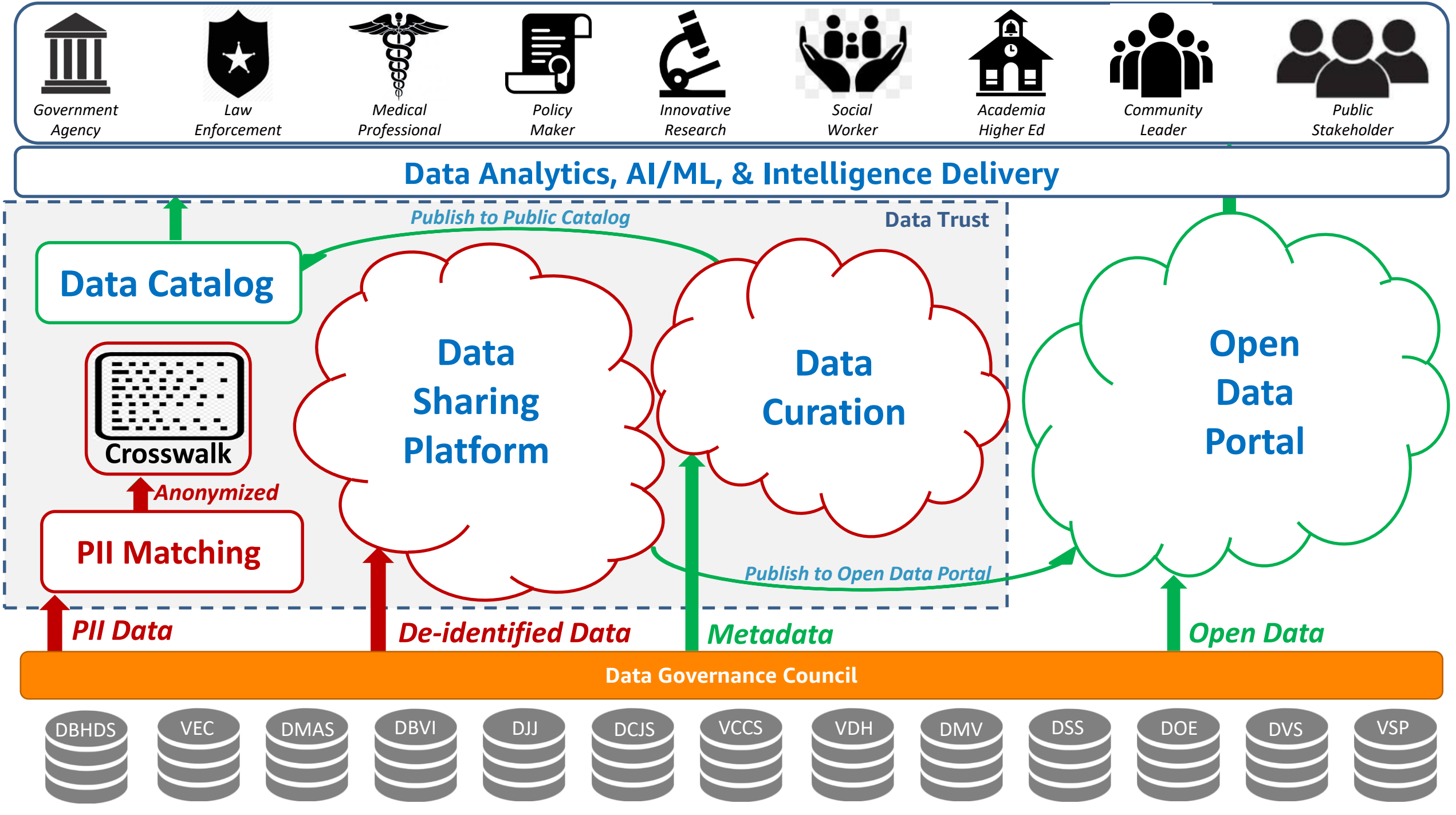
Innovative Research

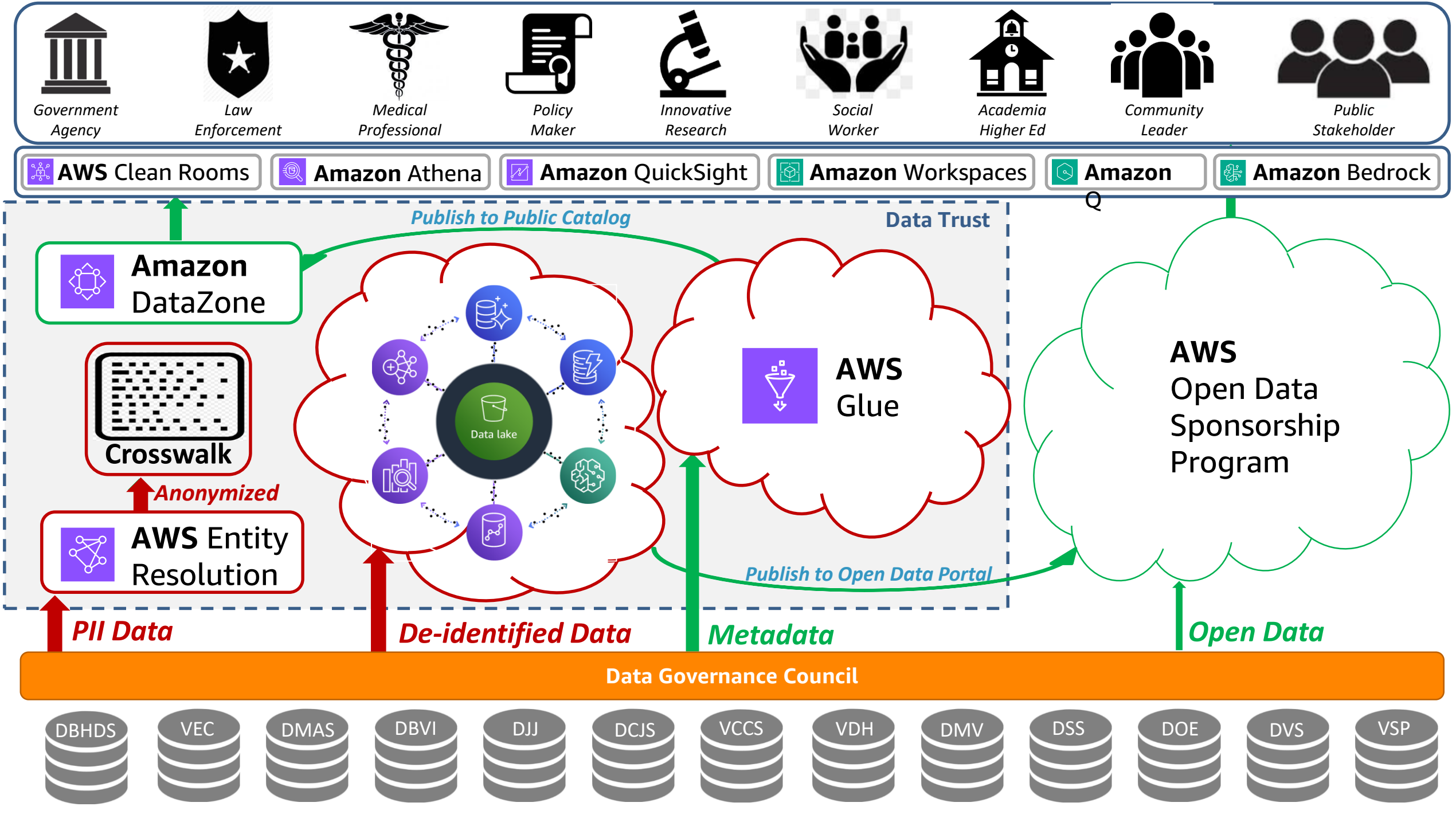
Social Worker

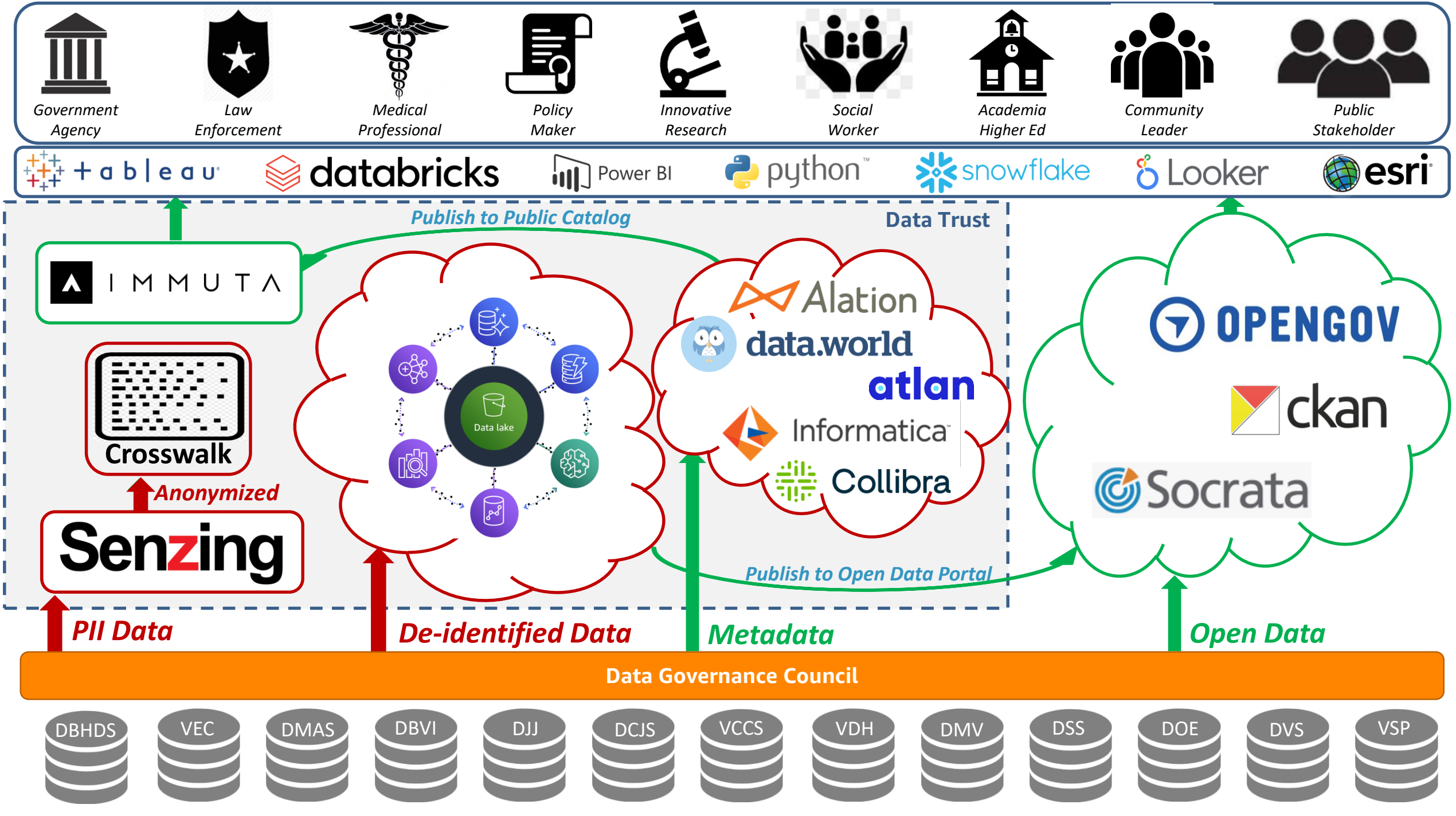
Academia Higher Ed

Community Leader

Public Stakeholder

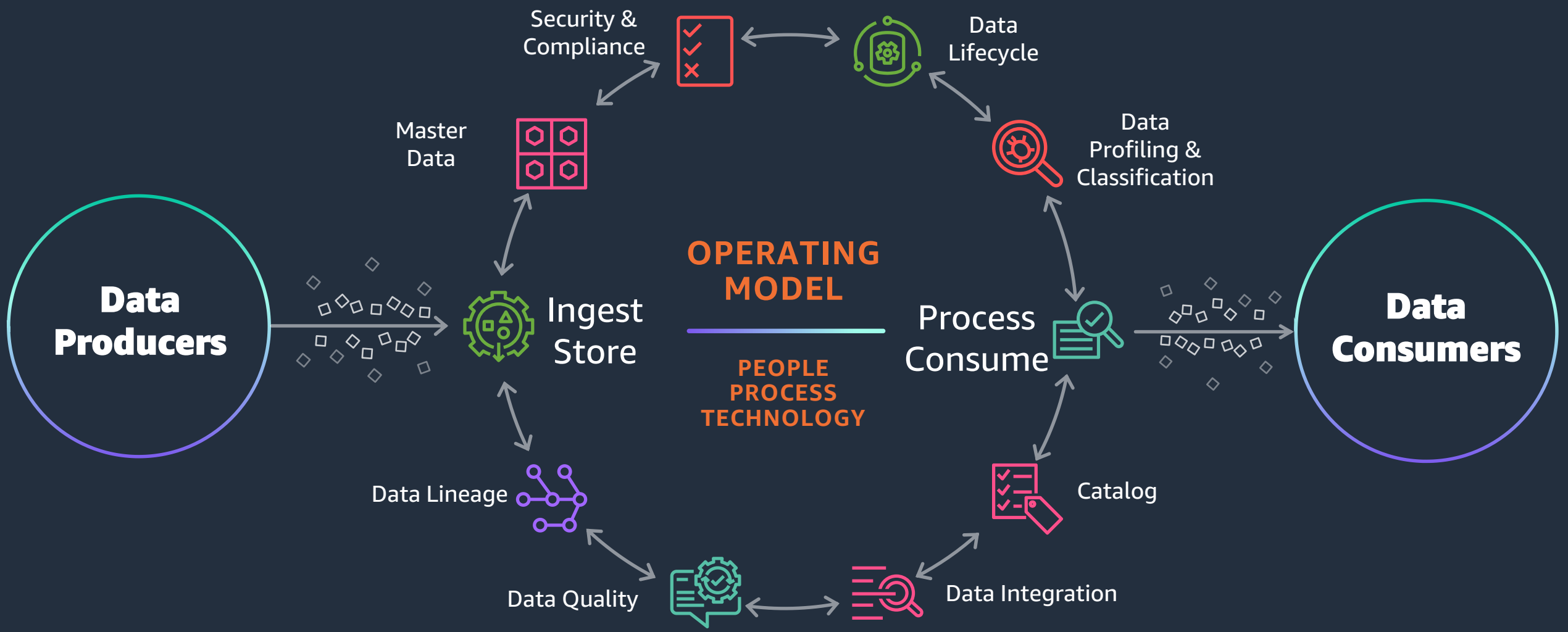

Government Agency
Law Enforcement
Medical Professional
Policy Maker
Innovative Research
Social Worker
Academia Higher Ed
Community Leader
Public Stakeholder
Data Analytics, AI/ML, & Intelligence Delivery
Publish to Public Catalog
Data Trust
Data Catalog
Crosswalk
Anonymized
PII Matching
Data Sharing Platform
Data Curation
Open Data Portal
Publish to Open Data Portal
PII Data
De-identified Data
Metadata
Open Data
Data Governance Council
DBHDS
VEC
DMAS
DBVI
DJJ
DCJS
VCCS
VDH
DMV
DSS
DOE
DVS
VSP


Government Agency
Law Enforcement
Medical Professional
Policy Maker
Innovative Research
Social Worker
Academia Higher Ed
Community Leader
Public Stakeholder
AWS Clean Rooms
Amazon Athena
Amazon QuickSight
Amazon Workspaces
Amazon Q
Amazon Bedrock
Publish to Public Catalog
Data Trust
Amazon DataZone
Crosswalk
Anonymized
AWS Entity Resolution
Data lake
AWS Glue
AWS Open Data Sponsorship Program
Publish to Open Data Portal
PII Data
De-identified Data
Metadata
Open Data
Data Governance Council
DBHDS
VEC
DMAS
DBVI
DJJ
DCJS
VCCS
VDH
DMV
DSS
DOE
DVS
VSP


Government Agency
Law Enforcement
Medical Professional
Policy Maker
Innovative Research
Social Worker
Academia Higher Ed
Community Leader
Public Stakeholder
tableau
databricks
Power BI
python
snowflake
Looker
esri
Publish to Public Catalog
Data Trust
IMMUTA
Crosswalk
Anonymized
Senzing
Data lake
Alation
data.world
atlan
Informatica
Collibra
OPENGOV
ckan
Socrata
Publish to Open Data Portal
PII Data
De-identified Data
Metadata
Open Data
Data Governance Council
DBHDS
VEC
DMAS
DBVI
DJJ
DCJS
VCCS
VDH
DMV
DSS
DOE
DVS
VSP

An easy-to-understand operating model

Earn trust through accountability, transparency, and visibility



Visibility

Data governance framework oversees data operations

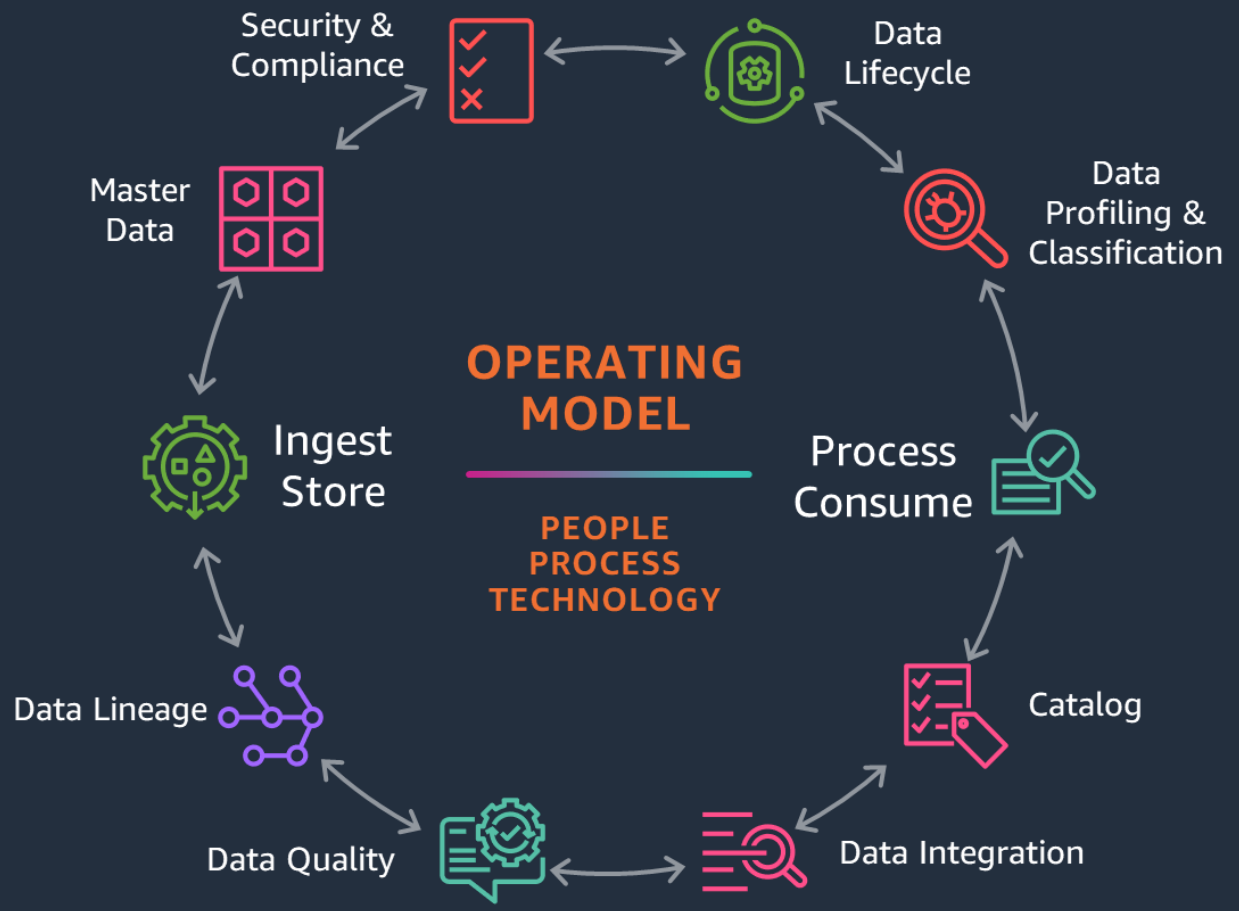
- **High-level Organizational Leadership**
- Identify organizational goals and objectives
- Prioritize initiatives for implementation
- Recommend changes to policies and budget

- **Line of Business Leaders**
- Review, adopt, and implement recommended policies, standards, and best practices
- Oversee the Data Governance Council

- **Data Owners**
- Oversee the operations of the Data Trust
- Recommend policies, standards, and best practices to improve data quality, security, accessibility, and use

AWS approach to data governance

- people, processes, and technology that organizations use to ensure the quality and security of their data throughout its lifecycle



THINK BIG, START SMALL, SCALE FAST

1. Architect data governance to support the wider data strategy
2. Implement incrementally based on business initiatives and use cases that drive the data strategy
3. Further evolve data governance capabilities over time

Consistently engaging your stakeholders ensures visibility

Build community through communications and outreach

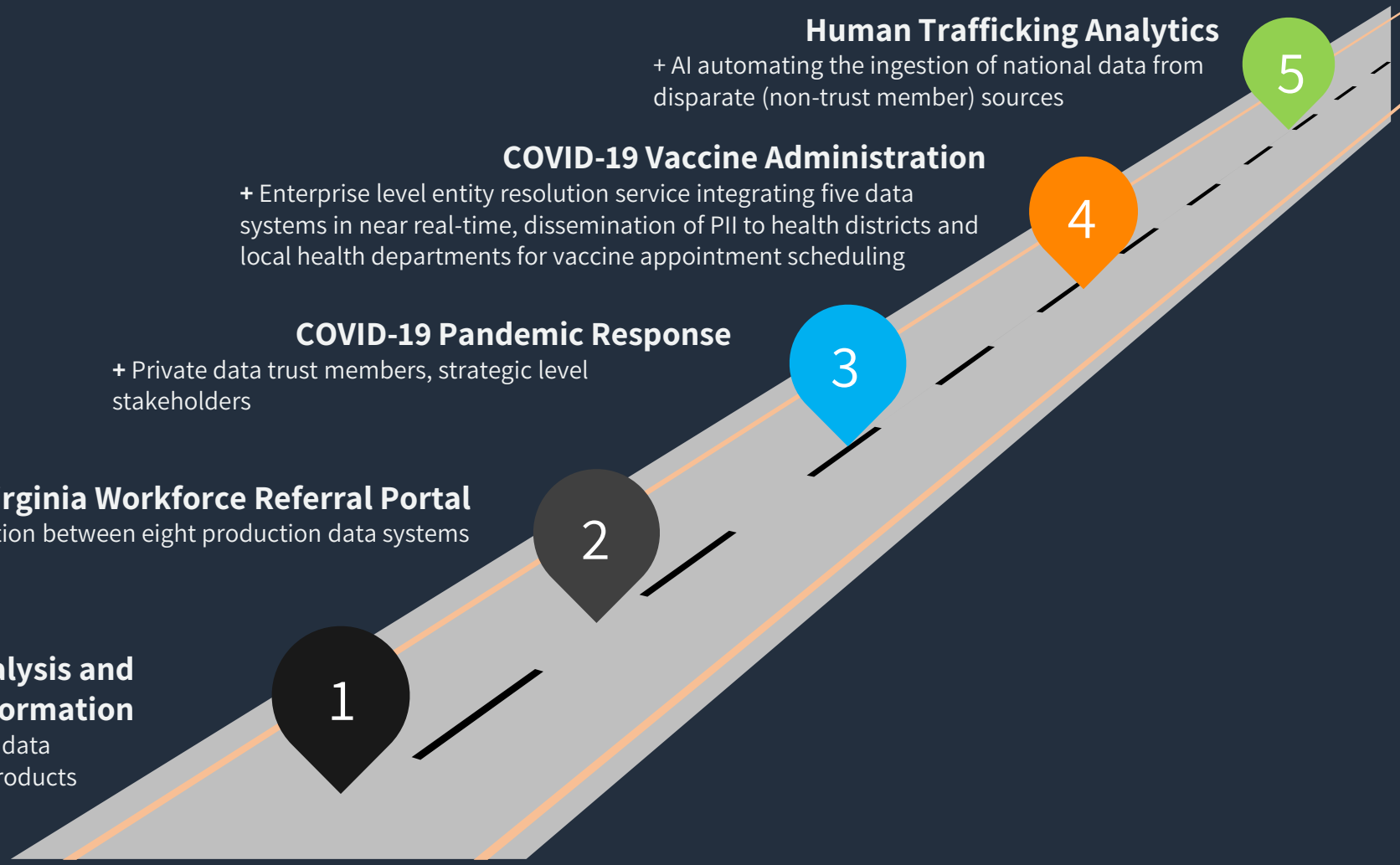
- Road shows and outreach campaigns
- Governance entities
- Monthly newsletters
- Social media
- Datathon
- Data Summit

Best practices to build trust

Reasonable Questions	Best Practice	Benefit
Who is responsible for ensuring only authorized individuals access sensitive or restricted-use data for approved projects?	The Chief Data Officer or Data Leader facilitates enterprise data sharing transactions on behalf of operational units	Accountability
How do I know the security and access controls align with defined data sharing policies and procedures?	Data Governance Council oversees the operations of the data program and meets regularly to monitor progress and address concerns.	Transparency
How will my data be used? Who's accessing my data? Are products produced using my data published without my knowledge or consent?	Real-time data access and use reports based on audit logs available to all data producers for their respective data assets.	Visibility

Use Cases

Mission use cases build the path to data program maturity



FAACT – Framework for Addiction Analysis and Community Transformation

Data trust, governance framework, data sharing platform, data integration services, and community-based intelligence products

Virginia Workforce Referral Portal

+ Real-time integration between eight production data systems

COVID-19 Pandemic Response

+ Private data trust members, strategic level stakeholders

COVID-19 Vaccine Administration

+ Enterprise level entity resolution service integrating five data systems in near real-time, dissemination of PII to health districts and local health departments for vaccine appointment scheduling

Human Trafficking Analytics

+ AI automating the ingestion of national data from disparate (non-trust member) sources

Virginia Crossover Youth Study

That the Virginia Commission on Youth shall convene a work group to include representatives from the Department of Juvenile Justice, the Department of Social Services, the Department of Behavioral Health and Developmental Services, the Department of Education, youth and families with lived experience in the juvenile justice and child welfare systems, representatives of Virginia juvenile justice advocacy groups, representatives of local public defender offices, and representatives from other relevant state or local entities. The work group shall review current data and record sharing provisions with regard to youth served by the juvenile justice and child welfare systems and make recommendations on best practices for the sharing, collection, and use of such data and records while respecting the privacy interests of youth and families. The work group shall report its findings and recommendations to the Governor and the Chairmen of the Senate Committee on the Judiciary and the House Committee for Courts of Justice by November 1, 2021.

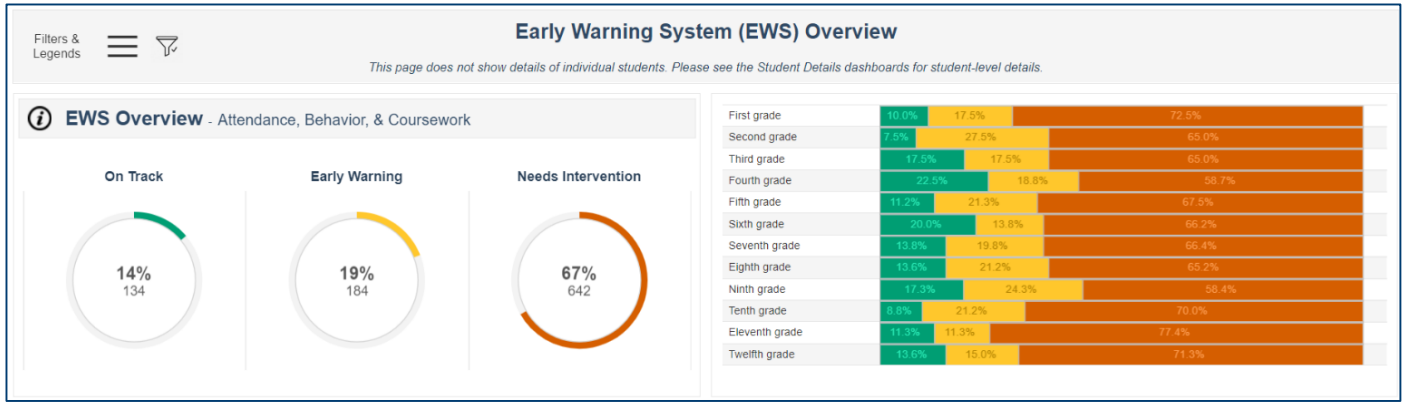
Virginia 2021 Legislative Session Senate Bill 1206 sponsored by Senator George Barker.

Confidentiality of juvenile court records; exceptions.

What is LASER?

VIRGINIA DEPARTMENT OF EDUCATION LASER

LASER is a decision analytics platform to visualize Student Information System (SIS) data for Attendance, Behavior and Coursework



The intent of these systems is to empower:

- administrators
- support personnel
- teachers

To

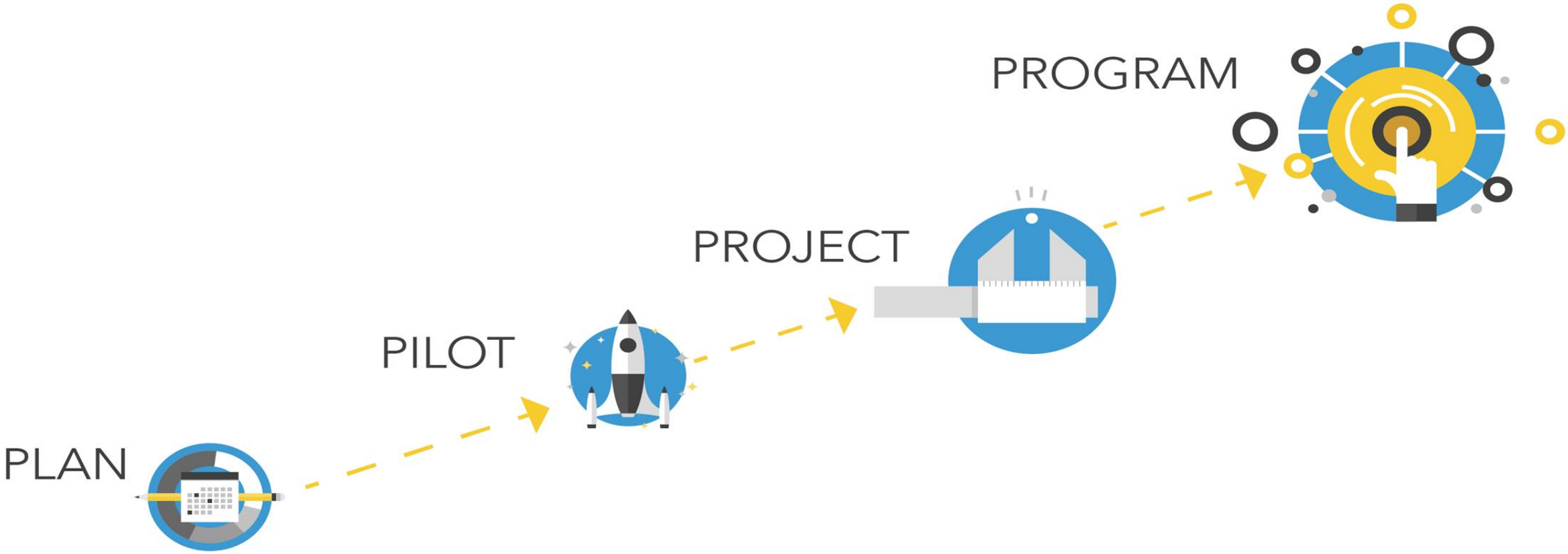
- better understand student performance
- make data-informed decisions

LASER taps into the state-of-art tools including Amazon Web Services for secure data storage and Tableau for data visualization

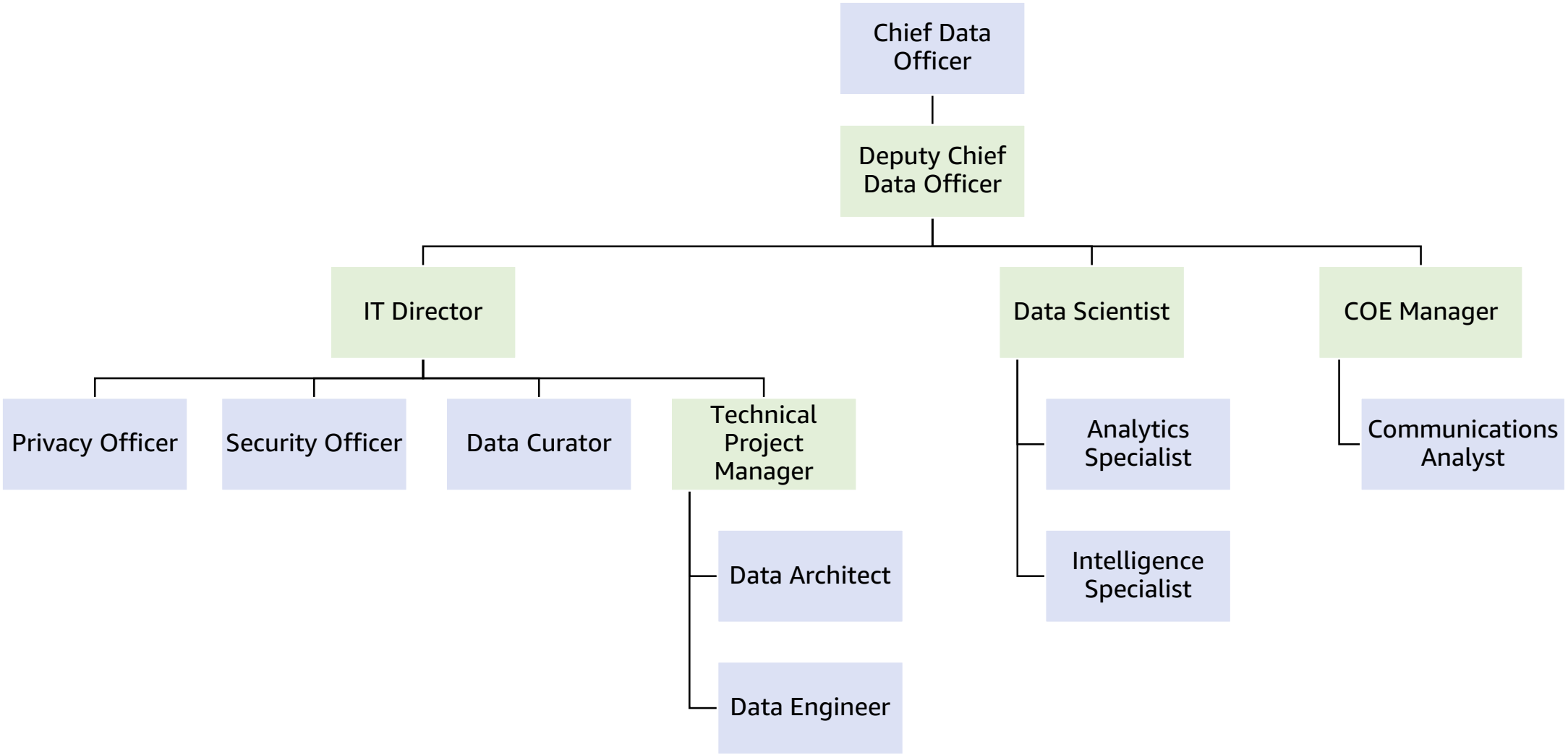
LASER allows every school access to a highly tailored, Virginia data reporting system with ample, targeted training that is highly reliable

LASER is FREE to all Virginia School Divisions

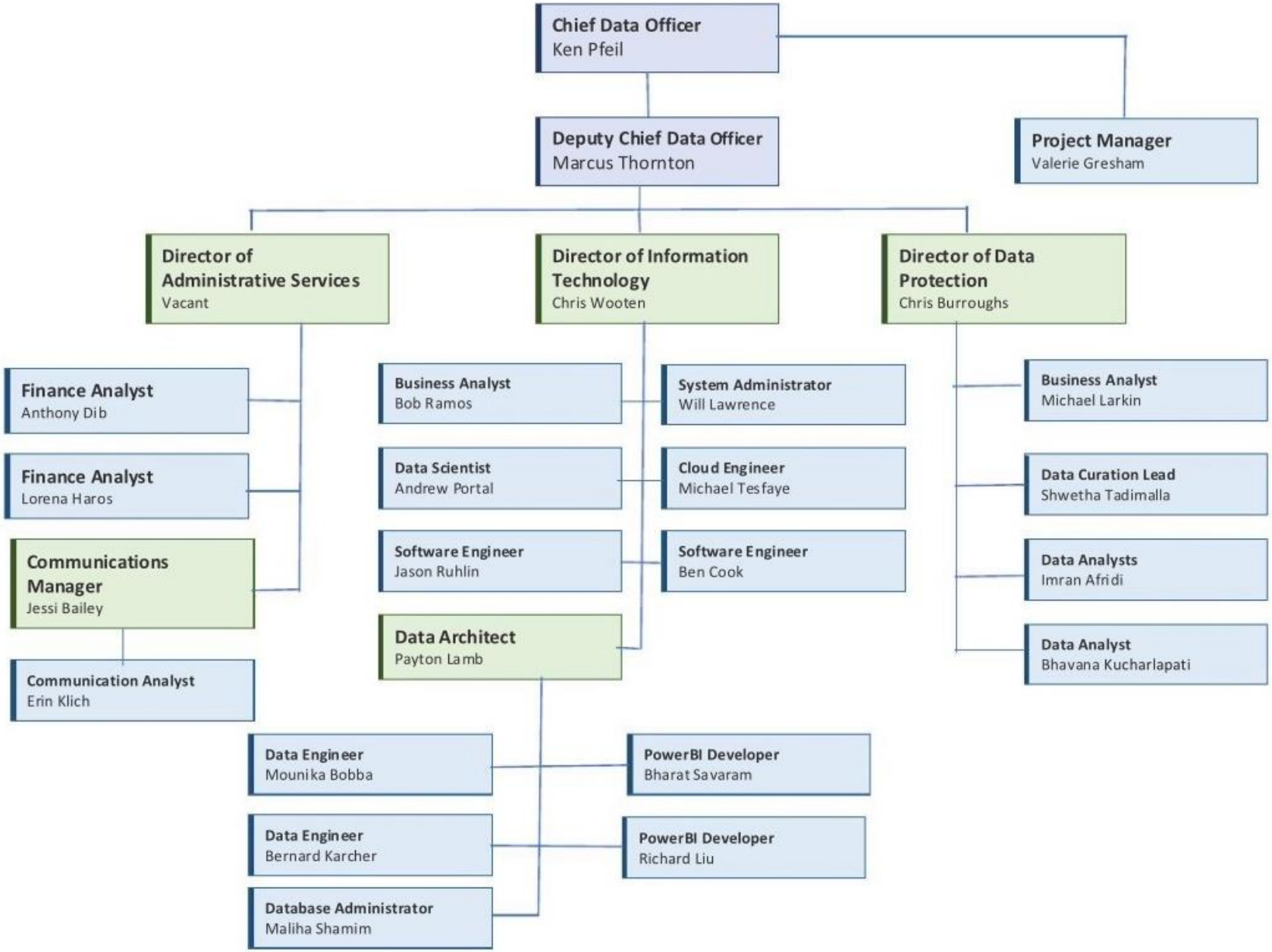
Path to data maturity



Virginia's Office of Data Governance and Analytics



ODGA 2.0


Chief Data Officer
Ken Pfeil
Deputy Chief Data Officer
Marcus Thornton
Project Manager
Valerie Gresham
Director of Administrative Services
Vacant
Director of Information Technology
Chris Wooten
Director of Data Protection
Chris Burroughs
Finance Analyst
Anthony Dib
Finance Analyst
Lorena Haros
Communications Manager
Jessi Bailey
Communication Analyst
Erin Klich
Business Analyst
Bob Ramos
Data Scientist
Andrew Portal
Software Engineer
Jason Ruhlin
Data Architect
Payton Lamb
System Administrator
Will Lawrence
Cloud Engineer
Michael Tesfaye
Software Engineer
Ben Cook
Business Analyst
Michael Larkin
Data Curation Lead
Shwetha Tadimalla
Data Analysts
Imran Afridi
Data Analyst
Bhavana Kucharlapati
Data Engineer
Mounika Bobba
Data Engineer
Bernard Karcher
Database Administrator
Maliha Shamim
PowerBI Developer
Bharat Savaram
PowerBI Developer
Richard Liu

AWS Public Sector Enablement Programs

The journey to becoming a data-driven organization

Beginner

- Disconnected data and business strategy
- Reactive business operations
- siloed, fragmented data landscape
- Limited skills

First big challenge

Experimenter

- Data sponsorship growing
- Isolated data and AI initiatives
- Pockets of talent and value
- No connection between data and AI architectures

Harder than anticipated

Adopter

- Senior stakeholders engaged and advocate data
- Cross functional teams forming
- Value being realized, not consistently tracked
- Common data and AI standards, architectures, platforms forming

How to elevate?

Scaler

- Business actively investing in data
- Data as strong part of culture
- Cross functional teams and data-AI communities
- Active skill development
- Standardized governance and architectures integrated across data and AI

Data Driven

- Data and AI as significant part of the business value proposition
- Proactive actions, automated decision making
- Widespread autonomy in innovating with data and AI
- Product teams embedded in the business
- Autonomous use of standardized platforms, ethics, and governance

How can AWS help you on your data journey?

Need peer-level executive guidance?

Executive Government Advisors

- ✓ Mental models and strategies based on the first-hand experience of former public sector CXOs
- ✓ Get peer-level sounding board and sparring partner

Inspire and accelerate your cultural transformation

Want to build a modern data strategy?

Data and Digital Transformation

- ✓ Create an organizational vision for innovation with data to drive business outcomes
- ✓ Define the first pilot, learn, and build

Jump-start the modern data strategy flywheel

Want use case implementation help?

Customer Acceleration Team

- ✓ Create tangible deliverables to accelerate strategic databases, analytics, and ML initiatives
- ✓ Leave with an architecture, working prototype, path to production, and deeper knowledge of AWS service

Come with an idea, leave with a solution

AWS WWPS Executive Government Advisors

Jayson Dunn

Executive Government Advisor

Danielle Hinz

Executive Government Advisor

Procurement

Learn more

Morgan Reed

Sr. Manager, Executive Advisory Team

Carlos Rivero

Executive Government Advisor

Data

Maria Thompson

Executive Education Advisor

Cybersecurity

Next steps to guide you on your data journey

Align key mission stakeholders

aws Public Sector Data Day

- ✓ Educate your high-level stakeholders through exposure to mental models and strategies based on the first-hand experience of former public sector CDOs
- ✓ Qualifying criteria:
  - ✓ Executive Sponsor

Inspire and accelerate cultural transformation

Assess data program maturity

aws Data Strategy Diagnostic

- ✓ Create a common understanding among mission and technology leaders of your organizations maturity level across 4 perspectives:
  - ✓ Mindset
  - ✓ People
  - ✓ Process
  - ✓ Technology
- ✓ Qualifying criteria:
  - ✓ Executive Sponsor
  - ✓ Mission Program Engagement

Know where you are on your data journey

Accelerate governance and engagement

aws Data Governance Accelerator

- ✓ Identify the right roles to participate in a governance structure appropriate for your organization
- ✓ Develop the charters and necessary decision-making processes
- ✓ Establish communication and escalation mechanisms
- ✓ Qualifying criteria:
  - ✓ Executive Sponsor
  - ✓ Mission Program Engagement
  - ✓ Defined Mission Use Case

Engage the right people in the right processes

aws

Key Concepts Learned

Being data-driven is more than technology

The right legal framework establishes accountability

End-to-end governance enables transparency

Consistent communication with stakeholders facilitates visibility

Use cases that solve real world problems build the path

AWS has multiple ways to get started including training, enablement, and a global network of partners

Recommendations

- **Think big, start small, scale fast.**
- **Work backwards** from employee and resident/citizen/constituent challenges.
- Foster **data literacy** through leadership principles and daily use of metrics in business decisions.
- Form **multi-disciplinary** teams including business, technology, and data skills.
- **Incentivize** your data producers by creating metrics on the availability, completeness, and utility of their data.
- Build a **community**, host **events**, celebrate success by publishing blogs and writing stories about what you're doing.
- **Automate** governance and manual tasks to increase adoption.

Next Steps

- What are the **goals** for your data program?
- What **use cases** can you identify that will help you accomplish your goals?
- Who are the right **stakeholders** to engage?
- How can you leverage the **AWS Public Sector Enablement Programs** to help your organization become data driven?

Please Provide Your Feedback

Step 1: Select Executive Track
Step 2: Select How to become a data-driven public sector organization

Questions?

Thank you!

Carlos Rivero

rivercap@amazon.com