Substance Use Disorder Abatement (SUDA) 25-26 Needs Assessment

Final Report

February 2025

VIRGINIA IT AGENCY

Gartner®

Contents

Introduction & Gartner Project Overview

Opioid and substance use is a persistent challenge in Virginia communities

For over a decade, the Commonwealth of Virginia has been working to combat the opioid and substance use crisis that has significantly impacted the Commonwealth of Virginia, affecting individuals, families, and communities across the state, **but devastating effects have continued to bear down on the Commonwealth:**

Public Health Impacts	Economic Burden	Resource Allocations
In 2021, Virginia Commonwealth University's Center on Society and Health collaborated with the Virginia Department of Health to calculate that at least six Virginians died of an opioid overdose every day on average.	Researchers calculated that the overall cost of the epidemic in 2021 was more than $5 billion, with costs associated with healthcare, law enforcement, and lost productivity.	State and local agencies have been diverting resources and funds to combat the crisis, which has strained public resources, necessitating increased funding for emergency services and rehabilitation programs. Virginia has provided millions of dollars in federal and state grant funds to communities for their prevention, treatment, and recovery services.

As the opioid crisis continues to challenge municipalities and communities, the role of data and analytics has never been more critical as a powerful tool in the fight against this epidemic.

Data and analytics can accelerate the fight against the opioid crisis and substance use and misuse

Establishing a statewide substance use disorder abatement (SUDA) enterprise data platform, featuring integrated data and sophisticated analytics, promises to deliver significant benefits to Virginia:

Understanding the Crisis and Disparate Impacts

Critical insights into patterns and trends, including identification of geographic hotspots and demographic groups that are disproportionately affected.

Real-Time Data for Rapid Response

Real-time data analytics enable rapid response efforts.

Improving Collaboration

improved collaboration enables utilizing community level data to inform selection, implementation, and evaluation of prevention programs.

Measuring Outcomes

Achieve the greatest goal to assess the impact of various interventions to optimize spending, resources, and programs to avert future crises.

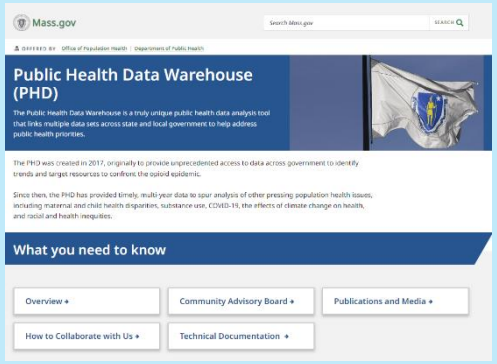
Accelerating Grant Proposal Writing

Quickly identify gaps and needs to reduce response time to federal and state grant opportunities.

Several states have established integrated databases to analyze substance use disorder behaviors, and there is a pressing call for action for more states to develop and implement similar databases

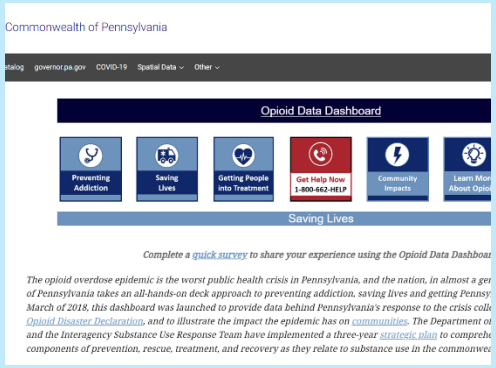
The Commonwealth of Virginia can look to other states that have invested similar large scale, state-level integrated databases in their fight against opioids and substance use. Examples include:

Commonwealth of Massachusetts



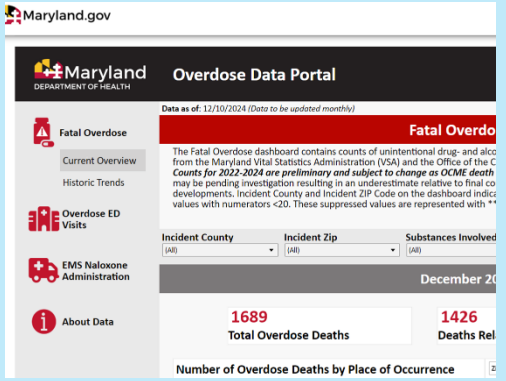
Researchers using Public Health Data Warehouse created project RESPOND, a first-of-its-kind initiative that brings together 22 opioid-related datasets from numerous state agencies.

Commonwealth of Pennsylvania



Part of the broader Pennsylvania open data portal, metadata capabilities helps users discover data and supports multiple data types.

State of Maryland



Newly re-launched for unified and geographic data, timely updates, historical trend analysis, and demographic insights.

Non-SUDA related integrated data platforms also exist as examples of states investing in integrated databases and robust analysis to address critical initiatives.

- Commonwealth of Massachusetts Criminal Justice and Public Safety: Criminal Justice Cross-Tracking System
- Washington State Department of Social and Health Services: Integrated Client Databases

Virginia and Gartner partnered together to define a path forward for a substance use disorder abatement data platform

Over the last few years, Virginia has invested in developing the Framework for Addiction Analysis and Community Transformation (FAACT) as an attempt to create a comprehensive data solution along with agency data efforts. However, adoption and awareness among stakeholders remains low.

Office of the Governor Executive Order, 2024 Appropriations Act HB6001, Item 79 and Item 80, and SB6001 Item 79 appropriates funding for a data needs assessment for a statewide substance use disorder abatement (SUDA) data platform to reduce opioid related deaths.

Virginia engaged with Gartner Consulting to conduct a **needs assessment** and provide recommendations that **define the future state of the cloud-based SUDA enterprise data platform** that serves stakeholders across the Commonwealth.

Gartner Project Overview and Outcomes

Mission / Objectives

Mission

Define the future state of a statewide substance use disorder abatement enterprise data platform that serves stakeholders across the Commonwealth to reduce opioid related deaths

Objectives

- Conduct a Needs Assessment across CoV state agencies, local governments, addiction service providers and other interested stakeholders
- Identify existing data sets and analytical tools that can be leveraged
- Review statewide opioid abatement goals and identify data that can support progress to meet those goals
- Evaluate and define how existing data sets could be better utilized to inform decision making
- Identify data collection and analysis gaps
- Develop high-level functional and technical requirements for a future platform
- Conduct an Analysis of Alternatives to determine best path forward
- Develop a high-level plan for next steps

Scope

1. **The SUDA needs assessment will initially focus on opioid use and stimulant use.**
   - Opioids are a class of drugs that include synthetic opioids such as fentanyl; pain relievers available legally by prescription, such as oxycodone (OxyContin®), hydrocodone (Vicodin®), codeine, morphine; the illegal drug heroin; and many others.
   - Stimulant use includes Cocaine, Methamphetamine, Amphetamine
   - Opioid use and stimulant use data needs directly aligns with the Office of the Governor Executive Order, 2024 Appropriations Act HB6001, Item 79 and Item 80, and SB6001 Item 79
2. **Additional data needs can be expanded upon in future phases if desired (e.g., alcohol use, cannabis use, etc.)**

Outcome

The Commonwealth is now strategically positioned to **advance the development of a comprehensive data-sharing platform** designed to tackle the substance use disorder opioid crisis and enhance public health outcomes.

- **Stakeholder Needs Understood:** Comprehensive inventory of stakeholder needs categorized and prioritized to ensure that the platform will provide the essential insights required for informed decision-making.
- **Platform Functionality:** By defining clear use cases and requirements, a foundation to deliver functionalities that directly contribute to SUDA goals and outcomes has been developed.
- **Roadmap:** Path forward based on analysis of alternatives. Roadmap includes business sponsorship and cross-organizational input to continue to drive strategic vision of the platform.
- **Critical Success Factors:** For the development and adoption of the future data platform

Executive Summary

Needs Assessment Summary

1

FAACT ODMAP VDH Others

Multiple and disparate data systems exist, but data sharing and a single source for data remains elusive.

2

Stakeholders see value in and have strong interest in having access to SUDA-related data in a “one-stop-shop” way.

Stakeholder Average Value 4.0 from Interviews

3

There are enormous opportunities of varying complexities for SUDA-related data and analytics use cases.

- 26 Interviews
- 70+ Stakeholders
- 40 Agencies

- 90+ Use Cases
- 61 Unique Use Cases
- 45 Use Case Groups

Categories	Description	#
Single Dataset	▪ Single agency; narrow domain datasets	8
Integrated Analytics	▪ Multiple agencies / multiple data domains integrated for enhanced analysis ~80% of needs	45
Individual Analytics	▪ Individual data required for targeted analysis. Implications are more complex access rights, data privacy/security	8

4

Lack of business champion and formal cross-organizational input / decision-making body has resulted in a data platform that does not meet user needs.

5

Virginia possesses foundational elements that would support a SUDA-related data platform

Commonwealth Data Trust (Data Governance & Security)	**Yes**	No
Cloud Infrastructure	**Yes**	No
ODGA Data Management Capabilities	**Yes**	No

Note: Use cases describe the <u>data needs and priorities</u> that a future statewide SUDA data platform could provide

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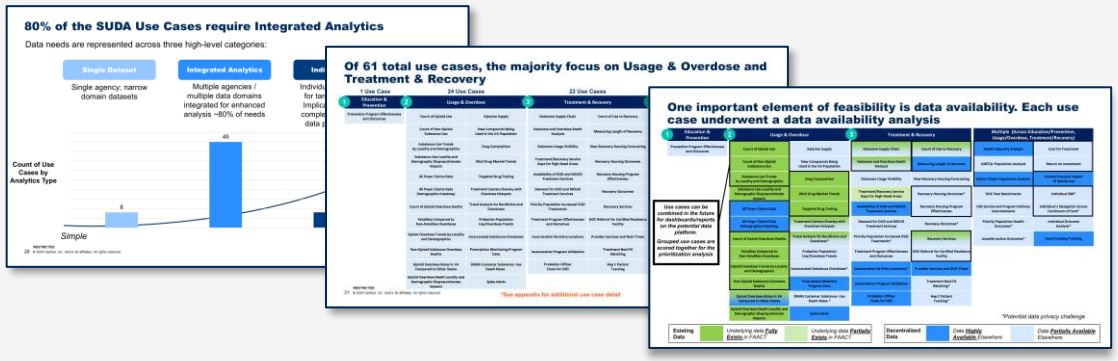
61 total unique use cases identified, analyzed, and prioritized

Multipronged Approach to Use Case Analysis

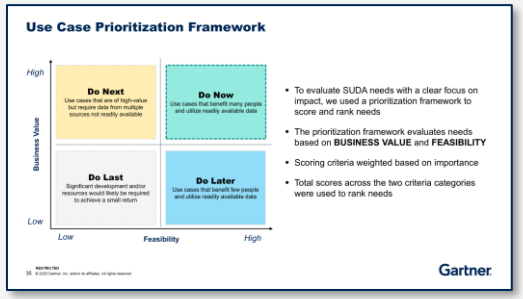
1. **Analysis by the Type of Analytical Data Needs**
   - Single Dataset
   - Integrated Analytics
   - Individual Analytics
2. **Categorization by the Continuum of Behavioral Health Framework from Virginia DBHDS**
   - Education & Prevention
   - Usage & Overdose
   - Treatment & Recovery
   - Multiple
3. **Analysis by Data Sources and Availability**
   - Fully or Partially Available in FAACT
   - Highly or Partially Available Elsewhere



Use Case Scoring & Prioritization Analysis

1. **Prioritization Criteria**
   - **Business Value and Feasibility:** Each use case was evaluated and scored based on potential impact and feasibility.
   - **Stakeholder Benefits:** Considered the benefits to each stakeholder type to ensure alignment with their needs and priorities.
2. **Prioritization Categories**
   - **Do Now (Top Use Cases):** 14 use cases
   - **Do Next:** 20 use cases
   - **Do Later:** 5 use cases
   - **Do Last:** 6 use cases

** Please note, some use cases are grouped and scored together for the prioritization analysis. Collecting new use cases and re-prioritizing is an important on-going activity.*



Gartner's recommendations FOR PATH FORWARD

Based on the Analysis of Alternatives that considered feasibility, risk, and cost, Gartner recommends a path forward for the SUDA platform in two categories: business sponsorship and technical approach.

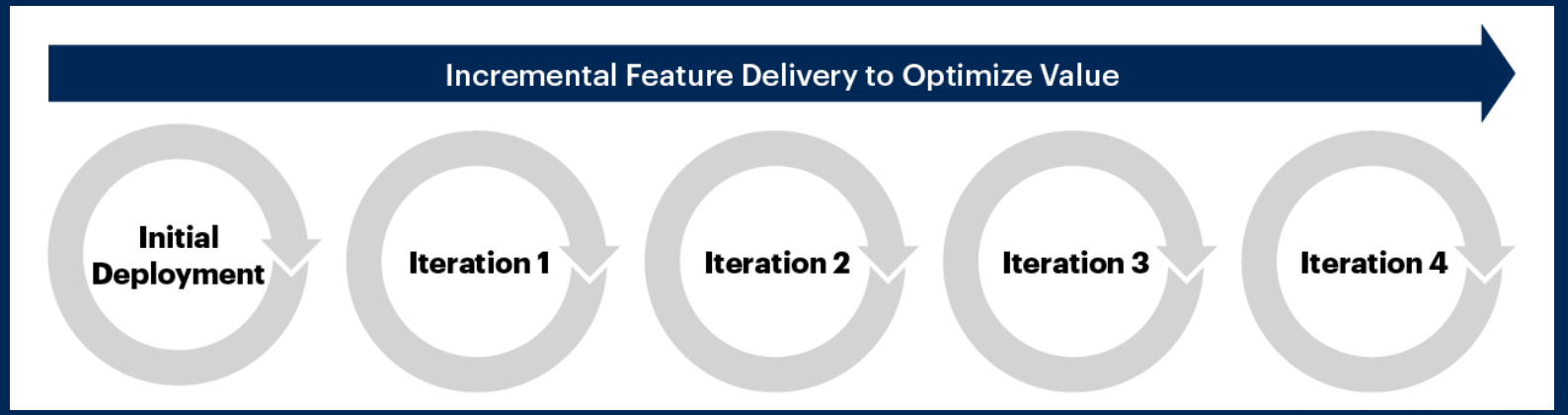
Business Sponsorship

- Virginia Opioid Abatement Authority (VOAA) will be the product owner and provide funding, with VITA/ODGA owning technical development.
- A cross-organization committee should be assembled to provide strategic guidance and expert input to ensure the SUDA data platform meets diverse stakeholder needs and achieves its objectives.

Technical Approach

- Implement a new SUDA platform in a VITA/ODGA-managed cloud environment and leverage existing re-usable assets to achieve quick wins in the most cost-effective manner.
- Conduct a procurement to select a vendor to build a new user interface and purpose-built dashboards to better support SUDA-related decision-making and related actions.

The implementation of a future SUDA data platform should start with use cases with high business value and current data availability to enable quick wins. Additional platform releases would continue to focus on high-value use cases.



Business Sponsor* supported by Cross-Organization Council

Business Needs Drive the Platform

Secure cloud-based VITA/ODGA environment

- Data trust for authorized usage
- Data integration technical capabilities
- Data governance capabilities for trusted data

Different Approach to Platform Development Based on Your Needs:

Product Management discipline to ensure user-centric design and business intelligence

You Will Experience:

- Quicker Time for Insights
- Dashboards Tailored to Answer Your Questions
- Trusted Data that is Secure
- A Full-Picture Across Organizations
- Consistency with Standardized Data
- Drill-Downs for Demographics, Locality/zip codes, etc.
- **Desired Outcomes!**

- **Understanding the Crisis and Disparate Impacts**
- **Real-Time Data for Rapid Response**
- **Accelerating Grant Proposal Writing**
- **Improving Collaboration**
- **Measuring Outcomes**

* VOAA will be the product owner and provide funding, with VITA/ODGA owning technical development

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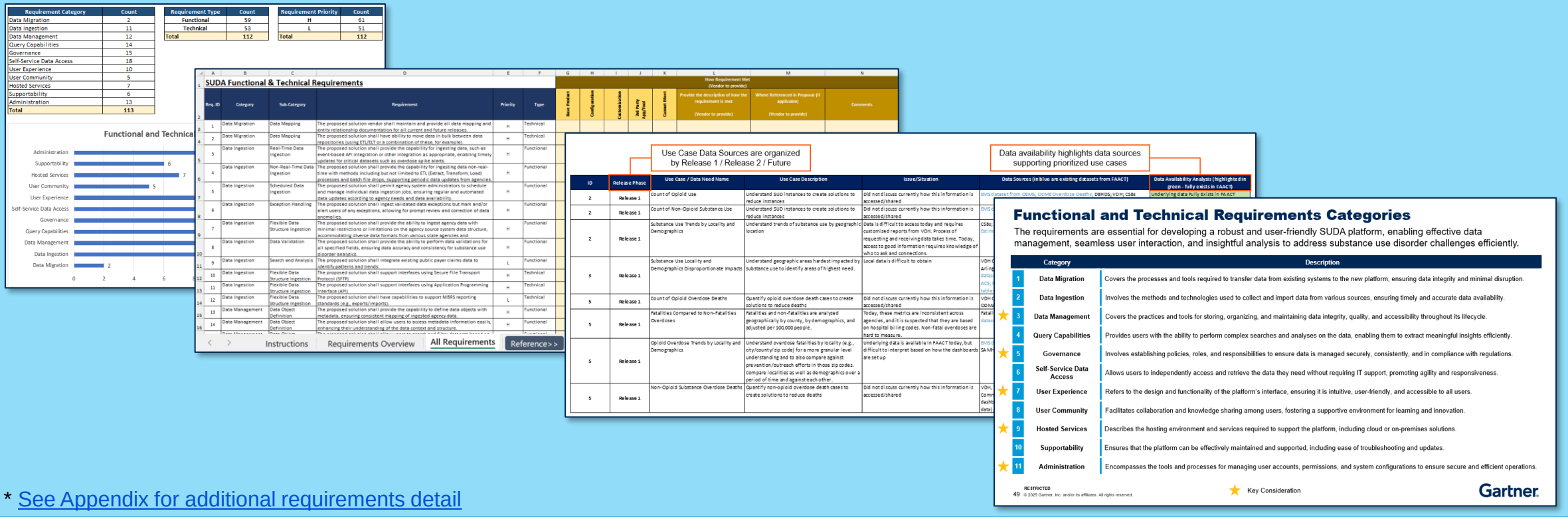
To best support this SUDA platform vision, Gartner has developed high-level technical and functional requirements

- Requirements have been prioritized by **'Must Haves'** and **'Nice to Haves'** – allowing potential vendors to respond to the requirements that are directly necessary to implement and demonstrate the primary use cases of Releases 1 and 2.
- Known/existing data sources from high priority use cases have been documented within the requirements.
- There are **113** proposed requirements for the target-state SUDA solution:
  - **59 Functional Requirements**
  - **54 Technical Requirements**



* See Appendix for additional requirements detail

Business Sponsorship

Socialize the Business Sponsor: Clear and vocal commitment to drive strategic vision and ensure the future SUDA data platform aligns with user needs/goals.

Stakeholder Engagement

Establish a Cross-Functional Committee: Collaborate with broad stakeholders for input, new use cases, and buy-in for data sharing. Leverage stakeholders' existing talent and data assets.

Strong Communications

Develop Impactful Messages: Explain the benefits of the data platform and provide training/resources to increase user adoption/data-sharing.

Sustained Funding

Keep Funding Top of Mind: Secure funding and resources to maintain and update the platform to continuously meet user needs.

Product Management Approach

Adopt Product Principles: Emphasizes user-centric design, a well-defined roadmap that prioritize/re-prioritize features that deliver the most value, cross-functional collaboration, and iterative development. Conduct ongoing monitoring on outcomes.

Data Governance

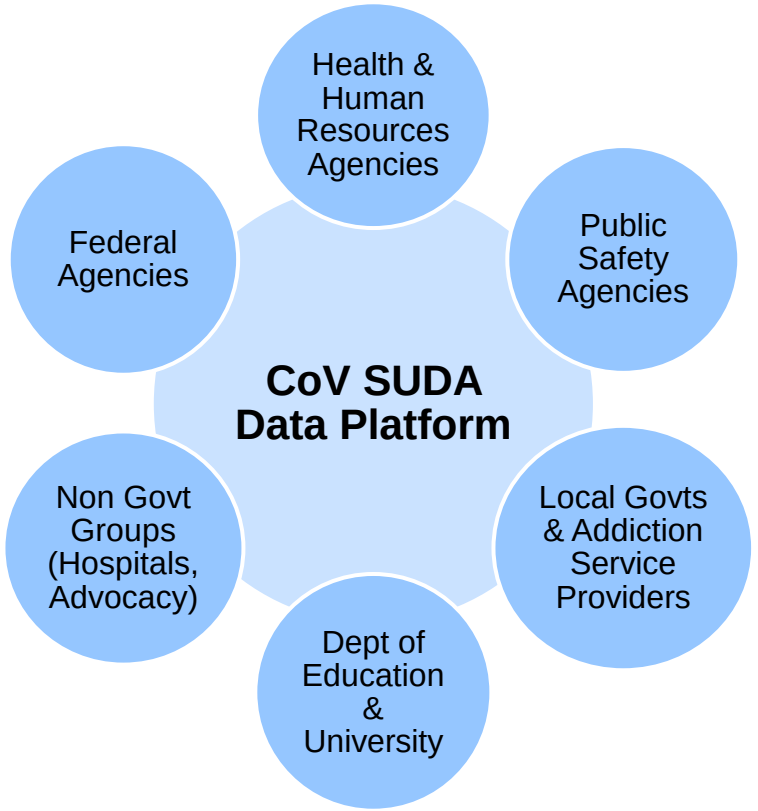
Continue and Expand Data Governance Efforts: Uphold data privacy and data security standards, user access permissions, and data quality for standardized and trustworthy data. Stakeholders' agreement required for standardized data definitions.

Factors necessary for a future state SUDA-related data platform to be SUCCESSFUL

Results of Needs Assessment

CoV Stakeholders and Demand for a SUDA Data Platform

CoV General Assembly & Office of the First Lady

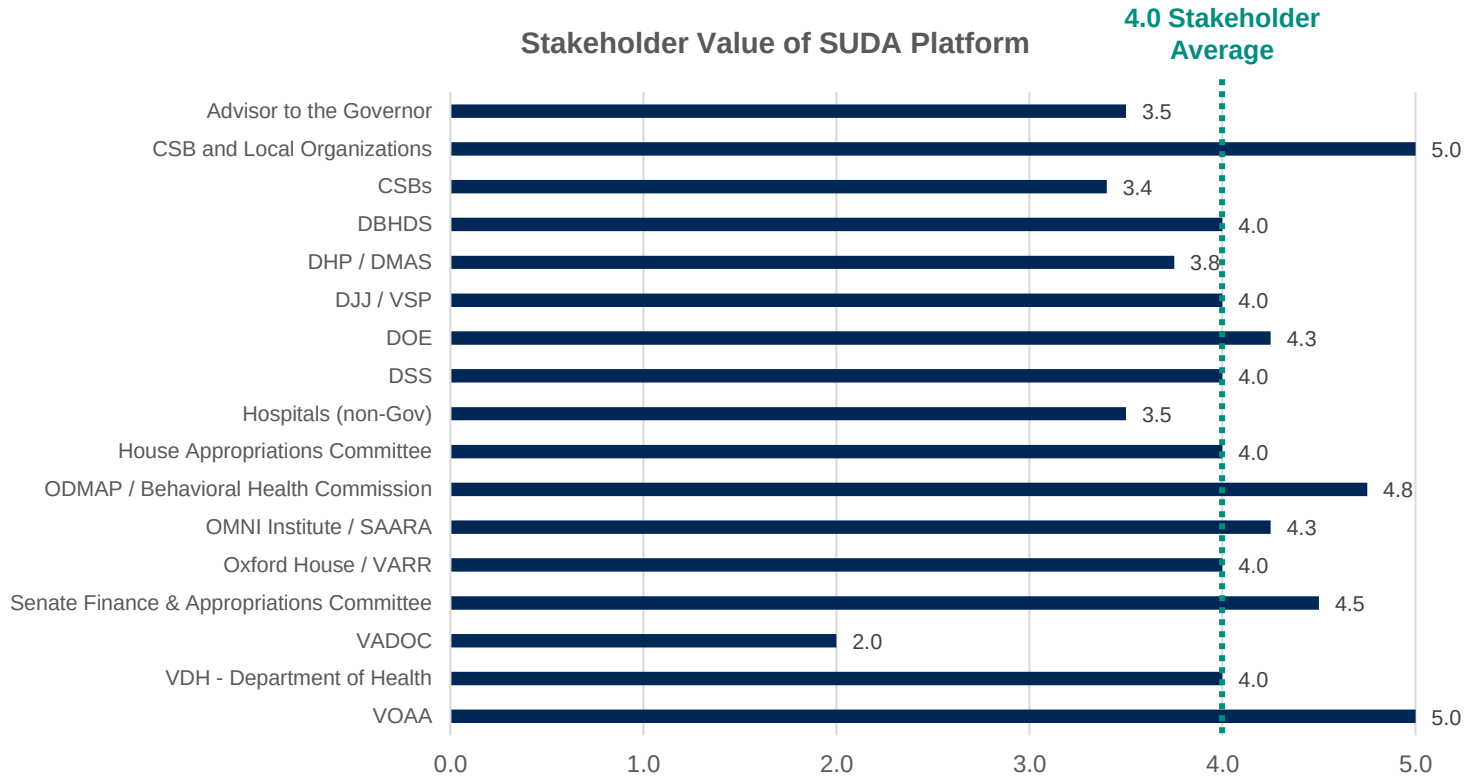


Opioid Abatement Authority

VITA and ODGA

On a scale of 1-5, how valuable would a statewide cross-agency data platform be to your agency's efforts?

- **Score of 1:** This data platform would add little to no value to current mission and objectives
- **Score of 5:** This data platform would be game changing to current mission and objectives



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* See appendix for stakeholder engagement detail

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SUDA Use Case Overview and Analysis Performed

Input

- 26 Interviews
- 70+ Stakeholders
- 40 Agencies

Synthesized

90+ data needs

↓

61 unique use cases

↓

*45 use case groupings

Analyzed

- Outcomes
- Analytics Types
- Score and Priority
- Data Availability
- Benefits By Stakeholder

*Gartner grouped the use cases to consolidate like data needs to streamline subsequent SUDA analysis efforts: Data Needs & Use Cases

80% of the SUDA Use Cases require Integrated Analytics

Data needs are represented across three high-level categories:

Single Dataset

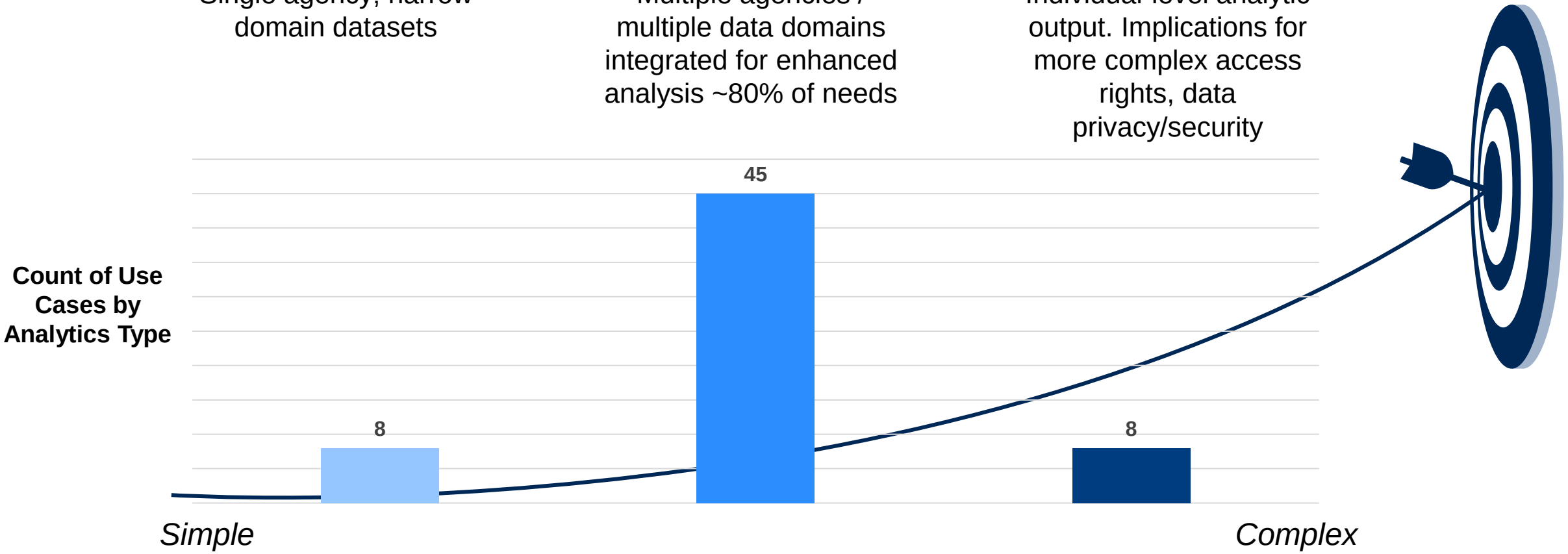
Single agency; narrow domain datasets

Integrated Analytics

Multiple agencies / multiple data domains integrated for enhanced analysis ~80% of needs

Individual-Level Analytics

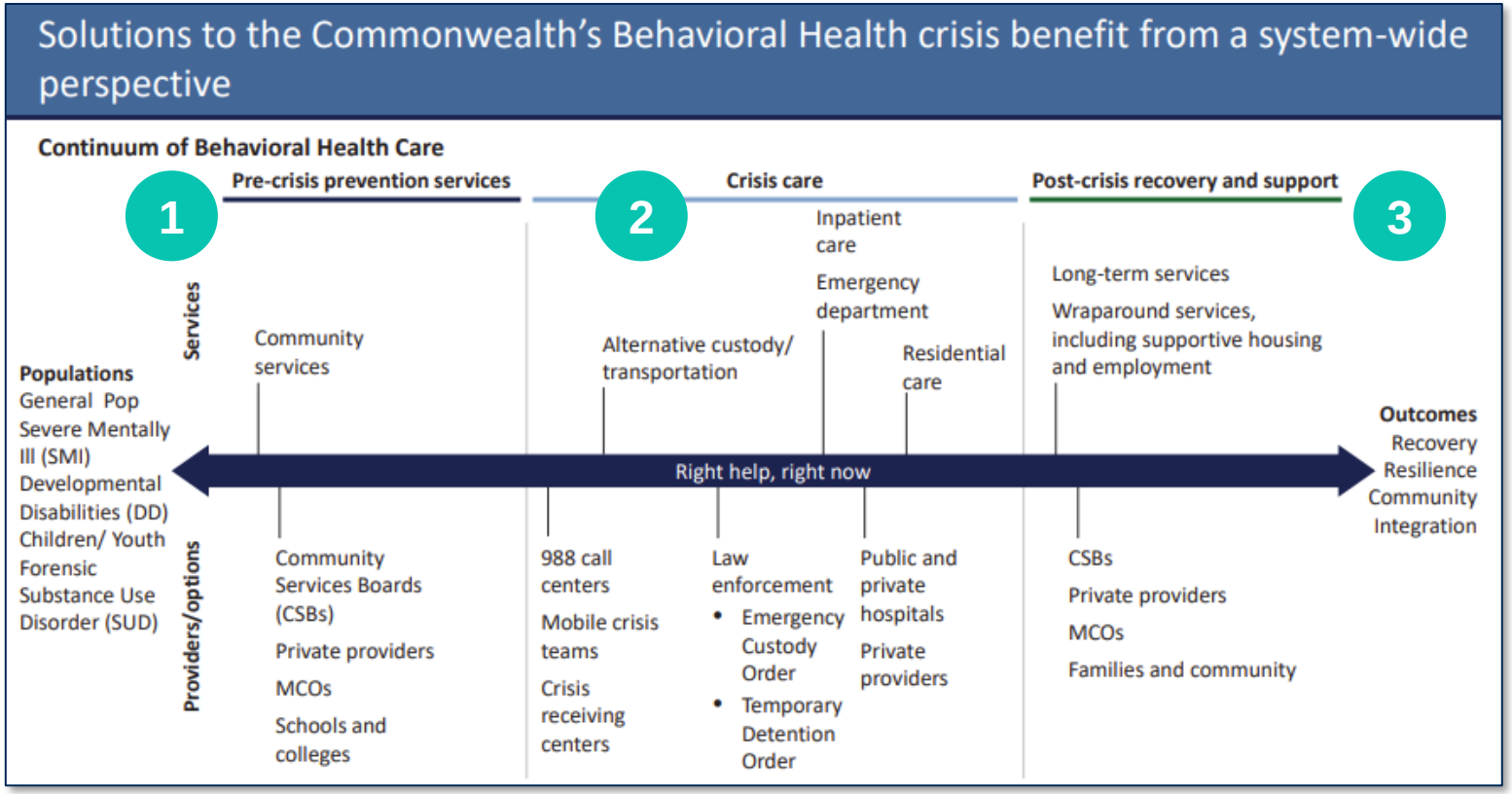
Individual-level analytic output. Implications for more complex access rights, data privacy/security



Gartner leveraged the Continuum of Behavioral Health Framework to categorize the SUDA Use Cases; adding a 'Multiple' category

SUDA Data & Analytics Outcomes

1. Education & Prevention
2. Usage & Overdose
3. Treatment & Recovery
4. Multiple



Source: VA HHR: DBHDS

Of 61 total use cases, the majority focus on Usage & Overdose and Treatment & Recovery

1 Use Case	24 Use Cases		22 Use Cases		14 Use Cases	
1 Education & Prevention	2 Usage & Overdose		3 Treatment & Recovery		4 Multiple (Across Education/Prevention, Usage/Overdose, Treatment/Recovery)	
Prevention Program Effectiveness and Outcomes	Count of Opioid Use	Xylazine Supply	Naloxone Supply Chain	Count of Use to Recovery	Health Disparity Analysis	Cost for Treatment
	Count of Non-Opioid Substance Use	New Compounds Being Used in the VA Population	Naloxone and Overdose Death Analysis	Measuring Length of Recovery	LGBTQ+ Population Analysis	Return on Investment
	Substance Use Trends by Locality and Demographics	Drug Composition	Naloxone Usage Visibility	New Recovery Housing Forecasting	Senior Citizen Population Analysis	Society Financial Impact of Opioid Use
	Substance Use Locality and Demographic Disproportionate Impacts	Illicit Drug Market Trends	Treatment/Recovery Service Gaps for High-Need Areas	Recovery Housing Outcomes	DOC Peer Benchmarks	Individual 360
	All Payer Claims Data	Targeted Drug Testing	Availability of OUD and MOUD Treatment Services	Recovery Housing Program Effectiveness	CSB Service and Program Delivery Improvements	Individual's Navigation Across Continuum of Care
	All Payer Claims Data Demographics Heatmap	Treatment Centers Overlay with Overdose Hotspots	Demand for OUD and MOUD Treatment Services	Recovery Outcomes	Priority Population Health Outcomes	Individual Outcome Analysis
	Count of Opioid Overdose Deaths	Trend Analysis for Recidivism and Overdoses	Priority Population Increased OUD Treatments	Recovery Services	Juvenile Justice Outcomes	Grant Funding Tracking
	Fatalities Compared to Non-Fatalities Overdoses	Probation Population Use/Overdose Trends	Treatment Program Effectiveness and Outcomes	DOC Referral for Certified Residence Facility		
	Opioid Overdose Trends by Locality and Demographics	Incarcerated Substance Overdoses	Incarceration Re-Entry Locations	Provider Services and Wait Times		
	Non-Opioid Substance Overdose Deaths	Prescription Monitoring Program Data	Incarceration Program Utilization	Treatment Best-Fit Matching		
	Opioid Overdose Rates in VA Compared to Other States	DMAS Customer Substance Use Death Rates	Probation Officer Cases for SUD	Hep C Patient Tracking		
	Opioid Overdose Death Locality and Demographic Disproportionate Impacts	Spike Alerts				

* See appendix for additional use case detail

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Prioritizing SUDA needs for the assessment

- A structured and objective approach to prioritizing SUDA needs is crucial to manage the complexity to make informed decisions based on clear criteria and priorities.

- Benefits to prioritizing SUDA needs include:
  - Most critical needs can be addressed first, thereby maximizing the effectiveness and efficiency of the analysis process.
  - Promotes fairness and transparency, as decisions are made based on objective factors rather than personal biases or assumptions
  - Facilitates clear communication and understanding among stakeholders, as it provides a systematic framework for discussing and agreeing on priorities.
  - Enhances the quality and reliability of the analysis, leading to more accurate insights and better decision-making.

Gartner's Approach:

- **Leveraged Gartner Use Case Prism Framework**
- **Evaluate each opportunity for Stakeholder Value and Feasibility**
- **Conduct initial scoring followed by a collaborative workshop with CoV SUDA Steering Committee**

Use cases were ranked based on business value and feasibility that reflect SUDA priorities

Business Value

Insights
Insights and impacts from cross-organizational data

Multiple Stakeholder Interest
Use case would benefit multiple agencies

Efficiency
Decreases time spent on manual data activities (e.g., finding data, manually integrating, etc.)

Feasibility

Data Availability
Data is available / obtainable

Complexity of Analysis
Complexity to execute (e.g., individual-level analytic privacy/security, decisions on access rights, standardization across agencies, common definitions, agreement on metrics, etc.) or challenging to explain and justify (e.g., some AI models)

Each use case was scored on a 1-4 scale for each criteria, for an overall business value and feasibility score

Contribution Level

0	1	2	3	4
None	Low	Medium	High	Outstanding

Difficulty Level

0	1	2	3	4
Impossible	Challenging	Complicated	Doable	Easy

One important element of feasibility is data availability. Each use case underwent a data availability analysis

1 Education & Prevention	2 Usage & Overdose		3 Treatment & Recovery		4 Multiple (Across Education/Prevention, Usage/Overdose, Treatment/Recovery)	
Prevention Program Effectiveness and Outcomes	Count of Opioid Use	Xylazine Supply	Naloxone Supply Chain	Count of Use to Recovery	Health Disparity Analysis	Cost for Treatment
	Count of Non-Opioid Substance Use	New Compounds Being Used in the VA Population	Naloxone and Overdose Death Analysis	Measuring Length of Recovery	LGBTQ+ Population Analysis	Return on Investment
	Substance Use Trends by Locality and Demographics	Drug Composition	Naloxone Usage Visibility	New Recovery Housing Forecasting	Senior Citizen Population Analysis	Society Financial Impact of Opioid Use
	Substance Use Locality and Demographic Disproportionate Impacts	Illicit Drug Market Trends	Treatment/Recovery Service Gaps for High-Need Areas	Recovery Housing Outcomes*	DOC Peer Benchmarks	Individual 360*
	All Payer Claims Data	Targeted Drug Testing	Availability of OUD and MOUD Treatment Services	Recovery Housing Program Effectiveness	CSB Service and Program Delivery Improvements	Individual's Navigation Across Continuum of Care*
	All Payer Claims Data Demographics Heatmap	Treatment Centers Overlay with Overdose Hotspots	Demand for OUD and MOUD Treatment Services	Recovery Outcomes*	Priority Population Health Outcomes*	Individual Outcome Analysis*
	Count of Opioid Overdose Deaths	Trend Analysis for Recidivism and Overdoses*	Priority Population Increased OUD Treatments*	Recovery Services	Juvenile Justice Outcomes*	Grant Funding Tracking
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	Opioid Overdose Trends by Locality and Demographics	Incarcerated Substance Overdoses*	Incarceration Re-Entry Locations*	Provider Services and Wait Times		
	Non-Opioid Substance Overdose Deaths	Prescription Medicine Program Data	Incarceration Program Utilization	Treatment Best-Fit Matching*		
	Opioid Overdose Rates in VA Compared to Other States	DMAS Customer Substance Use Death Rates *	Probation Officer Cases for SUD	Hep C Patient Tracking*		
	Opioid Overdose Death Locality and Demographic Disproportionate Impacts	Spike Alerts				

Use cases can be combined in the future for dashboards/reports on the potential data platform.

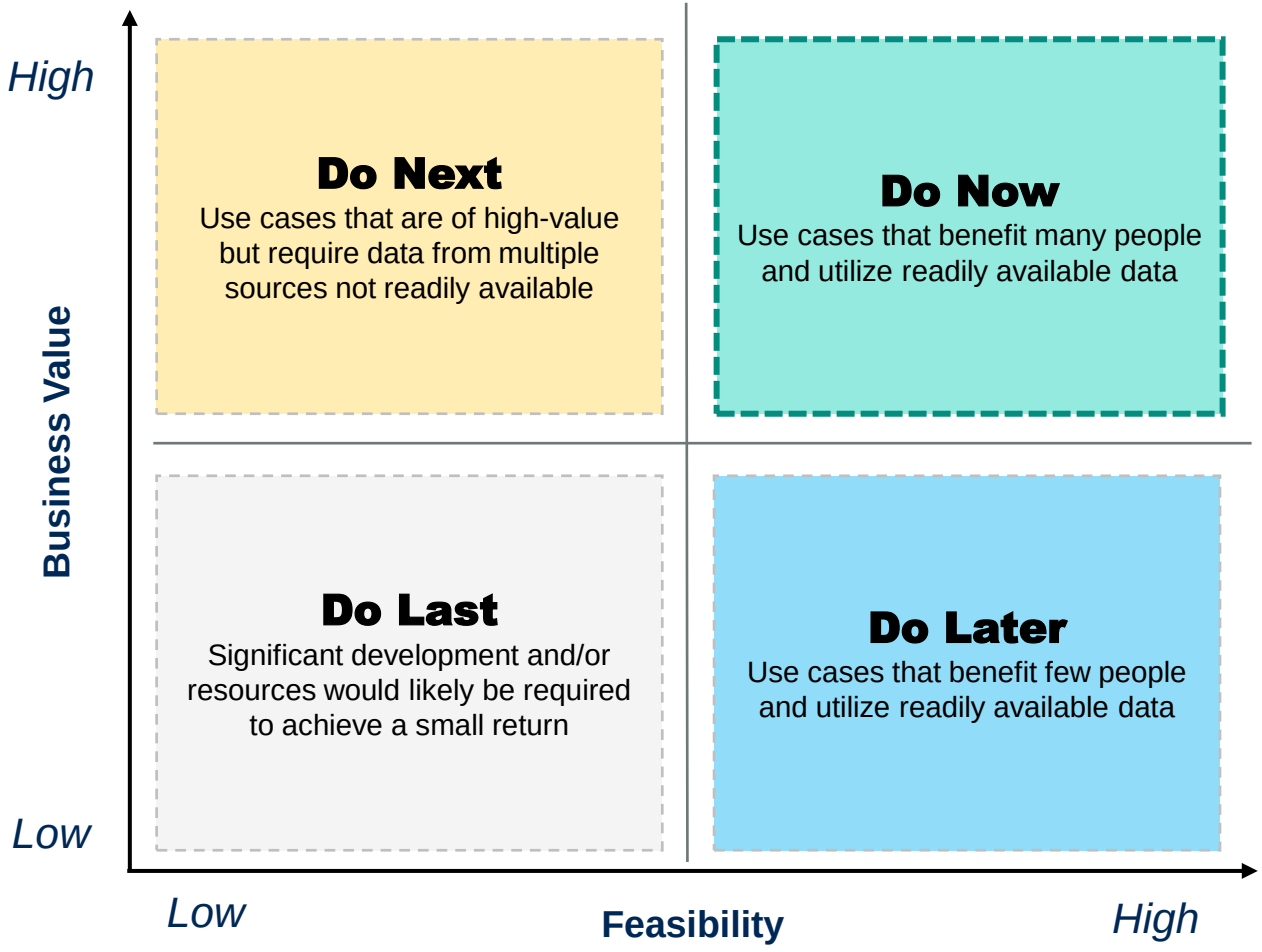
Grouped use cases are scored together for the prioritization analysis

**Potential data privacy challenge*

Existing Data — *Underlying data **Fully Exists** in FAACT*; *Underlying data **Partially Exists** in FAACT*

Decentralized Data — *Data **Highly Available** Elsewhere*; *Data **Partially Available** Elsewhere*

Use Case Prioritization Framework



- To evaluate SUDA needs with a clear focus on impact, we used a prioritization framework to score and rank needs
- The prioritization framework evaluates needs based on **BUSINESS VALUE** and **FEASIBILITY**
- Scoring criteria weighted based on importance
- Total scores across the two criteria categories were used to rank needs

* See appendix for additional use case detail

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Use Case Prioritization Results

Prevention / Education | Usage / Overdose | Treatment / Recovery | Multiple | Grouped

Top Use Cases

ID	Use Case Name	Value	Feasibility
2	Opioid and Non-Opioid Usage Trends	*3.5*	*3*
3	Substance Use Locality and Demographics Disproportionate Impacts	*3.5*	*3*
4	All Payer Claims Data	*2.8*	*2.8*
5	Opioid and Non-Opioid Overdose Death Trends	*3.3*	*3*
6	Opioid Overdose Rates in VA Compared to Other States	*3.5*	*2.8*
7	Opioid Overdose Death Locality and Demographic Disproportionate Impacts	*3.5*	*3*
8	Xylazine Supply	*2.1*	*2.5*
9	New Compounds Being Used in the VA Population	*2.1*	*2.5*
10	Illicit Drug Supply and Composition Trends	*2.5*	*3*
11	Treatment Centers Overlay with Overdose Hotspots	*2.7*	*3.5*
17	Spike Alerts	*3.5*	*3*
18	Naloxone Distribution Tracking and Overdose Correlation	*3*	*2.5*
19	Naloxone Usage Visibility	*2.5*	*2.5*
20	Treatment/Recovery Service Gaps for High-Need Areas	*3.5*	*3*
28	Count and Length of Recovery	*2.8*	*2.7*
32	Recovery Services	*2.7*	*3.5*
45	Grant Funding Tracking	*3*	*2.2*

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Use Case Prioritization Results – Further Explained

Majority of high-value and low-feasibility use cases measure outcomes and program effectiveness, which require data from multiple organizations and an agreement on data definitions / calculations

Majority of low value use cases only apply to one stakeholder or limited scope.

High-value high-feasibility use case include those that many people would benefit from and data is already available

Analysis of Alternatives & Gartner Recommendations

Analysis of Alternatives Overview

Definition

An Alternative of Analysis (AoA) is an analytical approach to evaluating the future SUDA data platform solutions, ensuring that any proposed change or implementation is assessed from both a strategic business perspective and a technical feasibility standpoint.

Approach

Gartner defined and analyzed SUDA data platform alternatives in two categories:

01 **Business Sponsorship Alternatives**

The various potential approaches to business sponsorship that considers feasibility, sustainability, and success for adoption.

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02 **Technical Solution Alternatives**

The various potential technical approaches and strategies that considers feasibility, cost, availability of skillsets, and risks.

* See Appendix for additional AoA detail

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A Business Sponsorship/Champion is critical for future SUDA platform success

Business Sponsor/Product Owner

Business Sponsor/Product Owner responsible for providing strategic vision, securing funding, ensuring alignment with data goals/needs, and championing stakeholder engagement to drive the successful implementation and adoption of the SUDA data platform.

Technical Platform

Assumption is that SUDA data platform infrastructure will be in a VITA/ODGA-managed environment

Analysis of Alternative: Business Sponsorship/Product Ownership

Note: Each alternative scenario assumes that VITA/ODGA would enable the technical solution.

#	Business Sponsor Alternative	Strengths	Risks
1	**Cross-Agency Taskforce** Multiple agencies would share business sponsorship. Clear accountability and charter would be required.	▪ **Shared Accountability**: No one agency is elevated above others ▪ **Diverse Expertise:** Varied perspectives of the challenge/solution, enhancing platform's capability to address complex issues ▪ **Resource Pooling:** Potential for larger pool of resources, including people and funding ▪ **Broader Reach:** Increased collaboration for platform's reach and impact	▪ **Lack of Ownership:** Progress may stall or halt ▪ **Coordination Challenges:** Coordinating multiple organizations can be complex and may lead to inefficiencies or delays ▪ **Conflicting Priorities**: Varying goals or priorities can lead to conflicts or misalignment in the initiative's objectives
2	**VITA/ODGA as Lead** Cross-organization steering committee provides input.	▪ **History of Success:** There is a history of successful business sponsorship with the COV Identity project and other Enterprise Solutions	▪ **Buy-In:** Effort may be seen as an IT initiative and not a business initiative
3	**Single State Agency** Examples: Virginia Department of Behavioral Health and Developmental Services (DBHDS); Virginia Department of Health (VDH)	▪ **Clear Accountability**: Single-party ownership results in clear accountability and streamlined decision-making ▪ **Alignment to Agency Goals:** Majority of agencies have some goals SUDA-related goals	▪ **Advocacy:** Potential for over-advocacy of sponsor agencies priorities vs broader CoV SUDA priorities ▪ **Competing Priorities:** Mission priorities and funding may negatively impact success or timeline of initiative
4	**Virginia Opioid Abatement Authority (VOAA)** Cross-organization committee provides input.	▪ **Vested Interest:** VOAA has a high interest in the success of the SUDA data platform ▪ **Access to Funding:** Critical success factor is continued product management for the data platform ▪ **Drafted Legislation:** Provides funding to support operational cost of the SUDA system (once acquired) and identifies VOAA as the business product owner	▪ **Lack of Authoritative Influence:** VOAA is not an Executive Branch Agency, and therefore there is no authorization influence over the agencies
5	**Secretariat** Examples: Health and Human Resources (HHR); or Public Safety	▪ **Executive-Level Sponsorship:** Secretariat level can influence participation and usage of platform	▪ **Churn:** Political appointee creates risk of turnover and losing momentum or sponsorship with new administration

* See Appendix for additional AoA detail

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Gartner Recommends Business Sponsor Alternative #4

Based on the Analysis of Alternatives, Gartner recommends Alternative #4:

- **Virginia Opioid Abatement Authority (VOAA) as business product owner***
- **Cross-organization committee provides input**

Alternative #4 has emerged as the most feasible and least risky approach.

Rationale:

- **Sustainability:** Access to funding is a critical success factor for continued product management of the data platform, and there is drafted legislation for VOAA to provide funding to support operational costs
- **Drafted Legislation:** If approved, drafted legislation identifies VOAA as the business product owner

* Dependent upon signed legislation

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Technical Solution Alternatives - Overview

#	Technical Alternative	Ownership(s)
1	**Enhance Current Platform (FAACT)** Based on use case analysis, update with required data sets and enhanced user experience (interface and dashboards) to meet user needs.	Vendor & Infrastructure: Incumbent
2	**Move to a new SUDA Platform, Vendor leverages existing reusable assets** Migrate existing workloads to VITA/ODGA-managed environment. Select Vendor build new user interface and analytic dashboards and manage data ingestion.	VITA/ODGA: Conduct RFP Vendor: • Migrate workloads to VITA/ODGA-managed environment. • Builds data pipelines and workloads (as needed) • Builds new user interface and analytic dashboards Infrastructure: VITA/ODGA-managed environment
3	**Move to a new SUDA Platform, Vendor builds new Data Pipelines and Workloads** Select Vendor to build new data pipelines using the VITA/ODGA-managed environment and re-create ETL processes; ODGA take over ETL processes as O&M (after the initial go-live).	VITA/ODGA: Conduct RFP Vendor: • Builds data pipelines and workloads • Builds new user interface and analytic dashboards Infrastructure: VITA/ODGA-managed environment
4	**Move to a new SUDA Platform, Vendor builds new Data Pipelines, ODGA builds Workloads** Selected Vendor builds new data pipelines using the VITA/ODGA-managed environment and analytic dashboards. ODGA builds ETL processes	VITA/ODGA: Conduct RFP Vendor: • Builds data pipelines ODGA: • Builds workloads • Builds new user interface and analytic dashboards Infrastructure: VITA/ODGA-managed environment
5	**Move to a new SUDA Platform, Vendor proposes and builds full solution stack (e.g., Snowflake, Databricks)**	VITA/ODGA: Conduct RFP Vendor: • Propose and implement solution including infrastructure and analytics Infrastructure: Vendor-Selected

* See Appendix for additional AoA detail

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Technical Solution Alternatives – Details

#	Technical Solution Alternative	Feasibility Score	Risk Score	ROM Cost
1	**Enhance Current Platform (FAACT)** Based on use case analysis, update with required data sets and enhanced user experience (interface and dashboards) to meet user needs.			
2	**Move to a new SUDA Platform, Vendor leverages existing reusable assets** Migrate existing workloads to VITA/ODGA-managed environment. Select Vendor build new user interface and analytic dashboards and manage data ingestion			
3	**Move to new SUDA Platform, Vendor builds new Data Pipelines and Workloads** Select Vendor to build new data pipelines using the VITA/ODGA-managed environment and re-create ETL processes; ODGA take over ETL processes as O&M (after the initial go-live).			
4	**Move to a new SUDA Platform, Vendor builds new Data Pipelines, ODGA builds Workloads** Selected Vendor builds new data pipelines using the VITA/ODGA-managed environment and analytic dashboards. ODGA builds ETL processes.			
5	**Move to a new SUDA Platform, Vendor proposes and builds full solution stack (e.g., Snowflake, Databricks)** Selected Vendor builds new platform			

Alternatives are scored on the criteria of Feasibility, Risk and Cost. Scores are relative to each other

Legend:  Poor  Moderate  Acceptable  Good  Excellent

Gartner Recommends Technical Alternative #2

Based on the Analysis of Alternatives, Gartner recommends Alternative #2:

- **Migrate existing workloads to VITA/ODGA-managed environment**
- **Leverage existing reusable assets with Selected Vendor**
- **Selected Vendor builds new user interface and analytic dashboards**

Alternative #2 has emerged as the most feasible and least risky approach.

Rationale:

- **Cost-Effectiveness:** Leveraging existing ETL workloads and VITA/ODGA-managed infrastructure reduces the need for significant upfront capital investment and time to market, maximizing the $4 million budget appropriated.
- **Ability for Quick Wins:** Reusing existing components accelerates the implementation timeline and allows for a quicker realization of benefits. VITA/ODGA has multiple cloud-native applications that will be considered.
- **Scalability and Flexibility:** Cloud-native infrastructure provides scalable solutions that can adapt to future growth and changing business needs. Additionally, they offers enhanced capabilities, such as AI and ML, that CoV can leverage in the future.
- **User Experience:** Purpose-built dashboards for the use cases that stakeholders value most will better support SUDA-related decision-making and related actions. ODGA currently has deep expertise with Power BI.

Technical Solution Considerations

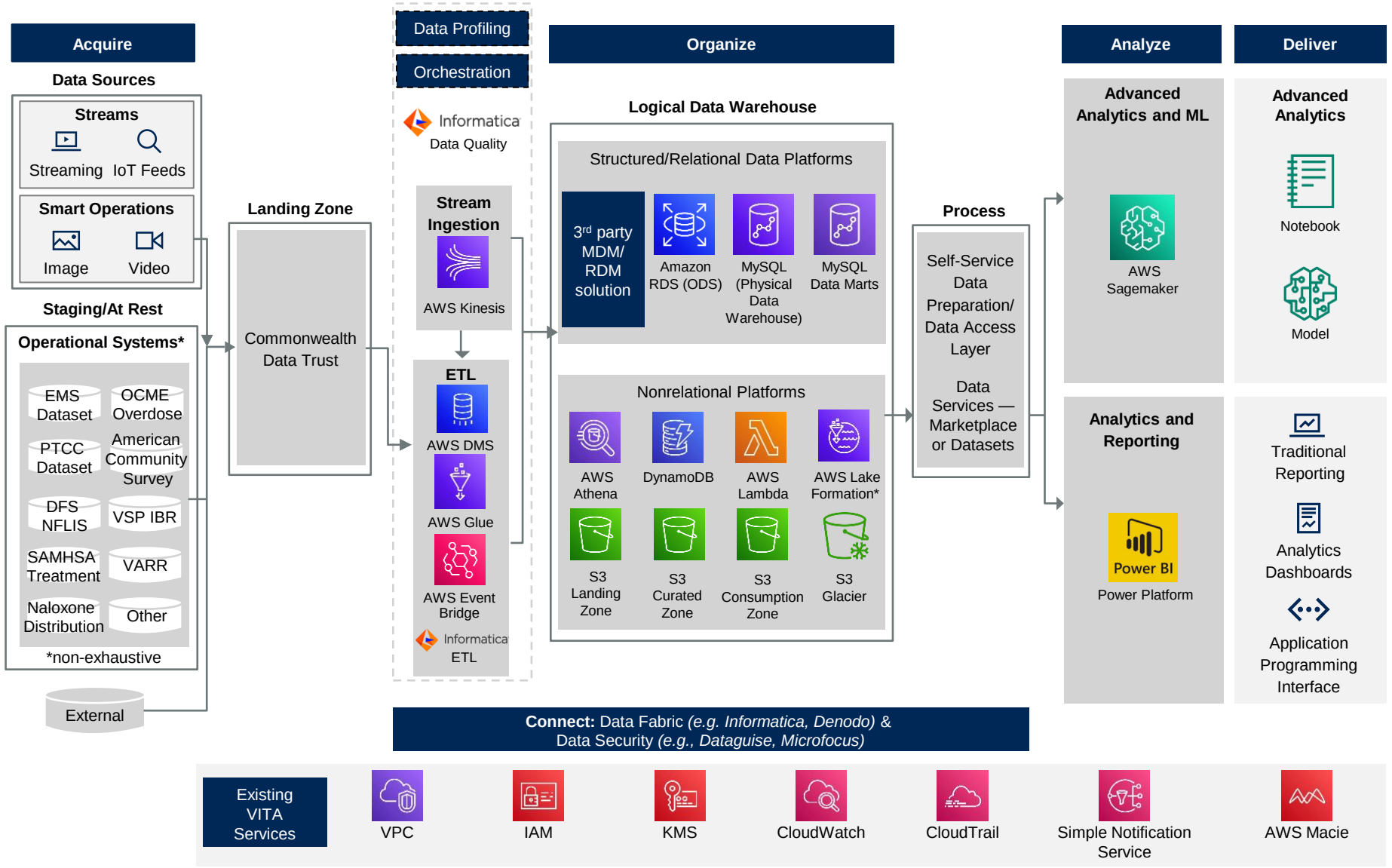
VITA and ODGA Technical Solution Decisions

Based on Gartner's analysis of alternatives, technical solution considerations and market research*, the following decisions were made for the future SUDA data platform.

Architecture	**Cloud Infrastructure**	AWS was identified as the preferred choice for cloud infrastructure, due to maturity of VITA managed service offerings, cost advantage and ability for implementation vendor to leverage reusable assets for quick wins and accelerated development. *See additional analysis on subsequent slides.*
	Business Intelligence	PowerBI was identified as the preferred business intelligence solution based on the use case and business intelligence requirements and the volume of end users. Due to low user satisfaction and current dashboards not meeting use case needs, re-design of dashboards are required.
	ETL Tooling	AWS Glue was identified as the preferred short-term solution to migrate existing ETL scripts, while standardizing on Informatica as the platform of choice for ETL long term to support various deployment models, true scalability and integration with Informatica's suite of products (e.g., data quality). *See additional analysis on subsequent slides.*
	Master Data Management	Decision made to evaluate and finalize master data management platform as part of the detailed architectural design; existing tool might be immature to handle master data needs for ODGA.
Other Technical	**Vendor Transition Plan**	VITA and ODGA to work with FAACT incumbent vendor (Voyatek) to complete a transition plan, including documenting existing workloads (currently documented as a risk).
	Product Management Approach	VITA and ODGA to adopt Product Management approach to emphasize user-centric design, a well-defined roadmap that prioritizes features and functionalities that deliver the most value, cross-functional collaboration, and iterative development.
	Talent	ODGA to engage AWS expertise to ensure the appropriate skills and capacity to support environment builds and migration of technical workloads.
Programmatic	**Governance with VOAA**	Decision made to describe decision rights and responsibilities across VITA / ODGA / VOAA / Cross-Organization Committee for more effective governance. Proactive communication as part of stakeholder management important to explain the benefits of the data platform and provide training/resources to increase user adoption/data-sharing

*See Appendix for Additional Gartner Research

SUDA Data Platform target state technical reference architecture based on use case requirements and technical solution decisions



** AWS Service to create data lakes*

** Subject to change based on detailed architecture design*

Solution Analysis – Infrastructure

Product	Pros	Cons
AWS	+ Speed of transition and cost avoidance of additional development work compared to Azure. + Lower Risk as current system is in AWS (tried and tested). Extending the functionality to add analytics should also be easier leveraging AWS. + Leadership Support to establish AWS/multi cloud environment + AWS skills are easier to obtain	– Limited AWS skills/capacity within technical teams – Additional costs if data traverses across systems between existing systems hosted on Azure and analytics hosted on AWS
Azure	+ Commonwealth may have already negotiated discounted pricing for Azure and other products	– Additional Cost/Risk to operationalize the current solution based on AWS into Azure – Highly competitive but require more precise optimization to lower costs for Data Engineering projects

Comments

- The current data platform is hosted on AWS, which would be easier for managed services vendor to lift and shift.
- Azure and AWS as infrastructure are very similar in terms of capabilities but AWS may provide better value in this scenario. Ultimately, infrastructure choice should consider Commonwealth's vision on maintaining/investing in a multi-cloud environment and maturity of service offering(s).
- ODGA has an established Azure ecosystem. Limited SUDA data exists within existing Azure data warehouse/lake that can be leveraged in future platform. ODGA can retool/procure AWS skills/talent.
- Cloud vendor preference can be mentioned as part of the RFP process, and vendors can be invited based on meeting the presented architecture. However, emphasis should be given on their experience delivering solution in similar scale/complexity irrespective of cloud platform.

* See Appendix for Additional Gartner Cloud Scoring Research

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Solution Analysis – ETL Tooling

Product	Pros	Cons
Glue	+ Pay as you go + Integrates easily within AWS ecosystem + No infrastructure to set up	– Limited advanced features (compared to out of box features on Informatica) – Vendor lock in as Glue is limited to AWS and not suited in multi-cloud environment – Performance concerns as based on serverless architecture – Typically needs to be combined/configured with additional AWS tools to address wholistic needs.
Informatica	+ Tried and tested for Enterprise scaled applications as very scalable + Flexibility in being cloud, on prem, and DB agnostic + Advanced Data Governance, Data Lineage, Data Quality, Monitoring and Security features	– Complex pricing – Higher complexity

Comments

- Informatica's Intelligent Data Management Cloud is operational for data quality capabilities
- Path forward options:

  1. Talend to Glue in the short-term and then transition to Informatica in the long-term
     - Decision considers which tool has the majority of the ETLs built today.
  2. Talend transition to Informatica
     - Informatica should be preferred for enterprise scale apps if budget permits.
     - Multi-cloud environment favors a platform-agnostic tool.

* See Appendix for Additional Gartner ETL Scoring Research

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Solution Analysis – Business Intelligence

Product	Pros	Cons
Microsoft Power BI	+ Can support all use cases identified in the needs assessment + Robust functionality + Very intuitive user interface and a library of visualizations	– Can be expensive at high volumes, which is unexpected in this platform – Very large volume of data can *potentially* slow reports (depending on how Power BI is configured)
Qlik	+ Existing platform and resources that understand the needs of ODGA + Associative data model helps to understand relationships by clicking on a data point	– Users have negative experience with Qlik with FAACT – Visualization library not as robust as Power BI
AWS QuickSight	+ Integrated well into the AWS environment + Provides basic functionalities and can handle large datasets in AWS	– Does not have a robust calculation engine for models (such as DAX for Power BI) – Visualization library not as robust as Power BI

Comments

- Three BI platforms were considered for analysis based on current usage and/or availability:
  - MS PowerBI: Market-leader BI tool. VITA/ODGA has significant investment and capability in the MS Suite, and it is integrated into existing architecture
  - Qlik: Current FAACT dashboards are built in Qlik
  - AWS QuickSight: VITA/ODGA has significant investment and capability in AWS, and it is integrated into existing architecture
- Power BI provides a rich visualization library and can be configured to scale/handle large loads of data well. While ODGA does have some large data sets, a properly configured Power BI instance can handle the scenarios
- Power BI's native integration with its semantic layer can provide a quick and easy way to expose curated and vetted data sets for self-service analytics
- Advanced calculations and optimization for data models are possible using Data Analysis Expressions (DAX)

* See Appendix for Additional Gartner Business Intelligence Scoring Research

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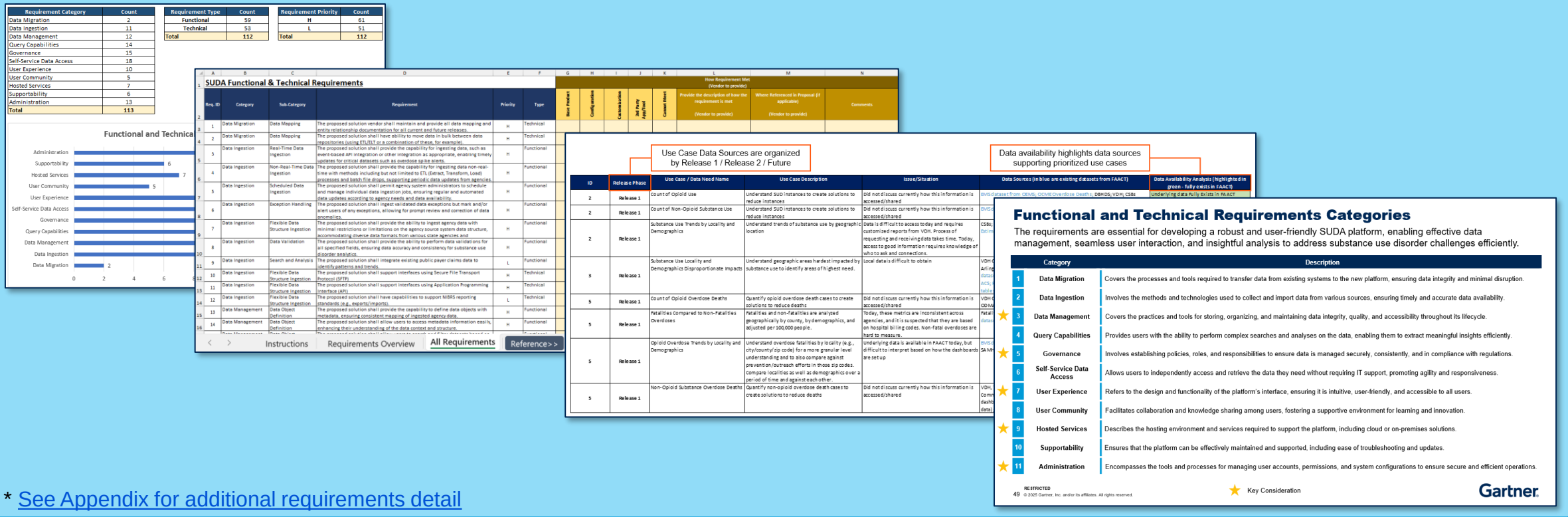
Requirements Overview

To best support this SUDA platform vision, Gartner has developed high-level technical and functional requirements

- Requirements have been prioritized by **'Must Haves'** and **'Nice to Haves'** – allowing potential vendors to respond to the requirements that are directly necessary to implement and demonstrate the primary use cases of Releases 1 and 2.
- Known/existing data sources from high priority use cases have been documented within the requirements.
- There are **113** proposed requirements for the target-state SUDA solution:
  - **59 Functional Requirements**
  - **54 Technical Requirements**



* See Appendix for additional requirements detail

Prioritization Criteria for Functional and Technical Requirements

Key Considerations

- **High-priority** requirements are must-have requirements that **directly contribute to the platforms ability to deliver its intended functionality in Release 1 and Release 2** and include foundational elements supporting both current and future platform needs.
- **Low-priority** requirements are nice-to-have requirements that **align with long-term strategic objective and innovation goals**, providing a roadmap for future enhancements and iterations.
- **Vendor Clarity:** The prioritization criteria should help vendors understand which features are essential for initial releases and which are potentially planned for future enhancements, allowing them to tailor their RFP accordingly.

Priority Level	Criteria Description
High (H) – Must Have	**Release 1 & 2 Use Case Alignment:** Requirements that are directly necessary to implement and demonstrate the initial set of use cases. These are non-negotiable and must be included to meet the SUDA data platform's fundamental goals and deliver immediate value. **Platform Foundation and Support:** Foundational requirements that ensure the platform's stability, security, and scalability. This includes specific requirements that directly support the development and deployment of the platform.
Low (L) – Nice to Have	**Enhancements and Future Features:** Requirements that are nice-to-have but not essential for Release 1 and Release 2. These may include advanced and complex features or optimizations that improve user experience or system performance but can be deferred to later phases. **Strategic Long-Term Goals:** Requirements that align with broader strategic objectives and innovation goals, which are valuable for future iterations but not critical for the initial deployment.

SUDA Functional & Technical Requirements

						How Requirement Met (Vendor to provide)							
Req. ID	Category	Sub-Category	Requirement	Priority	Type	Base Product	Configuration	Customization	3rd Party App/Tool	Cannot Meet	Provide the description of how the requirement is met (Vendor to provide)	Where Referenced in Proposal (if applicable) (Vendor to provide)	Comments
1	Data Migration	Data Mapping	The proposed solution vendor shall maintain and provide all data mapping and entity relationship documentation for all current and future releases.	H	Technical								
2	Data Migration	Data Mapping	The proposed solution shall have ability to move data in bulk between data repositories (using ETL/ELT or a combination of these, for example).	H	Technical								
3	Data Ingestion	Real-Time Data Ingestion	The proposed solution shall provide the capability for ingesting data, such as event-based API integration or other integration as appropriate, enabling timely updates for critical datasets such as overdose spike alerts.	H	Functional								

Excerpt from Requirements Workbook

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For the prioritized Use Cases corresponding high level data sources and release categorizations were developed (excerpt below)

Use Case Data Sources are organized by Release 1 / Release 2 / Future

Data availability highlights data sources supporting prioritized use cases

ID	Release Phase	Use Case / Data Need Name	Use Case Description	Issue/Situation	Data Sources (in blue are existing datasets from FAACT)	Data Availability Analysis (highlighted in green - fully exists in FAACT)
2	Release 1	Count of Opioid Use	Understand SUD instances to create solutions to reduce instances	Did not discuss currently how this information is accessed/shared	EMS dataset from OEMS; OCME Overdose Deaths; DBHDS; VDH; CSBs	Underlying data Fully Exists in FAACT
2	Release 1	Count of Non-Opioid Substance Use	Understand SUD instances to create solutions to reduce instances	Did not discuss currently how this information is accessed/shared	EMS dataset from OEMS;	Underlying data Fully Exists in FAACT
2	Release 1	Substance Use Trends by Locality and Demographics	Understand trends of substance use by geographic location	Data is difficult to access today and requires customized reports from VDH. Process of requesting and receiving data takes time. Today, access to good information requires knowledge of who to ask and connections.	CSBs; EMS dataset from OEMS; American Community Survey 5-year Estimates from ACS; PTCC dataset from DCJS;	Underlying data Fully Exists in FAACT
3	Release 1	Substance Use Locality and Demographics Disproportionate Impacts	Understand geographic areas hardest impacted by substance use to identify areas of highest need.	Local data is difficult to obtain	VDH Office of the Chief Medical Examiner; Dept of Forensic Science; Arlington County direct MOU; Virginia Office of EMS data via ODMAP; EMS dataset from OEMS; American Community Survey 5-year Estimates from ACS; PTCC dataset from DCJS; Geometrics related tables from reference tables;	Underlying data Fully Exists in FAACT
5	Release 1	Count of Opioid Overdose Deaths	Quantify opioid overdose death cases to create solutions to reduce deaths	Did not discuss currently how this information is accessed/shared	VDH Office of the Chief Medical Examiner; Virginia Office of EMS data via ODMAP; OCME Overdose Deaths from OCME	Underlying data Fully Exists in FAACT
5	Release 1	Fatalities Compared to Non-Fatalities Overdoses	Fatalities and non-fatalities are analyzed geographically by county, by demographics, and adjusted per 100,000 people.	Today, these metrics are inconsistent across agencies, and it is suspected that they are based on hospital billing codes. Non-fatal overdoses are hard to measure.	Fatalities - Medical Services; Non-Fatalities - Public Health; VDH; EMS dataset from OEMS; OCME Overdose Deaths from OCME	Underlying data Fully Exists in FAACT
5	Release 1	Opioid Overdose Trends by Locality and Demographics	Understand overdose fatalities by locality (e.g., city/county/zip code) for a more granular level understanding and to also compare against prevention/outreach efforts in those zip codes. Compare localities as well as demographics over a period of time and against each other.	Underlying data is available in FAACT today, but difficult to interpret based on how the dashboards are set up	EMS dataset from OEMS; OCME Overdose Deaths from OCME; VDH; CDC; SAMHSA	Underlying data Fully Exists in FAACT
5	Release 1	Non-Opioid Substance Overdose Deaths	Quantify non-opioid overdose death cases to create solutions to reduce deaths	Did not discuss currently how this information is accessed/shared	VDH, The Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE); Fairfax County overdose dashboard (https://www.fairfaxcounty.gov/health/opioid-overdoses-data); EMS dataset from OEMS;	Underlying data Fully Exists in FAACT

Path Forward

High Level SUDA data platform implementation plan based on Use Case and Alternatives Analyses

Release 1 - Quick Win Implementation

Use cases with fully available data today

Includes technical workload migration to the new platform and development of all "Do Now" use cases as a result of prioritization

Release 2 – Implementation

Use cases with partially available data today

Prioritized high value use cases with data highly available in ecosystem

Includes all data sets and workloads that allow for FAACT to be retired

Release 1 and Release 2 use case requirements to be included in the SUDA Data Platform solicitation *(see next slide)*

Future Releases

Use Cases with high business value that require new data agreements and/or more technically complex

New use cases with high business value / Backlog

Notes:

- *Collecting new use cases and re-prioritizing is an important on-going activity.*
- *Due to the volume of use cases in Release 2 (i.e. use cases with partially available data today), re-prioritization may be required based on results of Release 1*

Release 1 and Release 2 Use Cases

Top Use Cases

ID	Use Case Name
Use Cases with Data Fully Available in FAACT (Release 1)	
2	Opioid and Non-Opioid Usage Trends
3	Substance Use Locality and Demographics Disproportionate Impacts
5	Opioid and Non-Opioid Overdose Death Trends
7	Opioid Overdose Death Locality and Demographic Disproportionate Impacts
10	Illicit Drug Supply and Composition Trends
Use Cases with Data Partially Available & Highly Available Elsewhere (Release 2)	
4	All Payer Claims Data
6	Opioid Overdose Rates in VA Compared to Other States
8	Xylazine Supply
9	New Compounds Being Used in the VA Population
11	Treatment Centers Overlay with Overdose Hotspots
17	Spike Alerts
18	Naloxone Distribution Tracking and Overdose Correlation
19	Naloxone Usage Visibility
20	Treatment/Recovery Service Gaps for High-Need Areas
28	Count and Length of Recovery
32	Recovery Services
45	Grant Funding Tracking

Existing Data — *Underlying data **Fully Exists** in FAACT*; *Underlying data **Partially Exists** in FAACT*

Decentralized Data — *Data **Highly Available** Elsewhere*; *Data **Partially Available** Elsewhere*

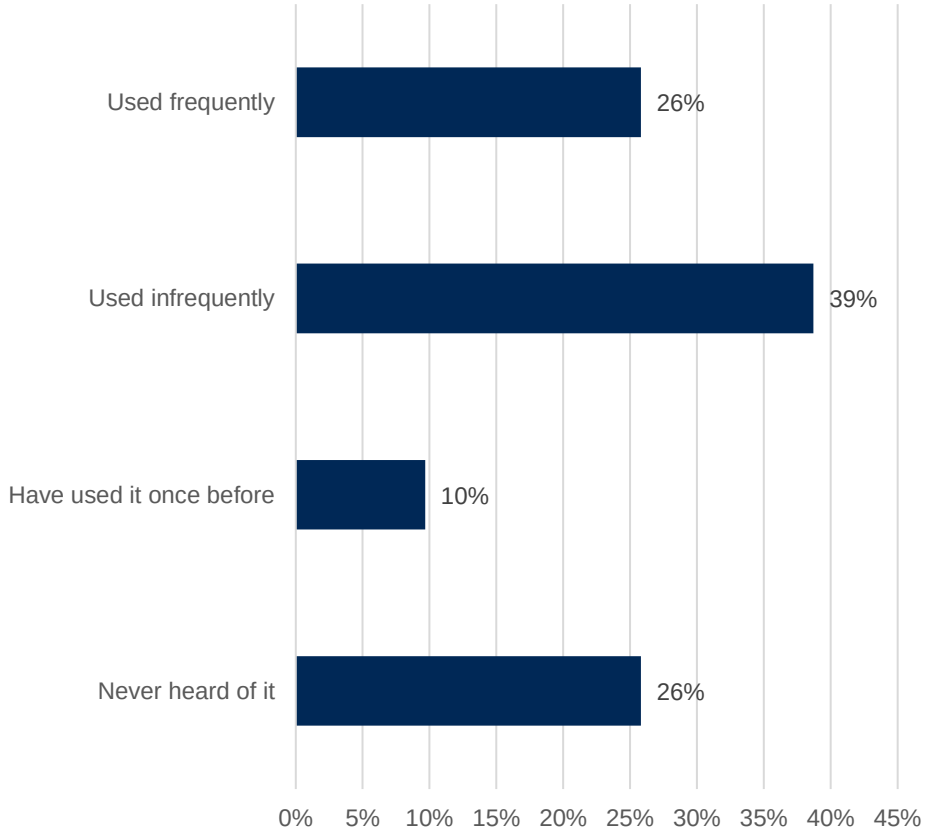
Grouped

Appendix

Stakeholder Engagement

Project Kickoff Poll Response: Stakeholder responses highlighting the need for an enhanced SUDA Platform (1 of 2)

What is your current usage / awareness of FAACT?



If this project could solve one problem for you, what would that be?

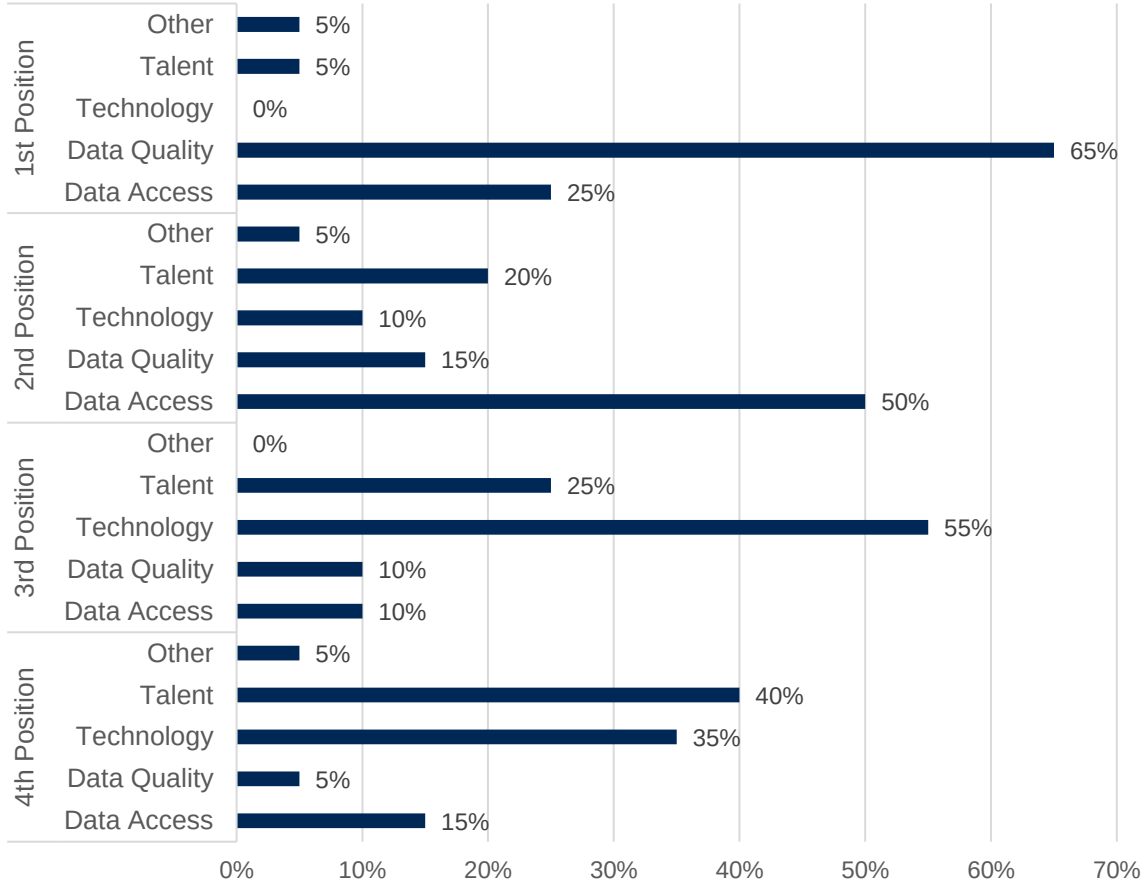
- **Unified Data Source:** *We need a single data source for multi agency data standardization.*
- **Reliable Data Integration:** *Integration of reliable data sets to inform and maximize success of policy decisions and investments.*
- **Centralized Dashboard:** *One central place to see most important measurements / data / results regarding SUD in Virginia.*
- **Continuum of Care Tracking:** *Tracking metrics for individual's navigation across the continuum of care.*
- **Collaborative Platform:** *Cross-agency collaboration and site/data sharing*

Project Kickoff Poll Response: Stakeholder responses highlighting the need for an enhanced SUDA Platform (2 of 2)

What SUDA-related questions do you have to answer today?

- *How can we effectively reduce opioid and substance use, including overdose deaths?*
- *What data and metrics are needed to inform decisions and evaluate the performance of substance use interventions?*
- *Where should substance use services be focused to have the greatest impact, and what strategies are most effective?*
- *How can we ensure access to and the effectiveness of treatment and prevention services?*

What makes answering SUDA-related questions difficult (rank based on priority)?



Stakeholder Interview/Needs Gathering Summary

Group	Agency / Organization	Status	Detail
1	DOE - Department of Education	Complete	11/15 at 11 AM
2	Advisor to the Governor	Complete	10/29 at 11:30 AM
3	Hampton-Newport News Community Services Board (CSB)	Complete	11/4 at 1 PM
	HIDTA - High Intensity Drug Trafficking Area		
	Offender Aid and Restoration (OAR), Charlottesville		
	York County		
4	VOAA - Virginia Opioid Abatement Authority	Complete	11/5 at 11 AM
5	Carilion Health System	Complete	11/6 at 1:15 PM
	Horizon Behavioral Health		
	Sentara Healthcare		
6	OMNI Institute	Complete	11/6 at 3:30 PM
	SAARA - Substance Abuse and Addiction Recovery Alliance		
7	DBHDS - Department of Behavioral Health and Developmental Services	Complete	11/6 at 2:30 PM
8	DSS - Department of Social Services	Complete	11/7 at 2 PM
9	VDH - Department of Health	Complete	11/6 at 12 PM
10	DHP - Department of Health Professions	Complete	11/6 at 10:30 AM
	DMAS - Department of Medical Assistance Services		
11	DCJS - Department of Criminal Justice Services	Complete	11/18 at 11 AM
	DFS - Department of Forensic Science		
12	DJJ - Department of Juvenile Justice	Complete	11/8 at 10 AM
	VSP - Virginia State Police		
	Northwestern Regional Jail, Winchester		
	Behavioral Health Program Manager, Fairfax County Sheriff's Office		
13	VADOC - Department of Corrections	Complete	11/7 at 1 PM

Group	Agency / Organization	Status	Detail
14	ODGA - Office of Data Governance and Analytics	Complete	11/18 at 12 PM
	VITA - Virginia IT Agency		
15	Oxford House	Complete	11/15 at 10 AM
	VARR - Virginia Association of Recovery Residences		
16a	VACo - Virginia Assoc of Counties	Complete	11/21 at 10 AM
	Virginia Municipal League		
16b	Virginia Assoc of CSBs	Complete	11/14 at 1:30 PM
17	ODMAP - Overdose Detection Mapping Application Program	Complete	11/4 at 11:30 PM
	Behavioral Health Commission		
18	VT/Carilion Med School	Complete	11/21 at 2 PM
	VCU - Virginia Commonwealth University Health		
19	DBHDS - Enterprise Management and Technical Capabilities	Complete	12/4 at 2 PM
20	Senate Finance & Appropriations Committee	Complete	12/5 at 10:30 AM
21	House Appropriations Committee	Complete	12/10 at 10 AM
22	House of Delegates (16th District)	No Response	-
23	Senate of Virginia (38th District)	No Response	-
24	House of Delegates (42nd District)	No Response	-
25	Senate of Virginia (6th District)	Did not Attend	10/12 at 5:15 PM
26	Office of the First Lady of Virginia	Complete	12/4 at 9:30 AM

List of Stakeholders that participated in the needs assessment

NAME	Agency / Organization
Joseph Wharff	DOE - Department of Education
Na-Keisha White	
Nenneya Shields	
Martha Montgomery	
Colin Greene, MD, MPH	Advisor to the Governor
Anthony Crisp	Hampton-Newport News Community Services Board (CSB)
Emma Driscoll	HIDTA - High Intensity Drug Trafficking Area
Matt Vitale	Offender Aid and Restoration (OAR), Charlottesville
Michelle Justiniano	York County
Tony McDowell	VOAA - Virginia Opioid Abatement Authority
Charlie Tarasidis	Carilion Health System
Curtis Jones	Horizon Behavioral Health
Januwaa Davis	
Anna Healy James	Sentara Healthcare
Mandy Johnson	
Julia Simhai	OMNI Institute
Victor McKenzie	SAARA - Substance Abuse and Addiction Recovery Alliance
An Major	DBHDS - Department of Behavioral Health and Developmental Services
Leonard Dickey	
Mia McCoy	
Paulose Poovathukaran	
Kathy Spangler	DSS - Department of Social Services
Nethan Reddy	
Stephen Wade	
Abigail Nimitz	VDH - Department of Health
Adam Hess	
Anup Srikumar	
Carolyn Lamere	
Erin Austin	
Julia Mogren	
Lauren Yerkes	
Laurie Forlano	
Vanessa Walker-Harris	
Melissa Viray	
Jessica Rosner	
Kathrin Hobron	
Alexandra Baldwin	
Meredith Davis	
Bruce Taylor	

NAME	Agency / Organization
Nicole Barron	DHP - Department of Health Professions
Ashley Carter	
Jason Lowe	DMAS - Department of Medical Assistance Services
Lisa Jobe-Shields	
Baron Blakley	DCJS - Department of Criminal Justice Services
Jackson Miller	
James Harris	
Linda Jackson	DFS - Department of Forensic Science
Peter Gregory	DJJ - Department of Juvenile Justice
Phillip Anastasi	
Keon Turner	VSP - Virginia State Police
Clay Corbin	Northwestern Regional Jail, Winchester
Sahana Karpoor	Behavioral Health Program Manager, Fairfax County Sheriff's Office
Allen Stewart	VADOC - Department of Corrections
Jessica Lee	
Tama S. Celi	
Warren McGehee	
Ken Pfeil	ODGA - Office of Data Governance and Analytics
Marcus Thorton	
Chris Burroughs	
Chris Wooten	
Payton Lamb	
Swetha Tadimalla	
Thomas Kramer	VITA - Virginia IT Agency
Jeff Scheich	
Kelvonte Nesmith	
Natalie Fitzwater	
Paul Stevens	Oxford House
Anthony Grimes	VARR - Virginia Association of Recovery Residences
Dean Lynch	VACo - Virginia Assoc of Counties
Michelle Gowdy	VML Virginia Municipal League
Janet Areson	
Joe Flores	
Jennifer Faison	Virginia Assoc of CSBs
Ali Burrell	ODMAP - Overdose Detection Mapping Application Program
Nathalie Molliet-Ribet	Behavioral Health Commission
Robert Trestman	VT/Carilion Med School
Gerry Moeller, MD, VCU	VCU - Virginia Commonwealth University Health
Brandon Wills, MD, VCU	

NAME	Agency / Organization
Craig Camidge	DBHDS - Department of Behavioral Health and Developmental Services
Paulose Poovathukaran	
Mike Tweedy	Senate Finance & Appropriations Committee
Amy Cochran	House Appropriations Committee
Del. Paul Krizek	House of Delegates (16th District)
Senator Jennifer Boysko	Senate of Virginia (38th District)
Del. Jason Ballard	House of Delegates (42nd District)
Senator Todd Pillion	Senate of Virginia (6th District)
Kathryn Zimmerman	Office of the First Lady of Virginia
Bob Osmond	VITA - CIO

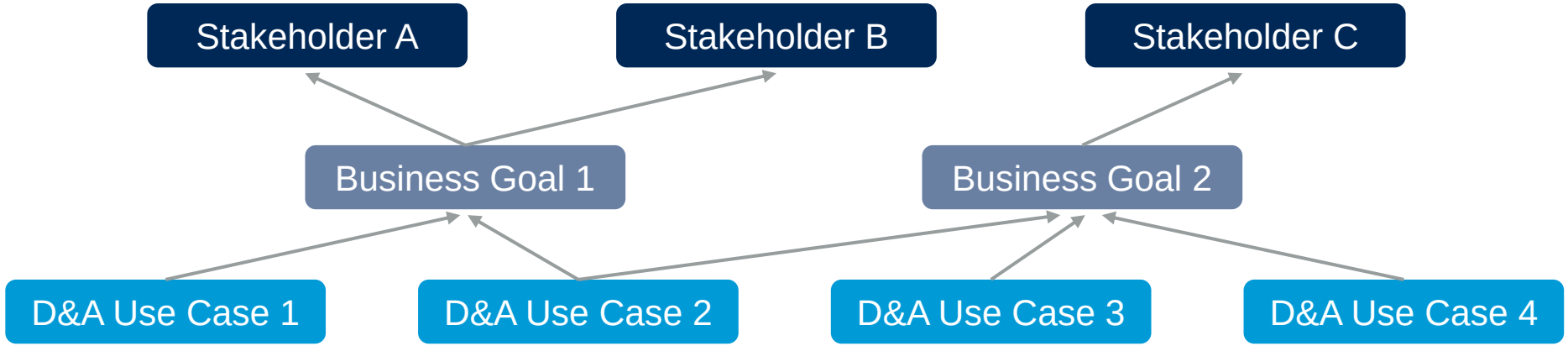
Use Cases

What is a Use Case?

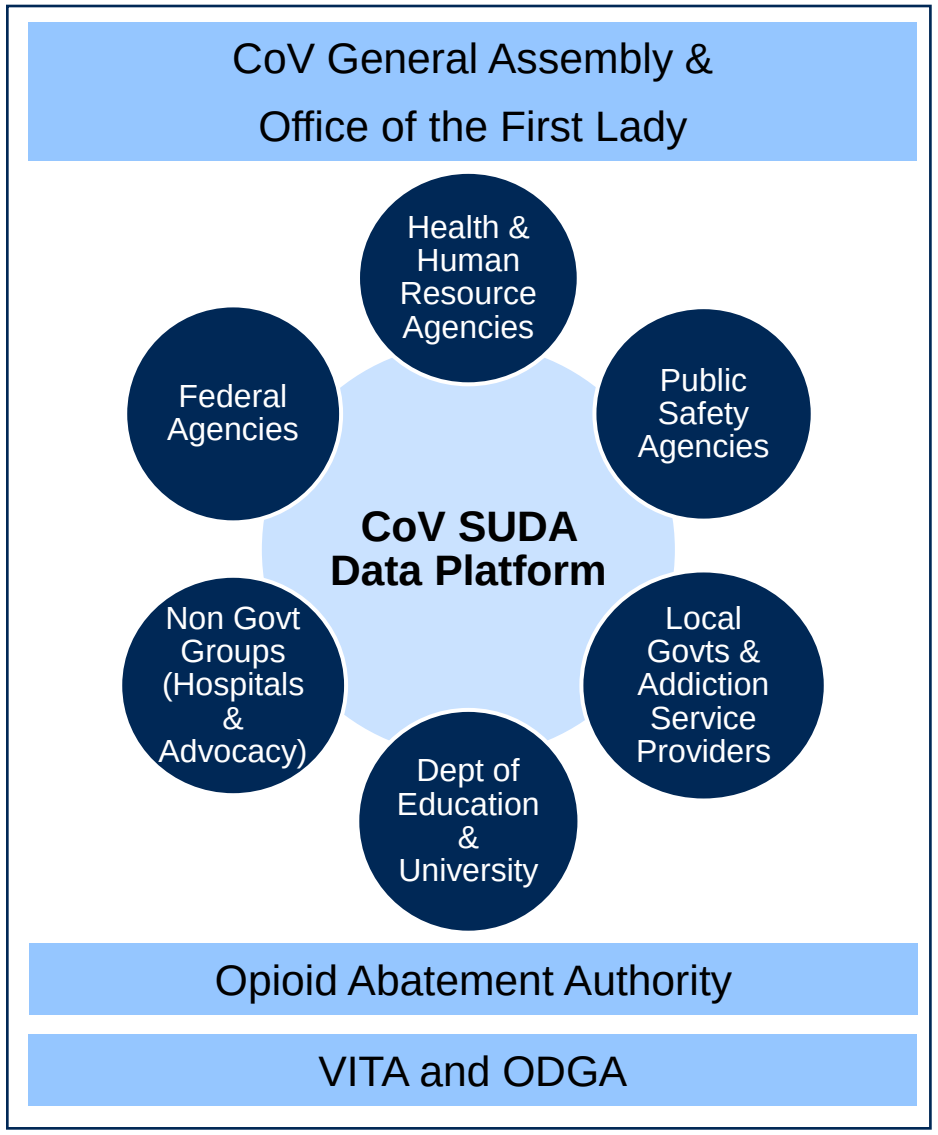
Use cases describe the data needs and priorities that a future statewide SUDA data platform could provide. Use cases can help define the necessary data, analytics, and technical infrastructure required for implementation. Best practice is to develop data products with a use-case driven approach.

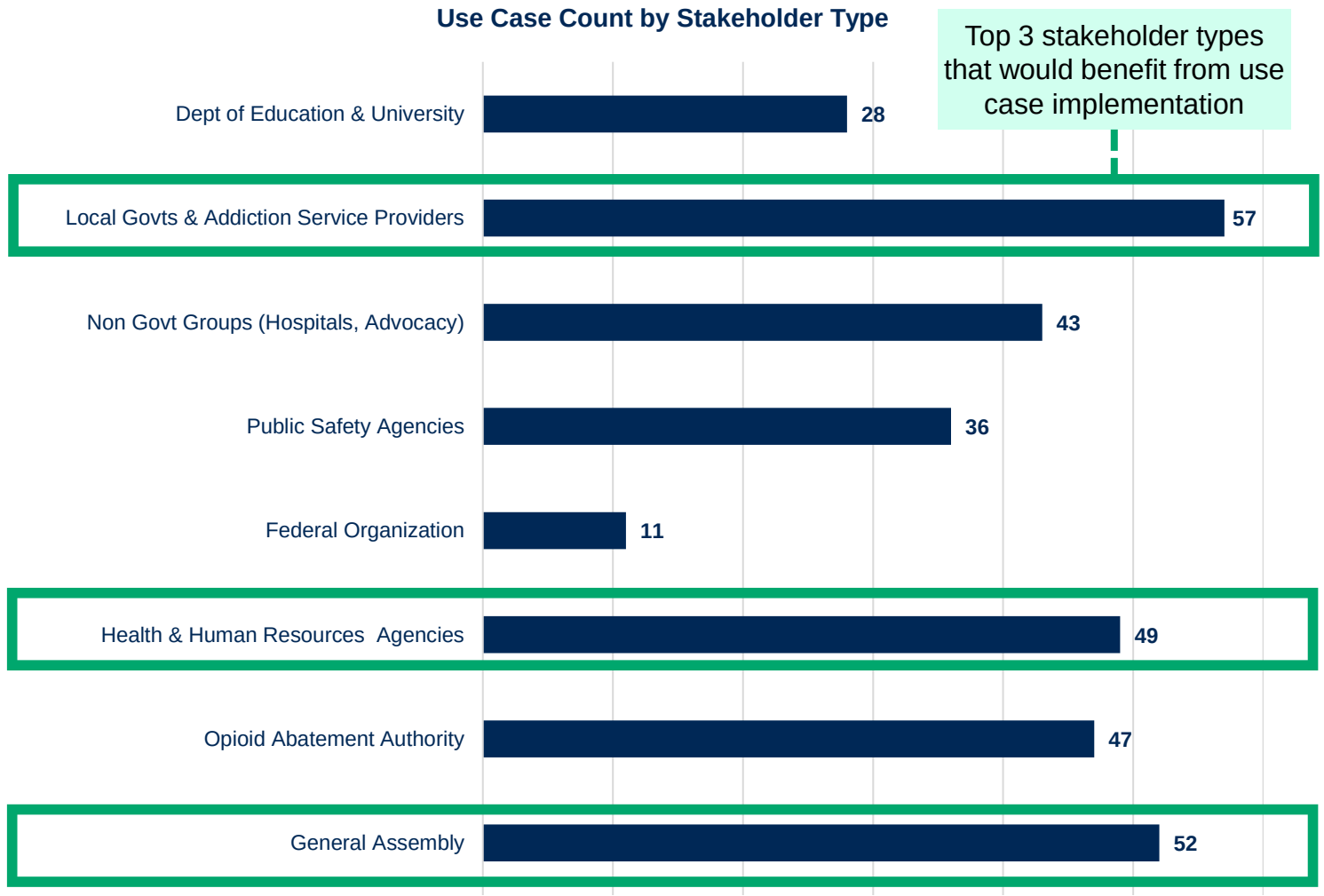
Effective use cases:

- ✓ Described in business language: Must be instantly recognizable by business users
- ✓ Describes the ideal target start state situation and outcome desired
- ✓ Can be evaluated and prioritized based on stakeholder value / impact



Once implemented, SUDA Use Cases will benefit multiple Stakeholder Types





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Use Case Descriptions – Education & Prevention

ID	Agency	Use Case / Data Need Name	Use Case Description	Issue/Situation
1	Behavioral Health Commission (BHC), VDH, Advisor to the Governor, Carilion Health System, Sentara Healthcare, Horizon Behavioral Health	Prevention Program Effectiveness	Demonstrate prevention program effectiveness and identify areas of opportunities to improve programs.	Such analysis is not possible today

★*Top Use Cases*

Use Case Descriptions – Usage / Overdose (1 of 3)

ID	Agency	Use Case / Data Need Name	Use Case Description	Issue/Situation
2	Virginia State Police, Advisor to the Governor	Count of Opioid Use	Quantify opioid instances to create solutions to reduce instances	Available in FAACT today.
★	Unknown, from Kickoff	Count of Non-Opioid Substance Use	Understand SUD instances to create solutions to reduce instances	Available in FAACT today.
	VOAA - Virginia Opioid Abatement Authority, DOC	Substance Use Trends by Locality and Demographics	Understand trends of substance use by geographic location and demographics	Underlying data is available in FAACT today, but difficult to interpret based on how the dashboards are set up. Customized reports have been received from VDH that make analysis easier. Process of requesting and receiving data takes time.
★ 3	HIDTA (CDC Foundation)	Substance Use Locality and Demographics Disproportionate Impacts	Analyze geographic areas and demographic communities hardest impacted by substance use to identify areas of highest need.	Local data is difficult to obtain. Want easier way to analyze and interpret information
4	Sentara Healthcare	All Payer Claims Data	Identify patterns and trends of payer claim data to support prevention/treatment program and resource decisions	Public database exists today that partially addresses desired use case
★	Horizon Behavioral Health	All Payer Claims Data Demographics Heatmap	Identify patterns and trends of payer claim data by demographics to support prevention/treatment program and resource decisions	Public database exists today that partially addresses desired use case
5	VDH, DMAS	Count of Opioid Overdose Deaths	Quantify opioid overdose death cases to create solutions to reduce deaths	Available in FAACT today.
★	Advisor to the Governor; VOAA - Virginia Opioid Abatement Authority, OMNI Institute	Fatalities Compared to Non-Fatalities Overdoses	Fatalities and non-fatalities are analyzed geographically by county, by demographics, and adjusted per 100,000 people.	Today, these metrics are inconsistent across agencies, and it is suspected that they are based on hospital billing codes. Non-fatal overdoses are hard to measure.
	Office of the First Lady	Opioid Overdose Trends by Locality and Demographics	Understand overdose fatalities by locality (e.g., city/county/zip code) for a more granular level understanding and to also compare against prevention/outreach efforts in those zip codes. Compare localities as well as demographics over a period of time and against each other.	Underlying data is available in FAACT today, but difficult to interpret based on how the dashboards are set up
	VDH, DMAS	Non-Opioid Substance Overdose Deaths	Quantify non-opioid overdose death cases to create solutions to reduce deaths	Underlying data is available in FAACT today, but difficult to interpret based on how the dashboards are set up

★*Top Use Cases*

Use Case Descriptions – Usage / Overdose (2 of 3)

	ID	Agency	Use Case / Data Need Name	Use Case Description	Issue/Situation
★	6	Office of the First Lady	Opioid Overdose Rates in VA Compared to Other States	Compare overdose rates of Virginia to other states over a period of time.	Data not readily available today, and would require ingestion of data from other states' publicly available data
★	7	VOAA - Virginia Opioid Abatement Authority	Opioid Overdose Death Locality and Demographic Disproportionate Impacts	Analyze geographic areas and demographic communities hardest impacted by overdoses to identify areas of highest need.	Local data is difficult to obtain. Want easier way to analyze and interpret information
★	8	Advisor to the Governor	Xylazine Supply	Understand trends of the Xylazine supply, including geographic location and quantity.	Xylazine data is available via the DFS dashboard, showing cases in Virginia. Additional data from other agencies, labs, or hospitals may be needed for comprehensive tracking.
★	9	Department of Forensic Science	New Compounds Being Used in the VA Population	Understand new compounds being used in the VA population	This data is partially available via the DFS dashboard, showing trends and hotspots. Additional data collection from agencies will be needed for comprehensive tracking.
	10	Advisor to the Governor	Drug Composition	Understand whether drugs are composed of fentanyl in addition to other drugs (e.g., cocaine, meth, etc.). Analysis also broken down by geographic location.	Available in FAACT today.
★		HIDTA (CDC Foundation)	Illicit Drug Market Trends	Gain insights into drugs present on the illicit drug market to inform overdose prevention, reduce harms of drug use, and advise substance use disorder service providers.	Available in FAACT today.
		DOC	Targeted Drug Testing	Narrow down types of substances to test for based on supply trends to reduce testing costs.	DOC-specific use case (Minimizing drug types in the drug test for cost savings). Can conduct analysis with information made available in similar use cases.
★	11	Oxford House/ VAAR	Treatment Centers Overlay with Overdose Hotspots	Understand service needs by correlating private and public license treatment centers with geographic overdose spike alerts/trends	Overdose information in FAACT today. Would require getting a list of treatment center addresses for integrated analysis.
	12	VSP	Trend Analysis for Recidivism and Overdoses	Understand trends in recidivism and overdoses across different regions.	Would require individual-level data to match those who went through the criminal justice system and health records
	13	DOC	Probation Population Use/Overdose Trends	Identify patterns of overdoses/drug trends in different communities, particularly probation population, to pinpoint high-risk areas/drugs and implement targeted treatment programs, aiming to reduce overdose and enhance recovery in the probation community.	Could require data tracking by probation officers and could be aggregated for analysis

Use Case Descriptions – Usage / Overdose (3 of 3)

ID	Agency	Use Case / Data Need Name	Use Case Description	Issue/Situation
14	DOC	Incarcerated Substance Overdoses	Understand overdose cases for individuals incarcerated	If someone has overdose and goes to the hospital, DOC does not always get medical records, so they are unable to validate whether it was an overdose. Would require individual-level data to match individuals for analysis.
15	DHP - PMP	Prescription Monitoring Program Data	Aggregate and de-identified analysis of the PMP data at the zip code level.	This information can be provided upon request today. PMP vendor anonymizes the data. PMP was in conversation with FAACT but work was put on pause.
16	DMAS	DMAS Customer Substance Use Death Rates	Understand whether DMAS customers are dying from substance use.	Requires individual-level data. Data sharing agreement between DMAS and VDH was just executed but are still working on the mechanics on how to share data.
★ 17	Multiple	Spike Alerts	Gain real-time or near-real-time insights into overdose spikes to enable swift decision-making and prompt action.	Data exists today through ODMAP and partially through FAACT.

★*Top Use Cases*

Use Case Descriptions – Treatment / Recovery (1 of 3)

ID	Agency	Use Case / Data Need Name	Use Case Description	Issue/Situation
★ 18	DMAS	Naloxone Supply Chain	Understand distribution of naloxone. Identify areas with the highest need and ensures effective allocation of naloxone resources	Some of the underlying data is available in FAACT today, but only available at the agency-level. Requires data from agencies after they distribute to understand more granular localities receiving the supply.
	Advisor to the Governor	Naloxone and Overdose Death Analysis	Understand naloxone distribution impacts on deaths by comparing different counties who receive different rates of distribution	Some of the underlying data is available in FAACT today, but only available at the agency-level. Requires data from agencies after they distribute to understand more granular localities receiving the supply.
★ 19	VDH	Naloxone Usage Visibility	Track inventory and usage of naloxone after it is distributed	VDH does not know what happens to naloxone kits after distribution. Currently, EMS data contains Naloxone intervention usage. Known potential issues with tracking usage includes non-standardized approach to collect this data across agencies; also, some organizations (like DOC) have a policy to administer doses for anyone that is unresponsive so analysis could be unreliable in some cases. Would require agencies to track data and share.
★ 20	York County	Treatment/Recovery Service Gaps for High-Need Areas	Identify service gaps and high-need service opportunities, such as geographic needs, to determine where additional resources should be allocated.	Underlying data is available in FAACT today, but difficult to interpret based on how the dashboards are set up. Would require validation of services/programs and probably need to expand in the future.
21	Advisor to the Governor	Availability of OUD and MOUD Treatment Services	Measure the number of people receiving OUD treatment and MOUD across different geographies (e.g., cities, counties, etc.) to identify areas with insufficient treatment options and track changes over time as services become more accessible.	Would require data from treatment providers
22	Advisor to the Governor	Demand for OUD and MOUD Treatment Services	Forecast demand for OUD and MOUD treatment based in-part by understanding history of availability of OUD/MOUD treatment services and other factors.	Would require new data sources and discussion of business rules / demand calculations.
23	DMAS	Priority Population Increased OUD Treatments	Identify whether DMAS priority population have an increase in OUD treatments. Priority populations are pregnant and parenting people.	DMAS currently conducting analysis internally, not available broadly. Would require individual-level data.

★*Top Use Cases*

Use Case Descriptions – Treatment / Recovery (2 of 3)

ID	Agency	Use Case / Data Need Name	Use Case Description	Issue/Situation
24	Behavioral Health Commission (BHC), VDH, Carilion Health System, Sentara Healthcare, Horizon Behavioral Health	Treatment Program Effectiveness and Outcomes	Demonstrate treatment program effectiveness and positive outcomes, as well as identify areas of opportunities to improve programs.	Analysis not conducted today. Would require stakeholders to define business rules / calculations and data from treatment program providers would be required.
25	Oxford House/ VAAR	Incarceration Re-Entry Locations	Understand communities that incarcerated individuals are moving back to for targeted treatment/recovery outreach	Assumption is that information is highly available, but re-entry data is regulated by CJIS, which may make it unavailable to share.
26	DMAS	Incarceration Program Utilization	Understand utilization of programs and services of incarcerated individuals prior to DOC release.	Would require aggregate data from DOC. Assumption is that information is highly available.
27	Oxford House/ VAAR	Probation Officer Cases for SUD	Understand probation officer caseloads that contain individuals with SUD to conduct targeted outreach and potentially inform housing location decisions.	Would require data integration from public safety and housing. Some probation officers who are making referrals have never heard of oxford house or VAAR, so there is a need to create awareness and communicate better.
28	Advisor to the Governor	Count of Use to Recovery	Quantify number of people who move from use to recovery	Compare recovery numbers with SU use cases
★	DBHDS	Measuring Length of Recovery	Quantify time of recovery periods	Would require stakeholder agreement on how to define and measure recovery, and data from recovery agencies would be required
29	Oxford House/ VAAR	New Recovery Housing Forecasting	Ability to decide where to open new houses in strategic locations based on funding and agency requests as well as data (e.g., access to employment, public transportation, mutual aid groups, outpatient care, community-based recovery resources, etc.)	Would require stakeholders to define business rules / calculations and necessary sources of data
30	Oxford House/ VAAR	Recovery Housing Outcomes	Demonstrate positive outcomes from recovery housing.	The VARR dashboard currently provides relevant metrics. However, stakeholders may need to define business rules/calculations and identify additional data sources, potentially requiring individual-level data.
	Behavioral Health Commission (BHC), VDH, Carilion Health System, Sentara Healthcare, Horizon Behavioral Health	Recovery Housing Program Effectiveness	Demonstrate housing program effectiveness and positive outcomes, as well as identify areas of opportunities to improve programs.	Would require stakeholders to define business rules / calculations and necessary sources of data

Use Case Descriptions – Treatment / Recovery (3 of 3)

ID	Agency	Use Case / Data Need Name	Use Case Description	Issue/Situation
31	DBHDS	Recovery Outcomes	Analysis of outcomes post-treatment/recovery	Current metrics are focused on utilization of services, rather than outcomes. Sometimes can get that data, but there is a delay, and it is cumbersome to obtain
★ 32	DBHDS	Recovery Services	Understand geographic coverage of recovery services to provide referrals or identify gaps in available treatment services	Some information on recovery services/programs are available in FAACT today, including geographic location. Stakeholders would need to review the list for gaps and close if needed
	Oxford House/ VAAR	DOC Referral for Certified Residence Facility	DOC refer individuals to a certified residence facility who were enrolled in a SUD program.	A lot of formally incarcerated individuals are going to a halfway house, but they are not suited for SUD needs. Certified Residence facilities list and address are not in FAACT today, so would require data from those organizations
33	DMAS	Provider Services and Wait Times	Understand wait times and analysis on service utilization.	Would require CSB data. Potentially change information collected or how it is collected to satisfy this use case
34	Oxford House/ VAAR	Treatment Best-Fit Matching	Identify treatment options best suited to individuals based on individual characteristics	Analysis not conducted today. Would require individual-level data.
35	Carilion Health System	Hep C Patient Tracking	Track Hep C cases to connect patients to treatment programs, as 30% of people who are Hep C positive also have substance use disorders.	Would require individual-level data, as well as decision from product manager and stakeholders on whether we want to implement this use case

Use Case Descriptions – Multiple (1 of 2)

ID	Agency	Use Case / Data Need Name	Use Case Description	Issue/Situation
36	DMAS, Carilion Health System	Health Disparity Analysis	Examine the differences in the prevalence, treatment, and outcomes of substance use disorders among different population groups (e.g., race, ethnicity, socioeconomic status, gender, age, or geographical location) to identify and understand inequalities in the burden of substance use disorders and access to treatment services.	Data is very difficult to access and analyze today for stakeholders. This information should be available though from different data sources like census data or data tracked by the programs.
	York County	LGBTQ+ Population Analysis	Analyze substance use disorder impacts to the LGBTQ+ community	The data is currently unavailable, and multiple agencies have requested access to it. It is unclear whether this data is being collected or where it could be obtained.
	York County	Senior Citizen Population Analysis	Analyze the effects on the senior citizen population, particularly those aged 65 and older, in light of the recent increase in marijuana usage.	ACS provides demographic details, and FAACT dashboards can filter by age, race, and gender. Additional correlation with census or Medicare data may be needed for comprehensive analysis.
37	DOC	DOC Peer Benchmarks	Understand SUDA -related initiatives that other state DOCs are doing and outcomes	Unsure whether data is available today. This could potentially drop as a use case if there is no data available today. DOC could also obtain this through discussions / conferences.
38	CSB	CSB Service and Program Delivery Improvements	Identify opportunities to improve programs and service delivery	Would require CBS data. CBS may need to standardize metrics / data types to compare across.
39	DMAS	Priority Population Health Outcomes	Understand priority population levels of care and how many are getting served at each level.	Currently conducting analysis, but could broaden datasets beyond DMAS. Further investigation would be required and it may require individual-level data
40	DJJ - Department of Juvenile Justice	Juvenile Justice Outcomes	Track youth outcomes, including recidivism and program completion.	Information very sensitive and current data sharing is limited, with data often de-identified and not correlated across localities, hindering comprehensive outcome tracking. Juvenile data is required to be purged upon individual reaching adulthood.

Use Case Descriptions – Multiple (2 of 2)

ID	Agency	Use Case / Data Need Name	Use Case Description	Issue/Situation
41	VOAA - Virginia Opioid Abatement Authority	Cost for Treatment	Quantify costs related to treating individuals with substance use disorder	Data not available today, but multiple agencies have pieces of the puzzle.
	VOAA - Virginia Opioid Abatement Authority	Return on Investment	Quantify the cost compared to the effectiveness of strategies.	Want visibility into costs because some strategies/programs may have lower costs but have similar effectiveness than expensive programs.
42	VDH, DMAS	Society Financial Impact of Opioid Use	Quantify the economic impact and financial burden of substance use disorders to inform policy/program decisions and guide the allocation of resources.	VDH currently partners with VCU partner to estimate financial cost of opioids (e.g., costs on the economy, jobs, hospitals) and impact of substance use to those sectors. Leveraging ARPA dollars to continue the work. Website: costofaddictionvirginia.com
43	VOAA - Virginia Opioid Abatement Authority	Individual 360	Visibility on an individual's engagement across agencies related to substance use disorder and tracked over time. (e.g., law enforcement, corrections, DSS, DMAS, etc.)	Inability to connect data across agencies for a single individual. Requires individual-level data.
	DOC	Individual's Navigation Across the Continuum of Care	Track key metrics as individuals move through various stages of care, including assessment, treatment, and rehabilitation, providing insights into treatment adherence, progress and outcomes.	Such analysis is not possible today. Requires individual-level data.
44	Behavioral Health Commission (BHC)	Individual Outcome Analysis	Information about individuals receiving services includes their history, diagnoses, and co-occurring disorders (substance use or mental health-related), as well as details about the services received, such as timing, frequency, and independent functioning ability. Outcomes are measured by changes in social service use, criminal justice interactions, offenses, employment status, and earnings, with regular post-service analysis possible.	Such analysis is not possible today. Requires individual-level data.
★ 45	General Assembly	Grant Funding Tracking	Track sources and recipients of funding for SUDA initiatives, particularly the state opioid remediation fund and the state general fund. Longer term goal is to understand effectiveness of funding.	Office of Attorney General maintains spreadsheet of funding from the opioid remediating fund. Understanding of funding from the state general fund would be available by reading past budget approvals.

Analysis of Alternatives – Detailed Analysis

Technical Solution Alternatives – Details (1 of 2)

#	Technical Alternative	Description	Feasibility Strengths	Risks	Other Considerations
1	**Enhance Current Platform (FAACT)**	▪ Based on use case analysis, update with required data sets and enhanced user experience (interface and dashboards) to meet user needs.	▪ **Lowest Cost and Effort:** Avoid the upfront costs associated with transitioning to a new vendor and technology solution. ▪ **Established Relationships:** Vendor has established relationships with existing data suppliers. ▪ **System Knowledge:** Vendor has established familiarity with existing platform, including custom data transformations for current metrics and dashboards.	▪ **Platform Not on VITA AWS Infrastructure:** Future platform is required to exist within VITA-owned infrastructure. ▪ **Doesn't Meet User Needs:** Existing analytical dashboards do not fulfill user data needs / use cases. ▪ **User Dissatisfaction and Low Adoption:** There are negative perceptions of the platform, including suboptimal user experience and dashboard designs, which will be difficult to change. ▪ **Opportunity Costs:** Maintaining the status quo may hinder CoV from leveraging the capabilities of alternative solutions. Updating data sets, interfaces, and dashboards will require some additional investment.	▪ Costs include labor costs for development of platform enhancements
2	**Move to a new SUDA Platform, Vendor leverages existing reusable assets**	▪ Migrate existing workloads to VITA/ODGA-managed environment. Select Vendor build new user interface and analytic dashboards and manage data ingestion.	▪ **Leverage Existing Capabilities:** Current workflows, such as data and ETL processes, are integrated with the existing platform, ensuring operational continuity. Most high-value and feasible use cases will utilize these existing data and ETL processes. ▪ **Fast Deployment:** Utilizes foundational architecture and ETL processes already in place. ▪ **Meaningful Insights:** Use-case driven analytics/dashboards support user decision making and actions. ▪ **Cost Savings:** Comparable to building new infrastructure and ETL processes.	▪ **Lack of Documentation:** Current vendor does not provide official documentation; reviewing the code for business rules, metrics, and ETL processes will be time-consuming.	▪ Conducting an RFP process to select a new vendor will require maintaining FAACT, with ongoing maintenance costs, while new solutions are developed.
3	**Move to a new SUDA Platform, Vendor builds new Data Pipelines and Workloads**	▪ Select Vendor to build new data pipelines using the VITA/ODGA-managed environment and re-create ETL processes; ODGA take over ETL processes as O&M (after the initial go-live).	▪ **Optimized Architecture:** The new infrastructure can be optimized for specific workloads based on prioritized use cases, assuming data feeds are maintained. ▪ **Knowledge Transfer:** Initially, leverage the SI's experience and expertise, then gradually transition the management and maintenance of data pipelines to CoV staff.	▪ **Increased Costs:** Creating a new, custom data platform can be prohibitively expensive. ▪ **Longer Time to Deployment:** Rebuilding the existing infrastructure and ETL processes will take longer.	▪ Conducting an RFP process to select a new vendor will require maintaining FAACT, with ongoing maintenance costs, while new solutions are developed.

Technical Solution Alternatives – Details (2 of 2)

#	Technical Alternative	Description	Feasibility Strengths	Risks	Other Considerations
4	**Move to a new SUDA Platform, Vendor builds new Data Pipelines, ODGA builds Workloads**	▪ Selected Vendor builds new data pipelines using the VITA/ODGA-managed environment and analytic dashboards. ODGA builds ETL processes.	▪ **Optimized Architecture:** The new infrastructure can be optimized for specific workloads based on prioritized use cases, assuming data feeds are maintained. ▪ **VITA/ODGA Full Control:** Building the ETL processes internally gives CoV more control than outsourcing to SI.	▪ **Increased Costs:** Creating a new, custom data platform can be prohibitively expensive. ▪ **Skillsets and Capacity:** If VITA has the data engineers and capacity, internal development could be more cost-effective than outsourcing the ETL processes and data pipelines development to SIs. However, using VITA staff could slow the project if competing priorities exist, or resources lack the necessary skills. ▪ **Longer Time to Deployment:** Subcontracting development of ETL processes to VITA/ODGA might save time, but it might result in a longer deployment time compared to Alternative #1.	▪ Conducting an RFP process to select a new vendor will require maintaining FAACT, with ongoing maintenance costs, while new solutions are developed.
5	**Move to a new SUDA Platform, Vendor proposes and builds full solution stack (e.g., Snowflake, Databricks)**	▪ Selected Vendor builds new platform	▪ **Additional Capabilities:** Additional or enhanced modules, including AI/ML capabilities, may be available.	▪ **Increased Costs:** Expensive depending on the licensing model chosen. Existing ETL processes and data pipelines will be lost, requiring additional costs to build new ones. ▪ **Skillsets:** Limited technical skillsets in-house for some vendors (e.g., Snowflake) ▪ **Data Security and Compliance:** Introducing new components and involving third parties may complicate ensuring data security and regulatory compliance.	▪ Conducting an RFP process to select a new vendor will require maintaining FAACT, with ongoing maintenance costs, while new solutions are developed. ▪ Costs significantly driven by volume of data. Future growth of the platform would increase costs.

ROM Cost Drivers

Assumptions:

- Incumbent is managed service provider with fixed fees
- Significant costs are involved in developing and maintaining existing ETL processes
- UI/UX is going to be completely redesigned to meet user requirements; not understanding existing complexities will not incur high costs
- Labor costs includes development cost for platform enhancements, including UI/UX and business intelligence
- Going through an RFP process to select a new vendor will require continuity of FAACT for ongoing maintenance costs while developing new solutions
- Software licenses includes storage and analytic products

#	Technical Solution Alternative	Magnitude of Costs Relative to Each Other		
		Cost Driver: Labor	Cost Driver: Infrastructure & Software Licenses	Overall Costs
1	**Maintain Current Vendor and Platform** Based on use case analysis, update with required data sets and enhanced user experience (interface and dashboards) to meet user needs.		No Change	
2	**Leverage Existing Reusable Assets with Selected Vendor** Selected Vendor migrates existing workloads (**lift and shift**) to VITA/ODGA-managed environment. Selected Vendor build new user interface and analytic dashboards and maintains the workloads after the initial go-live.			
3	**Selected Vendor Builds New Data Pipelines and Workloads** Selected Vendor builds **new data pipelines** using the VITA/ODGA-managed environment and **re-creates ETL processes**; ODGA take over ETL processes' Operations & Maintenance (after the initial go-live).			
4	**ODGA Builds and Maintains New Data Pipelines but Selected Vendor Builds Analytic Dashboards** ODGA builds **new data pipelines and re-creates ETL processes** (internal resources or using contracting resources). Selected Vendor builds and maintains analytic dashboards.			
5	**Selected Vendor Builds New Platform of Vendor Choice (e.g., Snowflake, Databricks)**			

Legend: Poor · Moderate · Acceptable · Good · Excellent

Requirements - Detailed

Themes extracted from interviews & use-cases driving requirements

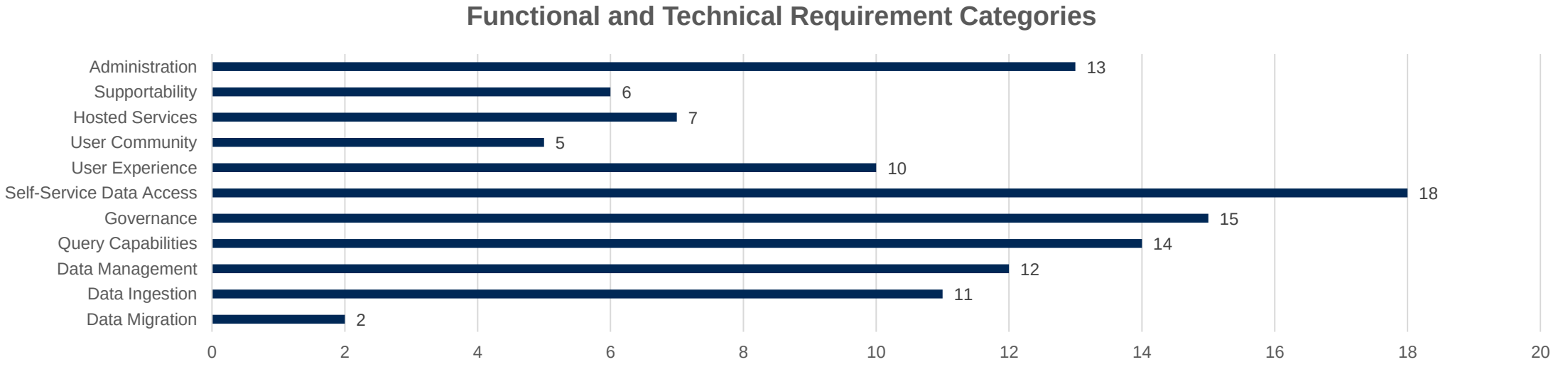
Stakeholders highlighted the need for a user-friendly platform with secure, real-time data access, robust governance, comprehensive analysis tools, and effective resource integration to enhance the SUDA platform's relevance and utility.

These themes were incorporated within the functional and technical requirements:		
1	**Data Integration with Analytics and Insights**	Gathering, cleaning, and merging data from multiple sources to apply various analytical techniques to uncover patterns and trends, ultimately providing actionable insights that help agencies make informed decisions and improve SUDA-related outcomes.
2	**Data Access and Sharing**	Easy, secure access to data, with features for downloading, sharing, and extracting analyses. Role-based access ensures users have appropriate permissions, facilitating collaboration across agencies.
3	**Data Quality and Governance**	High data quality and governance are essential, with vetted data sources and documented lineage and assumptions. Compliance with standards like HIPAA and clear roles for data stewardship support effective management and legal adherence.
4	**Real-Time and Timely Data**	The platform must provide real-time or near-real-time data to enable rapid decision-making. Frequent updates ensure the relevance and accuracy of insights, crucial for timely responses in public health and safety.
5	**Data Analysis and Visualization**	Advanced analytical capabilities and meaningful visualizations are needed for trend analysis and demographic insights. The platform should support easy data drill-down to facilitate informed decision-making.
6	**User-Centric Design**	A simple, intuitive design encourages adoption and effective use. The platform should support straightforward data ingestion from multiple formats and sources, minimizing technical barriers for users.
7	**Stakeholder Engagement and Feedback**	Engaging stakeholders through clear governance roles and feedback loops ensures the platform evolves to meet user needs, maximizing its relevance and impact to the CoV.

SUDA Requirements Summary

Both functional and technical requirements are aligned with the overarching SUDA objectives, strategic goals, and identified use cases, ensuring that the data platform supports stakeholder needs.

- Stakeholders highlighted the need for a user-friendly platform with secure, real-time data access, robust governance, comprehensive analysis tools, and effective data integration to enhance the SUDA platform's relevance and utility.
- Requirements have been prioritized by ‘Must Haves’ and ‘Nice to Haves’ – allowing potential vendors to respond to the requirements that are directly necessary to implement and demonstrate the primary use cases of Releases 1 and 2.
- There are **113** proposed requirements for the target-state SUDA solution:
  - 59 Functional Requirements
  - 53 Technical Requirements



Functional and Technical Requirements Categories

The requirements are essential for developing a robust and user-friendly SUDA platform, enabling effective data management, seamless user interaction, and insightful analysis to address substance use disorder challenges efficiently.

		Category	Description
	1	**Data Migration**	Covers the processes and tools required to transfer data from existing systems to the new platform, ensuring data integrity and minimal disruption.
	2	**Data Ingestion**	Involves the methods and technologies used to collect and import data from various sources, ensuring timely and accurate data availability.
★	3	**Data Management**	Covers the practices and tools for storing, organizing, and maintaining data integrity, quality, and accessibility throughout its lifecycle.
	4	**Query Capabilities**	Provides users with the ability to perform complex searches and analyses on the data, enabling them to extract meaningful insights efficiently.
★	5	**Governance**	Involves establishing policies, roles, and responsibilities to ensure data is managed securely, consistently, and in compliance with regulations.
	6	**Self-Service Data Access**	Allows users to independently access and retrieve the data they need without requiring IT support, promoting agility and responsiveness.
★	7	**User Experience**	Refers to the design and functionality of the platform's interface, ensuring it is intuitive, user-friendly, and accessible to all users.
	8	**User Community**	Facilitates collaboration and knowledge sharing among users, fostering a supportive environment for learning and innovation.
★	9	**Hosted Services**	Describes the hosting environment and services required to support the platform, including cloud or on-premises solutions.
	10	**Supportability**	Ensures that the platform can be effectively maintained and supported, including ease of troubleshooting and updates.
★	11	**Administration**	Encompasses the tools and processes for managing user accounts, permissions, and system configurations to ensure secure and efficient operations.

★ Key Consideration

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Gartner Research: Cloud Scoring

Gartner Research: Cloud-Native App Comparisons

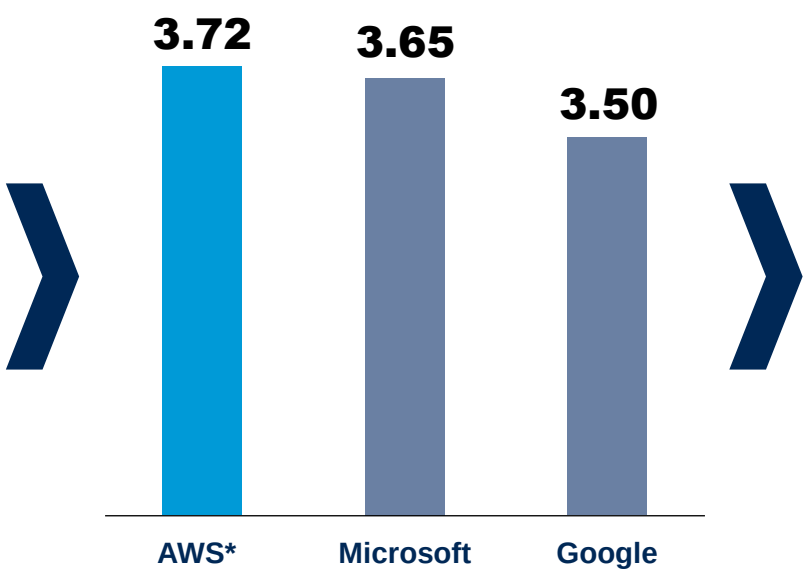
VITA/ODGA offers cloud-based capabilities through both AWS and Microsoft platforms, providing versatile options for managing cloud environments. When deciding which VITA/ODGA-managed environment to utilize, several factors should be considered, such as the specific needs of the organization, compatibility with existing systems, cost implications, and the unique features and strengths of each cloud service provider. This decision-making process ensures that the chosen environment aligns with organizational goals and maximizes the benefits of cloud technology.

Note: The use of a provider's full suite of cloud-native services for application development. This is for public cloud, on-premises and/or edge deployments.

Capabilities and Weightings

AI/ML Capabilities	5%
Developer Capabilities	30%
Distributed Cloud Architecture	5%
Edge Architecture	5%
Environmental Sustainability	5%
Industry Capabilities	3%
Middleware Capabilities	15%
Modernization	5%
Operations Management	5%
Public Cloud Architecture	5%
Resiliency	5%
Security	5%
Sovereignty Capabilities	2%
Transformational Capabilities	5%
Total	**100%**

Cloud Scoring



Key Takeaways*

Amazon Web Services (AWS) is ranked the highest compared to Microsoft and Google due to its extensive global infrastructure, comprehensive range of cloud services, and strong performance across critical capabilities such as cloud architecture, distributed and edge solutions, and AI/ML offerings.

AWS excels in security, resiliency, and modernization, further solidifying its leadership position in the cloud services market. Despite some areas for improvement, AWS's ability to integrate technology with business outcomes and its strong industry-specific solutions contribute to its top ranking.

Gartner Research: Cloud-Native App Comparisons - AWS

Amazon Web Services (AWS) continues to be a leader in cloud services, offering a comprehensive range of capabilities across various critical areas. It boasts a global presence with public cloud regions in numerous countries, including the U.S., Canada, Brazil, several European nations, the Middle East, China, and the Asia-Pacific region. AWS's robust cloud architecture is highlighted by its deployment of Availability Zones (AZs) within regions, ensuring high availability and redundancy through geographically distributed data centers with independent power, water, networking, and connectivity.

AWS excels in distributed cloud architecture, offering a variety of solutions such as AWS Local Zones, AWS Dedicated Local Zones, AWS Outposts, Storage Gateway, and Amazon CloudFront. These services bring AWS infrastructure closer to large population centers and industry hubs, providing tailored solutions for both exclusive customer use and hybrid cloud storage. Additionally, AWS's edge architecture capabilities are strong, with offerings like AWS Wavelength, which integrates AWS services into 5G networks, and the AWS Snow Family, which facilitates data collection, processing, and transfer to AWS.

In terms of security and resiliency, AWS scores well, although it could improve by providing more publicly available documentation on service-level objectives (SLOs). Its operations management capabilities are robust, despite some gaps in multicloud offerings. AWS's AI developer services are a significant strength, though its middleware capabilities, particularly in data integration and API management, could be enhanced. The company's AI/ML infrastructure is strong, but navigating its extensive offerings can be complex, and its proprietary foundation models, like Titan, have yet to gain significant market traction.

AWS demonstrates strong performance in modernization and transformation capabilities, with effective programs for mainframe and midrange migrations and comprehensive certification programs. Its ability to connect technology with business outcomes is notable, leveraging its technical foundation to support industry-specific solutions. However, AWS's sovereignty solutions could improve by addressing local disconnected requirements, and its environmental sustainability efforts need enhancement in areas like circularity and reporting. Overall, AWS maintains a strong position across most critical capability areas, with opportunities for improvement in certain aspects.

Critical Capabilities	Ratings	Weightings	Subtotal
AI/ML Capabilities	4.1	5%	0.21
Developer Capabilities	3.5	30%	1.05
Distributed Cloud Architecture	3.6	5%	0.18
Edge Architecture	3.7	5%	0.19
Environmental Sustainability	3.4	5%	0.17
Industry Capabilities	3.6	3%	0.11
Middleware Capabilities	3.5	15%	0.53
Modernization	4.2	5%	0.21
Operations Management	3.9	5%	0.20
Public Cloud Architecture	4.4	5%	0.22
Resiliency	4.0	5%	0.20
Security	4.1	5%	0.21
Sovereignty Capabilities	3.1	2%	0.06
Transformational Capabilities	4.1	5%	0.21
Totals		**100%**	**3.72**

Gartner Research: Cloud-Native App Comparisons - Microsoft

Microsoft is recognized as a leader in cloud services, consistently scoring high across various use cases. It offers a comprehensive suite of integrated IaaS and PaaS capabilities, with a strong emphasis on incorporating AI across its technology stack. Microsoft's expansive public cloud footprint spans numerous countries, including the U.S., Canada, several European nations, the Middle East, China, and the Asia-Pacific region. While its public cloud architecture is robust, Microsoft faces challenges in infrastructure provisioning capacity guarantees and managing sudden demand spikes.

Microsoft excels in hybrid cloud solutions with its Azure Stack family and Azure Arc, which enable the deployment of Azure services on customer premises. Azure Arc is pivotal in providing security, monitoring, and policy management across hybrid environments, contributing to Microsoft's high ranking in distributed cloud architecture. In edge computing, Microsoft offers a comprehensive set of IoT solutions, including Azure IoT Hub and Azure Arc-enabled Kubernetes, earning it high scores for edge architecture capabilities.

However, Microsoft faces challenges in security and resiliency. A Cyber Safety Review Board investigation highlighted potential vulnerabilities in services relying on Entra ID for single sign-on. Additionally, Microsoft lacks multizonal and regional replication capabilities for some services, impacting its resiliency score. Its operations management capabilities are average, with strengths in Azure tooling but challenges in capacity planning practices.

Microsoft performs well in developer capabilities, showcasing strengths in its DevOps platform, container management, and AI developer services. It also excels in middleware, particularly in API management and data integration. While strong in AI/ML services, Microsoft could improve in lower-layer services and hardware. Its modernization efforts benefit from its extensive on-premises experience, and it effectively links business value to Azure capabilities. Microsoft leads in industry-specific solutions but offers average sovereignty capabilities. Its environmental sustainability efforts are commendable, with effective metrics, circularity capabilities, and tools.

Critical Capabilities	Ratings	Weightings	Subtotal
AI/ML Capabilities	4.0	5%	0.20
Developer Capabilities	3.6	30%	1.08
Distributed Cloud Architecture	3.6	5%	0.18
Edge Architecture	3.6	5%	0.18
Environmental Sustainability	3.7	5%	0.19
Industry Capabilities	3.7	3%	0.11
Middleware Capabilities	3.5	15%	0.53
Modernization	4.2	5%	0.21
Operations Management	3.6	5%	0.18
Public Cloud Architecture	3.7	5%	0.19
Resiliency	3.5	5%	0.18
Security	3.4	5%	0.17
Sovereignty Capabilities	3.2	2%	0.06
Transformational Capabilities	4.0	5%	0.20
Totals		**100%**	**3.65**

Gartner Research: Cloud-Native App Comparisons - Google

Google is a prominent player in the SCPS market, consistently performing well across various use cases, with its strongest performance in AI/ML. Its global public cloud presence spans the U.S., Canada, several countries in Europe, the Middle East, Africa, and the Asia-Pacific region. Google's public cloud architecture is robust, particularly excelling in networking capabilities. However, its distributed cloud architecture scores are average due to non-compliance with API standards for its regional services.

Google's distributed infrastructure solution, Google Distributed Cloud (GDC), is designed for air-gapped and connected environments. The Google Kubernetes Engine (GKE) Enterprise supports container workloads across multiple platforms, including Google Cloud, on-premises, and other cloud providers like AWS and Microsoft Azure. Over the past year, Google has expanded its partner network and on-premises configurations for its distributed cloud offerings. Despite these efforts, its edge architecture capabilities are rated as average, focusing on GKE Enterprise and an edge ISV ecosystem across various industries.

In terms of security, Google scores well, but its resiliency capabilities are less impressive due to the absence of an Availability Zone mileage commitment and limited disaster recovery orchestration tools. The operations management capability is also not among its strongest areas. Google's developer capabilities are strong, driven by its AI developer and container management services, while its middleware capabilities are bolstered by robust DBMS and API management services. Its AI/ML capabilities are particularly noteworthy, with comprehensive full-stack offerings and a deep-rooted history in the domain.

Google's performance in other critical capability areas is competitive. While it has improved its modernization capabilities, it still lacks substantial proof points and partnerships with legacy vendors. In transformations, Google does not effectively link business value to its technology offerings. However, it scores well in sovereignty capabilities, with a diverse product set and a growing partner network, and its industry cloud solutions are also strong. Sustainability is a core focus for Google, reflected in its transparency, efficiency metrics, and sustainability tools and services.

Critical Capabilities	Ratings	Weightings	Subtotal
AI/ML Capabilities	4.4	5%	0.22
Developer Capabilities	3.4	30%	1.02
Distributed Cloud Architecture	3.4	5%	0.17
Edge Architecture	3.2	5%	0.16
Environmental Sustainability	3.8	5%	0.19
Industry Capabilities	3.5	3%	0.11
Middleware Capabilities	3.4	15%	0.51
Modernization	3.2	5%	0.16
Operations Management	3.6	5%	0.18
Public Cloud Architecture	3.8	5%	0.19
Resiliency	3.3	5%	0.17
Security	3.8	5%	0.19
Sovereignty Capabilities	3.4	2%	0.07
Transformational Capabilities	3.5	5%	0.18
Totals		**100%**	**3.50**

Gartner Research: ETL

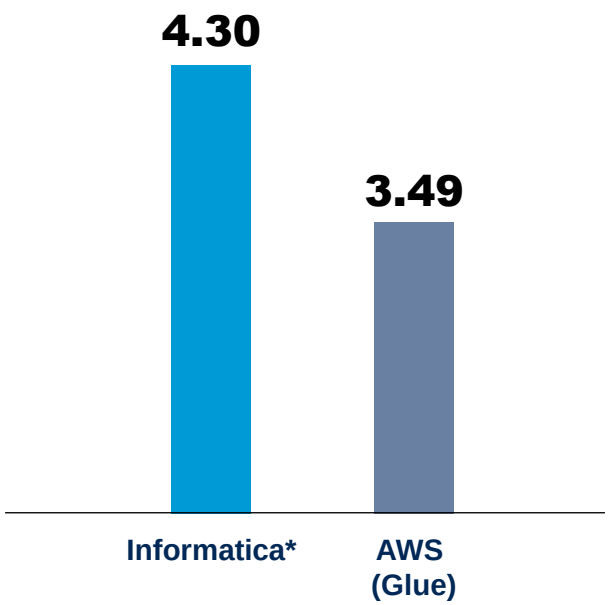
Gartner Research: ETL App Comparisons

When evaluating VITA/ODGA's ETL needs, it's important to consider several key factors. Organizations should assess their specific ETL requirements, ensuring compatibility with existing systems while taking into account the cost implications of each platform. Informatica, already operational for data quality capabilities, is a noteworthy consideration in evaluating VITA/ODGA's ETL needs by ensuring compatibility, cost-effectiveness, and alignment with organizational goals. Data integration tools are mature and support a wide range of use cases; however, not all tools are equal in delivering critical capabilities.

Capabilities and Weightings

Advanced Data Transformation	11%
Augmented Data Integration	11%
Bulk/Batch Data Movement	22%
Data Governance Support	2%
Data Preparation	2%
Data Replication/Synchronization	11%
Data Virtualization	2%
DataOps Support	22%
Deployment Options	11%
FinOps Support	2%
Metadata Management Support	2%
Stream Data Integration	2%
Total	**100%**

ETL Scoring



Key Takeaways*

Informatica's Intelligent Data Management Cloud (IDMC) platform offers a comprehensive suite of data management services, excelling in bulk/batch data movement, metadata management, and augmented data integration. It supports a wide array of scenarios with extensive metadata utilization, making it ideal for data engineering and modern data architectures.

Despite scoring slightly below average in data virtualization, Informatica remains a robust choice for organizations seeking advanced data management and integration solutions.

Gartner Research: ETL App Comparisons - Informatica

Informatica offers the Intelligent Data Management Cloud (IDMC) platform as its comprehensive data integration tool. This platform encompasses a wide array of data management services, including data cataloging, governance, integration, API and application integration, data quality, and master data management. The platform's data integration components are designed to handle a broad range of scenarios, extensively utilizing metadata to enhance functionality and efficiency. Overall, Informatica ranks highly across all evaluated use cases, making it particularly suitable for data engineering and enabling modern data architectures due to its strengths in bulk/batch data movement, metadata management support, and augmented data integration.

Informatica excels in bulk/batch data movement and metadata management support. It provides numerous connectors for bulk/batch data movement, enabling connections to almost any source and target, including uncommon and legacy systems. For metadata management, Informatica's product suite leverages metadata by automatically extracting it from sources to create a common metadata model. This model includes definitions, relationships, and transformation logic, facilitating efficient data management and integration processes.

The platform also boasts advanced capabilities in augmented data integration, DataOps support, FinOps support, deployment options, data governance support, and advanced data transformation. Informatica's metadata-oriented AI engine, CLAIRE, utilizes metadata and machine learning to generate recommendations for tasks such as data mapping, standardization rules, transformations, and masking. CLAIRE can also suggest additional data sources for joins by identifying relationships between datasets, further enhancing data integration and management capabilities.

However, Informatica scores slightly below the market average for data virtualization, as it does not offer a single, comprehensive solution for this capability. Virtualization can be achieved through IDMC’s Cloud Integration Hub or as a semantic layer via the Data and AI Marketplace. Despite this, Informatica's robust platform and advanced capabilities make it a strong choice for organizations seeking comprehensive data management and integration solutions.

Critical Capabilities	Ratings	Weightings	Subtotal
Advanced Data Transformation	4.5	11%	0.50
Augmented Data Integration	4.5	11%	0.50
Bulk/Batch Data Movement	4.5	22%	0.99
Data Governance Support	4.3	2%	0.09
Data Preparation	3.8	2%	0.08
Data Replication/Synchronization	4.5	11%	0.50
Data Virtualization	3.0	2%	0.06
DataOps Support	4.0	22%	0.88
Deployment Options	4.4	11%	0.48
FinOps Support	3.5	2%	0.07
Metadata Management Support	4.5	2%	0.09
Stream Data Integration	4.1	2%	0.08
Totals		**100%**	**4.30**

Gartner Research: ETL App Comparisons - AWS

Amazon Web Services (AWS) offers AWS Glue as its primary data integration tool, alongside a suite of services like Amazon AppFlow, Amazon Managed Workflows for Apache Airflow (MWAA), Amazon EMR, Amazon Kinesis, AWS Database Migration Service (DMS), Managed Streaming for Apache Kafka (MSK), Managed Streaming for Apache Flink, and Amazon Athena, among others, for various data integration tasks. AWS is particularly suitable for enabling less-technical users due to its enhanced data preparation capabilities, although it is slightly less suited for modern data architectures due to lower scores in deployment options and DataOps support. Overall, AWS's capabilities are well-balanced across use cases.

AWS scores above the market average in data preparation, with AWS Glue Studio offering over 250 data transformations and Glue Databrew providing a spreadsheet-like interface for business users to wrangle data. The integration of its AI virtual assistant, Amazon Q, across AWS data integration services allows users to perform natural language querying, enhancing accessibility and usability for less-technical users.

AWS also excels in metadata support, with AWS Glue Data Catalog offering extensive capabilities such as cataloging, search, data lineage, PII detection, and data access logging for auditability. Integration with Amazon DataZone facilitates business metadata management, while Glue Data Quality supports data profiling, data quality rules, and anomaly detection, providing comprehensive metadata management.

AWS scores at the market average for batch data movement and data streaming, positioning Glue as the data integration service for both batch and real-time workloads. Tools like Amazon Kinesis, MSK, and Managed Service for Apache Flink are designed for ingesting and transforming data in-flight. While AWS has adequate functionalities for data virtualization, with Amazon Athena offering built-in federated query connectors, data virtualization remains a relatively weaker area in terms of data delivery style.

Critical Capabilities	Ratings	Weightings	Subtotal
Advanced Data Transformation	3.6	11%	0.40
Augmented Data Integration	3.6	11%	0.40
Bulk/Batch Data Movement	3.8	22%	0.84
Data Governance Support	3.4	2%	0.07
Data Preparation	3.9	2%	0.08
Data Replication/Synchronization	3.4	11%	0.37
Data Virtualization	3.0	2%	0.06
DataOps Support	3.2	22%	0.70
Deployment Options	3.3	11%	0.36
FinOps Support	3.3	2%	0.07
Metadata Management Support	3.8	2%	0.08
Stream Data Integration	3.8	2%	0.08
Totals		**100%**	**3.49**

Gartner Research: BI Scoring

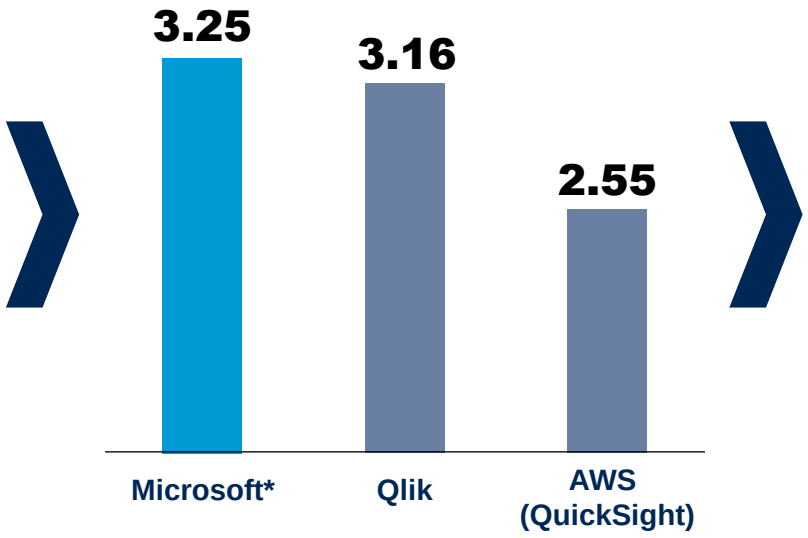
Gartner Research: Business Intelligence App Comparisons

When selecting a business intelligence (BI) app for the VITA/ODGA-managed environment, considerations should include the specific needs, compatibility with existing systems, cost implications, and the unique features and strengths required. This careful decision-making process ensures alignment with organizational goals and maximizes the benefits of BI technology. Additionally, data and analytics leaders should aim to deliver an optimal analytics experience to multiple personas, facilitating collaborative decision-making.

Capabilities and Weightings

Analytics Catalog	10%
Automated Insights	15%
Collaboration	5%
Composability	5%
Data Preparation	15%
Data Science Integration	0%
Data Storytelling	10%
Data Visualization	15%
Governance	5%
Metrics Layer	10%
Natural Language Query	5%
Reporting	5%
Total	**100%**

Business Intelligence Scoring



Key Takeaways*

Microsoft's recent PowerBI enhancements aim to provide a comprehensive solution to meet diverse business needs, although areas like data science integration and metrics layer need improvement.

Microsoft's key strengths include an analytics catalog, data storytelling, and natural language query features, with enhanced reporting capabilities through Mobile BI and the GenAI-powered Copilot feature.

Gartner Research: Business Intelligence App Comparisons - MSFT

In 2023, Microsoft launched Fabric, an integrated data analytics platform that enhances Power BI by incorporating data management, data science, and real-time analytics. As part of this transition, Microsoft announced that Power BI would no longer be sold as a standalone product. From July 1, 2024, customers will need to purchase the F-SKU for Fabric, though the functionality of the Power BI premium product will remain unchanged. This integration aims to provide a more comprehensive data analytics solution to meet diverse business needs.

Microsoft Fabric's key strengths include its analytics catalog, data storytelling, and natural language query features. The analytics catalog automatically inventories accessible content and offers recommendations based on the social graph. Data storytelling is enhanced through integration with PowerPoint, allowing users to embed live Power BI reports into slides with features like bookmarks and drill-downs. The natural language query capability provides a robust question-and-answer interface with suggestions and type-ahead features, simplifying the querying process.

However, Microsoft Fabric has areas needing improvement, particularly in data science integration, metrics layer, and reporting. While its data science integration aligns with other vendors, most features are part of the Fabric ecosystem. The metrics layer scores relatively low, as metrics are developed within individual semantic models. Nonetheless, Semantic Link and OneLake integration, currently in preview, offer potential enhancements by providing access to abstracted metrics and enabling data export with key performance features.

In reporting, Microsoft Fabric excels in Mobile BI with native apps for iOS and Android, allowing users to interact with Power BI reports on the go. The Copilot feature in Power BI uses GenAI to help report authors create reports automatically via a chat interface, scanning the schema and data to generate well-formatted reports. Overall, Microsoft Fabric is a robust platform with significant capabilities, though some areas could benefit from further development to maximize its potential.

Critical Capabilities	Ratings	Weightings	Subtotal
Analytics Catalog	3.6	10%	0.36
Automated Insights	3.2	15%	0.48
Collaboration	3.0	5%	0.15
Composability	3.8	5%	0.19
Data Preparation	2.7	15%	0.41
Data Science Integration	3.0	0%	0.00
Data Storytelling	3.2	10%	0.32
Data Visualization	3.6	15%	0.54
Governance	3.5	5%	0.18
Metrics Layer	3.0	10%	0.30
Natural Language Query	3.8	5%	0.19
Reporting	2.8	5%	0.14
Totals		**100%**	**3.25**

Gartner Research: Business Intelligence App Comparisons - Qlik

Qlik offers its products and services on the Qlik Analytics Cloud, a SaaS platform that includes Qlik Sense, Qlik AutoML, and Qlik Application Automation, with the latest version released in November 2023. With its recent acquisition of Talend for data integration and Big Squid for AutoML (now Qlik AutoML), Qlik is well-positioned to help companies leverage their data for analytics and AI-driven business value. These strategic acquisitions enhance Qlik's capabilities in providing comprehensive data solutions.

Qlik was an early adopter of embedding a foundation model based on BERT, offering a natural language interface to an analytics assistant in Teams. This positioned Qlik among the top vendors for natural language query (NLQ). However, as other vendors have introduced NLQ interfaces based on newer large language models (LLMs), they have surpassed Qlik in this category. Nonetheless, Qlik plans to enhance its natural language generation (NLG) experience in Insight Advisor and across its platform as part of its roadmap.

Qlik's data science integration has significantly improved, thanks to its elegant AutoML functionality, which includes a comprehensive MLOps view across deployed projects. Additionally, Qlik integrates with other leading data science and machine learning platforms such as AWS SageMaker, Databricks, and DataRobot. Qlik's collaboration capabilities are highly rated, allowing users to leverage its app in Microsoft Teams to create collaborative canvases for interactive data discussions. Users can take snapshots of analytics, add text commentary, and tag and invite others to discussions, while its visual, no-code approach enables the assembly of automated flows to connect insights and trigger alerts.

Despite its strengths, Qlik lags in data preparation, partly due to weaker integrated data prep and a lack of automated alerts. However, following its acquisition of Talend, Qlik plans to incorporate Talend's no-code data prep into its analytics platform. Qlik's primary use case is for analytics developers, where organizations prioritize metrics layers and enterprise reporting. With a loyal customer base and a sizable user community, Qlik is appreciated as a powerful end-to-end data and analytics tool. Customers who fully utilize Qlik's product portfolio and features may find significant advantages, particularly in data integration.

Critical Capabilities	Ratings	Weightings	Subtotal
Analytics Catalog	3.0	10%	0.30
Automated Insights	2.8	15%	0.42
Collaboration	3.8	5%	0.19
Composability	3.3	5%	0.17
Data Preparation	2.8	15%	0.42
Data Science Integration	3.7	0%	0.00
Data Storytelling	2.8	10%	0.28
Data Visualization	3.6	15%	0.54
Governance	3.5	5%	0.18
Metrics Layer	3.1	10%	0.31
Natural Language Query	3.8	5%	0.19
Reporting	3.4	5%	0.17
Totals		**100%**	**3.16**

Gartner Research: Business Intelligence App Comparisons - AWS

Amazon QuickSight is a serverless, subscription-based cloud BI service with a proprietary in-memory calculation engine. In 2023, it enhanced its capabilities by enabling insights from structured and unstructured data via the Amazon Q chatbot and deepening integration with SageMaker Canvas, Amazon Redshift, and Amazon DataZone. These improvements offer expanded functionalities, such as one-click machine learning model creation and governed data access, providing a more integrated BI experience.

Amazon Q allows users to query data using natural language and add visualizations directly to dashboards or reports. Powered by QuickSight ML Insights, it includes key driver analysis, forecasting, and anomaly detection. The chatbot suggests previous questions, AI-generated samples, and related insights, offering multivisual responses and enhancing user interaction.

QuickSight excels in paginated, parameterized reporting, enabling users to filter reports with prompts and receive scalable, serverless reports in PDF or data export formats. It supports a strong mobile UX for Android and iOS apps. Paginated reporting is available with pay-as-you-go pricing, and users benefit from a fully managed solution with access to the latest features without costly upgrades.

Despite its strengths, QuickSight lacks native data cleansing and ETL capabilities, requiring additional investments in AWS Glue and AWS Glue DataBrew. It also lacks support for time series animation and certain visualization features. Deployment is limited to AWS cloud, though it allows connectivity to other environments. QuickSight's APIs and SDKs offer extensive customization, making it popular among independent software vendors. While there are gaps, QuickSight is strong in distributing reports across many users and excels in augmented consumer use cases with robust natural language query capabilities.

Critical Capabilities	Ratings	Weightings	Subtotal
Analytics Catalog	2.2	10%	0.22
Automated Insights	2.7	15%	0.41
Collaboration	2.5	5%	0.13
Composability	2.1	5%	0.11
Data Preparation	2.7	15%	0.41
Data Science Integration	3.0	0%	0.00
Data Storytelling	2.6	10%	0.26
Data Visualization	2.0	15%	0.30
Governance	2.7	5%	0.14
Metrics Layer	2.6	10%	0.26
Natural Language Query	3.5	5%	0.18
Reporting	3.2	5%	0.16
Totals		**100%**	**2.55**

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