Modernizing Public Sector Data Management:

Building a Data-Driven Future with SolixCloud CDP

TABLE OF CONTENTS

1. Executive Summary

The public sector is undergoing a digital transformation driven by the need to improve service delivery, enhance transparency, and leverage data for decision-making. Governments manage vast datasets that range from citizen information to infrastructure, transportation, healthcare, and financial data, and the challenges of managing these datasets effectively have become more pronounced.

The proliferation of IoT, mobile devices, and cloud computing has generated unprecedented amounts of data. This deluge of information can be overwhelming without the proper data management infrastructure. The increasing demands for data-driven decision-making, transparency, and accountability, coupled with stricter compliance regulations, make the sector even more fragile. Unfortunately, many government agencies rely on legacy systems, resulting in siloed data and operational inefficiencies.

The role of government is evolving rapidly as the technological revolution drives constant innovation and shifts citizens' expectations. As new technologies emerge, governments must adapt to address data privacy, cybersecurity, and digital infrastructure challenges. A survey of 36 countries found that 87 percent of respondents stated that a seamless digital government experience would increase their trust in the government.

The opportunity, however, is immense. Proper data management could allow governments to predict infrastructure needs, identify trends in public health, allocate resources more efficiently, and improve overall service delivery. This dynamic landscape requires a forward-thinking approach as governments strive to support technological progress while safeguarding public interests.

This whitepaper discusses how SolixCloud CDP transforms public sector operations through a modern data platform. It elaborates on its role in empowering government agencies in areas like data governance, transparency, efficient data collection and analysis, and the reduction of IT infrastructure costs. Additionally, we explore real-world use cases of Solix's products that bring immense value to the public sector, illustrating how this technology can improve both operational efficiency and citizen services.

2. What is the Big Deal on Data Management?

Data Management (DM) encompasses the processes, strategies, and technologies required to collect, store, integrate, secure, and analyze data effectively. Traditionally, public sector agencies operate in silos, where each department manages its data independently. This disjointed approach leads to inefficiencies, redundancy, and poor data quality, which in turn hampers the ability of agencies to make well-informed decisions.
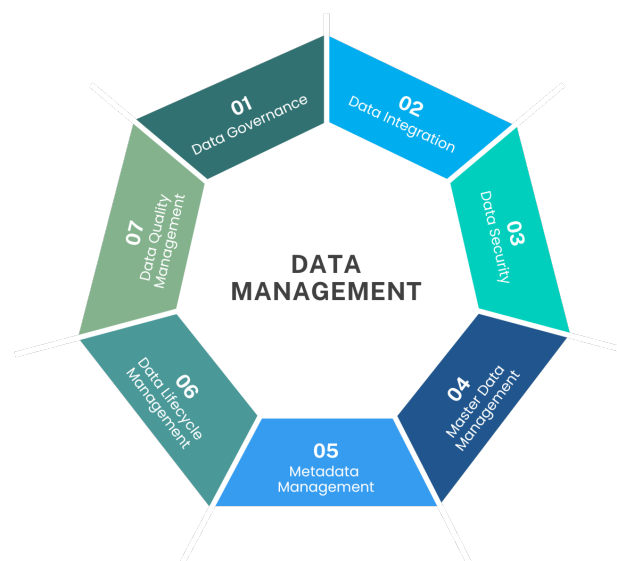
In the public sector, DM plays a key role in breaking down data silos, facilitating data sharing between agencies, and ensuring compliance with regulations related to data privacy and security. It also supports the integration of new data sources, such as IoT and geospatial data, enabling governments to gain a more comprehensive understanding of societal needs. Furthermore, DM helps manage the complexities of legacy systems and modern cloud-based solutions, providing a unified hybrid approach to data governance.

Gartner anticipated that by the end of 2025, around 80 percent of public sector organizations will implement cloud solutions, with nearly 50 percent opting for hybrid cloud models. SolixCloud CDP is designed to support this hybrid approach, providing a flexible, secure, and scalable environment that meets government agencies' operational needs and regulatory requirements. The hybrid approach allows government agencies to maintain their critical infrastructure and sensitive data on-premise while migrating non-sensitive data and workloads to the cloud.

A robust DM framework allows public sector organizations to maintain data accuracy, consistency, and accessibility. This will enable better decision-making, improved service delivery, and enhanced operational efficiency. It also lays the groundwork for utilizing advanced analytics and AI to forecast trends, allocate resources wisely, and anticipate communities' needs.

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> *Gartner:" By 2028, generative AI will be embedded in 60% of government case management systems."*

3. The Modern Public Sector and Government Data Landscape

The modern public sector transforms as data becomes a central asset in delivering services and formulating policy. The government data landscape is more complex and interconnected than ever, driven by the proliferation of digital services and the increasing need for transparency, efficiency, and data-driven decision-making. Governments now manage vast amounts of data, ranging from demographic and economic statistics to real-time public health and infrastructure information.

This data is crucial for optimizing services, improving citizen engagement, and addressing critical issues such as climate change and urban planning. However, the challenges of data privacy, cybersecurity, and regulatory compliance remain at the forefront, requiring robust strategies to protect sensitive information while leveraging data's potential for societal benefit. As the public sector continues to navigate this evolving landscape, the focus is on building resilient data governance frameworks that foster innovation while maintaining public trust.

Unfortunately, the digital transformation of public sector organizations has lagged due to a risk-averse culture, bureaucratic processes, reluctance to adopt the latest IT innovations, and tight budgets that leave insufficient funds for development. About 51 percent of public sector organizations identify organizational silos as a major barrier to their digital transformation efforts. However, the pressure to modernize has grown, driven by citizen expectations for seamless digital services and the need for greater efficiency. Today, leading governments are embracing cloud computing, data analytics, AI, and digital platforms to streamline operations, improve transparency, and deliver better services..

4. Public Sector Laggards to Leaders in Digital Transformation

Public sector projects aim to deliver top-tier, citizen-focused services, much like private companies pursue competitive advantage. However, unlike the rapid innovation in the private sector, public agencies face bureaucratic pressures that require a slower, more cautious approach to digital innovation. This careful pace ensures security, compliance, and accessibility, maintaining public trust and service quality.

Public sector CIOs must balance the demands of elected officials, risk, security, transparency, innovation, and compliance mandates as they consider cloud initiatives, legacy upgrades, and social media citizen interaction tools. How critical is it for governments to explore commercially available options to optimize shrinking resources and provide stellar citizen service? Very! Every government agency is playing catch-up, aspiring to become the next-gen government offering cutting-edge service.

The "Modernizing Government Technology Act" is a U.S. federal law that was enacted in 2017. The MGT Act addresses outdated and inefficient IT systems across federal agencies by providing resources for modernization efforts. While initiatives like this can uncover numerous opportunities, achieving success necessitates projects that benefit the greatest number of citizens while optimizing costs. Challenges include outdated legacy systems, subpar data quality, and a culture that hinders the adoption of open data.

How can the Public Sector overcome the handicap of perception and compete with the private sector for talent? How can it address the conflict between the need for innovation and a culture of caution and risk aversion, especially when the electability of leaders plays a crucial role? Elected officials often support innovation only when routine operations seem risk-free: "If it ain't broken, why fix it?" At the same time, citizens accustomed to the seamless digital services of the private sector are growing frustrated with outdated government services, like long wait times at the DMV.

The public agency CIO can be the catalyst for change but, to a certain extent, has to take the cue from elected leaders. Framing initiatives with the cloak of electability may be the key to accelerating the innovative agenda. The opportunities are immense!

5. What is a Data-driven Government?

Data can be a goldmine that enhances the quality of life, builds a vibrant community, and creates a thriving economy. Policy decisions are more effective when based on underlying data. These policies can set goals, measure performance, and increase citizen confidence in the effectiveness of government through transparency.

"Forrester's 2023 Data Culture and Literacy Survey reveals that organizations with strong data literacy experience significant benefits. Data and analytics professionals noted increased productivity (42%), enhanced innovation (41%), better business decisions (40%), improved adaptability (38%), revenue growth (36%), greater decision-making confidence (36%), faster decision-making (33%), and higher adoption of insights platforms (31%)."

Data-driven government is all about leveraging data, minimizing risk, innovating to create hitherto unknown efficiency in the operation of the public sector, and delivering services faster, better, and at reduced cost. It is about finding the most effective way to make data accessible while preserving compliance and privacy. It is about making decisions based on data, evaluating options, creating optimizations, and optimizing spending and project prioritization to deliver the most impact.

Data-driven government is about addressing the problems of an ever-evolving, sophisticated populace with access to cutting-edge technology, tools, and endless data.

🔵 Impacts of data-driven examples

- The Department of Health Service (DHS) can improve the detection of public health patterns and trends.
- School districts can track student growth, drilling down to school, grade, subject, teacher, class, student, standard, programs, and demographics, and track at-risk student populations.
- Water utilities can improve the ranking of the risk of pipe failure with advanced analytics.
- Governments can eliminate data silos to make information more available while improving data quality to increase citizen trust and confidence in elected leaders.
- The Department of Human Services (DHS) can transform unstructured service data into actionable information to enable caseworkers, supervisors, and service providers to serve clients better through deeper understanding of clients' concerns, needs, and service experiences.
- Health and Human Services can leverage data to respond better to the opioid epidemic, focusing on treatments that work and preventing relapses, leading to long-term recoveries.
- A child welfare agency can justify its funding needs by measuring indicators such as the number of case workers, reunifications, homes visited, cases resolved, and families reunited.
- Government agencies can populate a Freedom of Information Request data repository of public information, allowing citizens to conduct searches to answer their own questions.

BENEFITS OF DATA-DRIVEN GOVERNMENT

Improved Resource Allocation	Improved Transparency
Improved Policy Development	Improved Decision-Making
Improved Operational Efficiency	Improved Emergency Response
Improved Elected Leadership Ratings	Improved Data Security and Privacy
Improved Governance & Government Perception	Improved Citizen Services & Citizen Satisfaction

Goernment agencies can build models using advanced analytics to justify funding requestsbased on the impact delivered, building confidence among stakeholders and citizens while doing more with limited resources.

6. Gearing Up for Government Modernization

Public Sector CIOs are finding it imperative to power their firms' transition into the digital business age. Connected devices are ubiquitous, generating volumes of data while accessing more information. The plethora of assets and the data they generate offer an opportunity to better serve citizens and communities with a shared economic, social, and environmental objective.

Where do we start? How do we get this going? Here are a few technology initiatives to modernize public sector operations that can inspire Public Sector CIOs:
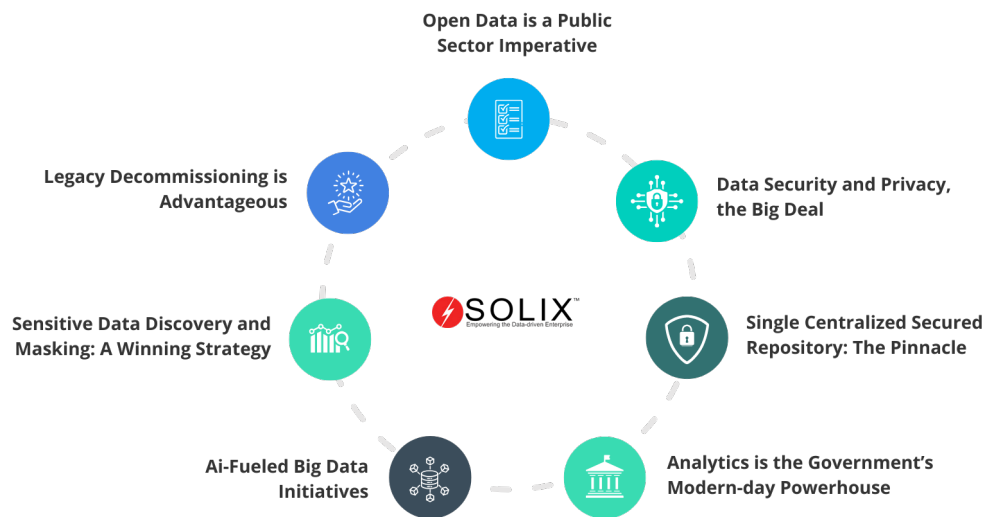
6.1 Open Data is a Public Sector Imperative

Public agencies generate huge quantities of data. The Public Sector Open Government Data (OGD) initiative promotes access to anonymized public sector data that can be combined with other data and used to create transformative programs.

Providing access to public data such as traffic, energy use, and public safety statistics for any use, including transforming, combining, and sharing it, can create significant value for a public sector agency and the citizens it serves at minimal cost. Cities that do so can tap into communities of civic-minded developers and entrepreneurs who can create useful applications for citizens and make government-citizen interactions more efficient. However, there is sensitivity to the kind of data that can be released and how this data is connected to a broader ecosystem.

Open data is information that can be freely used, re-used, and redistributed by anyone - subject only, at most, to the requirement to attribute and share alike. The data must be non-personal to avoid violating personal privacy, and these systems need a strong governance foundation.

Open data systems strengthen public-private collaboration while increasing transparency and accountability, building public trust and citizen participation. This helps governments work with citizens to develop innovative services that meet taxpayers' needs. For instance, providing non-personal information on traffic fines and cameras can reduce public confusion and misinformation.

6.2 Data Security and Privacy, the Big Deal

Most public sector organizations feel increasingly at risk today. Given the need for Open Data, data transparency, digital transformation, and reliance on the Internet, the explosion of digital tools and IOT creates data security and privacy challenges and new vulnerabilities for attackers to exploit. Every

public sector organization is not only cognizant of the risks involved but deals with them daily, developing a collaborative, coherent strategy and response to the increasingly sophisticated nature of cybersecurity threats.

A cybersecurity strategy is imperative for every public sector agency. Public sector agencies are fighting a daily battle with security at every level—federal, state, and local—via a security strategy built on the best security tools of the day, with a desire for real-time threat analytics and intrusion detection. Cyberattackers do not discriminate and target organizations at all levels. If there is a vulnerability, it will probably be exposed.

Securing citizen data isn't optional; it's a mission-critical task for a public sector CIO. The technology stack must provide a strong security layer to protect data and transactions, meeting the unique requirements of public sector organizations. While not every threat can be predicted, having a process to react, detect, protect, repel, and remediate is essential.

6.3 Single Centralized Secured Repository: The Pinnacle

A self-service portal enables public sector agencies to provide citizens with 24/7 access to information on program eligibility and forms, documentation, video, audio files, and other public records without any staff intervention. When data is stored in a single repository, the centralized location reduces errors and becomes the single source of the truth.

The new data management technologies of Big Data provide ways to unify all customer and operational data from all sources into a single centralized repository to eliminate data silos. Big Data technology is designed to ingest multiple data types in their original formats without the expensive and time-consuming extract, transform, and load (ETL) required by relational databases. This allows near real-time data ingestion without disturbing systems already in place. Over time, the organization can replace obsolescent databases that the new system makes redundant and move operations to the new platform.

A Big Data technology platform such as Apache Hadoop provides in-built advantages towards realizing the data-driven government vision by ingesting a wide variety of data, whether structured, semi-structured, or unstructured, in a single repository in low-cost bulk storage or lowering the cost by using Object Storage. Such a portal, aided by Big Data technology, can be a huge leap forward for public sector agencies to better meet the needs of sophisticated time-sensitive citizens with minimal staff time and increased satisfaction.

6.4 Analytics is the Government's Modern-day Powerhouse

Once all the data is in one logical place, data analytics, modern machine learning, and cognitive analytics can be applied for dramatic outcomes. Intelligent analytics can generate reports, forecasts, and insights into citizen behavior to serve citizen needs better. Public sector agencies can use analytics to resolve the conflict between heightened citizen expectations, demand for personalized public service, and the pressures of reduced budgets.

- Fraud prevented via analytics is money saved and increases government revenue. Analytics can lead to real-time auditing and prevent fraud and errors, ensuring that benefits are provided only to legitimately qualified.
- Analytics can provide complete citizen profiles by combining data from sources, including click traffic, online behavior, and social media. This can provide insights to enhance service models for better citizen satisfaction. Analysis of voting behavior can reach the point of predicting whether a specific ballot measure is likely to be passed.
- Analytics can allow law enforcement to identify trends in crime patterns and better allocate resources.

- Analytics can predict community health trends and diagnose issues such as water impurities. Analytics can also track epidemics, supporting the optimization of vaccine distribution.
- Analytics can allow health inspectors to identify food establishments likely to have critical violations, supporting optimized inspector allocation.

Public sector agencies can anticipate and respond to citizens using analytics that harness massive internal and external data volumes. Insight-driven analytics will continue to redefine public service for intelligent decision-making and service improvements.

6.5 AI-Fueled Big Data Initiatives

Integrating artificial intelligence (AI) with big data can revolutionize the public sector, enabling government agencies to harness vast amounts of information for improved decision-making, enhanced service delivery, and increased operational efficiency. By leveraging AI technologies, public sector organizations can analyze complex datasets, identify patterns, and derive actionable insights that drive positive outcomes for citizens and communities. Here's a comprehensive look at how AI-fueled big data initiatives are transforming the public sector.

- AI algorithms can analyze historical data to predict crime hotspots, allowing law enforcement agencies to deploy resources strategically and proactively address public safety concerns.
- AI chatbots, for instance, can provide instant assistance to citizens seeking information about government services, streamlining processes and reducing wait times.
- By analyzing social media trends and public sentiment, agencies can understand the needs and concerns of their constituents.
- AI can assist in predicting patient admission rates, allowing hospitals to allocate staff and resources more efficiently.
- AI algorithms can analyze tax filings in taxation to identify anomalies indicating fraudulent activity.
- By flagging suspicious patterns, agencies can proactively investigate and prevent fraud, safeguarding public funds.
- Smart waste management systems can analyze data on waste levels to optimize collection routes, reducing costs and environmental impact.
- AI can analyze labor market trends to inform workforce training programs, ensuring citizens have the skills needed for emerging job opportunities.

By leveraging the power of AI and big data, government agencies can address complex challenges, optimize resource management, and create a more responsive and efficient public sector. As these technologies continue to evolve, the potential for a positive impact on society will only increase, paving the way for a smarter, more sustainable future.

6.6 Sensitive Data Discovery and Masking: A Winning Strategy

Public sector organizations are just as vulnerable to data breaches and privacy concerns as private companies. With heaps of sensitive information—like personally identifiable information (PII), health records, and financial data—government agencies are prime targets for cyber threats. That's why rolling out sensitive data discovery and masking solutions is crucial. These tools help identify and protect sensitive information while keeping up with the latest regulations.

By embracing smart data management practices, public sector entities can boost data security, cut risks, and build public trust. It's clear that when it comes to protecting our data, the public sector is stepping up just like the private sector!

- A public hospital uses sensitive data discovery to locate patient information in EHRs and applies data masking for training and application development to protect sensitive data.
- A city government identifies sensitive citizen data using data discovery tools and implements masking for analytics shared with contractors to maintain privacy.

- A public university employs sensitive data discovery to classify student information and uses data masking when sharing anonymized datasets with research partners.
- A state tax authority uses data discovery tools to identify sensitive taxpayer information and applies data masking for compliance audits to protect taxpayer confidentiality.
- A public social services department locates sensitive client data with discovery tools and uses data masking when sharing information for program evaluations.
- A police department employs sensitive data discovery to find sensitive information in criminal records and uses data masking when collaborating with other agencies.

By leveraging these tools, government agencies can enhance their data security posture, ensure compliance with regulations, and protect citizens' privacy while still utilizing data for effective service delivery and decision-making.!

6.7 Legacy Decommissioning is Advantageous

According to a recent GAO report, The federal government allocates over $100 billion annually for IT and cybersecurity investments, with agencies usually spending around 80% of this on operating and maintaining existing IT, including legacy systems. Mission-critical federal systems are more than 50 years old. Such legacy systems entrench inefficiencies and complexity and make it difficult to integrate newer technologies. They make digital government impossible and cannot meet citizen demands. A modernization plan provides numerous advantages, including:.

- It dramatically improves data and system security, increases performance, and eliminates mission-critical system failures.
- It optimizes operational costs, freeing operational resources, including valuable tax dollars. Modern IT systems are cost-optimal due to inherent technology advances such as virtualization, process automation, cloud, and Big Data.
- Legacy retirement is a viable strategy for rationalizing application portfolios, consolidating data centers, improving operational efficiency, reducing data costs, and achieving compliance.
- Modern systems are built on standard interfaces, supporting automated data consolidation and eliminating isolated data silos, reducing the cost and risks of manual consolidation.

The first step in a legacy replacement project is understanding the transaction data it holds and how that data can be moved or archived. Multiple regulations require that data be retained from a minimum of seven years for financial records to unlimited periods for some other kinds of data. Archiving to a modern system provides a better solution for managing retention while eliminating dependency on obsolescent, increasingly undependable technology.

A data retention policy, when actively enforced, pays for itself with the following:

- It preserves digital collections of historical value.
- It consolidates the vast amount of information stored throughout city departments, preventing information loss.
- Based on the state's data retention policy and compliance requirements, it eliminates the preservation of items beyond their useful life, reducing risk and cost.
- It ensures data availability based on the records retention schedule for public requests and litigation discovery.

7. SOLIXCloud CDP Helps Digital Transformation

Organizations need an industry-grade 'public sector ready' data management system with a Big Data engine and built-in security and governance capabilities. The Solix Common Data Platform (CDP) for Government provides a comprehensive solution that meets these needs, empowering public sector organizations to manage their data effectively while maintaining high security and governance standards. With the Solix CDP, organizations can harness the full potential of their data, drive informed decision-making, and enhance operational efficiency.

✔ Solix Common Data Platform for Government

The Solix Common Data Platform (CDP) for Government is an advanced data management solution designed to address the unique challenges of public sector organizations. It offers a comprehensive framework that integrates various data management capabilities, ensuring that government agencies can effectively handle the increasing volumes and complexities of data in today's digital landscape.
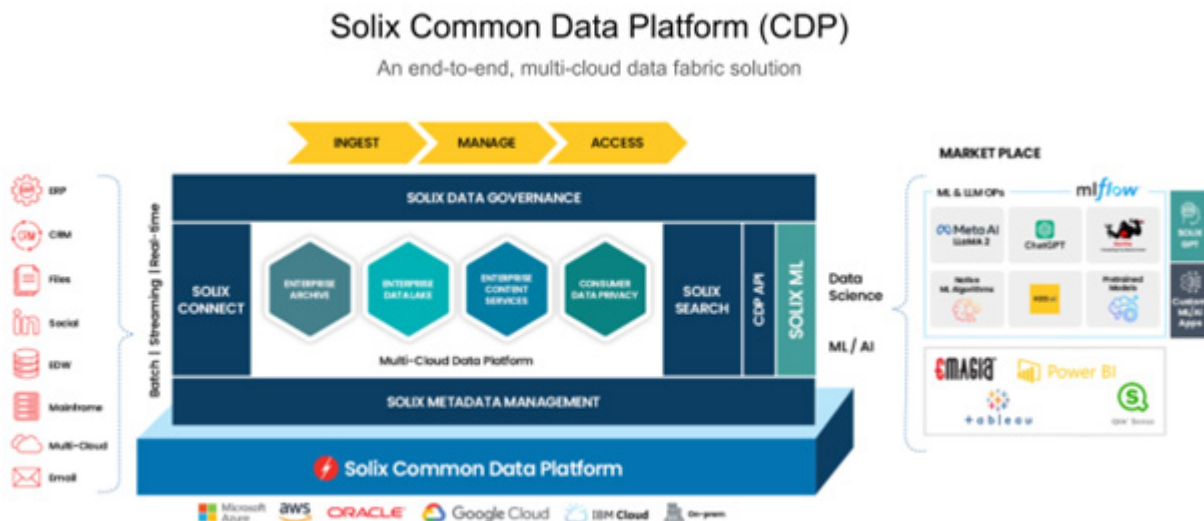
The Solix Common Data Platform (CDP) is a highly scalable, robust next-generation Big Data management platform that features uniform data collection, metadata management, data governance, ILM, data security, data discovery, and a full set of interfaces to support plug-and-play stack creation and modernization. It leverages the high-performance and low-cost characteristics of the open-source Apache Hadoop framework for economical storage and real-time processing of petabytes of structured and unstructured financial data.

The Solix Common Data Platform (CDP) simplifies data storage and processing by storing data in its original form, eliminating costly ETL processes. It transforms data only when needed, allowing applications like NoSQL databases and analytics platforms to access it in the most useful format. With built-in Big Data processing engines like Apache Spark, Impala, and Hive, Solix CDP is ideal for handling large datasets and supporting real-time analytics and machine learning.

The Solix CDP is certified to operate with both the Cloudera and Hortonworks Hadoop distributions. Additionally, it can be deployed on-prem or in the cloud. (It supports AWS, Azure, Oracle, and Google Cloud.)

Solix CDP provides an end-to-end solutions framework

With a built-in Enterprise Data Lake, Enterprise Archiving, Application Retirement, Enterprise Content Services, and Enterprise Security And Compliance, SolixCloud CDP provides unparalleled data management and analytic tools and frameworks to public sector organizations.

All Data—The Solix CDP allows you to join structured, unstructured, and semi-structured data sources within a single application with full security, including encryption in transit, for data ingested.

Metadata Management—The CDP's ability to track the meta-data used within an Enterprise Data Lake, including ingestion, validation, usage, lineage, and more, enables confidence in the data's integrity and the accuracy of the analytics and insights.
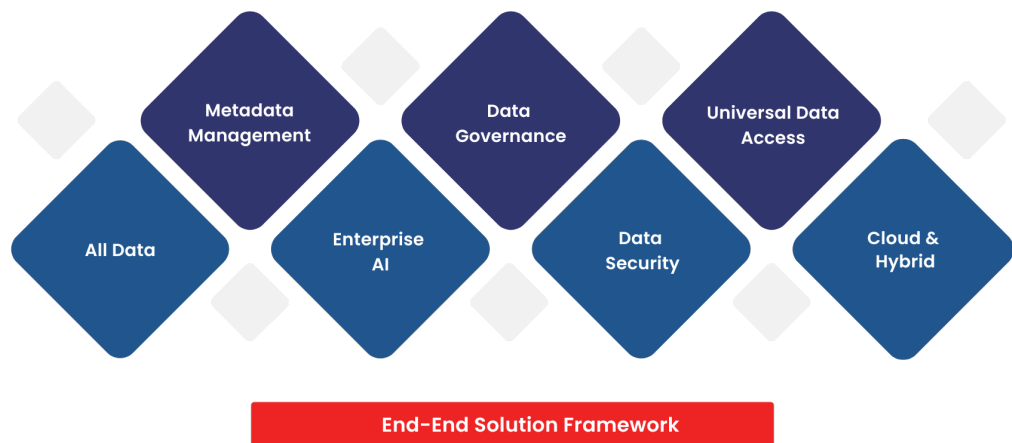
Enterprise AI— SOLIXCloud Enterprise AI includes Solix GPT and Solix ML for high-quality, secure data in machine learning and generative AI, with open-source foundations like Llama 2 and MLFlow while offering pre-trained models and extensible integrations.

Data Governance—The CDP provides insights into how data has been sourced, used, and finally disposed of at the end of its natural life.

Data Security—The Solix Common Data Platform enhances data security through integrated data masking, sensitive data discovery, and compliance tools, enabling organizations to protect sensitive information and ensure regulatory compliance while maintaining efficiency.

Universal Data Access—The CDP provides the means for high-performance client/server and Web-based applications to interoperate with all systems, from desktops to departmental servers to mainframes, across the enterprise on private networks or worldwide via the Internet.

Cloud & Hybrid— The CDP can be installed in a mixed computing, storage, and services environment comprising on-premise infrastructure, private cloud services, and public cloud.

Metadata Management

Data Governance

Universal Data Access

All Data

Enterprise AI

Data Security

Cloud & Hybrid

End-End Solution Framework

7.1 Data Governance, Security, and Compliance

Proper data governance requires compliance and security measures, and nowhere is data governance more vital than the public sector. One key question in any privacy audit is who can access sensitive information. Each time someone on the public sector agency staff needs to access a citizen record, proper authentication must occur to ensure that only those with permission to access records can do so.

Solix Common Data Platform provides a wealth of data governance capabilities, including a business glossary, sensitive data discovery, data security, data classification, data access, data masking, encryption, dashboarding, role management and role-based views, workflows, approval processes,

policy management, search access to your data and metadata, data profiling of both internal and external systems. The Solix CDP imposes business rules on who can access data and for what purposes and maintains the metadata to support compliance audits.

Its sensitive data discovery comes with a dedicated data privacy compliance tool that addresses GDPR, CCPA, and similar regulations; and it leverages a number of external security technologies, such as LDAP and single sign-on, as part of its data security functionality, and can integrate with a number of third party security products using these technologies. The Solix CDP provides a robust, multi-layered security model:

Perimeter—Kerberos and AD/LDAP protect the Hadoop cluster with authentication and network isolation.
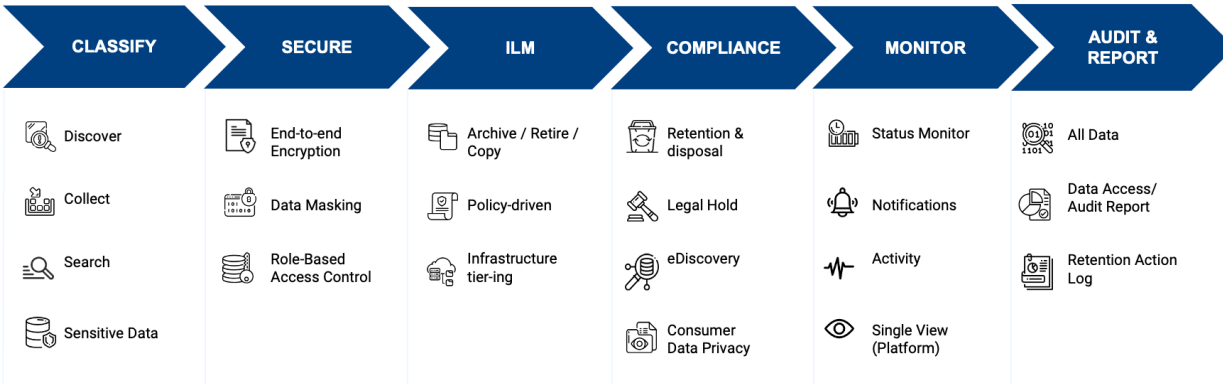
Sensitive Data Discovery—Enables the auto-discovery of sensitive data across multi-cloud environments with pre-populated and custom rules (PII, Financial records, Regulated data—GDPR, CCPA, HIPAA, PHI, etc.).

Access Control— Data users and applications can access roles-based permissions and authorizations via security configuration schemas such as Sentry.
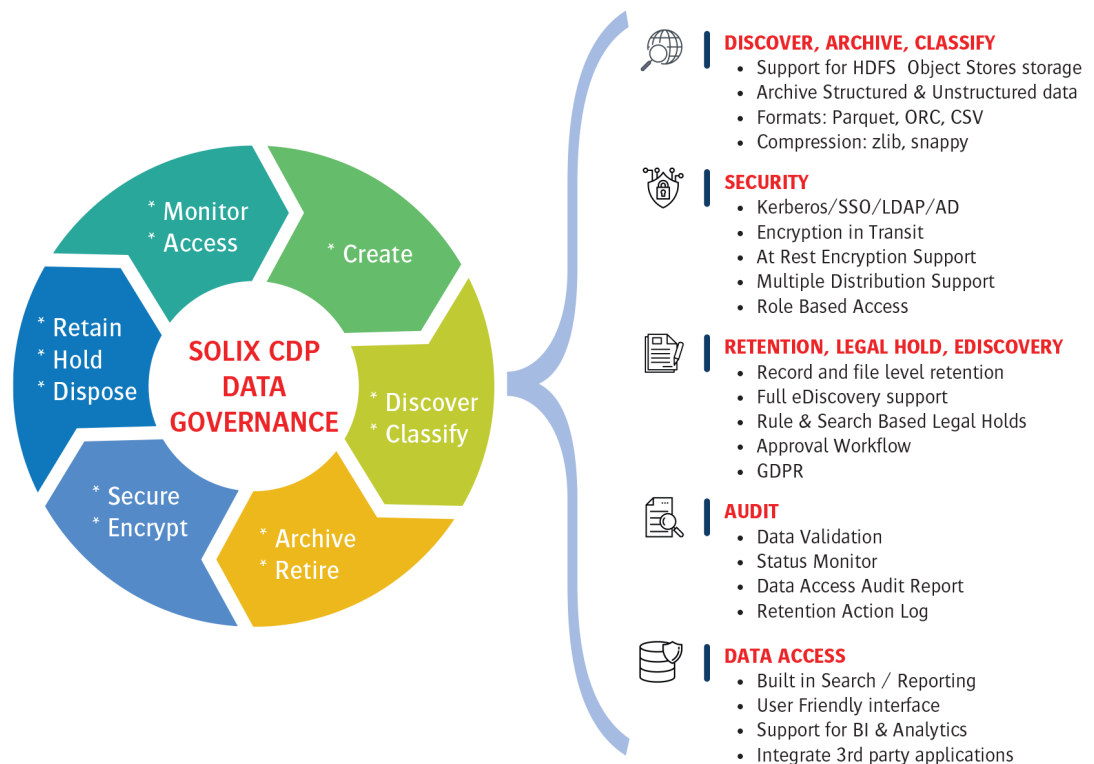
Encryption/Masking—End-to-end encryption for data when in motion and at rest and data masking to restrict unauthorized usage are all supported.

Data Compliance—Supports 8 consumer data privacy principles (e.g., right to be forgotten, right to be informed) for GDPR, CCPA, LGPD, NYDFS, etc., enabling comprehensive compliance and robust consumer privacy protection.

Audit—An audit trail and reporting on the complete data lifecycle, including security classification, lineage, access, retention, legal hold, etc., are provided.

CLASSIFY	SECURE	ILM	COMPLIANCE	MONITOR	AUDIT & REPORT
Discover	End-to-end Encryption	Archive / Retire / Copy	Retention & disposal	Status Monitor	All Data
Collect	Data Masking	Policy-driven	Legal Hold	Notifications	Data Access/ Audit Report
Search	Role-Based Access Control	Infrastructure tier-ing	eDiscovery	Activity	Retention Action Log
Sensitive Data			Consumer Data Privacy	Single View (Platform)	

Additionally, the Information Lifecycle Management (ILM) capability discovers and classifies public sector data and then establishes rules and retention policies to manage it throughout its lifecycle. Comprehensive retention policies with exception handling, such as legal hold and data access, help further meet complex regulatory and compliance requirements.

DISCOVER, ARCHIVE, CLASSIFY
- Support for HDFS Object Stores storage
- Archive Structured & Unstructured data
- Formats: Parquet, ORC, CSV
- Compression: zlib, snappy

SECURITY
- Kerberos/SSO/LDAP/AD
- Encryption in Transit
- At Rest Encryption Support
- Multiple Distribution Support
- Role Based Access

RETENTION, LEGAL HOLD, EDISCOVERY
- Record and file level retention
- Full eDiscovery support
- Rule & Search Based Legal Holds
- Approval Workflow
- GDPR

AUDIT
- Data Validation
- Status Monitor
- Data Access Audit Report
- Retention Action Log

DATA ACCESS
- Built in Search / Reporting
- User Friendly interface
- Support for BI & Analytics
- Integrate 3rd party applications

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With the increasing number of data breaches and the growing sophistication of these cyber-attacks, a technology stack to react, detect, protect, repel, and remediate is key to every public organization's success in protecting citizen data. Such a technology allows the public sector organization to detect a cyber-attack faster and reduce and remediate the attack's impact via cutting-edge correlation and analytics tools. Solix Log Analytics keeps pace with the high velocity of data and the sophistication of cyber attacks, providing the government organization an upper hand, protecting citizen data, and avoiding public embarrassment.
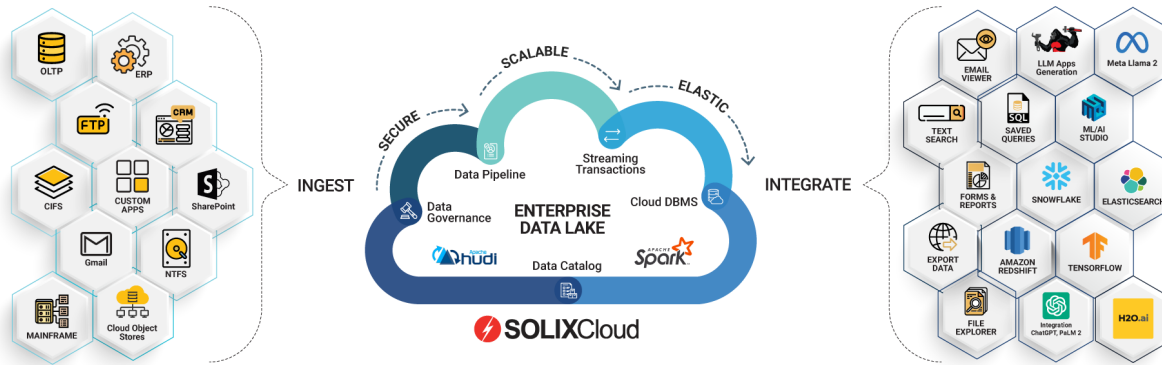
7.2 Enterprise Data Lake

Organizations are dealing with large volumes of structured and unstructured data, including streaming data that allows them to make informed data-driven decisions when brought together in real-time. Additionally, organizations are moving from pre-defined EDW-styled analytics to an investigative approach that seeks further clarity based on the insights discovered. The Solix Enterprise data lake addresses all of these requirements and more.

Running on the cloud-native Solix Common Data Platform (CDP), SOLIXCloud Enterprise Data Lake is a third-generation, transactional streaming data lake that brings core data warehouse and database functionality directly to a data lake. Designed for high-performance, real-time cloud database workloads, the SOLIXCloud Enterprise Data Lake supports ACID transactions and delivers transactional guarantees to the data lake with consistent atomic writes and concurrency controls tailored for longer-running data lake transactions.

To ensure your data infrastructure is not tied to any one vendor, the SOLIXCloud Enterprise Data Lake supports Open Table Formats for Apache Hudi, Apache Iceberg, and Delta. It provides organizations with a big data platform capable of capturing data from structured and unstructured sources via batch, real-time, and streaming modes. It brings all data into a common repository 'as is' to avoid costly ETL and allows organizations to define the schema on read based on their specific use case.

Zooming out to the big picture, SOLIXCloud Enterprise Data Lake is a multi-cloud solution and an ideal platform for data pipelining, data integration, data engineering, machine learning, advanced analytics,

generative AI, real-time data warehouse, low latency, and transaction processing applications. The figure below shows the architecture of SOLIXCloud Enterprise Data Lake - A Third-Generation Cloud Data Platform.

A central challenge for enterprise data warehouse (EDW) platforms is delivering highly specific data views that meet the needs of business users rather than canonical top-down enterprise views that may or may not satisfy end-user requirements. The Solix Enterprise Data Lake reduces the complexity and processing burden to stage EDW and analytics applications and provides highly efficient bulk storage of enterprise data for later use.

The Solix Enterprise Data Lake provides a copy of production data and stores it "as is" in bulk to be better described and distilled later. This simple COPY process eliminates the need for heavy extract transform load (ETL) processing during ingestion. Once resident within the Hadoop file system (HDFS), enterprise data may be better described or transformed later for use with business analytics applications such as those available from the Solix App Store.

The Solix Enterprise Data Lake employs an Information Lifecycle Management (ILM) framework to meet governance, risk, and compliance objectives and ensure that the best data retention and classification practices are deployed. ILM policies and business rules may be pre-configured to meet industry standard compliance objectives such as COBIT or custom-designed to meet more specific requirements.
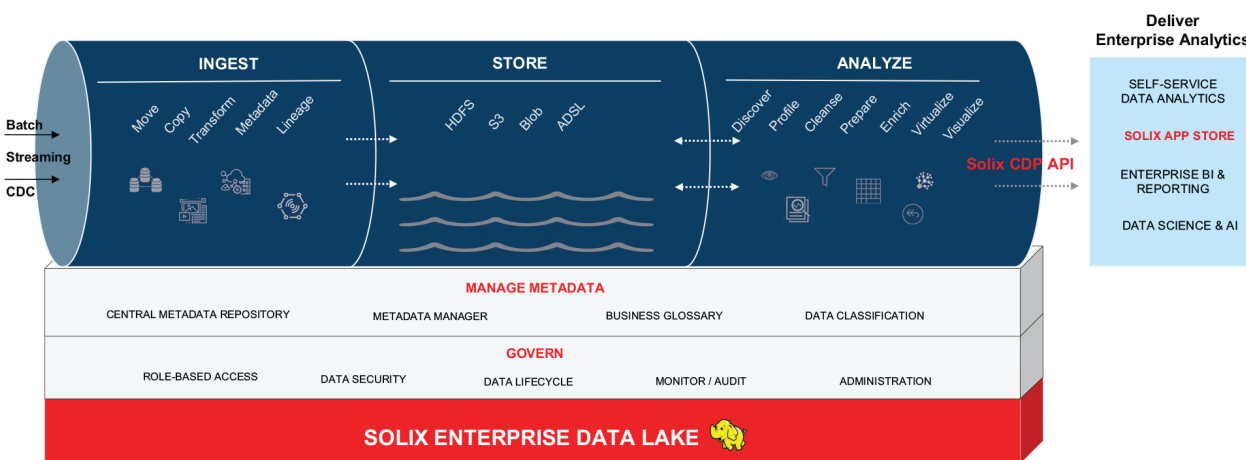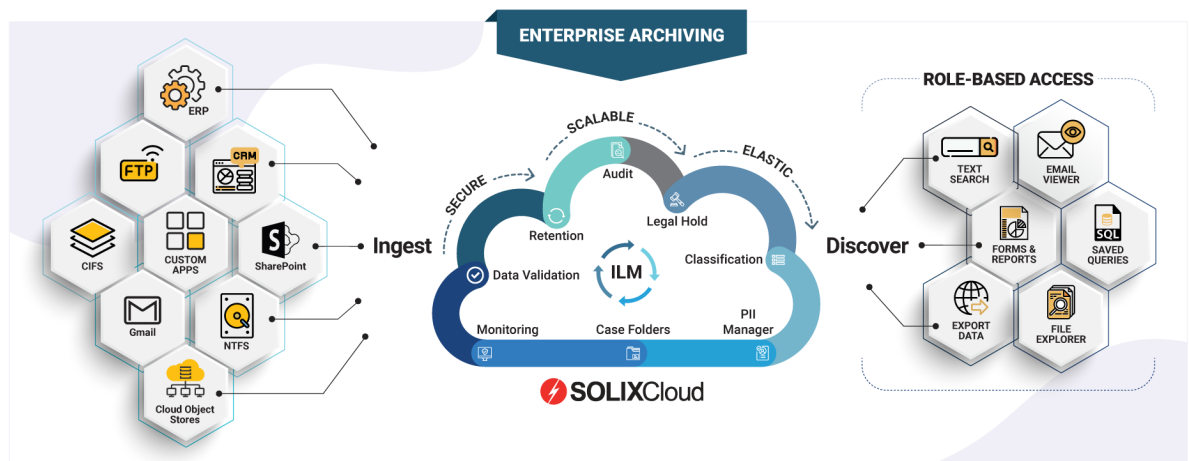

7.3 Enterprise Archiving

Archiving and application decommissioning are high-impact public sector projects that support OpEx optimization and position the public sector agency for modernization and increased ability to roll out

cutting-edge technology solutions. An archiving strategy that protects data integrity in all instances enables compliance, eliminating the risk of data loss while ensuring your ability to meet data retention requirements.

Addressing the growing need for public-sector agency application networks to migrate data across applications, protocols, and proprietary data structures, Solix delivers an intelligent solution that enables seamless data migration across all agency applications.

SOLIXCloud Enterprise Archiving is a complete suite of archiving applications, including Application Retirement, Database Archiving, Email Archiving, and File Archiving, to manage unprecedented data growth. It provides a low-cost, pay-as-you-go repository for all legacy data, including structured, unstructured, and semi-structured information and content. The figure below depicts the architecture of SOLIXCloud Enterprise Archiving.

SOLIXCloud Enterprise Archiving offloads less frequently accessed data to modern cloud object storage to improve production application performance and optimize your infrastructure. Text search, structured reports, and ad-hoc queries provide universal access to archived data, and advanced information lifecycle management (ILM) provides data governance and compliance. The key capabilities SOLIXCloud Enterprise Archiving offers are shown below.
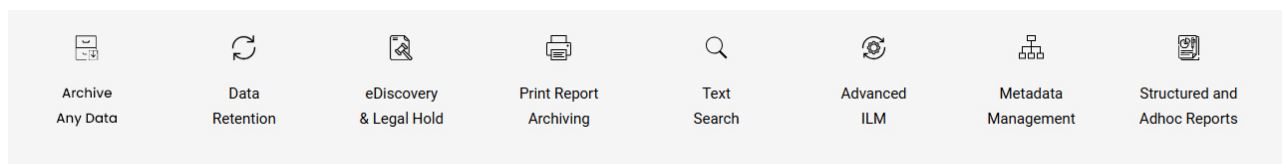
Application Retirement—SOLIXCloud Application Retirement and Decommissioning enables organizations to rationalize their application portfolio and reduce infrastructure costs. Legacy applications consume valuable data center resources and create data governance and compliance risks. SOLIXCloud application retirement as-a-service helps organizations transition away from complex, on-prem legacy application management to SaaS-based, modern alternatives.

SolixCloud Application Retirement ensures compliance with policy-based data retention, legal hold, and role-based access, supporting structured, unstructured, and semi-structured data. It offers connectors for nearly any platform and legacy data access through full-text search, forms, and legacy reports. Accelerators for SAP, Oracle E-Business Suite, PeopleSoft, Siebel, JD Edwards, Baan, and more, combined with Solix expertise, streamline projects efficiently and cost-effectively.

Database Archiving—Database growth hampers application performance, complicates compliance, and strains data governance. Rising data volumes slow batch processing, query times, and backups, often requiring costly hardware upgrades. SOLIXCloud Database Archiving resolves this by relocating older, less-used data to affordable cloud storage, maintaining peak efficiency and reducing infrastructure costs.

SolixCloud Database Archiving enables MOVE/VALIDATE/PURGE of data per ILM policies to ensure security, compliance, and data governance for all archived data across major relational databases, including Oracle, SQL Server, DB2, and more. It offers table-to-table archiving with master data sync. It supports affordable cloud/on-prem storage, and certified knowledge bases for top applications such as SAP, Oracle E-Business, PeopleSoft, Siebel, JD Edwards, Baan, and more. It supports universal self-service access to archive data through full-text search, reporting, and ad-hoc SQL queries. With Solix Database Archiving for the public sector, agencies have the tools to.

1. Classify data based on its business value and regulatory impact for tiered storage and information security.
2. Leverage Oracle-certified trigger and non-trigger archiving methods or transaction-based or table-based archiving.
3. Enable compliance with an archiving strategy that protects data integrity in all instances, eliminating the risk of data loss while ensuring your ability to meet data retention requirements.
4. Implement active archiving to ensure simultaneous access to data from the native application for more frequently accessed data and XML archiving for long-term data retention needs.
5. Maintain seamless data access to archived data through native Oracle Applications interfaces.
6. Leverage a metadata-driven approach for defining data management policies, reducing overhead costs associated with data management solutions.
7. Recover storage space with complete integrated de-archive, space re-claimer, and patch synchronization utilities to assist in data management processes.

File Archiving—Organizations face costly content sprawl from legacy file repositories across departments, impacting productivity and compliance. Analysts estimate management costs at $3,351 per terabyte annually, plus backups. SOLIXCloud File Archiving consolidates unstructured data into a compliant cloud repository, decommissioning outdated servers and archiving infrequently accessed data for streamlined data management.

SOLIXCloud File Archiving is a fully managed, centralized, low-cost, secure, and highly available cloud-scale repository that supports all file types, including office files, PDFs, text, images, videos, IoT, logs, and social media. SOLIXCloud File Archiving offers robust search capabilities, adaptable retention policies, and centralized governance for compliance. With connectors for popular file repositories, it identifies and archives unused files to a unified repository, with data validation ensuring complete migrations. IT teams can enable automated source purge, efficiently securing data in the cloud while optimizing storage.

Email Archiving—Email has become the leading tool for business communication and collaboration, leading to data growth at unsustainable rates. With 60% of emails containing critical and sensitive information, organizations must address the regulatory and compliance challenges, along with the IT costs, that come with managing this data.

SOLIXCloud Email Archiving is a fully managed email archiving as-a-service, designed to simplify eDiscovery, compliance, and email growth management for enterprises of all sizes. Built on SOLIXCloud's Common Data Platform, it centralizes ILM compliance for structured, unstructured, and semi-structured data. The solution features active classification, monitoring, alerts, powerful search capabilities, organized case folders, and self-service access to archived emails while enforcing retention and legal hold policies for data integrity.

7.4 Enterprise Content Services

Public sector workgroups are grappling with a multitude of digital and paper-based content repositories. These siloed repositories adversely impact workgroup productivity, content availability, security, and compliance. It is time to revolutionize your content management and related tasks with Solix ECS, an advanced cloud content platform that transforms the tedious handling of documents and files into a powerful catalyst for growth and impact. Below are a few key capabilities Solix ECS delivers:

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Centralized Content Management—Secure cloud content repository for centralized file storage, management, discovery, processing, and governance.

Secure File Sharing & Collaboration—Securely share files with internal and external stakeholders using permissions, secure links, and guest accounts.

Cloud Archiving— Automate archiving of documents, emails, images, videos, audio, and web content from active and legacy repositories.

Automation Powered by AI— Improve productivity and deliver digital experiences for employees and customers with at-scale automation and workflows powered by Cloud and AI.

Regulatory Data Compliance—Comprehensive audit reports, encryption, retention management, classification, and legal hold help ensure compliance.

8. Call to Action

A responsive government leads to happy citizens, excellent polling numbers for elected leaders, and optimized spending of dollars. Data-driven government is designed to modernize government organizations and address the challenges with citizens, cost, compliance, and cash. This is enabled by strategic digital transformation and modernization projects geared to harness and apply data to solve challenges. Solix Technologies enables exactly that with the following:

Solix Common Data Platform (CDP)—A big data management platform for unifying structured and unstructured data from disparate sources in public agencies, featuring a modern data lake and data archive based on low-cost, bulk storage Apache Hadoop.

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