

The Architecture Behind the **Government Experience Cloud**



What is the Government Experience Cloud?

Government Experience Cloud (GXC) is a platform that provides government organizations (of all sizes) with a rich suite of capabilities to help the government engage with the communities they serve. This broad range of digital capabilities includes websites, forms, communications technology for email and SMS engagement, surveys, meeting management, service request management, and much more.

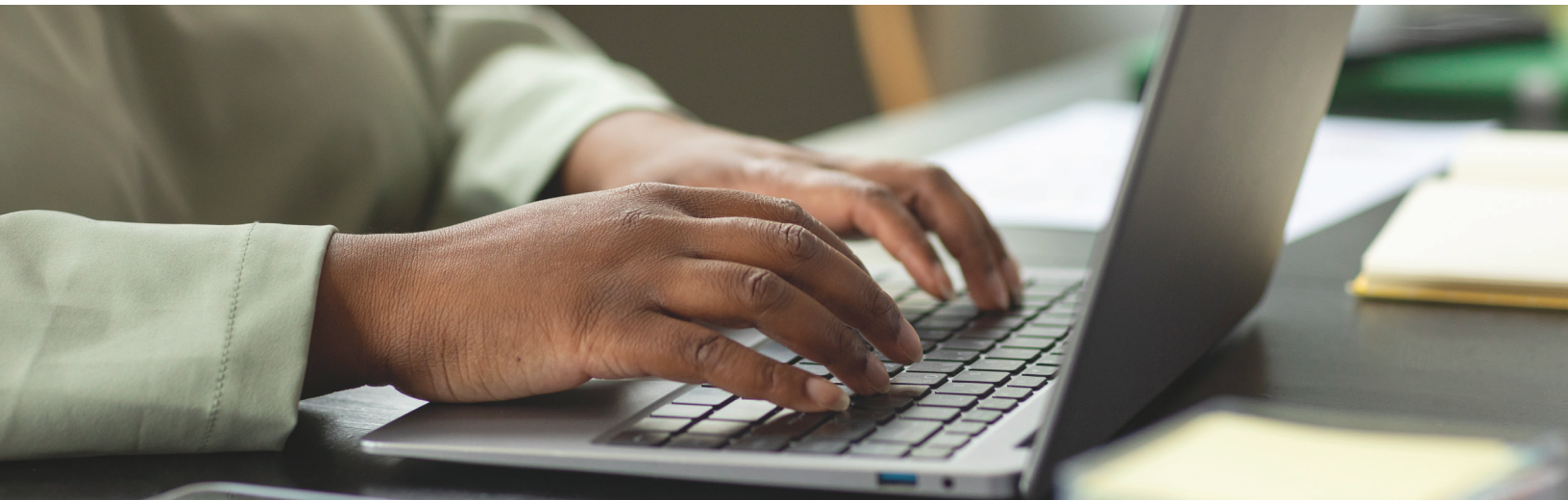
With more than 6,000 customers leveraging these technologies, GXC generates billions of individual interactions every month, creating a vast reservoir of valuable data.

This data is key to understanding and

meeting the needs of the communities served by the government.

Whether you look at GXC from the lens of a government organization or of a resident or local business, the goals are the same: The platform is designed to achieve specific outcomes. The government, for example, wants to provide services and information to help the community, whether that's having more families be part of the foster network, providing health information, or helping people secure employment. The resident, on the other hand, wants to benefit from — and even influence — those services.

GXC is designed to achieve those outcomes in a way that builds both trust and a sense of belonging.



The Challenges

1

THE SCOPE OF GOVERNMENT SERVICES

The government is arguably the largest service provider on the planet. The A to Z of services runs from the Affordable Care Act to Zoning Regulations, and all points in between. This is how artificial intelligence recently responded to a sizing question:

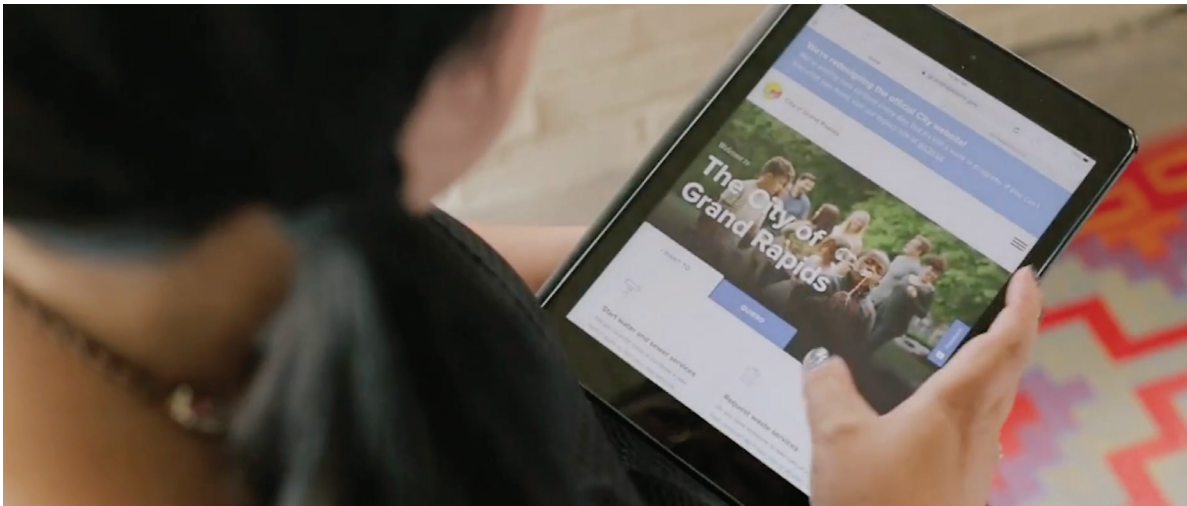
“Estimating the total number of government services offered by federal, state, and local organizations in the USA is a challenging task, as the scope and scale of government services is vast and constantly evolving.”

2

DIVERSE DEMOGRAPHICS

Government services cater to a diverse population, ranging from infants to centenarians, individuals below the poverty line to successful entrepreneurs, and from the ultra-healthy to those in hospice care. As if that wasn't challenging enough, you might be surprised to learn that there are more than 300 languages spoken in the USA, and the same in the UK.

Connecting the right service to the right people is a formidable challenge. However, the solution lies in personalization. For instance, individuals eligible for the Women, Infants, and Children (WIC)¹ program are unlikely to be eligible for the Senior Nutrition Program², and vice versa. By understanding more about individuals, families, or businesses, governments can tailor their services to meet specific needs effectively.



The Key to Effective Engagement: Data

Creating relevant, timely, and impactful experiences hinges on data. However, the data necessary for personalization often resides in disparate, disconnected systems.

Each department might hold different pieces of information about a resident — one system might know a person is a new mother, another might know she lives in rented accommodation, and yet another might recognize her as a veteran.

The data must be united and cross-referenced to harness it effectively. This not only enhances the accuracy of service delivery but also improves the overall efficiency of government operations, which in turn benefits the

resident and provides them with a superior digital experience.

In summary, the government has a really tough challenge. Not only is it the largest service provider of any sector, but its customers also come from every vector on the demographic spectrum.

Personalization is the best methodology to overcome the challenges. But personalization feeds off data, and the data is locked away deep in — often uncooperative — silos. Despite all that, there is a clear solution.

The Heart of the Architecture: A Data Mesh

The past decade has witnessed the failure of most projects that tried to create a single, centralized data warehouse to overcome the challenges with distributed data stores. Paradoxically, the centralized control of a data warehouse exacerbates data silo problems, as all data must be funneled through a single point, creating access delays and bottlenecks.

Maintaining a centralized data warehouse requires considerable effort to ensure data consistency and integrity, which can be resource-intensive and complex. Typically, centralized warehouses rely on batch processing, limiting their ability to provide real-time insights crucial for timely personalization.

Data mesh offers a better architecture by addressing many of the challenges associated with traditional centralized data systems. A data mesh provides several key benefits that make it an excellent choice for creating personalized digital experiences by distributing data ownership and integrating data across various domains.

Adopting a modern data mesh enables businesses to create highly personalized digital experiences by leveraging decentralized data ownership, scalability, enhanced data accessibility, real-time processing, and improved governance. These features collectively ensure that businesses can deliver tailored, relevant, and compliant digital interactions, ultimately driving user engagement and satisfaction.



The Top 4 Data Mesh Capabilities

1. DECENTRALIZED DATA OWNERSHIP AND DOMAIN-SPECIFIC KNOWLEDGE

In a data mesh, data is treated as a product, and each domain within an organization is responsible for its data. This decentralized approach ensures that data is managed by those who understand it best, leading to higher data quality and relevance. When creating personalized digital experiences, having accurate and domain-specific data is crucial. For example, marketing teams can better understand customer preferences, while product teams can track usage patterns to tailor offerings.

2. SCALABILITY AND FLEXIBILITY

Traditional monolithic data architectures can become bottlenecks as organizations scale. A data mesh, however, allows for scalable and flexible data management. Each domain can scale its data operations independently, avoiding the limitations of a centralized system. This scalability is vital for businesses looking to personalize experiences for a growing user base, as it ensures that data processing capabilities can keep up with increasing demand.

3. ENHANCED DATA ACCESSIBILITY

Data meshes improve data accessibility by breaking down silos and enabling seamless data sharing across domains. This accessibility means that personalized experiences can be enriched with diverse data sources, leading to more accurate and comprehensive user profiles. For instance, integrating data from customer service, sales, and social media can provide a holistic view of the customer, enhancing personalization efforts.

4. IMPROVED DATA GOVERNANCE AND COMPLIANCE

With a data mesh, governance policies are enforced at the domain level, allowing for more granular control over data privacy and compliance. This decentralized governance model ensures that data is handled according to local regulations and organizational policies, which is critical for building trust with users and delivering compliant personalized experiences. For example, different regions may have specific data privacy laws, and a data mesh can accommodate these variations more effectively than a centralized system.

And that is why we have a massive data mesh (running in AWS) at the heart of our GXC solution.



The Revolution in Analytics

The integration of a comprehensive data mesh with the advanced capabilities of Artificial Intelligence (AI) and Machine Learning (ML) is revolutionizing the field of analytics.

Over the past decade, analytics technologies have undergone changes that are fundamentally reshaping how public and private sector organizations harness data. A decade ago, the landscape was dominated by traditional Business Intelligence (BI) tools, which primarily focused on retrospective analysis and basic reporting. These tools, while powerful, were limited in their ability to handle large, diverse data sets and often required significant manual intervention. The advent of big data technologies marked a significant leap forward, enabling the processing and analysis of vast amounts of structured and unstructured data. The rise of cloud computing further democratized access to advanced analytics, offering scalable and flexible solutions that could be tailored to the needs of businesses of all sizes.

The Need for New Solutions

In today's data-driven world, the variety and velocity of data have increased exponentially. Modern solutions must be capable of integrating and analyzing data from a myriad of sources, including communications, web activity, citizen support and interactions, and transactional systems. This heterogeneity presents both a challenge and an opportunity.

Traditional analytics tools designed for structured data struggle to keep pace with this complexity. Therefore, modern analytics solutions must be versatile and robust, offering seamless integration capabilities that allow businesses to gain a holistic view of their operations and customer behaviors. By leveraging diverse data sources, organizations can uncover deeper insights, drive innovation, and make more informed decisions. That is one of the reasons we adopted the data mesh architecture.

AI/ML in New-Generation Analytics Platforms

The new generation of analytics platforms is distinguished by the incorporation of AI and ML. These advanced technologies enable

predictive and prescriptive analytics, moving beyond the descriptive analytics of the past.

AI and ML algorithms can sift through massive datasets to identify patterns and trends that would be impossible for humans to detect. This allows organizations to not only understand what has happened and why, but also to anticipate future outcomes and optimize strategies accordingly. Moreover, these platforms are becoming increasingly user-friendly, with intuitive interfaces and automated processes that empower users at all levels of an organization to leverage sophisticated analytics without needing deep technical expertise.

As a result, AI/ML-driven analytics platforms are becoming indispensable tools for businesses looking to maintain a competitive edge in an increasingly data-centric world.

The Granicus Analytics Platform

Although we have offered analytics solutions in our products for more than 15 years, the convergence of data mesh and AI/ML innovations compelled us to create a major new analytics platform that transcends what any individual product can accomplish.

Put simply, Granicus' Analytics Platform (GAP) enables government organizations to leverage analytics to improve outcomes and materially accelerate the achievement of those outcomes. How? By leveraging these technologies to drive impact:



UNIFIED SOURCES

Outcomes are affected by a broad range of quantifiable forces: budgets, people, systems, activities, processes, and more. By leveraging a data mesh, information and data can be gathered and analyzed from a wide range of sources, including Granicus data, your data, and third-party data. These data can be highly structured, unstructured (like text), or semi-structured. The system leverages these data to provide truly insightful benchmarks, single pane of glass views that span different product and technology boundaries, and more.



CONVERSATIONAL INTERFACES

Using Natural Language Processing, analysts can use business language (spoken/typed) to ask GAP to perform analysis in real time. "Show me a stack rank of administrators that have consistently sent the most impactful emails over the past 12 months."



PREDICTIVE ANALYTICS AND AUTOMATED INSIGHTS

AI/ML enables advanced forecasting and intelligent recommendations, enhancing proactive decision-making and reducing manual analysis efforts.



ANOMALY DETECTION

With literally billions of government interactions in our systems, AI/ML can, in real-time, detect and diagnose unusual patterns swiftly, ensuring timely issue resolution and improved operational efficiency.



RICH GRAPHICS AND DATA STORYTELLING

GAP utilizes state-of-the-art visual techniques to create compelling and informative graphics, improving the communication of complex data insights.

Conclusion

The integration of a data mesh architecture with advanced analytics capabilities represents a pivotal evolution in how organizations manage and leverage their data. By decentralizing data ownership and fostering unified access, organizations can achieve greater agility and scalability. The incorporation of AI/ML, real-time anomaly detection, and natural language processing further enhances the power of these analytics platforms, enabling predictive insights, automated analysis, and intuitive data interaction.

Embracing these modern technologies not only improves decision-making and operational efficiency but has a true impact on program outcomes.

As we move forward in this data-driven era, the ability to harness diverse data sources and extract actionable insights will have literally life changing impact.

