



**Frictionless
Government
Provide, Protect,
and Prosper in
the Digital
Society**



Run Simple



Dear Customers and Partners,

Governments have a timeless mission: to **provide services**, to **protect society**, and to **enable economic prosperity**.

Yet, in recent times, governments are facing a **growing number of major challenges**:

- **Disasters** happen more often, and with a bigger impact
- **Globalization** puts businesses and governments under pressure
- **Natural resources** are more and more constrained in the face of a growing world population
- **Massive urbanization** stresses cities and leaves rural areas underserved
- **Digitally experienced citizens** demand the service level and customer experience they know from shopping, banking, and social media

At the same time, **digitization and the underpinning breakthrough** technology innovations offer immense opportunities worldwide to deliver better outcomes:

- Social media mobilizes people all over the world
- Sensors help optimize waste removal, parking space, and street lighting
- Cloud and Internet are becoming essential for innovations like personalized care, optimized traffic flow, autonomous cars, and agile disaster management
- Networks run on smart technology and help make businesses, students, job-seekers, and service providers more effective
- In-memory computing is able to translate massive data to insightful information, literally at your fingertips

Digitization is the foundation for a **frictionless government**. Running frictionless is when you deliver services based on real insights, not statistical trends. It's when you can interact with no channel constraints; when technology works for you, instead of the other way around; and when government always puts its customers first, rather than forcing them into the maze of government bureaucracy.

Based on our 30-year experience partnering with public sector agencies, we have a unique perspective to enable our ambition of a frictionless government and support your digital transformation with our **digital business framework**. It is our portfolio of applications, platform, and networks based on the latest digital technology: **in-memory computing**.

How do we get there? In this white paper, we would like to share with you our perspective on a digital, frictionless government; how governments around the world have successfully digitized different operations; and how you can design your own digital transformation agenda with us.

Thank you for your interest, and I look forward to our journey together!

A handwritten signature in black ink that reads "Martin Klein".

Kind regards,

Dr. Martin Klein

SAP Global Vice President for Public Sector

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EXECUTIVE SUMMARY

To govern in a digital society, you need to fundamentally reimagine and transform all aspects of government.

Five technology trends have converged into the digital society: hyperconnectivity, supercomputing, cloud computing, a smarter world based on outcomes, and cybersecurity. The resulting pace of change is staggering and shows an immediate disruptive impact on government.

Government on all levels has a **timeless mandate**: to **provide services, protect society, and make the economy prosper**. This mandate will not change, but the role of government will: government is transitioning from being a provider of services to an enabler. It commissions, facilitates, brokers, and orchestrates service delivery. Smarter services and service delivery models will focus government on outcomes and blur traditional industry lines, e.g., cities using loyalty programs on some of their private sector services (waste, transportation) to drive usage, incentivized by free library, theater, and other services.

Executives in government and commercial industries know the world has changed. Research shows 90% of CEOs believe the digital economy will have a major impact on their industry, but less than 15% are funding and executing on a plan.¹ Citizens and businesses are expecting more and more from government, but the digital maturity and readiness of public agencies on all levels are generally even weaker and lagging behind leading private companies.

All government stakeholders expect a new type of experience: one that is frictionless, where work and collaboration are seamless, with interconnected service communities where technology is intuitive and easy to use. "Government made for me" is the new paradigm for personalized, anticipatory services – tailored to individual needs.

\$1 trillion

Government digitization could free up \$ 1 trillion annually in economic value worldwide.²

Digitization value

95% of agencies and departments agree or strongly agree that the ability to manage and analyze fraud is critical to meet their mission.³

Shared economy

In anticipation of the papal visit in September 2015, the City of Philadelphia created a regulatory framework to allow AirBnB to market and provide accommodations needed in addition to the 11,200 hotel beds in the city.⁴

INCREASINGLY CHALLENGING GOVERNMENT ENVIRONMENT



Population growth



Rapid urbanization



Fragile economies



Falling public trust



Greater insecurity and instability



Constrained resources



Citizen social power



Reducing budgets



Civic disengagement



Digital expectations



Government complexity



Workforce re-tooling



Security and privacy



Cyber resilience



Technology fit

EXECUTIVE SUMMARY

From standardization to digitization

For 20+ years the public sector has invested in **standardizing** business processes and online services to reduce internal complexity. The outcomes in the public sector have been remarkable – significant business value was achieved in the financial, social, and political ROI (public value). But still, complexity exists in governments. Citizens and businesses are experiencing this complexity every time they interact with a public agency, often enduring long wait times to obtain a simple service, or having to answer the same questions repeatedly. Government agencies must evolve to predict and solve, rather than (re-)question and react.

To achieve a frictionless government, agencies need to move from standardization **to simplification and innovation**. E-government brought old processes online; frictionless government is about reinventing government models, processes, and work.

Digitization is the foundation for frictionless government

Running frictionless is when agencies deliver services based on real insights, not statistical trends.

- Interact with no constraints on a variety of channels (mobile, Web, chat, in person)
- Make technology work for the agency instead of against it
- Put customers first rather than forcing them into the maze of government bureaucracy

This sort of transformation requires simplification and a reimagining – unity of purpose across all levels of government, improved models across traditional boundaries and silos, and simplifying the provision of government. It will foster a “digital mindset” within government that is focused on the best possible outcomes, uses the creative power and expert insights of society, and builds real-time insights upon wearable and mobile technology.

SAP HANA is the great simplifier.

The foundation of digital business is a flexible, secure, real-time innovation platform that makes all this possible – SAP HANA.



81%

of executives surveyed believe simplification is important for their organization **and 88% admit IT investment** is important to achieve simplification⁵



150%

improvement to Los Angeles Fire Department brush inspection efficiencies performed by field team with Capriza iPad app on SAP⁶



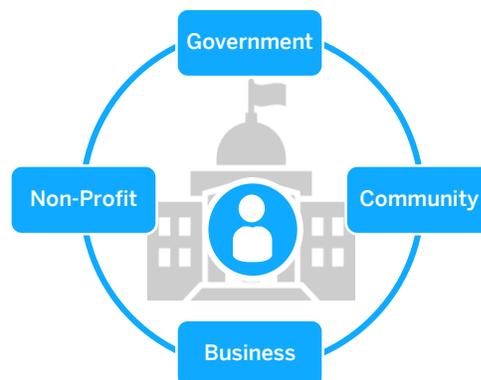
72%

of IT budgets at 3,700 firms surveyed are utilized to “keep the lights on”⁷

FROM: STANDARD PROCEDURES



TO: SERVICE ORCHESTRATION



EXECUTIVE SUMMARY

Digital journey: Steps to run your frictionless government simply

Step 1: Reimagining

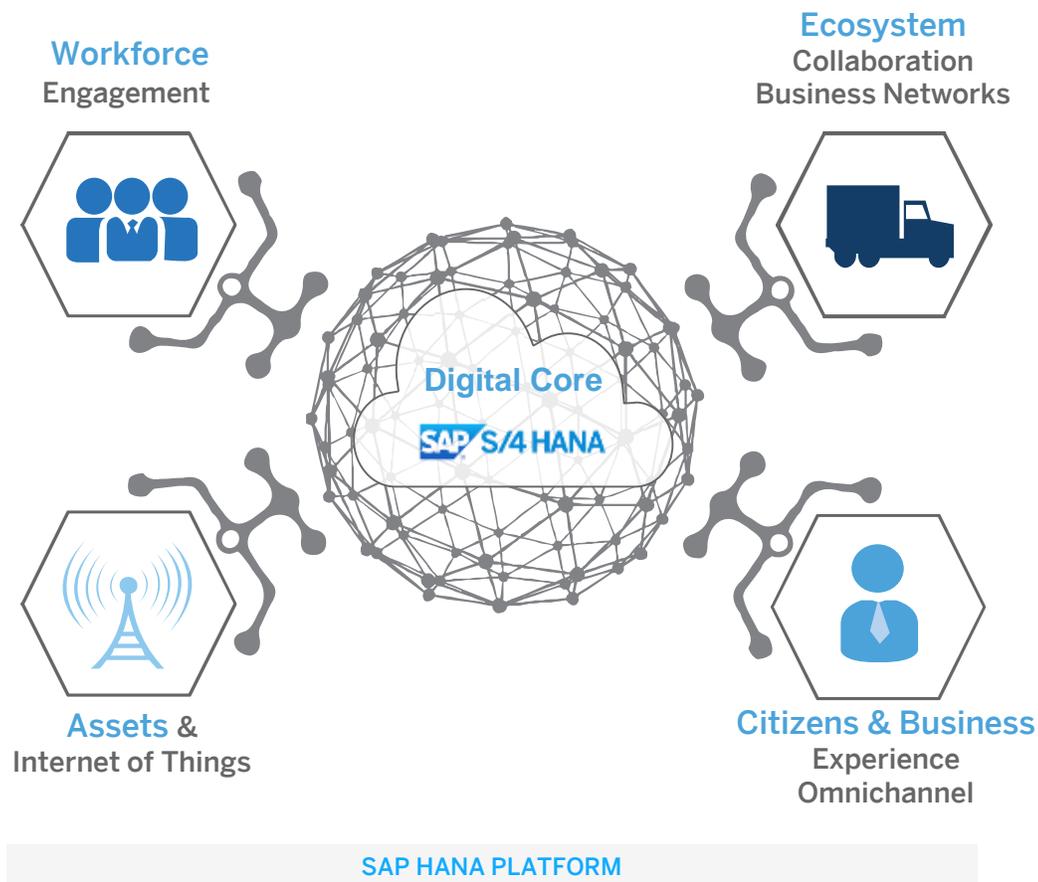
Do you have the right strategy? Start by reimagining government models, government processes and work in government to create a truly Frictionless Government. Focus on the intended outcomes and put your customers at the center of everything you provide. In this phase, we leverage the “we intelligence” of **Design Thinking** to inspire creativity. As an innovation method for products and services, it is a completely new way of posing questions about how we want to live, learn, and work in the 21st century.

Step 2: Digital Business Framework

The reimagining process helps crystalize the future of government. Aligned to the desired outcomes, the right technologies enable agility and a rich foundation for innovation in a secure and trustful digital environment.

SAP’s digital business framework is based on the five key elements of a digital plan and architecture. True digitization connects these elements to achieve better business outcomes:

1. **Re-platform and extend** business processes through a digital core
2. **Improved interaction experience** for citizens, businesses, and government
3. **Ecosystem collaboration** across supplier networks
4. **Data, assets, and the Internet of Things** for increased awareness
5. **Workforce engagement** for improved productivity



EXECUTIVE SUMMARY

Change is here: Five technology trends changing everything

We are witnessing an unmatched era of true business innovation. Breakthrough technologies have matured and hit scale together. According to Forrester, "... empowered citizens increasingly demand **more government transparency, increased operational efficiency, and better government service delivery...**"⁸ **SAP sees five defining trends for our society, economy, and government.**

HYPERCONNECTIVITY

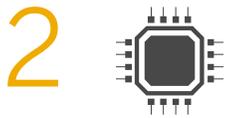


The hyperconnectivity of an "always-on" world allows governments to interact with citizens and businesses in real time, create dynamic services and service delivery models, and ultimately improve livability for all.

Humans as sensors

When an earthquake hit Virginia in August 2011, Twitter users in New York learned about the quake through tweets about 30 seconds before it was felt.⁹

SUPER COMPUTING



Supercomputing plays a key role in creating an intelligent synopsis of different data sources. Governments can leverage up-to-the-minute citizen information to support highly responsive decision-making and predict the likely outcomes of an intervention.

CLOUD COMPUTING



Cloud software is on the rise in the public sector, with faster innovation, lower TCO, and network capabilities. With data privacy and residency being major concerns, most governments will choose a hybrid model, where critical solutions remain on premise and are complemented and integrated with cloud applications.

Rising expectations

"The technology that empowers citizens offers ways for governments to improve service design and delivery. They include: open data and Big Data; embedded technologies and the Internet of Things; integrated and ubiquitous mobility platforms; cloud computing; and next-generation networks."¹⁰

SMARTER WORLD



With objects such as waste bins and streetlamps already getting "smart" and connected, the Internet of Things is changing everything from infrastructure management to how people live smarter in cities and rural areas. With these technologies, a smarter workforce will deliver improved services and be better informed through wearable devices, such as those already in use in many police forces. Even artificial intelligence is no longer beyond the realm of possibility.

CYBER SECURITY



Corporate spying and digital theft are on the rise, but governments are also not immune to attacks on critical infrastructure. Expectations of consumer-grade service delivery lead to increased vulnerabilities. Governments therefore need to address cybersecurity holistically at the enterprise level as well as across the entire government spectrum.

78%

of public sector agencies are using hosted or cloud-based services in 2015 to drive efficiencies, improve flexibility and scalability, and reduce costs (up from just 38 % in 2010).¹¹



REIMAGINING

DIGITIZATION OF OUR SOCIETY AND ECONOMY OFFERS INFINITE OPPORTUNITIES

In a connected world where every public sector agency is becoming a technology agency, smarter services and service delivery models will focus government on outcomes and blur traditional industry lines.

DIGITAL INNOVATION IS REAL

Digitization moves the focus from following a procedure to defining an outcome. It puts customers first – always! Frictionless, integrated, and real-time processes set an end to closed, top-down, bureaucratic, and paper-based transactions.



REIMAGINE GOVERNMENT MODELS

Government “made for me”

Citizens and businesses receive personalized, anticipatory services tailored to their needs, proactively offered by government and triggered by online self-services – or even automatically delivered.

Government as enabler

Rather than providing all services itself, government can become a service coordinator, information broker, and business promoter, connecting all stakeholders on one platform.

Surge capacity

Governments scale operations up (and down) swiftly, smoothly, and productively across networks of resources. Peak capacity is often needed at short notice in extreme situations such as natural disasters, sporting or cultural events, and social crises.

Inclusion and participation

Policies and decisions have much better outcomes when they are based on citizens' insight and ideas. Analysis of sentiments expressed in social networks and e-participation tools help governments understand the electorate.



REIMAGINE GOVERNMENT PROCESSES

Whole-government platforms/ shared services

Sharing government infrastructure, resources, services, and systems is essential to a government-wide digital identification of all participants. “Make citizens tell it only once” is the new paradigm.

Digital by default

Government's structure is often highly complex, with vast networks of agencies and departments. This complexity, however, should not be reflected in its dealings with citizens and businesses. Those seeking information and services from government expect a frictionless and efficient experience. Digitization puts customers and outcomes first – always!

Predict and solve

Be data-driven: use data to drive policy decisions, set goals, measure performance, and increase government transparency.



REIMAGINE WORKING IN GOVERNMENT

Digital mind-set

A savvy government workforce with digital skills must be provided with attractive career opportunities. Incentives and metrics support decision-making agility. Employees are encouraged to develop new ideas and collaborate across functions and hierarchies.

The “social collective”

Government officials collaborate with the public and across agencies on joint platforms.

“Five plus one” senses

Field officers, such as police or law enforcement, make well-informed decisions through real-time integrated, wearable technology in clothes, or with on-body devices such as cameras and glasses.

Predictive decision making and artificial intelligence

The government workforce will be relieved of/supported to handle routine tasks and therefore focus more on outcomes.



REIMAGINE GOVERNMENT MODELS (1/2)

Citizens are no longer unknown consumers to government, services can now be personalized. Government utilizes citizens' expertise, engagement and creativity to collaborate with them for the best possible outcomes. Rather than being the prime provider, government organizes service delivery via a network of partners.

Government "made for me"

For more than two decades, government focused on standardizing business processes and introduced online services to streamline internal processes. This generated remarkable financial, social and political return on investment, thus providing significant public value. But with digital technology, governments can achieve even more:

Frictionless government is about reinventing government models, processes, and work. Reduce costs, yet raise customer satisfaction; routing every citizen or business through the same one-size-fits-all procedure is inefficient and cumbersome. Technology now helps governments to individualize their customers and provide **personalized, self-managed** services.

Insightful online services evaluate all accessible information immediately, guide users during through the jungle of possible transactions, and give individual recommendations. This transforms self-service routines to a **quasi-human interaction**. More so, intelligence from different data sources can even be used to deliver services **proactively** – for example, the

renewal of a business license if a business is still active. Government employees can focus on those cases that need their individual attention and human assessment.

Government as enabler

Governments become **service orchestrators**, enablers, information brokers, and networkers, rather than supplying all services directly. Digital platforms **connect all stakeholders** on one ecosystem, thus facilitating interaction and business in a self-sustained manner. Cities, for example, stimulate the local economy by attracting local retailers, small businesses, restaurants, citizens, and tourists onto platforms with loyalty programs or other gamification characteristics. Employment agencies go far beyond typical job portals and digitally **manage whole ecosystems** of employers, job-seekers, and training providers. Business founders create jobs and therefore receive the necessary support to set up, finance, and operate their businesses. Job seekers are offered learning opportunities to qualify for current and future needs on the job market.



NATURALLY CONNECTED VS. MANAGED AND INTENSIVE

Governments around the globe are embracing the self-service paradigm to improve efficiency and effectiveness in service delivery, segmenting customers based on individual service needs ranging from naturally connected, self-managed, assisted and managed, and intensive.



MODERNIZING GOVERNMENT SERVICES

The Australian government announced it will officially go ahead with a \$1 billion project to replace the 1980s mainframe-driven IT system. "The new system will be designed around the customer, ensuring people are directed to the appropriate services for their situation."¹²



METRO AND MORE

Société de Transport de Montréal attracts riders with a loyalty program that rewards using local retail, services, and event businesses. Advertising is done through a mobile app based on the location of the metro rider, which provides a clear win for everyone: metro, citizens, and local business.¹³



REIMAGINE GOVERNMENT MODELS (2/2)

Surge capacity

Being digitally prepared and connected to the population, governments **scale** operations up (and down) swiftly, smoothly, and efficiently across all **networks of resources**. Peak capacity is needed on short notice in extreme situations like natural disasters, sporting or cultural events, influx of war refugees, or terrorist attacks. A technical infrastructure that mobilizes public and private resources in **real time** and enables immediate communication with all helpers can save people's lives.

With SAP, government agencies and non-profits such as Direct Relief can use the power of the network to ensure they are deploying their people resources effectively and redirecting the resulting cost-savings to making a tangible difference in citizen's lives.¹⁴

Inclusion and participation

Citizens are experts on the ground. If they are not being heard, political interest and election turnout decline. **Public sentiment analysis** helps politicians understand their electorate and act accordingly. Policies and decisions have much better outcomes when they are based on citizens' insight and ideas, fueled into government via **participative collaboration tools**. Open **access to government data** is another means of raising civic engagement; people and businesses can use their insight to share information about their city, design special interest city maps, build communities, help their neighbors, and strengthen local business networks. To improve their services and connect better to the public, governments run hack-a-thons or ideation workshops and collaborate with organizations like CodeForAll, which assigns technology professionals as "**civic hackers**" to governments to bridge the technology gap between government and the public.¹⁵



IMMEDIATE RESPONSE

There is often little to no advance warning when disaster strikes. The American Red Cross therefore leverages Ariba to respond immediately, with information about supplies, deliveries, and inventory now available online and in real time.¹⁶



CONSUMER VS. CITIZEN

Code for America: "When it comes to the big, important things we need to do together ... are we just going to be a crowd of voices, or a crowd of hands?"¹⁷



INNOVATION FOR FREE

City of Edmonton: "No longer do we as the city have to use tax dollars to make applications for citizens. We can put the data out there and people have just made apps on their own. That's game changing."¹⁸



REIMAGINE BUSINESS PROCESSES (1/2)

Frictionless processes integrate physical and digital worlds across all organizations, are data-driven, and eliminate unnecessary administrative steps.

Whole-government platforms

Whole-government platforms share government infrastructure, resources, services, and systems. They realize massive savings and are essential to government-wide identification of every citizen. “Make citizens tell it only once,” is the new paradigm.

Advanced governments issue a secure online identification for citizens that bridges the gaps between agencies without resorting to a single central database of personal information. Australia and New Zealand for example are expanding their “MyGov” platform to a “tell us once” capability where, regardless of how your circumstances change, you can tell the government once and all relevant departments are notified.¹⁹

Integrated, real-time processes are frictionless and overcome existing boundaries not only between government and the public, but also between government organizations. They even support cross-border public services, such as a common framework for citizens' electronic identity management, and therefore act as a supranational platform.

Becoming digital by default

Each and every new service or product the public sector offers will be digitally accessible. Known streams of governmental revenue generation (taxation) might soon shrink and therefore have to be reasonably adapted to also cater for new digital business models, especially in the growing shared economy (AirBnB, Uber, etc.).

Digitization puts the customer first – always. Processes are no longer optimized to government needs and traditions but designed in a strictly outward-looking manner. They make the interaction with government frictionless and easy for citizens and business. Rather than following procedures for traditional reasons, governments will focus strictly on intended outcomes, define them precisely, and hold themselves as well as their partners accountable for them.



€50 BILLION POTENTIAL

In Denmark, electronic invoicing saves taxpayers €150 million and businesses €50 million a year. If introduced across the EU, annual savings could exceed €50 billion. In Italy alone, e-procurement systems cut over €3 billion in costs.²⁰



THE PORT OF HAMBURG

brings together port and road traffic conditions, truck availability and incoming/outgoing shipment schedules to reduce idle truck/ship time. The solution allowed the port to more increase container handling capacity by 178% within the same land area.²¹



REIMAGINE BUSINESS PROCESSES (2/2)

Predict and solve: be data-driven

- Governments require a wide variety of data to learn, simulate, and predict. Data can be collected from people, systems, sensors, devices, and many other sources such as disparate software systems, statistics, registers, or social media
- In-memory databases translate Big Data into meaningful information in near real time to equip the government decision-maker (a human or even a machine) with all necessary information to predict and solve problems. In the management of disasters and public security, this saves lives and builds resilience in the event of crime and natural or man-made catastrophes
- Big Data also helps in understanding and focusing the social and economic impact of government activities in public health, social protection, or economic stimulus programs
- Prediction models optimize not only the repair cycles and investments in infrastructure, but also its real-time utilization, such as traffic management. Rather than investing in enlarging the existing infrastructure, traffic through-put of streets, bridges, or harbors can be optimized



POSITIVE OUTCOMES

New Zealand focuses digitization where it really drive outcomes and improvement for citizens and the economy. “We never emphasized outcomes like reduced cost of services or savings – but these would be by-products of better outcomes for New Zealanders.” An early sign of things to come was the successful introduction of a new online passport system. Within two years 300,000 had been renewed online – 40.3% of all adult renewals, and growing.²²



BUENOS AIRES

“SAP software technology innovation contributes to more efficient management of the city, simplifies our operations, and greatly improves the quality of life for all the people living here.”²³



DATA TO LIVE

In 2011, Indiana had the 6th highest death rate for child births in the United States, or 7.7 deaths per 1,000 live births. By analyzing a wide variety of sources that span both state and federal agencies, the state can get a complete picture of the problem. Using analytics gives insights to caseworkers. Understanding complex situations based on years of experience is something the state hopes to tap into by building algorithms to identify solutions for its citizens.²⁴



REIMAGINE WORKING IN GOVERNMENT

Digitized citizens and businesses require a digitally savvy government workforce to deliver on their needs. A new performance-oriented mind-set is needed with digital tools to help identify, recruit, retain, educate, and promote the most engaged staff.

Digitization – the opportunity for government stakeholders and officials

Future-ready government will achieve innovation by transforming its workforce. The expected surge of IoT-connected assets with mobile-connected officials, businesses, and citizens allows simplified process execution, reducing manual process steps.

It is time for government to attract, develop, and retain strong digital competencies in its workforce. Current retirement rates create the opportunity to recruit new digitally savvy talents. The workforce of the future expects interactive technologies that improve user experience, predictive technologies to handle mass and day-to-day tasks, and a career framework to assume responsibility for outcomes and enable personal growth.

Governments are the largest workforce on the planet. Digitization will help identify, recruit, retain, educate, and promote the most engaged staff, with fast-track growth opportunities for high potentials. It will help to unleash the power of this workforce to deliver better outcomes with:

- **Digital mind-set:** Up-skill the government workforce in technical, digital, and managerial skills and provide attractive career opportunities for digital talents. Incentives and metrics support decision-making agility. Employees are encouraged to develop new ideas and collaborate across functions and hierarchies
- **Social collectives:** Create adaptive platforms for participants to share, collaborate, and build new citizen, community, and cross-agency relationships. Make appropriate decisions based on viable and crowd sourced information
- **“Five plus one senses”:** Improve individual and team cognitive performance through real-time analytics. Field officers, such as police or law enforcement, make well-informed decisions through real-time embedded technology in clothes, or with devices such as cameras and glasses attached to their body.
- **Predictive decision making and artificial intelligence** will help to handle mass and routine tasks and focus on better outcomes by supporting with relevant and personalized content. Powered by data analytics, they will leverage the available information to make proactive decisions



THE WORKFORCE OPPORTUNITY

In Germany, Italy, Belgium, and Sweden, over 40% of the government workforce will soon reach retirement age.²⁵



REFOCUSING WORK

With rapidly evolving technologies, the digitization of the workplace and government processes will refocus and even eliminate some work, (e.g., call center worker jobs are at a 75% risk for replacement.)²⁶



SKILLS IMPROVEMENT

Workforce technology skills development will continue to lag. The need for technology skills will grow over the next three years, especially in analytics and programming/development. 48% of employees surveyed say analytics skills will be needed by employees in three years, and 59% say programming/development skills will be needed.²⁷

BREAKTHROUGH INTO DIGITIZATION: IN-MEMORY COMPUTING

Insightful decisions + **real-time** transactions = **frictionless** government

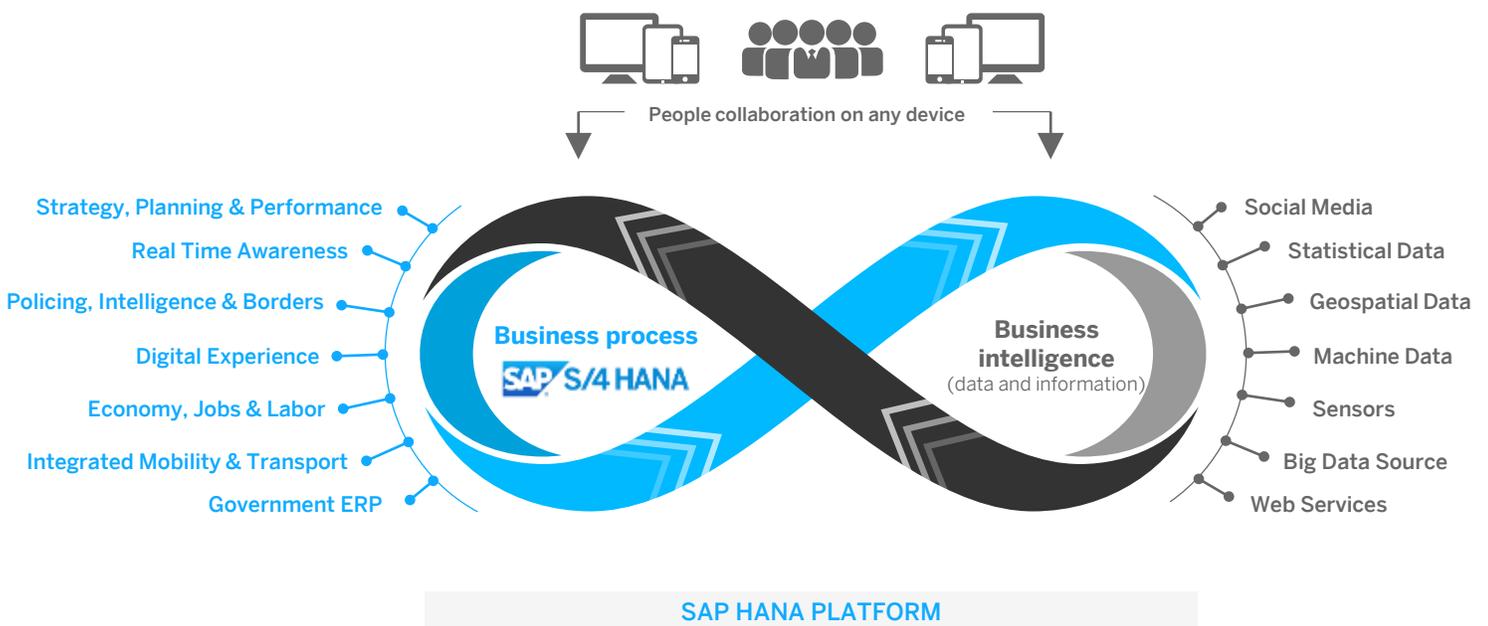
At the heart of an agile, frictionless government is a simple idea: a person or machine is perfectly equipped with all the necessary information to predict, decide, and act.

To make this happen, we have combined **transactions and analytics on the same platform**. Uniting structured data (e.g., finance) and unstructured data (text, video, voice) will change the way governments plan, act, and innovate. The necessary speed comes from a breakthrough innovation: **in-memory computing** on the SAP HANA platform.

The transformative power of in-memory computing unleashes a **groundbreaking reimagining** of government **models, processes, and work**. Governments become frictionless when they:

- **Leverage Big Data** from sensors, weather, social, and geospatial sources to achieve real-time situational awareness about disasters in order to derive the best possible decision and procedure, executed by people or processed machine-to-machine
- **Interoperate** with other government agencies and private business partners in real time via advanced cloud-based business networks to leverage loyalty programs to drive adoption of both private and public sector offerings
- **Modernize government processes**, running them in real time with neither data replication nor batch programs, ultimately leading to individualized and tailored service delivery, acknowledging specific needs of each applicant for social benefits

SMARTER DECISIONS + SMARTER TRANSACTIONS = SMARTER BUSINESS





DIGITAL BUSINESS FRAMEWORK

THE SIMPLE APPROACH TO FRICTIONLESS GOVERNMENT

Every government across all levels requires a simple digital approach to build a pragmatic and executable vision on its digital strategy.

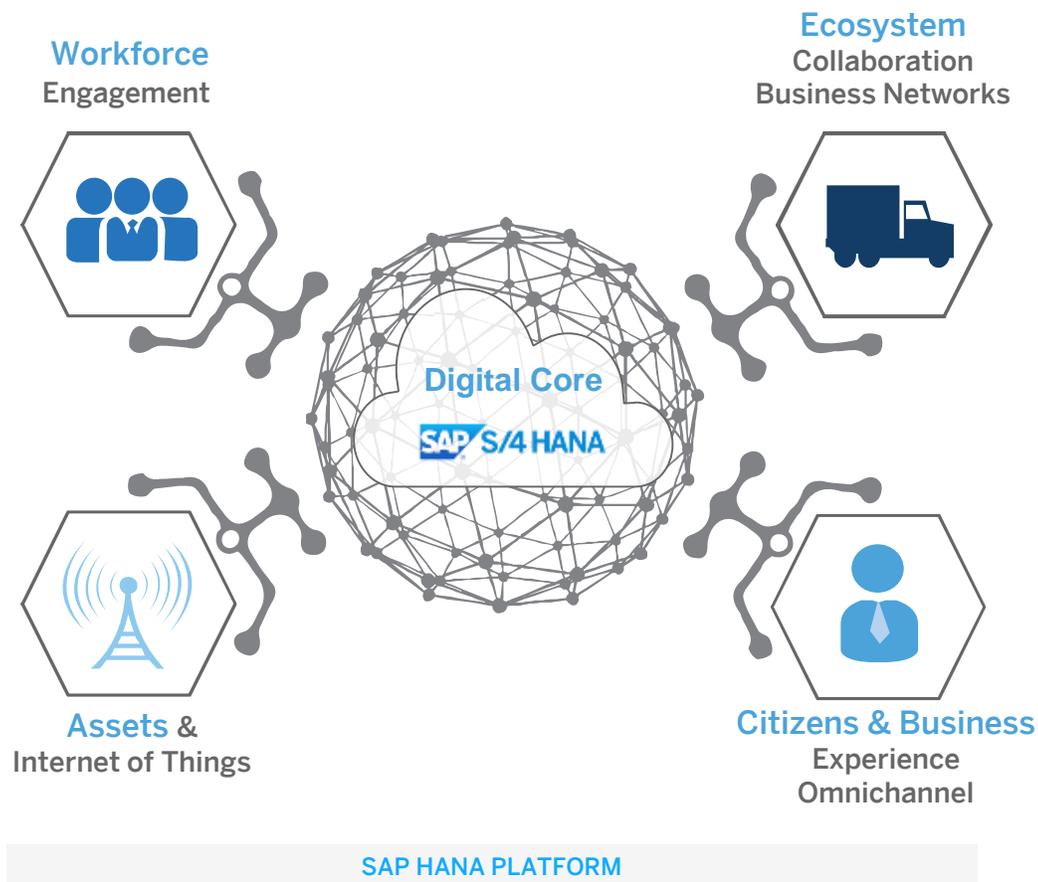
THE SAP DIGITAL BUSINESS FRAMEWORK

Business digitization means **simplification and innovation**

SAP understands the five technology trends, and we also understand that these ever-changing requirements are big challenges for governments. As a result, we have built a structured framework to think through how to develop and execute on your digital business strategy: the **digital business framework**.

With this framework, the entire value chain will be digitized, including the core, which serves as the platform for innovation and business process optimization. Every company can develop a digital strategy across these five pillars:

1. Re-platform **business processes** and bring together transactions and analytics in real time to be smarter, faster, and simpler
2. **Interaction experience** for citizens, businesses, and government
3. **Ecosystem collaboration** to maximize savings and ensure compliance
4. Leverage data, **assets, and the Internet of Things** to drive real-time insights and customer services
5. Smarter and faster **workforce engagement** across all employees and contractors





THE DIGITAL CORE

The new generation of ERP software runs **simple**, in real time, integrating predictive analytics, Big Data, and mobile.

With in-memory computing, running in reactive mode is eliminated, as are technology limitations that in the past led to cumbersome work-arounds. Instead, every government employee can use **prediction and simulation** tools to make the right decision. Public organizations have the **choice to deploy** in house, in the cloud, or in a mixed environment. In-memory computing will also **reduce TCO**, freeing up more budget for innovation, and a **consumer-grade user experience** drives adoption, user engagement, and ultimately productivity.

This is SAP's Run Simple approach.

Simplify with SAP

Currently SAP S/4HANA is the only end-to-end solution that covers all business processes and runs in-memory. It helps governments thrive in the face of uncertainty and threats, streamline their processes, and efficiently meet the increased demands of compliance, budget constraints, transparency, and accountability. Government agencies can optimize their processes and reduce TCO to predict and solve in real time, make better decisions, achieve omnichannel interaction with citizens and business, and tailor service delivery.

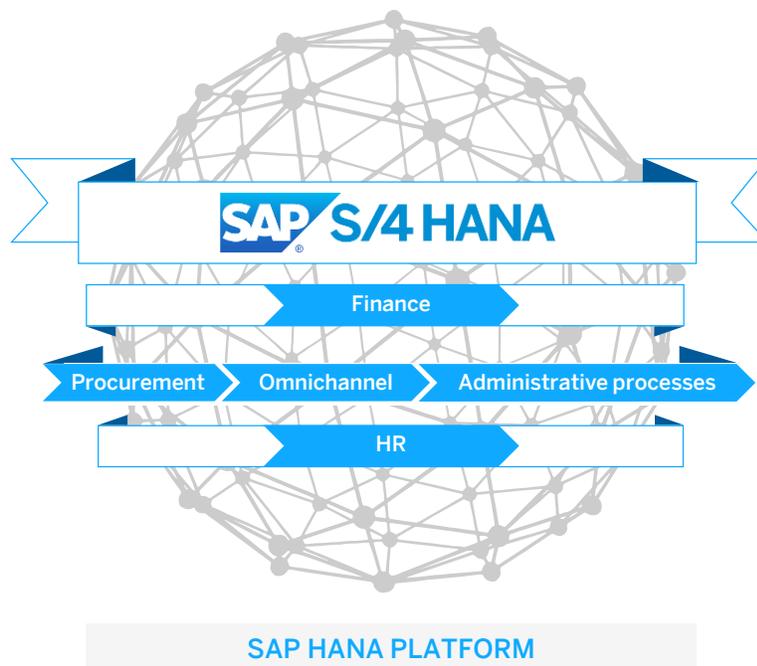
In addition, the SAP HANA platform can be the single enterprise data source leveraged by SAP S/4HANA and the rest of your solution landscape.

87%

of finance executives agree that meeting growth targets requires **faster data analysis**, but only 12% are able to respond to information requests in real time.²⁸

5.5 hours to 4 seconds

Reduction in retrieval times for weather data. Korea Meteorological Administration (KMA) introduced SAP HANA to help businesses, such as fisheries, and citizens live and work with greater confidence.²⁹





INTERACTION EXPERIENCE FOR CITIZENS, BUSINESSES, AND GOVERNMENT

Digital technology has **changed the game**, but users **changed the rules**. They demand simple, seamless, personalized experiences across **any channel, anytime, anywhere, and on any device**.

Citizens – and businesses – demand frictionless and responsive customer services from their government, just like what they receive from leading private companies. Today’s users are driving a major **channel shift** from traditional face-to-face and phone conversations to mobile, social media, and Web self-service. Customers choose from multiple channels at their convenience. They expect their own customer journey to be **personalized** and consistent.

During these transactions, governments can sense and respond to customer needs in real time based on known, **predictable** life events and the comprehensive information at hand.

Digitize your end-to-end customer experience with SAP

SAP customer engagement and commerce solutions, powered by SAP HANA, enable a 360-degree view of your customer, real-time interaction, and sophisticated predictive analytics, fully integrated to the core transactional system. They can help governments:

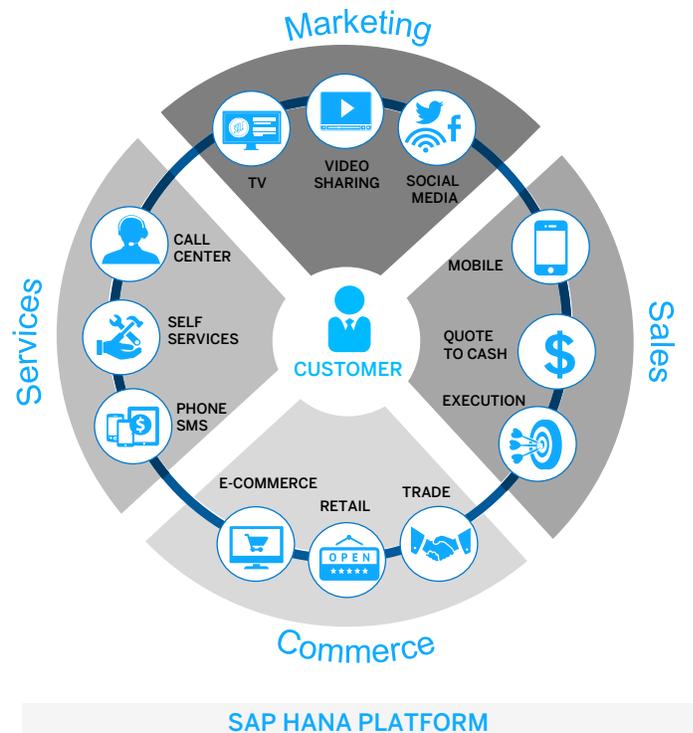
- **Orchestrate business processes** across marketing, online self-service/commerce, sales, and service
- **Deliver personalized experiences** in context with each interaction
- **Create a single, harmonized experience** for your customer while reducing the burden on employees
- **Engage your customers on the channels they choose** at any moment in their journey
- Fully **integrate** with your core business processes and systems

From 55 to 85 %

In 2014, 55% of customer service interactions do not require human assistance, This is expected to grow to 67% by 2017 and to 85% by 2020.³⁰

One source

Cardiff Council: “We have to work with lots of agencies and it can be hard to connect directly with partner networks. By creating a space accessible to all, folks can get access to the same data, and therefore collaborate and deliver more joined-up services”³¹





WORKFORCE ENGAGEMENT

The world is getting **smarter** in the digital economy, but **complexity is impeding the workforce** in this pursuit.

People are working harder than ever but not necessarily accomplishing more. In government, they often don't have the technology to work smarter, faster, and better.

Governments must attract young employees to replace the "silver tsunami" of the **aging workforce** and sustain service levels. Governments can drive agility and reduce fixed costs by turning more and more to **contractors** and services providers. They must improve collaboration, communication, and best practices internally and with the **contingent workforce**.

Governments must develop **talent management** strategies to better reflect their strategic values and mission, accelerating onboarding and knowledge exchange and focusing on **continuous development** and compliance.

83%

of executives indicate they're increasingly using contingent workers – at any time, on an ongoing basis.²⁷

34%

of executives feel that they've made progress in building a workforce that can meet future business goals.³²

Improve your total workforce productivity: Simplify with SAP

SAP S/4HANA + SAP SuccessFactors solutions + SAP Fieldglass solutions + SAP Fiori provide the tools for total workforce engagement and advanced analytics.

- Recruit and onboard the **best workforce**, simplify their work, and ensure that regulatory and compliance requirements are met
- Manage the **total workforce lifecycle** from recruiting to onboarding, performance, compensation, and learning – all in one place
- Enable the workforce with **smarter apps** to easily access the **right information** across any device and through a dramatically **simplified user experience**
- **Ensure surge capacity** by easily on- and off-boarding a flexible contingent workforce



SAP SuccessFactors



SAP Fiori



SAP Fieldglass



ECOSYSTEM NETWORKS AND SUPPLIER COLLABORATION

Trillions of dollars worth of commerce moving through silos + thousands of public organizations attempting to innovate on their own = **lost opportunity** to improve the lives of millions of citizens.

Collaboration within, across, and outside an organization is key to value creation and impacts the delivery of critical services via supply chain and procurement. A network that is open only to certain suppliers (travel, personnel, goods, and services) is valuable to its limited ecosystem, but a vertical network that connects to other vertical networks in real time is revolutionary.

Connecting vast ecosystems means exponential data growth generated and consumed by networks – Big Data gets even bigger. Connecting millions of business partners and processing petabytes of data in real time demands a new kind of platform to realize the immense potential. Only SAP offers the platform to meet this challenge with SAP HANA.

Simplify supplier collaboration with SAP Business Networks

SAP S/4HANA gives you incredible capacity to digitize business processes across and beyond the four walls of your government to ecosystems of public and private partners.

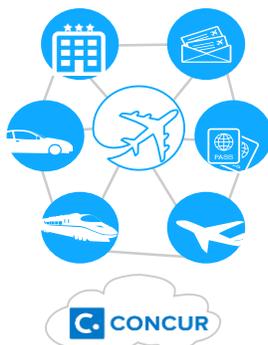
- **Business networks operate on a global basis**, meet data security standards, and operate at industry-best standards
- **SAP Ariba, SAP Fieldglass, and Concur cloud solutions** for travel, direct and indirect material, and labor and services. Connected, effortless, and at scale
- **Services from partners** vastly extend the value of core offerings

Networked companies are **50% more likely** than their peers to have increased sales, higher profit margins, and be a market leader³³

50–75% faster transaction cycles are being achieved with the Ariba Network³⁴

25–50% of travel bookings are “out of compliance” with limited corporate control or visibility⁵

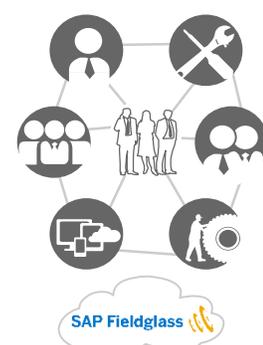
Travel and entertainment



Direct and indirect material



Labor and services





ASSETS AND THE INTERNET OF THINGS

In the digital world, everything will be “aware” – potentially connected to all other things by the network. Cities, for example, will very simply become focal points and prime adopters of the Internet of Things.

Soon tens of billions of devices and other physical objects will be connected, generating vast amounts of data. Connecting the sensors, devices, and networks to the business processes in an integrated way will allow governments to predict business and operational outcomes, and consequently take proactive or automated actions to:

- Optimize traffic flow and parking and avoid bottlenecks before they happen
- Improve tax compliance by sending point-of-sale transactional data to check with summary tax declarations
- Improve infrastructure uptime, predict failures, and optimize maintenance cycles, thereby reducing spent on unplanned procurement, maintenance and repair, and overhaul efforts
- Prevent, prepare for, respond to, and recover from disasters, leveraging sensor data from assets, weather forecasts, and real-time insights into resources and support needs

SAP turns data from sensors, systems, citizens, and employees into real-time insights

With SAP HANA, Internet of Things (IoT) edition, organizations can now take embedded device data, analyze the data into information in real time, and leverage this information across the value chain to drive business insights, predict and act, and even create new operational models.

6.4 billion

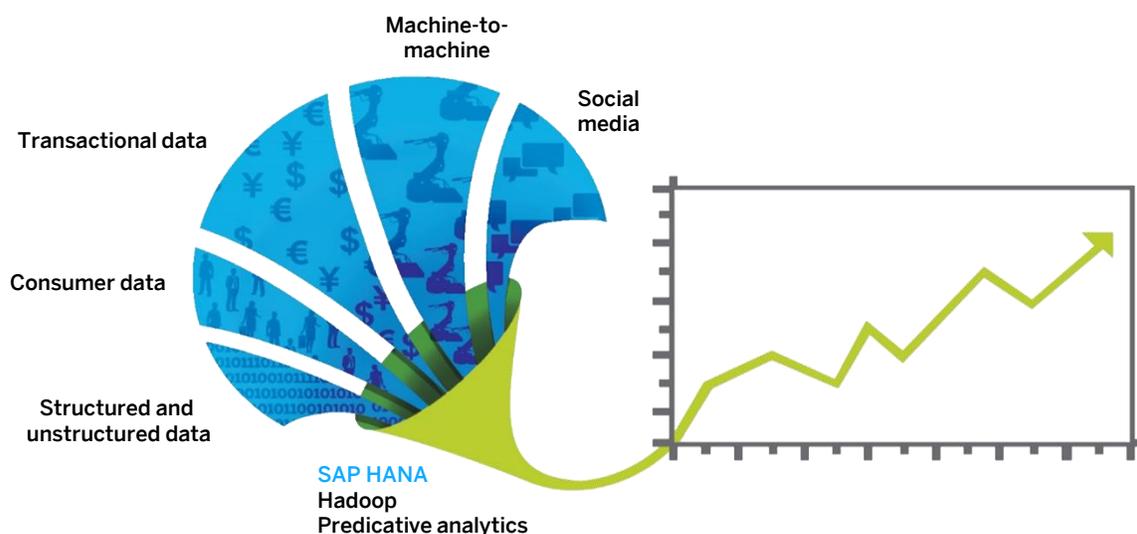
connected things will be in use worldwide in 2016, up 30% from 2015, and will reach 20.8 billion by 2020.³⁵

\$4–11 trillion

estimated potential economic impact of the Internet of Things per year by 2025.³⁶

€ 177 billion annually

Connecting point-of-sale systems with tax analytics and predictive solutions help address the staggering estimated €177 billion in revenues lost due to non-compliance or non-collection in 2012.³⁷



SAP HANA PLATFORM – A NEW COMPUTING PARADIGM

SAP HANA is the platform for innovative, frictionless government

Dream, develop, and deliver

SAP HANA Cloud Platform enables you to rapidly build and deploy modern, innovative cloud applications connected to your other enterprise applications. The SAP HANA Cloud Platform gives you the mobile, collaboration, integration, and analytic capabilities to support the following scenarios in a digital government:

- **Extend existing cloud or on-premise** solutions to support more modern and digital business processes, allowing you to serve your constituents better
- Easily connect and consume [Big] data from any internal or external data source, and then use native **real-time analytics and predictive capabilities** to solve big problems for your constituents, manage internal performance, optimize funding decisions, reduce fraud, and improve transparency
- Quickly build and deploy innovative **consumer-grade apps** for today's always-on, mobile, social, and data-driven world
- **Extend storage capabilities** and manage all structured, unstructured, and infinite data streams with flexible combinations of data stream processing, in-memory technology, disk-based columnar storage, and Hadoop-based storage solutions
- Significantly **reduce memory footprint** and TCO. In ERP systems, we have seen ~6x reduction by SAP HANA's dictionary compression. Removing aggregates and actual and historical data separation further reduces the footprint to ~10x

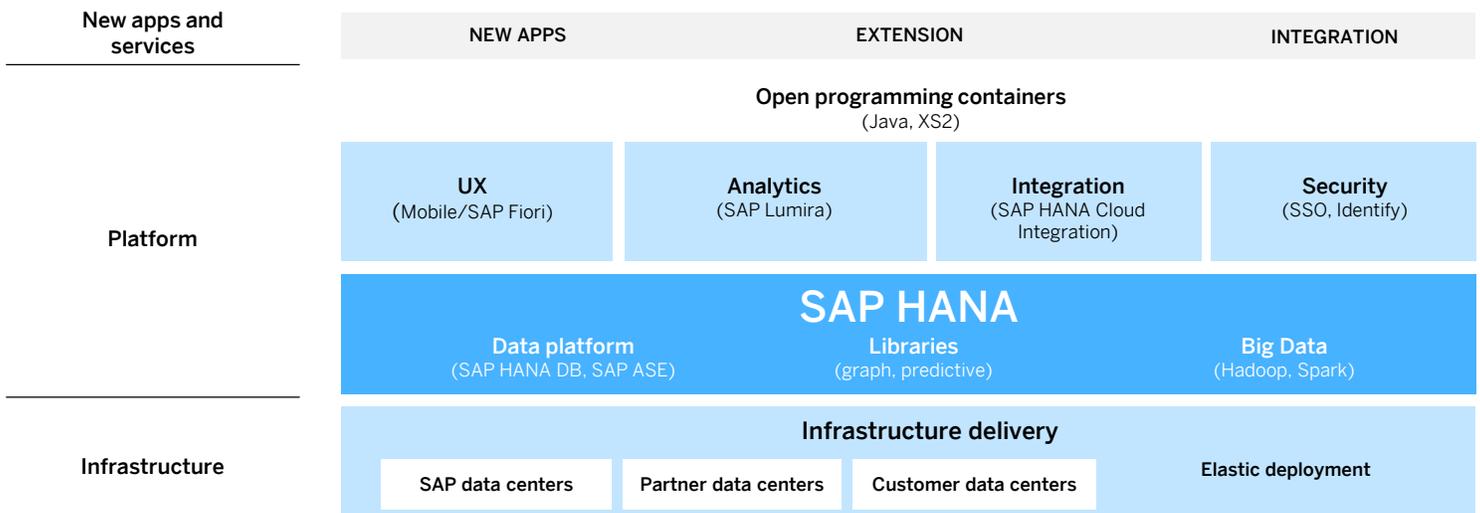
Hamburg Port Authority

"The smartPORT logistics platform running on SAP HANA Cloud Platform has allowed us to **double cargo handling capacity**.

The more partners participate, the more effectively the port will run."³⁸

The SAP HANA platform is...

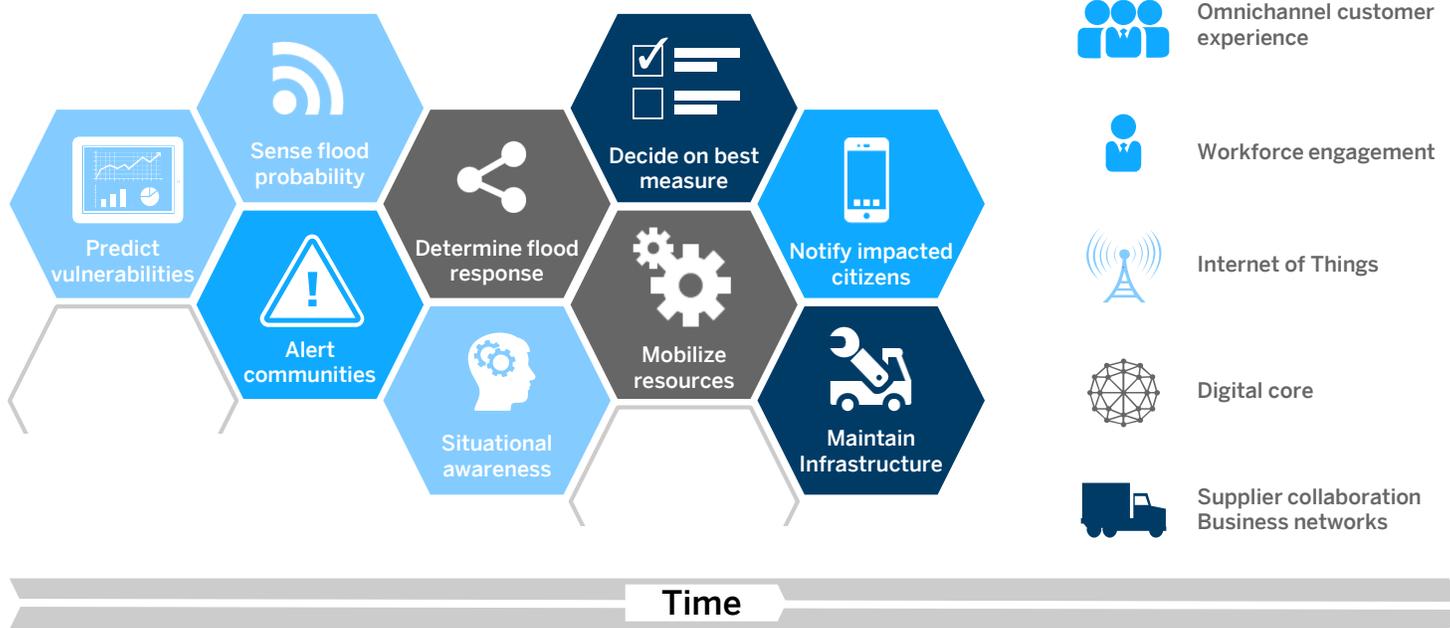
Real-time, in-memory platform • 10x data footprint reduction for ERP • Extended storage, including Hadoop • Open architecture • Developer-friendly • Embeds mobile and analytics • Secure • Cloud-ready



HOW DOES IT ALL COME TOGETHER? – EXAMPLE

While the five digital business pillars deliver significant value as stand-alone capabilities, the ultimate goal is to design the next generation of government solutions that will span across all the digital pillars, leaving organizational boundaries and technology friction behind. Citizens come first when government orchestrates all activities to provide personalized services and solutions – at the right time by the right partner.

BUILDING DISASTER RESILIENCE



The scenario above shows how flood resilience can be improved across the spectrum of disaster preparedness, response and recovery.

The manager of the intelligent operations center has just **received an alert** that the **probability of flooding** has increased dramatically, and the **predictive tool has advised initiation of a flood action plan**. Immediately citizens, businesses, and officials **receive an alert on their devices notifying** them of the flood risk and steps they can take.

Previous flood history and patterns are combined with **real-time data from rain flow sensors** in drains and **resource information** so **skilled and available resources can be deployed** to the right places. Response follows a well-defined flood response plan, using **situational awareness** to continuously monitor ongoing needs and tasks. Available resources are mobilized and deployed **using intelligence from different sources**, guiding teams through their individual tasks and capturing insights from **wearable devices to assess localized needs and impacts**.

The flood is managed successfully with minimal impacts, **contractor teams are deployed to effect repairs, and citizens receive tailored information and services** to help anyone affected with support.

- **Anticipate:** Better predict risk and understand vulnerabilities to disasters and other extreme events
- **Absorb:** Build greater capacities to absorb future shocks and stresses; mitigate consequences
- **Adapt:** Reshape policies, programs, and strategies to reduce local risks and deliver more resilient outcomes
- **Outcome:** Save citizens' lives, protect their property, and minimize economic losses



HOW TO START

**RUN A TRANSFORMATION AGENDA
TO IMPLEMENT SIMPLIFICATION
AND INNOVATION, WITH
FRICTIONLESS GOVERNMENT AS
THE RESULT**

HOW TO BECOME A FRICTIONLESS GOVERNMENT

Digital, frictionless government requires the implementation of two key concepts: **simplification** and **innovation**.

- **Simplification** is all about doing what we are already doing, but better, faster, and cheaper
- **Innovation** is all about reimagining government and public value by leveraging the five technology trends

THE COLLABORATIVE VALUE AND INNOVATION FRAMEWORK

Governments need to reimagine everything they do with a focus on intended outcomes. Digitization of administrative processes might even require regulatory changes. Answering the key questions, “What role will we play in a digital society and economy?” and, “How can digital technologies help us deliver more public value – politically, socially, and economically?” will provide direction for reimagining your government model, processes, and work.

SAP has developed a framework that will be a continuous and holistic partnership model designed to drive true collaboration and engagement. Outlined below are the five steps of **SAP’s collaborative value and innovation framework**:



- 1. Strategy alignment:** Define agency strategy alongside political goals. Understand SAP strategic direction and identify transformation initiatives
- 2. Opportunity assessment:** Opportunity deep-dive based on strategic initiatives and prioritization based on public value
- 3. Solution road map and ROI :** Document end-state solution and business case including benefits, public ROI (political, social, financial), TCO, and strategic road map
- 4. Value realization:** Deliver transformation on time, on budget, and on value
- 5. Governance:** Maximize investments and accelerate value creation with governance based on executive engagement, value delivery, and continuous innovation



WHY SAP?

BUSINESS DIGITIZATION IS A NATURAL NEXT STEP FOR THE #1 BUSINESS APPLICATION COMPANY

It took years of innovation, strategic investment, and the forging of new strategic relationships to build the end-to-end digital business platform.

SAP IS COMMITTED TO INNOVATION

- Vision** Help the world run better and improve people's lives
- Mission** Help our customers run at their best
- Strategy** Become the cloud company powered by SAP HANA



- **25+ years** of public sector experience
- **77K employees** representing 120 nationalities
- **300K customers**, 25K in public sector
- SAP operates in **191 countries**



- Solutions for **25 industries and 11 lines of business**
- **Broadest and deepest solution portfolio** for public sector on the market
- **74% of world's transactions** managed on SAP



- **95 million** business cloud users
- **2.0 million connected** businesses
- **\$740 billion+** in B2B commerce
- **99%+ of mobile devices** are connected with SAP messaging



- 2011 **SAP HANA** launched
- 2012 **SAP Cloud** launched
- 2014 **SAP business networks** the largest marketplace in the world
- 2015 **SAP HANA Cloud Platform**
- 2015 **SAP S/4HANA**: most modern ERP system

INCREASING RESILIENCE IN NSW

New South Wales is now able to have a comprehensive view of fire and disaster risk to **protect 7 million residents**. 30+ years of training and experience are available for each worker real-time in SAP HANA. This ensures that the right people address emergencies at the right time.³⁹

PROVIDING JOBS FOR THE FUTURE

A government among the G20 countries leverages SAP to provide a learning environment to **upscale 2.8 million** job seekers, **pay benefits** to up to 4 million beneficiaries, and offer cohesive, omnichannel access to job seekers through Web and mobility solutions.

IMPROVING SERVICES IN CARDIFF

With the help of SAP customer engagement and commerce solutions, Cardiff City Council is able to provide an **improved and seamless service experience** across multiple channels and departments, despite shrinking budgets.³¹

SAP GLOBAL SERVICES AND SUPPORT TO DRIVE YOUR SUCCESS

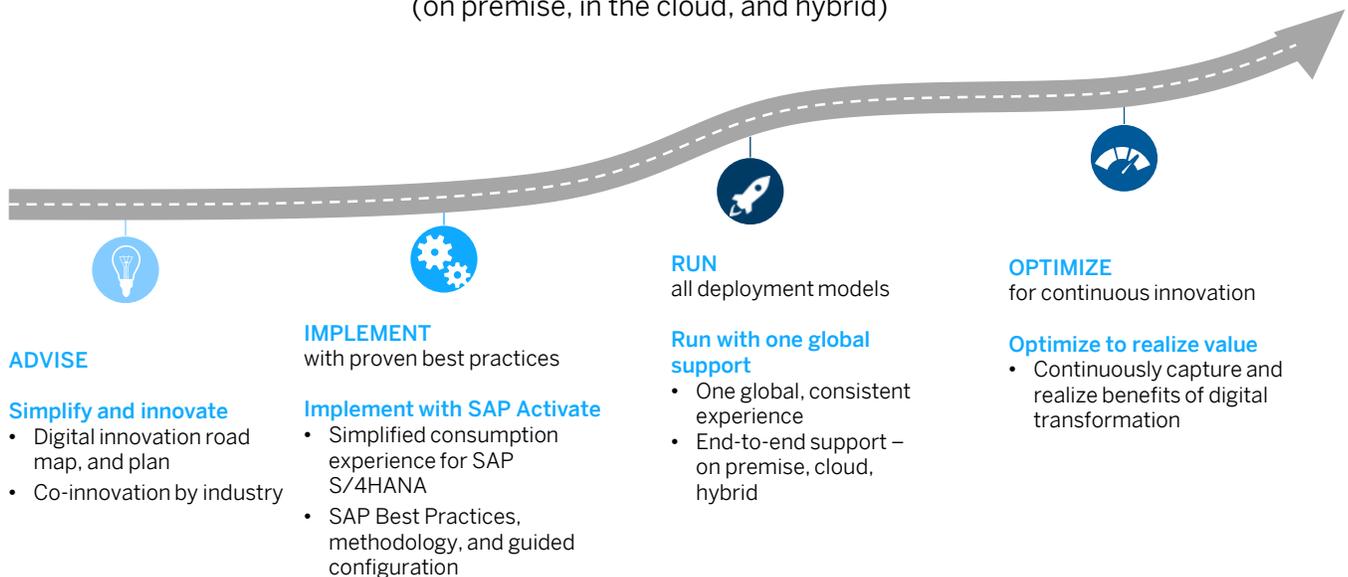
In the digital economy, simplification and business innovation matter more than ever. SAP has a broad range of services to cover the end-to-end digital transformation journey, ranging from long-term industry expertise to leveraging advice on a digital innovation road map and plan, to implementing with proven best practices, to the ability to run across all deployment models, and ultimately optimize for continuous innovation across your digital journey. SAP provides both choice and value within our services, allowing you to tailor the proper approach based on your needs.

Turn to the 30,000 consultants and support professionals who can bring your digital strategy to life. SAP's Global Service & Support (GSS) organization provides a consistent, secure experience – on premise, cloud, or hybrid. GSS has the expertise, assets, and the proven methodologies required to accelerate business innovation, reduce TCO, and run a stable platform (on premise or in the cloud).

SAP Activate is a new, simplified consumption experience introduced for SAP S/4HANA and cloud adoption. It provides a combination of SAP Best Practices, methodology, and guided configuration. In addition, we offer leadership in learning to drive quick time to value realization and a solid engagement foundation with SAP MaxAttention, SAP ActiveEmbedded, and SAP Value Partnership across the end-to-end customer lifecycle.

SAP HANA Enterprise Cloud is the optimal springboard to the cloud for customers. It offers an attractive option for organizations that are eager to leverage SAP's latest innovations, such as SAP S/4HANA, with the peace of mind that SAP is in the driver's seat.

Global Service & Support for the expertise, assets, and proven methodologies required to accelerate business innovation, reduce TCO, and run a stable platform (on premise, in the cloud, and hybrid)



Learn | Extend / Innovate | Engagement Foundation | Support



EUROPEAN SCHOOLS

"SAP S/4HANA Finance [formerly SAP Simple Finance] empowers our users with more control and drives greater accountability. We have a complete solution that meets all our needs. And SAP HANA Enterprise Cloud means that we did not need to invest in IT staff to maintain the system."⁴⁰

SAP COMPREHENSIVE ECOSYSTEM

Orchestrating the world to deliver faster value

Our comprehensive ecosystem for public sector offers:

- A wide range of business services (OEM suppliers, banks, key vendors)
- Special cloud services for government with the highest data security standards
- Open architecture: choice of hardware and software
- Complementary and innovative third-party solutions
- Reach – partners to serve your business of any size, anywhere in the world
- Forum for influence and knowledge
- A large pool of industry experts with broad and deep skill sets

Our partner ecosystem includes, among others:



BUSINESS NETWORK

- 2.0 million suppliers
- 200 major travel partners (air, hotel, car)
- 50K service and contingent labor providers

INFLUENCE FORUMS AND EDUCATION

- 32 user groups across all regions
- 40+ industry councils
- SAP community >24 million unique visitors per year
- 2,650 SAP University Alliances

INNOVATION

- 1,900+ OEM solution partners to extend SAP solutions
- 2,700 startups developing SAP HANA apps



CHANNEL AND SME

- 1200+ public sector-focused channel partners

IMPLEMENTATION SERVICES

- 400+ public sector-focused service partners
- 3,200 general service partners
- Delivering 40+ industry-specific solutions for government

PLATFORM AND INFRASTRUCTURE

- 500+ public sector-focused cloud partners
- 1,500+ platform partners

ADDITIONAL RESOURCES

Outlined below is additional external research that was used as supporting material for this white paper.

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Note: All sources cited as "SAP" or "SAP benchmarking" are based on our research with customers through our benchmarking program and/or other direct interactions with customers

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