IDC | ANALYZE THE FUTURE

The Key Elements to the Successful Digital Transformation into a Smart City

A foundation of smart cities is a strong, ubiquitous network.

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Navigating This InfoBrief

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Executive Summary

Smart technologies continue to be a vital part of city infrastructure investments, accelerating digital transformation and driving improvements to constituent service delivery.

- The effects of COVID-19 on how governments operate has been substantial, with more services relying on digital channels than ever before. Expect many formerly in-person services to remain digital beyond the pandemic.
- Connectivity is a foundation for success, with 26.2% of thriving Smart Cities using highly available and secure networks in order to meet needs for operational resiliency.
- CIOs are also focused on building trust. As services continue to go digital, constituents need to know their information is secure throughout the entire process.

What Is a Smart City?

Smart Cities focus on economic development, sustainability, innovation, citizen engagement, and building an ecosystem of partners to fundamentally change and improve the quality of life for residents.

Smart Cities' digital mission is to catalyze the digital transformation of an urban ecosystem to meet environmental, financial, and social outcomes.

Smart Cities and Communities use emerging technologies such as data analytics, cloud, big data, mobile technologies, social networking, the Internet of Things (IoT), artificial intelligence (AI), next-generation security, and augmented reality (AR) to find innovative solutions to urban challenges.

THE DIGITAL TRANSFORMATION OF AN URBAN ECOSYSTEM

By 2026, 20% of city products and services will be delivered using high-touch digital and hybrid digital/physical experiences.

Source: IDC FutureScape: Worldwide Smart Cities and Communities Predictions, 2021

Smart City Innovations Yield Concrete Benefits

Digital transformation (DX) is a journey of large-scale change that helps organizations manage and embrace innovation and digital disruption instead of merely updating or enhancing existing processes, technologies, and models.

As governments seek to realize tangible benefits from technology, DX has provided an excellent path to providing real value to constituents. This process of innovation has resulted in several benefits to organizations from cost efficiencies to employee retention to productivity improvements. These improvements are touching government services across the many traditional siloed domains.

What Benefits Have You Seen From Your Digital Transformation Efforts? (Top 10)

Source: IDC Global DX Leaders Survey 2019; government sample | n=151

Smart Cities and Communities Need to Prepare for the Future

The future city will blend physical and virtual experiences for constituents, local businesses, visitors, and employees by offering them a mix of onsite, remote, and contactless services. IDC predicts:

By 2022, 40% of public safety agencies will use digital tools, such as live video streaming and shared workflows, to support community safety.

By 2022, 40% of cities will use digital space planning tools, such as digital twins, to speed socioeconomic recovery.

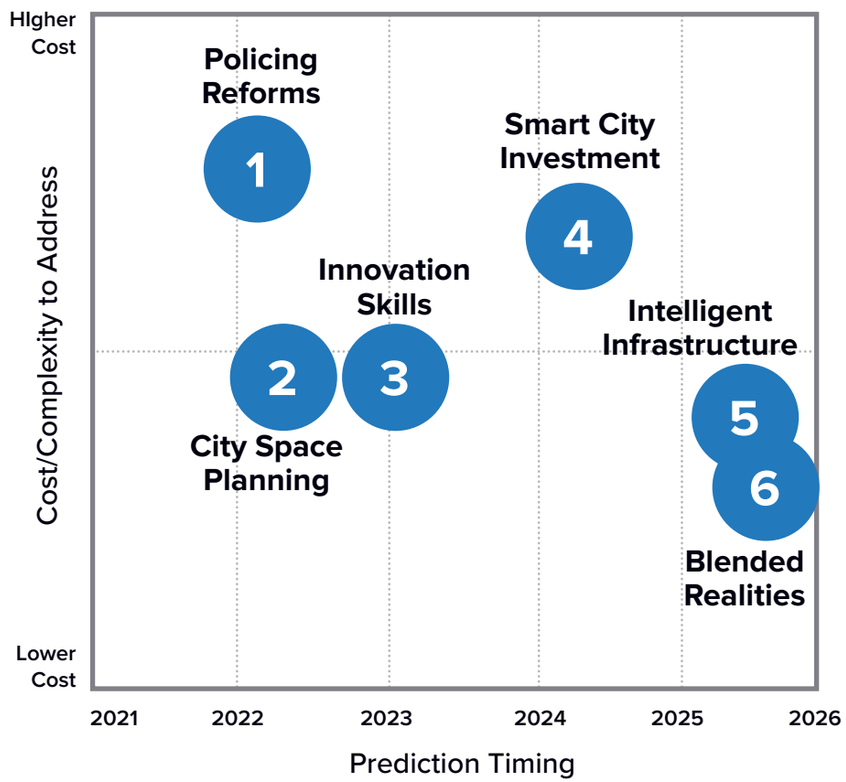
By 2023, 20% of midsize Smart Cities will appoint a dedicated staff lead to drive innovation and digital transformation to meet growing community demands to improve service offerings and delivery.

By 2024, **spending by Smart Cities and Communities will be $203 billion** with focused areas of investment in a wide range of areas such as public safety, civic engagement, and Smart City platforms.

By 2025, 30% of cities will leverage automation via Internet of Things (IoT), artificial intelligence (AI), and digital twins to blend the physical and digital, improving the remote management of critical infrastructure and digital services.

By 2026, 20% of city products and services will be delivered using high-touch digital and hybrid digital/physical experiences, transforming constituent interaction with local government.

Top Smart City Predictions



Source: IDC FutureScape: Worldwide Smart Cities and Communities Predictions, 2021

Smart City Success Relies on Coordinating Initiatives and Investing Effectively

Smart Cities and Communities leverage a wide range of technologies for initiatives and use cases. Strategically grouping related initiatives together allows governments to utilize their investments in technologies such as sensors, cameras, and networks across multiple projects to create efficiencies.

IDC organizes related initiatives into strategic priorities; these priorities can be viewed as a portfolio and can leverage technologies such as sensors, cameras, and networks for use across multiple projects.

Thinking about adjacent use cases can help expand your digital footprint. Looking at use cases with synergies to technology you have or are considering will help make the move into a new area much easier and less costly.

Source: IDC, 2020

What Enables Successful Transformation? A Model for Smart City Maturity

	1	2	3	4	5
	Ad Hoc	**Opportunistic**	**Repeatable**	**Managed**	**Optimized**
	Siloed Experimentation	Intentional Investment	Established Processes	Operationalized Outcomes	Systemic Transformation
Description	One-off, siloed approach without formal governance frameworks or methods. Extremely difficult to replicate successes or adjust plans to avoid failures.	Beginnings of stakeholder buy-in leads to looking for new paths for innovation. Collaboration between some departments underway but bigger picture plan is missing.	Process and policy catch up with innovation, allowing projects to proceed without reinventing the wheel. This builds the foundations for organizational learning.	Enterprise-level thinking occurs, formal frameworks and methods in place, and silos are disappearing. Momentum may still be lacking and is more reactive than responsive.	The ideal state to work toward. Continuous improvement and innovation are standardized across the enterprise to be more sustainable, agile, and comprehensive.
Key Questions	• **Can projects break out of silos?** • **Can the successes and failures be used to build toward something bigger and understand the gaps in the approach?**	• **Is there room to develop new processes?** • **Is staff ready to formalize the approach?**	• **With process and policy in place, what can the organization as an enterprise begin to learn?** • **Is leadership ready to support broader work?**	• **Can the success be sustained, and people kept excited about the progress?** • **Is leadership ready to move faster and align key resources?**	• **Is the work now transforming how business is done?** • **Are constituents now expecting a higher level of service than is being delivered to them?**

Source: IDC Smart Cities and Communities Maturity Model, 3.0, 2020

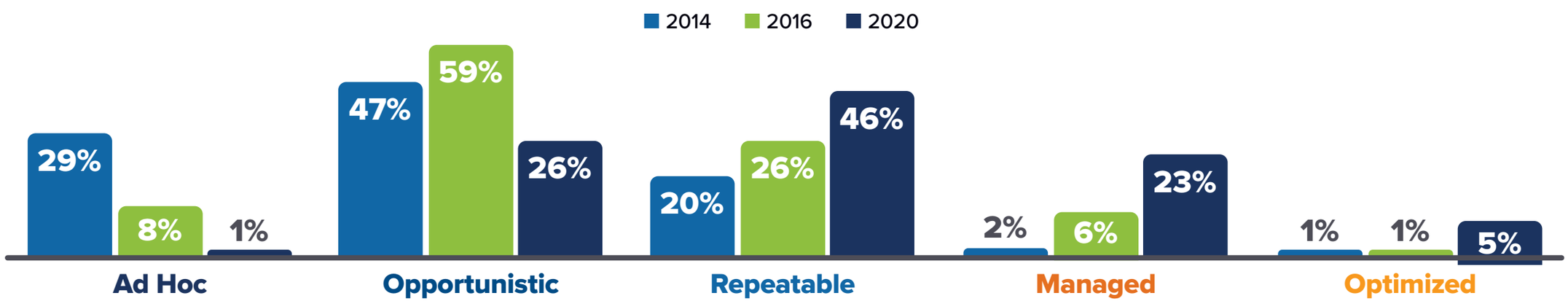
Where Are U.S. Cities Today in Their Smart City Transformation?

IDC has conducted a benchmark survey of U.S. cities and communities to understand their Smart City development over time.

Today, one-fifth of American cities are in the Opportunistic stage, and almost half are in the Repeatable stage. This represents significant growth over the past five years when 58% were in the Opportunistic stage.

There is work still to be done to move more cities, counties, and states into the Managed and Optimized stages. IDC's survey shows that more mature cities are also more advanced in the best practice areas of culture and data, using them to drive their organizations forward.

U.S. Smart Cities and Communities Maturity 2014-2020



Source: IDC Smart Cities and Communities Maturity Model Benchmarks, 2014-2020

Best Practice Areas for Smart Cities Development

Transformation to a Smart City occurs through incremental advancements in five key areas: vision, culture, process, technology, and data.

Large-scale change is complex, and cities should tackle the challenges of Smart City adoption by working on their maturity in all these areas.

Thinking about technology is important, but technology is most effectively deployed with vision, culture, data, and processes aligned to support it. That's how city leaders can find true value in Smart City programs.

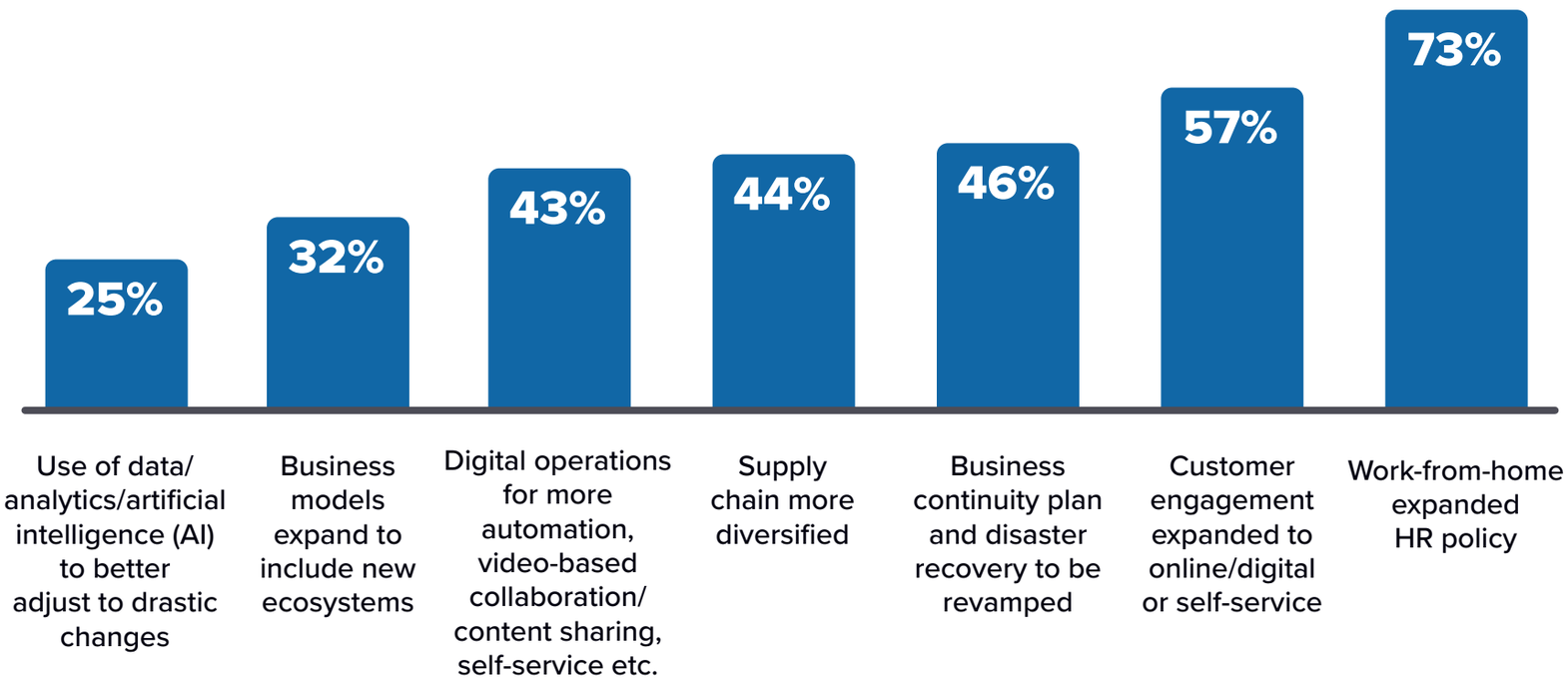
Source: IDC, 2021

Permanent Changes from COVID-19 Are Impacting Governments

With the world changing after COVID-19, keeping employees, constituents, and other key stakeholders connected and engaged is high priority.

Many changes that occurred during COVID-19 will remain permanent, including a hybrid workforce, more online constituent self-services, and business operations that are increasingly automated and remotely managed.

Which of these areas will be permanently changed as a result of the COVID-19 pandemic?



Source: COVID-19 Impact on IT Spending Survey (conducted during August 26th to September 6th), IDC, September 2020

These Impacts Drive New Technology Investment Focus

Key priorities in the years ahead will be using connectivity programs to connect organizations and individuals seamlessly, improving digital trust and security, and gaining more insights from data.

Updating legacy systems will mean investment in resilient network infrastructure, cybersecurity, and digital platforms to make the most of this digital paradigm.

Which of the Following Will Be Your Organization's Top 3 Priorities into 2021 and beyond?

Source: COVID-19 Impact on IT Spending Survey (conducted during August 26th to September 6th), IDC, September 2020

Platforms and Connectivity Are Fundamental Pillars of Smart City Technology

Underlying the growth in Smart Cities is network infrastructure and bandwidth.

These capabilities power innovative platforms across many use cases. Having a high availability, high bandwidth, and secure network opens the potential to have deployments that deliver the Smart City promise to constituents.

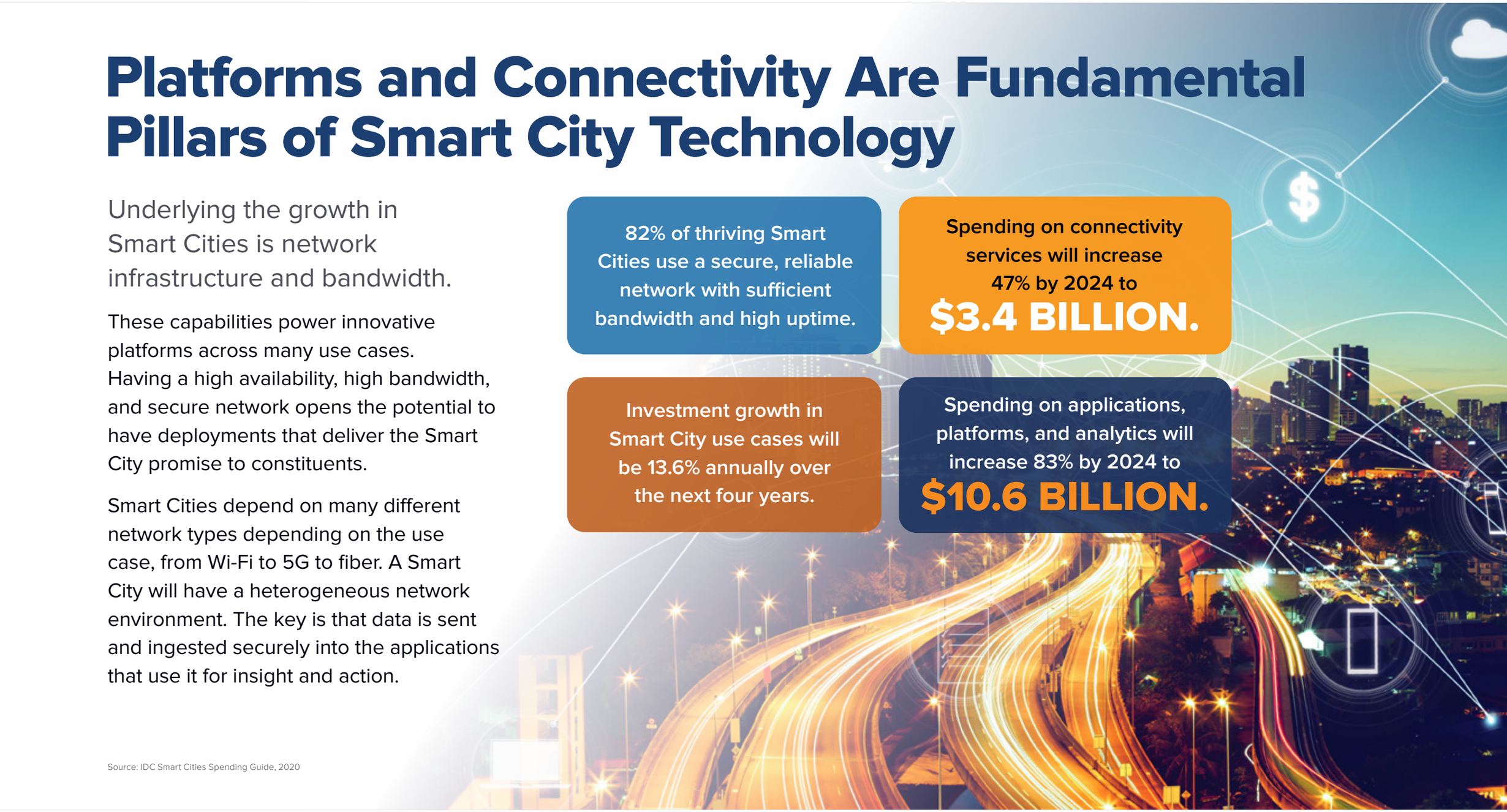
Smart Cities depend on many different network types depending on the use case, from Wi-Fi to 5G to fiber. A Smart City will have a heterogeneous network environment. The key is that data is sent and ingested securely into the applications that use it for insight and action.

82% of thriving Smart Cities use a secure, reliable network with sufficient bandwidth and high uptime.

Spending on connectivity services will increase 47% by 2024 to **$3.4 BILLION.**

Investment growth in Smart City use cases will be 13.6% annually over the next four years.

Spending on applications, platforms, and analytics will increase 83% by 2024 to **$10.6 BILLION.**



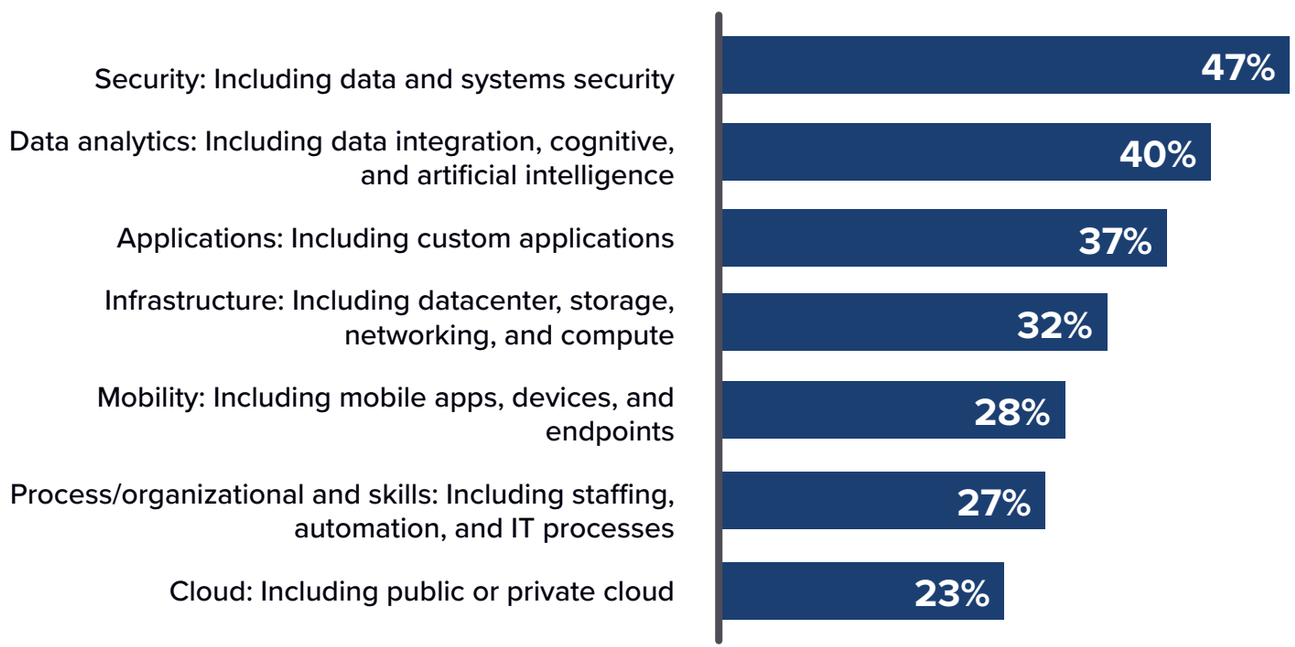
Source: IDC Smart Cities Spending Guide, 2020

Security, Data, and Applications Investment Drives the CIO Agenda for Smart City Use Cases

With limited resources, municipal CIOs are prioritizing these technologies — security, data, and applications — as their top investment areas.

These investments are critical to providing hyper-connected cities with the foundations to power, secure, and monitor the performance of the applications and devices supporting Smart City use cases.

CIO Investment Priorities



Source: Digital Transformation (DX) Executive Sentiment Survey 2019, IDC, August 2019

How to Approach Smart City Technology Investments

Technology investments impact many other areas of operations in cities, from requiring new digital skills from staff and constituents to ensuring equity in access to online services, and from working to change organizational and cultural inertia to changing workflow and work expectations.

New technology investments often make life easier and provide realizable benefits over time but only after a period of adjustment and rapid learning.

Source: IDC Smart Cities Spending Guide, 2020

Key questions to ask about technology products include:

- What sort of staffing is required to support this technology?
- What do I need in terms of developers with specialized skills like data scientists, or IT training for staff?
- How much does the technology vendor support my needs in these areas?
- Does the solution fit with the larger ecosystem and technology vision for the enterprise?

Kickstarting Your Smart City Transformation

Start small and focused and with an eye toward the future. Develop a plan for incremental, long-term change that includes:

- Having a clear business case and defined outcomes.
- Creating an action plan with go/no go readiness criteria.
- Determining what success looks like for your organization/your constituents and how to measure it.
- Identifying vendor partners that can aid your entire journey and evolve with you.
- Building *with*, not for your constituents by learning to listen to what they really need and what serves them best.
- Remembering that DX is about process and people as well as technology.
- Planning to design, build, test, deploy, seek feedback, and iterate.

Smart City transformation provides tangible advantages. Nevertheless, once you start to see the ROI and benefits, "what comes next" has already arrived.

It's time to start planning for what's next, now.

About the Analysts

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Ruthbea Yesner is the Vice President of Government Insights at IDC. In this practice, Ms. Yesner manages the US Federal Government, Education, and the Worldwide Smart Cities and Communities Global practices. Ms. Yesner's research discusses the strategies and execution of relevant technologies and best practice areas, such as governance, innovation, partnerships and business models, essential for government and education transformation.

More about Ruthbea Yesner

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Curt Savoie is the Director, Global Smart Cities Strategies program. The central components of his work revolve around data: Its use, security, meaning, accessibility, and governance. He brings to IDC a deep interest in algorithms, artificial intelligence, resiliency, identity, ethical considerations, privacy and anonymization, reducing information asymmetry, and how data can power a better future.

More about Curt Savoie

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