



Everything you *wished for*?

Has Gen AI for software engineering lived up to the hype in the public sector?

Capgemini 

Two years after Open AI introduced generative AI to the public through its ChatGPT application, the world of software engineering is still captivated – and for good reason.

Our recent survey focuses in on how Gen AI is being used in software development today, and reveals a bright future ahead. Here's what Gen AI means for developers creating the digital public services of the future.

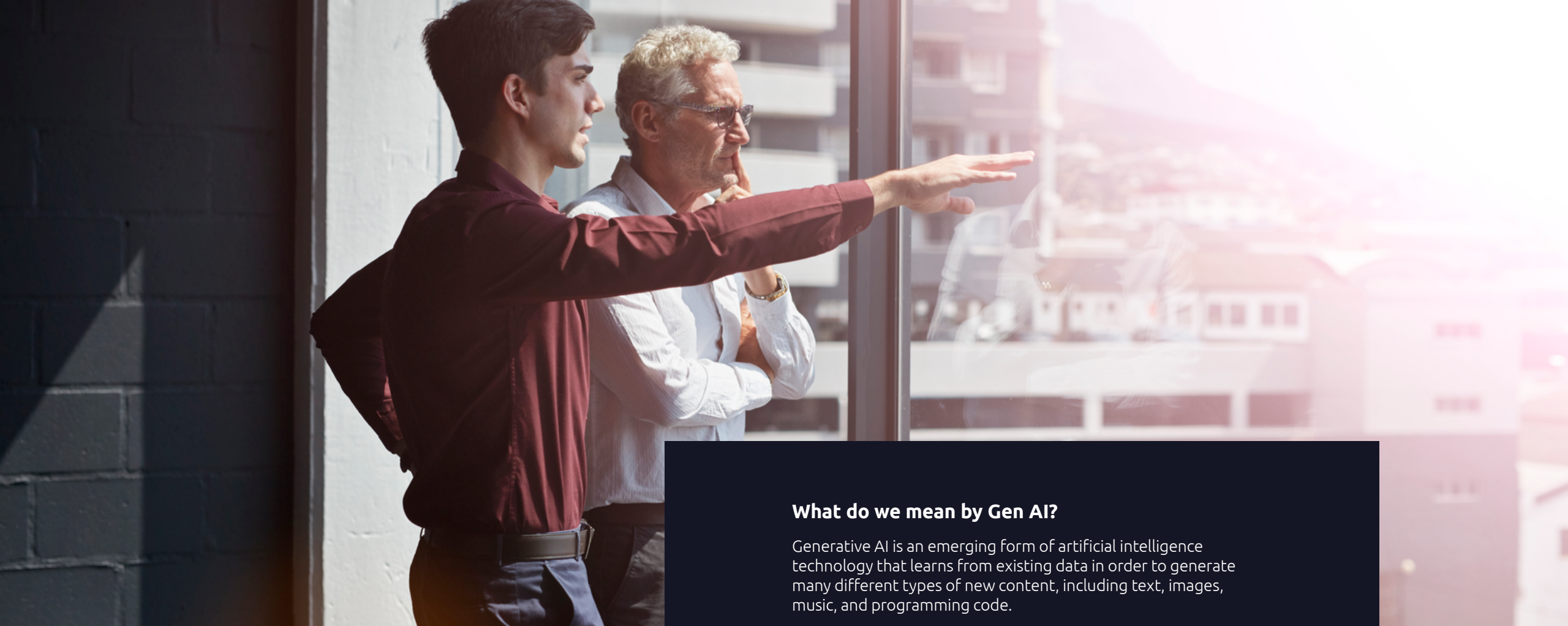
Through our discussions with software engineers in the public sector over the past two years, we identified a number of recurring questions regarding Gen AI:

- What impact is Gen AI having on software?
- How does this apply to the public sector?
- What is the best strategy and governance for the use of Gen AI within public sector organizations?
- How can we define where it can be used, including vendors and training?
- How can we measure the performance and accuracy of generative AI for software engineering?
- What is the best approach to modernizing our legacy apps?
- How can we ensure the security of the data we use?

To find answers, The Capgemini Research Institute surveyed over 1,000 senior executives and 1,000 software professionals from organizations with over \$1 billion in annual revenue, across eleven sectors, including public sector. We included additional in-depth qualitative insights from 20 industry leaders, professionals, and entrepreneurs.

With a focus on the many considerations for implementing generative AI in software engineering, the findings reveal a sector that is curious, cautious – and approaching the threshold of a significant transformation.





What do we mean by Gen AI?

Generative AI is an emerging form of artificial intelligence technology that learns from existing data in order to generate many different types of new content, including text, images, music, and programming code.

There are various types of generative AI models, each with their own unique capabilities and applications. For the purpose of exploring software engineering in the public sector in this report, we'll be referring to Large Language Models (LLMs), which are AI systems that are trained on vast datasets of text, with the ability to interact with users using human language.

The benefits of Gen AI on software engineering

Among the top benefits for organizations is that Gen AI enables significant improvements for the development, enhancement, modernization, and maintenance of applications. While 77% of organizations surveyed across all sectors agree that using generative AI for code assistance brings significant benefits, 70% also agree that generative AI's potential extends beyond writing code. We find that Gen AI can also support business requirement analysis, design, build, quality assurance, tickets management and change management. We find that these productivity benefits are maximized when used within mature software development processes, with clear benchmarking, measurement protocols, and productivity calculations.

Job satisfaction

Software engineers' eagerness to use Gen AI tools is paying off in a number of ways, including having a positive impact on their overall work experience: 69% of senior software professionals reported high levels of satisfaction from using generative AI for software. One important factor that contributes to this impact is that Gen AI tools can save software professionals considerable amounts of time: 7–18%, according to our research.

Gen AI excels at the more painstaking tasks for a software engineer, like creating documentation, and ensuring comprehensive code coverage during automated testing. If Gen AI helps to cover such use cases for software developers, it frees up their time to do higher-value tasks such as enhanced innovation and upskilling – bringing them more personal fulfillment.

Gen AI can also significantly increase in coding velocity (including bug fixes due to client priorities) with stable code quality. From a few pilots that we've seen implemented, our observation is that the productivity improvement is substantial for greenfield development compared to bug fixes.

Increased collaboration

One of the top benefits identified in our study relates to cross-team collaboration: across the sectors we surveyed, 78% of software professionals are optimistic about generative AI's potential to enhance collaboration between business and technology teams.

For developers, this benefit addresses the issue of sharing technical information with non-technical teams – and vice versa – by making it easier to communicate requirements or explain what the code does, in natural language. The Gen AI technology saves time spent on communications, which can boost productivity, and improve time to value.





Excitement about Gen AI in the public sector

Our findings indicate substantial interest and multiple benefits to incorporating Gen AI into software engineering processes in the public sector.

- 61% of software leaders see Gen AI as enabling innovative work.
- 49% expect it to improve the quality of software.
- 69% of senior software professionals report high levels of satisfaction from using Gen AI for software.
- 78% are optimistic about Gen AI's potential to enhance collaboration between business and technology teams.

Innovation, quality, satisfaction and collaboration – across the board, the results were positive. It's no wonder then that Gen AI adoption is expected to nearly double by 2026, in organizations across all sectors. However, this prediction skips over some very real challenges to adoption, that are particular to the public sector.

Current challenges

While the enthusiasm and curiosity in the technology is readily apparent, we have observed that adoption in the public sector is slower than in other industries. Why is this the case? To understand, it's crucial to assess a number of specific challenges that are inherent in the public sector landscape, including:

- **Code security** – Public sector organizations must ensure that any code created by Gen AI is correct and secure.
- **Copyright and license issues** – Organizations must also make sure that they do not break any license terms. This is less important when employees are using Gen AI as part of their work, but very relevant when governments are offering Gen AI solutions to citizens, as in the form of a chatbot, for example. Some governments want to know about the source of the training set for their LLMs, which adds an additional difficulty, as these sources are not typically disclosed.

- **Regulatory compliance** – Organizations in the public sector operate within a complicated hierarchy of regulation. In Europe, for example, there is a need to be fully compliant with the [EU Artificial Intelligence \(AI\) Act](#), as well as each country's own sovereign requirements – and within that, local administrative regulations. Navigating these many-tiered nuances can be challenging.
- **Legacy code modernization** – Many core legacy systems and applications are built on decades-old code, and when the existing workforce cannot understand or enhance this codebase, it leads to a buildup of technical debt. This creates barriers to new technologies such as Gen AI.
- **Workforce reskilling and adaptation** – As Gen AI technologies continue to evolve rapidly, developers (and the business stakeholders they collaborate with) must stay updated with the latest advancements, which can be time-consuming and require significant effort.

- **Public scrutiny and democratic accountability** – Operating within a democratically elected government adds a unique weight to any consideration of process transformation. Their effectiveness and reliability is key to maintaining citizens' trust in government.

These hurdles are significant, and many of them are unique to the public sector. However, the positive impact that Gen AI can make on software development means there is a strong business case for adopting it as public sector organizations build more efficient and citizen-centric digital services. This includes interoperability and effective data sharing capabilities. Citizens have come to expect a level of efficiency from tools and services in the private sector, which places even more urgency on public sector organizations to catch up.

Public sector organizations can deploy Gen AI to innovate for the future of public services, to operate more efficiently, and to achieve parity between resources and workload in an era of limited budgets and skills.



Build trust in Gen AI by starting small

Earlier, we examined the reasons why Gen AI adoption in software engineering is slower in the public sector. Yet, as we see in our survey results, adoption across sectors is expected to nearly double from 46% today, to an estimate of 85% in 2026. How can public sector organizations get there?

One tried-and-true method is to start small, and build from there.

A [2023 report by Gartner](#) assesses various use cases for Gen AI in government contact centers, in terms of both value and feasibility. Two use cases with low risk and high value are the development of Gen AI virtual assistants (exemplified by Saudi Arabia's [National Portal](#)), and step-by-step guided services, for example, to help a citizen fill out a form or complete a process.

Prioritizing relevant use cases can build confidence in using Gen AI tools, and can pave the way incrementally towards Gen AI-powered code generation. An added bonus is that the agency that jumps in first, and realizes those incremental benefits, can make a name for themselves – a reputational win-win.



Better code means better developer (and citizen) experience

What would software development look like if public sector organizations had better visibility and clarity on the state and stakes of their data systems, if they built trust in Gen AI technology, and if they fostered a people-centric culture of learning? How would this affect the day-to-day experience of citizens, who increasingly expect the more streamlined processes found in the private sector?

Our survey makes it clear: by focusing on relevant use cases at the start, and putting people at the heart of digital transformations, Gen AI can play a driving role in boosting new software development, legacy app modernization, quality of software, and productivity – and support better developer and citizen experience. While we're still in the early stages of adoption in the public sector, the potential is enormous – and the path to success is clear.

Use Gen AI to explore this PoV

Share this report with your generative AI tool (via upload or link), along with one of the below sample prompts (or your own) to kickstart inspiration on how you can explore our survey findings:



“List the key findings and recommendations for Gen AI in public sector software engineering.”



“What are the best approaches that public sector organizations can prioritize for Gen AI implementation in software engineering?”



“Explain the current challenges of using Gen AI in software engineering in the public sector.”



Capgemini can help

With over 100,000 experts in software engineering, Capgemini equips its teams with Gen AI assets and value measurement protocols. We also provide training and enablement through our Gen AI Academy, ensuring that our teams are well-prepared to deliver innovative solutions.

We use Gen AI not just to augment software development, but also to augment application modernization and application maintenance.

Gen AI can play a driving role in boosting new software development, legacy app modernization, quality of software, and productivity – and support better developer and citizen experience.



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About Capgemini

Capgemini is a global business and technology transformation partner, helping organizations to accelerate their dual transition to a digital and sustainable world, while creating tangible impact for enterprises and society. It is a responsible and diverse group of 340,000 team members in more than 50 countries. With its strong over 55-year heritage, Capgemini is trusted by its clients to unlock the value of technology to address the entire breadth of their business needs. It delivers end-to-end services and solutions leveraging strengths from strategy and design to engineering, all fueled by its market leading capabilities in AI, cloud and data, combined with its deep industry expertise and partner ecosystem. The Group reported 2023 global revenues of €22.5 billion.

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