Globant

Revolutionizing Software:

The Power of *Generative AI*

Introduction

The introduction of Generative AI (GenAI) and Large Language Models (LLMs) like OpenAI's GPT or Meta's Code Llama but also through tools like Github Copilot or AWS Code Whisperer brought transformative changes to the Software Development Life Cycle (SDLC).

These powerful AI models, capable of generating text in various languages, including programming languages, have sparked the creation of AI-powered developer tools that significantly enhance productivity and collaboration.

If the projected 30% productivity enhancement by AI developer tools is realized, it could boost global GDP by over $1.5 trillion.

With an estimated 45 million professional developers in 2030, these tools could effectively add the productivity gains equivalent to 15 million additional developers to worldwide capacity.

Software development transcends mere coding;

it's a creative journey involving multiple roles and complex decision-making. While Generative AI automates tasks and enhances efficiency, it is not a silver bullet—human expertise remains crucial to defining compelling user experiences and driving true innovation.

Agustin Huerta

SVP of Digital Innovation at Globant.

The Power and Promise of Generative AI in the SDLC

1. **Accelerated Development:** Tools are at the core of the discussion. The proliferation of new applications based on LLMs is astonishing. Competition is at its peak, and the boundaries between app offering and capabilities is still fuzzy. At Globant, our Studios model brings together cross-functional teams of experts who work seamlessly throughout the Software Development Life Cycle, building best practices on using Gen Ai and our own AI tools that work as productivity boosters for our developers and our customers, reinventing the way software is coded and tested.

2. **Communication and Collaboration:** GenAI bridges gaps between technical and non-technical stakeholders by translating jargon, reducing misunderstandings and errors. At Globant, we use GenAI to analyze team dynamics, spot issues, and suggest solutions for better collaboration and continuous improvement.

3. **Comprehension:** GenAI tools summarize complex technical and requirement documents, making information more accessible and speeding up onboarding and knowledge sharing. At Globant, we utilize AI-powered summaries not just to simplify technical documents, but to empower our teams to grow their skills and collaborate more effectively.

4. **Multimodality:** Multimodal AI can transcribe meetings, convert sketches into digital designs, and generate code from UI mockups, streamlining workflows and freeing developers for creative tasks. At Globant, we explore AI integration in workflows to enhance processes while maintaining human creativity and decision-making.

Embracing Agentic AI: Transforming Development Processes

We are witnessing a trend towards building AI systems that exhibit more autonomy and adaptability. These are called Agentic AI systems. Unlike traditional AI, which responds to single input prompts, Agentic AI can independently plan, act, reflect, and iterate to achieve goals.

Well here is where **Globant is changing the game by introducing their own AI Agents to co-create more efficient development cycles.** In this context is where "Co-create" is the magic word, as it signifies that human agency and control are integral to the process. These AI agents interact with the environment, gather data, and autonomously perform tasks to meet predetermined goals, but always under human oversight. This ensures that while our capabilities are elevated to the next level, human expertise and decision-making remain central to the development process.

Meet Our AI Agents

Backend Prototyping AI Agent

Our Backend Prototyping AI Agent enables users, regardless of technical knowledge, to create the backend of a business application in record time. Just provide a detailed business description, and the agent will create a customizable backend that you can adjust through a simple conversation. Choose a design system, and within minutes, a fully functional prototype for web and mobile is ready to go.

Application Design AI Agent

When it comes to design, our Application Design AI Agent brings your vision to life from a simple text input, accelerating the design process and simplifying teamwork. Just describe your desired characteristics, and watch as it generates a fully functional application layout that you can adjust to meet client's requirements.

Test AI Agent

Our Test AI Agent helps companies deliver high-quality software faster. All testers have to do is describe the URL, browser, and variables of the website or application to be tested. Then, the agent will test it autonomously creating a report of bugs and issues to be solved.

Code Fixer AI Agent

Our Code Fixer AI Agent, the ultimate solution for error correction in existing applications. When an issue is reported, simply assign the task to the CodeFixer Agent, and it develops a detailed plan to resolve the issue. Approve the plan, and the Agent seamlessly deploys the fix, resolving the problem effortlessly.

How Agentic AI Outperforms Standalone LLMs?

Aspect	Agentic AI	Standalone LLM
Improvement	Iterative cycles for self-improvement	No iterative self-reflection
Complexity	Breaks tasks into subtasks	Processes inputs linearly
Adaptability	Autonomously gathers extra information	Depends solely on initial input
Collaboration	Uses multiple agents for problem-solving	Operates independently
Reliability	Robust through feedback loops	Less reliable, no ongoing adaptation
Engagement	Handles long-term tasks	Suited for short-term engagements

How GenAI is changing people dynamics in the SDLC

The advent of Generative AI (GenAI) is reshaping the dynamics of software development, bringing forth a paradigm shift in roles, skills, and work methodologies. As Large Language Models (LLMs) like GPT-4 become integral parts of the Software Development Life Cycle (SDLC), the industry is witnessing a transformative wave that promises to redefine how we approach software creation and innovation.

Impact

- **Restructuring Developer Roles:** GenAI automates repetitive tasks, allowing developers to focus on higher-level responsibilities.
- **Skills for the GenAI-Powered Era:** Developers need proficiency in crafting effective prompts, understanding AI/ML fundamentals, data literacy, and adaptability.
- **Cultural Shift and Organizational Adaptation:** Organizations must embrace AI as an ally, investing in comprehensive AI training programs and fostering a culture of continuous learning.

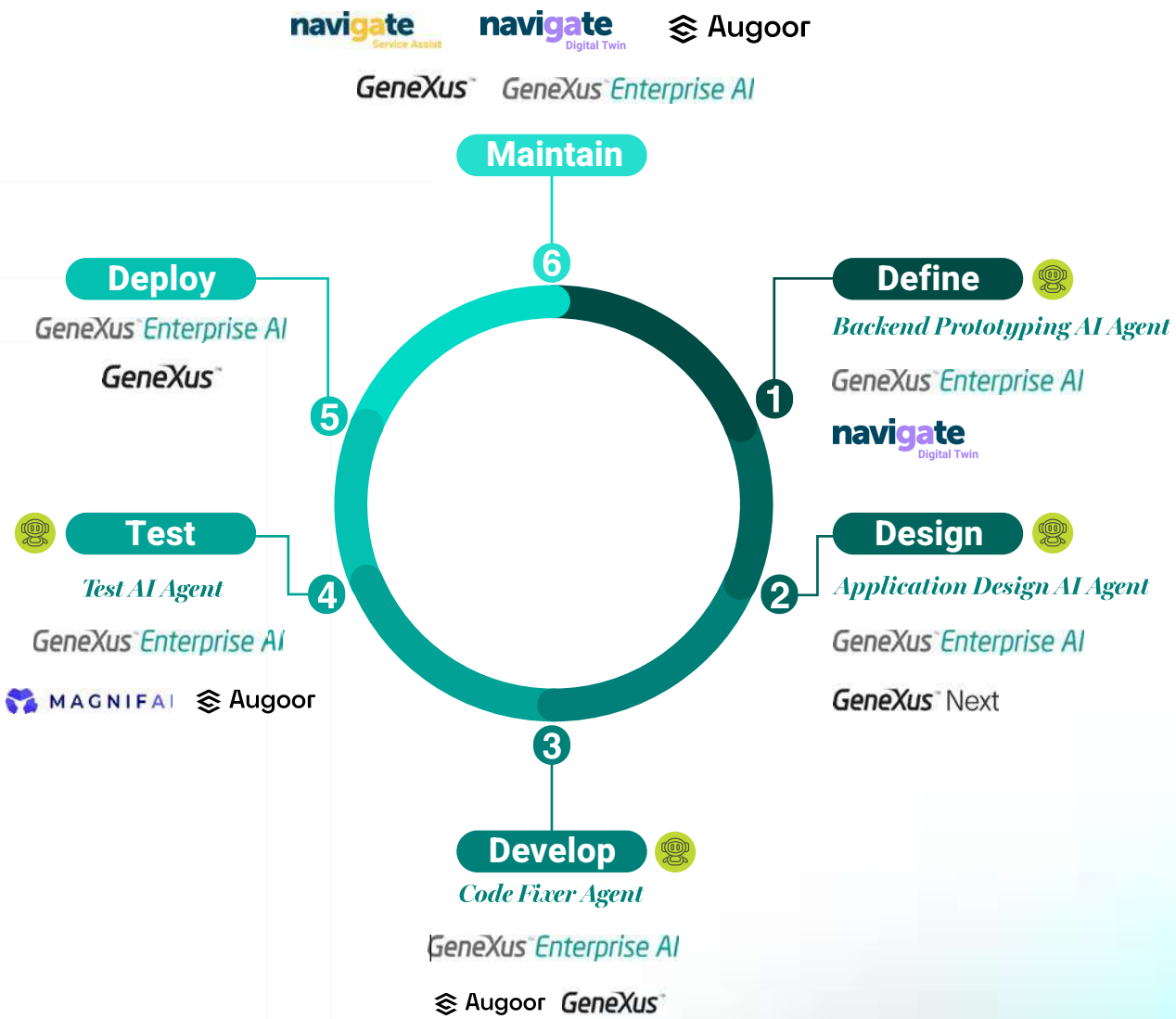
By viewing the SDLC as a triadic relationship between people, tools, and goals,

we can better understand the complex interplay between these elements and develop strategies for AI adoption that maximize benefits while minimizing potential disruptions.

Diego Tartara

Global Chief Technology Officer at Globant

The Six Phases of the SDLC



1

"Define" stage of the SDLC is undergoing a profound transformation, thanks to the integration of Generative AI. Tools like ChatGPT and Midjourney are empowering teams with enhanced clarity, collaboration, and strategic decision-making. By streamlining communication, automating documentation, and fostering creative exploration, GenAI is not just optimizing the Define stage, but also setting the stage for a more efficient and innovative SDLC.

Globant's *Key Differentiators*

GeneXus Enterprise AI

GeneXus Enterprise AI: has the ability of connect users with multiple LLMs through a single, private conversational interface, enhancing collaboration and understanding among diverse users for tasks like brainstorming, market research, and converting user feedback into structured requirements can also benefit from this tool.

navigate Digital Twin

Navigate Digital Twin: can replicate business processes to avoid bottlenecks and improve efficiency, enabling users to quickly gain insights and learn from their data with its AI Consultant, thereby reducing costs and promoting optimal process behaviour.

Backend Prototyping AI Agent

Backend Prototyping AI Agent: lets anyone, no matter their tech expertise, quickly create a business app backend. Just give a detailed business overview, and the agent crafts a customizable backend. Pick a design system, and in minutes, get a fully functional web and mobile prototype.

Impact

- **Efficient Idea Exchange:** Bridges communication gaps among stakeholders, from business leaders to end-users.
- **Shared Project Vision:** Ensures a common understanding early on, setting the stage for a more efficient and innovative SDLC.

2

The "Design" phase of the Software Development Life Cycle, marked by its dynamism and focus on user-centricity, is ripe for transformation through Generative AI. The strategic integration of AI-powered tools can significantly augment the capabilities of designers, developers, and product managers, fostering a more collaborative and efficient design process.

Globant's *Key Differentiators*

GeneXus Enterprise AI

GeneXus Enterprise AI: enables users with multiple LLMs through a single, private conversational interface, the creation of images, generation of clear UI text, and translation of requirements into detailed system design documents.

GeneXus

GeneXus: its toolset that simplifies the development of high-quality application designs, enhancing user experience by reducing implementation time and enabling seamless iteration between design and development teams.

Application Design AI Agent

Application Design AI Agent: brings the user's vision to life from simple text input, accelerating the design process and simplifying teamwork by generating a fully functional application layout that can be easily adjusted to meet client requirements.

Impact

- **Accelerated Design Cycles:** Faster iterations and quicker time-to-market.
- **Enhanced User-Centricity:** Creation of intuitive, user-friendly interfaces.
- **Optimized System Performance:** Proactive identification of design flaws and bottlenecks.
- **Reduced Risk and Cost:** Early detection of issues minimizes costly rework.

3

The "Develop" phase, where code is written and the software solution takes shape, is considered the stage of the SDLC with the most potential for Generative AI impact. A study by McKinsey & Company suggests that up to 80% of the value creation from AI in business automation can be attributed to development activities. GenAI's ability to automate code generation, enhance testing, and streamline debugging positions it as a transformative force in software development.

It is pretty clear that this technology is significantly impacting coding and data management. In coding, tools like Tabnine, DeepCode, and OpenAI Codex accelerate development by automating tasks like code completion, refactoring, and prototyping. They also enable real-time collaborative code review, fostering knowledge sharing. In data management, GenAI aids in streamlining data migration, providing intelligent data modeling, automating query generation, optimizing performance and ensuring data integrity. It also assists in resolving complex schema inconsistencies and optimizing queries, enhancing efficiency and scalability.

Globant's *Key Differentiators*

Augoor

Augoor: offers deep insights into existing codebases, aiding developers in optimizing legacy code through indexing, documentation, visualization, and analysis. It accelerates development and improves code quality, with a key focus on efficiency through thorough understanding and optimization.

GeneXus

GeneXus: automates the development of sophisticated software solutions as a low-code platform, improving time to market by generating optimized native code for each platform from business and process knowledge.

GeneXus™ Enterprise AI

GeneXus Enterprise AI: assists in creating and maintaining comprehensive, up-to-date project documentation, as well as analyzing code snippets to suggest improvements in readability, performance, and maintainability.

Code Fixer Agent

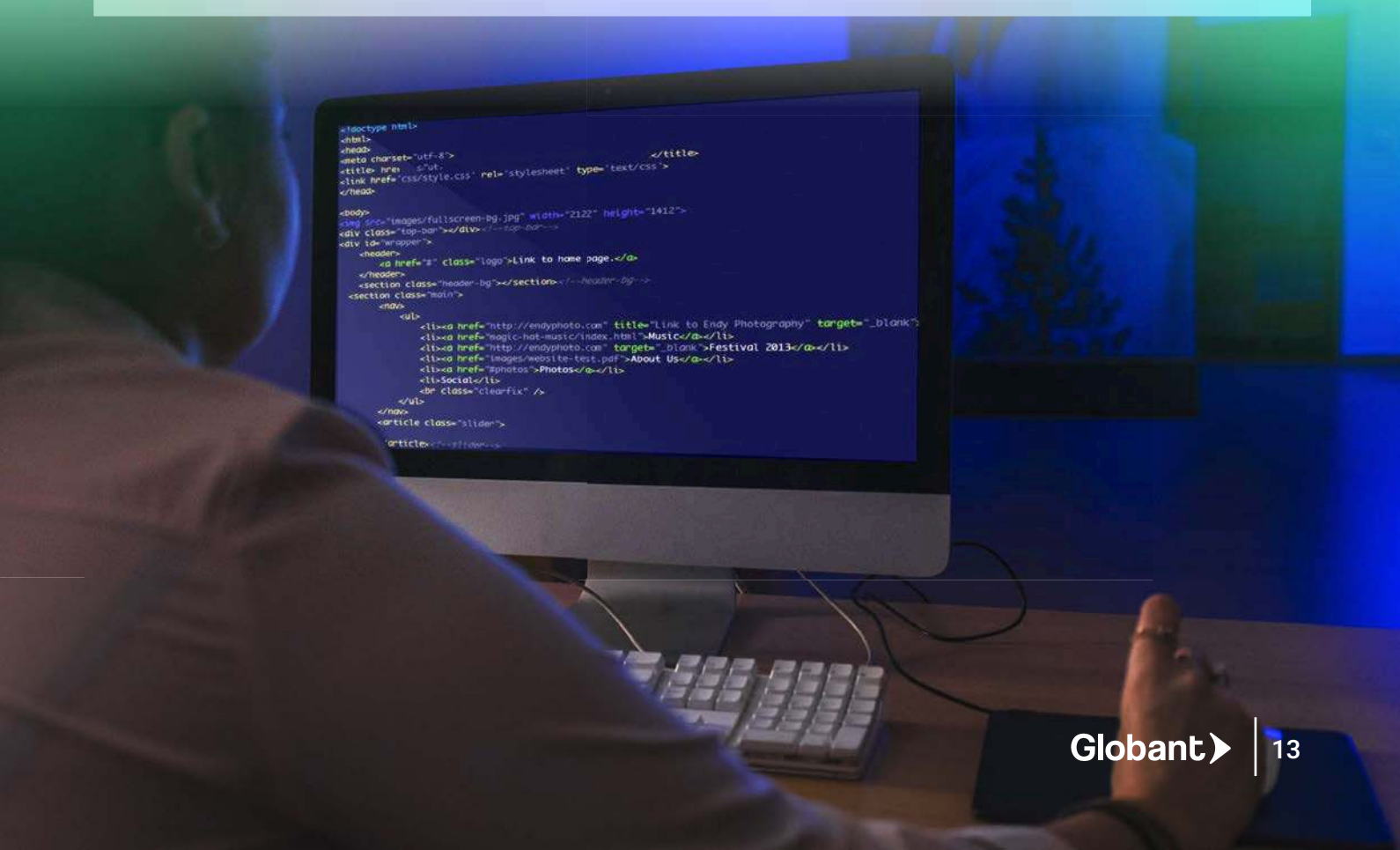
Code Fixer Agent: provides the ultimate solution for error correction in existing applications by developing a detailed resolution plan and seamlessly deploying fixes with minimal effort upon approval.

Impact

• **Enhanced Productivity:** Developers work more efficiently, reduce human-coding errors, and keep focus on complex and higher-value tasks.

• **Innovative Solutions:** AI-driven advancements foster creativity.

• **Optimized Development:** Streamlined processes improve overall effectiveness. Inherit best practices and coding standards. Improve solutions TCO.



4

The integration of GenAI into the *"Test"* phase of the SDLC holds immense promise for enhancing software quality and reliability. By automating test case generation, enabling intelligent test execution, and facilitating comprehensive test analysis, GenAI empowers testing teams to work more efficiently and effectively.

Globant's *Key Differentiators*

MAGNIFAI

MagnifAI: drastically reduces testing time from weeks to minutes through the utilization of generative AI and computer vision, automating repetitive tasks, enhancing team productivity, and enabling expedited delivery of high-quality digital experiences.

Augoor

Augoor: aids Test Automation Engineers by providing clear insights into code structure and dependencies, enabling the creation and maintenance of effective test cases. Its visualization and documentation features enhance reliability and efficiency in testing processes.

GeneXus™ Enterprise AI

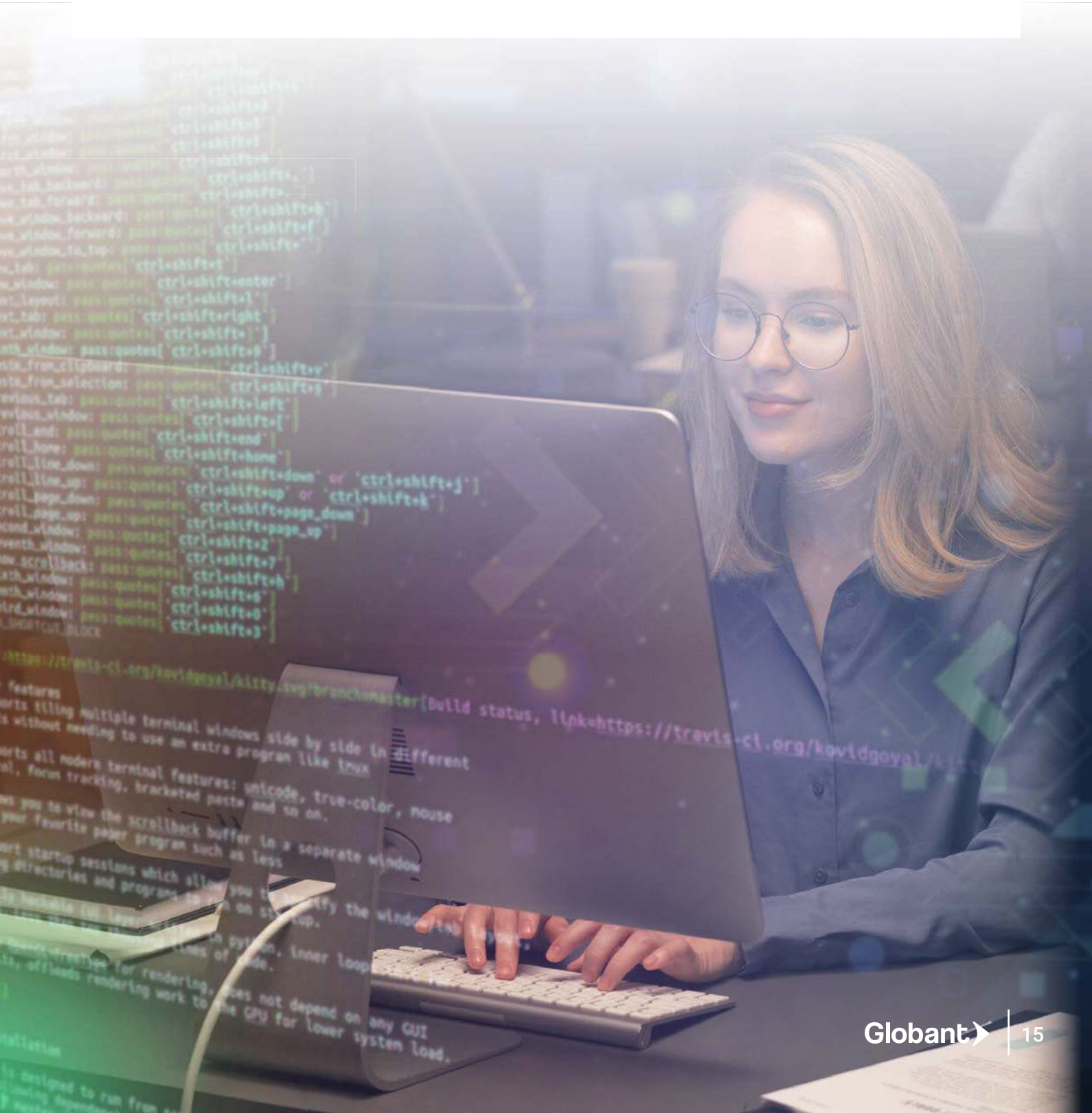
GeneXus Enterprise AI: has the ability to draft comprehensive test reports summarizing findings, highlighting key issues, and offering actionable recommendations, or to generate insights based on test results, identifying potential root causes for failures, common issues, or areas requiring further investigation.

Test AI Agent

Test AI Agent: helps companies deliver high-quality software faster. All testers have to do is describe the URL, browser, and variables of the website or application to be tested. Then, the agent will test it autonomously creating a report of bugs and issues to be solved.

Impact

- **Accelerated Time-to-Market:** Automated analysis speeds up testing, enabling quicker releases.
- **Enhanced Product Quality:** Rigorous testing ensures higher-quality, reliable software.
- **Improved Efficiency and Cost Savings:** Automation reduces manual effort and cuts costs.
- **Risk Mitigation:** Early error identification prevents costly production issues.
- **Enhanced Customer Satisfaction:** High-quality software leads to increased satisfaction and loyalty.



5

Generative AI is revolutionizing the *"Deploy"* stage of the SDLC, providing unparalleled automation, efficiency, and reliability. Through intelligent infrastructure management, process automation, and proactive issue identification, GenAI empowers teams to accomplish seamless software deployments and elevate the overall user experience. However, as GenAI becomes integrated into deployment, it's imperative to address security, monitoring, and human oversight to ensure responsible and ethical utilization, maintaining a harmonious equilibrium between automation and human expertise.

Globant's *Key Differentiators*

GeneXus™

GeneXus: applications created with GeneXus can be deployed in any environment. The generated software runs on any cloud, on-premise or hybrid architecture.

GeneXus™ Enterprise AI

GeneXus Enterprise AI: creates scripts to validate deployments, detect anomalies, and trigger rollbacks if necessary.

Impact

- **Accelerated Time-to-Market:** Faster deployment cycles enable quicker delivery.
- **Increased Reliability:** Automated processes and intelligent validation ensure consistent deployments.
- **Enhanced Scalability:** AI-powered resource management enables efficient scaling to meet demand.
- **Proactive Issue Detection:** Real-time monitoring and anomaly detection minimize downtime and improve user experience.

6

The *"Maintain"* phase of the SDLC, often underestimated yet crucial, reveals the true cost of software ownership, with studies suggesting that up to 80% of total software expenses occur during this stage. This high cost is primarily attributed to ongoing updates, bug fixes, and enhancements required to align software with evolving user needs and technological advancements. Consequently, optimizing maintenance processes becomes imperative for ensuring the longevity and success of software products. In response to this challenge, Generative AI (GenAI) emerges as a powerful ally, offering a diverse set of tools and capabilities to revolutionize software maintenance practices.

Globant's *Key Differentiators*

navigate Service Assist

Navigate Service Assist: uniquely integrates with any IT Service Management (ITSM) tool, such as Jira, to streamline the evolution and maintenance of digital solutions in production, prioritizing the enhancement of Jira's performance and the reduction of operational costs given its pivotal role in issue tracking, project management, and team communication.

navigate Digital Twin

Navigate Digital Twin: predicts possible scenarios and improvements to make intelligent data-driven decisions and track every current process, from standard, common pathways to variants and exceptions.

Augoor

Augoor: enables tracking of changes over time, swift identification of obsolete code, and detection of code smells, ensuring software remains up-to-date and efficient.

GeneXus: protects business knowledge by adapting to technological changes with new generators for emerging platforms, enabling agile evolution of solutions, seamless integration with external systems, and development of new functionalities compatible with data from multiple sources.

GeneXus Enterprise AI: it assists to generate and update documentation from code changes and user feedback, and can also help write scripts for log analysis, system health monitoring, and issue prioritization based on severity.

Impact

- **Reduced Operational Overhead:** Frees up valuable human resources for strategic initiatives.
- **Enhanced Software Quality and Security:** Proactive issue detection and automated remediation.
- **Increased User Satisfaction:** Faster response times to user feedback and issues, along with data-driven feature enhancement = loyalty.
- **Cost Efficiency:** Optimized resource utilization, reduced downtime, and streamlined processes translate to significant cost savings.

Humans at the Center of de SDLC

AI integration fosters a collaborative ecosystem where human expertise and AI capabilities complement each other. Roles such as Product Managers, Designers, Devops, Testers, Business Development, Stakeholders, and Project Managers evolve, leveraging AI for more interconnected and efficient operations.

ROLE	PRIMARY PHASES	AI USE CASES
Product Managers	Define, Design	Gather and analyze user feedback, prioritize features, create product roadmaps
Designers	Design, Develop	Generate and iterate on design concepts, create prototypes, personalize experiences
Developers	Develop, Test	Generate code, test and debug code
Testers	Test, Deploy	Generate test cases, automate test execution, analyze results
Business Development	Define, Deploy	Identify potential customers and partners, personalize marketing messages, automate lead generation
Stakeholders	All Phases	Gain real-time insights, identify risks, make data-driven decisions
Project Managers	All Phases	Efficient project management, resource allocation, progress tracking

Globant's approach to the SDLC brings a Holistic Approach to Software Development

that is characterized by a deep understanding of the interplay between human expertise and AI capabilities. We view AI as a tool to enhance human potential, not replace it. ***By embracing AI responsibly and prioritizing ethical considerations, we can leverage its transformative power to deliver innovative and impactful solutions.***

Globant Approach: Embracing AI as a tool, investing in continuous learning, and fostering a culture of responsible AI innovation, we are confident that our developers will not only adapt to the changing landscape but also lead the way in shaping the future of software development. These are some AI initiatives to help our teams adapt and excel:

- **POD Training:** We provide comprehensive AI training to 100% of our multidisciplinary PODs (teams).
- **Harnessing the Power of AI Certificate:** Our Globant University offers a certificate program ensuring our developers have a well-rounded understanding of the technology.
- **AI Manifesto:** We have developed an AI Manifesto that guides our ethical approach to AI development and use.

Challenges in Measuring AI Impact:

The 2024 Work Trend Index report reveals that while **79% of leaders believe their companies need AI to stay competitive, 59% are concerned about quantifying the productivity gains.**

Quantifying the impact of AI on the SDLC remains challenging due to the dynamic and human-centric nature of software development.Traditional performance metrics fail to capture the nuanced ways AI affects the development process.

We believe that by **combining rigorous data analysis with a deep understanding of human behavior and team dynamics, we can develop metrics that accurately reflect the transformative power of AI in the SDLC.**

Key Aspects in this Transformation

Generative AI has the potential to change the SDLC by enhancing efficiency, boosting innovation, and improving software quality. However, successful integration of AI requires careful planning, consideration of human factors, and strategic execution. Embracing AI not only augments human capabilities but also reshapes how teams collaborate, learn, and evolve.

1. Identify Areas for AI Integration
2. Gather and Analyze Data
3. Integrate AI into Each Phase of the SDLC
4. Ensure Data Security and IP Protection
5. Continuously Monitor and Evaluate AI Performance
6. Foster a Culture of Collaboration and Learning

Those who embrace the challenges and opportunities *that GenAI brings, will be the ones that redefine what is possible in the digital realm.*

Martin Migoya

CEO & Co-founder of Globant

Conclusion

The integration of Generative AI into the Software Development Life Cycle represents a significant shift in how we develop software. **By accelerating development, enhancing communication and comprehension, and fostering a human-centric approach, AI has the potential to transform the SDLC.** At Globant, we are committed to leveraging these advancements to create high-quality, innovative software while maintaining a focus on human creativity and decision-making.

As we move forward, it is essential to address ethical considerations, invest in continuous learning, and embrace the synergy between human expertise and AI capabilities. By doing so, we can harness the full potential of AI and shape the future of software development.

About Globant

We are a digitally native company that helps organizations reinvent themselves and unleash their potential. We are the place where innovation, design, and engineering meet scale.

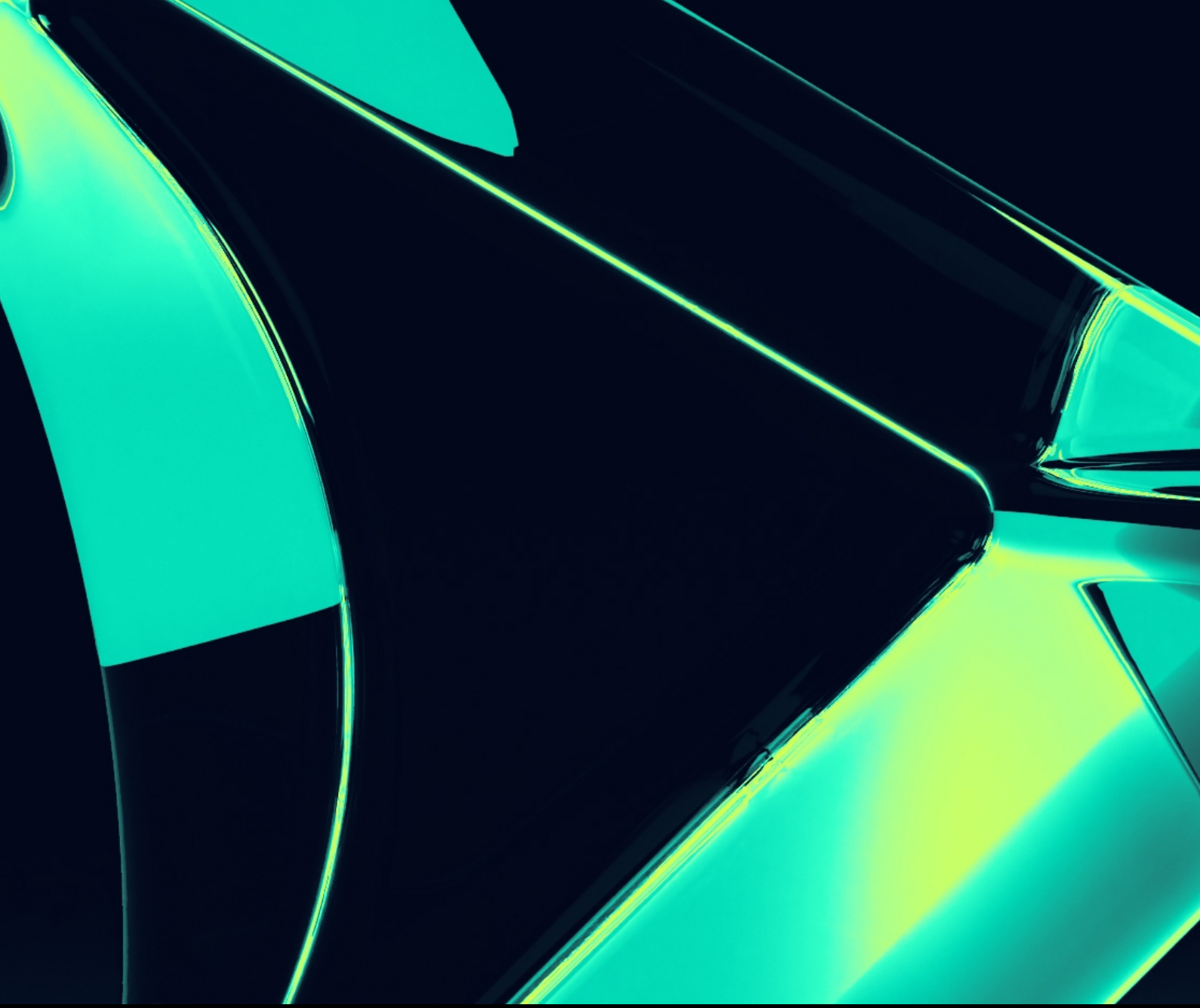
• We have more than 28,900 employees and are present in 33 countries across 5 continents, working for companies like Google, Electronic Arts, and Santander, among others.

• We were named a Worldwide Leader in AI Services (2023) and Worldwide Leader in CX Improvement Services (2020) by IDC MarketScape report.

• We are the fastest-growing IT brand and the 5th strongest IT brand globally (2024), according to Brand Finance.

• We were also featured as a business case study at Harvard, MIT, and Stanford.

• We are active members of The Green Software Foundation (GSF) and the Cybersecurity Tech Accord.



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