Cloud-native Development

Driving agile product, service and experience innovation at scale

CGI

Today's organizations require agility and innovation to deliver seamless digital experiences—anytime, anywhere. Cloud solutions are essential enablers of agile operating models that adapt continuously to constant change.

Mastering cloud-native software development to drive rapid innovation at scale and fidelity takes learning, practice and organizational tuning. Many organizations see the promise and are on the path, yet struggle to seize the prize and fully realize cloud-native development's potential.

How will you realize the full potential of cloud-native development to accelerate your transformation?

Driving business results with strategic cloud modernization at scale

Cloud is the "new normal" for how we work and an essential enabler of agile operating models that adapt continuously to constant change.

Some say cloud is the new operating model, especially in a digital world of anywhere operations.

Over nearly two decades, cloud services have become mass-adopted and pervasive. Cloud service providers—ranging from AI start-ups to independent software vendors to hyper-scalers—continue to innovate new services at a breakneck pace. The combination of cloud and other technologies, such as Internet of Things, advanced analytics, artificial intelligence, automation, 5G and edge computing, form the key ingredients of modern digital business solutions.

Today's enterprise cloud challenges often stem from inflexible cloud strategies, overly simplistic modernization efforts, immature cloud-native practices, poorly governed and integrated yet sprawling SaaS solutions, and governance, management and operational models that were not designed for the velocity, connectedness and dynamism of the cloud age.

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According to executives in the 2021 CGI Voice of Our Clients research:

3rd

highest innovation priority is investing in IT agility in the coming 3 years.

2x

revenue and profit growth from digital leaders' agile operating models compared to those just building or launching digital strategies.

>95%

of new digital initiatives will use cloud-native platforms as foundation, by 2025. (Source: Gartner®[1])

A balanced, flow-based software innovation approach

The Greek philosopher Heraclitus described the world with the phrase "panta rhei" or "everything flows." Our approach uses systems thinking to focus on optimizing the whole. We look at the overall flow of work and value to eliminate the largest bottlenecks.

We balance human-centered design (HCD), domain-based composable software architecture, aligned team topologies, and cloud-native platforms. We work closely with you to get these dimensions right, and they are critical characteristics of our cloud-native software factory model.

We work with you on three fronts:

- **Innovation compass (why and what):** Using HCD and domain and stream-based software architecture, we help you prioritize and innovate the right things.

- **Innovation best practices (how):** We co-develop the best team topologies and set-ups for agile, high-fidelity software innovation flows. We help with key platform and technology recommendations and implementations in a continuous integration/continuous delivery (CI/CD), DevSecOps and site reliability engineering (SRE) model.

- **Flexible sourcing, skilling and scoping (who):** We collaborate with you on the best sourcing, skilling and scoping approach. Based on your skills gaps and goals, we co-staff key teams for alignment and knowledge transfer. We adapt to your desired blend of onsite, onshore and nearshore operation, and can scope from agile cloud-native software delivery to full DevOps, including SRE teams.
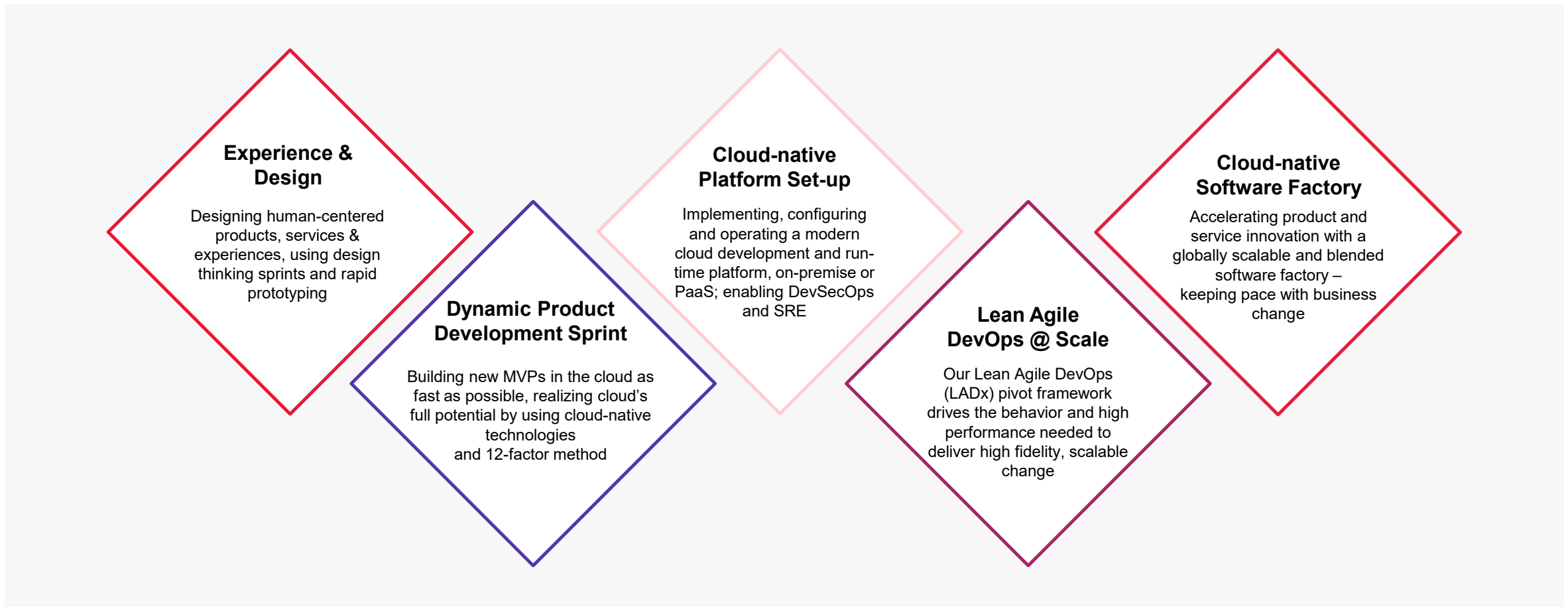
With our human-centered, cloud-native software development and DevSecOps services, we partner with you to bring product, service and experience innovations to market at pace and scale—and put agile innovation into your organization's operating DNA.

What cloud-native success looks like

- **Speed:** Rapid release times and frequency allow for **innovation** and new functionality to be delivered fast and at scale to support your "sense and respond" operating model.

- **Stability:** Your cloud platforms and SRE model use the highest degree of **automation** and facilitate stability and resilience.

- **Scalability:** Your **containerized** run-time environments and serverless architectures effortlessly scale based on demand, optimizing cloud resource consumption.

- **Savings:** Your pervasive **12-factor app** design pays back with easy portability and scalability, easy hand-offs between developers and easy continuous deployment.

- **Security:** Your cloud platforms support continuous patching, **zero-downtime upgrades** and instant "repaving" of virtual infrastructure to stay ahead of the latest threats.

- **Satisfaction: HCD** at the front of your cloud-native software development flow creates differentiating and meaningful experiences for customers and employees.

- **Skills:** Your employees have mastered the cloud-native software development factory model, with experience in low/no code development, agile DevSecOps and SRE.

- **Swift delivery:** An architectural focus on **composability** and microservice is paying off, enabling quick reconfiguration of components into new critical business capabilities.

CGI Cloud-native Software Development Services

Experience & Design

Designing human-centered products, services & experiences, using design thinking sprints and rapid prototyping

Dynamic Product Development Sprint

Building new MVPs in the cloud as fast as possible, realizing cloud's full potential by using cloud-native technologies and 12-factor method

Cloud-native Platform Set-up

Implementing, configuring and operating a modern cloud development and run-time platform, on-premise or PaaS; enabling DevSecOps and SRE

Lean Agile DevOps @ Scale

Our Lean Agile DevOps (LADx) pivot framework drives the behavior and high performance needed to deliver high fidelity, scalable change

Cloud-native Software Factory

Accelerating product and service innovation with a globally scalable and blended software factory – keeping pace with business change

Experience and Design

Our human-centered experience and design teams help you prioritize and build products and services that can be used intuitively and delight your internal or external customers.

We conduct human-centered ambition workshops to create alignment between your business, customers, stakeholders and technology. From ideation to innovation, we help you envision fresh solutions. We facilitate product, service and user experience (UX) design sprints. Our designers use rapid prototyping with an experimental approach that allows our joint teams to test and adjust business concepts and technical solutions.

We can also help you build out, staff and mature your own internal design/UX studio with a flexible co-staffing model.

Dynamic Product Development Sprint

We focus on rapidly co-creating a new product or service in the cloud: from idea, design and minimum viable product (MVP), to build and scale. The right team topology, agile method, tech stack, cloud-native platform and architecture are crucial for success. Our application services optimization program (ASOP) "in-a-box" can serve as a launch pad and accelerator.

We start with an innovation idea that leads to a business vision and business case. If available, we validate and refine your existing work. During high-level design, we define a scope to launch a first MVP within a few months. In the first sprint, we start with a nimble, two-pizza team topology. We drive rapid dynamic progress with a sequence of sprints, each with a refine-or-scale decision at the end.

Before launching the MVP, we switch tooling and team topology to DevSecOps and SRE including additional training and stakeholder education. After MVP launch and cool-off, we work the backlog to deliver new user-driven features towards full productization. We regularly revalidate and adjust the business model and release strategy to maximize value.

This service aims to build credibility in how to deliver cloud-native innovation rapidly. It can serve as a template to replicate in other parts of your organization.

Cloud-native Platform Set-up

We help you choose, set up and operate the right cloud-native platform and supporting technology ecosystem.

For platforms, we can advise across the hyperscalers (e.g., AWS, Microsoft® Azure and Google's GCP), leading ISV platforms (e.g., Red Hat® OpenShift and VMware Tanzu™ hosted on public or private clouds) and pure Kubernetes with open-source components.

For supporting cloud-native technology, we cover container technologies, DevOps toolchains (including security components for DevSecOps) and emerging application-platform-as-a-service (aPaaS) components such as serverless, API gateways and service meshes. We also help with the purpose-fit monitoring, observability and AIOps solutions to enable full SRE.

We provide reference blueprints and vendor evaluations and offer our CGI SiteReliability360 for AIOps-powered multi-cloud management. We can assist with implementation, integration, tuning and operation, transferring knowledge along the way.

We deliver this service as stand-alone or as part of our Cloud-native Software Factory.

Lean Agile DevOps @ Scale for Cloud-native

We support the move from a project-based, waterfall-driven organization to a product, domain and business stream-focused and flow-based delivery organization. Our proven LADx method accelerates this transformational pivot. It supports the leading scaling agile frameworks (e.g., SAFe, LeSS, DA) as well as the 12-factor cloud-native application methodology.

Our experts assess your maturity across skills, organization model, team topologies, operational processes, and the platform and technology stack. A series of workshops drives stakeholder alignment, business domain and value stream models, and the design of the agile operating model and team topologies. Training sessions prepare employees for new roles, working in agile scrum teams, and prioritizing work from value-driven backlogs. Our experienced coaches support the new scrum teams in their sprint cycles and train product owners and scrum masters to perform as coaches. Retrospectives capture lessons learned for subsequent program increments.

DevOps and SRE capabilities are gradually integrated into the operating model via appropriate sprints. A Center of Enablement and a platform team support enterprise-wide consistency and capabilities.

Cloud-native Software Factory

Our software factory model standardizes, streamlines and optimizes the cloud-native software development process for an accelerated product and service innovation flow at scale.

We leverage our proven ASOP, LADx and CGI SiteReliability360 accelerators. We introduce a standard delivery model based on an agile scaling framework and set up team topologies for fast flow. We bring key cloud-native systems thinking and architecture tenets, as well as platform and tech stack recommendations and reference architectures. Our model shifts the focus from cost and activity to value stream, flow of work, time-to-market and quality.

During the design phase, the factory is tailored to your desired mix of insourced, outsourced and hybrid (where we support your employees with key expertise, skills and coaching). We also advise on and implement the right cloud-native platform(s) and technology stack.

The design phase is followed by a launch and "bake-in" phase, leading to full operation and scaling. Over time, the degree and sophistication of test and release automation is dialed up. The factory can be configured towards a full LADx and SRE mode to also manage and optimize the ongoing CloudOps and AIOps aspects of the software.

Case in point

Cloud-native sprint digitizes and automates COVID-19 information for citizens

When the COVID-19 pandemic first reached a Canadian province, the government's 8-1-1 helpline saw a spike in calls, creating long wait times for constituents to get advice.

In discussing how to manage the call volume, the idea was to develop a digital assistant to triage questions, direct callers to the right services and answer pressing questions in a matter of seconds.

In an agile, human-centered design and development sprint, the team of government and CGI experts developed a digital agent MVP in just 7 days using a public cloud-native platform—Google Dialogflow on Google Cloud Platform. They also used natural language processing to refine the digital assistant's ability to understand questions and respond appropriately.

The digitization, rapid migration and staging of critical information has allowed the digital assistant to field hundreds of thousands of data requests, providing immediate responses to inquiries. In the early critical stages of the pandemic, the digital assistant also helped answer healthcare workers' vital questions, including how to best wear and remove personal protective equipment.

Case in point

Fueling an airline's digitization with a cloud-native factory and DevOps

CGI is a long-term partner to a European airline in improving their customer experience and omni-channel sales. When the company started an extensive digitization program, CGI was the logical partner of choice.

We helped the client plan and execute a modern API architecture, using integrations, microservices and an API Gateway, to enable consistent services across channels, including partners. The collaboration included forming a model for DevOps and CloudOps, operationalized in a scalable cloud-native development factory on AWS.

The program reduced deployment times from hours to minutes, increased deployment frequency from bi-weekly to several per day, and cut wait times for infrastructure setup and changes to minutes. The increase in agility and speed to market is transformative.

As a result, the company's innovative app gives passengers peace of mind by providing relevant information at just the right time during their journey. This is because back-end processes flow without a hitch to provide information that is always available and up to date.

We combine industry and technology expertise and industrialized cloud-native software engineering

When it comes to innovation through scalable cloud-native software development, we bring you the full breadth and depth of cloud-native services, industrialized methods and global scale.

For 45+ years, we've been a strategic partner in helping leading organizations achieve state-of-the-art software engineering at scale. We apply our deep understanding of:

- **Our clients' industries.** We analyze the trends that are changing these industries.

- **Software engineering.** We apply the ASOP, LADx and CGI SiteReliability360 accelerators we developed for our own portfolio of 200+ industry solutions. We understand how to operate hybrid environments: your premises, our premises, multi-clouds, the edge, with CloudOps and AIOps.

- **Cloud.** Over the last decade, we built our practice of 7,000+ cloud strategists, architects, developers and operators to guide and support clients on their cloud modernization journeys. We partner with all major hyperscalers, PaaS and SaaS providers.

- **Technology.** Our global network of emerging technology teams and centers continuously scans the technology landscape to provide you with salient advice.

- **Innovation.** In our 12 Innovation Labs, we co-create with clients and prototype breakthrough solution to your toughest problems.

- **Architecture**. We have a global architecture practice with 1,500 certified architects and our Responsive, Collaborative approach to Digital Architecture (RDCA).

When it comes to cloud-native development services CGI is the partner of choice for our clients around the world. Let us help you chart your future with our full breadth and depth of services and expertise.

We stand ready to work with you to accelerate the pace and agility of your software innovation in support of a sense and respond operating model for today's agile and adaptive enterprise.

CGI's Cloud-native Software Development Services are part of our full suite of cloud services designed to help with the transformation to an agile, adaptive and resilient enterprise. In addition to cloud-native development innovation, we offer cloud strategy, architecture and planning advisory, IT and application cloud modernization, enterprise SaaS solution installation and configuration, cloud turn-around intervention, and ongoing cloud management, operations and optimization services.

Contact us at info@cgi.com **or learn more at** cgi.com/cloud.

About CGI

Insights you can act on

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world. We are insights-driven and outcomes-based to help accelerate returns on your investments. Across 21 industry sectors in 400 locations worldwide, our 80,000 professionals provide comprehensive, scalable and sustainable IT and business consulting services that are informed globally and delivered locally.

For more information,

Visit cgi.com

Email us at info@cgi.com

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[1]Gartner® "Top Strategic Technology Trends for 2022," David Groombridge, Frances Karamouzis, et al., 18 Oct 2021

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