

Application Development for the **Digital Enterprise**



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Advancing Digital Adoption through Strategic Development

Digital disruption has had an undeniable impact on the financial services industry. While firms may not be ready for a fully-digital, enterprise transformation, Synechron draws upon Digital, Technology and Business Consulting expertise to create a digital foundation during strategic application development.

As a digitally-driven company, we believe in developing applications that advance our clients' digital strategies by contributing lean, future-proofed solutions that are compatible with their technology ecosystems. However, before a digital enterprise can be achieved,

firms must transform their application development processes, which in many cases will involve embracing Agile and DevOps.

At its core, a digital enterprise is rooted in a DevOps methodology, promising continuous integration and delivery, enabled by portable components, standardized code, interoperable applications, and a steady stream of updates to stay current. By introducing increasingly Agile applications into our clients' environments, we are laying the groundwork for enterprise DevOps and ultimately, a digital enterprise.



Stages of DevOps Maturity

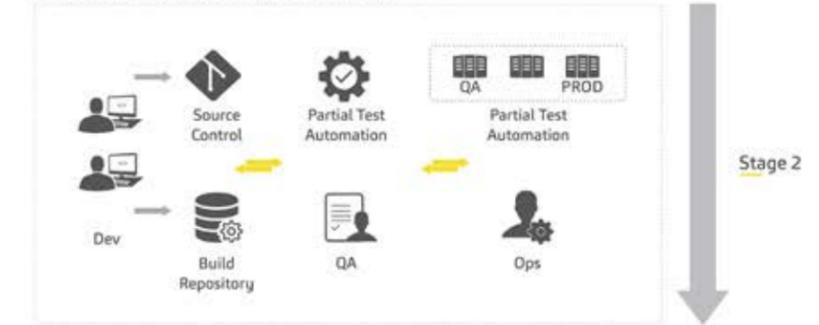
Pods- Additional Delivery Models

Increasingly, Synechron's clients are looking for alternative delivery models. In addition to Agile, Waterfall, and DevOps Approaches for application development, we also offer a variety of delivery models for how we build teams and delivery projects. In terms of teams, we work with clients to create "Pods" around a specific theme, combining multiple skill-sets. This is a unique, differentiated value Synechron can offer given our cross-functional experts across Digital, Business Consulting, and Technology. In terms of global delivery, we're also working with clients on onshore, offshore, mixshore, and near-shore delivery.

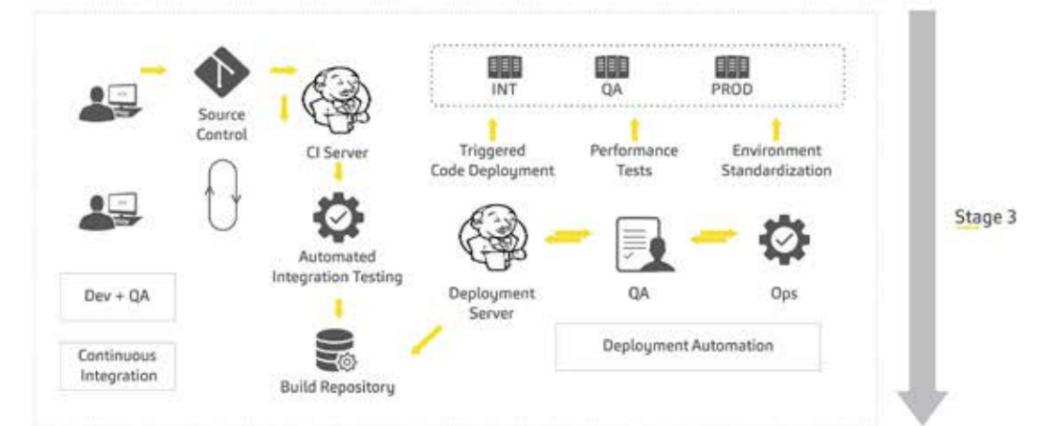
INITIAL GOAL SETTING + AUTOMATION



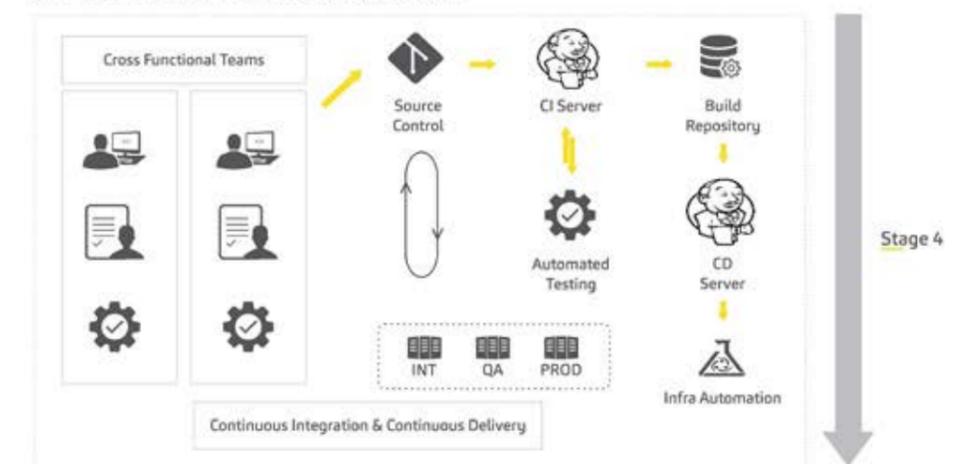
MANAGED COMMUNICATION + RELEASES



DEFINED COLLABORATION, BUILD + TESTIMONIAL



OPTIMIZED VIA AGILE TEAMS + CANARY RELEASES



Three Key Challenges to Application Development Using Agile and DevOps

Financial services firms are facing three significant challenges in achieving DevOps maturity. Synechron is uniquely positioned to consult them in their process maturation journey toward a true digital enterprise.



1

Enterprise Fragmentation

DevOps thrives on efficiency, consistency, and standardization. For many financial services firms, decades of monolithic systems development, siloed business operations and an overabundant reliance on tools have created a fragmented enterprise lacking universal best practices for processes or metrics. By applying our proprietary application development methodologies and frameworks, Synechron helps to reduce fragmentation and increase agility.

2

Legacy Architecture & Manual Processes

A functional DevOps strategy necessitates process automation, cloud-enablement, and componentized applications and is incompatible with manual processes and the fragile source code of legacy applications. Synechron not only builds lean, cloud-enabled applications but also facilitates the development of DevOps-friendly automated applications to replace manual processes.

3

Lack of Internal Capabilities and Resources

Running a true DevOps practice requires transformation of people, in addition to processes and technology. It not only requires developers, testers and IT Operations professionals to completely transform their methodologies and approaches but also requires the business teams to align to the Agile operating model. Only then can Enterprises realize the full value of this transformation.

Synechron's unique blend of niche technology experts, Subject Matter Experts and experienced DevOps professionals, enables enterprises to transform from the ground up, while gaining incremental benefits by virtue of Automation and Agility, in parallel.



Overcoming Fragmentation

Legacy applications that rely on fragmented business processes and Information Technology (IT) infrastructures often hinder the operational efficiencies of financial institutions. Applications are expected to be developed with increasing speed, efficiency and consistency; however, too often a lack of standardization ensures the contrary. Synechron aligns the application development initiative with the greater enterprise vision, prioritizing standardization and involvement of IT and business groups from strategy

through implementation, thus increasing operational performance.

One of the primary requirements to transition from a Waterfall methodology to an Agile or DevOps development approach is to promote collaboration among typically siloed groups. Many firms hesitate to apply more rapid-output development models, concerned with increased risk due to the industry's strict regulations, compliance-laden processes and the immense impact of systems failure. However, a well-implemented

Agile or DevOps methodology enforces greater collaboration among all groups benefiting from early consideration of compliance and regulatory requirements, and continuous testing. At an enterprise level, this allows a firm to establish a reusable code repository, standardized toolkits, governance best practices, and metrics which dramatically reduces time-to-market, cuts application upkeep, improves interconnectivity, and keeps cost down.

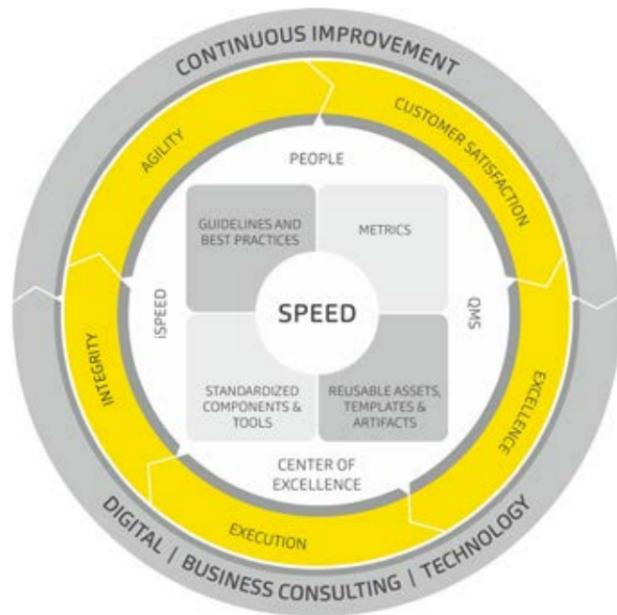
Synechron's Development Approach

To adhere to our high development standards, Synechron employs a series of proven methodologies selected and implemented specifically to serve the unique needs of our financial services and insurance clients and to scale to

enterprise levels. Synechron holds the Microsoft Gold Certification for Application Development. Furthermore, Synechron aims to deliver solutions that can be maintained easily and affordably following the project's conclusion.

Structured Project Execution & Engineering Discipline (SPEED)

The **Structured Project Execution & Engineering Discipline (SPEED)** is Synechron's proprietary development framework to provide superior code quality, efficient delivery, and standardization across individual applications or enterprise initiatives. Applied to Engineering and the Systems Development Lifecycle (SDLC), SPEED focuses on four primary areas:



1

Guidelines and Best Practices

Establishes standards to produce code that is clean, secure, defensive, efficient, and scalable. Review phases are used to fortify security, performance, scalability, reliability, supportability, and extensibility. Tasks are graded on importance and criticality, encouraging timely delivery, efficient resourcing, risk mitigation, enhanced documentation, and regular testing and analysis.

2

Metrics

Using the Best Practices framework, projects are measured by both maturity and quality, factoring in variables such as project size, developer resources expended, and the amount and types of defects generated.

3

Reusable Assets, Templates & Artifacts

To maintain consistency and compare disparate projects, refer to a series of reusable SDLC templates and checklists.

4

Standardized Components & Tools

Strategically use-vetted and pre-developed architectures, tools, components, and standardized platforms, while maintaining a robust code repository.

Taking an Agile/DevOps Approach

For those clients ready to test or fully embrace Agile development, Synechron can help them to refine their processes or to co-develop to reinforce best practices during project delivery. This allows us to help these clients overcome their top challenges head-on. For example, most Agile methodologies don't address project management or quality control but instead favor simplicity and agility. Not only does this not fully abide by the strict standards of the financial services industry, but it doesn't accommodate enterprise-class software and systems initiatives. As such, Synechron adopts a SAFe (Scaled Agile Framework) Scrum methodology. Specifically designed for product teams working on multiple modules toward a common goal, it enables Synechron to efficiently deliver robust, large-scale projects by syncing up Agile teams and creating a culture of collaboration, standardization, shared artifacts, and knowledge exchange.

The DevOps practices can be integrated seamlessly into Scrum teams by virtue of:

- Upfront capacity and release planning
- Behavior Driven Development (BDD) framework adoption for test automation, risk-based regression
- Size estimation vs. effort estimation
- Minimum Viable Product (MVP) solutions vs. long-running user stories
- Train schedule vs. half-done functionality
- Automated Integration and Deployments (continuous integration and continuous delivery) to enable the fail-fast paradigm

Developer Toolkits Approach

When considering developer toolkits, Synechron aims to keep tools to a minimum. By developing light applications from the ground up, we provide critical architectural solutions that aren't tied down to specific technologies

and for which technology stacks are kept up to date easily. In doing so, we reduce dramatically the inflated costs associated with vendor contracts, product specialists, ongoing maintenance, and version updates.

However, we do provide extensive experience and expertise across both major and niche development toolkits, allowing us to work within our clients' unique technology environments and reducing the need to add additional tools.

Among our Agile/DevOps-enabled toolkit capabilities are:

Code Quality Management	Trunk based Dev, FxCop, StyleCop, ReSharper
Responsive Design	ANGULARJS, Knockout, Bootstrap, HTML5
Platform	JIRA, Confluence, VERSIONONE, Quality Center, CA Service Desk, servicenow
Continuous Integration	git, Jenkins, artifactory
Unit Test Automation	NUnit, JUnit, BWUnit, SoapUI, EMMA
System & Regression Test Automation	Se, Cucumber, HP QuickTest Professional, appium
Performance Test, Security Test	JMeter, SOASTA, LISA, HP Loadrunner, CHECKMARX
Continuous Delivery	puppet labs, CHEF, docker, ANSIBLE, Jenkins

OpenCover	SonarQube	OpenCover	SonarQube	Continuous Monitoring	sonarqube	Nagios	OPNET	Foglight	PRTG	amazon CloudWatch	JIRA
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Legacy Modernization & Innovation Enablement

Another significant impediment for financial services organizations looking to implement innovative application development strategies and employing Agile and DevOps techniques is overcoming Legacy Infrastructure. Synechron helps firms address this challenge with three key value propositions: the reduction of manual processes, consolidation of siloed systems, and cloud enablement.



Automation

Financial services firms hold their applications to the highest standards of performance, accuracy, and responsiveness. However, this is hard to achieve when relying on manual processes, which are inefficient, error-prone, and can bottleneck a workflow. Siloed, monolithic systems can compound these problems with limited visibility, batch processing, and time-consuming maintenance. By employing advanced, AI-powered, automation techniques Synechron has helped clients automate unstructured document processing and gain new insight through predictive and prescriptive analytics. Increasing automation will progress enterprise agility, as it is a critical component for effective DevOps, which thrives on rapid development of automated workflow components and test automation.



Consolidation

Enterprise applications depend on efficient communication with parallel systems and data storages. However, efforts to overcome incompatible applications and disparate data models have led frequently to a buildup of convoluted workarounds and redundancies that risk data

incongruities. To overcome this challenge, Synechron has developed lightweight user interface (UI) layers to connect legacy systems through Application Programming Interfaces (APIs), supported by back-end optimization, delivering a singular view and workflow.

For clients with long-term DevOps strategies, API-first, microservice-based applications provide the ideal, componentized development structure. Synechron has worked with clients to establish DevOps through both the decomposition of monolithic applications as well as to greenfield microservices-based applications.



Cloud Enablement

The emergence of cloud technology has removed many barriers previously facing application development and is a prime enabler for an effective DevOps strategy. The dynamic provisioning and immense processing power have been invaluable for Synechron in our development of Big Data, Deep Analytics, Blockchain, and Omnichannel solutions, while also enabling 24/7 mix-shore development to provide our clients around-the-clock service. In addition to providing legacy modernization through significant cloud migrations, we have helped clients transform their business with cloud-based applications such as Customer Relationship Management (CRM) systems, data platforms, and customer-facing solutions. Synechron has extensive experience with all major service providers, is an Amazon Web Services (AWS) Partner and holds a Microsoft Azure Cloud Competency.



Innovation

Innovation initiatives are a driving force pushing financial services to modernize their applications, infrastructure and approaches and are, in some cases, also pushing the use of Agile and DevOps for rapid proto-typing of new digital applications. Companies are embracing Design Thinking, User Experience Design, and Engineering Approaches to create Minimum Viable Products (MVPs) in one or two-week sprints using preliminary research and ongoing user data to iterate and enhance their applications in real time. Synechron is dedicated to being on the forefront of digital innovation and uses our knowledge of emerging technologies to develop practical applications to solve real-world problems. We've worked with clients to develop applications to enhance data integration and analytics systems with machine learning, introduced predictive capabilities to data analytics platforms, delivered award-winning mobile applications for banks, contributed to global blockchain initiatives and much more.

We have experience developing innovative solutions incorporating:

- Blockchain
- Artificial Intelligence
- Data Science
- Machine Learning
- Virtual/Augmented Reality
- Internet of Things (IoT)
- Biometrics
- Mobile & Omnichannel Solutions

Case Studies



Robotic Process Automation (RPA) Application

A Global Investment Manager sought to enhance its highly-manual Investment Management Agreement (IMA) documentation process. Synechron successfully automated the review of IMAs, extraction of relevant requirements, and coding of related rules into the IMA management system. The Proof-of-Concept (POC) was developed in a three-month, rapid development cycle with the goal to free technical analysts for more strategic work.



Sell-Side Technology's Best Agile Development Initiative

Synechron developed six blockchain accelerator applications focused on use cases such as Trade Finance, Know Your Customer (KYC), Payments, Margin Calls, Insurance Claims, and Mortgage Financing. The three months of process reimagining and sprint development won Synechron the 2017 Sell-Side Technology Best Agile Development Initiative.



Legacy Modernization through Microservices

A major insurer wanted to modernize the way it reached its customers but was limited by monolithic architecture. Synechron implemented a cloud-based, API-enabled, microservices architecture enabling omnichannel services and a DevOps culture.



Enterprise Cloud Migration

A global bank selected Synechron to migrate all of its applications to the cloud. Each application underwent code remediation and analysis, was upgraded to the cloud, and encrypted for security. The migration occurred in three phases, starting with smaller, low-risk applications and building up to complex, business-critical applications. Two hundred applications were migrated per quarter, and the client has benefitted from reduced cost, enhanced security, and enterprise agility.

Capabilities & Resources

There is no one-size-fits-all solution in the complex Banking, Financial Services and Insurance (BFSI) landscape, which is why Synechron embraces Agility at the cornerstone of our consulting approach. With a diverse skillset, financial focus, and strategic approach, we can develop robust solutions for today while progressing enterprise strategies for tomorrow.



Migration & Application Sunset / Decommissioning:

As firms undergo legacy modernization, we help clients seamlessly migrate useful applications off legacy systems, delivering a smooth transition without interruption of service.

Our Application Service Offerings

Synechron's Application Development practice works hand-in-hand with our other Technology Teams such as Quality Assurance (QA) and our leading Digital and Consulting experts to develop robust programs.

Our services include:

Architecture & Design:

An application is only as good as its architecture and engineering. Our team assesses the existing environment and business requirements in order design robust, scalable, and future-proof applications.

Development:

Accelerate product development with cutting-edge technologies, advanced methodologies, and rigorous engineering standards. By employing SPEED and limiting tools, we can reduce both the upfront cost and future maintenance expenditures.

Performance Engineering:

Maintain peak application performance amidst constantly changing IT ecosystems and business strategies. We monitor for and identify potential incidents to fortify design and code.

Maintenance & Production Support:

Our team offers maximum coverage across all phases of the development cycle while our global staff provides 24/7 support.



Embracing Transformation

Whether it is implementing an Agile development methodology, adopting DevOps, or seeking a digital infrastructure, successful enterprise transformation requires change to both the architectural and operational structure that requires a clearly-defined, organization-specific roadmap. Synechron has worked with clients to devise Digital roadmaps, aided in the transition from Waterfall to Agile development approaches, and enabled DevOps within global institutions.

When devising a DevOps transformation strategy, Synechron will rigorously evaluate business processes, organizational structures and the technical architecture, informing the design of a customized development methodology and solidifying a standard approach from the start. Key approaches include:

Inside-Out Approach:

Using our knowledge of the client, Synechron recommends the right structure for an Agile team, led by an experienced team of Synechron consultants consisting of a certified Scrum Master, Solution Architect and

DevOps Lead. This team engages in creating Lean User Story Workflows, developing software sizing models using Story Points, delivering Minimum Viable Product (MVP) solutions, and establishing DevOps automation. Once the execution model is sufficiently mature, it is replicated across other agile teams.

Outside-In Approach:

The Synechron team executes a four-phase strategy:

- **Delivery** – Our process and technology experts assess the current state of the ecosystem, evaluating the client's team structure, SDLC platform, and application life-cycle process.
- **Design** – Based on the findings, Synechron designs a strategy for a thorough pilot application implementation, including necessary people, process and technology transformations such as reorganizing team structure from isolated to journey teams, filling missing roles, aligning business teams with IT, institutionalizing work intake and prioritization processes, reducing process overheads, and implementing Automation.
- **Pilot** – Synechron executes the design and captures data points and metrics such as Lead Time, Cycle Time, Velocity, Defect Removal Efficiency, First Pass Yield, and Test Automation Coverage.
- **Production** – Implement adjustments based on metrics and enter production

Overall Framework for Development Maturity

We work with our clients to guide them through the necessary frameworks, models, metrics and toolkits needed to support their development initiatives.

Process Frameworks	Engagement Models	SDLC Maturity Framework	Metrics, KPI's	Toolkit
<ul style="list-style-type: none"> • Scaled Agile Framework (SAFe) • Agile Scrum • Kanban • Iterative 	<ul style="list-style-type: none"> • Fixed-Price • Managed Capacity • Managed Services (SLA Driven) 	<ul style="list-style-type: none"> • Trunk based development • Test Driven Development • Behavior Driven Development • Unit Test Automation • Functional Test Automation • Regression Test Automation • Synthetic Transactions • Continuous Integration • Continuous Deployment 	<ul style="list-style-type: none"> • Lead Time, Cycle Time • Velocity • Defect Removal Efficiency • First Pass Yield • Test Automation Coverage 	<ul style="list-style-type: none"> • Platform: Jira, Confluence, TFS, VersioOne, ServiceNow, SVN, GitHub • Testing: NUnit, Junit, Selenium, Cucumber, JMeter • CI/CD: Jenkins, Puppet, Chef • Monitoring: SonarQube, Splunk, Nagios, Foglight, Cloudwatch, Kibana

Development Skillsets

Our Application Development practice has extensive experience developing applications to deliver complex financial solutions within the restrictive scope of regulations, compliance and risk management. This financial-fluency allows Synechron to tackle complicated problems with lean, versatile, and communicative development teams.

Synechron is technology agnostic and has deep experience providing

full-stack development and consulting services for: JavaScript frameworks, .NET technology stack, Java technology stack, Middleware and BPM solutions (PEGA, Tibco, MS CRM, etc.), API Management, Microservices, Cloud Services and Database Services.

Synechron can also fast-track process transformation through our expertise in configuring and customizing platforms such as JIRA, Confluence, AgileVision, ServiceNow, QualityCenter, TFS, SVN and others.

Flexible Delivery Models

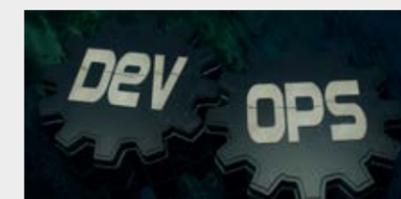
With 18 global offices, Synechron is able to adapt to our clients' unique delivery needs. Our consultants are capable of both operating in "run the project" capacity and augmenting development teams. Additionally, our strong Offshore and Nearshore development centers enable us to hit aggressive delivery deadlines, provide 24/7 support and maintenance, and deliver managed services via the cloud.

Case Studies



DevOps Enablement

A global financial organization selected Synechron to expedite its Agile and DevOps journey across multiple teams. Synechron provided a range of services including training, test automation, continuous integration and delivery initiatives, and providing build/release engineering improvements.



Lean DevOps Transformation Support

A global financial organization selected Synechron to expedite its Agile and DevOps journey across multiple teams. Synechron provided a range of services including training, test automation, continuous integration and delivery initiatives, and providing build/release engineering improvements.



Full-stack Development

Synechron provided full-stack development services for a leading insurance software provider looking to transform a monolithic, product. Synechron deconstructed the system into a series of more than 20 Angular applications powered by a robust .NET backend changing their market perception and positioning. Synechron also designed and developed tools and operations to support processing for 150+ million claims, 34,000 files, and 500+ conversions annually with 95% uptime.

Global Footprint



Synechron
Digital / Business Consulting / Technology

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