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How Banks Can Take DevSecOps to the Next Level

The only way banks can sustain or build their innovative and competitive edge is by powering their digital transformation strategy with effective DevSecOps

Most banks today are driving business objectives aligned to keep pace with the disruptive born-out-of-cloud fintech startups and soaring customer demands primarily in mobile, retail, wealth and private banking channels. DevOps practices are being followed by some digital banking startups and other disruptive online fintech platforms by leveraging cloud services to adapt without much spend. The customer demands have now converged into perceivable and measurable KPIs such as:

- Login time
- Interface speed with other payment gateways
- Funds transfer
- Account opening
- Account statement generation, etc.

For a bank, the performance of these KPIs will depend on several aspects like:

- Scale of technical debt or legacy code
- Level of orchestration and automation maturity
- Vision of the bank translating into goals across the organization
- Governance and value stream visibility connected all the way from technology to bank's users
- Design led thinking to bake in compliance and security into every stage of product delivery

Since most banks are still operating in silos due to historical, and in some cases strategic reasons, most of the programs designed to address these dependencies have different outcomes, KPIs and timelines, making the convergence of digital transformation painful. A case in point here is that app modernization, integrated messaging and infrastructure transformation programs, which are part of the digital transformation umbrella, have different goals and objectives.

DevOps in a bank is a collaborative coming together of business objectives, 'Change the bank' and 'Run the bank' to deliver speed, quality of service and an intuitive end user experience. For the business objectives to translate into agile change projects and efficient run operations, CxOs and Engineering Heads play pivotal roles.

Roles leading digital transformation and their impact on DevOps in banks

The advent of DevOps and the more recent BizOps has brought to focus the growing importance of engaging with the CxOs of an organization early and continuously to build a successful digital transformation journey. If digital transformation is the "what" of the future, DevOps and BizOps are the "how" of that journey.

Both these decisive programs need a constant engagement with the CxOs, both from the strategic and instant implementation feedback perspective.

The impact of these programs are versatile and profound around people, process, technology and governance towers, the backbone of DevSecOps transformation.
It is hence important to look at the changing perspectives and roles of the CxO group if we were to achieve the successful outcomes the business and technology expects from these programs.

Chief Technology Officer [CTO]: The CTO of any enterprise possesses a strategic view of the organization's technology architecture and business. The CTO develops pertinent initiatives to lead technology transformation towards organizational success by taking charge of overall outcomes. A CTO's responsibilities in a banking organization include:

- Designing comprehensive product, design and technical requirements through agile frameworks for collaboration, tracking and prioritization.
- Creating a central platform team for evangelization, evaluation, implementation and support of tools across the bank.
- Prioritizing digital transformation programs based on risks and benefit analysis associated with the customer – Cloud, microservices and containerization first for new products and features while ensuring parallel focus on programs like core banking refresh / upgrade.

In fact, the vital need of digital transformation in business strategies is such that a CTO designation, it is said, should stand for 'Chief Transformation Officer'.

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Chief Information Officer [CIO]: A CIO role usually manages both strategic as well as operational responsibilities. But the primary aspect of a CIO's role is to manage change. With increasing focus on IT, the CIO's role has been expanding in proportion. The financial industry attracts cyber criminals more than other sectors. Hence, the CIO's task in a banking enterprise is to develop robust security models while driving digital transformation. The CIO's role also includes:

- Dismantling silos built around different business, process and IT Functions – Create common agile squads/pods for run and change the bank.
- Defining KPIs for successful business and technology outcomes – Mobile banking response times, Internet fund transfer times, disaster recovery SLAs etc.
- Acquiring new skills and assuming new responsibilities while fostering internal collaboration and creating a culture that can adapt to change seamlessly.
- Improving the front-office and back-office digital functionalities, the focus is increasingly on improving the consumer experience across the entire customer journey.
- Sharing insights with Marketing to enable the delivery of personalized solutions, which can yield better customer experience.
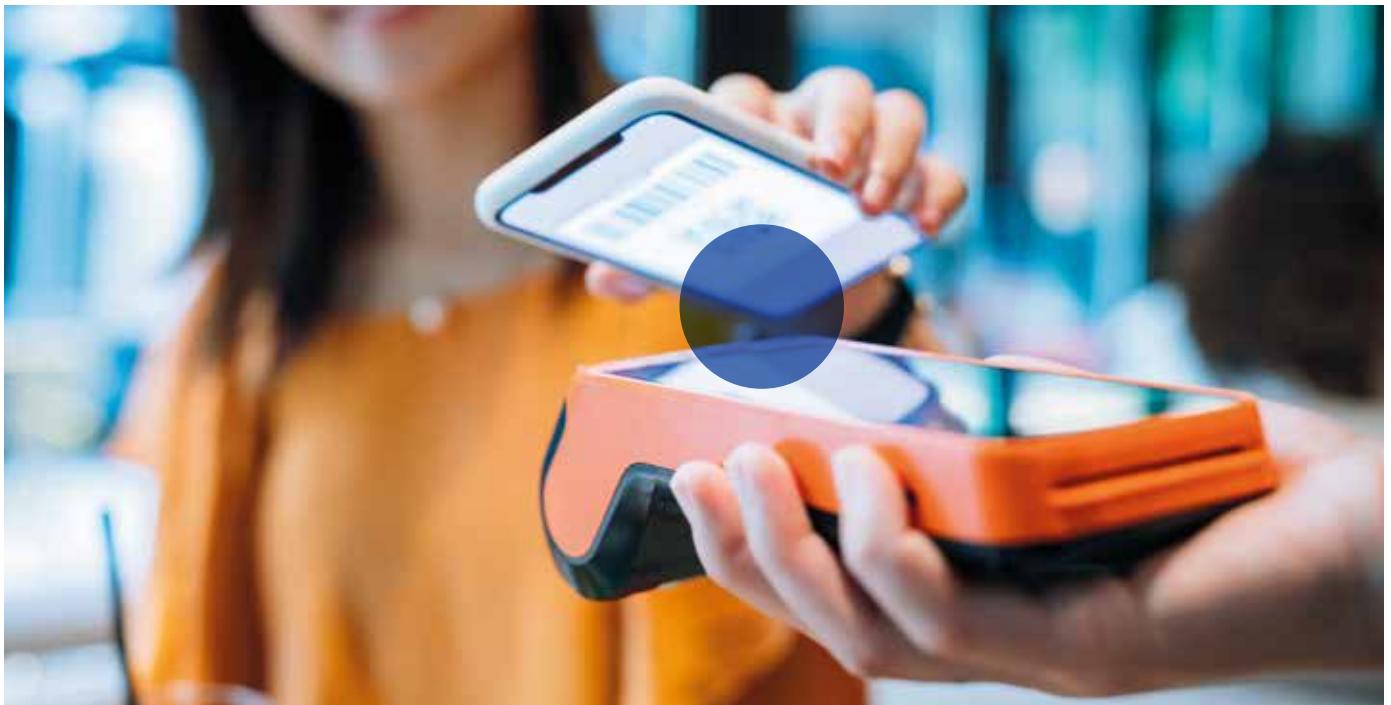
VP of Engineering: The VP- Engineering needs to be well versed in industry digital technologies and leading tools, automation, AI and Analytics, and should have a proven track record of implementing Digital Finance/Insurance/Banking/CAAS solutions. The role involves:

- Devising continuous everything – Requirements, design, build, test, deployment, feedback and optimization.
- Handling of process diagnostics, blueprinting, storytelling and data analysis.
- Seeking customer feedback at various SDLC iteration stages – MVP, Test and deployment.

Chief Information Security Officer [CISO] : As mentioned earlier, security for the banking sector is most crucial and banks as well as other financial institutions must realize that there is no one common tool that can protect the organization from cyber threats. People, processes, systems and technology should be aligned and the overall responsibility for this lies with the CISO. The CISO needs to adopt various strategies to manage cyber security operations. His / Her responsibilities include:

- Building a lean process with IT and compliance standards.
- Prioritizing digital transformation programs based on risks and benefit analysis associated with the customer – Cloud, microservices and containerization first for new products and features while ensuring parallel focus on programs like core banking refresh / upgrade.
- Focusing on security hygiene and this will help most organizations sail through the crisis. Customizing controls, selective monitoring and focusing on comprehensive security hygiene.

Some of the translated challenges for banks in undertaking the transformation journey are:

- Silos across Change the Bank, Run the Bank, Security & Compliance. The siloed structure coupled with organizational resistance to change renders making the shift difficult.
- Different reporting structure and strategies need different methods to transform.
- Legacy applications and infrastructure involve cost and huge efforts to transition.
- Resistance to innovation appetite, a factor common in legacy enterprises, prevents introduction of new technologies.
- Security and compliance OEMs do not keep up with diverse control requirements of standards – PCI DSS, GDPR, ISO 27K , NIST etc.
- There is unavailability of a single pane of glass for measure and traceability of KPIs driving business and technology outcomes.

Taking DevOps to the next level

Once the strategic vision of a bank's business and technology is established, It becomes imperative to outline a precise and comprehensive approach to achieving the Agile Release Orchestrated DevSecOps end state.

The impact of the strategic and consultative approach to DevOps is quite compelling in organizations driving several business and IT initiatives in parallel where collaborative effort and converged outcomes are key to successful implementations.

The first pit stop of the prescriptive approach to DevOps transformation journey is setting up teams that will drive banking product strategy, tooling landscape and policy definitions. The recommended option is to have a central platform team to drive tooling and process and have a federated agile scrum team across product lines and business units for pipeline management of build, test and deploy.

The IT strategy and KPIs must be driven from the product owner's perspectives to

ensure IT becomes a successful business enabler. For instance, there might be a need to run core banking in a waterfall model given the impact of risking a fast-paced agile model and run alternate channels like mobile, internet and private banking as agile models. This could be made possible if the next generation architecture is a distributed one with modular development, and if microservices first is the product owner's strategy. A prescriptive agile DevSecOps team structure will be variants of the following 7 roles:

1. Product owner - Promotion of the benefits of DevOps, quantify business benefits

2. Scrum master - Facilitation for an agile development team

3. DevOps engineer – Pipeline and Infra as code for build and ops

4. Test automation - Application functionality, technical landscape, test automation tools, scripts with development

5. Governance – RBAC, security and compliance

6. Process consultant – Release and change management

7. Central platform team – Tools stack design, implementation and management

The product owner's perspective to implementing DevOps automatically aligns the organization with TOGAF driven architecture strategy for apps, API and infrastructure continuity while enabling IT4IT for managed IT services. One of the significant outcomes of a business-driven IT strategy is the creation of a vision for automaton and orchestration.

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There could be different flavors of vision strategies depending on the business objectives of a bank. With a reference vision, architecture and strategy in place, the bank can chart the DevOps approach. The approach to attaining the DevSecOps end state is centered on enabling parallelism across digital transformation programs, with DevOps being the overarching practice across all of them. Hence, it is very important to decide on the sequence and parallelism of programs such as:

1. Migration of Dev environments (In the order of non-banking, alternate channels and corebanking) to cloud.

2. Data center exit strategy – With due consideration and compliance controls given to customer sensitive data.

3. Application led version upgrades of the ecosystem - End of life legacy versions followed by digital innovation.

4. Container and microservices transformation – Starting with non-critical banking applications.

5. Enable shift left IT security and bank standards for compliance in data center before moving to cloud – PCI DSS, NIS, GDPR, ISO 27K and so on.

6. Integration of release orchestration platform to the CI/CD tool stack – Enables release governance through predictability, re-usability and visibility of release status and issues.

7. Define and activate business, process, technology KPIs for:

   - Issue traceability: Funds transfer pipeline stuck due to build agent overload and wrong capacity forecast.

   - Metering/chargeback: Charge for DevOps services across business units like Wealth management, Wholesale banking, and Private banking for better cost control.

   - App and infra deployment quality: Bank's customers look to quality of services ahead of even innovation only preceded by security, hence quality of the product is essential to staying ahead in competition.

   - Agile delivery: Bridges the siloed gap between a business analyst of a bank's function, the developer and testing teams for early detection of issues, instant feedback and greater collaborative productivity.

   - Value enablement: DevSecOps will have a significant impact on mindset, culture and skill change to an organization. It is imperative for organizations to measure the value of investments and transformation at every level in terms of:

     -- Increased scope of test automation in improvement of quality of the released product

     -- Infra as code reduced deployment failures

     -- Self-service catalog blueprints reduction in onboarding time and delivery time

- Instant feedback: In a high voltage race to be the fastest to deliver new banking features to end customer, AI enabled instant feedback bots for collaboration, pipeline and operations management is the key.
- Pipeline performance: There are several factors that affect the CI/CD pipeline performance – Stable integrations, platform design and capacity forecast are some of the key drivers.
- Sprint velocity and release frequency: The velocity of the sprints for MVP and feature delivery is directly proportional to business and DevOps' success.
- Predictive warnings: The analytics driven approach to predict the success of a release or a pipeline is essential to pre-empt any bugs or issues getting leaked into a stage of irreversible damage.
- BizOps and customer experience: All of the above KPIs will steer banks towards the next level of DevOps – BizOps, which effectively ties DevOps initiatives to business benefits and outcomes.

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While most of what is outlined in the approach above maps best practices recommendation followed by consultations and devops services organizations the world over, some unique approach differentiators are exclusive only to Wipro's framework for banks after years of successful consulting and implementations. Wipro's RAPID Ops framework and platform enables transformation to the bank's DevOps journey. This offering that drives Agile and Release orchestrated DevSecOps supported by Infra as Code and cloud native end state, follows these themes:

- Consulting to assess DevOps maturity level of the bank through Wipro's flagship framework and rating algorithms.
- Strategic planning on people, process, technologies and governance for 'run and change the bank' streams.
- Enable BizOps mode of thinking by mapping business strategies to Agile ways of working and continuous feedback to IT – Scrum, Kanban, ScrumBan etc.
- Transformation to the release-orchestrated Agile DevSecOps end state.
- Automated testing included as a mandate into the application and infrastructure pipelines.
- Enabling of AIOps driven managed services of tools stack and workloads.
- Continuous feedback, improvement and optimization.
- Find smarter ways to include business feedback into sprints instead of a post implementation review of a release.

Case Study: Transforming a large bank toward BizOps winning ways

A financial services major with more than $45 billion in revenue wanted Wipro to partner in their journey towards Agile release orchestrated BizOps. Wipro recommended achieving this through consultative assessment of their process, DevOps teams, and technology and governance streams followed by enterprise transformation to the 'To-Be' state. The consultative assessment unearthed some important gaps and shortcomings in the As-Is DevOps state such as:

1. Agile, continuous integration and delivery in silos
2. Manual release and high cost of test and security process
3. Script based automation
4. Lack of measurement and visibility of outcomes
5. Outdated software development, support processes, which were not aligned to new age methodologies
6. Losing out on competitive advantage due to lack of agility and automation of IT processes
7. Lack of a business vision mapped to IT strategies

Wipro embarked on a journey to validate the problem statements and come up with a measurable maturity model. After a detailed assessment of 12 weeks, the maturity assessment score was pegged at 23 out of 50. The To-Be state was envisaged with the following themes:

- Central Agile pods for platform support and federated pods for product build and deployment
- Continuous testing and release delivery
- Leveraged Wipro's blueprint library for Infra as Code automation
- Integration of security and quality code analysis with CI/CD
- Standardized RBAC and value stream KPI dashboard

After 18 months of transformation, 3 new tools were added, 8 processes were re-designed (including release and patching) and 1 Agile framework was created with the following business and tech outcomes.

Technology outcomes:

1. Env provisioning time - From 3 days to 10 minutes.
2. Release cycle time - From 8 weeks to 2 weeks.
3. RBAC & onboarding time- 75% reduction.
4. Manual touchpoints – 75% reduction.
5. Cost – 30% reduction in OpEx cost.
6. Early bug detection - 60 % increase.
7. Deployment failures – Down by 95%.

Business outcomes:

1. A competitive edge in time to market.
2. Dev and OpEx cost save leveraged for innovation.
3. Fastest funds transfer module.
4. Better customer trust due to comprehensive compliance and security.

Driving transformation real quick with DevSecOps

Digital transformation of banks are being driven by agile DevOps ways of working as an overarching theme. Statistics and successful transformation outcomes suggest that this is the only way banks can sustain their innovative and competitive edge.

Adopting or maturing DevOps to the next level of excellence must include detailed assessment and evaluation of existing practices, a strategic roadmap to achieve streamlined functioning of different teams, and a robust implementation approach of the desired end state that suits the current business environment.

Looking to drive innovation and transformation in your organization through DevSecOps? To know more and to accelerate your DevSecOps journey, connect with us at **info@wipro.com.**

About the author

Syed Ahemed is the Presales Practice Director for DevOps with years of consulting, evangelizing and implementation experience in DevSecOps for banks, financial institutions and Tech BUs predominantly. His versatile experience in design and hands on implementation in open source and commercial technologies while adopting enterprise security, governance and IT standards has helped several organizations attain the desire DevSecOps end state and maturity level.
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