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Application Modernization simplified and accelerated – Apply best practices, leverage PaaS and boost with AI/GenAI

The truth is that legacy applications are complex, and Application Modernization projects are complicated, risky and expensive. Creating a truly convincing business case is difficult. Hence, there is a tendency for procrastination, which doesn't make it any better. Are there best practices to reduce effort and risk. To what extent is AI/GenAI a game changer?

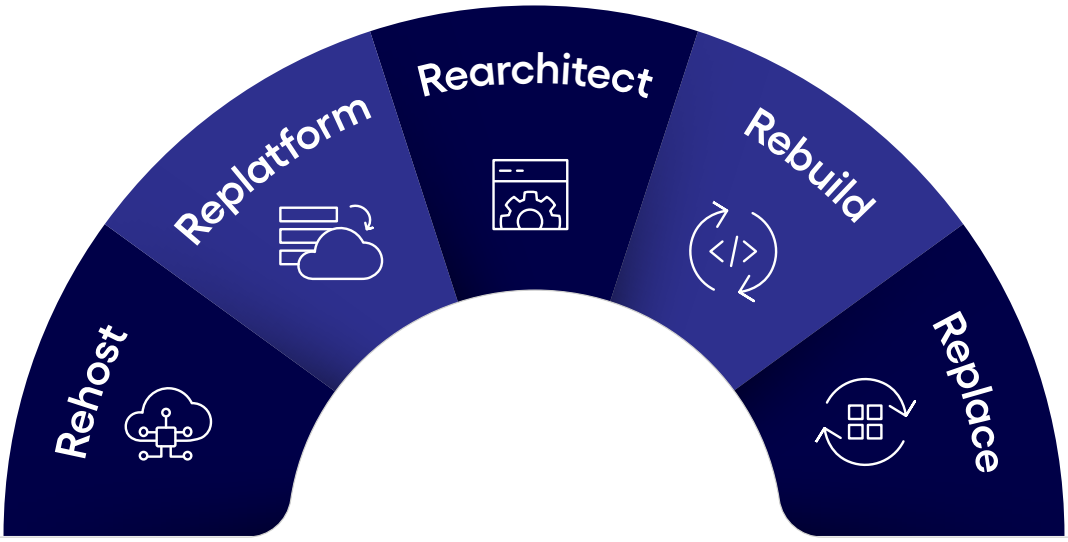
Agility and Digital Transformation are critical success factors in all industries. However, both are hampered by outdated legacy applications that act like digital shackles. Enterprises still rely heavily on legacy applications. Typically, at least one-third of business applications are outdated, and in some industries, such as banking and insurance, the rate is over 50%.

Legacy applications include but are not limited to mainframe. There are also Client/Server applications from the 90s and 2000s, e.g. .NET, which exhibit the same technical debt characteristics: outdated technology stack and programming language, monolithic architecture, limited scalability, manual deployment process, etc. This situation is often exacerbated by poor documentation and fewer and fewer experts

Application Modernization following the 5R Model

Application Modernization initiatives are motivated by business and IT drivers. The key business drivers are business fit, agility and innovation. From an IT perspective the main concerns are technical debts and lack of resources/skills. Technical debts result in high effort and costs and pose security & compliance risks. By knowing the business and IT drivers the root causes can be analyzed. This also reveals what must be changed regarding functionality, architecture and technology.

Once this is determined, the best fitting application modernization approach can be derived. With Gartner's well-known 5R model there are straightforward norm strategies on what best to do in which situation. While rehost and replatform may make sense in certain situations, neither is considered application modernization.



Rehost
Lift & Shift
and redeploy

Replatform
Lift & Shift
and revise

Rearchitect
Reengineer
and refactor

Rebuild
Redesign and
rewrite from scratech

Replace
Use SaaS /
Standard App

Most enterprises have a defined target application landscape and roadmap and know the target solutions and modernization approach for almost all of their legacy applications. The problem, however, is that many projects are being postponed further and further.

Tendency of Procrastination

Why are application modernizations so often procrastinated? Firstly, it is challenging to secure budget and resources, because it is hard to make a truly convincing business case. Effort, costs and risks are high, while there are only few measurable benefits, at least from a financial controlling point of view. Secondly, application modernizations are complicated projects, which do not fail that seldom. It is much easier to shine with new, innovative solutions. But you can't put it off forever either. Costs and negative implications increase over time. Moreover, as the Deutsche Bahn analogy shows, there comes a point when it is too late because you can't renew everything at once. So, how to get it done?

Best Practices and Recommendations

1. Choose an evolutionary, incremental approach in the sense of a continuous application modernization journey. Avoid trying to modernize everything at once (too big) or falling into a stop-and-go mode with long pauses between phases and projects. Likewise, secure the budget and resources for this continuous approach.

2. Failed or troubled projects can put the entire initiative on hold. Hence, set the right expectations and do not overpromise. Take the time required to assess and deeply understand the legacy application and its complex dependencies. Don't shortcut and make false assumptions just to get started.

3. Unburden and make life easier for application modernization projects with easy-to-grasp guidelines, pre-defined technology standards, and appropriate, ready-to-use platform services (PaaS). For example, there should be no discussion in a project about which container technology should be used at which cloud provider; ideally, the required environment including CICD pipeline should be provided with a single click.

4. Provide cutting-edge, AI/GenAI-powered tools/platforms for the entire application modernization journey to facilitate and accelerate tasks and reduce effort.

AI/GenAI-powered Application Modernization

To what extent is AI/GenAI a game changer? What are the use cases? Firstly, enrich the target applications with innovative AI/GenAI process automation features, thereby going beyond an unappealing functional 1:1 replacement. This improves the business case and ensures business' buy-in. Secondly, AI/GenAI-powered tools can reduce effort, time, costs and risks of Application Modernizations signifcantly. If so, how precisely:

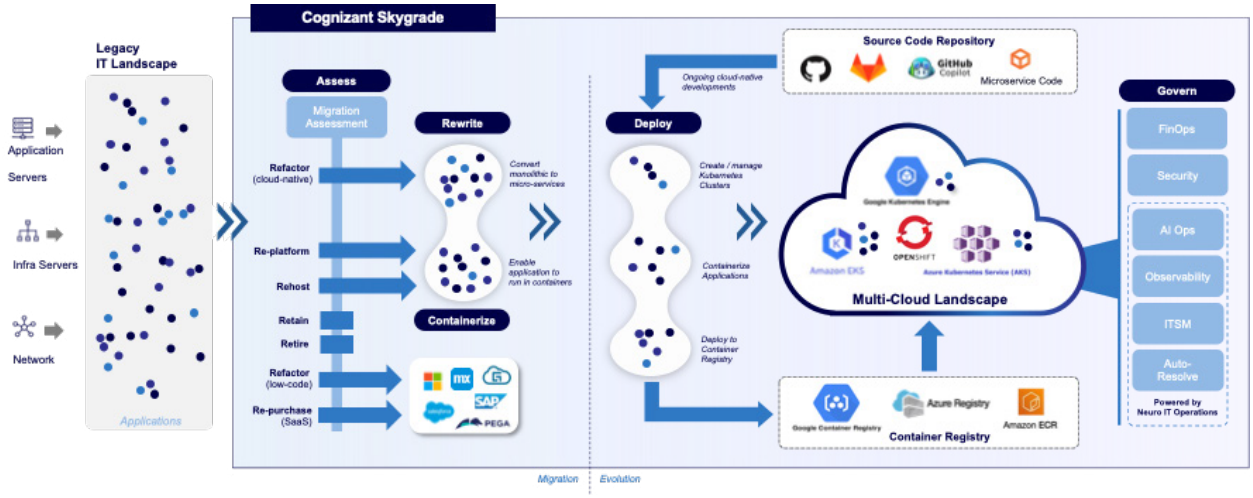
- **Assessment**. Tools provide multidimensional insights into legacy applications and their dependencies. Much deeper insights can be gained in a much shorter time.

- **Closing documentation gaps**. Surprisingly, this is difficult for GenAI. LLMs can explain code snippets, but LLMs are overwhelmed by millions of lines of code and don't understand top-down what an application is really doing. However, there are innovative tools combing classical code analysis and flow tracing with LLMs.

- **Automatic code conversion**. GenAI-powered tools can convert e.g. COBOL to Java. While this works, it does not improve code quality (garbage-in-garbage-out) and does not turn a monolithic architecture into well-structured Microservices. But still, it may be the right first step followed by refactor and rewrite activities.

- **Coding and testing assistance**. GenAI-powered tools like GitHub Copilot accelerate rewrite projects by increasing developer productivity significantly. Likewise, test cases can be generated automatically.

Cognizant provides a highly innovative platform called Skygrade to support the entire application modernization journey. **Cognizant Skygrade™** bundles tooling, processes, and best practices to accelerate the cloud transformation. Skygrade allows for the open integration of all kinds of leading-edge tools (plug-in).



Summary and Call to Action

AI/GenAI is a game changer, which strongly simplifies the tasks, but fully automated application modernization remains a dream for the time being. Projects remain challenging. Hence, lower hurdles, provide ready-to-use PaaS and cutting-edge AI/GenAI-powered tools supporting the entire transformation journey (try Cognizant Skygrade). Assess legacy applications thoroughly and don't shortcut with wrong assumptions. Above all, adopt an evolutionary approach to continuous application modernization and get started.

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