

# HCLTech application development and modernization

# Introduction

Application development and modernization can be complex, expensive and intrusive. However, HCLTech, leveraging decades of experience, offers solutions and platforms that streamline this process. Our approach includes identifying systems for modernization, enhancing asset value through APIs, automating system understanding, transpiling legacy code to cloud native platforms and modern application development. We manage the entire modernization journey with robust organizational change management practices.

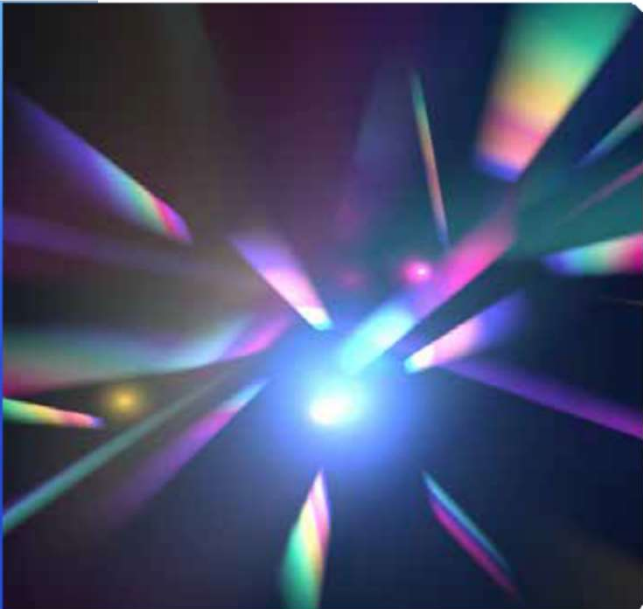
HCLTech's AI Force Platform, a suite of GenAI-powered solutions, integrates intelligence into software and engineering workflows, including application development and modernization. These solutions leverage Generative AI to enhance automation, productivity and efficiency across various application development and modernization use cases.

Here are some of our flagship solutions that aid in various application development and modernization use cases:

**Solution 1:**  
**HCLTech Prizm**

HCLTech Prizm is a comprehensive platform that provides fit-for-purpose assessments and lifecycle management of the enterprise application portfolio. HCLTech has been leveraging this platform for over a decade and has successfully served hundreds of clients across geographies and domains.

HCLTech Prizm employs a data-driven approach to mapping the "as-is" landscape, connecting applications to the business capabilities they support and designing their ideal "to-be" future state. It supports multiple data ingestion methods and provides comprehensive insights through a journey dashboard.



## Key features

HCLTech Prizm is the unified platform for continuous modernization and migration journeys. HCLTech Prizm is a SaaS Application which means zero onboarding time. It supports all discovery tools including those offered by leading hyperscalers and other ISVs (Cloudscape, Movere, CAST). The platform drives portfolio assessment through objectives-led assessments, ensuring accurate evaluations for cloud migration, application modernization, decommissioning and other transformation goals. It captures ongoing transformation initiatives and uses this information to generate impact insights, target dispositions and dependency groups.

|                                        |                                                                    |                                      |                                                          |
|----------------------------------------|--------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------|
| Portfolio assessment and cloud roadmap | Applications portfolio assessment and solution planning guidelines | Application modernization assessment | Modernization and migration opportunities and strategies |
| Cost out opportunities and strategy    | EOL, standardization assessment                                    | Merge IT strategy and planning       | Decommissioning and archival assessment and strategy     |

## Benefits

Organizations leverage HCLTech Prizm to map the value chain, manage IT assets' health, define dispositions, move group planning and perform impact analysis of each asset to make informed modernization decisions. HCLTech Prizm suggests best-fit SAAS alternatives based on current functionality and industry analysis. It also maps the tools within the portfolio to IT value streams and functional components. HCLTech Prizm drives solution planning and curation to design a modernization strategy. Below are a few business benefits provided by HCLTech Prizm.



**Purpose-driven assessments**



**Portfolio data quality**



**Assessment accuracy**



**Comprehensive view of applications**



**AI-driven and configurable**

## Client success stories



**Client 1:** For a leading power equipment manufacturer, HCLTech performed a cloud readiness assessment of 130+ business applications and 10+ core service applications like Identity, access management, directory services etc. and assessed SaaS solutions for COTS. Conducted infrastructure discovery, application dependency analysis and treatment plan recommendations (6 R's).

**Client 2:** HCLTech got engaged to perform a 360-degree assessment for cloud migration, covering different tracks such as cloud eligibility of workloads, database, tools, security, modernization, risk and compliance, process, business readiness, TCO analysis and change management.

**Client 3:** HCLTech performed application assessment and cloud migration of 272 applications for a leading oil and gas company.

## Solution 2:

# AI Force Upgrade

AI Force Upgrade is another component of the AI Force Platform. It is a unique service proposition that helps customers upgrade or migrate their Java and .NET-based applications to the latest versions of Java runtime, middleware and .NET technology frameworks. An automation engine supports the proposition and GenAI leverages a prompt library, accelerating the identification, analysis and remediation of incompatibilities for technology upgrades or migration.



## Key features

AI Force Upgrade helps to make applications compatible with higher versions of application servers. It also helps to detect framework changes and incompatibilities to fit the target runtime, framework and middleware versions. The list of supported archetypes includes:

Java runtime  
upgrade

EJB/MDB to  
spring  
conversion

Spring  
version  
upgrade

Hibernate to  
JPA  
migration

WAS to  
spring boot  
migration

SOAP to  
REST  
conversion

Below are a few distinct features:

- Analyses the application sources and dependent libraries
- Identifies an exhaustive list of incompatibilities for running the application on the latest version of Java
- Estimates the developer effort necessary to fix all instances of the issues identified
- Evaluate the complexity of the different frameworks present in the source code and generate visual representations to understand the various components present in the source code
- Remediates more than 20% of the incompatibility types through automated code corrections

## Benefits



Eliminates end-of-life risks,  
associated security and  
compliance risks



Up to 70% savings in cost and  
time for upgrade and  
migration compared to the  
manual approach

### Solution 3:

## AI Force Cloud

AI Force Cloud is the AI Force component for automated mass application migration to the cloud. It caters to automated rehost, re-factor and re-platform treatments. Advantage Cloud accelerates the modernization and migration of an on-prem application to cloud native architecture and containers, leveraging the native services of the cloud providers.

### Features:

AI Force Cloud is technology—and platform-agnostic, providing automated rehost, refactor and remediation treatments for migrating on-prem applications to the cloud.

**Assessment:** Analyzes the application sources through a set of pre-configured rules and GenAI prompt library to recognize code patterns that can be replaced with cloud native services of the target cloud platform

**Remediation:** Refactors the application code with cloud native service implementation as per the choice of the migration architect

**Automation:** Helps automate application rehost, refactor, re-platform and containerization

**Reports:** Generates detailed reports on code that is refactored and requires manual interventions

**Deployment:** Helps deploy applications on provisioned resources with CI/CD integration

Single dashboard to manage and monitor application migration and deployment

### Benefits

AI Force Cloud helps achieve the true and complete benefits of cloud migration, such as elasticity, auto-scaling, reliability, load balancing and disaster recovery due to the integration of cloud native services that cloud providers offer through automated discovery and code remediation. It is a low-risk approach due to low dependency on SMEs and manpower; it provides an improved user experience and enables better cloud ROI through enhanced savings. Below are a few of the business benefits of AI Force. Cloud provides:



Significant savings to the extent of 70 to 80% in analysis, design and migration phases



Enhanced cloud ROI—Delivers up to ~60% of cost savings on infrastructure and operations



Low dependency on technical and functional SMEs



Technology agnostic and cloud service provider agnostic



No functional or configuration loss – Domain model and business logic remain the same

## Client success stories



**Client 1:** For a Swedish multi-national telecom company that wanted 80% of its applications to be migrated to the cloud, HCLTech leveraged AI Force Cloud to accelerate application migration, automation of legacy components mapping to cloud native services and DevSecOps adoption, resulting in a 50% reduction in application migration effort, time and cost

**Client 2:** For an American multi-national fast food restaurant franchise, the business challenge was to create a functional specification of one of their core business application with 300+ forms on the legacy .NET. By addressing issues of lack of documentation, impending audits and risk mitigation, HCLTech leveraged AI Force Specs to create functional and technical specifications for a domain data dictionary, resulting in a 50% reduction in the effort and time required for application documentation.

**Client 3:** For a leading producer and distributor of beverages in North America, technology standardization/remediation of the old legacy stack before moving to the cloud was a customer requirement, HCLTech leveraged AI Force Upgrade tool which accelerated automated remediation of JDK 1.7 to 1.8, Hibernate 3.x to 5.x upgrade, Spring 2.0 to 5.0 upgrade and subsequent migration to the cloud.

**Client 4:** For a leading pension administrator based in Europe, AI Force Upgrade solution was leveraged to migrate 30+ applications from the GlassFish application server to Spring Boot containers and make them compatible with the Java 17 version.

#### Solution 4:

## AI Force Code

Traditional application development methodologies frequently struggle to satisfy the pace and frequency at which demand for new innovative features must be fulfilled. To improve the agility of development teams, two critical elements— developer experience and GenAI-enabled engineering automation—must be addressed.

HCLTech brings you the AI Force Code, our innovative solution aimed at boosting developer experience in application development through the seamless integration of GenAI-enabled engineering automation in the development process. AI Force Code enables GenAI-based automation to keep the developer in control and make GenAI indeed a developer assistant without the noise and additional learning burden to the developer. In a way, AI Force Code is our attempt to industrialize the GenAI in the development process, which is not limited to code generation.

GenAI also allows the AI Force Code to evolve with changing technological trends, ensuring that it remains relevant and effective in the face of future advancements. With GenAI, the platform can predict and adapt to the changing needs of developers and the broader app development landscape, making it a truly intelligent, responsive and intuitive tool.



## Key features

The philosophy behind AI Force Code revolves around enhancing the developer experience and bolstering productivity by harnessing the power of GenAI, with a particular emphasis on automating the development process. AI Force Code aids developers at various process stages, offering features that allow them to maintain focus and enhance productivity. Some of these features include:

**User story generation:**

GenAI is employed to generate user stories, interpreting and converting business requirements into manageable tasks.

**Pattern-Based Code**

**Generation:** Consumes the service requirements to generate code based on the pattern that needs to be implemented in services.

**Codified Best Practices:**

AI Force Code integrates best practices directly into the generated code. This replaces the conventional method of documentation, making the process more efficient.

**Developer**

**Empowerment and Control:** Gen AI-based automation in AI Force Code always provides adequate opportunity for developer intervention, enabling developers to be in control and enables developers to focus on the business functions implementations.

**Automation First:**

AI Force Code prioritizes identifying opportunities for automation and executes them efficiently.

**DevSecOps / CI**

**Automation:** In addition to generating code, Unit Test cases, Deployment configurations AI Force Code also establishes corresponding DevOps pipelines with built-in security practices.

**Build at Scale:**

AI Force Code enables the rapid construction of applications at the cloud and internet scale. This facilitates the swift development of robust, scalable applications

## Benefits

Automation from AI Force Code allows the developer to have ~60% code ready even before opening the IDE and standardized DevOps pipeline.



Help customers leverage productivity gains by leveraging Gen AI.



Provides a platform for customers to enable further automation using Gen AI



Bring consistence and standardization across dev teams



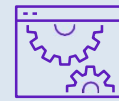
Automate application scaffolding creation to enable developer focus on solving business problem.



Help customer to onboard the DevOps journey quickly.



Enable the full stack development.



Build a part of NFRs automatically in scaffolding to enable NFRs are baked from start

## Customer References



**Customer 1:** For a leading railroad provider based out of North America, helped realized the productivity gain of 27% in build phase using Gen AI based automation. Also helped improved the quality and consistency of deliverables across teams.

**Customer 2:** For a British public-service television broadcaster. HCLTech used AI Force Code to accelerate micro services development by generating base structure of spring boot based microservices taking the entity model as input.

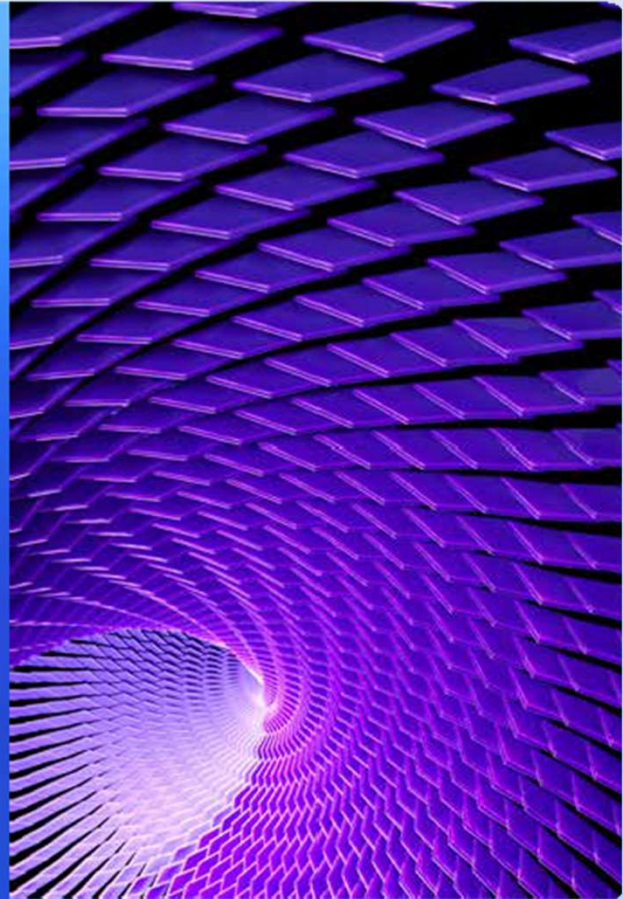
Solution 5:

## AI Force Test (VITA)

Testing is essential for ensuring the reliability and quality of digital solutions. AI Force Test (VITA) is a revolutionary AI-augmented platform designed to enhance every aspect of the testing lifecycle.

Traditional testing methods often struggle to keep up with the growing complexity of modern applications. Challenges such as automation, script creation, maintenance, and adapting to changing requirements create significant obstacles for organizations aiming for efficient, high-quality testing. Moreover, the lack of comprehensive insights into the testing process limits informed decision-making, hinders collaboration, and slows progress.

AI Force Test (VITA) delivers Gen AI-enabled testing capabilities that meet the demands of today's dynamic digital landscape.



### Key features

AI Force Test (VITA) is a composition of various agentic engines that provide test automation capabilities as described below. Each engine is capable of leveraging LLM/SLM to deliver the best outcomes for the goal and as well collaborate by passing necessary context and intents.

**Auto Scripting Engine:** This engine is built on industry-standard Generative AI and AI/ML technology. It excels in processing requirements from feature files or user stories through natural language processing (NLP) techniques. By doing so, it generates Functional test cases and automation scripts automatically.

**Self-healing Engine:** Leveraging deep learning techniques, it can identify object or element changes during the execution of the application under test. When changes in requirements, such as feature files, occur, the daemon service within the Selfheal Engine triggers the auto scripting engine to update the relevant parts of the script automatically.

**Test Selection Engine:** By enabling risk parameters for test cases, it intelligently selects and prioritizes the test cases for execution. This ensures that the most critical test scenarios are covered, enhancing testing efficiency and reducing the overall testing time.

**Execution Engine:** The Execution Engine is responsible for executing the automation scripts generated by the Auto Scripting Engine. It seamlessly runs these scripts against the application under test, providing test results and feedback.

**Reports Engine:** Reports Engine enables the generation of detailed and informative test reports. These reports help stakeholders understand the testing progress, results, and overall quality of the product under test. The Reports Engine aids in making informed decisions and facilitates effective communication among team members.

## Benefits

Some of the key benefits realized in Gen AI enabled testing using AI Force Test (VITA).



### **Increased test coverage:**

AI Force Test (VITA) can help you to automate more tests, which can lead to increased test coverage.



### **Reduced test maintenance:**

The Selfheal Engine in AI Force Test (VITA) can help you to reduce the amount of time that you spend maintaining your test scripts.



### **Improved test efficiency:**

AI Force Test (VITA) can help you to improve the efficiency of your testing by automating tasks such as test selection and execution.



### **Improved test reporting:**

AI Force Test (VITA) can provide you with comprehensive reports that can help you to track the progress of your testing and identify any areas that need improvement.

## Customer References



**Customer 1:** A leading North American information management services company employed AI Force Test (VITA)-Auto Scripting Engine for automating of its Salesforce applications. The Auto Scripting Engine was utilized to identify UI objects and perform automation of identified test cases, it internally uses AWS Code whisperer to generate cucumber step definition files. This helps at least 60% effort savings with end-to-end testing lifecycle automation & integration with CI/CD and CT tools.

**Customer 2:** For a leading North American Information Management Services Company to improve Automation productivity, HCLTech Transform the test cases into Feature file format using Gen AI and then automate the feature file using AI Force Test (VITA)-Auto Scripting Engine which internally uses AWS Code whisperer to generate cucumber step definition files. This in-turn helps to convert 80% of existing feature files to automation scripts and significant productivity improvement.

## Solution 6:

# AI Force Specs

AI Force Specs is another GenAI augmented component of the AI Force platform, which accelerates reverse engineering of .NET and Java applications to extract functional and technical specifications in non-technical formats. It comes in handy for knowledge extraction, transition and preparation of business requirements for any modernization/transformation of legacy applications by significantly reducing the effort required for analysis and improving the accuracy of specifications. The output of the Advantage Specs platform includes the following content:

Domain data  
dictionaries

Business  
rules in  
Gherkin  
format

User  
interface  
mappings

Data  
layer/interfa  
ce mappings

Call flows  
and  
UML/sequen  
ce diagrams

Functional  
specification  
s in natural  
English

## Benefits



Generates  
human and  
machine-  
readable  
specifications  
from source  
code



Accelerates  
the process of  
extracting  
functional  
specifications  
by business  
analysts



Significantly  
reduces  
dependency on  
developers for  
system  
documentation



Enables test  
script  
generation in  
line with BDD  
and TDD



Paving ways to  
generate  
application  
code from  
specifications

## Solution 7:

# AI Force Modernize

Our home-grown solution, Modernize or Automated Technology Modernization Accelerator (ATMA), is part of the AI Force platform and helps to accelerate the modernization of mainframe and non-mainframe applications to modern architectures and platforms. Modernize supports the modernization of multiple legacy technologies, such as Cobol, Natural, PL/I, HPS, JCL, RPG, Cobol400, Oracle Forms, Visual Basic, Classic ASP, VB.Net, ASP .Net and Accent/R, to name a few.



## Key features

AI Force Modernize can modernize legacy applications to run on platforms like Java or .NET through automated code conversion. ATMA not only translates the code but transforms the application to adopt modern architecture and technology frameworks. It helps accelerate various phases of application modernization projects, thus reducing the human effort required.

### Architectural transformation:

This transforms monolithic and client-server architecture to multi-tier, modular architecture, eliminating the intrinsic characteristics of legacy platforms and transforming applications into truly modern technology stacks

### UI/UX:

Facilitates user experience transformation and digitalization

### Delivery automation:

Promotes a high degree of automation at each transformation step for legacy application modernization

### GenAI augmented:

AI Force Modernize leverages the best combination of automation and GenAI solutions to minimize the human interventions necessary for post-code conversion and reduce risks of uncertainty and hallucinations, thus optimizing the modernization efforts and duration

### Customizable:

AI Force Modernize is extendible to support the modernization of more legacy platforms and customizable to adapt to clients' technology blueprints

### Cloud migration:

AI Force Modernize helps enable cloud migration

## Benefits

AI Force Modernize is flexible, scalable, has low cost and risk and delivers significant savings. Below are a few of the business benefits AI Force Modernize provides



**Flexible and scalable:**

Multi-tier architecture on a modern platform, scalable, extendible and high-performing



**Low cost:** 50-70% savings in cost and time for modernization compared to re-engineering



**Hardware costs:** 40-70% reduction in hardware and licensing costs at runtime



**Low risk:** Low dependency on technical and functional SMEs for modernization



**Improved user experience -**  
No retraining of business users is needed



**High quality:** Produces good quality code, which adheres to the standards and is easily maintainable

## Client success stories



**Client 1:** For a leading insurance provider in Europe, HCLTech performed modernization of their core policy administration systems and several other satellite systems built on legacy visual basic, resulting in improved user experience, time to market, multi-tier architecture being extendable, scalable and maintainable.

**Client 2:** HCLTech modernized a 20-year-old mainframe legacy child support system for a major American social care provider. The result was a modernized user interface to improve user usability and accessibility, a transformed business process, enhanced maintainability and a 50% reduction in modernization efforts and duration.

**Client 3:** For a leading health insurance provider, HCLTech modernized a suite of Cobol-based mainframe applications handling the adjudication of claims and maintenance of per-contract-per-month rules, comprising online and batch workloads, into a Java technology stack with Spring Boot services and Angular-based user interfaces through automated code conversion and deployed them on the cloud.

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