



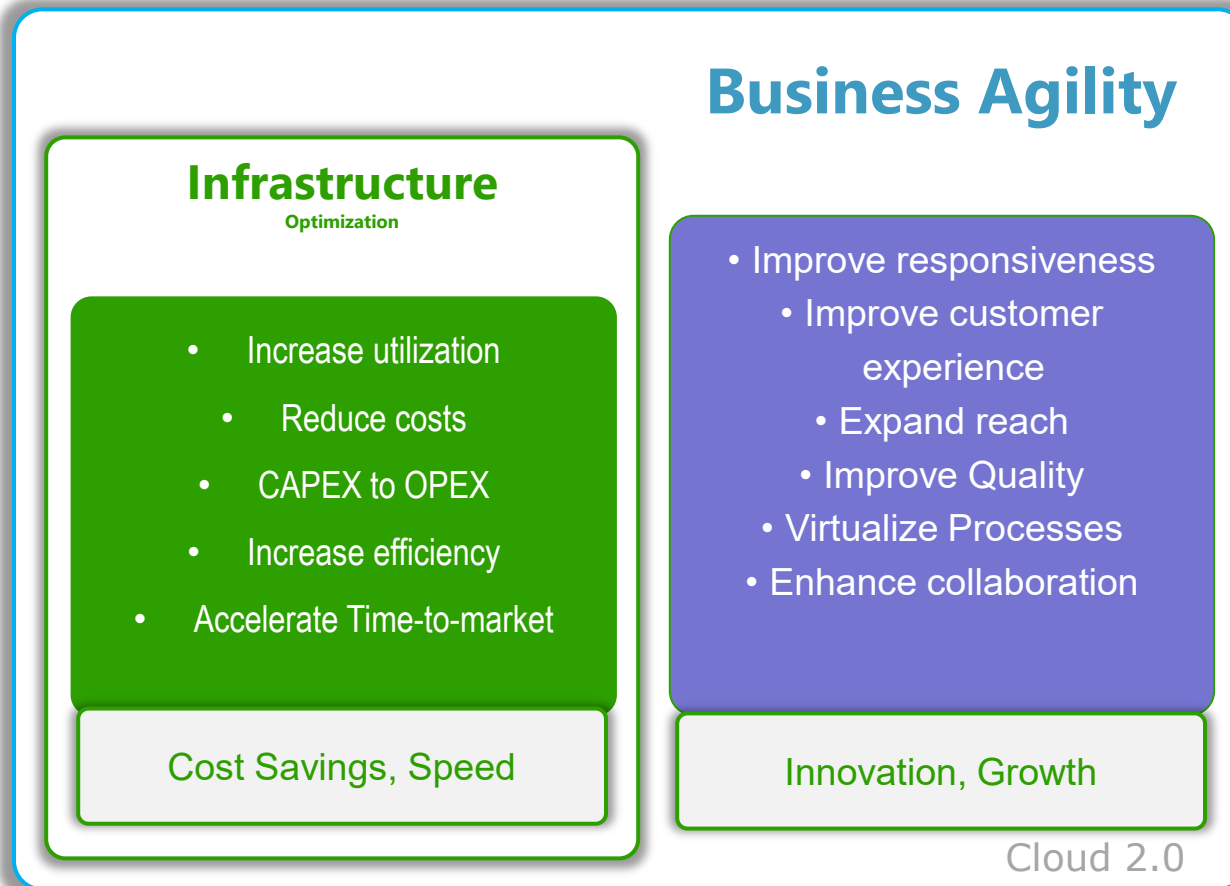
# Cloud Computing

## Session 4 – Sample Cloud Projects

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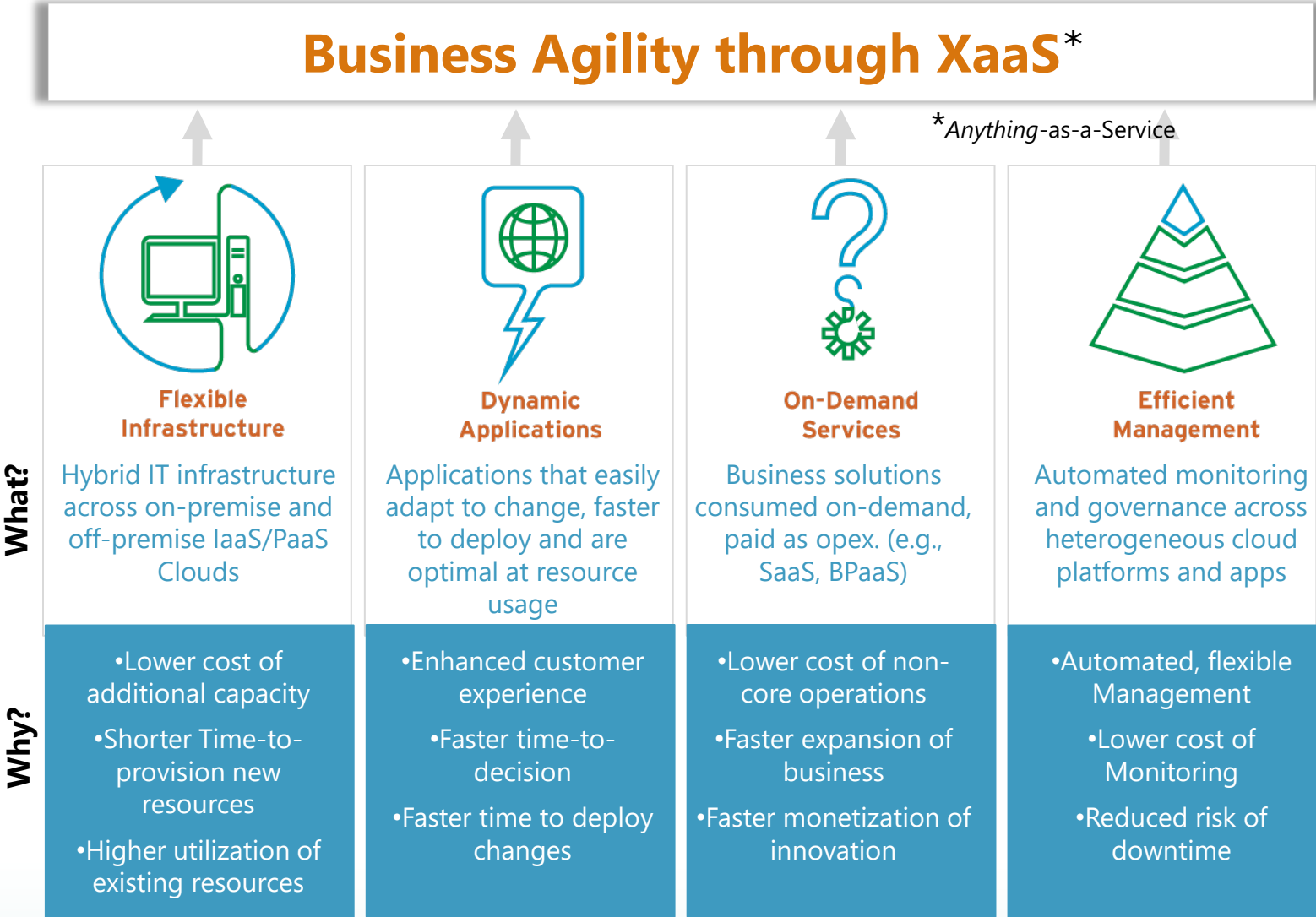
# Enterprises are Leveraging Business Value from Cloud



## Business Impact

- Increase Profitability
- New Markets
- New Revenue Streams
- New Products
- Customer Retention
- Adapting to the 'New Normal' faster
- Staying Competitive

Business Agility is the ability to adapt to business changes **faster** at **optimal** costs.



Cloud accelerates agility through faster cost reduction, faster innovation and faster expansion.

# Cloud Transformation Services

## *Infrastructure **FOR** Cloud*

### Cloud Infrastructure Services

- |   |   |
|---|---|
| <ul style="list-style-type: none"><li>• Build</li><li>• Host</li><li>• Provision</li><li>• Manage</li></ul> | Private IaaS<br>Multitenant IaaS<br>VPC |
|---|---|

## *Applications **ON** Cloud*

### Cloud Application Services

- |   |   |
|---|---|
| <ul style="list-style-type: none"><li>• Re-Host</li><li>• Migrate</li><li>• Build</li><li>• Extend</li><li>• Test</li></ul> | Applications on<br>IaaS or PaaS,<br>Custom PaaS,<br>SaaS, BPaaS |
|---|---|

## *Software **FROM** Cloud*

### Cloud Software Services

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>• Setup</li><li>• Customize</li><li>• Integrate</li><li>• Test</li></ul> | 3rd Party<br>SaaS, On-<br>demand<br>solutions |
|--|---|

## *Approach **TO** Cloud*

### Cloud Strategy & Roadmap Services

- |  |                                  |
|--|----------------------------------|
| <ul style="list-style-type: none"><li>• Assess</li><li>• Select</li><li>• Plan</li></ul> | Applications,<br>Cloud, Software |
|--|----------------------------------|

### Across a choice of providers..



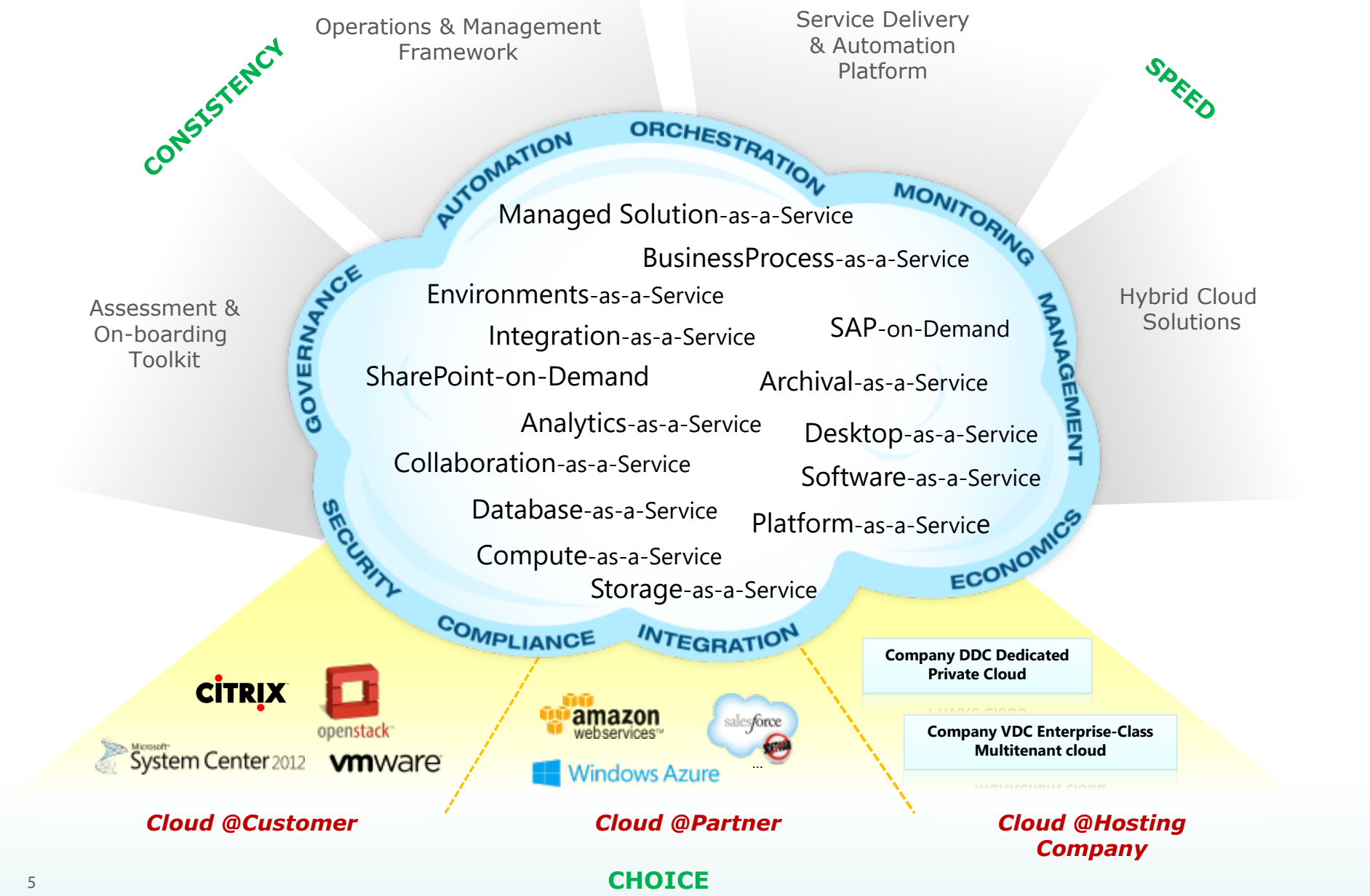
## *Management **OF** Clouds*

### Cloud Management Services

- |   |                               |
|---|-------------------------------|
| <ul style="list-style-type: none"><li>• Monitor</li><li>• Manage</li><li>• Automate</li></ul> | Applications,<br>VMs, Storage |
|---|-------------------------------|



# 'XaaS' Framework



# Cloud Solutions and Scenarios

## Flexible Data Center

- App Migration Foundry
- Storage-as-a-Service
- Desktop-as-a-Service
- Sharepoint on Cloud
- Managed Solution-aaS

## Optimal Dev-Test Methods

- DevEnv-aaS
- TestEnv-aaS
- Build-aaS
- Custom PaaS
- SAP on Cloud

## On-demand Enterprise Functions

- CRM-on-demand
- HCM-on-demand
- SCM-on-demand
- ERP-on-demand

## Key Workloads

Data Center Infrastructure  
Custom Applications  
Enterprise Application Software  
Legacy Applications  
Storage  
Mobile/Social App Hosting

Dev/Test Environments  
Demo/Training Environments  
Analytics / BI  
Web Applications  
Collaboration Applications  
Content Management

## Agile Applications

- Web Scale Apps
- SaaS Enablement
- Batch Optimization

## New Insights from Data

- Self-service BI
- Analytics-aaS
- Big-data analytics
- High Performance Computing

## People-Ready Experiences

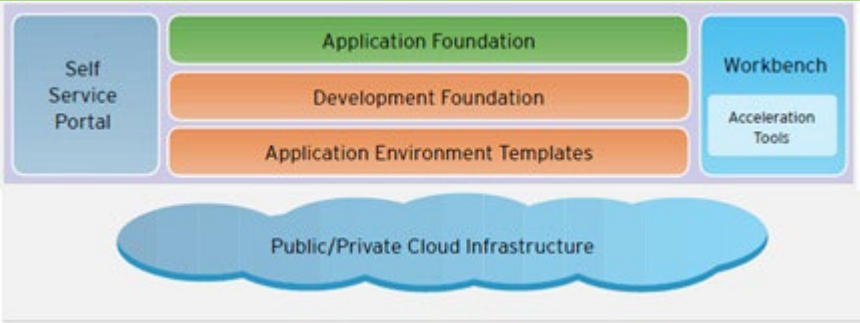
- Mobile enablement
- Collaboration-aaS
- Media Delivery
- App Stores

# Platforms for Cloud

## TRANSFORM THE APPLICATION DEVELOPMENT LIFECYCLE

### Java IDE for Cloud

Continuous delivery platform to accelerate your application development and improve productivity



## TRANSFORM COMMUNICATION OVER THE WEB

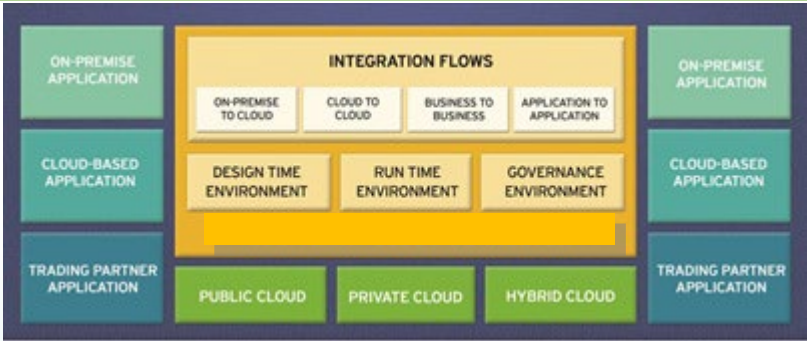
### Video as a Service Platform

Video conferencing & streaming solution for one-way, multi-party, live, and on-demand video connectivity that leverages cloud infrastructure



### Cloud Connector Platform

High-performance, service-oriented integration platform that provides unified connectivity across cloud-based and on-premise applications



## TRANSFORM INTEGRATION ACROSS CLOUD & ENTERPRISE

# TaaS: fasTest – On Demand Testing Service

## What is fastest?



### Key Components of On-Demand Services

Service-Based  
No Concerns with service levels and Higher reliability levels

Scalable  
Services scale on-demand to add or remove users as needed

Shared  
Services share a pool of resources to build economies of scale

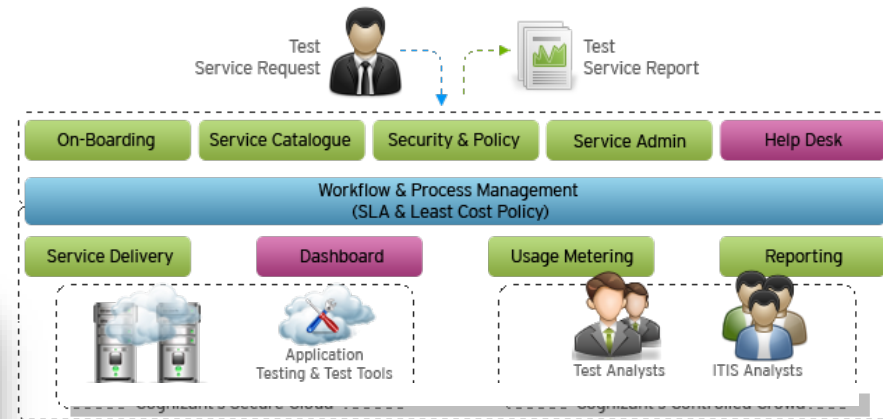
Subscription/Usage-Based  
Services are subscribed on a contract basis

Render  
Agility



Deliver  
Flexibility

## How fastest works?



## Our key alliances/partnerships



Cloud partners:



## Product Shelf

### Performance Testing

- Performance Test Execution
- Performance Test Script Development
- Non-functional requirements definition and validation
- End to End Performance Testing
- Budgetary Capacity Planning

### Mobile Testing

- Mobile Web Compliance Testing
- Mobile Interruption Testing
  - Mobile Compatibility Testing
- Pre Certification Validation

### Testing Infrastructure

- Test Environment provisioning,
- Legacy Network Monitoring & Management
- Cloud Based Infrastructure Provisioning & Management
- Test Tool Administration & support

### Security Testing

- Penetration Testing
- Vulnerability Testing
- OWASP standards validation

### Automation Testing

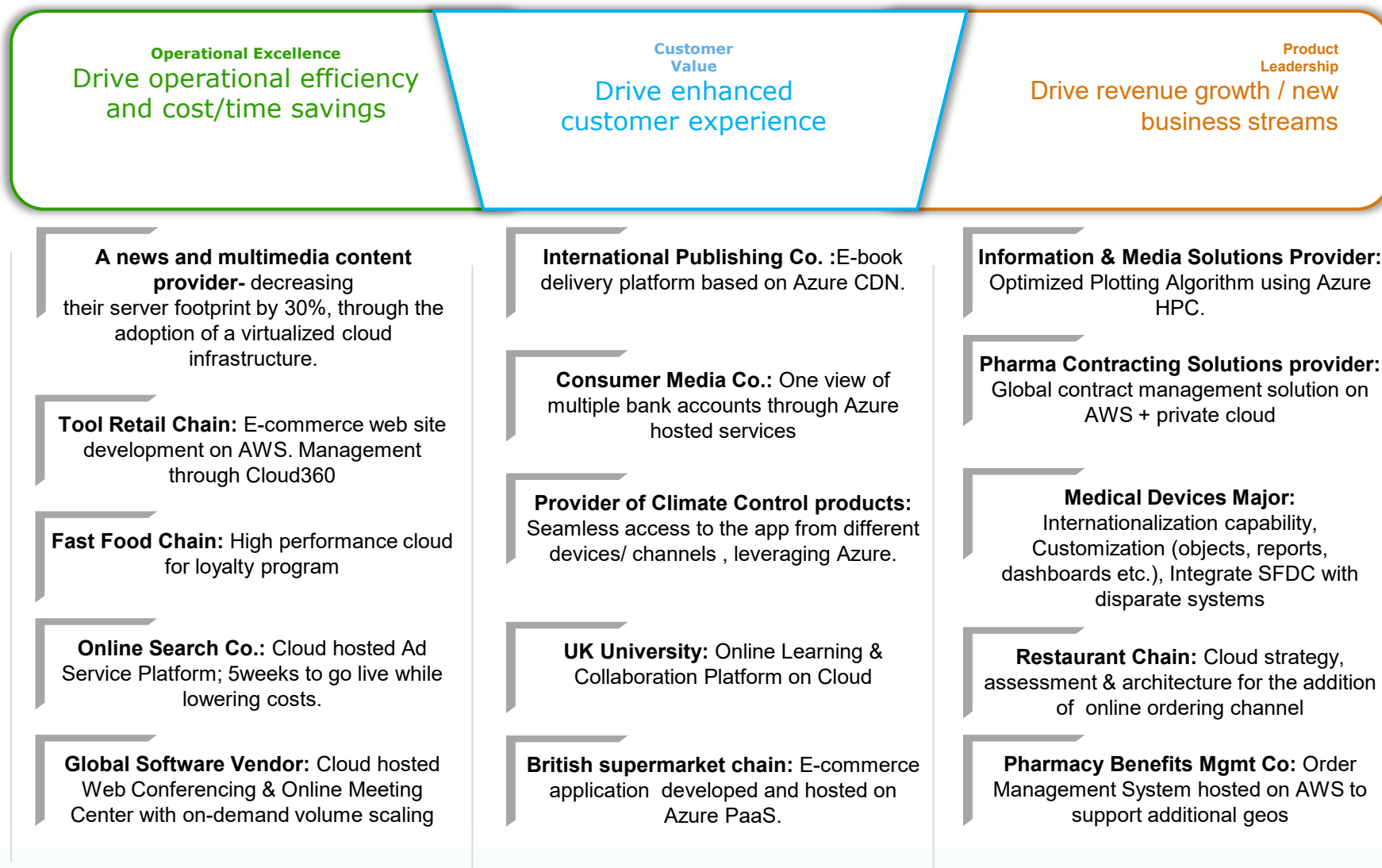
- On Demand Test script execution
- Automated Regression Test

### Beta Services

- Regression Testing
  - Temenos T24 implementation testing
- Temenos T24 Regression

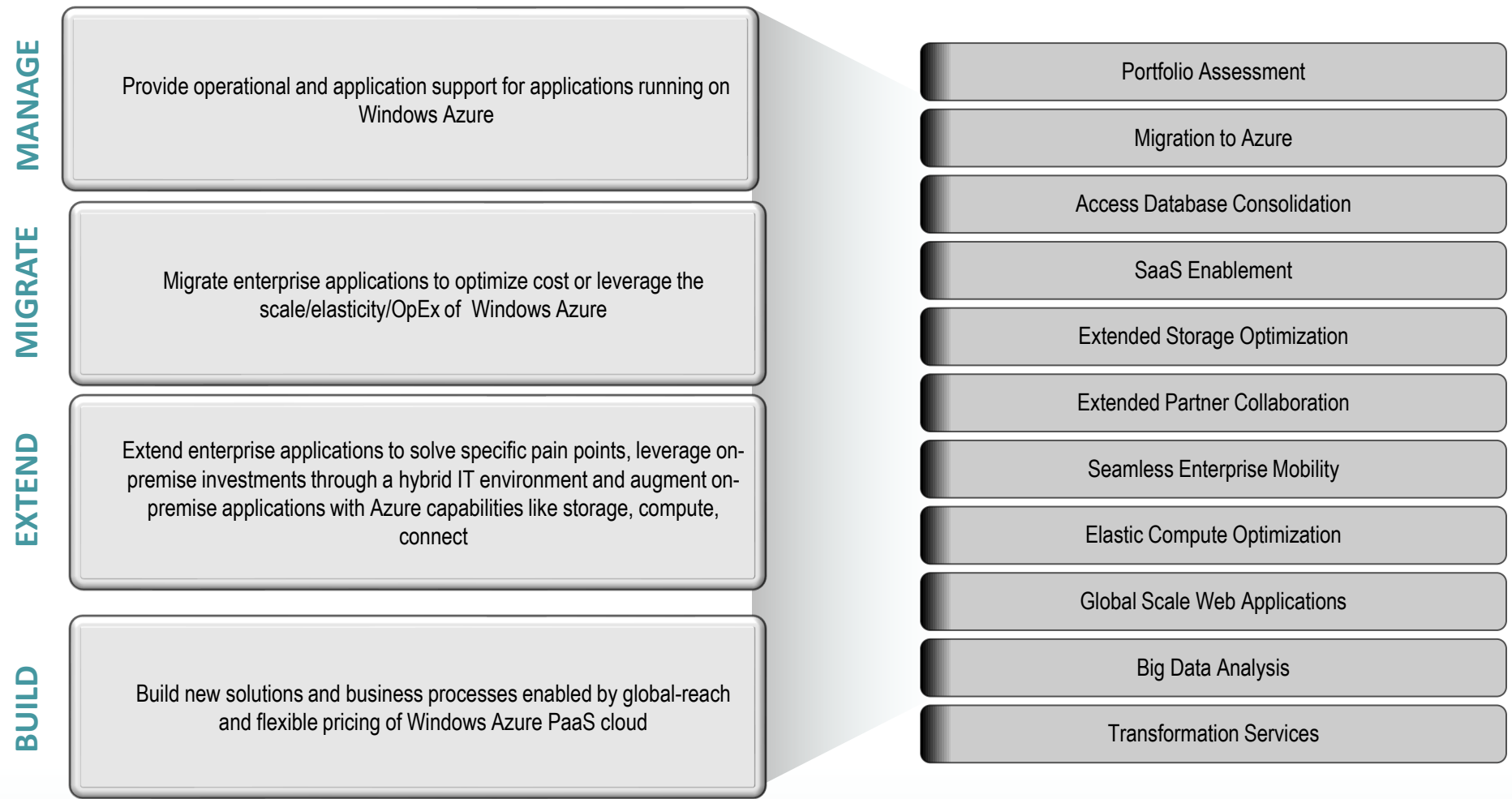


# Cloud Services – Sample Cases



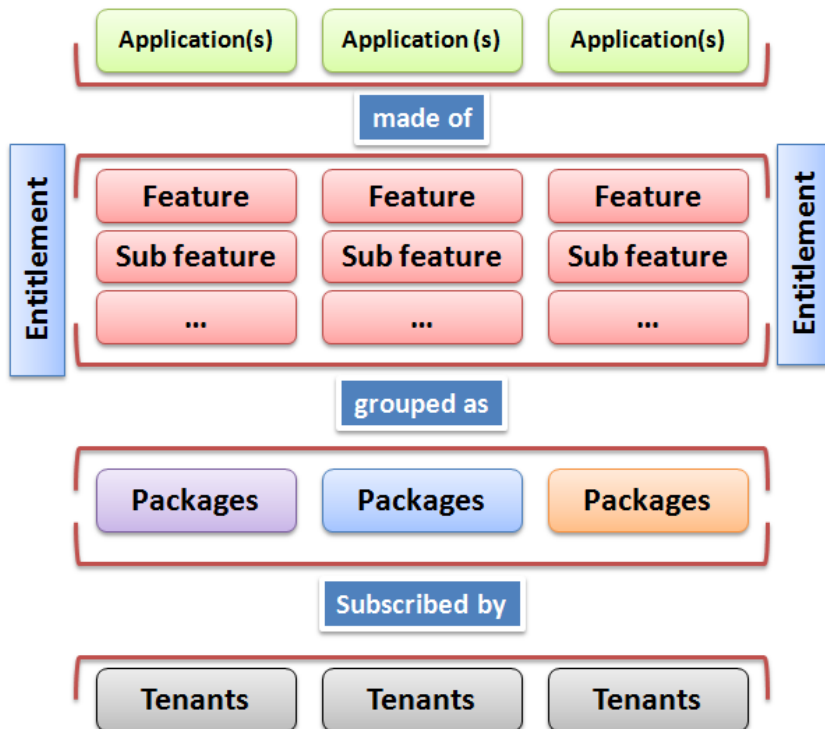
# Sample Azure Service Offerings

Suite of services and solutions that help leverage the Azure platform to provide optimal and innovative business solutions – faster and at reduced risk



# SaaS accelerator for .NET / Java

*Software As A Service* (SaaS) frameworks are built using latest technologies, extensible and customizable to cater to the multi-tenancy requirements of web/rich client applications

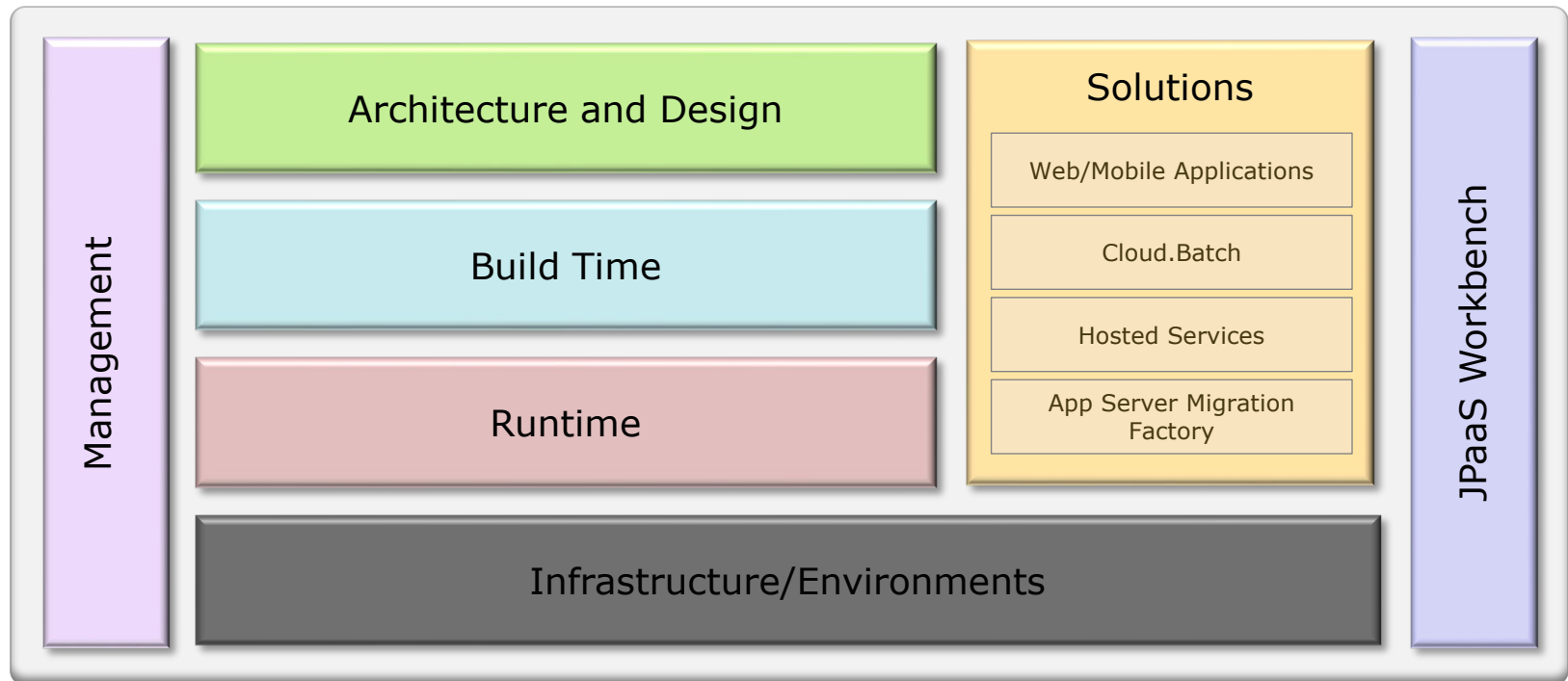


## Client benefits

- Lesser time to market
- 30% reduction in application development effort.
- Up to 40% reduction in testing time
- Zero learning curve for developers
- write business components only
- Higher ROI:
- Easy and maintainable
- Feature rich, Customizable and Extensible
- Co-exists with other most popular frameworks
- Flexibility to cater applications of any size
- Industry Standard
- Standard and Pattern based
- Fully automated runtime
- Best-of-the-breed architecture stack from Microsoft
- Unified APIs

# Java Platform as a Service – Platform Suite

On-demand, interoperable platform for rapid Java application development. The platform tool suite, supported by the cloud, significantly accelerates the Java application development cycle – from setting up the environment, to development and deployment.



# Java Platform as a Service – Platform Suite

## ❑ Solution Highlights

- Offers a standardized JEE application stack to bring down the technical risks
- Provides proven project templates and modularized set up for new projects to kick off
- Provides an eclipse based workbench to seamlessly access all the development tools
- Adheres to JEE standards and design best practices
- Reduces code writing/testing by one fourth without

## ❑ Solution Value

- Eliminates repetitive, cross-cutting tasks and increases reuse of common, shared services
- Accelerates and simplifies various stages of development cycle while Improving quality and predictability
- Boosts overall productivity while reducing the cost of quality and project duration
- Impacts direct revenues by saving the development and on-boarding costs

## ❑ Technology Highlights

- Eucalyptus enterprise private cloud
- WSO2 Stratos
- Rational Team Concert
- Java, JSF, JPA, Bean Validation, Hibernate, RichFaces, Spring , Spring MVC, Spring Webflow, Maven
- Freemarker Template
- Eclipse RCP



## ▣ Solution Overview

- Enables customers to leverage Microsoft's cloud-based offerings focusing on the Windows Azure Services Platform
- Solution Accelerators
  - Auto-scaling
  - Monitoring and management
  - SAAS framework
  - Data sync
  - Notification framework



## ▣ Solution Value

- Low risk transformation to cloud through incremental software and services approach
- Value-driven approach to cloud enablement
- Strategic investments between Microsoft and Cognizant to help jumpstart your cloud initiatives
- Strong domain expertise to help in business transformation through cloud

## ▣ Solution Highlights

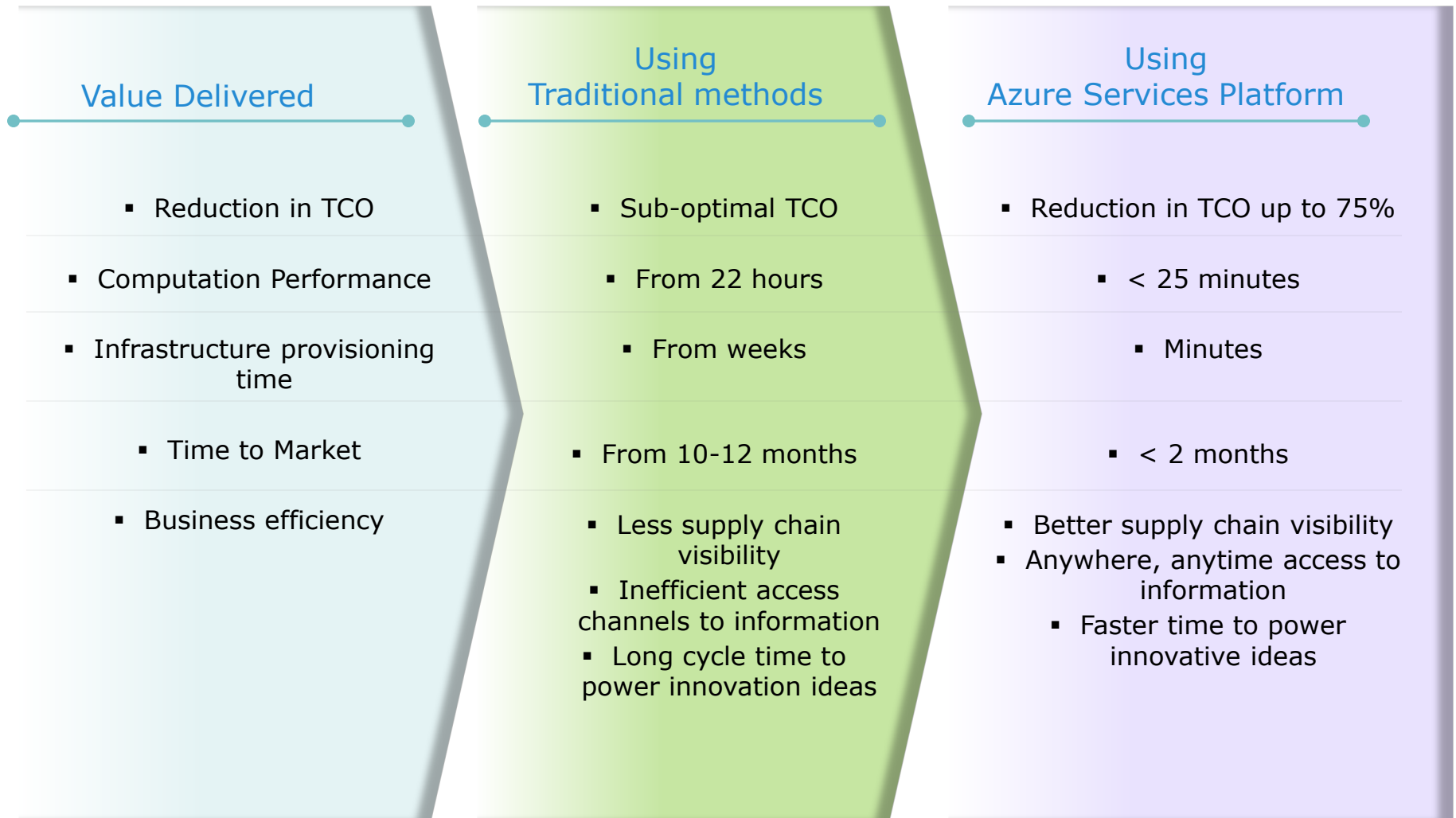
- Optimizes IT costs by extending IT on cloud
- Reduced TCO to run/manage IT systems
- Scales up IT efficiently by meeting seasonal demands
- Augments existing systems with additional storage and compute power
- Leverages existing investments on legacy systems and builds value-added extensions through cloud
- Faster time-to-market for newer ideas



## ▣ Technology Highlights

- Windows Azure
- Windows 7
- Windows Mobile
- Microsoft Dynamics
- Visual Studio, SQL Server
- Microsoft Office SharePoint & .NET

# Representative Value Delivered through IDE-Based Solutions



## Client Situation

### Background

- Leading Information & Media Customer wanted to build a portal to self monitor credit profiles of their customers vendors

### Business Drivers

- Time to market
- Rich User Experience
- Billing based Security Model
  - B2B Capability

### IT Drivers

- High Volume of Data
- Critical Web Transactions
- Complex Business Process Integration
  - Multiple System Integration
    - Highly Scalable
    - High Performance

## Solution

### Technology Solution

- Java, JSF RichFaces, Spring MVC, Spring WebFlow, Spring Security, Hibernate JPA, Maven, Spring Integration,
- JBoss Application Server, Webservices, Oracle

### JPaaS Platform Usage

- The reference architecture has been used to arrive at the technology solution
- Maven Archetype & Repository have been used to quickly setup the project with compatible library dependencies
- Workbench – an Eclipse based IDE has been used for the project development
  - The reference implementation has been referred for following the best practices and integrating multiple technologies
- Fabrication Engine has been used to auto generate the deployable code from the data and web services
- Quickly provisioned the Virtual Machines for Integration, QA and Performance Testing Environments

## Client Benefits

### Benefits

- Shortened time to Market
- Improved Productivity using Code Generation and leveraging the JPaaS Java Platform Services
- Improved Maintainability
- Improved response time
- Extensible product for international customers
- Stable and Scalable Product

### Productivity Metrics

Code Automation: 23.79%  
(1767 of 7426 LOC)

## Client Situation

### Background

- As a part of 'Healthcare Operation Clarity – Extend Track' program, the project (HC Care Management Sliver) team is building a comprehensive care management end-to-end solution that can be sold to various healthcare customers.

### Business Drivers

- Attracting and retaining existing customer
- Building a responsive & flexible system
  - Business process as a service
  - Software as a service

### IT Drivers

- High Volume of Data
- On premise deployment
- Hosted deployment
  - Security
  - Highly Scalable
- High Performance

## Solution

### Technology Solution

- Java, JSF RichFaces, Spring MVC, Spring WebFlow, Spring Security, Hibernate JPA, Maven, Spring Integration,
  - JBoss Application Server, MySQL

### JPaaS Platform Usage

- The reference architecture has been used to arrive at the technology solution
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## Client Benefits

### Benefits

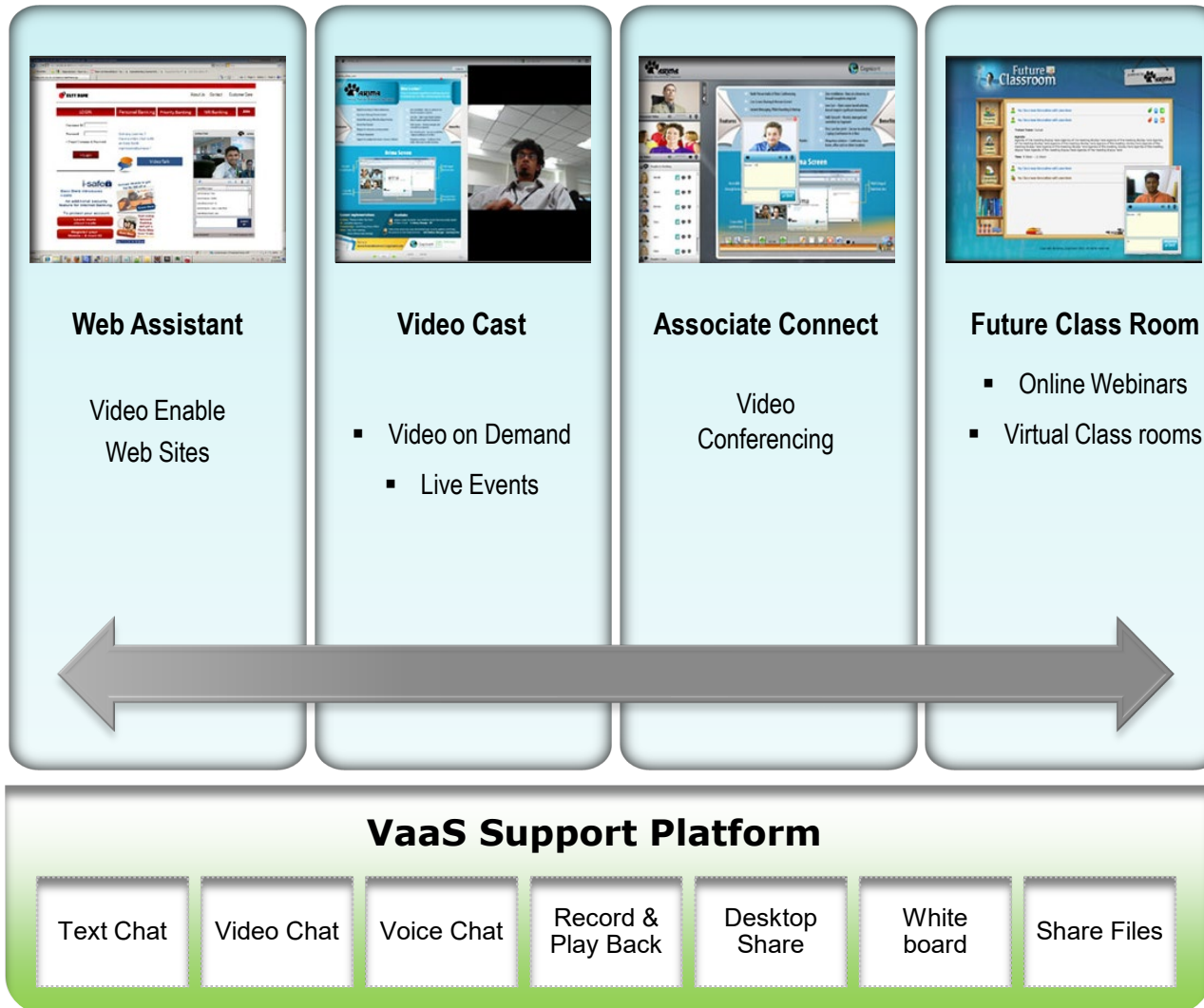
- Improved Productivity using Code Generation and leveraging the JPaaS Java Platform Services
- Improved Maintainability
- Improved response time

### Productivity Metrics

Code Automation: 57.65%  
(21832 of 37872 LOC)

# Sample Project #1 - Video as a Service (1/2)

## Video As A Service – Tele presence solutions for the enterprise



### Delivery Model

- Hosted
- Dedicated

### Benefits

- Low Cost & Secured
- Ubiquitous solution

### Features

- Multi Person Audio & Video
- Multiple Form factor
- Widget and API support



# Sample Project #1 - Video as a Service (2/2)

## == Solution Overview

Video As A Service (VaaS) is a suite of telepresence solutions for extended enterprises.

- VaaS is delivered as Hosted or Dedicated model on cloud or on premises.
- VaaS provides a host of add-on solutions that are ready for use (AssociateConnect, FutureClassroom, WebAssistant, and VideoCast)

## == Solution Value

VaaS adds value by providing the following benefits:

- Video conferencing at lower cost and reduced set-up time
- Improved productivity within enterprise, by using video conferencing
- Makes customers stay longer in video support websites
- Low cost and secured
- OPEX cost and Pay-as-You-Use model of costing
- No licensing required, built on open source

## == Solution Highlights

The following are the salient features of the VaaS solution:

- Multi-person video, audio, and text chat conference
- Whiteboarding, file sharing, and desktop sharing features
- Record and playback features and multiple form factor
- Plays on browser and needs no installation
- Widget and API support, and high content security
- Integrated native AWS services
- Dedicated and on-cloud, hosted within datacenter

## == Technology Highlights

VaaS comprises the following technology components:

- Adobe Flash
- Java
- Tomcat and Active MQ
- Red5
- MySQL

# Sample Project #2 - SOLAR

## == Solution Overview

SOLAR is a scalable archival solution that can be hosted on premises or cloud.

- It provides read-only views of data/applications retrieval.
- It provides services on structured and unstructured data archival and instant online retrieval.
- It exposes standard service APIs for easy integration.
- It provides REST based web service for data retrieval.

## == Solution Value

SOLAR adds value by providing the following benefits:

SOLAR add value by providing the following benefits:

- Instant and online retrieval of archived data and application
- Legacy retrieval applications retirement
- Usage-based pricing without costly vendor components
- Improved business operations through better management of Exabyte of archived data
- Anytime anywhere access

## == Solution Highlights

The following are the salient features of SOLAR:

- Pay-per-use model that costs less than USD 1 per GB per month
- Instant and online solution for legacy data
- Reduced operational costs by retiring the legacy systems that incurred high costs
- Indexing of data using Map-Reduce framework for faster retrieval.

## == Technology Highlights

SOLAR comprises the following technology components:

- Cassandra, Amazon SimpleDB and Amazon S3, and HDFS
- Spring Framework 3.1
- Spring Security 3.1
- Hive 0.9.0
- Hadoop 1.0.0
- Oozie 3.2.0
- J2EE/Tomcat/Linux

# Sample Project #3 - LGaaS

## == Solution Overview

- Captures and analyzes logs as a cloud-based UI platform
- Fosters a better control over internal processes
- Comprises a built-in mechanism to provide alerts on the go
- Applies to organizational problem areas related to application performance and tuning
- A near real-time logging solution to search across thousands of log files
- Provides instant search through thousands of logs and enables

## == Solution Value

- Requires no installation of additional software or tool
- Offers access anytime anywhere model
- Provides easy and predictable debugging of application in a distributed environment
- Monitors specific events to occur based on which a policy can be set
- Offers zero maintenance as it is not based on logging server architecture

## == Solution Highlights

- Supports logging for both smaller and larger deployments
- Supports dynamic schemas
- Stores both unstructured and semi-structured log files
- Offers predictive analytics as an add in feature for easy extensions
- Hosts on Amazon EC2 cloud
- ease of use and deployability
- Uses Hadoop cluster to capture logs from OS, middleware,

## == Technology Highlights

Embraces the following technology components:

- PERL ,Python
- Hadoop Cluster
- HDFS /Hive
- Spawner
- NoSql
- Map-Reduce(MR) Framework

# Sample Project #4 - Turbo HPC

## == Solution Overview

Turbo HPC is a Web application that is hosted in Amazon. It helps create and manage clusters within a specific AWS account. It provides users with the ability to create HPC environment on-demand in the Cloud environment.

The following are the salient features of the solution:

- Supports Windows HPC and Hadoop
- Helps to create and set up clusters with hundreds of nodes in minutes, which normally takes days of time to set up

## == Solution Value

- One-click HPC cluster management for Windows HPC and Hadoop
- Manage and deploy HPC application by using a simple Web interface
- Ability to set up hundreds of node clusters in minutes, with pay-as-you-use model
- Access from anyplace, from any Internet-connected device
- Ability to stop and start the cluster when not in use

## == Solution Highlights

- HPC environment can be provisioned inside a secured VPC and non-VPC environment in Amazon EC2.
- The compute units are protected at network-level to external and internet access.
- Auto Scalable Compute units can be dynamically scaled up and down on demand.
- They provide REST API that can be integrated with other applications.

## == Technology Highlights

- Windows HPC and Hadoop
- C#.Net, PowerShell, WCF, WF , and Java
- SQL Server
- AWS SDK
- Windows Remote Management

# Sample Project #5 - High Perf. Retail Analytics Engine

## == Solution Overview

The Retail Analytics Engine is for predicting customer behavior on entering retail store, based on past behavior of customers and staff:

- It collects past behavior of customers over time.
- It displays the probabilities of items that the customer is likely to buy.

## == Solution Value

The solution offers the following features and functionalities:

- Offers retailers a method to run customized promotions
- Provides customers better shopping experience
- Scales up to large data sets including customer recognition
- Gathers bills data from several stores over a long period
- Displays data that can be mined for improved accuracy

## == Solution Highlights

The following are the salient features of the solution:

- ABC uses a combination of
  - » Mahout to arrive at the probability of buying items which have been purchased before (using FP growth algorithm) or not purchased before (using logistic regression algorithm)
  - » Hive queries on raw data – to compute conditional probabilities – what is the probability of a customer buying item B, given that he has picked up item A from the store already?

## == Technology Highlights

Embraces the following technologies:

- Mahout Platform as a Service (MPaaS)
- Hive
- Hadoop
- Java



# Sample Project #6 - Alexandria

## == Solution Overview

- Provides illustrations of insurance products, and renders them as Microsoft Silverlight charts, graphs and tables on a Web application hosted in Windows Azure
- Empowers a sales agent with the ability to:
  - present an illustration on a standalone laptop through an offline version developed in Windows Presentation Foundation (WPF)
  - synchronize the data on the laptop and Azure platform

## == Solution Value

- Reduces capital cost by hosting the User interface and services in Azure platform
- Applies consistent, time-independent formula to calculate the illustration details
- Enables the screen layout and controls to automatically change and capture user data towards creating product-specific illustrations
- Enables automatic display of customer data during generation

## == Solution Highlights

- Enables direct logon for users who already have a windows Live ID, with customers being able to log on without authentication
- Uses Windows Azure Storage as the default platform to store data as tables, binary large objects (blobs), and queues only instead of a relational data model
- Stores event log entries for linear data that is similar in nature to illustrations

## == Technology Highlights

- Embraces the following technology components:
  - Windows Azure Platform
  - Extensive Application Markup Language (XAML)-based user interface design on Microsoft Silverlight 3.0 framework
  - Extended user interface to support ASP and .NET versions
  - Windows Live ID used for authentication and authorization
  - Windows Communication Foundation (WCF) Services
  - Windows Workflow Foundation

# Sample Project #7 - Federated Identity Provider Solution

## == Solution Overview

The Enterprise Identity Provider solution is a reusable, out-of-the-box security solution for cloud applications.

- Enterprise Identity Provider enables Single Sign-On (SSO) from enterprise to the applications deployed in a cloud environment. The internal authentication takes place by using Kerberos Tokens and Security Assertion Markup Language (SAML) as standard, to exchange protocol between identity



## == Solution Value

The Enterprise Identity Provider solution adds value by providing the following benefits:

- Identity and access management at one place
- Audit requirements for compliance
- SSO requirements among cloud applications
- Granting and revoking of access at the enterprise to the services offered in cloud
- Increased adoption for cloud-based applications

## == Solution Highlights

The following are the salient features of the Enterprise Identity Provider solution:

- Secured(X509Certificate) communication for authentication data
- Extendable code base for future SAML versions
- Increased extensions to multiple user data stores
- Automated provisioning of users

## == Technology Highlights

Enterprise Identity Provider comprises the following technology components:

- Core Java
- JSP/Servlet
- Open SAML
- SAML 2.0 Specification

# Sample Project #8 - Cloud PaaS Selection Offering

## == Solution Overview

The PaaS Platform Selection offering helps customers identify the cloud platform to which their applications can be moved. The offering has three main phases:

- Gather

This is the phase in which the assessment factors are finalized in association with the Customer Enterprise Architecture team. The inventory of the application is also gathered. The deliverable at the end of this phase is finalized weightage for assessment



## == Solution Value

The PaaS Platform Selection offering solution adds value by providing the following benefits:

- Provides evaluation parameters and associates weightages, which may vary according to the client's platform requirements
- Evaluates based on enterprise workloads to identify platforms most suitable for a given scenario

## == Solution Highlights

- Provides a complete engagement model to a Cloud Platform Selection requirement.

## == Technology Highlights

- Platform Evaluation Parameters provides a Reference Model for evaluating PaaS Providers with multiple languages and application containers
- Built on MS Excel

# Sample Project #9 - Hadoop Performance Tuning

## == Solution Overview

- The Hadoop PT solution gives the customer the ability to do performance tuning of Hadoop Clusters and NoSQL stores, based on HDFS storage platform.

## == Solution Value

The Hadoop PT solution offers the following features and functionalities:

- Capabilities to tune the performance of Hadoop cluster, ranging from tuning the network, servers, and NoSQL data stores
- Methodology to analyze the requirements of the cluster application first, and then to tune it accordingly, by analyzing mappers and reducing loads related to CPU and network

## == Solution Highlights

The following are the salient features of the Hadoop PT solution:

- It is offered as a service to customers. It allows users to run some benchmarks to analyze current cluster performance first and then to tune it according to applications that run on Hadoop cluster.
- It offers a cost-effective method to get the best out of Hadoop clusters, without adding more systems. This is achieved by optimizing and tuning clusters.

## == Technology Highlights

The following is a list of the technical components of the solution:

- Hadoop (MR) paradigm
- Hive scripts for query performance
- CPU usage and network monitoring tools
- System statistics tools to evaluate system performance
- VMware, Xen bare-metal hypervisor

# Sample Project #10 - Mirage AMI Migration

## ▣ Solution Overview

Mirage is solution that helps in the process of automatically migrating an Amazon EC2-AMI from one AWS region to another.

## ▣ Solution Value

- AMI's EBS-backed or S3-backed.
- Automation includes a zip file, which can be downloaded and executed.
- Makes AMI available in a few hours in the required region.

By using Mirage, the source region root volume of EC2 instances will be bundled based on destination region Kernel-ID and RAM-disk ID, and uploaded into S3 bucket. The destination region

## ▣ Solution Highlights

- Supports all the Linux-Operating system.
- Reduces the time for the replication of the environment setup in different regions.
- Creates EBS-backed AMIs or S3-backed AMIs (instance store).

## ▣ Technology Highlights

- Amazon Command line tools
- ec2-api-tools
- ec2-ami-tools



# Sample Project #11—Secure/Compliant Cloud Storage Solution

## == Solution Overview

- Provide a secured data transfer and storage in cloud
- A common dashboard for file upload, file download, and activity logs of files and users
- Secure and complaint storage solution that uses multiple cloud providers such as DropBox, AWS, and GDrive

## == Solution Value

- Data availability managed by the cloud provider
- Secured file transfer from client to server
- Encrypted file storage on cloud by using a 256-key AES encryption
- No residue of files stored either in client or server
- Tamper-proof activity logs of user actions
- A centralized visibility of the all activities based on documents or users

## == Solution Highlights

- A plugin for multiple cloud storage providers, along with HIPAA compliance
- It covers HIPAA's data availability, secured data transfer and storage, and visibility and control and audit logs
- Facility to securely upload or download multiple documents from the common dashboard
- Restful plugin, which supports easy integration with different applications

## == Technology Highlights

Embraces the following technology components:

- Java
- JavaScript
- HTML5
- jQuery
- CSS3
- REST API

# Sample Project #12 - ScaleBot Auto Scaling for GCE

## == Solution Overview

Google Compute Engine (GCE) is an IaaS offering that was recently created by Google. Google have pitched GCE as pure compute offering. Given its lineage, GCE is at-least Google scale, but it lacks tooling to extend scalability to user apps. Improper resource management can cause user applications to either starve for compute capacity or be billed for idle excess resources. ScaleBot is designed to tackle these problems.

## == Solution Value

- Lightweight, agent-less design; Minimum intervention with user's compute tasks.
- Optimization of compute resource utilization.
- Helps in significant reduction of compute resource consumptions and total cost of ownership.

## == Solution Highlights

- Built-in multi-tenancy
  - ReST API for accessing user's resources
  - Extendible to manage resources on other cloud offerings
  - Capability to handle multiple Google Compute Engine projects per customer
  - Each Project supports multiple groups of managed instances
- Each group → has the following:
- o A Scaling Rule

## == Technology Highlights

Embraces the following technology components:

- ReST (JSON API)
- Java
- SQL

# Sample Project #13 - Mahout PaaS Platform


## == Solution Overview

- Ability to run 20+ MR based algorithms on large amounts of data to get insights into it.
- Algorithmic based modeling to make useful predictions for future action.
- Upload your data set and select types of modeling supported. Will be based on domain specific knowledge

## == Solution Value

- Analytics using MPaaS
- Telecom- Churn Analysis for customers
- Retail -Product pick prediction for Intellistore – platform for retail stores
- IME - Recommendation engine for videos/audios.

## == Solution Highlights

- Differentiators
  - Mahout Platform as a Service (MPaaS)
  - Comparable to Google Analytics API
  - Has only two algorithms, one for predicting the next item and one for classification of items
  - Has 250 MB limit per data set
  - Allows several statistical algorithms over large data sets
  - Removes size limit on data sets
- 

## == Technology Highlights

- Mahout
- Hadoop