# SaaS for Smart Buildings

Invicara is into serving building industry with smarter construction process and effective operations through its life cycle with its SaaS product. The product helps their customers and partners create models with rich, accurate, standards related data on different aspects, resulting in more efficient design and high-quality constructions.

The SaaS product (BIMAssure) helps designers, builders, owners and operators leverage Building Automation process and BIM tools to its fullest potential. Invicara leverages the best of emerging technologies like Cloud, Mobility, Big Data Analytics etc., and applies to a traditional industry.

## Existing system:

The customer had development teams spread across USA (multiple locations), India and Singapore. The development process needed close collaboration from the team, central versioning and code repository system in a shareable environment. They have three different physical environments for development, QA and Production and the technology stack is Linux, Java, Windows/SQL, Auto CAD drawings.

The target customer base is mostly in APAC and Europe to whom they must extend design validation and intelligent operations services. Despite an agile development process, the build and release cycles are taking few months for each client.

## Key business requirements were:

- ➢ Automate creation of infra-structure for development, test and production environments
- ➢ Create a build automation process that tracks change requests
- ➢ Deploy applications in different zones to enable faster access to building plans, drawings and national standards.
- ➢ Monitor the applications and infra-structure for uptime in the cloud environment

## Choice of Cloud platform:

The choice of the hosting platform and optimizing the various components on that was the biggest decision as a SaaS provider to give global access. The robustness and scalability of the platform, options for compute, memory, storage, bandwidth, multiple zones and open APIs were critical factors. Only one challenge then was to use Chef Solo instead of OpsWorks to create a staging environment to include Windows code base. Newt Global recommended that among all the options commercially available at that time, AWS presented the best environment to meet most of the requirements.

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Solution Overview:

With a deep understanding of the AWS features to address the client requirements, Newt Global offered the following solution – automated sequence of actions.

Launched EC2 instances for Dev, QA, Stage and Prod environments. Created appropriate security groups and mounted EBS volumes and configured Glacier to store log files and project archives. Calculated CPU, RAM and IOP's for the application and selected instance type based on the sizing requirements.

Used Cloud Formation templates to deploy and manage applications on Dev, QA, Stage and Prod environments. Configured RDS instances and imported DB schema and used cook books store din S3 storage. The workflow automation extended to launching and managing MySQL and Postgres instances for staging and production environments.
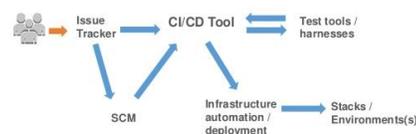
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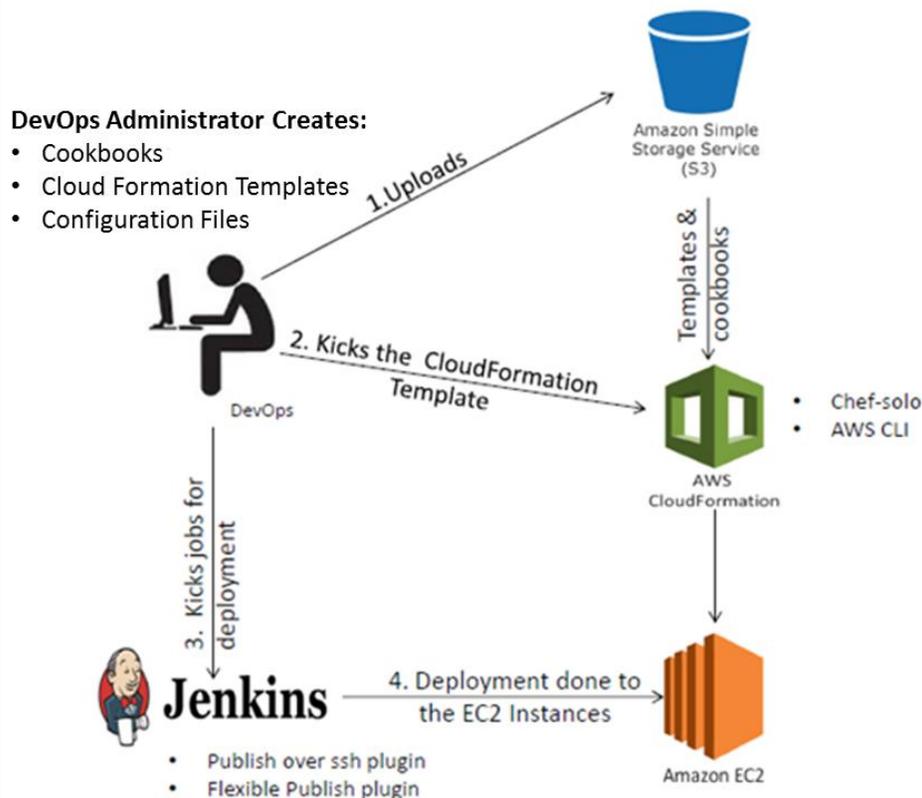
Deployment highlights:

➢ The scripts & the Templates will reside in the S3 bucket and serve the Cloud Formation Template to create EC2 instances.
➢ Once the instances are created, Jenkins will be triggered, which will in turn deploy the necessary builds to the instances.
➢ After build process is complete, the deployment validation job will be triggered by the customized tool which was created by Newt Global.
➢ Tools like Chef-Solo has been used for automation deployment, Jenkins for Continuous Deployment.

Business benefits:

✓ The Development cycles were made faster as the feedback loop was faster due to automated infra-structure creation – reduced from months to weeks.
✓ Deployment cycles shrunk from days to hours and AWS provided centralized repository for all configuration files.
✓ CI/CD ensured better control and visibility on the change management process
✓ The Synchronization between the Development and Deployment was reduced by over 50%.
✓ Ease of monitoring of all the applications using open source and native AWS based monitoring tools.

**An example CI/CD workflow**



**powered by amazon web services**

Developed and deployed by:     Newt Global LLC for     **invicara**