

Delivering
Technology in an
Agile Framework
in the Public
Sector



Department of
Social Services



Information
Technology Services

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Homelessness
Technology



Project
Management
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New York City





Agile in the Public Sector

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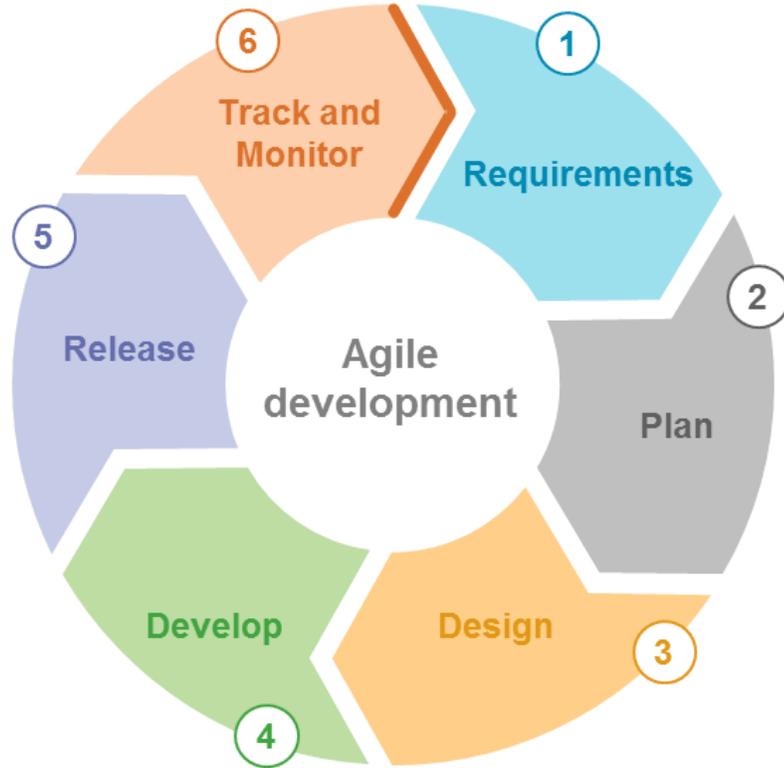
How Was Agile Introduced – Establishing New Standards

Agile Practice Example - Gartner Research Case Study

Fireside Chat with Professor Ron Rigores on Agile Transformation

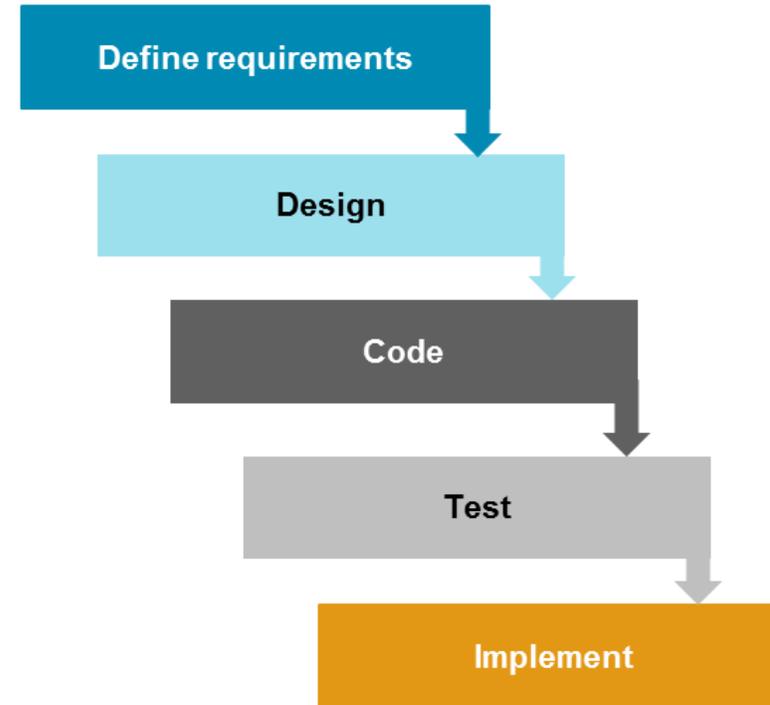
What is Agile: Comparing Methodologies

Agile



- Continuous cycles
- Small, high-functioning, collaborative teams
- Flexible/continuous evolution
- Customer involvement

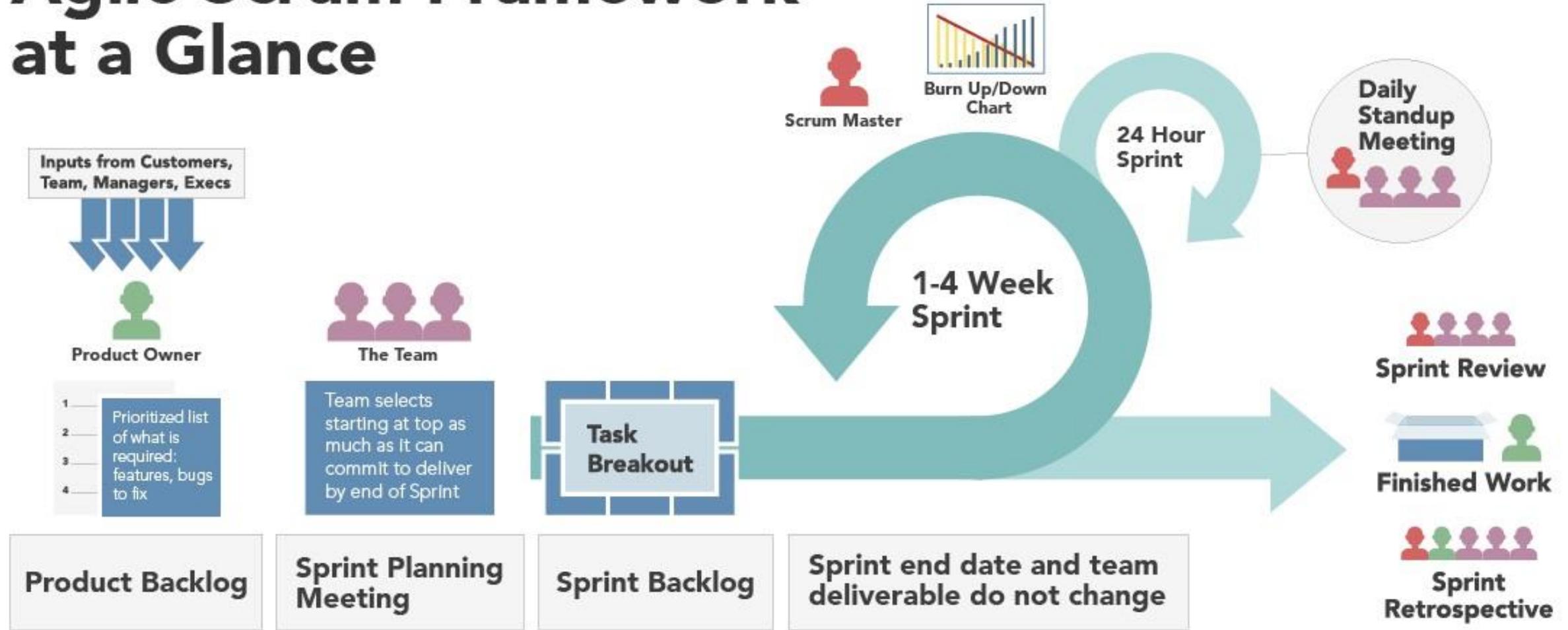
Waterfall



- Sequential/linear stages
- Upfront planning and in-depth documentation
- Best for simple, unchanging projects
- Close project manager involvement

What is Agile: Agile SCRUM Overview

Agile Scrum Framework at a Glance



Why is Agile Needed: Public Sector Innovation

Recently our business customers challenged ITS to improve its approach to software development and service delivery efforts – with a particular focus on the key areas below:



Key Benefits of Agile: Public Sector Innovation



Standard Design Framework:
 Better integration of consistent UI/UX approaches for application development.

Common Application Framework:
 Standard approaches and tools to building, testing and deploying technology solutions.

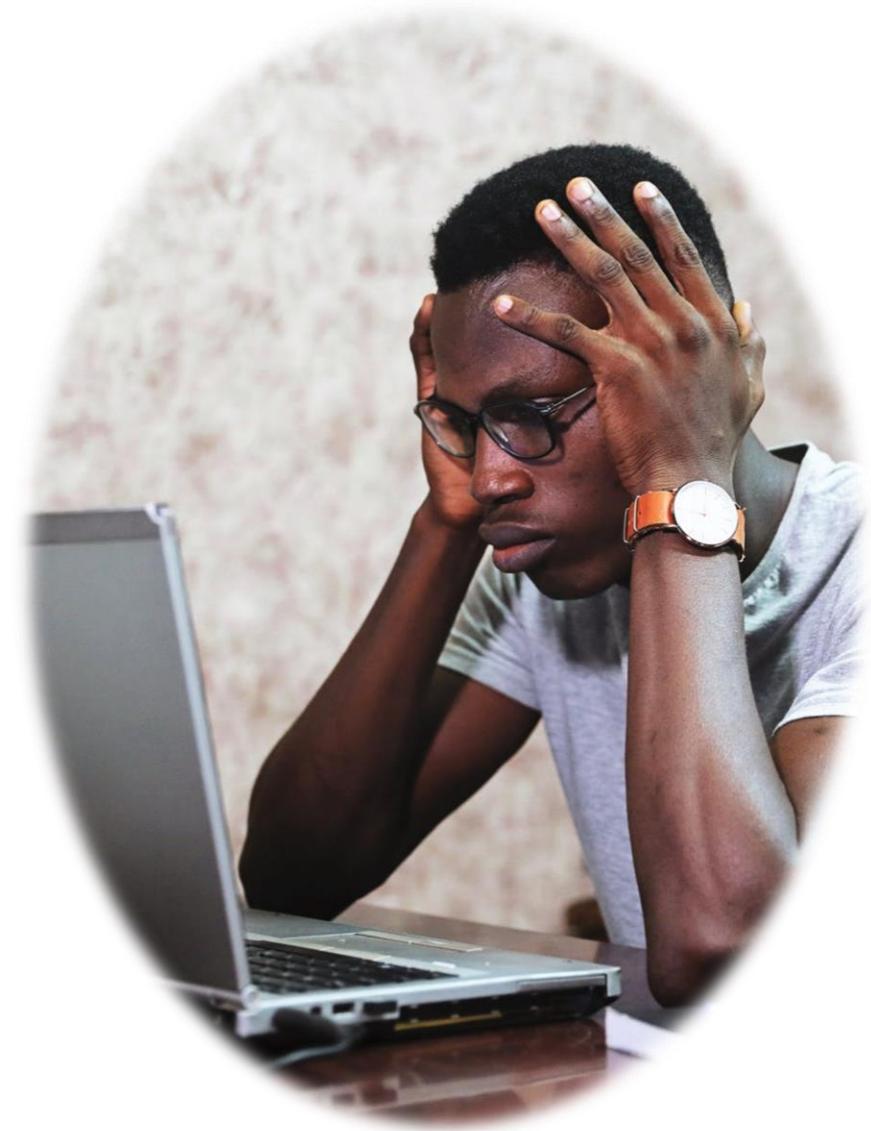
Software Development Lifecycle (SDLC):
 More leadership and collaboration across IT and Business stakeholders on technology solutions.

Common Application Framework:
 Improve resource allocation to maximize the skillset of team members and offer more career paths

Agile:
 Incremental releases of software modules.

Open Source:
 Using freely available source technology to facilitate rapid development of solutions to solve business problems.

- ❑ New Team Structures
- ❑ New Team Practices
- ❑ New Skills
- ❑ New Tools
- ❑ Radical Transparency
- ❑ Standard Application Framework
- ❑ Standard Design Approach

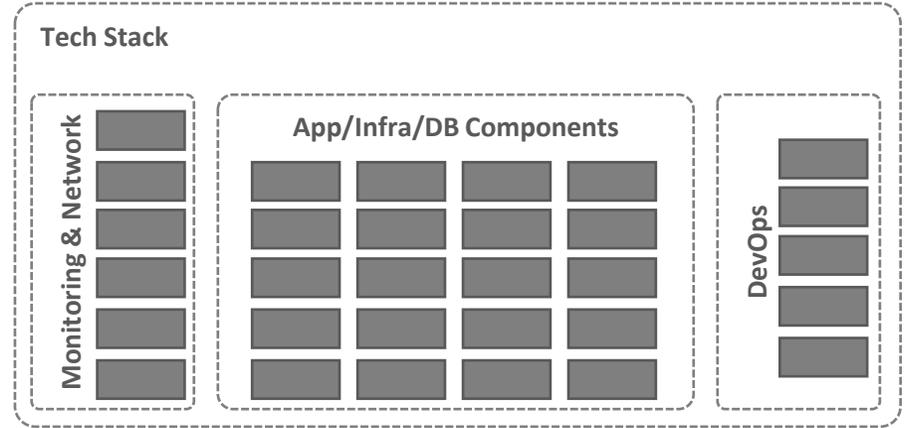
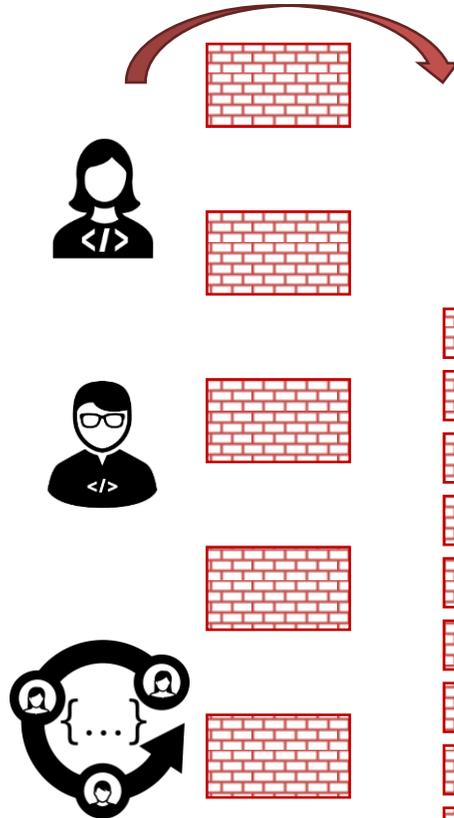


Roadblocks Faced: Barriers to Adopting Standard Framework

Applications in the Queue



Legacy Development Teams have many Hurdles to Overcome



- 01 Learning Agile/Scrum
- 02 Learning JIRA/Confluence
- 03 Learning Git/GitFlow
- 04 Old, Slow PCs
- 05 Incorrect PC Image for Developers
- 06 Networking and Firewall Issues
- 07 Learning Modern web Development (Angular/Vue/React)
- 08 Learning Code-First Entity Framework
- 09 Addressing Technical Debt (Compliance Checklist)
- 10 CAF Services availability affected by Network/Infrastructure problems
- 11 Configuration and Startup Challenges

What was Developed: Step 1 – Standard Application Framework

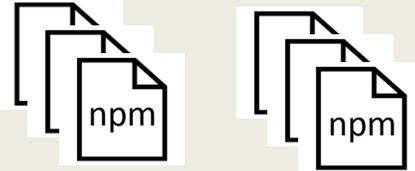
What Is the Standard Application Framework?

Application Frameworks

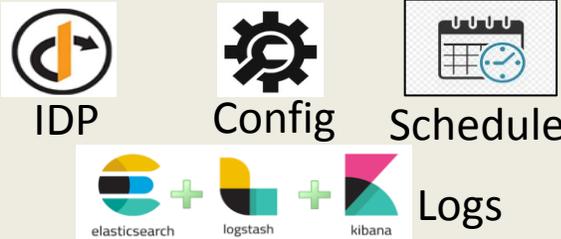
Seed Starter Project - Web



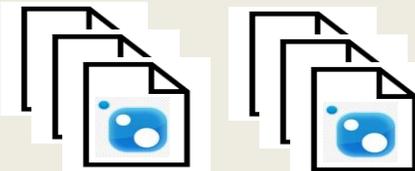
Angular Libraries



Core Services



React Native Libraries



Seed Starter Project - Mobile

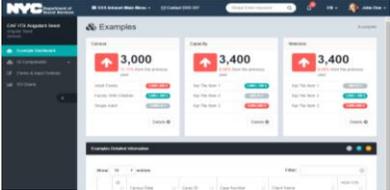


CAF CI/CD Build, Deploy Apps



Example App

Seed Sample Project



Documentation



<http://cafdocs.dhs.nycnet>

Component Overviews | Developer's Guides | Interactive Reference

Enterprise Tools



What was Developed: Step 2 – Roadmap of Tools & Open Source

Front-End

npm npm Angular 5 **UPGRADE** Angular 7 MATERIAL DESIGN Freshen Look and Feel

New Existing

Back-End

Microsoft ASP.net MVC Entity Framework Core .NET Core 2.1 **UPGRADE** .NET Core 2.2 SendGrid Email Hangfire Scheduler EPPlus Excel Mgmt

Application Services

IDP Redis RabbitMQ DECISIONS

DevOps

AWS RUN DECK Job Runner Consul App Configuration Vault Secrets Mgmt Terraform Auto Provisioning go Build Server artifactory Binary Repository Octopus Deploy Application Deployment git flow

- Incremental Approach
- No big bang
- Work closely with teams
- Risk-based prioritization
- Crawl → Walk → Run

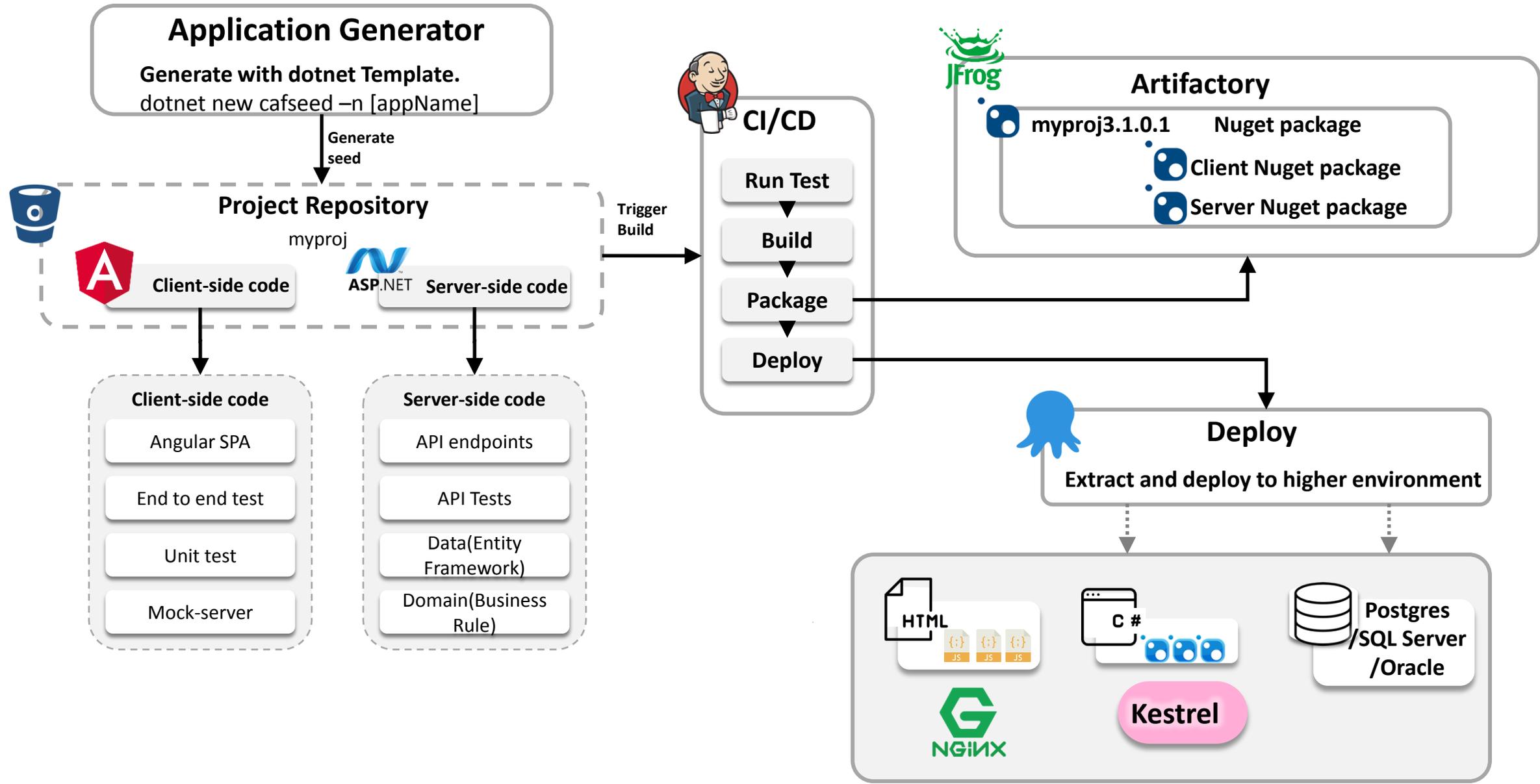
Application Lifecycle Management

Atlassian JIRA Atlassian Bitbucket Atlassian Confluence

Application Lifecycle Management

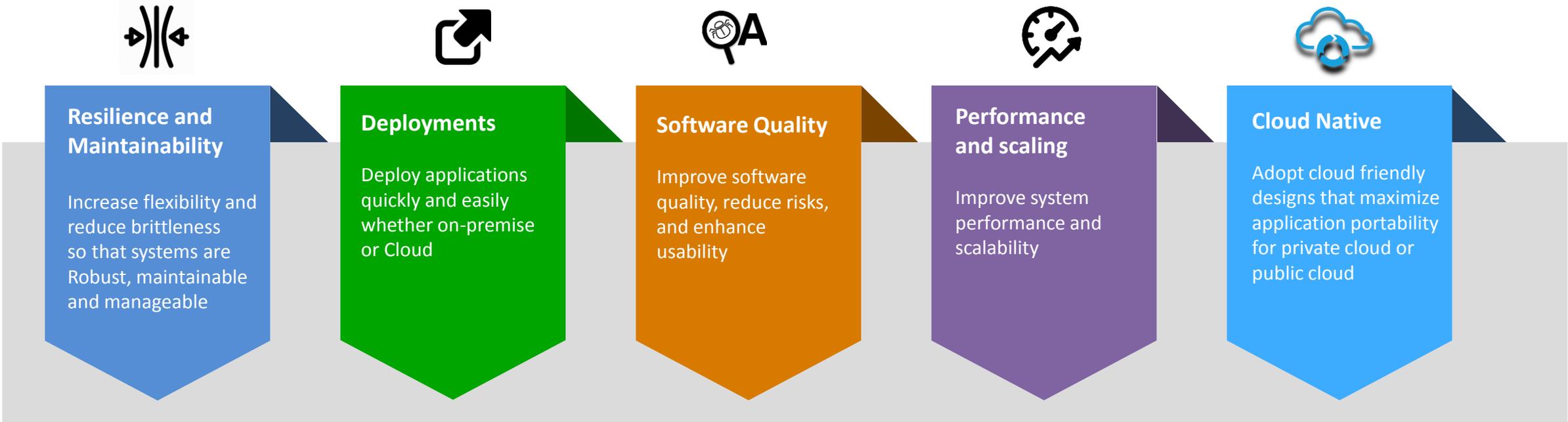
splunk Logs solarwinds Monitoring & Alerting

What was Developed: Step 3 – Build Automation Process



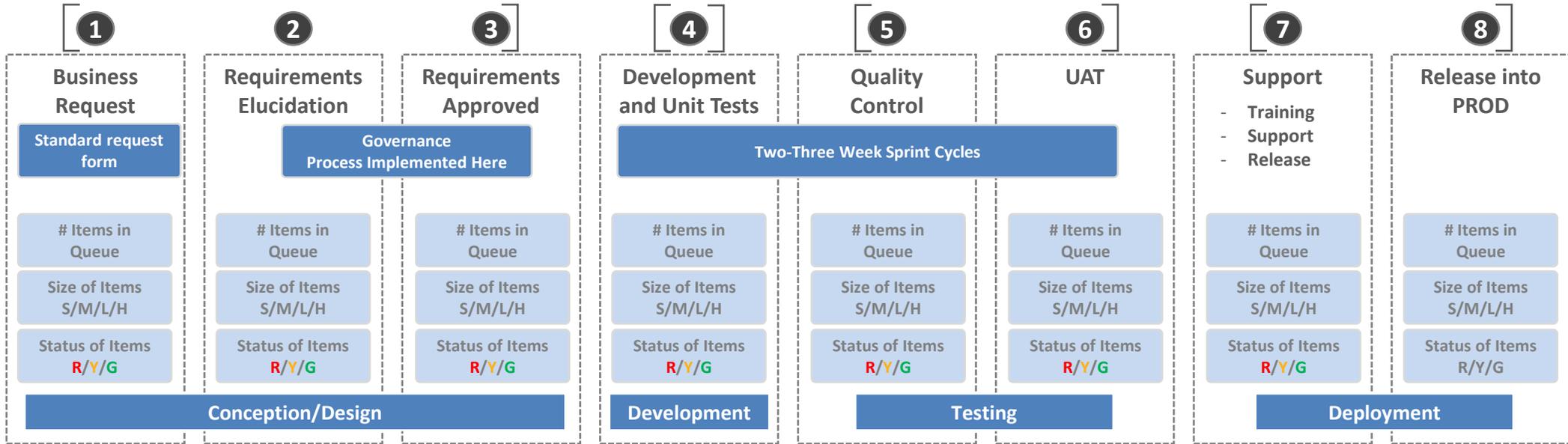
How it was Implemented: Introducing a Standard Framework

The objective of the common application framework is to provide standard approaches to solving the types of problems commonly experienced by application teams, including:

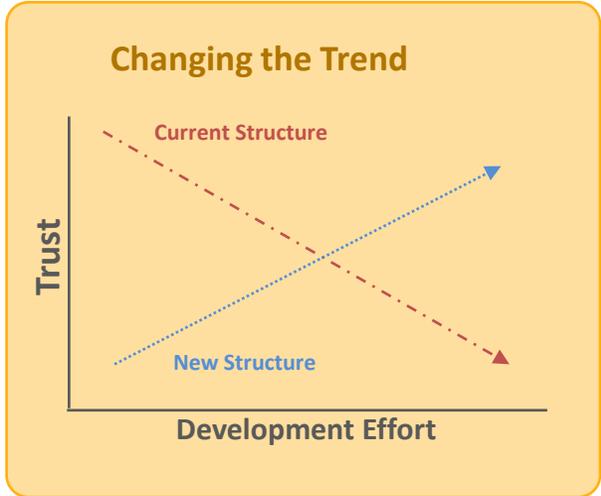
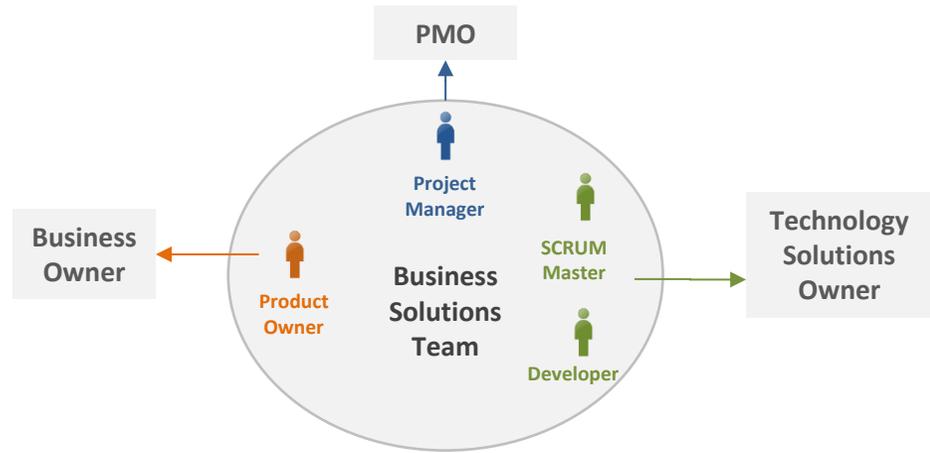


How it Was Implemented: Implementing Agile SDLC

Technology Solutions Process Flow



- Steps to how this was introduced to elicit TRUST with the Business**
- A) Transparency:** Letting them know that we have a model
 - B) Structure:** Making sure WE agree on & Document our new process and structures
 - C) Roadmap:** Timeline of process flow to get from the request to the release (incremental improvement)
 - D) Communications:** Roadshow presentation for the business – highlighting benefits
 - E) Training:** Training for the business and IT on how to leverage new process & Structures



How it was Implemented: Overcoming Roadblocks



PC Provisioning (Dev Team)

Updated Image
 Validation Checklists



GIT/GITFlow (Training Team)

1-hour Introduction/Walkthrough, ½ Day Official Hands-on Training, Conversion from TFS



Angular & Core Seed (Dev Team)

Unified Seed Generator, Single Artifact Deployment, Zero External Dependencies, Modular Architecture



Core Services (Dev Team)

Friendly GUIs, Multi-Level Logging (File, Airbrake, ELK), Monitoring & Manageability (SolarWinds, HealthCheck)



JIRA (Training Team)

1-hour Introduction/Walkthrough, ½ Day Official Hands-on Training



Angular & Core Framework (Dev Team)

Unified Confluence Documentation, Hardening, Advanced Usage Examples (Complex Forms, Parallel Processing, Complex Grid)



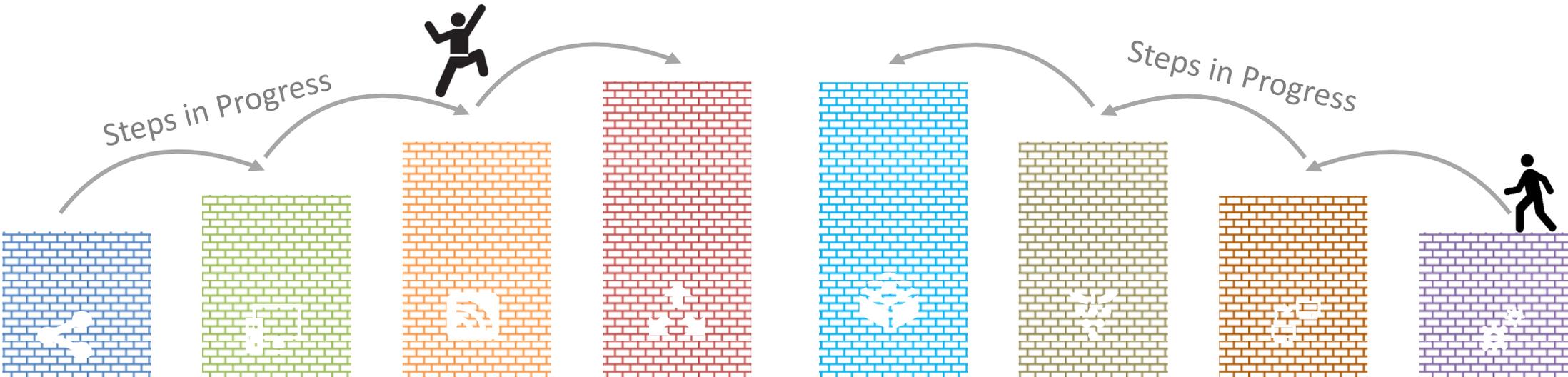
Angular & Core Seed: "Plug-Ins" (Dev Team)

IDP/AD Authentication, Integration of: BRE/WF, CI/CT/CT, and Angular JS



CI/CD (DevOps Team)

Unified Confluence Documentation, Application Build/Test/Deploy path and framework of tools



Gartner Research 2020 Case Study: How New York City Leverages Digital Government Strategy to Improve Homeless Services



Gartner®



In 2016 NYC Established a Goal to reduce the number of homeless people living on the streets

DHS uses a combination of agile methodology and Human Center Design to develop **StreetSmart**

Key Roles

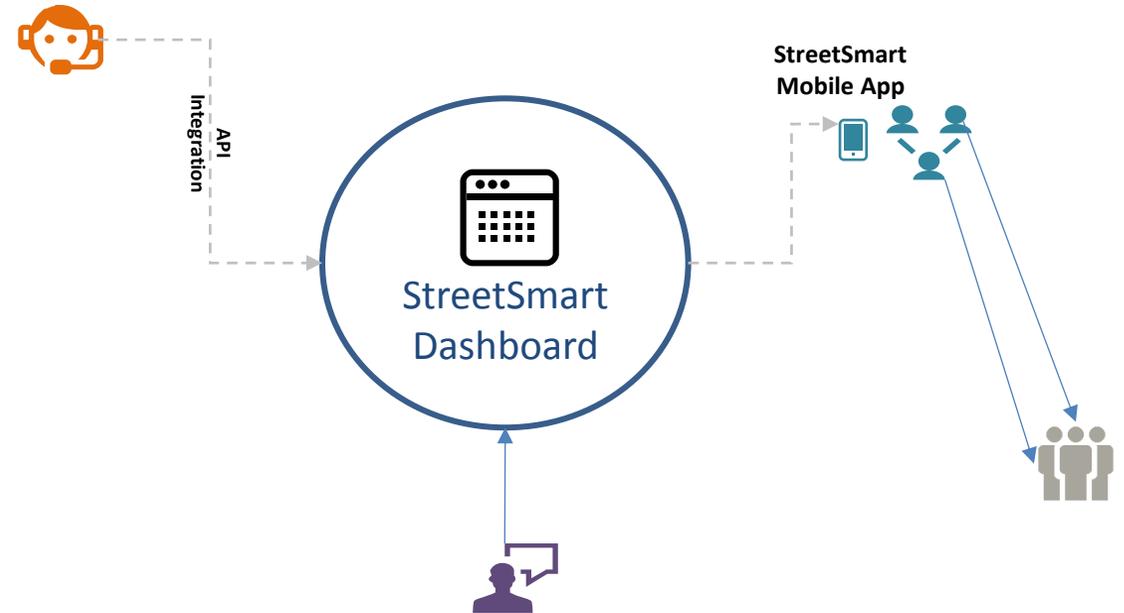


Challenges

- Manual processes for transferring data between systems
- Time consuming to coordinate teams
- Lots of opportunity for human error
- Delayed responses result in missed opportunities



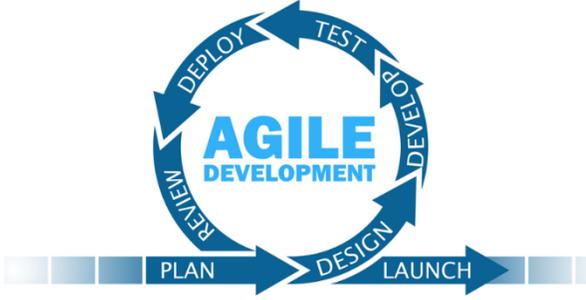
DHS StreetSmart (Dashboard & Mobile App)



Fireside Chat: Agile Transformation



Delivering Technology in an Agile Framework in the Public Sector



Fireside Chat - Questions

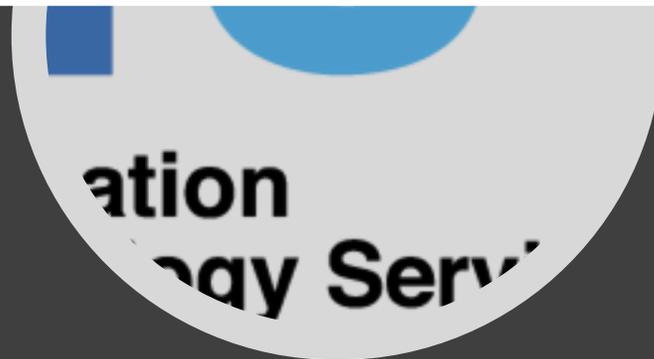
- ❑ How are agile transformation efforts conducted in other New York City government agencies?
- ❑ What are questions public sector organizations and individuals should explore before making a commitment to enterprise-wide agility?
- ❑ Are there examples of agile transformation pitfalls to be on the look out for?
- ❑ The journey to an agile organization often starts with sound leadership. What are some of the capabilities a senior leader in a public sector organization attempting agile should possess and/or invest in?
- ❑ Agile transformation in IT, isn't just a new way of delivering solutions; how should leaders in public sector organizations plan for cost and innovation-driven growth in an agile framework?



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Thank You



NYCTM

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