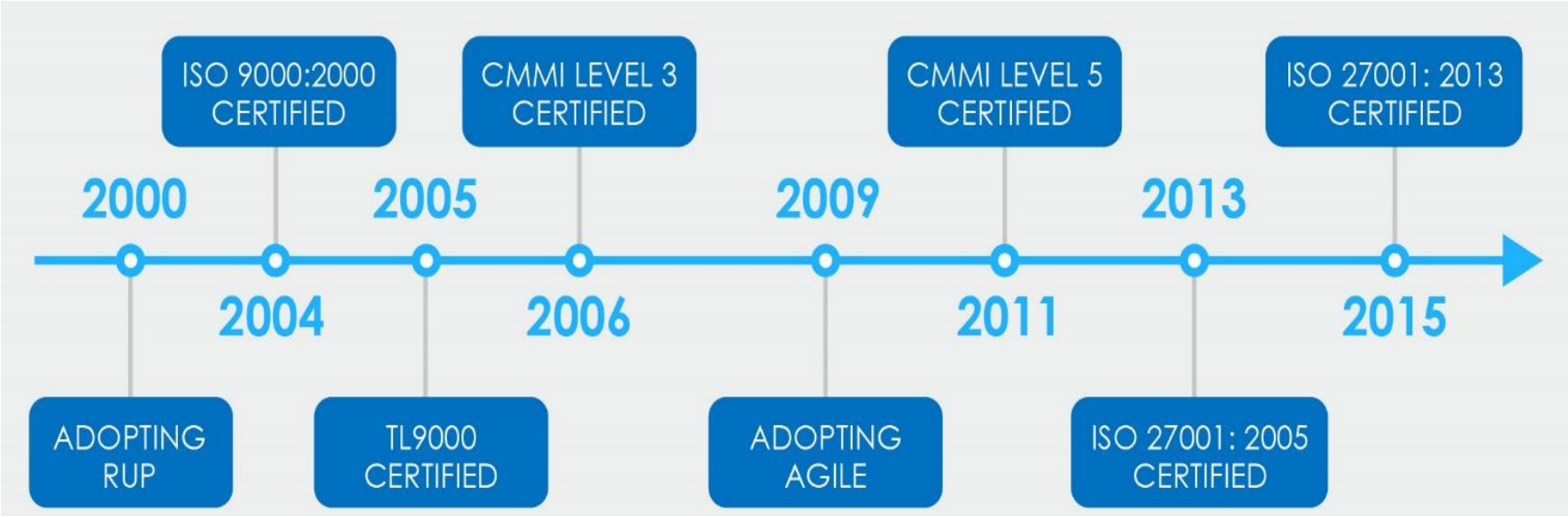
TMA SOLUTIONS

ENGINEERING PROCESSES

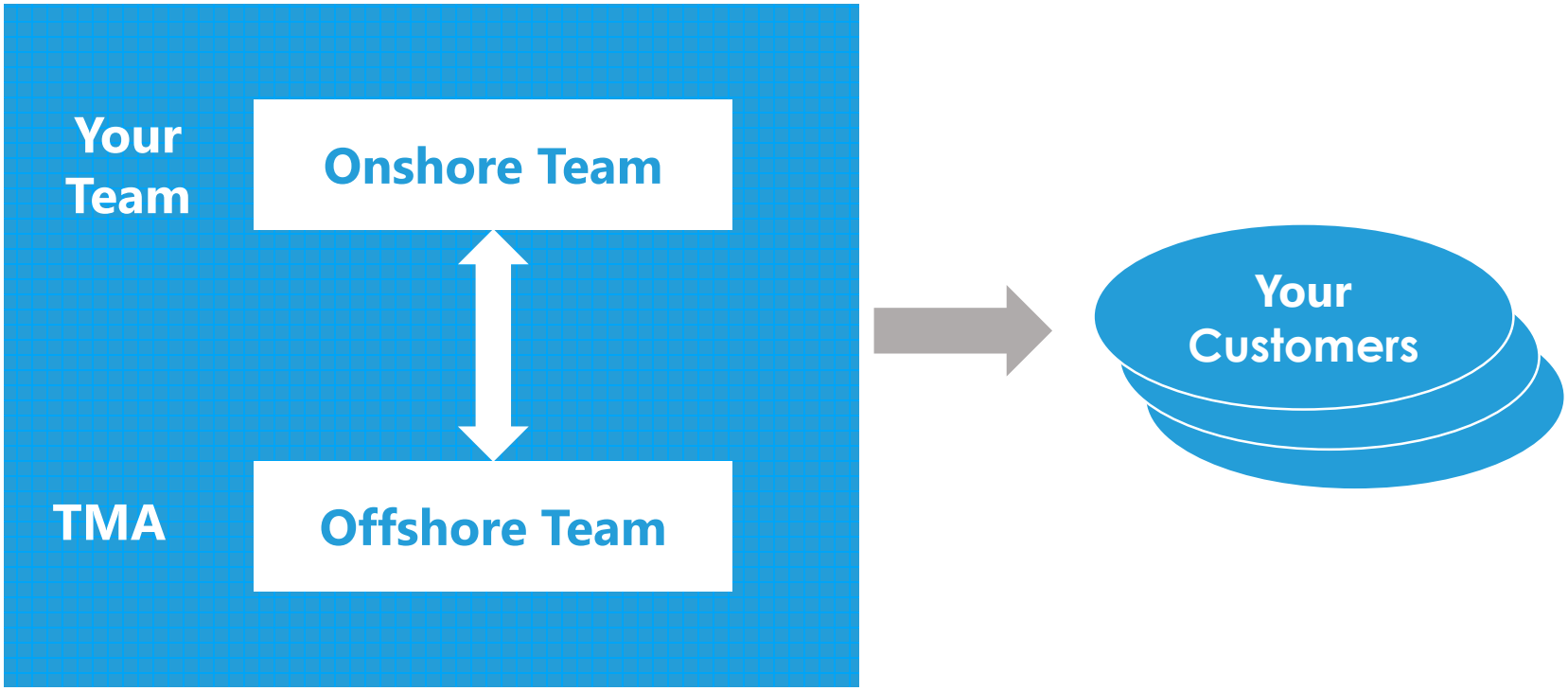
Overview

- TMA engineering process was developed based on
  - TMA experience in many software projects
  - Industry practices and standards (RUP, ISO, TL9000, CMMI, Agile)
- Meeting stringent requirements from leading companies
- Regular reporting of productivity and quality metrics to clients
  - To demonstrate performance and quality improvements



ONE Team Principle

Fully integrated Onshore and Offshore team to support your end customers



Onshore & Offshore Communication

Channels	Activities
Email	Project Reports
Instant Messaging	Task Status
Phone	Technical Discussion
Web/Video Conference	SCRUM Meeting
Web-based Tools	Milestone Review

TRANSPARENCY – VISIBILITY – REGULAR COMMUNICATION

Project Monitoring & Control

Daily Review

- Scrum meeting
- Task clarification
- Code Review

Weekly Review

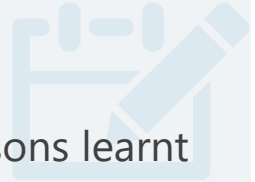
- Task status
- Schedule deviation
- Effort deviation
- Productivity
- Quality
- Risks, issues & actions

Monthly Review

- Performance review
- Accomplishment
- Milestones
- Metrics
- Risks, issues & actions
- Process application
- Staffing
- Training
- Improvement

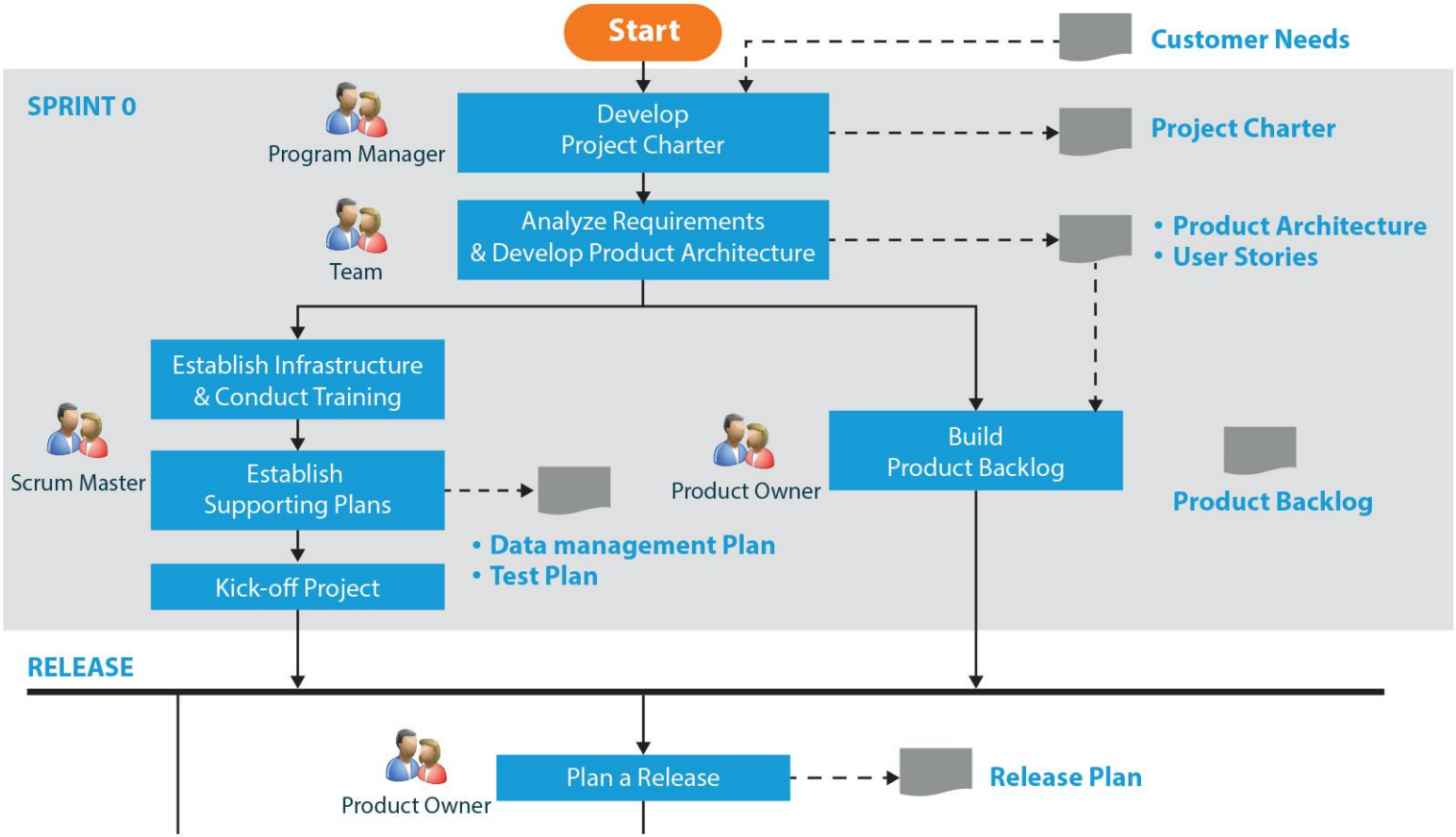
Milestone Review

- Status
- Achievement
- Best practices and lessons learnt

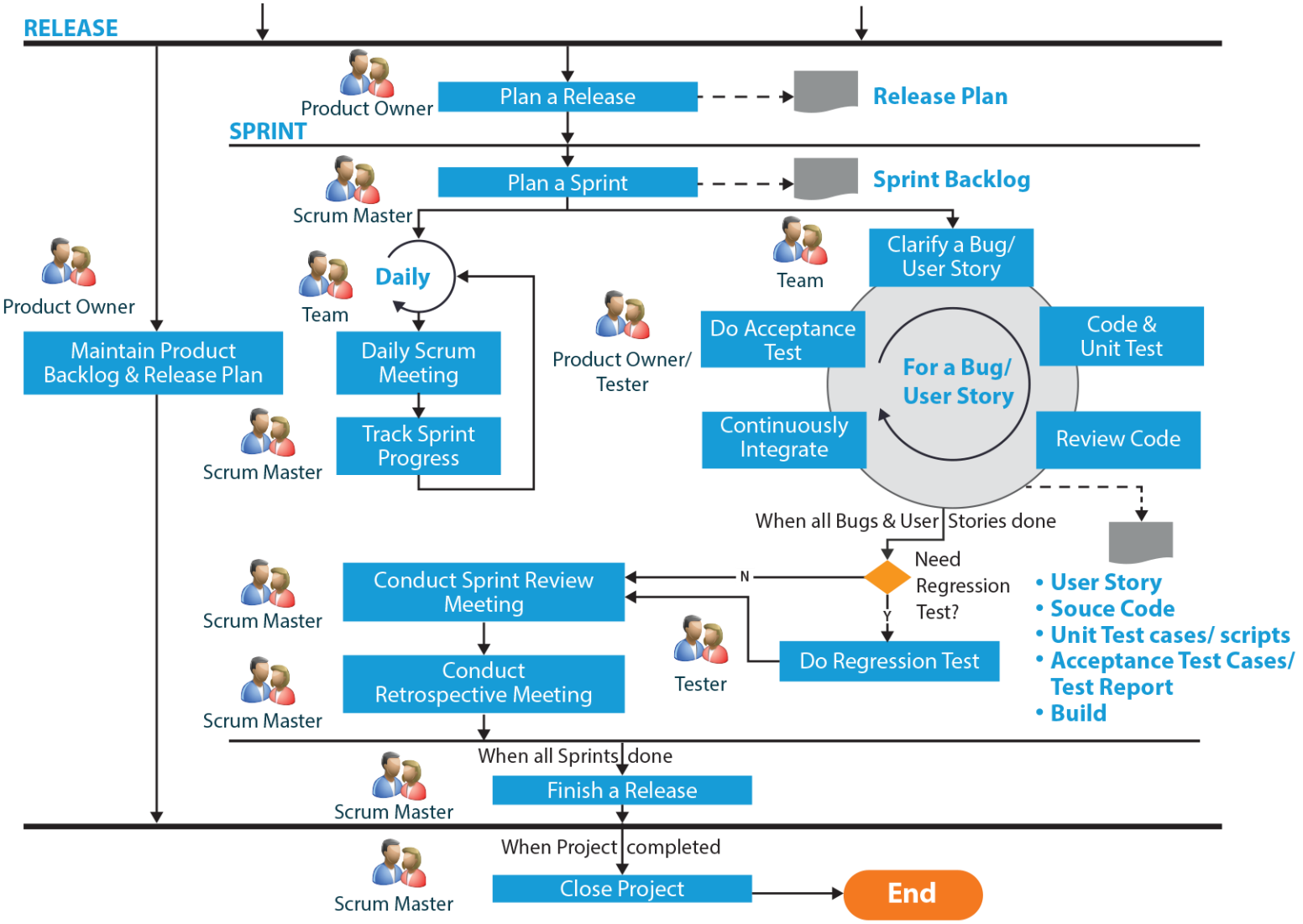


TMA Agile (1/2)

- **Customized Agile process and workflow for offshoring model**



TMA Agile (2/2)


RELEASE
Product Owner
Plan a Release
Release Plan
SPRINT
Scrum Master
Plan a Sprint
Sprint Backlog
Product Owner
Team
Daily
Clarify a Bug/ User Story
Maintain Product Backlog & Release Plan
Daily Scrum Meeting
Product Owner/ Tester
Do Acceptance Test
Code & Unit Test
For a Bug/ User Story
Continuously Integrate
Review Code
Scrum Master
Track Sprint Progress
When all Bugs & User Stories done
Need Regression Test?
N
Y
Conduct Sprint Review Meeting
Do Regression Test
Tester
Conduct Retrospective Meeting
When all Sprints done
Finish a Release
When Project completed
Close Project
End
• User Story
• Souce Code
• Unit Test cases/ scripts
• Acceptance Test Cases/ Test Report
• Build

TMA AGILE: Best Practices

Early and continuously deliver

- Short time-box sprint, done each user story, deliver working software

Shorten feedback loop

- Wire-frames, prototypes, daily stand-up meeting, sprint review, retrospective

Continuous integration

- Auto build and test for any code change, readiness of potential deliverables

Delivering unit tests together with the code

- Code review, TDD, Unit test coverage match quality objectives

Divide to many small teams

- Each team has specific skill set and focus on specific release targets

Clear exit criteria

- Approved and committed

Face-to-face conversation

- Onsite, phone or instant messaging for offshore members

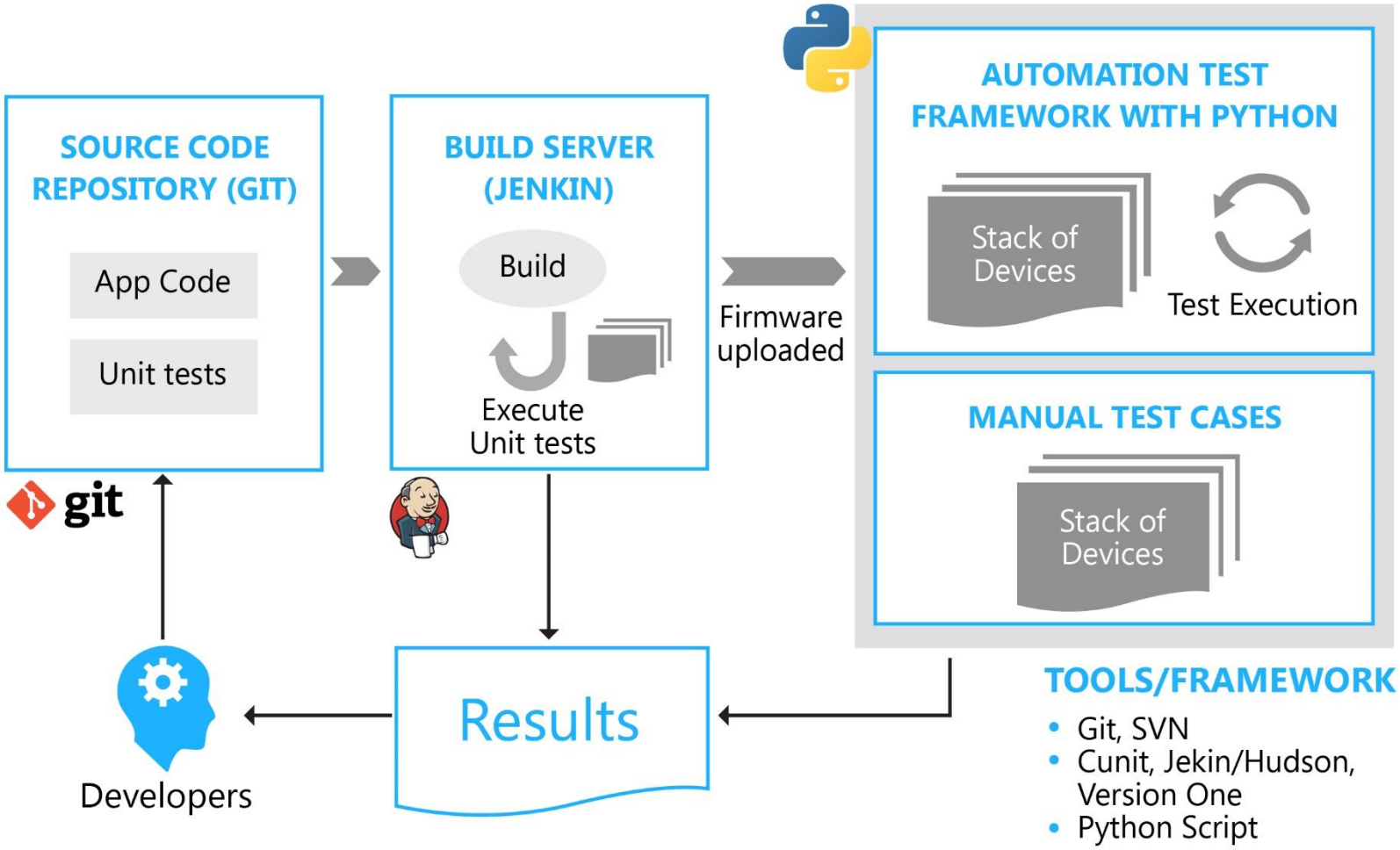
DevOps Overview

- More than 8 years of experience in Continuous integration (CI), Continuous Deployment (CD) and DevOps
- Applied CI/CD/DevOps in many large scale projects
- Familiar with many DevOps tools

DevOps Best Practices

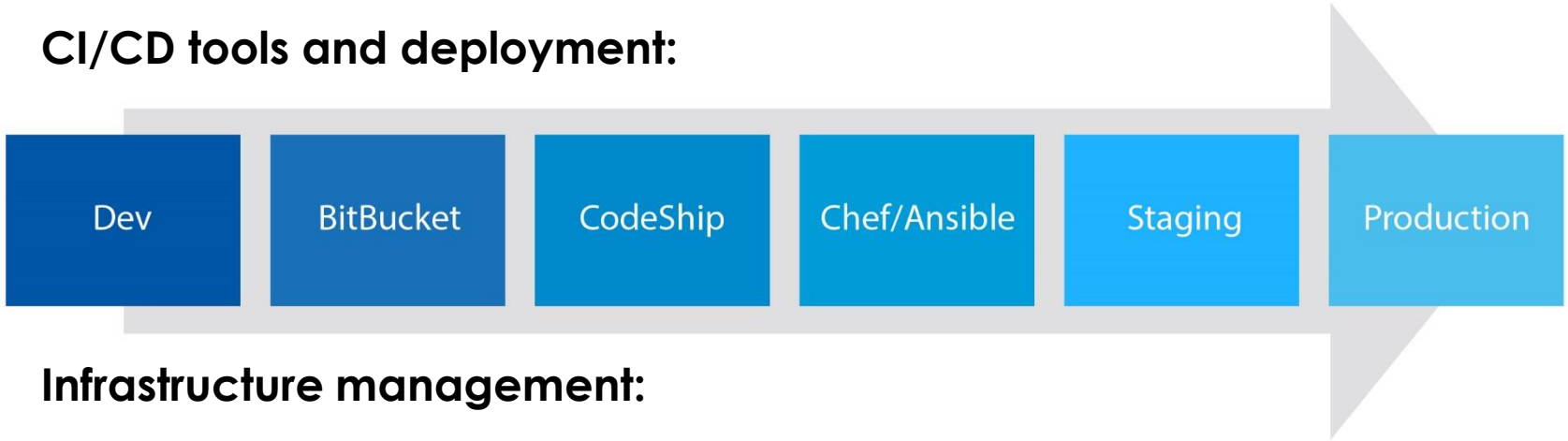
- Manage and execute automation for deployment, upgrade, validation of applications using DevOps tools
- Implement Continuous integration (CI) & Continuous Deployment (CD) using DevOps tools
- Create a repeatable, reliable process for releasing software
- Automate acceptance testing, deployment tasks, configuration management, etc.
- Keep everything under version control
- Create Fast Feedback Loops
- All members and teams responsible for the release process
- Quickly identify and fix defects

Sample Continuous Integration Process

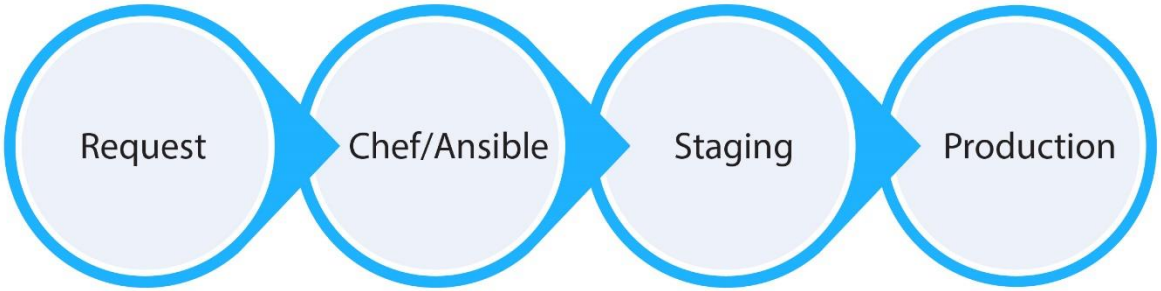


Sample DevOps Process

- **Automation:**
  - Auto staging deployment
  - Semi-auto production deployment for better control
  - Manual QA due to nature of billing portal
  - QA working on partial automation
- **CI/CD tools and deployment:**



- **Infrastructure management:**



Sample DevOps Tools