APPLYING ESSENCE TOWARDS

DEVOPS SCALABILITY

ANSHUL **LALIT**
KONGSBERG DIGITAL

Brief History

A year and few months ago...

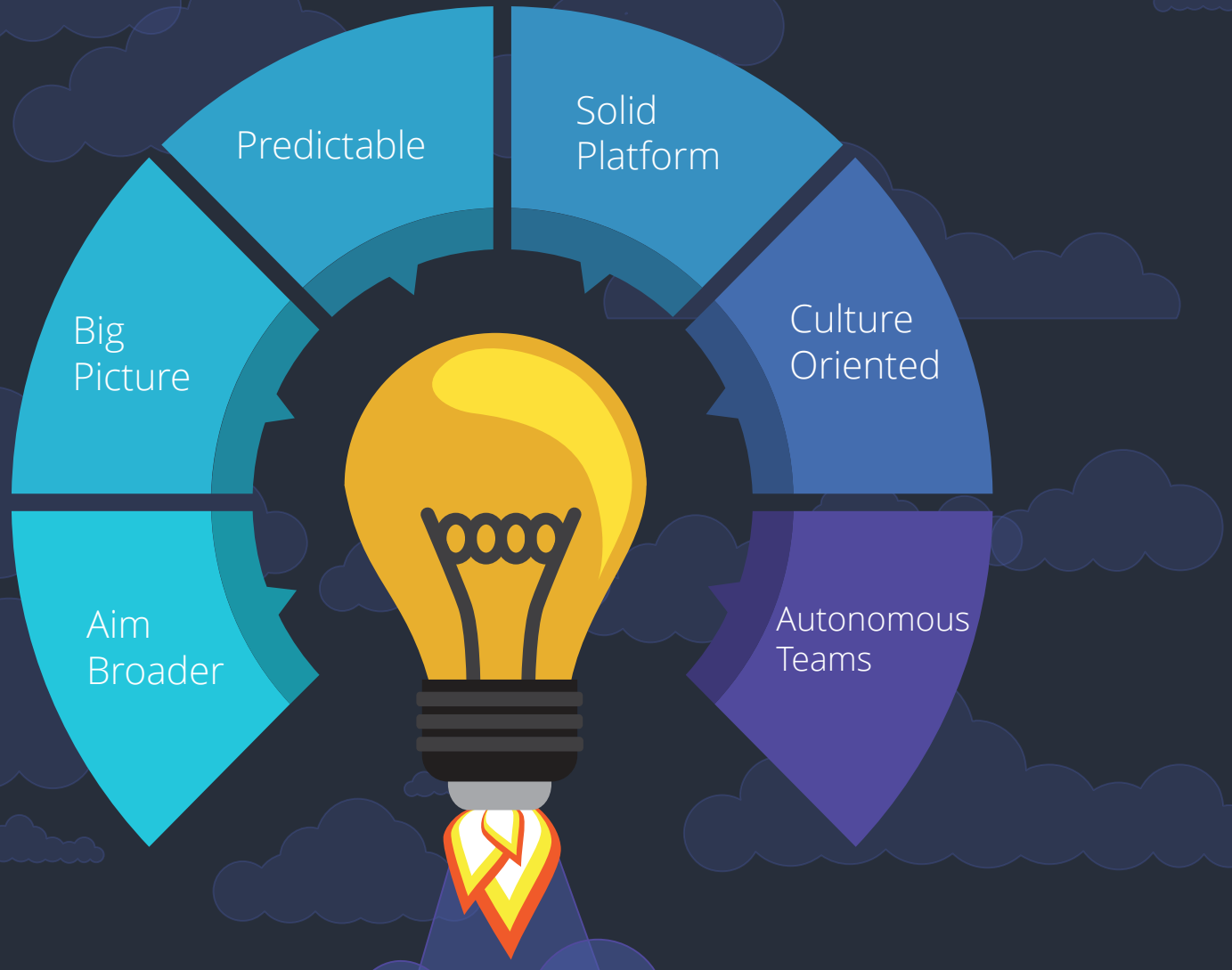
The question was no longer why, but how.

- Mostly driven by DevOps initiatives
- Management support but no sustainable approach
- No guidelines towards shaping up the culture
- Dealing with anti-patterns

Anti-patterns are the worst.

Goal Development

Being on Azure DevOps, or automating stuff wasn't enough

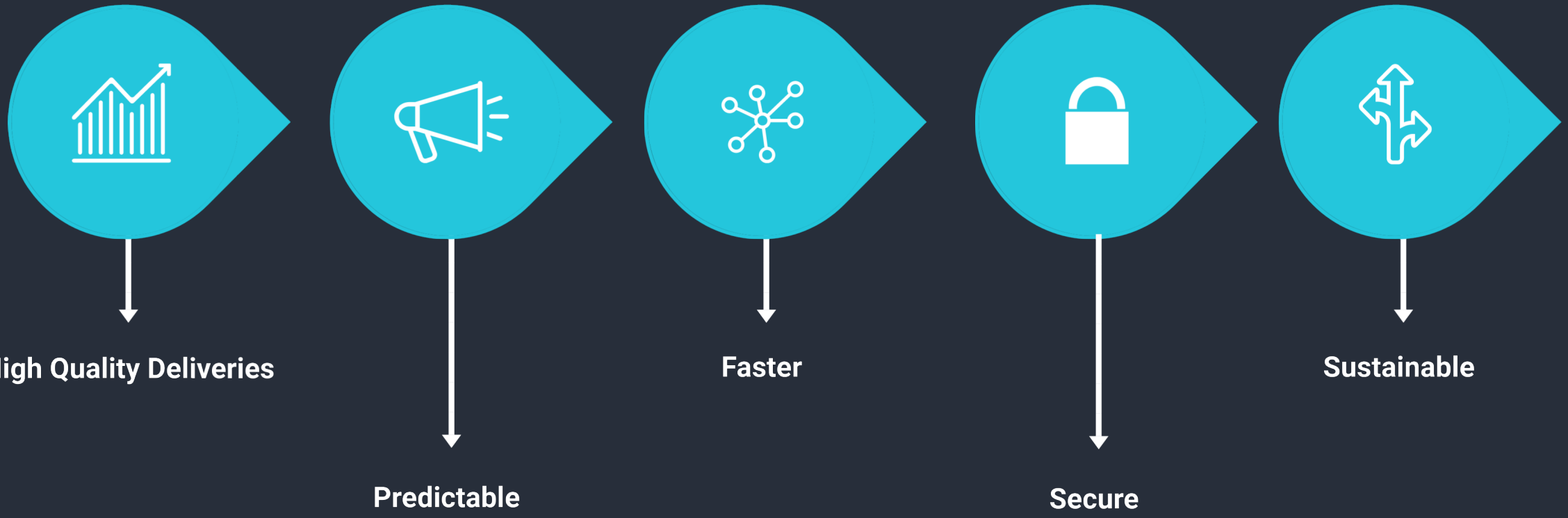


Birth of KCDM

- Mid 2018, we decided to shape our goals in a structured model
- We identified essential maturity areas and maturity scale for the teams
- Focus on breaking down silos
- Primary focus is mindset, culture and process
- Formal Enrollment Process for teams

KCDM Objectives

How the guiding and driving path matches towards results



KCDM Essentials

- Clear roles assignments needs to be present in a team.
- Formal Team Enrollment Process
- CoRE model for expert areas like Automation, Infrastructure and incident handling
- Promoting Self Service model for few areas
- Strategy towards DevOps (CD) maturity at scale, not towards extreme DevOps

Maturity Areas

Where should we focus within teams?

Organization, Process & Culture

One of the most important area to consider maturity over, and to aim a sustainable maturity model.

Technology

Technology has essential impact on CD maturity w.r.t. code metrics, testable code, dependency management and component architecture.

Build & CI

This may be referred as a core to the CD maturity process as it involves a lot of tools, process and automation into the CI/CD pipeline to facilitate Continuous Deliveries.

Testing & QA

A crucial part of CD process and to ensure successful implementation of Continuous Delivery Model.

Deployment Routines

This area ensures maturity over deployment routines for testing, user accessibility, or customer delivery readiness.

Information & Reporting

Maturity over process of collecting/reporting based on information gathered, to validate or increase business value with dynamic dashboards, environment statistics, user & usage statistics

Maturity Levels

What level of maturity team(s) have and how should they proceed further?

Base (or) Introductory

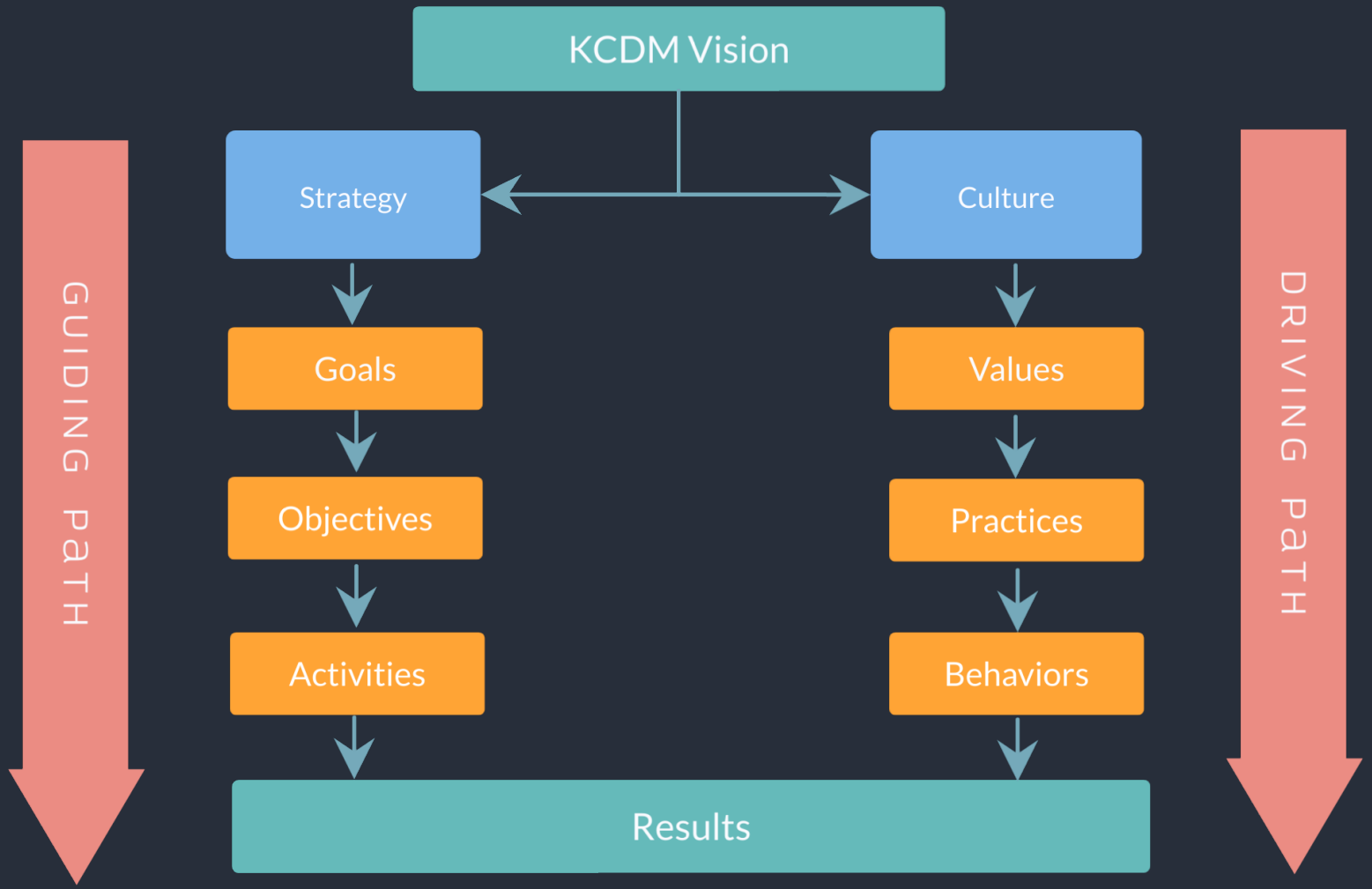
Beginner (or) Novice

Intermediate (or) Consistent

Advanced

Strategy vs. Culture

How the guiding and driving path matches towards results



KCDM Enrollment Process

4 stages to become autonomous and do away anti-patterns

Enrollment

- Program Orientation
- Define Roles in Team
- Map Expert Pools i.e. Ops, Automation, Security as needed
- Prepare for KCDM Self Assessment

Self-Assessment

Assess maturity areas including (not limited to):

- Security Assessments
- Agile Methodology
- Code Quality & Coverage
- CI/CD Automation
- Technical Debt Assessment
- Infrastructure as Code
- Feature Flags
- Code Obfuscation
- End-user Statistics and Telemetry

KCDM Follow-up

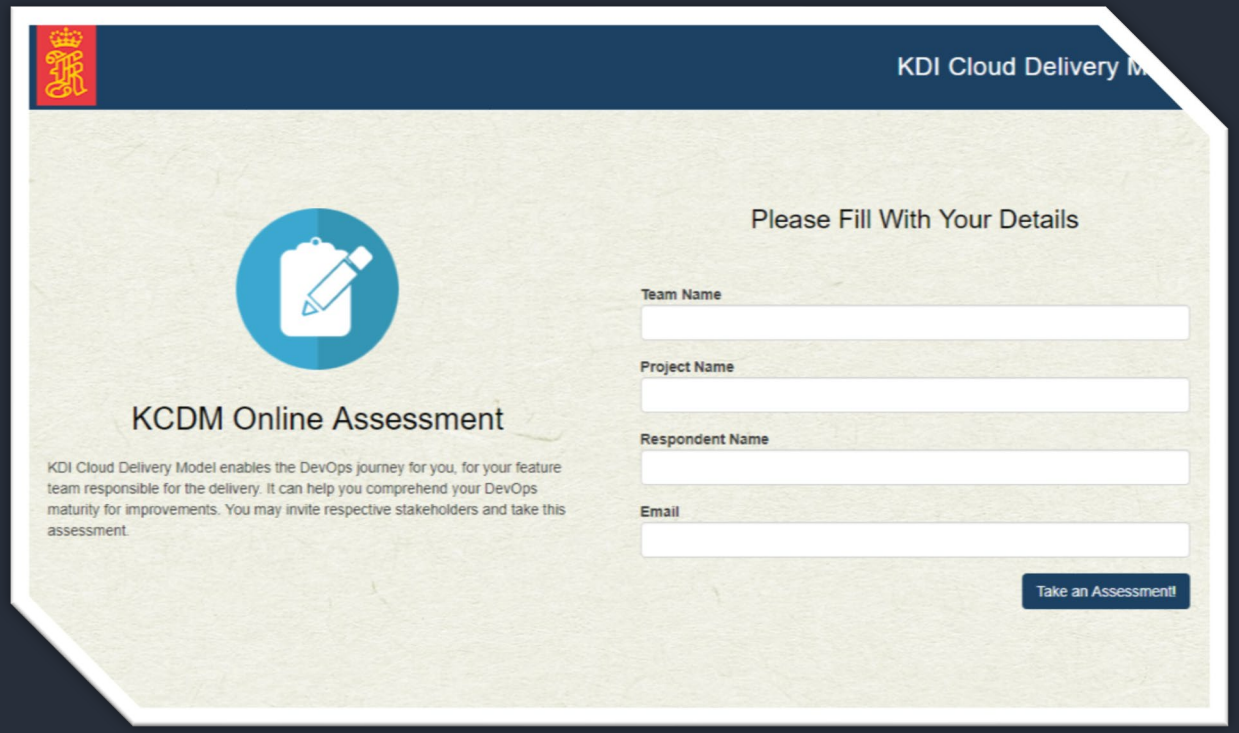
- KCDM Follow-up and Improvement Planning
- Agreement on Top 10 action items
- Action items go to the team backlog and prioritized in upcoming sprints
- Typical duration for improvements is 12 – 20 weeks

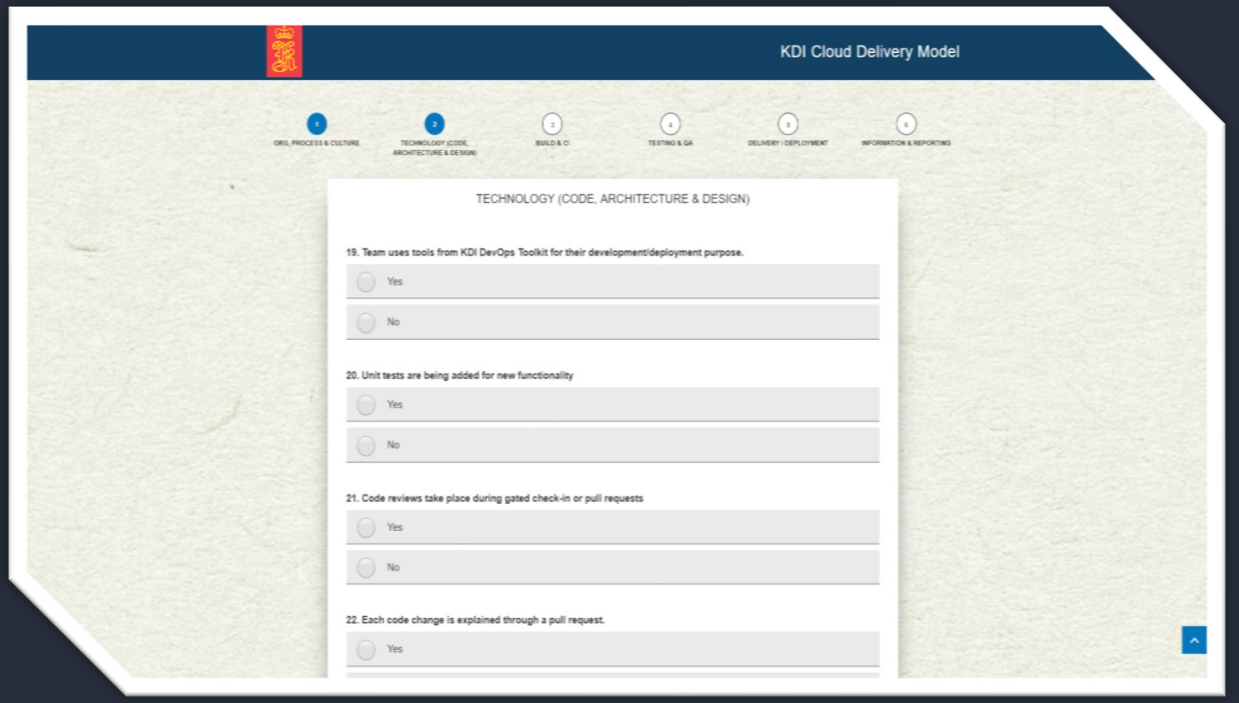
Approval

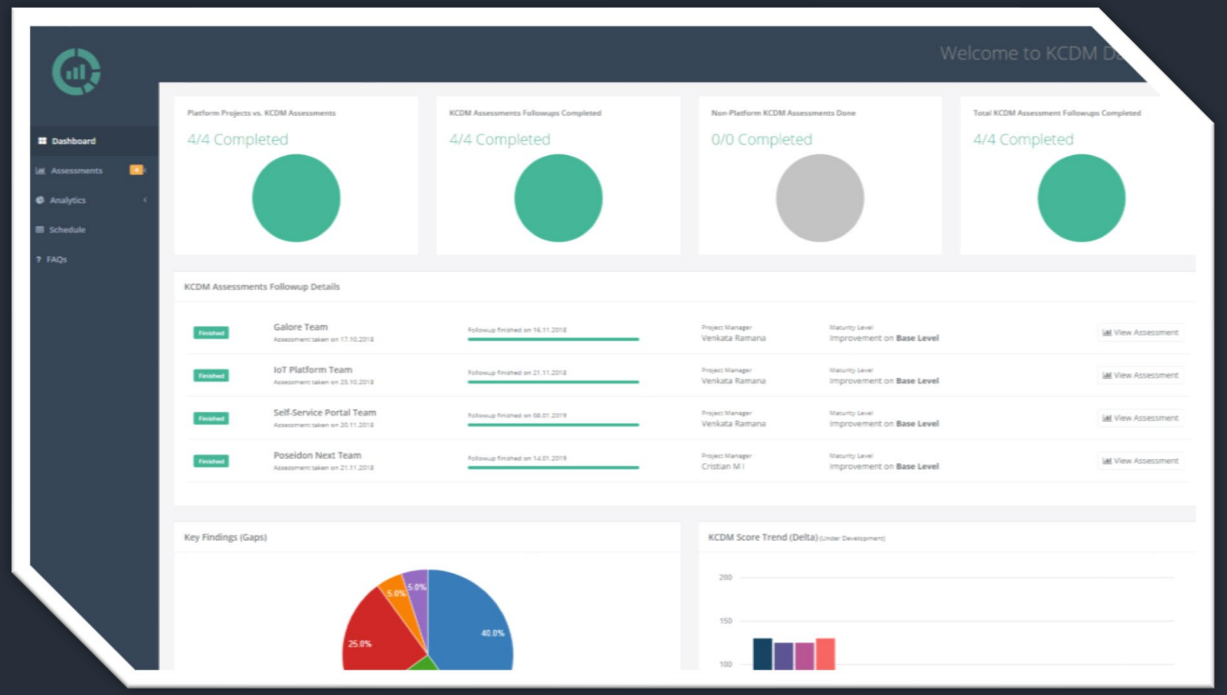
- Re-assessment to ensure KCDM Index improvements
- Action item reviews
- Stamp of approval as “KCDM Certified Team”

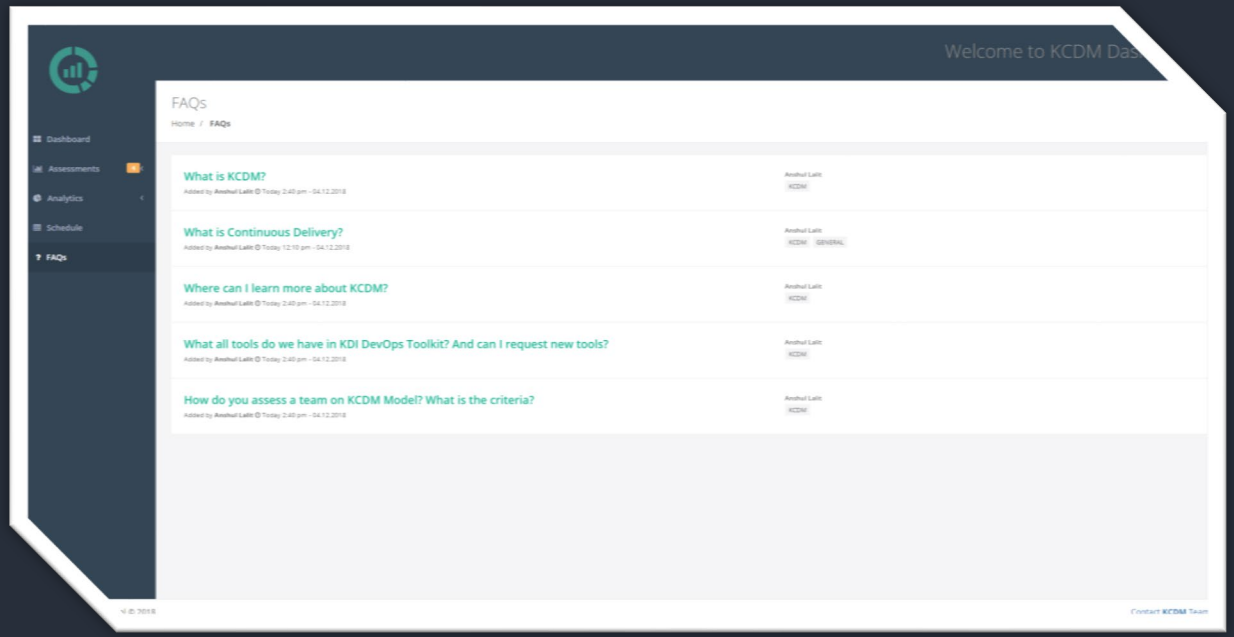
How do we ensure progress?

- KCDM retrospective during regular follow-ups (roughly 12 – 20 weeks)
- Every assessment calculates an index number based on DevOps & Culture Maturity, Security Maturity, and Technical Maturity
- Any gap becomes a backlog item and addressing of such item becomes necessary during backlog prioritization to maintain KCDM Index.
- Such KCDM Index is transparent among teams and recognized across organization.


KDI Cloud Delivery M
KCDM Online Assessment
KDI Cloud Delivery Model enables the DevOps journey for you, for your feature team responsible for the delivery. It can help you comprehend your DevOps maturity for improvements. You may invite respective stakeholders and take this assessment.
Please Fill With Your Details
Team Name
Project Name
Respondent Name
Email
Take an Assessment!


KDI Cloud Delivery Model
1 ORG, PROCESS & CULTURE
2 TECHNOLOGY (CODE, ARCHITECTURE & DESIGN)
3 BUILD & CI
4 TESTING & QA
5 DELIVERY / DEPLOYMENT
6 INFORMATION & REPORTING
TECHNOLOGY (CODE, ARCHITECTURE & DESIGN)
19. Team uses tools from KDI DevOps Toolkit for their development/deployment purpose.
Yes
No
20. Unit tests are being added for new functionality
Yes
No
21. Code reviews take place during gated check-in or pull requests
Yes
No
22. Each code change is explained through a pull request.
Yes


Welcome to KCDM Da
Dashboard
Assessments
Analytics
Schedule
FAQs
Platform Projects vs. KCDM Assessments
4/4 Completed
KCDM Assessments Followups Completed
4/4 Completed
Non-Platform KCDM Assessments Done
0/0 Completed
Total KCDM Assessment Followups Completed
4/4 Completed
KCDM Assessments Followup Details
Finished
Galore Team
Assessment taken on 17.10.2018
Followup finished on 16.11.2018
Project Manager:
Venkata Ramana
Maturity Level:
Improvement on Base Level
View Assessment
Finished
IoT Platform Team
Assessment taken on 25.10.2018
Followup finished on 21.11.2018
Project Manager:
Venkata Ramana
Maturity Level:
Improvement on Base Level
View Assessment
Finished
Self-Service Portal Team
Assessment taken on 20.11.2018
Followup finished on 08.01.2019
Project Manager:
Venkata Ramana
Maturity Level:
Improvement on Base Level
View Assessment
Finished
Poseidon Next Team
Assessment taken on 21.11.2018
Followup finished on 14.01.2019
Project Manager:
Cristian M I
Maturity Level:
Improvement on Base Level
View Assessment
Key Findings (Gaps)
40.0%
25.0%
5.0%
5.0%
KCDM Score Trend (Delta) (Under Development)
200
150
100


Welcome to KCDM Da
Dashboard
Assessments
Analytics
Schedule
FAQs
FAQs
Home / FAQs
What is KCDM?
Added by Anshuli Lalit Today 2:40 pm - 04.12.2018
Anshuli Lalit
KCDM
What is Continuous Delivery?
Added by Anshuli Lalit Today 12:10 pm - 04.12.2018
Anshuli Lalit
KCDM GENERAL
Where can I learn more about KCDM?
Added by Anshuli Lalit Today 2:40 pm - 04.12.2018
Anshuli Lalit
KCDM
What all tools do we have in KDI DevOps Toolkit? And can I request new tools?
Added by Anshuli Lalit Today 2:40 pm - 04.12.2018
Anshuli Lalit
KCDM
How do you assess a team on KCDM Model? What is the criteria?
Added by Anshuli Lalit Today 2:40 pm - 04.12.2018
Anshuli Lalit
KCDM
Contact KCDM Team

Total Assessments 1

Outstanding Actions 10

Project Manager Venkata R.

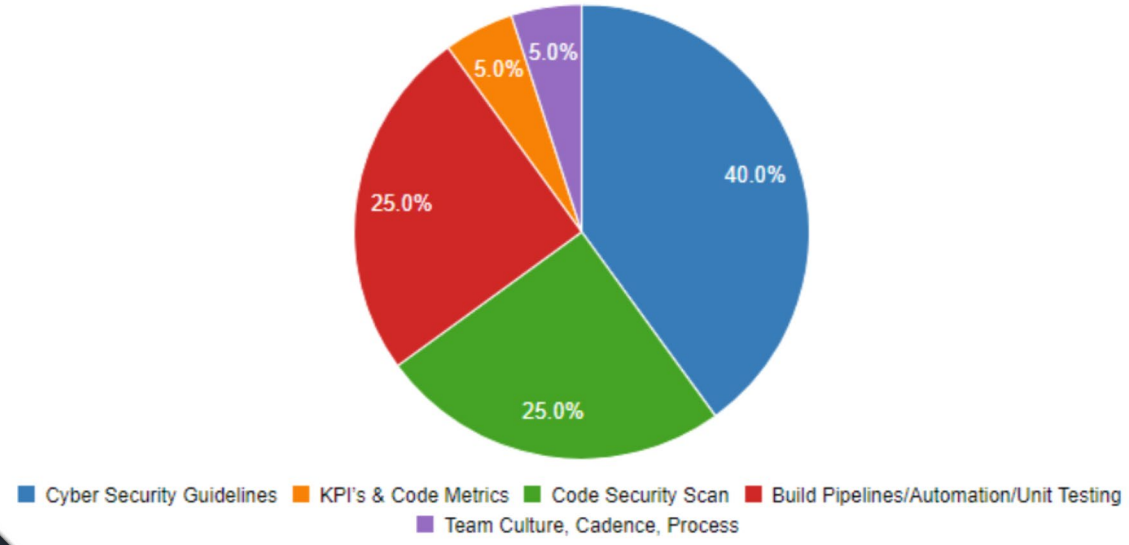
KCDM Assessments History - Galore Team

Finished	Galore Team Assessment taken on 17.10.2018	Followup finished on 16.11.2018	Project Manager Venkata Ramana	Maturity Level Improvement on **Base Level**	View Assessment · View Analysis

KCDM Action list for Galore Team

Blocked	**Cyber Security Guidelines and training** Galore team must undertake KDI CS guidelines and necessary training.	Action On Venkata Ramana	Due Date 31.01.2019 00:00 am	Security · Process
Blocked	**SonarCloud Implementation** Address code coverage, unit testing, and vulnerabilities management.	Action On Venkata Ramana	Due Date 31.01.2019 00:00 am	Security · CI/CD
In Progress	**Define Team Roles** Component lead and Security Champion roles should be aligned within the team.	Action On Venkata Ramana	Due Date 31.01.2019 00:00 am	General · Process
In Progress	**Performance Testing Improvements** Galore performance shall be aligned with use case expecations.	Action On Venkata Ramana	Due Date 31.01.2019 00:00 am	General · Process
In Progress	**Improvement on Telemetry** Galore team shall encourage necesssary facilitation to improve on Telemetry.	Action On Venkata Ramana	Due Date 31.01.2019 00:00 am	General · CI/CD
In Progress	**Working in cadence** Although it has improved a lot in this quarter, team shall work on inter-team collaboration and ensure that they finish current work before starting new one.	Action On Venkata Ramana	Due Date 31.01.2019 00:00 am	General
Blocked	**Collect and act on metrics and KPIs** Team shall act on various mode metrics and KPIs for improvements towards deliveries. This is targeted to be done with SonarCloud usage.	Action On Venkata Ramana	Due Date 31.01.2019 00:00 am	General
In Progress	**Assess technical debt continuously** Technical debt shall be included as part of the backlog and each sprint includes work related to reducing/management of technical debt.	Action On Venkata Ramana	Due Date 31.01.2019 00:00 am	General
In Progress	**Application configuration as code** Teams shall manage and provision application configurations which are written as source code, rather than fiddling with random configuration files. Team shall also make use of Azure variables and Key Vault service for their benefits.	Action On Venkata Ramana	Due Date 31.01.2019 00:00 am	CI/CD
	Failure traceability via the CI/CD pipeline Any failure, say during functional automation, shall be traceable with context for further investigation and preferably associated work items for quick reference and resolution.	Action On Venkata Ramana	Due Date 31.01.2019 00:00 am	CI/CD

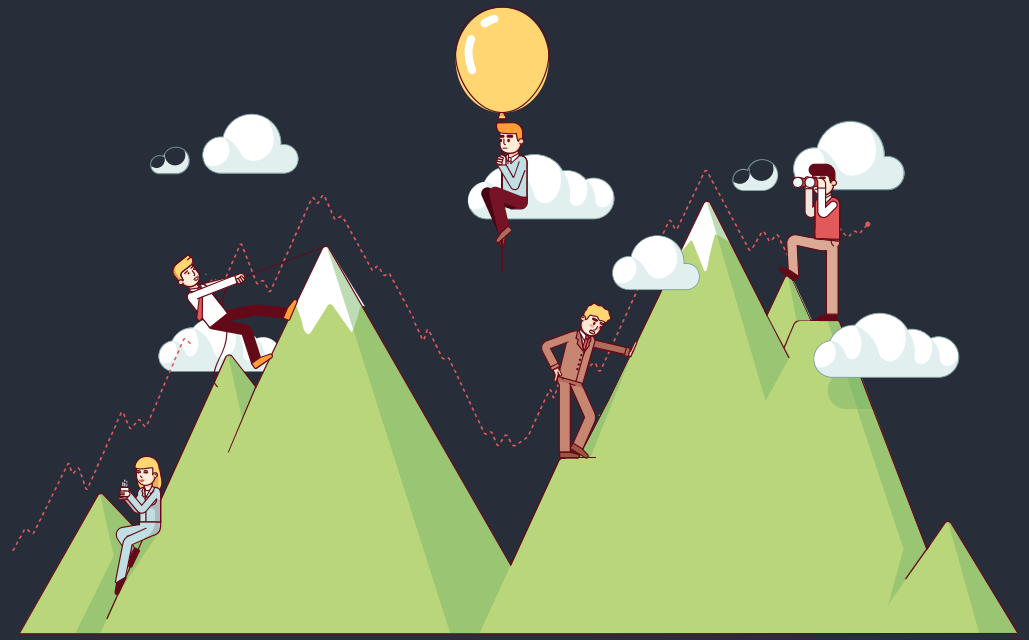
Key Findings (Gaps)



Our Alternative Approach

- Center of Resource Excellence* (CoRE) in various areas:
  - Ops CoRE
  - Automation CoRE
  - Tooling CoRE

- AHBL Simulation – still evolving, but works to ensure service resiliency



Self-Service Agents: making life better!

- IaC - Common Azure Services provisioning with pre-defined NSGs
- Pre-configured deployment pipelines for common automation solutions facilitating quick CI/CD maturity
- Custom pipeline tasks facilitating automated code signing, code obfuscation etc.
- Project and user provisioning (approval based automation)
- Cloud Cost Optimization, Smart indicators for idle resources
- DevTest Labs
- Certificates as a Service

Automation Overview

- Self-sufficient Automation Framework
- Out of the box plug n play support with our Kognifai Application Framework, codename: Poseidon Next
- Anything from UI automation to API tests
- Supports Coded UI, Protractor, Selenium, Web driver, Jasmine BDD etc.
- High degree of automation in PSR (Performance, Scalability, Reliability)

So how far are we?

- 10 teams have been enrolled in KCDM
- 6 of the teams completed enrollment in 3 months
- 4 of the teams completed enrollment in 4 months
- 9 new teams are in pipeline for summer 2019
- Good automation & self-service maturity across areas
- Security holds importance from day 1 in various areas
- Team size – anywhere from 8 – 10 resources per team
- Improved deployment frequency (once every 2-3 months to anywhere from 8-10 deployments a month)
- In a couple of projects, historically we only deployed once or twice a year. Now we *can* deploy every day or a certified build on demand with high failure tolerance.

Major Takeaways

After a year and few months…

- Azure has been very instrumental for us, and is our preferred cloud platform
- Azure DevOps is our preferred CI/CD, planning & collaboration tool due to its flexibility, features and friendliness.
- It helps us to create strong ambassadors to take this journey forward
- It's a long term process hence management shall be willing to take decisions in this direction
- It takes time and resources. This is surely an investment, but you will reap significant return in long term.

https://www.linkedin.com/in/a-lalit/