

A Modern Software Factory

Achieving Quality, Agility, and Affordability through a DevOps Culture

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Special thanks to:

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Approved for Public Release

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“The biggest epiphany I’ve had this year is that what really matters is the machine that builds the machine - the factory. And that is at least two orders of magnitude harder than the vehicle itself.”

– Elon Musk

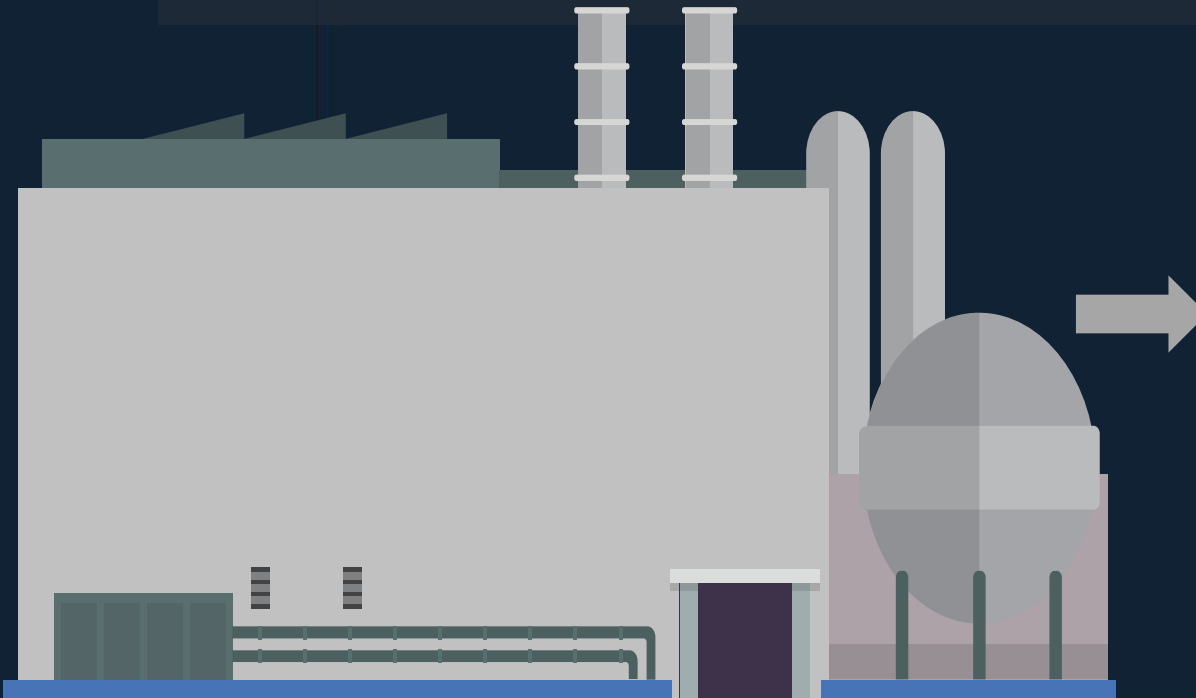


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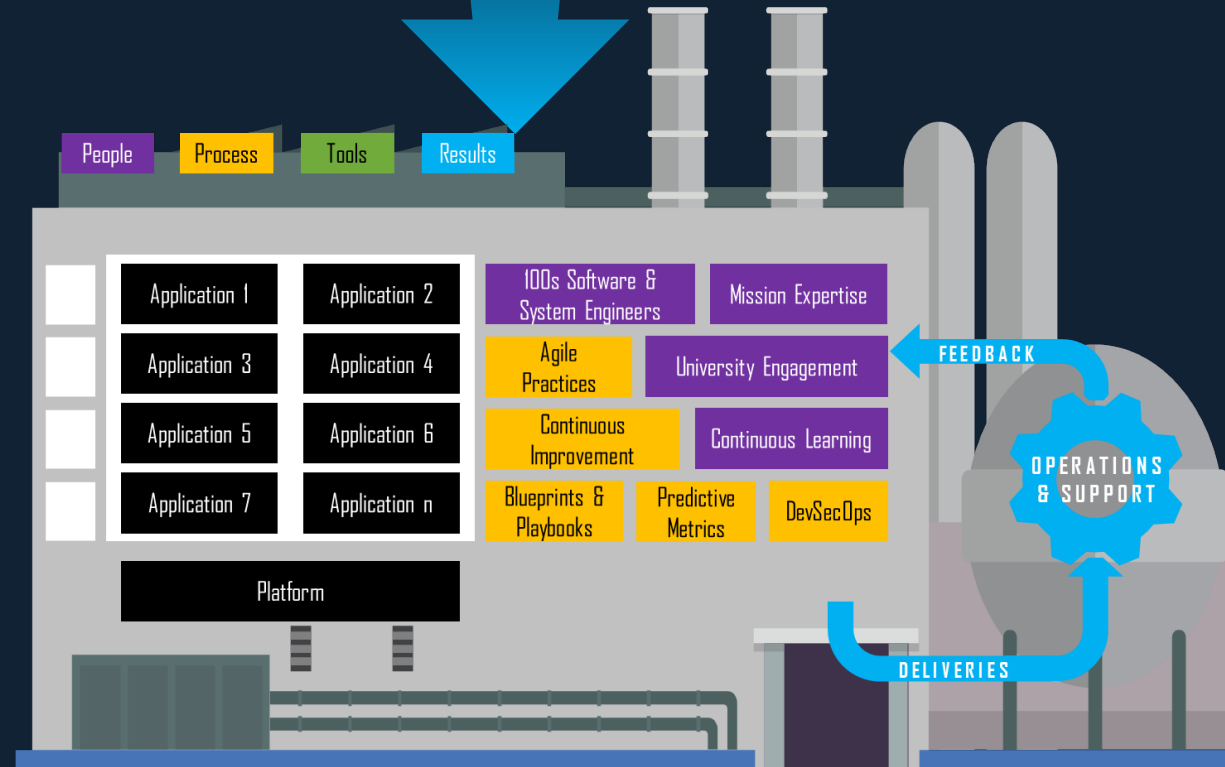
The Challenge

Imperative 1

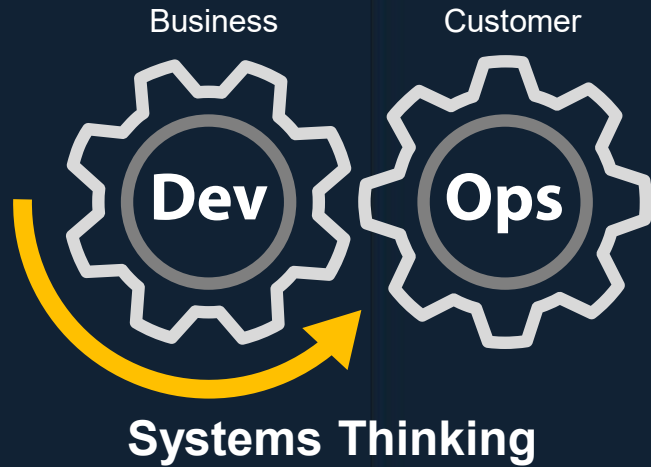
Support rapid evolution of capability through experimentation and the release of minimum viable products

Imperative 2

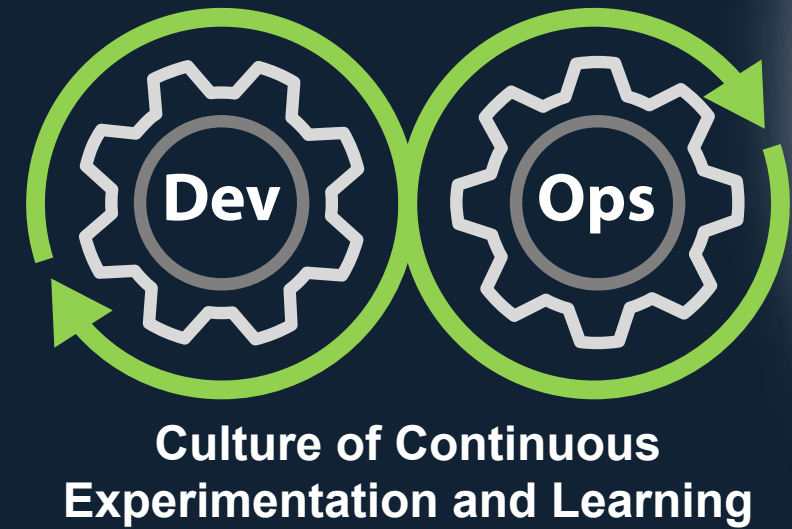
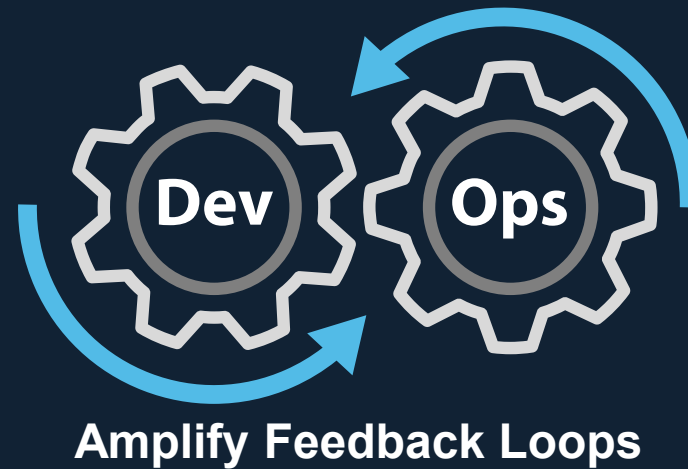
Develop high quality, secure, reliable solutions to support the users' critical needs



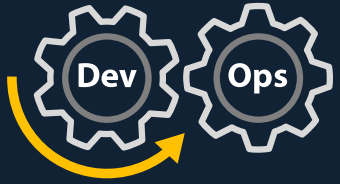
The Solution: DevOps



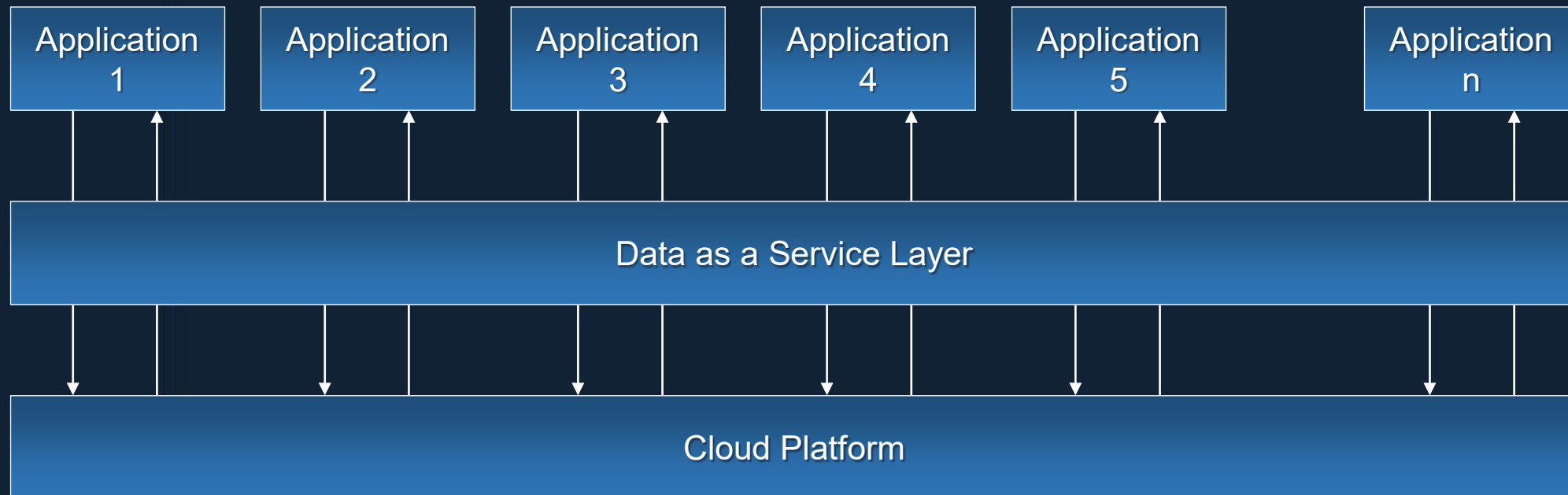
Key Principles: the “Three Ways”



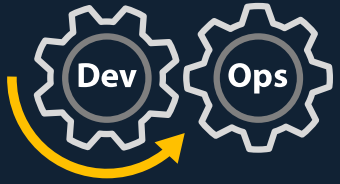
advancing – Fast



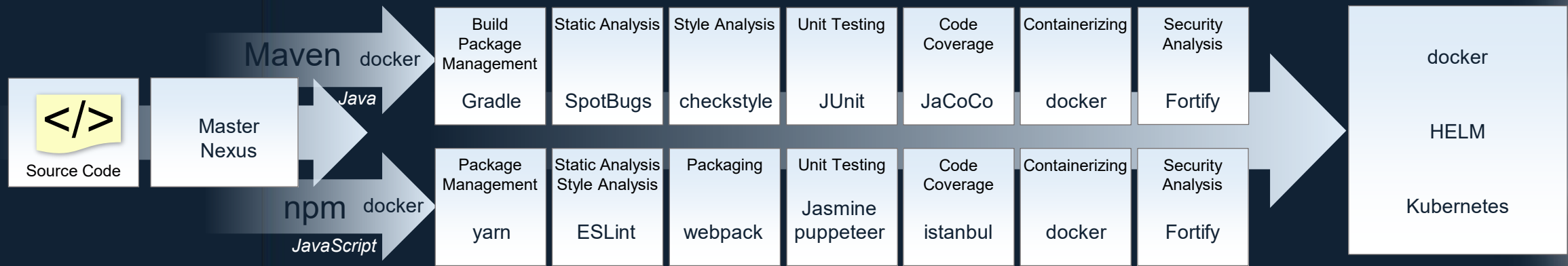
Enterprise architecture – develop apps, not systems



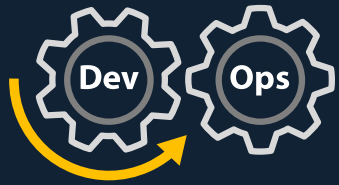
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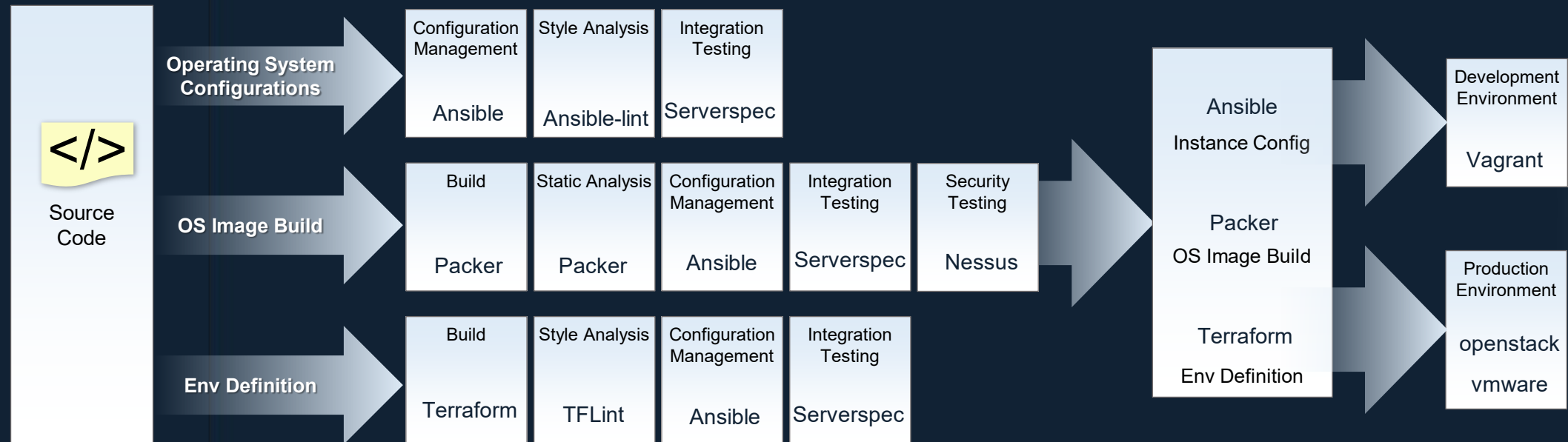
Ruthlessly automate the software development processes...



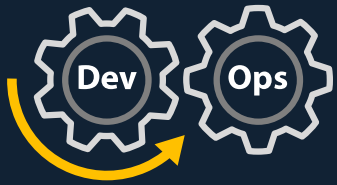
advancing – Fast



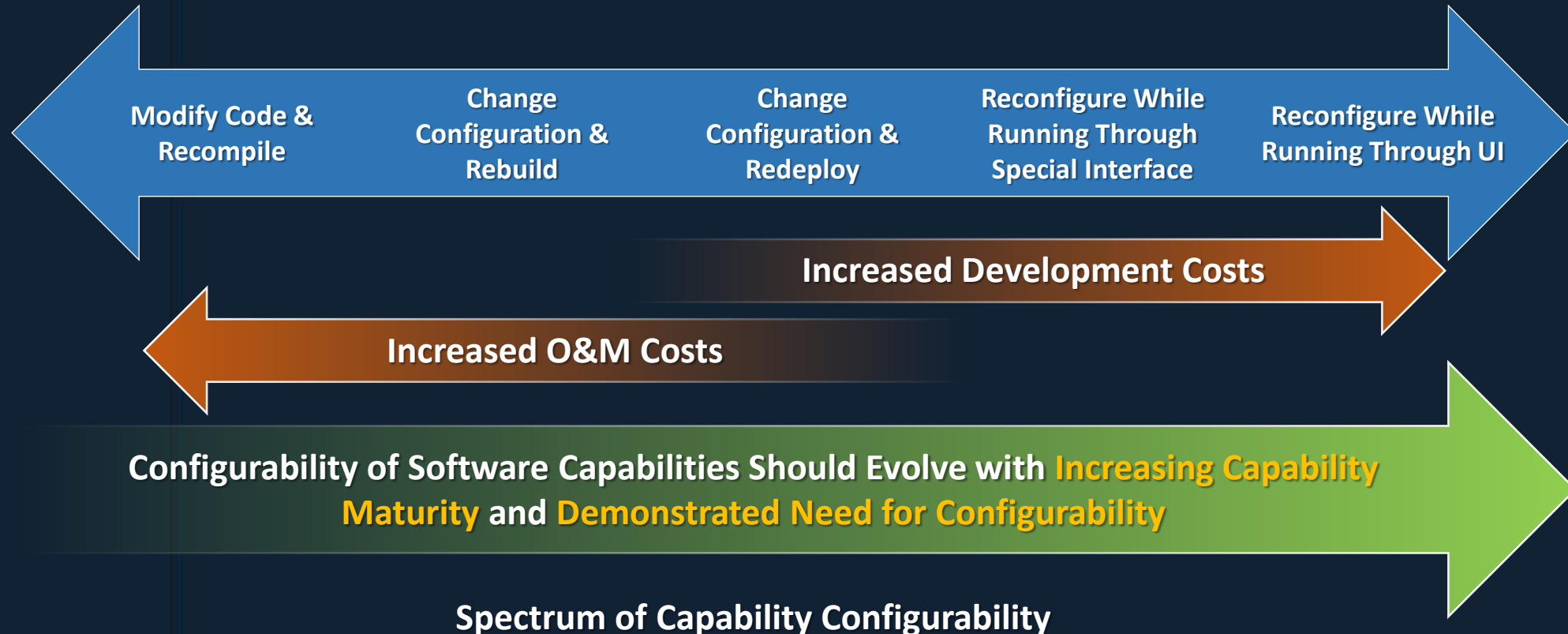
...and treat everything as software



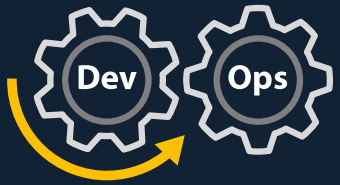
advancing – Fast



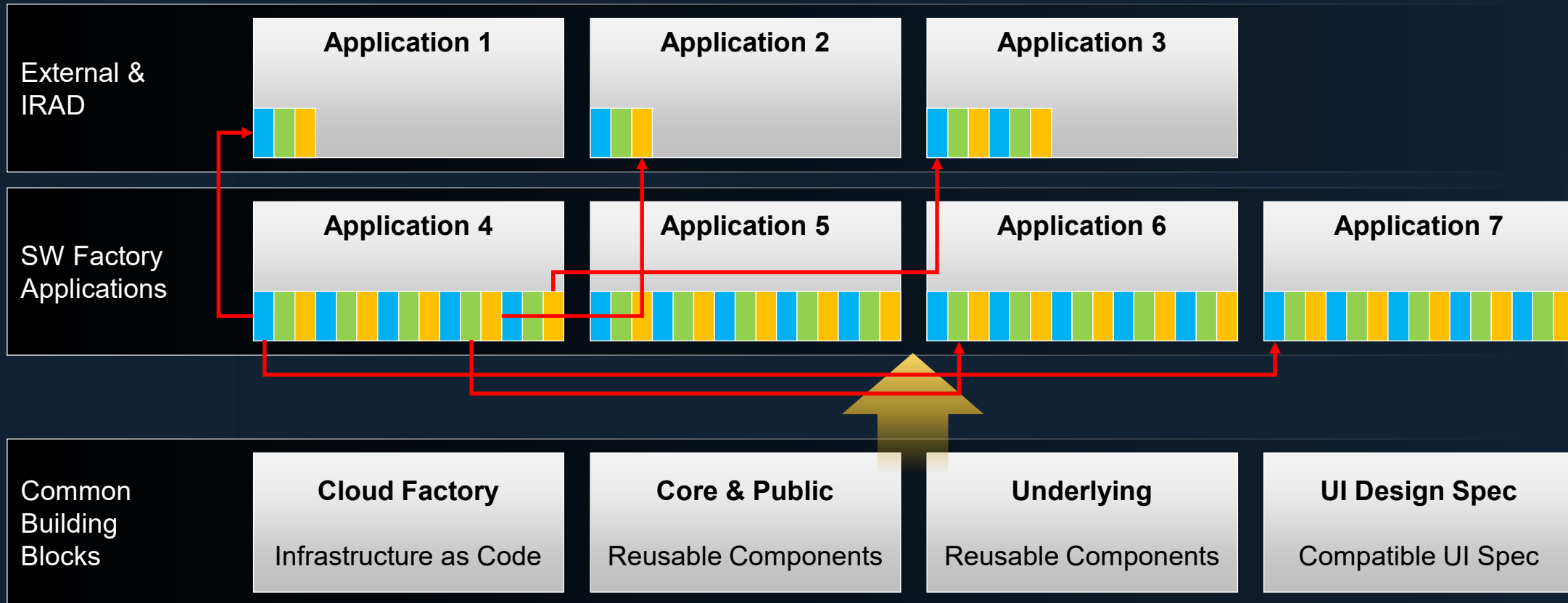
Modularity and flexibility evolve organically through agile project management principles



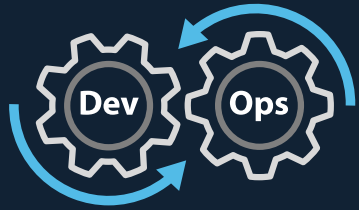
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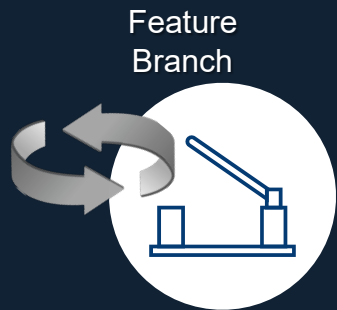
Reuse across a family of applications



advancing – Safely



Multiple levels of automated testing and gates create a culture of continuous quality and safety



Build Gate

Unit testing
Static analysis
Security analysis



Merge Gate

Human review
Acceptance testing
Dependency verification



Nightly Tests

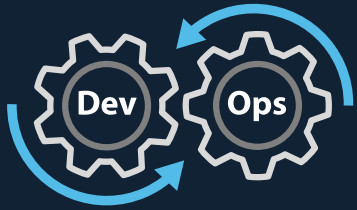
End to end testing
Stability testing
Longevity testing

Release Tag

Controlled manifest
Automated deployment

Internal Deployments: many per day | Story Cycle Time: hrs to days | Releases to I&T: many per week

advancing – Safely

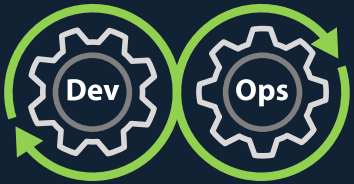


Frequent deployments to integration and test team
Powerful dashboards provide transparency and analytics



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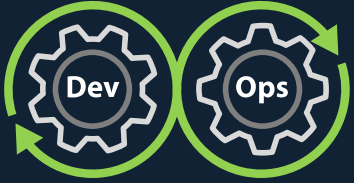
Partnership between program office, operators, and contractor allows for true agile execution



Planning Increment: weeks or months | Workshops: multiple / month



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Culture of blameless continuous improvement – both within teams, between them, and with management



