



Accelerating Value Delivery in Highly Complex Domains

Kelli Houston, Lockheed Martin Associate Fellow

Introduction



Kelli Houston

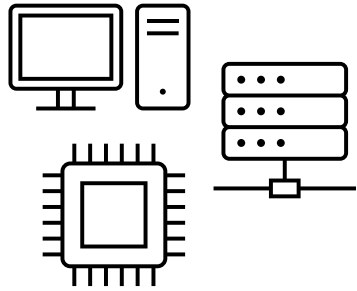
Lockheed Martin Associate Fellow



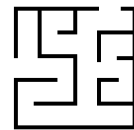
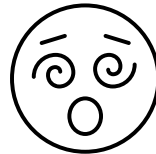
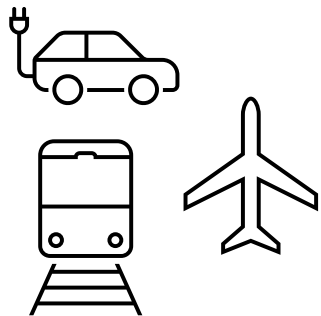
NOTE: The content of this presentation has been approved for public release

Value Delivery in Highly Complex Domains is Hard

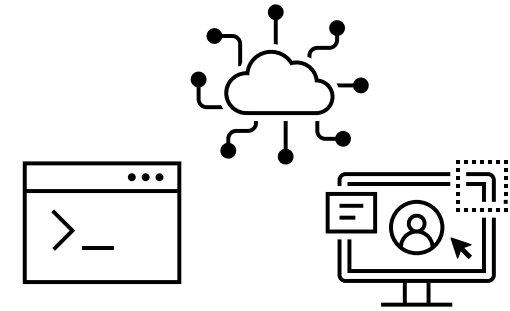
Cyber-Physical Systems



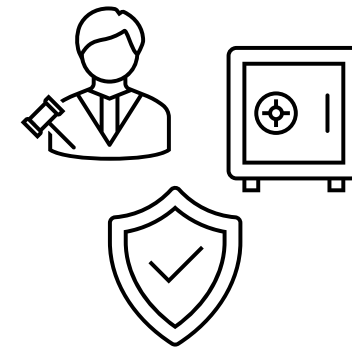
Hardware, Firmware, Platforms



Knowledge work in a maze of concerns that must all be juggled

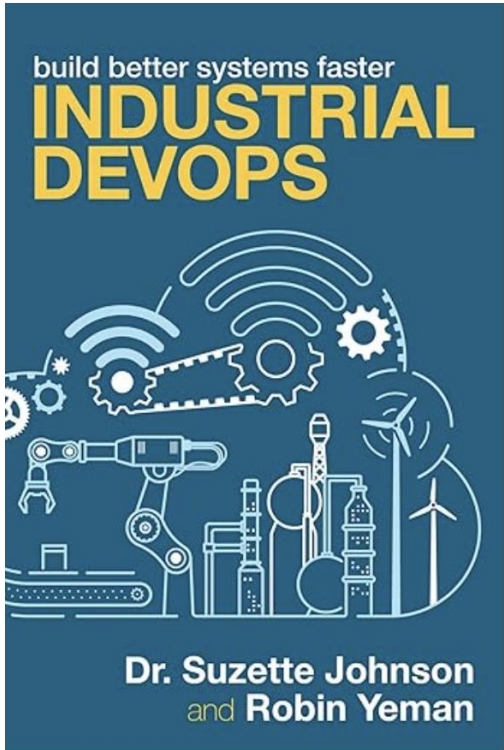


Software, security, compliance



Technology can help, but how ...

Industrial DevOps Principles



Industrial DevOps: Build Better Systems Faster, by Dr. Suzette Johnson and Robin Yeman

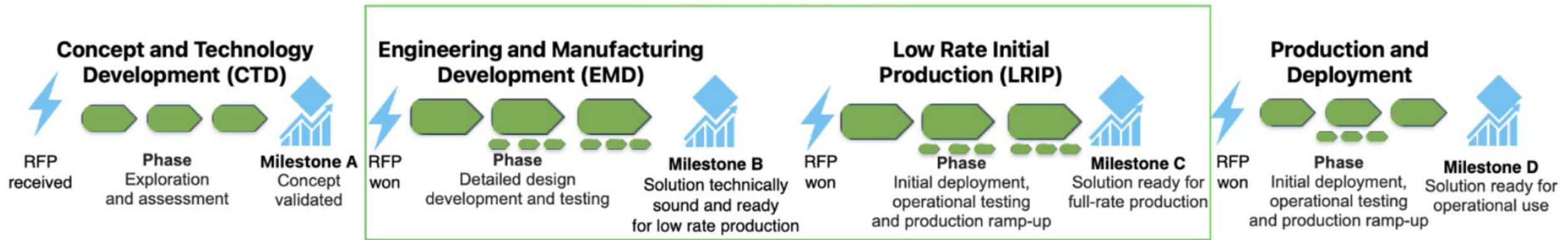
The Process – From Value Stream to Organizational Structure

1. Identify and map the **operational value stream**
2. Identify the operational value stream solutions (system architecture: **subsystems**)
3. Identify and map the nested **development value streams**
4. Identify the development value stream solutions (system architecture: **subsystem components**)
5. Organize the **teams** around the development value streams and the system architecture
6. Implement a **lean-agile operating system** to enable the teams to execute effectively and efficiently

Systems Engineering is key!

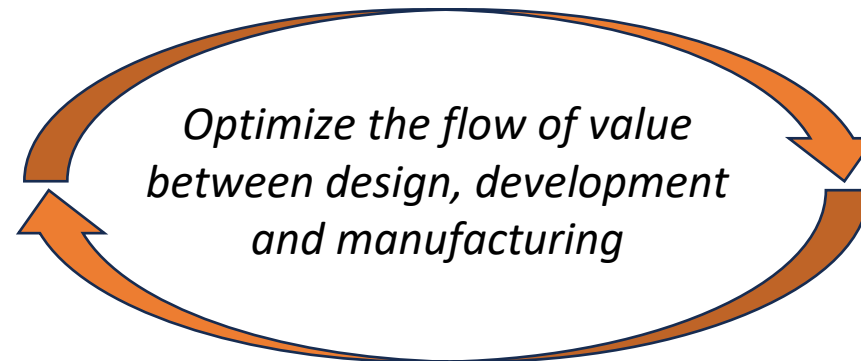
Step 1: Identify and Map the Operational Value Stream

Operational Value Stream

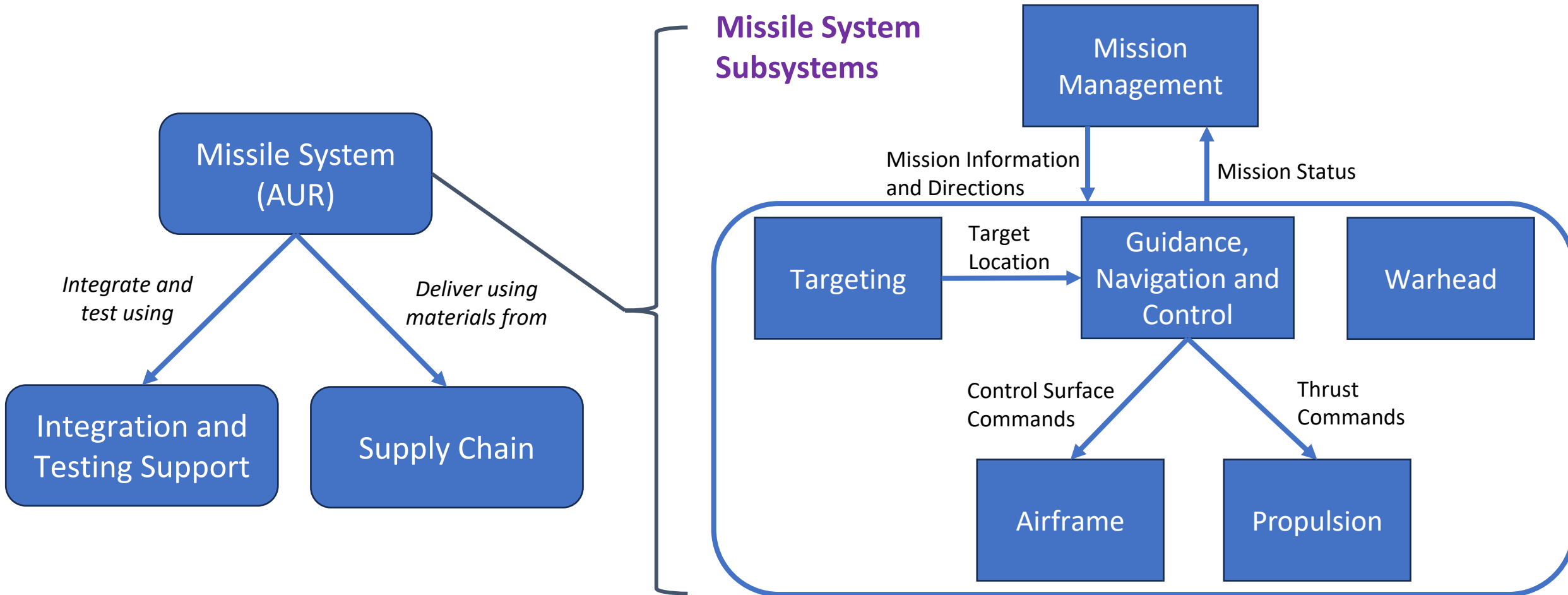


Trigger: RFP

Value: Missile Ready for Production and Deployment



Step 2: Identify the Operational Value Stream Solutions



Step 3: Identify and Map the Nested Development Value Streams

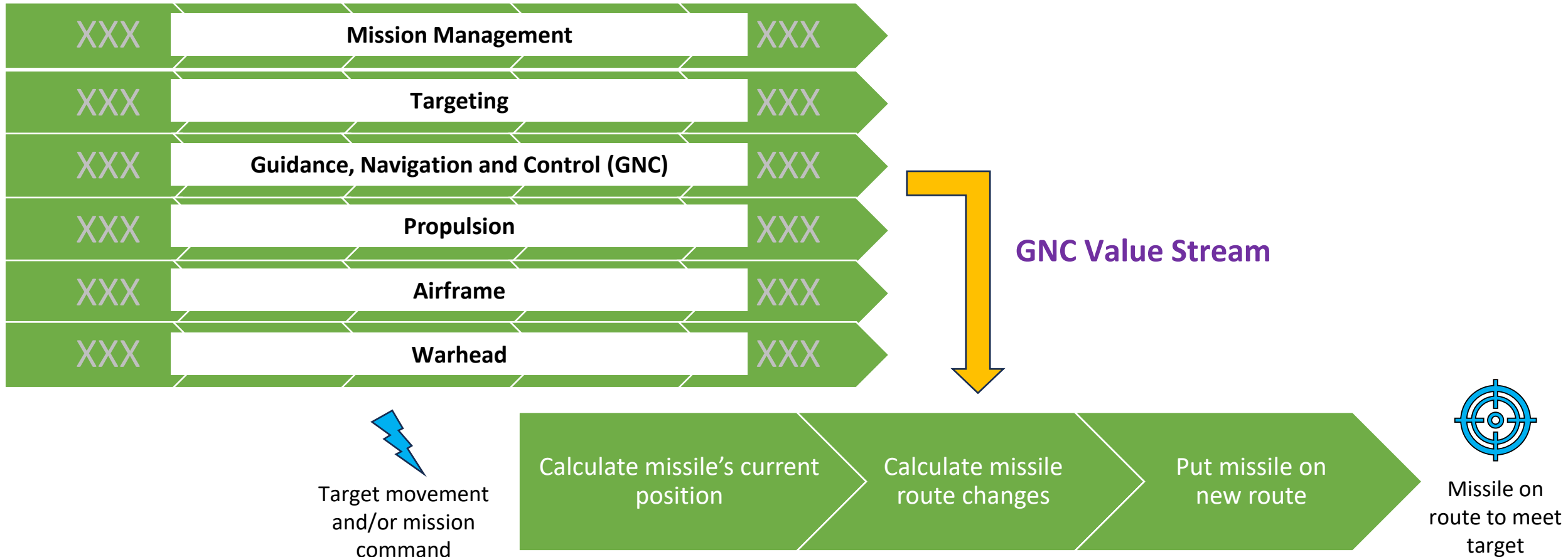
Nested Development Value Streams



- 1 Organize for the Flow of Value
- 4 Architect for Change and Speed

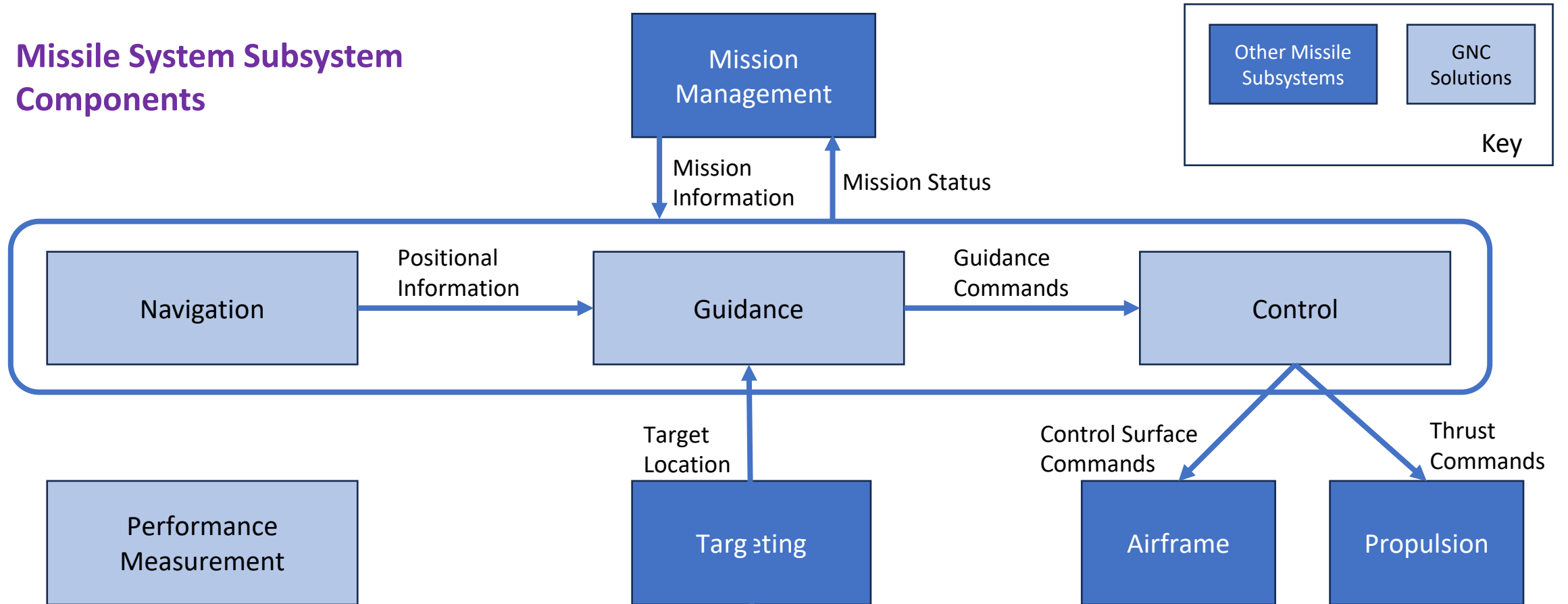
Step 3: Identify and Map the Nested Development Value Streams

Nested Development Value Streams



Step 4: Identify the Development Value Stream Solutions

Missile System Subsystem Components



Step 5: Organize Teams Around Development Value Streams and the System Architecture

GNC Subsystem Team Structure



Navigation Team
(Complicated Subsystem Team)



Guidance Team
(Complicated Subsystem Team)



Control Team
(Complicated Subsystem Team)



Performance Measurement Team
(Platform Team)



Autopilot Team
(Complicated Subsystem Team)

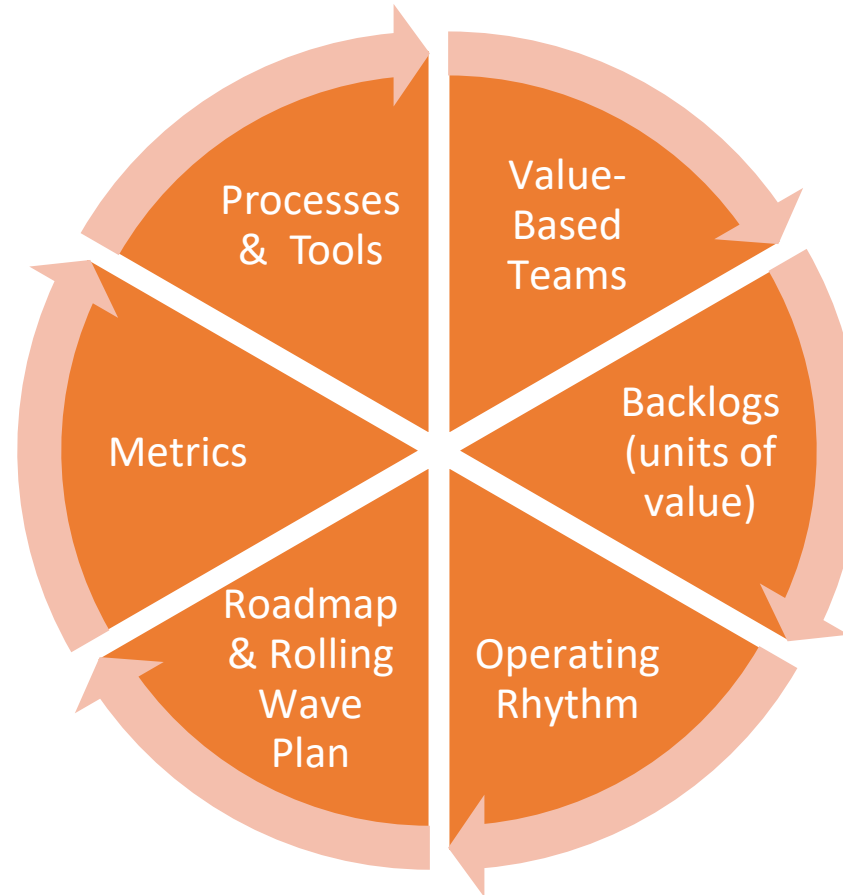


1 Organize for the Flow of Value

4 Architect for Change and Speed

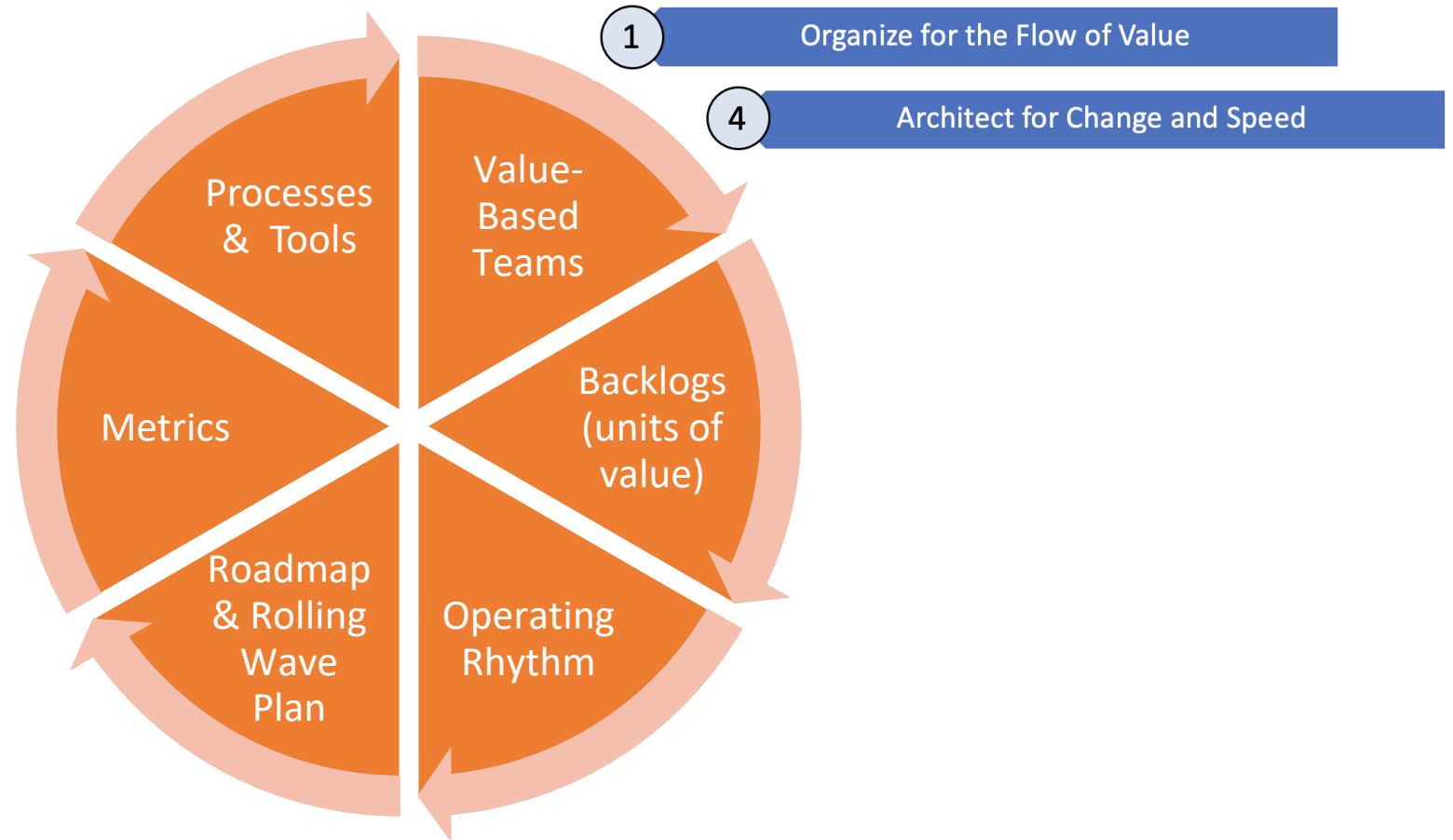
Step 6: Implement a Lean-Agile Operating System to Enable Teams to Execute Effectively and Efficiently

Operating System Components



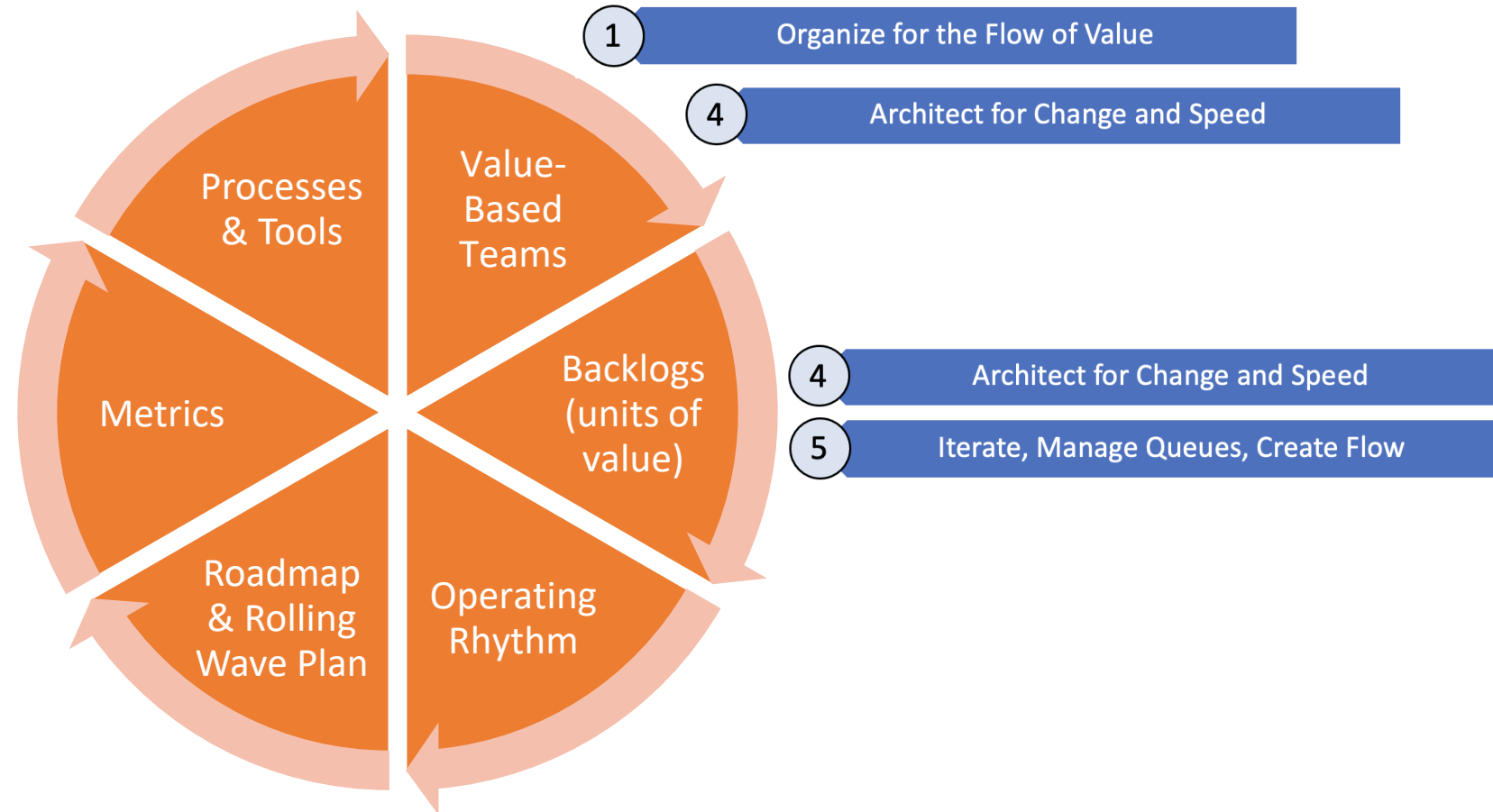
Value-Based Teams

Organization designed to flow work and deliver value



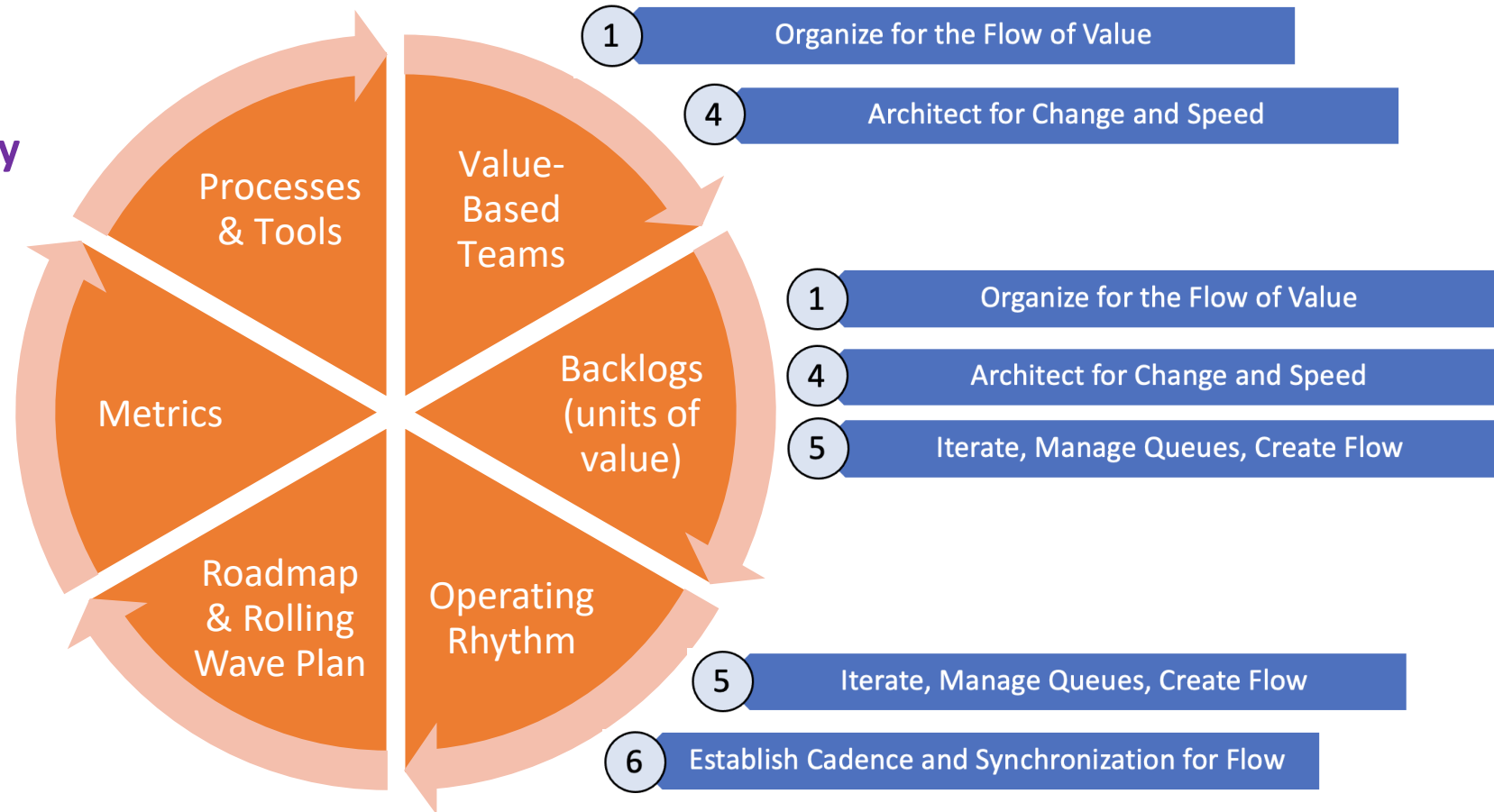
Backlogs

Single source of truth that provides clear priorities and aligns teams on the value to be delivered



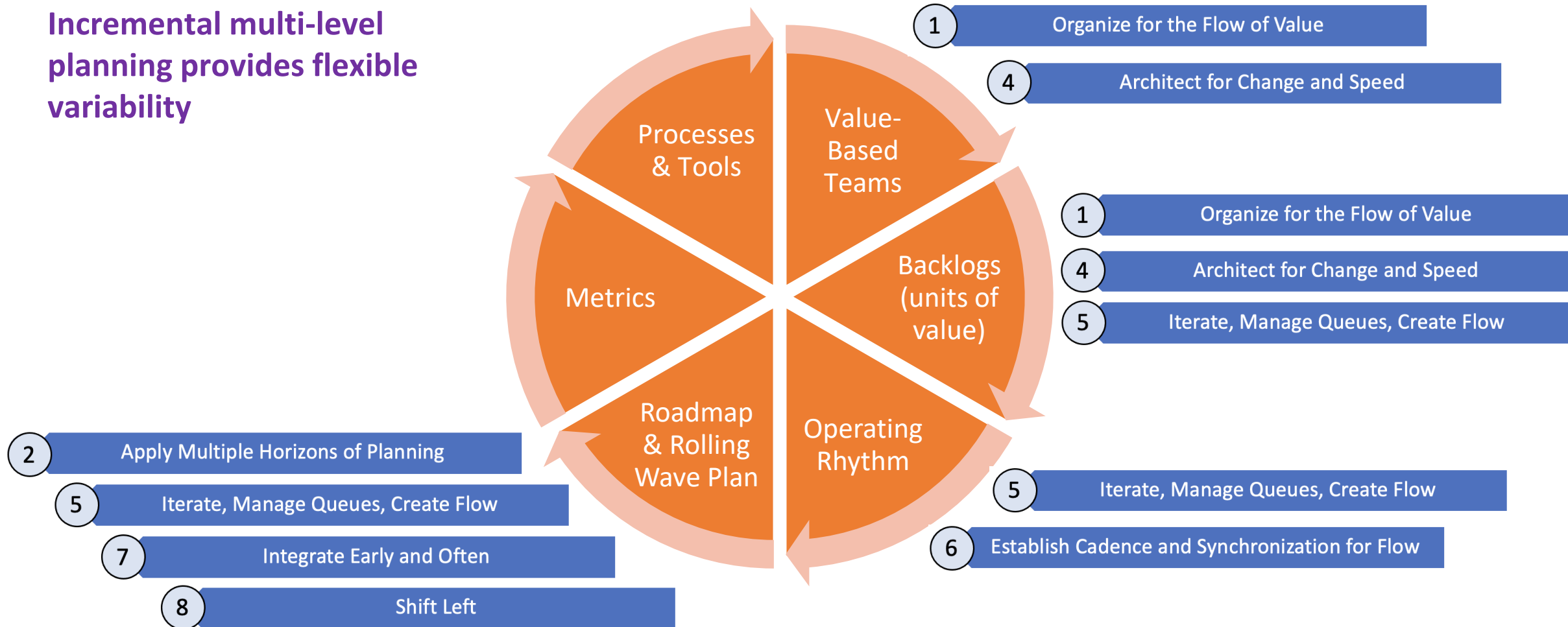
Operating Rhythm & Supporting Meetings

Cadence and synchronization drive effective and efficient execution and reduce variability



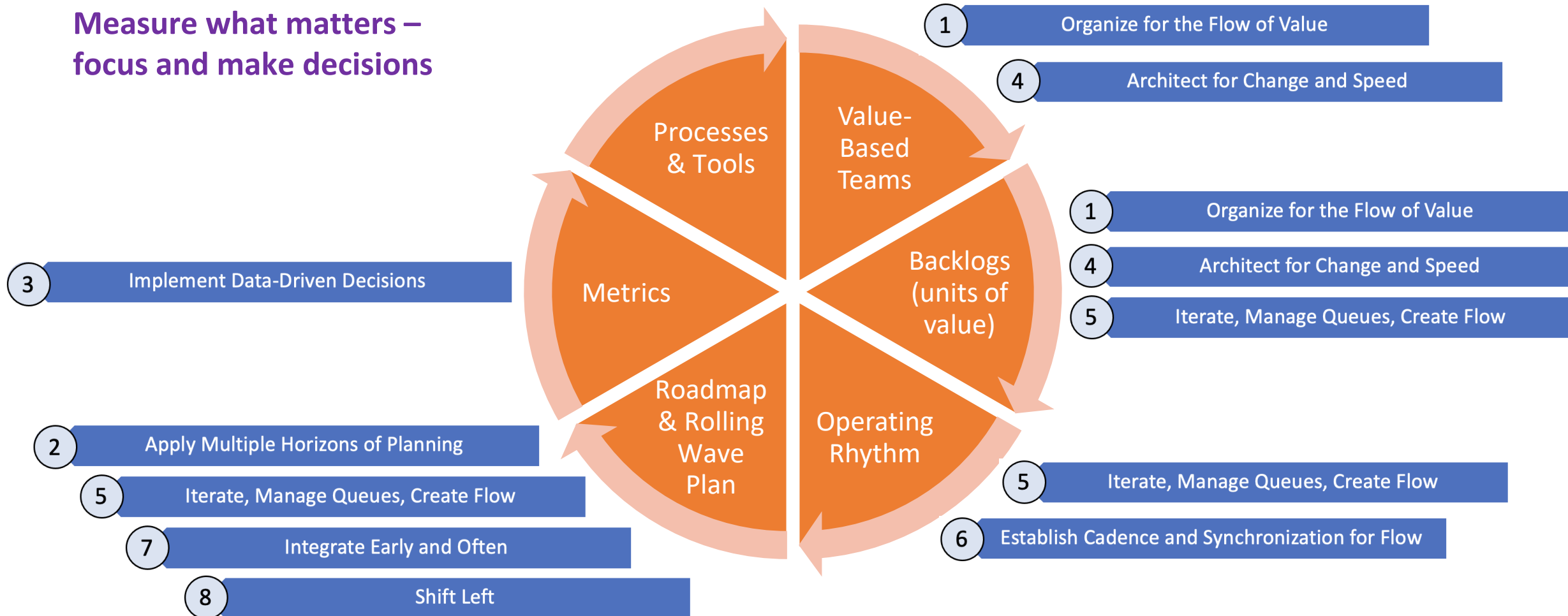
Roadmap & Rolling Wave Plan

Incremental multi-level planning provides flexible variability



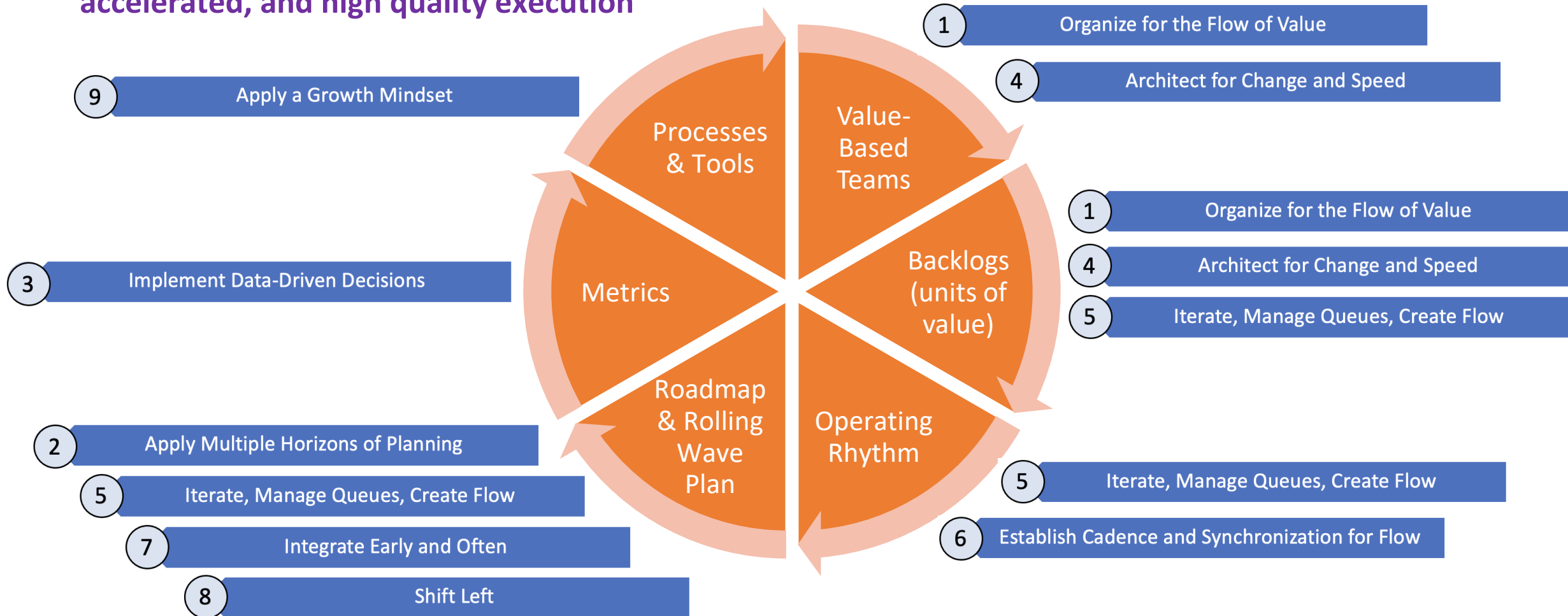
Metrics

Measure what matters –
focus and make decisions



Processes & Tools

Guide and support the teams – enable consistent accelerated, and high quality execution



Summary – Accelerate Value Delivery with Industrial DevOps

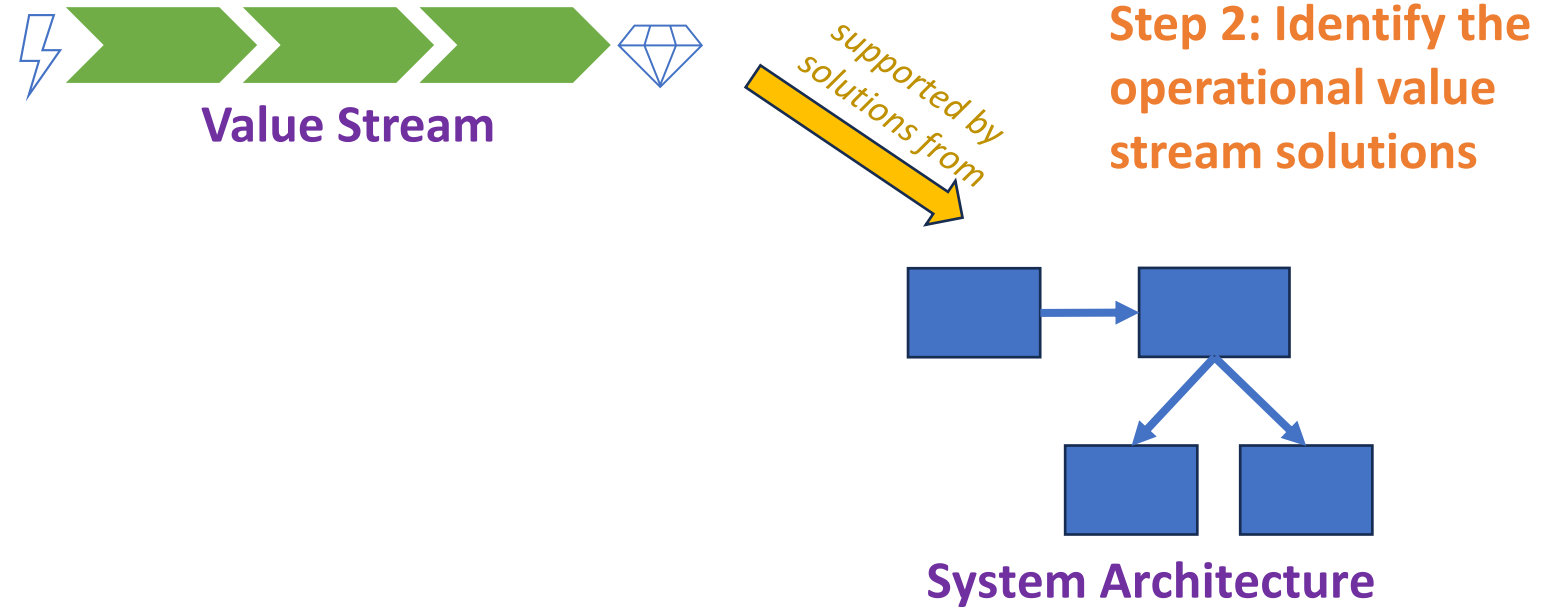


Summary – Accelerate Value Delivery with Industrial DevOps

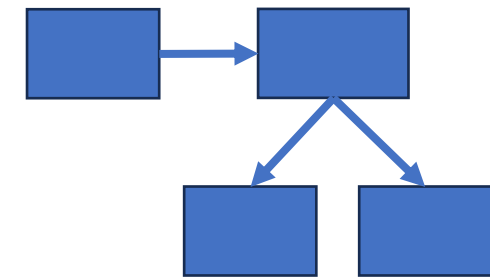
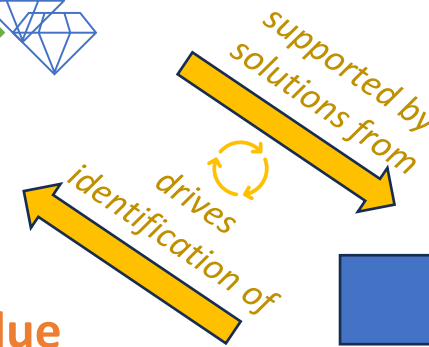
Step 1: Identify and map the operational value stream



Summary – Accelerate Value Delivery with Industrial DevOps



Summary – Accelerate Value Delivery with Industrial DevOps



System Architecture

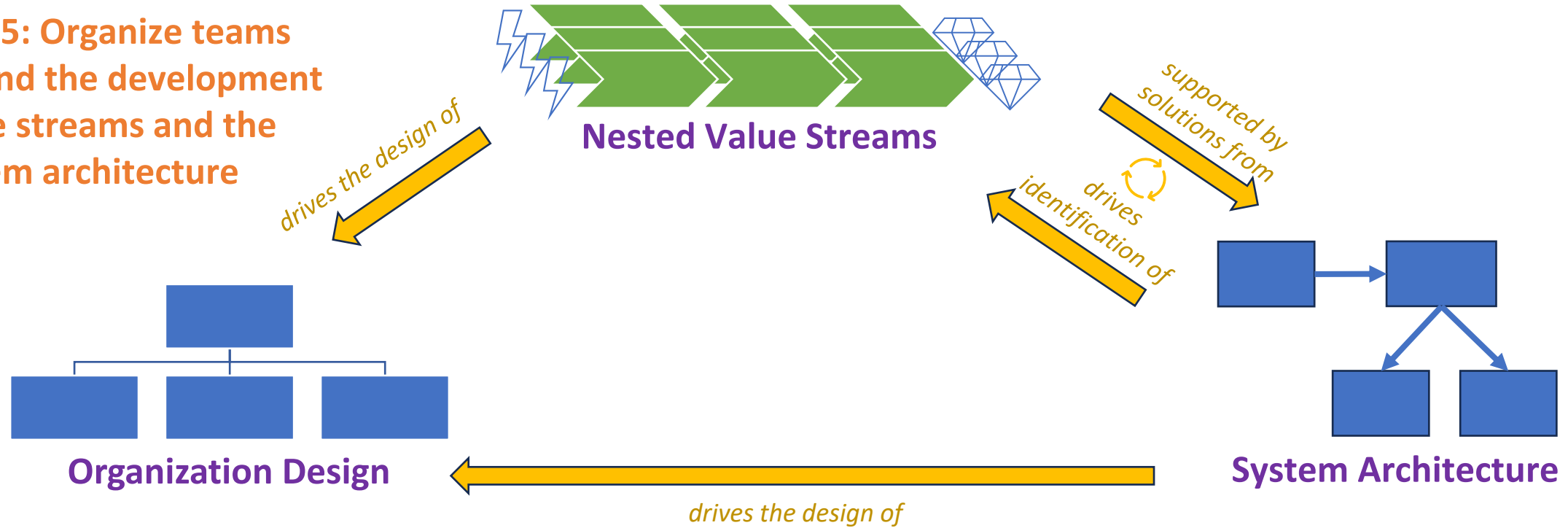
Step 3: Identify and map the nested development value streams that produce the solutions

Step 4: Identify the development value stream solutions

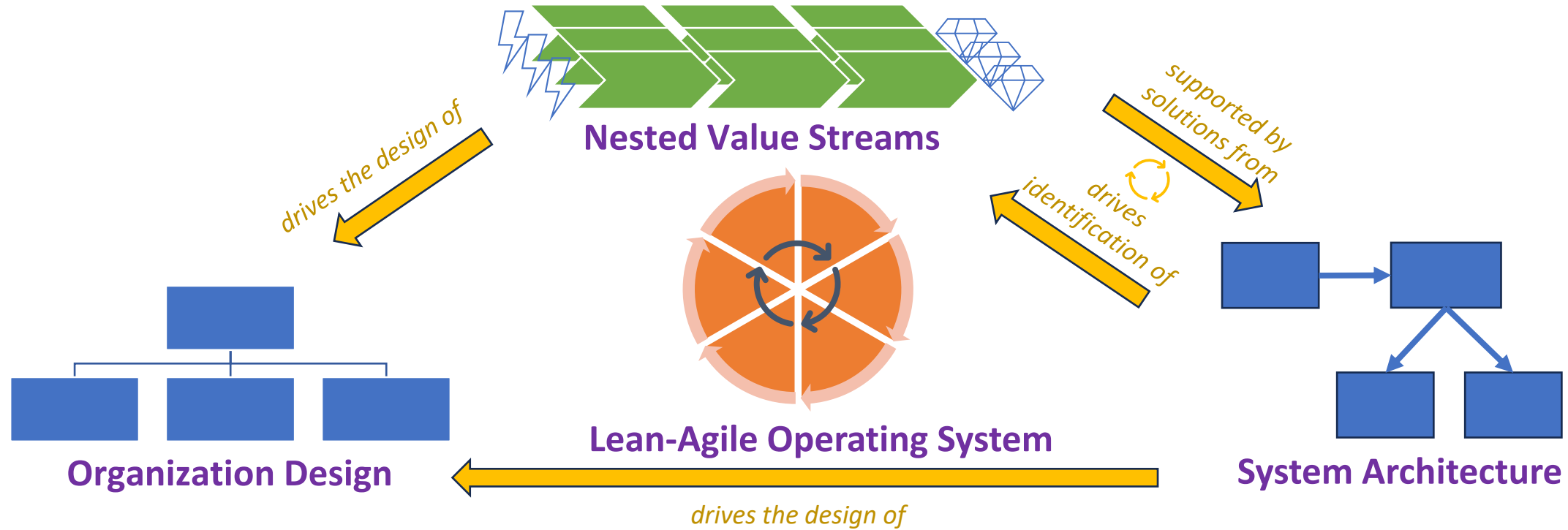
Repeat the value stream/solution identification steps until you have decomposed your system to the desired level

Summary – Accelerate Value Delivery with Industrial DevOps

Step 5: Organize teams around the development value streams and the system architecture

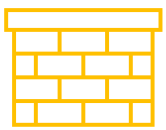
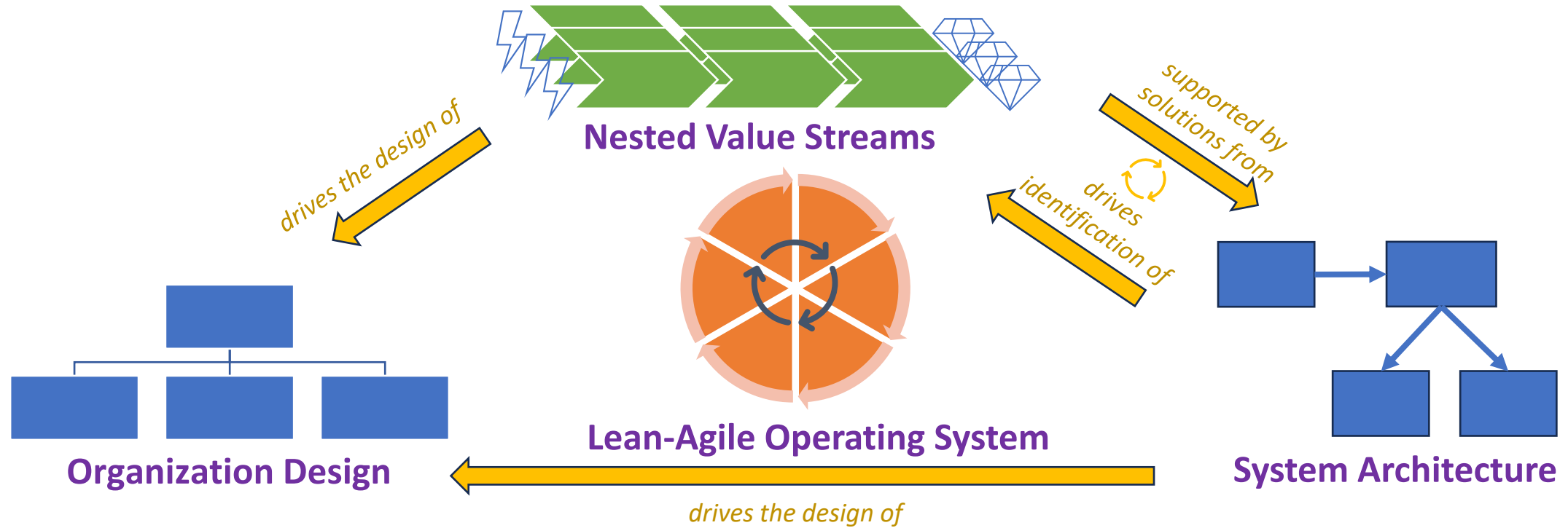


Summary – Accelerate Value Delivery with Industrial DevOps



Step 6: Implement a lean-agile operating system to enable the teams to execute effectively and efficiently

Summary – Accelerate Value Delivery with Industrial DevOps



- | | | | | | |
|---|--------------------------------|---|-------------------------------------|---|--|
| 1 | Organize for the Flow of Value | 2 | Apply Multiple Horizons of Planning | 3 | Implement Data-Driven Decisions |
| 4 | Architect for Change and Speed | 5 | Iterate, Manage Queues, Create Flow | 6 | Establish Cadence and Synchronization for Flow |
| 7 | Integrate Early and Often | 8 | Shift Left | 9 | Apply a Growth Mindset |

Process supported by the Industrial DevOps principles

Key Takeaways

To accelerate value delivery in highly complex domains:

- **Align the structure** of the system architecture, value streams, and team organization to **clarify the flow of value at all levels**
- **Implement a lean-agile operating system** to **coordinate value delivery** across teams to **enable experimentation, fast feedback, and flow optimization**
- **Adopt the Industrial DevOps principles** to instill a mindset that will **sustain positive change and continuous improvement**

Questions

Thank You

