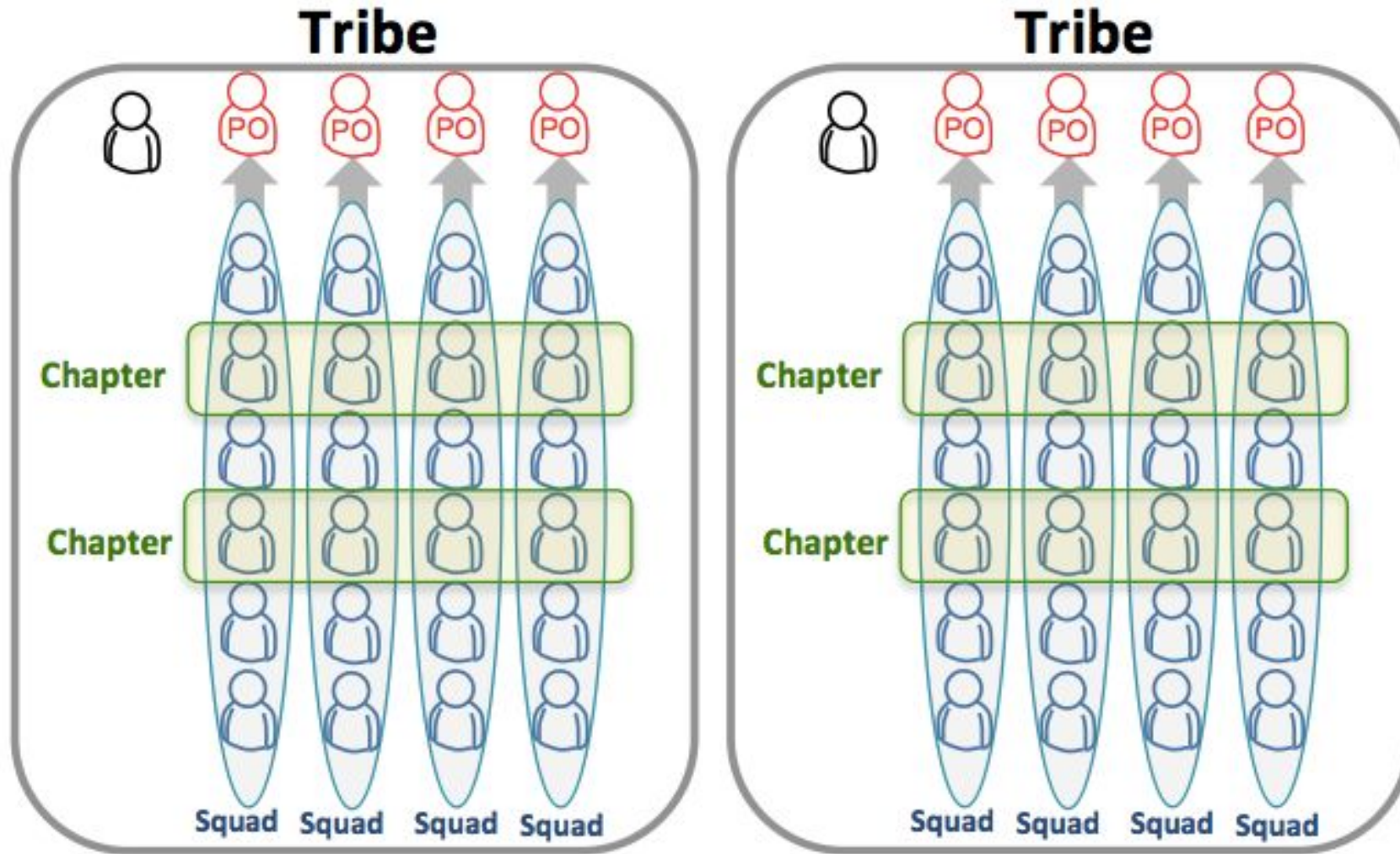


Software Engineering

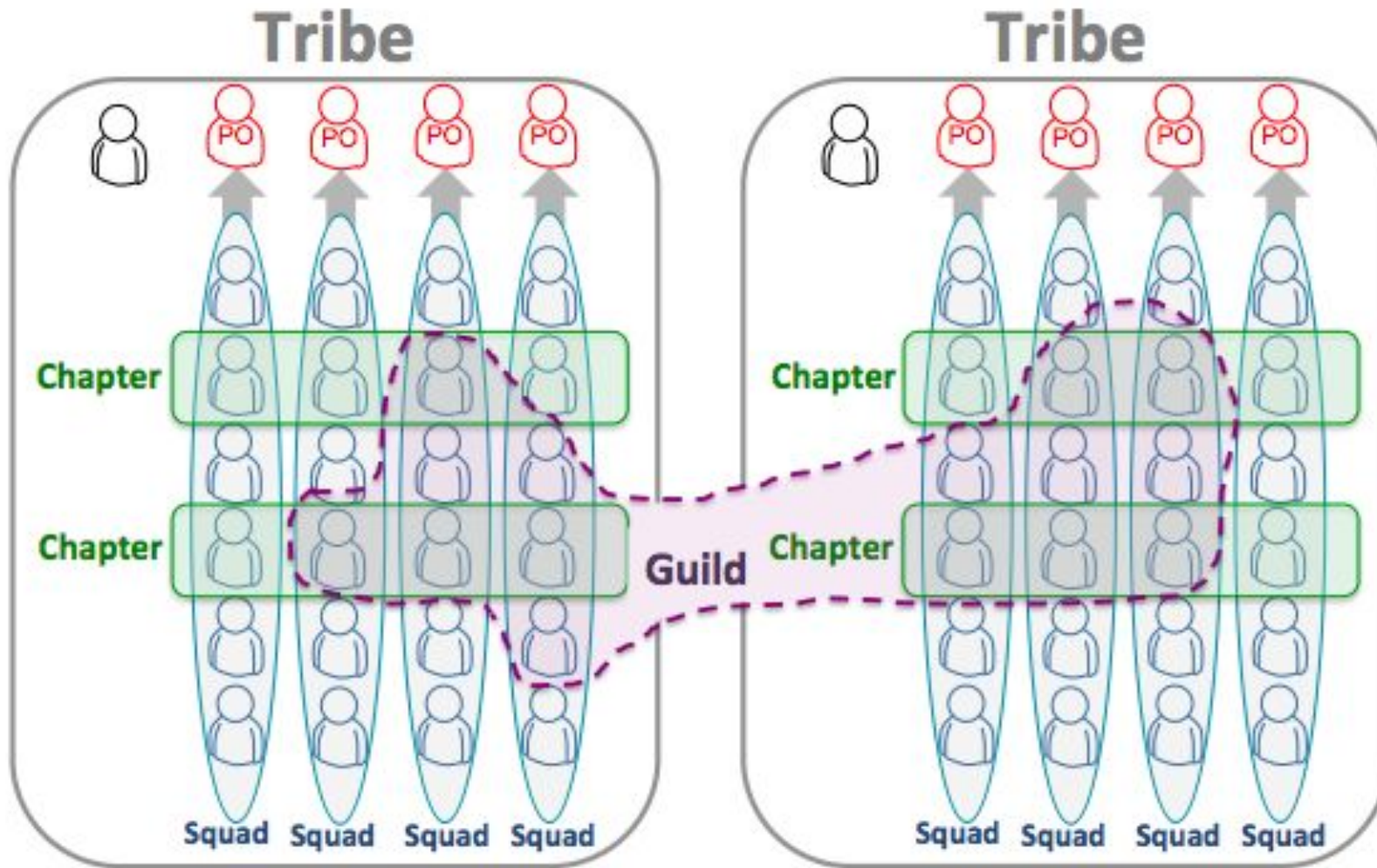
Part (IV)- Software Team Topology

By: Mehran Alidoost Nia
Shahid Beheshti University, Fall 2023

The Spotify Model



The Spotify Model



It helps to ...

- Encourage flow of change.
- Establish and clarify team responsibilities.
- Promote good kinds of team collaboration.
- Plan and budget for cross-team enablers.

It does not cover ...

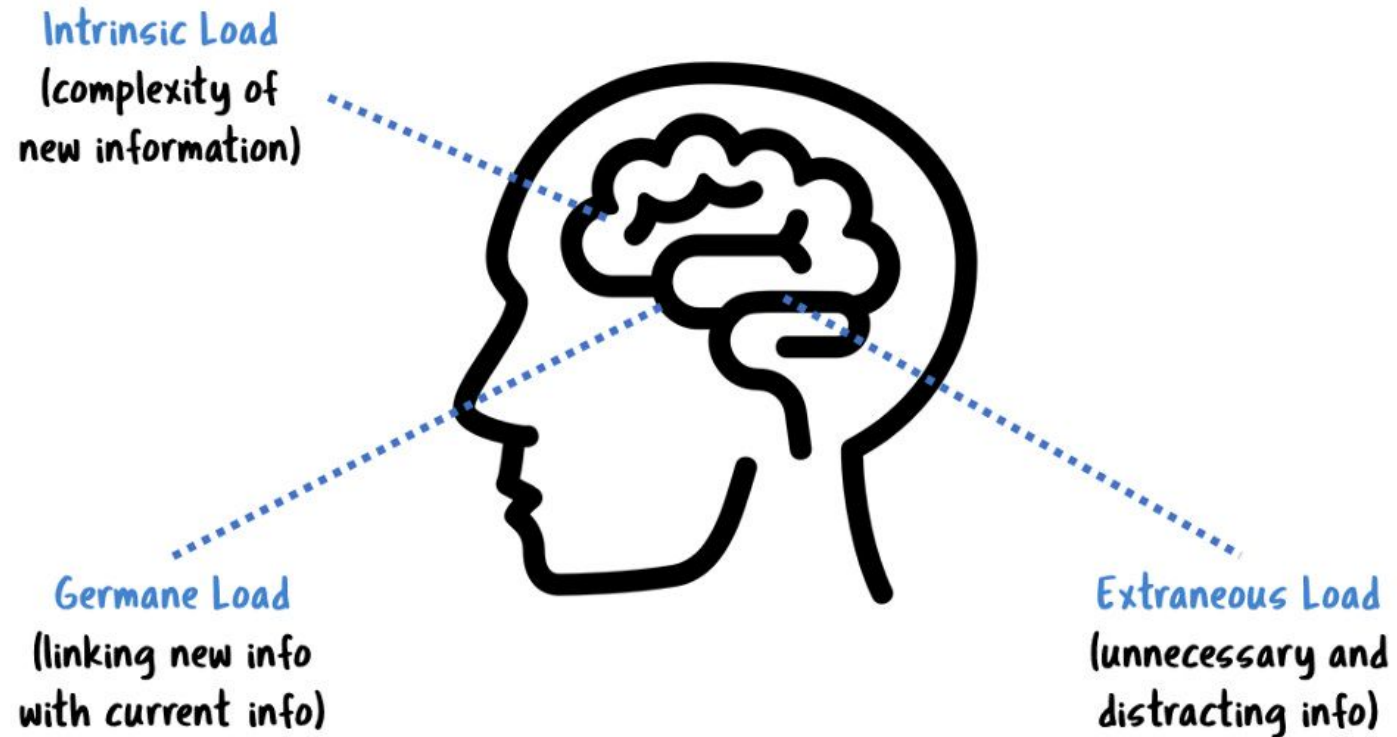
- Software sizing and cognitive load.
- Heuristics for Conway's law.
- Patterns for team interactions.
- Triggers for change and evolution.

Cognitive Load

“The total amount of mental effort being used in the working memory.”

(see Sweller, 1988)

Cognitive Load Theory



Cognitive Load

- Match the team responsibility to the cognitive load that the team can handle.

(see Sweller, 1988)

Conway's Law

“Organizations which **design systems** ... are constrained to produce designs which are copies of the **communication structures** of these organizations.”

Mel Conway, 1968

Which one is stronger?





“If the architecture of the system and the architecture of the organization are at odds, the architecture of the organization wins.”

Ruth Malan, 2008

Reverse Conway

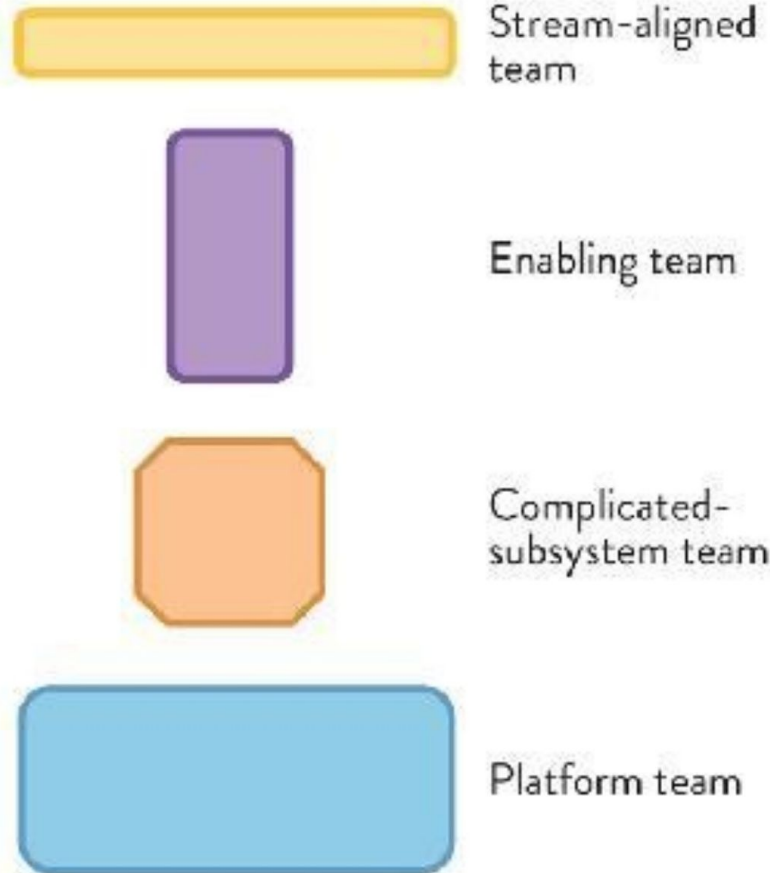
Design the organisation architecture to produce the right software architecture.

Four Fundamentals Topologies

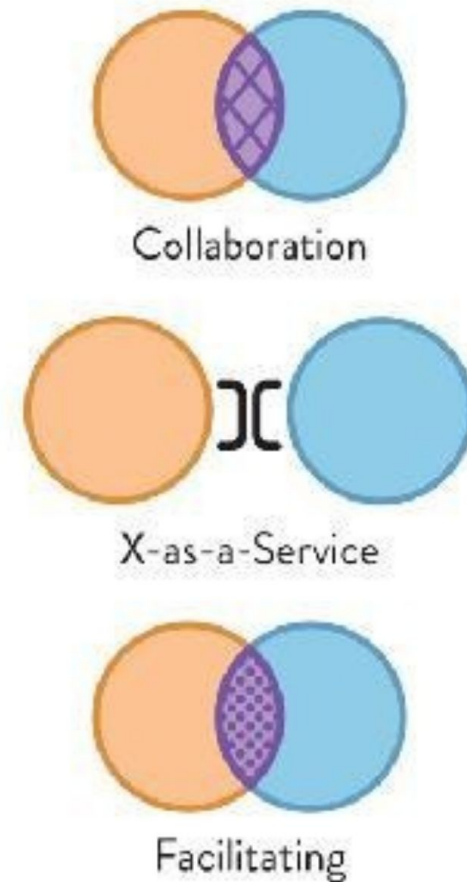
-  **Stream-aligned team**
-  **Enabling team**
-  **Complicated Subsystem team**
-  **Platform team**

Team Interaction Modes

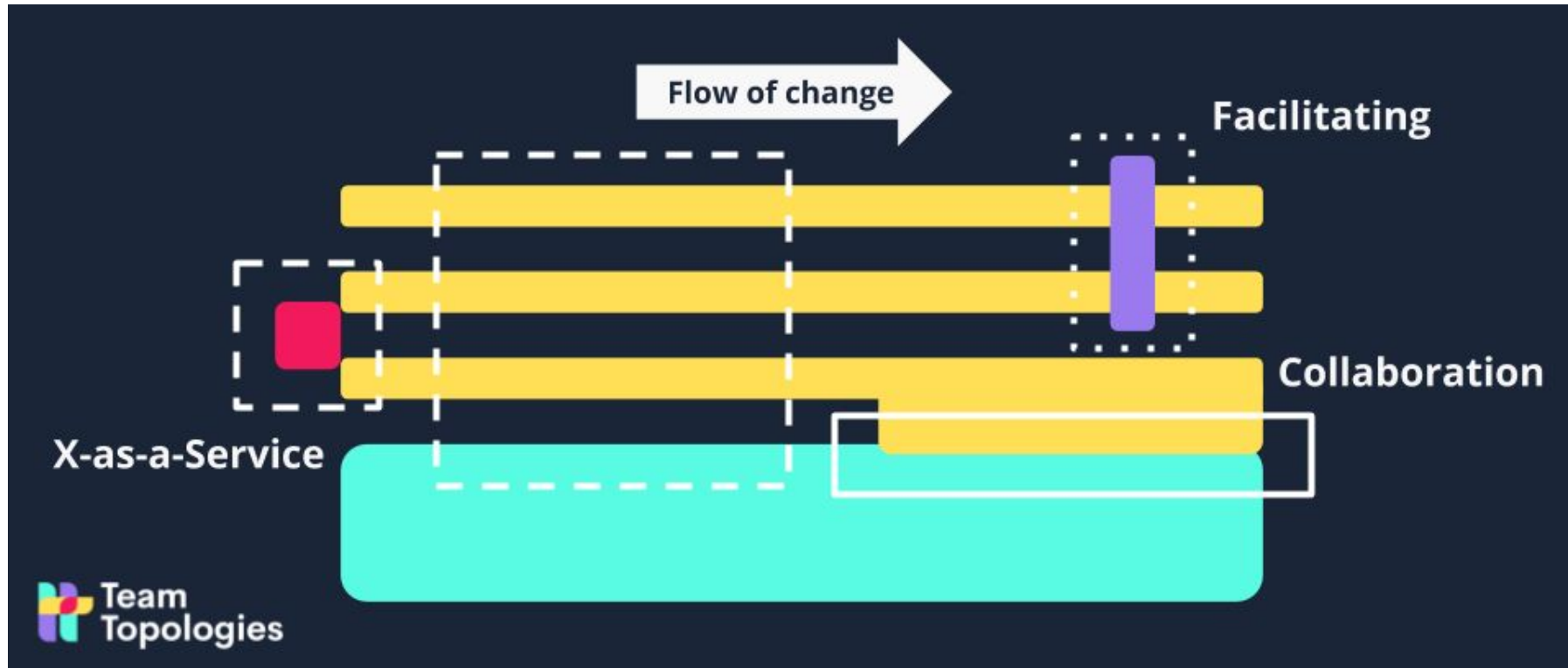
Four Team Types



Three Interaction Modes



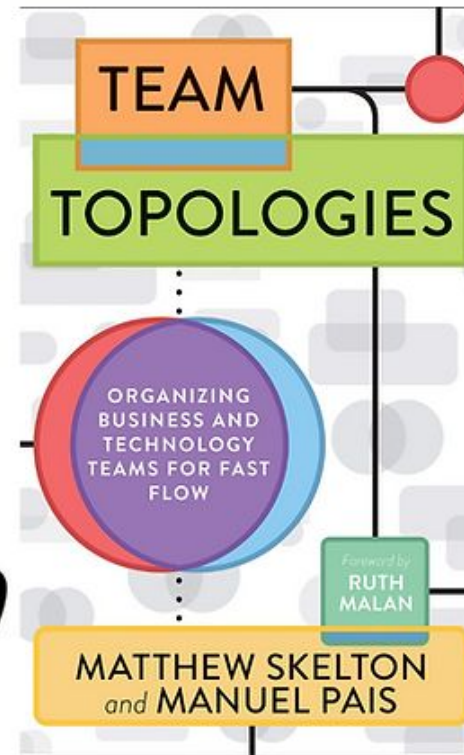
3 Core Interaction Modes



Team-First Thinking

- The team is the **means of delivery**.
- Design for **team cognitive load**.
- Choose **boundaries** for team ownership.
- Physical and digital **workspace**.

The Quote of the Day



Readings

- Software Engineering: A Practitioner's Approach, Roger Pressman and Bruce Maxim, 9th Edition, September 2019, Chapter 5.
- Team Topologies Organizing Business and Technology Teams for Fast Flow, JMatthew Skelton, Manuel Pais and Ruth Malan, September 2019, Chapter 5.