Teaming with Data

Tableau Team Design

John Armistead Wilson, 2024

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1. Tableau COEs/Governance
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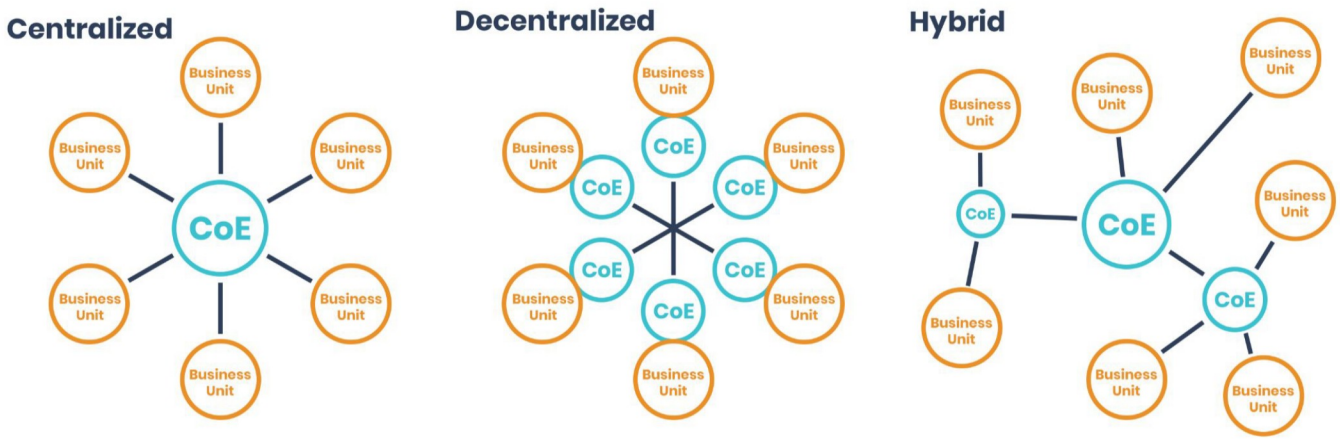
My hope is that you can come away from this talk with ideas around: a set of **enabling constraints** to help *coherent behavior* emerge from a **complex adaptive system.**

Tableau COEs and Governance

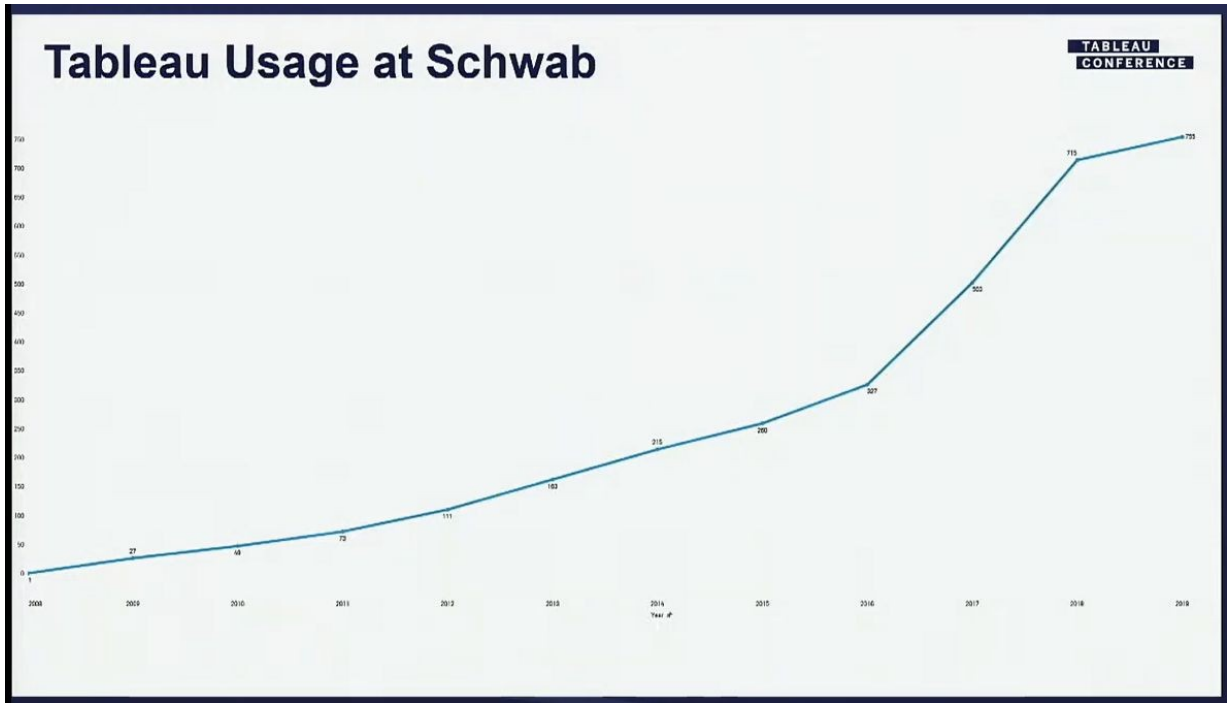
Center of Excellence

- Common design model for organizations that use Tableau
- Centralizes domain knowledge and administrative duties
- Involves organizing Community of Practice or user group



Charles Schwab

- 16,000 users
- 700+ developers
- “Jumpword” resource hub for COE materials
- Prep, Alteryx
- Usability lab



Checklists to verify readiness for production

Data QA Checklist

1. Validate data against source using crosstabs. Check data history.
2. Check calculations for accuracy when filters or dashboard actions are applied.
3. Cycle through all filters and actions to check visualizations are loading as expected.
4. Check dashboard performance on Desktop and Server.
5. Resolve any timing issues with data refresh and ensure timing can meet stakeholder SLAs (e.g. Redshift v. Snowflake sync).

Visual QA Checklist

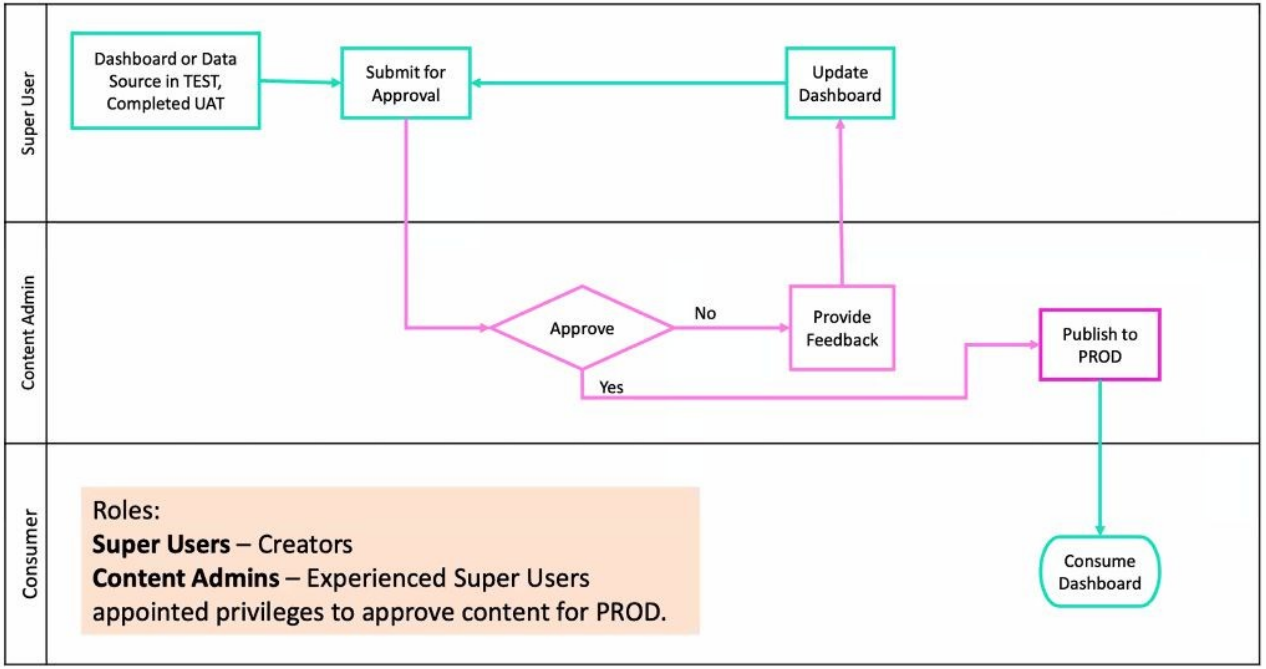
1. Colors should match with (Insert Organization Name Here) brand guide.
2. Check all numbers for consistent formatting (e.g. consistent rounding, bold/not bold, and size).
3. Check all tooltips for consistent formatting.
4. Review all text for relevant placement and readability. Adjust placement and sizes if needed.
5. Check all chart format for consistency (e.g. consistency in removal of gridlines, axes, tick marks, and row banding).

Data source constraints

Data Connections	Sandbox	DEV	PROD
Capabilities	Direct connections to database allowed	Direct connections to database allowed	
Restrictions			Server hosted data sources

Extract Refresh Schedules	Sandbox	DEV	PROD
Capabilities			Scheduled extract refresh options
Restrictions	No scheduled refreshes	No scheduled refreshes	

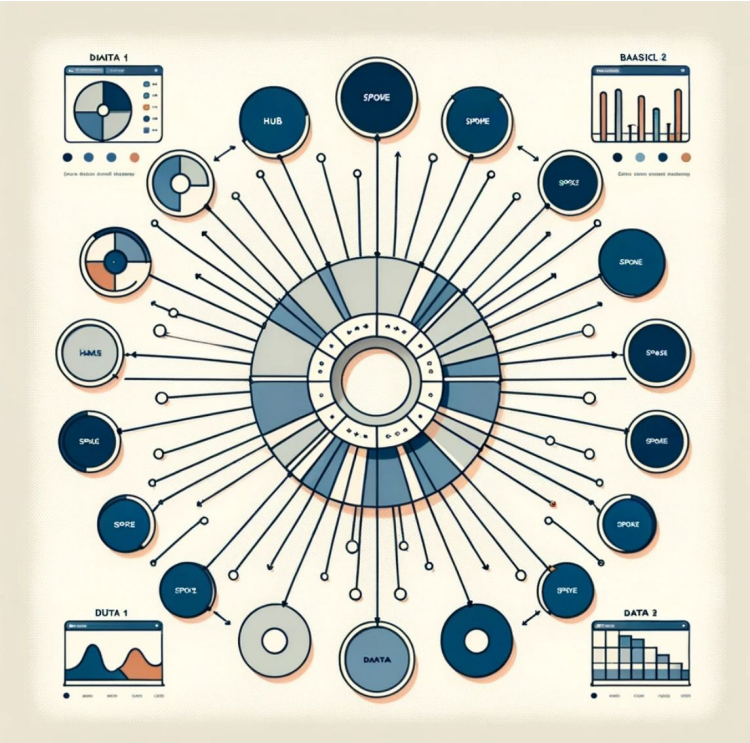
DEV/PROD Promotion



- Promotion to PROD requires approvals, coordination with content admin and consumers

Alternative Frameworks

Is the COE really the best?



- Expertise remains in one team
- Change management is characterized as a bottleneck
- Marketing becomes the role of technicians
- Complexity leads to cognitive load

Thompson Analytics Team Architecture

Artisinal

All aspects of solving a business problem are responsibility of analyst; requiring exemplary communication and technical skills

Factory

All aspects of solving a business problem are decomposed into tasks that are assigned to automated processes or other teams

Hybrid

Bespoke solutions with at least semi-automated approaches to addressing executive challenges

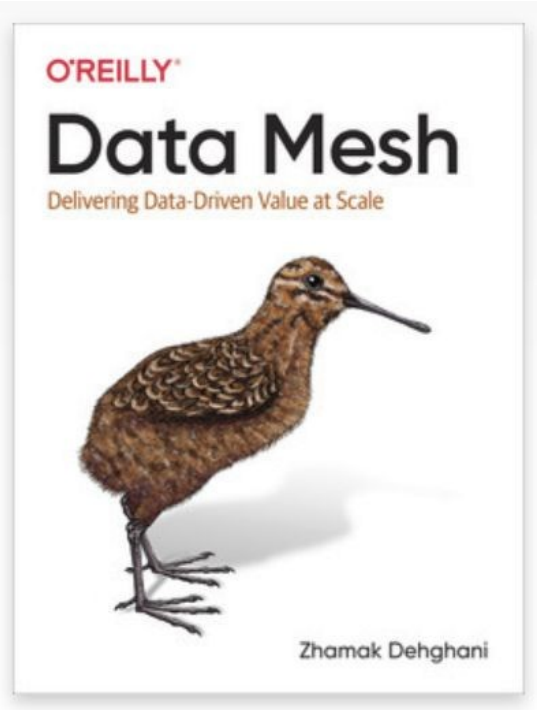
- Simple, easily-understood
- Craftsman/automation balance
- Broad adoption in management consulting

Dashboards as Product

- Dashboards and data applications require a product mindset
- Multidisciplinary skill set beyond data analysis
- Embedded teams by definition have more business knowledge and domain expertise

Data Mesh: Decentered excellence

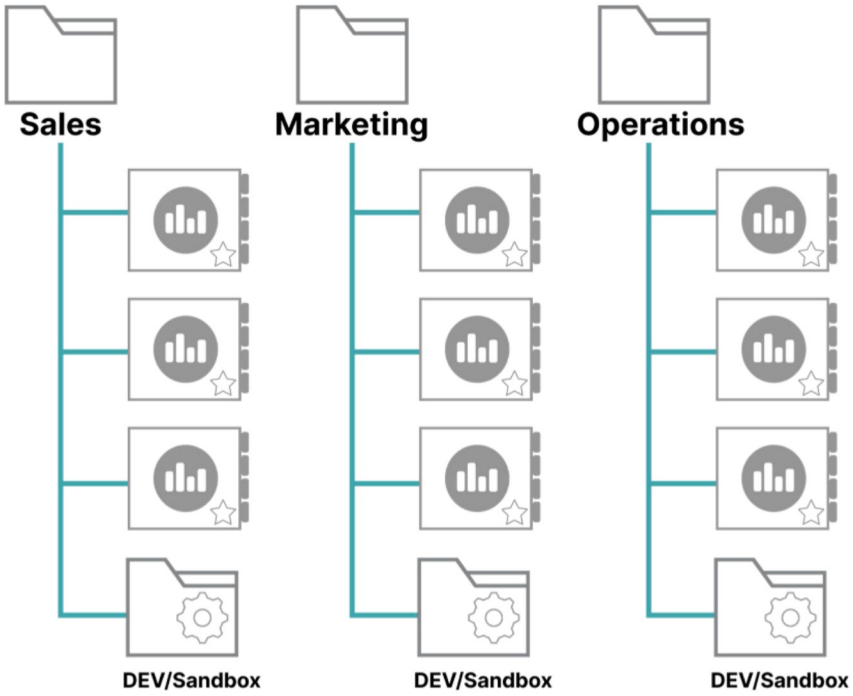
- Decentralized domain ownership of data to remove the gap between data users and data providers
- The culture and technology of treating data as a product
- Teams have responsibility to provide data that is easily discoverable, understandable, accessible, and usable.



Jaguar Land Rover

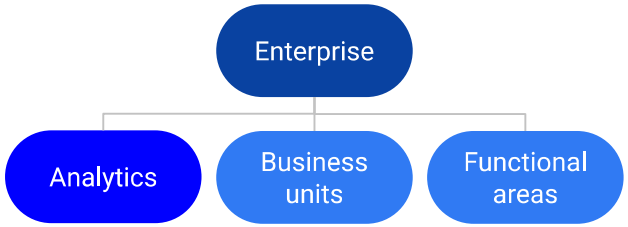
- Mesh transformation with Tableau led by Jaguar Land Rover CDO by 2021.
- Row-level security:
  - Confidential: Directors + up
  - Proprietary: 5,000+ users can access
- £250M annual returns from initiative

Tableau Mesh

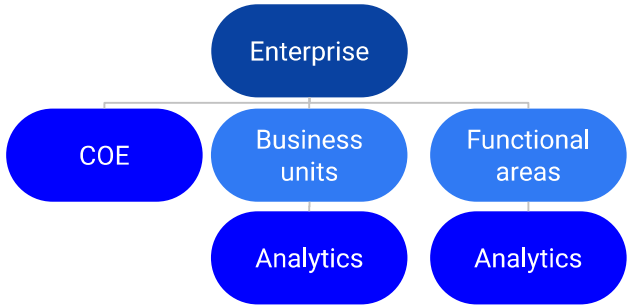


- Distributed, enabled analytics teams across business areas
- End-to-end ownership like Thompson's Artisinal approach
- Embedded PROD/DEV within each domain project
- COE more focused
- COP more engaged

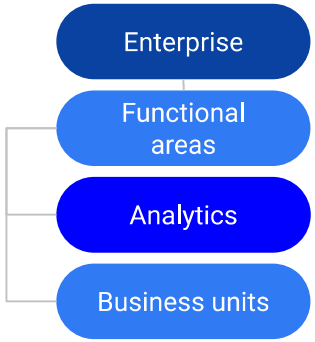
Org Chart Design



Centralized: team reports to central body and engages across units and functions as directed by executives.

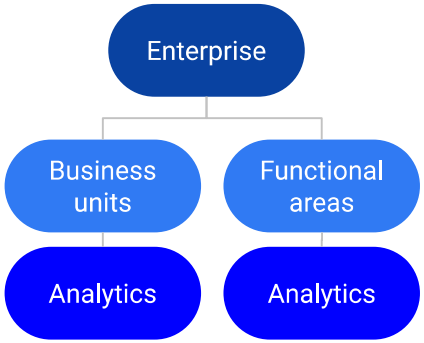


COE: COE coordinates activity with embedded teams



Functional: Where analytics sits within functional area and supports projects across business units, with central business functions guiding priority.

Decentralized: Team sits within business units and functions without coordination or collaboration across them.

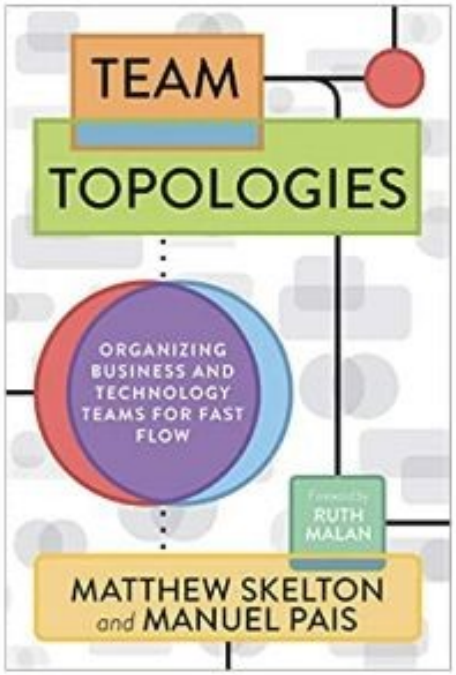


What's the purpose of a data team?

Team Topologies

Team Topologies

- Organization design framework optimizing for flow of change and feedback from running systems
- Team-first approach (size, lifespan, relationships, etc.) but expect to evolve
- Reverse conway maneuver - decide architecture, then team.
- Cognitive load - often ignored at team level



Different types of teams

Stream-Aligned arranged to flow of business value

- Cross-functional skills
- Ability to deliver significant increments
- *Without* another team

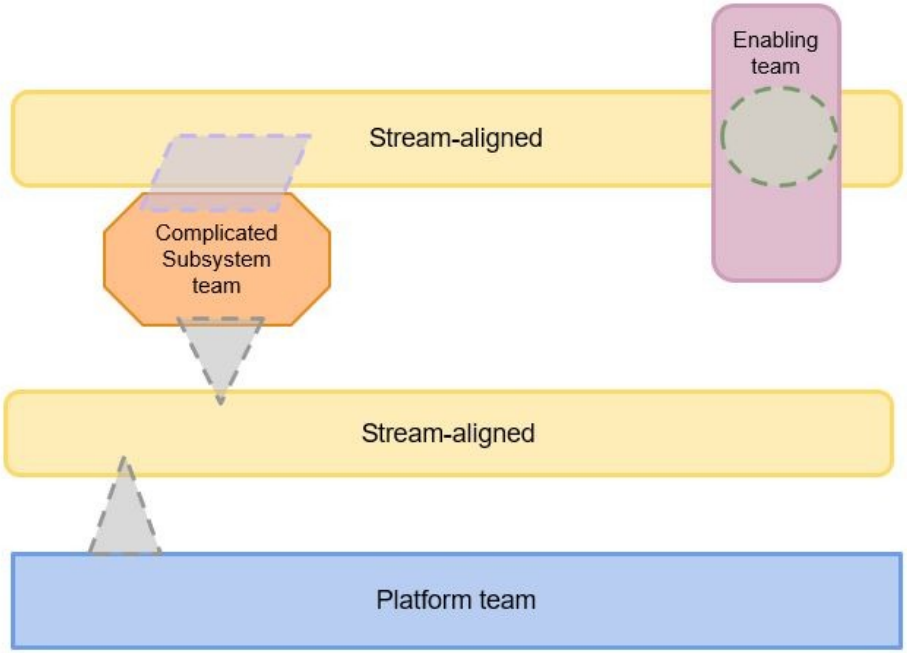
Platform supporting systems for stream-aligned team

- Simplifies complex technology
- Reduces cognitive load for teams that use it

Enabling assisting other teams in:

- adopting and modifying software as part of a transition or learning period

Complicated-Subsystem dealing with a subsystem that is too complicated to be dealt with by a normal stream-aligned team or platform team. (optional)



Conway's Law

"Organizations which design systems (in the broad sense used here) are constrained to produce designs which are copies of the communication structures of these organizations."

Melvin E. Conway, How Do Committees Invent?

"If you have four groups working on a compiler, you'll get a four-pass compiler."

Eric Raymond, The New Hacker's Dictionary

"You can see the organization chart of a car company in the dashboard, and also see whether the steering wheel team hates the gear stick team."

Benedict Evans, Newsletter

Cognitive Load

- Current org design frameworks focus too much on individual rather than team cognitive load
- Types:
  - Intrinsic: Task fundamental to problem
  - Extraneous: Environmental factors
  - Germane: Tasks which require learning or high performance

Team Topologies adopted by AWS

AWS > Documentation > AWS Well-Architected > AWS Well-Architected

Feedback Preferences

DevOps Guidance
AWS Well-Architected

Abstract and introduction
Using the DevOps Guidance
The DevOps Sagas
Organizational adoption
Leader sponsorship
Supportive team dynamics
Indicators for supportive team dynamics
[OA.STD.1] Organize teams into distinct topology types to optimize the value stream
[OA.STD.2] Tailor operating models to business needs and team preferences
[OA.STD.3] Prioritize shared accountability over individual achievements
[OA.STD.4] Structure teams around desired business outcomes, not the other way around
[OA.STD.5] Establish

[OA.STD.1] Organize teams into distinct topology types to optimize the value stream

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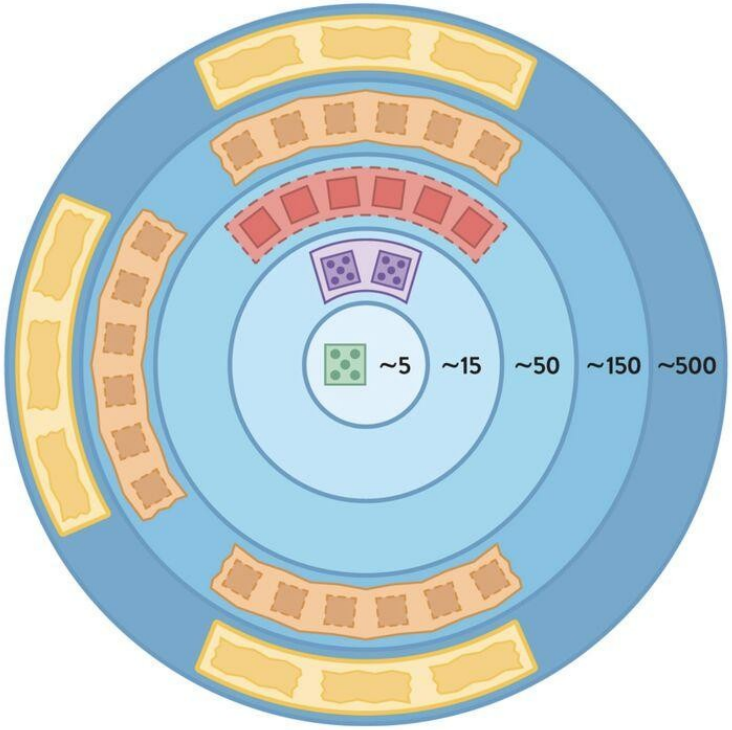
Embrace the four team topologies model, as outlined in the Team Topologies book by Matthew Skelton and Manuel Pais, to optimize the value stream and achieve desired business outcomes. Assess each team and categorize them into one of the four topologies, ensuring alignment with the overall value stream and clear purpose and goals. Organizing teams according to these topologies allows organizations to effectively manage dependencies, enhance collaboration, and enable teams to deliver value more efficiently.

The four team topologies are:

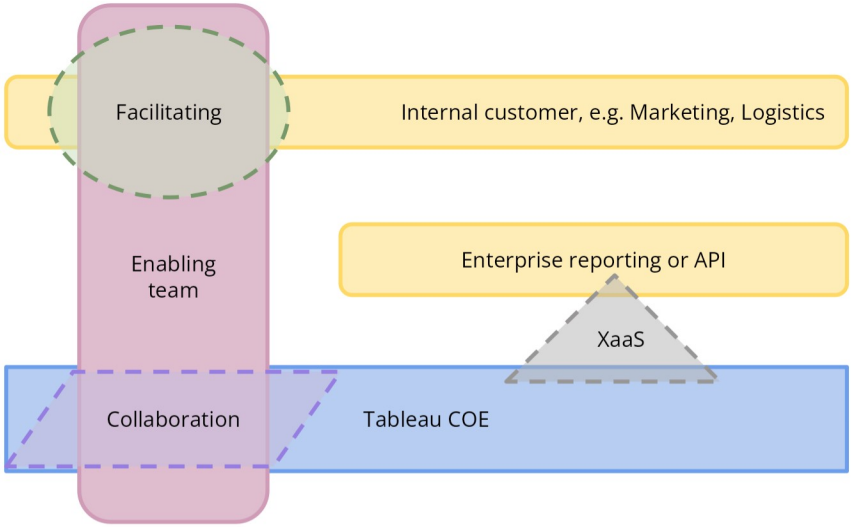
- Stream-aligned teams are responsible for delivering end-to-end value to customers by focusing on specific product lines or customer segments. These teams possess cross-functional expertise that enables them to build, test, and deploy software independently, while minimizing dependencies and handoffs with other teams. They are the primary teams within the organization, normally representing 60-80% of the total teams within an organization.
- Platform teams create and maintain shared infrastructure, tools, and services that support multiple stream-aligned teams across the organization. They produce reusable components, improve efficiency, reduce duplication of work, and overall reduce the amount of individual team effort. As these teams cast a wide net and support many teams within the organization, they make up a smaller portion of the organization, usually between 10-20%.
- Enabling teams support other teams by providing just-in-time skills, knowledge, and expertise. They empower other teams to overcome technical challenges, adopt best practices, and improve their capabilities. All assistance provided by enabling teams is meant to be temporary, as they strive to make other teams self-sufficient through facilitation and mentoring. The percentage of enabling teams is fewer than platform and stream-aligned, often ranging between 5-15% of the overall organization.
- Complicated subsystem teams are teams responsible for specialized subsystems within a larger system that require complex, deep domain knowledge and expertise. These subsystems are typically part of the core business logic or functionality of a single product or application, and their primary consumers are internal components within that system. Making the distinction between platform teams and complicated subsystem teams may not always be clear-cut, and a team could have characteristics of both types. When a team is providing a foundational service to multiple teams, they usually are considered platform teams. If they support a single product or application, it is generally considered a complicated subsystem team. Typically, there are fewer complicated subsystem teams than other team types, making up 0-10% of the distribution.

Dunbar's Number

- When scaling teams, individual teams should target 5-8 people for size
- Dunbar's number suggests no more than 15 people should be involved in a collaboration
- Brook's law: "adding new people to a team doesn't immediately increase its capacity"



Interaction Modes - with Tableau



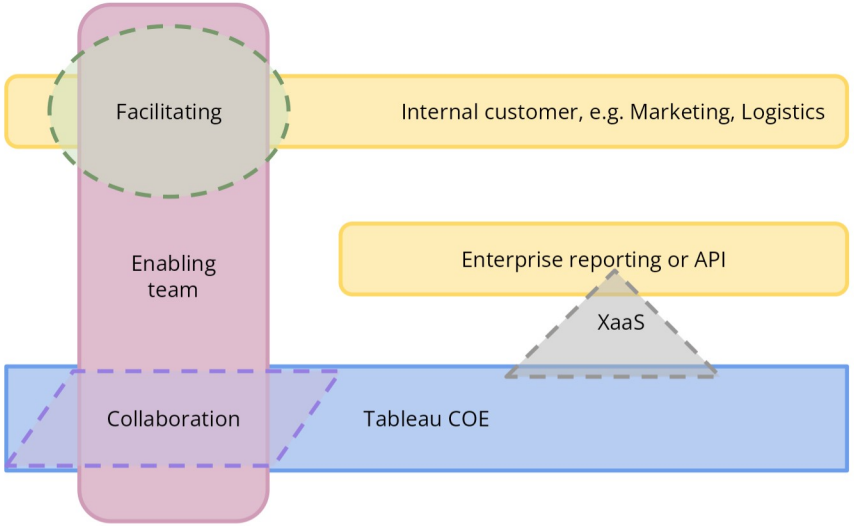
Collaboration: working closely together with another team

X-as-a Service: providing data with minimal collaboration

Facilitating: Helping another team to clear impediments

What can you do today?

- Don't wait, ~~collaborate~~ enable
- Two pizza meetings
- Free your dashboards
- Build a team API
- Join Team Topologies Academy
  - Use code "20off-linkedin" for discount
  - https://academy.teamtopologies.com/courses/independent-value-streams-with-domain-driven-design



So what?

"Organizations should be viewed as complex and adaptive organisms rather than mechanistic and linear systems"

Naomi Stanford,
Guide to Organization Design