



# **Brain of the community**

## **Matrix as a viable system**

**Alexey “Kitsune” Rusakov**  
**Spec Core Team; Quotient/Quaternion**

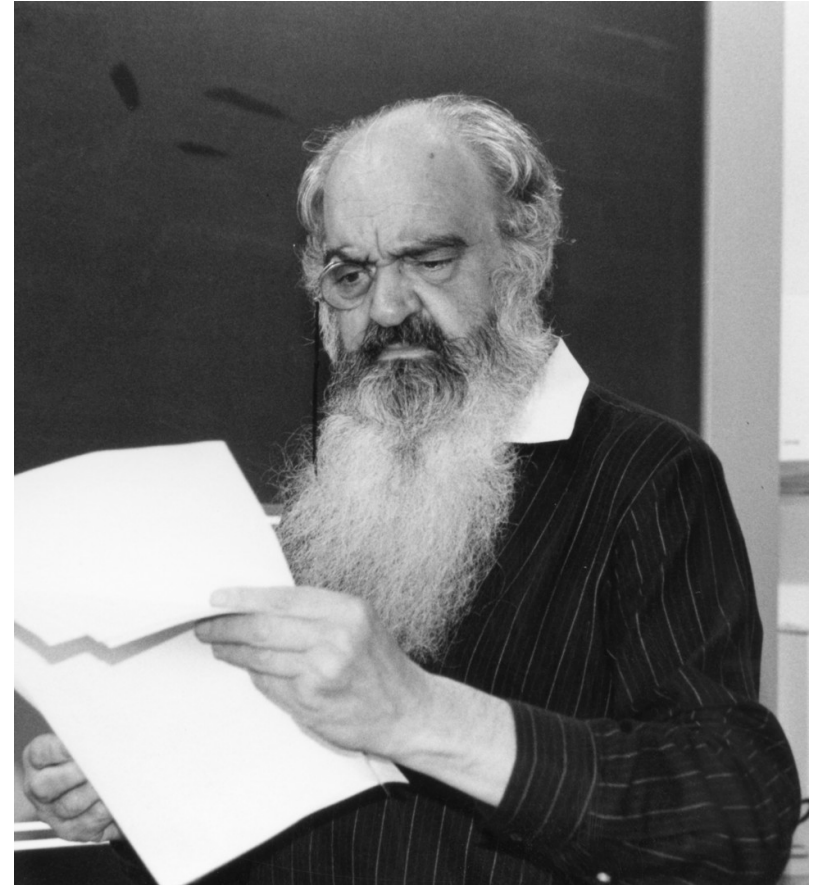
**`matrix:u/kitsune:matrix.org`**

# **Brain of the community**

## **Part 1. Beer**

**Stafford Beer  
(1926 – 2002)**

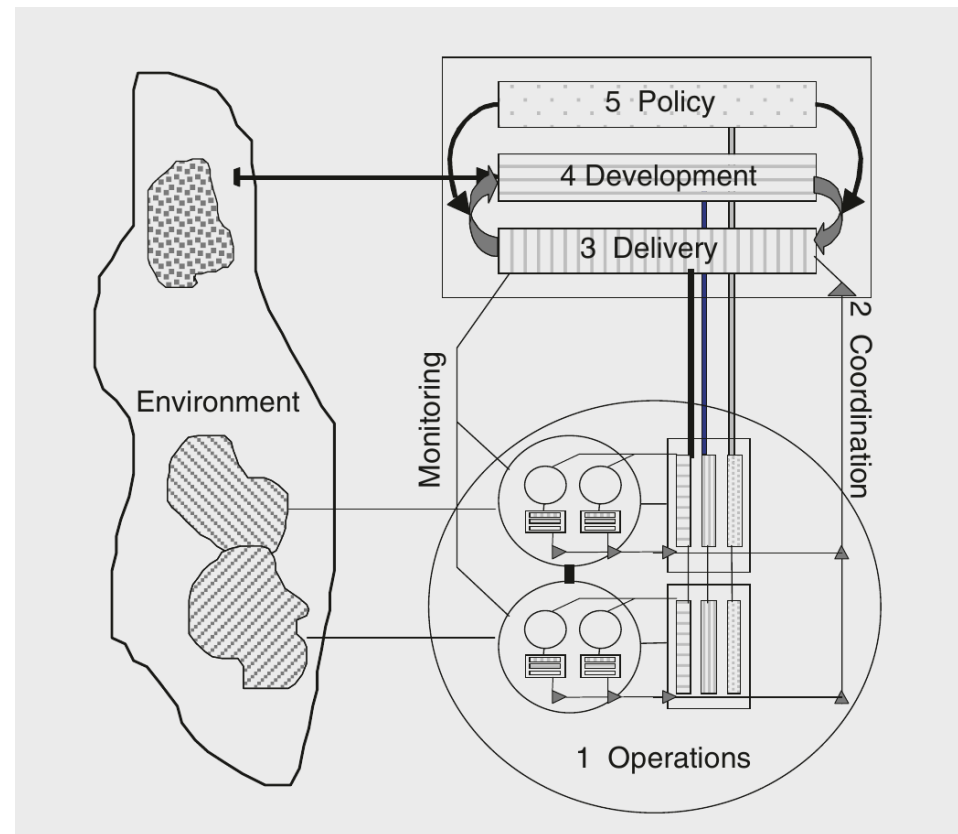
**”Brain of the  
firm” (1972)**



# Viable System Model

[https://en.wikipedia.org/wiki/Viable\\_system\\_model](https://en.wikipedia.org/wiki/Viable_system_model)

- Describes an autonomous system capable of (re)producing and sustaining itself
- Applies to a wide range of “living” systems: living organisms, organisations, social groups, countries...
- Can be used as a “diagnostic” or a “guiding” tool



# 5 systems of VSM

**System 1:** individual operations; itself a VSM (“recursion point”)

**System 2:** information transfer; coordination of activities; scheduling

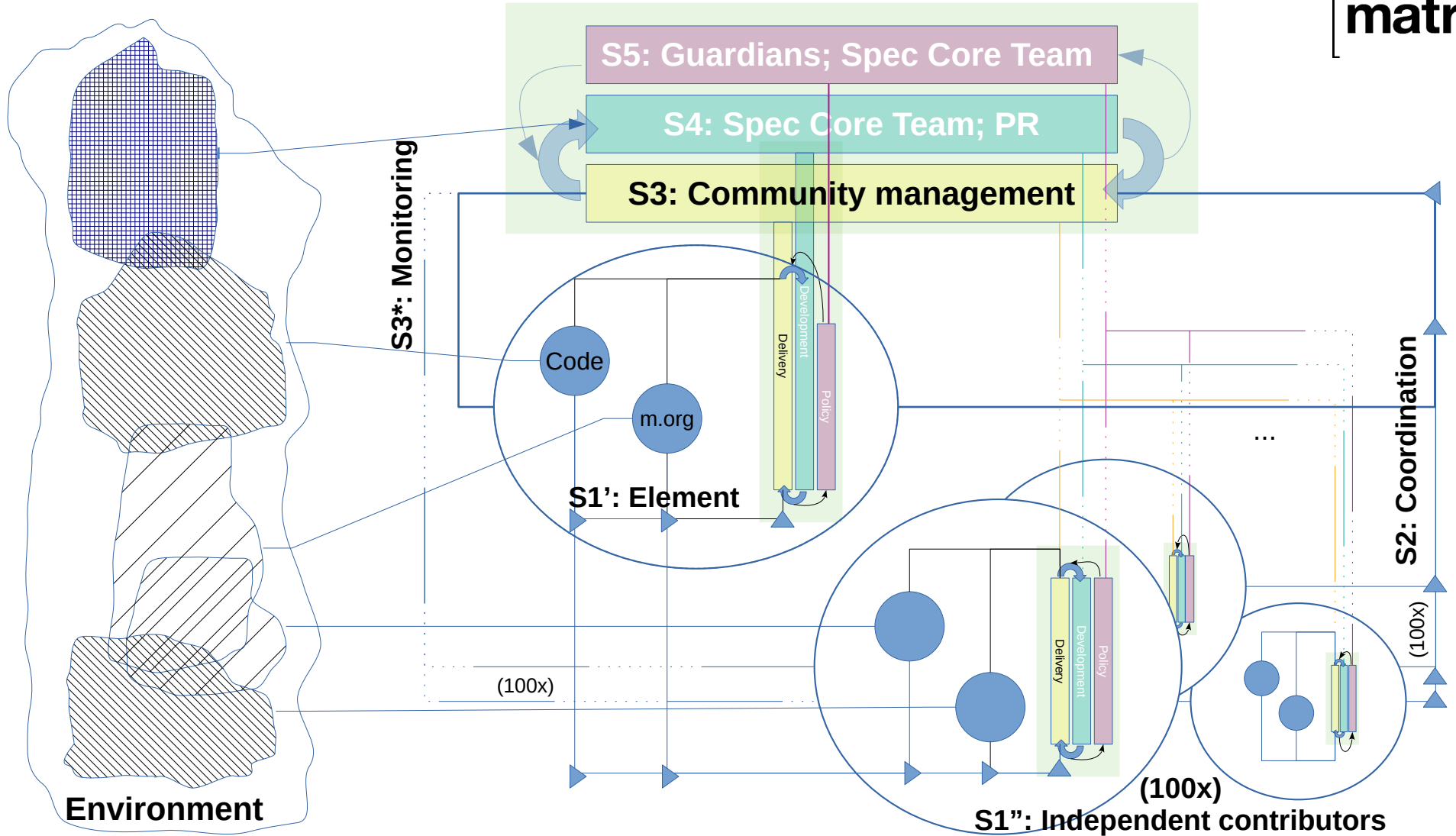
**System 3:** delivery; “command & control” (operations management);

big picture view; connectivity to systems 4/5

**System 4:** monitoring and anticipation of the environment

**System 5:** identity (“who are we?”, “why?”); vision; policy; governance

[matrix]



# Variety

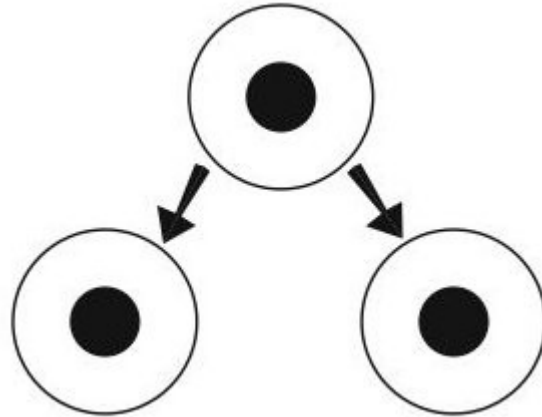
The number of “states” of the system / distinguishable “elements” it can deal with

Related concepts: uncertainty; complexity; entropy

**Requisite variety:** “Only variety can destroy variety” (W. Ross Ashby)  $\Leftrightarrow$  **Requisite complexity:** the internal complexity of the system must match the external complexity it confronts

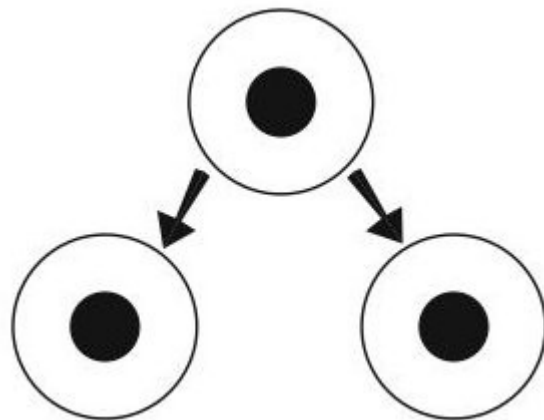
# Increasing variety? Divide and conquer!

[matrix]





# Increasing variety? Divide and conquer!



Did anybody say “Mitosis”?

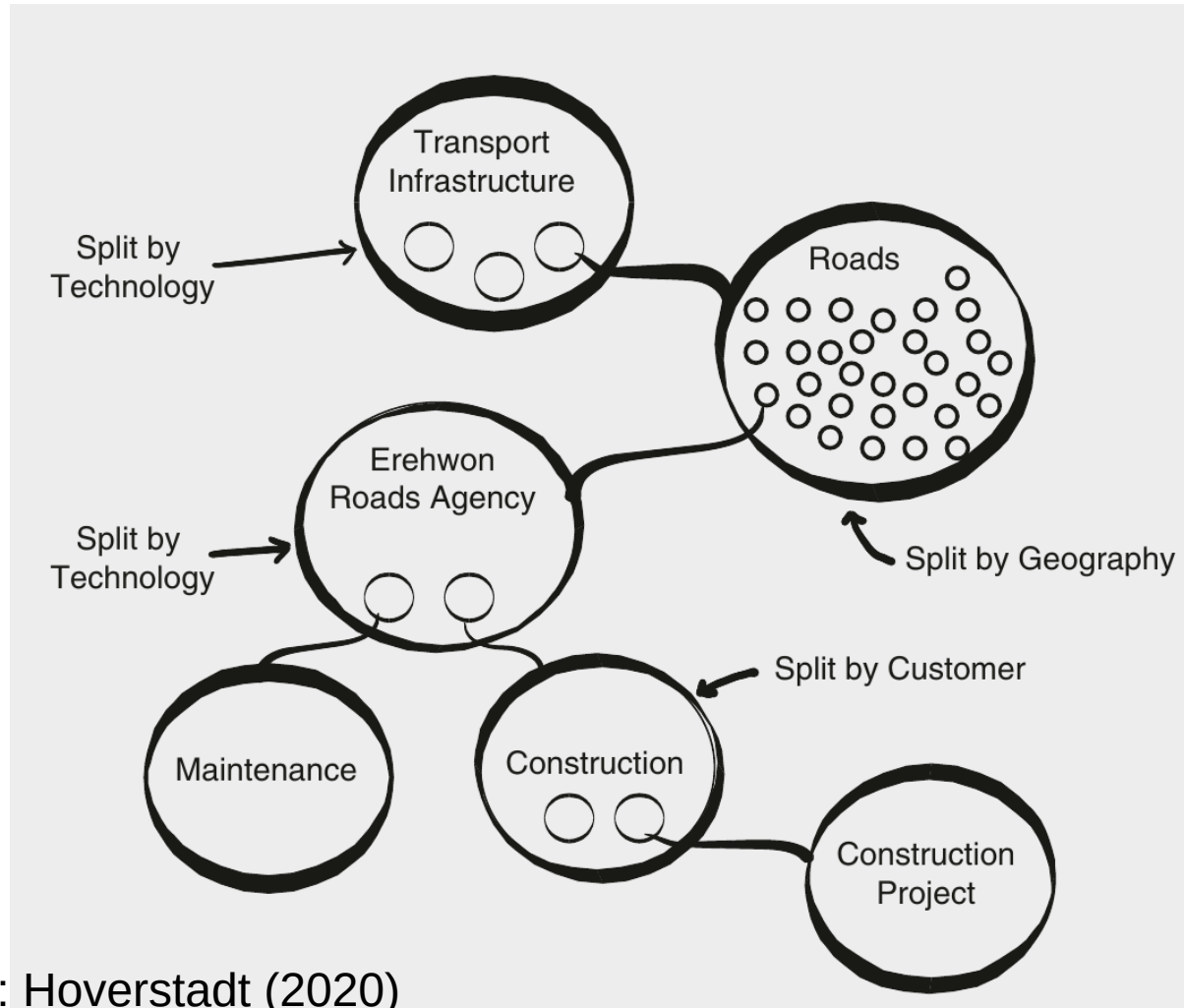
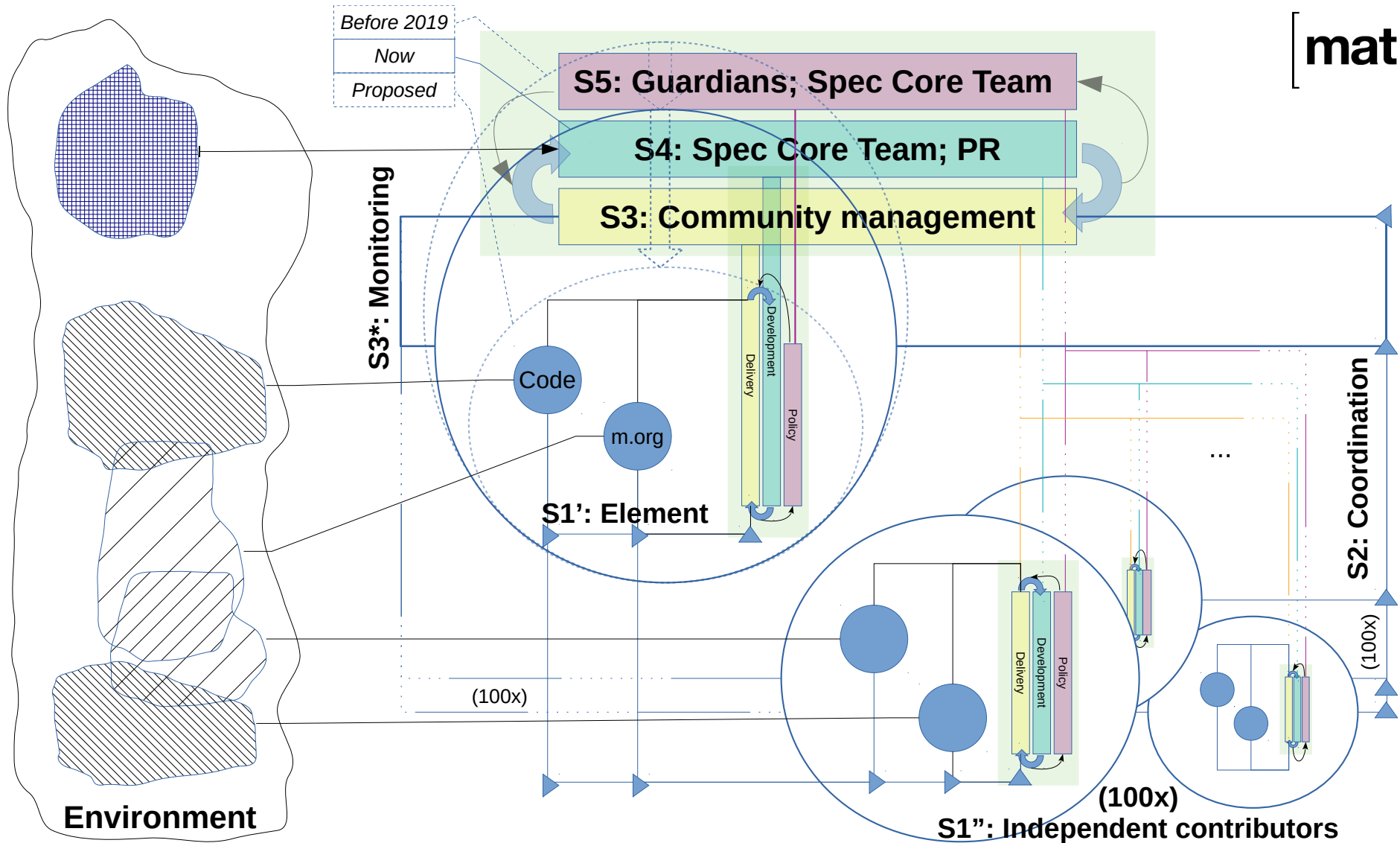


Image source: Hoverstadt (2020)

# **Brain of the community**

## **Part 2. Matrix**

[matrix]



Before 2019  
Now  
Proposed

**S5: Guardians; Spec Core Team**

**S4: Spec Core Team; PR**

**S3: Community management**

Code

m.org

**S1': Element**

Development

Delivery

Policy

**S2: Coordination**

...

(100x)

**S1'': Independent contributors**

(100x)

**Environment**

**S3\*: Monitoring**

# Trade-offs: current delivery vs. future needs

**Current delivery:** winning projects to run the show (not specific to Element...); Matrix 2.0

**Future needs:** Third Room; PQC; extensible events

**Where we are:** ended up too much into current delivery, not much exploration of new terrain

- Risk of system variety going down
  - ...alleviated by open source being good for innovation

# Trade-offs: autonomy vs. cohesion

**Autonomy over cohesion:** Jami, XMPP

- *Could* absorb a lot of external variety but extremely slowly because coordination is *hard*

**Cohesion over autonomy:** WhatsApp, Signal, Telegram

- Can move fast but is limited in use cases and features because of low internal variety

Matrix has a lot of autonomy because of federation alone

*Are we too much into either? Why are we better than others?*

# Coordination is our power

- Better coordination => faster decisions, increases requisite variety
- One of the most common systemic problems in organisations
- Most often hindered by boundary issues
  - Open source => fewer boundaries
  - Language/culture/political boundaries remain
- Coordination is a limited resource too – you can only spend so much time communicating

**PLEASE! BE EXCELLENT TO EACH OTHER**

# (Lack of) Focus is our weakness

- Remember that autonomy over cohesion? => lack of focus
- Another common problem in (younger) organisations
- Specialisation and cooperation vs. everybody competing with everybody
- Coordination helps!

**Pick your battles carefully. We need each of you at your best.**



# P. S. Trust, security, safety

- Mainly about Systems 3,4
- Also needs very good System 2 because coordination is essential
  - We have it but ought be better
- We have very weak System 3 for that (and System 4... who's that?)
- Hostile environment complicates matters
  - Especially difficult trade-off between cohesion and autonomy
- Having a consolidated group won't help, per se; the variety of malicious actors is too large
  - We need the community that this group could lead (when we have it)
    - Know-your-neighbour system?..

[matrix]

[matrix]

**Thank you!**

matrix:u/kitsune:matrix.org  
<https://fosstodon.org/@kitsune>