

Data Scientists: Challenge, Organisation & Architecture

Balancing stability, agility and quality in a sea of change

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Environmental Research
Infrastructures Providing Shared
Solutions for Science and Society

Overview

● Pushing three extremes

- complexity
- data
- computation

● Data-driven science a multi-dimensional balancing act

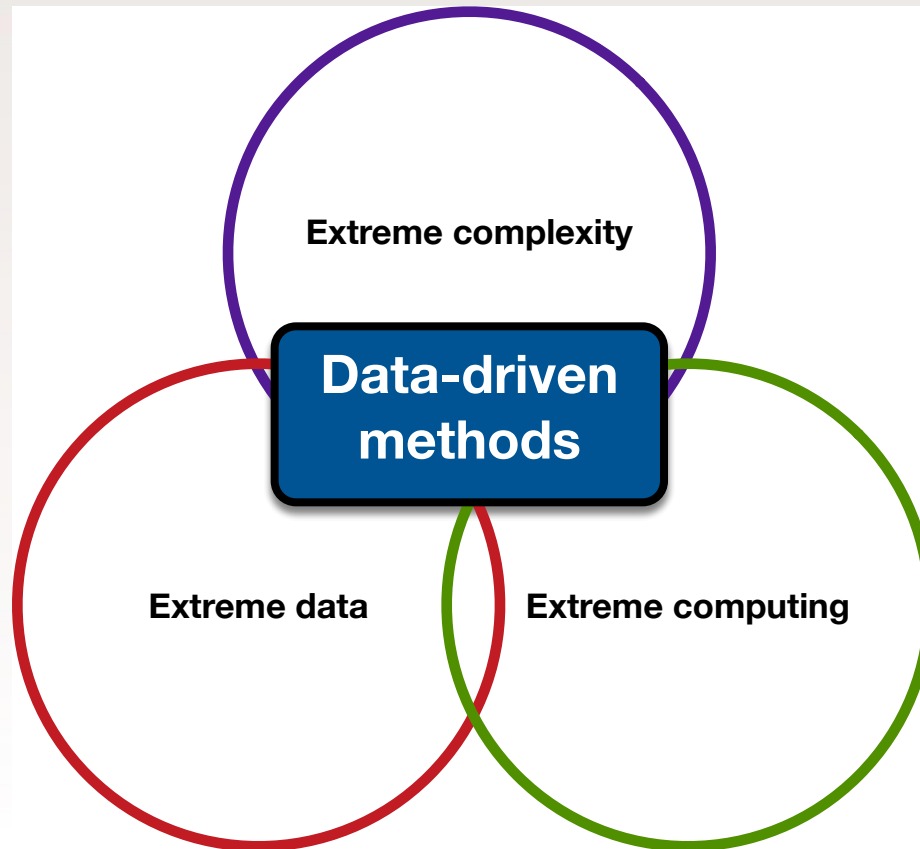
- Agility v Trust
- Collaboration v Identity
- Power v Stability
- Innovation v Productivity

● Architectures

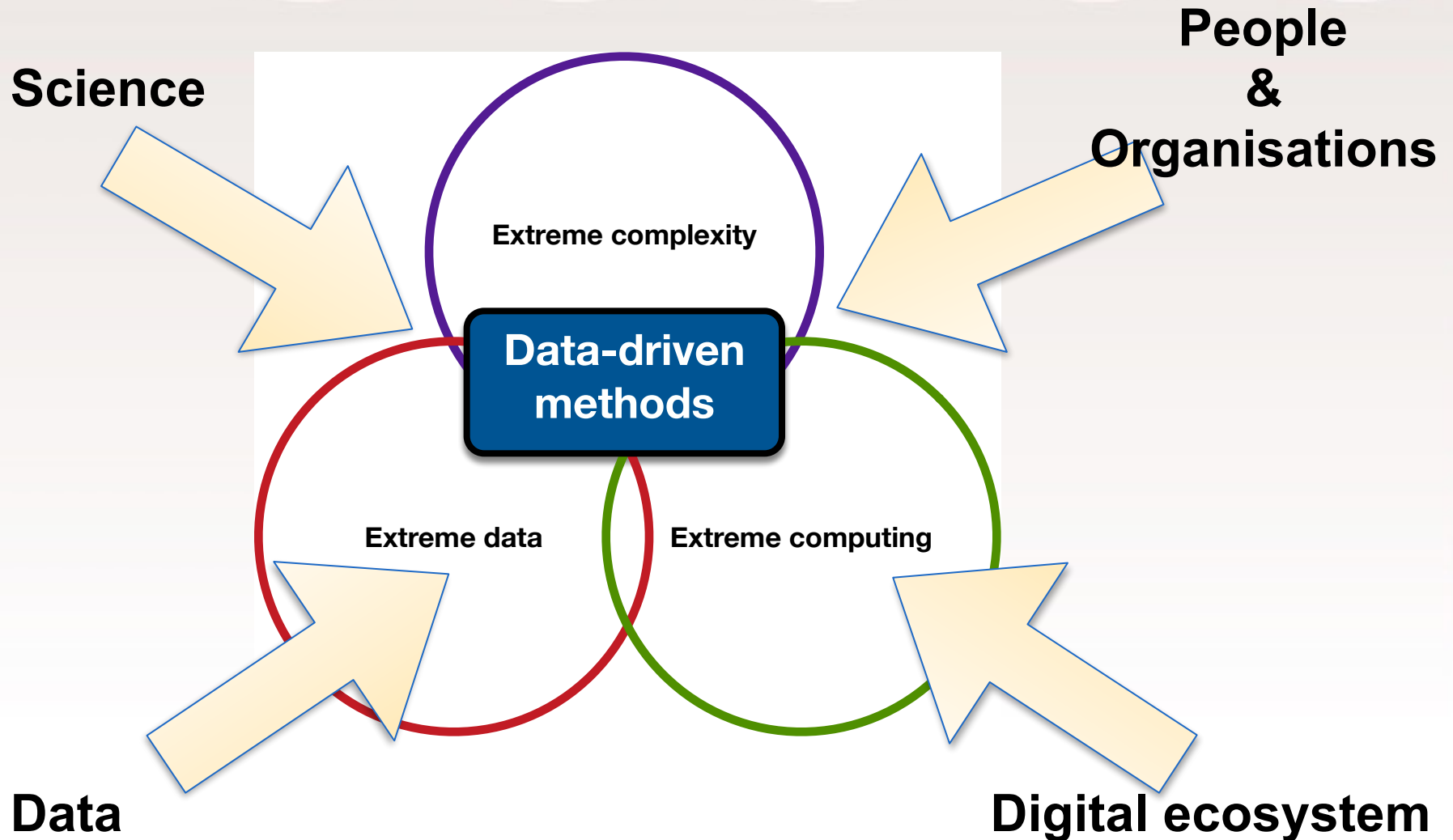
- Engagement and Responsibility
- Solution longevity
- Exploiting emerging power



Pushing the limits to 3 extremes



Delivering stability and responding to change

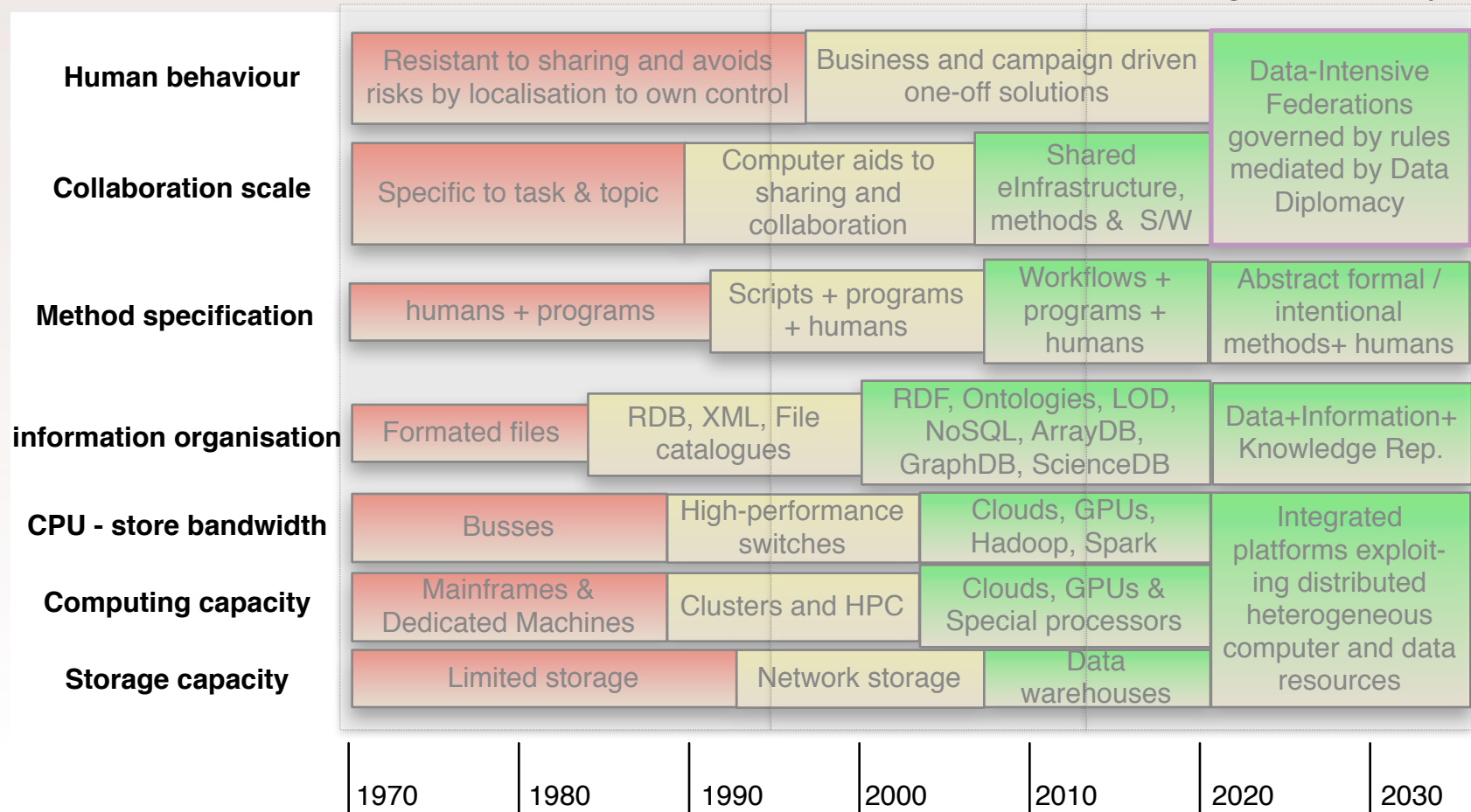


Expanding our capacity to pool resources

Era of technical limits

Era of heroic campaigns

Era of information-sharing diplomacy

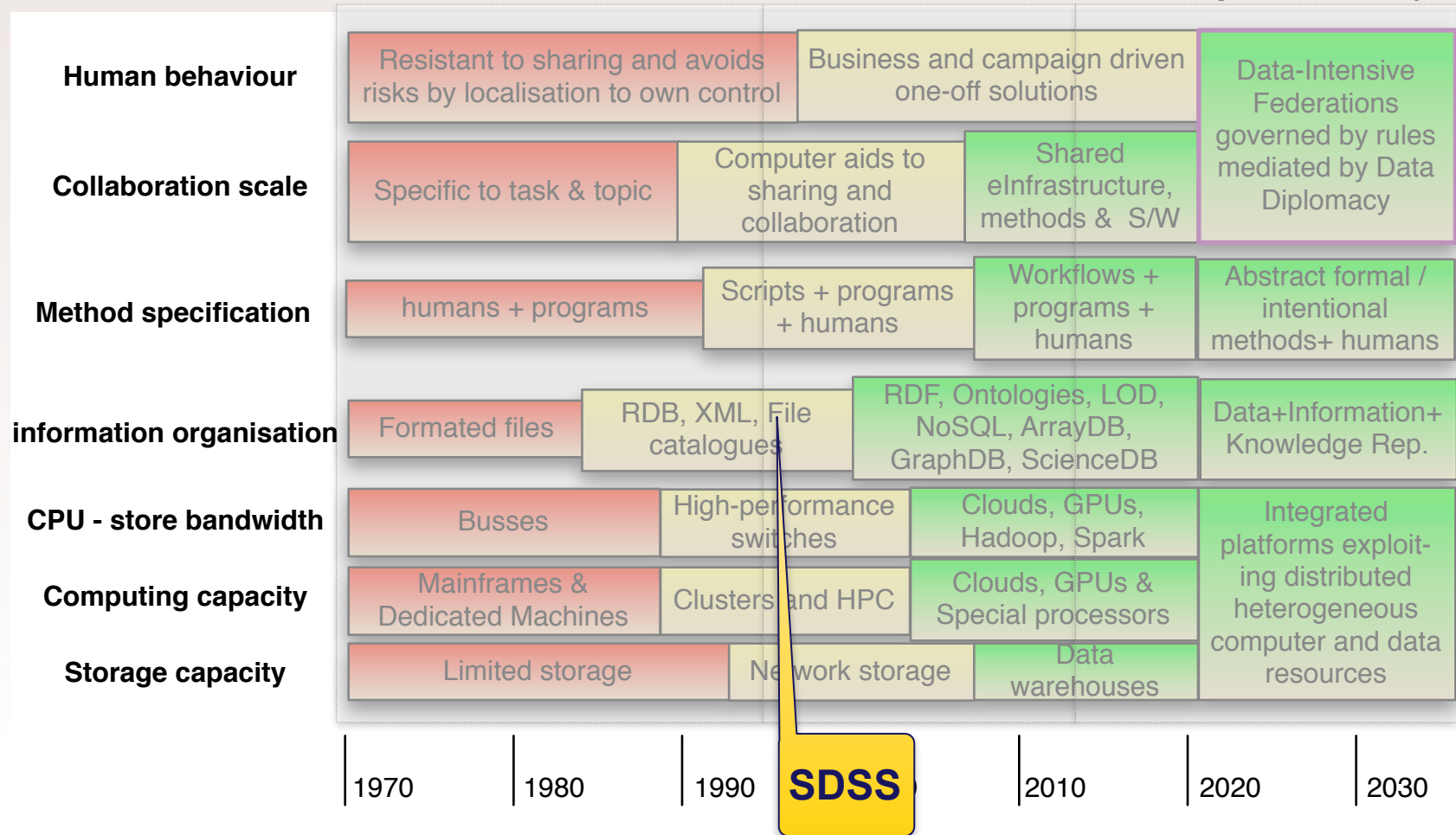


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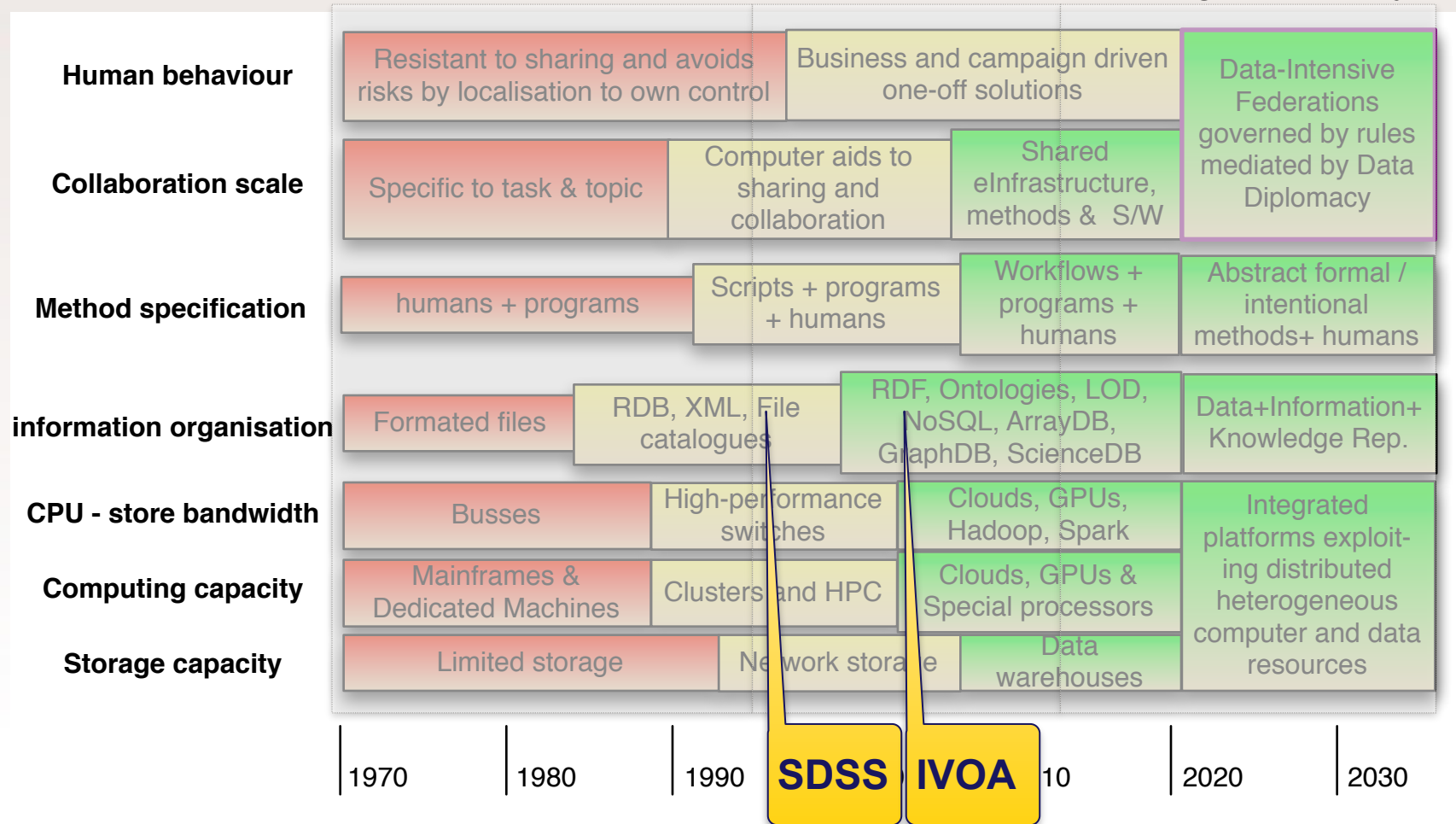


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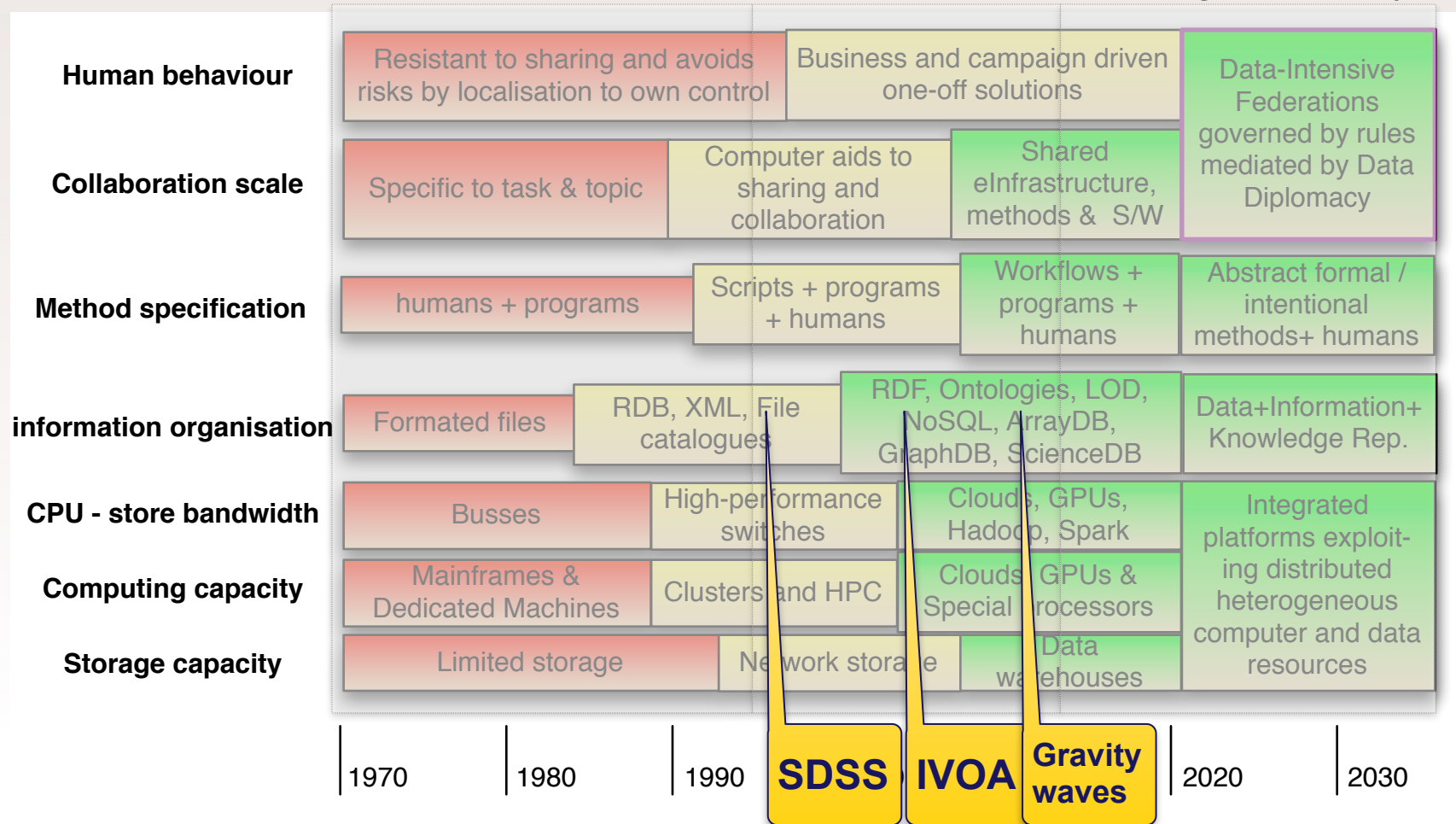


Expanding our capacity to pool resources

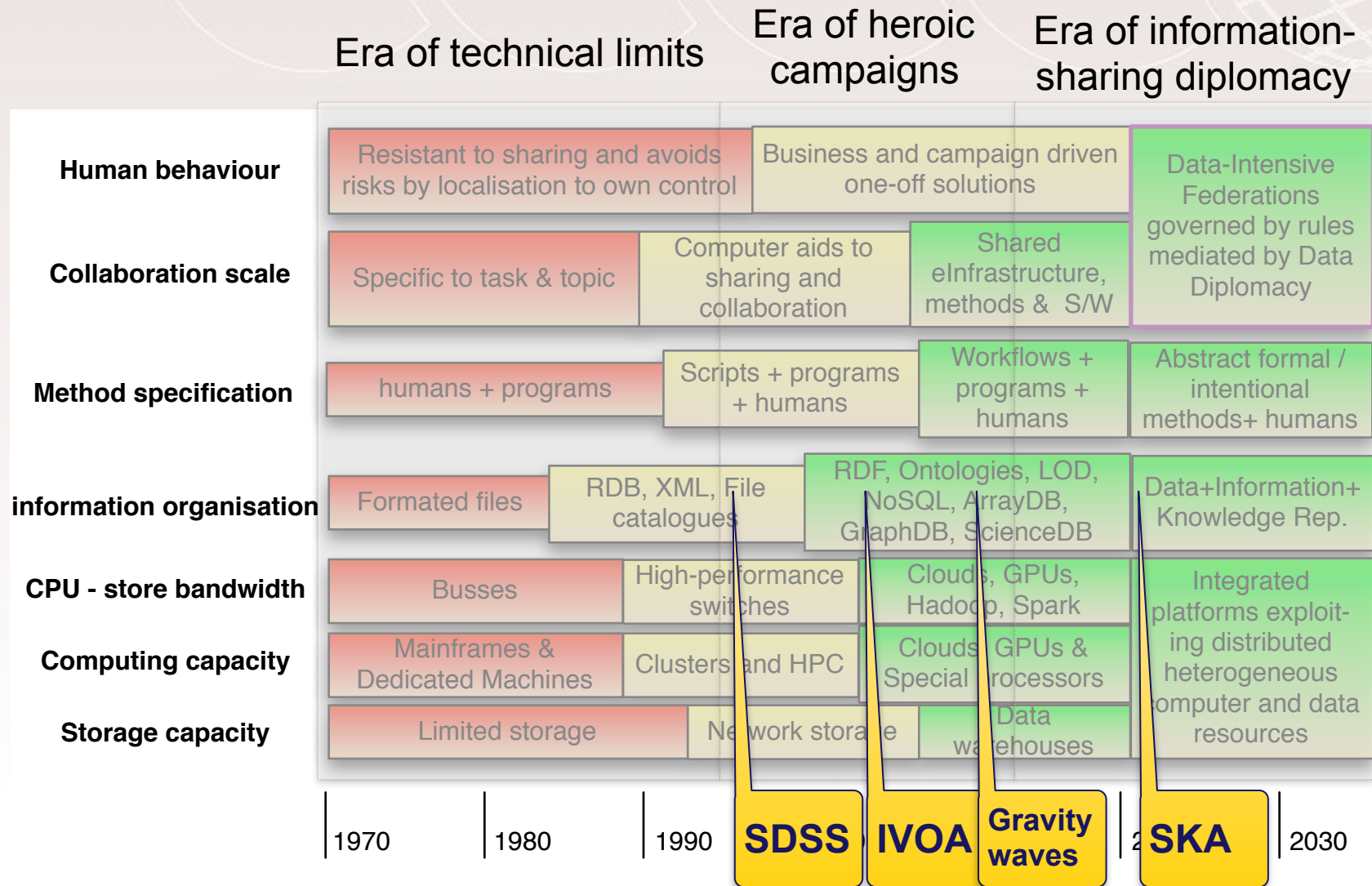
Era of technical limits

Era of heroic campaigns

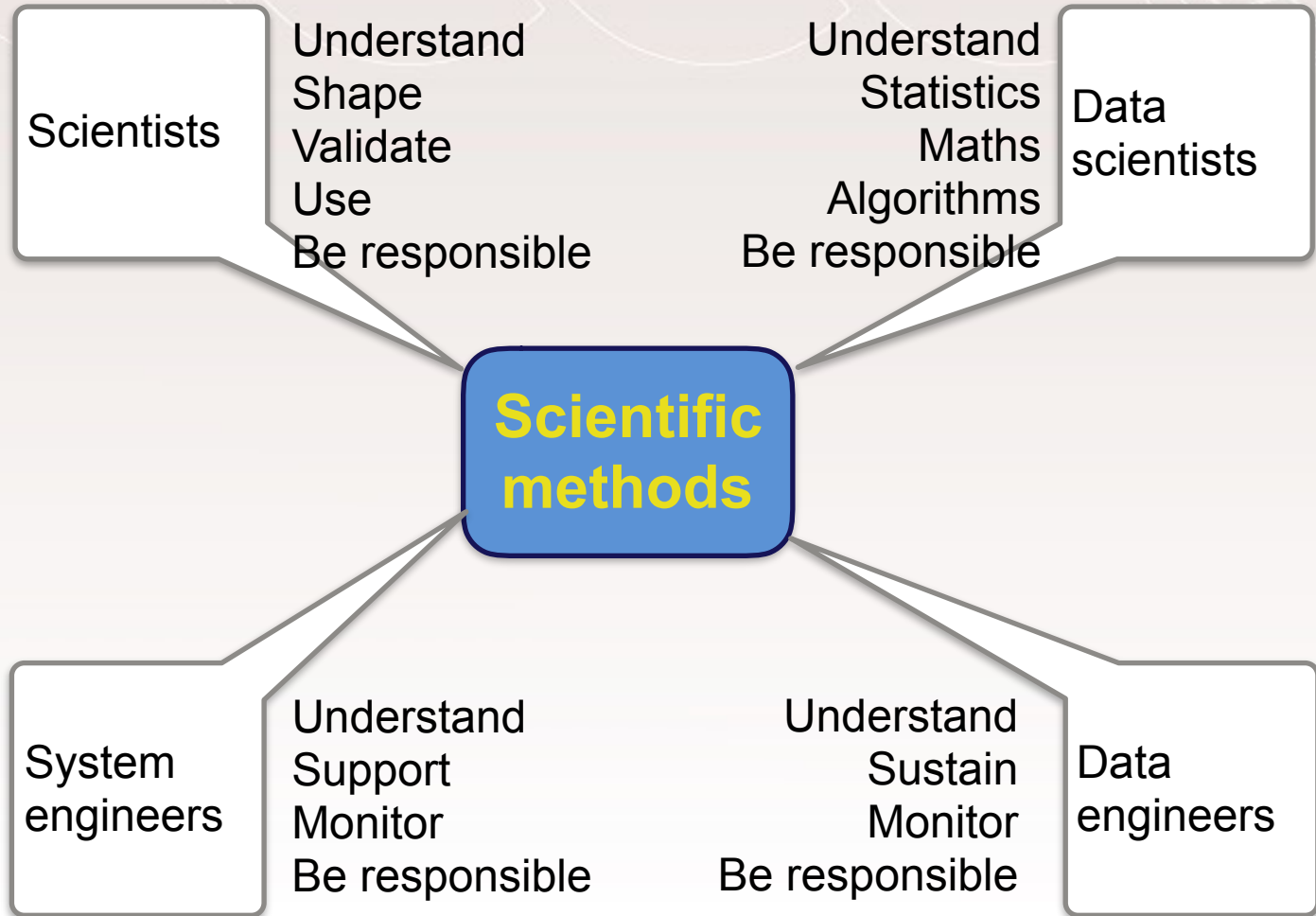
Era of information-sharing diplomacy



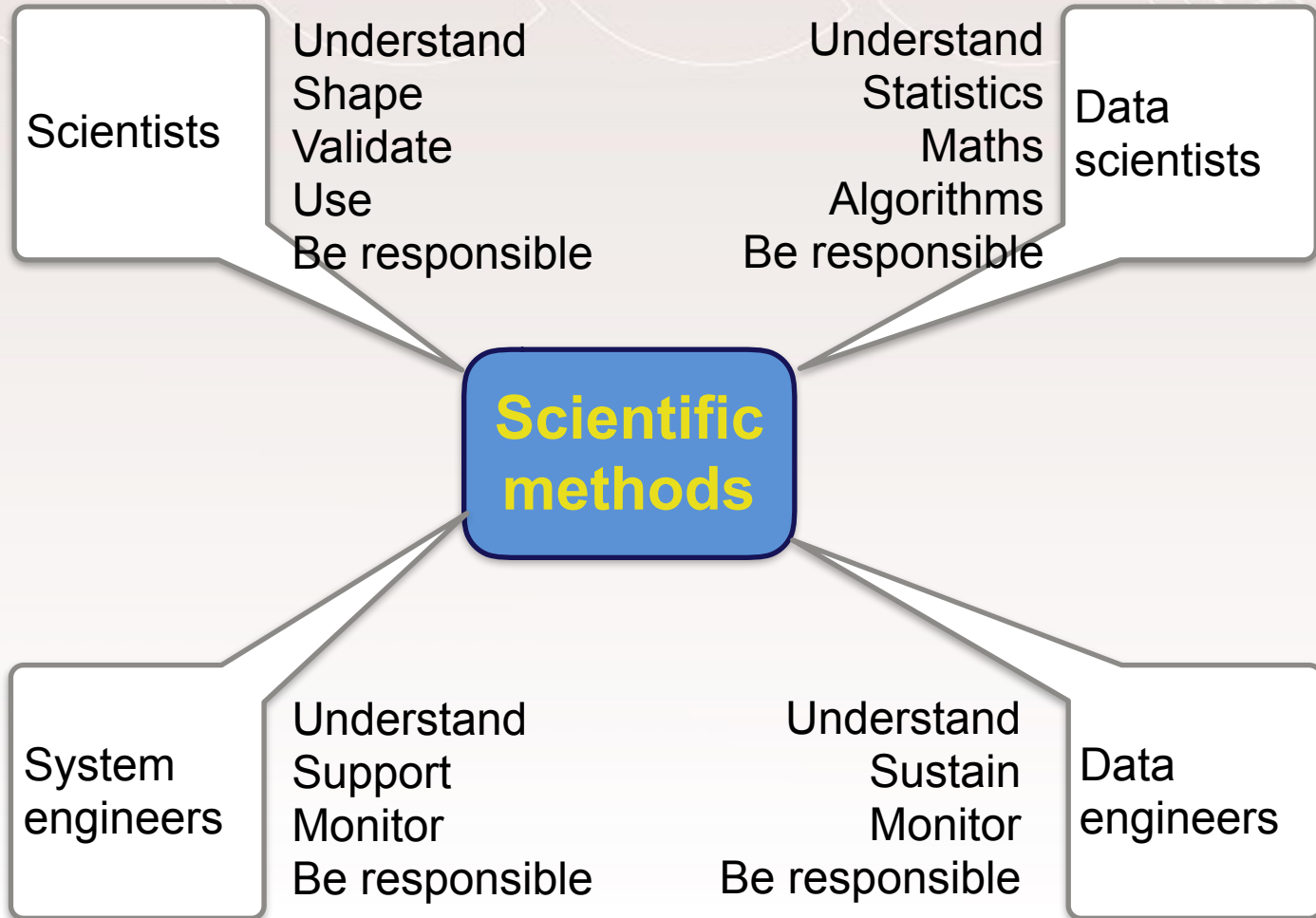
Expanding our capacity to pool resources



AAA = Architecture **Abstraction** Automation

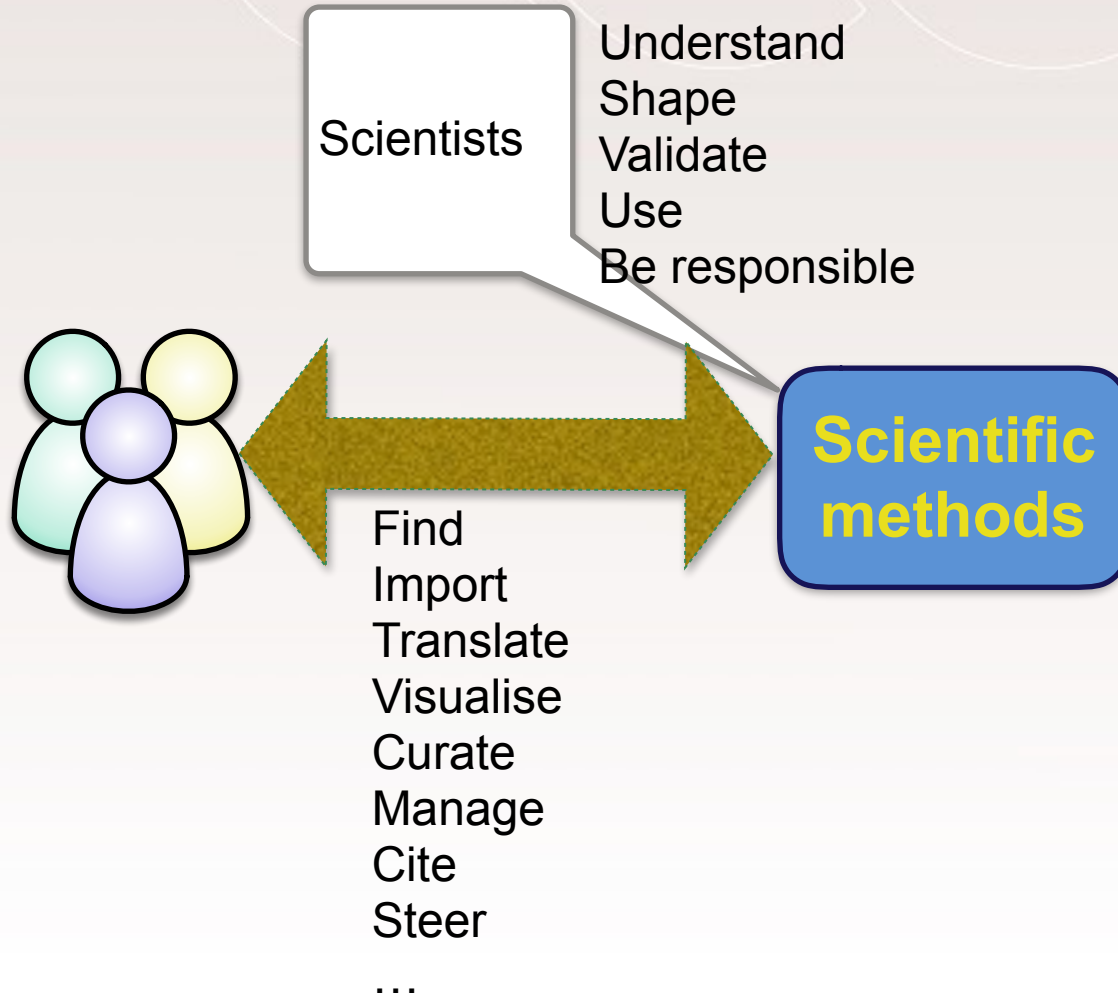


AAA = Architecture **Abstraction** Automation



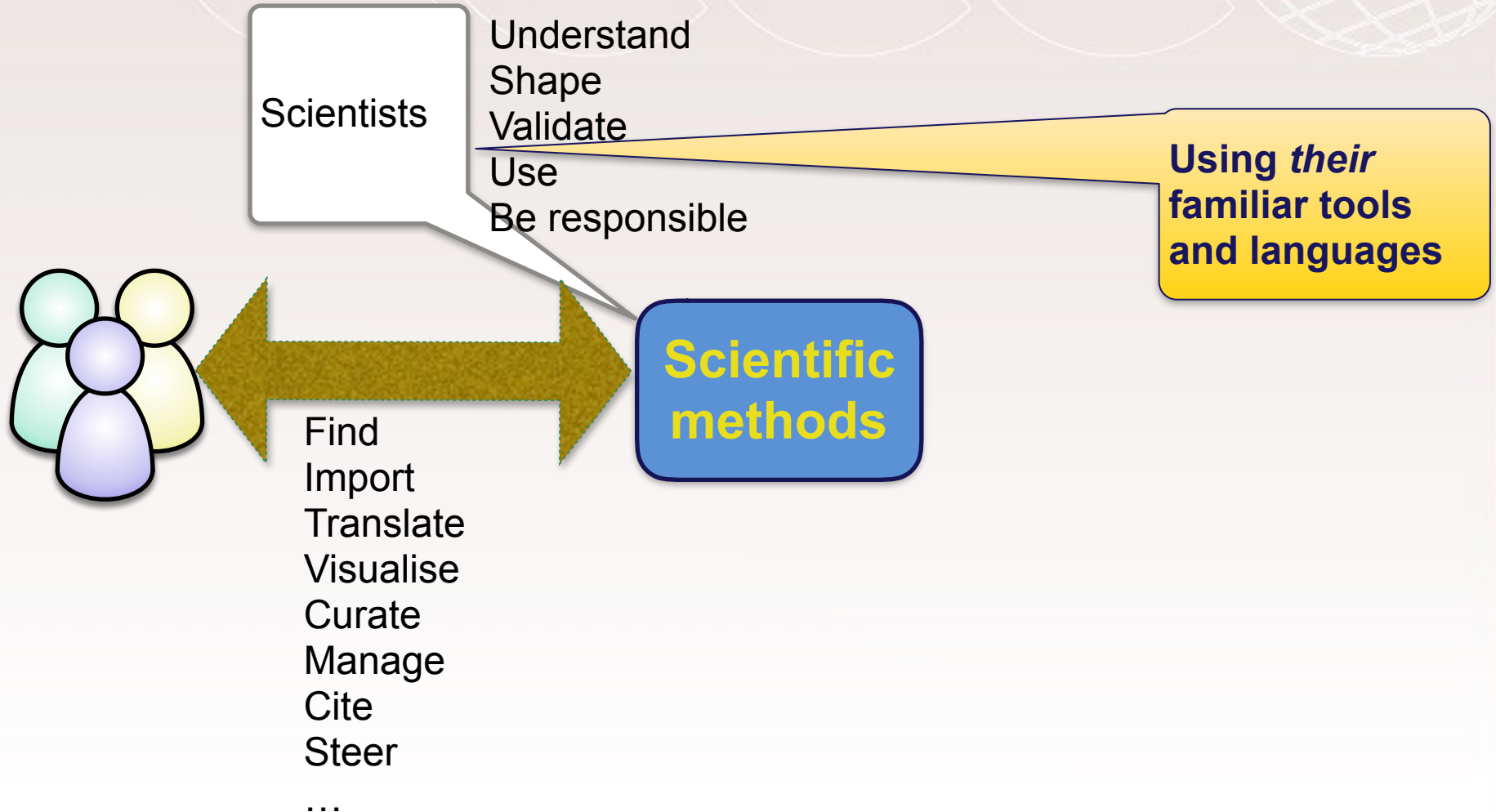
Stable Abstraction supporting whole team for whole campaign

AAA = Architecture Abstraction Automation



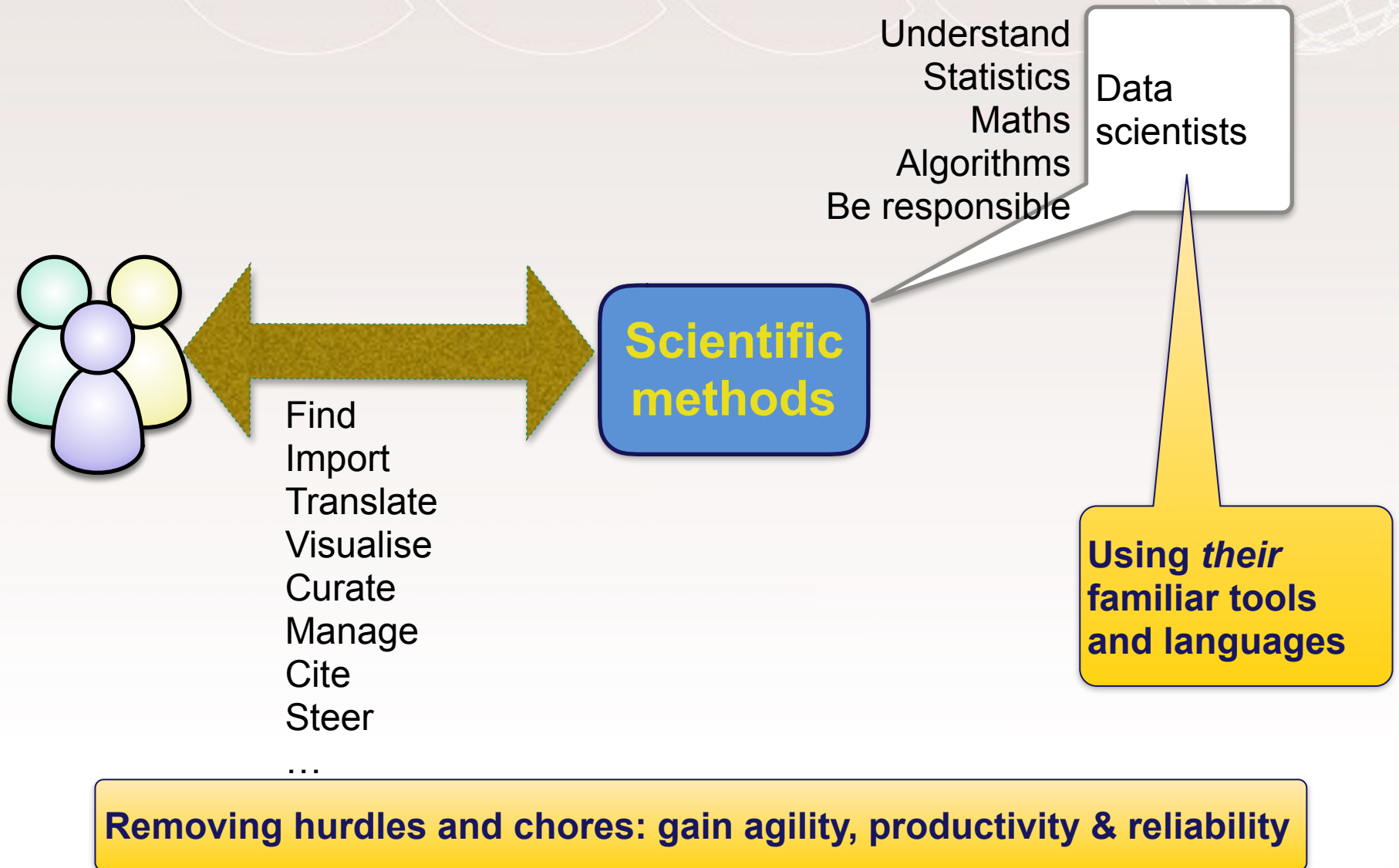
Removing hurdles and chores: gain agility, productivity & reliability

AAA = Architecture Abstraction Automation



Removing hurdles and chores: gain agility, productivity & reliability

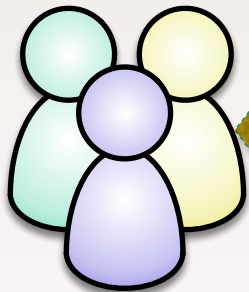
AAA = Architecture Abstraction Automation



AAA = Architecture Abstraction Automation

24 X 7
Global & remote
Autonomous
New platforms
Upgrades
Optimisation
Mapping

...



Scientific
methods

System
engineers

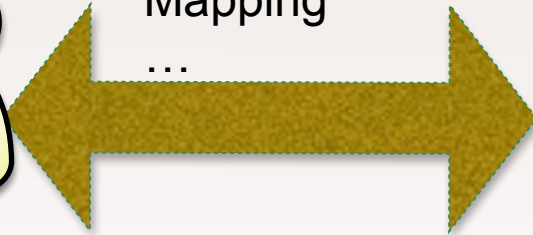
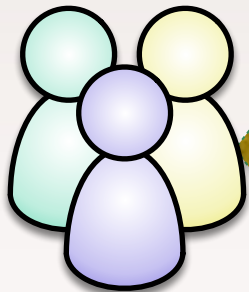
Understand
Support
Monitor
Be responsible

Using *their* familiar
tools and advances
from global drivers

Summaries, predictions & responses: more power lower cost

AAA = Architecture Abstraction Automation

24 X 7 for decades
Global & remote
Autonomous
New structures
New representations
Upgrades
Optimisation
Mapping



Scientific methods

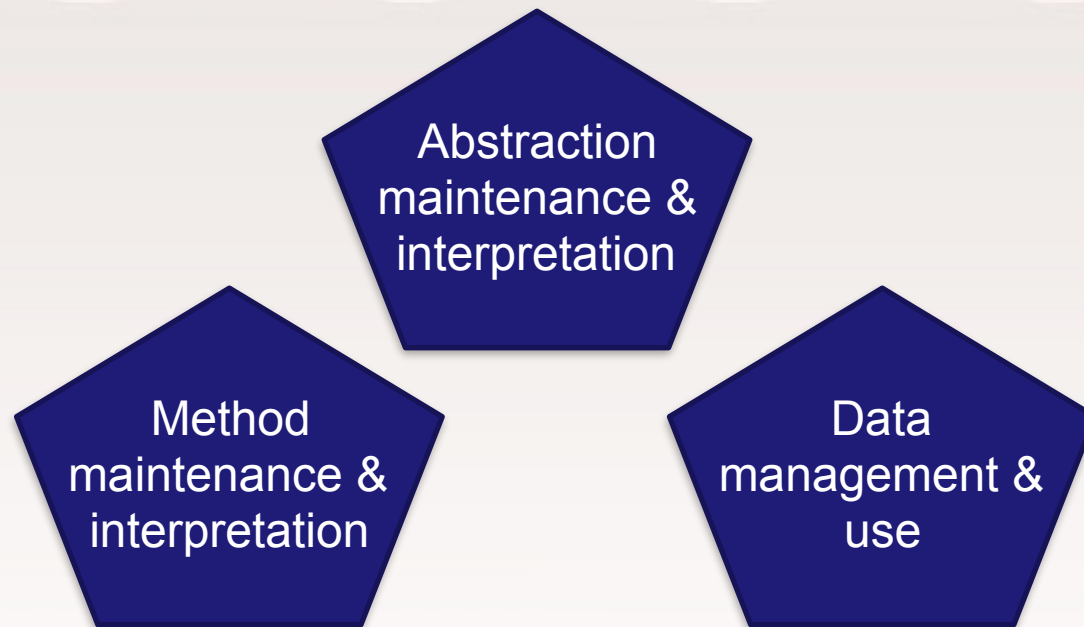
Using *their* familiar tools and advances from global drivers

Understand
Sustain
Monitor
Be responsible

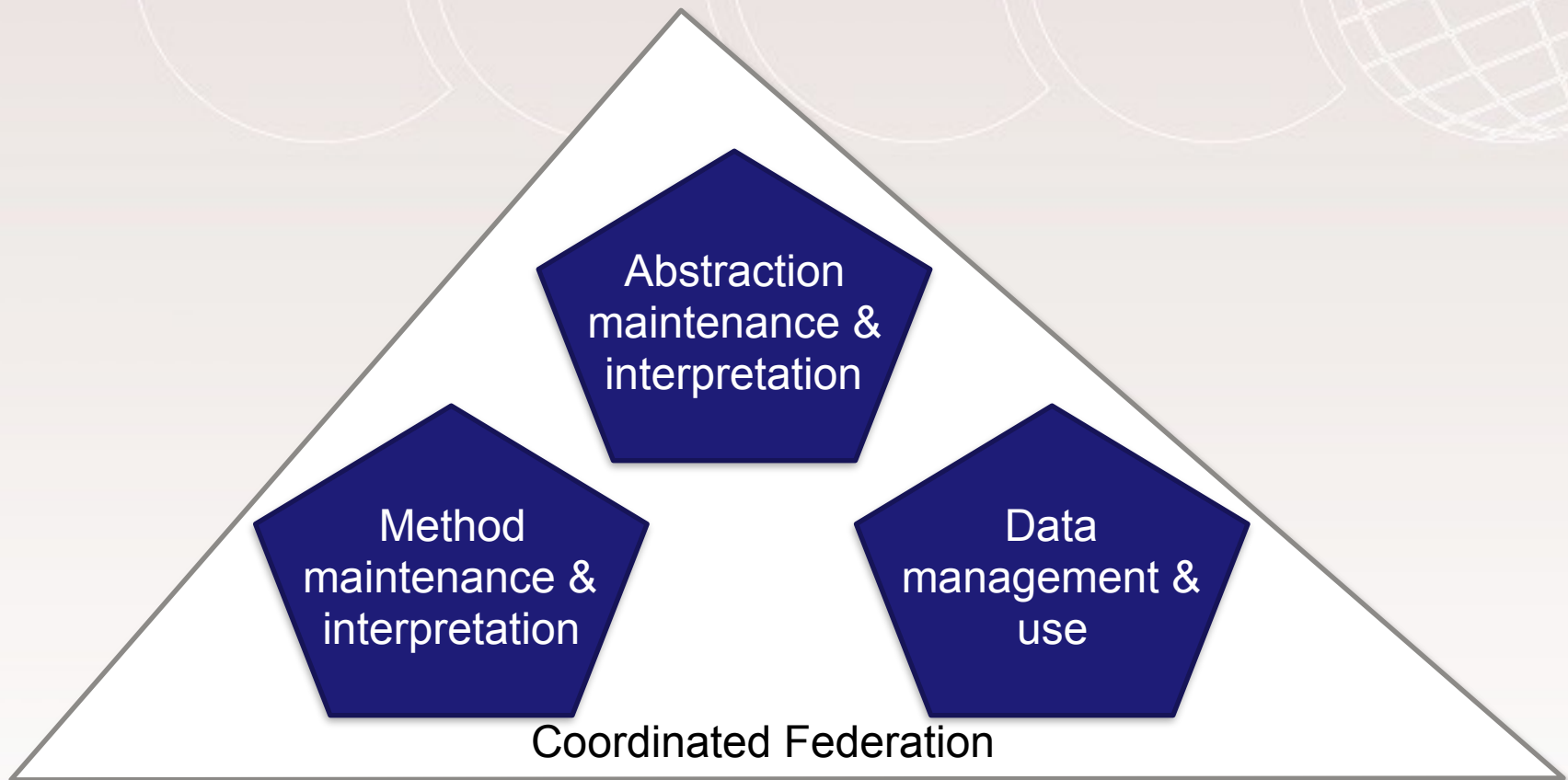
Data engineers

Summaries, predictions & responses: faster access more persistence lower cost

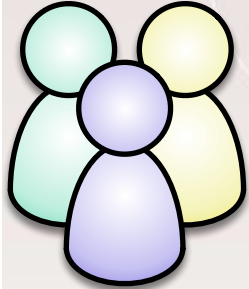
AAA = **Architecture Abstraction Automation**



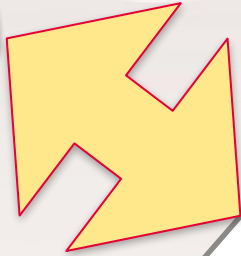
AAA = Architecture Abstraction Automation



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Adaptive
Mappings
for
Scientists



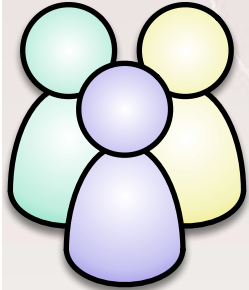
Abstraction
maintenance &
interpretation

Method
maintenance &
interpretation

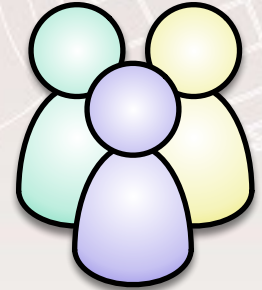
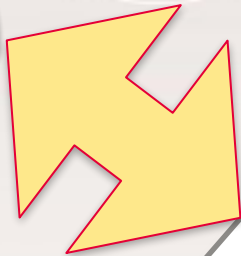
Data
management &
use

Coordinated Federation

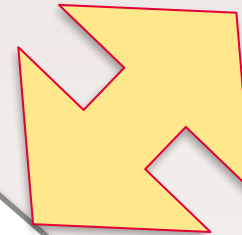
AAA = Architecture Abstraction Automation



Adaptive
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Adaptive
Mappings
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Supporters



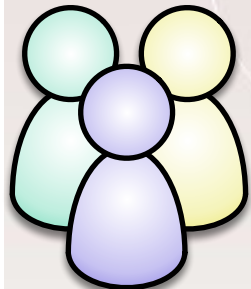
Abstraction
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Method
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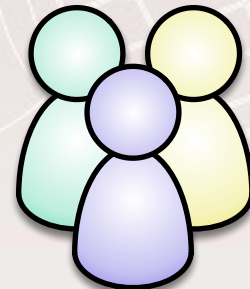
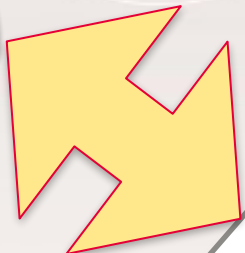
Data
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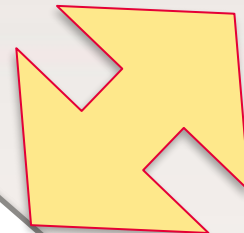
AAA = Architecture Abstraction Automation



Adaptive Mappings for Scientists



Adaptive Mappings for Supporters



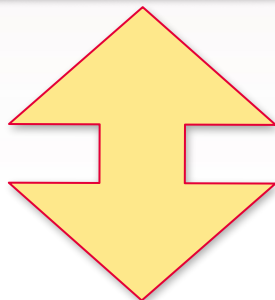
Abstraction maintenance & interpretation

Method maintenance & interpretation

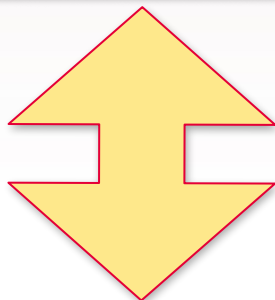
Data management & use

Coordinated Federation

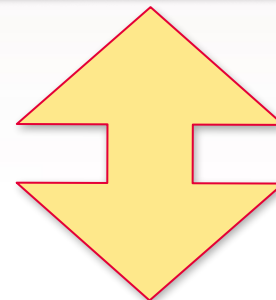
Adaptive Mappings



Platforms



Comms



Storage

Thank you

Questions and Comments please

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H2020 Project

