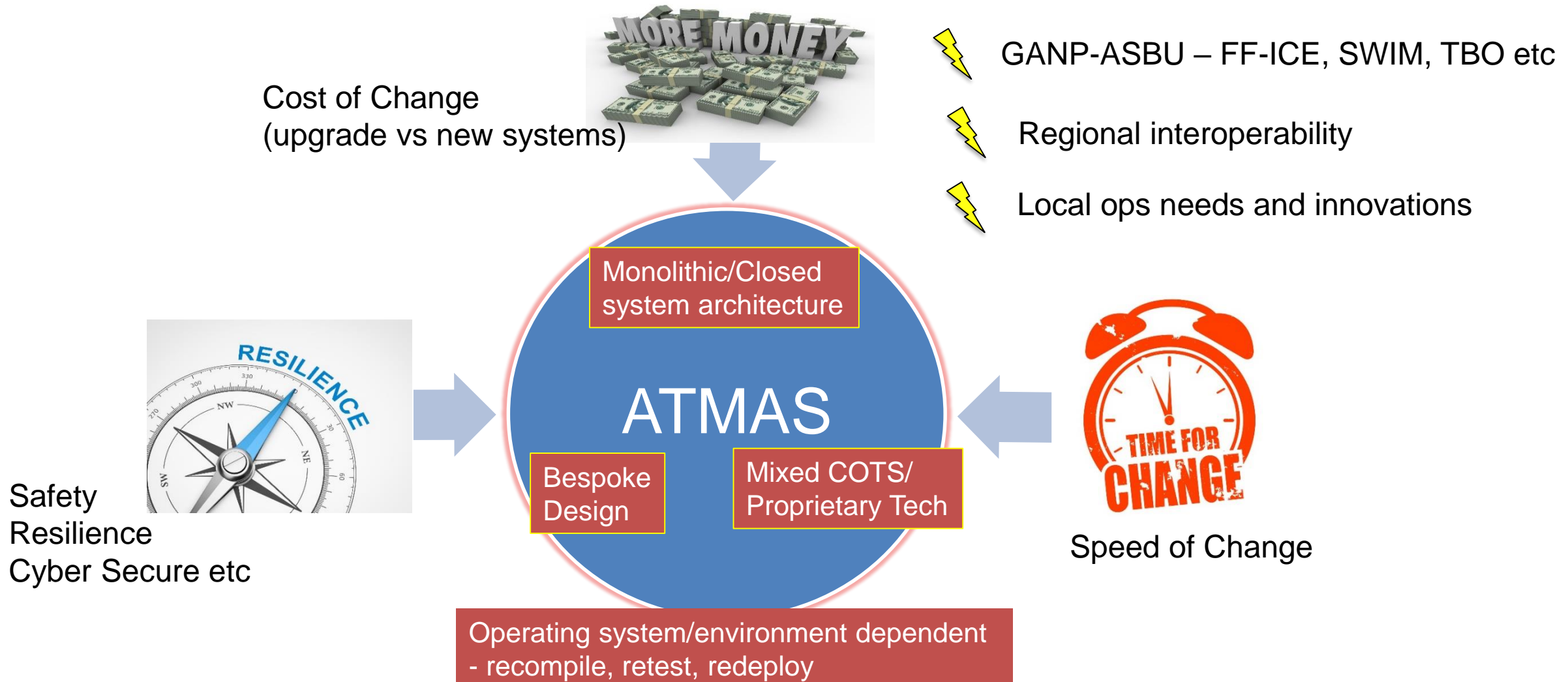


Architecture Design to Address System Upgrade and Interoperability Challenges

Chan Tai Khoon

27 June 2023

Challenges of upgrading ATMAS and associated systems to meet new operational requirements



ABC to address the challenges

A

Aware

Upfront design of system architecture can help to reduce cost and effort to meet requirements in a timely manner

B

Benefits

Use Open Architecture and implement microservices to address system upgrade and interoperability challenges under each state's unique operating environment

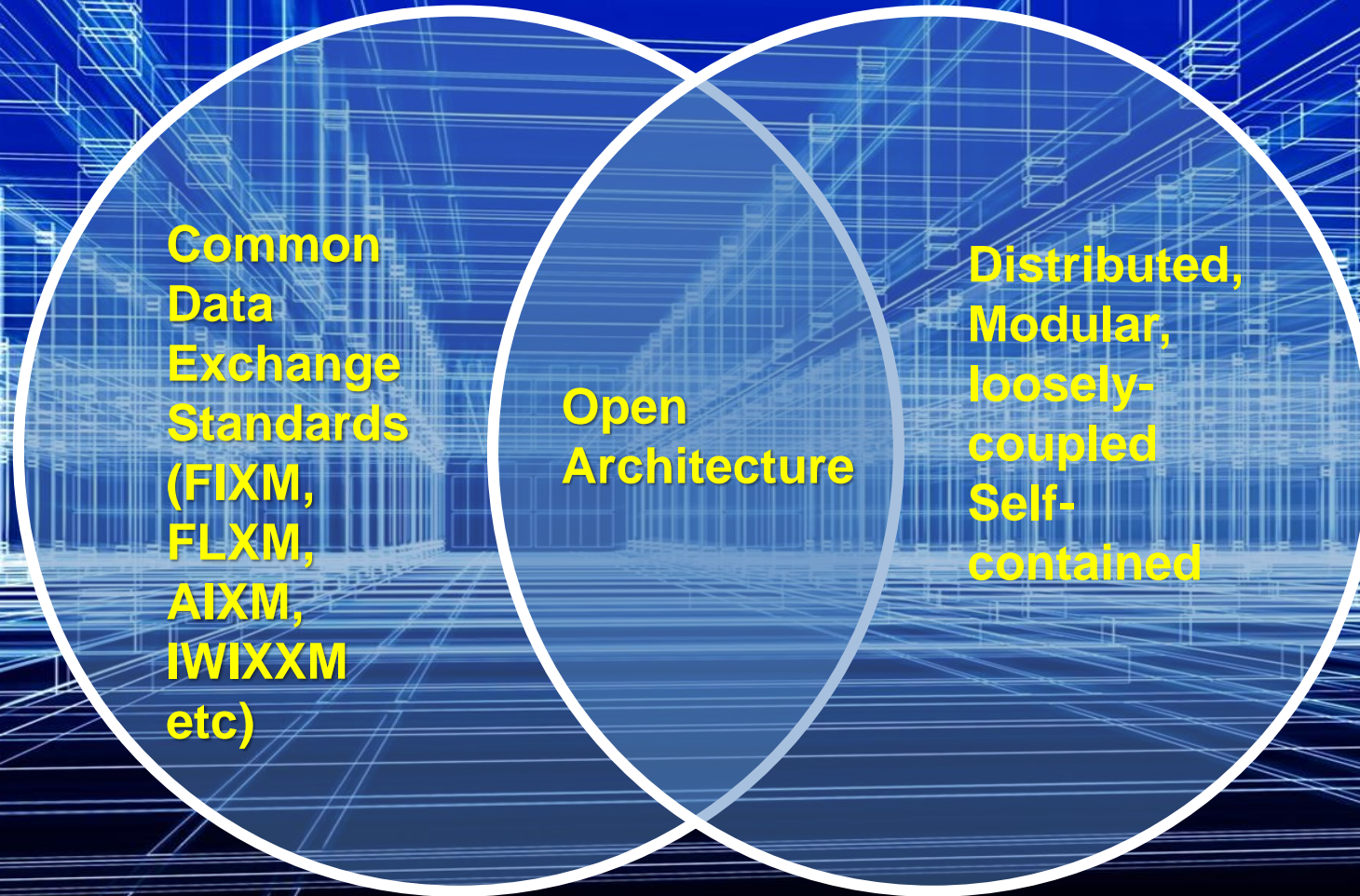
C

Collaborate

Share knowledge and experience
Provide guidance and training

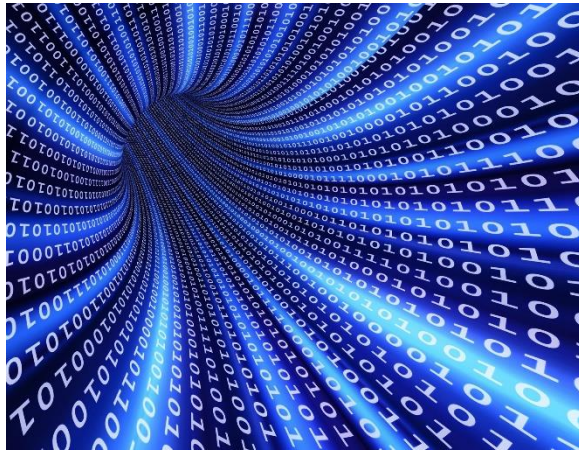


What is Open Architecture?

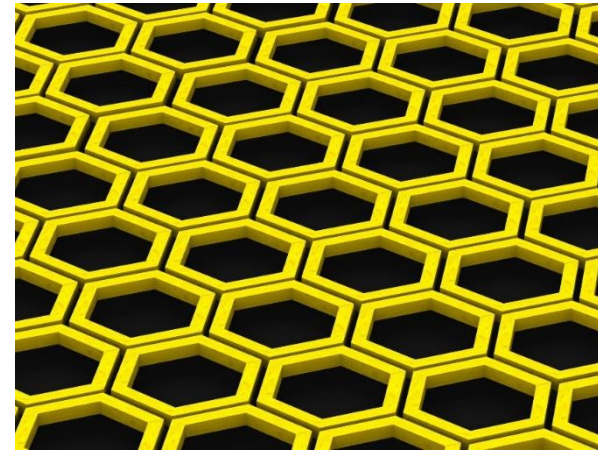
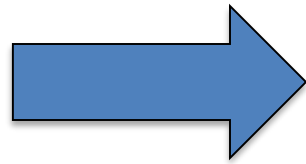


Introducing Microservices

An emerging IT architecture style where complex software modules are decomposed or broken down into smaller independent functional services



Monolithic architecture as single deployment unit

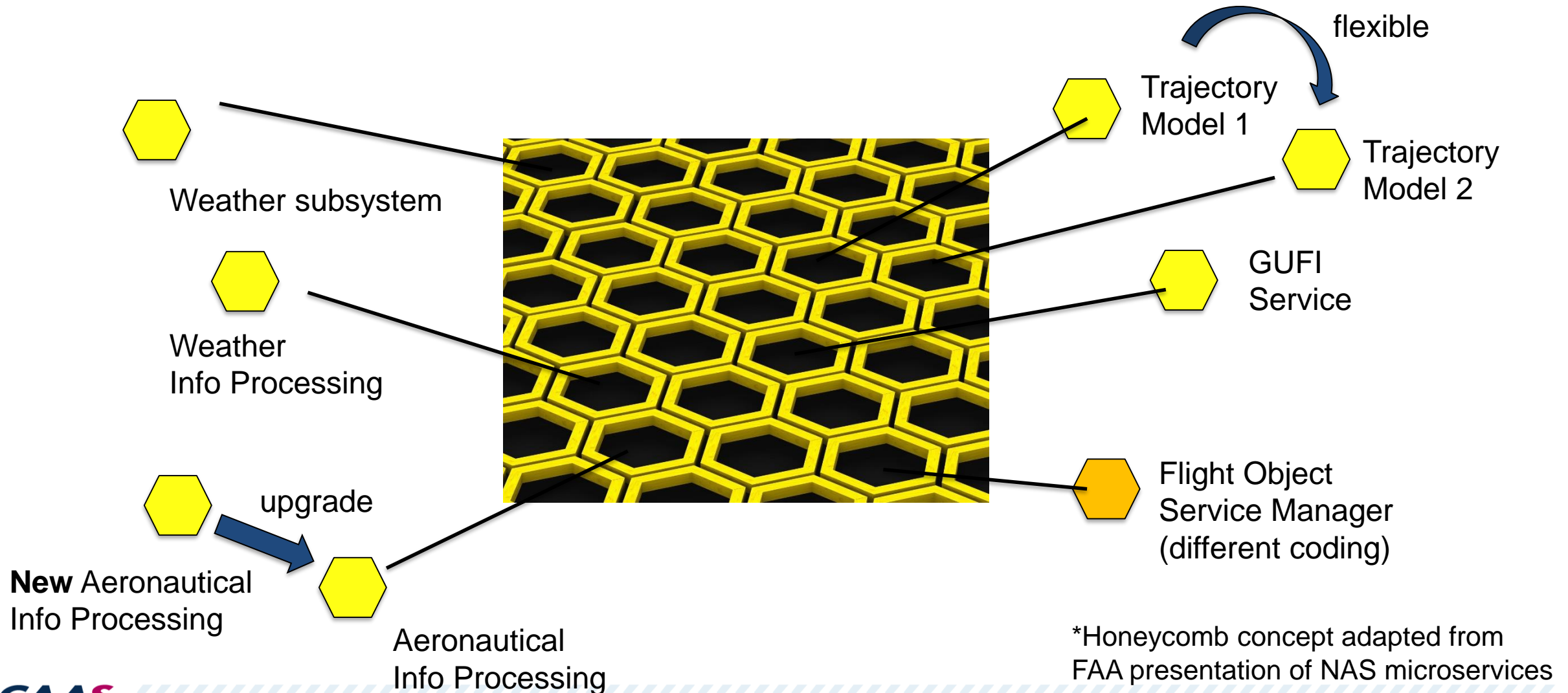


Self contained, independent deployment, add-on

Examples of microservices early adopters in the commercial world



Possible microservices for ATMAS and associated systems



*Honeycomb concept adapted from FAA presentation of NAS microservices

Microservices - Opportunities vs Challenges

Enable experimentation and innovation

Ease of change/rolling deployment

Reuse/Redundancy/Scalability

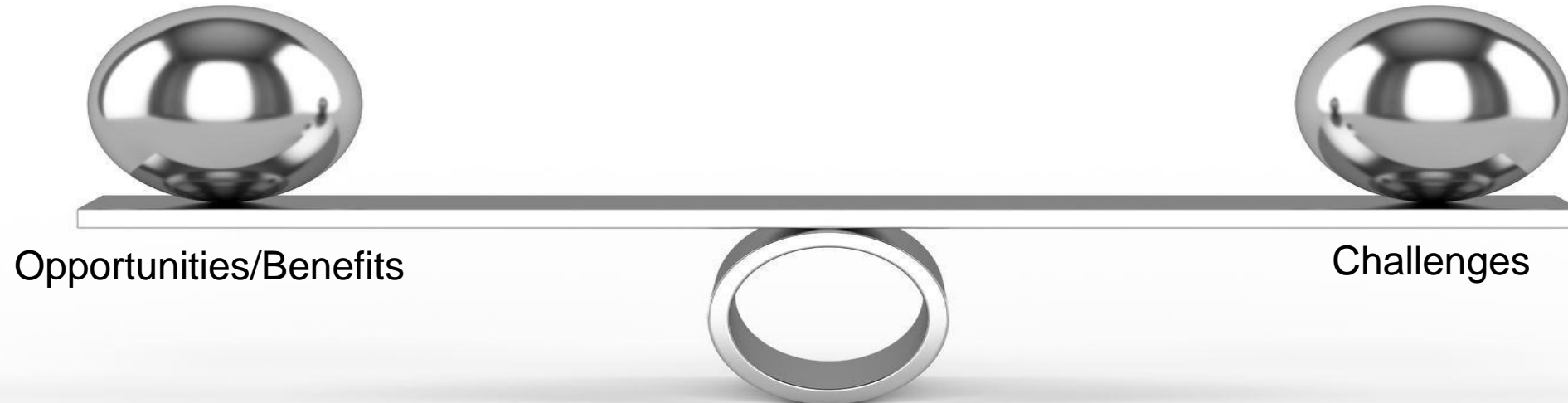
Source for best-in-class

Upfront cost

Decompose function/size optimally

More clarity on performance

More work on standards and testing

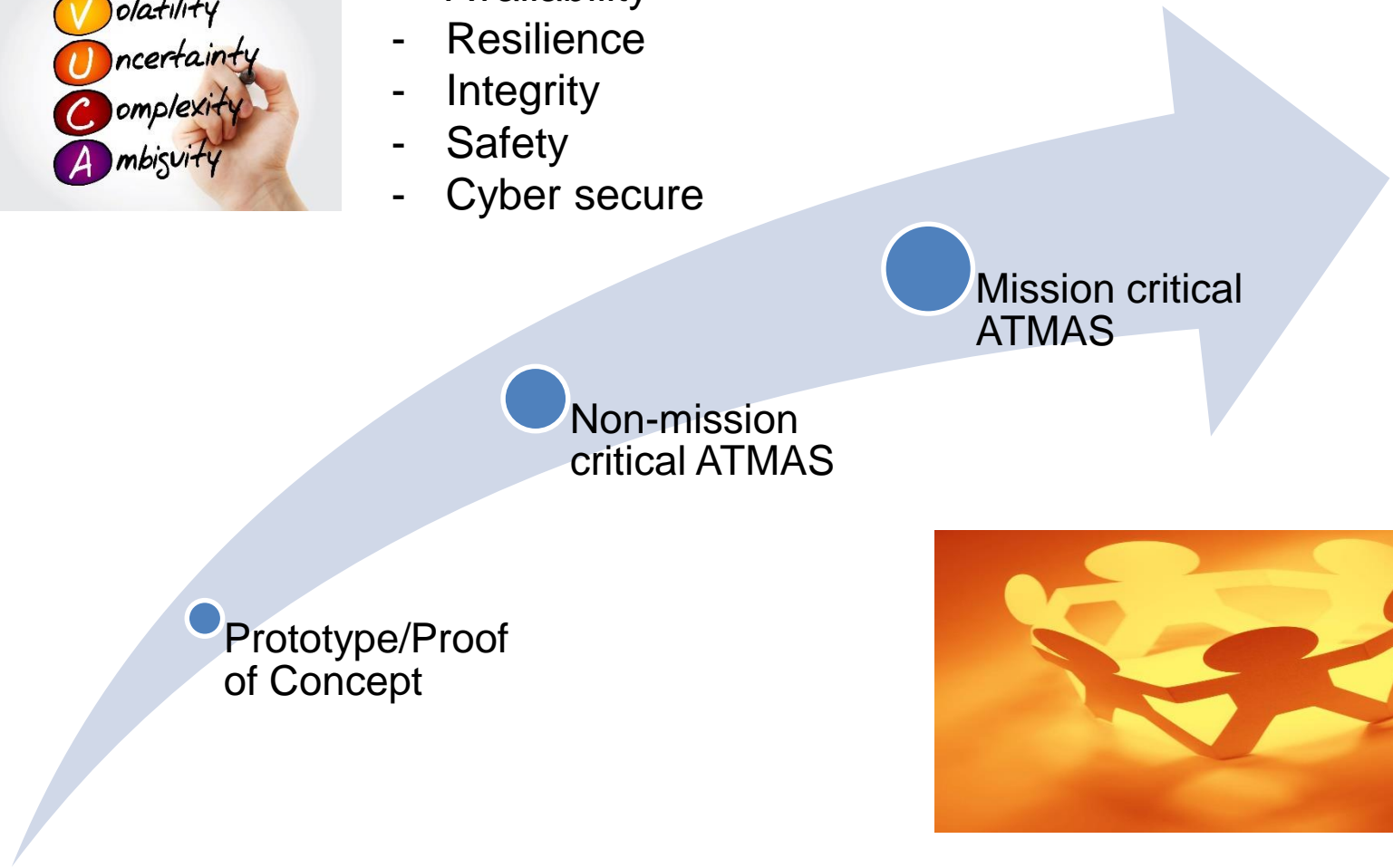


Steps Ahead



Evaluation of various metrics

- Availability
- Resilience
- Integrity
- Safety
- Cyber secure



Prototype/Proof of Concept

Non-mission critical ATMAS

Mission critical ATMAS

Increasing understanding, confidence and buy-in on Open Architecture/Microservices



Working together

- ANSPs
- Industry partners
- Research organisations

Conclusion

- Meeting is invited to
 - Share experience on open architecture, common data exchange standards, and microservices that reduce cost and effort on upgrades and increase system interoperability
 - Collaborate on the design on open architecture and update ATMAS Guidance Document where applicable



*For more details, refer to Working Paper 12 of ATMAS TF/4



Thank you