

Payloads for Rideshare Opportunities: What's ready or would/should be ready to go?

- Rapid Deployment Timeline

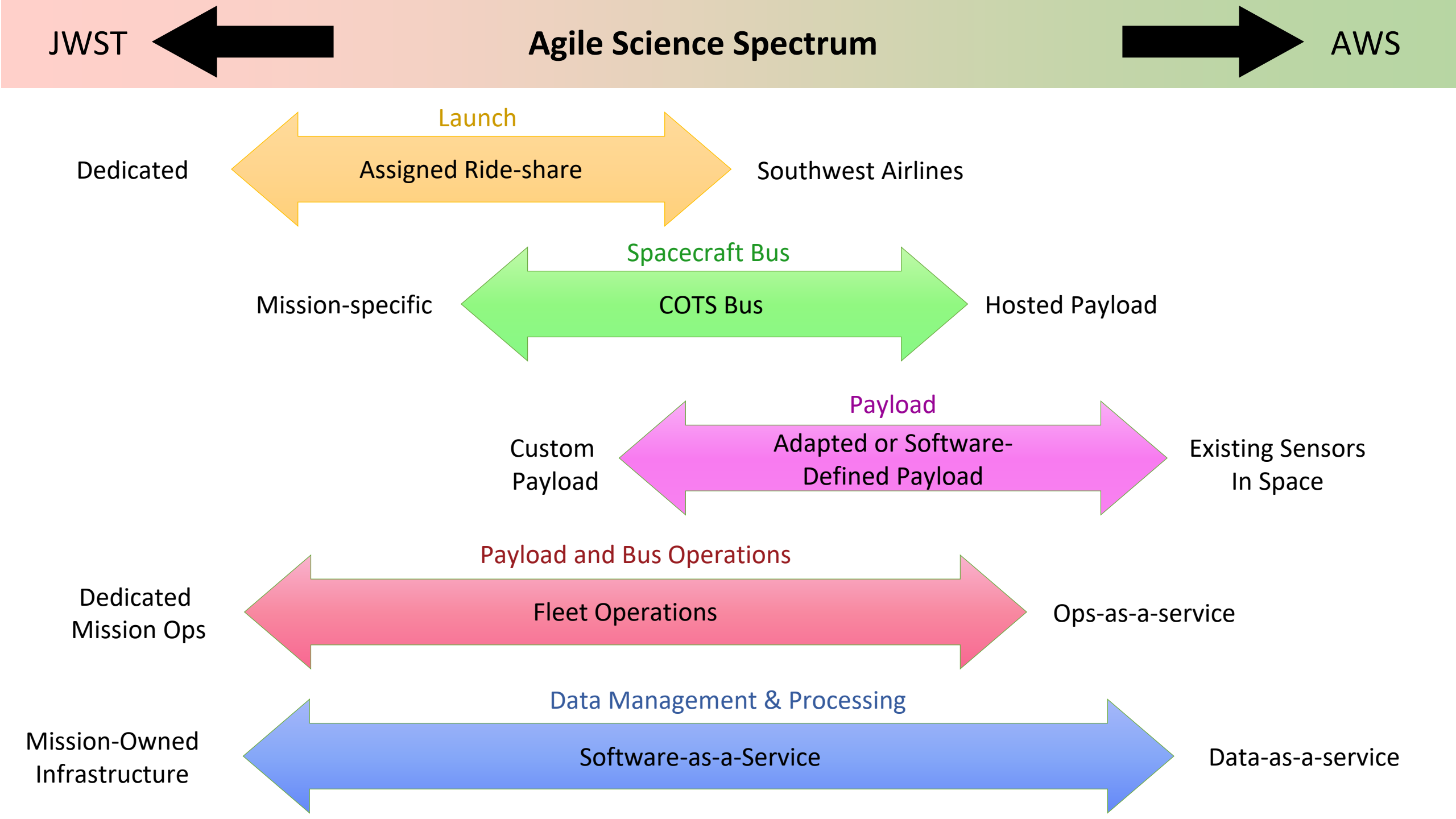
- Opportunity to Integration \leq 1 year if possible

- Mission characteristics suitable for responsive ride share

- Either (1) Full-spacecraft to **standard** (ESPA, Cubesat) -or- (2) instrument only with **standards-driven** power/data/thermal/mechanical interfaces
 - Non-optical (RF, magnetic, particle spectrometers) payloads more suitable - contamination, environments (launch and handling), pointing less critical
 - ACS requirements in order of difficulty - (1) Precision control / pointing; (2) coarse orientation control or ranges; (3) Knowledge only (easiest)
 - Data - latency & volume requirements impact instrument hosting availability; On-board compute to reduce data requirements or physical payload req's.

- Other Considerations

- Do-no-harm - [proto-]qualify to robust requirements (e.g. GEVS); Avoid batteries+prop if possible; well-characterized EMI/EMC



Types of instrumentation/platforms: What should be the priorities for instrument/platform development?

- Specific standards
 - Power, Data (incl. volume + latency) and control
 - Mechanical/Thermal
 - Orbit and pointing
- Technologies
 - Software-defined payloads
 - On-board digital signal processing for higher performance / reduced physical requirements
- Program opportunities
 - Shift from hardware-centric to service-centric perspective

Success factors: What are the key considerations needed to establish an instrument/payload program?

1. Development of standards at the instrument-level
 - Power, data, thermal, mechanical, environment, etc.
 - Tiered standards for different mission capabilities
2. Don't reinvent the wheel - basic bus technologies should be proven and re-flown rather than re-implemented regularly
3. Private/Public engagement at multiple points
 - Launch providers, spacecraft vendors, spacecraft owner/operators
 - Small to large (start-up to primes)
4. Central clearing-house / market for matching payloads with opportunities