

# Multilateral Asynchronous Bidirectional Synchronization of NASA's Knowledge



A wiki provides ...

- A single portal for information
- Easy, crowdsourced curation
- Powerful search
- Built-in revision history
- Integrations with existing data sources
- Bots to automate simple tasks
- Semantic data for powerful queries
- Tools for finding gaps in knowledge
- Measurable accountability

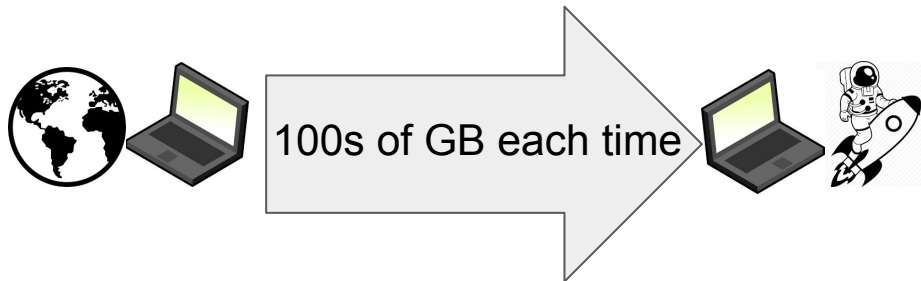
An astronaut uses the wiki for ...

- Training
- Procedure history and rationale
- Imagery, drawings, animated illustrations
- Mission history
- Hardware design rationale
- Anomaly history
- Hazards and mitigation
- Operational constraints
- Logging observations, recording data

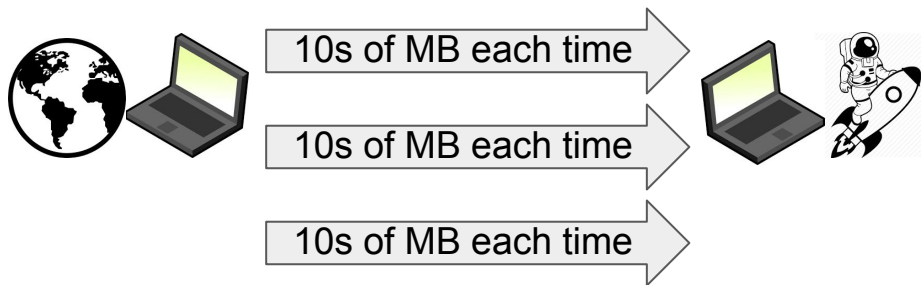
A wiki empowers astronauts for autonomy

# Asynchronous

1. Unidirectional read-only
  - Crew has read-only copy of wiki. Requires downloading entire wiki (100s of GB) each time updates are made.

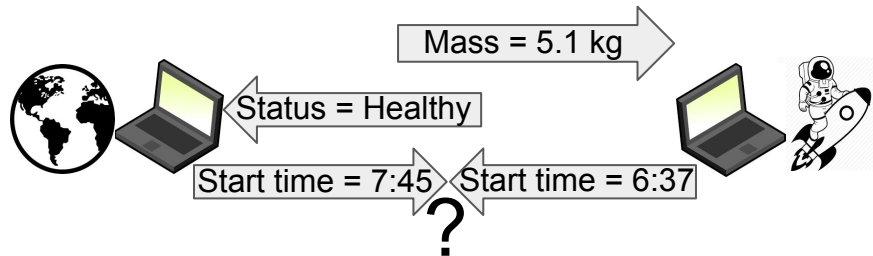


2. Unidirectional read-only with smart sync
  - Crew has read-only copy of wiki *and* can synchronize changes only (reducing required bandwidth)

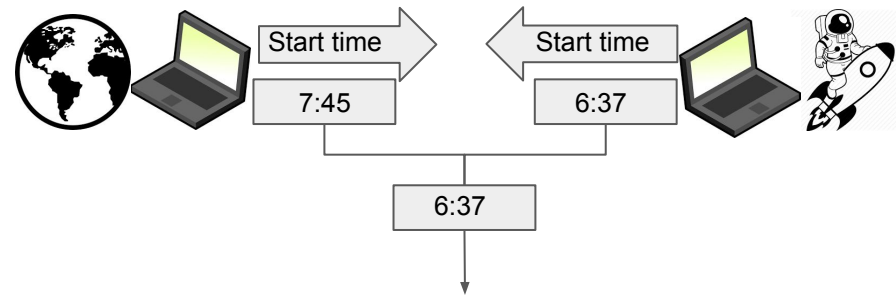


# Asynchronous Bidirectional

3. Simple
  - Crew can edit their copy of wiki. Conflicting revisions between wikis are shown in-line with no immediate resolution.



4. Revision conflict resolution workflow
  - Crew can edit their copy of wiki. Conflicting revisions between wikis are handled within a wiki workflow.



# Multilateral Asynchronous Bidirectional Synchronization

## 5. The entire team, empowered

- Multiple copies of the same wiki can intermittently synchronize and handle revision conflicts

