

Mission Operations and Command Assurance: Flight Operations Quality Improvements

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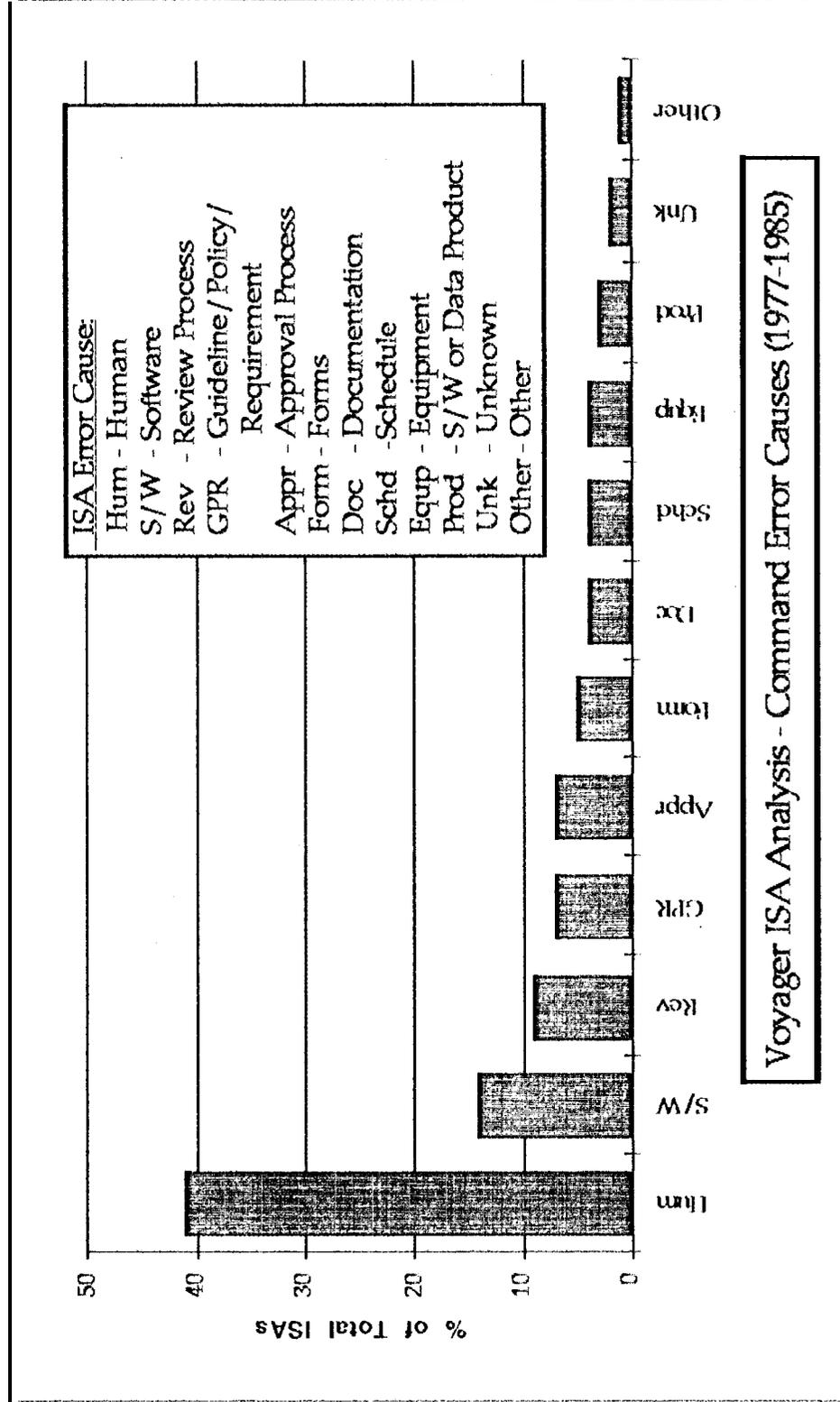
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Mission Operations and Command Assurance

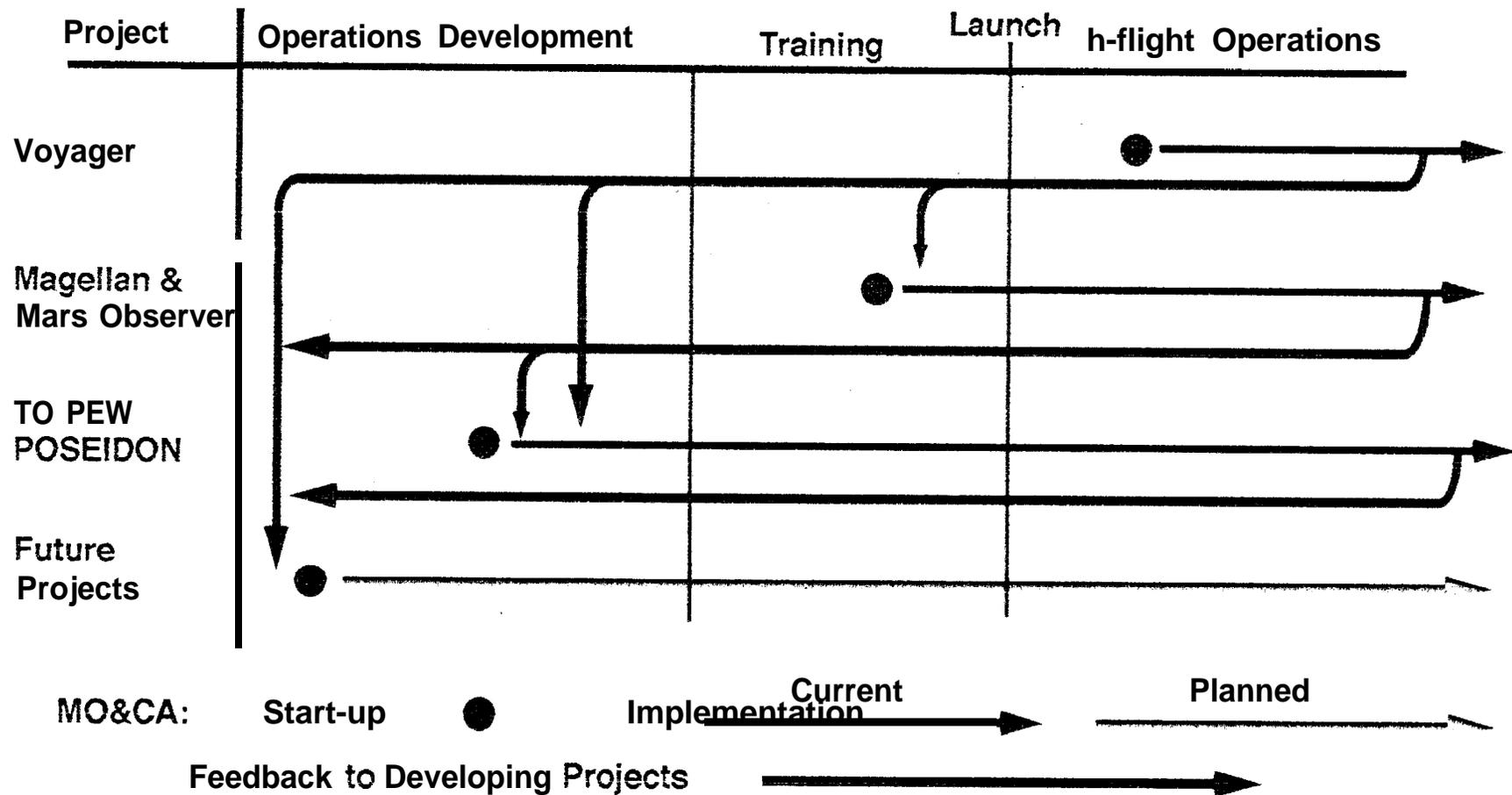
- **problem** Flight mission operations systems place human operators in demanding, high risk environments
- **Objective** To help improve the operational reliability of flight projects by reducing error - Pareto analysis shows “human” is the largest error category
- **Position** System level task reporting to project flight management and J FL Systems Assurance Division

MO&CA Origin Voyager ISA Analysis

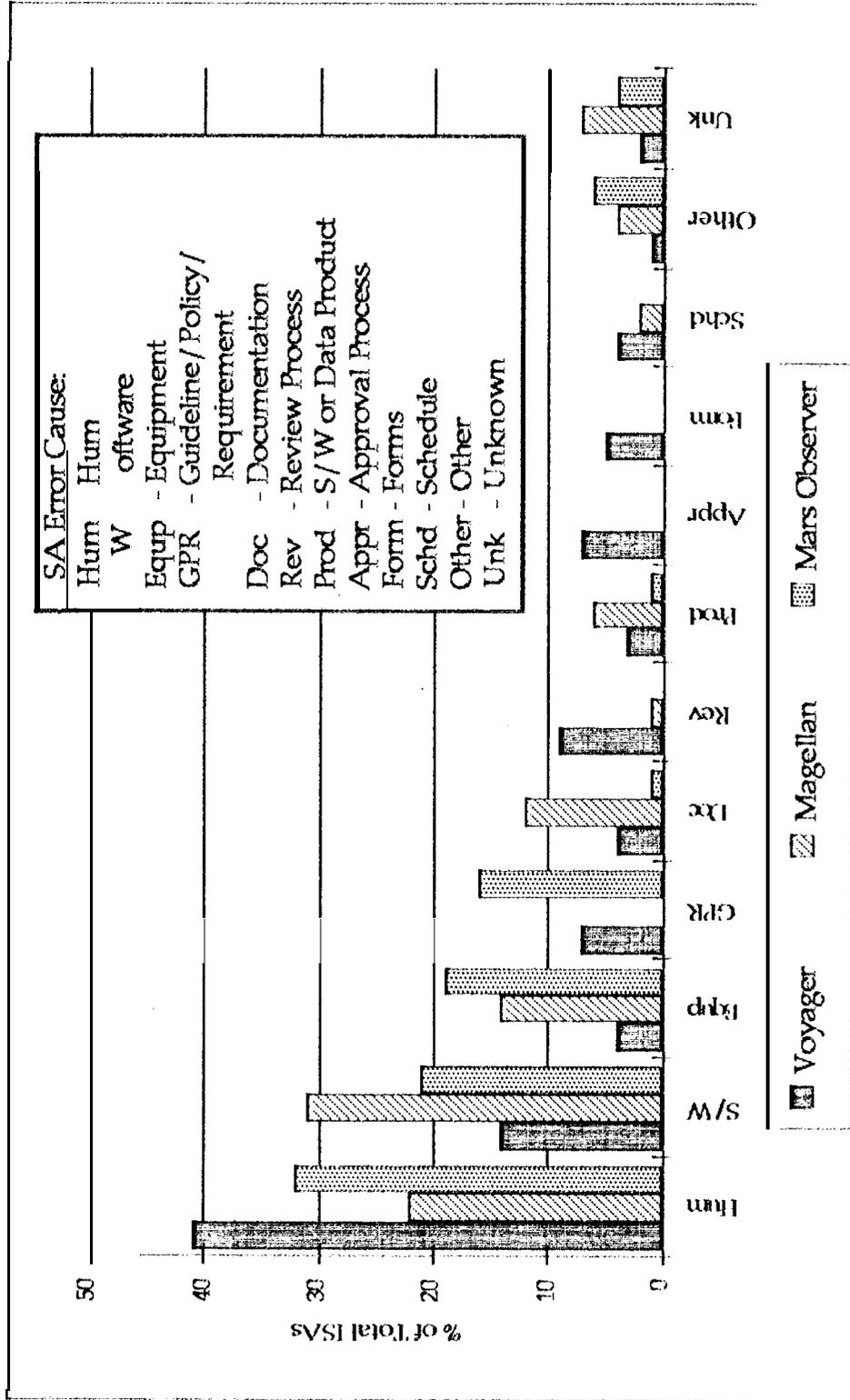


Evolution of MO&CA

MO&CA Project implementation and Feedback



Extended ISA Analysis



MO&CA's Benefit

- **Human factors in flight mission operations**
 - **Direct transfer of knowledge**
 - **Continuous Process Improvement**
 - **Communication Facilitation**



Direct Transfer of Knowledge

- **Transfer between current flight projects**
- **Provide “Lessons Learned” to new flight projects**
- **Establish laboratory repository of mission operations knowledge**
- **Example: TOPEX/POSEIDON real-time command process and contingency command library**

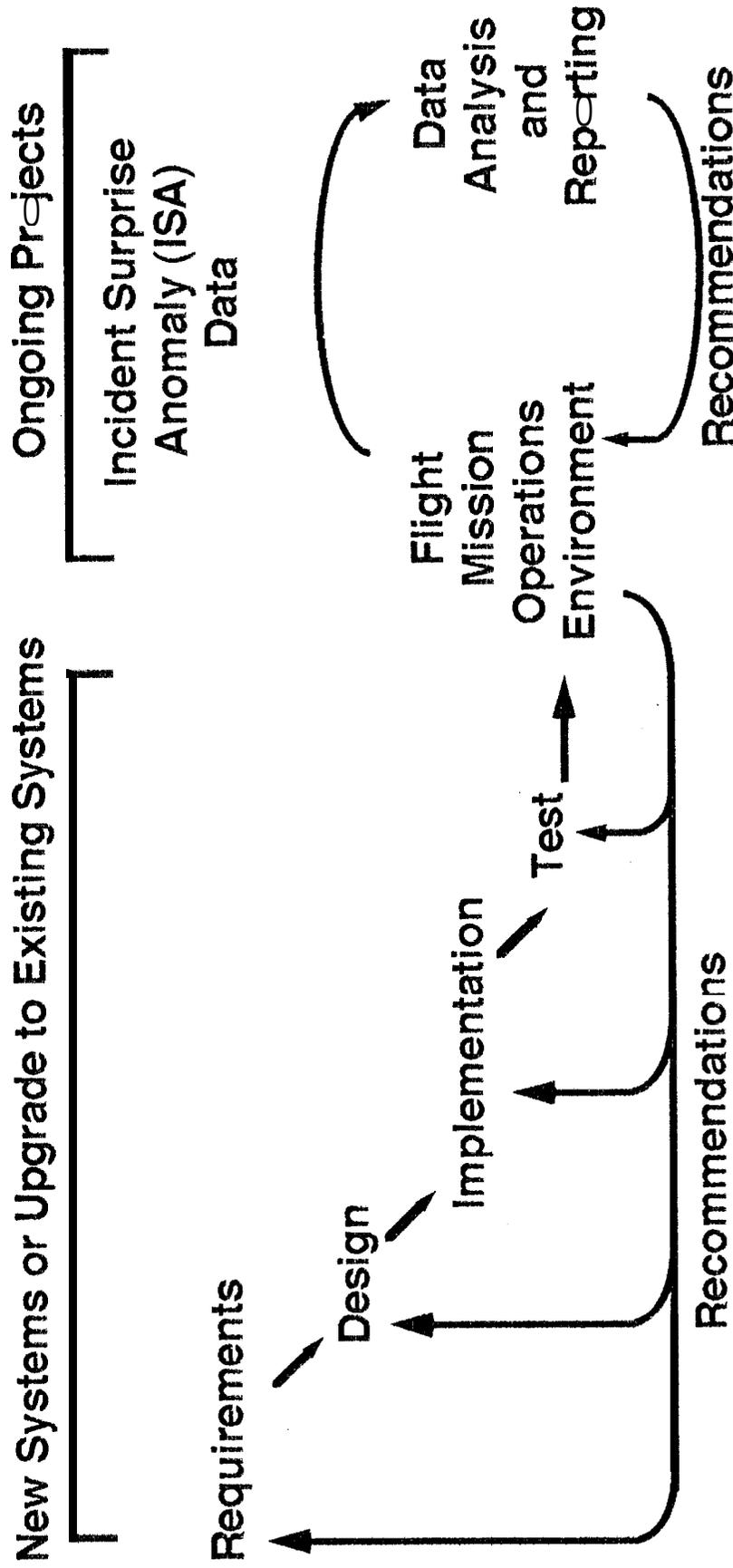
Process Improvement

- **Analyze ISA data**
- **Make recommendations to projects**
- **Implement for both sequence and real-time commanding**
- **Example: Magellan real-time command system update**

Facilitating Communication

- Enabled by MO&CA's unique system level position
- Spans many teams and offices within a project
- Brings together remotely located team members
- Example: Mars Observer inter-team communication and ancillary command data

MO&CA and TQM



Summary

- System engineering and assurance
- ISA analysis
- Human factors benefits
 - Continuous Process Improvement
 - Direct Transfer of Knowledge and Experience to Existing and Future Projects
 - Enhance Communication to Facilitate Problem Solving
- TQM and MO&CA