

# ***“RESPONSIVE SSA”***

## ***RESPONDING TO NEW SPACE AND OLD PROBLEMS***

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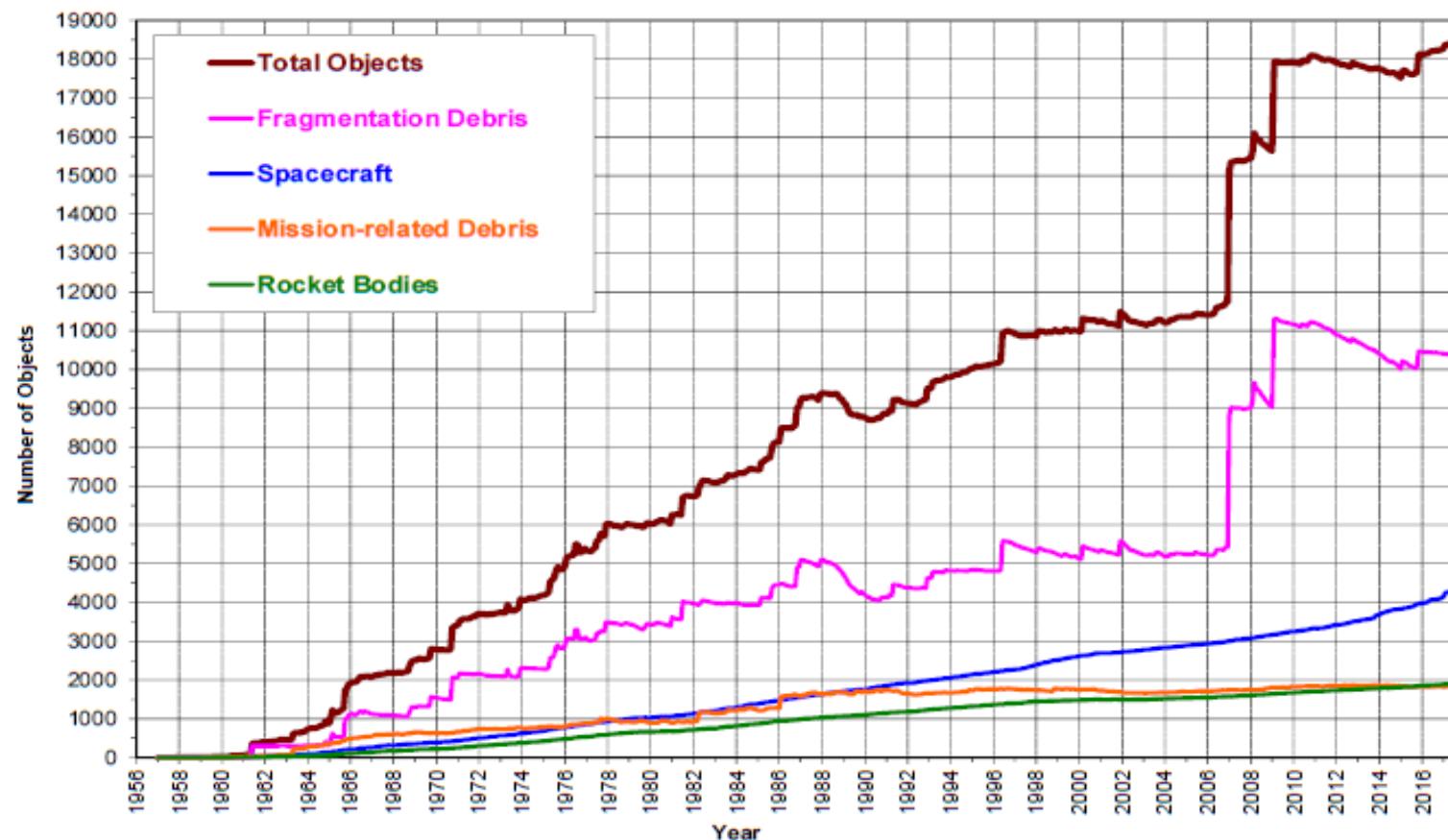
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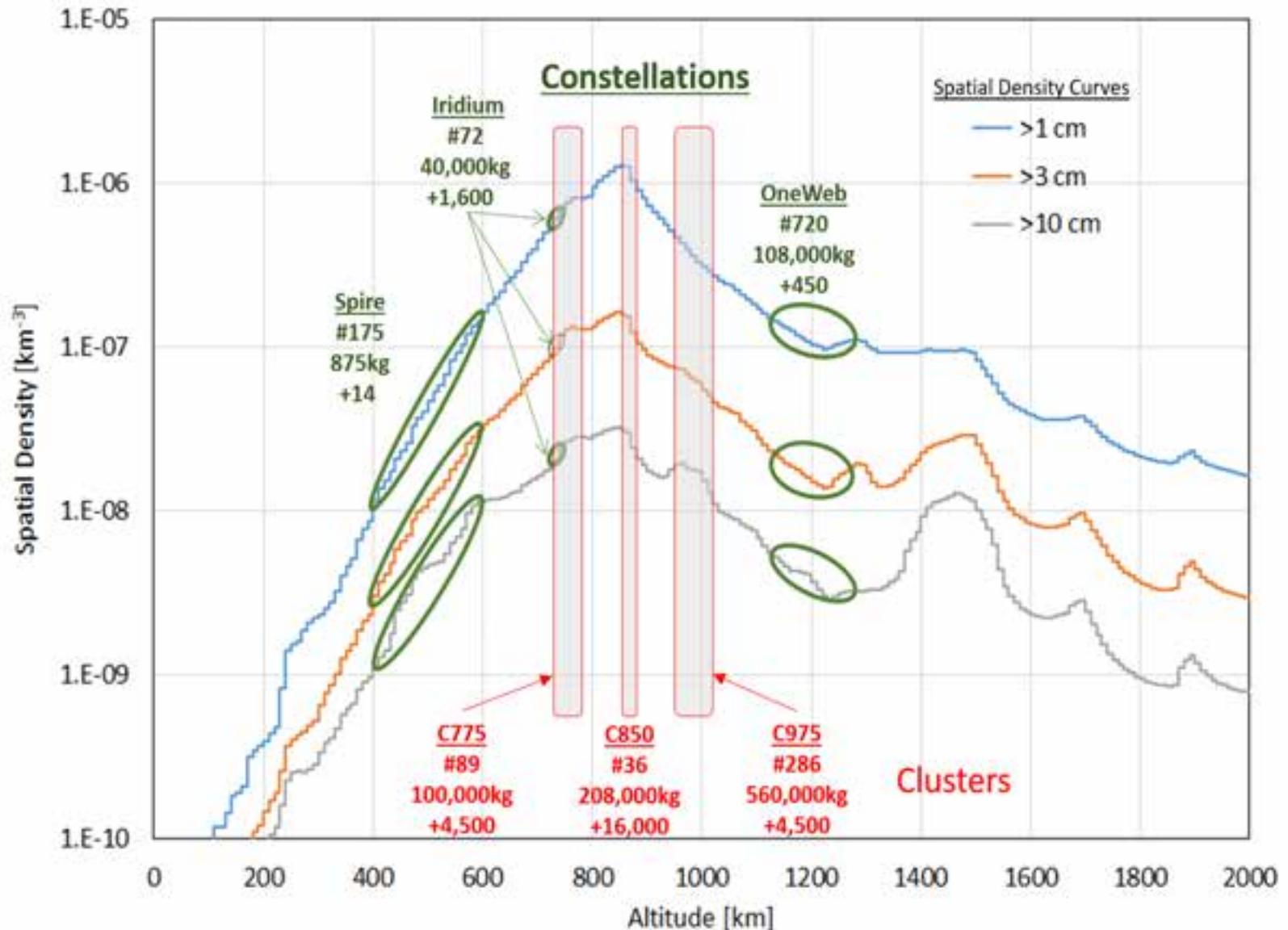
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# Orbital Debris

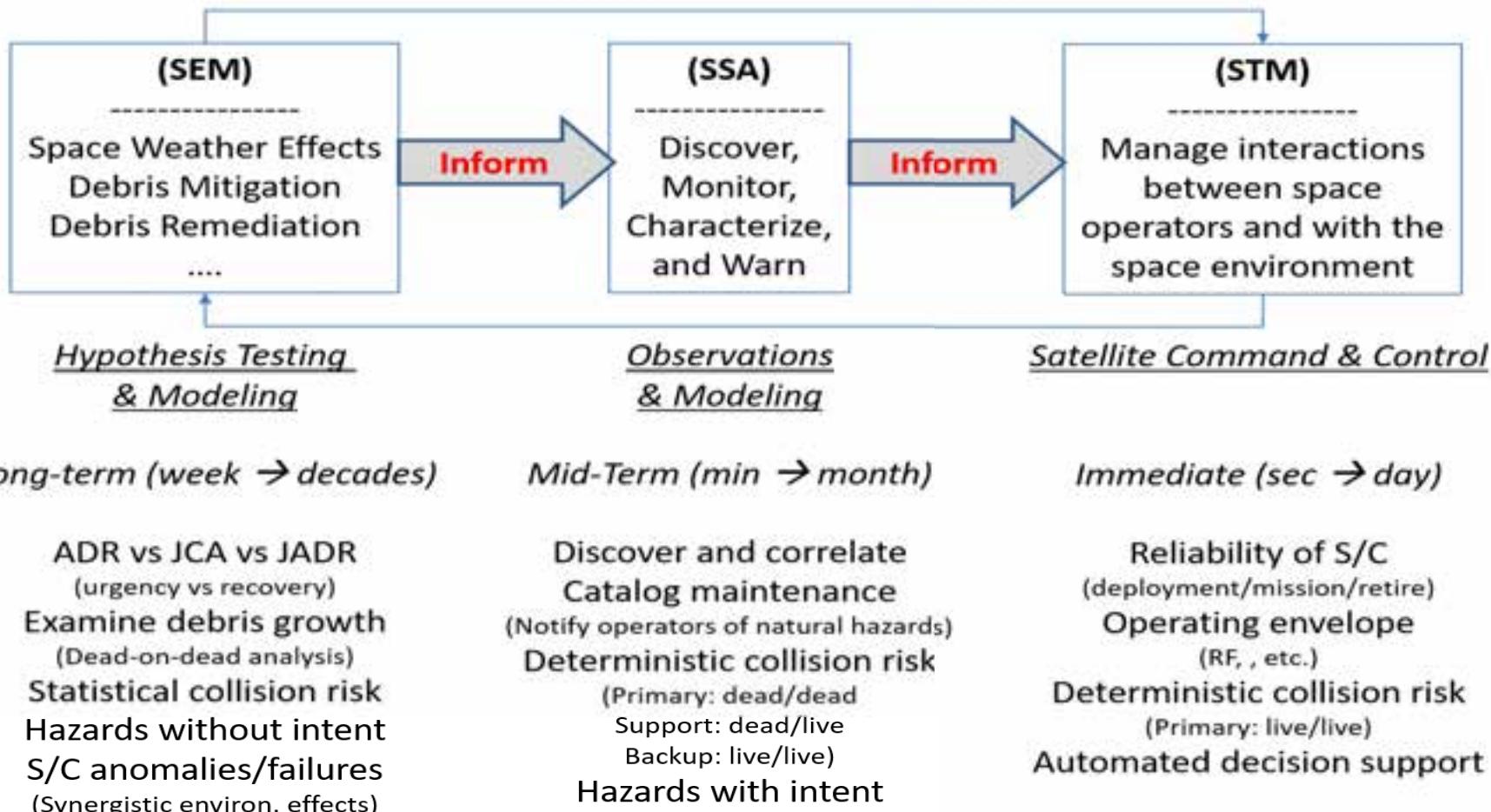
Orbital Regime	Number / Mass (million kg)			
	Operational Payloads	Non-Operational Payloads	Rocket Bodies	Total
LEO	~950 / 0.5	~1,100 / 1.8	~1,250 / 1.2	~3,300 / 3.4
HEO	~250 / 0.3	~50 / 0.1	~300 / 1.5	~600 / 1.9
GEO	~500 / 1.5	~650 / 1.6	~ 250/ 0.5	~1,400 / 3.6
<b>Total</b>	<b>~1,700 / 2.3</b>	<b>~1,800 / 3.4</b>	<b>~1,800 / 3.2</b>	<b>~5,300 / 8.9</b>



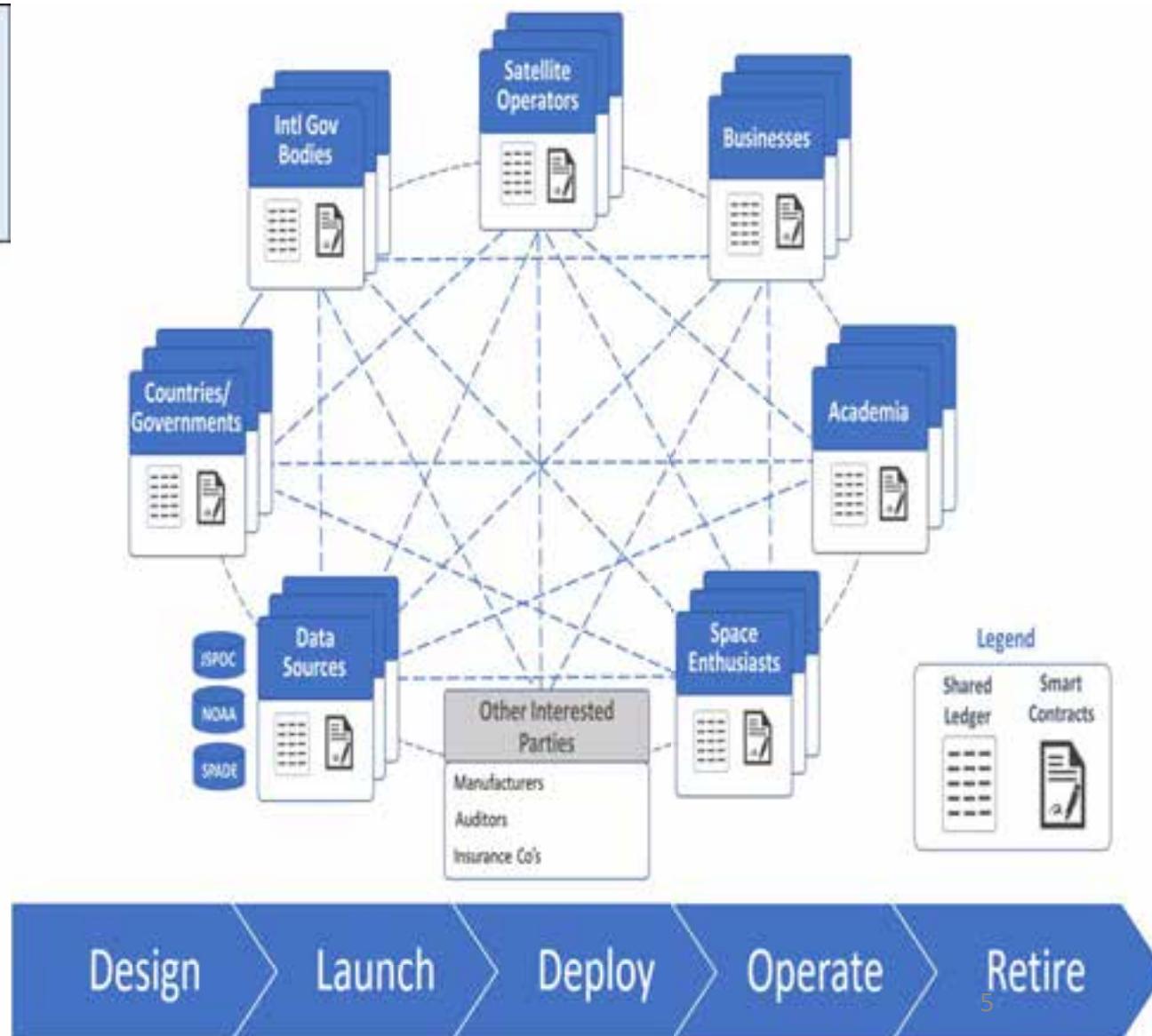
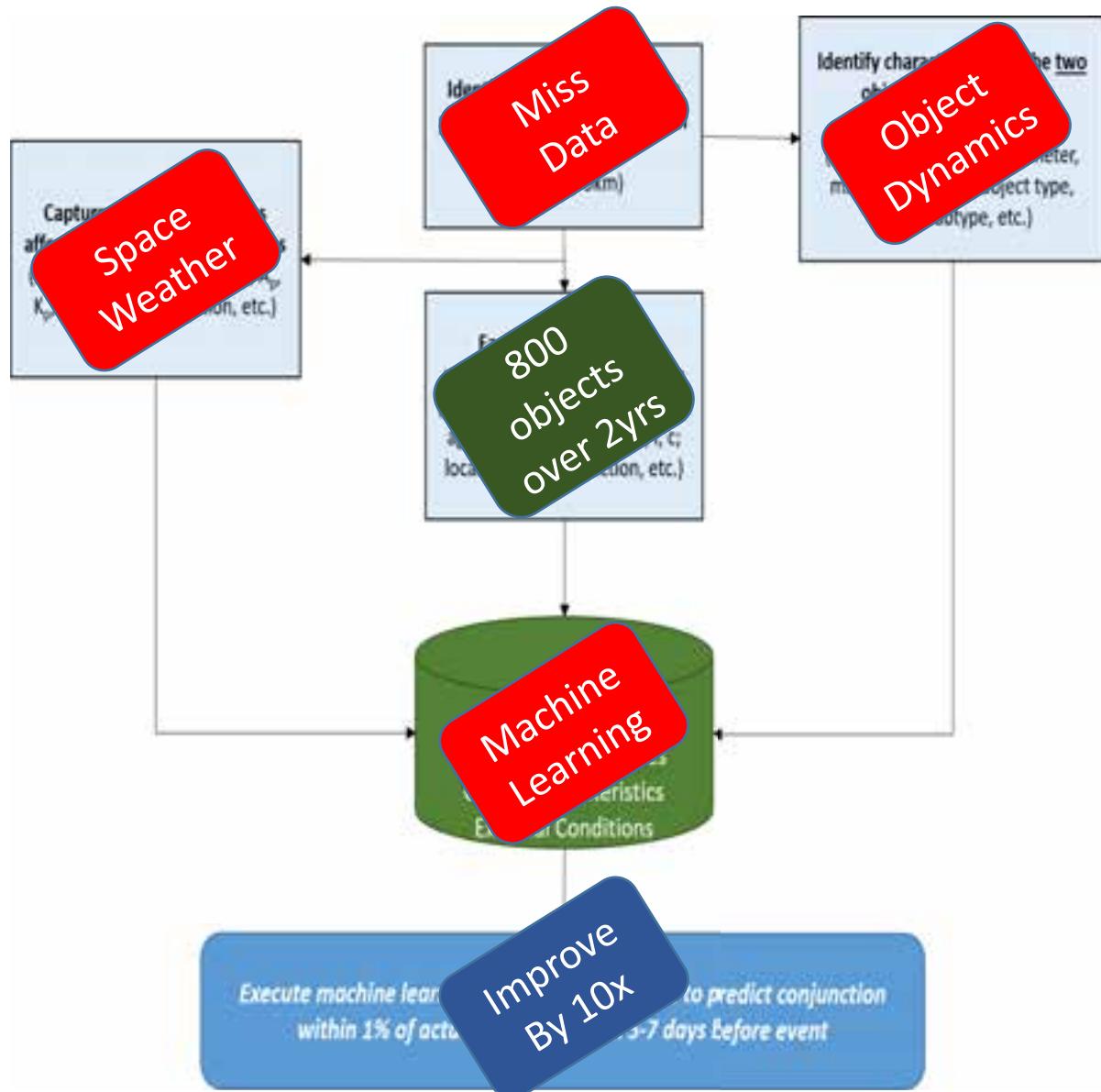
# Perspective: *Constellations* vs *Clusters*



# Framework for Action: Space Operations Assurance



# “Responsive SSA”: More Accurate Conjunctions to Everyone



# This is an Experiment

- Machine Learning
  - Better understanding of potential catastrophic collision events
    - Creates new options to manage risk
    - Examine integrating more available data
      - Object characteristics and space weather
- Blockchain
  - Adaptive, Multi-Path Secure Communications
    - Decentralized database
    - Immutable source
    - Smart contracts
    - Just a part of the solution...