



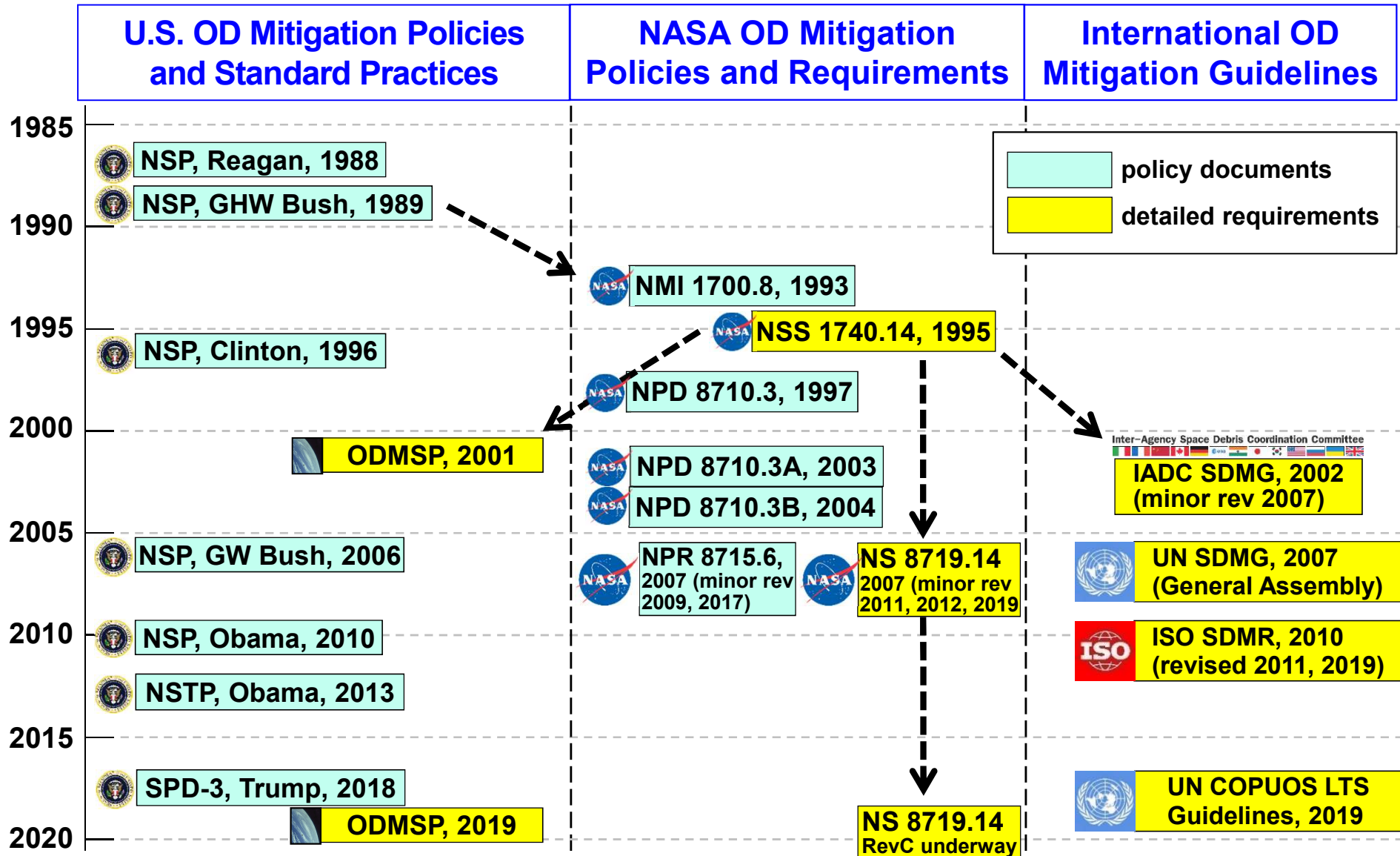
# **Orbital Debris Mitigation Policies, Standards, and Best Practices**

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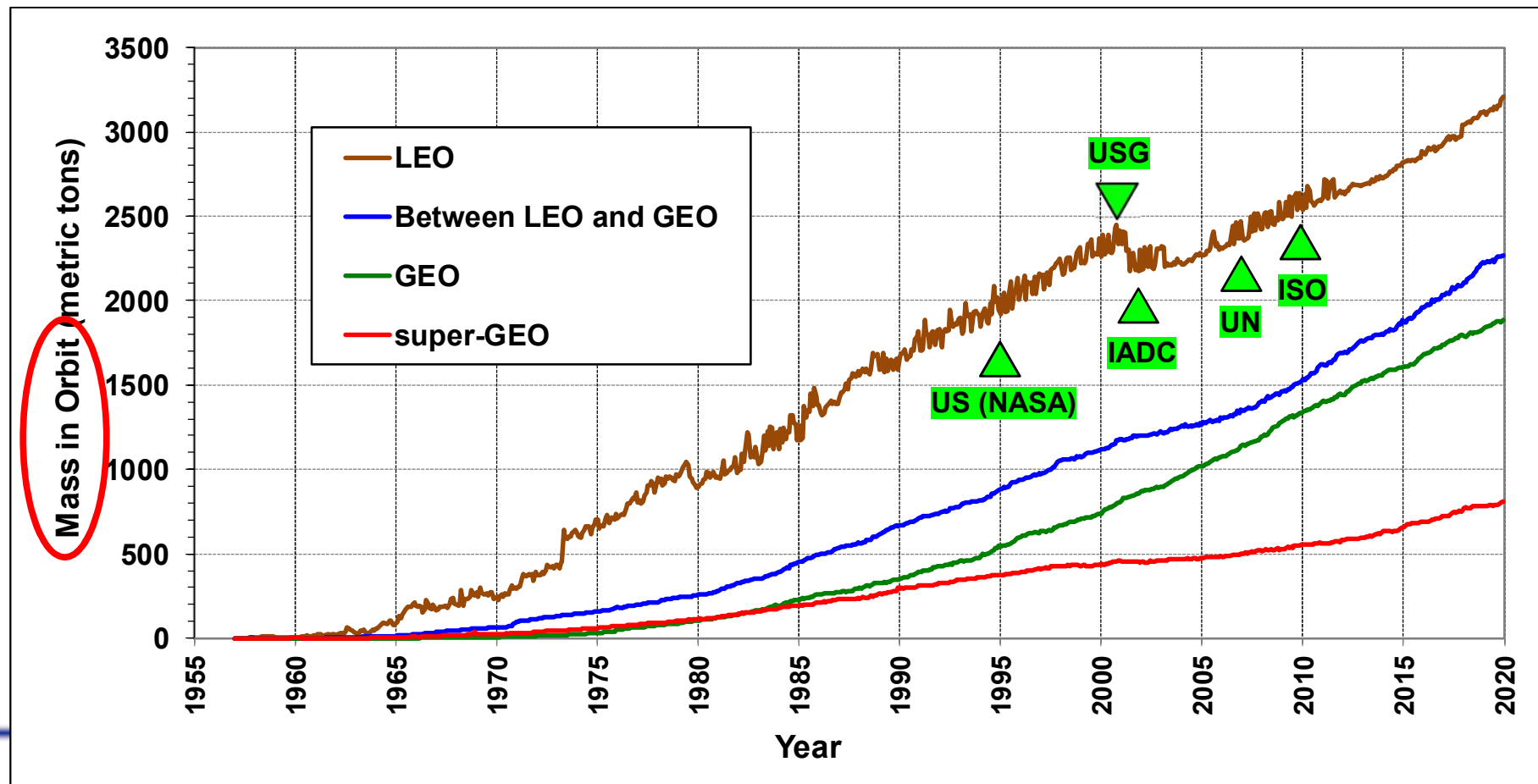
# History of U.S., NASA, and International Orbital Debris (OD) Mitigation Policies and Requirements





# The Long-Term Orbital Debris Problem

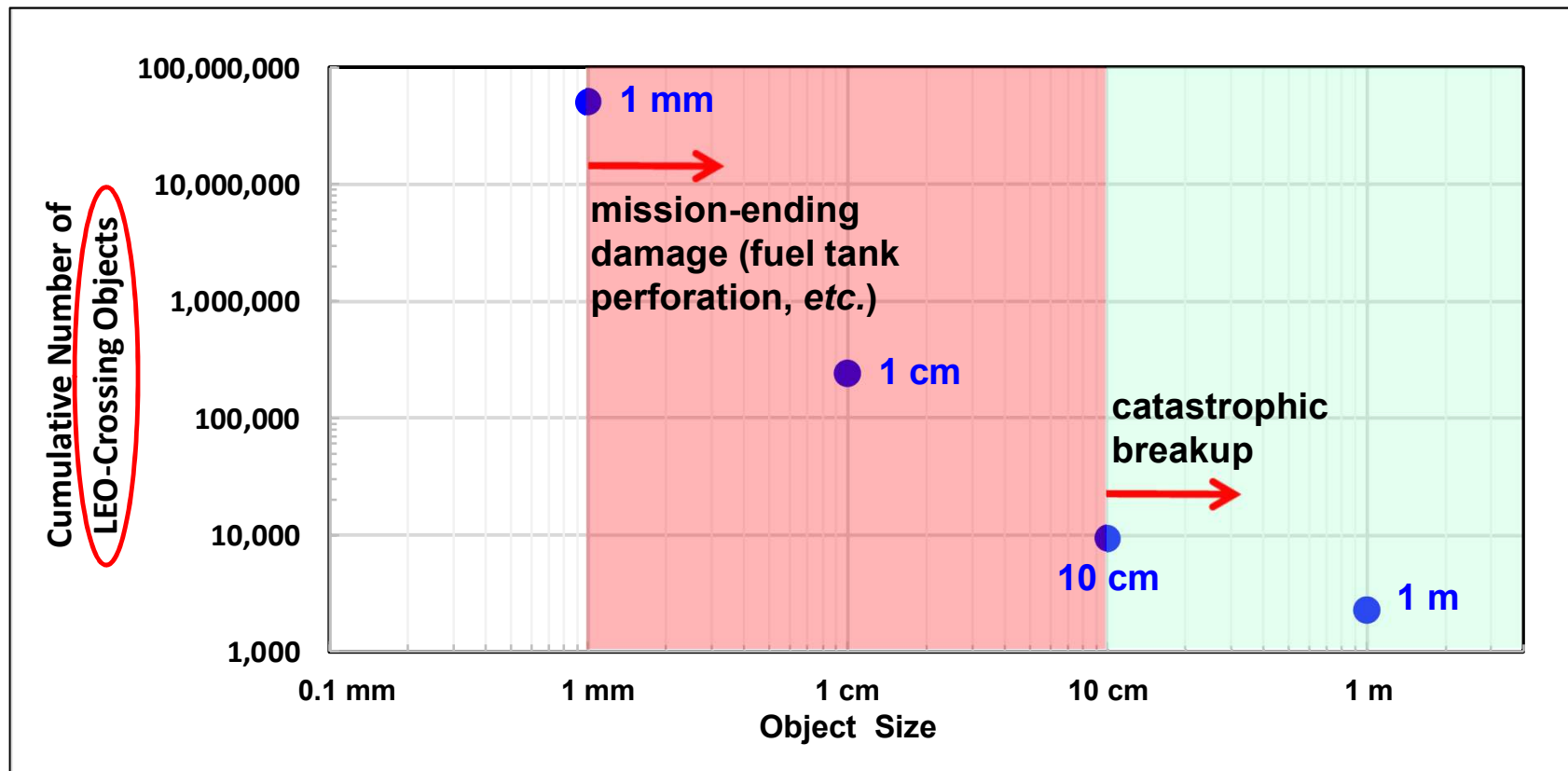
- The orbital debris (OD) population continues to increase over time despite decades of efforts to limit the generation of new debris
  - **Green triangles** indicate when key OD mitigation guidelines and standard practices were first established
  - The global 25-year rule compliance level is **only about 30%**





# The Short-Term Orbital Debris Problem

- **There is far more small debris than large debris**
  - **Mission-ending risk** is driven by millimeter-sized OD in LEO, and sub-centimeter-sized debris in GEO, **but there is a lack of data on such small debris**
  - Conjunction assessments and collision avoidance against the large ( $\geq 10$  cm) tracked objects only address  $<1\%$  of the debris impact risk





## Managing Risk from Orbital Debris

- “**Space Traffic Management** shall mean the planning, coordination, and on-orbit synchronization of activities to enhance the **safety**, stability, and sustainability of operations in the space environment.” (SPD-3)
- Key orbital debris priorities to enhance the **safety**, stability, and sustainability of operations in the future space environment
  - Improve space situational awareness on small debris, especially the millimeter-sized debris in LEO, to better protect future space missions
  - Promote better global compliance with existing OD mitigation best practices to slow down the debris population growth
  - Consistent with Space Policy Directive-3 (SPD-3), **establish long-term goals**, combining mitigation and remediation, to preserve the near-Earth space environment