Status of NEPP SmallSat Efforts

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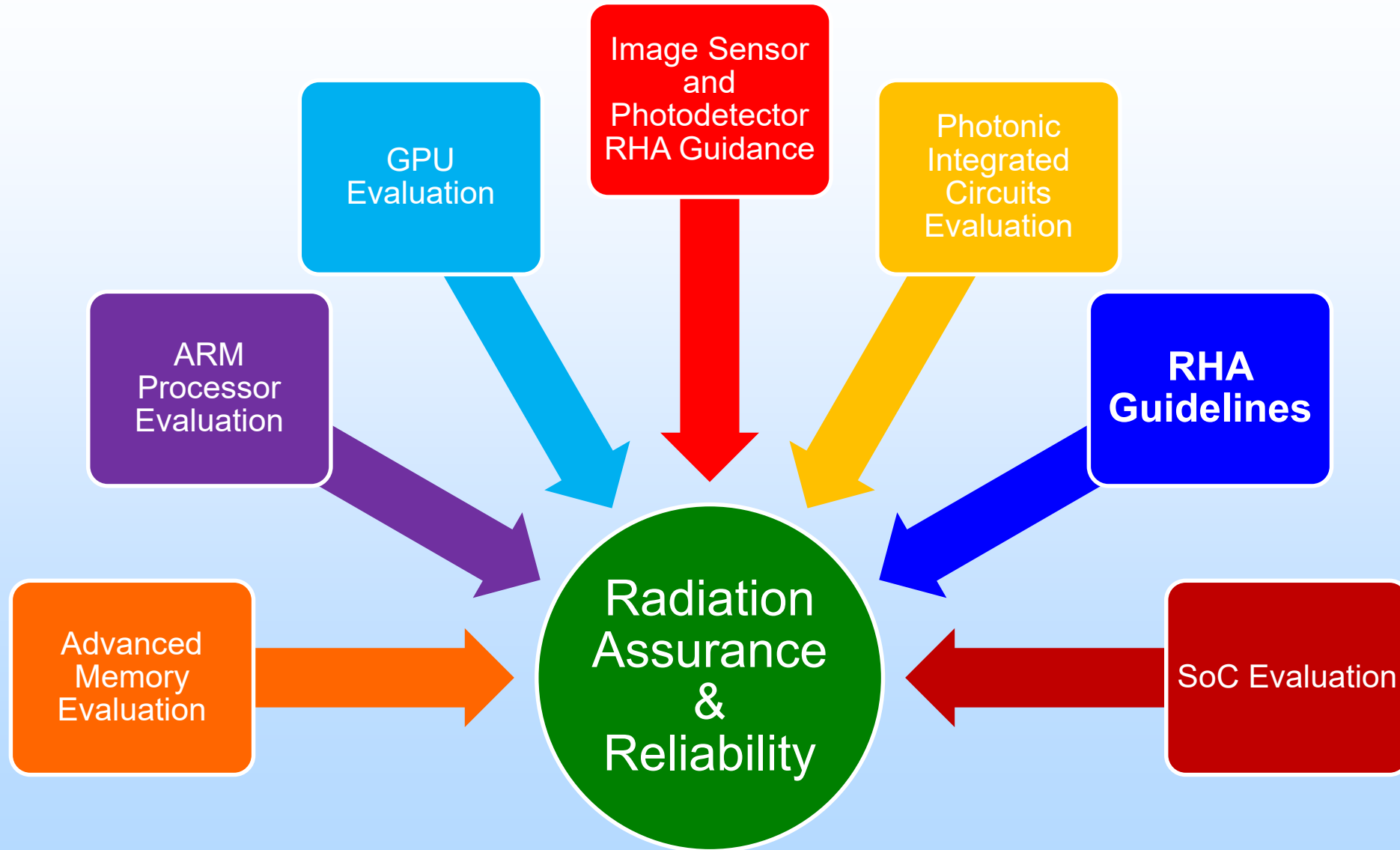**NASA Goddard Space Flight Center**

Acronyms

- **ARM: Architecture Reference Manual**
- **AWS: Amazon Web Services**
- **COTS: Commercial Off The Shelf**
- **DT: Digital Transformation**
- **EEE: Electrical, Electronic, and Electromachanical**
- **ESA: European Space Agency**
- **GPU: Graphical Processing Unit**
- **GSN: Goal Structuring Notation**
- **H4D: Hacking For Defense**
- **MBMA: Model-Based Mission Assurance**
- **MBSE: Model-Based System Engineering**
- **NEPP: NASA Electronics and Packaging Program**
- **NESC: NASA Engineering & Safety Center**
- **OSMA: Office of Safety and Mission Assurance**

- **R&M: Reliability & Maintainability**
- **R-GENTIC: Radiation Guidelines for Notional Threat Identification and Classification**
- **RHA: Radiation Hardness Assurance**
- **S3VI: Small Spacecraft Systems Virtual Institute**
- **SEAM: System Engineering and Assurance Modeling**
- **SEE: Single Event Effects**
- **SoC: System-on-Chip**
- **SSTP: Small Satellite Technology Program**
- **SSRI: Small Satellite Reliability Initiative**

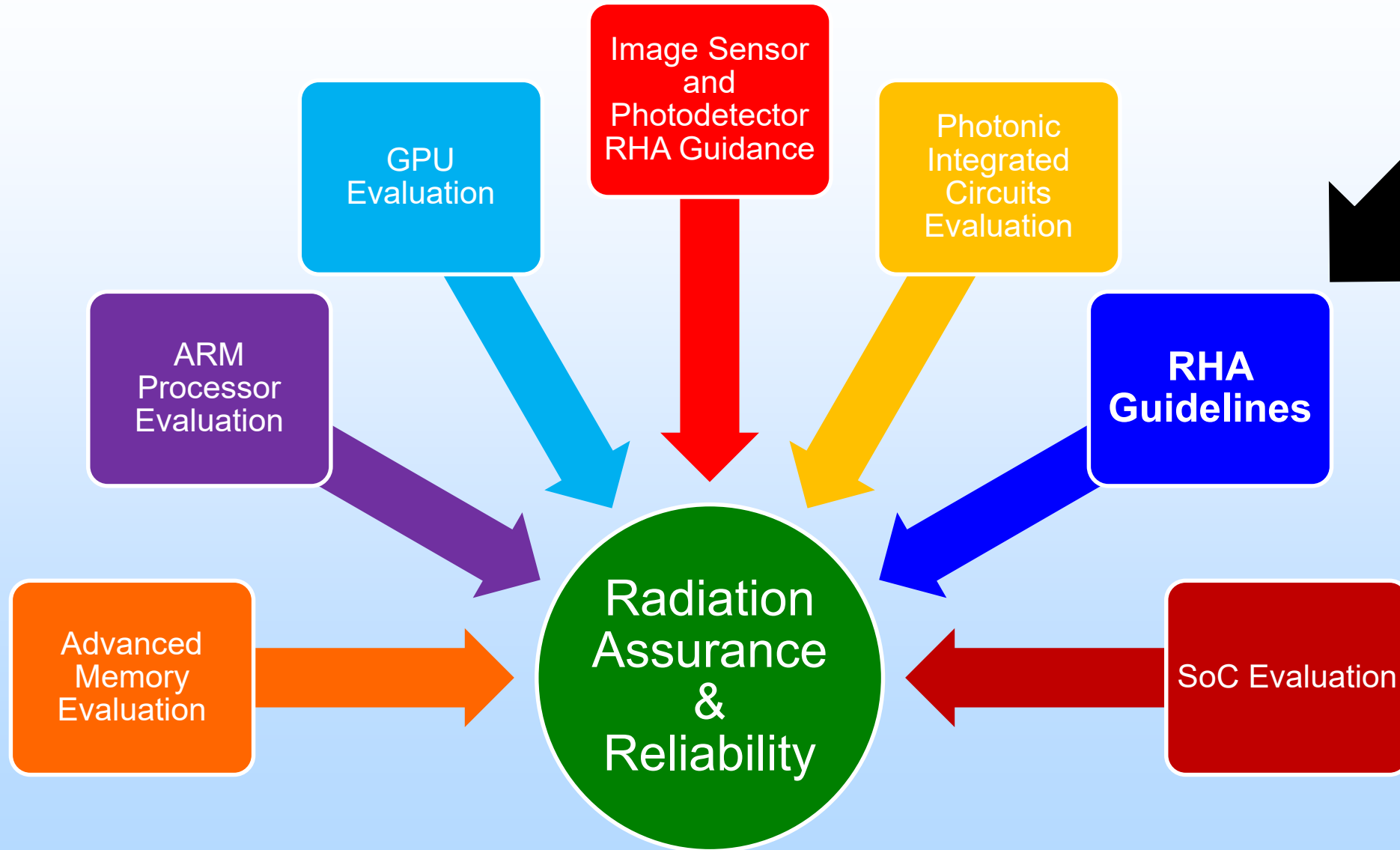To be presented by Rebekah Austin at the 2021 NEPP Electronics Technology Workshop (ETW), NASA GSFC, Greenbelt, MD, June 14, 2021.

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Outline

- **NEPP Focus**
- **Today's Talks**
- **FY21 Update**

NEPP Program (OSMA) – Radiation Work

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To be presented by Rebekah Austin at the 2021 NEPP Electronics Technology Workshop (ETW), NASA GSFC, Greenbelt, MD, June 2021.

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NEPP Program (OSMA) – Small Mission Efforts

SEE Reliability Analysis

COTS and Non-Mil Data

CubeSat Mission Success Analysis

Best Practices and Guidelines

CubeSat Databases

Model-Based Mission Assurance (MBMA)

Reliable Small Missions

Working Groups

To be presented by Rebekah Austin at the 2021 NEPP Electronics Technology Workshop (ETW), NASA GSFC, Greenbelt, MD, June 2021.

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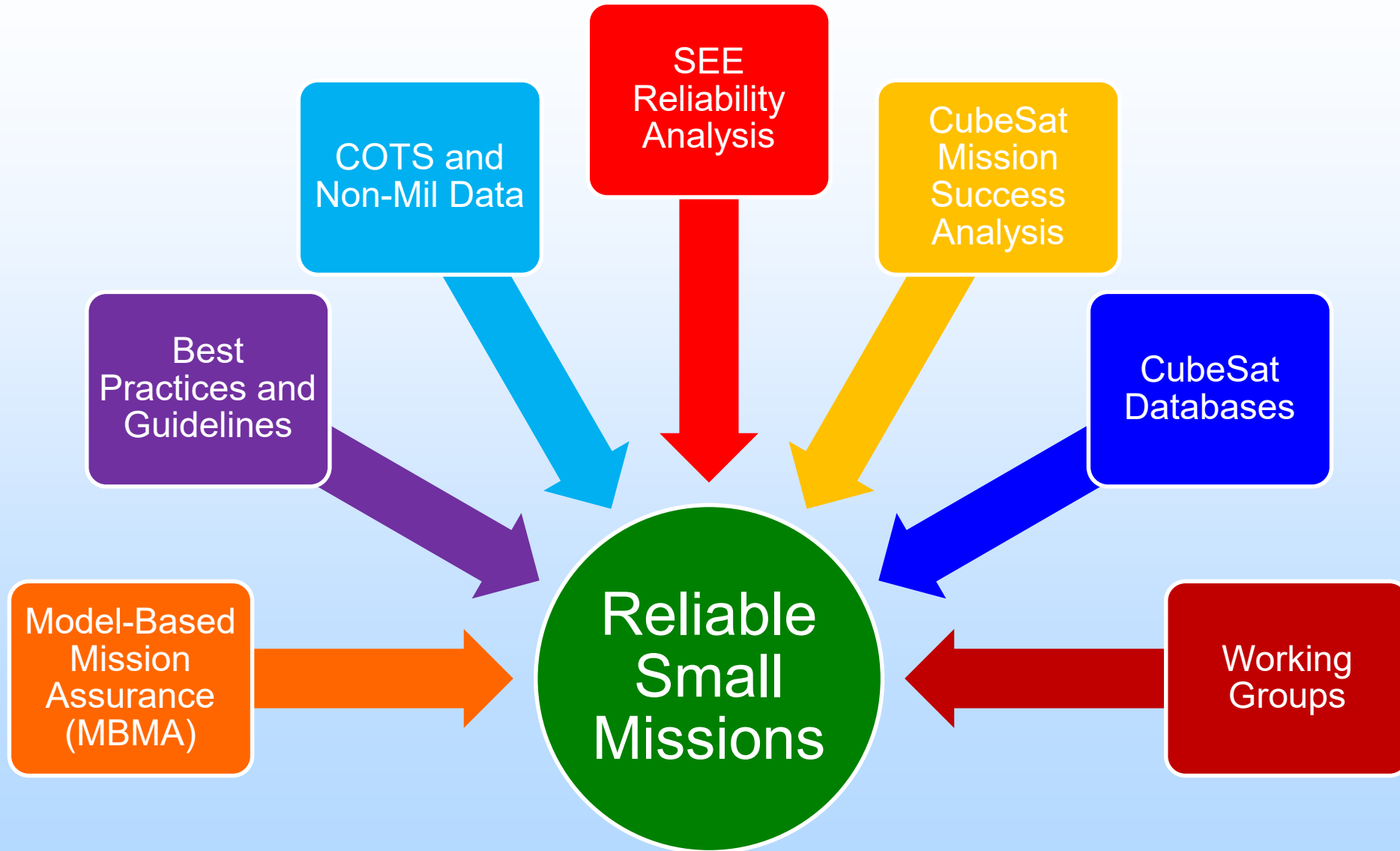
Today's Talks

Best Practices and Guidelines

SSTP Guidebook

COTS and Non-Mil Data

NESC Assessment – Recommendations on COTS EEE Parts for NASA Mission

Utilization of COTS in ESA Missions

CubeSat Databases

A Crowd-Sourced Alt Grade Parts Knowledge Repository

S3VI Knowledge Database

CubeSat Mission Success Analysis

Small Satellite Reliability: Database Update and Identifying Best Practices

RHA Tool Suite

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FY21 Work

- **R-GENTIC**
  - **Integration with SEAM**
  - **Updated environment files**
  - Demo for Aerospace

- **Appendix on RHA for Small Satellite Technology Program (SSTP)**

- **Small Satellite Reliability Initiative (SSRI) SmallSat Paper**

- **Outreach through presentations and guest lectures**