# DHS Systems Engineering Acquisition Challenges and Issues

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# DHS Challenges

- **The GAO and DHS Inspector General identify the following issues:**
  - Gaps in developing capability and acquisition program requirements
  - Initiating acquisition activities without component or department approval of documents essential to planning acquisitions
  - Not incorporating information on costs and benefits in making technology acquisition decisions or establishing acquisition program baselines
  - Projects allowed to progress without proper acquisition review or without adequate front-end analysis
  - No policy for coordinating Systems Engineering (SE) processes nor established mechanisms for sharing lessons learned across components.
- **Better program oversight, governance, and control at component and department level is needed to remedy the issues affecting the DHS portfolio.**

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# DHS Secretary's Unity of Effort Priority

## In April 2014, Secretary Johnson instituted the "Strengthening Departmental Unity of Effort" designed to address these challenges

- Establish a component-driven joints requirements process to
  - Identify and prioritize capability gaps and overlaps in capability
  - Ensure proposed solutions are feasible technical alternatives
- Review and improve the DHS Acquisition Oversight and Processes to
  - Improve the integration of strategy and acquisition planning
  - Development of joint requirements

## In August 2015, Secretary Johnson issued a memo establishing DHS Integrated Product Teams and directing DHS S&T to conduct systems engineering reviews and technical assessments of major acquisitions

- Assist programs in planning, executing and managing technical activities and risks
- Inform acquisition decision-making based on independent and objective technical information
- Advise S&T IPTs of potential R&D opportunities

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Technical Assessments will be conducted to aid the programs and help overcome challenges

# Technical Assessments Approach

Conduct independent program reviews to determine the level of risk in five technical areas and the risk of overall program.


### Technology Maturity

- CTEs identified
- CTE maturity
- Activities required to reach full maturity
- Risks to practical maturation

### Requirements

- Right requirements (e.g., operational and suitability)
- Threats (e.g., physical, cyber, environmental) defined
- Traceability
- Stability, clarity, and achievability
- Engineer to test

### Software/IT Systems

- Business process defined
- Alignment with EA
- Incremental delivery schedule
- Development metrics and processes

### Manufacturing

- Maturity of processes & facilities
- Quality Control

### Design/Development

- Interface definition & control practices
- Integration challenges
- Interoperability challenges
- IT/Cyber Security Attack Space Definition
- Cyber risks and mitigation strategies

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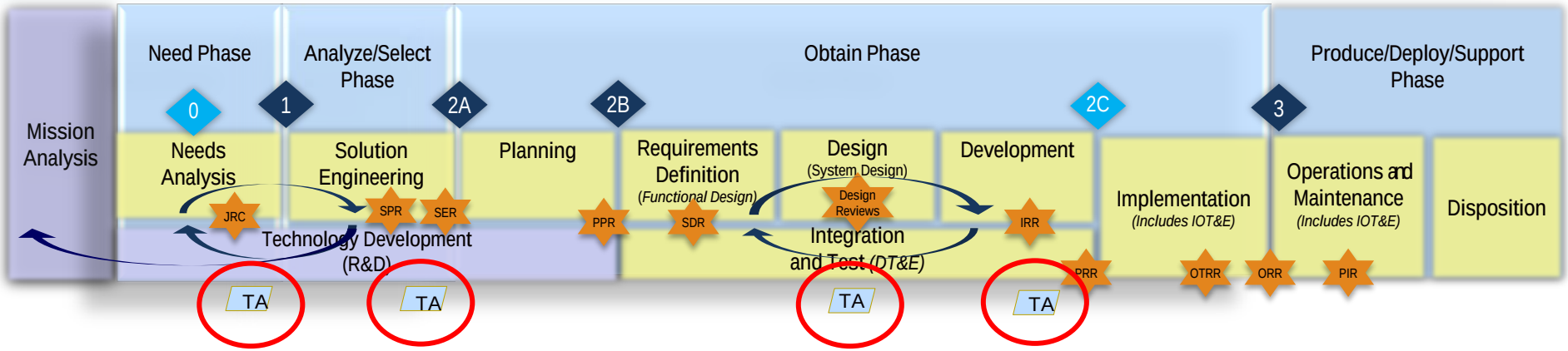
# Technical Assessment Benefits

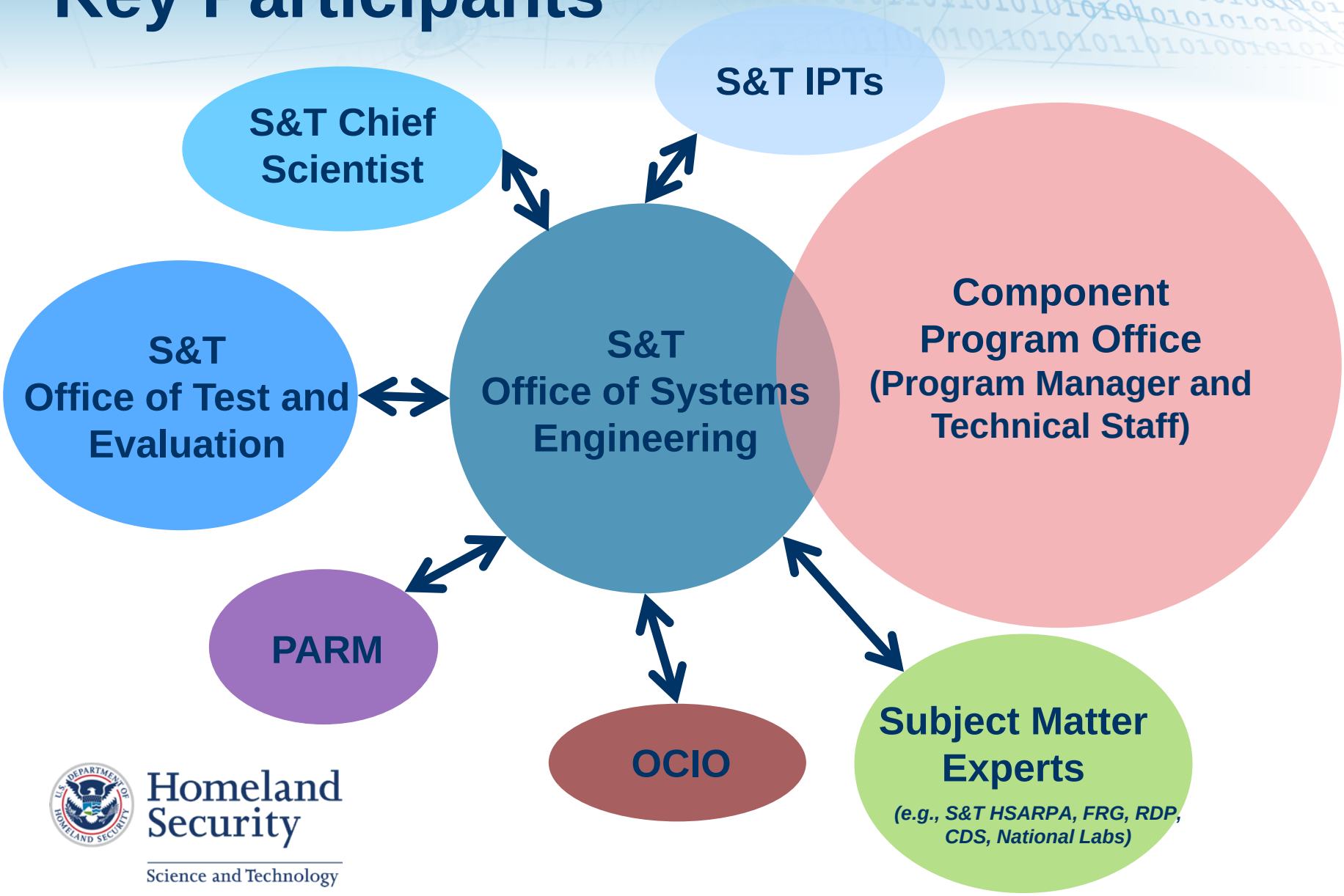
- **Program Manager –**
  - Identification of previously unknown risks earlier in the life cycle
  - Assistance in developing/refining mitigation plans
  - Ensuring that appropriate technical activities and events have been planned
  - Guidance when conducting technical activities and events
- **Acquisition Decision-Makers –**
  - More informed decision-making that is based on independent and objective technical information throughout the acquisition life cycle
- **DHS R&D Organizations** –
  - Information on the technical maturity of technologies in specific applications
  - Identification of specific areas where technologies are immature and do not meet mission and/or operational needs

# When are Technical Assessments Conducted?




| ALF Phase | Technical Assessment Focus |
|---|---|
| Need Phase | • Technical feasibility<br>• R&D opportunities |
| Analyze / Select Phase | • Technical maturity<br>• Technology maturation/integration approach<br>• Sound requirements and trade-off analysis<br>• R&D opportunities |
| Obtain Phase | |
| *After an ADE-2A decision and Planning activities have been completed:* | • Design/Development technical risks<br>• Technology maturation/integration progress |
| *Prior to an ADE-2C decision (Low-Rate Initial Production or Incremental Release decision)* | • Manufacturing readiness<br>• Production readiness |

# Technical Assessment Key Participants

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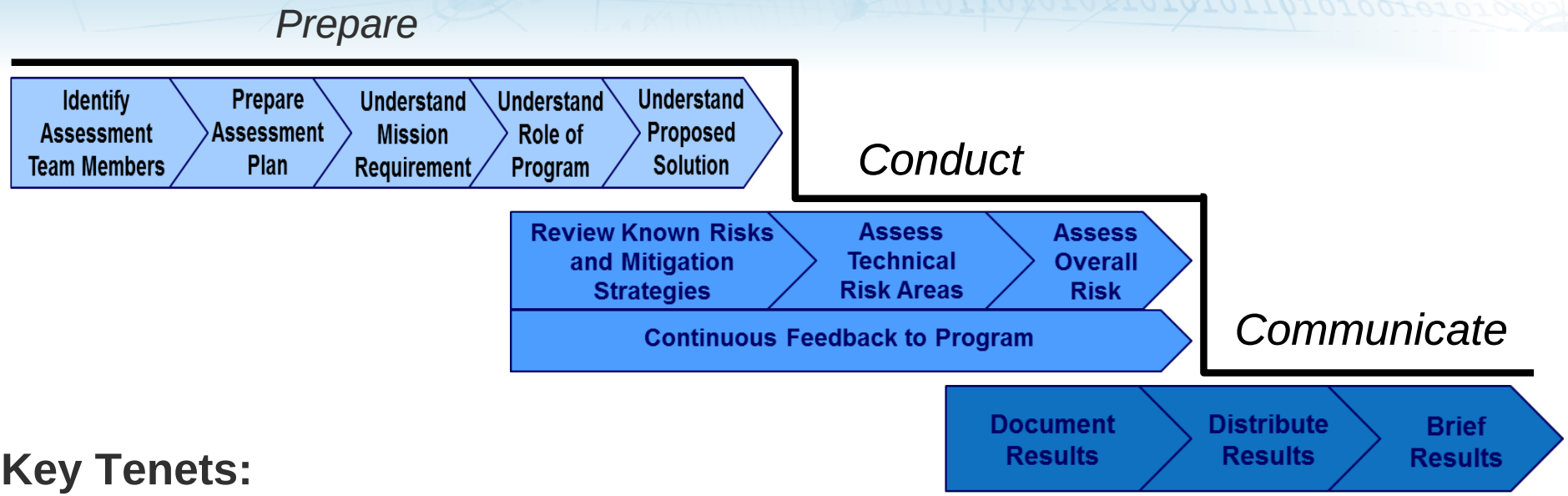
# Technical Assessment Process (How)




**Key Tenets:**

- *Assist* program in planning for and delivering technically sound solutions
- *Minimize impact* to program
- *Early and continuous engagement* with program
- Consistency and transparency through objective evaluation criteria

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# Summary

- S&T Led Technical Assessments will be conducted to aid DHS Acquisition Programs in overcoming challenges based on ‘Unity of Effort Priority”
- 5 Technical Assessment Areas
  - Technology Maturity
  - Requirements
  - Software/IT Systems
  - Manufacturing
  - Design/Development
- Key Benefits
  - Program Manager
  - Acquisition Decision-Makers
  - DHS R&D Organizations

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