Technology Transition Effort for a Future AFSCN Antenna System

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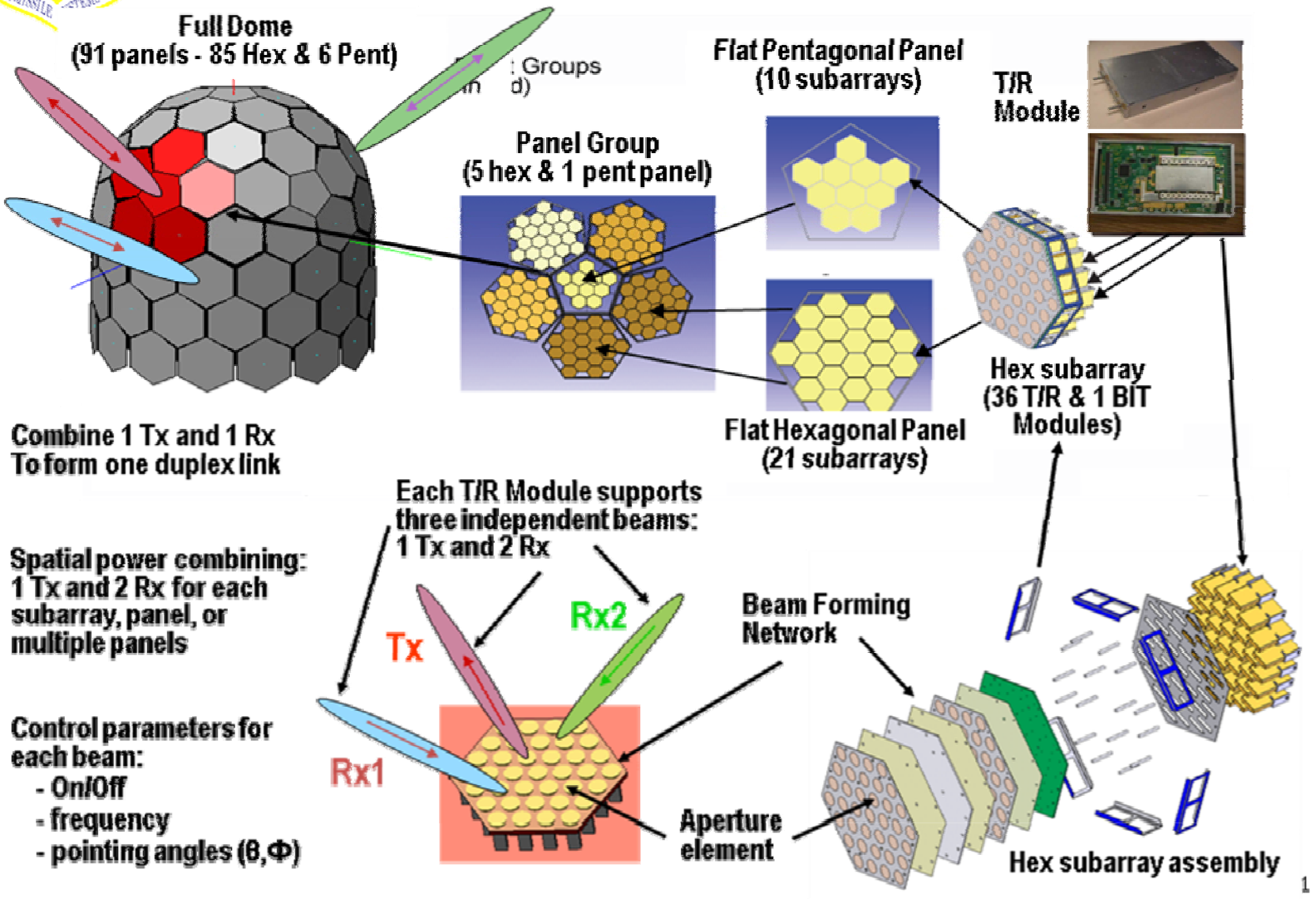
Agenda

- Introduction
- Overview of GDPAA Technology
- New System Payoff Dimensions and Advantages
- Technology Demonstration and Maturity
- Competitive Prototype Phase
- Transition Program and Implementation
- Conclusions
- Acknowledgments

Introduction

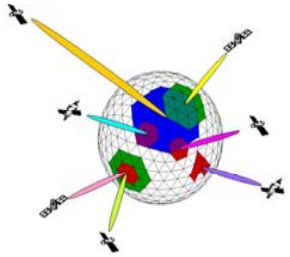
- Air Force Satellite Control Network (AFSCN) provides:
  - C2 connectivity between satellites and ground SATOPS Centers
  - Emergency recovery of satellites in trouble
  - Initial deployment and checkout of all new DoD and NRO satellites
- AFSCN modernization ongoing
  - AFSCN initially fielded in 1950s
  - 16 antennas at 8 worldwide ground stations
  - Remote Tracking Station Block Change (RBC) replacing AFSCN antennas, electronics cores and high power amplifiers (HPAs)
- Geodesic Dome Phased Array Antenna Program
  - Technology Advantages
  - Technology Maturation and Risk Reduction
  - Balancing Technology Development Processes with genuine Technology Risk Reduction Achievements

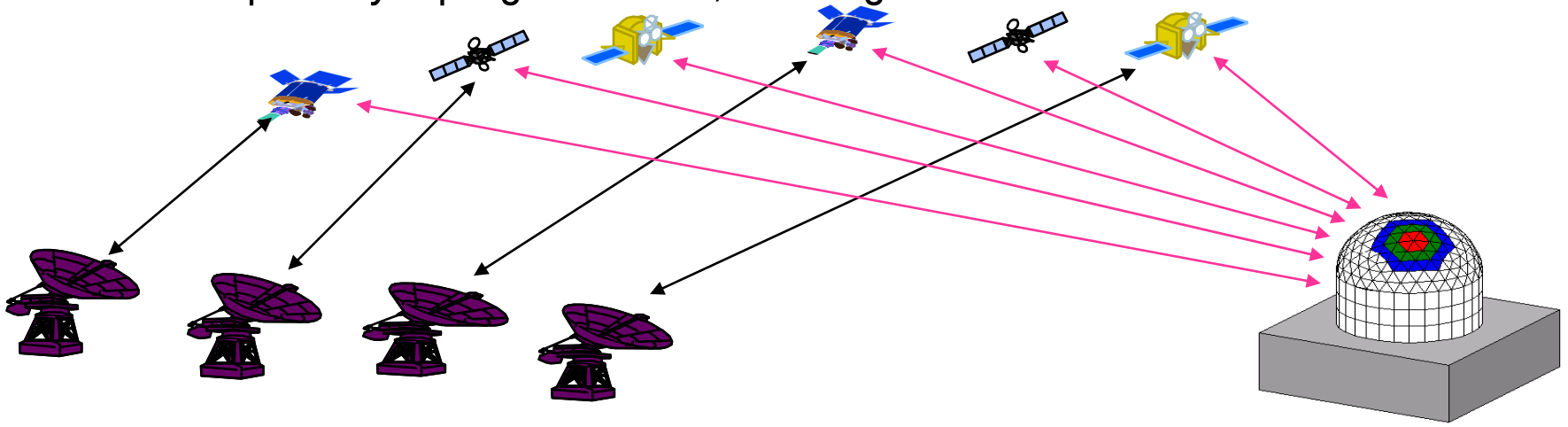
Overview of GDPAA Technology



New System Payoff Dimensions and Advantages

- GDPAA is enabled by new technologies to meet current and future AFSCN capability needs
  - High capacity – increases contact capacity
  - Continuing operation – high availability, lower life cycle cost
  - Responsiveness – on-demand satellite contact
  - Resilience – improved anti-jam capability and graceful degradation
  - Automation – remote operation, interoperability
  - Adaptability – programmable, reconfigurable





Technology Demonstration and Maturity

FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	FY 21
Concept & Arch Development				Technology Development											EMD							

Technology and subarry Development

5

3rd Gen. Panel/TR

6

ATD

TTPE

7

Risk Redtn Proto type

Full Dome Prototype

9

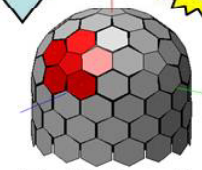
TRL

MUGS

AFRL Test

Critical Experiment

ATD



Full Scale GDPAA Demonstration

Technology Demonstration and Maturity

ATD Successes

- Beam steering
- L&S band commanding
- Multiple simultaneous contacts
- T/R module demonstrated

TTPE Action Items

- Interfaces to control electronics
- Transmission Noise Reduction
- Improving Tracking Accuracy
- Improved Life Cycle Cost Estimating

Competitive Prototype Phase

- **Transitioning from research to leveraging competitive production innovation**
- **Exploit broader industry innovation in product designs, CONOPS, producibility, Life Cycle Costs**
- **Fully functional prototypes**
- **Next Steps in tech development:**
  - **Increased number of simultaneous contacts**
  - **Beam walking**
  - **Beam intersections**
  - **Software development**

Transition Program and Implementation

- **Continue systems engineering as program matures**
- **Prepare cost benefit analysis for Program of Record decision**
- **Quantify requirements**
- **Application of innovative management tools, such as Probability of Program Success (PoPS)**

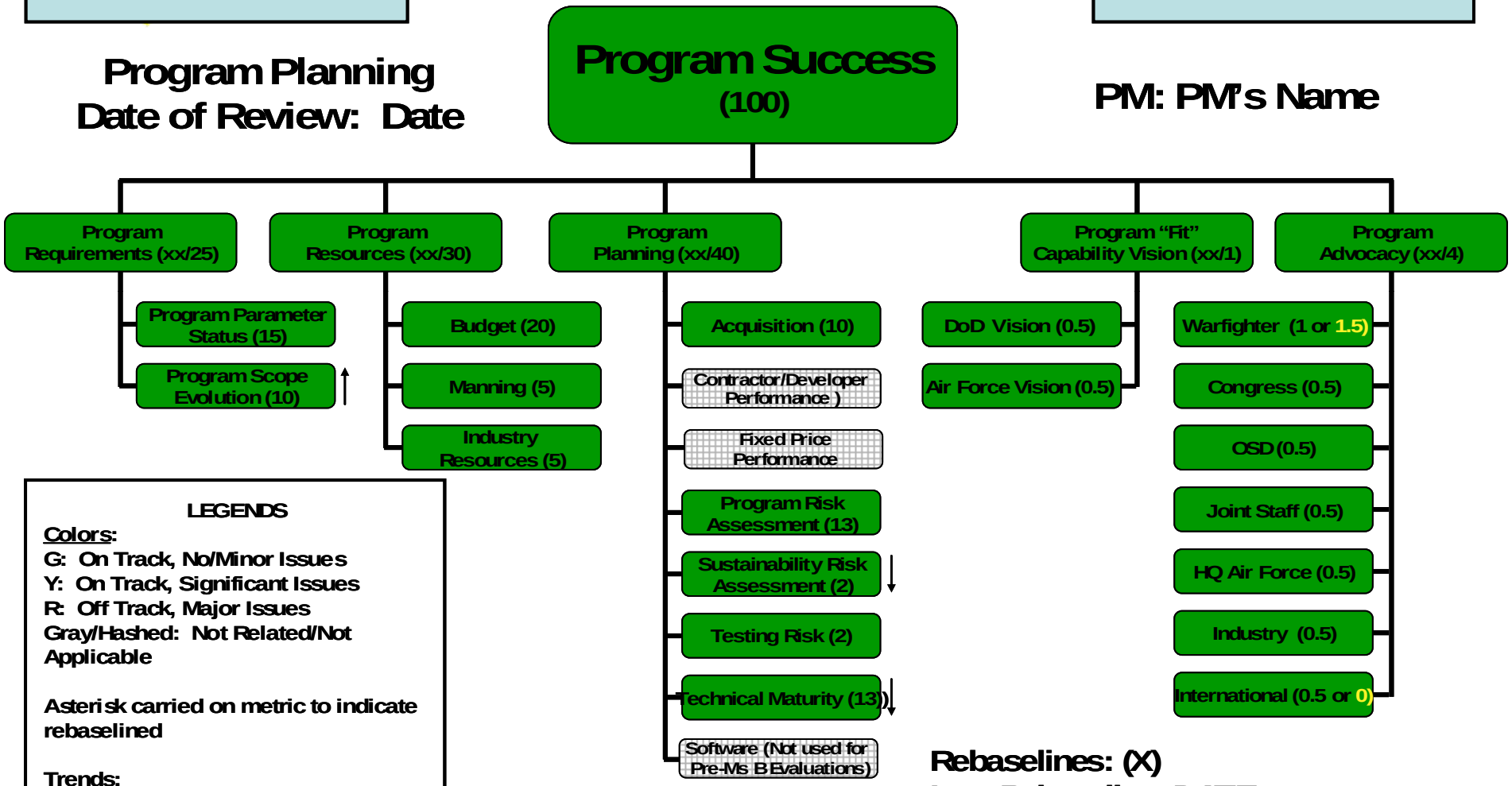
Probability of Program Success Summary

PEO:

Program Name
ACAT XX

Program Planning
Date of Review: Date

PM: PM's Name



LEGENDS

Colors:
G: On Track, No/Minor Issues
Y: On Track, Significant Issues
R: Off Track, Major Issues
Gray/Hashed: Not Related/Not Applicable

Asterisk carried on metric to indicate rebaselined

Trends:
Up Arrow: Situation Improving
(number): Risk Score
(based on 100 possible)
Down Arrow: Situation Deteriorating

EXAMPLE

Rebaselines: (X)
Last Rebaseline: DATE
Program Life Cycle Phase: XXXXXXX

Conclusions

- **GDPAA**
  - **Advantageous technology solution**
  - **Disciplined systems engineering approach**
  - **Solidly addressed and tested leveraged technology**
  - **Created a solid foundation to address prototype phase**
  - **Shortly ready to address producibility and deployment**

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