



An Introduction to

# SPEARS

Spectrum Education Awareness

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# About SPEARS

- NASA's Space Communications and Navigation Program is responsible for safeguarding NASA's and U.S. technology advancements in areas that use radio frequency spectrum and to emphasize the need for proper stewardship of this limited resource.



- The Spectrum Education Awareness (SPEARS) initiative seeks to increase the awareness and understanding of the use of the radio frequency spectrum, and its regulation by the applicable domestic and international regulatory processes.



- NASA will collaborate with other partner Agencies (domestic and international) to ensure a coherent message from all participating entities.



# SPEARS Benefits

- Increase knowledge of policy and processes
- Cross-functional education of spectrum disciplines
- Enhanced coordination of spectrum interests
- Unified regulatory spectrum position
- Gained efficiencies in processing of spectrum requirements
- Unilateral processes and procedures
- Education of the next generation of spectrum managers



# SPEARS Current Year Task Objectives

- Identify internal and external stakeholders

- Assess methodology to reach target audience (working groups, web, app, seminars, etc.)
- Identify outreach forums (general and specific)

- Define activities and schedule during plan implementation

- Define roles and responsibilities for both SPEARS team and stakeholders
- Generate detailed cost estimate for FY19 and ROM for follow-on years

- Develop SPEARS initiative definition material

- Brief community on scope and purpose of initiative
- Coordinate future collaboration

Develop SPEARS initiative implementation plan which defines the details of the activities to be performed over the next five (5) years to accomplish SCan spectrum education awareness goals

Perform initial outreach to introduce the spectrum community to the SPEARS initiative

# SPEARS Scope

- **Educate Spectrum users** on the processes for ensuring availability of spectrum for their communications, remote sensing and navigation requirements
- **Train spectrum professionals** to ensure they are ready to perform their job by providing access to the necessary training and tools kits
- **Support policy partners** such as other government agencies and international partners in awareness, outreach and training activities to advance our collective agendas
- **Raise the awareness** of the role that spectrum plays in the exchange of electronic information **to the Science Technology Engineering Mathematics (STEM) community**



# SPEARS Activities Summary



## Spectrum Partnership



ITU News Article/  
Edition on Benefits  
of Spaceborne  
Remote Sensing



Facilitate  
S-, X-, Ka-band  
Workshops



Educational  
Seminars for CITELE  
Administration



## Spectrum Professional



Develop and Maintain  
Spectrum Management  
Training Catalogue



Assess Spectrum  
Impacts of SCan  
Technology Initiatives



Interview  
Senior Spectrum  
Management Personnel  
within NASA to Develop  
Experiential Knowledge  
Base



Facilitate Establishment  
of OPM Job Category for  
Spectrum Management



Facilitate Inter-Agency  
Detail Personnel Swaps



## Spectrum Users



Spectrum  
Management  
Program Awareness  
Article for NASA  
Publications across  
the Agency



Develop Frequency  
Band Selection Web  
Tool for use by  
NASA Mission  
Planners



Develop/Enhance  
Presentation for  
Spectrum Managers  
to Missions



## Spectrum Community



Student Internship  
Job Development



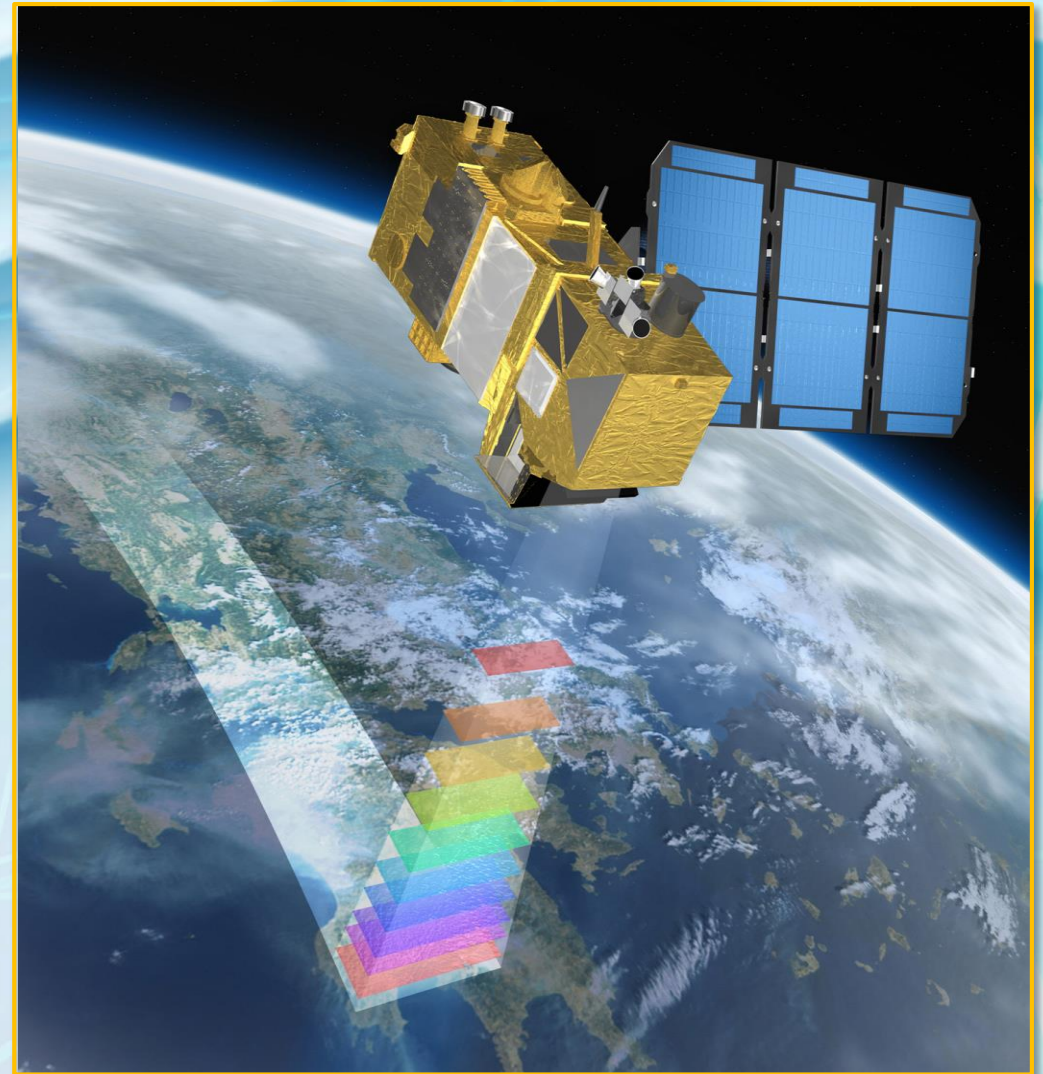
Spectrum  
Management  
Presentation to  
IEEE/AIAA Student  
Chapters



Participate in Job  
Fairs

# SPEARS: ITU News Edition Spaceborne Remote Sensing

- **Working with Director BR to promote an edition of the ITU News publication devoted to Spaceborne Remote Sensing scheduled for publication 31 January 2018**
  - > Raise global awareness
  - > Highlight spectrum bands used for measurements
  - > Engender goodwill among international spectrum regulators
- **ITU plans to solicit articles from entities involved in spaceborne radio frequency active and passive remote sensing, including SFCG members and observer agencies**
- **ITU POC – Vadim Nozdrin**
- **Target is to publish articles in advance of WRC-19 to try to influence administrations perspectives in favor of remote sensing issues at WRC-19**
- **NASA encourages SFCG members to consider contributing articles for the ITU News publication**
  - > NASA support to ensure broad coverage while focusing on defense of bands likely to be targeted at WRC-19



# SPEARS: Spectrum Management Training Near Term

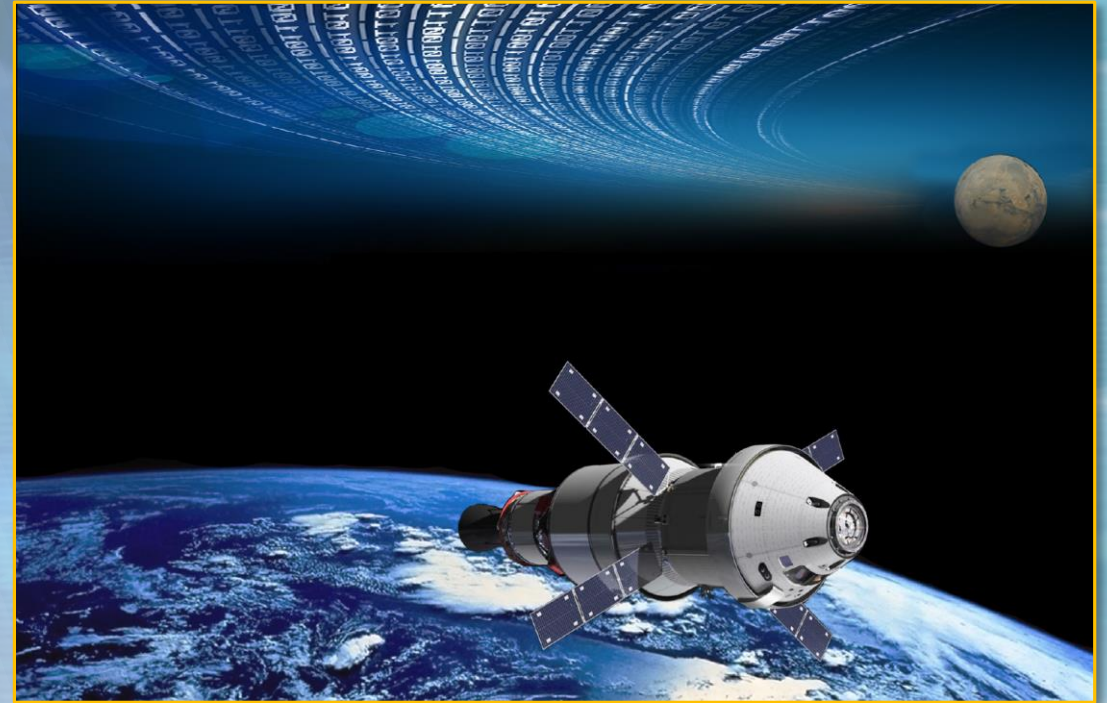
- **Develop and maintain a spectrum management training catalog listing training opportunities for NASA Spectrum Management personnel including:**
  - > U.S. spectrum management processes and procedures including systems certification and frequency assignments
  - > University offerings and short courses on spectrum management fundamentals
  - > Course offerings on the use of spectrum management analytical tools (e.g. Satellite Tool Kit, Visualyse)
- **Develop “Spectrum 101” to educate NASA missions and spectrum users on the importance of spectrum management and need to work closely with NASA Center Spectrum Managers**
- **Develop “WRC Process” training to help prepare NASA personnel attending their first WRC**





# **SPEARS:** NASA Technology Assessing Spectrum Impacts

- **Review NASA technology development activities to assess potential spectrum impacts**
  - > Initial focus on Space Communications and Navigation (SCaN ) technologies
  - > Subsequent focus on technology development of other NASA Mission Directorates
- **Identify any spectrum impediments to SCaN and other NASA technology development initiatives as early as possible**
- **Recommend suitable course of action, both domestically and internationally, to address spectrum impediments:**
  - > Identify WRC-19 and/or WRC-23 agenda actions required to address regulatory gaps that may impede implementation of NASA technology initiatives
  - > Identify domestic regulatory actions that need to be undertaken
- **Assess potential interference environment for NASA systems employing resultant technologies**



**SAVE The DATE**

**Space Spectrum Symposium**

**July or September 2019**

NASA Headquarters  
300 E Street, SW  
Washington, DC 20546



**Additional details forthcoming**

# SPEARS Points of Contact

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SPEARS

Spectrum Education Awareness

Back Up

# SPEARS Activities Listing



## Spectrum Partnership

### Activities

ITU News Article/  
Edition on Benefits  
of Spaceborne  
Remote Sensing



Educational  
Seminars for CITE  
Administrations



Facilitate  
S-, X-, Ka-band  
Workshops



### Purpose

- Publish ITU News article/edition to raise global awareness on the importance of spaceborne remote sensing to the Earth's environment
- Facilitate workshops on S-band, X-band and Ka-band bringing together government, industry and international user communities to review and coordinate shared use of these bands
- Promote awareness within CITE Administrations of NASA activities and the related benefits to all humankind.

# SPEARS Activities Listing (cont'd)



## Spectrum STEM

### Activities

**Student Internship  
Job Development**



**Participate in  
Job Fairs**



**Spectrum  
Management  
Presentation to  
IEEE/AIAA  
Student Chapters**



### Purpose

- Create spectrum management job internship activities that can be leveraged across all NASA Centers; internships will encourage STEM students to consider spectrum management as a career path
- Provide a means for attracting the best talent available to fill spectrum management vacancies across the Agency and to help promote spectrum management as a career choice
- Present spectrum topics at IEEE/AIAA to introduce university students to the technical and regulatory aspects of spectrum management and encourage them to consider spectrum management as a career path

# SPEARS Activities Listing (cont'd)



**Spectrum User**

## Activities

**Spectrum Management Program Awareness Article for NASA Publications across the Agency**



**Develop/Enhance Presentation for Spectrum Managers to Missions**



**Develop Frequency Band Selection Web Tool for use by NASA Mission Planners**



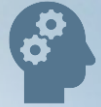
## Purpose

- Raise the level of awareness of Spectrum Managers role in Mission fulfillment
- Increase the visibility of the Center Spectrum Managers

- Develop web-based tool to use in considering the various frequency band options to meet mission requirements.
- Capture mission parameters: TT&C, data downlink and remote sensing

- Generate a top-level spectrum briefing for early mission planning
- Execute a high-level roadshow to the NASA Centers on spectrum management

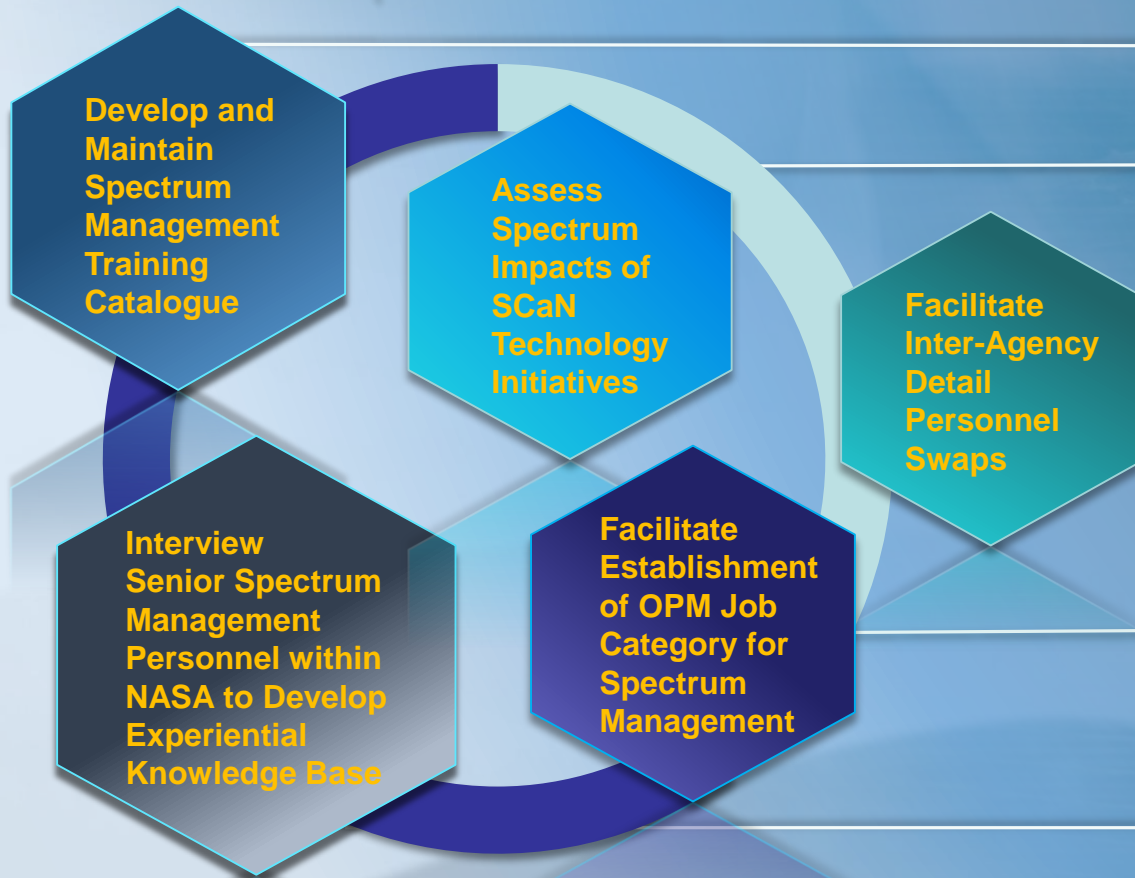
# SPEARS Activities Listing (cont'd)



## Spectrum Professional

## Purpose

- Provide an easily accessible catalogue of training opportunities/materials available to the NASA spectrum management community (e.g., government training, university courses, etc.)
- Ensure that any spectrum impediments to SCan and other NASA technology development initiatives are identified as early as possible
- Enhance/improve NASA spectrum management processes by direct observation in the spectrum management activities of other federal agencies (e.g. DOC, DoD, NTIA, FAA, DOS)
- Enable the establishment of a new job category (occupational group series) for spectrum managers within the Office of Personnel Management (OPM) classification system
- Capture in writing the experiential knowledge base of NASA's senior spectrum management staff to use as a resource in succession planning/training.



## Activities