



American Commercial Space Weather Association

# Roles and Partnership Opportunities

--

## Commercial Sector Contributions

2018 Space Weather Enterprise Forum  
Washington, DC  
July 25, 2018

Conrad C Lautenbacher, Jr  
CEO, GeoOptics, Inc



American Commercial Space Weather Association

# Agenda

- Space Weather Developments
- International and National Situation
- Organizational Components
  - Government
  - Commercial
  - Academic
- Commercial Contributions
  - American Commercial Space Weather Association
  - Specific capabilities



# International

## UN/US Workshop **International Space Weather Initiative:** **The Decade after the International Heliophysical Year 2007**

BOSTON COLLEGE, CHESTNUT HILL, MA 31 JULY - 4 AUGUST, 2017

Marks tenth anniversary International Heliophysical Year, which led to International Space Weather Initiative (ISWI).

Focus on recent scientific research advances by:

- Using ISWI instrument data
- With space mission data
- Adding significant new knowledge on Space weather phenomena
- In near Earth and interplanetary space.

**Absence of commercial sector participation**



# Space Weather Developments

## Commercial Sector Reactions

- Space Weather as a Global Challenge
  - International forum hosted by Embassy of Japan
    - Recognized global importance of space weather
    - **Commercial sector contributions recognized**
- National Space Weather Partnership (NSWP)
  - SWORM Subcommittee under NSTC
    - Established by OFCM -- **community wide public forum**
- Pending Space Weather Legislation
  - Passed in Senate
    - House hearing held – private sector included
    - Currently **weak in commercial sector inclusion**



# U.S. National Space Weather Strategy\*

## Introduction

- “The Strategy and Action Plan .... aiming to foster a **collaborative environment** in which **government, industry,** and the **American people** can better understand and prepare for the effects of space weather.” \*
- “The Nation must continue to **leverage existing public and private network of expertise and capabilities** ... to improve the ability to manage risks associated with space weather.” \*

-----

- That means: **include the commercial sector in planning and executing specific viable goals for services and products.**



\*[https://www.whitehouse.gov/sites/default/files/microsites/ostp/final\\_nationalspaceweatherstrategy\\_20151028.pdf](https://www.whitehouse.gov/sites/default/files/microsites/ostp/final_nationalspaceweatherstrategy_20151028.pdf)

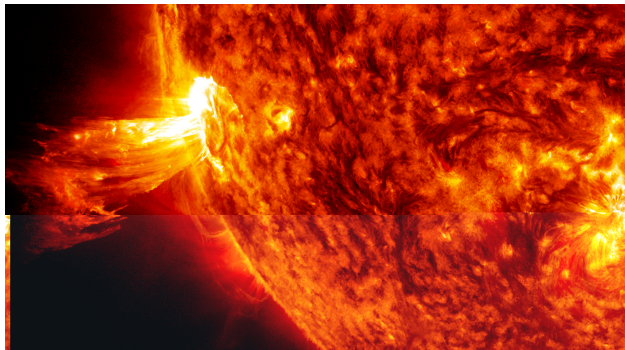
# Commercial Space Weather Industry

Products and Services

## Value Chain

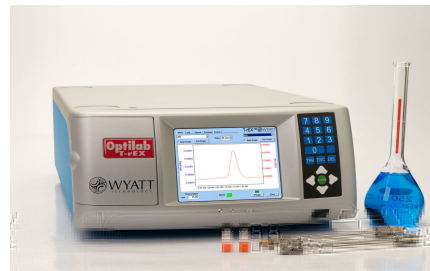
### Upstream

- Research
- Observations
- Instrumentation
- Data



### Mid-Stream

- Data Processing
- Computation
- Algorithms
- Models



American  
Commercial Space  
Weather Association



### Downstream

- Forecasts
- Warnings
- Services
- Emergency Mgt

# The Space Weather Enterprise

Products and Services

**Maximizing Value**

Analogy:  
“Weather  
Enterprise”

Government

- **Public Safety**
- Economic Health
- National Defense
- **Regulation**

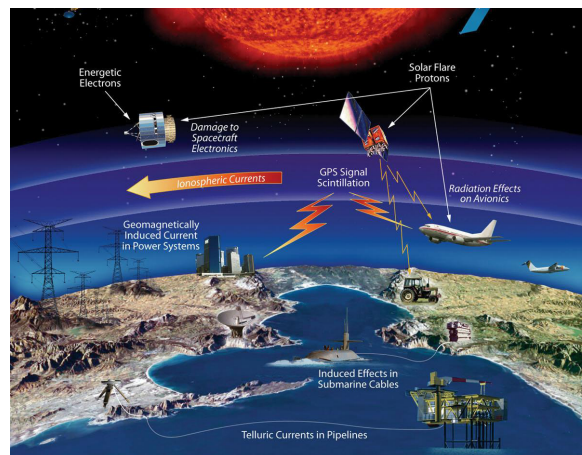


Academia

- Science
- **Research**

Commercial

- Services
- **Efficiency**
- Competition
- **Robust Economy**
- Communication



American Commercial Space Weather Association



# Enterprise Efficiency

Which system architecture is the most efficient?

Swim Lanes?

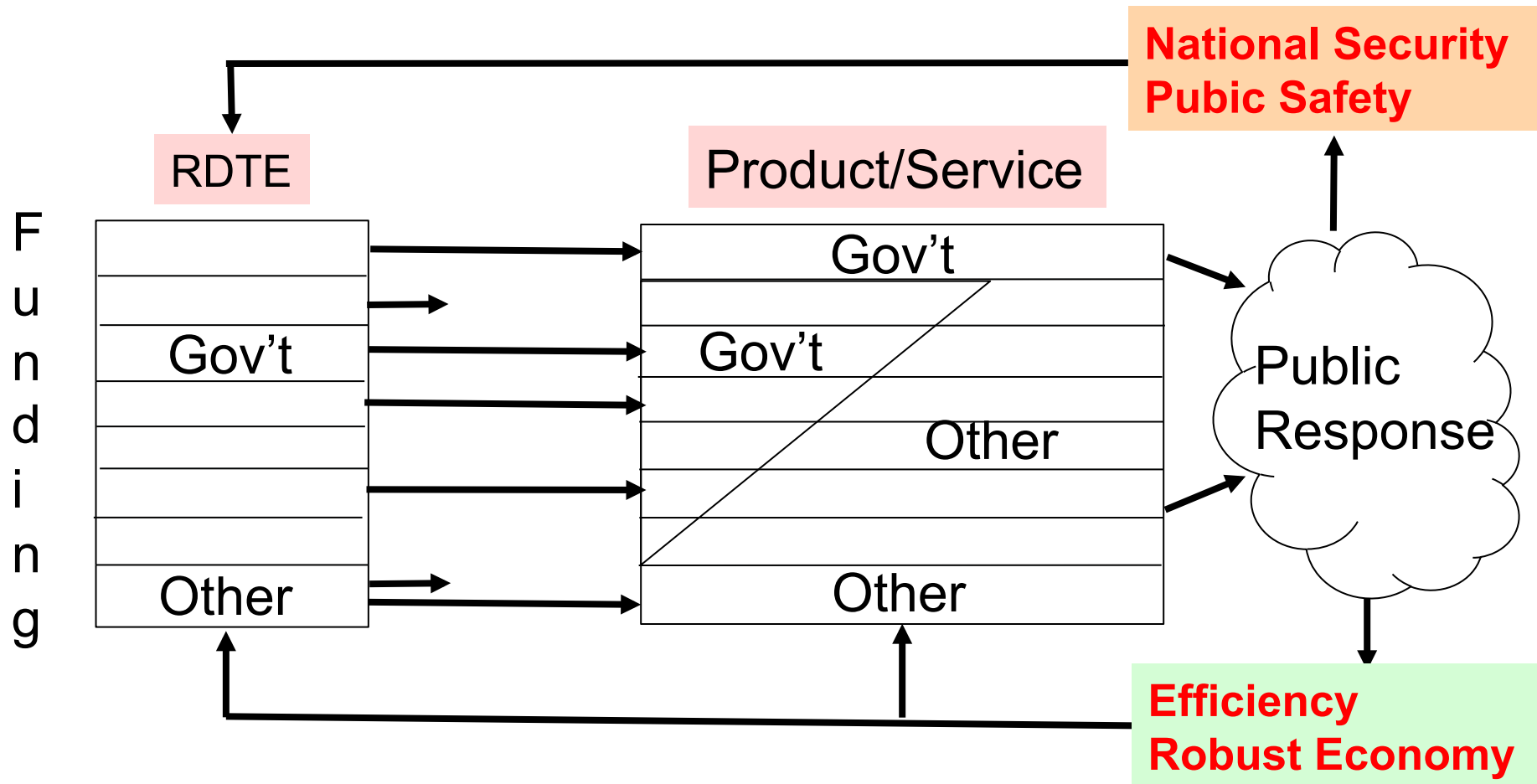


Free for All?





# “Swim Lanes” for National Needs



Other = NGO, Free Enterprise



# Commercial Space Contributions

## Examples

- Power Grid Outages\*
  - Storm Severity Index “Dst”
    - Commercially developed for USAF
    - Now publically available and in use
- Radiation in Air Travel\*
  - ARMAS\*\* Program
    - Started by commercial company
    - Measures radiation dose
- Ionospheric Scintillation\*
  - Event during Katrina wiped out HF radio
    - Companies w/Utah State -- free 24 hr global forecasts

\*Courtesy of W. Kent Tobiska

\*\*Automated Radiation Measurements for Aerospace Safety



**American Commercial Space Weather Association**



## **American Commercial Space Weather Association**



***Linking Scientific Understanding  
with Operational Priorities***

**The End**



**American Commercial Space Weather Association**