



Supplier Research & Analysis Approach

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Presentation Topics

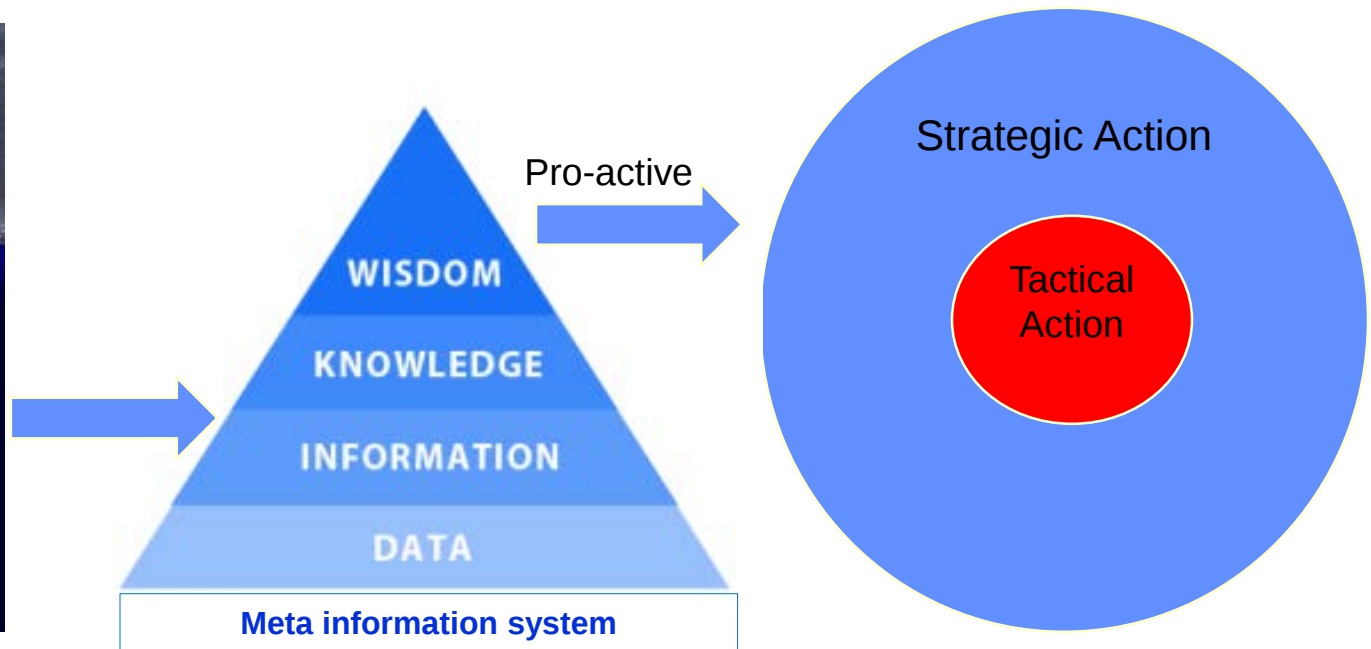
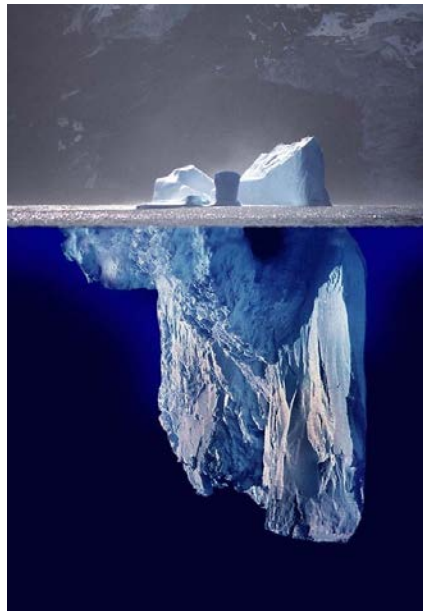
- Strategic Challenge / Supply Chain Risks
- Purpose / Key Attributes
- Analytical Framework
- Core Process / Report Types
- Products of Interest
- Case Examples
- Summary / Discussion



Strategic Challenge / Supply Chain Risks

- GSFC mission projects rely upon interconnected, multi-tiered supply chains of organizations operating under direct and indirect contracts and other agreements around the world that are subject to an interrelated and broad array of risks that can disrupt the provision of products and services when needed and in conformance with requirements

Building Knowledge for Informed Planning, Oversight and Decision Making



As we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns – the ones we don't know we don't know. Donald Rumsfeld, Secretary of Defense, 2002



Worldwide Locations of Suppliers



Supplier Research & Analysis on over 95 organizations since 2015

Source: NASA's Meta information system as of 04/16/2018



Purpose / Key Attributes

Purpose

- Supplier Research & Analysis (SRA) is designed to provide information on and insight into the operating environment, capabilities, performance and viability of current and potential suppliers for GSFC mission projects in support of SMA and project management needs

Key Attributes

- Holistic analytical framework based on selected technical, business enterprise, market and security factors
- Guided by priorities, concerns, needs and products/services of interest
- Primarily open source information sources (cited with confidence ratings) blended with NASA / U.S. Government information
- Internal use only
- Non-intrusive
- Timely
- Affordable
- Sound, Credible
- Lean, multidisciplinary team
- Complementary to traditional SMA disciplines / project management methods



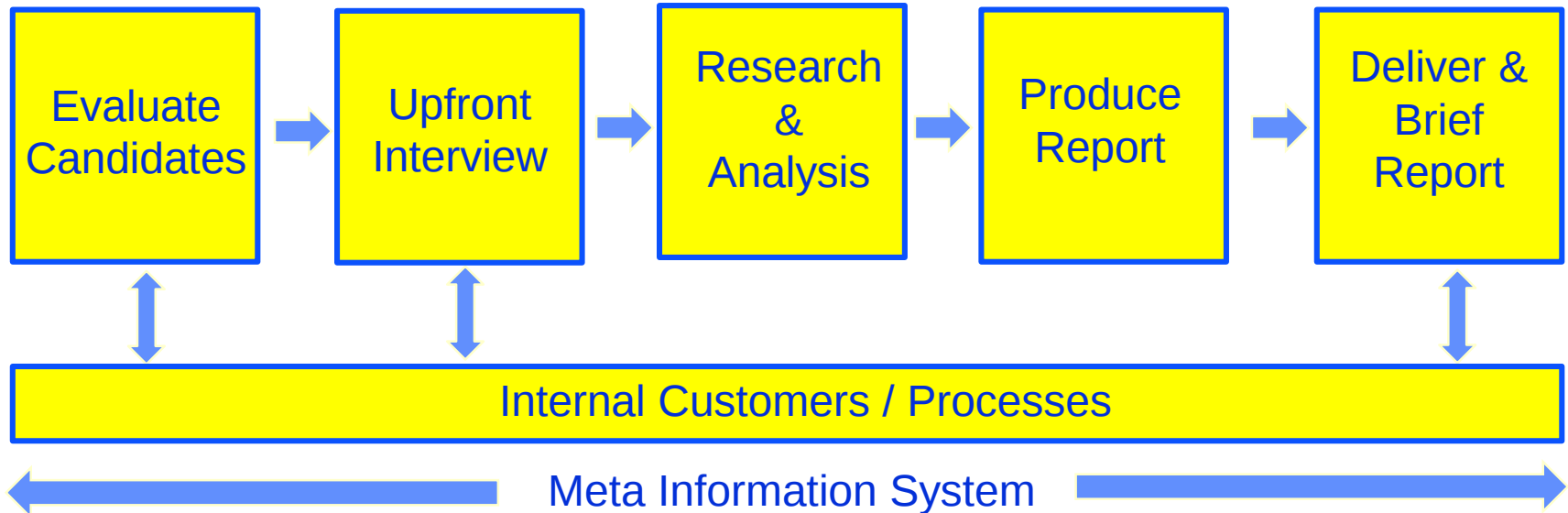
Analytical Framework

Categories	Key Factors
Technical	Quality Management, Manufacturing, R&D/Innovation
Business Enterprise	Leadership & Organization, Workforce, Supplier/Supply Chain Management, Financial Status, Business Alliances
Market	Industry Position, Market Trends, Regulatory & Legal
Security	Socioeconomic Environment, Cybersecurity, Physical Security



Core Process / Report Types

Core Process for Supplier Research & Analysis (SRA)



Levels of Research & Analysis / Report Types

- Rapid Supplier Insight
- Supplier Information Profile
- Supplier Information Profile & SWOT (Strengths, Weaknesses, Opportunities, Threats) Analysis



Products of Interest

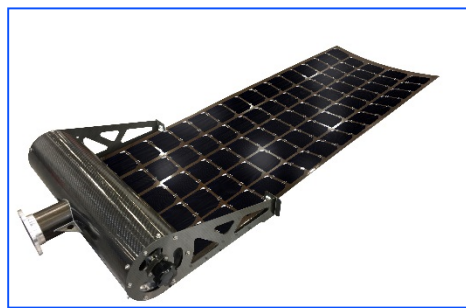
(examples)



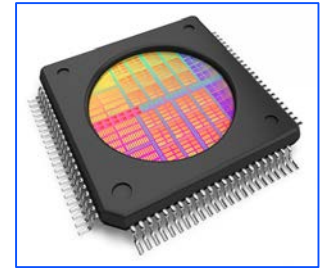
Bipropellant Thruster Valve



Lithium-Ion Battery



Solar Array



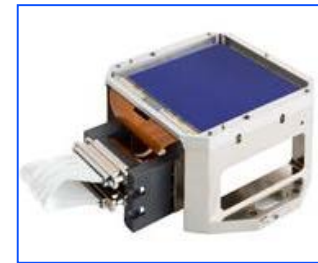
Semiconductor



Thruster Engine



Spacecraft Bus



Charge-coupled device



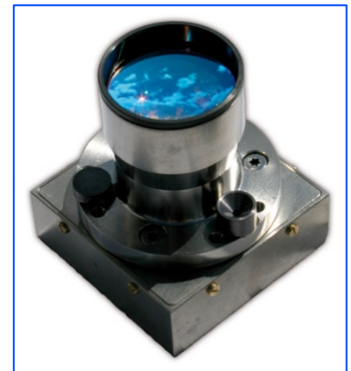
Inertial Reference Unit



Optical Encoder



Software



Star Tracker



Case Examples

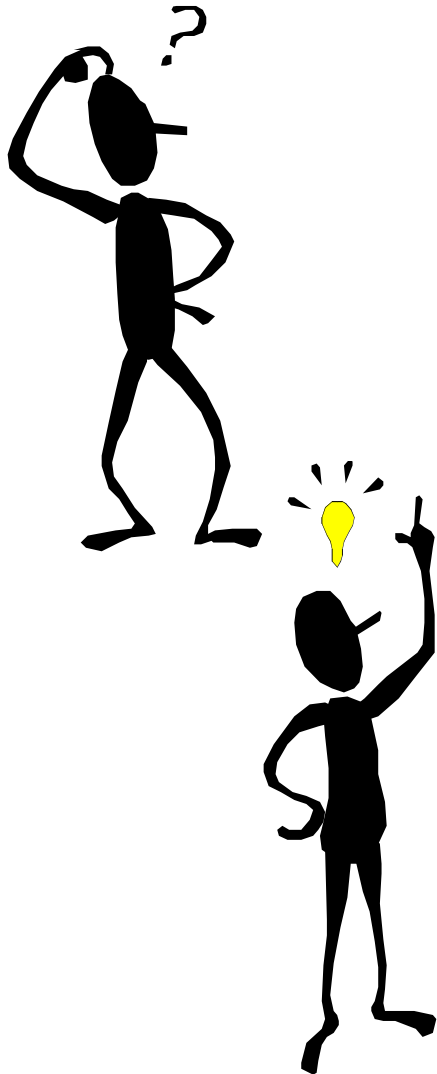
- Case 1: Very small, privately-held company (less than 10 employees) located 3500+ miles from GSFC under contract to produce components on the critical path of several GSFC mission projects
 - Leadership / business continuity: “one-man show”
 - Inadequate quality management, history of delivery delays and security concerns
- Case 2: Well-established, recurring commercial source (\$300 million / year) of a critical component for GSFC mission projects under acquisition by a large corporation (~\$3.0 billion / year)
 - Possible operational disruptions due to acquisition
- Case 3: Very large enterprise (~\$10 billion / year) with multiple subsidiaries that supply key components / subsystems for GSFC mission projects experienced prior cyberattack and illicit technology transfer events
 - Future security incidents could impair design / production
- Case 4: Entrepreneurial business established in 2001 with experience in design / technology development for space systems identified as a potential subcontractor to develop and integrate micro-satellites for a possible mission
 - Home-based company led by an entrepreneur lacks capabilities at present...no discoverable facility for production/integration/test nor quality management

Supplier Research & Analysis reports illuminate strengths, weaknesses, opportunities and threats in providing insight and situational awareness

[illegible]



Summary / Discussion



An Old Proverb

For want of a nail the shoe was lost;
For want of a shoe the horse was lost;
For want of a horse the rider was lost;
For want of a rider the battle was lost;
For want of a battle the kingdom was lost;
And all for the want of a horseshoe nail.

In summary ... in proven and innovative ways we are building knowledge for informed planning, oversight and decision-making in order to reduce the risks of exploring the Earth and space in achieving mission success