



Industrial Base Assessment Tool (IBAT)



Presentation

September 2022

Decision Sciences Incorporated



Agenda



- **IBAT Background**
 - IBAT Resume
 - How IBAT is Organized
 - ConOps Graphic
 - How IBAT Works
 - Set Up Examples
- **Demonstration**
- **Minimum Sustaining Rate**
- **Discussion**



IBAT Resume



- **IBAT Construct**

- Designed, developed, maintained by DSI
- Focused on munitions
- Includes facilities, suppliers, components, and end-items
- Identifies **Risks, Bottlenecks, and Production Capabilities** of the industrial base
- Near real-time – Not a Report – Not a PowerPoint

- **IBAT System Forensics**

- **Hundreds of facilities and thousands of components/end-items** in IBAT
- **Hundreds of Users** from DOD organizations
- **18 Years** of continuous operation

- **Thousands of use cases**

- + 1,700 Reports Generated
- + 500 Disaster Mapping Calculations
- + 48,000 Supplier and Item Lookups
- + 4,500 Simulations



- **DOD Relies on IBAT!**
- **JMC Marque System**

Briefed to Multiple Four-Star Officers, JOCG Principals, OSD, HASC / SASC

OSD - IBAT is the *Gold Standard* for How to Perform Industrial Base Analysis





What is IBAT?

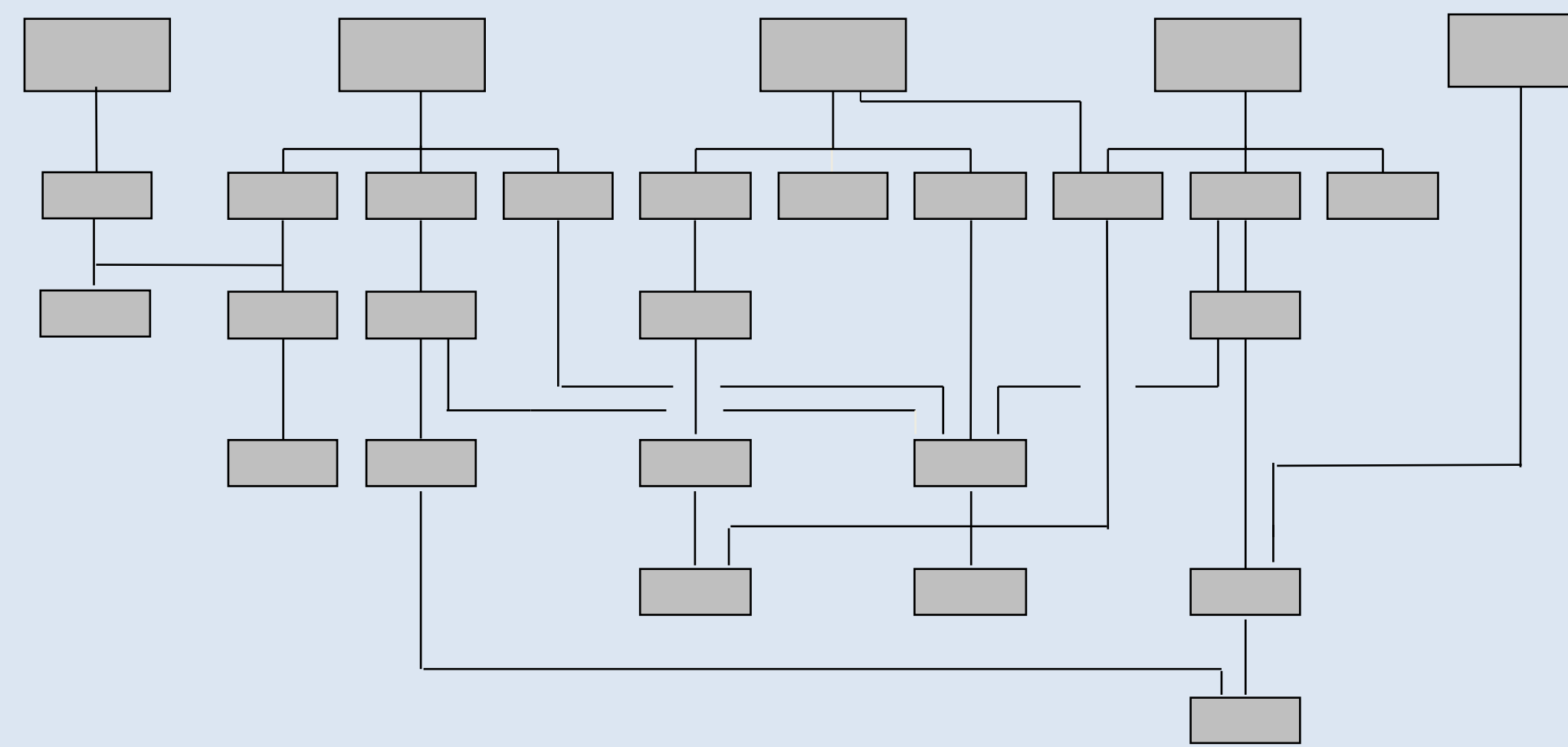
How IBAT is Organized – Technical and Programmatic



Munitions Supply Chain

OEMs

- Tier 1
- Tier 2
- Tier 3
- Tier 4
- Tier 5



Extended
Supply Chain



Inventory Contracting Manufacturing Budget Financial Source Attributes



What is IBAT?

How IBAT is Organized - Informational



▶ Ammunition Families

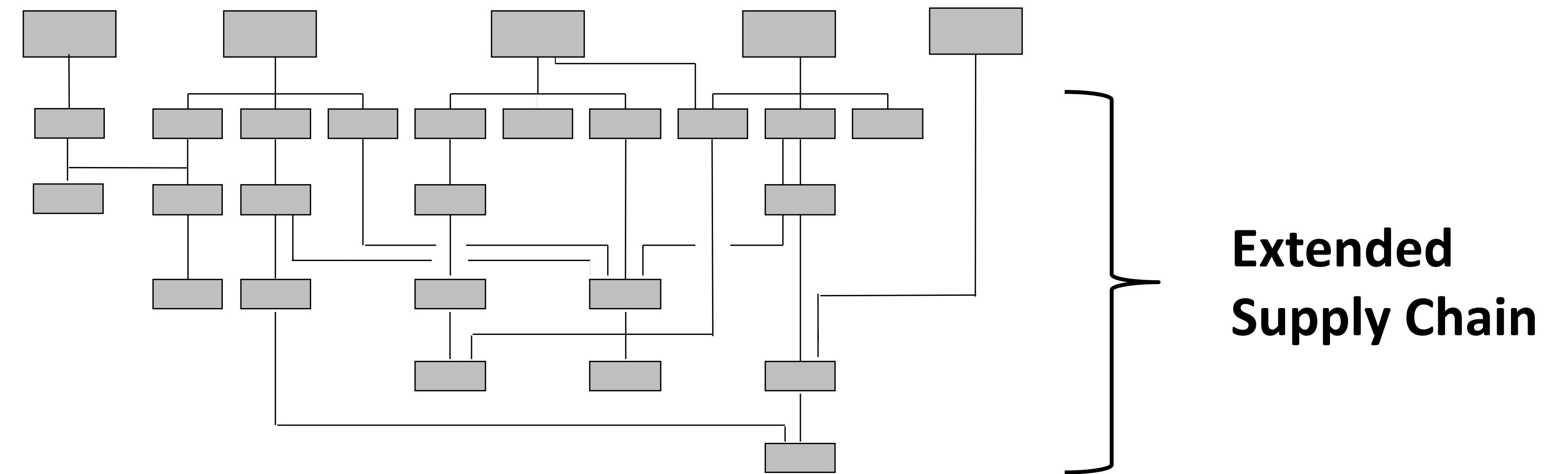
- ▶ ■ Artillery Caliber
- ▶ ■ Bombs
- ▶ ■ CAD/PAD
- ▶ ■ Demolitions
- ▶ ■ Dispenser
- ▶ ■ Explosives
- ▶ ■ Fuzes
- ▶ ■ Grenades
- ▶ ■ Inactive
- ▶ ■ Loaded Components
- ▶ ■ Medium Caliber
- ▶ ■ Mortars
- ▶ ■ Navy Gun
- ▶ ■ Non-Lethal Munitions
- ▶ ■ Other
- ▶ ■ Propellants
- ▶ ■ Pyrotechnics
- ▶ ■ Rare Earth Element
- ▶ ■ Rockets, Warheads
- ▶ ■ Shoulder Launched Munitions
- ▶ ■ Small Caliber
- ▶ ■ Special Projects
- ▶ ■ Tank
- ▶ ■ Terrain Shaping

IBAT System

- 24 Ammunition Families
 - Each Family Contains of Many End-Items
 - Each End-Item Consists of a Critical Bill-of-Material (Components)
 - Each Component has an Associated Supplier(s)

OEMs

- Tier 1
- Tier 2
- Tier 3
- Tier 4
- Tier 5



- Each Component/Supplier Combination Encompasses:
 - Attribute Information (SPF, Foreign Sources, Service, etc.)
 - Operating Modes (Information, Manufacturing, Contacting, Inventory, Demand)



IBAT Background

Concept of Operations Graphic

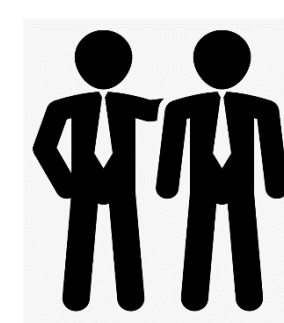


Data Sources

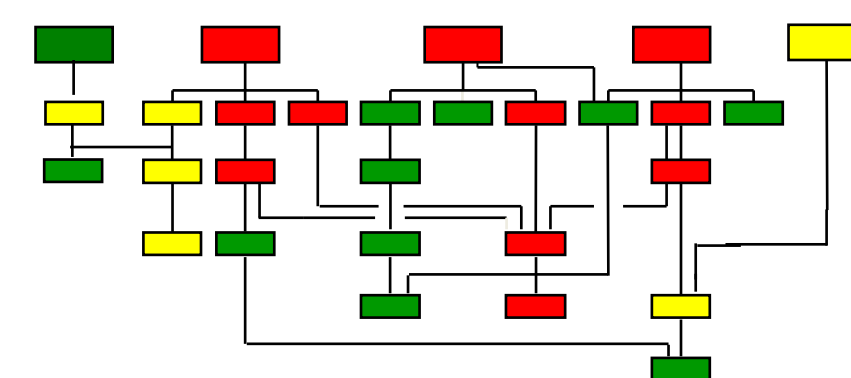
DOD Databases



DOD Planners



Commercial Industry



Joint Munitions Command

IBAT



DOD User Community



Analysis Engine

Supports *Readiness, Resiliency and Affordability*



IBAT Background

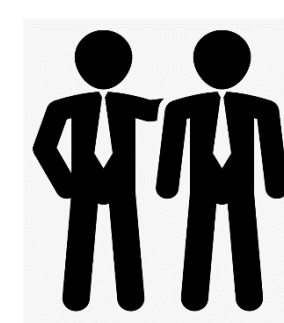
Concept of Operations Graphic

Data Sources

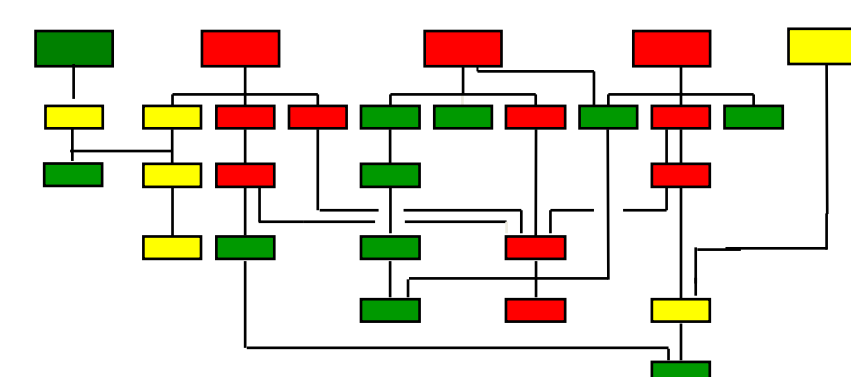
DOD Databases



DOD Planners



Commercial Industry



Joint Munitions Command and Navy

IBAT



DOD User Community



Analysis Engine

Supports **Readiness, Resiliency and Affordability**



IBAT

How IBAT Works - Analytical



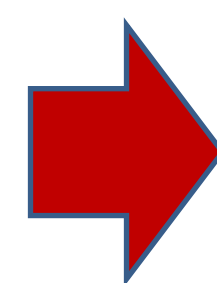
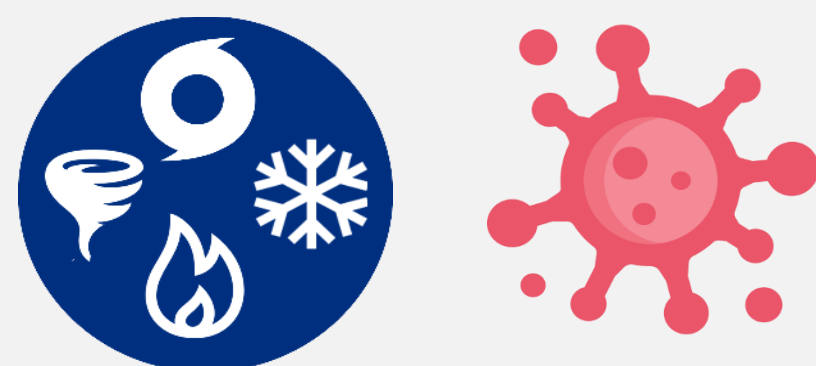
Budget Analysis



War Planning



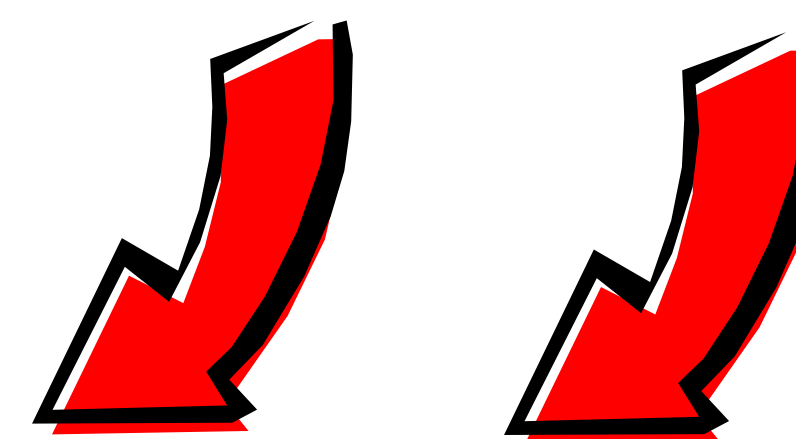
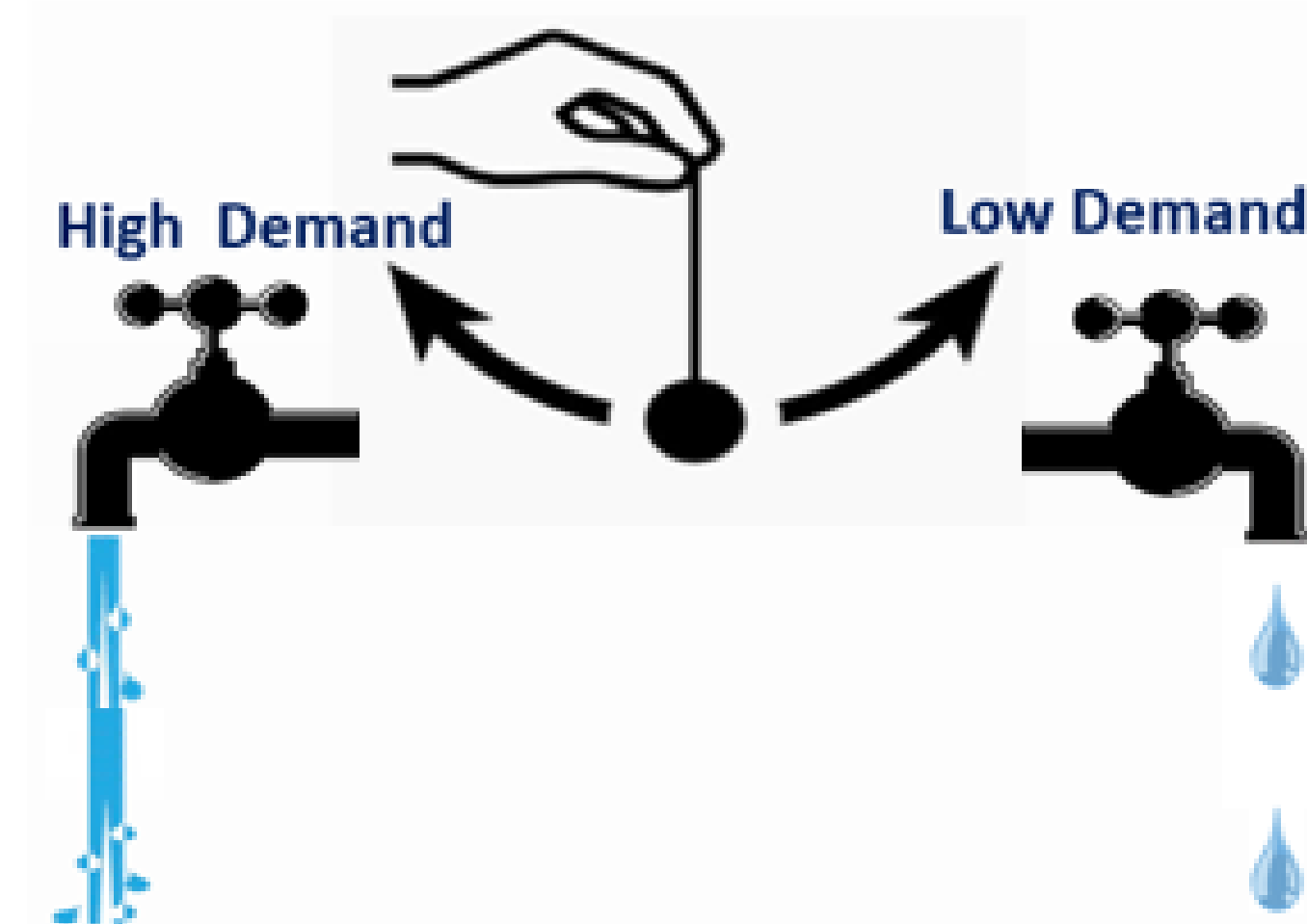
Disaster Planning



Demand for Munitions Four Services

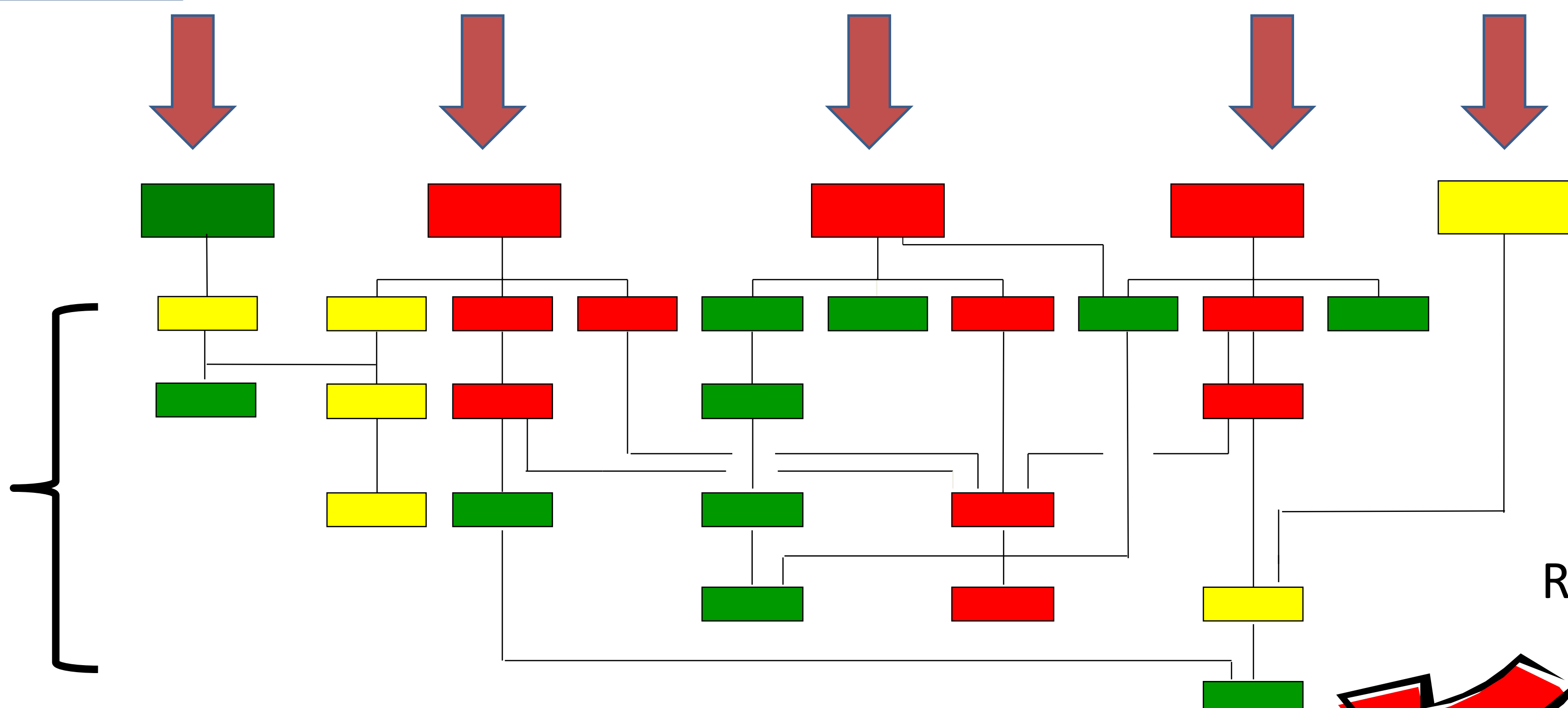
- Marine Corps
- Navy
- Air Force
- Army

Demand Flow

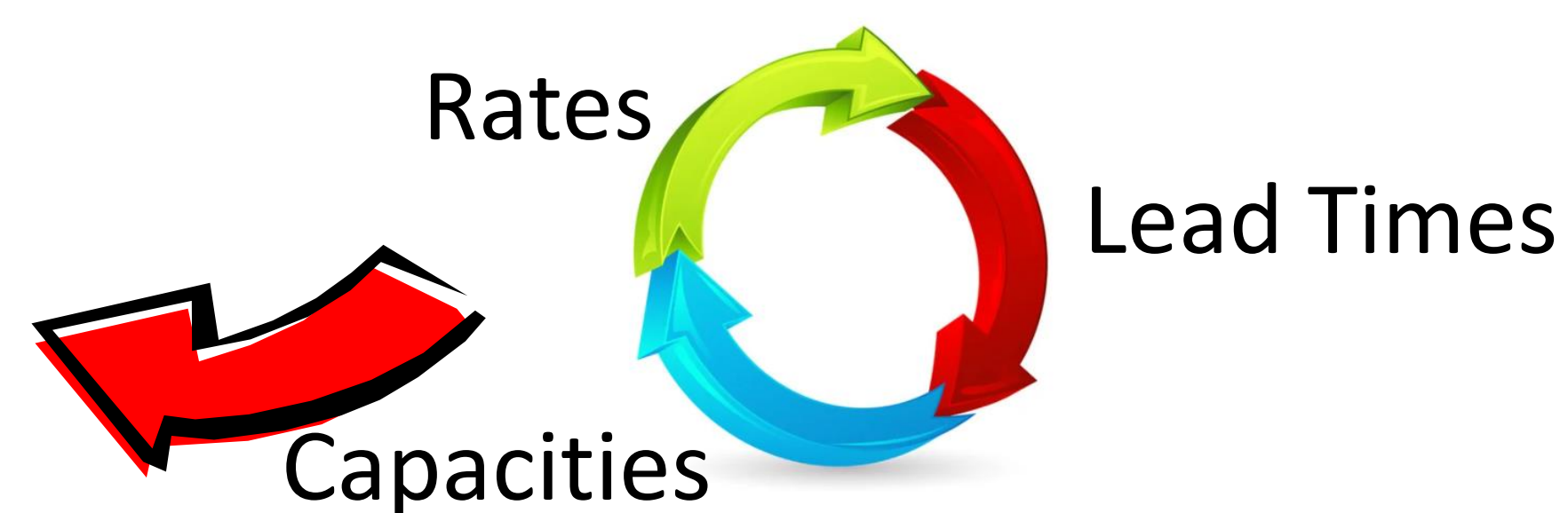


Prime Contractors

SubTier Suppliers



Constraint Based Simulation





Demonstration IBAT Demo Examples



Example 1

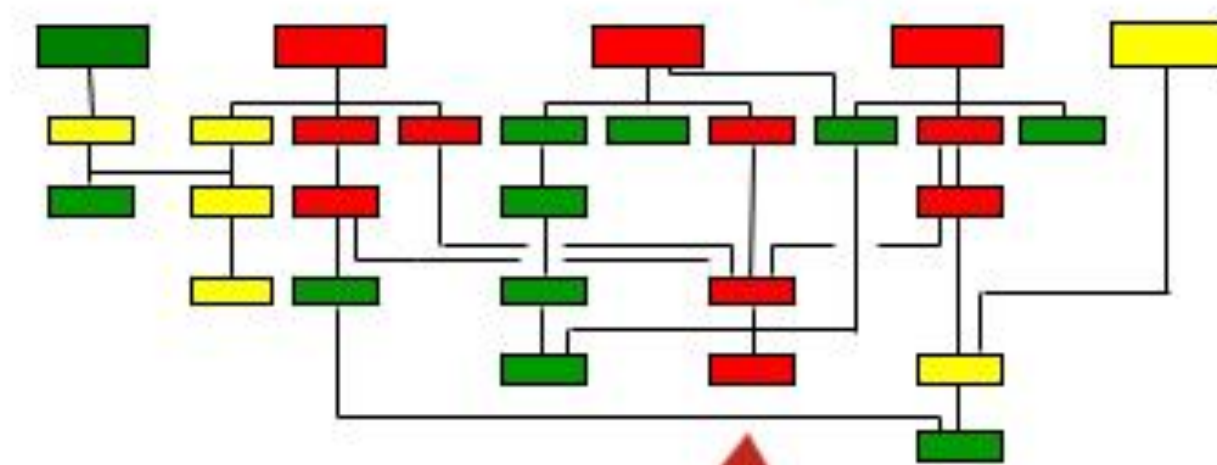
War Planning & Operational Use

Facility Investments



Surge Requirements

Manufacturing Capacity Risk

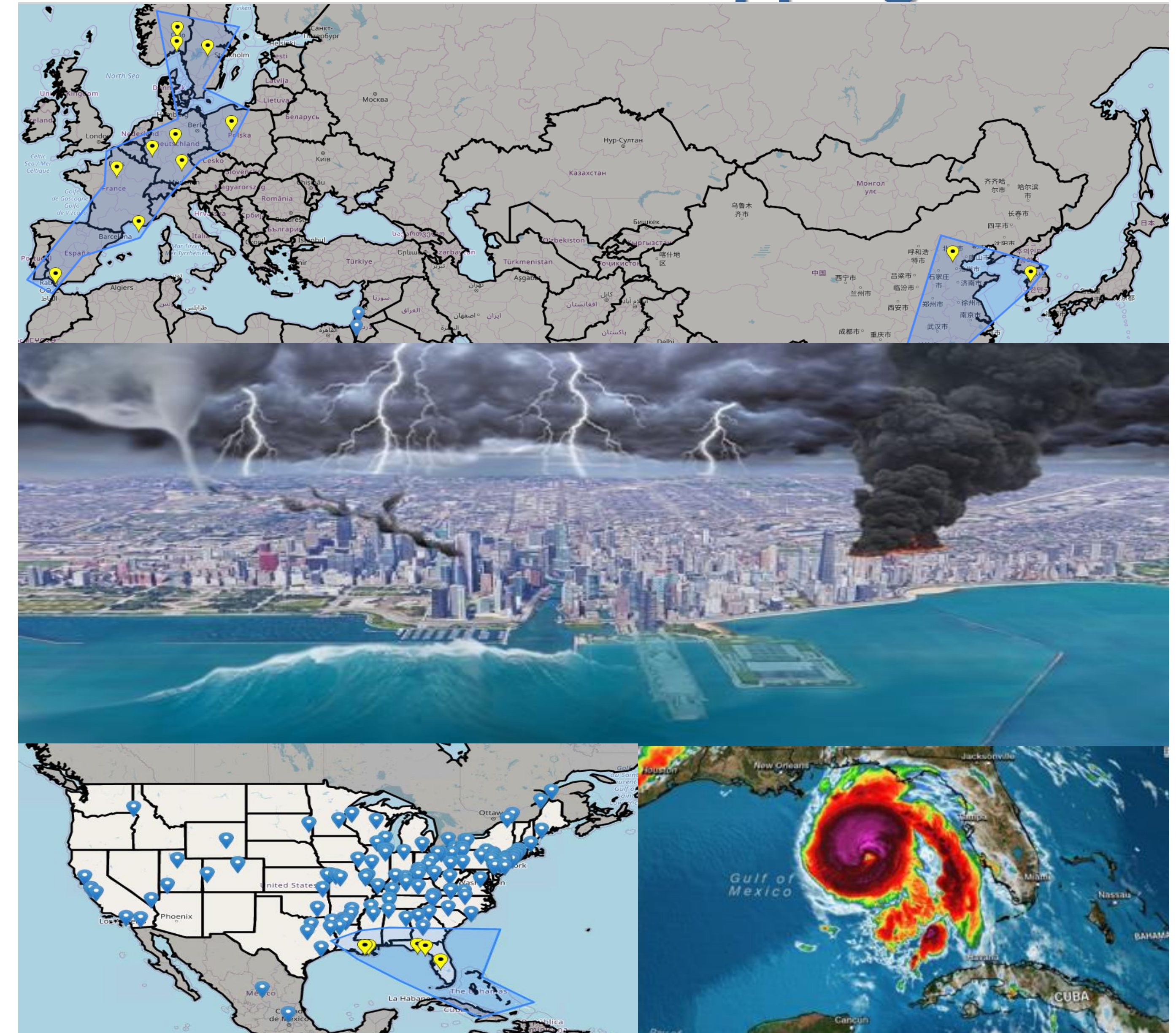


Foreign Dependencies

Material Shortages Risk

Example 2

Disaster Mapping



Features:

- **Advanced Filtering**
- **Supplier Attributes**
- **Item Attributes**
- **Deep Supply Chain Networks**
- **Industrial Base Demand**
- **Manufacturing**
- **Contracting**
- **Inventory**
- **Simulation**
- **Minimum Sustaining Rate**
- **Disaster Mapping**
- **Revenue Analyzer**

IBAT Demonstration

Baseline (Healthy Base)

Family	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
BASE	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Ammo Family 1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 3	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 4	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 5	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 6	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 7	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 8	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 9	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 10	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%

No China

Family	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
BASE	98%	92%	85%	85%	83%	81%	80%	79%	78%	77%	77%	76%
Ammo Family 1	100%	97%	95%	95%	94%	94%	94%	94%	93%	93%	93%	93%
Ammo Family 2	100%	91%	61%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 3	50%	48%	40%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Ammo Family 4	100%	97%	89%	92%	90%	88%	86%	85%	84%	83%	83%	82%
Ammo Family 5	100%	92%	81%	83%	79%	76%	74%	73%	71%	69%	67%	66%
Ammo Family 6	100%	97%	87%	87%	83%	80%	78%	77%	76%	75%	74%	73%
Ammo Family 7	100%	100%	99%	98%	97%	97%	96%	96%	96%	96%	96%	95%
Ammo Family 8	100%	92%	73%	68%	61%	56%	53%	51%	49%	47%	46%	45%
Ammo Family 9	100%	100%	94%	83%	77%	72%	69%	67%	65%	63%	62%	61%
Ammo Family 10	95%	77%	57%	53%	46%	41%	37%	34%	32%	30%	29%	27%

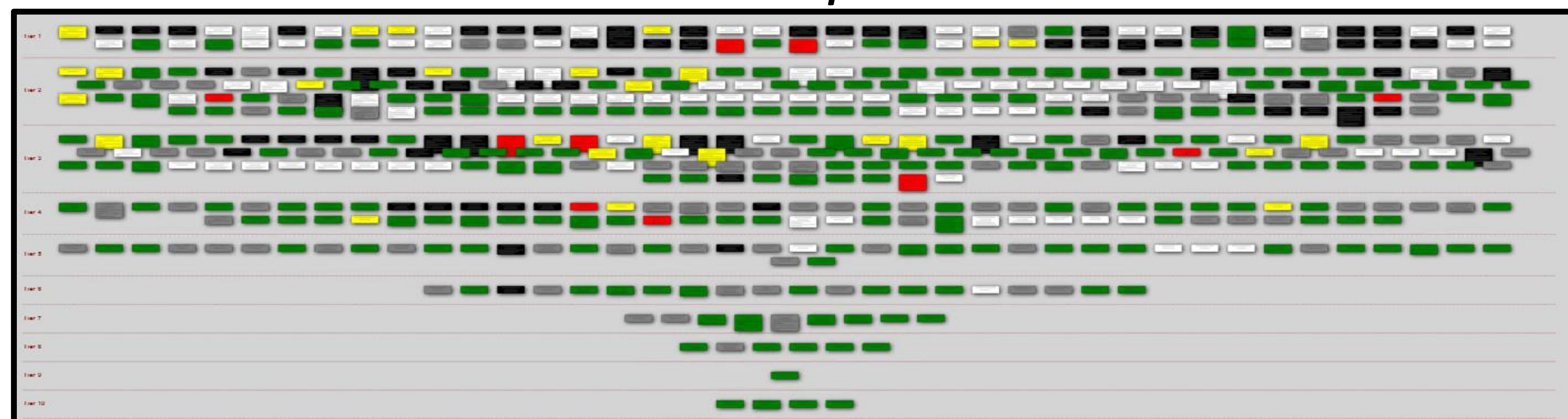
No China – Add Mexico

Family	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
BASE	98%	93%	86%	86%	91%	91%	90%	90%	90%	90%	90%	89%
Ammo Family 1	100%	98%	96%	96%	97%	97%	97%	97%	96%	96%	96%	96%
Ammo Family 2	100%	91%	61%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 3	50%	48%	40%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Ammo Family 4	100%	97%	89%	92%	100%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 5	100%	92%	81%	83%	82%	81%	80%	79%	79%	78%	78%	78%
Ammo Family 6	100%	97%	87%	87%	100%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 7	100%	100%	99%	98%	97%	97%	96%	96%	96%	96%	96%	95%
Ammo Family 8	100%	92%	73%	68%	78%	76%	75%	74%	73%	72%	72%	71%
Ammo Family 9	100%	100%	94%	83%	77%	72%	69%	67%	65%	63%	62%	61%
Ammo Family 10	95%	77%	57%	53%	76%	76%	75%	75%	74%	74%	74%	73%

No China – Add Mexico – Surge

Family	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
BASE	70%	64%	62%	67%	77%	78%	79%	80%	80%	80%	81%	81%
Ammo Family 1	94%	93%	93%	94%	96%	96%	96%	96%	96%	96%	96%	96%
Ammo Family 2	29%	14%	10%	93%	99%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 3	19%	10%	7%	21%	35%	45%	50%	50%	50%	50%	50%	50%
Ammo Family 4	71%	62%	59%	72%	98%	100%	100%	100%	100%	100%	100%	100%
Ammo Family 5	30%	15%	10%	30%	46%	48%	52%	56%	58%	60%	60%	60%
Ammo Family 6	55%	39%	26%	36%	64%	69%	70%	72%	73%	74%	74%	75%
Ammo Family 7	88%	88%	88%	88%	88%	88%	88%	89%	90%	91%	91%	91%
Ammo Family 8	48%	40%	38%	38%	67%	67%	67%	67%	66%	66%	65%	65%
Ammo Family 9	66%	60%	57%	55%	54%	53%	53%	53%	52%	52%	52%	52%
Ammo Family 10	25%	15%	11%	11%	29%	34%	36%	37%	38%	39%	39%	40%

Network – China Impact



Analysis Takeaways:

1. Domestic Production of Antimony Sulfide would be Helpful

2. Many other Foreign Rare Earth Materials are Chokepoints

3. Acquisition / Logistical Strategies can Reduce Risk

Minimum Sustaining Rate (MSR)

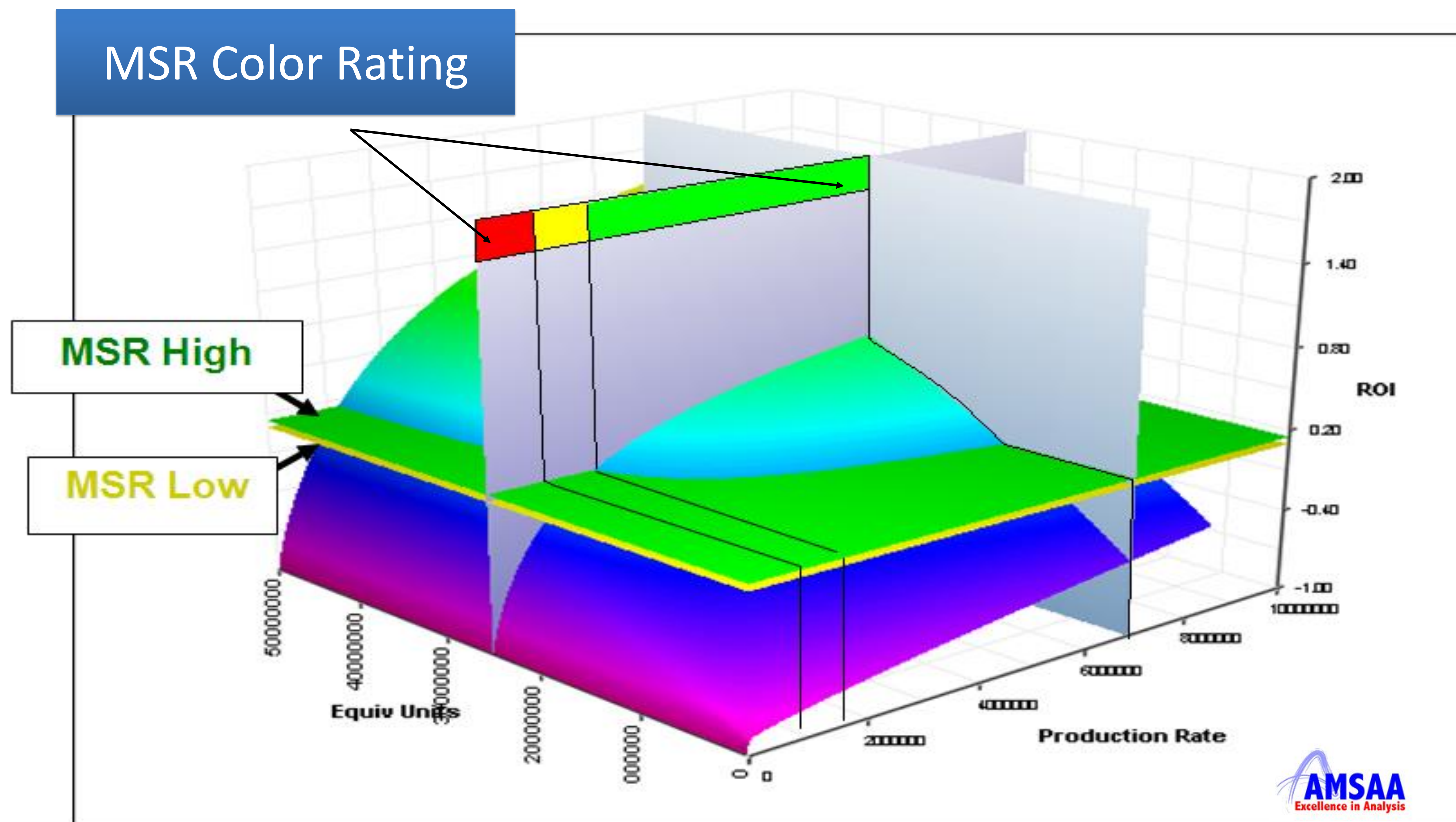


Minimum Sustaining Rate

Financial Viability Rating



Supplier A – Component X



Only DOD Vetted MSR Methodology
(Vetted by United States Army Materiel Systems Analysis Activity)



Summary – Future Direction

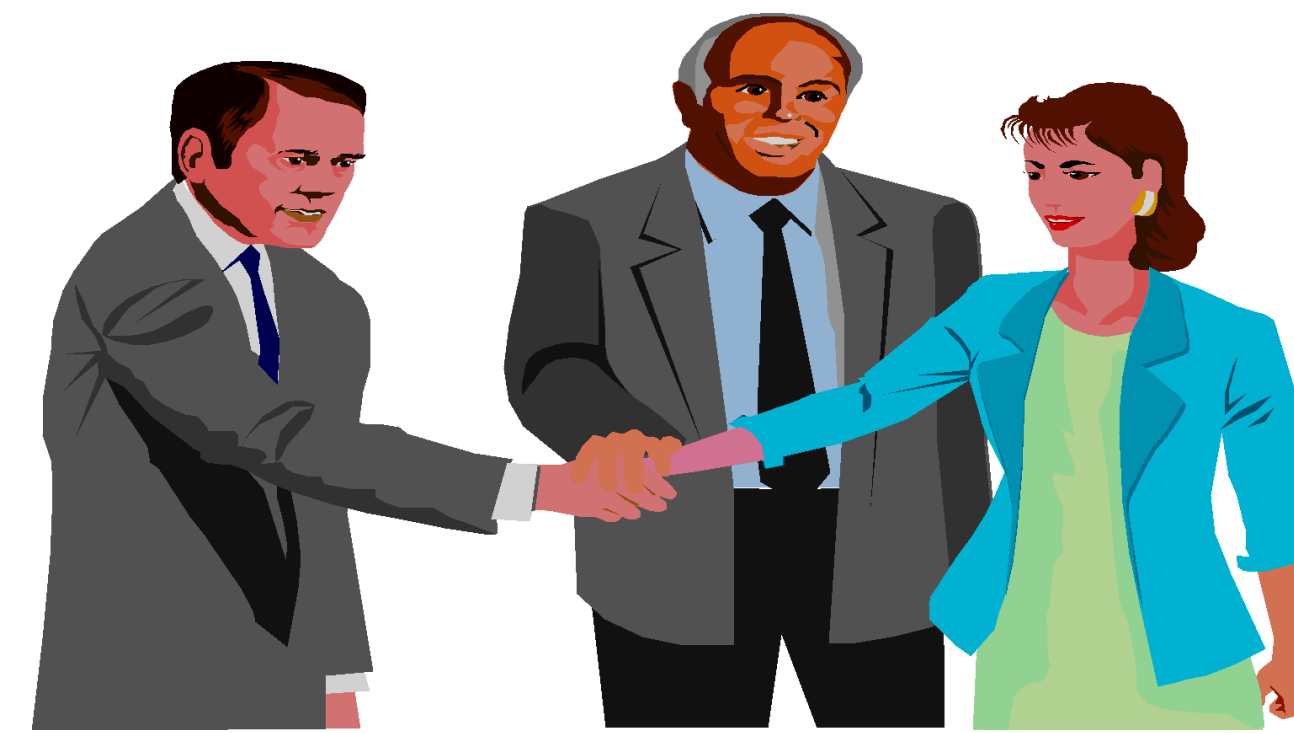


- **Commercial Portal Being Integrated into the IBAT**
- **Greater Industry / DOD Collaboration**
- **Navy to Join IBAT Effort**
- **IBAT Can be Scaled to Other Commodity Area
(Aircraft, Armor, Missiles, Ships, etc.)**



Thanks!

Decision Sciences Incorporated



Rob Roy – President
LaDonna Schneller – Program Manager
Decision Sciences Incorporated
(850) 864 – 2552
reroy@dsifi.com