

Deterrence Symposium, 31 July - 1 August 2019
La Vista Conference Center, La Vista, NE
Deterrence and Assurance Academic Alliance - Student Research Poster Presentations

25 Apr 19

We are pleased to offer students the opportunity to present their deterrence and assurance related research during a poster session at the 2019 United States Strategic Command Deterrence Symposium.

You and your students are invited to register for the Deterrence Symposium and participate in the full agenda on both days. Due to contractual agreements with the La Vista Conference Center, registration for the symposium is necessary to attend the event. The registration website will open on 21 May 2019.

Deterrence Symposium Theme: “Deterrence and Assurance in an Era of Great Power Competition”

Why should a student participate? Provides an excellent opportunity for students to engage deterrence experts from government, academia, industry, and international participants. As in previous years, we anticipate over 700 U.S. and international participants. We suggest students bring copies of their research and business cards.

How do I begin the process? Students interested in presenting their research must have Alliance Member sponsorship prior to submitting the request to USSTRATCOM. Sponsorship simply means the review and approval at the university level before providing their entry to USSTRATCOM.

Undergraduate and Graduate presenters: The poster session occurs both days of the symposium (beginning of each morning, during breaks and between sessions, and prior to the keynote reception).

Poster requirements: basic elements of a poster, but may adjust for your presentation.

- Title/Author
- Abstract: identify research topic, intent of research, and findings/conclusion.
- Body: What are the main questions paper is addressing?
- Data/empirics: Opportunity to use graphs, charts or quantitative analysis. Visual representations of argument or data is very useful in a poster.
- Conclusions: Be clear and concise. What did you find and how is this similar/different from previous analyses? What is the “bottom line” of your analysis?
- Have references available.

Ensure poster is:

- Readable: the elements should flow and relate logically to each other.
- Legible: Do not overload with too much information. Avoid fancy fonts or fonts that are too small. Organize your information carefully. Text should be clear, concise, and free of spelling and grammatical mistakes.
- Eye-catching: make good use of graphics and/or pictures to include presenting research and findings in a succinct and interesting manner. Use color and spacing wisely and consistently.
- Attached are poster examples for reference.

Submission details: Submit poster proposal, abstract of the research, university affiliation and Alliance Member sponsor to include contact information no later than 21 June 2019 to be considered to Ms. Katie Cooper, USSTRATCOM Academic Alliance, Kathleen.a.cooper8.civ@mail.mil, (402) 232-0766.



Global Information Grid

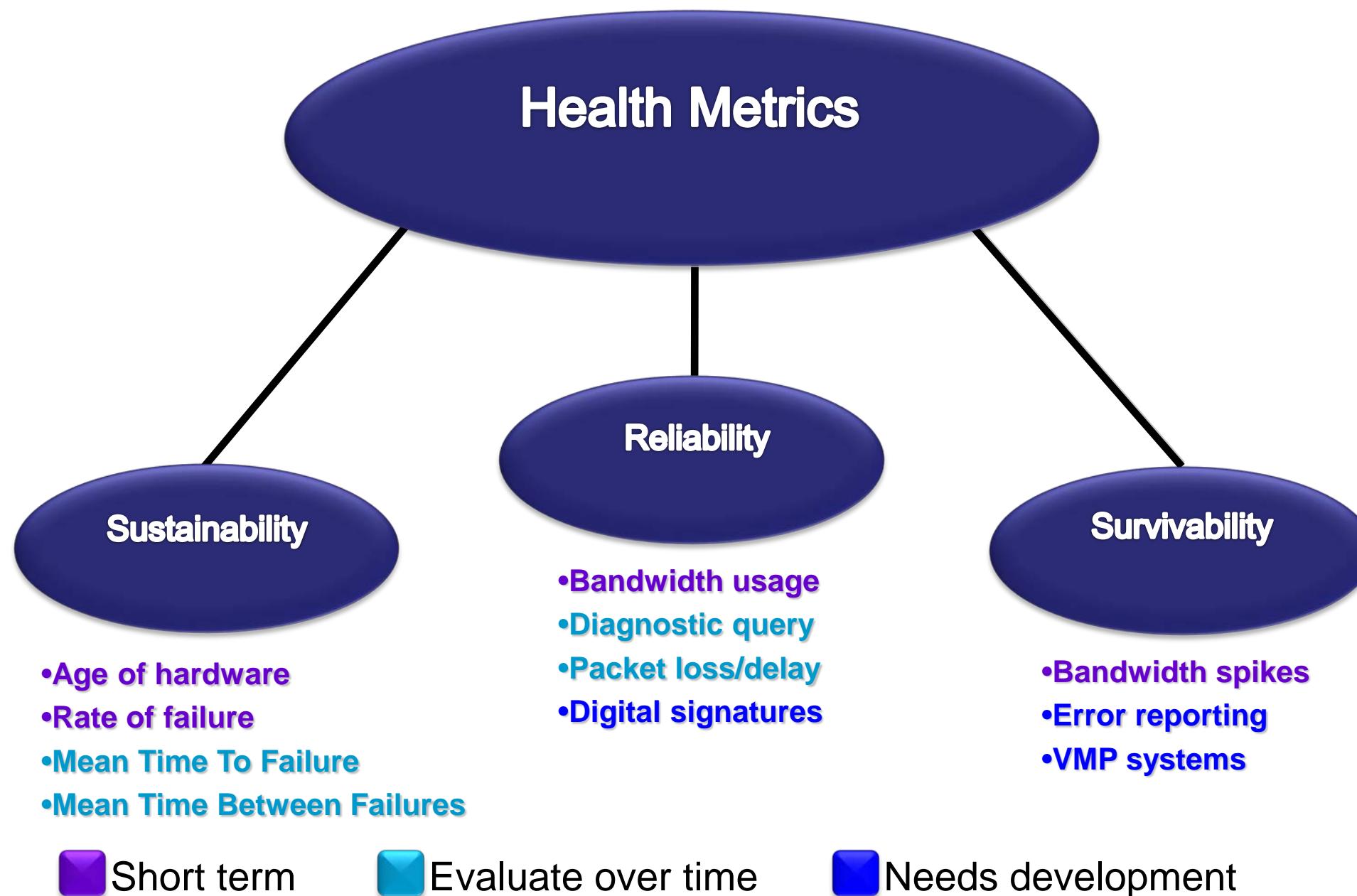


(U) Dates: January – May 2009
(U) Customer: JTF-GNO, JFCC-NW
(U) Mission Areas: Cyber

(U) Purpose: Design the framework for metrics that assess the health of the Global Information Grid (GIG) with regard to sustainability, reliability, and survivability.

(U) Task:

- Determine best methods to effectively measure the sustainability, reliability, and survivability of the GIG on a daily basis
- Discover commercial best practices and how best to implement them into the GIG
- Review metrics currently used in the commercial sector to measure network health, and assess whether these metrics can be readily applied to the GIG
- Determine how to incorporate commercial practices into the GIG architecture



(U) Methodology:

- Evaluated the impact of the sustainability, reliability, and survivability of the GIG
- Explored the technological methods necessary to assess and maintain health of the system (Figure 1)
- Researched commercial best practices and their potential impact on the GIG
- Designed an inclusive framework that incorporates sustainability, reliability, and survivability through qualitative measures
- Provided a notional framework and recommendations to address the health of the GIG

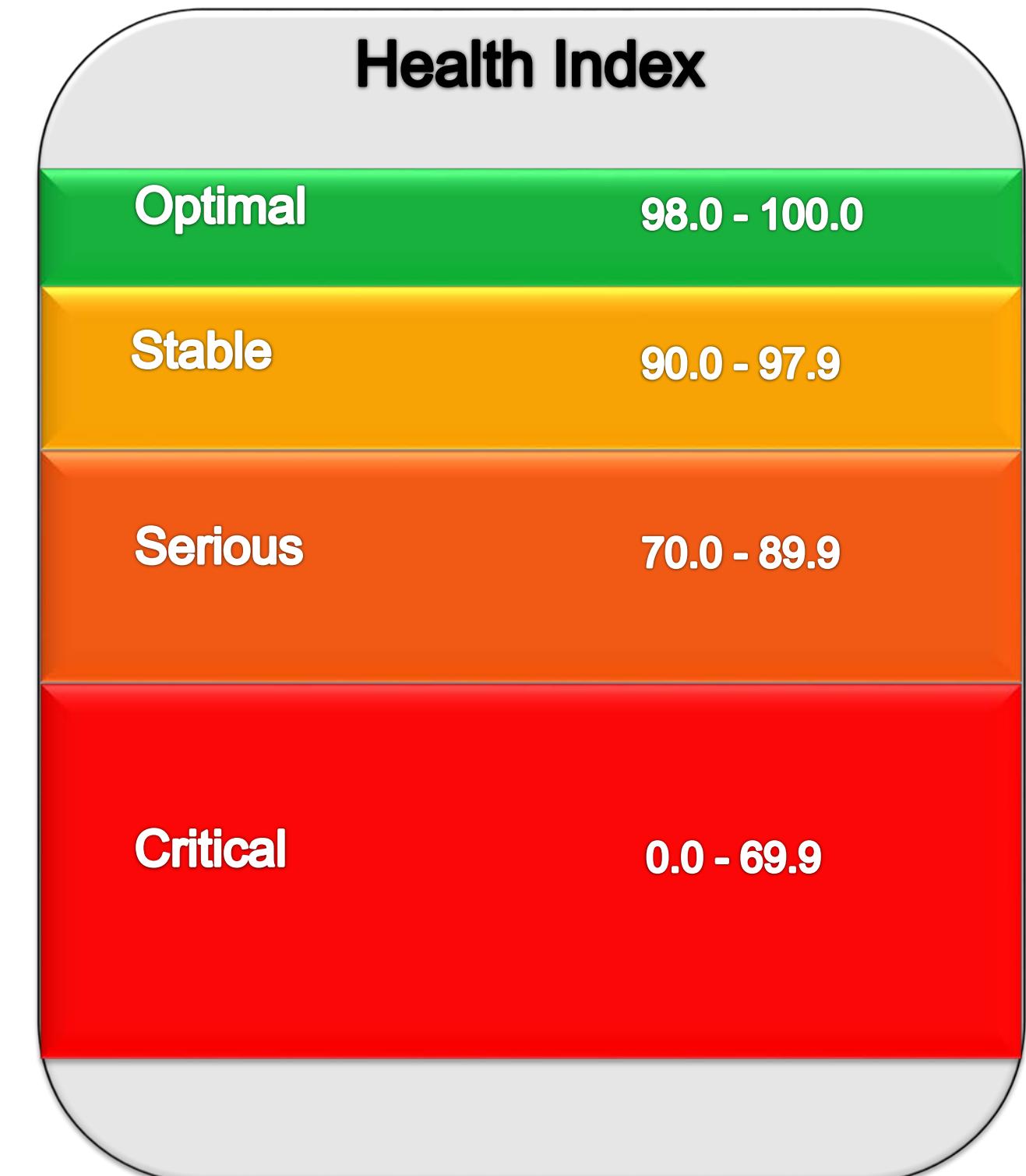


Figure 1: Global Information Grid Health Framework

Criterion	Weight	Score	Total
Sustainability	0.3	96	28.8
Reliability	0.3	95	28.5
Survivability	0.4	96	38.4
95.7			

Figure 2: Notional Health Indicator

(U) Conclusions:

- The U.S. must develop a comprehensive method for evaluating the overall health of the GIG
- Besides technical reporting of the health, other factors, such as cyber threats, must be considered
- Several aspects of user culture must change to adapt to the rapidly changing threat environment
- Research, development, and annual funding is needed to execute and maintain optimal solution
- Due to confusing reporting structure of current GIG operations, a unified reporting structure with unitary control should be evaluated to ensure optimal care of the GIG

(U) Recommendations:

- Acknowledge unitary control of the GIG
- Enforce user accountability to prevent common errors that could compromise security of the GIG
- Weigh mission necessity more heavily than individual user rank
- Implement the Health Indicator to create and sustain baseline measurements for the health of the GIG (Figures 2 and 3)
- Use common definitions, language, and measurements
- Encourage collaboration among all organizations responsible for part of the GIG



Blue-on-Blue Electromagnetic Interference

(U) Dates: August – December 2009

(U) Customer: J-66

(U) Mission Areas: Cyber, Space

(U) Purpose: To study commercial space practices to mitigate, reduce, or eliminate blue-on-blue (or unintentional) Electromagnetic Interference (EMI) to Department of Defense (DoD) space systems.

(U) Task:

- Examine the major trends in SATCOM over the last 20 years in order to extrapolate sources of EMI
- Investigate methods by which EMI can be mitigated, reduced, or eliminated from Commercial Space Systems in order to potentially recommend similar methods for the DoD to eliminate EMI
- Determine the extent to which commercial satellite companies differ in their practices or share best practices to mitigate EMI
- Recommend appropriate practices for DoD to adopt

(U) Methodology:

- Researched satellite communications and determined the main sources of EMI
- Identified trends in the satellite industry and their effect on the frequency of EMI events
- Conducted outreach to EMI experts from the commercial sector and the DoD
- Analyzed commercial best practices for mitigating, reducing, and resolving EMI to determine which practices could be utilized by the DoD

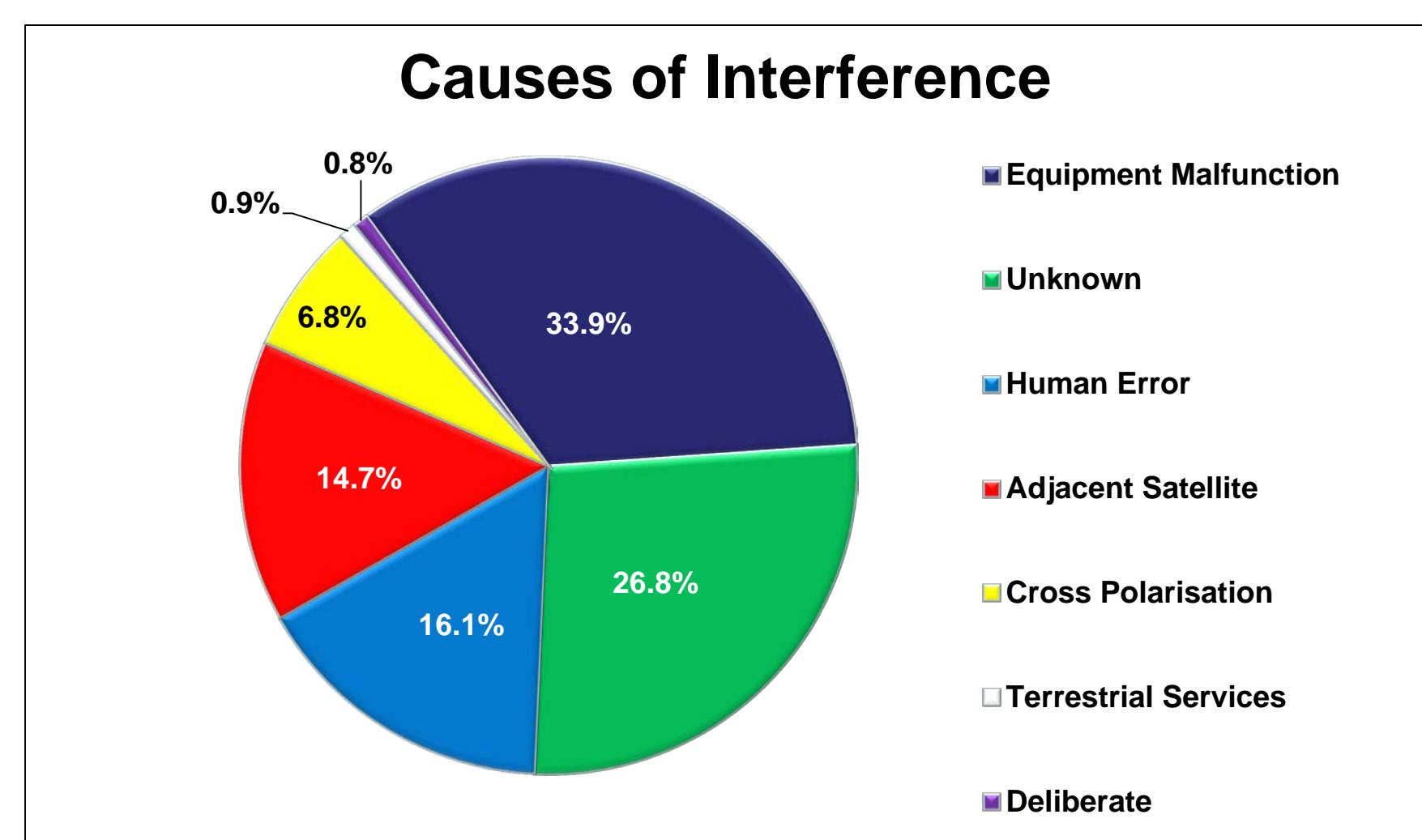


Figure 1: Causes of Interference

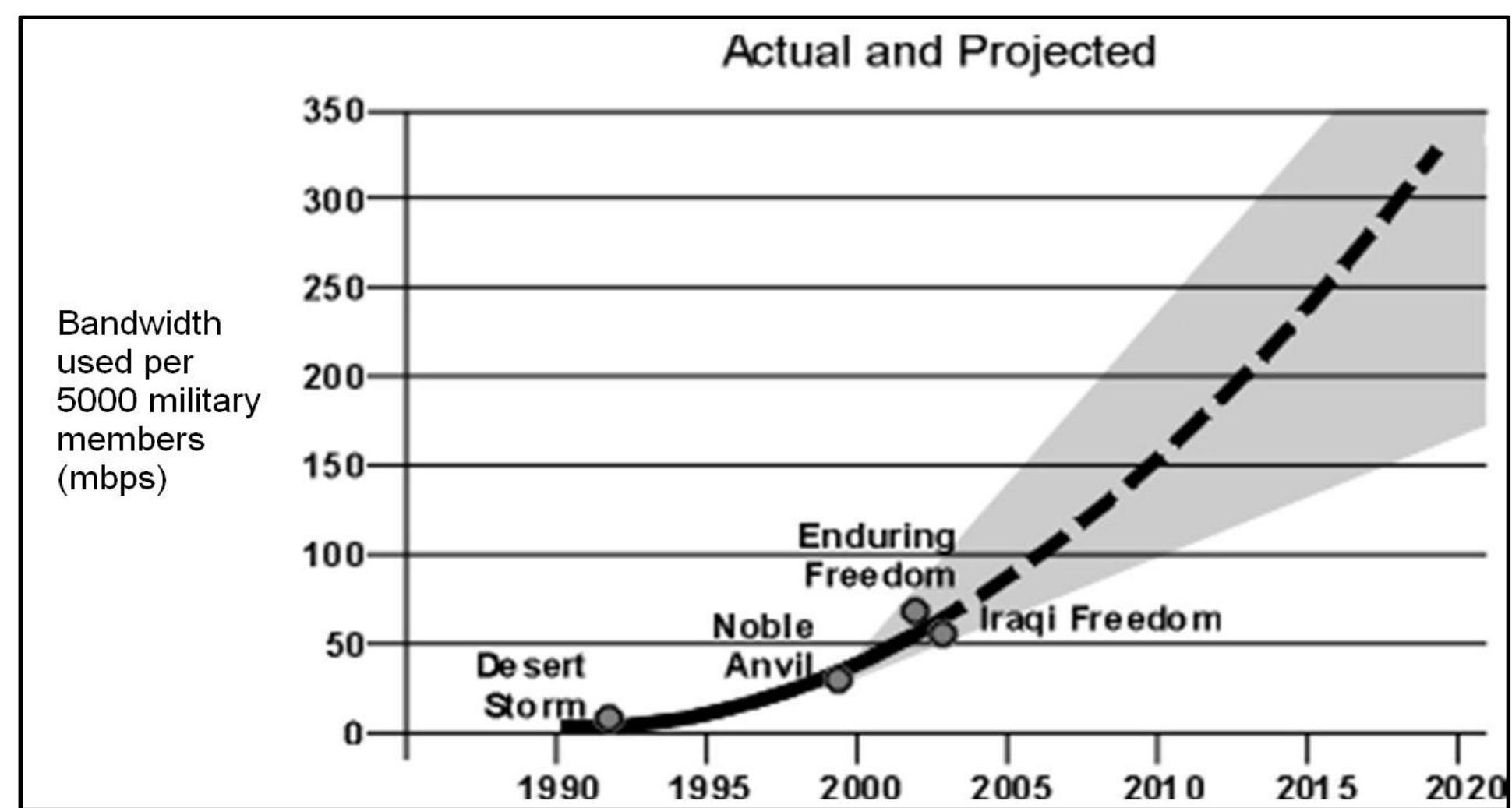


Figure 2: Growth in Military SATCOM Requirements



Figure 3: Notional Organizational Structure of the General Users Initiative

(U) Conclusions:

- Human error plays a significant role in creating EMI, resulting largely from inadequate training (Figure 1)
- Spectrum crowding has resulted in increased EMI
- The military's need for bandwidth has grown exponentially since Desert Storm and is expected to continue over the next 10 years (Figure 2)
- The military now gets more than 80% of its bandwidth from leased commercial satellites
- Despite widespread use of commercial satellite equipment, military schoolhouse curriculums provide little or no training on these commercial systems
- Communication among operators is vital to mitigating, reducing, and eliminating EMI

(U) Recommendations:

- Standardize training and certification programs to decrease human error
- Designate the military as a pre-launch customer to allow for the specification of payload requirements
- Increase communication to resolve straightforward issues and prevent future problems
- Create a General Users Initiative (GUI) to facilitate greater communication among SATCOM operators and the DoD (Figure 3)
 - The GUI would serve as a third party communication hub including a database of EMI events occurring on all SATCOM systems