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June 10, 2004

Paul Margie  
Office of Commissioner Copps  
Federal Communications Commission  
445 12th Street, S.W.  
Washington, D.C. 20554

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Policy Branch  
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Re: *Ex Parte* Submission  
File No. SAT-MS-C-20040210-00027

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

Dear Mr. Margie:

In a meeting with you and Commissioner Copps last week regarding this proceeding, Inmarsat mentioned that it had responded to a request for information made by the Department of Homeland Security. Enclosed as promised is a copy of the DHS request for information, as well as Inmarsat's response, which provides an overview of the next-generation Broadband Global Area Network (BGAN) system currently under development by Inmarsat.

Please let us know if you need any additional information.

Respectfully submitted,



John P. Janka  
Alexander D. Hoehn-Saric

Enclosures (2)

cc: Marlene Dortch  
Andrea Kelly  
Qualex International

# 58 -- Request for Information, SAFECOM Program, Technologies and Processes Enabling Public Safety Interoperability

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- Modification 01 - Posted on Nov 07, 2003
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## General Information

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## Contracting Office Address

DHS - Direct Reports, Office of the Chief Procurement Officer, Office of Procurement Operations, Office of the Chief Procurement Officer, Washington, DC, 20528

## Description

REQUEST FOR INFORMATION, SAFECOM PROGRAM, Technologies and Processes Enabling Public Safety Interoperability\_\_\_\_ ---- INTRODUCTION----  
The SAFECOM Program (SAFECOM) is soliciting comments and input from qualified vendors and the academic research community regarding technology concepts and existing or under-development products or services to provide for the interoperability of public safety communications. SAFECOM is asking for 5-7 page White Papers describing the technology product, service, or concept to be submitted by November 14, 2003. White Papers should be submitted to safecomprogram@dhs.gov.\_\_\_\_ SAFECOM is the umbrella program within the Federal government intended to help local, tribal, State and Federal public safety

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agencies improve public safety response through more effective, efficient, interoperable wireless communications. The SAFECOM program was created by the Office of Management and Budget (OMB) as a high priority e-government initiative and is housed within the Science and Technology Directorate of the Department of Homeland Security (DHS). SAFECOM is currently working with existing Federal communications initiatives and key public safety stakeholders to facilitate the development of better technologies and processes for the cross-jurisdictional and cross-disciplinary coordination of existing communications systems and future networks. A public safety practitioner driven program, SAFECOM has a customer base of over 44,000 local and State public safety agencies and organizations, in addition to over 100 Federal agencies involved in public safety response. \_\_\_\_ This Request for Information (RFI) is intended to increase SAFECOM's awareness of the technology available, under development or in concept that will help realize the program's long-term goal: The creation of a "system of systems" by which public safety across disciplines and jurisdictions will be fully interoperable when necessary. A panel of SAFECOM representatives will review submissions to this RFI and select respondents may be invited to present to a board of these representatives to answer questions regarding submitted products, services, or technology concepts. A Broad Agency Announcement (BAA) under which SAFECOM may fund demonstration projects undertaken jointly by industry and public safety agencies will likely follow this RFI. \_\_\_\_

----BACKGROUND----

Public safety wireless "interoperability" is the ability of public safety service and support providers to communicate with each other via voice, data or video, on demand, in real time, when needed and as authorized. Inadequate and unreliable wireless communications are serious issues plaguing public safety. In many instances, agencies lack the technology necessary to perform their mission-critical duties. Such agencies are unable to share critical voice and/or data information in routine day-to-day operations, within pre-established task forces and in large-scale events such as acts of terrorism and natural disasters. This lack of interoperability comes at a high price: Property may be damaged or even lives lost when public safety agencies cannot effectively communicate. \_\_\_\_ According to a report issued by the National Task Force on Interoperability (NTFI) in January 2003, there are many factors-- political, technological, and financial-- that hamper public safety interoperability today, including: \_\_\_\_

- Incompatible and aging communications equipment in use across the 44,000 agencies in the United States, ranging from newer, digital systems to 30 year old analog systems \_\_\_\_
- Limited and fragmented budget cycles and funding at the federal level (where grant funding agencies have not previously coordinated a common set of requirements) and at the local level (where individual agencies often have different planning cycles, procurement processes and technology requirements) \_\_\_\_
- Limited and fragmented planning and cooperation among public safety agencies due in part to the limited resources of small and sometimes volunteer organizations \_\_\_\_
- Limited and fragmented radio spectrum dedicated to public safety \_\_\_\_
- Limited equipment standards for public safety communications which would incorporate universally recognized, fully open, implementable standards \_\_\_\_

----TECHNOLOGIES OF INTEREST--

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-- SAFECOM is requesting information from qualified vendors and the research community for products, service models or enabling technologies that can accomplish one or more of the following functional requirements: \_\_\_\_ • Interconnect disparate voice and/or data public safety communications systems \_\_\_\_ • Extend and/or enhance public safety communications systems coverage (including but not limited to improved spectrum management, signal coverage, system reliability) \_\_\_\_ • Extend and/or enhance capabilities to public safety communications systems (including, but not limited to extension of battery life, user/message prioritization) \_\_\_\_ SAFECOM and its associated programs have identified a number of parameters expected to characterize the technologies and processes submitted in response to this RFI. While submissions are not necessarily expected to respond to all of these considerations, SAFECOM would like to identify concepts that fulfill or enable as many as possible. Evaluations will be based on these parameters. \_\_\_\_ These parameters include: \_\_\_\_ • Open Standards rather than proprietary solutions \_\_\_\_ • Leveraging of "mainstream" commercial technology \_\_\_\_ • Backwards compatibility with legacy systems and technologies \_\_\_\_ • Scalability to function in both day-to-day public safety response and in major event situations with small and large number of responders and varying functional requirements of different types of subscribers (e.g. police, fire, EMS) and levels of government (local, State and Federal) \_\_\_\_ • High end-to-end Quality of Service and performance characteristics \_\_\_\_ • High degree of reliability and redundancy \_\_\_\_ • Useful for day-to-day operations \_\_\_\_ • Limited power requirements \_\_\_\_ • Flexibility in ergonomics / ease of use \_\_\_\_ • Inherent and supportable elements of security \_\_\_\_ • Inherent and supportable elements of privacy \_\_\_\_ • Acceptable Total Cost of Ownership for public safety agencies \_\_\_\_ • Interoperability across public safety disciplines and all levels of government \_\_\_\_ • Spectral efficiency \_\_\_\_ • Non-Repudiation \_\_\_\_ • Interoperable across all Public Safety frequency bands \_\_\_\_ Stage of Development: \_\_\_\_ SAFECOM is interested in receiving submissions from industry that illustrate any new or developing technologies that can provide solutions, full or partial, towards public safety interoperability. Information on technologies in all stages of development is welcome and sought after, whether the products are already on the shelf, in development, or merely a concept on the drawing table. It is asked that industry clearly articulate the stage of development of any technologies in the submissions. \_\_\_\_ ----WHITE PAPER CONTENTS:---- In response to this Request, white papers of 5-7 pages should be submitted which cover: \_\_\_\_ 1. Background, Current State, and Categorization of Proposed Technology Describe in adequate detail the specific technology or solution being proposed for SAFECOM consideration, the current state of its development, any current deployments of the technology within the public safety environment, and how the technology or solution compares with the parameters outlined above. \_\_\_\_ 2. Applicability of Proposed Technology to Public Safety Communications Explain how the proposed technology or solution would be deployed in a public safety communications setting, and how public safety officers would gain access to and use it. \_\_\_\_ 3. Timeline and Cost to Develop Provide a rough estimate of the time and cost to develop the technology for

utilization. \_\_\_\_\_

----SUBMISSION PROCESS:---- In response to this Request, white papers of 5-7 pages should be submitted electronically by Friday November 14, 2003 to \_\_\_\_\_ safecomprogram@dhs.gov \_\_\_\_\_

----CONTACTS:---- Parties requiring further information may contact: \_\_\_\_\_ Dereck Orr, SAFECOM Program, Dereck.orr@nist.gov \_\_\_\_\_

----RESOURCES:---- Additional information on public safety communications and associated federal efforts can be obtained at the following websites. \_\_\_\_\_

AGILE Program The AGILE Program within the Office of Science and Technology at the National Institute of Justice has a mission to assist State and local law enforcement agencies to effectively and efficiently communicate with one another across agency and jurisdictional boundaries. It is dedicated to studying interoperability options and making valuable information available to law enforcement, firefighters, and emergency technicians across the country. \_\_\_\_\_ <http://www.agileprogram.org/> \_\_\_\_\_

Association of Public Safety Communications Officials – International, Inc. (APCO) APCO is the world's oldest and largest not-for-profit professional organization dedicated to the enhancement of public safety communications. \_\_\_\_\_ <http://www.apcointl.org/> \_\_\_\_\_

Justice Technology Information Network (JUSTNET) The official web site for the National Law Enforcement and Corrections Technology Center system, JUSTNET contains various publications on communications interoperability issues. \_\_\_\_\_ <http://www.justnet.org/> \_\_\_\_\_

National Institute of Standards and Technology (NIST) Summit on Interoperable Communications for Public Safety The Summit on Interoperable Communications for Public Safety, held at the National Institute of Standards and Technology (NIST) in Gaithersburg, Maryland, on June 26 and 27, 2003 was a joint effort between NIST, the Department of Homeland Security's Science and Technology (S&T) Directorate, Project SAFECOM, and the National Institute of Justice's AGILE Program. The Summit brought together a variety of programs that were created to assist public safety practitioners, including the First Responders. The Summit was the initial step in familiarizing key interoperability players with the work being done by others so that mutually beneficial coordination, and collaboration, among the various technical programs could be established. \_\_\_\_\_

<http://pssummit.its.bldrdoc.gov/> \_\_\_\_\_

National Public Safety Telecommunications Council (NPSTC) NPSTC is a federation of associations representing public safety telecommunications. NPSTC serves as a resource and advocate for public safety telecommunications issues. \_\_\_\_\_ <http://www.npstc.du.edu/> \_\_\_\_\_

National Task Force on Interoperability (NTFI) Recognizing that solutions to the national problem of public safety communications interoperability could only be achieved through cooperation between all levels of government, 18 national associations representing State and local government and public safety officials formed a task force to address this issue. NTFI's recommendations have been published in the form of a brochure, guide, and supplemental resources. \_\_\_\_\_

<http://www.agileprogram.org/ntfi/> \_\_\_\_\_

Public Safety Wireless Network (PSWN) Formerly a joint Department of Justice and Department of Treasury program and now part of the SAFECOM program under DHS, PSWN is dedicated to the establishment of a seamless, coordinated public safety communications system for

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the safe, effective, and efficient protection of life and property. \_\_\_\_  
<http://www.pswn.gov/> \_\_\_\_

**Point of Contact**

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[jean.carter@dhs.gov](mailto:jean.carter@dhs.gov)



**Response of Inmarsat, Inc.**

Request for Information: SAFECOM Program  
Technologies and Processes Enabling  
Public Safety Interoperability  
HSSCHQ-04-RFI-0002  
November 14, 2003

Overview

This paper responds to the above referenced Request for Information (RFI) by providing an overview of the Broadband Global Area Network (BGAN) system currently under development by Inmarsat®.

By providing a portable, highly reliable, IP-based connection at data rates up to 432 kbits/s on a shared satellite channel, BGAN will allow mobile users to access any IP-based network, or device connected to the Internet, anywhere in the world. The BGAN system will also provide circuit switched voice and ISDN connectivity, including to/from mobile terrestrial wireless users. This interoperability will allow BGAN to make an important contribution to the "system of systems" envisioned in the RFI. In doing so, BGAN can help ensure that public safety users have on-demand access to critical data, video and voice communications, even in areas where the wireline and terrestrial mobile infrastructure is damaged or lacking, or in situations where interoperability challenges threaten vital communications. Furthermore, until such time as full public safety communications is achieved, Inmarsat's global coverage, proven reliability and portability also make it an ideal choice for fallback communications capabilities.

Inmarsat operates a global satellite system relied upon by governments and other mobile users for a range of voice and data communications. Using satellite terminals and services available from Inmarsat's distribution and manufacturing partners, the Inmarsat system provides a readily available, scaleable and highly reliable communications platform for voice and high-speed data required by mobile users. These solutions are currently available in North America at data rates up to 64 kbit/s. BGAN will offer much higher data rates, along with expanded features.

Inmarsat provides service through its distribution network. Accordingly, this response provides an overview of BGAN system capabilities relevant to the RFI,

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but does not address details of pricing, packaging with other communications services or applications, or other issues that might be proposed by individual distribution partners during an actual procurement process. A list of Inmarsat distribution partners is available on request and can be found at its web site ([www.inmarsat.com](http://www.inmarsat.com)).

#### The I-4 Satellites

Responding to the growing demand from corporate mobile satellite users for high-speed Internet access and multimedia connectivity, Inmarsat is now building its fourth generation of satellites. When fully assembled, the two Inmarsat 4 (I-4) satellites will be the largest commercial satellites ever launched. The satellites will provide major increase in system capacity over existing Inmarsat satellites.

#### The BGAN System

When operational in mid-2005, the BGAN system will provide access to high-speed Internet and other IP-based data networks without the restrictions or limitation of either fixed line or terrestrial mobile services. BGAN will also enable circuit switched voice services via a peripheral handset, as well as circuit switched ISDN (64Kbps) data via the user terminal. BGAN service will be offered on Inmarsat's I-4 satellites.

Set against existing satellite and even terrestrial mobile services, BGAN will offer significant improvements in data rates. Downlink data rates will be up to 432 kbits/s using a secure shared channel. From a network design standpoint, BGAN service is similar to GPRS but with the advantages of higher speed and full coverage within its operational area. Unlike GRPS, BGAN services will not be affected by network "holes" where base stations are either absent or have not been upgraded to carry high-speed data. BGAN performance will be enhanced by a TCP/IP accelerator to compensate for satellite delay.

**Flexible/Ease of Use:** BGAN is designed as a "turn up and go" system, which means that a small workgroup or an individual will be able to get on-line at high speed within minutes of arrival at an emergency site. BGAN will provide access to standard networking protocols, so a single satellite data modem can give access to virtually any IP service, including the Internet, to a workgroup or even a group of offices. As a broadband service, the BGAN IP offering will be "always on," with users paying according to the data they transmit rather than by the time they spend on line. This means there will be no need to wait for a dial up connection to the Internet. And as BGAN terminal will allow users to access both the BGAN IP network and the BGAN circuit switched network, users will have the flexibility to use, as necessary, a range of voice, video, fax, text messaging and other data applications. The direct dial voice service will offer landline quality speech using cutting edge voice compression technology (4kbps), including calling to and from terrestrial mobile users. Voice service features will include: caller identification, call hold, call waiting, call barring, and voice mail.



**Backwards Compatibility:** As a system using IP standards, BGAN will give seamless access over virtual private networks, wireless LAN and remote access technologies, so a BGAN user can have all the advantages of a connection to their corporate networks. BGAN users will be able to access any users connected to the Internet. At the same time, the I-4 satellites will also continue to support existing Inmarsat services relevant to the public safety community.

**Standards and Mainstream Technology:** BGAN terminal will support standard industry interfaces, including 802.11 wireless, Bluetooth and Ethernet, so there will be no need to consider drivers, data cards and (if desired) connection cables. Running over IP, BGAN will offer "plug and play" connectivity with standard networking and operating systems, including Microsoft Windows.

**Reliability and Redundancy:** Inmarsat has a strong track record of providing reliable mobile communications. Reliability is a key factor for users of Inmarsat's existing satellite services and as the international provider of emergency communications for those at sea; resilience is at the heart of Inmarsat's network. In order to meet strict International Maritime Organization (IMO) requirements, the entire Inmarsat network, including the satellites, must provide better than 99.9% availability at all times. This availability is independently audited by an Inter-Governmental Organization (IGO) and is reported to IMO at least once per year. Inmarsat has, since its inception, always bettered this 99.9% requirement for availability.

**Quality of Service:** BGAN will support two service levels:

Standard IP Service features include:

- Always on;
- Variable bit rate (dependent on demand);
- Web access, file transfer, e-mail;
- Pay only for data sent and received; and
- Satellite capacity redeployed in real-time to service areas of high demand.

Premium IP Service (subscription option) include:

- Streaming Class IP;
- Guaranteed bit rate over the satellite;
- Possible 64, 128, 256, 384 kbps send or receive; and
- Available "on-demand" (as with GAN ISDN) and Ideal for voice over IP or video over IP application.

**Security/Privacy:** As with other Inmarsat digital services, BGAN service will be highly secure, supporting full military standard encryption as required. In addition, as BGAN works on IP standards, existing security procedures such as secure sockets layer (SSL) and virtual private networks (VPN) will operate in the same way as they would within the office.

**Status of Development:** Underscoring the potential of its BGAN system, in November 2002, Inmarsat launched the Regional BGAN service, a forerunner to the full BGAN service. Available over a wide area of Europe, North Africa, the Middle East and the Indian sub-continent, R-BGAN service provides packet data communications to light weight (1.6 kg) notebook-size satellite modems over shared 144 kbits/sec channels. Development of both the I-4 satellites and the BGAN system are well advanced. The two satellites are currently expected to be launch, respectively, in the fourth quarter of 2004 and the first quarter of 2005, with BGAN service launch currently planned for the second quarter of 2005.

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