Gatehouse Satcom

BGAN Software Defined Radio

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A complete waveform for the Inmarsat BGAN satellite system

In need of incorporating BGAN capability on Software Defined Radio (SDR) platforms? The Gatehouse BGAN waveform for SDR is a complete waveform for the Inmarsat BGAN satellite system.

By using the Gatehouse BGAN SDR waveform, terminal manufacturers will have the ability to incorporate BGAN capability (BGAN, FleetBroadband and SwiftBroadband, is in the following just referred to as BGAN) on their SDR platform with a minimum of effort. The BGAN waveform is based on the proven Gatehouse BGAN Protocol Stack, which has been incorporated in a large number of BGAN terminals from several suppliers. The waveform has been SCA (Software Communications Architecture) certified by Department of Defence, Joint Tactical Networking Center. The SCA compliant BGAN Waveform is compatible with SCA compliant hardware and can form a complete radio for land, maritime or aeronautical use. The waveform is designed for military as well as civilian use.

APPLICABLE TO ANY SEGMENT
COMMERCIAL OR MILITARY

Benefits

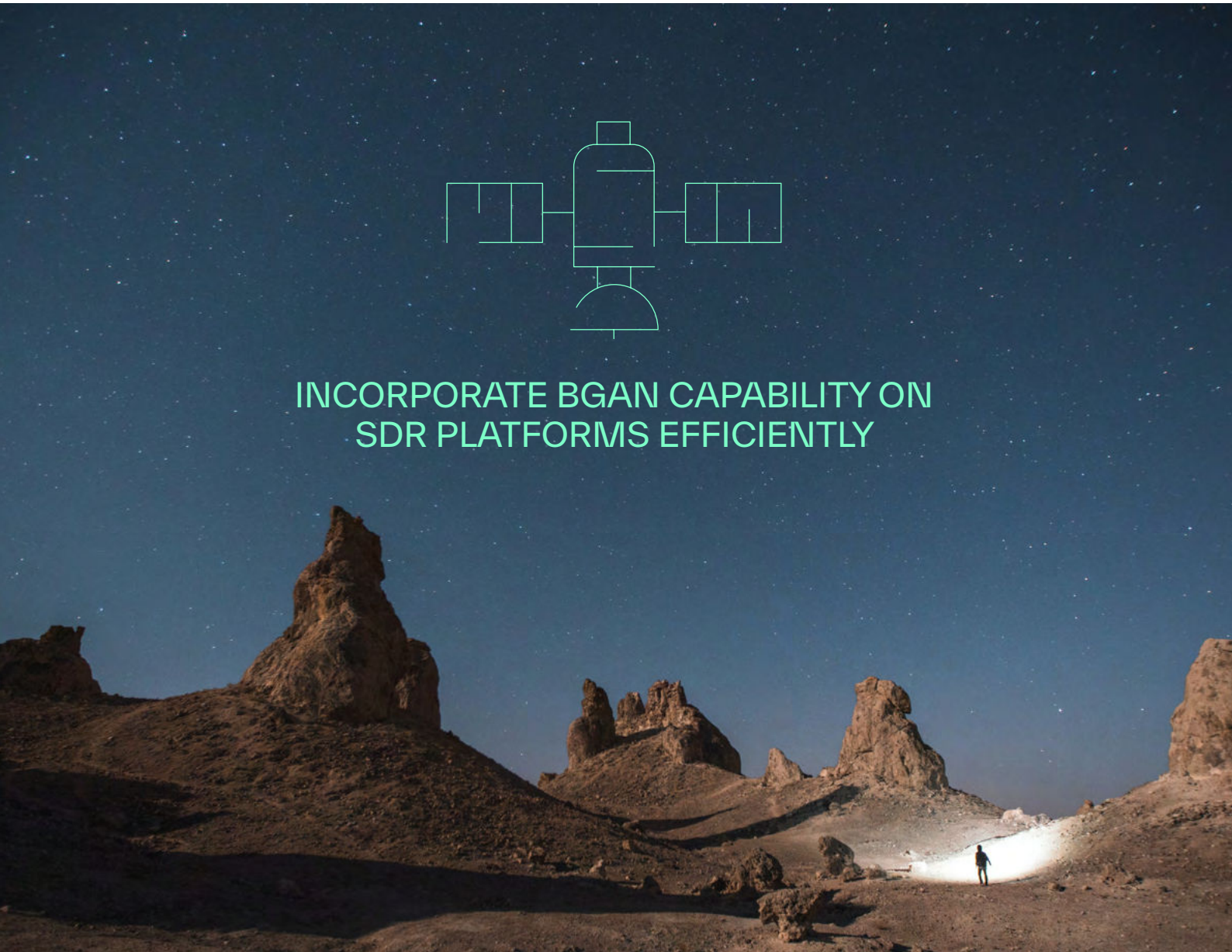
- Enables global SDR-based satellite communication
- Minimal effort required for integrating the waveform with different radio platforms
- Supports the full suite of BGAN bearers, such as packet switched data, circuit switched data and Integrated Services for Digital Network (ISDN)

Use Cases

Even if the purpose of using an SDR is to enable waveforms to run on any platform, some well-known porting effort of the waveform to the platform is required. The main part of the protocol stack is reused as it is; it will be ported to the SCA platform.

Some additional features will be developed to interface to the platform. For the USIM card as an example, the protocol stack defines a relatively high-level interface; some glue logic will be implemented to form the bridge between the USIM hardware interface and the existing protocol stack interface.

When integrating the waveform to the platform a range of optional features and functions is available according to the customer's requirements.



Technical Description

The radio will be built from two main components:

- An SCA compliant platform
- The Gatehouse BGAN waveform

The customer can use their own SCA platform containing the hardware platform, including typical SDR items such as RF, FPGA, DSP and GPP and the SCA core framework. The Gatehouse BGAN waveform contains all the necessary software. The platform must support the characteristics of the BGAN system, such as operation in the L-Band. The BGAN system is a full duplex system, that is, the platform must be able to receive and transmit at the same time. The BGAN system utilizes a number of channel bandwidths, from 10 kHz to 200 kHz.

The BGAN waveform contains the following components:

- The Protocol Stack
- The Physical Layer
- BGAN Application Framework (BAF)

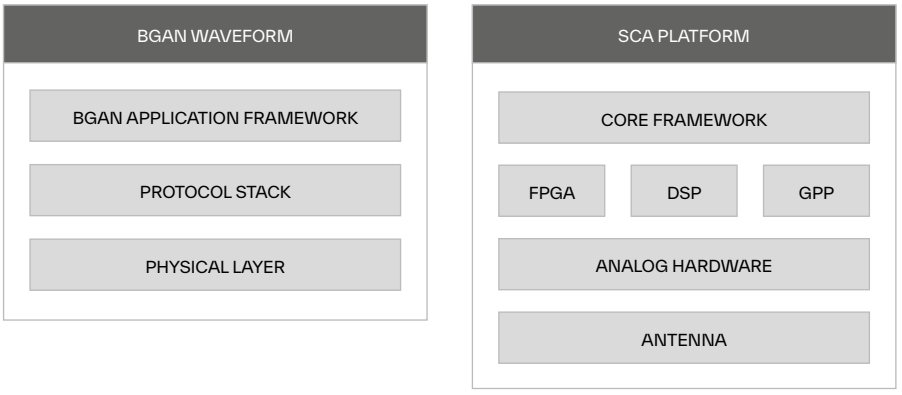
The BGAN waveform includes all the software necessary to use the BGAN services. The waveform includes code for FPGAs, DSPs and GPPs. It also handles all UE (user equipment) classes; at start up the actual UE class will be configured. The waveform is developed to be easily portable across SDR platforms and will, as far as possible, only require standard SCA interfaces. The waveform has an interface for antenna pointing and control. The physical layer manages the RF hardware, HPA and LNA. The platform can be any standard SCA compliant platform.

The hardware will typically include the following:

- DSP and GPP processors, on which the software will run
- One or more FPGA's
- Connectors for user data and speech, e.g. Ethernet, ISDN, RS232 or USB
- Analog hardware, including LNA, HPA, ADC and DAC
- GPS receiver
- USIM card reader
- Antenna

The Core Framework used can be any SCA compliant Core Framework, including OS and CORBA®. The radio must have access to the GPS position and for aeronautical platforms also the velocity vector.

BGAN Software Defined Radio Architecture



Get in touch

Get in touch with us to learn how you can Incorporate BGAN capability efficiently with the Gatehouse BGAN SDR Waveform.
You can contact us at satcom@gatehouse.com.

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Let's unlock the power of satellite communications software