THE GROWING IMPORTANCE OF GEOSPATIAL INTELLIGENCE

"GEOINT is the only intelligence discipline that can accurately display relevant, fused information from the other 'INTs': it's critical to time-dominant tactical and strategic decision making, mission planning, and arming engagement forces with situational understanding and knowledge."

Ric Diaz,
Director for Sales Operations
and Business Development,
Textron Systems Geospatial Solutions

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Introduction

Geospatial technology is going through unprecedented period of growth, 10-15% a year, with an estimated value of $100bn.

Perhaps most importantly, however, is the increased functionality afforded to the beneficiaries of this technology. The ability to support first responders and military personal with actionable insights and real time data has proved to be invaluable.

We have seen vast improvements in the management of data – leading to vastly improved standards and interoperability. Advances in sensor resolution and fusion have had a big impact, however, we are still some way from taking full advantage to what this technology can truly offer.
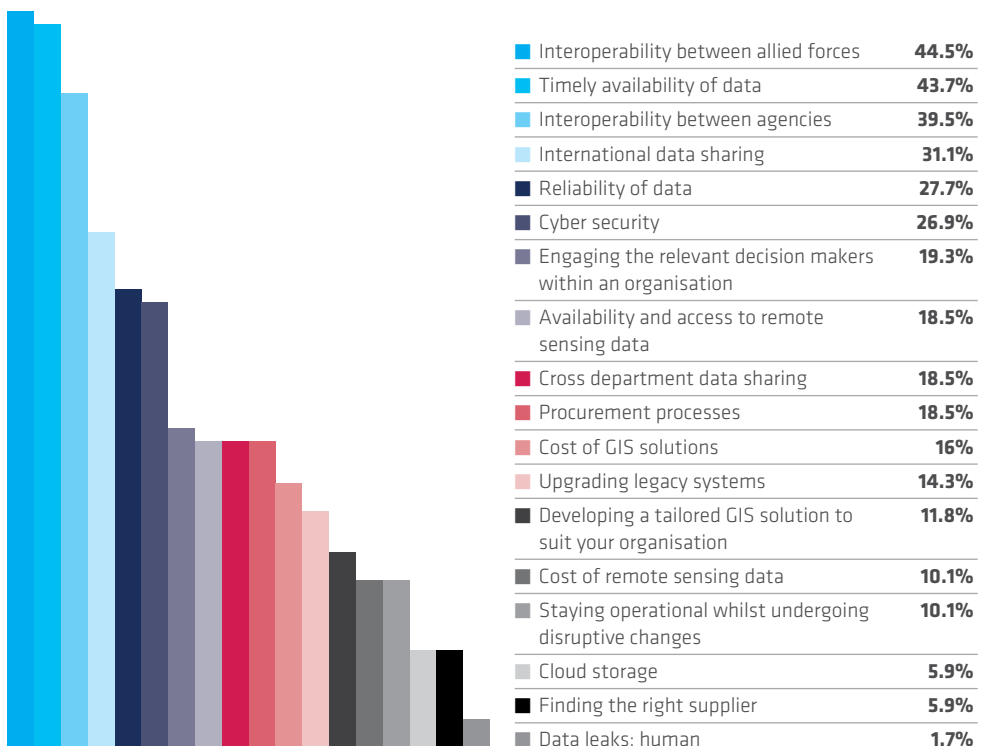
A number of significant challenges face teams running GIS initiatives, from the integration with allied forces and organisations, to data storage, and real-time data. These obstacles, and many more, are currently being tackled by government agencies, military forces and technology providers around the world.

This survey was conducted across July and August with 120 senior GIS focused professionals from defence and government organisations. The report is designed to offer executives an insight into the current state of the industry.

Part 1
Intelligence Challenges
What are your biggest concerns/challenges?

Interoperability of information, whether between agencies or allied forces, is the biggest challenge alongside the timely availability of this data

Challenge	%
Interoperability between allied forces	**44.5%**
Timely availability of data	**43.7%**
Interoperability between agencies	**39.5%**
International data sharing	**31.1%**
Reliability of data	**27.7%**
Cyber security	**26.9%**
Engaging the relevant decision makers within an organisation	**19.3%**
Availability and access to remote sensing data	**18.5%**
Cross department data sharing	**18.5%**
Procurement processes	**18.5%**
Cost of GIS solutions	**16%**
Upgrading legacy systems	**14.3%**
Developing a tailored GIS solution to suit your organisation	**11.8%**
Cost of remote sensing data	**10.1%**
Staying operational whilst undergoing disruptive changes	**10.1%**
Cloud storage	**5.9%**
Finding the right supplier	**5.9%**
Data leaks: human	**1.7%**

Data sharing is a common challenge amongst many industries that use big data. Just under half of all the participants state that sharing data between agencies or allied forces is their biggest concern. As much as we would like to see data forces across borders having the ability to seamlessly share the data they need – almost everything adds complexity to the problem, from security concerns, bureaucracy, red tape to simply opting for different software and data formats.

How much is your organisation investing in the development of GEOINT capability?

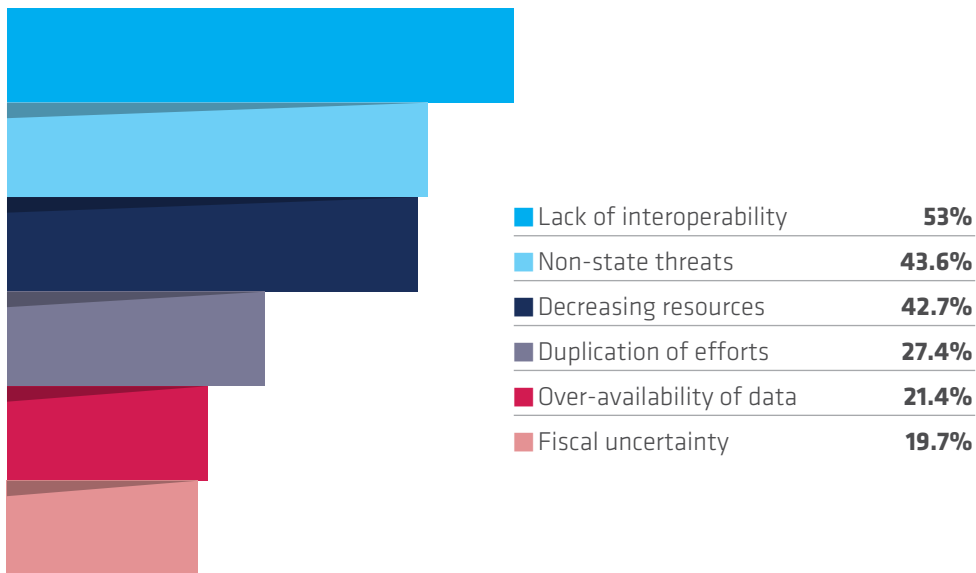Almost 50% of respondents are spending more on GEOINT than they were last year

■ More than last year	**48.3%**
■ The same as last year	**34.5%**
■ Less than last year	**1.7%**
■ Unknown	**15.5%**

"Incremental increase in investment in GEOINT for nearly half of all respondents tells us this capability continues to be a top priority for most nations, despite tighter fiscal constraints and more competition between programmes for limited budget. Drivers for sustained investment in GEOINT range from the ever shifting geo-political situation in Europe, like the ongoing Ukraine-Russia conflict, to events taking place farther afield, like China's contested land reclamation in the South China Sea. That so few respondents are spending less on GEOINT year-on-year tells an equally interesting story, pointing to the trend that the pool of nations not investing in GEOINT is shrinking as a consensus on the benefits of the capability gains greater momentum."

Tom Webber, Conference Director, DGI

Which of these challenges facing GEOINT leaders today do you think are most relevant?

Non-state threats and lack of interoperability are the most relevant challenges facing GEOINT leaders

Lack of interoperability	**53%**
Non-state threats	**43.6%**
Decreasing resources	**42.7%**
Duplication of efforts	**27.4%**
Over-availability of data	**21.4%**
Fiscal uncertainty	**19.7%**

"The need to work together to do more with less against an enemy that is harder than ever before to precisely target is a key driver lying behind these results. However, these challenges show that there are also opportunities to take advantage of. Not everyone sees the availability of data as a challenge, nor should they: better analysis, exploitation and dissemination of the vast amounts of imagery and geo data from a wide variety of sources can be a powerful enabler to solve some of the world's biggest challenges. In addition, few believe that duplication of effort is a major challenge, suggesting collaboration is already creating efficiencies, although there is undoubtedly more that can yet be done in this regard."

Tom Webber, Conference Director, DGI

What do you feel are your most pressing intelligence gaps that GEOINT may be able to address?

We identified marine surveillance as the latest intelligence gap in our current operations and we are looking to strategies accordingly to get the right GEOINT tools to execute this process in a more accurate way.

Intelligence can turn around the security and defense challenges and can give it sufficient support to make appropriate decisions to fill the operational mission gaps.

There are some loop holes in mining activities and exploration that will be eliminated with the use of high resolution imagery software designed to project accurately the exploration sites.

Complexity in collating and analysing huge data will be eliminated once geospatial intelligence is applied.

Flow of information is a big concern, gaps in how information is collected, stored and transferred can lead to critical information being lost.

Military operations, as well as political and humanitarian decisions can be made far more effectively when using the right GEOINT solutions. In addition, the ability to easily share and interpret data leads to more more efficient operations carried out at a lower cost.

Without GEOINT it is not possible to leverage the complete benefit of information systems.

Lack of information sourcing and reliability.

Research and development requires significant amounts of data from various sources and its reliability must be measured in order to drive better results.

Mass data management on a real time basis will be the ultimate solution that geospatial intelligence will have to offer. It would resolve surveying and inspection techniques and will lead to better information absorption by decision makers.

Processing and data extraction gaps will be taken of the shoulders of data scientist looking to change and simplify data management processes.

Gauging the quality of data, intelligence and information is a bit challenging as our technology is a still a bit below-par. Data production is also another challenge we are facing.

Gathering and analysing location data is causing the gaps in our productivity, and geospatial intelligence is likely to solve our issues as it provides better information

Before geospatial intelligence we faced lots of challenges, including unclear information and a difficulty new risks affecting operational performance. Now, this has completely changed.

GEOINT can bridge our analytic gap after which we can provide more comprehensive and customised solution to our clients.

The biggest challenge is mapping the demand of the growing audience with regards to video and navigation updates.

Managing database challenges which create gaps in the intelligence provided to management for decision making

Data of national and regional cartographic databases is challenging and with the help of lthe latest technology we can easily reduce these challenges by adapting to a fully automated GEOINT model.

Integrating new geospatial enterprise software will distribute databases and support infrastructure based on a common platform -- this makes it easier and more effective for the information to be collected, analysed and disseminated right down to the level of an individual soldier.

To accumulate data regarding customer preference and changing trends

List one major event which you believe GEOINT played a decisive role in resolving?

Top Answers

MH370 – Malaysian Airlines lost plane

MH17 – Malaysian flight shot down over Ukraine

Paris, Charlie Hebdo attack

Tracking ISIS in the Middle East

Ebola outbreak

Other Answer Included

- Japan Tsunami
- Tracking Boko Haram
- Philippines Typhoon
- Tracking Somalian pirates
- Monitor strikes in the Israel/ Gaza conflict
- Arctic melting

"I actually had a hard time believing that GEOINT could have actually resolved MH370, lost over the southeastern Indian Ocean – GEOINT could provide potential areas to search, but satellite imagery over a large broad open rough water area is difficult to exploit. Tides and currents certainly precluded a more exact location for search aircrews when MH370 'debris' was presumably located using overhead imagery. However, I totally agree that GEOINT worked more favourably with tracking down what happened to MH17 over Ukraine – even to the point of identifying the probable shooting platform location using social media, press reporting, open source flight trackers, and all-source intelligence information on weapon capabilities, as well as the movement of Ukrainian separatist units on the ground."

Ric Diaz, Director for Sales Operations and Business Development, Textron Systems Geospatial Solutions

Part 2
Cyber Security

Cyber snooping in order to detect terrorist activities has sparked many political debates over civilian privacy rights. Do you believe that cyber snooping is necessary?

An overwhelming response, almost 90% of respondents think cyber snooping is necessary to protect civilians from external threats

■ Yes	**89.1%**
■ No	**10.9%**
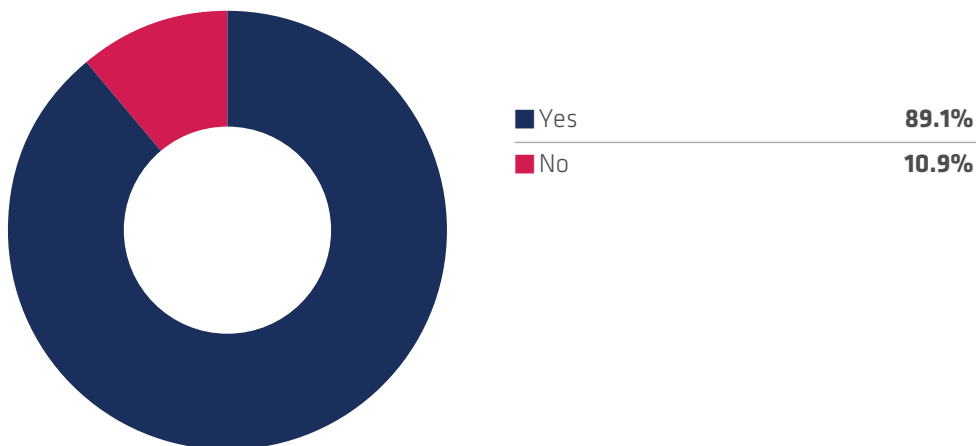
Mass surveillance is something we as a society will have to accept if we value our national security. The recent leaks by Edward Snowden have sparked an age old debate regarding the sovereignty of an individual's freedom. Without these programs we would, however, seriously inhibit the ability of defence agencies to neutralise threats before they happen.

Cyber security is more important than ever. Do you believe governments have enough safeguards in place to protect sensitive information from being leaked?

Over 50% of respondents believe better safeguards should be in place to protect information leaks
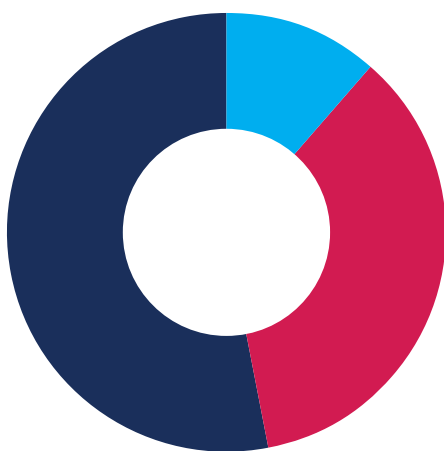
■ Yes	**11.6%**
■ No	**35.5%**
■ There are some safeguards but they could be improved	**52.9%**

Information leaks from intelligence agencies will be on the rise as the battle between hackers and agencies continues. As long as we have these programs we will have 'whistleblowers' and hackers trying to expose their inner workings.

It has been widely reported that companies and military agencies hire hackers in order to combat cyber terrorism. Do you agree that morehackers need to be hired?

'84% of respondents believe that more hackers need to be hired'
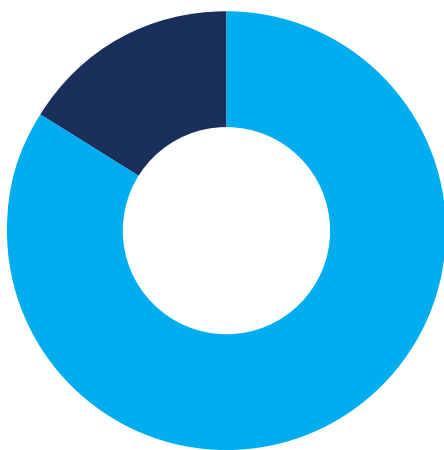
■ Yes	**84%**
■ No	**16%**

Hiring hackers is inevitable – the cyber security expert Misha Glenny even put forward a case for this in his recent TED talk. The idea that individuals can find back doors into intelligence agencies is frightening and it may well be that the only way to stem the tide is to fight fire with fire.

Online hacktivists and organisations now even go beyond 'random attacks and try to justify their actions morally – this approach has been popularised by the online group Anonymous. If government organisations do not recognise the skills rogue hackers can offer their organisation they will sure to be victim of many more attacks.

Part 3
The Future of Geospatial Intelligence

Is the defence and security community too reactive to external developments rather than "leading the way"?

> 89.2% feel the defence and security community are too reactive

■ Too reactive	**34.7%**
■ Reactive - however this is the main way the community can develop	**54.5%**
■ The community is leading the way	**10.7%**

"Respondents on the whole express realism about what the defence and security community can actually do with the resources available in most missions. We've already seen financial constraints referenced as a key challenge in this survey, and this might go some way to explaining the sense of being held back.

For those who believe the community is leading the way – a minority of respondents – their position may be explained by the fact that investment in GEOINT is enabling greater powers of both prediction and prevention, thus empowering the community to become lead decision makers and influencers on major geo-political challenges."

Tom Webber, Conference Director, DGI

How much do you think open-source intelligence will be used by your organisation over the next 18 months?
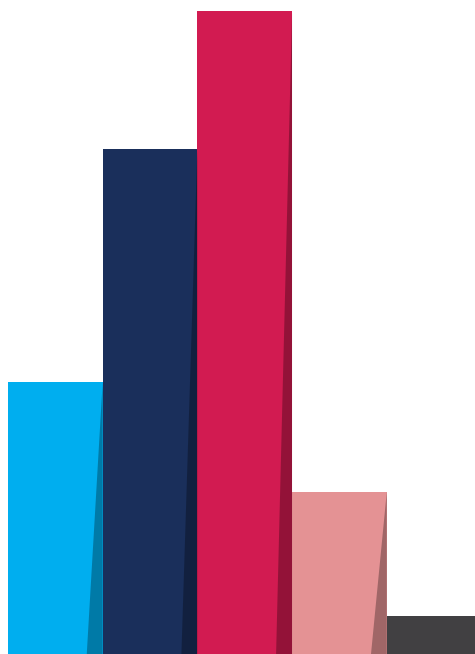
97.5% of respondents will be using some form of OSINT over the next 18 months

In everything we do	**16.8%**
In most things we do	**31.1%**
In some things we do	**39.5%**
In few things we do	**10.1%**
Not at all	**2.5%**

OSINT is changing the entire culture of information collection, exploitation and dissemination so quickly that organisations are being forced to review long-established classification systems, training of analysts and even the very meaning of intelligence. With only a handful of exceptions respondents to this question agree that OSINT will be playing a role in their future activities and in most cases with increasing frequency. One of the most interesting trends to watch over the next 18 months will be to what extent classified intelligence will incorporate openly available sources of information as a final product in operations.

Tom Webber, Conference Director, DGI

Where do you expect GEOINT to play an important problem-solving role in the next 18 months?
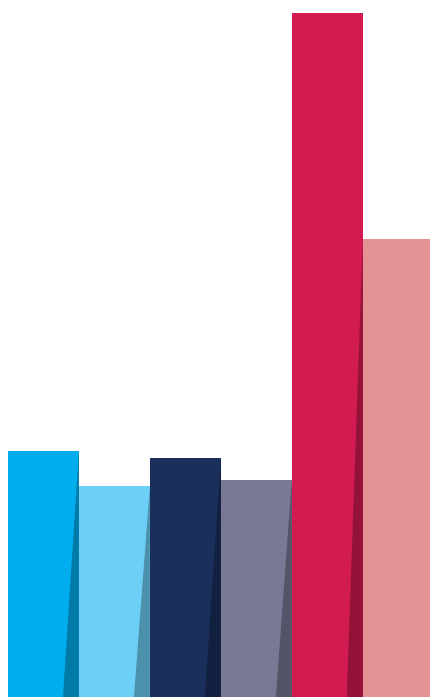
Military operations dominate the use of GEOINT over the next 18 months

■ Military Operations	**80.8%**
■ Relief Operations	**54.2%**
■ Energy Security	**29.2%**
■ Water Security	**28.3%**
■ Megacity Security	**25.8%**
■ Food Security	**25.0%**

"Taking into consideration that most respondents represent military organisations it is unsurprising that the majority believe GEOINT will solve most problems in military and relief operations. Perhaps more interesting is the relatively equal distribution of priority given to urban and utility security, suggesting the diversity of GEOINT application is improving while still being considered mainly as a crucial security capability to be used in only the most vulnerable environments."

Tom Webber, Conference Director, DGI

How relevant will these themes be in 2016?

89% of respondents feel cyber security will still be a pressing issue for 2016'

GEOINT for Maritime

Cyber Security

Information Exploitation

Standards and Interoperability

Innovation

Data Management

National Security

Public Security

■ Not Relevant ■ Still Relevant ■ Very Relevant
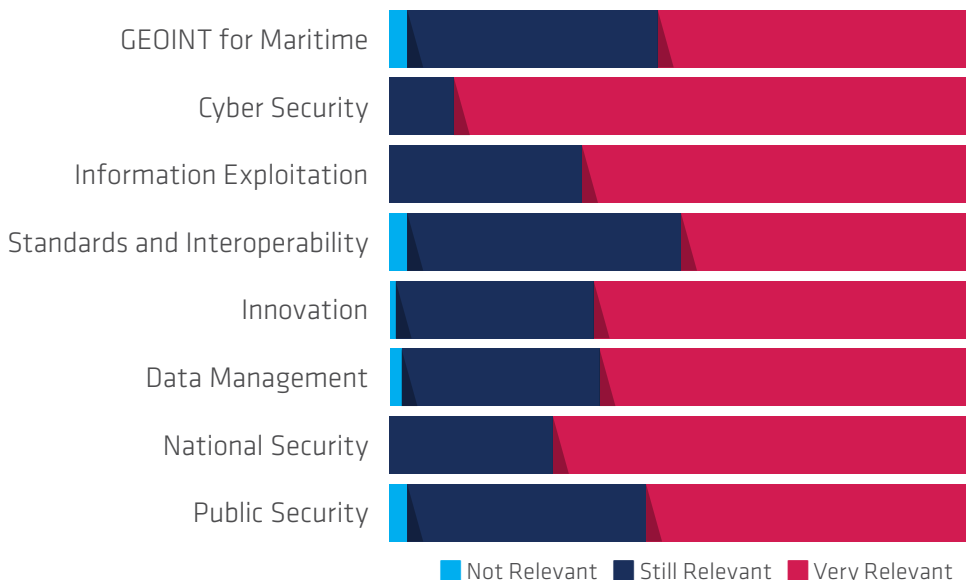
"I was shocked that only 50% thought that standards and interoperability would still be very relevant in 2016 – I would rate this amongst the most likely to be critical in the coming year."

Ric Diaz, Director for Sales Operations and Business Development, Textron Systems Geospatial Solutions

"Cyber, national security and information exploitation are most relevant in relation to the development of GEOINT for respondents in 2016. Close behind are innovation, data management and public security with GEOINT for maritime and standards and interoperability of least importance. One clear conclusion from these results is that the evolution of protection and safety in their broadest definitions is closely bound to the successful sharing and interpretation of geo data, further reinforcing the notion that future security is all about greater and deeper investment in developing better national GEOINT capability."

Tom Webber, Conference Director, DGI

ABOUT

TEXTRON Systems

Textron Systems, after more than 50 years, continues to bring ingenuity, agility and full-spectrum solutions to its growing roster of customers. Our businesses' wide range of products and services fulfil the needs of defence, homeland security, aerospace, infrastructure protection, and other customers around the world.

Textron Systems businesses are industry leading developers and integrators of geospatial intelligence management and analysis systems, intelligence software solutions, unmanned systems, advanced marine craft, armoured vehicles, intelligent battlefield and surveillance systems, geospatial precision weapons, piston engines, test and training systems, and total lifecycle sustainment and operational services.

Textron Systems' businesses consist of Geospatial Solutions, Advanced Information Solutions, Electronic Systems, Lycoming Engines, Marine & Land Systems, Support Solutions, Unmanned Systems, Weapon & Sensor Systems and TRU Simulation and Training."

Textron Systems Geospatial Solutions' respected RemoteView software and complimentary modules delivers an extensive set of GEOINT exploitation tools to enhance the analysis process by providing an analyst-centric user interface, customisable profiles, and new workflow panels that may be tailored to individual users and collaborative analytical teams. From geospatial data management, high-powered exploitation and mapping for geospatial analysts to imagery analysis for precision positioning, radar exploitation, and advanced 3D visualisation, Geospatial Solutions is the proven solution provider for situational understanding and interoperability.

Geospatial Solutions delivers multi-source intelligence, geospatial analysis, and situational understanding solutions to enhance mission planning, deliver actionable intelligence, and enable rapid decision-making. More than 25,000 analysts across 30 countries rely on Textron Systems' geospatial-intelligence solutions to provide unmatched fidelity and accuracy through exploitation of multi-sensor data with precision positioning, radar exploitation, advanced 3-D, video, and feature extraction technologies.

Geospatial Solutions is an industry-leading developer and integrator of advanced geospatial intelligence solutions used across a broad spectrum of industries; supporting military and defense, border security, humanitarian assistance, disaster relief, environmental studies, natural resource management, ecosystem monitoring, environmental engineering, insurance, real estate, oil and gas exploration, urban planning, and more to provide unmatched fidelity and accuracy in mission planning, actionable intelligence, and rapid decision making.

Geospatial Solutions enables analysts to 'see the unseen' – clearly, and with confidence. For over 50 years, Textron Systems has provided solutions for managing, visualising and interpreting geospatial data that improves situational understanding and delivers actionable intelligence. From a remote location, or a safe place anywhere in the world, our advanced geospatial systems enable you to derive the knowledge you need to accomplish the mission.

Textron Systems Geospatial Solutions enables users to achieve enhanced productivity gains and geospatial awareness through management, discovery, and analysis of the variety and magnitude of raw source data at their disposal.

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ABOUT DGI

Since its launch in 2003, the Defence Geospatial Intelligence (DGI) Conference & Exhibition, has become the largest and most international annual gathering dedicated to the high-level discussion of geospatial intelligence and national security in both defence and intelligence operations. Addressing the use of geospatial information in scenarios such as international conflicts, defence operations, C4ISR, humanitarian disasters, crime, national security, border control, arms treaty monitoring and global climate change; the fundamental objective of DGI is to help organisations understand how to build the necessary infrastructure and architecture to take advantage of geospatial intelligence capabilities.

DGI brings together heads of geospatial intelligence, remote sensing, GIS mapping, GIS data and satellite imagery within the military, governmental and national security sectors as well as industry solution providers. It attracts professionals who are responsible for using and integrating geo based capabilities in their operations and organisations.

DGI provides a unique forum for defence intelligence professionals to discuss and debate the development of geospatial intelligence capabilities. Over 700 senior defence and security executives from 46 countries attend the Defence Geospatial Intelligence (DGI) in Westminster, London, to discuss the future role of GeoInt in their organisations, to debate new strategies, future collaboration plans, and to find solutions to their current Geo challenges.

Supported by the UK MoD, the NGA, US Army, NATO, Australian DoD, Council of the European Union and many more international military and governmental organisations, DGI combines a high level conference, with a large exhibition hall, to combine unparalleled networking, benchmarking and learning opportunities into one event.

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