

Successful Planning and Operations for Major Events with Intergraph®

A White Paper

Security, Government & Infrastructure, a division of Intergraph®



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1. Introduction

Ensuring the security of major events is one of the most significant challenges facing public safety organisations – it is complex, highly resource intensive and risks disrupting normal levels of service.

Modern event management and command and control technology can greatly enhance the efficiency and effectiveness of security operations. Organisations investing in security infrastructure need to execute a complex balancing act: While public safety is the paramount concern, precautions need to be proportionate - neither intrusive nor unaffordable.

Investments in security, including the supporting infrastructure, have to be “socially compatible” and sustainable.

The multi-agency Olympic Security Directorate (OSD), led by the Home Office and hosted by the Metropolitan Police Service, is undertaking security planning for the London 2012 Games. The scale and nature of the challenges posed by the Games are comparable with those of the EURO 2008 football championships, the 2007 Pan-American Games in Rio de Janeiro and the recent US Presidential Inauguration in Washington, D.C. Safety and security played a critical role in the organisation and implementation of these events. Command & Control Centre and mapping technologies from Intergraph were instrumental in their success.

This document reviews successful deployments of technologies for security planning and execution at major events and considers how these experiences could contribute to the preparations for 2012.

2. Major Events are Resource Hungry

Major events are complex and particularly resource intensive aspects of policing and public safety. On the whole, their management is planned well in advance (e.g. protest marches, football matches, Notting Hill Carnival, etc.), but they can also require spontaneous response (e.g. the July 7th bombings). Sometimes precautions might seem extreme until one remembers the attacks in Mumbai: Ten terrorists killed 173 and paralysed a city of 13 million for three days, armed with little more than automatic weapons, grenades and mobile phones.

Security is the first and absolute condition for success and the primary duty of governments. The investment in major events inevitably involves highly public discussions of costs and the levels of security: No one wants to live in a fortress for a month and taxpayers do not want to shoulder enormous costs for a one-off investment, particularly when organisers and commercial sponsors can be portrayed as raking-in profits.

Investment in the venues and plans are designed with long-term use in mind. Economically, when you factor-in investment in preparations, operations, revenue generation and insured risks, their implications can be measured in billions of pounds. Investments in security, including the supporting infrastructure, have to be “socially compatible” and sustainable.

2.1 Over 5000 Planned Events in London – Every Year

In the face of tightening budgets and rising pressure on resources, police forces are increasingly reliant on networked IT services to help them increase efficiency and quality of service, engage with citizens more effectively and meet critical operational demands. But one thing has to be kept in mind: while systems can ensure operators have access to the right information when making urgent decisions, the system’s primary role is to enable people to act.

Already, more than 5000 pre-planned events take place in London annually, of which more than 500 are planned centrally, and these are projected to increase both in numbers and complexity. Given the increasing demands, the Metropolitan Police Service (MPS) plan is seeking to implement suitable tools and systems to support a corporate Event Management processes up to and beyond the 2012 Olympics.

2.2 London 2012 and Beyond – System Requirements

The MPS expects to achieve significant benefits through the implementation of a common, end-to-end event management solution across the organisation. The new solution will enhance event planning (including the ability to learn from, re-use and adapt previous plans), event resourcing (including the balancing of resource requirements) and active event management (including command posts for external agencies).

The ability to rapidly and accurately prioritise, assign and coordinate activities through the use of workflow, operational logic and automated routing of messages are key elements of such systems. By avoiding potential bottlenecks, they enable responders to handle multiple, simultaneous events -including events within events and events with differing levels of security classification - appropriately through efficient and effective resource allocation and inter-agency collaboration. Behind the scenes, integral security and audit logs manage, track and control all access to the system and its data with due reference to security classifications.

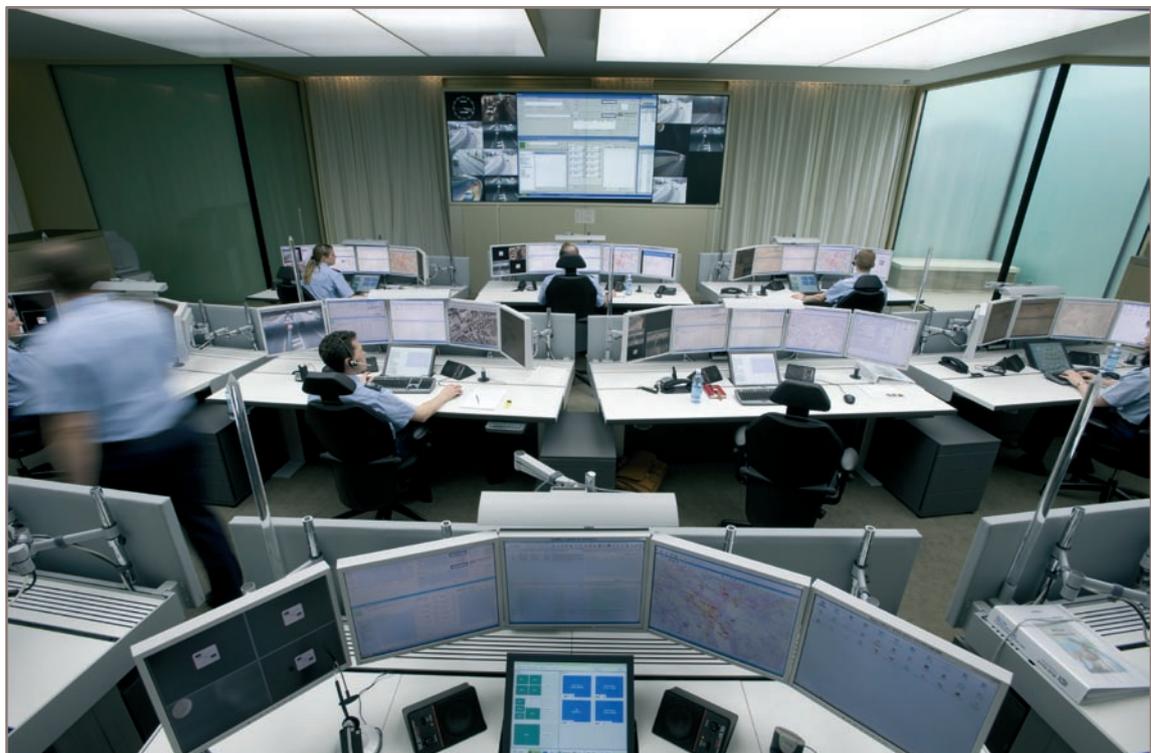
As well as better preparedness, capacity and ability to deal with new forms of threat, improved event planning and delivery are also expected to result in secondary benefits such as better utilisation of MPS resources, reduced overtime and rest day working

2.3 A Party, Not a Fortress - at Reasonable Cost

Due to their scale, major events invariably attract high profile debates over costs and levels of security: No one wants to live in a fortress for a month and taxpayers do not want to shoulder enormous costs for a one-off investment while organisers and commercial sponsors are seen to be raking-in profits. Investments in security, including the supporting infrastructure, have to be “socially compatible” and sustainable.

Three recent examples from around the world provide valuable insight into the important contribution of modern Command and Control Centre technology and how, with careful selection the systems can provide a generic public safety resource for the long term.

Zurich and Geneva delivered EURO 2008 with existing platforms used for day-to-day operations; Rio assimilated security and ICT capabilities procured for the Pan-American games into their normal operational infrastructure, and; the Unified Communications Center in Washington D.C. “only” had to work double shifts and man a backup facility to handle their largest event ever, the Inauguration of Barack Obama as the 44th President of the United States.



Perfect processing of information: the central control room of Zurich City Police. © Stadtpolizei Zürich

3. EURO 2008 in Zurich - a Security Success Story

Zurich is both the largest city in Switzerland and the capital of the canton of Zurich. The core city has around 370,000 inhabitants, with 1.1 million people living in the wider area. Zurich played host to three games during EURO 2008. Around 725,000 visitors gathered in the designated viewing zones to see each match - a total of 2.7 million fans.

Zurich City Police took the lead for security, in close cooperation with Zurich City Protection & Rescue (responsible for fire fighting, ambulance and emergency services) and Zurich State Police (responsible for policing outside of major centres and for safety controls at Zurich's Kloten airport). As no additional IT budgets were available for the tournament, operations and resources had to be directed using the three organisations' existing Intergraph Command and Control systems.

Each day during the games, between 600 and 1300 police officers were deployed in the city, with up to an additional 1000 personnel from Zurich Protection & Rescue. Resources included 500 police vehicles, a temporary holding and processing area, additional ambulances and support stations and 260 vehicles from the emergency medical and fire services. According to Alessandro Foletti, one of the senior police officers in charge, this was a ten-fold increase over a standard weekend. It would simply not have been possible to coordinate the public safety resources adequately and keep an auditable log of all actions without Command and Control Centre technology.



Almost three quarters of a million spectators gathered to watch each match in Zurich's dedicated fan zones. © Stadt Zürich

3.1 Intergraph Command & Control Centre Technologies Handled the Challenge Perfectly

Zurich City Police's new Command and Control Centre with its management infrastructure for major incidents is equipped with Intergraph's latest technology. Emergency calls are received, processed and documented and resources are coordinated and directed from a central hub. Although completed in time for EURO 2008, it was by no means as a special investment, but part of an Integrated Command and Control Centre concept for the City of Zurich.

Daniel Haenni, CIO of Zurich City Police affirmed, "It was important that this major event capability could be delivered and managed using the existing IT-infrastructure of the new Command and Control Centre."

3.2 Zurich Street Parade - Different Scenario, Same Tools



Shortly after Euro 2008, more than 800,000 people flocked to the city on the 9th August to boisterously celebrate what was, according to the organisers of Zurich Street Parade, the “most colourful outdoor-event in the world”. The three organisations were able to employ the existing procedures and systems infrastructure to plan and manage operations for the event.

Busy crowds during Euro 2008. © Stadt Zürich

Faster on location - 50% More Focused

Digital aerial images and maps greatly assist tactical operations - Dispatchers estimate they help event staff and equipment arrive at incidents 10 to 15 % faster to incident locations while the efficiency of responders is 50% higher. Zurich Protection & Rescue is working on expanding the information available to responders down to the level of floors within individual buildings.

Hans-Peter Faeh, police officer with Zurich City Police and member of the operations team of EURO 2008 affirmed: “Supported by what are perhaps the most up-to-date operational techniques, the operator is kept at the centre of the unfolding event through situational awareness and operations management.”

Learning Organisations – Knowledge Worth Millions

Systems provide the tools to field calls, create and update incidents and manage critical resources by providing access to and real-time interaction with crucial data. Today they integrate geospatial and imagery analysis functionality with operational workflows to streamline processes and save vital seconds when they count most.

Intergraph’s technology allows organisations to continuously develop, test and refine actionable information and procedures, - for example police tactical checklists, or multi-agency coordination procedures for major incidents - based on their experiences and lessons learned. This flexibility enables them to adapt in response to changing operational conditions and new requirements.

Representing the collective corporate knowledge of a public safety organisation, this information asset has been estimated as having an equivalent value measured in Millions of pounds.

4. EURO 2008 in Switzerland – Geneva Canton Police

Geneva is, after Zurich, the second largest city in Switzerland with around 185,000 inhabitants, while the wider canton has almost half a million residents. The security challenges of the region are multifaceted, much like the international atmosphere of the city. “International Geneva” hosts 25 International Organisations, 170 foreign missions and about 250 NGO’s. Every year, it plays host to several thousand international conferences with more than 170’000 delegates, among them many high level (and sometimes high risk) politicians. Security on an international level is a permanent consideration in this international centre.

As Chief of Staff, Raphael Rebord stated: “Geneva has experience in organising and securing all kinds of major events with international cooperation. We are at the leading edge in our use of IT technologies to support this.”

Geneva also hosted Euro 2008, attracting 87,000 spectators for the three matches in the Stade de Geneve; an additional 600,000 supporters watched the games in fan areas. In spite of these additional pressures within the city, essential police services had to be maintained at normal levels throughout the entire canton of Geneva.

“That’s why it is so important to have software for emergency response and decision support that is connected with a fully-developed and well-engineered information system. Intergraph’s I/CAD fulfils these functions perfectly and supported the Geneva police enormously in maintaining peace and order in our canton during EURO 2008”, concluded Monica Bonfanti, Head of Geneva Canton Police.

Direct Payback – Placing a Value on Command and Control Systems

In a major urban area where, depending on the time of day, millions of people may live or work, one dispatcher of a Command and Control Centre can theoretically cover the security management of between 50,000 and 100,000 people.

If it is possible to prevent a traffic jam at a traffic accident delaying several hundred vehicles by half an hour, an economic loss of more than £10,000 can be avoided.

If a fire brigade can be on the scene of a room fire within 10 minutes, the average operational costs and damage are less than £20,000. If the team does not arrive until the entire building is ablaze, the damage will be many times higher.

In cases of heart attack, it is crucial for the ambulance to arrive on scene within eight minutes. After that time the chances of survival and recovery decline dramatically. The consequences of a preventable death can run into millions, and not only from the perspective of the insurance company.

Domestic burglaries result in financial losses of between £5,000 and £10,000. Fast and coordinated interventions can help reduce the number of higher value incidents.

5. The Washington Metropolitan Area

Washington, D.C. the capital of the United States of America has a resident population of over 590 000; however, commuters from the surrounding suburbs, this number swells to over one million during the working week. The Washington Metropolitan Area, of which the District is a part, has a population of 5.3 million, the eighth-largest metropolitan area in the country.

Intergraph systems support nearly 20 public safety and security agencies in the metropolitan Washington, D.C. area; They include the Washington, D.C. Unified Communications Center, Naval District Washington, Frederick County, Md., Howard County, Md., Fairfax County, Va., Fort Detrick, Md., Fort Meade, Md. and Bolling Air Force Base. The technologies facilitate effective and efficient multi-agency response and advance enterprise level interoperability and collaboration within the U.S. capital region.

5.1 Fairfax County

With more than one million residents, Fairfax County, Va. is the most populous jurisdiction in both Virginia and the Washington, D.C. metropolitan area . Intergraph's emergency incident response, planning and reporting solutions were selected as part of a programme to upgrade and update legacy public safety systems. The following Fairfax County agencies employ Intergraph's computer aided dispatch, records management, field reporting and mobile solutions: Fire and Rescue Department, Department of 9-1-1 Public Safety Communications, Office of Emergency Management, Police Department, Sheriff's Office

5.2 Washington, DC's Unified Communications Center

As an organisation tasked with handling the 1.8 million emergency calls that occur in the District of Columbia each year, the OUC carries tremendous responsibility. Designed to 'optimise the allocation of people, technology and business processes', the Unified Communications Centre (UCC) consolidates public communications functions of the Metropolitan Police; Fire and Emergency Medical Services (FEMS); Emergency Management Agency; and Public Services.

The UCC also houses the Mayor's Emergency Command Centre, and, in the event of a regional emergency, serves as the command centre for regional law enforcement agencies and EMS first responders. Additionally, this advanced facility can host regional and federal authorities during national emergencies.

5.3 OUC 10,000 Calls Successfully Managed During Presidential Inauguration

During the inaugural celebrations the OUC dispatched from both their state-of-the-art UCC and a resilience facility, the Public Safety Communications Center (PSCC). Tactically, this allowed District Public Safety Operations to manage the large volumes of incoming calls to both 9-1-1 and 3-1-1 (the number for city services and information).

Anticipating high call volumes, more than 300 personnel, including call takers and IT professionals, staffed the UCC and PSCC on Inauguration Day to ensure smooth operation. Intergraph's computer-aided dispatch (CAD) system enabled operators to field calls, create and update incidents and manage emergency response resources.

Intergraph's mobile dispatch technologies extended incident management capabilities to remote field and mobile units stationed near the special event area. This provided responders in the field access to the same information that operators at the UCC and PSCC relied on for efficient response.

Special Event Zone

As part of the preparation for the Inauguration and associated activities, personnel used Intergraph's CAD map to create a special "event zone" around the plaza, parade route and other critical locations. 9-1-1 calls originating from inside this zone were routed to the appropriate remote dispatch event area where they were immediately handled by dispatchers assigned to the special event zone. This reduced response time as dispatchers were able to swiftly deploy foot or bike patrols in the immediate vicinity of the incident.

5.4 Integrated Monitoring During the Inauguration

Intergraph's mobile resource management solution supported federal government security teams with real-time tracking. The map-based Command and Control system provided visibility and management of deployed mobile resources throughout the course of the event.

Surveillance was monitored by authorities at various command centres run by the many agencies involved in security operations. Major federal investments in visual and information technologies, along with classified and unclassified computer networks and communications equipment, have been made since 9/11. According to security expert Joseph Funk, no significant investments in new technologies or facilities were needed for this inauguration. Based on their experiences, the security agencies continuously update and improve their Command and Control Centres' operational procedures. Improvements were apparent over the last inauguration, four years earlier.

DC's IT department operated a satellite and Internet-based video link to Washington's 5,265 fixed and mobile surveillance cameras, spread around the city. The Capitol Police and US Park Police provided surveillance from the air. "When you have an event like the inauguration, the more eyes we have in and around the city the better off we are," District of Columbia Police Chief Cathy Lanier explained to the Washington Post.



An estimated 1.8 million people flocked to Washington to witness the inauguration of Barack Obama as 44th president of the United States.

5.5 A Total Success!



Despite 1.8 Million visitors, not a single arrest was reported by police or the Secret Service. The DC Fire department had transported more than 200 people to hospitals by early evening. Hospitals reported treating several dozen people, most for cold-related ailments, others for “partying too hard”. 750 people were treated at first aid stations on the Mall, but none of the cases was serious, officials said. About 30 children separated from their parents, were later reunited, police said.

The volume of emergency calls to 9-1-1 increased by 50 percent over an average day, with nearly 6,000 calls for assistance. Of these calls, 96 percent were answered within five seconds. An additional 400 non-emergency calls were handled.

“I couldn’t be more proud of the entire team who worked together tirelessly to ensure the safety and security of those who gathered for the inauguration of

Barack Obama,” said Janice Quintana, Director, Office of Unified Communications. “An estimated one point eight million people came to witness the inauguration and they all went home safely thanks to our dedicated staff and their unwavering commitment to serving the public.”

Inauguration Security Was Tight

The United States Secret Service, under the leadership of the U.S. Department of Homeland Security (DHS) and in cooperation with its local, state and federal security and public safety partners, was in charge of security of the inauguration for the Barack Obama as the 44th President of the US on Tuesday, 20th January 2009.

The security effort involved the military and over 50 law enforcement and public safety agencies drawing on more than 30,000 law enforcement officers and military personnel from across the country. This represented a 50% increase in staffing over the 2005 Inauguration of George W. Bush.

Intergraph technologies and services played an active role in securing this event and deploying resources to maintain the level of security needed.

Everyone attending the festivities was subject to a thorough security screening by machines, security personnel or both. Queues were long outside the 13 entrances along the parade route. The list of prohibited items ranged from the “duh” variety — firearms, ammunition, explosives, knives and pepper spray — to the more mundane: cool boxes, thermos flasks, umbrellas, prams and backpacks. Precautions included airport-style magnetometers, counter-snipers, trained to hit a target the size of a teacup saucer from 1kilometre away, undercover officers, bomb sniffer dogs and air patrols. The Chemical Response Force was on alert. NORAD forces were used to increase the air-defence presence in the area: F-16s and Patriot missile batteries were ready to deter and, if necessary, shoot down aerial intruders. Military helicopters and Marine landing boats were primed for an emergency. A Joint Task Force in the capital region was designed to provide large-scale medical response in case of an event.

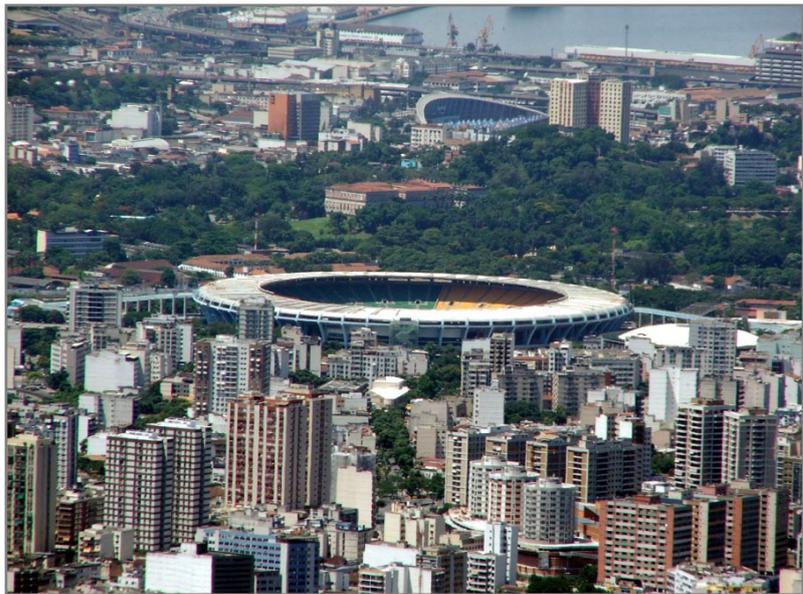
“We are certainly pleased with the successful implementation of the security plan designed by 58 military, law enforcement and public safety agencies and carried out by thousands of officers on the street,” U.S. Secret Service Director Mark Sullivan summed up in a statement.

6. Pan-American Games in Rio de Janeiro:

Building on the expertise and success of providing security and emergency response solutions for large scale events, including the 2006 Winter Olympic Games, 2006 FIFA World Cup, and 2005 U.S. Presidential Inauguration, Intergraph emergency incident response, planning and reporting solutions contributed to the safety of the 2007 Pan-American Games between 13th and 29th July in Rio de Janeiro, Brazil.

More than 5,600 athletes from the Americas and 1.3 million spectators attended the games in Rio, which has a metro population of nearly 14 million people. 6.5 million inhabitants live in the city alone where, during Carnival, an estimated three million people fill the streets!

Securing an event of this scale in a city of the size and geographic complexity of Rio is a daunting challenge. The approach taken made full use of ICT resources to keep managers aware of events as they happen and identify, and communicate with, the nearest and most appropriate resources.



Rio de Janeiro, the complex and vibrant setting for the 2007 Pan-American Games and 2014 Football World Cup. © Bruno Marques

6.1 Large Resources – Managed Perfectly

Coordinated by the national security authority SENASP, security operations drew on nine different organisations, among them the Military, Civil, Traffic and Federal Police, the Municipal Guard, Fire fighters and the National Security Force.

The pooled resources included 18'000 security agents, 1768 vehicles (motorbikes, cars, fire engines and special vehicles), 30 aircraft (with 24 new multi-mission helicopters and eight helicopters for observation and guidance), 18'000 digital radios, 120 sniffer dogs, lethal weapons, non-lethal arms and anti-bomb equipment.

6.2 Integrated information – Secure, Real-time Access

The command & control infrastructure comprised 15 primary centres (a hub, a resilience centre, eight regional centres, five mobile centres) supplemented by more than 36 local security centres. Incoming emergency and non-emergency calls were screened and, if related to the Games, directed to the Command and Control Centre in charge. Using operational logic, the complete system had the clear objectives of establishing current, reliable situation awareness and facilitating fast end effective response.

Geo-spatial processing (GIS analysis) supported operations around the clock throughout the period of the games. This enabled the exact location of incidents to be identified anywhere in this vast city. The integrated intelligence secure network was based on a more than 1,500 cameras monitoring system integrating federal agencies, state and municipal security.

The whole communication structure of the games was integrated in the network of the National Information Security Service, connected with 28 databases. Redundant network configuration and data encryption ensured secure and uninterrupted service. This allowed security officers to run checks on possible suspects in real time from any device connected to the network (palm, mobile, radio, terminal, etc.) from any location without the need to use a laptop or terminal.

6.3 Successful Implementation by Sisgraph

To ensure successful implementation, Sisgraph, a representative of Intergraph in Latin America and the Caribbean, delivered the software system (using I/CAD and a suite of other Intergraph products) and provided training and support for the 15 Command and Control centres. The system was implemented in five months.

6.4 Long Term Use – Excellent Return on Investment

After the Pan-American Games, the new equipment was integrated into the public security systems of the State of Rio de Janeiro and other federal entities in Brazil. Some £60 million of the £165 million invested by the federal government in the security of the games were directed at information and communication technologies. This investment has carried Rio into the premier league of modern data transmission, electronic monitoring, identification of persons and dedicated radio transmission.

Their demonstrable security capabilities and operations undoubtedly contributed to Brazil being awarded the 2014 football world cup two months after the successful and safe delivery of the Pan-American Games.

7. About Intergraph

Intergraph is the leading global provider of engineering and geospatial software that enables customers to visualise complex data. Businesses and governments in more than 60 countries rely on Intergraph's industry-specific software to organise vast amounts of data into understandable visual representations and actionable intelligence. Intergraph's software and services empower customers to build and operate more efficient plants and ships, create intelligent digital maps and protect critical infrastructure and millions of people around the world.

Intergraph operates through two divisions: Process, Power & Marine (PP&M) and Security, Government & Infrastructure (SG&I). Intergraph PP&M provides enterprise engineering software for the design, construction and operation of plants, ships and offshore facilities. Intergraph SG&I provides geospatially-powered solutions to the defence and intelligence, public safety and security, government, transportation, photogrammetry, utilities and communications industries.

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