NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

FOUNDATION GEOINT GROUP

FOUNDATION GEOINT

NGA provides the basis for intelligence integration through a global geospatial operational framework describing the physical and cultural characteristics of the world from the center of the Earth to the space domain. This framework is a critical part of NGA's mission to satisfy intelligence, defense, civil and commercial needs with foundation data, innovative products and services - whether delivered through geographic information system-enabled applications or hard copy map products.

Supporting that framework are the NGA content areas that encompass the earth sciences, gravity, magnetics, geodetic surveys, elevation, precise imagery, coordinate systems, global navigation satellite systems, topography, geographic names, human geography, political geography, and safety of navigation for the maritime and aeronautical domains.

CONTENTS

FOUNDATION GEOINT GROUP | SF

Understanding the Earth from its core to the Space Domain

MISSION

Provide assured, timely, relevant, and accurate foundation data, products and services in support of prioritized requirements of the warfighter, our national security objectives, and the Safety of Navigation needs of the U.S. government

WHO WE ARE

Foundation Builders of a global geospatial operational framework for military operations, intelligence analysis and humanitarian assistance

Masters in the art and science of depicting the Earth's surface

Modelers of the forces of gravity and magnetics, the depths of the seas and the physical and cultural landscape of the world

WORKFORCE

Government | Military | Contractor personnel

PRIMARY WORK ROLES

- Aeronautical Analyst
- Bathymetrist
- Cartographer
  - Topographical
  - Nautical
- Data Steward
- Data Scientist
- Foundation GEOINT Officer
- Geodetic Earth Scientist
- Geodetic Orbit Scientist
- Geodetic Surveyor
- Human Geographer
- Human Geography Linguist
- Maritime Analyst
- Photogrammetrist
- Program Manager

LOCATIONS

40% NGA Washington

55% NGA St. Louis

5% Other

GEOMATICS

- World Geodetic System 1984 (WGS 84)
  - Reference Frame (precise global coordinates)
  - Earth Gravitational Model (EGM) (defines mean sea level)
  - World Magnetic Model (WMM) (defines bearing and azimuth)
- Supports 4 billion Global Positioning System (GPS) users worldwide
- Quality control data collected from 40 independent GNSS ground tracking sources
- 350 million square kilometers of elevation data
  - Shuttle Radar Topography Mission (SRTM), Digital Terrain Elevation Data (DTED), Defense Gridded Elevation Data (DGED), TanDEM-X etc.
- 200+ million gravity records
- 580 airfield surveys (TAGGS, or Terminal Aeronautical GNSS Geodetic Survey)
- 118 million square kilometers of precise imagery
  - 19,965 Digital Point Positioning Database (DPPDB) titles
  - 35,983 Controlled Imagery Regional Ortho-mosaic (CIRO) ¼ cells
  - 40,108 Controlled Image Base 1M (CIB01) ¼ cells
  - 11,126 Controlled Image Base 5M (CIB05) 1-degree cells
- 30 Holloman High Speed Test Track Surveys (10-mile track, 1,020 survey marks)
- 3,600+ geodetic and geophysical surveys

LAND

- 104 million square kilometers of mono-orthorectified imagery
- 100 percent of the Earth's surface has 12-meter high-resolution elevation data
- 5+ billion topographic features
- 118 million square kilometers of precise stereo imagery
- 90,000 topographic maps

HUMAN AND POLITICAL GEOGRAPHY

- 2+ million human geography features describing population demographics, community systems and stability
- Steward of official geographic names, political boundaries and country codes for the U.S. government
- 8.9 million features with 14.45 million geographic names in the Geographic Names Database (GNDB)
- 16 million Geographic Names Server (GNS) hits annually
- 37 foreign languages spoken by analysts
- Boundaries
  - 900+ international land and maritime boundaries
  - 74,000+ administrative (internal) boundaries
  - 2,500+ claimed maritime limits and zones
  - 2.85+ million miles of high-resolution shoreline data

SEA

- 16,500 U.S. government and commercial vessels supported
- 70 million hydrographic features
- 30,000 points in bathymetric dataset
- 700 nautical hard copy charts
- 12,800 electronic navigational charts (ENCs)
- 3,900 digital nautical charts (DNCs)
- 20,000 Submarine electronic navigational charts (SMENCs)
- 1,400 tactical ocean data (TOD) libraries
- 580 littoral planning charts (LPCs)
- 79 nautical publications
- 24/7 World-Wide Navigational Warning Service (WWNWS)

AIR

- 13,000 DOD and U.S. Coast Guard aircraft supported
- 4.5+ billion aeronautical data elements
- 25 million vertical obstructions (VOs)
  - >150 feet worldwide
  - >50 feet within seven miles of 9,800 priority airfields
- 49,000+ airfields in the Automated Air Facilities Intelligence File (AAFIF)
- 11,600+ airfields with Airfield Foundation Data (AFD) vectors collected
- 27,219 IFPs coded in the Digital Aeronautical Flight Information File (DAFIF®)
- 15,000+ Instrument Flight Procedures (IFPs) in DOD Flight Information Publications (FLIPs)
- 18,000+ IFPs in Federal Aviation Administration (FAA) FLIPs
- 14,000+ IFPs in the Electronic Instrument Procedure Library (E-IPL)

PARTNERSHIPS

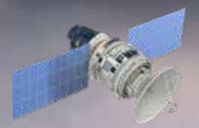
- Competing strategically for allies and partners
- Building GEOINT partnerships to provide interoperable data and mapping solutions
- 240+ nations with agreements for foundation data and products (Basic Exchange and Cooperation Agreements (BECAs), multilateral, bilateral)
- 32 nations sharing 1:50K scale topographic feature data via the Multinational Geospatial Co-Production Program (MGCP)
- 25 nations sharing 1:5K scale topographic feature data via the MGCP Urban Vector Data (MUVD) Program
- 16 nations sharing human geography data via the International Program for Human Geography (IPHG)
- 33 nations in the TanDEM-X High Resolution Elevation Data Exchange (TREX) program
- Operation DEEP FREEZE — support to DOD, FAA, the National Science Foundation and international partners

ACCURATE AND PRECISE MEASUREMENTS

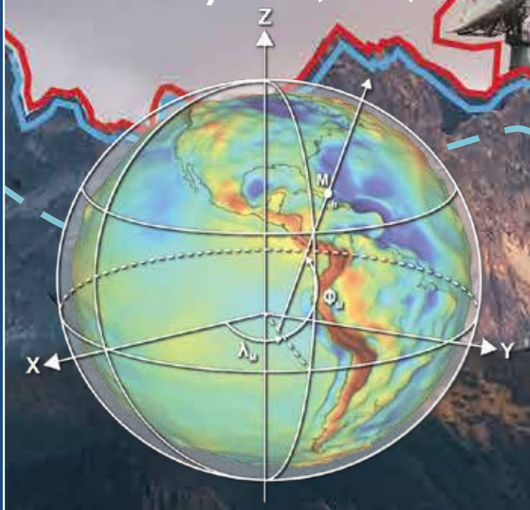
GLOBAL COVERAGE BY NGA

GEOMATICS

- Collection of sciences, technology and tradecraft measuring and modeling the globe to provide 3D accuracy of every point in, on or above the Earth
- Provides accurate positioning, navigation, timing, and targeting content and services in support of critical infrastructure and the national security objectives of the U.S. government

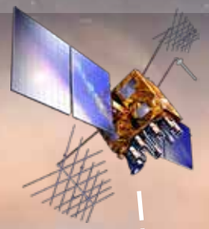


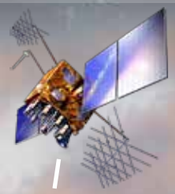
Global Navigation Satellite Systems (GNSS)



Digital Surface Model (DSM)

Digital Terrain Model (DTM)





Ground Truth

Geoid & Mean Sea Level (MSL)

Precise Imagery

Ellipsoid

GEOSCIENCES

Geotechnical Hazards, Indications & Potentials (GeoHip)

Earth Gravitational Model (EGM)

World Magnetic Model (WMM)

Coordinate System Analysis

3D and 4D Modeling

ELEVATION

Low Resolution - Shuttle Radar Topography Mission (SRTM)/ Digital Terrain Elevation Data (DTED)

TanDEM-X (Global 12 meter) Bare Earth/Reflective

High Resolution Terrain Elevation (HRTE4)

Defense Gridded Elevation Data (DGED)

GLOBAL NAVIGATION SATELLITE SYSTEMS (GNSS)

Global Positioning System (GPS) Precise Orbit Production

Maintain & Enhance the World Geodetic System 1984 (WGS 84) Reference Frame

Earth Orientation Parameter Predictions (EOPP)

GNSS Monitor Station Network

PRECISE IMAGERY

Commercial Imagery Regional Ortho-mosaic (CIRO)

Controlled Image Base (CIB) & Enhanced CIB

Digital Point Positioning Database (DPPDB)

Near Global Stereo

GEODETIC SURVEYS

Geophysical: Astronomic Positioning & Azimuth (POS & AZ), Gravity and Magnetic

Airfield Surveys (Terminal Aeronautical GNSS Geodetic Survey, TAGGS)

Geodetic: Positioning & Azimuth, Light Detection and Ranging (LiDAR), Deflection of Vertical (DOV) and Precise Leveling

ASSURED POSITIONING, NAVIGATION, TIMING AND TARGETING (APNT&T)

CRITICAL FOR

Maritime and Aeronautical Safety of Navigation

Ground Navigation

Space Launch, Telemetry and Tracking

Sea, Land and Air Based Weapon Systems Support

Infrastructure Sectors Support

Global Navigation Satellite System (GNSS)

Terminal Aeronautical GNSS Geodetic Survey (TAGGS)

Elevation Data, Models and Repository

CUSTOMERS

U.S. Army

U.S. Marine Corps

U.S. Navy

U.S. Air Force

U.S. Space Force

U.S. Coast Guard

Combatant Commands

Missile Defense Agency (MDA)

DOD Test Ranges

Intelligence Community

National Reconnaissance Office (NRO)

Allies

National Aeronautics and Space Administration (NASA)

National Oceanic and Atmospheric Administration (NOAA)

National Geodetic Survey (NGS)

Scientific Community

Research Laboratories

Universities

4 billion Global Positioning System (GPS) Users

POSITIONING

World Geodetic System 1984 (WGS 84) Reference Frame

Precise Latitude/Longitude/Elevation

Ground Truth Geodetic Surveys

GPS Constellation Positioning

NAVIGATION

Terrain Contour Matching (TERCOM)

Inertial Navigation System (INS)

Magnetic/True/Grid Navigation

GPS Navigation

TIMING

Critical National Infrastructure

GPS Constellation Timing

Communications Network

Atomic Clocks

TARGETING

Digital Point Positioning Database (DPPDB)

Coordinate Guided Munitions

Deflection of Vertical (DOV)

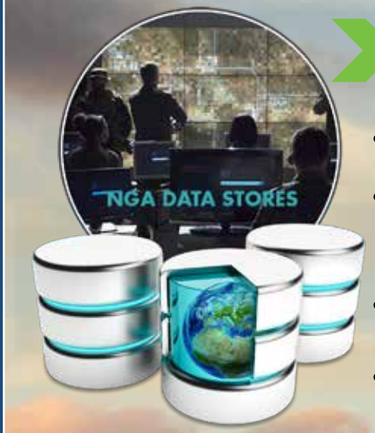
GPS Guided Munitions

DOD FORCES MISSION SPECTRUM

WORLDWIDE COVERAGE SUPPORT BY NGA

PRODUCING FOUNDATION GEOINT DATA, PRODUCTS AND SERVICES TO ACCOMPLISH WORLDWIDE MISSIONS

STRATEGIC → **OPERATIONAL** → **TACTICAL**



- **TOPOGRAPHY**
- **POLITICAL GEOGRAPHY**
  - Geographic Names
  - Digital Boundaries
- **HUMAN GEOGRAPHY**
  - Populated Places Framework
- **PARTNERSHIP CO-PRODUCTION**

Jet Navigation Charts **1:2M**

Tactical Pilotage Charts **1:500K**

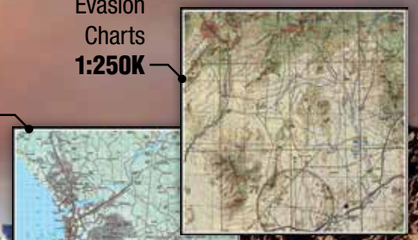
Joint Operations Graphics **1:250K**

Image City Maps **~1:12K**

Global Navigation Charts **1:5M**

Language Maps

Topographic Maps **1:100K** **1:50K**



Evasion Charts **1:250K**

MISSION PLANNING	DEPLOYMENT	RECEPTION AND STAGING	ONWARD MOVEMENT AND INTEGRATION	CONDUCT OPERATIONS
Home Station Predeployment Activities Mission Analysis Intelligence Preparation of the Battlespace Course of Action Development	**Safety of Navigation** Airfield Point of Embarkation/ Debarkation Sea Point of Embarkation/ Debarkation	**Intermediate Staging Base** Continue Mission Planning Lines of Communication • Ground Convoy • Inter-Theater Airlift	**Tactical Assembly Area** Main Supply Routes Mission Rehearsal	**Actions on Objective** Actions Enroute Change of Mission

HUMANITARIAN ASSISTANCE AND DISASTER RESPONSE

MISSION Providing geospatial data, products and services to inform and improve domestic and international response

GEOMATICS

Geodetic Surveys

Elevation Models

Precise Imagery

Global Models

LAND

Topographic Maps

Human Geography

Political Geography

SEA

World-Wide Navigational Warning Service

Navigation Publications

Notice to Mariners

Nautical Charts

AIR

Flight Information Publications

Digital Aeronautical Flight Information File

Vertical Obstructions

PRODUCING SAFETY OF NAVIGATION PRODUCTS AND DATA TO ACCOMPLISH DOD WORLDWIDE MISSIONS

Knowledge to Safely Plan and Execute Mission Objectives

Daily support to naval vessels and U.S. Navy sailors and Marines underway

Over 30 critical navigational warnings and distress messages sent to U.S. and international Mariners daily

MISSION PLANNING

- Littoral Planning Charts (LPCs)
- Operation Area (OPAREA) Charts
- Additional Military Layers (AML)
- Navigation Publications
- World Port Index
- Closure Areas

PORT OF EMBARKATION

- Submarine Electronic Navigational Charts (SMENCs)
- Electronic Navigational Charts (ENCs)
- Digital Nautical Charts (DNCs)
- Nautical Hard Copy Charts
- Tactical Ocean Data (TOD)

NAVIGATION/OBSTRUCTIONS

- World-Wide Navigational Warning Service (WWNWS)
- Receives Navigational Warnings Daily from Worldwide Sources
- 24/7 Maritime Watch

MISSION EXECUTION

- Maritime Quality Feedback System (MQFS)
- Mobile Offshore Drilling Units (MODUs)
- Maritime Intelligence Support
- Satellite-Derived Information

DOD AND U.S. COAST GUARD AVIATION NAVIGATION

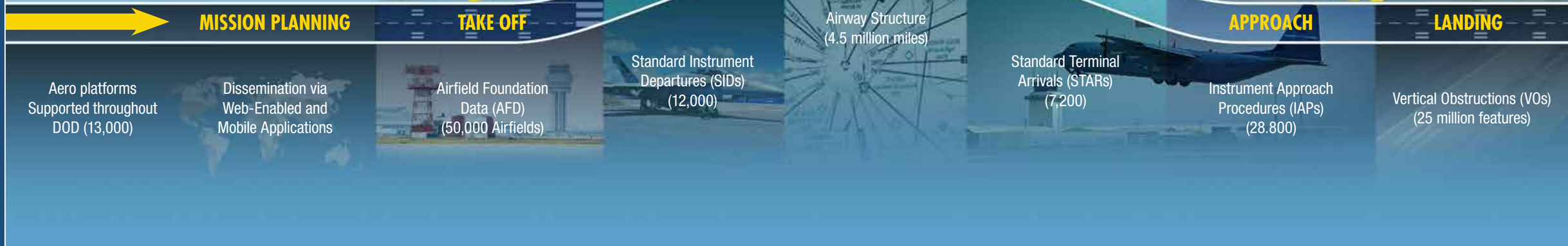
WORLDWIDE COVERAGE BY NGA

PRODUCING SAFETY OF NAVIGATION PRODUCTS AND DATA EVERY 28 DAYS TO ACCOMPLISH DOD WORLDWIDE MISSIONS

Performance-Based Navigation (PBN) — Transforming to Data-Driven, Space-Based Navigation

FLIP
FLIGHT INFORMATION PUBLICATIONS

DAFIF
DIGITAL AERONAUTICAL FLIGHT INFORMATION FILE



MISSION PLANNING	TAKE OFF	DEPARTURE	ENROUTE	ARRIVAL	APPROACH	LANDING
Aero platforms Supported throughout DOD (13,000)	Airfield Foundation Data (AFD) (50,000 Airfields)	Standard Instrument Departures (SIDs) (12,000)	Airway Structure (4.5 million miles)	Standard Terminal Arrivals (STARs) (7,200)	Instrument Approach Procedures (IAPs) (28.800)	Vertical Obstructions (VOs) (25 million features)
Dissemination via Web-Enabled and Mobile Applications						

NATIONAL SYSTEM FOR GEOSPATIAL INTELLIGENCE (NSG) FOUNDATION GEOINT REQUIREMENTS

WORLDWIDE SUPPORT BY NGA

Requirements are submitted to NGA through the Foundation GEOINT NSG Operations Executive (FG NOX) process

MISSION PARTNERS

Geographic Combatant Commands

Functional Combatant Commands

Military Services

Intelligence Community

Civil Agencies

USGS science for a changing world

FG NOX

FOUNDATION GEOINT PRODUCERS

- Office of Geomatics
- Office of Geography
- Maritime Safety Office
- Aeronautical Navigation Office
- Geospatial Planning Cells (GPCs)
- International Program for Human Geography (IPHG)
- Allied System for Geospatial Intelligence (ASG)
- Multinational Geospatial Co-Production Program (MGCP)
- TanDEM-X High Resolution Elevation Data Exchange (TREx)

STANDING REQUIREMENTS

(2-Year Cycle)	QTR 4	QTR 1	QTR 2	QTR 3	QTR 4
Planning Year	*Data Call*	*Gap Analysis*	*Prioritization*	*Plan Approval*	
Production Year	*Production Plan Approval*	*Execute Production Plan*			

EMERGENT & CRISIS REQUIREMENTS

Partner identifies unforecasted need

Partner identifies crisis requirement

Partner crisis POC engages with FG NOX who coordinates with Producers to meet need

OFFICE OF GEOMATICS | SFN

MISSION
Provide accurate positioning, navigation, timing and targeting content and services in support of critical infrastructure and the national security objectives of the U.S. government

WORLD GEODETIC SYSTEMS 1984 (WGS 84)

EARTH-FIXED REFERENCE FRAME
Maintains and updates the underlying foundational x,y,z coordinate system used by the Intelligence Community (IC)/Department of Defense (DOD) and all Safety of Navigation (SoN) systems

EARTH GRAVITATIONAL MODEL (EGM)
The EGM is built utilizing global correction files to support accurate strategic and tactical navigation systems using 200+ million gravity records

WORLD MAGNETIC MODEL (WMM)
Maintain and update the WMM, the accurate description of the Earth's magnetic field supporting sea, land and air magnetic-based navigation, utilized by the U.S. Armed Forces, NATO partners, and commercial platforms that serve the global population

ELEVATION
Provide global coverage of digital elevation models (DEM) at various different resolutions to support a wide range of missions including mission planning, SoN, and 3D GEOINT

GEODETIC SURVEYS
Provide support to DOD weapons and flight-testing ranges, airfield SoN, and U.S. Navy strategic systems programs

PRECISE IMAGERY
Provide global coverage of DOD's most accurate ortho-mosaic imagery to support a full range of U.S. joint force and allied operations, such as mission planning and SoN

GEOSCIENCES
- Earth Gravitational Model (EGM)
- World Magnetic Model (WMM)
- Coordinate Systems Analysis
- Geotechnical Hazards, Indications & Potentials (GeoHip)
- Global humanitarian assistance and disaster relief, and advanced mobility analysis
- Inertial Navigation System (INS) support

ELEVATION
- Global, regional, local and specialized datasets
- Bare Earth/reflective data
- Manual/Automated
- In-house/contracted production
- Auto-generation capability
- Supercomputing partnerships to support 3D GEOINT
- Geospatial Repository and Data Management (GRiD) system
- 33 nations in the TanDEM-X High Resolution Elevation Data Exchange (TREX) Program
- Elevation models
  - Terrain contour-matching sciences
  - High Resolution Terrain Elevation 4 (HRTE4) products
  - Air-launched cruise missile support
- 100% of the Earth's surface has 12-meter high-resolution elevation data

GEODETIC SURVEYS
- Space launch and weapons system support
- DOD flight safety
- Survey technical expertise
- Geophysical data collection and analysis
- Astronomic azimuth, astronomic positioning, Deflection of Vertical, gravity, magnetic and geodetic positioning

PRECISE IMAGERY
- Digital Point Positioning Database (DPPDB) — stereo precision product
- Controlled Image Base (CIB) — global ortho-mosaic mission planning product
- Imagery accuracy improvement, exploitation and evaluation
- Commercial Imagery Regional Ortho-mosaic (CIRO) — Unclassified ortho-mosaic imagery products
- Near global stereo imagery content

GLOBAL NAVIGATION SATELLITE SYSTEMS (GNSS)
- Maintain and enhance the World Geodetic System 1984 (WGS 84)
- Earth-Fixed Reference Frame
  - Built from NGA's GNSS collection stations' data
  - Provides a single set of global coordinates for navigation and weapons systems
- Interoperability between U.S. and international reference frames
- Support National System for Geospatial Intelligence (NSG)
- GPS Monitor Station Network
- Real-time GNSS dataflow
- GPS precise orbit production
- Earth-orientation parameter predictions

INTEGRATION
- Technical integration
- Business operations support
- Geomatics tradecraft advancement
- Cloud migration
- Geomatics standards

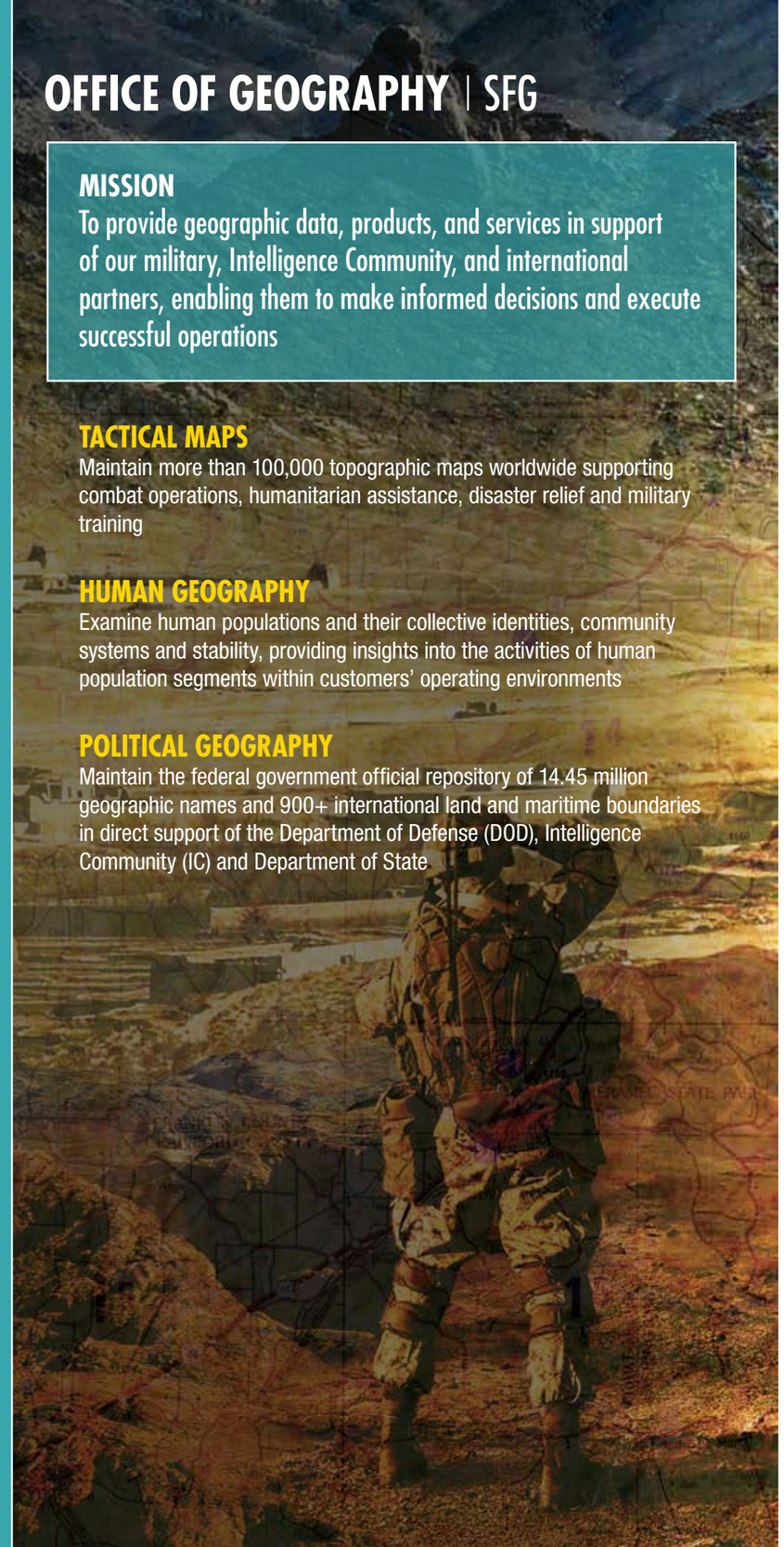
OFFICE OF GEOGRAPHY | SFG

MISSION
To provide geographic data, products, and services in support of our military, Intelligence Community, and international partners, enabling them to make informed decisions and execute successful operations

TACTICAL MAPS
Maintain more than 100,000 topographic maps worldwide supporting combat operations, humanitarian assistance, disaster relief and military training

HUMAN GEOGRAPHY
Examine human populations and their collective identities, community systems and stability, providing insights into the activities of human population segments within customers' operating environments

POLITICAL GEOGRAPHY
Maintain the federal government official repository of 14.45 million geographic names and 900+ international land and maritime boundaries in direct support of the Department of Defense (DOD), Intelligence Community (IC) and Department of State



TOPOGRAPHY

- Feature data collection, quality assurance, integration, management and distribution
- Map and chart finishing and quality assurance
- Data integration
- 5+ billion topographic features including geometry and attributes for roads, rails, hydrography, land cover, buildings, and industrial and cultural features
- 83,000+ topographic
  - 3615 Joint Operations Graphic-Air charts
  - 460 Evasion Charts (EVCs)
  - 1,561+ Image City Maps (ICMs)
  - 1,086 NAVPLAN charts — Tactical Pilotage Charts (TPCs), Jet Navigation Charts (JNCs), Operational Navigation Charts (ONCs), and Global Navigation and Planning Charts (GNCs)
  - 3,889 urban scale topographic maps and 68 topographic atlases
- A collaborative production environment in which topographic data can be edited by NSG, ASG, international, and vendor partners

HUMAN GEOGRAPHY

- Describes the demographics of populations and their collective identities including ethnicity, religion, language, politics and ideology
- Identifies community systems for communications, economics, education, energy, elections, health, security, transportation, water, worship and cultural heritage
- Focuses on social stability and conflict at the regional, national and sub-national levels
- Populated Place Framework: enables geolocated of population attribute to settlements, villages, cities and neighborhoods
- Over 2+ million human geography features

POLITICAL GEOGRAPHY

- Steward of official geographic names, political boundaries and country codes for the U.S. government
- 8.9 million features with 14.45 million geographic names in the Geographic Names Database (GNDB)
- 37 foreign languages spoken by analysts
- Boundaries
  - 900+ international land and maritime boundaries
  - 74,000+ administrative (internal) boundaries
  - 2,500+ claimed maritime limits and zones
  - 2.85+ million miles of high-resolution shoreline data

TECHNOLOGY AND INTEGRATION

- Foundation GEOINT Modernization (FG MOD)
- Production management of data and products
- Amazon Web Services (AWS) for storage
- Utilize Cloud migration to increase computing performance
- Global Earth Mapping Information Network Interface (GEMINI)
- Fully-automated and semi-automated map and chart finishing

PARTNERSHIPS

- Develops, manages and leverages NGA's bilateral and multilateral foundation geography international partnerships, maximizing partner contributions to meet NGA/NSG/Allied System for Geospatial Intelligence (ASG)/IC/DOD/NATO FG requirements for boundaries, geographic names, human geography and topography
- Strategic partnerships assist in meeting the growing demand for FG
- Combatant command support
- Education partnership and data exchange with academia
- Environmental security
- 70+ nations multi- or bi-lateral agreements for foundation data and products
- 32 nations sharing 1:50K scale topographic feature data via the Multinational Geospatial Co-production Program (MGCP)
- 25 nations sharing 1:5K scale topographic feature data via the MGCP Urban Vector Data (MUVD) Program
- 16 nations sharing human geography data via the International Program for Human Geography (IPHG)
- Chairing and serving as U.S. representatives at multinational forums

MARITIME SAFETY OFFICE | SFH

MISSION
Provide global maritime geospatial intelligence in support of national security objectives, including commercial and defense Safety of Navigation (SoN), international obligations and joint military operations

MARITIME SAFETY

Maintain 70 million hydrographic features globally, which are used to produce over 10,000 charts and publications that are certified safe for navigation for military and civilian mariners, per U.S. Code Title 10 and Title 44

WORLD-WIDE NAVIGATIONAL WARNING SERVICE (WWNWS)

Provide 24/7 broadcast of urgent maritime safety information, for the Navareas Navigational Areas (NAVAREAS) IV and XII, North Western Atlantic and North Eastern Pacific, respectively to thousands of commercial, international and U.S. government ships per day, ensuring maritime SoN

NOTICE TO MARINES

- Weekly unclassified publication since 1869
- Send over 30 critical navigational warnings and distress messages to U.S. and international mariners daily
- Provides critical Safety of Navigation (SoN) updates to all NGA, National Oceanic and Atmospheric Administration (NOAA) and U.S. Coast Guard nautical hard copy charts and publications
- Monthly classified version

NAUTICAL CHARTS

- 700 nautical hard copy charts
- 3,900 digital nautical charts (DNCs)
- 1,400 tactical ocean data (TOD) libraries
- 20,000 submarine electronic navigational charts (SMENCs)
- 3,400 NGA and 9,400 foreign-produced electronic navigational charts (ENCs)
- 3 Operation Area (OPAREA) additional military layer (AML)
- 580 littoral planning charts (LPCs)

WWNWS

- Internationally coordinated 24/7 operation that providing immediate SoN messages to mariners at sea
- World divided into 21 NAVAREAS; U.S./NGA is the NAVAREA coordinator for NAVAREA IV and NAVAREA XII
- Receives 300,000 messages per year; 8,000 messages are promulgated as a NAVAREA IV, NAVAREA XII, HYDROLANT, HYDROPAC or HYDROARC
- Closure areas, icebergs, and U.S. maritime alerts and advisories

NAUTICAL PUBLICATIONS

- Bowditch — The American Practical Navigator Volumes I & II
- Sailing Directions (enroute and planning guides) — 42 publications
- NGA List of Lights — seven volumes
- Fleet Guides — Atlantic and Pacific
- World Port Index
- Radio Navigation Aids
- Global Maritime Traffic Density Service

BATHYMETRY

- Provides bathymetric datasets for the SoN portfolio
- Custom bathymetric products

PARTNERSHIPS AND STANDARDS

- 40+ bilateral and multi-lateral International Agreements
- Primary Charting Authority responsibilities for 12 foreign partners
- Tri-Service (NOAA, Navy, and NGA) member of the U.S. Delegation to the International Hydrographic Organization (IHO)
- 75 Strategic Engagement Representatives supporting the IHO technology and standards modernization

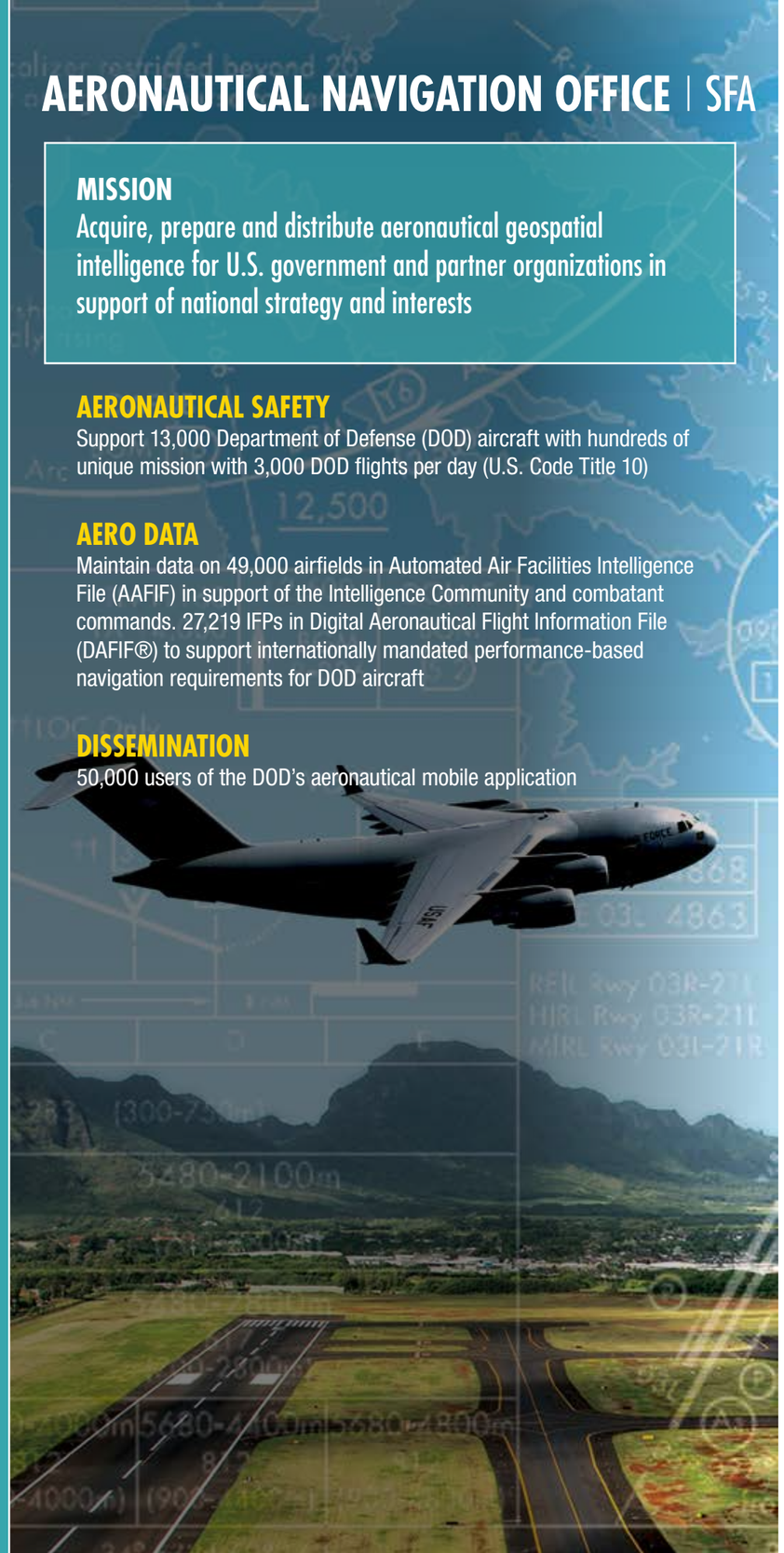
AERONAUTICAL NAVIGATION OFFICE | SFA

MISSION
Acquire, prepare and distribute aeronautical geospatial intelligence for U.S. government and partner organizations in support of national strategy and interests

AERONAUTICAL SAFETY
Support 13,000 Department of Defense (DOD) aircraft with hundreds of unique mission with 3,000 DOD flights per day (U.S. Code Title 10)

AERO DATA
Maintain data on 49,000 airfields in Automated Air Facilities Intelligence File (AAFIF) in support of the Intelligence Community and combatant commands. 27,219 IFPs in Digital Aeronautical Flight Information File (DAFIF®) to support internationally mandated performance-based navigation requirements for DOD aircraft

DISSEMINATION
50,000 users of the DOD's aeronautical mobile application



FOUNDATION AERO DATA
- Maintain airfield data on 49,000+ airfields worldwide in the Automated Air Facilities Intelligence File (AAFIF) product as the Intelligence Community RESPROD for global airfields
- 11,600+ airfields with Airfield Foundation Data (AFD) vectors collected
- 33 million vertical obstructions (VOs) collected
  - o >150 feet worldwide
  - o >50 feet within seven miles of 9,800 priority airfields

ENROUTE AERO DATA
- 9,000 navigation aids
- 54,000 waypoints
- 10,000 airways with 154,000 segments
- 16,000 boundaries with 191,000 segments
- 14,800 special use airspace with 81,000 segments

TERMINAL AERO DATA
- 18,000+ Instrument Flight Procedures (IFPs) in global Federal Aviation Administration (FAA) Flight Information Publications (FLIPs)
- 15,000+ IFPs in the DOD FLIP
- 14,000+ IFPs in the Electronic Instrument Procedure Library (E-IPL)
- 27,219 IFPs coded in the Digital Aeronautical Flight Information File (DAFIF®)

AERO DATABASE
- 4 billion data elements
- 44 million updates on a 28-day cycle
- 10,000 lines of SQL code

WORKFORCE
- Comprised of military and civilian pilots, navigators, air traffic controllers, airfield managers and other technical specialties
- Credentialed by the FAA

DISSEMINATION
- 7.5 million hard-copy FLIP products disseminated via Defense Logistics Agency accounts
- 50,000 users of the DOD's Aeronautical Mobile Application (iOS, Android and Windows)
- 9,830 active accounts for the Aeronautical Content Exploitation System (ACES)
- Web-enabled on JWICS, SIPRNet, NIPRNet and the Internet

PARTNERSHIPS
- 410 national, international and industry working relationships
- 240+ nations with agreements for foundation data and products
  - o 170 managed by this office
- Allied System for Geospatial Intelligence (ASG) Aeronautical Sub Group (FVEY) — aeronautical co-production, data comparison and development of FVEY standards
- NGA aeronautical analysts embedded with FAA
- Operation DEEP FREEZE — support to DOD, Federal Aviation Administration, the National Science Foundation and international partners

ENABLES
- 24/7 digital access to worldwide aeronautical data
- Life-saving collision and terrain avoidance systems
- Intelligence Community support for global operational planning and weapon systems
- Global combat, training, force protection and humanitarian assistance/ disaster relief (HA/DR) operations
- Aeronautical Safety of Navigation for DOD and allied partners

FOUNDATION GEOINT NATIONAL SYSTEM FOR GEOSPATIAL INTELLIGENCE (NSG) OPERATIONS EXECUTIVE OFFICE (NOX) | SFP

MISSION
Coordinate, refine and execute the prioritized National System for Geospatial Intelligence (NSG) Foundation GEOINT (FG) requirements to ensure optimal use of production resources in support of the Department of Defense (DOD) and the Intelligence Community, report on NGA's FG mission readiness, lead the Foundation GEOINT Group's international engagements and ensure non-combatant and other contingency operations (NCO) support to the Department of State

NON-COMBATANT EVACUATION OPERATIONS (NEO)

Support U.S. Government contingency operations worldwide with the most current FG products for 600+ NEO sites in 189 countries; maintain and disseminate authoritative "Listing of Products" for each site.

INTERNATIONAL ENGAGEMENT

International bilateral sharing agreements with 240+ nations that support the DOD warfighter, national security objectives, and Safety of Navigation (SoN) requirements

REQUIREMENTS

- Collect and report Foundation GEOINT (FG) requirements across the NSG
- Assist customers with FG requirements creation, refinement and submission
- Oversee and synchronize prioritization of FG requirements
- Coordinate strategic engagement with NSG and Allied System for Geospatial Intelligence (ASG) partners
- Maintain and enhance a requirements management system enabling customers to efficiently submit, validate, track, and query requirements

READINESS AND ASSESSMENT

- Serve as the NGA Source Directorate lead for both FG Adequacy and the Chairman of the Joint Chiefs of Staff (CJCS) mission-readiness reviews
- Perform annual availability and adequacy assessments against stated requirements and identify shortfalls.
- Coordinate with FG Production Offices to develop and leverage new FG methods and tradecraft to meet mission needs

OPERATIONS

- Facilitate cross-functional FG activities and report accomplishments to DOD, the Intelligence Community, and US Government decision-makers
- Serve as the FG crisis manager
- Produce and disseminate Non-Combatant Evacuation Operations (NEO) products
- Lead FG engagements with international partners

PARTNERSHIPS

- Lead the development and execution of an international engagement strategy, aligning with NGA vision and policies
- Facilitate strategic engagements with NSG and Allied System for Geospatial Intelligence (ASG) partners
- Collaborate within NGA for development of international agreements and co-production and/or data exchange programs
- Assess capabilities of international partners and identify opportunities to enhance NGA/NSG global data through exchange, co-production, and/or burden-sharing activities

CORPORATE OPERATIONS AND TECHNOLOGY OFFICE | SFC

MISSION

Oversee Foundation GEOINT Group's (SF) corporate business, technology, and standards activities supporting geomatics, geography, maritime and aeronautical missions

OPERATIONS

Lead SF's corporate activities including manpower, taskers, business continuity planning, workspace planning and IT infrastructure

TECHNOLOGY

Partner with the Defence Geospatial Information Working Group (DGIWG-NATO) to enhance the Defence Geospatial Information Framework (DGIF) Data Model

Partner with the Program Executive Office (PEO) for Mapping, Charting, and Geodesy (MC&G) to develop, acquire, integrate, deploy, and sustain IT capabilities and services

STANDARDS

Influence data models with customers to ensure foundation data interoperability with current and future geospatial-based system

BUSINESS OPERATIONS

- Support SF senior-level requirements
- Provide communications and engagement support
- Supervise space, IT systems/devices and software requirements
- Manage external and internal tasking
- Manage awards program
- Supervise business continuity and information assurance programs
- Lead Next NGA St. Louis (N2W) planning for SF and NGA Source Directorate

RESOURCE MANAGEMENT

- Perform strategic workforce planning coordination
- Monitor manpower and career service requirements

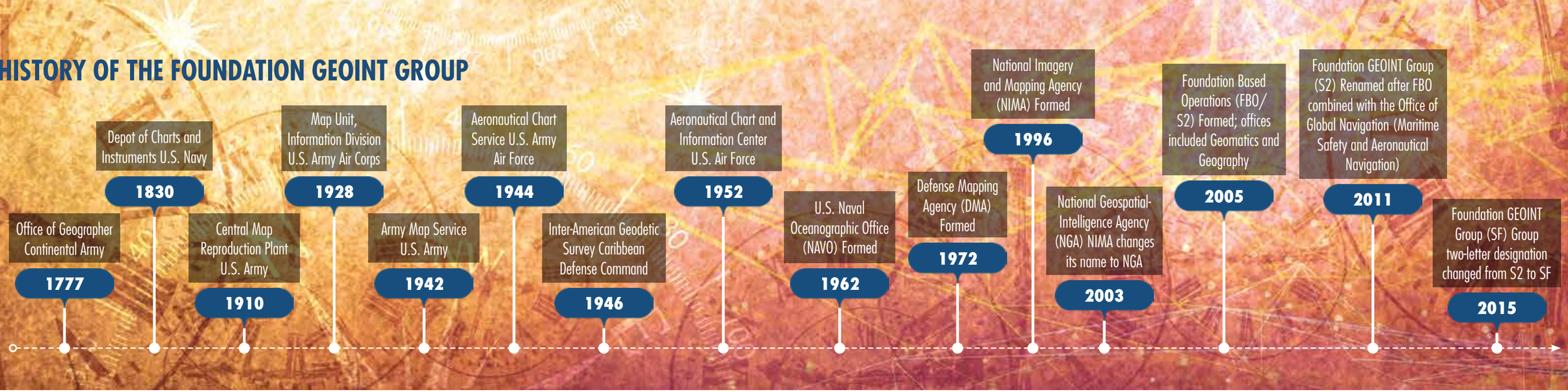
FOUNDATION GEOINT TECHNOLOGY

- Establish and maintain FG Information Technology (IT) governance across SF
- Serve as the Digital Foundation GEOINT Data integrate across SF
- Document Foundation GEOINT (FG) mission planning and capabilities
- Coordinate SF data and content integration services.
- Support the SF Technical Executive and the Program Executive Office (PEO) for Mapping, Charting, and Geodesy (MC&G) Services Mission Owner
- Conduct software development to increase automation. Currently developing the Quality Assurance Capability (QAC) application to conduct automated QA of FG feature data sets
- Fulfill requests from within SF for Data Science/Data Analysis work, to include scripting for automation and analysis/visualization to support data-centric decision-making
- Conduct outreach and partner with government, academia, and industry to identify, develop, leverage, and/or deploy AI/ML capabilities within SF

STANDARDS

- Lead, influence, and coordinate FG standards activities across the NGA, National System for Geospatial Intelligence (NSG) and international standards communities, including MGCP and DGIWG
- Develop and maintain standards to increase interoperability and compatibility across products and services
- Enable online access to FG standards and extraction guidance through the FGS-DPS website
- Lead the SF Standards Forum to encourage collaboration and knowledge sharing across FG offices

HISTORY OF THE FOUNDATION GEOINT GROUP



THE FOUNDATION GEOINT GROUP

The Foundation GEOINT Group traces its lineage back over 248 years. In 1777, General George Washington established the Office of Geographer for the Continental Army, which consisted of cartographers and surveyors. In 1830, the U.S. Navy's Depot of Charts and Instruments was established. By 1962, this office evolved into the U.S. Naval Oceanographic Office (NAVO). In 1910, the U.S. Army's Central Map Reproduction Plant was established, evolving into the Army Map Service in 1942. In 1928, the Map Unit, part of the Information Division of the U.S. Army Air Corps, was established, evolving into the Aeronautical Chart Service in 1944 and subsequently to the U.S. Air Force Aeronautical Chart Information Center in 1952. In 1946, under presidential directive, the Inter-American Geodetic Survey formed under the Caribbean Defense Command.

These organizations, along with other entities, eventually combined to form the Defense Mapping Agency (DMA) in 1972. The Foundation GEOINT Group inherited key missions of the original DMA mission that was assimilated into the National Imagery and Mapping Agency (NIMA) and then NGA. Below is a summary of the chronicle of events that resulted in the formation of the Foundation GEOINT Group.

DMA

1971 A presidential memorandum directed the consolidation of the Department of Defense (DOD) mapping, charting and geodesy operations.

1972 The DOD established DMA to provide mapping, charting and geodesy to support the Secretary of Defense, military departments, Joint Chiefs of Staff and other DOD components.

In establishing DMA, DOD combined the selective activities of the U.S. Army Topographic Command (including the Army Map Service); the Department of Topography of the U.S. Army Engineer School; the Inter-American Geodetic Survey of the U.S. Army; and the chart production, nautical information, and distribution activities of the U.S. Navy Oceanographic Office, the Aeronautical Chart and Information Center operations, the 1st Geodetic Survey Squadron, and elements of the 15th Reconnaissance Technical Squadron of the U.S. Air Force.

Those organizations formed DMA's four operational offices: the Inter-American Geodetic Survey, the Topographic Center, the Hydrographic Center and the Aerospace Center.

Through these four organizations, DMA support spanned the next quarter century, providing for the production, worldwide distribution, and support of maps, charts and geodesy. This also included precise positioning data and digital data for strategic and tactical military operations, weapons systems and Safety of Navigation.

NIMA

1996 NIMA was formed to bring our nation's most capable imagery and geospatial assets together into a single agency. NIMA brought together DMA, Central Imagery Office, the Defense Dissemination Program Office and the National Photographic Interpretation Center. It also incorporated parts of the Central Intelligence Agency, the Defense Airborne Reconnaissance Office, the Defense Intelligence Agency and the National Reconnaissance Office. Subsequently, DMA's offices and missions were distributed across various NIMA offices.

2003 NIMA established the Source Operations and Management Directorate (S), responsible for acquiring, managing, and delivering imagery and other source data and information to the National System for Geospatial Intelligence (NSG).

NGA

2003 The Defense Authorization Bill included a provision renaming NIMA as the National Geospatial-Intelligence Agency.

2005 The NGA Director commissioned a review of current agency missions. As a result of its findings, an entity within the Source Directorate, Foundation Based Operations (FBO/S2), with an NSG Operations Executive (NOX), was formed. Offices included in the FBO were Geomatics (SN) and Geography (SG).

The offices of Maritime Safety (PVM) and Aeronautical Navigation (PVA) were in the Analysis and Production (P) Directorate in the Office of Global Navigation (PV) with a Safety of Navigation (SON) NSG Operations Executive (NOX).

2011 The foundation mission activities of FBO and PV were combined to form the Foundation GEOINT Group (S2).

2015 To be consistent with the rest of the agency's two-letter designations, S2 was changed to SF.

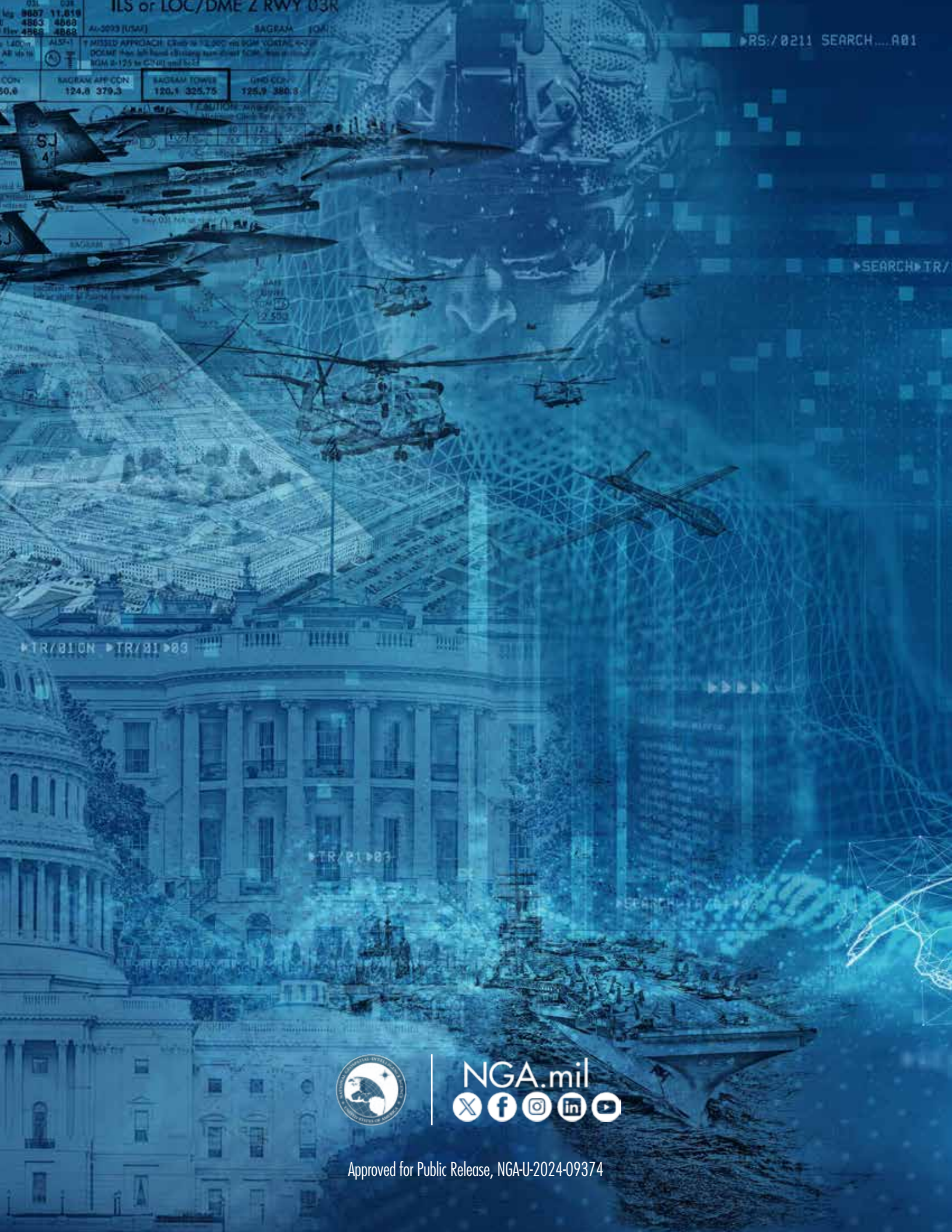
Today, the Foundation GEOINT Group is organized in a similar manner to that of DMA. The organization of DMA's former four operational offices correlates to a certain degree to that of the SF operational offices of today: the Inter-American Geodetic Survey to the Office of Geomatics (SFN), the Topography Center to the Office of Geography (SFG), the Hydrography Center to the Maritime Safety Office (SFH), and the Aerospace Center to the Aeronautical Navigation Office (SFA).

SF features two support offices. The Corporate Operations and Technology Office (SFC) manages personnel, administration, communications, information technology and logistic functions. Foundation GEOINT NOX (SFP) manages customer mission requirements.

Today, the SF workforce consists of military, government and contractor personnel. Their distribution in St. Louis, the National Capital Region and locations around the world reflects the agency's varied geographical roots and global presence to provide world-class data, products and services describing the physical and cultural characteristics of the Earth and space.

NOTES


/Administration
/Human Resources
/Legal
/Accounting
/Finance
/Marketing
/Publicity
/Production
/Research
/Business
/Development
/Engineering
/Manufacturing
/Planning



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