

**Written Statement by  
David Millar, Government Accounts Director - Americas, Fugro  
Committee on Commerce, Science and Transportation  
Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard  
on  
A Decade of the Digital Coast Partnership Program: Successes and Opportunities**

**June 5, 2018**

Chairman Sullivan, Ranking Member Baldwin, and members of the Committee, thank you for this opportunity to appear before you to provide an industry perspective on the past ten years of the Digital Coast Partnership Program. My name is David Millar and I am the Government Accounts Director – Americas for Fugro, based in Frederick, Maryland. Data, tools and training are critically important to managing coastal resources and NOAA’s Digital Coast provides the coastal management community with all of these in one convenient portal.

My background includes 30 years of Marine Navigation & Positioning, Hydrographic Survey, Ocean and Coastal Mapping experience. As Government Accounts Director – Americas, I serve as Fugro’s key account manager for the United States government, other national governments within the Americas Region, the United Nations, the World Bank and other Multilateral Development Banks. In this capacity, I am the interface between Fugro’s government customers and all of Fugro’s marine site characterization and asset integrity service offerings, across both the Land and Marine Divisions.

Prior to this, I served as the President of Fugro Pelagos, Inc., a Fugro company specializing in Hydrographic Survey and Ocean & Coastal Mapping. There I was responsible for managing a company with approximately 80 staff and an annual budget of approximately \$20M. During that period, I oversaw the delivery of Hydrographic Survey and Coastal Zone Mapping Services to NOAA, the United States Army Corps of Engineers, as well as similar government agencies in other nations. I am also on the Board of Directors of The Maritime Alliance, the GEBCO Guiding Committee, as well as the Establishment Board of Seabed 2030.

Fugro is the world’s leading, independent provider of geo-intelligence and asset integrity solutions for large construction, infrastructure and natural resource project. We provide the technical data and information required to design, construct and maintain structures and infrastructure in a safe, reliable and efficient manner. Our United States and Americas regional headquarters are located in Houston, Texas and we employ approximately 1,100 employees across 30 offices in 10 states in the United States. Working predominantly in the energy and infrastructure markets, we serve both public and private sector clients on land and at sea.

Fugro has been active in all U.S. Coastal States, including Alaska and those on the Great Lakes, for more than three decades, supporting resource development initiatives, coastal infrastructure development and maintenance activities in addition to providing survey and mapping support to federal, state and local governments.

Fugro also holds multi-year contracts with NOAA Office of Coast Survey (OCS), NOAA National Geodetic Survey (NGS), NOAA Office for Coastal Management (OCM), United States Army Corps of Engineers (USACE), United States Geological Survey (USGS), the Federal Emergency Management Agency (FEMA), United States Bureau of Reclamation (BOR) and the United States Navy. Elevation data acquired under all of these contracts is or could be incorporated into the Digital Coast.

The following sections highlight specific Fugro experience with federal agencies that relate to or support the Digital Coast Program:

#### NOAA – Office of Coast Survey

Fugro has been providing Hydrographic Survey Services to NOAA’s Office of Coast Survey since 1997, providing critical support in addressing the nation’s charting backlog. This support has been in the form of executing hydrographic surveys utilizing vessel-based sonar and aircraft-based bathymetric lidar. Over the years, much of this work has been performed in Alaska, though most recently, the company has been tasked to work in Maine and the Gulf of Mexico.

#### NOAA – National Geodetic Survey Coastal Mapping Program

Fugro has been supporting the NOAA National Geodetic Survey Coastal Mapping Program since 2014. This program uses stereo photogrammetry with tide-coordinated aerial photography and/or bathy-topo lidar along the coast to provide the nation with an accurate, consistent, up-to-date national shoreline, which serves as the critical baseline for demarcating the United States’ marine territorial limits, including its Exclusive Economic Zone and for the geographic reference needed to support coastal zone management.

#### NOAA – Office of Coastal Management

Since 2005 Fugro has been providing Geospatial Services to NOAA’s Office of Coastal Management. One of the services provided under this contract is the production of land cover and land cover change information, which is used by NOAA’s Coastal Change Analysis Program (C-CAP). C-CAP provides nationally standardized, raster-based inventories of land cover for the coastal areas of the United States.

#### USACE – National Coastal Mapping Program

Fugro has been supporting the USACE’s National Coastal Mapping Program since its inception in 2005, providing integrated topographic lidar, bathymetric lidar, aerial imagery and hyperspectral data along coastal areas of the contiguous United States and Hawaii. These data support the USACE’s regional sediment management, construction, operations, and regulatory functions in the coastal zone

#### USGS – Geospatial Services

Fugro has been supporting the United States Geological Survey (USGS) via their Geospatial Product and Service Contract and its predecessor contract since 2008. Under this contract, the

company has been supporting The National Map and many other federal, state and local projects through the provision of photogrammetric mapping, orthophotography, IFSAR and lidar.

### FEMA – Risk Map

Fugro has been supporting the Federal Emergency Management Agency's (FEMA's) Risk Mapping, Assessment and Planning (Risk MAP) program since 2010. Risk MAP provides data and solutions that increase public awareness and reduces risk to life and property through a combination of flood hazard mapping, risk assessment tolls and hazard mitigation planning. Fugro provides geospatial content, including, topographic data, bathymetric data, ortho imagery and oblique imagery

### **Digital Coast Partnership Program**

This combined experience and expertise has positioned Fugro as a strong participant in the Digital Coast Partnership Program. With more than 39% of the U.S. population living near the coast, projected to reach 134 million by 2020, the need and appreciation for this type of integrated data is growing among local, state, and federal emergency response and resource development managers. Fugro plays an important role supporting the Digital Coast by providing high quality geospatial data in formats readily accessible to federal partners, including NOAA.

Through the contracts and programs summarized above, Fugro provides a variety of source data to the Digital Coast Program. These source data include elevation, land cover and imagery. The coastal data acquired under some, but not all, of these contracts are incorporated into the Digital Coast. Other data sources and content, such as hazards and climate, economic, benthic, fish, birds, corals, demographic, federal geo-regulations, jurisdictions and boundaries, marine habitat, marine mammals and turtles, ocean uses and planning areas, physical and oceanographic and weather are provided by NOAA and many other contributors. All content is vetted by NOAA before being served and combined on-line with tools and training. The Digital Coast portal includes visualization tools, predictive tools and tools that make data easier to find and use. Training courses are also available online or at the user's location. Content is critical, however, and Digital Coast would not exist if it were not for current and historical data. For Fugro, acquiring and processing content that feeds into the Digital Coast via our numerous federal government contracts results in approximately one-hundred well-paying jobs across the country.

In many ways, Fugro's site characterization and asset integrity services mirror many of the areas prioritized in Digital Coast. The Digital Coast provides an enabling platform that facilitates use and application. It starts with data, turns it into information and facilitates action through discovery, download, mapping, analysis, learning and sharing. Within Fugro, we acquire data of the earth and its assets, we manage and analyze the data and we provide advice covering a wide spectrum of geo-engineering and asset integrity disciplines to our customers. As with the Digital Coast, this process allows our clients to make informed decisions and facilitate / de-risk complex and technically demanding projects. The nature of the projects is different, but the process is similar and the experiences gained through work in the Digital Coast Partnership Program are valuable to the private sector.

## Highlights

Fugro has been a contributor to the Digital Coast Program since its inception ten years ago and even data that we acquired before this date have been incorporated into the Digital Coast. Several examples follow:

- Fugro, through its support to the Joint Airborne LIDAR Bathymetric Technical Center of Expertise (JALBTCX), acquired topographic lidar, bathymetric lidar, aerial photography and hyperspectral imagery along the Gulf Coast for the USACE immediately after Hurricane Katrina, which was subsequently incorporated into and is now served by the Digital Coast.
- Under our Geospatial Services contract with NOAA's Office of Coastal Management, Fugro provides land cover and land cover change information from Landsat imagery to support C-CAP. All of our C-CAP data are incorporated into the Digital Coast and is updated on a 5-year cycle. In 2015, our C-CAP work was in the Great Lakes. In 2016, it was in Washington, Wisconsin, Pennsylvania, Ohio, Illinois, Indiana, New York, New Hampshire, Maine, Michigan, Rhode Island, Connecticut, North Carolina and South Carolina. In 2017, we worked in Georgia, Alabama, Mississippi and California.
- Between 2009 and 2011, we surveyed the entire west coast of the United States from the Mexico border in the south to the Canadian border in the north. This work was executed under our contract with USACE and was in support of the Corp's National Coastal Mapping Program. Topographic lidar, bathymetric lidar, aerial photography and hyperspectral imagery were acquired, processed, delivered and are now served by the Digital Coast.
- Most recently, Fugro has been contracted by the Texas Natural Resources Information System and the USGS to acquire high-resolution topographic lidar data of the Greater Houston-Galveston area. This work was executed using four aircraft earlier this year. Given that this area was devastated by flooding from Hurricane Harvey last August, the dataset will undoubtedly serve as an invaluable resource to the local coastal and emergency management community.

The frequency of coastal flooding seems to be increasing and with this comes increased risk of life and property. In the case of Houston, that city has experienced three 500-year floods in the past three years. As a result, coastal and emergency managers are under increased pressure to plan for, mitigate and manage these events. The Digital Coast can be an invaluable resource in this process.

The private sector also uses the Digital Coast and in Louisiana where Fugro is contracted directly by the State of Louisiana's Coastal Protection and Restoration Authority (CPRA), as well as indirectly by CPRA's engineering contractors, we see data served by the Digital Coast used to monitor barrier island restoration projects on a regional scale, as well as to calibrate hydrologic models on a project level.

Even Fugro uses the Digital Coast to support some of our other activities. Data from the Digital Coast is often used to support siting and desk top studies that help our clients assess the feasibility of infrastructure development projects in the coastal zone. Data can also be used to aid in the planning and estimating of future mapping projects, where the availability of Digital Coast data can often reduce the price to our clients on new data collections. Data from the Digital Coast can also be used for change detection purposes, such that rates of change can be developed and they can also be used for QC purposes to validate the results of new surveys in some cases.

## **Recommendations**

1. Increase the marketing and promotion of the Digital Coast Partnership Program – While I believe the Digital Coast is well known to those in federal, state and local governments, I am not sure it is so well known in academia and the private sector. As an example, a Google search of “available coastal bathymetry data in the USA” does not present the Digital Coast within the first five pages of results.
2. Incorporate coastal sonar and bathymetric lidar data from NOAA NCEI – All of the bathymetry data acquired and maintained by NOAA’s Office of Coast Survey are stored at and served by NOAA NCEI. It is suggested that data that are coastal in nature (i.e. data that are adjacent to the coast) should be visible or accessible from the Digital Coast.
3. Develop a link between the U.S. Federal Mapping Coordination Seasketch site and the Digital Coast – The prior has been developed by the Integrated Working Group on Ocean and Coastal Mapping (IWG-OCM) and shows the mapping requirements and plans of Federal and state agencies around the country. It was developed to improve coordination and eliminate redundant mapping efforts, which it has done quite successfully. It would be useful if the Digital Coast could also show these plans as a layer, however.
4. Continue the federal government commitment for data collection – As mentioned earlier, the Digital Coast would not exist without coastal data. Having a combination of current as well as historical data allows coastal managers to not only assess the current situation, but also allow them to monitor change. Both are critical to maximize the utility of data served by the Digital Coast.

## **Conclusion**

Once again I would like to thank the Committee for allowing me to provide this statement for the record and to give testimony. I would be happy to answer any questions from the Committee on the Digital Coast Partnership Program.