

Mississippi Enterprise for Technology

John C. Stennis Space Center



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Geospatial Technologies

DigitalGlobe gets new eye in the sky

DigitalGlobe's Brett Thomassie is an old hand in the geospatial technology game.

He's been working in the field for two dozen years and has seen the growing use of satellite-acquired images. But even this old hand is excited about what will happen in October.

That's when DigitalGlobe's newest satellite, WorldView-2, will launch from Vandenberg Air Force Base, Calif. Built for DigitalGlobe by Ball Aerospace of Colorado, the satellite will double the imaging capability of the company's satellite constellation.

"We think it's going to be a game changer for us," said Thomassie, the company's representative at John C. Stennis Space Center. He said the new satellite also will improve detail and allow more frequent pass-overs – and that will be a big deal for customers.

Growing technology

Anyone who uses Google Earth or Bing Maps for Enterprise – the former Microsoft Virtual Earth – has probably seen images captured by DigitalGlobe satellites. The two popular programs have played a big role in familiarizing the public with geospatial technologies.



A recent satellite image of Stennis International Airport in Hancock County taken by a DigitalGlobe satellite. The company's imaging capacity will double with the launch of World View-2 in October.

And the future for DigitalGlobe and its competitors is beginning to look particularly bright.

In August the U.S. National Geospatial-Intelligence Agency, part of the Defense Department, said it has begun a procurement process that could lead to new satellite imagery orders in the first half of 2010. According to Reuters, analysts said the new imagery orders could amount to several billion dollars in revenues for DigitalGlobe and rival GeoEye, over the next five years.

That's not surprising to Charles Beasley, executive director of the Mississippi

Enterprise for Technology. DigitalGlobe, a member of MsET, was one of the early believers in Mississippi's push to create a geospatial cluster in the state.

"Geospatial technology has been identified by the U.S. Department of Labor as one of the top growing technology sectors in the country, and DigitalGlobe is certainly a leader in the industry – particularly in data collection," Beasley said.

Early startup

DigitalGlobe, based in Longmont, Colo., was estab-

(DigitalGlobe Continued on page 2)



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lished in 1992 and sells Earth observation imagery to government agencies, mapping companies and the media. It has 460 workers and went public in May 2009 (NYSE:DGI). In its first quarterly report as a public company it had second-quarter earnings of \$8.4 million on revenue of \$70 million.

It first set up an operation at Stennis in 1998 to be close to federal clients, such as the Naval Oceanographic Office, said Thomassie, DigitalGlobe's director of civil government programs and president of the company's Mississippi operations.

Thomassie, who joined DigitalGlobe in 1998, said the company's Mississippi operation is a key location for civil government program sales, business development and research and development.

DigitalGlobe commercial satellite products are designed to support a wide array of government, academic and commercial applications, ranging from land and natural resource management to asset monitoring and disaster and emergency response planning.

The commercial imaging industry now provides products once provided by the government. DigitalGlobe has been a pioneer with the first operational sub-meter satellite and the first constellation of sub-meter satellites.

For the past three years DigitalGlobe has offered a GIS-ready CitySphere imagery product line that includes 300 of the world's most populated cities and is available for off-line delivery or through DigitalGlobe's Web services. In partnership with the AEGIS Technologies Group, a modeling and simulation service, DigitalGlobe also offers a 3D image product, ImageScape, that can be created from any of its high-resolution satellite or aerial images.

Thomassie said DigitalGlobe also has a large and growing archive of images, and the launch of WorldView-2 will help meet the demand.

Growing constellation

WorldView-2 will be the third satellite in DigitalGlobe's constellation. Its first satellite, QuickBird, launched in late 2001 and the second, WorldView-1, launched in the fall of 2007. The two satellites can



Artist's drawing of the World View-2 satellite, which is scheduled to be launched in October. The satellite, built by Ball Aerospace of Colorado, will become the third satellite of the company's constellation.

collect up to a million square kilometers (386,000 mi²) globally each day. WorldView-2 will double the collection capacity.

Images from WorldView-2 will be available about 90 days after a successful launch.

WorldView-2 has about the same imaging capacity as WorldView-1, but the sensor package is different, said Thomassie. In addition to black and white imagery, it can also provide color products.

WorldView-2 will collect 8-bands of digital multispectral imagery that will improve the ability of a user to determine more precise change detection, vegetation analysis and mapping. It includes the industry standard four multispectral bands of red, blue, green and near-infrared, and four new spectral bands – coastal, yellow, red edge and near-infrared 2.

The upgraded ground system also includes a more efficient image processing system, multi-satellite collection planning, shorter tasking timelines, and an expanded network of remote ground receiving terminals.

Each satellite, traveling at 17,000 mph, makes 15 orbits a day. And with three of them, DigitalGlobe theoretically would be able to take an image of any given location every day, depending on a variety of factors.

Customers take priority and images are taken for them first. Second in priority

are images to fill out the DigitalGlobe archived collections. The third type of images are "speculative," taken by the company for something interesting anywhere on the globe that may be sold to a potential customer.

DigitalGlobe said the bolstering of collection and revisit capability from the satellite constellation will be key for planning and reacting to natural and manmade events, from terrorism to hurricanes or wildfires.

Commercial satellite imagery already has played a major role in responding to critical events like Hurricanes Katrina and Ike, as well as assisting in the southern California wildfire management and relief efforts that occurred in the fall of 2008, the company said. Sub-meter imagery is particularly helpful for accurate damage assessment.

On the team

Beasley thinks having DigitalGlobe as part of MsET says a lot about the importance of Mississippi's geospatial technology future. DigitalGlobe is also one of the early members of the Enterprise for Innovative Geospatial Solutions, operated by the University of Mississippi.



Beasley Since 1998, the state of Mississippi has nurtured the growth of a geospatial industry cluster. EIGS was created as a coordinating body. It works with private companies, university research programs, state agencies, and complementary partner programs to research, develop, and market new geospatial technology products from Mississippi.

"The fact that DigitalGlobe has operated at Stennis Space Center in Mississippi for so many years speaks not only to the successful efforts of this state in developing a strong geospatial footprint but also to the future prospects for the industry in this state and region," he said.

"Brett Thomassie has been a very active proponent of the geospatial industry in the region for a long time, and I consider him a huge asset for this state when it comes to fostering this growing industry," Beasley said.

– David Tortorano



The MsET story



Tortorano Publications photo

It could be considered the granddaddy of Mississippi's geospatial technologies effort.

The Mississippi Enterprise for Technology Inc. at John C. Stennis Space Center is a nonprofit created in 1994 as a business incubator and technology transfer office. The joint effort of the Mississippi Development Authority, NASA and the state's universities was designed to spawn the development of high-wage, high-skill technology jobs.

MsET evolved into one of the first state groups to focus on leveraging the presence of federal geospatial activities, no small matter considering it's a key technology of the 21st century.

Geotechnology is the gathering, interpretation and distribution of geographic data gathered with satellites and aircraft to provide a picture of the world. It involves several disciplines and was once the purview of government. But now commercial companies are big players with products and services evolving rapidly.

The beginning

The state's interest in leveraging federal technologies at Stennis – then called the Mississippi Test Facility – began in 1964 with creation of the Mississippi Research and Development Center. State officials knew they had a jewel in the facility designed to test rockets for NASA.

In 1970 NASA located its Earth Re-

sources Laboratory to MTF to find applications for data acquired from remote sensing equipment. At NASA's invitation, the departments of Commerce, Interior, Transportation, Army, Navy and EPA set up operations at the facility that would eventually be renamed Stennis Space Center.

In 1994 MsET was established to fulfill the role first envisioned 30 years earlier: leveraging the research, development, test and evaluation taking place at Stennis Space Center.

That it wound up involved so deeply in geospatial activities was simply because geospatial technologies had become key at SSC. Three years after MsET was established Congress passed legislation to commercialize geospatial technology. The same year Stennis was designated NASA's lead center for implementing commercial remote sensing.

In 1998 Mississippi formally began its effort to create a geospatial technology cluster with establishment of the Mississippi Space Commerce Initiative, which in 2003 became the Enterprise for Innovative Geospatial Solutions.

MsET today

MsET is headquartered in the 56,000-square-foot Mississippi Technology Transfer Center, designated the Center of Excellence in Geospatial Technologies. Building 1103 is also occupied by universities, nonprofits and commercial companies. MsET

also has space in Building 1210 for a total of 25,000 square feet.

Its mission is to provide an environment where start-ups can turn technologies into products and services through serving as an incubator and technology transfer office.

As a technology transfer office, MsET is a clearinghouse where research at SSC, whether from federal or state labs, can be converted into products and services for the general public.

As a business incubator, MsET is a member of the National Business Incubator Association and provides an environment where start-ups stand a better chance at surviving through providing business and technology-related services, opportunities for joint ventures, entrepreneur training and access to state/federal technology portfolios.

MsET works with a statewide network of offices to offer technology forecasts, business plans, market research, sources of financing/marketing strategies, patent searches and vendor sources.

MsET does not limit itself to a particular type of technology, and the current list of tenants includes companies involved in everything from software development to computer security systems. Long-range plans call for exploring the growth of alternative technology areas.

But its emphasis on geospatial activities at SSC makes MsET a unique organization in the state and an engine for future growth.



Demographics

The John C. Stennis Space Center is a key location for three of five science and technology sectors likely to play a growing role in South Mississippi's future.



South Mississippi science & technology sectors

Sector	Primary centers
Aerospace	Stennis Space Center; Moss Point
Advanced materials	Hattiesburg; Bay St. Louis; Gulfport
Shipbuilding	Gulfport; Pascagoula
Geospatial technologies	Stennis Space Center, Ocean Springs
Marine science	Stennis Space Center, Ocean Springs

Source: Mississippi Gulf Coast Alliance for Economic Development/Tcp

Stennis tenant MSET has a range of technology companies involved in a variety of fields.

Current MSET residents

Company	Field
3 Rivers Visual Communications	Business services
3001 Inc.	Aerial imagery
Avery Island Technologies	Systems integration
DQSI Corporation	GIS support
DigitalGlobe	Imagery products
Digital Quest	Education products
DNet	Geoinformatics
Geocent	Geospatial
Helios Systems	Digital media
High Performance Solutions	IT support
Innovative Imaging and Research Corp.	Illumination; agr.
Institute for Technology Development (ITD)	Imaging
Melcorp	UAV products
Mississippi Global Technologies	Navigation; security
Motex Corporation/CORE-ECS	Assurance info
Northrop Grumman Information Technology	Emergency mgmt
Prototyping Solutions	3D printing
Radiance Technologies	Geospatial
Rockwell Collins	Geospatial; UAV
Skylla Engineering	Engineering
Themis Vision Systems	Imaging
WorldWinds	Weather modeling

Source: MSET

MSET tenant residency	
Pearl River County	27%
St. Tammany Parish	21%
Hancock County	17%
Harrison County	15%
Other Louisiana parishes	13%
Other Mississippi counties	8%

MSET tenant education	
Bachelors	44%
High school	30%
Masters	18%
Associates	6%
PhD	1%

MSET Profile

Most MSET tenant workers live in Mississippi, but 34% are from Louisiana. Sixty-nine percent of the workers have college degrees. Source: MSET

South Mississippi federal/state geospatial research

Organization	Location
Center of Higher Learning/University Research (Consortium)	Stennis
Engineering Research Center - GeoResources Institute (MSU)	Stennis
Engineering & Science Directorate (NASA)	Stennis
Enterprise for Innovative Geospatial Solutions (UM)	Stennis, Oxford, Jackson
Gulf Coast Geospatial Center (USM)	Ocean Springs
Hydrographic Science Research Center (USM)	Stennis
Joint Airborne Lidar Bathymetry Technical Center (NOAA)	Kiln
Mississippi Enterprise for Technology (Mississippi)	Stennis
Mississippi Laboratory/Southeast Fisheries Science Center (NOAA)	Stennis
Mississippi Laboratory, Pascagoula Facility (NOAA)	Pascagoula
National Data Buoy Center (NOAA)	Stennis
Naval Oceanographic Office (Navy)	Stennis
Naval Research Laboratory, Research Site (Navy)	Stennis
Northern Gulf Institute (Consortium)	Stennis

Source: Mississippi Gulf Coast Alliance for Economic Development/Tcp