



Visitors were exposed to some big ideas at the InterGEO 2017 event in Berlin. Emerging from the hubbub were a host of new products including offerings from Trimble, Microdrones and Topcon.

by Peter Gutierrez

The InterGEO Conference and Trade Show is billed as the world's No. 1 event for the geospatial community and one can see why. According to organizers, an estimated 17,000 visitors from more than 100 countries gathered at the Messe Berlin to meet, learn and make deals over more than seven acres of exhibition space. Emerging from the hubbub were buzzwords like 'LiDAR,' 'autonomy,' 'integration' and 'end-to-end service.'

Among this year's conference headliners was positioning technologies giant Trimble, which announced a complete new line of GNSS boards. Trimble is intent on serving the autonomous market including unmanned aircraft, said Elmar Lenz, general manager of the company's Integrated Technologies Division, as well as pursuing opportunities in agriculture, construction, aviation and, of course, land survey.

Topcon's
Immersive Dome.

"In the OEM world, given our legacy and our footprint, the penetration we have in the market, I would argue we are well ahead of the game," Lenz said. "But we listen a lot to the voice of the customer. Our team works very hard to say to our customers 'Hey, what is missing in our portfolio, what are the challenges when it comes to precision navigation, guidance and control?'"

The offering includes seven BD-family boards in three categories.

"The first one is the BD940," Lenz said. "It's a small form-factor board and it comes in three flavors: we have the basic level board; then there's a version with inertial; and there's a ruggedized, enclosed version."

Next comes the new BD992, a dual-antenna board that also has an inertial capability and mobile satellite services (MSS) connectivity, so it can support correction services like OmniSTAR and Trimble RTX. "That's a big thing in our world," Lenz said, "to have PPP technology available." The BD992 comes in three versions: a basic board, inertial and enclosed.

The BD992INS with its dual antennas, inertial and the MSS capabilities is very un-

usual in the industry, Lenz said. “I don’t think there’s anyone else in the market who has that at the moment.”

Then there’s the BD990. “We had a very strong board before in our portfolio which was called the BD970,” Lenz said. “This is the next generation, our flagship product effectively.” The upgrade is the new Maxwell chipset, going from Maxwell 6 to Maxwell 7. “So we’re supporting 336 channels,” Lenz said. “Maxwell has been fairly future proof for our customers in the past, and now we have the next generation.”

The boards have not been altered, so for previous customers it’s a simple plug-in replacement.

In terms of GNSS, Trimble is now supporting pretty much every satellite navigation constellation including the GPS, GLONASS, QZSS, NAVIC, Galileo and BeiDou systems.

“We also have some RF spectrum monitoring capabilities,” Lenz said, “so if you’re a system integrator you can analyze the board and tweak it accordingly so it performs better. So for example you can add a really decent antenna to it and you have the monitoring tool available so you can tune the board to maximize performance for your specific application.”

Lenz said he sees lots of potential in the autonomous and UAV markets, where precision navigation and guidance is key.

“When you look at today’s UAV market, everything is still line-of-sight, where you have a drone and an operator creating a topographic map or digital terrain model. With things changing over time with regulations, applications will go to beyond-line-of-sight and to drone fleet management.”

Omar-Pierre Soubra, Trimble’s director of marketing communications, said he sees a trend toward greater sensor fusion. “We will see a lot of our customers going towards that integration of more and more sensors, but they will start with the GNSS and inertial.”

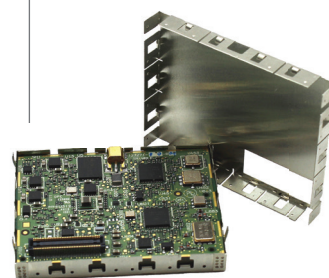
Microdrones Keeps Pushing

Trimble’s footprint is broad, as evidenced by its huge presence at InterGEO, encompassing many subsidiaries, collaborators and partners. One such partner is Microdrones, a French UAV company.

The company’s president, Vivien Heriard Dubreuil, has very clear views about where his company is going. “I think the future for us is definitely LiDAR, and it’s not only, you know, attach the LiDAR under the drone. It’s really about providing a complete solution.”

That means, he said, adapting the mission preparation software and the flying platform and then maintaining a presence during flight operations to see that all goes according to plan—right through to data production.

Microdrones recently brought in Mohamed M.R. Mostafa as its new director of mdSolutions.



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Elmar Lenz, general manager, Trimble

“My team is developing, maintaining and upgrading different solutions,” Mostafa said, “and by solutions we include getting closer to Microdrones’ clients and helping to improving their skill sets.

“We are also working on the LiDAR that Vivien mentioned. It’s really the next big thing at Microdrones.” Once it’s out, he said, and that will be fairly soon, it will be the world’s only end-to-end LiDAR solution. “This includes the drone, there is the scanner, a georeferencing tool, inertial GNSS, as well as the software, hardware, firmware, workflow for data production and map production.”

One of Microdrones’ biggest business moves last year was to become the preferred provider of vertical-takeoff-and-landing (VTOL) solutions for the Trimble dealer network, Microdrones



Trimble’s BD940 and BD992.

Marketing Director Mike Dziok said. “There’s a tremendous opportunity for us within that network,” he said, “and it’s not just in providing the best technology, the best software, the best drone integration. That package is obviously the basis for being a good business partner, but the other end of it is people and the training that we do. It’s the marketing support we put out there.”

Dziok pointed out that when you see an ad for Microdrones, it’s not usually for Microdrones. Rather, “It’s an ad for one of our new Trimble

“Our main interest is not to sell drones but to design and provide you with the best tool for your specific application. We can customize all the technological bricks to design end-to-end solutions for your specific need. At that we are the best.”

Bringing Users into the Data, Literally

Another firm making a splash in Berlin was Topcon Positioning Systems, which is working on ways to share and work collaboratively on

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Elmar Lenz, general manager, Trimble



Microdrones with LiDAR.

dealers; it’s about them and the cool stuff that they’re doing with our solutions.”

As for the new Microdrones LiDAR system, Dubreuil said it will find immediate success in the mining and energy sectors. “I don’t think it will replace our other products, like our photogrammetry solutions, but it really depends on your application. When you have vegetation that you want to map, when you have a forest cover, or water or glass buildings, there are a lot of applications that photogrammetry is not really good for.”

And of course, he added, with LiDAR you can have the results right away. “With photogrammetry you need to post-process and it takes hours to get your feedback, so when you need something quickly LiDAR is much more efficient.”

Dubreuil does not hesitate to call his company “the leaders of mapping solutions based on VTOL.”

“Next month, he said, “we will be releasing a new product called M-Detector, to detect methane leaks, for example, in long terrestrial pipelines.” The laser-based tool will deliver a result in real time and will allow recording for post-processing and mapping of methane levels.

big data—bringing collected information to life, so to speak, and making it accessible and meaningful to all involved in a project.

Enter Topcon’s walk-in ‘Immersive Point Cloud Workspace,’ combined with its latest MAGNET software solution—MAGNET Collage. The Workspace is a four-meter-diameter virtual reality dome that can be used to visually navigate through 3-D models of real-life geospatial projects. To flesh out the model the company’s software package combines data from IP-S3 mobile mapping technology, the GLS-2000 terrestrial scanner, and point-cloud data from its UAS/UAV products, including the rotary-wing Falcon 8 and the fixed-wing Sirius Pro.

“The whole purpose of this dome is you can get inside and experience MAGNET Collage,” said software application specialist Andrew Evans, who took me inside the Immersive Point Cloud Workspace.

Walking into the dome, we found ourselves standing in the great hall of England’s Medieval Bamburgh Castle, or at least in a very detailed point-cloud representation of it. A straightforward joystick allowed us to move up

and down, lean over, spin around, fly through doorways or out through the roof.

Pointing to some furniture, Evans said: “It’s pretty unusual for us to be able to stand here and discuss whether we need to move that table over there or the chair over here. But we can go a lot further; we can use MAGNET Collage to create subsets of the data and we can start to extract very simple things like the floor plan of our room and make some key measurements.”

From there, he said, the users can create data subsets, which they can then hand on to a design team or other collaborators.

“We can build us a 3-D model,” he said. “We can colorize various elements in this environment, so if you look down you know it’s a wooden floor—and over there the wall is a stone wall, and we can put a value on all these materials and the various structural elements.”

Topcon just announced the launch of MAGNET Collage Web, which means you can jump online and try some of the functionalities on your PC or smartphone.

As for the Immersive Point Cloud Workspace, Evans said, “Given the positive response to the dome we may be thinking about taking the whole thing out onto construction sites.

“I was at a site the other day and the guy’s giving me the tour of the building on paper, you know, in 2-D. And he’s pointing at the paper and saying we’ll go to this floor and this room and then we’ll go up these stairs here, and I’m like I have no idea what he’s talking about, until I got into the building and could see it with my own eyes.”

With the dome, Evans said, it’s another story: “Here you can be inside the building, virtually, really feel and understand the space, without having to actually be inside the building.”

Latest Hardware

Topcon’s drone-based, point-cloud, data collection capabilities include the rotary-wing Falcon 8+, now being made by Intel, said Scott Langbein, the director of marketing for the firm’s Positioning Group.

“We started distributing the Falcon 8 a few years ago,” he said, “working mostly in Europe back when following the rules meant not being able to fly in the U.S. As far as the workflow goes, we use the Bentley ContextCapture software to process the raw photos.”

In November 2016, Bentley Systems and Topcon joined forces to advance cloud services for what they called ‘constructioneering.’ Part of that deal allowed Topcon to incorporate ContextCapture image processing.

“We use that software to do the photogrammetry, and then once that is resolved as a surface model we can bring it into MAGNET Collage, which you saw in the dome. Now for the fixed-wing we have the SIRIUS Pro by MAVinci, where we embed one of our own GNSS boards, the B110, so it’s fully RTK.”

Some will feel the real meat is in the applications. An example of that is a project that used the SIRIUS Pro to count ground squirrels—or were they rare and endangered black-footed ferrets—on Native-American lands in Montana.

“It was interesting,” Langbein said, “because when a lot of people in the geospatial fields think of mapping they think of things like mining operations. Here they made a map and they could count all the little ferret holes, which is important.” ■

Topcon’s MAGNET Collage pulls together data from disparate sources to create a unified 3-D point cloud (below). The technology was featured at the firm’s booth (corner photo).

