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# ISPRS Congress Daily

## HIGHLIGHTS

SUMMER SCHOOL | COLUMNS | EUROS DR | LIDAR

## Welcome to Prague!

Four years seems to be a long time if you do not have much to do. Four years are quite short when you are busy. My last four years were short. They were short because we prepared an 8-day Congress programme, and a 6-day Summer School. We created a large and powerful team of volunteers who set up, managed and processed the reviewing process. The process started with a call for papers that was opened in summer 2015 – a year ago, and followed by reviewing, decisions on acceptance, setting the congress programme, collecting final papers and publishing the ISPRS proceedings – The ISPRS Archives and the ISPRS Annals. The third millennium gave us new tools and further developed the

quality of tools already used. Participants of the Congress can find the programme at the Congress web, including abstracts and final papers. They can find the programme in the Congress App. The App also allows them to find and contact all the other participants, to prepare questions for the presenters during the presentation, to follow the latest news at the Congress, and to view photos taken just a few minutes earlier. The App can be your diary, your guide, and your proceedings. Participants will have not only access to daily congress news presented by GIM International, but also to a video – both about events of the previous day. Speeches by keynote speakers and plenary speakers



Lena Halounová

will be recorded and made available, particularly for those who did not have time to attend the Congress.

In addition to being given the opportunity to listen to the latest news on sciences, participants will also be able to go back in the human history in Prague – by listening to a nice concert in the go-

thic Bethlehem Chapel, by visiting Prague – a city taken from an architecture encyclopedia with its old narrow streets, stone bridge with statues, ..... and a Castle. I look forward to meeting all who found at least one reason for attending the Congress and joining the other participants.



## COLUMN

Photogrammetry has made huge progress over the past 15 years, on both hardware and software fronts. Dedicated large-frame cameras enable increasingly high geometric and radiometric precision, capturing overlapping images to be used by software with new, tailored algorithms. Large-scale surface models with proven accuracy and high detail are produced from these images by dense image matching software, a technique which has in many cases replaced the more traditional Lidar. Two pioneers in introducing 3D models from photogrammetry into the consumer sphere are Vexcel and Microsoft. Vexcel focused on finding the best sensor for large scale mapping and 3D modelling, while Microsoft, with their brilliant computer vision and photogrammetry researchers, focused on extracting models from overlapped images. Their alliance brought the first large-scale, publicly accessible 3D models into homes via Bing Maps. 3D maps are increasingly available and of better quality. 3D surface models are also being used as part of car navigation systems, showing the increasing change and diversification of photogrammetry applications. However, obtaining highly accurate surface models from dense image matching is still very expensive in terms of both hardware and software, and thus somewhat limited to bigger companies who update large areas every 3-5 years. This excludes applications where immediate or frequent updates of surface models are necessary, i.e. in emergency response, construction monitoring, open pit mining, and local cadastral maps, to name but a few. Other solutions are needed in such fields, with professional and consumer drones already presenting themselves as one. The number of consumer drones used for professional applications will increase enormously in the coming year: both by businesses using consumer drones for the first time, and those expanding their existing professional drone fleet to include more consumer drones. This has huge implications not only for hardware, but software companies as well. Rather than telling clients to improve their results through the use of better cameras and sensors, software companies will need to invest in developing better algorithms. With hundreds of millions of consumer drones on the market, there is huge potential for professional applications that do not require the highest accuracy, but still provide large savings in industry workflows. When paired with a user friendly photogrammetry software optimised to provide high-quality results despite rolling shutter cameras or hardware limitations, consumer drones will be used more and more as an indispensable part of the professional tool kit.

Christoph Strelha

## 5 Questions to...



Fabio Remondino

**Which highlights are you most looking forward to?** I believe the Congress will highlight the latest developments and products at hardware, software and processing level. According to the submitted papers, I foresee presentations related to methodological and computational aspects of modelling and analysis in photogrammetry and remote sensing. I am particularly looking forward to presentations about sensor characterisation and modelling, automated orientation, dense matching, point cloud segmentation and land classification. I believe the congress will nicely summarise the state of the art and current trends in remote sensing, photogrammetry, computer vision and image analysis. I'm also looking forward to the changes in the Technical Commissions structure, with the restructuring to five commissions and the creation of all new Working Groups. This is a fundamental in keeping

We took the opportunity to ask Fabio Remondino five questions. He will be chairing the session EuroSDR: Innovative technologies and methodologies for NMCAs today.

**Members of the remote sensing and photogrammetry community are gathering in Prague this year for the ISPRS Congress.**

## General Assembly

The first day of the ISPRS Congress was predominantly marked by the first General Assembly. President Chen Jun reported on the progress and changes in the ISPRS community. Attendees were able to attend the presentations by new candidates for the president positions of the technical commissions TC I – TC prior to today's election. Furthermore, the candidate cities

for the 2020 ISPRS Congress were given the opportunity to present themselves: Dubai, Nice and Quebec. They did their utmost to convince everyone why they are the perfect city to host the next ISPRS Congress.

[www.isprs2020-nice.science](http://www.isprs2020-nice.science)  
[www.isprs2020-dubai.com](http://www.isprs2020-dubai.com)  
<http://bit.ly/29yNfFC>

the good momentum of ISPRS and therefore I wish all new Technical Commission presidents much luck.

**What are the most exciting trends in your own areas of expertise, namely reality-based surveying and 3D modelling?**

On the one hand, we have recently witnessed a continuous production of sensors for data collection and algorithms for data processing and visualisation and, on the other hand, a democratisation of

3D modelling, particularly due to more affordable active range sensors and to the large automation within image-based approaches. This had led to exciting products and solutions (including, among others, RGB-sensors, oblique aerial systems, mobile 3D tools, BIM, etc.) and to an abundance of 3D data, often shared and accessible online inside webGIS or repositories solutions.

Read the full interview at [www.gim-international.com/isprs](http://www.gim-international.com/isprs)

## Sponsor Portrait



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Inpho® and eCognition® software streamlines imaging and Lidar workflows, into application-driven object based information with maximum automation.

Visit our booth no. 83 and learn more about how Trimble's Geospatial solutions transform the way the world works.

## Lidar-driven Innovation

(By Norbert Pfeifer) The first laser was built in 1960 by Maiman, two years after Miller and LaFlamme introduced the digital terrain model (DTM) in the context of civil engineering purposes in 1958. Probably, none of them thought that by around 1995 this would solve a geomatics problem that had existed since the arrival of aerial photogrammetry: capturing terrain elevation in wooded areas. While that also required precise navigation based on GNSS and inertial systems, it was the multi-tar-

get capability of pulsed Lidar the showed unprecedented detail below the canopy. This technique has also revolutionised other fields in industry, administration and science, such as forestry by revealing the 3D structure of high vegetation or natural hazard assessment related to geomorphic processes and the fine traces they leave on the terrain surface.

Read the full column at [gim-international.com/isprs](http://gim-international.com/isprs)



## Famous Czech Scientists

ISPRS Congress assemblies every four years at some attractive location in the world, to welcome participants from all over the globe who meet to discover, report and exchange ideas on state-of-the-art in research, technology and education. This year is no different. More than two thousands of professionals in the fields of remote sensing, photogrammetry, imaging, vision, geospatial science and technology, and numerous fields of related scientific and engineering applications are meeting from July 12 to 19, 2016 in the historical city of Prague. This is my third professional visit to Prague in 12 months, as Prague has been a popular destination for many international conferences, including the 16th World Congress of the International Association of Institutes of Navigation (IAIN) last October, and the 26th General Assembly of the International Union of Geodesy and Geophysics (IUGG) that was held in summer 2015.

There is a good reason for organizations, such as ISPRS, IUGG or IAIN to meet in Prague. Many famous scientists and engineers who have made important scientific discoveries related to the fields of geoscience, astronomy and navigation have lived and worked here under the auspices of Czech kings. Not to mention that Czechs themselves are known to have a propensity for technical ingenuity. Otto Wichterle, who in 1959 developed a process for manufacturing the world's first practicable soft contact lenses, is considered the most quixotic of Czech innovators. Nikola Tesla, though Serbian, lived in Prague for a year and contributed to the development of the alternating-current electrical system, and another Czech, Josef Ludvík František Ressel, can lay claim to one of the most important inventions in maritime travel - the screw propeller. Did you know that Albert Einstein also lived in Prague? You can visit the place where he played his violin and his debating circle

met regularly. Look for a memorial plaque outside a house on the Old Town Square. It reads: "Here in this salon of Mrs. Berta Fanta, Albert Einstein, Professor at Prague University in 1911 to 1912, founder of the theory of relativity, Nobel Prize Winner, played the violin and met his friends, famous writers, Max Brod and Franz Kafka."

Not far from the ISPRS venue there is a statue of two famous Renaissance astronomers - Tycho Brahe and Johannes Kepler. At the turn of the 16th century both of these astronomers were employed at the court of the Holy Roman Emperor and Czech King Rudolph II in Prague. Brahe spent most of his time in the so-called Kurz Summer Palace at Pohorelec, where Kepler worked with him for some time. These two brilliant scientists made fundamental contributions to our understanding of the universe: Kepler discovered the three laws to describe the motion of planets about the Sun, which emerged

from the analysis of data carefully collected by his predecessor and teacher, Tycho Brahe.

A few other things worth noting about the Czech Republic, is that the Reporters Without Borders rank the country as the 5th best place to visit in the world; the country is known for not only its outstanding beer, but also numerous spas and castles, and for being the second richest country in Central Europe and the most educated in European Union. In fact, the Charles University in Prague is the oldest university in Europe, established in 1348, the year when The Black Death epidemic spread to central and western Europe, and the first English order of knighthood was founded, Order of Garter. Oh, and year 1348 (MCCCXLVIII) was a leap year starting on Tuesday of the Julian calendar. Welcome to Prague, "the City of a Hundred Spires!"



**Dorota A. Grejner-Brzezinska**

*Professor, The Ohio State University  
President, Institute of Navigation*

*Dorota A. Grejner-Brzezinska  
Lowber B. Strange Endowed*

## ISPRS 2016 Summer School Report

The ISPRS 2016 Summer School was held in Telč, Czech Republic from 5 to 11 July 2016 and welcomed participants from five different continents (North and South America, Africa, Asia and Europe). The majority of participants took the bus provided from Prague and arrived in Telč on Tuesday afternoon (the 5th) just in time for the Icebreaking party at the venue courtyard. Lectures started on Wednesday (the 6th). Participants were divided into 2 groups and joined lectures given by Martin Isenburg (Lidar data processing in the LAStools software) and Martin Landa (Optical and Lidar data in OpenSource GIS), with each group going to the other lecture on the Thursday so no one had

to miss anything. Practical aspects and analysis on real data were performed to show the use of the introduced software.

Friday was a free day and the Summer School participants went for a one-day trip to see the town of Třeboň. The journey took about an hour by bus and on arrival our guides were waiting for us. During the morning we had a nice walk around the town with information on the culture, history and nature of South Bohemia. Lunch was provided in a restaurant on the main square where South Bohemian specialties like the "Třeboň Carp" and "Svičková na smetaně" were served. After lunch we moved to the Regent Brewery for an

excursion. We saw how the beer is made, were introduced to the long history of making beer in the South Bohemia region and at the end we tested local beer in the brewery cellar restaurant.

During the weekend lectures were on again. Norbert Pfeifer gave a very interesting lecture about use of Lidar data and their processing in environmental studies and Arnošt Müller introduced commercial GIS software and performed analyses similar to those shown by Martin Landa in the OpenSource GIS lecture a few days earlier. Read the full report at [gim-international.com/isprs](http://gim-international.com/isprs)

## Twice the Data in Half the Flying

As urban environments change rapidly, the speed of mapping a city also needs to increase. Image data and Lidar data, therefore, must be collected at the same time, a requirement that gave birth to the Leica CityMapper, the world's first hybrid airborne sensor specifically designed for urban mapping applications. The simultaneous acquisition of nadir and oblique image data as well as

Lidar data offers the most cost-effective way to generate a comprehensive geospatial base map for city planners and those who are engaged in urban mapping with oblique images, orthos, DSM and DEM as well as derivative products out of the combined dataset, such as 3D buildings and mesh. Read further at [gim-international.com/isprs](http://gim-international.com/isprs)



**The ISPRS Summer School welcomed participants from five different continents.**

## Lidar workshop

Blue Marble Geographics will be exhibiting and delivering a Lidar workshop at the ISPRS Congress in Prague. Representatives from Blue Marble will be on hand at booth 22 in the exhibit hall to demonstrate the latest releases of the company's software, including the new Global Mapper Mobile app for iOS. With a rapidly expanding worldwide customer base for both Global Mapper and Geographic Calculator, the ISPRS Congress provides the ideal venue for Blue Marble to engage with existing users and to introduce new customers to the company's products. Global Mapper, along with

the accompanying Lidar Module, is quickly becoming the GIS software of choice when a nimble but effective application is required for operational success. During the Congress, Blue Marble will be conducting a complementary workshop on the topic of Lidar Processing in Global Mapper. This hour-long presentation will cover the software's Lidar management capabilities including data filtering and editing; terrain generation and analysis; and feature extraction. The workshop is scheduled for Wednesday 13 July from 4:30 – 5:30 pm in the North Hall of the Congress Centre.