

# Sustainable Civil Engineering

June 20-21, 2016 Cape Town, South Africa

## Geomatics applied for Civil Engineering - State of the art

**Irineu da Silva**

Carlos University of São Paulo, Brazil

Geomatics can be defined as part of scientific knowledge, including the sciences, techniques and methods that deals with the measurement, mathematical modeling, geo-referencing, mapping and staking of spatial geometric elements of the Earth's surface. Due to the multitude of applications, it is therefore a vital area of expertise in civil engineering, which must be understood and assimilated by civil engineers. Like all technical segments; Geomatics is also undergoing important technological advances over the years, incorporating new instruments, new technologies and new working methods. This is the case, for instance, of 3D data collection, geodetic structural monitoring and machine control, to name a few. In order to correctly apply these new tools, it is important that civil engineers know the most important details of each instrument, its technical resources and the level of accuracy that can be achieved with its use. In that sense, the proposed presentation aims to discuss the new technologies available in Geomatics and their applications in civil engineering projects and jobsites workflow. It will focus on the main technical features of topographic and geodetic instruments and its application, including Terrestrial Laser Scanners, LIDAR technology, Machine Control for earthmoving projects, UAVs and Geodetic Structural Monitoring, among others.

### Biography

Irineu da Silva is Associate Professor Doctor in Civil Engineering at Department of Transportation Engineering of the University of São Paulo - Brazil. He holds the title of PhD in Geodetic Sciences from the University of Lausanne - Switzerland. He is responsible for undergraduate and post-graduate courses of Geomatics for civil engineering, has published more than 80 papers in scientific congress and reputed journals and 2 scientific books in the area of Geomatics. He has been invited as keynote speaker in more than 20 scientific congress and seminars and has been serving as an editorial board member of reputed journals and scientific congress.

[irineu@sc.usp.br](mailto:irineu@sc.usp.br)

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