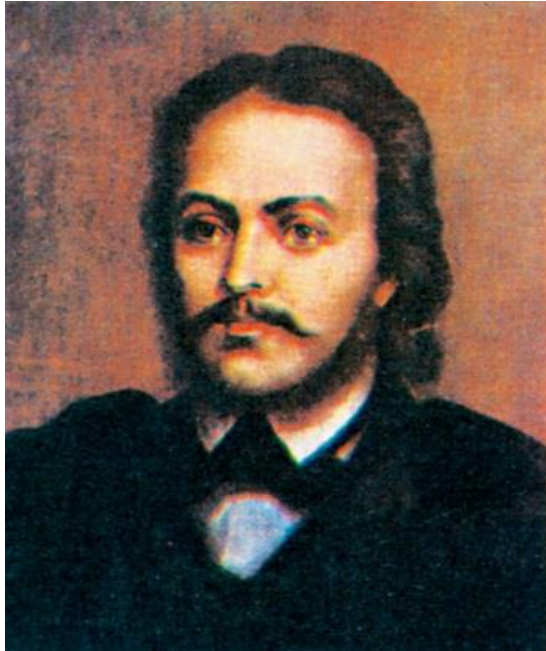


Geodesy for Smart Cities

History :

- Oldest technical education in Romania is the **land surveying**;
- First colleges "hotărnicii" were established in the early nineteenth century by two outstanding personalities, Gheorghe Asachi in Moldavia and Gheorghe Lazăr in Muntenia.
- From natural reasoning that you cannot educate and train professionals if you not master very well a profession, **Gheorghe Asachi and Gheorghe Lazăr** can be considered in this context the parents of geodetic engineering in Romania.
- Their creative period overlaps with the life of **Carl Friedrich Gauss** (1777-1855), who developed the reference work for Geodesy "Theoria combinationis observationum erroribus minimis obnoxiae" published in 1823.



- ***Gheorghe Lazăr*** was born in 1779 in Avrig, near Sibiu;
- He followed two years at the Faculty of Philosophy in Cluj, where he studied Mathematics, Physics, Logic and History
- He becomes a student in Vienna where he studies Theology;
- In Vienna he follows Physics and Mathematics courses as well as courses at the Engineering School in addition to Theology courses
- The Applied Geometry studies have determined that the young student *Gheorghe Lazăr* was assigned for the topographic works required by the French army who had conquered Vienna;
- 1816** - Bucharest – “**geometer**”; the only Romanian who enjoyed this privilege;
- 1818** – The school began in August 1818 in the Saint Sava Monastery. The curriculum included: Arithmetic, Theoretical Geometry, Trigonometry, Algebra, Geography, *Geodesy or Field Engineering*, Economics, Architecture.

FIG 2004

“A surveyor is a professional person with the academic qualifications and technical expertise to conduct one, or more, of the following activities:

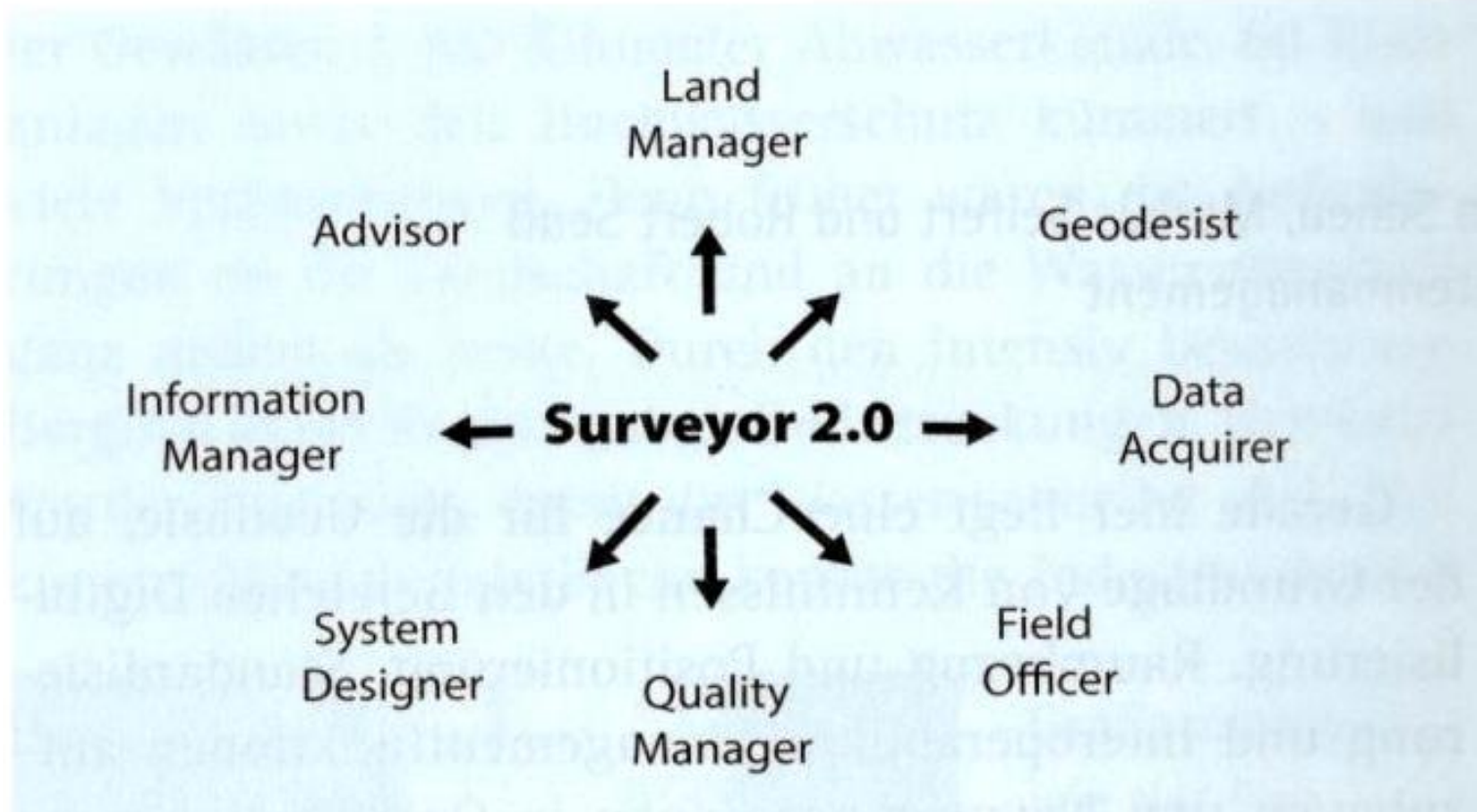
- to determine, measure and represent land, three-dimensional objects, point-fields and trajectories;

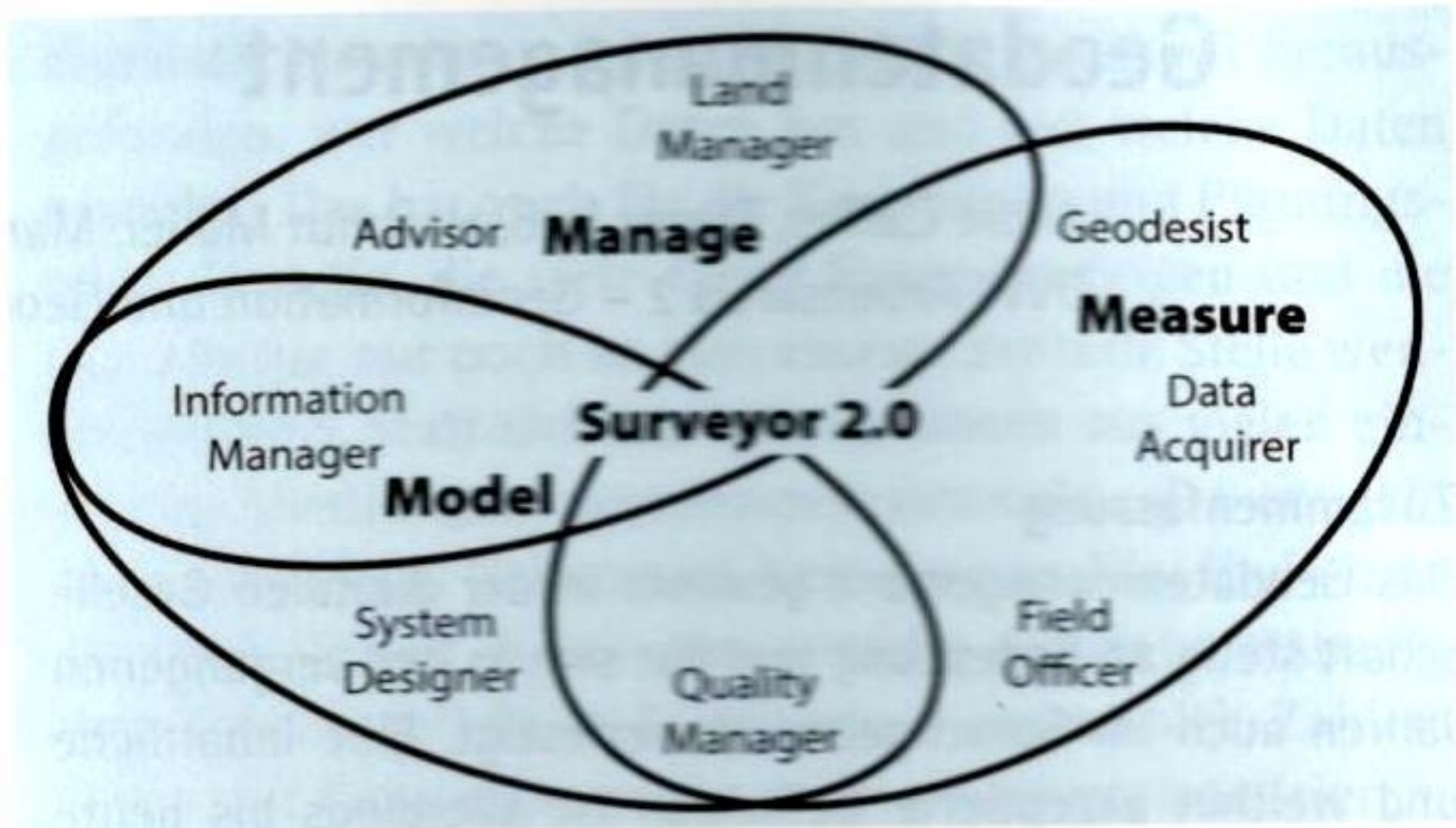
- to assemble and interpret land and geographically related information, to use that information for the planning and efficient administration of the land, the sea and any structures thereon;

- and, to conduct research into the above practices and to develop them”.

In 2012 FIG introduced the concept of “Surveyor 2.0” with the following responsibilities:

- **Surveyor** (Coordinate Systems, Altimetric Modeling, GNSS-Infrastructure);
- **Spatial Data Collector** (Mobile Mapping, Open-Street-Map, Virtual Earth, Coordinator of Crowd sourcing activities, Photogrammetry and Satellite Images, Classical cadastral measurements);
- **Communicator** (Bidirectional links to the citizen);
- **AQ Manager** (Justness of the attributes and the relationship to the data, Decisions related to the accuracy, Data’s Confidence and Data’s certification...);
- **System Designer** (Providing formal and informal property, Geodata infrastructure, 2D and 3D Data management, Workflows, ...);
- **Information manager** (Data integration and transformation, Interconnection data from different sources, General IT, Webtechnologies, ...);
- **Guidance counselor** (For urban development, Expert real estate appraiser, Urbanist);
- **Land manager** (Physical planning, Cadastre, Drafting legislative provisions, Governance, ...)





**Thank you
for your attention!**