Navigando sul WEB talora possono ricomparire vecchi articoli o materiali che non hanno avuto la diffusione attesa.

Recentemente abbiamo recuperato un vecchio articolo apparso sulla rivista "Grading and Excavation Contractor" nel 2003 (!), con una intervista al dr. Marco Gualdrini sulle tecniche di rappresentazione e simulazione 3d in ambito geotecnico e nella gestione di aree di cava. L'articolo è pieno di impliciti riferimenti al software Visual Nature Studio, che già nel 2003 era uno strumento chiave per l'attività di analisi e simulazione territoriale svolta dallo studio GEOgrafica.

A seguire, il testo dell'articolo, raggiungibile anche facendo click qui:

One of the challenges facing contractors who move dirt is getting public understanding - and approval - of the project. No wonder, whether it's for houses or a quarry, people already living in the area tend to become concerned when they learn that a portion of the ground is going to be excavated. Fortunately, there's technology that makes it easier for nonprofessionals to see what will happen, including how the site will possibly even be more attractive after it's been reclaimed. Still, the real crunch comes with the consistent need to be sure the winning bid doesn't lose the company money.

The trick is knowing just what to look for in 3D technology, so *Grading & Excavation Contractor* contacted a geologist who has been using that technology. Expert Marco Gualdrini of Faenza (RA), Italy, holds a master's degree from an Italian university in geomatics and geographic information system (GIS) technologies. For the last 10 years, he has been working with 3D terrain visualizations for forests, farms, and quarries. He points out, "Usually the application of these techniques has been to help private and public companies answer the requirements of regulatory agencies."

That technology comes into play again when the project is put up to bid. Describes Gualdrini, "3D technology helps contractors submit winning bids more quickly yet avoid the danger of underbidding because 3D software can aid in quickly developing sections, profiles, and plans. 3D helps the contractor more accurately determine what he's going to do to the terrain involved, how many ramps to build, what kind of equipment he will need, where the critical points are, and so on. It also aids in taking care of the surrounding area in all of its factors, whether morphological, vegetational, or biological."

Regarding what a contractor should look for when shopping for a 3D terrain visualization system, Gualdrini emphasizes compatibility. "First of all, the software should be able to use real-world coordinates and data derived from as many data sources as possible: CAD files, GIS files, GPS data, and topographic information. Also important is the ability to load DTMs [digital terrain models] and DEMs [digital elevation models] produced by other software companies."

He continues, "The second important parameter is the ability to model the terrain automatically [that is, building a road with automatic cut and fills, only specifying the maximum and minimum slope for the path and for cut and fills]. Another important add-on is the ability to change the terrain on the fly, changing shapes and digits, and animating them."

A third parameter is the way the software simulates nature and provides a high-quality, high-resolution image. "Many software firms do very well with area and volume calculations, generating drawings, plans, profiles, sections, but most of them don't emphasize the photorealism of the output. Remember that quarries aren't placed in 'virtual places,' they are in real places, usually surrounded by vegetation or houses.

"We usually [give] a lot of attention to the actual site but not enough to the surrounding terrain. So a good 3D visualization software should be able to display the surrounding landscape and the impact of anticipated terrain movements. I also think it's important to show how the

environment will change through time, showing density, height, species of plants, and so on. These features are not directly involved in the grading and excavating phases but are greatly appreciated in reclamation phases."

Gualdrini points out that 3D terrain visualization helps project planners minimize error. "With time-lapse simulations you can also show how to mitigate the impact and finally complete the reclamation of the area. Photorealistic simulations are especially aimed [at] making the project more clear and understandable to the media, and we know that media understanding is an important factor in the process." This is especially true when community agitation begins after the bid has been accepted and the contractor finds himself spending more time explaining the project than supervising the site work.

Looking again for ways to help contractors make more accurate bids, he states, "The accuracy of estimation is always linked to accuracy of collected data. The more data, the greater the precision. These data help produce very good estimations of volumes, with errors smaller than 1%, and do it rapidly. A simple CAD software program for drawing and volume computations based on sections, for instance, can take five to 10 times as long."

Gualdrini concludes, "The 3D terrain visualization field in Italy still isn't well developed. My expertise has helped me find many jobs as a consultant. I have a host of software and hardware tools I've been using for a long time now, and I feel comfortable with them. Because the geomatics field is developing very quickly, I constantly keep myself informed about new hardware and software technologies that can simplify my work."