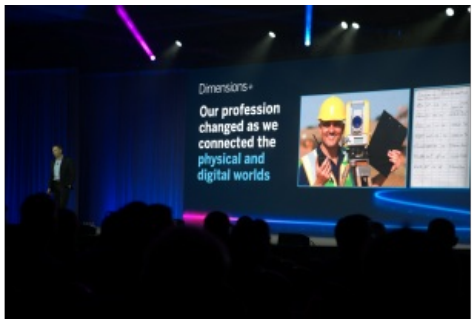
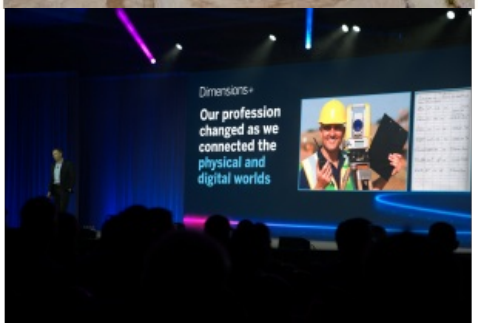
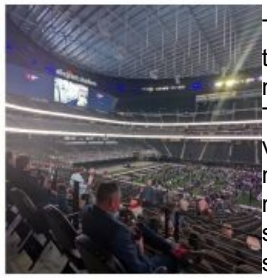
EMBRACING THE TECHNOLOGICAL TIDES TO CONTRIBUTE TO GLOBAL DEVELOPMENT

Unlocking possibilities and imagining a better future at Trimble Dimensions+ 2022







The Trimble Dimensions+ User Conference would be a good place to start for anyone aiming to reposition their business outlook or career in civil engineering, industrial technology, surveying and mapping or geospatial information technology. Trimble hosts the conference annually, and most recently in Las Vegas with 5,750 people in attendance from 75 countries. At Trimble Dimensions+ 2022, the Trimble community gathered to "unlock possibilities and imagine a better future".

Trimble's business portfolio and solutions cut across construction, agriculture, transportation, geodetic positioning and mapping. The pace with which the world has changed and is still changing is phenomenal, with astronomic growth in digital technology, big data and artificial intelligence. AI seems poised to drive developments never seen before in human history, and it seems natural for tech giants to get in on the game. Trimble's singular vision is to leverage cloud computing power, broadband speed and new technologies for human advancements.

Keynote address

Trimble's CEO, Rob Painter, piloted conference attendees beyond four-dimensional space to the 'fifth dimension', by which I mean a voyage into what Trimble considers the future of model-based design, project management and professional collaborations, all enabled by Trimble constructible software. Imagine a model with data connected to every object in 3D visualization: such technology is no longer fiction but a reality with Trimble technologies, making collaborations on such designs efficient and cost-effective. Data transmission in real time from the field to the office and project inspections using augmented reality are some features that Trimble software offers users. A notable aspect of Painter's opening speech was a partnership with Microsoft, Esri and other tech companies in actualizing that dream.


Trimble CEO Rob Painter (left) delivering the keynote address, and the co-founder of Apple, Steve Wozniak (right).

The co-founder of Apple, Steve Wozniak, joined Painter on stage towards the end of the keynote presentation to talk about his childhood and curiosity about how a computer works, his days at Hewlett Packard, and his contributions to Apple. In his words: “You want to be the disrupter, not the disrupted, and Apple was good at that.” His message for rising professionals was heartwarming, and the attendees were left with a clear idea of his work ethic, doggedness, simplicity, humility, humane qualities and attitude to life in general.

Why big data and collaboration matter

The world is now a data machine, and we generate about 2.5 quintillion bytes of data daily. This number will only grow as more technological advancements are made, which explains why the future will be data-driven. Innovations and business ideas will make comparable quantum leaps, and nations’ economies and maybe even our social construct will depend on how these data are managed and interpreted. A whopping US$79 trillion investment in global infrastructure is forecast for the next 15 years, bringing fantastic opportunities for the civil construction industry.

So, whether your business is in architecture, engineering, construction, surveying, mapping or infrastructure, there are opportunities to be had in contributing to global development while earning a fair share of the dollars. Doing so may require moving with the technological tides, connecting the physical and the digital world, and dynamically linking the stakeholders. For example, stakeholder collaborations are made easy with the Trimble Connect platform, a cloud-based common data environment (CDE) designed for construction industry professionals, which presently connects over 20 million subscribers from 185 countries in 17 different languages. This is germane to a business model that will continuously satisfy the demands of a diverse clientele.


Attendees at Trimble Dimensions 2022+ during one of the keynotes. (Photo: Trimble)

Machine control highlight

A significant highlight of the conference was machine control and autonomy. While the technology is still nascent, its future model is here. Experts and researchers are working behind the scenes to actualize a construction industry where machines build roads and infrastructure. If I were to suggest future names for those machines, I would name them ‘road bots’ or ‘civil bots’. The future looks exciting, with amazing technologies coming from the ‘world beyond’.

At the Trimble Dimensions Offsite Expo, attendees saw an excavator, grader, roller, bulldozer, paver, trencher and pile driver operating remotely and autonomously. I am not sure that was an exhaustive list of all we saw. However, a fascinating point to note here is that Trimble envisions that machine control technologies will permit either remote or autonomous operation of these machines from anywhere in the world.


Offsite Expo at Trimble Dimensions+ 2022.

Another fascinating demo was the Trimble Business Centre, Trimble WorksManager and Trimble WorkOS software suites for managing civil construction projects, which usually involve project planning, project design, surveying and mapping, construction, as-built monitoring, earthworks estimation, site deformation analysis, project reporting and device reporting, to mention just a few aspects. Using the software mentioned above plus robotic total stations, geotechnical sensors and the previously-mentioned civil bots, construction professionals can measure their productivity in real time and connect other professionals worldwide to field datasets, allowing smooth workflows.

Expo Theater overview

A place to feed your curiosity, the Expo Theater hosts an array of technologies, including self-driving cars, robots, uncrewed hydrographic survey vessels, drones, 3D scanners and total robotic stations for varied applications. You cannot but imagine what the future holds with these technologies. Other technologies worth mentioning are the robotic printer capable of staking out construction marks on the floor and the neural link technologies. Imagine construction engineers controlling machines with their minds or driving your car just by thinking about each action. This is no longer the realm of science fiction; the technology is here, though still evolving, and attendees saw how a model can be trained to learn human thought patterns for various actions. For example, the model learns how you think about the push and stop action via a headset connected to a computer. Once the neural link model masters your thought pattern, you think of pushing or stopping and a toy car responds. It is no big step to imagine that tech gurus will one day provide us with devices that help control machines with our minds.


3D scanner (top left), robotic total station (top right) and robots (bottom).

Takeaways from the events

Behind all these technologies are the geospatial science discipline and mapping products on which most of these solutions rely. The fundamental discipline that underpins all geospatial sciences is surveying and geodesy, one of the oldest professions – dating back to ancient Egypt and probably beyond. Sadly, qualified professionals are becoming increasingly scarce in this field, and the average age of geodesists, if my guess is correct, is 45 to 50. Moreover, sustaining these emerging technologies, from satellites in space to robots on the ground, requires the training and retraining of qualified professionals.

Unfortunately, however, 8% of licensed surveyors in the USA are retiring each year, and 50% of general contractors are worried about finding people to join their workforce. Will robots replace this noble profession? In the foreseeable future, we will still need to supervise robots for quality control and make human-centred decisions and policies, making qualified professionals unmissable. Nevertheless, we

should expect changes in the role of professionals and blurred boundaries between related disciplines as technologies proliferate, allowing humans to do more.

Scott Crozier, vice president surveying and mapping, zoomed in on the changing profession during his keynote at Trimble Dimensions+ 2022. (Photo: Trimble)

The Allegiant Stadium farewell

The conference was not all work, and there was an opportunity to meet new people and become reacquainted with old friends. The Allegiant Stadium hosted attendees on the last night of the conference, with delicious food, games and music to top off the event. Looking back, it was a memorable and insightful conference that provided a wealth of information, and I see Trimble building a new future with professionals and clients worldwide.

Surprisingly, many students were interested to hear about my experience at the conference, especially how they can remain relevant in their careers for the next ten to 15 years. Hopefully, this article will reach such students not just in the western world but all around the globe, as the future of geospatial science has never been as bright as it is today. With Trimble fostering collaborations and developing new solutions, great things are on the horizon.

Participants at the Allegiant Stadium, Las Vegas.

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https://www.gim-international.com/content/article/from-the-field-to-the-future-trimble-dimensions-2022