Technology is impacting the construction industry like never before--from cloud based collaboration and the development of digital twins to robots, super materials, wearable tech, pollution eating building and even artificial intelligence--an incredible array of developments are hoping to improve a sector that shapes how every human being on earth is able to live their lives. These are the nine construction technology trends to keep your eyes on in 2019.

Robotics

Rapidly moving from science fiction to reality, robots are beginning to end the construction and a number of areas: from autonomous rovers that can increase the efficiency and detail of site inspections to mechanical arms that automates highly repetitive tasks like brick lane and tying rebar. The robotic revolution look sad to get a significant pace in 2019. While the credibility of robots online construction sites has long being questioned the last 12 months, so a number of real world trails deliver their results on the unveiling of some astonishing developments. Now taken seriously, the debate has moved on to how best to integrate robots the impacts they will have an existing job roles, and the new skills that will be required as processes become automated. Building on this progress, the rise of artificial intelligence is also beginning to have an impact on construction. From the major leagues taken in concepts like predictive design at the project planning stage, to the rise of intelligent buildings that learned how best to operate themselves and so they uses over time, the construction sector will likely find itself at the core of the wider AI debate taking place across our societies in the year ahead. Tough fraught with challenges and inherently disruptive, the rise of automation could give construction the efficiency, productivity and safety breakthroughs they have sought for decades.

Exoskeletons

Originally developed for military use and for patient mobility and rehabilitation, exoskeletons are now beginning to appear on construction sites. Helping to protect workers from manual handling injuries and the risk of hand on vibration, these mechanical suits that argument with human operatives can also deliver considerable gains in productivity. Already being rapidly adopted across manufacturing, life trails on construction sites in the past year, have yielded results that look set to drive the development and uptake of exercise curses in our sector during 2019.

The connected Jobsite

Connected Jobsites use cloud technology to make information about almost every aspect of their operation available to all the relevant parties, regardless of whether those parties are on site or elsewhere. From putting design information stream from a single points of truth into the palms of operatives, to information by geolocation, remote site monitoring, personnel location tracking, life mark ups and the seamless transfer of as built information, connected jobsites improve communication, productivity and safety for everyone involved in the projects. With the intuitive technology supporting these sites advancing and now more widely available than ever before, connected jobsites are only expected to become more commonplace in 2019. Meanwhile, developments continue to be made in connecting people and consolidating systems through digital mapping engines that contain and visualize construction data. New technology like blue bean atlas said to be available in 2019 is leveraging geo-spatial mapping to rethink mobile information access. Mapping design and construction data onto a real world jobsite. Atlas uses geolocation to present product information from multiple systems, relevant to your physical location, making traditional folder structure obsolete and streamlining any access, critical process like snuggling, inspections and more.

Autonomous Vehicles

While the autonomous vehicles continue to make healines in the consumer space, their adoptions in the construction sector looks set to take notable strides forward in 2019. As with the fields of robotics, the automation of construction plant particularly in relation to highly repetitive tasks, could greatly improve productivity while creating a safer work environment and helping to address the industry shortfall in labor. At the electric sites in Sweden, Volvo construction equipment trailed electrical autonomous vehicles in conjunction with electric human operated excavators, to deliver a 40 percent improvement in efficiency as compared to a traditional setup. Although concept vehicles under development by the manufacturer include semi-automonous electric excavators that can learn the careful movements required to achieve grading or highly accurate leveling. The combined use of autonomous technology and electric power enables work to take place around the clock, without the need for breaks or the disruptive noise levels that traditionally prevent such working. Meanwhile phobos trucks business has made progress in developing a concept fleet of fully autonomous and electric vehicles. They could help combat pollution, noise and congestions in our cities by reducing emissions, planning optimum routes and responding to real time traffic situations.

Advanced Materials

With growing awareness of the impacts that construction has on our environment, technological advances are bringing numerous new materials innovations to the full. The recycling of hard-to-dispose of waste products has seen a significant increase, particularly in relation to plastics. Recent developments have seen the incorporation of waste plastics into roadways and even its use as a material for 3D printing new building components or structures. CO2 is an other by-products being repurposed and an effort to reduce the carbon footprint of the industry. At this product in Atlanta, CO2 is injected into the concrete mix used in the building structure. This carbon dioxide becomes trapped inside the concrete as it cares. More chemical reactions within the matrix form limestone, and other particles that increase the overall compressive strength of the final material. Staying with one of constructions most popular materials, self healing concrete is mixed with calcite precipitating bacteria. These bacteria germinates when water enters the cracks in decaying concrete, filling the emerging air gaps. Other areas to watch include the continued rise of kinetic paving, the harvest energy from the footsteps of pedestrians to generate electricity. 4D printed structures that have the ability to reshape or self-assemble over time, by virtue of how different elements of the construction respond in different conditions and smoke eating buildings, coded in photo catalytic titanium dioxide. They reacts with light to neutralize pollutants in the air for some of the world’s most congested cities.

Unamed aerial vehicles

Unamed aerial vehicles, also known as drones, look set to become increasingly common on construction projects through out 2019. From undertaking inspections, ensuring the operatives are kept out of harm’s way, to surveying vast areas of land in just a few minutes, the continued rise of UAVs will considerably improve safety and productivity in construction. In a similar vein to robotics and the rise of automation, debate in this field has matured from one around feasibility to considering the steps needed for successful implementation with safety, approvals, privacy, the need for suitable legislation and the urgent demands for specialist skill sets, all on the agenda.

Virtual and Augmented Reality

Well virtual reality or VR has traditionally enables project teams and stakeholders to step inside their proposed schemes for full construction work commence. The technology is finding countless new applications across the industry as 2019 adores. From a neighboring walk throughs of complex scientific plans in advance to supporting health and safety awareness training, VR use has been matured in construction and made a largely successful transition from its early days of novelty into a number of practical uses. In hardware developments, HP’s virtual reality backpack PC allows VR users to enjoy a more realistic untetehered experience that involved authenticity and improve outcomes. Meanwhile, developments continue to be made in augment reality or AR. The technology provides a digital overlay of our real world view, offering a range of data at site personnel from design information to statistics on productivity and health and safety warnings.

3D Printing

The use of 3D printing technology is advancing rapidly in the construction sector at all scales. Accurate digital design information allows a 3D printing to be used for everything from rapid prototyping, component manufacture and scale modeling to the full scale printing of house and bridge components. With a number of prototype structure is completing in the past year, countless larger trials proving successful and ambitious plans to 3D print entire housing districts in development. 2019 looks set to be the year the 3D printing moves from the fringes of construction to become a credible structural solution.

The Intelligent Built Environment

The construction industry shapes our world, affects how almost every person on earth is able to live their lives, and enables the majority of other businesses and service sectors to operate. In that context, ensuing that the built environment is operating as effectively as possible is of critical importance to the sustainability and successful developments of the human race. By harnessing the data from the digitally enabled to build assets we are now creating, our homes, offices and in turn cities can all be operated in a smarter, more efficient, useful and environmentally-friendly way. Furthermore, the data arising can be used to assess trends and to inform the design of future buildings, infrastructure projects even a large scale citywide master plans. With the effective development of our urban environments, on the agenda of countless governments and authorities around the world, we expect to see the importance of this area increased significantly in 2019.