Transforming the Landscape

S+SNZ CONFERENCE 2025
TE PAE, CHRISTCHURCH

Transforming the Landscape – 2025 Workshops

A1 Workshop

Old dog, new tricks – a new survey approach to support the Public Works Act

Presenter: Caleb Baildon, WSP

Collaboration between LINZ and NZTA has facilitated a new approach to undertaking surveys for a public work. WSP successfully trialled the use of a new type of CSD to support land notices under s23 of the PWA on the Ōtaki to north of Levin highway project. LINZ has subsequently developed a survey prescription for these CSDs that can be used by any acquiring agency for a public work. This innovation creates efficiencies when the underlying cadastral data meets the accuracy requirements of the Cadastral Survey Rules 2021. WSP and LINZ will discuss the prescription's application, lessons learned, and how licensed cadastral surveyors or acquiring agencies can use it.

Kaitiakitanga, Legal Personhood, and the Evolving Landscape of Land Governance

Presenter: Dr Francesca Marzatico, Otago University, Dr Jonathan Laird, Student, Otago

Māori worldviews (te ao Māori) define land not as a commodity but as a living entity, intrinsically connected to people through customary practices (tikanga) and traditional knowledge (mātauranga). Central to this perspective is kaitiakitanga—the responsibility to safeguard the environment (taiao) for future generations. This relational approach to land has been recognised in Aotearoa's legal framework through the granting of legal personhood to natural features,

including Te Urewera (2014), Te Awa Tupua (2017), and the pending recognition of Taranaki Maunga.

These developments challenge conventional Western land governance models, particularly in relation to cadastral systems, tenure, and resource management. For surveyors and spatial professionals, legal personhood raises important questions: How do we engage with land when it holds its own legal identity? What role does the profession play in integrating
these evolving legal structures into practice?

This presentation will explore the significance of legal personhood in transforming land governance, highlighting both the challenges and opportunities it presents for surveyors as the profession adapts to an evolving legal and cultural landscape.

A2 Workshop

Greville Road Stormwater Culvert Upgrade – Mobilising quickly for flood emergency

Presenter: Daniel Wiederkehr, McConnell Dowell

The existing Greville Road Culvert consisted of a 1,950 mm diameter ARMCO stormwater pipe that conveys flow from an inlet located within a basin north of Greville Road. The pipe stretches across a key arterial road (Greville Road), that connects to the Northern Motorway and Albany Expressway, and under Rosedale Landfill. There, it connects into a 1,950 mm concrete pipe. The culvert had failed at the inlet on the northern side of Greville Road.

Although the initial scope was to excavate and remove the collapsed culvert and replace it with a temporary shaft, it was decided that this shaft could be designed and constructed to accommodate the permanent inlet at the same time. The reason for this solution was to avoid any reworking later on in the project, saving time in the construction programme. What is unique about this project is that this is the first time we have used low-carbon pipes. The 92 pipes sourced through Hynds will avoid approximately 62 tonnes of CO2e emissions, which is a 16% reduction in the standard pipe range.

Work began in March 2023, with the first phase of the project to unblock the culvert. Our team successfully completed it in December 2023. At the beginning

of 2024, the project team mobilised the landfill site which accommodates the launch shaft for the MTBM. There are several risks to consider when operating within a landfill site, such as gas and leachate. The collaborative approach with our customer, consultants and designers has already made a positive impact on the overall programme and provided a cost-effective solution.

Intercepting Transformation (Surveying the Central Interceptor Project)
Presenter: Fax McKernan

This presentation will share the technical challenges and surveying innovation that contributed to the successful completion of the country's largest Wastewater project and one of the longest tunnels ever built it New Zealand.

The construction of the Central Interceptor signifies transformative investment in wastewater infrastructure, fundamentally changing how Auckland manages its wastewater. This new system has replaced the Western Interceptor and parts of the Oraki main with a more resilient water storage pipeline designed to last the city over 100 years.

A3 Workshop

Navigating Compliance – Maritime New Zealand's Guidelines for Mini USV Operations
Presenter: Steve Peters Manager, Ship Technical Systems Assurance, Maritime New Zealand

The use of uncrewed surface vessels (USVs) in maritime operations is expanding rapidly in New Zealand. Mini USV's offer a cost-effective and efficient solution for hydrographic surveying, environmental monitoring, and security applications. However, as technology advances, regulatory frameworks and guidance must evolve to ensure safety, environmental protection, and operational compliance. Maritime New Zealand (MNZ) help to develop and maintain the national safety, security and environmental protection regulations that govern the operation of vessels, ports and offshore installations in New Zealand waters – this includes USV's. MNZ are currently developing guidelines for the use of mini USVs (typically under 5 meters in length) to provide clarity on compliance and best practices for operators in New Zealand waters.

This presentation will outline the key components of MNZ's guidance, including USV classification, operational limits, and compliance with the Maritime Transport Act 1994 and Marine Protection Rules. It will explore safety management requirements such as remote operation protocols, collision avoidance measures, and emergency response planning. Additionally, the presentation will also examine challenges such as liability, risk assessment, and the evolving role of autonomous technologies in maritime operations.

An Intern's View: Update on the Review of the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers
Presenter: Emily Tidy, Otago University

The FIG/IHO/ICA International Board of Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) have been reviewing the S-5 (Standards of Competence for Category "A" and "B" Hydrographic Surveyors) and S-8 (Standards of Competence for Category "A" and "B" Nautical Cartographers). Part to the review has involved well attended in-person workshops and an online questionnaire with 101 respondents.

As part of the International Hydrographic Organisation's (IHO) 'Empowering Women in Hydrography' (EWH) project, four interns were selected to participate in an intersessional IBSC meeting to assist with the review. As part of this, the interns reviewed the questionnaire responses and presented findings to the Board. The meeting was held in Athens, Greece in late 2024, and as one of the interns I will share my experiences here.

B1 Workshop

LandonLine Update & Digitally Visualised Survey Plans
Presenter – Land Information New Zealand

The Future of the Trig Beacon
Presenter: Reubin Van den Berg, Eliot Sinclair

The trig beacon has been a physical representation of the surveying profession since the beginning.

Since the introduction of industry grade GNSS techniques in the 2000's, reliance on these legacy monuments has dwindled. Land Information New Zealand has historically maintained and replaced trig beacons with their geodetic maintenance team, but that function has now ended. Trig beacons are simply not a critical part of the cadastral or geodetic system anymore. As Surveyors and spatial professionals, we have an interest in the great outdoors. When you climb a peak on a day or multi-day walk, it is a great feeling to see the trig and know you have reached the top. Your comrades might even ask what the black and white Christmas tree is all about, and you can educate them on the impressive history of the beacon network.

The current transforming landscape can be switched to one of historic heritage preservation rather than dilapidation for our predecessors who worked so hard to create the excellent system we have today.

B2 Workshop

The New Frontier: Surveyors in the Age of Ubiquitous Spatial Data
Presenter: Chris Scott

In an era defined by rapid technological advancement and the democratization of spatial data, the traditional role of the surveyor is being fundamentally challenged. Once the sole custodians of mapping, modelling and measurement, surveyors now find themselves sharing the stage with architects, engineers, designers, and even hobbyists - armed with drones, scanners, and free geospatial tools.

This presentation explores the evolving identity of the professional surveyor in a landscape transformed by ubiquitous technology and open data. It questions whether our profession is at risk of losing relevance, or if this is an opportunity to reassert our unique value. With deep expertise in spatial data integrity, coordinate systems, and error propagation, surveyors possess critical skills that remain unmatched in the broader geospatial ecosystem.

In this presentation I make the case for a strategic redefinition of the surveyor's role - one that embraces innovation, rebrands our expertise, and positions us as essential navigators in the digital terrain. As we

transform the landscape together, this is a call to action for surveyors to lead, not follow, in shaping the future of spatial science.

The Application of Laser Tracker Technology in Industry: A Role for Surveyors?

Presenter: Steve Bowden, Cheal

Many Surveyors decline the opportunity to align a turbine shaft in a generation plant or set out or align new manufacturing machinery because the required tolerances are perceived to be beyond the capabilities of traditional survey instruments and we perceive to lack the training, leading to apprehension about taking on such tasks. The financial risk may be deemed too high if errors occur. However, with the availability of advanced instruments such as the laser tracker, we should not shy away from these challenges. Surveyors excel at spatial point capture, delivering high-quality work and understanding the environmental impacts on our measurements. In a world where we are relying more and more on digital alternatives to traditional manual measurement methods, we should be at the forefront of utilising these sophisticated instruments.

My early background is as a Licensed Cadastral Surveyor, and I continue to practice in this field. Over the years, based in the Central Plateau of the North Island, I have developed a passion for working in the hydroelectric power industry with Cheal Consultants, addressing our client's measurement needs through laser scanning, reverse engineering scanning, and precision set out and alignment with the laser tracker. These latter two services fall into the category known in Australasia as 'Dimensional Metrology'. In this session, I will introduce the laser tracker and its applications, and the role Surveyors may play in the area of Metrology. It is a complex instrument, costly, and requires expertise and ongoing training in mechanical measurement applications. I will provide an overview of the advantages and challenges of owning such an instrument, including the financial commitments involved for business owners.

B3 Workshop

Small-Scale Unmanned Surface Vessels (USVs) for Hydrographic Surveying: Lessons from Prototype Development to Commercial Deployment

Presenter. Jimmy Van der Pauw, Discovery Marine Ltd

Discovery Marine Ltd (DML) has been conducting hydrographic surveys across New Zealand for over 25 years, combining traditional surveying methods with emerging technologies. This paper presents our journey with small-scale Unmanned Surface Vessels (USVs), from developing an in-house prototype to commissioning a commercially available USV—the Blue Robotics Blue Boat.

Our initial approach focused on designing a cost-effective, custom-built USV tailored to our operational needs for mapping shallow, inaccessible, or contaminated waterways. This involved constructing the vessel, mounting sensors, engineering a robust propulsion system, and establishing a reliable communication framework. While the prototype successfully completed several commercial projects—demonstrating the viability of USVs for shallow-water and confined-area surveys—it also revealed key challenges, including endurance limitations, control stability, and data logging reliability. These factors ultimately led us to explore commercially available alternatives.

The decision to adopt the Blue Robotics Blue Boat was driven by its affordability, modularity, and compatibility with industry-standard hydrographic equipment already in use at DML. In this presentation, we provide an in-depth evaluation of the Blue Boat, discussing equipment integration challenges, autonomous navigation performance, and operational insights from real-world deployments.

By sharing our experiences, we aim to contribute to the ongoing discussion on small-scale USVs in hydrography, offering practical considerations for organisations evaluating autonomous solutions for coastal and inland surveying.

A Deep Dig: Mapping an Excavator Lost at Sea

Presenter. Declan Stubbing, Discovery Marine and Matt Mooney, Bay Dynamics

Hydrographic surveys play a critical role in updating nautical charts and ensuring maritime safety. In late 2024, Discovery Marine Ltd (DML) conducted a hydrographic survey using a Multibeam Echo Sounder (MBES) in the Bay of Plenty, New Zealand, on behalf of Toitū Te Whenua Land Information New Zealand (LINZ).

The survey revealed a submerged 4-meter-tall excavator, lost overboard more than 15 years ago.

Following the MBES survey, Bay Dynamics deployed a Remotely Operated Vehicle (ROV) to conduct a detailed visual inspection and 3D photogrammetric mapping of the wreck. The integration of MBES data with ROV imagery provided comprehensive insights into the excavator's condition, its orientation on the seafloor, and the marine life it has attracted over time.

This presentation will explore the MBES methodologies employed to detect and map the excavator, including data acquisition, processing, and visualization techniques used to generate high-resolution seabed models. It will also look at the challenges encountered with the ROV in underwater imaging, and the processing techniques used to refine the 3D model. Key takeaways include best practices for conducting underwater photogrammetry with an ROV, considerations for working in varying visibility conditions, and the benefits of combining acoustic and optical survey methods.

C1 Workshop

Conservation blocks – buying farmland but not to farm

Presenter: Craig McInnes, Fox Surveys

Farmers are often faced with marginal land that has little economic value and low productive capacity. It can be a cost to manage this land when on-farm expenses continue to rise. Selling this marginal land becomes impossible because of the costs to subdivide and the reluctance by other farmers to buy it. It will still be marginal farmland to them too.

However, there is an emerging buyer in the rural market who has a desire to own retired farmland to support the regeneration of native vegetation, improve water quality and provide habitat for native fauna. These buyers are not looking to buy this land as a financial investment, but rather to reap the sense of well-being from working on the land and to see native biodiversity thrive for future generations. They see value in marginal farmland.

This presentation will explore a subdivision project on the Banks Peninsula as a case study in bringing these two sets of people together. The subdivision consent

was crafted to meet the objectives of the District Plan, even though the lots were undersized for the rural zoning and were subject to landscape protection overlays.

The result was a subdivision that created a win for the farmer, a win for the buyer, and a win for the environment. This was an example of land surveyors using their professional skills to meet the needs of the market, and in the process help to transform the landscape in a positive way.

Cadastral Surveying, rules for cadastral survey - Inaccurately determined boundaries

Presenter: Tony Nikkel, LINZ

A discussion on inaccurately determined boundaries and how the rules for cadastral survey can enable surveyors to provide innovative solutions for the creation of easements and covenants in areas where survey accuracy is poor.

Attendees will learn when and how to use inaccurately determined boundaries to good effect and what the cadastral survey rules requirements are for submitting compliant datasets using this provision.

The discussion will also include how non-primary parcels can be accurately connected to their underlying primary parcels and what factors need to be considered when a non-primary parcel adjoins or crosses the bed of a river. Cadastral survey rules 51-53, 70 and 89(g) will be discussed.

C2 Workshop

Integrated Aerodrome Safeguarding: Managing Airspace Constraints

Presenter: Maksym Khovalko, Blackmaps

As urban encroachment and infrastructure development intensify around airports, airspace safeguarding has become a critical issue for planners, developers, and regulators. The Integrated Aerodrome Safeguarding Framework (IASF) offers a structured and forward-thinking approach to managing height zoning and aerodrome safeguarding, ensuring that both airside and landside developments align with aviation safety requirements and long-term planning objectives.

Countries like Australia and the UK already integrate aerodrome safeguarding into national planning, ensuring airspace protection is considered upfront rather than being an afterthought. In New Zealand, the Civil Aviation Act 2023 formalizes consultation processes, making safeguarding a structured part of spatial planning. At the same time, upcoming ICAO OLS changes (2027) and SBAS/SouthPAN (2028) will reshape how aerodrome safeguarding is applied in spatial decision-making, making accuracy and regulatory alignment more important than ever.

In alignment with the Civil Aviation Act 2023, Master Planning and Regulatory Airport Spatial Undertakings (RASU) driving airport expansion strategies, spatial professionals will be at the centre of integrating safeguarding measures into modern urban planning. Whether it's understanding regulatory triggers, working with OLS constraints, or applying geospatial tools for smarter decision-making, there's a clear need for more efficient, automated safeguarding processes that support the urban growth.

The Landscape of Spatial Data - GIS in the Bachelor of Surveying (BSURV) Curriculum

Presenter: Kelly Gragg, University of Otago

At the School of Surveying we introduce a variety of open source and commercial GIS applications and utilize these across a wide range of Surveying papers. In addition to the core GIS papers that surveying students take, GIS has been introduced throughout the four-year Bachelor of Surveying degree. This begins in the first-year papers to help students understand the intersection of population distributions and urban development, visualizing the effects of sea level rise and conducting site analyses for urban design and planning. In higher level papers we use GIS to assess three waters catchment boundaries and pipe networks as well as an aid in the planning and visualization of survey control networks for the capstone SURV399 field camp. Students are provided an opportunity to experience of bit of python coding to customize the GIS, as well as the option for elective paper on scripting their own GIS tools.

This presentation will demonstrate the importance of GIS to the education of surveyors and spatial professionals and its role as a critical lynchpin for bringing together a wide variety of data for robust decision making.

C3 Workshop

Land Development Engineering Workshop – Design and Project Management

This presentation works through the civil design process to develop construction package for Project X, a fictitious 5 lot development. This is a general overview of design principles targeted at smaller developments but transferable to larger projects.

Detail:

- Where to start
- Gathering information, existing services, site issues, what to look for
- Design Processes
- When to use specialists
- Design reviews
- Stormwater design, when is stormwater modelling required
- Pavement design
- Earthworks
- Contamination
- Where it can go wrong

Transforming Rural Landscapes with Decentralised Wastewater Schemes

Presenter: Salma Rayan, Innoflow Technologies NZ Ltd

New Zealand continues to struggle with extending wastewater infrastructure to rural and unreticulated areas. Expanding centralised networks remains a costly, slow, and urban-focused solution. In contrast, decentralised wastewater schemes, designed for populations of up to 3,000 EP, provide a cost-effective, flexible, and resilient alternative, particularly in regions vulnerable to natural disasters. Beyond improving public health and environmental outcomes, these systems play a critical role in unlocking rural and unreticulated land for development by providing sustainable wastewater solutions where traditional infrastructure is impractical.

This paper explores three case studies which examine key drivers, solutions, challenges during implementation, and long-term performance. They highlight how decentralised systems not only enable rural development but also thrive with early contractor involvement, strong community engagement, and effective user education.

D1 Workshop

Bridging Boundaries, Collaboration between Surveyors and Property Lawyers

Presenters: *Panel Discussion*

D2 Workshop

Mapping the Unseen: Using GIS to Uncover Hidden Risks in Road Safety and Air Pollution

Presenter: Mehrdad Rafiepourgatabi

As cities expand and evolve, Geospatial Information Systems (GIS) are transforming how we analyze and address hidden risks in urban environments. From road crashes to air pollution exposure, spatial data is revealing critical patterns that impact safety, health, and equity. This presentation demonstrates how GIS is being used to uncover disparities in road safety and air quality, particularly in communities most vulnerable to transport and environmental hazards.

Uncovering Road Safety Disparities with GIS - The first study utilizes New Zealand's Crash Analysis System (CAS) to investigate the relationship between road traffic injuries (RTIs) and socioeconomic deprivation in urban areas. With a focus on roads with speed limits below 60 km/h, the study eliminates the influence of highway-related incidents and examines crash trends in local neighborhoods. By applying spatial clustering, hotspot detection, and deprivation mapping, it identifies high-risk locations where crashes disproportionately impact lower socioeconomic areas. These insights support data-driven decision-making for infrastructure improvements, road safety measures, and targeted interventions.

Assessing Air Pollution Exposure Among Schoolchildren - The second study shifts the focus to air pollution exposure among schoolchildren in Auckland. Using high-resolution air pollution modeling, GIS reveals a stark reality—certain schools experience significantly higher levels of harmful pollutants than others. The study explores how urban form, traffic density, and socioeconomic conditions shape air quality disparities, with central areas exhibiting more concerning levels of nitrogen dioxide (NO_2). The findings highlight the need for environmentally informed urban planning and policies that prioritize communities at risk.

GIS as a Tool for Urban Equity and Resilience - By integrating spatial analytics, statistical modeling, and geospatial data, this presentation provides a deeper understanding of how GIS can be leveraged for urban safety and environmental justice. It showcases how spatial tools can support better policy development, guide infrastructure investments, and create more equitable and resilient cities.

D3 Workshop

Land Development Engineering Workshop

Project X - Civil Engineering - Managing a Construction Contract

This presentation picks up from workshop C3 and addresses the construction phase of Project X. Construction contracts and other documents are discussed along with roles and responsibilities from the engineer and their representatives.

Detail:

- Contract types and when to use NZS3910, 3915 and 3916
- NZS 3910 2013 vs 2023
- Roles in a contract, site observation levels (CM level)
- Obligations of an engineer to the client and to the contractor
- Specification, Basis of payment and Schedule of Quantities – tips and tricks
- Tendering vs negotiated contract
- Accessing tenders.
- Duties the engineer to contract under NZS 3910 and within the law
- Special conditions – are they needed, when do they undermine NZS3910
- Processing of claims and variations
- Contract communications
- Site meetings and site visits
- QA
- Producer statements

- Resolving issues or conflict.

Project X - Civil engineering – design tools and panel discussion

In the first part of this session participants will hear from software suppliers how they see the future of civil design. The second part of the session will be a panel discussion with the presenters of lecture 1 and 2 where the future of civil design and challenges faced by the industry.

Detail:

- Short presentation from 2 software suppliers on their take on the future of design
- Followed by a panel discussion with all presenters to talk about;
    - What is the future of civil design, how will AI affect it?
    - What are some of the biggest challenges at the moment.
    - How can surveyors become better engineers
    - How can we raise our profile with Councils.
    - Questions from the floor

E1 Workshop

Transforming the Landscape of Field Data Management with Cloud Workflows

Presenter: Luke Johnson, Trimble

Surveying is changing, and so are the ways we manage field data. Traditional workflows often create bottlenecks—delayed data transfer, miscommunication between field and office teams, and time lost to manual processing. Cloud-based solutions are changing the game, making it easier than ever to share, access, and collaborate on field data in real time. This session will dive into how cloud-connected workflows are streamlining field operations, improving accuracy, and reducing costly rework. We'll explore real-world examples of how survey businesses are using cloud tools to keep projects moving, ensure teams have the right data when they need it, and ultimately, deliver better results.

If you're looking to make your survey operations more efficient, more connected, and ready for the future—this is a conversation you won't want to miss.

Starlink / Project Kuiper and GNSS communication

Presenter: Bruce Robinson, Global Survey

For the highest accuracy RTK we reply on communication between the Base and Rover. Historically this communication was radio based, cellular communications came along and for many users replaced traditional radio communications. Now the next wave of communication is amongst us via Low Earth Orbit (LEO) Satellite systems, two of the major players being Elon Musk's Starlink and Amazon's Project Kuiper

Global Survey have been investigating how these systems can and will transform the communications landscape for surveyors.
This paper will discuss the following

1. what we understand about these 2 systems, and their current state
2. our experiences with using LEO satellites for communication, including the configuration for mobile base stations, mobile rover hotspots, and for RTK bridges (internet to radio).
3. a look out to the future

E2 Workshop

Te Kaha Arena – Christchurch

Presenter: Jenny Divers, Graham Surveying

Graham Surveying has been involved in Te Kaha Arena since performing the initial topographical survey in 2021. We became the project surveyors for Besix Watpac in 2022 and have provided surveying services throughout each stage of the build, with the stadium set to open in April 2026. We have used a mixture of total station, UAV, and laser scanning technology to offer a modern approach to the surveying set-out and as-builts on site. The project has pushed our existing skill sets to the limit, and we have had to adapt and develop new and efficient methods of survey to keep up with the project demands. At the height of the project, we had five full-time surveyors on-site. A key part of our work has involved the development of a methodology to scan, model, and report on the steel components for the roof structure within one business day to ensure the construction programme was not delayed due to survey processing timeframes.

Attendees will learn about the surveying methods, technology, and software used throughout the project. We will share an insight into the life of a surveyor working on the Te Kaha Arena. The presentation will run through each stage of the project and share some fun facts about the build.

Business Resilience

Presenter: *Carl Fox, Fox Surveys*

E3 Workshop

Presentations from the 2024 Cadastral Award Winners

F1 Workshop

Promoting the value of the professional surveyor in a future with no barriers to acquiring technology

Presenter: Richard Harrison, Global Survey

Technologies that might have once been considered "owned" by surveyors have been adopted and used to great effect in a wide variety of 'non-surveying' industries. The earliest adopters learned some hard lessons about the risks of bypassing professional surveyors on their projects. Many 'non-surveying' businesses now commonly have their own surveyors on staff, many taken from traditional survey roles, applying their skills in a rapidly changing technological environment. Other industries can learn from this, and benefit from a surveyor's continued involvement in their projects, especially at critical stages that demand the unique capabilities of the survey professional.

This paper draws attention to industries, applications, and technologies that offer opportunities for surveyors, and encourages surveyors to promote their unique capabilities for the benefit of the project, their client and themselves. It will explain why these industries are prepared to invest in the technology and training and identifies gaps in their capabilities that should be filled by a surveyor. Examples from today's technology landscape include the adoption of robotic layout tools in commercial construction, use of laser scanning and related technologies in multiple industries, increasing numbers of portable remotely controlled vessels for

hydrographic surveying and the adoption of extraordinary new measurement tools for interior fitout and digital templating.

F2 Workshop

What is Spatial – Panel Discussion

Presenter: Kirsty Mackie

F3 Workshop

Transforming the Landscape with Plus Size 3D Printers

Presenter: Steven Shephard, Trimble

The world of construction and the role that spatial professionals play within it has been evolving with each step that the technology takes. Within the span of a century we've gone from marking stakes for construction with dumpy levels, to theodolites, to total stations, to GNSS. At each step the productivity and practices we implement have changed in the way that we help to guide transforming the landscape. As the construction industry has adopted more and more technology, then we are seeing projects that don't require stakes to be marked on the ground anymore, instead the machines hold the designs and 3D print the landscape taking it from a digital design into a physical representation. In this presentation I will explore the changes in technology and practices, challenges to traditional work being conducted and opportunities being opened. Spatial professionals are going to continue to transform the landscape of their work; from boots on the ground to hands on the mouse they can continue to provide high value services in emerging roles such as data management, where their expertise to an industry in revolution can keep the projects on time and under budget.

Transform The Efficiency of All Your Survey Workflows With 3D Scanning

Presenter: Jonathan Davis, Allterra

3D scanning technology has revolutionised spatial data capture in many applications. By quickly and accurately collecting large volumes of accurate data, the use of 3D scanning technology can significantly reduce the time spent in the field compared to traditional surveying methods. Recent developments in both

hardware and software technologies make the use of both terrestrial and aerial 3D scanning easier and more efficient than ever before. However, it is still often regarded as a niche or specialist technology, only applicable for certain applications. This presentation will challenge that mind set and demonstrate how you can now leverage 3D scanning technology across nearly all of your survey work streams to reduce costs, improve safety, and transform your overall efficiency from field to finish.