

# Surveying a large performance artwork canvas

by Chris Kirchhoff, Kirchhoff Professional Surveyors

*Visual artist Hannelie Coetzee collaborated with Wits School of Animal Plant and Environmental Sciences associate professor Sally Archibald to create Benko and Eland, a 5 ha art performance piece in Gauteng, South Africa.*

**B**enke and Eland is a performance art piece created on 13 June 2015 using a controlled fire on a hillside in the Khatlhampi Private Reserve, bordering the Nirox Sculpture Park and Artists Residency in the Cradle of Humankind, Gauteng. The artwork depicts an image of a child reaching out to an eland, and forms part of the "Firegrazer" project, an art and science collaboration.

Prof. Archibald's research looks at the relationship between fire and grazing animals, and how small-management fires can influence the way antelope use the landscape. Her research aims to contribute to the improved management of grassland in conservation areas to create more diverse and productive grasslands. Coetzee saw the opportunity to depict the ecological message, which explores the relationship between humans, animals and the landscape.

First a suitable area in a valley was selected, bearing the 200-member audience in mind, who was to view the artwork burn from the opposite side. Coetzee provided Kirchhoff Professional Surveyors with an A4 sketch of the Eland and boy. The surveyors then took the digital image of the drawing and overlaid it onto Google Earth at a size of approximately 500 x 800 m large.

Utilising virtual reality, the surveyors positioned the artwork in the valley and adjusted the perspective view of the art. This process allowed them to create a visually correct image as seen from the opposite side of the valley. When Coetzee was happy with layout, the surveyors extracted 1500 co-ordinates that defined the detailed edge of the boys' face and Eland profile.

The surveying team proceeded to plot the 5 ha image's 1500 points with GPS measurements. The points were set out so that the 1 to 2 m spaced points accurately defined (within 5 cm) the image. After setting out the edge, The Cradle of Humankind team from Working on Fire (a government-funded programme focusing on integrated fire management in South Africa) burned a 1 m wide firebreak along the edge so that the burn across image could be controlled.

On the day of the performance, Working on Fire "performed" the controlled burn of "Eland and Benko"



*Fig. 1: The firebreak as surveyed by Kirchhoff Professional Surveyors.*



*Fig. 2: The artwork after the burn.*

which lasted 25 minutes. Wits MSc student Felix Skhosana will monitor antelope usage of the burnt veld until April 2016. Coetzee intends to work with Archibald and the other participants in the Firegrazer project again, in different variations.

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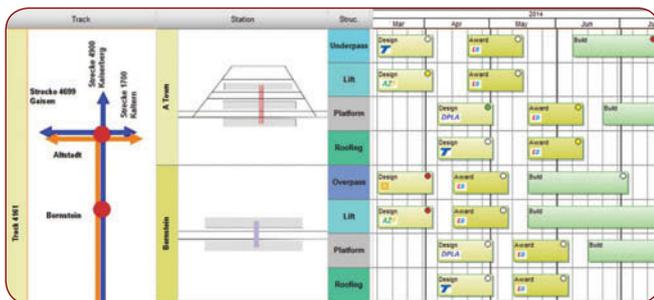
## Workbook for making maps and analysing data

Learn the fundamentals of making digital maps, analysing geospatial data, and building and editing spatial databases using the workbook Getting to Know ArcGIS, fourth edition, published by Esri. Updated for use with the latest version of its software, Getting to Know ArcGIS teaches geographic information system (GIS) concepts and common tasks such as how to find GIS data online, create a web map, set map projections, symbolise and label maps, edit data, and geocode addresses. The workbook also provides a preview of the new ArcGIS for Desktop ArcGIS Pro application. The new application for creating and working with spatial data on a desktop includes scientific tools for spatial analysis, along with the capabilities needed to create and publish 2D and 3D content and to share maps in ArcGIS Online or on an internal server portal. The workbook, which provides a comprehensive understanding of all the tools and functionality available in ArcGIS 10.3.1 for Desktop, can be used in classroom settings or for on-the-job training. The data for working through the exercises and a 180-day free trial of ArcGIS are available for download at Esri's Book Resources website.

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## Linear construction project visualisation

Trimble has announced Tilos version 9.0 time and location planning software for highways, railways, pipelines, tunnels, water engineering, transmission line construction and other linear civil engineering projects. The software merges



technical and schedule information into one dynamic plan, giving users more information than Gantt charts or network diagrams alone. The new version offers better linear construction project visualisation and improved integration with Primavera project management software and Trimble Business Center – HCE office software for heavy civil construction takeoff and data preparation. The software introduces a new Gantt chart format that visually connects the site layout with the user-defined time frame of a project. Graphics representing project locations provide additional clarity, making the plan more intuitive and easier to read. The new grouping and formatting represent the schedule in a digital wall chart format, which is frequently used in lean production to show progress in a simplified manner.

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## Cloud-based geospatial collaboration for enterprise

Intergraph Government Solutions (IGS), a wholly-owned subsidiary of Intergraph, a Hexagon company, has unveiled a comprehensive, cloud-based solution for visualising, analysing and processing geospatial information. The new solution exploits geospatial data, including imagery, terrain, features, maps and intelligence information, in a high-performing manner through a cloud-based, thin-client interface. This model improves efficiency and flexibility by reducing costs and enhancing the ability to collaborate across the enterprise. Specific benefits for federal agencies include streamlined and reliable software management, quicker adoption of technological innovation, scalability, robust support for remote and mobile users, improved data integrity and security and lower maintenance and support costs. At the core of this new solution is Hexagon Geospatial's Erdas Imagine, including Spatial Modeler, and GeoMedia product lines, which provide geospatial algorithms for remote sensing, image processing, photogrammetry, GIS and mapping workflows. Transformed into RESTful web services, these algorithms can be deployed on cloud platforms, such as Amazon Web Services (AWS) Public Cloud, GovCloud and C2S, and now support advanced workflows previously only possible with thick, desktop-installed applications. The solution offers an alternative to the more traditional commercial-off-the-shelf software.

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## Reference station monitoring with visualisation and reporting

The latest version of the web-based Leica CrossCheck service for GNSS reference station network integrity and deformation monitoring now comes with enhanced visualisation and reporting options. Customisable, automatically generated reports can be distributed to multiple viewers, while dashboard and status views allow fast interpretation of complex data of reference network coordinates and area deformation. Experts at the company process monitoring data using the latest geodetic software and algorithms to provide highly accurate assessments of any site movement on various types of infrastructure platforms such as oil platforms, bridges or dams. Customisable reports can then be distributed via email or downloaded on demand. Leica CrossCheck is a secure web-based application that provides interactive and flexible, round-the-clock access to project data. It simplifies project site movement analysis and speeds up decision making. From a receiver to the final result, the company is an all-in-one provider, offering a complete solution tailored to fit users' project specifications. Using the latest advances in geodetic monitoring and processing, the company's GNSS solutions deliver highly accurate GNSS coordinates and displacements to ensure reliable information about the site status.

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