Tasmanian State of GIS Seminar

Wednesday 12 May 2021, RACV Hobart

Click the hyperlinks below to see the abstracts of the presentations!

12.00pm	**Registration**
12.30pm	**LUNCH IN EXHIBITION**
1.30pm	**Welcome** Chris Walsham *Principal Advisor Spatial, Integration & Data Management, City of Hobart*
1.35pm	**SSSI Update** Paul Digney *President, SSSI*
1.45pm	**Integrating conventional surveying and reality capture for GIS data collection** Martin Ankor *Survey Coordinator, TasWater*
2.00pm	**Building an analysis web interface for the Bushfire Risk Assessment Model** Tim Bendall *Spatial Analyst, Esk Mapping and GIS*
2.15pm	**Land Tasmania Imagery and LiDAR update - new Aerial Photo Viewer** Alex Crothers *Program Leader (Topographic Data), Location Services, Land Tasmania*
2.30pm	**Open Data - For Internal Use Only** Houtan Emad *Senior Solutions Engineer, Esri Australia* AND Andrew Ritchie *Geographic Information System Administrator, Launceston City Council*
2.45pm	**Using satellite derived indices to determine seasonal and annual patterns in land cover change at Lagoon of Islands wetlands in the Tasmanian Midlands.** Kristy Petroff *GIS Student, Hydro Tasmania and UTAS*
3.00pm	**AFTERNOON TEA IN EXHIBITION**
3.30pm	**Drone Photogrammetry in Kingborough Council to Measure and Map Change in Land Surface Volume** Shirisa Timilsina *GIS Officer, Kingborough Council*
3.45pm	**TasWater Spatial Data Standards/Systems Update & Future Automation Plans** Patrick Kent-Fahey *Asset Information Quality Specialist, TasWater*
4.00pm	**Opportunity Mapping** Robert Rowell *Managing Director, Insight GIS*
4.15pm	**City of Hobart Digital Twin: Progressing Beyond the Buzzword** Chris Walsham *Principal Advisor Spatial, Integration & Data Management, City of Hobart*
4.30pm	**Closing Remarks** Inga Playle *SSSI Tasmania Regional Chair*
4.45pm – 6.00pm	**NETWORKING DRINKS IN EXHIBITION**

Many thanks to our sponsors

Please note, this program is subject to change.

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Integrating conventional surveying and reality capture for GIS data collection

Martin Ankor *Survey Coordinator, TasWater*

TasWater is responsible for water and sewerage across Tasmania, managing a widely distributed network with a combined 11272 km of water and sewer mains, over 950 pump stations and 171 water or sewerage treatment plants. Spatial data collected by TasWater has many stakeholders, both internal and external, which is used for a range of operational, planning, reporting and development purposes. Our data is essential for the DBYD service, and accessible through LISTmap. Diverse spatial data requirements, combined with a network that is predominantly underground, presents many challenges for spatial data collection.

This presentation describes how TasWater has combined conventional surveying systems and reality capture techniques to facilitate spatial data capture of diverse and complex infrastructure. Incorporating a reality capture workflow has enabled the development of data products that enable increased collaboration, safer operations, improved data quality and quantity, and more efficient use of existing data.

Building an analysis web interface for the Bushfire Risk Assessment Model

Tim Bendall *Spatial Analyst, Esk Mapping and GIS*

Tasmania Parks and Wildlife have an annually updated Bushfire Risk Assessment Model for analysing the Likelihood of a fire getting out of control in any part of the state whilst also analysing the Values at Risk from fire in the state. This model takes millions of data points and distils them down to an image of the state with 5 risk categories. Esk Mapping worked with Parks and Wildlife to bring the model to the web and provide selected users the opportunity to run their own scenarios. This allows, for example, for the submission of a theoretical fuel reduction burn, and then an assessment of the resulting impact on risk. Long-term this could become a vital tool for organisations such as councils in their bushfire planning and mitigation works.

Land Tasmania Imagery and LiDAR update - new Aerial Photo Viewer

Alex Crothers *Program Leader (Topographic Data), Location Services, Land Tasmania*

Alex will update delegates on new imagery and LiDAR holdings and what derivative products are coming online. He will also overview the new Aerial Photo Viewer and foreshadow capture programs for 2021/2022.

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Open Data - For Internal Use Only

Houtan Emad *Senior Solutions Engineer, Esri Australia* AND
Andrew Ritchie *Geographic Information System Administrator*, *Launceston City Council*

We all know and love open data. Interfaces the likes of "data.gov", "opendata.launceston", and "thelist" are a familiar part of our data discovery journey. But some data sets may include sensitive information and cannot be shared publicly, yet still provide immense value to the broader city council organisation. How do we combine the easy and familiar open data interface with the privacy and security requirements of enterprise council data? The City of Launceston has found the answer with ArcGIS Enterprise Sites.

In their latest iteration of "SAM the DataCat[alogue]" the Strategy, Economic Development, and Analytics team (SEDA) at the City of Launceston has opted to use ArcGIS Enterprise Sites to provide an open-data-like interface for discoverability of spatial and spatially-complemented data within the council organisation. Placed safely behind the council firewall, SAM is accessible to the 500 credential-holding members of Launceston City Council. This double layer of security ensures that sensitive council data is as discoverable as possible within the organization, while nearly eliminating the risk of accidentally sharing the information outside the council.

Join Andrew Ritchie from Launceston City Council and Houtan Emad from Esri Australia as they walk you through the basics of ArcGIS Enterprise Sites and dive into the intricate details of SAM's design and development.

Using satellite derived indices to determine seasonal and annual patterns in land cover change at Lagoon of Islands wetlands in the Tasmanian Midlands.

Kristy Petroff *GIS Student, Hydro Tasmania and UTAS*

This project uses freely available satellite imagery spectral band indices to identify vegetation and water at Lagoon of Islands. This information is then used to map percentage cover change and investigate seasonal and annual fluctuations from 2014-2020. Integrating remote sensing with water and vegetation management is key as continually improving technology making this a cost-effective option that saves considerable resources, energy and time. Applying this to Lagoon of Islands means it could be then extended to monitor water and vegetation change in numerous inland lakes in Tasmania where cost and access make this task prohibitive; giving important information about baseline health of wetlands and direct management strategies to target specific areas.

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Drone Photogrammetry in Kingborough Council to Measure and Map Change in Land Surface Volume

Shirisa Timilsina *GIS Officer, Kingborough Council*

Drone (unmanned aerial systems) based photogrammetry offers exciting new opportunities in surveying and mapping. In recent years, Local Governments are increasingly utilising the opportunities brought forward by this new technology in a range of tasks including mapping, monitoring and emergency management. For example, Brisbane city council has demonstrated the use of drones in building inspections and monitoring wildlife populations in the parks.

Kingborough Council has recently used drone photogrammetry to quantify change in volume of an area in between 2013 and 2021. A DJI Phantom 4 drone was used to capture aerial images of 2021. Ground controls were created by establishing well-distributed control points measured by the survey grade Leica GNSS (Global Navigation Satellite System). We used Pix4D software to generate a georeferenced orthomosaic and Digital Elevation Model (DEM). Light Detection and Ranging (LiDAR) data was used to create DEM of 2013. Surface difference and volume calculation was performed in ArcGIS Pro software. This project demonstrates the use of drones and state-of-the-art surveying methods for volumetric change analysis, which can be highly useful in compliance purposes.

TasWater Spatial Data Standards/Systems Update & Future Automation Plans

Patrick Kent-Fahey *Asset Information Quality Specialist, TasWater*

TasWater's GIS is constantly evolving and growing, increasingly becoming an integral part of day-to-day operations and critical to business decision-making. But it's still only ever as good as the data that goes into it. A new spatial data standard and delivery system will soon be launched by TasWater with the goal of seamlessly taking data from the field, standardising it and automatically loading it into the GIS.

This presentation will provide an overview of the new data standard and demonstrate the ways it will simplify the data handover processes for surveyors and TasWater staff alike. The standard is supported by templates and tools that are intuitive to use and streamline processes, including:

•	A survey code library for Trimble and Leica survey systems

•	A CAD template for as-constructed drawings with built-in layers and attributes

•	The use of SafeSoftware FME to automatically QA and import data from submitted CAD files into GIS.

The use of FME to automatically map and import data will shield surveyors or other data providers from future internal changes to TasWater's GIS, minimising the need for them to change processes or learn new specifications.

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Opportunity Mapping

Robert Rowell *Managing Director, Insight GIS*

Future Glenorchy is a program from Glenorchy City Council that will strategically coordinate several projects aimed at growing Glenorchy and improving the liveability of the city. As part of Future Glenorchy, Insight GIS has completed the Opportunity Mapping Project (OMP).

Council is regularly approached by developers and investors seeking land suitable for development. OMP is a mapping tool that enables developers, investors and stakeholders to identify sites for development - particularly around opportunities for affordable housing, med-high density residential, commercial and industrial sites.

City of Hobart Digital Twin: Progressing Beyond the Buzzword

Chris Walsham *Principal Advisor Spatial, Integration & Data Management, City of Hobart*

A true digital twin is more than just a virtual representation of a physical object. IBM's definition states that a 'digital twin is a virtual representation of an object or system that spans its lifecycle, is updated from real-time data, and uses simulation, machine learning and reasoning to help decision-making'. In engineering circles, the concept of a digital twin is not entirely new however when it comes to built environments spatially enabled digital twins have really only gathered pace over the past 5-10 years. Within the City of Hobart, thanks to the advancement and proliferation of multiple technologies and in line with changing community expectations, the Spatial and Smart Cities Teams in City Innovation have now been provided with the opportunity to investigate turning the vision of a City Digital Twin into reality. The aim is to deliver and environment for both our Smart City initiatives and to provide a mechanism for interactions with the community we serve.
This presentation highlights the technical components of a Digital Twin, then details these within the context of the City of Hobart, and finally serves to demonstrate some of the core foundation work which has currently been undertaken.