

CLIENT: Internal

SCOPE:

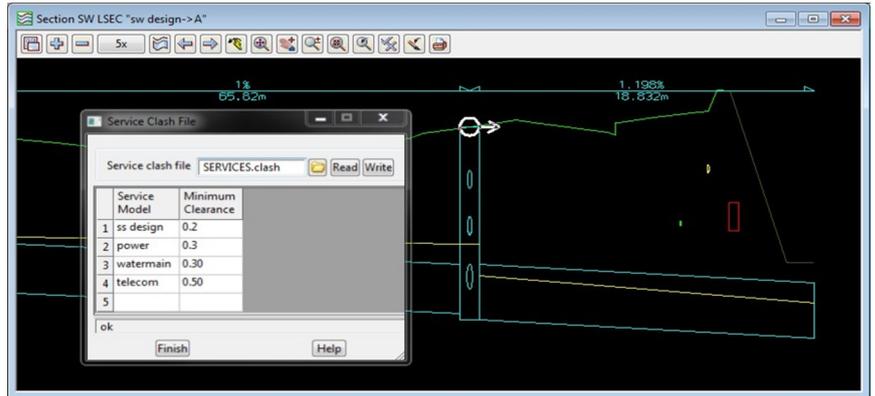
Enhancing the efficiency of the design and drafting team by simplification of data management.

12d DIMENSIONS:

- Customisation

Creation of a Design Pool

Internal



Project Summary

Wood and Grieve sought to enhance the efficiency of the design and drafting team by simplification of data management.

This was achieved by development of macros to consolidate 12d Model information into a unified file format, accessible by other software packages.

For more information

To find out more about how you can create better designs faster with the 12d Model solution for civil engineering design, visit www.12d.com.



Australasia: Sydney
P: sales@12d.com
M: +61 2 9970 7117

The Challenge

Prior to this innovation, the designer was required to export a large number of single use files for the drafting staff to document, as well as reports for engineers. Such single use files included horizontal curves, sewer/drainage pipe information, clashes, chainages and so on. These exports varied in file type and included CSV, TXT, DGN, and DWG.

Whenever the project design changed, the designer needed to export each individual file again. This was a cumbersome task, prone to errors and/or omissions. It had the potential to lead to confusion between exported files, resulting in wrong information being put onto drawings. This meant a lot of scope for human error.

The Solution

The proposed solution was to export data to a limited number of consistent unified files, adopting a database file type.

The main catalyst for this innovation occurred during development of a new macro for Clash Detection. It was realised that the data being captured would be applicable across several existing macros, and customising the 12d files would allow the team to incorporate additional attributes.

The intent was to export several consistent files containing all the information required by draftees and engineers to produce drawings and technical documents. The files had to be accessible by standard drafting packages, and also by the Microsoft Office packages.

A database file type was chosen to maximise the flexibility of the data to be contained.

XML was chosen as it is more robust than CSV and easier to read and navigate than SQL and similar structures. XML also has the advantage of being easily read and manipulated by most programming languages. In addition, the XML file type can contain as many variables as desired, in contrast to CAD file types such as DGN, DWG and DXF.

Several macros were developed within 12d Model to export common data to the relevant single files. Macros within the CAD programs were developed and customised to reference these single files.

To capture significant milestones within the project, these exported files were saved as a "snapshot" of the design at that time. These files contain all the data necessary to recreate the design information as it stood at that particular milestone, enabling quantification of variation between milestones.

Result

Implementing this process improvement achieved clear demarcation of the elements of work conducted by the designer using 12d Model, and the draftee, allowing all staff to work at their highest level. As a consequence, drawings are produced with increased efficiency and a higher level of accuracy.

Proposed Future Development:

Data is currently exported for sewer, drainage and roads. The next step for this innovation is to incorporate LandXML for earthwork information.



Roads and Highways

12d Model's design option is the smarter solution for the design, modification and maintenance of Road and Highway projects.

Enjoy advanced 3D tools to design local and major roads, intersections, roundabouts, highways, interchanges and much more.



Ports and Dredging

12d Model is the solution for port infrastructure and dredging, easily managing the very large datasets and complex volume calculations often required by these projects.

A complete range of flexible and customisable volume calculation tools allow teams to extract and present the information quickly and easily.



Land Development

12d Model is the most versatile solution for the creation of sustainable land development projects, including residential, commercial and industrial developments, recreational areas, landfills, and agriculture projects.

Easily manage all aspects of your land development project from earthwork quantities, road design utilities and drainage design.



Airport Infrastructure

12d Model provides a solution for the design, construction and analysis of new airports, as well as the upgrade and maintenance of existing runways and airport infrastructure.

Easily manage large airport infrastructure projects and share data across multi-disciplinary teams.



Rail

12d Track has been specifically designed for the survey, design and construction of light, heavy and high speed rail projects.

Extensive railway tools in 12d Track allow the rail designer to quickly and easily design their projects. These options are built on the existing 3D modelling and design tools available in 12d Model.



Mining Infrastructure

12d Model's powerful set of exploration, site investigation, survey and analysis tools are crucial for the initial design, construction and ongoing operation of mining projects.

Comprehensive tools for the survey, design and construction of access roads, railways, earthworks and services allow for the coordinated design and management of mining infrastructure from within 12d Model.



Drainage, Sewer and Utilities

12d Model provides comprehensive tools for the design, analysis and optimisation of stormwater and sewer projects using rational, dynamic (hydrograph) and 2d drainage methods.

Powerful clash detection management allows for efficient 3D modelling of service networks such as gas, electricity, telecommunications and water prior to construction.



Surveying

12d Model is a complete surveying package providing the tools to manage all facets of surveyed data including LIDAR, topographical, as-built, conformance, traversing, geodetics, data mapping, labelling and much more.

The 12d Field option runs on a ruggedized tablet and gives the user access to full 12d Model functionality, allowing you to take the entire project into the field with the most comprehensive pick-up and set-out tools.



Oil and Gas

12d Model assists with the design, construction and mapping of oil and gas pipelines, original site exploration and the wide range of infrastructure required for oil and gas projects.

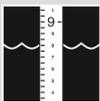
Accurate 3D modelling and the ability to share data between users allow teams to quickly and easily coordinate designs.



Construction

12d Model is the ultimate software for construction with powerful set-out options, direct interfaces to machine control and detailed conformance reporting and auditing.

Manage 3D data and control volumes, quantities and progress claims with 12d Model. Set-out your project and undertake conformance and as-built surveys live on-site using 12d Field.



Rivers, Dams and Hydrology

12d Model handles very large datasets and interfaces with a wide range of analysis packages, making it perfect for flood studies and the management of rivers and dams.

12d has partnered with industry leading analysis software, allowing users to apply 2D drainage analysis from within 12d Model.



Environmental

12d Model's ability to handle very large datasets combined with flexible and comprehensive 3D analysis and modeling tools make it perfect for a wide variety of environmental projects.

Existing workflows can adopt 12d Model easily as it allows users to directly interface with GIS systems and most software packages and file formats.

Why Choose 12d?

- **Powerful data processing & intelligent functionality.**
- **Modular, easy to update & completely customisable.**
- **Seamless integration with major industry software and hardware.**
- **Used in over 55 countries worldwide.**
- **Friendly support & training from industry experts.**

Americas: Vancouver

E: americas.sales@12d.com

P: +1 206 905 1464

Australasia: Sydney

P: sales@12d.com

M: +61 2 9970 7117

Europe: London

E: sales@12d.co.uk

P: +44 845 051 0372

12d Solutions Pty Ltd

PO Box 351 Narrabeen

NSW 2101 Australia

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