ADAC Overview

ADAC – As Design As Constructed

From survey and design to GIS and Asset Management

Bob Andrew - Bob Andrew Consulting
Ross Guppy - IPWEA Q
Peter Sutter - SA Water Corporation
Kieren Chappell - Light Regional Council
Today’s ADAC Speakers

- Ross Guppy, Director Technical Products, IPWEAQ
- Peter Sutter, Business Analyst Asset Information, SA Water
- Kieren Chappell, Manager Engineering & Assets, Light Regional Council
What is ADAC*?

• A set of tools to make the transfer of survey accurate asset data easier
  – *Between asset constructors, contractors & owners*

• Developed by a consortium of asset owners
  – *Informed by industry (incl. surveyors)*
  – *Supported by IPWEA Queensland*

• *Endorsed by NAMS.AU*
  – *See case study 32 in the International Infrastructure Management Manual (2011) p. 2|56*

*Asset Design & As Constructed (Data Standard)*
ADAC Consortium

- A mix of small, medium & large Councils & utilities
- Not profit motivated
  - Focused on advancing asset management practice
  - Sharing with & learning from each other
- Operating under the governance of IPWEAQ
  - ADAC governance model
  - Role of the IPWEAQ
SA ADAC Working Group

• City of Charles Sturt
• Light Regional Council
• SA Water Corp
• Mount Barker District Council
• Other interested councils
• Biannual meetings
SA ADAC Projects

- LGA Research & Development Grant
- Involves two SA Councils, Light & Mt Barker
- Kieren Chappell to deliver status of project
- SA Water Corporation Electronic Plan Lodgement – Peter Sutter to present
Two major problems facing Asset Managers today:

1. Multiple AM data standards / formats
   - Designs / as cons created in multiple formats
   - Difficult to exchange data between systems or organisations

2. Re-work caused by incomplete / inconsistent asset data capture
   - Not all data captured
   - Data collected in different formats
   - Spatial data & asset component data are not consistent

Result: a lack of confidence in your asset data that impacts your ability to do long-term asset, service & financial planning
Two major issues facing Surveyors:

1. There is no consistency
   - Each council wants something different
   - Sometimes each department in one council wants something different
   - Some don’t know what they want and surveyors are doing it multiple times

2. Certification of As Constructed Data
   - Surveyors being asked to certify Engineering asset information
   - Some Asset owners are asking for certification by a registered surveyor
   - But an engineering surveyor is not required by legislation to be registered
Typical Paper-Based Process

Surveyor/Consulting Engineer → CAD Presentation of Asset Details → Paper Based Plans

Council Corporate Systems → Processing of Asset Information

Lodged with Council for Review
The Smarter (ADAC) Process

Digital Lodgement Process using Common Standard

Surveyor/Consulting Engineer

Council Corporate Systems

Digital Processing/Error Checking
ADAC Components

• **ADAC Data standard**
  – *Project* information
  – *Spatial & non-spatial* data schemas
    • Transport, Drainage, Water, Sewer, Open Space, Cadastre, Surface, Enhancements, Supplementary
    • 68 asset types

• **ADAC Data transfer mechanism**
  – *XML* based

• **Supporting Documentation**
  – *Data capture guidelines*
Metadata (data about the data)
- What type of information this is
- Used by programs to determine what to do with the information that follows

Asset attribute data
- Non-spatial data about the asset

Geometry elements
- Spatial data about the asset
Authorities and ADAC

Each Authority requesting ADAC.XML needs to define
• Which ADAC Assets they require
• Which attributes are wanted for each required ADAC Asset
• What the Geometry for the required ADAC Asset represents

So the Council/Authority needs to provide “ADAC Asset Capture Guidelines” (which they are now doing)
Transport

- **Roadways**, including seals and pavement to be captured from “Nominal kerb line to Nominal kerb line” as a closed polyline as per “red-dashed” example pictured in figures 1 & 2 below. Note: Separate polygons will be required at changes in pavement and/or surfacing.
- **Kerb line** is captured on the nominal kerb line (invert of kerb and channel, face of kerb only) as shown by “yellow-dashed” line shown in figures 1 and 2 shown below.
- **Sub-soil drains**, where installed, are to be captured at kerb/seal junction as per the “blue-dashed” examples shown in figures 1 and 2.
- **Road islands** are captured as closed polyline/object from back of kerb. Individual sub-sections of traffic islands to be identified by different material types (i.e. paving, concrete, grassed) as per “green-dashed” line in figure 1.
SA Water’s path to Electronic Lodgement
As-Constructed Information

• About SA Water
• What initiated the need to investigate Electronic Lodgement?
• Electronic Lodgement Pilot
• Pilot Results
• Where to next?
Business Drivers of Electronic Lodgement

• How can we reduce the time taken to update the GIS from when the asset is constructed?
  – Supports the activation of services and rating of new customers

• How can we ensure the quality of the data is maintained and improved?
  – Facilitate asset management and land development process through timely and accurate information
Electronic Lodgement Assessment

- Assess and recommend a standard
- Review available software
- Test the standard and software with a pilot
- Assess the impact of electronic lodgement on developers and contractors
Pilot Overview

- As-Constructed standard: ADAC v4.1
- Software: Open Spatial ACDC
- Developer / Contractor partner: Alexander & Symonds
Pilot Overview

• Configure ACDC to be ADAC v4.1 compliant
  – Water
  – Wastewater

• Configure ACDC with SA Water business rules

• Capture water and wastewater as-constructed information for a new medium sized subdivision:
  – Manually update the GIS from as-con plans
  – Automatically update the GIS from the as-con data

• Compare the results of both methods
Pilot Results

Water

Manual: 90min  Automatic: 18min 40sec

5 fold improvement

- Open AutoCAD and Drawing File (57sec)
- ACDC Validation (39sec)
- ACDC FDO Connection (58sec)
- ACDC Generate FDO Create GIS Layers (21sec)
- Post Process GIS staging (34sec)
- Create Edit Session (39sec)
- Adjust & Abandon Existing (13min 17sec)
- Merge new with existing (1min 16sec)
Pilot Results

Wastewater

Manual: 90min  Automatic: 8min 50sec

10 fold improvement

- Open AutoCAD and Drawing File (58sec)
- ACDC Validation (30sec)
- ACDC FDO Connection (1min)
- ACDC Generate FDO Create GIS Layers (34sec)
- Post Process GIS staging (1min 25sec)
- Create Edit Session (41sec)
- Adjust Existing Sewer (2min 9sec)
- Merge new with existing (1min 27sec)
Assessment of Pilot Objectives

• Effectiveness of electronic lodgement
  – It does work
  – Accuracy is acceptable
  – Clear savings in time taken to update the GIS
  – Reduced risk of working with data that is not up-to-date

• Effectiveness of ADAC
  – It can do the job
  – Electronic lodgement will only work if the developer and contractor community endorse it
  – A National standard will encourage industry acceptance
Where to next?

- Project underway for full implementation of electronic lodgement

- Planned completion September – October

- SA Water will be in a position to accept and process electronically lodged as-constructed information