Powerful Test Data Analysis using ASAM ODS®

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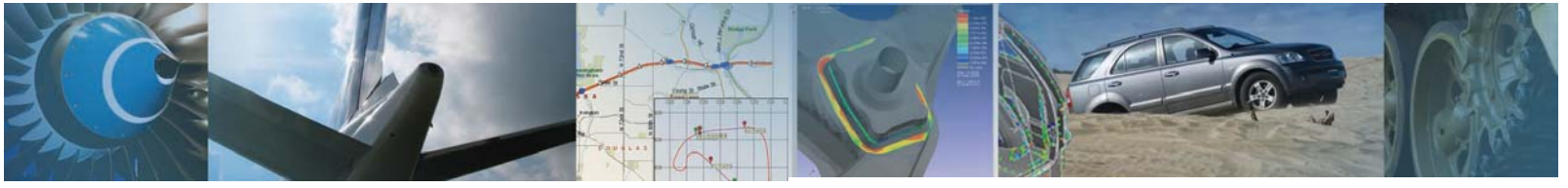
nCode International

25 years of helping customers:

eliminate unexpected structural failures and improve ***product lifecycle performance***

…... through a unique combination of measurement instruments, software and services



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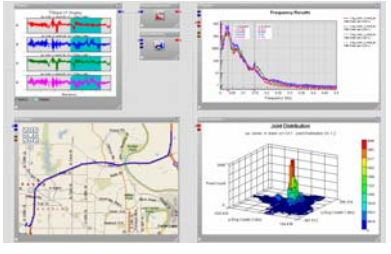
Product Range

Acquisition

Rugged, mobile data acquisition

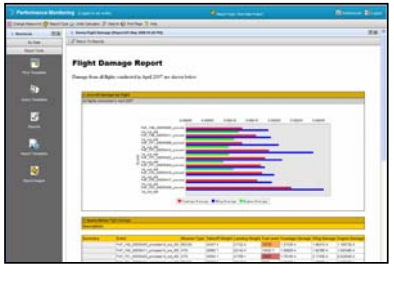
SoMat® eDAQ, eDAQ-Lite



Analysis

Desktop engineering software for test and CAE analysis.

ICE-flow® Analysis systems (GlyphWorks®, DesignLife™)



Automation

Web-based systems for automated engineering data processing.

ICE-flow® Automation systems

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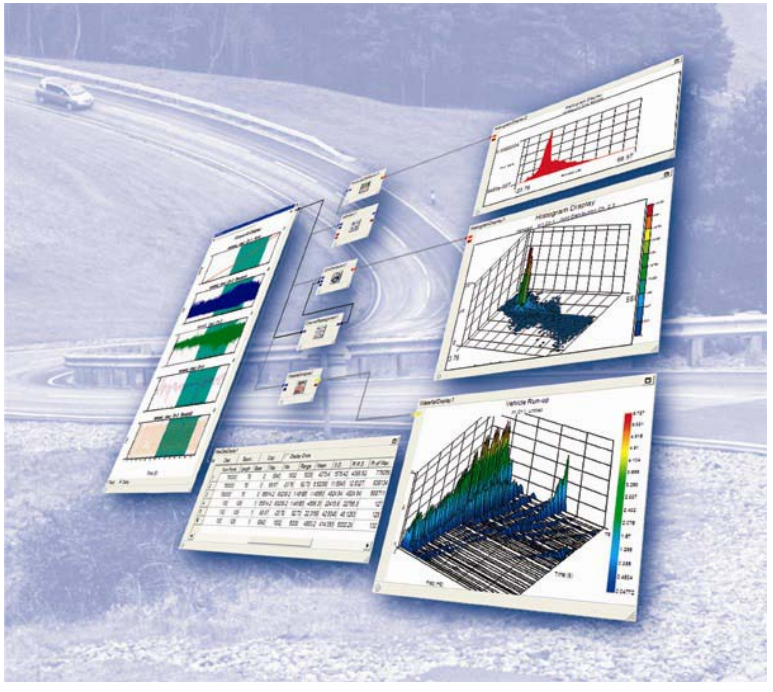
GlyphWorks®



Graphical

Process Driven

Data Analysis

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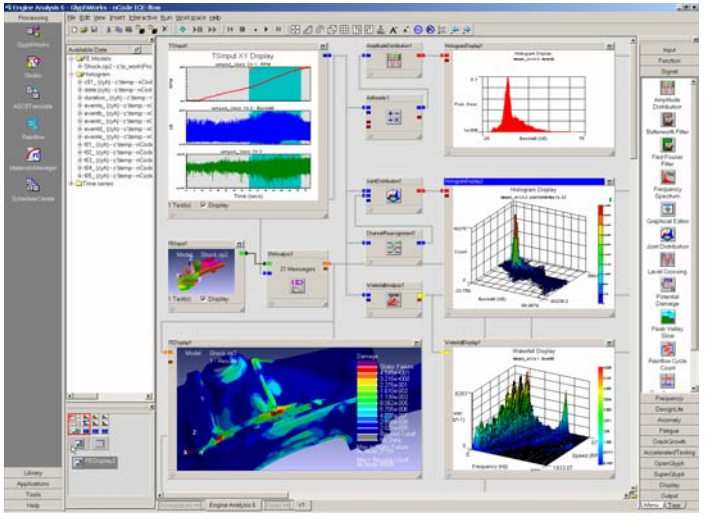
GlyphWorks : Power



- Provides the ability to process **gigabytes of data** – many channels, millions of data points.
- Seamlessly work with a **wide range of data types** – no translation of formats needed.
- Wide range of **analysis tools** – from basic filtering and spectrum analysis to advanced fatigue prediction and accelerated testing.
- **Gain insight** from embedded GPS mapping and video.
- **Both Test and CAE data** in one environment for better, faster overall analysis.

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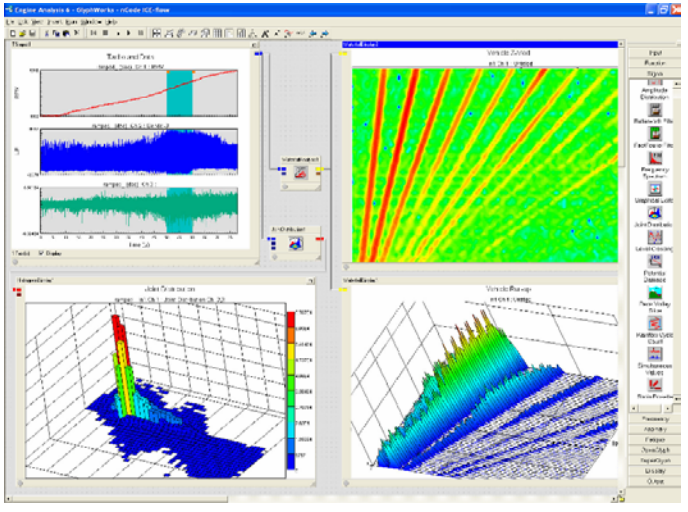
GlyphWorks : Process



- **Drag and drop creation of multi-step analysis processes** with many steps and branches – no scripting required.
- Improve quality by using locked-down processes that **capture corporate knowledge**.
- Saved processes can be **password protected**.
- **Distribute processes** and deploy throughout organization.
- Incorporate links to **external codes** and even create glyphs using open-source Python.

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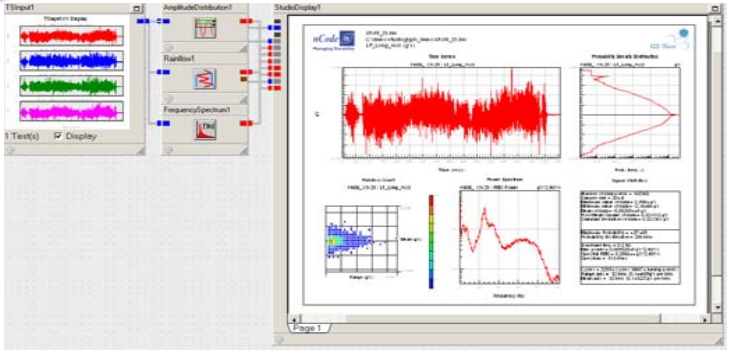
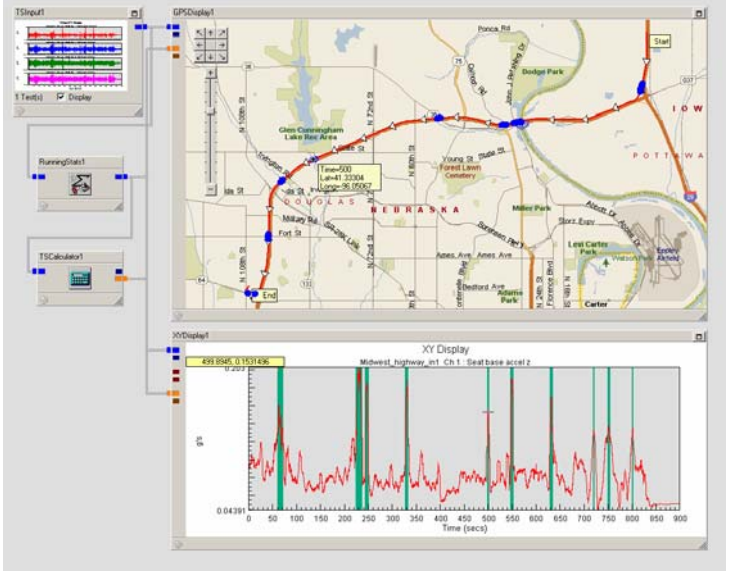
GlyphWorks : Productivity





- **‘One-click’ generation of results and reports**. Go straight from raw data to finished document.
- Intuitive flow-chart interface is **easy to learn**.
- Build a **complete process in minutes** that would have taken days to code.
- Spend engineering time **understanding the data** not supporting scripts.

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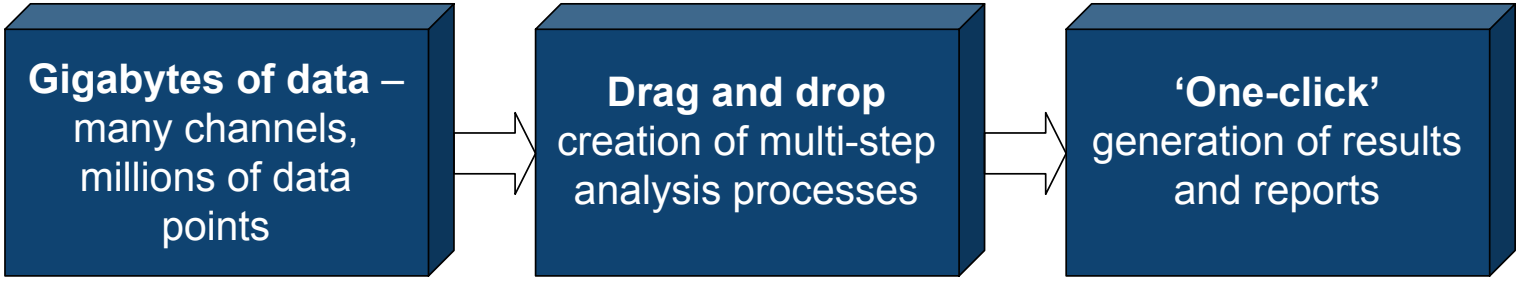
GlyphWorks – Summary

GlyphWorks delivers **Power, Process, Productivity…**



…to more quickly gain understanding and make decisions.

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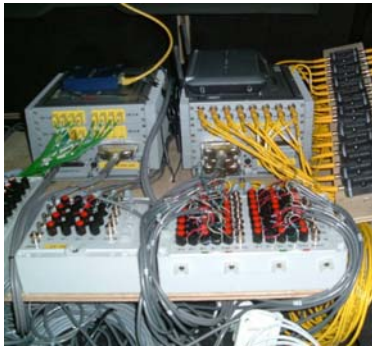
Common Data Problems

- Increasing volumes of data.
- Spending too much time looking for the correct data or manually distributing data.
- Repeating tests because data cannot be found or re-used with confidence.
- Limited or inconsistent electronic description of the data.
- Many different proprietary data formats causing inefficiencies in software and data usage.



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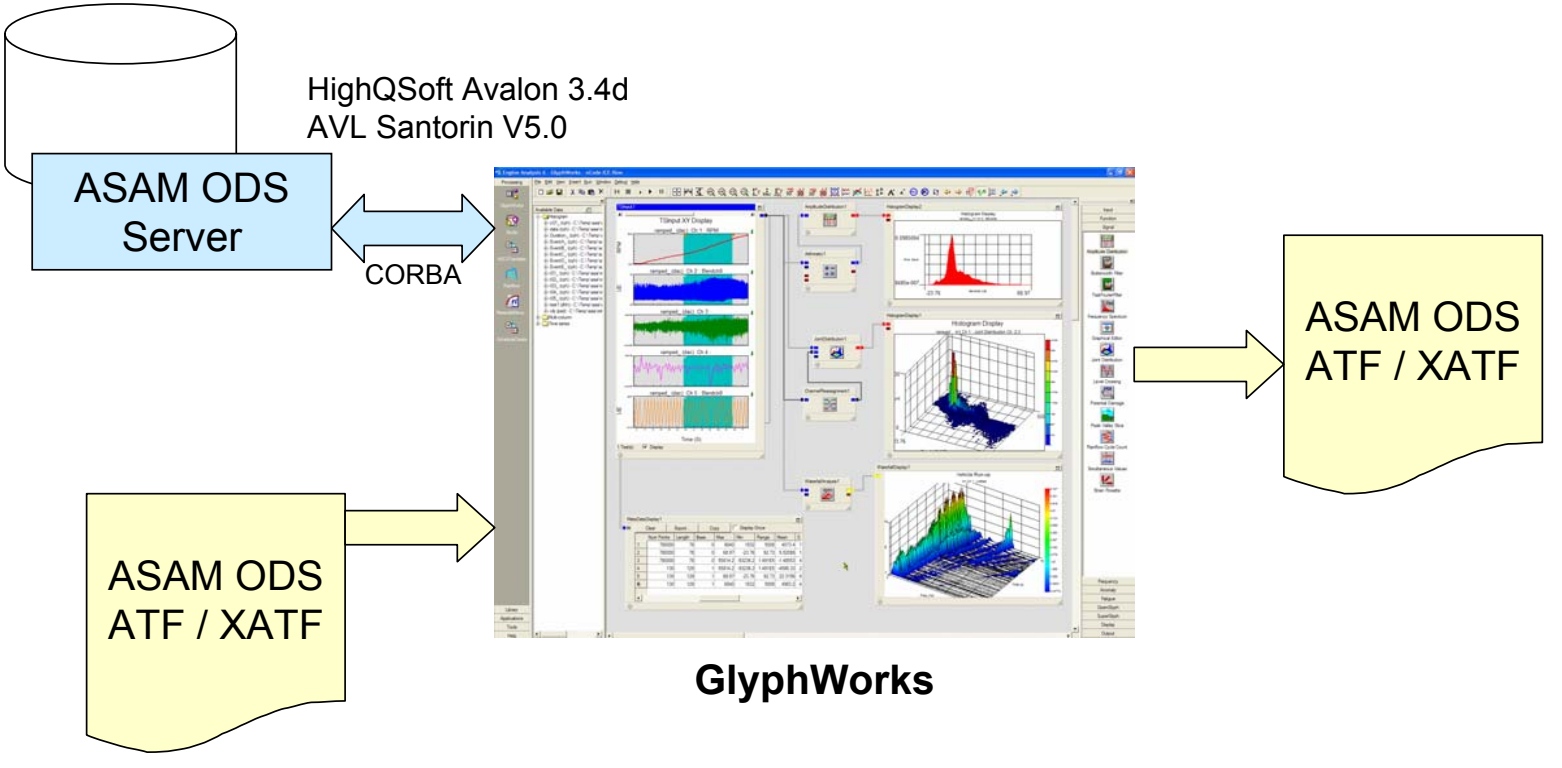
ASAM ODS

- ASAM (Association for Standardization of Automation and Measuring System) family of standards originated in the European automobile industry in the early 1990's as a method to increase standardization in the field of automated testing.
- ASAM ODS (Open Data Structures) is a part of the ASAM family of standards responsible for storing and maintaining persistent testing data. Reduces reliance upon proprietary data formats.

ASAM ODS Components

- ASAM Base Model
  - This is essentially a standard schema which defines the basic object types and attributes. Customers add their own Application Model to include additional elements to describe the data (such as “VehicleWeight”, “DriverName” etc.)
- ASAM API
  - This allows applications to find and access data via an ‘ASAM Server’ by executing standard calls.
- ASAM ATF and XATF
  - ATF is an import / export format of data and associated schema to move between applications. XATF is a newer XML-based version.

GlyphWorks and ASAM ODS



ASAM ODS Version Support

- GlyphWorks uses functionality available in ASAM ODS V4.1 and above.
- GlyphWorks uses CORBA to connect to the ASAM ODS server and has been tested with
  - HighQSoft Avalon 3.4d
  - AVL Santorin V5.0

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Data Support

- Based upon established mime types in ODS standard, GlyphWorks supports
  - Time series data
  - Rainflow histograms
  - Time at level histograms
  - Multi-dimensional time at level histograms
- GlyphWorks data is “test” oriented, where a test is a single multi-channel data set. The corresponding base element type in ASAM ODS is AoMeasurement.
- The “channels” of the time series test are the AoMeasurementQuantity children of the AoMeasurement.
- Information from the ASAM Application Model can also be accessed within GlyphWorks using its powerful metadata system that passes additional information along with the test data.

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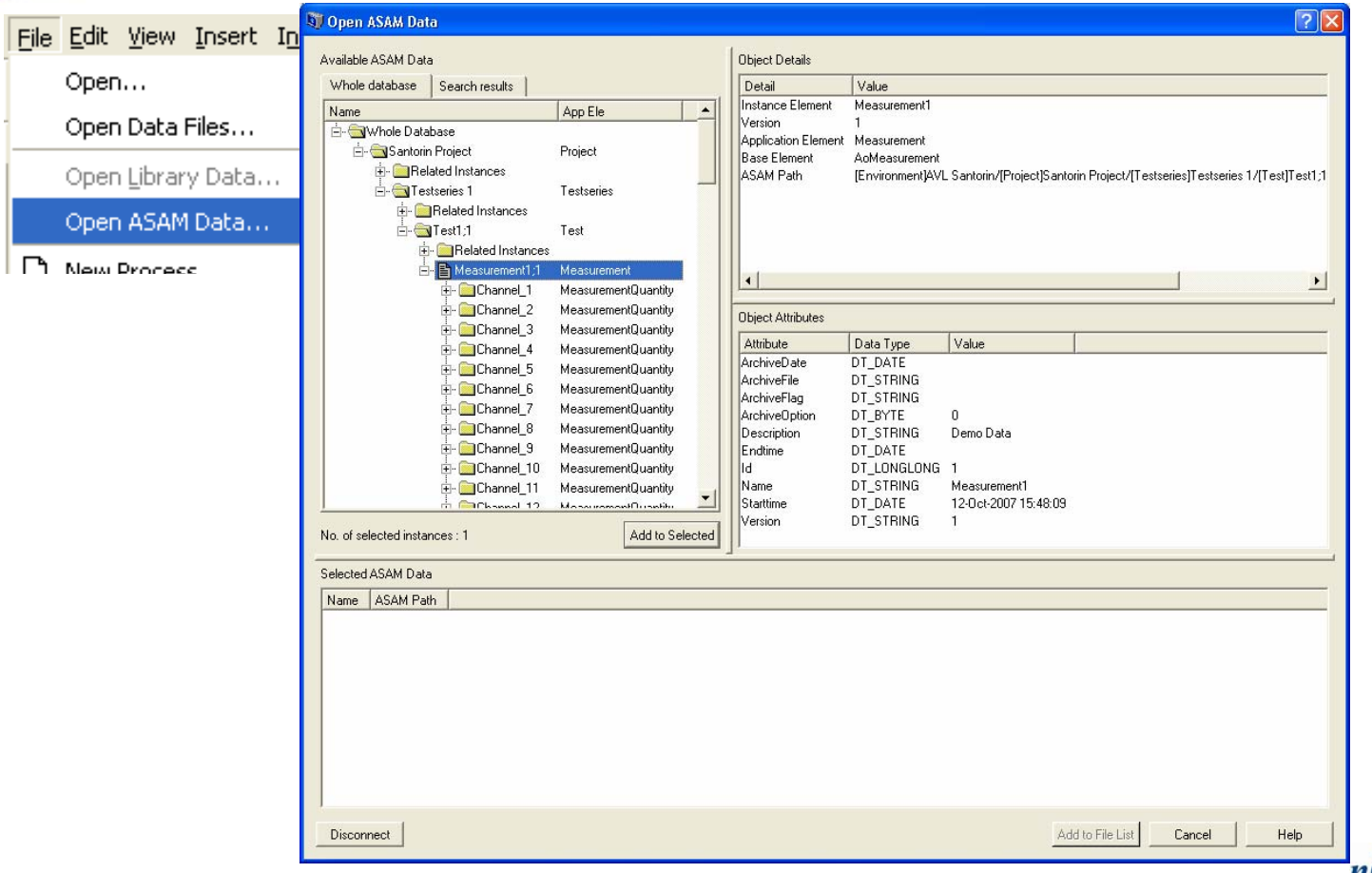
Example Usage



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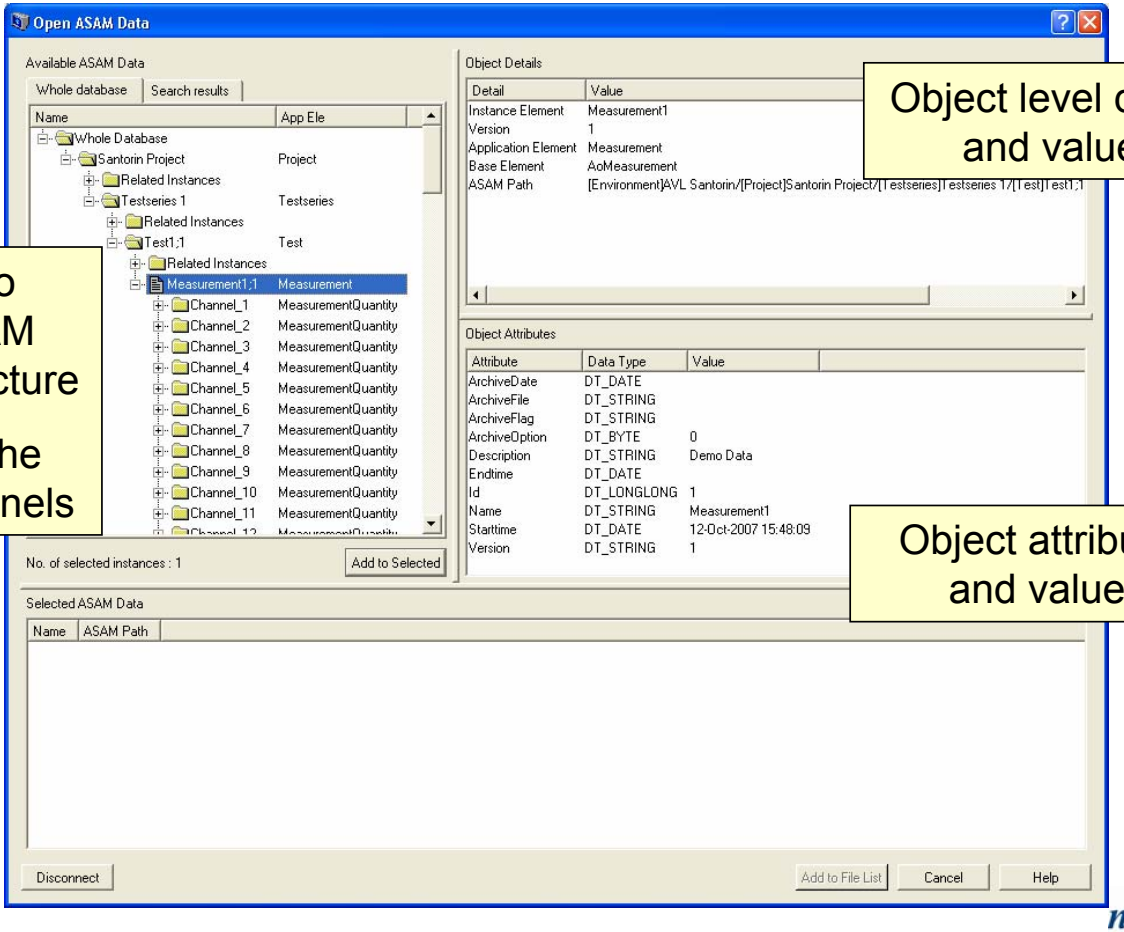
Example Usage



Tree view to explore ASAM ODS data structure

e.g. to view the tests and channels

Object level details and values

Object attributes and values

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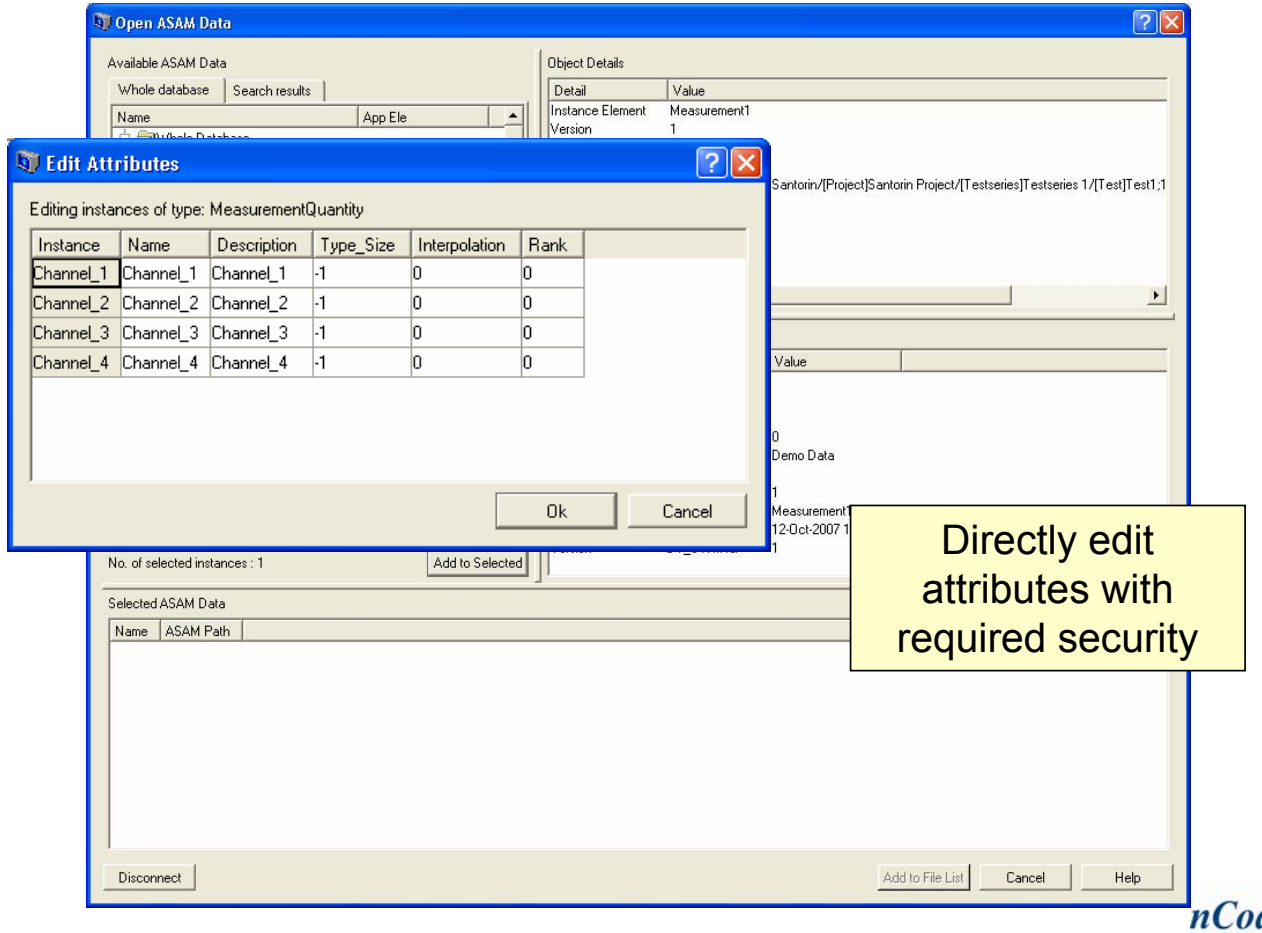
Example Usage



Directly edit attributes with required security

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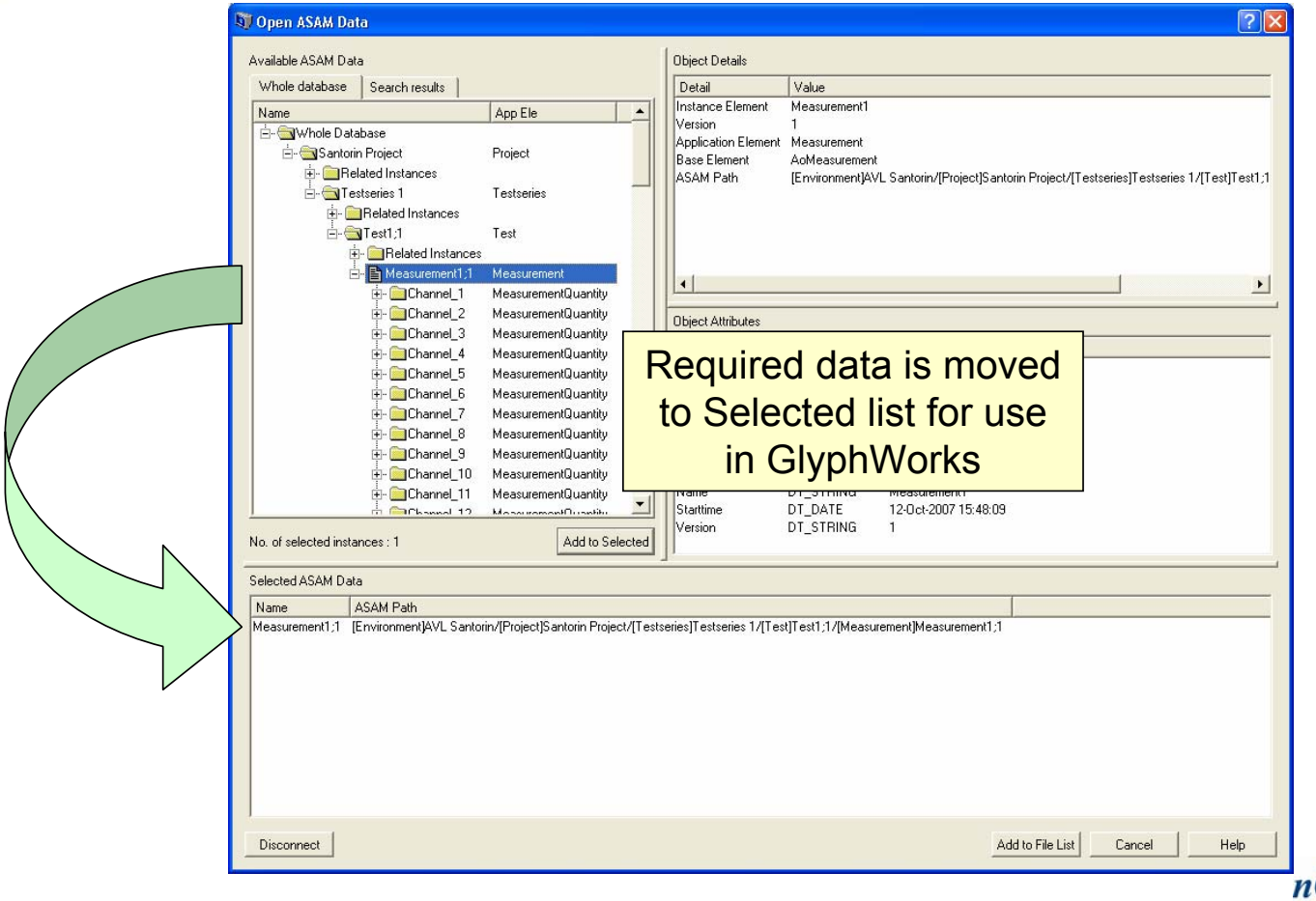
Example Usage



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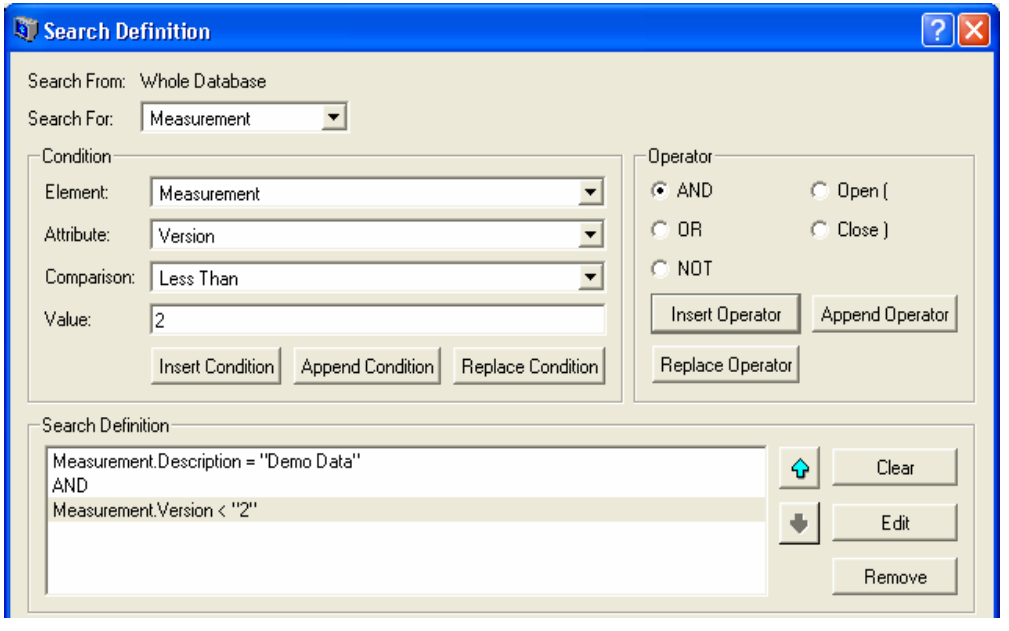
Searching

- An important requirement is to find the right data using search.
- Context sensitive pull downs show available options such as the attributes on each element.



- Multiple conditions can be combined using operators to build up sophisticated searches.
- Searches can be saved and restored for rapid future use.

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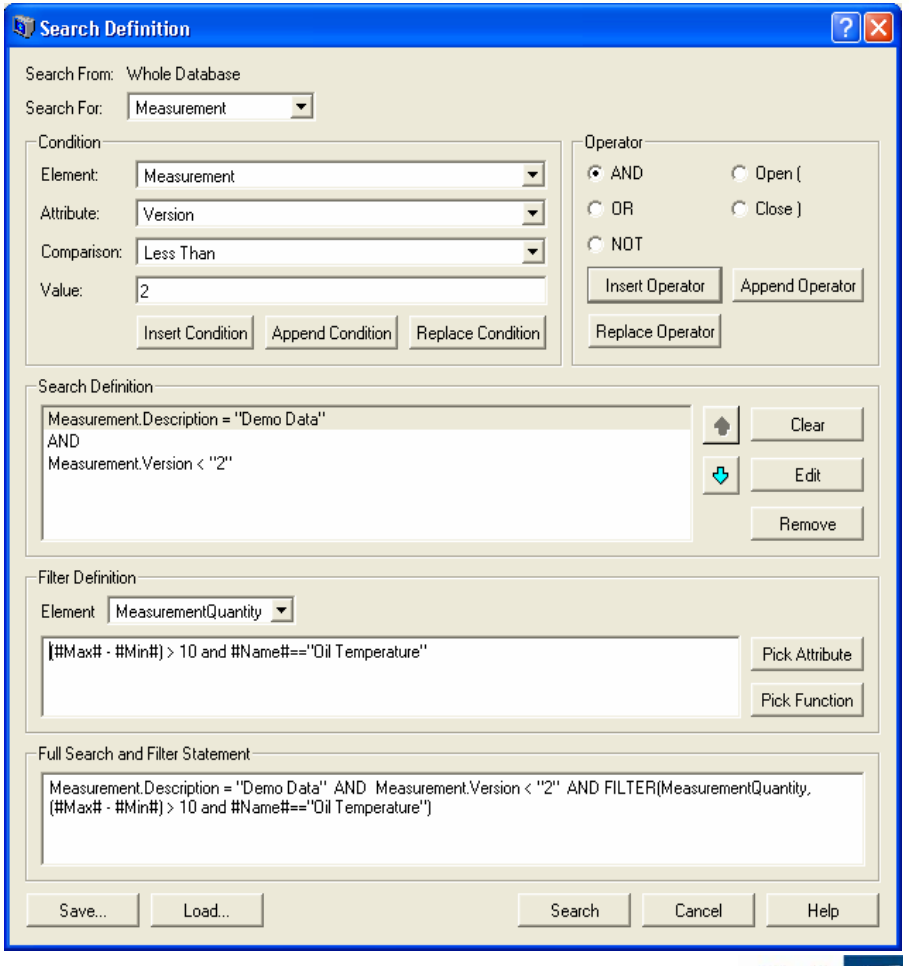
Advanced Searching

- Additional filtering can be added to searches.
- This enables numerical calculations to be used such as where the range of a channel:

  (*Max – Min) > 10 AND*

  Name == “Oil Temperature”
- This reduces the search results to only include tests (measurements) where this is true.



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Example: PSA Peugeot Citroën

Business: Automotive OEM

Challenge: Process and manage over 800 gigabytes of data from different sources such as proving grounds, customer monitoring sites, and laboratory test rigs

Solution: GlyphWorks used corporately, interfacing with ASAM ODS database

Value: Productivity gains from accelerated testing and faster processing speed

- **"nCode's software provides PSA Peugeot Citroën with an easy-to-use, standard solution powerful enough to process and manage over 800 gigabytes of data."**

  Jacques Mercier, Manager, Customer Usage Synthesis Department.

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GlyphWorks & ASAM ODS

- Together, GlyphWorks and ASAM ODS provide
  - Ability to process large amounts of data.
  - Graphical, easy to use analysis environment.
  - Controlled analysis processes.
  - Access to the right data through interactive browsing and advanced searches.
  - Ability to share data with other applications through ATF / XATF.
- Thus providing the means to save time, improve quality and reduce costs in the testing process.

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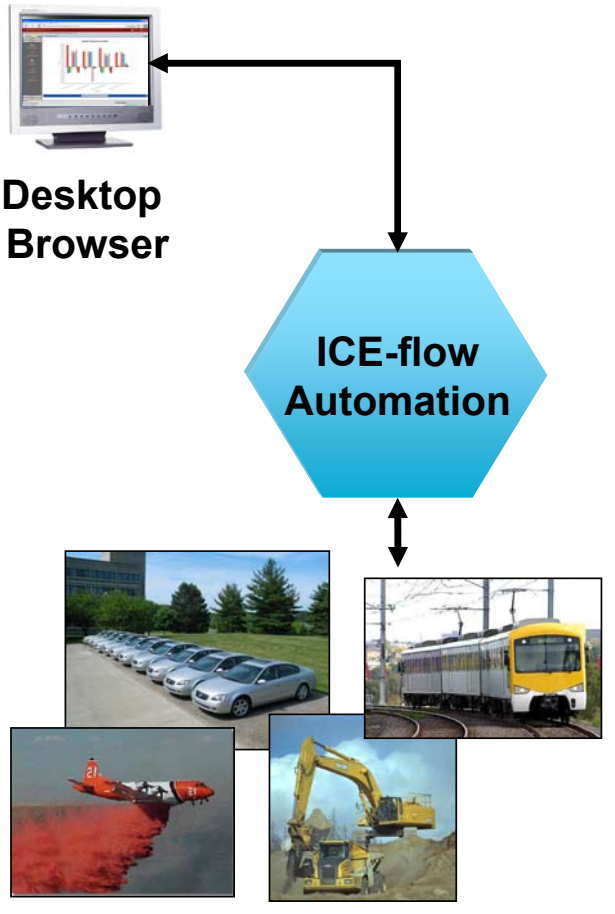
ICE-flow Automation *NEW!*

- ICE-flow Automation takes test data management to the next level through:
- Web-based system for engineering data processing.
- Catalogue, process, analyse and distribute data and reports.
- Used by leading engineering organizations to:
  - Automatically processing test data
  - Monitoring and analysing vehicle fleets



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ICE-flow Automation applications

- Ground Vehicle OEMs and suppliers
  - Proving grounds
  - Test rigs
  - Multibody dynamic analysis
  - Customer correlation.
- Aerospace OEMs
  - Life cycle test rig programs
  - Engine test cell data
  - Flight loads
- Monitoring
  - Optimize maintenance.
  - Health usage monitoring

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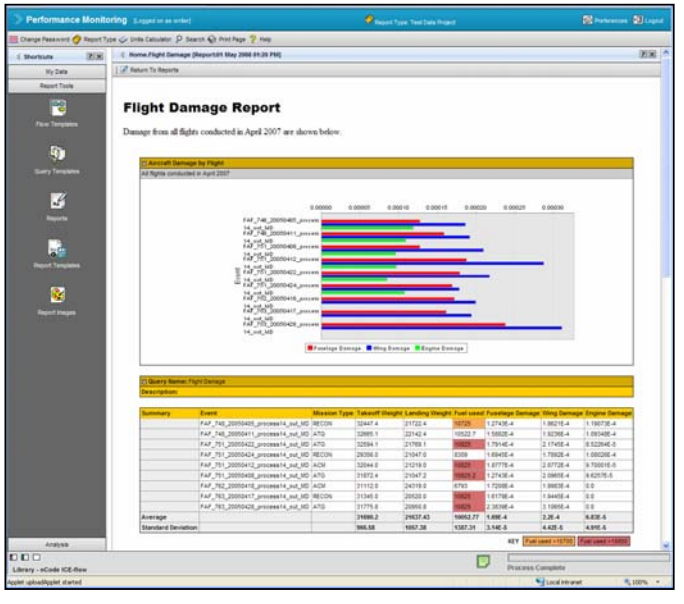
ICE-flow Automation Benefits

- Simplifies data and report distribution.
- Encourages corporate and global design collaboration.
- Automates the data processing.
- Enables detailed trend analysis.
- Streamlines remote monitoring exercises.
- Promotes data quality and analytical consistency.



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Visit us at Booth #1042

Thanks for Your Attention!

Any questions?

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Visit us at Booth #1042

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