

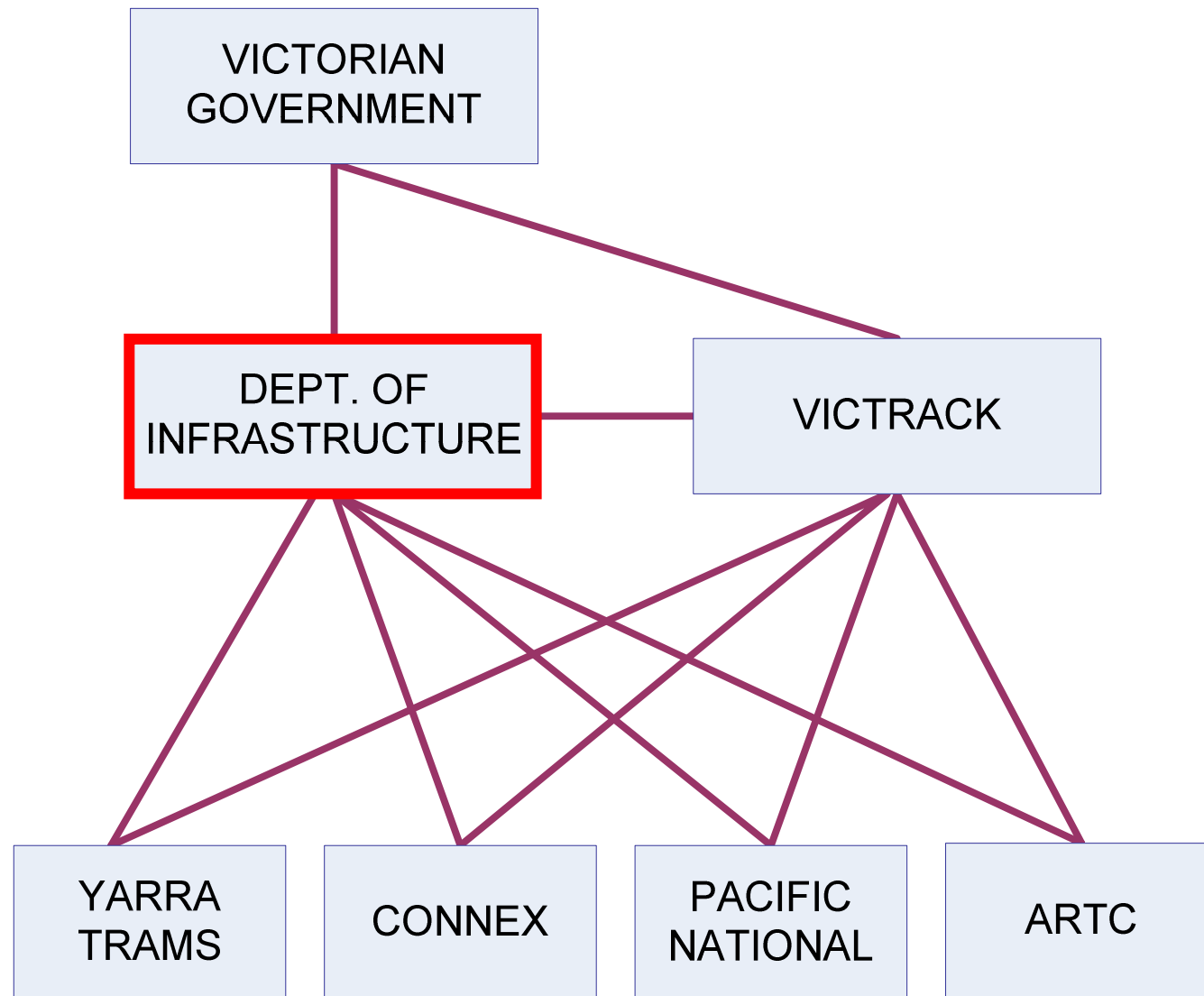
Versatile Web Client Design

Paul O'Halloran

Manager Standards
Safety and Asset Management Branch
Public Transport Division



Victorian Public Transport

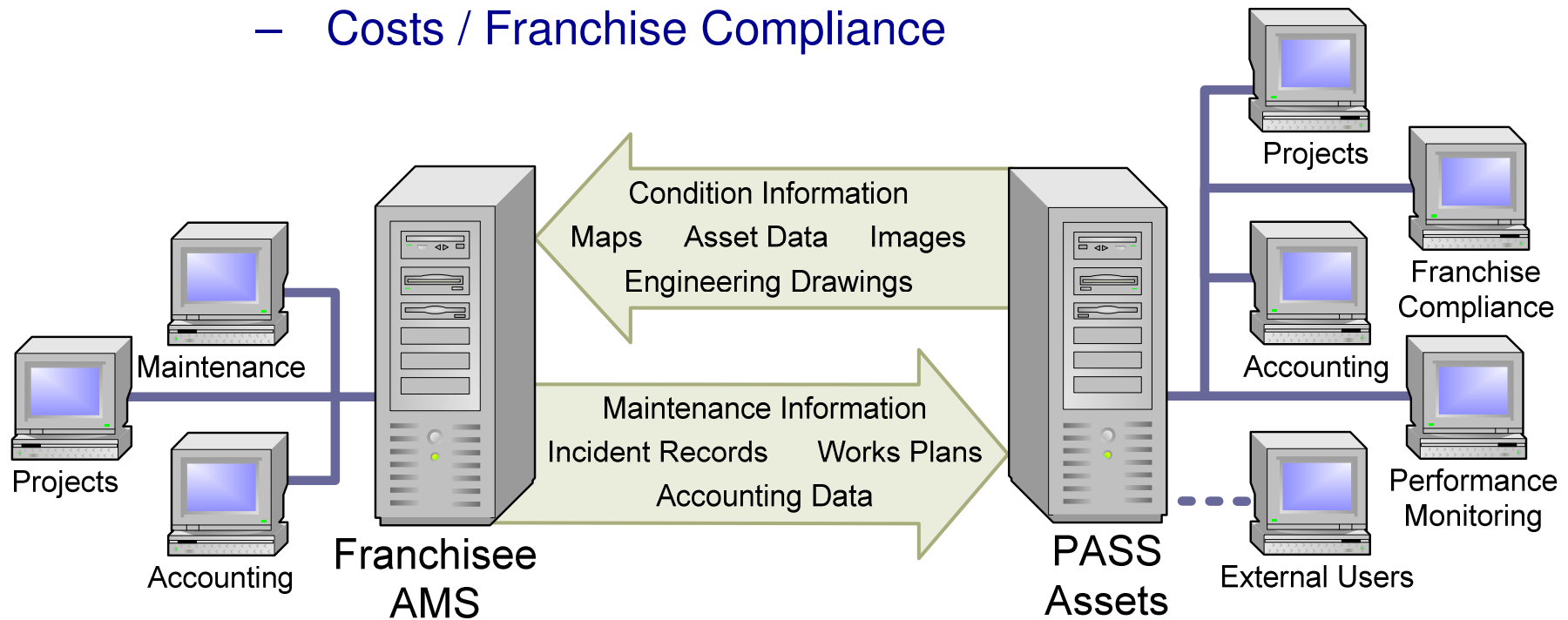


PASS Assets System History

- **PASS** – (Privatised Arrangements Support Systems)
- **PASS Assets Evolution**
 - Condition Database (July 2001) Terminated due to lack of agreement on statistical methodologies
 - Accounting Application (Dec 2002)
 - Data Collection methodology lead to Geospatial Asset Register (Dec 2003) both Train and Tram
 - Web Delivered GIS (2004/2005)
 - Public Transport Information Portal (2005/2006)

Integration with Franchisee Systems

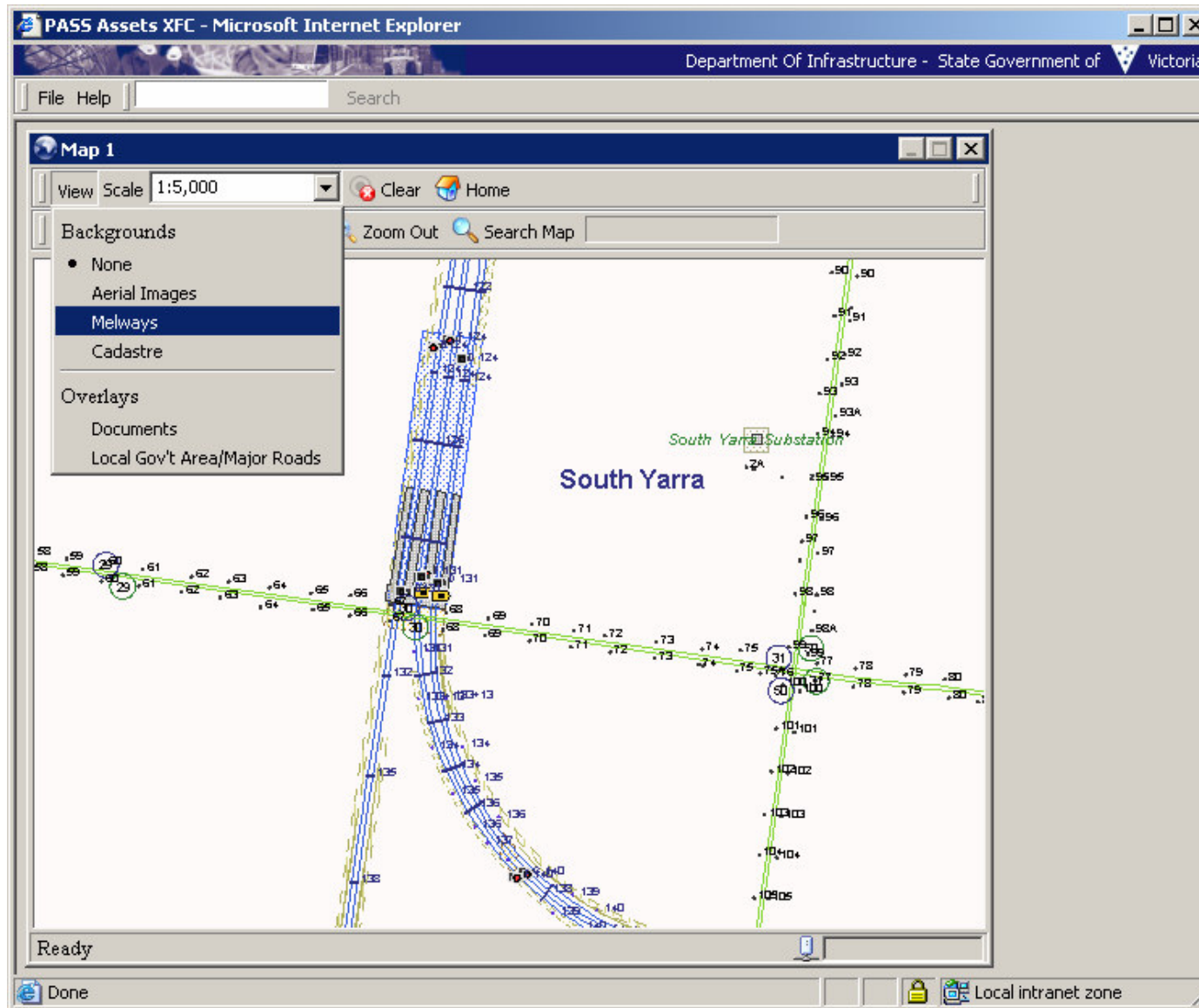
- Integrate with Franchisee's Asset Management Systems (AMS)
 - Maintenance Planning / History
 - Costs / Franchise Compliance



Intelligent Data Model

- Linear Network
 - Kilometrage
 - Topology
 - Network Tracing
- Asset History
 - Planned / Live / Disposed
- Inbuilt Quality Assurance Procedures
- Audit Trail of Data Edits

PASS Assets – Web Client



- Web Client
- Windows like application
- Move / Resize
- Zoom In / Out
- View Backdrops

PASS Assets – Web Client

Map 1

View Scale 1:2,500

Results Explorer 2

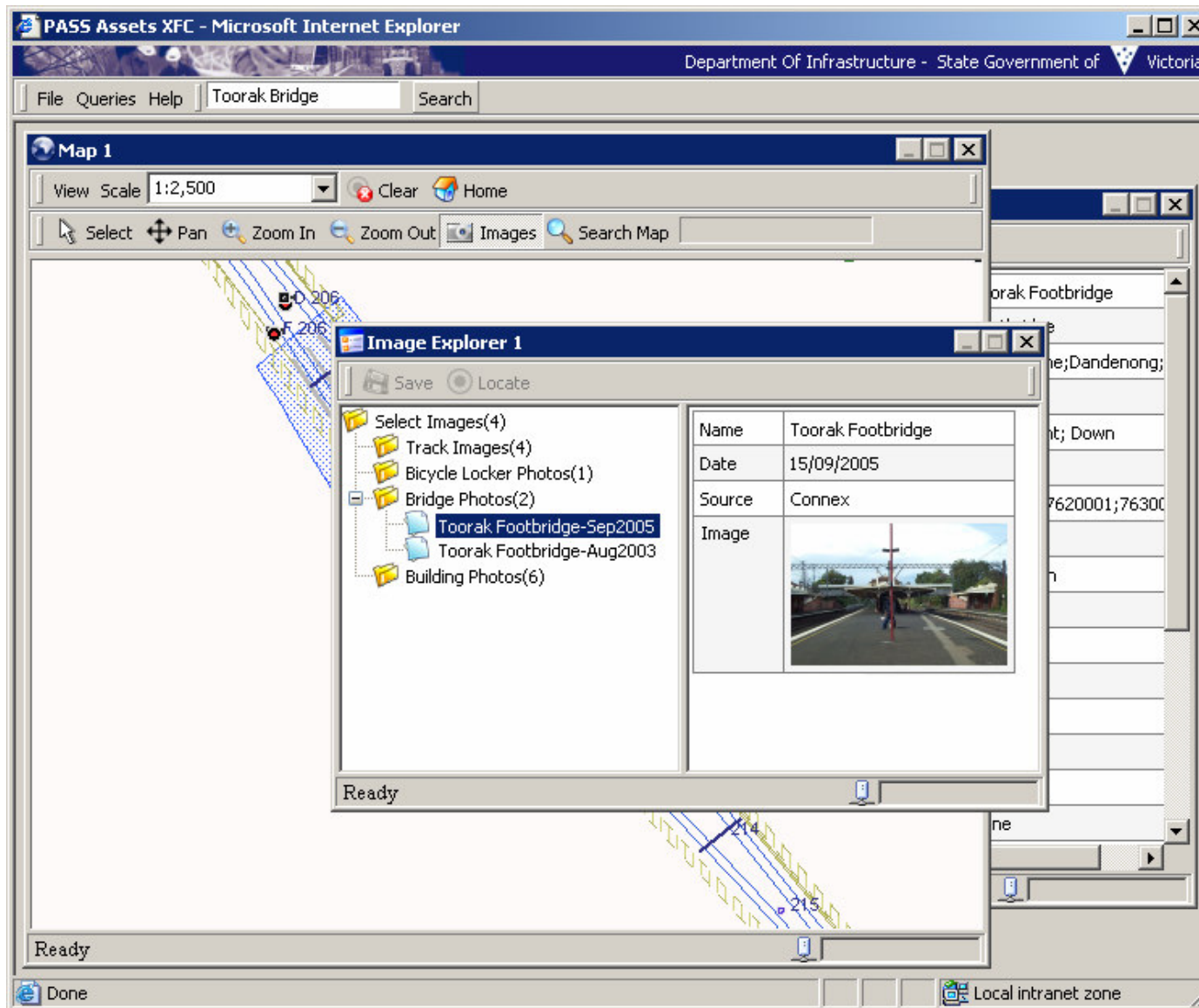
Search "Toorak Bridge" (4)

- Overhead Structure(7)
- Tram Pole(4)
- Bridge(8)
 - Toorak Road Bridge
 - Moonga Rd - Toorak
 - Toorak Footbridge**
 - Toorak Rd - South Yarra
 - Malvern Rd
 - Williams Rd
 - Canterbury Rd Footbridge
 - Mathoura Rd - Hawksburn
- Contact Wire(2)

Name	Toorak Footbridge
Purpose	Footbridge
Line/Route Names	Cranbourne;Dandenong;
Kilometrage	7.947
KM Description	Stony Point; Down
Facility Name	Toorak
Track Section Numbers	7610001;7620001;76300
In Location	Toorak
Up Location	Hawksburn
Down Location	Armadale
Area	132.0
Length	5.73
Width	33.0
Maximum Flood Height	NA
Position	OVER 2BG
Restrictions	None

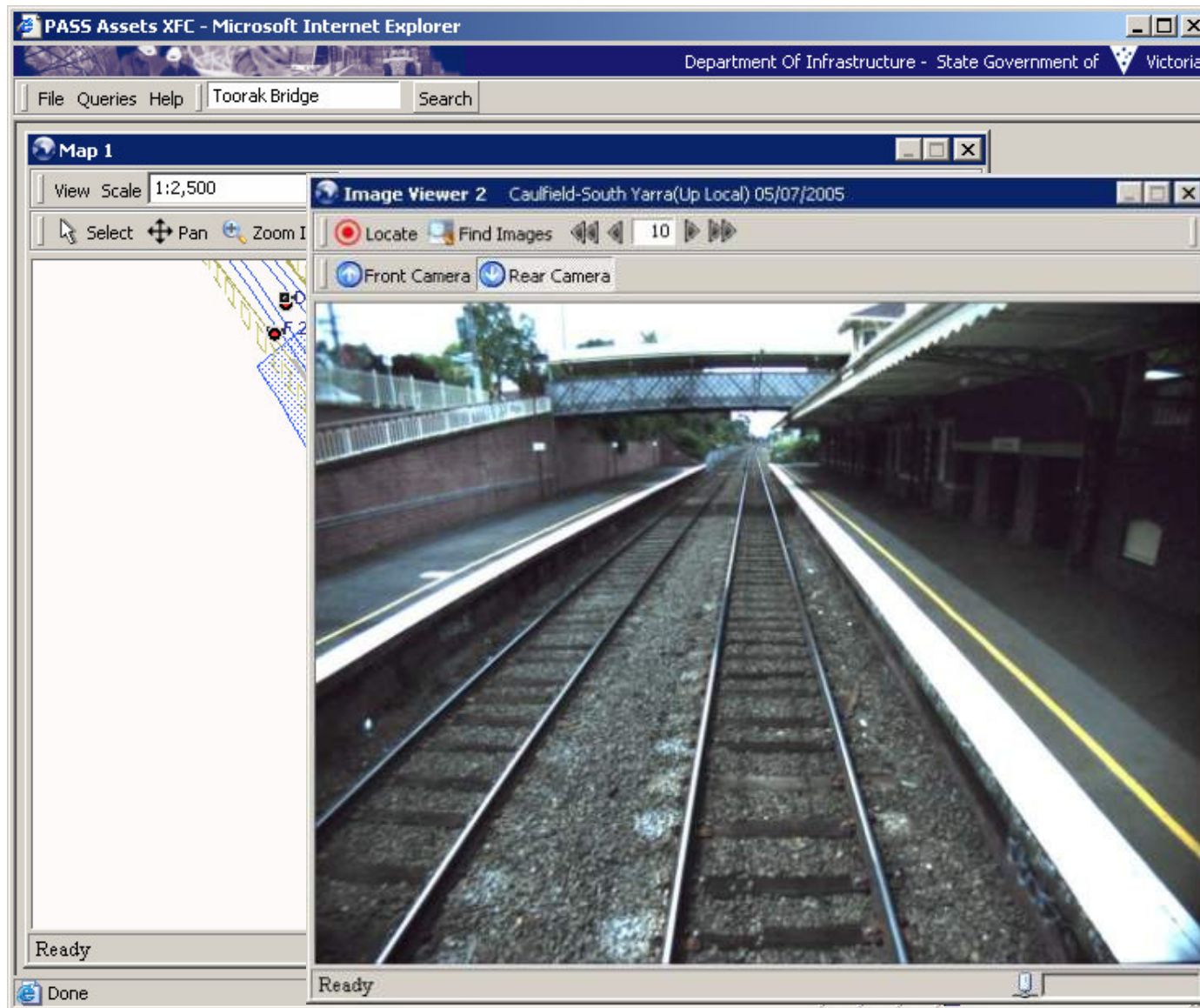
- Web Client
- Windows like application
- Move / Resize
- Zoom In / Out
- View Backdrops
- Select
- Text Search

PASS Assets – Web Client



- Web Client
- Windows like application
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- Images

PASS Assets – Web Client



- Web Client
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- Select
- Text Search
- Images

Information Portal

- Integrate with external systems
e.g. VicTrack's Drawing Management System (DMS)

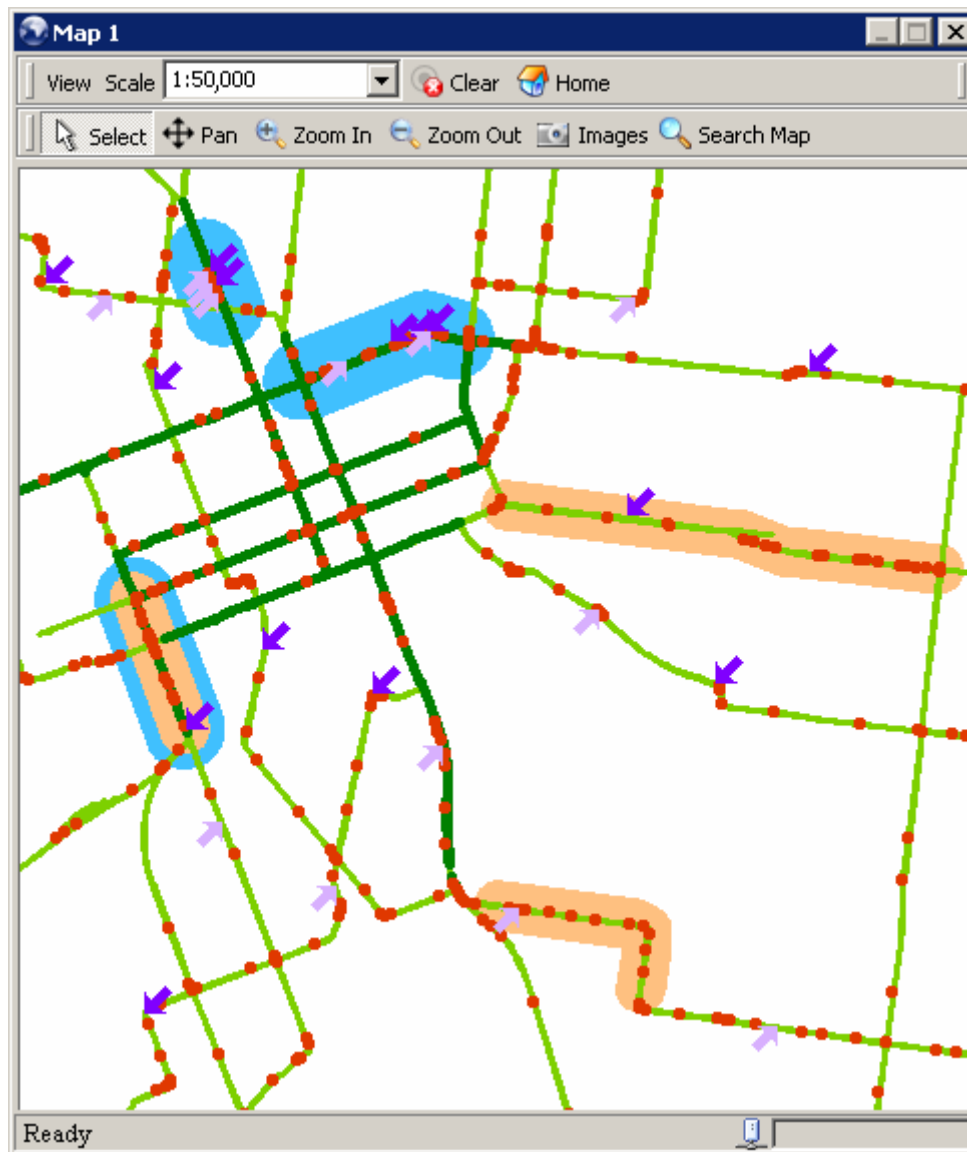
The screenshot displays a GIS application interface with three main components:

- Map 1:** A map window showing a network of cables and nodes. The map includes labels for "Moolimont" and "Richmond". The scale is set to 1:2,500. The status bar at the bottom left indicates "Ready".
- Enter Network Password:** A dialog box for authentication. It contains the following fields:
 - Site: dms.victrack.com.au
 - Realm: dms.victrack.com.au
 - User Name: dms-user
 - Password: (masked with asterisks)
 - Save this password in your password listButtons for "OK" and "Cancel" are at the bottom right.
- Results Explorer 1:** A panel showing a tree view of drawing files. The selected drawing is "Cable Plan 111 & 111B". A table to the right provides details for this drawing:

Title	Cable Plan 111 & 111b
Discipline	Electrical
Scale	1:2,000
Doc. No.	RMD_E0003
Revision	-A
Date	29/06/2005
Link	VicTrack DMS

The status bar at the bottom left indicates "Ready".

Synergy of multiple datasets

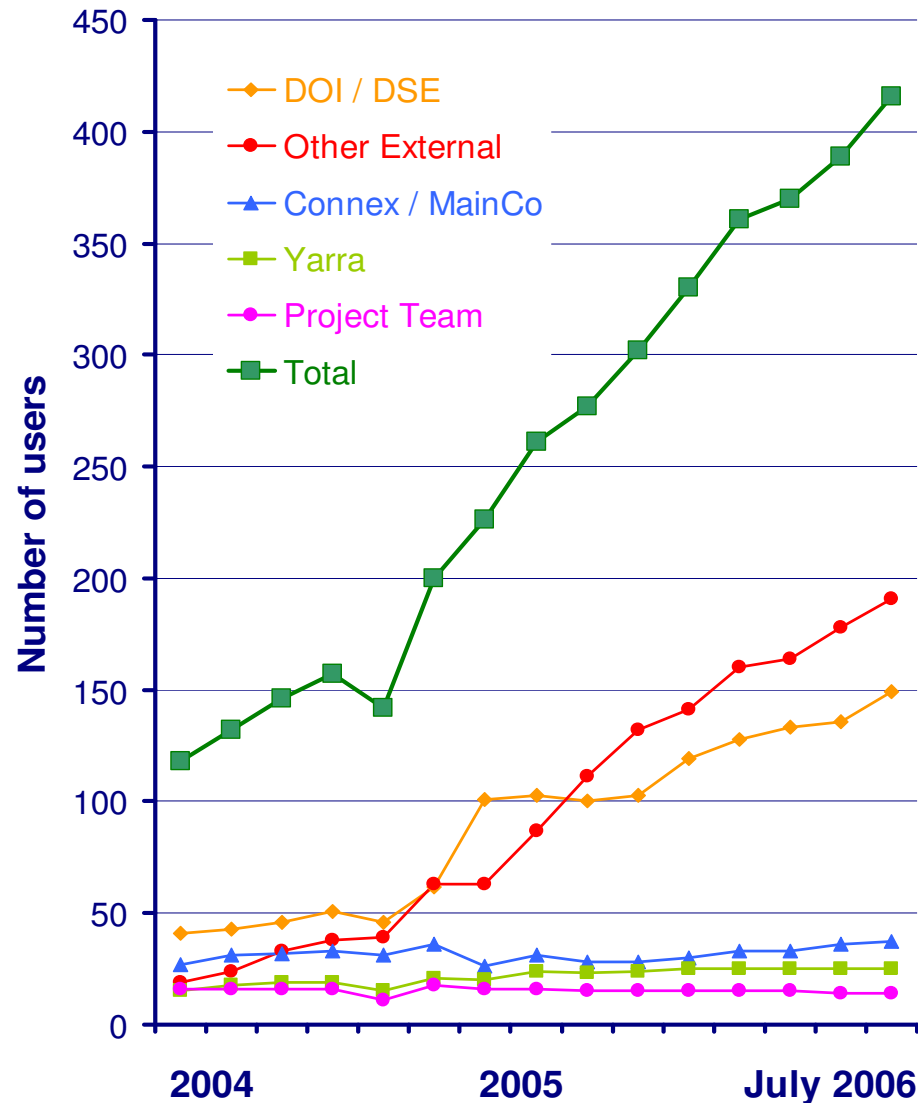


Identify most beneficial areas for Tram Track renewal

- Medium Use Track
- High Use Track
- TRQ Fault
- Maintenance Fix Broken Rail
- Tram Derailment Incident
- DOI Track Replacement
- Franchisee Track Work Plan

User Base

- Originally designed for 5 Users
- DOI and external users
 - Franchisees
i.e. Yarra Trams
 - Other Gov. Orgs.
i.e. Vic Roads
 - Engineering Companies
i.e. SKM
- Now 420+ registered users



Re-architecture Aims

- Identify and fix performance bottlenecks
e.g. removing non-spatial functions from the GIS engine
- Construct reusable core services
e.g. mapping, imagery
- Scale up to many concurrent users
- Reduce vendor lock in
- Provide functionally rich user experience
e.g. multiple map windows
- Provide open interfaces to external systems

Solution

Original Architecture

- Smallworld HCF (HTML Client Framework)
- J2EE Application Server (Simple XML Transformation)
- Smallworld SIAS

Re-architecture

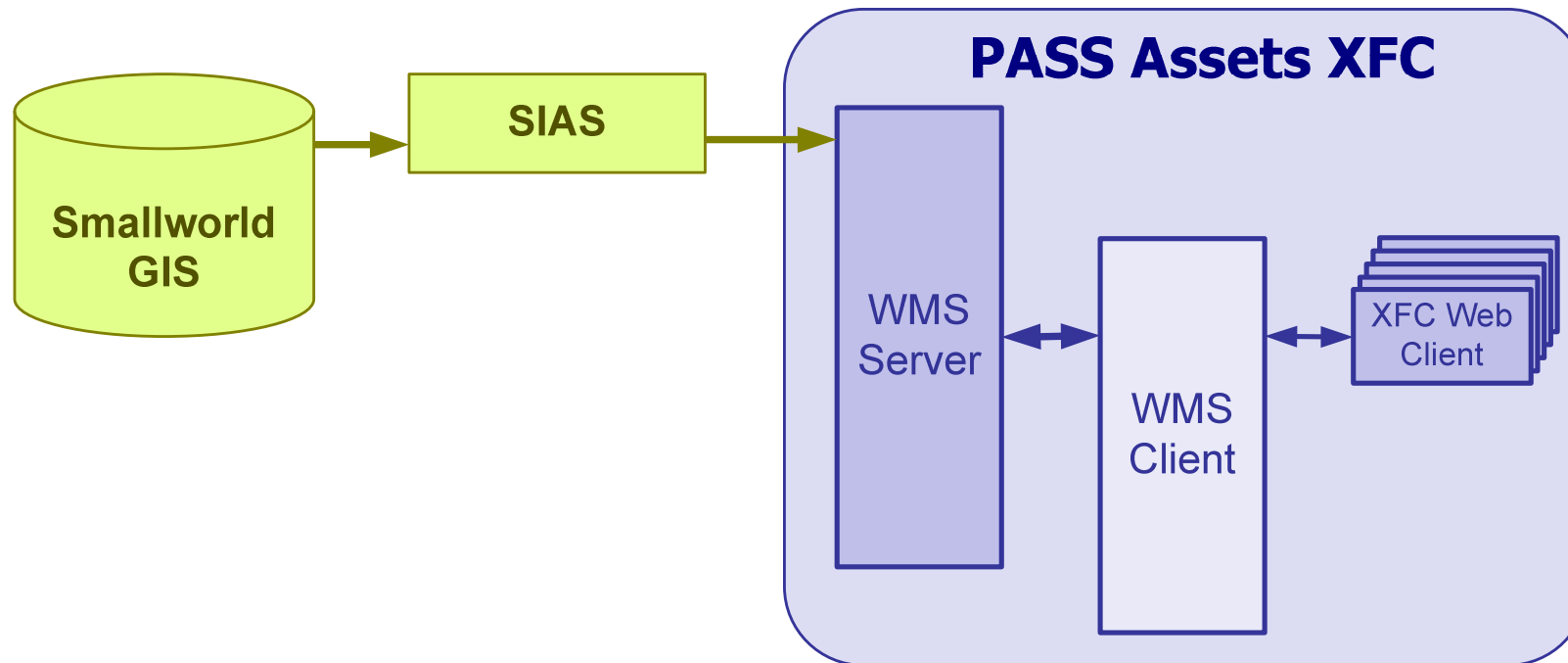
- Ajax/JavaScript Custom Client
- J2EE Application Server (Centralised Business Logic)

- Smallworld SIAS
- Microsoft SQL Server

OR

- Oracle 10g

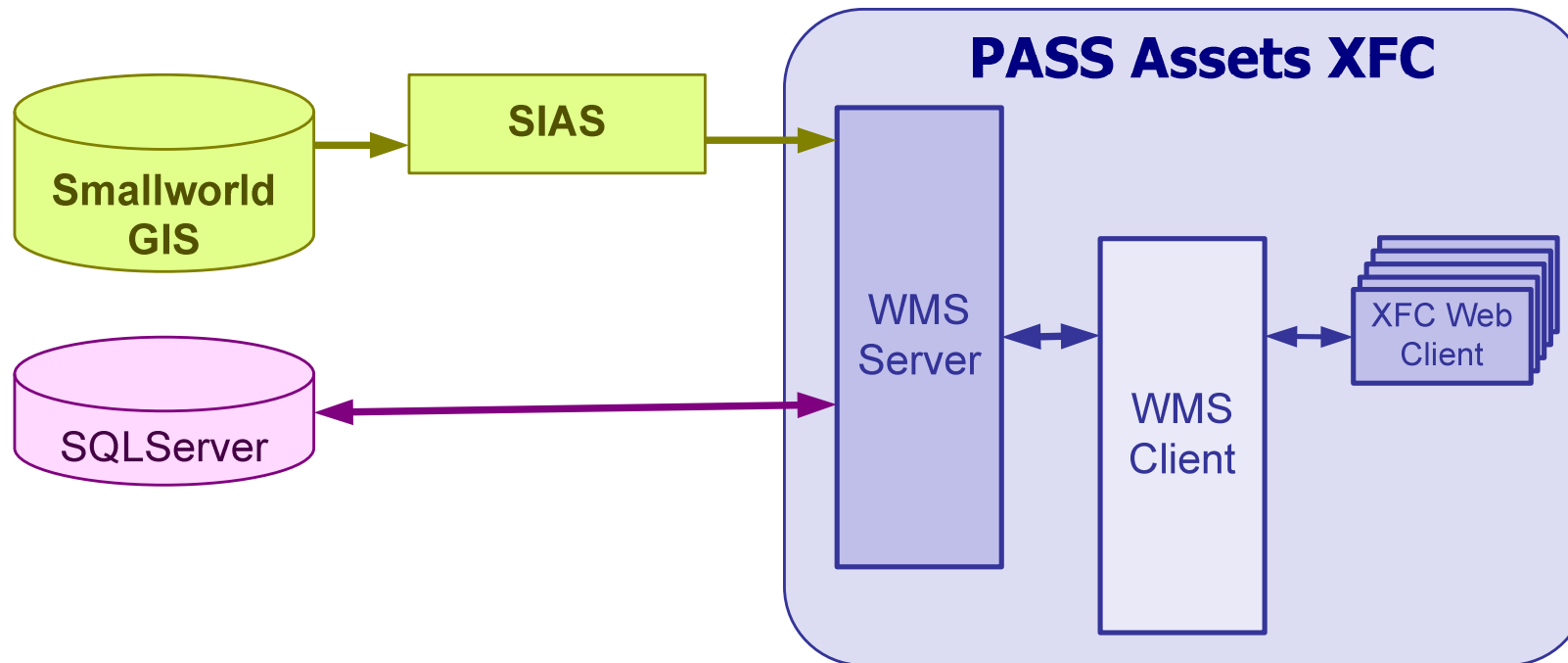
PASS Assets System Architecture



PASS Assets XFC System

- Versatile Design (**WMS** Open Standard)
- eXtremely Fast Client (**XFC**) – AJAX GUI + Advanced Map Caching

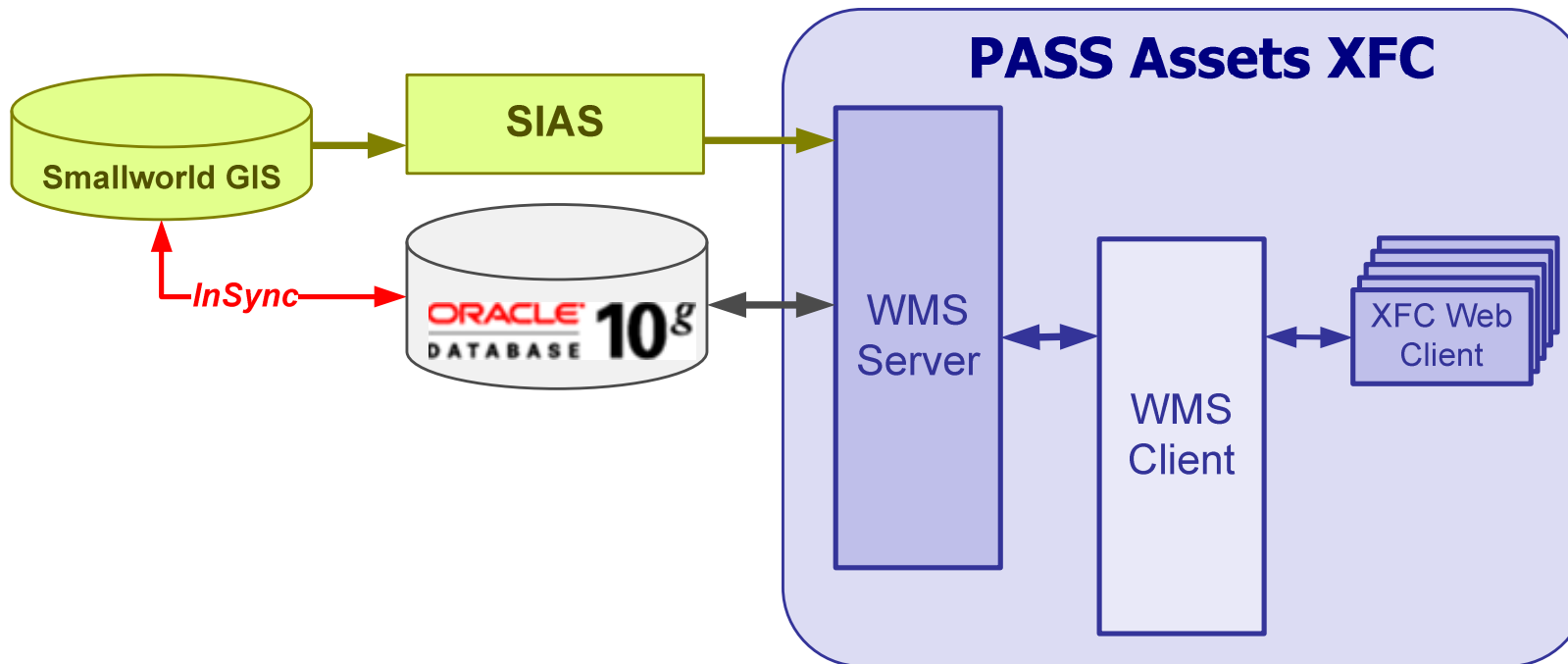
PASS Assets System Architecture



PASS Assets XFC System

- Versatile Design (**WMS** Open Standard)
- eXtremely Fast Client (**XFC**) – AJAX GUI + Advanced Map Caching
- Smallworld Internet Application Server (SIAS) performance & scalability issues
- **May 2006** - Attribute retrieval work-around (MS-SQL)

PASS Assets System Architecture

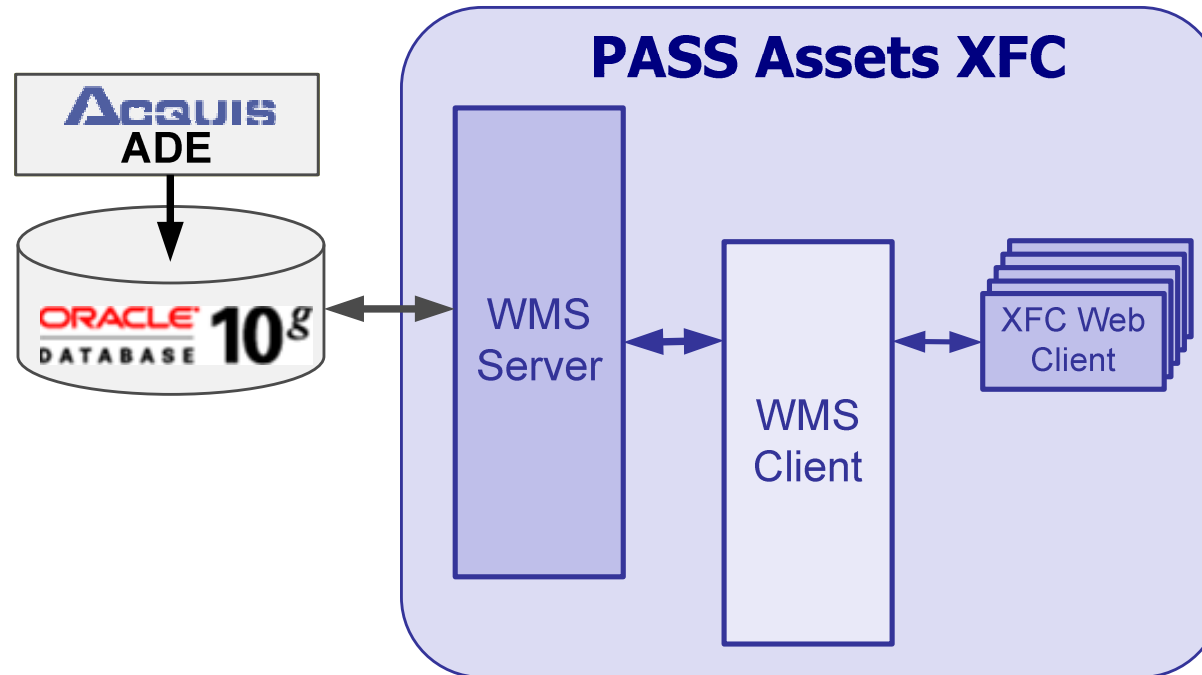


Trial use of Oracle10g **August 2006**

- No Oracle history, no in-house support
- Smallworld and Oracle Spatial support by *we-do-IT.com*
- Proof of concept within days
- Proved PASS Assets capability to serve layers from both SIAS (Raster) and from Oracle10g
- Very encouraging performance increase indicators

PASS Assets System Architecture

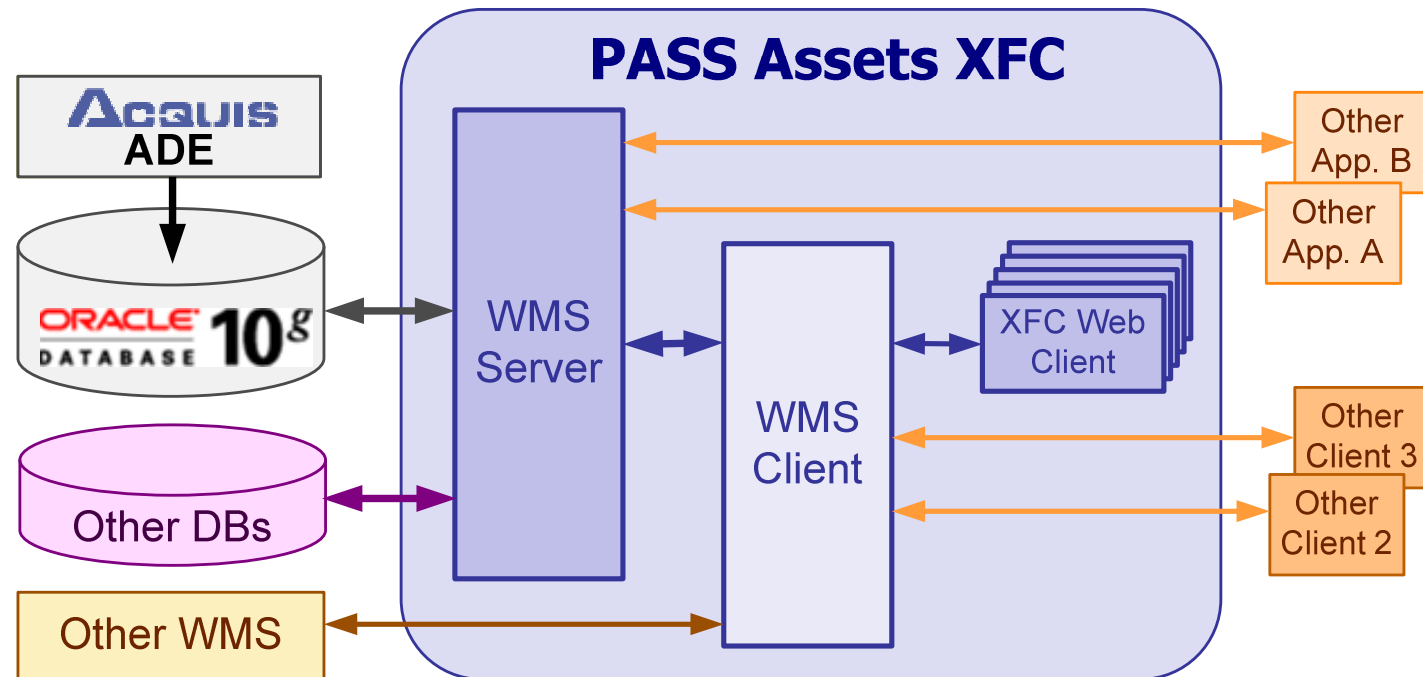
- Topology Editing
- Version Management
- Connected / Disconnected Editing



Next Step *September 2006*

- Quantify encouraging performance indicators from trial
- Evaluate alternative "back-office GIS" function, i.e. full topology/version management environment ACQUIS/ADE
- Explore Legacy system redundancies
- Explore wider business integration potential e.g. mobile asset inspections and remote/detached editing

PASS Assets System Architecture



PASS Assets flexibility for the future

- Link to other databases, such as Safety Incident system
- Utilise existing Web Mapping Servers for non-core data
- Investigate different client types, i.e. PDA
- Provide WMS services to other application, e.g. the Metropolitan Train Control Centre