



# The Value of an Oracle Spatially Enabled Enterprise Database

Paul Dunne  
Department of Agriculture and Food  
Forest Service  
Ireland



# Our Mission Statement



*Our mission is to lead to the sustainable development of a competitive, consumer-focused agri-food sector and contribute to a vibrant rural economy and society.*



## Enterprise - Business Level



- The Department of Agriculture and Food (DAF) is responsible for the development and implementation of over 250 national and European Union (EU) schemes
- Total expenditure of €3.4billion (\$4.2 billion) per year.
- Funded by the National Exchequer and by the EU.
- The Irish accredited EU Paying Agency (requires adherence to very strict audit requirements)
- Over 4,500 staff. Mixture of Technical, Administrative and Specialist Staff (e.g. Veterinarians, Scientists, Foresters etc.).
- Located in 5 major HQ centres and 27 smaller Offices.



## Enterprise – Technical Level



- Objective is a single, consolidated view of Customer, Land and Animal data across Department of Agriculture and Food (DAF)
- Majority of corporate applications now integrated on the Oracle, Unix, J2EE platform
- some legacy IBM mainframe apps & ERP's (SAP, Peoplesoft) also
- Development Environment – Oracle JDeveloper, Oracle 10g Application Server and Oracle 8i database spatial edition
- Running on HP SAN (18+terabytes) and Alpha servers
- iMAP, first integrated spatial application built in 2001
- Customer and Spatial data infrastructure now being leveraged for major new developments in EU Single Farm Payment and Forest Service.



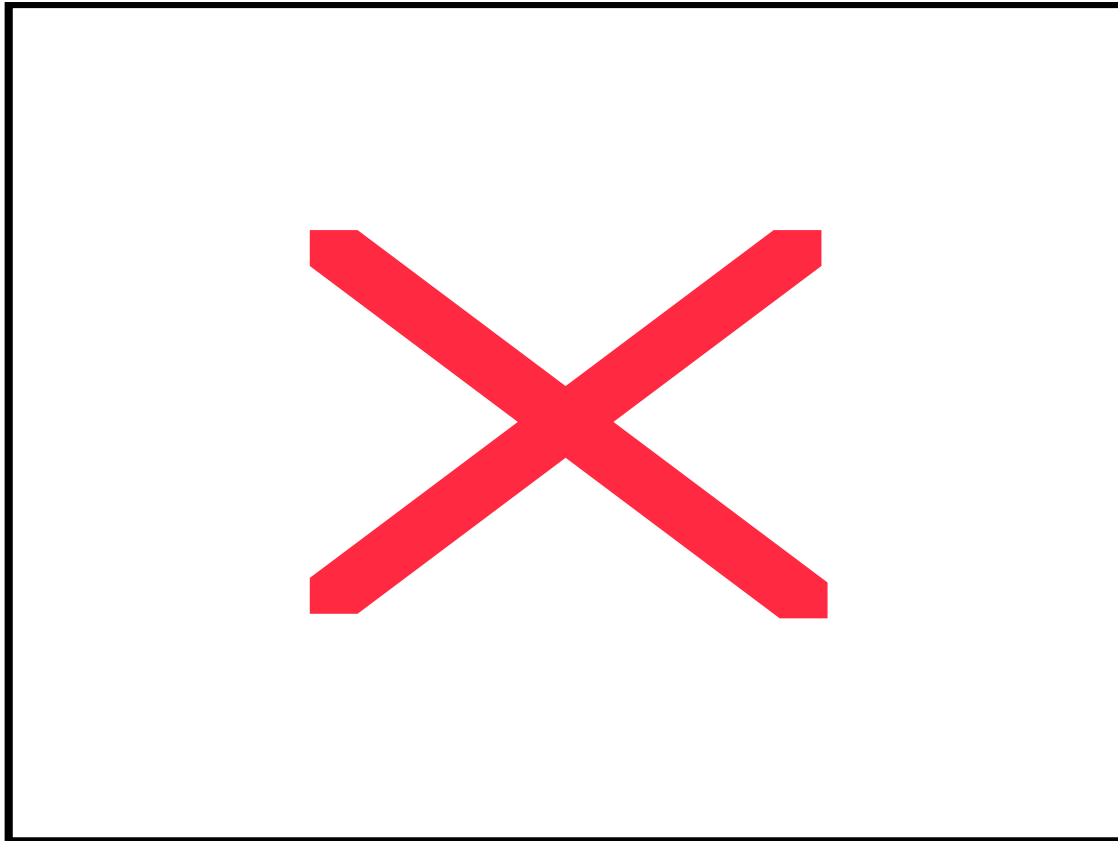
# Forest Sector



- Forestry Accounts for 10% of land usage in Ireland
- Government Policy to increase to 17% by 2030
- Afforestation Programme of grants and premiums
- Area based payments
- Funded by National Exchequer and European Union
- Expenditure of €100m pa and increasing



# Old Forestry System



# New Online Mapping and Plot Management System



The screenshot shows the DAF - Forest Service web application interface. The browser window title is "DAF - Forest Service - Microsoft Internet Explorer". The page header includes the logo of "THE DEPARTMENT OF AGRICULTURE & FOOD AN BOINN TALMHAIOCHTA ACUS SIA" and a "Welcome Forest Service User" message. The interface is divided into several sections:

- Navigation:** Includes a "Navigate" section with various map navigation icons and a search bar.
- Layer Control:** A list of layers with checkboxes, including "Color Ortho - 2001", "O.S. Discovery 1:50", "O.S. Raster 1:2500", "Parcels", "Townlands", "Deds", "Counties", "DoEHLG", and "Architecture Rural". An "Update" button is located below the list.
- Map:** A central map area showing a landscape with various colored overlays and labels like "026", "002", and "006". A scale bar at the bottom indicates "400000 millimeters".
- Search/Location:** A section titled "Enter map Co-Ords" with options to "Locate by one of the search types below":
  - County:** A dropdown menu labeled "County\_Select".
  - DED:** A dropdown menu labeled "DED\_Select".
  - Townland:** A "List" button and an input field.
  - Contract Number:** An input field.
  - Co-ordinates:** Input fields for "X" and "Y" (both set to "0").
  - OS Map Number:** An input field.
- Contract Details:** A table at the bottom left showing:

Contract Details	
Contract Number	CN12345
Total GPC Area (h)	58.8
Total Species Area (h)	56.8



# Mapping Search Functionality



DAF - Forest Service - Microsoft Internet Explorer

File Edit View Favorites Tools Help

THE DEPARTMENT OF AGRICULTURE & FOOD  
AN BOINN TALMHAÍOCHTA ACUS ÉIA

Welcome Forest Service User

logout espatial

DAF - Forest Service

Navigate

Layer Control

[ID] Source Name

- Color Ortho - 2001
- O.S. Discovery 1:50
- O.S. Raster 1:2500
- Parcels
- Townlands
- Deds
- Counties
- DoEHLG
- Architecture Rural

Update

Contract Details

Contract Number	CN12345
Total GPC Area (h)	58.8
Total Species Area (h)	56.8

400000 millimeters

Enter map Co-Ords

Locate by one of the search types below:

County: County\_Select

DED: DED\_Select

Townland: List

Contract Number:

Co-ordinates: X 0 Y 0

OS Map Number:



# Redlining Functionality



THE DEPARTMENT OF AGRICULTURE & FOOD  
AN tOIDEANNAIRIACHTA AGAS AEA

Welcome Forest Service User [logout](#) POWERED BY espatial

### DAF - Forest Service

**Navigate**

**Layer Control**

[ID]	Source Name
<input checked="" type="checkbox"/>	Color Ortho - 2001
<input type="checkbox"/>	O.S. Discovery 1:50
<input type="checkbox"/>	O.S. Raster 1:2500
<input checked="" type="checkbox"/>	Parcels
<input checked="" type="checkbox"/>	Townlands
<input type="checkbox"/>	Deds
<input checked="" type="checkbox"/>	Counties
<input type="checkbox"/>	DoEHLG
<input type="checkbox"/>	Architecture Rural
<input type="checkbox"/>	National Parks

Coordinates X: 293628 Y: 303460 Scale: 1:1797

Calculate Distance & Area:

Turn on 'Clickable FIPS'

**Contracts:**

Contract Number	Applicant Name	Planting Date	Townland Name	County Name	Claimed Area	Locate Map
-----------------	----------------	---------------	---------------	-------------	--------------	------------

**Enter map Co-Ords**

Locate by one of the search types below:

**County:** MONAGHAN

**DED:** DED\_Select

**Townland:**  BALLAKELLY

List Contracts

**Contract Number:**

**Co-ordinates:** X  Y

**OS Map Number:**

**OS National Grid Number:**



# OS Discovery Layer



DAF - Forest Service - Microsoft Internet Explorer

File Edit View Favorites Tools Help

THE DEPARTMENT OF AGRICULTURE & FOOD  
AN tSionn Talmaireadóchtá, Aodis Éire

Welcome Forest Service User

logout spatial

DAF - Forest Service

Navigate

Layer Control

[ID] Source Name

- Color Ortho - 2001
- O.S. Discovery 1:50
- O.S. Raster 1:2500
- Parcels
- Townlands
- Deds
- Counties
- DeEHLG
- Architecture Rural

Update

Contract Details

Contract Number CN12345

Total GPC Area (h) 58.8

Total Species Area (h) 56.8

Total Exclusion Area (h) 2.0

Castlewally

Donore

70

800000 millimeters

208000 Y: 240000  
Scale: 1:2420

Highlight Selected Assign Polygon Remove Polygon Add Hole

Select	Plot No.	GPC Area (h)	GPC	Land Type Use	Species Area (h)	Species	Mixture Type	Exclusion Area (h)	Plot Type
<input type="checkbox"/>	PL001	9.0	4	MHF	7.5	DF	P	0.7	Forestry
<input type="checkbox"/>					0.8	AdB	P		Forestry
<input type="checkbox"/>	PL002	4.4	4	BHF	3.2	LEC	I	0.2	Forestry
<input type="checkbox"/>				CHF	1.0	MC	P		Forestry
<input type="checkbox"/>	PL003	12.0	4	MHF	11.3	ALD	P	0.7	Forestry
<input type="checkbox"/>	PL004	10.5	4	BCF	10.2	LC	R	0.3	Forestry
<input type="checkbox"/>	PL005	9.3	4	CHF	9.2	MC	I	0.1	Forestry
<input type="checkbox"/>	PL006	3.4	4	BHF	3.4	ASH	P	0	Forestry

Remarks: 15 metre buffer zone will apply to aquatic zone A-B and C-D [more...](#)

Done Unknown Zone (Mixed)



# Heritage Layers



DAF - Forest Service - Microsoft Internet Explorer

File Edit View Favorites Tools Help

THE DEPARTMENT OF AGRICULTURE & FOOD  
AN BORD TALLMHAIRÍOCHTA ADUS BIA

Welcome Forest Service User

logout POWERED BY spatial

DAF - Forest Service

Navigate

Layer Control

[ID] Source Name

- Color Ortho - 2001
- O.S. Discovery 1:50
- O.S. Raster 1:2500
- Parcels
- Townlands
- Peds
- Counties
- DeEHUG
- Architecture Rural

Update

Contract Details

Contract Number CN12345

Total GPC Area (h) 58.8

Total Species Area (h) 56.8

Total Exclusion Area (h) 2.0

X: 208000 Y: 240000  
Scale: 1:2420

Highlight Selected Assign Polygon Remove Polygon Add Hole

Select	Plot No.	GPC Area (h)	GPC	Land Type Use	Species Area (h)	Species	Mixture Type	Exclusion Area (h)	Plot Type
<input type="checkbox"/>	PL001	9.0	4	MHF	7.5	DF	P	0.7	Forestry
<input type="checkbox"/>					0.8	AdB	P		Forestry
<input type="checkbox"/>	PL002	4.4	4	BHF	3.2	LEC	I	0.2	Forestry
<input type="checkbox"/>				CHF	1.0	MC	P		Forestry
<input type="checkbox"/>	PL003	12.0	4	MHF	11.3	ALD	P	0.7	Forestry
<input type="checkbox"/>	PL004	10.5	4	BCF	10.2	LC	R	0.3	Forestry
<input type="checkbox"/>	PL005	9.3	4	CHF	9.2	MC	I	0.1	Forestry
<input type="checkbox"/>	PL006	3.4	4	BHF	3.4	ASH	P	0	Forestry

Remarks: 15 metre buffer zone will apply to aquatic zone A-B and C-D [more...](#)

Done Unknown Zone (Mixed)



# FIMS Deployment Architecture



**Web**

**Intranet**



*Firewall*

**iSMART 4.3.5:**

Web Only, No Applet

**App Server – OC4J 10g**



**SQL**

**Oracle 8.1.7 Database**



## Impact of using iSmart web technology



- based on standard technology:
  - no large file downloads to the customers or staff members PC,
  - no specialist GIS software required on user PC, and
  - no downloading of an applet;
- Customers can mark up or “redline” their individual land parcels and plots directly to the database while viewing and overlaying existing layers from DAF’s central spatial database;
- The accuracy of each forestry planting application is greatly enhanced and document turn-around between the customer and the Forest Service is greatly reduced;
- Customers can verify the application they have made, by printing the “redlined” map work over an orthophotography layer and the existing DAF land parcel layer;
- Standard Internet browsing bandwidth is adequate for full functionality.



## Corporate benefits of new Integrated System



- Real-time access to Enterprise Customer and Spatial databases
- Accuracy and reliability of data, adheres to EU audit requirements
- Addresses critical failings of old system and avoids duplicate payments
- Strict Environmental considerations
- Integrated, internet enabled, spatial and business logic application
- Better Management Information, National Forestry Inventory
- Carbon Credits



# Customer Benefits



- Reduces Costs
- Speed of processing
- Initial spatial view without committing to planting
- No specialist client-side GIS software required
- No downloading of an applet
- Full access to all spatial data required
- Better information for industry going forward



# Conclusion



- Major Leap Forward from Paper-Based System
- WIN WIN situation, Customers and Government
- eGovernment solution with exciting future
- System demonstration available afterwards.
- **Thank you for listening.**
- *Slan go Foill.*

