



# GCP DIVA-GIS + Location Model

## (Task 28-4)

Reinhard Simon and Edwin Rojas

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## General Overview

As part of the GIS part for the GCP platform DIVA-GIS is being upgraded (70%) as reference implementation for the location and environment module. The product includes basic GIS and DIVA-GIS functionality and is available either from CIP or the GCP software site.

### What is DIVA-GIS ?

DIVA-GIS is a free and Open Source geographic information system (GIS) application that is used specially on GIS support for genebank curators & breeders.

### What is the Location Model Sub-Domain ?

This model specifies entities for managing GIS data types. The responsibilities of this entities are mainly define position for a location like map position (point, line or polygon) or relative position (street address, room or building)

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## Summary Activities 2005 for DIVA-GIS and Location Model

### For DIVA-GIS

- Evaluate and select a GIS Framework to be reused
- uDIG Training – GIS Framework selected for DIVA-GIS (People from IPGRI/INIBAP, IRRI, CIMMYT, NCGR and CIP Staff)
- Migrate DIVA-GIS to Java from Delphi version (70% completed)
- Declare Delphi version and Java version as Open Source Projects
- Publish DIVA-GIS 4,5, and 6 with RC1, RC2, RC3, RC4 and RC5 (Annapurna)
- Documentation: PDF Manual, Flash Videos and a Official CIP web site on [www.diva-gis.com](http://www.diva-gis.com) and for GCP on [cropforge.org](http://cropforge.org)

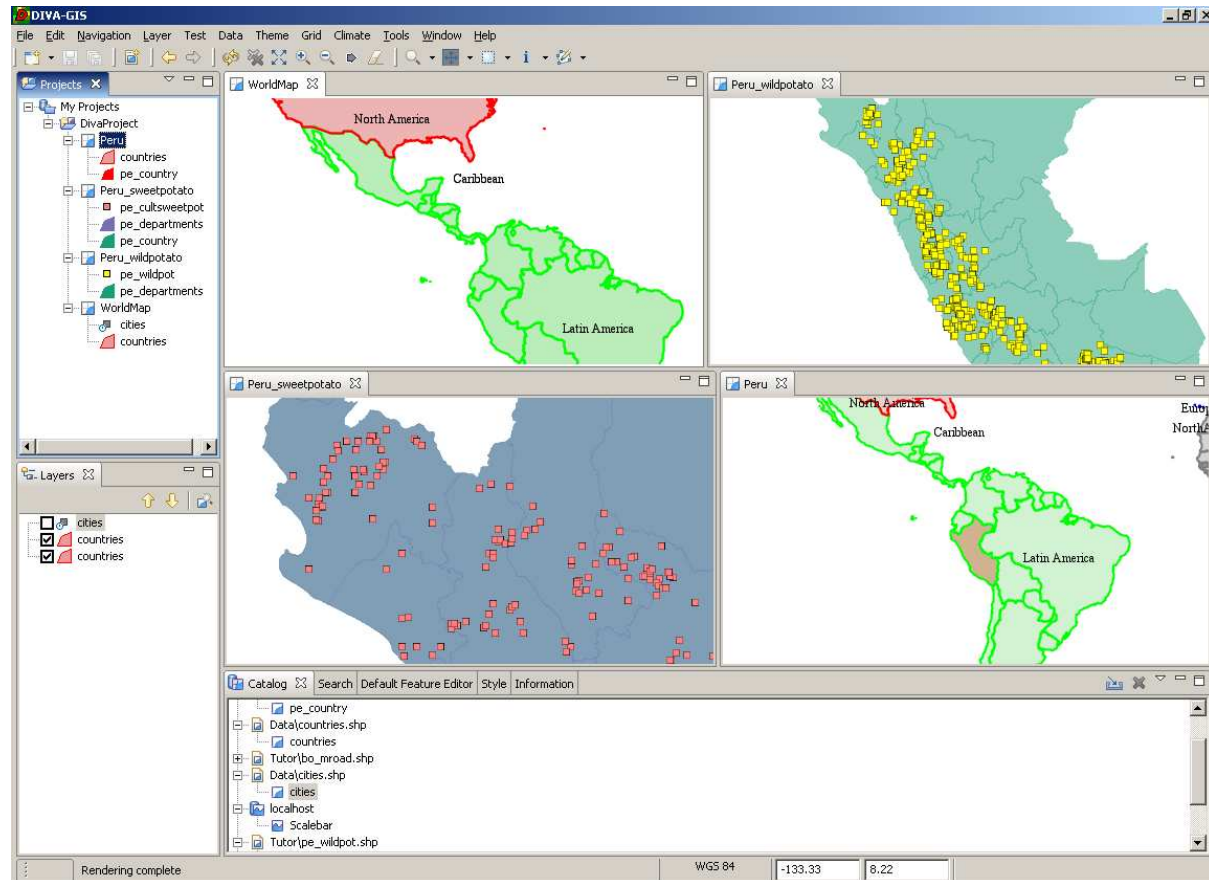
### For Location Model

- Phase I on web site (<http://cropwiki.irri.org/gcp/index.php/Location>), modeled by R.Simon, E.Rojas and I.Mukema
  - Phase II on web site (<http://www.generation.com/models>), modeled by R.Bruskiewich, R.Simon and I.Mukema
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# DIVA-GIS Overview

DIVA-GIS was originally designed to enhance the data quality of accessions in genebank collections by providing and verifying location data (georeferencing) of collection sites.

Mapping and Spatial analysis with DIVA-GIS can also be used to identify geographic areas of interest, for example: highly diverse (environmentally, taxonomically, or genetically), well represented or not in current collections, distributions of species and others.



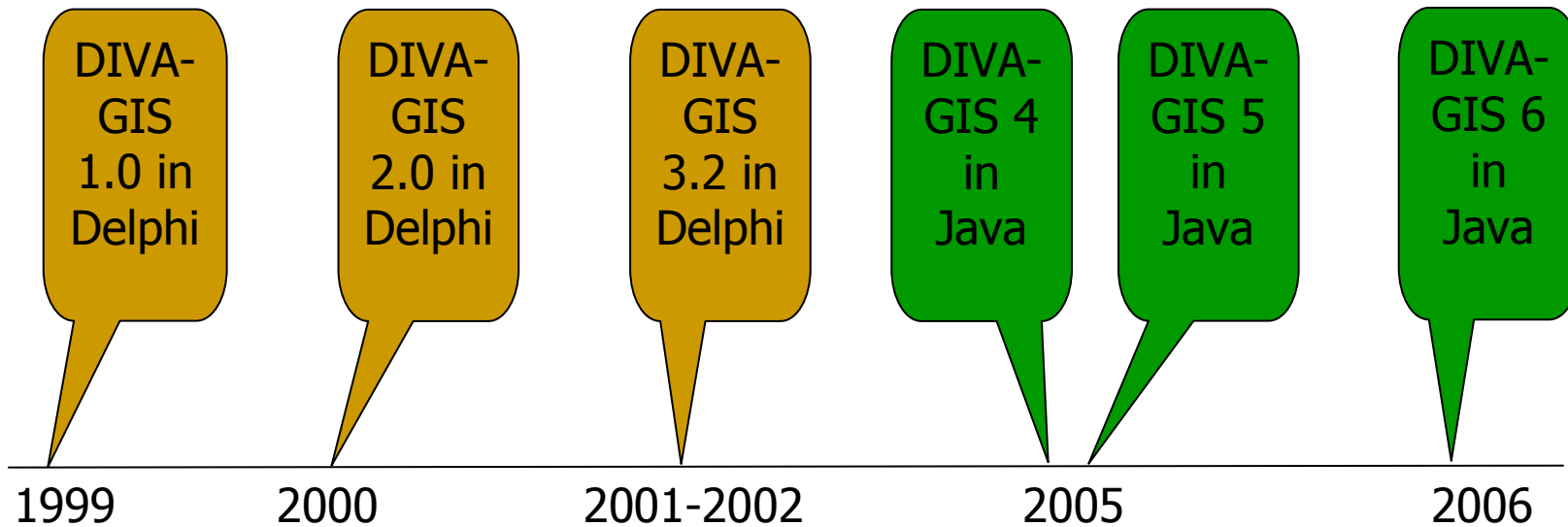
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## DIVA-GIS Team Group

- Who is programming ?  
Magna Schmitt – 100%, Main Developer  
Luis Avila – 30%, Expert in Eclipse RCP  
Juan Carlos – Trainees
  - Who is giving support to programming ?  
Jody Gatner and uDIG staff (by chat from Canada)
  - Who design Architecture, Strategies, Planning Activities ?  
Reinhard Simon, Edwin Rojas
  - Who is transmitting old functionality to new DIVA-GIS Java version ?  
Edwin Rojas
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# DIVA-GIS Historic

**Borland**



# GIS Framework selection process

OpenMap: en el 2003

Deegree: en el 2003 – 2004

Jump: en el 2004

**uDig+Geotools: 2005**

- “Integrated Client”

Ability to directly view WMS

Ability to directly edit WFS

Ability to search catalogues

Ability to integrate standard GIS data

Hides complexity of network access

- “Standard GIS Functionality”

Ability to directly edit GIS data

Ability to connect to PostGIS, Mapserver, GeoServer

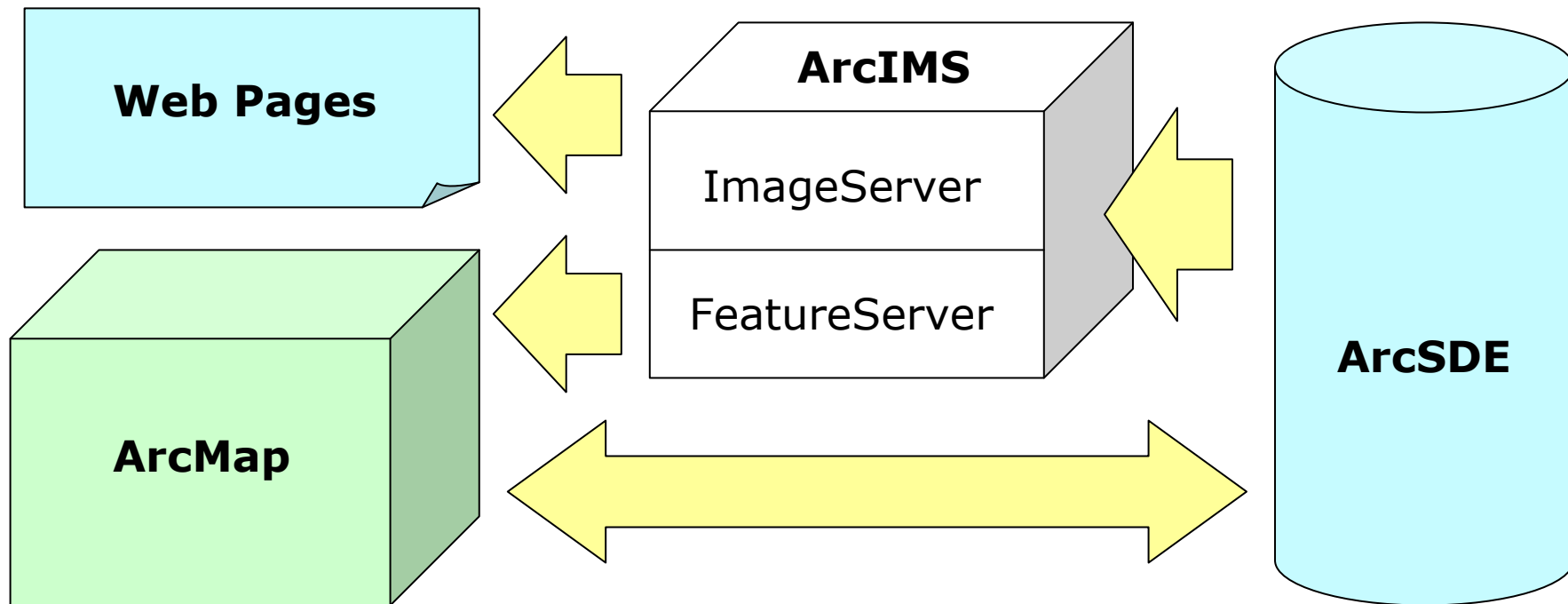
Ability to create paper cartography

Ability to integrate with proprietary infrastructures

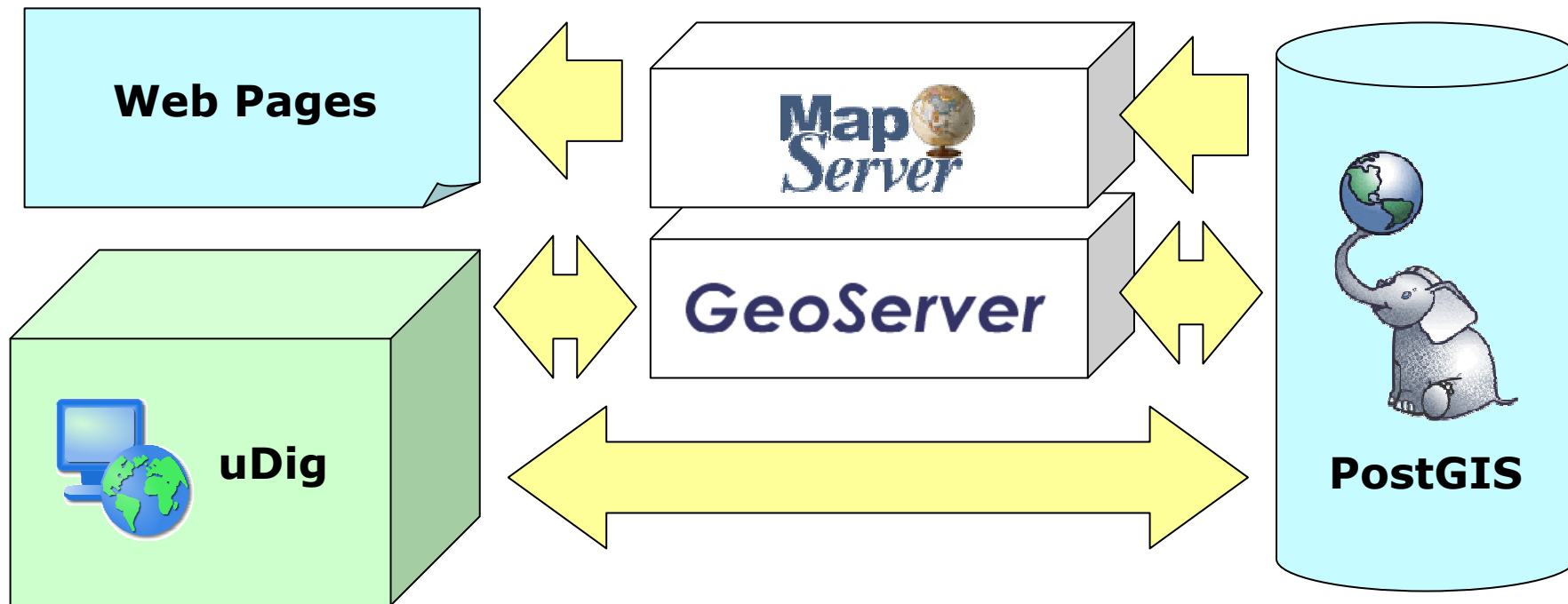
- Facilities for development

DIVA is reusing a uDIG construction to communicate between plug-ins (BlackBoard), [View Eclipse Demo](#)

# ESRI Map Server Storage Architecture, commercial product



# Open Source Map Server Storage Architecture



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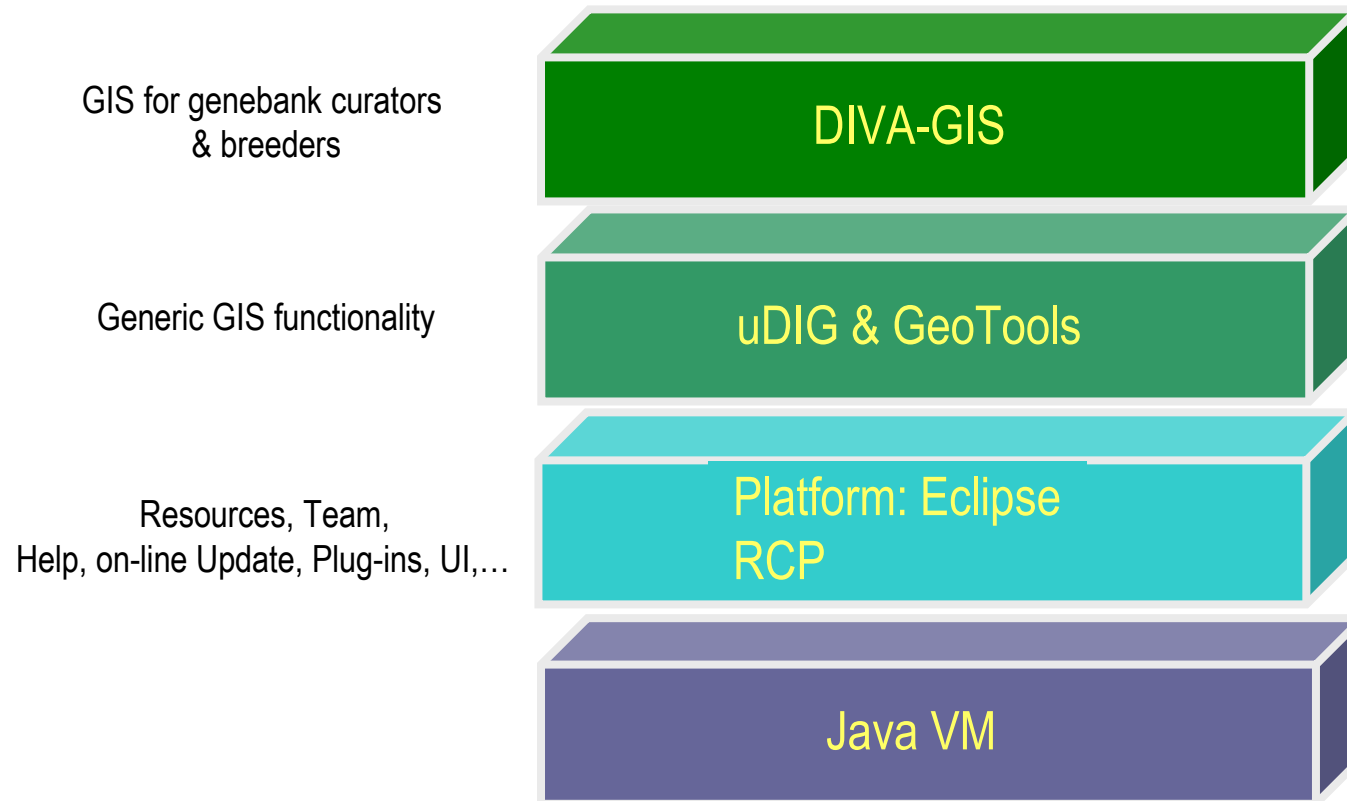
## Demo on-line catalog (WMS)

[videos\\_demo\\_diva\4\\_Video\\_WMS\\_y\\_WFS\Video\\_WMS\\_y\\_WFS.html](#)

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# DIVA-GIS/uDig Architecture

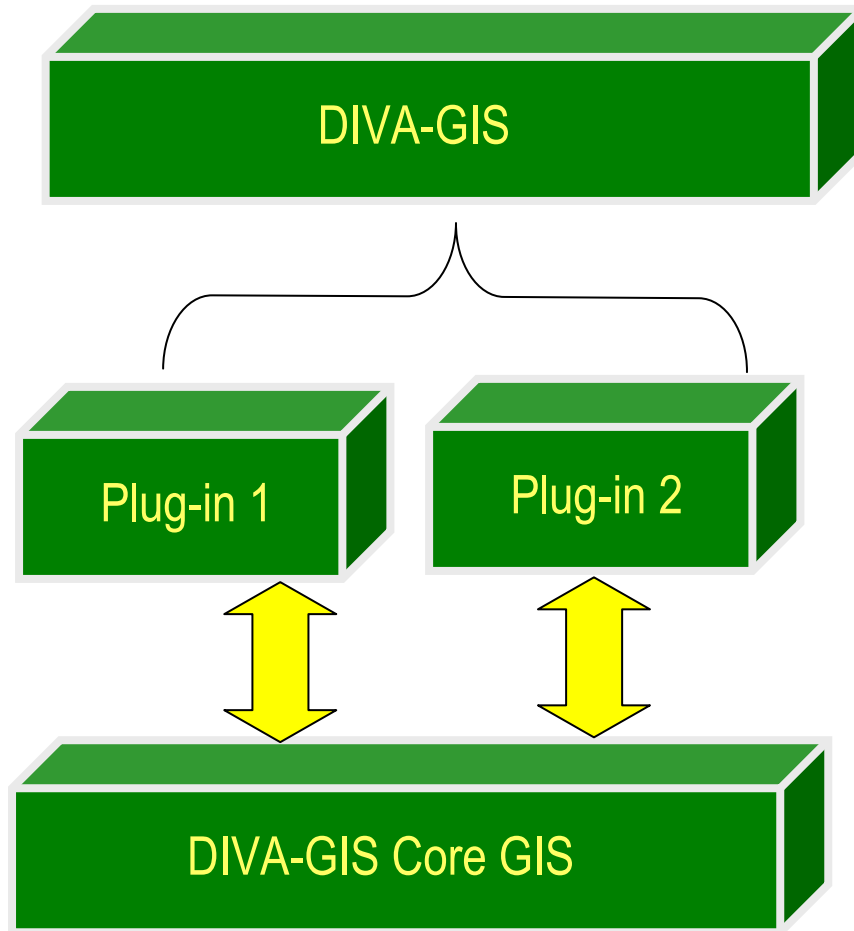


*Modified from Eclipse site*

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# DIVA-GIS Development Strategy, iterative development with Eclipse RCP Update Manager

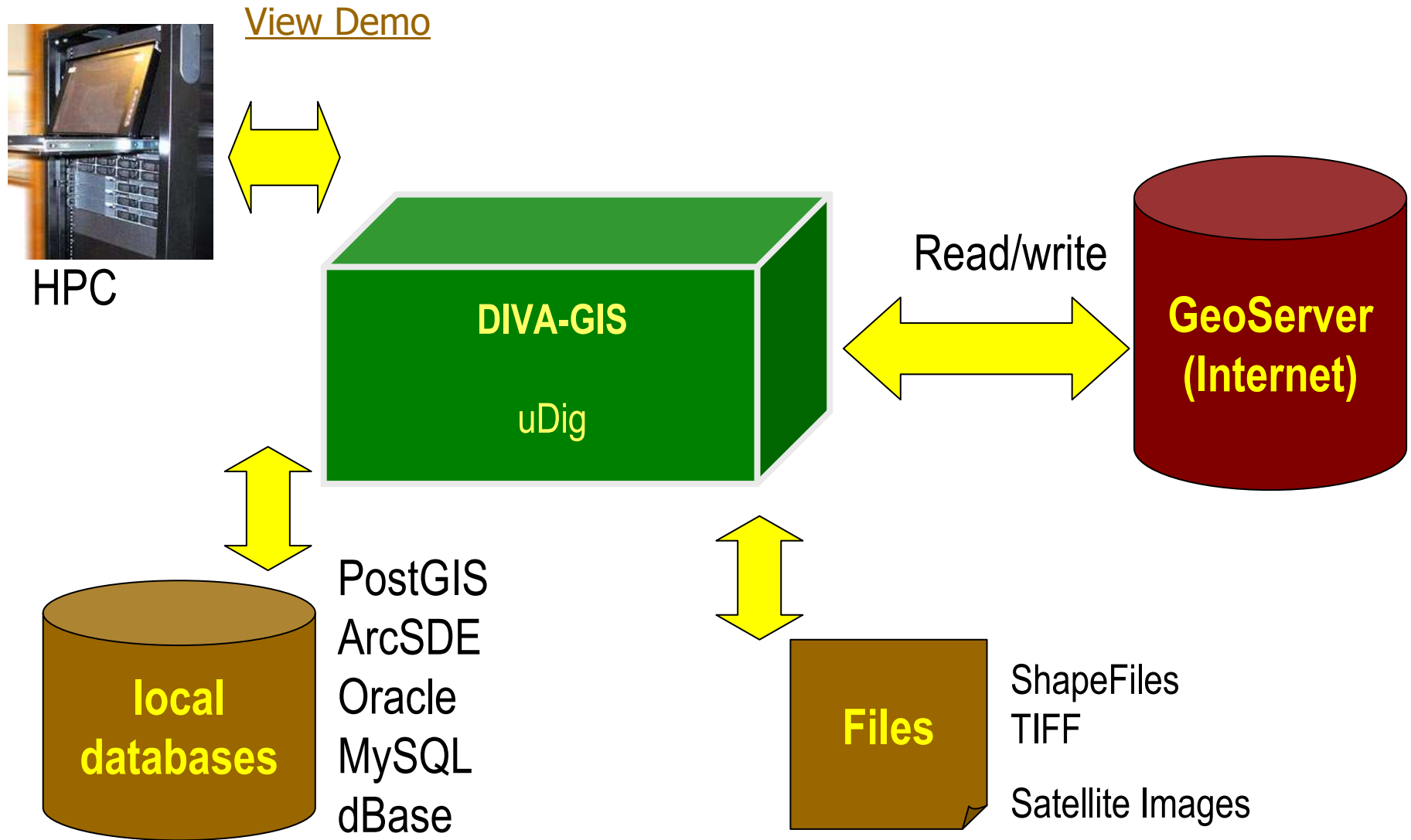


## Benefits of an iterative approach

Compared to the traditional waterfall process, the iterative process has the following advantages:

- Risks are mitigated earlier
  - Change is more manageable
  - Higher level of reuse
  - The project team can learn along the way
  - Better overall quality
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# DIVA-GIS connectivity to a variety data sources



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## Why Eclipse RCP and DIVA-GIS ?

[Why to use EclipseRCP.ppt](#)

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# DIVA-GIS and CVS and SVN

CVS Synchronization I: [View Demo](#)

CVS Synchronization II: [View Demo](#)

2003-2004 DIVA-GIS used CVS

2005-2006 DIVA-GIS use SVN

Why use SVN ? [Why Use Subversion.ppt](#)

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## DIVA-GIS Open Source, where is the code ?

1. In the CVS repository of Cropforge (Private Access = GCP Members)
  2. In the SVN repository of Refractions-uDIG (Private Access = uDIG Staff+ CIP Staff)
  3. In Source Forge web site (Public Access) <http://sourceforge.net/projects/divagis>
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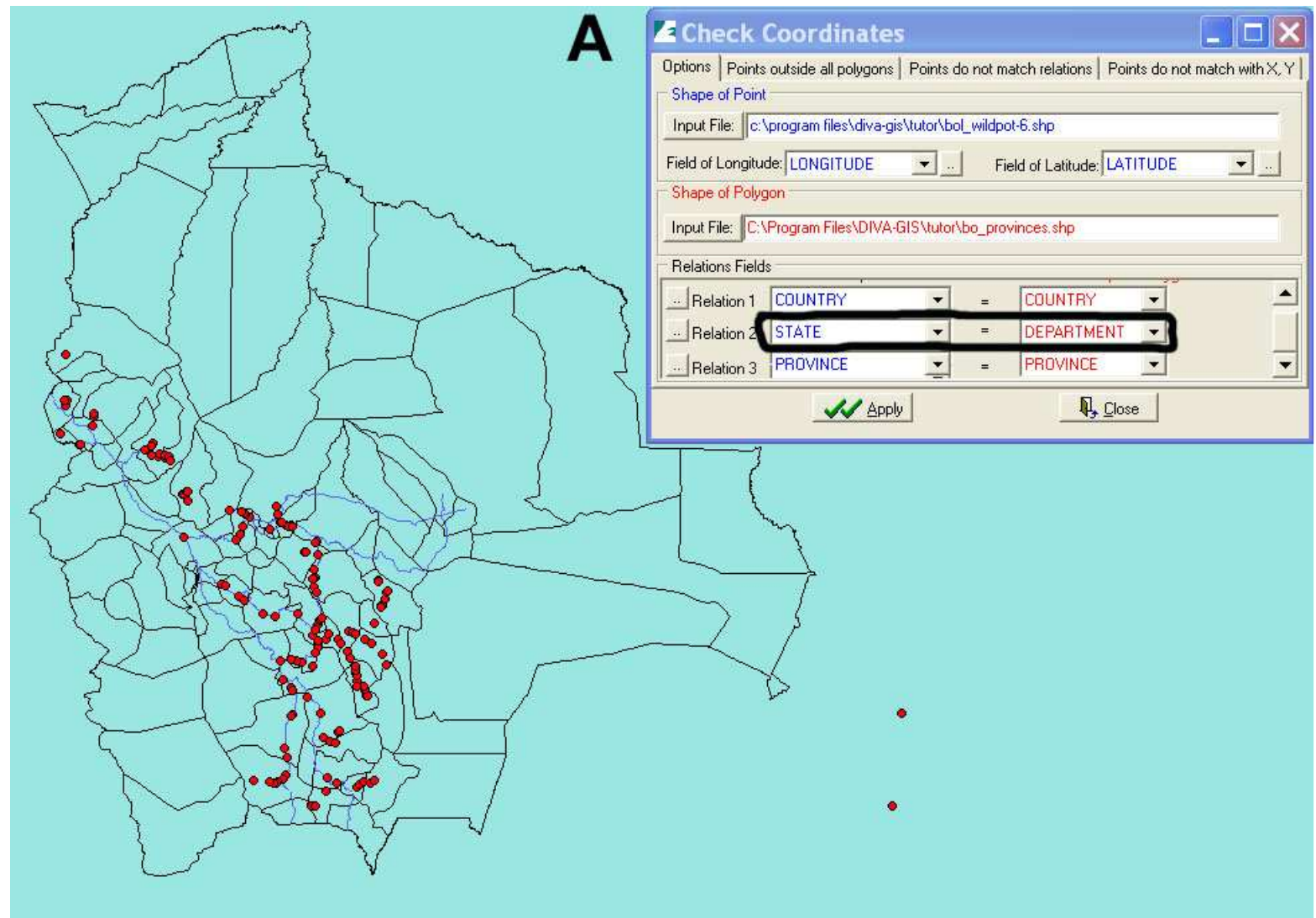
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# Creating Analysis by Extension Points based in DIVA-GIS

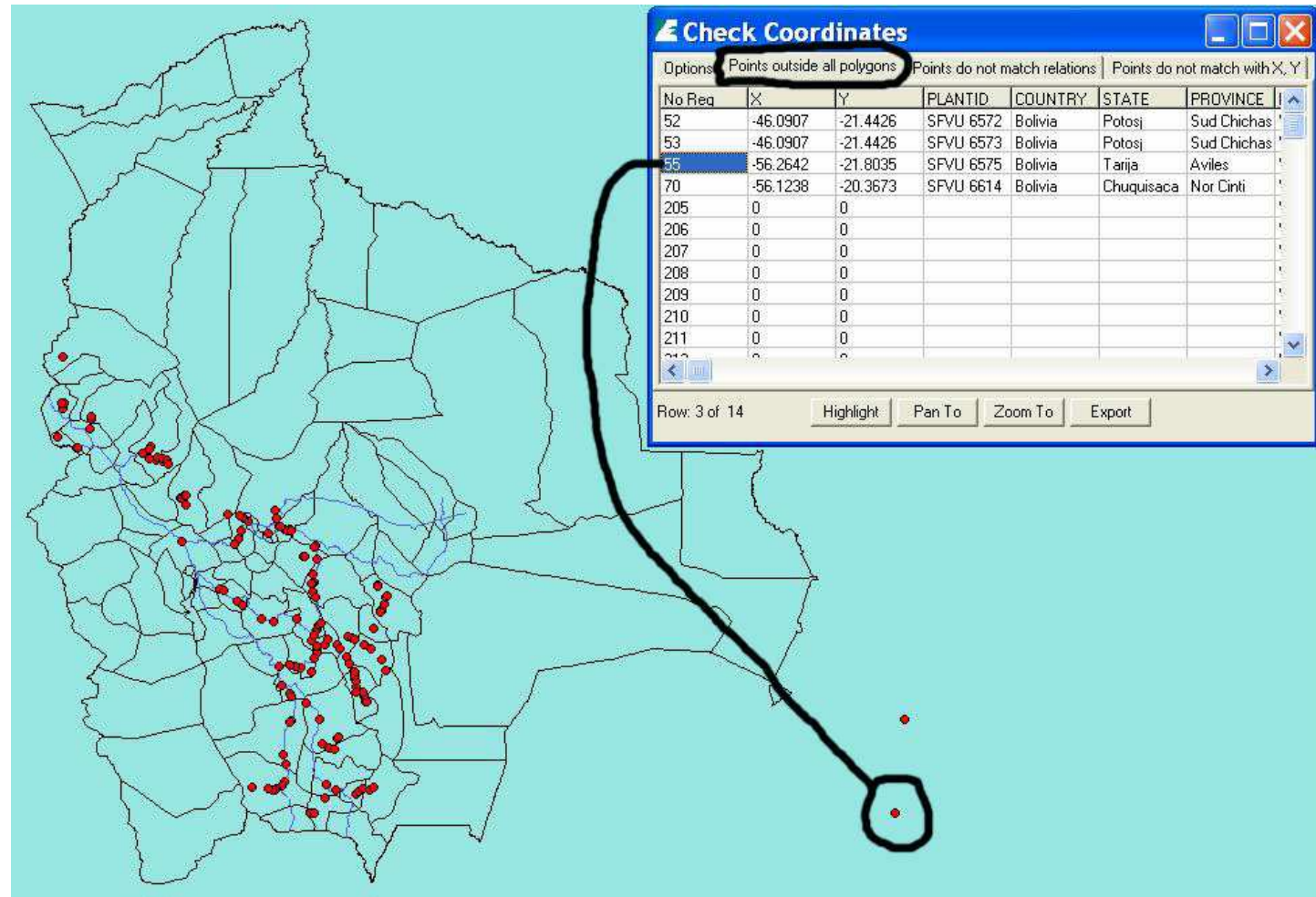
- Word File Tutorial: [TutorialExtentionPoint.doc](#)
- Flash Video Training: [View Video](#)



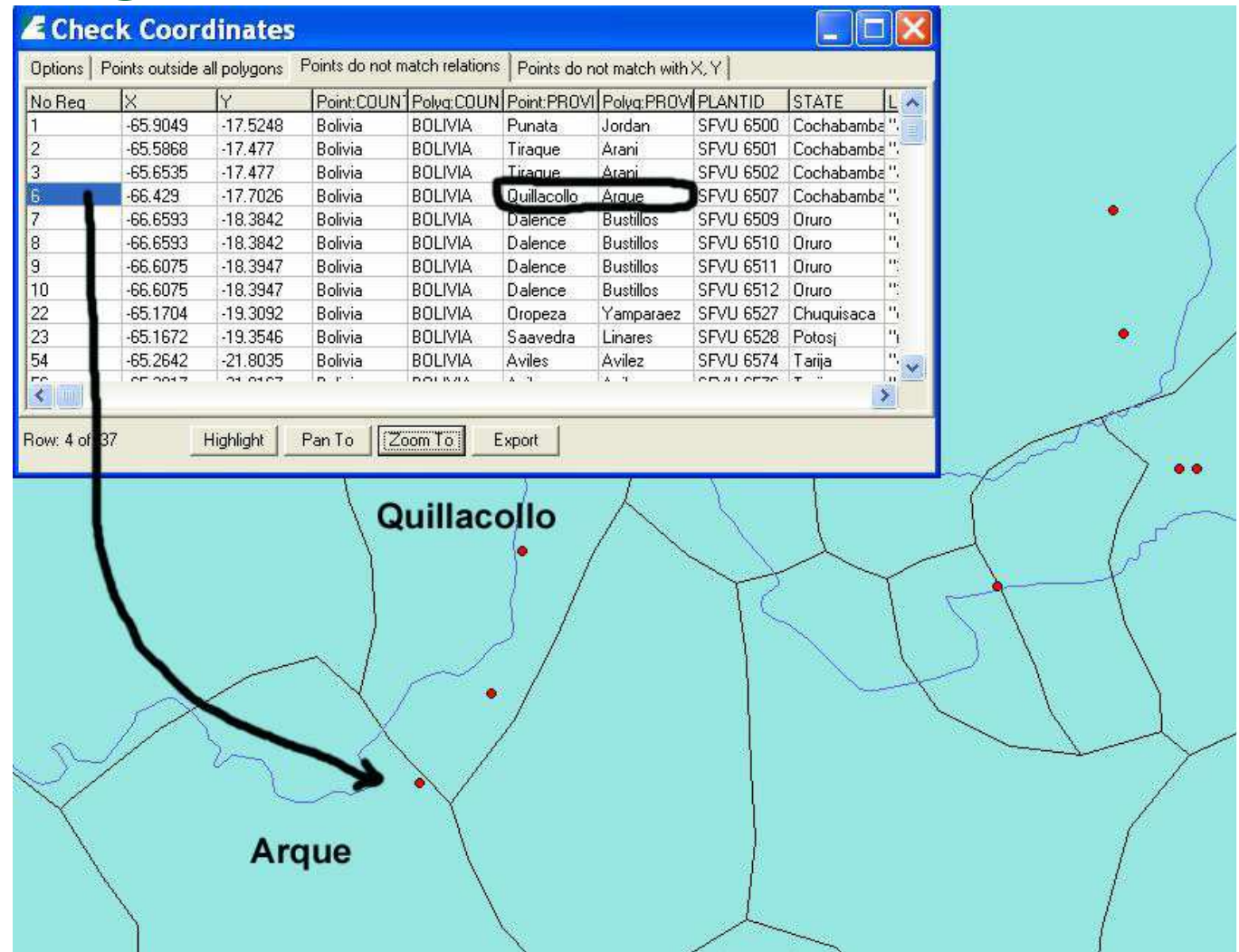
# Diva-GIS Cleaning Geodata– Coordinate Check



# Diva-GIS Cleaning Geodata—Points outside Polygon



# Diva-GIS Cleaning Geodata–Mismatched Provinces



# Diva-GIS Cleaning Geodata—Assign Coordinates

The screenshot displays the 'Assign Coordinates' software interface. The window title is 'Assign Coordinates'. The menu bar includes 'Select Files', 'Select Fields', 'View Input File', 'View Output File', and 'Manual Assignment'. The status bar shows 'Record: 1 of 32' and buttons for 'Details' and 'Highlight'. The main data table is as follows:

LONG	LATI	OBSCODE	DBSTEXT
-76.4	-11.8046	1	Found with distance and direction:
-76.2919	-12.2	1	<b>A</b> Found with distance and direction:
		0	Not Found
		3	<b>B</b> 5 found: 3 equal(s) and 2 similar(s) in locality (-71.9780, -13.5183); (-72.4241, -3.2766);
		3	8 found: 0 equal(s) and 8 similar(s) in locality --- (-72.3500, -13.9833); (-75.4666, -13.63
		0	<b>C</b> Not Found
-65.8414	-21.45	1	Found with distance and direction:
-68.3833	-18.2	2	Similar locality found: ESTANCIA CHUQUILLAMAYA in different ADM1: ORURO and ADM2: SAJAMA

The map below shows the geographical outline of Peru with several red dots indicating specific locations. A black arrow points from the first row of the table to a red dot on the western coast of Peru.

# Diva-GIS Cleaning Geodata—Multiple possibilities

**Assign Coordinates**

Select Files | Select Fields | View Input File | View Output File | Manual Assignment

Draw all points | Clear all points | Assign | Highlight | Record: 1 of 5

ADM1	ADM2	NAME	LAT	LONG
AREQUIPA	CAYLLOMA	CUSCO PUQUIO	-15.1775	-71.7594
CUZCO	QUISPICANCHI	CUSCO	-13.5183	-71.9780
JUNIN	JUNIN	HACIENDA RUC	-11.1052	-75.9030
LORETO	MAYNAS	CUSCO	-3.2766	-72.4241
SAN MARTIN	BELLAVISTA	CUSCO	-7.2583	-76.4766

The screenshot shows the 'Assign Coordinates' window in Diva-GIS. The window title is 'Assign Coordinates'. It has a menu bar with 'Select Files', 'Select Fields', 'View Input File', 'View Output File', and 'Manual Assignment'. Below the menu bar are buttons for 'Draw all points', 'Clear all points', 'Assign', and 'Highlight'. To the right of these buttons is the text 'Record: 1 of 5'. The main area of the window contains a table with the following data:

ADM1	ADM2	NAME	LAT	LONG
AREQUIPA	CAYLLOMA	CUSCO PUQUIO	-15.1775	-71.7594
CUZCO	QUISPICANCHI	CUSCO	-13.5183	-71.9780
JUNIN	JUNIN	HACIENDA RUC	-11.1052	-75.9030
LORETO	MAYNAS	CUSCO	-3.2766	-72.4241
SAN MARTIN	BELLAVISTA	CUSCO	-7.2583	-76.4766

Below the table is a map of Peru. Several red dots are plotted on the map, representing the coordinates from the table. Black arrows point from the first three rows of the table to their corresponding locations on the map.

Extracted from TDWG Lisbon, October 2003

# DIVA-GIS Currently Status

**DIVA-GIS STATUS REPORT**  
**DIVA-GIS 6.0**  
**03/09/2006**

This document is a report to show the current status of the DIVA-GIS migration. It shows the advances and pending modules to finish.

<b>Project Menu</b>			
Print	Done		Assigned to <b>udig</b>
Export Map to Image	Done		Assigned to <b>Luis Avila</b>
Export Project	Done		Assigned to <b>udig</b>
Import Project	Done		Assigned to <b>udig</b>
<b>Data Menu</b>			
Text to DBF	Done		Assigned to <b>Juan Carlos Gonzáles</b>
Assign Coordinates	Done (pending communication with HPC with more parameters)		Assigned to <b>Juan Carlos Gonzáles</b>
Points (DBF) to Shapefile	Done		Assigned to <b>Luis Avila</b>
Text to Shapefile	Done		Assigned to <b>Luis Avila</b>
Check Coordinates	Done		Assigned to <b>Juan Carlos Gonzáles</b>
<b>Describe</b>	Gridfile	Pending 0%	Assigned to <b>Luis Avila</b>
	Shapefile	Pending 0%	Assigned to <b>Luis Avila</b>
Selection to new Shapefile	Done		Assigned to <b>Luis Avila</b>
<b>Export GRIDFILE</b>	To text file	Pending 0%	Assigned to <b>Juan Carlos Gonzáles</b>
	Multiple Gridfiles to Text File	Pending	
	To IDRISI	Pending	
	To BIL	Pending 0%	Assigned to <b>Juan Carlos Gonzáles</b>
	To Shapefile	Pending	
	To ArcGis Binary	Pending 0%	Assigned to <b>Luis Avila</b>
	To ArcGis Ascii	Pending 0%	Assigned to <b>Luis Avila</b>
<b>Import GRIDFILE</b>	To Grass	Pending 0%	Assigned to <b>Juan Carlos Gonzáles</b>
	From IDRISI	Pending 0%	Assigned to <b>Luis Avila</b>
	From ArcGis Binary	Pending 0%	Assigned to

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# GIS Support to Research and Agricultors

Participative GIS with Poor Farmest : [View PPT](#)  
For Molecular Markers: [View PPT](#)  
Using Grids for Genebank Collections: [View PPT](#)

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# DIVA-GIS Demos

1. [DIVA intro I](#)
  2. [Intro II and Check Coordinates](#)
  3. [Intro III Select Records Climate](#)
  4. [Checking Connection Configurations](#)
  5. [Import ICIS Data](#)
  6. [Analysis Richness](#)
  7. [Export Features](#)
  8. [Change Styles and Reprojections](#)
  9. [Structure output to Shapefile](#)
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# Location Model Phase I

- [LocationPhaseI\LE\\_Users.JPG](#)
  - [LocationPhaseI\LE\\_DomainUseCases.jpg](#)
  - [LocationPhaseI\LE\\_DomainModeling.jpg](#)
  - [LocationPhaseI\LE\\_UseCases.jpg](#)
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## Location Model Phase II

1. [LocationPhaseII\location1.jpg](#)
  2. [LocationPhaseII\location2.jpg](#)
  3. [LocationPhaseII\location3.jpg](#)
  4. [LocationPhaseII\location4.jpg](#)
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## Location Model Phase III, pending

- Integrate Phase II + Pantheon + uDIG Framework

