



Map Africa 2006

Open Source and Interoperability

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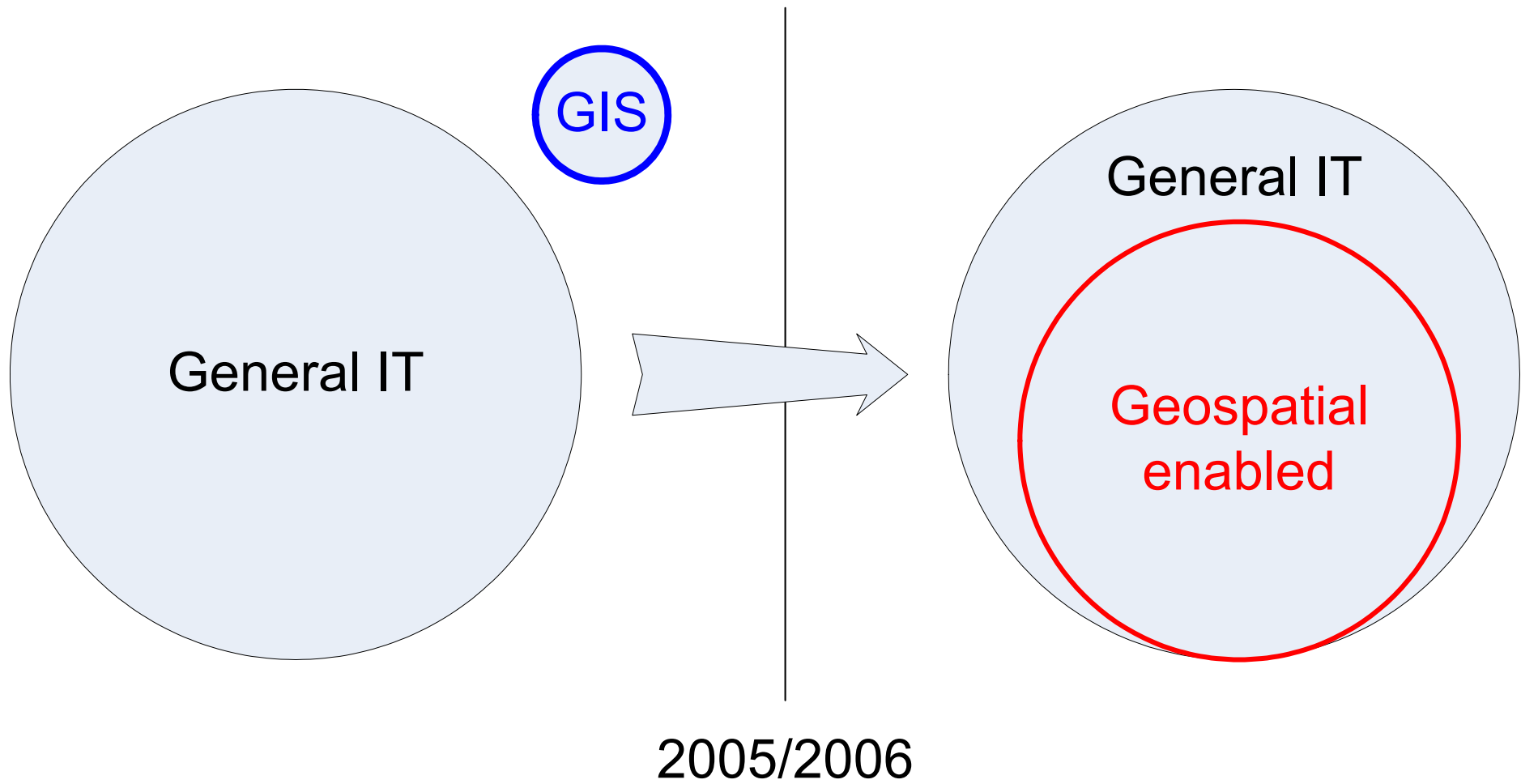
Overview

- **2005/2006 is an *inflection point* for geospatial**
- **The Web, Interoperability, and Open standards**
- **Open Source Geospatial**
- **Capacity building: Open Source and developing a spatial IT ecosystem for Africa**



2005/2006 is an inflection point for geospatial

2005/2006 is an *inflection point*



2005/2006 is an *inflection point*

Mobile computing is pervasive

- 100 cities worldwide will be totally WiFi
- Ex. Taipei, San Francisco, ...
- WiMAX is on the horizon

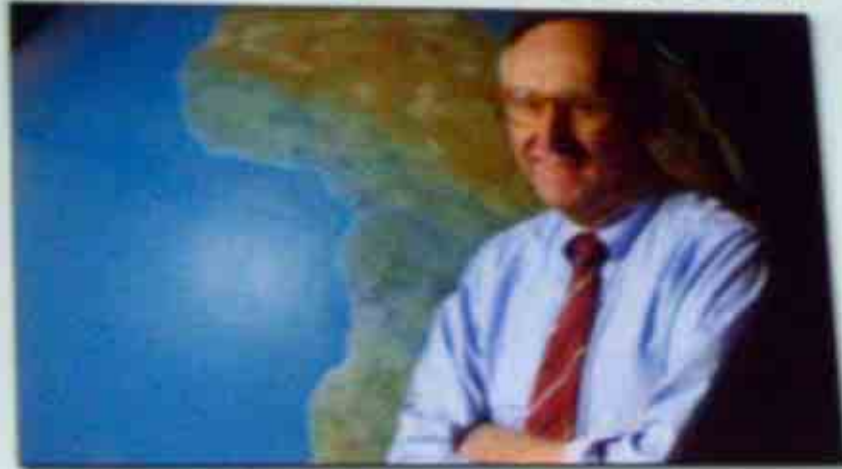


2005/2006 is an *inflection point*

Web 2.0



"Google Earth is just the most fantastic thing I have ever seen"



Jack Dangermond
Founder and President, ESRI

2005/2006 is an *inflection point*

Spatial data is becoming ubiquitous

In the US spatial data collected by Federal Government at taxpayer expense is freely available.

In South Africa digital spatial data is freely available.

- Spatial Data Infrastructure Act

2005/2006 is an *inflection point*

Open source geospatial has matured



**GRASS, MapServer, GeoServer, MapGuide,
...**



Web, Interoperability, and Open standards

Internet as Platform

For internet applications, a single monolithic approach, controlled by a single vendor, is no longer a solution, it's a problem.

Internet-as-platform

- A system without an owner, tied together by a set of open standards

Requires interoperability.

Interoperability Requires IT Standards

W3C

- HTTP, HTML, XML, SVG,...

ISO

- SQL

Standards-based interfaces

- ODBC, JDBC, OLEDB/ADO

Enterprise architecture standards

- J2EE, .Net

Spatial Standards

OGC

- Simple Feature Specification (SFS)
- Geographic Markup Language (GML)
- OGC Web Services
 - Web Mapping Service (WMS)
 - Web Feature Service (WFS)



ISO

- SQL/MM SQL with geospatial extensions

Progress toward Sharing Spatial Data

OGC Simple Feature Specification

- Points, lines, closed polygons, rasters

OGC SFS Extensions (in progress)

- Cartographic text

Future

- Feature Stylization
- Metadata
- Linear topology
- Polygon topology
- Linear referencing systems
- Long transactions

Major Vendors Support OGC OWS Standards

All major vendors support OWS:

- Autodesk, Intergraph, Mapinfo,...

Recently ESRI announced support.

At GITA 2006, 10 vendors demonstrated interoperability based on OWS



Open source geospatial

Two Models for developing software

Closed source

- Microsoft Windows, AutoCAD, ...

Open Source

- Linux, Apache, MySQL, ...

Both necessary

- Address different problems

Standards, commoditization, and open source

- **POSIX -> Linux, OpenBSD, ...**
- **HTTP -> Apache**
- **C, C++ -> Gnu C, C++ compiler**
- **SQL, ODBC -> MySQL, PostGreSQL,...**
- **POP, SMTP -> Sendmail**
- **.NET -> Mono**

Geospatial and IT standards

Geospatial was a latecomer to modern IT standards

- GIS was highly proprietary.
- Geospatial has joined the IT mainstream.

IT standards extended to geospatial

- SQL -> SFS, SQL/MM
- XML -> GML
- Web services -> OGC OWS (WMS, WFS, GML)

Spatial standards, commoditization, and open source

Open Standards

- SFS
- WMS, WFS, ...
- GML



Open Source and Open Standards

- Open standards are fertile ground for open source
 - SFS -> PostGIS, MySQL
 - WMS, WFS, ... -> MapServer, GeoServer, ...

Open Source Geospatial

“a quiet secret”

Rapidly matured,

Driven by OGC standards: SFS, WMS, ...

MapServer

- One of the two top web mapping applications
- Estimate 30K – 50K sites.

Open Source Geospatial Foundation

Leading members of the open source web mapping community joined forces.

Established a foundation OSGEO.ORG to support the ongoing development of open web mapping and other geospatial technologies.

***MapGuide Open Source* contributed to the OSGEO.ORG as an open source project.**

Open Source Geospatial Foundation

MapServer

GeoTools

GDAL

MapBender

GRASS

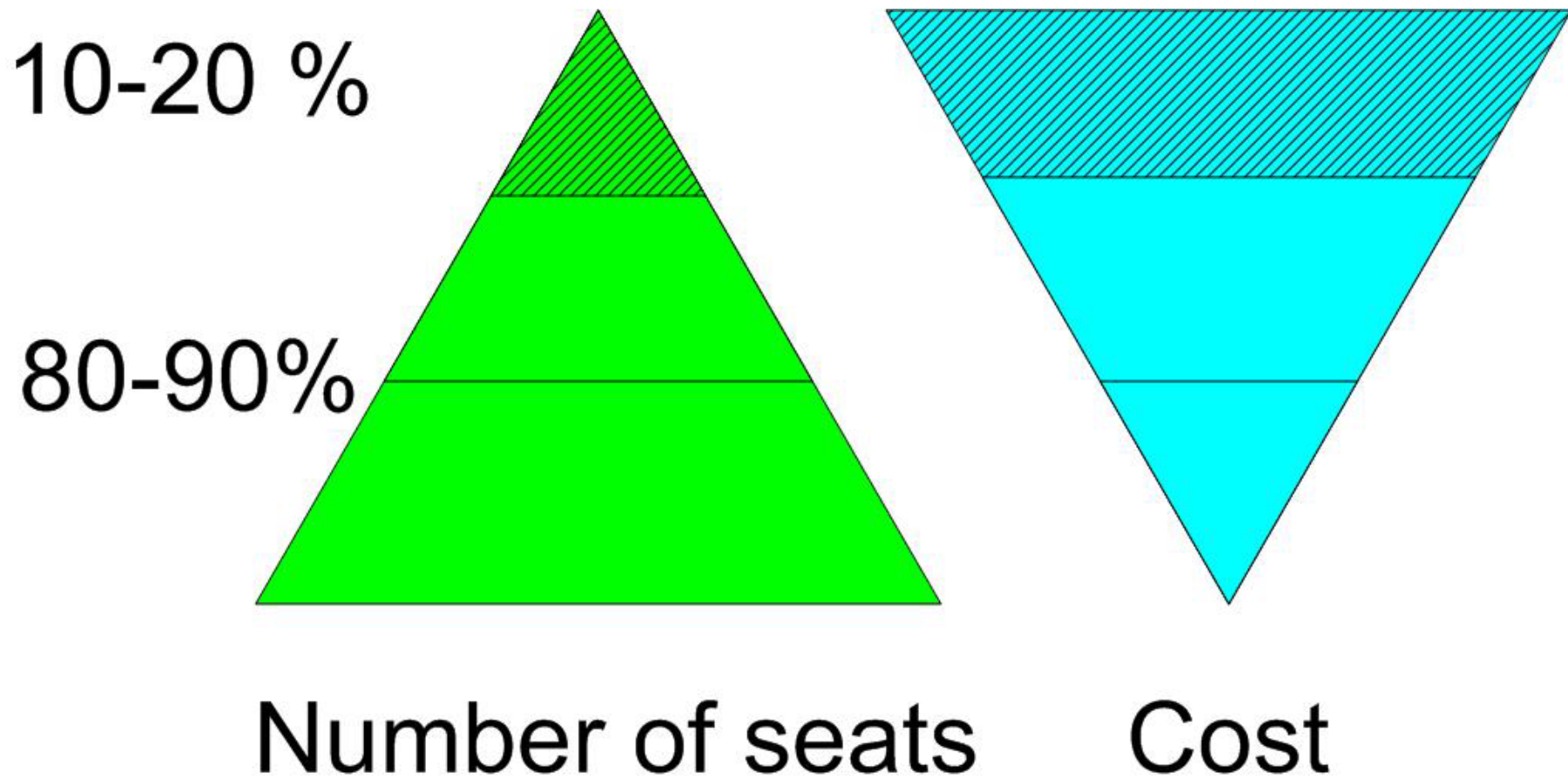
MapBuilder

MapGuide

OSSIM



Open Source Reduces TCO



The Web, Open Source and Creating an IT Ecosystem in Africa

Open source can help in creating an IT ecosystem for Africa

Prerequisite is internet access

Low cost of entry

- Especially with low cost data as in South Africa
- Low financial barrier for entrepreneurs
- Low cost access for education

Facilitates international participation

Summary

Interoperability requires open standards.

Open standards create a fertile ground for commoditization.

Open source is good at commodity software.

- http, html -> Apache HTTP Server
- POSIX -> Linux
- OGC OWS -> MapServer

Capacity building: Open source provides a basis for building an IT ecosystem in Africa

- Low barrier to entry
- In South Africa supported by low cost spatial data

How can you contribute?

*Join the Open Source
Geospatial Foundation*

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