



# Enterprise GIS and Interoperability in Defence

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## Topics covered

- Enterprise GIS in defence projects
- Rationale for enterprise GIS in defence projects
- SOA in enterprise GIS
- Standards in enterprise GIS
- Interoperability across projects
- Vendor neutral solution for a project



## Enterprise GIS in defence

- Enterprise GIS with a central updation enables group of people to work collaboratively.
  - Improves decision making
  - Decreases planning cycles
  - Saves time and effort



# Rationale for enterprise GIS in defence projects

- Solution will be highly scalable - to add clients without the need of undergoing major changes in architecture
- Provides true application level integration and not just data store level
- Maintains data security, integrity and reduces redundancy



## Rationale for enterprise GIS in defence projects

- Updation made at the server end will be reflected automatically at the client end. Ensures all clients are updated and always in synchronization with the server
- Provision to simultaneously update data by multiple clients resulting in manifold increase in efficiency
- Ensures updated data is available anytime, anywhere across the enterprise



# Rationale for enterprise GIS in defence projects

- Inbuilt provision for live tracking using GPS and RSS feeds for live updation and availability of info
- Archive control for data and overlays
- Loading the spatial data in an enterprise platform will increase data security. GIS package and GIS module installation can be done only at server end not at every client



## SOA in Enterprise GIS

- Enables growth and scalability
- Provides applications and data as web services
- Networked server-based technology centralises the application and data at the server
- Provides ease of deployment & consistency of information and functionalities
- Helps in standardising the provisioning of common GIS applications services



## Standards in enterprise GIS

- Standards play a key role towards ensuring consistency
- Provides foundation for the architecture of the enterprise GIS
- International standards, such as, standards established by Open Geospatial Consortium, Symbology standard by MIL-STD-2525B and APP 6A





# Interoperability

Interoperability is the "capability to communicate, execute programs, or transfer data among various functional units in a manner that requires the user to have little or no knowledge of the unique characteristics of those units"

Source: OGC Abstract Specification Topic 12: Services. Derived from ISO 2382-1.

Desired: **Lossless transfer of static or dynamic data** between

- different users, systems, applications, and
- different operating systems, platforms.



# Interoperability In GIS

## Need of Interoperability:

Geo spatial information has been locked in non standard systems by using different information models and storage structures

**Definition:** The ability to integrate or exchange information between different components of a geospatial solution.

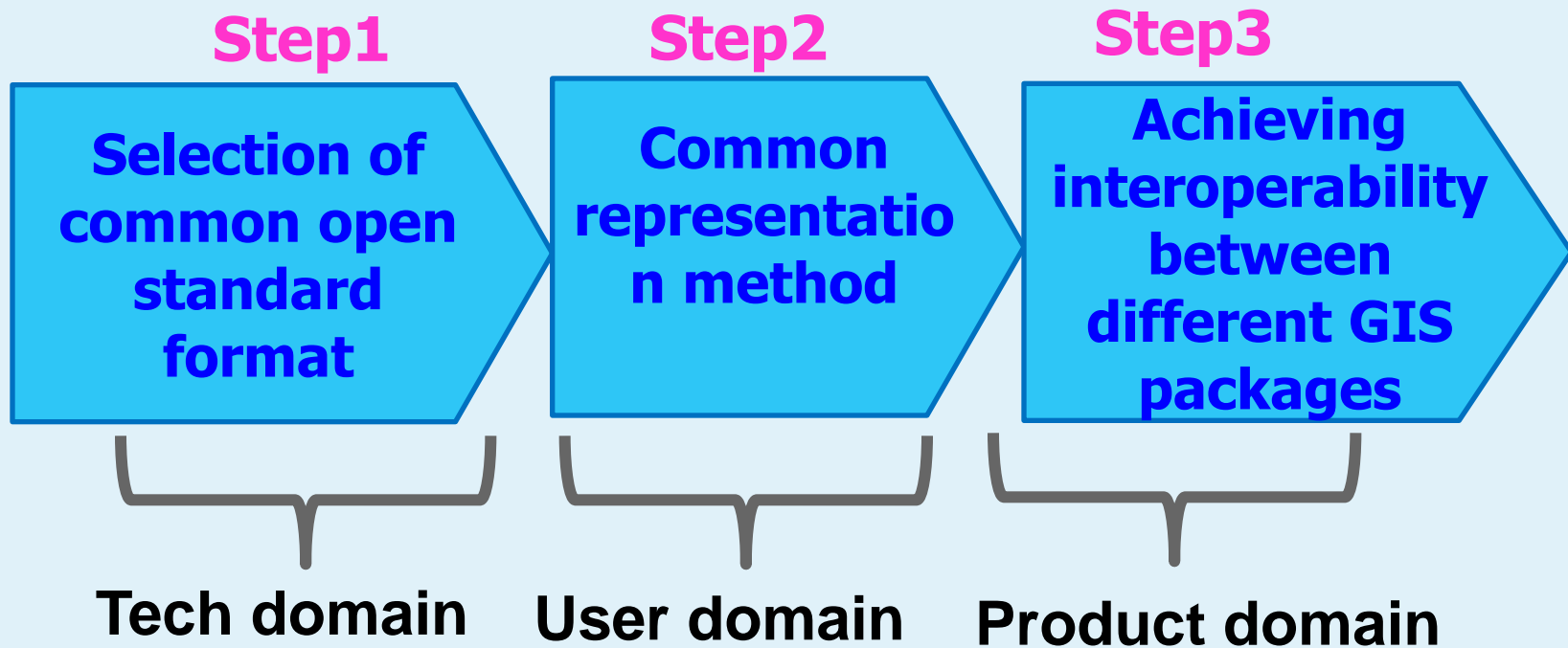
## Helps in:

1. To Share the data
2. To share the computing resource
3. To integrate applications, vendor solutions, technology



# Achieving interoperability across projects

## Approach:





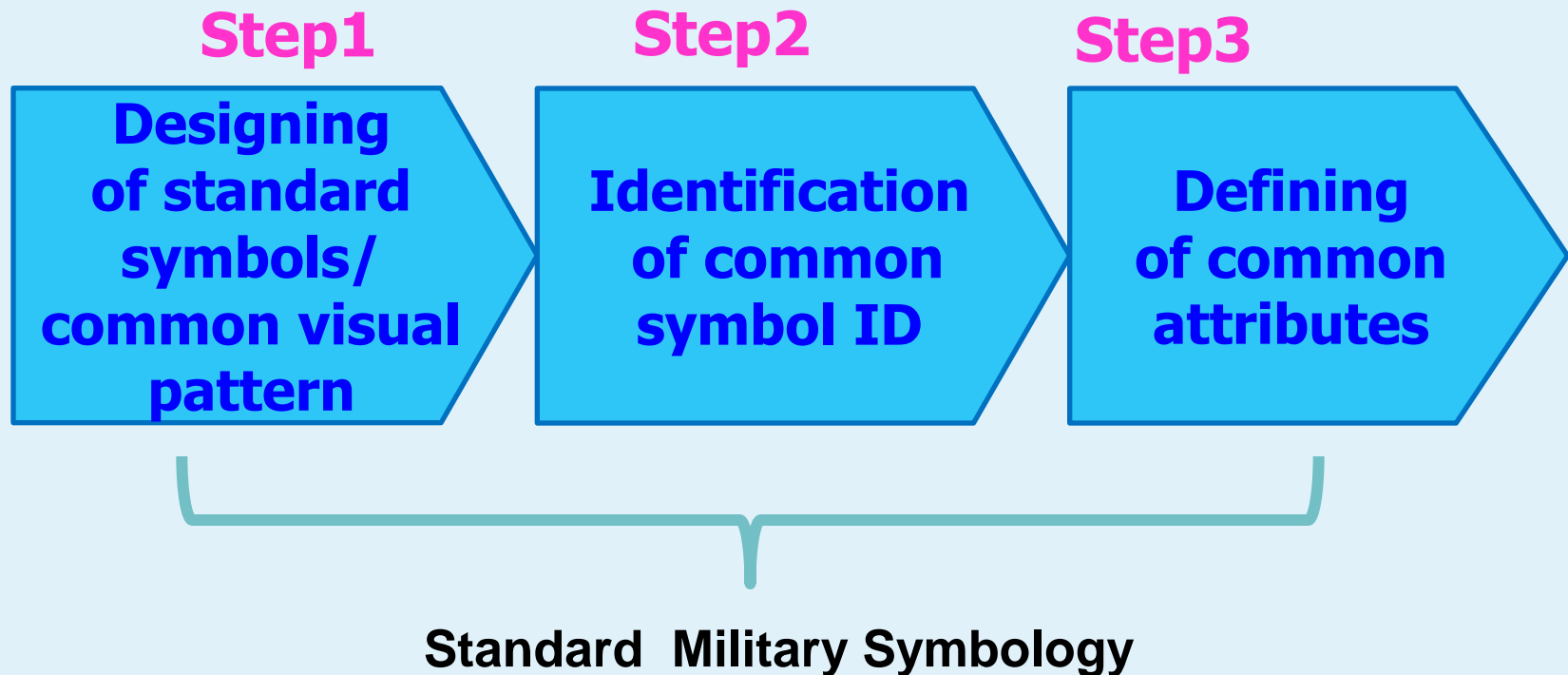
## **Selection of common open standard format:**

**Some of the open standard formats which are suitable to achieve interoperability are:**

- **XML** : is being increasingly used for Web based applications as an open and standard markup language
- **XML based open standard GIS formats like GML and KML**
- **Well-known text(WKT)** – Helps in transmission of most frequently used geometry types in form of plain text



## Step 2: Common representation method





## **Step 3: Achieving interoperability between different GIS packages**

**Agreement needs to be established between the projects to :**

- **Exchange spatial data using selected open data format**
- **Visual representation using unique numbering scheme**
- **Associated information using selected attributes**



## Vendor neutral solution for a project

### General GIS package practice:

- GIS packages prefer to store data in native format
- Applications to use package specific implementations or APIs to store and retrieve data

### Defence application concern

Applications that are immense in nature. Need to cater for various types of functionalities of various modules of the project



## Vendor neutral solution for a project

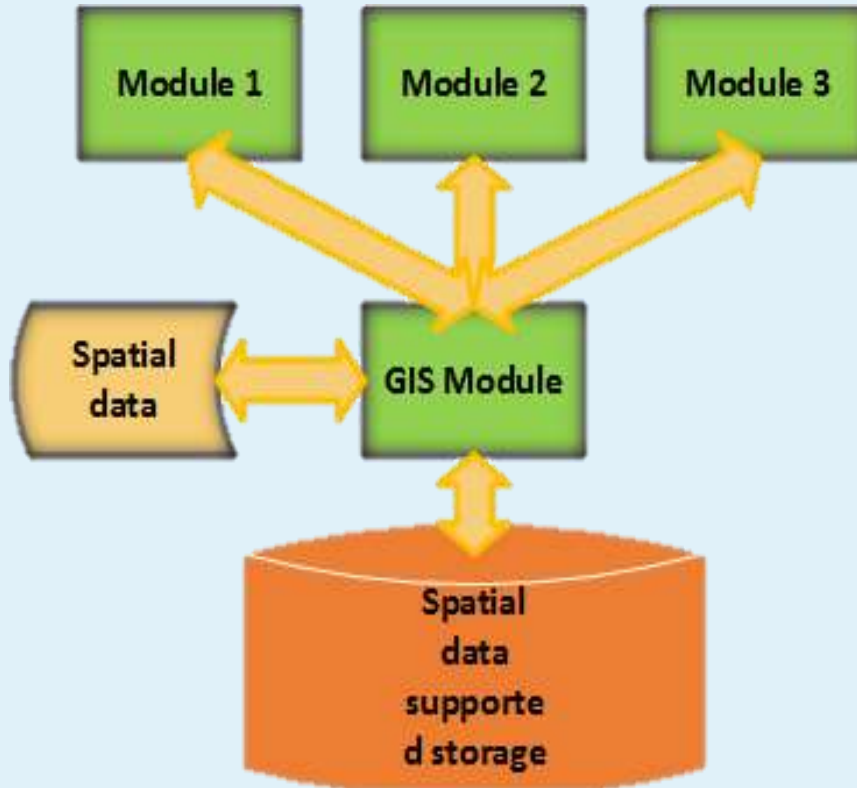
Vendor specific GIS storage will raise:

- **Complete dependency on GIS framework**
  - The project will be completely dependent on vendor specific GIS package since vendor specific storage will have native format support. So changing the GIS package will become tedious.
  
- **Difficulty in understanding the GIS interface for other subsystems**
  - For all GIS dependent modules to fulfil GIS dependent functionalities it will become mandatory to know the vendor specific storage (native format support).





# Vendor neutral solution for a project

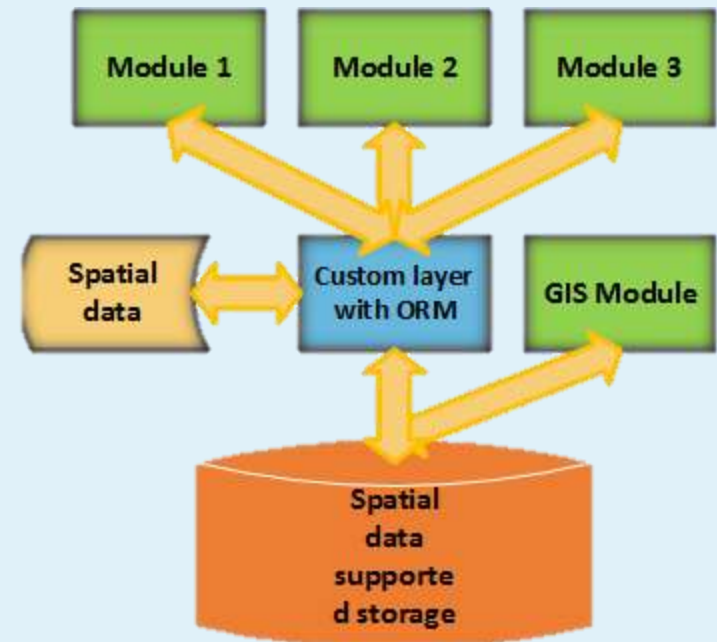


**Dependency needs be avoided**



# Achieving Vendor neutral solution for a project

- Converting the vendor specific packages provided spatial data methodology to add, edit and delete features as an object of type storage specific spatial format using ORM technology.





## Achieving Vendor neutral solution for a project..

- Storing the GIS (spatial) specific data using Geospatial data supported storage
- Exposing the functionalities like, creating overlays, adding, editing and deleting of GIS features as services.

### Benefits achieved :

Gives freedom to choose and change the vendor specific GIS packages in projects without affecting other subsystems excluding GIS specific subsystem

**THANK YOU**

