

# MIGRATING AV 3.X TO AV 8.X?

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## **Abstract**

ArcGIS suite – the latest architectural re-structuring of the gamut of ESRI products under a single umbrella is a unique convergence. With many users' are having acquainted with the ESRI suite for the past several years, we are now confronted with re-organizing our delivery capabilities in the new suite.

This paper aims in highlighting a typical case of migrating the desktop GIS ArcView 3.2 to ArcView 8.X. The issue's discussed includes the migration path, the ease of migration, potential advantages and pitfall and benefits. Overall the paper aims in the sure advantages of porting the ArcView 3.x to the more open standard's of ArcView 8.x, which is converging towards an interoperable and scalable system, which would be the basis for the future of GeoSpatial operational requirements in the disparate arena of multi-vendor GIS software.

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## **Introduction**

With more than 5 million ArcView 3.X user base in multiple domain usage level, ArcView ArcGIS represents a significant change in architecture, terminology, concepts and workflow from ArcView 3.X.

ArcView 3.x – since its inception served as a bridging ware to the functionally superior flagship product - ArcInfo. The product ideally acted as a tool to view, query and prepare maps for “not so” ArcInfo - centric group and also as a convenient tool in making simple geographic analysis.

Increased growth of ArcView 3.x user base saw subsequent versions of ArcView 3.x leveraged on its object-oriented base in exposing much more functional capabilities than it was designed for. With the availability of object oriented scripting language with the core package – the user base was quick to adapt and learn the language in building an impressive list of functional analysis features. ESRI's development team was equally aggressive in extending advanced analysis and modeling tools as extensions to the product.

Release of ArcGIS suite has given an option before the existing ArcView 3.x user base for potential porting to the functionally advanced environment. This paper examines the porting levels that might exist amongst the user base and discusses on the porting options to the ArcView ArcGIS environment.

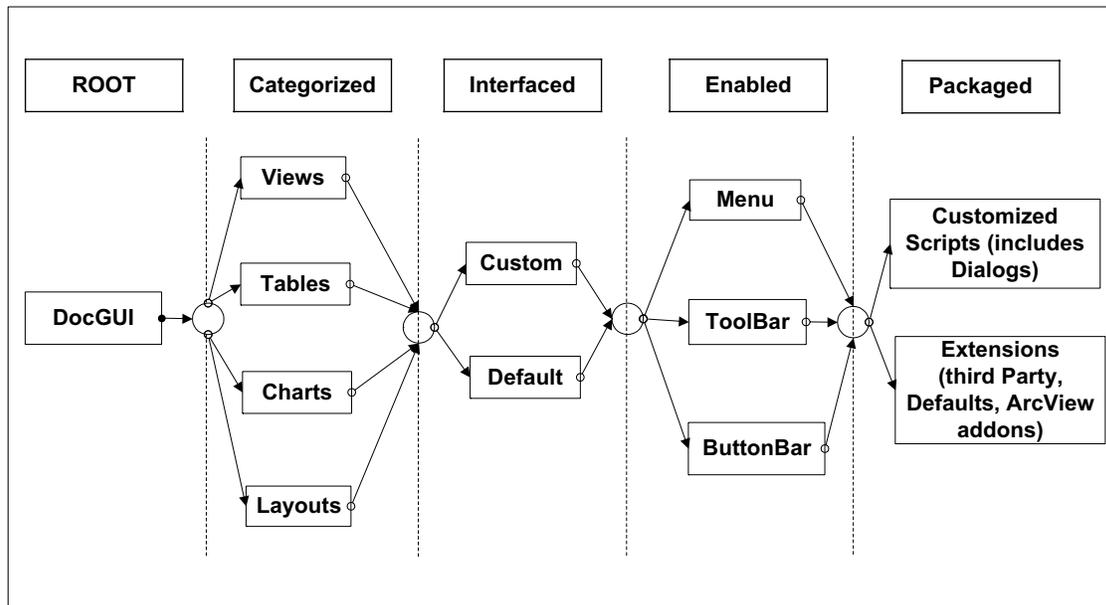
## **Porting Levels:**

Having decided to port to ArcGIS environment, users are to come to a broad assessment of their ArcView 3.X project to port. Porting to ArcGIS environment can involve on-the fly or sizeable efforts, which depends on the complexity of the

ArcView project and its related dependencies on third party extensions and libraries.

### **Porting Elements:**

Typical porting involves the study of the object data file, i.e., the \*.apr project file components. This ideally involves “port mapping” the object containers to the corresponding interfaces in ArcGIS environment. The figure below highlights the high-level port mapping that is required in migrating the ArcView project.



ArcView 3.x Project Document Vs Customization Tracing

The migration path briefed in the figure above details the documents associated with the project and the respective data reference (which would commonly be a Shapefile).

Though “port mapping” gives us the overview to map the elements to the respective environments, the actualities of migration involves on the functional usage of the ArcView 3.x system.

Here we attempt to present the basis for the Porting levels based on the categorization of the ArcView 3.x user community.

It can be noted that ArcView users can be broadly classified based on the following categories and the corresponding ArcView project files for porting can be identified to the said Porting Levels.

1. Porting Level I - Functional Users
2. Porting Level II - Functional plus developmental Users

### 3. Porting Level III - Advanced Users

Based on the classification of the users, the level's of porting requirements varies. The classification of the above three users with respect to ArcView 3.x environment can be identified based on the usage characteristics as briefed in the table below:

User Level	ArcView Utilization Level	Remarks
Functional Users	<ul style="list-style-type: none"> <li>➤ Restricted to Primary Interface.</li> <li>➤ Extends to use third party extensions.</li> </ul>	These users are restricted to the interface as available with ArcView Environment and also capable of using the free resources i.e., extensions made available by the Advanced ArcView users and from ESRI
Functional plus Developmental users	<ul style="list-style-type: none"> <li>➤ Make use of Primary Interface</li> <li>➤ Automate using Scripts and Custom Controls</li> </ul>	One step ahead of Functional users capable of extending ArcView through Avenue Scripting.
Advanced Users	<ul style="list-style-type: none"> <li>➤ Perform Advanced Customization using avenue and Dialog designer.</li> </ul>	These categories of users are more of core developers with a mix of Functional users who have built their expertise on ArcView3.x developmental environment and distribute their applications. Core developers include people who develop Extensions / Libraries for use within ArcView environment.

#### ***Porting Level I:***

Porting level I involves simple migration of ArcView Doc Classes, View's and its data, Tables, Layout's. Ideally at this level it can be considered as a switch over from ArcView 3.X to ArcGIS environment to capitalize on the functional feature's provided by the new environment. Typical porting can be achieved directly by using the facility provided within the ArcGIS environment.

Recommendations:

- Make use of importing option available within ArcMap Environment.
- Familiarization of terminologies within ArcGIS interface elements.
- Import Shape file data as personal GeoDatabase for efficient data maintenance.

#### Stumbling Blocks:

- ArcGIS terminologies in correspondence to ArcView 3.X.
- Only a single layout template can be imported at an instance.
- Complex symbologies are not imported.
- Table and Chart documents are not imported.
- Joins and link's to the Spatial Data attributes are not imported.

### ***Porting Level II:***

Porting level II involves simple migration of ArcView elements View's and its data, Tables, Layout's and in additional includes the migration of the simple user customizations done on buttons, tools and menus of the view, Table, and layout document respectively.

In addition to Porting level I recommendation basic utilities can be used to write out as odb from avenue, which can be "interpreted" to re-code the functional requirements of the customization. Typically this involves a study of code logic associated with the customized buttons, tools and menus and replicating the macros in VBA environment.

#### Recommendation:

- Automate process to read the project apr's "Custom script" objects and its associated links with the document interfaces.
- Re-code as macros within the VBA Environment.
- Create corresponding UI Controls and attach macros with the events of the controls.
- Check out for availability of features in the customize options

#### Stumbling Blocks:

- Object mapping between Avenue to ArcObjects
- Absence of multiple layouts and hence to have unique layout multiple \*.mxd to be used.

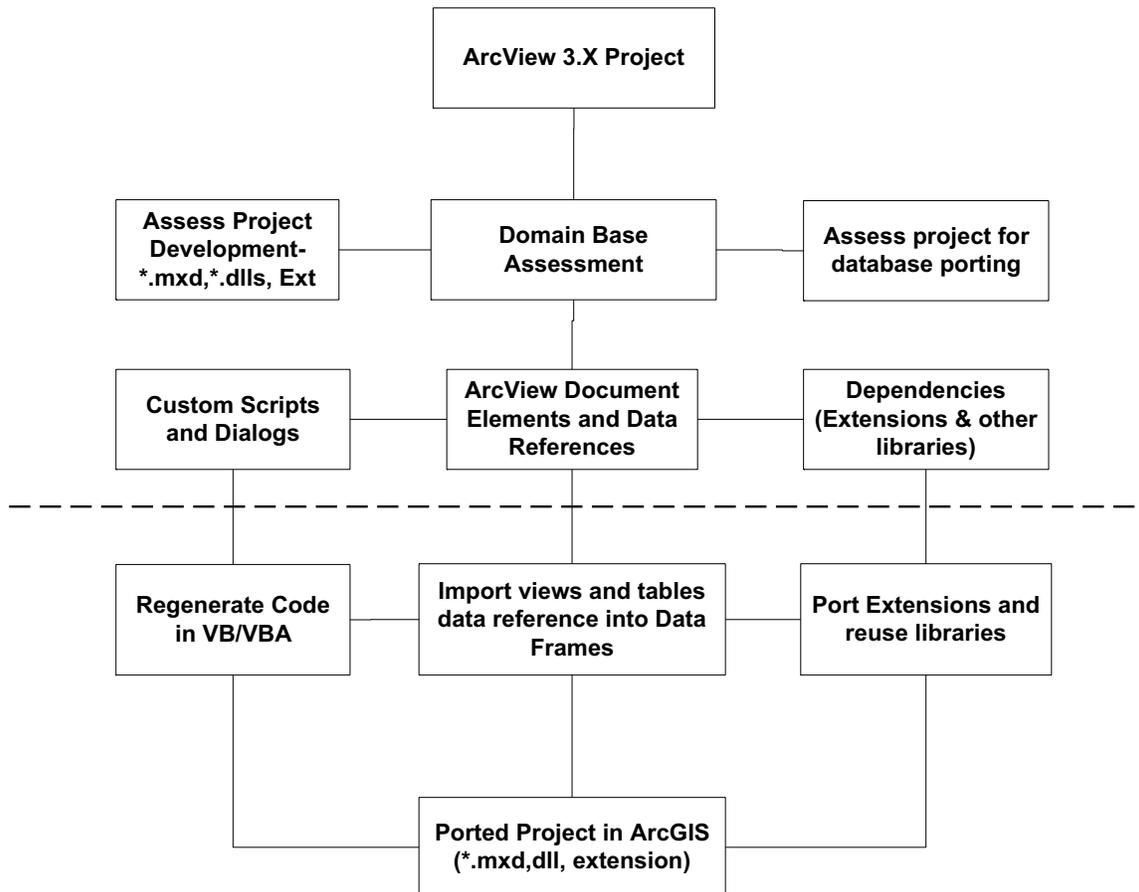
### **Porting Level III:**

Porting level III involves a high level mapping of the extensive customization of ArcView apr files into the corresponding ArcView ArcGIS environment. This level of porting involves advanced programming capability in VBA, VB or any COM compliant development environment.

Depending upon the distribution requirements the project to be ported can developed as

- mxd template
- dll or
- Extension

A Typical high level migration flow for porting level III is shown below.



Some basic parameters, which could be a guide to minimal porting efforts, are:

- Domain knowledge, which was the basis of development of the ArcView 3.x Project.
- Functional mapping of the Avenue object to the ArcObject interfaces.
- Reference to third party extensions/libraries.

Recommendation:

- Develop utility to dynamically generate the Dialog Document objects developed in the migrating project.
- Generate Script extractor utility, which will list the links to the interface to the respective dialogs and document customization. This also helps to generate the Script's that are to be ported and the events and actions to which the script is associated.
- Perform a porting study in mapping the necessary objects and interface against the avenue classes and ArcObjects.
- Many of the methods and interfaces exposed by ArcObjects are synonymous to Avenues objects methods and properties – this will help in our “minimal search” efforts.

Stumbling Blocks:

- Extended study hours need to be spent in identifying the appropriate interfaces, which will meet the requirements.
- Interfaces might not function the way it as it happened in Avenue.
- Method's that works in VBA will not work in VB.
- Debugging the code in case of Active X project development.

### ***Success factors for Migration***

The Migration success can be assessed based on the end-users perception to the system functional features and his adaptability to the ArcGIS environment.

Some success factors for optimal Migration efforts could be:

- Domain knowledge specific assessment of the project to be migrated
- Mapping the object between Avenue and ArcObjects.
- Automate task to regenerate Dialog objects of ArcView and it associated control with their respective events.
- Map for core ArcGIS features which would have been an add-on in ArcView 3.x environment.

- Re-use of sample developers code, which installs with ArcGIS Installation.
- Leverage on ArcObject model (ArcMap and ArcCatalog) for extending the features.

## Summary:

GIS Functional capability that extends within the ArcGIS Suite is a reckoning factor for current active ArcView 3.x users towards the migration path. While the migration path is dependent on many parameters and requires a multi-level skill for a successful porting to the new environment, the end-users should make judicious plan for a short and trouble free porting.

Though the avenues for migration can extend to include data migration, the current paper analyzed the porting levels for the ArcView 3.x end-users to assess their position and based on their futuristic needs could start their migration plan towards a more open system which would be the operational standards in the years to come.

## References

1. ArcView 3.x Help Documentation
2. ArcGIS 8.X Help documentation
3. ArcGIS desktop ArcGIS forums

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