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Building an Advancement Data Warehouse


Strategy, Planning, Implementation



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10¹⁸ bytes of data being created every year according to a study.

Challenge for a data warehouse project is to turn data into information.



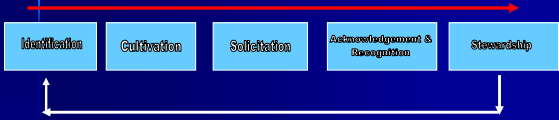
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Advancement and the Enterprise View of Information

An advancement data warehouse project needs to provide the broader enterprise information view while still allowing drill down to individual prospects and donors.

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Data Facilitates all Advancement Activities



- Advancement cycle requires information from all of these areas.
- Cradle to grave relationships with prospects and donors means that both individual and aggregate data is complex.

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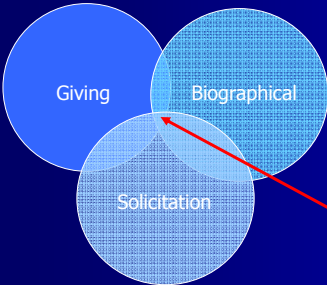
Data Facilitates all Advancement Activities

- Keeping track of Alumni of record and other important constituents
- Events invitee and invitation lists
- Mailings of magazines, e-news, etc.
- Prospect management
- Solicitations of pledges and gifts
- Recording/tax receipting/reporting for all gifts received
- Recognition, naming, special events
- Bequests, wills & deferred gifts

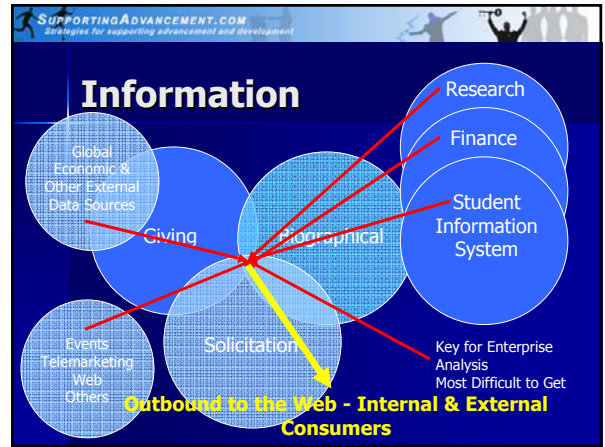
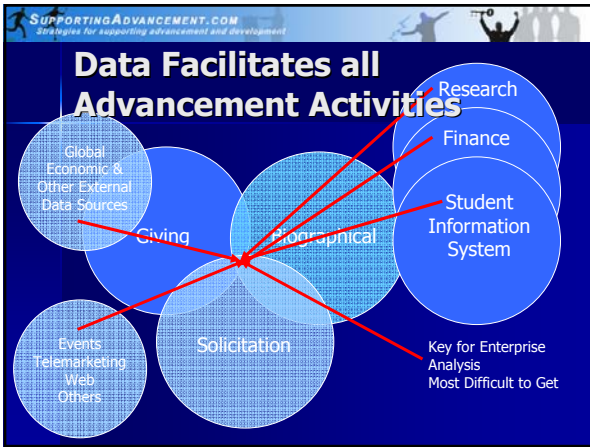
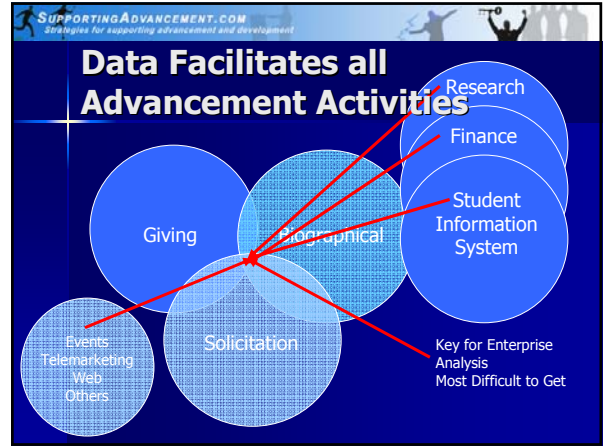
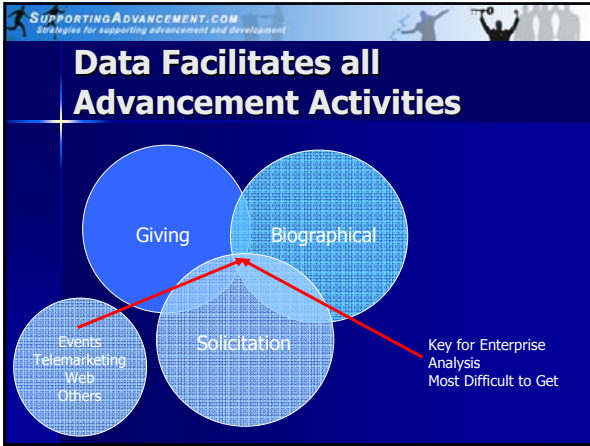
↑ Advancement Cycle ↓

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Data Facilitates all Advancement Activities



Key for Enterprise Analysis Most Difficult to Get



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Summary vs. Drill Down Data

- Approximately 90% of the total \$ amount of pledges received are from 2% of donors.
- 2% of all donors have given a cumulative amount of \$25,000 or more.
- More general information maintained globally such as addresses, names, education, etc.
- More detailed information for major prospects

Relationship of data maintained to total # of entities complicates the need for duality of summary vs. drill down data in an Advancement data warehouse.

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Information and Data

What is information?
What is data?
How are the two related?

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Information Vs. Data

Strategic
Information

Tactical
Data Warehouse

Operational
Development System

Facilitates Creation of Information from Transactional Data

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Information Questions

- Can we show the whole relationship with both individuals and with groups of donors easily?
- Do we measure on hard facts?
- Can we measure success and failure indicators?
- Do we have a common and standardized language to define measures?
- Do we have timely and accurate reporting of information?
- Are we able to benchmark against other institutions and global indicators?

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Benefits of Information

- Helps to communicate advancement strategy.
- Helps optimize advancement strategy.
- Helps create consistency.
- Drives strategic alignment.
- Helps development of strategies for directional changes.
- Helps to focus priorities.
- Helps integrate performance analysis and action.
- Encourages continuous improvement.
- Allows for more rapid deployment of changes.

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Benefits of Information

- Facilitates integrated continuous cycle of improvement.
- Creates a culture of responsibility/accountability.
- Helps align people and technology to support advancement and organizational goals.
- Helps align organizational structure to business goals.

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Optimizing Knowledge

- Data
- Information
- Strategy
- Action
- Real Time analysis
- Spot Trends
- Dashboard Reporting

Data Collection Storage Analysis & Reporting

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"CEO Spends an Average of 90 Seconds Looking at a Report or a Screen"

Presentation & Decision

Modeling & Analysis

Standardization/Organization of Key Data

Transactional Capture

Data Warehouse Project Focus

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Information Vs. Data

Strategic	Presentation & Formatting
Tactical	Extract Transform Load Tools SQL Scripts
Operational	Transactional Data

Data Warehouse Project Focus

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What Level of Information?

- Summary vs. Detail
- Project
- Donor Type
- ZIP
- Household
- Individual

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Reporting and Data Extraction Environment

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Build the Environment to:

- Provide a single version of the "truth" for all users of advancement information.
- Improve information effectiveness for performance measurement and analysis.
- Align information and reporting with organizational goals.
- Eliminate and reduce work in creating and compiling information.
- Allow drill down from information to data.

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The End User Community

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End User Community

- Very decentralized information and reporting deployment environment required.
- Little chance that any end users will develop reports.
- Some are able to run reports in the development information system.
- A limited number of users access OLAP cubes.
- A limited number of users access on-line web reports.
- A limited number of users access stored PDF reports on the network directory.

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End User Community

- Most users download and further manipulate development information system and web data using spreadsheets to get it into a format that is useable and/or presentable.
- A limited set of biographical data is deployed on the web site in the alumni community.
- Staff turnover in advancement organizations is typically high so knowledge is lost. Report training by folklore.



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Information Environment



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Are These Characteristics of Your Information Environment?


- Multiple versions of information and extractions which is often inconsistent for use in decision making.
- Duplication of efforts with multiple presentations of the same or similar information.
- Information extraction is labor intensive and lots of manual intervention to create information both by analysts and end users.
- Multiple database environments.
- Multiple reporting and extraction tools.



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Are These Characteristics of Your Information Environment?


- Large number of ad-hoc reports since Advancement is an opportunity driven business.
- Table and indexes in reporting environment are a copy of production and do not support reporting well.
- SQL and conventional report writing tools not work well for analytical analysis of transactional data.
- Libraries of standard reports exist in a very limited extent but are difficult to access and utilize.



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Are These Characteristics of Your Information Environment?

- Development system reports are relatively inflexible for analysis purposes and don't provide information in a format that is useable as an end product.



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Information Challenges



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Information Challenges


- Information overlap often required between Development System and other campus systems such as the Financial Information System.
- Telemarketing and events management system will add to reporting challenges especially in terms of consolidated views.
- Difficult to look at the relationship of advancement data to external indicators such as stock market indices.



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Information Challenges


- Current data is difficult to use and deploy in a web environment such as the alumni directory/community.
- A lot of data is stored in notes fields which are difficult to extract and report from.
- Decentralized advancement environment means that every data extract and report should be designed in a way that considers the decentralized advancement operation.



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Information Challenges Giving Specific


- Accuracy of pledge and gift data is sometimes suspect.
- Volume of updates and number of rows in tables creates long running queries.
- Metrics for performance measurement are inconsistent between program areas. i.e. Annual Fund vs. Annual Giving
- Difficult to do comprehensive time series analysis of financial data.
- Performance statistics for data entry are limited.



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Information Challenges Biographical Specific


- Number of entities on system requiring data maintenance and data cleansing is very high.
- Address and contact information needs significant improvement.
- Auxiliary attribute codes are numerous and complex.
- Performance statistics for data entry do not exist.



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Information Challenges Prospect Specific


- Performance of solicitation and contact activity is difficult to track and relate to other factors such as giving.
- Decentralized environment adds greatly to complexity of prospect reporting.



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Meeting the Challenges

**Start Small
Think Big
Deliver Quickly**



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To Do List

- Develop Strategy
- Set Direction
- Manage Results
- Manage Execution
- Manage Day to Day Activities

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Critical Success Factors

- Right information to the right people at the right time.
- Focus on high impact processes.
- Well designed data models.
- Measurable data quality improvements.
- Data warehouse project management success.
- Business analysts able to work more effectively.
- Cost effective improvements.

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Target Delivery

- Vice President
- Associate Vice President
- Divisions and senior development officers
- Analysts – modeling and analysis
- Operational Staff – for data cleansing
- Web – internal users
- Web – External anonymous users i.e. stats on alumni by geographic areas, alumni community

Most Critical for the Ultimate Future

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Determine Key Performance Indicators

Key performance indicators and summary data will help to define extractions and the level of drill down for related sets of information.

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Performance Indicators

- Campaign Totals and Growth
- Top Projects
- Top Donors
- Pledges
- Contacts
- Prospects
- Processing Statistics
- Annual Fund
- Telemarketing
- Contactable Rates

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Performance Indicators

- Gift and pledge pyramid
- Planned giving
- Outstanding pledges
- Affinity programs
- Web statistics/performance
- Others?

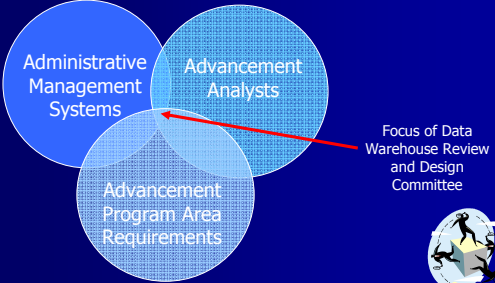
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Create a Data Warehouse Design Team



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Data Warehouse Design




Administrative Management Systems

Advancement Analysts

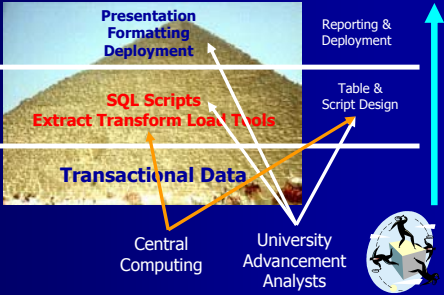
Advancement Program Area Requirements

Focus of Data Warehouse Review and Design Committee



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Roles & Responsibilities



Strategic

Tactical

Operational

Presentation Formatting
Deployment

Reporting & Deployment


SQL Scripts
Extract Transform Load Tools

Table & Script Design

Transactional Data

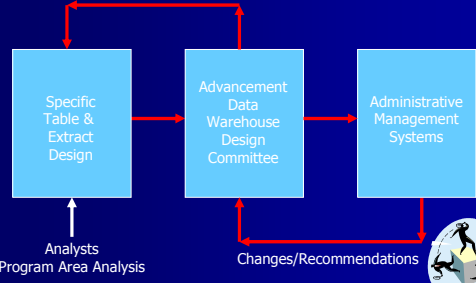
Central Computing

University Advancement Analysts



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Data Warehouse Design




Specific Table & Extract Design

Advancement Data Warehouse Design Committee

Administrative Management Systems

Analysts Program Area Analysis


Changes/Recommendations



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Design Committee

- Should be small enough to be manageable.
- Permanent members and members assigned by program areas as projects are prioritized.
- Rotating/revolving temporary membership.
- Overall approval and review of all data warehouse projects to ensure duplication is avoided and the central computing staff's efforts are the most effective.



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Design Elements


All tables need to be designed and reviewed in a comprehensive fashion to optimize use, reusability and flexibility.



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Time Series


- Current fiscal year
- Previous fiscal year
- Previous 5 fiscal years
- Previous 10 fiscal years
- Fiscal month
- Projections and future
- Other time series?



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Grouping


- By Project
- By Fund
- By Pyramid Level
- By Solicitation
- By Development Officer
- By Program Area
- By Geographic Area



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Grouping


- By entity type
- By gift type
- By division
- By degree
- By donor
- Other groupings?



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Table Elements


- Summary or detail table
- Time to create table and performance windows
- Full or partial update
- Frequency of updating
- How performance is to be monitored and reported



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Design Elements


- Columns that need to be included
- Full data or table designed to be joined
- Indexes required for joins and for performance
- What drill down capability is necessary/required?



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Design Elements


- What web based documentation will be required?
- Will table be used for downloading?
- What future maintenance will be required?
- Estimated frequency of access by users.
- Catalogues and how tables will be accessed by reporting tools.
- Rollout and prioritization strategy.



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Design Elements


- Naming conventions.
- English like field names.
- How intuitive is the content for each table?
- Degree of permanence vs. temporary.
- Relationship to other system tables such as the financial system.
- Are the results repeatable over the longer time horizon with minimal maintenance?



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Design Elements

- How will stored procedures and views be utilized?
- Eliminate wherever possible pre and post sql scripts by having well defined tables.
- Eliminate calculations in end user reports.
- How table can be used for data cleansing.
- Eliminate rows not needed when extractions are done such as those rows flagged for deletion.



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Avoid Data Mart Anarchy



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Normalization of Data Warehouse

- Current extracts were developed over time and have redundant data in multiple tables.
- Names and sort names are repeated.
- Donor groupings.
- Pledge aging buckets.
- Others ...



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Developer Productivity



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Manage Development Environment


- Web collaboration.
- Database environment management.
- Test and production environment for script development and deployment up so as to optimize performance.
- Naming conventions and standards.
- Script development, management and deployment.
- Report conventions and standards.



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Standardize and Enhance Analyst's Tool Set


- Enterprise warehouse environment vs. specialized advancement warehouse environment.
- Enterprise vs. specialized advancement division reporting tools.
- Local desktop tools for analysts.
- Ensure that workstations are adequate for the task.



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Training

- Institutional database scripts and basic DBA knowledge.
- ETL Tool overview training.
- Divisional and enterprise reporting tools.
- Desktop database training.
- Web site training for information deployment.



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Create Once Deploy Many



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Referencing Data in the Data Warehouse


- All reports, data extracts, downloads, OLAP cubes, web reports, alumni community data and all reports in the Development Information System should be extracted from the institutional data warehouse.



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Specialized Tables, Views, Stored Procedures

- Re-usable components that need to be utilized in all reports and development activities.
- Tables - a_dw_fiscal_dates, a_dw_staff, a_dw_capital_projects, a_dw_test_ids, and more ...
- Stored Procedures - proc_calculate_fiscal_year, proc_calculate_fiscal_month
- Views - view_af_solicitation_codes




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Reporting & Resources

- Reporting is less technically demanding but one of the highest consumers of resources in all system development activities.

Advancement environments are more "report intensive" than other departments/divisions.


Strategy should be to reduce efforts expended on reporting so resources can be directed towards user interface and other more technically demanding projects and system enhancements.



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Reporting Reusability

- Separate extraction of data from formatting and presentation of data.
- Standard report templates stored in one location for report development.
- Standard catalogues stored in one location.
- Standard repository for report components.
- Use of standard sub reports and other reusable components stored in one location.




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Reduce Joins & Logic

- Reduce joins and logic in all subsequent queries wherever possible by designing tables with columns that can be used for multiple purposes.
- Build reports from stats files, i.e. stats_table contains entity_id, and flag_good_address and an index on entity_id.

```
SELECT * FROM campaign_extract ce WHERE ce.entity_id IN
(SELECT entity_id FROM stats_table WHERE
flag_good_address = 1)
```


In this case, you don't need to go to the address table and figure out the logic to extract entities with a good address. You could also use the stats_table for a web or hard copy report to calculate the number of lost alumni.



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Priorities


Initially small subject area where the end of the project is in sight even though the project will never end.



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Start Small, Think Big, Deliver Quickly


- Project table with all names de-normalized and with FIS fund amount.
- Re-design campaign and total revenue extracts. Run changed/added updated data only, eliminate redundancy.
- Move notes into a table that can be used in reporting.



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Start Small, Think Big, Deliver Quickly


- Pledge
- Payments
- Address
- Names
- Others ...



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Future Data Marts

- Campaign performance
- Annual fund and annual giving
- Pledge collection and management
- Prospect management
- Performance statistics for data entry and maintenance
- Matching programs
- Address, email and contact information
- Changed/modified data area to monitor and cleanse data.



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Immediate Steps



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Get Organized

- Establish committee and regular meeting schedule to initiate the project.
- Existing sql scripts, reports, catalogues moved to a common shared area.
- Naming convention established.
- Documentation convention established.
- Report standards reviewed and agreed upon and established.
- All SQL scripts to run within a common university Advancement data warehouse environment.



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Questions?

<http://www.supportingadvancement.com>