

# Enterprise Reporting at Delaware through a Partnership with Phytorion

**Session #25832**  
**March 12, 2008**

**Alliance 2008 Conference**  
**Las Vegas, Nevada**





# Today's Presenters

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- **Kat Collison**, University of Delaware
- **Karen DeMonte**, University of Delaware
- **Yiorgos Marathias**, Phytorion, Inc.



# University of Delaware



- PeopleSoft Modules
  - 2000 – Human Resources
  - 2003 – Financials
  - 2006 – Student Admin
- Located in suburban Newark, Delaware midway between Philadelphia and Baltimore.
- Public, State Assisted University
- Doctoral Research Extensive University
- 23,000 Undergraduate Applicants
- 16,000 Undergraduates
- 3,400 Graduates
- 4,000 Employees





# Synopsis of Presentation

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- Reporting Environment
  - Legacy
  - PeopleSoft
  - Cognos
- Data Warehousing
  - Technical
  - Functional
  - Management
- Reporting Strategy





# Legacy Reporting

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- Production reports developed by IT
- Users easily produced reports
- Included data from several sources
  - Human Resources
  - Finance
  - Student Records
  - Development, etc.





# PeopleSoft Reporting

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- Reporting is decentralized
- Limited support from Information Technology
- Could not report across systems
- Multiple reporting platforms
  - PSQuery
  - N-Vision
  - Crystal
  - Excel, Access, SPSS





# Reporting Challenges

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Reporting against 1000's of tables

- Joins difficult
- How to know which tables to use
- Eliminate/reduce the shadow systems
- Increase efficiency in our reports
- Report formatting limited





# Solution: Cognos BI Tools

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- Web-based deployment
- Easy to use
- Share Reports via email and the web
- Give users the ability to write and deploy their own reports
- Download reports to excel and access







# OLTP Challenges

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*"An online transactional processing (OLTP) environment is not suitable for decision support as they have been designed to support short transactions affecting a few records at a time. This type of data tends to reflect only the current state of the system and seldom keeps historical snapshots, which are critical for planning purposes" (p. 170).*

*Guan, Nunez, and Welsh (2002)*





# Solution: A Data Warehouse

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- We wanted outside experts
  - Did not have expertise on campus
  - No time; No resources
  - Needed a vendor with PS experience and, if possible, used Cognos tools
- We did not want an out of the box solution
  - Wanted customization
  - Ability to grow and expand
  - Ownership





# Phytorion Advantages

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- Expertise and experience
- Time saving
- Data consolidation
- Processing speed
- Knowledge of Cognos
- Knowledge transfer





# Phytorion Process

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- Gather Business Rules
- Create Sourcing Documents
- Locate Source Tables
- Build the Design (Visio)
- Build the Coding Document
- Build the ETL Code and Job Stream





# Gather Business Rules

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## **Business Rules: Students (sample)**

- Students are tracked by program (college), plan (major), and subplan (concentration)
- Students can be active in multiple careers at the same time. Plan sequences 10-19 store majors (the primary major is plan sequence 10), 20-29 store minors, **30's indicate various honors (honor students, Dean's scholars, etc)**, 40's indicate certificates. For reporting, it would be helpful to have the **30 series plans set as flags**.
- Term honors and dean's list will be tracked in the PS\_HONOR\_AWARD\_CS record.
- Milestones will probably be used by GRAD, but it's unclear how.



# Create Sourcing Documents

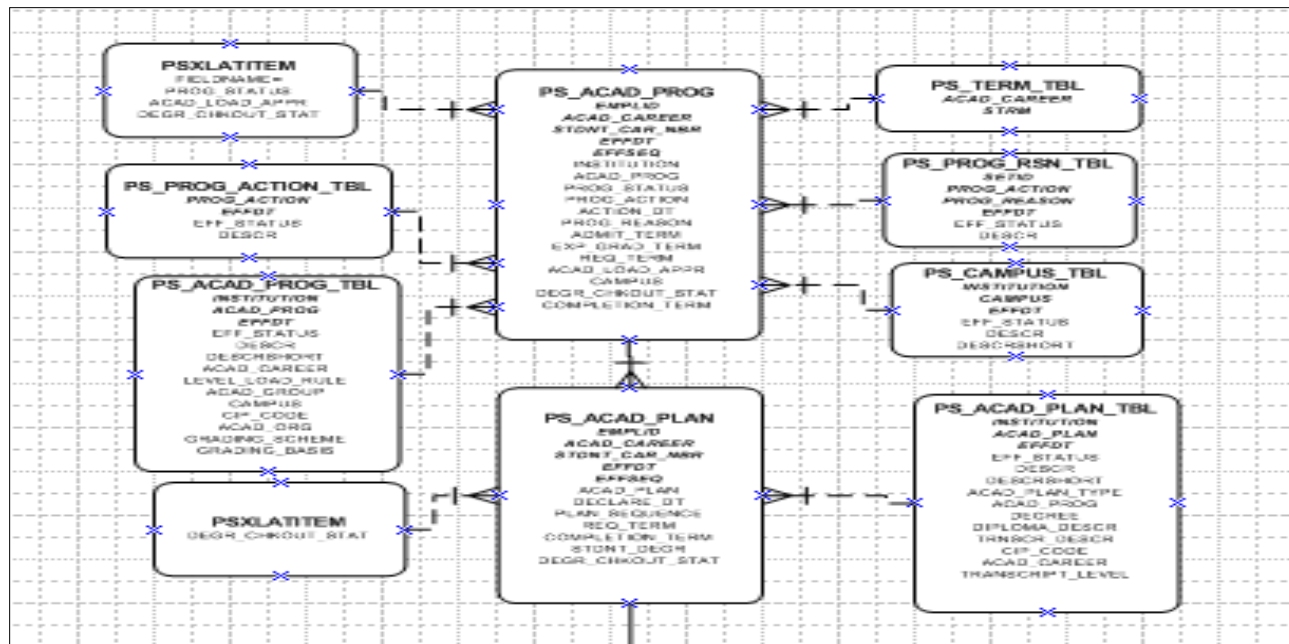
- **STUDENT\_PLAN\_FC (*Fact Table*)**
  - Honors plans (Honors, Dean's Scholar, and Connected) are not included as plans in this table; they are tracked as **flags in the Student Prog Attributes Dimension**.
- **Student Prog Attributes Dimension**

Technical Notes:

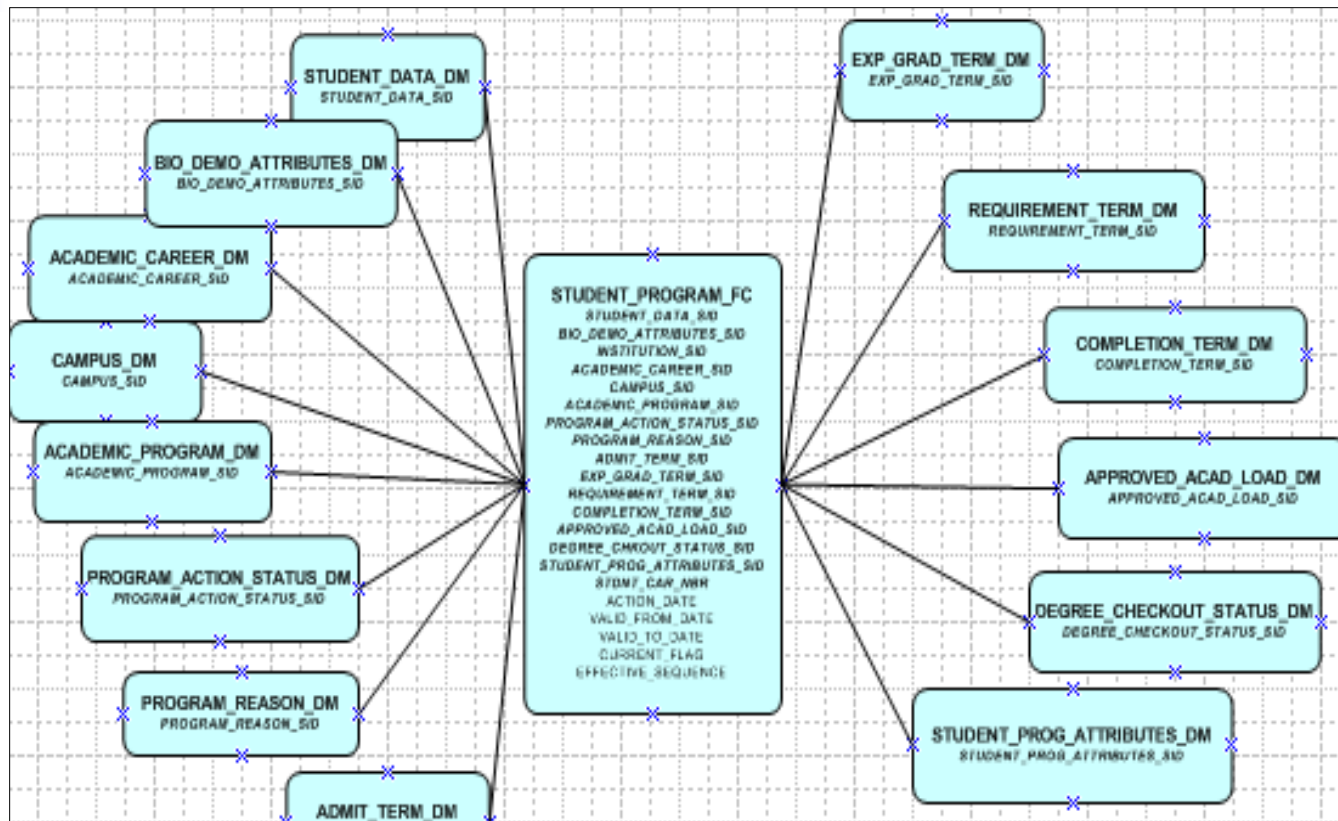
  - To filter out honors plans, the following SQL should be added to the main select:  
WHERE ACAD\_PLAN NOT IN ('HONORS', 'DEAN SCHLR', 'CONNECTED')
  - This fact table is sourced from a left outer join of PS\_ACAD\_PLAN, PS\_ACAD\_SUBPLAN on EMPLID, ACAD\_CAREER, STDNT\_CAR\_NBR, EFFDT, EFFSEQ, ACAD\_PLAN



# Locate the Source Tables



# Build the Design (Visio)





# Build the Coding Document

Attribute	Sourcing Instructions	Description
GRAD_SUSTAINER	<pre> IF ACAD_CAREER &lt;&gt; 'GRAD' THEN 'N' ELSE IF EXISTS (SELECT FROM PS_STDNT_ENRL for this EMPLID, STRM, ACAD_CAREER WHERE INSTITUTION = 'UOD01' AND PS_STDNT_ENRL_STATUS = 'E' AND PS_STDNT_ENRL.CLASS_NBR = PS_CLASS_TBL.CLASS_NBR AND PS_CLASS_TBL.SUBJECT = 'UNIV' AND PS_CLASS_TBL.CATALOG_NBR = '999' AND PS_CLASS_TBL.CLASS_SECTION = '011' (IGNORE PS_CLASS_TBL KEYS: CRSE_ID,CRSE_OFFER_NBR, STRM,SESSION_CODE,CLASS_SECTION)) THEN 'DS' ELSE IF EXISTS (SELECT FROM PS_STDNT_ENRL for this EMPLID, STRM, ACAD_CAREER WHERE INSTITUTION = 'UOD01' AND PS_STDNT_ENRL_STATUS = 'E' AND PS_STDNT_ENRL.CLASS_NBR = PS_CLASS_TBL.CLASS_NBR AND PS_CLASS_TBL.SUBJECT = 'UNIV' AND PS_CLASS_TBL.CATALOG_NBR = '899' AND PS_CLASS_TBL.CLASS_SECTION = '011' (IGNORE PS_CLASS_TBL KEYS: CRSE_ID,CRSE_OFFER_NBR, STRM,SESSION_CODE)) THEN 'MT' ELSE IF EXISTS (SELECT FROM PS_STDNT_ENRL for this EMPLID, STRM, ACAD_CAREER WHERE INSTITUTION = 'UOD01' AND PS_STDNT_ENRL_STATUS = 'E' AND PS_STDNT_ENRL.CLASS_NBR = PS_CLASS_TBL.CLASS_NBR AND PS_CLASS_TBL.SUBJECT = 'UNIV' AND PS_CLASS_TBL.CATALOG_NBR = '895' AND PS_CLASS_TBL.CLASS_SECTION = '011' (IGNORE PS_CLASS_TBL KEYS: CRSE_ID,CRSE_OFFER_NBR, STRM,SESSION_CODE)) THEN 'MN' ELSE 'N'                     </pre>	<p>Graduate Sustainer indicator: values = DS (Doctoral Sustainer), MT (Masters with thesis), MN (Masters, no thesis), N (Not a graduate Sustainer)</p>



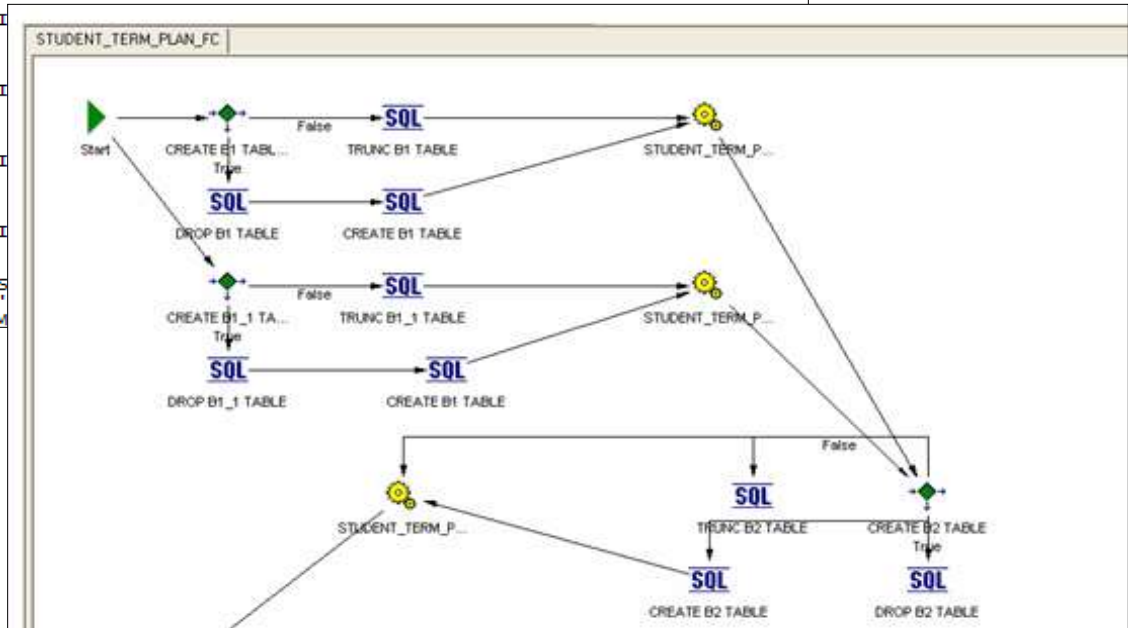
# Build the ETL Code & Job Stream

Data Manager v8.1.209.25 -- Copyright (C) 2006 Cognos Incorporated  
 Licensed to University of Delaware/Newark, DE(1)  
 databuild -- start run (16-Feb-2007 10:41:41)

Run context:  
 JobStream '\*\_Fact\_Master\_JobStream'  
 JobStream 'STUDENT\_PROGRAM\_FC'  
 Build 'STUDENT\_PROGRAM\_FC\_B1'

[PROGRESS - 10:41:44] Build 'STUDENT\_PROGRAM\_FC\_B1' - run id 20, audit id 15809  
 [SQL - 10:41:44] LOOKUP() function call

```
SELECT VARIABLE_VALUE FROM DW_SYSTEM_CONFI
[SQL - 10:41:44] LOOKUP() function
SELECT VARIABLE_VALUE FROM DW_SYSTEM_CONFI
[SQL - 10:41:44] LOOKUP() function
SELECT VARIABLE_VALUE FROM DW_SYSTEM_CONFI
[SQL - 10:41:45] LOOKUP() function
SELECT VARIABLE_VALUE FROM DW_SYSTEM_CONFI
[VARIABLE - 10:41:45] DS_JOBSTREAM_NAME
[VARIABLE - 10:41:45] DS_BUILD_NAME = 'S
[VARIABLE - 10:41:45] DS_BUILD_FNAME =
[VARIABLE - 10:41:45] . DS_JOBSTREAM_NAM
```





# University Reporting Strategy

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**U** *University of*

**D** *Delaware*

**E** *Enterprise*

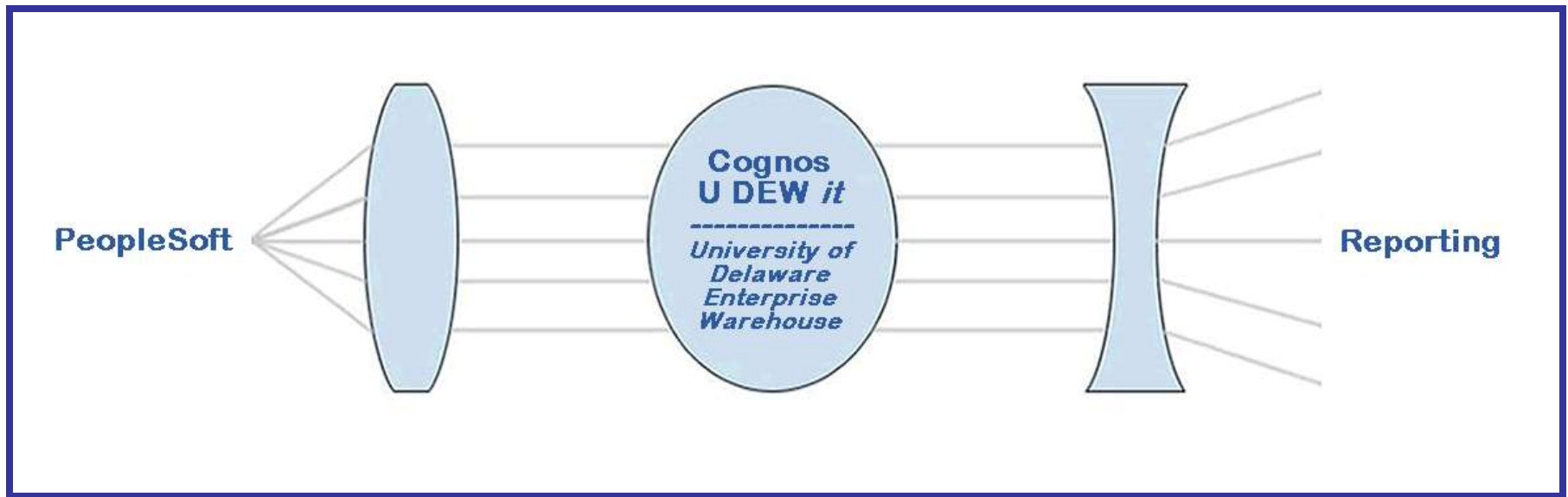
**W** *Warehouse*  
*it*

Our Goal  
Provide the University  
with tools they can  
use themselves

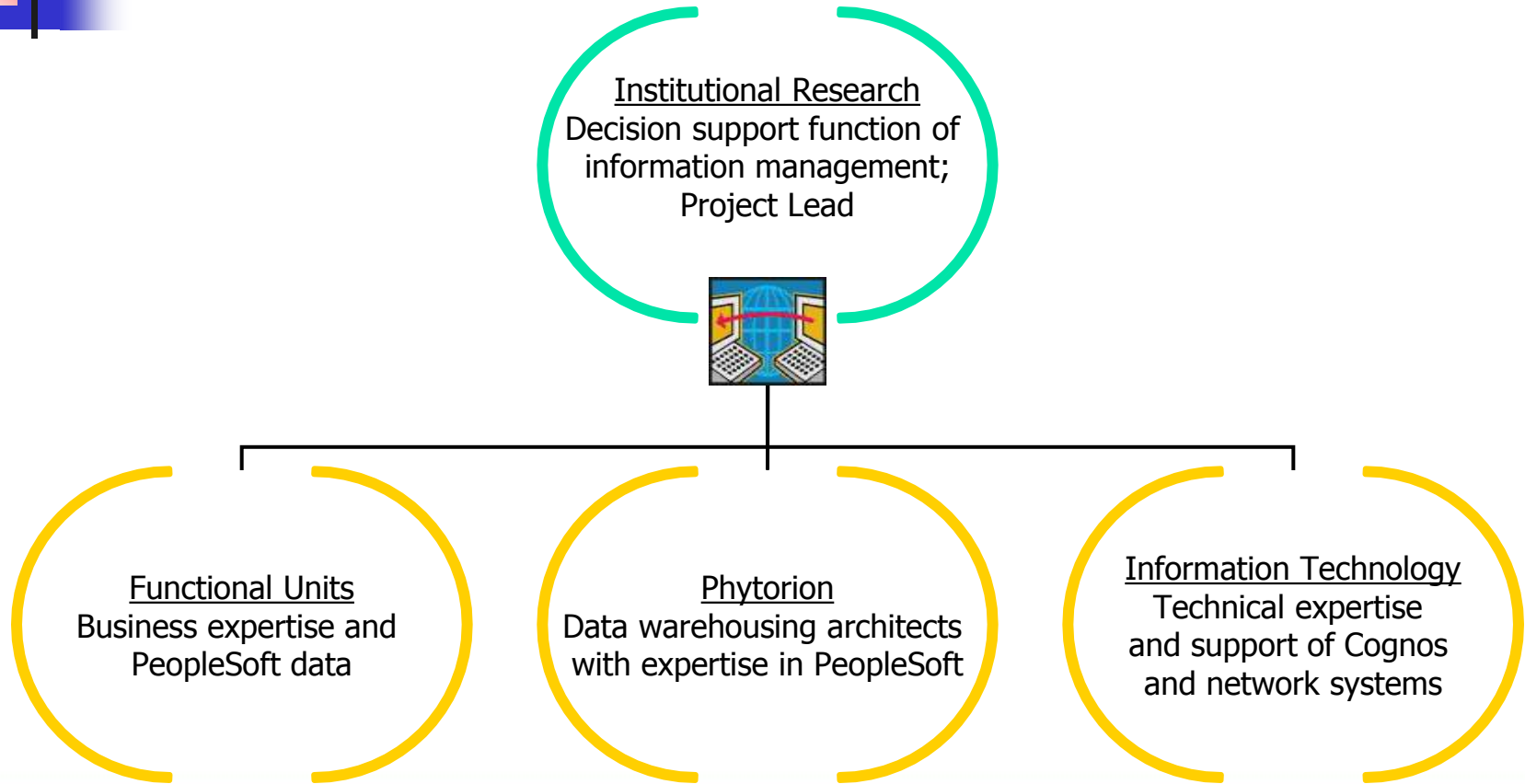
"You Do It"



# Enterprise Warehouse



# Internal Organization





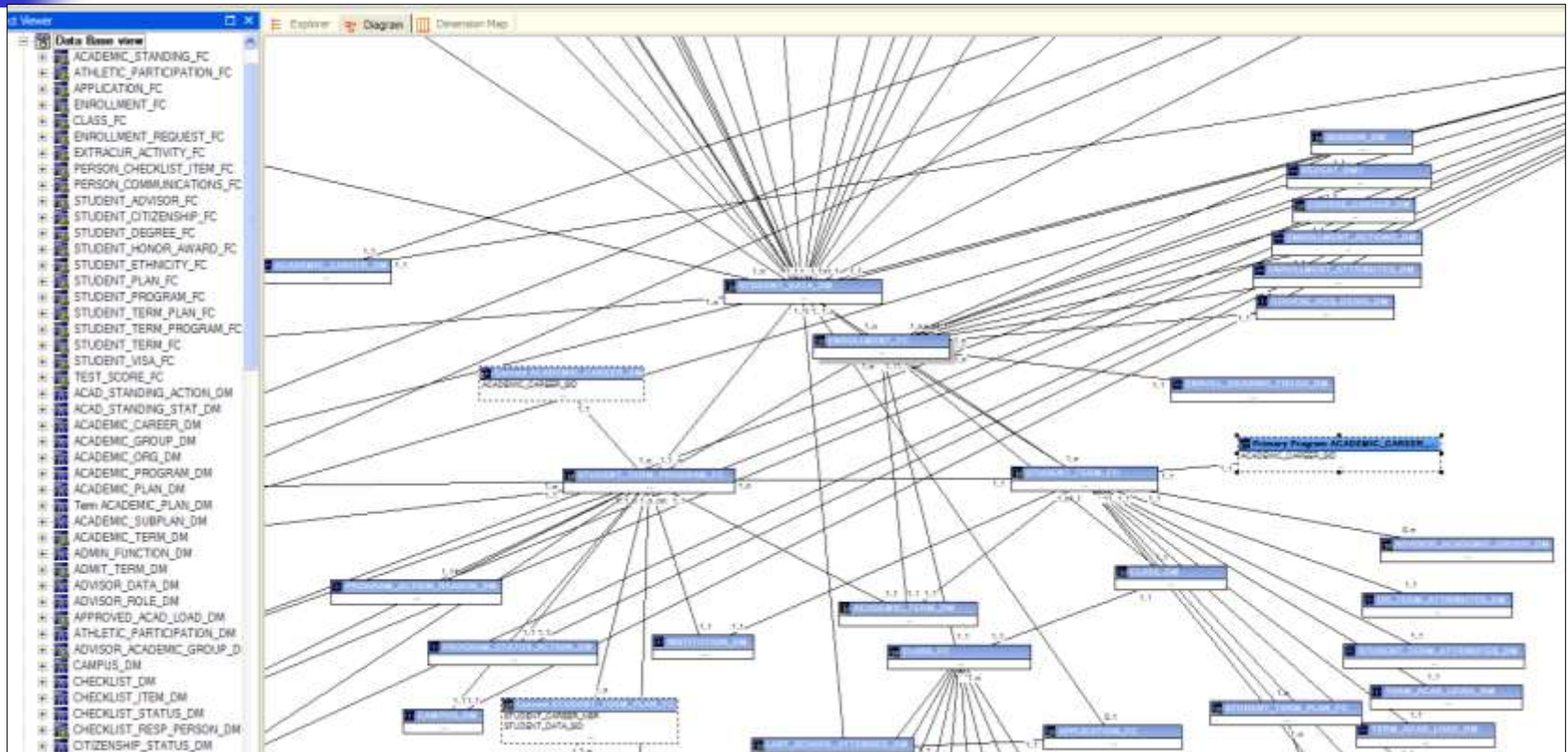
# Phased Reporting Approach

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- Phase 1 – Institutional Research Development
  - Build and test data models (packages)
  - Provide prompted reports to campus users
- Phase 2 – Campus Units
  - Cognos training
  - Verify data in SDM models
  - Write production and ad-ho reports
- Phase 3 – Business Intelligence Reports
  - Portal Pages
  - Digital Dashboards



# Phase 1: Data Modeling



# Reports for Functional Units

Cognos Connection Event Studio Query Studio Analysis Studio Report Studio

kdemonte [Log Off](#) Tools Help

My Folders **Public Folders**

Public Folders > 1-UD Student Admin Reporting > **Student Enrollment**

Entries: 1 - 7

<input type="checkbox"/>	Name ↕	Modified ↕	Actions
<input type="checkbox"/>	<a href="#">Missing Data</a>	February 21, 2008 10:35:47 AM	
<input type="checkbox"/>	<a href="#">No Active Program</a>	February 15, 2008 9:42:06 AM	
<input type="checkbox"/>	<a href="#">Phi Beta Kapp</a>	September 4, 2007 10:12:23 AM	
<input type="checkbox"/>	<a href="#">Plan Seq &lt; 10</a>	September 13, 2007 1:45:53 PM	
<input type="checkbox"/>	<a href="#">Students with no active primary name</a>	February 17, 2008 3:54:00 PM	
<input type="checkbox"/>	<a href="#">Term active CE without current program CE</a>	February 15, 2008 10:46:44 AM	
<input type="checkbox"/>	<a href="#">TermActivated2Careers</a>	February 15, 2008 10:39:20 AM	





# Data Verification Reports

https://cognos-test.udel.edu/ - No Active Program\* - Report Studio - Windows Internet Explorer

File Edit View Structure Table Data Run Tools Help

Insertable Objects

- Current Address
- Current Email
- Names
- Current Phone Numbers
- Degree CheckOut
- Email Address All
- Enrollment
  - CONNECTED\_FLAG
  - CONNECTED\_DESC
  - Current ACADEMIC
  - Current ACADEMIC
  - ACADEMIC\_PLAN\_S
  - ACADEMIC\_PI AN

**No Active Program**

EMPLOYEE_ID	PRIMARY_NAME	Primary ACADEMIC_PROGRAM	Current ACADEMIC_PROGRAMS
<EMPLOYEE_ID>	<PRIMARY_NAME>	<Primary ACADEMIC_PROGRAM>	<Current ACADEMIC_PROGRAMS>
<EMPLOYEE_ID>	<PRIMARY_NAME>	<Primary ACADEMIC_PROGRAM>	<Current ACADEMIC_PROGRAMS>
<EMPLOYEE_ID>	<PRIMARY_NAME>	<Primary ACADEMIC_PROGRAM>	<Current ACADEMIC_PROGRAMS>
<EMPLOYEE_ID>	<b>Summary</b>		

Cognos Viewer

kdemonte

**No Active Program**

EMPLOYEE_ID	PRIMARY_NAME	Primary ACADEMIC_PROGRAM	Current ACADEMIC_PROGRAMS
700022497	XXXXXXXXXXXX		BE
<b>1</b>	<b>Summary</b>		



# Phase 2: Campus Users

## Office of Institutional Research and Planning Our Mission

## University of Delaware



[UD Home](#) [Staff](#) [Contact Us](#)

- Budget Support Notebook (*authorized access only*)
- Common Data Set
- Delaware Study of Instructional Costs and Productivity
- Facts and Figures
- Faculty Out-of-Classroom Activity
- Professional Presentations
- Quick Facts
- Reports, Surveys, and Studies
- UDEW IT - University of Delaware Enterprise Reporting (*authorized access only*)

The **Office of Institutional Research and Planning (IR&P)** collects data from both internal and external sources, and then analyzes, distributes, and presents this information for use in planning, decision-making, and policy formulation at the University of Delaware. We respond to diverse requests for data from members of the University community, and assist personnel in other units with research and assessment methodology, evaluation, and analysis.

The Office has access to and is responsible for reporting from University databases (i.e., Student Administration; Human Resources; Financials, etc.), and the Office provides consultation, computer programming, and analytical support for several other recurring projects such as IPEDS coordination, Middle States annual data summaries, retention, and

### 2006/2007 Updates:

- Secure Cost Site release date set for July 2007
- Fall 2006 Common Dataset released January 2007
- UDEW IT, University of Delaware Administrative Reporting System. Phased Release beginning in Fall 2007

Easy Access to Cognos Reports For AA Deans



# Reports for Assistant Deans

**Cognos Connection** Event Studio Query Studio Analysis Studio Report Studio

kdemonte [Log Off](#) Home Search Tools Help

My Folders **Public Folders**

Public Folders > 1-UD Student Admin Reporting > AA Deans

Entries: 1 - 13

<input type="checkbox"/>	Name	Modified	Actions
<input type="checkbox"/>	Official Census Reports	March 4, 2008 4:06:51 PM	More...
<input type="checkbox"/>	Current Enrollment by Class and Gender	February 1, 2008 9:37:25 AM	More...
<input type="checkbox"/>	Current Enrollment by Minors (drill thru)	March 5, 2008 3:36:28 PM	More...
<input type="checkbox"/>	Current Enrollment by Time Status (drill thru)	January 18, 2008 1:09:41 PM	More...
<input type="checkbox"/>	Current Enrollment by Time Status and Residency (drill thru)	January 18, 2008 1:11:09 PM	More...
<input type="checkbox"/>	Majors By Class and Ethnicity	February 29, 2008 10:49:47 AM	More...
<input type="checkbox"/>	Majors By Class and Gender	February 24, 2008 5:52:41 PM	More...
<input type="checkbox"/>	Open Matriculation Enrollment by Primary Major (unduplicated)	January 4, 2008 9:53:41 AM	More...
<input type="checkbox"/>	Open Matriculation Enrollment Counts by Primary Major (unduplicated)	March 7, 2008 2:48:50 PM	More...
<input type="checkbox"/>	Students on Deans List	January 31, 2008 8:03:32 AM	More...
<input type="checkbox"/>	Students on Probation	January 4, 2008 9:39:41 AM	More...
<input type="checkbox"/>	Subject to Dismissal (QPD > 12.999)	January 4, 2008 9:55:02 AM	More...
<input type="checkbox"/>	Subject to Dismissal with grades (QPD > 12.999)	January 7, 2008 8:44:14 AM	More...



# Sample Report

Prompt for Minor:

**Prompt**

Provide values for the report you are about to run.

- \* Indicates a required field.
- Points to missing information.

**MINOR1**

Provide a value:

- \* EC-BS
- EC-MIN
- ECA-BAAS
- EDS-MIN
- EGTE-MIN
- ENEG-MIN
- ENG-BAAS
- ENG-MIN
- ENST-MIN
- ENT-MIN
- FA-MIN

[Select all](#) [Deselect all](#)

Drill thru  
to Student  
Matrix

**University of Delaware  
Student Data Mart  
Student Enrollment By Minor**

[ENEG-MIN](#)

**2008 Spring Semester**

MINOR1	MINOR2	MINOR3	ACAD_CAREER	College	ACADEMIC_ORG	MAJOR1	Count
ENEG-MIN	HIS-MIN		UGRD	AS	CHBC	CHEM-BAAS	1
CMGS-MIN	ENEG-MIN		UGRD	AS	GEOG	ENSC-BSAS	1
ENEG-MIN			UGRD	EG	CHEG	CHE-BCHE	1
ENEG-MIN	BCEG-MIN		UGRD	EG	CHEG	CHE-BCHE	1
BCEG-MIN	CHM-MIN	ENEG-MIN	UGRD	EG	CHEG	CHE-BCHE	1
CHM-MIN	EC-MIN	ENEG-MIN	UGRD	EG	CHEG	CHE-BCHE	1
BCEG-MIN	ENEG-MIN		UGRD	EG	CHEG	CHE-BCHE	1
SP-MIN	ENEG-MIN	BCEG-MIN	UGRD	EG	CHEG	CHE-BCHE	1
ENEG-MIN			UGRD	EG	CIEG	CE-BCE	9
ENEG-MIN	EC-MIN		UGRD	EG	CIEG	CE-BCE	1
BUS-MIN	ENEG-MIN		UGRD	EG	CIEG	CE-BCE	1
PSC-MIN	ENEG-MIN		UGRD	EG	CIEG	CE-BCE	1
ENEG-MIN	HIS-MIN		UGRD	EG	CIEG	CE-BCE	1
ENEG-MIN	MSC-MIN		UGRD	EG	CIEG	CE-BCE	1
ENEG-MIN			UGRD	EG	MEEG	ME-BME	1
<b>Summary</b>							<b>23</b>

NOTE: Excludes Students on Leave of Absence

Office of Institutional Research and Planning

Source: SDM/UDSIS\_Term\_Extract





# User Response

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E-mail from College of Engineering Assistant Dean:

*Dear Assistant Deans, I frequently get requests from my faculty regarding the population of students who are enrolled in our various engineering minors. I explained this to Karen DeMonte, and she quickly produced a very useful report which you can find on the UDEW IT site (see below). I think you will find it useful. Karen, thank you very much.*



## Phase 3: BI Portlet

The report cannot run because of insufficient access permissions. Contact your administrator.

### Admission News Items

Entries: 1 - 1

Name

Acceptance Rate has increased!!

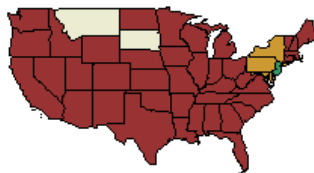
### Admissions Production Reports

Entries: 1 - 2

Name

Fall 2007 Admissions Monitoring

Weekly Summary Admission Report



Acceptance by State: 2007



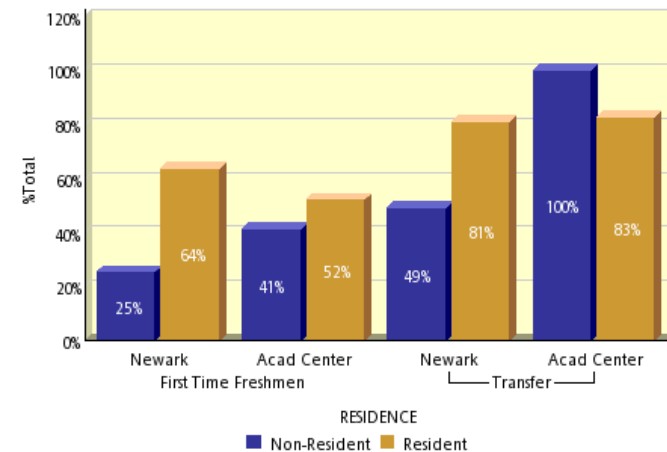
UNIVERSITY OF DELAWARE

Admission Monitoring

Fall 2007 as of Sep 24, 2007

ADMIT TYPE	CAMPUS	RESIDENCE	OFFERED ADMISSION	ACCEPTED OFFER (DEPOSIT)
First Time Freshman	Newark Campus	Out of State	9,832	2,534
		Delaware	1,620	1,058
<b>Newark Campus</b>			<b>11,452</b>	<b>3,592</b>
	UD Academic Centers	Out of State	15	6
		Delaware	642	351
<b>UD Academic Centers</b>			<b>657</b>	<b>357</b>
<b>First Time Freshman Applicants: 23,269</b>			<b>12,109</b>	<b>3,949</b>
Transfer	Newark Campus	Out of State	498	259
		Delaware	286	249
<b>Newark Campus</b>			<b>784</b>	<b>508</b>
	UD Academic Centers	Out of State	1	1
		Delaware	9	8
<b>UD Academic Centers</b>			<b>10</b>	<b>9</b>
<b>Transfer Applicants: 2,005</b>			<b>794</b>	<b>517</b>
<b>Total Applicants: 25,274</b>			<b>12,903</b>	<b>4,466</b>

Percentage of Accepts to Offers



Total Applicants include all completed and non-completed applications submitted to the University of Delaware. The UD Academic Centers house the Associate of Arts program in cooperation with Delaware Technical & Community College.



UNIVERSITY OF DELAWARE



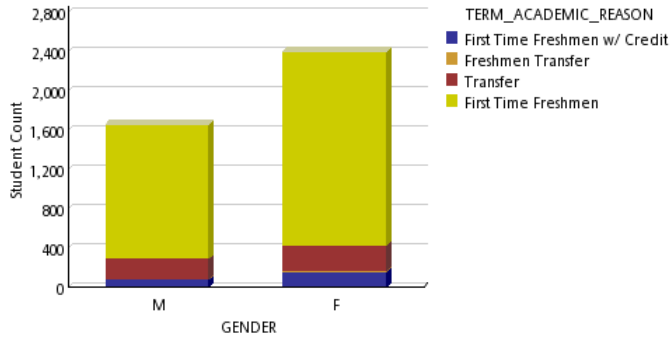
PHYTORION

# Digital Dashboards

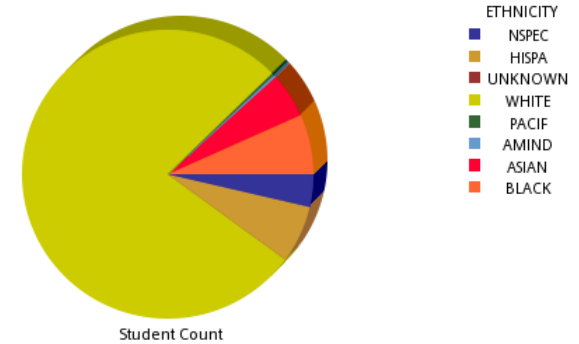


UNIVERSITY OF DELAWARE

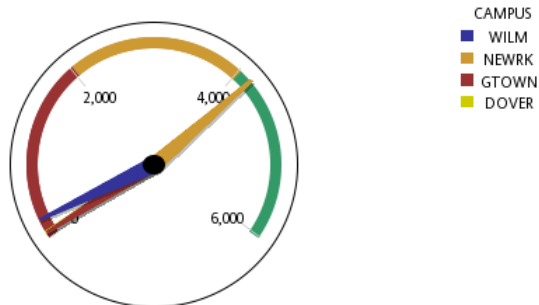
Enrollment by Entry: Undergraduate



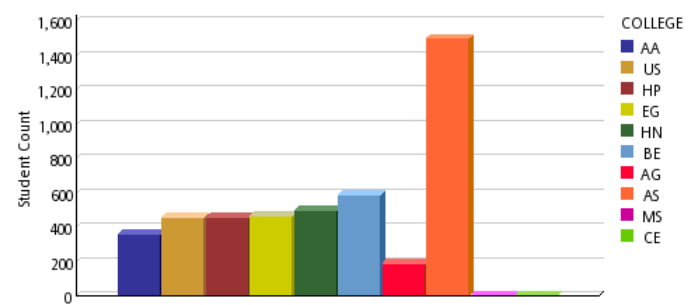
Enrollment by Ethnicity



Enrollment by Campus



Enrollment by College





# Project Milestones

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- Trained core functional users
- Created drill-thru reports for AA Deans
- UDEW-*it* User group established
- University wide training unit established
- Business requirements for Finance and Human Resources data marts completed







# Project Setbacks

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- Data Modeling challenges
- Data verification and testing
- Load time for build
- Staffing issues
- Administrative support





# Lessons Learned

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- When is the best time to implement
- Verify the sourcing documents
- Functional users commitment required
- Resources you will need
- Amount of time





# Plans for the future

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- Incorporate Finance and Human Resource data marts into UDEW with Phytorion's help
- Incorporate other university systems into UDEW (ie: Housing, Development, etc.)
- Incremental updates
- Release an institution-wide data warehouse with Cognos to the University community





# Questions ?

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[www.udel.edu/IR](http://www.udel.edu/IR)



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