

# Designing a Datamart to Unlock Valuable Insight:

## Northwestern's Story

**Nick Angeloni**

Director, Research Analytics

**Kim Griffin**

Senior Director, Business Systems and  
Operations, Sponsored Research

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Northwestern University

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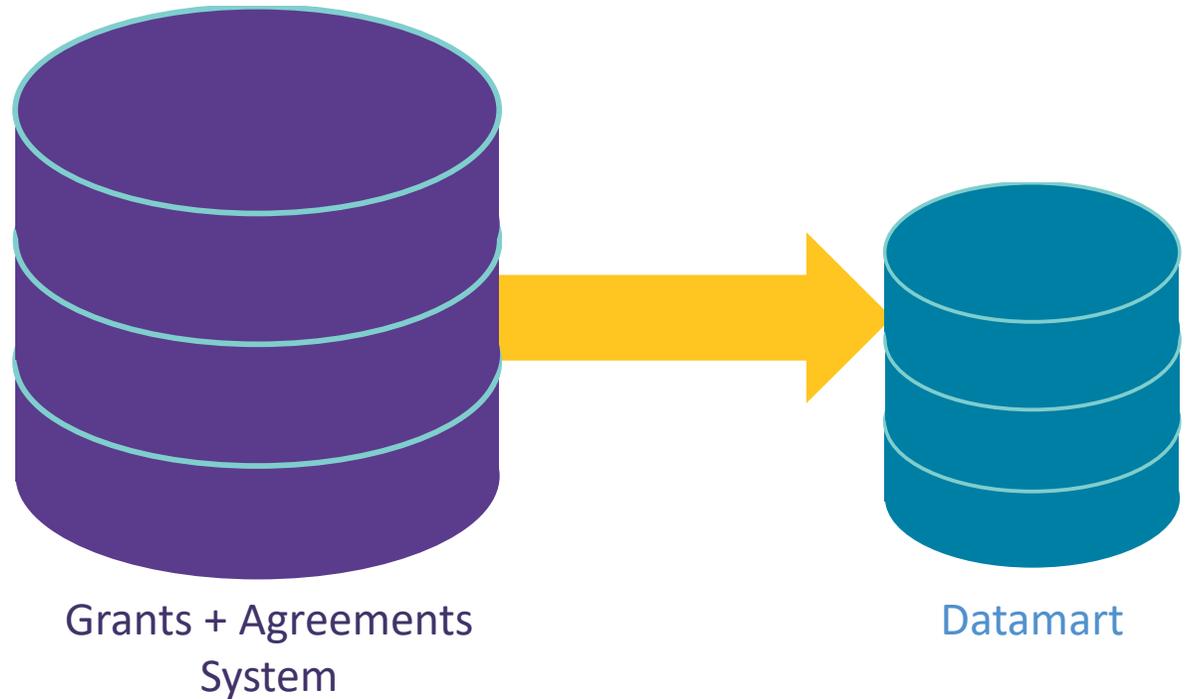


# Objectives

Identify how a datamart connected to a grants and agreements system **informs** the broad varieties of research support activities

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Describe key activities and considerations required to **design** an effective datamart





# Poll



Do you currently have a research datamart for sponsored research reporting?

.....

Are you currently gearing up for a grants & agreements system replacement and/or datamart implementation?



# Poll

Join at [menti.com](https://menti.com) use code 7936 9869

 Mentimeter

## Do you currently have a research datamart for sponsored research reporting?

0  
Yes, I am a regular user

0  
Yes, I've used it a little bit

0  
Yes, but I'm not familiar with it

0  
What's a datamart?

0  
Not sure





# Poll

Join at [menti.com](https://menti.com) use code 7936 9869

 Mentimeter

Are you currently gearing up for a grants & agreements system replacement and/or datamart implementation?

0%  
Yes

0%  
Considering, no firm plans

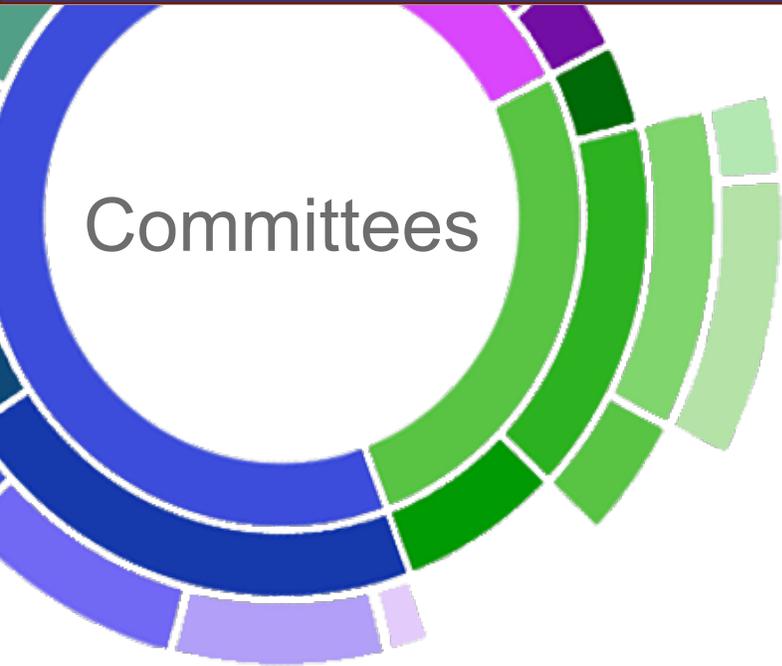
0%  
No

0%  
Not sure





# Acknowledgements





# Northwestern University



12 colleges and schools



4,000+ full time faculty



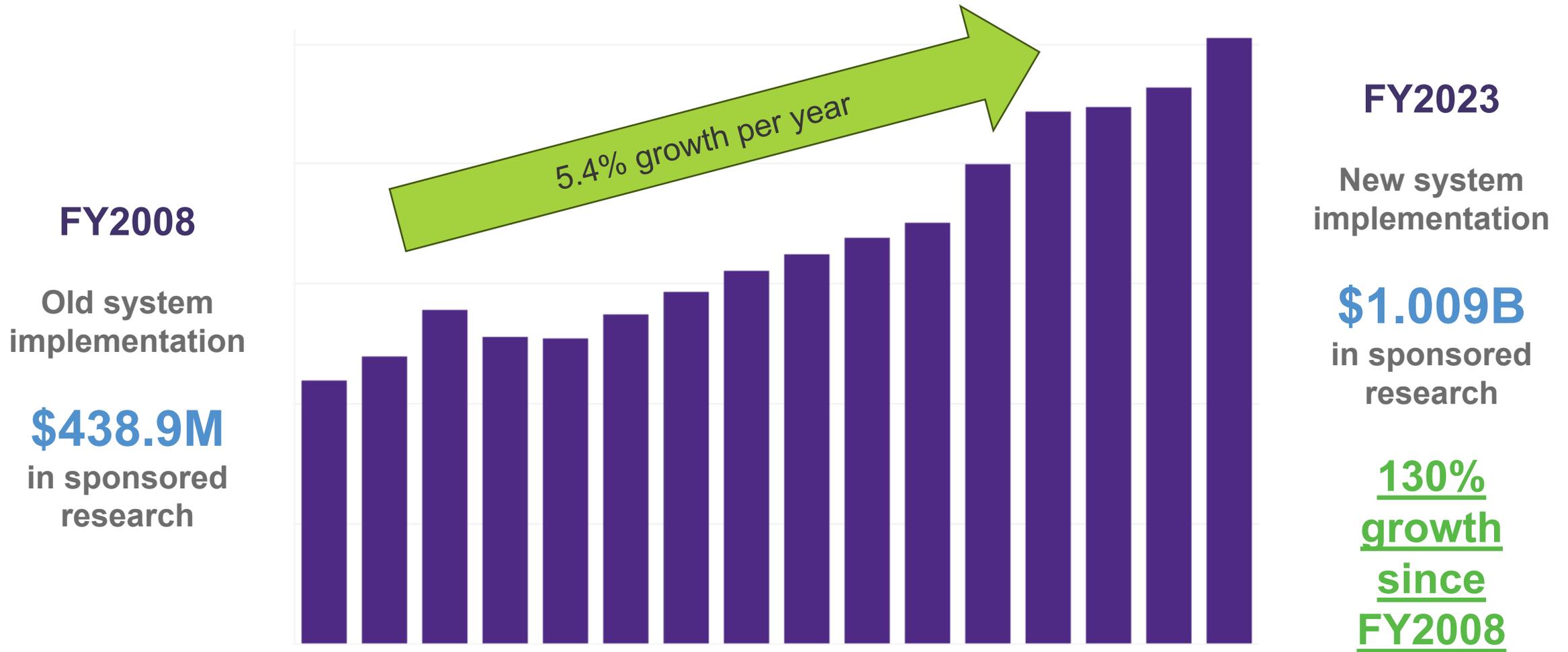
8,839 undergraduates

14,546 graduate/professional

**\$1B**  
sponsored  
funding  
FY23



# Sponsored Research at Northwestern





# Why did we switch systems?



82% increase since 2013

Growth equals change

.....

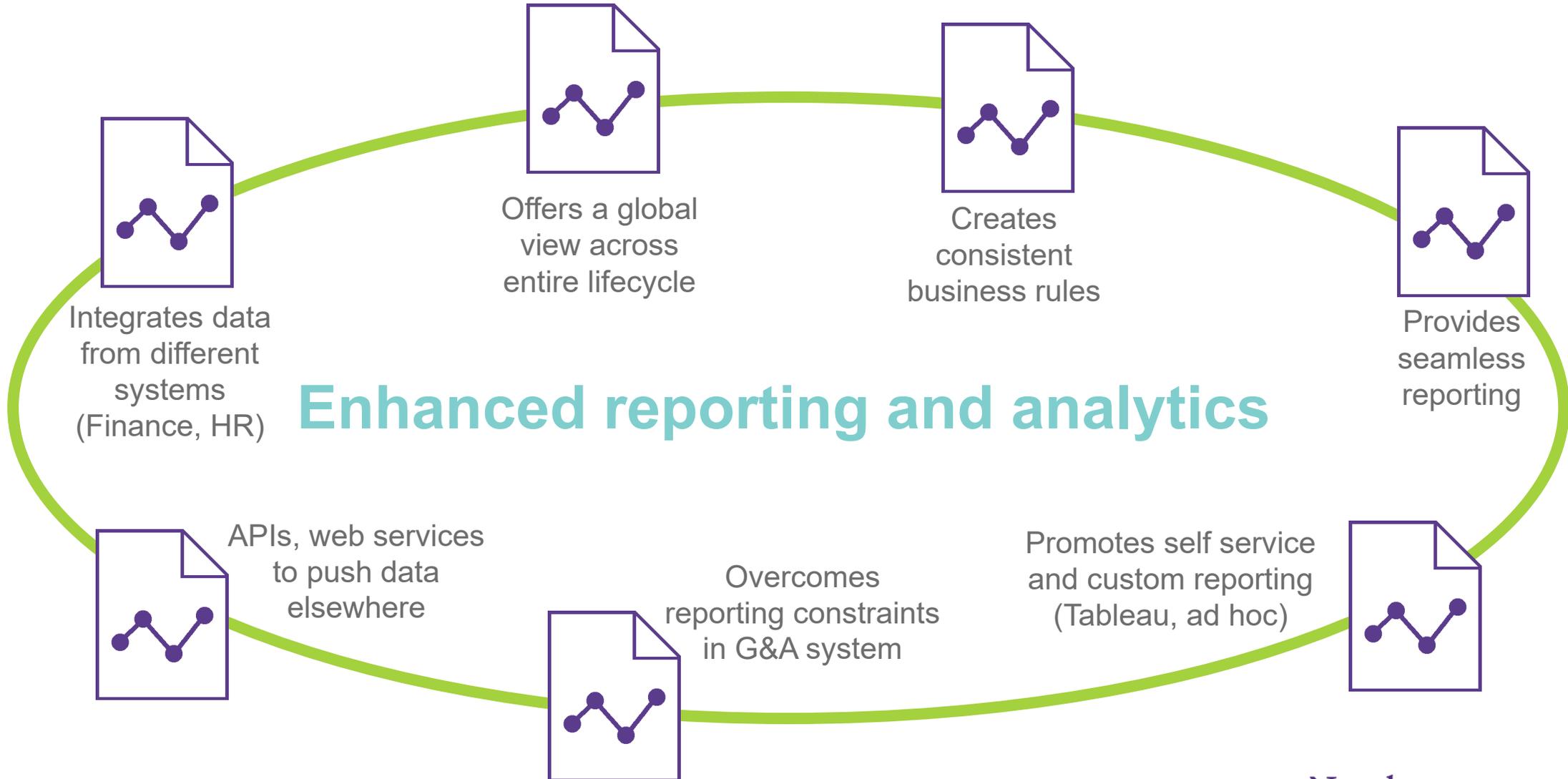
Need to scale our technology

.....

System no longer met needs



# Why create a datamart?





# Discovery

Met early with stakeholders

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Defined high level goals:

- Simplify data model
  - Provide additional fields & data sources
  - Increase adoption of self-service
  - Improve documentation
- 

Involved vendor

**LESSONS LEARNED**

Need to expand stakeholder group



# Current vs. Aspirational State

## Issues with existing Datamart (2008)

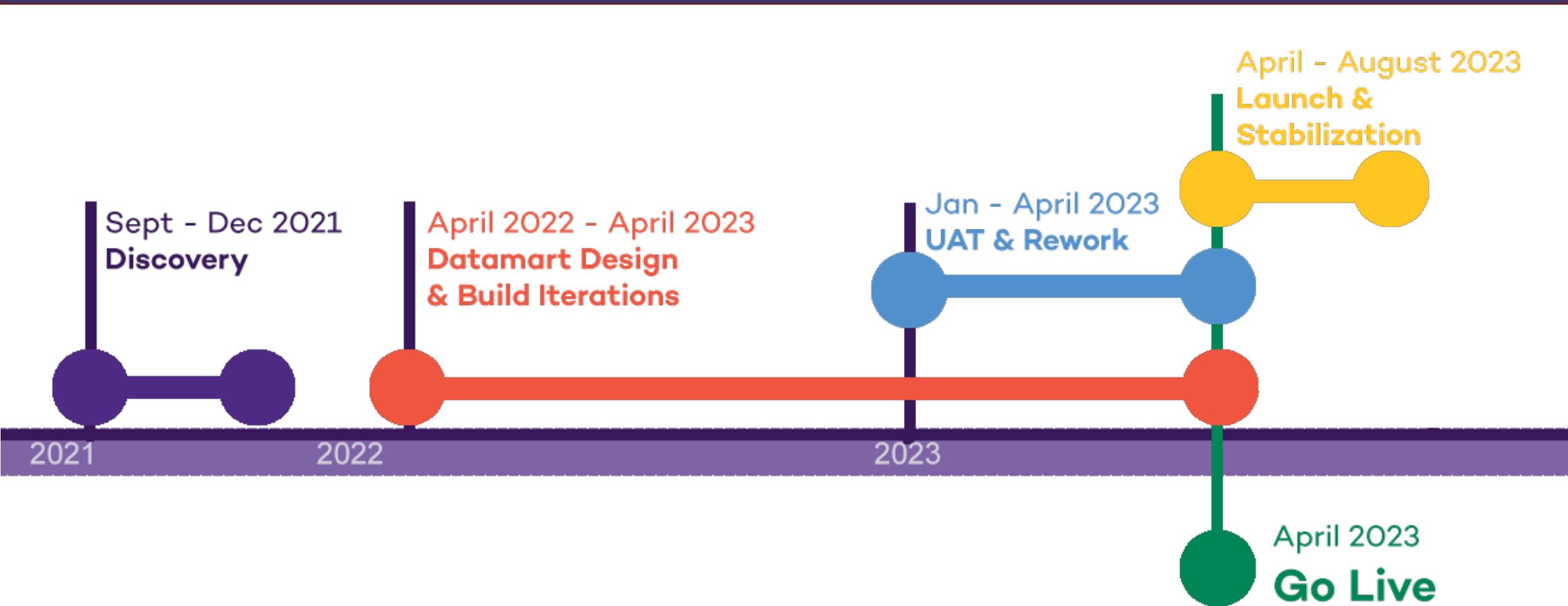
- Data model was convoluted
- Data fields were too basic
- No transaction workflow information
- Data dictionary non-existent

## Aspirational state

- Simplify data model
- Provide additional fields & data sources
- Increase adoption of self-service
- Improve documentation

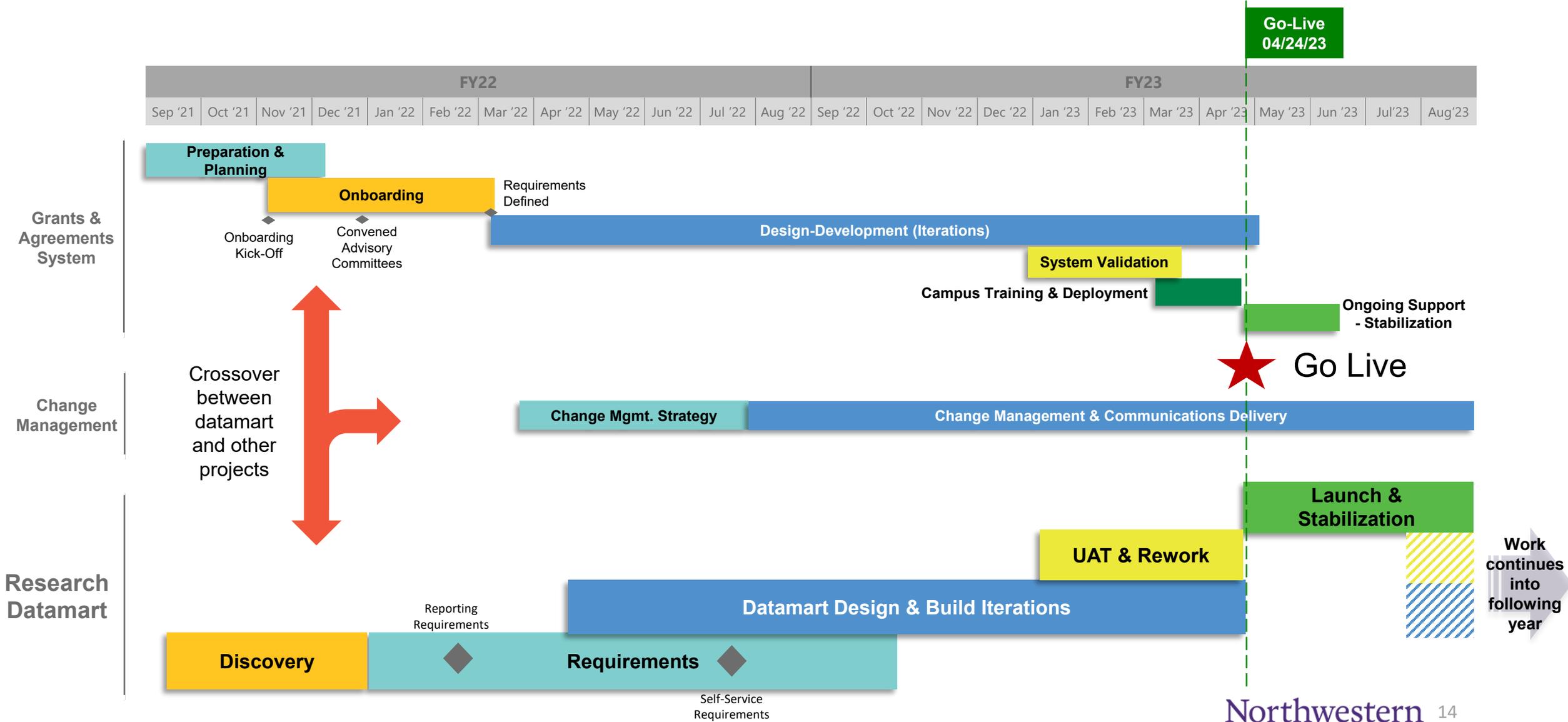


# Timeline





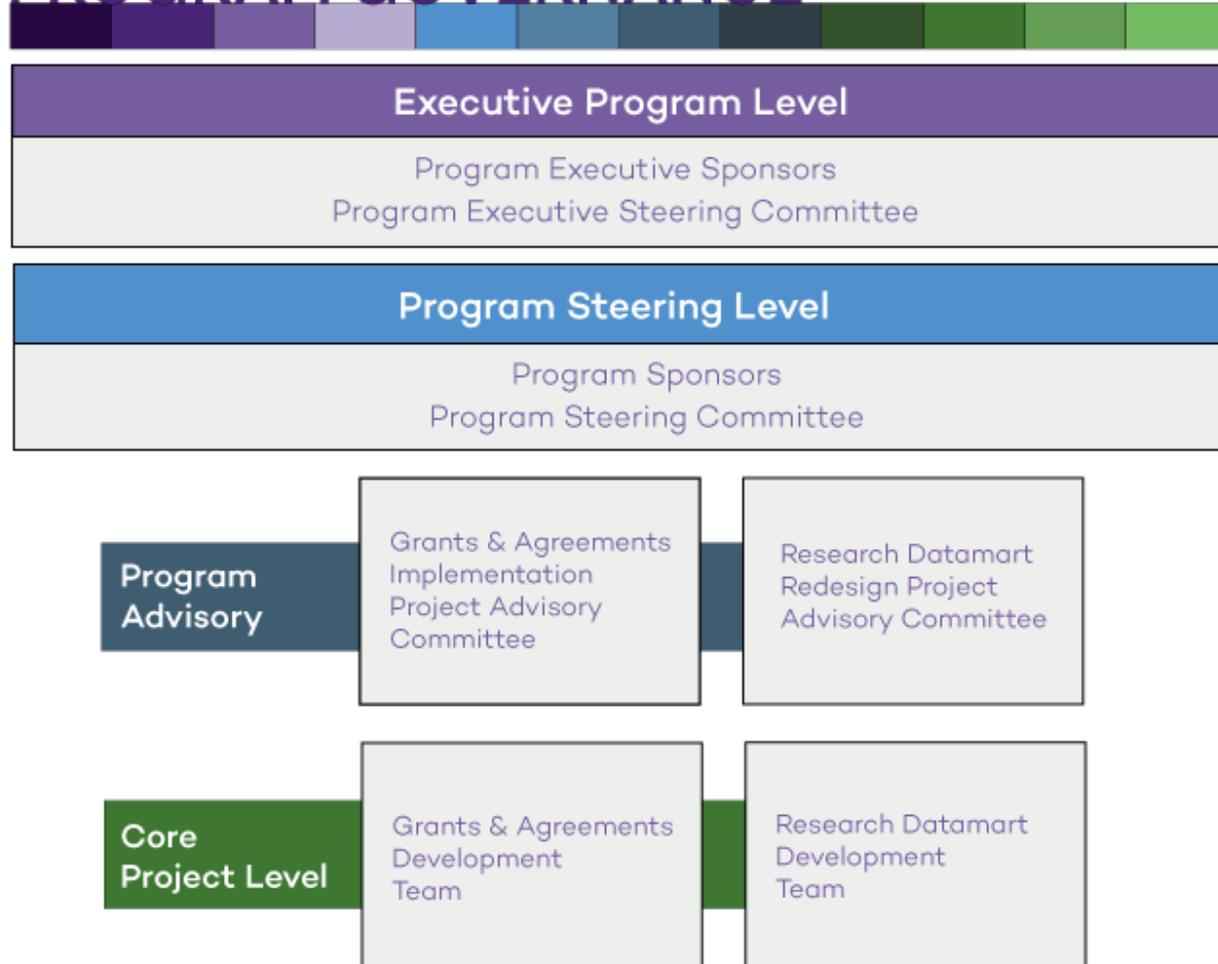
# Program Schedule





# Participants

## PROGRAM GOVERNANCE



## LESSONS LEARNED

- Use collaboration suite
- Have standing meetings
- Have an initial kickoff
- Structure roles/responsibilities
- Account for personnel turnover



# Design and Build Activities

Staggered integrations in datamart with new system integrations

.....

Defined requirements for reports

.....

Consultants moderated sessions and developed specs

.....

Created mapping between old and new systems

## LESSONS LEARNED

- Get report update and retirement specs early
- Increase communication between projects
- Involve users early
- Move away from preconceived notions
- Increase consulting contract length



# Identifying Fields



What questions need to be answered?

.....



What types of data do we need?

.....



How to best engage stakeholders?

## LESSONS LEARNED

- Make source-to-target mapping available earlier
- Get draft earlier, even if imperfect
- Solicit feedback from wider research community



# Data Model

## Awards

F\_AWARD\_SUMMARY  
F\_AWARD\_BY\_ALLOCATION  
F\_AWARD\_TO\_PROPOSAL  
F\_SUBAWARD  
D\_ALLOCATION  
D\_AWARD  
D\_AWARD\_MOD  
D\_SUBAWARD

.....

## Effort Reporting

F\_COMMITTED\_EFFORT

## Proposals

F\_PROPOSAL\_BY\_BUDGET\_PERIOD  
F\_PROPOSAL\_SUMMARY

.....

## Transaction Workflow

F\_TRANSACTION\_WORKFLOW\_HISTORY  
F\_TRANSACTION\_WORKFLOW\_SUMMARY

## Agreements

F\_AGREEMENT\_DETAIL  
F\_AGREEMENT\_SUMMARY  
D\_AGREEMENT

.....

## Shared

F\_PERSON\_ROLE  
D\_PERSON  
D\_ROLE  
D\_FINANCIAL\_ACCOUNT  
D\_DATE  
D\_DEPT  
D\_ROLE  
D\_SPONSOR

Fact Tables = numerical data

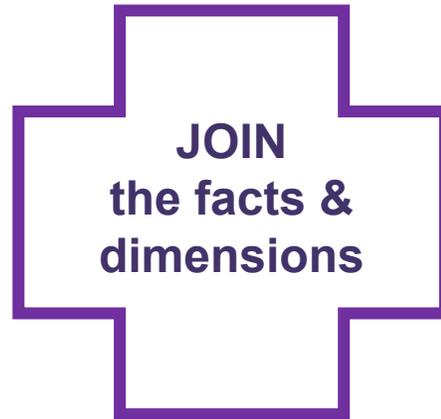
Dimension Tables = descriptive data



# Build a Table

## BUILD a table containing:

Allocation Amount  
Award ID  
PI Name  
Award Department  
Award Sponsor  
Allocation Reporting Date



F\_AWARD\_BY\_ALLOCATION (Allocation Amount)

D\_AWARD (Award ID)

D\_PERSON (PI Person Data)

D\_ROLE (PI Role Data)

D\_DEPT (Award Department)

D\_SPONSOR (Award Sponsor)

D\_DATE (Date Details)

## LESSONS LEARNED

- Reuse dimensions where applicable



# Data Access and Security



Support for Cognos, Tableau, PowerBI

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Data dictionary and documentation

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Avoid row level security



# Data Conversion

Complex but important

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Allows for longitudinal reporting

.....

Business processes can remain same after remapping

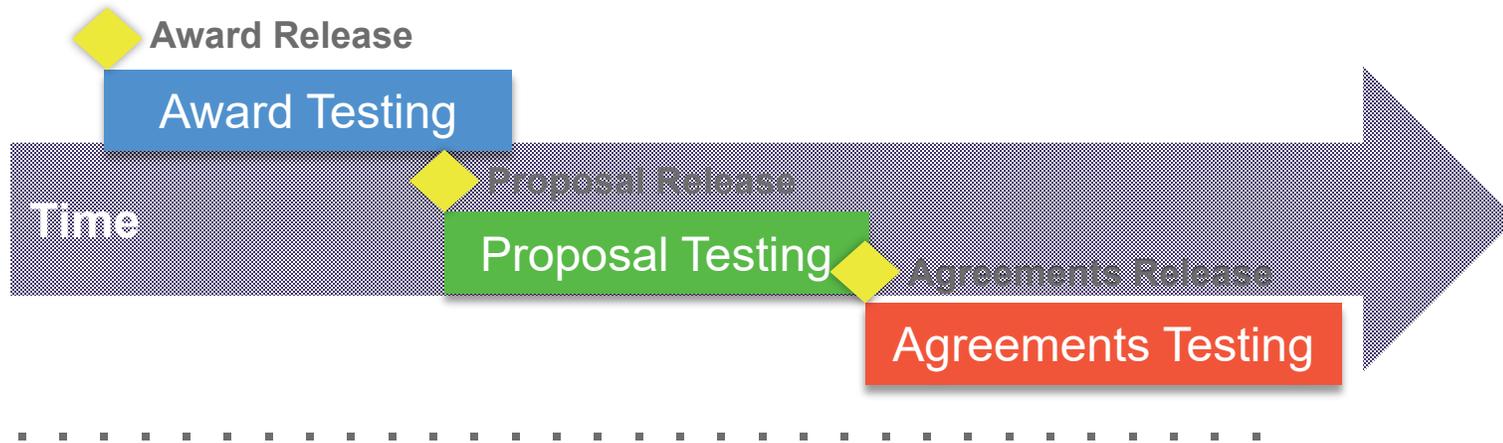






# Testing

Testing schedule was staggered by release



Shared issue log – implementation team prioritized fixes

## LESSONS LEARNED

- Have issue log available via collaboration suite
- Set roles and expectations for testing
- UAT windows were shorter than ideal and overlapped due to limited time



# Change Management



## InfoEd - CERES Reports Crossmap

InfoEd Report Number and Name	NEW CERES Report Number and Name
ER001 - Committed and Certified Effort	ER001 - Committed and Certified Effort
GM030 - Award Amount Expected	Retired - similar info available on GA401, 402, 403
GM048 - Sponsor Trends: Proposals	GA104 - Proposal Summary by Sponsor
GM049 - Aging Submitted Proposals	Retired
GM052 - Faculty Proposal Activity	GA101 - Proposal Detail
GM053 - OSR Negotiation Metrics	GA301 - Agreement Detail
GM055 - Negotiation Status Report	GA301 - Agreement Detail
GM057 - Faculty Award Activity	GA201- Award Allocation Detail
GM059 - Proposed and Funded Cost Share	Retired
GM060 - Current, Pending and Completed Support: Active Awards-All Roles	GA401 - Current Awards - All Roles
GM063 - Sponsor Trends: Awards	GA204 - Award Allocation Summary by Sponsor
GM064 - Monthly Award Detail	GA201- Award Allocation Detail
GM065 - Proposals Summary by Sponsor Type	GA104 - Proposal Summary by Sponsor
GM066 - Proposals Summary by Management Area	GA102 - Proposal Summary by Department
GM067 - Awards Summary by Management Area	GA202 - Award Allocation Summary by Department
GM068 - Awards Summary by Sponsor Type	GA204 - Award Allocation Summary by Sponsor
GM070 - Awards with Required Cost Sharing	Retired
GM071 - Monthly Proposal Detail	GA101 - Proposal Detail
GM072 - Award Analysis	GA201- Award Allocation Detail
GM073 - Proposal Success Rate	Retired
GM074 - Proposal Analysis	GA101 - Proposal Detail
GM084 - Current, Pending and Completed Award	GA403 - Completed Awards - All Roles
GM085 - Current, Pending and Completed Support: Pending Proposals	GA402 - Pending Proposals - All Roles
GM090 - Award Projection Report	Retired
GM092 - Subcontract Monitoring Report	GM092 - Subcontract Monitoring Report

Effort in parallel with system implementation

- Included a report crosswalk to easily move from old to new
- Email reminders about switchover

Self service users were engaged through UAT

- Community of practice, weekly meeting, Teams channel



# Launch and Stabilization

Dates	# of reports new system	# of self service queries
Day 1	75	120
.....		
Week 2	521	985
.....		
Week 3	623	950
.....		
Week 4	614	1319

**LESSONS LEARNED**

- 1 month stabilization is too short
- Same team and same codebase for stabilization/enhancement limited what we could do
- Unexpected developments led to lost time



# What are we doing with the data?

Dashboards



Annual Reports for Institutes & Centers



Northwestern Scholars



Research Portal



Premade Reports

The screenshot shows a detailed data table with numerous columns and rows, likely representing a comprehensive report or dataset.



# Take Home

- A datamart has unique capabilities and is a powerful means to support data-informed decision making
- Think big about requirements and needs, but be realistic
- Implementation is multi-step and takes time
- Involve & engage university-wide stakeholders and assign clear roles – communication is key
- Empower end users through self-service capabilities & documentation
- Historical data conversion is high effort, high reward
- Be prepared for the unexpected and don't be discouraged!



# Future Plans

Stabilization/enhancement project underway

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Outreach/training to increase self-service adoption

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Thinking about best ways to prioritize future work



# Questions

Nick Angeloni  
[n-angeloni@northwestern.edu](mailto:n-angeloni@northwestern.edu)

Kim Griffin  
[kimberly.griffin@northwestern.edu](mailto:kimberly.griffin@northwestern.edu)

Northwestern