Unifying Disparate Data for Optimizing Business Practice

Chad Boersema

Chief Data Officer

NATIONAL
LOUIS
UNIVERSITY

Introduction

- Chad Boersema
  - Chief Data Officer @ National Louis University (NLU)
  - 30 years of working with data
  - 20 years with NLU
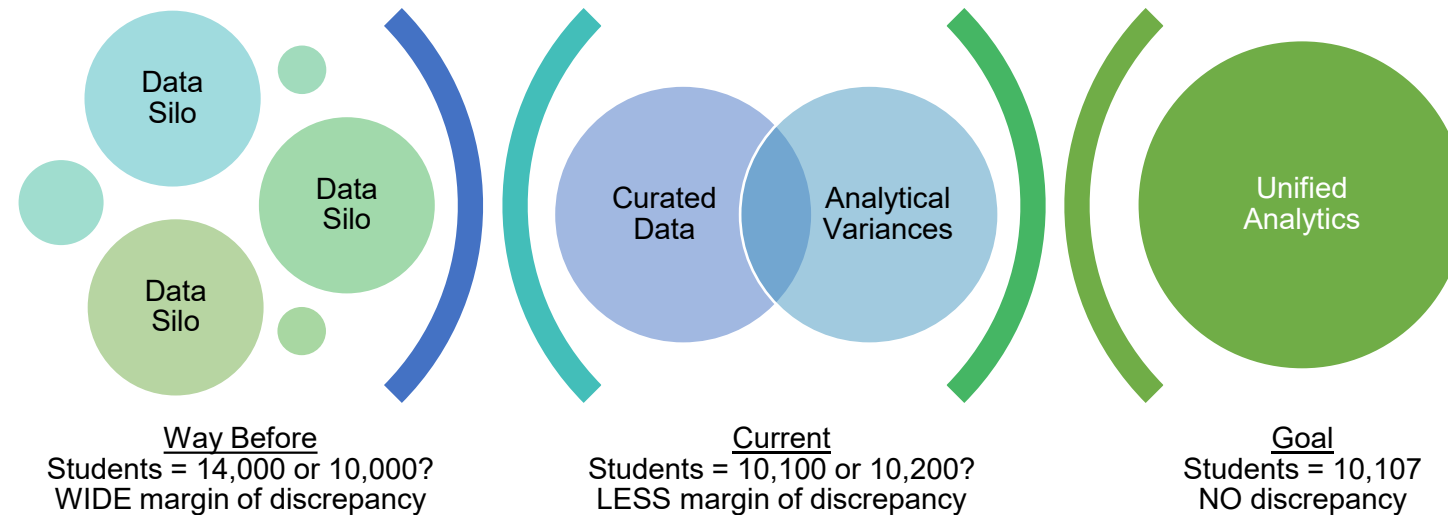 - cboersema@nl.edu

The NLU data story – Once upon a time…

Way before: No alignment of data work and very little collaboration

Currently: Alignment of data sources and some alignment on analytics

Goal: University wide alignment of data and analytics

Data Silo

Data Silo

Data Silo

Curated Data

Analytical Variances

Unified Analytics

Way Before
Students = 14,000 or 10,000?
WIDE margin of discrepancy

Current
Students = 10,100 or 10,200?
LESS margin of discrepancy

Goal
Students = 10,107
NO discrepancy

What was our problem?

- ERP's used to be the answer, a single-system solution that integrated processes across multiple business areas
- That is not the case any longer and there are multiple systems in use across the university, all meeting specialized needs
- Separate systems then means separate data sets not natively related to each other, nor accessible in the uniform ways
- This causes a nightmare and roadblock to effective institutional use of data assets

A time long ago…

Way before:

Data is everywhere!
Don't trust it!

Best Guess

IT Data

IR Data

Independent Data Silos

College Data

Reg Data
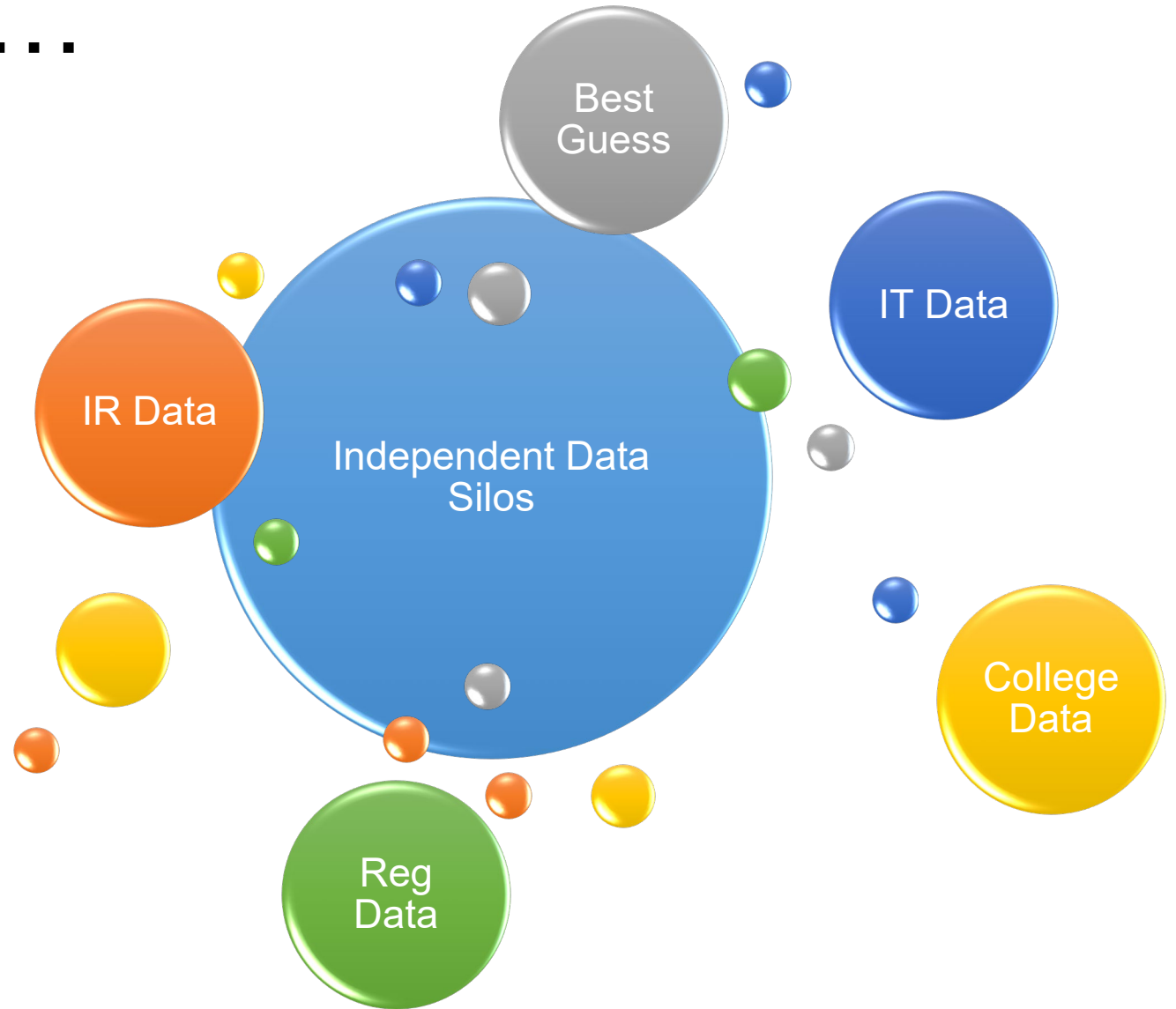
What was our solution?

- Given the plethora and dispersion of data sets in various systems, we knew we needed to bring the data together into a single repository to effectively gain meaningful use of it.

- Many reporting tools can combine data from multiple systems, but we determined a more solid foundation would be to create a central repository for data that any reporting tool could then connect to, so as not to be overly dependent on any one product.

- A single repository also allowed us to more effectively govern and build our business logic into the combined data sets, which were then made available to consumers for self reporting.

What was our solution?

- Defining our business logic, and establishing data governance, with a wide range of stakeholders across the university from the President to student facing administration was crucial for building trust in the data and the information drawn from it.

- This effort, to unify our data definitions and data sets from multiple systems into a single source of truth, led to the creation of a "data lake" for reporting and information.

- This project has been successful because of the desire, buy in, and utilization of NLU leadership. This infrastructure has become a primary way to gain insight into our past, present, and future, giving us a strong data-based foundation to confidently make decisions.

NLU BI Infrastructure

Data Systems
- Salesforce (CRM)
- Banner (SIS)
- D2L (Online Learning)
- Handshake (Career Services)
- Alchemer (Surverys)
- Braven Presence Others…
- National Student Clearinghouse

Data Access
- Account Login Credentials
- API
- FTPS
- Excel, Google, Smartsheet spreadsheets

Data Integrations
- Jitterbit
- One-off Manual Data Loads

Data Storage
- Data Lake (Oracle Database)

Data Analytics
- Tableau
- MS Power BI
- SQL Apps
- Jitterbit
- Cognos
- External Organizations
- R & Others…

NLU Data Lake

- Data currently from over 10 systems brought into a single data base
- Over 250 data objects used for reporting and analytics
- Automated nightly data refreshes
- Documented in an NLU data dictionary
- Supports reports and dashboards in Tableau and MS Power BI
- Recognized as an exemplar in EDUCAUSE Horizon report
- CACUBO best practices first-place winner

NLU Data Dictionary

- Data definitions

- Documentation of integrated data systems and sources

- Strategic metric and university analytics definitions

- Catalog of data lake content

- Documentation of data assets

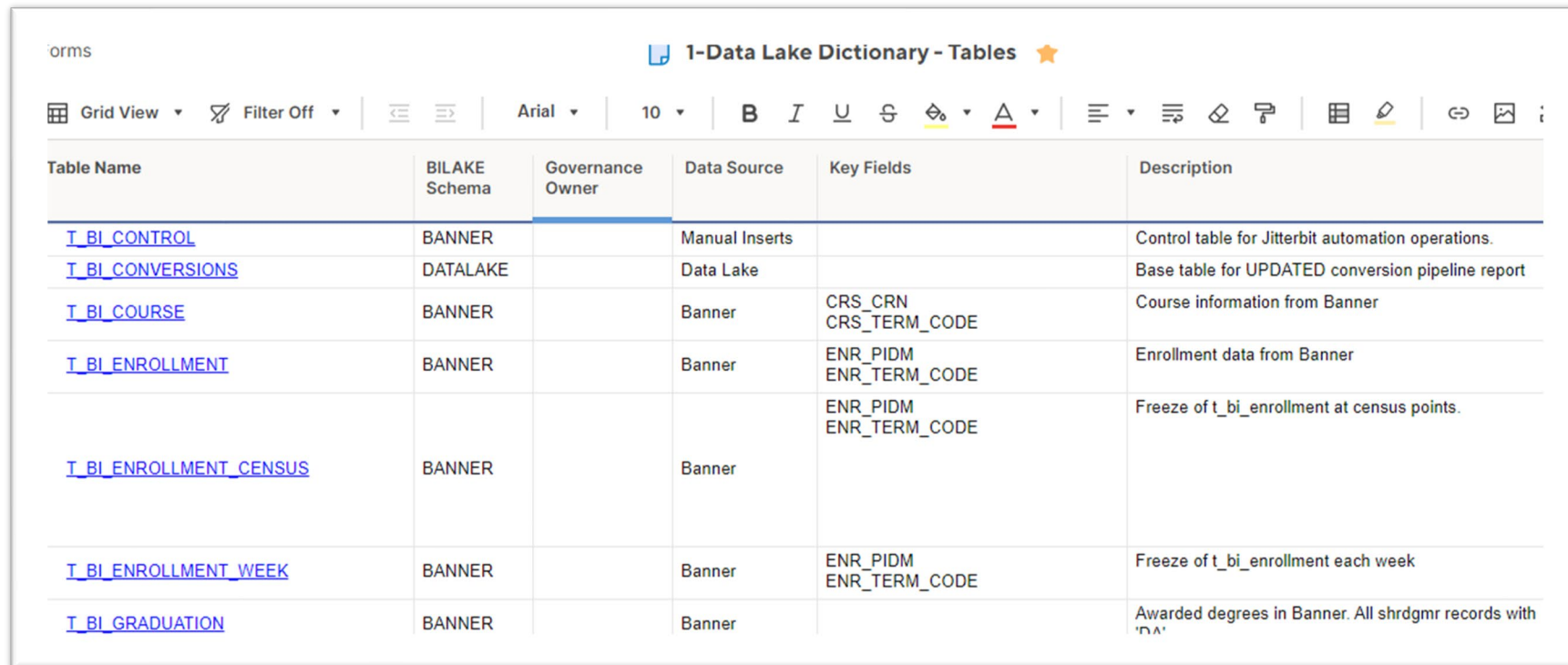# NLU Data Dictionary

Data Lake content currently 250+ data objects
from 10+ systems with more to be added

Timeline / Process

1. Define university wide data definitions and metrics
2. Identify necessary data, data location, and data transformations to support the data asset
3. Determine central data warehousing tool and perhaps data integration tool
4. Build the data assets using definition specs
5. Determine reporting tool(s) and build out reports/dashboards to deliver content
6. Train and socialize users of reports and dashboards on how to use them
7. Be very responsive to feedback and any roadblocks to understanding the data and using the delivered content. If it's not used, it's useless

Timeline is really dependent on how much is addressed at one time and how many resources are dedicated to building and maintaining an approach like this. Best practice though… start small with one to three crucial data elements or metrics and us that as a way to build confidence in the process. For us, the entire process to build the "data lake" occurred over a period of 9-12 months.

Benefits and Retrospect

- The benefits have been astounding. When leadership and management are in agreement around what they are talking about and have trusted information to make decisions around, so much time is saved not having to debate the merits of the data or the reporting itself.

- It allows everyone to travel in the same direction at the same time with confidence.

- One example of a tangible benefit has been utilizing data from 4 different systems in a single dashboard to enable our enrollment representatives to efficiently help students navigate through the application, financial aid, registration, orientation, and first week of class processes. The reps can quickly identify students stuck at various funnel points and intervene in a timely manner to help them along the process.

- Previously, this would have required manually accessing four different systems to check on a potential students progress. Needless to say, it wasn't efficient or effective. Now, we have a clear way to provide information to users as to how students are progressing through the pipeline and where any holdups might be.

- A new problem now, though not nearly as bad, just the next step in our evolution.

In a not too distant land…

Currently:

We have a lot of data, but "Where can I get it from?", and "Which is correct?", and "Why do they have so much when I have so little?"
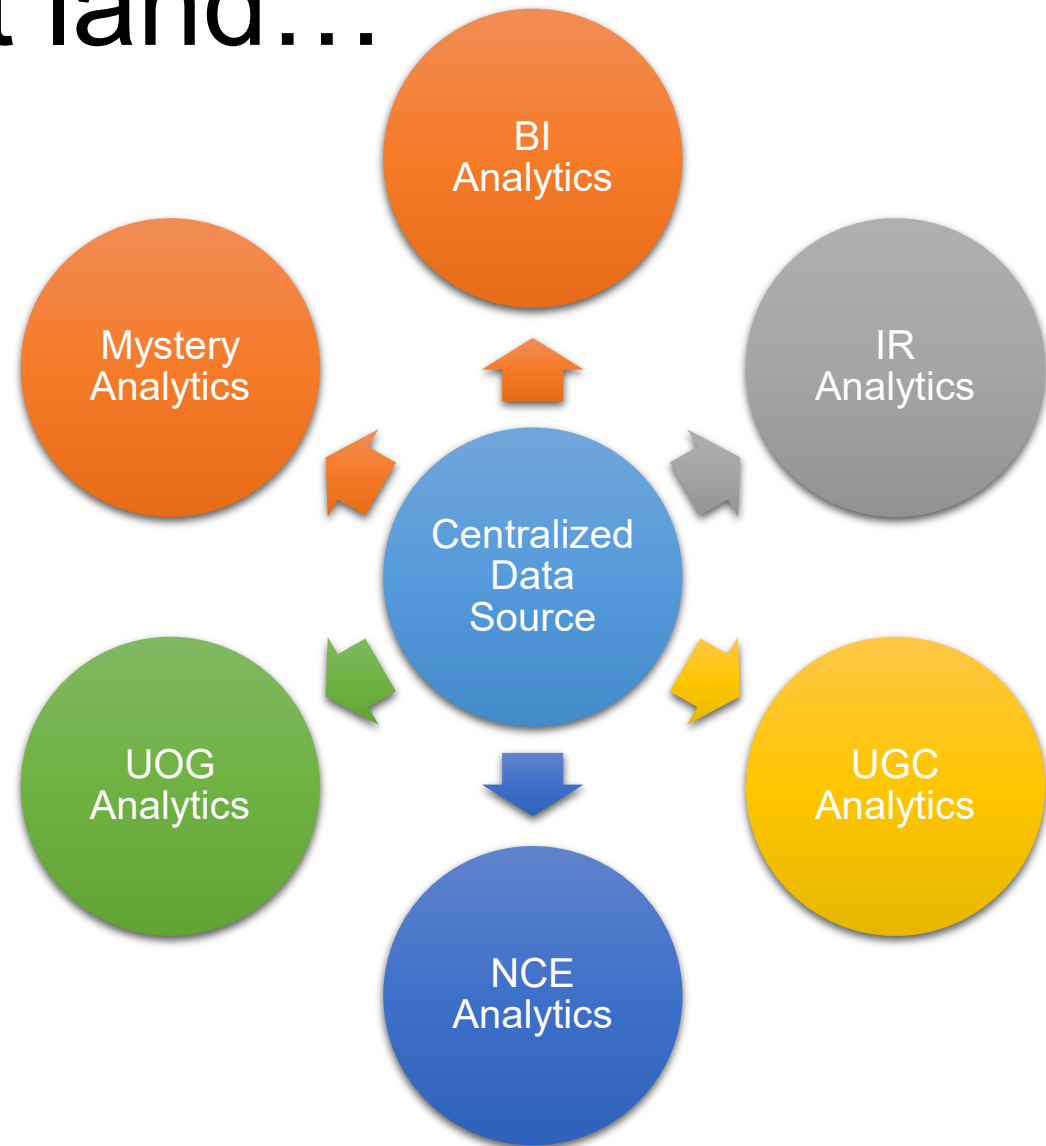
Evolution through the years

- Data silos all over the place
- Started small in our production database
- Department of one
- Started with Tableau but became too costly
- Started impacting production database so moved to independent warehouse solution
- Moved to MS Power BI for cost savings and greater distribution
- Created a centralized data department
- Strategic Data Center with a Chief Data Officer
- Three year plan to build service for additional departments

… and they lived happily ever after.

Goal:

Single source of truth for
data and analytics from
a centralized business intelligence unit
servicing additional departments, and
equitably distributing resources.
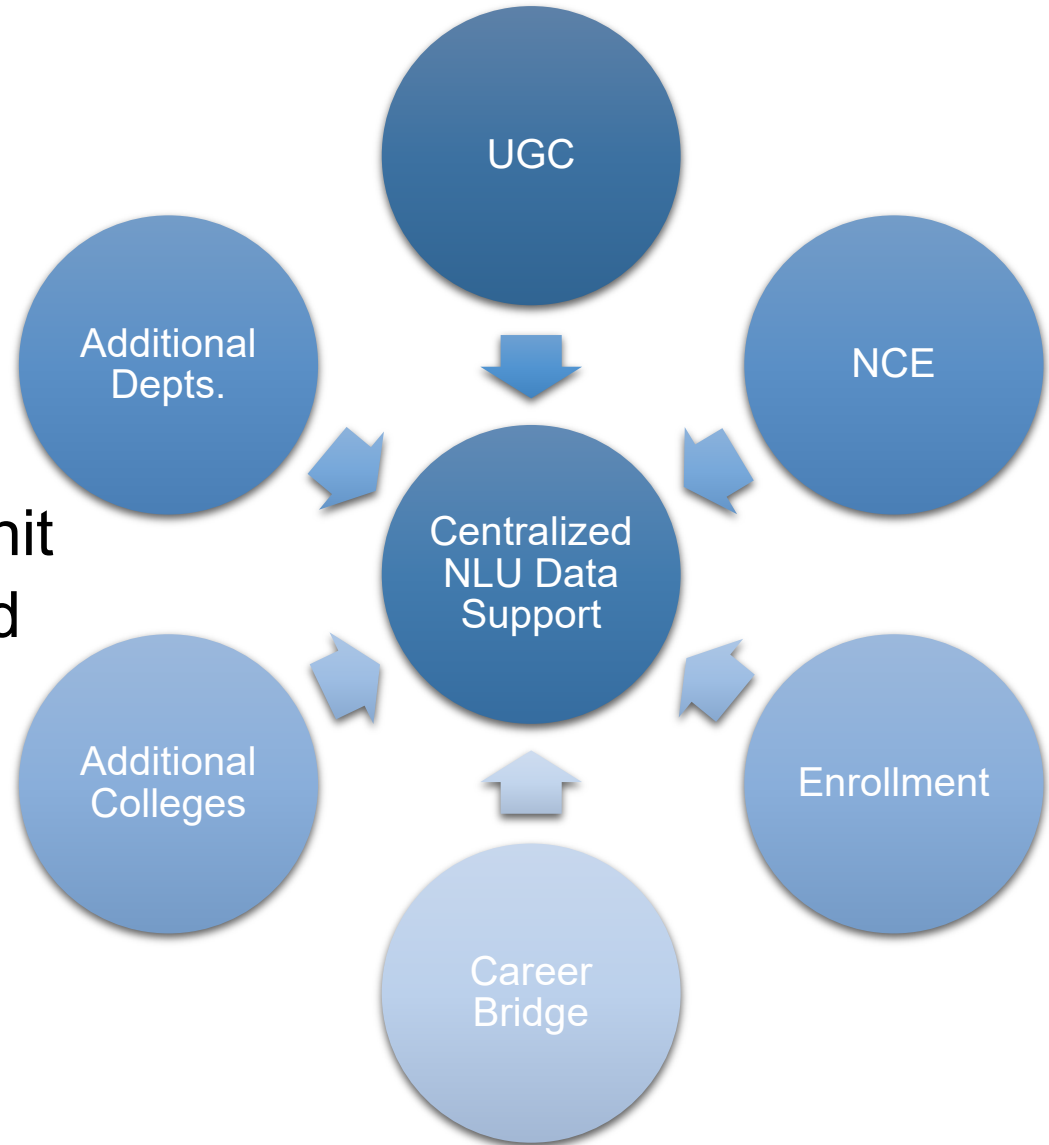
What are we doing to meet this goal?

Chief Data Officer (CDO)

- Leading data strategy for the university
- Building a centralized business intelligence unit
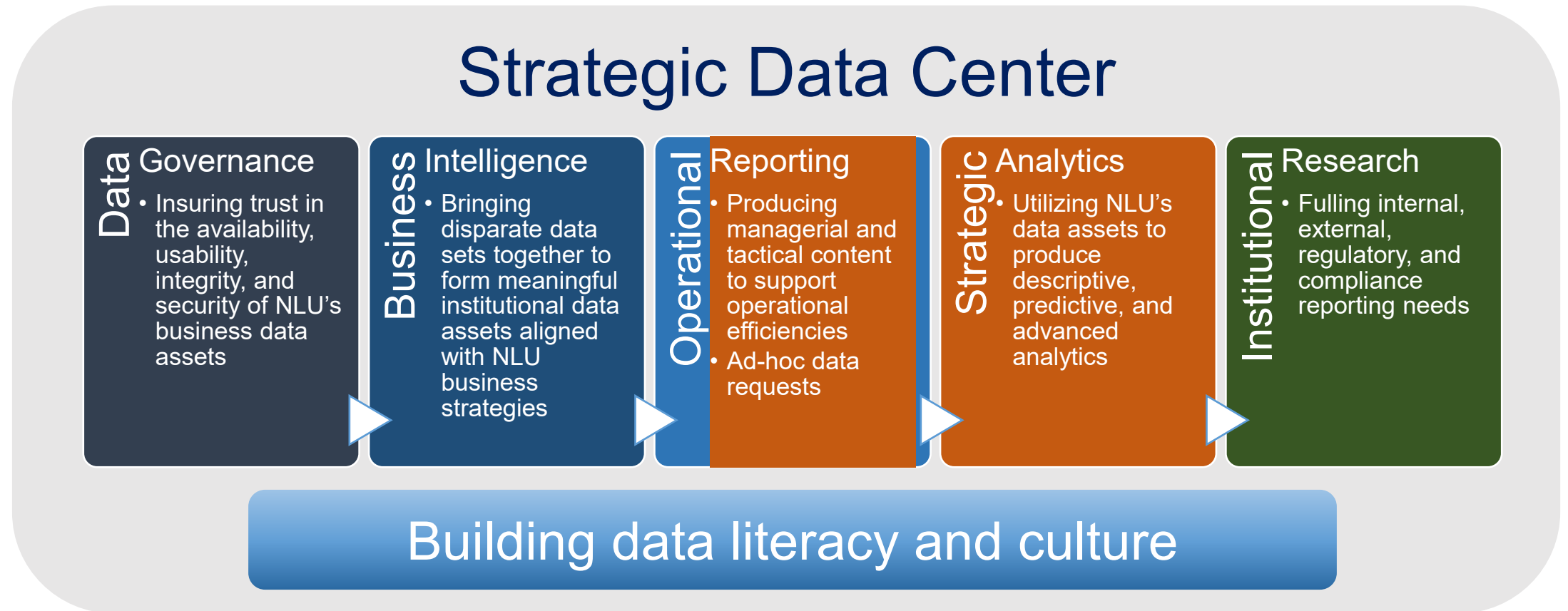- Reporting to Provost and VP of Operations and Technology

Strategic Data Center (SDC)

- A centralized data and analytics team
- A single source of truth for data and analytics
- Building capacity and efficiency through shared knowledge and practices

What will the SDC do?

Data services centralized to optimize efficiency, build capacity, and service the institution equitably

Strategic Data Center

Data Governance
- Insuring trust in the availability, usability, integrity, and security of NLU's business data assets

Business Intelligence
- Bringing disparate data sets together to form meaningful institutional data assets aligned with NLU business strategies

Operational Reporting
- Producing managerial and tactical content to support operational efficiencies
- Ad-hoc data requests

Strategic Analytics
- Utilizing NLU's data assets to produce descriptive, predictive, and advanced analytics

Institutional Research
- Fulling internal, external, regulatory, and compliance reporting needs

Building data literacy and culture

Thank you!

Chad Boersema

cboersema@nl.edu