Decision Support: Pursuing Institutional Effectiveness

From Business Analytics to Business Intelligence

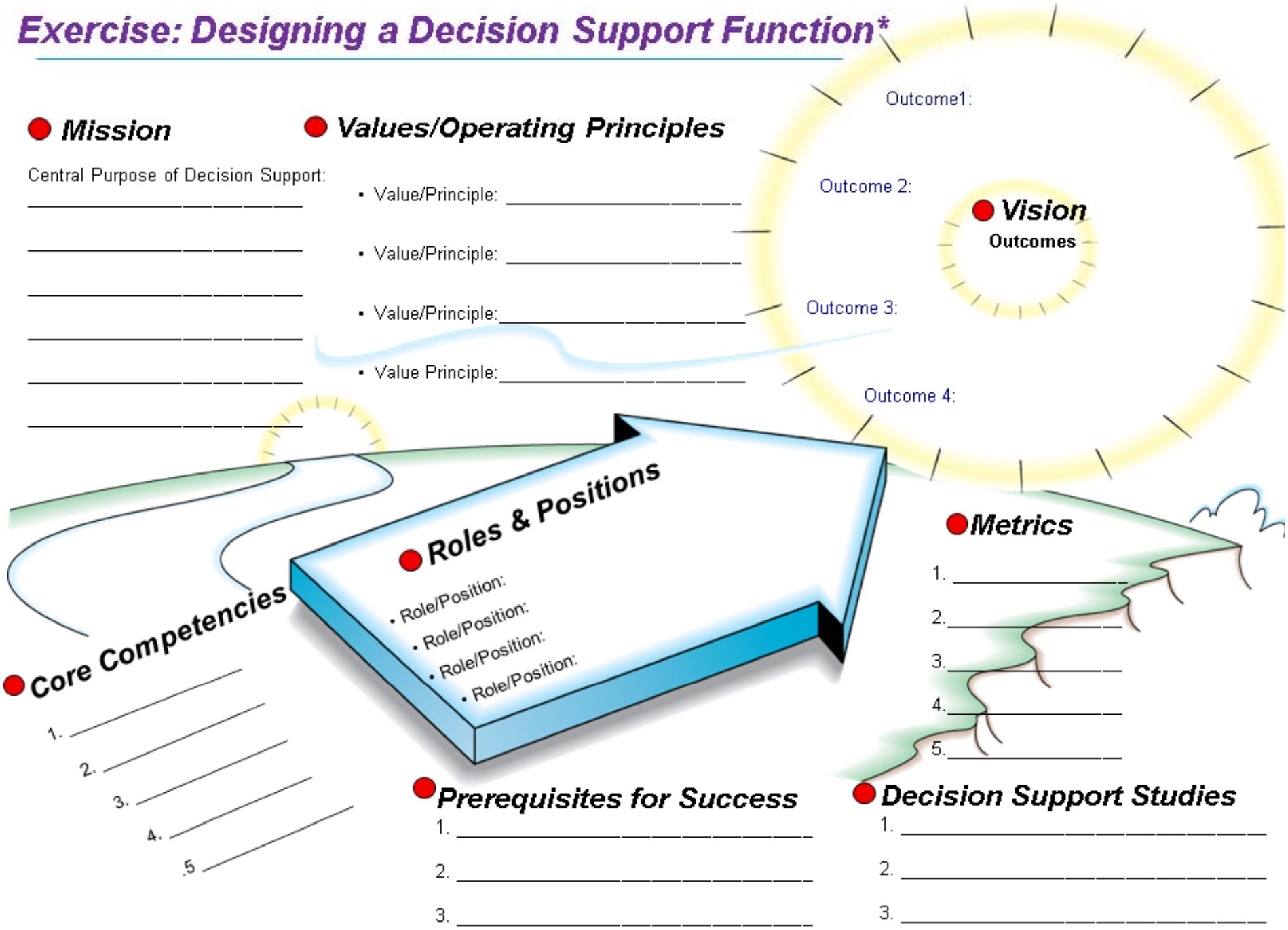
September 12, 2012

Georgia Institute of Technology
Institute Planning and Resource Management

Agenda

Welcome and Introduction	**Steve Swant** *Georgia Institute of Technology*
Decision Support at Georgia Tech	**Amir Rahnamay-Azar** *Georgia Institute of Technology*
The Evolving University: Disruptive Change and Institutional Innovation	**Richard A. DeMillo** *Georgia Institute of Technology*
Best Practice Perspectives: Development and Evolution of Decision Support	**Holly Nielsen** *University of Michigan* **Aaron Walz** *University of Illinois*
The Art and Science of Communicating Data: Information Design + Data Visualization Trends and Practices	**Holly Goodson** *Georgia Health Sciences University*
Envisioning and Developing a Decision Support Function	**Chet Warzynski** *Georgia Institute of Technology* **Kevin Center** *Georgia Institute of Technology*
Group Feedback	
Wrap-Up and Adjournment	

Exercise: Designing a Decision Support Function*



*Adapted from *The Journey*. San Francisco: The Grove Consultants International.

WELCOME AND INTRODUCTION

Steve Swant

Executive Vice President

Administration and Finance

Georgia Institute of Technology

Georgia Institute of Technology

Institute Planning and Resource Management

DECISION SUPPORT AT GEORGIA TECH

Amir Rahnamay-Azar

Senior Vice President for Administration and Finance

Georgia Institute of Technology

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Current State of Business Analytics*

1. **Business Analytics is still in the "emerging stage."**
2. **Organizations are proceeding cautiously in their adoption of analytics.**
3. **Most institutions are looking to analytics to solve big issues, with the primary focus on money.**
4. **Most institutions continue to struggle with data accuracy, consistency, and even access.**
5. **Culture plays a critical role in the effective use of business analytics.**

*Citation for work:
Analytics in Higher Education, EDUCAUSE Center For Applied Research, Bichsel, Jacqueline, Aug 2012

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THE EVOLVING UNIVERSITY:
DISRUPTIVE CHANGE AND INSTITUTIONAL INNOVATION

Richard A. DeMillo

Director, Center for 21st Century Universities and

Distinguished Professor of Computing and Management

Georgia Institute of Technology

DISCUSSION QUESTION

What impending challenges in higher education stand out as most important for decision support?

10
minutes

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BEST PRACTICE PERSPECTIVES:

DEVELOPMENT AND EVOLUTION OF DECISION SUPPORT

Holly Nielsen

Interim Executive Director for Application and Information Services

University of Michigan

Georgia Institute of Technology

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Business Intelligence at the University of Michigan

Holly Nielsen
Interim Executive Director
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The University of Michigan

- Founded in 1817
- Three campuses
  - Ann Arbor: 20 schools & colleges, University Hospitals, and Health Centers
  - Dearborn: 4 schools & colleges
  - Flint: 4 schools & colleges
- Research & Educational Units
  - 35 Centers
  - 18 Institutes
  - FY11 Research Exp. $1.2B

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University Profile (Fall 2011)

- Student Enrollment
  - Ann Arbor: 42,716
  - All Campuses: 59,933
- Regular Faculty
  - All Campuses: 6,941
- Staff & Supplemental Faculty
  - All Campuses: 35,360

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Assessment and Recommendations 2006

- Build awareness via BI Community
- User segmentation; increase ‘market’
  - Power (~3000), operational (8000), casual/guided analysis (>10,000)
- Increase tools portfolio, infrastructure
  - Browser-based solutions for execs and managers
- Improve data structures
  - Aggregate, derive: add OLAP dimensional models
- Incorporated into Administrative Systems Strategic Plan

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Reporting Gateways

Operational Users ⟷ Information from Operational System

Decision Support Users ⟷ Guided Analysis

Power Users ⟷ Direct Access / Power Tools

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Progress 2007-2012

- Increase Awareness; Educate
  - BI/Analytics Community of Experts: Events, Small Groups, BI Career Resources, BI Awards
- ITS makes parallel progress while campus readiness improves
  - BI Organization within ITS
  - Site License for Business Objects
  - M-Reports
    - Primarily Financial content; some Student Administration content
    - Ability for Dashboards, predictive analysis, alerts
    - Report Library covering FIN, HR and SA production reports and all UM DW reports
  - Data Improvement
  - Process Improvements
  - 3 Tiered Data Warehouse Architecture

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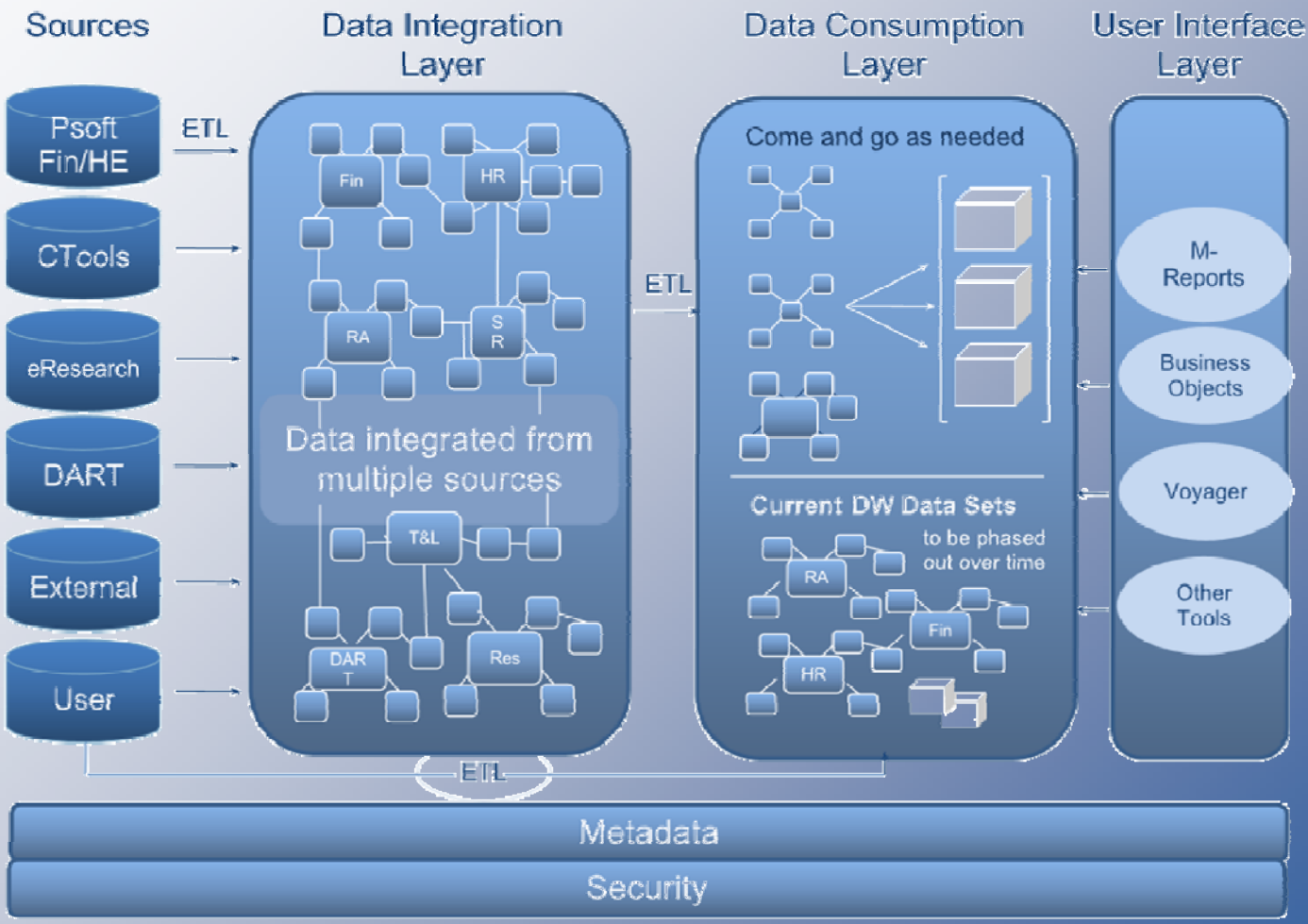
Next Generation DW Architecture



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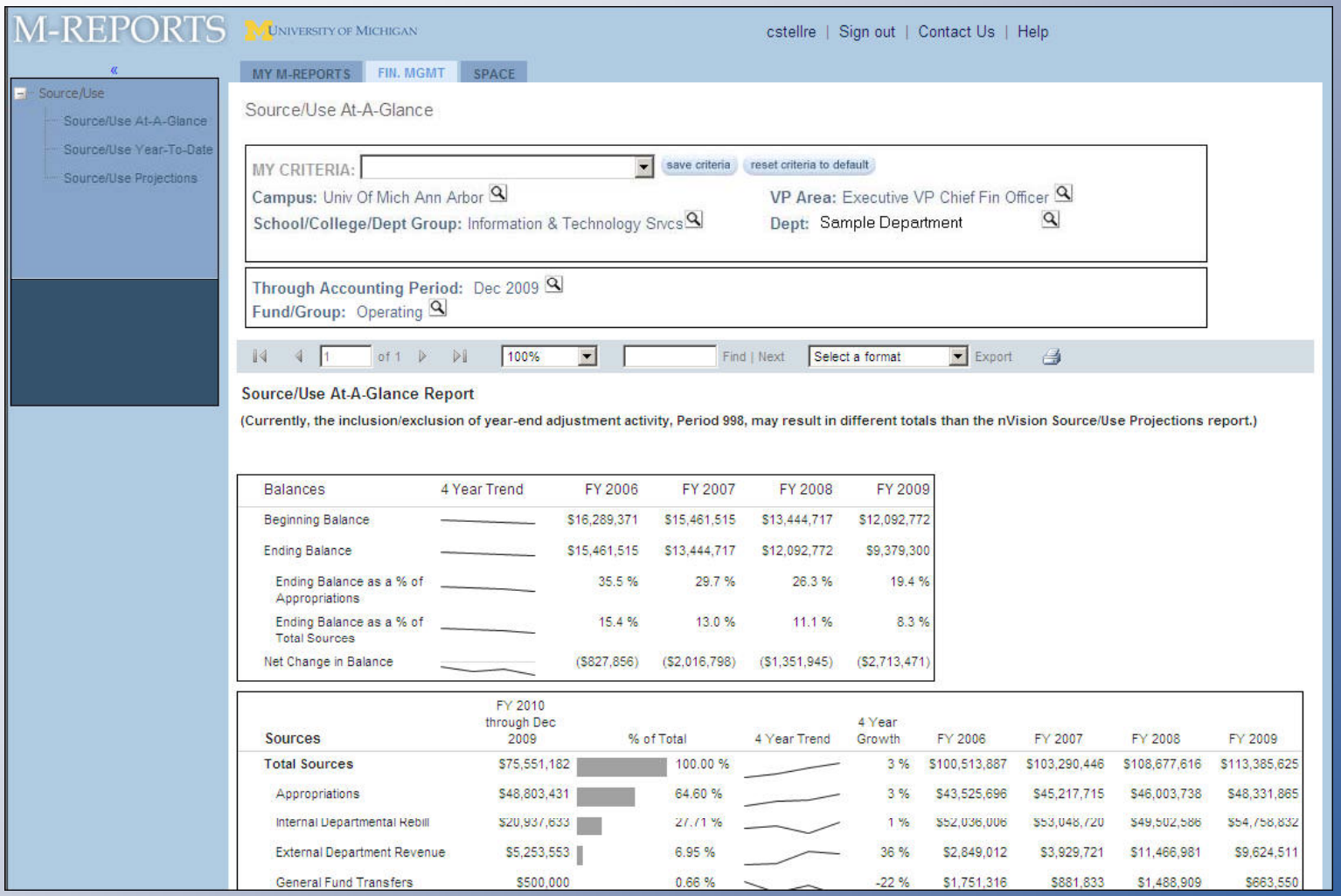
Application—M-Reports



Balances	4 Year Trend	FY 2006	FY 2007	FY 2008	FY 2009
Beginning Balance		$16,289,371	$15,461,515	$13,444,717	$12,092,772
Ending Balance		$15,461,515	$13,444,717	$12,092,772	$9,379,300
Ending Balance as a % of Appropriations		35.5 %	29.7 %	26.3 %	19.4 %
Ending Balance as a % of Total Sources		15.4 %	13.0 %	11.1 %	8.3 %
Net Change in Balance		($827,856)	($2,016,798)	($1,351,945)	($2,713,471)

Sources	FY 2010 through Dec 2009	% of Total	4 Year Trend	4 Year Growth	FY 2006	FY 2007	FY 2008	FY 2009
Total Sources	$75,551,182	100.00 %		3 %	$100,513,887	$103,290,446	$108,677,616	$113,385,625
Appropriations	$48,803,431	64.60 %		3 %	$43,525,696	$45,217,715	$46,003,738	$48,331,865
Internal Departmental Rebill	$20,937,633	27.71 %		1 %	$52,036,006	$53,048,720	$49,502,586	$54,758,832
External Department Revenue	$5,253,553	6.95 %		36 %	$2,849,012	$3,929,721	$11,466,981	$9,624,511
General Fund Transfers	$500,000	0.66 %		-22 %	$1,751,316	$881,833	$1,488,909	$663,550

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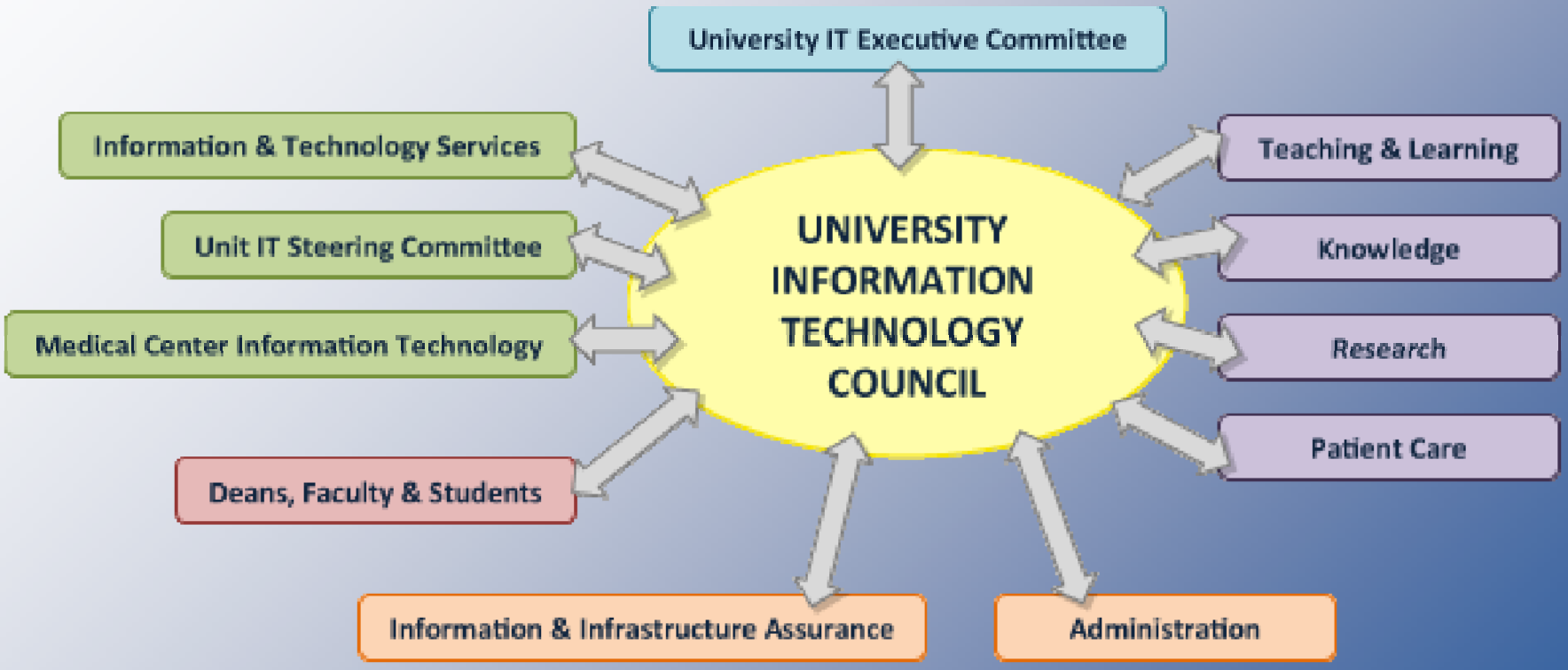
IT Governance



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BI Community

- Business Intelligence Community of Experts (BICE)
- www.businessintelligence.umich.edu
- BI Events
- BI Small Networking Groups
- BI Awards
- BI Consulting

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Business Intelligence Adoption

- M-Reports usage has doubled since 2008
- Business Intelligence Community of Experts: 445 members
- Popular BI Events:
  - Streamlining the Data Flow Process with ETL Best Practices
  - Visualizing Data for Business Reporting and Analysis
  - Making Sense of Analytical Data Structures

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What's Next?

- More content in M-Reports
- Continue Next Generation Data Warehouse
- More statistical analysis, forecasting, predictive modeling, optimization
- Look at query tool options for power users
  - Improve Business Objects experience
  - And/or look at other tools (e.g. Tableau)

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Space Utilization: Behavior Changed

- Slowed growth of new space avoiding approximately $462 million in one-time costs and $18 million in recurring costs
- Shifting campus culture: space is must be shared and managed effectively for the good of the institution
- New process for units requesting a new building, additions, or major renovation
- Enhanced central system and reporting to show classroom and research space utilization
- Institutional policies on how classrooms, research space, offices, and food service venues are assigned or used
- Repurposing underutilized space for higher-priority needs

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Conclusion

- Build a Community
- Develop the Data Infrastructure
- Present the Information
- Have Strategies to Change Behavior

DISCUSSION QUESTION

What are the best practices in decision support?

What should be the mission, values and goals of a decision support function or organization?

15 minutes

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BEST PRACTICE PERSPECTIVES:

DEVELOPMENT AND EVOLUTION OF DECISION SUPPORT

Aaron Walz

Director of Decision Support

Administrative Information Technology Services

University of Illinois

Georgia Institute of Technology

Institute Planning and Resource Management

Business Intelligence at Illinois

Aaron Walz – Director of Decision Support

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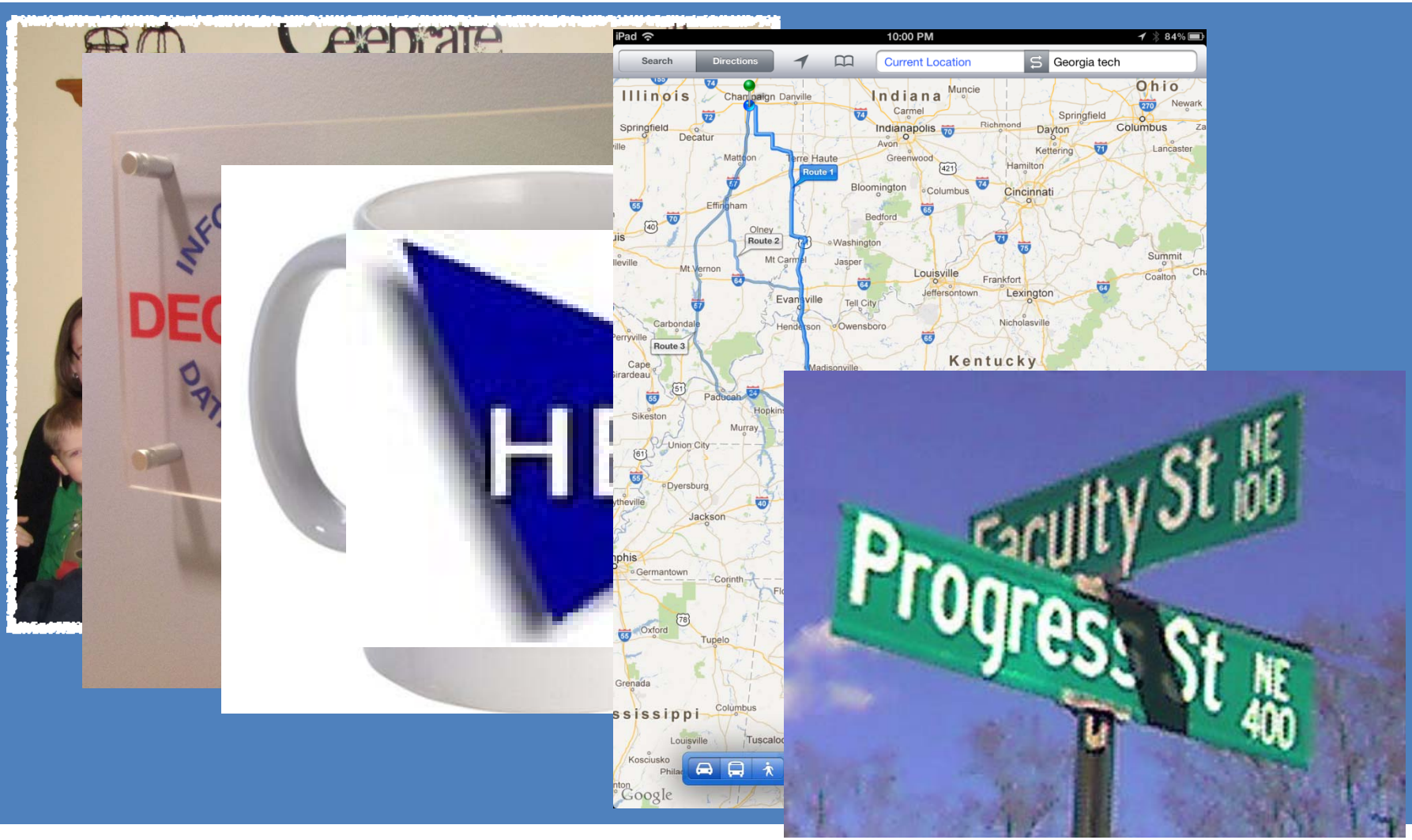
A bit about me



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Overview

- Current state of BI in Higher Ed
- Illinois' BI story
- Customers and culture
- Scope and organization
- Technology
- Strategy
- Lessons learned

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BI Current State

- Disclaimer
- ECAR Report
- Working Definitions
- BI Future State
- Why is BI so hard in Higher Ed?

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The University of Illinois

- Founded in 1867
- 3 physical campuses (Urbana-Champaign, Chicago, Springfield), and University Administration
- Leading public university in Illinois with significant impact on economy
- $4.76 billion operating budget in 2010-2011
- 76,886 students on 3 campuses
- 19,047 degrees awarded in 2009-2010
- 5,654 faculty
- 27,700 non-faculty employees (incl. grad. asst.)
- Premier research and discovery

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Illinois' BI Story

- Central IT reporting (prior to 1994)
- Past warehouse-like projects (1995-1999)
- ERP implementation of SCT Banner (UI-Integrate project 2000 – 2005)
- ERP planning team (1998-1999) told they must have a way to "get the data out of the ERP"
- Parallel development of Data Warehouse with SCT Banner implementation
- Decision Support team launched in 2001 with intention of building a permanent unit
- Executive Sponsor: Planning & Budgeting

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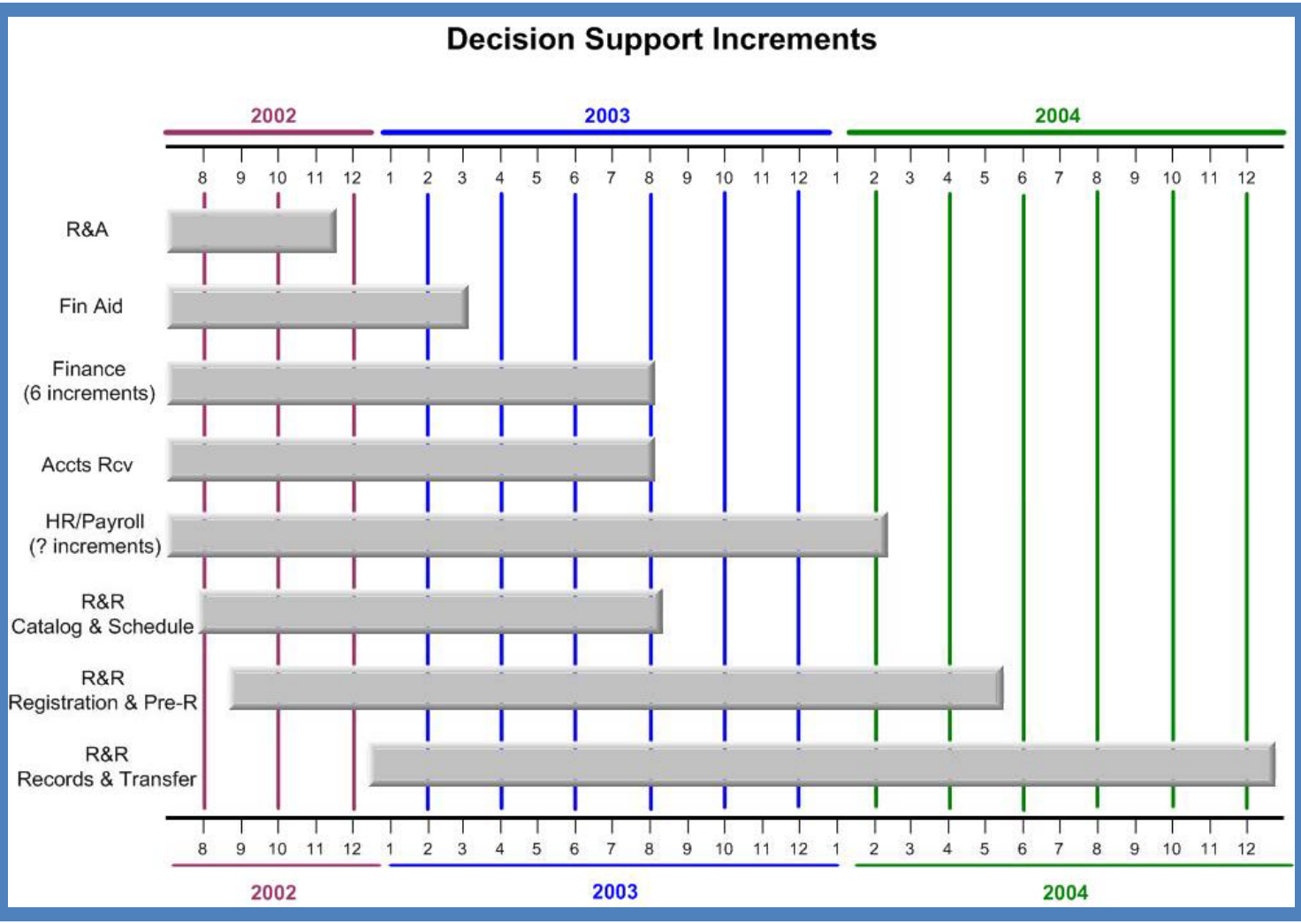
Building the Data Warehouse

$17 M

54 FTE

Parallel projects



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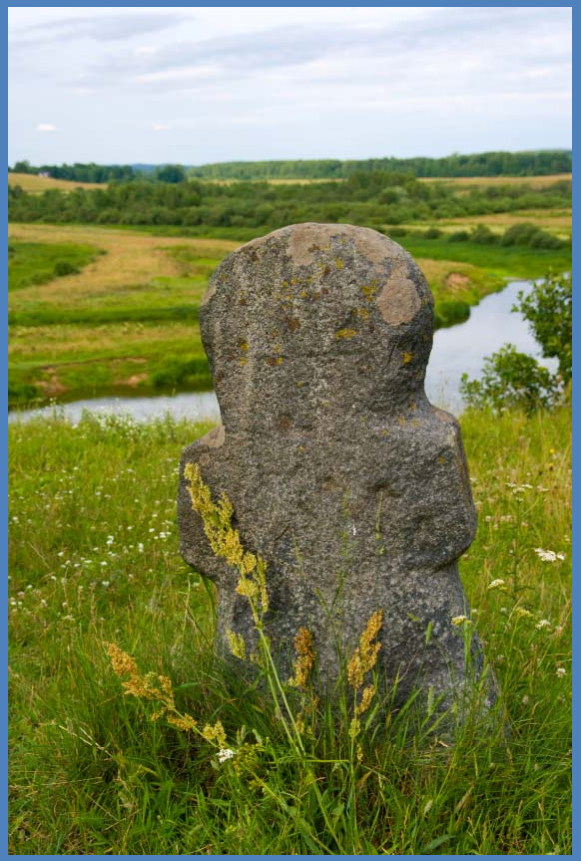
Shift to Self-Service Reporting



here lies the Report Fairy

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From project to department

- Maintenance and operations
- Awareness and adoption
- Organizational changes
- Merger with Central IT

Continuing the evolution

- Adding data sources
- Building out the data layer
- Adding BI interfaces

Where are we in the lifecycle?

http://www.jiscinfonet.ac.uk/infokits/strategy/environment-scanning/maturity-model

Customers and Culture

- Types of customers and needs
- Relationship with other central offices
  - Functional offices
  - IR
  - Central IT: history, merger
- UI culture: highly decentralized, distributed, and independent

Direct Users of Data Warehouse

- 1,800 ad-hoc users from over 430 departments
- 1.6 million database sessions during FY 2011
- 10.5 million queries ran during FY 2011
- Approximately 5,000 accounts in the BI/DW environment

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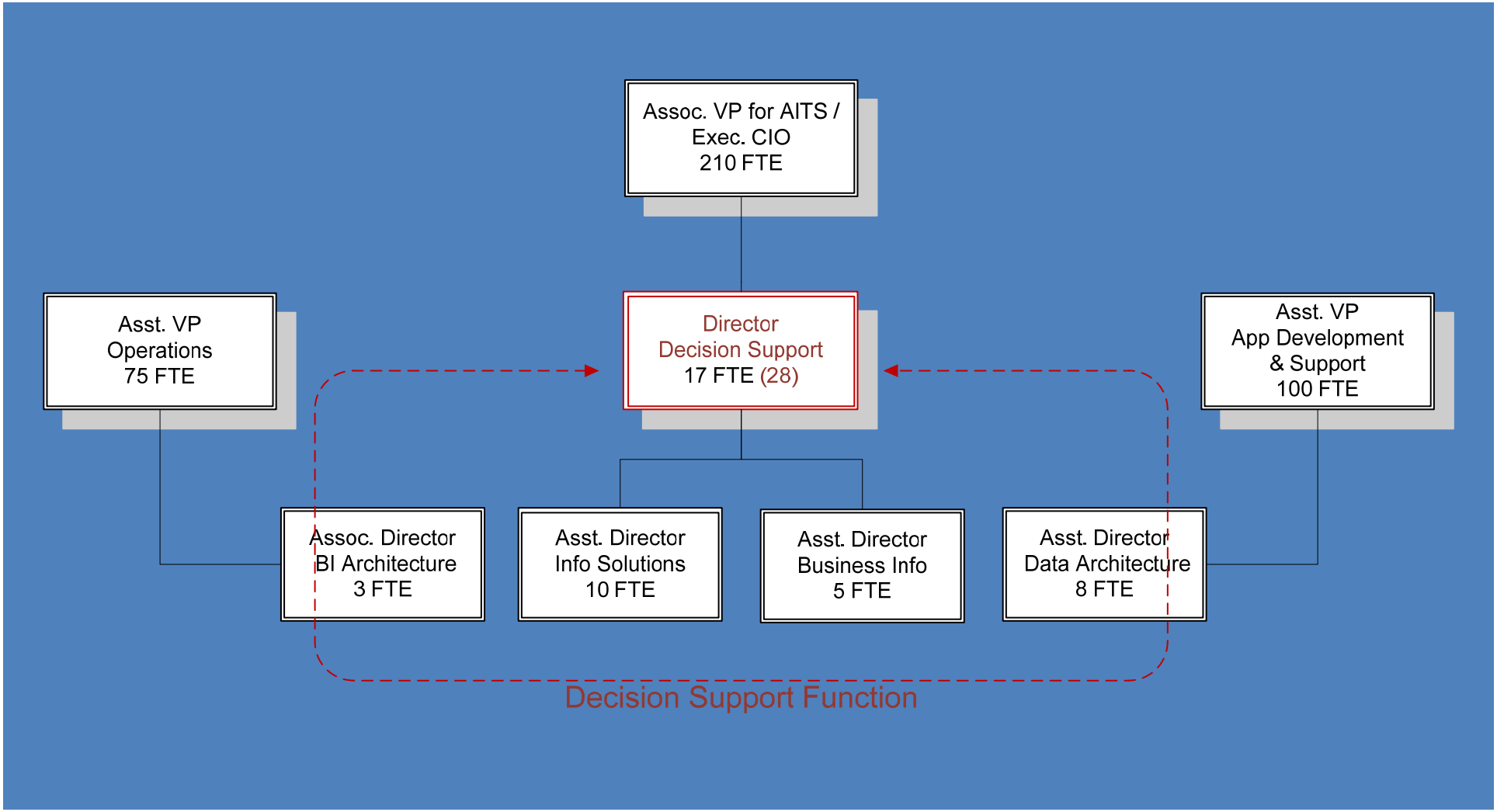
2012 Organization and Staffing



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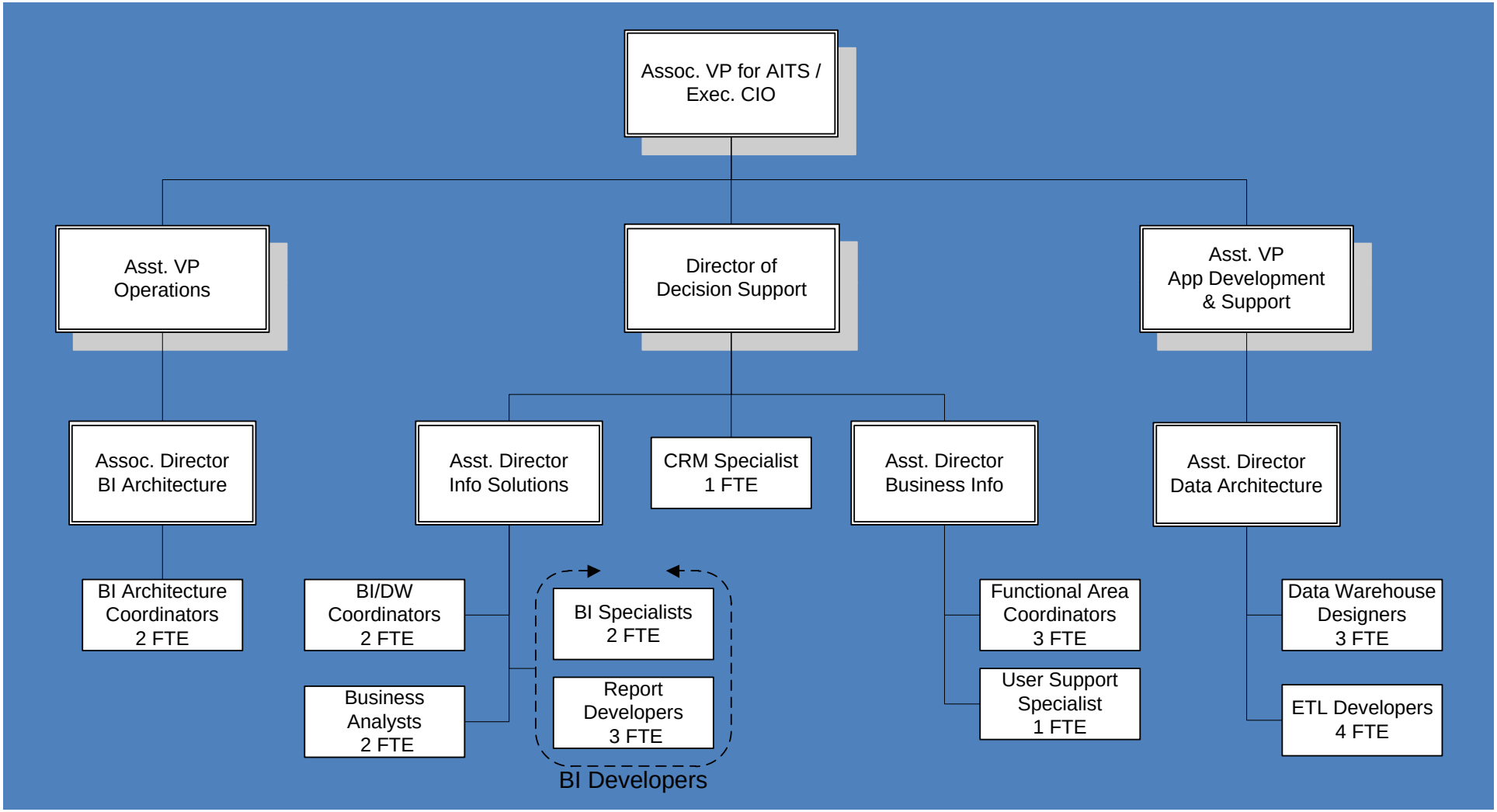
Organization and Staffing



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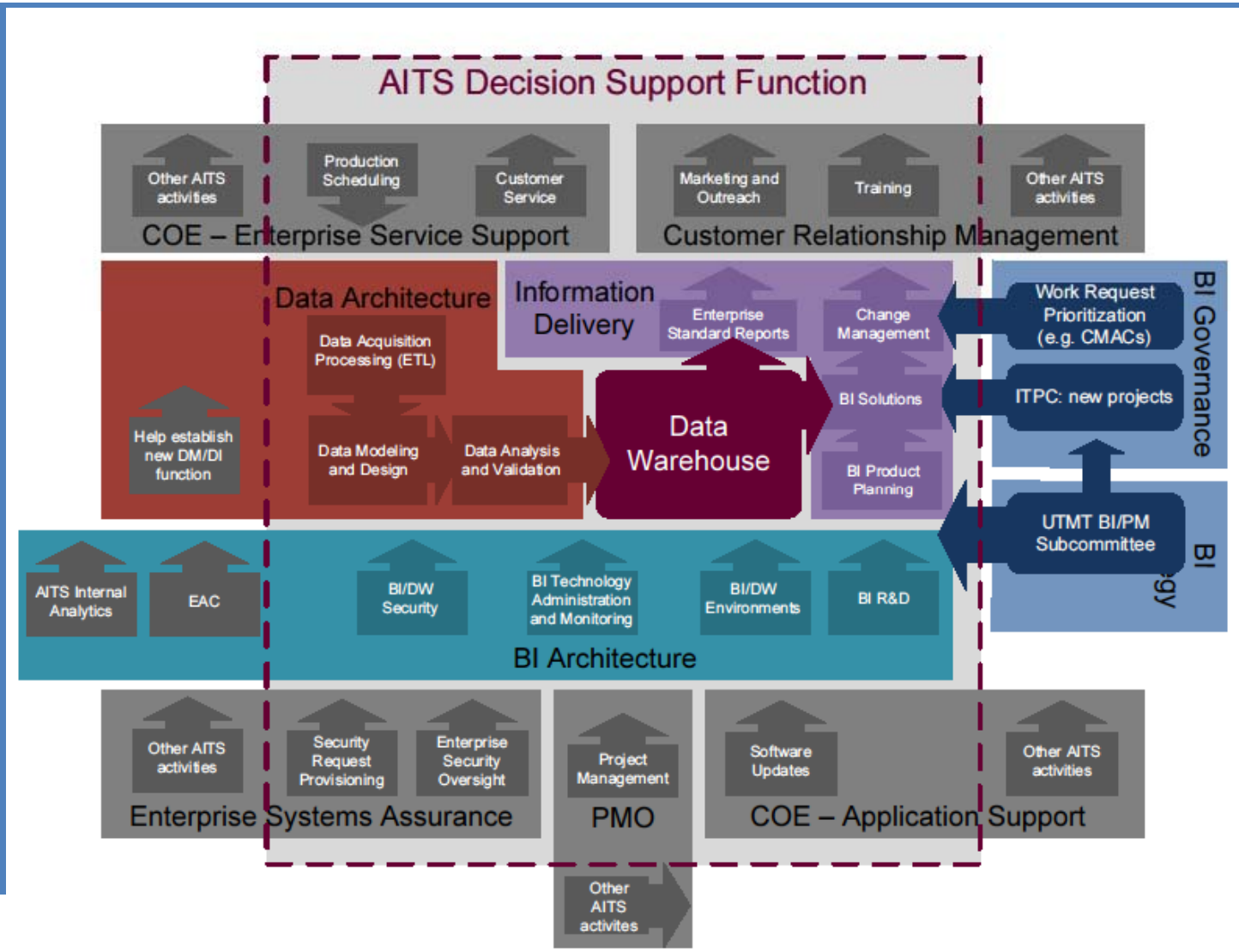
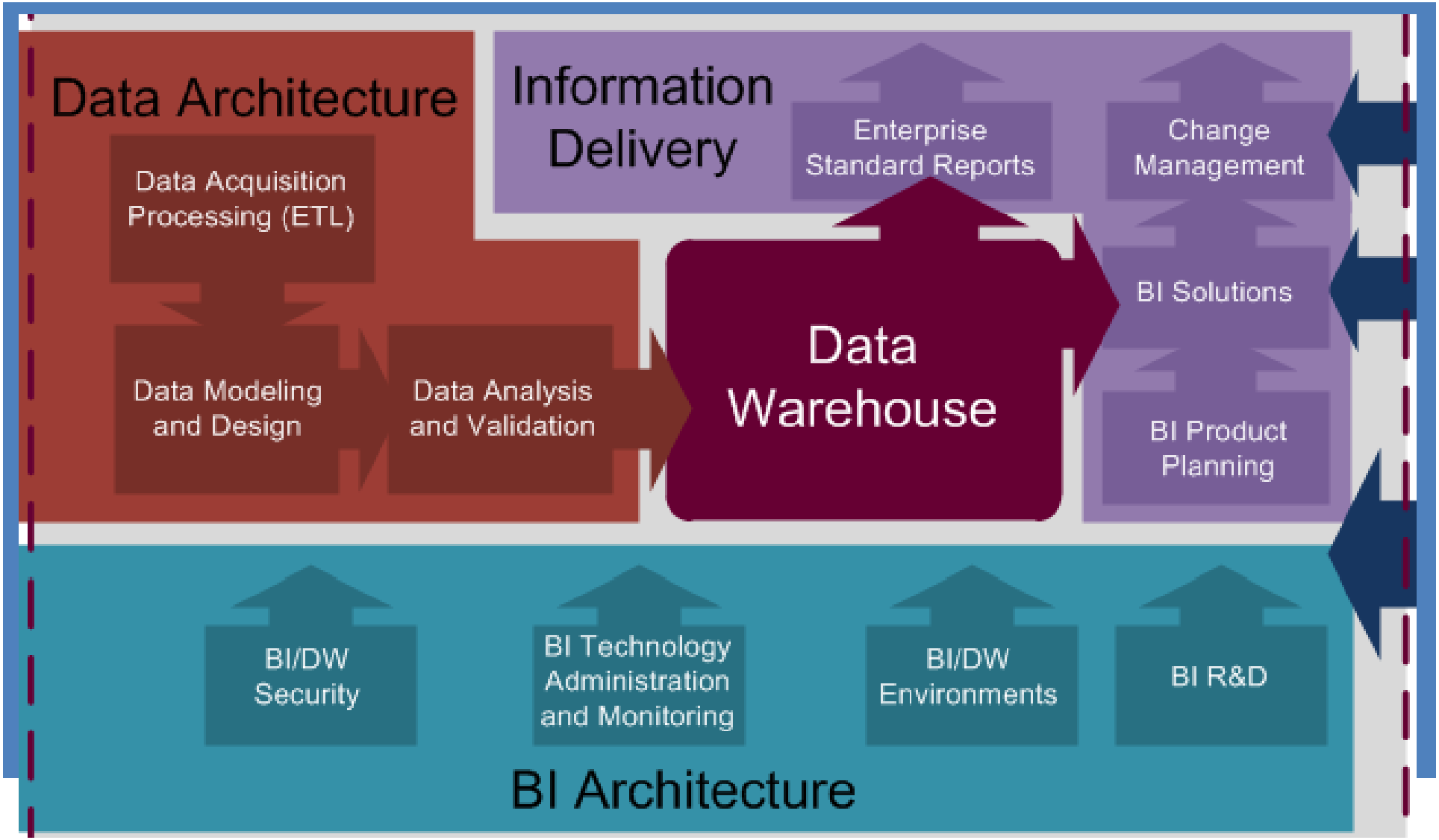
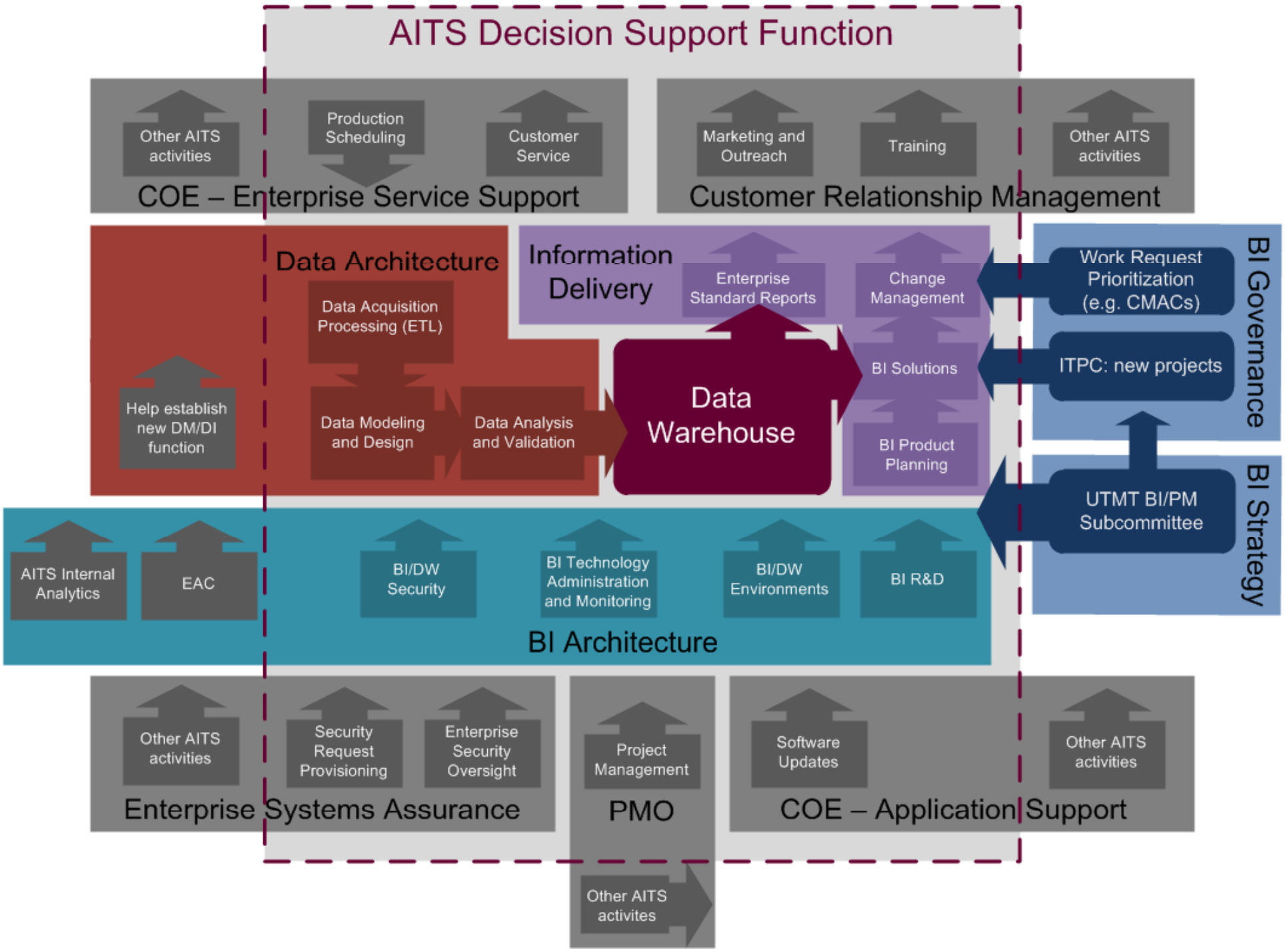
Services and Operations

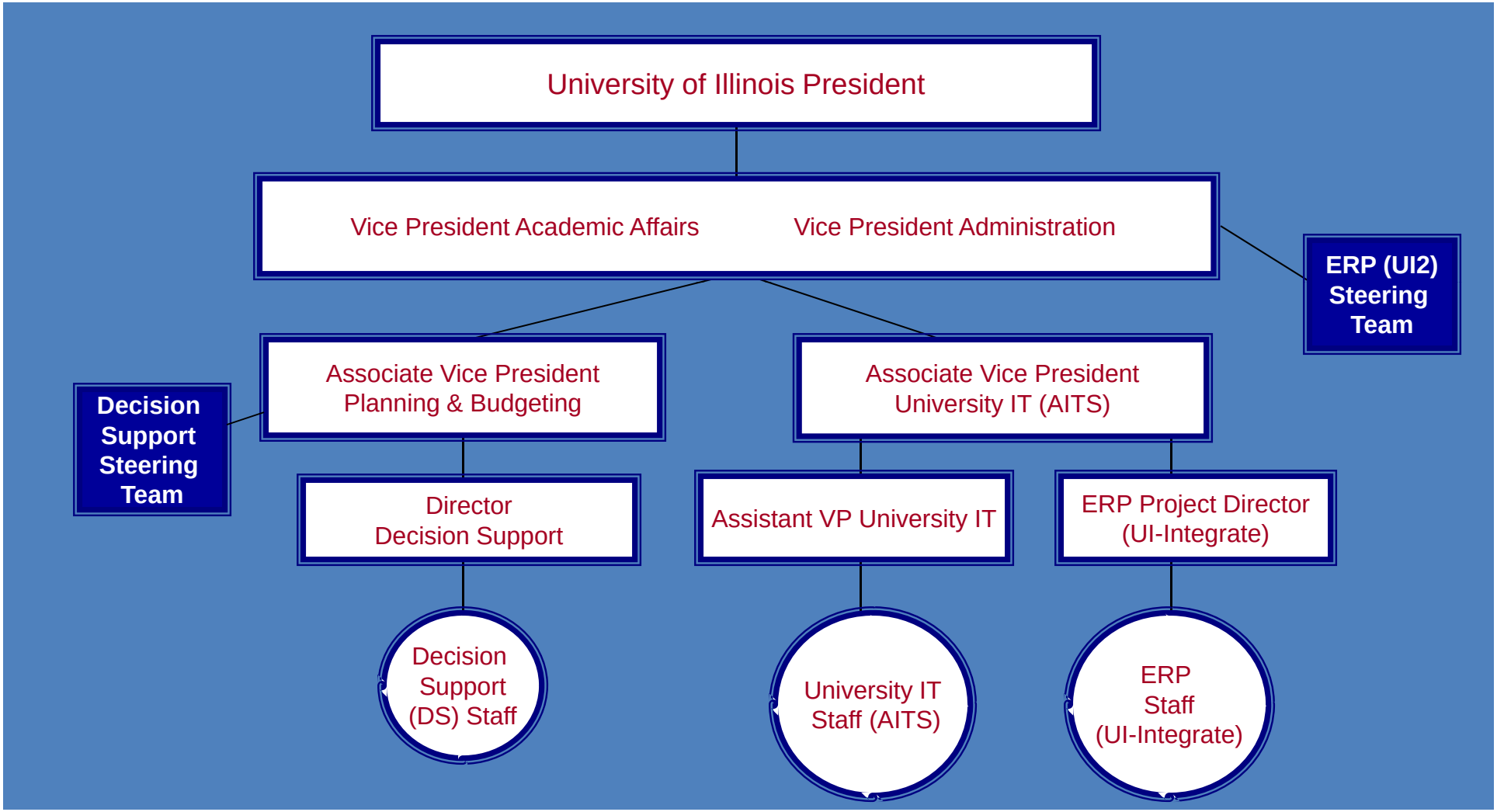


Services and Operations




AITS Decision Support Function
Other AITS activities
Production Scheduling
Customer Service
COE – Enterprise Service Support
Marketing and Outreach
Training
Other AITS activities
Customer Relationship Management
Data Architecture
Data Acquisition Processing (ETL)
Help establish new DM/DI function
Data Modeling and Design
Data Analysis and Validation
Information Delivery
Enterprise Standard Reports
Change Management
Data Warehouse
BI Solutions
BI Product Planning
Work Request Prioritization (e.g. CMACs)
ITPC: new projects
BI Governance
UTMT BI/PM Subcommittee
BI Strategy
AITS Internal Analytics
EAC
BI/DW Security
BI Technology Administration and Monitoring
BI/DW Environments
BI R&D
BI Architecture
Other AITS activities
Security Request Provisioning
Enterprise Security Oversight
Enterprise Systems Assurance
Project Management
PMO
Other AITS activites
Software Updates
Other AITS activities
COE – Application Support

Governance during ERP



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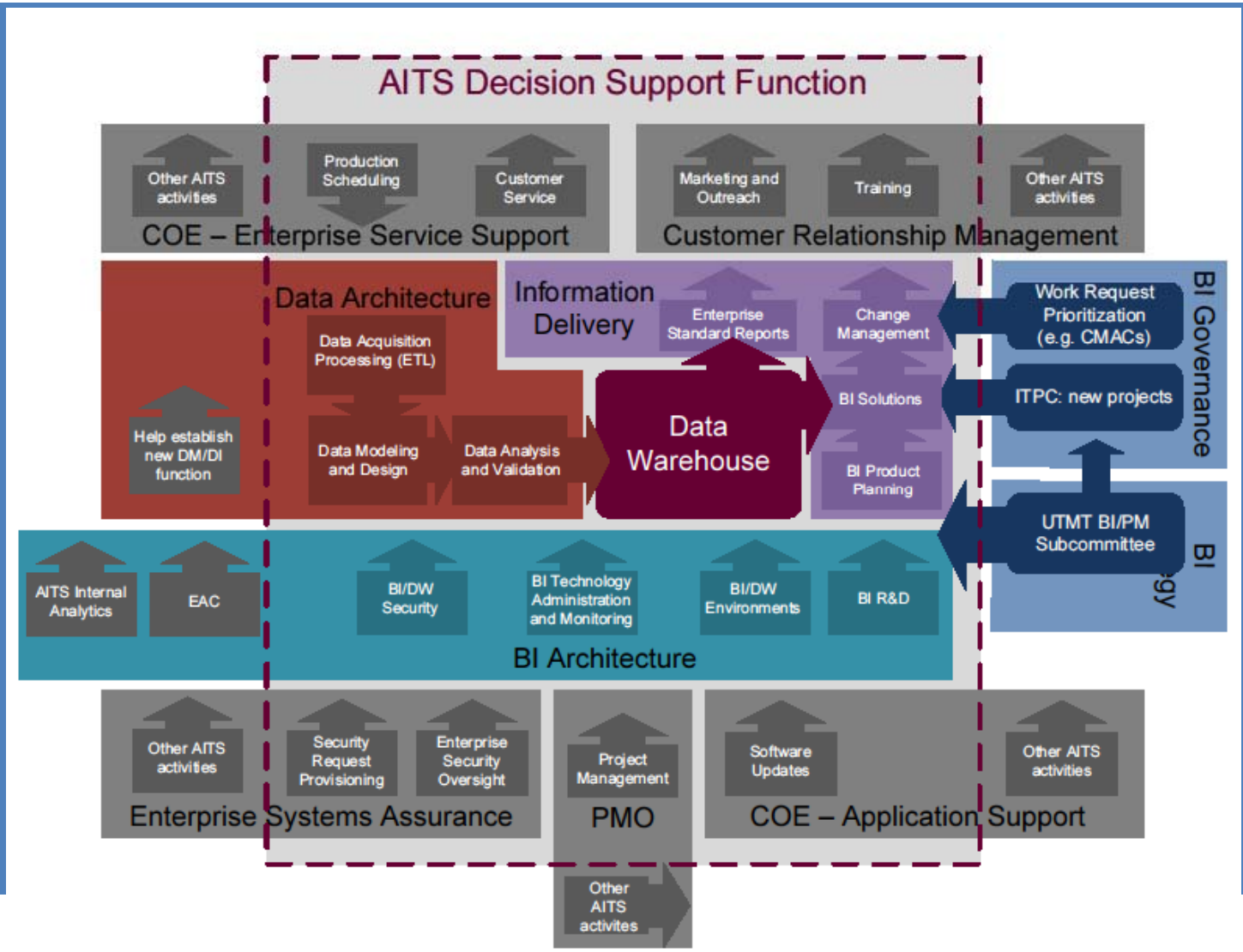
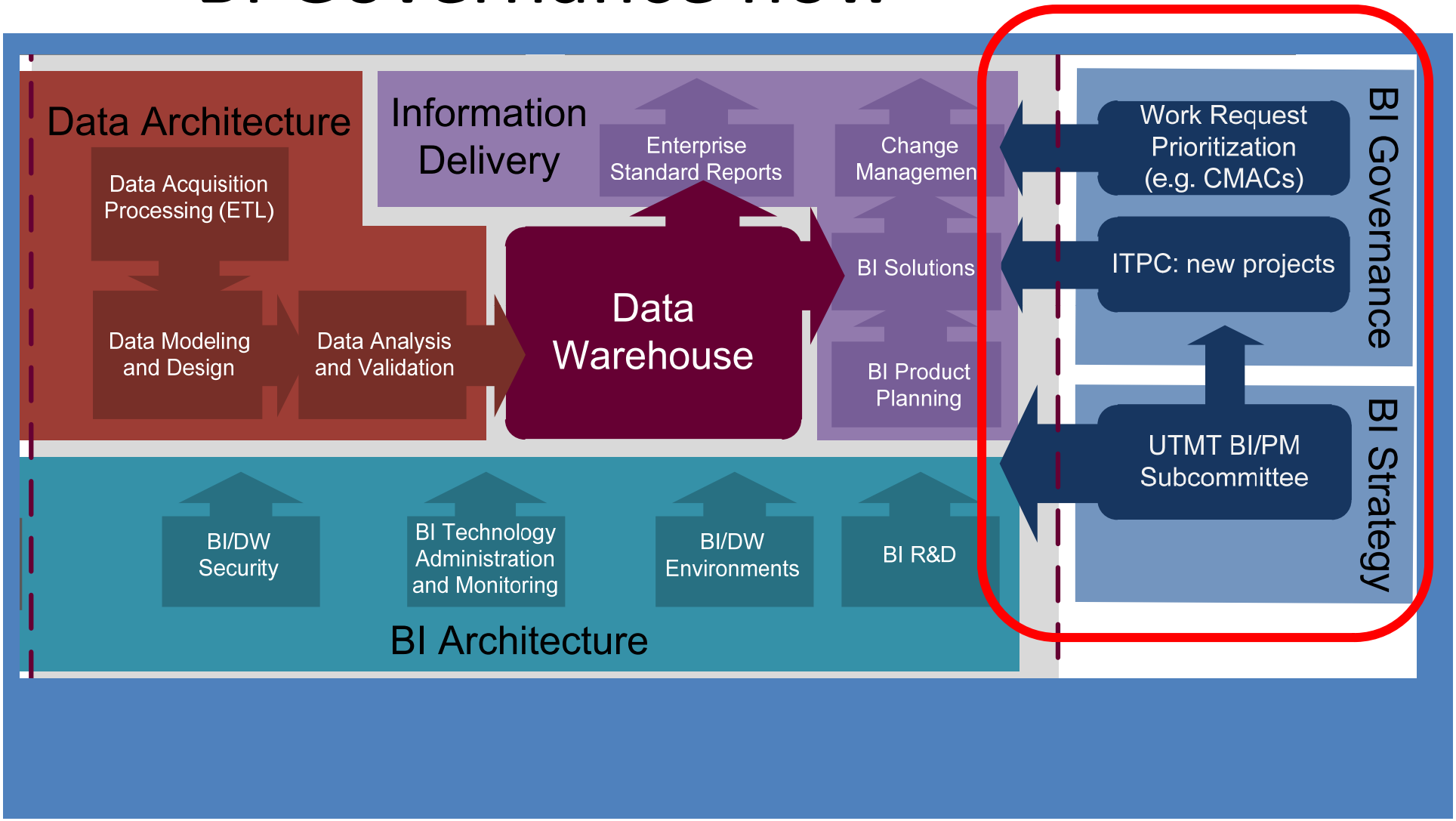
BI Governance now



BI Governance now



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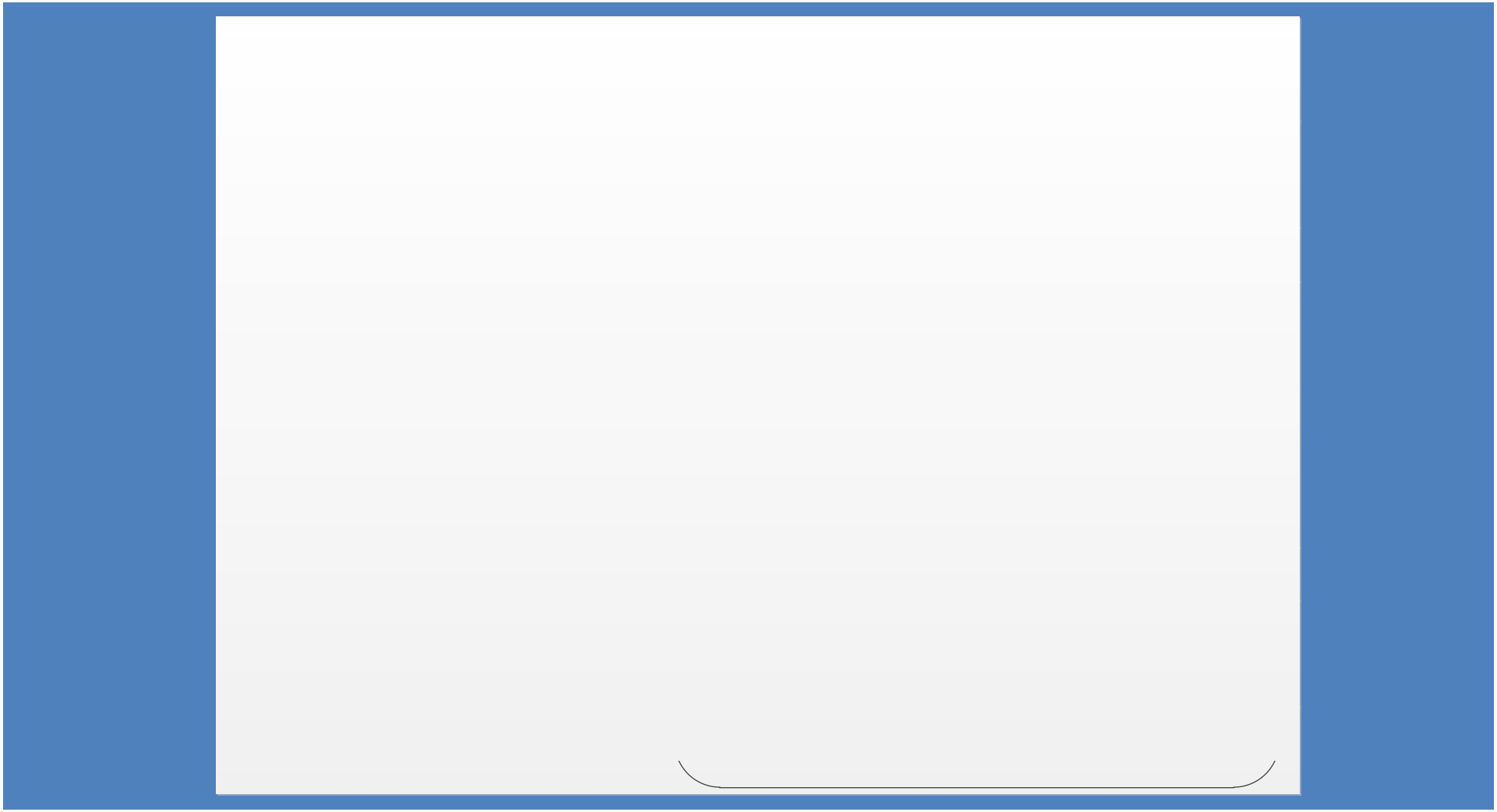
BI Governance now



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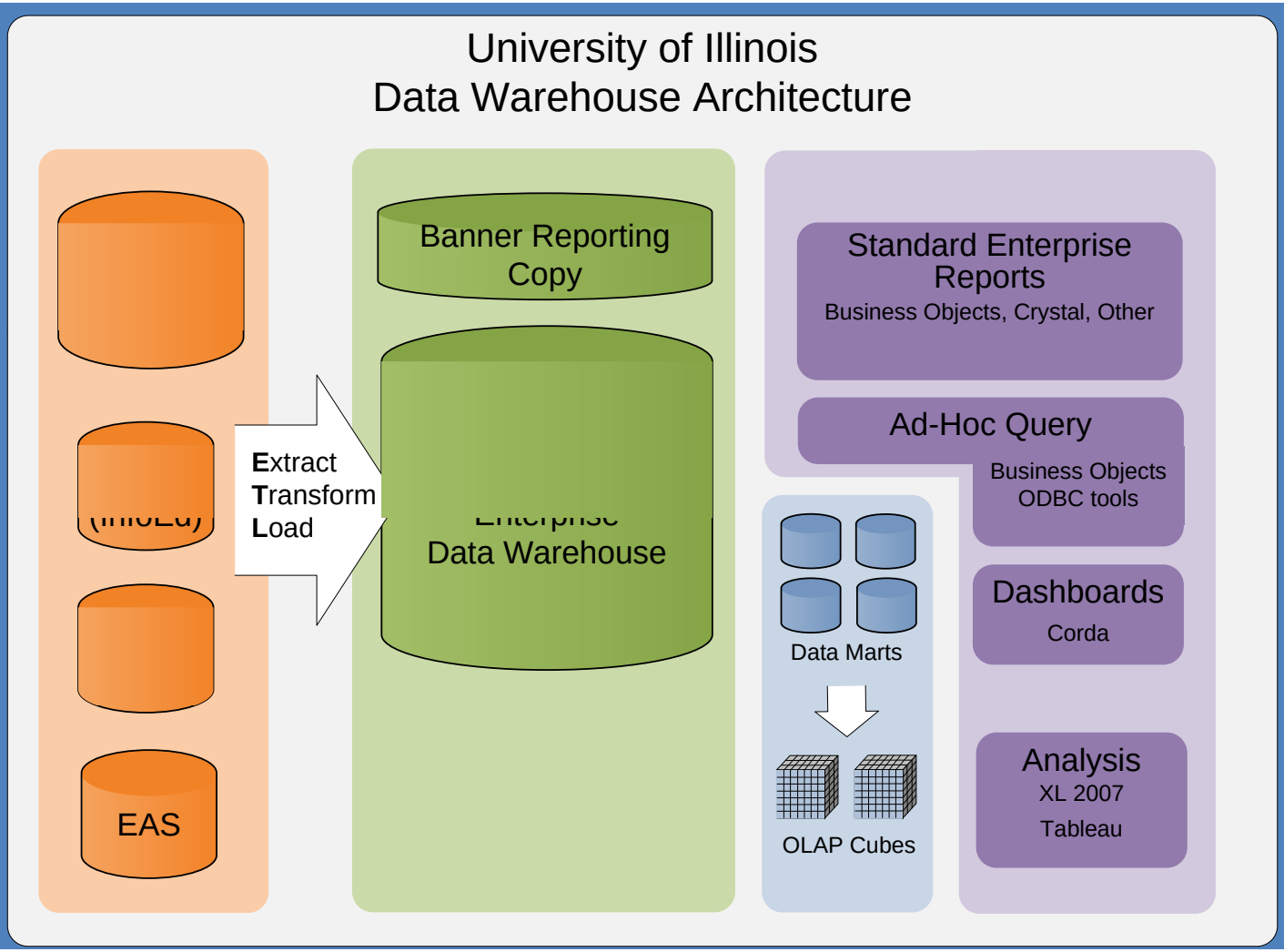
Technology



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Data Warehouse Environment

750 Tables

2 billion Rows

Enterprise Data Warehouse (EDW)	677 tables
Data Mart(s)	76 tables
Code Tables	29% (218)
History Tables	21% (158, 29 are code tables)
Truncate/Reload	60-65%
Incremental	35-40%

Size of Tables (in rows)

Rows	% (rnd)	# of Tbls
100M-175M	0.3	2
10M-99M 5	35	
1-9M	18	136
500K-999K	9	66
100K-499K	11	86
10K-99K	15	115
1-9999	42	313

# of Intermediate Tables

44

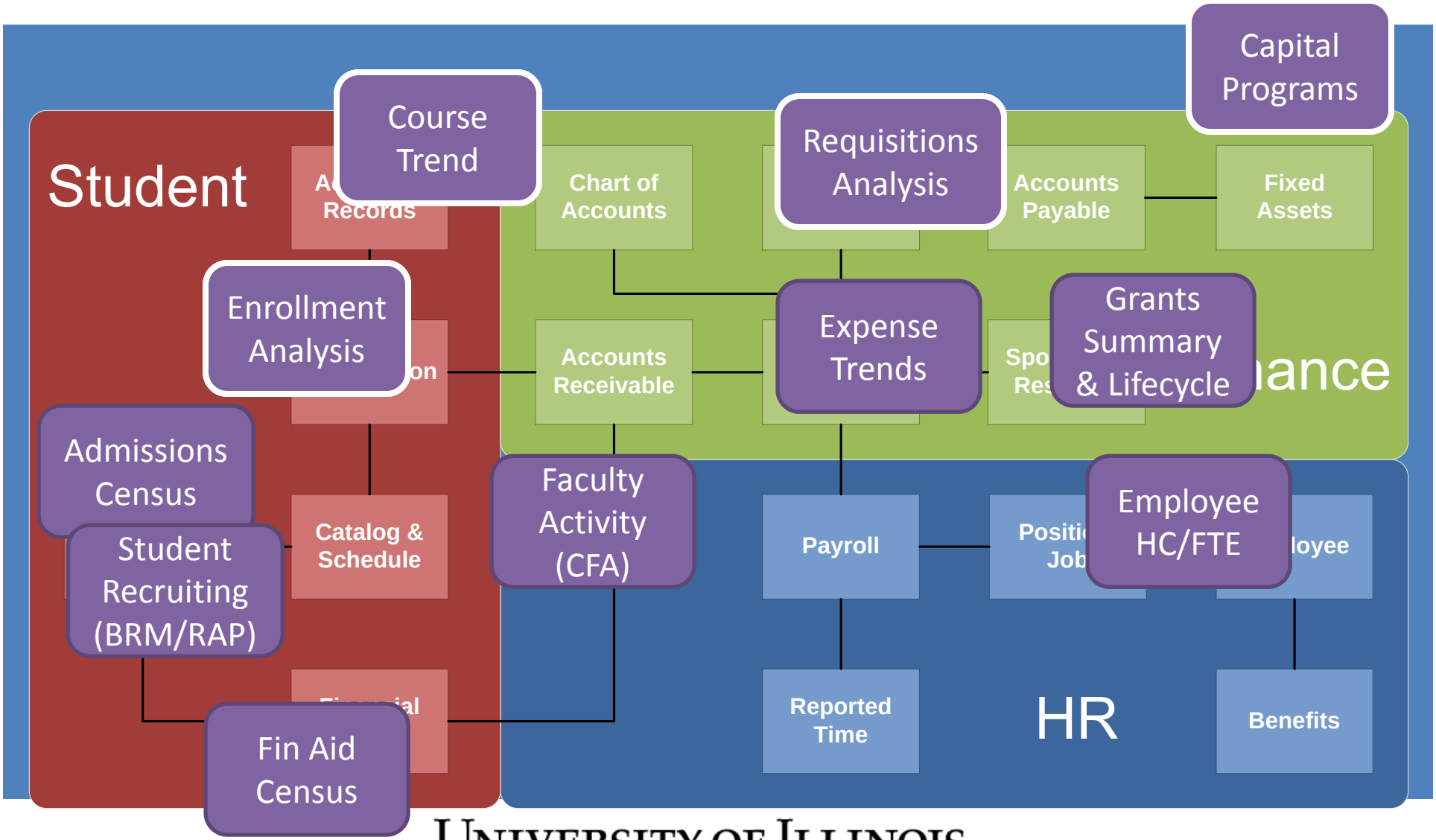
# of DW Source Tables

711

# of Rows

1,567,536,662

What data does we have?



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BI Strategy

- Changes in focus over time
- Key strategic themes/anchors

BI Strategy

- Future vision and plans
  - Institutional Standard Answers and the limits of self-service BI
  - Next-generation BI
  - Desired future state
  - Getting from here to there
  - What about KPIs? What about Analytics?

Lessons and Challenges

- Adoption and the limits of “build it and they will come”
- Is self-service BI the holy grail?
- Know your customers
- Use the right tool for the right job
- Build prototypes
- Collaborative BI in a distributed culture

Questions and Discussion

Aaron Walz
Director of Decision Support
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BI Products Demo

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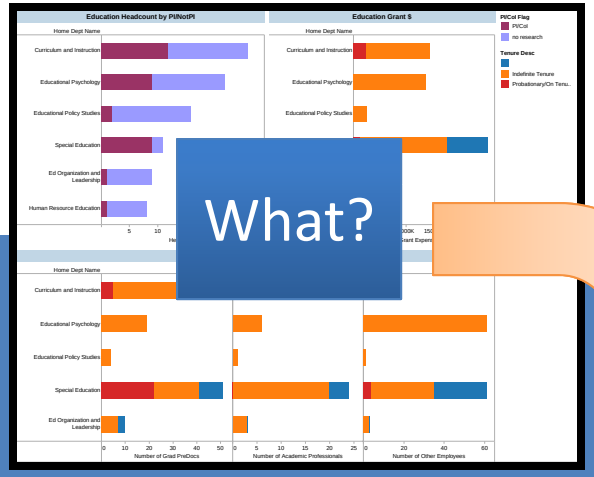
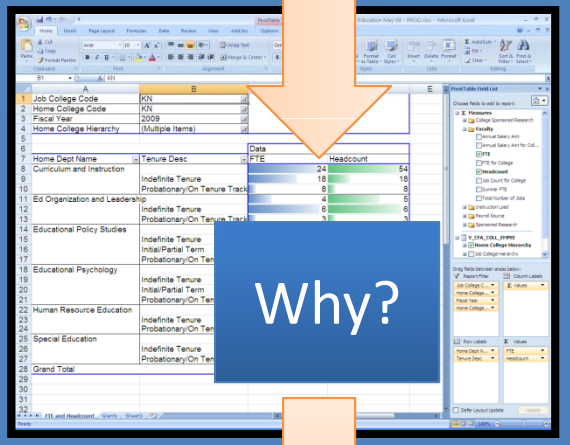
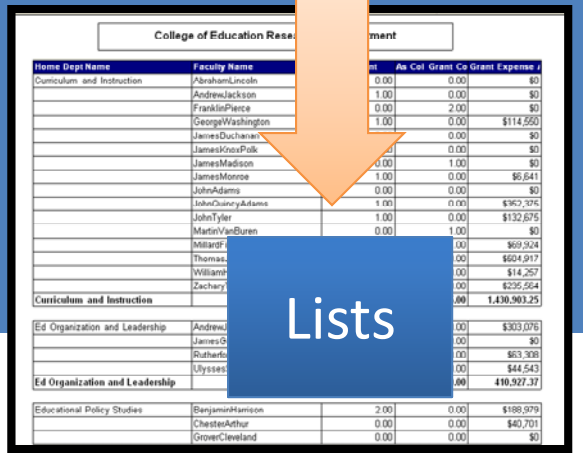
Integrated BI

- Dashboards
  - Lay of the land
  - Monitoring: what
- Analysis (OLAP)
  - Explore
  - Analysis: why
- Custom Reports
  - Catalog findings
  - Lists: look up specific details







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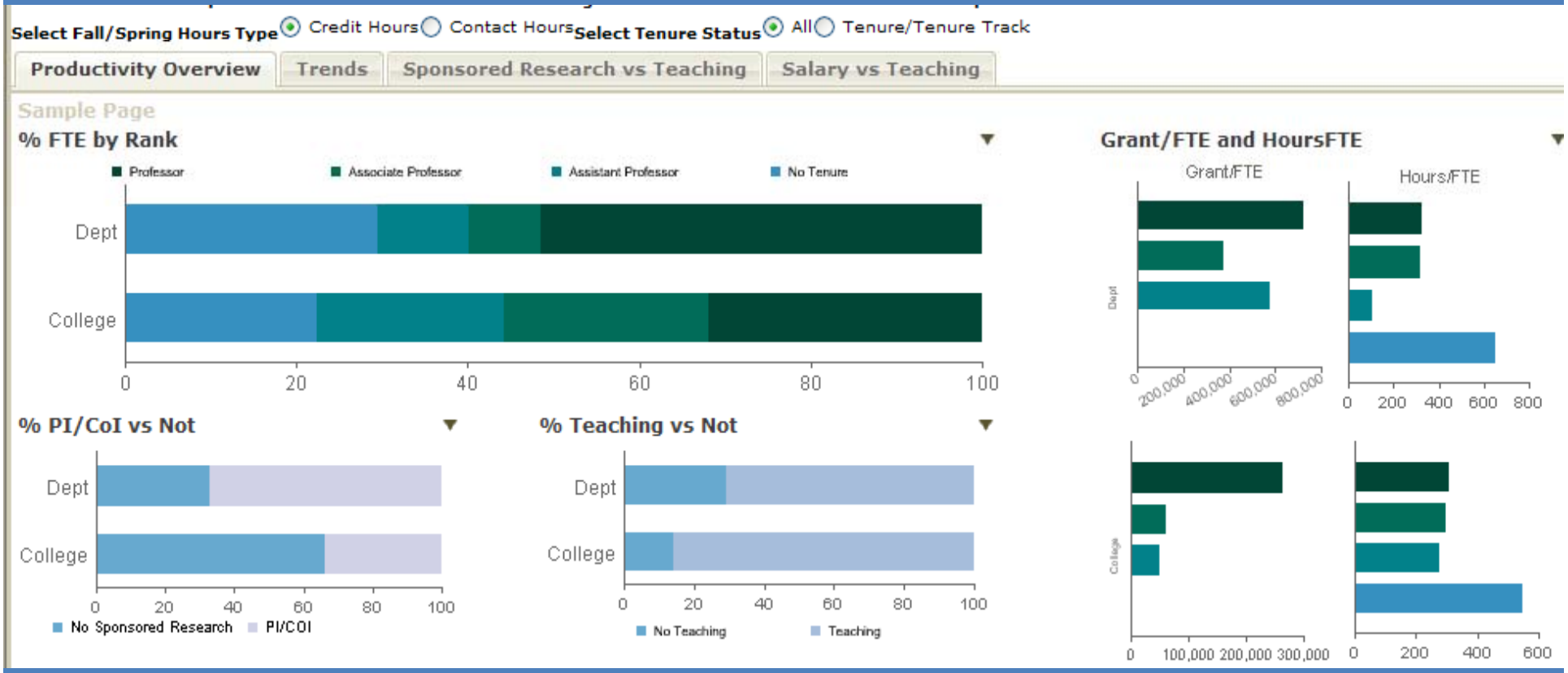
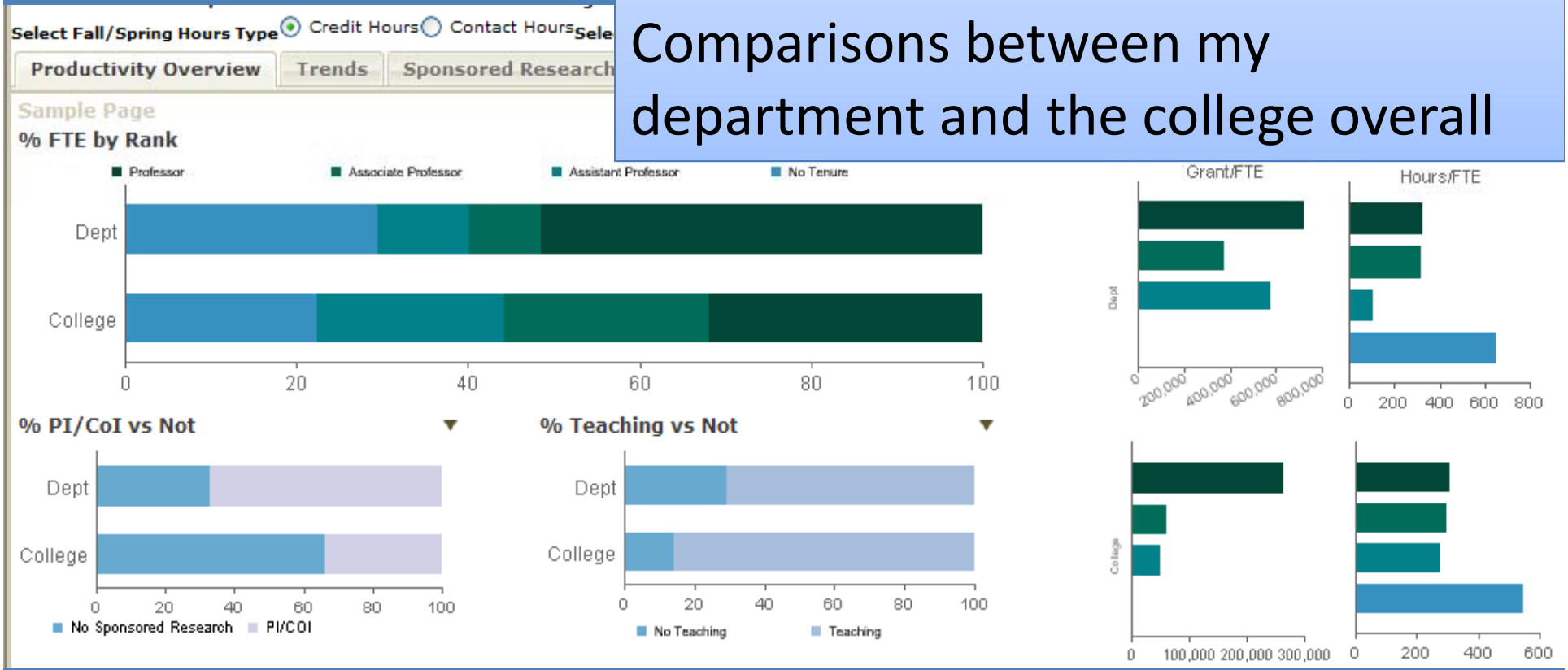
Faculty Productivity Dashboard



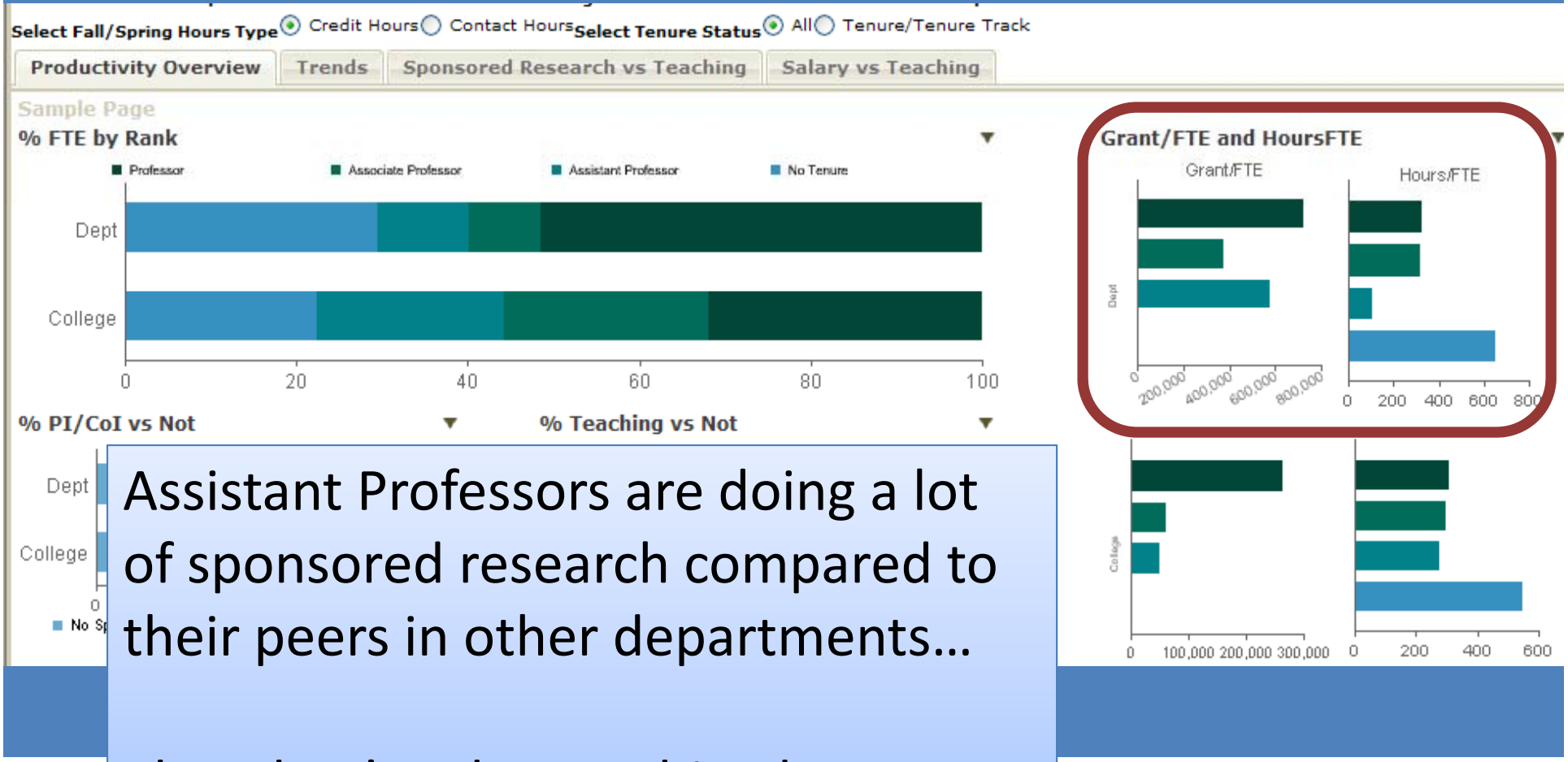
Faculty Pro

Overview of Faculty productivity in terms of teaching and sponsored research (grant $)

Comparisons between my department and the college overall



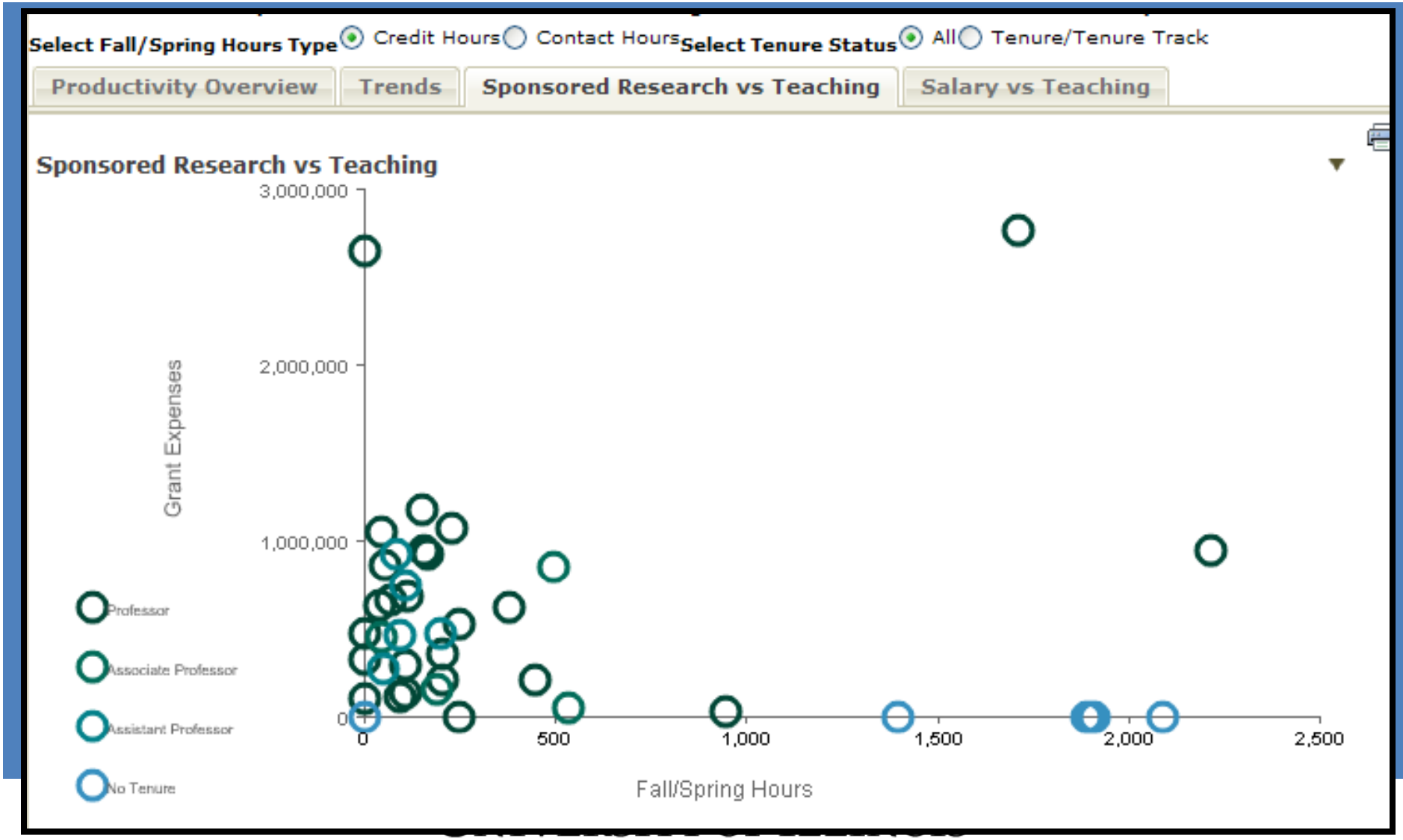
Faculty Productivity Dashboard



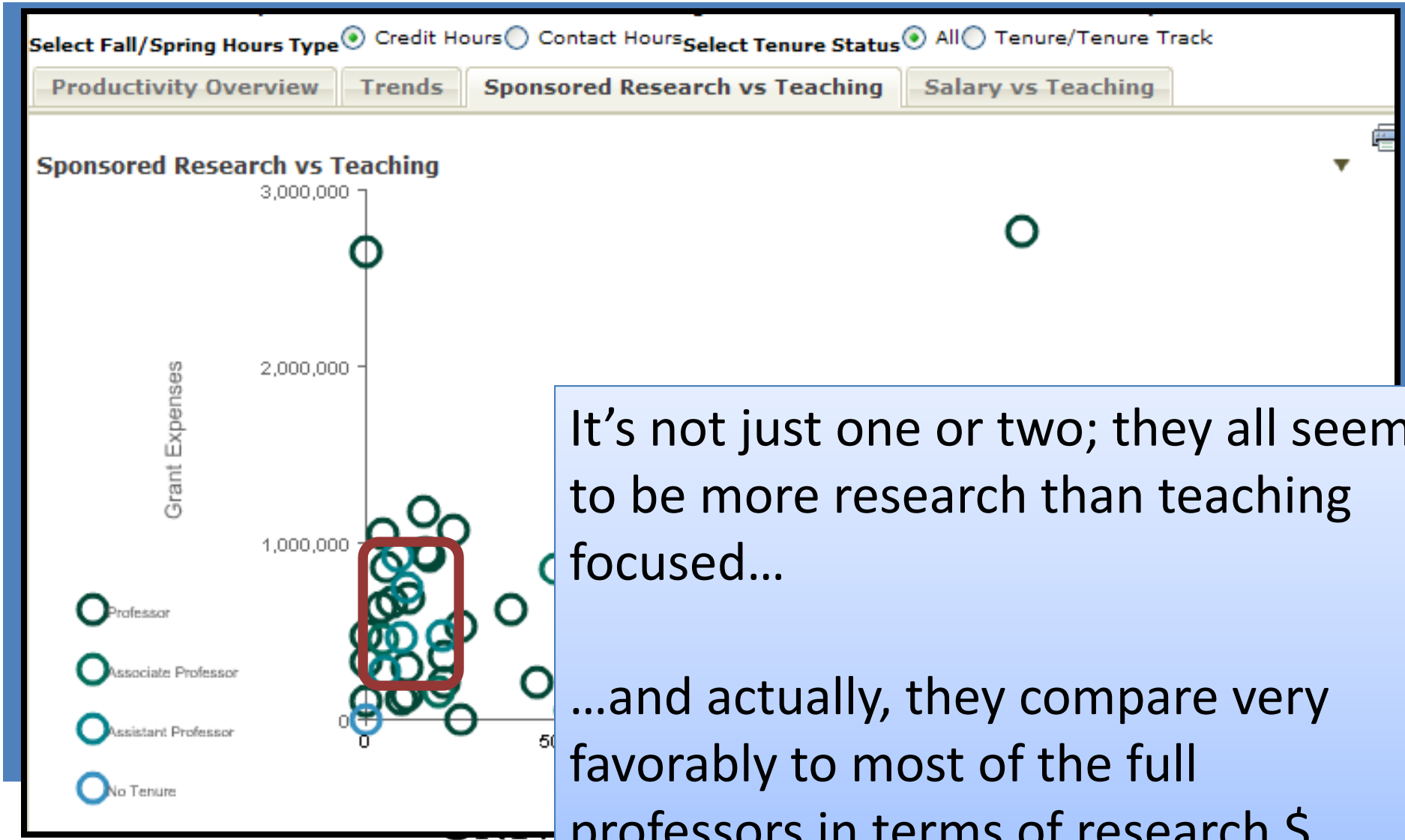
Assistant Professors are doing a lot of sponsored research compared to their peers in other departments…

..but they're also teaching less

Faculty Productivity Dashboard



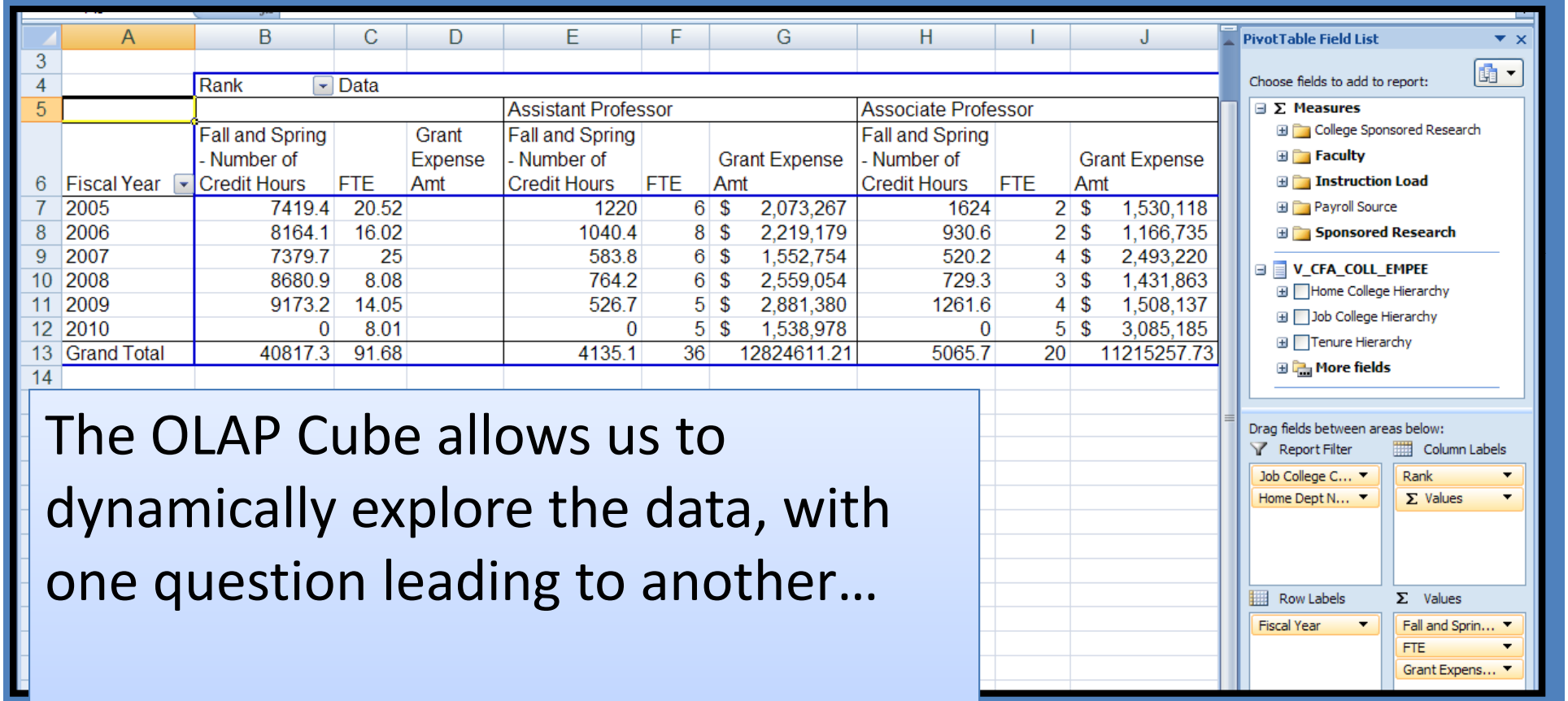
Faculty Productivity Dashboard



It's not just one or two; they all seem to be more research than teaching focused…

…and actually, they compare very favorably to most of the full professors in terms of research $

Faculty Activity OLAP Cube



	A	B	C	D	E	F	G	H	I	J
3										
4		Rank	Data							
5					Assistant Professor			Associate Professor		
6	Fiscal Year	Fall and Spring - Number of Credit Hours	FTE	Grant Expense Amt	Fall and Spring - Number of Credit Hours	FTE	Grant Expense Amt	Fall and Spring - Number of Credit Hours	FTE	Grant Expense Amt
7	2005	7419.4	20.52		1220	6	$ 2,073,267	1624	2	$ 1,530,118
8	2006	8164.1	16.02		1040.4	8	$ 2,219,179	930.6	2	$ 1,166,735
9	2007	7379.7	25		583.8	6	$ 1,552,754	520.2	4	$ 2,493,220
10	2008	8680.9	8.08		764.2	6	$ 2,559,054	729.3	3	$ 1,431,863
11	2009	9173.2	14.05		526.7	5	$ 2,881,380	1261.6	4	$ 1,508,137
12	2010	0	8.01		0	5	$ 1,538,978	0	5	$ 3,085,185
13	Grand Total	40817.3	91.68		4135.1	36	12824611.21	5065.7	20	11215257.73
14										

PivotTable Field List

Choose fields to add to report:

- Σ Measures
  - College Sponsored Research
  - Faculty
  - Instruction Load
  - Payroll Source
  - Sponsored Research
- V_CFA_COLL_EMPEE
  - Home College Hierarchy
  - Job College Hierarchy
  - Tenure Hierarchy
  - More fields

Drag fields between areas below:

Report Filter	Column Labels
Job College C...	Rank
Home Dept N...	Σ Values

Row Labels	Σ Values
Fiscal Year	Fall and Sprin...
	FTE
	Grant Expens...

The OLAP Cube allows us to dynamically explore the data, with one question leading to another…

…so here's my teaching and research $ by rank over time

Faculty Ac

This is Excel, so we can easily add some calculations of our own…

Assistant Professor			Associa					
Fall and Spring - Number of Credit Hours	FTE	Grant Expense Amt	Fall and Number Credit H					
1220	6	$ 2,073,267						
1040.4	8	$ 2,219,179						
583.8	6	$ 1,552,754						
764.2	6	$ 2,559,054						
526.7	5	$ 2,881,380	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0	5	$ 1,538,978	0	5	$ 3,085,185	0	25	$ 12,949,617
4135.1	36	12824611.21	5065.7	20	11215257.73	38157.2	163	86143854.13

T	Credit Hrs/FTE	Grant $/FTE	Credit Hrs/FTE	Grant $/FTE	Credit Hrs/FTE	Grant $/FTE
	203	$ 345,544	812	$ 765,059	293	$ 416,182
	130	$ 277,397	465	$ 583,368	235	$ 397,359
	97	$ 258,792	130	$ 623,305	294	$ 530,465
	127	$ 426,509	243	$ 477,288	249	$ 641,503
	105	$ 576,276	315	$ 377,034	317	$ 711,455
	0	$ 307,796	0	$ 617,037	0	$ 517,985

Faculty Ac

This is Excel, so we can easily add some calculations of our own…

…highlighting trends for the different faculty ranks

Assistant Professor			Associa					
Fall and Spring - Number of Credit Hours	FTE	Grant Expense Amt	Fall and Number Credit H					
1220	6	$ 2,073,267						
1040.4	8	$ 2,219,179						
583.8	6	$ 1,552,754						
764.2	6	$ 2,559,054						
526.7	5	$ 2,881,380	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0	5	$ 1,538,978	0	5	$ 3,085,185	0	25	$ 12,949,617
4135.1	36	12824611.21	5065.7	20	11215257.73	38157.2	163	86143854.13

T Credit Hrs/FTE	Grant $/FTE	Credit Hrs/FTE	Grant $/FTE	Credit Hrs/FTE	Grant $/FTE
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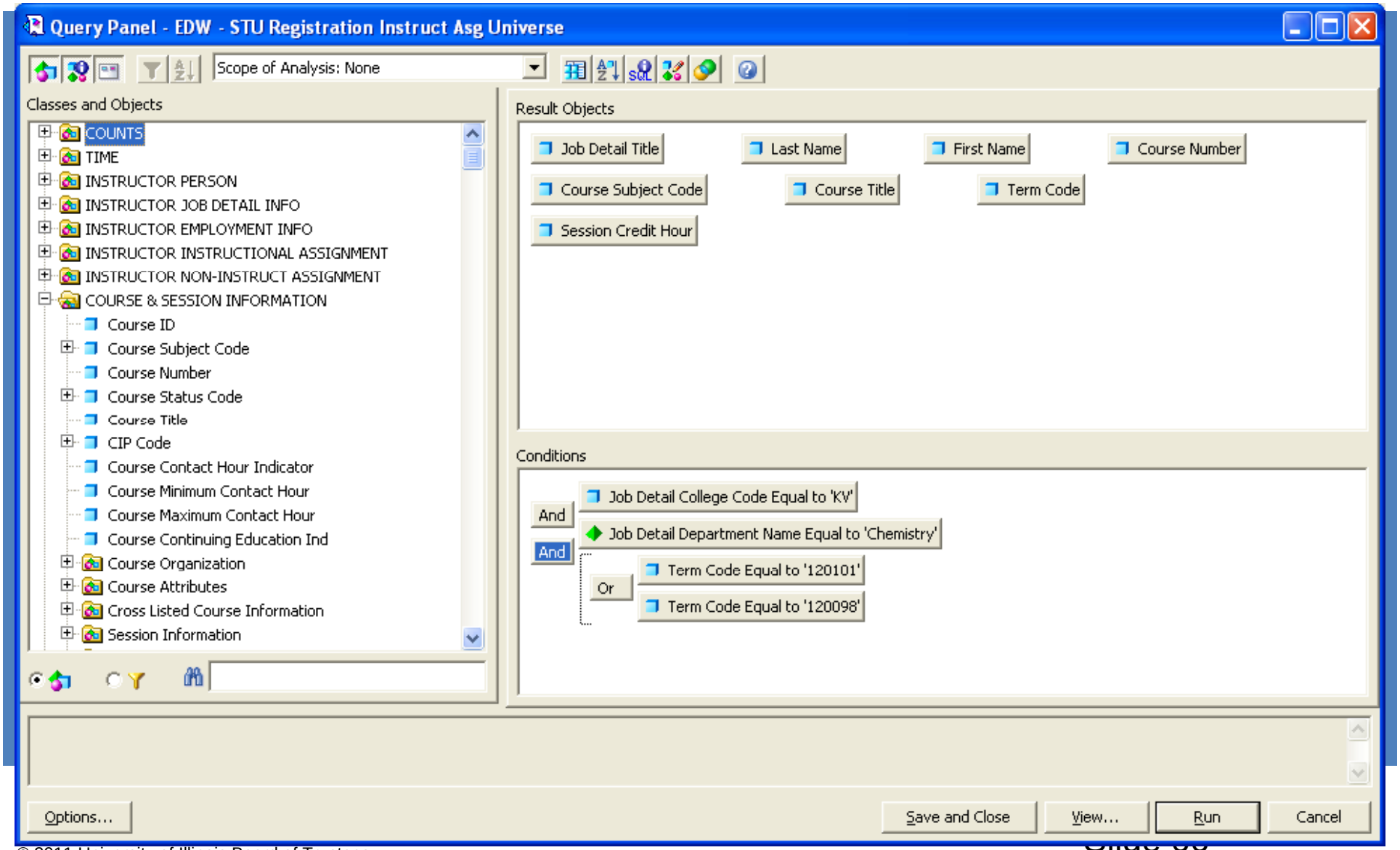
105	$ 576,276	315	$ 377,034	317	$ 711,455
0	$ 307,796	0	$ 617,037	0	$ 517,985

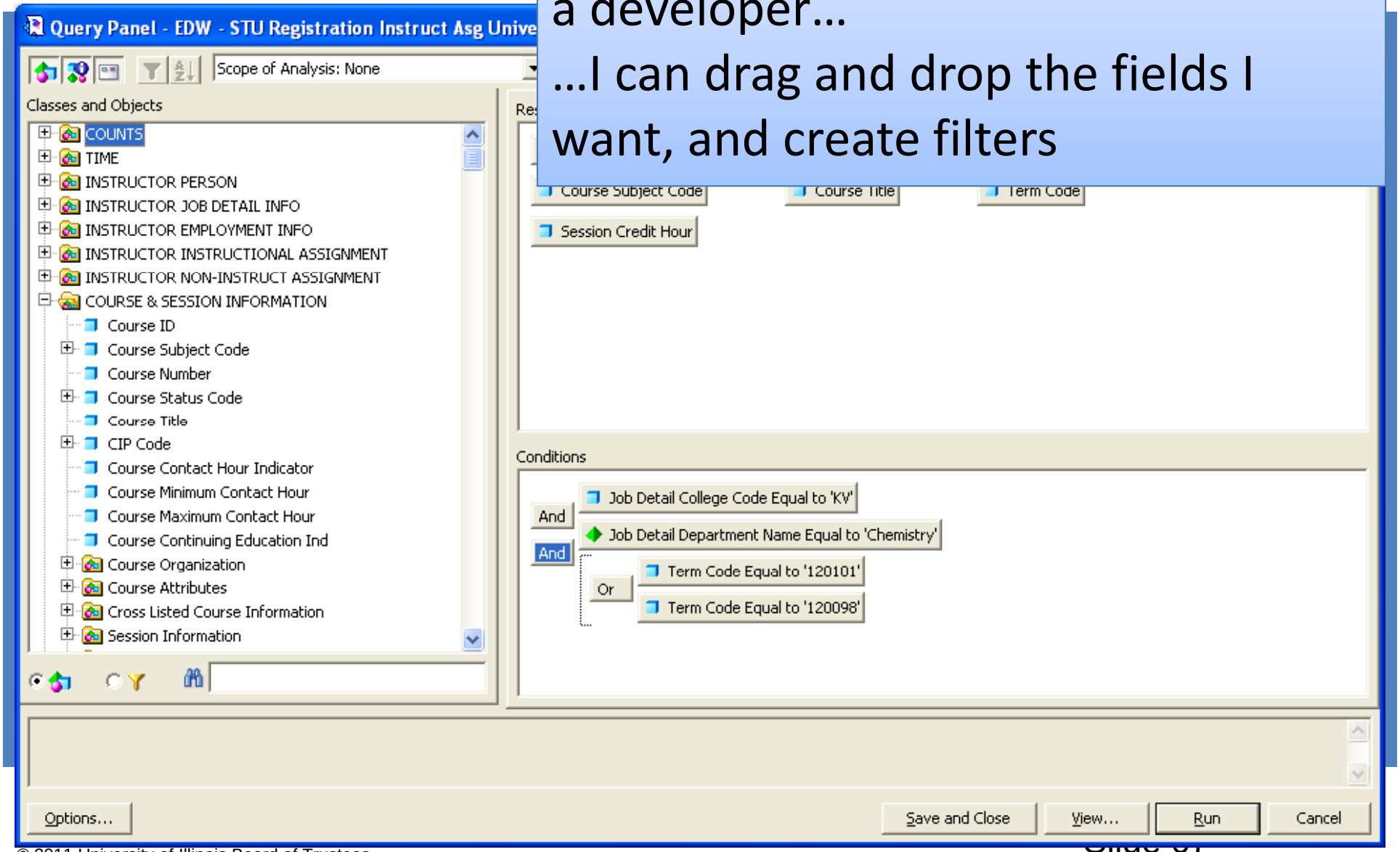
Faculty Ad-Hoc Reports



Faculty Ad

Ad-Hoc Query tools let us create custom reports without having to be a developer…

…I can drag and drop the fields I want, and create filters



Faculty Ad-Hoc Reports

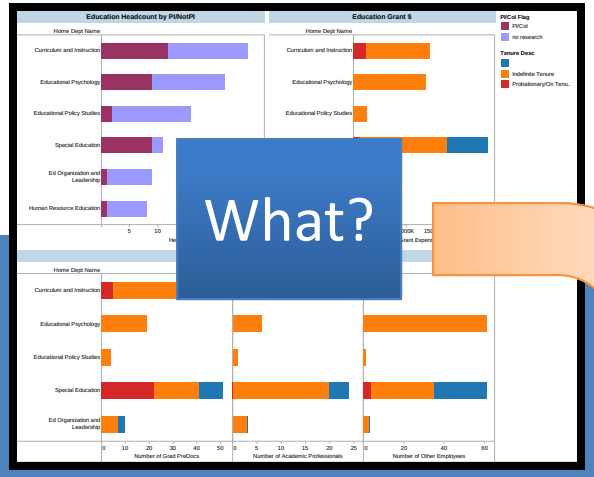
Term Code	Last Name	First Name	Course Subject	Course	Course Title	Session C
120098	Adams	Gretchen	CHEM	101	Introductory Chemistry	3
	Adams	Gretchen	CHEM	102	General Chemistry I	3
	Adams	Gretchen	CHEM	104	General Chemistry II	3
	Adams	Gretchen	CHEM	199	Undergraduate Open Seminar	1
	Adams	Gretchen	CHEM	202	Accelerated Chemistry I	3
	Allegretti	Lauren	CHEM	104	General Chemistry II	3
	Anderson	Nicholas	CHEM	103	General Chemistry Lab I	1
	Bartels	Steven	CHEM	103	General Chemistry Lab I	1
	Bendis	Elizabeth	CHEM	103	General Chemistry Lab I	1
	Bhat	Sheila	CHEM	103	General Chemistry Lab I	1
	Boulanger	William	CHEM	499	Senior Thesis	2
	Bradley	Alyssa	CHEM	101	Introductory Chemistry	3
	Braun	Pau				
	Braun	Pau				
	Braun	Pau				
	Braun	Pau				
	Braun	Pau				
	Braun	Pau				
	Braun	Pau				
	Braun	Pau				
	Brea	Elli				
	Brom	Jac				
	Cason	Mic				
	Chang	Noe				
	Choules	Mar				
	Ciciora	Mat				
	Council	Mark	CHEM	203	Accelerated Chemistry Lab I	2

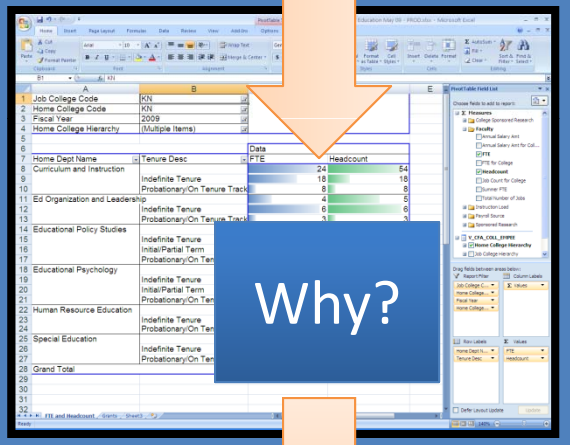
Reports are very effective for creating lists so I can look up specific values…

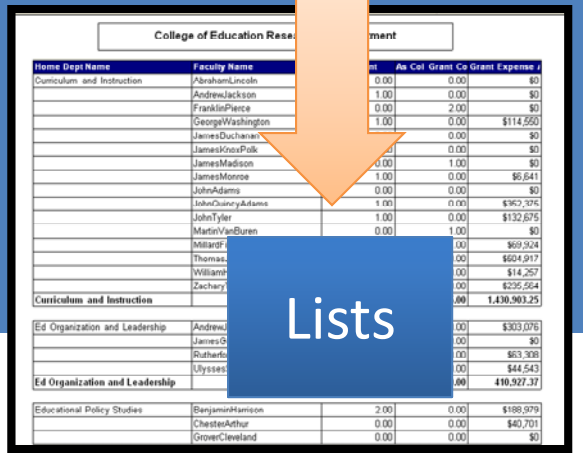
…here's a listing of who's teaching what Chemistry classes

Integrated BI

- Dashboards
  - Lay of the land
  - Monitoring: what
- Analysis (OLAP)
  - Explore
  - Analysis: why
- Custom Reports
  - Catalog findings
  - Lists: look up specific details







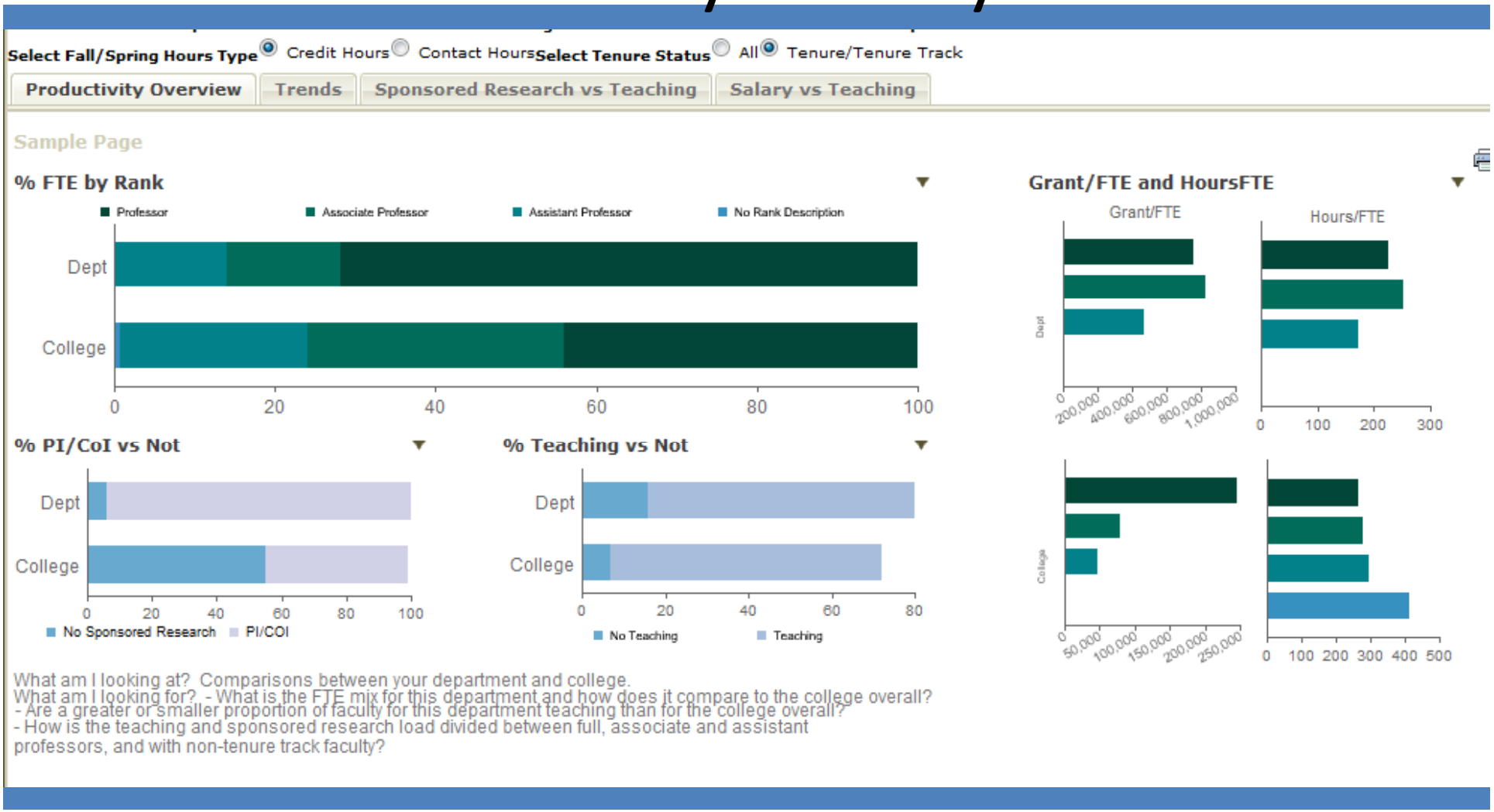
UNIVERSITY OF ILLINOIS
URBANA-CHAMPAIGN • CHICAGO • SPRINGFIELD

Metrics



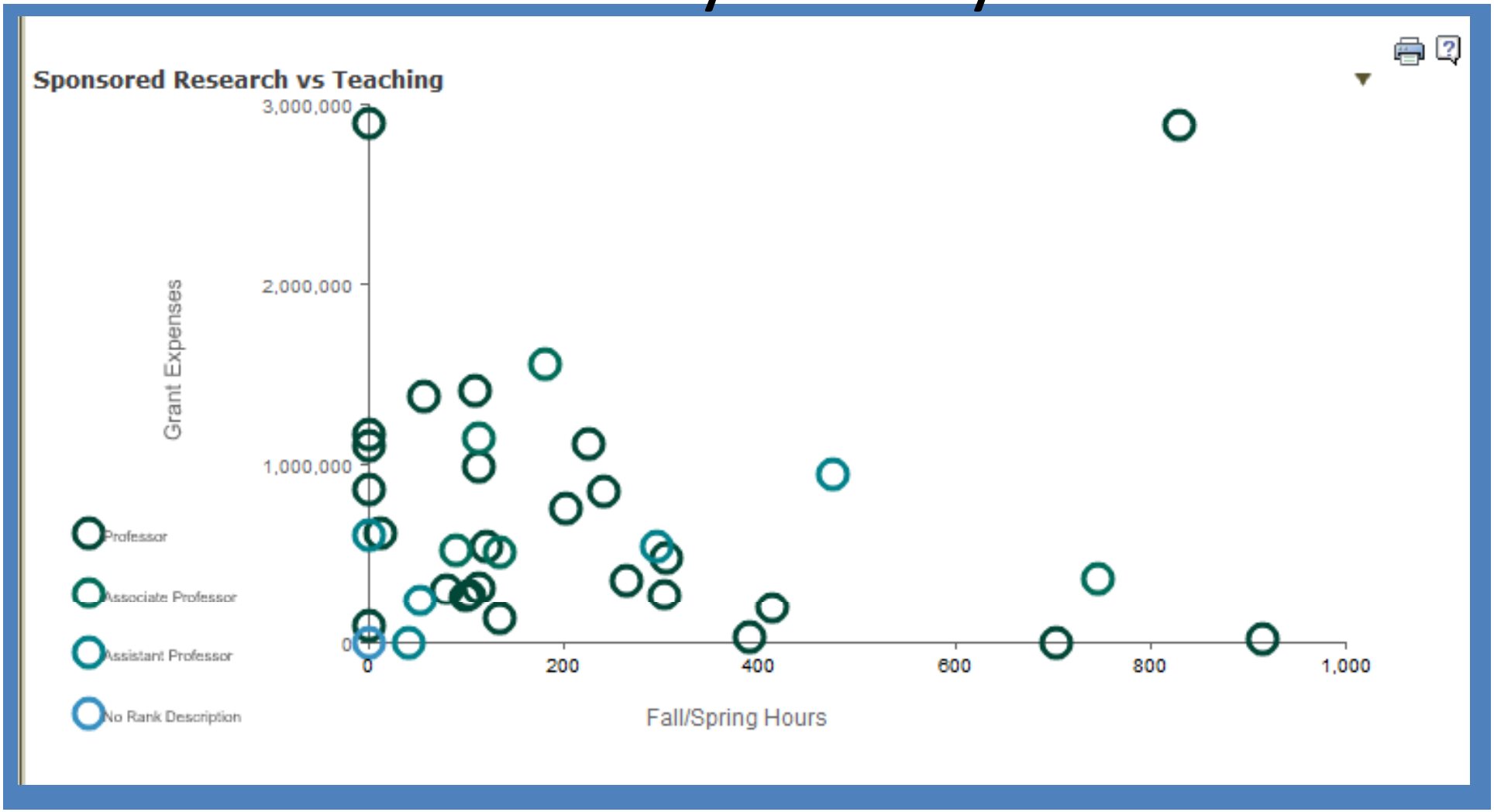
UNIVERSITY OF ILLINOIS
URBANA-CHAMPAIGN • CHICAGO • SPRINGFIELD

Metrics: Faculty Activity



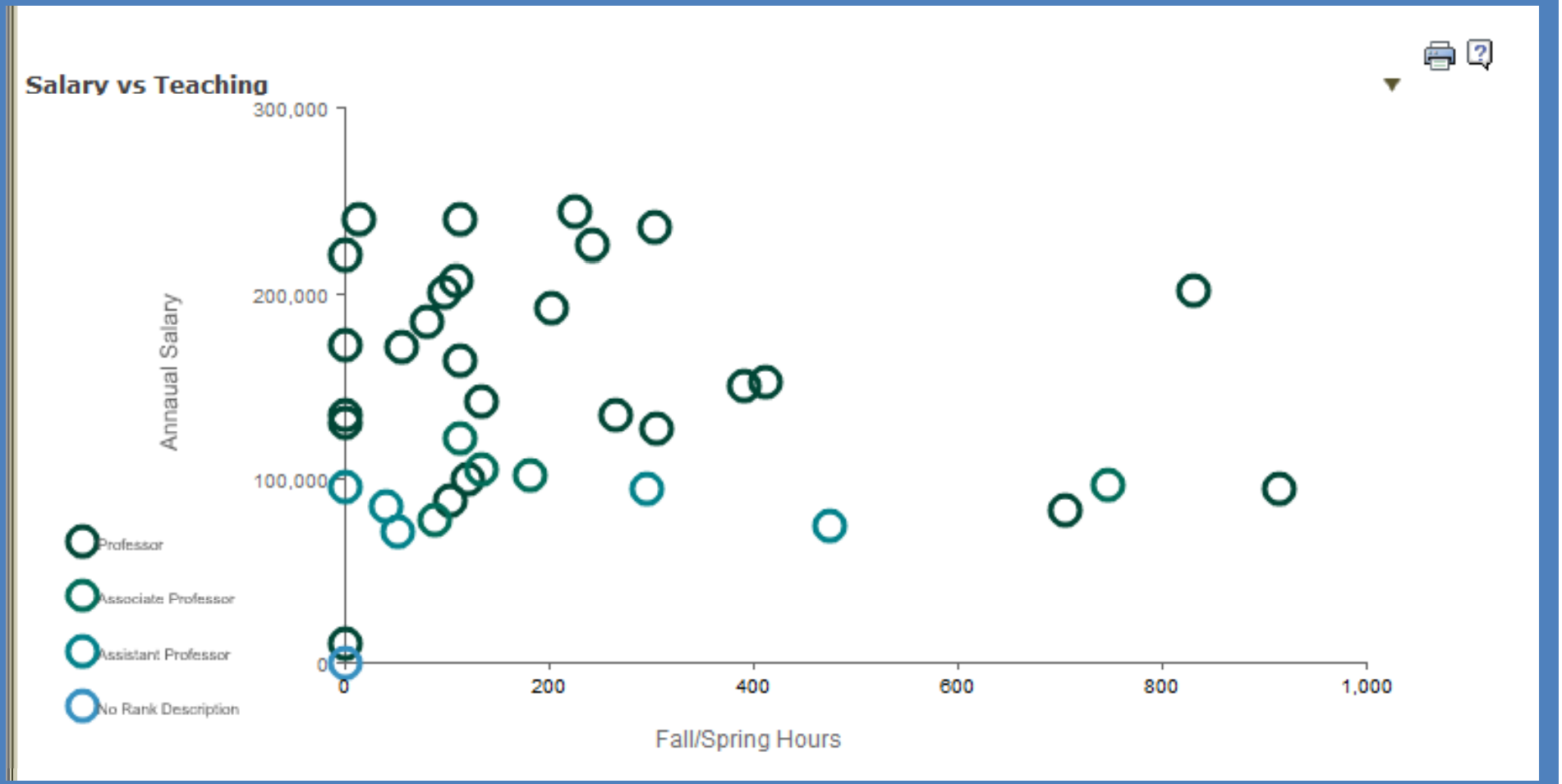
UNIVERSITY OF ILLINOIS
URBANA-CHAMPAIGN • CHICAGO • SPRINGFIELD

Metrics: Faculty Activity



UNIVERSITY OF ILLINOIS
URBANA-CHAMPAIGN • CHICAGO • SPRINGFIELD

Metrics: Faculty Activity



UNIVERSITY OF ILLINOIS
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DISCUSSION QUESTION

What are the best practices in decision support?

What should be the mission, values and goals of a decision support function or organization?

15 minutes

Georgia Institute of Technology
Institute Planning and Resource Management

THE ART AND SCIENCE OF COMMUNICATING DATA:

INFORMATION DESIGN + DATA VISUALIZATION TRENDS AND PRACTICES

Holly Goodson

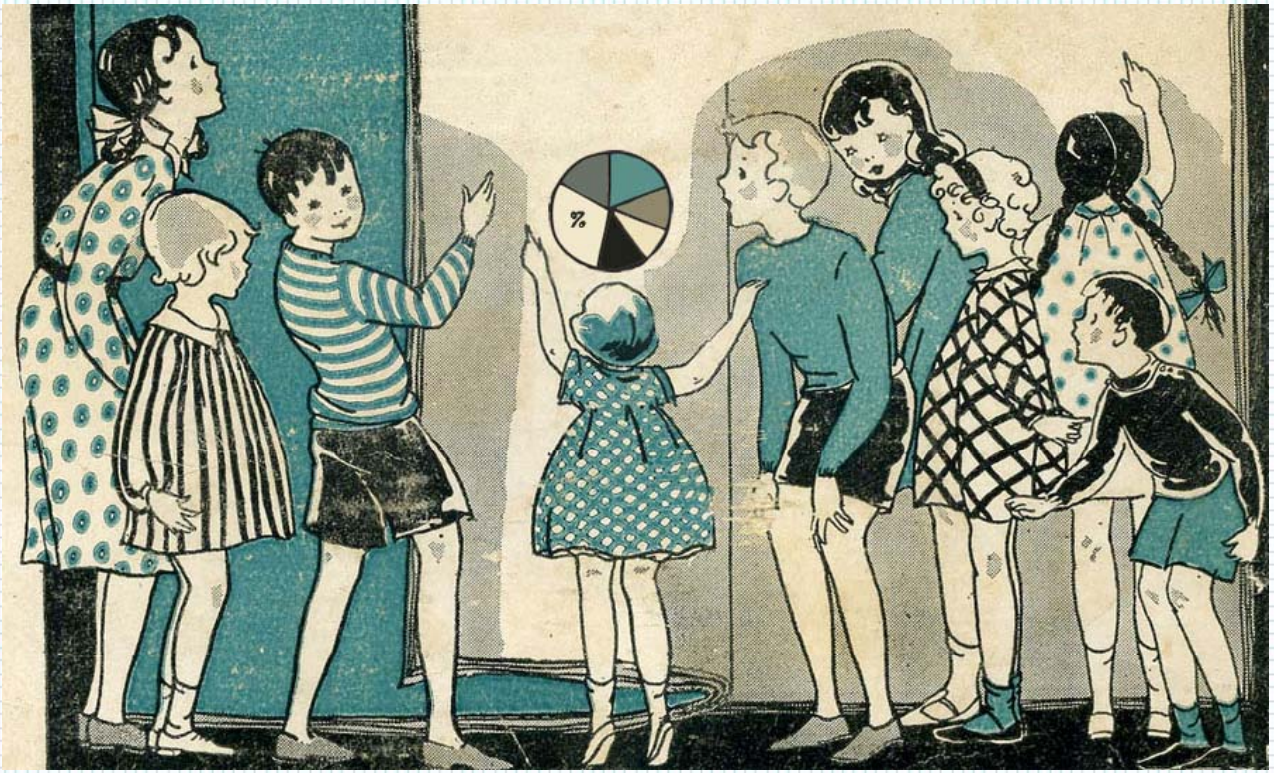
Chief Data Officer and Director

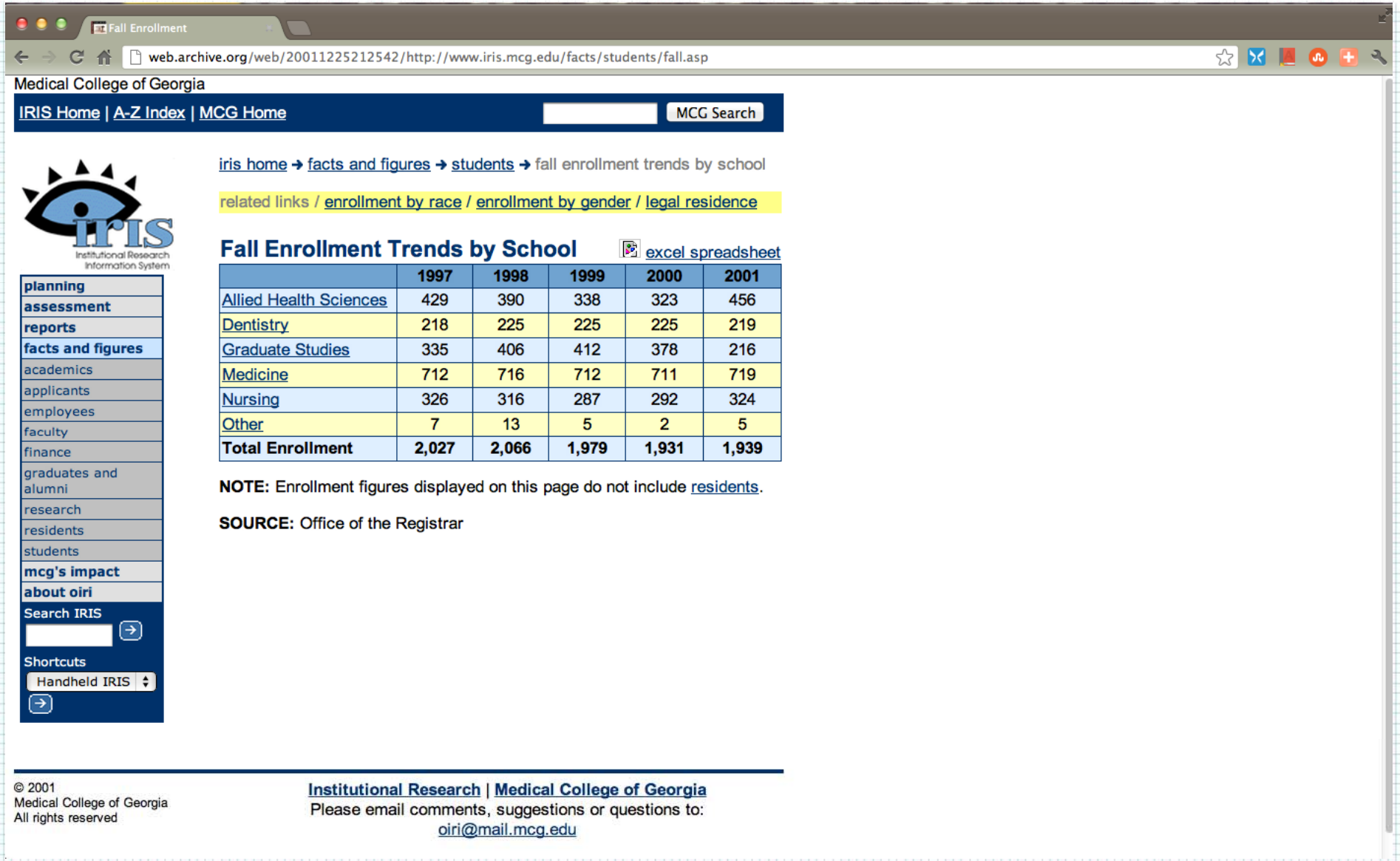
Institutional Research

Georgia Health Sciences University

The Art + Science of Communicating Data

INFORMATION DESIGN AND DATA VISUALIZATION TRENDS + PRACTICES





Fall Enrollment

web.archive.org/web/20011225212542/http://www.iris.mcg.edu/facts/students/fall.asp

Medical College of Georgia

IRIS Home | A-Z Index | MCG Home

MCG Search

Institutional Research Information System

- planning
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- facts and figures
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- finance
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- students
- mcg's impact
- about oiri

Search IRIS

Shortcuts

Handheld IRIS

iris home → facts and figures → students → fall enrollment trends by school

related links / enrollment by race / enrollment by gender / legal residence

Fall Enrollment Trends by School

excel spreadsheet

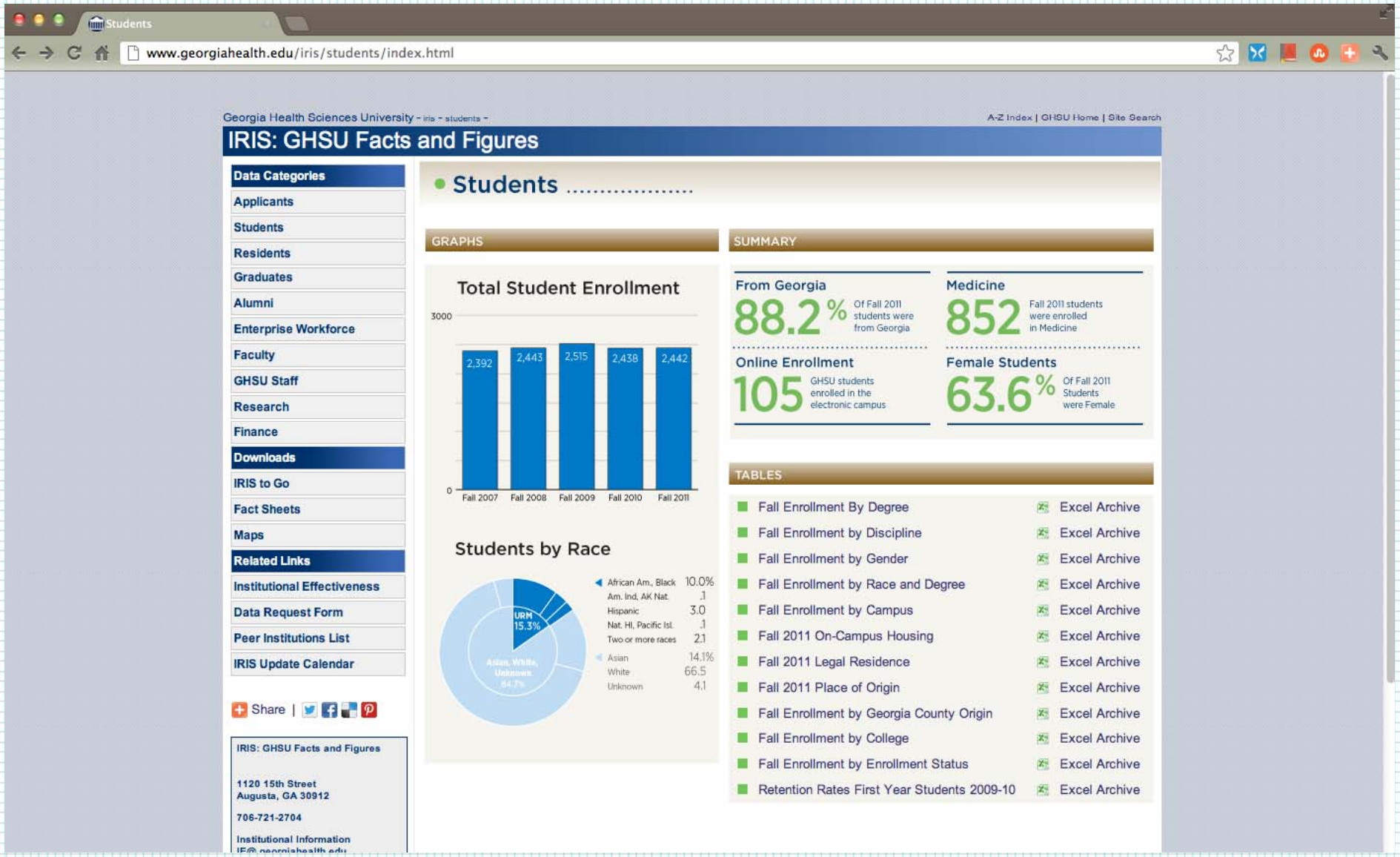
	1997	1998	1999	2000	2001
Allied Health Sciences	429	390	338	323	456
Dentistry	218	225	225	225	219
Graduate Studies	335	406	412	378	216
Medicine	712	716	712	711	719
Nursing	326	316	287	292	324
Other	7	13	5	2	5
Total Enrollment	**2,027**	**2,066**	**1,979**	**1,931**	**1,939**

NOTE: Enrollment figures displayed on this page do not include residents.

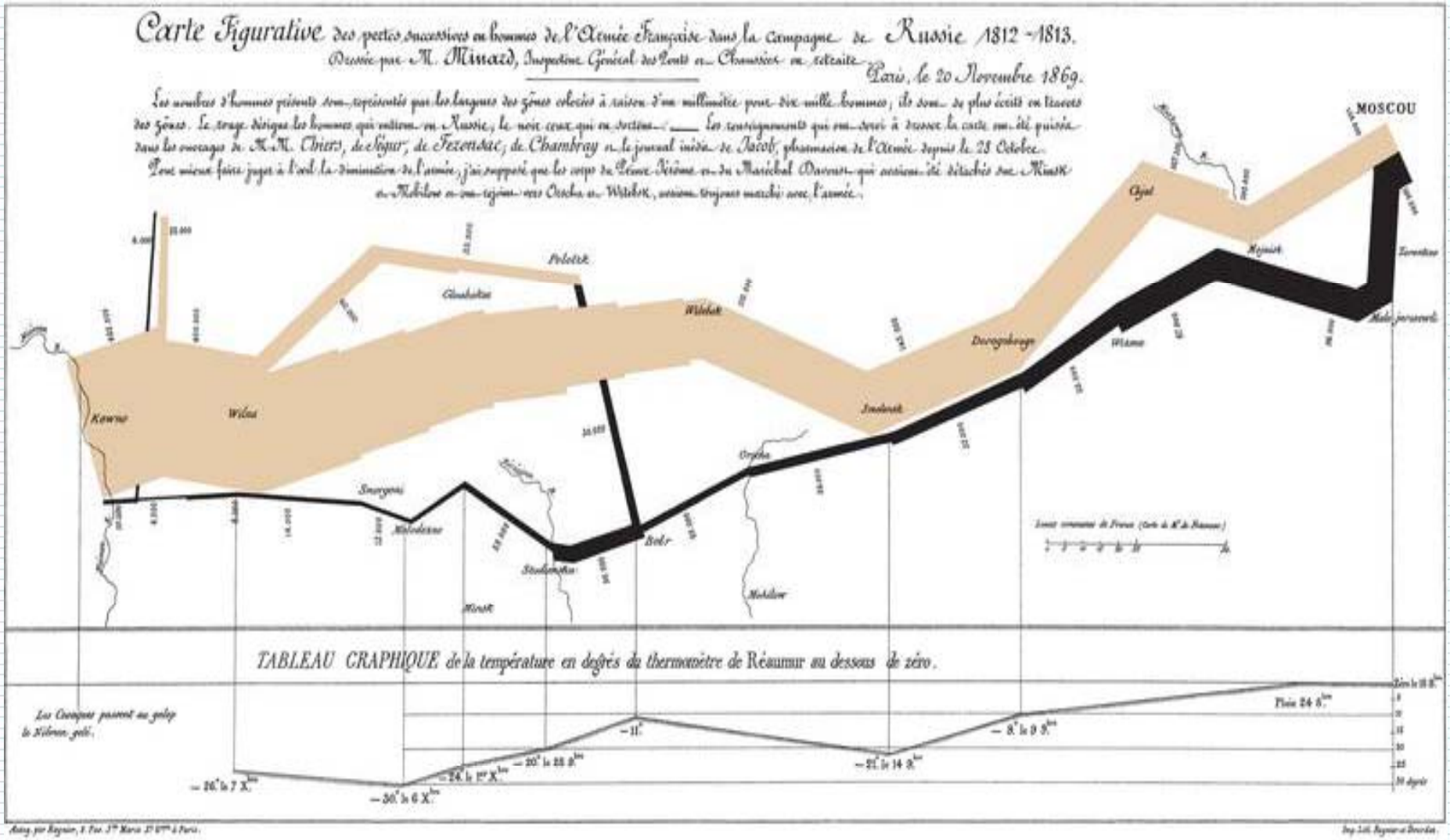
SOURCE: Office of the Registrar

Institutional Research | Medical College of Georgia
Please email comments, suggestions or questions to:
oiri@mail.mcg.edu

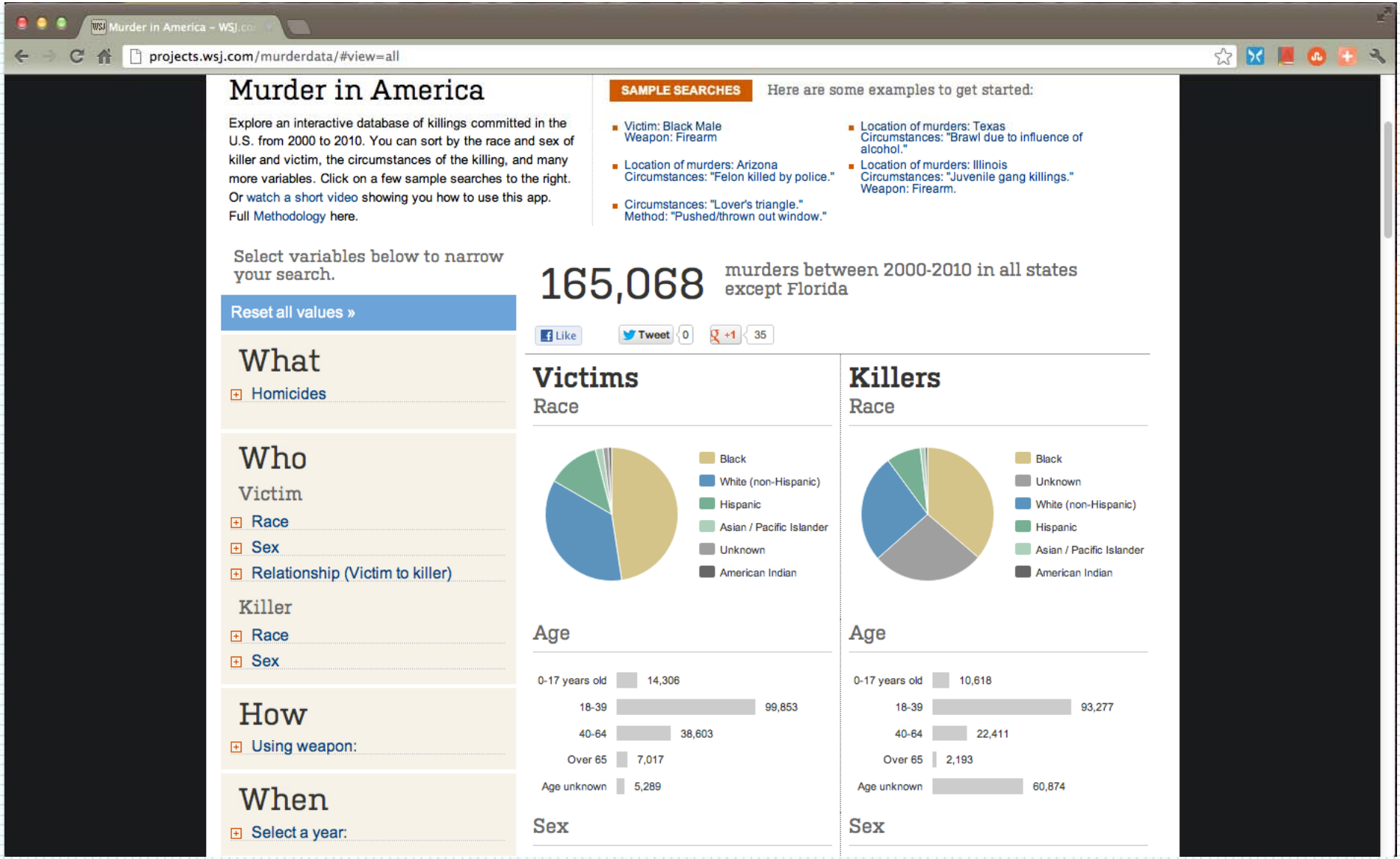
IRIS Student Enrollment - 2002



IRIS Student Enrollment - 2012

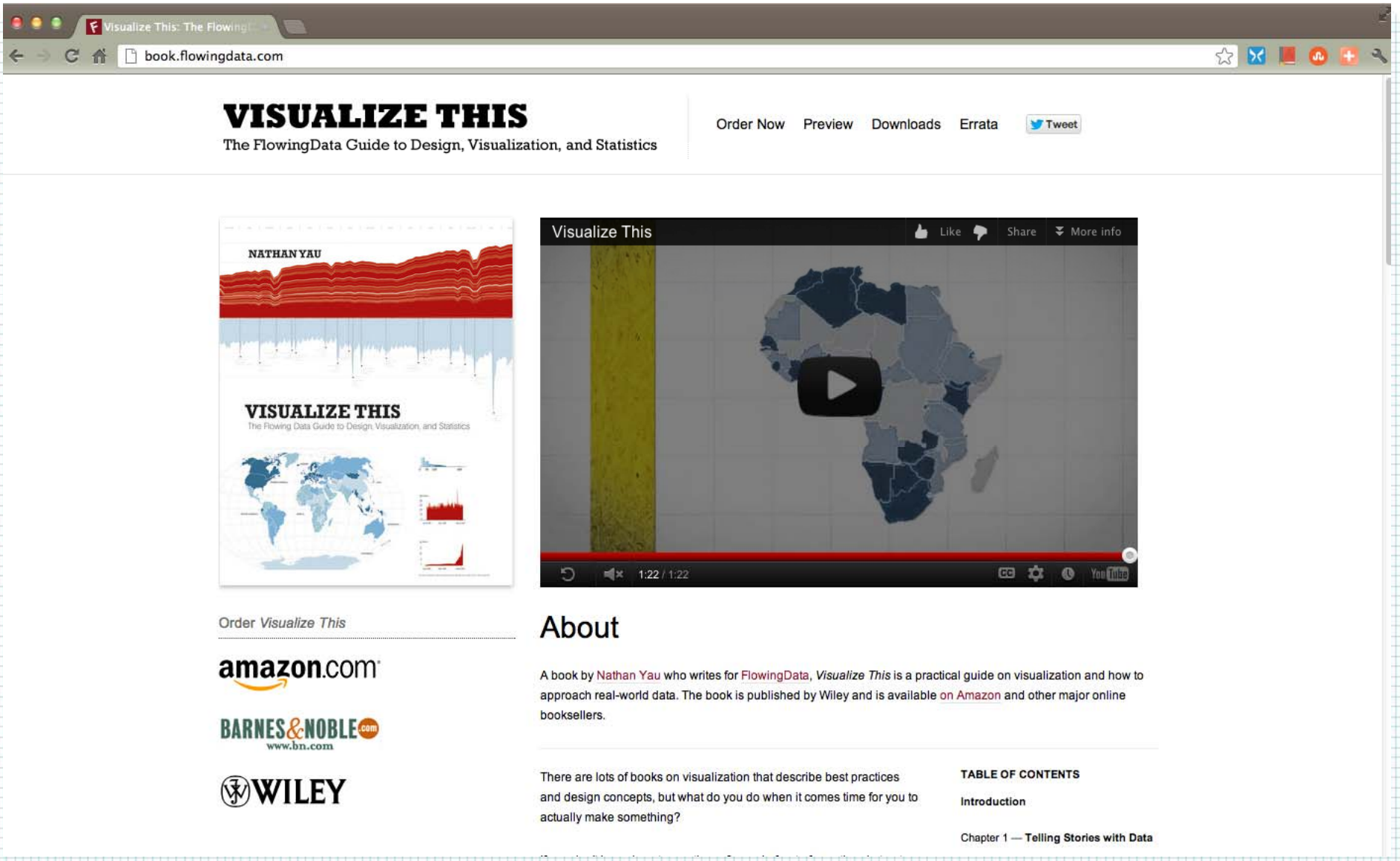


DATA VISUALIZATION



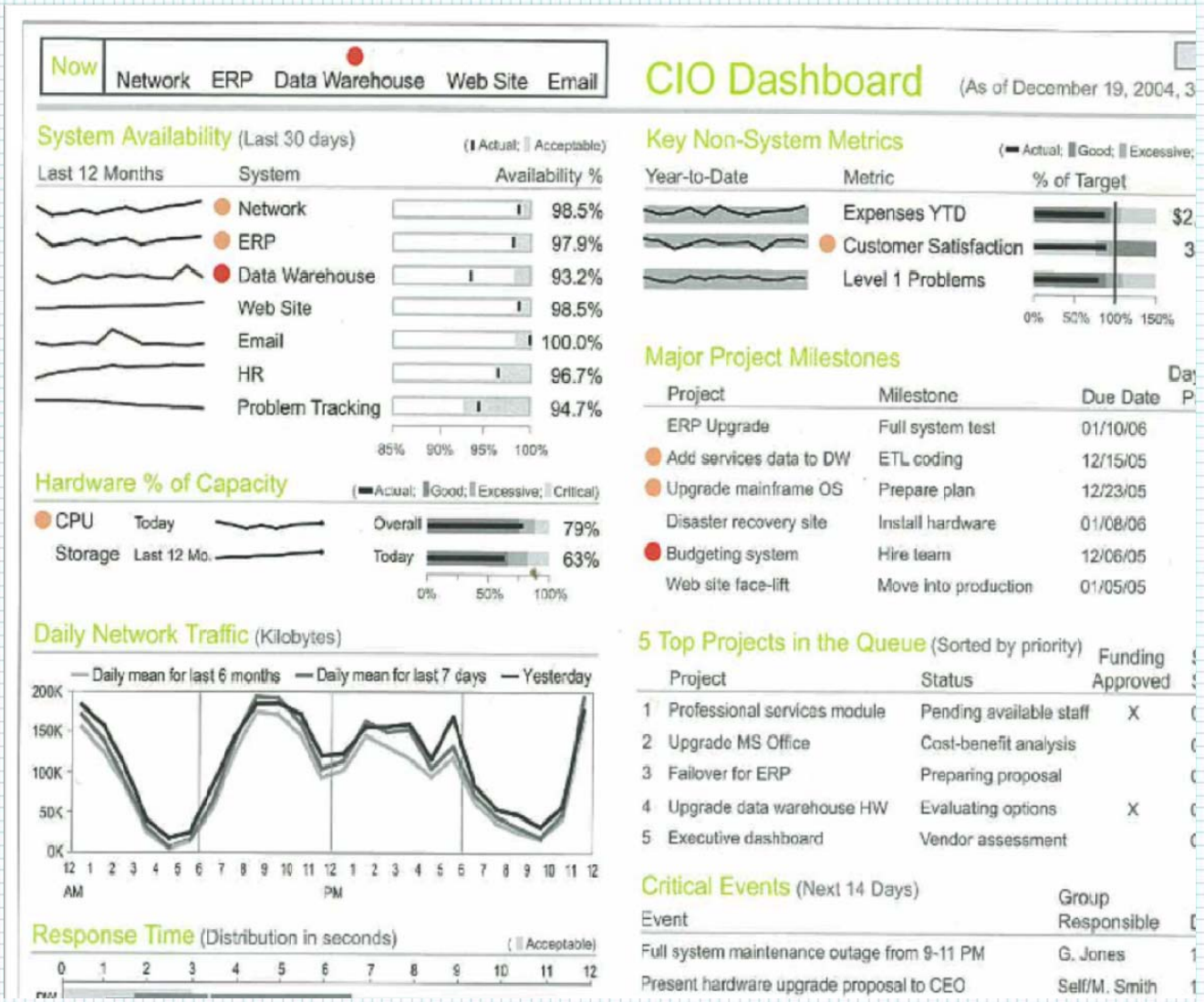
Wall Street Journal Murder Database

http://projects.wsj.com/murderdata/



Visualize This! by Nathan Yau

http://book.flowingdata.com/


Now
Network ERP Data Warehouse Web Site Email
CIO Dashboard
(As of December 19, 2004, 3
System Availability (Last 30 days)
(Actual; Acceptable)
Last 12 Months
System
Availability %
Network 98.5%
ERP 97.9%
Data Warehouse 93.2%
Web Site 98.5%
Email 100.0%
HR 96.7%
Problem Tracking 94.7%
85% 90% 95% 100%
Hardware % of Capacity
(Actual; Good; Excessive; Critical)
CPU Today
Storage Last 12 Mo.
Overall 79%
Today 63%
0% 50% 100%
Daily Network Traffic (Kilobytes)
Daily mean for last 6 months
Daily mean for last 7 days
Yesterday
200K
150K
100K
50K
0K
12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12
AM
PM
Response Time (Distribution in seconds)
(Acceptable)
0 1 2 3 4 5 6 7 8 9 10 11 12
Key Non-System Metrics
(Actual; Good; Excessive;
Year-to-Date
Metric
% of Target
Expenses YTD
Customer Satisfaction
Level 1 Problems
0% 50% 100% 150%
Major Project Milestones
Project
Milestone
Due Date
ERP Upgrade Full system test 01/10/06
Add services data to DW ETL coding 12/15/05
Upgrade mainframe OS Prepare plan 12/23/05
Disaster recovery site Install hardware 01/08/06
Budgeting system Hire team 12/06/05
Web site face-lift Move into production 01/05/05
5 Top Projects in the Queue (Sorted by priority)
Project
Status
Funding Approved
1 Professional services module Pending available staff X
2 Upgrade MS Office Cost-benefit analysis
3 Failover for ERP Preparing proposal
4 Upgrade data warehouse HW Evaluating options X
5 Executive dashboard Vendor assessment
Critical Events (Next 14 Days)
Event
Group Responsible
Full system maintenance outage from 9-11 PM G. Jones
Present hardware upgrade proposal to CEO Self/M. Smith

DASHBOARDS

A dashboard is a visual display of the most important information needed to achieve one or more objectives; consolidated and arranged on a single screen so the information can be monitored at a glance.

-- Stephen Few
Analytical Design Master

Sales | Marketing | Call Center | Warehouse | Executive | +

Add a Klip | Layout

Visits

Date Range: Last Month

Visitors 31,700

Leads this Month

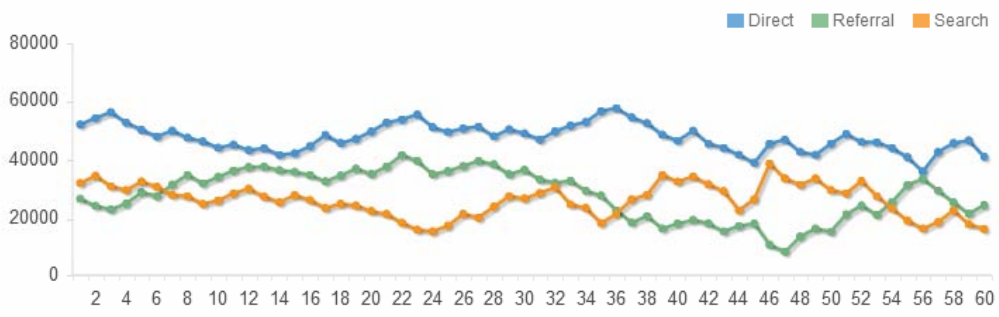
455

Leads last month 1890 | Avg. leads / month (past 3M) 1950 | Leads today: 40

Campaign Performance

Campaign	ROI	Leads	Wins	Start
01/09 Email Blast	-18.45%	1,214	2	Thu, Apr 01, 2010
Blue Team Video	-8.73%	325	42	Mon, May 10, 2010
Red Team Skyscraper	11.05%	235	58	Wed, May 12, 2010
Red Team Banner	33.88%	512	121	Sun, Apr 04, 2010
		2,286		

Traffic Sources (past 60 days)



Funnel

Metric	On Target	Past 30 ...	60 - 90 ...
Visits	3%	67,875	64,874
Downl...	9%	23,092	19,456
Leads	54%	3,434	3,845
Opps	26%	197	157
Wins	-8%	112	120

Revenue Per Sale

$6,100.00

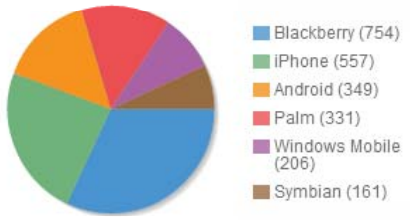
Last Month: $5,800.00

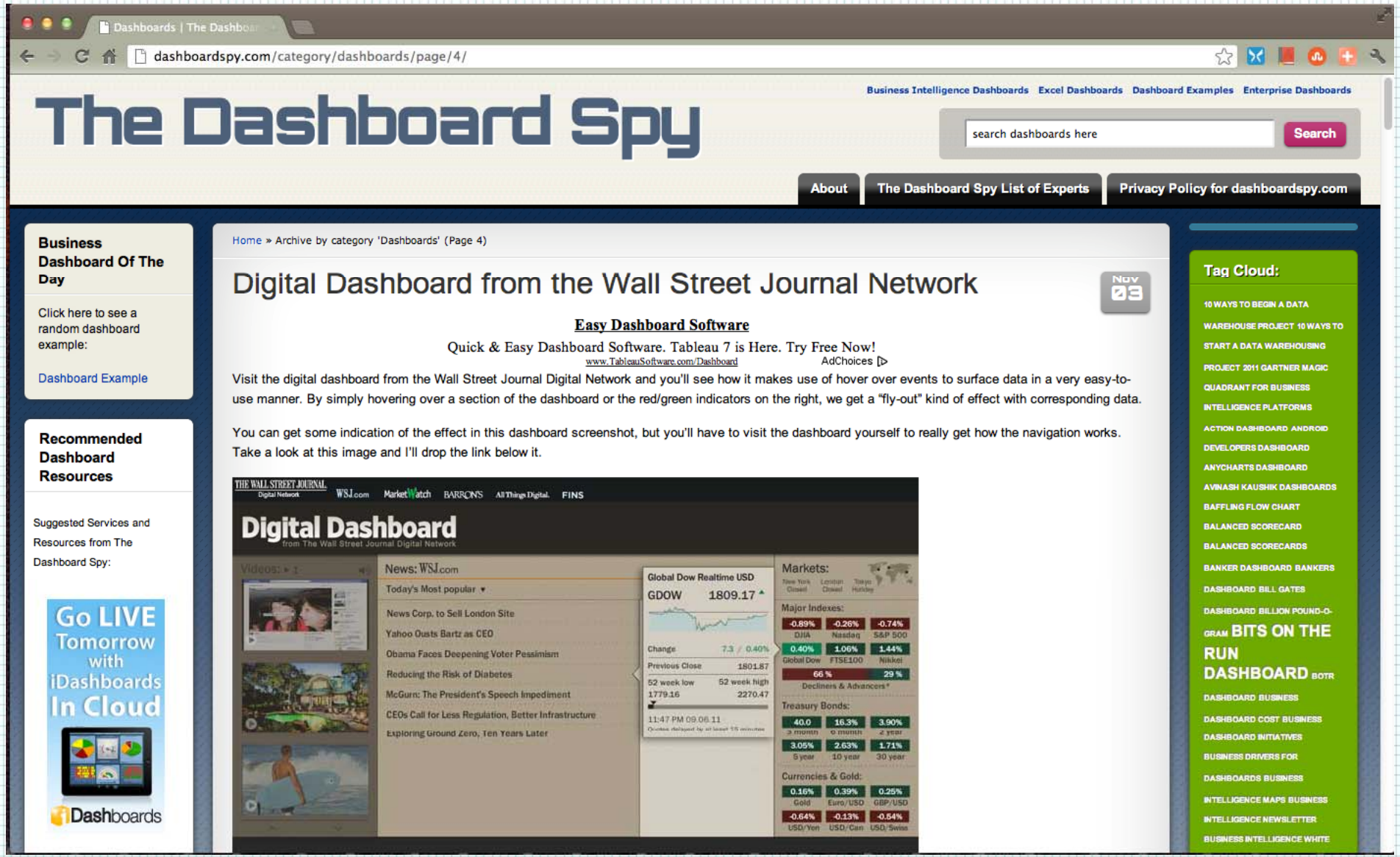
Cost Per Lead

$127.00

Last Month: $156.00

Smartphone Poll Results





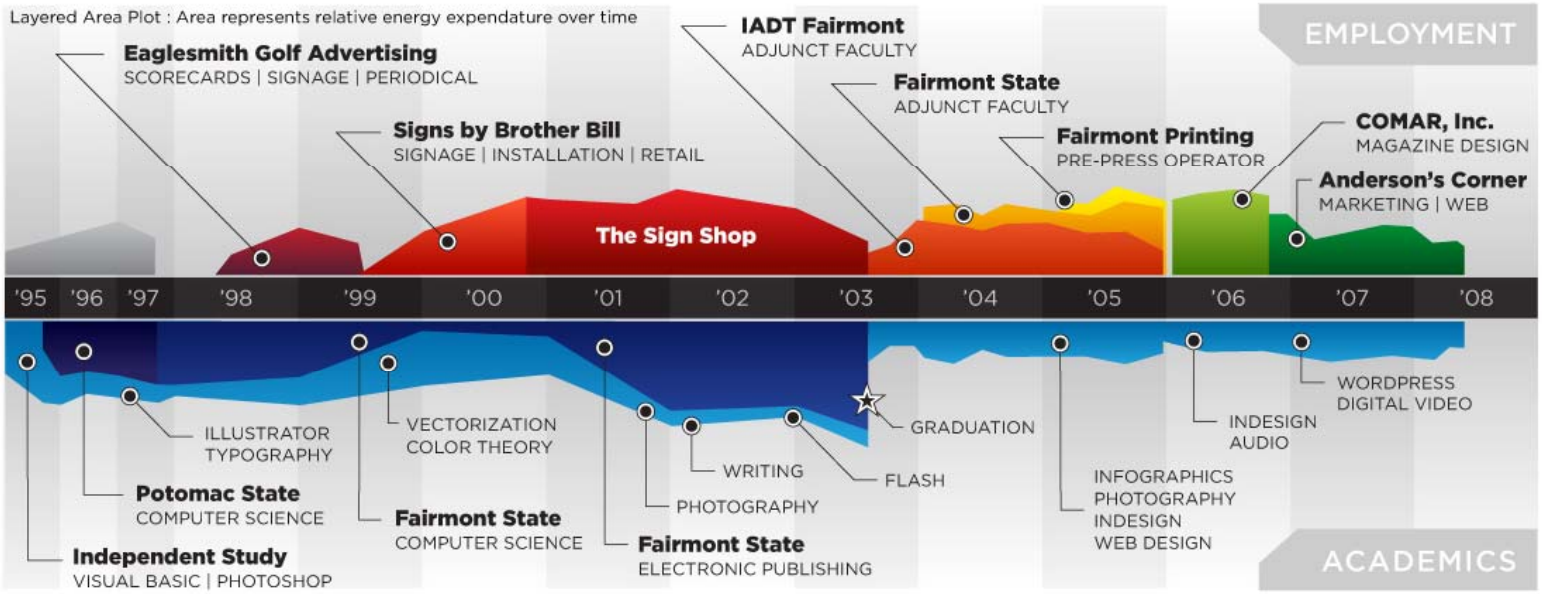
Dashboard Spy

http://dashboardspy.com/

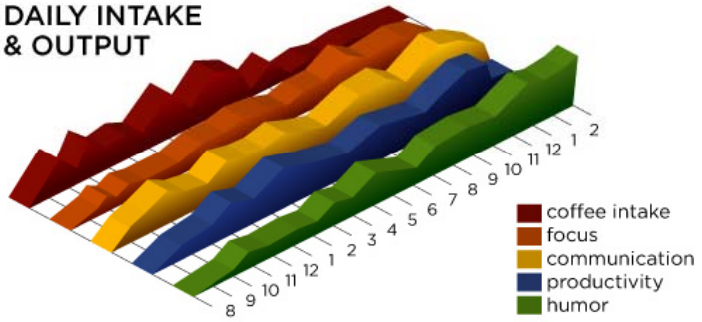
Michael Anderson

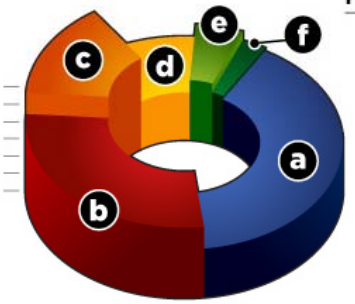
RÉSUMÉ / INFOGRAPHICS

theportfolio.ofmichaelanderson.com
lunyboy@yahoo.com | 304-382-5145
HC 63 BOX 2340 | ROMNEY, WV 26757



DAILY INTAKE & OUTPUT



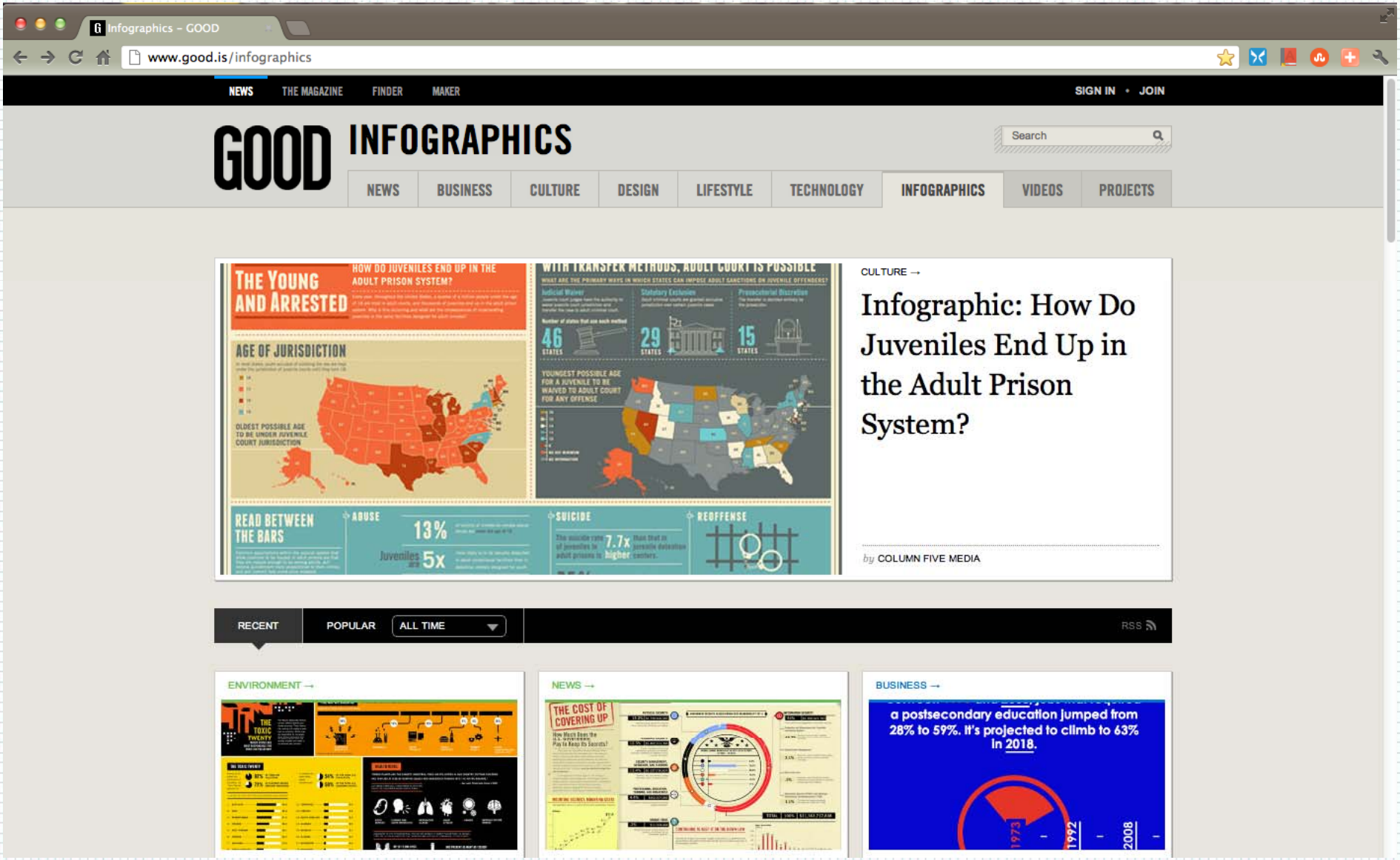


PRIMARY SKILL SETS

a. Digital Photography, *Photoshop*
b. Layout, *InDesign*, Typography
c. *Illustrator*, Vectorization, Signs
d. *Flash*, Animation, Scripting
e. Web Design, Wordpress, CSS
f. Copywriting, Editing, Research

Pie slice = represents % personal time investment.
Height indicates approx. professional deployment.

INFORMATION GRAPHICS



GOOD Magazine Infographics

http://www.good.is/infographics

Real Simple – The Office of

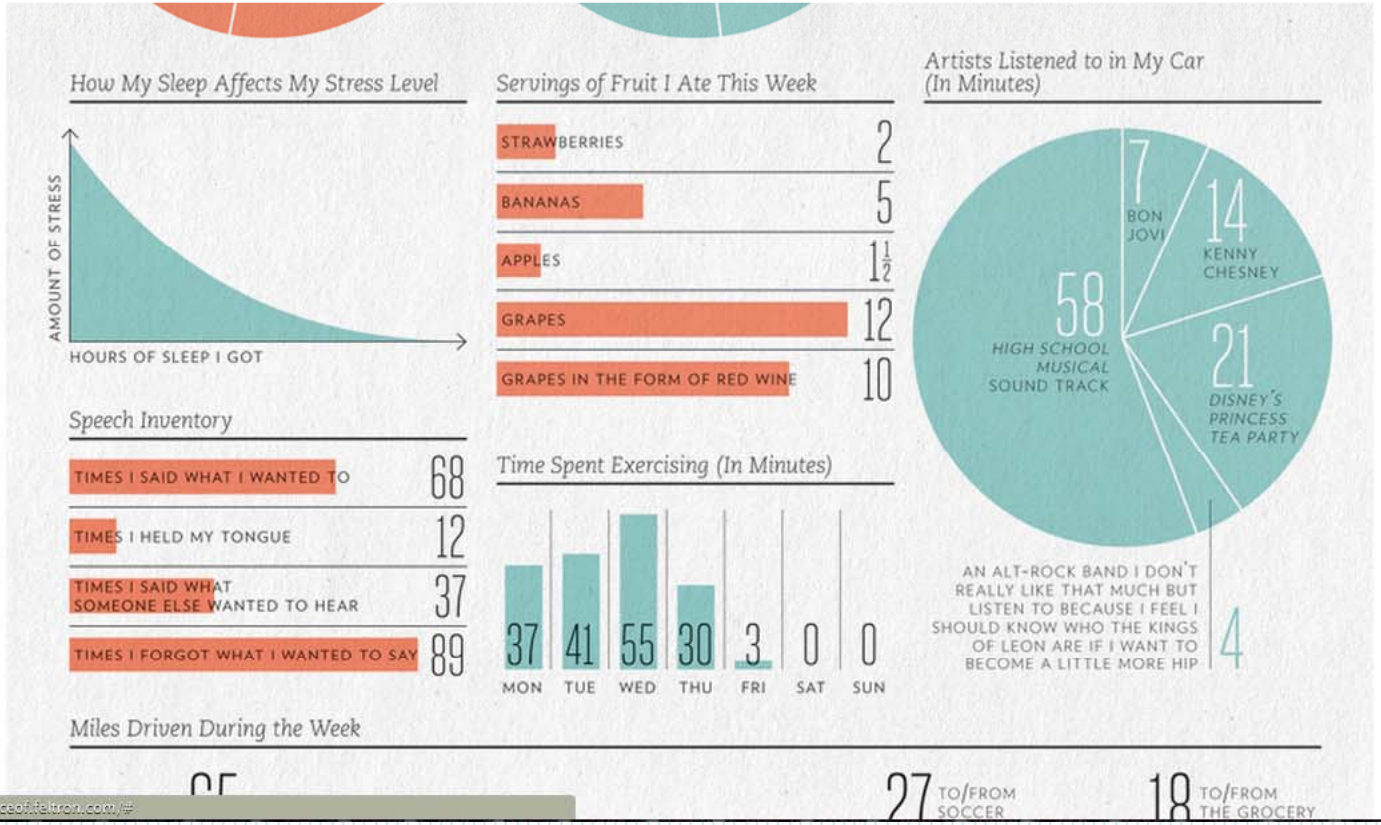
theofficeof.feltron.com/Real-Simple

FELTRON

HOME | OFFICE | SHOP | BLOG | ABOUT | FAQ | DAYTUM | SPEAKING

Real Simple

PREVIOUS / NEXT IMAGE (2 OF 2)



theofficeof.feltron.com/#

Nicholas Felton

http://www.feltron.com

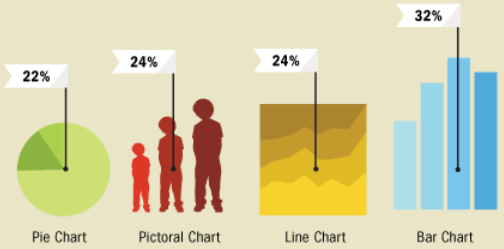
INFOGRAPHIC OF INFOGRAPHICS

Data visualization is a popular new way of sharing research. Here is a look at some of the visual devices, informational elements, and general trends found in the modern day infographic.

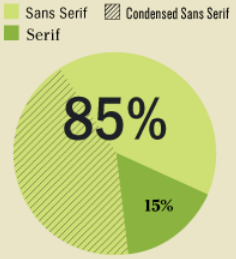
DESIGN

CHART STYLE

Percentage of infographics with the following charts:

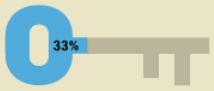


FONT



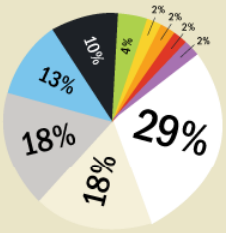
KEY INFO

Percentage of infographics with key:



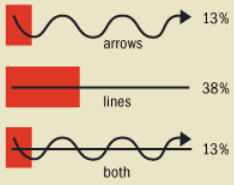
Average number of symbols per key: **5.1**

BASE COLOR



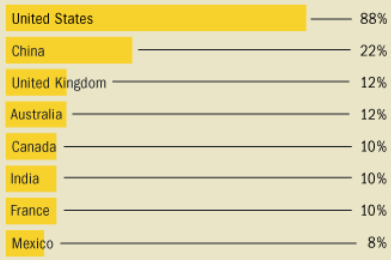
NAVIGATIONAL ICONOGRAPHY

Frequency of arrows & connecting lines in infographics:



CONTENT

COUNTRIES FEATURED



THEME

Relative popularity of different infographic themes:

SECTIONS

CREDITED SOURCES

Average number of sources per infographic: **2.29**

TITLE

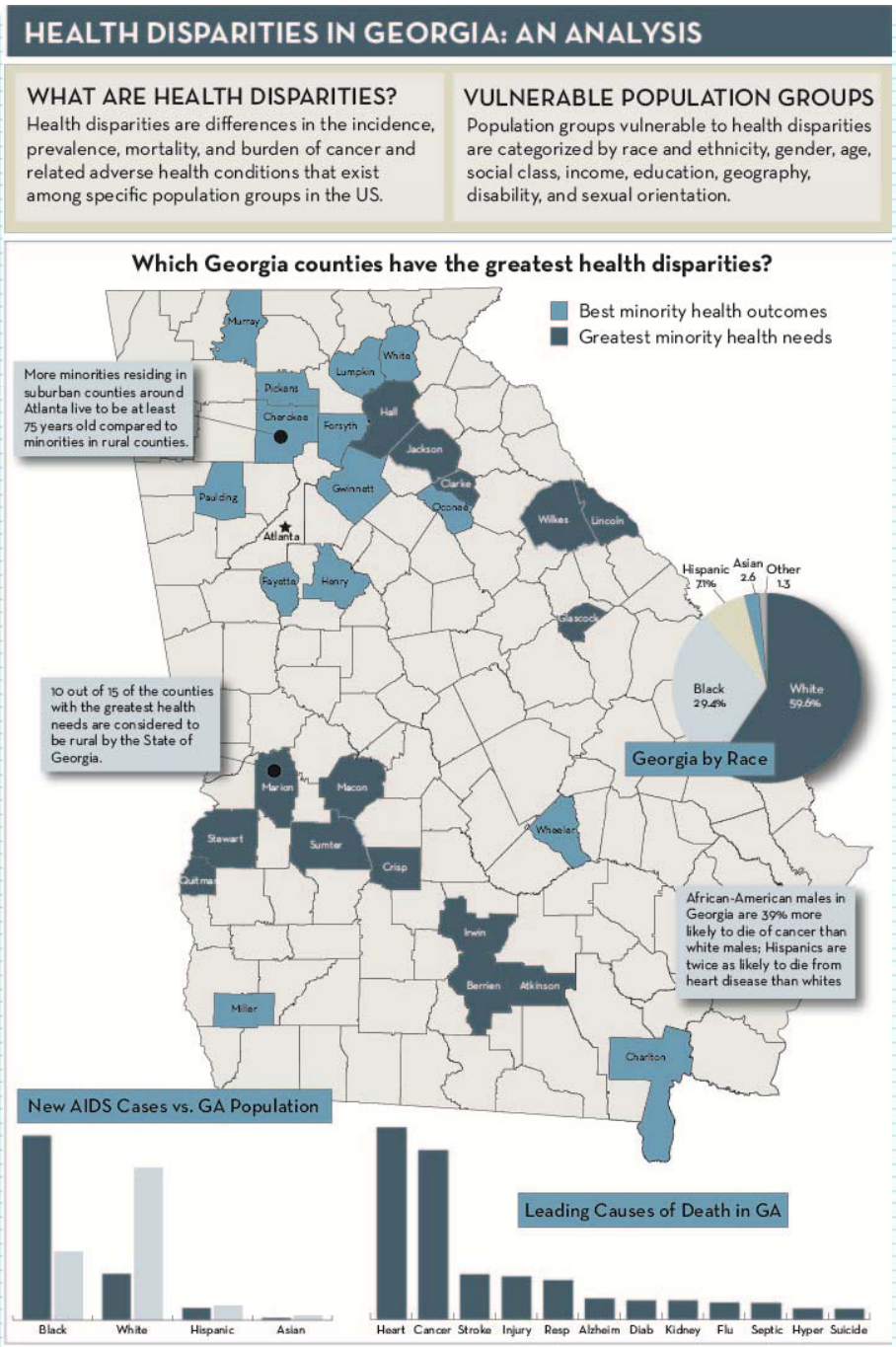
Average number of words per infographic title: **4.36**

"RICHEST AND POOREST AMERICAN NEIGH

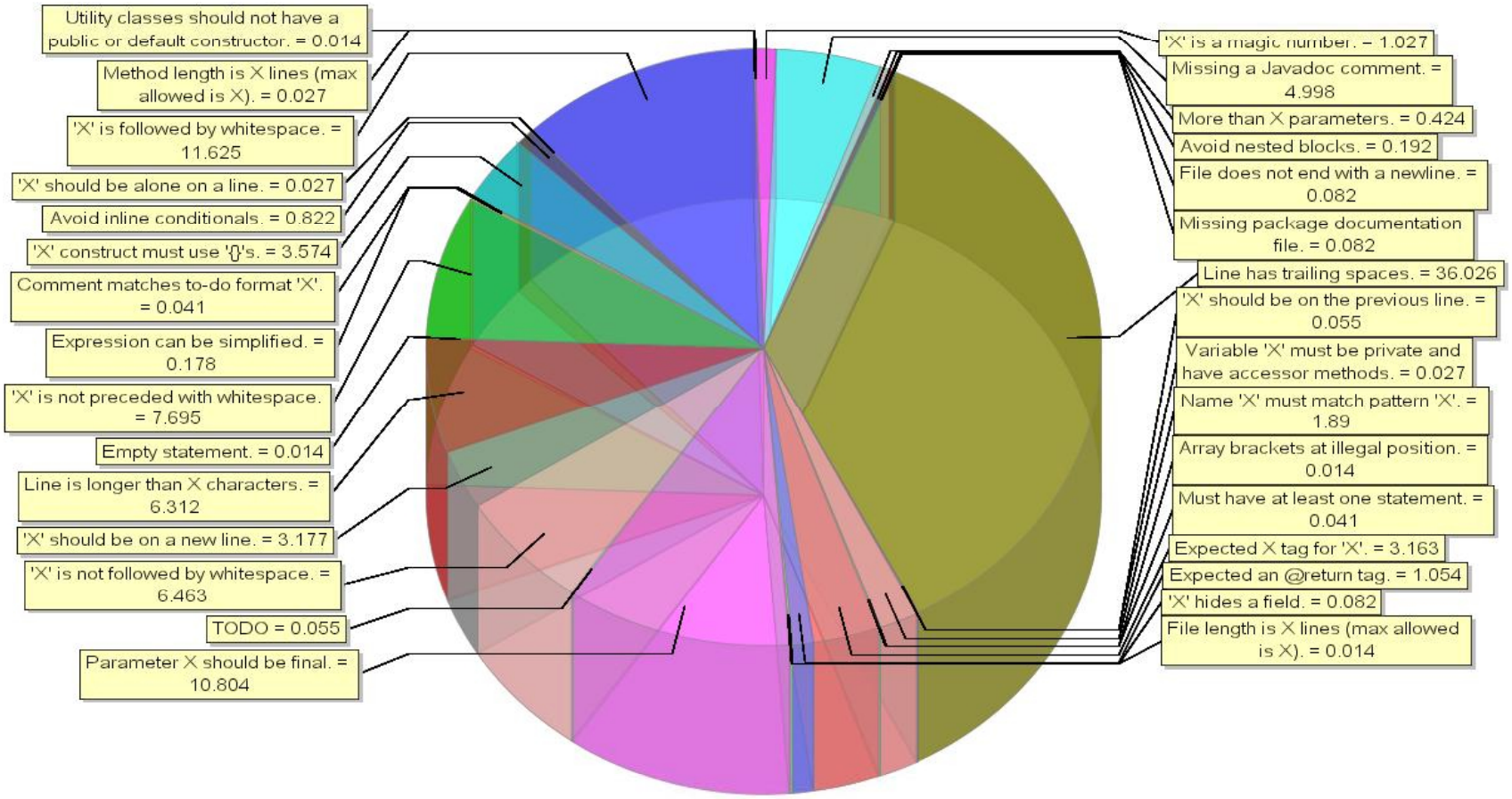
CONCEPT & DESIGN Ivan Cash **SOURCE** 49 infographics collected at random from www.good.is/infographics

Infographics of Infographics

http://ivancash.com/Infographic-of-Infographics



Health Disparities in Georgia: An Analysis



GOOD VS. BAD DATA DESIGN

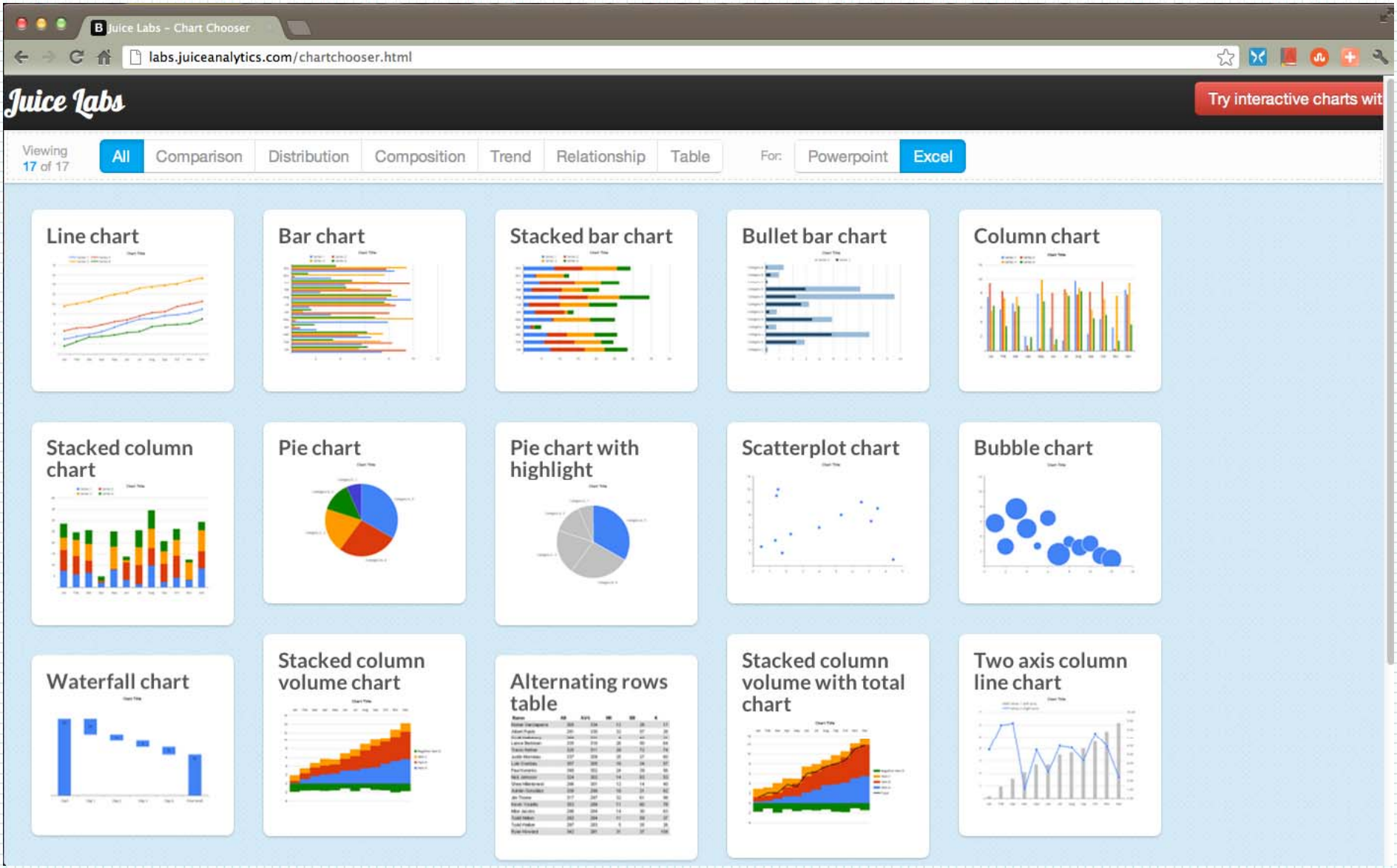


Chart Chooser

http://labs.juiceanalytics.com/chartchooser.html

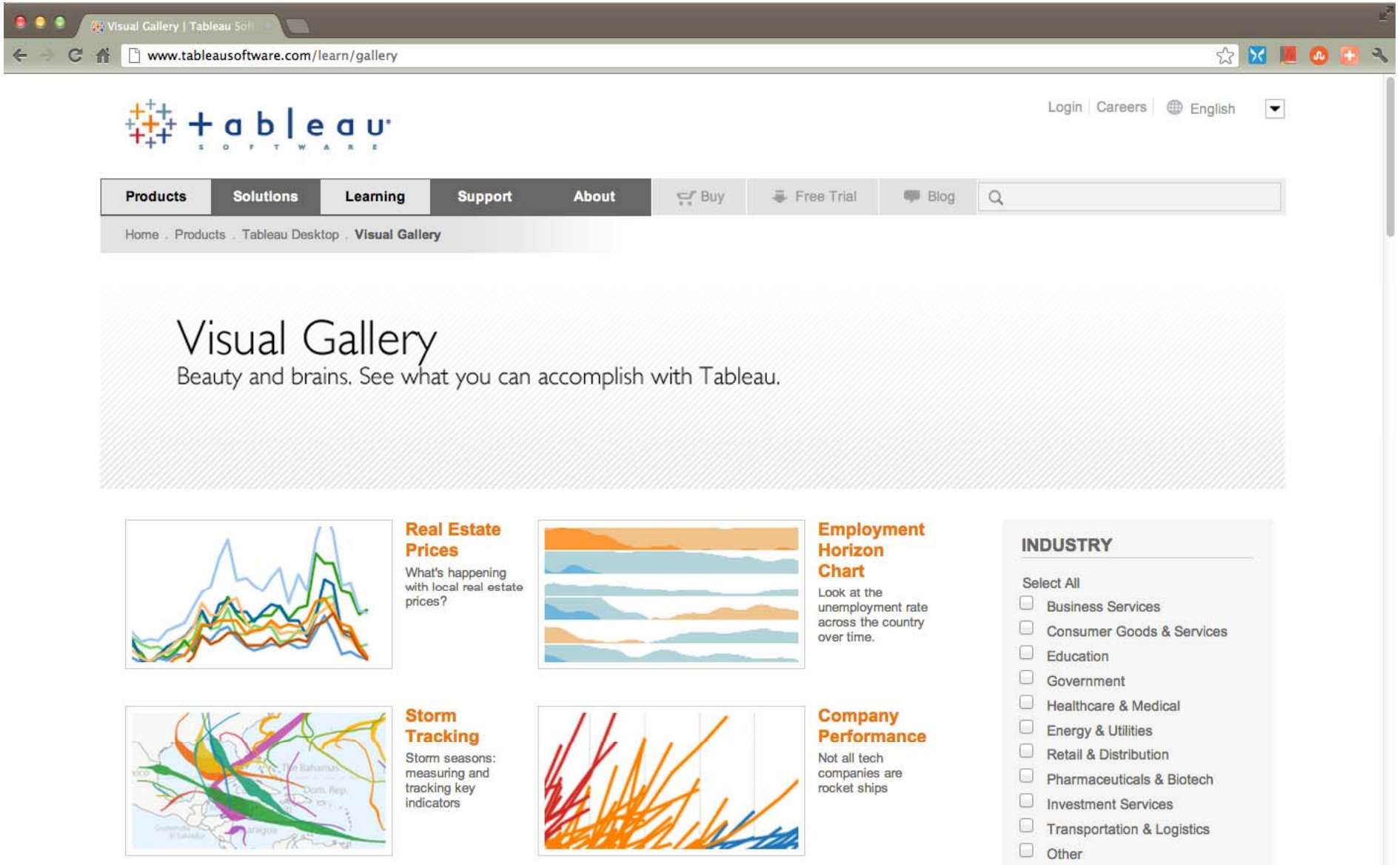
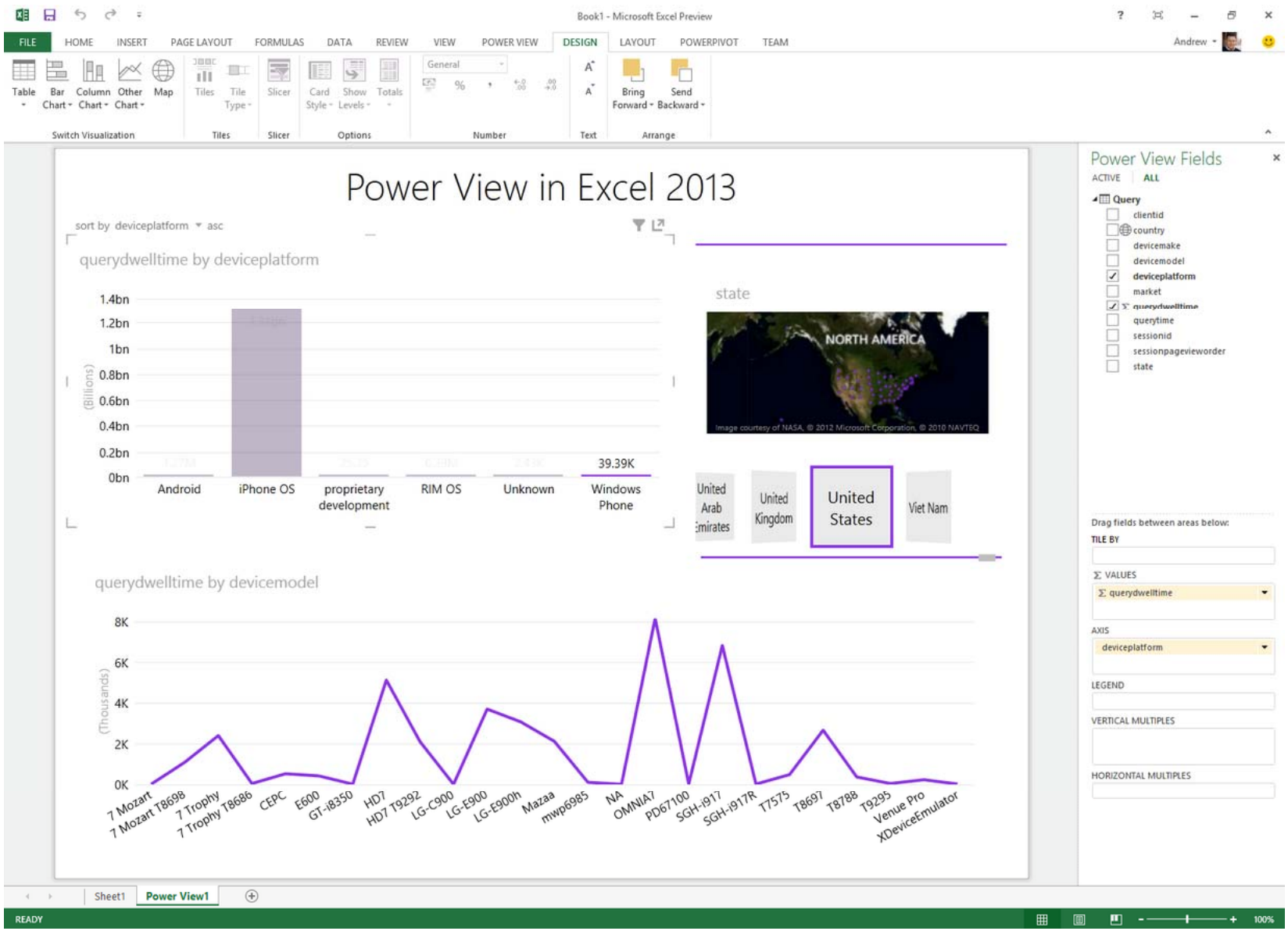


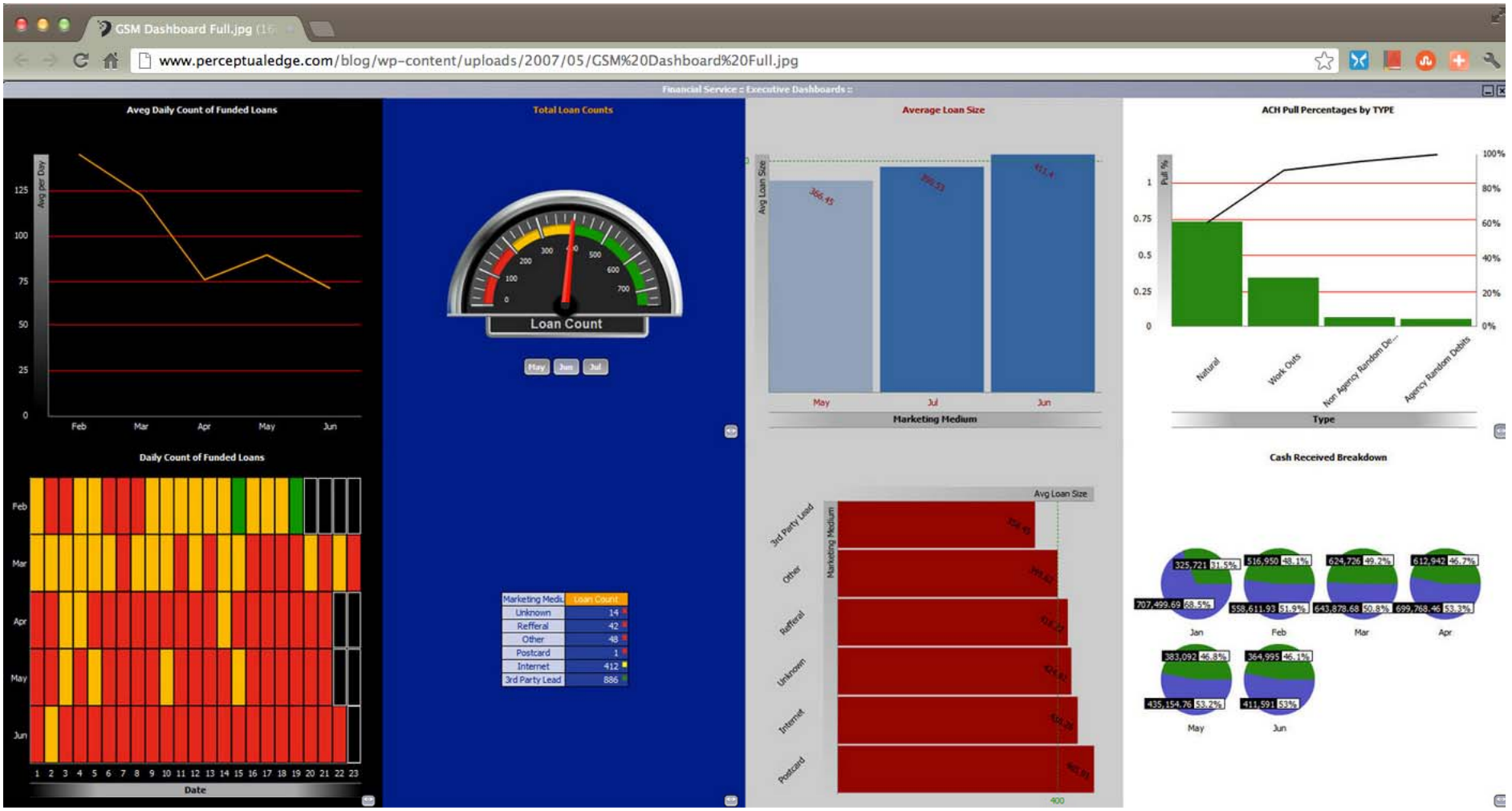
Tableau Software

http://www.tableausoftware.com/



Microsoft Excel 2013 Chart Wizard

http://www.microsoft.com/excel/



Bad Dashboard Gallery/Perceptual Edge

http://www.perceptualedge.com/

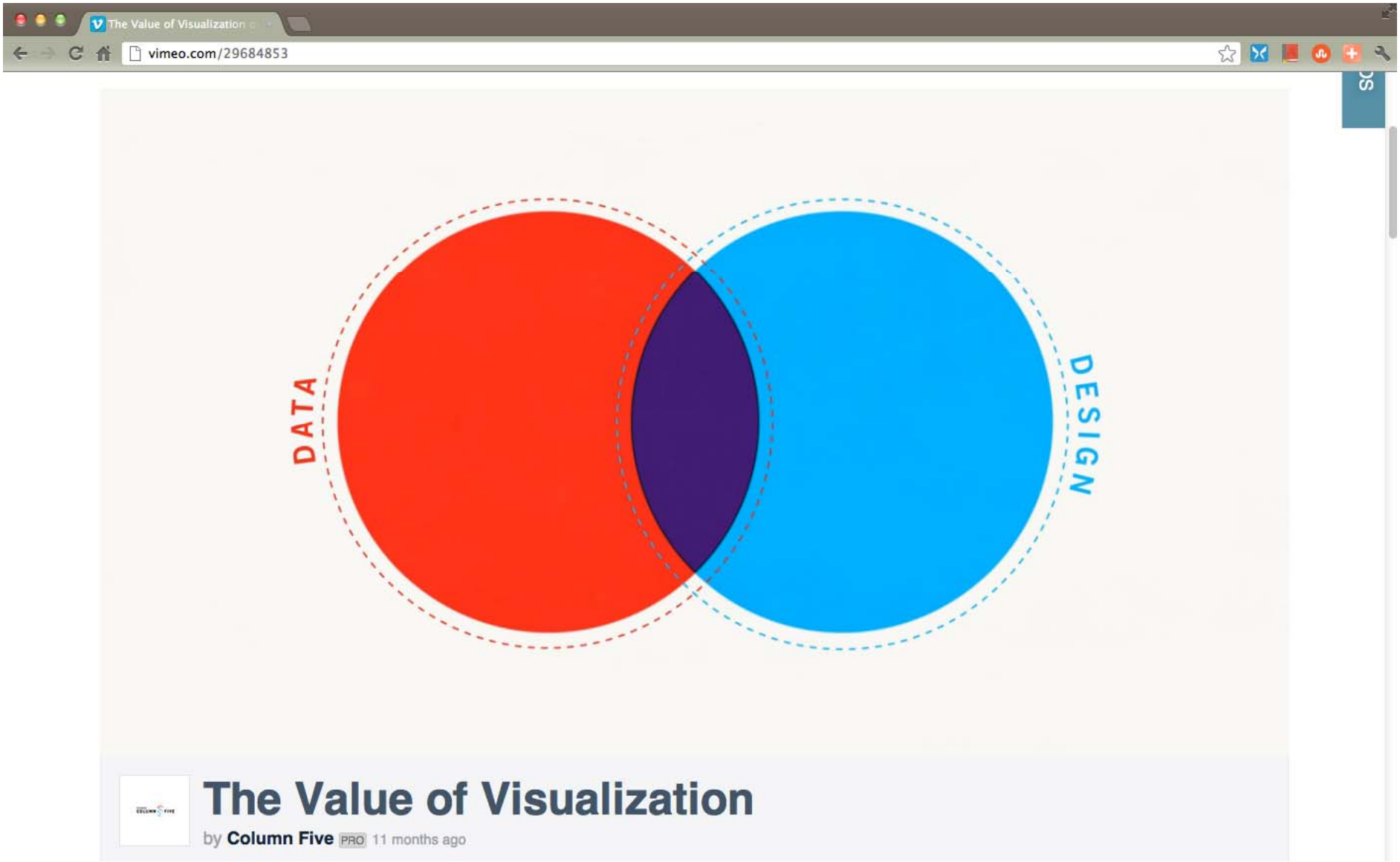
VALUE OF INFORMATION DESIGN

Internet in 60 Seconds

A year old and already outdated.

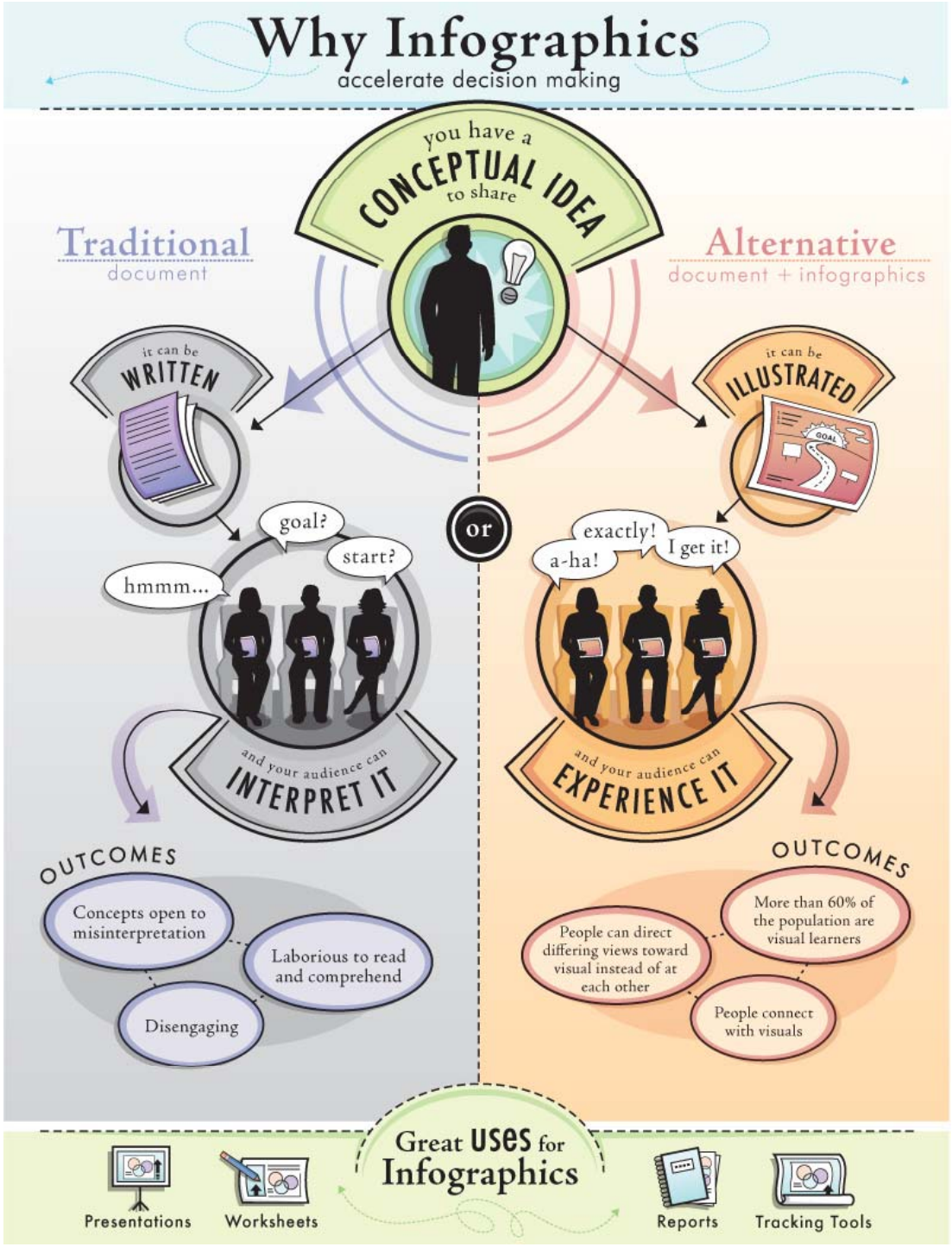
A commonality between science and art is trying to see profoundly - to develop strategies of seeing and showing.

-- Edward Tufte
Information Design Giant



The Value of Visualization

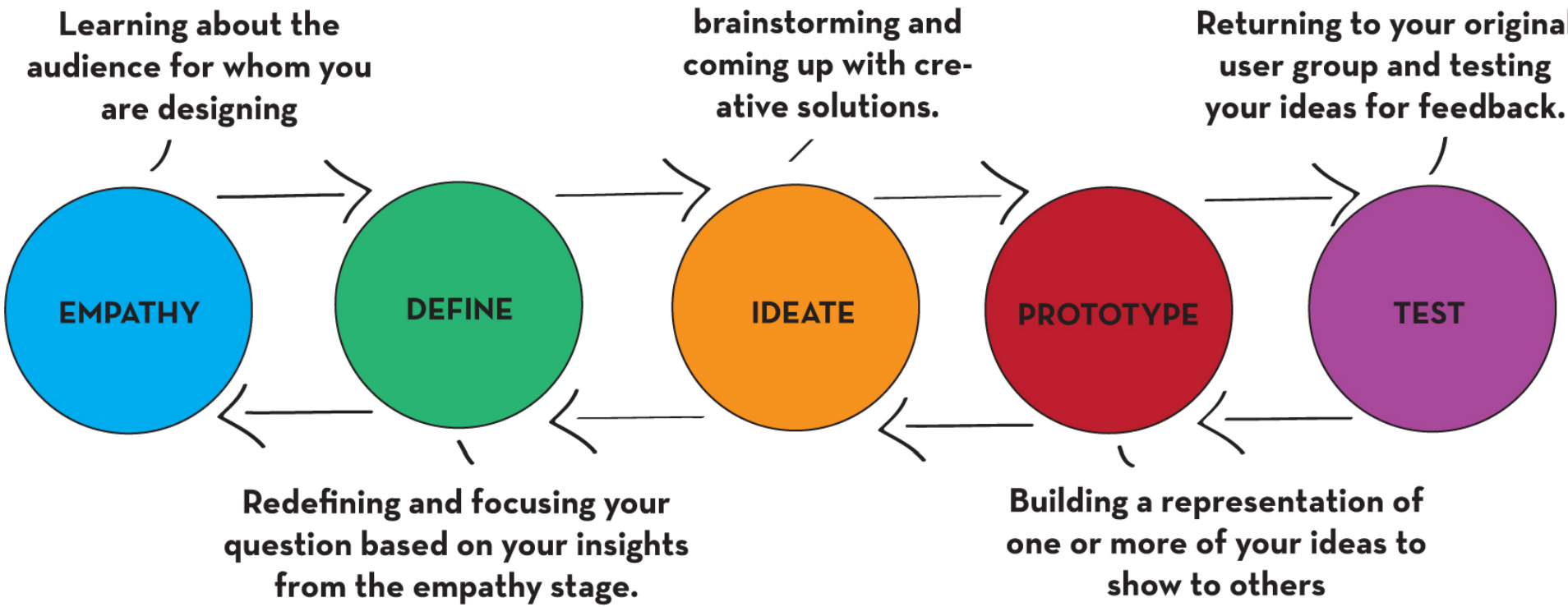
http://columnfivemedia.com/the-value-of-data-visualization/



DESIGN

MEANING

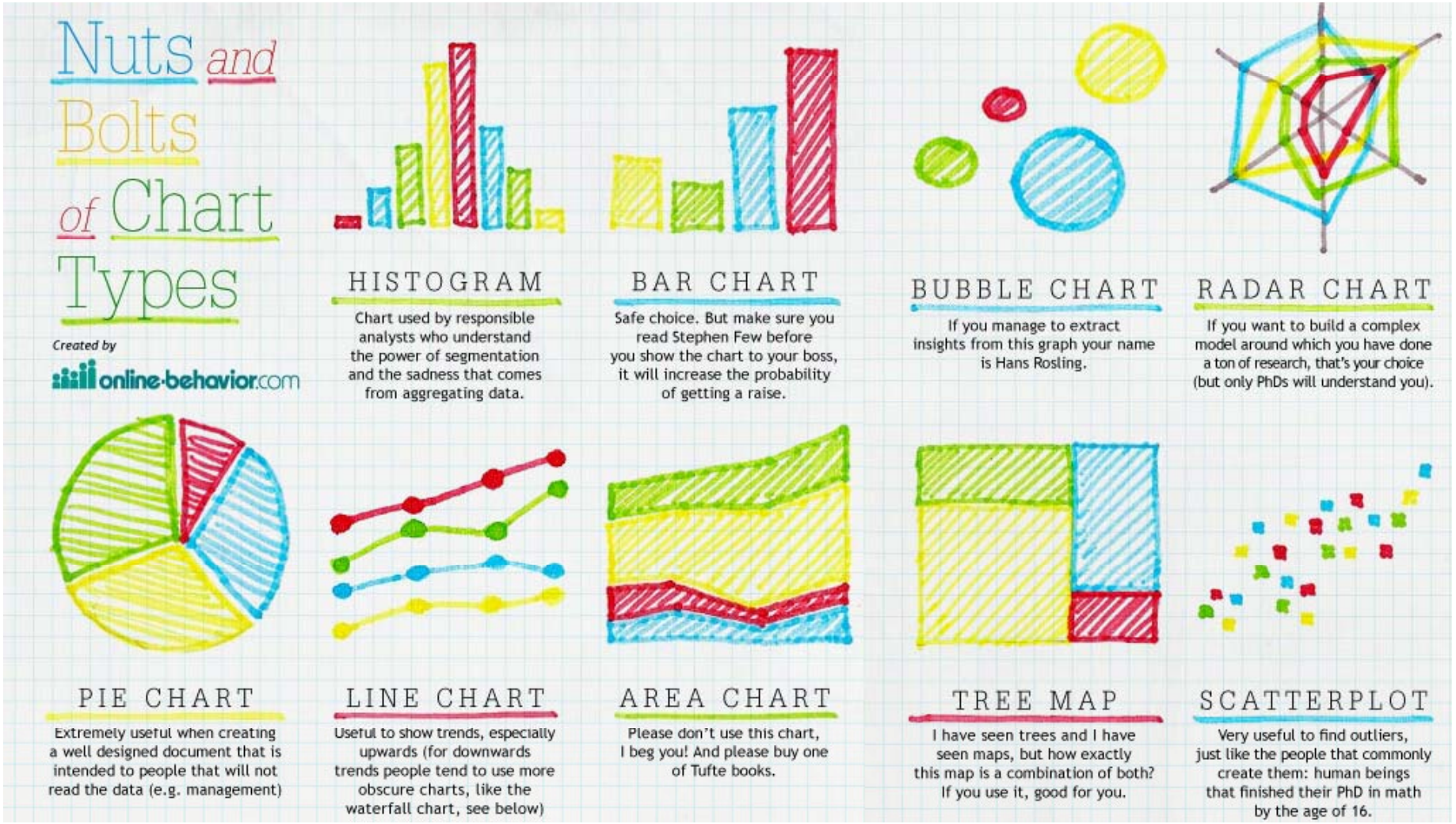
CLARITY



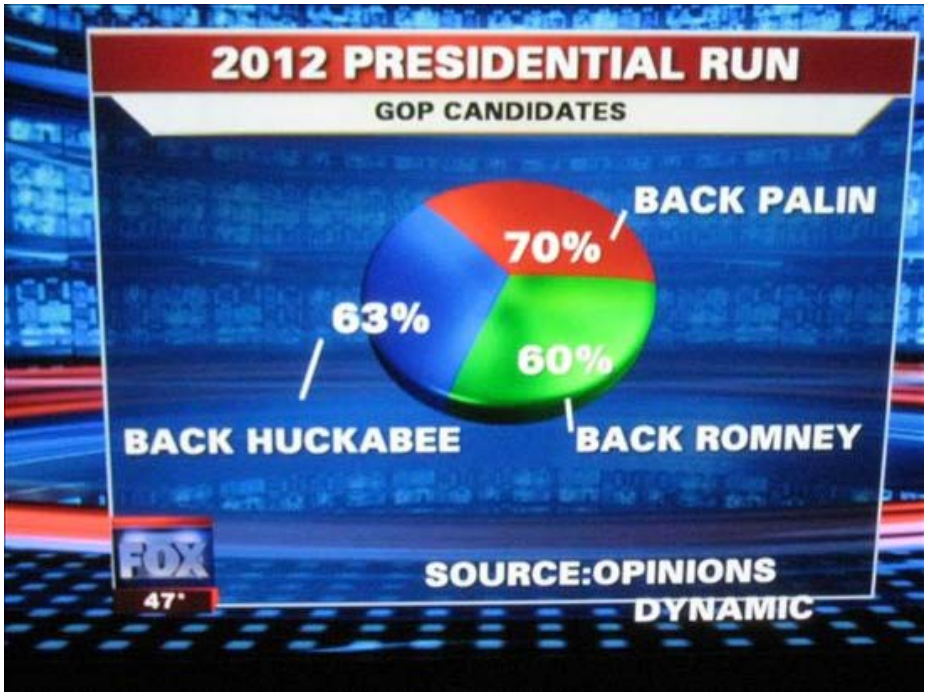
DESIGN THINKING

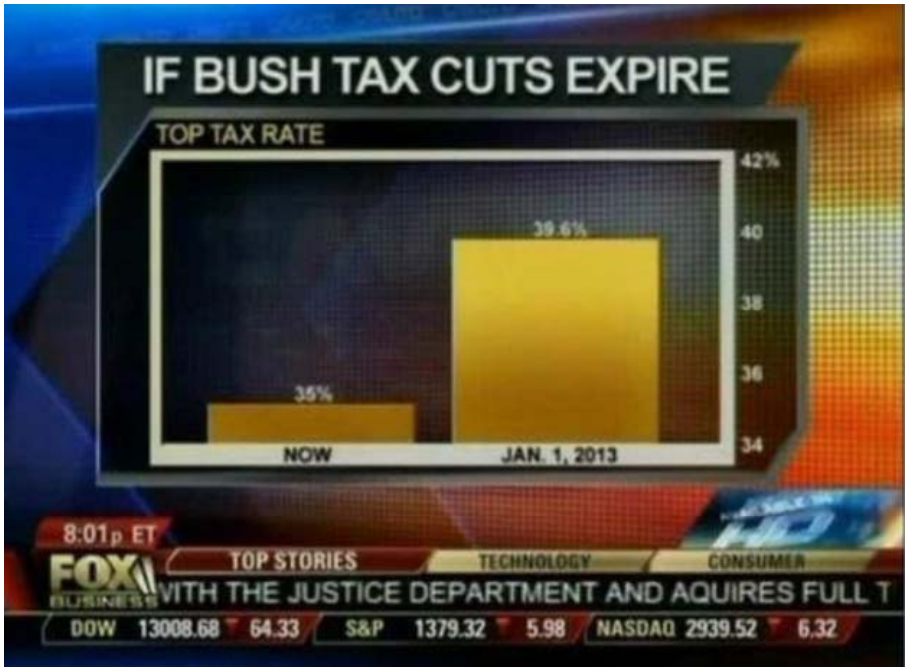
Because design thinking balances the perspectives of users, technology, and business, it is by its nature integrative.

-- Tim Brown
IDEO



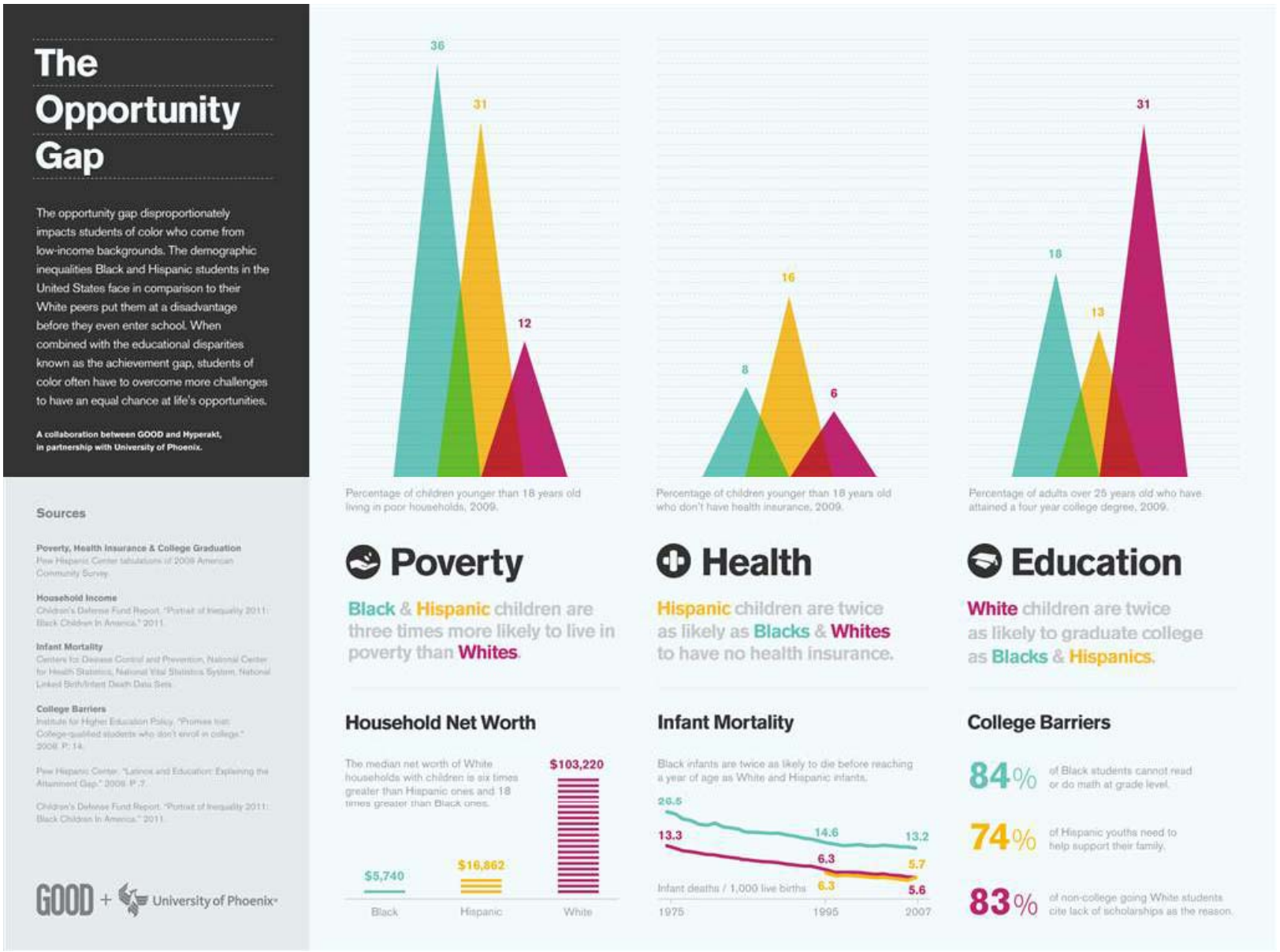
DATA DESIGN PRACTICES





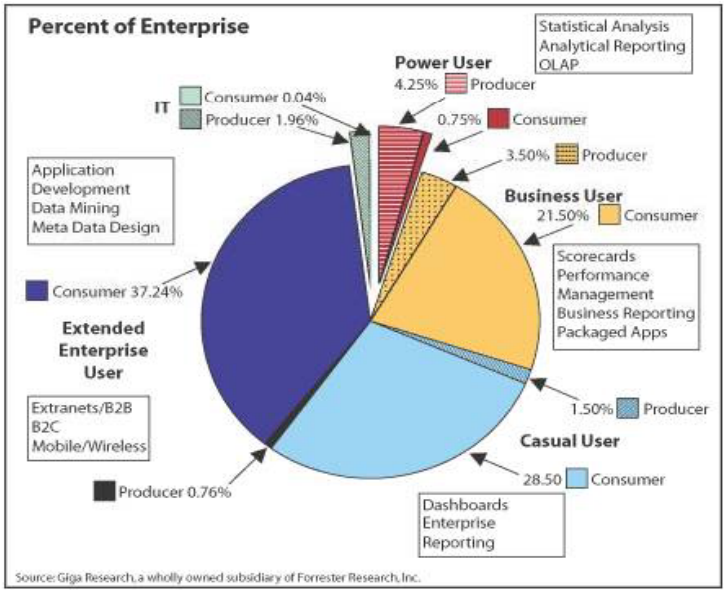
Tell the truth!

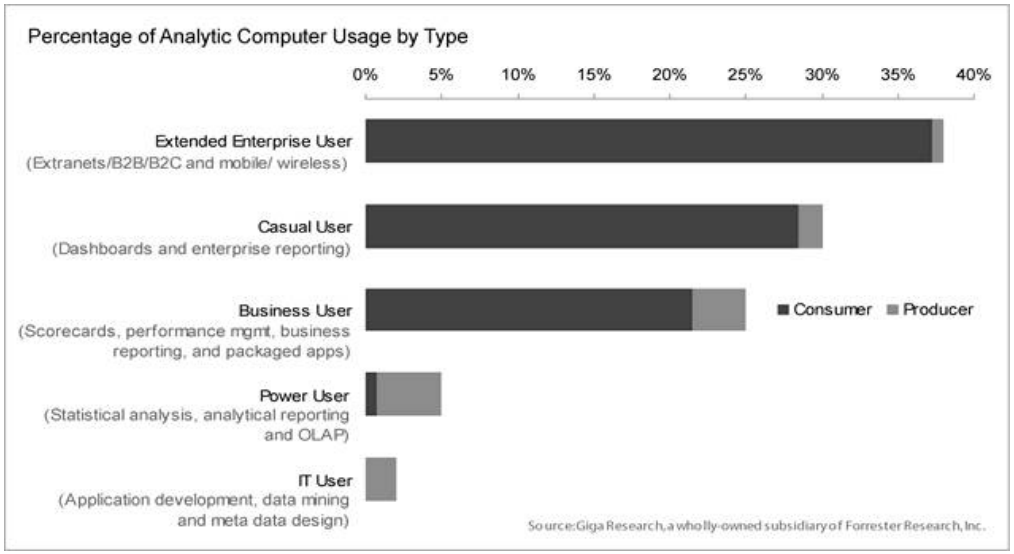
Is the design accurate? Is the design appropriate for the audience?



Get to the point!

What is the story? What is the context?





Use the correct format!

What visualization works best?

Contrast

Provides **emphasis** to a particular pattern or trend.

Repetition

Repeat **consistent** elements in familiar **places**.

Alignment

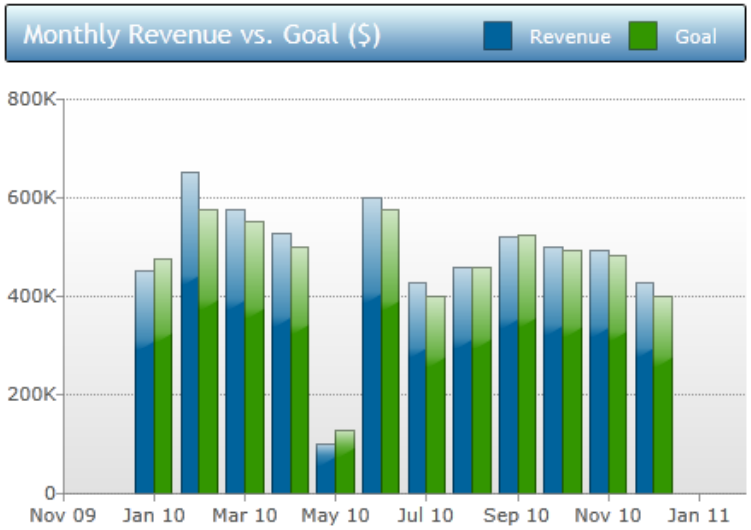
Design elements using the **invisible grid**.

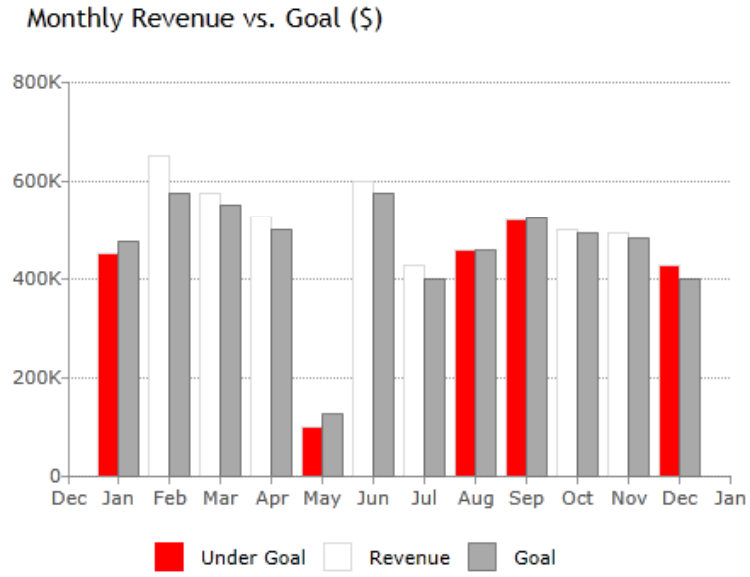
Proximity

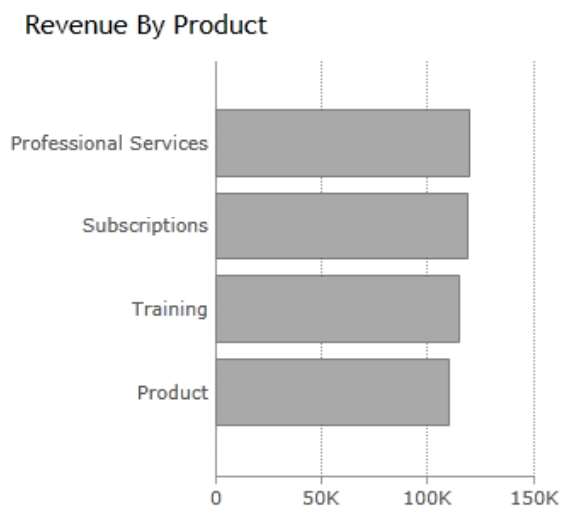
Group elements together to create **one unit**.

Highlight what's important!

Do the **relationships**, **patterns** and **trends** emerge?







Contrast

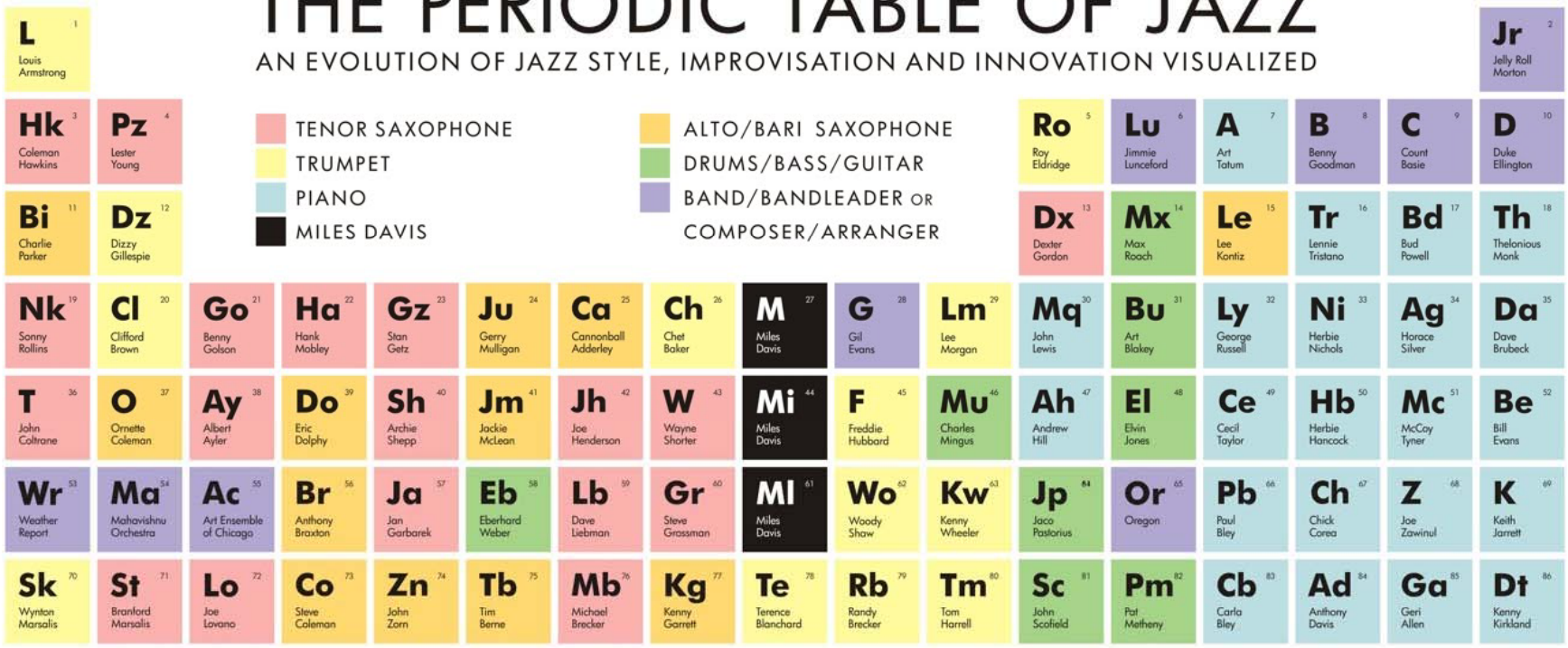
Provides **emphasis** to a particular pattern or trend.

Repetition

Repeat consistent elements in familiar places.

THE PERIODIC TABLE OF JAZZ

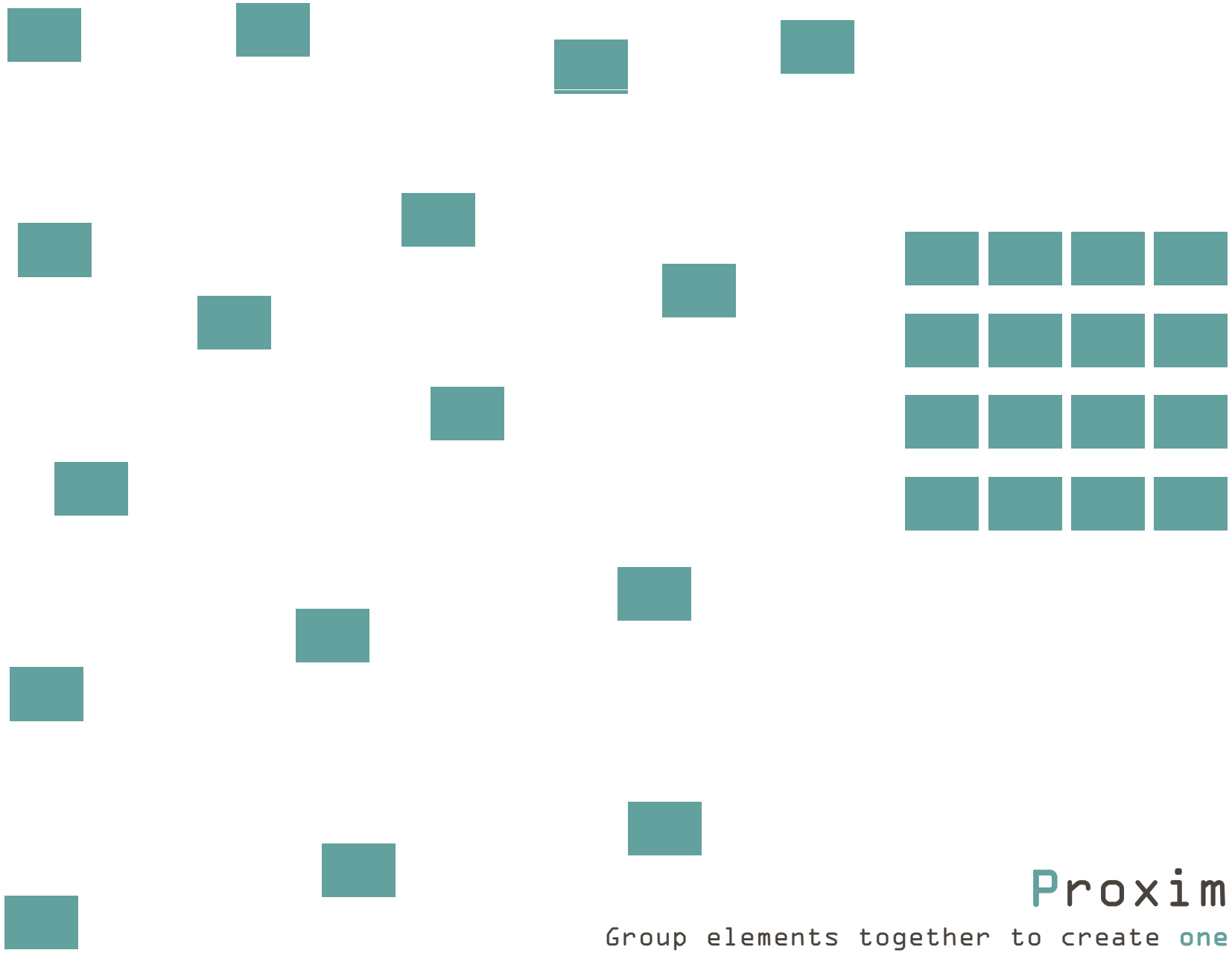
AN EVOLUTION OF JAZZ STYLE, IMPROVISATION AND INNOVATION VISUALIZED



red ras pus

EACH TABLE ROW ROUGHLY CORRESPONDS TO A DECADE, BEGINNING WITH THE 1920S.

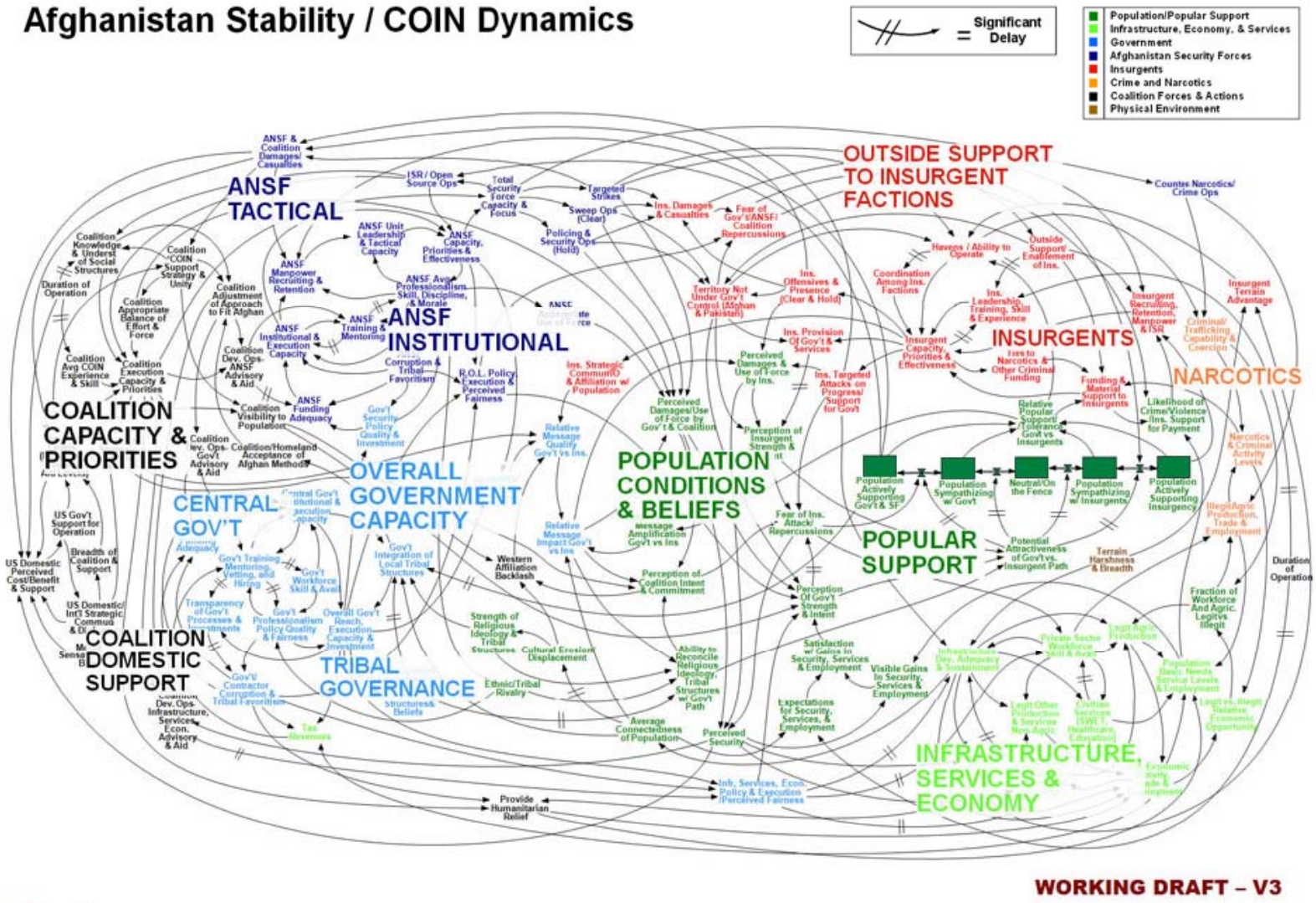
FOR MORE DETAILS ABOUT THIS POSTER AND ITS CREATION, PLEASE VISIT HTTP://REDRASPUS.COM



Proximity

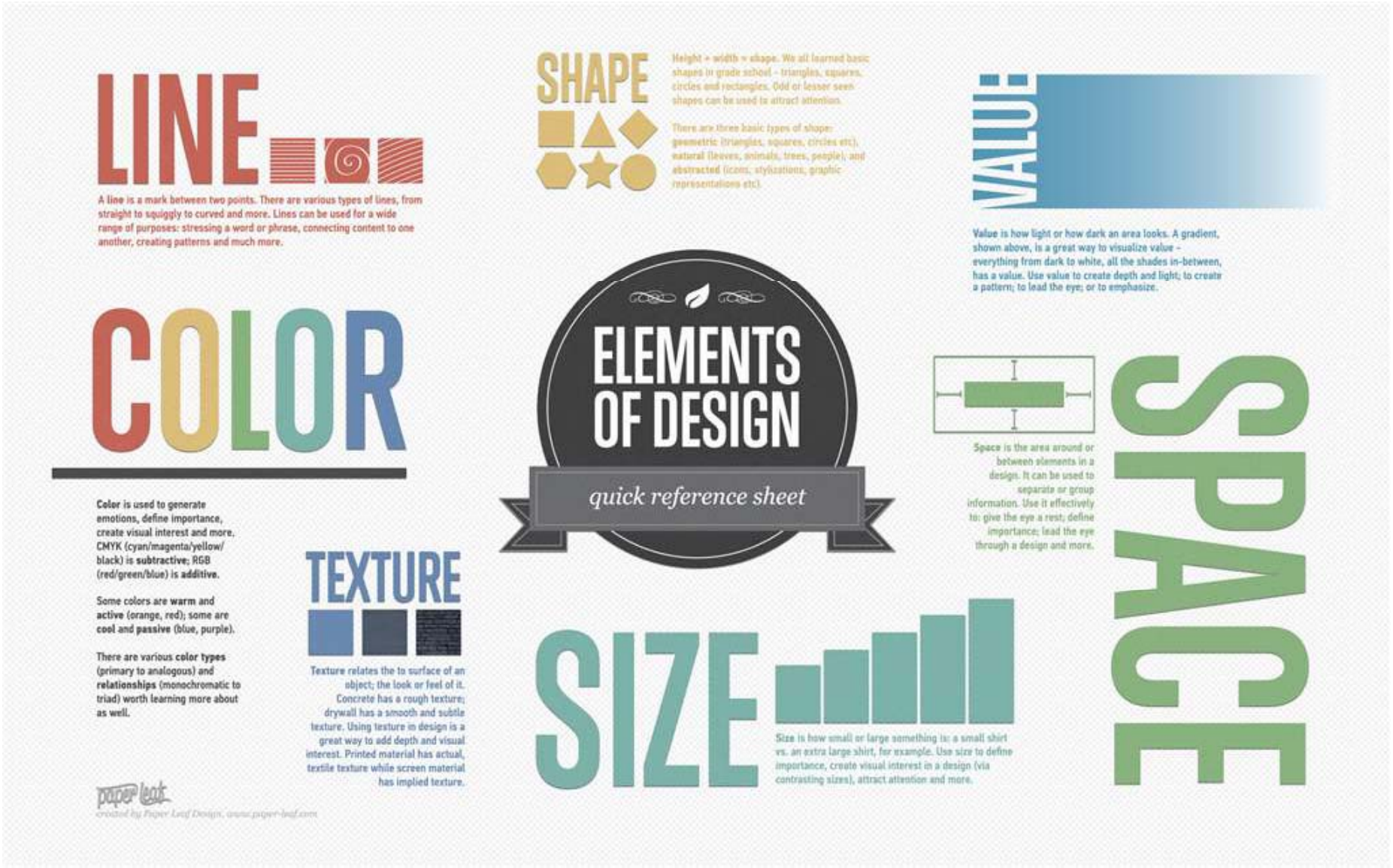
Group elements together to create one unit.

Afghanistan Stability / COIN Dynamics

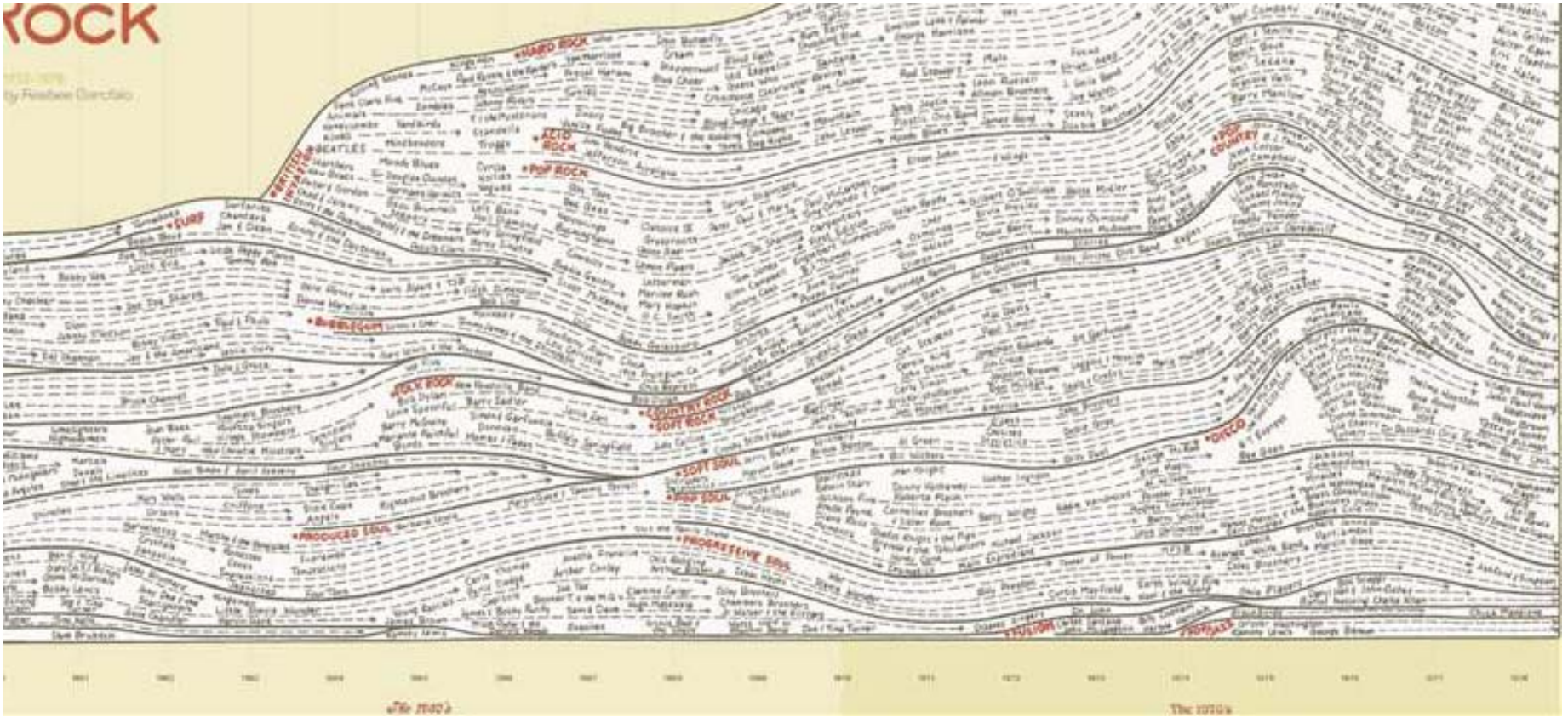


Keep it simple!

Strip unnecessary data to eliminate clutter.

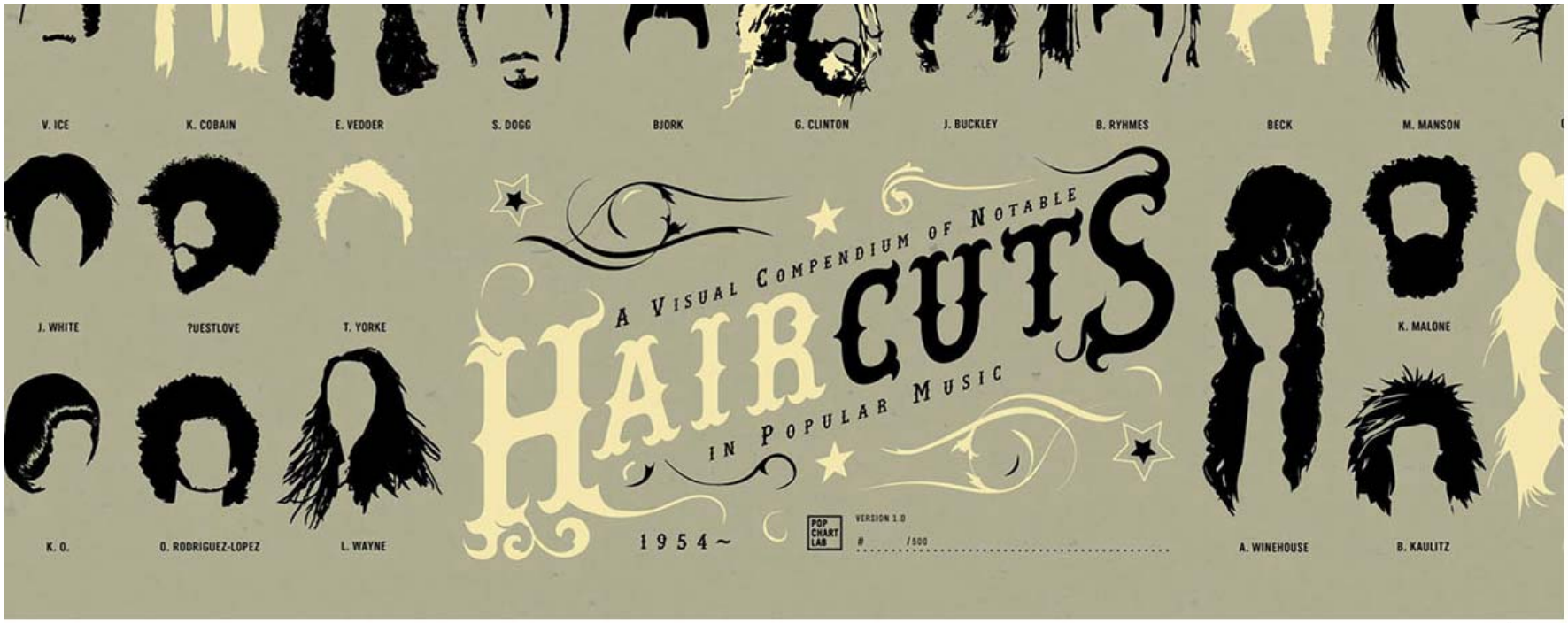


BASIC DESIGN ELEMENTS



Lines

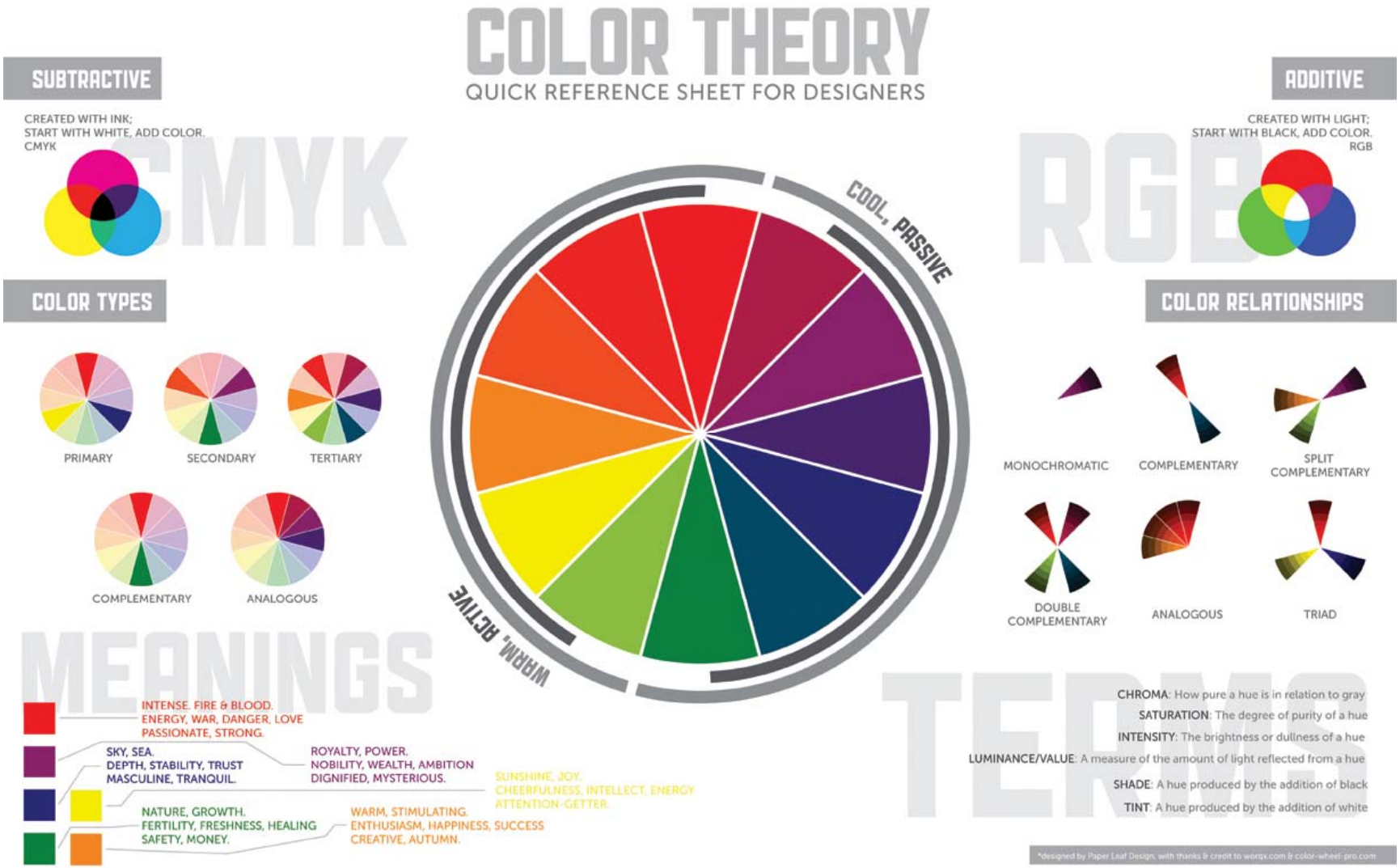
Lines help define shapes - can show tranquility, power and change.



X CLOSE

Shapes and Forms

The center square of any good visual. Shapes are 2D. Forms are 3D.



Color and Value

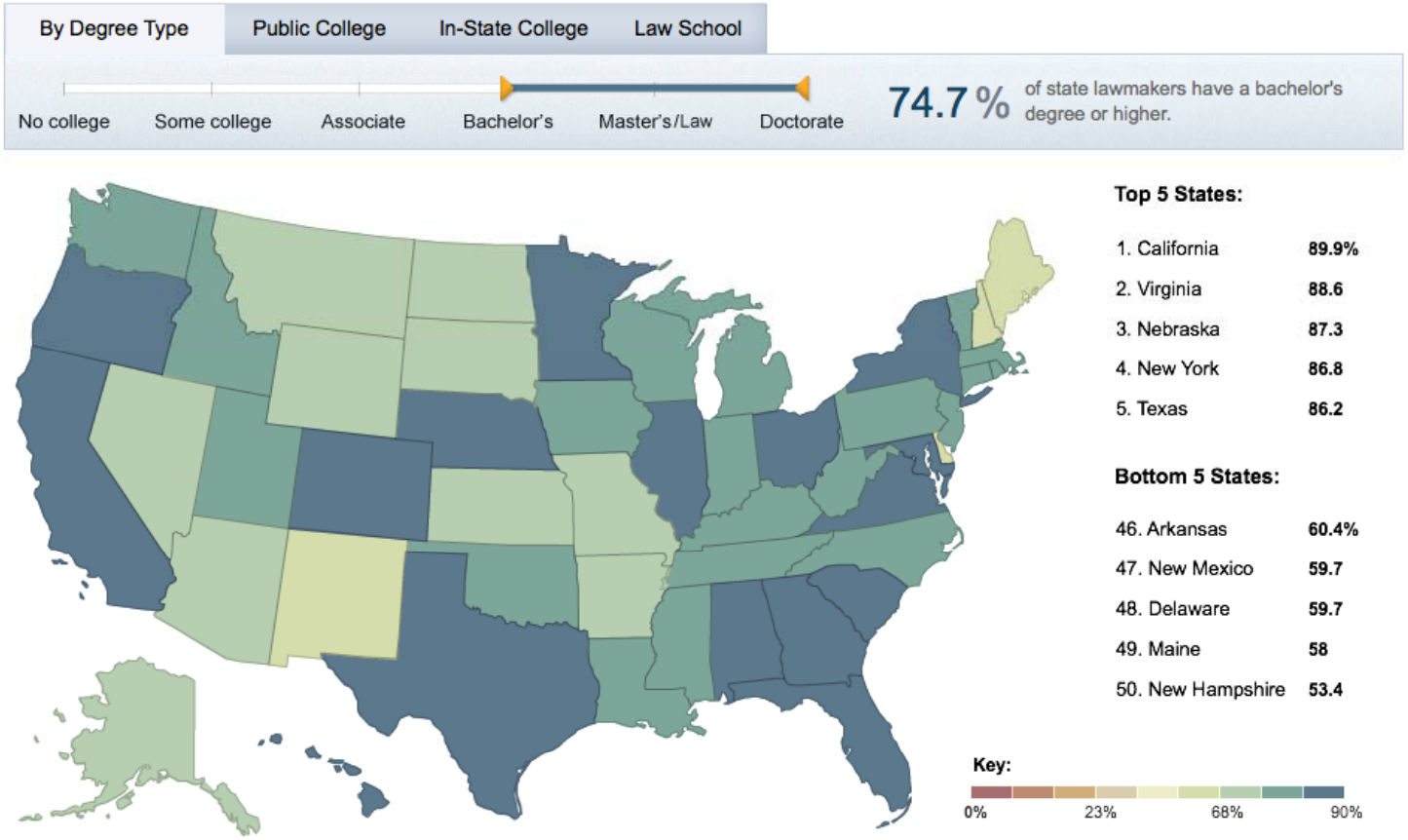
Hue, value and intensity. Can enhance meaning in a powerful way.

Space

White space is the part of the design that isn't "there".

How educated are state legislators?

The Chronicle has looked at where each of the 7,000-plus state legislators in America went to college—or whether they went at all. In doing so, we got a glimpse of how the citizens who hold these seats reflect the average American experience.



Built by Josh Keller and Alex Richards / Produced by Xarissa Holdaway, Gabriela Montell, and Carmen Mendoza

DESIGN IN PRACTICE

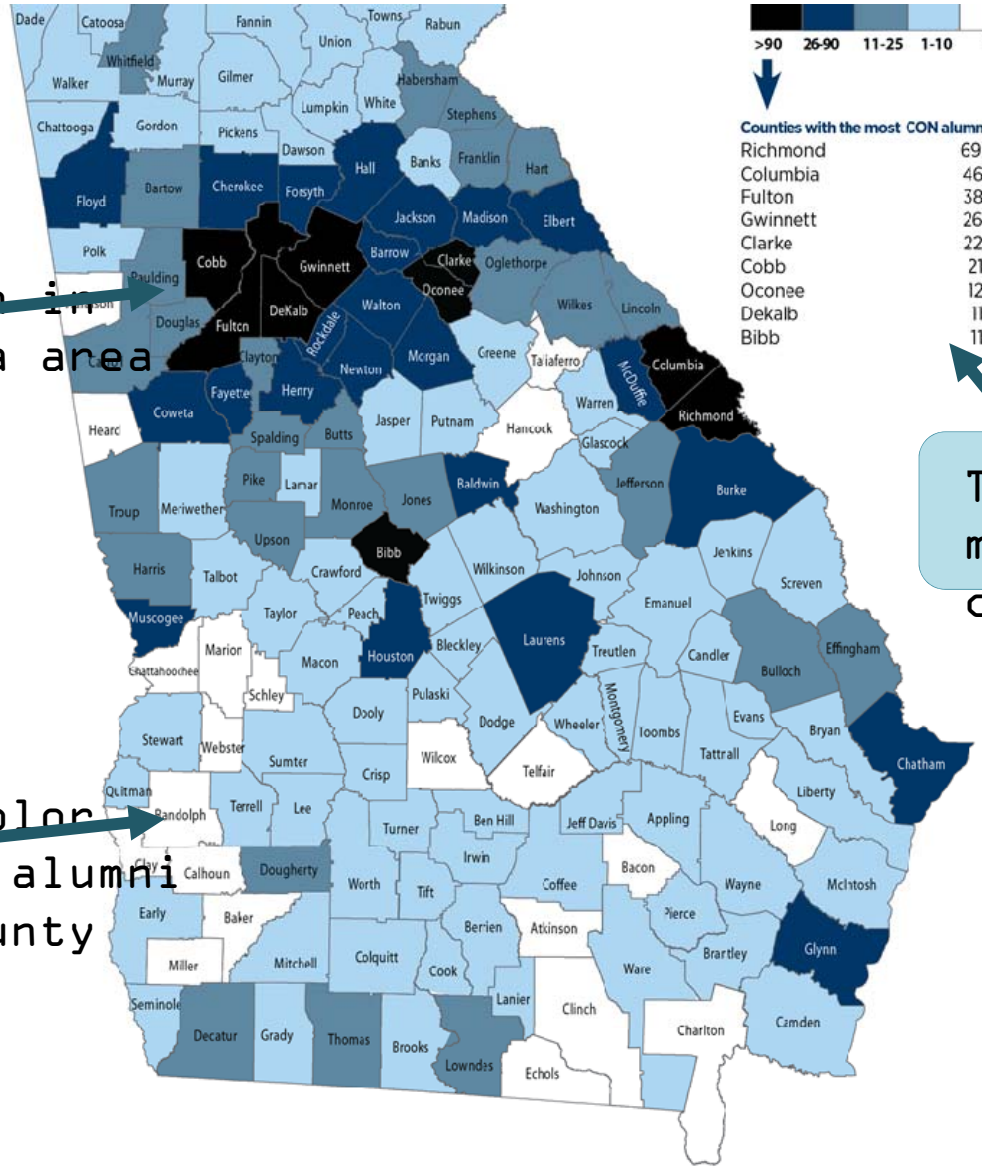
How many Nursing alumni live in Georgia?

Fiscal Year 2012	Count
Nursing Alumni in Georgia	4,366
Total Nursing Alumni	6,356

How many Nursing alumni live in Georgia?

County	#	County	#	County	#
Appling	4	Calhoun	0	Cook	2
Atkinson	0	Camden	5	Coweta	31
Bacon	0	Candler	4	Crawford	1
Baldwin	40	Carroll	20	Crisp	10
Banks	2	Catoosa	10	Dade	2
Barrow	47	Charlton	0	Dawson	3
Bartow	11	Chatham	84	Decatur	11
Ben Hill	4	Chattahoochee	0	Dekalb	117
Berrien	3	Chattooga	7	Dodge	8
Bibb	112	Cherokee	65	Dooly	2
Bleckley	5	Clarke	228	Dougherty	21
Brantley	1	Clayton	17	Douglas	16
Brooks	2	Clinch	0	Early	2
Bryan	10	Cobb	213	Effingham	11
Bulloch	17	Coffee	7	Elbert	27
Burke	26	Colquitt	5	Emanuel	7
Butts	12	**Columbia**	**463**	Evans	7

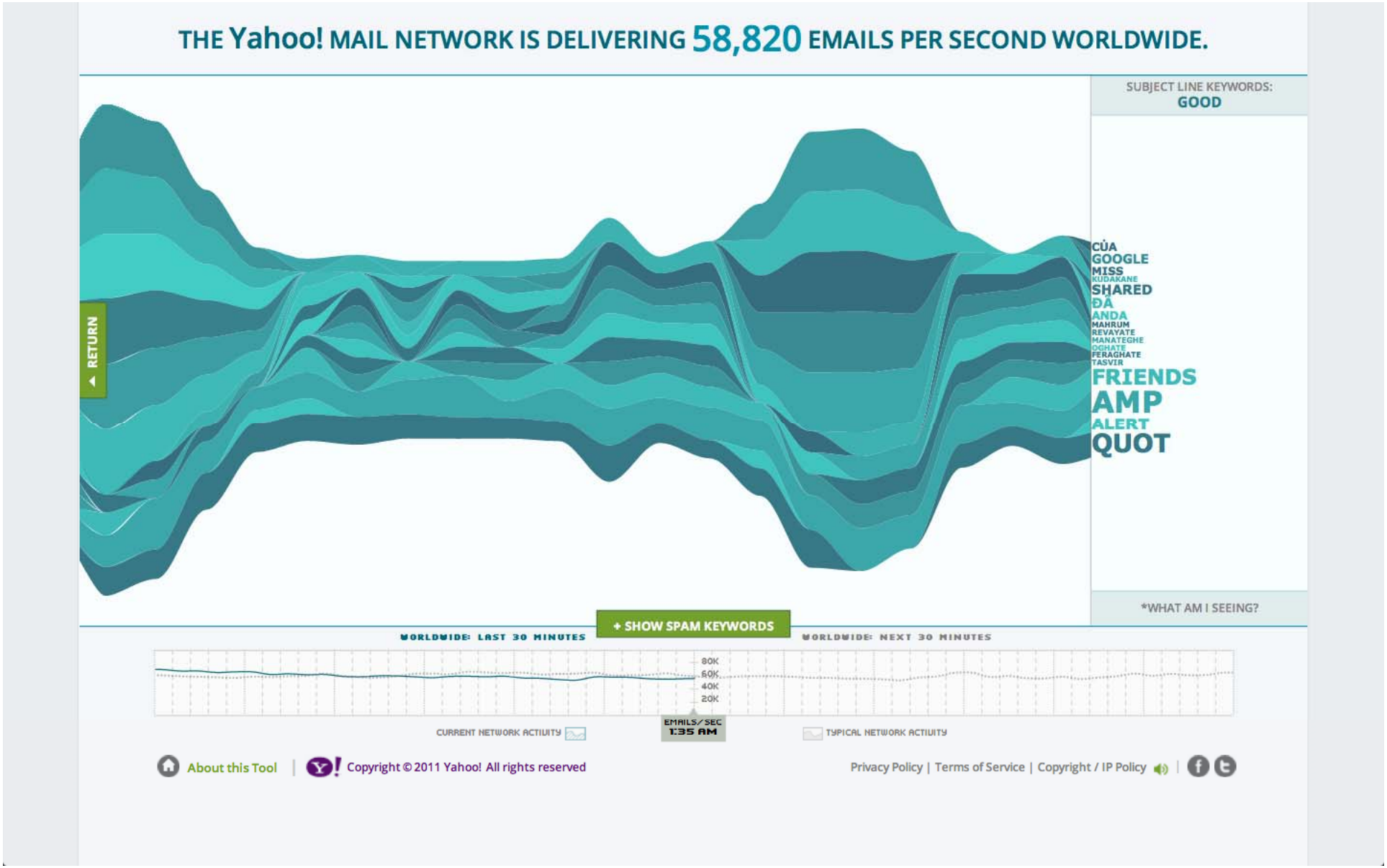
Nursing Alumni in Georgia



Concentration in Metro Atlanta area

Absence of color indicates no alumni live in a county

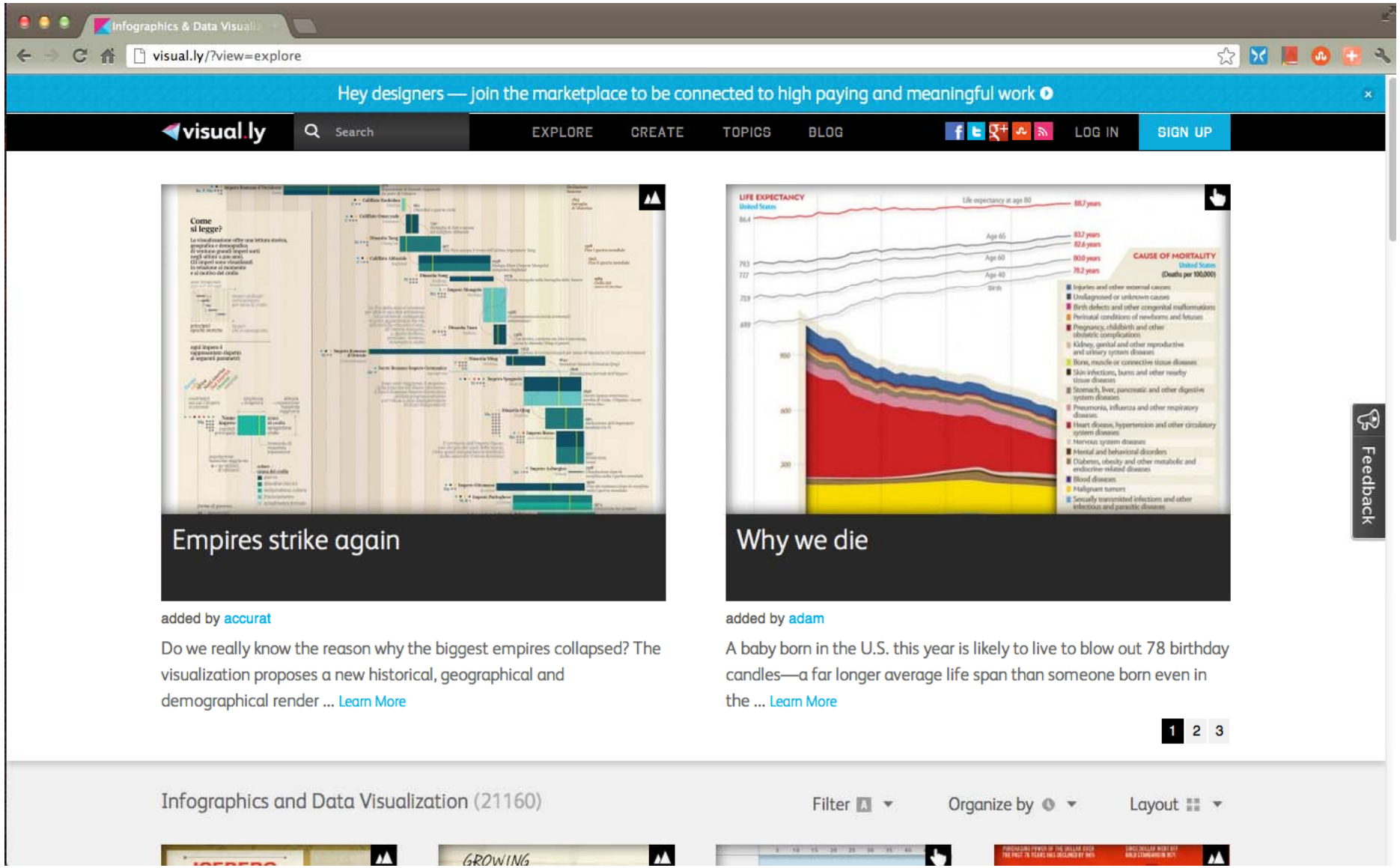
Top 10 list giv more detail for comparison



FUTURE OF DATA

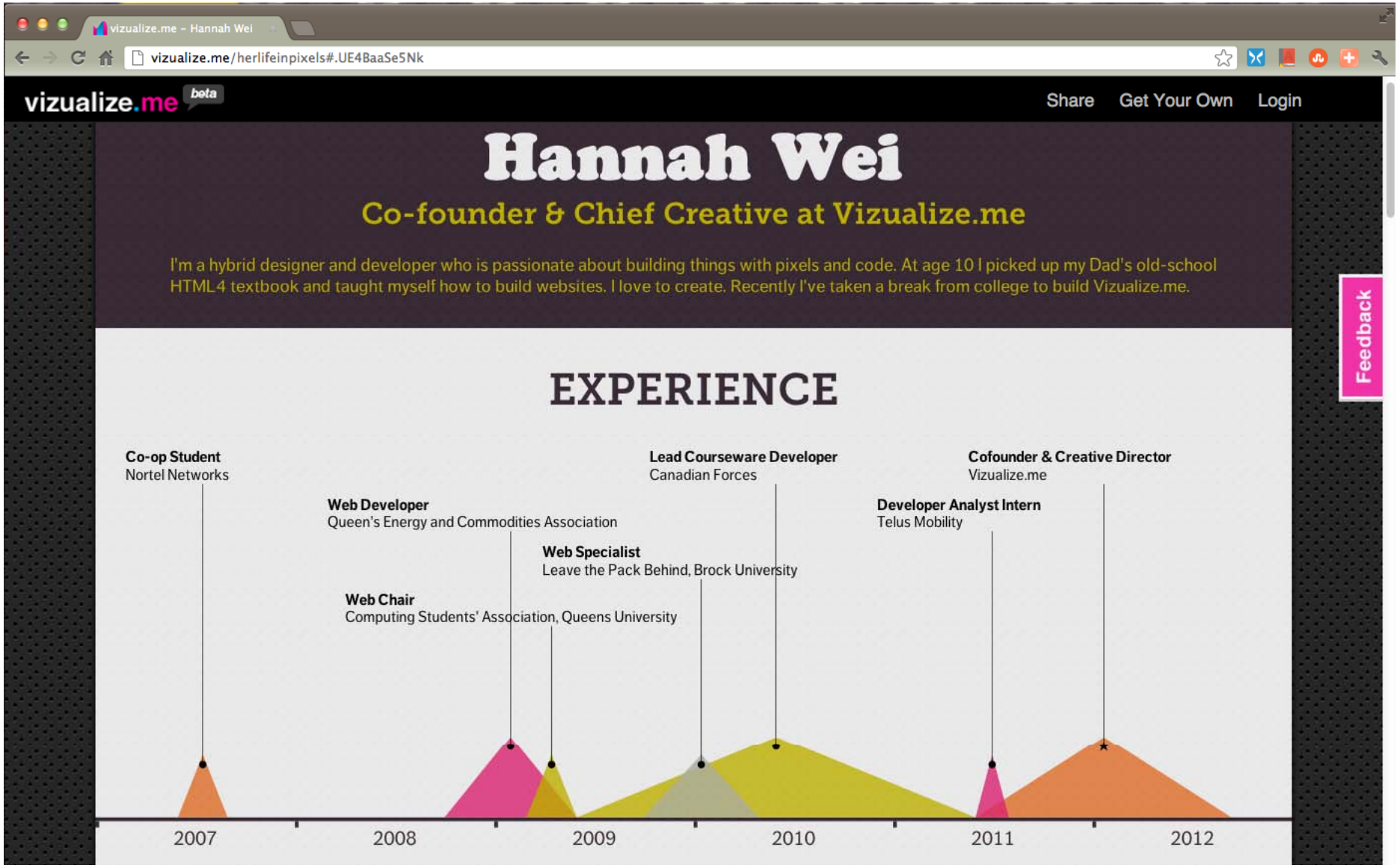
Hans Rosling @ Gapminder

http://www.gapminder.com



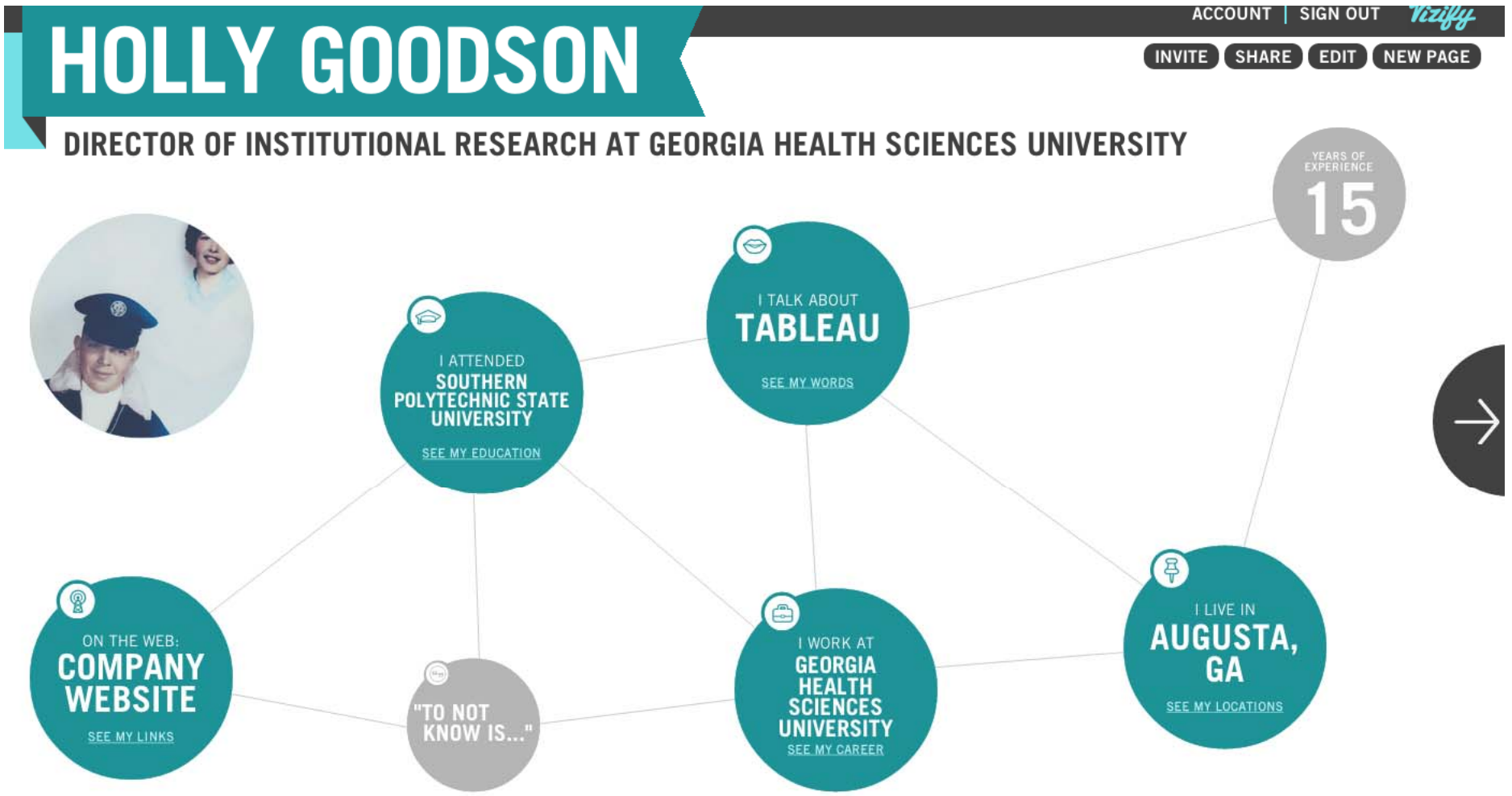
Visual.ly Community

http://www.visual.ly



Visualize.Me

http://www.visualize.me



Thank you!

Presentation link: http://portal.sliderocket.com/BAAUN/Art-Science-of-Designing-Data

Work link: http://www.georgiaheath.edu/ie

Folio link: http://www.goodgirlgraphics.com

LinkedIn: http://www.linkedin.com/in/hollyvann

Vizify: https://www.vizify.com/holly-goodson

DISCUSSION QUESTION

What key principles for data visualization are most important for providing decision support?

15
minutes

Georgia Institute of Technology
Institute Planning and Resource Management

ENVISIONING AND DEVELOPING A DECISION SUPPORT FUNCTION

Chet Warzynski

Executive Director

Office of Organizational Development

Georgia Institute of Technology

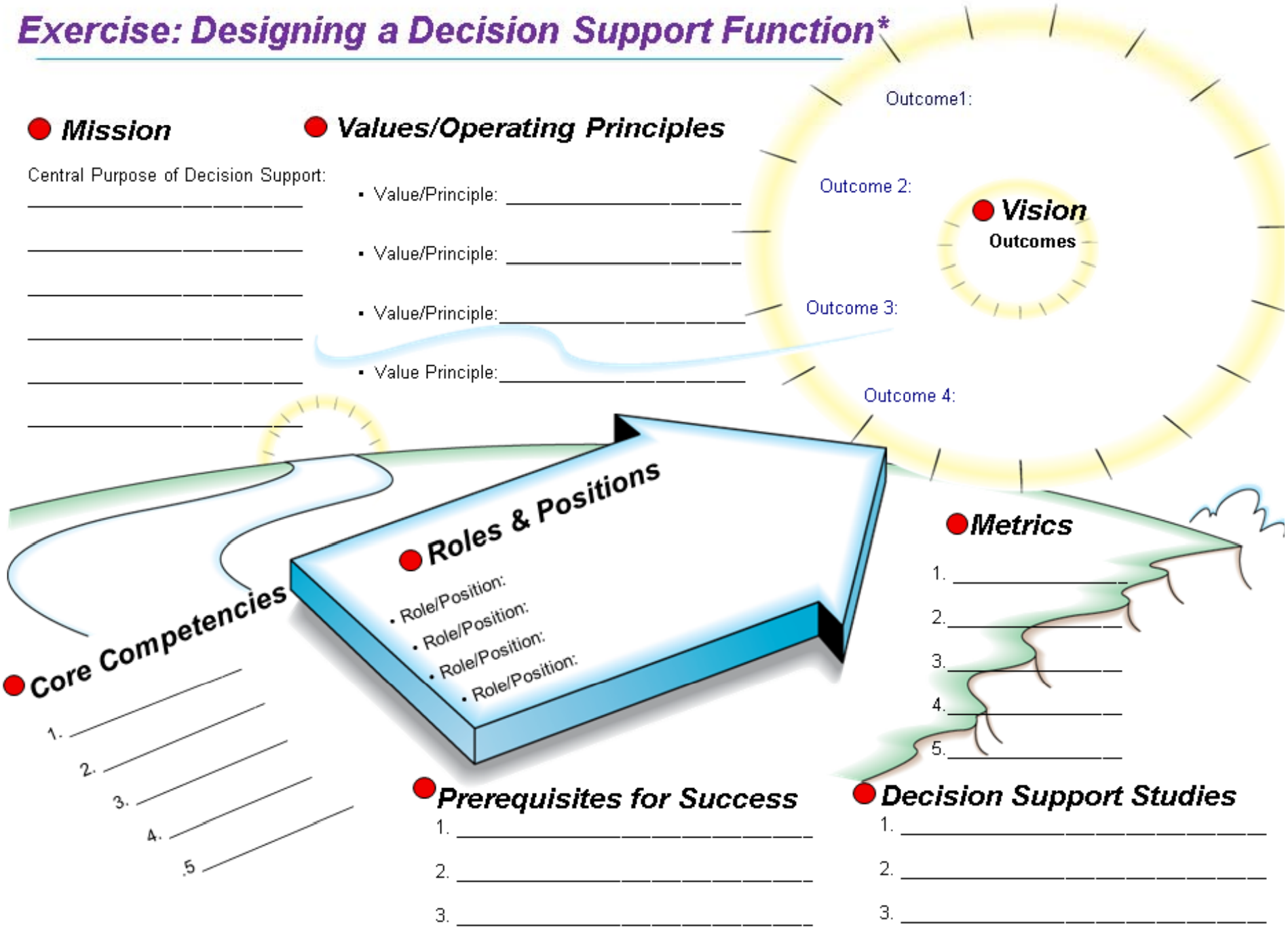
Kevin Center

Senior Director

Office of Organizational Development

Georgia Institute of Technology1

Exercise: Designing a Decision Support Function*



*Adapted from *The Journey*. San Francisco: The Grove Consultants International.

GROUP ACTIVITY

Complete the organizational template representing your group's decision support function

Georgia Institute of Technology
Institute Planning and Resource Management

GROUP FEEDBACK

THANK YOU!

Georgia Institute of Technology
Institute Planning and Resource Management

FOR MORE INFORMATION, PLEASE CONTACT

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Georgia Institute of Technology
Institute Planning and Resource Management