

The Vision

A new world order for data

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Question?

How much would your
iPhone have cost in 1980?

Ignore tech reality – figure memory cost only.

Big Data?

Size + Velocity = Solved

Variety is the challenge

A man in a dark suit and tie stands leaning against a white brick wall. He has his arms crossed and is looking upwards and to the left. Three black pendant lights hang from the ceiling, casting light on the wall. The text 'Information Consumer Critical needs' is centered on the wall.

Information Consumer Critical needs

- Reporting
- Analysis
- Discovery

Data visualization enhances all three

Desirable Qualities

- Easy to learn/use
- Connect to many data sources
- Deploy quickly
- Manage easily
- Scale securely

Data Visualization

The *lingua franca* of data.

A language that is adopted as a common language between speakers whose native languages are different.

As a means for dealing with variety.

Challenges & Opportunities

- **Accountability** – moving it to where it belongs
- **Availability** – data from a variety of sources
- **Responsiveness** – tech resources on demand



Business Critical Needs

- Speed
- Security
- Governance

Speed of Deployment

Small pilots < 4 weeks build confidence and enthusiasm

Speed of Response

Restructure the IT group by creating a rapid-response team.

Rapid = < 1 hour to immediate

Speed of Analysis

- Users accessible tools
- Publishing in a browser (embeddable/flexible)
- Creation in the browser

Security - Right Mindset

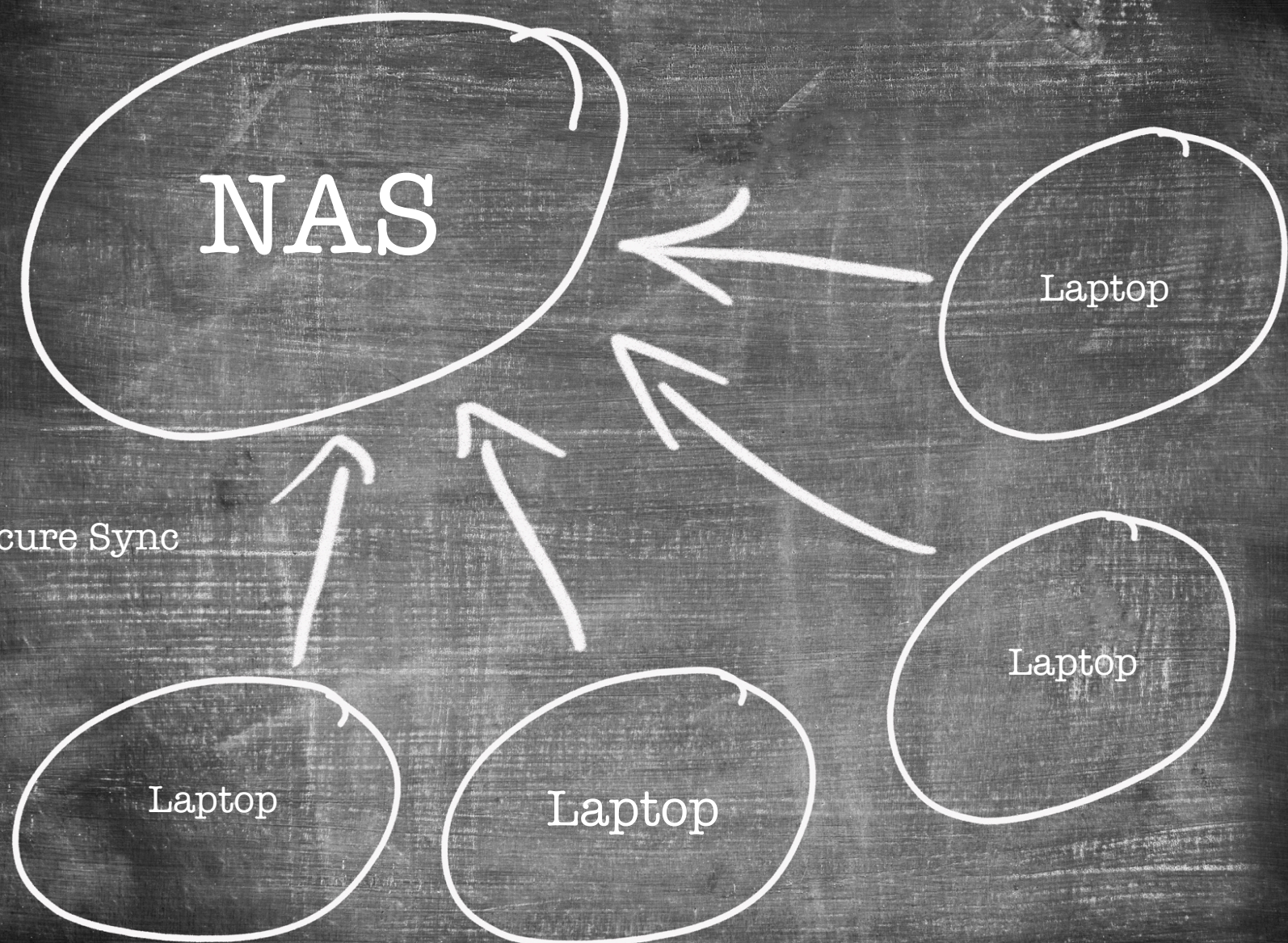
- Define what IT owns
- Define what the creator owns
- This isn't a technology problem

Tracking Unstructured Data

- Hard to do with existing methods/technology
- Data aware storage is part of the answer
- Populating the NAS (network attached storage)

NAS = Network *Aware* Storage

New Governance



Data Aware Storage

Solution Review

1. Reporting/analysis/discovery
2. Speed
3. Security

Contact Information

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Available in the show bookstore



The DBA/Analyst Divide

The Divide

- Our Routines
- Communication Gaps
- Development Lifecycle
- Unlocking the data gate

The Analysts

- How we use Tableau
- Shift in the way we provide data
- Disconnect:
 - R/W Access
 - Data Granularity
 - Business Logic
- Spending time together
- Controlling the data

The Data

- Changing Technology
- Data-focused Business
- Building teams around Data
- Taking everyone to the next level

The Execution

- Doing what we do best
- Laying new groundwork
- Sitting down with the stakeholders

DATA STRATEGY @PRINCETON



Why?

- Why do we manage our data?
- Why do we invest in new tools?
- Why do we build reports and visualizations?
- Why do we encourage process change?



To Make Information Accessible

- To answer questions
- To drive action
- To generate new ideas
- To improve efficiencies

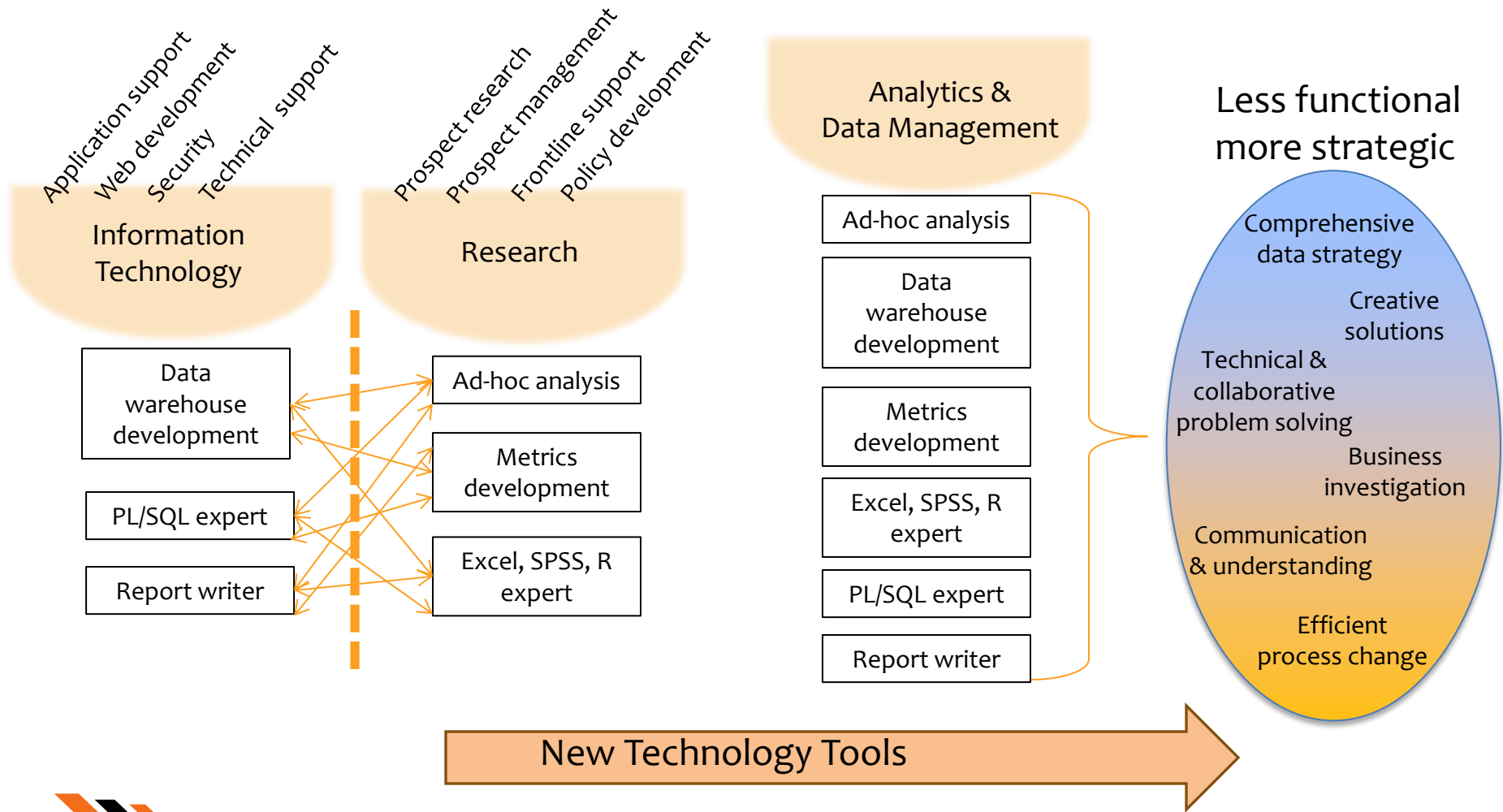


Objectives

- Deliver better business intelligence
- Data architecture should support our business intelligence
- Stabilize and streamline our data warehouse
- Cross-functionally utilize our technical and business staff
- Position our technology resources for the next several years



A Team Dedicated to Data Strategy



Guiding Principles of Information Strategy Depts.

Technology Services

- ✓ Web Development
- ✓ Technical Support
- ✓ Application Support
- ✓ Security

Prospect Development

- ✓ Frontline Support
- ✓ Policy Development
- ✓ Prospect Management
- ✓ Prospect Research

Analytics & Data Management

- ✓ Business Intelligence
- ✓ Data Warehouse
- ✓ Metrics Development
- ✓ Predictive & Ad-hoc Analytics

Vendor Application Enhancements

Customer Support

Data Quality

Policy & Training Development

Commitment to Best Practices

Alumni &
Donor
Records

Central
Information
Strategy

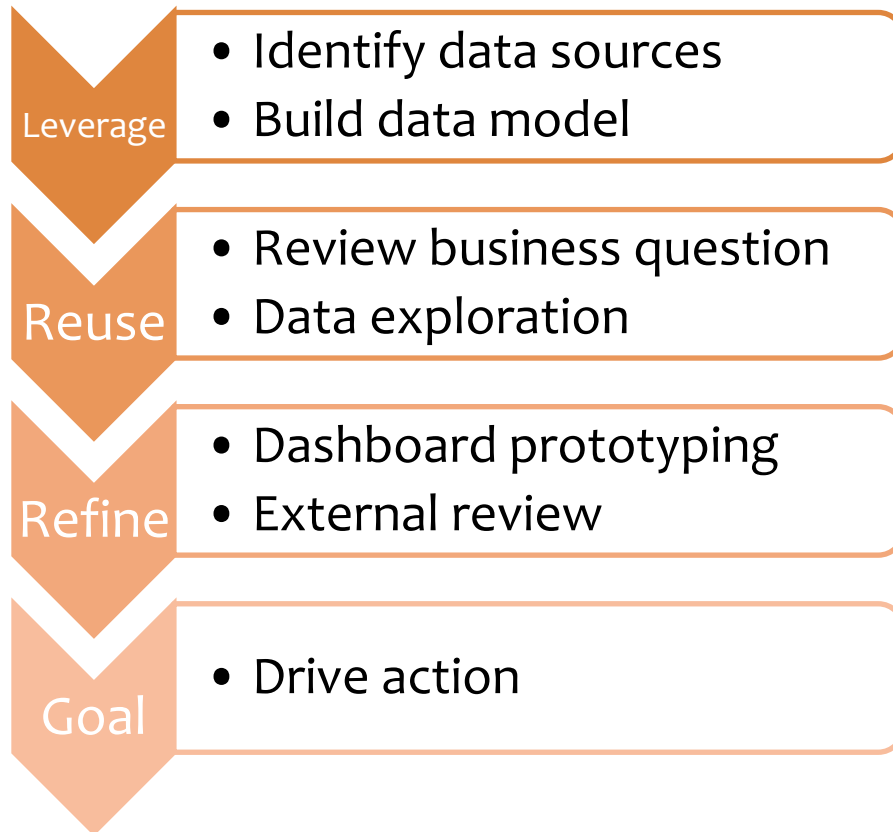


Better Business Intelligence Guiding Principles

- Producing faster, deeper, visual analytics
- It's all about perspective – build for buy-in
- Information empathy
- Writing specs/requirements gathering IS OUT
- Creative prototyping IS IN
- Iterative collaboration
- Transparent and flexible business rules
- Streamline BI redundancy => streamline sources
=> streamline the data warehouse



Building Blocks of Business Intelligence



- ✓ When to push work to the DW
- ✓ When to build joins versus dashboard actions
- ✓ Build broadly for multiple use cases; reuse
- ✓ Follow the storyline; expand the storyline
- ✓ Team review & brainstorming
- ✓ Iterate quickly during review period
- ✓ SIMPLIFY
- ✓ If you're not providing actionable information then what's the point

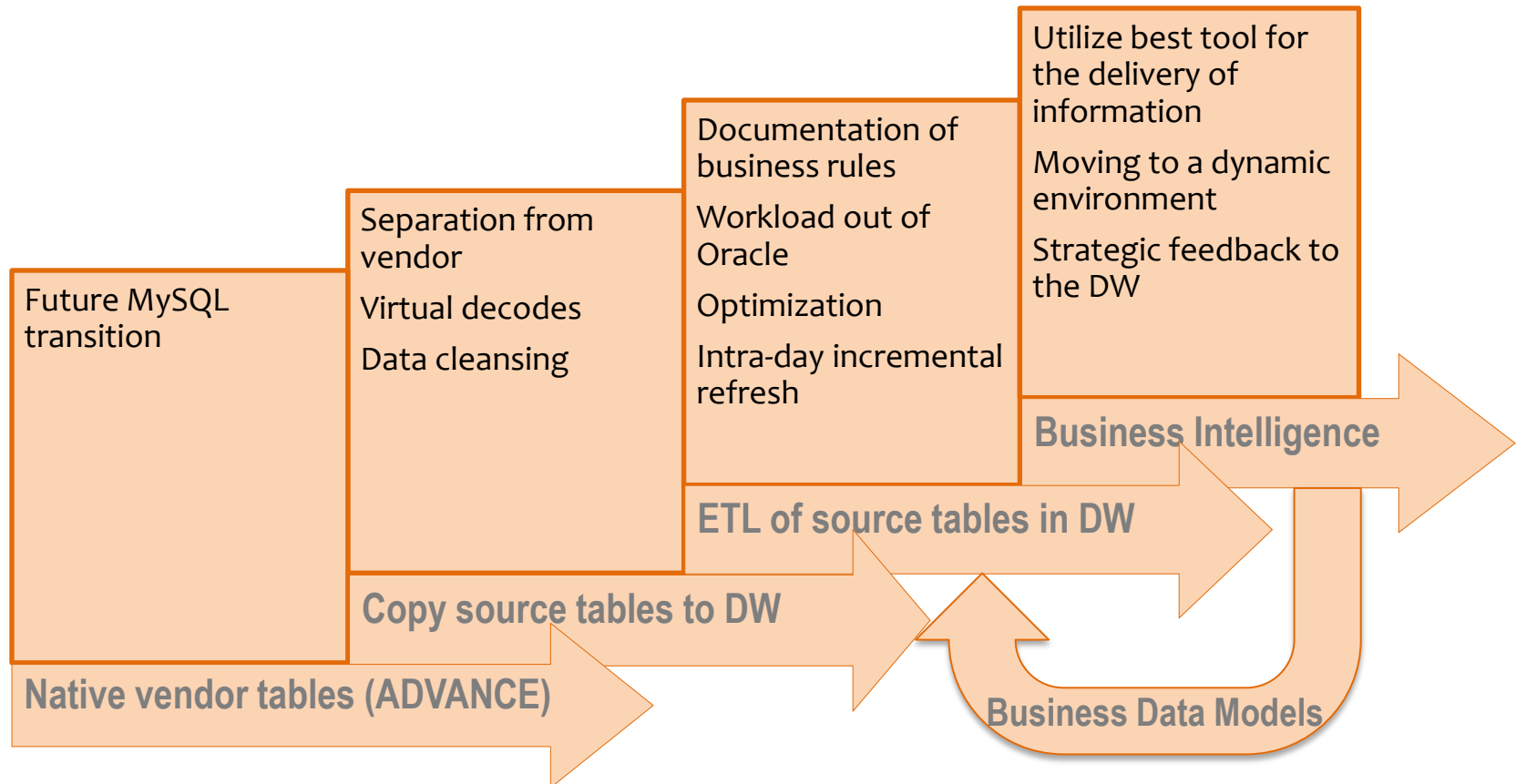


Streamlining the Data Warehouse

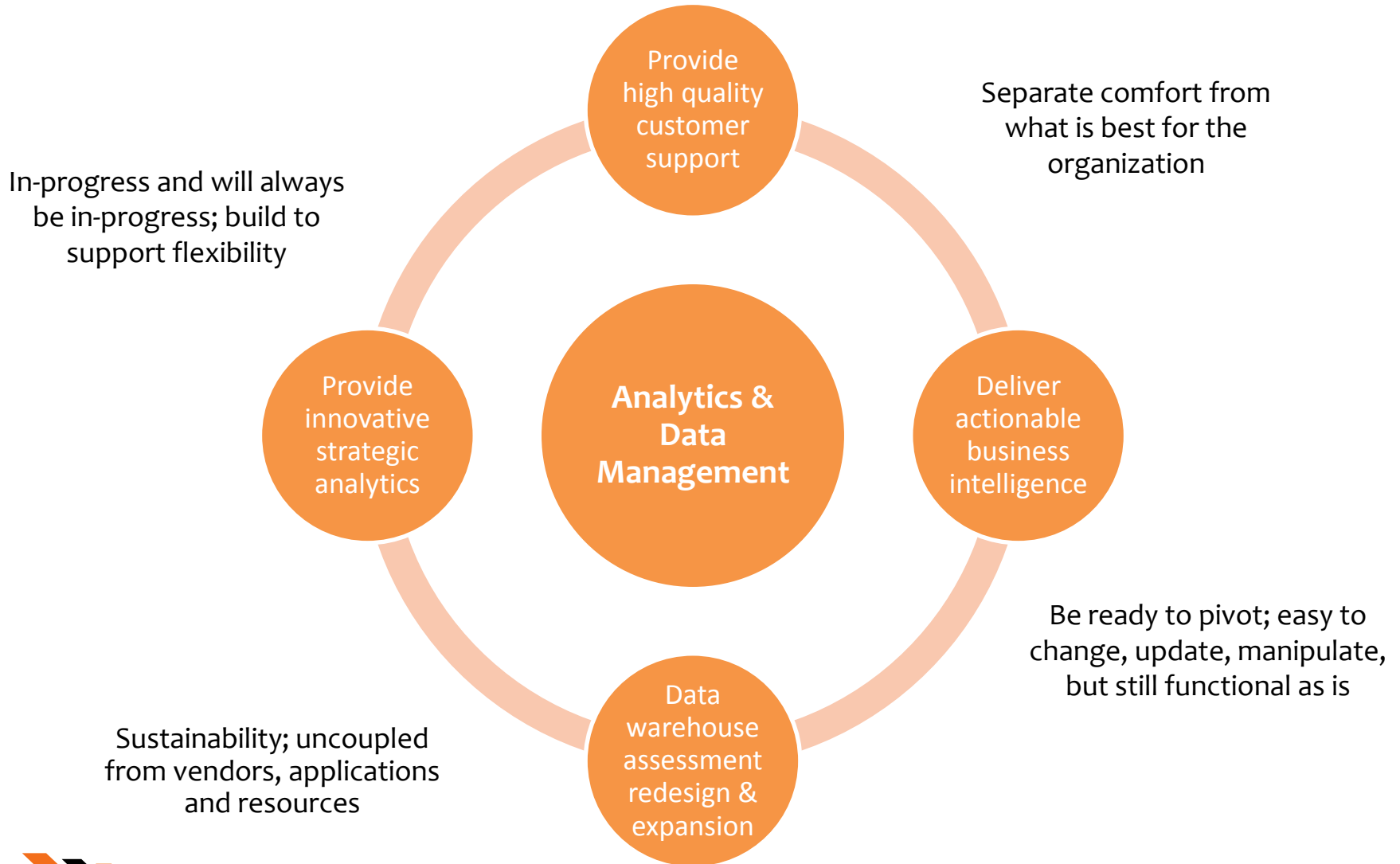
- Data environment assessment
- Identifying priorities
 - Documentation; flexible business rules
 - Incremental intra-day refreshes
 - Simplifying and documenting sources
 - Enable greater transparency and access across functions
- Implement with parsimony
- Model the business not the data
- Business rules versus data rules



Building Blocks of the Data Warehouse



FY15 Team Goals



Communication is Key

Share Remember my changes Edit



Download

Is tableau portal

Welcome to the Development Office Tableau Portal. All dashboards are shown in list form below. You may also click on the highlighted dashboards or enter text to search for a particular dashboard on the right. Please feel free to email questions or suggestions by clicking on the Tableau question icon on the top right.

dashboard table of contents		mouse over for description
Giving Dashboards	Aspire/Post Aspire Giving Detail	
	Distribution of Donors and Dollars	
	FY13 Fundraising Progress	
	FY14 Fundraising Progress	
Annual Giving Dashboards	AG Major Special Prospects	
	Grad AG Gift Level Comparison	
Capital Prospect Dashboards	CLC Volunteer Dashboard	
	Capital Contacts FY14	
	Capital Contacts FY15	
	Capital Prospect Pool Management	
Bio Information Dashboards	Employer Datamining	
	Employment Datamining	
	High Rank Employment	
Special Cohort Dashboards	50th and Post-50th Reunion Giving History	
	Advisory Council Dashboard	
	Arts Priority Development	
External Metrics	External Big Gifts List	
	Peer Benchmarking	

highlighted dashboards



FY15 Fundraising Progress

Pledge Payment Forecast



Prospect Profile Dashboard

Historical Giving by FY & Donor

dashboard search by title

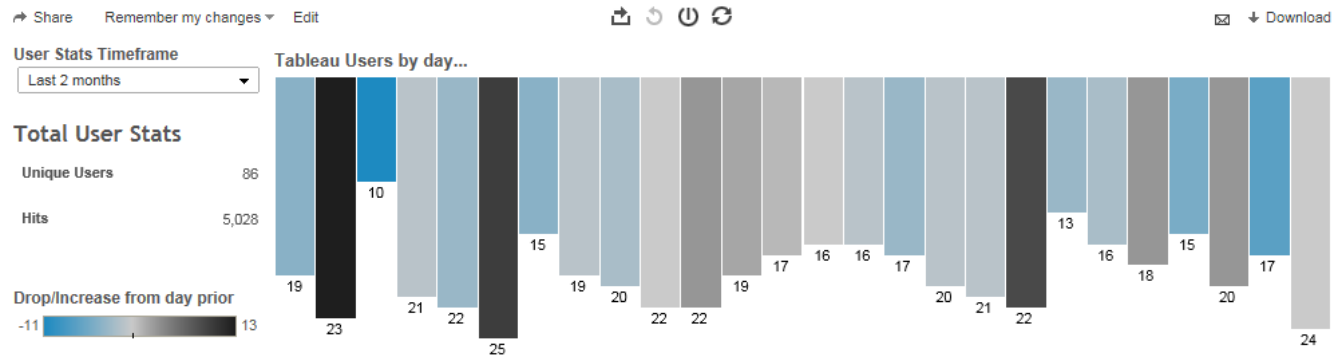
Enter text to search by name.

[Tableau Usage Stats](#)

helpful links



Feedback is Important



Trending Reports

Report	Users	Hits
Capital Prospect Pool Dashboard	23	270
FY15 Fundraising Progress	22	89
Capital Contacts FY15	21	143
Departmental Financial Information	17	175
Gift/Pledge Lookup & Donor History	14	158
Historical Giving by FY, Donor & Giving Groups	12	79
Peer Screening & Prospect Discovery	10	111
International Dashboard	9	105
Aspire/Post Aspire Giving Detail	8	70
CLC Volunteer Dashboard	8	51
Gift Planning Management	8	196
TigerTracks Notes	8	264
Employer Datamining	7	59
Distribution of Donors and Dollars	6	8

Highest Users

User Name	Max. Log In	Nbr of Hits
Laura M. Melnyczenko	3/9/2015	172
Rebecca A. Campana	3/2/2015	144
Suzanne V. Franzino	3/9/2015	127
Thomas W. Birkenholz	3/3/2015	93
Eileen Scholder	3/9/2015	76
Christine Hill	3/9/2015	69
Colleen M. Moore	3/9/2015	61
Kerstin M. Larsen	3/6/2015	60
Traslyn C. Butler	3/9/2015	57
Karen B. Barbiero	2/19/2015	56
Rochelle A. Makela-Goodman	3/6/2015	55
Vanessa R. Silva	3/9/2015	55
Mariesa P. Lea	3/6/2015	43
Mary Childs	3/2/2015	43
Kevin M. Cotter	3/9/2015	39

My Recent Views

From any dashboard, click this icon to:

- Email DO Tableau support ▶
- Link back to DO Tableau Portal ▶
- View the Tableau reference guide ▶

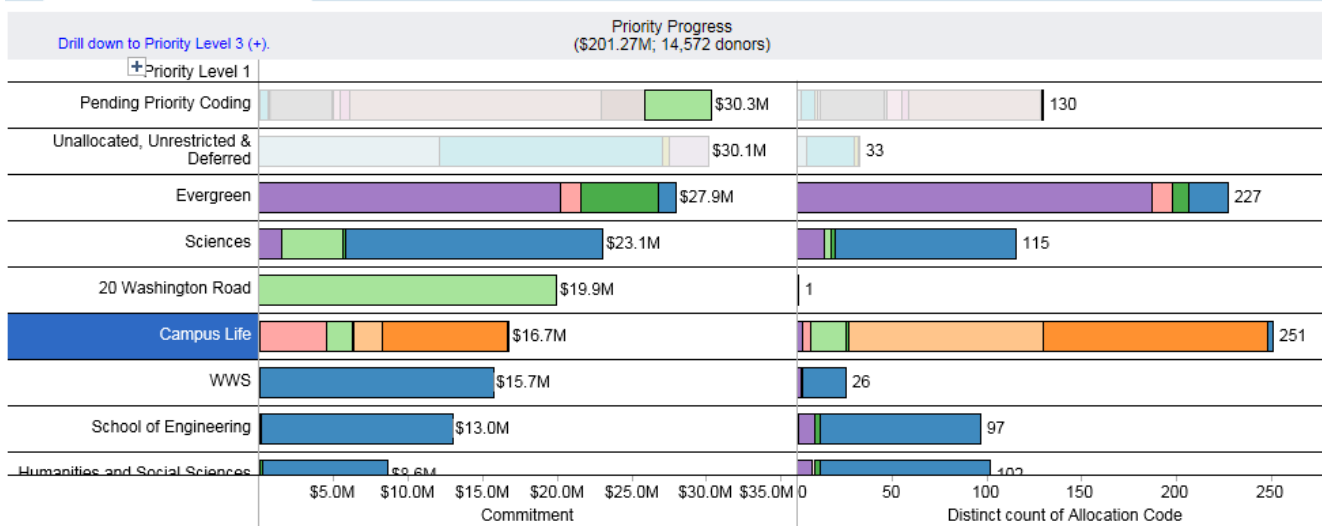


Prototyping Data Hierarchies

- Build complex data hierarchies in Tableau
- Share with business experts for review and iteration
- Working dashboard with live data; allow the hierarchy to become part of and be vetted by the business
- Final step, define tables in data warehouse
- Outcome: data structure is defined by the business; implemented by the DW developer



Fundraising Priorities Progress Full Hierarchy Crosswalk Dash



Show Color By: Purpose Level 1

Priority Level 1: (All)

Priority Level 2: (All)

Purpose Level 1: (All)

Purpose Level 2: (All)

Commitment: \$1 to \$80,000,000

Credit Date: 7/1/2013 to 12/3/2014

- Academic
- Art Museum
- Athletics
- Campus Life
- Faculty and Teaching Support
- Grounds and Buildings
- Library
- President's Cabinet
- Student Support
- xAnnual Giving
- xCampus Improvement & Facilities
- xFaculty & Dept. Support
- xFellowships
- xFinancial Aid
- xFreshman Seminars
- xGeneral
- xInternship

Select bars from the graph to limit detail list below. Drill down is available to donor name and entity ID. Select a donor entity ID to open a STRIPES2 record (must be logged on).

Allocation Search Fund Search Last, First Name Search

List Detail \$16.74M 11,712 donors

Priority Level 1 (copy)	Priority Level 2 (copy)	Priority Level 3 (copy)	Purpose Lvl 1	Purpose Lvl 2	Allocating Dept	Allocation	Amount
Office of the Vice President for Campus Life			Academic	Department program center funds	VCL-Ofc of Campus Life	ROTC Program	\$14,750
			Campus Life	Clubs and other activities	VCL-Ofc of Campus Life	Women's Mentorship Program in the Office of the Vice President for Campus Life	\$25,000
Pace Center	Community House		Campus Life	Service Funds	PCE-PACE Center	Community House	\$450
						Community House Summer Program	\$1,380
						Pace Center for STEM Camp - Solar Suitcase Week	\$3,750
						Davis Projects for Peace	\$30,000
Pace Center Salaries	Faculty and Teaching Support	General faculty and administrative support	PCE-PACE Center	Pace Center Staff Salaries	\$15,000		
Pace Student Organization	Campus Life	Clubs and other activities	PCE-PACE Center	Princeton Social Entrepreneurship Initiative	\$10,000		



Building the Hierarchy in Tableau

Calculated Field [Priority Level 1]

Name: Priority Level 1

Formula:

```
//coding was done base
CASE [Allocation Code]

//Campus Life
WHEN "1H1044" THEN "C:
WHEN "1H1506" THEN "C:
WHEN "1H1892" THEN "C:
WHEN "1H2088" THEN "C:
WHEN "1H2147" THEN "C:
WHEN "1H2187" THEN "C:
WHEN "1H2199" THEN "C:
WHEN "1H2249" THEN "C:
WHEN "1H2257" THEN "C:
```

Calculated Field [Priority Level 2]

Name: Priority Level 2

Formula:

```
WHEN "CN0017" THEN "Pace
WHEN "CN0024" THEN "Pace
WHEN "CN0014" THEN "Pace
WHEN "CN0026" THEN "Pace
WHEN "CN0005" THEN "Pace
WHEN "CN0016" THEN "Pace
WHEN "CN0013" THEN "Pace
WHEN "CN0022" THEN "Pace
WHEN "CN0027" THEN "Pace
WHEN "CN0019" THEN "Pace
WHEN "CN0030" THEN "Pace
WHEN "CN0025" THEN "Pace
WHEN "CN0021" THEN "Pace
WHEN "CN0029" THEN "Pace
```

Calculated Field [Priority Level 3]

Name: Priority Level 3

Formula:

```
//Pace Center allocations, based on email from TCK on 10/3/2014
WHEN "CN0005" THEN "Student Volunteers Council"
WHEN "CN0016" THEN "Student Volunteers Council"
WHEN "CN0020" THEN "Student Volunteers Council"
WHEN "CN0013" THEN "Pace Center Salaries"
WHEN "CN0022" THEN "PICS"
WHEN "CN0026" THEN "PICS"
WHEN "CN0017" THEN "PICS"
WHEN "CN0018" THEN "Princeton Summer Journalism Program"
WHEN "CN0003" THEN "Davis Projects for Peace"
WHEN "CN0019" THEN "Prison Teaching Initiative"
WHEN "CN0021" THEN "TigerLaunch"
WHEN "CN0024" THEN "Community House"
WHEN "CN0014" THEN "Community House"
WHEN "CN0030" THEN "Community House"
WHEN "CN0027" THEN "Pace Student Organization"
```

Fields: Parameters: Create Functions:

3 Level Priority key

- Campus Life/PACE Center/Community House key (A1B1c1)

2 Level Purpose key

- Campus Life/Service Funds (X1Y1)



Interactive Hierarchies

Share Remember my changes Edit



Fundraising Priorities Progress

Full Hierarchy

Crosswalk Dash

Priority Level 1

Priority Level 2

Priority Level 3

Purpose

Purpose Level 2

Campus Life

Pace Center

Purpose Lvl 1 (copy 2)

Campus Life

Purpose Lvl 2 (copy)

Service Funds

Athletics - Construction

Athletics - Misc.

Athletics - Programs

Center for Jewish Life

Club Sport Friends

Community House

Davis Projects for Pea..

LGBT Center

Pace Center Salaries

Pace Student Organiz..

PICS

Princeton Summer Jo..

Princeton Varsity Club

Prison Teaching Initiat..

Student Volunteers C..

TigerLaunch

Varsity Friends

Religious Activities



Prospect Interest Tie to Priority

Prospect Interest Desc	Prospect Interest Full Desc	Prospect Interest Code Added	Fund Code	Fund Full Desc	Fund Code Added	Max. Credit Date	Contact Desc	Contact Full Desc	Contact Code Added
ASP02	Campus Life General (Priority)	8/26/2010	Null	Null	Null	7/1/1981	Null	Null	Null
ASPXZ	Canadian Studies	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
	Career Services	7/17/2014	Null	Null	Null	7/1/1981	Null	Null	Null
D161	Carl Fields Center Program (Priority)	9/3/2009	D161	Carl Fields Center Program	9/3/2009	12/24/2014	D161	Carl Fields Center Program (Priority)	9/3/2009
ASP06	Center for African American Studies (..	11/3/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASPXZ	Center for Child Well-Being	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASP06	Center for Health and Wellbeing (Prio..	6/3/2008	Null	Null	Null	7/1/1981	Null	Null	Null
ASPXZ	Center for Human Values	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASP06	Center for Public Policy and Finance (..	3/14/2011	Null	Null	Null	7/1/1981	Null	Null	Null
ASPXZ	Center for the Study of Books & Media	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASPXZ	Center for the Study of Religion (CSR)	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASP06	Center of International Studies	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASPXZ	CFR/ORPA Joint	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASP03	Chemical Engineering	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASPXZ	Chemistry	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASP02	Childcare Facility (Priority)	3/7/2008	Null	Null	Null	7/1/1981	Null	Null	Null
ASP03	Civil and Environmental Engineering	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASPXZ	Classics	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASP02	Club Sports Endowments (Priority)	3/6/2008	Null	Null	Null	7/1/1981	Null	Null	Null
D168	Community Action (Priority)	9/3/2009	Null	Null	Null	7/1/1981	Null	Null	Null
D170	Community House (Priority)	9/3/2009	D170	Community Service Initiatives	9/3/2009	3/4/2015	D170	Community House (Priority)	9/3/2009
ASPXZ	Community Service	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASPXZ	Community-Based Learning Init (CBLI)	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASPXZ	Comparative Languages & Literatures	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASP03	Computer Science	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
	Computing Applications	6/14/2006	Null	Null	Null	7/1/1981	Null	Null	Null
ASP06	Council on Intl Teaching and Researc..	3/7/2008	Null	Null	Null	7/1/1981	Null	Null	Null



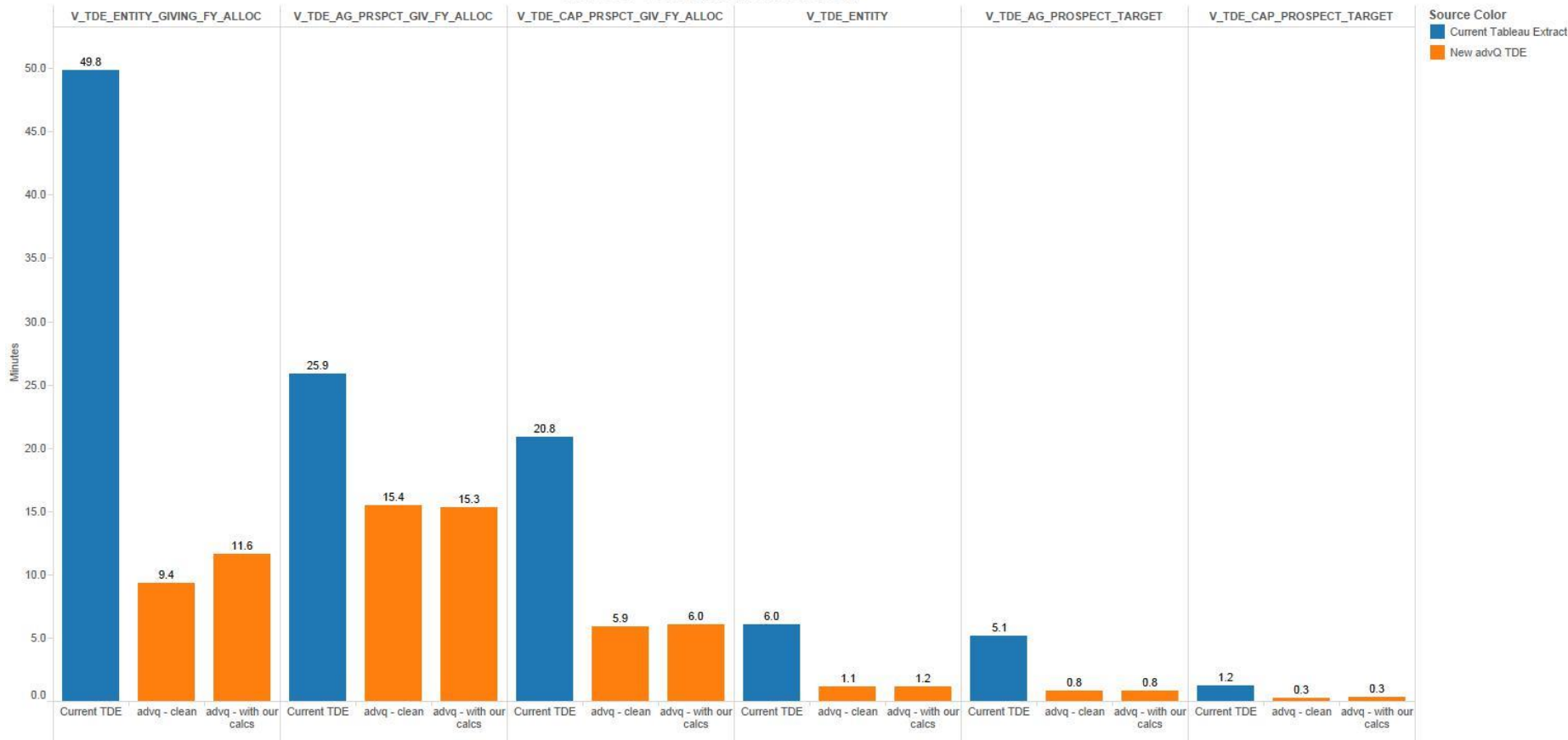
Developing Reporting Views

- Based on like-levels of granularity
- Resist building aggregation in the data warehouse
- Iterative builds involve a business analyst and DW developer
- Performance and QA completed by the business analyst
- Co-ownership of views by DW developer and business analyst



Shared Technical Build & Review

New TDE Testing Results (4/10/2014)



- 1) Test data quality of new column(s)
- 2) Test data refresh time to understand impact on overnight Tableau refreshes



Business Model => Data warehouse Model

PROPOSAL MAIN

Connection: Live Extract | Edit... Refresh | Filters: 0 | Add...
 Extract will include subset of data.

Connected to Oracle

Server
advp

Schema
ADVANCE

Table
Enter table name

- ACKNOWLEDG...NT_DETAIL)
- ACKNOWLED...T_HEADER)
- ACTIVITY (AD...CE.ACTIVITY)
- ADDRESS (A...E.ADDRESS)
- ADDRESS_GE...DRESS_GEO)
- ADDRESS_LAB...RESS_LABEL)
- ADM_PASSW...PASSWORD)
- ADMISSIONS...VOLUNTEER)
- ADV_BATCH_A...H_APP_TYPE)
- ADV_BATCH_T...TCH_TABLES)
- ADV_LOAD_P...AD_PLEDGE)

PROPOSAL

- PROPOSAL_PURPOSE
- PROSPECT_ENTITY
- TMS_PROPOSAL_STAGE
- TMS_PROPOSAL_STATUS
- TMS_PROPOSAL_SUBMIT_TYPE
- TMS_PROPOSAL_TYPE
- V_ENTITY_CONTACT_REPORTS
- V_ENTITY_TASK

V_ENTITY_NAME_PREF

V_TDE_ENTITY_GIVING

Go to Worksheet

Copy

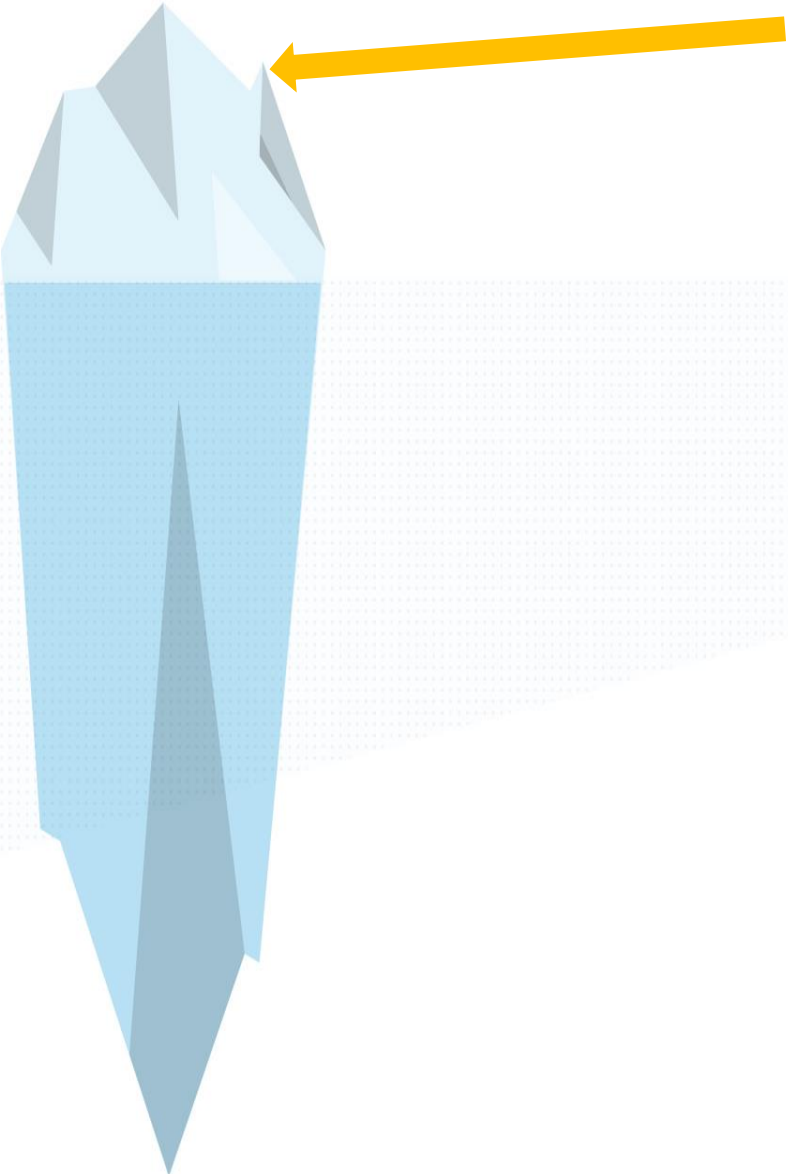
Show hidden fields Rows

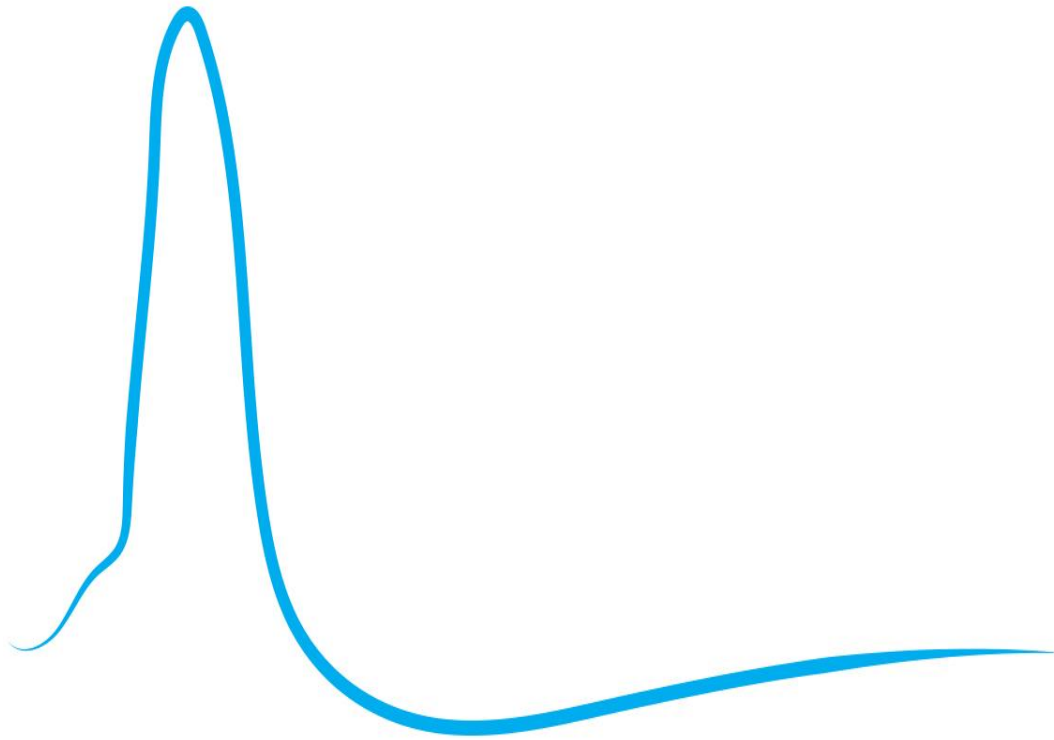
PROPOSAL_ID	PROSPECT_ID	PROPOSAL_TYPE	ACTIVE_IND	PROPOSAL_STATUS_CODE	STAGE_CODE
# PROPOSAL	# PROPOSAL	Abc PROPOSAL	Abc PROPOSAL	Abc PROPOSAL	Abc PROPOSAL

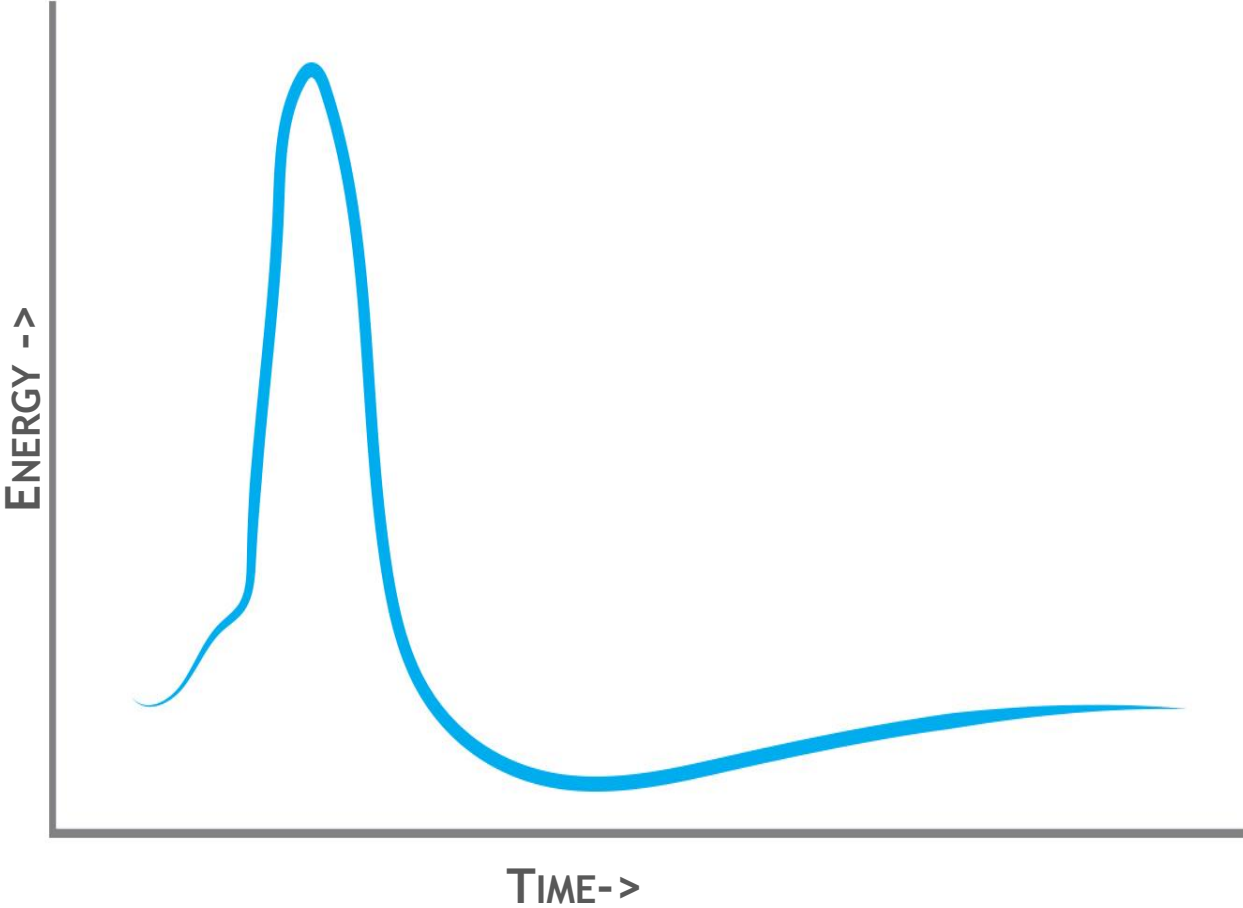


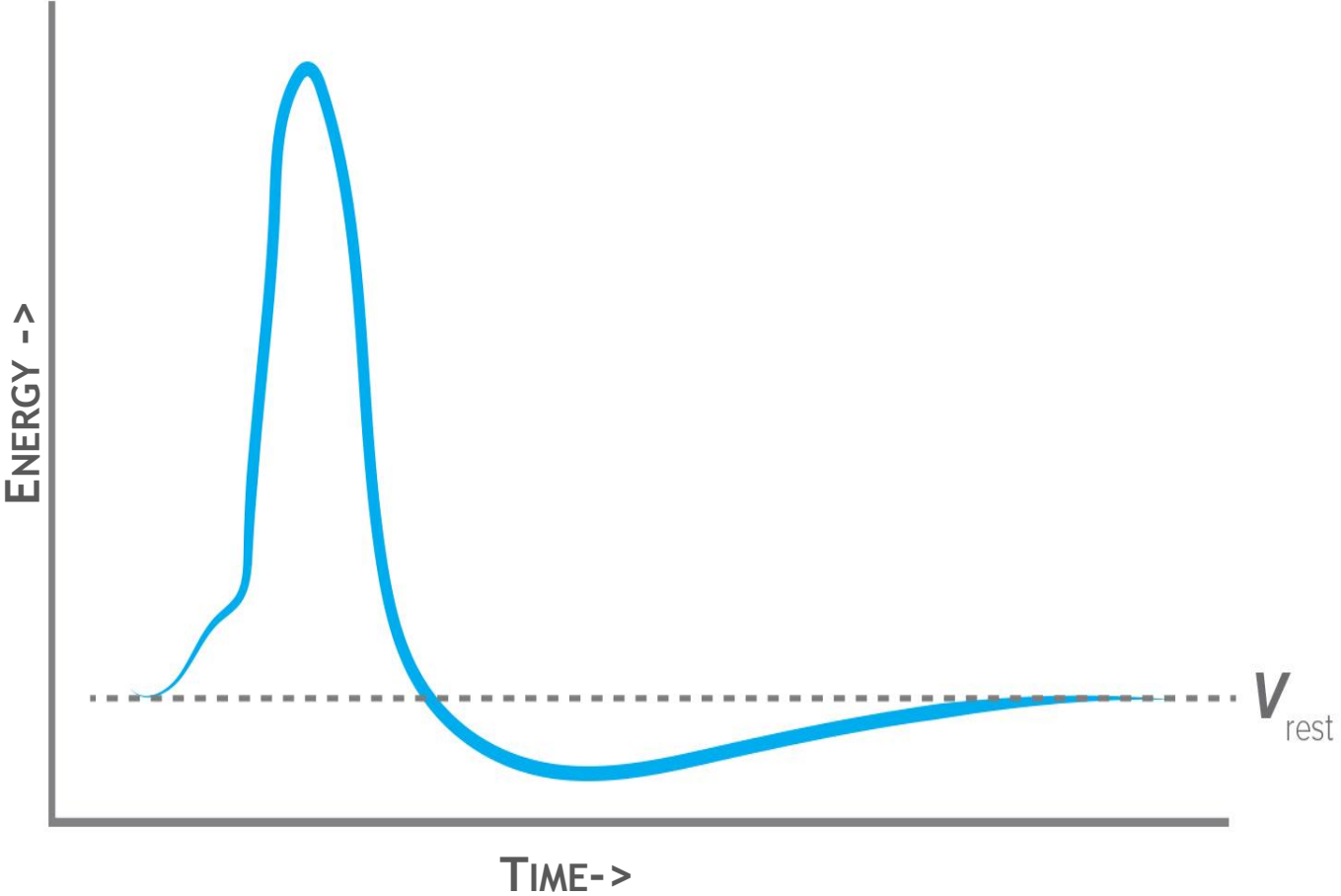


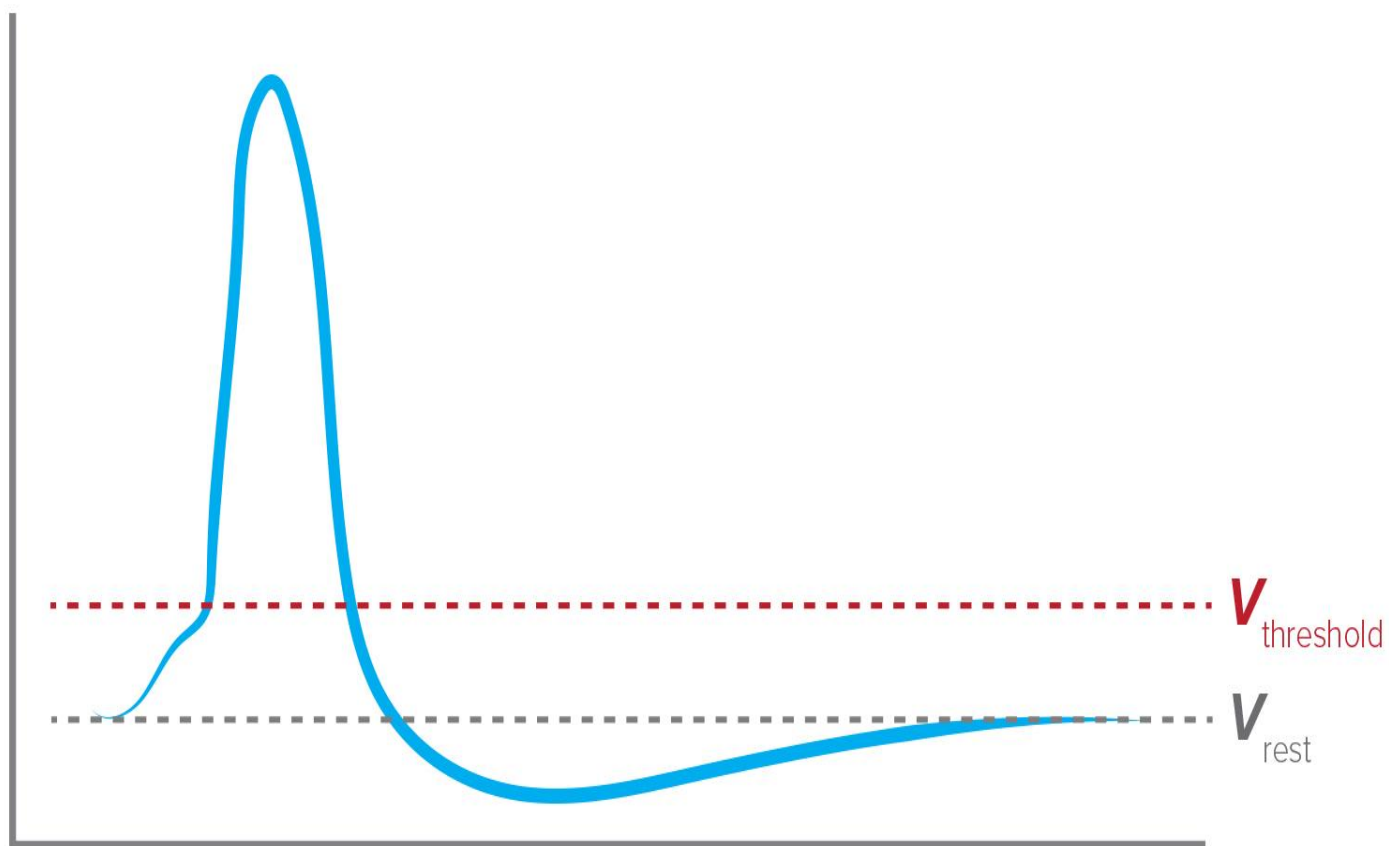
DRIVING DATA ADOPTION - SHIFTING CONSUMER CULTURE

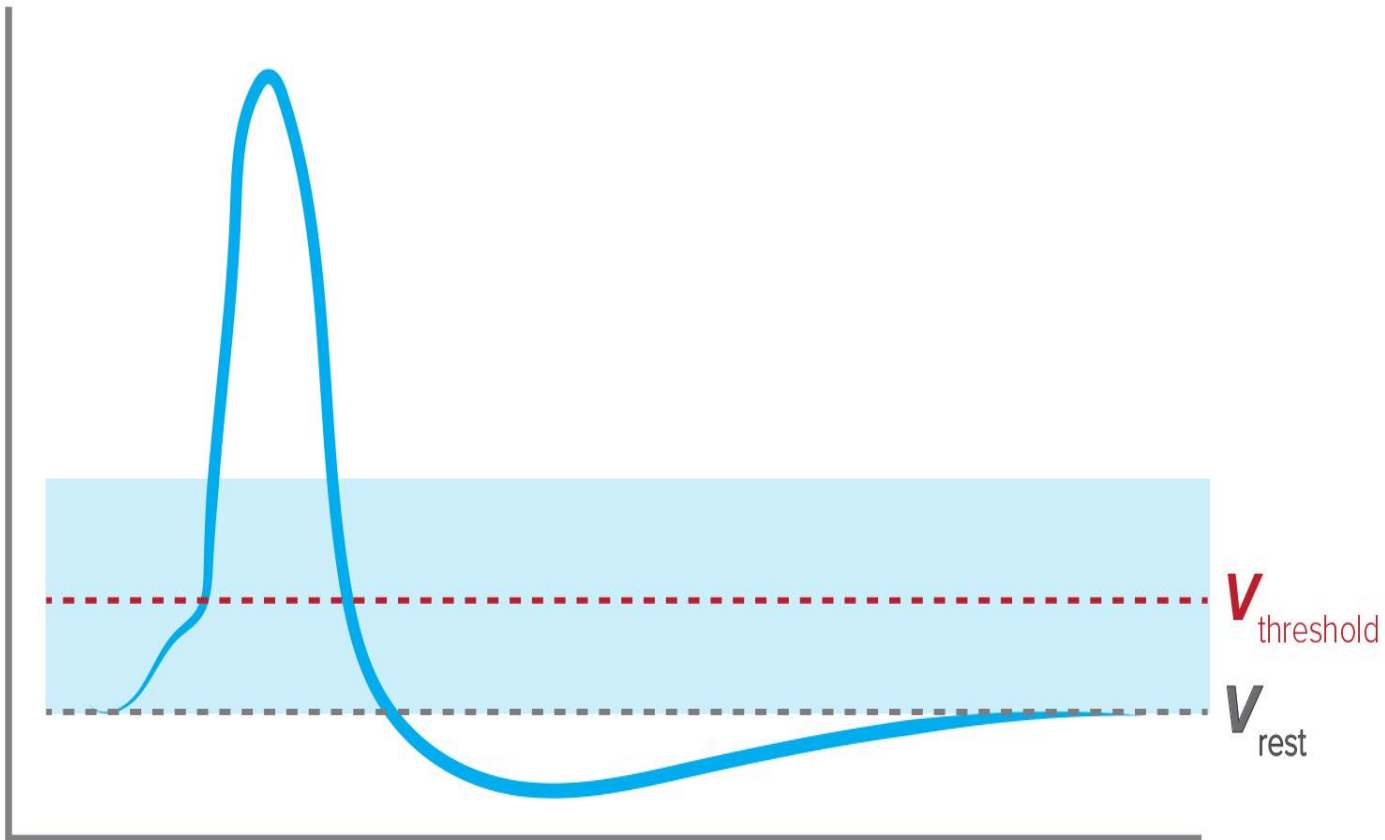


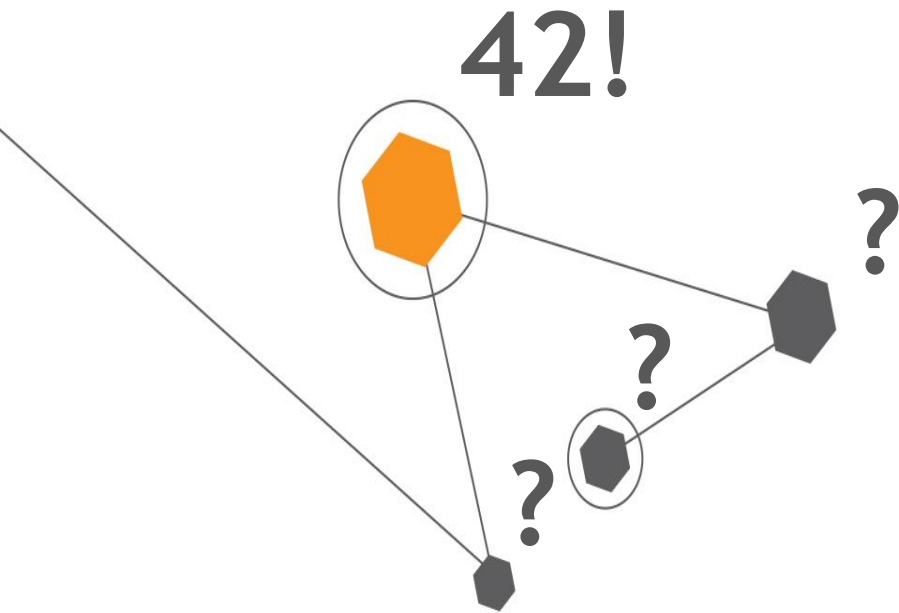




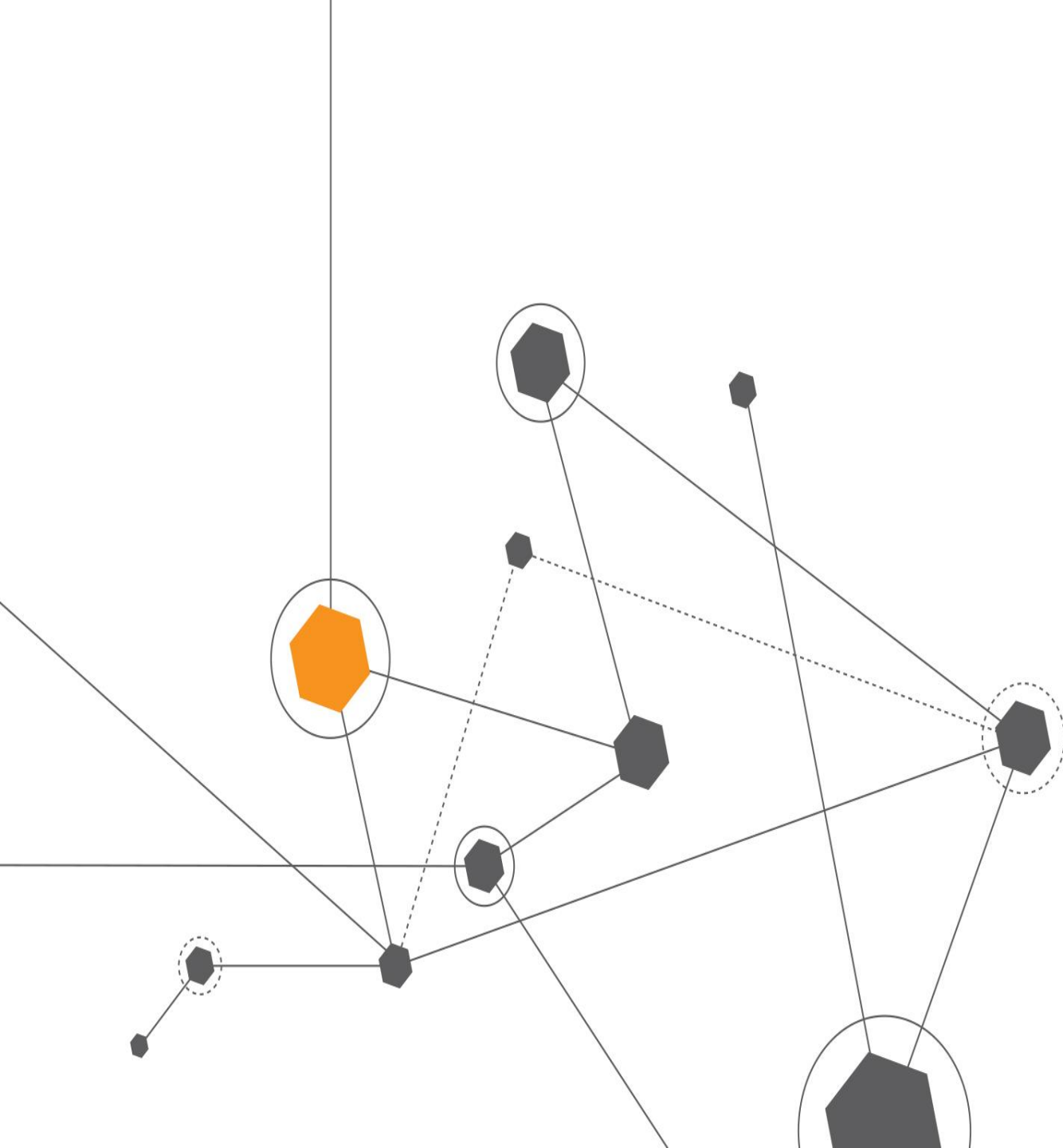








**ANSWER TO
THE ULTIMATE
QUESTION
OF LIFE,
THE UNIVERSE,
AND EVERYTHING**



1. Focus on the Consumer
2. Streamline Effective Development
3. Earn [and Deserve] Trust
4. Make it Fun to Use
5. Avoid the Field of Dreams

FOCUS ON THE CONSUMER

- Consistency in Dashboard Design
- Design for Real-World Use
IPAD vs. Print vs. Monitor vs. Email
- Support Multiple Consumption Mechanisms
(PPTX, PDF, Email)
- Avoid Technological Isolation

STREAMLINE EFFECTIVE DEVELOPMENT

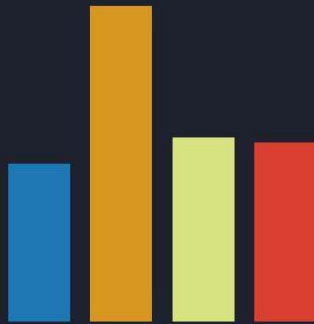
- Design Templates
 - Starter Workbooks
 - Shape Palettes
 - Color Palettes
 - Consistent Fonts & Visual Elements
- Champions & Center of Excellence
- Lightweight SDLC and QA Process

EARN [& DESERVE] TRUST

- Avoid the Worst Case Scenario
- Provide Context for Information
 - Dates
 - Metadata / Data-Dictionary
 - Contact Information
- Communicate SDLC Status through Watermarking

All★Star

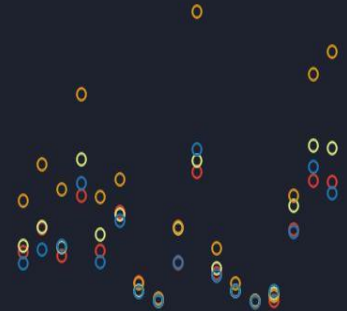
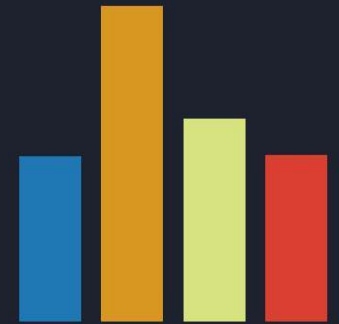
Power Tools
for Tableau



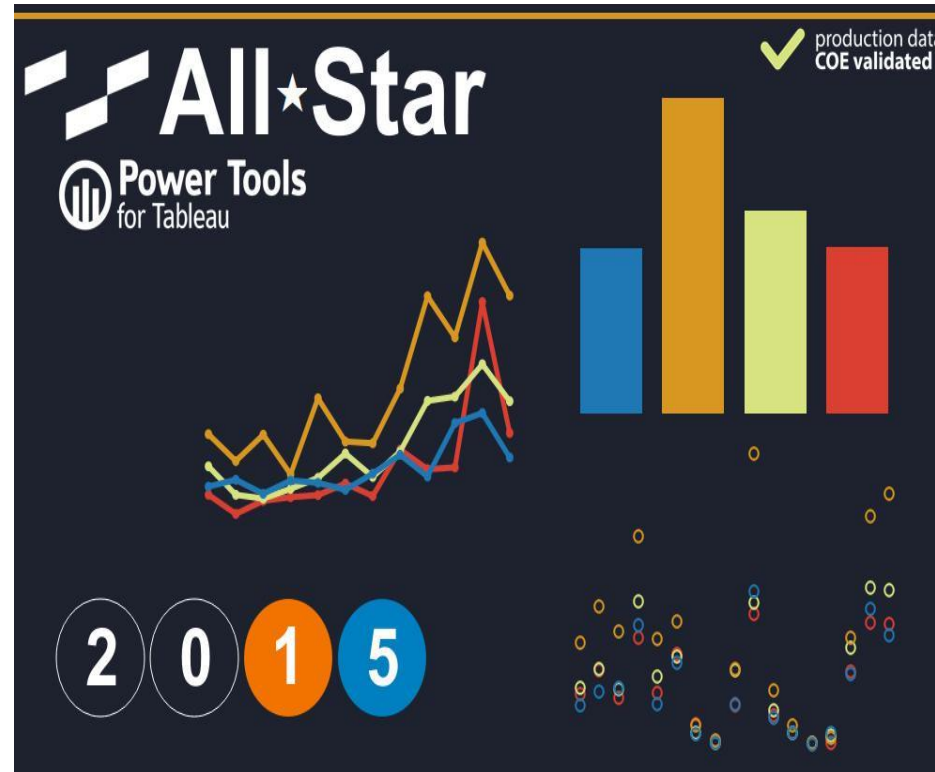
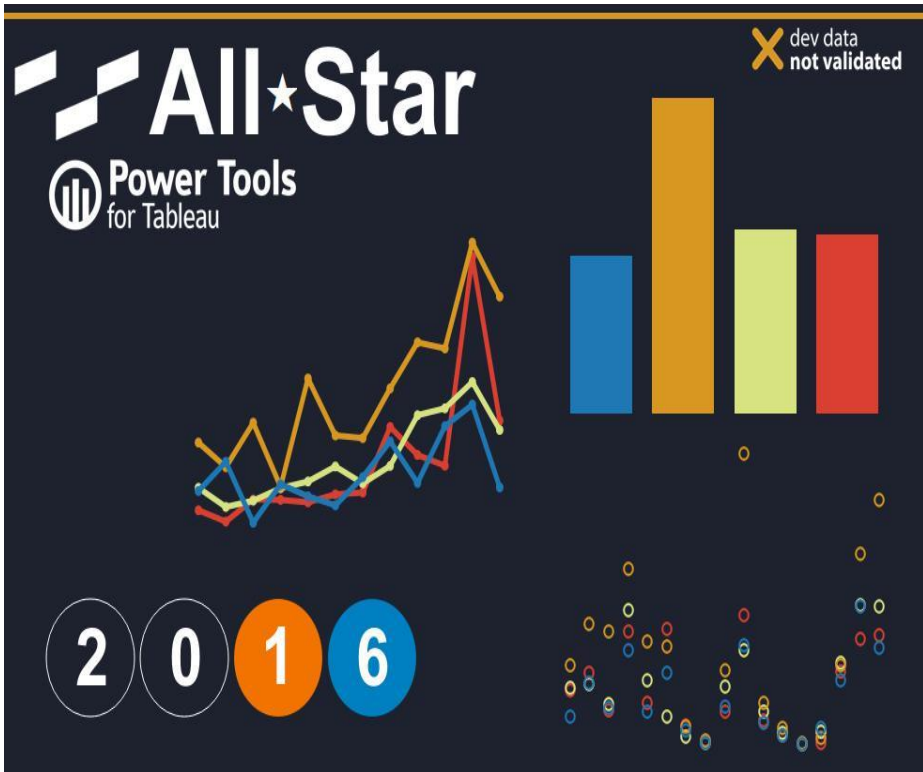
2 0 1 6

All★Star

Power Tools
for Tableau



2 0 1 5



MAKE IT FUN TO USE

- Avoid the Second Worst Dashboard
- Make it Fast
- Maximize Ease of Use
 - Consistent Fonts
 - Standard Icons

AVOID THE FIELD OF DREAMS

- Build Community
 - Network
 - Support
 - COE
- Provide Activation Energy
 - Analytics Community Hour
 - Office Hours
- Integrate into Business Processes
 - Event Centered
 - Alert Based

