DATA & ANALYTICS SUMMIT SM

Live Online Event

September 21 - 22, 2016

Why You Should Care About Data Analytics

Ellen Wagner, PAR Framework, Hobsons

Presented by

THE eLEARNING GUILD

Technology Provider

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Why You Should Care About Data Analytics

Ellen Wagner – 21 September 2016 - @edwsonoma

HOBSONS

WELCOME! We're All Glad You Are Here

- In this opening session of the Data & Analytics Summit, you will learn:
  - why data analytics is taking the world by storm
  - how it is affecting the work of learning and performance professionals.
  - How to get started with data analytics in your organization

- You will leave this opening session prepared to spend the next two days exploring opportunities for putting data to work.

In this first session, we will:

- Consider the value that data analytics offer to individuals and enterprises
- Explore the learning data analytics ecosystem
- Offer examples of using data to support student success
- Provide tips for getting started on your data analytics journey

Let’s Find Out Who’s Here

HOBSONS

First, tell us a little bit about you

In the *left* chat pod below tell us:

Where you work - AND -

What you do there

Use the *right* chat pod below to tell us why you are here?

Poll 1: Where is your organization currently using data analytics (check all that apply)

Poll 2: Please rate your organization's "Analytics Maturity"


WHY ANALYTICS ARE TAKING THE
WORLD BY STORM

Analytics

Analytics is the discovery, interpretation, and communication of meaningful patterns in data. Especially valuable in areas rich with recorded information, analytics relies on the simultaneous application of statistics, computer programming and operations research to quantify performance. Analytics often favors data visualization to communicate insight.

https://en.wikipedia.org/wiki/Analytics

Drivers of Change

- Data warehouses and “The Cloud” have made it possible to collect, manage and maintain massive collections of digital records.
- Distributed tech platforms provide the computational power needed to grind through calculations on massive data sets and turn the mass of numbers into meaningful patterns.
- Analyses may feature descriptive and inferential statistics, ANOVAs, moving averages, correlations, regressions, graph analyses, market basket analyses, to name just a few.
- Predictive techniques such as neural networks and decision-trees help anticipate future behaviors and events.

“If we have data, let’s look at data.

If all we have are opinions, let’s go with mine.”

Jim Barksdale

Why LEARNING PROFESSIONALS Need to Care about Data Analytics

- The digital “breadcrumbs” learners leave behind about engagement and behaviors, interests and preferences provide massive amounts of information that can be mined for insights to better optimize experience.
- Every other business unit in your enterprise is going to be using data from the rest of the business to support decision-making. Don’t be left behind.
- Decision-making that leverages experience, seniority, expert opinion AND data is more effective than decision-making that depends only on experience / seniority / expert opinion.

The Data Analytics Landscape

HOBSONS

data

noun plural but singular or plural in construction, often attributive | da·ta | \ ˈdā-tə, ˈda- *also* ˈdä-\

Simple Definition of DATA

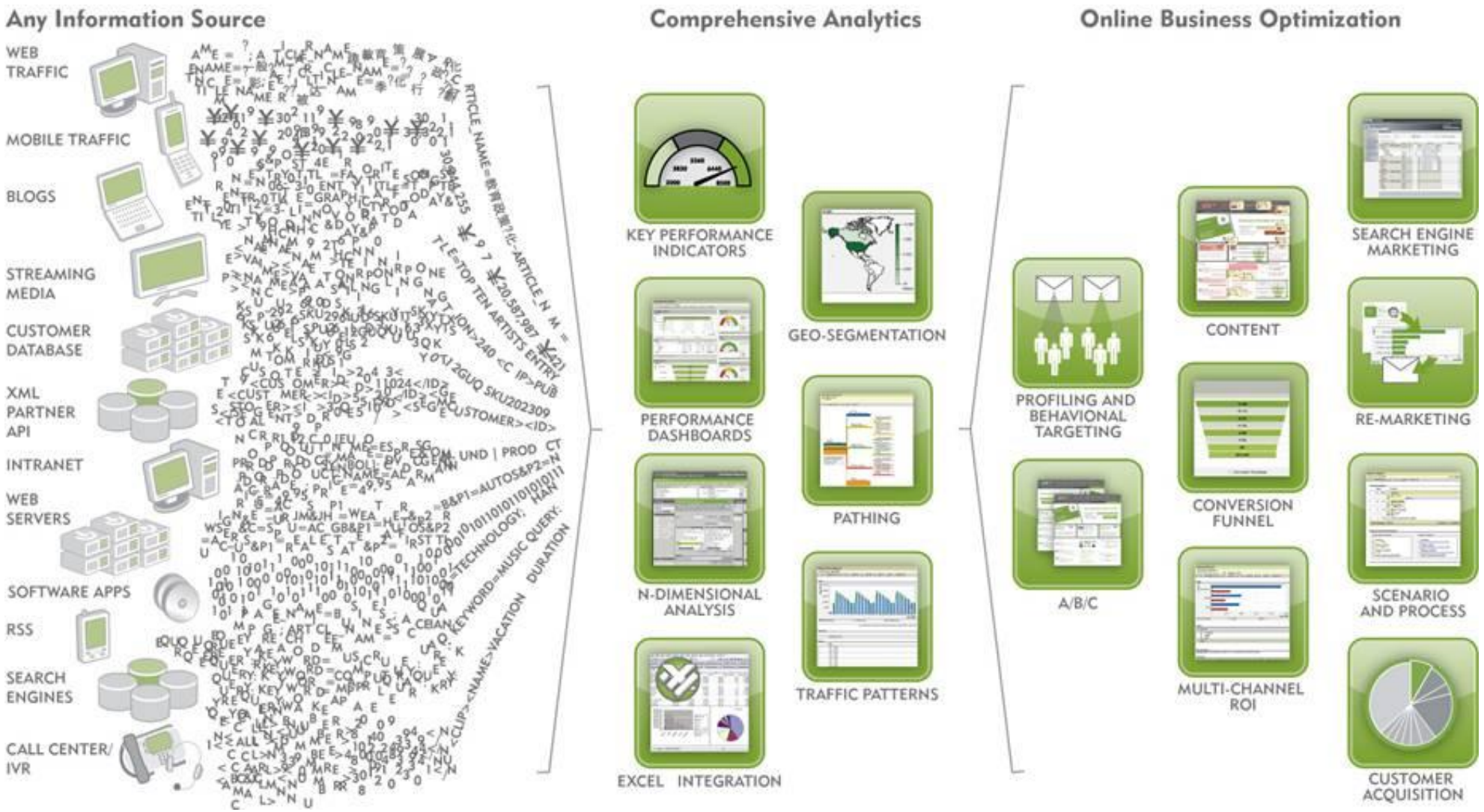
Popularity: Top 1% of lookups

: facts or information used usually to calculate, analyze, or plan something

: information that is produced or stored by a computer

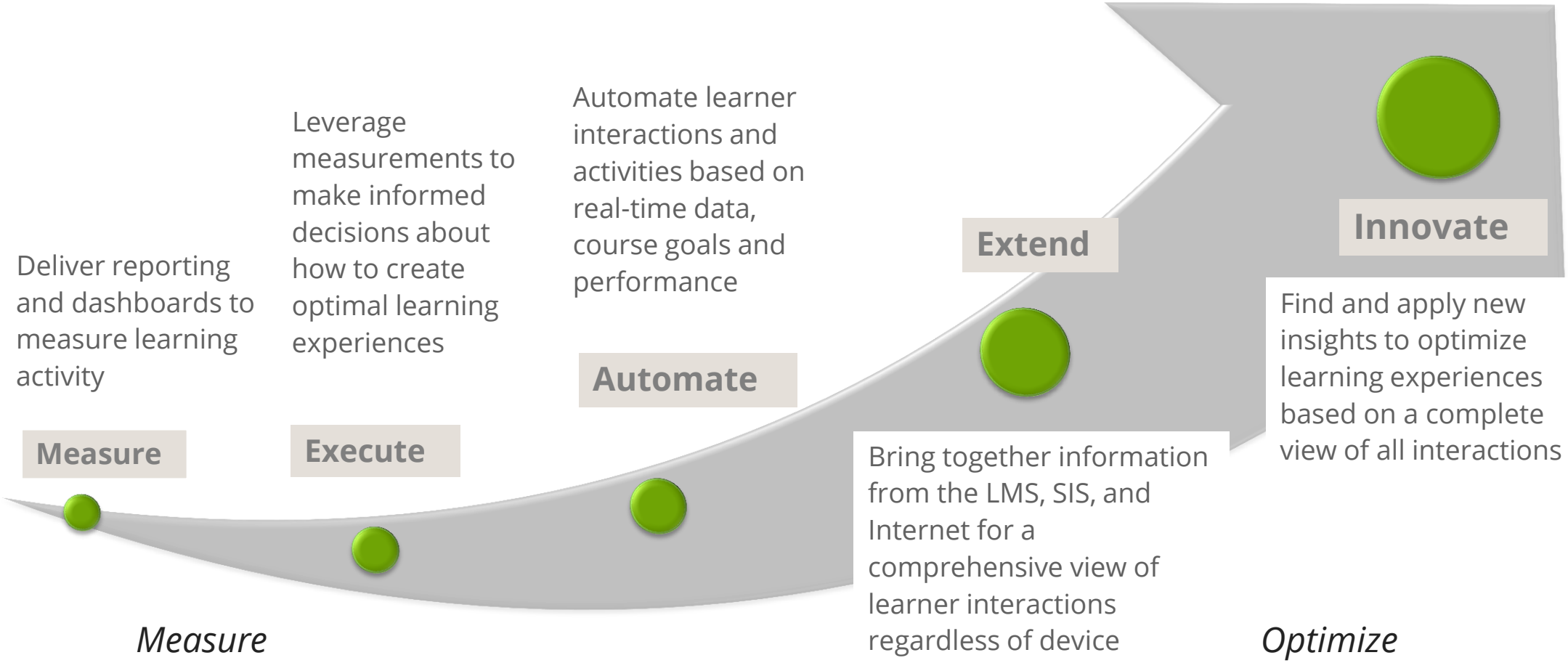
Source: Merriam-Webster's Learner's Dictionary

Analytics Bring Order and Meaning to Data



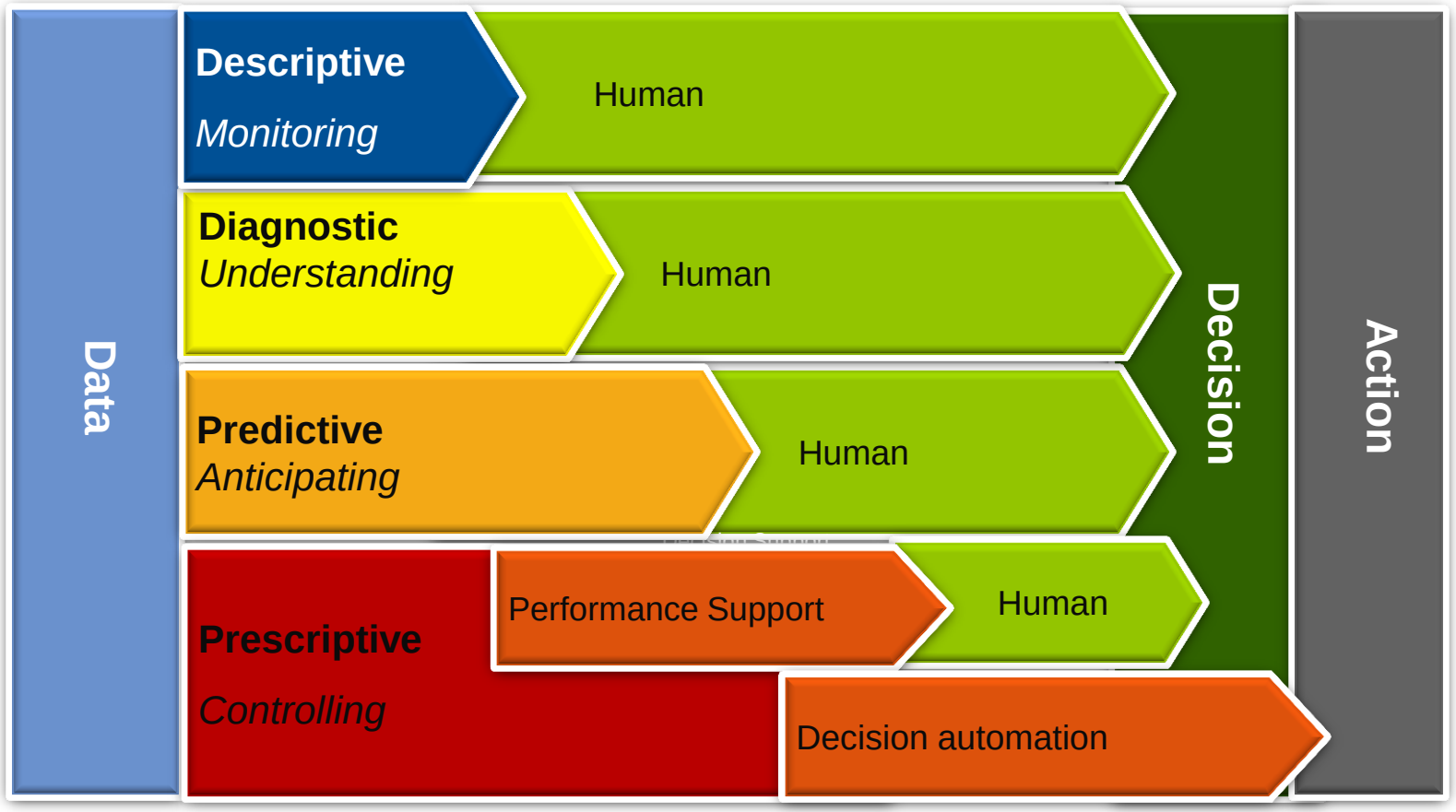
HOBSONS

Analytics Enable Learning Optimization



HOBSONS

The Analytics Ecosystem (Gartner, 2016)



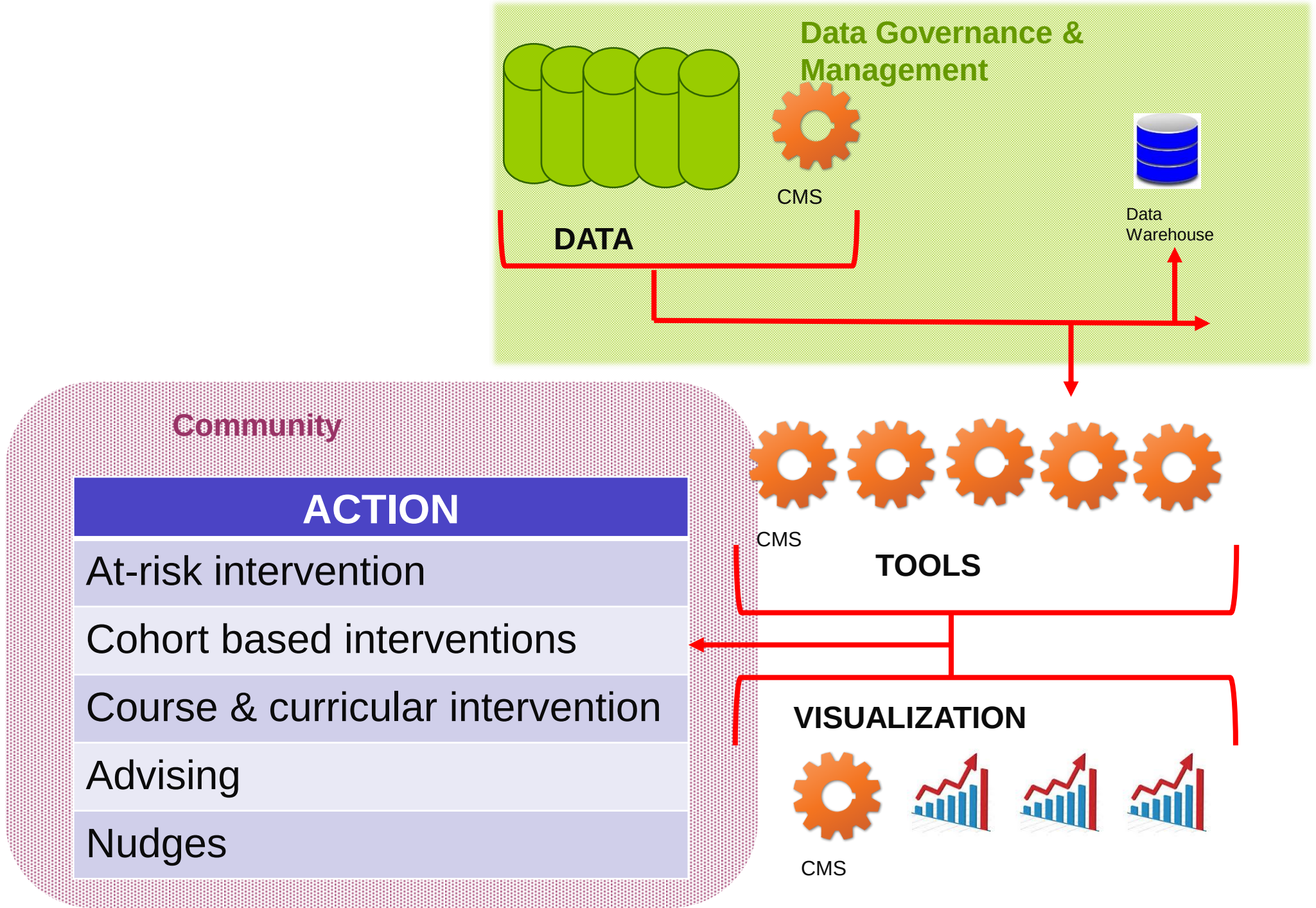
From Information to Action (Gartner, 2016)

Descriptive	*Diagnostic*	*Predictive*	*Prescriptive*
What Is Happening?	Why Did "X" Happen	What IS GOING to Happen?	How Can We Make "X" Happen?

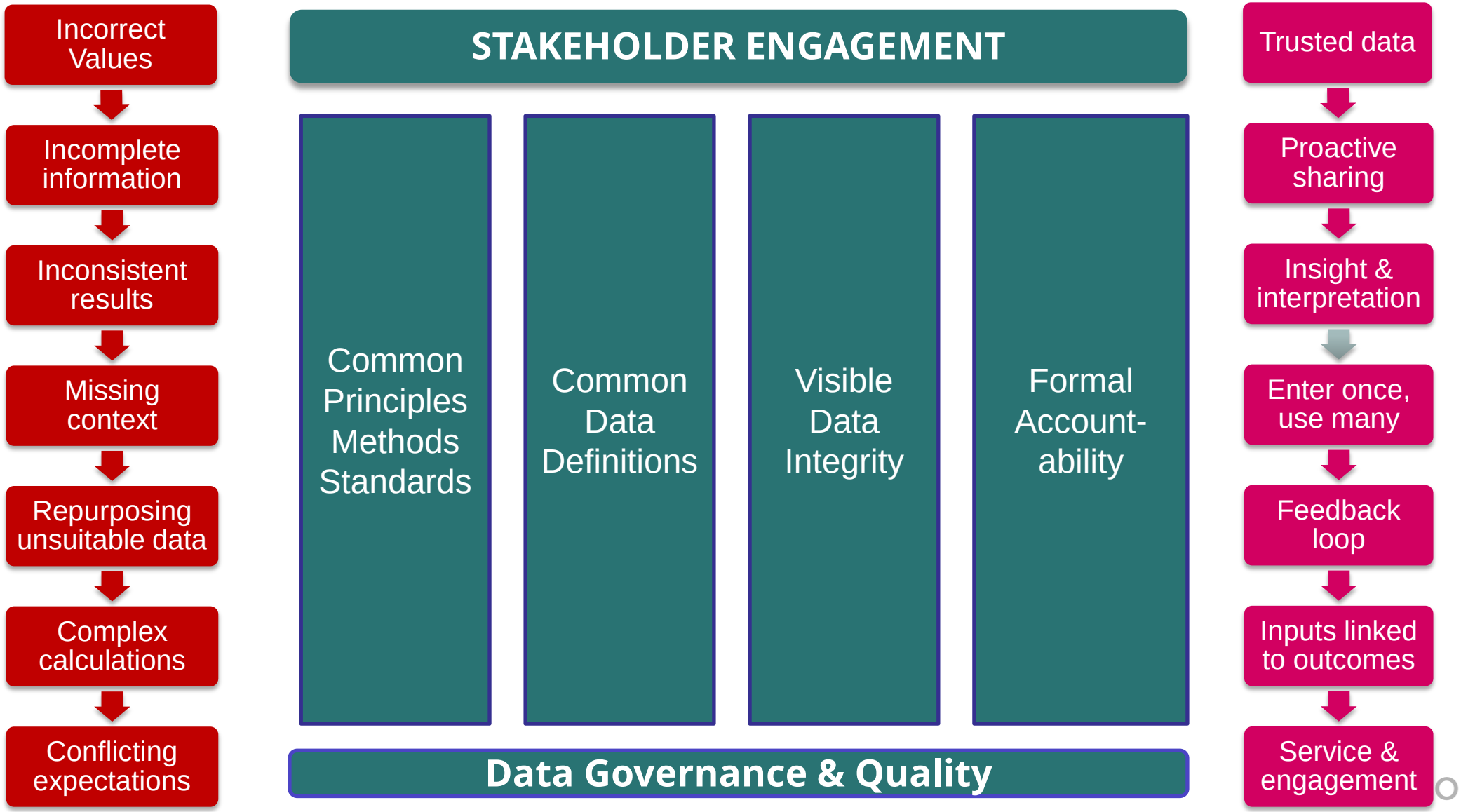
Analytics: Simple Arithmetics, Reporting/Dashboards, Common BI Platforms, "Familiar"

Advanced Analytics: Data Science, Business Problem Solving, Mathematics-Based Tools, "Creepy"

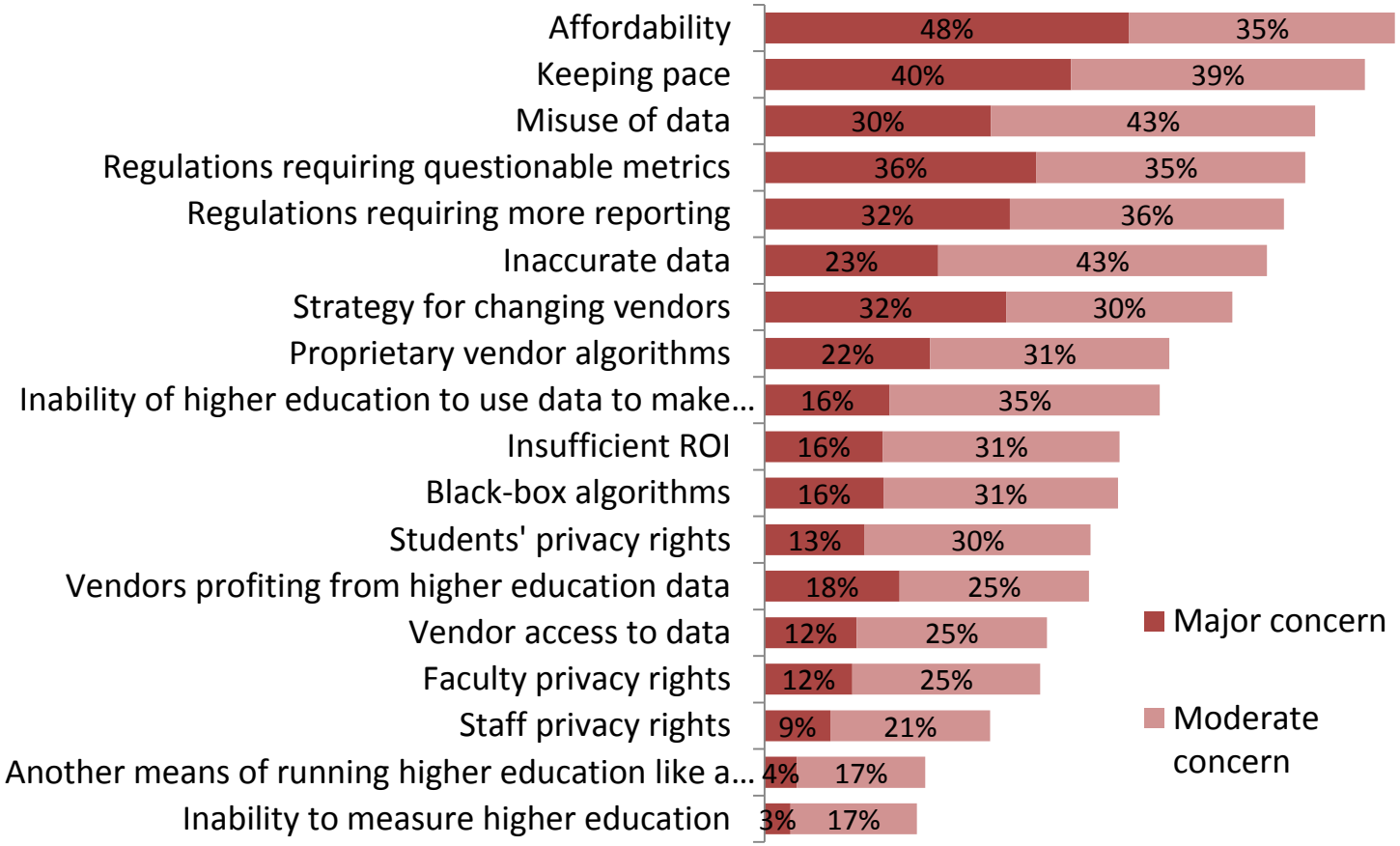
Where Does the Data Come From? An .edu example


Data Governance & Management
CMS
DATA
Data Warehouse
Community
ACTION
At-risk intervention
Cohort based interventions
Course & curricular intervention
Advising
Nudges
CMS
TOOLS
VISUALIZATION
CMS

Target States, and How to Get There



Major Concerns About Analytics in .EDU



ECAR 2016 Learning Analytics in Higher Education

Current State of Analytics in Learning and Development

- Use of analytics in business settings tends to focus on strategic market development, revenue forecast, product and services roadmaps, content management and transactions.
- HR organizations can use analytics for tactical compliance tracking to content licensing and strategic talent development
- L&D may feature compliance reporting, employee recruitment, sales training, customer support, course management, content management.
- L&D has emerging opportunities for leveraging BI and interactive sensor based tools and activity stream data collection to support decision-making, e.g. “fitbits for learning”
- IoT represents emergent opportunities for re-thinking data sources.

Breakout: Barriers and Opportunities

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CHATBREAK

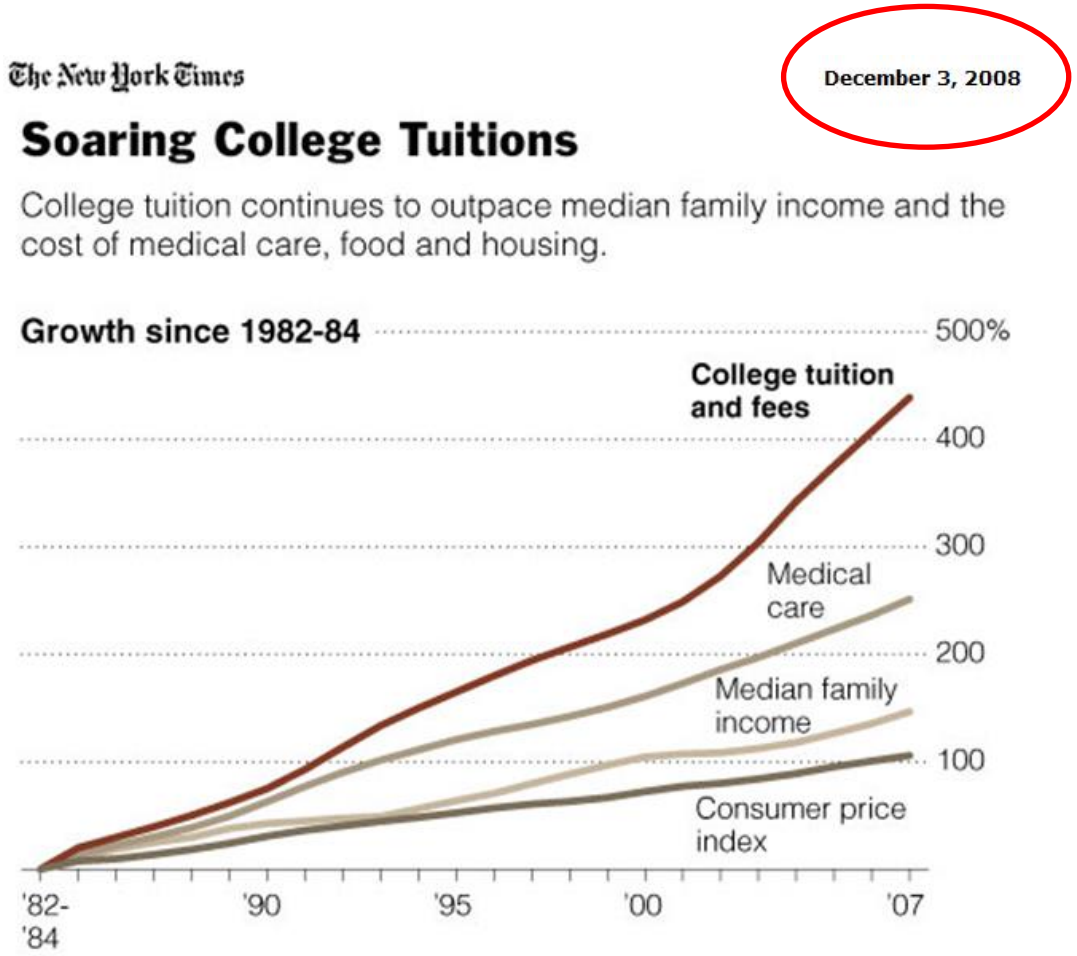
- What are some of the opportunities you see for working more actively toward data-enabled decision-making using data analytics in your organization?

- What are some of the barriers you anticipate in moving toward a culture of data in your organization as you move forward?

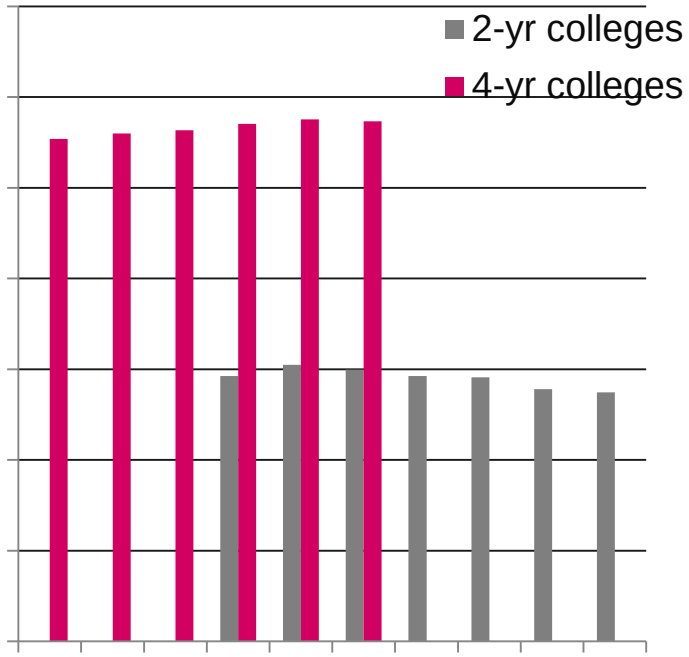
Use Case: PAR Framework

HOBSONS

Costs and Completion Rates



Graduation rates at 150% of time



Cohort year

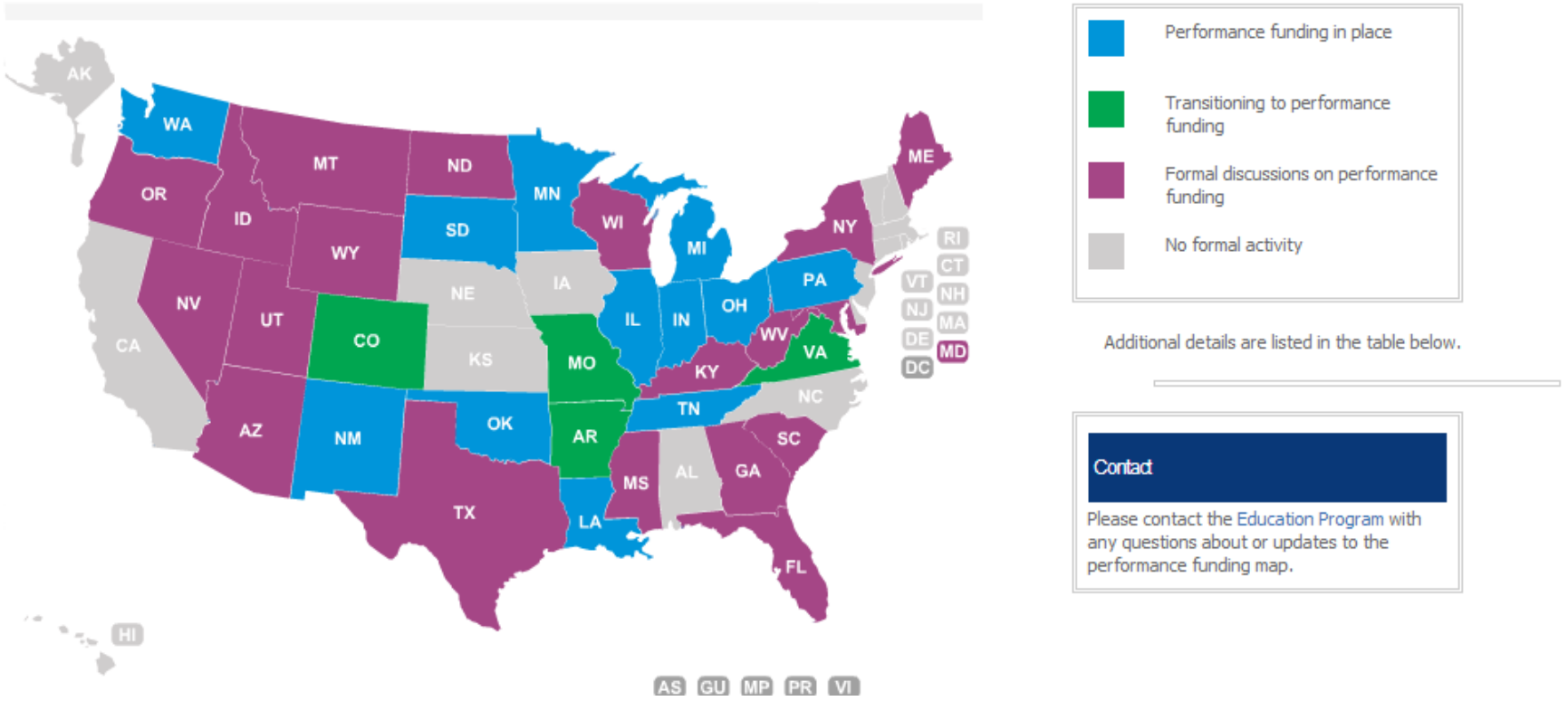
Source: New York Times; NCES

Performance Based Funding

Performance Funding for Higher Education

February 2013

Typically, colleges receive state funding based on how many full-time equivalent students are enrolled at the beginning of the semester. That model provides incentives for colleges to enroll students—but not necessarily to help them graduate. Many states are reconsidering the enrollment-based funding model and instead are allocating money to colleges based on the number of students who complete courses and degrees.



http://www.ncsl.org/issues-research/educ/performance-funding.aspx

Are You "Data-Ready"?

College Affordability and Transparency Center

College Scorecard

College Scorecards in the U.S. Department of Education's College Affordability and Transparency Center make it easier for you to search for a college that is a good fit for you. You can use the College Scorecard to find out more about a college's affordability and value so you can make more informed decisions about which college to attend.

To start, enter the name of a college of interest to you or select factors that are important in your college search. You can find scorecards for colleges based on factors such as programs or majors offered, location, and enrollment size.

TYPE OF COLLEGE ▲

Search Institution

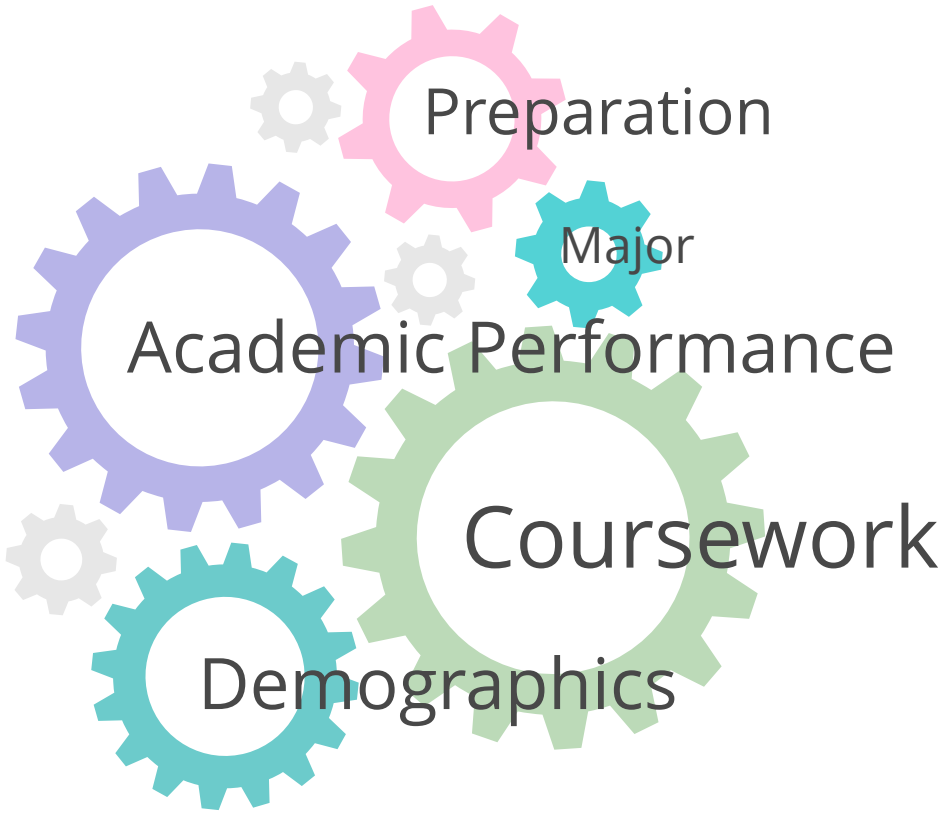
Search for a college by name...

Choose from the following options to begin searching for colleges of interest to you by:

College Location | Type of College | My Area of Interest | Popular Criteria

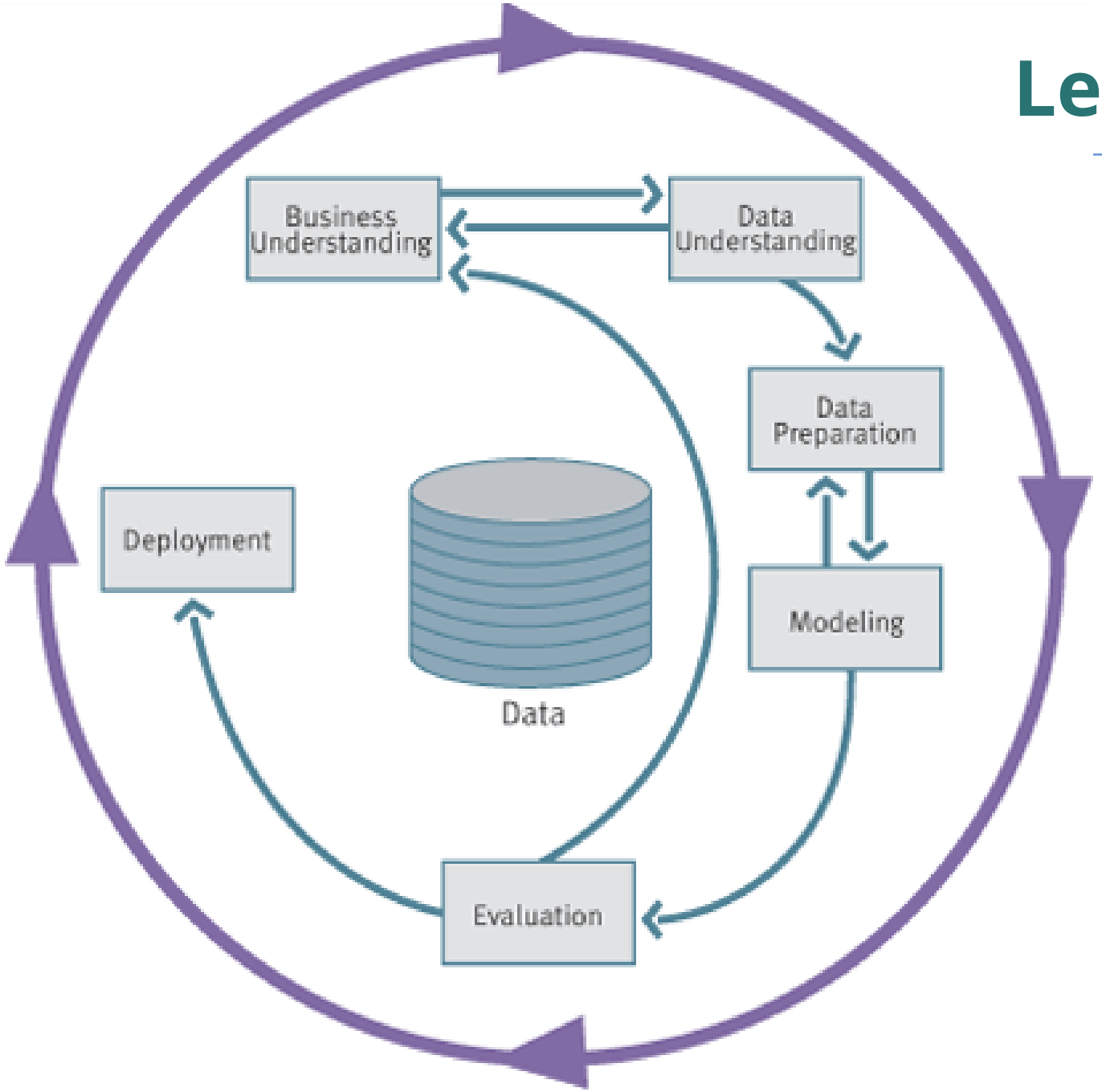
http://www.whitehouse.gov/issues/education/higher-education/college-score-card

Mitigating Risks to Student Success



PAR developed a single federated data set and applied predictive analytical techniques to see if we could find students at risk.

We used historical data to determine patterns of risk, then created models to find students at risk of dropping out. With this information we and then and to find variables likely to cause risks and can then go about removing those risks.



Lesson Learned:

80% of All Analysis is Data Understanding

PAR Common Data Definitions Enable Scale and Adoption

Student Demographics

- Gender
- Race
- Prior credits
- Permanent resident zip code
- High school information
- Transfer GPA
- Student Type

Course Information

- Course location
- Subject
- Course number
- Section
- Start date / End date
- Initial grade / Final grade
- Delivery mode
- Instructor status
- Course credit

Course Catalog

- Subject
- Course number
- Subject (long)
- Course title
- Course description
- Credit range

Lookup Tables

- Credential types offered
- Course enrollment periods
- Student types
- Instructor status
- Delivery modes
- Grade codes
- Institution characteristics

Student Financials

- FAFSA on file
- FAFSA file date
- Pell received / awarded
- Pell date

Student Academic Progress

- Current major / CIP
- Earned credential / CIP

Open Source and Available

A8 Cumulative Transfer Credits Earned

	A	
1	Name	Functional Definition
2	AutoCredential	Indicates if earned credential was awarded
3	CIP	Student's declared program of study per s Program Code/CIP (created by the U.S. D Education Statistics), for up to 5 concurre PAR assigns a code for Undeclared.
4	Credential Earned	Credential earned by student, for up to period. May be different or in addition
5	Credential Earned CIP	CIP Code associated with the student's during the reporting time period.
6	Credential Earned Date	Date the credential was earned for up period.
7	Credential Sought	Credential pursued by student during sought concurrently.
8	Cumulative Transfer Credits Earned After Par Start Date	Cumulative total number of accepte Student Start Date. Accepted mea credit at the current institution but applied toward the student's speci
9	Cumulative Transfer Credits Earned Before Par Start Date	Cumulative total number of accep Student Start Date. Accepted m credit at the current institution b applied toward the student's spe
10	Cumulative Transfer Credits Earned Unspecified Date	Cumulative total number of acce Student Start Date. Accepted credit at the current institution applied toward the student's s
11	FAFSA Date	Date of student's FAFSA filing "Yes."
12	FAFSA Indicator	Indicator if a student's FAFSA institution for the reporting t
13	Pell Grant Awarded Date	Date of student's Pell Grant
14	Pell Grant Awarded Indicator	Indicator if the student was
15	Pell Grant Received Date	Date of student's Pell Grant
16	Pell Grant Received Indicator	Indicator if the student rec
17	Student Home Location ID	Applies to institutional sys student home location fro courses taken in other loc
	Term Code	A code associated with a enrollment period as def

Definitions from Predictive Analytics Reporting Framework

Definitions from Predictive Analytics Reporting Framework

PARFRAMEWORK

Glossary of Definitions

Academic Cycle

The stages of course or program completion along the horizontal/top dimension of the Student Success Matrix which indicates at what part of the academic cycle – connection, entry, progress, completion – the support occurs or is directed. The academic cycle can apply to a single course, a student program, or a student's entire experience at an institution. A given student support can be relevant to only one part of the cycle or it may cross several or all points in the cycle.

Predictor Category

The left column of the Student Success Matrix organizes predictors of student success/student risk into categories or rows. Predictors come from the student success literature (indicated by italics), from findings at PAR member institutions (noted in standard font), or from PAR Framework findings to date (indicated by bold text). Some supports may address more than one predictor category and may appear in multiple rows. Currently, there are seven categories. As PAR Framework partners and other institutions complete the matrix, additional categories may be added.

Student Success Matrix Narrative

A brief description of each support or predictor entry in the Student Success Matrix, that provides detail for the corresponding abbreviated labels or short titles used within the matrix itself. References to available risk metrics associated with predictors or outcome measurements associated with actions are included in the narrative. The narratives are usually provided as a list that accompanies the matrix.

Support Focus

Supports may be directed to a particular group of students (targeted focus) or may be applied to all students (general focus). A superscript G is used to denote general focus in the Student Success Matrix; a superscript T denotes targeted focus.

Support or Student Support

Any program, service, offering, action, intervention or policy at an institution that supports or assists students in the successful

	E	F	G
	Functional Areas	Copied From Term id	Copied From Version
	Student Success Matrix,Student Success Matrix-Academic Cycle,Student Success Matrix-Overarching Definitions	27259	3
	Student Success Matrix,Student Success Matrix-Predictor Categories	27263	3
	Student Success Matrix,Student Success Matrix-Academic Cycle	27271	3
	Student Success Matrix,Student Success Matrix-Academic Cycle	27268	3
	Student Success Matrix,Student Success Matrix-Predictor Categories	27266	3
	Student Success Matrix,Student Success Matrix-Academic Cycle	27269	3
	Student Success Matrix,Student Success Matrix-Support Focus	27273	3
	Student Success Matrix,Student Success Matrix-Predictor Categories	27267	3
	Student Success Matrix,Student Success Matrix-Predictor Categories	27262	3

To Download:

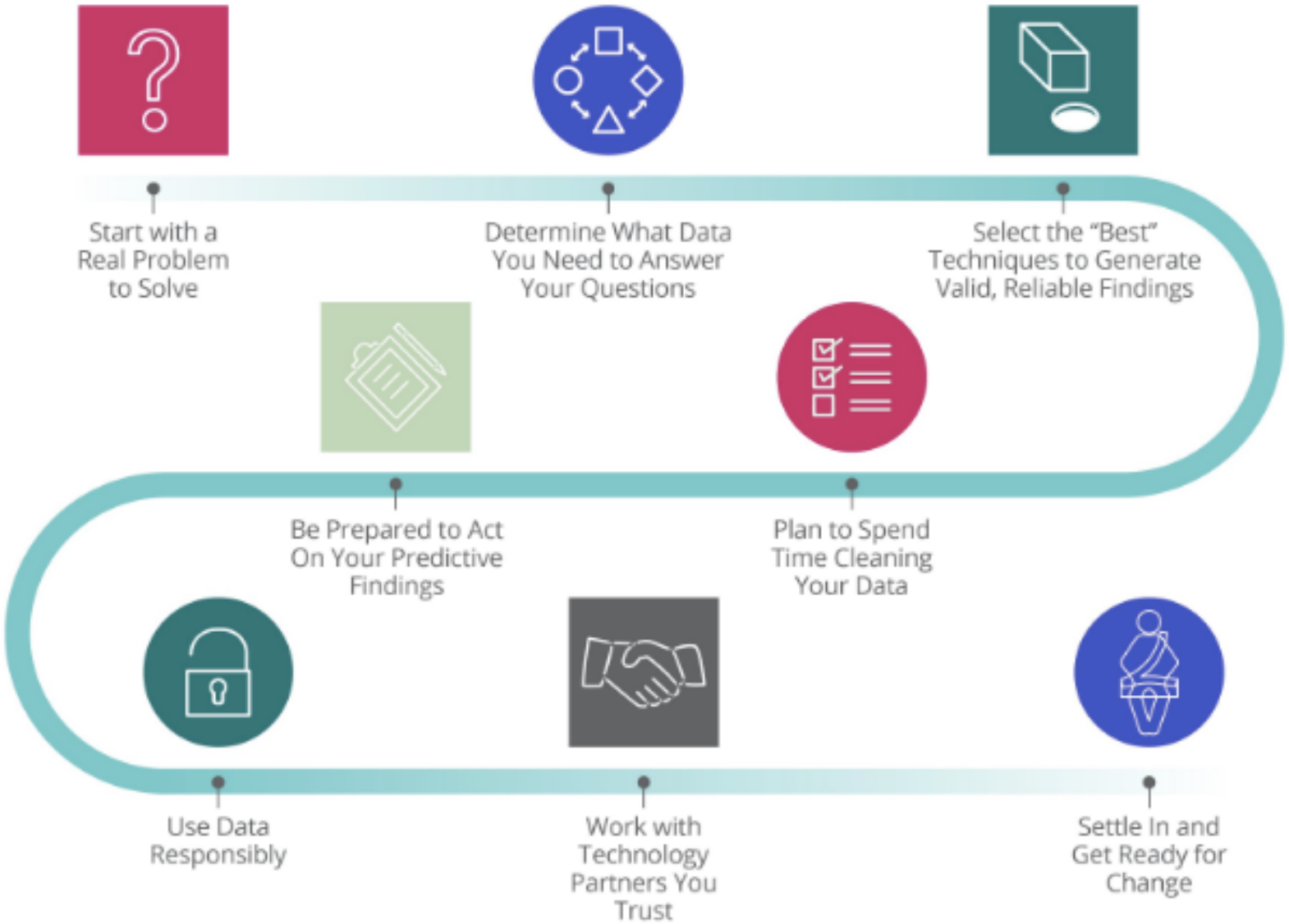
https://community.datacookbook.com/public/institutions/par

The PAR Framework data definitions are licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License

Discussion

HOBSONS

How to Use Predictive Analytics for Student Success



START WITH A REAL PROBLEM TO SOLVE

Focus on solving a real problem (e.g. What causes students to drop out? Are these causes common in all settings?) or finding a new opportunity (e.g. What motivates students to complete courses faster?).

Your problem statements and queries will help you focus on finding data sources and selecting techniques for analyses that are likely to reveal the patterns you seek.

DETERMINE DATA YOU NEED TO ANSWER YOUR QUESTIONS

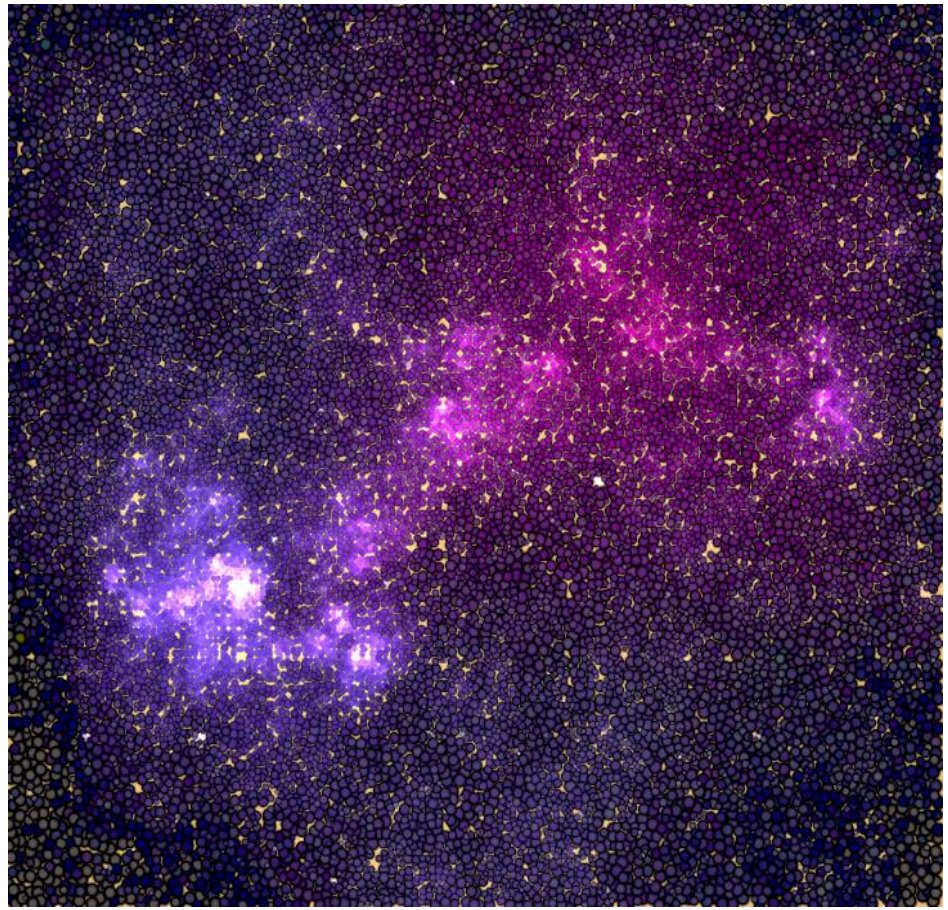
How will you know which is the right analytics solution to help you address your needs?

Where do you want to start?

Where will predictive analytics give you the power to anticipate trends, opportunities, problems, risks?

How will you know who to believe?

You owe it to yourself to be informed about the wide range of possibilities, methodologies, platforms and techniques.



SELECT THE "BEST" TECHNIQUES TO GENERATE VALID, RELIABLE FINDINGS

Choose the techniques likely to yield results for the kinds of predictions you wants to make.

Selecting the most appropriate techniques for conducting predictive analyses has a lot to do with knowing the questions that the predictions will help answer, or the performance problems to be solved.

Don't force your research design to fit the platform; select the platform you need for achieving the goals you want to achieve.

PLAN TO SPEND TIME CLEANING YOUR DATA

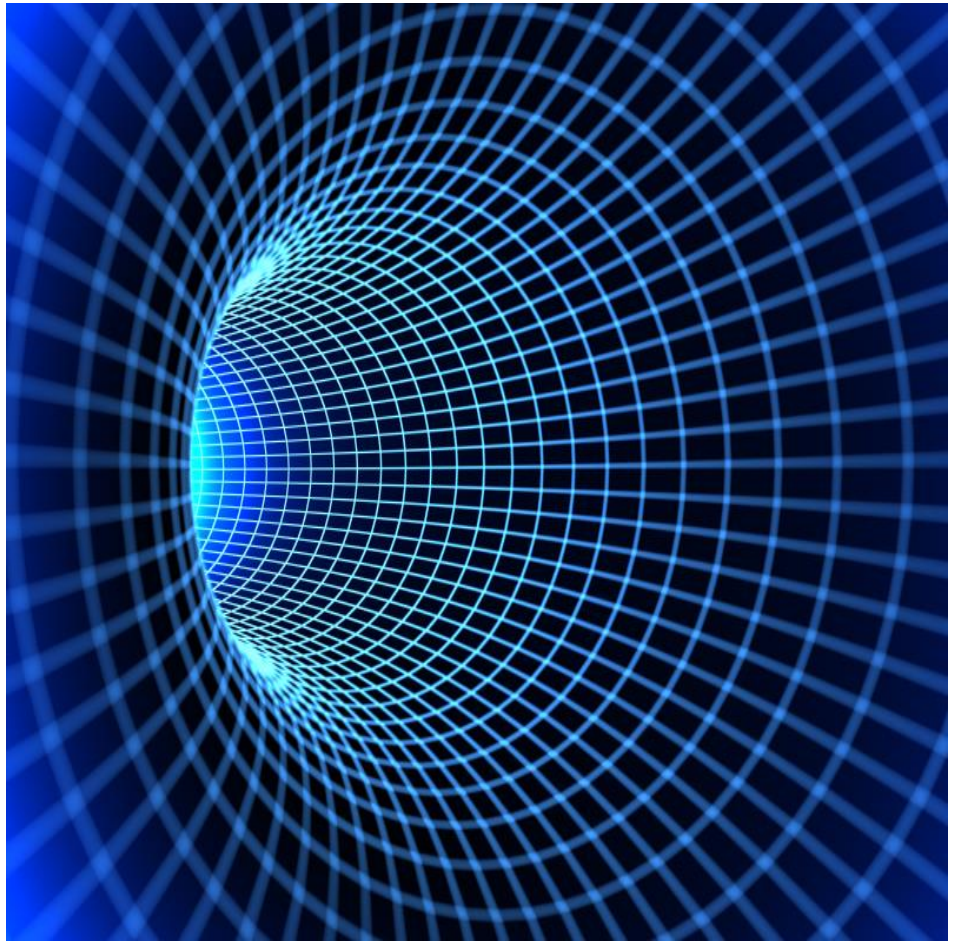
Up to 80 percent of a data project's efforts are spent on data cleansing and quality assurance preparation.

You have to ask the right research questions, make sure that data coming from a variety of sources is cleansed, normed and refined, and conduct quality assurance evaluations to yield valid, reliable results.

BE PREPARED TO ACT ON YOUR PREDICTIVE FINDINGS

Simply knowing who is at risk isn’t enough. Predictions must be actionable.

Predictions without action don't really matter very much to anyone.



USE DATA RESPONSIBLY

Predictive analytics could be used to profile students of varying predicted skill levels into programs of study based upon test results, rather than on personal passions and interest.

Data decision-making represents opportunities to support students with targeted interventions and services tailored to their uses and preferences.

WORK WITH TECHNOLOGY PARTNERS YOU TRUST

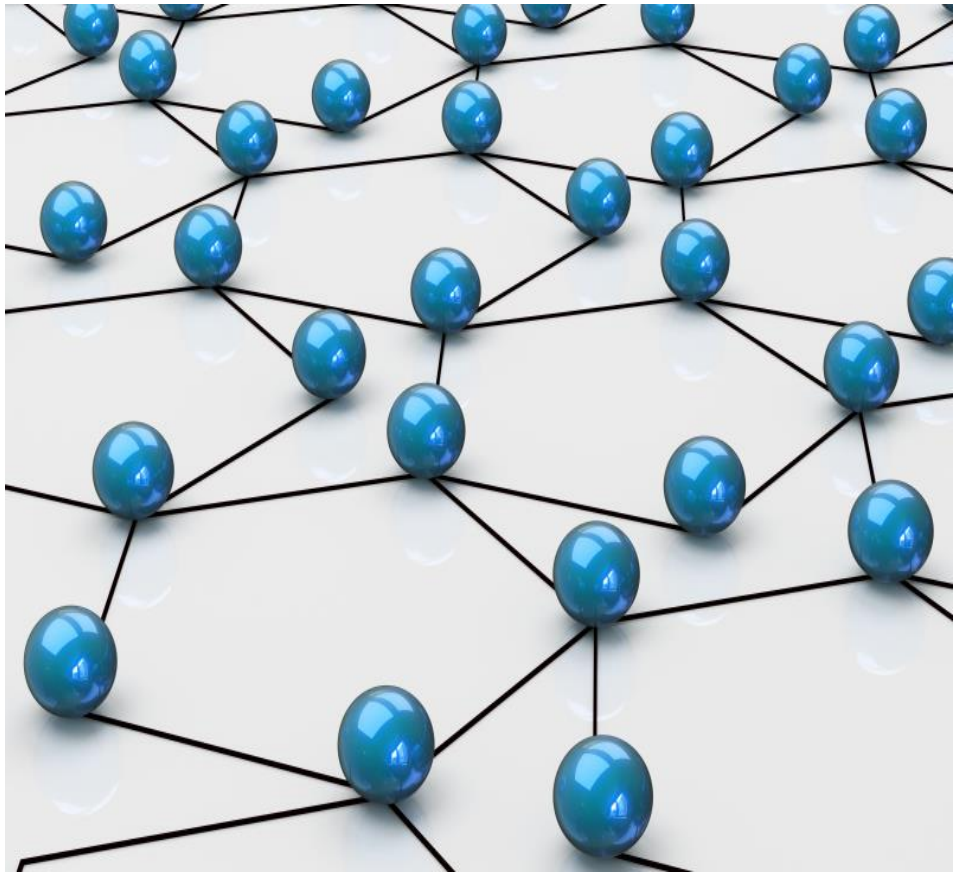
Despite the collective crazy hope that predictive analytics can be a "Magic 8-Ball for Learning Success," there simply is no single one-size fits all predictive analytics solution.

THINGS TO ASK YOUR ANALYTICS PROVIDER

- Have them describe methods and models.
- What will the platform actually give you the power to do?
- How are variables defined?
- How are data sampled for analyses?
- What kinds of quality assurance processes are in place to make sure that data has been cleaned and normalized?
- What do you know about the data warehouse?
- Which analyses are being used?
- What protocols for consistent reliable repeatable analysis exist?
- What kinds of licensing agreements will be in place?
- Who will be able to actually use the platform?
- What kinds of privacy considerations are being used?
- How is data access and data governance handled?

SETTLE IN AND GET READY FOR CHANGE

Data readiness means knowing what you want to do and paying attention to what it actually takes to get things done.



Q & A

HOBSONS

Thank you for your interest

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