Orientation to Session

- Today's remarks are aimed at what we as educational professional can do differently in the service of student success.
- Data and analytics are going to play an important role in navigating between and among pathways, platforms and solutions for learning in this always online world.
- A national post-secondary massive data use case will offer context, proof points and exemplars to share some "lessons learned."
- Radical Vision and seeing the world anew.

PAR FRAMEWORK

Radical Vision: Seeing the World Anew

Beth Davis
Chief Executive Officer
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September 26, 2015

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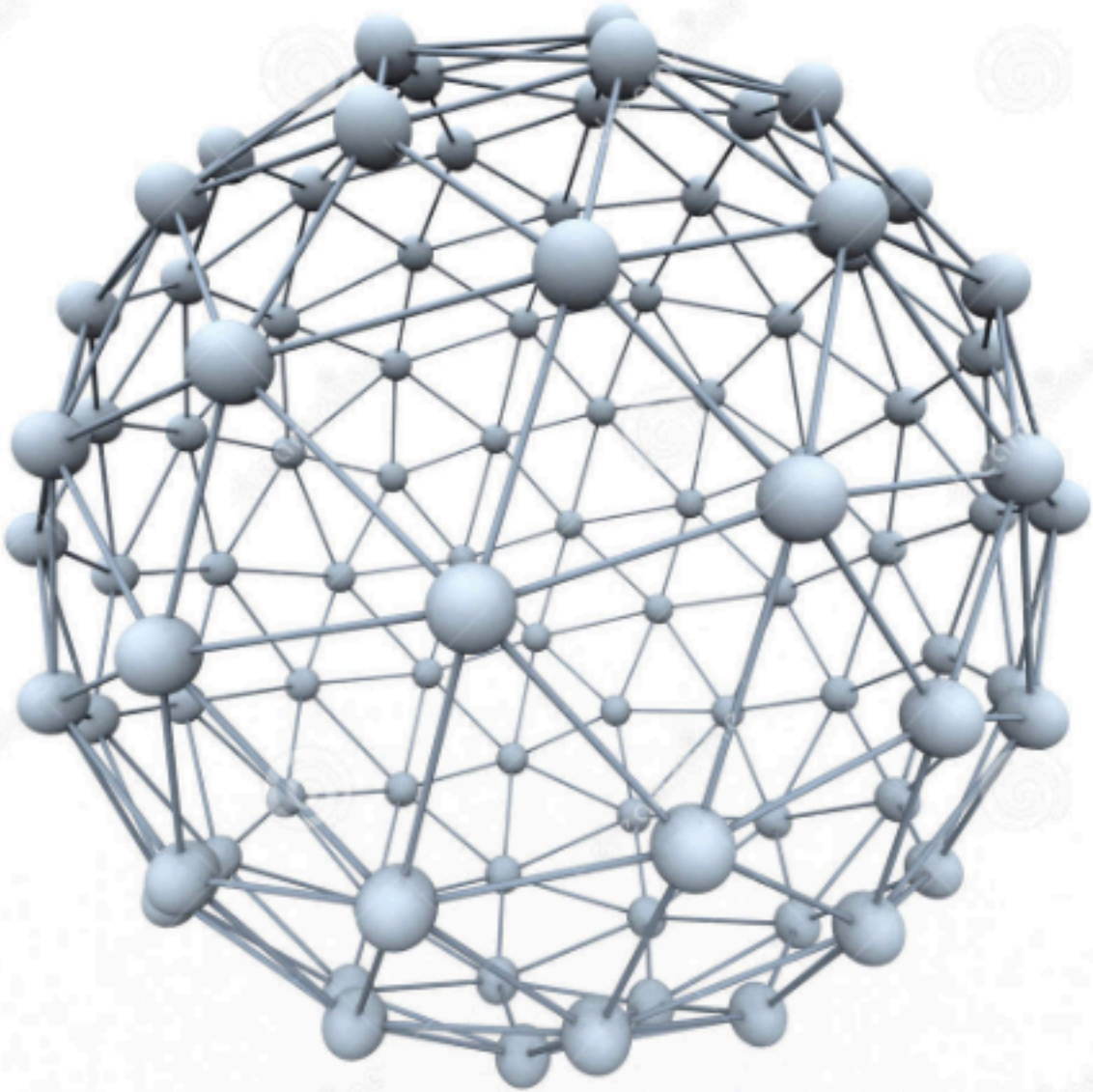

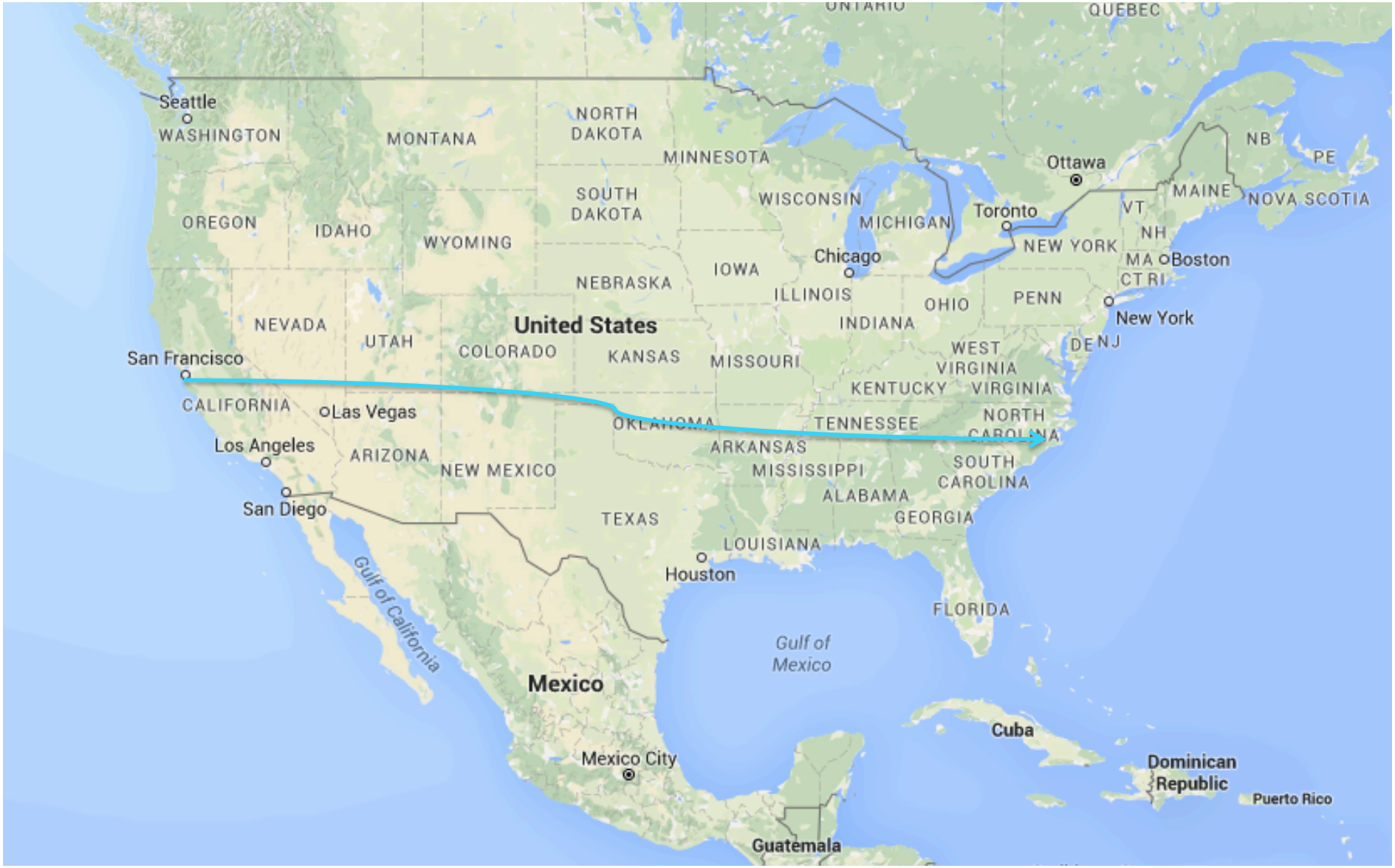
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MICHIGAN
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NEW MEXICO
ARKANSAS
MISSISSIPPI
SOUTH CAROLINA
San Diego
ALABAMA
GEORGIA
TEXAS
LOUISIANA
Houston
Gulf of California
FLORIDA
Gulf of Mexico
Mexico
Cuba
Mexico City
Dominican Republic
Puerto Rico
Guatemala

Ten Years from Now,
When We Look Back at
How This Era of Big Data Evolved...

We Will Be Stunned at How
Uninformed We Used to Be
When We Made Decisions

– Billy Bosworth, DataStax CEO (2015)

@KPCB

http://www.slideshare.net/kleinerperkins/internet-trends-v1

Data is Everywhere

JAN 2015

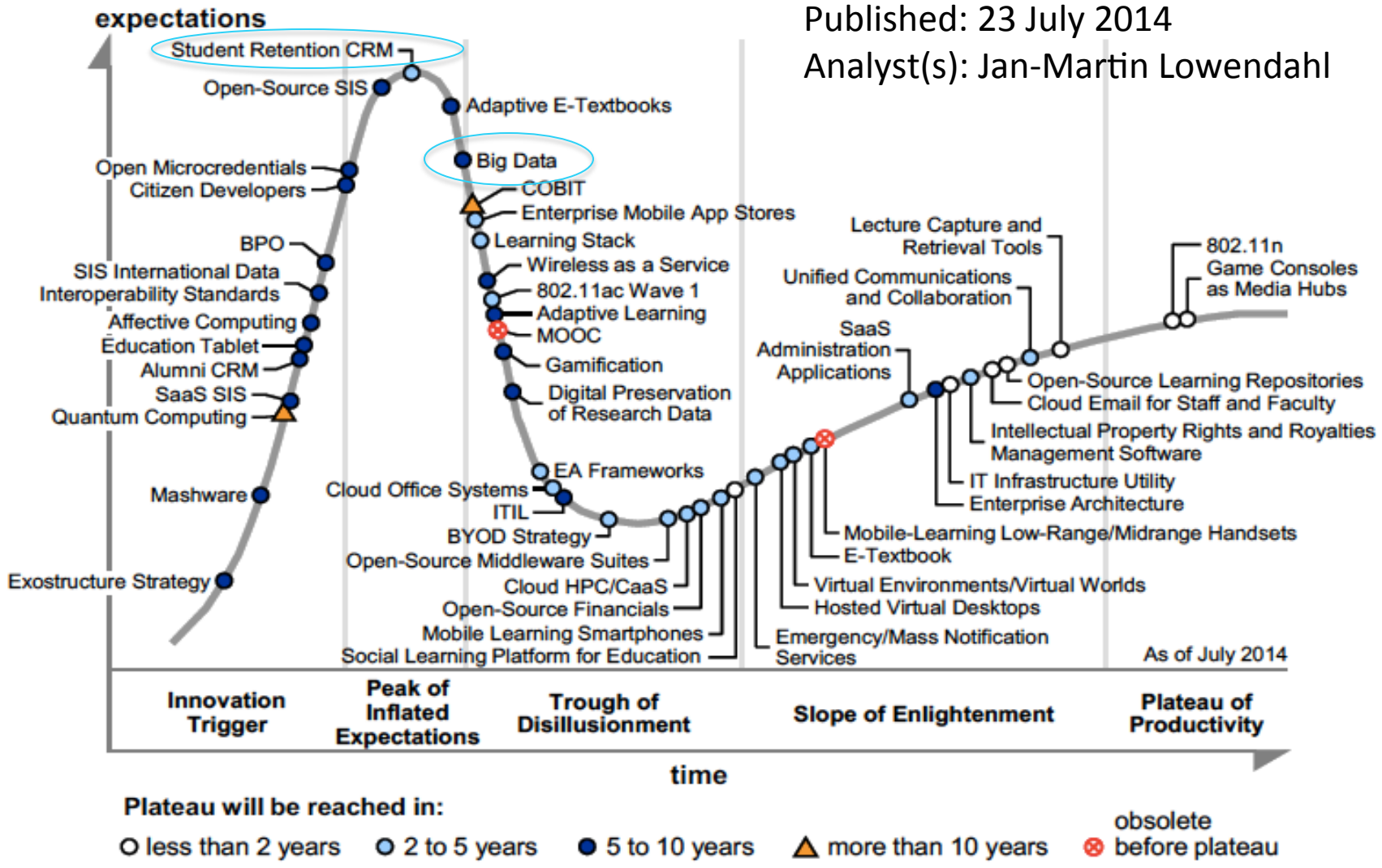
GLOBAL DIGITAL SNAPSHOT

A SNAPSHOT OF THE WORLD'S KEY DIGITAL STATISTICAL INDICATORS

TOTAL POPULATION	ACTIVE INTERNET USERS	ACTIVE SOCIAL MEDIA ACCOUNTS	UNIQUE MOBILE USERS	ACTIVE MOBILE SOCIAL ACCOUNTS
7.210 BILLION	3.010 BILLION	2.078 BILLION	3.649 BILLION	1.685 BILLION
URBANISATION: 53%	PENETRATION: 42%	PENETRATION: 29%	PENETRATION: 51%	PENETRATION: 23%
FIGURE REPRESENTS TOTAL GLOBAL POPULATION, INCLUDING CHILDREN	*FIGURE INCLUDES ACCESS VIA FIXED AND MOBILE CONNECTIONS*	*FIGURE REPRESENTS ACTIVE USER ACCOUNTS, NOT UNIQUE USERS*	*FIGURE REPRESENTS UNIQUE MOBILE PHONE USERS*	*FIGURE REPRESENTS ACTIVE USER ACCOUNTS, NOT UNIQUE USERS*

Figure 1. Hype Cycle for Education, 2014

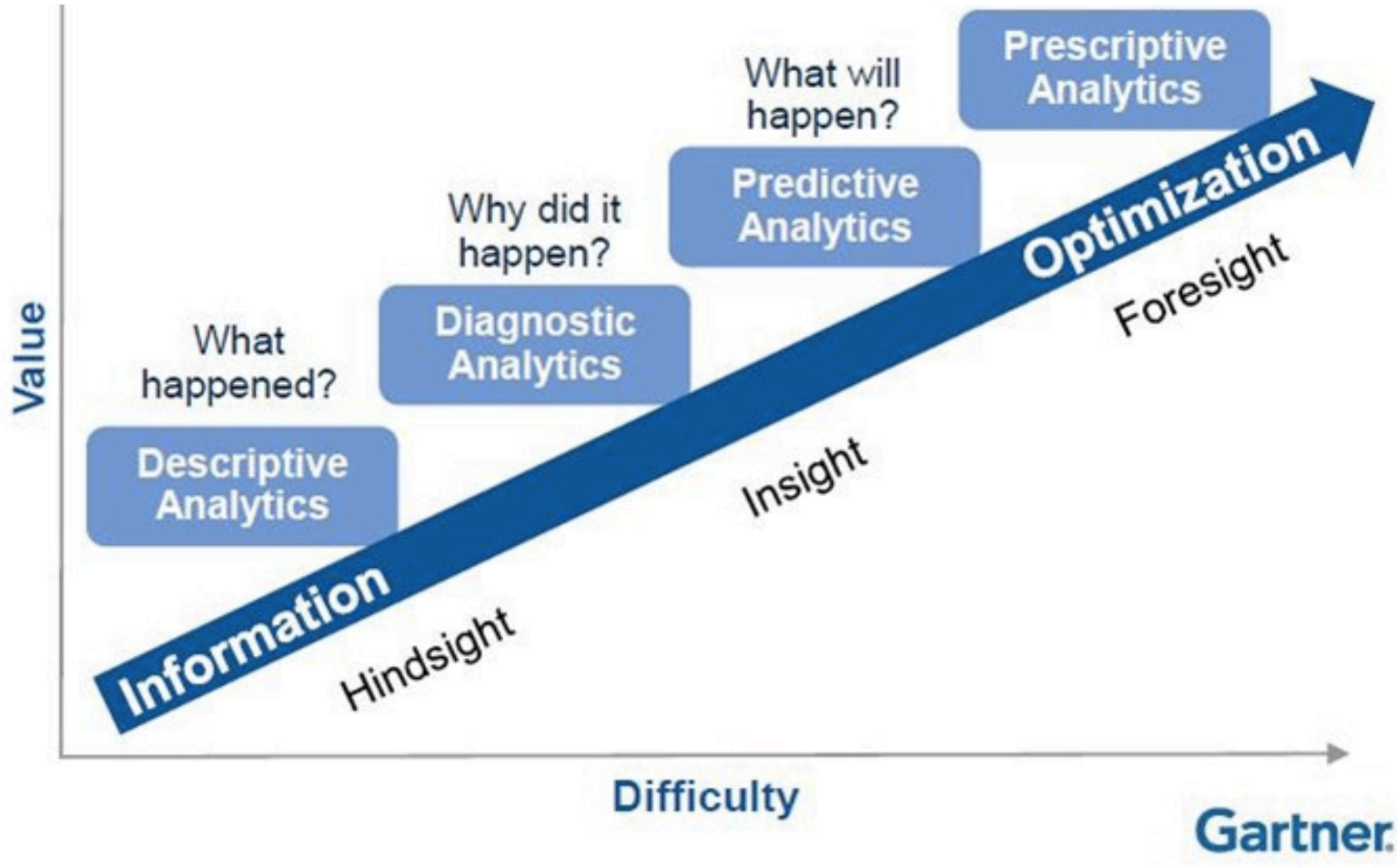
Hype Cycle for Education, 2014
Published: 23 July 2014
Analyst(s): Jan-Martin Lowendahl



Source: Gartner (July 2014)

Gartner, Inc. | G00263196

From Hindsight to Foresight



PAR
FRAMEWORK

Driving student success

via Analytics, Interventions, Measurement, and Benchmarks

PAR Framework

- Collaborative, member-driven, non-profit analytics as a service provider.
- Comprehensive approach to student success
  - Cross institutional **benchmarks**
  - Institutional specific **predictive models**
  - Individual student-level **watch lists** for retention & academic success
  - Actionable framework for **evaluating campus intervention programs** and **measuring impact**

Big Data as it relates to PAR

>77

commonly defined, openly published data definitions used to explore specific dimensions and promising patterns of risk and retention.

Big Data as it relates to PAR

>350

unique campuses represented

Big Data as it relates to PAR

>1,700

student interventions mapped using publically available, creative-commons licensed SSM[x]

Big Data as it relates to PAR

>2,500

downloads PAR data definitions

Big Data as it relates to PAR

>2.4 Million

Students in dataset

Big Data as it relates to PAR

>25 Million

Course records aggregated,
in a single federated data set, developed using
common data definitions

PAR Uses Structured, Readily Available Data

Common data definitions = reusable predictive models and meaningful comparisons

Openly published via a cc license @ https://public.datacookbook.com/public/institutions/par

Common data definitions make our disparate data sources work together

"How can we study problems related to student success longitudinally and across many institutions if we're not really using the same terminology?"

Russ Little

(formerly Sinclair Community College, now a member of PAR's executive team)

Photo by: Hans Hillewaert

Common Framework for Examining Interventions

PREDICTOR CATEGORY *italics* = research literature regular = partner experience **bold**=PAR Framework findings —limited list of predictors below each category—	**CONNECTION** application to enrollment (advising to enrollment)	**ENTRY** completion of gatekeeper courses (beginning of class)	**PROGRESS** entry into program to 75% of classes complete (middle of class)	**COMPLETION** of course of study & credential w/ market value (end of class)
LEARNER CHARACTERISTICS *prior GPA; achievement beliefs; content Knowledge & skills; ...* **1st time in college**				
LEARNER BEHAVIORS attendance/log ins; *participation in orientation programs;* **withdrawals;**...engagement				
ACADEMIC INTEGRATION *participation in student learning communities; peer mentoring;...specialized program coordinators*				
SOCIAL/PSYCHOLOGICAL INTEGRATION *perceived social presence; participation in freshmen interest groups;...specialized program coordinators*				
OTHER LEARNER SUPPORT *ongoing student support services...*				
COURSE/PROGRAM CHARACTERISTICS *perceived interactivity; ...perceived utility*				
INSTRUCTOR BEHAVIORS/CHARACTERISTICS *faculty responsiveness;...perceived social presence*				

PAR Puts it All Together

- Determine students probability of failure (**predictions**)
- Determine which students respond to interventions (**uplift modeling**)
- Determine which interventions are most effective (**explanatory modeling**)
- Allocate resources accordingly (**cost benefit analysis**)

Specific Examples of Data Driven Improvements

- U of Hawaii – "Obstacle courses"
- U of Hawaii System – "15 to Finish"
- UMUC / U of Hawaii – replication of community college success prediction studies
- University of North Dakota – predictives tied to student watchlist data
- Intervention measurement at Sinclair CC and Lone Star CC

Reflections on 4 Years in the Learner Analytics Trenches

- In .edu, big data *may* be in our future, but we also need to leverage little and medium data to help drive better decision-making.
- Common data definitions are a game changer for scalable, generalizable, repeatable learner analytics.
- Predictions are of greater institutional value when tied to treatments and interventions for improvement, and intervention measurement to make sure results are being delivered.
- Infrastructure matters, but EXOSTRUCTURE matters more.

Reflections on 4 Years in the Learner Analytics Trenches

- Scale requires reliable, generalizable outcomes and measures that can be replicated in a variety of settings with a minimal amount of customization.
- Change happens when fueled by collaboration, transparency and trust.
- Data needs to matter to everyone on campus. ALL members of the higher education community are going to need to "up their game" when it come to being fluent with data-driven decision-making, from advisors to faculty to administrative staff to students.
- It takes guts, networks and shared purpose, all of us working together toward the same goal in our own unique ways to make the difference.

Getting to Where We are Going: The Map as Metaphor

"A map is a sustained attempt upon an unattainable goal, the complete comprehension by an individual on a tract of space that will be individualized into a place by that attempt."

Tim Robinson, *Interim Reports from Folding Landscapes*

Radical Vision: Seeing the World Anew

- Martin Waldseemuller (1475-1522), Matthias Ringmanan (1482 – 1511) and one of the most famous and mysterious maps in the history of cartography:
- What we can learn from this example.

Seeing the World Anew: The Radical Vision of Martin Waldseemuller's 1507 and 1516 Maps, by John W. Hessler and Chet Van Duser. http://www.tandfonline.com/doi/abs/10.1080/03085694.2013.784625

Universalis Cosmographia, 1507

http://bit.ly/1Jd9oX5

Universalis Cosmographia

A schematic vision of what the whole known world looked like.

The first representation of America on a map

It showed a large body of water to the west, but 1507 was before Western explorers found the West coast of America; how could this be known?

What – and WHO - did it take to create a holistic vision for what the world looked like?

Envisioning a new world took a village

- Explorers
- Scholars
- Documentarians
- Artists / Developers / Producers
- Librarians
- Money Lenders
- Change Agents

The Metaverse Roadmap (2009)

"What happens when video games meets Web 2.0? When virtual worlds meet geospatial maps of the planet? When simulations get real and life and business go virtual? When you use a virtual earth to navigate the physical earth, and your avatar becomes your online agent? What happens is the Metaverse." (p.3)

http://metaverseroadmap.org/MetaverseRoadmapOverview.pdf

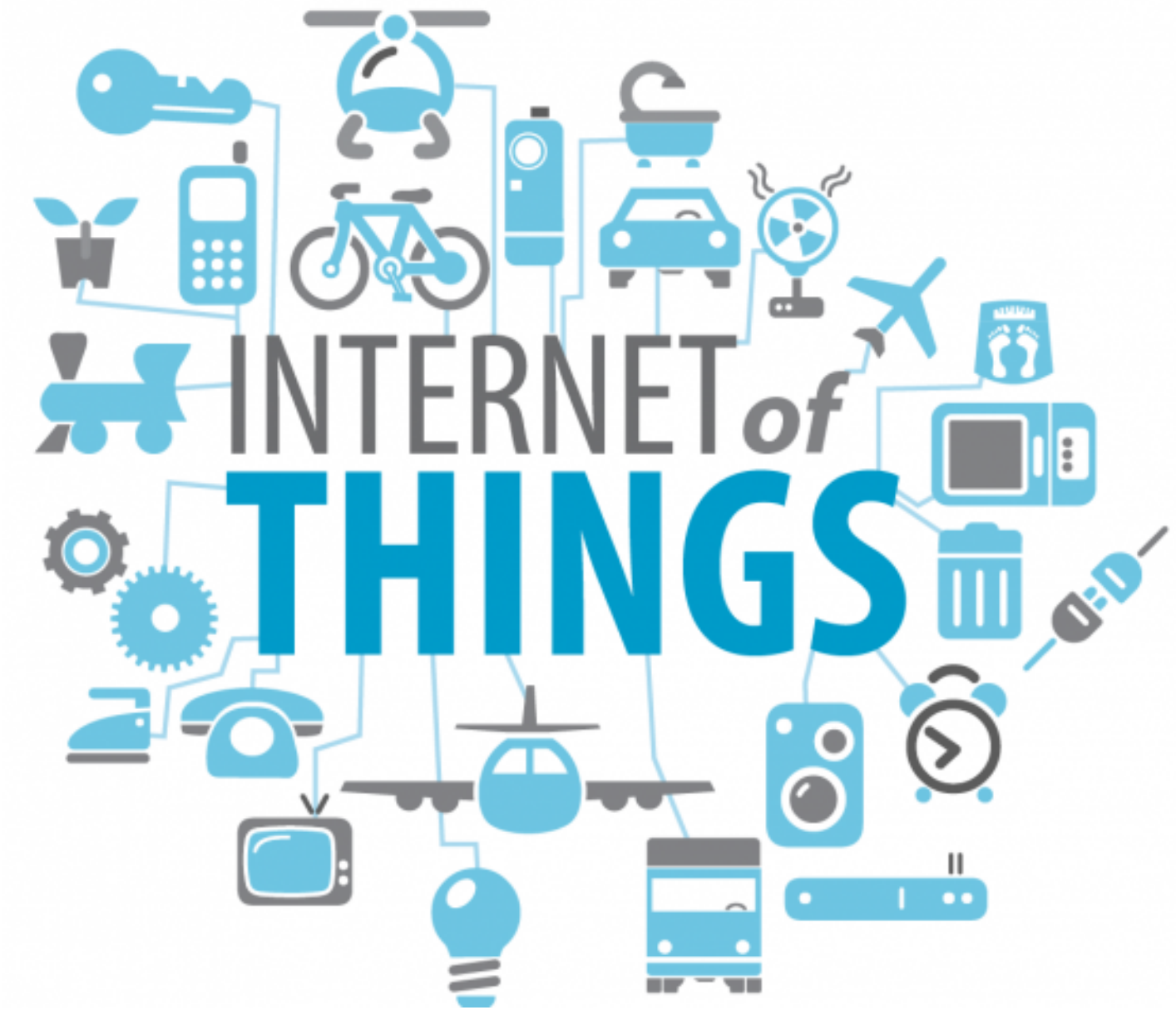
Wearable Tech (2015)

"Ubiquitous, Anticipatory, Passive"

"This is where computing is going after the smartphone era. It will be everywhere, it will know what you want, and it won't require you to DO anything to get something in return."

Matt Rosoff, Business Insider, April 11, 2015

http://www.businessinsider.com/apple-watch-here-comes-the-future-2015-4#ixzz3YTdDfUH0



Wearables and IoT: All About the Data

Sensors: IoT devices and systems include sensors that track and measure activity in the world.

Connectivity: Internet is either contained in the item itself, or a connected hub, smartphone, or base station. A base station will likely be collecting data from an array of sensor-laden objects, and relaying data to the cloud and back.

Processors: Just like any computing device, IoT devices will contain some computing power "under the hood," if only to be able to parse incoming data and transmit it.

Read more: http://www.businessinsider.com/defining-the-the-internet-of-things-2013-12#ixzz3YS1jft6W

When data are everywhere how will
we choose the data that matter most?

Once we find our data,
what kind of information will we create?

With our information in hand
how will we know what to do with it?

Navigating the Learning Metaverse

Two Questions to Ponder

- Where do you see yourself in this picture of the future?
- What are you going to do to get ready?

Thank you!

- Beth Davis

  beth.davis@parframework.org

PAR Framework

  http://www.parframework.org