

Tips for Effective Presentations

Tips

Presentation

- **Know your audience (statistical sophistication / language)**
- **Eye Contact**
- **Voice Inflection**
- **Practice Makes Much Better (Not Perfect... but much much better.)**
- **Anticipate Questions**
- **Respect constraints**

Slides:

- **Pictures (Plots / Charts / Tables / Plots) are worth a 1000 words**
- **Labels on Plots**
- **Animations**
- **Readable Size/Font**
- **Bullet Points**

Tips

Presentation

- You should know your audience. If you are presenting to an audience who has minimal technical / statistical experience you should not use overly technical jargon and should take the time to explain any necessary theory or methods. Of course, if your audience is technically savvy, feel free to use appropriate language.
- It is important to make frequent but natural eye contact with your audience in order to let them know you care that they are understanding your point(s). Humans are social beings and eye contact lets your audience know that you are interested in their understanding.
- Voice Inflection also lets your audience know you care and helps you keep your audience's attention and helps to bring home important points. Don't be boring ... some experts estimate you have about 20 seconds to make good impression before an audience member may become disinterested and start checking their phone or other disengaging.
- Practice practice Practice... every time you practice your presentation will get smoother and smoother. I sometimes go through full presentations 4 or 5 times until I feel I can make all the points easy to understand and digest.
- Try and anticipate questions as you are preparing your presentation. This will help you answer some of the questions before they are asked (since you can build that material into the slides) and will help you have quick answers to many of the questions whose answers were not able or practical to be built into the presentation.
- It is important to respect the time constraints and any other constraints of your audience. Time may be the precious commodity any of us have.

Slides:

- Audiences typically prefer tables and plots to words and numbers.
- Be sure and label all axes of plots.
- Animations
- Make sure font is a legible font and that the size is one in which everyone can easily see.
- Bullet Points

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Poor Presentation

Dallas Customer FICO Score Analysis

Goal: Test the claim that the mean credit rating of our Dallas customers is equal to 700.

Impact: if this is true then we need to go ahead with Commercial A other wise we recommend Commercial B.

Data: We obtained a random sample of FICO scores from 15 potential Dallas customers with a sample mean of 660.3 and a standard deviation of 95.9.

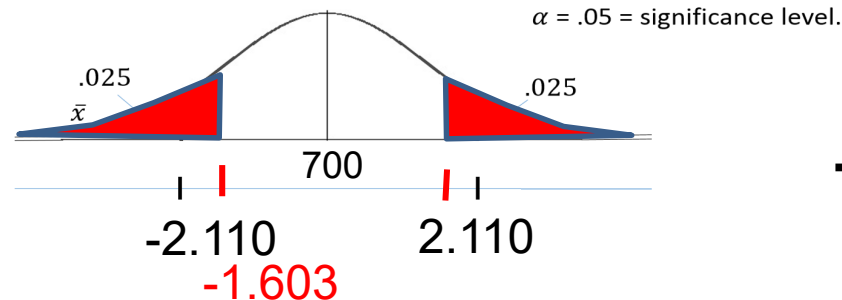
$$H_0: \mu = 700$$

$$H_1: \mu \neq 700$$

$$\alpha = 0.05$$

$$\bar{x} = 660.3$$

$$s = 95.9$$



Critical Values

$$t = \pm 2.110$$

Test Statistic

$$t = -1.603$$

P-value: .1312 > .05

Fail to Reject H_0

There is not enough evidence to suggest that the mean credit rating of our Dallas customers is different than 700 (pvalue = .1312). We are 95% confident that this mean credit score is greater than 612 and less than 709.

We recommend going with Commercial A

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Good Presentation

Dallas Customer FICO Score Analysis

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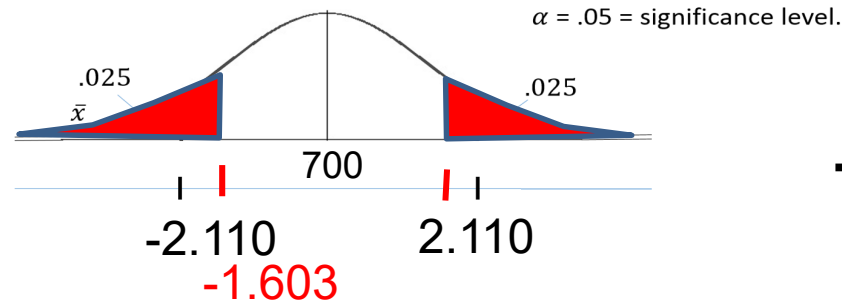
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Recap

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Moneyball Revisited

Doug Gray

Moneyball: The Art of Winning an Unfair Game

2018 MLB playoffs update

How Did the Teams Fare?

- AL Wild Card: New York Yankees (**\$148 million** active payroll) defeated Oakland A's (**\$64 million** active payroll) ***Moneyball*** team.
- ALDS: Boston Red Sox (**\$168 million** active payroll) ***Moneyball*** team defeated New York Yankees (**\$148 million** active payroll) in a very close series.
- Playoff MLB is largely about “momentum”; who’s “hot” coming in.
- ***Moneyball*** helped the A's get to the Wild Card *over the course of a season*, but in a *single game playoff situation*, talent and momentum matters more.

Moneyball 2018 LCS Playoff Observations

- What are some of the analytics-based observations and impacts?
- ***All four teams*** in the ALCS | NLCS are practicing ***Moneyball*** teams
 1. Boston Red Sox (\$168 million active payroll): ***winner!***
 2. Houston Astros (\$159 million active payroll)
 3. Los Angeles Dodgers (\$161 million active payroll): ***winner!***
 4. Milwaukee Brewers (\$90 million active payroll)
- **Bottom line:**
 - The *combination of payroll and Moneyball analytics* is formidable

Moneyball 2018 Playoff Observations

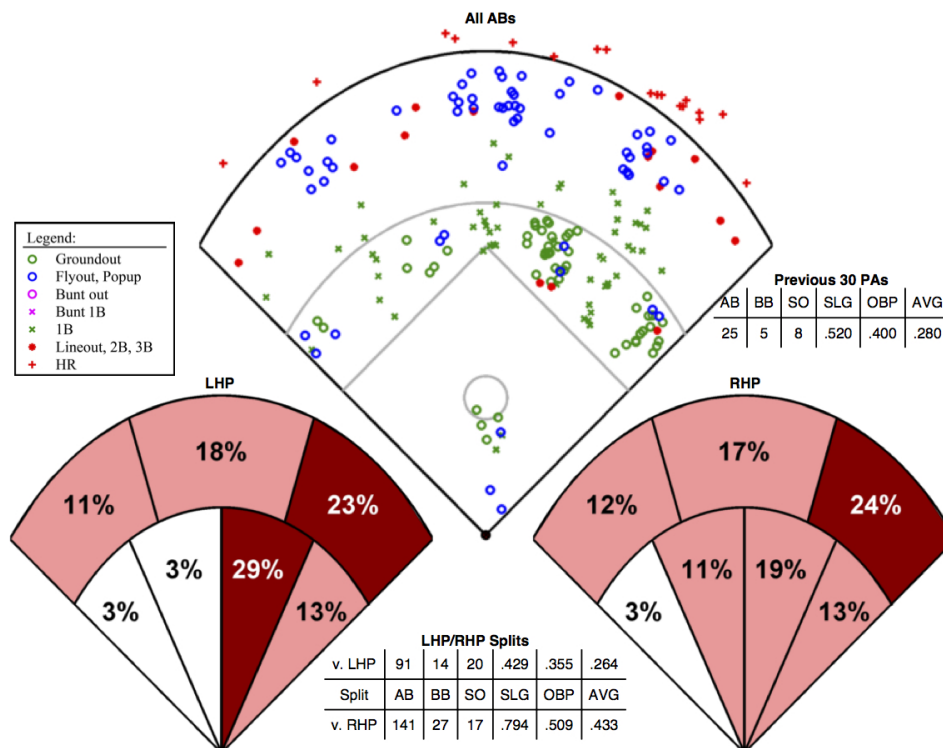
What are some of the analytics-based observations and impacts?

- **“*Spray charts*”**
 - *Descriptive* analytics, data visualization
 - Probabilities batters will hit the ball to a certain window in the field
 - *Frequentist* approach, i.e.,
 - Total batted balls in play per sector/total batted balls in play
 - *Predictive* analytics: *Bayesian* inference using conditional probabilities with variables such as pitcher, pitch type, ball strike count, runners on base, RISP

Sample University					
Bat	Throw	Pos.	Class	No.	Player Name
L	R	C/OF	So	10	Player_s

2013 Stats																
GP-GS	AB	AVG	2B	3B	HR	RBI	SLG	OBP	BB	HBP	SO	GDP	SF	SH	SB	P/PA
61-59	235	.366	10	1	18	54	.647	.456	42	0	37	3	4	0	4-7	4.12
FPA	FSA	GBP	FBP	LDP												
0.10	0.32	54%	29%	17%												

Gameday
Notes



Moneyball 2018 Playoff Observations

What are some of the analytics-based observations and impacts?

- “***Spray charts***” influence fielder positioning, AKA, “***the shift***”
- Overloading players to one side of the infield, or short outfield positions, to better defend against hitter propensities, e.g., left-hand hitter hits line drives to short right field
- Proven effective based on outs vs. hits percentage in general and more so against certain “pull hitters”



The Astros love their defensive shifts: "It's the new baseball"
<https://ftw.usatoday.com/2015/03/houston-astros-defensive-shifts-mlb>

Table 2. *Non-pitcher wBABIP non-shifting vs. traditional shifting, 2010-2015*

	No Shift wBABIP	Shift (Trad.) wBABIP
2010	.297	.302
2011	.295	.278
2012	.294	.289
2013	.296	.280
2014	.299	.288
2015	.296	.286

Over the five years, we see the traditional shifts have indeed suppressed offense by an average of nine wBABIP points. So in broad strokes, the traditional Ted Williams shift does its job in suppressing offense. Given that the traditional shift is effective, the cumulative effect is in the range of .5-1.5 wins gained by a team, depending on how much they use the shift throughout the season.

Moneyball 2018 Playoff Observations

What are some of the analytics-based observations and impacts?

- An announcer is quoted saying, ***“Analytics today indicates that unless you are successfully stealing bases 75% of the time, it is not worth the risk.”***
- Obviously, there are a lot of factors to consider, like the runner's speed and base stealing ability, the pitcher's move to first quality, and the catcher's throw to second.
- See long run expected runs scored chart as a result of stealing, bunting.

Expected Runs Scored Matrix (Up through 2007)

- **Moneyball** highlights the *long run average risk* of *stealing* and *bunting*, as they both present a higher risk of making an *out*, and risk reducing the *expected runs scored* in an inning.
- **Moneyball** also focuses on situational batting statistics, like BA with RISP, BA with certain ball-strike counts, and hitter's spray pattern against specific pitchers and pitch types, to optimally place fielders.

Runners			Outs		
1 st	2 nd	3 rd	0	1	2
---			0.5165	0.2796	0.1075
1--			0.8968	0.5487	0.2370
-2-			1.1385	0.6911	0.3502
12-			1.4693	0.9143	0.4433
--3			1.5120	0.9795	0.3718
1-3			1.8228	1.1830	0.4931
-23			2.0363	1.4144	0.6073
123			2.3109	1.5279	0.7485

World Series 2018 Matchup

Boston Red Sox vs. LA Dodgers

- Boston **Red Sox**
- Now **this** is **Moneyball!**
- Led MLB in:
 - *Runs per game*
 - *On-base percentage (OBP)*
 - *Extra-base hits or slugging percentage (SLG)*
 - $OPS = OBP + SLG$



“Play (Money)ball!”

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Final Thoughts

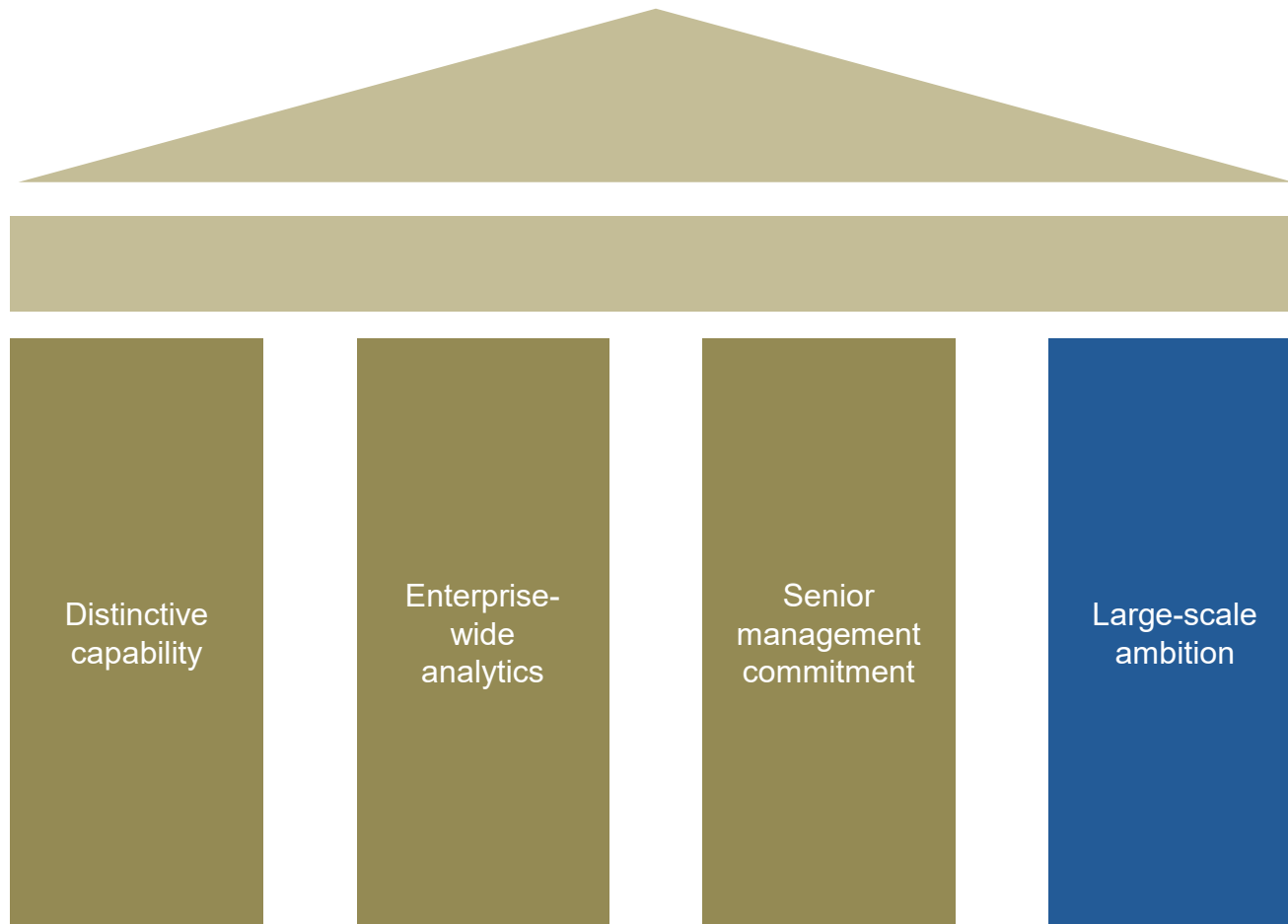
Doug Gray

Analytics “Lenses” to See Corporate Strategy

- Davenport text ***Competing on Analytics*** tells us ***what*** to do and ***why***.
- The Davenport texts ***Analytics at Work*** and ***Keeping Up with the Quants*** are excellent “***how to***” manuals that are useful for implementing analytics on an enterprise or departmental scale, and interacting with “quants.”
- ***Revised*** “Pachinko Machine” and Booz Allen Hamilton *desktop references*
 - ***The Field Guide to Data Science***
 - ***Tips for Building a Data Science Capability***

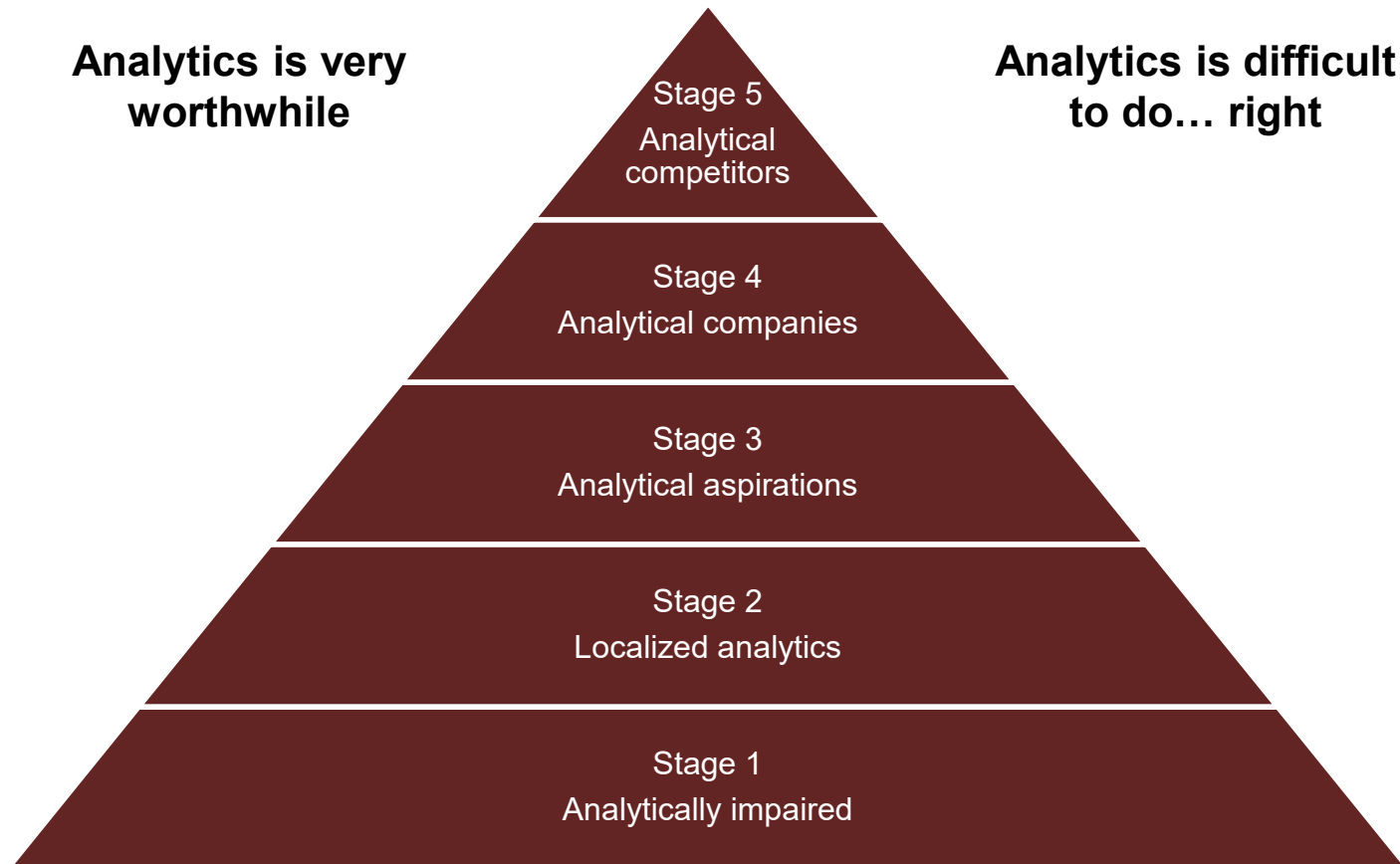
Competing on Analytics (2017)

Four Pillars of Analytical Competition



Competing on Analytics (2017)

Five Stages of Analytical Competition



Competing on Analytics (2017)

D-E-L-T-T-A-A (Evolved: 2017)

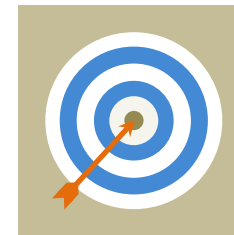
- **Data**
- **Enterprise**
- **Leadership**
- **Targets**
- ***Technologies***
- ***Analytical techniques***
- **Analysts**



Data Team



Enterprise view



Targets



Analysts



Leadership Support

Analytics at Work

*DELTA: **Data**, enterprise, **leadership**, targets, **analysts***

- *Without **data** and **data infrastructure** (data warehouses, data marts, databases, etc.), analytics is practically impossible.*
 - *“In God we trust...all others must bring data”--- W. Edwards Deming*
- ***Leadership** at the executive, business unit, department head levels are crucial.*
 - *Bob Crandall and Don Carty were the biggest fans and champions of the OR group at AA, and they planted the seeds in every department of the airline.*
- ***Analysts** are like eagles, they don't flock, you have to find them one at a time (at the best schools).*
 - *“A” players attract other “A” players, and the competition is fierce.*
 - *Don't bother to hire B or C players.*

Internal Factors

1. Leadership (executives, champions): Billy Beane, Jeff Bezos, Gary Loveman
2. Data (or lack thereof): ***you have to start collecting/buying data sometime***

Internal Factors

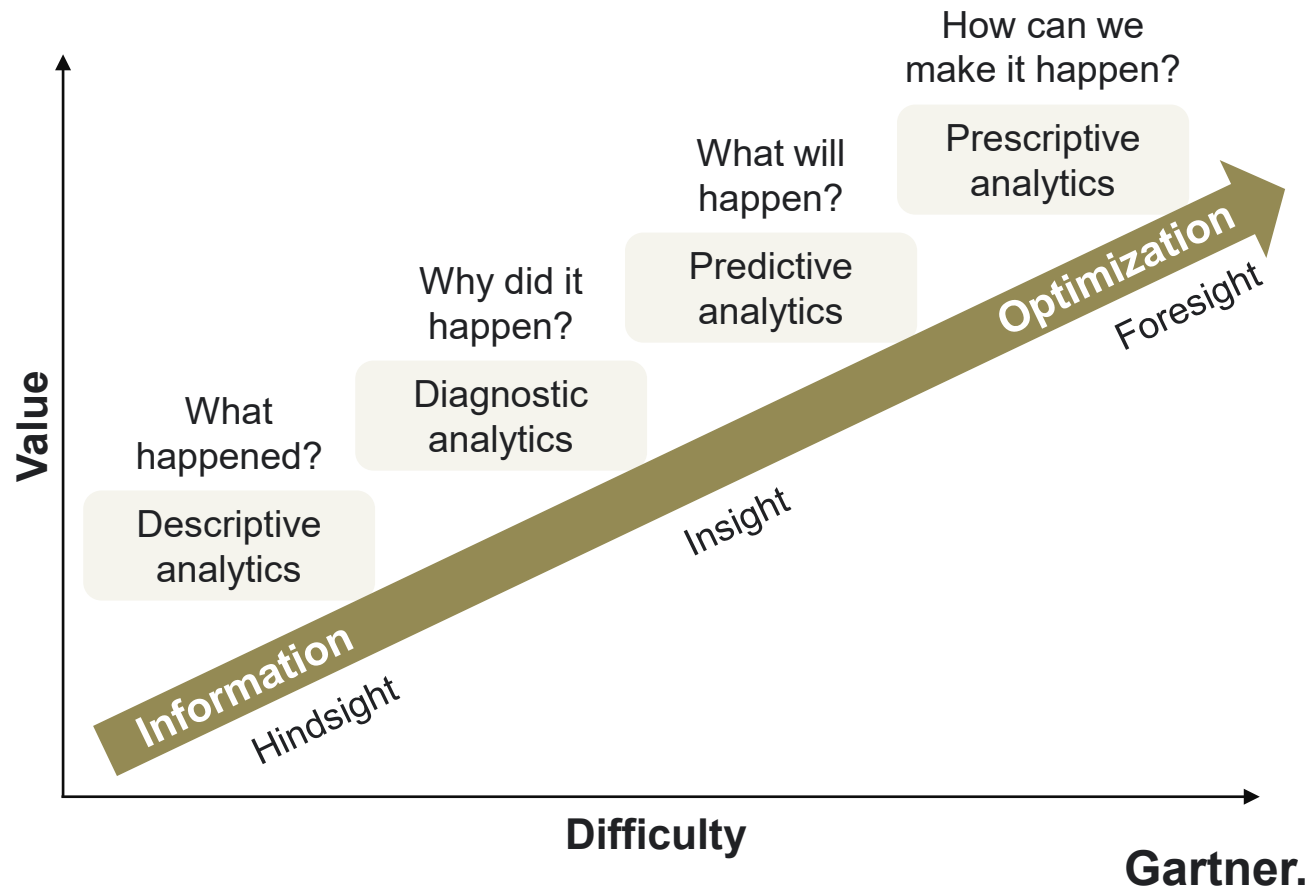
3. Culture, including politics: ***Some will buy into analytics, some won't.***
- Data-driven (“let the data speak”) vs. gut/experience-driven (“HiPPO-driven”)
 - **Hi-P-P-O** Theory: **H**ighest **P**aid **P**erson’s **O**pinion
 - Openness/ability to change, adaptive, challenge the *status quo*
 - Proactive vs. reactive, action-oriented vs. resistant to new ideas/change
 - Incentive and reward structures, i.e., W-I-I-F-M?
 - Continuous Improvement (Kaizen), creative destruction
 - Seeing analytics as a means to ***creative competitive advantage***, not “number crunching”

Keeping up with the Quants F-A-C-E

- **F**rame the problem/decision/question.
- **A**nalytically “model” and solve for the problem/decision/question.
- **C**ommunicate and ***act*** on/implement the results.
- ***E***embed models in enterprise business processes and systems.

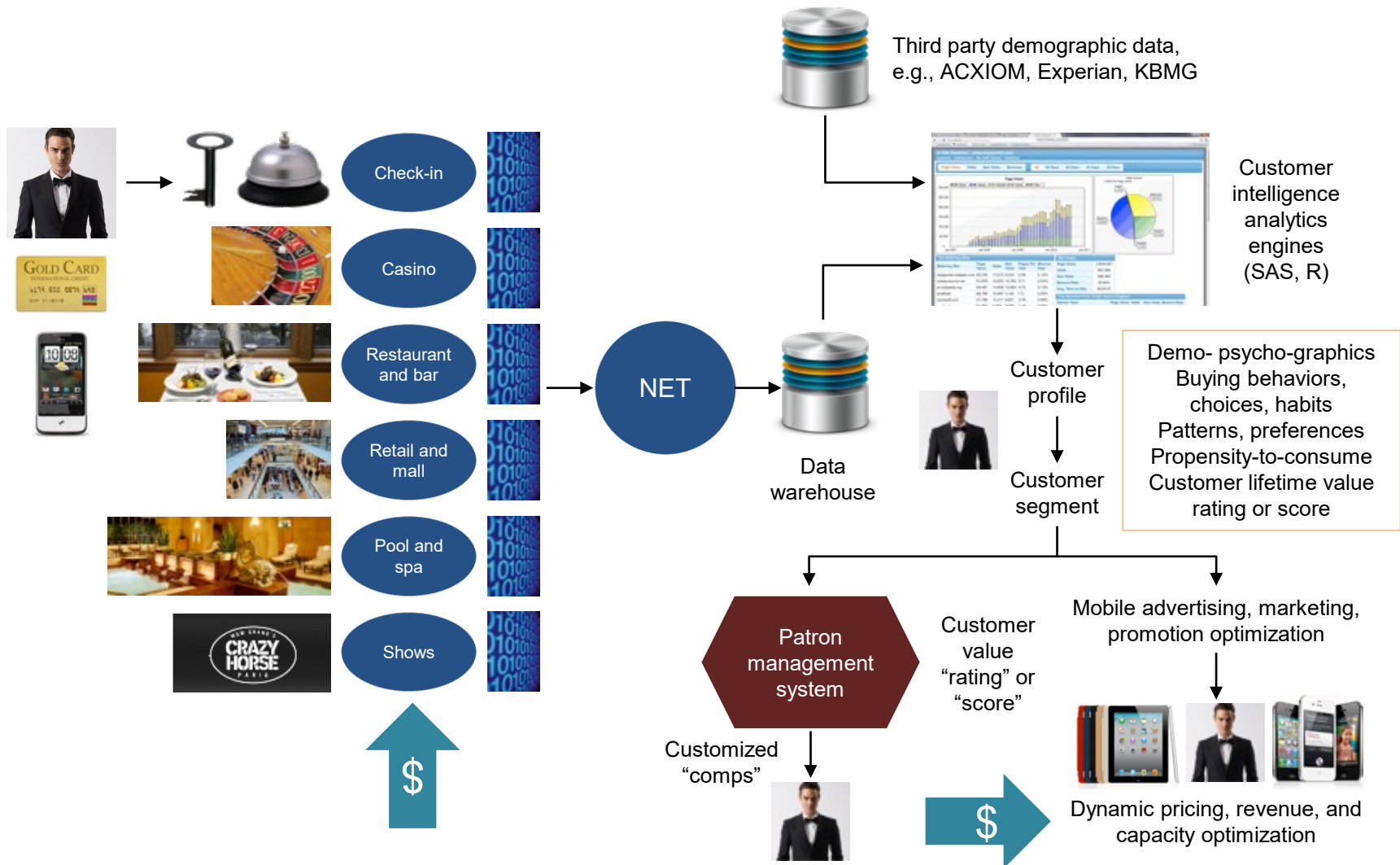
Analytics at Work

- **Embedding analytics in business processes: the greatest value lies here!**
 - For certain industries, like airlines, analytics is a “must have” across the enterprise/business processes to operate profitability.
 - But analytics ***can be applied in any business or industry***, e.g., P&G, John Deere, MLB (and most pro sports now use variations of Moneyball concepts), hotels/casinos, telecommunications (mobile-churn), oil and gas/energy, healthcare/insurance.
 - Once you have an analytics model that “works,” **make it part of the corporate DNA fabric.**
- Building an analytics **culture...data-driven, model-based decision-making**
 - CapitalOne runs **85,000 experiments per year** to evaluate offers, promotions, products, policies, and risk management techniques
 - Thinking about your business in an analytics-oriented context, framework

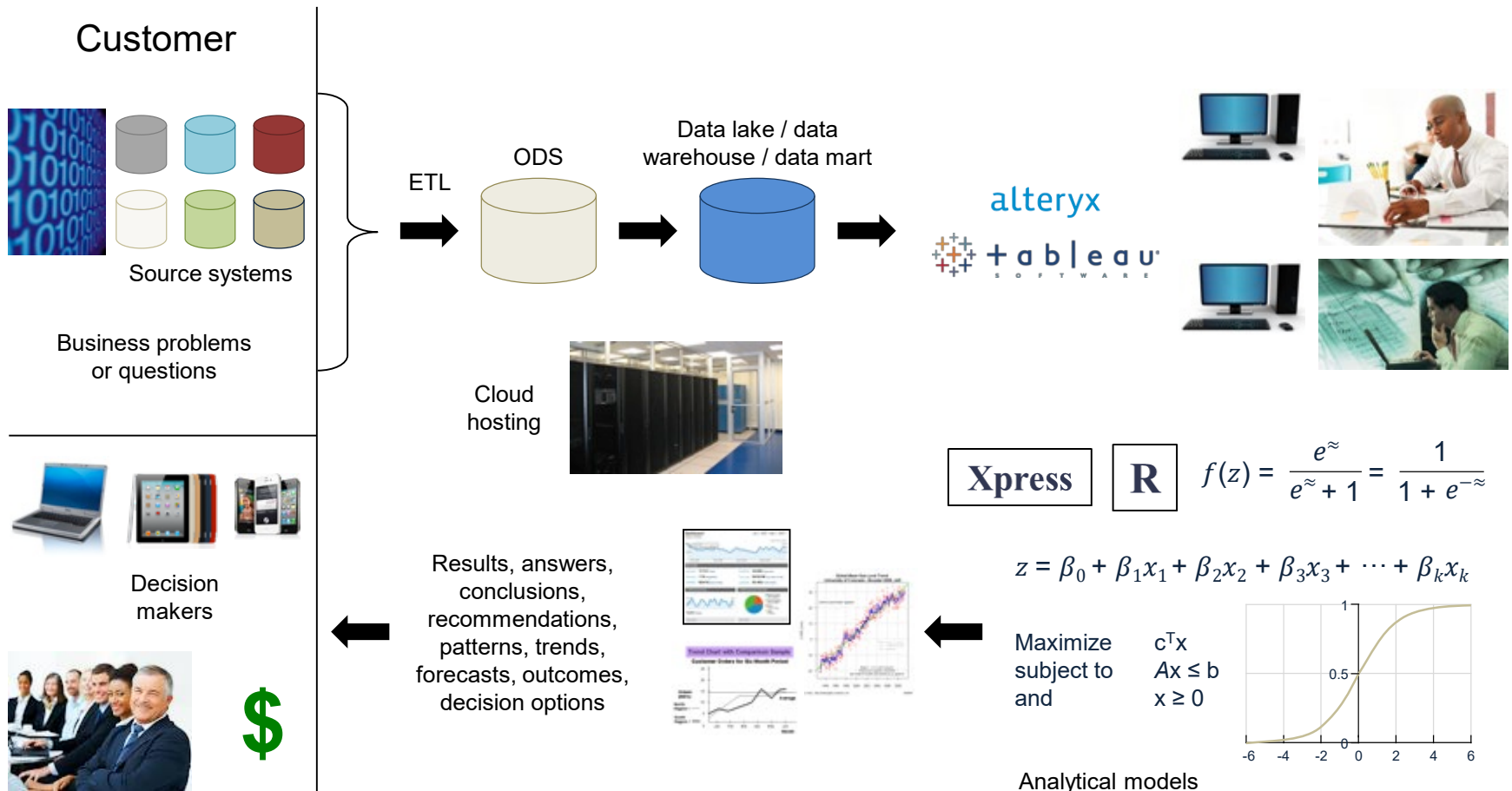


“Models make the enterprise smarter; models embedded in systems and processes make the enterprise **more efficient**” —Tom Davenport

Analytics Architecture



Analytics Architecture Flow



Hiring Who, When, in What Order?

- Which comes first, the analytics *project* or the analytics *resources*?
 - Low risk, low cost resources: student interns, capstone projects, thesis projects, college hires (***but they require experienced supervision!***)
 - Unless you already have a mature analytics team, hire folks with education *and* experience!—for example, consulting

Hiring Who, When, in What Order?

- Which comes first, the analytics *team leader* or the analytics *analysts*?
 - What are the qualities of each resource?
 - Analytics **unicorns**: have **data-domain-math** skills, and are rare; interpersonal/communication skills.
 - **Leaders** must have D-D-M and technology and management/leadership skills *plus* outstanding relationship building and communication skills, political awareness, and organizational savvy, similar to that of business development leaders; they must become **trusted partners** with the business.
 - The **best** analytics pros have a natural curiosity about the domain(s) in which they work.
 - “*If you try to tell someone how to do a job better before you know how to do it yourself, you are a fraud.*”

Hiring Who, When, in What Order?

- Where to find analytics leaders?
 - Analytics best practice companies, e.g., your competition, other industries
 - Academia, but preferably/only if they have real-world (e.g., consulting, industry) experience

Closing Thoughts and Key Takeaways

- ***Tom Davenport's methodologies really do work! (I both use them, and teach them!)***
- ***Business strategy and operations provides the context for analytics.***
 - *Be curious, dig in deep, and ask questions to understand the "inner workings" of your business model.*
- ***Analytics will inform and optimize business strategy and operations.***
 - *Look for "big bang for the buck" opportunities; key is big value multipliers.*

Closing Thoughts and Key Takeaways

- ***Focus on outcomes scored against KPIs; technology and techniques are secondary.***
 - *Don't be the person with a "technique, tool, or solution in search of a problem."*
 - *Solve problems that leaders care about and maximize business value and economic impact, i.e., quick sure win tactic.*
- ***Start small, move quickly, fail fast, and learn, time box...then increase scope, scale.***

Closing Thoughts and Key Takeaways

- ***Business folks take all of the credit for business value creation using analytics.***
 - *Endear yourself, and be seen as a **partner**, and get a **lot** more projects that way!*
 - *Analytics is “creative destruction and a disruptive force”; be cognizant of change management impacts.*
- ***Why analytics? It is measurably transformational...***
 - *Refines data into business value; finds the needle (optimal answer) in the haystacks (possible answers)*
 - *ROI 1.5X – 10X more than IT/BI projects alone*
 - *Significant incremental business, operational, and economic value adds*

Thank you!

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