



Level 7 Big Data: The Science of Reading Between the Lines



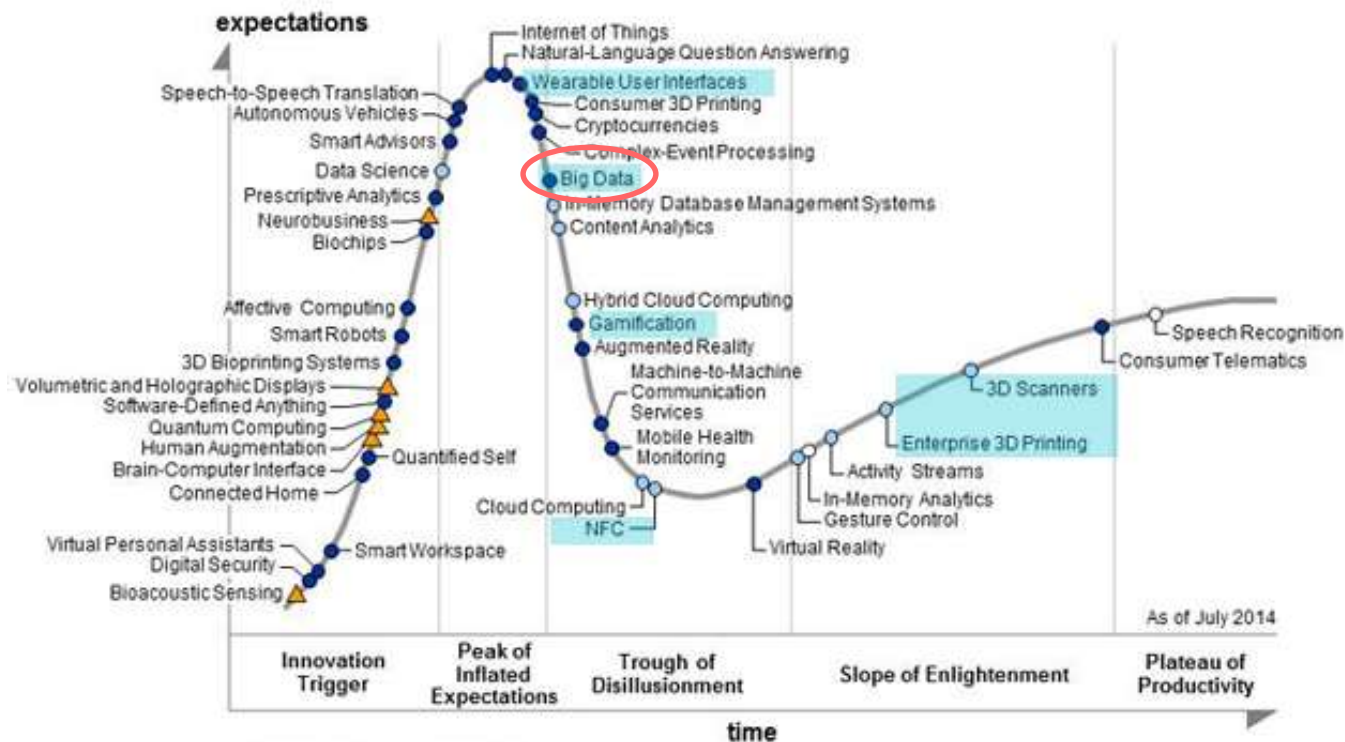
Big Data Analytics

- \$14B industry in 2013;
- \$20B in 2014.

- Evidence of tangible benefit to clients ~ zero?



2014



Plateau will be reached in:

- less than 2 years
- 2 to 5 years
- 5 to 10 years
- ▲ more than 10 years
- ⊗ obsolete before plateau

You Don't Find Needles In Haystacks By Adding More Hay...



...even worse if there were no needles in the hay to begin with...

Data Breeds Data

Hypothesis: the main reason for BDA dysfunction is it's being operated by data people.

George Harrison: 'if you don't know where you're going, any road will take you there'

'Any road' in this case means, if the last data I captured didn't help, I'll go and capture more data.

93%

National
(7431 trains)

92%

LSE
(4059 trains)

94%

Regionals
(2084 trains)

93%

Scotland
(787 trains)

93%

Long Dist.
(500 trains)

Operators

c2c
Trains: 129

100% 

South West Trains
Trains: 561

98% 

Arriva Trains Wales
Trains: 315

98% 

Chiltern
Trains: 144

97% 

Abellio Greater Anglia
Trains: 678

97% 

Virgin Trains
Trains: 91

97% 

London Overground
Trains: 372

97% 

Big Data = Small Wisdom

 **65 billion**

Location-tagged payments made in the U.S. annually

154 billion



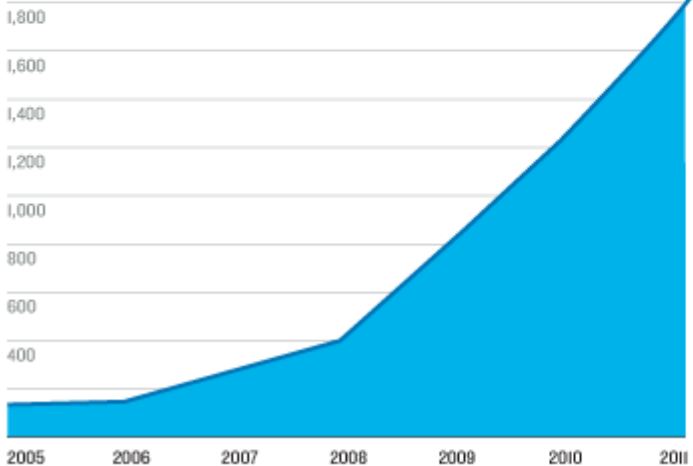
E-mails sent per day

 **87%**

U.S. adults whose location is known via their mobile phone

Digital Information Created Each Year, Globally

2,000 BILLION GIGABYTES



2,000%

Expected increase in global data by 2020

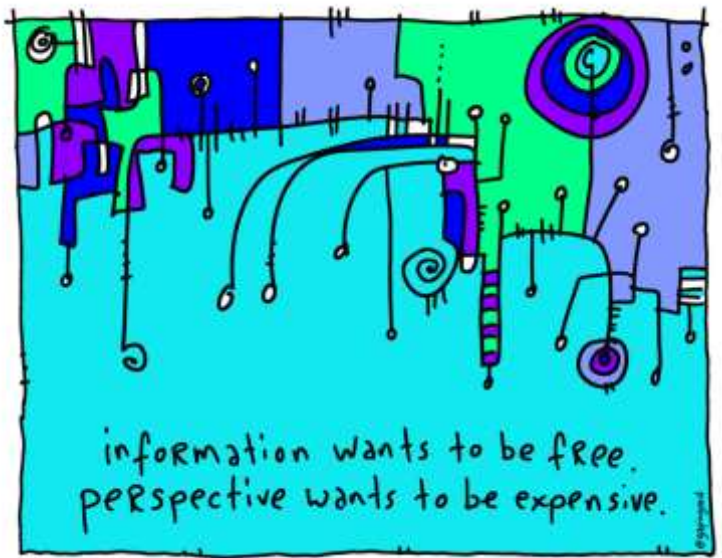
III

Megabytes

Video and photos stored by Facebook, per user

75%

Percentage of all digital data created by consumers



Sources: IDC, Radicati Group, Facebook, TR research, Pew Internet

The Accidental Big Data Company

Hypothesis: you can only know what needs to be measured if you know what the solution is!

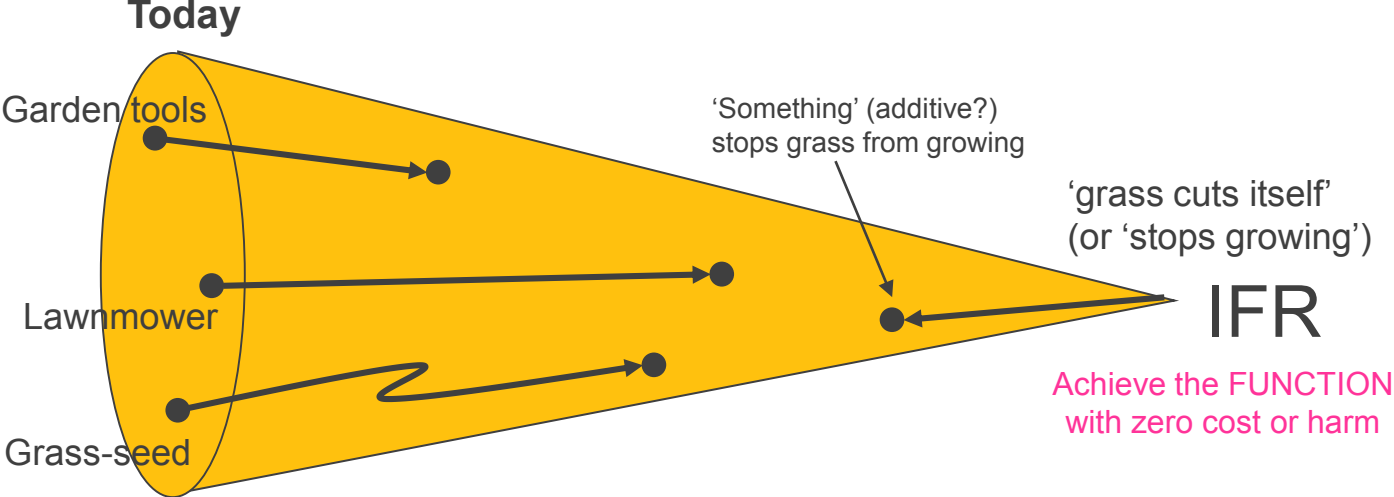


But We Do Know...



- * Increasing ideality is the over-riding driver for all system evolution
- * Ideality is about increasing the good, decreasing the bad
- * Ideality = 'Value' =
$$\frac{\text{(Perceived)Benefits}}{\text{(Cost + Harm)}}$$
- * IDEAL FINAL RESULT – all the benefits, none of the cost or harm
- * *'free, perfect & now'*
- * **'SELF'**

Lawnmowers – The Bigger Picture



Financial Services – The Bigger Picture

Today

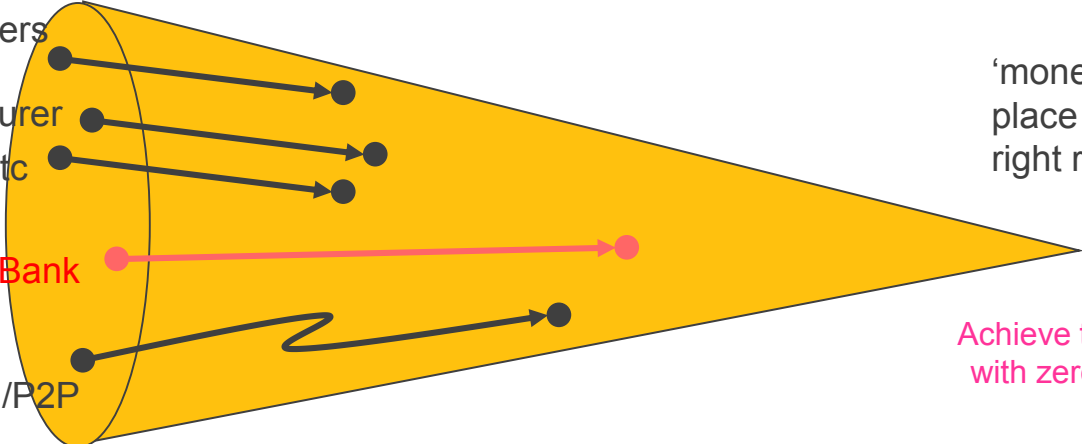
Retailers

Cement Manufacturer

etc

Bank

Grameen/P2P

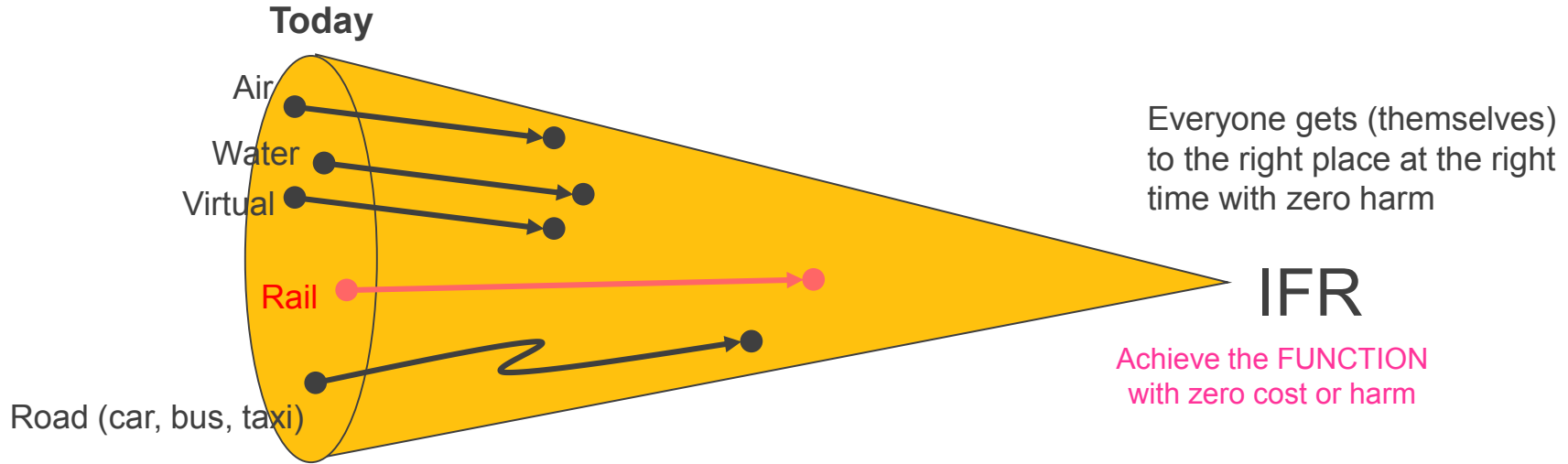


'money manages itself' – right place at the right time for the right reasons

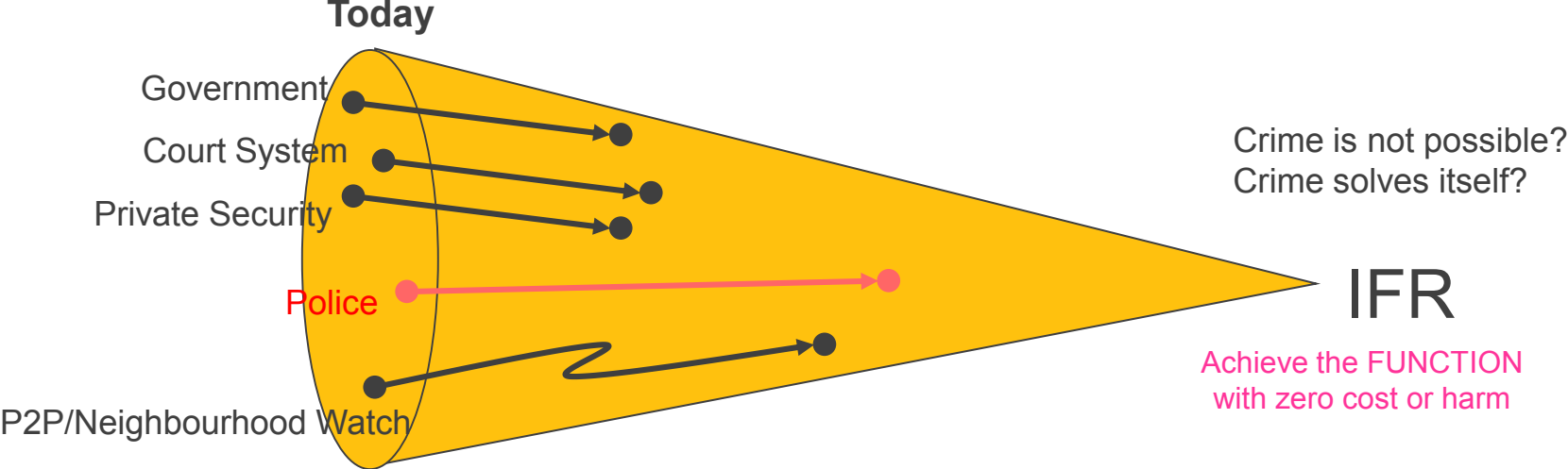
IFR

Achieve the FUNCTION with zero cost or harm

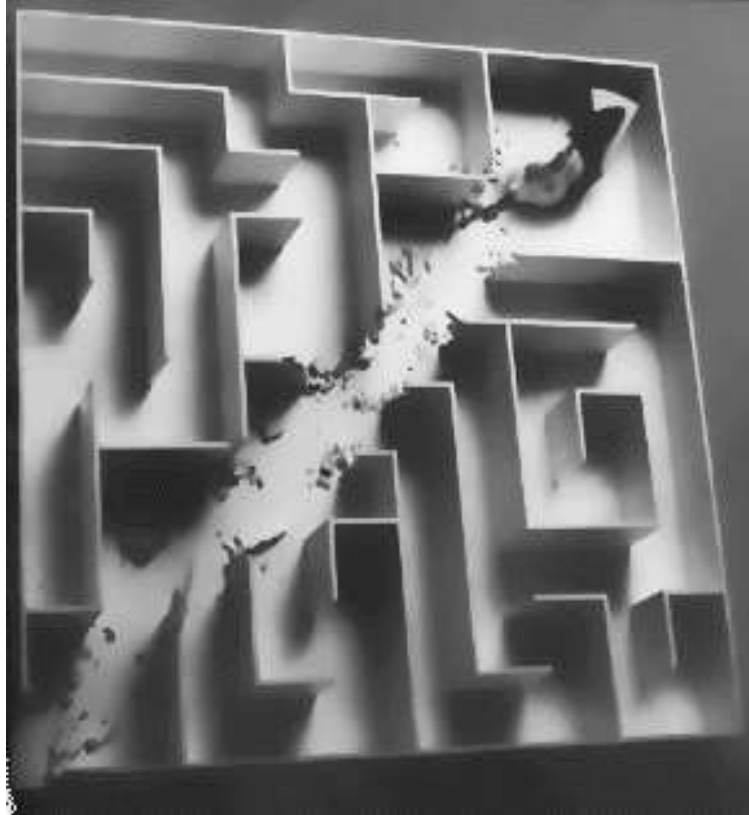
Transport Infrastructure– The Bigger Picture



Law Enforcement – The Bigger Picture

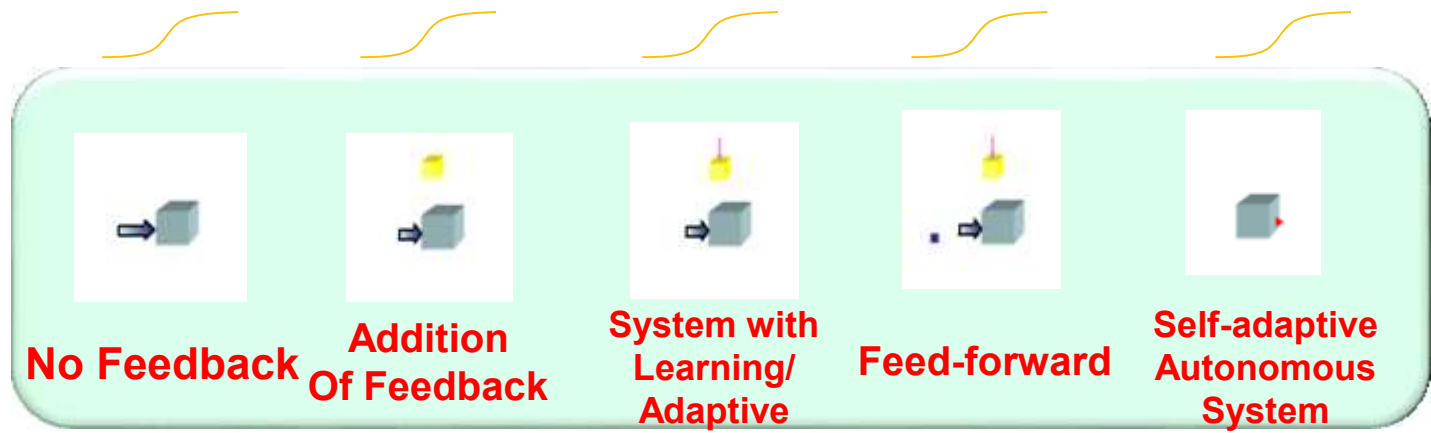


Problem Solving And 'Ideal Final Result



Predictable Evolution Signposts:

CONTROLLABILITY



Reasons For Jump

Direct Control -> Use of Intermediary
-improved user safety
-reduced user effort

Intermediary -> Feedback
-system self-correction
-reduced likelihood of error/catastrophic failure
-ability to control function delivery to specified requirements
-improved user-proofing
-reduced user involvement

Feedback -> Intelligent Feedback
-adaptive systems
-self-learning systems
-self-repairing systems
-reduced likelihood of failure due to system non-linearities

-reduced delay/lag
-improved response rate
-improved efficiency
-increased operational effectiveness

-removal of human from system
-improved reliability/durability
-improved ability to operate in hazardous conditions

Reasons For Jump

Predictable Evolution Signposts:

MARKET EVOLUTION



Reasons
For
Jump

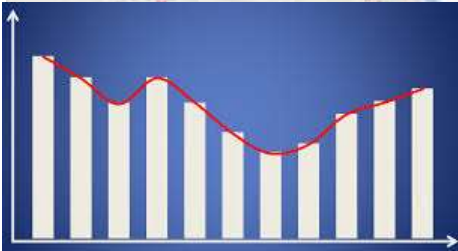
Customer expectations increase with time
If you stand still, you are actually going backwards.
In order to remain competitive, you should be looking to the right along the trend

Key jump motivations:
Service-experience = intangibles
Experience-transformation = responsibility

Reasons
For
Jump

PREDPOL: Input data from multiple sources is integrated in order to make a prediction of likely events. In the first instance, we will integrate five:

1) Incident Density Trend Data



2) Contagion Models

$$\lambda_{i,t}(t) = \mu_i + \sum_{\{t, t' \in C_{i,t}\}} \rho(t-t')$$

Expectation step:

$$\hat{\rho}_t = \frac{K_{i,t} e^{-\alpha(t-t')}}{\mu_i + \sum_{t'=1}^{t-1} \theta e^{-\alpha(t-t')}} \{t, t' \in C_{i,t}\}$$

$$\hat{\rho}_t = \frac{\mu_i \theta}{\mu_i + \sum_{t'=1}^{t-1} \theta e^{-\alpha(t-t')}} \{t, t' \in C_{i,t}\}$$

Maximization step:

$$\hat{\mu} = \frac{\sum_{i=1}^N \hat{\rho}_i}{T}$$

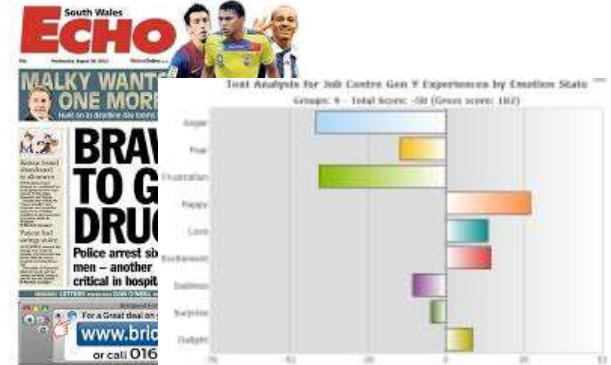
$$\hat{\theta} = \frac{\sum_{i=1}^N \hat{\rho}_i}{N}$$

$$\hat{\alpha} = \frac{\sum_{i=1}^N \hat{\rho}_i}{\sum_{i=1}^N (t-t') \hat{\rho}_i}$$

4) Special Event Calendar



3) Social Mood Data trends

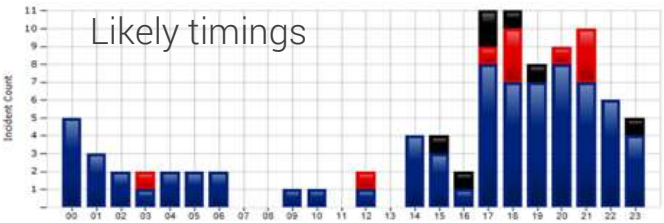
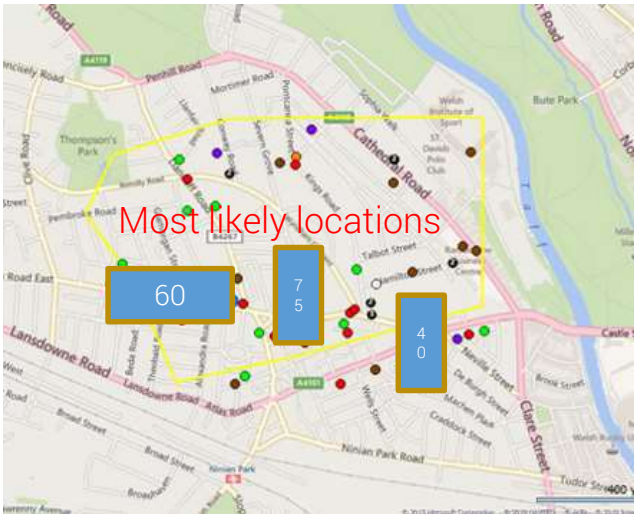
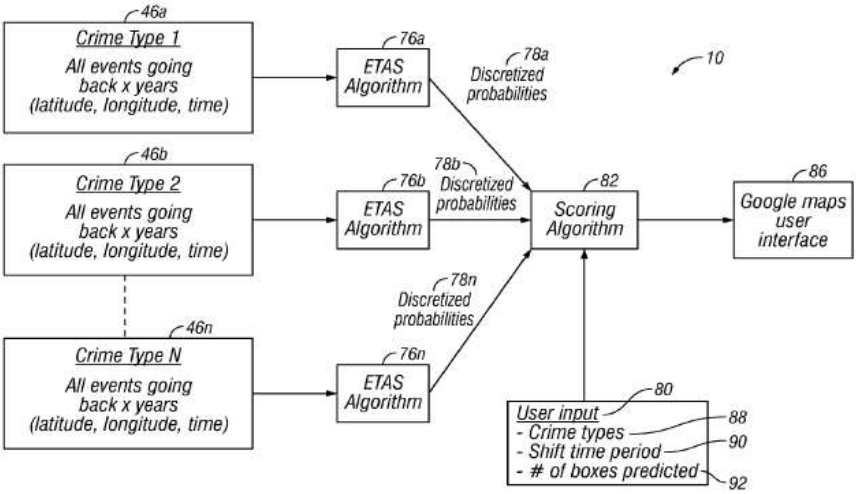


5) Weather Forecasts



Pre-DMM Dashboard

The DMM will be presented with a forecast of likely incidents of the various different crime types for the upcoming day(s), with outputs presented in both a geographic and temporal basis:



- Theft
- Damage
- Antisocial Behaviour
- DV
- Assault
- Missing Persons
- Major Incident

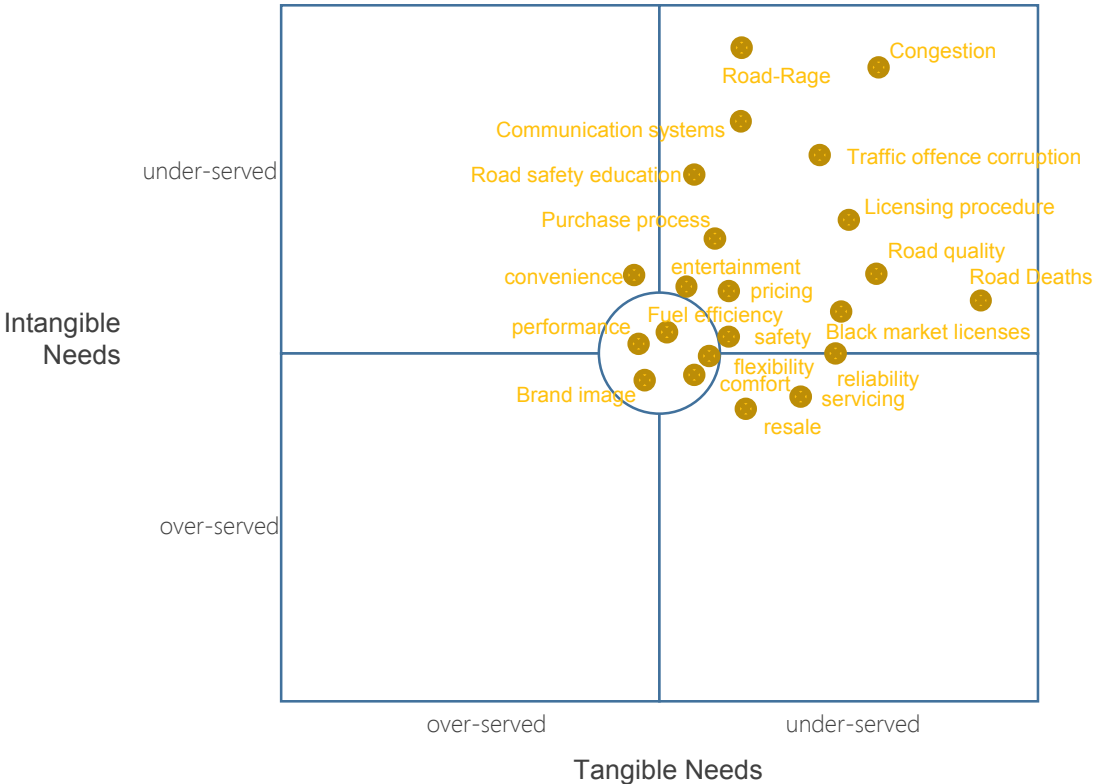
Predicted No. Incidents	90% Confidence Level
5	+/- 1
4	+/- 2
2	+/- 0.2
3	+/- 0.1
0	+/- 0.1
0	+/- 0.01
0	+/- 0.2




**Frustration
Is The
Mother
Of Innovation**

India – Driver Frustrations

(based on scrape of multiple social media sources)





Contradiction
is the
Father

**Frustration
Is The
Mother
Of Innovation**



How was the meal?

Fine, thanks.

we're never coming back here again

Q. What do you think of...(x)...?

» Pre-frontal Cortex

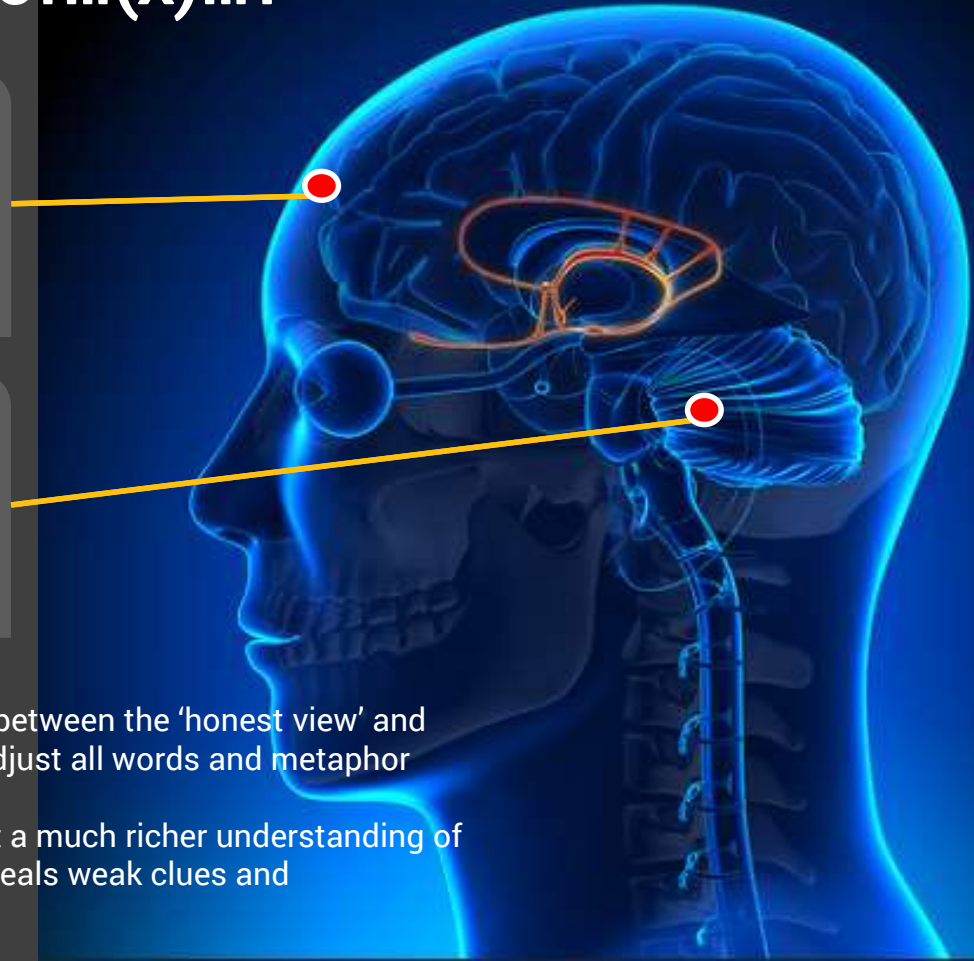
Your 'filtered' reaction that you present to the world

» Limbic Brain

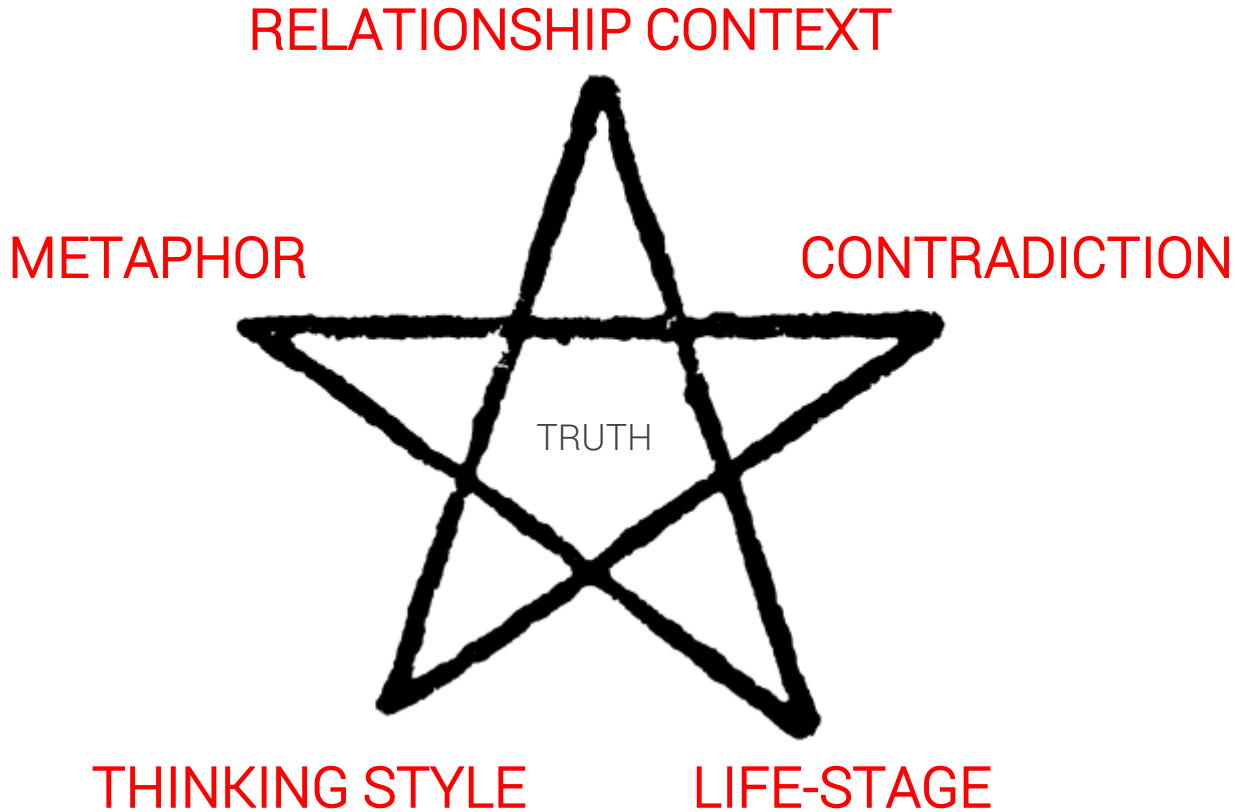
Your honest reaction to a question

While the 'packaging' of a comment may change between the 'honest view' and the 'public view', the brain is not fast enough to adjust all words and metaphor phrases in a descriptive response.

So by understanding this language choice, we get a much richer understanding of how somebody really feels/thinks/acts, which reveals weak clues and opportunities.

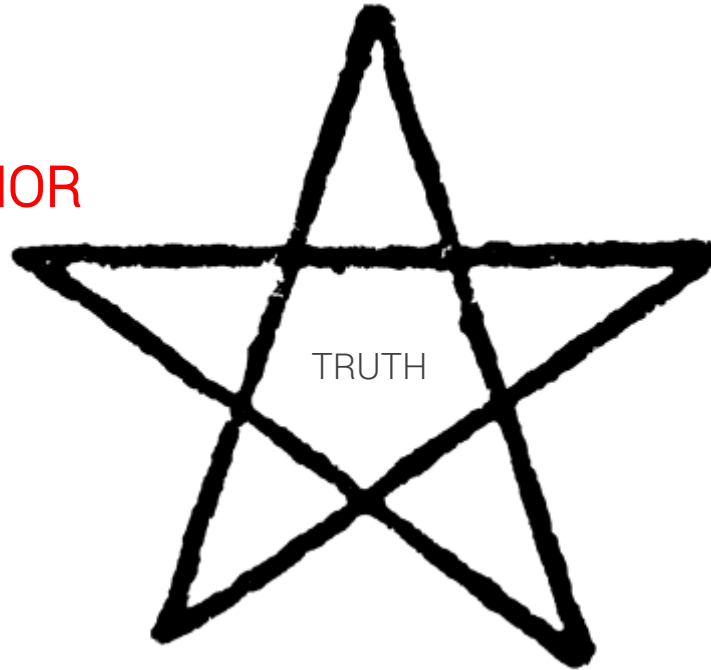


5 Elements Of Truth

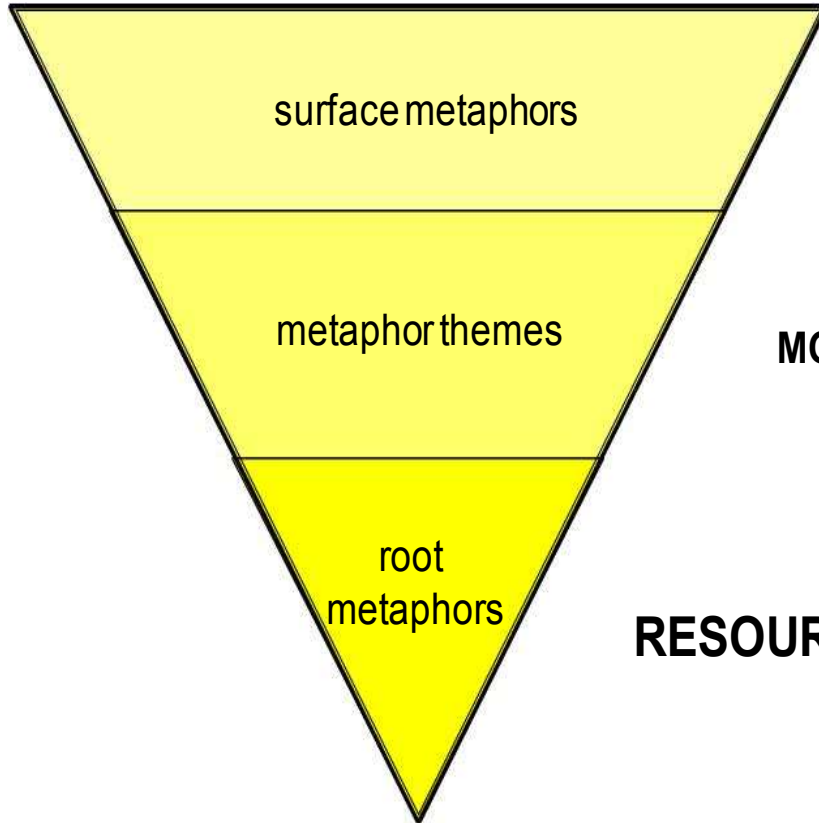


5 Elements Of Truth

METAPHOR



Metaphor...



“money down the drain”
“drowning in debt”
“the bank froze my assets”



MONEY IS LIKE LIQUID

RESOURCE



JupiterMu – Root Metaphor Analytics

Journey

How the Meeting of Past, Present, and Future Affects Peoples' Thinking

Union

How the Need to Relate to Oneself and Others Affects Peoples' Thinking

Power

How the Sense of Mastery, Vulnerability, and Well-Being Affect Peoples' Thinking

Inside

How Inclusion, Exclusion, and Other Boundaries Affect Peoples' Thinking

Transformation

How Changes in Substance and Circumstances Affect Peoples' Thinking

Equilibrium

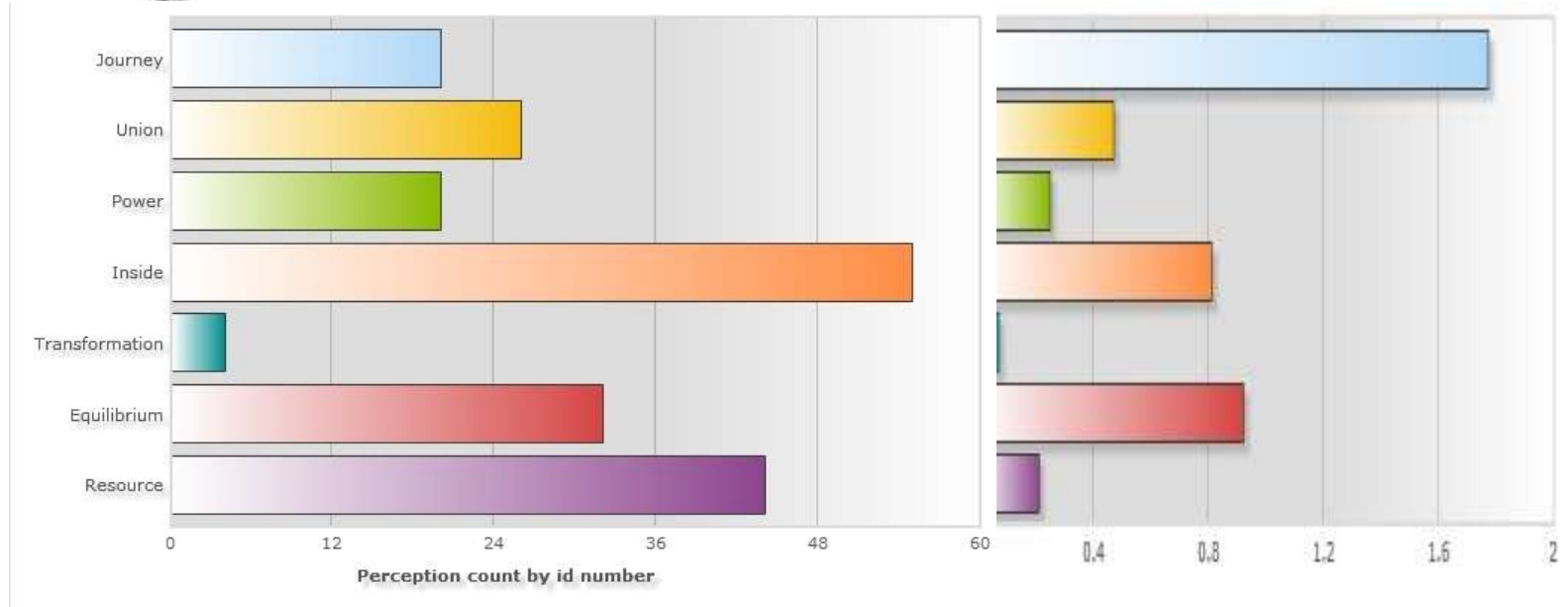
How Justice, Equilibrium, and the Interplay of Elements Affect Peoples' Thinking

Resource

How Acquisitions and Their Consequences Affect Peoples' Thinking



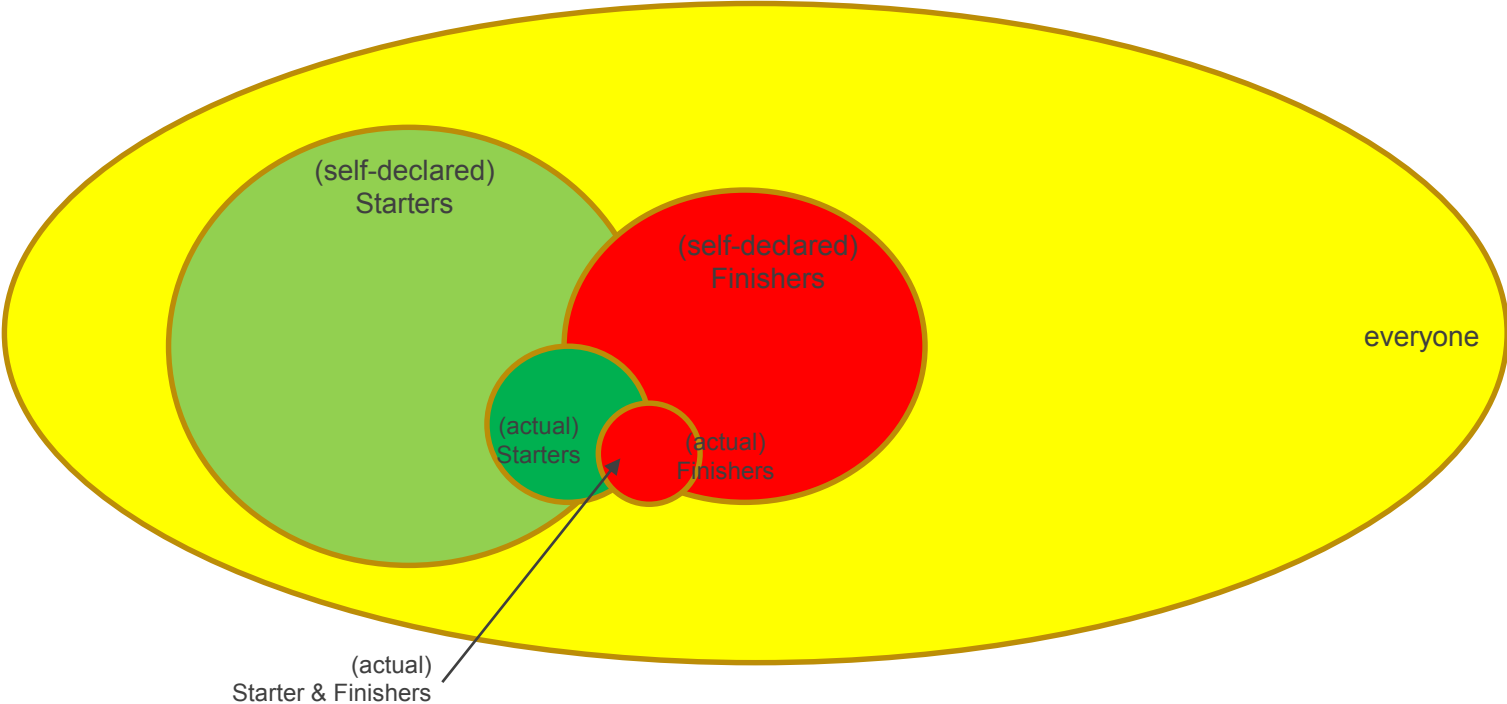
JupiterMu – Root Metaphor Analytics



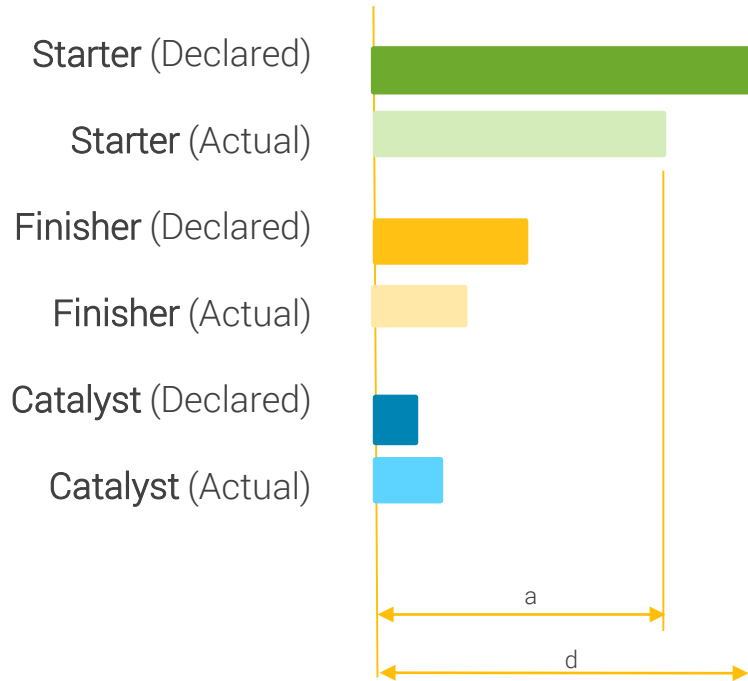
Advertising Messaging

Customer

Starters & Finishers



Outputs



$$\text{Realism} = 100 + 100 \cdot (a-d)/d$$

Starter = 78% (<100% represents person is over-optimistic about abilities)

Finisher = 60%

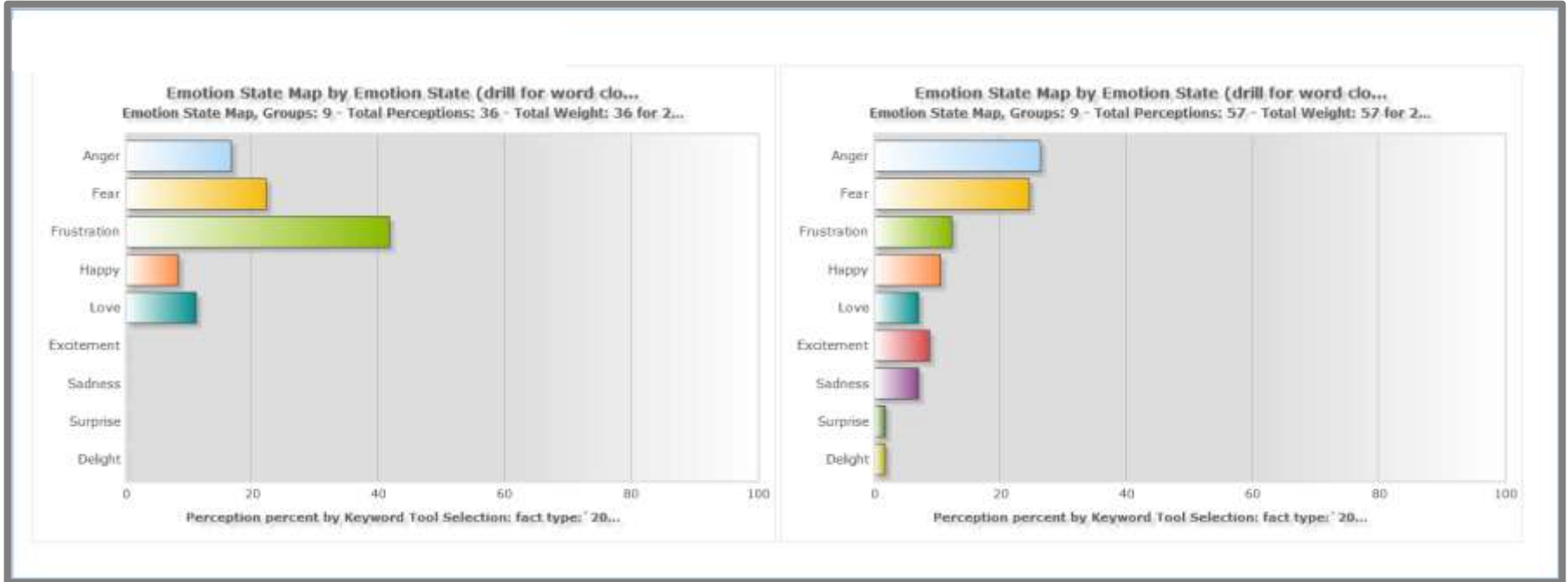
Catalyst = 115% (>100% represents person who underestimates their abilities)

Hong Kong News 2014 Compared With 2015



2014

2015



Hong Kong Frustrations

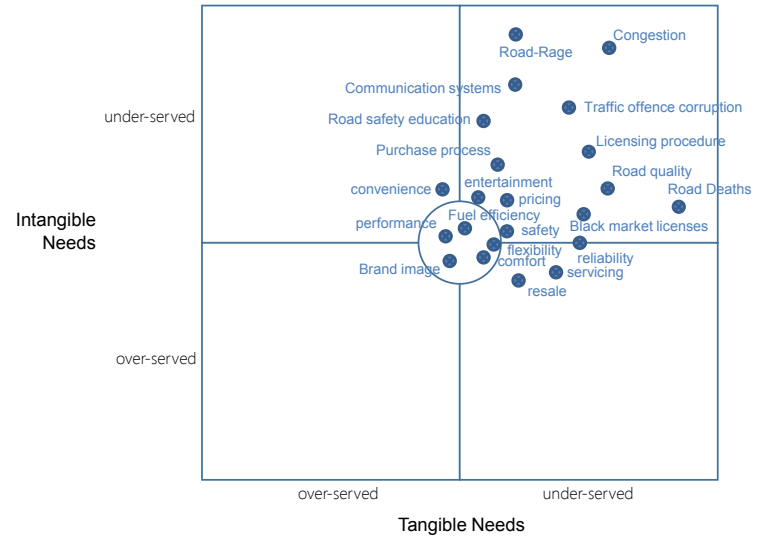
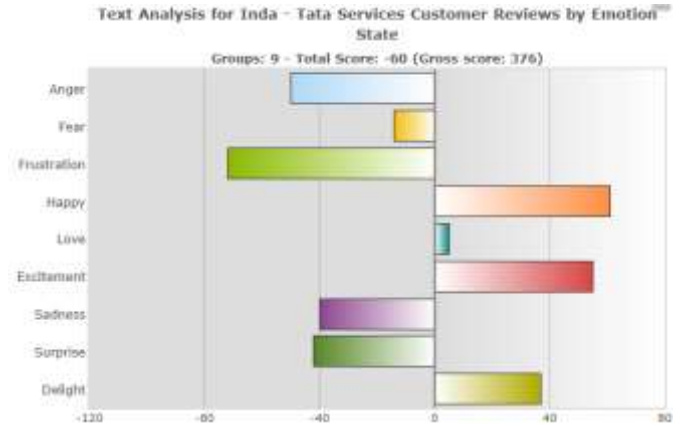
Capaign for universal suffrage - opposing views	Lust
Caution	Market Driver
Challenge to dictatorship Resheme	Online Censorship increased in HK
Community Celebrations	Outbound tours popular
Creativity opens eyes	Peace and ceremony
Critisim	People v Capitalism
Cultural Celebration	People v Power
Decrease in employment in the Activity Sector	Peoples voice growing
Definance against electrial reform	Political Corruption
Developing Tourism Facilities	Political Reform
Difference in cultural behaviours	Population Management
Difficulties for Young People - education and employment	Protection of endangered species
Disgruntled locals over good smuggling	Questioning communist links
Economic slow down	Questioning the agenda of supporters
Export demands from US - Lobster	Review on import control
Financial exploitation elder abuse	Rising Food Prices
Financial exploitation elder abuse	Risk of hostile attitudes
Financial exploitation elder abuse	Risk to locals
Financial Pressures	Security Risk
Financial strain	self censorship v Freedom of Expression
Flu Death Toll	Soaring Food Prices
Food Safety - Reviews on Export	Social and Economic inequality
Food Safety - Reviews on Export	Student generation rising
Freedom of Expression	Student Voice
Government Processes	Student Voice
Holidaymaker Critisim	Student Voice - Generational - natural progression
I.T. Bureau	Supporting revolution
llegal trading	Themes
Indulging on good food	Tourism
Inequality financial	Troubled Economy
IT Security	Uncertain change
Legislative Power	Universal Values
Loss of democracy	Zero Tolerance to unlicienced vendors



Real World Social Listening

Meaningful Measurements: Meaningful Solutions

- PanSensic is a proprietary Big Data Analytics technology. It uses smart 'lenses' to read between the lines of discourse to identify clues, decode weak signals and frustrations, locate insights, and improve understanding of what customers and employees mean, not just what they say.
- PanSensic is grounded in 15+ years of academic research around human anthropology, social science and psychology. It applies a contextual understanding of how consumers use specific words and metaphor phrases, to arrive at an unparalleled comprehension of meaning.
- Unlike other Big Data providers, PanSensic started from a world of delivering meaningful solutions to seemingly intractable problems, where there is a need to measure what's important rather than what is merely convenient to measure
- PanSensic is helping marketers, managers and leaders to identify opportunities, recognise tensions, and improve communications.



Triangulating Patient-Clinical-Management opinions



Mapping Guest Frustrations



Weak-Signal New-Trend Radar



'What will be Cool next year?'



How best to serve motorist needs in India?



How to re-invent 18-24 holidays?



How to transform Call-Centre acceptability?



What do GenY Mortgage Customers Want?



Uncovering Hidden consumer needs





Pick up the weak signals
that will change the world

Hello world.
How nice to
hear from you.

darrell.mann@systematic-innovation.com