"Maximize Innovation Success"

AI enabled Innovation…how to predict next Innovation?

***Eugene Roytburg**, Ph.D. Managing Partner, Fractal Analytics Inc.*
***Avishek Singh**, Principal, Fractal Analytics, Inc.*

June 7, 2018
Chicago, IL,

fractal

About me...
Eugene Roytburg, Ph.D. Managing Partner at Fractal Analytics

- **Overall Background**
  - Thought leader in bringing **Science**, **Foresight Analytics**, and **Consulting** to business problem solving and decision making
  - Over **25 years** of experience of developing **predictive and foresight analytics** based solutions, processes and technologies to address variety of problems, from engineering to social to business
  - Managing Partner of **Fractal Analytics** (**4i** was acquired in June 2017), leader in foresight driven growth strategy and analytics helping clients identify, develop and sustain **future growth and innovation**
  - **Ph.Ds. in Systems Engineering from Minnesota and Applied Mathematics from Moldova University.** Studied MBA at **Kellogg** Graduate School of Management, emphasis on strategy, operation and innovation

- **Work Experience**
  - **25 years** of corporate (CNH, SPSS, Nielsen), academic (Russia, Moldova) and consulting experience (Booz, A.T. Kearney, 4i)
  - Worked with more than **60 companies** on key issues ranging from market growth strategy, marketing, **innovation** to analytics and data strategies, transformation and process development
  - Frequent presenter and keynote speaker on same topics at more than **15 conferences** annually

Storyline

- Why predicting innovation is important topic?

- Before we get into this, I will define a few things
  - what is analytics, predictive analytics and AI
  - what does it mean to predict innovation?

- I will discuss Predictive Innovation process…

- …and will share a few examples

- I will finish with some key principles for how to improve Innovation Success

fractal

Could we have predicted these products?

Companies spend up to 15% of Sales on Innovation…

Top 20 R&D Spenders

Rank in 2017	Rank in 2016	Change	Company	Geography	Industry	R&D spending (US$ Billions)	Revenue (US$ Billions)	R&D Intensity
1	3	+2	Amazon.com, Inc.	North America	Software and Internet	16.1	136.0	11.8%
2	4	+2	Alphabet Inc.	North America	Software and Internet	13.9	90.3	15.5%
3	5	+2	Intel Corporation	North America	Computing and Electronics	12.7	59.4	21.5%
4	2	-2	Samsung Electronics Co., Ltd.	South Korea	Computing and Electronics	12.7	167.7	7.6%
5	1	-4	Volkswagen AG	Europe	Auto	12.1	229.4	5.3%
6	6	NA	Microsoft Corporation	North America	Software and Internet	12.0	85.3	14.1%
7	7	NA	Roche Holding AG	Europe	Healthcare	11.4	51.8	21.9%
8	14	+6	Merck & Co., Inc.	North America	Healthcare	10.1	39.8	25.4%
9	11	+2	Apple Inc.	North America	Computing and Electronics	10.0	215.6	4.7%
10	8	-2	Novartis AG	Europe	Healthcare	9.6	49.4	19.4%
11	10	-1	Toyota Motor Corporation	Japan	Auto	9.3	247.5	3.8%
12	9	-3	Johnson & Johnson	North America	Healthcare	9.1	71.9	12.7%
13	13	NA	General Motors Company	North America	Auto	8.1	166.4	4.9%
14	12	-2	Pfizer Inc.	North America	Healthcare	7.9	52.8	14.9%
15	15	NA	Ford Motor Company	North America	Auto	7.3	151.8	4.8%
16	16	NA	Daimler AG	Europe	Auto	6.9	161.8	4.2%
17	20	+3	Oracle Corporation	North America	Software and Internet	6.8	37.7	18.1%
18	17	-1	Cisco Systems, Inc.	North America	Computing and Electronics	6.3	49.2	12.8%
19	23	+4	Honda Motor Co., Ltd. New	Japan	Auto	6.2	125.6	4.9%
20	27	+7	Facebook, Inc. New	North America	Software and Internet	5.9	27.6	21.4%
					Total	194.5	2217.0	8.8%

Companies in red have been among the top 20 R&D spenders every year since 2005
Source: Bloomberg data, Capital IQ data, 2017 Global Innovation 1000 study

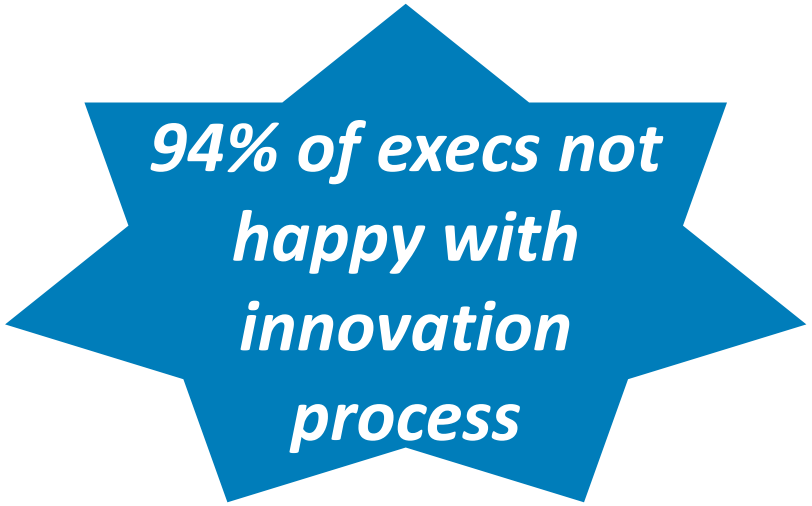
4-25%

$195B

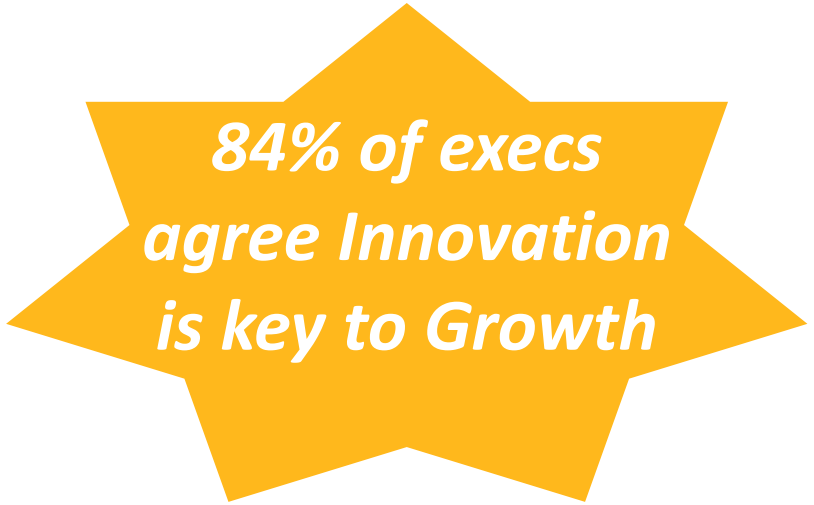
fractal

…and yet, they struggle to consistently launch successful products

Source: Fractal Analytics' Innovation Success Study 2017, 45 Companies (CPG, Retail, Pharma)



Source: McKinsey



Source: McKinsey

So, how we can use Analytics/AI for improve Innovation Success?

Let's define Analytics first

Helping making optimum **decision** via addressing **business issues**…

by combining…

Business knowledge…

…with math and data…

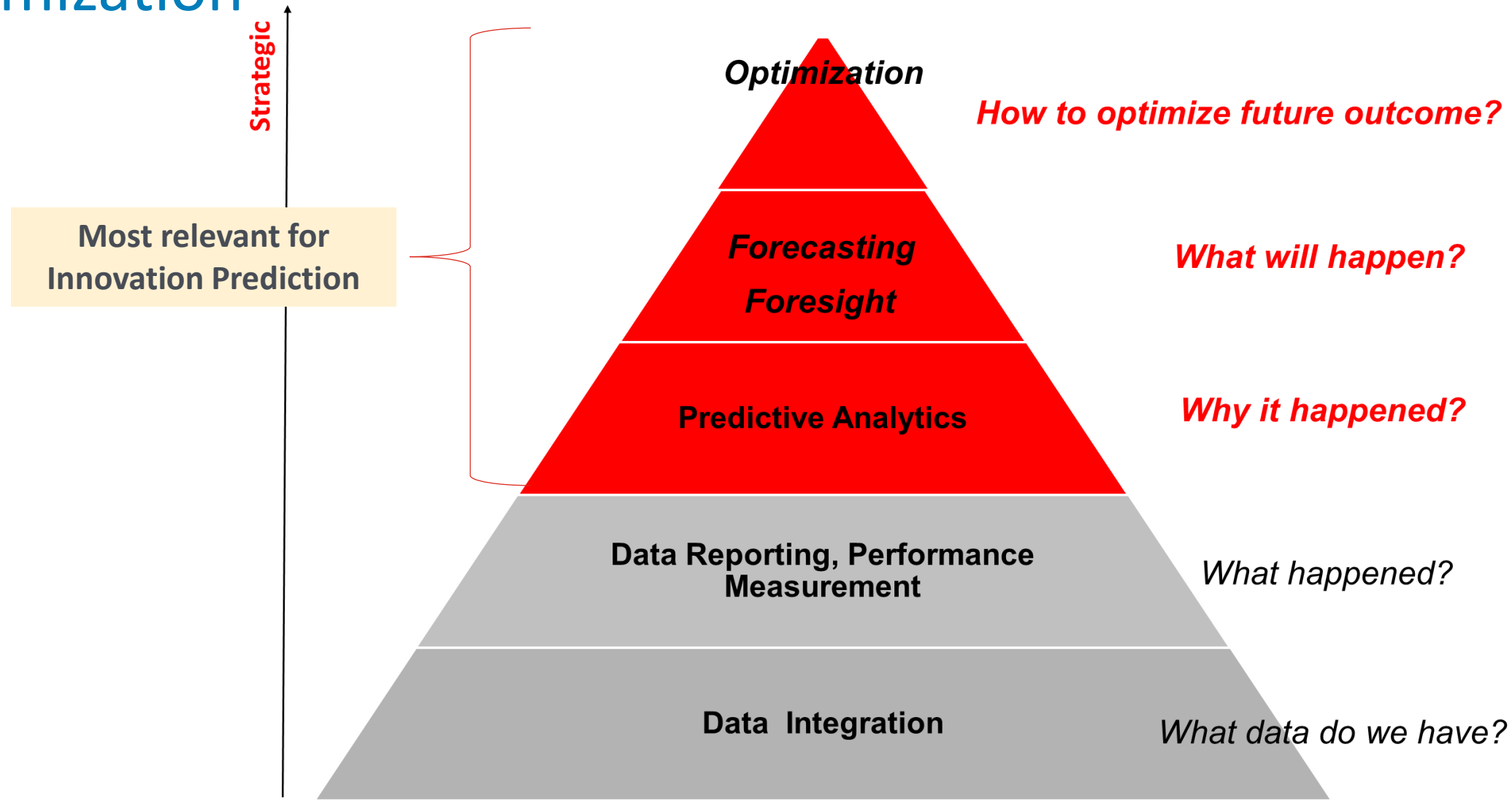
…and keeping future in mind…

…to create…

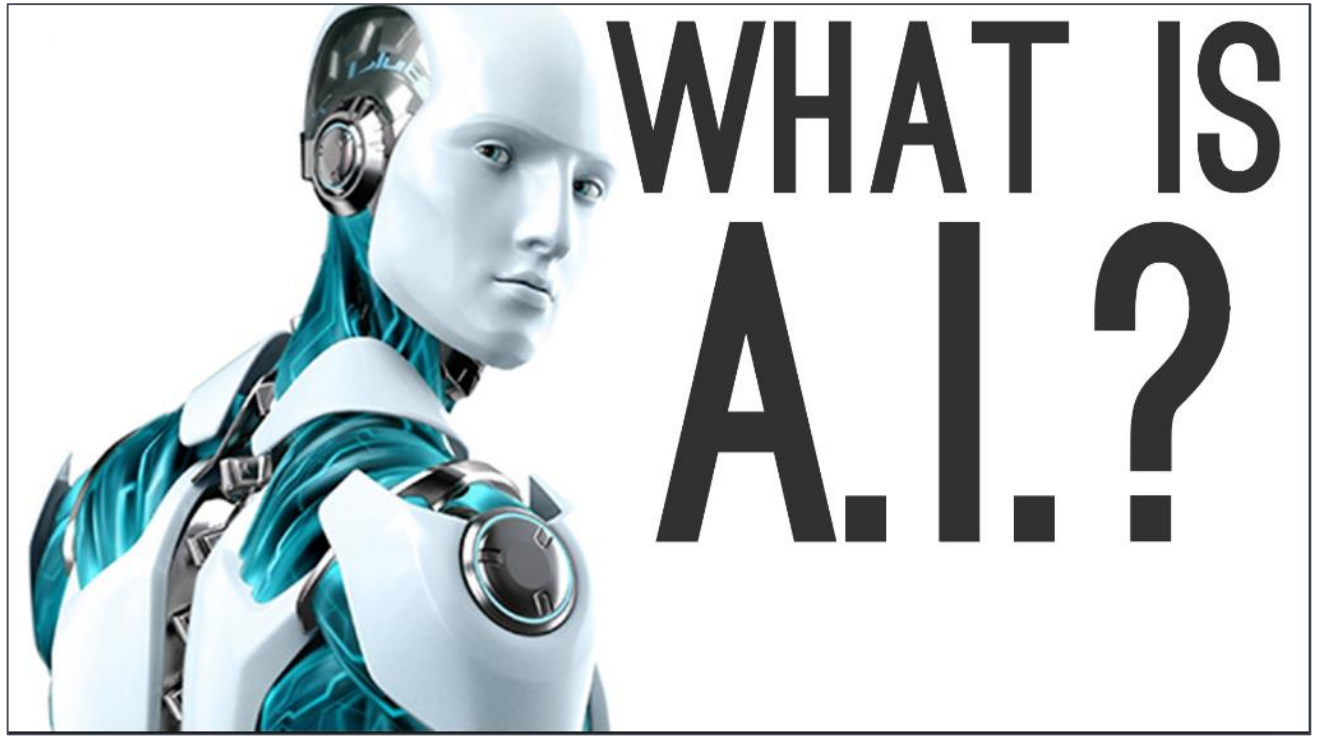
…more predictable performance

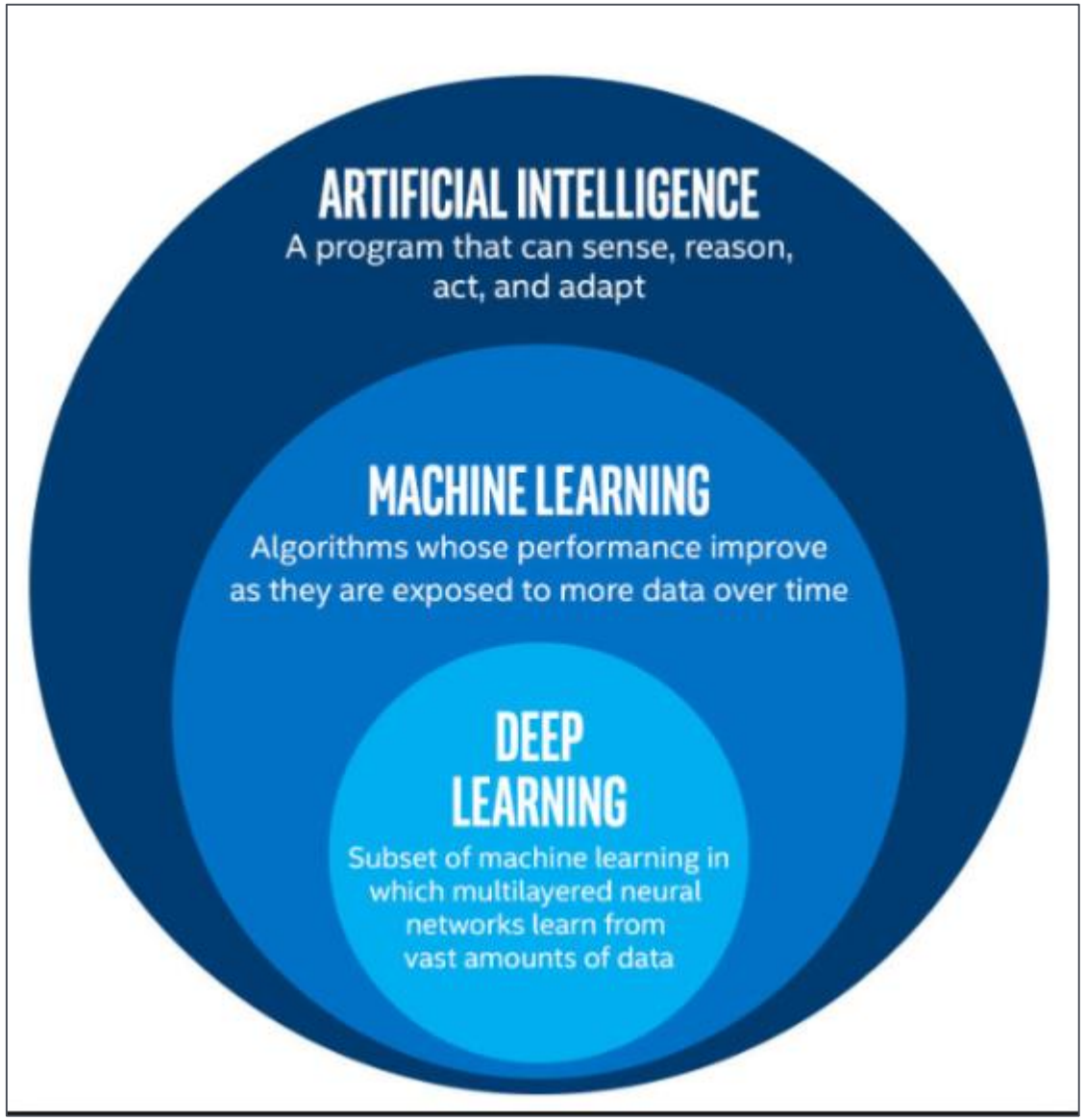
fractal

Analytics can be divided into “basic”, predictive and foresight, optimization



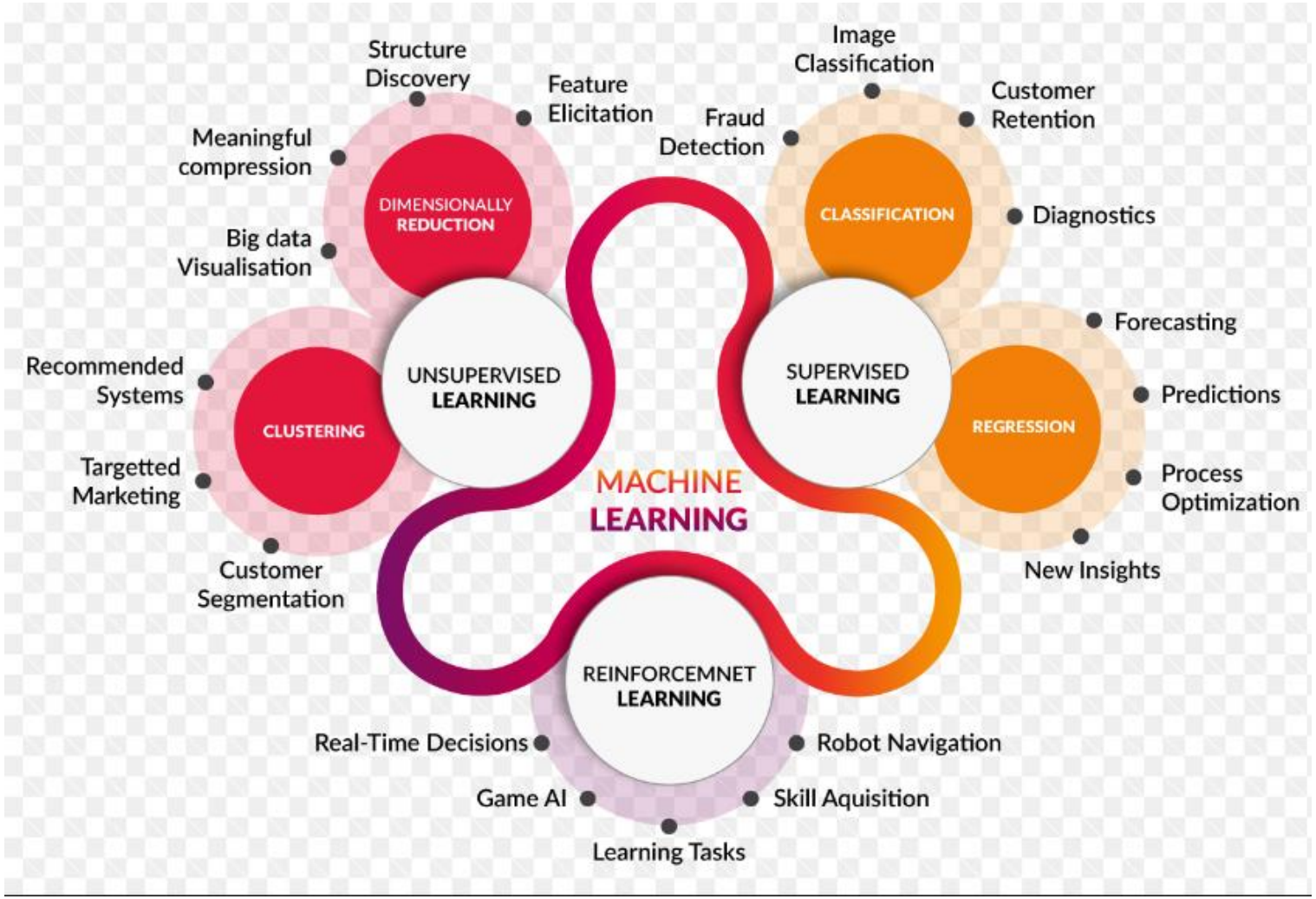
What is AI…





…an Analytics Technique

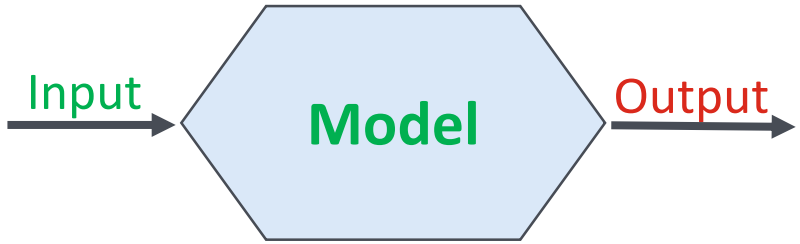
AI Techniques and Applications



Analytics vs. AI

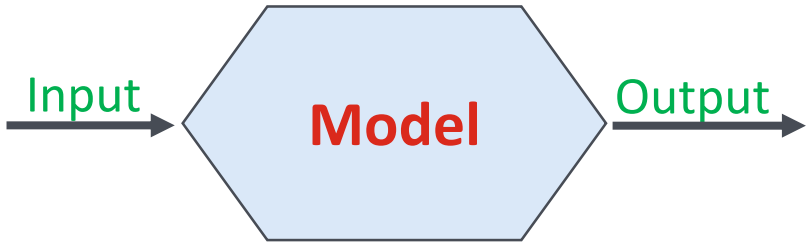
Given
Wanted

Analytical Modeling Approach



- Data is **NOT** always needed to develop models
- **Knowledge** is required
- Can predict future without data

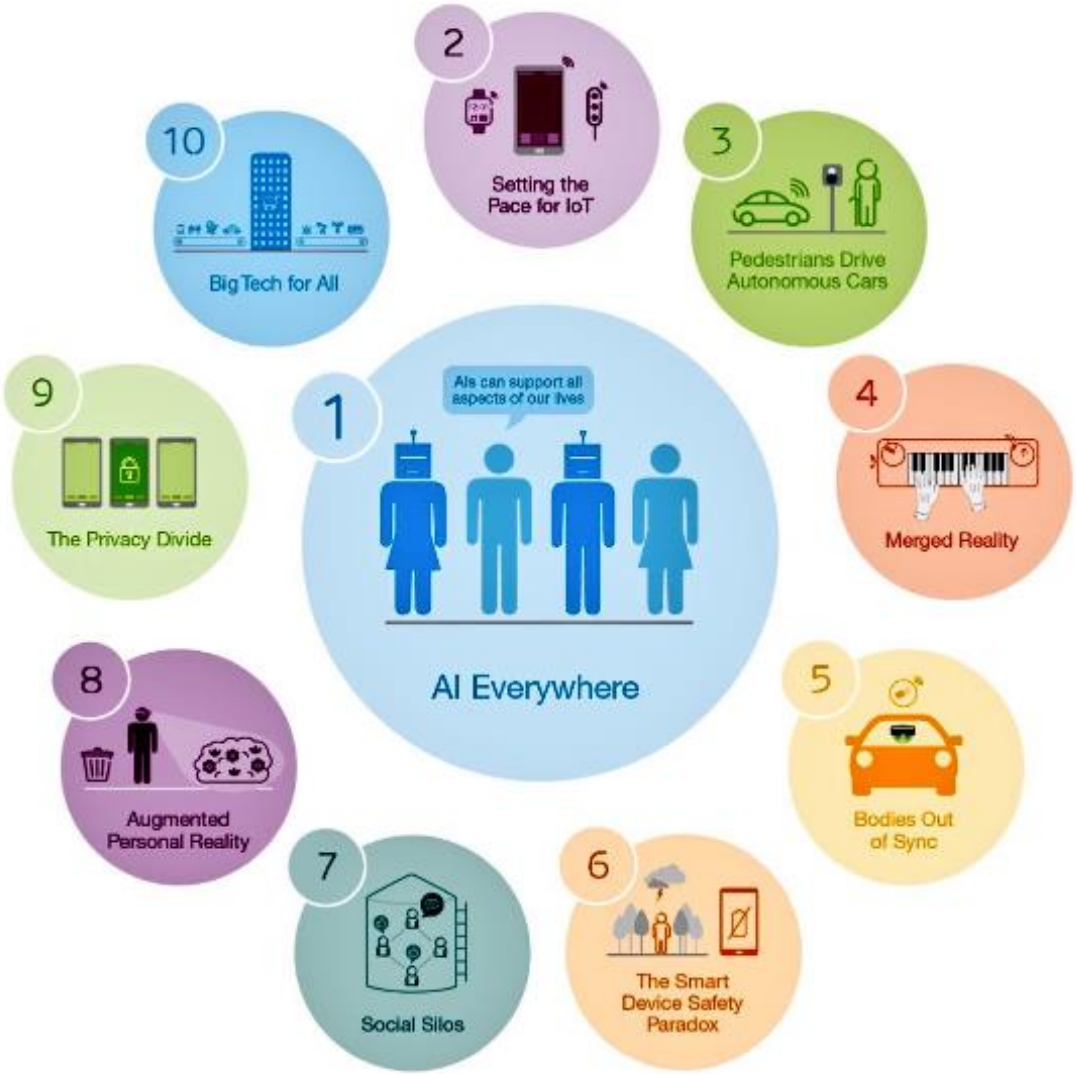
AI Approach

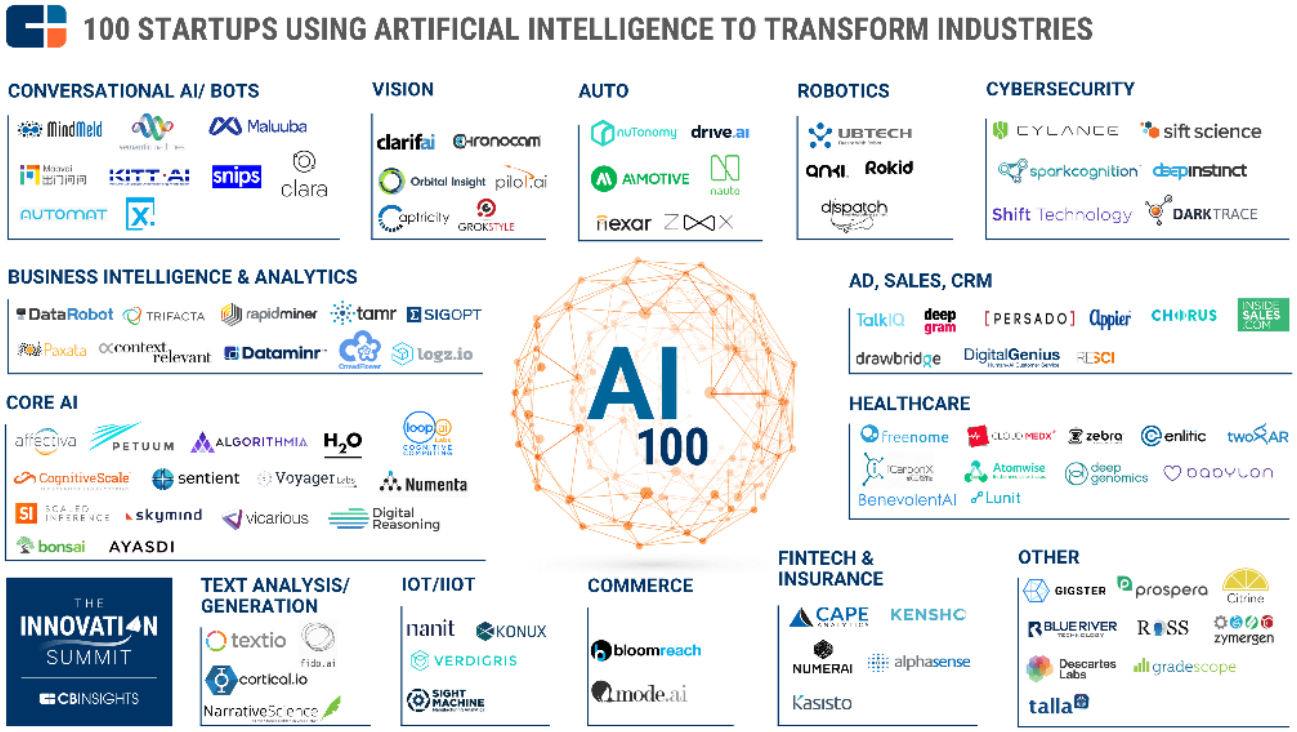


- **Data** is **ALWAYS** needed to train models
- No Knowledge required
- Can’t predict future if did not exist in past data

fractal

AI is Everywhere…





fractal

…Including, Baking!

Recipe Chocolate Chip and Cardamom Cookie

Google

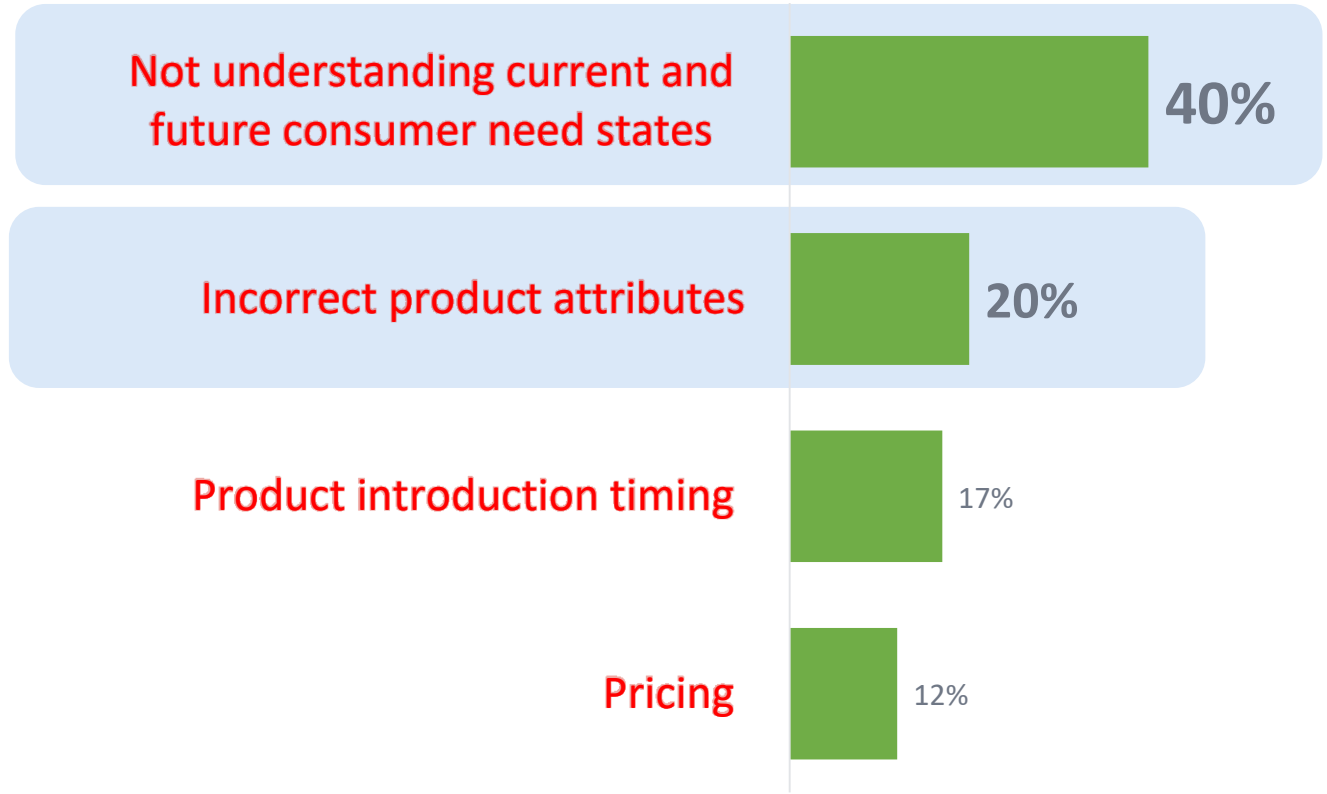
GLUTEN FREE GOAT BAKERY & CAFÉ

INGREDIENTS		DIRECTIONS
Tapioca Starch	1/2 cup + 2 TBSP	Combine all the dry ingredients except the chocolate chips,
Brown Rice Flour	1/2 cup	in a bowl and mix well.
OG Sugar	3/4 cup + 1.5 TBSP	
Cardamom	2 tsp	In another bowl, combine all the wet ingredients, and then
flaxseed meal	1.5 TBSP	add to the dry ingredients and mix enough to combine.
Sorghum Flour	1/4 cup	
Raw Sugar	1/4 cup	Add the chocolate chips and fold in until just mixed. Using a
xanthan gum	1.5 tsp	large spoon, drop on parchment lined sheet pan and bake
Sea salt	1.5 tsp	at 350F for about 12 minutes.
baking soda	1 tsp	
Chocolate chips	1 cup	
water	3/4 cup	
Saf flower oil	3/4 cup	

Will talk about it later

fractal

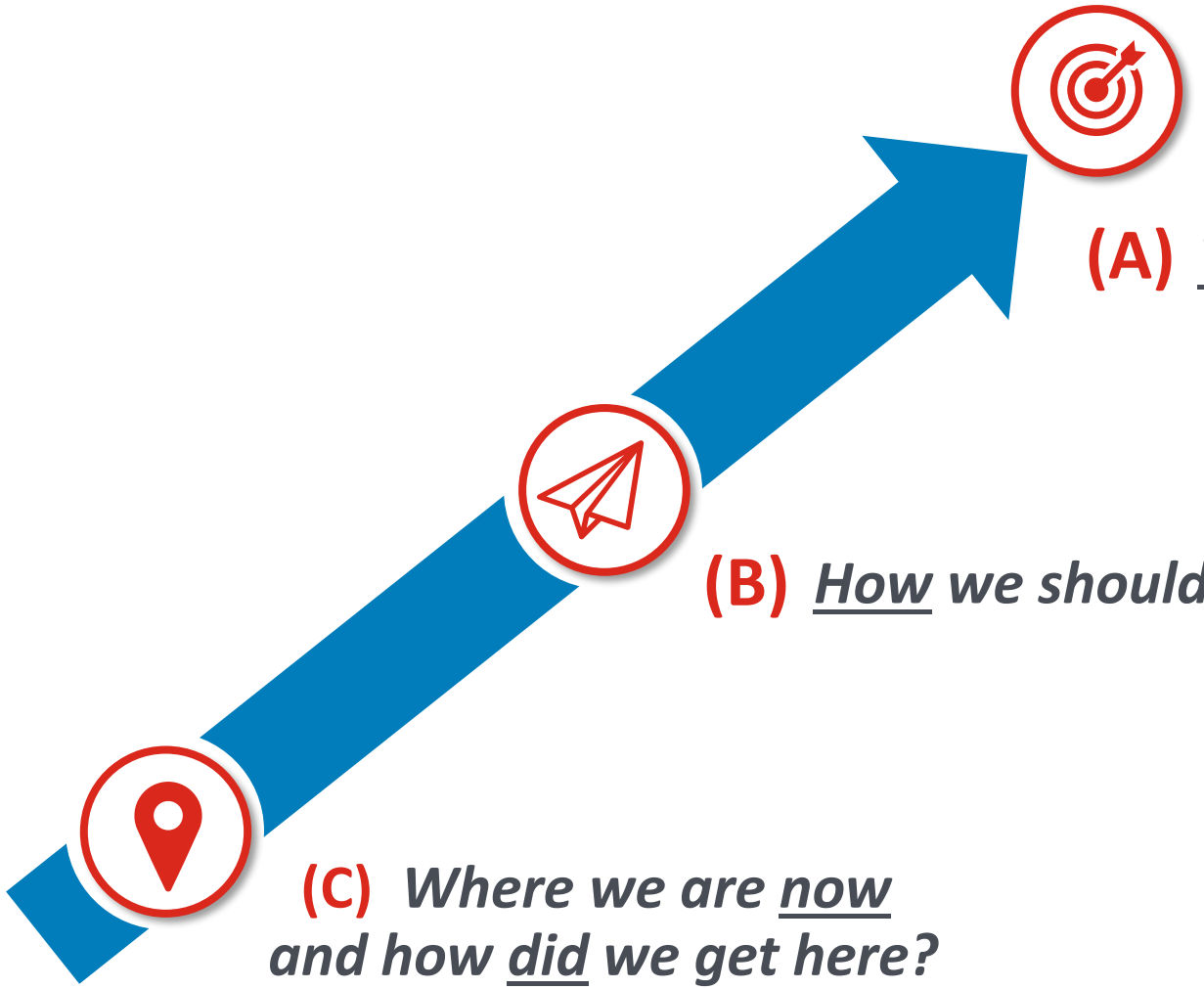
Key Reasons for New Product Failure… Do not understand *need states* and misaligned *product attributes*



Source: Fractal Analytics' Innovation Success Study 2017, 45 Companies (CPG, Pharma, B2B)

fractal

So what do we need for innovation prediction?



(A) ***Where we want to be?***

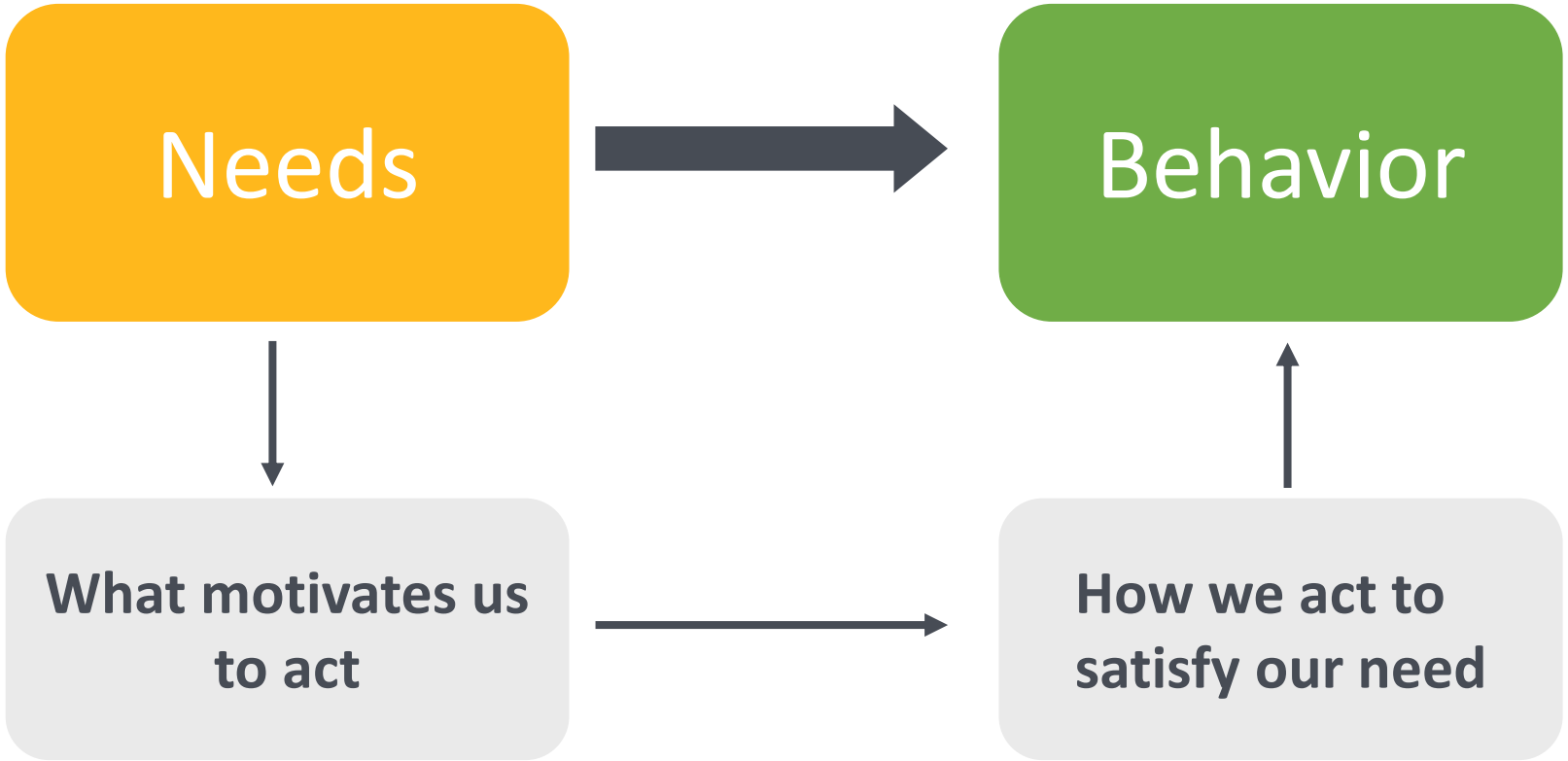
(B) ***How we should get there?***

(C) ***Where we are now and how did we get here?***

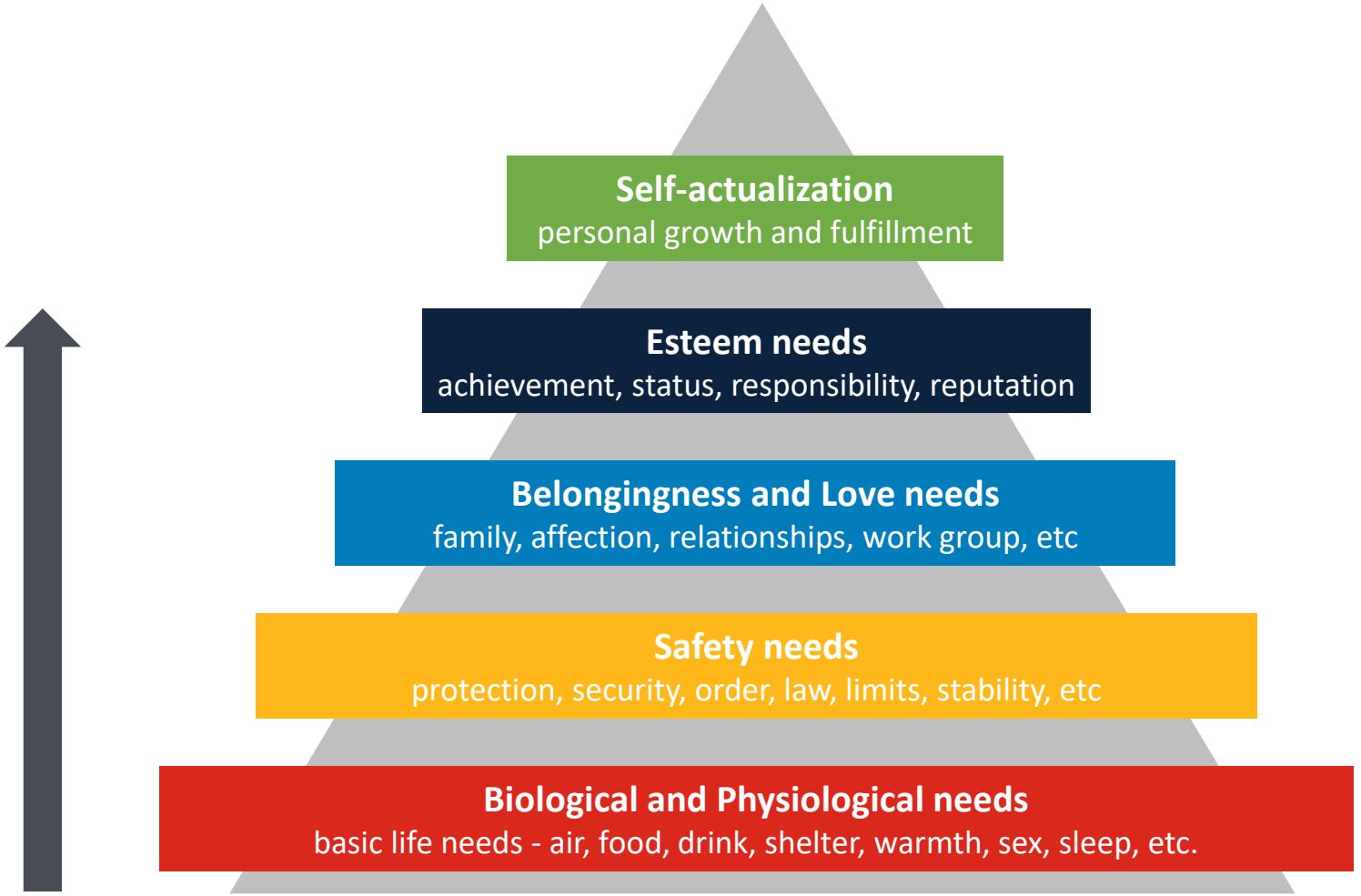
What we want to achieve with Innovation?

Shaving Example

Each of us is motivated by our needs. Our needs principally drive our behavior



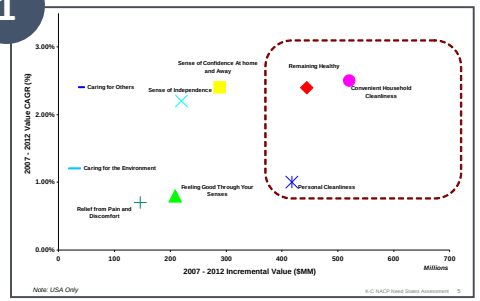
We know all needs are not equal. We began with basic needs and then…we wanted more!



Looking at existing and new need states will uncover new sources of innovation

FROM Existing Need States…

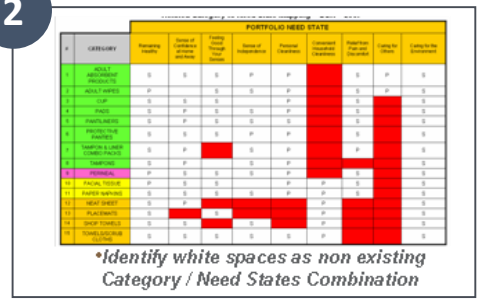
1



$ XX MM

…Extended footprint…

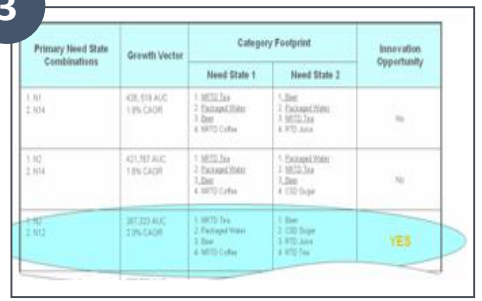
2



$ YY MM

…Multiple Need State Combination…

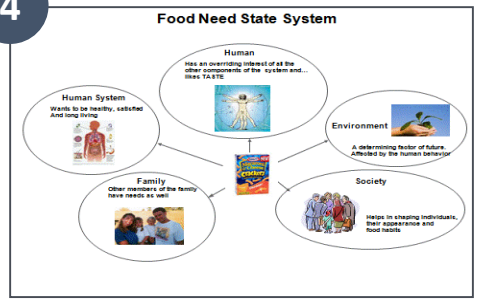
3



$ ZZ MM

…TO New /Non-existing Need States

4



$ WW MM

CURRENT SOURCES

NEW SOURCES OF INNOVATION

fractal

From combining multiple need states…

FEEL GOOD

LOOK GOOD

…to identifying new needs that do not yet “exist”

SHAVING NEED SYSTEMS

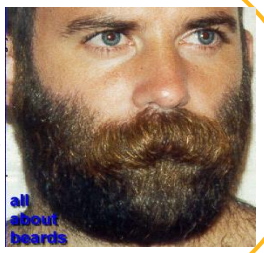
Shaving Example

Skin

Protects body and prevents entry of micro-organisms

Hair

Extension of skin with no sensory organs, assists in appearance



Human

Has an overriding interest of all the other components of the shaving system.
May not completely understand the objectives of other components and their purpose

Environment

A determining factor of future.
Affected by the human behavior

Society

Helps in shaping individuals, their appearance and habits

Past Needs may not be…**Future** Needs

HISTORY

Future = Past
Conditions do not change

No Change

Need States 2015

60% Taste
30% Feel Good
10% Health

Need States 2020

60% Taste
30% Feel Good
10% Health

Same need states

FORESIGHT

Future = Past **+ Change**
Conditions **will Change**

Foresight Change

Need States 2015

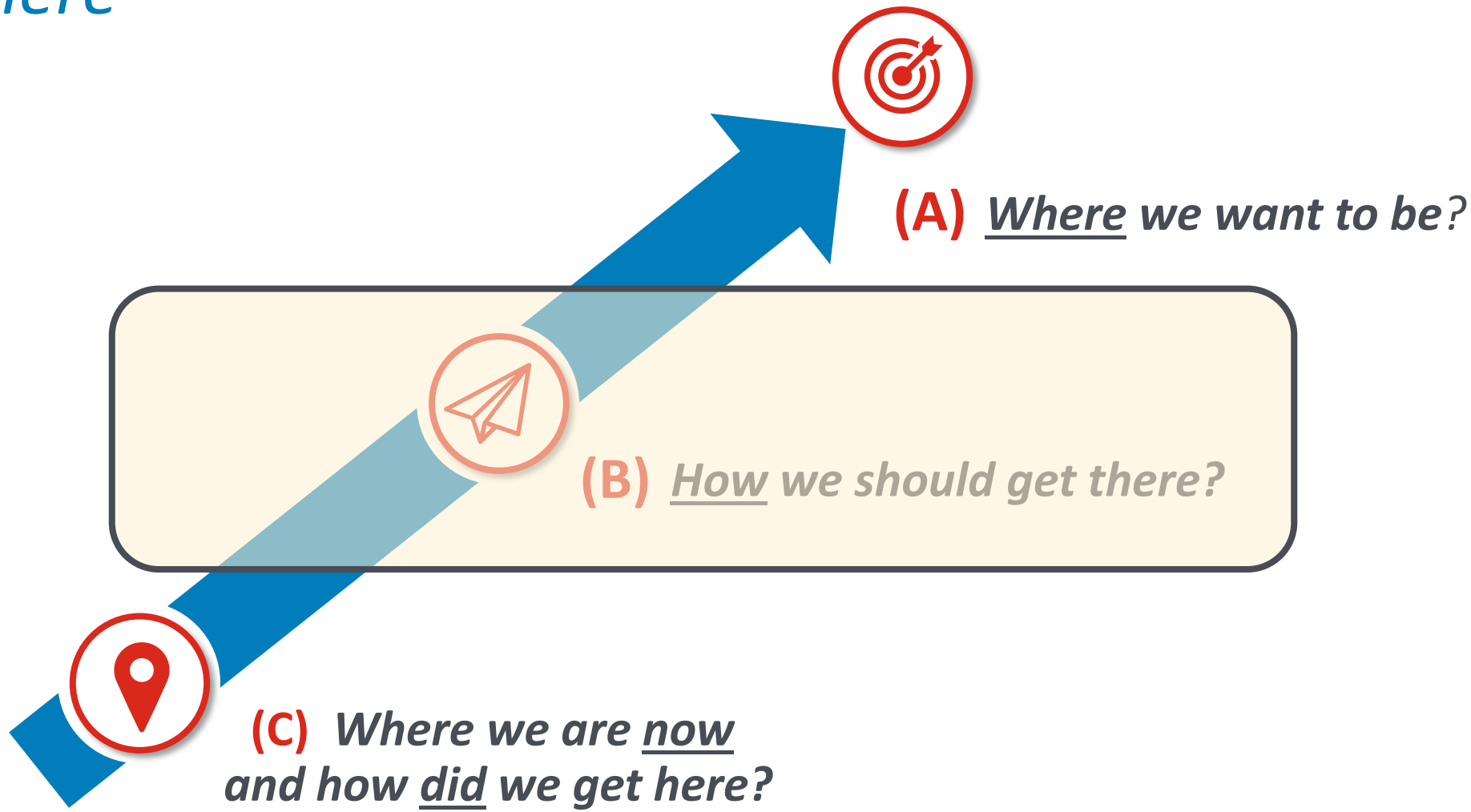
60% Taste
30% Feel Good
10% Health

Need States 2020

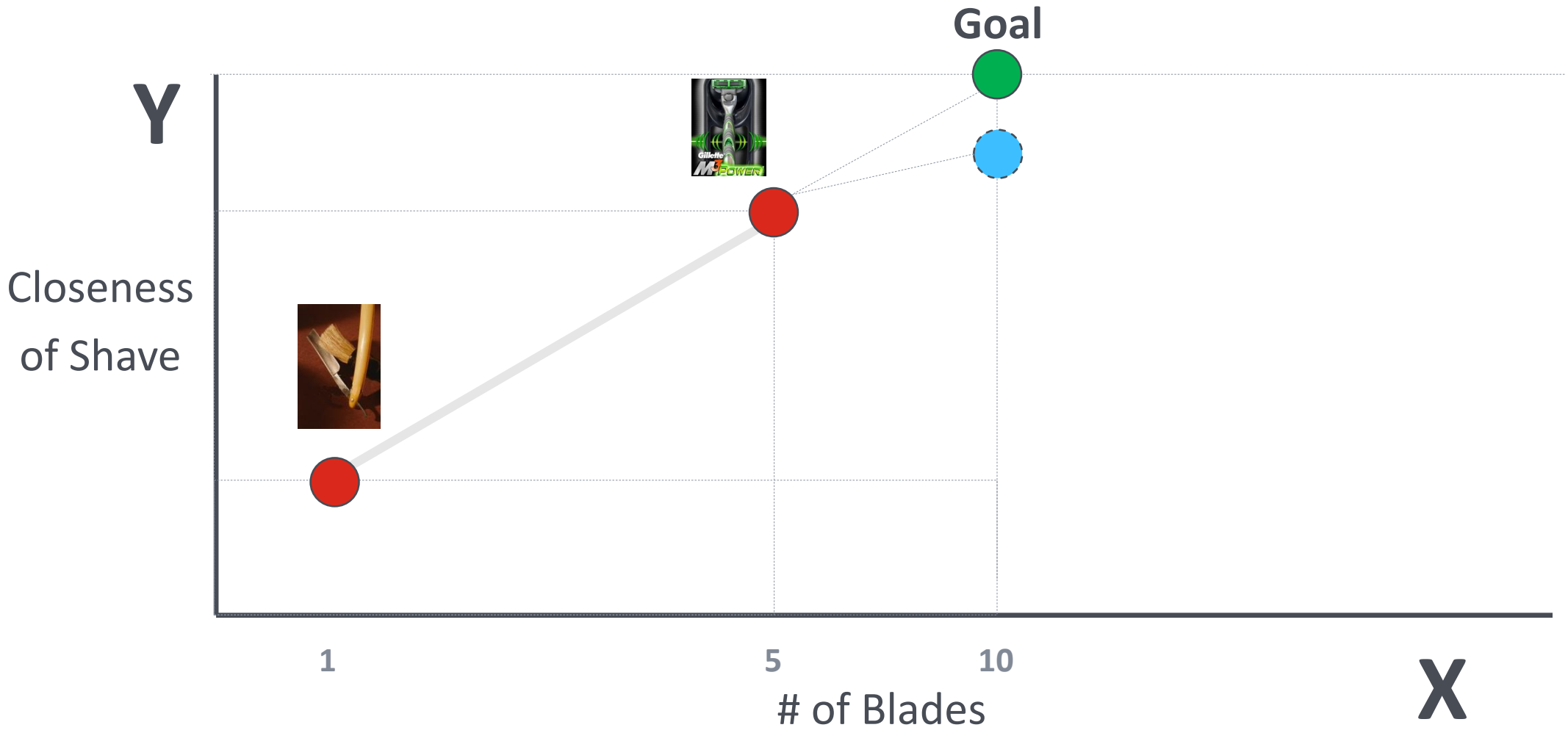
50% Taste
25% Feel Good
20% Health
10% Look Good

CHANGE – Need state mix and new needs

Once the goals defined, we should talk about *(B) How we should get there*



How we can achieve that goal?

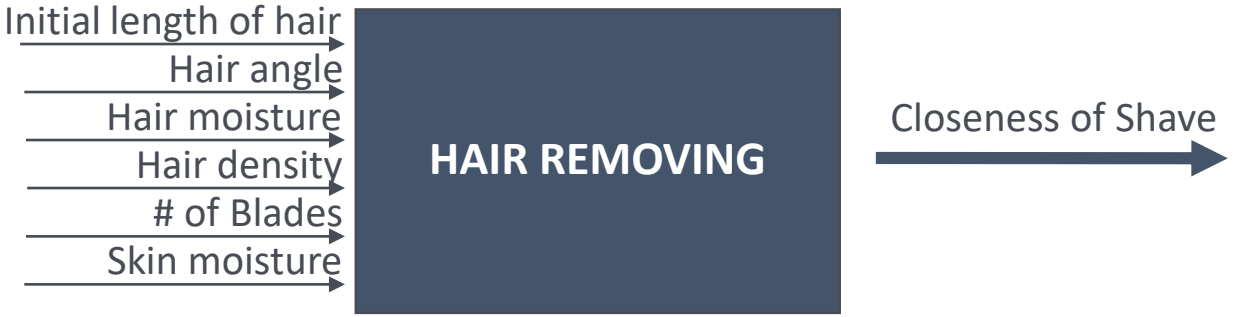


Closeness of Shave = f (# of Blades)

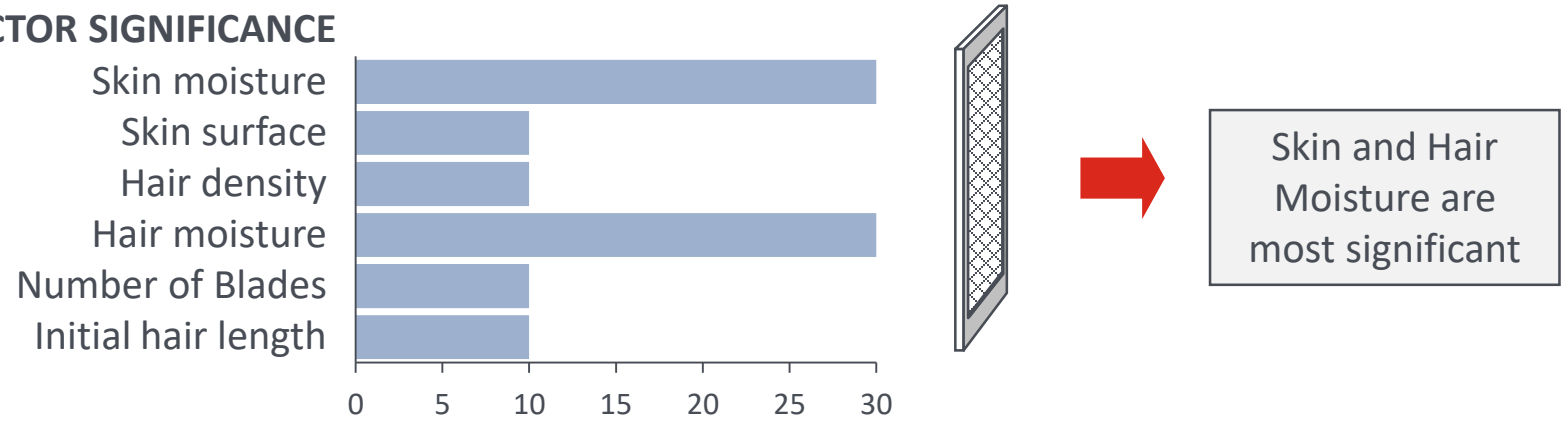
But what about Skin Moisture, Hair Moisture, Initial hair Length?

Shaving Example

ANALYTICAL FORMULATION



FACTOR SIGNIFICANCE

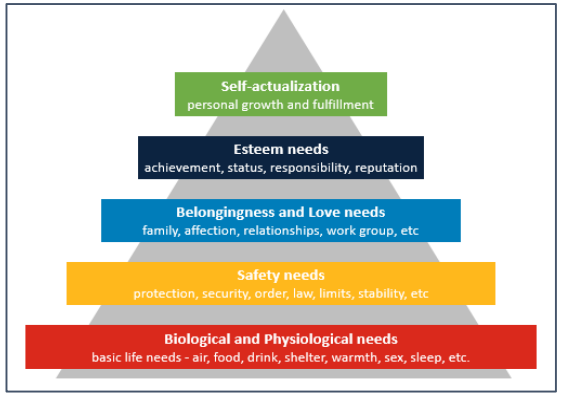


Closeness of Shave = f (# of Blades, Skin Moisture, Surface, Initial length, …)

And…Voila! Yes, we predicted this innovation!

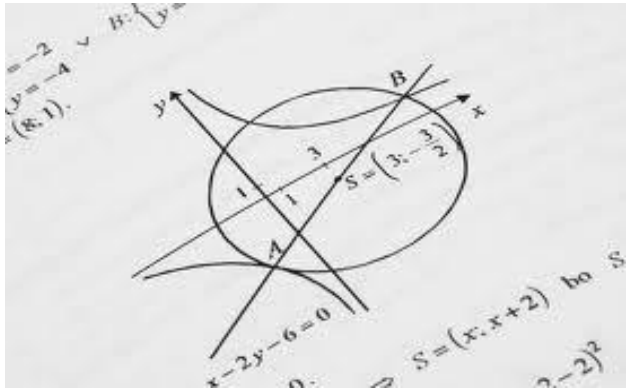
You just saw three key pillars of Predictive Innovation

Looking into needs…



…with future in mind…

…more predictably…



…will create…

…sustainable innovation with higher probability of success

fractal

Innovation Success Factors

WHAT GOALS?

Do we know WHAT innovation is supposed to DELIVER in terms of strategic, marketing and product goals ?

WHAT ATTRIBUTES?

Do we know what ATTRIBUTES innovation supposed to have to meet the goals ?

WHERE AND HOW TO SEARCH?

De we know WHERE and HOW we should search for innovation ?

WHEN TO BRING TO MARKET?

Do we know how business and customer will CHANGE by the time innovation arrives to the market ?

fractal

Predictive Innovation has two phases – ***Where*** and ***How*** to Innovate

Where to Innovate

1. EXISTING NEED-STATES	$XX MM
2. WHITE SPACE	$YY MM
3. MULTIPLE NEED STATE COMBINATION	$ZZ MM
4. NEW STAKEHOLDER NEEDS	$WW MM

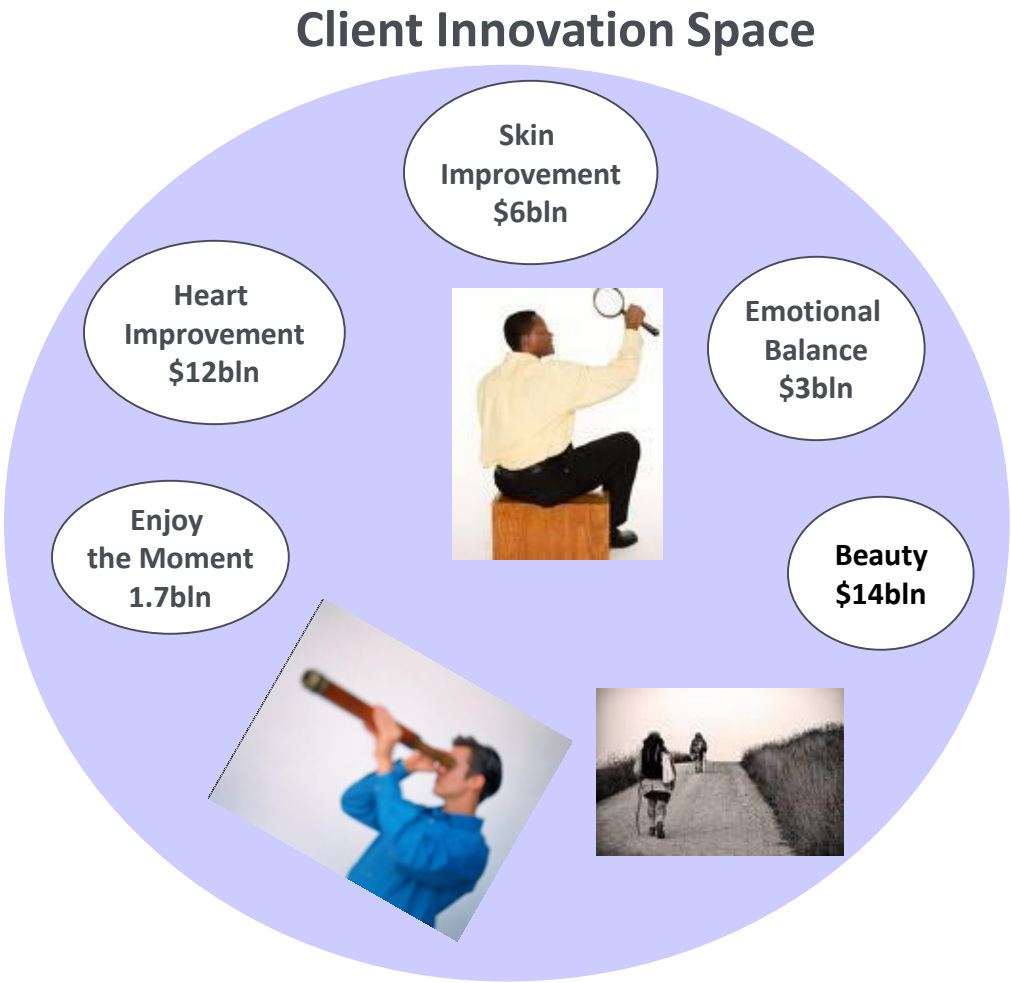
How to Innovate

- Optimum product attributes to satisfy each need-state
- Delivery platforms that maximize benefits aligned with need states

Innovation directions to go after

Optimum innovation platforms and concepts

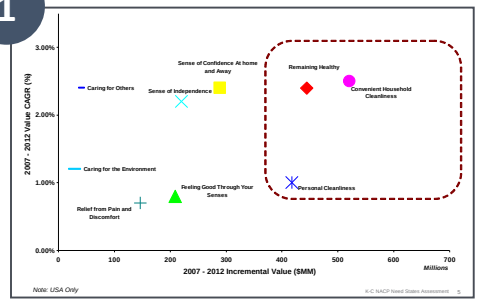
Where to Innovate phase helps identify the areas where innovations will be found



Most attractive need states are identified

FROM Existing Need States…

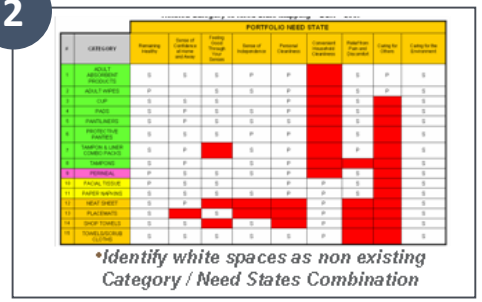
1



$ XX MM

…Extended footprint…

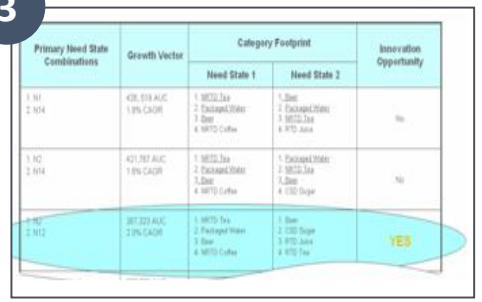
2



$ YY MM

…Multiple Need State Combination…

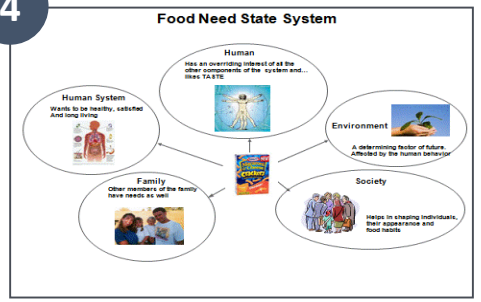
3



$ ZZ MM

…TO New /Non-existing Need States

4



$ WW MM

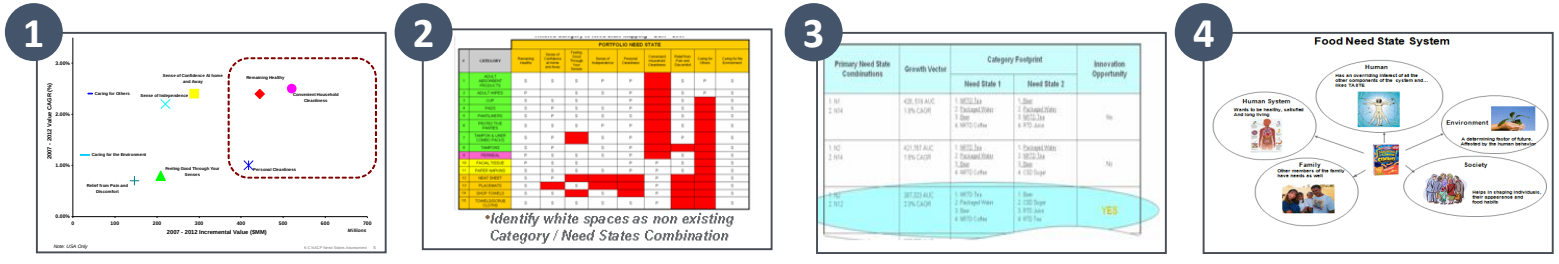
CURRENT SOURCES

NEW SOURCES OF INNOVATION

fractal

All sources of innovation will be prioritized and will feed into ***How to Innovate*** phase

WHERE TO INNOVATE?



$ XX MM	$ YY MM	$ ZZ MM	$ WW MM

N	Innovation Directions	Benefits	Size, $	Categories to satisfy	Attributes
#1	N1/N7/N9 Lips improvement/ Beauty/Tooth Health	•B1 •B7 •B9	$500mln	• Lipstick • Cosmetics • Toothpaste • …	• A11 - A17 • A71 - A77 • A91 – A97 •…
#2					

How to Innovate phase will identify attributes of future innovations

Mapping need states/benefits to product attributes and defining optimum "attribute mix" will help define innovation directions and concepts

How to Innovate?

N1/N7/N9 =g(B1/B7/B9)

A1/A7/A9 – new innovation idea

Toothpaste with lips improvement ingredient

N	Need State Combination	Benefits	Size, $	Categories used to satisfy	Attributes
#1	N1/N7/N9 Lips improvement/ Beauty/Tooth Health	•B1 •B7 •B9	$500mln	• Lipstick •Cosmetics • Toothpaste •…	• A11-A17 • A71 – A77 • A91-A97
#2					
…					

Need State has Benefits delivered via Attributes

N1 = f(B1) = g(A11-A17)

N7 = f(B7) = g(A71-A77)

N9 = f(B9) = g(A91-A97)

Case Study #1.
Shaving…without Shaving?!

You recall this Shaving Need System

Shaving Need System

Skin

Protects body and prevents entry of micro-organisms

Human

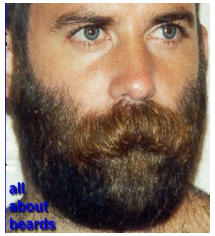
Has an overriding interest of all the other components of the shaving system. May not completely understand the objectives of other components and their purpose

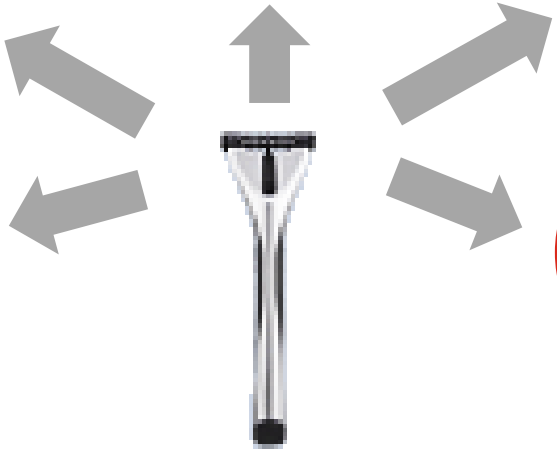
Environment

A determining factor of future. Affected by the human behavior

Hair

Extension of skin with no sensory organs, assists in appearance





Society

Helps in shaping individuals, their appearance and habits

fractal

Each Shaving Need System's components has its own objectives and needs

Shaving Need System

Shaving System Components	Component Objectives	Desirable Conditions (Needs)
Hair	• To grow • To protect human body from heat and cold	• No obstruction to active growth • To be left uncut
Skin	• To protect the human body • To provide sense if touch, feel, pressure, heat etc. • To prevent micro-organisms from entering the body • To stay healthy	• To be kept clean from dust and dead cells • To be kept moist at all times • To be allowed to breathe freely
Society	• To determine the norms for public behavior	• Humans need to follow an acceptable etiquette
Environment	• To provide life support for all organisms • To enable different forms of life to live in harmony • To provide an ideal situation for growth and reproduction of different living organisms	• No littering of unwanted material • No pollution that may prevent life forms from growing
Human	• To reproduce and grow • Self-actualization	• Basic, aesthetic, psychological, social and Economic needs

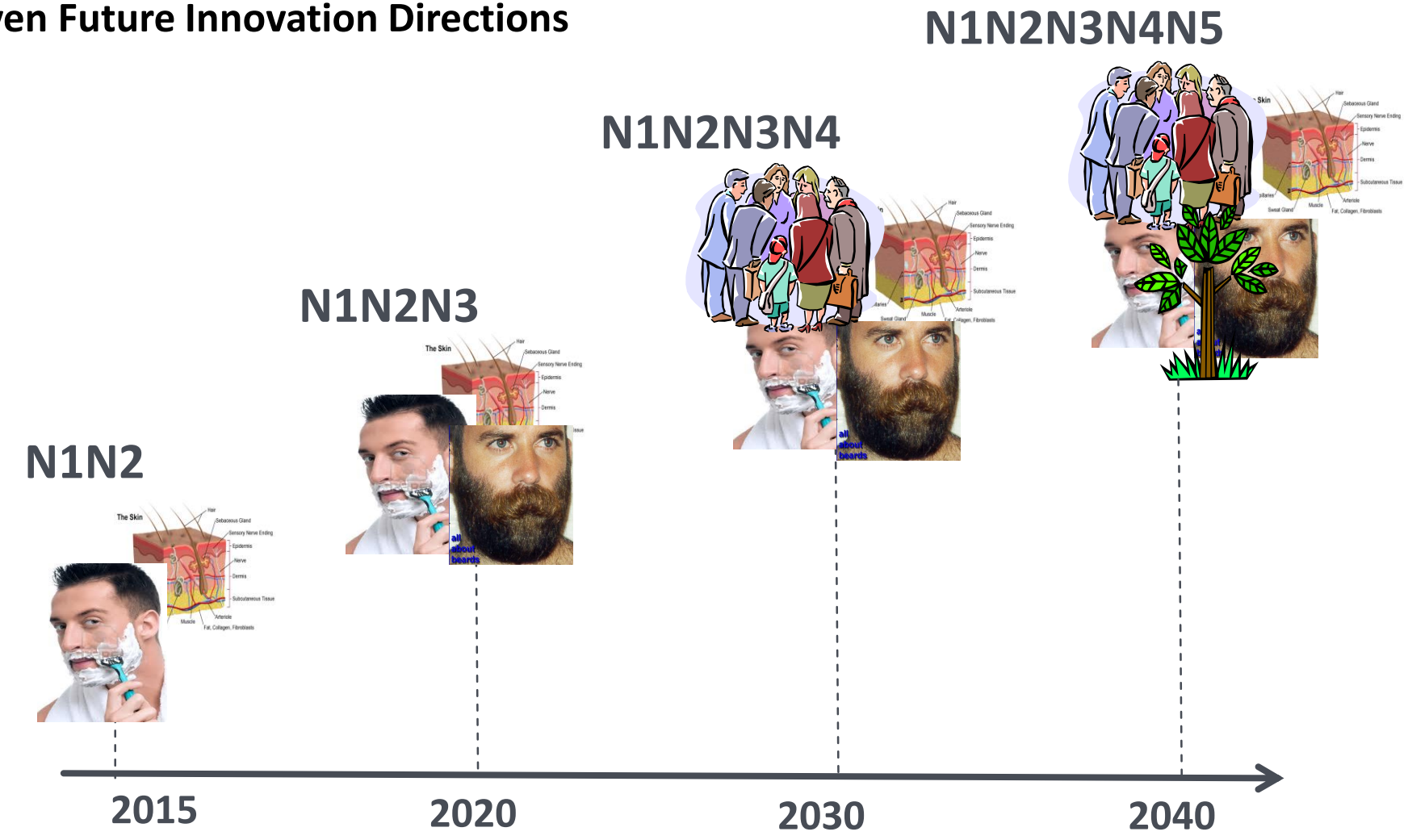
Predicting most "attractive" need combinations that most probably occur in future…

Need Combination Prioritization

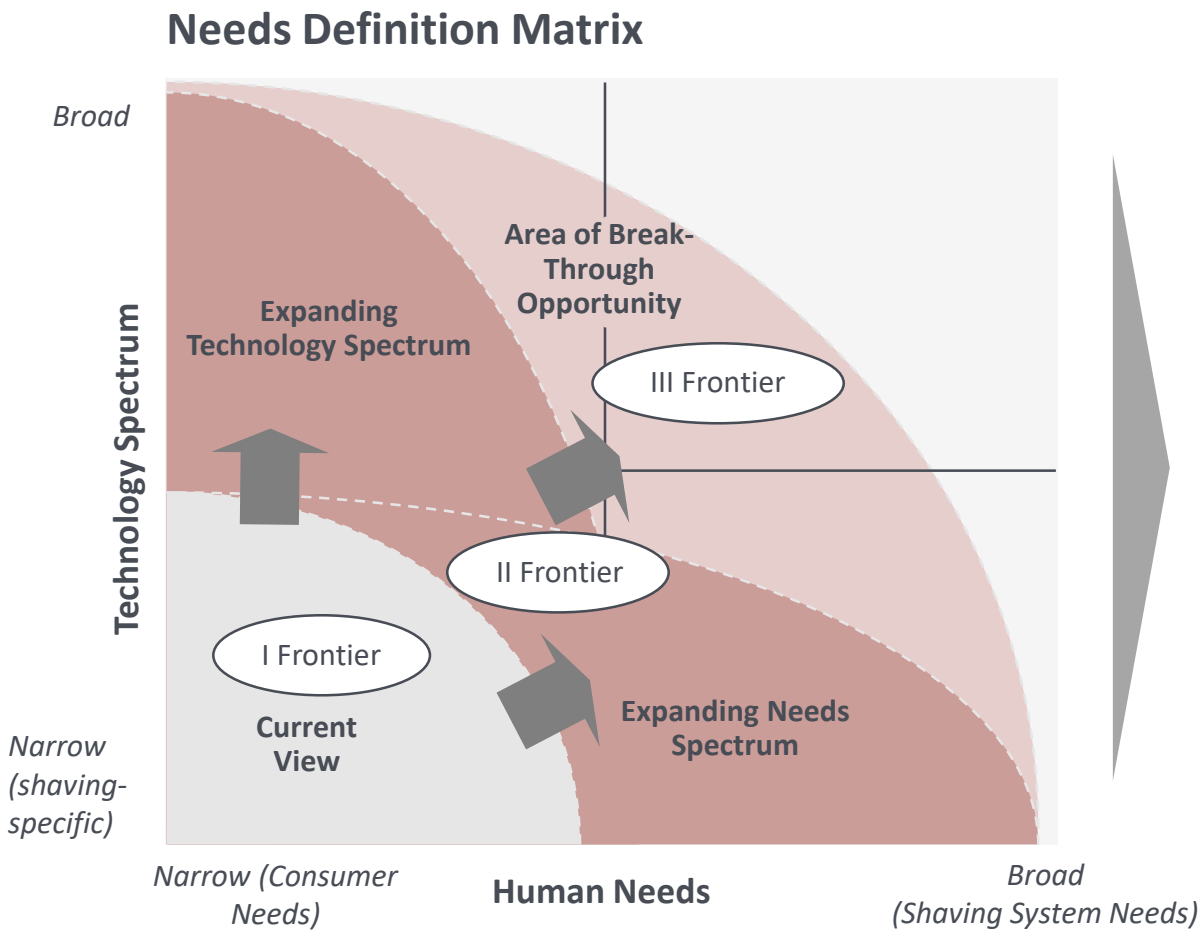
Needs	Combinations	Met Vs Unmet Scale 1 to 5 1- Met; 5 - Unmet	Conflict Level Scale 1 to 5 1- high; 5- low	Importance Scale 1 to 5 1 - low; 5- high	Total
N1. No Obstruction to active hair growth N2. Skin needs to be free of dead cells and dirt N3. Shaving system needs to be environmentally safe N4. Closeness N5. Lack of nicks and cuts	N1N2	5	5	2	12
	N1N3	4	5	2	11
	N1N4	3	4	3	10
	N1N5	4	5	2	11
	N2N3	5	5	4	14
	N2N4	5	5	5	15
	N2N5	5	3	4	12
	N3N4	3	5	5	13
	N3N5	3	5	5	13
	N4N5	3	3	5	11
	N1N2N3	5	3	3	11
	N1N2N4	4	3	3	10
	N1N2N5	4	4	4	12
	N1N3N4	5	3	4	12
	N1N3N5	4	4	3	11
	N1N4N5	5	3	3	11
	N2N4N5	5	3	5	13
	N2N3N4	5	5	4	14
	N2N3N5	4	3	5	12
	N3N4N5	4	3	5	12
	N1N2N3N4	5	3	3	11
	N1N2N3N5	5	3	3	11
	N2N3N4N5	5	3	5	13
	N1N2N4N5	5	2	3	10
	N1N2N3N4N5	5	1	3	9

…will help map future innovations

Needs driven Future Innovation Directions



Staying within current needs will bring only INCREMENTAL improvements; identifying future needs will bring BREAKTHROUGH opportunities



Examples

- **Human Needs** - Technologies that will assist young people in learning best shaving techniques
- **Shaving System** – skin improvement through combining shaving with exfoliation

Predictive Innovation…

- Any *innovation* is a stop in the journey towards maximizing functional, environmental and economical benefits
  - Therefore, **Innovation is PREDICTABLE**

- *Customer needs* are evolving in the certain pattern influenced by societal, environmental and human forces
  - Therefore, **customer future needs are PREDICTABLE**

- *Innovation success* is a function of right time to market, right needs, right introduction time and right cost
  - Therefore, Innovation success is controllable and **PREDICTABLE**

- If Innovation success is predictable then *Innovation Development* Process should be
  - systematic, measurable, controllable and **optimized**

- Consumer needs define ***where to innovate***
- ***Maximizing benefits*** via product functionality determines ***how to innovate***

Predictive Innovation brings more *structure and predictability* to innovation identification and development

key features

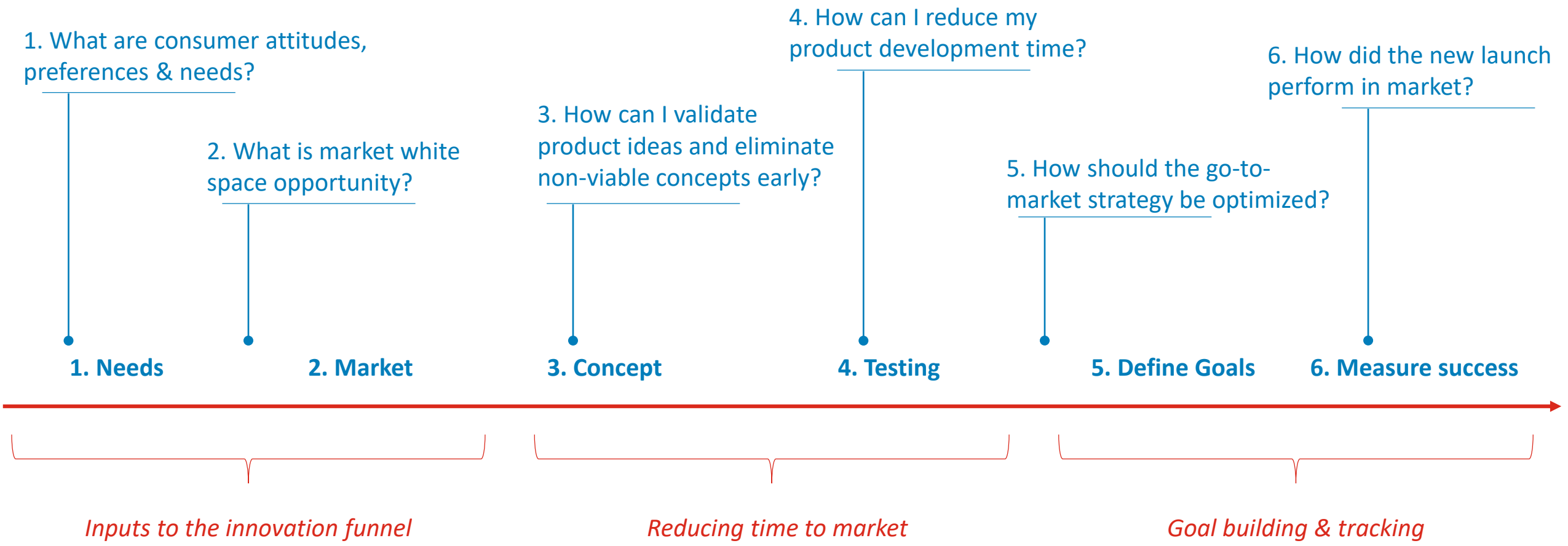
- ***PI*** works as the GENERATOR of new ideas based on the CHANGE in consumer needs
- ***PI*** GUIDES developers in the MOST PROMISING direction of new innovation
- ***PI*** covers WHERE TO LOOK and HOW TO LOOK for innovation

value creation elements

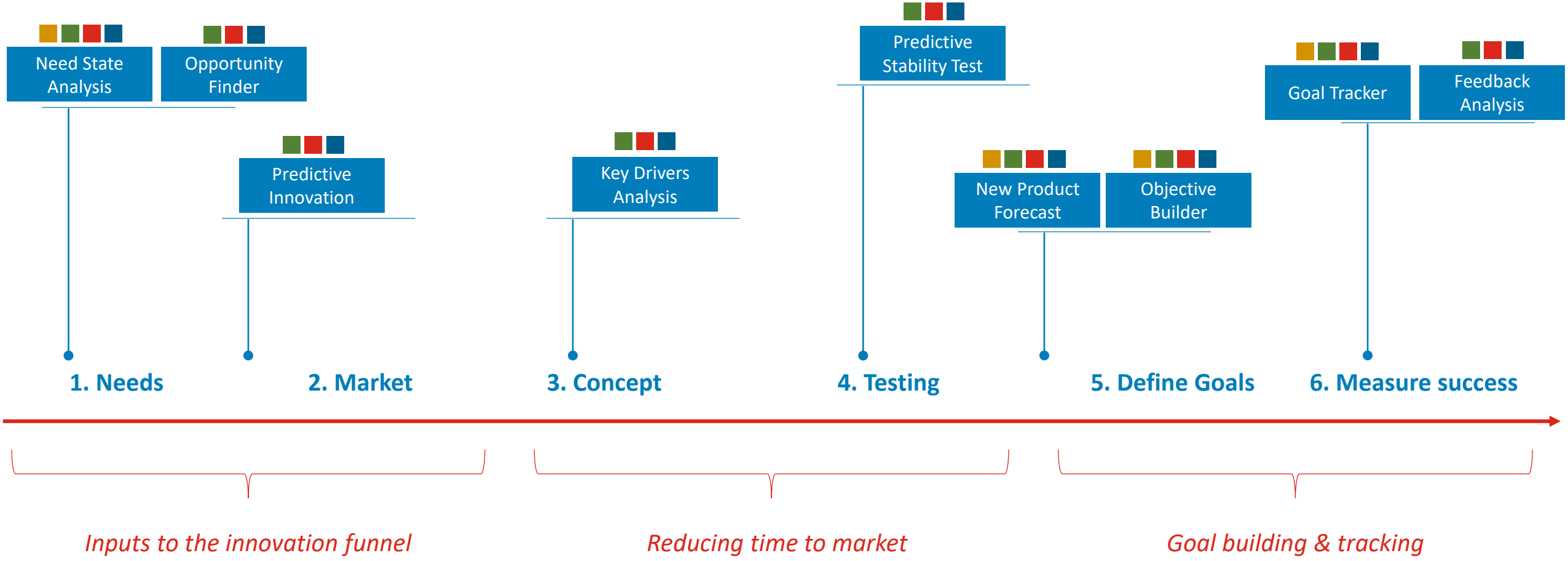
- Helps clients to direct and focus their innovation efforts
- Optimize innovation portfolio to balance the risks and maximize the rewards
- Expedite an innovation area identification and evaluation producing a fast turnaround time
- Provide measurement and predicts ROII allowing for OPTIMUM strategic innovation decisions prior to making large investments

Source: Fractal Analytics

What are the decisions required for a successful innovation?



AI/Analytics can augment decision making in Innovation Process



So what you learnt today…

- Why predicting innovation is important topic
  - *15% of sales spent on Innovation…*
  - *…with 90% of failure*

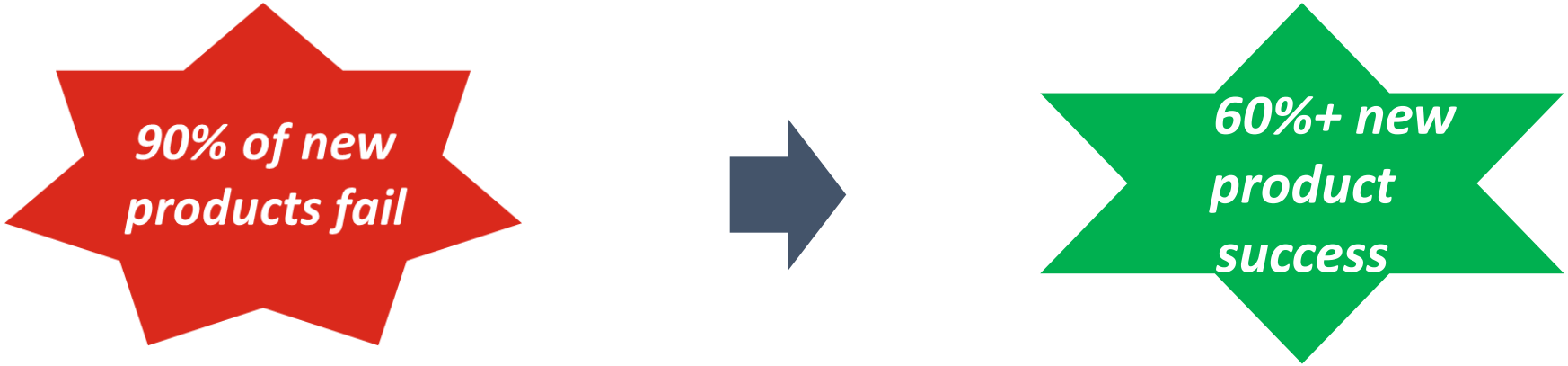
- I defined a few things
  what are analytics and AI
  what does it mean to predict innovation?
  - *Analytics helps to improve innovation success*
  - *Analytics vs. AI*
  - *To predict Innovation…*
    - *Goals (need states)*
    - *How to achieve goals (models, attributes)*

- I discussed Predictive Innovation process and shared a few examples…
  - *Predictive Innovation*
    - *Where to Innovation*
    - *How to Innovate*

- Finally, shared a few principles for how to improve Innovation Success
  - *Look at Innovation Process **holistically** with clear understanding of goals, individual steps' contribution*
  - *Start with "**consumers of tomorrow**", anticipate both external (market and technology) trends and internal (e.g. innovation IQ and culture) factors*
  - ***Align** Innovation directions with consumer of tomorrow, optimize attributes to maxim key goals*

fractal

Predictive Innovation helps improve product success by 30-50%



- *In past 10 years, we helped 22 clients identify and develop…*
- *128 innovation directions, 15 innovation platforms, 75 innovation concepts*
- *…resulting in total of **$6.7Bn** of growth opportunities with **68%** of new products assisted by **PI launched since 2008 are still on the market!***

fractal

And here is our best idea so far…

Dog Beer!

fractal

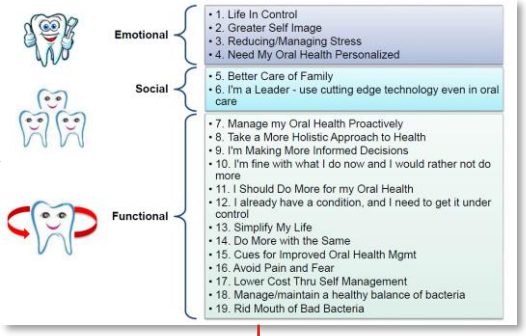
Appendix

Overview of Innovation Process solutions

#	Solution	Business Questions addressed	Data requirements	Solution/Algorithm
1	Need State Analysis	What is the landscape of my category and how will it evolve in short to medium term? What are the white spaces to address?	Syndicated data Macro economic data	Growth forecast and prioritization
2	Predictive Innovation	Identify future trends in my category	Syndicated data Macro economic data	Business Consulting
3	Opportunity Finder	Identify opportunities based on consumer feedback and response outside test environment	Social Media, Product reviews, Consumer feedback	Natural Language Processing
4	Purchase Intent Driver	Historically, what attributes drive purchase of my products? What are the engaged/disengaged demographics?	Consumer Research surveys	Structured Equation Modeling
5	Concept Testing	What attributes are driving purchase intent?	Consumer Research surveys	Structured Equation Modeling
6	Predictive Stability Test	How can we predict the stability of my formulations and reduce time to market?	LabNet data, SAP PDM data	Ensemble Model
7	New Product Forecast	What should by our go-to-market strategy? What sales lift can we expect?	Syndicated data	Forecasting and simulation
8	Objective Builder & Tracking	What are in-market goals for my new launches? How have they been performing since launch against the goals and benchmarks?	Goals, Syndicated data	Visualization
9	Feedback Analysis	How was my product perceived in market? What is working vs what is not?	Social Media, Product reviews, Consumer feedback	Sentiment Analysis

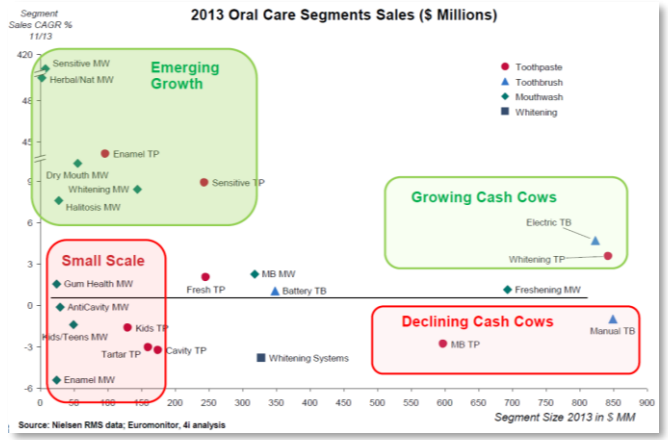
Need State Analysis – Sizing and prioritizing pathways for growth

Categories & attributes mapped to need states and benefits



Need states in turn size Pathways based on "fit" between need states and Pathways

Opportunities



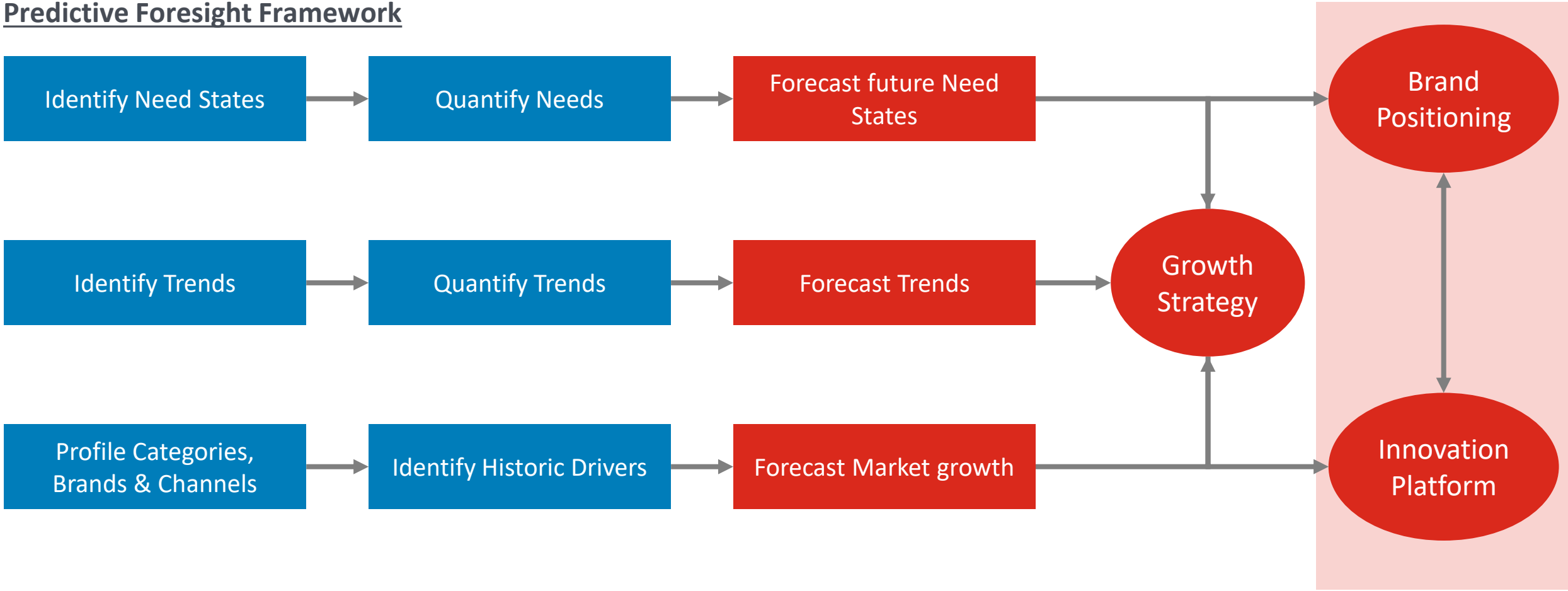
Solution approach

1. Profile and analyze categories and trends
2. Identify need state by category
3. Profile and size pathways
4. Forecast growth of pathways, need states and categories
5. Define growth opportunities
6. Provide pathway prioritization

fractal

Predictive Innovation uses inputs from Need State Analysis to predictably identify new innovations to maximize success rate

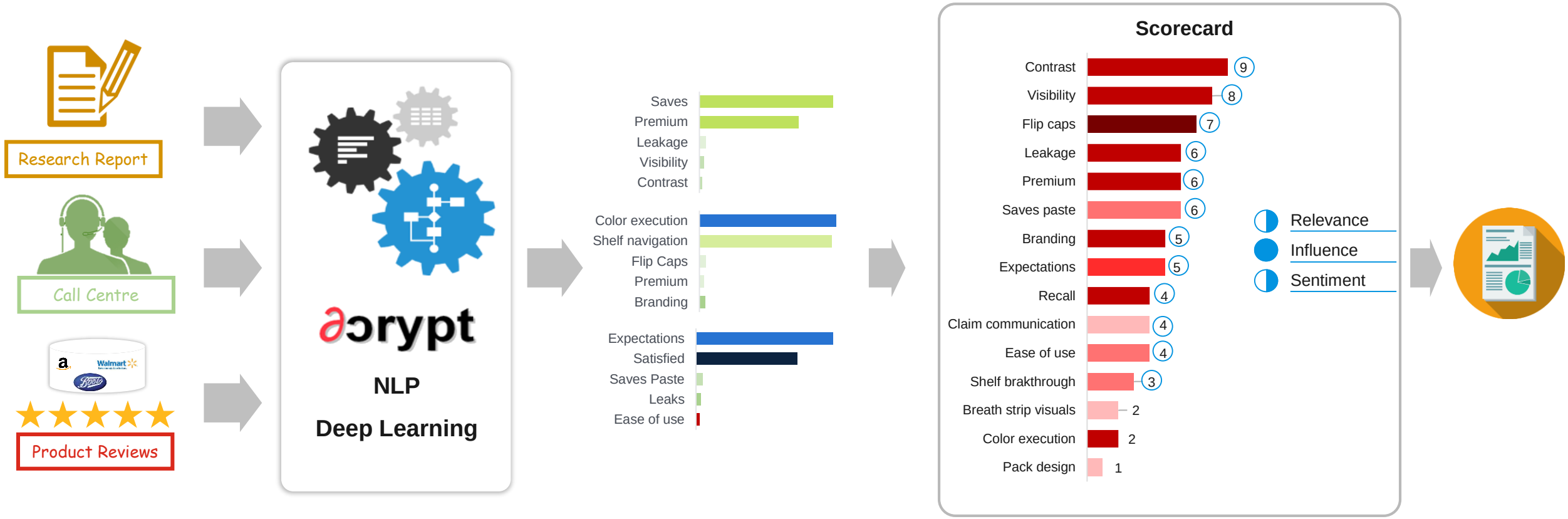
Predictive Foresight Framework



fractal

Opportunity Finder – Using AI on unstructured text to discover insight and opportunities

Natural Language Processing through Artificial Intelligence algorithm
to discover patterns and themes, non-obvious non-trivial fringe

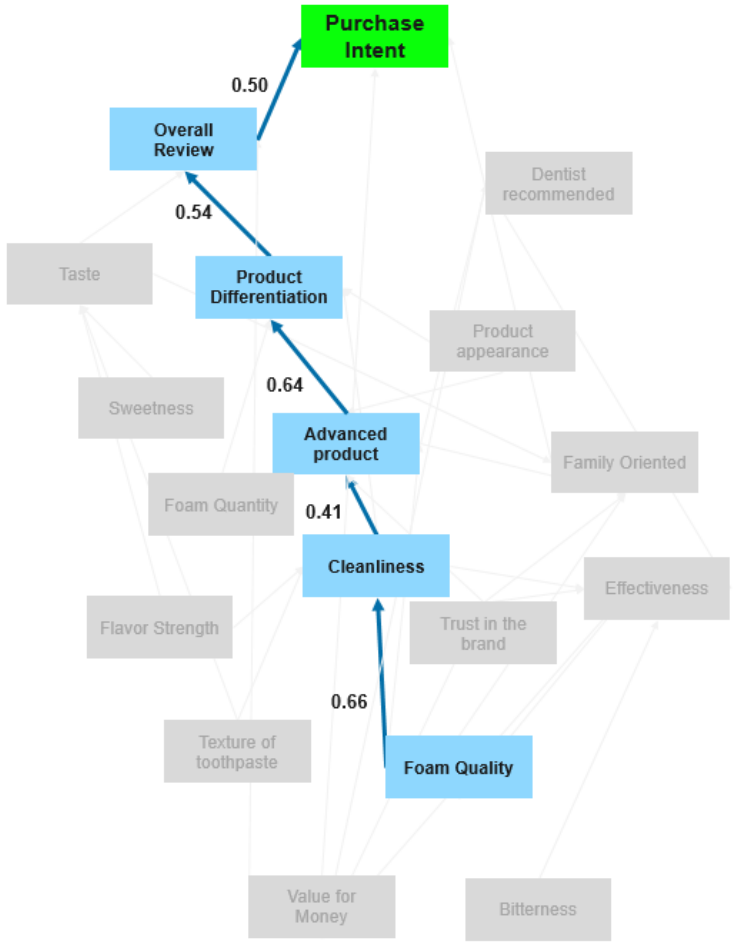


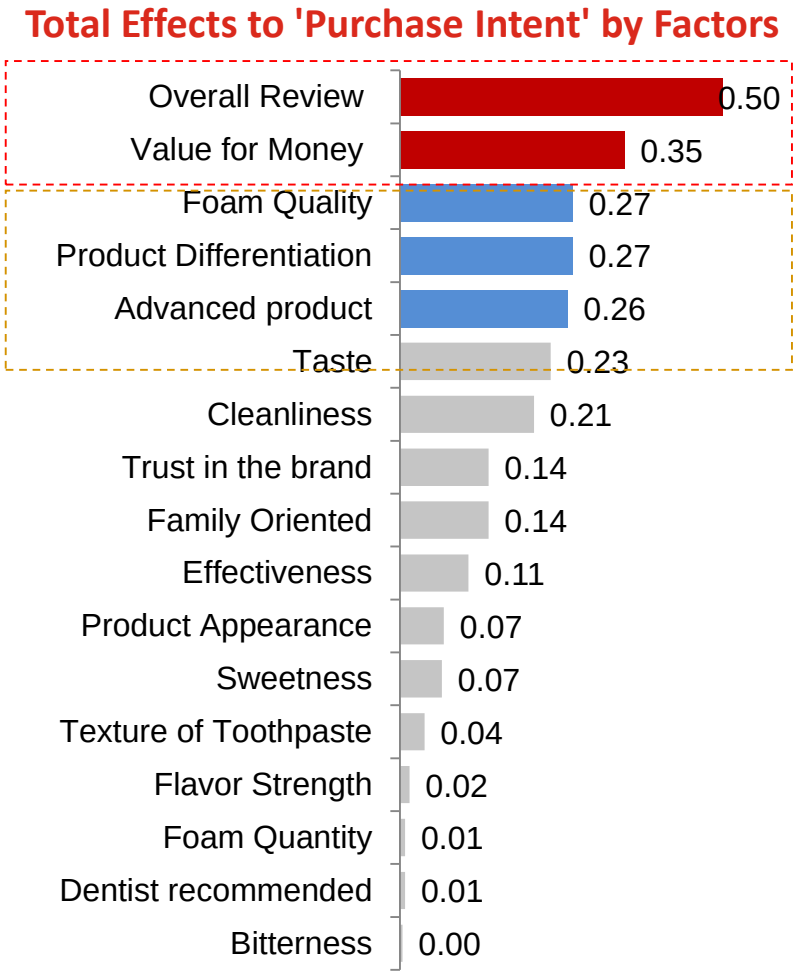
fractal

Purchase Intent Driver – Key drivers analysis on survey data

Drivers Analysis can help

- Model the relationship between attributes and purchase intent
- Test multiple hypotheses on the relationship inter-linkages
- Identify the most optimal path to influence purchase intent
- Quantify the total effect of attributes on the purchase intent





fractal

Predictive Stability Tests – Reducing time to market

Model Design

Backbone & test level

Dental Cream

1. **Soluble Fluoride** test
   NaF / Silica/ Sorbitol backbone
2. **Soluble Fluoride** test
   MFP / $CaCO_3$/ Arginine backbone
3. **Arginine** test
   MFP / $CaCO_3$/ Arginine backbone
4. **Triclosan** test
   NaF / Triclosan / Silica backbone

Dishwashing Liquid

5. **pH** test
   North America Alkaline backbone
6. **Viscosity** test
   North America Alkaline backbone
7. **pH** test

Input factors

Ingredients at recipe level
- Role of ingredient
- % level in recipe

Batch description
- Lab, Pilot, EMO, Production

Age of recipe
- Initial, 1 month, 3 months, 6 months, 1 year, 2 years

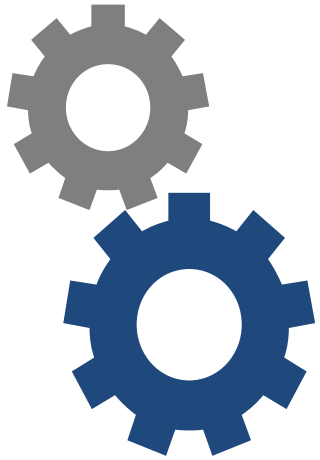
Condition (Temp)
- 25C, 40C

Out of scope

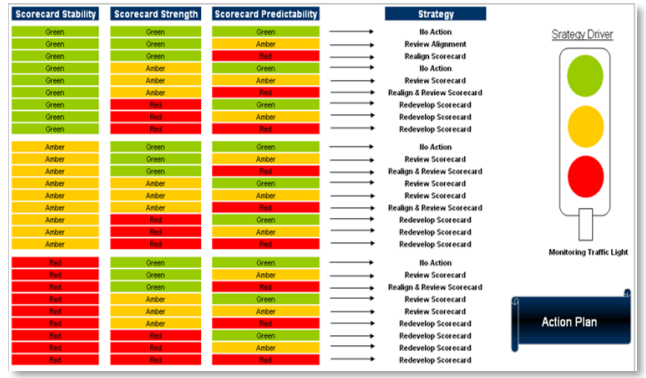
- Packaging
- Composition details
- Recipe making process (sequence of addition)
- Country of recipe

Model iterations

Machine learning techniques to train models



Business validation iterations with Client team



fractal

New Product Forecasting – Better way to forecast new product sales

- ✓ Most new launches present some combination of attributes that are already in play in the category or in adjacent categories
- ✓ Historical sales data as such can be used to model how attractive these attributes are to consumers and the expected sales lift

Benefits

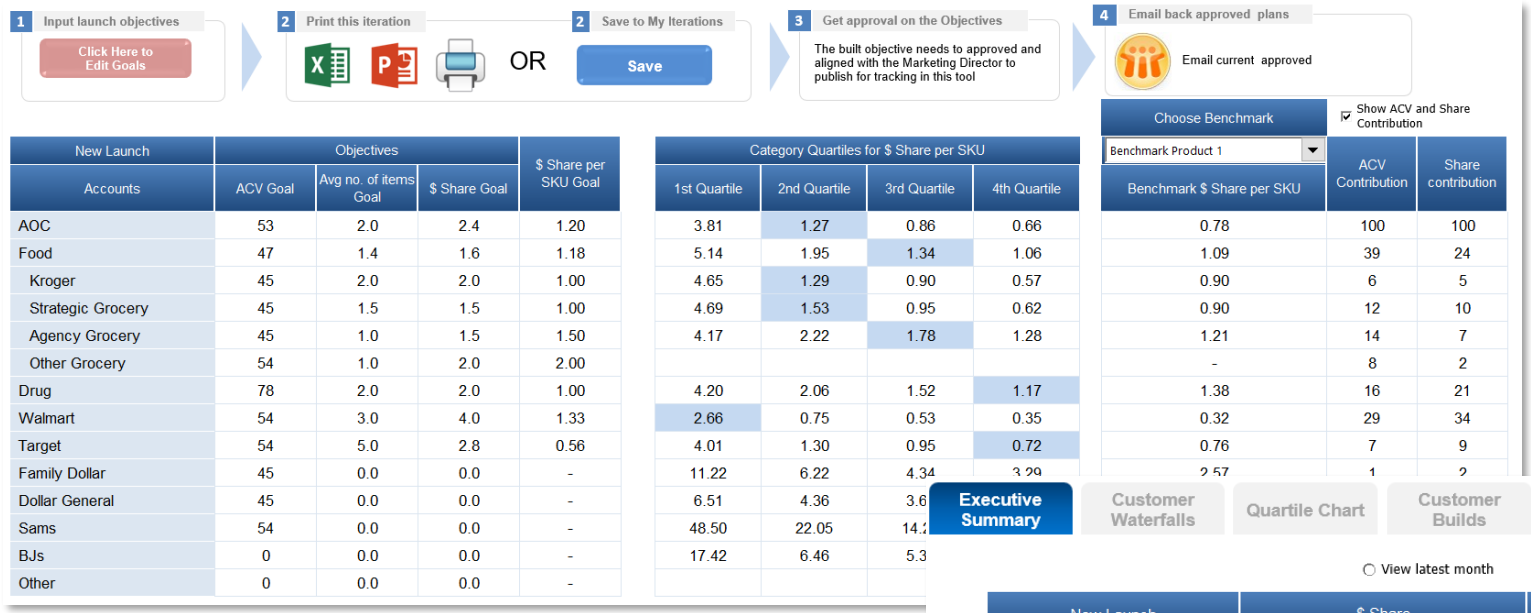
- ✓ Accuracy comparable but at a lower cost and lead time
- ✓ Includes simulator to optimize the go-to-market strategy

Solution Approach

Build Category Attribute Map	Model Attribute Contribution to Demand	Develop Forecast Model	Develop Simulator Tool
Identify & size the key product attributes	Develop Statistical model to determine impact of product attributes on product demand	Develop Statistical Model of New Product demand; model will incorporate all drivers identified	Develop a tool to play various innovation and product launch scenarios

fractal

Objective Builder & Tracking



New Launch	Objectives			$ Share per SKU Goal
Accounts	ACV Goal	Avg no. of items Goal	$ Share Goal	
AOC	53	2.0	2.4	1.20
Food	47	1.4	1.6	1.18
Kroger	45	2.0	2.0	1.00
Strategic Grocery	45	1.5	1.5	1.00
Agency Grocery	45	1.0	1.5	1.50
Other Grocery	54	1.0	2.0	2.00
Drug	78	2.0	2.0	1.00
Walmart	54	3.0	4.0	1.33
Target	54	5.0	2.8	0.56
Family Dollar	45	0.0	0.0	-
Dollar General	45	0.0	0.0	-
Sams	54	0.0	0.0	-
BJs	0	0.0	0.0	-
Other	0	0.0	0.0	-

Category Quartiles for $ Share per SKU			
1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
3.81	1.27	0.86	0.66
5.14	1.95	1.34	1.06
4.65	1.29	0.90	0.57
4.69	1.53	0.95	0.62
4.17	2.22	1.78	1.28
4.20	2.06	1.52	1.17
2.66	0.75	0.53	0.35
4.01	1.30	0.95	0.72
11.22	6.22	4.34	3.29
6.51	4.36	3.6	
48.50	22.05	14.2	
17.42	6.46	5.3	

Choose Benchmark — Show ACV and Share Contribution

Benchmark Product 1

Benchmark $ Share per SKU	ACV Contribution	Share contribution
0.78	100	100
1.09	39	24
0.90	6	5
0.90	12	10
1.21	14	7
-	8	2
1.38	16	21
0.32	29	34
0.76	7	9
2.57	1	2

Build commercially aligned goals for long lead planning on new products

Disciplined ongoing monitoring of in-market performance through key metrics

Executive Summary | Customer Waterfalls | Quartile Chart | Customer Builds | Customer Scorecard | Trend Visuals | Competitive Trend Visuals | Trial & Repeat | Notes

View latest month — View launch to date

New Launch	$ Share			$ Share per SKU			Quartile Range	% ACV			Avg no. of items		
Accounts	Goal	Launch to date	Gap	Goal	Launch to date	Gap		Goal	Current Distribution	Gap	Goal	Current	Gap
AOC	1.6	0.8	(0.8)	0.79	0.56	(0.23)	4Q	73	66	(7)	2.0	1.4	(0.6)
Food	1.3	0.6	(0.7)	0.69	0.70	0.02	4Q	57	50	(7)	1.9	0.9	(0.9)
Strategic Grocery	1.2	0.5	(0.7)	0.67	0.43	(0.24)	4Q	70	61	(9)	1.8	1.1	(0.7)
Agency Grocery	1.5	0.3	(1.2)	0.83	1.00	0.17	4Q	50	32	(18)	1.8	0.4	(1.4)
Other Grocery	1.2	0.9	(0.3)	0.60				30			2.0		-
Drug	2.8	0.8	(2.0)	1.40	0.96	(0.44)	4Q	85	60	(25)	2.0	0.9	(1.1)
Walmart	1.5	0.9	(0.6)	0.54	0.33	(0.21)	4Q	100	98	(2)	2.8	2.7	(0.1)
Target	1.5	1.3	(0.2)	0.60	0.66	0.06	4Q	100	99	(1)	2.5	1.9	(0.6)
Family Dollar	1.5	0.5	(1.0)	1.88	2.18	-	4Q	80	51	(29)	0.8	0.5	(0.3)
Dollar General	1.5	1.1	(0.4)	1.88	2.71	-	3Q	80	46	(34)	0.8	0.5	(0.3)
Sams	0.0	0.0	0.0	-				0	0	0	0.0	0.0	0.0
BJs	0.0	0.0	0.0	-				0	0	0	0.0	0.0	0.0
Other	0.0	0.8	0.8	-				0			0.0		-

fractal