IRI 75 1938-2013

FUTURE SUMMIT

NOVEMBER 18-20 | SAN JOSE, CA

Envisioning the Future of Research & Technology Management

Ted Farrington
Senior Director, PepsiCo Advanced Research
PepsiCo

Industrial Research Institute
Creating Innovation Leadership Solutions
WWW.IRIWEB.ORG

IRI2038 Foresights Project

Ted Farrington
Sr. Director, PepsiCo R&D
IRI 2013 Future Summit
San Jose, CA

Agenda

Industrial Research Institute
Creating Innovation Leadership Solutions
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2038

- Review Overall Project Approach
- Show Scenarios and Online Game Results
- Prepare for Backcasting Exercises

Christian Crews
Principal, AndSpace Consulting

Lee Green
VP, Research & Innovation
IRI

Ted Farrington
Sr. Director, PepsiCo Corporate R&D

Jennifer Blenkle
VP, Research & Innovation
IRI

STRATEGIC FORESIGHT

*is **NOT** about*

Predicting The Future!

Death of Distance v Megacities
Smart Cities
City Perks
Federation of Megacities
Smaller Projects
Prize R&D
Human Augmentation
Hollywood Model
Skunkworks
Connected Brains
3 Roads to Innovation
Africa Leapfrogs
Infrastructure
MOOC's
Mass Customization
Regulatory Constraints
Deprinting
Speed
Embedded Resources
PPM by β
Talent Sourcing
Bifurcated Skills
Social Problem Solver
Buyer Beware!
Everything's in Beta
PROJECT MANAGEMENT
EXTREME OPEN INNOVATION
UNITED STATES PATENT AND TRADEMARK OFFICE
DEPARTMENT OF COMMERCE

The FUTURE
is a **big place**

IRI2038

Focus Question:

How might future trends, developments and events impact the art and science of research and technology management ***over the next 25 years***?

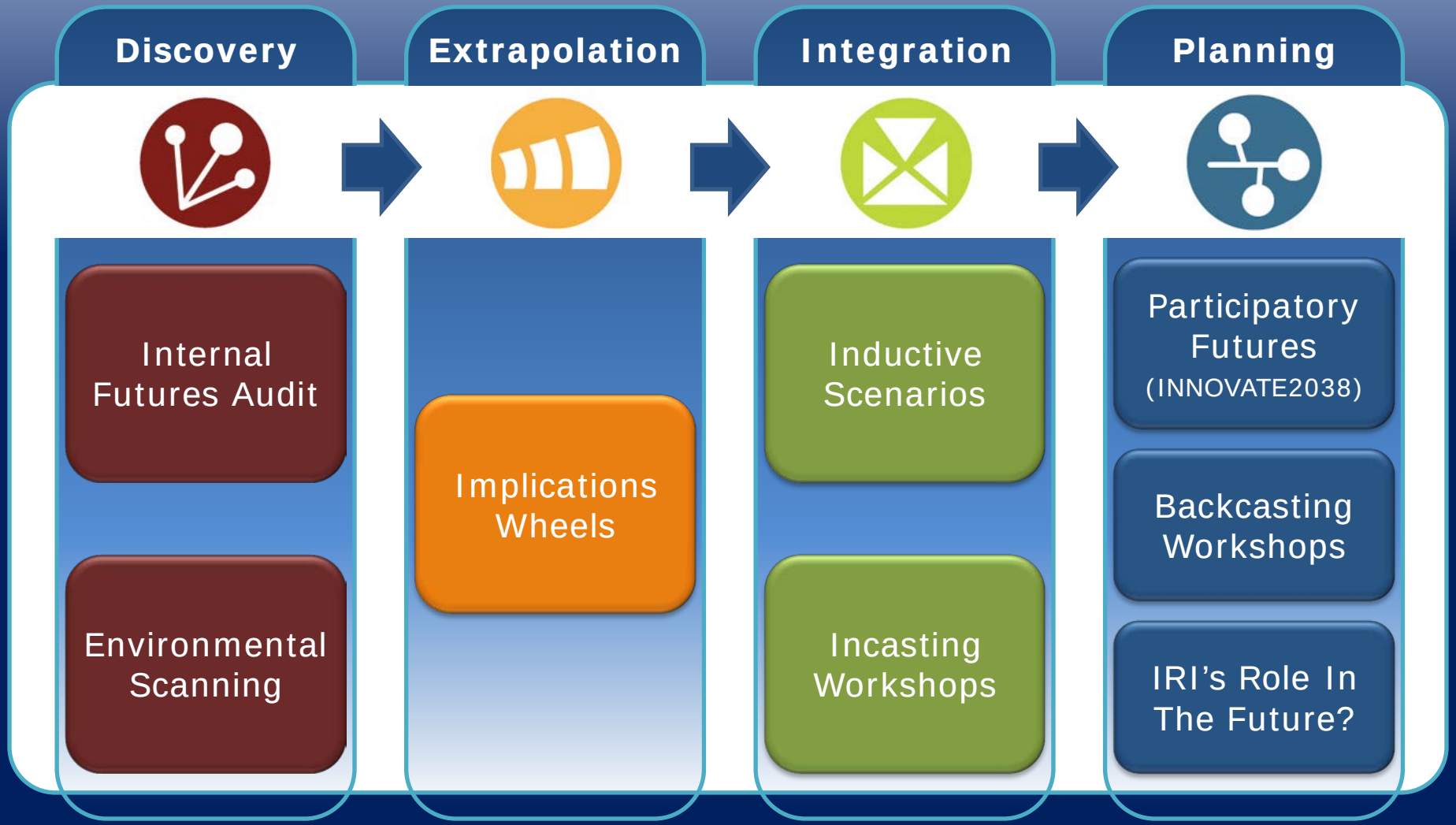
Four Phase Strategic Foresights Process

andspace consulting

SME and Overall Project Management

Discovery	Extrapolation	Integration	Planning

Detailed IRI2038 Foresights Process



Internal Futures Audit

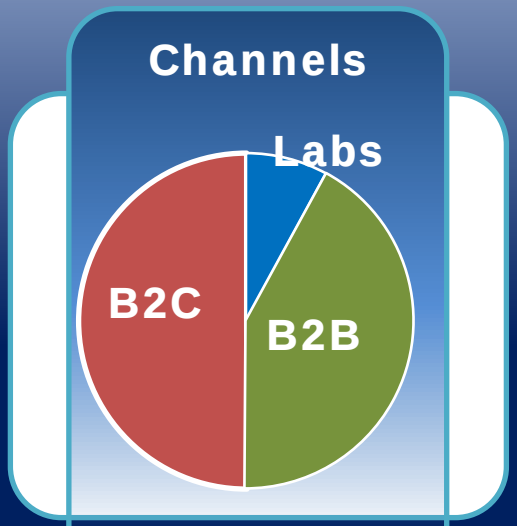
Futures Audit

Industrial Research Institute 2038

Creating Innovation Leadership Solutions
WWW.IRIWEB.ORG

Industries Represented

- Consumer Products
- Pharma/Medical
- Industrial Materials
- Consulting
- Chemicals
- Food/Beverage
- R&D Labs
- Electronics
- Conglomerates
- IT Systems
- Pulp & Paper
- PetroChemical
- Power Systems
- Automotive
- Aerospace



Internal
Futures Audit

DRIVERS of Past 25 Years

OpenInnovation
BigDataAnalytics
GlobalizationofRnD
VideoConferencing
Miniturization
Computation
Internet
FearOfScience
Incrementality
IncreasedRegulation

Internal Futures Audit

What We Are Seeing Today

IRI2038 FUTURES AUDIT

BIGGER CAPACITY | BIGGER TEAMS | BIGGER TARGETS

Internal
Futures Audit

Future Drivers

Simulation
CompanyLoyalty
RiseofAfrica
RisingSOL
SpeechRecognition
IPChallenges
IntelligentSystems
CloudResearch
PureRnDCompanies
Sensors
SocialMedia
Collaboration
AcceleratedLearning
Automation
Cybernetics
3DPrinting
SeaLevelRise
IPinChina
VirtualWork
WarforTalent
TissueEngineering
Genomics
PopulationGrowth
EmbeddedCommunication
MolecularHardware
Biofuels
AgingPopulation
Nano-Biotech
Sustainability
Robotics
Energybreakthrough
TrueGlobalCurrency
ReverseInnovation
ResourceScarcity
WorkLifeBalance
Biomimicry
FutureofF2F

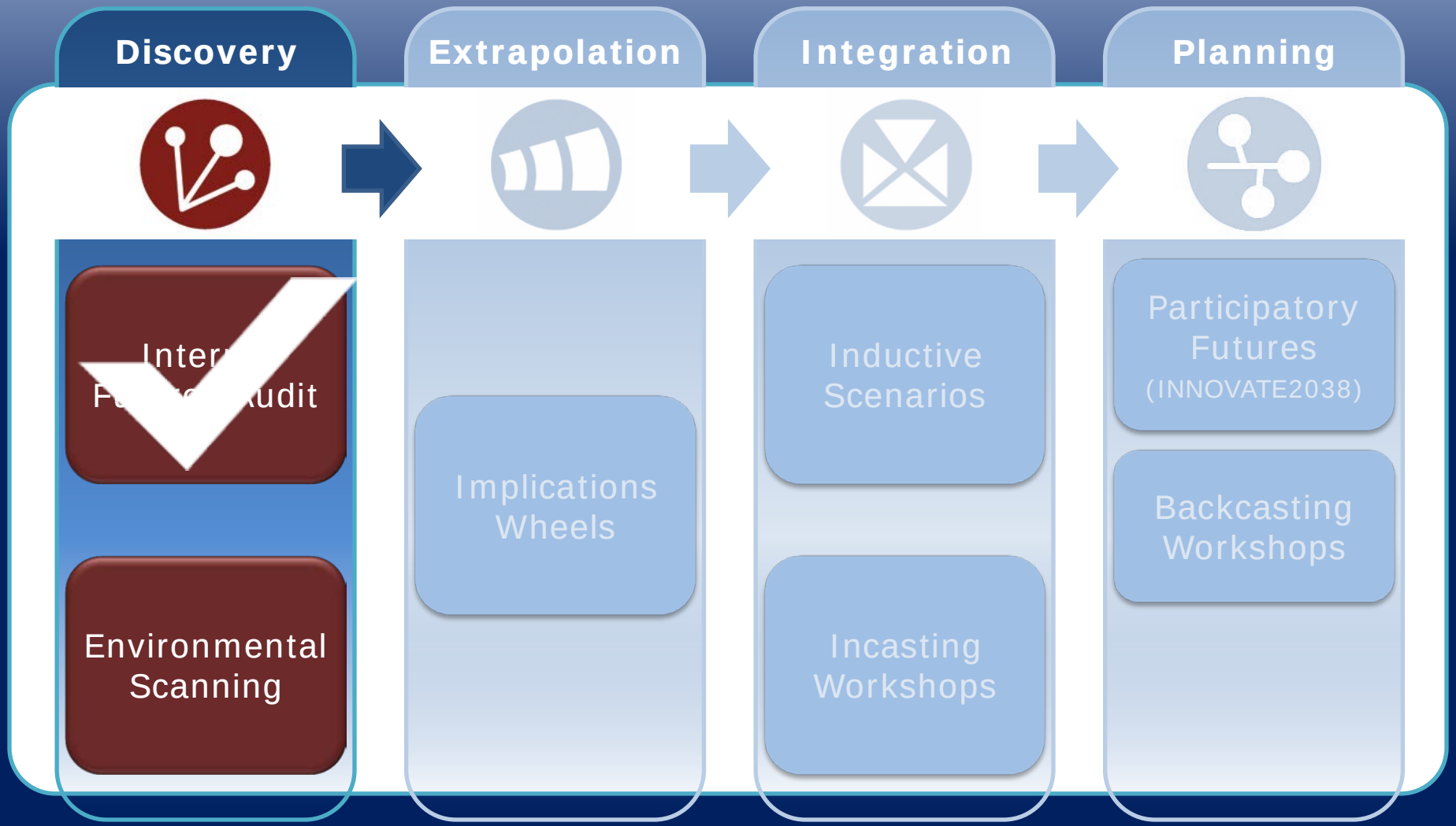
CREATE

FOR TALENT

different stakeholders and industry collaborators

FREELANCE
WORKFORCE

Detailed IRI2038 Foresights Process

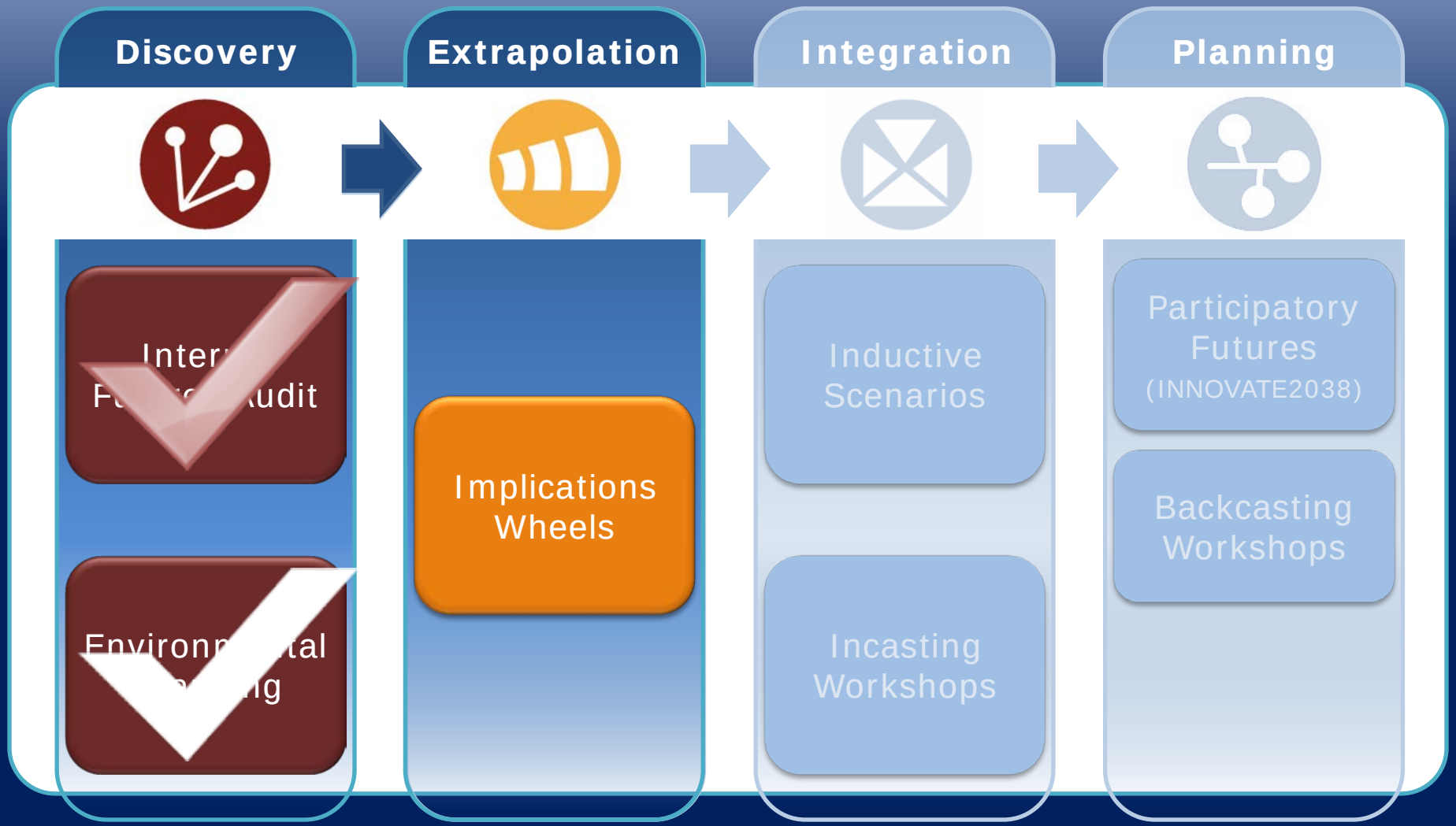


Environmental Scanning

WEAK Signals

Foresight Alliance

Detailed IRI2038 Foresights Process



Implications Wheels

Augmented Workforce

WEAK Signal

1st Impacts

- **Mental Augmentation Divide**
- **Physical (Endurance)**
- **Distributed Workforce**

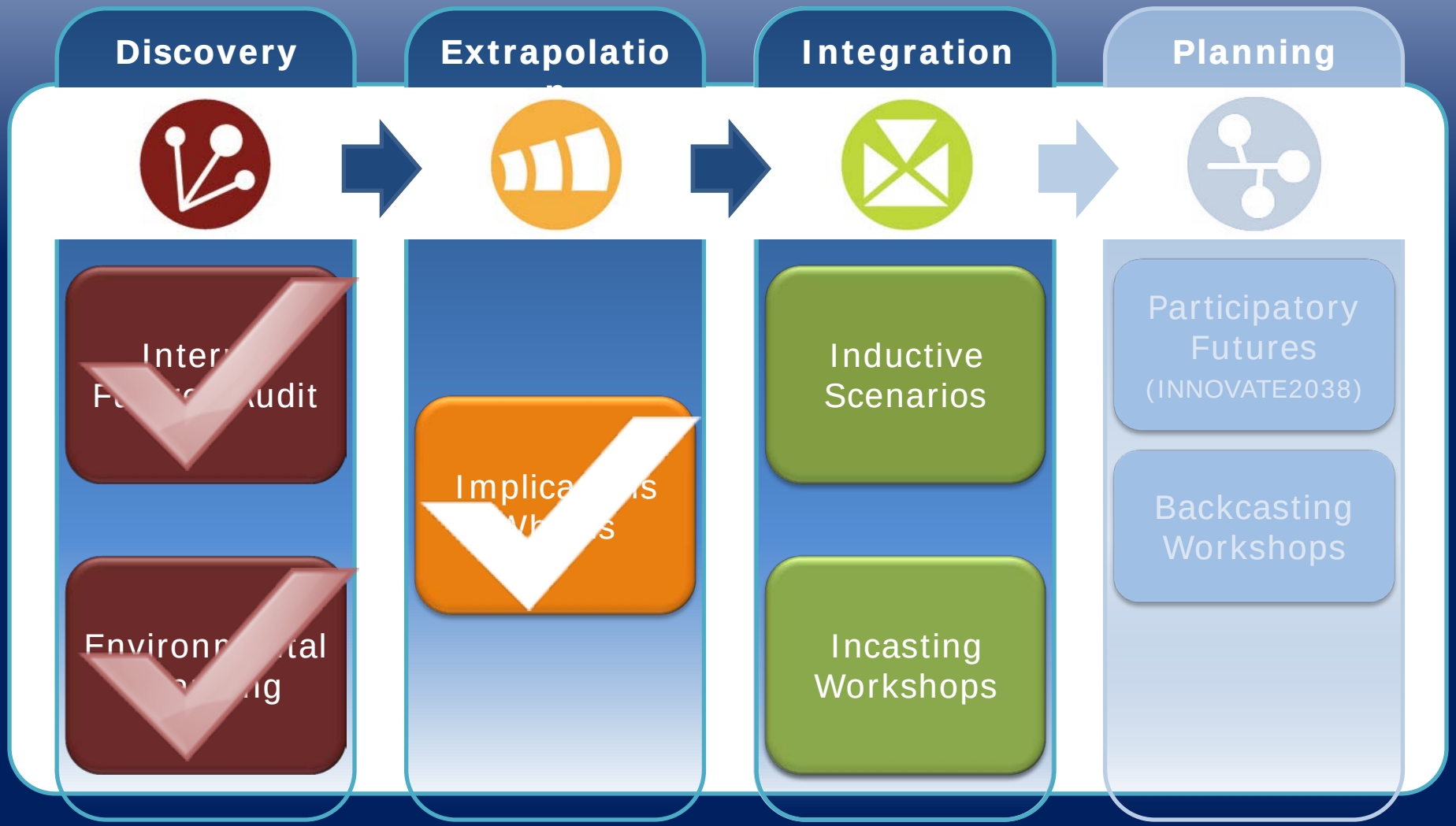
2nd Impacts

- Stratified Society Accepted By Some
- Laws Protect Rights of the Unaugmented
- Long Term Health Impacts
- Faster Innovation Productivity ↑
- Boundary of Who is an Employee
- Even More Garage Innovation

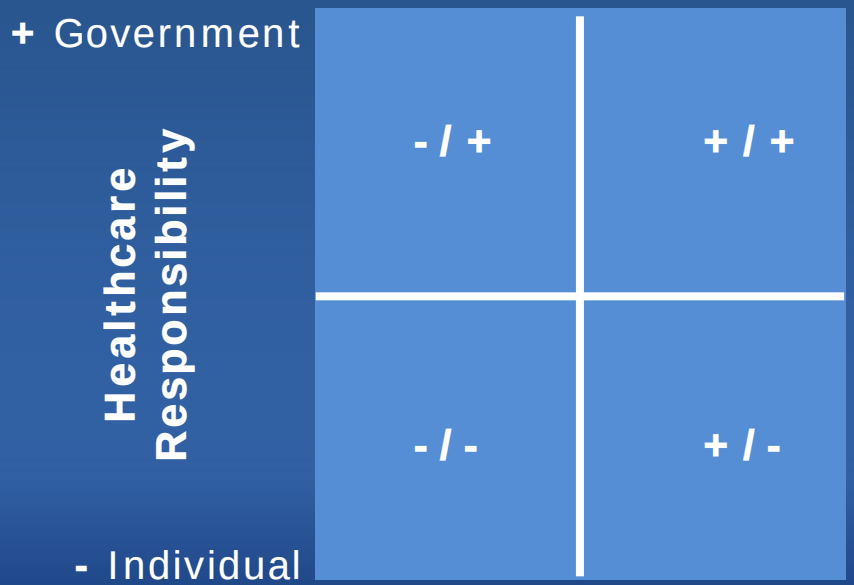
3rd Impacts

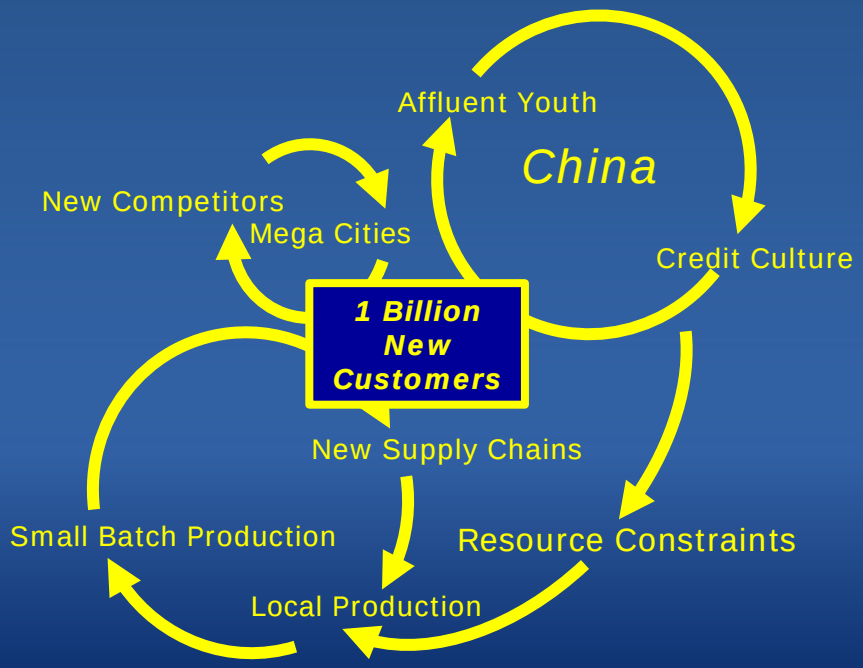
- Social Unrest
- Augments Level Playing Field?
- Safe Augmentation vs Capability
- Impact on Work/Life Balance
- New Compensation Systems (not $$'s)
- Large Companies Less Relevant

Detailed IRI2038 Foresights Process



Deductive VS. Inductive



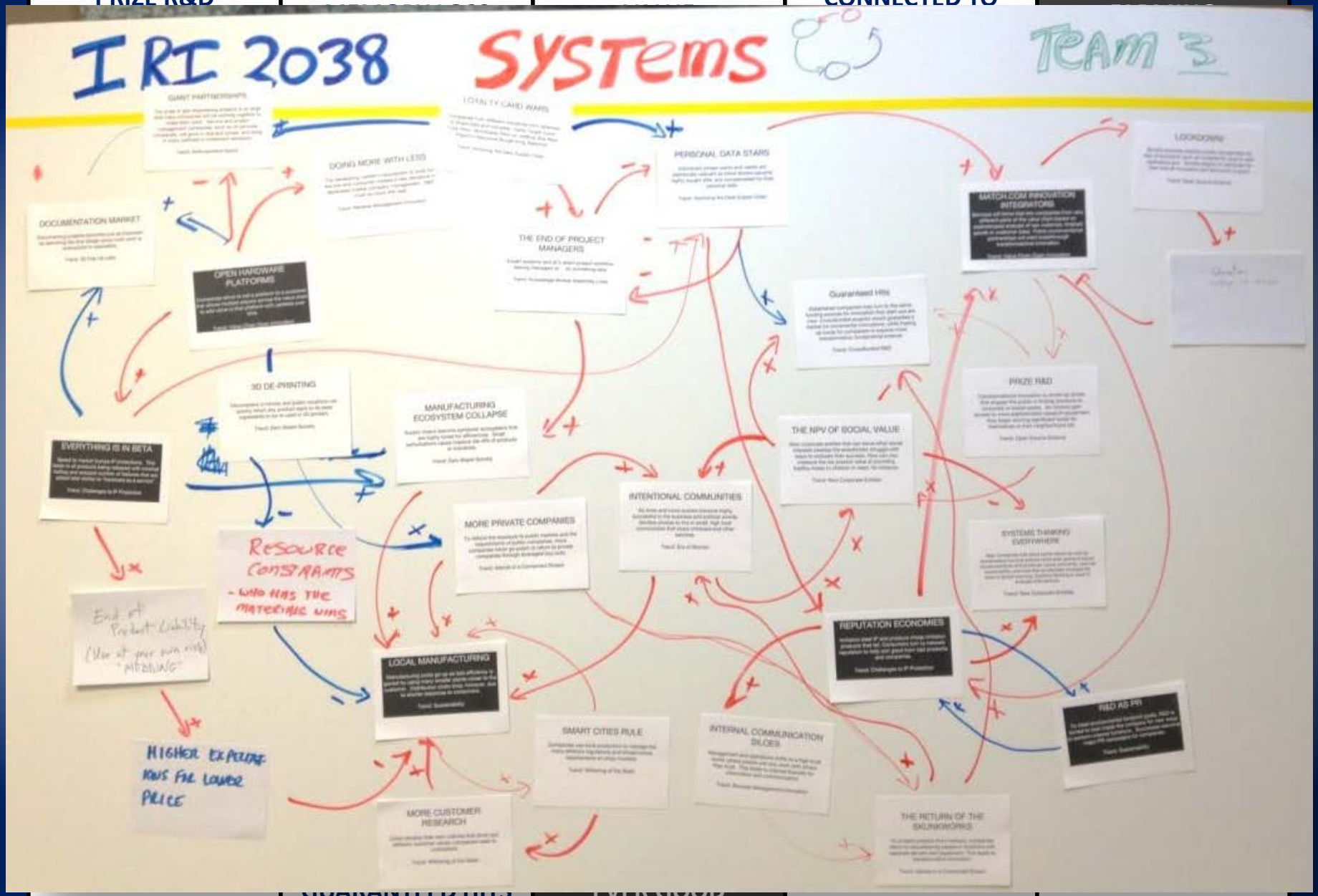


Inductive Scenarios

(4) Influence Diagram Workshops

IRI Winter ROR Meeting
Fort Lauderdale, FL

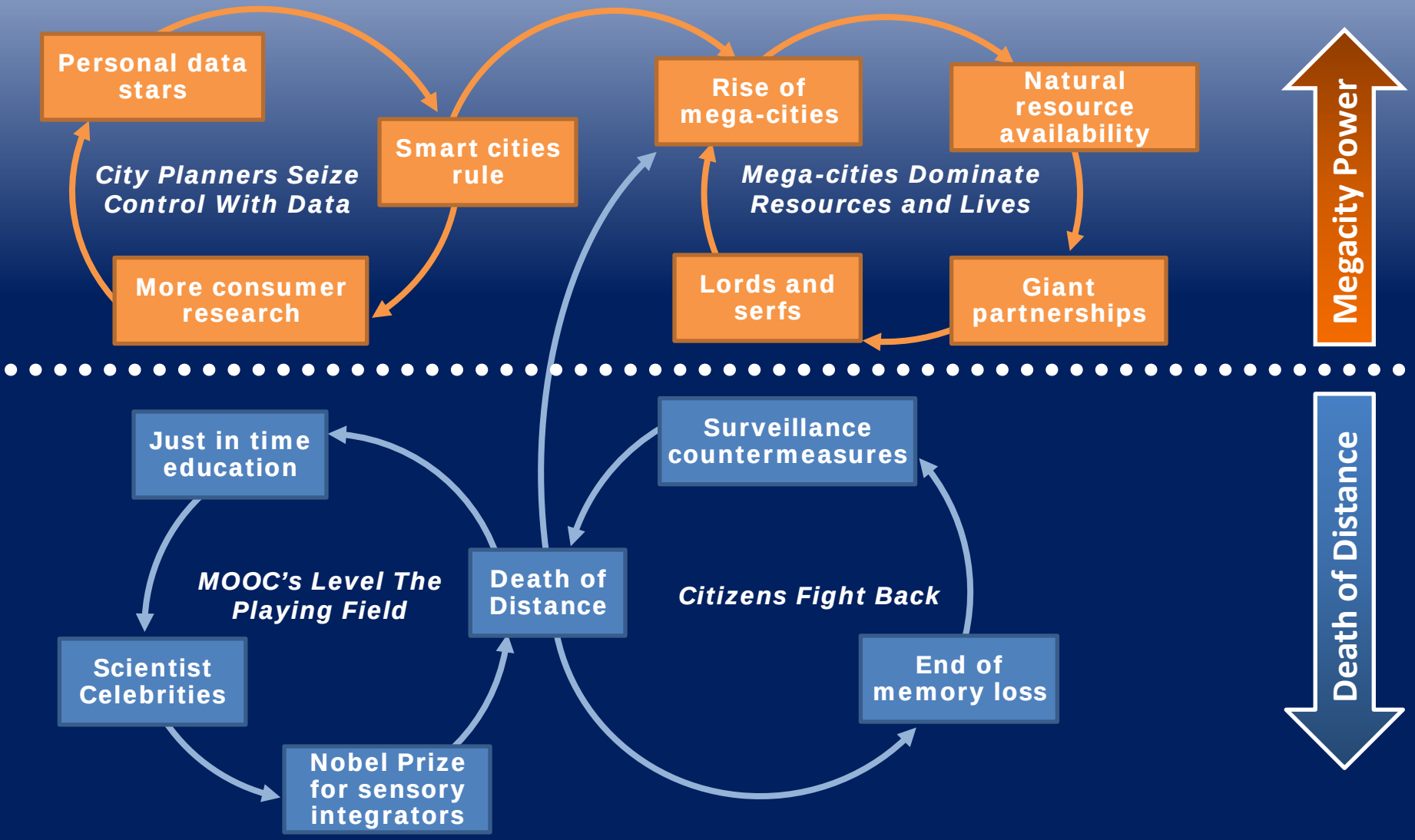
PRIZE R&D	THE END OF	THE NPV OF SOCIAL	BRAINS CONNECTED TO	VERTICAL



COUNTERMEASURES	GUARANTEED HITS	EVER GOOD ENOUGH	IMPERIALISM	WARS

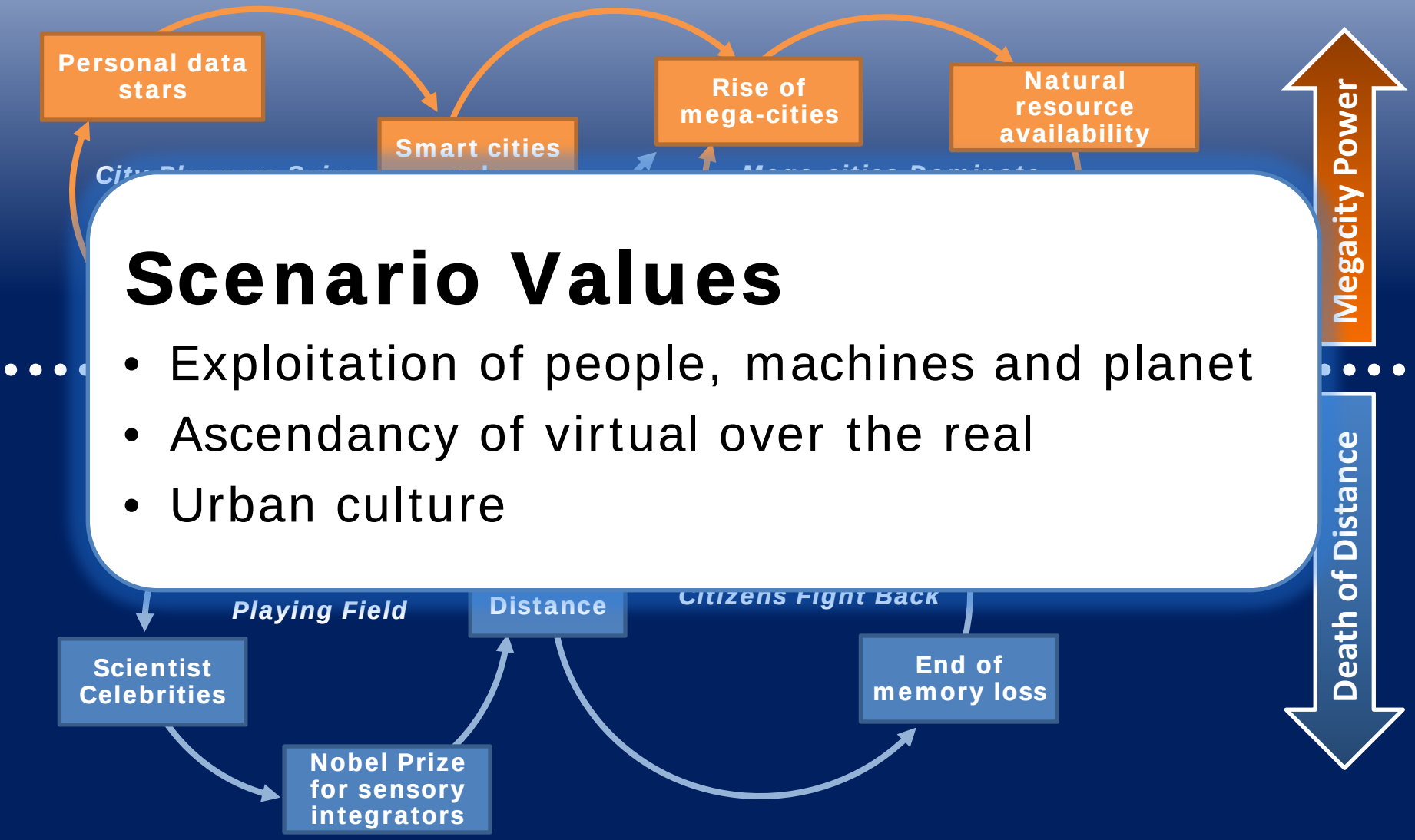
Inductive Scenarios

Death of Distance vs. Megacities



Inductive Scenarios

Death of Distance vs. Megacities



Scenario Values

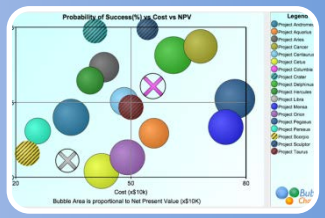
- Exploitation of people, machines and planet
- Ascendancy of virtual over the real
- Urban culture

Incasting Workshops

Implications for R&D?

May Jubilee Meeting

PROJECT
Management



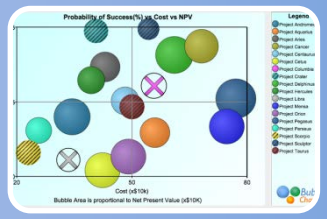
PORTFOLIO
Management

R&D's
Value Proposition

TALENT
Management

Implications for R&D

Many Smaller Projects
Rapid Startup and Execution Key



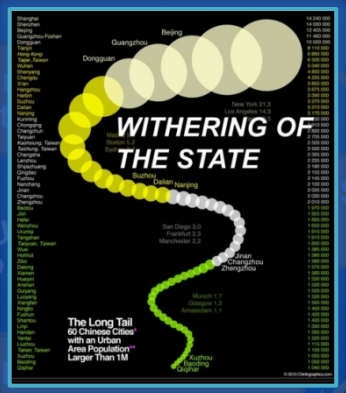
Driven By Megacity Needs and
Funding IP Supports Megacity Needs

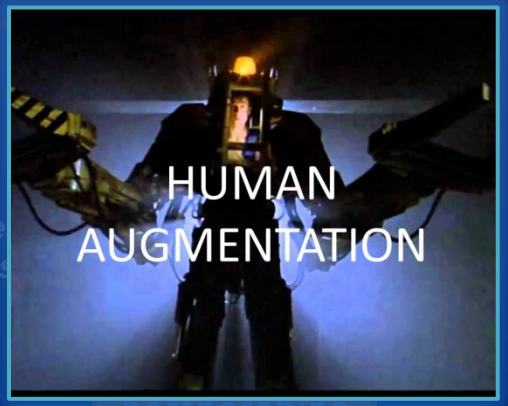
Megacity Path to Open Innovation
Value Judged by Megacities

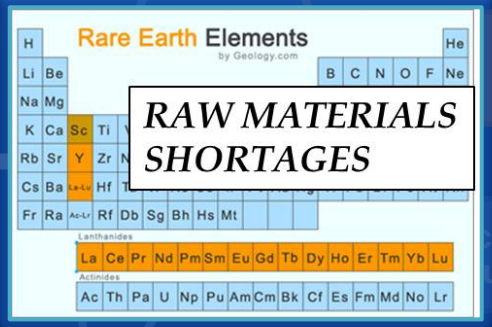
Reputation Market
Compensation Includes Megacity Perks

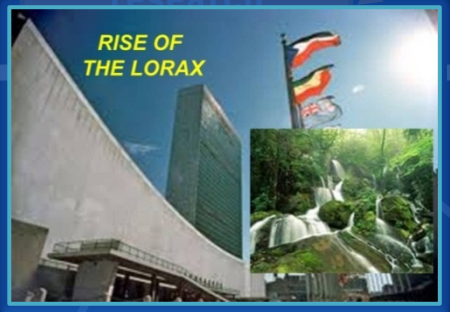
Inductive Scenarios

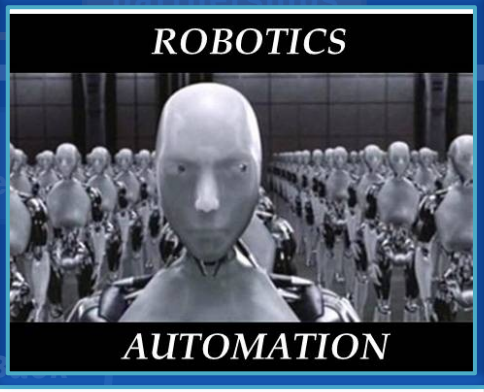
Death of Distance vs. Megacities

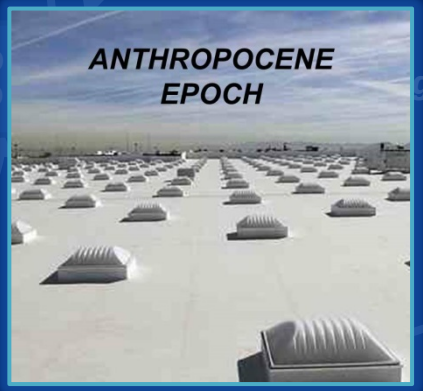


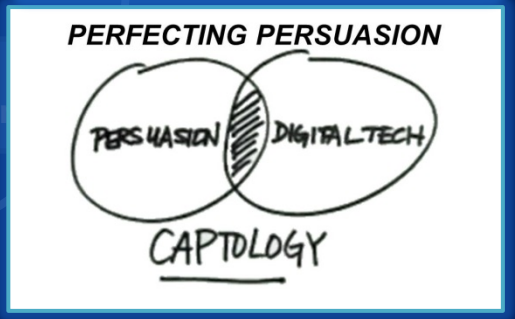










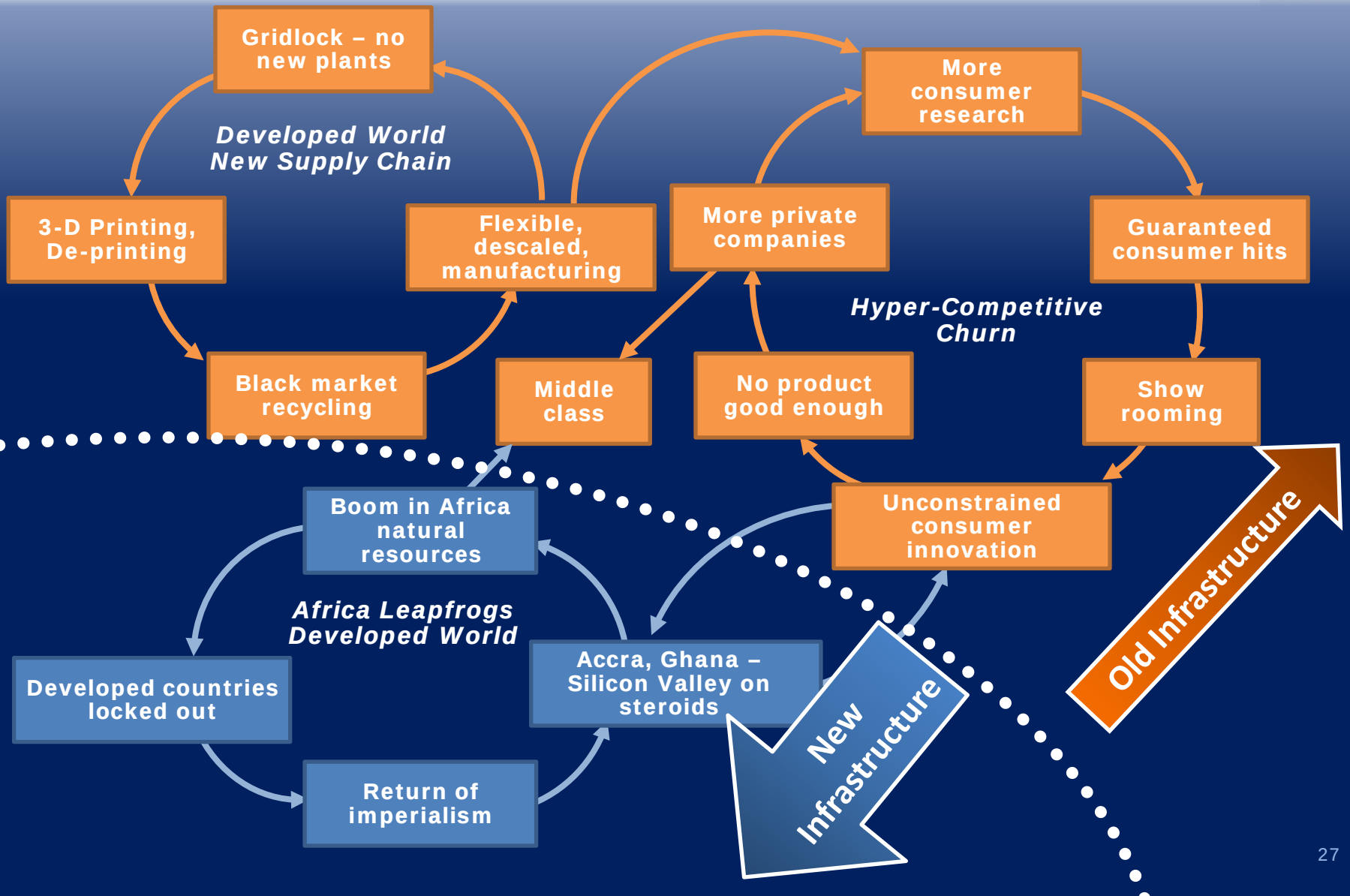


Megacity Power

Death of Distance

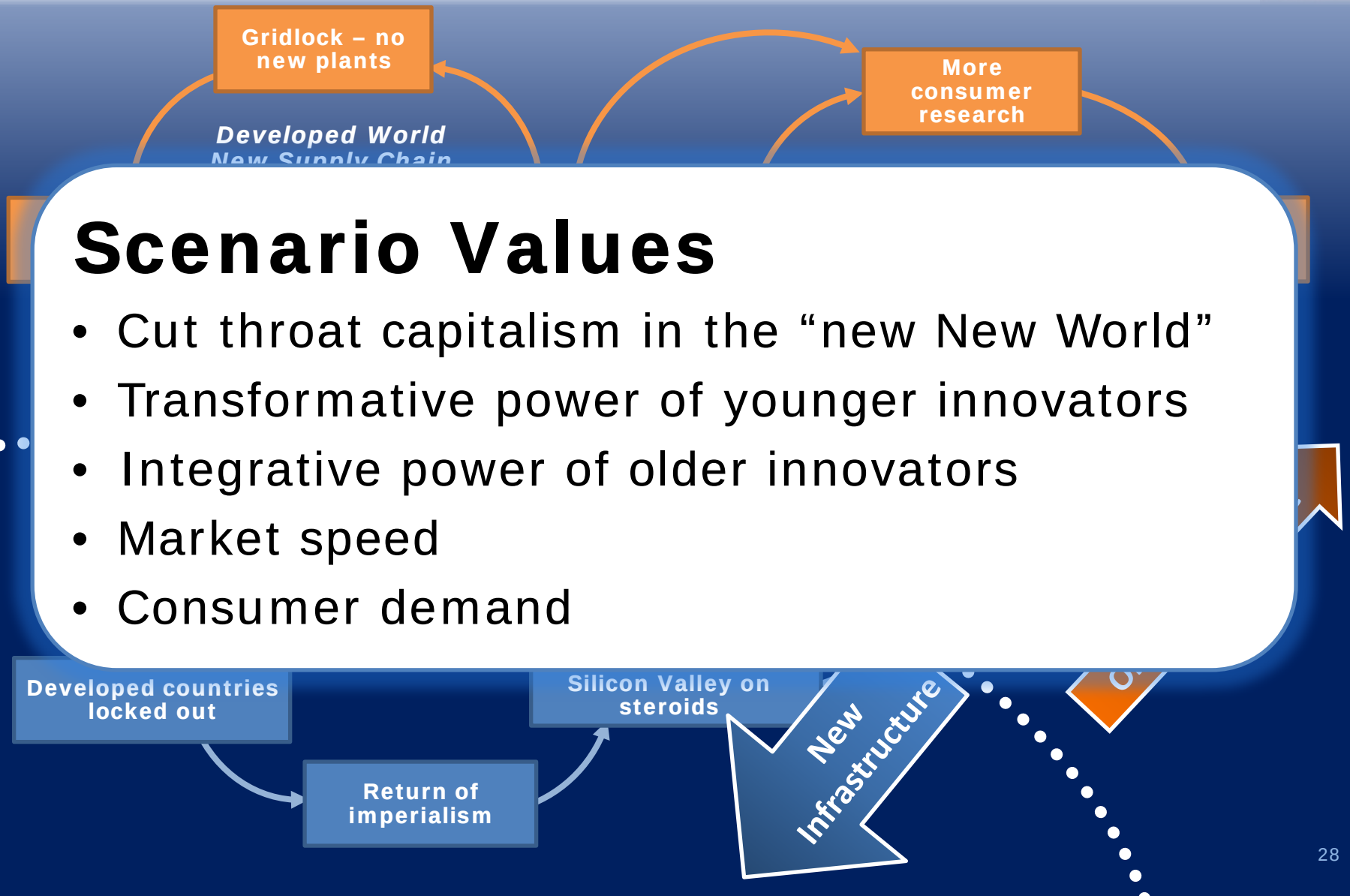
Inductive Scenarios

Africa Leapfrogs Developed Countries



Inductive Scenarios

Africa Leapfrogs Developed Countries



Scenario Values

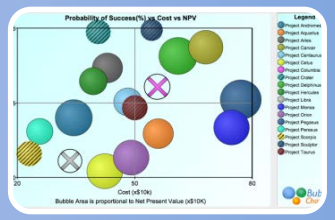
- Cut throat capitalism in the “new New World”
- Transformative power of younger innovators
- Integrative power of older innovators
- Market speed
- Consumer demand

Inductive Scenarios

Implications for R&D

Africa Leapfrogs Developed Countries

Fail Fast & Fail Cheap
Software For Basic Project Management



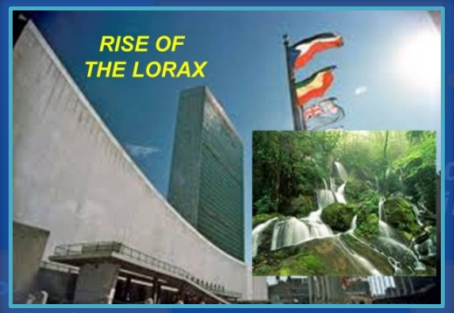
Simulation Dominates Decision Making
IP For Processes, Not Things

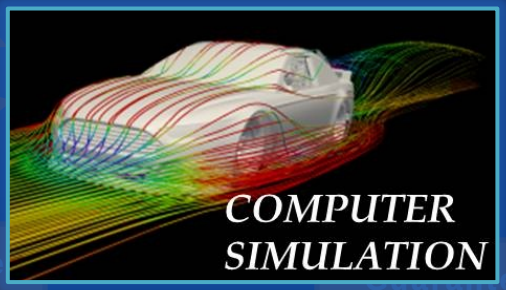
Speed!
Not Long Term IP

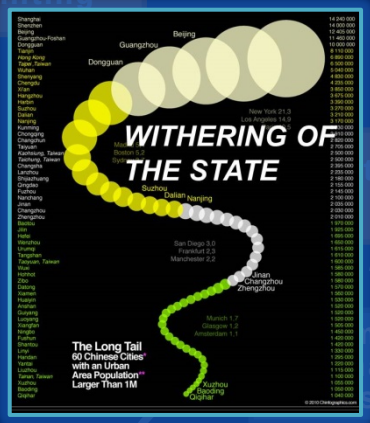
Rented Workforce
Talent Sourcing Is Key

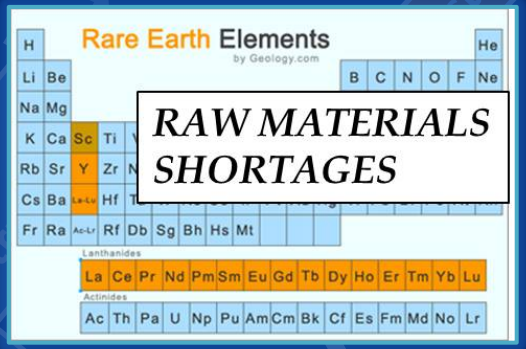
Inductive Scenarios

Africa Leapfrogs Developed Countries



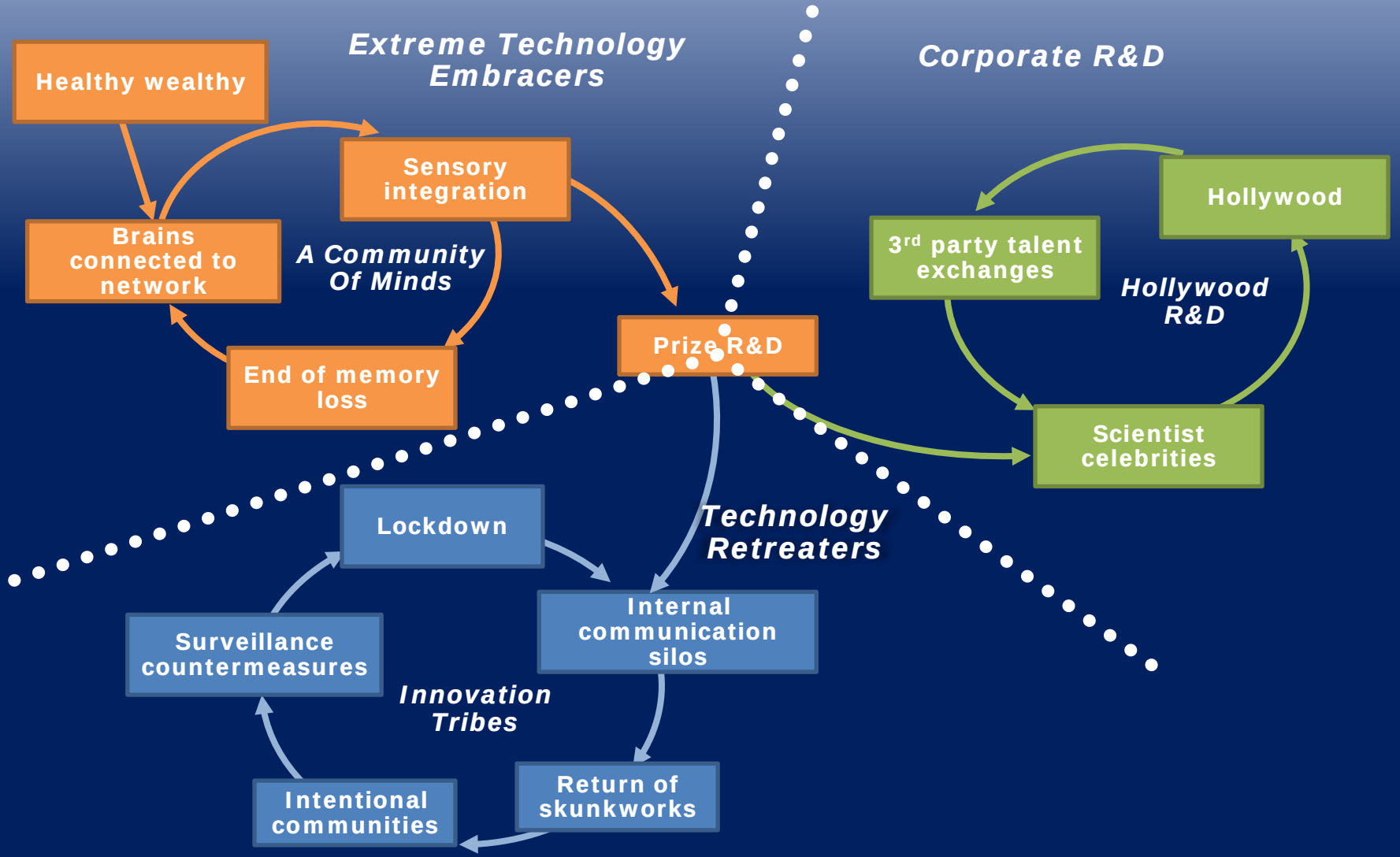






Inductive Scenarios

Three Roads To Innovation



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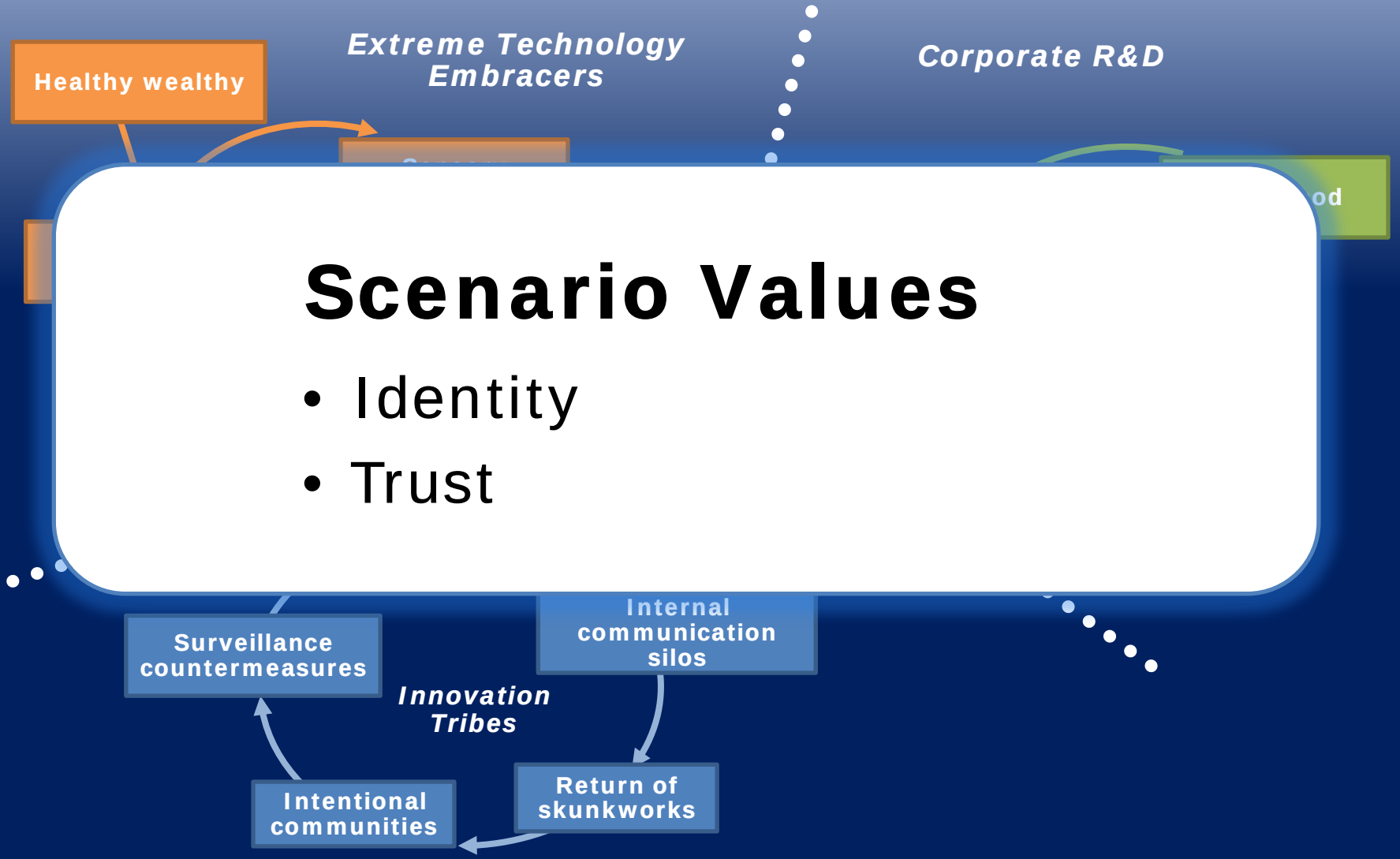
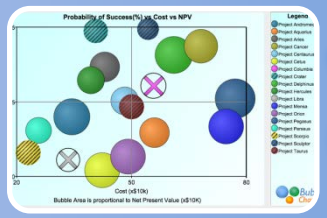


Scenario Values

- Identity
- Trust

Implications for R&D

Simulations Improve PM
Managers Focus On Collaboration



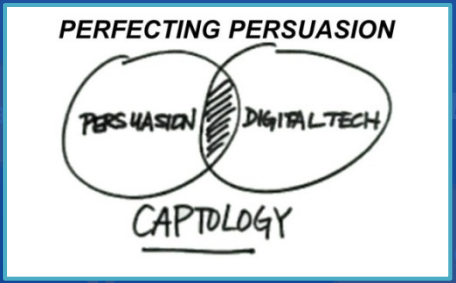
Very Open To Very Closed Projects
Clearly Defined Needs & Requirements

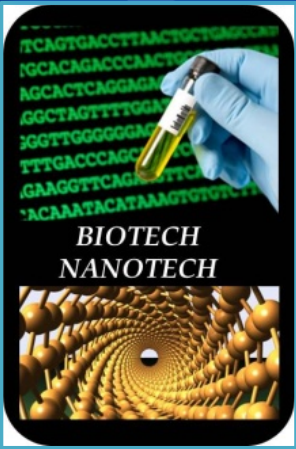
Connecting Needs and Research Model
Fast Tracked Product Launches

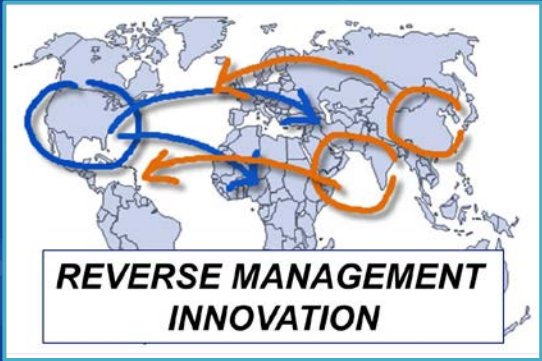
Cultivating Freelance Network Is Key
Simulation Assists Team Assembly

Inductive Scenarios

Three Roads To Innovation

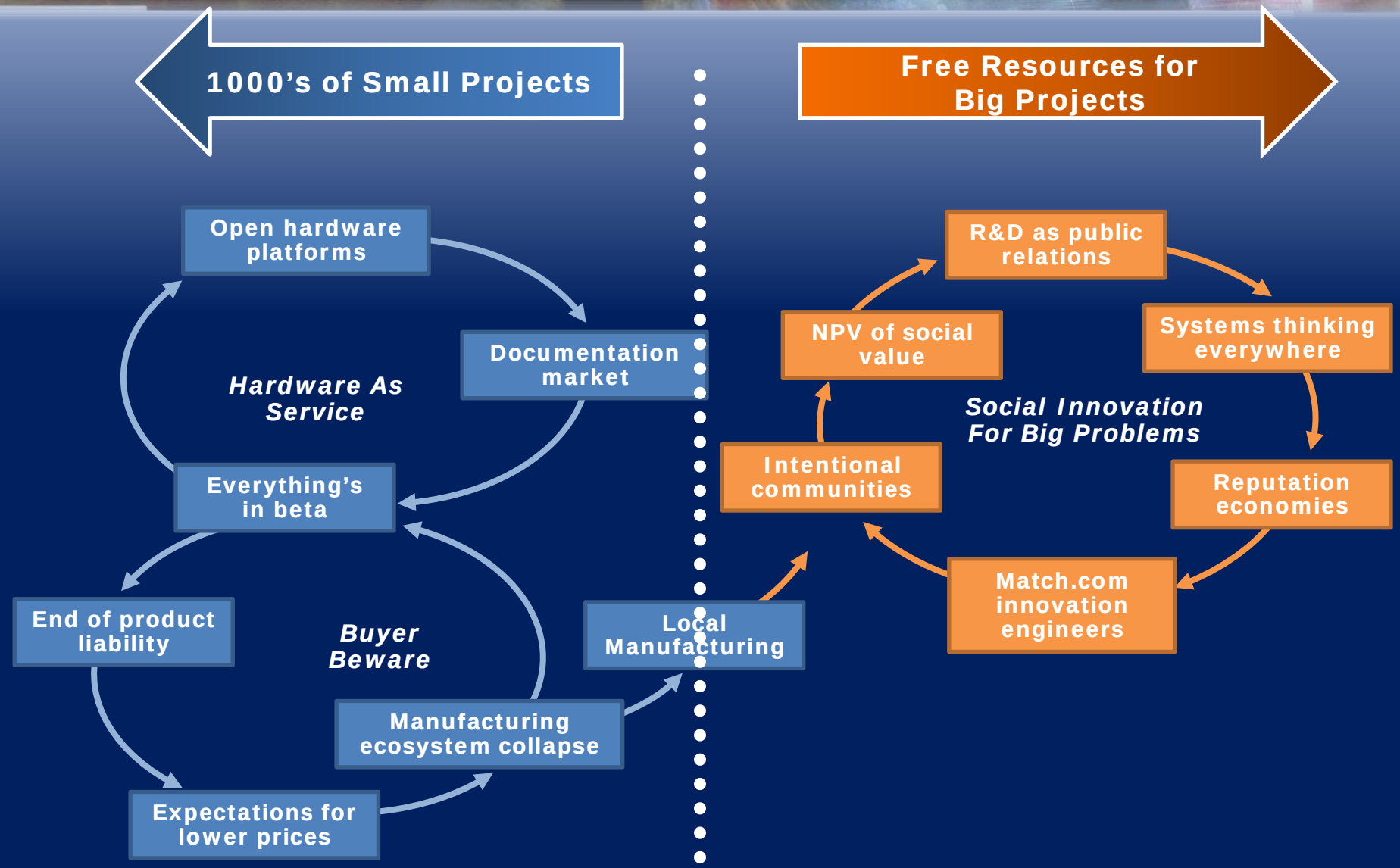






Inductive Scenarios

Everything's In Beta



Inductive Scenarios

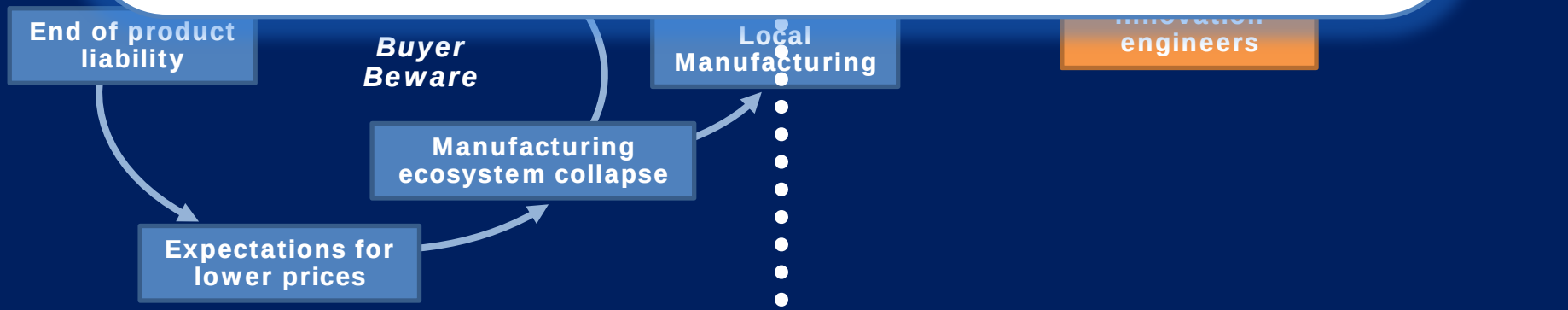
Everything's In Beta

1000's of Small Projects

Free Resources for Big Projects

Scenario Values

- Participatory consumption
- Artisanal & throw-away

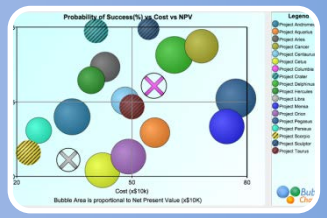


Inductive Scenarios

Implications for R&D

Everything's In Beta

AI for Project Management
Embedded Resources



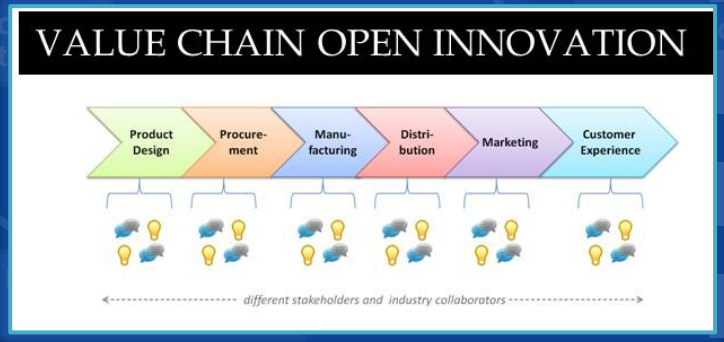
PPM by Beta Testing
Networks, Relationships, Communities

Data Management, Speed & Cost
Reputation as Social Problem Solver

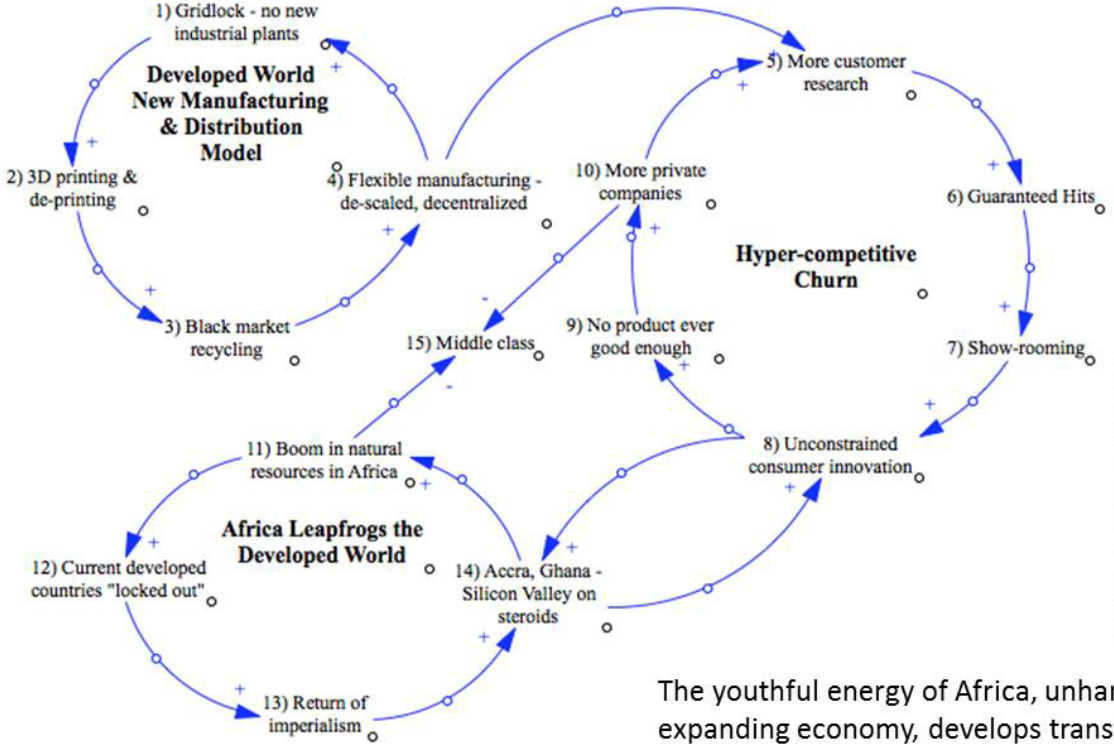
Bifurcated Skills Base
Limited Mobility

Inductive Scenarios

Everything's In Beta



Africa Leapfrogs Developed Markets –
An inability to build new capacity in the developed world due to increasing environmental regulations creates a new flexible and localized manufacturing process. This process churns out the highly customized products consumers demand at an ever-faster pace. With less of an installed asset base and the ability to better leverage its natural resources, Africa jumps ahead of the developed world in growth and economic dynamism.



Drivers:

- Simulation
- Resource Constraints

System Dynamics

- Developed World New Manufacturing Model
- Hyper-competitive Churn
- Africa Leapfrogs the Developed World

Scenario Values

- Cut throat capitalism in the "new New World"
- Transformative power of younger innovators
- Integrative power of older innovators
- Market speed
- Consumer demand

Scenario Analysis

The values of this culture in 2038 are not much different than today. Aside from strict environmental regulation in the developed countries, the world is still driven by consumer demand and consumption. This scenario is characterized by incredible market speed, fueled by hyper-competition in a shrinking market and cut throat capitalism from Africa.

The youthful energy of Africa, unharnessed by almost free world-class education and rapidly expanding economy, develops transformational innovations characteristic of young inventors and entrepreneurs. This is tempered by the developed world's older scientists and engineers, who excel at integrating this future's mix of Big Data, distributed manufacturing, and limited resources.

Throughout this churn there is little room for the middle class. With much lower requirements for people, owners and private shareholders of small companies can compete with any company worldwide. Society bifurcates between owners of companies and natural resources creating value and the service workers that support them.

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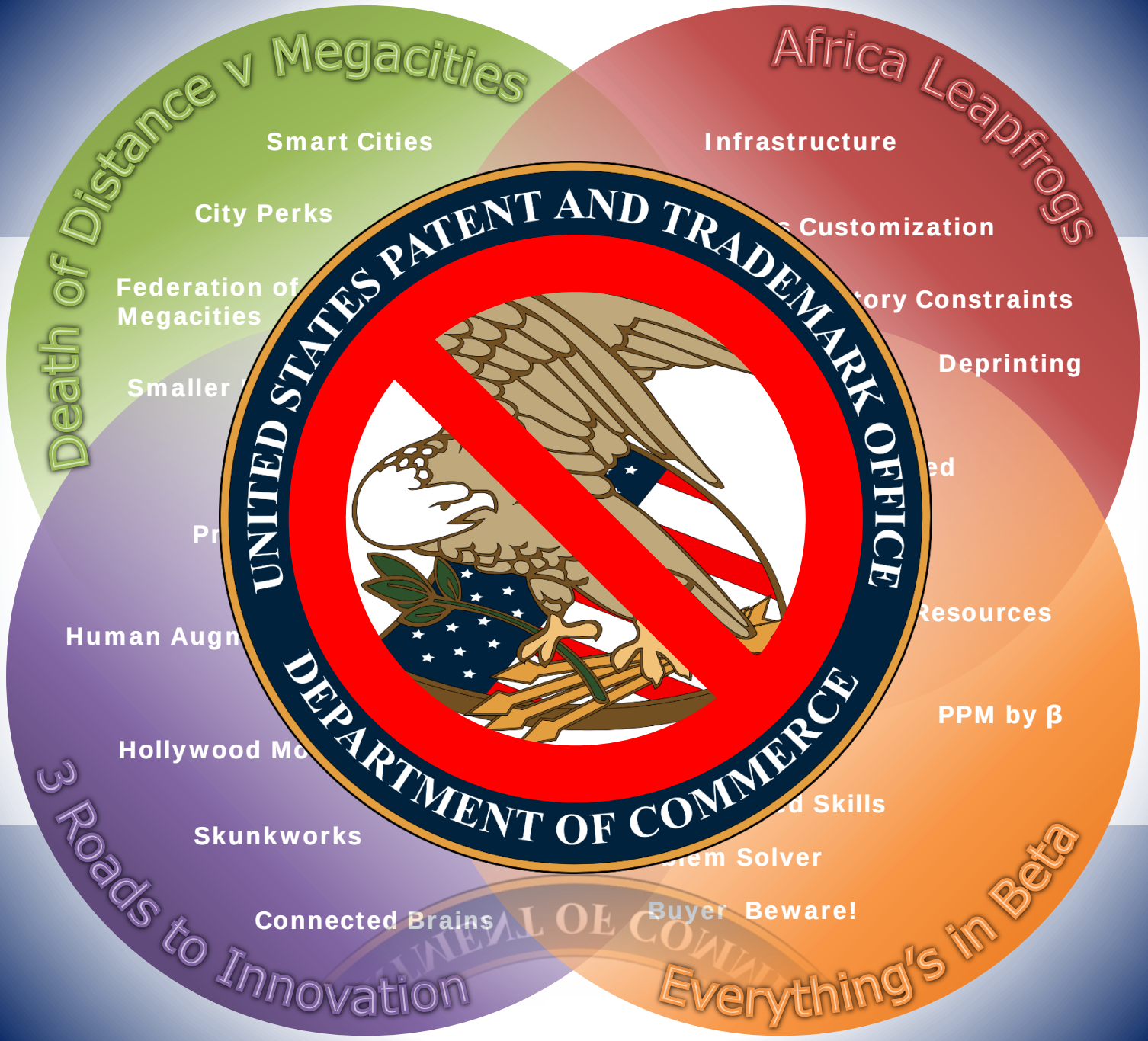
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Smart Cities
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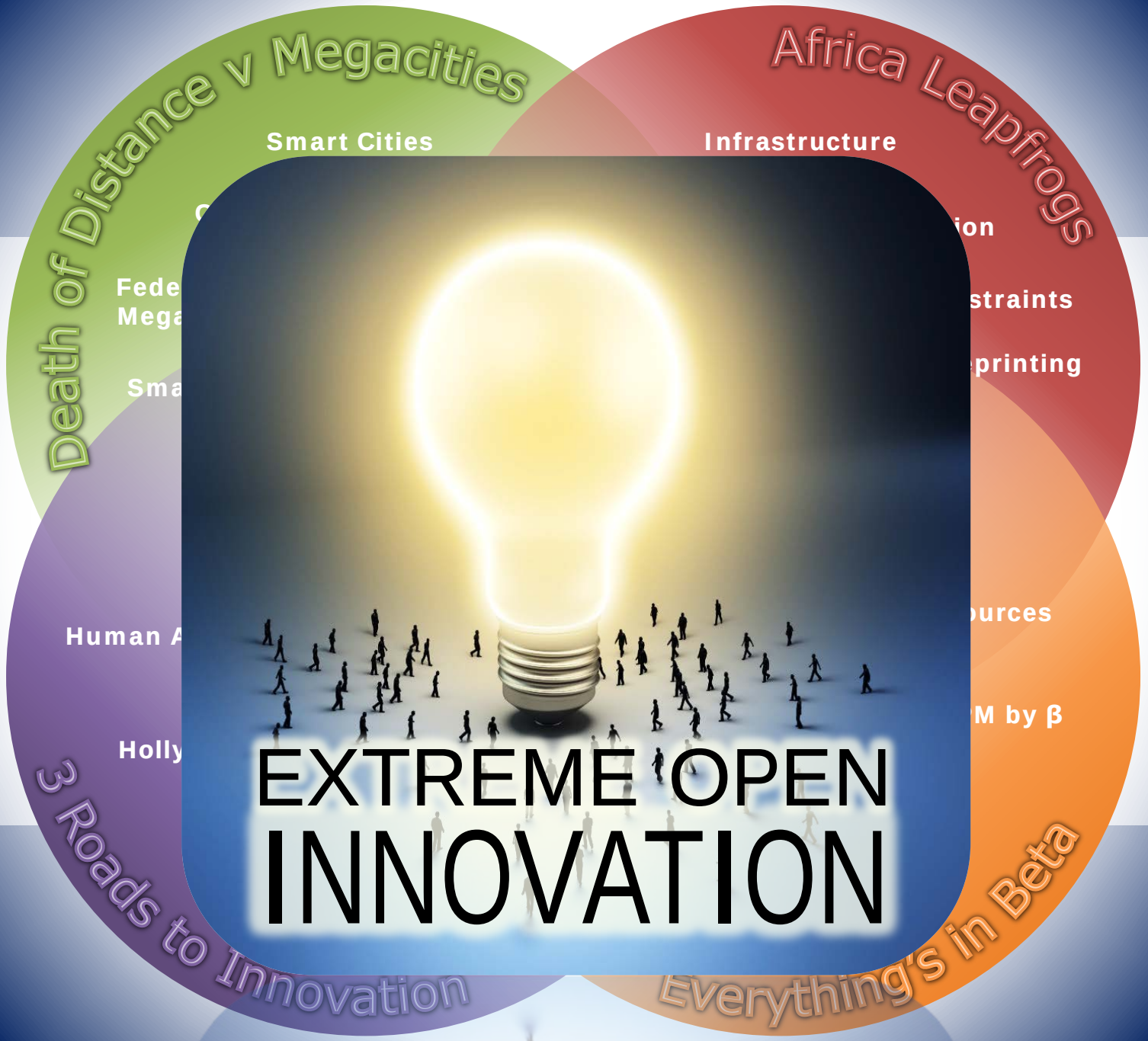
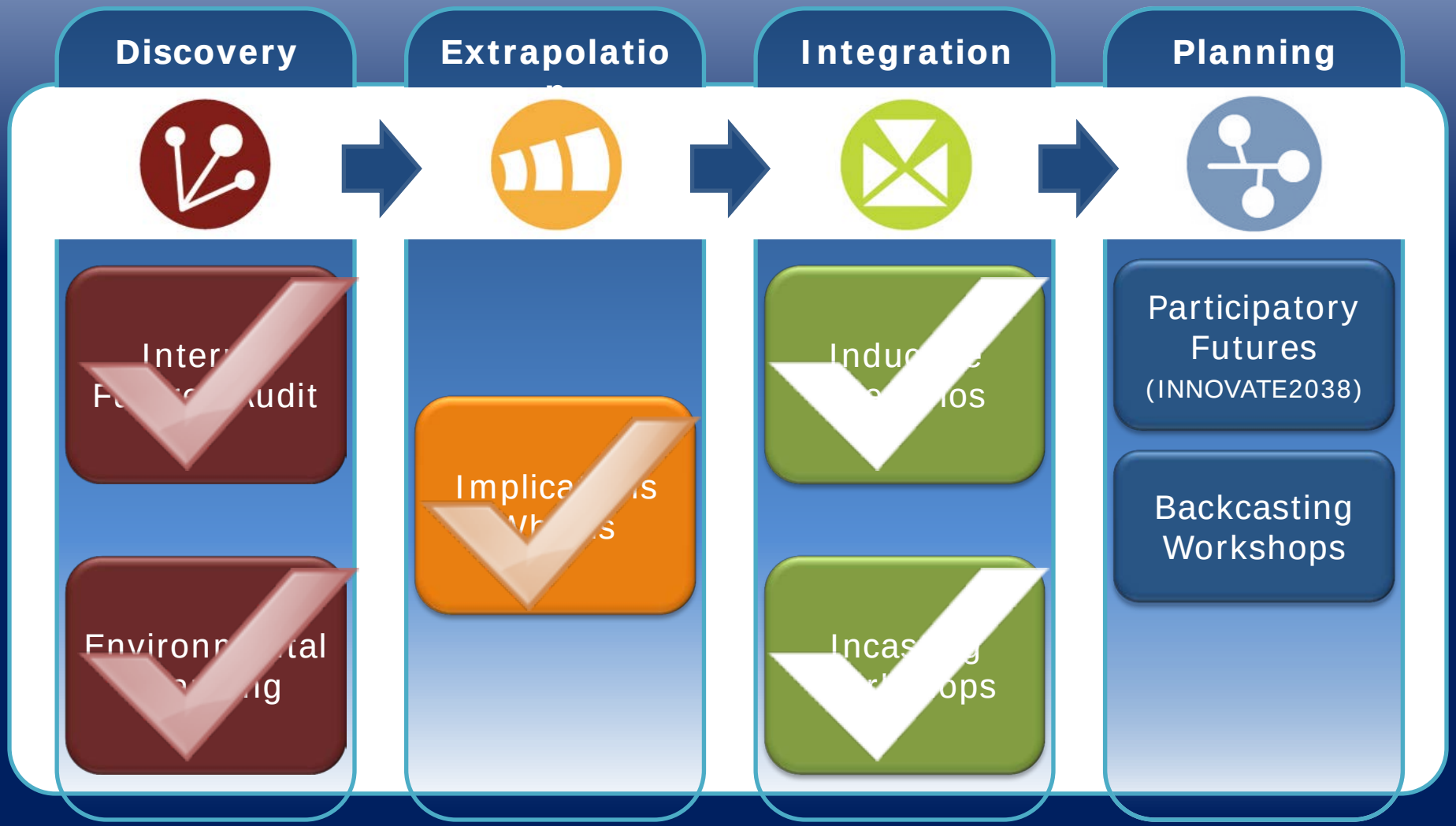
Infrastructure
PROJECT
MANAGEMENT
Social Problem Solver
Connected Brains
Buyer Beware!
3 Roads to Innovation
Everything's in Beta


Death of Distance v Megacities
Smart Cities
Africa Leapfrogs
Infrastructure
3 Roads to Innovation
Everything's in Beta
EXTREME OPEN
INNOVATION

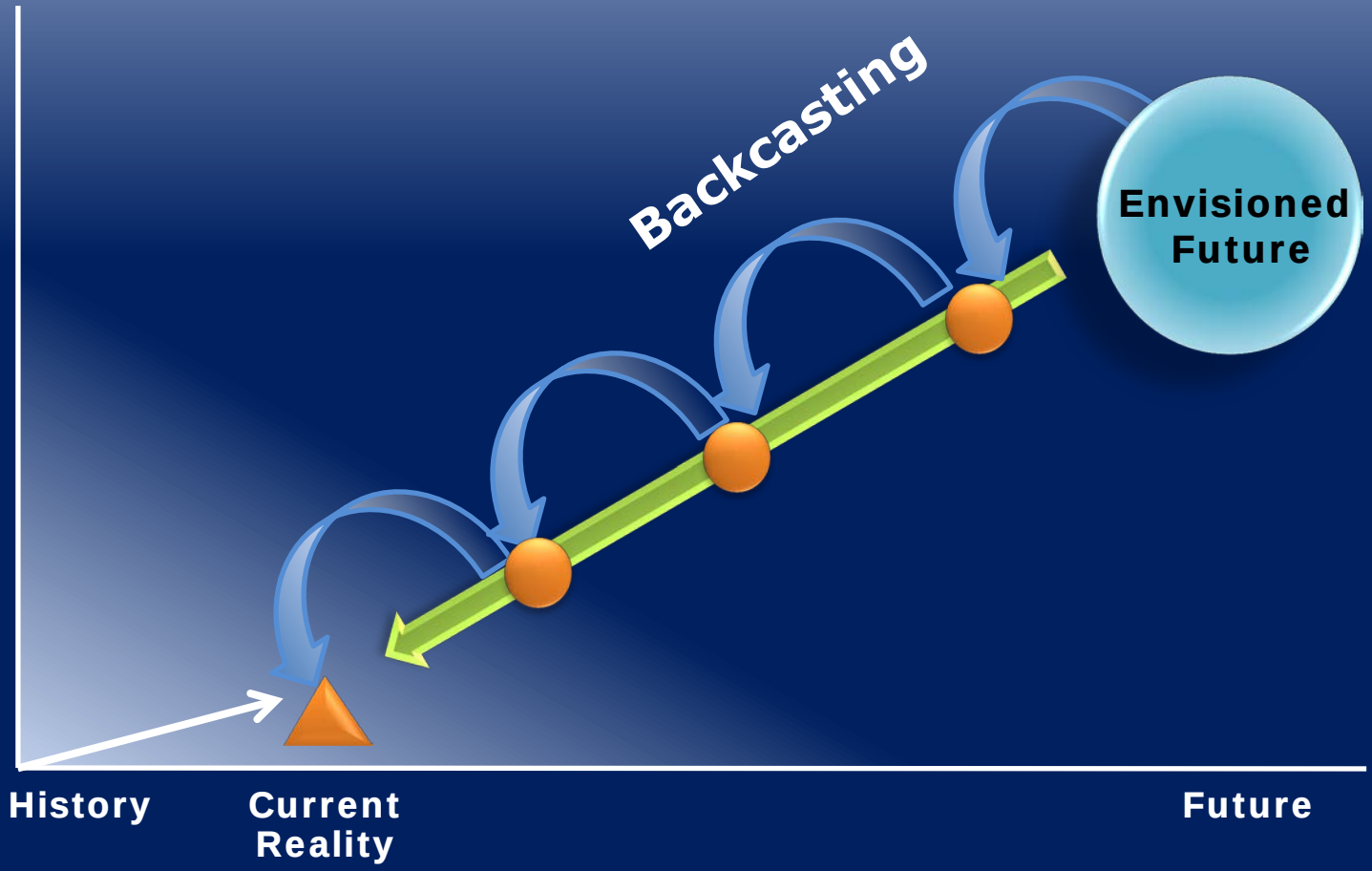
Death of Distance v Megacities
Smart Cities
City Perks
Federation of Megacities
Smaller Projects
Africa Leapfrogs
Infrastructure
Mass Customization
Regulatory Constraints
Deprinting
Speed
Embedded Resources
PPM by β
Everything's in Beta
Buyer Beware!
Social Problem Solver
Bifurcated Skills
Talent Sourcing
3 Roads to Innovation
Connected Brains
Skunkworks
Hollywood Model
Human Augmentation
Prize R&D
MOOC's
PROJECT MANAGEMENT
EXTREME OPEN INNOVATION
UNITED STATES PATENT AND TRADEMARK OFFICE
DEPARTMENT OF COMMERCE

Detailed IRI2038 Foresights Process



Backcasting Workshops

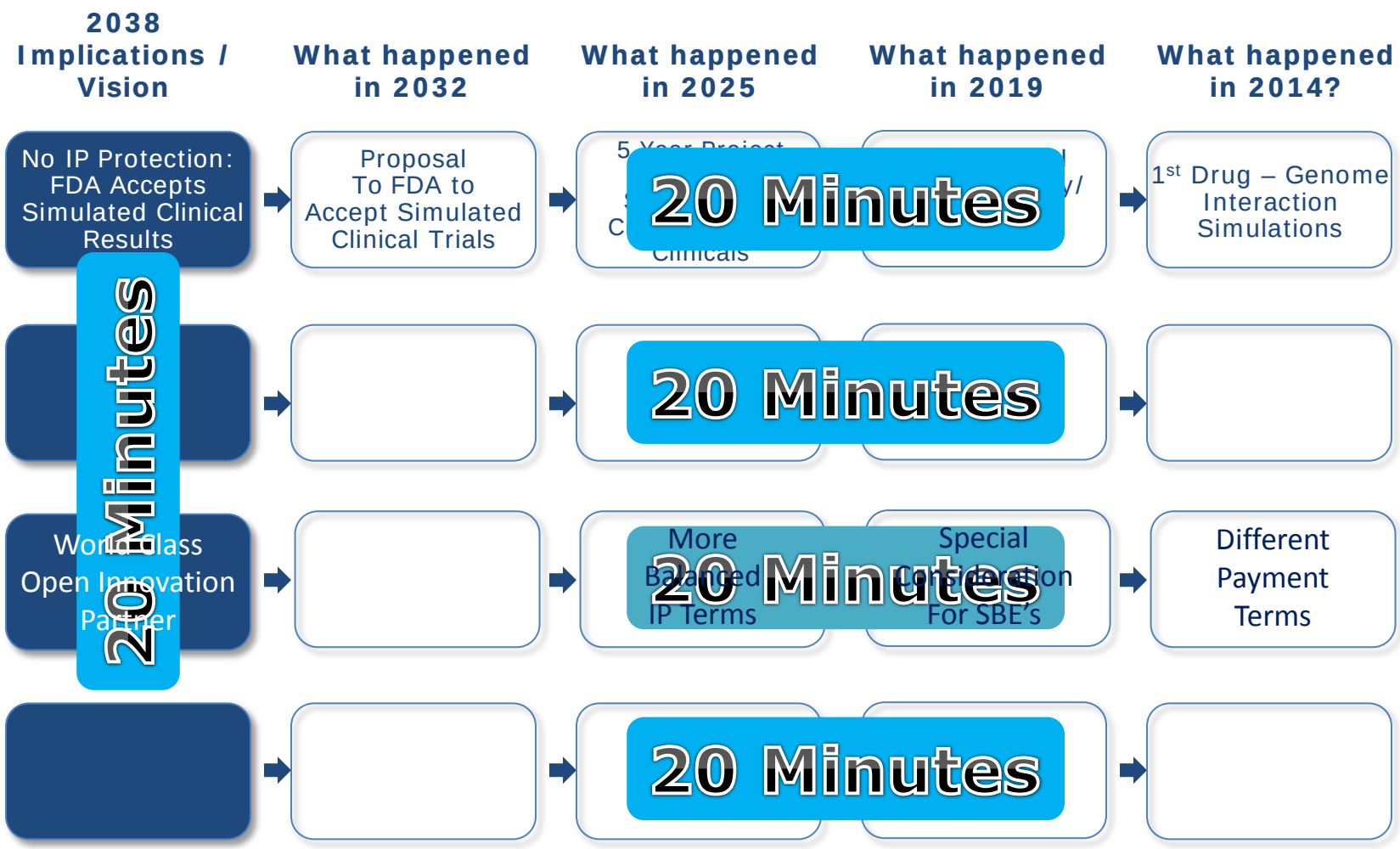
Backcasting: Introduction



Backcasting Workshops

Backcasting Workshop Process

SCENARIO: One Scenario Per Team



innovate2038

FORESIGHT ENGINE

Today's paths to research and innovation won't work in 2038 ...

INSTITUTE FOR THE FUTURE

INNOVATE 2038

Play the game. Make the future.

GAME ARCHIVE

September 25 - 26, 2013

Backcasting Workshops

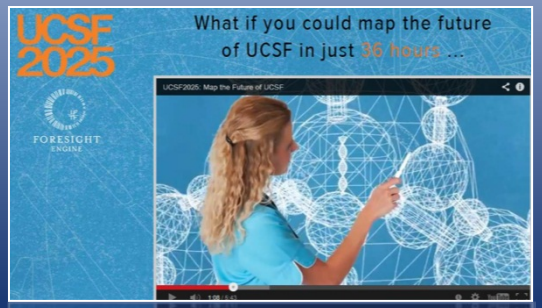
2011 Make Every Calorie Count Game

(IFTF Stack-it Platform)

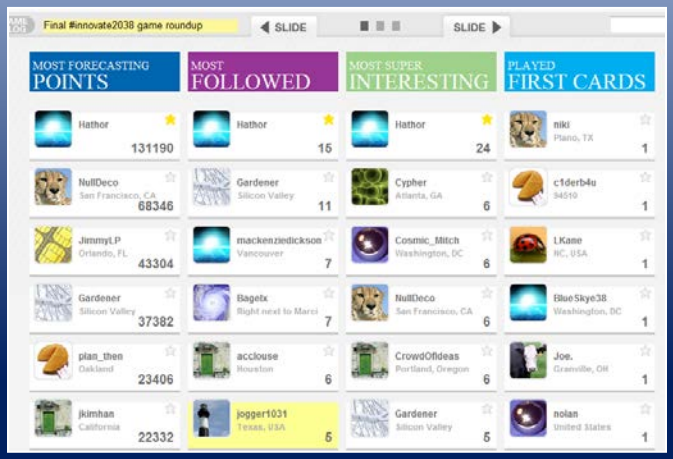
Total players:	**1,300**
Countries:	**33**
Game boards:	**8**
Total ideas:	**1,701**
Votes cast:	**3,345**
Wins:	**304**
Epic wins:	**25**

Backcasting Workshops

IFTF Foresight Engine



Introductory Video



What urgent challenges will UCSF face?

How can UCSF lead the way in 2025?

Two Provocative ?'s

Answer 1

Answer 2

Answer 3

Build 1
Build 2
Build 3
Build 4

Build 1
Build 2
Build 3
Build 4

innovate2038

FORESIGHT ENGINE

Today's paths to research and innovation **won't work in 2038 ...**

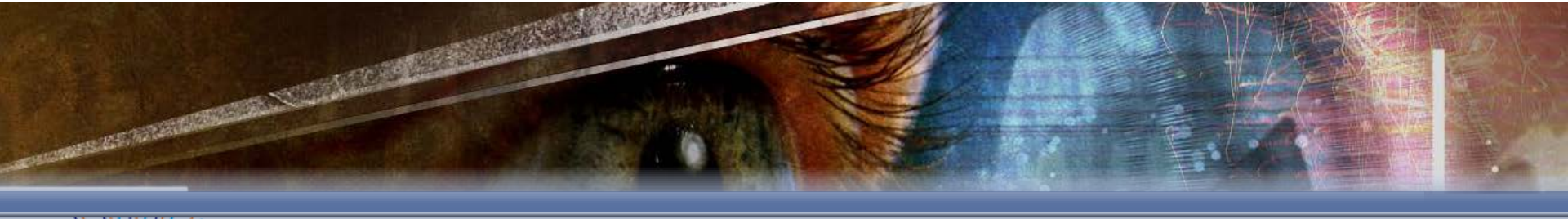
INSTITUTE FOR THE FUTURE

You have **36 hours** to change the future.

Play the game. Make the future.

GAME ARCHIVE

September 25 - 26, 2013



FORESIGHT ENGINE

HOME ABOUT BLOG FAQ & HELP HOW TO PLAY

Welcome jogger1031
SIGN OUT

7580
POINTS

Today's paths to research and innovation won't work in 2038 ... how will you remake the future? #Innovate2038

innovate2038

DETAILS PLAY CARD

GAME BLOG Final #innovate2038 game roundup

GO TO DASHBOARD

Search

Innovate2038

Make the future of research and innovation!

Innovate 2038: The Future of Research and Innov

PLAY POSITIVE IMAGINATION

How can new research and innovation practices lead the way in 2038?

The trial is not open.

PLAY CRITICAL IMAGINATION

What obstacles & roadblocks will hold research & innovation back?

The trial is not open.

POSITIVE IMAGINATION CARDS

Unlimited free energy allows terraforming; global paradises follow

CrowdOfIdeas

The AI's realize that everything is built geometry-like on axioms...and they begin changing them

CRITICAL IMAGINATION CARDS

Lack of forgiveness - we must practice forgiveness within innovation as we look back on failed ideas with new uses and novel possibilities.

Hathor

Increasing "thought-silos" from media fragmentation

FORESIGHT ENGINE

SIGN OUT

POINTS

Today's paths to research and innovation won't work in 2038 ... how will you remake the future? #Innovate2038

DETAILS PLAY CARD

innovate2038

GAME BLOG Final #innovate2038 game roundup

GO TO DASHBOARD

Search

POSITIVE IMAGINATION IN RESPONSE TO:

How can new research and innovation practices lead the way in 2038?

Will innovative become the new normal? Will we need a new definition for "innovative" by 2038?

played 14 days ago by SaschaGoto

Momentum

PLAY MOMENTUM

If this is true... what happens NEXT?

The trial is not open.

MOMENTUM CARDS

Antagonism

PLAY ANTAGONISM

Disagree? What could happen INSTEAD?

The trial is not open.

ANTAGONISM CARDS

Adaptation

PLAY ADAPTATION

Yes, and...how might this EVOLVE?

The trial is not open.

ADAPTATION CARDS

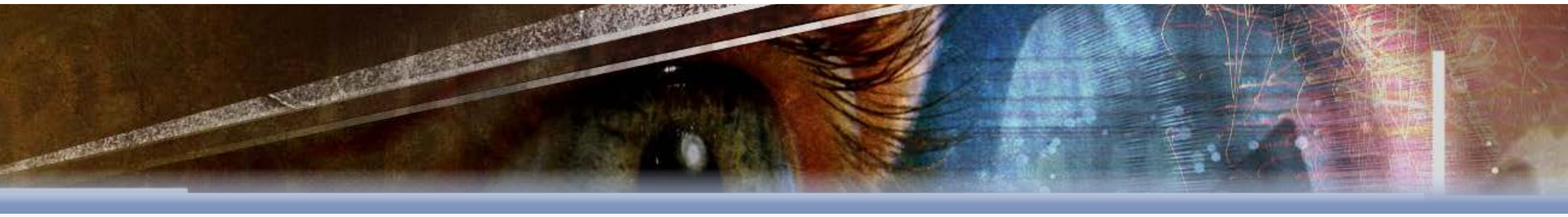
Investigation

PLAY INVESTIGATION

Curious? Ask or answer a FOLLOW-UP QUESTION...

The trial is not open.

INVESTIGATION CARDS



Final #innovate2038 game roundup

SLIDE

SLIDE

Search

POSITIVE IMAGINATION

POSITIVE_IMAGINATION
Thank you for amazing input, fascinating ideas, and creative commitment to the future! Gratitude to #Innovate2038!
0 Hathor

POSITIVE_IMAGINATION
It's been an amazing 36 hours! Thank you all for the idea exchange. It gives hope for the future all of the bright thoughts being discussed
0 NullDeco

POSITIVE_IMAGINATION
With 15 minutes left I want to thank all of you for a special 36 hrs. Its been fascinating, inspiring and entertaining. Hathor - you rock.
2 Sydney

POSITIVE_IMAGINATION
Public education elevates a generation of students to

CRITICAL IMAGINATION

CRITICAL_IMAGINATION
During lack of public media, famous inventions around scientific theories/technologies were revered. Has media made inventions
0 scigeek

CRITICAL_IMAGINATION
devil hacker to damage network open global system into separate independent small system
0 seiji oshima

CRITICAL_IMAGINATION
The desire to move too quickly -- human face to face time, actual conversation, and the patience to explore are and always will be the key.
0 AndySpear

CRITICAL_IMAGINATION
Governments only funding "near to market" rather than

ALL BUILDS

MOMENTUM
ya, instead, spread the knowledge and generate some level of equality in the matter of knowledge and skill sets for a better world,
0 ravz

MOMENTUM
Chaotic turbulent, interconnected. Paradoxical uncontrollable. Has potential for increasing in/equality straddles borders. See Bob
0 KittyAlmanac

INVESTIGATION
If global challenges are same, can we track innovation as a linear relationship with time? If not why? When were we more innovative? Why?
0 scigeek

ADAPTATION
Creativity and innovation frequently come from inspired

BUILDS ON MY CARDS

MOMENTUM
Guns are so accessible 3D printed guns wouldn't be noticed. What would be destroyed is manufacturing and that will be noticed
0 Sydney

INVESTIGATION
The lessons of Sci-fi helping our risk assessment in real life R&D.
0 NullDeco

MOMENTUM
Good One. Is the rift between Romulans and Vulcans a commentary on the struggles we'll face if Singularity is reached?
1 NullDeco

INVESTIGATION
When do you think the Turing test will be passed?

YOUR POSITION

7	SaschaGoto	16802
8	mackenziedicks	14770
9	mary.hart	11566
10	acclouse	9692
11	DiaZero	8664
12	**jogger1031**	**7580**
13	michele	7258
14	April	6486
15	Cosmic_Mitch	5142
16	Complexity	4340
17	NeedMoreData	4320

TRENDING #TAGS

#freetizen
#innovate2038
#psychedelicinnovation
#value2038
#talent2038

VIEW ALL

TOP KEYWORDS

Final #innovate2038 game roundup

SLIDE

SLIDE

Search

MOST FORECASTING POINTS

Hathor		131190
NullDeco	San Francisco, CA	68346
JimmyLP	Orlando, FL	43304
Gardener	Silicon Valley	37382
plan_then	Oakland	23406
jkimhan	California	22332

MOST FOLLOWED

Hathor		15
Gardener	Silicon Valley	11
mackenziedickson	Vancouver	7
BageIx	Right next to Marci	7
acclouse	Houston	6
jogger1031	Texas, USA	5

MOST SUPER INTERESTING

Hathor		24
Cypher	Atlanta, GA	6
Cosmic_Mitch	Washington, DC	6
NullDeco	San Francisco, CA	6
CrowdOfIdeas	Portland, Oregon	6
Gardener	Silicon Valley	5

PLAYED FIRST CARDS

niki	Plano, TX	1
c1derb4u	94510	1
LKane	NC, USA	1
BlueSkye38	Washington, DC	1
Joe.	Granville, OH	1
nolan	United States	1

YOUR POSITION

7	SaschaGoto	16802
8	mackenziedicks	14770
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TRENDING #TAGS

#freetizen
#innovate2038
#psychedelicinnovation
#value2038
#talent2038

VIEW ALL

TOP KEYWORDS

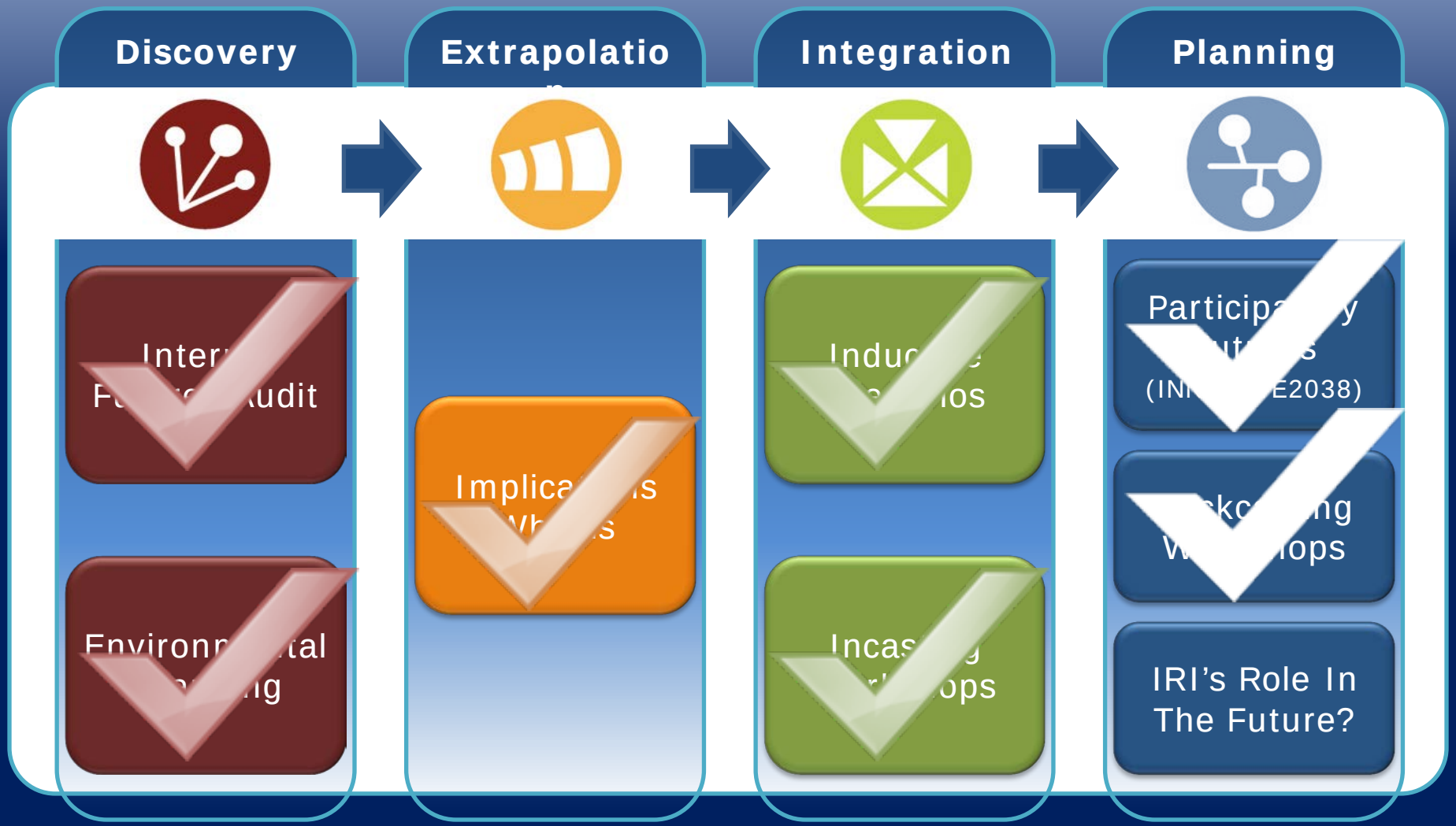
RESULTS

10,000 **ideas were generated**

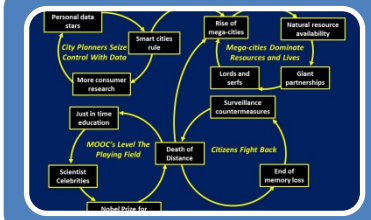
>500 **players**

From 52 **countries**

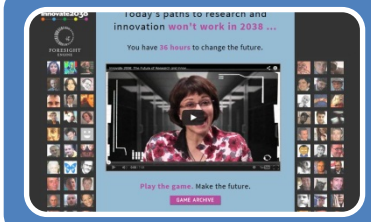
Detailed IRI2038 Foresights Process



Overall Conclusions



Inductive Scenarios are a powerful tool for exploring the future



MOOG's are evolving and will continue to grow in R&D

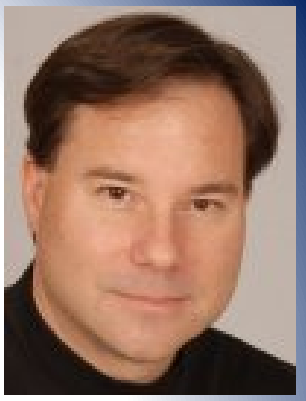
Engaging the organization in any foresights project is important

Resulting inductive scenarios are a valuable piece of property

Foresight Alliance

andspace consulting
FORESIGHT
INNOVATION
STRATEGY
APPLYING FORESIGHT AND DESIGN THINKING TO HELP ORGANIZATIONS INNOVATE AND GROW

IRI Industrial™ Research Institute
Creating Innovation Leadership Solutions



Thought Leadership Institute

INSTITUTE FOR THE FUTURE

vault communications, inc.

Strategy Studio®

INFINITE FUTURES
foresight training and facilitation

DESIGNS ON TALENT

Creelman RESEARCH

UNIVERSITY of HOUSTON
COLLEGE OF TECHNOLOGY
Future Studies in Commerce

Staffing.org

Customer Innovations

CROWN
Brand-Building Packaging™

PEPSICO

dziękuję
ขอขอบคุณคุณ
감사합니다
谢谢
شكرا
唔該
Gracias
Merci
Tack
THANK YOU
Obrigado
ευχαριστώ
Danke
תודה
спасибо
Grazie
ありがとう
ধন্যবাদ
তোমাকে
σας ευχαριστώ