Technology Triage: Assessment

Surya Raghu
Advanced Fluidics LLC &
ET Cube International

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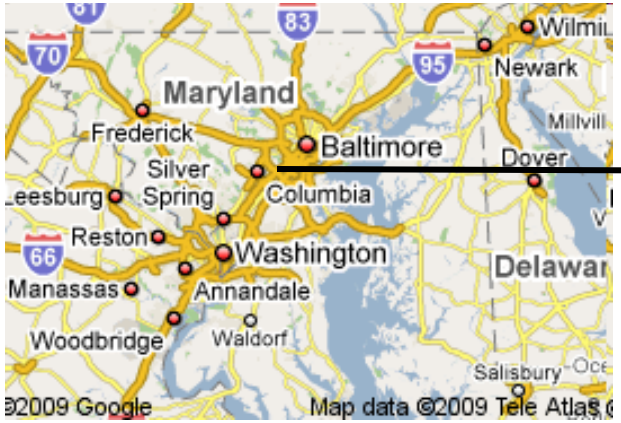


About Me

Ph.D. Mechanical Engineering – Yale University
Academics – State University of New York, Stony Brook
Industrial Scientist – Automotive and Consumer Products
>20 inventions
15 issued US and International patents
6 Products: Invention to commercialization
Entrepreneur: Started Advanced Fluidics (Small Company) in 2001

Training: ET^3 International (Non-Profit Organization)

About ET^3 International and Advanced Fluidics

ET^3 International
Entrepreneurship and Research Commercialization
Training and Consulting ~ 20 countries

Advanced Fluidics LLC
Research and Product Development in
1. Aerospace Sciences – Aerodynamics, combustion
2. Micro/Nanofluidics/nanotech-based biosensors
3. Medical Instrumentation
4. Technology Roadmap Development and Training

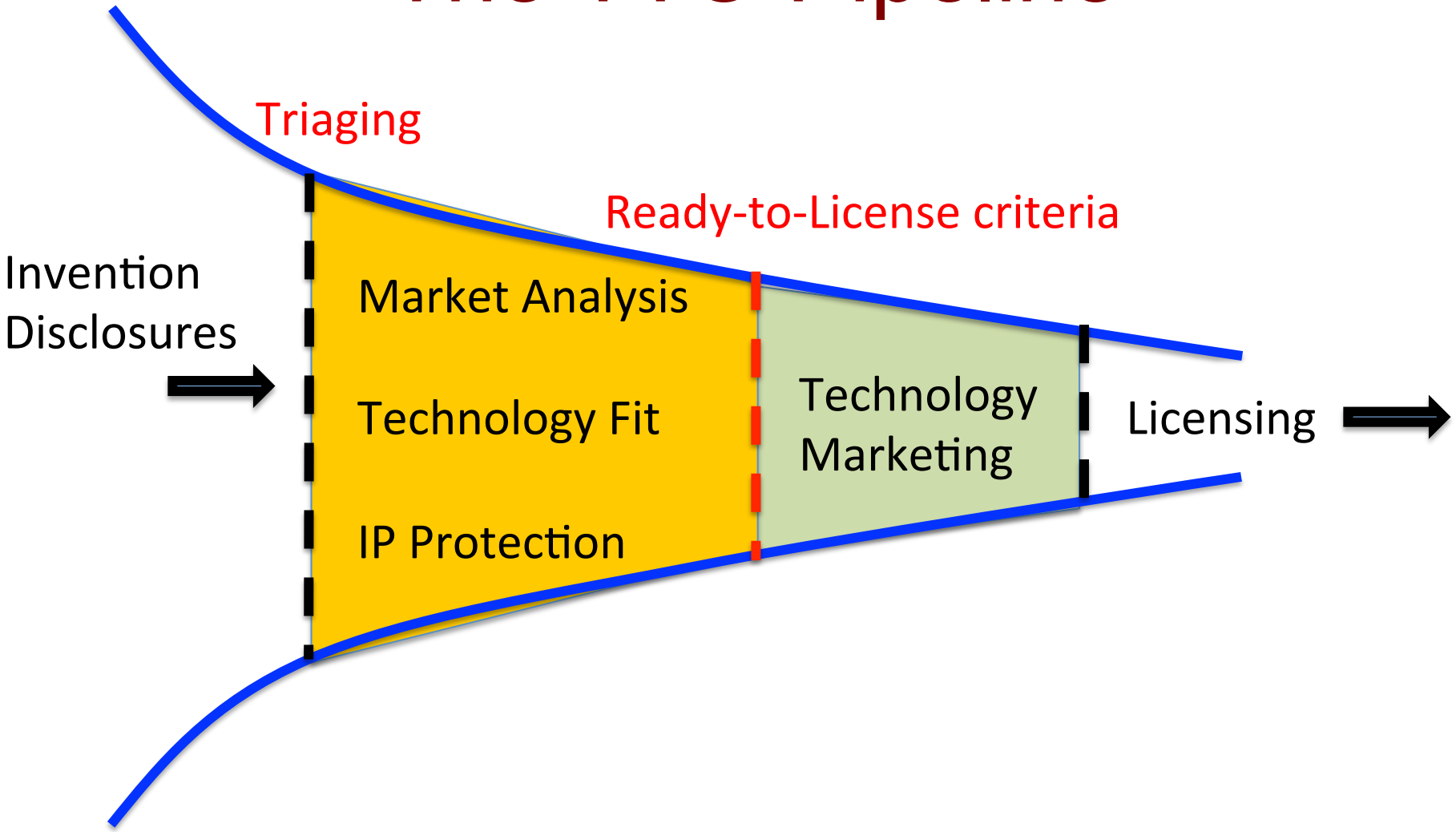
Work with many Universities…

Motivation

University researchers come up with many good ideas and invention disclosures….

Challenge for the TTO is to see how to prioritize the inflow of invention disclosures and create a pipeline towards licensing…

The TTO Pipeline



OUTLINE

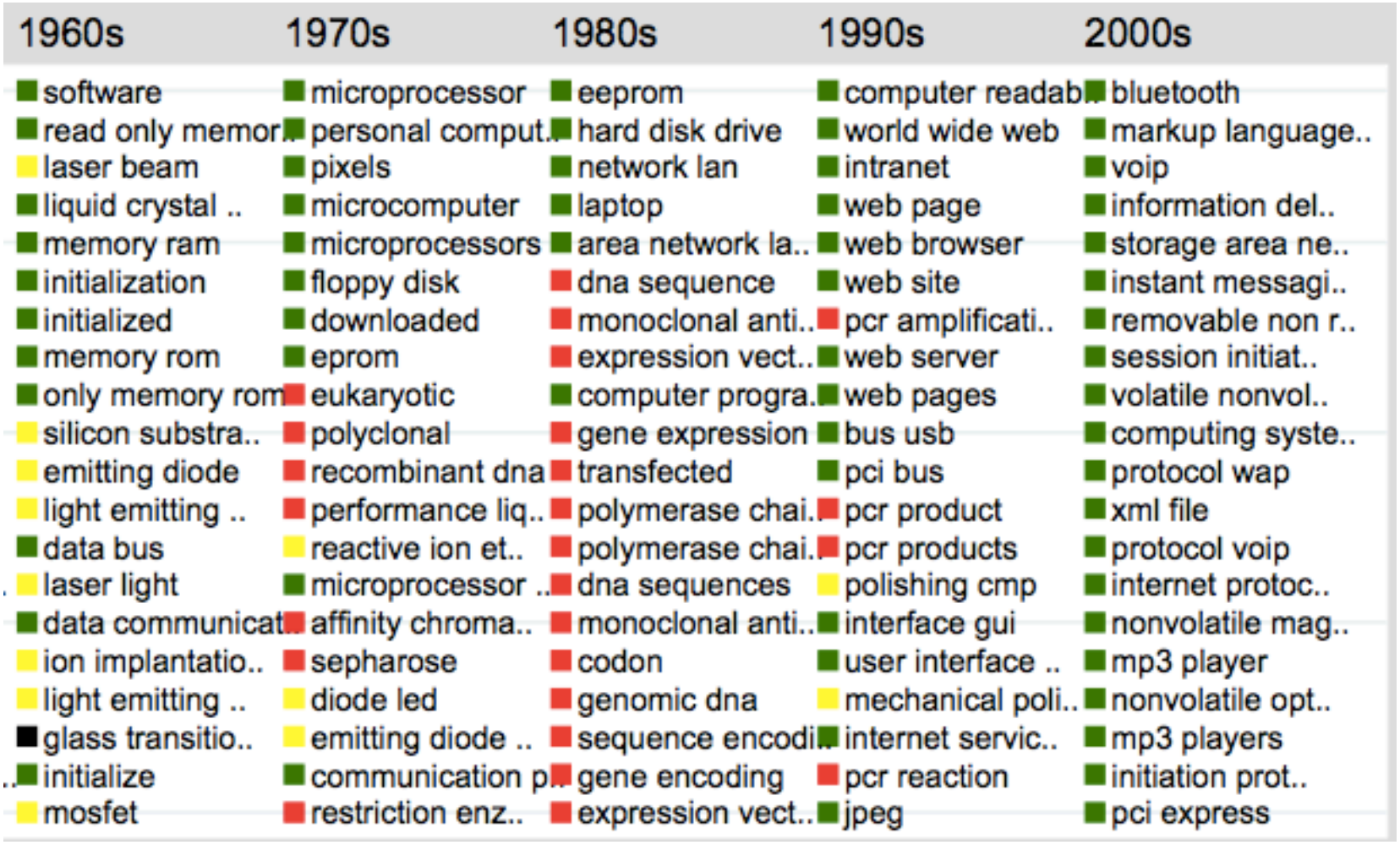
Triaging Incoming Invention Disclosures

Preparing for licensing

Licensing Decision Criteria

Conclusions

Top 20 Inventions in each decade



Chemical | Computers & Communications | Drugs & Medical | Electrical & Electronics | Mechanical | Others

(www.theatlantic.com)

Field/Subject Matter of Invention

Chemistry
Physics
Electronics
Engineering - Mechanical/Electrical/Civil/Chemical…..
Biotech
Agritech
BioMedical
Others???

Importance of multi-disciplinary research and inventions….

Related Industry?

Agriculture
Aquaculture
Automotive
Bio-Instrumentation
Aerospace
Consumer Electronics
Healthcare
Others??

A single invention can map to multiple industries…..

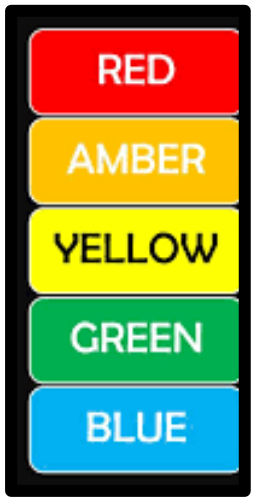
Triaging

Triage is the procedure of assigning levels of priority to tasks or individuals to determine the most effective order in which to deal with them.

Three levels:
1. Low
2. Medium
3. High

OR

Scale of 1-5 where 1= Very unfavorable
2= Unfavorable
3= Neutral
4=Favorable
5=Very Favorable



Triaging Criteria

	Criteria	Score
1	Invention description	
2	IP Potential	
3	Market relevance or need (Technology fit)	
4	Market Size and Characteristics	
5	Value proposition potential	
6	Potential for economic value	
7	Stage of Development/TRL	
8	Scale-up feasibility	
9	Support, funding and resources	
10	Existing or potential for private sector partnership	

IP: Patent Quick Search

Clear Invention description helps in understanding its IP domain

Quick searches:
Local country Patent Office: MyIPO

European Patent Office: https://worldwide.espacenet.com/

WIPO: https://patentscope.wipo.int/search/en/search.jsf

USPTO: www.uspto.gov

Japan PTO: www.jpo.go.jp

Technology Fit

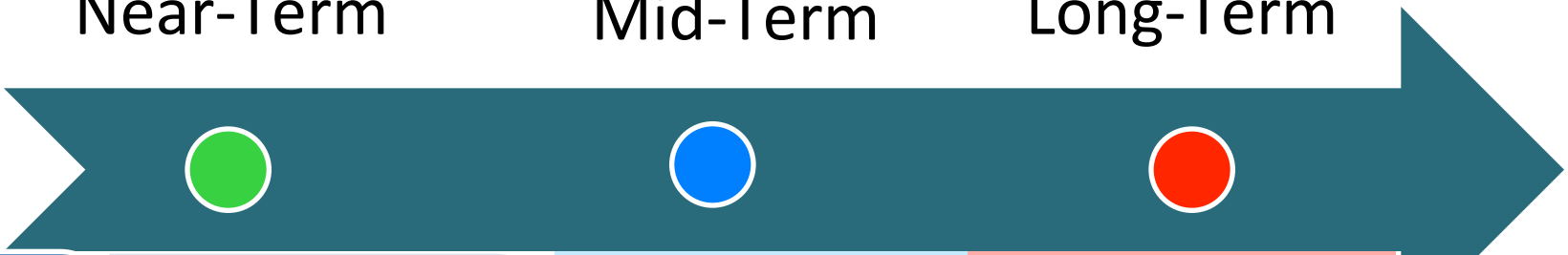
	Criteria	Score
1	Invention description	
2	IP Potential	
3	Market relevance or need (Technology fit)	

Roadmaps

Forecasting

Technology Road Map

http://www.climatetechnology.gov/library/2006/testimony20sep2006.htm



GOAL 1
Energy End Use and Infrastructure

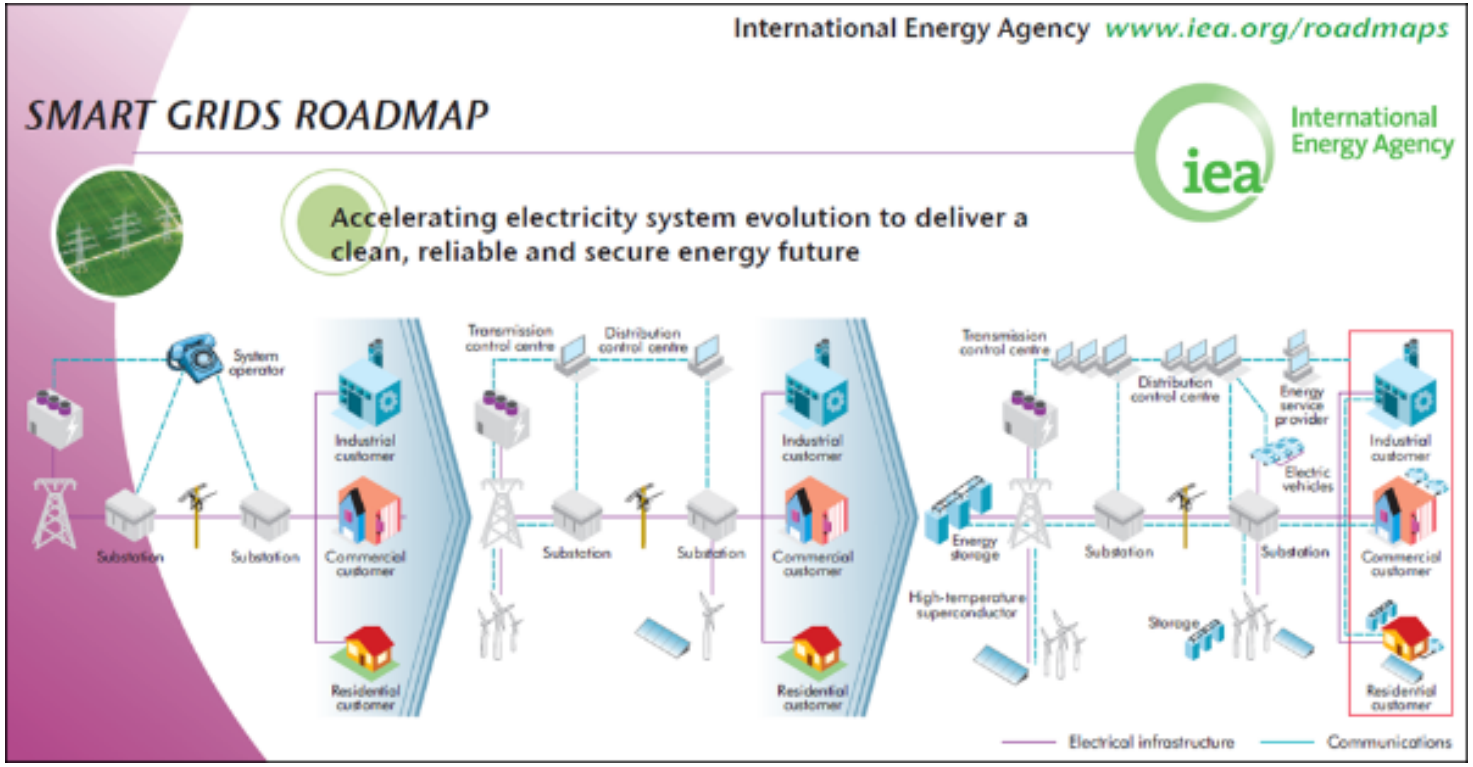
Near-Term
- Hybrid Vehicles
- Plug-ins
- Hi-Performance integrated homes
- High-efficiency appliances
- High-efficiency boilers and combustion systems
- High-temperature superconductivity demonstrations

Mid-Term
- Fuel cell vehicles and hydrogen fuels
- Low emission aircraft
- Solid-State lighting
- Ultra-efficient HVACR
- Smart buildings
- Transformational technologies for energy-intensive industries
- Energy storage for load leveling

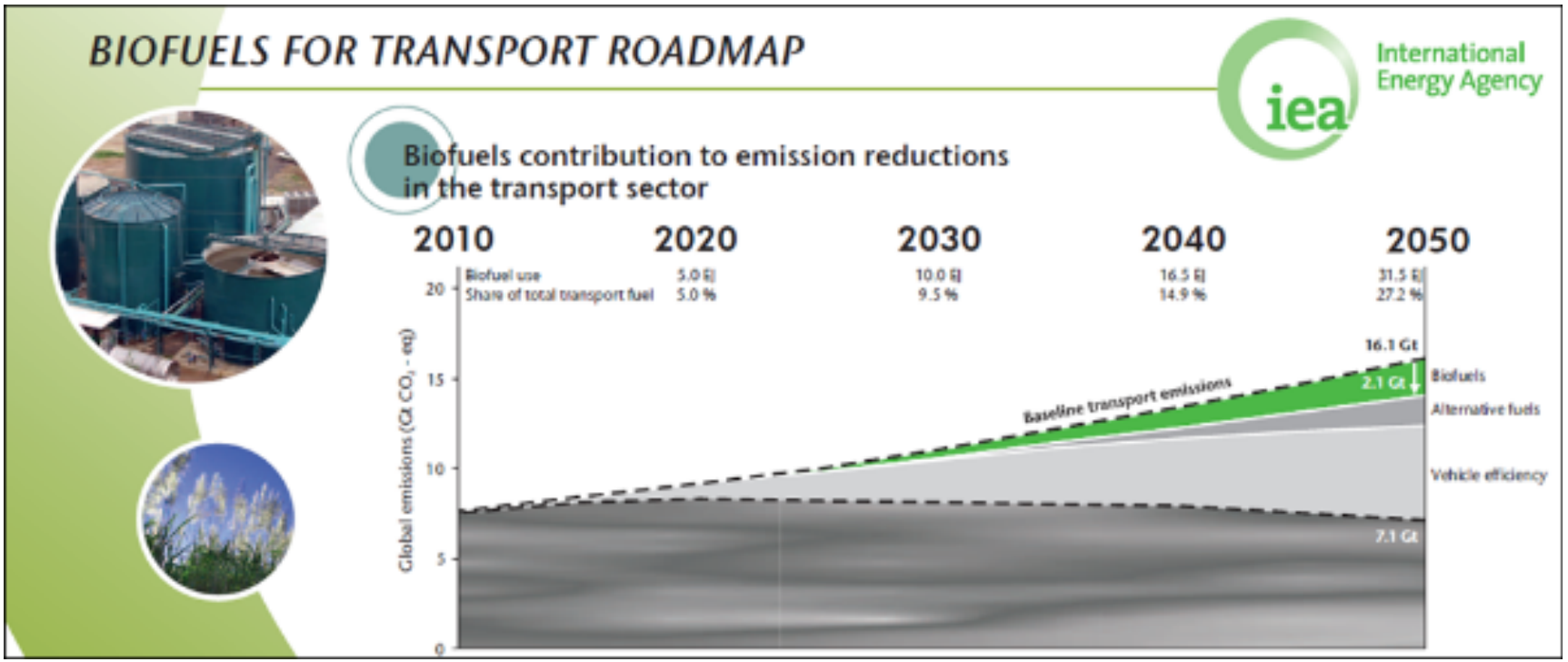
Long-Term
- Widespread use of engineered urban design and regional planning
- Energy managed communities
- Integration of industrial heat, power, process and techniques
- Superconducting transmission and equipment

Your invention?

Smart Grids Roadmap



Roadmap for Biofuels

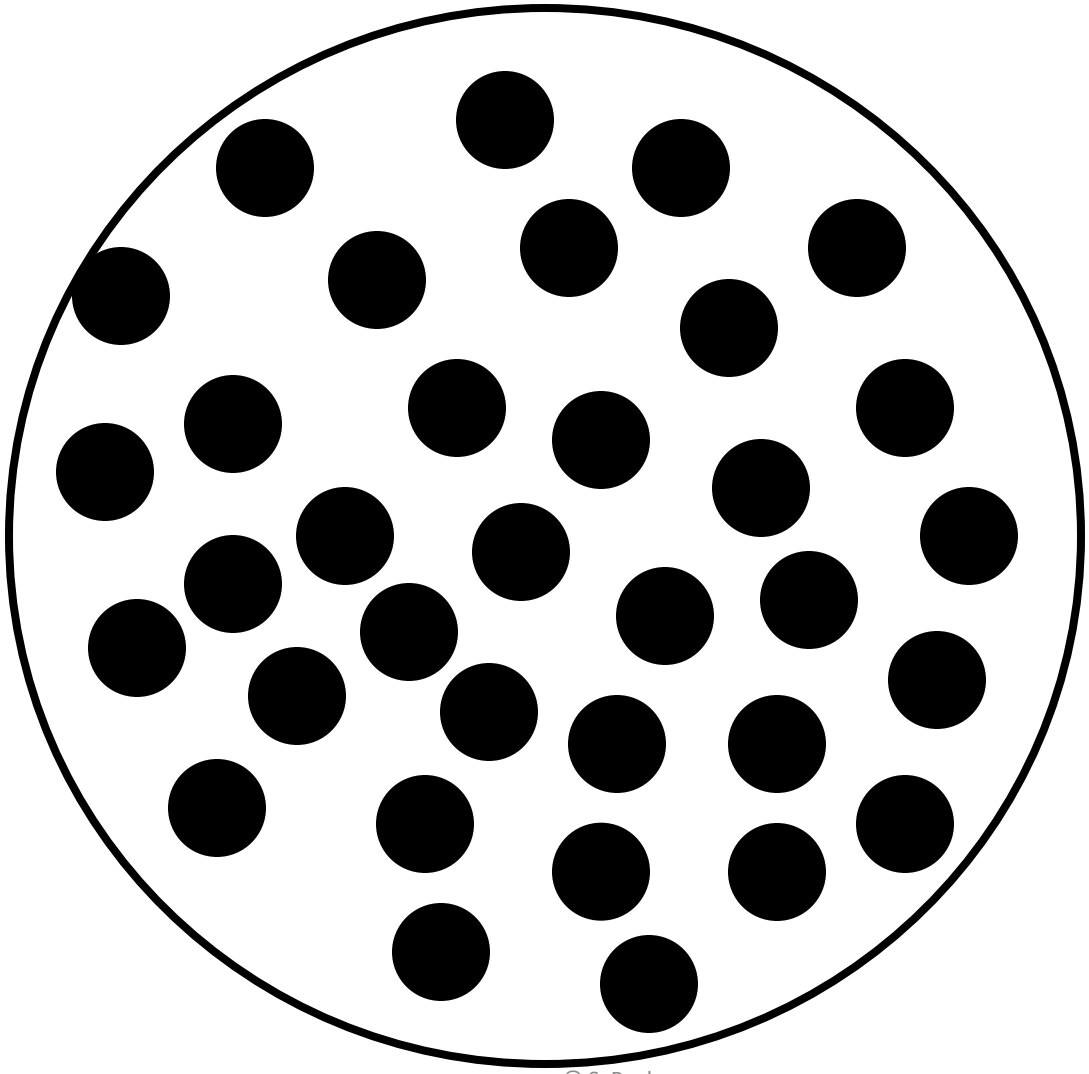


Technology Roadmaps for:

Healthcare?
Energy?
Water and Sanitation?
Agriculture?
Aquaculture
Food Security?

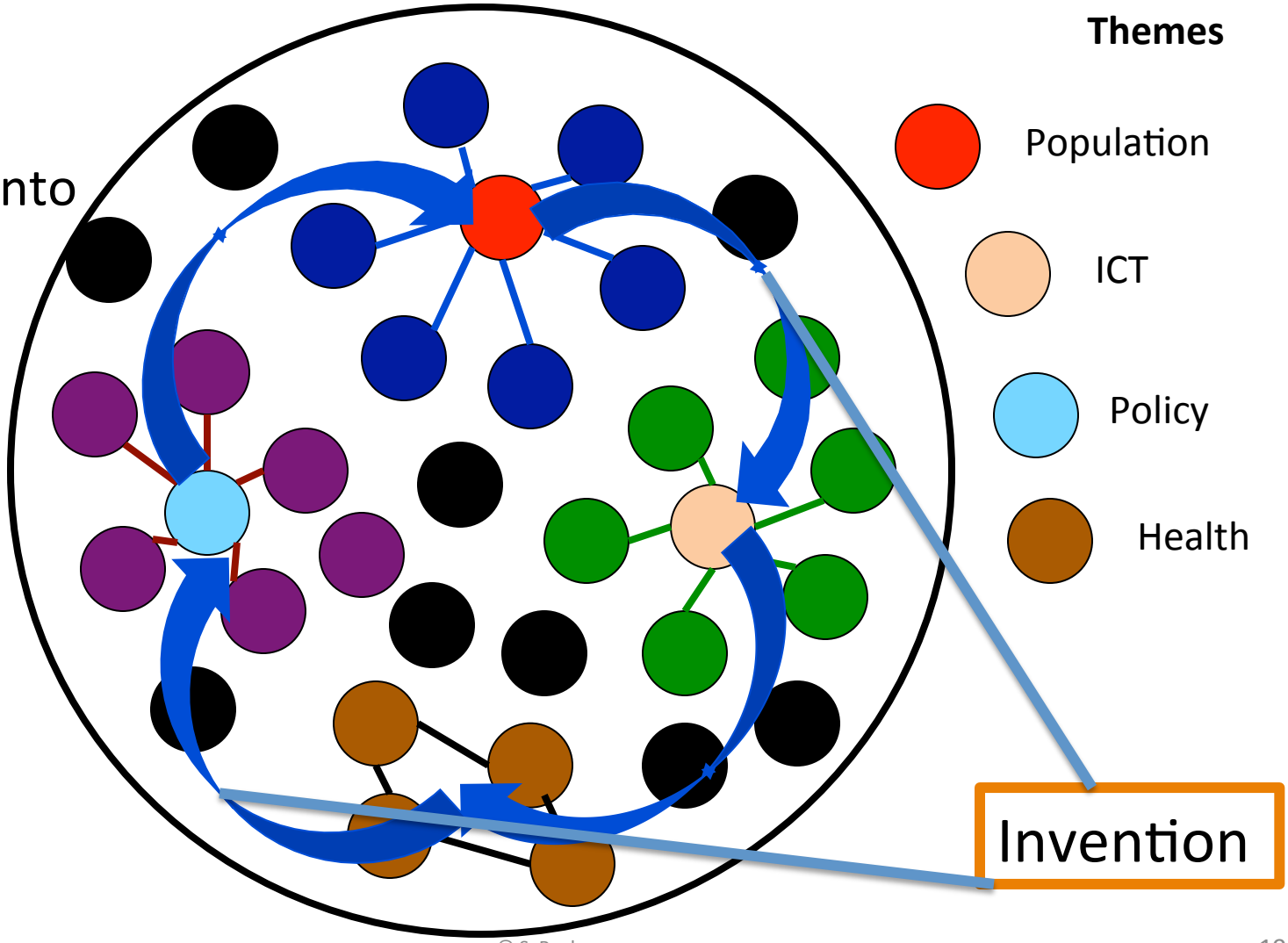
Horizon Scanning

Random factors



Horizon Scanning

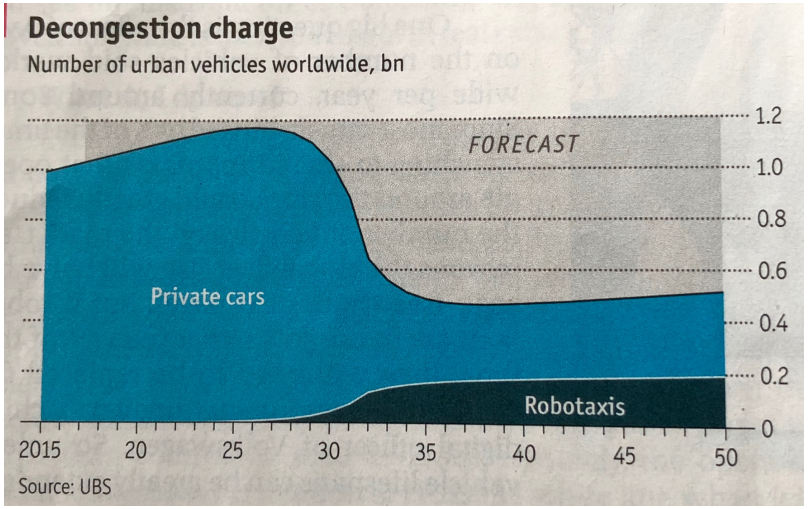
Random factors clustered into themes



Urban Trends

Cities for people, not cars

(The Economist – March 3-9, 2018)



Triaging Criteria

	Criteria	Score
1	Invention description	
2	IP Potential	
3	Market relevance or need (Technology fit)	
4	Market Size and Characteristics	

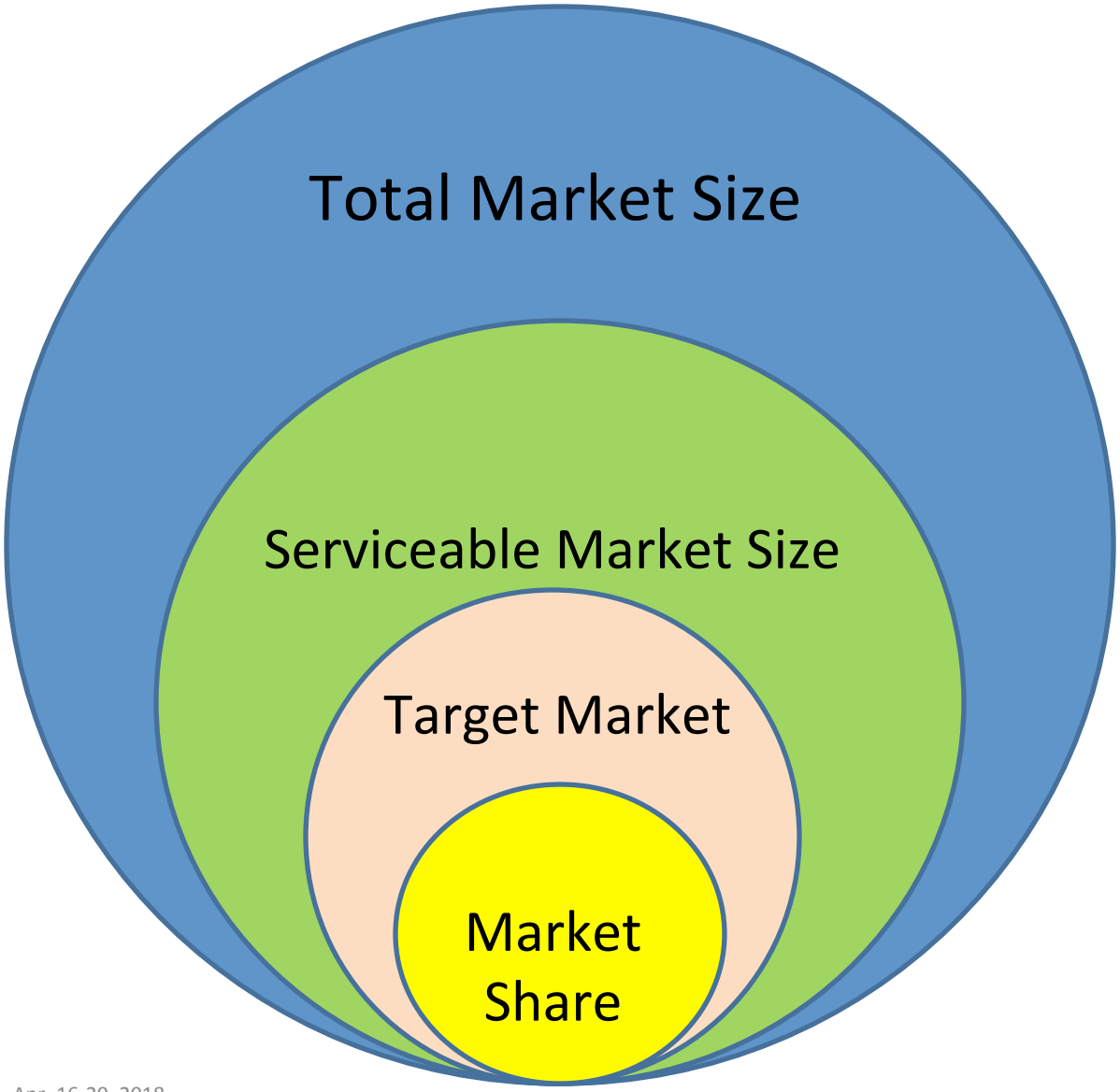
Market Size and Characterisitcs

Market size

Entry barrier

Competition

Market Size



Value Proposition and Potential

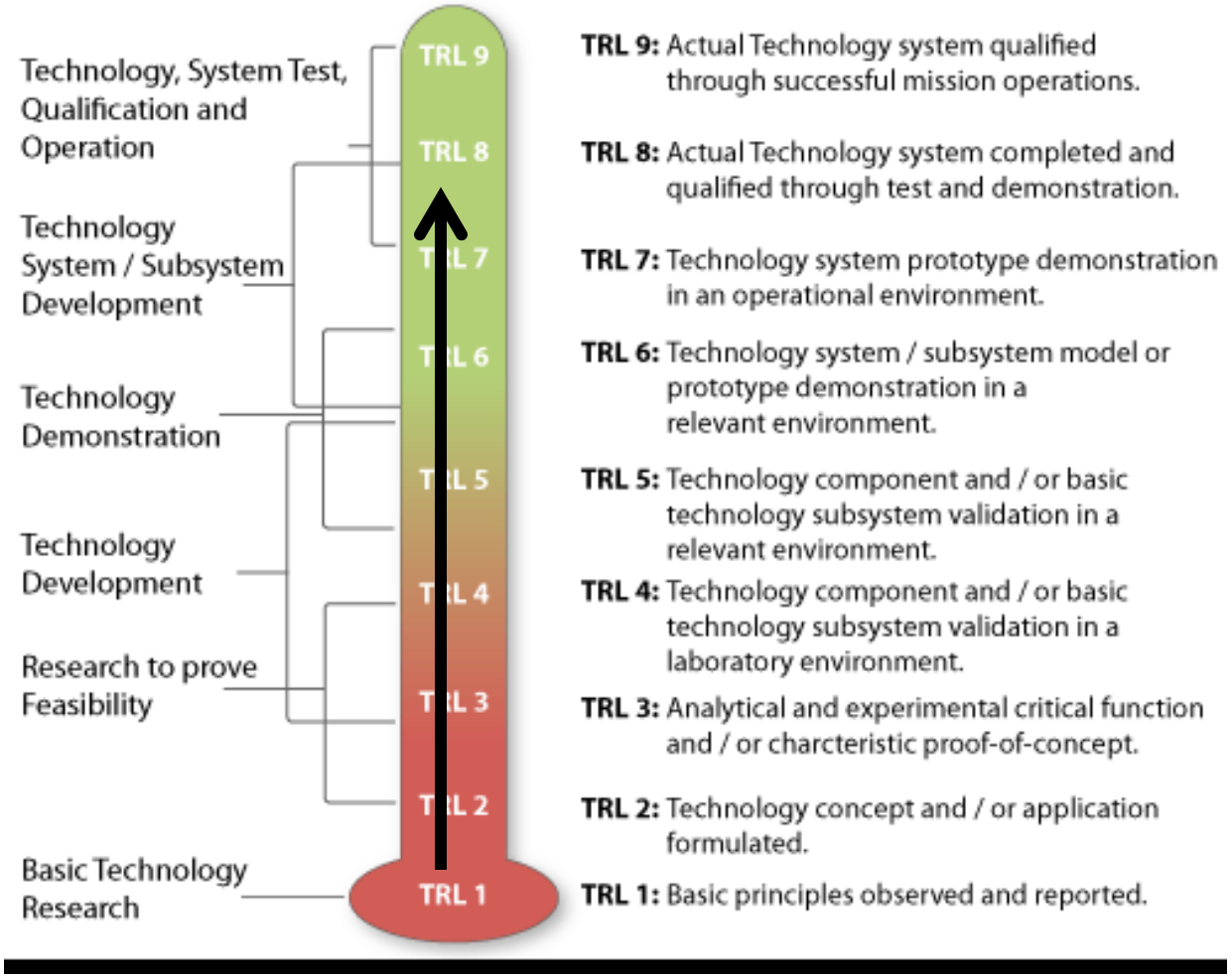
	Criteria	Score
1	Invention description	
2	IP Potential	
3	Market relevance or need (Technology fit)	
4	Market Size and Characteristics	
5	Value proposition potential	
6	Potential for economic value	

How can we define the benefit of the invention over the absence of it in the market/alternate products?

Technology Readiness Level

	Criteria	Score
1	Invention description	
2	IP Potential	
3	Market relevance or need (Technology fit)	
4	Market Size and Characteristics	
5	Value proposition potential	
6	Potential for economic value	
7	Stage of Development/TRL	
8	Scale-up feasibility	

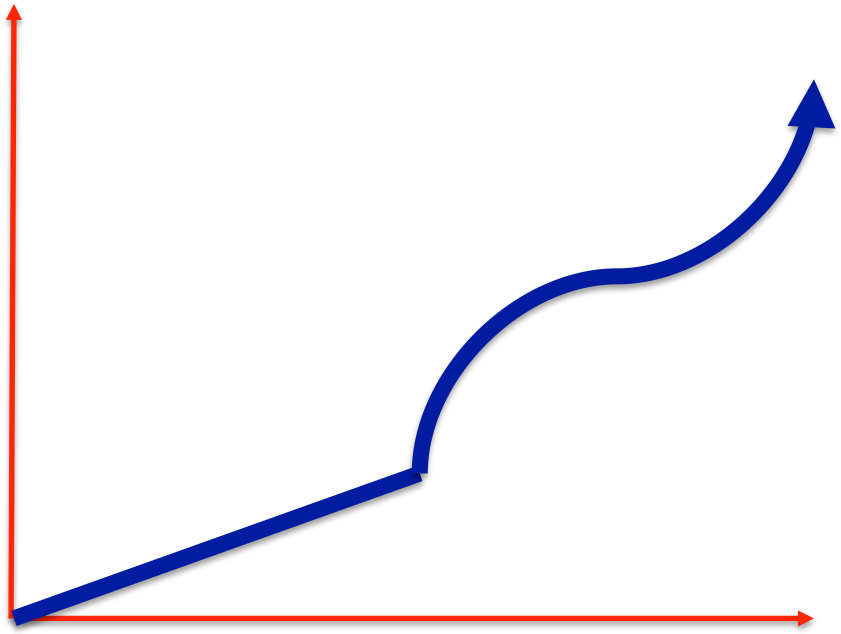
Technology Readiness Levels (TRL)



http://www.aof.mod.uk/aofcontent/tactical/techman/content/trl_applying.htm

Scale-Up Feasibility

Scale-up: > 20% growth/year for at least 3 years…



Licensing Opportunity

Access to Licensee is critical

Does the inventor know the potential industry licensee?

Does the TTO have access to the potential licensee through contacts?

Does the TTO/Dean/President have access to the industry?

Technology Triaging

What should be the next action plan?

Ranking the inventions

Invention	Score
Invention 1	25
Invention 2	10
Invention 3	18
Invention 4	8
Invention 5	27

21-30: High
11-20: Medium
1- 10: Low

Low hanging fruit!

Creating a Pipeline for Licensing

Processing the invention disclosures after triage

IP
Marketing
Upgrade TRL/requires further research
Licensing Negotiations
Release “Not pursued” IP?
Other conditions (special priorities – windows of opportunity cases) would help.

Ready-to-license Criteria

Rank invention disclosures in a scale of 1-4 for the following quantities

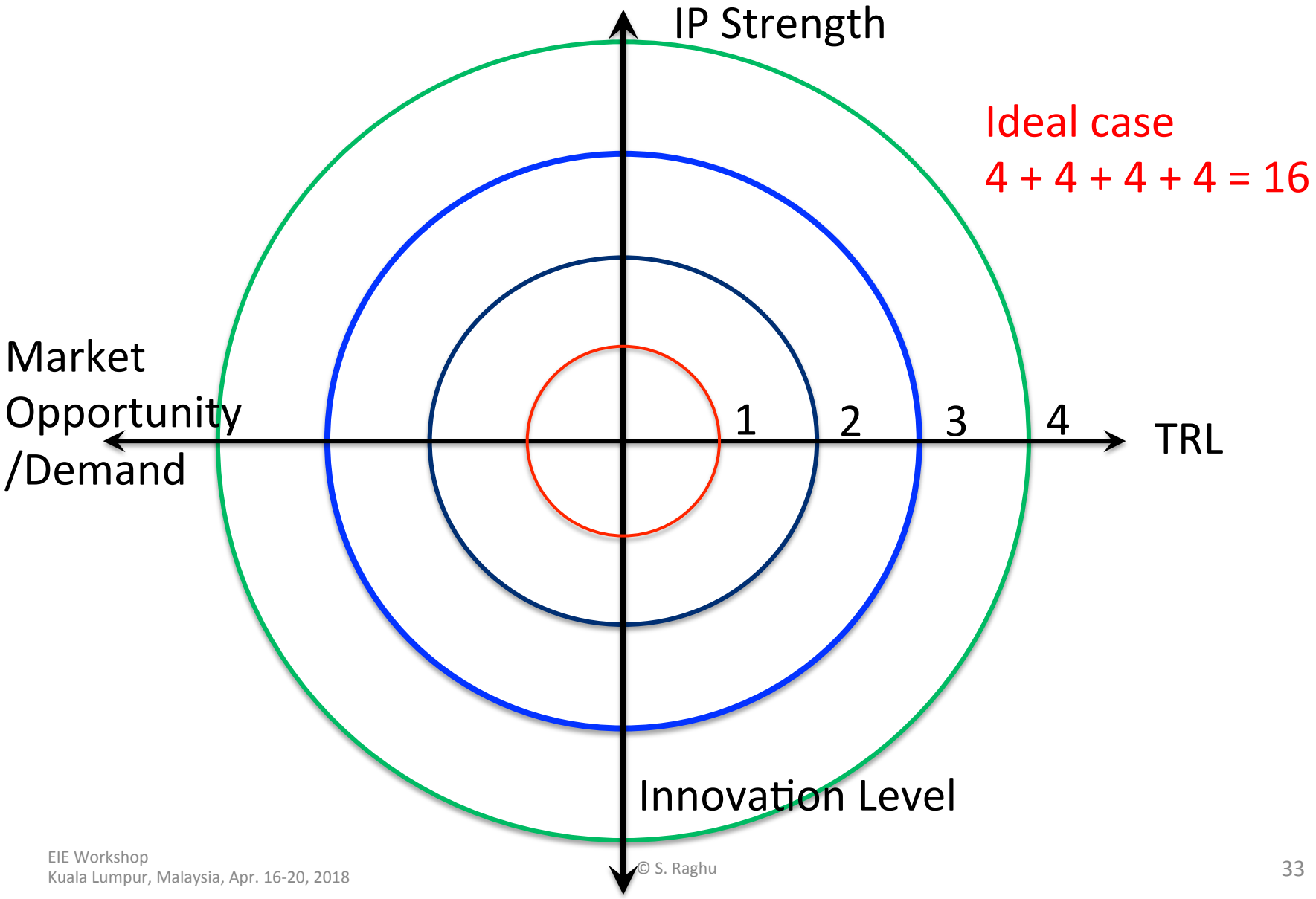
IP: 1. Invention Disclosure 2. Patent being applied 3. Patent Pending 4. Patent Issued: (local/Global)

TRL: 1-4

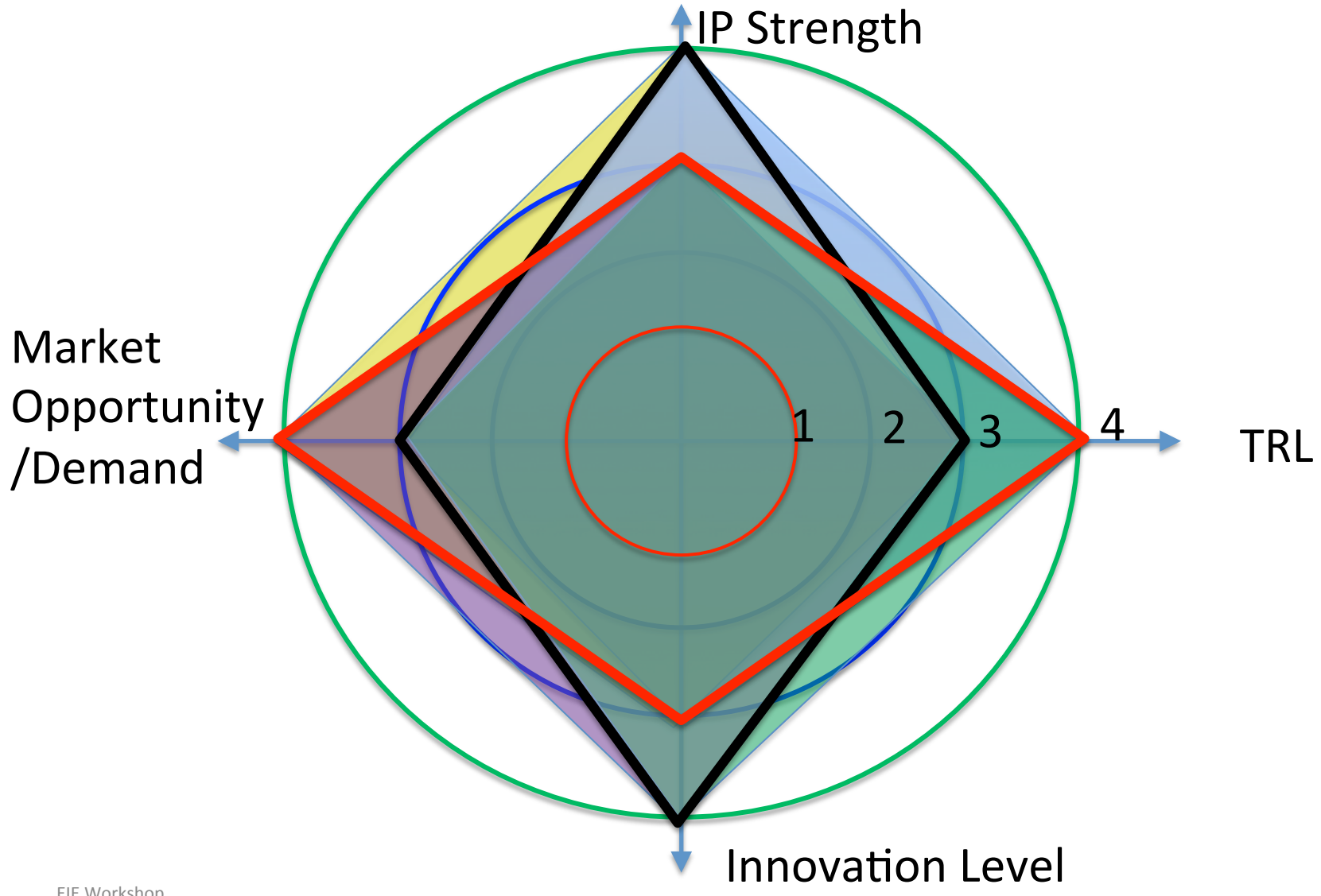
Market Opportunity/Industry demand: 1. Unknown market (Technology push) 2. Small market share 3. Medium market share 4. Large market share

Innovation: 1. Low 2. Medium 3. High. 4. Extraordinary

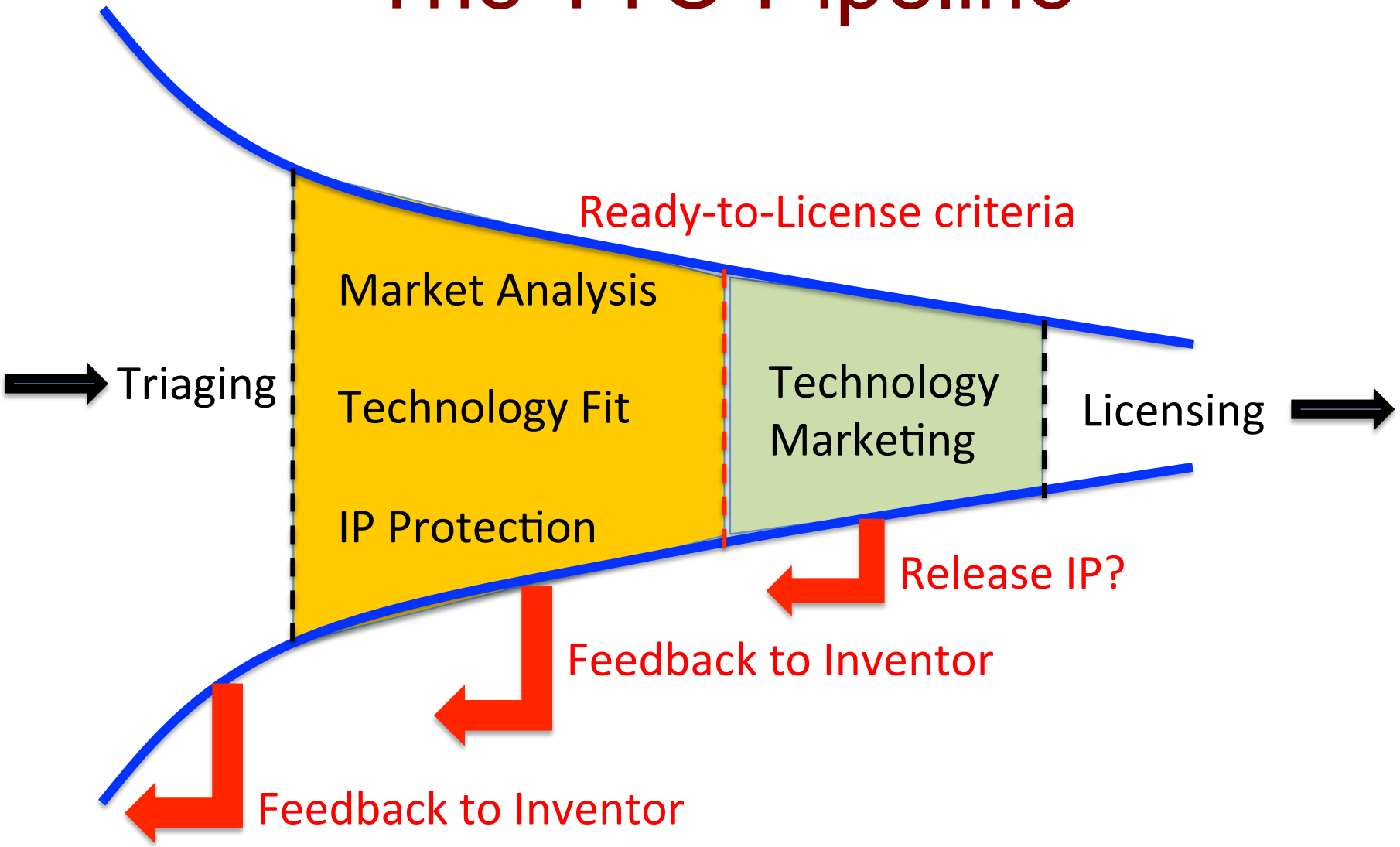
Plotting the criteria



Licensing Criteria?



The TTO Pipeline



Take-home Message

Evaluation of IP is based on following guidelines:

Easy to license “Solutions to problems” than “Solutions looking for problems”

Triaging helps set priorities - High, medium and low potential

Ready-to-License status is based on at least two of the four metrics being the maximum.

THANK YOU

Back-Up Slides