

# Innovation Ecosystems in Antitrust

Ketan Ahuja

DPhil Candidate, University of Oxford

Fellow, Harvard Kennedy School



**HARVARD  
Kennedy  
School**

Innovation should be Antitrust's central harm

Y = A \* K \* L



**87.5%**

But Innovation is often peripheral in cases

Innovation harms are hard to measure

Antitrust law focuses on the incentive to innovate and neglects the ability to innovate

How does innovation  
happen?

One View: innovation happens because actors work hard at a problem



Effort



Incentive

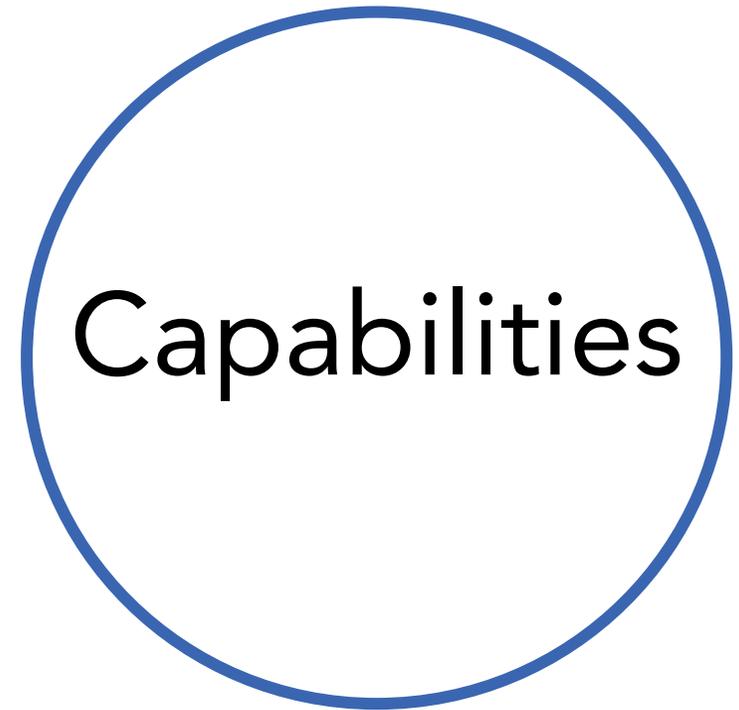
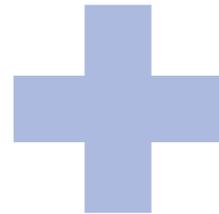
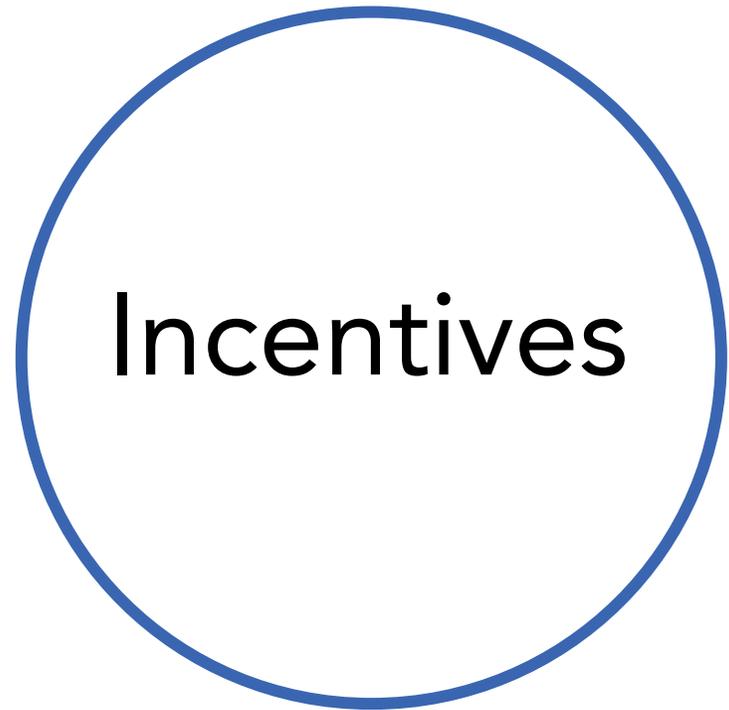


Innovation

So innovation policy is about maximizing the incentives of innovators.

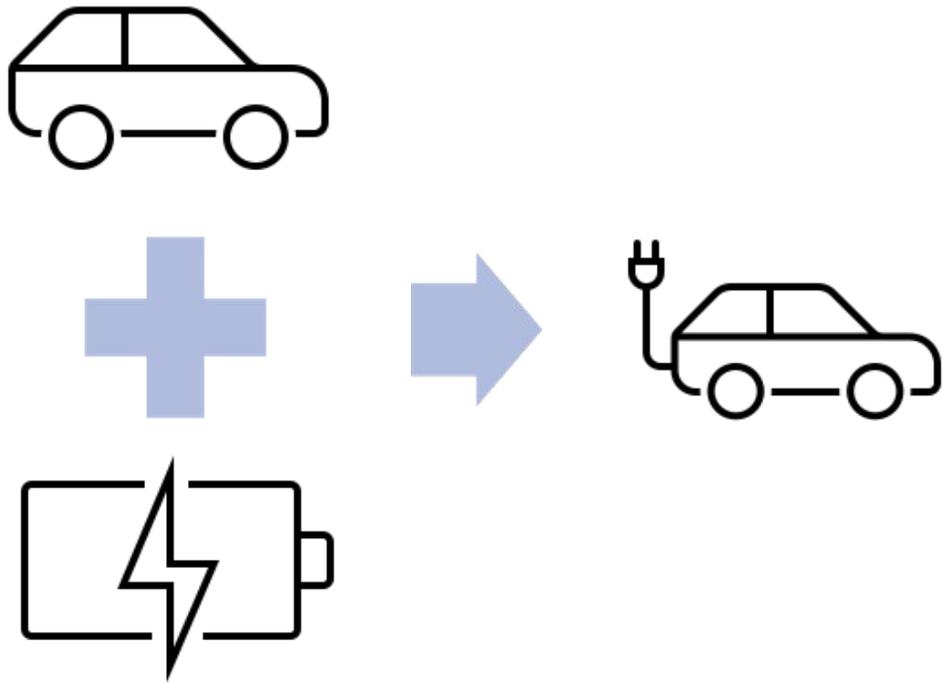
Deeply Embedded in Neoclassical Economics

But Innovators need the Incentive and  
the Ability to Innovate



A model of the ability to  
innovate

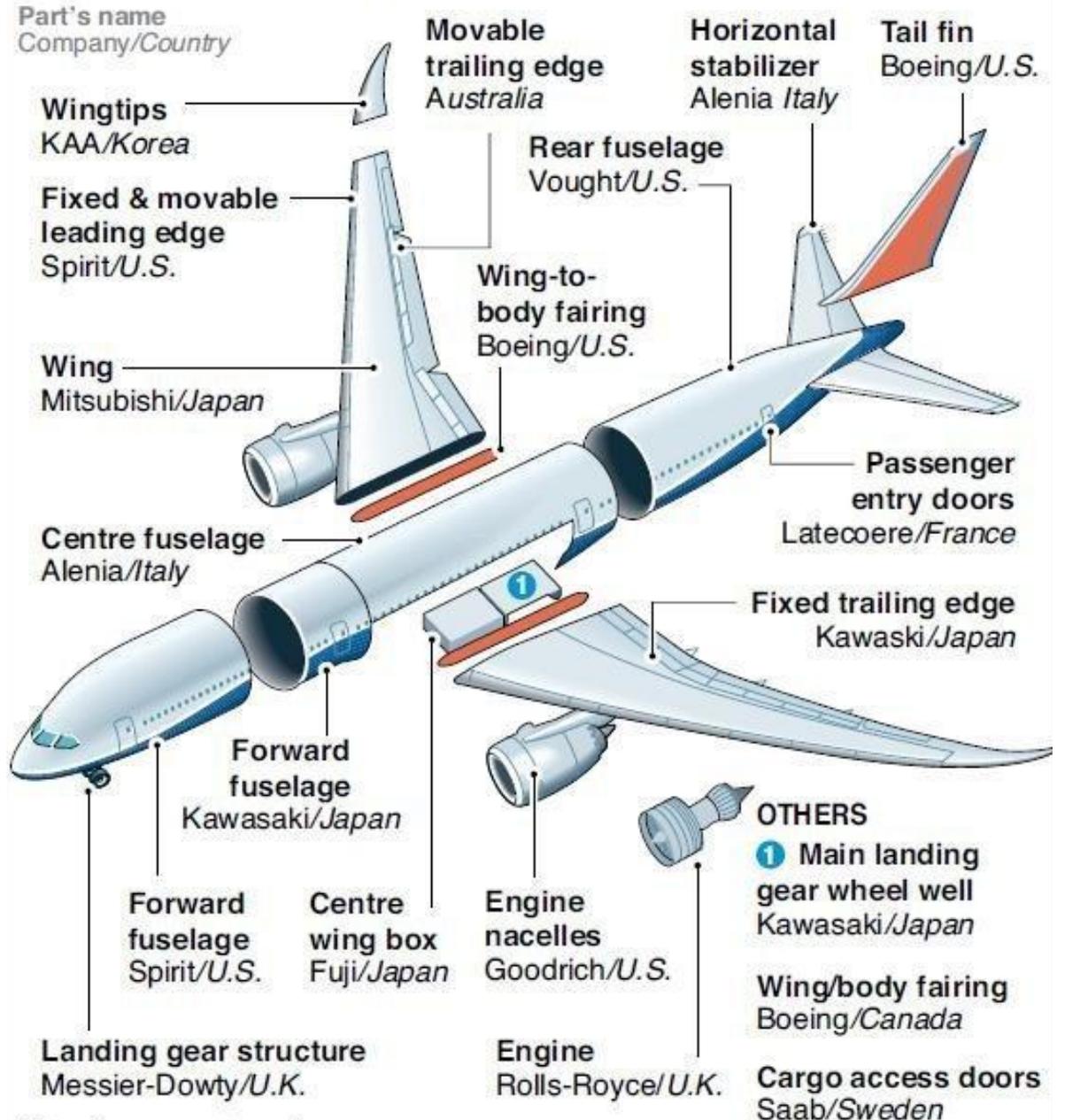
Innovation arises from combining technologies to make new products and services



So Innovation Policy should make it easier for people to combine capabilities in new ways to create new products and services.

# Modularizing Technologies Enables Innovation

787 DREAMLINER *First flight: 2009*



*Note: diagrams not to scale*

*Sources: International Association of Machinists, Boeing*

# Innovation happens in supportive ecosystems

San Jose-Santa Clara

San Francisco

Los Angeles

New York City

Boston

Chicago

Detroit

## Number of patents

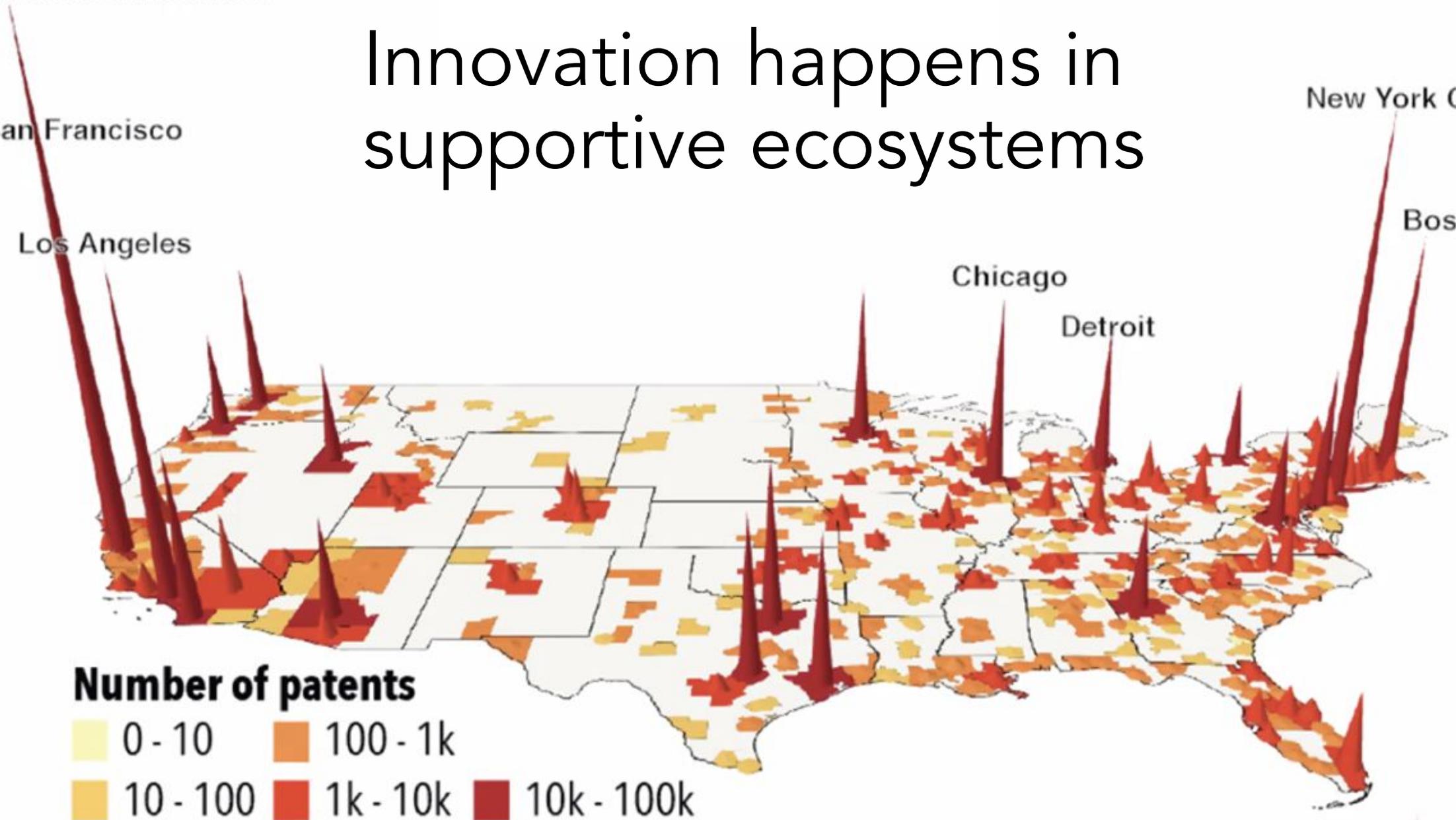
0 - 10

100 - 1k

10 - 100

1k - 10k

10k - 100k



# Combining Incentive and Ability to Innovate

	Approach to innovation focuses on:	Innovation happens because:	Innovation policy should:
Incentive to Innovate ("Innovation-as-Incentives")	Agents or innovators (generally firms).	Innovators apply effort to a problem motivated by incentives.	Maximize innovators' incentives to innovate.
Ability to Innovate ("Innovation-as-Capabilities")	Relationships between agents; the ecosystem.	Innovators have access to all the capabilities or technologies they need to create new products and services.	Maximize innovators' access to necessary capabilities.

Antitrust law focuses on  
innovation *Incentives* rather  
than *Capabilities*

# Innovation-as-Incentives motivates US antitrust enforcement

Judge James E. Boasberg, *FTC v. Facebook*:

“[f]irms may acquire monopoly power by establishing an infrastructure that renders them uniquely suited to serve their customers. Compelling such firms to share the source of their advantage is in some tension with the underlying purpose of antitrust law, since it may lessen the incentive for the monopolist, the rival, or both to invest in those economically beneficial facilities.”

... So Facebook's refusal to interoperate with competitors could not violate US antitrust law.

# ... And EU enforcement

Where economic reasoning is squarely neoclassical and incentive-based.

‘In the long term it is generally pro-competitive and in the interest of consumers to allow a company to retain for its own use facilities which it has developed for the purpose of its business... [T]he incentive for a dominant undertaking to invest in efficient facilities would be reduced if its competitors were, upon request, able to share the benefits... It is on the other hand clear that refusal of access may in some cases entail elimination or substantial reduction of competition to the detriment of consumers in both the short and the long term. ... In assessing such conflicting interests, particular care is required where the goods or services or facilities to which access is demanded represent the fruit of substantial investment.’

Advocate General Jacobs in *Oscar Bronner v Mediaprint*

# ... And UK enforcement

Mr Justice Mann in *Purple Parking v Heathrow Airport*:

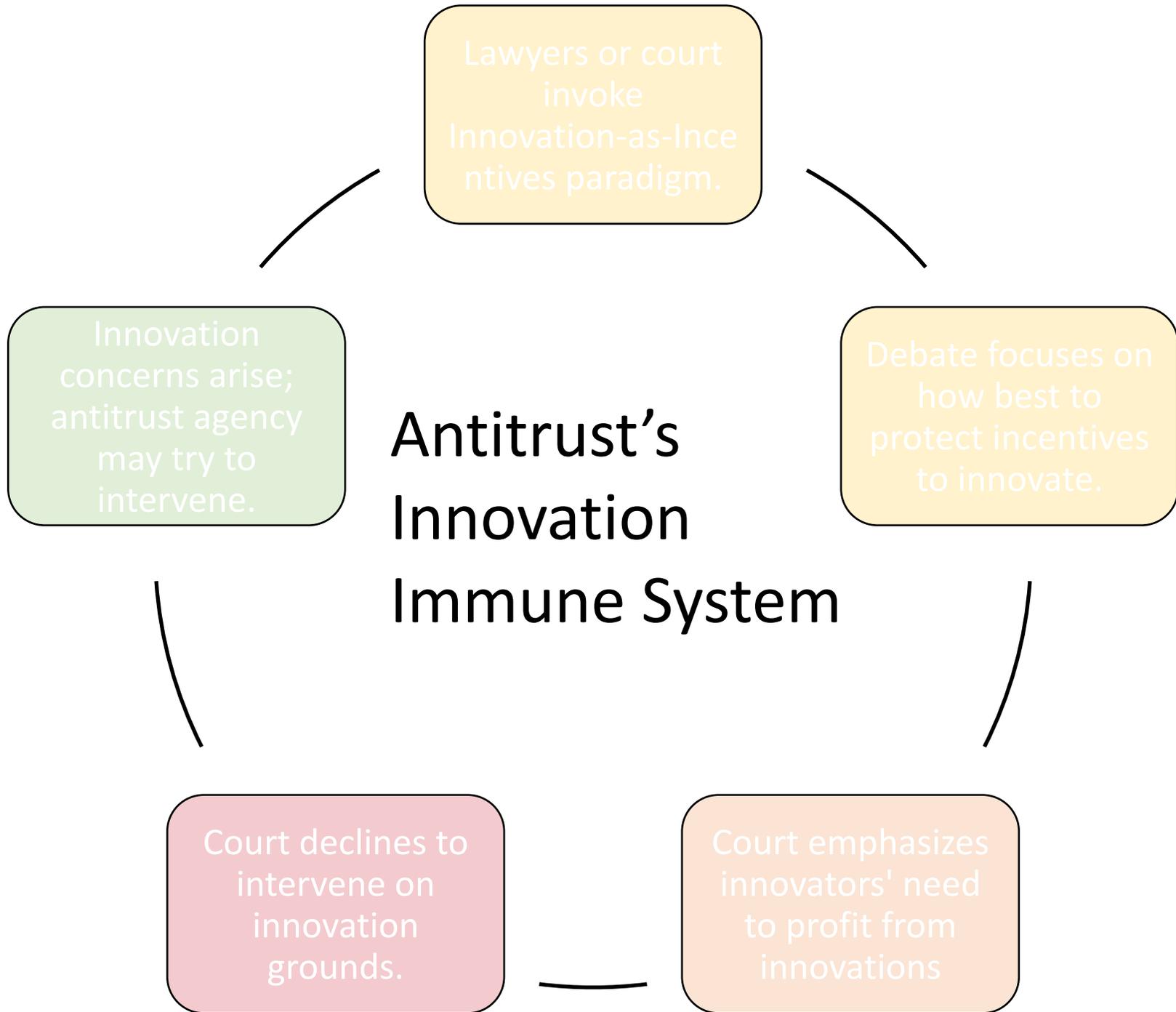
'[T]his is not a case where the creator of a facility, or the acquirer of property, is being required to share the real fruits of ownership with a competitor.

[If a property owner were obliged to share the main economic benefits that come from owning the asset] the property owner could say... that he had paid good money to create the facility and should not be required to share it, at least until he had extracted a fair benefit. To hold otherwise... would discourage other people from innovation and developing their own products.'

...So Heathrow could be obliged to share its valet parking terminal with other operators.

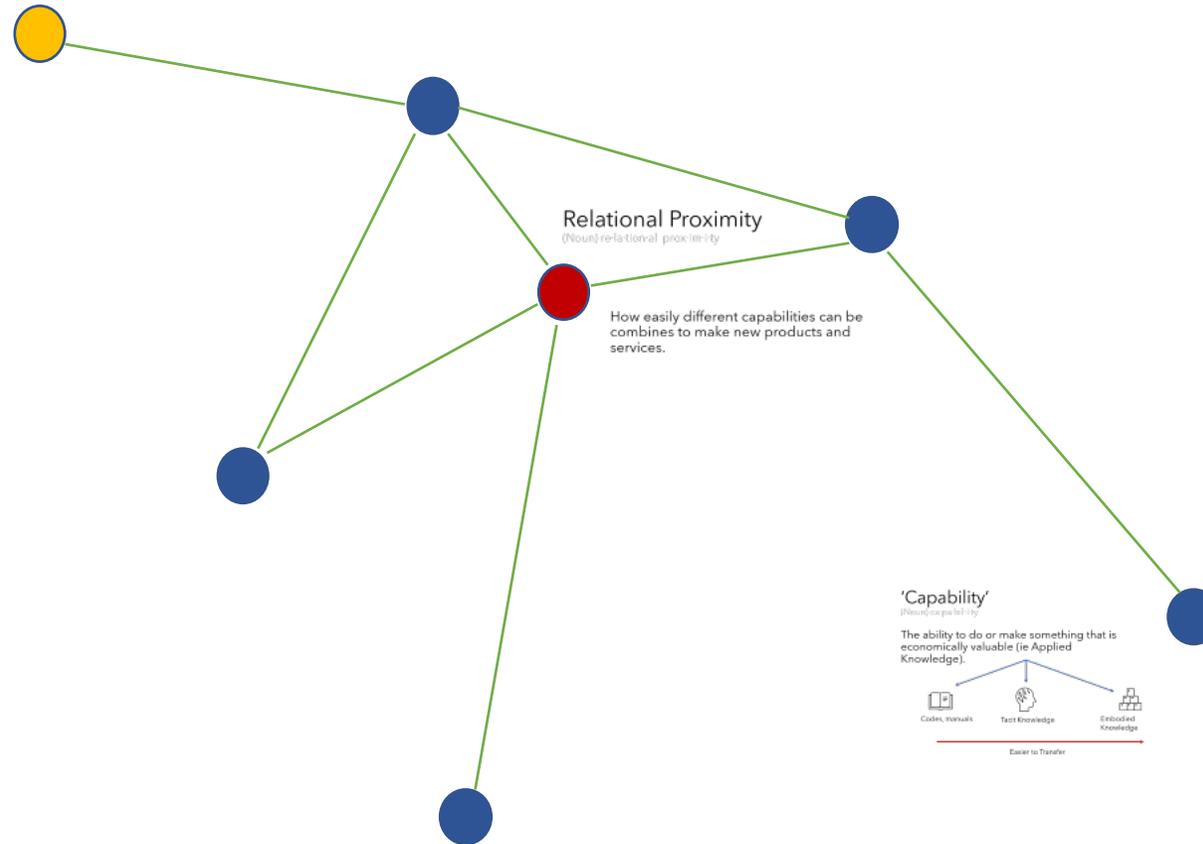
Embedded Economic  
Paradigm in Antitrust:

That Innovation is about  
Incentives



# Integrating Innovation Capabilities into Antitrust

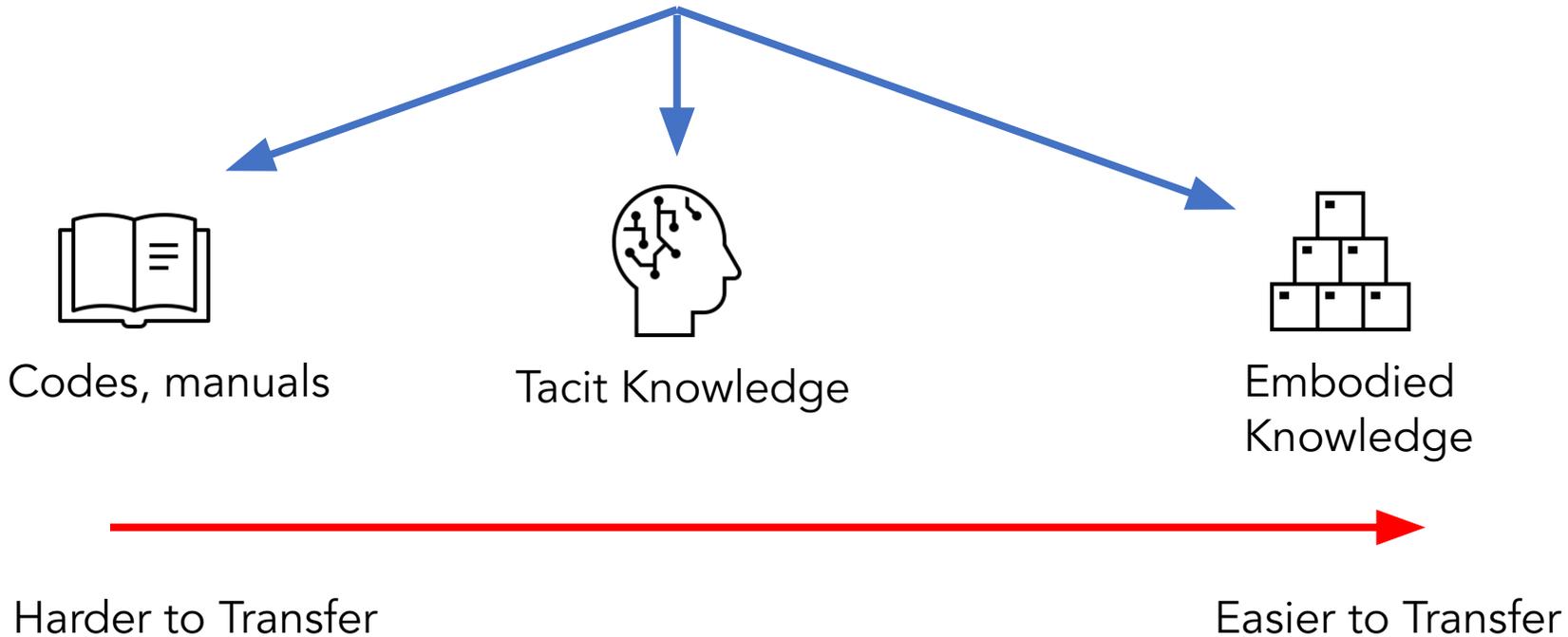
# Lexicon for an innovation ecosystem



# 'Capability'

(Noun) ca·pa·bil·i·ty

The ability to do or make something that is economically valuable (ie Applied Knowledge).



# 'Relational Proximity'

(Noun) re·la·tion·al prox·im·i·ty

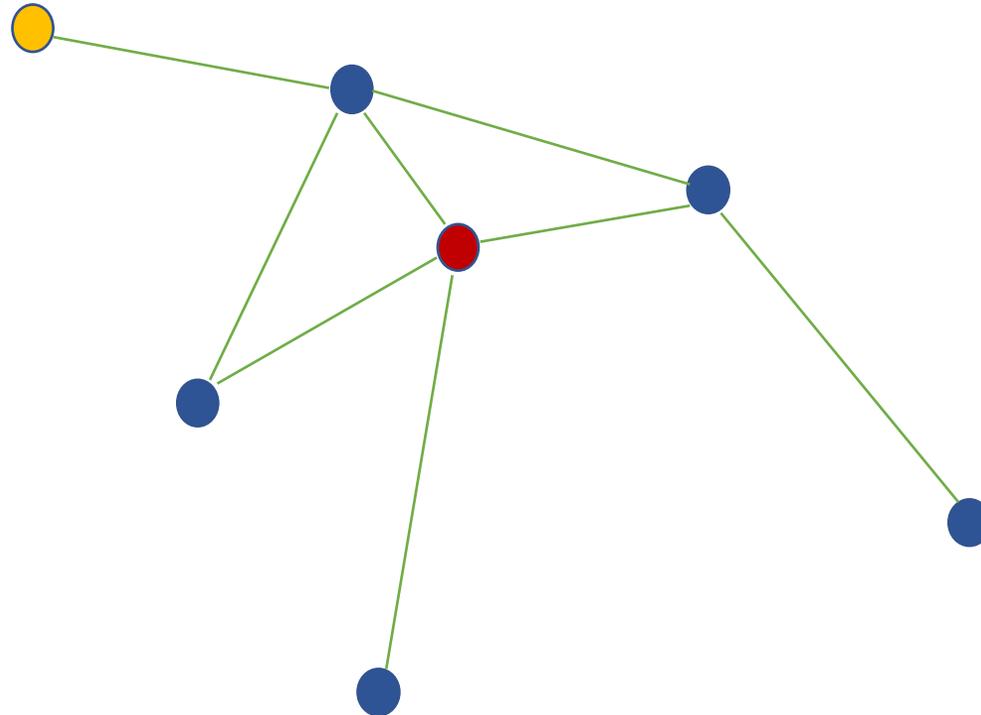
How easily different capabilities can be combined to make new products and services.

# 'Technoeconomic Domain'

(Noun) tech·no·eco·no·mic do·main

A set of technologies needed to produce a good or service.

About the Inputs and  
Outputs to a product  
or service



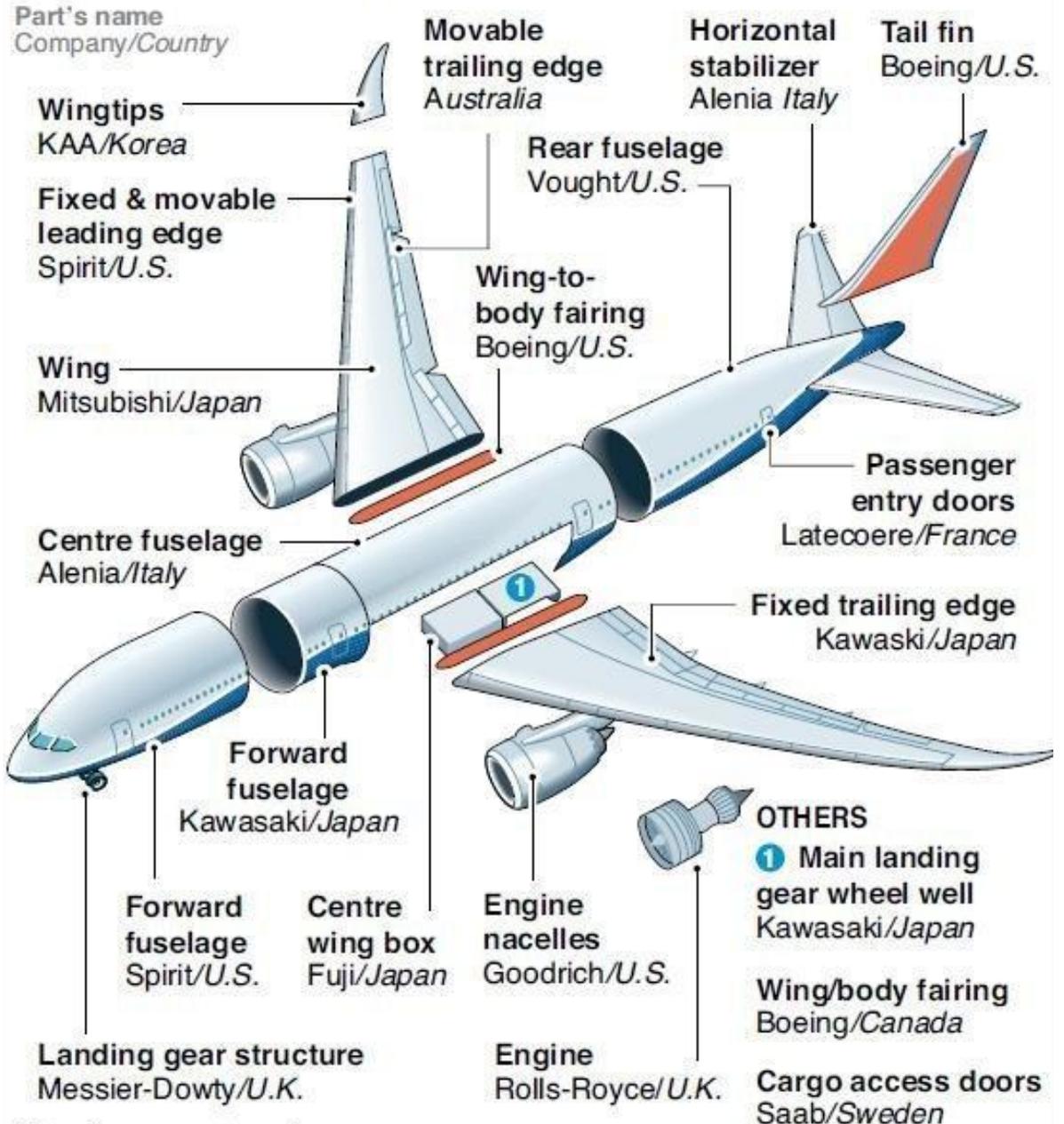
# 'Modularization'

(Verb) mod·u·lar·i·za·tion

Module: a tradable component of production that can operate as a going concern on a standalone basis.

Modularization means making bundles of capabilities tradable on the open market on a non-exclusive basis.

787 DREAMLINER *First flight: 2009*



Note: diagrams not to scale

Sources: International Association of Machinists, Boeing

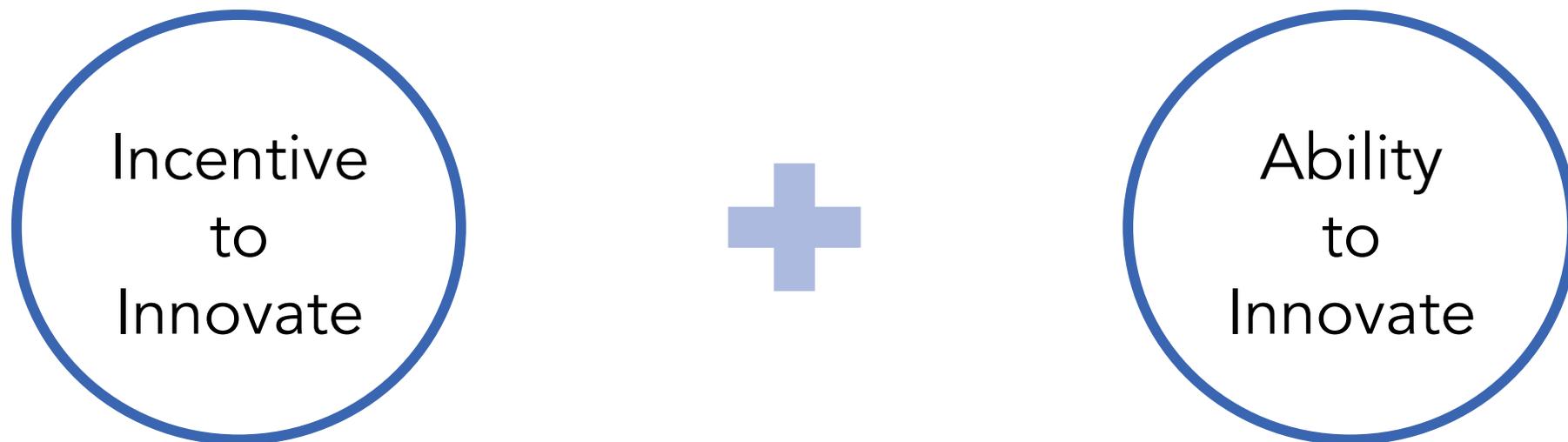
# Lexicon for Innovation-as-Capabilities

Innovators combine capabilities in new ways to make new products and services.

Innovation policy should aim to give innovators better access to the capabilities they need to innovate—making them more relationally proximate to related capabilities in a technoeconomic domain.

Antitrust can promote innovation by modularizing 'building blocks' of production: giving innovators easy access to capabilities as modules.

# What's our limiting principle?



Promote the ability to innovate until you undermine the incentive to innovate too much (ie such that innovations don't happen because of insufficient incentive)

# Policy prescriptions for Antitrust

## **Anticompetitive Agreements**

Regulate exclusivity agreements that tie up important capabilities

Ban employee non-competes

## **Merger Regulation**

'Modularize' key capabilities

Restrict Acquihires

## **Abuses by Dominant Companies**

Have a strong Essential Facilities doctrine – oblige companies to share key capabilities (for a fair price)

# Legal Tests

1. Assess the technoeconomic domain
2. Are the capabilities particularly important?
3. Can many market participants easily access the capabilities?
4. Will the Antitrust Event increase or reduce access to the capabilities in question?
5. Balance efficiencies or trade-offs related to access to technologies
6. Apply our limiting principle – Don't undermine innovation incentives too much

Thank you!

& Appendix

# Modularizing knowhow/technologies

- Carliss Baldwin

Antitrust breakups increased innovation



**I.G. Farbenindustrie AG**



# Antitrust law has three main pillars

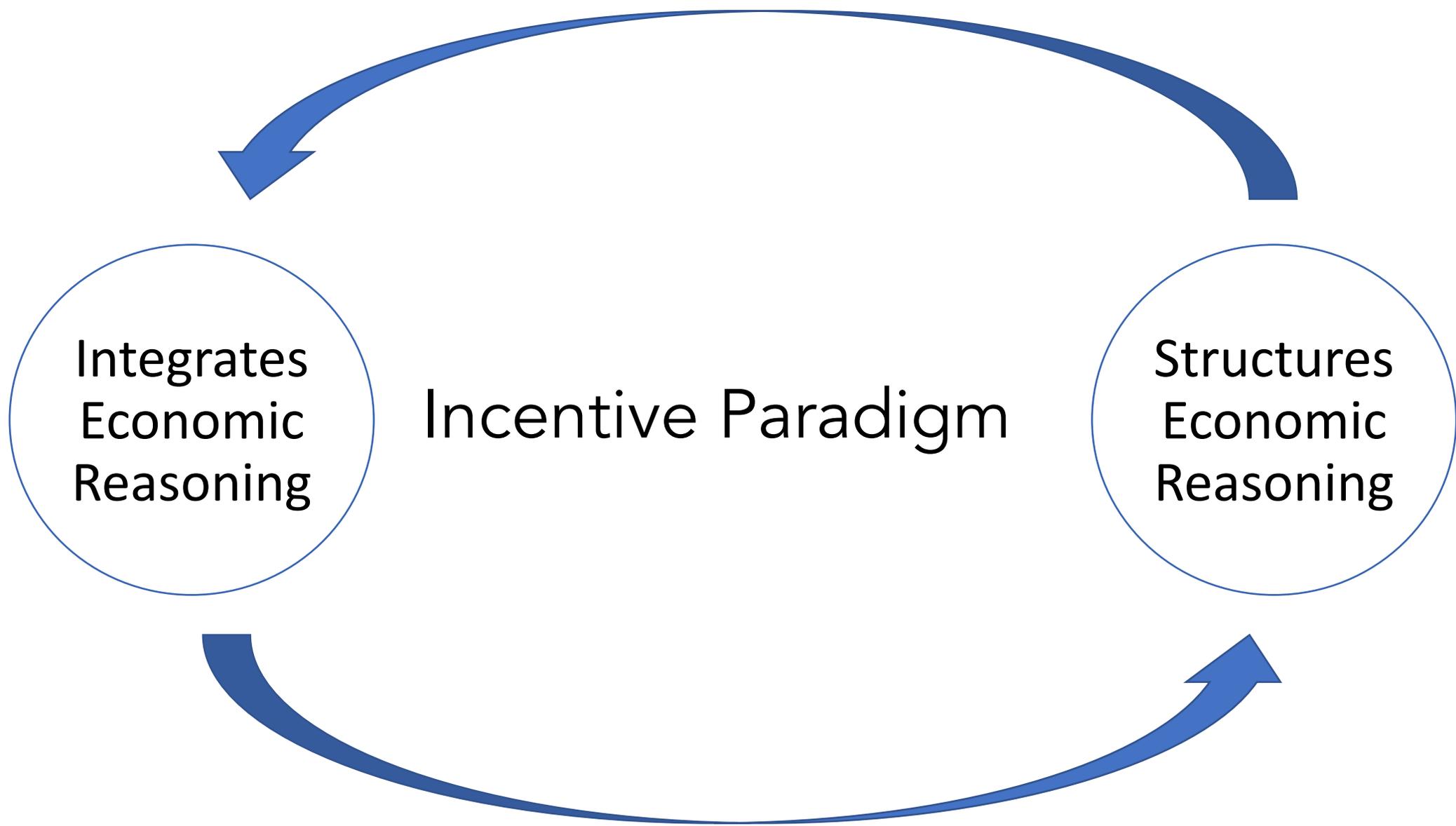
**Anticompetitive  
Agreements**

**Merger  
Regulation**

**Abuses by  
Dominant  
Companies**

# Economic paradigms motivate antitrust as much as case-specific analysis

- Structure of antitrust rules: eg Market definition
- Objects of study: Firms rather than relationships between firms / networks / ecosystems
- What enforcers have to prove: eg that incentives were harmed (*United-Change*)
- Especially true for innovation harms where the future is highly speculative, increasing reliance on general economic ideas



Integrates  
Economic  
Reasoning

Incentive Paradigm

Structures  
Economic  
Reasoning

# Incentive paradigm gives antitrust an 'immune system' against intervention

- Agency tries to intervene
- Lawyers invoke incentive paradigm
- No intervention
- Problems arise

# Antitrust Overlooks Ecosystem Dynamics

Focus on Substitutes

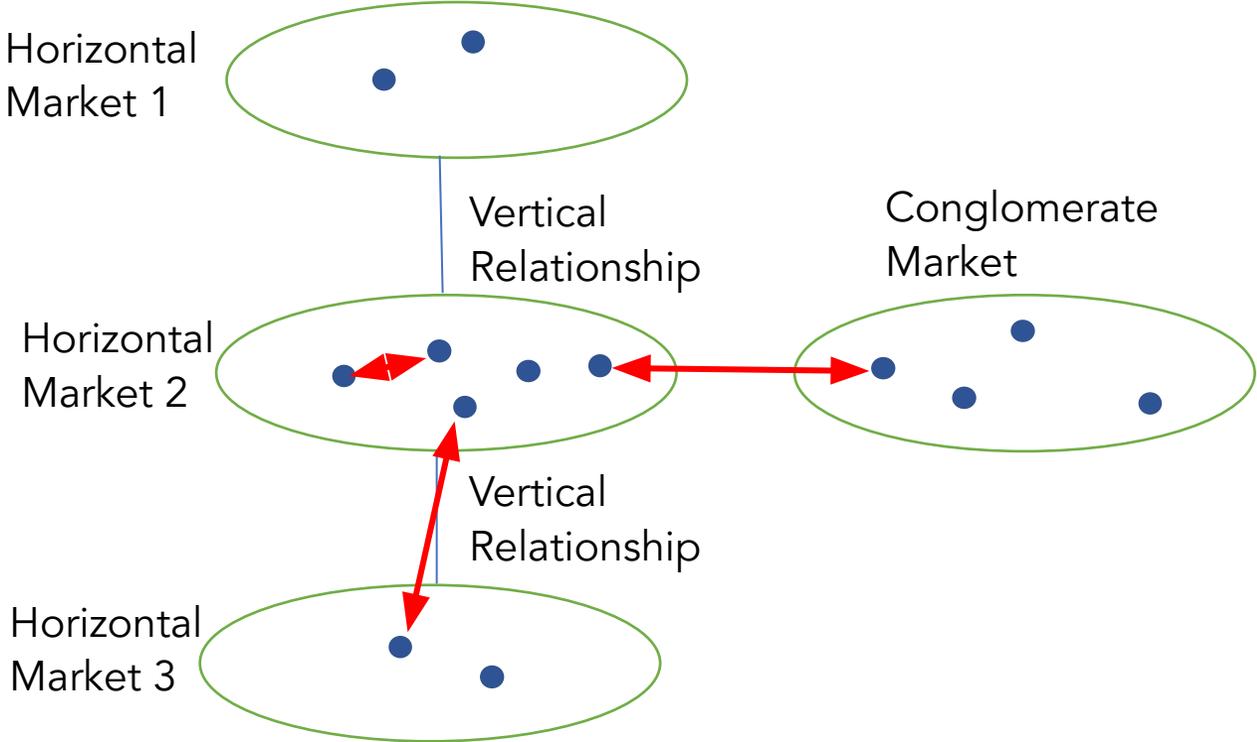
Overlooks  
Complements

*Facebook/WhatsApp*

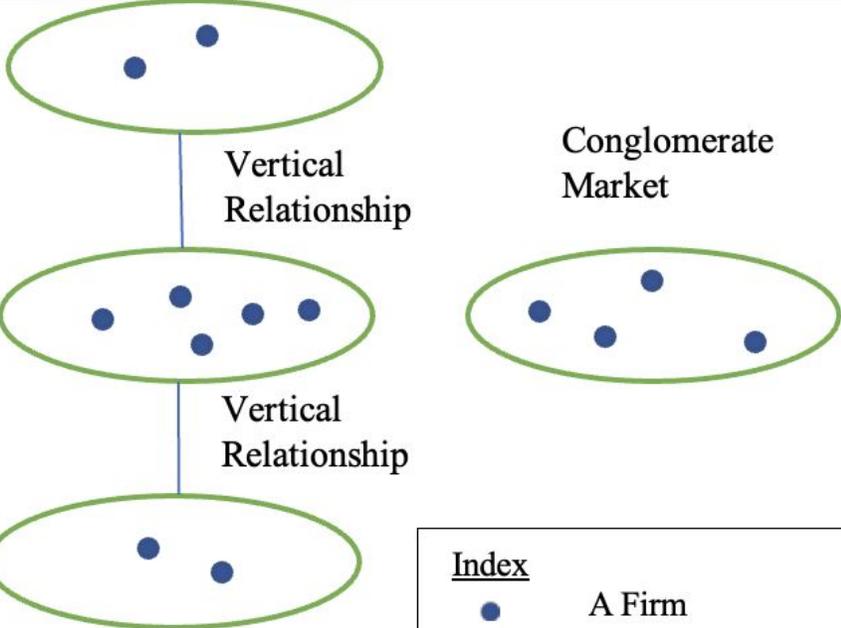
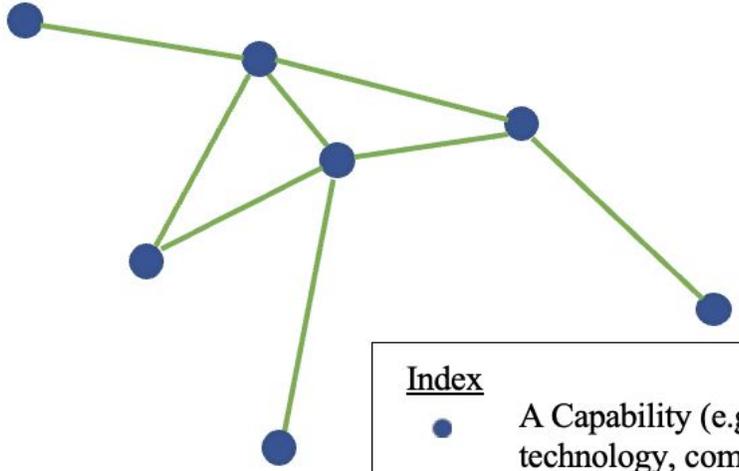
*Google/Fitbit*

*Meta/Within*

*Microsoft/Activision*



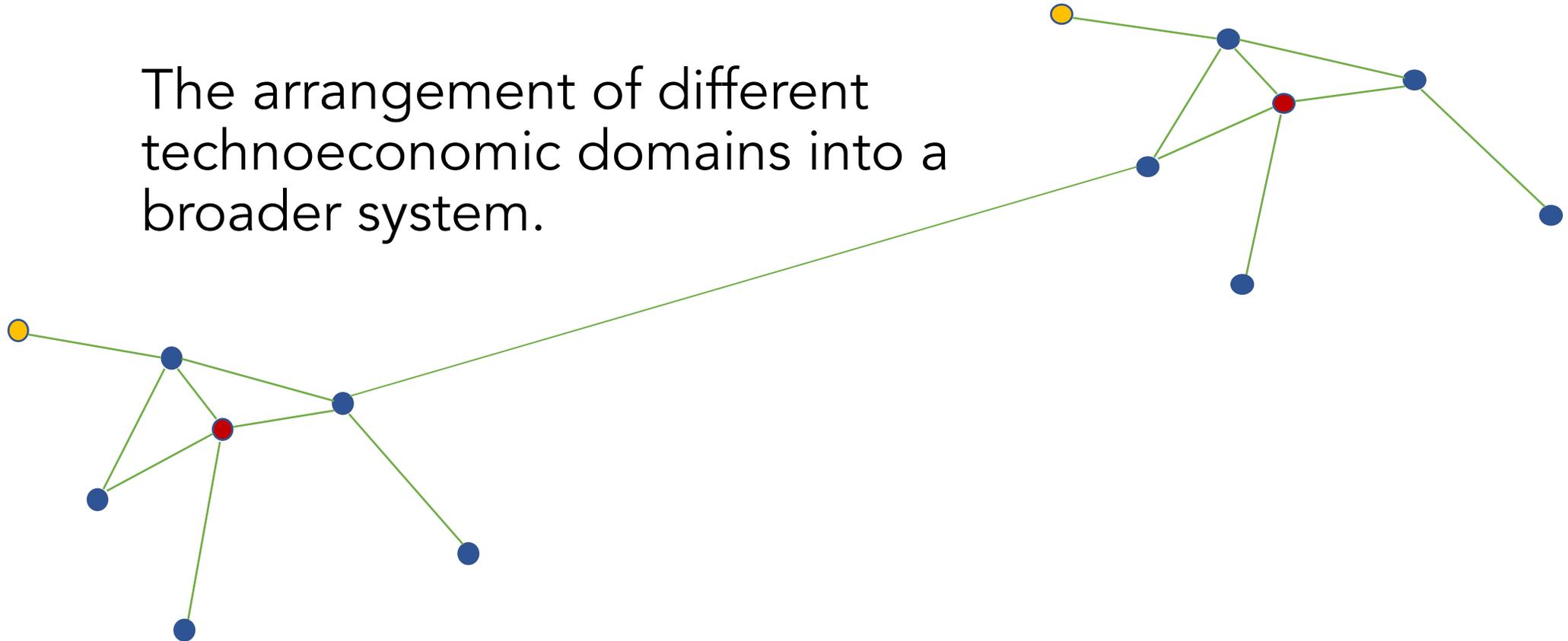
# Contrasting Market and Technoeconomic Domain

<b>Market Definition (Innovation-as-Incentives)</b>	<b>Technoeconomic Domain (Innovation-as-Capabilities)</b>
<p data-bbox="224 592 394 671">Horizontal Market 1</p>  <p data-bbox="611 714 802 799">Vertical Relationship</p> <p data-bbox="224 835 394 913">Horizontal Market 2</p> <p data-bbox="611 963 802 1049">Vertical Relationship</p> <p data-bbox="224 1085 394 1163">Horizontal Market 3</p> <p data-bbox="955 692 1172 771">Conglomerate Market</p> <p data-bbox="840 1120 1210 1249"><u>Index</u> ● A Firm ○ Defined Market</p>	 <p data-bbox="1834 978 2305 1178"><u>Index</u> ● A Capability (e.g. a firm, technology, component) — A relationship between capabilities</p>

# 'Economic Structure'

(Noun) eco·no·mic struc·ture

The arrangement of different  
technoeconomic domains into a  
broader system.



# Applying Innovation as Capabilities to Antitrust



Protect Innovation

Restricting access to capabilities as an abuse.

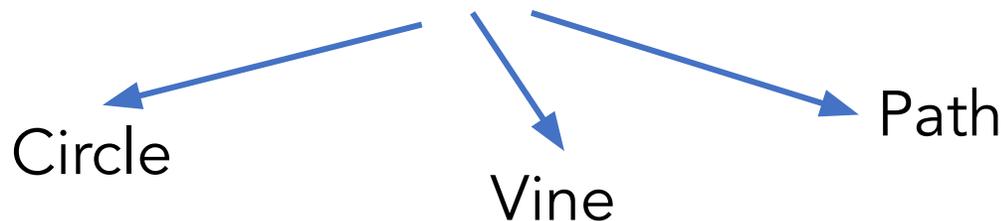


Promote Innovation

Enabling access to capabilities as a remedy.

# Essential Facilities case: FTC v. Facebook

Facebook open access APIs lead to innovative social networking startups.



Facebook removes, degrades, and conditions this access and these social networks die.



## Protect Innovation

## in FTC v. Facebook

Denying access to open APIs is abusive where:

- Innovators use them to make new products
- In (hypothetical) new markets
- for which there is unsatisfied demand.

Protect the Ability to Innovate

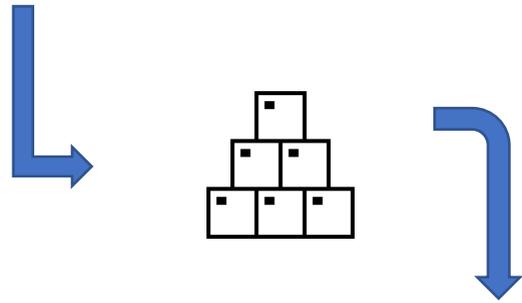
But not where companies use these APIs to replicate Facebook's core functionality.

Preserve the Incentive to Innovate

Facebook can charge for access to its APIs to compensate it for its investments

# + Promote Innovation in FTC v. Facebook

Facebook found to abuse market power



Structural remedies & interoperability to modularize capabilities will promote innovation

# Merger case: DOJ v. Google

DoubleClick

AdX

AdMeld

Header Bidding

New Products that  
arose in response to  
consumer demand



Protect Innovation

Stop Google buying them to maintain  
relational proximity with ad tech stack



Promote Innovation

Force Google to interoperate with  
them to increase relational proximity  
with Google capabilities (Google Ads)

# Merger Analysis in Google's domination of the Ad Stack

- 
- ✓ Modules: Can operate on a standalone basis
  - ✓ Relationally proximate to many businesses:  
integrated into ad stack
  - ✓ Important: novel, complex, few alternatives
  - ✓ Balance synergies of integrating vs keeping separate: Does Google need to codevelop technology with these companies?
  - ✓ Can Google achieve innovation objectives in a less invasive way (by non-exclusive licensing)?

# Protect Innovation before things go wrong: Break up 'Big AI'?

Opinion **Artificial intelligence**

## Competition authorities need to move fast and break up AI

Unless regulators act, Big Tech's dominance over the digital economy will be cemented

SARAH MYERS WEST

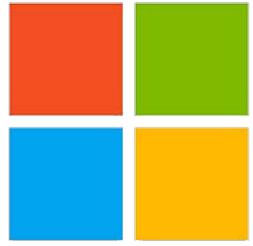
+ Add to myFT

“[This] is exactly the type of scenario that the Federal Trade Commission has said they’re going to focus on,” said William Kovacic, a former Republican chair of the US antitrust agency, and a professor of antitrust law at George Washington University.



## Experts warn of antitrust risks from generative AI

Charley Connor  
18 April 2023

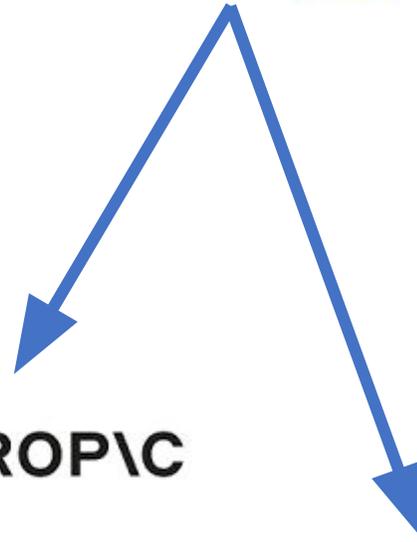


Microsoft



OpenAI

Google



ANTHROPIC



cohere

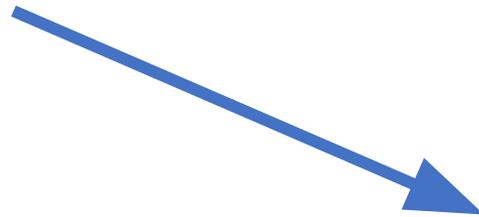
amazon



Ban OpenAI / Windsurf



OpenAI



# Maybe Allow OpenAI / LoveForm?

**Sam & Jony introduce io (OpenAI buys LoveForm for \$6.4 billion), May 21, 2025**

Community openai, io



anon1374209

1 30d

May 21

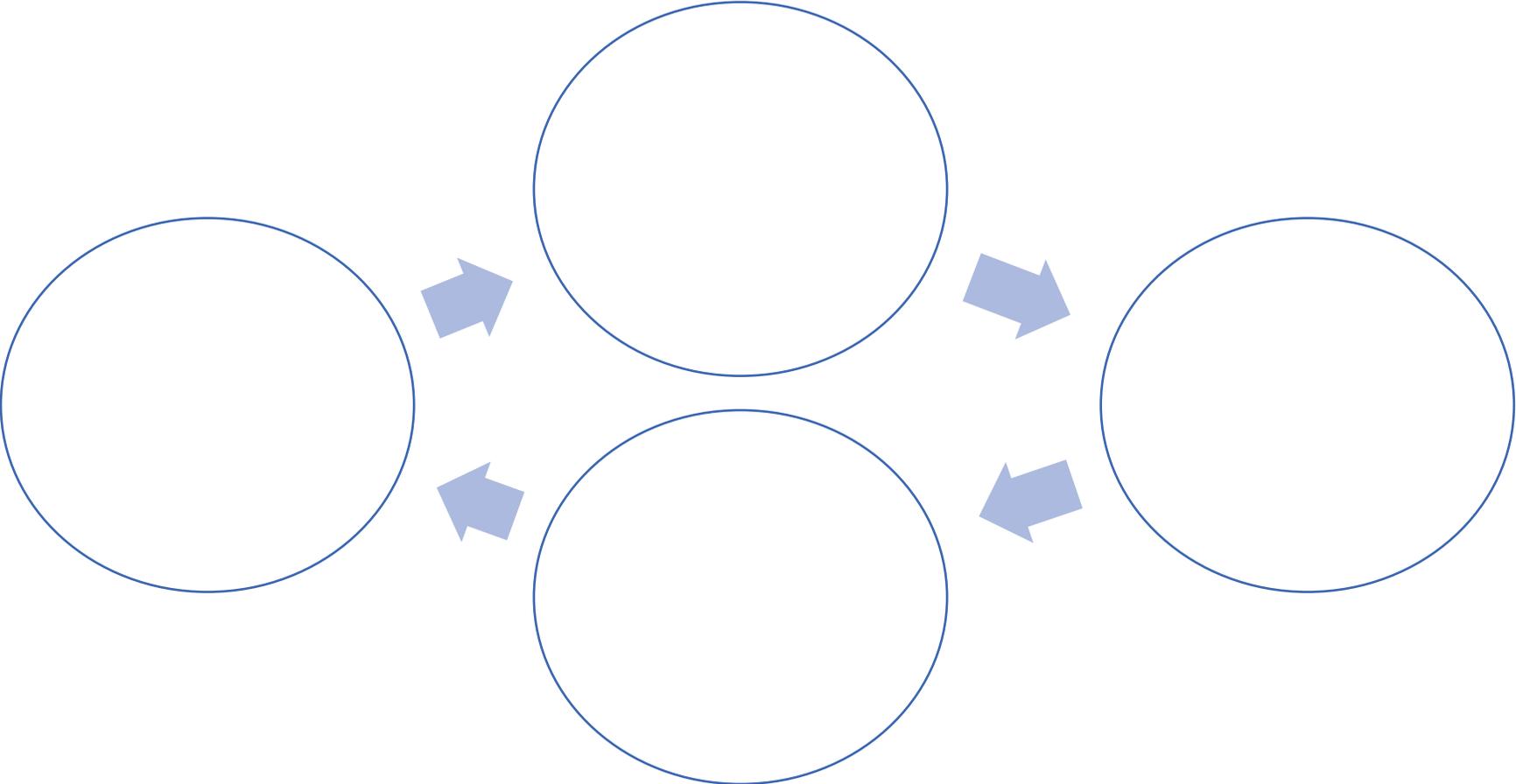
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May 21

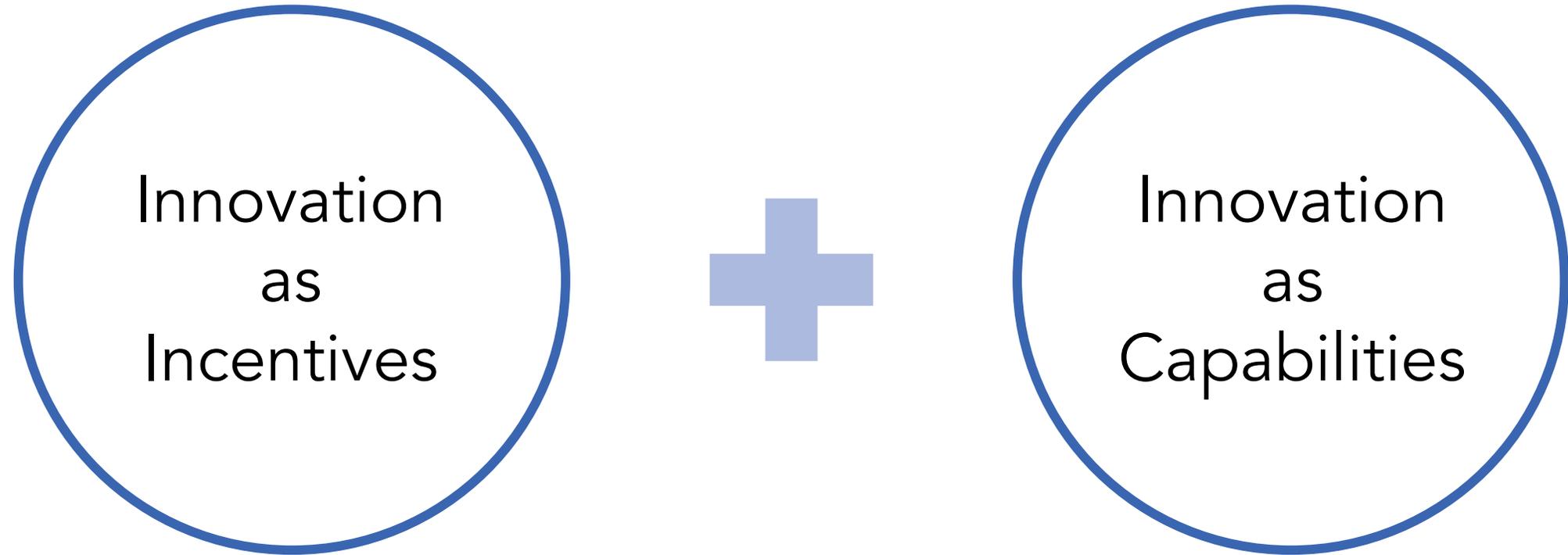
24d ago



# Incentive-based immune system would stop agencies acting against Big AI



# Innovators need the Incentive and the Ability to Innovate





**Khalifeh Al Jadda, Ph.D.** • 2nd

Director of Data Science at Google

1mo • Edited •

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OpenAI is no longer "open"! The co-founder has stated that it was a mistake to open-source GPT and that they will no longer open-source their models or share details on how they trained them because of a fear of losing competition. This is a dangerous development, as the advancement we have seen in AI is a result of the open-source mindset. All GPT generations are based on Transformer, which was introduced by Google researchers in 2017, so it's frustrating to see GPT-4 closed off by a company that has benefited the most from open-source. This is a move back to the "trade-secret" era, which will stifle innovation and progress in AI.

Open-source software is a critical part of the AI ecosystem. It allows researchers to share ideas and build on each other's work. It also allows companies to build products and services on top of open-source software. OpenAI's decision to close off its models and training data will have a negative impact on the AI community. It will make it more difficult for researchers to advance the field and for companies to build innovative products and services.

OpenAI's decision is also a missed opportunity. The company could have used its platform to promote the open-source mindset and encourage others to contribute to the AI ecosystem. Instead, it has chosen to close itself off and stifle innovation.

[#ai](#) [#innovation](#) [#mindset](#) [#opensource](#)

# Innovation-as-Capabilities would intervene across all three antitrust pillars

## **Anticompetitive Agreements**

Regulate exclusivity agreements that bind AI startups to big tech (MS – OpenAI)

Ban non-competes on AI workers

## **Merger Regulation**

Restrict attempts to acquire new AI startups

Restrict Acquihires of AI startups before product launch

## **Abuses by Dominant Companies**

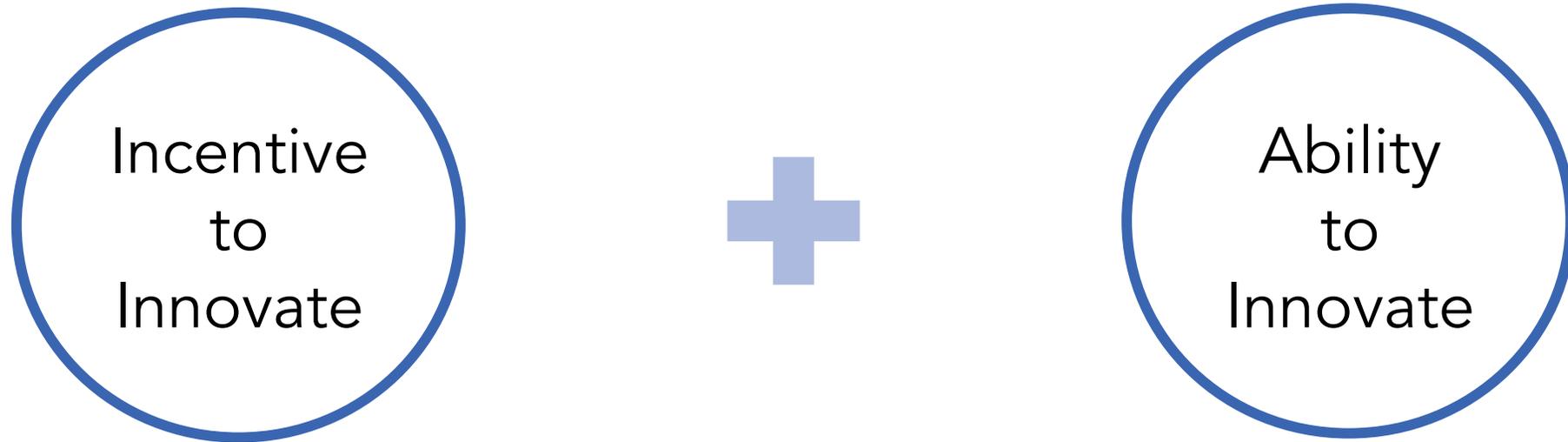
Promote non-discriminatory access to AI capabilities through eg APIs



Protect Innovation

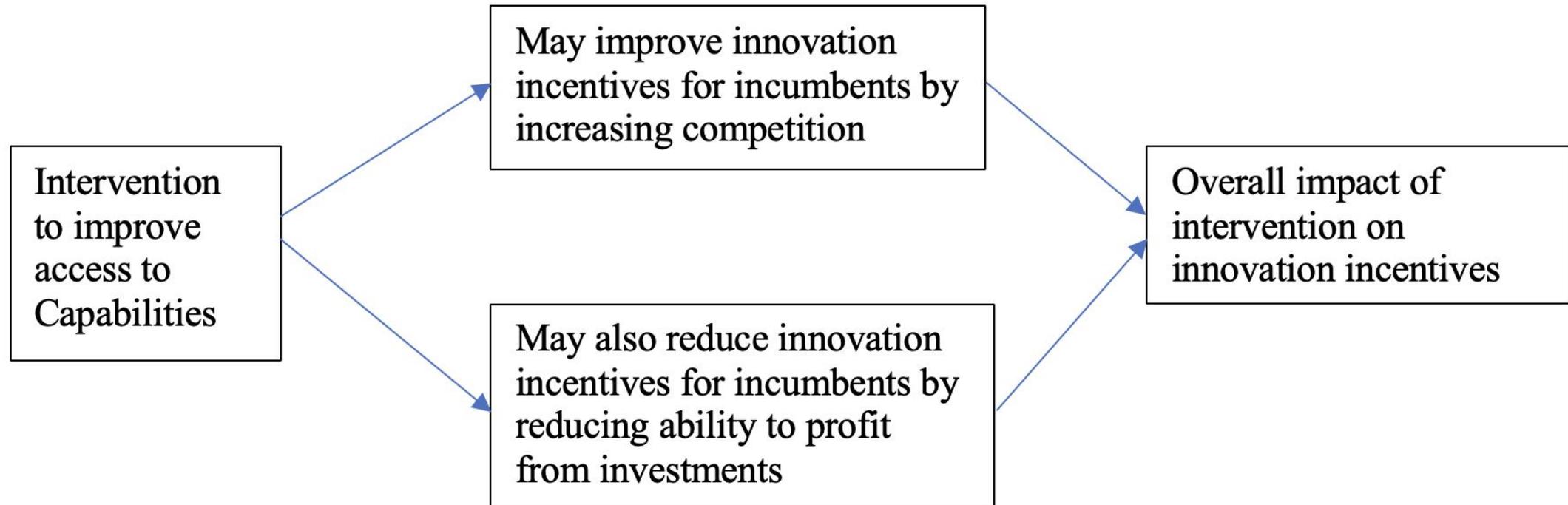
by intervening before problems arise rather than after.

# Limiting Principle: Don't undermine the incentive to invest in AI too much



Promote the ability to innovate until you undermine the incentive to innovate too much (ie such that innovations don't happen because of insufficient incentive)

# Balancing Innovation Incentives and Capabilities



# Test for Essential Facilities in European Competition Law

A dominant company must share an essential facility where:

1. the company's refusal to share its facility prevents a new product (or technical progress) from arising;
2. the refusal was not justified; and
3. the refusal prevents competition on a distinct secondary market (which may be hypothetical)

Balances between incentives and capabilities.

# Innovation as Capabilities would limit Acquihires



Startups are attempts to 'productize' their human capital into tradable 'modules'. This 'embodied knowledge' is easier to transfer, making it relationally proximate to more innovators.

We need to  
provide  
signals to  
the  
research  
community



Policy Statements



(Merger) Guidelines



Calls for Research



Application of Innovation as  
Capabilities arguments in a case