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New Technologies, Vegans, Disasters, and All That Stuff: How to Make Use of External Enablers to Create New Business

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QUT

Please note that this version looks duller and less coherent than the actual presentation due to removal of images which may be subject to copyright

Digital Technologies as External Enablers of New Venture Creation in the IT Hardware Sector

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Rapid-prototyping technologies
Electronics development platforms
Interconnectable devices
Crowdfunding platforms
Social media
Cloud computing

Abstract

We develop theory about how and when digital technologies enable new venture creation processes. We identify two fundamental properties of digital technologies—specificity and relationality—and develop propositions that link these properties to six enabling mechanisms: compression, conservation, expansion, substitution, combination, and generation. We use the linked properties and mechanisms to determine how and when in the venture creation process—from prospecting to developing to exploiting—digital technologies have enabled start-ups in the IT hardware sector

External Enablers

- Significant external *changes*—such as new technologies, political and regulatory changes, demographic and social shifts, and changes to the natural environment—which can play an essential role in eliciting and/or enabling a variety of start-ups (Davidsson, 2015).
- Aggregate level – pertain to multiple ventures
- Favourability theoretically assumed for *some* new ventures based on EEs disequilibrating nature
- Not complete success recipe for any individual venture
- Not necessarily societally beneficial overall

Types of Enablers

Type	Definition	Examples
New Technology	New artifact, new knowledge, or a combination of both, that performs known functions in novel ways or functions old technology could not perform	World Wide Web 3D-printing Crowdfunding platforms Social media
Regulatory change	Change of the formal and/or informal rules and sanctions pertaining to acceptable social behavior.	Bayh-Dole Act Bank deregulation Shifting opinions on an issue
Demographic shift	Change to the demographic composition of the human population.	Population growth Aging population Migration crisis
Socio-cultural/Economic/ Political shift	Changes to the socio-cultural, political or economic environment.	Environmental movement Change of government Global Financial Crisis (Reactions to) Crime wave; terrorist attack
Changes to the natural environment	Spontaneous or manmade changes to the natural environment	Climate change Natural disasters Urban development

Why Is This Important?

"The fundamental attribution error"

Our tendency to seek explanations of behaviour and outcomes in the dispositions and qualities of the people involved, rather than in situational factors

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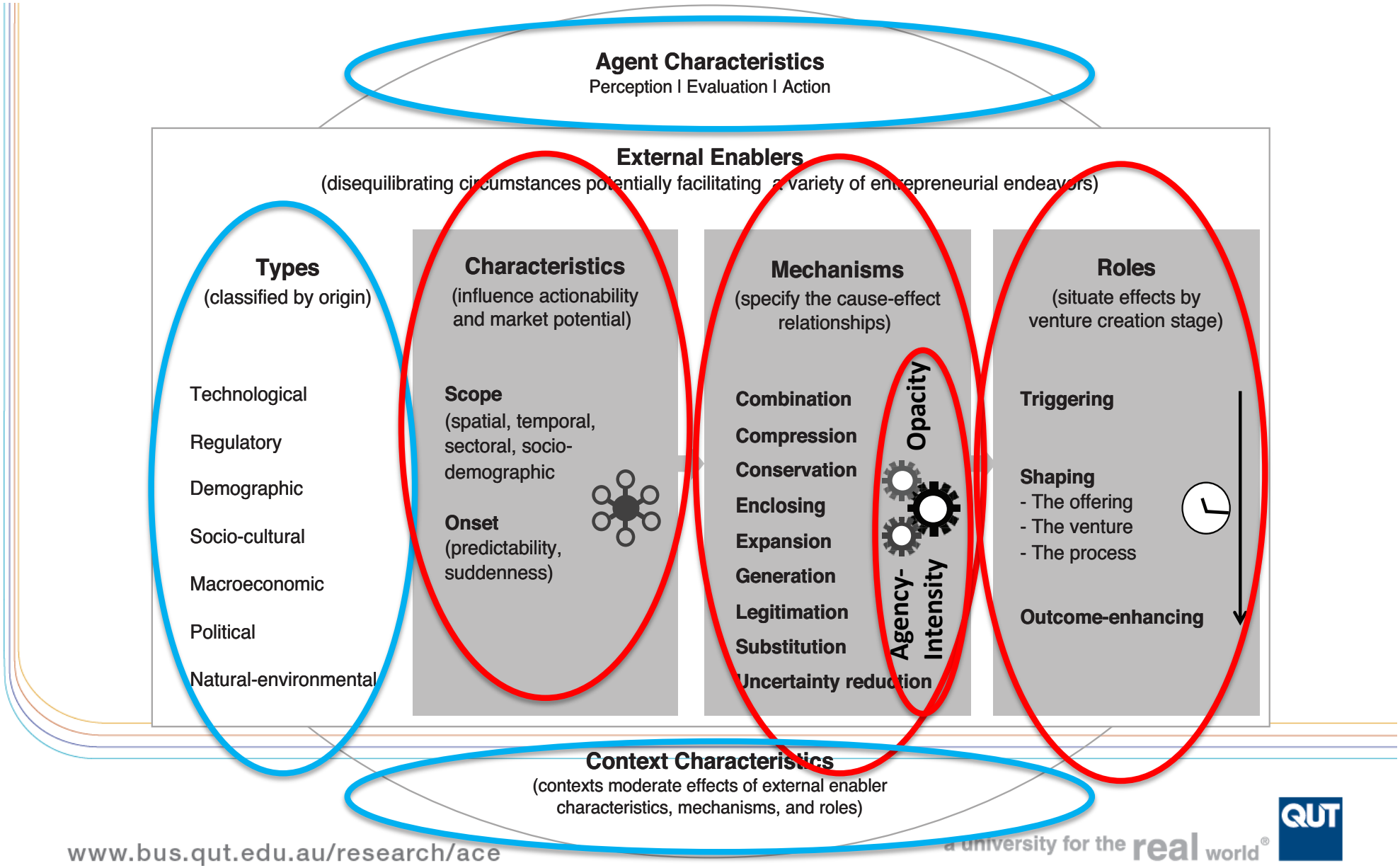
The External Enabler Framework



Old hat?

PESTEL

SWOT

Megatrends

External shocks

Institutions; Institutional change

Environ-mental Jolts

(Objective) Opportunities

Institutional Theory / Change

- Well-developed theoretical framework(s)
- Fundamentally created to explain stability; not change
- Not all relevant changes are/concern “institutions”
- Tends to focus mainly on aggregate level (change → rates of start-up activity); not micro-level, strategic action

External shocks; Environmental Jolts

- Lack theoretical depth / detail
- Tends to focus mainly on aggregate level (change → rates of start-up activity); not micro-level, strategic action
- Not all relevant changes are sudden shocks/jolts; some are gradual and/or predictable (climate change, aging population, social movements)

"Objective & pre-existing entrepreneurial opportunities"

- Intuitively appealing
- Can cover any type of external circumstances
- Usually refers to the micro-level (e.g., Shane, 2000)
- Proven too hard / controversial / imprecise for research purposes
- Therefore, limited progress ("yeah, opportunities are important – but ***how***?")

Journal of Business Venturing

Entrepreneurial opportunities and the entrepreneurship nexus: A re-conceptualization

New Venture Ideas

External Enablers

Opportunity Confidence

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ABSTRACT

The literature on "entrepreneurial opportunities" has grown rapidly since the publication of Shane and Venkataraman (2000). By directing attention to the earliest stages of development of new economic activities and organizations, this marks sound redirection of entrepreneurship research. However, our review shows that theoretical and empirical progress has been limited on important aspects of the role of "opportunities" and their interaction with actors, i.e., the "nexus". We argue that this is rooted in inherent and inescapable problems with the "opportunity" construct itself, when applied in the context of a prospective, micro-level (i.e., individual[s], venture, or individual–venture dyad) view of entrepreneurial processes. We therefore suggest a fundamental re-conceptualization using the constructs *External Enablers*, *New Venture Ideas*, and *Opportunity Confidence* to capture the many important ideas commonly discussed under the "opportunity" label. This re-conceptualization makes important distinctions where prior conceptions have been blurred: between explananda and explanantia; between actor and the entity acted upon; between external conditions and subjective perceptions, and between the contents and the favorability of the entity acted upon. These distinctions facilitate theoretical precision and can guide empirical investigation towards more fruitful designs.

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metro

The New Venture Idea underlying Metro:

“To provide commuters with a free daily newspaper of decent journalistic quality by saving on distribution and production costs, covering costs and generating profits solely from advertising” [Stable across cities]

The "Objective Opportunity" underlying Metro's success in Stockholm, 1995- ?

- a) a very high literacy rate & incidence of regularly reading morning papers;
- b) high minimum wages → high distribution cost and high prices of traditional papers;
- c) a well developed public transportation system under a monopoly provider, which was not Tokyo-style overcrowded,
- d) a culture of keeping to oneself rather than interacting with strangers in commute;
- e) a strong non-vandalism and non-littering culture, allowing the papers to be distributed via unattended racks
- f) traditionalism among incumbents dictating that morning papers be broadsheet (less suitable for reading in commute) whereas tabloids were evening papers;
- g) the availability of new labor-saving technologies for print media production in combination with strong trade unions blocking their adoption among incumbents, and
- h) the *non*-existence of today's electronic devices and Internet content to compete for commuters' attention and advertisers' money.
- **That is, a combination of circumstances unique to the time and place**
- **Sorry, but academic theorists aren't smart enough to make anything useful out of this!**
- **BTW, the founders were probably not aware of all this, either…**

The Theory of External Enablement of Entrepreneurship (TEEE)

- Seek generalizable insights across seemingly different types of change
- Link aggregate change to venture-level action and success
- HOW, WHEN, WHY, for WHAT and for WHOM do External Enablers benefit new business?

What's the point of all this?

The External Enabler Framework and its vocabulary provides language and structure for analysing how external changes can be useful to particular start-ups (/corporate venturing / growth of established business).

It's a tool to guide our thinking and action.

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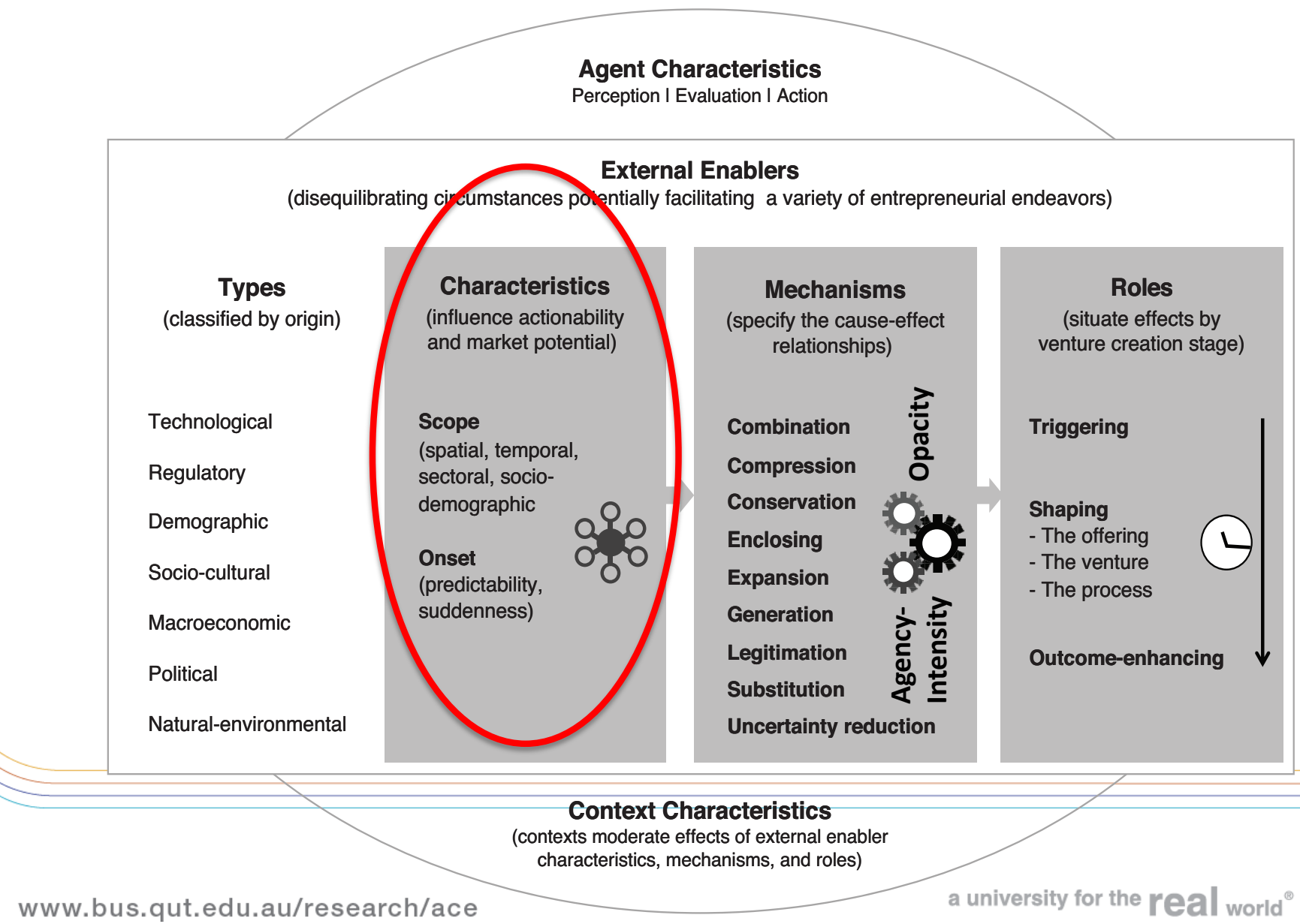
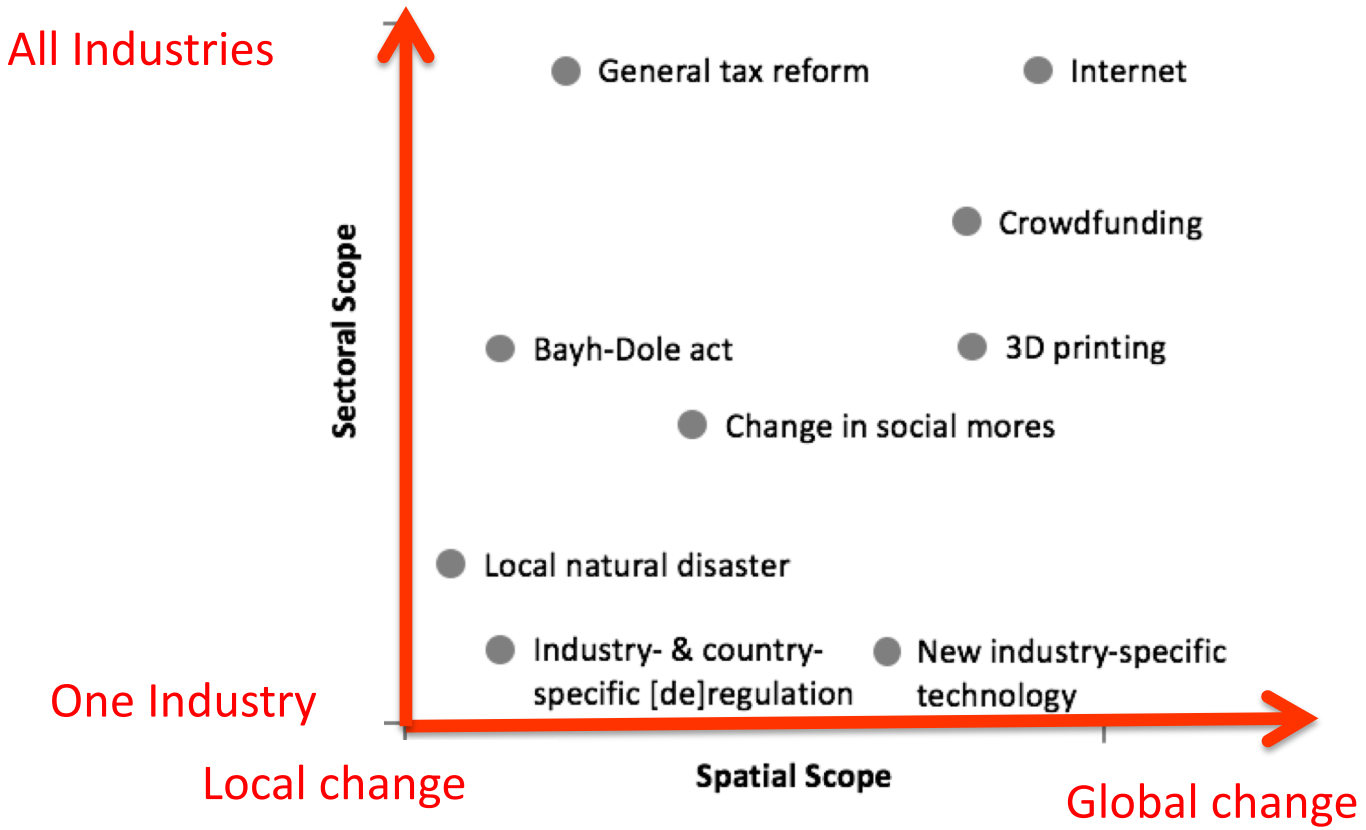
The External Enabler Framework



Characteristic: Scope

- Spatial
- Sectoral
- Temporal
- Socio-demographic

Characteristic: Scope



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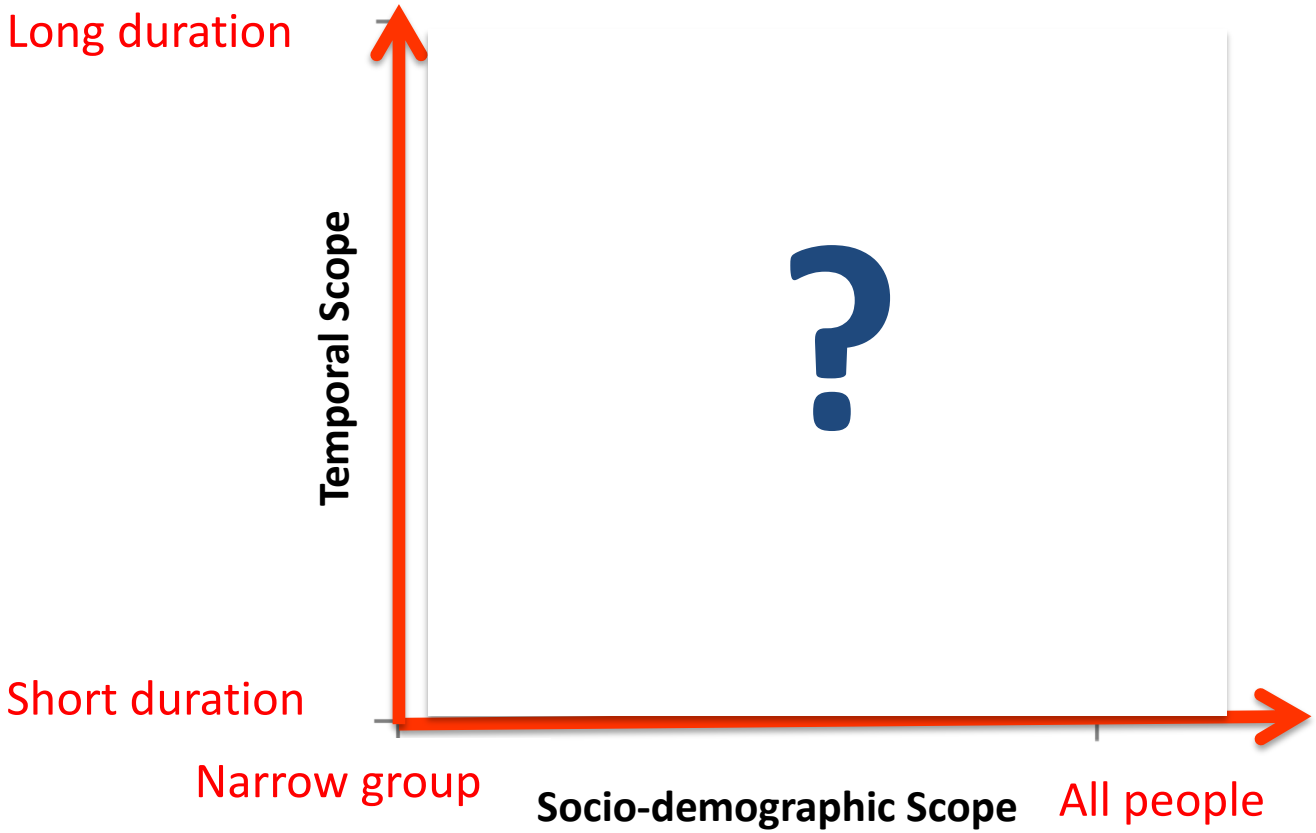


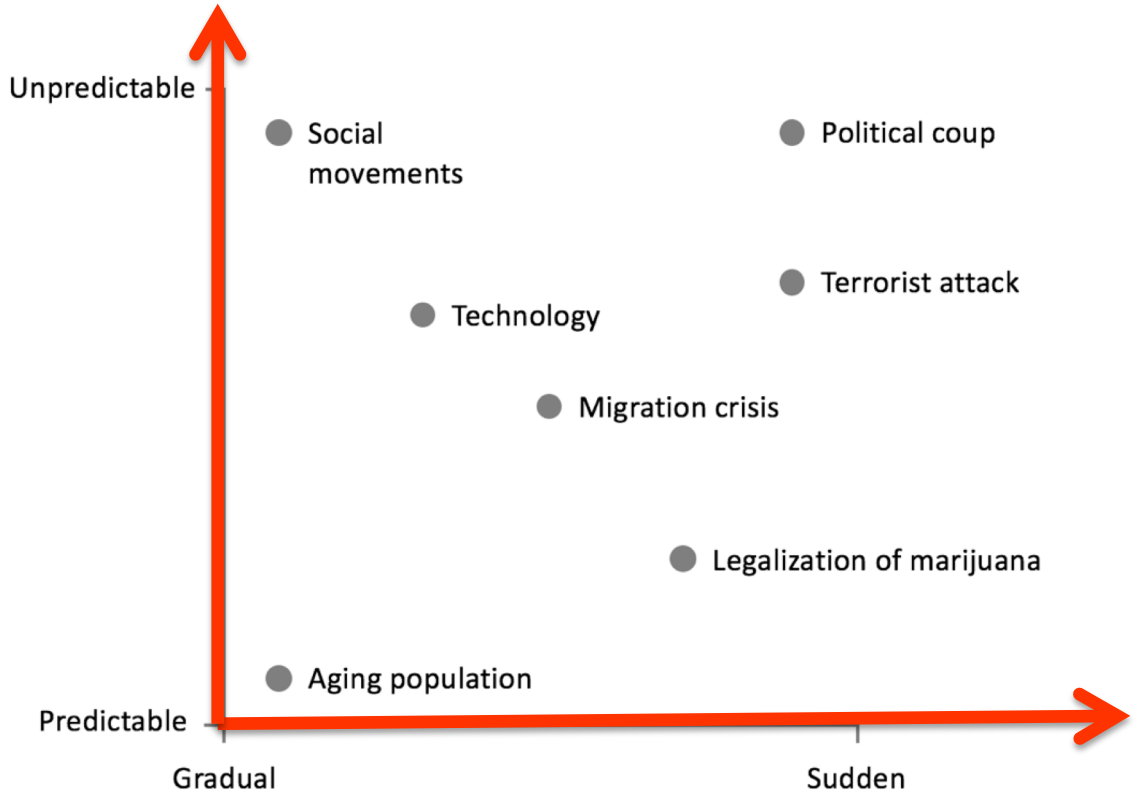
Characteristic: Scope

- Greater scope ≈ Bigger market potential for new ventures exploiting this External Enabler +
- → Less likely to avoid competition from large, established behemoths −
- → More likely to become an attractive acquisition target (and aiming for this may be wiser than going for long-term independence) +
- Lesser scope → Niche Market → More defensible for new, small business +

But then again…

- What if the spatial scope is large AND sectoral and/or socio-demographic scope are also large?
- There will be room for many, many different ways of exploiting the EE
- And no single actor will have the ability or inclination to go for all of them

Characteristic: Onset



Characteristic: Onset

- More predictable & gradual onset ≈ Easier to work with +
- Unfortunately, that's true for everybody else, too –
- Less predictable & more sudden ≈ Easier for a small, nimble actor to act on (= independent start-up) +
- However, this logic does not hold when fast action requires big resources… –

Same type of EE – Different Characteristics

Unusually hot and sunny summer

- Limited spatial, sectoral and temporal scope
- Low predictability
- Some small operators will get lucky
- Some small operators will get unlucky next year

El Niño / La Niña...

- Medium spatial, sectoral, temporal scope
- Medium predictability
- Potential for strategic use in weather-sensitive industries

Climate change

- Broad-very broad scope on all dimensions
- Medium-high? predictability
- Major role in many cases of new business action and/or success over long time

In Summary

- The EE characteristics *scope* and *onset* influence
  - The degree of strategic actionability pertaining to the EE
  - The magnitude of the potential for new business exploiting the EE
  - Who is more likely to successfully exploit the EE

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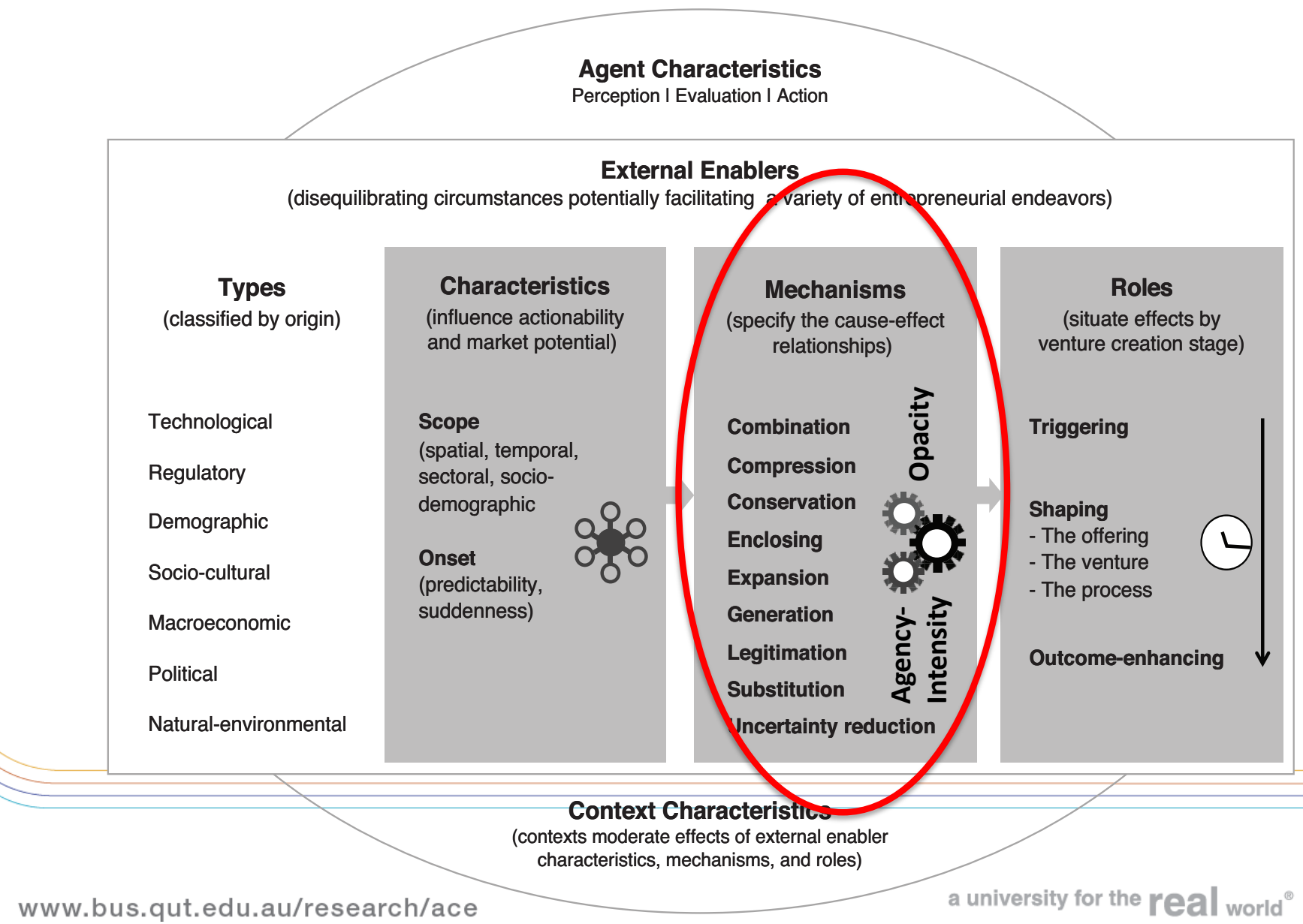
The External Enabler Framework



Mechanisms

- "Specify cause-effect relationships"
- In other words: what we call "mechanisms" describe what benefits particular new ventures can derive from a particular enabler

Mechanisms: Supply side

Label	Definition	Example
Compression	Reduction of the amount of time required to perform an activity	3D-printing considerably shortening development times De-regulation simplifying start-up process
Conservation	Reduction of the amount of resources required to perform an activity	Changes to the natural environment reducing need for cooling, heating, irrigation
(Resource) Expansion	Increase of the amount of a resource that is accessible	Crowdfunding platforms making external finance and effective market research available to more start-ups

Important for surviving through the process and creating advantages…

Mechanisms: Supply side (cont.)

Label	Definition	Example
(Resource) Substitution	Replacement of one resource with another	Changing social mores and progress in medical science triggering shift to using autistic software developers
Generation	Creates new artifacts, such as devices, functionalities, and business models, by changing existing ones	New technology that makes entirely new functionality possible
Combination	Bundles different resources to create new artifacts, such as devices, functionalities, and business models	Leveraging technology platforms A natural disaster that triggers an inflow of external resources

Mechanisms: Demand side

Label	Definition	Example
Uncertainty reduction	Reductions of the uncertainty perceived by buyers	Broad political agreement creating expectation of long term stability
Legitimation	Increase in the legality or psychological/socio-cultural acceptability of the venture or its offerings	Formal legalization; socio-cultural trends changing values in favor of a product category
(Demand) Expansion	Increase in demand at given price and functionality	Macroeconomic income growth; population growth
(Demand) Substitution	Increase in demand due to making focal venture's market offerings [perceived as] more needed/attractive (positive substitution) or due to making competitive offerings perceived as less needed or attractive (negative substitution)	Terrorist attack, natural disaster or demographic shift fueling demand for associated products; socio-cultural trends and/or legislation banning or disadvantaging competitors' market offerings Economic downturn switching demand from "big treats" to "little treats"

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Mechanisms: Appropriability

Label	Definition	Example
Enclosing	Increase in a venture's ability to capture the the value it creates	Strengthened IP legislation; Technology facilitating customer "lock-in" Shortages and limited competition due to outbreak of (trade) war

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The External Enabler Framework

Agent Characteristics
Perception I Evaluation I Action

External Enablers
(disequilibrating circumstances potentially facilitating a variety of entrepreneurial endeavors)

Types
(classified by origin)

- Technological
- Regulatory
- Demographic
- Socio-cultural
- Macroeconomic
- Political
- Natural-environmental

Characteristics
(influence actionability and market potential)

Scope
(spatial, temporal, sectoral, socio-demographic

Onset
(predictability, suddenness)

Mechanisms
(specify the cause-effect relationships)

- Combination
- Compression
- Conservation
- Enclosing
- Expansion
- Generation
- Legitimation
- Substitution
- Uncertainty reduction

Opacity

Agency-Intensity

Roles
(situate effects by venture creation stage)

Triggering

Shaping
- The offering
- The venture
- The process

Outcome-enhancing

Context Characteristics
(contexts moderate effects of external enabler characteristics, mechanisms, and roles)

Mechanisms vary in…

- …Opacity. Some mechanisms of some EEs are obvious to anyone (more children → more childcare) whereas others require specialized knowledge and/or unique, creative ingenuity.

- …Agency-Intensity. Some EE mechanisms work without any deliberate action (change in climate → change in demand for weather-related products) whereas others may require heavy work and investment to realise the potential.

Exploiting opaque and agency-intense EE mechanisms can make the venture creation journey riskier and costlier while leading to a more unique and competition-insensitive business in the end.

In Summary

- EEs mechanisms facilitate superior supply; boost demand, or increase value appropriation
- The opacity and agency-intensity of mechanisms affect their risk/reward tradeoff (opacity + agency-intensity → competitive advantage)
- After identifying an EE, ask: What particular mechanisms can this EE offer with regard to:
  - Design, cost, price of the market offering
  - Design of the structure and processes of the business (business model)
  - Making the venture creation process faster and cheaper?
  - (For what type of new venture/for this particular new venture?)
- After identifying a problem during new venture creation, ask: What EE can offer the mechanisms needed to eliminate or reduce this problem?

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Roles
(situate effects by venture creation stage)

Triggering

Shaping
- The offering
- The venture
- The process

Outcome-enhancing

Context Characteristics
(contexts moderate effects of external enabler characteristics, mechanisms, and roles)

Roles

- Triggering (reason for starting the process)
- Outcome-enhancing

These are partly different – sometimes ventures are successful for reasons they never realise or realise only later in the journey.

- Inception is not the only point in time to look for EEs and their potential

The Shaping Role[s]

- The offering (product/service)
  - Apps
  - “Je Suis Charlie” T-shirt
- The venture (business model; organization)
  - The “start-up movement/eco-system” and associated mantras
  - Process technologies
- The process (catalyst/utensil)
  - 3D printing / rapid prototyping

Many ventures over-focus on the product/service. The organisation of the venture and its process of becoming can be equally important to its success

Finally:
Another take on EEs and the venture creation process

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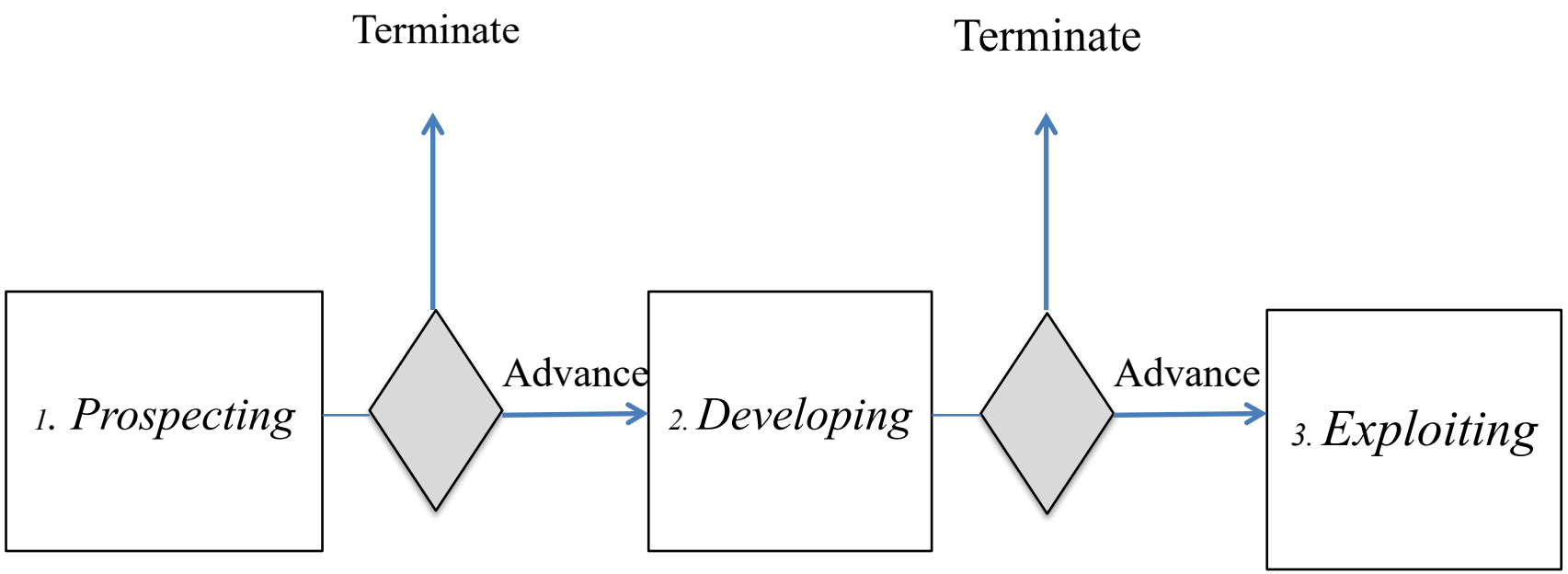
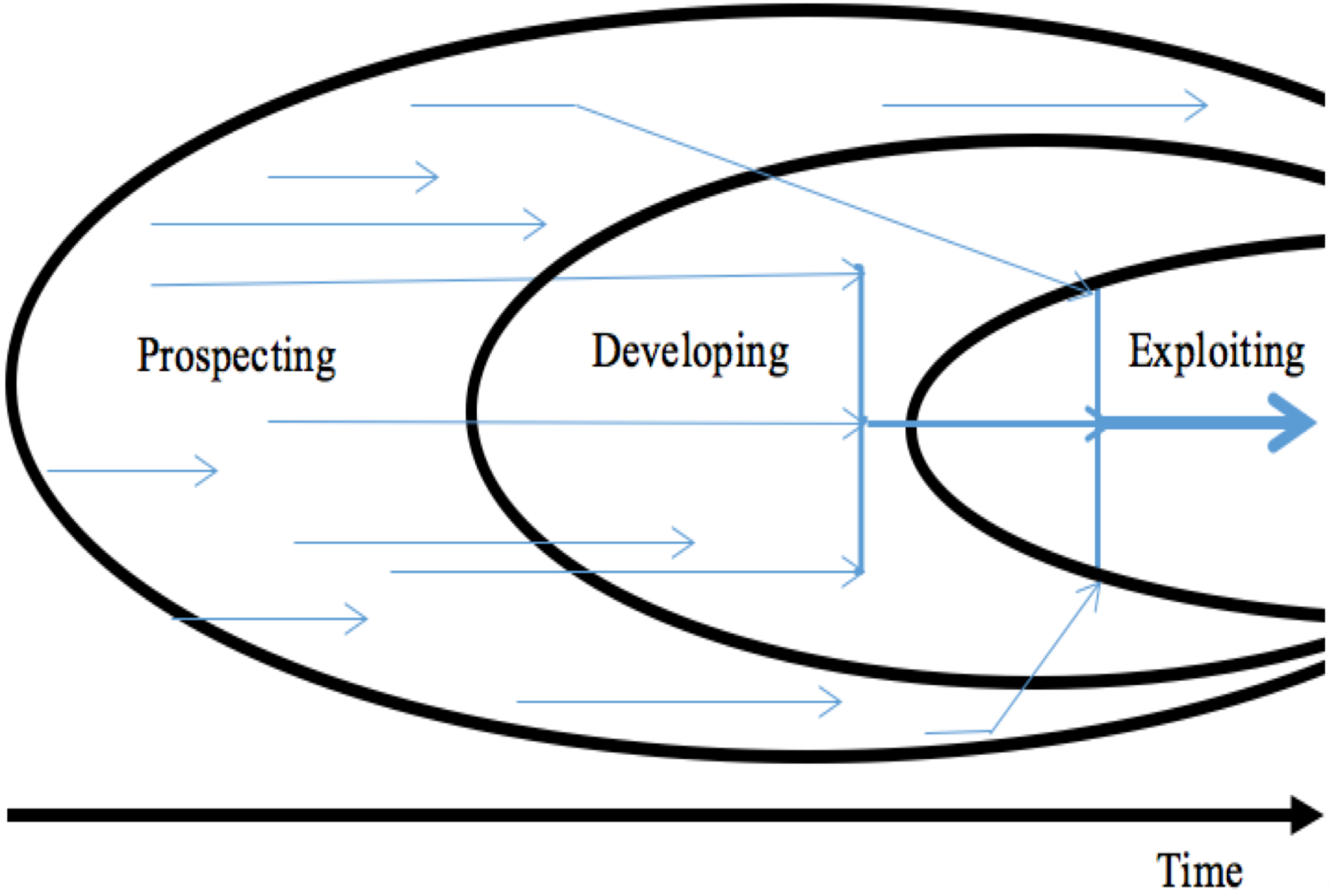
- Rapid-prototyping technologies
- Electronics development platforms
- Interconnectable devices
- Crowdfunding platforms
- Social media
- Cloud computing

The Bakker-Shepherd Model (BS-model?)




Prospecting
Developing
Exploiting
Time

Conclusions from our analysis

- Different (new, digital) technologies provided different enabling mechanisms across all three stages of IT hardware venture creation
- If only Prospecting is enabled, success chances for individual ventures may go *down* and no marked increase in completed new ventures ensue
- If only Exploiting is enabled, large, incumbent firms may be relatively more likely to act

Summary

- All external changes enable *some* new business
- The External Enablers concept and framework provides structure and language to analyse HOW, WHEN, WHY, for WHAT and for WHOM
- The Scope and Onset of EEs affect their potential, and for whom
- Mechanisms and Roles of EEs specify how, when and for what enablers can be of help (e.g., supply, demand, appropriability; offering, venture, or process)
- S/he, who is the best at identifying and using EEs, will win!

Thanks!

Q&A

ACE Research Vignette 061: Digital Technologies as External Enablers of Digital Hardware Start-ups

This series of research vignettes is aimed at sharing recent research findings from our team of international entrepreneurship researchers. This vignette, written by Dr. Frederik von Briel and Prof. Per Davidsson, discusses how digital technologies enable digital hardware start-ups, that is, start-ups that create and commercialize digital hardware devices such as drones, home automation devices, robots, smart kitchen appliances, and wearables.

https://tinyurl.com/ACE-EnablerVignettes

of new ventures, digging deeper into digital technologies enable digital hardware start-ups. Our research is based on the observation that a recent surge in independent digital hardware start-ups coincided with the introduction of several new or advanced digital technologies. The surge digital hardware start-ups is particularly interesting because the creation and commercialization of digital hardware has traditionally been challenging and imposed substantial barriers such as a high capital intensity and long development processes. Thus, the research question we explore in this vignette is:

How do digital technologies enable start-ups to create and commercialize digital hardware?

How was this investigated?

This is theoretical work guided by industry observations, prior research, and our own thinking.

Findings

The below table lists six categories of digital technologies that we identified as external enablers of digital hardware start-ups, along with a very brief example of each.

Digital technology	*Explanation*
Rapid-prototyping technology	Technologies such as 3D printers (additive) and mini-mills (subtractive) that use computer aided design (CAD) files to automatically create physical artifacts
Electronics development platforms	Programmable, digital devices such as Arduino or Raspberry Pi that can connect to, interact with, and process information from a broad range of (potentially non-digital) devices such as sensors, motors, or LEDs