



BRETT CENTRE FOR ENTREPRENEURSHIP

RESEARCH
EDUCATION
IMPACT

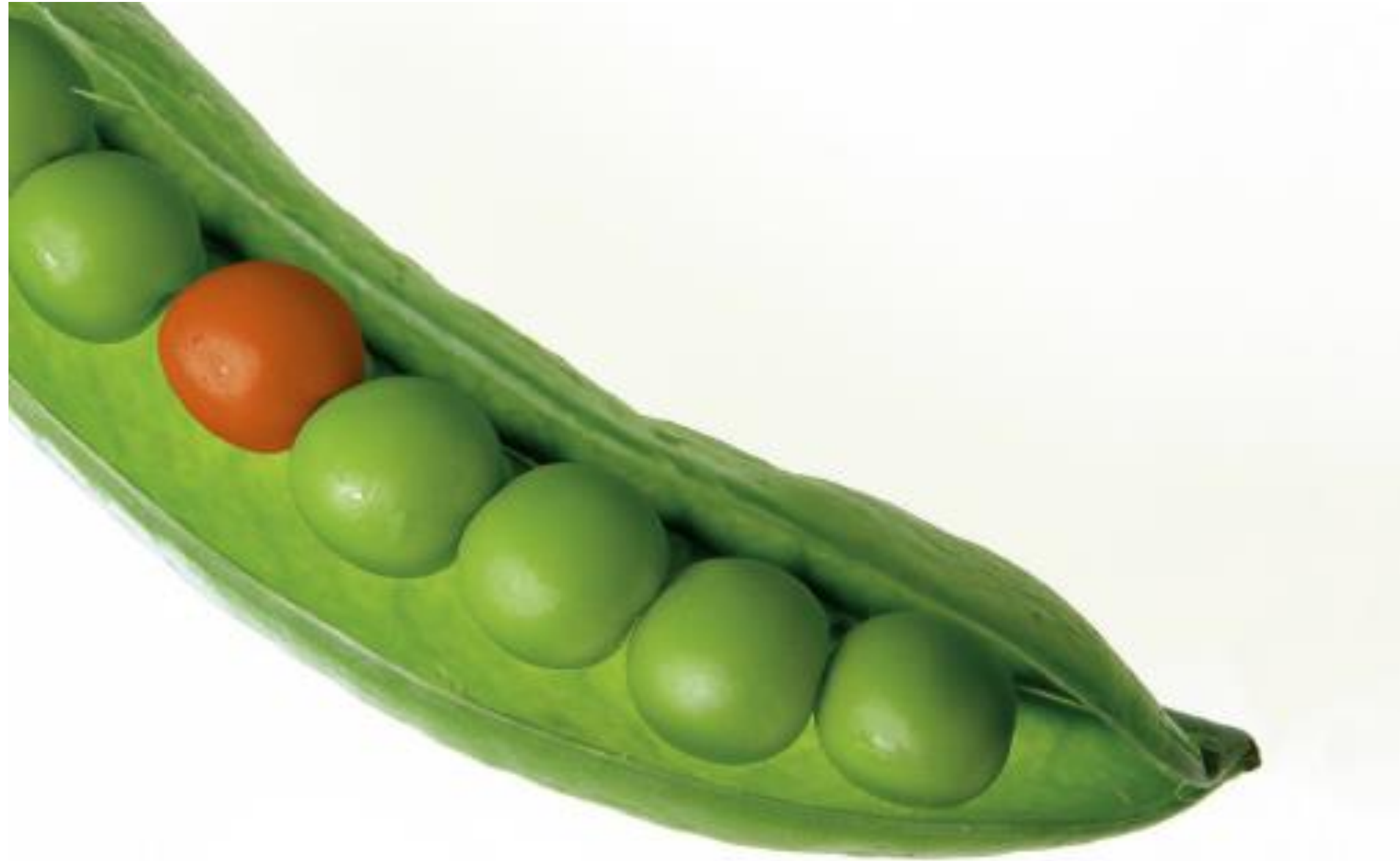
Doctoral Entrepreneurial
Training (LIV.INNO) **Day 1**

Dr Zeineb Djebali



Agenda

- Opportunity Recognition (OR)
- Some definitions
- Types of Opportunity Recognition
- Antecedents to Opportunity Recognition
- Case study – Nanopore Technologies
- Interactive Session 2



**What is the difference between an idea
and an opportunity?**

Opportunity recognition – some definitions

- Generally understood as 'situations in which new goods, services, raw materials, and organising methods can be sold and introduced and sold at greater than their cost of production (Shane and Venkataraman, 2000: 220).
- Argument in the literature that opportunity recognition does not just involve the discovery of opportunities but also the exploitation of these opportunities



Definitions

'although the discovery of an opportunity is a necessary condition for entrepreneurship, it is not sufficient. Subsequent to the discovery of an opportunity, a potential entrepreneur must decide to exploit the opportunity' (Shane & Venkataraman, 2000: 222)



Definitions

*“...a situation in which a person can **create** a **new** means-end framework for recombining **resources** that the entrepreneur **believes** will yield a profit”*
(Shane (2003: 16))

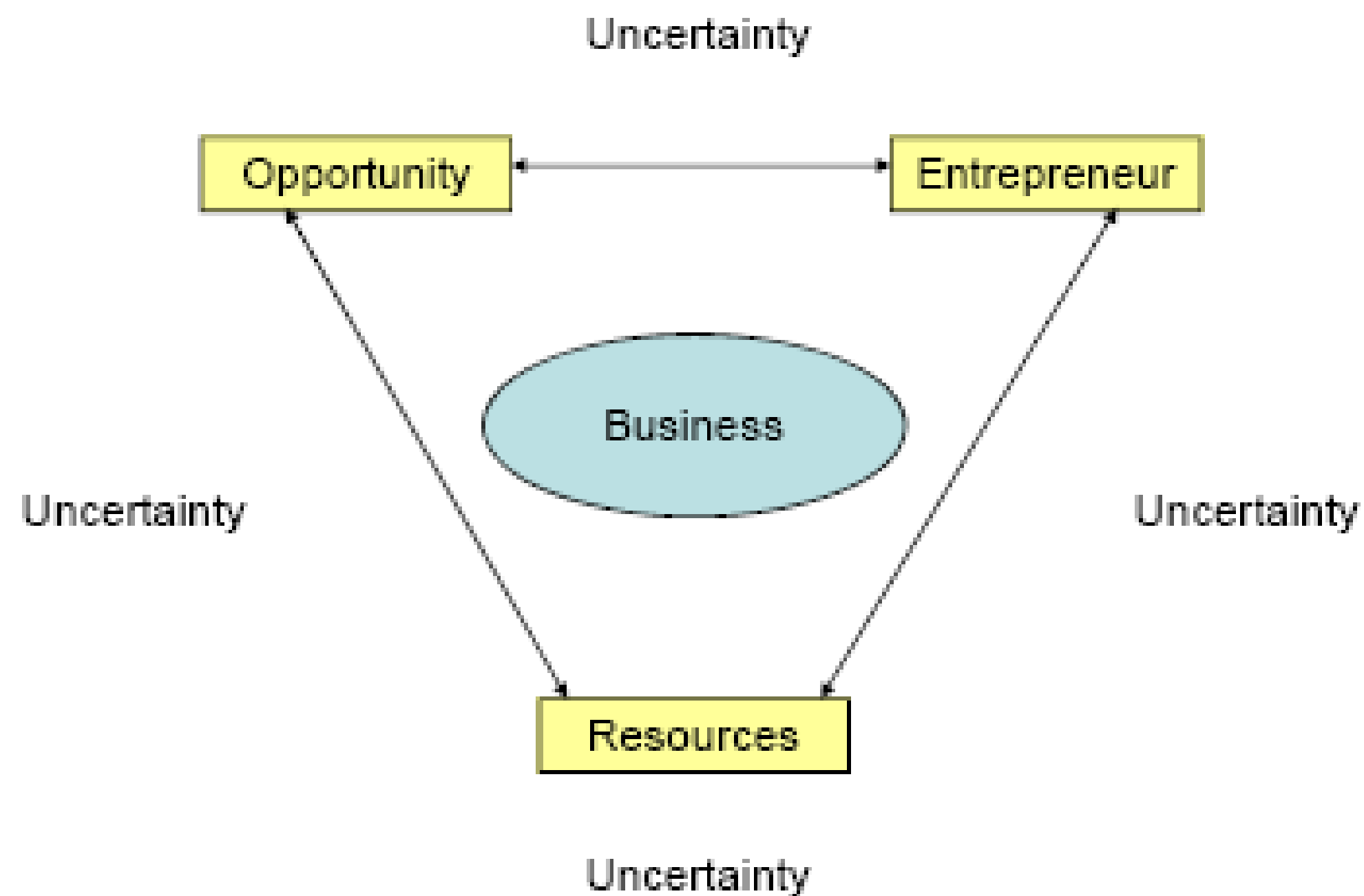


Definitions

Dimov (2011): For an opportunity to be entrepreneurial, we need three things:

- **A product or service,**
 - **One or more agents who consume it, and**
 - **One or more agents who produce it.**
-

Opportunity recognition - some frameworks

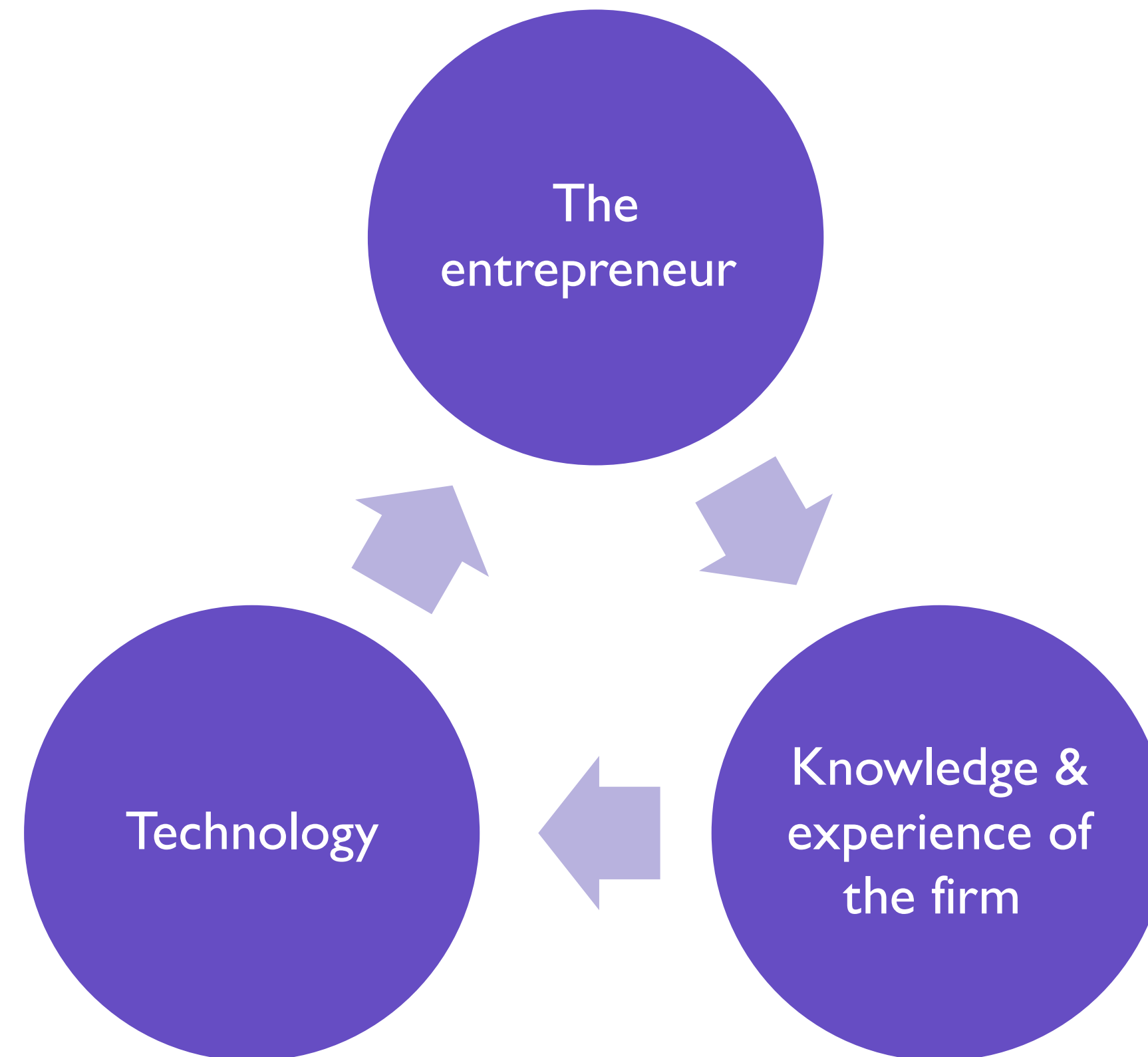


Source: Timmons and Spinelli (2009).

important

Opportunities are essential to entrepreneurial thought and action

Opportunity recognition – some frameworks



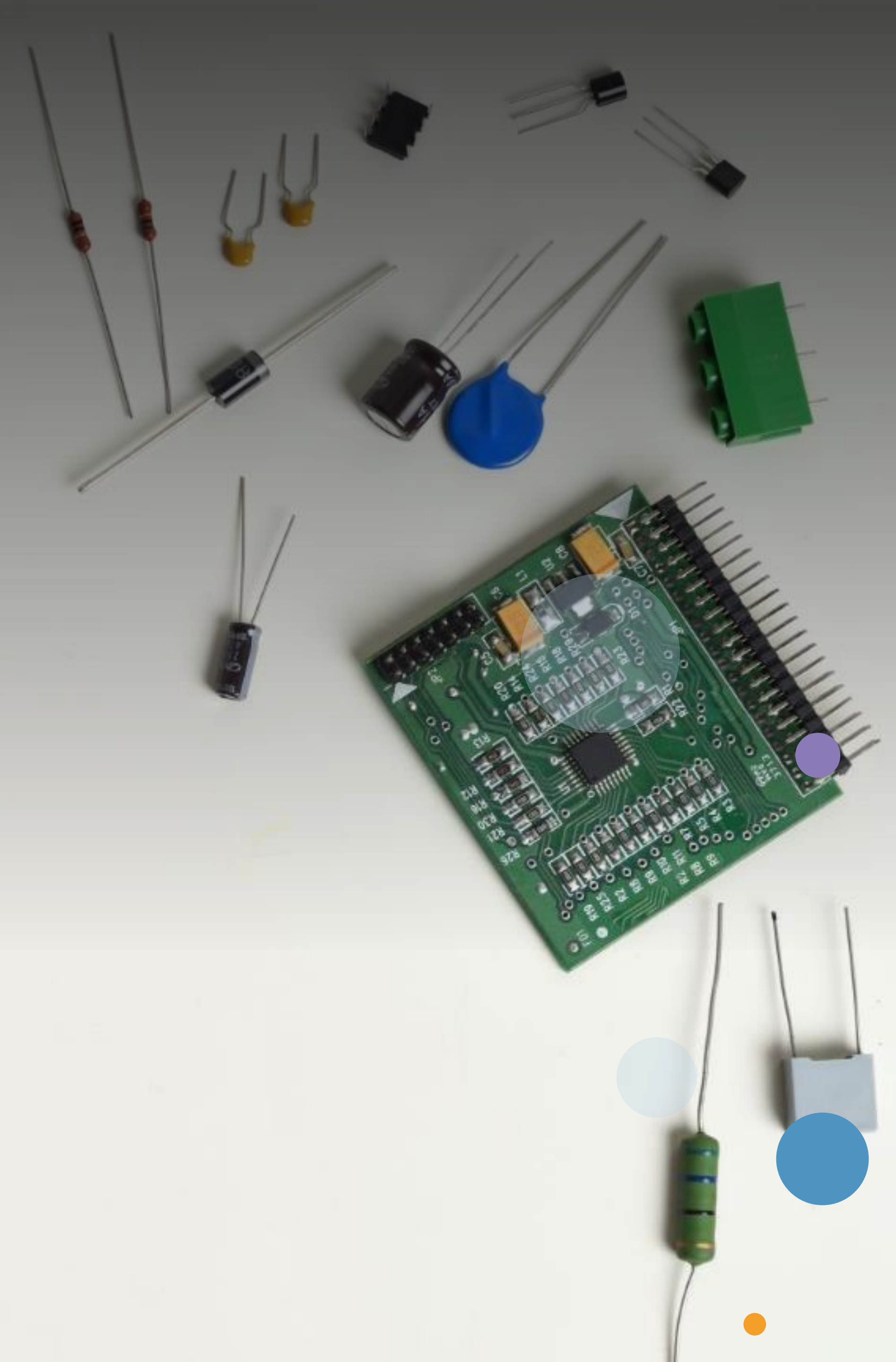
Park, 2005

1. The entrepreneur

Studies highlight that six motivating factors influence entrepreneurial opportunities:

- Innovation
- Independence
- Recognition
- Roles
- Financial success
- Self-realisation

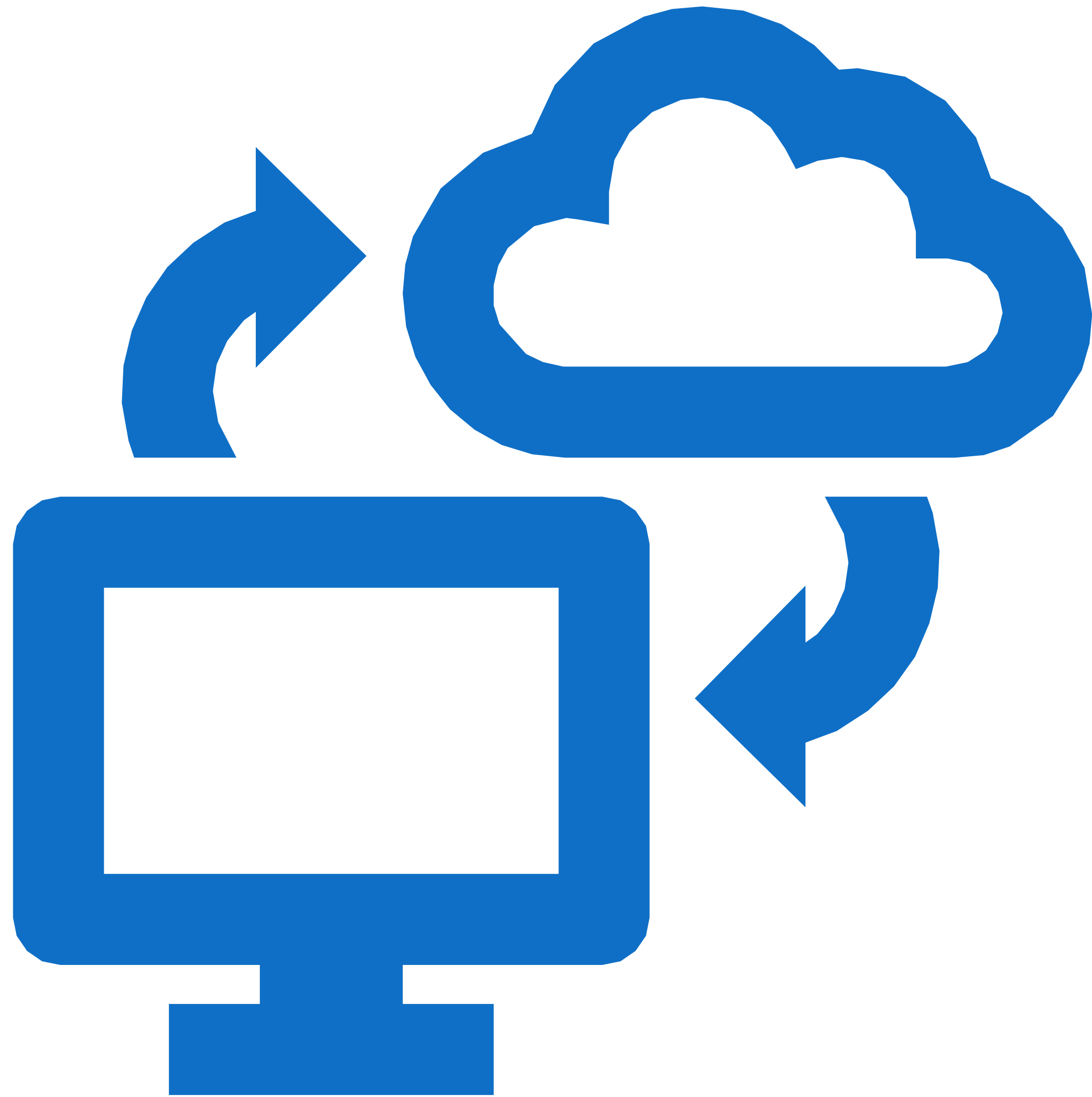
Carter et al 2003





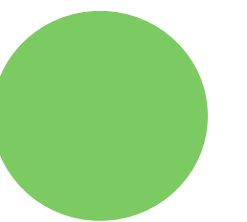
2. organisational knowledge

How the collective organisational knowledge and experience impact the success of the venture



technology

- How technology develops and evolves based on the interaction of the founder and the knowledge of the firm



How do
entrepreneurs
identify
opportunities?



1. Active search for opportunities

- Active search is an important factor in opportunity recognition (Gilad et al., 1989; Hills and Shrader, 1998).
- Entrepreneurs are more likely to engage in active search for opportunities than managers
- More likely that entrepreneurs search for these opportunities from personal contacts
- Entrepreneurs are seen to be more active in seeking opportunities (Busenitz, 1996)



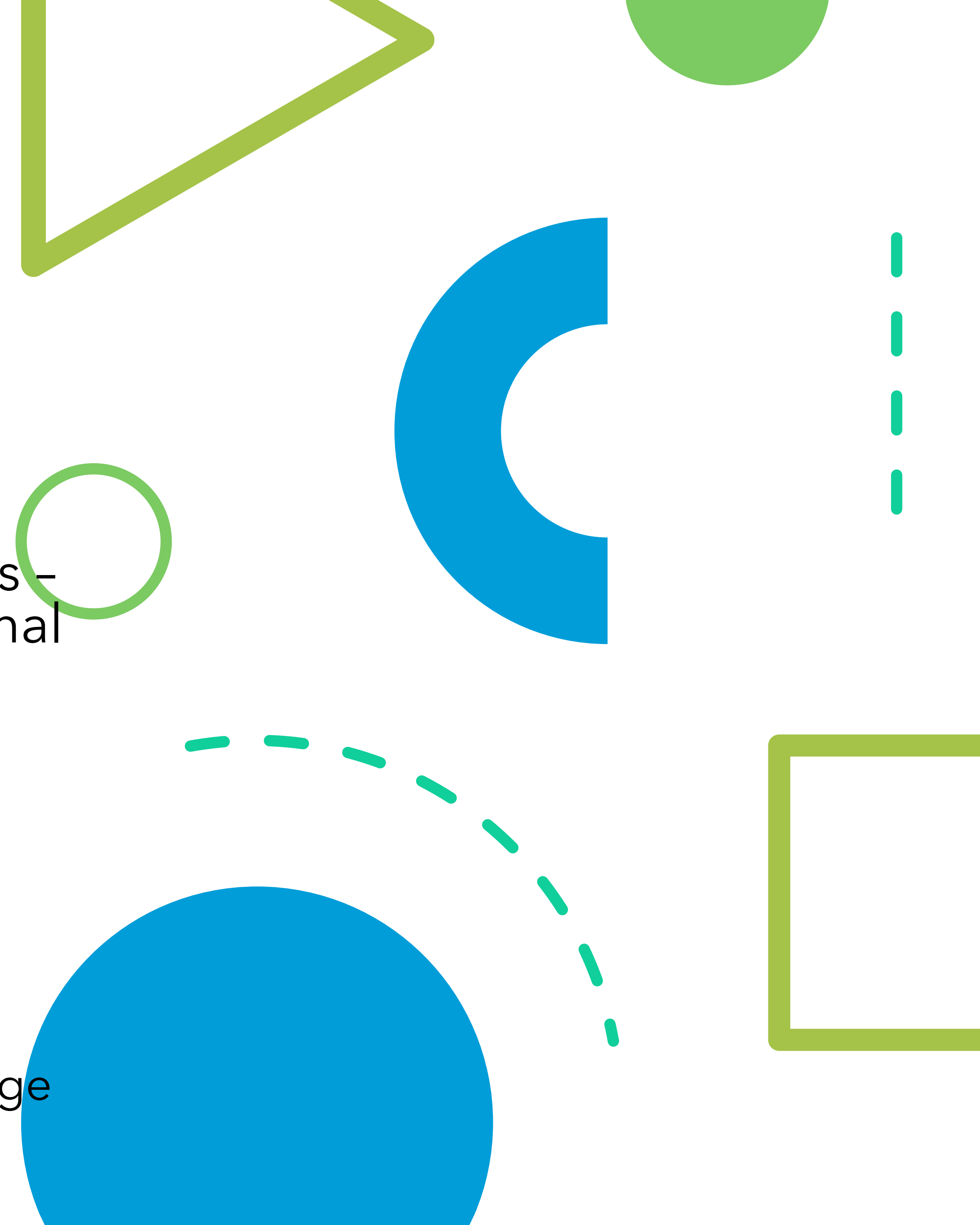
2. Alertness



- Kirzner suggested that entrepreneurs possess or obtain special knowledge and could use it to create or exploit entrepreneurial opportunities
- Other scholars such as Hills and Shrader (1998) and Timmons (1999) also found that successful entrepreneurs have a high level of alertness - the capacity to see what others don't

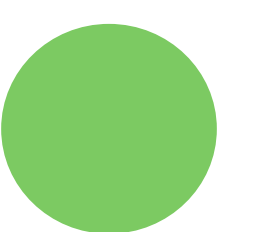
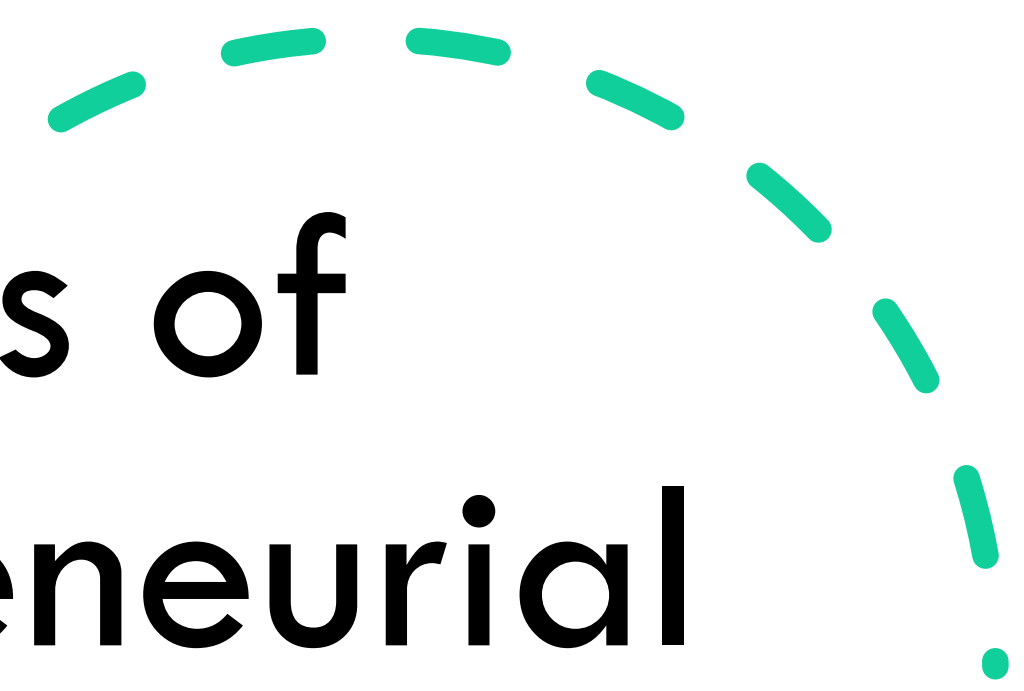
3. Prior knowledge

- Information obtained through life experiences, work experience - a major benefit for entrepreneurs to recognise potential of profitable opportunities
- The level of prior knowledge is key factor enabling exploitation of new opportunities - able to interpret and recognise new external information (Cohen and Levinthal, 1990)
- **Three Dimensions: (Shane, 2000):**
 1. Prior knowledge of markets
 2. Prior knowledge of ways to serve markets
 3. Prior knowledge of customer problems
- People recognize those opportunities related to information that they already possess - "knowledge corridor" (Venkataraman, 1997)





Types of entrepreneurial opportunities



Types of entrepreneurial opportunities

- **Radical vs incremental:**
- **Radical:** Schumpeter (1934): changes in technology, regulations, and other factors generate new information about how resources can be assembled,
- Allow entrepreneurs to have access to new information and use this to create radical and innovative product/services.
- **Incremental:** Kirzner (1973; 1985; 1997): opportunities exist even in the absence of new information – dependent on alert individuals who can obtain resources and use them to create products and services



Types of entrepreneurial opportunities

- **Exogeneous:** opportunities can result from exogenous shifts in information;

Examples:

- Spurred by Governments: e.g. change in interest rates influence entrepreneurial opportunities
- Regulatory interventions e.g. anti-trust and deregulation of industries, for instance, in USA created opportunities for new entrants e.g. telecommunications/airlines, banking (Winston 1998)
- Shifts in demographics: e.g. aging of baby boomers generate opportunities for new products/services aimed at the elderly (Drucker, 1985)
- New knowledge – opportunities for entrepreneurs to create new goods and services /restructure new industries/introduce new methods of supply (Schumpeter, 1934); e.g. new technologies /new drugs in pharmaceutical industries

Antecedents to Opp Recognition

Individual



Macro

Non psychological:

- Prior experience
- Social networks
- Education
- Role models

Psychological:

- Extroversion
- Need for Achievement & Independence
- Risk Taking
- Locus of Control & Self-Efficacy
- Confidence
- Intuition
- Ability to categorise information

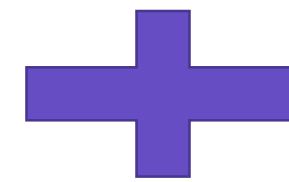
Antecedents to Opp Recognition

Individual

Macro

Macro-economic forces:

- Global market conditions
- Capital markets
- Commodities & other resources
- Economic infrastructure



Industry forces:

- Suppliers & other value chain actors
- Stakeholders
- Competitors
- New entrants
- Substitute products/services

Market forces:

- Market segments
- Needs and demands
- Market issues
- Switching costs
- Revenue attractiveness

Key trends:

- Technology trends
- Regulatory trends
- Societal & cultural trends
- Socio-economic trends

How OR conceptualised in Lit?

Year	Author	Contribution	Level of examination
1934	Schumpeter	Entrepreneurs create opportunities by disrupting the equilibrium in the market	Individual
1945	Hayek	The economic problem is not just how to allocate resources, it is a problem of utilisation of knowledge - knowledge is not given in totality to anyone	Individual
1973; 1985	Kirzner	Alertness, not just the possession of information helps one to recognise & exploit opportunities	Individual & environment
1985	Drucker	Opportunities are innovations that occur due to changes in industry structure, demand, outside events, demographics	Environment

How OR conceptualised in Lit?

Year	Author	Contribution	Level of examination
1990	Christensen & Peterson	Along with market & Technological knowledge, specific problems & social encounters are often a source of venture ideas	Environment
1996	Hamel & Prahalad	Broad experience & ability to learn and adapt should help individuals recognise opportunities	Individual
1999	Timmons	The role of experience in opportunity recognition	Individual
2004	Sarasvathy et al	Opportunities based on the market process: allocative, discovery and creative	Individual & Environment

Case 2 Exp: Oxford Nanopore Technologies

- Founded in 2005 as a spin out from the University of Oxford;
- Developed a disruptive, electronic, single molecule sensing system based on nanopore science;
- First product 'MinION' introduced in 2014 and made commercially available in 2015;
- Scaled up 'GridION' commercially launched in 2017 and other product pipelines also made available to the market;
- Currently has more than 2,600 patents – some generated by internal R&D and others through collaborations



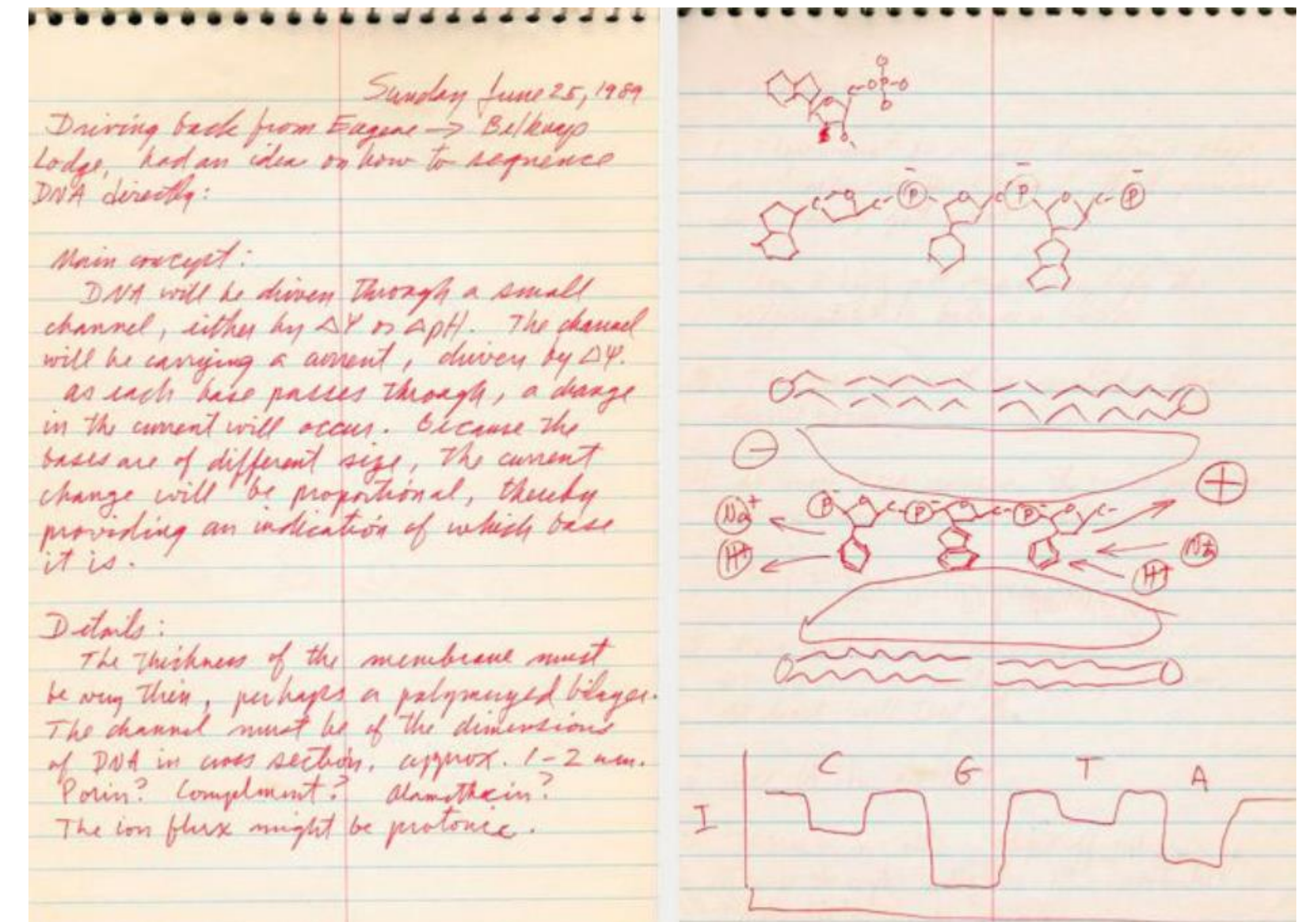
-timeline



From an idea, to fundamental science, to a tech platform

Earlier Concept (1989):

- June 1989, Prof David Deamer was driving when it occurred to him that a protein channel can be incorporated into the membrane of a liposome – accommodate small components of DNA
- For 2 years – idea was left in Prof Deamer notebook until a discussion occurred with Prof. Dan Branton (Harvard University)



Prof Deamer notebook,
1989

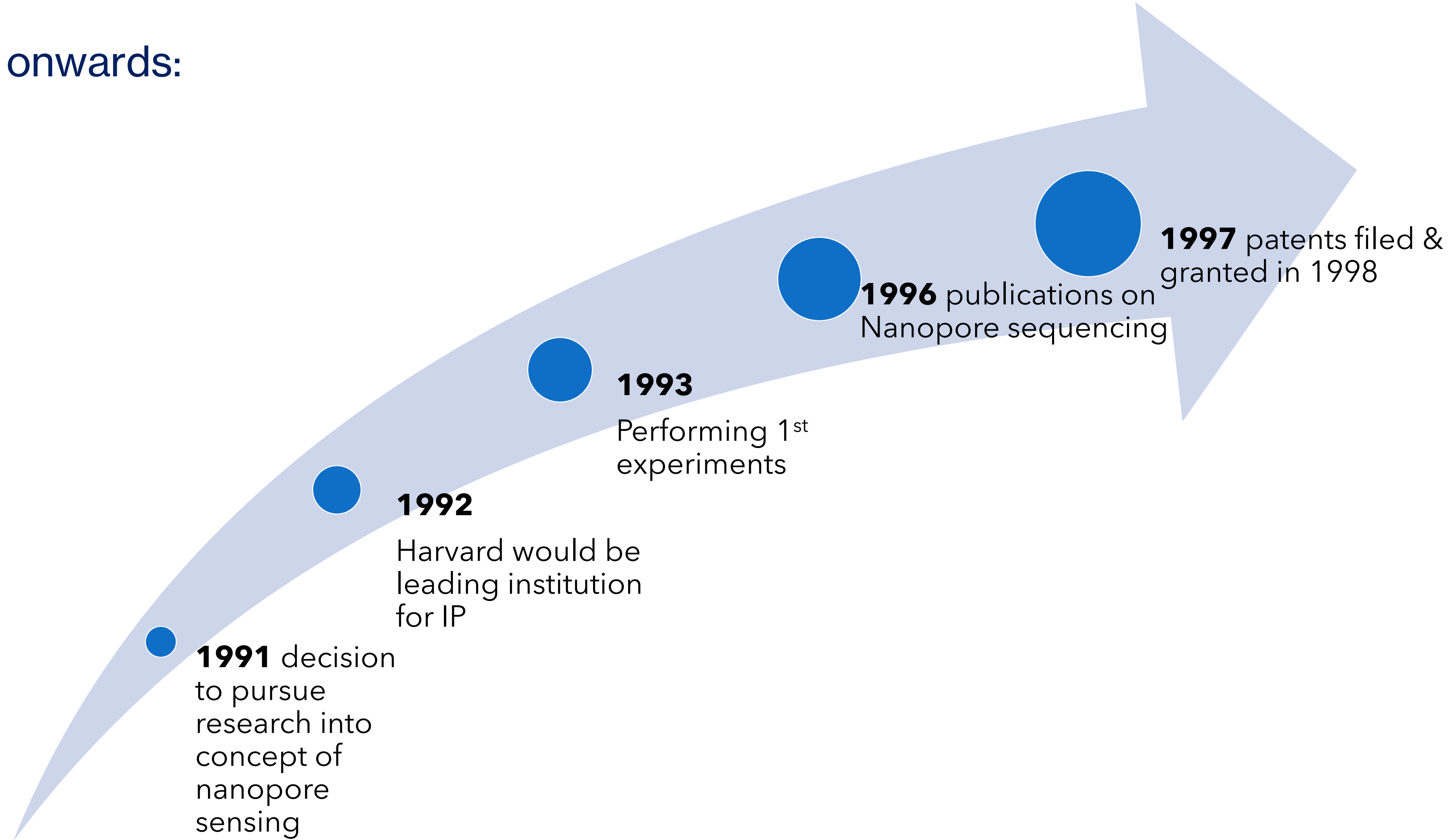
-timeline



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1990s onwards:



-timeline



2000 onwards:

- 2005 Oxford Nanopore was founded as Oxford Nanolabs by Dr Gordon Sanghera (CEO), Dr Spike Willcocks and Prof Hagan Bayley with seed funding from IP Group Plc
- **Early years:**
- Prof Bayley's work related to structure of protein nanopores was combined with expertise from various collaborators and multidisciplinary team: academics/scientists who continued to innovate in nanopore sensing and to bring to the market the only nanopore sequencing technology
- **Two fold focus:**
- R&D to develop nanopore sequencing chemistry
- Development of new/bespoke electronic platform that can measure nanopore sensors

-timeline



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Introducing Technology:

- February 2012 presented at AGBT conference: overview of the hardware and software behind the technology

Prototyping:

- Preparing handheld MinION device that can shipped by standard courier anywhere in the world
- 2014 MinION access programme launched – early users were invited to pay a refundable \$1,000 deposit to use the device – validation of business opportunity/gain feedback from users to improve performance and processes

-timeline



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Scaling up - 2017:

- Introducing GridION X5 desktop system integrating five MinION cells with integrated computer function
- Offered as
- **SaaS**: nanopore sequencing as a service suitable for customers who are interested in human or plant genomes at scale
- **On demand**: for those interested in using the nanopore sequencing for multiple projects
- 2018 – entered the Chinese market – appointed a distributor and established its first sale to customers
- More improvements/development occurred during this time

-timeline



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Mature Stage- 2018 :

- Floated on London Exchange in 2021
- More iterative improvements in technology/software

Crossing the chasm:

- Collaborating with multiple partners to extend the reach of nanopore sequencing technology to impact health/and industrial users who require analysis or testing



The background is a dark, artistic composition. On the left, numerous out-of-focus, warm-toned circular lights (bokeh) are scattered across the frame. On the right, a blurred miniature model of a stadium is visible, showing a green field and a blue track. The overall aesthetic is modern and dynamic.

Interactive session

Building on the business idea developed in interactive session (1), develop a product or a service *highlighting* the following: What problem are you solving? How are you meeting customer needs?

Problem

Start with a great problem
'nobody will pay you for solving a non-
problem' (Vinod Khosla, VC)

CONTEXT When does the problem occur?	PROBLEM What is the root cause of the problem?	ALTERNATIVES What do customers do now to fix the problem?
CUSTOMERS Who has the problem most often?	EMOTIONAL IMPACT How does the customer feel? QUANTIFIABLE IMPACT What is the measurable impact (include units)?	ALTERNATIVE SHORTCOMINGS What are the disadvantages of the alternatives?

Tool

Introducing the problem statement canvas

Example (adapted/used from the Metabeta)

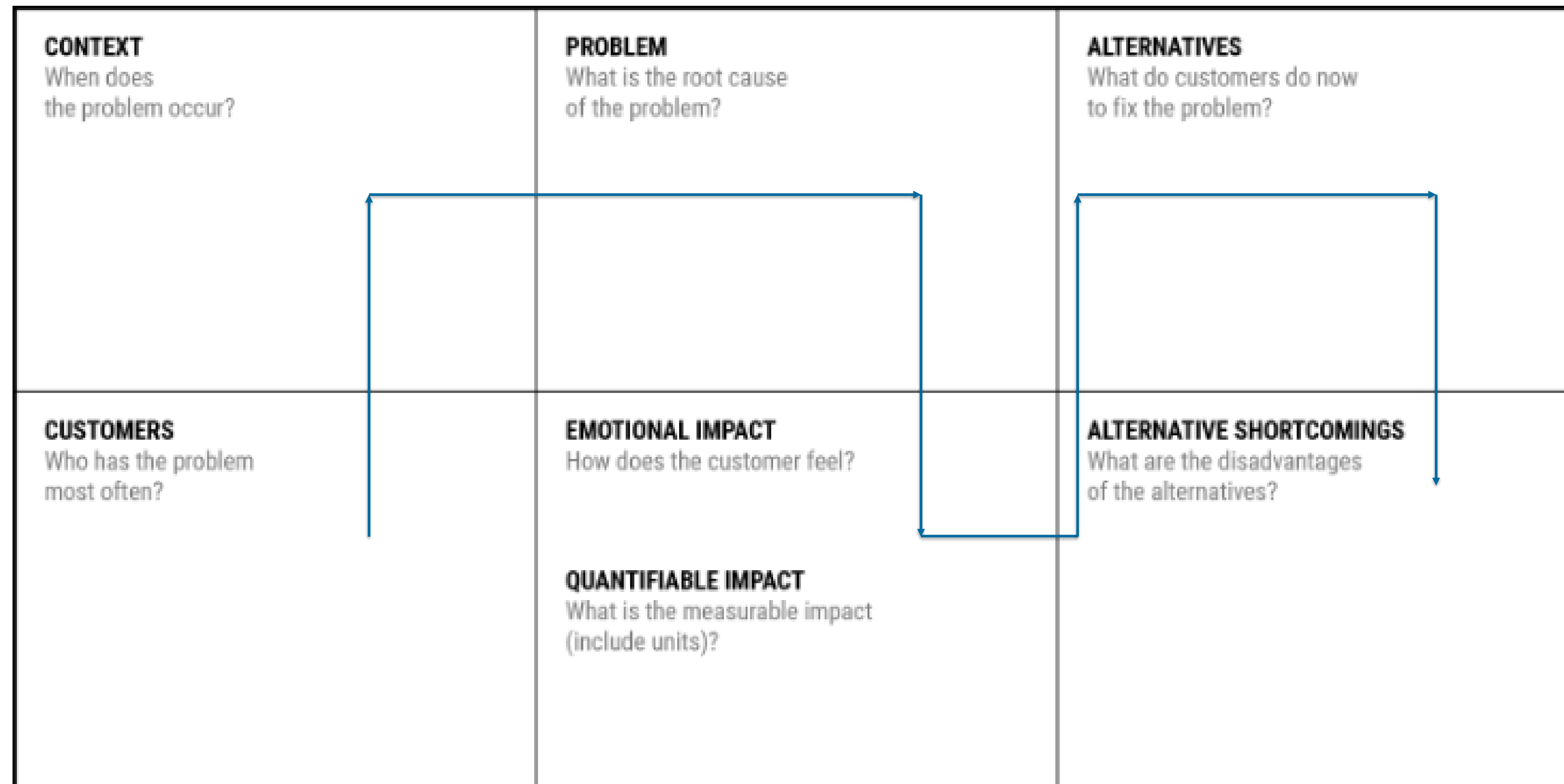
<https://www.metabeta.com/articles/process/problem-statement-canvas/>

Problem pitched by a startup

“People have a huge problem with traffic in São Paulo. We’re going to build the leading ridesharing app for them.”



The Problem Statement Canvas



Let's explore the canvas



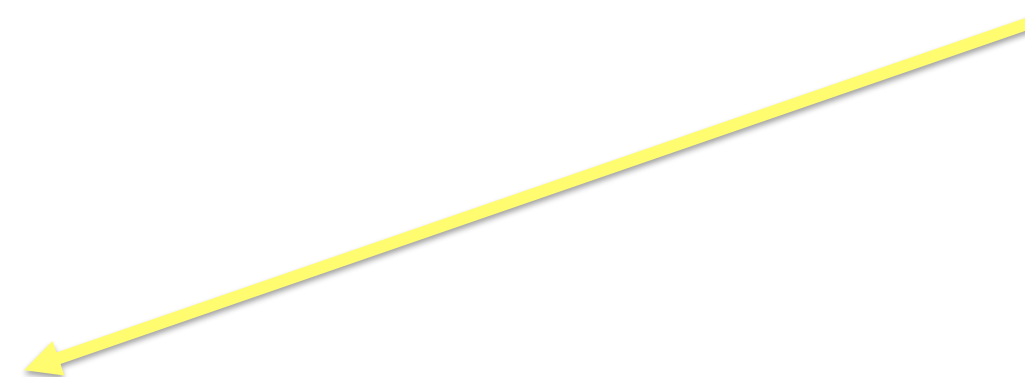
Customer type



“People in São Paulo”

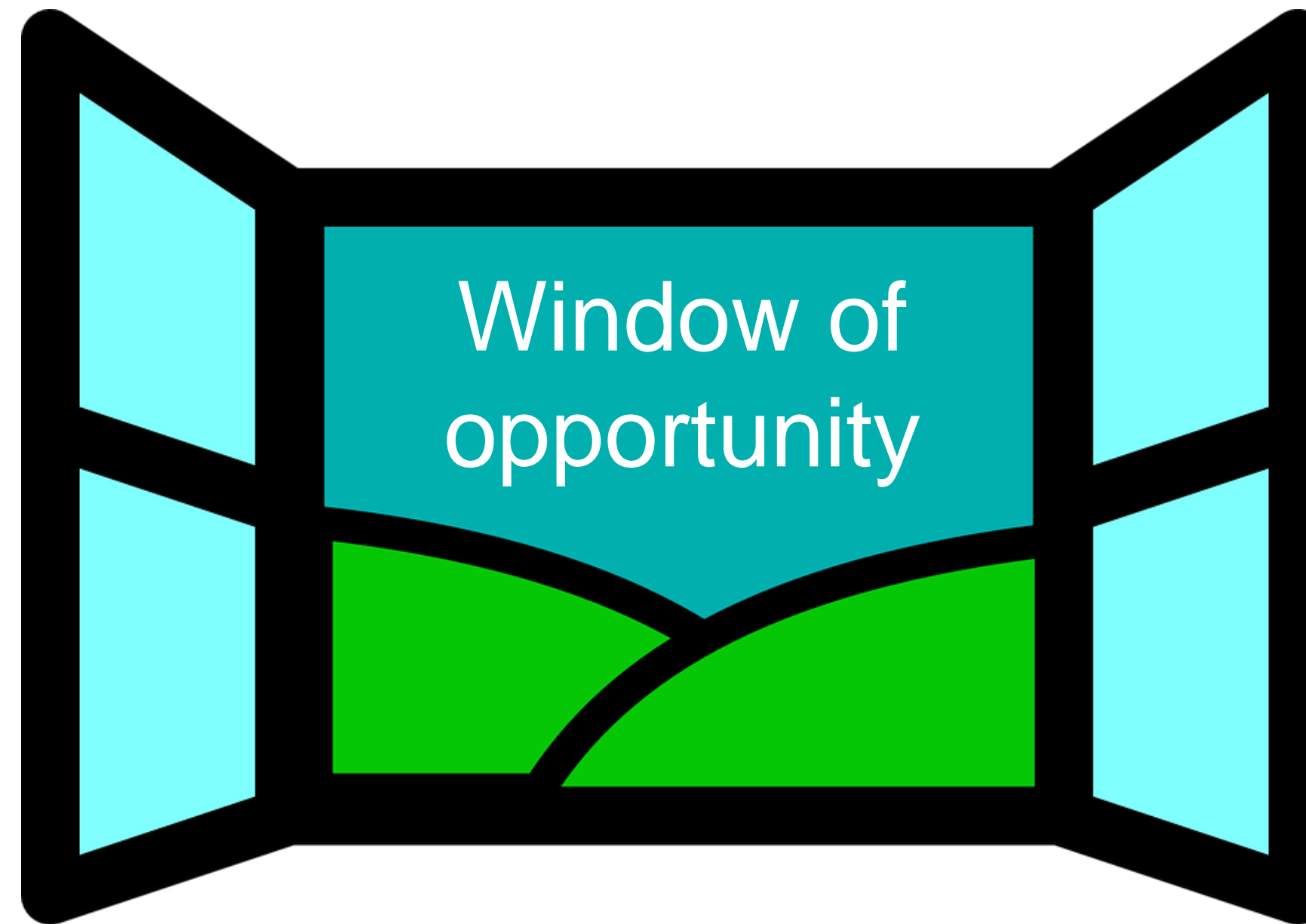


REFINE



Young men aged 25–35, with middle-low income, who live in suburban São Paulo and work in a corporate office in the city center.”

CONTEXT



Every workday, in the mornings and evenings, for an average of 2-3 hours per day.”

Root of the problem



“Are stuck in traffic.”

Root of the problem



Why! Why! Why! Why!

Root Cause Analysis

Root of the problem



“Are stuck in traffic.”

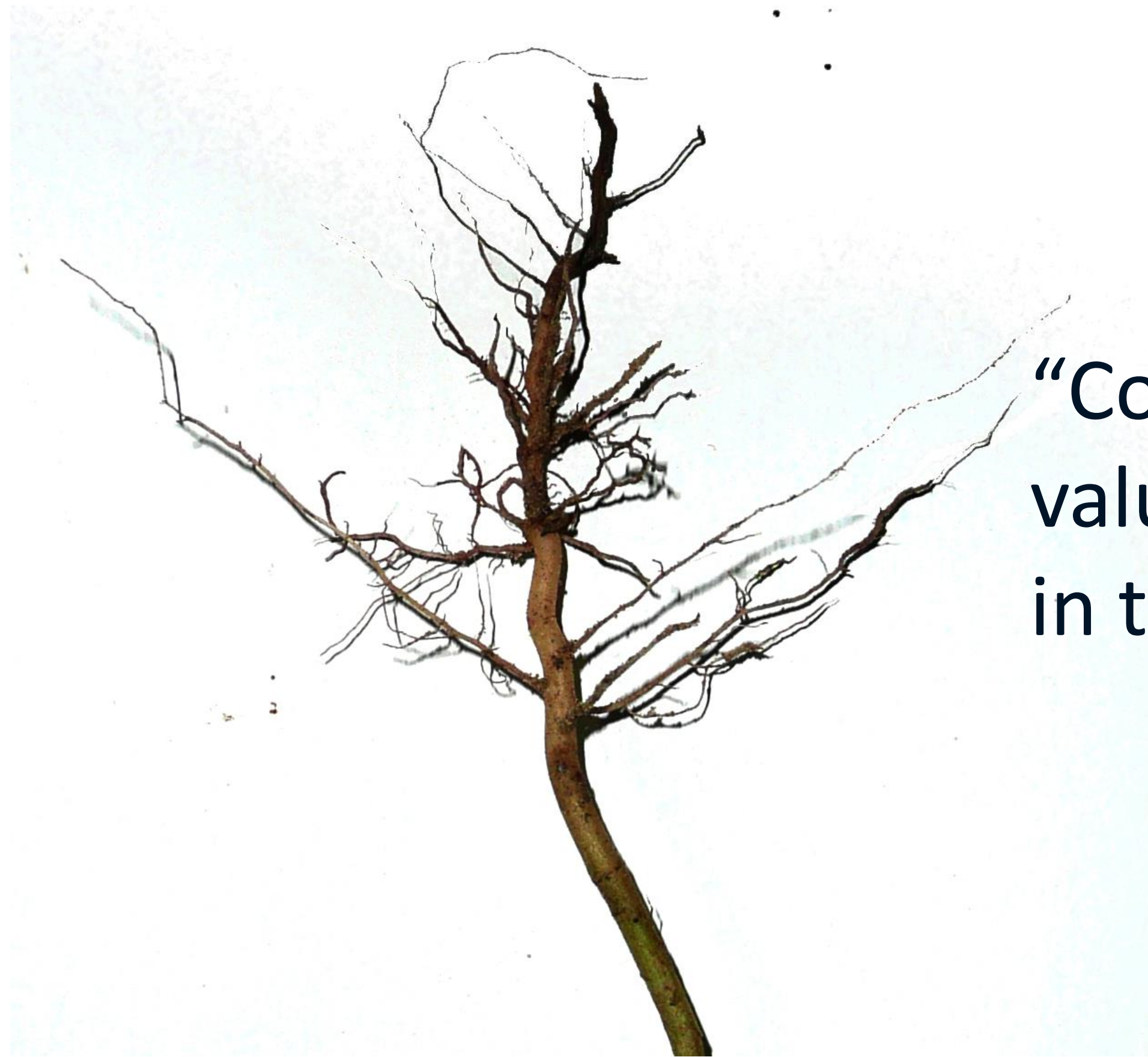
1. **Why:** Because it takes a long time to get to work

2. **Why:** Because they are wasting precious time

3. **Why:** Because they might use that time to do something more valuable

4. **Why:** Because they could earn more money in that time”

FINAL ROOT OF THE PROBLEM



“Could do something more valuable in the time they lose in traffic.”

EMOTIONAL IMPACT

emotion

OPPORTUNITY

QUANTIFIABLE IMPACT

40 hrs



Lose on average 40
hours per month.”

ALTERNATIVE SOLUTIONS

ALTERNATIVE:

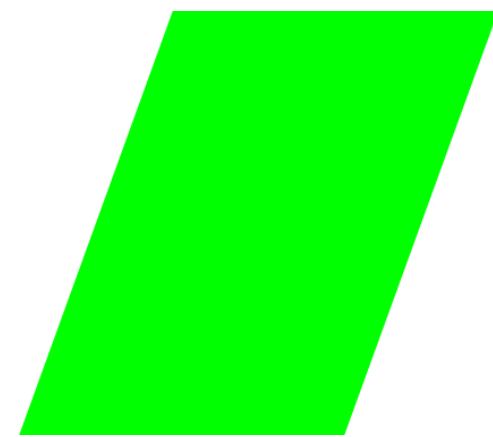
“They sign up for Uber [driver] but only accept rides when they go to work or come back.”

ALTERNATIVE SOLUTIONS



DISADVANTAGES

“Driving for Uber requires you to spend more time waiting for a ride in the area, as the origin and destination of the trip might not coincide with your home-work itinerary.”



THE SOLUTION

SOLUTION

“People have a huge problem with traffic in São Paulo. We’re going to build the leading ridesharing app for them.”

This process led the São Paulo team to come up with a rather different solution than the initial one they imagined, one which would have been hard to identify without looking at all the above.

The solution was a ride-sharing platform that allowed their customers to generate revenue while driving other people in their neighbourhood to work. Unlike Uber, their solution was subscription-based and a very ingenious way of generating not only revenue but also quick growth.”

<p>CONTEXT When does the problem occur?</p> <p>Every workday, in the mornings and evenings for an average of 2-3 hours per day</p>	<p>PROBLEM What is the root cause of the problem?</p> <p>Lose time in traffic instead of doing something more valuable</p>	<p>ALTERNATIVES What do customers do now to fix the problem?</p> <p>Sign up for Uber and accept rides only when going to or coming back from work</p>
<p>CUSTOMERS Who has the problem most often?</p> <p>Young men aged 25-35 with middle-low income, who live in suburban São Paulo and work in a corporate office in the city center</p>	<p>EMOTIONAL IMPACT How does the customer feel?</p> <p>Frustration & boredom</p> <p>QUANTIFIABLE IMPACT What is the measurable impact (include units)?</p> <p>Lose on average 40 hours per month</p>	<p>ALTERNATIVE SHORTCOMINGS What are the disadvantages of the alternatives?</p> <p>Driving for Uber requires more time waiting for a ride, as trip origin & destination might not coincide with their home-work itinerary</p>

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