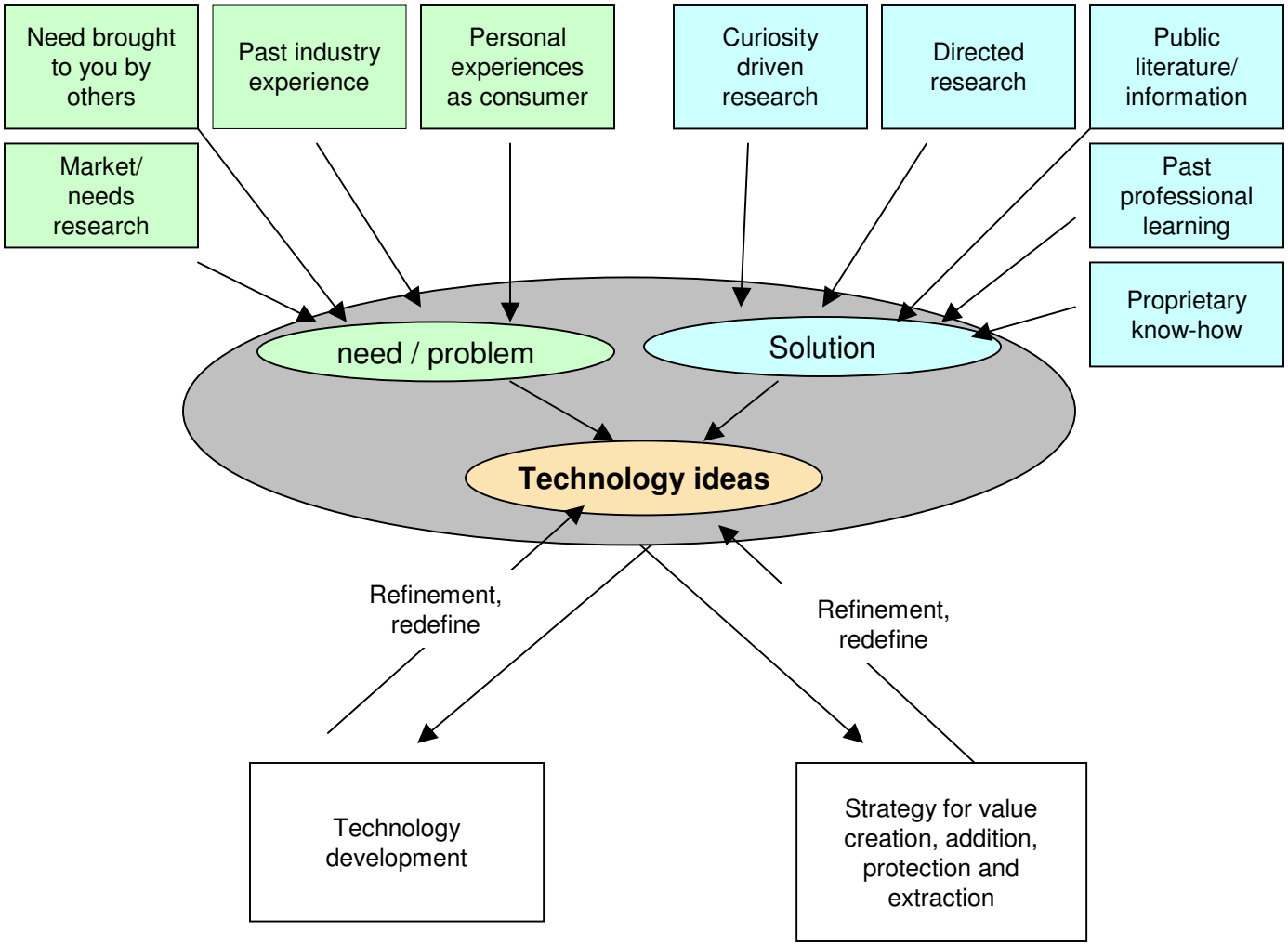
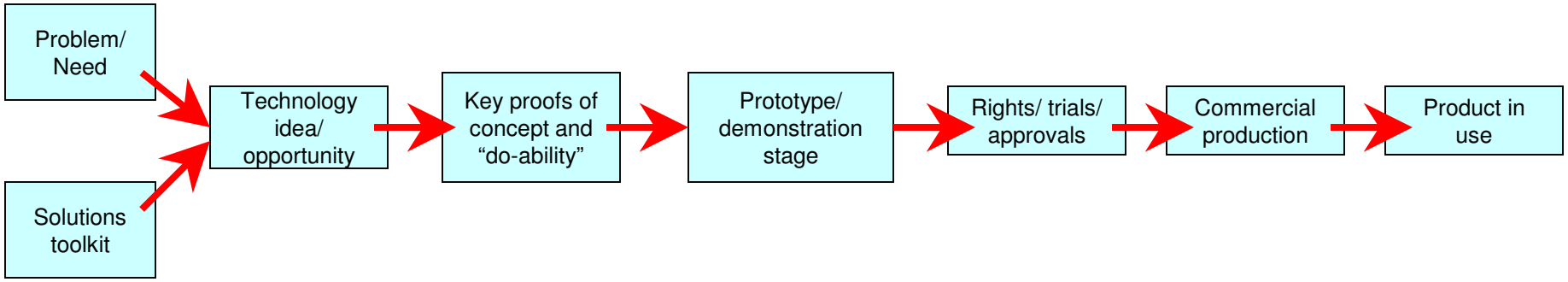
Understanding the technology development and commercialization process

V. Premnath

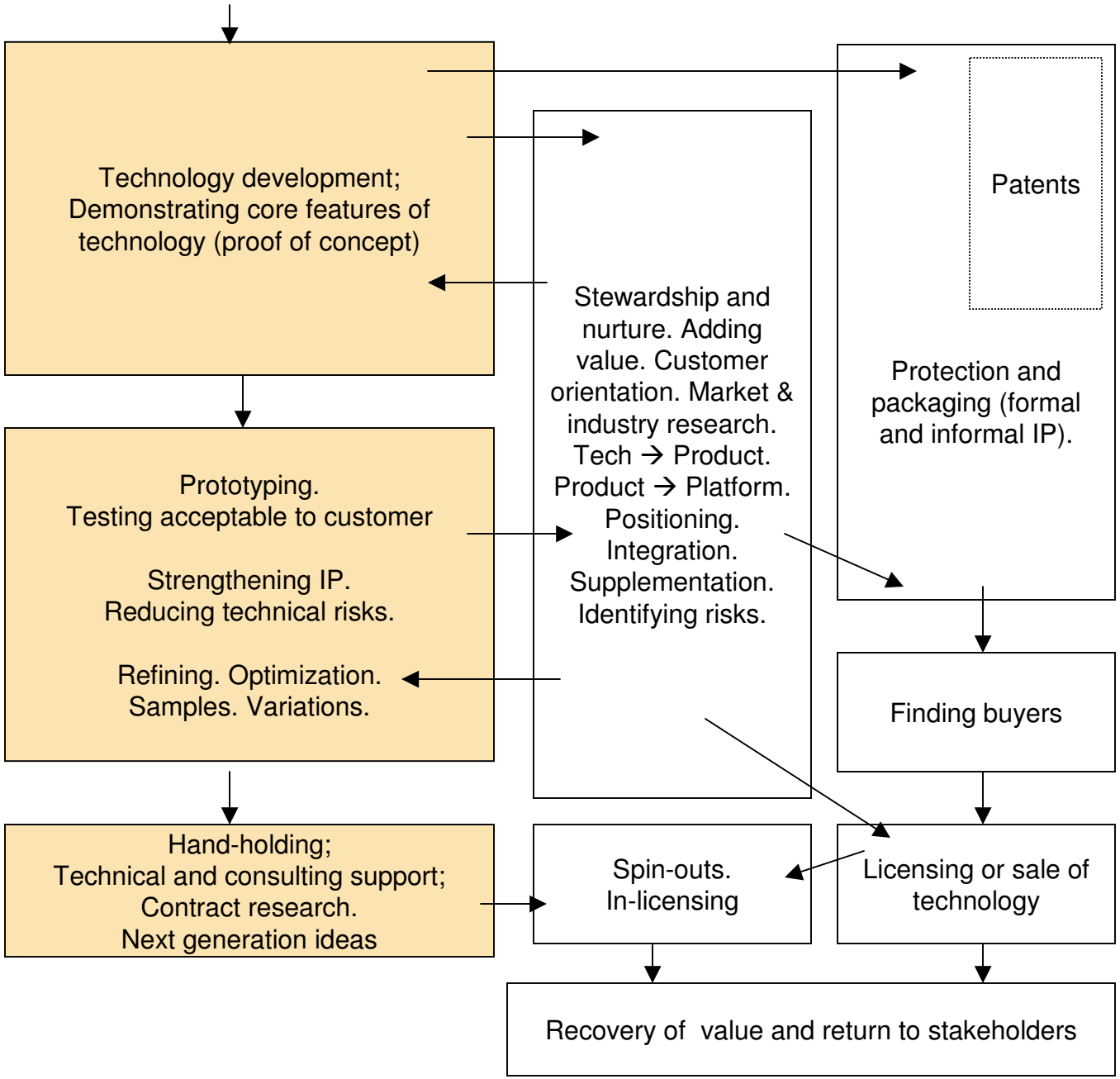
How do scientists think of technology ideas?



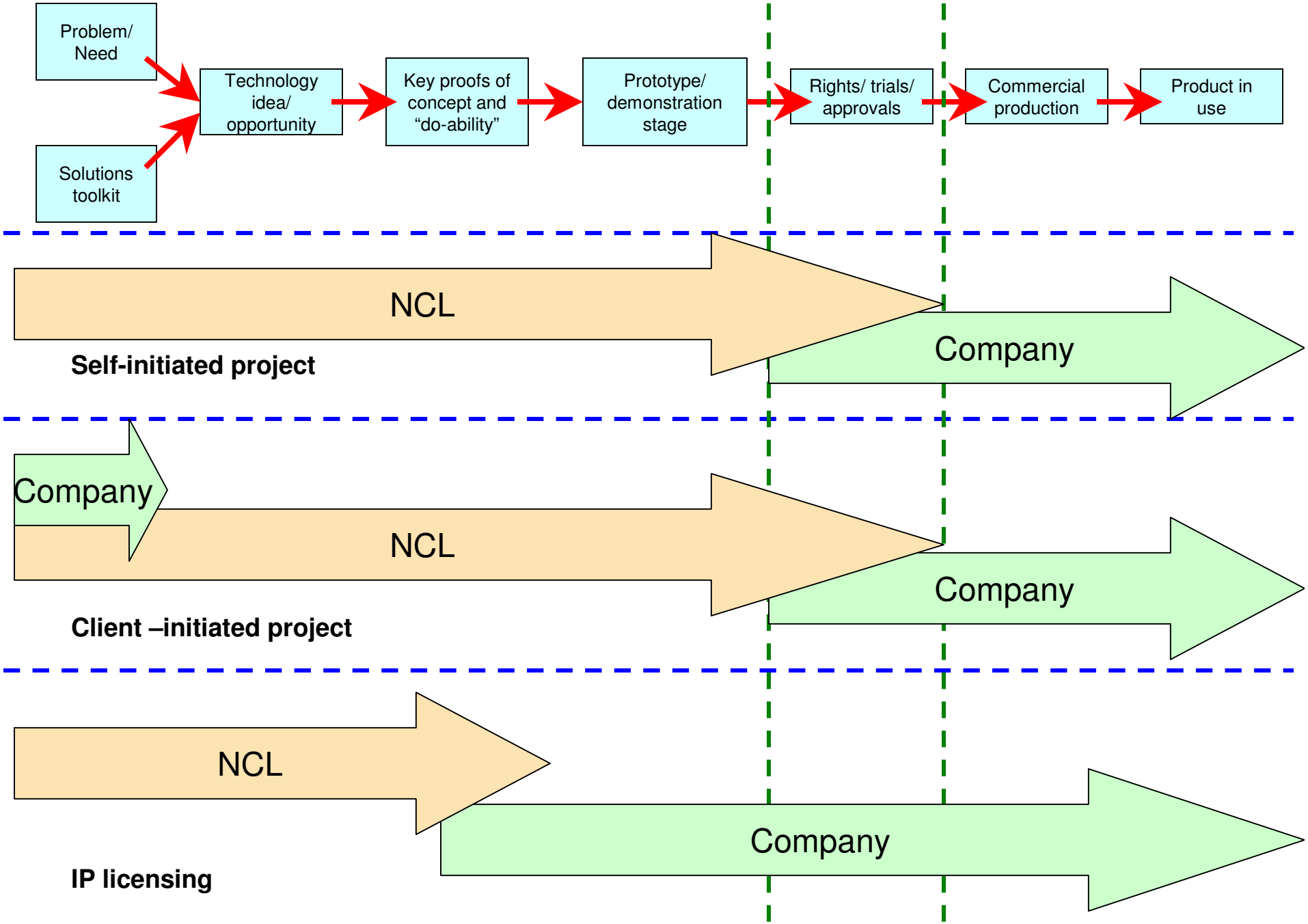
Technology development chain



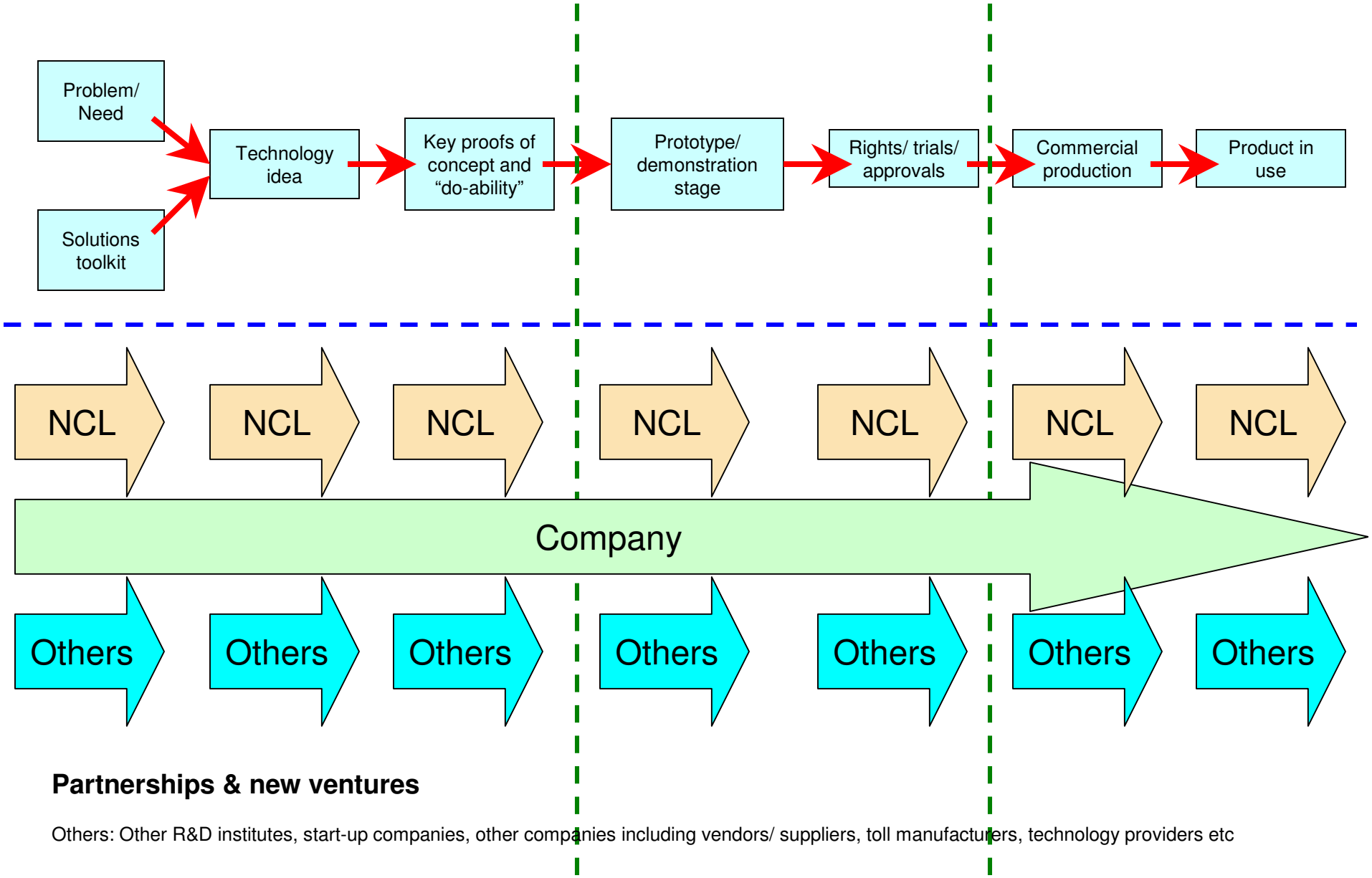
Supporting the technology development chain



Technology development & transfer: Traditional models



Technology development & transfer: Partnership models



Partnerships & new ventures

Others: Other R&D institutes, start-up companies, other companies including vendors/ suppliers, toll manufacturers, technology providers etc

Introduction to the Group Session

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The goal

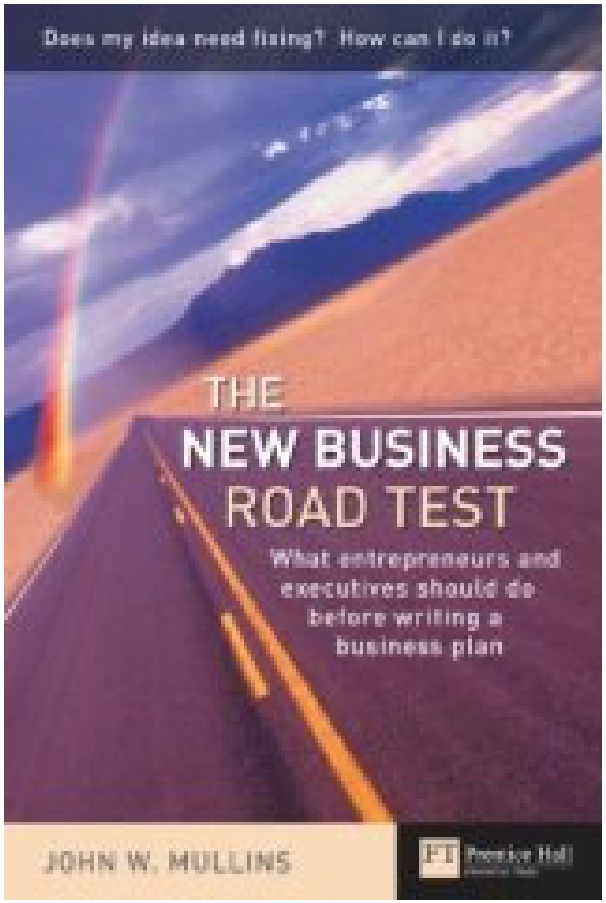
- Carry out a careful assessment of a technology opportunity
- Strategize and plan a roadmap for technology development, protection of know-how and commercialization

Mechanics of the exercise

- Form 5 teams of 5+ each. Each group will have a laptop with internet access. You have 2 hrs 45 min overall.
- Choose an idea/ invention for assessment
- Follow the proposed framework to assess various aspects of the technology idea
- Put together a strategy for commercialization
- Present your assessment and strategy at the workshop
- Winning team members get prizes

Assessing Technology Business Opportunities:

Mullins' Seven Domains Model

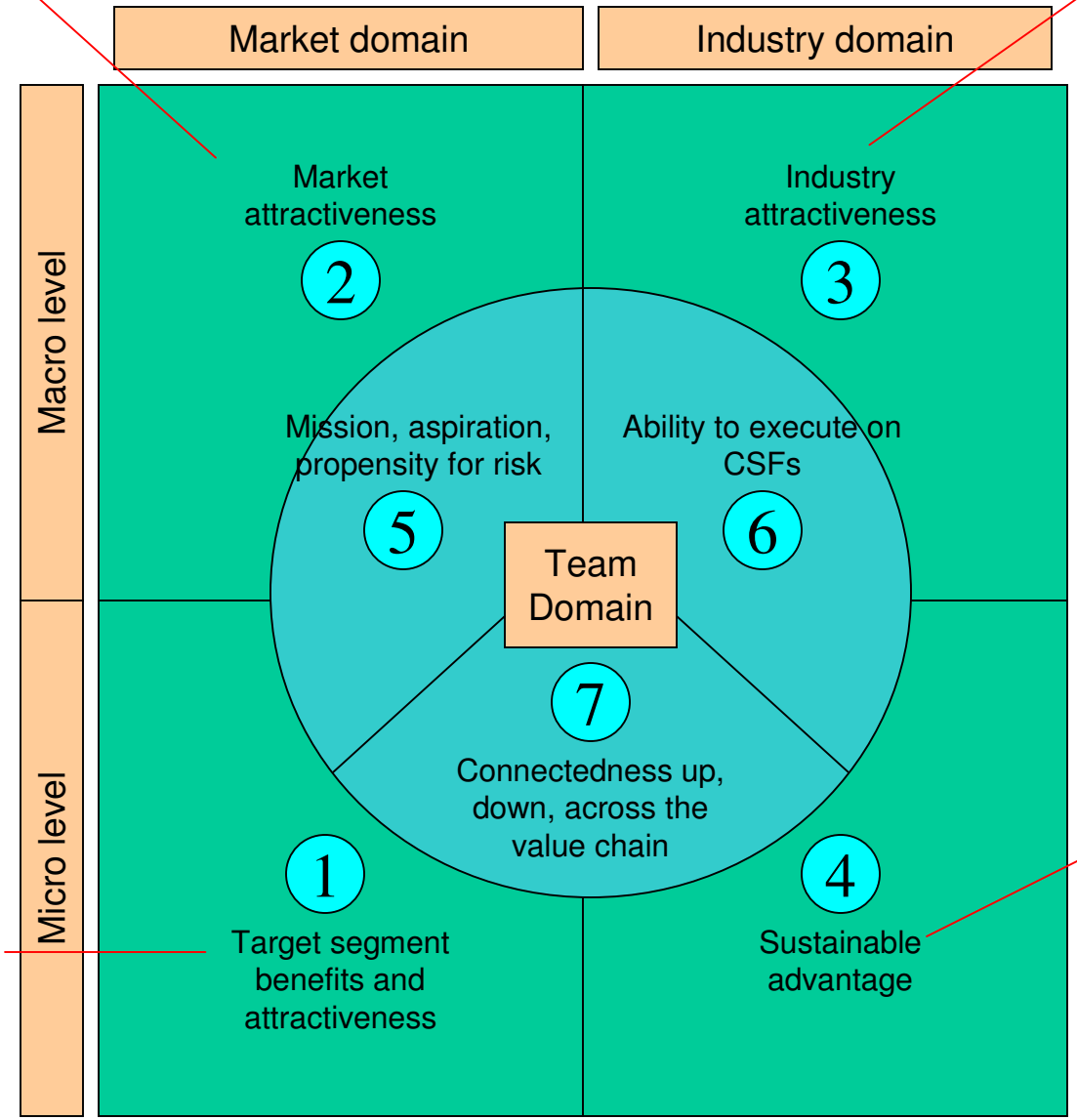


The New Business Road Test : What entrepreneurs and executives should do before writing a business plan
by, John Mullins

Qualifier: Model is best suited for start-ups with high growth aspirations – often funded by venture capitalists

Market (macro) size, growth rate (macro trends)

Industry structure and competition. Porter's 5 forces model. Current situation and likely changes.



Niche market and clearly identified customer. Customer pain. Solution and differentiated value proposition. Niche market size and growth rate. Market segments and growth trajectory.

"Sustainable competitive advantage" – proprietary elements like IP, difficult to copy business processes/ capabilities/ resources.

Financial viability: Revenues, customer acquisition/ retention costs, margins, capital investments, cash flow cycles.

Exercise template

Title

- An exercise in opportunity assessment -

Group A

Team members

ABC (NCL)

The problem/ need/ “customer pain”

- Define the problem/ need/ pain
- Who is the customer? Who is suffering or in need? Who will be willing to pay for a solution?
- How big is the problem/ need/ pain?

Required/ desired solution or characteristics of ideal solution

- The ideal solution would look/ feel/ function like this ….

The solution being offered by you and key product differentiators

- What is your solution?
- Define what will be the product or service that will deliver the solution?
- How does it compare with the competing solutions? Examine all available solutions being offered for a problem irrespective of differences in technology?
- Can you construct a differentiation diagram?
- What is the value proposition vis-a-vis the competition? Why will the customer buy your solution?

The technology that has made the solution possible

- What is the technology behind the solution?
- How is the technology protected?

Nature of the technology and way ahead

- Is the technology generic enough or a platform technology that can be directed towards several products?
- What are the complementing technologies/ know-how & other investments you need to build a prototype? Who controls that know-how?
- How all can the entrepreneur “milk” the technology to his advantage?
- How what is the forward path/ progression path?

Market structure/ segments: The bigger market and the niche/target

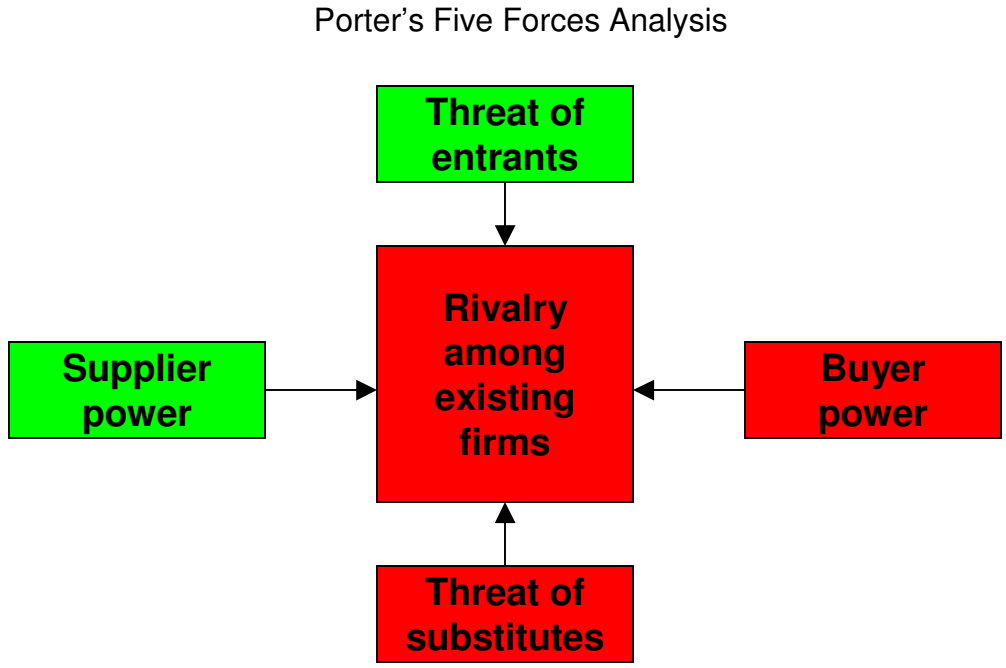
- This section will require some market research
- Which is the larger market space that the company will operate in eventually? How big is this market? How fast is this market growing?
- How is this market structured – in terms of product families, in terms of customer/ customer types, in terms of geographical regions?
- What does the market structure teach you about IP strategy?

Target market

- Which are the target markets within this larger space for the first products based on the technology? How big is this target market? How fast is it growing?
- What are the characteristics of this target market – type of customers, value chain, market controlling factors etc?

Industry structure

- Construct a rough diagram showing various industry players at different levels of the value chain including suppliers, buyers etc.
- Where does your product fit into the value chain? If you have options relating to where you can fit into the value chain, which one would you choose and why?
- Porter's five forces analysis



Sources of competitive advantage

- What will be the sources of competitive advantage that the business commercializing the technology will have or can consider building?
- Will the sources of competitive advantage be sustainable?
- What do you need to do to provide the entrepreneur the competitive advantage?

Envisioned path forward - technology

- Construct a flow diagram of key stages in taking the idea ahead towards commercialization. Defines which concepts need proof. Think about how you would put together a prototype or a demonstration plant ? What key tests/ trials etc does the product have to go through? What are the key uncertainties?

- What the key risks? Define activity in stages to de-risk the technology and product. Define decision points and milestones. Think of strategies to manage the risks.

Envisioned path forward – skills, resources, time

- Use the diagram constructed in the previous slide to think about skill requirements at each stage, time it will take and resources needed.
- Think about an HR and funding strategy based on this diagram. What will be your strategy for financing the company?

Critical to success factors (CSFs)

- Based on the previous slides, think about the key determinants of success.

Final analysis