

Developing a Winning Business Model

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January 17, 2013

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Today

- What is a business model?
- Why does one need a business model?
- What does a good business model look like?

Why do I need (to waste time developing) a business model?

- Why?
- Because scientists/engineers think like scientists/engineers

Scientists/engineers are notoriously:

- Smart
- Logical
- Rational
- Practical
- Fair-minded
- Proud of their work

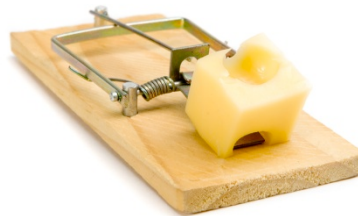
... and that's the problem

- Business development is different than technology development and requires a (slightly) different skill set

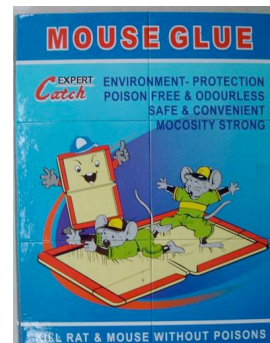
But what about Ralph Waldo Emerson?

- “Build a better mousetrap, and the world will beat a path to your door”
- Two problems
 1. He never said it.
 2. The research doesn't support it.

- The basic mousetrap (1897)



- How much innovation in mousetraps since then?



Mousetrap innovation

- Since USPTO's founding in 1828, how many mousetrap patents in U.S.?
 - 4,400 patents (Hargadon, 2010)
- How many new mousetrap patent applications each year currently?
 - 400 as of the mid-1990s (Hope, 1996)
 - 40 of these are granted
- How many out of these have made money?
 - 20 out of the 4,400

Mouse Trap Having Retractable Biting Portions

U.S. Patent

May 22, 2012

Sheet 2 of 10

US 8,181,383 B2

(12) United States Patent
Huang

(10) Patent No.: US 8,181,383 B2
(45) Date of Patent: May 22, 2012

(54) MOUSE TRAP HAVING RETRACTABLE BITING PORTIONS

(76) Inventor: Chang-Hsiu Huang, Pusin Township, Changhua County (TW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(h) by 366 days.

(21) Appl. No.: 12/591,802

(22) Filed: Dec. 2, 2009

(65) Prior Publication Data
US 2011/0126446 A1 Jun. 2, 2011

(51) Int. Cl.
A01M 23/00 (2006.01)
A01M 23/24 (2006.01)

(52) U.S. Cl. 43/81; 43/82; 43/83.5

(58) Field of Classification Search 43/77, 81, 83.5, 43/58, 59, 90, 91, 95, 96; 24/507, 521, 561, 24/564

See application file for complete search history.

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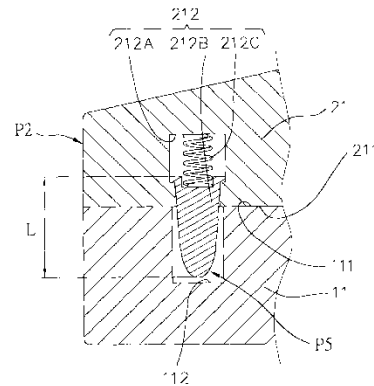
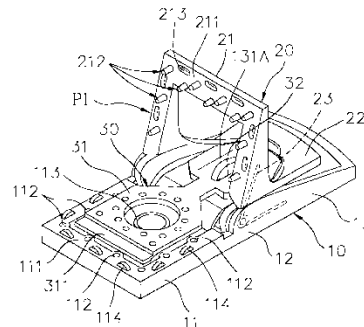
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7,757,429 B1 * 7/2010 Cambio 43/81
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Primary Examiner: David Parsley
Assistant Examiner: Danielle Clerkley
(74) Attorney, Agent, or Firm: Rosenberg, Klein & Lee

(57) ABSTRACT

This invention relates to a mouse trap having retractable biting portions. It includes a base, a movable portion, and a trigger. The base has a front seat which has a lower outer edge and several receiving holes. The movable portion is disposed on the base and has a front frame portion and a restoring force generating element. The front frame portion is disposed with an upper outer edge and a plurality of retractable biting portions. These retractable biting portions are corresponding to the receiving holes. The restoring force generating element is able to urge the movable portion moving from the first position to the second position. So, it can capture a mouse quickly. The protruded length of each retractable biting portion is automatically adjusted. Hence, the captured mouse will not bleed so it is sanitary. The capture method is humane without sacrificing its capturing result. The safety of the product can be enhanced. Plus, the biting depth is automatically adjusted.

5 Claims, 10 Drawing Sheets



"The protruded length of each retractable biting portion is automatically adjusted. Hence, the captured mouse will not bleed, so it is sanitary."

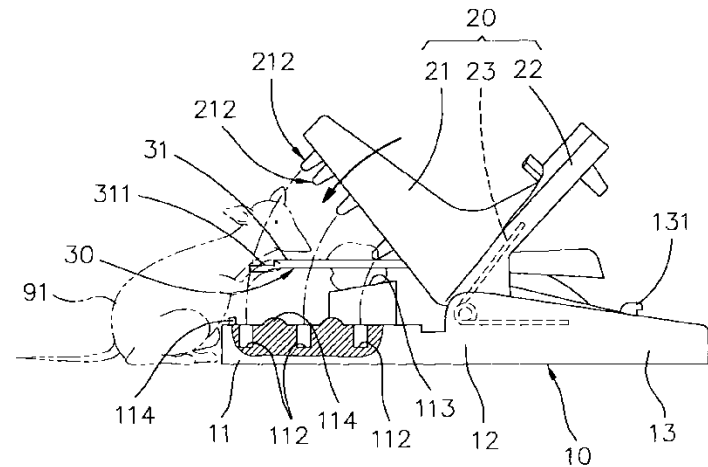


FIG. 2

Rearming Electronic Animal Trap with Infrared Sensor and Multiple Killing-Plate Configuration



US008024888B2

U.S. Patent

Sep. 27, 2011

Sheet 1 of 5

US 8,024,888 B2

(12) **United States Patent**
Wetzel et al.

(16) **Patent No.:** **US 8,024,888 B2**
(45) **Date of Patent:** **Sep. 27, 2011**

(54) **REARMING ELECTRONIC ANIMAL TRAP WITH INFRARED SENSOR AND MULTIPLE-KILLING-PLATE CONFIGURATION**

(75) **Inventors:** Troy A. Wetzel, Mohnton, PA (US);
Robert T. Cruz, Lutz, PA (US);
Richard L. Eyer, Lutz, PA (US)

(73) **Assignee:** Woodstream Corporation, Lutz, PA (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(h) by 0 days.

(21) **Appl. No.:** 12/805,198

(22) **Filed:** Jul. 16, 2010

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7,219,466 B2 *	5 2007	Rich et al.	43 98
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2007 0209270 A1 *	9 2007	Rich et al.	43 98

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Primary Examiner: Christopher P. Ellis

(74) *Attorney, Agent, or Firm:* Jacobson Holman PLLC

(57) **ABSTRACT**

An electric or electronic animal trap with a CPU-controlled, rearward, multiple killing plate configuration and automatically resetting interruptible beam sensor for triggering a high voltage cycle. A high-voltage output circuit is connected to killing plates which are activated with a high-voltage pulse. A pest interrupts the beam signal, such as an infrared beam signal generated by an infrared transmitter to an infrared receiver. The trap is preferably configured to automatically reararm if the IR beam signal is no longer interrupted after the killing cycle. However, the trap enters a standby mode indicating trap servicing is required to remove the dead rodent from the trap.

19 Claims, 5 Drawing Sheets

"A high-voltage output circuit is connected to killing plates which are activated with a high-voltage pulse train when a pest interrupts the infrared beam signal..."

See application file for complete search history.

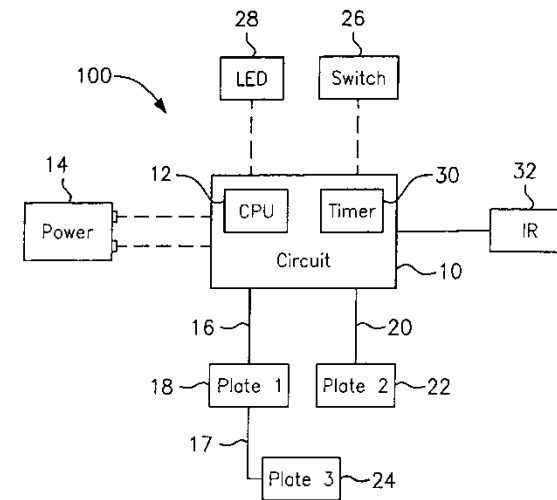


FIG. 1

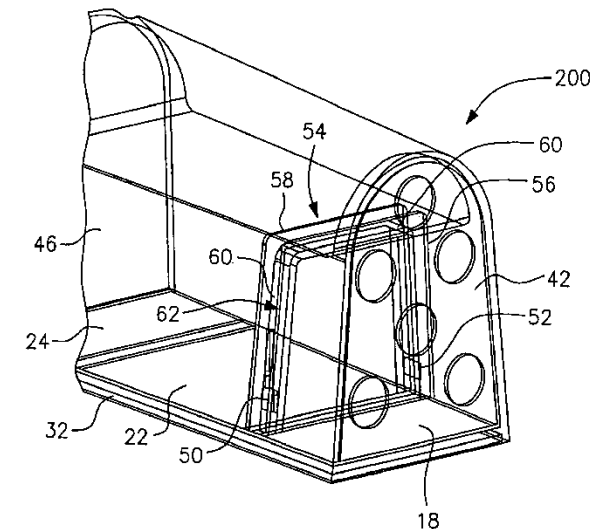
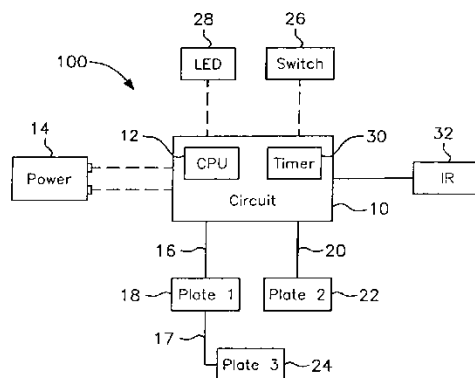


FIG. 6

Electrocuting Mousetrap with Automatic Chamber-Clearing Mechanism

(12) **United States Patent**
Bucher et al.

(10) **Patent No.:** **US 8,151,514 B2**
(45) **Date of Patent:** **Apr. 10, 2012**

U.S. Patent

Apr. 10, 2012

Sheet 3 of 25

US 8,151,514 B2

(54) **ELECTROCUTTING MOUSE TRAP WITH
AUTOMATIC CHAMBER-CLEARING
MECHANISM**

(75) Inventors: **Alan Weir Bucher**, Mannheim, PA (US);
Richard L. Eyer, Lititz, PA (US);
Marko Konstantin Lubie, Shillington,
PA (US); **Troy A. Wetzel**, West Reading,
PA (US); **Robert T. Cruz**, Lititz, PA
(US)

(73) Assignee: **Woodstream Corporation**, Lititz, PA
(US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 817 days.

(21) Appl. No.: **12/213,382**

(22) Filed: **Jun. 18, 2008**

(65) **Prior Publication Data**

US 2009/0313880 A1 Dec. 24, 2009

(51) Int. Cl.
A01M 19/00 (2006.01)
A01M 23/38 (2006.01)

(52) U.S. Cl. 43/99

(58) Field of Classification Search 43/98, 99;
A01M 23/38

See application file for complete search history.

(56) **References Cited**

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Primary Examiner Son T Nguyen

(74) Attorney, Agent, or Firm Jacobson Holman PLLC

(57) **ABSTRACT**

An electronic mouse trap is provided having multiple kill and automatic killing chamber clearing capabilities. The trap includes an elevated killing chamber rotatably mounted on a base that houses a collection bin positioned under the chamber and which has an entrance pathway that provides mice with access to the chamber. Upon completion of a killing cycle and the killing of a mouse, the chamber is automatically rotated by a gear motor about a longitudinal axis that is slightly below the floor of the chamber. The chamber rotates approximately 180 degrees so as to be inverted, allowing the dead mouse to fall downwardly into the collection bin. Once the chamber has been inverted and the mouse removed by gravity, the gear motor reverses the rotation direction and returns the chamber to its upright position where it is ready to reinitiate the killing cycle for another mouse.

20 Claims, 25 Drawing Sheets

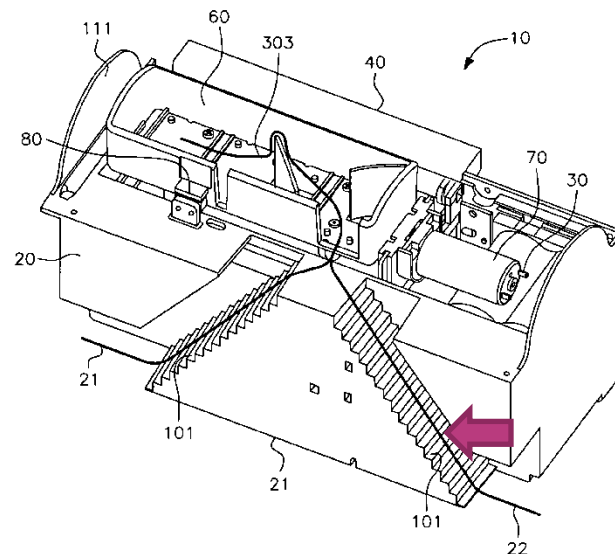
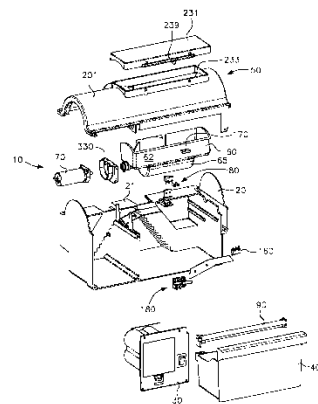


FIG. 3



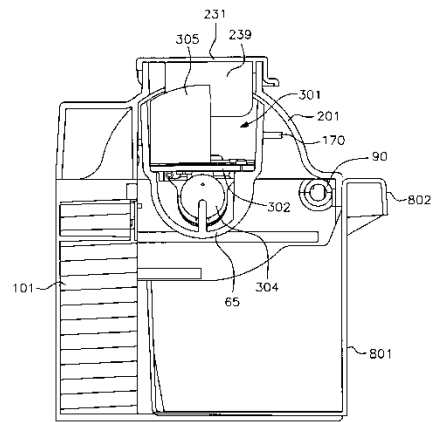


FIG. 17A

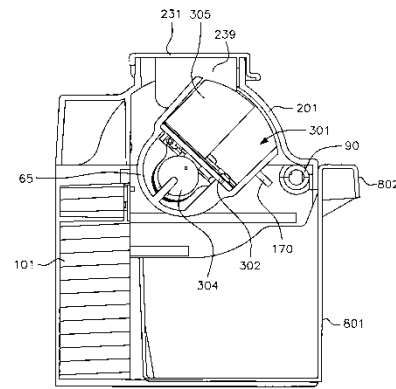


FIG. 17B

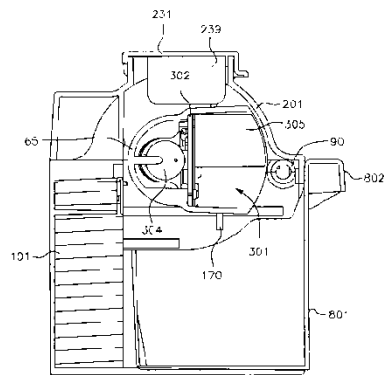


FIG. 17C

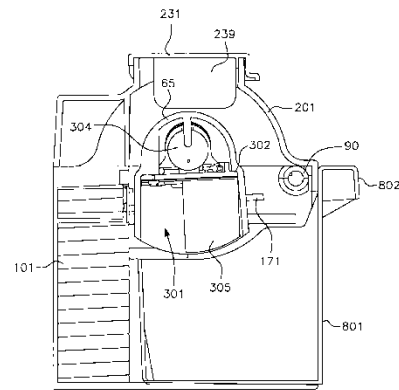


FIG. 17D

Networked Pest Control System



26822B2

(12) **United States Patent**
Borth et al.

(10) **Patent No.:** US 8,026,822 B2
(45) **Date of Patent:** Sep. 27, 2011

(54) **NETWORKED PEST CONTROL SYSTEM**

(56)

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(75) **Inventors:** Paul W. Borth, Zionsville, IN (US);
Peter N. Scherer, Lebanon, IN (US);
Mike P. Tolley, Indianapolis, IN (US);
Christopher J. Vogtlewede,
IN (US); Brian M. Schneid
IN (US); Nailah Orr, Carmel
Richard V. Baxter, Jr., App
(US); Douglas K. Brune, C
(US)

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(73) **Assignee:** Dow AgroSciences LLC, In
IN (US)

(*) **Notice:** Subject to any disclaimer, the
patent is extended or adjust
U.S.C. 154(h) by 106 days.

(21) **Appl. No.:** 12/584,581

(22) **Filed:** Sep. 8, 2009

(65) **Prior Publication Data**
US 2010/0134301 A1 Jun. 3, 2010

Related U.S. Application Data

(60) Provisional application No. 61/191,461, filed on Sep.
9, 2008.

(51) **Int. Cl.**
G08B 23/00 (2006.01)

(52) **U.S. Cl.** 340/573.2; 340/573.1

(58) **Field of Classification Search** 340/573.2,
340/573.1, 531; 73/865.8; 43/82, 132.1
See application file for complete search history.

(57) **ABSTRACT**

A pest control device system includes a plurality of pest control devices and a data collector. The system may further include the data collector in the form of a gateway that is connected to a data management server via a computer network along with other gateways in corresponding pest control device groups. Each pest control device includes a pest sensor and a wireless communication circuit to transmit information from the corresponding sensor. The devices also configure to define a local wireless communication network that can relay the information from one to the next and ultimately to the data collector.

22 Claims, 6 Drawing Sheets

U.S. Patent

Sep. 27, 2011

Sheet 1 of 6

US 8,026,822 B2

"Each pest control device includes a pest sensor and a wireless communication circuit to transmit information from the corresponding sensor. The devices also configure to define a local wireless communication network."

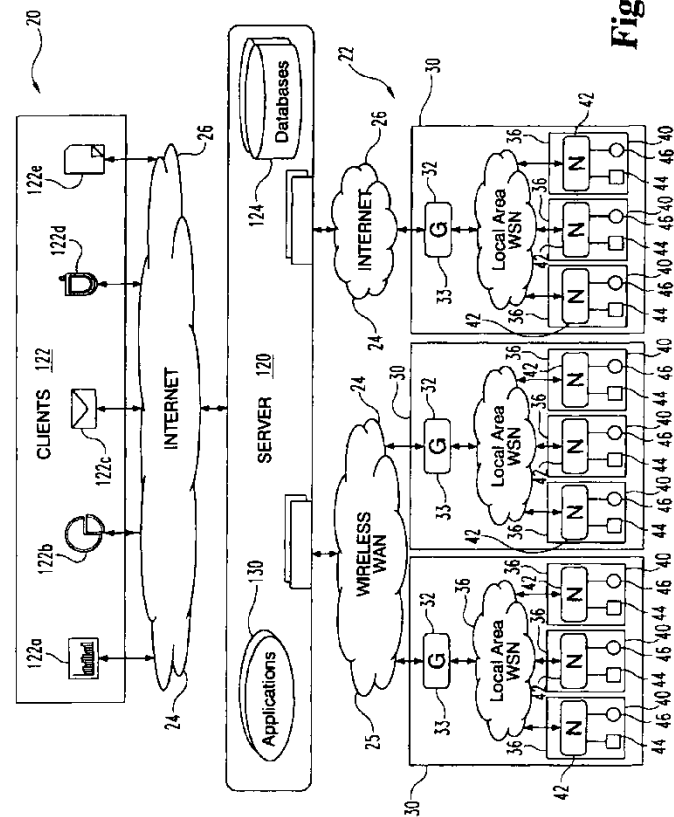
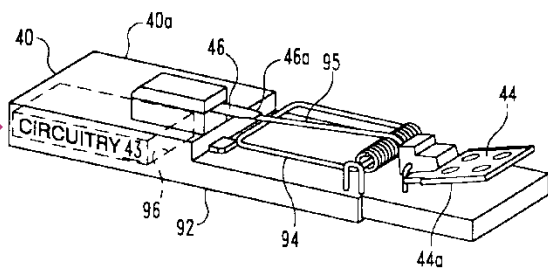
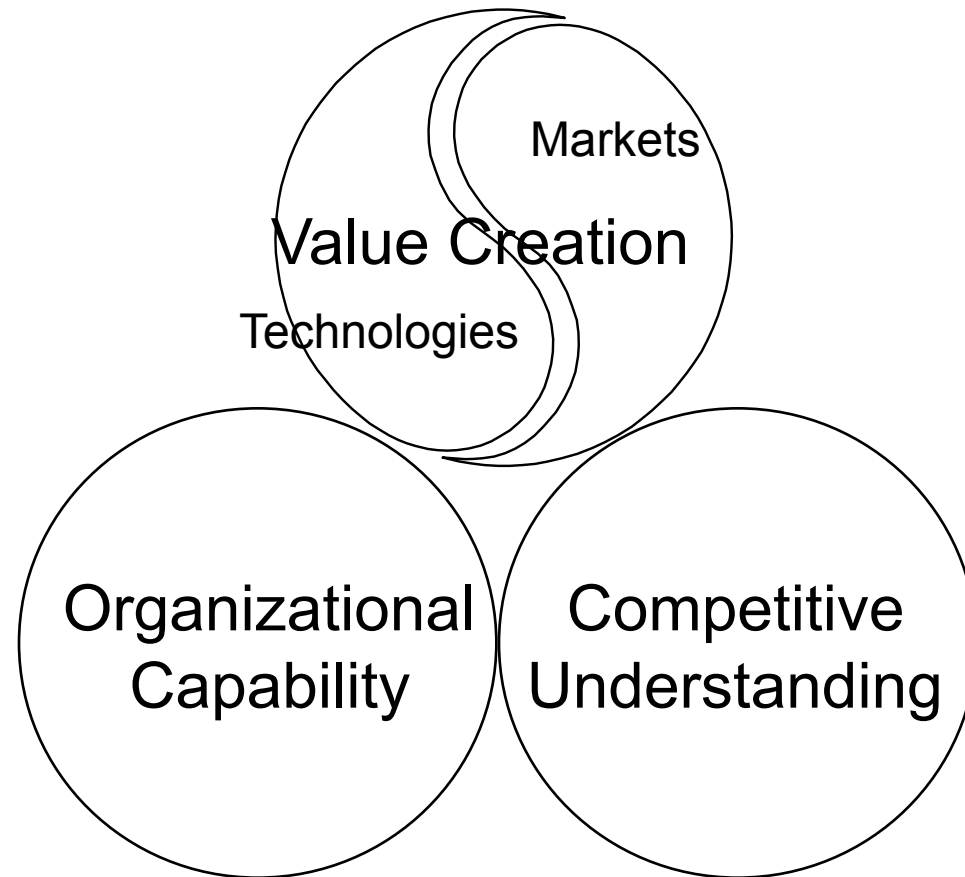


Fig. 1



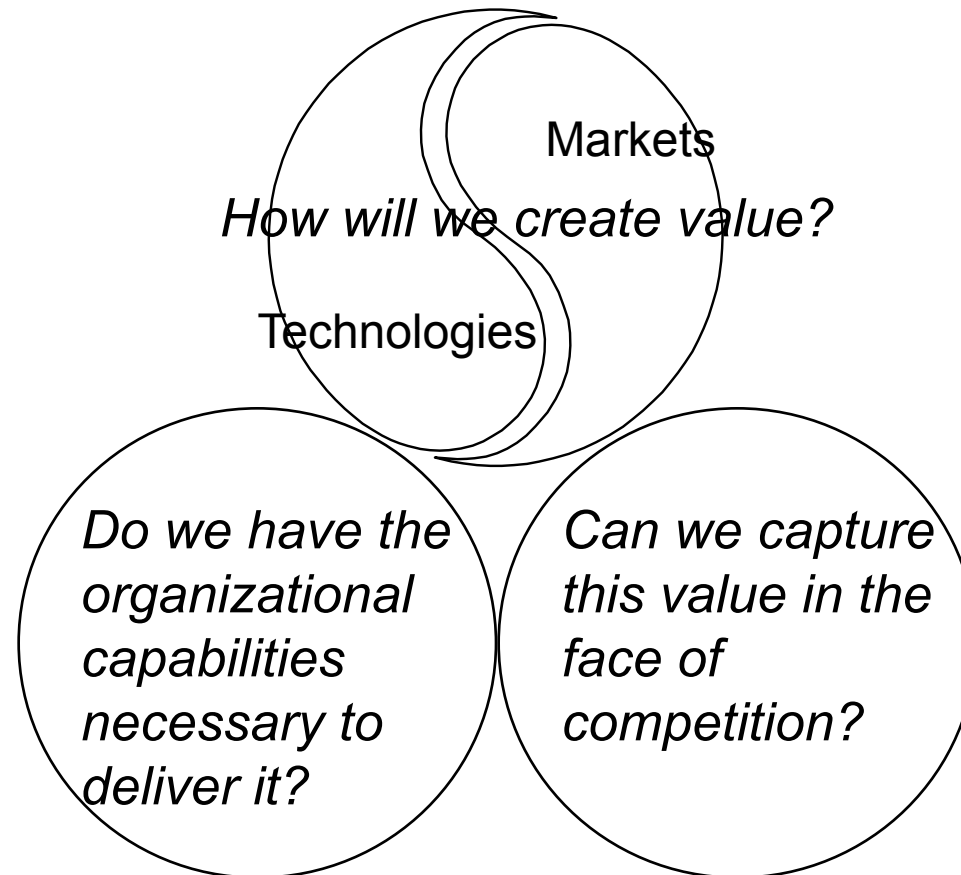
Why don't these innovations succeed?

Successful development of a technology-based venture rests on three foundations



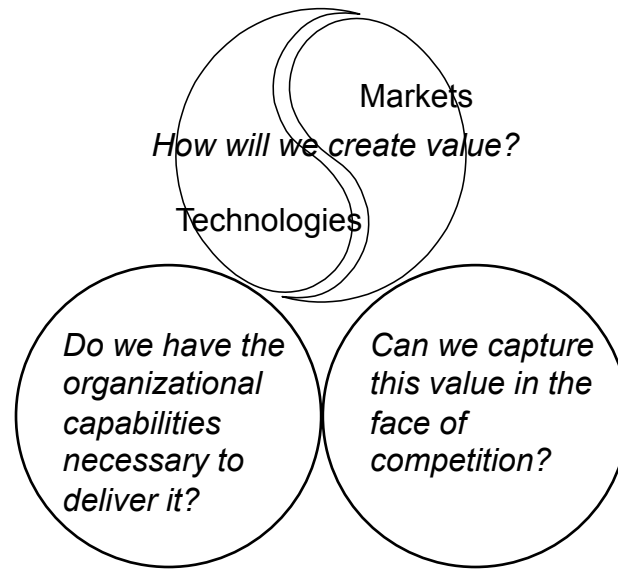
Source: Rebecca Henderson (2003)

...or rests on answering three key questions

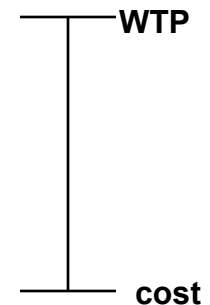
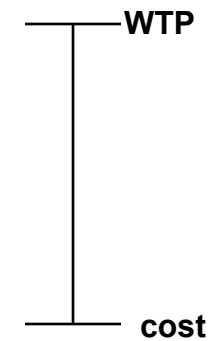
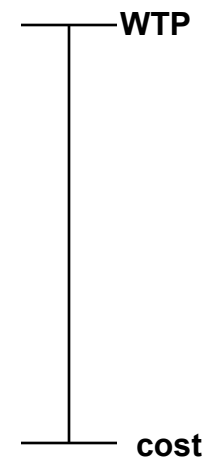
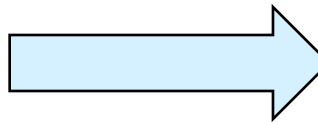
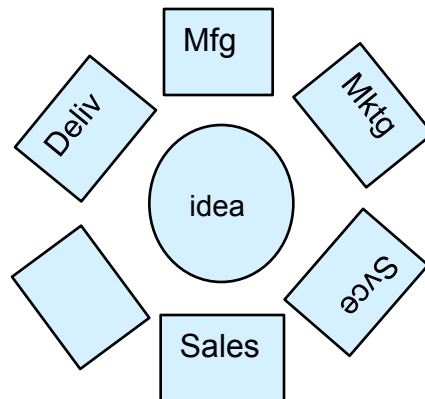


The “business model” is the logic by which you answer these questions

...or rests on answering three key questions



The “business model” is the logic by which you answer these questions



Business model logic – questions to ask

- Customer value proposition
 - what value do we create for the buyer?
- Technology and operations management
 - what organizational capabilities must we assemble?
- Go-to-Market plan
 - at what level of profit can we attract customers, given likely competitive responses?

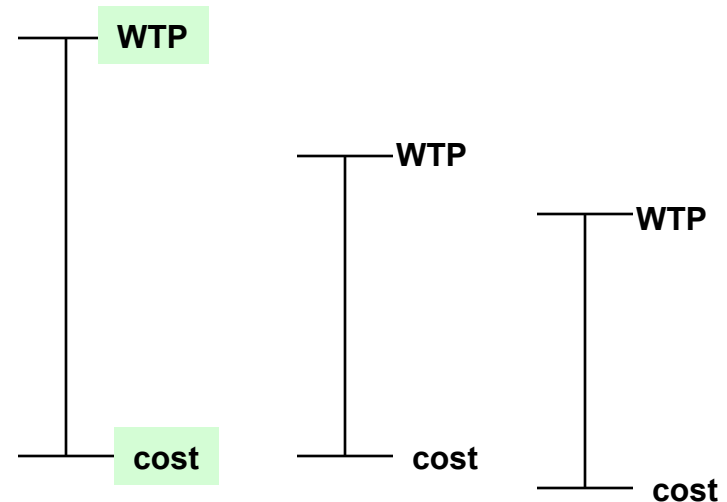
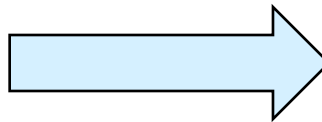
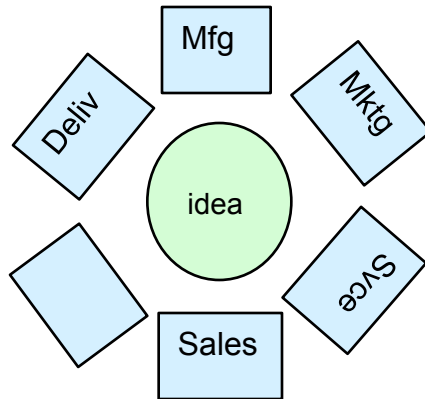
Customer value proposition: What do buyers value?

- Customers care about benefits, not technological prowess
- Customers might not receive any benefit from an invention
 - Examples: whiteners in detergent; aircraft that can fly halfway around the world
- Customers value benefits over technological elegance
 - Example: my buddy Vito (Microsoft vs. Apple)
- Aside: Why do entrepreneurs often overestimate the benefits that customers see in their product/service? Let's go to the research...

So how can you identify what buyers value and how much they value it?

One rule of thumb and four tools for thinking about buyer value

- Rule of thumb:
 - Allocentrism
- Tools:
 - Value curves
 - Scenarios
 - Economic valuation
 - Surveys/focus groups



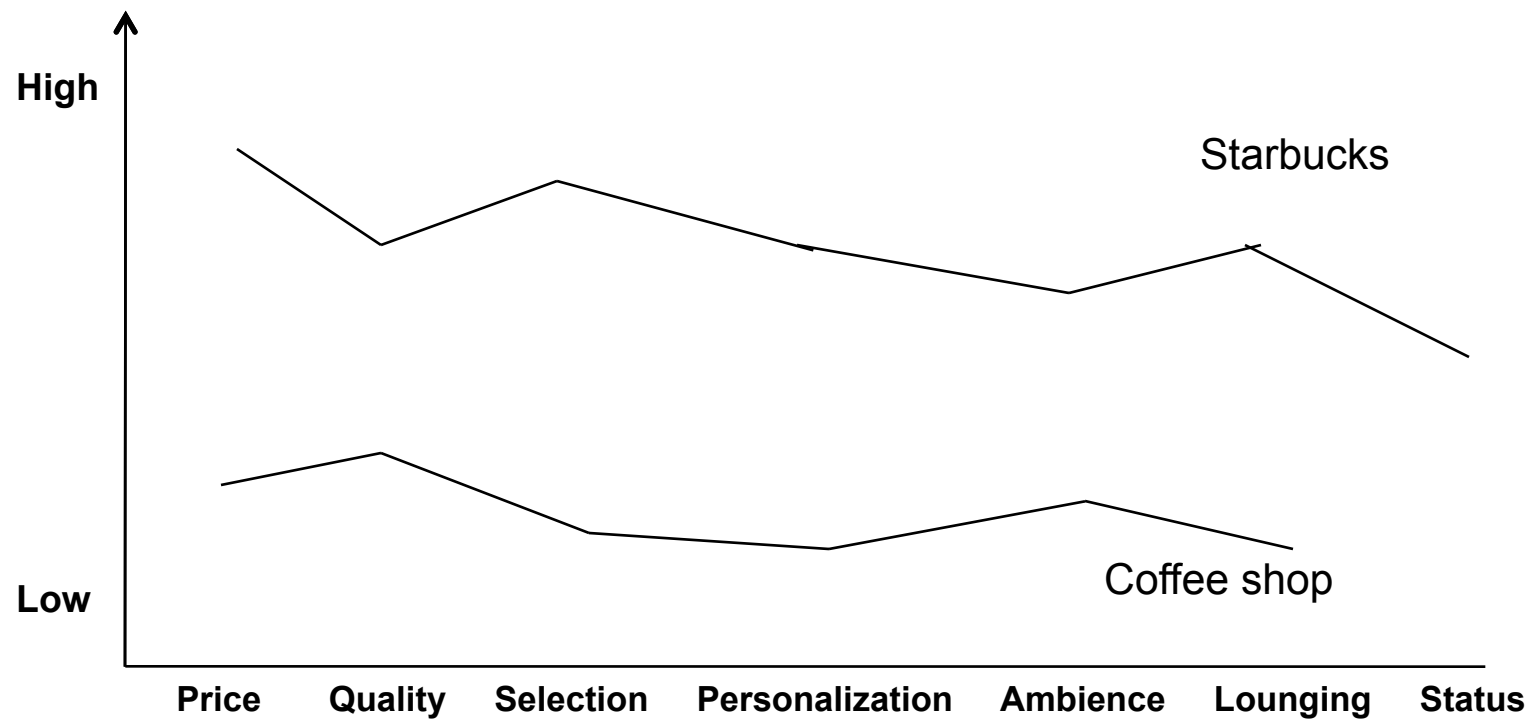
Rule of thumb: Allocentrism

- Put yourself in the shoes of the buyer
 - Observe buyers in action
 - Do what buyers do
 - Talk to buyers
- Examples
 - Bloomberg
 - User-generated innovations (tennis rackets; medical devices, etc.)
- Aside: this is one of the big secrets of successful strategy!
 - (You would pay several thousand dollars for this insight at a business school)

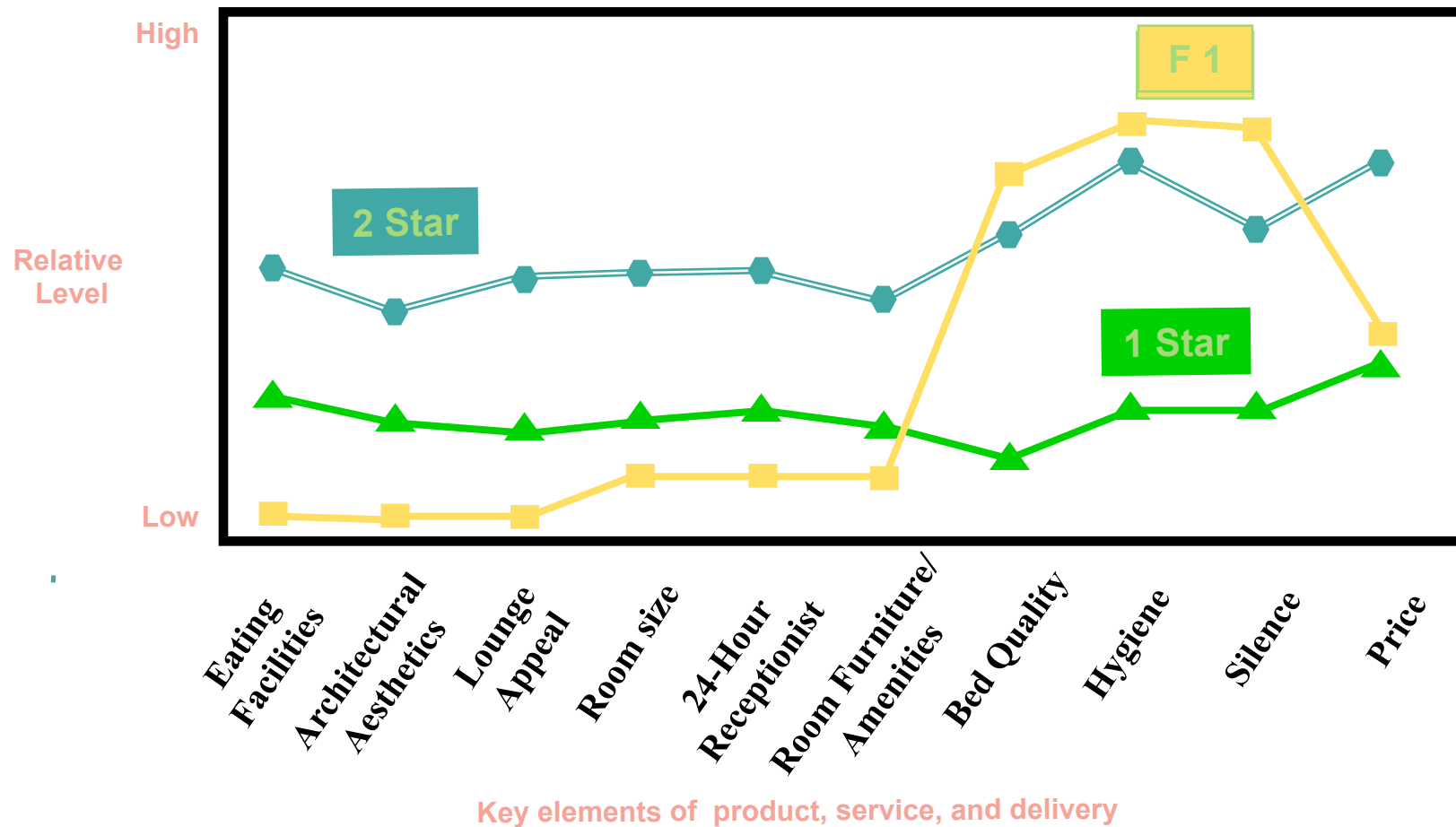
Tool: Value Curves

[W.C. Kim & R. Mauborne, *Blue Ocean Strategy*]

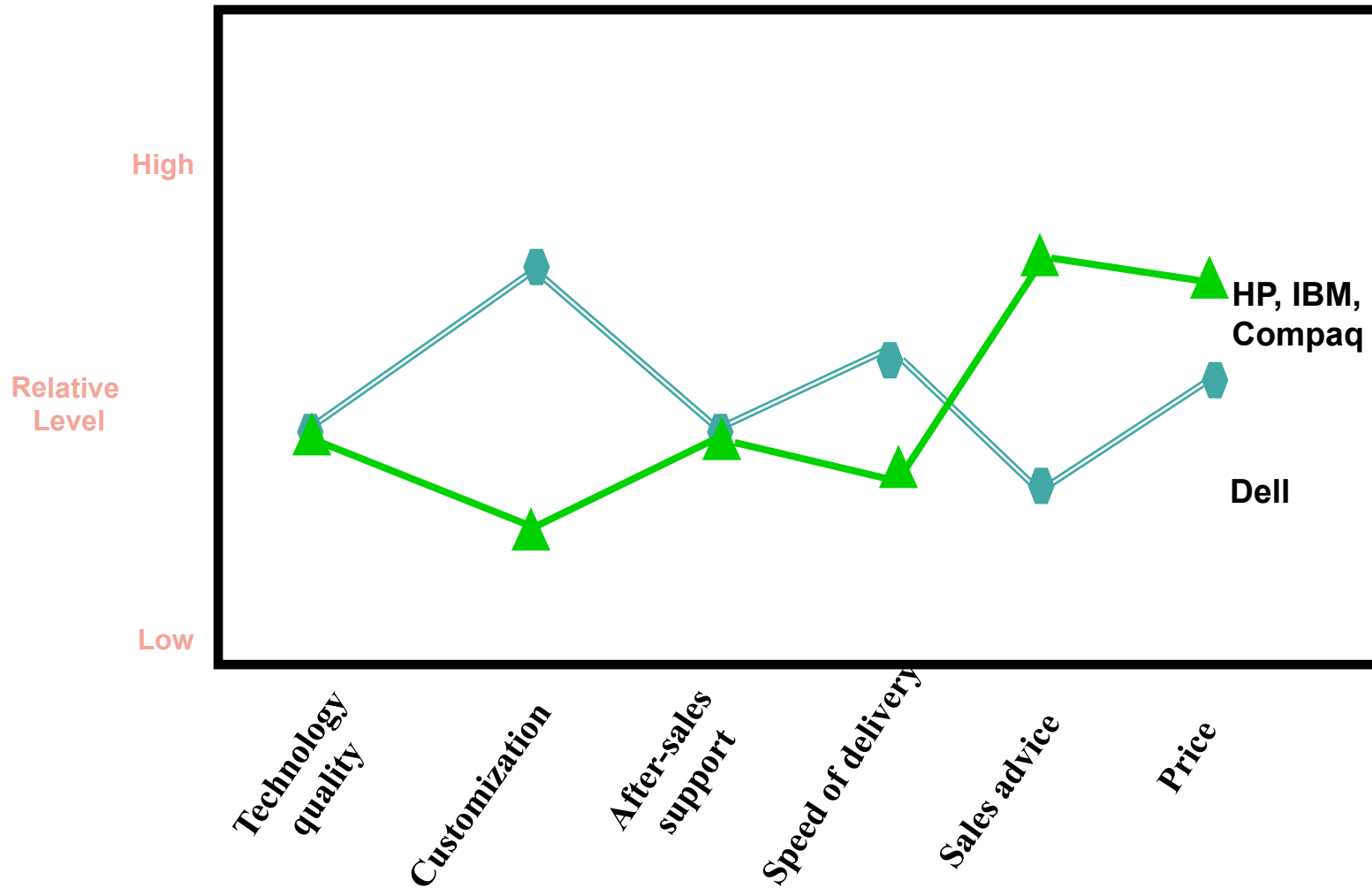
Picture = “strategy canvas”
Line = “value curve”



Value Curve of Formule 1 in French Low-Budget Hotel Industry



DELL value curve in personal computers



Time out: Shall we try to develop a value curve?

(NB: See examples of scenarios in G. Moore, *Crossing the Chasm*, and/or in the Harvard Business School case “Documentum,” HBS Case #502-026)

Tool: Economic valuation

[P. Ghemawat & J. Rivkin, “Creating Competitive Advantage,” HBS Note 798062]

“Toy” example:

- My machine allows you to make twice as many spoons as her machine
- My machine uses 100,000 fewer kWh in electricity each year
 - Electricity costs 1 cent per kWh
- I should be able to charge up to two times the price of her machine, plus the discounted present value of \$1,000/year

Real-world example: “Silverman” Injection Molding Company *

- Silverman charges \$1.2 million for a plastic-bottle-making machine
- Rival charges only \$1 million
- Is Silverman charging too much?
- Insert some math here...
- Buyer must pay \$1.3 million plus \$45,000/year to get same output from rival machine as from Silverman machine (in present value, roughly \$1.5MM)
 - SILVERMAN INJECTION MOLDING CO. IS NOT CHARGING ENOUGH!

* Name of firm has been changed

Tool: Surveys & focus groups

- It is possible to find out how potential buyers are likely to respond to your invention through surveys and focus groups
- Key:
 - Ask right questions
 - Listen
 - Gain input from competent market researchers
- Approaches:
 - Qualitative
 - Quantitative (i.e., conjoint analysis)

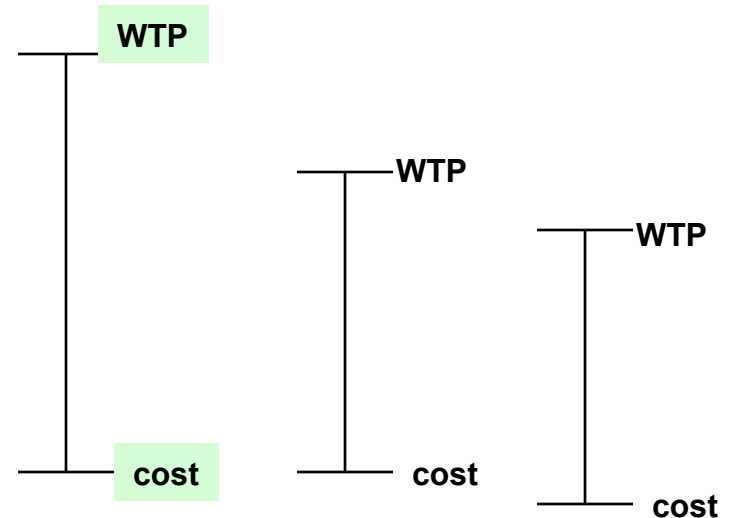
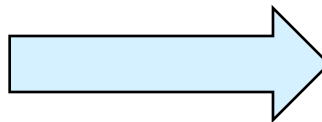
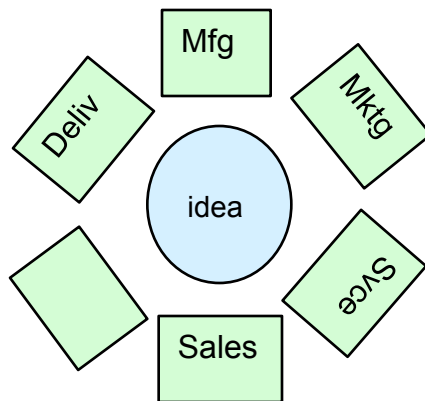
Technology and operations management: how can you deliver on this customer value proposition?

- Every activity/policy is a potential opportunity to deliver customer value
 - Every activity is a potential opportunity to deepen uniqueness
 - Every activity is a potential opportunity to reinforce other activities
 - Example: EDLP at Wal-mart
 - Example: Dell's cutting out conventional retail activities
- Assets/resources are required to support value-enhancing activities
 - Every investment in assets/resources is a potential opportunity
 - There is no limit to the creative ways in which you can access these assets
- Customers care about benefits, not activities or assets themselves (most of the time)

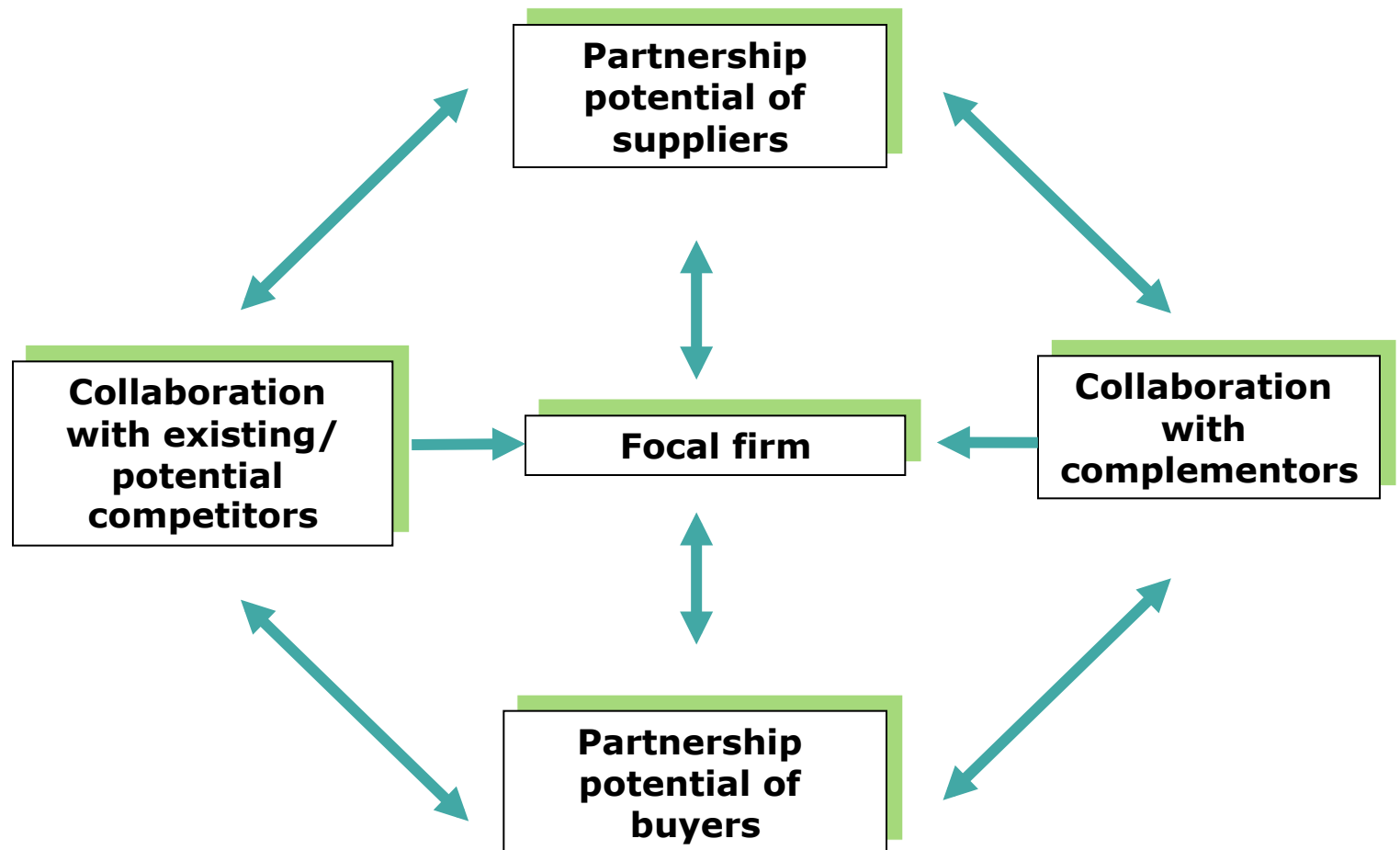
So how can you evaluate opportunities to deliver value?

One rule of thumb and two tools for thinking about assembling assets/activities to deliver value

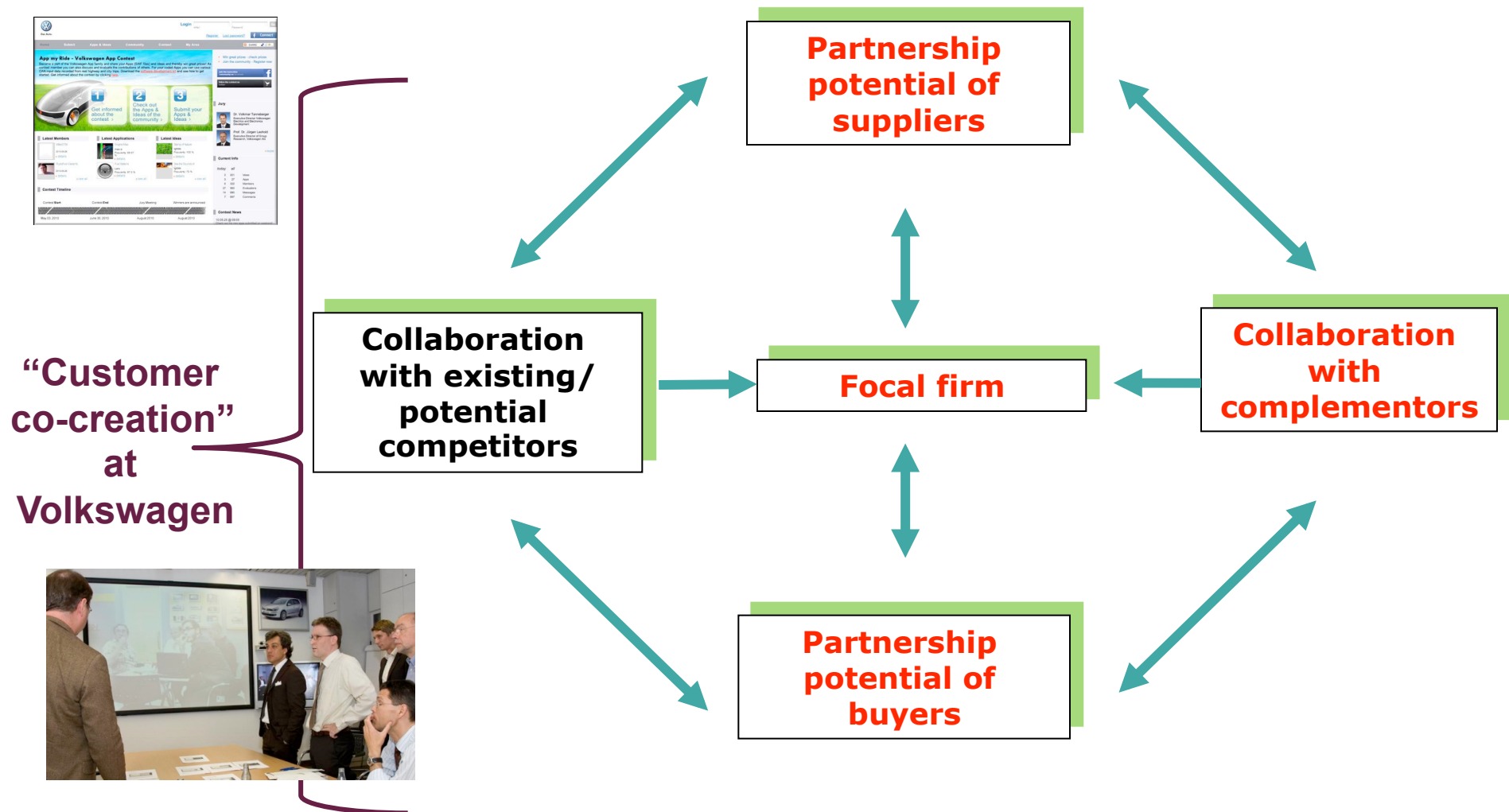
- Rule of thumb:
 - Allocentrism
- Tools:
 - Value net
 - Appropriability/complementary assets framework



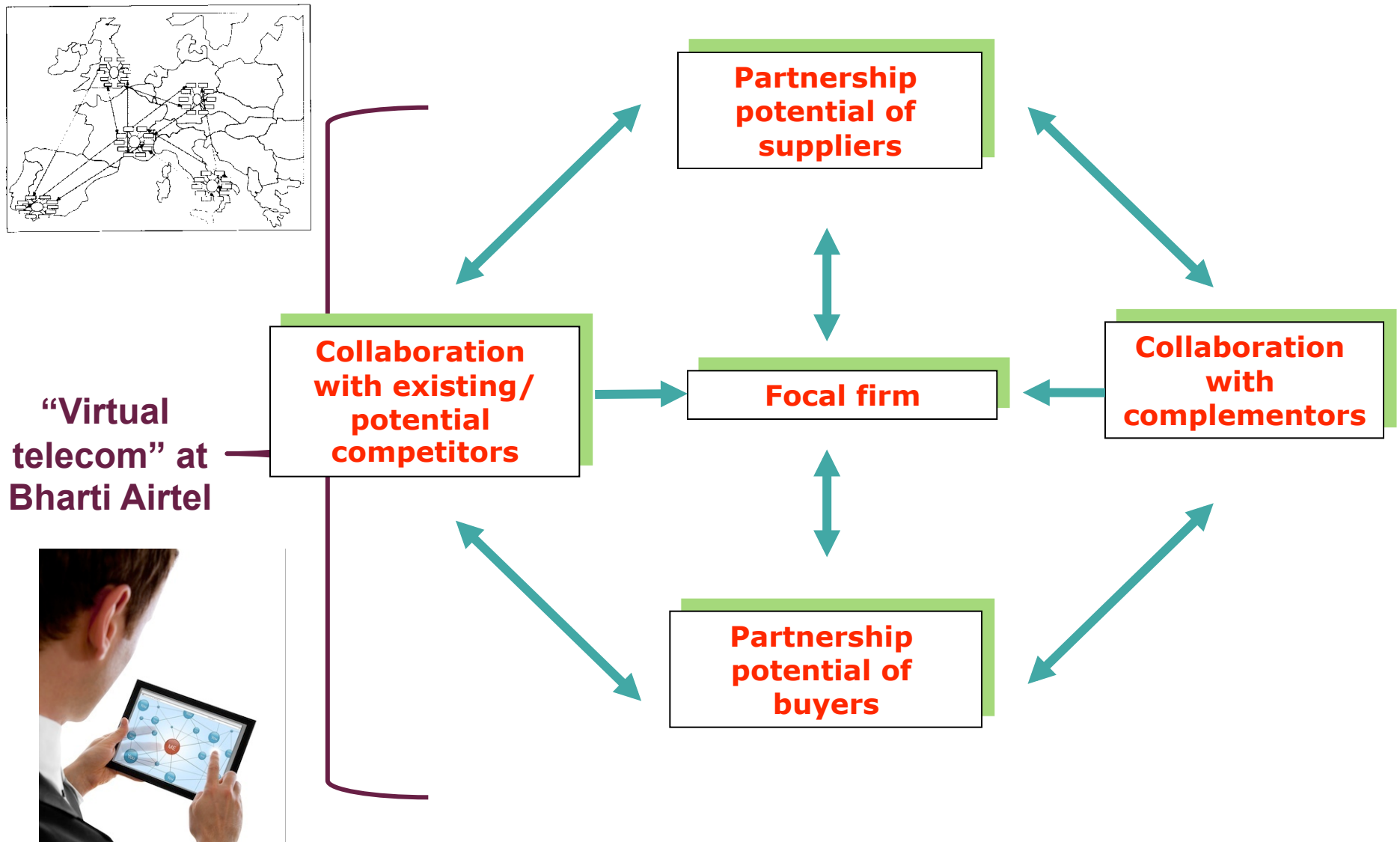
Tool: Value Net (to make choices about how to access assets/activities)



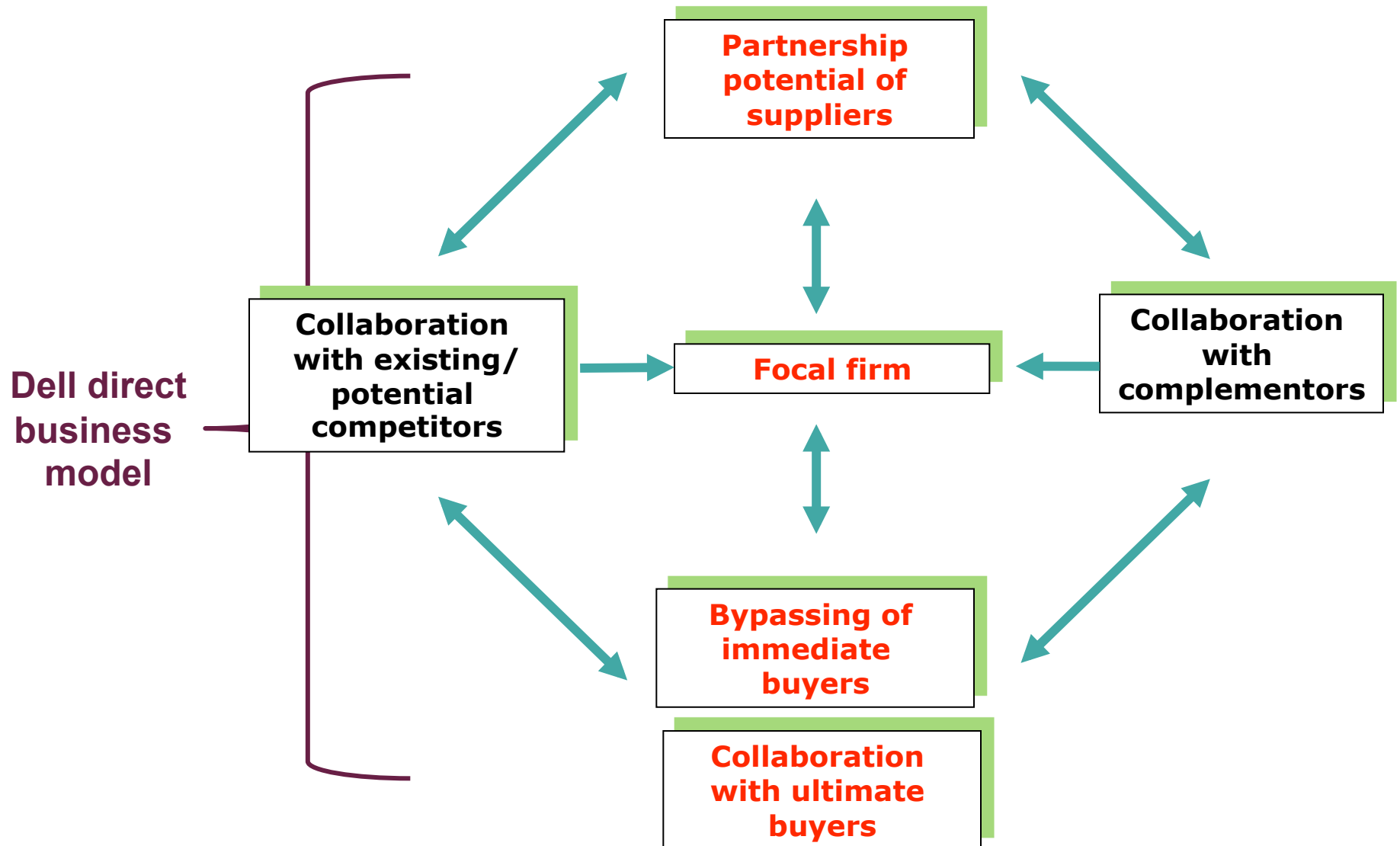
Tool: Value Net (to make choices about how to access assets/activities)



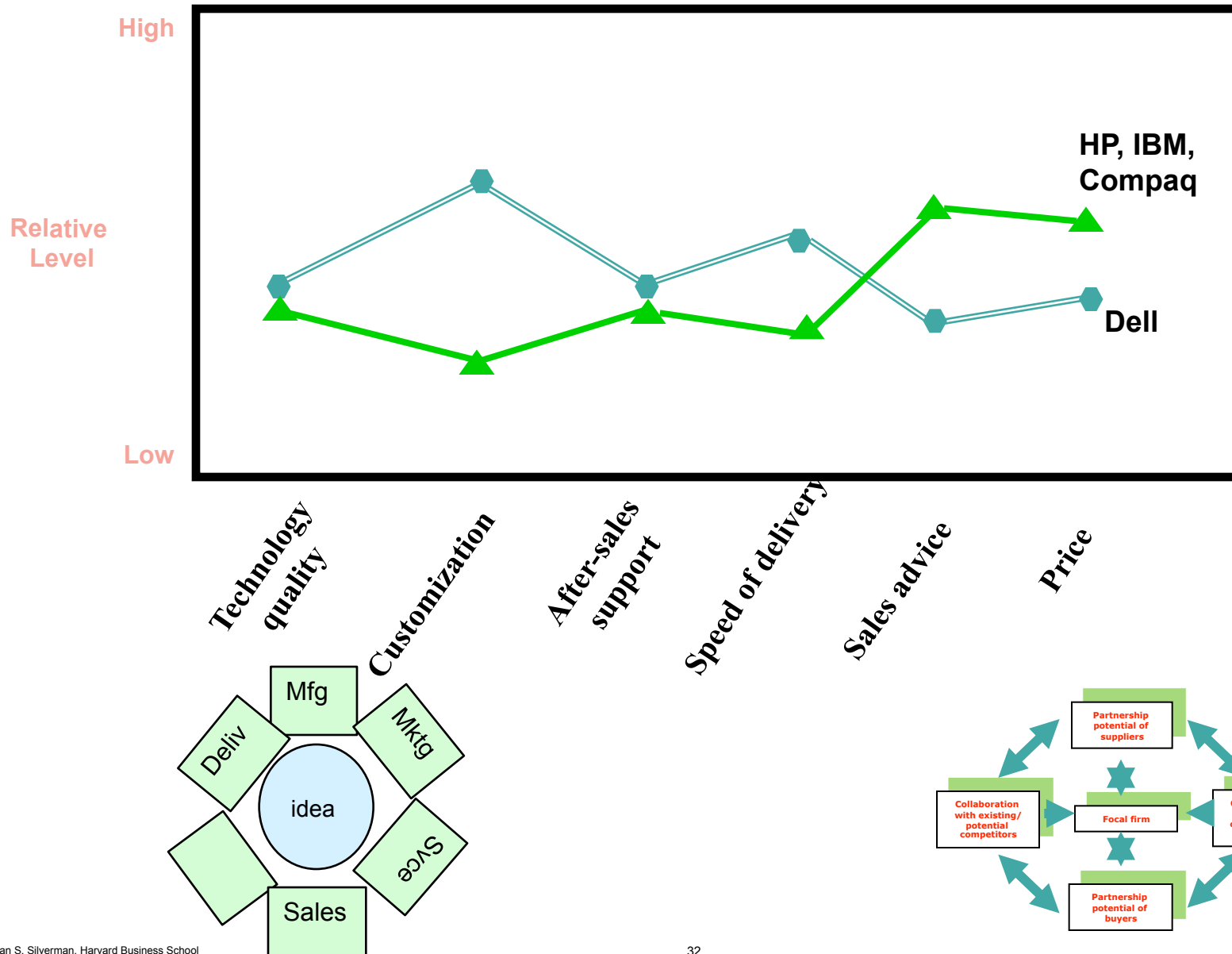
Tool: Value Net (to make choices about how to access assets/activities)



Dell and the Value Net



Linking assets/activities to the delivery of customer value



Tool for thinking about accessing assets:

Appropriability/Complementary assets framework

[Teece 1986]

How should an innovator try to access assets?

Who captures value?

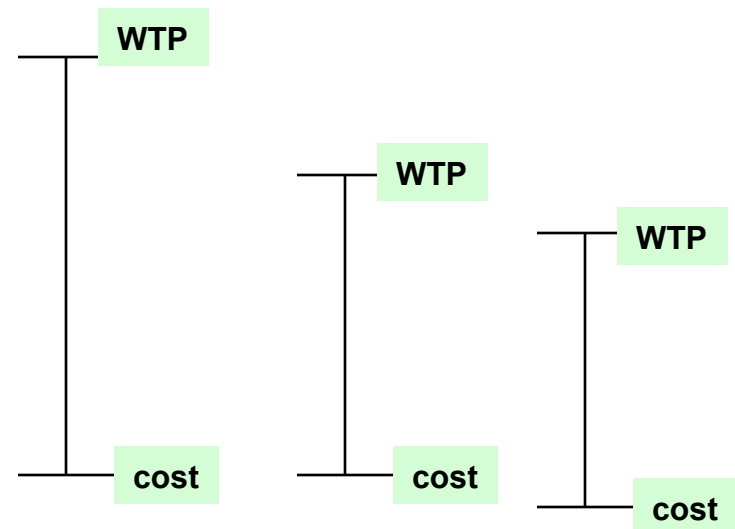
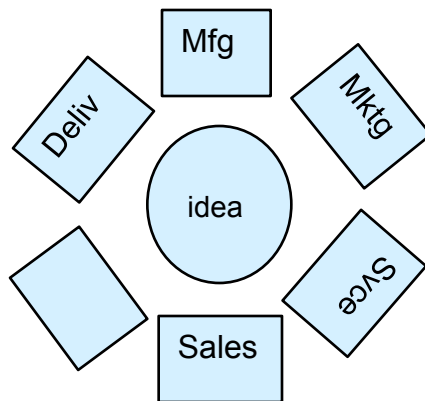
		Complementary Assets	
		Freely available	Tightly held
Appropriability Regime	Tight	Innovator	Divided b/w Innovator and Complementary Asset Owner
	Loose	???	Complementary Asset Owner

How to organize?

		Complementary Assets	
		Freely available	Tightly held
Appropriability Regime	Tight	Access complementary assets via open market	Partner with Complementary Asset Owner
	Loose	Diversify; Access complementary assets via open market	Can you buy or rent compl. assets without revealing how valuable they are to you?

Go-to-market plan: Will we be profitable, given competitors' responses?

- Competitors will not sit still
 - Yet we often are surprised when they respond
- It is often possible to assess the magnitude of response
 - Economic motivations
 - Psychological motivations
 - Procedural cues
 - Behavioral cues



So how can you anticipate success given competitors' future responses?

One rule of thumb and two tools for thinking about this

- Rule of thumb:
 - Allocentrism
- Tools:
 - Resource assessment (VRIO)
 - Competitor analysis

Tool: Resource assessment (VRIO)

[e.g., Barney 1995]

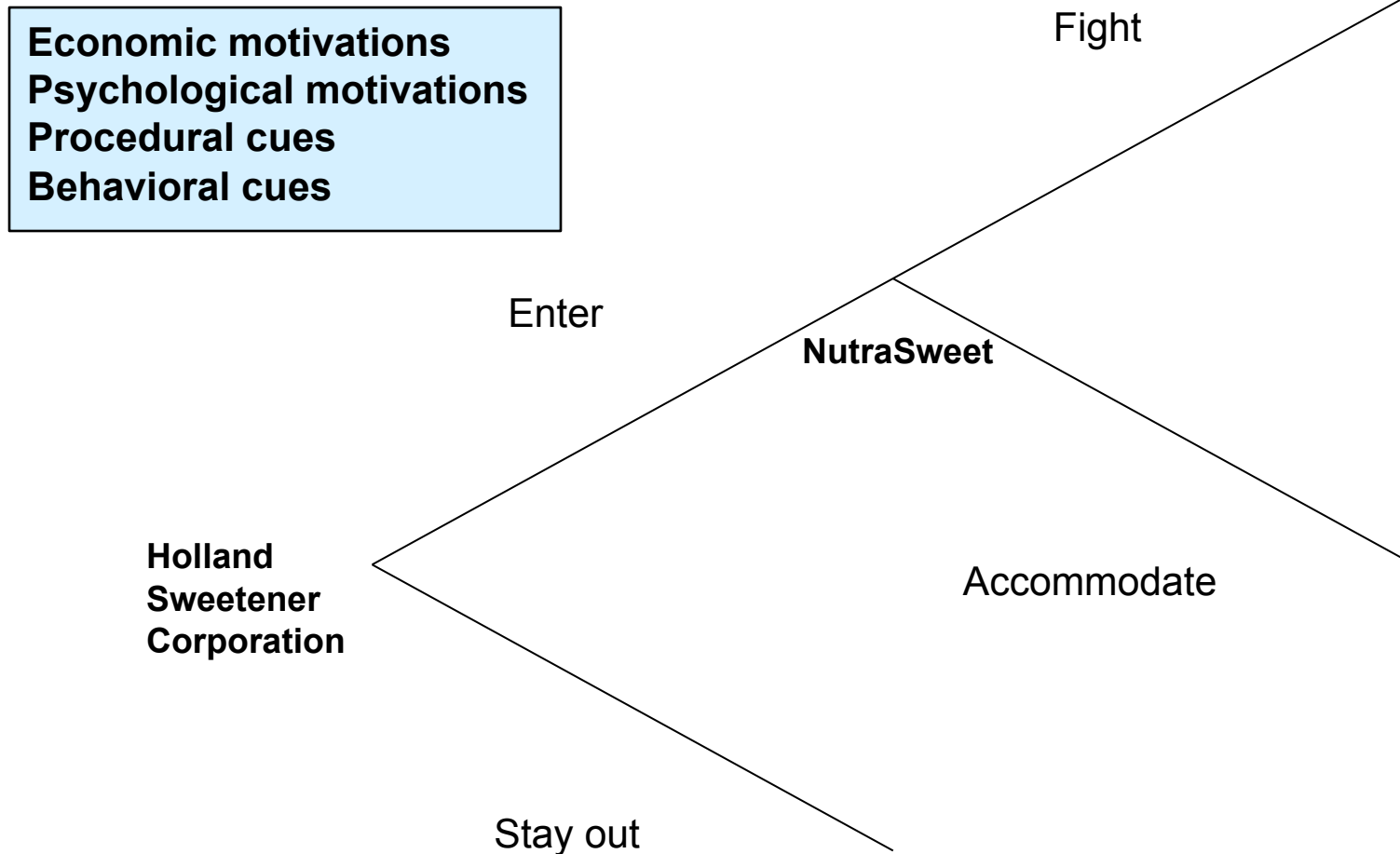
Assess the sustainability of each key activity/asset– it may be unique today, but will it be unique tomorrow?

A key source of sustainability can be the system of activities in which an activity is embedded.

Example: Dell

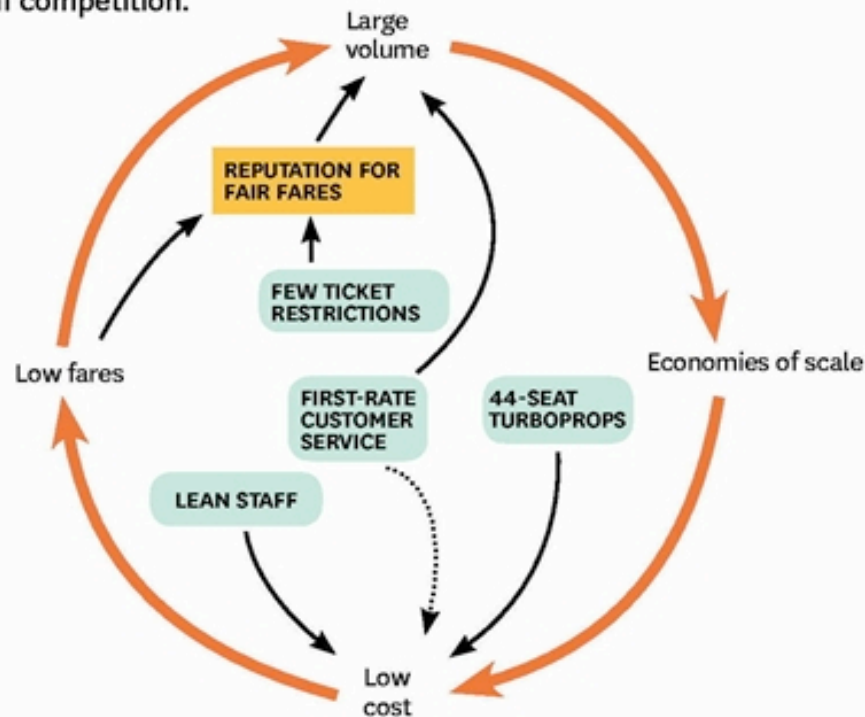
	Valuable?	Rare?	Inimitable?	Organized properly?
Just-in-time production capability	✓	✓	✓	✓
Supplier relationships	✓	✓		✓
On-line ordering capability	✓	✓		✓
Strong innovation skills	✓			

Tool: Competitor analysis



Ryanair's Business Model **Then**

This depiction of Ryanair's business model in the 1980s highlights the airline's major choices at the time: offering excellent service and operating with a standardized fleet. The airline was forced to redesign its business model in the face of stiff competition.



Does the logic make sense?

Are the underlying assumptions plausible?

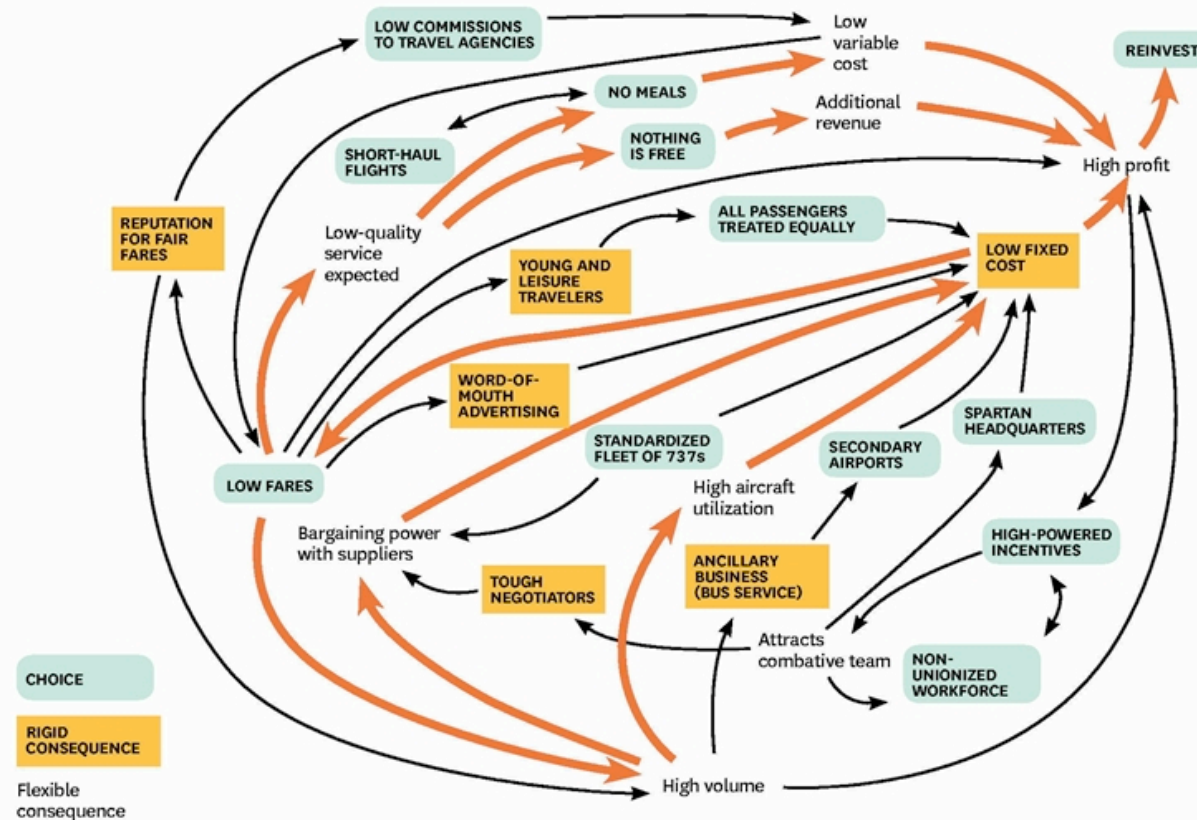
Are there positive feedback loops? (to support growth and profit)

Is it robust to likely competitive responses?

A good business model will (probably have to) evolve over time

Ryanair's Business Model **Now**

Ryanair's current business model rests on the key choices of offering customers low fares and providing nothing free. The rigid consequences include a reputation for fair fares and low fixed costs. Ryanair's choices are aligned with its goals, generate cycles that reinforce the business model, and are robust given that it has been operating as a low-cost airline for 20 years.



Additional resources

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