BUSM2615 OPEN INNOVATION · WEEK 8

The Vehicle Challenge

Design it. Hand it over. Watch what happens.

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Today’s challenge

You have one session to get a product built and certified.

Design a prototype for a production model of a self-propelled vehicle — and get a separate production team to build it.



Self-propelled

It must travel unaided after a single initial push.



Fit for the customer

The customer is in the room. They answer questions. They volunteer nothing.



Legal and safe

It must conform to all safety and regulatory requirements — including any that arrive later.



Actually buildable

A separate production team builds it, and they have never seen your design.

Your firm

Everyone has a card. Read only your own.



Project manager

Holds the budget and the clock. Accountable for delivery.



Designers

Turn the brief into something that can actually be built.



R&D

Holds technologies your labs have already developed.



Marketing

Your only line to the customer.



Production

Builds it. Currently out of the room and knows nothing.

Some cards carry information the other cards do not. Nobody is going to tell you which ones, or what it is.

The four rules that bite

Everything else is up to you.

01 **Prototyping costs money**

Anything you use to prototype is charged at full production price. Breaking something is a cost, not an accident.

02 **The clock is money too**

Design overrun costs $50 a minute. Production overrun costs $250 a minute.

03 **The handover is verbal**

Five minutes to brief production. You may not pass written notes or drawings.

04 **Hands off the build**

Once production starts, the design team may not touch the vehicle.

You have $10,000. What is left at the end, plus anything you earn, is your score.

What you have, and what you can buy

Three sources. They open at different times and cost different things.



YOURS NOW

The bag on your table

A mixed set of materials, issued at the start. It is not the same as anyone else's bag, and it is not enough on its own. Anything you use is charged at full price.



OPENS LATER

The supplier

Everything on the price list, plus a few things that are not. Each item has a price and a lead time — up to five minutes. The clock keeps running while you wait.



OPENS LATER

The other teams

Whatever they happen to be holding. Instant, no lead time, and the price is whatever the two of you agree.

And your production team starts with nothing at all

Every part of the finished vehicle is bought from the supplier during the fifteen-minute build, at a price and a lead time. Your bag goes back to the supplier at handover, so nothing at all carries into the build.

How the winner is decided

Certification is a gate. An uncertified vehicle scores nothing at all.

Certified

Meets every mandatory requirement, including any that arrive mid-session.

Distance

How far it travels unaided after a single push.

Customer fit

How well it meets what the customer actually wants — not what the brief said.

Net position

$10,000, less every cost, plus any revenue you generate.

And one more thing

At the end, each team gets ninety seconds to explain how it got hold of what it needed. There are no criteria for this. Say something true.

The clock

Sixty minutes of play. The rest is talking about it.



The clock does not stop

It does not stop while you argue, while you queue at the supplier, or while you walk across the room to talk to somebody. Time you spend finding something out is time you are not spending designing. That trade-off is real, and it is the whole game.

PHASE 1

Design sprint

Work inside your own firm. No contact with anyone outside your table.

10

MINUTES

Marketing may approach the customer. That is the only exception.

ECOSYSTEM UPDATE

Collision avoidance is now mandatory.
No vehicle will be certified without it, and an uncertified vehicle cannot be sold at any price.

The supplier desk and the user research station are now open. There are no restrictions on who any of you may speak to.

You have twelve minutes.

PHASE 2

Open phase

Finish the design and solve the new requirement. The clock does not stop while you walk.

12

MINUTES

Everything you buy, license or agree must be recorded with the ledger keeper.

PHASE 3

Handover

Brief your production team. Verbal only — no written notes, no drawings, no sketches.

5

MINUTES

Your bag goes back to the supplier now, and your prototype spend goes to the ledger keeper.

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PHASE 4

Build

Production builds and buys. The design team may not touch the vehicle.

15

MINUTES

Overrun costs $250 a minute, and an unfinished vehicle cannot be certified.

Test and judging

Bring your vehicle to the front.

1	**Certification**	Mandatory requirements present and accepted. Fail this and nothing else counts.
2	**Distance**	One push, then unaided. Measured to the nearest ten centimetres.
3	**Customer fit**	The customer scores it against what they actually wanted.
4	**The books**	The ledger keeper closes each team’s net position.
5	**Ninety seconds**	Each team explains how it got hold of what it needed.

Winner: the highest net position among certified vehicles.

PART TWO

What just happened

Observers first. Then we name it.

Observers — your observations first

Read the data before anyone offers a theory.



Movement log

Who left the design table, where they went, how long they were gone. Total minutes away, per team.



Ledger

Every dollar that moved — purchases, overruns, and anything that passed between teams.



Decision log

Every request each team received from outside, what they decided, and the reason they wrote down.

Three questions for the observers

- When an idea arrived from outside the team, what happened to it?
- Did anyone go and talk to the production team, and what did they come back with?
- What did the team decide not to do, and who actually made that call?

"Traps" in the game

These are about the boundary inside the firm.

- Failure is the most likely outcome
- Time versus cost — every minute of overrun is charged
- Separation of production and design
- Production had no idea what was to be designed or delivered
- But production held key information about assembly: delays, handling rules, materials that must be treated differently
- Early involvement, design for manufacturing, and plain communication
- Design was busy inventing, and still had to understand two outsiders: production, and the customer

Did anyone think of going to talk with the production team?

The traps we added

These are about the boundary between firms.

Mechanic	What happened in the room	What it is
Asymmetric resources	No team could build a competitive vehicle from its own bag, and nobody could see what rivals held.	Resource dependence. You had to search before you could trade.
The regulation shock	Collision avoidance became mandatory. The cheapest route ran through a direct competitor.	Co-opetition. The best deal available was with the firm you were trying to beat.
Integration cost	Every module acquired from outside carried a handling rule that slowed the build.	Absorptive capacity. Acquiring knowledge is not the same as being able to use it.

Nobody was told that collaboration was allowed, encouraged, or rewarded. The announcement said only that there were no restrictions on who you could speak to.

Discuss in groups

Ten minutes. Then one answer from each team.

1. **How would you link this game to open innovation?**
2. Why did you open up — and what did it cost you?
3. What would you change if you could run it again?
4. At what stage of the innovation process would you open up, to whom, and why?

Answer question two with a number, not an adjective. Your observer has the minutes and the ledger has the dollars.

Linking the game to open innovation

What you actually did, and what it is called.

What you did in the room	What it is called
Worked only from your own bag and your own R&D	Closed innovation
Searched the supplier, the users and your rivals for what you lacked	Inbound open innovation — sourcing and acquiring
Sold or licensed a technology your own vehicle never used	Outbound open innovation — selling
Traded with a firm you were competing against	Co-opetition
Marketing and R&D carrying knowledge across the boundary	Boundary spanning
Got the real requirement out of a user who would not volunteer it	Lead-user innovation
Acquired a module and then could not assemble it in time	Absorptive capacity
Refused or ignored an idea because it came from outside	Not-invented-here
Decided what to share, what to charge for, and what to keep	Appropriability
The room as a whole — rivals, supplier, users, broker	Innovation ecosystem

Openness is not one thing

Four distinct moves, and you made at least three of them.

Acquiring

INBOUND, PAID

Buying the aftermarket sensor. Licensing a radar from a rival.

Sourcing

INBOUND, FREE

Asking a lead user what actually goes wrong. Watching what another team built.

Selling

OUTBOUND, PAID

Licensing the technology your own vehicle never used.

Revealing

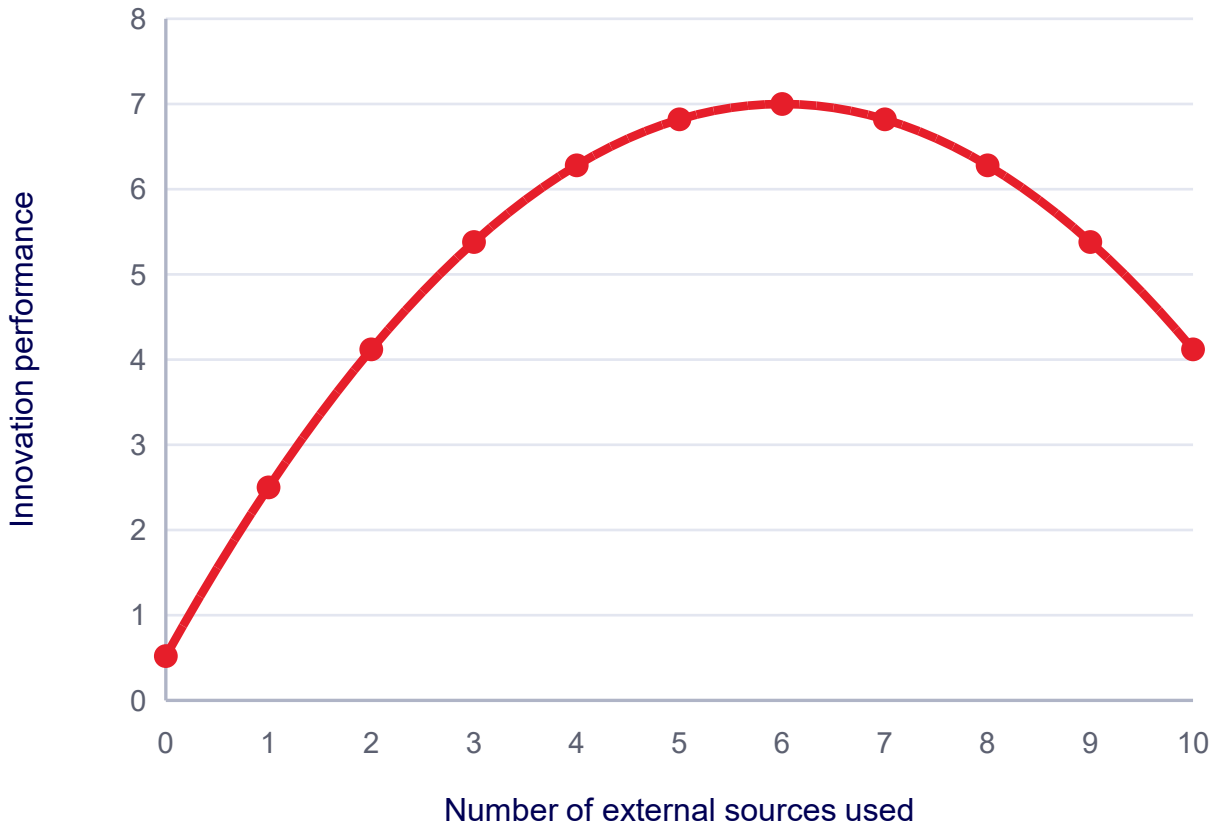
OUTBOUND, FREE

Telling a rival what you knew without charging for it. Did anyone?

After Dahlander & Gann (2010), How open is innovation?

Was more openness better?

Put your own numbers against the curve.



Curve is illustrative. After Laursen & Salter (2006) on search breadth and innovative performance.

Too closed

You never found the radar, never heard what the courier actually needed, and built for a customer you guessed at.

Too open

You visited everyone, acquired four modules, and handed production a design it could not physically assemble in fifteen minutes.

Search has a cost, and the returns turn negative. The question is never whether to open up, but how much, where, and with whom.

At what stage would you open up?

The same firm can be open at one stage and closed at the next.

Research

Cheapest place to be open. Ideas are abundant, nothing is committed, and a bad external idea costs you almost nothing.

Lead users, universities, suppliers, published work

Development

The expensive place to be open. In-licensing saves time; out-licensing turns a shelved technology into revenue. Both need real integration capacity.

Licensing in and out, joint development, contract manufacture

Commercialisation

Open here for reach rather than knowledge. You need someone else's channel, brand or complementary asset.

Co-branding, spin-outs, distribution partners

In the game you were forced to open at development — the hardest and most expensive stage. That is why it hurt.

Four things to take away

01 **Open innovation is not generosity**

It is the purposive management of knowledge flows across the boundary of the firm — in and out, paid and free.

02 **You opened up because you lacked something**

Nobody encouraged you. Resource dependence did the work, exactly as it does in practice.

03 **Acquiring is the easy half**

Every team that acquired a lot struggled to integrate it. External knowledge is only worth what you can absorb.

04 **More is not better**

There is an optimum degree of openness, and it differs by firm, by stage and by decision.

"For the first ten minutes, nobody told you that you had to solve this alone. Why did you all assume it?"