INNOVATE BY DESIGNING FOR VALUE

To innovate or not to innovate.
That is... not the question.
In the space sector, the playing field is changing. Commercial companies, like SpaceX or Virgin Galactic, are starting to gain traction in the space industry. There are currently more than a dozen private rockets, capsules and spaceplanes under development, with more on the way soon.
But the space revolution also offers new opportunities for space transportation such as:
- The launch and maintenance of big constellations
- Space logistics
- More affordable access to space
Innovating is no longer an option to stay competitive and seize these opportunities.
But what do we mean by innovation?
An innovation is anything that is both new and useful.
It can be a product or a service.
It can be a process or a way of organizing.
It can be incremental, or it can be breakthrough.

Innovation is not just about technology.
It’s about what people desire.
And if it is technically feasible,
And economically viable.
The last 3 years we developed a 3 step-method to design for value in early design stages.
And I would like to share with you these results.
To explain it, I will use 3 elements:
• A chair
• Needles
• And Harry Potter
Let’s start with the chair.
What’s the main function of a chair?
To sit.
Well, a group of architects decided to rethink from scratch the working environment.
Instead of starting from the objects like the chair, they ask themselves, “What could the architecture afford to the workers?”
They identified a variety of possibilities
• Lean on
• Rest
• Gather
• Perch
The architects modeled a variety of surfaces to afford a variety of possibilities.
You may have noticed I used the verb to afford. This is because the architects used the concept of affordance.
What is an affordance?

The word "affordance" was first defined by James Gibson, a psychologist, in 1979 to refer to the possible actions between the world and a person. Affordances are a relationship. An affordance emerges as a relationship between the object and the individual. Gibson developed the concept of affordances, to analyse the relationship of the child with its environment.
If you google “chair”. You’ll find… chairs!
Features, products.
You’ll find different colours, and shapes.
But if you google “sitting”. What will you get?
Various **people**: adults, babies
Various **contexts**: at work, at home
And various **behaviours**: crossed legs, feet on the ground.

The affordance, the possible action, depends on the **people** and the **context**.
When you focus on the **product**, you narrow your thinking,
While when you think about the **interactions** between the product and the users, you **broaden** the analysis.
AFFORD

Has the chair other affordances?
Does a chair only afford to sit?
What can the chair be used for?
The chair affords the child to jump
The chair affords the jogger to do sport at home
The chair affords to fight and defend yourself
This powerful concept already spread out in many fields:
- Psychology to understand autism and how the children interact with their environment
- Architecture to structure the space
- Education to transmit knowledge to students
- Robotics to let robots learn the affordances of the environment

In all these fields, the **Human is at the heart of the design**
Here's another example in software to understand the difference between functions and affordances

**Function** = what the product does  
**Affordance** = what the product is used for

- The function **search by name** affords to, is used to **connect with friends**
- The function **View friend** affords to **discover someone’s social network**
- The function **Update status** affords to, is used to **Share activities and interests**
But affordance-based design is not yet present in system design. That is why we extended this concept to design complex systems.

Then, to know what would be the most valuable affordances, to provide to the stakeholders, we need a deep understanding of their aspirations and goals. We need to gather knowledge around the business model and the future trends.

Could you raise your hand if you’re familiar with the Business Model Canvas (BMC), please?

In the middle, you’ve got the value proposition. We define it as a bundle, a set of affordances,

The VP is delivered to target customers,
And created thanks to key resources, activities and partnerships
The VP aims to capture revenues at a certain cost.

The BMC is very useful to communicate on a business idea. But it suffers from several limits.
- You cannot take into account the relationships between the elements of the BM. What if I change a part of the VP, what elements of the BM will be impacted?
- Also, you cannot **assess the level of maturity** of the BM. How far is the information captured reliable?
- Finally, the BMC does not include the notion of **competition**. But business models need to be defined wrt to competitors.

And usually you don’t think of one BM, but you need to explore many business models possibilities before picking the good one.
That's why we use needles to link the information with each other
We trace the reliability of the information, where it comes from, what sources of information: official or unofficial.

And we **combine** the different elements of the BM, like the stakeholders, the values we could bring to them.

And also compare the BM to competing offers
As we tooled this analysis, we are able to gather a large amount of information not, only on our direct stakeholders, but also our stakeholders’ stakeholders.

It’s useful because creativity increases when you broaden your frame of reference.

And we need to get a deeper understanding of our customers’ ecosystem to better predict the evolution of their needs as the satellite revolution is moving much faster.

For example, the satellite operators would like to address the emerging market of connected aircraft, and it requires shorter time-to-market, more flexibility.

How can we help them?

We also understand the possible impacts of the value proposition. For good or for bad. We consider created and destroyed values.
“In the networked world, the 3 most desirable things are connections, connections and connections”

– Netscape, Marc Andreessen

This approach is necessary, because we are living in a networked world. And “In the networked world, the 3 most desirable things are connections, connections and connections”
the puzzle of uncertainties when setting the problem

As we collected a large set of information, we also need to consider uncertainties on the problem: the fuzziness of needs and preferences. We need to play with the structure of the problem.
Einstein said «If I had an hour to solve a problem and my life depended on the solution, I would spend the first 55 min determining the proper question to ask, then I could solve the problem in less than 5 min.»
So we want to spend more time on exploring the problem, and trying several combinations like Harry Potter, the apprentice’s sorcerer.
We play with the different sources of uncertainties:
- What does the stakeholder value? We can add or withdraw values.
- Which stakeholders do we focus on?

We foster discovery of the value robustness of alternatives. This is a learning process.

It enables to:
- Structure the problem
- Model preferences
- Gain insights
All at once
I presented the 3 pillars of the method we developed to design for value:

- What can the products or services afford, be used for?
- How are the stakeholders’ goals linked to the offer? What are the possible combinations wrt future trends?
- How to explore the possible futures and impact of new systems and services?

When many of us think about innovation, we think about a “Eureka” moment. But we all know that’s a myth. Innovation is not about solo genius, it's about collective genius. Innovation is a journey.

With people who have different expertise and different points of view. If we want to invent a better future, then we need to design for value. Together.