

How to drive

EXTREME TECH INNOVATION

in the automotive industry

- *lessons learned*

WHITE PAPER



Authors:

Arlena Amiri & Magnus Penker

in collaboration with the Advance Engineering Exhibition
2023 in Gothenburg, Sweden.

Project Partners:

Koenigsegg, Polestar, Lightyear, Aurobay, NEVS, and Marell, together with Innovation360 in collaboration with Space for Agenda 2030 with Space designer Cecilia Hertz, astronaut Christer Fuglesang, and the European Space Agency

How to drive extreme tech innovation in the automotive industry – lessons learned

The automotive industry has undergone a significant transformation in recent years with the advent of smart, connected, electric, and autonomous vehicles leading the charge. This technological revolution has disrupted traditional manufacturing processes and created new business models and opportunities for growth.

As other industries look to drive innovation and stay competitive, the automotive industry's revamp is providing valuable lessons. In this article, we will explore how companies can drive extreme technology innovation and adapt to the changing landscape of their respective industries.

Authors: Arlena Amiri and Magnus Penker in collaboration with the Advance Engineering Exhibition 2023 in Gothenburg, Sweden.

Project Partners: Koenigsegg, Polestar, Lightyear, Aurobay, NEVS, and Marell, together with Innovation360 in collaboration with Space for Agenda 2030 with Space designer Cecilia Hertz, astronaut Christer Fuglesang, and the European Space Agency

Project High-tech suppliers: Aikolon, Betterfrost, BP Oil UK Limited, Elaphe, Flexound, Here, Imitera, New Cable Corporation, Optiphase Drive, Rapid Images, Research Institutes of Sweden, Semcon, Siili Automotive, Skey Network, Tactotek, Textreme, Bcomp, HERA project (Aachen Uni), Unikie.

ONCE UPON A TIME...

Polestar, Lightyear, Aurobay, NEVS, Koenigsegg and Marell, together with Innovation360 in collaboration with Space for Agenda 2030 with space designer Cecilia Hertz, astronaut Christer Fuglsang, and the European Space Agency, came together to form a one-of-a-kind tech collaboration. To drive innovation and push the boundaries of technology, we formed an initiative. We invited more than 20 high-tech suppliers from around the globe to tackle some of the toughest problems currently facing the industry.

This initiative formed a unique platform for collaboration where companies from different sectors can share ideas, knowledge, and resources. By pooling our expertise, we aim to create new solutions and products that will drive the industry forward.

We invited suppliers from a wide range of industries, from traditional manufacturers to cutting-edge startups. These suppliers have a wealth of experience, knowledge, and resources, which will be invaluable in helping us to achieve our goals.

*To push the boundaries of technology and create new products that will change the way we live and work, we formed a mission statement for the club: **To unleash the power of extreme technologies and ecosystems to solve the unsolvable and make the impossible possible.***

For six months, we performed the first sprint. We started with the challenge of tripling the range of a vehicle without changing its performance. Why? Because all innovation starts with a bold dream. Nothing should be impossible. Even if we cannot solve everything now, if we push boundaries, inspire, lead, and remain on course, most things are possible.

During the six months of the sprint, we collected over 500 ideas, clustered them into 17 groups, and made several iterations in workshops. We then conducted experiments, carried out hypotheses, reclustered, and refined the hypotheses again. We invited more suppliers and experts, including the European Space Agency. At the end of the six-month sprint, we presented six clusters, and our partners and high-tech suppliers made investments, moving the clusters into pilots together. No shark tanks, no contest—just pure co-creation without politics or boundaries.

THE IMPORTANCE OF A TANGIBLE VISION AND MISSION

One of the most iconic speeches in history is John F. Kennedy's "We choose to go to the moon" speech, delivered on September 12, 1962. In this speech, Kennedy challenged the American people to aim for the moon and commit to a vision of space exploration. This challenge was ambitious as well as inspiring, and it rallied the nation behind a common goal.

When creating a vision for your own organization, you can learn several key lessons from Kennedy's speech:

1. State your vision clearly and concisely. Kennedy's vision was simple and easy to understand: "We choose to go to the moon." By making his vision clear, he captured the imagination of the American people and inspired them to take action.
2. Communicate your vision in an inspiring and motivating way. Kennedy's speech was filled with emotion and passion, which motivated people to take action and work toward the goal.
3. Make your vision challenging but achievable. Kennedy's vision of going to the moon was ambitious, but it was also achievable with the technology and resources available at the time—even if the people did not know how to do it. By setting a challenging but achievable goal, he inspired people to work together toward the common goal of finding the path ahead.
4. Communicate the importance of the vision. Kennedy emphasized that going to the moon was not just about winning a race but about showing the world what America could achieve. By communicating the importance of the vision, he helped to rally people behind the cause.
5. Lead by example. The president and his team were committed to achieving the goal and worked hard to lead by example.

By following these key lessons, you can create a vision that is inspiring, motivating, and achievable for your own organization.

A vision is a powerful tool that can inspire and motivate people to work together toward a common goal. In our case, we want to inspire people to develop extreme solutions to extreme problems.

WHAT THE DATA TELLS US

Innovation360 data and research have shown that collaboration, a higher purpose, clear goals, a willingness to learn from failure, and an acceptance of uncertainty are essential for success in innovation. This highlights the importance of creating the right environment for innovation within a company, industry, and nation. To achieve this, policy-makers, universities, and industries must understand and implement these key findings. Additionally, underlying belief systems and value systems must align with these principles to drive innovation and success. Overall, the data indicates that fostering a culture of collaboration, purpose, and learning will drive innovation and promote success within a single company, a cluster of companies, an industry, and a nation, as well as lateral systems such as the EU, UN, and NAFTA.

Collaborate. If we grow the pie instead of shrinking it, then we are all better off. When the pie is bigger, we can fight for it. But it does not make any sense to negatively affect all our consumers and customers by destroying the planet.

Believe. The higher purpose, the *raison d'être*, or a well-articulated vision—that is what causes us to survive and takes us from one S-curve to the next. Shit will always happen, but you can plan for it, prepare for it, and end up as the winner instead of the loser.

Set and break down goals. Humans, from time to time—especially in good times—have shown a historical pattern of not planning ahead. We don't turn goals into actions because it is uncomfortable and hard. This is the first lesson in avoiding failing big. It is hard to be a human, but hiding away to only be hit by the blow later does not make it any better.

Do not fear failure, especially when everything is good and life is fantastic. We avoid doing anything that might jeopardize what we have. But in reality, this is the biggest risk. Nothing stands still—change is the only constant. Recreating yesterday and believing that everyone else will do the same is a naïve approach. We are in a constant struggle, driven by our free will.

Accept uncertainty. To ask for a crystal ball is insane. There is no crystal ball. However, we have good tools at our disposal, used in the club and elsewhere, for managing and planning for the many possible futures and for showing us how to cope and act. Only a fool will ask for an answer when there is no answer. This has been obvious in each of the cyclic phases of our history: pandemics, global warming, war, the rise and fall of civilizations, pollution, and so forth. What's the next upcoming cycle? Maybe one of those that were already mentioned, or maybe a new one, like intelligence?

LESSONS LEARNED: THE POWER OF SHARING SOLUTIONS AND IDEAS

Innovation is a crucial aspect of any business, and it must be used to stay ahead of the competition. The co-creation process is an effective way to generate new ideas and solutions. The lack of restrictions in the form of intellectual property, non-disclosure agreements, and other legal barriers greatly enhances the power of sharing solutions and ideas.

A key lesson learned from this process is the importance of starting with a common vision and challenge. This approach allows for the generation of ideas and solutions without spending hours with legal teams elaborating on codes of conduct for partners. This is a bold move, as it requires sharing ideas, thoughts, and comments in a common tool, in front of strangers, competitors, and potential business partners.

Another lesson learned is the importance of a common goal and vision that goes beyond the particular interests of the participants. Setting up a very general and visionary level of innovation contributes to the success of the process. Individuals and groups should understand the nature of the challenge, pursue a common goal, and create a “team feeling” in the process.

To create a common vision that is not company-specific, leaders should create a vision that people can easily understand and use to develop their best solutions. This approach encourages collaboration and the sharing of ideas and solutions, leading to more effective and efficient innovation.

The power of the co-creation process is enhanced when people can freely share solutions and ideas, particularly when they are not restricted by intellectual property, non-disclosure agreements, and other legal barriers. Individuals and groups should start with a common vision, have a common goal that goes beyond the particular interests of the participants, and create a vision that is not company-specific. By implementing these lessons, businesses can foster a culture of collaboration and innovation, leading to success in the long term.

MOVING FORWARD: RECOMMENDATIONS TO THE INDUSTRY AND TO THE EUROPEAN MARKET

As the global economy evolves, industry and society should move forward by fostering innovation and competitiveness. To do this, innovators and governmental bodies in Europe should consider several key recommendations.

First, build up a strong and competitive European industry. One way to accomplish this is by searching for innovation in your own backyard. You can look at the pre-existing resources and capabilities within the industry and society and find ways to leverage them to drive innovation. One way to do this is by identifying innovative ways of including human capital and organizational resources in the innovation process.

Second, consider switching from traditional mechanisms for funding innovation, such as funding agencies, because they may not always respond to the real needs of the industry and society. These traditional mechanisms can work within very narrow program frames, take a long time with project preparation, and require specific capacities to result in a benefit. Instead, you may be more effective by testing new ideas and solutions, and learning from failures, rather than spending a lot of time deliberating on them.

Third, be more inclusive when inviting people and organizations to participate in the innovation process. This means reaching out to diverse groups of people and organizations, including those who may not have traditionally been included in the innovation process. By being more inclusive, industry and society can tap into a wider range of perspectives and ideas, leading to more effective and efficient innovation.

Fourth, dare to set up bold visions, accept failure, and celebrate learnings. Setting bold visions and accepting failure can help drive innovation and progress. Instead of focusing on proven methods and concepts, you should be open to new and untested ideas, even if they carry a higher risk of failure.

Finally, avoid public funding based on proven methods and concepts, as this will only lead to improvements and help prevent disruption from new players. You should be willing to experiment with new pathways and test new approaches.

In conclusion, to move forward in the industry and society, leaders should build up a strong and competitive European industry by searching for innovation that is already present, creatively including human capital and organizational resources, being more inclusive when building an innovation team, casting bold visions, accepting failure and celebrating learnings, and avoiding the creation of public funding based on proven methods and concepts. By following these recommendations, industry and society can foster a culture of innovation and competitiveness, leading to long-term success in the long-term.