Federal Ministry
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Climate Action, Environment,
Energy, Mobility,
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REDSWAN
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Scenario Report

NGI – THE INTERNET FOR PEOPLE 2040

Vienna, 2020

Contents

Introduction

"The digital age is Haraclitus on steroids: change is a daily constant. In almost every professional environment, we are expected to use and master tools that did not exist a decade ago, or even last year"[1], writes Scott Galloway in his book "The Four – The Hidden DNA of Amazon, Apple, Facebook, and Google".

This perpetual and accelerated change creates a lot of uncertainty and fears. Many people feel overwhelmed by the technological developments and look anxiously into the future. And many media articles and broadcasts fuel the fear of the future.

This is therefore the right time to think about what the individual can do to feel more empowered facing these technologies and to create a conscious, self-determined life. Digital technologies are not our enemies or new masters, if we don't let them. They can greatly enrich humans' lives and contribute to the benefit of humanity. But we, as humans, make them do so – or not. That is a conscious decision we have to make. We must take back our responsibility in creating a desired future enabled by digital technologies and networks.

The following report summarizes the findings of a future scenario process enabled by the Austrian Federal Ministry for Transport, Innovation, and Technology in Vienna 2019 focusing on a very human and responsibility centered approach to the potential future by asking the question:

How can we shape the future until 2040 in terms of trust, inclusiveness, openness and security in such a way that digital technologies and networks enable people to create a conscious, free, responsible and self-determined life?
How should people/citizens shape their roles in politics, administration, interest groups, NGOs, academia, media, and businesses in this respect?

Decisions always have to be made by individuals. And change can only happen one step at a time. Hence, this approach puts the individual, their empowerment and responsibility into the focus. This question will not be solved by a single technology, it calls for profound changes in society and the awareness of every individual.

The Intentions Of the Scenario Process

"The best way to predict the future is to create it." Abraham Lincoln

Organizations and decision makers are very often afraid of what they might learn about the future in a scenario process and thus refuse it entirely, as if the costs of not thinking about the critical uncertainties of the future in an open and flexible way were smaller and burying their heads in the sand could stop undergoing developments.

"The problem with the future is that it is different. If you are unable to think differently, the future will always arrive as a surprise." Gary Hamel[2]

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[1] Scott Galloway (2017): The Four: The Hidden DNA of Amazon, Apple, Facebook, and Google, Penguin, New York, p. 235
[2] Woody Wade (2012): *Scenario Planning: A Field Guide to the Future*, John Wiley & Sons, New Jersey, p. ix

But it is particularly important when we think about digital technologies and networks that we also have to think about the future to make more conscious decisions now. That was impressively shown when the future developments were discussed in an additional student workshop, which was not part of the original process, but provided a great opportunity to see the viewpoints of the young generation. The 14 to 17-year-old youngsters were very eager to discuss the future as they felt deeply concerned about it and were glad that adults actually asked them for their opinion. They were very clear about the driving forces of the future concerning digital technologies and they had a lot of fears and worries about it. Adults have to react to that and deliberately include the point of view of the next generation in the discussion. They may come up with creative and novel solutions.

Very Diverse Expert Team

The whole scenario process tried to include as many perspectives as possible, which was also underlined by the very diverse expert group participating in the three workshop discussions. It included AI experts, physicists, mathematicians, food technologists, ambient assistant living experts, architects, artists, philosophers, journalists, startup and business representatives as well as two 14-year-old students joined the conversation and enriched the process with their very different perspectives. That made the scenario process undertaken in Vienna 2019 a highly interesting, creative and open-minded advisory process.

The following notes reflect the discussions and summarize the findings of the process. After the executive summary, the mythology of the scenario process is explained in detail (chapter 1), then the identified driving forces are described in their roles as certain trends and critical uncertainties (chapter 2); chapter 3 explains the dimensions of the scenario cross, chapter 4 presents the scenario descriptions and chapter 5 summarizes implications and possible responses.

Executive Summary

A change in the way we develop and deal with digital technologies as well as an increase in human consciousness and awareness are no luxuries anymore.

According to the developed scenarios, in 2040 we live in an **urban, highly technology-infused**, **transparent** and rather **uncertain, complex** and **overwhelming** world, which makes us long for **more safety** and **security** that may be found in **secure connections to other people**. Digital technologies are with us everywhere and we have to take responsibility for that fact.

Truly detrimental consequences can be expected if we unconsciously embrace technology as new religion which imprisons us in the long run, as described in the **unconscious prisoners scenario;** or - if we let ourselves be trapped in conformity, convenience and pretense, seemingly well off in our comfort zones **(worker bee scenario);** or - if we become so disconnected from other people and reckless that we use technology to harm each other, like in the **lonesome cowboy scenario.**

"Man has the power to act as his own destroyer—and that is the way he has acted through most of his history. […] We are the first species capable of self-annihilation."[3] Said Elon Musk in an interview with Vanity in March 2017. He is afraid of *"a fleet of artificial intelligence-enhanced robots capable of destroying mankind."* As true as the first statement is, he may be wrong in his assumption that AI technology is the main threat in this respect.

The present scenarios show a different focus: it is the **human factor** that can make or break our future, not the technology itself.

"What we fear is, that machines will behave like humans", explained Microsoft Austria CTO Harald Leitenmüller. But, Prof. John Mark Bishop with the University of London quoted the British mathematician Sir Roger Penrose who says that human insight and consciousness are fundamentally non computable. The system does not understand anything, it just manipulates voltage levels. Computers can neither feel nor be conscious. They cannot have their own desires or understand meaning. So why would the computer want to overtake the world without feeling the desire to do so?

Nevertheless, we fear that the human bias might be replicated and enhanced in these systems. Hence, human awareness of their own mind patterns is the way to real, sustainable change. Musk is right, history will repeat itself as long as humanity does not break free from compulsive, conditioned mind patterns. But in the same way, our highly developed intelligence enables us not only to self-annihilate, but also to prevent this from happening - to save us, so to speak. And digital technologies as well as their endless possibilities play a crucial role here. Never have we had more technologies at hand to solve the existing problems.

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[3] Maureen Down (March 2017): *Elon Musk's Billion-Dollar Crusade to Stop the A.I. Apocalypse*, Internet: Link to the article in the magazine Vanityfair.com (last accessed on February 17, 2020)

The Promised Land

What the involved experts wish for is a **non-commercial, free internet as space for society and individuals to create, develop and implement new ideas and to further grow and develop as human beings.**

Co-creative Ecosystem – Getting To the Promised Land

Innovation in this sense does not come out of thin air. The key to reach this goal, which is portrayed in more detail, in the **connected surfer scenario** is the development of a **co-creative ecosystem**, in which a **variety** of **diverse players** work together in **symbiotic, mutually supportive,** and **empowered relationships**. This ecosystem is supposed to provide enough freedom **but also a secure basis for creativity and technological innovation.** It has to be a **flexible, evolving system** able to deal with and adjust to perpetual change. Co-creative **innovation labs** in which experimentation is possible, for example, could be a first step in this direction. Participants could include digital technology experts, physicists, mathematicians, food technologists, biologists, ambient assistant living experts, architects, artists, sociologists, psychologists, philosophers, journalists, startups, established businesses as well as the next generation, i.e. children and youths.

The vision is that they all work together to co-create the Next Generation Internet – The Internet for people.

Guiding principles for this ecosystem are the following:

- Co-creation
- Interdisciplinarity
- Connection to society
- Addressing people's needs (trust, security, inclusion, transparency, etc.)
- Openness
- Transparency
- Inclusiveness
- Support of variety, diversity, and pluralistic world views
- Fostering symbiotic, mutually supportive, and empowered connection and relationships among people
- Appreciation and support of the unique potential, role and contribution of every individual and thus actualization of their creative potential
- Shaping more responsible, social business models enabled by digital technologies
- Guidance to self-awareness
- Contribution to new educational approaches
- Taking responsibility for the consequences of new technological developments and businesses for the wellbeing of humans and the environment

Deutsche Zusammenfassung

Einleitung

Im Szenario-Prozess „Next Generation Internet – The Internet for People 2040" haben sich 25 ExpertInnen aus so unterschiedlichen Bereichen wie AI, Lebensmitteltechnologie, Mathematik, Physik, Philosophie, Architektur, Kunst und auch Jugendlichen in das Jahr 2040 versetzt. Ziel dieses Dialogprozesses war es, möglichst frei zu denken und möglichst viele Perspektiven zur Entwicklung digitaler Technologien und dem Umgang damit zu sehen und verschiedene Entwicklungen in verschiedenen Szenarien aufzuzeigen, damit jetzt, nicht erst in 20 Jahren, bessere Entscheidungen getroffen werden können.
Die diskutierten Szenario-Fragen dabei:

- Wie können wir die Zukunft im Sinne von Vertrauen, Inklusivität, Offenheit und Sicherheit so gestalten, dass digitale Technologien und Vernetzung es Menschen ermöglichen ein bewusstes, freies, verantwortungsvolles und selbstbestimmtes Leben zu kreieren?
- Wie sollten Menschen/BürgerInnen ihre Rollen in der Politik und Verwaltung, in Interessensvertretungen, NGOs, der Wissenschaft, Medien und Unternehmen diesbezüglich gestalten?

Die Szenarien

### 2040 – Eine urbane, komplexe, sich ständig verändernde Welt

Den identifizierten sicheren Trends zufolge leben wir im Jahr 2040 in einer überwiegend urbanen, hoch-technologischen, transparenten, sich ständig verändernden und komplexen Welt, was unser Bedürfnis nach Sicherheit und sicheren Verbindungen zu anderen Menschen größer werden lässt. Digitale Technologien begleiten uns überall in unserem Leben und wir müssen für diese Tatsache Verantwortung übernehmen.

Unsicher ist, wie wir damit umgehen. Als besonders signifikante kritische Unsicherheiten, in die viele andere Faktoren hineinspielen, wurden das **Soziale Gefüge (Social Texture)** und das Ökosystem gesehen. Hinter Social Texture steht die Frage: Was ist uns wichtig, worauf legen wir Wert? Auf die Verbundenheit zu anderen Menschen und ein gemeinsames Ko-Kreieren der Zukunft oder individuelle Abgrenzung und Isolation. Wenn digitale Technologien bisher von Menschen durchgeführte Tätigkeiten übernehmen, werden wir menschlichen Attributen wie Kreativität und Empathie höheren Wert beimessen müssen. Auch monetär, also in der Entlohnung.

Hinter **Ökosystem** steht die Frage: Wo sind die Ressourcen und wie wird ihr Entstehen und ihre Verteilung ermöglicht, um ein gutes Umfeld für Kreativität und Innovation zu schaffen? Durch eine zentrale Autorität oder verteilt (distributed) und selbst-verwaltet. Entlang dieser zwei Achsen – also Social Texture und Ecosystem – ergeben sich 4 unterschiedliche Szenarien, die im Folgenden kurz beschrieben werden.

Abbildung 1: Scenario-Cross „NGI – The Internet for People 2040"
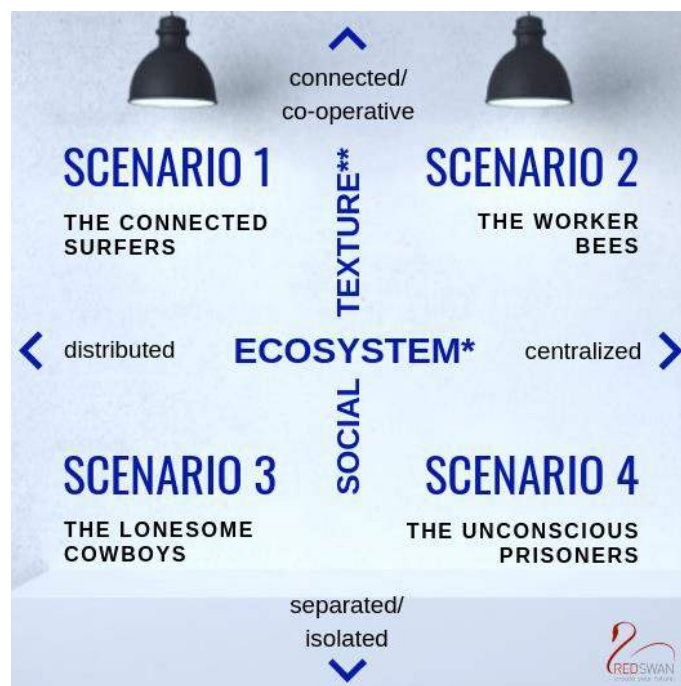
Die Szenarien zeigen: Änderungen in der Art und Weise, wie wir mit digitalen Technologien umgehen und mehr Bewusstsein für die Folgen neuer technologischer Entwicklungen und wie wir sie einsetzten sind kein Luxus mehr.

Drei der vier Szenarien zeigen nicht wünschenswerte Entwicklungen auf: Etwa, dass Technologie als neue Religion Menschen versklavt, wie das im **Prisoners-Szenario** der Fall ist. In blinder Bewunderung der technologischen Allmacht und auch aus Bequemlichkeit haben wir hier zugelassen, dass ein großer Tech-Gigant zur neuen, alles beherrschenden Autorität wurde, und uns alle durch digitale Technologien ständig überwacht und in Isolationshaft hält. Autoren wie Harari z.B. sehen die Entwicklung von Technologie als neuer Religion ganz klar in unserer Zukunft und auch die Beobachtungen in Shoshona Zuboffs Buch „Das Zeitalter des Überwachungskapitalismus" deuten in die Richtung dieses Szenarios.

Aus dem **Worker-Bee Szenario** lernen wir, dass zu viel Konformität und Bequemlichkeit Kreativität und Innovationskraft hemmt. Sie ist zwar effizient in der Massenproduktion und die Gesellschaft funktioniert wie ein gut geölter Motor oder ein emsiger Bienenstock, aber wirklich neue, disruptive Ideen entstehen hier nicht. Eher „more of the same". Hier bedarf es mehr Freiheit und Empowerment für das Individuum, sonst können keine nachhaltigen digitalen Innovationen geschaffen werden. Dabei geht es nicht nur um Dinge wie Überregulierung, sondern auch gesellschaftliche Zwänge, die Menschen zur Konformität zwingen oder auch die eigene Bequemlichkeit, die ein ausbrechen aus der eigenen Komfortzone unmöglich macht.

Das entgegengesetzte Extrem und mögliche Reaktion auf zu viel Konformität und Gruppenzwang ist das **Lonesome Cowboy Szenario**, in dem jeder für sich und gegen die anderen kämpft. Auch diese Verhaltensweise ist bereits zu beobachten. Hier entstehen disruptive Ideen ungehindert von einer zentralen Autorität, aber rücksichtslos. Die einsamen

Cowboys sind so abgekoppelt von anderen Menschen, dass sie sich nicht um das Wohlergehen anderer Menschen kümmern, was letztendlich auch auf sie selbst zurückfällt. Eine sehr feindliche Welt, in der wir viel um unsere Sicherheit bangen müssen. Und Technologien werden dazu genutzt, einander zu schaden, gegeneinander zu kämpfen. Die beteiligten Jugendlichen haben dieses Szenario als „World War 3 Szenario" bezeichnet. Wenn einer der „Lonesome Cowboys" gewinnt, führt uns das im Anschluss darüber hinaus direkt in das „Prisoners-Szenario".

Abbildung 2: Scenario-Cross „NGI – The Internet for People 2040" inklusive Bilder
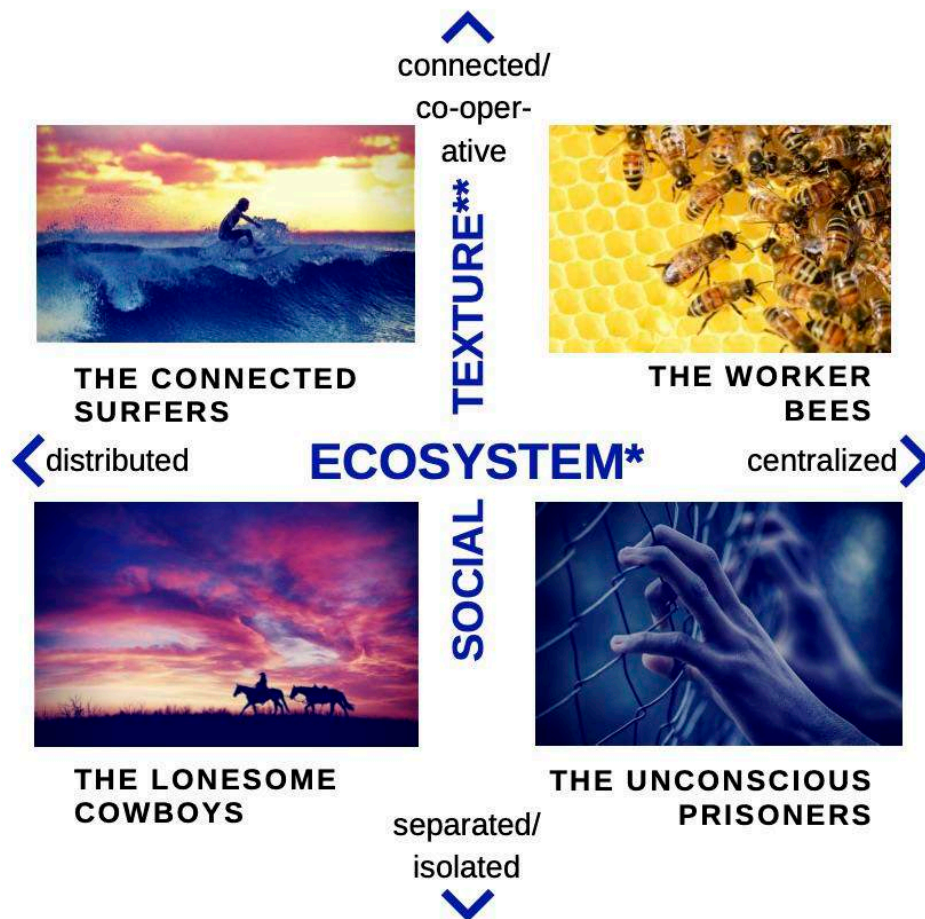
Ko-kreative Ökosysteme

Die Vision für 2040 im Connected Surfers Szenario – dem Best Case Szenario – dagegen ist ein freies, offenes, nicht kommerzielles, inklusives Internet als Raum für den Einzelnen und die Gesellschaft, um in Co-Creation und symbiotischen, einander unterstützenden Beziehungen mit anderen neue Ideen zu entwickeln, umzusetzen und uns als Menschen weiter zu entwickeln.

Gefragt sind digitale Technologien und Anwendungen, die Menschen in den urbanen, hoch-technologischen, transparenten, komplexen und oft überwältigenden Lebenswelten der Zukunft die Möglichkeit bieten, ihr Leben bewusst, frei, verantwortungsvoll und selbstbestimmt zu gestalten und dabei gleichzeitig die Verbindung zu anderen Menschen zu suchen und zu stärken. Eine Disziplin alleine kann das nicht lösen. Daher sind interdisziplinäre

Teams und die Einbeziehung von Unternehmen, Forschungseinrichtungen, NGOs, Medien, Startups, VertreterInnen aus Kunst und Kultur, Philosophie, Psychologie, Soziologie, Architektur, etc. und nicht zuletzt der Jugend gefragt. Die Entstehung **flexibler, kooperativ-kreativer Ökosysteme**, in denen eine Vielfalt verschiedener Akteure zusammenarbeiten soll begünstigt werden. Diese Ko-kreative Ökosysteme sollen dabei genügend Freiheit aber auch eine sichere Basis für Kreativität und die Entwicklung technologischer Innovationen bieten. Ein flexibles, sich ständig weiter entwickelndes System das fähig ist, sich an beständige Veränderung anzupassen. Die Möglichkeit zum Experimentieren spielt dabei eine wichtige Rolle.

Prinzipien solcher kooperativ-kreative Ökosysteme:

- Co-Creation
- Interdisziplinarität
- Verbindung zur Gesellschaft
- Eingehen auf menschliche Wünsche und Bedürfnisse
- Offenheit
- Transparenz
- Inklusivität
- Förderung von Vielfalt, Diversität und pluralistischen Weltansichten
- Förderung symbiotischer, fruchtbringender, gegenseitig unterstützender und ermächtigender Verbindungen und Beziehungen zwischen Menschen
- Wertschätzung und Unterstützung der einzigartigen Potenziale, Rollen und Beiträge verschiedener Menschen und damit Aktualisierung ihres kreativen Potenzials
- Entwicklung neuer, verantwortungsvollerer und menschlicherer Business Modelle (unterstützt durch digitale Technologien)
- Aufzeigen möglicher Wege zu mehr Bewusstsein für die eigenen unbewussten, repetitiven Muster
- Beitrag zu neuen, durch intrinsische Motivation geleiteten, Bildungsansätzen
- Übernahme von Verantwortung für die Auswirkungen neuer technologischer Entwicklungen und Businesses auf das Wohlergehen von Menschen und der Umwelt

Was können Menschen in ihren unterschiedlichen Rollen tun?

Damit diese kooperativ-kreativen Ökosysteme funktionieren, ist die Wertschätzung der verschiedenen Player und Rollen besonders wichtig. Und es ist wichtig, dass Menschen gemeinsam eine wünschenswerte Zukunft erschaffen, nicht gegeneinander. Empfehlungen an die verschiedenen Player sind:

- <u>Wissenschaft und Technologie</u>: Offenheit, Verbindung zu anderen Disziplinen, zu Menschen und zur Gesellschaft; Probleme adressieren, auf menschliche Bedürfnisse eingehen

- Business/Unternehmen: Grundsätzliche Änderung der Art und Weise, wie Business gemacht wird – keine Vorteile auf Kosten anderer und der Umwelt (end the zero sum games)
- NGOs&Interessensvertretungen: Vordenken, alternative Wege und Möglichkeiten aufzeigen und vorleben
- Neuer Typ von Politkern: Macht dient keinem Selbstzweck, sondern wird vertrauensvoll eingesetzt, um eine sichere, fruchtbare Basis für Kreativität und Innovation zu schaffen, anstatt Ängste zu schüren
- Administration: Schaffung einer sicheren, fruchtbaren Basis und eines fairen Spielfeldes für die blühende Entwicklung neuer digitaler Technologien
- Medien: Bewusstsein fördern und schaffen; weder blinde Verherrlichung noch Dämonisierung digitaler Technologien – kein Geschäft mit der Angst
- Menschen als Individuen: Verantwortung übernehmen; symbiotische, gegenseitig unterstützende, fruchtbringende und ermächtigende Beziehungen zu anderen entwickeln; Bewusstsein für eigene Denk- und Handelsmuster entwickeln und Muster aufbrechen

1. Methodology – Scenario Process

1.1 The Origin Of the Scenario Process

The Scenario Process, also called Scenario Planning, was first applied by the U.S. Air Force for strategic planning in the 1940's. The military organization tried to imagine what opposing forces might do and developed alternative strategies accordingly. In the 1970's, the oil company Royal Dutch-Shell adapted Scenario Planning for business purposes with great success: Shell had already been prepared for an oil-shock scenario when others did not even dare to think about it. As a result, Shell was able to skyrocket from a rather weak market position to the top two of the world's leading oil companies. Since then Scenario Planning has been used for decision making globally - by Shell, the World Energy Council, the Government of Singapore, South Africa, public entities, non-governmental organizations and companies of all sizes.

It is important to note that the scenario process is not about predicting the future or getting the future right: *"Scenarios are not predictions. It is simply not possible to predict the future with certainty. […] Rather, scenarios are vehicles for helping people learn. Unlike traditional […] forecasting or market research, they present alternative images of the future; they do not merely extrapolate the trends of the present."*[4]

1.2 What Are Scenarios and What Is Their Impact?

> *"Building Scenarios is like making a journey of exploration. It can change how we see and understand the world."*[5]

Scenarios are different views of the potential future and they open up new ways to tap into the endless sea of possibilities the future can hold if we do not bury our heads in the sand and start creating the future instead of just reacting to it. The presumption is not that we can predict the future, but that we can co-create it if we see various potential paths into the future and understand how to build and influence them. The questions that are discussed include the following: What drives the future of the topic we are looking at? What do we feel is uncertain? How can we get to a desirable end-state? How can we contribute to these developments? That makes the Scenario Process an excellent way to think about driving forces and the future's critical uncertainties. Also, collaborative conversations, typical for the process, lead to changes in perspectives.

Here is a short overview of the beneficial impact a scenario process usually has[6]:

- Enabling the exchange of a wide variety of ideas in a collaborative, conversation-based process

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[4] Peter Schwartz (1991): *The Art of the Long View: Planning for the Future in an Uncertain World*, Currency Doubleday, New York, p. 6

[5] Royal Dutch Shell (2008): Scenarios: An Explorer's Guide, Internet: Link to the PDF, p. 8 (last accessed on February 17, 2020)

[6] cf. Peter Schwartz (1991): *The Art of the Long View: Planning for the Future in an Uncertain World*, Currency Doubleday, New York

- Widening perspectives and gaining new ones: "Scenarios address blind spots by challenging assumptions, expanding vision and combining information from many different disciplines."[7]
- Challenging existing beliefs and thinking patterns
- Focusing on the drivers and uncertainties of the topic
- Thinking of the future in order to be prepared for it instead of being paralyzed in case of a worst-case scenario
- Taking better, conscious decisions in awareness of the drivers behind them
- Training the mind to think about different versions of the future at the same time and thus seeing the future's many possibilities and imagining ways to exploit chances and opportunities[8]

1.3 The 6-Step Approach

The Scenario Process itself is a flexible methodology, which is always tailored to the specific challenge to be tackled and decisions to be made. We defined a 6-step approach for the scenarios concerning the topic "NGI – The Internet for People 2040" which were conducted in three expert workshops and will be explained in more detail in the following part.

Overview Of the 6 Steps:

1) Framing the Challenge
2) Identifying Driving Forces
3) Defining Critical Uncertainties of the Future
4) Building the Scenario Cross
5) Fleshing the Scenarios out and Creating Story Lines
6) Assessing Implications and Defining Possible Responses

1. Framing the Challenge

In the kick-off meeting with representatives of the Federal Ministry for Transport, Innovation and Technology we first defined the challenge we wanted to tackle in the scenario process as follows:

How can we shape the future until 2040 in terms of trust, inclusiveness, openness and security in such a way that digital technologies and networks enable people to create a conscious, free, responsible and self-determined life?
How should people/citizens shape their roles in politics, administration, interest groups, NGOs, academia, media, and businesses in this respect?

Looking more than 20 years ahead might seem a bit daring. But it is not done in hubris of thinking that we could look so far into the future or predict far distant developments. The reason for looking so far ahead is that when we only look one, two, or even three years into the future, the mind is captured too much in the current reality. Looking further ahead gives

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[7] Royal Dutch Shell (2008): *Scenarios: An Explorer's Guide,* Internet: Link to the PDF of the Explorer's Guide, p. 16, (last accessed on February 17, 2020)
[8] cf. ibid.

the mind the freedom to think the unthinkable and get really creative. It opens the door for imagination, for thinking out of the box and it diminishes the resistance to the idea that it is possible to create a new, very different future.

2. Identifying Driving Forces

Step 2 was gathering and discussing driving forces, which are defined as factors with the potential to cause significant changes now and in the future, in the **first scenario workshop with the chosen expert group in Vienna on March 27, 2019**.

After a short presentation of driving forces identified in a previous scenario discussion at EBDVF 2018 (follow this link to the EBDVF 2018 program website and follow this link to the livestream video of the session) and ICT/Imagine 2018 (follow this link to the Imagine 2018 program website) concerning the topic "Responsible AI of the Future" and the input from existing NGI-Activities as inspiration, the experts were asked:

What are
1) political & legal
2) sociological & philosophical
3) business & economical
4) technological
5) ecological
factors driving the described topic now and in the future?

The goal of the task was developing a view of the main forces that will drive the topic "Next Generation Internet – The Internet for People" between 2019 and 2040.

On June 6, 2019, after the three expert-advisory-workshops were already completed, the author additionally had the opportunity to discuss future scenario questions concerning the topic "NGI – The Internet for People 2040" with **14 to 17-year-old students** in a **workshop** aimed at contributing to the Austrian Youth Strategy. The next generation was very enthusiastic about contributing their viewpoints.

The students were asked three open questions:
- If you could look into the future of the development of Next Generation Internet technologies, what would you like to know?
- If the future unfolded according to your wishes, realistically but optimistically, what would it look like?
- If the future unfolded in the wrong direction, what would you worry about?

What was remarkable is that the students were very well informed about AI for example, that they named very similar driving forces to the ones the experts had identified and, last but not least, that they have a lot of worries about the future.

The specific driving forces are described in detail in the part "The Driving Forces – Certain Trends and Critical Uncertainties Among Them" in this report.

3. Impact- Uncertainty-Matrix: Defining Critical Uncertainties and Certain Trends

The scenario process is a good way to look at uncertainties. In order to define **Critical Uncertainties** and **Certain Trends** among the identified driving forces, a so-called **Impact-Uncertainty Analysis** of the previously discussed driving forces was undertaken in a group discussion also in the first scenario workshop on March 27, 2019. In this task the driving forces were ranked on the Impact-Uncertainty-Matrix presented below.

The question guiding the discussion was: "How important are the driving forces and how uncertain is their development?" At the end of the discussion all the driving forces were plotted on the matrix in order to visualize their relevance for the scenarios and to identify certain trends (upper left corner) and, more importantly for the scenarios - critical uncertainties (upper right corner).

The important part for the further scenario development is to be found in the upper right corner: the critical uncertainties. Why so? Because in contrast to certain trends and predetermined elements, which cannot be changed, critical uncertainties still may be influenced and even created in a different way. That is the reason why they are in the focus of the scenario building process. When nothing is certain anything is possible.

Figure 1 shows the Impact-Uncertainty-Map concerning the topic "NGI – The Internet for People 2040" described extensively in the part "The Driving Forces – Certain Trends and Critical Uncertainties" of this report

4. Building the Scenario Cross

The **second scenario workshop** with the dedicated expert group on April 25, 2019 started with another look at the Impact-Certainty-Matrix plotted in the first workshop to make sure the factors were placed in the right spots. In the discussion, the factor "**Fragmentation of the Access to Infrastructure**" was moved from certain trends to critical uncertainties as it was perceived to be closely related to the critical uncertainty "**Fragmentation of the Internet into Islands**".

The next step in the process was the selection of the **two most significant and important critical uncertainties** and the discussion of their **alternative developments in order to form the "Scenario Cross"**, a matrix, which defines four different scenarios in four different quadrants. The two selected uncertainties forming the two major dimensions of the scenarios concerning "NGI – The Internet for People 2040" are: **1) Ecosystem: Where are the resources and how are they facilitated?** and **2) Social Texture: What do we care about?** These dimensions are described in more detail in the section "Scenario-Cross – Dimensions" of this report.

5. Fleshing the Scenarios Out and Creating Storylines[9]

After the skeleton of the scenarios had been defined in the scenario cross, the creative part of fleshing the scenarios out and thinking of storylines began. For this purpose, we imagined having travelled in time and looking back from the year 2040. The expert group was guided to describe the future end state of the different scenarios, paint a detailed picture of what the scenarios look and feel like and describe the developments taking place over the next 20 years leading to the specific outcomes. According to their predominant features and focussing on how the individual feels like and lives in the various scenarios they were named:

1) The Connected Surfers
2) The Worker Bees
3) The Lonesome Cowboys
4) The Unconscious Prisoners

The detailed scenario descriptions may be found in the part "Scenario Descriptions" in this report.

6. Assessing Implications and Defining Possible Responses

Last but not least, implications of and possible responses to the scenarios were discussed in the 3rd scenario workshop on May 23, 2019. The group was generating options along the questions:

▪ How would the group want people to act in their various roles in politics, administration, interest groups, NGOs, academia, media, and businesses in order to create the best-case scenario in which the future is shaped in terms of trust, inclusiveness, openness and security in such a way that digital technologies and

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[9] cf. ibid. p. 50

networks enable people to create a conscious, free, responsible and self-determined life? How can positive developments be supported?

As scenarios are not meant to predict the future, but rather to help us recognize different drivers and uncertainties of the future as chances to make it better, we were not aiming at developing a fixed strategy or roadmap to follow, but rather at giving some **suggestions to inspire further consultations and discussions**. The result may be found in the part "Implications and Possible Responses".

1.4 Using the Scenarios

An important purpose of building and using scenarios is to raise the awareness of the critical uncertainties of the future as well as of the different ways the future may unfold. People can use scenarios to structure their discussions about the future. The stories provide them with the possibility to deal with uncertainties in a flexible way without being overwhelmed or paralyzed by any development. This is intended to prepare them to respond faster and more effectively to changes in their environment. At the same time, scenarios make it easier to keep various possibilities in mind without losing the focus on the most important driving forces and critical uncertainties.

As the discussion with the students has shown, there is a real need and desire of the young generation to discuss the future of digital technologies in a human-centred way. The discussion about the implications of these technologies for themselves and society in future scenario questions was more appealing to them then just being informed about a specific technology. Thus, it is desirable, to conduct more student workshops. A possible way would be to highlight the technological uncertainties:

- **Address fears**: Show, that **AI singularity** is less likely than the current discussion might want us to believe, but sub-categories like machine learning and deep learning are already in usage. According to the students' recommendation, cases and examples are useful to make this tangible for them.
- **Show future potential**: explain what **quantum computing** is, its current development stage and why it is an important driving force for future digital technologies and networks
- **Raise awareness** in dealing with **future media** and **social networks**: we do not know which networks will be used in the future. There is a lot of room for creativity here; it presents a lot of opportunities and chances, but also threats. The next generation has to be aware, that these technologies make them very transparent and that the internet does not forget. The user has the ultimate power and decides with every click where attention goes and what will be shown on these channels next. Thus, a responsible usage is the key.

2 The Driving Forces – Certain Trends and Critical Uncertainties Among Them

2.1 Introduction

As mentioned before, driving forces are factors with the potential to cause significant change in the future. In the first scenario workshop on the topic "NGI – The Internet for People 2040" at BMVIT in Vienna on March 27th, 2019, the chosen expert group identified driving forces for this topic in line with the description given above. The experts were asked:

What are
1) political & legal
2) sociological & philosophical
3) business related & economical
4) technological
5) ecological

factors driving the described topic now and in the future?

The driving forces were then plotted on an **Impact- Uncertainty-Matrix** with the goal of visualizing their importance for the scenarios and identifying **Certain Trends** and **Critical Uncertainties** among them. The questions discussed here were: How important are the various driving forces and how uncertain is their development? What do we feel is uncertain but very important?

The driving forces are described in more detail in next part and classified as a Certain Trend or Critical Uncertainty. **Political & legal, sociological & philosophical, business & economical, technological,** and **ecological factors are visualized on the matrix in different colors.** As many of the drivers are interwoven with each other beyond these categories, this clustering is intentionally broken up in the description part and the factors are summarized in logical umbrella topics.

The matrix and findings derived from it are presented in the following section.

An impact-uncertainty matrix generated in the previous scenario discussion on the topic "Responsible AI of the Future" at EBDVF 2018 (Link to the EBDVF 2018 program website and Link to the livestream video of the session is clickable) and ICT/Imagine 2018 (Link to the Imagine 2018 program website) which was presented as inspiration for the NGI-expert group is included here as well, as this report refers to it and compares it to the NGI-scenario discussions in certain parts.
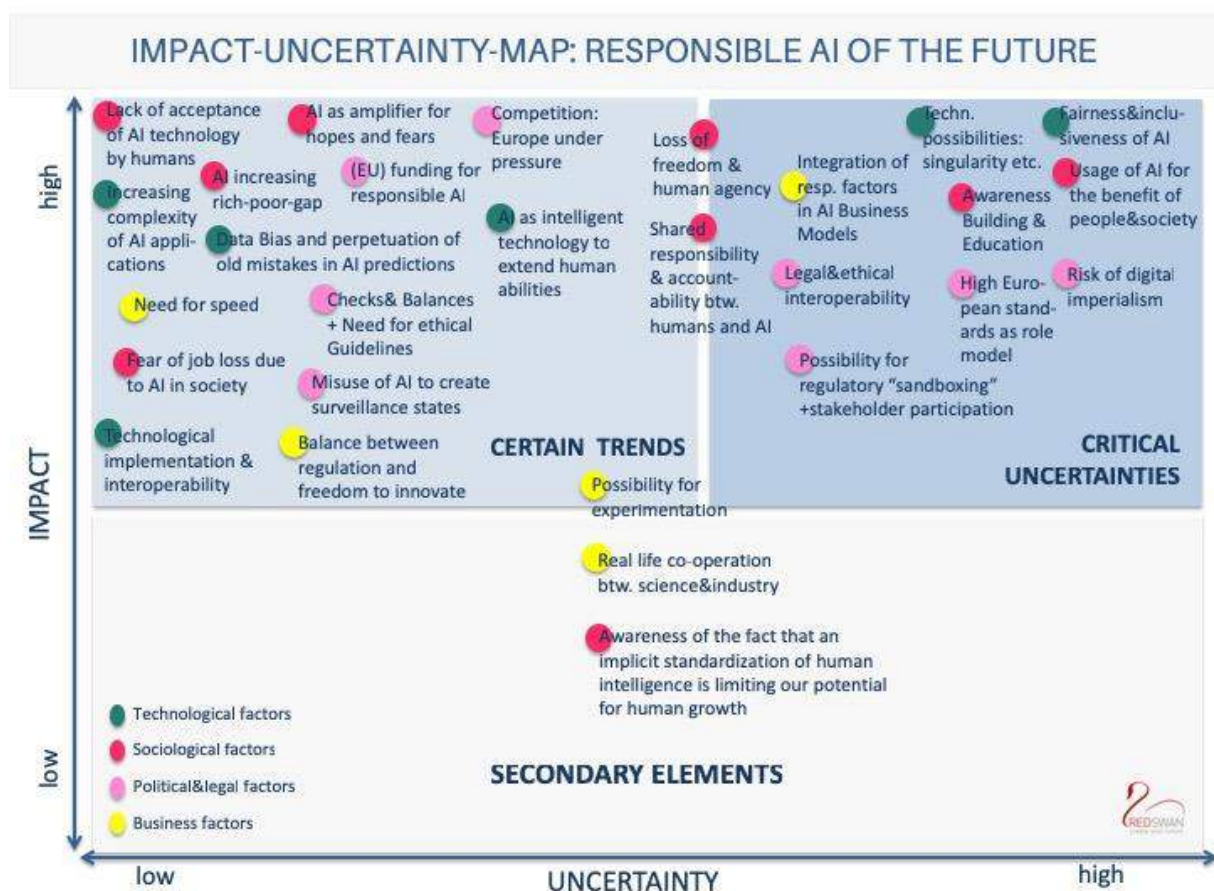
Figure 2 shows the Impact-Uncertainty-Map concerning the topic "Responsible AI of the Future" described extensively in the "Summary: Driving Forces and Critical Uncertainties of Responsible AI". ®Red Swan

2.2 Certain Trends

2.2.1 Summary

In the scenario process, certain trends are driving factors which have high impact on the development of the "Next Generation Internet – The Internet for People 2040" and the direction of their development is rather certain. That means we already more or less know – or believe to know – the direction of their development and do not expect that this trend will change significantly until 2040.

Among the highest ranked certain trends driving the development of the Next Generation Internet for People 2040. are the following: **urbanization**, the **ubiquity of digital technologies,** including the fact that **they do not forget**, the **internet as a driver for education** and the **need for safety and security** that stems from **increasing complexity** and **overwhelm** because of it.

That means, in 2040 we live very **urban, transparent** and rather **uncertain, complex** and **overwhelming** lives, which makes us long for **more safety** and **security** we probably only find in **secure connections to other people. Digital technologies are accompanying us everywhere** – it is a highly technology infused world.
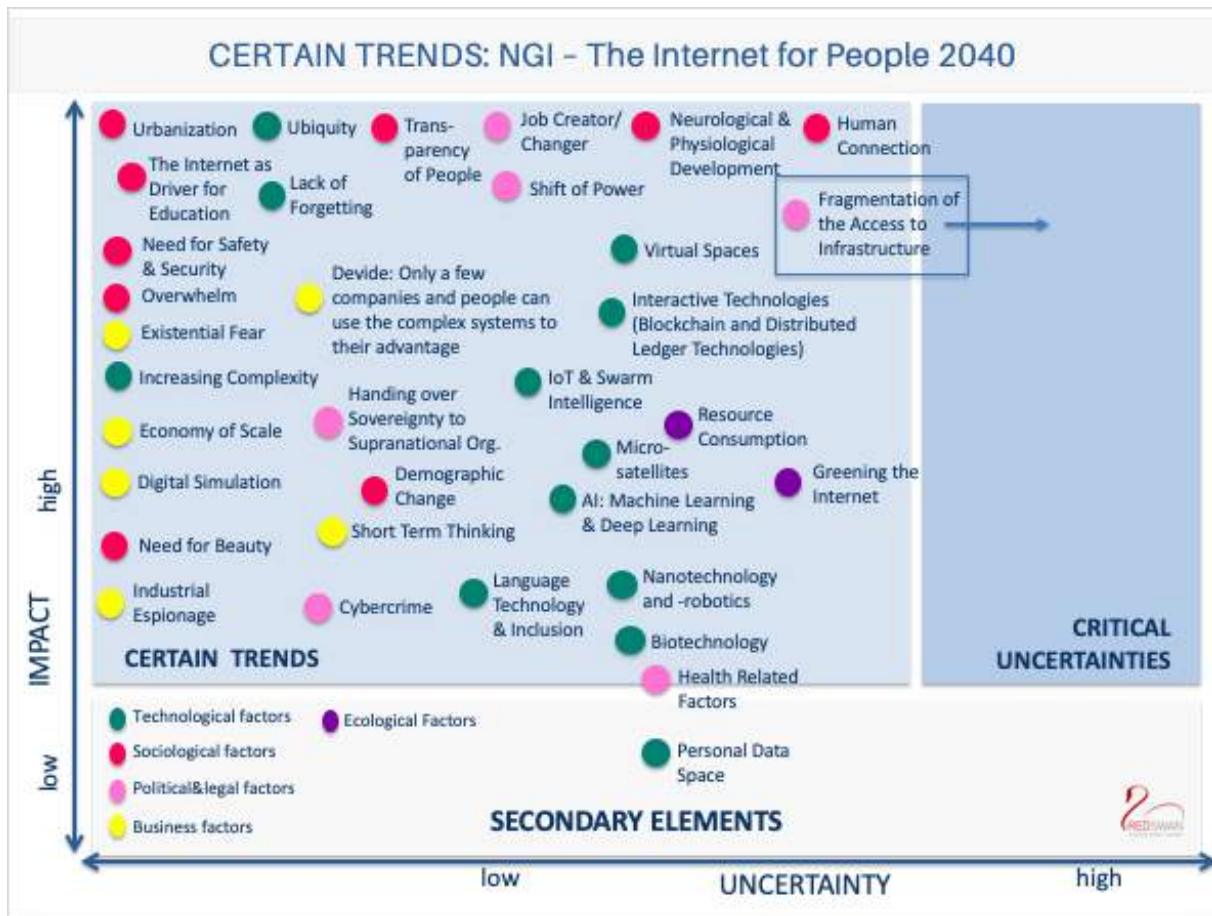
Figure 3 shows the Certain Trends plotted on the Impact-Uncertainty-Map concerning the topic "NGI – The Internet for People 2040" described extensively in the surrounding text.

2.2.2 Urbanization and Demographic Change

The highest ranked certain trend is **urbanization**. It is seen as a very strong, certain driver for the development of digital technologies. **Virtual spaces** and **digital simulation** were named as technological drivers **enriching the urban experience** in all scenarios. **Cities are complex systems** and thus prone to be supported by useful technologies like **big data analysis** and **artificial intelligence** which help us deal with huge amounts of data and make use of it in a responsible way. On the other hand, a complete **surveillance of citizens** by the use of digital technologies, as it is practiced in China, for example, is not a desirable development, but rather a huge concern of citizens. What is alarming is that the **misuse of AI to create full surveillance states was already seen as a certainty** in the discussion on "Responsible AI of the Future". This very possibility seems to be China's main driver for striving to become the world leader in AI technologies by 2030. That makes democratic values and guidelines in Europe even more important. **Humans and their wellbeing need to be in the focus of urban technology use**. **Technology** should not be religion or a dictator, but a very useful tool for **enhancing the urban experience for all citizens**.

Another certain trend which has a huge impact on cities is a **demographic change**. In 2040 we live in an urban world with **changed demographics.** In Europe, this clearly means an **aging society**. Thus, we will have to think of creative ways to connect elderly people, growing in

number, with younger people to fight increasing loneliness and also - to make sure they are cared for. There are great approaches in the Netherlands for example the platform https://stichtingseniorenstudent.nl, bringing together senior citizens and students in a win-win-situation: the students are looking for an affordable place to stay and the elderly people can provide that easily while gaining social connection to new companions. **Digital platforms** help them **find each** other and **connect**.

International migration to cities is also not likely to stop in the near future. **Inclusive language technologies** can help us in great ways to communicate with each other seamlessly across language barriers: there are already **AI-powered real-time voice translation technologies** available now (like https://www.tywi.de for example) and there might be more in the future which could also serve as great tools for **urban tourists**. Furthermore, internet technologies make it easier than ever for **digital nomads** to lead a **flexible, mobile lifestyle**.

2.2.3 Ubiquity Of Digital Technologies – A Technology Infused World

There is no doubt that **digital technologies** will be **deeply immersed in our daily lives** in 2040. The strongest **technological drivers** among the **certain trends** are **ubiquity**, **absence of forgetting**, which leads to increasing **transparency of people**, and **increasing complexity**. That changes the lives of individuals fundamentally. Everything we post on the internet, will be saved and we become more and more transparent. On the one hand, this can greatly enhance authenticity and the recognition of our own patterns in order to break them, but on the other hand, it can amplify things like public bullying and hurting other people intentionally.

Virtual Spaces, **interactive technologies** and **blockchain and distributed ledger technologies**, **IoT** and **swarm intelligence**, **microsatellites**, **artificial intelligence**, **digital simulation**, and **inclusive language technologies** are seen as implemented in our daily lives in various ways in the year 2040. **Nanotechnology**, **nanorobotics** and **biotechnology** also play a considerable role. **What is interesting is that the experts did not rank AI as high as it might seem in the current discussion which highlights hopes, fears and hype around this technology.** They explained that in 2040 AI would not be discussed anymore. It will simply be used. This was also reflected in the Impact-Uncertainty-Matrix concerning the topic "Responsible AI of the Future". The possibility of implementing the subareas of the AI technology like **machine learning** and **deep learning** in various ways was seen as a certainty, whereas AI as intelligent technology to extend human abilities was also described as feasible. These subareas have already reached market uptake at the time of this report. What the experts in the "Responsible AI of the Future" sessions as well as in the NGI scenario process clearly doubted is that we will reach AI singularity – not even by 2040. And furthermore, this was not seen as our main concern. Thus, this awareness could also be used to **decrease the fear** of a terminator nightmare scenario for human kind.

2.2.4 Overwhelm, Complexity, Fears and Needs – Technology Connecting and Separating People

Digital technologies are an amplifier for big hopes and big fears among people.

With no doubt the **need for human connection** is a certain driving force for human behavior now and in the future and digital technologies can greatly enable these connections, Even **virtual reality games** can help to find new friends, as one expert explained from her personal experience, but they can also disconnect people and **increase loneliness** and **isolation**, - developments we clearly have to deal with in new ways. Loneliness is an increasing problem already at the time of this report. In 2018, the U.K. even appointed a loneliness minister to address this societal challenge. And using **virtual reality glasses** to **mute and numb out your children** while eating out at a restaurant, like one expert pointed out as an alarming example, is certainly not a step in the right direction.

People are increasingly experiencing **overwhelm** because of the **increasing complexity** enhanced by digital technologies. Only a few are able to understand the complexity and use these technologies to their advantage.

This leads to **existential fears** including the fear of job loss and the fear of failure. The described **overwhelm** and fears clearly highlight the human needs which are not met here and need more attention: the **need for safety and security**, the **need for beauty** and the **need for human connection.** If the need for beauty just surprised the reader's eye in this context, here is a short explanation: beauty is essentially something we enjoy rather than use. In a very hectic and goal-oriented world, the non-utilitarian, undivided enjoyment of beautiful flowers for example has been pushed to the background. But giving something **undivided attention** without a specific goal not only decreases stress, but also increases creativity.

Making people less and less able to give undivided attention can be a real risk associated with digital technologies: When not used in a **responsible** and **conscious** way they can easily **clutter our minds** and **increase unawareness of our own patterns** as they **distract us.** We l**ose the ability to focus** and give attention and thus **lose our creative potential** as **human beings.** And without actualizing our **creative potential,** we also **lose our capability to solve problems** which in the long run could lead to real disasters.

Ecological factors mentioned as certain trends in the discussion are the increasing **resource consumption** and the consequential desire of "**greening the internet**". As the paper "Green AI" by Roy Schwartz et al. shows, deep learning, for example, consumes enormous amounts of energy: *"The computations required for deep learning research have been doubling every few months, resulting in an estimated 300,000x increase from 2012 to 2018. These computations have a surprisingly large carbon footprint."*[10]

2.2.5 Short Term Thinking & Economy Of Scales – Too Fast and Too Furious

Short term thinking is a certain trend posing a real **threat** and **hindrance** to the development of digital technologies and networks which enable people to create a conscious, free, responsible and self-determined life. We really have to address this if we want to **highlight European strengths** in the **global competition race**. As we discussed possible responses to the

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[10] Roy Schwartz, Jesse Dodge, Noah A. Smith, Oren Etzioni (2019): *Green AI*, ArXiv abs/1907.10597, Internet Link: https://arxiv.org/pdf/1907.10597.pdf (last accessed on February 17, 2020)

scenarios and recommendations, experts stressed the importance of **investing more in basic research** in order to **stay competitive** as Europe. This has always been a European strength we should **not jeopardize for short term market wins**. It is important that inventions are used to address human problems, needs and desires and not only to be brought to the market, but if we do not **give scientists the freedom to experiment and fail,** we are bound to destroy the **basis for great innovations in the future**. Admittedly, Europe, its politicians, its companies, and its people find themselves under **severe competitive pressure** concerning topics like AI for example, but that does not mean that we should participate in a "**race-to-the-bottom**" with totalitarian countries like the People's Republic of China and throw all our values and strengths overboard to win the race. This is very likely to backfire in the long run. Why not find another, European way which focusses more on long term than on short term goals and emphasizes our high standards and values?

Short term thinking is also a **problem in the current management incentive systems**. When managers are evaluated and get their bonuses by reaching 1- or 2-year short term goals, they **can** and **will not foster risky, disruptive, and uncertain innovation projects**.

The dictate of **economy of scales,** another factor seen as a certain trend, does not make that any easier either. If we only focus on quantity, China will probably always win. But faster and more is not necessarily better in the long run.

2.2.6 Shift Of Power – Losing Sovereignty and Control

The experts see a clear **shift of power** already happening. We are increasingly handing over our sovereignty to **supranational organizations**.

And we are handing over our personal power not only to supranational organizations, but to **technologies** and **companies** as well. At the World Economic Forum in Davos 2019., Salesforce CEO Mark Benioff raised his concerns about the consequences for those countries and companies that are not able to use technologies like Artificial Intelligence to their benefit:

„We are risking a new tech divide, between those who have access to artificial intelligence and those who don't. I so strongly believe that AI is going to be a new human right. Every person, every country needs to have access to this critical new technology. Of course, today only a few countries and a view companies have the very best Artificial Intelligence in the world. And those who have the AI will be smarter, will be healthier, will be richer. […] What are we doing to really bring these technologies to everyone? Those without AI are going to be weaker, poorer, less educated and sicker. […] So, we must ask ourselves: Is this the kind of world we want to live in?"[11]

In the "Responsible AI of the Future"-matrix, the factors: **paradigm shift in decision making – loss of human agency and freedom** and **shared responsibility** have been placed on the line between critical uncertainties and certain trends, which means we are now on the verge of **giving up our responsibility and handing it over to machines**. And we have to decide now if we want that or not. Christoph Müller quoted Charly Chaplin in this context saying: "We have the

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[11] Business Insider (2019): *Salesforce CEO Mark Benioff Calls Artificial Intelligence New Human Right*, Internet: Link to the article on busnessinsider.de (last accessed on February 17, 2020)

power to build the machines." Yes, we do, and we can also switch them off before we have handed all our human responsibility over to them. If we as humans do not **take responsibility for our lives and our decisions**, we should not be surprised if one day we wake up in a dystopian future.

2.2.7 Job Creation and Self-Induced Education

Contrary to many headlines and public debates, the experts believe more in the **possibility of job creation** than in the destruction of job opportunities by digital technologies. They see the potential for changing existing jobs and creating new ones. **And they see digital technologies as drivers for self-induced education.** Even today youtube, MOOCs (massive open online courses) like https://www.coursera.org or https://www.edx.org, etc. make it possible to learn almost everything via the internet. **Digital technologies have democratized information and education** once reserved to the wealthy and it would be desirable to use them in this way in the future, too.

2.2.8 Neurological and Physiological Development – Health Related Factors

Digital technologies do have an impact on our neurological and physiological development. That is of specific concern when children and young adults use these technologies. As a workshop with 14 to 17 year old students has shown, young adults themselves are concerned with various health problems like back problems – more and more teenagers already need to wear corsets in order to address their back pain –, pain in the thumbs caused by the excessive use of smartphones and neurological problems. **Internet addiction** was a topic also mentioned by the young people. "People are different. Some like to come to expert workshops like this one, others, who might have real problems, don't. So, we would suggest helping each other in **peer-to-peer support**", explained one of the youngsters as a possible response to problems like internet addiction.

The desire "**to green the internet**" was already mentioned. As the world in 2040 is very urban, we also have to think about how to get **healthy food with low CO2 footprints** into the city. **Digital platforms** like markta.at or myproduct.at are good signs in this direction but also in sectors like **urban vertical farming digital technologies** can play an important role and **revolutionize traditional concepts.**

2.2.9 Cybercrime and Industrial Espionage

Cybercrime and **industrial espionage** are seen as certain facts we will have to deal with in 2040. A possible solution the experts mentioned was to **generally encrypt the internet** to decrease security concerns.

2.3   Critical Uncertainties

Critical uncertainties are factors which are of high importance for the development of the Next Generation Internet, while the direction of their development is rather uncertain. Uncertainty is a good thing here, because it means we can still shape these factors and take responsibility for their future development. As seen very often in the scenario processes, there are more social, human related factors than technological factors among the critical uncertainties.
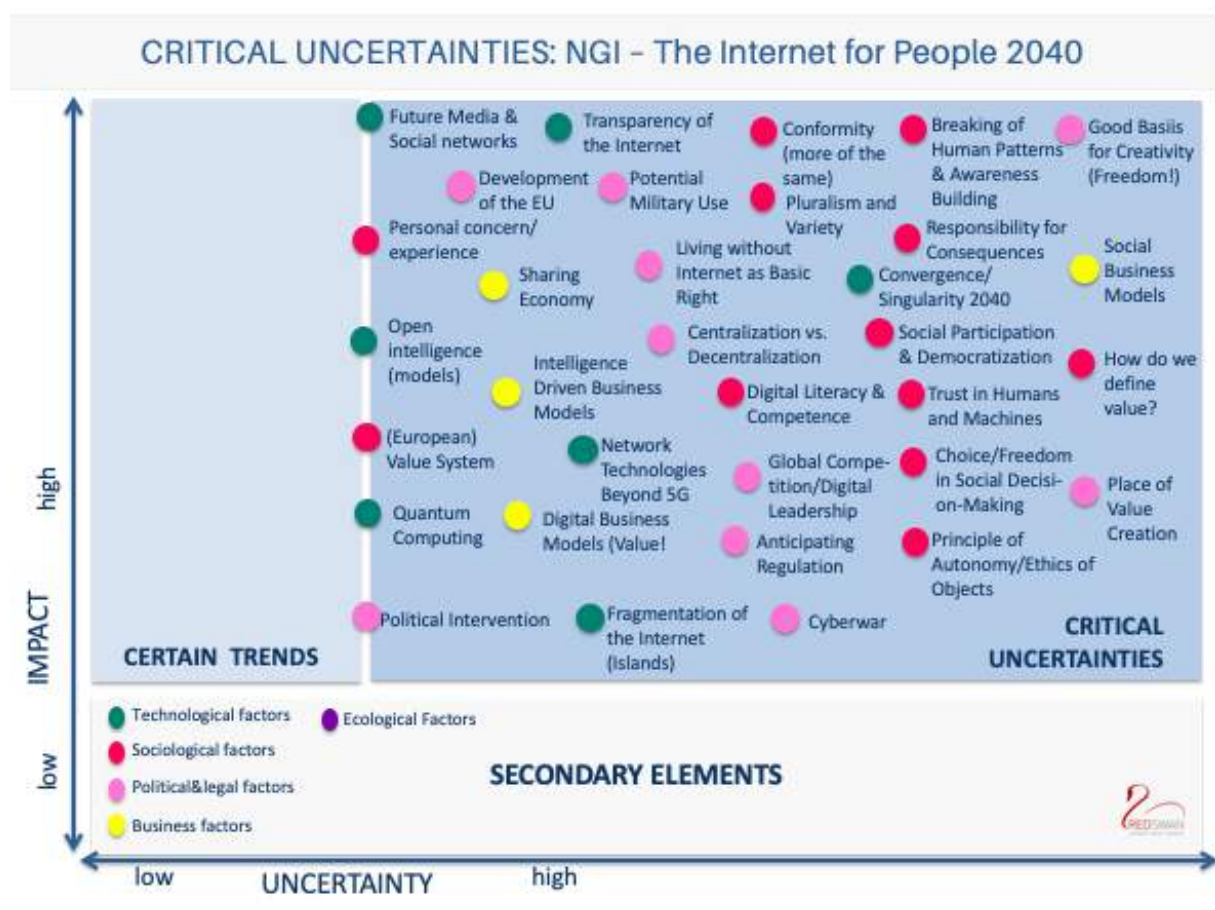

Figure 4 shows the Critical Uncertainties plotted on the Impact-Uncertainty-Map concerning the topic "NGI – The Internet for People 2040" described extensively in the surrounding text.

2.3.1 Fragmentation Of the Internet As Possibility

At the time of this report most people in the western world perceive the internet as unified entity and the access to it as free. But that does not necessarily have to be the case in the future. The **fragmentation of the internet** in many different Islands and a possible **fragmentation of the access to the internet infrastructure** are seen as important driving forces. The question is how we will handle such developments. Could they even be of advantage, like the possibility that many internet islands could make the internet more resilient? Or, alternatively - does the fragmentation of the access to the internet increase the existing rich-poor gap caused by current technologies such as Artificial Intelligence?

2.3.2 Future Digital Technologies: Nothing To Fear

An important lesson to learn is that we have to be **aware of new technological developments** but **restrain from generating fear around them**. Media and opinion leaders have to take responsibility in that respect and stop fueling and instrumentalizing fears in the population.

AI singularity and convergence was ranked as the **most uncertain technological driver**, similarly to its placement in the responsible AI matrix. That is interesting as media articles and headlines often outline this "impending" threat as very real and thus generate a lot of fear. The workshop with students showed, that young people are also very concerned about this technology. But experts seem not to be convinced that this is our main concern – not even 20 years from now – because there are certain technological limitations to it. While AI-subareas like machine learning and deep learning have become a real hype within the established businesses and startups and have reached market uptake, AI singularity was seen as highly uncertain. IBM Asia Pacific CEO, Harriet Green, recently also voiced that in her opinion "The imagination that AI-systems could overtake world leadership is science fiction. "[12] Of course, this is a debatable topic, but the involved experts ranked this possibility as highly uncertain.

Future media & social networks as well as **technological transparency of the internet** were ranked as the technological uncertainties with the highest impact on our question of enabling people to develop a conscious, free, responsible and self-determined life. **Open intelligence models** may contribute to the transparency.

When discussing the future with social media experts, they would always like to know which **new social media channel** will be next to bet on. The answer is - we do not know. New channels can emerge any time, and the users will decide which one to use. Flexibility will be the key as well as the increase in **taking responsibility for the content** published on **social platforms** and by the **future media**. Content should never dehumanize other human beings. Entertainment and **media** hold immense potential and are **highly influential**. But, in the digital age, more than ever, the media **reflect what is of interest to humans**. The content is defined by what gets attention, by ratings and subscriptions. Thus, **people are in control** of what is presented in the media and they **shape the future with every new click**. If people change what they give attention to, the content in the media will change, too. Thus, once again, the responsibility lies with the individual.

New network technologies beyond 5G and **quantum computing** are also technological factors ranked among the critical uncertainties. The experts recommended investing more in basic research in order to gain competitive advantage in Europe in the long run. These two sectors can be important focus areas for that.

2.3.3 Freedom and Support For Creativity – Co-creative Ecosystem

A **Good Framework or Basis for Creativity** was identified as the most critical uncertainty in the right upper corner of the matrix. Interestingly, **political intervention** was not seen as the most important driver to provide such a framework – this factor was only ranked in the lower left

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[12] Vontobel (22.1.2019): *Die Denkfabrik aus dem Internet*, Internet: <u>Link to the article on www.vontobel.com</u> (last accessed on February 17, 2020)

part of the right quadrant. If there is an intervention like regulation, it should be smart, flexible, and **anticipating** (e.g. by regulatory sandboxing). **Freedom for creativity** and the term **"framework"** as such were seen as **contradictory.** What the experts could more agree on is the **significance of a co-creative ecosystem**. This discussion raises an important question - whether **resources are facilitated** in a **centralized** or a **decentralized** way? Is there a **secure basis** but also **enough freedom** for **creativity** and **innovation**? How can this be shaped in new ways? As Mihaly Csikszenthmihalyi pointed out in his book "Flow: The Psychology of Optimal Experience"[13], the creative flow is not necessarily dependent on the surroundings. We cannot wait for the optimal conditions to start being creative. But it is important to create an **innovative, open ecosystem** enabling **co-creation** between players, such as science&technology, established companies, startups, the media, young people, citizens, sociologists, philosophers, artists, etc.

Pluralism, Variety and Conformity

Pluralism and **variety** were seen as necessary ingredients in a **co-creative ecosystem**. **Conformity**, on the other end of the spectrum, diminishes creativity and yields "more of the same" instead of real innovation.

Change In the Educational System

Education lays the foundation for expressing creativity in authentic, uninhibited, intrinsic ways. So, in order to create a good basis for creativity, we will have to **change the whole educational system** and lead it away from training industrial, machine-like workers in the direction of educating responsible, creative human beings who have the **flexibility, security**, and **confidence** to **adjust to an ever-changing world.** The experts explained: "Children still know their intrinsic motivation and follow it if we let them." The Latin term "educare" originally means "to bring out". And that should be the task of parents and the educational system: to bring the unique potential of every individual out, not to make them fit into predefined molds like clumps of clay.

The participants of the panel on "Responsible AI of the Future" also highlighted this important enabler: "We need a **fundamentally different education system.** Right now, we are disciplining our children into industrialized workforce. We are training people to function like machines." And that, of course, does not work anymore when machines take over jobs, which they can do better than humans.

Digital Literacy and Competency – Enabling People To Benefit From These Technologies

In the "Responsible AI of the Future" discussion, the most critical uncertainties identified were "Fairness and Inclusiveness of AI" and the "Usage of AI for the Benefit of People and Society." **Digital literacy** and **competency** play a crucial role in **enabling people to benefit from future digital technologies** and **include them** in the developments. These technologies provide endless opportunities, but only if people learn how to use them to their advantage in creative ways.

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[13] Mihaly Csikszenthmihalyi (2008): *Flow: The Psychology of Optimal Experience*, Harper Perennial Modern Classics, New York

2.3.4 Defining Value and Social Texture

The main questions here are: Will we find **new ways of defining value** and value creation? Will entirely new things be of value in the future? If, for example, digital technologies take over repetitive and high precision jobs, we will have **to value human attributes like creativity** and **empathy more**, since they cannot be provided by a machine easily. More – also in terms of salaries and money.

The **main focus of value** and **value creation** should be **human beings** and their **relationships to each other**, which make up the **social texture**. **Humans** are a **social species** and as such **bound to connection** and **social participation**. And in Europe, we do that in **democratic** ways.

Personal Concern and Experience

People value products and services, which fulfill their desires and needs or solve problems for them. The closer an innovation comes to their **personal concern** and **experience**, the higher the likelihood that they recognize its value. Real behavioral changes in the usage of technologies can only happen if people perceive this do be important in their personal concern and experience.

Place of Value Creation and Formalized Value Systems Less Important

In the face of digital technologies, the **place of value creation** was ranked rather low on the matrix, in terms of impact (perceived as of medium importance), but it was also estimated as highly uncertain. Another driver of medium impact is **digital leadership in the global competition**. This is quite interesting as the need for speed, global competition and enormous pressure on Europe in the global AI race was seen as one of the main certain trends in the AI-Matrix. What is also remarkable is that **formalized value systems** were not ranked among the most critical uncertainties. **New value systems** will have to be **diverse**, **pluralistic**, and **continuously evolving**, not forced by a higher entity or the community.

2.3.5 Awareness Building, Freedom of Choice, and Taking Responsibility For Consequences

The **breaking of old mind patterns**, **awareness building** and **taking responsibility for the consequences of our actions** are critical uncertainties which already point in the direction of possible solutions. Since they are perceived as both highly critical and uncertain, there is a lot to be done here. As long as humans are unaware of their own subconscious patterns, they are at their mercy and keep repeating them over and over again. AI technologies, for example, are great in pattern recognition and can **greatly support the recognition of our own compulsive and conditioned thinking patterns** if we use them in the right way and start acting according to the findings.

Taking Responsibility (Back) and Trust

We **cannot shift the responsibility for taking decisions from ourselves onto machines**, which is actually very often the goal now. This is not and should never be their task. The responsibility of decision-making stays with us. **Taking back responsibility** also increases our **trust both in**

humans and machines: if the humans behind the machines take responsibility for the wellbeing of others, there is less to fear. Not taking responsibility in this way makes new technologies highly uncertain and potentially dangerous for humans.

Freedom Of Choice and Living Without the Internet As a Basic Right

In order to take responsibility for the consequences of our actions, we need to perceive **freedom of choice** in our **individual and social decision-making**. Who would take responsibility for their actions, if they did not choose them out of their free will? The more others decide for us, the less free we are in our decisions, and the less responsibility we take.

An interesting facet of the freedom of choice which was discussed vividly among the experts is the idea of establishing **"living without the internet as a basic right"**. It comes as no surprise that the above described **ubiquity of digital technologies** also triggers **counter-reactions**, like the wish to live a **life without the internet**. **Digital fasting** is already a trend in this direction. But not all participants agreed that this should be a basic right.

2.3.6 Business: Profitable Social Business Models Enabled By Digital Technologies – Changing the Way We Do Business Fundamentally

Consistent with the value and responsibility discussion, the development of **social business models** is one of the highest ranked critical uncertainties in the upper right corner of the matrix and the highest business-related critical uncertainty overall. In an ideal future like in the "Connected Surfers"-Scenario, companies that make profits by harming people, are out of business. What is discussed here is a fundamental change of the way we are doing business in general, not only labelling some businesses as "good" and "social". In fact, "social businesses" should not even be a term anymore. It is important to notice that this does not mean that social businesses are not allowed to make money. We have to create more profitable business models which do not harm people or the environment.

So important questions here are: Will we **change the way we are doing business fundamentally according to new values**? Will "**social business models**" be able to replace unhuman models in which companies can gain profits by harming people (e.g. automotive industry)? Can models of the **sharing economy** contribute to that? What are other solutions? **Co-creation** definitely plays a crucial role in the solution.

Another important question is - can the development of **digital business models** and **intelligence driven business models** contribute to the development of social business models? Or - are they used in the opposite direction to increase polarizations such as the rich-poor-gap in a society? In any case, we will need a lot of creativity and new ideas in order to **shape more responsible, social business models enabled by digital technologies**. This, in fact, is a great task for humanity as it combines two human factors which cannot be taken over by machines easily: **empathy** and **creativity**. In the "Responsible AI of the Future"-discussion, the successful **integration of responsibility factors into new digital business models** was perceived as the most important critical uncertainty from the business point of view, too. But companies wonder if clients and users will value this approach compared to solutions with less ethical standards. So, in this regard, there is also a lot of responsibility on the individual level, on the consumer side.

2.3.7 Potential Military Usage, Cyberwar, and the Development Of the EU

The **potential military usage** of digital technologies was ranked as a highly influential critical uncertainty, since military R&D investment was seen as a huge driver for innovation. **Cyberwar** in contrast was not seen as such a strong motivator and driver for digital innovation and as more uncertain than the military usage – which could also be the case in peace missions – in general.

The further **development of the EU** was seen as a strong driver of a rather medium certainty. Further breaking apart of the Union, after Brexit, would have an impact on the development of digital technologies in Europe, but it was not perceived as very likely.

High European Standards As Role Models In the World?

A main uncertainty from the political and legal side in the "Responsible AI of the Future"-panels was the **establishment of high European standards as role models in the world** and owing to its strong influence on the whole value discussion, it should be mentioned here as well. The crucial question is - are we able to wither international competition and adhere to our high standards and values in Europe? This discussion immediately triggered responses from the audience of the Responsible-AI-panel saying: "Definitely not. We are lacking behind already; we have no time to take the luxury to think about ethical aspects while China and the U.S. are overtaking us on the left and on the right side." But as described in the part on "short term thinking": not thinking about ethical questions and the consequences of new technological developments might lead to **short term gains**, but **long-term disasters**. So why not have the courage to take a specific European decelerated approach which, in the long run, may increase, not decrease our problem-solving capacities because we can rely on solid innovative foundations instead of quick wins.

3 The Scenario Cross – Dimensions

In an intense discussion, the expert group chose two critical uncertainties which summarize several others as the main dimensions in order to form the so called "scenario cross". Intentionally, no single technology was chosen as one of the dimensions, since this would have restricted the scenarios to one specific technological development, as it would be, for example, with the question - will there be AI singularity or not? Or, similarly with another one - will there be highly developed quantum computing or not?

The chosen dimensions are highly important for the development of the Next Generation Internet – The Internet for People 2040; they are very different from each other and can be expressed in a logical "either/or" dimension.[14]

The two chosen dimensions are:

1) Ecosystem: Where are the resources and how are they facilitated?
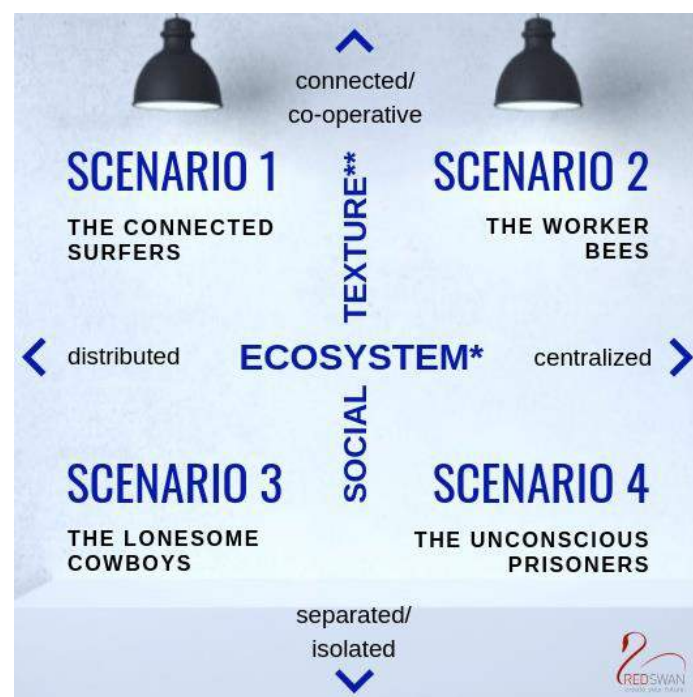2) Social Texture: What do we care about?

Figure 5 shows the Scenario Cross concerning the topic "NGI – The Internet for People 2040" described extensively in the surrounding text. ®Red Swan

The term **ecosystem,** as defined here, includes the discussion, if there is a good framework or basis for creativity (the highest critical uncertainty in the upper right corner of the Impact-Uncertainty-Matrix) and how it is provided. Are there **enough resources** and **support** for creative new ideas, digital technologies, and innovation and how are they **facilitated** and **managed**? Is a **centralized** authority governing and facilitating resources or - are they created

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[14] Cf. Woody Wade (2012): *Scenario Planning: A Field Guide to the Future*, John Wiley & Sons, New Jersey, p. 40

and **distributed** in **self-managed** ways? Is there **enough freedom for creativity** or is it **hindered** and **inhibited** by governmental intervention and **external circumstances**?

The term **social texture** includes things like **social participation** and also touches the topic of developing **social business models** and how much we value that. The underlying question is **"What do we care about and what do we value?"** On the other hand, social texture also includes the discussion if we use technology to form stronger, authentic connections to other people, to bring us closer together, or to further separate us and increase **loneliness** and **isolation**. Both constitute relevant problems already. Thus, the social texture can be **separated, disconnected, isolated** and **over-individualistic** or, alternatively – **connected, co-operative** and **community oriented,** as defined in the scenario cross.

The **need for human connection** was defined as a certain trend, but, on the other hand, whether we meet this need sufficiently is highly uncertain. What will be particularly important is how we form relationships with other people. Do we manage to create **symbiotic, mutually supportive**, and **empowered relationships by choice** (connected surfers), or - are they forced upon us by **strict value systems provided by the community** (worker bees)? Or - do we **ignore the interdependence of humanity altogether** and start fighting for ourselves recklessly, **without taking the best interests** and **wellbeing of other people into consideration** (lonesome cowboys & prisoners)?

Symbiotic, mutually supportive, and empowered relationships of the involved players will be the key to bringing the two dimensions together in a co-creative ecosystem.

4   Scenario Descriptions

Three of the four scenarios show developments, which in parts are current reality but need to be addressed and changed in order to develop digital technologies and networks which enable people to create a conscious, free, responsible and self-determined life. They show us the obstacles on the way to the promised land portrayed in the "connected surfers" scenario.

It is important to note, that the identified certain trends remain the same in all scenarios and thus are only separately mentioned in the scenario descriptions if their handling differs in various situations. So, in all scenarios, we live very **urban**, **transparent** and rather **uncertain, complex** and **overwhelming** lives and long for **more safety** and **security** that we try to find in **secure connections to other people**. **Digital technologies are accompanying us everywhere** – in any case, we live in a highly technology-infused world, but the way we deal with that and the related consequences are different.

In the following part the scenarios are described starting with the worst-case scenario and ending with the best-case scenario, the positive vision for the future:

- Scenario 4: The Unconscious Prisoners
- Scenario 3: The Lonesome Cowboys
- Scenario 2: The Worker Bees
- Scenario 1: The Connected Surfers

4.1   Short Versions Scenario Descriptions

4.1.1 The Unconscious Prisoners – Scenario 4

In the "unconscious prisoners" scenario people are neither conscious, nor free, nor self-determined. Technology has become the new God or religion; it imprisons and isolates us. One big tech-giant has taken over everything in the western world including social, economic, and political structures. It is the new central authority, which does not take the best interests and wellbeing of the prison inmates into consideration. The goal is to remain in power for power's sake by all means. The **technological innovator class** serves to support this purpose and is valued for that. They have an exponentially better life than all other members of the society who are not valued and left behind.

How did it come so far? We had admired the lonesome innovator cowboys who ruthlessly and recklessly went for disruptive innovations and success so much, that we did not realize that what they created lead to isolation and disconnection of all people. They were role models and heroes in the business world and one of them finally won the battle against each other in the western world and took over all the power and all parts of life. It had started seemingly harmless: more and more people unconsciously joined and followed this particular company and its technologies. It was so convenient, until we found ourselves imprisoned. Now everyone is in so much pain that they lose the capacity to care for each other. People feel completely **powerless** and **desire more freedom**, some dream of a prison break; but that is risky.

4.1.2 The Lonesome Cowboys – Scenario 3

The lonesome cowboys enjoy a lot of freedom, they are very self-determined and take responsibility for the creation of their life, but not for the consequences their actions have for other people. They create innovations ruthlessly against each other and without any community values or social concerns holding them back. The freedom for creativity leads to a **digital gold rush** situation. Everyone can claim and fight for new ideas, but no one supports the ideas of others. That leads to a constant fight for resources and a lack of security - like in the wild west. The lack of taking responsibility for the consequences of their actions decreases the trust both in humans and in machines.

The internet is fragmented in many islands or "claims". Disruption in digital technologies at any cost is the device in this scenario. Survival of the fittest is the governing law. Recklessness has become a business model. The digital cowboys live in a fully automated but socially disconnected world. They do not acknowledge interconnectedness and become increasingly alienated from themselves and others. The European Union is breaking apart, political entities are crumbling and collapsing. Everyone is out for themselves and takes change into their own hands without relying on any authorities to provide a stable basis. It is a very hostile surrounding, indeed.

4.1.3 The Worker Bees – Scenario 2

In the worker bee scenario, Europe is a strong, unified entity – one strong player who acts with speed and power and also claims its role on the world stage. Under the slogan "make Europe great again" everything is done to win the global race of digital leadership. In an attempt to shield the European digital market, Facebook, Google, Amazon, etc. have been driven out of Europe and her own platforms have been pushed in protectionist ways. The system favors big European businesses, small ones can hardly survive.

The ecosystem does not foster creativity, variety and pluralism. The resources are managed, and facilitated within a rigid, centralized framework. Conformity, rigidity, and convenience on the consumer side are main hindrances to creativity and real disruptive technological, social and business model innovations. People live in a highly risk-averse comfort zone and progressively shift the responsibility of decision-making onto technologies and governmental entities. The social texture is community oriented and co-operative in a forced way, not by choice. Value is defined according to the rules. The uniqueness of the individual is bulldozed by pre-defined community values. This leads to resentment in the individuals and the wish to break free. Thus, the lonesome cowboy scenario can be seen as a direct, extreme reaction to the worker bee scenario.

4.1.4 The Connected Surfers – Scenario 1

In this scenario, a **co-creative ecosystem** in which relevant, **diverse players** interact in **symbiotic, mutually supportive**, and **empowered relationships** provides a safe and secure basis for the creation of new digital technologies in the sense of these scenarios. It is mainly a **self-governed** and **self-managed system** full of **free choices**, **variety**, and **value pluralism**, that provides **interconnectedness of everything**. **Trust** is created **by openness**, **transparency**, and

taking responsibility for the consequences of digital technology developments. Incremental innovation as well as disruptive innovation is possible. Experimentation is highly supported. On this secure basis, people develop high **risk-intelligence** and can easily adjust to an ever-changing world. Continuous evolution is possible.

Interconnected internet islands also provide more **trust** and **resilience**. Digital technologies play together like in a fluid organism. There is a lot of variety and digital pluralism on the internet. Digital technologies increase awareness and enhance people's lives.

The connected surfers value being part of communities, co-operation and connection to other people, without sacrificing their individuality. People live a conscious, free, responsible and self-determined life.

4.2   Long Versions Scenario Descriptions

4.3   Scenario 4 – The Unconscious Prisoners

In this scenario, the **ecosystem** is **centralized but non-cooperative**. The **social texture** is **separated** and **isolated**. Distrust and isolation among people accompany the prison situation. Technology is used for control, separation, and dehumanization of human beings. One big tech-giant has won the competition race, gone rogue and taken over all power and control. Some experts called this scenario "Google World", because Google is absorbing all creative talent in the world at the time being. But it could also be called Facebook World, Amazon World, Alibaba World etc. Not to single out one of these companies, the ruling entity in this scenario will hereinafter simply be called "The Company".

There are already tendencies in this direction at the time of this report: "*Elizabeth Warren bites back at Zuckerberg's leaked threat to K.O. the government*"[15], captions TechCrunch an Article in October 2019. In a leaked recording of an internal Facebook Q&A session, CEO Mark Zuckerberg said that government proposals to break up Facebook's tech and communications monopoly, supported by Democrat presidential candidate Elizabeth Warren, are an existential threat to the company and that in response *"you go to the mat and you fight"*[16]. Warren responded by criticizing Facebook's anticompetitive practices and pledging to *"hold Big Tech companies like Facebook, Google and Amazon accountable"*.[17]

4.3.1   Controlled, Centralized Internet Infrastructure – A Prison Fortress

The highly **centralized**, sophisticated **internet infrastructure** is a threatening miracle to a normal user. Although the infrastructure is centralized, the content is highly individualized for every inmate. Everyone perceives something else in order to increase the **split** and **isolation among people**. They live in millions of different realities produced by high-tech.

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[15] Natascha Lomas (1.10.2019): Elizabeth Warren bites back at Zuckerberg's leaked threat to K.O. the government, Internet link: https://techcrunch.com/2019/10/01/no-you-suck/ (last accessed on February 17, 2020)
[16] See ibid.
[17] See ibid.

Discussions about separate European platforms are not relevant anymore. There is one ruler and that is The Company, not a national state or political conglomerate. **Politics has to serve the technology giant**, not the other way around. All resources are focused and absorbed by this particular company. The prisoners are controlled by the company's **social networks** and imprisoned by **digital technologies**. The **centrally provided platforms and technologies** are the only choice and have to be used.

4.3.2 Digital Technologies: Control, Fear and Isolation – Bioengineered Humans

Enabling people with digital technologies to create a conscious, free, responsible and self-determined life is not even a discussion here. The Company uses high-tech to **control** and **discipline the citizens** aka prisoners and further separate them from each other in **isolation**.

An **AI-driven 24/7 full surveillance system** keeps everyone on track. **Personal "assistants"** are in every household to **control the inmates**. No one can opt out and **there is absolutely no transparency** or **openness of the technologies in usage.** It is a crime to investigate them. Only a few chosen experts understand and work on the highly complex systems.

Technology is not used for the benefit of humanity; it is used against it and to **spread fear**. The more **fearful** and **unconscious** people are, the easier they are to **control**. Thus, **technologies are used like narcotics** to keep them **numb** and **unaware** of what is going on and of their power to change the situation. **Social networks** and **future media** serve as **propaganda channels to brainwash people** and numb them out.

Upload filters have not been enough. A **ubiquitous AI-driven control and censorship program** has been installed which alerts the central authorities as soon as there is something suspicious going on. **Predictive crime prevention** has been realized and people are locked away if they get into the radar.

The **darknet** is used by the **resistance breeding in the underground**, but it is highly dangerous to engage in these activities. **Blockchain-powered peer to peer networks** have been **destroyed** and it is **forbidden by law to develop** or **use** them.

Quantum computing, **new network technologies**, and **high-end AI** are developed in The Company's **secret laboratories** with no access for ordinary people. There is enough money for it as the central authority is eager to invest in these **technologies for human control** at the cost of basic human needs. Technology is the number one priority, humans, on the other hand, are not valued. Their deficiencies have to be mended by technology: **bioengineered humans** are a **favored research field** of The Company. Why rely on defective and insufficient human material, when you can make your own humans designed according to your needs and desires.

4.3.3 Many Restraints – No Freedom For Creativity

The company is not interested in the development of conscious, free, responsible, and self-determined people. They first and foremost have to be useful to The Company. That's how they are valued. Self-empowerment and individual creativity are not wanted.

Resources are **managed and facilitated in a centralized way**. The prisoners are provided for by The Company, but they have to take what they get. The Company decides who gets how much and who does which job. **The whole life is determined**. There are **no novel ideas or creativity coming from bottom up**. Innovation is not inspired by people's wants and needs. So called **"talent games"** are used to **spot misfits at an early stage** and to decide how to distribute people in the system to their jobs, not to boost creativity. The opposite is the case: individual creativity is perceived as too risky for the system and prevented from flourishing. The same holds true for **variety** and **pluralism**. Only **conformity** makes the system as stable as The Company wants it to be.

Political interventions like regulation or high tax burdens are not a topic here, The Company has successfully circumvented all of that and pays or (should we rather say?) - "employs" politicians to act in The Company's interests.

The tech-giant decides where the money goes. The Company **IS the ecosystem in which innovation has to happen**. Only research fields needed and wanted by The Company are funded, while other areas have no chance to emerge and develop. In the long run, this monopoly leads to a **decrease in innovation power**.

The educational system highly favors the "innovator class"[18]. Children who are talented in technological fields are separated from the others and trained in specific "talent labs". The others are left behind by the system - they only get a standardized basic training and can be glad to be molded in specific low-level jobs provided for them by the company. Intrinsic motivation, **flexibility** and **self-confidence** to **adjust to an ever-changing world are not supported or even wanted.** Thus, the system loses out on the specific talents and uniqueness of people in different areas and jeopardizes its innovation power by suppressing variety and pluralism.

Digital Literacy and Competency – Digital Devide Among People Increases

As everything is built on technology, The Company is interested to train the prisoners in the field of digital technologies. To show their attained **digital literacy** and **competency**, the prisoners have to compete in the so called "talent games". The winner may climb up to the "innovator class" and live an exponentially better life. The losers are punished with humiliating jobs. Along these lines, the training is not meant to enable people to benefit from digital technologies, but to further **increase the division in the population**.

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[18] Scott Galloway (2017): The Four: The Hidden DNA of Amazon, Apple, Facebook, and Google, Penguin, New York, p. 266

4.3.4 Defining Value – A Dehumanized, Distrusting, Hostile World

In this scenario, **technology replaces** other **value systems. It is worshiped and valued like religion or god**. On the other hand, humans, their relationships and connection to each other are not valued.

The Company does not need values to control people, technology does the trick perfectly. There are **rules** and **punishments enforced by technology**. The Company rules by using its technology for suppression and control. **Human rights** are not valued.

The Social texture in this scenario is **separated** and **isolated**: people distrust each other like in a common prison situation. **Survival of the fittest is a governing principle**. People are in so much pain, that they lose the ability to care for others completely. Furthermore, to prevent rebellion, the authority fosters **distrust** and **isolation**, which is a form of torture to social beings.

The Company has taken over the **western world** and cares that **value creation** of its **digital technologies** remains within its **area of influence**. Globally, there are one or two more tech-giants (like Alibaba for example) acting in the same way as the western Company, but the giants are not competing against each other: the world cake is big enough.

The **social security system** works very simply: do the job The Company has assigned to you and you will be cared for. Otherwise, you will not be able to survive in the system.

Social participation and **democratization** are unwanted and suppressed.

Human attributes like creativity and **empathy**, are not appreciated in the way they should be. **People are supposed to work like machines**, then they are "valued" and accordingly paid.

The **direct personal concern** of people is **survival**. They are in permanent existential fear and fight-or-flight mode. From this state of being, they dehumanize other human beings just to survive. People are in so much pain, that they have lost compassion and empathy for others. They simply have no capacities to care for others, for the environment or any desirable change.

If there is some spare time, people want **distraction** from their pain. Alcohol and digital technologies help them to dull their pain, not to grow personally or create new things. Hence, the **chance for real change, disruptive social innovation** or **personal growth** is **low**.

4.3.5 Awareness Building, Freedom Of Choice and Taking Responsibility For Consequences

This scenario is a living prison and technology supports this imprisonment. There are **no free choices**. Everything – the whole life from birth to death – is **determined**. Everyone lives in **one and the same system**. It is a very **restricted life**.

AI-driven personal assistants have taken over decision-making for humans and they are used to brainwash everyone who shows signs of resistance or (revolutionary) ideas for change. Opposing viewpoints and perspectives are forbidden and punished.

This severe suppression gives rise to the desire to break free, become aware and break up old patterns in people themselves, the system and the society. As there is so much control and the free mind of people can never be completely suppressed, there is resistance arising among people who are more awake and not reacting so well to narcotic technologies. But resistance and prison break are very risky. If people are caught, they are punished gruesomely. Thus, even the most motivated persons tend to give up their resistance and rather buy into the system with resignation. People are completely brain washed.

People cannot choose the community they want to belong to according to their personal preferences. There are no communities outside The Company, only outcasts who cannot survive outside the prison.

The Company and its technology take responsibility for the creation of their lives away from citizens. In the beginning, people perceived this to be very convenient and deliberately shifted their responsibility to The Company and its technology. But now, this has gone too far, and they feel completely powerless against the system.

People lack trust in humans as well as in machines. Not taking responsibility for the wellbeing of humans made the technological developments of The Company dangerous.

Living Without the Internet As a Basic Human Right

A life without digital technologies is definitely not a basic human right here. Everyone has to use the centrally provided digital technologies, otherwise they fall off the social insurance system. Human rights as such are not valued in this scenario. The Company does not care about the best interests and well-being of humans and humanity at large. They do not care if their gains lead to peoples' losses. The destruction of the environment is inevitable - the dehumanized world leads to droughts and other natural disasters which affect the well-being of humans living on this planet. But the company does not care.

4.3.6 Business: There Is Only One Business Model and It Is Not Social

There is only one business model: the model of The Company. The tech-giant holds a monopoly and does not face any competition in its area. It has attracted and sucked in all competences and creativity, thus gaining immense competitive advantage in the world. Other businesses were not able to compete for talent. Thus, the ruling company is the only one with the knowledge to handle the immense complexity of the system and to do basic research. Chosen ones who belong to the "innovator class"[19], are allowed to develop new things for the company. Ordinary people are not able to compete, and they are glad that The Company provides them with predefined jobs and regular income within the system.

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[19] Scott Galloway (2017): *The Four: The Hidden DNA of Amazon, Apple, Facebook, and Google*, Penguin, New York, p. 266

It is not a goal to **use digital technologies for the benefit of people and society** and to develop **social business models.** The Company willingly gains profits by acting against the best interests of individuals and humanity in general.

There is absolutely **no freedom** and **flexibility to create new businesses. Startups and new businesses in general do not exist or - they are suffocated as soon as they try to sprout.** Idea-competitions such as **"let 100 flowers bloom"** are used **to identify rebels and misfits** in early stages. Entrepreneurship and self-employment are seen as threats to the system. People are supposed to work in the prison company, nowhere else. They are supposed to work like machines. Misfits are singled out and punished publicly as a warning example.

The Company is not transparent or open at all. It is very secretive. The less regular people know, the better. People are consciously kept in unawareness by The Company. To keep the masses calm, The Company **sells** them drug-like, **addictive technologies** like narcotics.

The mighty company is of course **not regulated.** There are **no checks and balances. Regulation** is also **not needed to keep citizens under control - technology does the trick perfectly.**

The Company has successfully developed **Digital Business Models** and **Intelligence Driven Business Models**, but their focus is not to develop more responsible, social business models at all. The goal is to make The Company even richer and more powerful than it already is.

4.3.7 Potential Military Usage, Cyberwar, and the Development Of the EU – Technology Imperialism

Development of the EU: Europe, national states and political conglomerates in general become meaningless and obsolete. Big companies, not politicians are in power, they rule economy and politics, provide a centralized ecosystem and control governmental processes.

The political system could be called **technology imperialism.** The Company and the government have merged to a **one-company dictatorship facilitated and controlled by technology.** And the **ruling company** does not allow any other authority. Politicians are the marionettes of the company. They had been so corrupt and greedy for money, that it was easy for The Company to buy and control them. There are no checks and balances or separation of power. People are **governed by technology, fear** and **separation.** Technology controls and disciplines the members of the community. Companies, not national states or political unions have **won the global race of digital leadership**.

Cyberwar with external **(political) powers** is not a topic here. The world is shared between the mentioned two or three big high-tech companies and the cake is big enough for them. But nevertheless, there is **a lot of investment in military technology** as the **rulers would not hesitate to use military force against rebels and resistance** – like in China in 1989, or potentially in Hong Kong at the time of this report. Thus, warfare technologies are highly invested in.

Furthermore, the **control of the prison inmates** is in the **focus of development of new digital technologies.** There **is a lot of R&D investment in control and security technology.**

High European Standards Thrown Overboard

The tech giants laughed at the naive claim of the European Union to establish high European standards and things like basic human rights in the development of digital technologies. **Technologies like AI have not been used in responsible and ethical ways, but to create a full surveillance system.** An ethical race-to-the-bottom in the desperate attempt to win the global race has allowed that. The **short-term gains** lead to **long term disasters**.

4.4 Scenario 3 – The Lonesome Cowboys

In this scenario the **ecosystem is decentralized** and **non-cooperative. People don't care for each other** and **create innovation against each other instead of** creating it **for co-operation.** The lonesome cowboys are **risk takers** and **disruptors. In this digital gold rush situation, everything is allowed. No community values hold them back. There is a constant fight for resources and fierce competition. Recklessness has become a business model** and zero-sum games (one person's gain is another person's loss) are the main business tactic. The **social texture** is **separated** and **isolated.**

4.4.1 Fragmentation Of the Internet: Digital Wild West

The **digital infrastructure is fragmented. Access to the internet is not equal and free.** There are groups which limit the access and **sell** access at **different prices** to different people. The internet is **separated into many islands** which are **closed entities, not transparent or open. Distributed networks** make technology **even more complex** and only the "innovator class"[20] can use them to their **advantage.** Individual players and companies like Amazon, Google, Facebook, Alibaba but also newcomers **fight each other over talent** and **dominance.** Everyone can be the **next digital warlord** and **topple an existing one**.

4.4.2 Digital Technologies: Disruption At Any Cost – A Fully Automated But Socially Disconnected World

In this scenario **digital technologies** are **enhancing disconnection, isolation, polarization** and **separation among people.** Individuals and companies do not hesitate to **use these technologies to harm** or **take advantage of each other**. No one cares about the wellbeing of others. When all your neighbors want to attack you, you have to be creative. So, **disruptive innovation** is a **survival mechanism** here. The lonesome cowboys or digital warlords try everything, they are willing to take every risk to survive and gain competitive advantage. It is often at the costs of others and human connection.

On the positive side **digital technologies help the disruption of the status quo** and **breaking up old structures**. Even – violently, if necessary.

Digital technologies **increase the rich-poor polarization** further - **only a few companies and people are able to handle the increasing complexity** and **use the technologies to their advantage**. Some users and opinion leaders have way more power than others – money and

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[20] Scott Galloway (2017): The Four: *The Hidden DNA of Amazon, Apple, Facebook, and Google*, Penguin, New York, p266

success make right. It is exactly what Mark Benioff warned of in his speech in Davos in 2019. Technology makes the rich richer, and the poor poorer. That leads to a **civil war**.

Digital technologies support people living in their **technological fortresses – a not so desirable development of smart homes –** and bubbles. There are a lot of **gated communities, surrounded by fences and security guards** where the rich want to protect what they have from the ones who are not so well off.

A lot of tasks are taken over by machines in a way that people do not have to communicate with each other or to socialize. **Fully automated** airports, hotels, and grocery stores are tokens of this development.

"Social networks" have become **exclusive communities** and **clubs restricted to chosen members**, too. **Future media** is used by rivaling groups to shame, blame, harm, and dehumanize each other.

Technological development is pushed by the **security** and **military** or **para-military business**. There is a lot of investment in **military technologies**. **3D-printed guns** for everyone are popular, for example. **Drones** are used for combat purposes, too.

The **darknet** and **the encrypted internet** in general have become very important for **security reasons**. It is also a **driving force** for **disruptive innovation**. Civil cyberwar is going on in the darknet, too. The Islands have their own guarded and disconnected darknets. **Blockchain-powered peer-to-peer networks** are not hindered by governmental control or restriction, but these systems are based on **trust**, thus, they cannot flourish in this hostile atmosphere of distrust. **The different internet islands are not transparent or open.**

There is a lot of freedom for new ideas, but a constant **fight for resources**, which makes **basic research** in various fields that does not look promising at first glance quite **difficult**. A few players try to be at the leading edge of **quantum computing** or **new network technologies**, and to finally reach **singularity in AI** – mainly with the goal to **destroy competitors** and **conquer the world** with it. However, **basic research is hard to finance** as the constant **fight for survival** and **market shares** makes it necessary that **innovation ideas yield quick results** and must be **profit oriented**. **Short term thinking** hinders long term visions and goals.

4.4.3 Freedom For Creativity – Digital Gold Rush

This scenario is a bit like a digital gold rush. There is **enough freedom for creativity, but no secure basis as** the one **created by secure human connections**. **Variety** and **pluralism** and **the development of new ideas** are possible, but **no one supports the ideas of others**. Disruptive innovation is happening here, and experimentation is needed in the daily fight for resources and survival.
In the attempt to create their desired life recklessly, the lonesome cowboys lose compassion with others. People are not co-creating a desired future together; they are creating individual bubbles against each other.

Political Intervention: There is no regulation or other political intervention on the internet. **Intellectual property rights** are not respected or enforced anymore. Everyone can steal ideas

from others to make a profit. **As European political institutions are falling apart, regulative intervention like upload filters, GDPR etc.** are not enforced anymore. **Everything is allowed in this digital wild west.**

Resources are not provided and managed by central authorities; they are entirely **created** and **distributed** on the **free market**. That makes **variety** and **pluralism** possible, but **without any guiding principles** or **willingness to co-create** with others, the result looks rather **chaotic**. Furthermore, the **aggressive level of competition** renders the situation **more in a war of ideas than in a healthy ecosystem** for **creative innovation**.

The educational system provides a lot of freedom, but no stable basis and **support for the unique creative potential and specific talents** of the individual members of the community. Children are encouraged to follow their intrinsic motivation but are not guided by secure connections to adults in this endeavor. They are **left alone in their development** and **frightened by the ever-changing world around** them. The **pressure is high**, **failure is not an option**. Parents shift the **responsibility** they have for their kids onto them. In this unsafe environment, children cannot develop healthy self-confidence. The extreme development does not lead to conscious, free, responsible and self-determined people either.

Digital Literacy and Competency – Enabling People To Benefit From Digital Technologies

Only the "**innovator class**"[21] is able to understand the increasing complexity of the highly advanced digital technologies and disruptive developments are so fast, that regular people give up on it. After an **initial gold rush**, **fewer and fewer people** are able to use the **advantages of the internet** for their lives. Since **internet access is not guaranteed for everyone** anymore, **digital literacy** and **competency decrease** in the general population. The usage of these technologies for the benefit of people and society is only the goal of some activists, who violently attack others who are in their way and are not seeking a meeting of minds. Hence, they are not able to create real positive changes.

4.4.4 How Do We Define Value? – Every Man Is an Island

Survival of the fittest is the **governing law** in this scenario. **Winning global competition at all costs** was the motto which caused this situation. Europe was so eager to learn from nations like China how to **win the global digital race**, that we willingly embraced an **ethical race to the bottom** and **threw all values over board**. Even **human rights** are not spared anymore. Money, power, and disruptive technology make right. Digital warlords are now fighting each other to gain **digital leadership**. The **place of value creation** does not matter.

Autonomy and **individualism** are highly valued in this scenario and they certainly are necessary stages of human development, but in this situation, we have taken it so far to the edge, that there is **no secure connection to other people** anymore. **Separation** and **loneliness** among people have increased to such a degree, that it causes a lot of harm and real problems. And **technology enhances this development**. People are free to choose what they want, and they chose **isolation** and **separation** over **connection**. "**Every man is an island**" is the

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[21] Scott Galloway (2017): The Four: *The Hidden DNA of Amazon, Apple, Facebook, and Google*, Penguin, New York, p266

belief they live by. The lonesome cowboys are very disconnected from each other and the world around them. That renders the surrounding very hostile.

Due to the lack of trust in other communities, the lonesome cowboys have to be able to produce most of the goods and services they need themselves - full **autarchy** is the goal. Digital technologies support this development.

Social participation is not valued. **Democratic structures** are distrusted as no one wants to be dictated by the masses. **Community-thinking** is seen as **restricting to individual** development and therefore - rejected. People think they do not need each other and feel freer when they do not have to rely on others.

The lonesome cowboys are **risk-takers**. They want to get out of their **comfort zone**, thus the **chance for change** and social **disruption** is high. But they are reckless about it and what is not in their **direct personal concern** does not bother them. **People who cannot compete**, the weaker parts of society, **are not valued at all** and they are **carelessly left behind**. The intrinsic value of every human being is not acknowledged. **Creativity in disruptive innovation** is admired, but **empathy is not** a value. People do not care for each other.

4.4.5 Awareness Building, Freedom Of Choice and Taking Responsibility For Consequences

Self-responsibility: People take responsibility for the creation of their life but no responsibility for the consequences their actions might have for others. They are **creating** their **individual bubbles in opposition to each** other. The **awareness of destructive patterns is not high**. People are in a survival mode all the time and they feel threatened by the attempts to break these patterns. **Opposing viewpoints** and **perspectives** are seen as personal insults and are antagonized. There is **a lot of freedom** to do whatever you want, but a lack of safety and security. People think they can harm others without harming themselves, but that leaves them in a very unsecure world where everyone fights each other. In the **constant fight for resources,** people think they have to take from others to have enough for themselves.

There is **no social security system**. Everyone is responsible for themselves and blamed for their own misery. We are **losing humanity**.

AI-driven personal assistants perpetuate and **reinforce the destructive patterns and mistakes**, they do not help us to get out of them. People perceive a high level of **freedom of choice** to do whatever they want on the outside: no authority system restricts this freedom. But compulsive mind patterns still do. True **choice implies awareness**. Taking full responsibility for the consequences of our actions is not possible, as long as unconscious mind patterns dictate our behavior. The lonesome cowboys are not aware of the **natural process** of **action and consequences**.

The **lack of taking responsibility for the consequences of our actions decreases** the **trust both in humans** and **in machines**. Not taking responsibility in this way makes the new technologies highly uncertain and potentially dangerous for humans.

Living Without the Internet As a Basic Human Right

Every lifestyle is possible in this scenario, as long as it is self-sustaining. Thus, **living without the internet is an option here** as well. It is not guaranteed by any law or human right, but **everyone is free to choose to step out of digital connection**. Some people chose "digital fasting" and "digital disconnection" as a temporary or permanent **lifestyle**.

4.4.6 Business Wild West: Reckless Disruption Without Social Concerns – Profit Over People

In September 2019, Uber has laid off 435 employees across its product and engineering teams. *"Our hope with these changes is to reset and improve how we work day to day —* ***ruthlessly prioritizing****, and always holding ourselves accountable to a high bar of performance and agility,"*[22] an Uber spokesperson told TechCrunch. *"While certainly painful at the moment, especially for those directly affected, we believe that this will result in a much stronger technical organization which by going forward will **continue to hire some of the very best talents around the world**.*"[23] This course of action and the quote itself describe the predominant business atmosphere in the lonesome cowboy scenario quite well.

Businesses prioritize profit over people and play zero sum games.
Recklessness has become a business model.

New business ideas, startups and microbusinesses are free to develop in this scenario. Everyone can be successful, but no one supports the weaker parts of society. "Social business" is being ridiculed most of the time. But, as there is a lot of variety, diversity, and pluralism in this scenario, social business ideas which manage to gain profits are able to develop, too. It is hard, but possible.

In this scenario **competition has reached a very aggressive level**. It has become an exhaustive race and a fierce fight for survival. Winning over competition at all costs is the rule. Money and success make right. There is **a lot of freedom of ideas** but a **constant fight for resources** and a **lack of security**.

Big business incumbents and whole industries are being disrupted by newcomers. The creative power of destruction rules the picture. There is a **huge potential for change**, but the newcomers are **not really interested in changing the way business is done fundamentally,** i.e. in refraining from making profits by harming people. Companies that are harming people are not at all out of business, they thrive more than ever. They can **do whatever they want without restrictions**. What has changed is just that the old businesses have been replaced by new ones, but the models stay the same.

Developing and creating **great technologies** and **innovative business models** for the **benefit and evolution of humanity** is **not the main vision** of new emerging businesses. Every startup

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[22] Megan Rose Dickey (2019): *Uber lays off 435 people across engineering and product teams*, Internet link: https://techcrunch.com/2019/09/10/uber-lays-off-435-people-across-engineering-and-product-teams/ (last accessed on February 17, 2020)
[23] See ibid.

wants to be a **unicorn**, nothing else counts. And they want to become unicorns at all costs. They are not interested in co-operation with industry incumbents, they see them as rivals who have to be attacked and destroyed. **Every startup brags about disrupting and destroying traditional industries.** There is no room for co-existence, the winner takes it all. Thus, some companies and individuals gain way more influence, power, and money than others.

Due to the **lack of trust** and an **unsafe** and **hostile** environment there is a lot of **need for protection**. Thus, the **security business is highly profitable**. Technological development is pushed by the security and para-military sector. **Digital security technologies** are thriving.

The **sharing economy** and peer-to-peer networks are a part of the new business world, but they are regularly **corrupted** as businesses and people are not interested in real sharing and the wellbeing and best interests of others. Thus, these companies do not pay their service providers fairly etc. The lack of regulation makes that possible. They produce a lot of scandals which are gladly used by their competitors against them.

In this competitive and distrusting environment, **transparency** and **open intelligence models** would be of **disadvantage**. As there are **no intellectual property rights**, everyone can **steal ideas** from others to make a profit. Thus, no business wants to risk showing too much to their rivals. They are very **protective** and **secretive** about their **knowledge** and **intellectual property**.

Facebook, Google, Amazon, etc. are strong players, but they are also disrupted by new companies. **New platforms** arise permanently, and **users take their data** from Facebook for example and switch to other platforms quickly and easily. And they take their whole network with them. They follow **opinion leaders** in doing so.

Digital Business Models and **Intelligence Driven Business Models** are developed to gain **competitive advantage**, not to support the development of more responsible, social business models. Digital technology businesses make some rich people and companies even richer, and the poor - poorer. The rich-poor-gap in society and business increases. The middle class vanishes.

4.4.7 Development Of the EU, Potential Military Usage, and Cyberwar

Development of the EU: After Brexit other member states followed suit and the **European Union** is **breaking apart**. European **political entities** are crumbling and **collapsing**. A "Balkanization" of Europe is happening.

As the islands become concerned about the other islands there is large potential for conflict and cyberwar between the islands. **(Para)-military usage** is a **strong driver** for the **development of new digital technologies in this scenario** as the lonesome cowboys are fighting each other in a **civil cyberwar.** They are protective of their territories and want to gain more from others. The surrounding is very unsafe. There are a lot of concerns about security and protection, but no central authority to take care of that, so private security services and para-military units owned by private people in order to protect their property thrive.

The **conflict-ridden environment** potentially leads to a **World War III supported by disruptive digital technologies.**

High European Standards As Role Models? Ridiculous.

People had **ridiculed** the idea of **establishing high European standards as role models in the world**. Not thinking about ethical questions and the consequences of new technological developments lead to **short term gains**, but **long-term disasters**. We did not have the courage to take a specific European decelerated approach and lost our ability of problem solving because we destroyed solid foundations for sustainable innovation. Corrupt politicians and political systems contributed to the distrust of people in the European values and the whole Union. The Union was not acting as a partner for the creation of digital technologies in the described manner, but as a hinderer. So, after realizing **that everyone is out for themselves, people decided to take change into their own hands without relying on any authorities to provide a stable basis.**

4.5   Scenario 2 – The Worker Bees

In the Worker Bees' **ecosystem,** the **resources** are **created**, **managed**, and **facilitated** within a **rigid, centralized framework**. **Conformity, rigidity**, and **convenience** on the **consumer side** are main **hindrances to creativity** and real **disruptive technological**, **social** and **business model innovations** here. People live in a **highly risk averse comfort zone**. The **social texture** is **community oriented** and **co-operative** in a **forced way**, **not by choice**. The **uniqueness of the individual is bulldozed** by **pre-defined community values**. That leads to resentment in the individuals and the wish to break free. **Market protectionism** makes **European digital technology businesses** strong.

4.5.1   Strong, Unified European Internet Infrastructure, Protected and Separated From the World

In this scenario, the **internet and the access to the internet infrastructure** are **unified within Europe** but **separated** and **protected** from the **rest of the world**. **Digital technologies** and their advantages are **centrally provided**. Due to **central standards** and **rules** these technologies are **cheap**, **reliable**, and of **high quality** for the community members. Others, outside the community, are excluded by **technological barriers**. Similar to the approach of the "**great firewall of China**" we have created our **own, separated internet for Europe** and try to **protect** it by **cutting it off from the rest of the world**.

Protectionism and Own European Platforms

Protectionism is introduced to the European digital market. Europe takes **Alibaba, Baidu etc. as role models** and decides to **develop and support European versions of Google etc.** developed in centralized co-operation (the Google-Europe project, funded with millions of euros), which decreases the market shares of the big players and makes them leave Europe. **EUgle, EUmazon and Unionbook are among the new established European platforms.** They are **heavily supported by funding and investment**. There is **not much freedom of choice** and **flexibility**. Users more or less have to join the **big European social networks** as they are disconnected from other options by **technological barriers**. The **centrally provided platforms** are very **convenient** and **stable**, but there is a **lack of variety and a lot of conformity** on the **internet**.

4.5.2   Digital Technologies: Keeping the Swarm Uninformed and Playing By the Rules

Digital technologies are not used to enable people to live a **conscious**, **free, responsible** and self-determined life. They **support** and **enable the power of the central authority** and help **perpetuation of the status quo**. The **fears** around technologies like **AI** are **further instrumentalized**. **Authorities**, **big companies** and the **media** continue to spread the message: **People can be replaced by AI** and **robots easily**. Thus, you rather conform and do what we tell you to do, or else, you will not be able to survive in the system. An **AI-driven social bonus system** is introduced gradually and serves to control people into "being good" as defined by the community.

AI driven chatbots are used by the central government and big businesses to **prevent people from getting in direct contact** with them. Half of the time the chatbot conversations fail, but citizens and clients have no other choice than interacting with them for **governmental affairs** (tax, social insurance, etc.) or **customer service**.

Individuals are not using new digital technologies in responsible ways either. As long as they **support convenience**, everything is ok. People **dream of technology taking over all their chores** and are not focused on developing solutions which are really benefitting people. They want to be provided for and **shift their responsibility to authorities** and **technology**. **Applications** which **distract** them and don't get them out of their **comport zone** are thriving. **Virtual and augmented reality** are used to help people to **escape from life** or **put children on mute** when it is not convenient to give them attention.

Products like widget spinners, candy crush, Pokémon go and the like – products that like narcotics contribute to a dreamlike, unconscious and unaware state of society – are very successful and on the rise. On the other hand, technology is actually used in **smart ways to make life easier**. Perhaps too much easier. So easier, that people are too **inert to get out of their comfort zone**, **take risks** and **disrupt current developments**.

As mentioned above, **social networks** are unified and do not face competition within the union. **Technological transparency of the internet** is not wanted by the central authority. It is in their interest, to **keep the swarm comfortable** and **uninformed**. **Open intelligence models** are only discussed in theory.

Technologies like **upload filters** are **developed due to regulation**. The **darknet is used to get around regulation**. **Blockchain-powered peer-to-peer networks**, once perceived as a certain future trend, **are being destroyed by regulation**. Blockchain technology per definition is not the right way to choose in this centralized system.

Basic research in fields like **new network technologies beyond 5G** and **quantum computing** is financed in this scenario, but due to the predominant **rigidity**, **lack of freedom** and **conformity, disruptive innovation is not thriving** here.

4.5.3 Not Enough Freedom for Creativity – Conformity and Convenience Diminish Innovation Power

The system provides a **stable basis**, **but not enough freedom for creativity**. The **centralized, rigid system does not allow variety** and **pluralism**. **Conformity** is the **main problem** and creativity blocker here. There is **stable incremental innovation** and **processes are optimized** in highly **efficient** ways, but real **disruptive innovation is not possible**. The **frameworks are too rigid**. **Open experimentation** with the potential to **fail** is not allowed and facilitated.

Political interventions like too much inflexible regulation and high tax burdens hinder new developments and ideas. Money goes in focused ways to chosen research – such as AI in China now – which boosts the specific field but does not allow variety and pluralism. **Big trends are funded, weak signals are overlooked**. The central authority is not a partner for **creation of a conscious, free, responsible, and self-determined life,** but one who acts like a

vindictive parent **punishing** and **rewarding** its citizens according to pre-defined, unified values. That fuels **resentment**.

The **educational system** is also **hindering the creative potential** of the individual members of the community. Children are **not allowed** to **choose their education** and **career path** in line with their **intrinsic motivation** – they are **disciplined** into **conformity and** trained to be industrial, machine-like workers. **The well-oiled machinery** needs **more cogs in the wheel, not misfits** and **free thinkers.** Thus, individuals are not taught the **flexibility** and **confidence** to **adjust to an ever-changing world.** Furthermore, we are losing out on the **specific talents** and **uniqueness of people** and thus **do not actualize the full potential of humanity** and society.

Enabling People to Benefit from Digital Technologies – Digital Literacy and Competency

The **industrialized education system fails to increase digital literacy and competency** in a way that more people are able to use new digital technologies to their benefit. Hence, **polarities** like rich versus poor, big business versus small business, etc. are **amplified**.

4.5.4 How Do We Define Value? – Follow the Rules and Stay In Your Comfort Zone

In the Worker Bees Scenario being part of the **community** is valued, but at the **cost of the individual's free choice.** The union is a **centralized, forced community** with **rigid orders**, **values, laws,** and **regulation. Strict, predefined, formalized value systems** determine what has to be valued. **Value pluralism, diversity** or a **continuous evolution of values** is **not possible. Conformity** shapes the picture within the union. People are disciplined into **"being good" by the definition of the system** and **punished** by an **AI-driven social bonus system** similar to the Chinese "Social Credit Scores"-model[24], if they do not **conform. Social participation** and **democratization** and a **central call to solidarity** are facades, people do **not authentically** and **intrinsically care for each other.** Community-thinking does not yield good results here, it leads to a **"someone else will do it"-mentality. Public digital consultation processes** are **conducted frequently**, but they **never lead to real changes**, thus, the public loses interest in participating.

A conscious, free, responsible and self-determined life is not in the focus of the system which is more concerned about control. **Human attributes like creativity** and **empathy**, which cannot be accomplished by machines, are not appreciated in the way they should be. Everything aims at **making the engine or the swarm as efficient as possible. People are supposed to work like worker bees**, then they are **"valued"** and paid accordingly.

In their private lives, citizens value **stability, comfort, convenience** and **distraction.** They do not want to get out of their **comfort zone**, thus the **chance for real change, disruptive social innovation** and **personal growth** is **low.** What is not in people's **direct personal concern** does not bother them.

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[24] Charlie Campbell (Davos 2019): *How China Is Using "Social Credit Scores" to Reward and Punish Its Citizens*, Internet link: https://time.com/collection/davos-2019/5502592/china-social-credit-score/ (last accessed on February 17, 2020)

The **place of value creation of digital technologies** is very important in this scenario. That is the main reason why big social platforms and businesses have been driven out of the Union: **European leaders** stress the importance of **gaining European digital leadership in the global competition** at all costs.

4.5.5 Awareness Building, Freedom of Choice and Taking Responsibility for Consequences

The wish to **become aware** and **break up old patterns** in **people themselves,** the **political system** and **society** in order to stop repeating old, destructive patterns again and again **is not a priority** here. **Viewpoints** and **perspectives** which **oppose the rigid community values** are not taken into consideration. **AI-driven personal assistants perpetuate** and **reinforce old mind patterns** and **mistakes**. This is even more alarming as people progressively **shift the responsibility** of **decision-making** onto these **technologies**. That **decreases the freedom of choice**, which is already **restricted by the authority system**, even further. As they do not have free will choices, **people shift responsibility** for the **consequences** of their **actions** onto **authorities** and **technology**. There is a lot of **complaint** about **politics** and **administration** without taking personal **actions** for **change**.

The **lack of taking responsibility** for the **consequences** of **actions decreases** the **trust in humans** as well as in **machines**. It **makes new technologies highly uncertain** and **potentially dangerous** for humans.

Living Without the Internet Is Not Possible

Living **without the internet is not an option here** and definitely **not a human** or **civil right**. People have to use the centrally provided digital technologies in order to **fully participate in social** and **civic life**. **Public administration is mostly digitized** now, thus people without access to or knowledge of digital technologies are not able to use **public services** like the **digital tax declaration**, etc. People who are **not digitally connected** are also **disconnected from the community**, its **benefits** and **services**.

4.5.6 Big Business Rules

It is an officially announced goal to **use digital technologies for the benefit of people and society** and to develop **social business models as defined by the community**, but that is **more pretense than reality**. The **predominant conformism does not allow enough creativity** and new ideas to **shape more responsible, social business models enabled by digital technologies.** There is a **lack of awareness, variety, diversity**, and **pluralism** in the **structure of businesses** and the **ecosystem** as well. The system **favors big businesses, small ones can hardly survive**. The way we do business has not changed fundamentally. Companies who gain profits by harming people are not really out of business, they just have to do it in more covered ways.

In the **attempt to protect the European digital market**, Facebook, Google, Amazon, etc. have **been driven out of Europe**.

Strong, successful, big European companies are supported to thrive by the Union. If they play by the rules, they get incentives and resources are distributed to them in efficient and effective ways so that they can produce results quicker and with less effort. They also underly the social credit score system and **get funded for "doing good"**. So, every big company has a **CSR department** now, but **appearances deceive**. The extrinsic incentives do not lead to true, authentic social business driven by intrinsic motivation. **"Fair"-labels are bought expensively** but lack substance, truth, and real fairness. **Regulation** tries to force businesses to change their business models (for example not gaining profits from user data). But as they are huge tax payers, the system is in favor of these companies and due to their **market power**, they are able to **influence politics**. Furthermore, there is a **lack of transparency in big businesses** and there are **no open intelligence models**.

Regulation, rigidity, and **conformity** are **destroying startups** in this scenario. Heavy regulation makes the thriving of new business ideas, startups and microbusinesses almost impossible. Only big businesses can afford the human resources, lawyers and technology to conform to the overloading regulation. **Norms and standardized certificates for startups** as planned in Germany at the time of this report are now implemented.[25] The government and small businesses are not partners in creating something new, they are **adversaries**. As small businesses try to circumvent regulation or just lack the resources to conform, they are constantly living in a grey area, always threatened by huge fines because of minor violations of the rigid regulation system.

It is hard for startups to survive after an **initial funding phase**: **startup funding is also used as fig leaf**, not as real partnership in which both sides take equal risks. The **sharing economy** is only supported if it leads to **big business**. Due to **upload filters** and rigid **regulation,** real peer to peer networks cannot be developed and survive here.

Only a few big companies are able to develop **Digital Business Models** and **Intelligence Driven Business Models** and their main focus in doing so is not to develop more responsible, social business models, but to gain **competitive advantage**. Digital technology businesses make some already rich people richer, and the poor poorer. The rich-poor-gap in society and business increases. The **middle class,** once seen as **the strength of Europe, vanishes**.

4.5.7 Development Of the EU, Potential Military Usage and Cyberwar

Development of the EU: Europe is **one strong, unified entity**, one strong player who acts with **speed** and **power** and also claims its role on the world stage. Under the slogan **"make Europe great again"** everything is done to win the global race of **digital leadership**. The **place of value creation** for EU-supported big businesses and funding new digital technological development clearly has to be **Europe**.

Potential military usage is a **strong driver for the development of new digital technologies** in this scenario. There **is a lot of R&D investment in military technological** developments. As

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[25] Daniel Hüfner (2019): *Kein Scherz: DIN-Norm für Startups geplant*, Internet link: https://t3n.de/news/kein-scherz-din-norm-fuer-startups-in-planung-1164695/ (last accessed on September 9, 2019)

Europe becomes more and more protectionist, **economic cyberwarfare** with the outside world is on the horizon.

High European Standards Don't Become Role Models

The **rigid, conformist European values** do not become a role model in the world as they do not show results like disruptive innovation. Europe is seen as a big museum in the world. Europe pretended to think about ethical questions but was not really interested in the consequences of new technological developments for human beings. **Digital leadership was more important**. We did not have the courage to take a decelerated European approach - we solved the **competition problem** by **market protection** and by **shutting unwanted competitors out**. Short-term gains were more important than potential long-term consequences.

4.6 Scenario 1 – The Connected Surfers

In the connected surfer scenario, a **co-creative ecosystem** in which relevant, **diverse players** interact in **symbiotic, mutually supportive**, and **empowered relationships** provides a safe and secure basis for the creation of new digital technologies in the sense of these scenarios. The **resources** are **created, managed**, and **facilitated in distributed** ways. It is mainly a **self-governed** and **self-managed system,** full of **free choices, variety**, and **value pluralism**, that provides the **interconnectedness of everything**. The **social texture**, what we care about, is **connected** and **co-operative**.

4.6.1 Interconnected Internet Islands: More Resilience and Trust

Like the resources, the **internet infrastructure is distributed** as well, but the **access remains free**. In this case the **fragmentation** of the internet is used as an **advantage**: the many **internet islands make the internet more resilient**. The decentralized approach facilitates different technology levels. **People can choose which network to use**. The internet infrastructure is like a **fluid organism** – just as society itself. There are clusters and islands, but they are still connected to each other like an organism. **AI, blockchain and other cutting-edge IT technologies need interconnectivity**. Through **blockchain** and **distributed ledger technologies** we develop **trust in this interconnectivity** and **information exchange**.

There is a lot of **variety** and **digital pluralism** on the internet.

4.6.2 Digital Technologies: Increasing Awareness and Enhancing People's Lives

This is the **golden age of digital technologies** in which they **support** people in living **conscious, free, responsible** and **self-determined** lives and help them to **adjust to an ever-changing world**. Digital technologies and networks become **drivers of positive change in society**. They are **connecting, empowering** and **enabling people.** They help in **increasing awareness** and **breaking up conditioned mind patterns.** In practical terms, they **enhance human abilities** and help them **co-operate** and **co-create solutions** for existing **challenges** which **benefit human beings** and the **planet.** Digital technologies are **seamlessly integrated into every day's life where they are useful**, but **the digital realm does not replace real meetings** and **connections** - it **enables** and **enhances** them.

A lot of **tasks which machines can do better**, are **taken over by them. That does not mean that people do not contribute anymore.** Quite the opposite - contribution is a basic human need and digital technologies support people to do so in the most suitable way. They enable them to concentrate on human attributes like **creativity** and **empathy** while technology takes over exhaustive repetitive tasks.

Trust and Transparency

In this scenario the **darknet is called "lightnet"** and as such **has become mainstream** - to tackle former **security issues**, the **internet is encrypted in general** now. Blockchain and **distributed**

ledger technologies are on the rise and provide the much-needed trust, something that was missing on the internet before.

The bias in machine learning and deep learning is tackled by creating open, flexible, evolutionary algorithms which take into account as many perspectives as possible and adjust to evolving value systems and pluralism.

Digital platforms enable people to find connection and form specific communities. They are governed by freedom of choice and flexibility: users choose different networks according to their preferences. And they do so quickly and in a very flexible way. Platform businesses who want to thrive have to react to that, lock-in systems are not used anymore. Open intelligence models have become a standard. Technological transparency is very important for the users and the internet creates a high level of transparency in information gathering.

There is less personal competition within social media. The future media contributes to more awareness and to becoming consciousness of compulsive, conditioned mind patterns.

Virtual and augmented reality are used to help people to imagine a desired life and create it together, not to escape from life or put children on mute. They are used in great new ways for education, too. Technologies like AI-driven chatbots are used in real useful ways, for example for filtering spam-emails.

Individuals use new digital technologies in conscious and responsible ways.
Social participation is important. Digital public consultation processes are conducted frequently and lead to real changes. They are used as advice processes[26] rather than consensus processes which used to paralyze novel ideas instead of supporting them.

Freedom of ideas and an abundant flow of resources – not a fight for them – make basic research as well as applied sciences flourish. The best heads gather to develop quantum computing and new network technologies (beyond 5G) in open, co-creative laboratories. Innovation does not have to yield immediate results; it is understood as a long-term endeavor. To reach singularity in AI is not a goal. We have learned from the negative consequences of the full-surveillance-model in China and chose another way in Europe.

4.6.3 Open and Co-Creative Ecosystem – A Fertile Soil For Innovation

The open, flexible, self-managed system provides a stable basis and also enough freedom for creativity. It allows variety and pluralism. Incremental innovation as well as disruptive innovation is possible. Experimentation is highly supported.

Crowd-funding and -investment are thriving. Governmental funding is managed in a way, that new ideas have a real chance to get funded, not only big established companies with a long track record. Governmental funding takes real risks and thus takes a burden away from the shoulders of startups, new business founders and microbusinesses. It provides a secure basis

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26 Federic Laloux introduces the idea of advice processes in self-managed organizations in his book „*Reinventing Organizations, A Guide to Creating Organizations Inspired by the Next Stage of Human Consiousness*", published by Nelson Parker, Massachusetts 2014, p 99

for novel ideas. That works because everyone works towards a **greater good** by choice and out of full self-awareness: if I harm others, I also harm myself in the long run. New **businesses develop great solutions for the benefit of humanity**. **Politics** becomes a real **partner** in the **creation of a conscious, free, responsible and self-determined** life: we are in this together. On this basis, people develop a high **risk-savviness**, as the German psychologist Gerd Gigerenzer defines it in his book "Risk savvy. How to make good decisions"[27]. They are able to **create disruptive solutions** for **existing challenges**.

Political Intervention: Political intervention is used in supportive ways to provide a level playing field. **Principles** that are **useful and flexible enough for a free development** are adhered to, **others are discarded**.

Politics provides a **secure basis for flexibility** and **freedom of choice**. Really risky projects are funded without the expectation for a premature payoff. That takes some of the **risks** that lay on the shoulders of innovators or new business founders away. It's not a punishment-reward game from either side. People do not blame politicians or expect that everything is provided or done for them by the government. On the other hand, there is a **new type of politicians**, people who are not so much concerned about personal power but really interested in how to govern communities in beneficial ways.

The **social security system** has changed completely. It now **enables people to create something on their own**, instead of doing it for them.

The **educational system** has changed a lot. We do not discipline our children into cogs and wheels in a machine anymore. We are curious about their **individual abilities**, appreciate the **uniqueness of every child** and support them to bring it out in **self-induced learning processes**. We let them choose their education and career path due to **intrinsic motivation**. Thus, there is no shortage of jobs. Everyone has something unique to bring to the world and as the abilities are so different, everyone naturally finds what they can contribute. They are taught the **flexibility** and **confidence** to **adjust to an ever-changing world**. It's not hard to change because they know that they are able to start all over and create something new. **Failure** is seen as a **chance to learn**, not as a disaster.

4.6.4 How Do We Define Value? – Connection Without Sacrificing Individuality

People live a conscious, free, responsible and self-determined life. The connected surfers' value being part of **communities, co-operation** and **connection to other people,** without sacrificing their **individuality**. **Safe, authentic connections** lead to true **autonomy** and an atmosphere of **trust**. Society is like a fluid organism in which communities can be chosen consciously, intentionally, and in a **flexible** way according to the wellbeing and preferences of the individual. It is **pluralistic** in nature and honors the **diversity** of living beings. **Openness** and **flexibility** enable **pluralism**, **diversity** and a **continuous evolution of values**.

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[27] Gerd Gigerenzer (2013): *Risiko. Wien man die richtigen Entscheidungen trifft.*, btb Verlag, Munich, p. 12

Social participation and **democratization** are a **conscious choice of individuals**. They understand others as part of themselves and really care for them. **Human rights** and the **intrinsic value of all human beings** are highly appreciated in the pluralistic society.

What we value most is the **co-creation of a positive future for humanity**.
People are **contributing** to communities according to their **unique abilities** and **authentic, intrinsic motivation** – which is more sustainable than extrinsic motivation. Thus, they feel more committed and fulfilled in their jobs and line of work. The world is not free of challenges and not all chores in daily life are taken over by technology in this scenario, but **challenges** don't frustrate us, they **inspire us to innovative solutions** and to **grow** and **evolve** as **human beings**. People want to **dive deep** into challenges and solve them.

Social participation is important. **Digital public consultation processes** are **conducted frequently** and lead **to real changes**. They are used as **advice processes**[28] rather than consensus processes which used to paralyze novel ideas instead of supporting them.

Human attributes like creativity and **empathy**, are highly appreciated and supported. The **intrinsic value** of every human being is appreciated. Since there are safe human connections as a basis, people develop a high **risk-intelligence** and become able to get out of their comfort zone and to **think beyond their direct personal concern** whenever needed. This leads off disruptive social innovation.

4.6.5 Awareness Building, Freedom Of Choice and Taking Responsibility For Consequences

The wish to **becoming aware** and **break up old patterns** in **people themselves,** the **political system** and **the society in order to** stop repeating them again and again **is of high priority here** and **everyone starts this process with themselves. Opposing viewpoints** and **perspectives** are put into consideration in the mentioned **advice processes. AI-driven personal assistants** help in **breaking up old mind patterns** and **subconscious conditioning**. They support people in **more conscious, aware decision-making.** This **increases the freedom of choice** for the individual. As they start having free will choices, **people take responsibility for their choices and their consequences.** They take personal **responsibility** for change and the **natural process** of **action and consequences.** This increases **trust in humans** and **machines** as well.

Living Without the Internet As a Basic Human Right

In the diverse and pluralistic society, there are also communities who want to live without the internet. In this scenario, a life without digital technologies is a basic human right. There are community gatherings around the non-use of digital technologies. Internet fasting is a lifestyle for some people, and it is possible without being excluded from the community at large or basic public services.

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[28] Federic Laloux introduces the idea of advice processes in self-managed organizations in his book „*Reinventing Organizations, A Guide to Creating Organizations Inspired by the Next Stage of Human Consiousness*", published by Nelson Parker, Massachusetts 2014, p 99

Digital Literacy and Competency – Enabling People To Benefit From these Technologies

Digital literacy and competency among people are increased by digital technologies themselves in entertaining and playful ways. Digital platforms, virtual and augmented reality, holograms, etc. are used to educate people on how to benefit from future digital technologies and use them to their advantage.

4.6.6 Business: New, Social Business Models Enabled By Digital Technologies

Social business is not a term anymore, as all businesses adhere to social principles and focus on the desires, needs, and benefits for people. Companies who are harming people are out of business. Businesses have stopped to play zero sum games. Digital technologies are used to develop and create great things for the benefit of humanity.

Business is shaped by connection and co-operation. Startups and industry incumbents co-operate to create a positive life. Startups and new business ideas in general thrive in the provided freedom and flexibility.
Platform businesses enable communities and awareness. What is important is to connect the right people on the basis of awareness and consciousness, not bias!

There is a lot of variety, diversity, and pluralism in the structure of businesses and the ecosystem as well. The way we do business has changed fundamentally. Businesses might be decentralized organizations managed and owned by many (not everybody) according to their interests and preferences.

Businesses are transparent. Open intelligence models have been developed successfully. There is free access to the internet in general, but users are also willing to pay for valuable additional services.

The ultimate power is with the user: The big social media companies do not exist anymore as users decided to use other new platforms. New platforms arose and users took their data from Facebook for example and switched to other platforms easily. And they took their whole network with them. Real peer-to-peer-networks are developed, not centralized networks like Facebook or Uber.

Changes in technology change business models. Startups and established companies are able to develop Digital Business Models and Intelligence Driven Business Models and their common focus is to develop more responsible, social business models. Digital technology is a great enabler of new business ideas and new business models.

The sharing economy plays an important role as a driver for digital technological developments as well as for societal changes. But there are obstacles and drawbacks, e.g. taxi drivers do not want to become Uber drivers, hotels do not want to do Airbnb, etc.

Social networks and new media are an important, useful part of business and work life.

4.6.7 Development Of the EU, Potential Military Usage and Cyberwar

Development of the EU: The **political structure has changed** a lot into a fluid type of organism. There are no countries but different communities – large and small – which can also be globally and virtually connected, not only geographically. Territories are defined on the internet by communities, not geographically. **Digital leadership** is not defined geographically or by national states either and it is not the main driver of innovation. The **place of value creation** is important as local products are important also in terms of **greening the internet** by decreasing CO_2-footprints.

Potential military usage is **not a strong driver** for the development of new digital technologies in this scenario. As conflicts decrease, there **is not a lot of R&D investment in military technological** development. We do not fight cyberwars in this scenario.

High European Standards and Values Become Role Models In the World

Europe has become so open, flexible, and free, that it was able to **establish European value pluralism and human rights as role models** and **guiding principles** for the **development of digital technologies**. The European **value pluralism** has become a **role model in the world**. The decision to choose long-term sustainable thinking over short term gains has payed-off.

Europeans had the courage to take a specific European decelerated approach which in the long run increased our ability of problem solving. We can rely on solid innovative foundations on which we create real novelties and disruptive innovation benefitting humanity.

5 Implications and Possible Responses

5.1 Implications Derived From the Identified Certain Trends

5.1.1 Urbanization: AI and Other Digital Technologies In the City

Urbanization alongside with the **ubiquity of** digital technologies was identified as the strongest driving force among the certain trends for the development of NGI technologies. Cities are complex systems which can be greatly supported by digital technologies like AI (machine learning and deep learning) for example if they simultaneously support human connection in the city.

→ Questions:
How can **AI (machine learning and deep learning) and other digital technologies** contribute to make cities a **co-creative ecosystem in** which relevant, **diverse players** interact in **symbiotic, mutually supportive**, and **empowered relationships i**n different communities within the city?

How can digital technologies enhance the services and infrastructure in the city in a way that users gain more **safety, security** and **trust in humans and machines** in the **urban, highly technology-infused, transparent a**nd rather **uncertain, complex** and **overwhelming** world of the future? How can we make sure that "AI in the City" does not turn into an **AI-driven 24/7 full surveillance system** which keeps everyone on track like in the "prisoners" scenario?

5.1.2 Digital Technologies As Drivers For Education

Education as a driver for education was also identified as one of the strongest driving forces among the certain trends. On the other hand, a fundamental change in the way we educate children – and adults – was discussed as an important critical uncertainty for the successful development of future digital technologies in responsible and creative ways. The system has to change from molding people into worker bees to bringing out their unique potential.

→ Question:
How could we use digital technologies like **virtual and augmented reality** or **virtual spaces,** for example**,** to create educational material which enhances **self-induced, co-creative learning** which is driven by **intrinsic motivation**?

5.2 Implications Of the 4 Scenarios – What We Don't Want and What We Do Want Instead

There is something valuable to learn in every scenario – even if it is only a lesson about what we do not want. To some extent, they can be seen as evolutionary stages to the promised land of a desirable "Next Generation Internet – The Internet for People 2040". Not so desirable scenarios provide advantages and learnings as well and they are, thus, also highly valuable. Furthermore, elements of these scenarios can be used to create more evolved ones.

Three of the scenarios show us a lot of what we do not want:

- Technology as the new religion imprisoning us (unconscious prisoners)
- Conformity and convenience destroying creative and innovative potential (worker bees)
- Disconnectedness making us use technologies to harm each other (lonesome cowboys)

That is not all negative. **If there were no challenges, there would be no evolution**. Human beings often do not change until they are in a state of crisis, so sometimes structures have to break down in order to create something new. That is what Schumpeter calls "**the creative power of destruction**". Like a forest fire it burns away what is not serving anymore and prepares the ground for new creations to grow.

5.2.1 Unwanted Developments In the 3 Not-so-positive Scenarios and Questions That Arise

Three of the four scenarios show developments, which in parts are current reality but need to be addressed and changed in order to develop digital technologies and networks which enable people to create a conscious, free, responsible and self-determined life. They show us the obstacles on the way to the promised land portrayed in the "connected surfers" scenario.

Knowing what is unwanted can be used as an inspiration to create what we do want instead.

Unwanted Developments In the "Prisoners" Scenario:

- Lack of transparency → How can digital technologies contribute to more transparency?
- Lock-in systems → How can open systems be developed and supported (also from the user's side)?
- AI-driven 24/7 full surveillance system – personal assistants gone rogue: they do not assist, but control and imprison their inmates → How can digital technologies prevent personal assistants from controlling us?
- Technology isolating and increasing the divisions among people → How can digital technologies contribute to symbiotic, mutually supportive, and empowered connections and relationships among people instead of isolating them further?
- Technology used to spread fear → How can digital technologies like the future media and social networks themselves contribute to creating more (self-)awareness and consciousness instead of fueling fears?
- One big tech-giant has taken over everything in the western world including social, economic, and political structures. It is the new central authority, which does not take the best interests and wellbeing of the prison inmates into consideration. The goal is to remain in power for power's sake by all means. → How can such developments be avoided? Should there be more control mechanisms of such developments in place like in the worker bee scenario? How can digital technologies contribute to the awareness of such developments and show the users that the power is ultimately with them? – With every click they decide where their attention goes.

Unwanted Developments In the "Lonesome Cowboys" Scenario:

- Fragmented, commercialized access to the internet → How can digital technologies contribute to open models?
- Fully automated but socially disconnected world → How can digital technologies enhance symbiotic, mutually supportive, empowered, co-creative connections and relationships among people instead of further disconnecting them?
- Recklessness has become a business model → How can digital technologies contribute to finding business models which are more social (in terms of taking the wellbeing of others and the planet into account) and profitable at the same time?
- Technology is created ruthlessly against each other in isolated bubbles → How can digital technologies contribute to developing co-creative systems which include community values in flexible, evolving ways without bulldozing the uniqueness and creative power of the participating individuals?
- Technological innovator class as the only valuable members of society; others are left behind → How can digital technologies contribute to including all parts of society?
- Constant fight for resources and a lack of security → How can digital technologies create more safety and security?
- The lack of taking responsibility for the consequences of their actions decreases the trust both in humans and in machines → How can digital technologies create more trust? How can they contribute to make people take responsibility for their creations and the consequences they imply?

Positive Aspects In the "Lonesome Cowboys" Scenario:

- The freedom for creativity, variety, and pluralism leads to a digital gold rush situation and disruptive innovation – at any costs → Worker bee situations should introduce more of this freedom for creativity, variety, and pluralism, lessen the restriction, and give the individual more room and flexible choices

Unwanted Developments In the"Worker Bees" Scenario:

- People live in a highly risk averse comfort zone and progressively shift the responsibility of decision-making to technologies and governmental entities → How can digital technologies support people in taking their responsibility for decision- making back? How can they show them their choices and so enable them to make conscious decisions?
- The rigid, centralized ecosystem rewards conformity and does not foster creativity, variety, and pluralism → How can digital technologies support creativity, variety, and pluralism in a co-creative ecosystem?
- Convenience on the consumer's side is the main hindrances to creativity and real disruptive technological, social and business model innovations → How can digital technologies break the convenience trap? Is that possible at all? How can the awareness among consumers be enhanced with digital technologies?
- Value is defined by following the rules → How can digital technologies contribute to incorporate flexible and evolving value systems which support individual creativity as well as social connections?

- The system favors big European businesses, small ones can hardly survive → How can regulation of digital technologies be executed in a way that it does not hinder the development of new businesses which apply digital technologies in new, innovative ways?

Positive Aspects In the "Worker Bees" Scenario:

- Europe is a strong, unified entity – one strong player who acts with speed and power and also claims its role on the world stage. Under the slogan "make Europe great again" everything is done to win the global race of digital leadership → Is there a way other than protectionism to realize that? Can European long-term-thinking as well as high security and quality standards be the competitive advantage we want, for example?

Responses In the "Connected Surfers Scenario"

In all the not-so-positive scenarios relationships are neither symbiotic and supportive nor empowered. Thus, what we want instead is a **co-creative ecosystem** in which relevant, **diverse players** interact in **symbiotic, mutually supportive**, and **empowered relationships**; an ecosystem that provides a safe and secure basis for the creation of new digital technologies in the sense of these scenarios.

Technological solutions which can be developed in such a co-creative ecosystem may include:

1. **Interconnected Internet Islands: More Resilience and Trust**

Vision in the "Connected Surfers Scenario":
The **internet infrastructure is distributed**, but the **access remains free**.
In this case the **fragmentation** of the internet is used as an **advantage**: many **interconnected internet islands make the internet more resilient**. The **decentralized approach facilitates different technology levels. People can choose which network to use**. The internet infrastructure is like a **fluid organism** – just as society itself. There are clusters and islands, but they are still connected to each other. **AI, blockchain and other cutting-edge IT technologies need interconnectivity.** Through **blockchain** and **distributed ledger technologies, trust in this interconnectivity** and **information exchange** is developed.

→Wanted: How can this vision be realized? Which players should be involved in a co-creative project to develop this fluid internet organism? What parts are needed for resilience, which parts are flexible?

2. **Encryption: "Darknet" becomes "Lightnet"**

In the "Connected Surfers Scenario" the **darknet is called "lightnet"** and as such **has become mainstream:** to tackle former **security issues**, the internet is encrypted in general now.

Question: How can this vison be realized?

Important basic principles to put into consideration are:

a) <u>Taking the wellbeing of humans into consideration</u>: In all technological development, it is important to take the best interests and wellbeing of human beings into consideration. When we understand the interconnectedness of everything, it becomes impossible to hurt others without hurting ourselves simultaneously. This creates secure connections to other people which may serve as a solid basis for everyone to develop in the best possible way, to flourish.

    Taking the best interests of others into consideration can be greatly supported and enhanced by digital technologies. For example, in digital public consultations. There are 7,6 billion people with different perspectives on this planet and to put these into consideration is a great task for AI technologies, for example. New technology platforms can connect people without lock-in systems, in full transparency, and without losing data sovereignty.

b) <u>Awareness is the first mechanism of change</u>: An increase in awareness and consciousness was seen as crucial for the development of digital technologies in the described way. It can help us break our old mind patterns, change compulsive conditioned behavior, and transcend our own prejudices and ignorance in order to make better decisions and shape a desirable future. More enlightened media contributing to awareness instead of fueling the fear with catchy headlines are an important part of this.

c) <u>Focus on the unique potential of each individuum</u>: If we want to actualize humanity's full potential, we have to focus on and bring out the unique potential of each person. That leads to personal empowerment, responsibility, and self-determination. Some suggestions to support that derived from the scenarios:
    - Providing freedom of choice and support of intrinsic motivation: let children and adults chose their career paths according to their intrinsic motivation and support their unique talents
    - Appreciation for different talents, roles, and contributions in society
    - Fostering of variety, diversity and pluralism

5.3 Possible Responses – Recommendations

In the third scenario workshop on May 23, 2019 possible responses and recommendations to get closer to the desired state have been discussed.

The discussion was guided along the questions: How would the group want people to act in their various roles in politics, administration, interest groups, NGOs, academia, media, and businesses in order to create the best-case scenario in which the future is shaped in terms of trust, inclusiveness, openness and security in such a way that digital technologies and networks enable people to create a conscious, free, responsible and self-determined life? How can positive developments be supported?

The following section summarizes the debated topics in bullet points.

5.4 Citizens

In this scenario process, we decided to focus on the responsibility of the individual human being in shaping the future. Thus, the first question was: How should citizens shape their roles in handling digital technologies? The following points were seen as important:

- Behavioral change
    - Gaining awareness and consciousness: question everything and discern what is good and what is bad for you
    - Intentional, conscious media and technology consumption
    - Commitment to personal growth, self-empowerment, and responsibility
    - Seeing and recognizing possibilities to evolve and choose them (choice)
- **Recognition of the intrinsic value of all human beings**: Appreciation for different roles and people in society
- Using the internet as **Internet of Actions** (IoA)
    - Helping us to take informed and conscious decisions
    - Assisting us in taking inspired action steps on our decisions
    - Connecting the virtual and physical realm
    - Enabling collaboration and interaction between man and machine, man and man, and machine and machine

5.5 Interest Groups & NGOs

Interest groups and NGOs also have to assume their responsibility in society. Their tasks are seen as follows:

- Creating new circles in society
- Taking their role as a force to bring certain topics into consciousness
- Vision to steer/inspire us towards desired, conscious future
- Culmination of different fields (lawyers, science, politics, etc.)
- Class actions:
    - launch topics in a representative way
    - launch action enforcement mechanisms
- Access to politics / governing bodies

5.6 Media

- Not fueling the fear of technologies with catchy headlines ("AI is destroying Millions of jobs, etc.)
- Not providing narcotic, druglike entertainment to numb people out
- Providing real and conscious information
- Integrating AI and other digital technologies in the creative process where useful
- Taking their social function in a conscious way
    - Free communication
    - Socializing: Connecting people
- Connecting people, not dividing them

- Awareness building: Using entertainment and gamification elements for more consciousness and awareness
- Learning from children's programs
- Conscious media consumption

5.7 Academia, Science & Research

- Importance of basic research
  - Exploration and exploitation
  - 10 to 20 times more investment and funding to make a difference
  - Solution and value based: top-down and bottom-up (NGI-program as good practice: asking people what the problem/need is which they want to be solved, i.e. darkness in the city)
- Moving out of boxes
- Interdisciplinarity
- Connection to society →Exchange
- Wider communication possibilities → inclusiveness
- Asking questions →challenging perspectives
- Changing of incentives for people in academia
  - Less competition in writing papers
  - Making communication between institutions possible
- Productive connections: joint, focused efforts

Concrete steps:
- Using the power of the entertainment industry; making entertaining (TV) shows
  - Showing outcomes and usage/cases
  - Examples: Big Bang Theory, Science Busters
- Taking children's programs as best practices
  - Laying foundations early by bringing science to kids
  - Example, Israel: science TV show with and for children with Nobel Laureate Prof. Dan Shechtman
  - Describing scientific principles to children; they are able to understand them and chose according to their preferences their career path; they should choose due to their **intrinsic motivation,** but teachers and parents can support and foster their specific interests
  - Education in risks and probabilities → making educated estimates

5.8 Politics and Administration

Basic role:
- Co-ordination between free and self-empowered communities and individuals
- Taking care of and providing merit goods (goods that lie in the national interest or that are so important that they must be produced by the state, e.g. critical infrastructure)
- Market intervention to enable companies to provide common (merit) goods
- Making sure that data is used for the good and benefit of society (Regulation?)

- Shaping a different role of politicians:
  - communicating the needs of people
  - caring less about personal power and more about how to govern free, connected communities and individuals
  - no political parties anymore

- Different kind of **education and information**:
  - Thinking of new ways to make it attractive
  - Starting in Kindergarten and with the **intrinsic motivation** of children/human beings: very young children who have not gone through socialization and education yet are naturally interested and eager to learn; our task is to support them in their intrinsic motivation in the best way possible

- Designing by debate
- **Inclusive and transparent way of decision-making** (AI-strategy Austria: all relevant ministries and stakeholders are involved and working together in the process)
  - Co-ordinated action plans and public consultations
- **New, open regulatory approaches**, but: keeping what works (e.g. for merit goods)
  - disconnecting internet and digital technologies from basic structure (restructuring)
  - **Shared control** vs. quality of service (Google has more data than EUgle, hence the service quality is better) (positive example: Sezna, the local Google Earth in the Cech Republic)
    → **distributed regulation**
  - **Regulatory sandboxing**
  - Ethical and legal interoperability (like AI framework and initiatives)
  - Regulation with **democratic background (human rights as basis)**

- **New Funding schemes** for real high-risk projects (not only big, established players)
  - Supporting small businesses to compete on the market (Europe has mainly SMEs) – not killing them by regulation. There have to be different rules for startups, SMEs, and big companies.
  - Helping to scale up and grow new companies with new funding opportunities beyond innovation and new ideas (seed investment is good, but then investors from China etc. come in and buy technologies which were developed in the EU when they are market ready because there is a lack of follow up funding)
  - Avoiding PPP-syndrome: going back, inventing, and starting the same thing over and over again
- Linking human rights to supply chain → **human rights impact assessment for digital technologies** and tax
  - Managing trusted labels by blockchain, but: there are a lot of problems with "labels" now (too much administration for small businesses)

- Living without digital technologies as a human/civic right?

5.9 Business & Economy

- **Co-creation:** collaborating with your customers and other diverse players in new ways
- **Connection to Society**
- Contribution to the **empowerment of your users and customers**
  - Data Usage: giving customers real choice, not locked-in systems
  - Education and information of customers
- **Transparency**
  - Sharing your **values** with the crowd/ customers you are serving
- Doing everything to establish **trust**
- Liability & Accountability
- Thinking of **new business models, strategies and structures** (not - profit over people)
  - Establishing more long-term thinking
  - Preventing control from taking over business models, strategies and structures
  - Decentralization: **empowerment of the employee**
    - Transparency & Communication
    - Information & Education
    - Transformation in how we work together:
      - getting rid of hierarchy (Example: Tele Haase Vienna)
      - Defining common values together
    - Finding solutions in a more integrated and goal-oriented approach: **seeking out different perspectives**
    - **Flexibility**: **constant change and evolvement of business models** and values according to ongoing changes (the only thing constant in life is change)
    - **Open Intelligence Models**

- **Behavioral Economy**
  - Tribecoin system (https://www.tribecoin.com), Wiener Gulden etc. → create value by **contribution** (important: who defines what is a contribution? not indoctrinated, but pluralistic and evolving values!)

- Taking **responsibility** and the **conscious decision**
  - **not fueling fear and unconsciousness among customers** and **not taking advantage of their lacking capability**
  - **not harming people in order to make profits**

5.10 NGI Technology

The following principles for NGI Technology of the Future were formulated:

- **Non-commercial (non-economic), free internet as space for society and individuals to create, develop and implement new ideas and to further grow and develop as human beings**
- Digital Pluralism

- **Openness**:
  - Giving people choices
  - Open access
- Independency and redundancy of technology
- **Trust**: How can we establish trust?
- **Security** – trustworthy infrastructure
- **Transparency**: Enabling people to know where the information comes from and if they are talking to a human or an AI for example
  - Mechanisms in the system to support this
- **Privacy**: How can we protect privacy?
- Freedom of speech
- **Inclusiveness**
- **Availability**
- **Interoperability**
- Application/Applicability

Concrete ideas:

- **Digital Platforms**: As a guiding principle, platforms should contribute to connecting people, not to separating them. They should increase awareness, focus and attention, not foster unawareness and distraction. Some platform ideas:
  - Finding your community platforms
  - Freely available learning platforms
  - Participation platforms to support democratic and decision-making processes (e.g. liquid democracy)
    - Conversation based (not only consensus based)
    - Digital Pluralism
  - Wikipedia 4.0

- Automatic translation as public service
- Possibility to provide information as authors
- AI search machines for papers (peer review for quality control – best practice: https://arxiv.org)

- **Guidance and Information** on how people should shape their roles in politics, administration, interest groups, NGOs, academia, media, and businesses in a way that digital technologies and networks enable them to create a conscious, free, responsible and self-determined life.

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