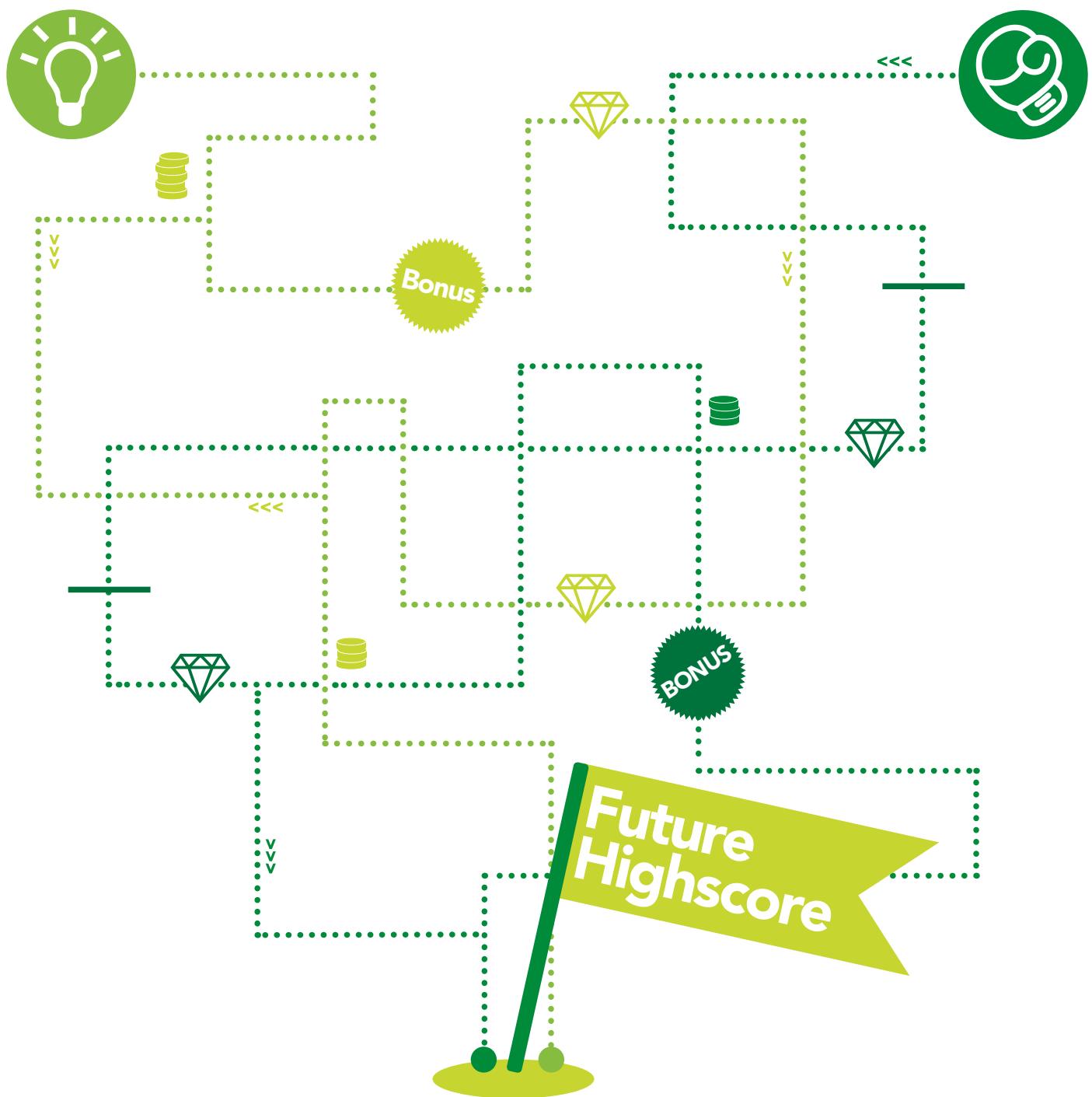


Playing into the future

How can strategic work relating to the future benefit from the gamification trend?

by Vanessa Watkins and Andreas Neef



1. The gamification trend

No other sector has experienced such an explosive growth over the past few decades as the computer and video game industry. Mankind currently spends a total of 3 billion hours per week playing computer games,¹ there are around 1.2 million active gamers around the world,² and by 2015 the global gaming sector will achieve a turnover of 86.1 billion USD.³ Therefore gaming represents a global trend, from whose success other sectors are increasingly wishing to learn. How can one get people to spend several hours at a time working at a more or less meaningful task in a highly motivated frame of mind? The magic word is "gamification".

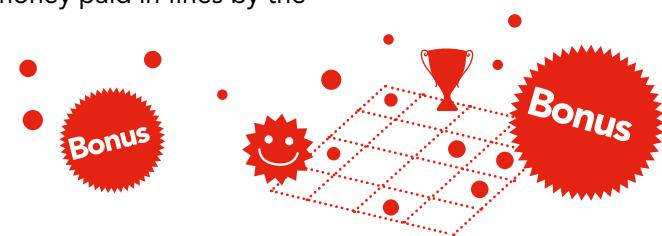
Gamification refers to the application of typical gaming elements to non-game contexts. Among other things such typical gaming elements include the accumulation of points, high-score lists, virtual goods, but also rules of play, game-like interfaces or meaningful stories ("epic meaning"). The gamification concept has been the subject of controversial discussions since 2010.⁴ Increasing numbers of public research and educational institutes as well as companies are currently testing ways to make their products and/or services, but also everyday tasks, more entertaining and engaging through the use of game design principles. Also, in May 2013 the Association of Professional Futurists organised a conference in Orlando, Florida, under the heading "*Play–Games, Simulations, and the Future*", in order to give the foresight scene an understanding of gamification.⁵

The basic idea of gamification is quite simple: increasing numbers of people are enthusiastically and tenaciously devoting their time to computer and video games, whereby they often carry out repetitive tasks, such as dealing with the same monster over and over again, for hours at a time, until they have accumulated sufficient points to reach the next level. Gamification is an attempt to make use of the enormous mobilisation of energy this gaming instinct represents in the real world, even for certain aspects of life, which are inherently less entertaining.

Typical fields of application for gamification approaches are things like health, learning or road safety. For example, a gamification pilot project in Stockholm was able to achieve a 22% reduction in car-driving speeds by introducing a "traffic camera lottery". Drivers who exceed the speed limit are still flashed, but so are those who stick to the relevant speed limit. Those who drive in accordance with the rules are automatically entered into a lottery and can, with a bit of luck, win the money paid in fines by the speeders. The lottery was developed in the course of an ideas competition called the "Fun Theory Awards", an initiative by Volkswagen; the Swedish Road Safety Association then implemented it.⁶

In the field of health, the jogging app "Zombies Run!" helps to increase joggers' motivation. Using this app, the rounds to be jogged are transformed into life-saving missions where supplies have to be delivered to areas besieged by zombies. The jogger's current position is determined by GPS and if the zombies get too close, the jogger receives an alert. Then they need to step up the pace.⁷

The gamification principle is often applied in a very reduced form, in which only a single gaming element is reused in a new context. For example, one can earn bonus points by carrying out certain actions (like tagging, commenting, recruiting new users, and so on) on an increasing number of web services. These then enable the activation of extra credit or more storage space. Even status bars that show what percentage of a given task one has already completed – whether in the course of online surveys or completing a web profile – originated in the world of computer games.⁸ When Gartner predicts that half of all organisations will have gamified their processes by 2015, this includes such reduced applications.⁹



"Serious games" represent an interesting sub-aspect of the gaming trend; these are computer games whose primary objective is not entertainment but rather to impart information or educational content. Thus, for example, the learning adventure game AJABU is all about the provision of information and education about Africa. It covers such topics as the destruction of natural and the environment as well as raw materials, globalisation, lobby-based politics, corruption and racism.¹⁰ In the business world an increasing number of companies are using games for recruitment purposes. The French postal services company Formaposte, for instance, uses an online game in which one is taken through the typical working week of an apprentice postal worker.¹¹

At Volkswagen budding vehicle mechatronics engineers can demonstrate their skills in a virtual workshop,¹² whilst junior staff at Lufthansa can even launch their own airline.¹³ Research is another field of application for "serious games". The University of Washington's "Foldit" game caused a stir in 2011 when it proved possible to decode one of the surface proteins of the HI virus with the aid of 57,000 players. The object of Foldit was to place proteins (molecules made of a large number of amino acids) into as low an energy state as possible by twisting, shoving, and folding. In 2012 about 100,000 registered players toiled over protein chains, thereby voluntarily relieving researchers of a tedious, yet necessary, task.¹⁴

2. Gaming v playing

The growing criticism of the gamification trend is primarily directed at the increasing number of projects that are selling the use of game design elements as a cheap instrument for raising motivational levels and increasing participation. As Judd Antin of Yahoo Research explained in *Technology Review* for example, just because games can be fun doesn't automatically make them motivating.¹⁵ On the contrary, he says, a game-like element that motivates some people can be completely demotivating to others. Therefore one ought to investigate what type of game element works in which contexts. Judd Antin contradicts the obvious assumption that offering rewards for desired actions cannot hurt. "Crowding Out" is a term used in the field of social psychology to describe a phenomenon whereby intrinsic motivation can be reduced by extrinsic, e.g. financial, rewards. The things that people strive for can sometimes be fundamentally different, namely recognition, being part of a group, personal development, status, prestige, etc. Therefore, using games to increase commitment and participation levels needs to be approached with caution. You should certainly form a clear profile in advance of the people you want to reach.

Furthermore, it is questionable what, precisely, people actually learn from "serious games". Do they merely internalise the way the game works or do they also retain something of the content beyond this? Michael Wagner, games expert from the Department of Visual Culture at the Danube University in Krems, concludes that what you learn in the game stays in the game. People, he goes on to say, only learn what is important for success within the game and that you can hardly impart any specific knowledge.¹⁶ Lee Skallerup Bessette, a blogger at Hybrid Pedagogy, raises the further question of whether it is even desirable to get people used to being rewarded for the act of learning. Should the objective not be more to impart a sense of taking pleasure in learning? In her opinion this is more achievable through free play than in a game with rules and rewards.¹⁷

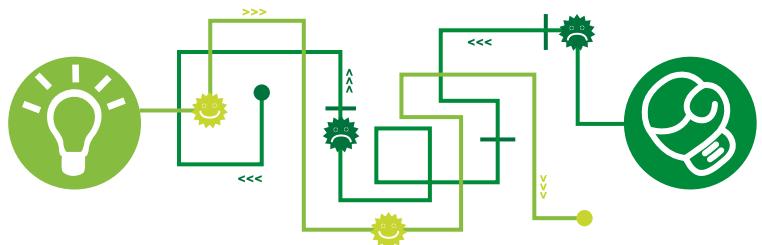
And it does indeed appear to be the case that quite a few companies forget when developing gamification applications that every game (in the sense of a rules-based game) should also include elements of play. Many of these applications are lacking the fun and productive factor. Hardly anyone becomes addicted to a game just because it has a good scoring mechanism and you can collect points. But in the case of gamification applications that is precisely what is being sold as the magic bullet for increasing

motivation and participation. That is why Koen van Turnhout, a researcher in Interaction Design and New Media at the Arnhem University of Applied Sciences, is calling for more "playification" rather than "gamification" and illustrates his demand by using the example of cleaning teeth: who would want to collect points for cleaning their teeth well? On the other hand, the daily oral hygiene routine could be more fun if one could take part in a global teeth-cleaning symphony from home.¹⁸ Although one could argue about the practicability of this example it does show that, as well as rules, good games also incorporate additional ingredients, namely exciting story lines, the opportunity to be part of something bigger (socially/narratively), to test oneself and often also to have a hand in shaping and modifying the game design.

Currently playification is primarily being discussed in more detail in the fields of art and design research. Here too the idea is to animate users to

interact with an object or topic in a playful manner, but without being constrained by formal rules or design aspects. Rather, it is the person with his or her subjective experience who is central within this context. Brigid Costello and Ernest Edmonds from the University of Technology in Sydney have developed a system of play-animating experiences and – with reference to various philosophers, psychologists and games designers – have identified 13 so-called "pleasure categories". According to these, people are motivated to interact playfully by such things as:

- the joy of creating something, exploration, discovery, fantasising, sensual experience, simulation
- getting a kick from challenges, competition, danger, subversion, and
- the feeling of happiness triggered by spontaneous empathy and friendship¹⁹



The Nokia Research Labs have extended this classification to include experiences such as humour, control, caring, relaxation, eroticism, and completion, on the basis of which they have developed a card-based brainstorming tool for "design for playfulness".²⁰

One company that has already discovered the "playification" trend as a potential new business segment is Lego. They are currently offering Lego workshops to businesses under the heading of "Serious Play".²¹ Lego developed its concept for the business world in conjunction with scientists from Lausanne. In this context managers use the colourful building blocks and plastic animals for their strategy processes, the visualisation of conflicts or as a visionary blueprint for new business areas, whereby the initial objective is not to analyse at a psychological level but rather to construct. Only in the second step do participants examine and evaluate the Lego structures. The benefit is that the visual and tangible statements are generally much more pithy and provocative than the run-of-the-mill "business talk". In this way fundamental open questions and areas of conflict can be identified much more quickly and then discussed in a more effective manner. These toy blocks have also proved helpful when it comes to developing shared visions. The results are automatically recorded in images and are remembered for longer.²²

3. Gaming concepts in futurology

And what is the current situation in relation to gamification and playification in terms of futurology? Futurologists recognised the power of play at a very early stage, especially as a catalyst for social change. One can legitimately regard the architect, inventor and futurologist Richard Buckminster Fuller (1895–1983) as a pioneer of "Future Gamifi-

cation". He developed the "World Peace Game" in 1961, in which the players do not compete with each other, but rather collaborate in the search for solutions to global problems such as over-population and the distribution of resources.²³ These days the game, now known as "Global Simulation Workshop", is available to buy from Earth Inc.²⁴ The "World Peace Game" was also adapted for children with great success by John Hunter, an American educationalist.^{25 26}

Other simulation-based games should also be mentioned in this context. There is an entire range of computer-based and haptic games that enable people to research the ways in which complex systems work. The homepage of the German Federal Centre for Political Education provides an excellent overview of a broad spectrum of simulation games relating to various subjects. "Ecopolicy" by Frederic Vester is worthy of particular note in this context.²⁷ These days, regular competitions for young people are being held under the heading of "Ecopolicyade", in which they take on the role of head of state and are faced with leading their own country towards a parades-like state.²⁸ In the business world simulation games are used particularly in the training and development of managers, often under the rubric of "Business War Games". The objective in this context is to simulate the company within the relevant competitive environment as realistically as possible and to try out various strategies for success.

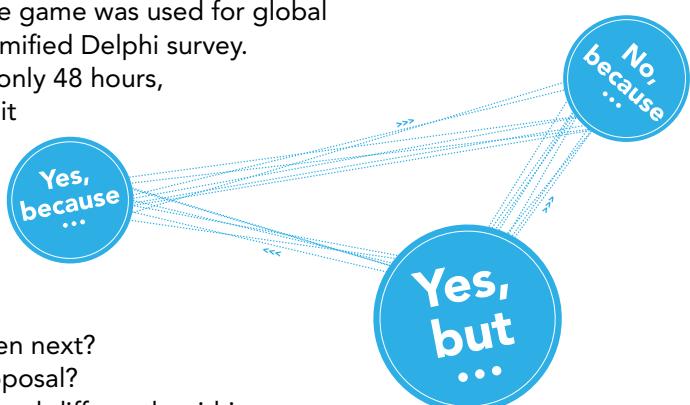
The futurologists Robert Jungk, Rüdiger Lutz and Norbert Müllert developed the "workshop of the future" in the 1970s. In line with the objectives of playification, this approach is designed to stimulate players' imagination and to inspire them to come up with new solutions to existing problems. During the first stage of the workshop a particular problem or point of criticism is outlined precisely. Afterwards the participants imagine themselves in a future utopia in which anything is possible. There, free of all restrictions, it is possible to imagine a world in which the relevant problem has already been solved. During this phase it is often the case that artistic forms of expression are chosen, especially modelling, painting etc.²⁹ Subsequently participants analyse what they could transfer from the future to the present or what direction they would have to take in order to achieve the envisaged utopia. At the end of the one to two-day workshop all delegates return home with a plan of actions and measures that they have developed themselves.

The South African Node of the Millennium Project³⁰ in conjunction with the Rockefeller Foundation developed a successful³¹ example of future gamification aimed at bringing about social change. In April 2012 people from around the globe were invited to take part in a game called "Catalysts for Change: Path out of Poverty". The objective of this so-called "Foresight Engine Game" was to dream up a large number of routes out of poverty. What was new about this was that an online game was used for global real-time participation and therefore, so to speak, for a gamified Delphi survey.

Over 1600 people from 79 countries took part, and, after only 48 hours,

a total of 18,160 new ideas had been received about how it might be possible to stimulate change in poverty stricken, at-risk and marginalised communities. Every participant was able to submit cards each containing one idea, to which the other participants were allowed to respond with four potential response cards:

1. Momentum: If we adopt this route, what would happen next?
 2. Antagonism: Don't agree? What's wrong with the proposal?
 3. Adaptation: Yes, but ... how could this idea be structured differently within your own specific community or region?
 4. Investigation: Curious? Ask a question or answer a follow-up question ...
- The mechanism of the game encourages the development of ideas: the longer the conversation relating to a given card, the more points the player wins. In this way each additional card improved the original idea and gave the players room for discussion, additions and questions.



Kathi Vian is also considered to be one of the pioneers of *Foresight Games for Social Change*. In 2008 she headed up the online forecasting game "Superstruct", in which the participants have their Avatars, living in the year 2019, work toward averting the end of humanity by 2042.³² She also co-designed the social forecasting platform "Foresight Engine" at the Institute for the Future in Palo Alto,³³ a multi-player platform that makes it possible to integrate a large number of people within a specific foresight process in order to benefit from the "wisdom of the crowd". "Tiltfactor"³⁴, an inter-disciplinary innovation studio headed up by Mary Fanagan, is another institute that has successfully researched and developed games as catalysts for social change.

4. Gamification in the foresight process: benefits and examples

But what benefits does the use of gamification and playification provide in foresight processes? Corporate and public foresight processes often suffer from a certain amount of "top heaviness". On the one hand, the often one-sided focus on facts and figures is the result of the complex questions raised, but can, on the other hand, be due to the fact that for many years futurology has had to establish itself as a serious discipline within companies and political institutes, conducted in line with scientific criteria. For that reason alone it is often the case that too little energy is devoted to thinking about the human factor within the project concept. A lot of intellectual effort is put into the content and methodological structure of future prognoses, but scant thought is given to the question of how to profitably integrate the various members of staff, departments and external experts, and "carry them along" on the journey into the future. This is exacerbated by the fact that the results of futurology processes often remain rather abstract – which lies in the nature of the subject, as the future per se is barely tangible. It therefore appears to be all the more important to "breathe life into" the results of analyses of the future in order to reduce barriers for individuals and companies when it comes to implementation.

Of course, neither gamification nor playification represent a panacea in this context, in addition to which it is not the object of the exercise to make a game of every intellectual activity. Nevertheless, the use of game elements in foresight processes provides some convincing benefits, which we shall elucidate in the following based on specific examples. In doing so, we shall particularly concentrate on participatory foresight processes, in which, in addition to a core research team, temporary participants are involved, often in the course of workshops and surveys (mostly clients and external experts – collectively referred to below as "participants").

Inspiring through the game interface design and "epic meaning"

Z_punkt originally developed the "Future World Café" innovation workshop for an airline company. In the course of conceptual considerations as to how we could enthuse the engineers and managers of different departments and countries, we soon started to refer back to the one childhood and youthful dream that would probably unite all participants, namely the subject of "space flight". The participants became members of a space shuttle crew and were tasked with researching various future worlds. Log-book entries from previous expedition teams gave the participants clues as to which peculiarities they would need to take into consideration on each planet. In this way such topics as climate change, population ageing or the increasing scarcity of resources were brought into play. The objective of the session was to provide the residents of the various planets with potential responses to the particular local challenges they were facing through the development of new products and services.



Away from a focus on content

7

Probably the greatest advantage of the gamification of foresight processes is the fact that by looking at it through the gamification lens the participants are automatically placed centre stage. A fundamental question then becomes: how can we design the process and its contents in such a way that they capture the imaginations of, seduce and animate participants? To answer this question it is essential to focus more closely on the specific participants and their view of the process. What is their background? For example, different design approaches are required to capture the imaginations of engineers and technicians than communicators and marketing specialists. How interested are the participants in the process? Those who are not expecting any immediate benefit from the project need to be brought on board in a different way to those who will benefit directly and indirectly from the project results. How much can one expect from participants in terms of content detail and factual knowledge? How much background knowledge do they require in order to get fully involved and at what point does information overkill come into play that simply requires too much effort and completely spoils the fun?

Of course, sound, relevant content and a clear methodological approach continue to be at the heart of good foresight work – but putting a bit more energy into communicating the contents in an appealing way and ensuring that the joint workshop is entertaining, can only enrich the foresight scene.

Modifying the degree of detail depth and communicating content in an appealing manner

Getting people involved, who have little to do with the foresight process and who may not necessarily be interested in it represents a challenge. We have had good experiences in presenting each of our questions in the form of newspaper articles from the future. The following is an example from an event staged in the course of a design festival in Cologne.

Punch lines at the press of a button

Body modification technology impresses the Cologne hip-hop Community. Old-school rapper and hip-hop Veteran Jan Delay presented his successfully implanted thesaurus at the Live Music Hall.

=> *What is your favourite body modification technology in the year 2030?*

The intention was to present the news from the future in a tongue-in-cheek manner, whilst still engaging with the relevant topics. In conjunction with "brain writing"³⁵, a creative technique, one can use this simple approach to gather lots of ideas within a group of almost any size.



Be specific

One area in which playification elements can prove to be particularly fruitful is in the elaboration of results. As described at the beginning of this article, future processes can suffer from chronic "abstractitis". During workshops one frequently encounters ideas à la "more sustainable solutions" on the results cards following a future brainstorming session. Such solutions may be "decentralised", "smart" or "regional". Another favoured response is to augment some older term with "version 2.0" or 3.0, or recently even 4.0 – and - abracadabra - the future is sorted! Admittedly it really isn't easy to develop concrete solutions for the future, and not just because the future, *per definitionem*, hasn't arrived yet, but also because our brains prefer to operate in line with established patterns. In addition, one is less vulnerable to criticism if one formulates results in a rather vague way.

One elegant way to arrive at specific results in spite of all of this is to be found in presenting the results in haptic and artistic modes of expression. People, who are asked to represent their ideas in Plasticine, Lego, handicraft materials or Playmobil figures will hardly be able to avoid linking their "sustainable / decentralised / smart solutions" to specific examples; after all it is easier to represent these in plastic form. As a matter of course the process of representation then raises a number of additional questions, such as what exactly might the individual elements of the concept be like? How can one best represent the user, and who is that exactly? Is it not the case that the actual heart of the idea is not so much the product, but rather the relevant service?

One can apply this approach in more than just the development of product- and service-related ideas. Project proposals, visions and even scenario worlds can be implemented artistically, for example, in the form of story boards or comics. In terms of subjects that tend to be larger or more complex, such as those represented in the form of visions, one ought to imagine the day-to-day manifestations that would characterise a given implementation; they are more amenable to a haptic or visual implementation.

The use of play and handicraft materials also offers significant advantages for group dynamics, as other people get a say than is the case in group discussions. Where these are dominated by the types of people who are skilled with words, those of a more visual or kinaesthetic nature are now more likely to contribute. For example, they often just start kneading and moulding whilst the others are still debating and then at some point hold their completed creation up with the words: "Well, I imagine it might look something like this..."

All in all the atmosphere created is far more relaxed; people laugh more and feelings of apprehension about one's own vulnerability subside. Perhaps this is because one already assumes that by playing with Plasticine figures everyone in the room is making themselves vulnerable.

Auxiliary Playification tools

The use of handicraft materials is less appreciated in certain corporate cultures. In these cases we, at Z_punkt, often like to work with illustrators, who produce drawings on the fly. Even the presence of someone who visually records the results usually suffices to inspire more creative and more concrete ideas.

However, we have really taken the principle of creative assistance to the extreme at our "Rapid Future Fabrication" workshop event. Participants in these large group events have the option of booking in various additional "living tools" for the development of their ideas. Optionally available are experts, who can help with content inspiration and with whom one can test-drive one's ideas, but also specialist practitioners such as designers, filmmakers, theatre directors or freestyle rappers. In terms of allocating these "tools", the rule is first come, first served, and, in this way, the natural result is that the final presentation of ideas consists of a colourful potpourri of images, scenic representations, songs and films. The event was developed in collaboration with the live communication agency facts+fiction³⁶.



The human factor

Last but not least, gamification and playification could be of benefit at the psychological and cultural levels in foresight processes. Probably the greatest inhibitors for futurist projects are of a mental and social nature. The foresight scene is well prepared to deal with mental barriers, but less so when it comes to social inhibitions.

All futurologists and foresight experts are familiar with this difficulty, in that the human mind tends to be conservative and specialises in arranging perceived information into

familiar patterns. If none springs to mind, then the most similar will be adopted and pressed into service without much further ado, even if it barely fits. Pattern changes or the creation of new patterns runs counter to the human mind, therefore it takes practice and conceptual tools to outsmart it. That is why copious anecdotes, quotes and examples are cited in foresight lectures and books, which illustrates the fact that people usually find it very difficult to imagine radical changes. Thus, we have the legendary quote by Thomas Watson, the former Chairman of IBM, in 1943: "*I think there is a world market for about five computers.*" Or there's the statement made in 1876 by Sir William Preece, Engineer-in-Chief of the British General Post Office: "*The Americans may well need the telephone. But not us: we've got enough errand boys.*"

Another favourite method is to use retrospectives to illustrate just how much has changed during one's own lifetime. Consider, for example, that 25 years ago the Cold War was still going strong and the Berlin Wall was still in place. The Internet hadn't yet been invented, Yugoslavia was still a single state, and nobody would have thought it possible in those days that terrorists would attack the World Trade Center. This approach quickly demonstrates that our brains not only tend to downplay future possibilities, but also things that we have experienced ourselves.

That is why foresight methods are designed to expand one's perception of what is possible and to expose blind spots. In this respect they are similar to methods aimed at overcoming mental barriers relating to the way in which one conducts one's life or manages a business as used by cognitive scientists or "creative gurus".³⁷ Basically all of these methods are aimed at expanding perception, and suspending traditional assessment criteria in order to be able to feed one's own mind with information that transcends the established mental patterns. This involves, for example, generating as many alternative attempted solutions or explanations as possible, regardless of their superficial absurdity. That is exactly what futurology does with its scenario method, for experience has shown that only when bizarre (less likely from today's perspective) futures can also be negotiated in addition to the business-as-usual scenarios within the relevant company or institution do robust strategies and really novel approaches and innovative ideas arise.

And how does gamification fit into all this? It's quite simple: foresight methods provide a productive basis for mentally stimulating and horizon-expanding games. How expedient it can be to also employ the existing conceptual tools of futurology as "games" can be seen in the South African Nodes example described above. A digital, interactive and international "Foresight Engine Game" grew out of a traditional Delphi expert survey. And wouldn't it also be desirable ultimately to gamify the unavoidable, but terribly arduous consistency analysis in scenario processes?

However, in addition to mental barriers, social barriers also stand in the way of deviant futures. The workshops take place within a professional context, which generates pressure to better one's profile; one has to position and define oneself. And this is where the use of gamification elements yields dividends, because a so-called "lateral space" is created during the game, a place in which existing cultural and social rules are temporarily suspended. As is generally understood, games have their own rules for the sake of which the players are prepared to deviate from everyday conventions within a pre-agreed, framework that is not just temporal. A specific example is that during a game hierarchical structures take a back seat; a boss has to play by the same rules as the employees. The game can also reverse hierarchies or create new ones. In Business Wargaming Sessions, for example, normal members of staff take on roles like heads of state or CEOs from rival companies. In addition, it can be determined in advance that, as an exception, ideas that are crazy, unprofitable or even risky for the company's own business model are to be collected and must be developed. Thus, things become possible during the course of the game that would be unthinkable in a normal professional context.

Overcoming social barriers through Gamification

Z_punkt's "Ice-Berg-Session" workshop format consciously turns workplace conventions upside down. Staff members form small groups and play the role of various social protagonists from the corporate environment. Their task is to conspire against their own company and to do as much damage to it as possible based on their insider knowledge. Only after every group has let off steam in the role of "baddies" do they change back to their own side. At this point they are tasked with developing strategic deflection and solution approaches aimed at averting the worst-case scenario.



5. Prognosis

Companies and organisations can benefit from the gamification trend in their strategic future-oriented work. It will always be necessary to sensitively adapt the method to specific objectives and questions, to the character of the group addressed and to the relevant corporate culture. We would like to encourage you to be open to new approaches and experiences, especially if you conduct your foresight process within a "serious" organisational environment, which is otherwise rather reticent when it comes to future-based topics. Our experience from over 15 years of foresight practice has shown that even critical managers and suspicious experts can be inspired by workshops that incorporate demanding content presented in a game-like workshop setting. Why don't you risk a game?

- 1 Jane McGonigal – http://www.ted.com/conversations/44/we_spend_3_billion_hours_a_wee.html
- 2 <http://www.newzoo.com/infographics/global-games-market-report-infographics/>
- 3 <http://www.newzoo.com/infographics/global-games-market-report-infographics/>
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- 8 Further examples are available at: <http://blogs.imediaconnection.com/blog/2011/08/03/15-brand-examples-of-gamification/>
- 9 Gartner (2011). Gartner Says by 2015, More than 50 per cent of organizations that manage innovation processes will gamify those processes. <http://www.gartner.com/it/page.jsp?id=1629214>
- 10 <http://www.seriousgames-berlin.de/archiv/2012/mai-12/ajabu-lernadventure.html>
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- 12 Volkswagen: http://www.volkswagen.de/de/models/scirocco/scirocco_news/entwerfe_einen_scirocco_auf_gatscar-game_com.html
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- 24 <http://www.osearth.com/>
- 25 <http://www.worldpeacegame.org/>
- 26 Worth seeing John Hunter presents his work at TED Talk: http://www.ted.com/talks/john_hunter_on_the_world_peace_game.html
- 27 <http://www.frederic-vester.de/deu/ecopolicy/>
- 28 <http://www.ecopolicyade.info/de/> and <http://www.frederic-vester.de/deu/ecopolicy/>
- 29 Further information on future workshops: <http://www.zwnetz.de/pages/methode.html> English: <http://www.zwnetz.de/EPages/willk.html>
- 30 <http://www.sampnode.org.za/>
- 31 <http://www.rockefellerfoundation.org/>
- 32 <http://archive.superstructgame.net/about>
- 33 <http://www.iftf.org/what-we-do/foresight-toolkit/collaborative-forecasting-games/foresight-engine/>
- 34 <http://www.tiltfactor.org/games>
- 35 <http://de.wikipedia.org/wiki/Brainwriting>
- 36 <http://www.factsfiction.de/>
- 37 For example one can find an overview of some methods that can be used to overcome mental barriers in Edward de Bono (2010): De Bonos neue Denkschule. Landsberg.

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