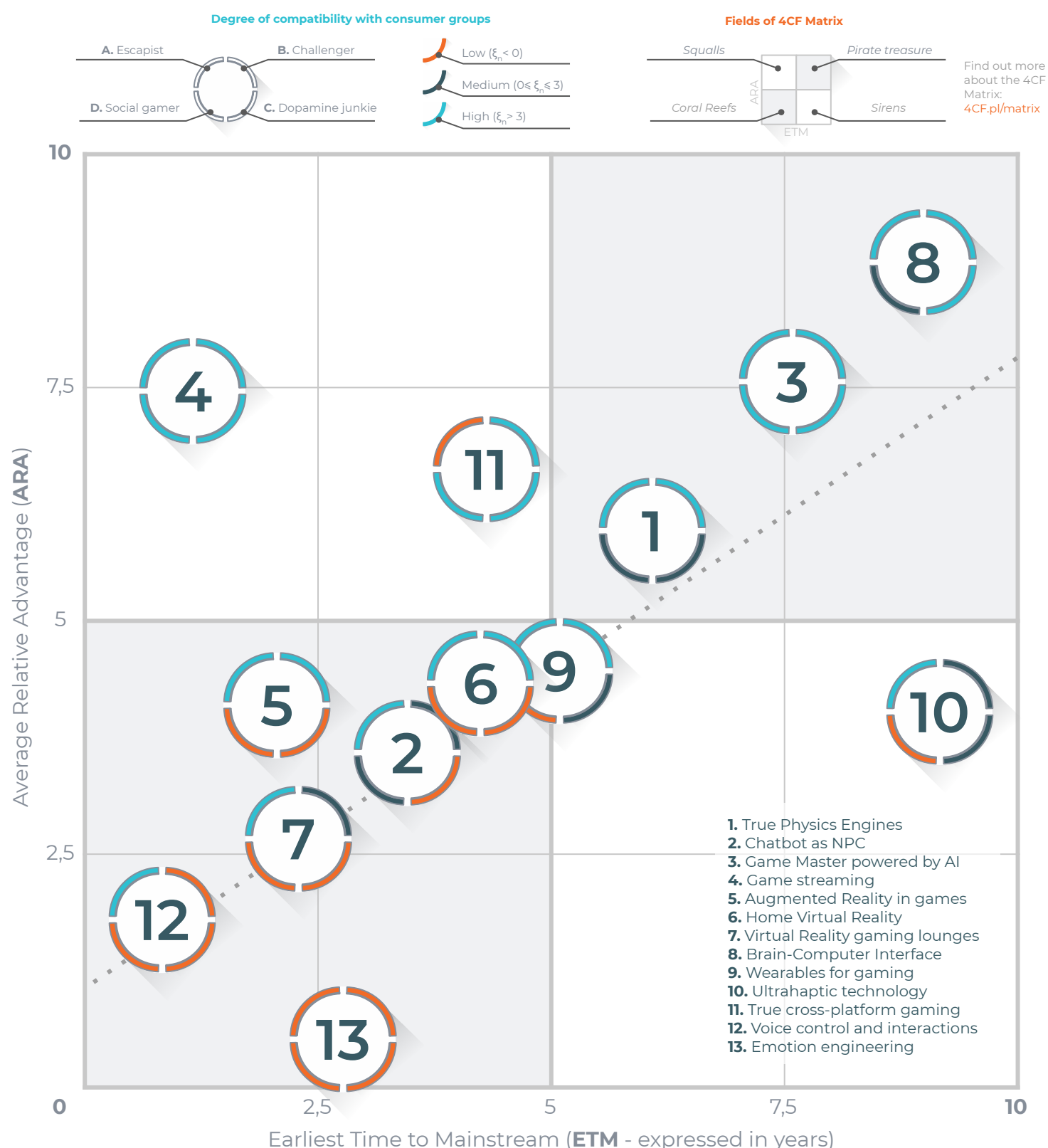4CF

Surf the future

the unexpected future:
GAMING

4CF MATRIX
2020+10

4CF MATRIX: GAMING 2020+10

The future of gaming is not set in stone: it is being shaped by a number of factors. How to gain a strategic advantage, surprise your market competitors and avoid being caught off-guard yourself? The 4CF Matrix is a tool for long-term strategic analyses and has successfully been applied in a broad range of fields (ranging from FMCG, the medical industry to banking and military applications). It is typically used to analyse a specific organisation with regard to its strategic goals, market segments and needs. It helps to establish a plan of development based on insights into the future which are unavailable to one's market competitors. The following version is public and concise, but contains valuable information about solutions which should not be overlooked. We encourage you to use it as a point of departure for an in-depth analysis from the perspective of your own business.

The 4CF Matrix is defined by two axes: **ARA** - *Average Relative Advantage* (expressed on a scale of 1 to 10) and **ETM** - *Earliest Time to Mainstream* (expressed in years, starting from 2020). In the following report, ARA shows how a given solution is perceived - in comparison to its alternatives - by 4 groups of potential future consumers. ETM signifies the earliest possible time of dissemination. ETM is therefore not a prognosis, but it might be too late to respond to market changes after the defined date.

Degree of compatibility with consumer groups

A. Escapist **B.** Challenger
D. Social gamer **C.** Dopamine junkie

Low ($\xi_n < 0$)
Medium ($0 \leq \xi_n \leq 3$)
High ($\xi_n > 3$)

Fields of 4CF Matrix

Squalls Pirate treasure
Coral Reefs Sirens
ARA ETM

Find out more about the 4CF Matrix:
4CF.pl/matrix

1. True Physics Engines
2. Chatbot as NPC
3. Game Master powered by AI
4. Game streaming
5. Augmented Reality in games
6. Home Virtual Reality
7. Virtual Reality gaming lounges
8. Brain-Computer Interface
9. Wearables for gaming
10. Ultrahaptic technology
11. True cross-platform gaming
12. Voice control and interactions
13. Emotion engineering

Average Relative Advantage (**ARA**)

Earliest Time to Mainstream (**ETM** - expressed in years)

CONSUMER GROUPS: GAMING 2030

The future of gaming will be shaped by new technological possibilities on the one hand, while on the other it will be developed in accordance with ongoing social changes which affect gamers' expectations and needs. Hence, the added value of new solutions needs to be considered from the diverse perspectives of future types of gamers. What will they be like? The four groups listed below have been developed through the extrapolation of current trends. They are therefore merely a point of reference and one should bear in mind that each of the categories will be subject to further changes, resulting partially from interaction with the three scenarios described further on this page.

A. ESCAPIST

Escapists are the "citizens" of virtual worlds. They are faithful and frequent visitors to VRs of their choice and enjoy an immersive experience which should, ideally, incorporate all the senses. Escapists believe that nothing else (including real life) compares with electronic entertainment and, therefore, games engage them financially, emotionally and timewise. In extreme cases, their passion borders on escapism, best expressed by the statement "real life is *here*".

B. CHALLENGER

Achievement hunters, noob slayers, living legends of the servers. For them, the purpose of gaming is the development of their skills and competition with other players. They can devote countless hours to the in-depth study of their favorite games' mechanics in order to achieve mastery. Their skills are tested in online events, e-sports tournaments and elaborate single-player challenges.
Winning brings them satisfaction but also recognition and acclaim in social media.

C. DOPAMINE JUNKIE

Computer games are a waste of time, but it just so happens that I have a lot of time on my hands - this seems to be the motto of players who fill almost every spare moment with gaming in order to escape boredom. Waiting room at the dentist, bus ride, 15-minute wait for potatoes to get cooked - all of these are perfect opportunities to launch your favorite title and play a round or two. But beware! Killing time with games takes many members of this category over the threshold of addiction, known among gamers as the "one more level syndrome".

D. SOCIAL GAMER

For "social gamers", virtual entertainment is primarily a pretext to spend time with their friends, true to the belief that in the company of good friends even staring at a wall becomes an unforgettable experience. They also like meeting new people and therefore enjoy multiplayer games. For members of this category, amazing graphics and advanced mechanics are not crucial, in fact they might even be a disadvantage: if expensive equipment or a high learning threshold would discourage some of their friends from joining in the fun.

SCENARIOS: GAMING 2030

When thinking about the future we have a tendency to extrapolate current trends and to assume they will remain unchanged in the coming years. The future, however, is not predetermined and it may follow various paths. In the coming decade, the gaming industry will be influenced by a number of factors, the most important of which have been analysed and used to develop four scenarios of the future. One of them is a continuation scenario, which corresponds to a simple extrapolation of current trends and which has been omitted below. The other three describe variants of the future in which one or more of the current trends changes significantly. Confronting specific solutions and consumer groups with possible scenarios is a means of determining the resistance of solutions to changes of the environment as well as a means of establishing how consumer groups change in comparison to the relatively conservative descriptions provided above.

BIG BROTHER: *Used to be limited only by the imagination and ethics of developers, but the industry is now facing ever increasing obstacles created by legislators. PEGI ratings, GDPR requirements and attempts to regulate so called "loot boxes" were only the beginning. Increasingly frequent hacker attacks as well as fears for the mental well-being and for the finances of players meant that the 3rd decade of the 21st century saw the introduction of effective and extensive restrictions in most parts of the world.*

ELYSIUM: *A number of technological breakthroughs - the 5G network, quantum processors, electronic implants - all of these contributed to an unprecedented range of new possibilities in the realm of electronic entertainment. Enormous computing power can create visual experiences matching reality, implants ensure additional stimulation and light-speed fast data transfer, which brings all the elements together, makes the magical worlds accessible also to players with limited funds.*

DOWNGRADE: *Recognising that they are on the verge of an ecological disaster, world leaders decide to drastically reduce energy consumption. In democratic countries, this results in a huge spike of electricity prices. Initially, long gaming sessions and access to the latest, extremely advanced titles becomes a luxury, available only to the financial elite. Most players settle for less power-consuming platforms. This seemingly lethal blow to the industry, however, gradually becomes a new impulse and stimulates the hitherto dormant creativity of game developers and equipment suppliers.*

1. True Physics Engines

Technological breakthroughs in the production of processors have provided developers of the future with enough computing power to create fully realistic physical engines. The latter do not rely on simplifications but furnish virtual worlds with the faithfully transferred mechanics which govern objects in the real world.
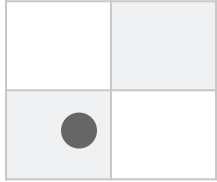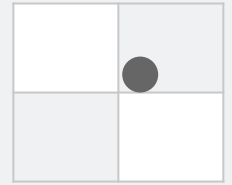
2. Chatbots responsible for interactions with NPCs

Chatbots are now able to mimic humans quite well. In the future, they could replace written dialogue for NPCs in computer games. Thus, players would have the freedom to "talk" with NPCs, unlimited by dialogue options provided by a scriptwriter.

3. Game Master powered by AI

"Thinking" with the aid of artificial intelligence, a scriptwriter would develop challenges tailored to the preferences of particular players, while at the same time maintaining a consistent main plot. Each player would therefore enjoy a completely different version of the same title: individual gamers would experience the same world with the same heroes, but with different adventures.
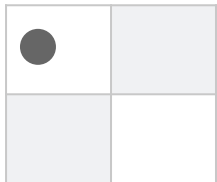
4. Game streaming

A future in which powerful computers have been replaced by high-speed internet which provides access to the latest hits of the gaming market is already here: since 2019 and the launch of the Google Stadia service. Similar solutions are offered, among others, by Nvidia, Microsoft and Sony. From a purely technical perspective, there is no reason for the solution not to be adopted massively. However, the business model remains an issue: friction between platform owners and developers might limit the spread of streaming.

5. Augmented Reality in games

Augmented Reality is entering the domain of computer games ever more boldly. However, AR is still neither too comfortable nor very smooth, and there are few ideas for incorporating this technology in gaming mechanisms. Will AI-developed algorithms and faster data transmission in the 5G network change this state of affairs?
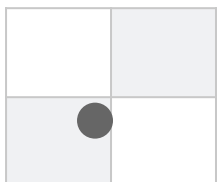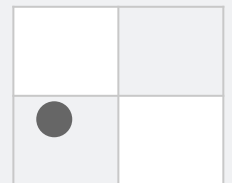
6. Home Virtual Reality

Parallel to augmented reality, the virtual reality technology is being developed. Compared to the early implementations of the late 1980s and early 1990s, huge progress has been made, but VR is still not the "first choice" among players and developers, mainly due to the price. However, given that large IT industries are investing in the technology, significant improvements can be expected.

7. Virtual Reality game lounges

The high prices of home VR kits may be remedied with a transformation of the game room business model known from the 90s. The first VR lounges are already appearing in cities, where you can experience virtual reality for a small fee. Will this form of gameplay only be temporary, or will visions of giant VR game rooms - known from cyberpunk dystopias - come true?
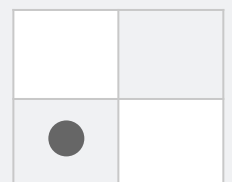
8. Brain-Computer Interface

A brand new type of interface to control the player's actions in the virtual world. Its key feature is that the player does not need to hold any device in their hands (pad, keyboard, mouse) or perform gestures with their entire body (as in the case of motion controllers). Only thoughts are needed to control games.
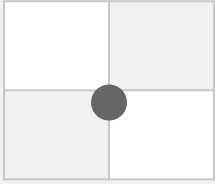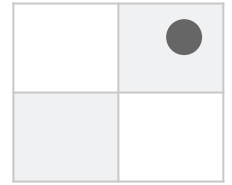
9. Real-life quality graphics

Improving the visual quality of electronic gameplay has been a trend since its inception. Dazzling graphics have often been key to the commercial success of games. Will future graphics cards, supported by AI algorithms, provide hyperrealistic images in new editions of GTA? Will they be able to bypass the trap of the uncanny valley?

10. Ultrahaptic Technology

A technology that allows players to experience games by touch. Currently, efforts are focused on creating such sensations with compressed air, but it is worth noting that some - very primitive versions of such systems - already exist, e.g. the Apple vibration generator used in the touchpad/home key to simulate the "clicking" of a mechanical button.
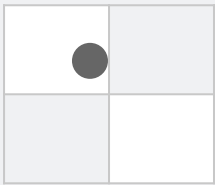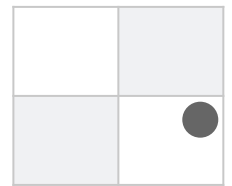
11. True Cross-platform gaming

Titles available on at least two hardware platforms are nowadays referred to as "cross-platform". Will future technologies enable gamers to switch between playing their favorite title on home equipment, mobile equipment, in urban games which employ AR glasses, and in VR lounges?

12. Voice control and interactions

Voice control is already beginning to appear in simple arcade games, but achievements in the field of human voice recognition and understanding suggest that it might become possible to use voice control for more than just simple commands to control the game. It could also be employed to bring reality to conversations with NPCs.
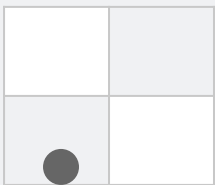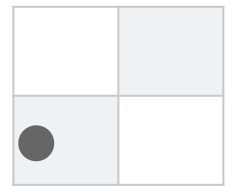
13. Emotion engineering

The simulation of madness in Call of Cthulhu or HellBlade shows that developers are trying to expand the range of gaming experiences by exploring hitherto untred territories. Achieving this goal - enabling the player to feel specific emotions/ experience realistic extreme situations - is a noticeable trend. Could it become a factor of change that will transform the entire industry in the future?
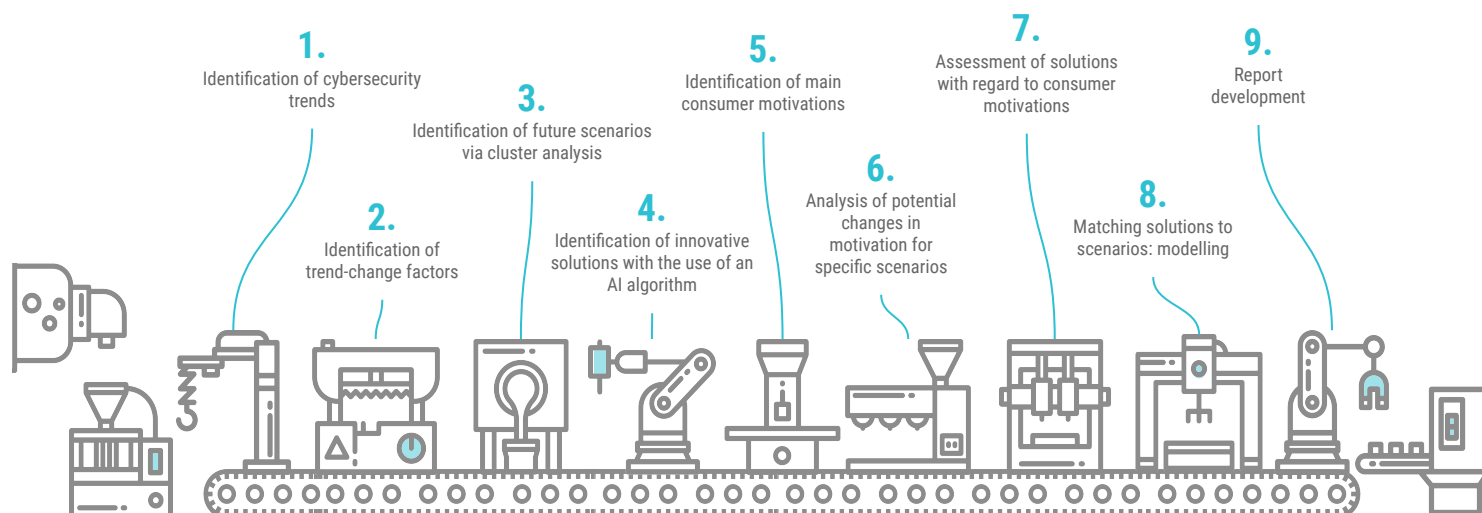
ACRONYMS

- **AI** - *Artificial Intelligence*
- **AR** - *Augmented Reality*
- **NPC** - *Non Player Character*
- **PEGI** - *Pan European Gaming Information* - a European ranking system which provides information as to the intended recipients and contents of computer games

THE REPORT: MAKING OF

This report is the result of a complex, methodologically advanced analytical process which aims to ensure the highest possible quality and to provide an adequate scale for the assessment of potential future solutions. The 4CF team would like to thank Michałowi Goszczyński, Bartek Wroński, Igor Sarzyński, and Aleksandra Świączkowska for their indispensable assistance in the preparation of this report.

1.
Identification of cybersecurity trends

2.
Identification of trend-change factors

3.
Identification of future scenarios via cluster analysis

4.
Identification of innovative solutions with the use of an AI algorithm

5.
Identification of main consumer motivations

6.
Analysis of potential changes in motivation for specific scenarios

7.
Assessment of solutions with regard to consumer motivations

8.
Matching solutions to scenarios: modelling

9.
Report development

WHAT'S NEXT?

Were you surprised by any parts of the report? Do you disagree with any of its aspects? Which scenarios seem promising and which might prove dangerous from your perspective? Are there some solutions you would rather see fail or some that you might try to win the market with?

Rapid market changes make it more difficult to develop a future-proof strategy. The present report may help you identify areas of particular interest to your organisation. However, to surprise your competitors on markets of the future and avoid being caught off guard yourself, you might need a more in-depth analysis, one which would consider a wider range of solutions and take into account your strategic goals, market segments, capabilities and needs.

Such an analysis, along with the constant monitoring of the environment in search of early warning signs, is the key to *surfing the future,* in other words: shaping desired future scenarios and taking advantage of changes to achieve your long-term development goals.

It is worth noting that many organisations, including your competitors, are already using analyses similar to this one. Those reports, however, are confidential, considerably more elaborate and are being utilised with a future strategic advantage in mind.

4CF
Surf the future

4CF is a Polish company with global reach. We have been helping our clients with strategic decisions for over a decade by making sure they stay a step ahead of competition. With our aid, our clients surf the wave of change safely and take advantage of market changes more successfully than their competitors.

Providing insights into the future which are key to strategic decisions is a task we take very seriously. Our advanced research methodology, which places us in the global forefront of business foresight, is constantly being developed. Both corporate clients (Asseco, First Data, Skanska, BGŻ BNP Paribas, Tauron or Veolia), and international organisations as well as government institutions have trusted our services.

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