Universität St.Gallen

PLAY TO LEARN

The St.Gallen Serious Gaming Handbook. A Practical Manual for Creating Scenario-Based Serious Games for Education and Training

SQUARE - University of St. Gallen

Co-Authored by Diederik Stolk, Tim Goudriaan, Lucia Goerke, Philippe Narval, Niklas Koch and Fiona Lehmann

Table of Content

Foreword

Learning through play is as old as humanity itself. Indeed, our ability to learn playfully is not exclusive to us "Homo Ludens". Many species learn just as much through play. Somewhere in the course of human evolution, we came to think of play as an unimportant pastime of toddlers and children; we began to believe that real learning could only take place when students are under serious instruction, sitting still and concentrating on a teacher`s lecture.

With the ongoing revolutions in neuropsychology and other related fields, such strict notions of what we understand as learning have also exited stage left. Playful learning is back where it belongs and is now recognised as an effective way to deliver applied, experiential learning. University faculty are waking up to this new reality and experimenting with forms of "serious gaming" in their own seminars. They and their students are seeing the methods around serious games and "scenario-based" learning as an effective way to try, test and experiment with acquired concepts and theories.

SQUARE – which opened in 2022 – is part of the University of St. Gallen. Our mission is to support the ongoing process of teaching and learning innovation at the university. We organised the St. Gallen Strategy Days in June 2023 in this context, and our aim was to showcase to a wider community how effective "play" can be in achieving learning goals. It is important to note that Square was entirely funded through private donations, mostly from university alumni.

Uncertainty is a dominant force in today's world. Dealing with uncertainty requires skills and knowledge that reach well beyond traditional academic curricula. Our Strategy Days, designed by experts in the field, are aimed at replicating the current state of affairs in Europe. They give participants the opportunity to experience the dilemmas and challenges of statecraft and corporate leadership in today's volatile world.

So, in June 2023, we challenged our participants to join the following game. Grouped into small teams, each representing a nation state, a corporation or an international organisation, over 120 participants attempted to pursue their strategic goals. In doing so, they experienced what it is like to decide, negotiate and lead in complex and uncertain scenarios.

We received incredibly positive feedback from participants with standing ovations at the end of the simulation. In the months after the event, participants continued to discuss the valuable foresight learning they had gained during our Strategy Days. Even if such gaming cannot predict the future with total clarity, it provided our participants with great insight into upcoming global trends and into the emerging dynamics of the contemporary world. On that note, gaming cannot predict the future, but it can be an excellent tool for anticipating trends and potential system change in businesses, markets, and geopolitics.

Faced with the extraordinary interest in "serious gaming" here in St. Gallen and beyond, as well as the fact that there is little literature available on how to use these gaming processes in the context of international affairs, economics and politics, we have decided to publish this open-source handbook. We hope that it will spark your interest and enthusiasm for using "serious games" and simulation in your teaching, training and learning.

Play well!

Philippe Narval, Diederik Stolk, Tim Goudriaan, Lucia Görke, Fiona Lehmann & Niklas Koch

Serious gaming: Why should you care?

"Man's most serious activity is play."
George Santayana

In his seminal book Homo Ludens, published in 1936, the Dutch historian Johan Huizinga pointed out that "Play is older than culture, for culture, however inadequately defined, always presupposes human society, and animals have not waited for man to teach them their playing." The question of whether we engage in play to learn or learn to play, therefore, is an age-old matter of contemplation. With this timeless insight in mind, we invite you to step into the world of serious gaming – a realm that encompasses learning, engagement, and fun.

The concept of games has ancient roots, and the deployment and use of so-called serious games can be traced back through the annals of history. We will explore this historical evolution further within the pages of this booklet. For now, it's important to highlight that since the 1970s, serious gaming has transitioned from the periphery of education and military contexts to the forefront of mainstream attention. Over the past decade, the serious gaming movement has gained considerable traction, emerging as a potent tool that breaks free from conventional constraints in both education and business. In recent years, serious games have become integral components of esteemed institutions like the University of St.Gallen (HSG), multinational corporations such as Nestlé, and renowned consulting firms including Deloitte and McKinsey.

The contributions of Huizinga and many others have paved the way for our contemporary understanding of game studies and serious gaming. If you've had the opportunity to participate in a Model United Nations (MUN) simulation or a simulated court case (referred to as a "Moot Court"), you are likely to understand the profound influence these learning encounters can exert on a participant. Engaging in an hour of negotiation within a game or simulation can wield a more potent influence than spending ten hours immersed in the traditional, often more theoretical instruction which characterizes much of university education today.

From captivating board games to immersive simulations and strategic war games, the landscape of serious gaming is broad and multifaceted. These activities, offering both enjoyment and structured design, come with learning objectives that extend far beyond simple entertainment. As such, it's hardly surprising that in the dynamic realm of business, serious games have evolved into a formidable tool for testing strategies and assumptions within interactive settings. By immersing oneself in various scenarios, collaborating or competing alongside actual or simulated stakeholders, these activities unlock invaluable insights into present and future decision-making processes. For instance, in the business context, such games are frequently deployed to gauge competitors' responses to the introduction of new products or when entering new markets. Likewise, organizations such as NATO harness the power of "war games" to attain a comprehensive, operationally informed understanding of the evolving dynamics within conflicts such as the ongoing Ukraine war.

At the heart of serious games' effectiveness lies their remarkable capability to transform intricate and abstract concepts into tangible, interactive, and often immersive experiences. By immersing participants in lifelike environments, serious games enable active engagement, establish a platform for structured collective thinking on complex issues, and thereby cultivate deep and often unforeseen comprehension of underlying mechanisms. These games effectively bridge the often-daunting divide between theory and practice. They also empower participants to cultivate practical skills and knowledge. Hence, for any educator earnestly committed to effective learning and teaching methodologies, the integration of serious games into their repertoire is imperative.

Regardless of whether you're an educator, a business professional, or a student, the potential benefits of serious gaming are substantial. Throughout the pages of this booklet, we will navigate you through the process of creating your own serious game. We focus on crafting a scenario-based serious game: a multiplayer experience wherein multiple players directly engage with a problem or scenario, often situated within a simulated physical environment mirroring the real world. Through established rules and mechanics, players collaborate or compete to address the problem or immerse themselves in the scenario. We will outline the essential steps, present pragmatic examples, and furnish you with the insights needed to create a meaningful, immersive, and enjoyable experience.

Summary

This handbook provides key insights into serious gaming and how to build a scenario-based serious game of your own. It does so by shedding some light on the purpose and utility of serious games in different contexts, such as strategy, leadership and foresight. To give you a clear understanding of a scenario-based serious game used within a university setting, we share our experiences organizing the St. Gallen Strategy Days and give you some personal testimonials. The handbook also provides you with the necessary knowledge to develop your own scenario-based exercise and provides you with some clear examples, as well as introducing a game that you can use immediately.

Summary per chapter

Chapter 1: serious gaming 1-0-1	This chapter provides the reasons why you should use serious games in various fields, ranging from education to corporate decision-making. It also provides clear examples of different types of serious games. In this chapter serious gaming is presented as a powerful tool in education and decision-making, particularly when dealing with complex topics such as strategy, leadership, and foresight. By engaging participants in a simulation or game, they can explore such topics in a hands-on, experiential way. Serious gaming 1-0-1 also specifically focuses on the benefits of scenario-based serious gaming within an educational setting for students. It helps students to retain information better, develop a deeper understanding of the subject matter, and learn to collaborate effectively.
Chapter 2: Case study: St. Gallen Strategy Days	The St. Gallen Strategy Days were held on 1-2 June 2023 with the specific intention to demonstrate the value of scenario-based serious gaming within an academic setting. This chapter explains the development and execution of this two-day scenario based serious game – also known as a simulation – and sheds light on participants experiences.
Chapter 3: serious game design	This chapter will give you key knowledge in order for you to design your first scenario-based serious game. It outlines a four-phase process for designing and implementing a serious game in a course or training setting: a. **Preparation**: This phase involves setting up the game, defining the learning objectives, and determining the game dynamics. Participants are briefed about the game, its rules, and the roles they will play. b. **Execution**: The game is executed over the course of two two-hour sessions. This phase involves both formalized negotiations (moderated by a neutral party) and informal negotiations and teamwork. The facilitators observe and manage the flow of the game. c. **Debriefing**: After the game is finished, the facilitators provide a debriefing, which involves a reflection on the game, relating the game experience to the learning objectives, and sharing of outcomes and insights. It may also include out-of-class work, such as writing a paper about the experience. d. **Evaluation**: The game is evaluated for its effectiveness in meeting the learning objectives and providing a meaningful learning experience to the students. This chapter also provides you with an overview of all the key game products that you can expect when developing a scenario-based serious game, such as a ruleset and instructions, a scenario as well as role and team profiles.

	Using a case study in which the objective is to design a scenario-based serious game about the Israeli-Palestinian Conflict and Peace building, this chapter illustrates how to create a game over a 10-week cycle as part of an academic course, from initial preparation to final debriefing. This includes iterative "sprints" where students work on their roles and team profiles, practice formal negotiations, and receive feedback on their performance.
Chapter 4: how to deliver a serious game.	This chapter focuses on the three key phases of actually delivering a serious game: the briefing (introduction), the execution (game time) and the debriefing (reflection). It will give you key knowledge in order to ensure that delivering your first game is a success.
Chapter 5: resources, and further readings	The concluding chapter of this handbook gives you an overview of recommended reading and watching on game design. It also provides you with a serious game that you can use in any classroom setting. Lastly, the background and personal bios are given of all the contributors to this handbook.

Serious Gaming 1-0-1

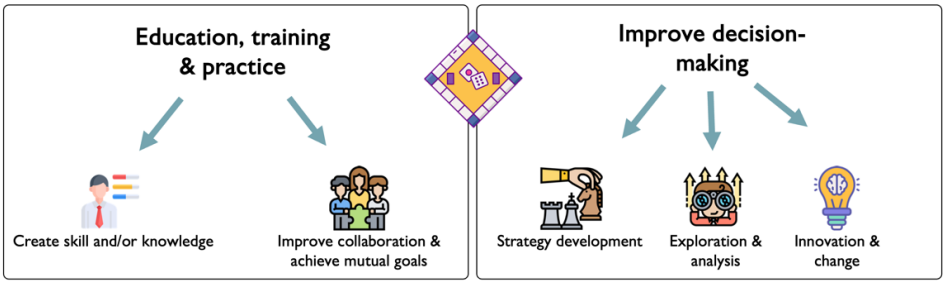
Throughout human evolution our species has engaged in play. Play is deeply engaging, fun and can foster learning. Therefore, it is no wonder that we find many examples of serious games throughout history. For instance, the strategy board game Go was played by Chinese aristocrats in the 5th Century BC as a means to sharpen the mind and cultivate strategic thinking. The game Chess – an early wargame – dates to the 7th Century CE; the fact that its rules spread all around the world before any major global trade system emerged is a profound testament to its power.

An early "attempt to build upon chess a tactical game which two or more persons might play" resulted in the first *Kriegsspiel* (literally: war game) created in Germany in1780. This early version provided a basis for the much more elaborate *Kriegsspiel* of the early 1800s: a wargame which came to stand for an entire genre of wargaming, developed by the Prussian army in order to teach battlefield tactics to officers. Ever since, the practice of wargaming has spread far beyond Germany and the armed forces, and has come to be used by governments, business, universities, and game enthusiasts all over the world.

There are many more examples of the usefulness of games for learning and sense-making. For instance, it is generally understood that children learn key social and communication skills through playing games such as tag, musical chairs and charades, to name but a few. Further, many sports fans feel excitement or frustration in the course of a weekend match, an activity which at its core consists of players and a few simple rules. Since the advent of the personal computer, the practice and domains of human gaming have clearly expanded to digital and online play.

What is a serious game? Concepts and Definitions

The field of serious gaming, game studies, and related areas is characterized by lengthy discussions and many disagreements about core concepts and their definitions. For practical purposes, this handbook defines key concepts related to games, play, and their applications as follows:

Game:	A structured activity with defined rules and goals, engaging participants for entertainment or challenge. Games feature win/lose conditions and can be competitive or cooperative.
Serious game:	A game with objectives beyond entertainment, such as education or decision-making improvement. Originally focused on structured educational content delivery, serious games now incorporate more playful elements. 
Scenario-Based Serious Game:	A multiplayer experience where participants address problems or scenarios within a simulated real-world environment. Rules and mechanics allow cooperative and competitive interactions for problem resolution or scenario immersion. It is noteworthy that scenario-based serious games are often interchangeably labelled as "simulations."
Simulation:	A simulation seeks to simulate real world events and human interaction. Often these are scenario-based. In this booklet, we use both terms for a scenario-based serious game.

Play:	A broader concept encompassing activities performed for enjoyment, amusement, or creative expression. Unlike games, play lacks predefined rules and objectives, often involving exploration and imagination. Hence, when we ask children at play together what they are up to, we often hear wildly different understandings of their shared activity.
Playfulness:	An attitude characterized by joy, spontaneity, and a willingness to engage in light-hearted, creative behaviour. Present in both games and play.
Game-based learning (GBL):	Application of gaming elements and principles beyond games for learning.
Gamification:	Integration of gaming elements and principles in various non-game contexts.

It is important to note there are roughly three ways to interact with a serious game:

- Playing pre-packaged off-the-shelf games, such as board or card games.
- Games in which players help design or research parts of the serious game.
- Designing a serious game from scratch for yourself.

This booklet predominantly focuses on games that are co-developed by players and serious games that are designed from scratch.

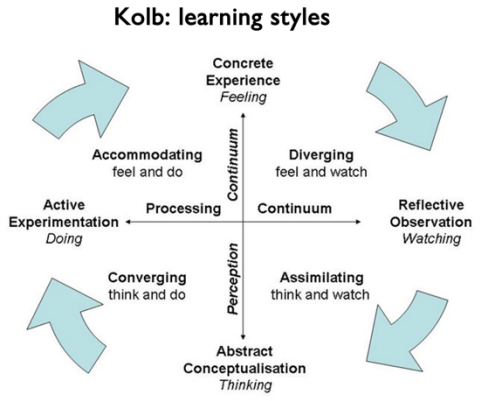
We will concentrate here on the use of scenario-based serious games within an educational framework and our particular focus will be within a higher educational context, primarily within the subjects of business and international relations. Sometimes we will refer to training or the use of such games in a non-academic setting and in these cases our attention is centred on the training of professionals such as diplomats, soldiers, CEOs, and advanced learners. We believe the St. Gallen Strategy Days held on 1 – 2 June 2023 exemplified how a scenario-based serious game can effectively instruct participants—students and professionals alike—in strategic decision-making, leadership, biases, and collaboration.

Why do serious games work in an educational setting?

Serious games are transitioning from traditional game structures to a more playful and open approach. Originally focused on delivering opportunities for educational content, they now incorporate elements of playfulness designed to achieve enhanced engagement and enjoyment. This shift encourages exploration, creativity, and intrinsic motivation. By aligning with the broader concept of play, serious games foster active learning, and can make them highly effective tools for education. For teachers and students alike, serious games provide the opportunity to develop and test knowledge and skills in a dynamic, yet controlled environment. Whether or not serious games are deployed in non-educational or educational settings, well-developed serious games are in general affordable, scalable and repeatable…. Perhaps most importantly, they are fun!

In education, the social aspect of learning is well-established: together as a group we can learn more and at a faster rate. Games follow the same principle: they are social, and represent a collective endeavour. Even in competitive simulations, you play and learn collaboratively. In essence, a game sparks interaction between peers about the subject - not just linear interaction with the subject alone – thus enhancing learning and aligning seamlessly with gaming and simulation.

Game designers and teachers use game mechanics to support the needs of different players, and to offer participants autonomy, competence and social skills. Autonomy in games enables meaningful choices, enhancing intrinsic motivation. Autonomy emerges through choice-driven narratives and open-world exploration. Competence is nurtured by skill trees and quests, fostering growth. Social skills thrive in multiplayer and leader boards, building social bonds. Designing such mechanics fosters achievement and skill improvement.

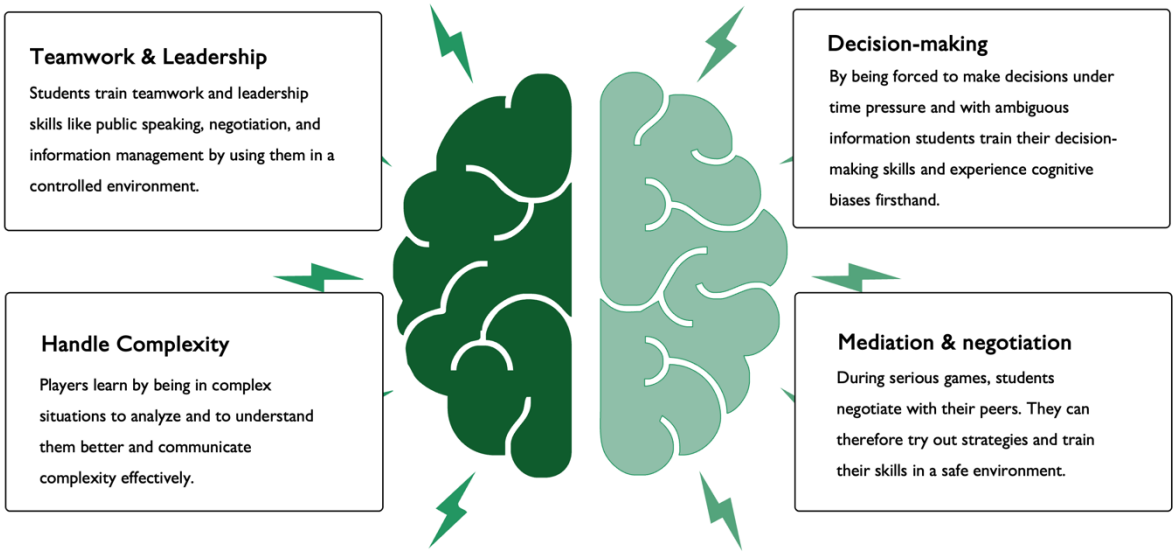


Why do serious games work?

Games provide the opportunity to develop and/or test knowledge and/or skills in a dynamic controlled environment.

- Catering to learning styles and going through the learning cycle.
- It is an active form of engagement, experienced alone or together.
- It provides direct feedback from others and/or through game mechanisms.
- It allows for a quick understanding of individual and/or group qualities.
- Failure has no real-life consequences.
- It is affordable, scalable, and repeatable.
- Fun(?).

In essence, serious games create an active learning environment and engagement that can be experienced alone or together. Through this learning engagement, direct feedback from others and /or through game mechanics can provide the learner (participant, student, employee) with the chance to apply knowledge and skills and to gain more of both.

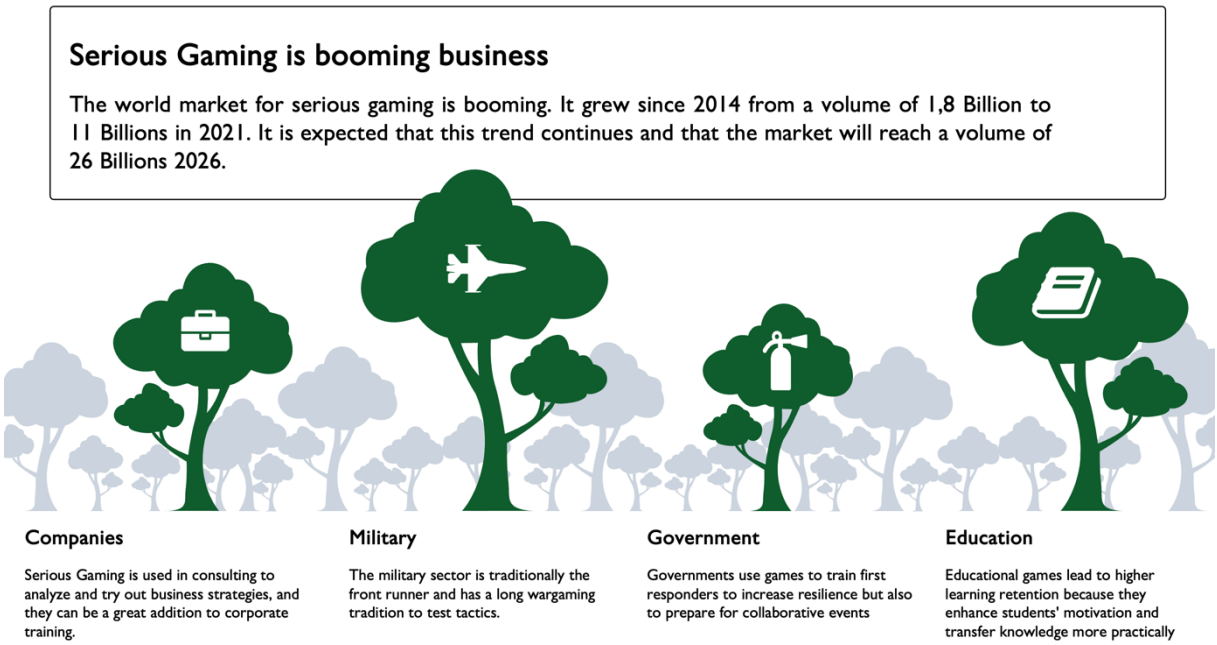


Critically, serious games provide a "safe", controlled and "low-risk" environment to practice. It is important to create an environment where failure is allowed and can be experienced without real-life consequences. In certain scenarios, apparent lack of success may even be encouraged, if this serves rapid learning and a shared understanding of a difficult problem. This is certainly the case in the military domain, where failure in a game may reveal crucial information or omissions that can save lives and protect assets in the real world. The same is true for business: it is probably better to fail repeatedly in trying to bring a product to market in a corporate simulation, than to find out such a product has no viability in the real world after spending a massive part of your budget.

In education, acknowledging failure as a learning opportunity is vital and is a key tool to foster experimentation. A clear example is available in the existence of flight simulators which allow aspiring pilots to refine their skills in a definitively risk-free environment. Such simulations are integral to pilot education and their ongoing training. Similarly, medical simulations empower healthcare professionals to enhance working knowledge and decision-working in a secure environment. By embracing failure and integrating it into serious games and simulations, learners from across various fields and industries can confidently grow and learn to excel.

Why do we play serious games in other settings?

Beyond academia, various sectors and industries use serious games for analytical and educational purposes.



Here are a few examples:

Training sales and communication skills:	here, games are used to train sales and call-centre staff around pertinent knowledge-areas such as: how to successfully pitch a product, how to deal with angry customers or how to improve email writing.
Wargames:	In the Armed Forces, wargames serve as a testing ground for military strategies and different courses of action and are absolutely integral to decision-making processes. The adversarial nature of wargames, often involving red vs. blue scenarios, can provide great insight into the feasibility of a military plan by simulating encounters with real-world yet simulated foes. Further, armed forces employ wargames to identify "capability gaps," to strategically assess which military capacities may be required for gaining the upper hand against adversaries or addressing the threats they pose. Moreover, wargames enable experimentation with resources (personnel and materiel) in both business and military contexts and can help to minimize real-world costs and damages.
Decision-Making Games:	Serious gaming offers strategic insights into diverse areas, from market dynamics to competitor behaviour and organizational dilemmas. An example is Royal FrieslandCampina, a Dutch multinational dairy cooperative, which used serious gaming to simulate market entry and takeover strategies, including profiling and anticipating hostile takeovers.
Foresight and Exploration:	Especially in the context of scenario-based serious games, insights into future trends and critical uncertainties become accessible, aiding decision-makers in allocating attention where needed. A pertinent case is the St. Gallen Strategy Days, as mentioned above

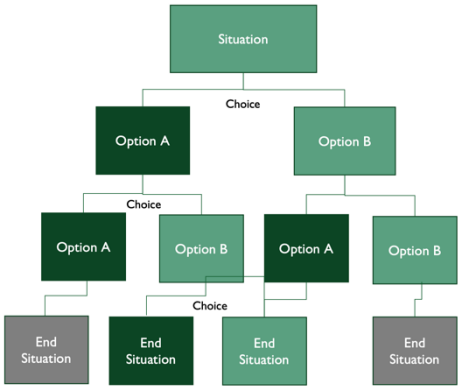
Many more sectors and industries employ serious games for training purposes. Countless examples abound from courtroom preparation games to simulated press events, and even the teaching of negotiation skills through simple bargaining games.

Types of serious games

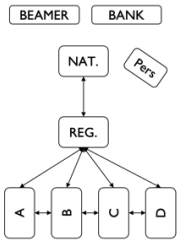
There are many types of serious games distinct from scenario-based serious games (aka simulations), wargames or diplomacy & negotiation games. We will not discuss these at length here, but encourage you to find further reading around these fascinating pursuits.

For illustrative purposes, we've identified three examples of serious games not described in this booklet.

Narrative based decision-games. In such games, participants become part of a scripted story through the decisions they make. A clear decision-making process is at the core of such games. In their gameplay, players are compelled to make decisions, which lead to new situations and eventually to a pre-designed end-state. Narrative based decision-games come in many forms, such as card games and cinematic summit experiences.



Resource management games. In such serious games, participants are challenged to make choices regarding the allocation of (scarce) resources to achieve specific objectives. Resource management games can give you both an insight into the dynamics of a particular case study, such as how a business or a particular market works and also provides insights into how other players react to challenging decision-making.



Example: It's your country!

Puzzle games enable participants to use their intellect and skills to find a solution to a complex problem. Collaboration is often the key characteristic of a puzzle game. In recent years, an archetypal puzzle game format in the form of Escape Rooms have become an ever-present and highly popular activity, often found on many high streets. As the clock ticks down, participants must solve a series of usually themed challenges in order to 'escape the room'. Puzzle games can give great insight into participants' problem-solving, leadership and collaboration skills.

'Gamified explorations' should also be mentioned, although we would argue they do not exactly equate to serious games. These playful activities use game-like mechanics (rules) and attributes to encourage participants to think about solutions for complex dilemmas. "Lego Serious Play" is a clear example of this. Using a few simple rules and Lego participants are challenged to build solutions relating to topics such as improving teamwork, strategy development and product development – in this example, using the Lego bricks themselves!

The key components of a serious game

Most serious games include one or more of the following components:

Players: one or more players with a concrete learning objective and/or clear purpose.
Setting: A game setting and starting point (scenario).
Game related materials (such as dice, laptops, communication software, pawns, player cards role or team profiles).
Instructions, rules and feedback mechanisms that promote interaction and (safe) learning – including specific learning objectives and outcomes.
Means to track progress and gather feedback, for example surveys, communication software, Slack etc.
A structured approach to **brief and debrief the game**.

These game components are made ready during the preparation phase of the serious game. They are subsequently used during the execution and debriefing phase.

The three phases of a serious game

Serious games can help participants learn a certain skill or attain specific knowledge. They give insight into the dynamics of complex case studies, ranging from market dynamics to the workings of international politics. Critically, the way we can distinguish between a 'serious game' and a 'game' comes down to the question of the specific purpose of the game.

That said, we can safely argue that any serious game consists of three phases:

1. **Preparation:** all the activities that are required for the players to actually play the specific serious game. This will include: preparing all the materials and briefing the participants on their role.
2. **Execution:** the actual playing of the serious game by the participants.
3. **Debriefing:** during the *after action review* the outputs of the game and the experiences of the participants are harvested.

It is essential that each of these phases receive adequate attention when designing and delivering a serious game. One of the most common mistakes is to skip the debriefing phase, which almost always leads to an unsatisfactory learning experience.

Limitations and Challenges of Serious Gaming

Serious games can lead to unequal learning outcomes due to differing player skills, where some excel and others struggle, and this can potentially create an uneven educational experience for those involved. Further, competition- or goal-oriented students may overshadow those who excel in different learning environments. To prevent such disparities, it is crucial to ensure inclusivity and a specific adaptation of games to cater to various learning styles and skill levels. Furthermore, there is concern that skills learned within serious games might not seamlessly apply to real-world situations and so their practical usefulness may be limited. This highlights the need for game designs which facilitate meaningful skill transfer. Another challenge is present in ascertaining how to assess the learning outcomes in serious games. These can be complex, traditional assessment methods may not fit and so we must ensure the development of reliable strategies that can accurately measure the educational impact of such games.

Educational Experience and Learning Outcomes:

Unequal Learning Outcomes:	Varying player skills may result in uneven educational experiences, with some excelling while others struggle. Competitive game dynamics might overshadow diverse learning environments, making inclusivity and adaptable game design essential to prevent disparities.
Limited Skill Transfer:	While serious games offer dynamic learning environments, a concern arises about the seamless application of acquired skills to real-world contexts. Struggles in translating game-based knowledge into practical scenarios may restrict the utility of learning. Designing games that bridge this gap and facilitate practical skill transfer is vital to ensure lasting educational benefits.

Methodology and Assessment:

Methodological Cohesion:	To craft effective serious games it will be necessary to create consistent alignment between game mechanics, learning objectives, and pedagogical methods. Inconsistencies can dilute the intended educational impacts and lead to learner confusion or frustration. A cohesive and coherent design approach is fundamental in order to optimize learning outcomes.
Assessment Complexity:	Evaluating learning outcomes in serious games can be intricate. Traditional assessment methods may not align smoothly with game-based learning, and so accurately gauging student progress within the game becomes challenging. It is crucial to develop reliable and valid assessment strategies that can precisely measure the educational impact of the game.

Game Design and Engagement:

Balancing Entertainment and Education:	Striking a harmony between educational content and entertainment value can pose a challenge. Overemphasizing entertainment can dilute the educational experience. Ensuring core learning objectives remain central while integrating engaging elements is pivotal to maintain educational quality.
Technical Access Barriers:	Serious games often require specific technologies or devices, creating hurdles for learners who lack adequate resources. While this is definitely a concern when games are designed digitally and with various forms of technology, scenario-based games are often mostly analogue and off-line and therefore relatively cheap and accessible.
Sustaining Engagement and Motivation:	Although serious games aim to heighten engagement and motivation, the risk of the novelty waring off does exist. Learners may disengage if games are poor at providing ongoing challenges or they fail to sustain interest. Integrating elements such as progressive difficulty levels and regular updates is critical to maintain a sense of continuous learning enthusiasm.

Serious Gaming and Foresight – By Lukas Zumbrunn

Serious gaming relies on the development of scenarios that guide the active players through the semi-fictional world in which they interact. Scenarios are also one of the most frequently used techniques involved in foresight. This is based on the characteristic of scenarios to make complex systems more graspable and the way in which they help us to conceptualize the external world - given the systemic interdependence of decisions within a specific environment, this is singularly important.

Strategic scenarios are particularly crucial to enable actors to reflect upon the consequences their internal decisions might have in the "outside world".
Foresight underlines exactly this skill and aims to actively foster vision-building for the long-term. Other than future studies, foresight impacts the concrete strategic plans and policies implemented in a specific context.By engaging with scenarios and playing them out in serious gaming, this helps to refine strategic decision-making in the different circumstances and to learn about and avoid potential negative outcomes.

Furthermore, scenarios in serious gaming can help to reduce group think and bring into discussions what was previously considered highly unlikely or even impossibleThrough this, new and broader horizons are opened up and issues that would otherwise be unimaginable can be discussed in a productive manner. How the participants conceptualize the future for themselves is highly important for foresight, as this defines the basis for what a group might decide to discuss. There are four popular distinct definitions of the future: probable, possible, plausible, and preferable. Depending on the underlying perceptions we bring to a scenario, certain assumptions are implicitly made. These assumptions heavily influence the stories or scenarios we are able to imagine alone and what we might believe to be true or useful in a serious game

Recent common wisdom has come to accept that decisions are made in uncertain conditions and in highly volatile and ambiguous circumstances. This should be reflected in the scenarios deployed in serious gaming activities. *Foresight* is a critical tool to mitigate the negative effects of such exogenous limits to our knowledge of what "the future" may hold for us. By including people from different backgrounds and with complementary knowledge – both experts and non-experts – participative foresight activities in serious gaming can create more versatile stories and outcomes.

Finally, it is crucial to observe that both foresight in general and the concrete application of the *foresight* technique in serious gaming have a broad range of contexts in which they can be applied. Hence, the applicability of approaches using this key tool has already been realized by different governments and inter-governmental organizations including by the European Union and the United Nations.

Covidbuster – A simulation about comprehensive crisis management of the COVID-19 pandemic in Austria in the form of a tabletop, off-the-shelf game.

Case Study of a serious game designed by the Austrian Army – By Markus Reisner and Robert Fritz

After the first wave of COVID-19 reached Austria, the commander of the Austrian Military Academy instructed the head of the Development Division, General Staff Col. Dr Markus Reisner to develop a simulation about the management of the COVID-19 pandemic by various key actors. Col. Reisner chose an innovative interdisciplinary approach. He gathered a core team of in-house experts and hired freelance game designer and active reservist Major Robert Fritz to create and develop the game. In his civilian day job as member of the Military Strategic Situation Center of the Austrian Ministry of Defence (MoD), Major Fritz contributed to COVID-19 situation reports throughout the course of the pandemic, covering national and international perspectives as well.

Setting the scene

On the one hand, a pandemic situation creates completely novel demands on military capabilities; on the other hand, the greatest challenge is probably already familiar -to get the various actors working together efficiently. The actors included within *Covidbuster* were the Health Authorities, the Civil Rescue Organizations, the Police, and the Austrian Armed Forces. The target groups were not only the military, but also public authorities, the business community and civilian organizations. During the concept development phase, it was particularly important to identify those core factors that influence a pandemic situation. In terms of game mechanics, abstractions had to be made in order to master the system in a reasonable amount of time.

The core challenge

The core challenge was to demonstrate the complexity of nation-wide crisis management in Austria at different working levels during a pandemic linked with a simple, but still logical, infection rate. The actors should face the ups and downs of virus spread due to different factors like clusters, lockdowns, limited supplier markets, vaccine research, influencer conspiracies and a variety of other events (like mass migration, natural disasters, terrorist attack) all of which drive the situation. The dominant player is represented by the Health Services – this player has the authority to enact a general Lockdown (just once per game with a special card the actor has been dealt at the very beginning of the game). The military is the final actor during a game round, since it only acts by request of other authorities like Health Services or Police.

About the game: Covidbuster's application, objectives and mechanics

Covidbuster is a cooperative game which delivers broad flexibility as a traditional board and innovative classroom game. You can play it alone on a kitchen table or in a classroom with four teams under the supervision of a gamemaster. You can run a game session for a limited time frame (such as for 3 months), the entire period of 12 months or continue to play it over a longer time.

Based on the professional background of the participants you could even create new events right on the spot to increase the individual learning experience.

The primary goal of participants is to maintain government/stakeholder capacity to act 19on and contain the spread of the COVID-19 pandemic. Success is measured by “Government Points.” These are gained if the players take successful actions and lost if they make bad decisions (known as "good" or "bad governance"). There is a common government points score for all players.

It is interesting to note that even in the simulation, an initial control of the infection was only made possible by a general lockdown within the first months of the outbreak, and that vaccinations could not be started until the eleventh month of gameplay. For players, Covidbuster, facilitated an enormous increase in their knowledge and understanding and a key takeaway that only the nationwide coordination of a huge number of measures can make a complex pandemic situation remotely manageable.

Key challenges in getting decision-makers to play Covidbuster

One of the biggest challenges of serious gaming in an educational environment is to approach gamers and non-gamers alike. In Covidbuster, resistance from certain players was encountered – those who had moral issues in gaming a real crisis which had impacted them and their families. On the other hand, industry players found the challenges reflecting the real-world nature of COVID-19 measures in their factories to be very well reflected in the game system.

From the very beginning, it is essential to honestly communicate the limits of the game’s logic to all participants, since this is still an abstraction from the real world. The game engine has to be modelled to reflect the key dynamics of a topic, and still use functional mechanics, manageable within a certain time limit, without feeling like a real-world job, weighed down by book-keeping and bureaucratic administration.

Due to the sensitive and somewhat close-to-home topic of a global pandemic affecting the global population, Covidbuster faced a similar fate to other professional pandemic simulations: it was rarely played and the insights and lessons learned were mostly ignored by decision makers. The real crisis management was decided day by day and dictated by political realities.

This aspect should not be seen as a disadvantage. Certain serious games have been developed to be played just once in order to study a special situation. As long as the output leads to a realistic understanding or even to provide options for the resolution of a conflict or crisis, it is always worth the effort to play the game. In that sense Covidbuster remains ready to be played as an analytical tool for the historical experience of a global pandemic. We should never forget that in this moment after the last pandemic we are waiting for the next one. The effects of one crisis can even trigger yet another crisis. Therefore, serious games should be used even more often as the powerful analytical tools they are, helping us to cope with the complex and multiple crisis we are facing today.

Covidbuster game design choices: cooperative vs competitive games

Research and advance analysis as well as reflective practice during the development and testing process is a core factor in the success of a game. It has to be stressed that the nature of the roles of each

player has a great impact on game design. There is a big difference in designing a cooperative or competitive game. In a cooperative serious game like Covidbuster you know the key actors and usually have access to valuable resources. A game with fictitional opponents which are acted by real people has its limits. Even the best preparation by the role players can be heavily influenced by their own professional culture and social environment.

Serious games involving opposing forces or actors, often classified as wargames, would need a well-prepared Red Team with a balanced toolkit of abilities. A Red Team represents the enemy. This should not merely be understood as a relic of the Cold War. In the world today, this typology has proven its value not only at the cyber front, but also as a powerful asset for a successful game session. So, serious games can serve as a petri dish to experiment with different solutions to challenges and crisis in a safe environment. In that regard having a serious Red Team representing the key opponents at hand should ensure a more realistic learning and training experience.

Case study: The St. Strategy Days | Geopolitical Leadership Simulation

The St. Gallen Strategy Days carried out a geopolitical leadership simulation – also known as a scenario-based serious game - hosted by SQUARE at the University of St. Gallen in Switzerland (HSG). It offered students and young professionals an interactive and immersive experience to sharpen their strategic leadership skills. In 2023, this two-day event took place on June 1 and 2, engaging over 100 participants in a Europe-centric geopolitical scenario.

Inn teams of 2 to 5 persons, participants played the roles of real-life state representatives, heads of multinational corporations, leaders of international organizations, non-governmental organizations and the world press. They tackled current political, economic, defence, energy, and climate challenges, guided by their in-game interests and objectives. The gameplay necessitated both cooperation and conflict, demanding a careful balance of strategy and diplomacy.

The scenario of the 2023 Strategy Days spanned Europe as well as other significant geopolitical players like China, Russia, India, NATO, and the United States. The issues addressed ranged from the ongoing Russia-Ukraine war to the dynamics of the global semi-conductor industry, the rise of artificial intelligence, and the escalating tensions between energy and climate plans – thereby offering a huge and diverse range of acute challenges to explore. As a bonus, experts from various fields, including business, diplomacy, and armed forces, enriched the experience with insightful keynote speeches and workshops.

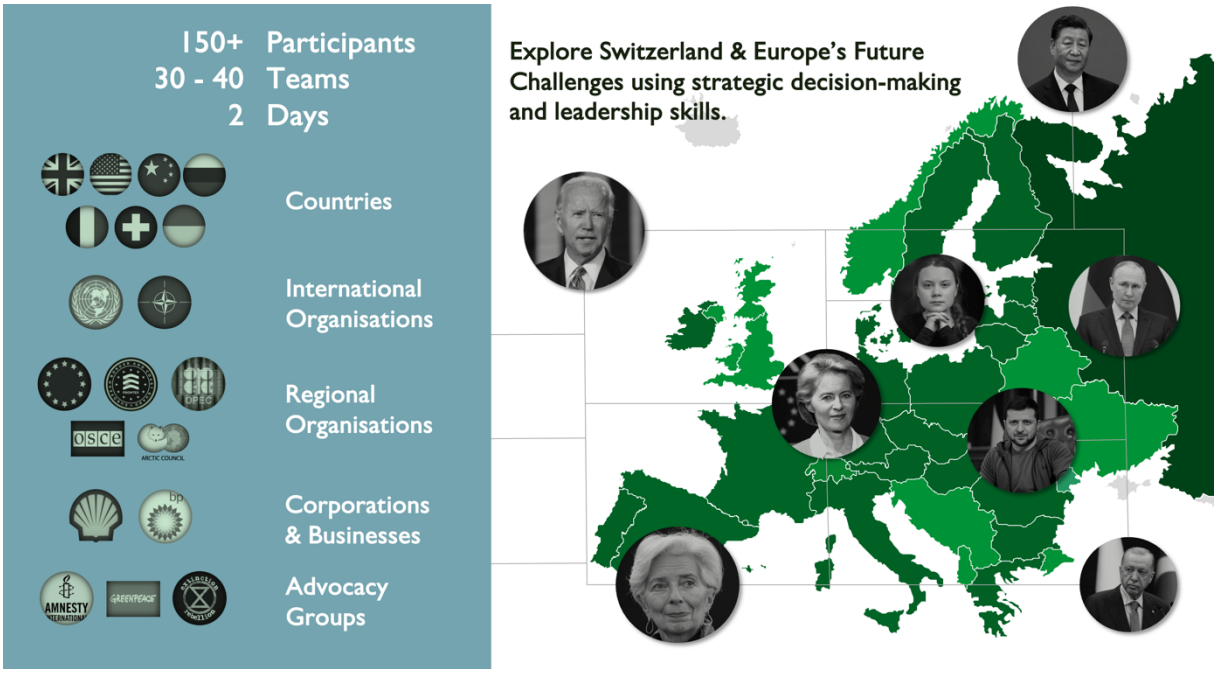
The event took place inside the unique three-level Square Building at HSG, where participants were assigned locations to play, but were otherwise able to walk around freely. The communication platform Slack proved to be a critical tool during the simulation, facilitating dialogue and meeting arrangements between teams, as well as in dealing with the World Press and X (previously known as Twitter). All key actions and outcomes during the game were logged and monitored through this platform, allowing the “Control Team” to keep track of events and have oversight of the progress of the entire simulation.

This chapter offers reflections on the main learning objectives, the game and scenario design, the overarching goals of the Strategy Days – and how they were achieved.

Learning objectives

The St. Gallen Strategy Days focused on four key learning objectives. With each learning objective, we will reflect upon and provide a series of examples about how the setup and execution of the game contributed to the attainment of these learning objectives.

Learning objective 1: Improving future skillset for navigating complex, volatile, and uncertain environment



The Strategy Days provided participants with a complex and volatile environment to test their strategic leadership skills. Pulling this objective apart, this is how we carried it out.

Navigating Complexities: During the Strategy Days, over 100 participants were divided into over 40 teams representing states, IGOs, NGOs, and businesses. They confronted a realistic, 10-page scenario of significant complexity that quickly evolved as the game developed.. At the moment this game was played, the Russia-Ukraine conflict was barely a year old and so of very great concern to many of the players. The large-scale Ukrainian Spring Offensive was just beginning in the South-East of Ukraine. This was both a strategic and emotional challenge for the participants playing Zelensky and Putin, as described in this article in the Austrian Daily Newspaper "Der Standard" (German Language).

Given this context, and that the July 2023 NATO-conference was taking place in Vilnius at the same time as our simulation, the teams were immediately confronted with a reality that demanded their action and attention. As Germany and France at first stayed on the fence, a strong Polish call for increased NATO defence spending demonstrated a series of divergent reactions to events across Europe – a situation our participants had to bear in mind as they began to play.

Responding to Volatility: The volatile geopolitical environment created by the scenario and player actions required rapid adaptation and quick decision-making from participants. With Ukraine occupied in the East, its Northern border with Belarus took the attention of the generals, military officials and diplomats throughout the entire game.

This was exacerbated when persistent rumours about Belarussian President Lukashenko's death led to political instability, pushing the three-man Belarussian team to rapidly consider multiple scenarios and act upon them – eventually creating some form of interim government which lasted until the end of the game.

Another striking example of geopolitical volatility was the sudden announcement by France that it would share its nuclear weapons with the EU – a surprising move that was quickly nipped in the bud by political pressure from France's allies. This illustrated how players must be responsible themselves for the necessary "checks and balances" when situations threaten to escalate.

Facing Uncertainty: In order to prepare participants for the manifold challenges of the real world, the Strategy Days were not just about politics and war; participants also dealt with unexpected technological and economic aspects of international relations.

This was perhaps best illustrated by the collaboration and competition between tech giants such as Google (including DeepMind), Microsoft (including OpenAI), TSMC, and ASML on quantum computing and artificial intelligence. While Microsoft was building on tried and tested partnerships in the US and Europe, Google's gaze was fixed on the East: rapidly, increasingly, and sometimes covertly partnering with the Chinese government. As this sub-scenario evolved, the United States government seemed blindsided by Chinese overtures in their own backyard, as spies sent by the China team infiltrated key positions in both Silicon Valley and Taipei.

Feedback from the participants acknowledged how the immersive experience helped shape their future skillset. The student playing DeepMind's CEO Demis Hassabis acknowledged how the game allowed him to explore alternative scenarios and fostered creativity with an eye to the future. "I currently conduct an outreach project on digital literacy [in the real world]" he said after the event. "Serious gaming inspired me to use creative methods to develop sustainable solutions in my field of work in the near future."

One participant mentioned how playing the serious game in the course of the Strategy Days allowed her to "delve into strategic decision making and current geopolitical affairs." Another player appreciated how the game helped him get ready for life after university: "Having just finished my last courses in the bachelor's in International Affairs program at the university, these two days prepared me well for what is to come, and I am more excited than ever to embark on the next chapters in my education and future professional life."

Learning objective 2: Practice making consequential strategic decisions when confronted with high-pressure challenges

The Strategy Days provided participants with multiple high-pressure challenges simultaneously, compelling them to navigate consequential decision-making processes in "real-time". The following points illustrate this:

Practicing Strategic Decisions: Participants assumed the roles of different stakeholders involved in, for example, the Ukrainian conflict, including the UN, EU, Ukraine, Russia, Belarus, and Hungary, amongst others. Each role elicited distinct team objectives that often overlapped or diverged, obliging our players to engage in strategic decision-making together.

In one example; the United States had to debate the strategic merit and potential repercussions of supporting Ukraine with a $1 billion economic reconstruction plan. In another, Switzerland dealt with the UK government about the facility and functioning of weapons parts delivery – while upholding their commitment to military neutrality. As our participants played, Kosovo became the site of tensions and potential conflict – one of the teams used foreign involvement behind the scenes in the Balkans as a key and subtle strategy.

Facing the Consequences: One of the most difficult aspects of making consequential strategic decisions is to predict how other leaders and actors in the game might react. The simulation enabled participants to experience the consequences and uncertainty of their own decision-making.
Participants confronted the consequences of their strategic decisions, experiencing tangible concepts such as opportunity cost and supply and demand. During the game, teams representing ASML found themselves in a situation that required a decision to build state-of-the-art factories in collaboration with the German government. This action, while advantageous for ASML and Germany, brought along new opportunities for infiltration and espionage from the East.

Another interesting example which arose presented itself when deliberations about the Green Deal in Brussels took too long. Extinction Rebellion protested and camped outside the EU Council building. When politicians did not listen to their demands, airports across Europe were targeted and shut down in early 2024. The person who played as Greta Thunberg in the game certainly had a lot to say when addressing the final UN General Assembly at the end of the game.

High-Pressure Challenges: High pressure challenges were amplified by the time pressure of the game format (1 hour in *real-life* was 1 month "*in-game*") and by the decisions made by players. The South China Sea, for example, was central to the agenda of the Chinese Communist Party throughout the game – prompting the UK government to strongly condemn any Chinese overtures in this area. Aware of the potential for escalation, India and Japan teamed up for a joint naval drill in the Bay of Bengal in early 2024. Taiwan, home of key chipmaker TSMC, had to monitor its coastline as teams tried to send warships and submarines to protect their vital national interests.

Feedback from participants reflected the intensity and value of the experience. One participant described the Strategy Days as one of the best events he had ever attended, calling it "very informative in terms of strategy, leadership, and understanding international processes." Another player highlighted the independence he discovered in his decision-making, demonstrating the emphasis the system places on personal responsibility. Another participant praised the "strategic foresight" the game offered. This was demonstrated retrospectively by Sweden joining NATO and Secretary General Stoltenberg extending his term – events that have broadly been seen in the real world in the weeks and months after our Strategy Days had taken place.

Learning objective 3: Enhance leadership and teamwork skills by applying strategies for self-regulation and goal attainment

The St. Gallen Strategy Days provided an immersive experience for participants to develop practical leadership and teamwork skills as they tackled real-world geopolitical challenges. They had to address complex geopolitical realities, as well as challenges around economic and digital sovereignty, while learning from experts in strategy, leadership, and negotiation during keynote addresses and separate in-depth masterclasses.

Leadership: Through play, participants learned about the different components of leadership

Teamwork: In their teams, participants were confronted with a myriad of cross-cutting topics and challenges. Without support staff, teams had to share out the work, and, crucially stay communicative with one another. Different teams used various methods to do this, e.g. routine sync moments, using the app "Slack" in meetings to keep each other updated. As each of the team members had to take the lead on specific areas of concern, each member had to step up and take the lead within their teams at different moments.

Understanding and dealing with biases: there were workshops on leadership and there was a keynote speech on diversity and inclusion in conflict resolution. The insights given during this conference events helped participants understand their own blind spots in negotiations and decision-making. One of the key lessons from the game was that perception and assumptions can obstruct one's ability to arrive at a shared solution for a shared problem.

In terms of broader power dynamics, the game provided participants with insights into the ambiguity that comes with being assigned a certain role. For example: when one is playing as President Biden, you will have a significant level of influence in the game – more, then, than the person who plays an NGO activist. Understanding such power dynamics and the strategies trying to break through or circumvent them represented a highly valuable lesson.

Learning Objective 4: Collaborate effectively in a diverse team by engaging with thought leaders and utilizing appropriate decision-making tools

The system of the St.Gallen Strategy Days empowered participants to collaborate effectively within diverse teams, through a number of targeted events or "mechanics" during the two days:

Keynote Speeches and Masterclasses: Participants were able to attend speeches and thematic masterclasses from thought leaders working in government, education, the military, the EU, and other international and multinational organisations.

In-depth contributions were delivered by Emilio Galli-Zugaro (Executive Coach on Leadership and former Head of Communications at Allianz), Cathryn Clüver Ashbrook (Executive Director of the Future of Diplomacy Project at Harvard University), Franz Fischler (former European Commissioner for agriculture and rural development), Col. Markus Reisner (Historian and Officer at the Austrian Armed Forces), Cecilia Pellosniemi (conflict resolution professional with worldwide experience at the UN, EU and NGOs), amongst others.

In order to create a *shared learning experience*, some of these contributions were attended as plenary events. However, participants also received relevant and *personalized learning experiences* so certain events were organised optionally and at a smaller scale.

Decision-Making Tools & Tech: The Strategy Days aimed to merge classical and modern approaches. Classical tools saw students receiving instructions on how to do a SWOT analysis and how to create a Best Alternative To a Negotiated Agreement (BATNA). One BATNA was illustrated at the very end of the Strategy Days in 2023, which concluded with a dual outcome of the Russia-Ukraine conflict – one *with* and one *without* Putin at the helm. A more contemporary toolset in the gameplay saw participants learning how tools like Slack and ChatGPT can aid in strategic and tactical decision-making.

Interestingly, the "World Press" team was able to create lots of content throughout the game with the help of ChatGPT – could this indicate a future trend?

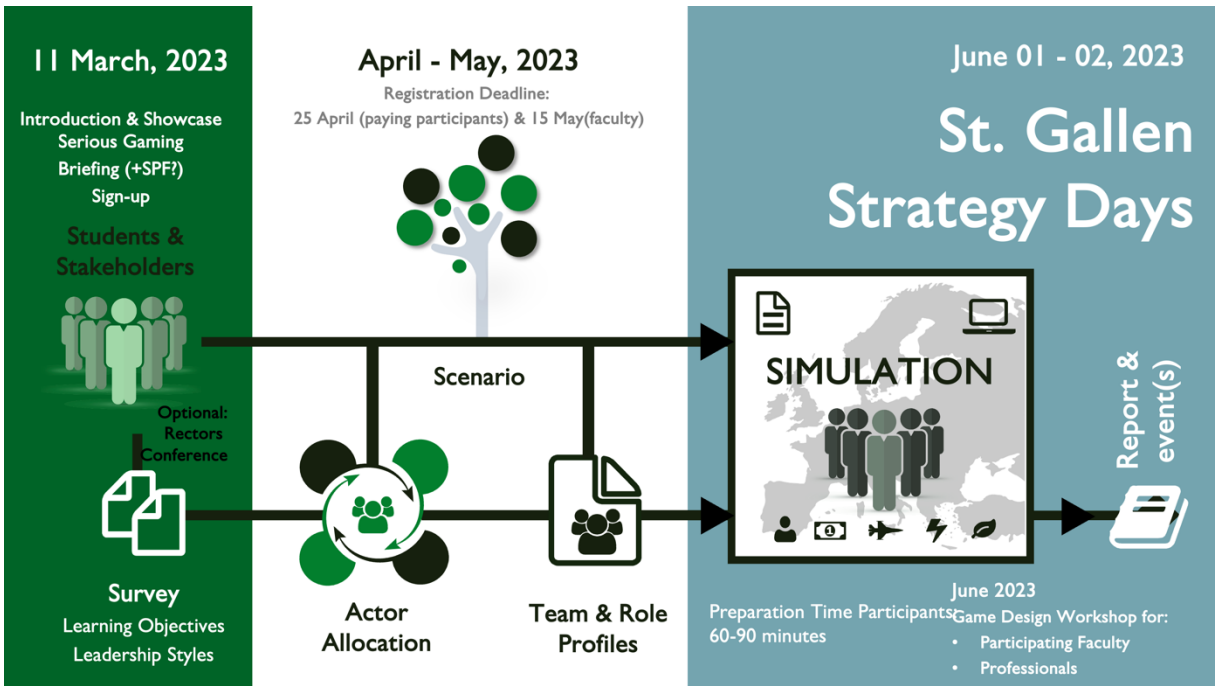
Effective Collaboration: Participants played in teams and confronted a wide range of issues. The setup of the game demanded that participants work together (within and without their teams) in order to find solutions to geopolitical problems in line with their interests. To achieve this, players had to deploy both soft and hard skills.

One participant wrote on LinkedIn: "While I'm still processing the experience, strategizing and negotiating in such a complex and fast paced environment was certainly a valuable experience! For me, it especially emphasized three success factors: 1) Prepare meetings with several alternative options; 2) Coordinate your own team, but also external stakeholders, and 3) Form alliances and actively manage expectations."

During the simulation, participants had various ways to engage with each other and the scenario: through one-on-one interactions, meetings, keynote speeches, Slack (incl. social media), working with the media, and taking decisive actions. As one participant noted, "this created a powerful, fictitious reality, emotional involvement as well as a sense of 'information overload,' among participants forcing players to focus their attention and prioritize their time and objectives." Indeed, as the Strategy Days developed, participants seemed to find their feet. "The second day was even livelier than the first," one participant commented.

In the end, the St. Gallen Strategy Days clearly demonstrated the potential for serious gaming in education and training, and laid the groundwork for a vibrant serious gaming community at the University of St. Gallen.

Game setup

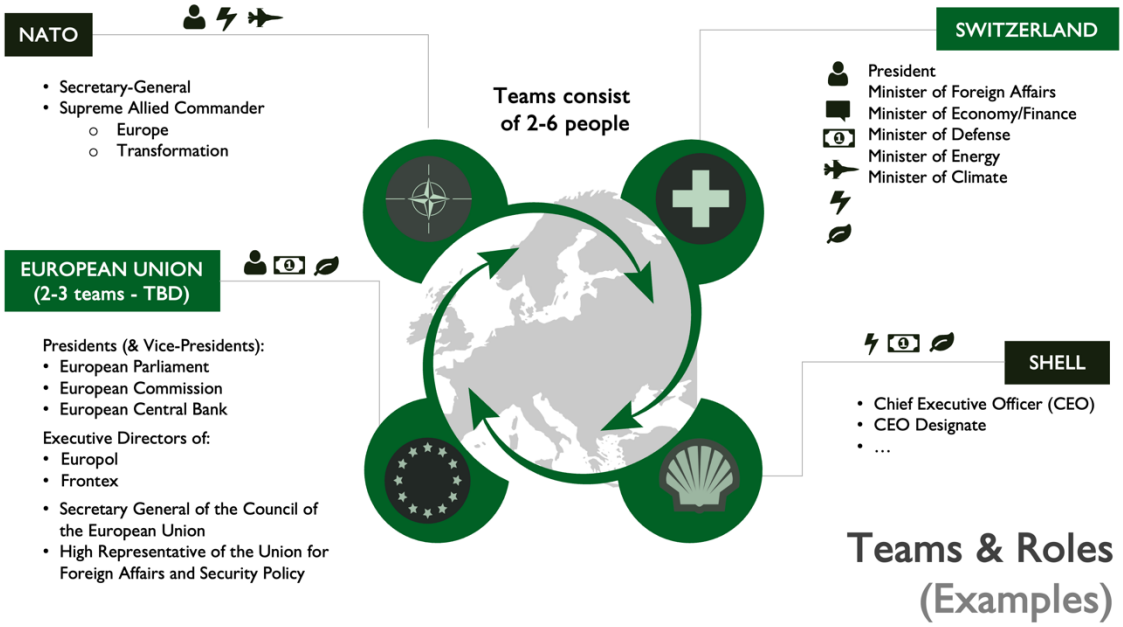


Designing a scenario-based serious game involves the creation of core components such as player roles, learning objectives, a scenario, maps, presentations, a rulebook, and particular physical materials. The St. Gallen Strategy Days followed this approach, thereby creating a "memorable once-in-a-lifetime learning experience on leadership and strategy".

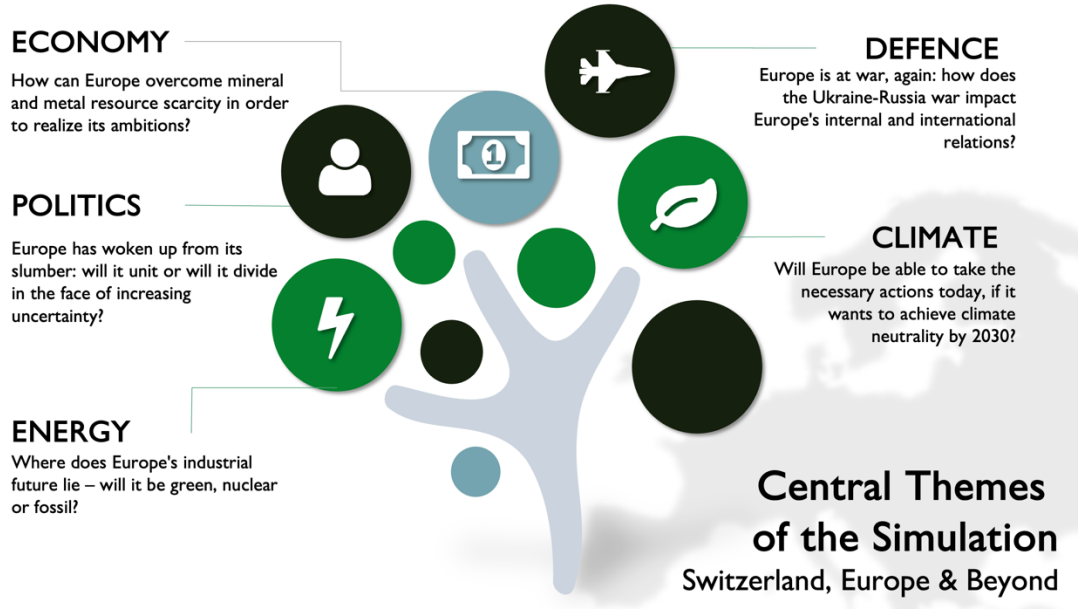
In order to ensure successful delivery, several game components were developed with the following characteristics:

- **Team & Role Profiles:** During the Strategy Days, players assumed the roles of heads of state, foreign ministers, diplomats, economic and defence officials from different European countries. Before the simulation, participants each received team and role profiles which contained a detailed briefing about their country, company, or organisation – and the real-life people that made up the team. These dossiers provided a clear understanding of capabilities and limitations for each team, enabling the development of an effective strategic plan.

  Additionally, all profiles provided some profile-specific information in the areas of political and economic influence, defence, climate, and energy. Due to the qualitative nature of the game, these tools and their accompanying metrics are not as quantifiable or measurable as they would be in the real world. This is an example of where we must exchange some realism for better and more functional gameplay.



- **Clear Learning Objectives**: A serious game should have specific, verifiable learning objectives that can be evaluated during the debriefing stage. For the Strategy Days, these were, in short: 1) to enhance future skillsets aimed at navigating complex, volatile, and uncertain environments, 2) to practice consequential decision-making, 3) to improve leadership and teamwork skills, and 4) Collaborate effectively in diverse teams with thought leaders and decision-making tools.



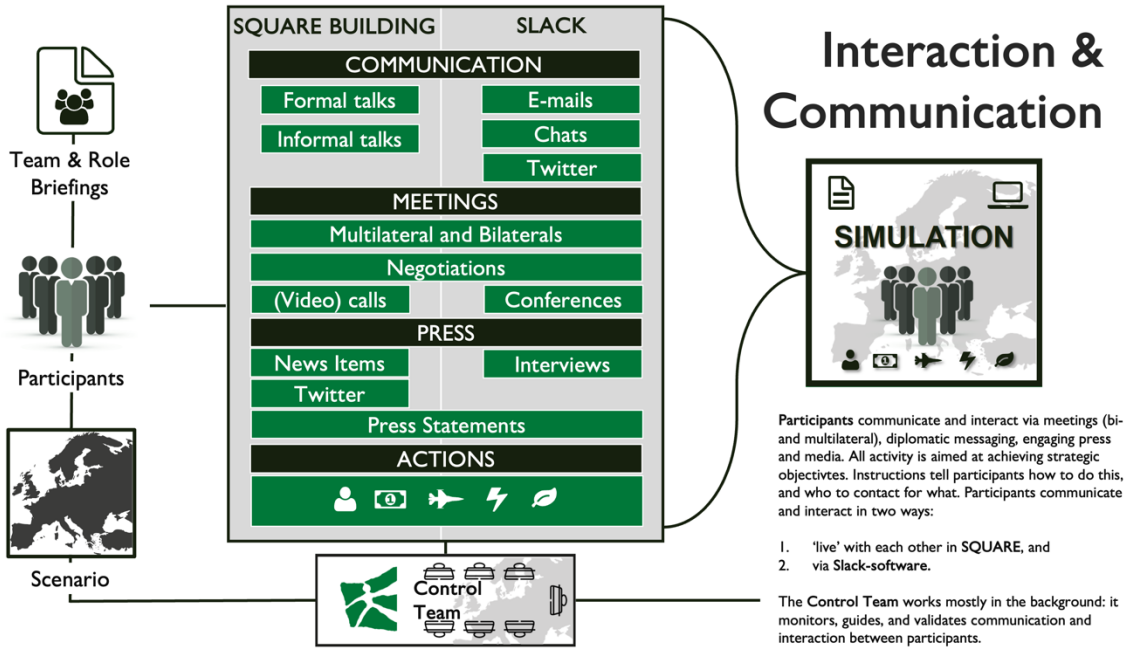
FOR Themes that underpin the scenario

- **Scenario**: A detailed and concrete text which explains the setting and starting point of the exercise is essential. The 10-page scenario "Lead the Way: Europe's Strategic Test of Character" gave us the game's context – that we would be starting the game one month into the future on July 1, 2023. This was written to reflect the real world as much as possible, and with the central intention that participants can and will develop the scenario in ways that best suit their playing.

The Strategy Days were focused on a geopolitical, Europe centred-scenario, evolving around 5 themes: politics, economy, defence, energy, and climate. This approach can be adapted to different thematic and disciplinary scenarios, focussing on historical, contemporary, or future challenges on a national, regional or global scale. For the scenario to work, we considered three elements to be crucial:

1. All teams must be represented realistically and somewhat proportionally to the topics at hand, pushing them towards interaction with other players. Teams that are important but not central to the scenario of the Strategy Days can be created for additional engagement and then included more easily once the simulation starts. In our example, for instance, we used teams representing India and the Dutch technology company ASML. In our case the ASML team were informed of supply chain problems and plans to build a new factory, while the India team was thrust between Russia and China as chair of the Shanghai Cooperation Council.
2. The scenario must be an easy and fun read, written in an active and direct style, adopting the editorial clarity of a magazine like The Economist. Of course, while a scenario composed in an academic fashion will be highly factual and reality-based, the scenario needs to be highly engaging. Occasional quotes from real-life actors can help to make the scenario more realistic.
3. The scenario requires all components of the simulation to be thought and worked through, to ensure coherence and alignment with new audiences, learning objectives, and other desired outcomes. It is therefore always written near the end of game development.

On that note, during the Strategy Days, participants engaged in diplomacy, international relations, complex negotiations, economic decisions regarding trade and tariffs, military strategies, energy management, and climate change policies. As one participant stated, it was noticeable how the speed of development and the ability to strategize increased among the other participants and "how quickly they grew into their roles and developed their strategies more and more confidently".



Map: A map of the situation area is crucial for situational awareness. For the Strategy Days, we created and used two maps that were accessible to all players:

1. A 6x9 meter **military map** representing Ukraine at war and its surrounding countries, with an overlay of chips and icons indicating troop presence and movement, as well as supply routes, naval activity, and refugee flows..
   On this map, the teams of Russia and Ukraine, flanked by relevant representatives from other teams, "wargamed" the Ukrainian 2023 summer Offensive and other developments while teams elsewhere developed the scenario for the rest of the world. This map was located in the centre of the ground floor, and could be viewed from all three higher levels.
2. A digital map of Europe at MapHub with icons representing events and news items, which was updated every hour by the Control Team.

- **Presentations**: The presentation contains relevant information for the players and questions for the debriefing. The Strategy Days were structured around multiple "presentations", divided into roughly 5 categories:

  1. **Instructions and updates** from the organizing team at the start and end of each day.
  2. **Keynote Speakers**: Emilio Galli-Zugaro and Cathryn Clüver Ashbrook (on leadership in crises), Franz Fischler (on the structure and procedures of the EU), Markus Reisner (about the military situation in Ukraine), Cecilia Pellosniemi (about conflict resolution in crises).
  3. **Workshops** on leadership, negotiation, peacebuilding, military strategy, diplomacy, serious gaming and negotiation with ChatGPT.
  4. **In-game Conferences**, hosted by the participants themselves, such as the 2023 NATO Vilnius Summit, the Green Deal, the Summit on Russo-Asian Cooperation, the EU AI-Act, and the UN General Assembly on Peace and Security in Europe.
  5. **A debriefing presentation**, followed by a "World Café" whereby groups separately discussed the insights they gained during the game and their own learning experience.

These presentations were part of a fixed programme, aimed at providing participants with structure, action, and incentives for goal-directed behaviour.

- **Player Support (conference and rulebook)**: A serious game often has a player guide which outlines the rules and mechanics of the game. For the Strategy Days, we created a Conference Booklet that contained the programme, information about keynote and workshop speakers, a map of the building, information about the simulation and how to prepare, the role of the Control Team, the digital tools used during the simulation, the scenario itself, a short overview of teams and roles for easy reference – and, of course, a short section on the value of serious gaming. It was kept as short as possible to make it accessible and easy to use – though it still grew to 41 pages!
- **Physical Materials**: These materials support the delivery of the game. For the Strategy Days, materials such as maps, tables for bilateral negotiations, and a dedicated 'newsroom' offered ongoing updates and alerts to participants and enhanced their immersion in the game. All teams were directed to their allocated section at SQUARE with small flags, and all participants received a badge with their in-game name and function.

  At the start of the simulation, participants were also supplied with a two-page brief with the most important information, and instructions for how to register at the conferences and workshops. Dressing up or finding a costume of some kind according to the role they were taking was suggested but was not mandatory.

Scenario themes and topics

The scenario consisted of key themes and topics. All the roles within the simulation had vested interests in at least one of the topics. Because of this it ensured that each player had a personal motivation to play the game.

Politics: Participants stepped into the shoes of European political leaders, immersing themselves in diplomacy, international relations, and complex negotiations. The high-pressure environment and the unpredictability of politics were integral to their experience.

Participants:

- Engaged in diplomacy and international relations as representatives of European countries.
- Navigated complex negotiations, negotiating different alliances and political pressures.
- Grappled with the historical contexts that intermingle with the unpredictability of global politics.
- Experienced rapid learning due to the accelerated time scale and immense complexity of the game.

Economy: Players assumed economic responsibilities for European nations, making critical decisions on trade, tariffs, and sanctions. Balancing domestic economic interests while negotiating with others for mutual growth was integral to carrying out their roles successfully.

Players:

- Made decisions regarding trade agreements, tariffs, and economic sanctions.
- Balanced domestic economic interests with international negotiations.
- Encountered real-world economic concepts like opportunity cost and supply-demand.
- Engaged in a practical example involving the Ukrainian conflict and multiple stakeholders.

Defence: Participants were plunged into the world of military strategy, and had to understand the importance of defence and its implications on national and regional stability and on international relations.

Participants:

- Weighed the implications of military actions and alliances for national and regional stability.
- Encountered textbook scenarios in practical settings such as the Security Dilemma.
- Developed multiple solutions to simulated conflicts via critical thinking.
- Understood the consequences of military decisions on international relationships.

Energy: Players took on the task of energy management, strategizing to secure and diversify energy resources. They considered the geopolitical landscape and relations with energy-exporting countries.

Players:

- Strategized how to secure and diversify energy resources.
- Considered the geopolitical significance of energy security.
- Engaged with thought leaders to learn decision-making tools such as a SWOT analysis.
- Formulated strategies for sustaining national energy needs through discussions and workshops.

Climate: The simulation addressed climate change, in which participants worked on sustainability goals, international cooperation, and understanding the geopolitical consequences of climate policies.

Participants:

- Tackled sustainability goals and international cooperation in climate change mitigation.
- Recognized the geopolitical ramifications of climate policies.
- Explored alternative scenarios for sustainability, as exemplified by players playing Deepmind and the EU.
- Understood tensions arising from resource scarcity and environmental migrations.

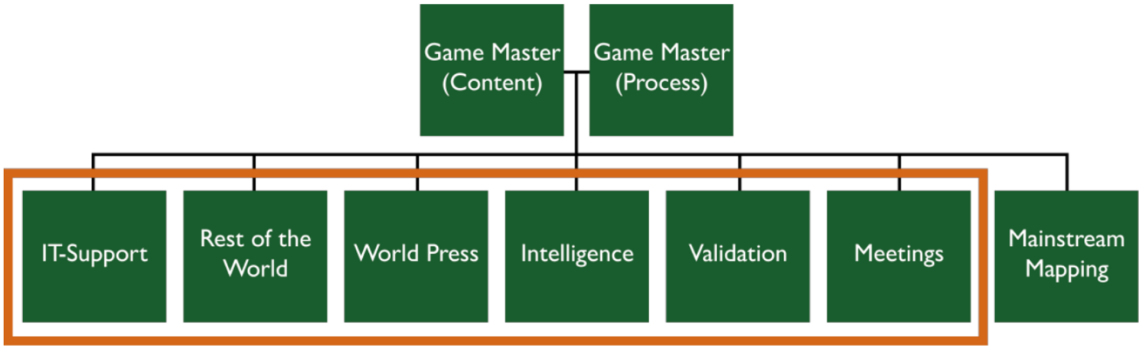
Designing the St. Gallen Strategy Days – a student's perspective – By Niklas Koch

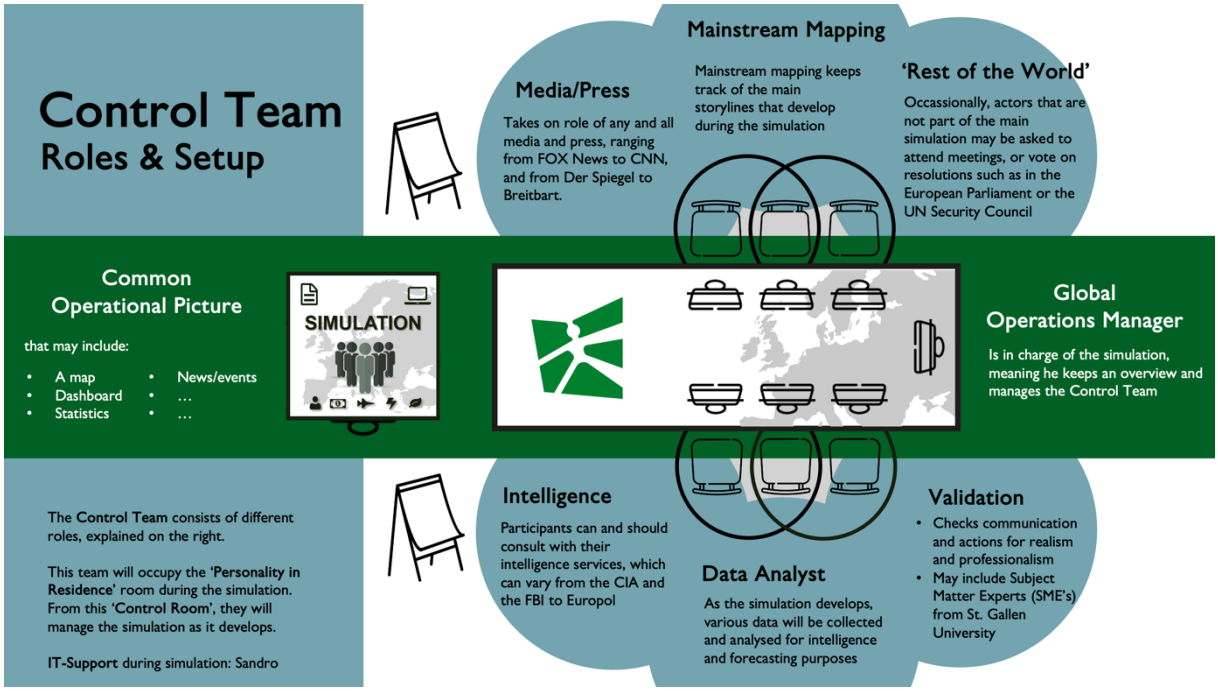
Two years ago, my interest in serious games was sparked during a course called "Leadership in Crisis" at the University of St. Gallen. We used serious games to practice leadership skills in high-pressure situations with limited time and uncertain information. Despite the challenges of remote learning during COVID-19, these games captivated my attention and became the most valuable experience of my first year at university. I vividly recall the frustration of failed attempts at cooperation in the so called "fish game". This motivated me to delve deeper into serious games. When the opportunity arose to join the team of the Strategy Days at Square, I eagerly accepted.

Over the next year, I worked extensively on the project in various roles. Initially, I focused on clarifying concepts and building partnerships with student clubs at the university. In this task, I experienced first-hand how important a strong network and acceptance among all stakeholders can be for the success of such a conference. Later, I developed content and briefing materials for over 100 participants and 35 teams. This deepened my understanding of European and world politics and showed me the huge learning potential that exists even in the design process of a serious game. Recognizing the need for digitalization as a consequence of the huge number of participants, I coded a Slack bot to streamline tasks and to ensure a smooth simulation.

During the simulation, I focused primarily on maintaining the Slack channel and tracking the evolving storylines through mapping them. With over a hundred participants driving the simulation forward, keeping an overview of the whole buzz and distilling the main trends from it proved a major challenge. In a team of two, we had to summarize the events for the whole control team and to provide hourly updates on major events for the players so they could arrive at aa common picture of the state of the world. Overall, my involvement in the control team during the geopolitical simulation deepened my understanding of strategic decision-making processes in a complex geopolitical environment. Further, it allowed me to develop skills in conceptualization, content development, digitalization, infrastructure planning, and operational management. So, evidently, I would conclude that participation in a serious game is not only a learning experience for the participants, but also and even more intensely so for all members of the control and design team.

The Control Team





The Control Team is responsible for organizing the simulation. It manages game mechanics, ensures fair play, and moderates communication. It consists of specialized roles:

- Game Master(s): Responsible for organization and scenario development.
- IT-Support: Contact for IT-related issues.
- Rest of the World: Represents non-participating world actors.
- A media team representing World Press: Represents mainstream and non-mainstream media.
- Intelligence: The intelligence services.
- Validation: Monitors and moderates communication for realism and appropriateness.

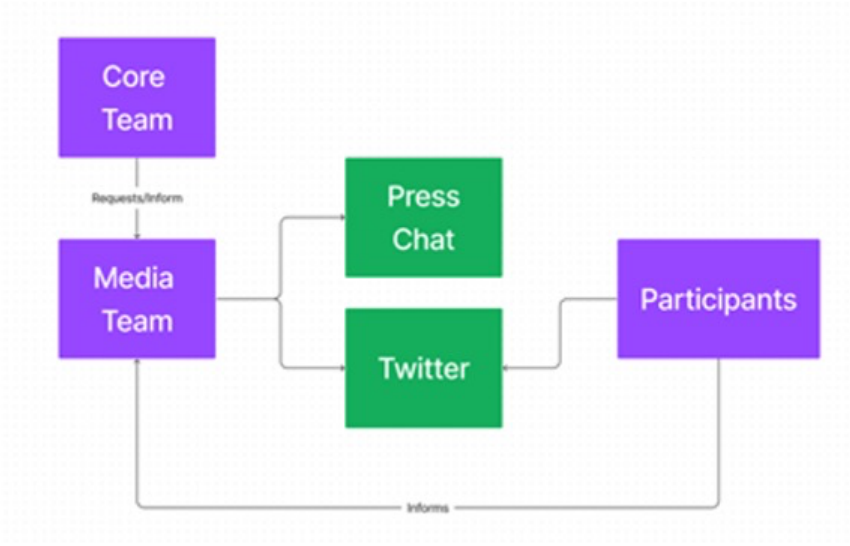
Importantly: The Control Team is purposefully "hidden" from most participants, so as to enhance realism, immersion, and the independence of players. It is their game, their world and the Control Team is there to assist their experiential learning.

Organizing a Media Team for Serious Gaming – By Hugo Bezombes

At the St Gallen Strategy Days, I had the opportunity to participate in and help organise the media team. As a YouTuber and journalist experienced in content production, I put my skills to the task of generating news and fake news for the game.

What is the Media Team and its purpose?
The media team consisted of 6 people who operated as journalists within the game to create media content.
This content was ordered by the Core Team to help move the scenario along, and also generated by the participants themselves so that their actions and decisions could shape the narratives of the game. In essence, the media team was essential to provide the participants and the core team with an overview of the inner workings of the game.

What did the media landscape look like?



Activities
Within this media landscape, the activities of the media team were threefold:

- Doing the rounds - literally walking around the conference as an act of investigation - in search of a scoop.
- Attending in-game conferences to write about the negotiations between teams.
- Feeding and steering the game's simulated social media (fake Twitter)

My Way to the St. Gallen Strategy Days – By Fiona Lehmann

My journey to the Strategy Days began with a game - a highly competitive round of Diplomacy with some friends. Diplomacy is a strategic board game where players assume the roles of different European powers in the early 20th century, aiming to conquer territories through negotiation, alliances, and backstabbing. This game vividly demonstrated the implications of strategic decision-making, particularly given the abundance of international crises we experienced in the spring of 2022. As an International Affairs student, I was immediately intrigued and agreed to join in on the Strategy Days. This experience ignited a fresh interest within me, as I had never considered games as a tool or gateway to explore more serious topics.

This led me to join the team for the St. Gallen Strategy Days, including a game designer, a lecturer who employed games as teaching tools, and a people analytics expert. Niklas and I, as student associates, served as the bridge between the game design team and the university, representing student interests. Our task was to conceptualize a game that would resonate with our peers, adhering to the university's standards while providing an engaging and educational experience. Our iterative design process involved weekly feedback meetings, during which we discussed our central themes, learning objectives, and game components. At the same time, we collaborated with student clubs to introduce various games, generating excitement and interest. The control team, a group of students who had oversight on the game mechanics and communications, played a pivotal role in facilitating these games.

Throughout the game development process, our primary focus as the Game-Design Team was to identify the learning objectives we wanted the participants to derive. Strategic leadership emerged as the key objective we aimed to instil. By participating in Serious Games, students would transcend the boundaries of traditional lecture halls and immerse themselves in experiential learning. This method of learning would enhance not only their cognitive abilities but also their personal and interpersonal skills. Guided by Tim, we began crafting team profiles that would shape the game's scenario, aligning with our objectives. Our aim was to create an engaging game that would provide participants with crucial insights into strategic leadership, with collaboration and creativity serving as our primary tools. With each step we took, we inched closer to realizing our vision - an immersive, dynamic game that would come to life during the Strategy Days.

As the much-anticipated Strategy Days finally arrived on June 1st, I found myself filled with a mix of excitement and nerves. The program commenced with captivating keynotes, setting the stage for the game to begin. In my role within the control team, I was responsible for providing reliable intelligence to the participants and ensuring that communications remained realistic and appropriate. The game's dynamics were thrilling, with participants fully engrossed in their roles and communication channels buzzing with activity. The second day of the Strategy Days maintained the momentum, featuring keynotes on EU matters and conflict resolution. Bringing the participants back to reality for wrap-ups and assessments of their experience posed its own challenges.

The project turned out to be an invaluable experience, opening my eyes to the power of Serious Games in education. I hope that more students can benefit from such immersive learning methods in the future. The journey has been enlightening, rewarding, and I have thoroughly enjoyed every moment of it.

Game design

"During the game, ideas arise spontaneously and give birth to further ideas."
Edward de Bono,

Building a game can be very a gratifying and liberating experience. It allows the game designer to go through a complete product development process: starting with an idea, developing game products and eventually seeing participants immersed in your game.

In our experience, as a game designer, you get to shape a world in which participants will play, in accordance to the rules you set and the information you provided. During the St. Gallen Strategy Days we had over 120 participants playing and they did not want to stop! Can you imagine the joy that gave us?

This chapter is all about game design. To make it tangible for you, we chose to focus this chapter on how to make a scenario-based serious game, also known as a simulation, that can be led by a facilitator during a university course.

Developing a serious game is not a "science". It is the outcome of a structured, yet iterative approach marked by trial and error. Building a game does not have to be difficult, especially if the game is facilitated. Facilitated serious games are easier to design and develop as the facilitator can intervene, and, if necessary, adjust the game where needed during the gameplay.

What you need to know to design your first scenario-based serious game

A scenario-based serious game can be relatively easy to design for classroom situations. Such serious games can be used to teach topics such as diplomacy, international relations, mergers and acquisitions, negotiations and leadership.

In such a game the players play in a clear setting (scenario) which defines the starting point of the simulation.

Such a game consists of the following components:

- Players playing in teams or as individuals taking on a specific role: e.g. in a game about negotiations between Israel and the Palestinians, they can play as the Israeli prime minister or the Palestinian president.
- Clear learning objectives: preferably that can be verified/affirmed by the participants during the debriefing.
- A scenario: the setting in which the players play (negotiate, collaborate, etc). This can be textual and physical, for instance through the use of a map.
- Briefing and debriefing materials: to lead participants into and out of the game.
- Physical materials (products) that support the delivery of the game.

Based on these components, a typical simple scenario-based simulation consists of the following game products:

- Team profiles: which contains some background information and some team objectives as well as an overview of relevant recent events and some information on the team's standing towards other actors (who may be friends or foes) and other key data.

- Role profiles: a clear definition of the player's role and personal objectives. A role profile can be as short or as long as you think is relevant.
- A map of the area in which the situation is sketched.
- A scenario: a text that explains the setting and the starting point of the exercise.
- A presentation: containing relevant information to start playing, and also any questions you may want to use for the debriefing.
- A rulebook: an overview of the rules and the game mechanics, answering questions such as: how is the game structured? Is there a turn sequence? How do you take an action? How many actions can you take? What are the rules of interaction with other players? What is the role of the facilitators?

Some guiding principles to designing a scenario-based serious game

When designing your first game it helps to follow to some guiding principles:

- Understand your training audience and participants. What are their learning needs? How susceptible are they to taking part in a game? How much time do they have for preparation, playing the game itself and then the debrief? And how much time can they invest in helping you to prepare the game?

- Understand your stakeholders. If there are other stakeholders who have a vested interest in the game, try to be aware of that and to understand their motives.

- Ensure that you have clear learning objectives. These can be both broad (for example experiencing negotiations and statecraft in relation to the Arab-Israeli conflict) and precise (for example, developing the necessary skills and knowledge to create a strategy for a new UN peacekeeping mission in the Sudan). Without clear learning objectives it is very hard to develop a successful scenario-based serious game.

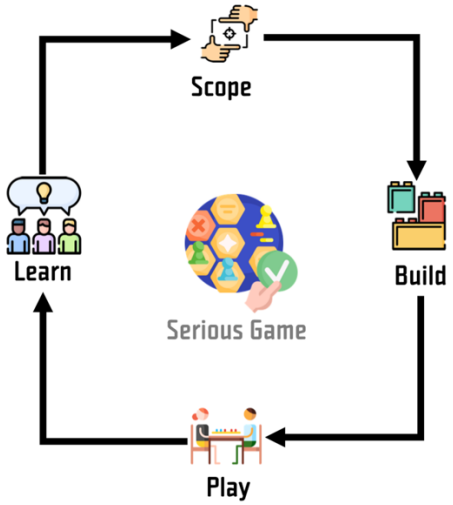
- Understand the shortcomings of your game design. A scenario-based game always reflect an abstract version of reality. This means that you may have to exclude less relevant actors, certain dynamics and/or technical details and other exogenous complexities.

If you have a clear understanding of the above (points 1, 2 and 3), you can start developing your scenario-based serious game on these further principles:

- Accept that designing a game is always a work in progress, first drafts will probably feel incomplete. Be aware that you are not developing a game like Monopoly, rather you are designing a game that should be purpose-built. This means a game that enables participants to achieve the learning objectives and caters to their needs as defined by you.

- Work iteratively and in quick sprints. You can lose a lot of time and pain-staking effort in designing a game. An iterative approach to game design allows you to get feedback quickly and work in a focused fashion towards your goal (a fit-for-purpose game). A sprint consists of the following phases:
- Scope: define the game-related products that you want to build, e.g. player profiles, a rulebook, a map.
- Build: build those products within a fixed time constraint (keep it simple).
- Test: play the game with a sample group of players.
- Analyse: reflect on what went well and what parts require further work.

After completing a sprint, you start a new cycle for your work based on the outputs of the previous sprint. Once you have a clarity on the outcome, your serious game can develop with more certainty so that the learning objectives will be reached by the participants.



How to start your game design?

Here, we will use the development of a facilitated scenario-based serious game based on the Israeli-Palestinian conflict as a working example. The training audience (our participants) are students studying International Relations (the second year of a BA undergraduate degree) and are following a specific course on diplomacy and statecraft.

Step 1: Scope the project / define the scenario-based serious game

- Figure out the learning needs of participants, e.g. the students within the course.
- Define the number of players.
- Define the number of facilitators and their background.
- Define the available hours of time for the preparation, execution, and debriefing of the game.
- Define whether the participants can be involved in the development of the game. Are they willing and able to develop their individual role and team profiles?

Step 2: Formulate learning objectives. The learning objectives will become the objectives of the game.

Step 3: Define the game process and products.

- Define the game process you want to apply.
- Define the products you believe need to be developed, such as the team and role profiles, presentations, a gameboard, some rules, etc.

Step 4: Make a simple plan and development timeline, including a date for the actual delivery of the game. Plan for at least 3 sprint cycles and nominate game-related outcomes:

- Sprint 1: all the initial game materials are identified and roughly drafted and make a list of all the game products, their status and key points of attention.
- Sprint 2: based on the outputs of sprint 1, define the focus of the second sprint. Complete the cycle, ensuring that you carry out a working test, update the list and the status of all the game products.
- Sprint 3: based on the outputs of sprint 2, finish all products and prepare the final event.

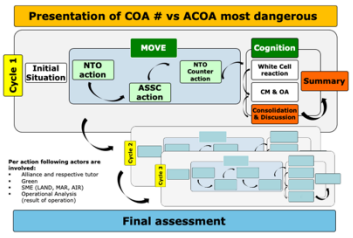
A wargame

Components to think about.

Profiles

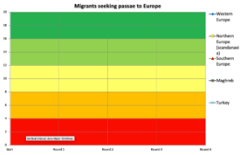
Scenario

Facilitators & players



Instructions

Geography and assets



Mechanics & data

Example: building a scenario-based serious game about the Israeli-Palestinian conflict

Imagine you would like to build a serious game about the Israeli-Palestinian conflict in order to teach about the complexities of conflict resolution and negotiations. The development of the actual game could work like this:

Step 1: scope out the project:

16 Second-Year BA students in International Relations need to learn about conflict resolution and negotiations as part of a larger course about the Israeli-Palestinian conflict.
There are two facilitators: professor and a teaching assistant.

Available time: over the course of the semester students have:

- 8 hours to prepare (self-study and groupwork).
- 4 hours for the execution of the game over two classes.
- 2 hours for the debriefing and reflection

Students are able to help prepare the game. They have 8 hours for self-study and groupwork available over the course of the term.

Step 2: Define the learning objectives:

The serious game enables students to:

- Practice negotiations and apply negotiations theory in a realistic setting
- The theoretical framework on negotiations is derived from the books, "Getting to Yes", "Getting Past No" and "Never Split the Difference" which make up mandatory reading in this field.
- Experience the complexity of conflict resolution using a case study that is known for its complexity
- Students need to research the various factions involved in the conflict at a state level as part of their preparation.
- Students will take roles in each of the significant factions, representing key leadership positions.

Step 3: Define the game process and products

Game process:

Students work in teams and represent a key leader of one of the parties involved in the conflict:

Israel

- Prime Minister
- President
- Minister of Foreign Affairs

Fatah (Palestine)

- President of the State of Palestine
- Prime Minister of the State of Palestine

Hamas (Palestine)

- Chief of the Political Bureau
- Deputy Chief of the Political Bureau

United States

- President of the United States
- Secretary of State

United Nations

- Secretary-General:
- Special Coordinator for the Middle East Peace Process:

European Union

- President of the European Commission:
- High Representative of the European Union for Foreign Affairs and Security Policy

China

- President
- Foreign Minister

The aim of the game is that the factions need to come to a peaceful resolution which is acceptable to all parties.

Phase 1 preparation:

- students prepare role and team profiles about the key individuals they will represent during the game.
- Students will need to present their team profile to their peers during one of the classes.

- The game facilitators will:
- Present the scope of the game, its objectives, rules, how to prepare and what to expect, and how the project will be graded.
- Develop a short scenario of 2 – 4 pages representing the start of the game.
- Provide lectures related to the theory and the background to the conflict.
- Assign roles and teams.

Phase 2: execution

This will be a moderated simulation game to be carried out over the course of two two-hour classes. The setting is that of a semi-formalized negotiation in which participants work to the following timetable per class:

- 45 minutes of formalized negotiations. All factions sit across from each other along a long table. At the head of the table is a team of students representing a neutral party. They are responsible for chairing the meeting.
- 30 minutes of informal negotiations and teamwork. Students are allowed to strategize with their team and negotiate with other parties in an informal setting.
- 45 minutes formalized negotiations. All factions sit across each other along a long table. At the head of the table is a team of students representing a neutral party. They are responsible for chairing the meeting.

During the formalized negotiations, the meeting is chaired and proper diplomatic decorum is used.

The facilitators (professor and teaching assistant) are responsible for:

- Time keeping
- Observing students' behaviour and progress
- Preparing the debrief on the basis of their observations
- Playing external parties when necessary
- Injecting new information to the game if this seems necessary.

The assumption is that before the simulation begins, participants have been fully briefed (see phase 1: preparation).

Phase 3: debriefing

The facilitators will provide a debrief once the game is over. The debrief can have multiple forms. In general, it contains:

- sharing game personal highlights and the key developments/accomplishments during the game
- relating the learning objectives to self-reflection (this can be both individual and groupwork) - prepared questions can here.
- The sharing of the results of these reflections
- More insights from the game (possibly sharing statistics, a word cloud, a timeline etc)
- You can also reflect on topics that were left out of the game, and identify if participants think they could have found them useful.
- Create a task for assignment (e.g. write a 1000-word paper on your experience and relate it to the theory explored).
- End on a positive note

Game products

For this game the following products need to be prepared:

- A set of rules and instructions covering gameplay and some pointers for how to conduct formal negotiations and chair formal meetings.
- A scenario: a document outlining the start state of the game
- Role profiles: each of the players need to work out a profile representing one of the roles
- Personal objectives (secret to other players)
- Background of the person (personal history/description)
- Overview of relations with key individuals in the game (friends and foes)
- Literature list
- Team profiles: students in teams have to develop a team profile covering:

- Team objectives (open and secret)
- History of the faction
- SWOT analysis
- Overview of friends and foes and their perspective on the various parties
- Overview of team breakdown (hierarchy)
- Literature list
- Background information such as maps and historic timelines.

Step 4: making a simple plan and starting development in sprints.

For sake of the example the course takes 10 weeks. The plan would be as follows:

Preparation: week 1 to 6

Sprint cycle 1: Week 1 and 2	Scope: Students are briefed on the basis of a simple presentation that covers: rules, game process and timeline of the preparation and execution. Build: Students start working on their products (role and team profiles) Playtest 1: opening of formal negotiations is practiced. Each team introduces their team in a short speech and makes their team's objectives clear. Subsequently, during the informal negotiations, participants try to find out what the demands are of each of the players / teams. Analyse: the gameplay is evaluated, students receive feedback on their work.
Sprint cycle 2: Week 3 and 4	Scope: based on the facilitators' feedback the necessary improvements and additions are outlined in order for everyone to be able to work. Build: Students start working on their products (role and team profiles). Facilitators start developing the scenario. Playtest 2: During the formalized negotiations, one element of the scenario is being discussed. Rules on negotiations, how a meeting is chaired and proper decorum is also practised. Analyse: the gameplay is evaluated, students receive feedback on their work. Please pay particular attention to who was less involved or inactive. Those participants need more content or to be given better objectives or an improve in their role or team profiles; they may need more input from the scenario, and/or more guidance on how to play.
Sprint cycle 3: week 5 and 6	Follow the process and give participants more time for development. The third play test can be the final simulation. Make sure that all required game products are properly developed and formatted.
Execution: week 7 and 8	Run the game as planned, and observe the game in progress. Between the two classes, decide whether additional scenario information is needed in order to achieve the learning objectives or to inspire those students who are less active during the game. In week 8 at the end of the game, do a short wrap-up and provide the questions that you want to discuss during the debrief
Debriefing: week 9 and 10	During week 9, use plenary reflection, (phase 3 debriefing as above. Assign the students an essay or paper to carry out this reflection. During week 10, use your own observations and the written essays of the players to further reflect on the game and relate these learnings back to theory.

Common game design mistakes

Out of the many serious games that we have built and played; we identified the following most common mistakes:

Unclear learning objectives:
If the objectives of your game are vague and not verifiable (for example that the players cannot identify the learning objective in their own words during the debrief), the game and the various game products will be difficult to design.

Thinking too big and overpromising:
Many first-time game designers, create games that require lots of extra investment, such as in software and specialized IT, or that take far too much time to develop.

Not working in sprints and playtesting on the go:
Taking a sprint-based approach is important as it allows you to develop a game in a focused and nimble fashion. It also allows you to scale up your serious game when the time is right. Playtesting is critical to the success of your game design. It will give you the feedback you need to progress.

Believing that technology alone will provide the solution:
Trust us, if it cannot be done with pen and paper (or PowerPoint, Excel and Word), it will not be any better with cutting-edge technology. In the end, software should facilitate play, not be the objective of the game.

Not involving others in the development process:
Building a game should not be a solitary experience. You should involve colleagues, students, friends in helping you "playtest", building specific products and/or critically reflecting on your game design.

Paying little attention to the presentation/appearance of products:
The appearance of products matter. The more beautiful and well thought-out they appear, – the better they are received by your participants.

Overestimating players:
Making assumptions about player knowledge and skill before the game begins can be costly. It is better to provide too much than too little information at the start of the game. Just don't do it in your briefing.

Overthinking, too much talking and too little playing and building:
Once you have your idea, start building. The more you overthink your design, the more difficult it will be to get it started. Just begin! Yes, there will be errors and missteps, but that is all part of the process.

This chapter has hopefully given you the key insights necessary to start building a serious game. Now go build yours!

Serious Learning by Playing 'Asperitas': Making Everyday Processes of Organizing Tangible for Reflection.

Florian Schulz & Julia Nentwich

Asperitas is a serious game focused on making the social group processes that typically develop in the early stages of an organization accessible to reflection and, thus, the subject of a learning process. The first objective of participants is to achieve the organization's survival and to avoid bankruptcy by ensuring that none of the four co-dependent indicators (economic effectiveness, total output, collaboration and employee engagement) reach a score of zero or less. The turn-based game can be played from 15 to up to 50 people and lasts between two to four days, with rounds lasting between 60 to 90 minutes.

Asperitas, as a classic manufacturing company, has to buy raw material, processes the material, and sells the products of this production process. At the start of the game, participants are allocated to one of seven departments, which are located in different rooms, each having a crucial role to play in the organization. As well as roles associated with the production process, other participants take on roles in which they have to coordinate output, write reports, and keep track of funds, and thus, participants can experience themselves as senior managers, production workers, accountants, HR managers, or support staff. Moreover, employees have significant freedom in choosing to play their roles. They can change departments and responsibilities and even take a vacation, become unemployed, go on strike, or enrich themselves and accumulate the power to make wide-ranging decisions for all employees. While each employee, by means of the game manual, has the knowledge of the underlying, relatively simple, game mechanics and thus knows what should be done to run Asperitas successfully, coordination and communication are critical to its survival. Given participants 'freedom of choice, each iteration of Asperitas is unique and directly dependent on how the group functions together. While the above-illustrated principle objective is for Asperitas to prosper as an organization, the core objective is not primarily for participants to understand how to run a business, but rather to understand how social processes are the fundamental pillars of organizations and are essential not only for how employees experience their everyday work life but essentially they shape the very capacity for fulfilling the most basic and essential tasks. By focusing on the social processes of organizing, it is possible first to experience and then to reflect on topics such as power dynamics and micro-politics, interpersonal and structural conflicts, the enactment of different leadership and management styles, the emergence or lack of creativity, the unconscious enactment of gender stereotypes or ability to integrate diversity.

The game was initially developed by the organizational behaviorists Robert H. Miles and W. Alan Randolph in 1979 (Miles & Randolph, 1979; Randolph & Miles, 1979) and has been used at all levels of higher education, from BA to executive education. At the University of St.Gallen, it has been part of the regular student curriculum since Peter Dachler (then professor of organizational psychology) brought the game back from the USA in 1981. Since then, it was developed further and continuously by Chris Steyaert and Thomas Eberle (Eberle & Steyaert, 2013), also professors at the University of St.Gallen as well as by several generations of Ph.D. students who acted as teaching assistants for the game.

The core didactical concept behind Asperitas is experiential learning (Kolb, 2015). This approach relies on participants having experiences they are making sense of, which can then be reflected within a theoretical framework..

For this experience-based approach to unfold to its full potential, the seminars are structured in three successive stages:

Stage 1: Kick-off event and preparation:

Several weeks before the actual game, participants receive the game manual for Asperitas, which allows them to understand all the core mechanics of the game as well as the various roles and tasks they need to fulfill as a group. During a kick-off session, the group gets to know each other, and the overall learning goals and the three-step operationalization are introduced. Moreover, participants are asked to consider what kind of dynamics they most interest them. If they want to use the role-playing opportunity to try out behaviors they do not usually show, like being more self-secure, dominant, creative, and so on.

Stage 2: Playing the Game Asperitas

To play the actual serious game, the team of lecturers and participants come together for two to four full days. Before the game begins, they must set up an adequate space consisting of at least five rooms and a shared space connecting all the rooms. This is best done in a large conference hotel or teaching space and ideally in a space like SQUARE as this allows participants to move freely. Before the first round of the game, each participant is allocated to one of the seven departments of the company and given some time to prepare and ask clarifying questions. Then, participants need to go to their department rooms, and the game begins for all participants at a preset time.

During game times, participants are asked to remain in their roles and to fulfil their assigned tasks as best they can. Typically, during the first two rounds of the game, participants quickly realize that they must build consensus by communicating how, why, and when they perform specific tasks together. While this insight is a truism and everyone quickly agrees on this, living this in practice is surprisingly demanding for most players. It quickly becomes apparent that only with a certain degree of cooperation in a coordinated manner can the company survive, grow, and adjust to an increasingly demanding environment and unforeseen events. Indeed, many groups struggle to keep Asperitas out of bankruptcy and find themselves caught up in one crisis after another.

Notably, after roughly every four turns and after the last round has been played, the lecturers facilitate a collective reflection, which lies outside the game time and in which participants are asked to step out of their roles. Alternating play and reflection phases is crucial for learning and allows participants to take notes on what they experienced and also begin a first reflection at a collective level. Moreover, these reflective phases allow participants time to adjust their overall strategy, much like an organizational development project would in corporate companies in the real world. Finally, participants also receive feedback on their individual impact on others and the group at large.

At the end of the game, participants tend to say that they have become fully immersed in their roles as employees of Asperitas and have learned a lot about organizational dynamics. Indeed, instructors often observe that participants are too immersed in their roles and the intensity of the game and its many parallel dynamics. Hence, a slower, reflective phase offers the opportunity for deeper insights.

Stage 3: Reflection on social processes and personal experiences:

Some days after the Asperitas game, the experiences are analyzed based on participants 'journal notes made during the game and from a theoretical standpoint using selected social and organizational psychology theories. During this post-game reflection phase, participants are asked to write a paper in groups. As each seminar is unique, the topics explored theoretically should be selected based on their importance in the seminar and tailored to student needs. Via feedback, participants engage with their experiences and theoretical concepts and develop an in-depth understanding of the social process of organizing, mirroring the philosophy of experiential learning with suggestions to make experience in the first place and then to use theory to gain a greater understanding..

Overall, Asperitas is unique as a serious game because it allows participants to explore the complexities and dilemmas of everyday work. This sandbox approach has no single prescripted way

of organizing. However, each action has consequences on the social level. Most of all, a lack of cooperation is always evident in the output performance of the organization. Through continuous feedback and reflection, participants learn how to make sense of social processes. They can widen their social and analytical skills repertoire by experimenting with behaviors without fearing real-world repercussions. In this sense, Asperitas is serious play at its best.

References:

Eberle, T. S., & Steyaert, C. (2013). OE lehren an der Universität. Organisations Entwicklung, 32(2), 54–63.

Kolb, D. A. (2015). Experiential learning: Experience as the source of learning and development (Second edition). Pearson Education, Inc.

Miles, R. H., & Randolph, W. A. (Eds.). (1979). The Organization game: A simulation in organizational behavior, design, change, and development: [participant's manual]. Goodyear Pub. Co.

Randolph, W. A., & Miles, R. H. (1979). The Organization Game: A Behaviorally Played Simulation. Exchange: The Organizational Behavior Teaching Journal, 4(2), 31–35. https://doi.org/10.1177/105256297900400209

How to deliver a serious game?

Once you've built a serious game or have identified a serious game fit for your needs, e.g. classroom or corporate training, it all comes down to delivery. Indeed, it is all in the delivery of the game that one can create value for the player.

Delivery roughly comprises of three key components:

- Technical: making sure the space in which the game is held is properly prepared and that game materials are ready to be used and shared disseminated.
- Players: participants are informed about all details and helped to get ready to play.
- Facilitators: they are prepared to deliver the game, including for the briefing and debrief.

Once the players are in the room it is up to the facilitators to guide them into and out of the serious game experience. They do so by briefing and then debriefing the game.

How to brief a serious game?

The purpose of a briefing is to get the participants into their role and ready to play.

Any serious game starts with a short briefing. In this briefing it is important to:

1. Explain why participants will play the game and talk about the learning objectives.
2. Explain the game's setup, setting, rules, teams and – possibly – individual roles.
3. Explain what is expected from participants and how to succeed in the game. Give an example.
4. Be clear on timekeeping and the role of the facilitator(s) during the game.
5. If necessary, brief the scenario: i.e. highlight the most important events and developments
6. Answer any questions that players may have.

A briefing should be short and snappy. The faster you can get people playing the better. A good briefing often takes less than 15 minutes. Keep in mind that not all questions have to be answered ordiscussed plenary before you begin.

Execution: play time!

After the game has been briefed, it is time to start the game. Participants will probably start strategizing, holding meetings, negotiating and anything else you advised them to do. So what is your role? You are responsible for the facilitation of the game. This means a few things:

1. You oversee the game in progress and make sure that the learning objectives continue to be met. This means that you might need to intervene if you see the game going in an unintended or ineffective direction. You might also keep score.
2. You should observe the behaviour of the participants in order to discuss personal learnings during the later debrief.
3. You should ensure that the "outside world" does not impact upon the game. Everything you can do to keep participants playing is – in principle and within limits – a good thing.

It might be the case that the game is too large or complex for a solo facilitator. If you have a team of facilitators, ensure you have a clear delineation of roles and responsibilities.

How to debrief a serious game?

The purpose of a briefing is to get the participants to reflect on their game experience in relation to its learning objectives. When engaging in real-life scenarios, this is usually the moment to facilitate the transfer of knowledge to the real world. Generally, a debriefing consists of the following elements:

1. Getting out of character (the role the player has taken) and their first reactions. Playing a serious game is an immersive and possibly emotional experience. Therefore, it is important to allow participants to let off steam and to create some emotional distance from their game experience.
2. A summary and reflection of key topics or events that took place during the game. This will give everyone a shared understanding of the situations they have experienced.
    a. This is especially important in games with large numbers in which not all players have experienced every part of the game.
    b. It creates a common ground for the following discussion.
    c. If available, data can be used to visualize and outline the game's progress.
3. Reflection on the game experiences vis-à-vis the learning objectives. This can be done in various forms: participants can share thoughts and experiences in plenary style, in a world café setting or individually. The goal is to connect the experiences and emotions of the individual player to the learning objectives of the larger group.to the level of the large group. It is important that everyone contributes and is heard.
    a. Dialogue is critical. Avoid lengthy presentations or orations by individuals.
    b. Ideally discussion between the players – even in smaller groups – are facilitated, this gives everyone an equal opportunity to share and profit from the experiences and insights of others.
    c. If available, data or visualizations can be used to give an objective context to the experiences and help the players to start a critical reflection about their perceptions and experiences..
    d. When playing or training for a real-life scenario, spend time transferring knowledge to the real-world domain. Questions such as "What does event X or discussion Y tell us about…" or "What can we do differently with regard to A, now that we know B or C …" can facilitate this thinking beyond the confines of the game – or out of the box, if you will.
4. Finish with a plenary reflection and summary led by the facilitator who connects the key takeaways of participants to the learning goals and applied (theoretical) concepts.

It is important to stress openness and dialogue without preconceptions or judgements. A debriefing should be a safe space, unhindered by seniority or status.

How playing a serious game helped me find my career path – By Cecilia Pellosniemi

The year was 2009. United Nations (UN) Secretary-General Ban Ki-moon, Israeli President Benjamin Netanyahu and Hezbollah Secretary-General Hassan Nasrallah were rushing out of the canteen with some wrapped sandwiches to keep them going for a long day of negotiations. Of course, this would never happen in real life, but once every year, this was the reality on the campus of University College Utrecht, an innovative honours college of the University of Utrecht, my undergraduate programme.

At the beginning of my course on Middle East politics, students would be assigned their roles and delegations for the highlight of the course: a Greater Middle East simulation. The simulation was based on a computer software, which allowed students to receive updates from the control team and take various actions, organize meetings and conferences with other delegations, or speak to the world press. As UN Secretary-General, my role was to convene diplomatic conferences and to serve as a broker between the various actors. As part of the preparations, I had to find out how all the actors perceived the UN and its role in the Middle East Peace Process (MEPP). Little did I know that the real-world Ban Ki-moon would become my boss a few years later.

Fast-forward to 2011. It was freezing cold in the suburbs of Warsaw, Poland. The students of the EU International Relations and Diplomacy Studies programme of the College of Europe in Bruges, Belgium, were spending two weeks at their sister campus. I was representing France in a simulation on the establishment of an EU Common Security and Defence Policy (CSDP) operation in a conflict setting. We negotiated the various operational planning documents such as the concept of operations (CONOPS) or operational plan (OPLAN), and we simulated the generation of the various civilian and military capabilities required for the new operation. Little did I know I would be involved in the start-up of a peacekeeping operation six years after this experience in Poland.

Today, in 2023, I have just completed a consultancy assignment related to the MEPP. I have worked on the Syrian conflict for over ten years, and over six of them with the UN. I have spent hours in the same room as Mr. Ban and Mr. Netanyahu. I have lived for several years in Lebanon, a country which is grappling with all the power dynamics of the Middle East, and experienced developments that only the wildest of simulations could have predicted. From 2016 to 2018, I worked for the (then) UN Department of Peacekeeping Operations (DPKO), and was sent to Haiti for the start-up of the UN Mission for Justice Support (MINUJUSTH), a peacekeeping operation. But how did my serious gaming experience prepare me for all of this?

In early June 2023, I delivered a keynote speech at the St. Gallen Strategy Days, and I told participants how serious gaming and conflict simulations had made a difference in my professional career. I have been able to use the simulation experience practically on a daily basis in at least three different ways.

Firstly, simulations have strengthened my conflict analysis skills. The scenarios of a simulation can have real-life foresight value: sometimes my superiors at the UN were wondering how, months in advance, I had been able to predict certain events. When you start seeing chains and patterns similar to those ofserious games, it becomes possible to see into the future. After my undergraduate studies, I was so intrigued by serious gaming that I decided to continue volunteering with simulations. I was mostly responsible for “mainstream mapping”, i.e. providing the overall analysis of the simulation to the participants. This analytical experience helped me predict scenarios, weigh different options and outcomes, and then design policy interventions that are risk-proof even when unlikely events occur.

Secondly, serious games have helped me understand the nature of various diplomatic actors. Sometimes, it may seem that simulations promote stereotypes or caricatures of world leaders. However, in general, actor profiles tend to capture much of the essence of world leaders and their political agendas. Through simulations and with the help of a professional control team, one learns to understand which actors would realistically communicate with one another (not Mr. Netanyahu and Mr. Nasrallah), who is a proxy, and who can act as a spoiler. One also learns how much – and how little – international organizations like the EU or the UN can actually influence global events.

Thus, thanks to my experience preparing actor profiles for simulations and analyzing them, I learned to understand how diplomatic actors think. When I worked at UN headquarters in New York, spending much of my time in the Security Council or the General Assembly, I would know most of the content of Member States' speeches already before hearing them. I would also understand why they made certain arguments when negotiating on rule of law and human rights issues which was my field at the time.

Thirdly, simulations are useful when advocating for a specific agenda in peace talks, including inclusivity, gender equality and women's rights. In order to understand how to influence international actors, one has to know when and where to strategically inject issues that might not be on the agenda as talks progress – or don't progress. In order to achieve good results, one has to know the history of the various actors, their long-term interests and related strategies, as well as their short-term tactics.

It is no surprise that gender equality and women's rights are not the first priority of the parties in the Syrian conflict. We in the UN Women's Syria Programme had to constantly strategize ways to make the priorities of Syrian women heard at the highest level of talks. We did so by identifying windows of opportunity. Furthermore, when we planned for activities, military and political developments and the COVID-19 pandemic would frequently render our plans impossible. In order to stay accountable to our programme participants and donors, it was necessary to quickly redesign activities when such changes occurred. In order to engage sensitively with members of different communities, it was vital to understand the history of their context.

One of the shortcomings of simulations – as with diplomacy more generally – is that they tend to be very state-centric. Some simulations, like the one in St. Gallen, include some civil society actors, but they rarely capture the diversity of civil society or society at large. Designing a serious game is a conscious effort. Moving forward, when building and organizing such games, it is essential, to start asking critical questions. Who is left out of the game? Is the scenario itself based on a proper gender analysis? Do we have enough women among the actor profiles? Do students prepare background papers that account for diversity within the societies they represent, or do they merely represent those in power? What does it mean for the progress and outcome of a simulation if minorities are ignored?

When students and other participants of serious games start to think about intersectionality and a more diverse range of actors, perhaps, over time, we are also able to address exclusion in diplomacy itself.

About the authors, resources and further readings

By embracing serious gaming and game-based learning, universities and businesses can harness the power of these immersive experiences to foster learning, skill development, and knowledge acquisition. This innovative approach offers a dynamic and engaging platform for exploring complex topics, enhancing decision-making abilities, promoting effective communication, and facilitating strategic planning. The integration of serious gaming into educational and professional settings represents a valuable opportunity to unlock the full potential of learners and professionals, equipping them with the skills and insights necessary to navigate real-world challenges.

By "playing", you gain practical experience and learn valuable skills in one or more of the following areas:

- Handling complexity effectively without becoming overwhelmed
- Mastering professional communication skills.
- Navigating complex decision-making processes, strategic planning, prioritization, and program design in conflict-affected states and scenarios involving violent crises.
- Acquiring conflict resolution skills through negotiation and mediation techniques.
- Developing crisis management abilities through risk analysis and stakeholder engagement.
- Enhancing your proficiency in active listening, public speaking, negotiation, diplomacy, team and information management, coalition building, and professional written communication.

To get you going with using serious games, we include a ready to use game as part of this handbook.

The fish game: a ready to use game about international cooperation & sustainable resource management

The fish game is a serious game about sustainable fishing and the responsible use of common goods (fish in the sea). It simulates the Tragedy of the Commons: a socio-political situation wherein individuals are incentivized to act in a way that may be at odds with the collective. This game can be used to teach about:

- International relations theory, such as realism, liberalism and constructivism
- The prisoner's dilemma
- Negotiation and diplomacy
- Rules-based order

The authors of this handbook use this game frequently to illustrate the power of serious gaming. It can be done with a minimum group size of 12 persons and takes roughly 30 minutes to two hours, depending on the depth of the debriefing.

All the instructions can be found here:
https://drive.google.com/file/d/1Faig7d_nNdingOlmjGGRJaERGZZM254x/view?usp=sharing

List of useful resources

Below you'll find a list or resources on serious gaming, including recommend reading, some videos and an overview of some universities that are known for their serious gaming initiatives.

1. Political Science & Education:

Austin, W. C., McDowell, T., & Sacko, D. (2006). Synergy across the curriculum: Simulating the institution of postwar Iraqi government. Journal of Political Science Education, 2(1), 89-112. https://www.tandfonline.com/doi/abs/10.1080/15512160500484127

Csajko, K., & Lindaman, K. (2011). Practice makes perfect: Engaging student-citizens in politics through theory and practice. Journal of Political Science Education, 7(1), 65-78. https://www.tandfonline.com/doi/abs/10.1080/15512169.2011.539917

Kolasa, T. (2012). Political science in the apolitical classroom. APSA 2012 Teaching & Learning Conference Paper. https://doi.org/10.2139/ssrn.1997668

Navarra, C. (2020). Serious Gaming for Climate Adaptation—Assessing the Potential and Challenges of a Digital Serious Game for Urban Climate Adaptation. MDPI. https://www.mdpi.com/2071-1050/12/5/1789

2. Simulations, Role-playing, & Games in Learning:

Balleck, B. J., & Van Tassell, D. H. (2008). Making the world more relevant for students: Role-playing exercises for the classroom. Politics and Policy, 32(2), 345-381. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1747-1346.2004.tb00187.x

Belloni, R. (2008). Role-playing international intervention in conflict areas: Lessons from Bosnia for Northern Ireland education. International Studies Perspectives, 9(2), 220-234. https://www.jstor.org/stable/44218543

Boyne, S. M. (2013). Crisis in the classroom: Using simulations to enhance decision-making skills. Journal of Legal Education, 62(2), 311-322. http://classic.austlii.edu.au/au/journals/LegEdDig/2013/27.html

Brynen, R., & Milante, G. (2013). Peacebuilding with games and simulations. Simulation & Gaming, 44(1), 27-35. https://www.researchgate.net/publication/258184361_Peacebuilding_With_Games_and_Simulations

Caffrey, M. B., Jr. (2019). On Wargaming. The Newport Papers, 43. https://digital-commons.usnwc.edu/newport-papers/43/

Invicta. (2018). How Did War Become a Game? [Video]. YouTube. https://youtu.be/-seIA9tukDs

McCarthy, M. M. (2014). The role of games and simulations to teach abstract concepts of anarchy, cooperation, and conflict in world politics. Journal of Political Science Education, 10(4), 400-413. https://www.tandfonline.com/doi/abs/10.1080/15512169.2014.947417?journalCode=upse20

Ministry of Defence United Kingdom. (2017). Wargaming Handbook: Developments, Concepts and Doctrine Centre. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/641040/doctrine_uk_wargaming_handbook.pdf

Ministry of Defence United Kingdom. (2021). Red Teaming Handbook Third Edition: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1027158/20210625-Red_Teaming_Handbook.pdf

Shaw, C. M. (2006). Simulating negotiations in a three-way civil war. Journal of Political Science Education, 2(1), 51-71. https://www.researchgate.net/publication/233194295_Simulating_Negotiations_in_a_Three-Way_Civil_War

US Army Combined Arms Center. (2018). The Red Team Handbook: The Army´s Guide to Making better Decisions Version 9.0: https://usacac.army.mil/sites/default/files/documents/ufmcs/The_Red_Team_Handbook.pdf

3. Learning Methodologies & Curriculum Design:

Dougherty, D. (2012). The maker movement. Innovations, 7(3), 11–14. https://ideas.repec.org/a/tpr/inntgg/v7y2012i3p11-14.html

Farashi, M. & Tajeddin, M. (2018). Effectiveness of teaching methods in business education: A comparison study on the learning outcomes of lectures, case studies and simulations. The International Journal of Management Education, 16(1). https://www.sciencedirect.com/science/article/abs/pii/S1472811717303294

Hmelo, C. E., Holton, D. L., & Kolodner, J. L. (2000). Designing to learn about complex systems. The Journal of the Learning Sciences, 9(3), 247–298. https://www.jstor.org/stable/1466843

Kolodner, J. L., Camp, P. J., Crismond, D., Fasse, B. B., Gray, J., Holbrook, J., Puntambekar, S., & Ryan, M. (2023). Problem-based learning meets case-based reasoning in the middle-school science classroom: Putting Learning by Design™ into practice. The Journal of the Learning Sciences, 12(4), 495–547. https://www.researchgate.net/publication/200773152_Problem-Based_Learning_Meets_Case-Based_Reasoning_in_the_Middle-School_Science_Classroom_Putting_Learning_by_Design_Into_Practice

4. Conflict, Peacebuilding, & Leadership:

Cavenagh, T. D. (1997). Establishing leadership studies in the liberal arts curriculum through conflict resolution education. Journal of Leadership Studies, 4(1), 132-139. https://www.proquest.com/docview/2299730922

Curran, D. (2017). Negotiation training for military peacekeepers. In More than fighting for peace? The Anthropocene: Politik—Economics—Society—Science (vol. 8). Springer, Cham. https://link.springer.com/book/10.1007/978-3-319-46305-6

Janke, E. M., & Dumlao, R. (2019). Developing communication repertoires to address conflict in community engagement work. Journal of Higher Education Outreach and Engagement, 23(1), 35-56. https://libres.uncg.edu/ir/uncg/f/E_Janke_Developing_2019.pdf

Mayer, B. (2018). Conflict resolution for the helping professions: Negotiation, mediation, advocacy, facilitation, and restorative justice (3rd ed.). Journal of Teaching in Social Work, 38(4), 446-450. https://www.researchgate.net/publication/328205022_Conflict_Resolution_for_the_Helping_Professions_Negotiation_Mediation_Advocacy_Facilitation_and_Restorative_Justice_3rd_ed

Salvador, E. (2014). Legislative theatre: Art for community conflict resolution. From Desires to Laws. http://journal-of-conflictology.uoc.edu/joc/en/index.php/journal-of-conflictology/article/view/vol5iss1-salvador.html

Suransky, L., Mans, U., & Shimshon, G. (2010). Training the Warrior-Diplomat: Enhancing Negotiation and Conflict Management Skills through Experiential Learning. International Negotiation, 15(2), 247-280. https://doi.org/10.1163/157180610X506974

Weerts, D. J., & Sandmann, L. R. (2010). Community engagement and boundary-spanning roles at research universities. The Journal of Higher Education, 81(6), 632-657. https://www.tandfonline.com/doi/abs/10.1080/00221546.2010.11779075

5. Recommended Games & Simulations:

Axis and Allies is a traditional grand strategy wargame that enables players to relive World War II https://boardgamegeek.com/boardgame/98/axis-allies

Diplomacy is a game about grand strategy and the power of diplomacy https://boardgamegeek.com/boardgame/483/diplomacy

Risk is a simple grand strategy wargame https://boardgamegeek.com/boardgame/181/risk

Memoire 44 is a historical wargame about D-Day. https://boardgamegeek.com/boardgame/10630/memoir-44

Magic the Gathering is a strategy card game that tests players their strategic skills. https://boardgamegeek.com/boardgame/463/magic-gathering

Bafa' Bafa' originally designed by the US government for soldiers to understand cross cultural differences, Bafa' Bafa'is now used in many sectors. https://en.wikipedia.org/wiki/BaFa%27_BaFa%27

Monopoly https://boardgamegeek.com/boardgame/1406/monopoly game about the workings of capitalism, specifically ownership.
History of the Russo-Ukrainian War. (n.d.). BoardGameGeek. https://boardgamegeek.com/boardgamefamily/58471/history-russo-ukrainian-war
Fischer, K. (2022, May 17). Serious Game for Russo-Ukrainian War - Design Diary. BoardGameGeek. https://boardgamegeek.com/thread/3074967/article/42733912#42733912
Country of Israel (boardgamefamily). (n.d.). BoardGameGeek. https://boardgamegeek.com/boardgamefamily/10630/country-israel/linkeditems/boardgamefamily
Fritz, R. (n.d.). Serious Game Library. BoardGameGeek. https://boardgamegeek.com/geeklist/319719/serious-game-library
Terraforming Mars—complex economic style multiplayer game. https://boardgamegeek.com/boardgame/167791/terraforming-mars
Pandemic – Cooperative game https://boardgamegeek.com/boardgame/30549/pandemic
Catan – resource gathering game. https://boardgamegeek.com/boardgame/30549/pandemic
Dungeons and Dragons – the original story telling role playing game https://boardgamegeek.com/boardgame/59946/dungeons-dragons-castle-ravenloft-board-game

Educational Institutions already working with serious games:

King´s College London Wargaming Network: The Wargaming Network is a research group within the School of Security Studies that aims to advance the theory and application of wargaming as a method of inquiry and as a method of learning and teaching. https://www.kcl.ac.uk/research/wargaming-network

- **McGill University**: A Canadian key institution with an outstanding platform about all aspects of serious gaming called Paxsims. https://paxsims.wordpress.com/

MIT Education Arcade. Their projects explore games that promote learning through authentic and engaging play. Available at: https://education.mit.edu/.

The Center for Game Science at the University of Washington. They aim to revolutionize learning through the discovery of new principles, the creation of novel curricula, the integration of innovative online platforms, and the pursuit of fundamental research in the design of effective serious games. Available at: http://centerforgamescience.org/.

The Engage Learning and Teaching - Serious Games. The University of Sussex provides information and examples of serious games as a tool for education. Available at: https://www.sussex.ac.uk/.

The Institute for Simulation and Training at the University of Central Florida. Offers various resources and research related to serious games and simulation for education. Available at: https://www.ist.ucf.edu/ .

The Utrecht Institute for Crisis and Conflict Simulation. A collaborative platform initiated by students and lecturers for the purpose of building serious games and simulations for higher education, in the field of security, international relations, and humanitarian affairs. Available at: https://www.uiccs.org .

University of Michigan - Gameful Learning Lab. The lab studies and designs playful systems that encourage a growth mindset and promote learning. Available at: https://www.si.umich.edu/research/gameful-learning-lab .

About the authors

The authors of this serious gaming handbook are convinced of the power of serious gaming. Their biographies can be found below:

Diederik Stolk
Diederik is an expert in serious game design. Since 2008 he builds serious games for government leaders, generals, captains of industry and many students. He is the Director of Goldsworthy, Stolk & Associates Ltd. Diederik also works as an expert in modelling and simulation for NATO's Civil-Military Cooperation (CIMIC) Center of Excellence. He frequently gives guest lectures on serious gaming and foresight at universities. During the COVID-19 pandemic, Diederik co-founded the Utrecht Institute for Crisis and Conflict Simulation.

Tim Goudriaan
Tim Goudriaan is a serious game designer and AI-expert. He is Chief Education Officer at educational platform Teachmehowtodothat and – together with Diederik – co-founder of the Utrecht Institute for Crisis and Conflict Simulation. Tim and his team train businesses and professionals in the applied use of serious games and AI – with a focus on (cyber)security, business geopolitics. Before this, Tim taught on war games and conflict simulations at Utrecht University and University College Utrecht for seven years. Thematically, he specializes in the history and politics of Middle East, Eastern Europe and East Asia.

Lucia Görke
Lucia Görke is the Global Head of People Analytics at Novelis. Previously she worked for various international companies in the data science space such as Nestlé and Allianz SE. Lucia also worked as a consultant in financial services. She holds a PhD from the University of Konstanz/New York University (NYU). Beyond her role at Novelis Lucia lectures at the University of St.Gallen at executive and bachelor level. Her expertise lies in leadership, crisis leadership and people data science and organisational behaviour.

Philippe Narval
Philippe Narval served as a founding director of SQUARE, dedicated to the future of learning & teaching at the University of St. Gallen between 2021 and 2023. Currently he leads an NGO in the area of disability & inclusion in Austria. He has co-organized serious games in cooperation with ENA (France), IIASA (Austria) and the Alpbach Forum. He holds university degrees from Kings College London and the University of Oxford. Between 2012 and 2020 he managed the European Forum Alpbach, Europe's foremost 'festival of ideas'. He writes and lectures on issues related to participatory leadership, transformation and learning innovation.

Fiona Lehmann
Fiona is a serious game designer with a focus on immersive learning. With a background in International Affairs, she understands the transformative potential of games for education and personal growth. Through her involvement in planning the St. Gallen Strategy Days, she has developed expertise in bridging the gap between game design and academia. Fiona is passionate about fostering strategic leadership skills through collaboration and creativity, aiming to empower more students with immersive learning experiences. Her next endeavour is to bring this knowledge to young adults in the Atelier du Futur program by Mobiliar insurance.

Niklas Koch
Niklas Koch is a dedicated young Serious Game Designer and an ambitious student at the University of St. Gallen. His journey in the field started in 2021 when he embarked on facilitating Serious Games at HSG, working with the dynamic team that birthed the St. Gallen Strategy Days. Upon the

conception of the Strategy Days, Niklas crafted the project plan and concept together with Fiona Lehmann. During the project, he served as a Game Designer and IT-Expert. Niklas is engrossed in an array of Serious Game initiatives, including the Atelier de Futur within Mobiliar Insurance. He continues to promote Serious Gaming as an innovative learning approach within the academic curriculum of the University of St. Gallen and beyond.

Fiona, Niklas, Lucia, Tim, Diederik & Philippe formed the core game development team of the St. Gallen Strategy Days.

Case study contributors
The following persons contributed to this handbook with case studies and insights.

Colonel Markus Reisner (Austrian Armed Forces), Major Robert Fritz (Austrian Armed Forces), Cecilia Pellisioniemi (Independent conflict resolution specialist), Lukas Zumbrunn (University of St. Gallen), Hugo Bezombes (Into Europe), Julia Nentwich (University of St. Gallen), Florian Schulz (University of St. Gallen)

Feedback
We extend our thanks to the following persons who provided valuable feedback to the handbook.

Arjan van Houwelingen (Hanze University of Applied Sciences, the Netherlands), Leonard Suransky (Webster University, Ghana), Hans Luijckx (Serious Game Designer)

IMPRINT

Publisher:

SQUARE

University of St. Gallen

Dufourst. 50

9000 St. Gallen

Switzerland

intendanz@unisg.ch

www.hsg-square.ch

Co-Authors:

Philippe Narval, Diederik Stolk, Tim Goudrian, Lucia Görke, Fiona Lehman & Niklas Koch