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# PARISHISHT

*..the essence*

SOUVENIR OF  
THE ANNUAL CONFERENCE OF  
INTERNATIONAL SIMULATION AND  
GAMING ASSOCIATION (ISAGA 2021)



**SHRI VAISHNAV VIDYAPEETH  
VISHWAVIDYALAYA, INDORE**

**Campus :** Indore - Ujjain Road, Indore - 453111 (M.P.), INDIA;

**City Office :** Shri Vaishnav Vidya Parisar, 177 Jawahar Marg, Indore (M.P.), INDIA

**Web Address :** <http://www.isaga2021.com/>

## ABOUT UNIVERSITY

Shri Vaishnav Vidhyapeeth Vishwavidyalaya is a private university established under Madhya Pradesh Niji Vishwavidyalaya (Sthapna Avam Sanchalan) Adhinyam in 2015 at Indore (India). The University has been established with a vision to be leader in shaping better future for mankind through quality education, training and research.

It shall pursue the mission to make difference in sustaining the growth of global societies by developing socially responsible citizens. Value based education being at the helm, the university is an activity driven institution.

## VISION

To create an educational environment that engages deep intellectual, moral and spiritual stimulation, thereby nurturing leadership

## MISSION

To pioneer a 'mentoring ' based education system with a culture of its own, rooted in Indian ethos and in tune with contemporary times; To impart learning through understanding- knowledge enrichment, skill development and positive attitude formation; To encourage innovative thinking with self discipline and social responsibility.

## VALUES

Endurance, Excellence, Fairness, Honesty and Transparency

## QUALITY POLICY

We, at Shri Vaishnav Vidyapeeth Vishwavidyalaya are committed to impart quality education by meeting stakeholder requirements and norms of regulatory authorities. We strive to continuously enhance the quality of our academic and research offering and effectiveness of teaching-learning process.



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**SHRI VAISHNAV VIDYAPEETH VISHWAVIDYALAYA**

**City Office:** Shri Vaishnav Vidya Parisar, 177, Jawahar Marg,  
South Rajmohalla, Indore-9 (M.P.)

**Campus:** Ujjain Road, Indore-453 111

विद्वत्त्वं च नृपत्वं च नैव तुल्यं कदाचन ।  
स्वदेशे पूज्यते राजा विद्वान् सर्वत्र पूज्यते ॥

Ruler ship and learning is not comparable any time. King gets respect from his own country where as learned person gets it from everywhere.

**INDsaga**



**NPO  
JASAG**



## **CORE COMMITTEE**

### **CHAIRPERSON**

**Dr. Upinder Dhar**

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### **COORDINATORS**

**Dr. Jigyasu Dubey**

**Dr. Vinod Dumblekar**

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### **TECHNICAL SUPPORT**

**Dr. Anand Rajavat**

## ISAGA 2021 Program Committee

- Dr. UpinderDhar, Conference Chair and Vice Chancellor, SVVV, Indore, India
- Dr. VinodDumblekar, Founder and CEO, MANTIS, India
- Dr. HeideLukosch, Chair of International Simulation and Gaming Initiative (ISAGA) and Associate Professor, Head of Applied Immersive Gaming Initiative (AIGI). University of Canterbury, Christchurch, New Zealand
- Dr. Sebastiaan Meijer, Professor, Vice Dean, KTH Royal Institute of Technology, Stockholm, Sweden
- Dr. Elysabeth Leigh, FuTureSearch, Australia
- Dr. Ivo Wenzler, Professor of Serious Gaming at the NHL Stenden University of Applied Sciences, The Netherlands
- Dr. Toshiko Kikkawa, Professor at Keio University, Tokyo, Japan
- Dr. Yusuke Toyoda, Professor, Institute of Disaster Mitigation for Urban Cultural Heritage Research and Development Institute of Regional Information, Japan
- Dr. Ramesh Sharma, Ambedkar University Delhi, New Delhi, India
- Dr. J. TuomasHarviainen, Associate Professor of Information Practices, Tampere University, Finland
- Dr. Elena Likhacheva, Researcher the Biological Department, M.V. Lomonosov Moscow State University, Russia
- Mr. Pieter van der Hijden, Management Consultant, Sofos Consultancy, Amsterdam, The Netherlands
- Dr. Pongchai Dumrongrojwatthana, Department of Biology, Faculty of Science, Chulalongkorn University, Bangkok, Thailand
- Professor Marcus Watson, Honorary Professor, Faculty of Health and Behavioural Sciences, University of Queensland, The Queensland
- Dr. Hidehiko Kanegae, Professor, School of Policy Science, Ritsumeikan University, Tokyo, Japan
- Dr. Sandeep Athavale, TCS, India
- Mr. David Wortley, Vice President of the International Society of Digital Medicine (ISDM) and Founder and CEO of 360 in360 Immersive Experiences, United Kingdom

## ISAGA 2021 Program Committee

### Local Organizing Committee

- Dr. UpinderDhar, Conference Chair and Vice Chancellor, SVVV, Indore, India
- Dr. Jigyasu Dubey, Conference Coordinator, and Head Department of IT – SVIIT, SVVV, Indore, India
- Dr. SantoshDhar, Dean, Faculty of Doctoral Studies and Research, SVVV
- Dr. Rajeev Shukla, Director, Shri Vaishnav School of Management, SVVV
- Dr. Anand Rajavat, Director, Shri Vaishnav Institute of Information Technology, SVVV
- Dr. TusharKantiMandal, Professor, Shri Vaishnav School of Management, SVVV
- Dr. Namit Gupta, Director, Shri Vaishnav Institute of Technology & Science, SVVV
- Dr. K. N. Guruprasad, Director, Shri Vaishnav Institute of Science, SVVV
- Dr. VinodDhar, Head, Institute of Vocational Studies, SVVV
- Dr. Uttam Sharma, Head, Department of Physics, SVVV
- Dr. Kavita Sharma, Coordinator, Shri Vaishnav Institute of Forensic Science, SVVV

## *From the Desk of Conference Chairman*

All of us know that International Simulation and Gaming Association is a prestigious professional body. It has successfully enabled the professionals having interest in simulation and gaming to remain connected, irrespective of the geographical location of a person. Annual International Conference, being a flagship activity of the Association, has served many objectives over the span of time. It was really a pleasant surprise and of course an honour to have been invited by the Executive Board during ISAGA 2019 at Warsaw in Poland to organize the conference in India in September 2020.

Covid-19 disrupted all kinds of businesses across the globe. However, technology came to everybody's rescue, because all activities could be shifted from offline mode to online mode within a few weeks after Covid-19 was declared as pandemic by the World Health Organization. The culture of organizing webinars commenced for getting educated and also for having interface with subject experts.

The theme of the 52nd Annual Conference of International Simulation and Gaming Association is Gaming, Simulation and Innovations: Challenges and Opportunities, which is quite timely and contemporary. Game science refers to the study of games using various tools and assumptions of natural science, social science, and engineering disciplines. It is interdisciplinary in the sense that commonly used tools are relied-upon assumptions. Within the values of mainstream science, effects exist in the real world and the goal of a scientist is to discover, measure, and predict these effects. The conference has attracted number of deliberations, which would throw light on various aspects of simulation and gaming. The abstracts compiled as PARISHISHT, which means the essence gives fairly a good idea about the quality and extent of the contributions.

I am thankful to the fraternity associated with ISAGA for having trusted us and allowing us to shift the conference from September 2020 to September 2021, and that too on the virtual mode. I would like to thank all the keynote and plenary speakers as well as authors of the papers for their contribution in making ISAGA 2021 possible. I would specially like to mention Dr. Sebastiaan Meijer and Dr. HeideK. Lukosch for having stood by us and extended support throughout the period of planning, and also understanding the minute details related to organizing ISAGA 2021.

1<sup>st</sup> September, 2021

**Dr. Upinder Dhar**  
Vice Chancellor

*From the Desk of Chairperson of the  
Executive Board of ISAGA*

Dear participants, a warm welcome to the 52th International Simulation and Gaming Association's – ISAGA – conference 2021!

The theme of this year's conference is "Gaming, Simulation and Innovations: Challenges and Opportunities". The organizing committee at the Shri Vaishnav Vidyapeeth Vishwavidyalaya (University) in Indore, India, chaired by Dr. UpinderDhar, faced many challenges in preparing the conference that was initially planned for 2020. Luckily, with all their dedication and determination to offer a place for the ISAGA community to meet and exchange knowledge and ideas, they were able to turn these challenges into opportunities.

The years 2020 and 2021 were a challenging time not only for the ISAGA community. Many of us had to change the ways we work. Workplaces changed from offices to living rooms. Care-giving and work melted together, meaning a heavy load for those providing care for family members. Face-to-face game play sessions were no longer possible. However, our community showed to be a very resilient one. New modes of remote working and online facilitation of games were invented. Some examples found their way into presentations at this year's ISAGA conference. The ISAGA community turned challenges into opportunities, too. The global pandemic forced us to explore and reinvent ways of developing and deploying games and simulations. We learned how to use cameras, break-out rooms, and written instructions to facilitate games that were made for in-person meetings. We invented effective ways to turn physical games into digital tools. This way, we embraced the opportunity to make many of our tools more inclusive, and accessible for a larger group of participants. Virtual reality found its way in many homes, and has become more familiar to a broader group of users. The games industry continued to grow, with digital games offering ways to escape an uncertain reality, and to connect players when physical games turned into spaces no longer accessible. This uptake of technology and positive influence of games in general is a big opportunity for Simulation Gaming, and to increase its acceptance in organizations and society.

The constructive knowledge exchange that is typical for ISAGA conferences can support this development. We were all looking forward to meet each other in person, chat with old friends, and make new friends. Enjoy the hospitality of the organizers of the ISAGA conference in Indore, and enjoy the beauty of India. Now, we all have to accept the challenge of a new mode for the ISAGA conference, and turn it into an opportunity to embrace technology supporting us to meet when we cannot travel through physical space. The hospitality and organization of the ISAGA conference by the committee at the Shri Vaishnav Vidyapeeth Vishwavidyalaya (University) in Indore, India, will help us to connect and collaborate across physical borders.

I wish all participants a fruitful and interactive 52nd ISAGA conference 2021, to gather a lot of new knowledge, and to further build our resilient and innovative community.

13<sup>th</sup> August, 2021

**Dr. Heide Lukosch**  
Christchurch, New Zealand

**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore (M. P.), India**  
**52<sup>nd</sup> Annual Conference of International Simulation and Gaming Association**  
**(ISAGA 2021) Virtual Conference**  
**Conference Schedule**

<b>Date:- September 06, 2021 (Monday)</b>		<b>Day: 1</b>		
9:30 a.m. to 10:50 a.m. (IST)	<b>Inaugural Ceremony</b>	9:30 a.m. - 9:33 a.m.	Lighting of Lamp and Sarswati Vandana	
		9:33 a.m. - 9:35 a.m.	Welcome of Guests	
		9:35 a.m. - 9:42 a.m.	About Conference by <b>Dr Upinder Dhar</b> , Conference Chairperson, and Vice Chancellor of SVVV, Indore, India	
		9:42 a.m. - 9:47 a.m.	Welcome Address by <b>Shri Purushottamdas Pasari</b> , Chancellor, SVVV, Indore, India	
		9:47 a.m. - 9:52 a.m.	Address by <b>Dr. Sebastiaan Meijer</b> , Immediate Past Chairperson - ISAGA EB and Professor, Vice Dean, KTH Royal Institute of Technology, Stockholm, Sweden	
		9:52 a.m. - 9:57 a.m.	Address by <b>Dr. Heide Lukosch</b> , Chairperson - ISAGA EB and Associate Professor, Head of Applied Immersive Gaming Initiative, University of Canterbury, Christchurch, New Zealand	
		9:57 a.m. - 9:59 a.m.	Release of Webinars Booklet " <b>PRATITI</b> " by the Chief Guest	
		9:59 a.m. - 10:01 a.m.	Release of Conference Souvenir " <b>PARISHISHTA</b> " by the Chief Guest	
		10:01 a.m. - 10:04 a.m.	Introduction and Citation of Chief Guest by <b>Dr. Jigyasu Dubey</b> , Coordinator, ISAGA 2021	
		10:04 a.m. - 10:45 a.m.	Keynote Address by Chief Guest <b>Dr Sivasailam Thiagarajan (Thiagi)</b> , Resident Mad Scientist at The Thiagi Group, Bloomington, Indiana, United States	<b>Secrets of Effective and Engaging Games and Simulations</b>
		10:45 a.m. - 10:50 a.m.	Vote of Thanks by <b>Dr. Vinod Dumblekar</b> , Founder and CEO - MANTIS, New Delhi, India	
<b>Rapporteur : Dr. Saurabh Jain, Professor, SVICA, SVVV, Indore, India</b>				
10:50 a.m. - 10:55 a.m. (IST)	<b>Comfort Break</b>			
10:55 a.m. to 11:25 a.m. (IST)	<b>Remembrance of Late Dr. Songsri Soranastaporn, Thai Simulation and Gaming Association: Dr Natthapong Chanyoo, Dr Natsarun Leesirisearn, Ms Panida Nootawee, Dr. Panicha Nitisakunwut, Dr Pongchai Dumrongrojwathana, Dr. David Crookall, Dr. Vinod Dumblekar</b>			
<b>Rapporteur : Mrs. Rani Singh, Assistant Professor, SVIIT - SVVV, Indore, India</b>				
11:25 a.m. to 11:30 a.m. (IST)	<b>Comfort Break</b>			
11:30 a.m. to 12:45 p.m. (IST)	<b>Technical Session - 1 (Academic Track)</b>			
	<b>Session Chair: Dr. Santosh Dhar, Dean, Faculty of Doctoral Studies &amp; Research-SVVV, Indore, India</b>			
	<b>Rapporteur: Dr. Raksha Chauhan, SVVV, Indore, India</b>			
	<b>ID: 117</b>	Zooming in on the game experience of facilitated tabletop games in an online environment	Harmen aan het Rot, Rens Kortmann, Gerdien de Vries, Alexander Verbraeck, May Kooreman, Birgit de Bruin	
	<b>ID: 120</b>	Towards Virtual Reality Gaming for Children with ADHD in Formal Education	Meike Belter, Heide Karen Lukosch	

## Conference Schedule

11:30 a.m. to 12:45 p.m. (IST)	<b>ID: 122</b>	“Risk management can actually be fun” - Using the serious Cards for Biosafety game to stimulate proper discussions about biosafety	Maria Freese, Simon Tiemersma, Alexander Verbraeck	
	<b>ID: 125</b>	Designing Business Game by Student–Teacher Collaboration	Ryoju Hamada, Tomomi Kaneko, Masahiro Hiji	
	<b>ID: 133</b>	Gamifying Serious Games: modding modern board games to teach game potentials	Micael da Silva Sousa	
	<b>ID: 164</b>	Effect of Learning Style on Students Learning Experience of Marketing Management Game	Rajeev Shukla, Monica Sainy	
	<b>ID: 137</b>	Natural security gaming in the transition towards regenerative economy: A review	Vaisakh Yesodharan, Feng Weiyu, Zaid A Almuala, Eric G Heckenauer Barrón, Shoeib Faraji Abdolmaleki, J. Julio Fernández Rodríguez, Pastora M Bello Bugallo	
	<b>ID: 139</b>	The co-design of educational video games	Daniel Kleffmann, Igor Mayer, Thomas Buijtenweg	
12:45 p.m. to 01:30 p.m. (IST)	<b>Break</b>			
1:30 p.m. to 02:30 p.m. (IST)	<b>Workshop 1</b>	<b>Topic</b> Effectiveness of Intensive Gaming Contest	<b>Workshop 2</b>	<b>Topic</b> The Online Game – Free, Friendly and Fun
		<b>Resource Persons</b> Ryoju Hamada, Tomomi Kaneko, Masahiro Hiji		<b>Resource Person</b> Dr. Vinod Dumblekar
		<b>Rapporteur: Dr. Roopa Shinde</b> , Associate Professor, SVISHA-SVVV, Indore, India		<b>Rapporteur: Dr. Pamela Neema</b> , Assistant Professor, SVISHA-SVVV, Indore, India
02:30 p.m. - 2:35 p.m. (IST)	<b>Comfort Break</b>			
2:35 p.m. to 04: 00 p.m. (IST)	<b>ISAGA Assembly Meeting - 1</b> <b>Executive Board Members + All ISAGA Members</b>			
<b>Date:- September 07, 2021 (Tuesday)</b>			<b>Day: 02</b>	
9:30 a.m. to 10:15 a.m. (IST)	<b>Keynote</b>	Introduction and Citation of the Keynote Speaker by <b>Dr. Anand Rajavat</b> , Director, SVIIT-SVVV, Indore, India		
		<b>Dr. Sebastiaan Meijer</b> , Professor, Vice Dean KTH Royal Institute of Technology, Stockholm, Sweden	<b>Gaming as a Frame for a New Era of Systems Science</b>	
		<b>Rapporteur: Dr. Rishu Roy</b> , Associate Professor, SVSM-SVVV, Indore, India		
10:15 a.m. - 10:20 a.m. (IST)	<b>Comfort Break</b>			
10:20 a.m. to 11:50 a.m. (IST)	<b>Plenary Session:-I</b> <b>Session Chair: Dr. Heide Lukosch</b> , Associate Professor, Head of Applied Immersive Gaming Initiative (AIGI). University of Canterbury, Christchurch, NEW ZEALAND <b>Rapporteur: Dr. Rishu Roy</b> , Associate Professor, SVSM-SVVV, Indore, India			
	<b>Speaker 1:</b>	<b>Dr. Toshiko Kikkawa</b> , Professor, Keio University, Tokyo, Japan	<b>Simulation &amp; Gaming: Past, Present, and Future</b>	
	<b>Speaker 2:</b>	<b>Dr. Ramesh Sharma</b> , Ambedkar University Delhi, New Delhi, India	<b>Gamified Framework for Educational Simulations in STEM Courses</b>	
	<b>Speaker 3:</b>	<b>Mr. Jegatheeswaran Manoharan</b> , Thought Catalyst, Team Effectiveness Consultant, Business Simulation Designer, Selangor, Malaysia	<b>Framework for Testing Simulations for Better Empathy in Design</b>	

## Conference Schedule

11:50 a.m. - 11:55 a.m. (IST)	<b>Comfort Break</b>			
11:55 a.m., to 01:10 p.m. (IST)	<b>Technical Session - 2 (Academic Track)</b> <b>Session Chair: Dr. Rajeev Shukla, Director, SVSM-SVVV, Indore, India</b> <b>Rapporteur: Dr. Reena Gupta, SVVV, Indore, India</b>			
	<b>ID: 138</b>	Bring joy to gamers: adding renewable energy alternative through sustainable development indicators	Shoeb Faraji Abdolmaleki, Vaisakh Yesodharan, Pastora M Bello Bugallo	
	<b>ID: 140</b>	Frame game as teaching methodology in Resilience Engineering education: the case of RElastiCity	Geertje Bekebrede, Carissa Champlin	
	<b>ID: 141</b>	Not for profit - a case study of "Social Economy" simulation game	Marcin Łaczyński	
	<b>ID: 144</b>	An Estimation Approach of Economic Impacts of Nankai Trough Earthquake: Based on Estimating Production Function at Municipal level	Mingji Cui, Hiroyuki Shibusawa	
11:55 a.m., to 01:10 p.m. (IST)	<b>ID: 146</b>	The Impact of Changing a Games Mood Based on Real-Time Biometric Measurements on the Player Experience	Helena Polman	
	<b>ID: 153</b>	Cynefin Domains of knowledge and boundaries in Simulation and Experience-based Education	Elyssebeth Ellen Leigh, Laurie Levesque	
	<b>ID: 165</b>	Intercultural Dialogue and Cross-Cutting Professional Training through Simulation and Virtual Exchange in Education	María Laura Angelini, Rut Muñoz	
	<b>ID: 166</b>	Factors of the Attributes of Team Players A Study of Engineering Students in India	Santosh Dhar, Upinder Dhar, Anand Rajavat	
01:10 p.m. to 01:55 p.m. (IST)	<b>Break</b>			
1:55 p.m. to 03:25 p.m. (IST)	<b>Workshop 3</b>	<b>Topic</b> How to align your organization with the U.N. Sustainable Development Goals (SDGs) <b>Resource Person</b> Pieter van der Hijden	<b>Workshop 4</b>	<b>Topic</b> Intercultural Comparison of Facilitating Simulation Games <b>Resource Persons</b> Birgit Zuern, Maria Freese, Elyssebeth Leigh, Elena Likhacheva,
	<b>Rapporteur: Dr. Anu Ukande</b> , Assiatant Professor, SVIFA-SVVV, Indore, India		<b>Rapporteur: Dr. Shweta Agrawal</b> , Assiatant Professor, SVIS-SVVV, Indore, India	
3:25 p.m. to 3:30 p.m. (IST)	<b>Break</b>			
03:30p.m. to 03:45 p.m. (IST)	<b>VIRTUAL TOUR OF INDIA</b>			

## Conference Schedule

<b>Date:- September 08, 2021 (Wednesday)</b>			<b>Day: 03</b>	
9:30 a.m. to 10:15 a.m. (IST)	<b>Keynote :</b>	Introduction and Citation of the Keynote Speaker by <b>Dr. Uttam Sharma</b> , Head, Department of Physics, SVVV, Indore, India		
		<b>Dr. Ivo Wenzler</b> , Professor of Serious Gaming at the NHL Stenden University of Applied Sciences, The Netherlands	<b>Take 5 revisited: The Serious Gaming Lemniscate</b>	
		<b>Rapporteur: Dr. Namrata Jain</b> , Assistant Professor, SVSM-SVVV, Indore, India		
10:15 a.m. - 10:20 a.m. (IST)	<b>Comfort Break</b>			
10:20 a.m. to 11:50 a.m. (IST)	<b>Plenary Session:-2</b>			
	<b>Session Chair: Dr. Vinod Dumblekar</b> , CEO and Founder, MANTIS, New Delhi, India			
	<b>Rapporteur: Dr. Namrata Jain</b> , Assistant Professor, SVSM-SVVV, Indore, India			
	<b>Speaker 1:</b>	<b>Dr. J. Tuomas Harviainen</b> , Associate Professor of Information Practices, Tampere University, Finland	<b>Five Decades of ISAGA and Sustainability: From Education to Innovation</b>	
	<b>Speaker 2:</b>	<b>Dr Karen Blackmore</b> , Associate Professor in Information Technology at the University of Newcastle, Australia	<b>More Than We Think: The Power of Simulation and Technology to Deliver Learning</b>	
	<b>Speaker 3:</b>	<b>Dr. Elena Likhacheva</b> , Researcher the Biological Department, M.V. Lomonosov Moscow State University, Russia	<b>Simulation &amp; Gaming: understanding ourselves</b>	
11:50 a.m. - 11:55 a.m. (IST)	<b>Comfort Break</b>			
11:55 a.m. to 01:10 p.m. (IST)	<b>Technical Session - 3 ( Tracks: - GS Design &amp; Design Science and GS Learner Behaviour)</b>			
	<b>Session Chair: Dr. K. N. Guruprasad</b> , Director, SVIS-SVVV, Indore, INDIA			
	<b>Rapporteur: Rupali Bhartiya</b> , SVVV, Indore, India			
	<b>ID: 129</b>	Pleasures in Games: Conceptual Analysis of Fun and its Constructs	Malay Dhamelia, Girish Dalvi	
	<b>ID: 147</b>	Mass Casualty Incidents- preparing paramedics for the unsafe and unexpected	Pip Lyndon-James, Elysebeth Leigh	
	<b>ID: 148</b>	An Auction Game for Railway Capacity Allocation	Bill Roungeas, Hans Dahlberg, Emanuel Broman, Fredrik Lundström, Sebastiaan Meijer	
11:55 a.m. to 01:10 p.m. (IST)	<b>ID: 154</b>	On shattering the magic circle: The use of games as tools for public policy	Bharath M Palavalli, Sruthi Krishnan	
	<b>ID: 118</b>	Unpacking and Disclosing the Reasoning behind "A Structured Instruction Improves Team Performance"	Mieko Nakamura	
	<b>ID: 152</b>	Development of the player satisfaction scale - A factor-analytic study	Vinod Dumblekar, Jigyasu Dubey, Upinder Dhar	
01:10 p.m. to 01:55 p.m. (IST)	<b>Break</b>			
1:55 p.m. to 03:25 p.m. (IST)	<b>Workshop 5</b>	<b>Topic</b> Mission Everest - A virtual simulation for high performance teams <b>Resource Persons</b> Ami Kotak, Himani Chandorkar	<b>Workshop 6</b>	<b>Topic</b> How to involve your organization in tendering procedures for SDG projects <b>Resource Person</b> Pieter van der Hijden
		<b>Rapporteur: Dr. Monica Sainy</b> , Associate Professor, SVSM-SVVV, Indore, India		<b>Rapporteur: Dr. Neetu Kataria</b> , Associate Professor, SVIS-SVVV, Indore, India
03:25 p.m to 03:30 p.m. (IST)	<b>Break</b>			
03:30 p.m. to 04:00 p.m. (IST)	<b>Cultural Program</b>			

## Conference Schedule

<b>Date:- September 09, 2021 (Thursday)</b>		<b>Day: 04</b>	
9:30 a.m. to 10:15 a.m. (IST)	<b>Keynote:</b>	Introduction and Citation of the Keynote Speaker by <b>Dr. Namit Gupta</b> , SVVV, Indore, India	
		<b>Mr. Anuj Garg</b> , Innovation Leader, IAM, Global Technology Services, IBM India	<b>Blockchain in the Gaming Industry</b>
		<b>Rapporteur: Ar. Vishal Yardi</b> , Director, SVICA, SVVV, Indore, India	
10:15 a.m. - 10:20 a.m. (IST)	<b>Comfort Break</b>		
10:20 a.m. to 11:50 a.m. (IST)	<b>Plenary Session:-3</b> <b>Session Chair: Dr. Paola Rizzi</b> , Professor of Techniques of Urban and Regional Planning at University of Sassari, ITALY <b>Rapporteur: Ar. Vishal Yardi</b> , Director, SVICA, SVVV, Indore, India		
	<b>Speaker 1:</b>	<b>Ms. Marieke de Wijse-Van Heeswijk</b> , Radboud University Nijmegen, Management Sciences, section Intervention Methodology, The Netherlands	<b>Effects of Learning Interventions in Simulation Games</b>
	<b>Speaker 2:</b>	<b>Mrs. Christine Goonrey</b> , Writer and community volunteer, Australia	<b>Scenarios that Create Memorable Engagement</b>
	<b>Speaker 3:</b>	<b>Mr. Bharath M Palavalli</b> , Co-Founder at Fields of View and Ashoka Fellow, India	<b>Is culture important to design simulation games?</b>
11:50 a.m. - 11:55 a.m. (IST)	<b>Comfort Break</b>		
11:55 a.m. to 01:10 p.m. (IST)	<b>Technical Session - 4 (Tracks : - GS Facilitation, GS Serious games, GS Industrial applications, GS Tools and technology, and GS and the U. N. Sustainable Development Goals (SDGs))</b> <b>Session Chair: Dr. Tushar Kanti Mandal</b> , Coordinator, SVSL-SVVV, Indore, India <b>Rapporteur: Dr. Abhishek Singh Rathore</b> , SVVV, Indore, India		
	<b>ID: 121</b>	WHE SimEx: Facilitating Training Simulations for Health Emergency Personnel	Heini Utunen, J. Tuomas Harviainen, Gaya M. Ganhwage
	<b>ID: 131</b>	Between urban resilience and serious gaming. Applying games for policy implementation	Weronika Szatkowska, Marcin Wardaszko
	<b>ID: 136</b>	Knowledge sharing game for sustainable restaurant management	Mizuho Sato, Hajime Mizuyama
	<b>ID: 123</b>	Why do people play mobile games?	Małgorzata Ćwil, Marcin Wardaszko, Kajetan Dąbrowski
	<b>ID: 130</b>	A Participatory Simulation Framework for Agent-Based Model Validation in Air Traffic Management	Bill Roungas, Lucia Herrero Alvarez, Sebastiaan Meijer
	<b>ID: 127</b>	Level generation and style enhancement -- deep learning for game development overview	Piotr Migdał, Bartłomiej Olechno, Błażej Podgórski
	<b>ID: 135</b>	Experimental Research: The Simulation-Based Learning Effectiveness in Educating for Sustainability	Uyen-Phuong Nguyen, Philip Hallinger

## Conference Schedule

01:10 p.m. to 01:55 p.m. (IST)	<b>Break</b>			
1:55 p.m. to 03:25 p.m. (IST)	<b>Workshop 7</b>	<b>Topic</b> diversiCASTE-RACE-SHUN: addressing toxic masculinity <b>Resource Person</b> George Francis Simons	<b>Workshop 8</b>	<b>Topic</b> Evaluation and Measurement in Simulation Games <b>Resource Persons</b> Elizabeth Tipton, Elyssebeth Leigh, Birgit Zürn, Marieke de Wijse, Elena Likhacheva, Richard
	<b>Rapporteur: Mrs. Isha Chopara</b> , Assistant Professor, SVIIT-SVVV, Indore, India		<b>Rapporteur: Dr. Aditi Veda</b> , Assistant Professor, SVSM-SVVV, Indore, India	
03:25 p.m to 03:30 p.m. (IST)	<b>Break</b>			
3:30 p.m. to 05: 00	<b>ISAGA Assembly Meeting - II</b>			
<b>Date:- September 10, 2021 (Friday)</b>			<b>Day: 05</b>	
9:30 a.m. to 11:00 a.m. (IST)	<b>Workshop 9</b>	<b>Topic</b> Gameplay of the serious Cards for Biosafety game <b>Resource Persons</b> Simon Tiemersma, Doris Boschma, Maria Freese	<b>Workshop 10</b>	<b>Topic</b> The Collectors - A Game based Workshop on Virtual Teams Collaboration <b>Resource Persons</b> Jagoda Gandziarowska-Ziolecka, Joanna Średnicka, Filip Tomaszewski, Nathan Berry
	<b>Rapporteur: Mrs. Richa Jain</b> , Assistant Professor, SVIIT-SVVV, Indore, India		<b>Rapporteur: Mrs. Sonam Mehta</b> , Assistant Professor, SVIIT-SVVV, Indore, India	
11:00 a.m. - 11:05 a.m. (IST)	<b>Comfort Break</b>			
11:05 a.m. to 11:50 a.m. (IST)	<b>Roundtable</b>			
	<b>Speaker 1:</b>	<b>Dr. Elyssebeth Leigh</b> , University of Technology Sydney, Australia	<b>Cultures, Contexts and Facilitating Learning</b>	
	<b>Speaker 2:</b>	<b>Dr. Willy Kriz</b> , Professor, University of Applied Sciences Vorarlberg, Department of Management and Social Sciences Hochschulstr, Dornbirn, Austria		
	<b>Speaker 3:</b>	<b>Dr. Bhimaraya Metri</b> , Director, IIM, Nagpur, India	<b>Gaming Simulations: The Pedagogy of Future Learning</b>	
	<b>Speaker 4:</b>	<b>Mr. Bharath M Palavalli</b> , Co-Founder at Fields of View and Ashoka Fellow, India	<b>How can Simulations and Games adapt for the future?</b>	
11:50 a.m. - 11:55 a.m. (IST)	<b>Comfort Break</b>			
11:55 a.m. - 12:10 p.m. (IST)	<b>Plantation of Tree as a Symbol of Memory</b>			
		12:10 p.m.. - 12:20 p.m.	Report Presentation by <b>Dr. Jigyasu Dubey</b> , Coordinator, ISAGA 2021	
		12:20 p.m. - 12:30 p.m.	Concluding Remarks by <b>Dr Upinder Dhar</b> , Conference Chairperson and Vice Chancellor of SVVV, Indore, India	
		12:30 p.m. - 12:32 p.m.	Virtual Transfer of Mascot	

## Conference Schedule

12:10 p.m. to 12:58 p.m. (IST)	<b>Valedictory Session</b>	12:32 p.m. - 12:42 p.m.	Address by <b>Casper Hartevelde</b> , Northeastern University, Boston, USA
		12:42 p.m. - 12:52 p.m.	Address by <b>Dr. Heide Lukosch</b> , Chairperson - ISAGA EB and Associate Professor, Head of Applied Immersive Gaming Initiative, University of Canterbury, Christchurch, New Zealand
		12:52 p.m. - 12:58 p.m.	Vote of Thanks by <b>Dr. Vinod Dumblekar</b> , Founder and CEO - MANTIS, New Delhi, India
		<b>Rapporteur : Dr. Kavita Sharma</b> , Coordinator, SVIFS, SVVV, Indore, India	

<b>Poster Presentation</b>			
<b>POSTERS WILL BE AVAILABLE ONLINE THROUGHOUT THE CONFERENCE</b>	<b>ID: 124</b>	<b>Why do People Play Mobile Games?</b>	Małgorzata Ćwil, Marcin Wardaszko, Kajetan Dąbrowski
	<b>ID:155</b>	<b>Cantor's World</b>	Bharath M Palavalli, Harsha K, Ursula Uday
	<b>ID:156</b>	<b>Participatory Urban Planning for Diverse Contexts</b>	Bharath M Palavalli, Sruthi Krishnan, Ursula Uday
	<b>ID:157</b>	<b>Whose Rights?</b>	Tarun Mugunthan, Rishabh Jain, Sruthi Krishnan, Vaibhav Dutt, Bharath M Palavalli
	<b>ID: 158</b>	<b>Hanigalu</b>	Yashwin Iddya, Srinidhi Santosh, Harsha K, Bharath M Palavalli
	<b>ID: 159</b>	<b>Developing Virtual Models of Industrial Robotics Using Game Engines</b>	Bharath M Palavalli, Harsha K
	<b>ID: 161</b>	<b>Made to Order</b>	Sruthi Krishnan, Vaibhav Dutt, Bharath M Palavalli
	<b>ID: 162</b>	<b>Rubbish!/Kaasu-kasa/Kaasu-kuppai</b>	Bharath M Palavalli, Sruthi Krishnan
	<b>ID: 163</b>	<b>Stake: A Game on Pastoralism</b>	Bharath M Palavalli, Sruthi Krishnan
	<b>ID: 168</b>	<b>Perceived self-efficacy of students in a business simulation game</b>	Vinod Dumblekar, Upinder Dhar
	<b>ID: 169</b>	<b>Interpersonal Competitiveness in a Cohesive Team: Insights from a Business Simulation Game</b>	Vinod Dumblekar, Upinder Dhar
	<b>ID: 170</b>	<b>Learning from a Business Simulation Game: A Factor-Analytic Study</b>	Vinod Dumblekar, Upinder Dhar
	<b>ID: 171</b>	<b>Kattu-Kathe: Using Games to Challenge the Narrative of Urban Migration</b>	Bharath M Palavalli, Vaibhav Dutt
	<b>ID: 172</b>	<b>Interpersonal Competitiveness - A Study of Simulation Game Participants' Behaviour</b>	Vinod Dumblekar

Day: 1

Date: September 06, 2021 (Monday)

## Keynote

### Secrets of Effective and Engaging Games and Simulations

**Sivasailam Thiagarajan,**

*Resident Mad Scientist at the Thiagi Group, Bloomington,  
Indiana, United States*

**Abstract :** The facilitator, Thiagi, has 92 years of experience (including his previous lifetime) in designing and delivering games and simulations. In this session, he will share powerful guidelines to conduct training on teambuilding that will produce engaging interaction and effective results. Many of these guidelines will challenge the conventional wisdom in game design and delivery. At the end of this hands-on session, you will be ready to apply a set of surprising suggestions such as

- Facilitating a game is safer than making a presentation.
- Avoid careful preparation and diligent rehearsals.
- Encourage both cooperation and competition among the participants.
- Disruptive behaviors of the participants provide valuable feedback.
- The more things go wrong, the more memorable the activity becomes.
- Most experiential activities just provide an excuse for debriefing.
- Any activity could be debriefed but you should not debrief certain types of activities.

Thiagi's session will be reinforced by a hefty reference manual.

*It is better to live your own destiny imperfectly than to live an  
imitation of somebody else's life with perfection.*

*-Bhagwad Gita*

## **Technical Session-1 (Academic Track)**

**Session Chair:** Santosh Dhar

Dean, Faculty of Doctoral Studies and Research, SVVV, Indore, India

**Paper ID: 117**

## **Zooming in on the Game Experience of Facilitated Tabletop Games in an Online Environment**

*Harmenaan het Rot<sup>1</sup>, Rens Kortmann<sup>1</sup>, Gerdien de Vries<sup>1</sup>,  
Alexander Verbraeck<sup>1</sup>, May Kooreman<sup>2</sup>, Birgit de Bruin<sup>1, 2</sup>*

<sup>1</sup>Delft University of Technology, Faculty of Technology, Policy, and Management,  
Department of Multi-Actor Systems, Delft, The Netherlands

<sup>2</sup>Stichting MaySways, Aerdenhout, The Netherlands

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**Abstract :** Facilitated tabletop games are typically designed for a physical environment. However, during the COVID-19 pandemic, lockdown measures prevented people from gathering. Similar to business meetings, facilitated tabletop games could be played in a mediated environment using a video connection instead. However, it is unknown how this affects the player experience. The authors addressed this problem through a mixed-method study comparing physical and mediated game sessions. The player experience was measured using a questionnaire. Also, qualitative observations were made and documented. Eleven game sessions of 1.5 hours were studied: three in a physical environment and eight in a mediated environment. Forty-four players completed a questionnaire. Of all seven dimensions of game experience, only one differed significantly between the two experimental conditions: players in a mediated environment became significantly more tired than players in a physical environment. The qualitative results showed that players in a physical setting can 'wander off', while players in an online setting have to stay focused on their screen. The latter causes more tiredness. The authors concluded that tabletop games may be played in a mediated environment instead of a physical environment, without significant loss of player experience. The game facilitators are encouraged to explore this opportunity to increase their versatility.

**Keywords:** Facilitated tabletop games, Game experience, Mediated environment, Presence, Zoom fatigue

*Educating The Mind Without Educating The Heart Is No Education At All.*

*-Aristotle*

**Paper ID: - 120**

## **Towards Virtual Reality Gaming for Children with ADHD in Formal Education**

*Meike Belter, Heide Karen Lukosch*  
*University of Canterbury, New Zealand*  
*meike.belter@pg.canterbury.ac.nz*

**Abstract :** According to national health services, between 5 and 10 percent of school-aged children are diagnosed with Attention Deficit Hyperactivity Disorder (ADHD). ADHD can influence the well-being and performance of children in formal education. Children with ADHD can show hyperactivity or impulsiveness. They might struggle with their executive functioning, including planning of tasks, remembering instructions, or focusing their attention. Only a few studies look into the role virtual reality games could play for this group of learners in formal education. Virtual reality (VR) games can offer realistic, yet simplified and safe experiences, in which children with ADHD could experience everyday learning situations tailored to their unique learning needs. Games are already successful in transmitting learning contents for ADHD diagnosed individuals and VR technology is increasingly incorporated in education as implementation feasibility increases. In this paper, the authors report on the results of a literature review exploring the role of VR gaming to support learning of children with ADHD in formal education. It is shown that how certain immersive game elements were derived while addressing specific ADHD learning needs, providing insights into possible game requirements and first prototyping ideas.

**Keywords:** Applied games, Virtual reality, ADHD, Education, Game requirements

*You Must Be The Change You Wish To See In The World.*

*-Mahatma Gandhi*

**Paper ID: - 122**

## **“Risk Management can Actually be Fun” - Using the Serious Cards for Biosafety Game to Stimulate Proper Discussion about Biosafety**

*Maria Freese, Simon Tiemersma, Alexander Verbraeck  
TU Delft, The Netherlands  
M.Freese@tudelft.nl*

**Abstract :** As part of the T-TRIPP project, the authors developed the serious game Cards for Biosafety. The aim of this game is to let young biotechnology researchers learn more about biosafety. Analyses of workshops with researchers from the biotechnology domain and interviews with biosafety officers clearly indicated the need for such a serious game with a focus on educational learning. Cards for Biosafety is a physical (also playable online) round-based card game and playable with up to eight players. The game itself consists of scenario, risk and measure cards, and the task of the players is to choose risk and measure cards that fit the scenario explained by the facilitator. To test the efficiency of Cards for Biosafety as a learning tool, the authors conducted two online-workshops with twelve participants. The results of these sessions have not only shown that Cards for Biosafety is a well-designed game, but also a successful game to achieve the intended learning goal. In addition, the authors recognized that ‘fun’ is an important element in the game which leads to ‘learning’ in a very effective way. Future research should focus on the role of such positive states in serious games and their influence on learning outcomes.

**Keywords:** Biosafety, Biotechnology, Cards for Biosafety, Covid-19, Game design, Serious games

*Educating The Mind Without Educating The Heart Is No Education At All.  
-Aristotle*

**Paper ID: - 125**

## **Designing Business Game by Student–Teacher Collaboration**

*Ryoju Hamada<sup>1</sup>, Tomomi Kaneko<sup>2</sup>, Masahiro Hiji<sup>3</sup>*  
*<sup>1</sup>National Institute of Technology, Asahikawa College*  
*<sup>2</sup>Hokkaido University of Science*  
*<sup>3</sup>Tohoku University*  
*hamada@edu.asahikawa-nct.ac.jp*

**Abstract :** Designing simulation gaming will be a difficult task in the near future, although demands for such learning methods are increasing. Currently, many games are created by an original author and are improved independently. If one can include young students who have just finished playing a game as a power to enhance games, then one might be able to solve human resource shortage difficulties. However, “Student–teacher Collaboration” is rare and such experience is limited. At Tohoku University in Japan, and at Thammasat University in Thailand, the authors conducted a business game designing project that included students and teachers during 2003–2019 under the management policy called “The Great Charter.” The authors assigned the most appropriate roles to individual students and then granted freedom to them. They were stimulated through collaboration. Given good people, good common topics, and a pleasant atmosphere, the students’ collective experience can cultivate an amazing harvest. The authors created many impactful games at a fantastic pace. Some students in the human cluster were “awakened,” later harnessing and spreading their young energy not only as great game designers, but also as global players, and through businesses as entrepreneurs.

**Keywords:** Awakening, Business game, Cluster, Entrepreneurship, Human resource management, Student–teacher collaboration.

*Arise! Awake! And Stop Not Till the Goal Is Reached.*  
*-Swami Vivekanand*

**Paper ID: - 133**

## **Gamifying Serious Games: Modding Modern Board Games to Teach Game Potentials**

*Micael da Silva Sousa*  
*University of Coimbra, Portugal*  
*micaelssousa@gmail.com*

**Abstract :** The growing interest in game-based approaches is evident. But establishing the gamification and serious game processes are challenging, especially when there are few available resources and game design knowledge. Low-tech and low-budget games can be the solution to learn and foster game-based approaches. We propose a method where modern board games were successfully adapted to deliver a game-based experience to adult students, allowing them to learn about serious games and the gamification as tools to train skills. This method was used during a one-day session, playing seven different games followed by debriefing stages.

**Keywords:** Analog games, Board games, Gamification, Serious games, Modding.

*Learning Is Finding Out What You Already Know. Doing Is Demonstrating That You Know It.*  
*Teaching Is Reminding Others That They Know Just As Well As You. You Are All Learners, Doers, Teachers ...*  
*-Richard Bach*

**Paper ID: - 164**

## **Effect of Learning Style on Students' Learning Experience of Marketing Management Game**

*Rajeev Shukla, Monica Sainy*

*Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore, India*

*directorsvsm@svvv.edu.in, monicasainy@svvv.edu.in*

**Abstract :** Effect of learning style of management students on learning experience of marketing game was studied in the present study. One hundred twenty Postgraduate Management students played The Marketing Game and completed exit surveys on learning experience and Kolb's Learning Styles Inventory instrument. Findings of the study revealed significant effect of concrete experience (CE) and abstract conceptualization (AC) dimensions of learning style on learning experience of marketing management game. Further, gender-wise significant difference was observed in learning experience of Marketing Management Game. Interactive effect of gender and learning styles on learning experience was also studied. Findings of the study revealed significant interactive effect of gender and reflective observation style of learning on learning experience of the studied Marketing management game.

**Keywords:** Marketing games, Kolb's Learning Style Inventory, Learning experience.

*Victory is always possible for the person who refuses to stop fighting.*

*-Napoleon Hill*

**Paper ID: - 137**

## **Natural Security Gaming in the Transition Towards Regenerative Economy: A Review**

*Vaisakh Yesodharan, FengWeiyu, Zaid A Almuala, Eric G Heckenauer Barrón,  
Shoeib Faraji Abdolmaleki, J. Julio Fernández Rodríguez, Pastora M Bello Bugallo  
Universidade de santiago de compostela, Spain  
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**Abstract :** Natural security refers to all aspects of security relating to a reliable, sufficient, affordable, and sustainable supply of natural resources and energy to meet the needs of society by protecting the environment, human health, and living things. Effects derived from climate change are one of the biggest challenges we encounter in terms of natural security. Ulrich (2014) has shown that simulation games play a vital role in building a sustainable world. Here, in this study, the authors investigated the topics like natural security, energy security, carbon capture and storage, renewable energy, and zero waste in the viewpoint of gaming. Through a systematic literature review, the study found that there are less than fifty studies that focus on the objective of the study. Most of the games are used in the educational domain to transfer knowledge in the field of waste. By analysis, it is seen that there are no existing games in the fields of both natural security and energy security. The paper points out the importance of natural security and the need of exploring more games in drawing a better understanding of natural security and its related fields for the citizens to build up a regenerative economy.

**Keywords:** Natural security, Gaming, Simulation game, Serious game, Carbon capture and storage, Energy security, Renewable energy, Waste.

*Teaching Should Be Such That What Is Offered Is Perceived As A Valuable Gift And Not As A Hard Duty.  
- Albert Einstein*

**Paper ID: -139**

## **The Co-Design of Educational Video Games**

*Daniel Kleffmann, Igor Mayer, Thomas Buijtenweg  
Breda University of Applied Sciences, Netherlands  
thekleffmann@gmail.com*

**Abstract :** Co-design is a widely implemented practice in many areas of design that deliberately and systematically incorporates stakeholders into the design of an artifact. Co-design practices in the context of educational video games (EVGs) exist but are insufficiently documented. Twelve semi-structured interviews with experts were conducted to understand how (1) co-design is structured, (2) stakeholders are being defined (3) involved and how (4) stakeholders influence specific game design elements (GDEs). Interviewees described their practices and then participated in a custom designed hierarchy-building exercise to close this knowledge gap. After systematically exploring the influence of the defined stakeholders, the data collected from the ranking and hierarchy exercises was aggregated and contrasted with the qualitative data for interpretation. The results show that most co-design practices are similarly structured, and although they portray varying degrees of stakeholder involvement and stakeholder-GDE influence, consistencies across practices were identified. This study recommends the following three identified co-design stages, involving at least four of the five types of stakeholders, and systematizing co-design processes for better designs and more efficient use of resources. Further research on co-design could improve their systematic design and EVGs in many fields where they can be applied, from healthcare to formal education.

**Keywords:** Educational video games, Game-based learning, Game design, Co-design, Stakeholder involvement.

*People become successful the minute they decide to.*

*-Harvey Mackay*

## Workshop-1

### Effectiveness of Intensive Gaming Contest

*Ryoju Hamada<sup>1</sup>, Tomomi Kaneko<sup>1</sup>*

*<sup>1</sup>National Institute of Technology, Asahikawa College, Japan*

*<sup>2</sup>Hokkaido University of Science, Japan*

**Abstract :** ISAGA Summer School (ISS) is the long tradition of ISAGA community to teach and learn gaming, a precious opportunity to hand down wisdom over the history. From the perspective of balance between cost and benefit in recent years, gathering in one venue for many days is becoming difficult. Then, the Covid-19 outbreak forced people to reconsider the framework of ISS. As the host of ISS2021, the authors try hybrid operation of ISS by using face-to-face sites and online, propose ISAGA Gaming Competition to celebrate new game and encourage its developers at ISAGA2021. The workshop is designed to show its result to ISAGA2021 colleagues.

*The past is over... forget it. The future holds hope... reach for it.*

*-Charles R. Swindoll*

## Workshop-2

### The Online Game – Free, Friendly and Fun

*Vinod Dumblekar*

*Founder and CEO, MANTIS, New Delhi, India*

**Abstract :** This workshop will engage its participants in an online game. It is ideal for and will benefit those who are new to or have never played such games. The participant should be registered for this workshop at least a day before the workshop. A laptop/smartphone and an internet connection are essential. Except for an everyday familiarity with English, no special qualification or prior experience is needed to participate in and enjoy this workshop. No more than 30 participants will be registered. A game is an interaction between participants to acquire a rare or valuable goal or to understand or solve a common problem. Some games offer the thrill of competition: to outthink or outdo others is the only goal. Often, participants will understand something new and develop abilities from their interactions. The online game may offer both. The contemporary world is digital; everyone is online. Let's do what they do and have fun.

**Keywords:** Competition, Interaction, Online game, Understanding.

*You cannot have a learning organization without a shared vision.*

*-Peter M. Senge*

Day: 2

September 07, 2021 (Tuesday)

## Keynote

### Gaming as a Frame for a New Era of Systems Science

**Sebastian Meijer**

*Professor, Vice Dean, KTH Royal Institute of Technology, Stockholm, Sweden*

**Abstract :** The gap between real-world decision making and scientific knowledge is difficult to close, not the least illustrated by the on-going pandemic. Uncertainty reduction in policy making is essential, as well as understanding the limited validity of different academic 'certainties'.

In this talk, the speaker will connect some of the classic gaming theories to more recent insights in policymaking and systems theory. An emergent proposition is that gaming as a simulation and participation paradigm could become the integrative framework to convert fragmented evidence into real world impact. Paradoxically, this doesn't necessarily involve games, but calls on the ability of people to play.

**Keywords:** Gaming, Innovation, Systems, Framework, Integration.

*Anyone who has never made a mistake has never tried anything new.*

*-Albert Einstein*

## Plenary Session-1

**Session Chair: Heide Lukosch**

Associate Professor, Head of Applied Immersive Gaming Initiative (AIGI)  
University of Canterbury, Christchurch, New Zealand

**Speaker-1: Toshiko Kikkawa**

Professor, Keio University, Tokyo, Japan

### **Simulation & Gaming: Past, Present and Future**

**Abstract :** The speaker is the joint editor of the journal, Simulation and Gaming (S&G) with Marlies P. Schijven of Amsterdam University Medical Center in 2021. We foresee a trend moving forward to a more diverse and inclusive world for S&G. Aside from the gender and cultural diversity, which is surface-level of diversity; we would also respect the deep-level diversity which includes differences in values, expertise, and beliefs. In this sense, we will expand S&G into new areas of interest and practice. We do welcome innovative articles on future perspectives and viewpoints as well as articles on traditional research paths and topics.

*Motivation is like food for the brain. You cannot get enough in one sitting. It needs continual and regular refills.*

*Peter Davies*

**Speaker-2: Ramesh Sharma**  
Ambedkar University Delhi, New Delhi, India

## **Gamified Framework for Educational Simulations in STEM Courses**

**Abstract :** The field of STEM (Science, Technology, Engineering and Mathematics) courses poses unique pedagogical challenges to the teachers. It requires pedagogical approaches like constructivism and skills like problem solving by students. Effective simulations can maximize the impact of learning outcomes with the help of parameters modeling and computer-based dynamic visualizations. One of the good examples is PhET simulations. There are various strategies for enhancing the quality of educational simulations, like constructivist simulations, exploration-based activities, motivation and interactive assignments for student engagement. Use of game design elements in non-game context is another strategy to make learning a joyful activity. Khan Academy employs interesting gamification strategies using learning resources, learning progress tracking, awards, and badges. Games have certain elements: aesthetics, mechanics, story, feedback and technology. This presentation will focus on game design elements for educational simulations and would discuss features of some popular educational gamified simulations for STEM fields.

*Keys to success: Research your ideas, plan for success, expect success, and just do it.*

*-John S. Hinds*

### **Speaker-3: Jegatheeswaran Manoharan**

Thought Catalyst, Team Effectiveness Consultant,  
Business Simulation Designer, Selangor, Malaysia

## **Framework for Testing Simulations for Better Empathy in Design**

**Abstract :** A cornerstone to good design is empathy for the users. Our depth in understanding and empathizing with our users will pave a smoother path in fulfilling the simulation's objective. This goes beyond the rhetoric 'user friendly' to a wider spectrum of learning experience that encompasses interface, cognition, and emotion. This session will address the three elements to focus on during a play test. First, is the Gameplay – Understanding the rules and mechanics of the game and to play it. Second, Player Experience – Players' engagement in the game. Finally, Learning – Relating the game play to the intended lesson.

*All of our dreams can come true if we have the courage to pursue them.*  
-Walt Disney

## **Technical Session-2 (Academic Track)**

**Session Chair:** Dr. Rajeev Shukla  
Director, Shri Vaishnav School of Management, SVVV, Indore, India

**Paper ID: 138**

**Bring Joy to Gamers: Adding Renewable Energy  
Alternative through Sustainable Development Indicators**

*Shoeib Faraji Abdolmaleki, Vaisakh Yesodharan, Pastora M Bello Bugallo*  
*Universidad de Santiago de Compostela, Spain*  
*shoeib.faraji@rai.usc.es, vaikash.yesodharan@rai.usc.es*

**Abstract :** This study aims to identify the indicators with the potential to be used in video games by using the concept of sustainable development through Renewable Energy (RE) sustainability assessment. A systematic review performs to gather the key indicators. Also, this study seeks to increase players' awareness about the role of RE in real life and expands the game appealing to sustainability. In this study, the game named TOWNSHIP™ is employed to evaluate if we can include RE and sustainability assessment concepts to use as a tool for sustainable development consciousness to the public. The work evaluates the availability of environmental, economic, social, technical, and governmental indicators in the game (capacity, aptitudes, and attractive options). First, from an existing inventory of sustainable indicators more compatible ones to RE are selected. Second, with the help of expert viewpoints, potential indicators are picked for the game. Finally, from the analysis of the game structure, some scenarios were constructed, and the game runs in an assumption atmosphere. The study concludes the video game's potential for sustainable development indicators in RE and advances recommendations for improving the game's attractiveness through updated options.

**Keywords:** Video game, Renewable energy, Sustainable development, Sustainability indicators, Gaming.

*Three things cannot be long hidden: the sun, the moon, and the truth.*  
*- Buddha*

**Paper ID: 141**

## **Not for Profit - A Case Study of "Social Economy" Simulation Game**

Marcin Łączyński

Warsaw University, Laboratory of Media Studies, Poland

laczynski.marcin@gmail.com

**Abstract :** The social economy and social enterprises are a part of entrepreneurship education, gaining more visibility in recent years, especially in the European Union. The unique characteristic of social enterprises and their complex relation to the concept of profit pose significant challenges in designing educational tools aimed at this sector. Accurate simulation of social enterprise must include familiar elements of profit and loss analysis, as those organizations operate as regular market entities. Still, it must also highlight the importance of each social enterprise's social impact on its community. This paper presents the game mechanics, the simulation model of social enterprise, and the four-year implementation of the educational game "Social Economy," designed for the Regional Center of Social Politics in Katowice, Poland.

**Keywords:** Simulation board game, Social economy, Social enterprise, Social impact.

*I have not failed. I've just found 10,000 ways that won't work.*

*-Thomas A. Edison*

**Paper ID: - 144**

## **An Estimation Approach of Economic Impacts of Nankai Trough Earthquake: Based on Estimating Production Function at Municipal level**

Mingji Cui, Hiroyuki Shibusawa  
Toyohashi University of Technology, Japan  
cui.mingji.iq@tut.jp

**Abstract :** As Japan has entered an era of depopulation, causing economic stagnation and declining resilience, it has to take account of population declining in disaster prevention planning and reconstruction planning. It is assumed that the social and economic environment will be significantly affected by the Nankai Trough Earthquake (M9). In particular, many of the towns and villages in the Pacific coastal area, which are the areas where it is assumed to be damaged by the tsunami in the Nankai Trough Earthquake, are facing a population crisis and will be cause for challenges in the recovery of regional vitality post-disaster. It is necessary to analyze the economic recovery process by taking these economic and population factors into consideration for efficient disaster-prevention planning. Concerning the population change, this paper expands the previous study, formulates the production function at the municipal level based on the four divisions of the regional economy sectors, applies to municipalities in Aichi Prefecture to estimate and verify the Gross Regional Product (GRP). In addition, based on the damage scenario when the Nankai Trough earthquake occurs in 2025, it conducts an economic recovery simulation and considers economic fluctuations which have differences in regions and industrial structures.

**Keywords:** Estimation, Economic impacts, Production function, Municipal level, Nankai Trough Earthquake.

*Take the first step in faith. You don't have to see the whole staircase, just take the first step.*

*-Dr. Martin Luther King Jr.*

**Paper ID: - 146**

## **The Impact of Changing a Games Mood Based on Real-Time Biometric Measurements on the Player Experience**

Helena Polman  
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**Abstract :** This paper focused on enhancing the player experience (PE) by using real-time biometric measurements to adapt the mood of a game. Biometric measurements are currently being used in game experience research. A previous project focused on the possibilities of modifying the game experience with real-time biometric measurements. The presented research biometric measurements were gathered from the Empatica E4 and used to apply the mood changes, while questionnaires were used before and after the experience to gather data. For the adapted group, the weather effects increased when their arousal increased, while it remained constant for the control group. The adapted group rated several basic emotions lower than the control group, just as their arousal and valence. The adapted group rated the overall experience and game features lower than the control group. Meaning that the PE was not enhanced; it instead was degraded. The findings were most likely due to the negative feedback loop and the negative connotations with rain. The emotions and experience of the participants got negatively impacted by the heavy storm. Indicating that using real-time biometric measurements to change a mood could impact the PE, meaning the PE could be improved by using a positive feedback loop.

**Keywords:** Biometrics, Games, Mood, Player experience, VR.

*Mistakes are always forgivable, if one has the courage to admit them.*

*Bruce Lee*

**Paper ID: - 153**

## **Cynefin Domains of Knowledge and Boundaries in Simulation and Experience-Based Education**

Elyssebeth Leigh, Laurie Levesque<sup>2</sup>

<sup>1</sup>Future Search, Australia

<sup>2</sup>Suffolk University, Boston USA

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**Abstract :** This paper explores linkages among theories of management and learning, the Cynefin Domains of Knowledge and design and application of simulations for learning purposes. The long term goal is to explore the role of simulations (of all forms) in regard to current teaching practices and 21st century management education. The authors use a narrative-based analysis of relevant literature to explore trends and themes influencing teaching practices and student assumptions and expectations. An auto ethnographic approach is employed to explore expectations about theories and practice in workplaces into which graduates anticipate transitioning. While it is expected that higher education will prepare students to achieve it in contemporary workplaces, there is a wide and expanding disconnect between formal and orderly academic teaching contexts and unordered and ambiguous conditions of 21st century workplaces. Since the gap and its effect on graduate success is clearly identified, the focus of authors here is on applying current understanding to describe how educators can reduce its adverse impact on graduate preparedness for employment.

**Keywords:** Cynefin domains knowledge; Simulation-based learning; Experience- based education; Systems thinking; VUCA.

*Coming together is a beginning. Keeping together is progress. Working together is success.*

*— Henry Ford*

**Paper ID: - 165**

## **Intercultural Dialogue and Cross-Cutting Professional Training through Simulation and Virtual Exchange in Education**

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**Abstract :** The study presents the results of the projects 'Sim+VE' (Simulation + Virtual Exchange). This project successfully brought together students from a Master teaching degree in Spain with student teachers, active teachers and academics from University of Babes-Bolyai, Romania; PädagogischeHochschuleNö, Austria; Tunisia Virtual University, Tunisia; University of Carthage, Tunisia; North-Eastern Illinois University, USA; Cégep De Jonquière, Quebec, Canada; University of Buenos Aires, Argentina; University of London, U.K.; and Lancaster University, U.K. The simulation 'The National School of Valtance' was carried out for one month by means of virtual exchanges synchronous and asynchronous virtual exchanges. Using simulation as a methodological strategy, the authors have shown that in the face of this health crisis, they have reformulated the erroneous concept of 'social distancing' by the correct one of 'physical distancing'. They have been able to continue with high quality training through virtual exchanges and the application of simulations in a digital environment. Simulation, when approached through team work, both virtually and physically, responds to the demands of an open, plural and inclusive education.

**Keywords:** Simulation; Virtual exchange; Teacher training; Active learning.

*Love me or hate me, both are in my favor...If you love me,  
I'll always be in your heart... If you hate me, I'll always be in your mind.  
-William Shakespeare*

**Paper ID: - 166**

## **Factors of the Attributes of Team Players: A Study of Engineering Students in India**

Santosh Dhar, Upinder Dhar, Anand Rajavat  
Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore, India  
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**Abstract :** Teams have defined membership, and collaborate on sets of related tasks that are required to achieve an objective. Each member is responsible for contributing to the team, but the group as a whole is responsible for the team's success. In a game, individual players contribute toward the goal of winning a game by collaborating on activities with defined outcomes. It is important for players to have the skills necessary to work effectively with others. Each member's influence on team decisions is critical for overall team performance, because it is only through mutual influence and individuals' ideas which are integrated into decision making of the team and implemented through team actions. Research has revealed that some universal and specific team skills exert a positive influence on outcomes. Members mostly highlight teamwork, decision-making, information processing, reaching agreements, and dealing with uncertainty as the most relevant contributions towards their outcomes. The present study is an attempt to understand the perception of engineering students about constituent factors of the attributes of team players and further to see whether gender has any impact on perception of engineering students about constituent factors of the attributes of team players.

**Keywords:** Trust, Identification, Collaboration, Functional conflict, Emotional exhibits.

*People with goals succeed because they know where they are going.  
-Earl Nightingale*

## Workshop-3

### How to Align Your Organization with the UN Sustainable Development Goals

Pieter van der Hijden

Management Consultant, Sofos Consultancy, Amsterdam, The Netherlands  
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**Abstract :** The original workshop is intended for the staff of a fablab i.e., an open workspace for digital fabrication. However, during ISAGA 2021 delegates will participate on an individual basis from an organization of your choice. The workshop introduces participants to the UN Sustainable Development Goals (SDGs), helps them to prepare a SDG Profile for their organization, discuss its impact on that organization and its role in external cooperation.

**Keywords:** Fablab, SDG, SDGs, Sustainable community.

*Balance of mind is called Yoga.  
-Bhagwat Gita*

## Workshop-4

### Intercultural Comparison of Facilitating Simulation Games

Birgit Zuern<sup>1</sup>, Maria Freese<sup>2</sup>, Elysebeth Leigh<sup>3</sup>, Elena Likhacheva<sup>4</sup>

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<sup>2</sup>TU Delft, The Netherlands,

<sup>3</sup>University of Technology Sydney, Australia

<sup>4</sup>Faculty of Biology, Lomonosov Moscow State University, Russian Federation

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**Abstract :** The “Intercultural Comparison of Facilitating Simulation Games” workshop will exchange and discuss experiences and ideas about:

1. What facilitation means to you? What are characteristics of facilitation?
2. What challenges impede effective facilitation of simulation games?
3. Tips and tricks for providing successful facilitation
4. Key competencies of a facilitator
5. Characteristics of effective debriefing? Different understandings about debriefing?
6. Facilitation in Covid-19 times – What did you change?

The facilitators will use a “World Café” and collaborative digital whiteboard to work in small groups at different virtual tables. Discussion outcomes will be shared with everyone. They hope to develop and share insights about similarities and differences in facilitation of simulation games for different cultural groups, learn from each other and become more sensitive. The workshop will benefit all those who do – and/or intend to - use simulation games or do research on them.

**Keywords:** Facilitation, Simulation, Intercultural, Gaming, Intercultural comparison.

*People with goals succeed because they know where they are going.*

*-Earl Nightingale*

Day: 3

Date: September 08, 2021 (Wednesday)

## Keynote

### Take 5 revisited: The Serious Gaming Lemniscate

*Ivo Wenzler<sup>1</sup>, Steven de Rooij<sup>2</sup>*

*<sup>1</sup>Professor of Serious Gaming at the*

*NHL Stenden University of Applied Sciences, The Netherlands*

*<sup>2</sup>Lecturer of Serious Gaming at the*

*NHL Stenden University of Applied Sciences , The Netherlands*

**Abstract :** This keynote presentation will introduce the Serious Gaming Lemniscate (a journey from the perceived reality to the simulated reality and back). It is the foundation of NHL Stenden design-based research approach to serious game development. It is also the framework for educating and enabling students at our Master Serious Gaming program to develop socially impactful serious games. At the beginning, the participants will be invited to take part in a digital (multi-player) serious game, introducing them to the concept of the Serious Gaming Lemniscate and illustrating our methodology for a design-based research approach to serious gaming and education.

*If you wish to see the truth, then hold no opinion for or against.*

*- Osho*

## Plenary Session-2

**Session Chair:** Vinod Dumblekar  
Founder and CEO, MANTIS, New Delhi, India

**Speaker-1:** - J. Tuomas Harviainen  
Associate Professor of Information Practices, Tampere University, Finland

### **Five Decades of ISAGA and Sustainability: From Education to Innovation**

**Abstract :** The speaker will present the results of his thematic review of ISAGA conference proceedings from 1971-2019. The focus of the research is on how many of the published papers in that time have directly dealt with the topics listed in the United Nations' Sustainable Development Goals, and how significant a part of the proceedings these themes are. Based on the study, the speaker will also present predictions and recommendations for the future of the ISAGA community, as well as discuss certain impediments to this area, identified in the research.

*A gift is pure when it is given from the heart to the right person at the right time  
and at the right place, and when we expect nothing in return.*

*-Bhagwat Gita*

**Speaker-2:** Karen Blackmore

Associate Professor, Information Technology, University of Newcastle, Australia

## **More Than We Think: The Power of Simulation and Technology to Deliver Learning**

**Abstract :** Simulation, in its simplest form, is an imitation of a real-world system or process that changes over time. One central idea though is that through simulation, humans learn – people learn how things work, how they might behave under different conditions, and how human beings respond to them. Simulation is also applied for the specific purpose of training and education as simulations are created to act as learning and training tools. Increasingly, simulations leverage a variety of technologies to increase realism and enhance engagement with the ultimate aim to improve learning outcomes. Widely available, these technologies can include visual displays such as augmented and virtual reality displays, 360-degree domes, and haptic devices to stimulate the senses. This talk will cover the simulation training/technology nexus, and consider how technologies enable learning. Looking beyond replication of traditional training approaches, the value-add provided through technology-enhanced simulation training is considered, and the hidden dimensions of training measurement and efficacy are considered.

*Do not dwell in the past, do not dream of the future, concentrate the mind on the present moment.*

*-Buddha*

**Speaker-3:** Elena Likhacheva  
Researcher - the Biological Department,  
M.V. Lomonosov Moscow State University, Russia

## **Simulation & Gaming: Understanding Ourselves**

**Abstract :** Simulations and games are utilitarian education tools, and means of providing knowledge and understanding of ourselves as participants and facilitators. In this session, the speaker will focus on the experience of conducting courses on ‘Simulation and Games in Management’ and ‘Urban Ecology’ in the year 2021 stressing the shift from totally physical to the online environment. These courses taught her as a facilitator to be more innovative, patient, and being ready for emerging unpreparedness.

**Keywords:** Simulation games, Innovation, Facilitation, Psychology.

*At twenty years of age the will reigns; at thirty, the wit; and at forty, the judgment*  
*-Benjamin Franklin*

## **Technical Session-3**

**(Tracks: - GS Design & Design Science and GS Learner Behaviour)**

**Session Chair:** K. N. Guruprasad  
Director, Shri Vaishnav Institute of Science, SVVV, Indore, India

**Paper ID: - 129**

## **Pleasures in Games: Conceptual Analysis of Fun and its Constructs**

*Malay Dhamelia, Girish Dalvi*  
*IIT Bombay, India*  
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**Abstract :** Fun is a fundamental driver of games. In serious games, the expectation to fulfill the purpose is oftentimes prioritized over elements of fun. In this paper, the authors analyze the concept of fun across domains and distinguish it from its allied constructs like flow, enjoyment, amusement, and so forth. They deduce the attributes of fun and elaborate concepts and their relationships. Their approach helps to advance the conceptualization of fun in games from a design science perspective and suggests possible directions to design and evaluate serious games for better player experiences. Implications of the suggested attributes of fun in the domain of serious games are discussed.

**Keywords:** Fun, Conceptual analysis, Player experience design, Serious games, Games design.

*The business of life is human connection.*  
*-Robin Sharma*

**Paper ID: -147**

## **Mass Casualty Incidents: Preparing Paramedics for the Unsafe and Unexpected**

*Pip Lyndon-James<sup>1</sup>, Elyssebeth Leigh<sup>2</sup>*

*<sup>1</sup>Family Planning NSW, Australia*

*<sup>2</sup>UTS*

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**Abstract :** Australia paramedic education provides theoretical foundations, practical skill application, and clinical placements. Conventional teaching transmits knowledge in safe and familiar teaching conditions usually unlike those in which the relevant skills will be applied. Thus, a learning gap exists requiring attention that cannot be provided through conventional methods. This gap concerns with preparing to respond to the unexpected. Healthcare simulation uses mannequins extensively in controlled settings, which do not behave like people encountered in real-world contexts such as Mass Casualty Incidents (MCI) where confusion, uncertainty and noise are competing for attention. To development the skills necessary to operate effectively under such conditions, the University of Tasmania's (UTAS) Sydney campus has conducted MCI simulations during the Bachelor of Paramedic Practice degree. The scenario involves mass casualties in a public setting utilizing 30 'simulated patients' (1st year students) enhanced by moulage makeup and 'paramedics' who are tasked to respond to the MCI simulation. The authors report on these events and draw lessons for design and facilitation of large scale, complex, stress-inducing simulations. Research indicates that intrusive noise, akin to real mass casualty incidents can be effectively achieved through use of simulated patients and live radio communications to elevate the fidelity of the simulated learning experience.

**Keywords:** Simulation, Student paramedic, Complexity, Mass casualty incident, Simulated patients.

*Imagination is more important than knowledge.*

*-Albert Einstein*

**Paper ID: - 148**

## **An Auction Game for Railway Capacity Allocation**

*Bill Roungas<sup>1</sup>, Hans Dahlberg<sup>2</sup>, Emanuel Broman<sup>3</sup>,  
Fredrik Lundström<sup>2</sup>, Sebastiaan Meijer<sup>1</sup>*

*<sup>1</sup>KTH Royal Institute of Technology, Sweden,*

*<sup>2</sup>Trafikverket, <sup>3</sup>VTI*

*vroungas@gmail.com*

**Abstract :** The deregulation of railway systems across western countries have brought the subject of pricing railway slots to the surface. The majority of the infrastructure remains under the ownership and supervision of governments, which in turn further complicates the pricing of slots, since profit does not become the sole aim. This paper proposes an auction model for pricing railway slots aimed at being applied in the Swedish railways. Moreover, in this paper, a game built on top of the auction model is presented as an interface that would enable testing the auction model with railway operators.

**Keywords:** Auctions, Railways, Web technologies.

*I never see what has been done; I only see what remains to be done.*

*Buddha*

**Paper ID: - 154**

**On Shattering the Magic Circle:  
The Use of Games as Tools for Public Policy**

*Bharath M Palavalli, Sruthi Krishnan*  
*Fields of View, India*  
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**Abstract :** In democratic societies, there is no single definition of what constitutes social good. Thus, policymaking in democratic, pluralist societies is a wicked problem. Thus, in order for citizens and the government to grapple with a wicked problem like policymaking, they need to have a dialogue such that they understand real-world complexities, engage with diverse perspectives, and explore different pathways. Games are a powerful tool to enable such a dialogue, as games let people play with a model of the real world. Though, in order for games to assume the mantle of a powerful tool for dialogue, the ‘magic circle’ needs to be shattered. The authors provide five examples of games being used to improve policymaking in India that illustrate how shattering the magic circle makes games a powerful tool to enable informed multi-stakeholder dialogue in different policy contexts.

**Keywords:** Magic circle, Games, Design, Play, Public policy.

*I choose a lazy person to do a hard job. Because a lazy person will find an easy way to do it.*  
*-Bill Gates*

**Paper ID: - 118**

**Unpacking and Disclosing the Reasoning behind  
“A Structured Instruction Improves Team Performance”**

*Mieko Nakamura*  
*Ryutsu Keizai University, Japan*  
*mnakamura@rku.ac.jp*

**Abstract :** Team planning tends to be optimistically biased. Unpacking is one way to reduce such bias. In a setting of simulation and gaming, a so-called production management game, a facilitator can ask a few questions to decompose a critical path prior to a game run. Unpacking is occasionally a facilitator’s role, although it does not necessarily improve team performance. This study adds a thought-provoking question that requests participants to disclose the reasoning behind the estimation. Such structured instructions would generate serious discussions in a team. The author examined individual levels of understanding and outcome prediction and analyzed the effect of the structured instructions that inquired about the process of the participants’ estimations. To disclose the reasoning behind it, participants needed to search for related information and perform accurate calculations. This resulted in an attitude of seriousness to the team, deepened their level of understanding, made their predictions reasonable, and improved their team’s final profit, on average. However, there are other possible causes of these results. Further research needs to focus on the effect of the structured instructions by itself.

**Keywords:** Facilitator’s role, Production management game, Structured instructions, Team planning, Unpacking.

*Drive your business. Let not your business drive you.*  
*-Benjamin Franklin*

**Paper ID: - 152**

## **Development of the Player Satisfaction Scale: A Factor-Analytic Study**

*Vinod Dumblekar<sup>1</sup>, Jigyasu Dubey<sup>2</sup>, Upinder Dhar<sup>2</sup>*  
*MANTIS, New Delhi, India*

*<sup>2</sup>Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore, India*  
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**Abstract :** To develop a scale of player satisfaction that is valid for many games, an instrument of 30 statements was first developed. The initial pool of 658 responses (undergraduate students and others) was purified by rejecting 51 duplicate and incorrect responses and two inappropriate statements. The data from the remaining 607 responses and 28 statements were processed for factor analysis. Four factors each of eigenvalue more than 1 were produced at high reliability of the Cronbach's  $\alpha$  of .95. The factors were named pleasant memories, excitement, team victory and learning experience to represent the statements that comprised the factors. While the study found no impact of gender on player satisfaction, the learning experience of others' satisfaction was significantly more than the experience of the students. This paper discusses the nature of the factors of player satisfaction and their potential utility in further research and applications.

**Keywords:** Excitement, Player satisfaction, Learning experience, Pleasant memories, Team victory.

*By three methods we may learn wisdom: First, by reflection, which is noblest; Second, by imitation, which is easiest; and third by experience, which is the bitterest.*

*-Confucius*

## Workshop- 5

### Mission Everest: A Virtual Simulation for High Performance Teams

*Ami Kotak, Himani Chandorkar*

*Etude360, India*

*director@etude360.com, director@acumenhr.in*

**Abstract :** This is an immersive and exciting virtual game based simulation wherein the group will be divided into teams which would then proceed on a virtual expedition to summit the Mt. Everest. The challenges in the fast paced simulation helps the participants to experience the impact of presence or absence of flexibility, quick decision making, learnability, ability to work under pressure and constraints, delegating effectively, communicating, and problem solving skills. This simulation is developed in consultation with a real life Everest Summiteer, Aditya Gupta, who summited the Mt. Everest in 2019. The videos and images from his expedition make the simulation all the more immersive. This simulation needs pre-registration. The first 1 hour 15 minutes would take the participants of the conference through a "Speed Climb" (Play testing session) of the Everest Expedition Simulation (The full Virtual Expedition duration is 3 hours). "The Speed Climb" (Play testing session) would be followed by an interactive session where participants share their experience and get an opportunity to work on improvising a challenge they experienced to make it more impactful and add in more learning elements.

*My pain may be the reason for somebody's laugh.  
But my laugh must never be the reason for somebody's pain.  
-Charlie Chaplin*

## Workshop- 6

### How to Involve Your Organization in Tendering Procedures for SDG Projects

*Pieter van der Hijden*

*Management Consultant, Sofos Consultancy, Amsterdam, The Netherlands  
pvdh@sofos.nl*

**Abstract :** The original management game is intended for the staff of a fablabi.e., an open workspace for digital fabrication. During ISAGA 2021, the facilitators assume that participants work in a consulting role. In three groups participants play successively different roles. As a government, they translate an SDG target into a Request for Proposals (RfP). As a consultant, they develop a proposal for an SDG project. As a development bank, they are going to assess a proposal. And as a consultant, again, they take note of this and draw lessons from it. Finally, the facilitators present all proposals in plenary and record as well as share all results.

zFablabcommunity, SDGs, Tender SDG.

*The whole life is a succession of dreams.  
My ambition is to be a conscious dreamer, that is all.  
-Swami Vivekanada*

**Day: 4**

**Date: September 09, 2021 (Thursday)**

# Keynote

## Blockchain in the Gaming Industry

**Anuj Garg**

Innovation Leader, IAM, Global Technology Services, IBM - India

**Abstract:** The gaming industry has increased by half a billion players in the past three years, totaling 2.7 billion people globally. The report predicts more than 400 million new gamers are expected by the end of 2023. Gaming industry is deeply influenced with upcoming technologies such as Blockchain, Artificial intelligence, Internet of things etc. There are already games getting designed for Quantum computers. Blockchain technology allows eliminating the intermediaries to manage the gaming systems and allow decentralized and trusted environment to be created among the gamers. It also allows the usage of Non fungible tokens that can act like a real asset and remain in full control of gamers. The NFTs allow tokens to be used across multiple games and even their values can be traded in the market like a normal NFT. Based on the popularity of the game or associated NFTs, the valuation of the game and points given to the gamer also increase. Blockchain could establish norms and fairness around in-game currency and asset trading and tie them to the real world in sensible ways. This could be particularly useful for the free-to-play model popularized by Fortnite wherein the majority of gaming revenue is generated by in-game purchases (e.g., skins) funded by digital currency.

*A shared vision provides a compass to keep learning.*

*-Peter M Senge*

## Plenary Session-3

**Session Chair:** Paola Rizzi

Professor of Techniques of Urban and Regional Planning at University of Sassari, Italy

**Speaker-1:** Marieke de Wijse-Van Heeswijk  
Radboud University Nijmegen, Management Sciences,  
Section Intervention Methodology, The Netherlands

### Effects of Learning Interventions in Simulation Games

**Abstract :** Research on the effectivity of learning interventions in simulation games shows that different types of simulation games render different types of learning. The type of simulation game strongly influences the types of interventions a facilitator performs and what learning results appear. In this presentation further explanations are given that what specific simulation game types deliver, what types of learning, and what the prominent influencers are from the simulation game, the facilitator and the participants with their context from a number of case studies. Findings on how to optimize different types of learning are presented.

*Laughing at our mistakes can lengthen our own life.*

*Laughing at someone else's can shorten it.*

*-Cullen Hightower*

**Speaker-2:** Christine Goonrey  
Writer and community volunteer, Australia

## Scenarios that Create Memorable Engagement

**Abstract :** One reason for players' thrilling experience in a game is due to the narration. An effective scenario narrates the event and stimulates players' curiosity and increases their engagement. Repeating all-too-familiar scenes, characters and events dampens interest and dulls their responses. Worse, it can reinforce stereotypes and produce passive outcomes. Instead, challenging scenes, intriguing characters and unexpected events help participants to open up to new experiences. Using intrigue, challenge, surprise and mystery creates energy, helps participants relax as the exercise unfolds. A ripple of laughter around the room is always beneficial. The people remember characters and events long after they have forgotten the book. They recall events that make their hearts beat faster and plots that draw them into the experience. Creativity and inspiration enliven scenarios and enhance engagement. This session will explore ideas and tools for developing scenarios to engender curiosity and energy, and remain memorable long after the exercise is complete.

*Life isn't about finding yourself. Life is about creating yourself.*  
-George Bernard Shaw

**Speaker-3:** Bharath M Palavalli  
Co-Founder at Fields of View and Ashoka Fellow, India

## Is Culture Important to Design Simulation Games?

**Abstract :** Often, “Culture” is a catch-all term that is used to describe a large range of phenomena and interactions. In the context of simulation games, this term is used to attribute tremendous success or often pointed to for the failure of the game. It is generally one of the reasons to counter/invalidate the game results in most discussions. The successful practice or failure of a facilitator is generally attributed to the understanding of “culture” too. Therefore, it is of interest to unpack culture and the manners in which it affects simulation games and how game developers can design better games. In this talk, using examples drawn from games in public policy, the speaker will talk about the game design process in order to successfully understand this catch-all term.

*The size of your success depends on the depth of your desire.*  
-Anonymous

## **Technical Session-4**

**(Track : GS Facilitation, GS Serious games,  
GS Industrial applications, GS Tools and technology and  
GS and the U. N. Sustainable Development Goals)**

**Session Chair:** Tushar Kanti Mandal  
Coordinator, Shri Vaishnav School of Law, SVVV, Indore, India

**Paper ID: - 121**

## **WHE SimEx: Facilitating Training Simulations for Health Emergency Personnel**

*Heini Utunen<sup>1,2</sup>, J. Tuomas Harviainen<sup>1</sup>, Gaya M. Gamhewage<sup>2</sup>*

*<sup>1</sup>Tampere University, Finland*

*<sup>2</sup>World Health Organization*

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**Abstract :** The World Health Organization's training simulation exercises (SimEx) are immersive activities that capacitate their audiences by enabling them to practice and perform various functions in an emergency response. This paper discusses four tools used in SimEx to maximize facilitators' technical experience in order to meet the overall learning outcomes and objectives. The findings have been collected from 12 exercises through feedback sessions and debriefings with facilitators, written feedback, and exercise management observations. These demonstrate that facilitation methods and their usability vary depending on an exercise's scope and the facilitators' experience. Exercise planning needs to fully align the SimEx activities with their learning objectives for optimal outcomes.

**Keywords:** Training simulation exercise, Competency-based assessment, Knowledge to behavior, Staff capacitation, Health emergencies.

*If you don't know where you are going, any road will get you there.*

*-Lewis Carroll*

**Paper ID: - 131**

**Between Urban Resilience and Serious Gaming:  
Applying Games for Policy Implementation**

*Weronika Szatkowska, Marcin Wardaszko  
Kozminski University, Poland  
wszatkowska@kozminski.edu.pl*

**Abstract :** The usage of serious games in training and policy development has the potential to enhance communication and creativity, simplifying complex environments and consensus-building. This article explores examples of existing games related to urban resilience policy implementation by applying systematic review of literature. It stresses the theory on urban resilience, the role of policymaking within it and the application of serious games in complex environments like cities. Findings reveal core urban resilience areas addressed by games. Also, the article defines goals, participants, and characteristics of games that reinforce implementing urban resilience policies. Moreover, the research distinguishes approaches to different stakeholders, including their roles in urban resilience.

**Keywords:** Serious games, Urban resilience, Policy, Complexity.

*There are two primary choices in life: to accept conditions as they exist, or accept responsibility for changing them.*

*- Dr. Denis Waitley*

**Paper ID: - 136**

## **Knowledge Sharing Game for Sustainable Restaurant Management**

*Mizuho Sato<sup>1</sup>, Hajime Mizuyama<sup>2</sup>*  
*<sup>1</sup>Tokyo University of Agriculture, Japan*  
*<sup>2</sup>Aoyama Gakuin University, Japan*  
*ms207184@nodai.ac.jp*

**Abstract :** Due to Coronavirus disease (COVID-19), self-restrained life continues globally, affecting various economies. The most affected is the food industry. In particular, the foodservice industry continues to be unable to operate normally and faces issues such as frequent leave requests, shortened business hours, and a reduction in the number of seats to prevent the spread of COVID-19. As a result, restaurant management has been severely compromised, and several stores have been forced to close. Therefore, in this research, a game system that applies the mechanism of the prediction market to solicit ideas from employees for recovery of sales of small restaurants and effective use of ingredients (including reduction of food waste) under the With-COVID-19 scenario has been developed. By developing such a game, daily operations can be visualized, current issues can be analyzed, and the deductions from these can be used as a reference for subsequent business opportunities. In addition, the game will improve communication between owners and employees. Visualizing the contents of food waste will be beneficial to employees and consumers.

**Keywords:** Restaurant, Management game, Prediction market, Employee, Knowledge sharing, Food waste.

*Kind words can be short and easy to speak, but their echoes are truly endless.*  
*-Mother Teresa*



**Paper ID: - 130**

## **A Participatory Simulation Framework for Agent-Based Model Validation in Air Traffic Management**

*Bill Roungas<sup>1</sup>, Lucia Herrero Alvarez<sup>2</sup>, Sebastiaan Meijer<sup>1</sup>*

*<sup>1</sup>KTH Royal Institute of Technology, Sweden*

*<sup>2</sup>Universidad Politecnica de Madrid*

*vroungas@gmail.com*

**Abstract :** The European Air Traffic Management (ATM) system is responsible for the safe and timely transportation of more than a billion passengers annually. It is a system that depends heavily on technology and is expected to stay on top of the technological advancements and be an early adopter of technologies. Nevertheless, technological change in ATM has historically developed at a slow pace. As a result, an agent-based model (ABM) of the ATM technology deployment cycle has been developed. This ABM is part of a larger project, which intends to recommend new policy measures for overcoming any barriers associated with technology adoption in ATM. In this paper, a participatory simulation framework validating this ABM is proposed. The aim of the framework is to be able to provide evidences with regards to validation both in an agent as well as in a system.

**Keywords:** Agent-based modeling, Validation, Participatory simulation, Air traffic management.

*I can do things you cannot, you can do things I cannot; together we can do great things.*

*-Mother Teresa*

**Paper ID: - 127**

## **Level Generation and Style Enhancement: Deep Learning for Game Development Overview**

*Piotr Migdal<sup>1</sup>, Bartłomiej Olechno<sup>1</sup>, Błażej Podgórski<sup>1,2</sup>*

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**Abstract :** The authors present practical approaches of using deep learning to create and enhance level maps and textures for video games – desktop, mobile, and web. The authors aim to present new possibilities for game developers and level artists. The task of designing levels and filling them with details is challenging. It is both time-consuming and takes effort to make levels rich, complex, and with a feeling of being natural. Fortunately, recent progress in deep learning provides new tools to accompany level designers and visual artists. Moreover, they offer a way to generate infinite worlds for game replayability and adjust educational games to players' needs. The authors present seven approaches to create level maps, each using statistical methods, machine learning, or deep learning. In particular, they include:

- Generative Adversarial Networks for creating new images from existing examples (e.g., ProGAN).
- Super-resolution techniques for upscaling images while preserving crisp detail (e.g., ESRGAN).
- Neural style transfer for changing visual themes.
- Image translation – turning semantic maps into images (e.g., GauGAN).
- Semantic segmentation for turning images into semantic masks (e.g., U-Net).
- Unsupervised semantic segmentation for extracting semantic features (e.g., Tile2Vec).
- Texture synthesis – creating large patterns based on a smaller sample (e.g., InGAN).

**Keywords:** Level generation, Game development, Deep learning, Computer vision, Generative adversarial networks.

*Not all readers are leaders, but all leaders are readers.*

*-Harry S. Truman*

**Paper ID: - 135**

## **Experimental Research: The Simulation-Based Learning Effectiveness in Educating for Sustainability**

*Uyen-Phuong Nguyen<sup>1</sup>, Philip Hallinger<sup>1,2</sup>*

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**Abstract :** A review of experimentation is needed to account for the effectiveness of simulation and serious games in developing sustainable behavior and other variables. Thirty-five experimental studies on simulation-based learning (SBL) featured ESD from the secondary database were selected. The nature of simulations and serious games in experimentation was explored. The review evaluated research designs, quality, and summarized research findings. Key findings highlighted the conceptual and methodological features of simulation gaming experimentation, which accounts for under 10% of the knowledge base. First, experiments are overly weighted with quasi-experimental designs, indicating the challenges to achieve random assignments for experimental designs. The analysis highlighted the statistical validity, including the roles of pre-tests in experimental designs, and the combinations of different quasi-experimental designs. Second, SBL interventions showed significant effects on knowledge, attitude, intention, and behavior towards sustainability, even though effect size indicators were likely to be ignored or skipped reporting. This suggests future researchers use proper analytical analysis to achieve both statistically significant results and practical meanings on outcome variables on a specific size. Third, the diversity of outcome variables, especially the heterogeneity of sustainability-related behavior raised the quest for systematic principles in defining a construct measure before conducting a SBL experiment.

**Keywords:** Simulation-based learning; Education for sustainable development; Theory of planned behavior; Sustainable behaviors; Experimental and Quasi-Experimental research.

*Nobody can do everything, but everyone can do something.*

*-Author Unknown*

## Workshop- 7

### **Diversicaste-RACE-SHUN: Addressing Toxic Masculinity**

*George Francis Simons*  
*GSI, France*  
*diversophy@gmail.com*

**Abstract :** This game addresses critical issues that we as men are urged to Shun, stripping us of our potency to address the social ills and biased systems that threaten the well-being of men as well as the future of humanity on the planet at every level. The game's dynamics unfetter the male prowess to address the stunting cultural beliefs of what it means to be a man in today's world. How? By manning-up to challenge the toxic steroids of male metanarratives that shape no-exit caste systems where the large majority of men are disposable, while women are duped into envying this privilege. These seductive fables colonize people with gender and racial neurosynapses that they can change. It's time to reactivate the testosterone to inseminate the minds to give birth to new and better stories to live by. This game will show the participants that how to stand erect again and find useful, collaborative know-how!

*The weak can never forgive. Forgiveness is the attribute of the strong.*  
*- Mahatma Gandhi*

## Workshop- 8

### Evaluation and Measurement in Simulation Games

*Elizabeth Tipton, Elyssebeth Leigh, Birgit Zürn, Marieke de Wijse, Elena Likhacheva, Richard etipton@ewu.edu, elyssebeth.leigh@icloud.com, Birgit.Zuern@dhw-stuttgart.de, mariekedewijse@hotmail.com, likhacheva@mail.bio.msu.ru, Richard.Teach@scheller.gatech.edu*

**Abstract :** The facilitators want to know what happens in simulation games and would like to capture this. Long term effect studies of simulation games are limited in number due to many factors possibly interfering in these long term effects. Most evaluation studies consist of pre test/post test studies and these are valuable. However, other ways of measurements can deliver even more insight into what are the real learning effects. A diversity of methods can be used for capturing different types of learning and knowledge that develop in the gameplay itself and there is still a large part of learning that takes place that is difficult to capture. In this workshop, the facilitators discuss theoretical and practical research known in the field, suggest best practices and hope to lower the threshold for measurement in the gameplay to look beyond the pre and post test! This valuable information provides with handholds to improve the practice as simulation game professionals even more. Questions addressed are:

- How can winning a simulation game actually be losing on learning?
- What simple methods can be used to capture learning in gameplay?
- What do results tell facilitators and not tell them when they measure?

The facilitators hope that participants want to discuss, play and exchange ideas with the former in this interactive and highly relevant workshop.

*I slept and dreamt that life was joy. I awoke and saw that life was service. I acted and behold, service was joy.*  
-Rabindranath Tagore

**Day: 5**

**Date:- September 10, 2021 (Friday)**

## **Workshop-9**

### **Gameplay of the Serious Cards for Biosafety Game**

Simon Tiemersma, Doris Boschma, Maria Freese  
TU Delft, The Netherlands

S.A.Tiemersma@tudelft.nl, D.Boschma@tudelft.nl, M.Freese@tudelft.nl

**Abstract :** In this interactive workshop, the facilitators will play the serious Cards for Biosafety game which is a round-based card game and playable up to seven players. The aim of this game is to create more awareness of risks and measures in biotechnology by stimulating interesting, creative and funny discussions. Originally, the game is designed for junior and senior researchers in biotechnology, but the game can also be played with people who do not have any biosafety- or biotechnology-related knowledge. Besides playing this game, the facilitators will address and discuss issues that arose during the design and development of this game, such as the transformation from an analogue to an online serious game, the transformation from an entertainment game to a serious game, and the role of fun in serious games in order to contribute to an effective learning process.

*Strength does not come from physical capacity. It comes from an indomitable will.*

*-Mahatma Gandhi*

## Workshop- 10

### The Collectors - A Game Based Workshop on Virtual Teams Collaboration

Jagoda Gandziarowska-Ziołeczka<sup>1</sup>, Joanna Średnicka<sup>1</sup>, Filip Tomaszewski<sup>1</sup>, Nathan Berry<sup>2</sup>

<sup>1</sup>PGS Pracownia Gier Szkoleniowych, Poland

<sup>2</sup>Assimilate.eu

**Abstract :** The facilitators propose a 2-hours workshop that will lead participants through the game experience and a discussion on challenges and gains of virtual cooperation. The participant experience follows a 5 step process designed to maximize the time they spend together and produce the best results. Luggage is lost every day at airports around the world. Some of these suitcases are never claimed and are purchased at auction by “The Collectors”. These suitcases may contain a valuable piece of art, an antique vase or simply old clothes from a vacation taken years ago. The participants will work together as a team to maximize the score by collecting the most valuable suitcases from 3 airports around the world. This Simulation game will pull the team of participants into an experience in which they will:

- Utilize multiple forms of technology to collaborate as a team
- Communicate clearly establishing their personal and collective tasks and goals
- Make decisions under pressure based on information gathered and shared
- Use their influence to plan and empower in changing and uncertain situations
- Establish a quick process of feedback to more efficiently accomplish their goals
- Create and implement a shared direction for a successful outcome

All while working in a remote, online, team context.

*Success is not final, failure is not fatal: it is the courage to continue that counts.*

*-Winston Churchill*

**Roundtable**  
**Gaming, Simulation and Innovations:**  
**Challenges and Opportunities**

**Moderator:** Upinder Dhar  
Vice Chancellor – Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore, India

**Speaker-1: Elysabeth Leigh**  
University of Technology Sydney, Australia

## **Cultures, Contexts and Facilitating Learning**

**Abstract :** Simulations create – and exist within – particular contexts. While this seems obvious, cultural factors that shape contexts are less evident but more potent. Peter Drucker said: “culture eats strategy for breakfast”. Designers’ and facilitators’ cultures shape their thinking, informing their designing and facilitation. Global interconnections are expanding, while cultures persist as the causal factor creating boundaries. Simulations help us learn about, and how to manage, intersections and boundaries among social, political and knowledge domains. The future needs the right tools to navigate across and among those boundaries, along with simulation and games professionals to develop and manage the learning processes involved.

*Music gives a soul to the universe, wings to the mind,  
flight to the imagination and life to everything.*  
-Plato

**Speaker-2: Willy Kriz**

Professor, University of Applied Sciences Vorarlberg,  
Department of Management and Social Sciences Hochschulstr, Dornbirn, Austria

**Gaming Simulation and Aspects of  
Ethics – Innovation and/or Manipulation?**

**Abstract :** Why we need to consider ethics in gaming in past, present and still also in future maybe even more than ever before? I want to talk about ethics as content of games but more about ethical aspects in the process of gaming, in design, facilitation/debriefing and evaluation. And I want to take on board a statement of ISAGA co-founder Allan Feldt on the challenges and risks of gaming as a tool of learning and communication but at the same time also on fake communication and manipulation. This seems to me to be even more actual than ever before. New technical innovations with big data, AI, virtual reality, social media & fake news, real-time scenarios, immersive video-gaming etc. make games even more “real” and the user/player even more vulnerable to be manipulated.

Allan saw methods of Gaming Simulation as the most effective way of communication and therefore used gaming as form of experiential learning. However, he also was concerned with ethical questions and negative consequences related to the use of gaming (for example: addiction, hurting emotions, manipulation with games). In an interview with me in 2013, he was asked for a message to the future generations of game designers. In the interview, Allan argued that gaming is powerful, because it teaches by experience. At the same time, he conveyed a warning based on the same aspect too: “But the danger is: it teaches by experience. People are not capable of disbelieving things that happened to them. They believe implicitly ‘it must be true, because it happened to me’. Games can be designed to lie, and they give false experience. We must be vigilant in protecting this from happening ... Debriefing is important, by an honest debriefer. I know some well-intentioned professors who believe so strongly in what they are teaching that they lie even when they are not thinking that they are lying. They say things that are not true. For example, Marxists do this. They teach Marxism as sociology, but not all of Marx’s ideas are true. But they do it with the best of intentions ... You have to limit complexity for effective teaching through gaming ... but you can misrepresent”.

Increasingly we live in times of fake news and realize the attempts of stakeholders to use media in order to manipulate information and moods and to gain control in our societies. We should be aware of the positive and negative potential of gaming as a powerful media for communicating, learning, and persuading. May we remember Allan’s warning and try our best to use gaming in a responsible and reflexive way.

*It is better to live your own destiny imperfectly than to live an  
imitation of somebody else's life with perfection.*

*-Bhagwad Gita*

**Speaker-3: Bhimaraya Metri**  
Director, IIM Nagpur, India

## **Gaming Simulations: The Pedagogy of Future Learning**

**Abstract :** Today, the speed of disruption and change affects the organization due to technological advancements. The workplace and its contexts are continually changing faster than ever before. Learning new generation skills and the development of new capabilities can meet this challenge of change. India's National Education Policy-2020 (NEP-2020) has recognized that the future of work demands competencies and capabilities like creativity, curiosity, tenacity, enthusiasm, leadership, and innovator and entrepreneurial mindsets. Corporate learning and development departments and higher education institutions (HEIs) focus their attention on gaming simulations (GS) as a powerful pedagogy in both online and offline modes. Active and perpetual learning are the keys to success in the business world because they develop problem-centric, critical and original thinking. The NEP focus on holistic development through a multidisciplinary approach and the changing leadership style of HEIs will enhance the need for GS in learning far rapidly in future than ever before.

*Educating The Mind Without Educating The Heart Is No Education At All.*  
*-Aristotle*

**Speaker-4: Bharath M Palavalli**

Co-Founder at Fields of View and Ashoka Fellow, Bangalore

**How can Simulations and Games Adapt for the Future?**

**Abstract :** The future direction of gaming simulations rests on three issues. Firstly, the diverse use of the medium and the varying cultural contexts forces us to question both, the relevance of Huizinga’s Magic Circle and the Eurocentrism around ‘play’. Secondly, there needs to be an increased impetus to standardize and validate facilitation processes if one wishes to compete with other mediums. Finally, the accelerated demand for virtual engagement models forces us to rethink data collection and validation processes, and the hard lines drawn between physical, digital and mixed-medium games.

*The first step is to be absolutely clear about what you want.*

*- John Assaraf*

## Poster Session

**ID: 124**

## **WHY DO PEOPLE PLAY MOBILE GAMES?**

Małgorzata Ćwil<sup>1</sup>, Marcin Wardaszko<sup>1</sup>, Kajetan Dąbrowski<sup>2</sup>

<sup>1</sup>Kozminski University, Poland

<sup>2</sup>Daft Mobile, Poland

mcwil@kozminski.edu.p<sup>1</sup>



AKADEMIA  
LEONA KOŹMIŃSKIEGO

## Why do people play mobile games?

Małgorzata Ćwil  
Marcin Wardaszko  
Kajetan Dąbrowski

## Aim of the research

Research question:

Which factors influence mobile players' experience and their intention to replay the game?

H1: Player experience consists of 5 sub-constructs:

Emotions, Skills, Challenge, Immersion, Flow.

H2: Player experience has a significant and direct effect on replay intention.

H3: Gender moderates the effect of player experience on replay intention.

H4: Win/loss ratio moderates the effect of player experience on replay intention.

Emotions

Skills

Challenge

Immersion

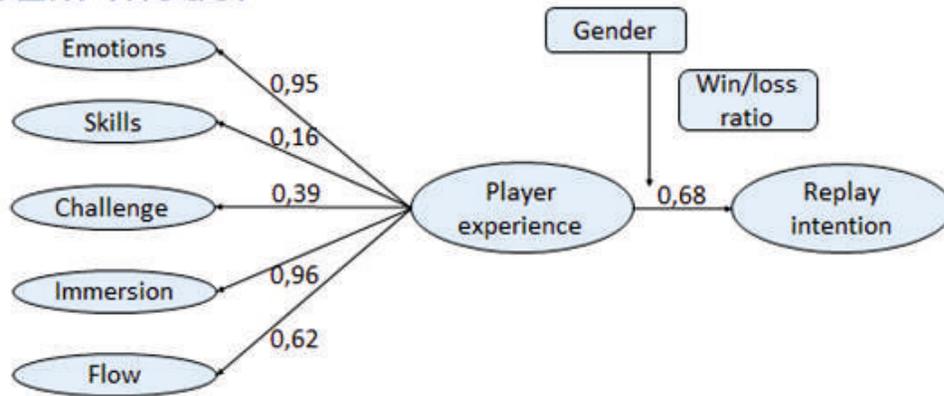
Flow

## Research methods

- Sample: 258 players
- Methods: quantitative analysis, structural equation modelling (SEM)
- Data source: questionnaire + data from gameplays



## SEM model



Construct	Path	Construct	Estimate	S.E.	C.R.	P
Replay_intention	<--	Player_experience	,675	,081	8,339	***

## Results

- 5 factors build player experience and the most important ones are: **emotions and immersion**
- Perceived level of skills has a slight impact on player experience
- **Win/loss ratio has no significant impact on replay intention**
- Positive player experience increases chances that a player will play the game again
- Gender differences: immersion is more important for women than for men; perception of high skills is more important for men than for women

**ID: 168**

## **Perceived Self-Efficacy of Students in a Business Simulation Game**

Vinod Dumblekar<sup>1</sup>, Upinder Dhar<sup>1</sup>

<sup>1</sup>MANTIS, New Delhi, INDIA

<sup>2</sup>Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore, INDIA

dumblekar@yahoo.com

### **Perceived self-efficacy of students in a business simulation game**

Dr Vinod Dumblekar & Dr Upinder Dhar

**Self-efficacy** predicts performance and produces goal-oriented behaviour. It is 'one's belief in one's ability to succeed in specific situations or accomplish a task' and 'the confidence in one's own ability to achieve intended results' (Bandura, 1977).

**Game self-efficacy** is the belief of game players that they would win in a business simulation game competition.

Irish Journal of Management, 40(1), 61-73, 2020  
<https://sciendo.com/article/10.2478/ijm-2021-0004>

## Objectives of the study

1. To extract and understand the factors of the construct of perceived game self-efficacy under such conditions.
2. To determine the relationship between the factors of perceived game self-efficacy, in terms of their correlations between them and their effects on each other.
3. To propose new research about perceived game self-efficacy and its factors, based on the findings of the study.
4. To recommend the application of perceived game self-efficacy and its factors in games, learning, business and other domains.

Irish Journal of Management, 40(1), 61-73, 2020  
<https://sciendo.com/article/10.2478/ijm-2021-0004>

## Method

**The game:** an all-day competition in an enterprise simulation between teams of four students each.

**The players:** 227 undergraduate students, 18-23 years, 52% male, commerce (46%) and engineering (30%).

**The instrument:** 30 statements in game actions.

**Data analysis:** Exploratory factor analysis.

Irish Journal of Management, 40(1), 61-73, 2020  
<https://sciendo.com/article/10.2478/ijm-2021-0004>

## Results

Perceived game self-efficacy is a composite of **potential actions** (innovation, experimentation, focus, and conceptualisation), **personality traits** (openness, proactivity, and determination) and **belief** (conviction).

Irish Journal of Management, 40(1), 61-73, 2020  
<https://sciendo.com/article/10.2478/ijm-2021-0004>

## Implications and recommendations

Would self-determination correlate with determination? Could persistence predict determination? And, how would autonomy and competence affect innovation, experimentation and proactivity? To develop efficacy scales with appropriate factors for other business game environments in (e.g.) services, trading, extraction and agriculture, and for roles in (e.g.) surgeries, projects and sales campaigns. Training in competencies such as innovation, experimentation and proactivity.

Irish Journal of Management, 40(1), 61-73, 2020  
<https://sciendo.com/article/10.2478/ijm-2021-0004>

**ID: 169**

**Interpersonal Competitiveness in a Cohesive Team:  
Insights from a Business Simulation Game**

Vinod Dumblekar<sup>1</sup>, Upinder Dhar<sup>1</sup>

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<sup>2</sup>Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore, INDIA  
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**Interpersonal Competitiveness in a  
Cohesive Team: Insights from a Business  
Simulation Game**

Dr Vinod Dumblekar & Dr Upinder Dhar

**Interpersonal competitiveness** is the trait of an *individual* that affects behaviour and performance with respect to others in similar situations. **Cohesion** is the characteristic of a *team* that facilitates the collaborative work of its members and affects their members' and team performance.

M. Wardaszko et al. (Eds.): ISAGA 2019,  
LNCS 11988, pp. 259–272, 2021

## Objectives of the study

To examine the relationships between the variables, **interpersonal competitiveness** and **team cohesion**, and their respective attributes.

To develop guidelines from the findings to use the competitiveness of individuals to build and enhance the cohesiveness of teams, and vice versa.

M. Wardaszko et al. (Eds.): ISAGA 2019,  
LNCS 11988, pp. 259–272, 2021

## Method

**The instrument:** The **interpersonal competitiveness** scale had five factors, viz., measured aggression, proactivity, intrinsic motivation, winning orientation, and verbal aggression. The **team cohesion** scale had three factors, viz., goal orientation, open communication, and mutual understanding.

**The players:** 309 postgraduate students, mostly 22-24 years.

**The game:** an all-day competition in an enterprise simulation between teams of four students each. 80 teams.

**Data analysis:** Exploratory factor analysis.

M. Wardaszko et al. (Eds.): ISAGA 2019,  
LNCS 11988, pp. 259–272, 2021

## Results

Generally, **interpersonal competitiveness** and **team cohesion** and their respective attributes correlated with each other. Intrinsic motivation and goal orientation were the most pervasive independent attributes, and they affected each other, six other attributes, and both variables, positively. The independent attributes predicted all other attributes in 12 instances, positively and significantly.

M. Wardaszko et al. (Eds.): ISAGA 2019,  
LNCS 11988, pp. 259–272, 2021

## Implications and recommendations

1. The study may be replicated for managers in large organisations (where cohesion may be more desired than employee competitiveness) and in entrepreneurial firms (where employee competitiveness may be more needed than cohesion) to determine the effect of the relative attributes and the variables.
2. Team leaders may seek to develop their members' intrinsic motivation because of its predictive effect on their aggression and proactivity. Similarly, open communication would enhance goal orientation and mutual understanding, and goal orientation would facilitate open communication.

M. Wardaszko et al. (Eds.): ISAGA 2019,  
LNCS 11988, pp. 259–272, 2021

**ID: 170**

## **Learning from a Business Simulation Game: A Factor-Analytic Study**

Vinod Dumblekar<sup>1</sup>, Upinder Dhar<sup>1</sup>

<sup>1</sup>MANTIS, New Delhi, INDIA

<sup>2</sup>Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore, INDIA

dumblekar@yahoo.com

### **Learning from a Business Simulation Game: A Factor-Analytic Study**

Dr Vinod Dumblekar & Dr Upinder Dhar

**Learning** is the process that changes the perspectives and abilities of the individual to think and behave differently from before. The learning experience creates and changes knowledge through the adaptation and continuous transformation of that experience.

M. Wardaszko et al. (Eds.): ISAGA 2019,  
LNCS 11988, pp. 328–340, 2021.

## Objectives of the study

To analyse the nature of learning produced and felt by the participants from their experiences in a business simulation game.

The business simulation game was an experiential learning exercise whose participants could learn business practices because of its interactive, exploratory, and inter-disciplinary environment.

M. Wardaszko et al. (Eds.): ISAGA 2019,  
LNCS 11988, pp. 328–340, 2021.

## Method

**The game:** one-day enterprise simulation game with exposure to and understanding of business and management.

**The players:** 356 students of two-year post-graduate management school, New Delhi, India. Graduates in commerce, business administration, humanities, economics, engineering, science, and psychology. Most were ~22 years old with no career experience. Females (25%).

**The instrument:** 28 statements in learning and related actions

**Data analysis:** Exploratory factor analysis.

M. Wardaszko et al. (Eds.): ISAGA 2019,  
LNCS 11988, pp. 328–340, 2021.

## Results

The **learning from a business simulation game** factors were **business goal orientation, collaborative action, competitiveness, business skills, and sales function.**

They were positively correlated with each other. They predicted each other, positively, with moderate significance.

**Competitiveness** was the most versatile factor with the capability to predict all other factors.

M. Wardaszko et al. (Eds.): ISAGA 2019,  
LNCS 11988, pp. 328–340, 2021.

## Implications and recommendations

Creativity, innovation, collaborations, simulations and games are critical thinking exercises that offer profound insights in learning and development behaviour.

Game designers must create multi-faceted learning experiences that have elements such as business objectives, resources and sales in their business simulation. Games must offer players frequent interactions to produce knowledge.

M. Wardaszko et al. (Eds.): ISAGA 2019,  
LNCS 11988, pp. 328–340, 2021.

**ID: 172**

**Interpersonal Competitiveness -  
A Study of Simulation Game Participants' Behaviour**

Vinod Dumblekar  
<sup>1</sup>MANTIS, New Delhi, INDIA  
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**Interpersonal Competitiveness - A Study Of  
Simulation Game Participants' Behaviour**

Dr Vinod Dumblekar

**Interpersonal Competitiveness** is an adaptive trait of individuals to accomplish something in any form of human endeavour. It is their desire to win in interpersonal situations, dominate over others or attain a reward or goal, often at the expense of others.

Paradigm, X1V(2), 13–20, July-December 2010.

## Objectives of the study

To understand the composition of the construct of **interpersonal competitiveness** and to study its factors in terms of available research.

Paradigm, X1V(2), 13–20, July-December 2010.

## Method

**The game:** one-day enterprise simulation game in business management.

**The players:** 379 first-year post-graduate management students, New Delhi.

**The instrument:** The Competitiveness Index (Smither & Houston, 1992), a personality scale for interpersonal competitiveness in everyday contexts. 20 items in 5-point Likert format, internal consistency ( $r = .90$ )

**Data analysis:** Exploratory factor analysis.

Paradigm, X1V(2), 13–20, July-December 2010.

## Results

The **interpersonal competitiveness** factors were **measured aggression, proactivity, intrinsic motivation, winning orientation, and verbal aggression.**

Paradigm, X1V(2), 13–20, July-December 2010.

## Implications and recommendations

**Interpersonal competitiveness** is a blend of calculated and directed effort, early action, and the urge to act without visible gain by individuals.

The study did not cover any demographic variables such as age and gender. It should be extended to other profiles such as salespersons, negotiators and entrepreneurs, where identification of their unique competitive traits would be valuable to respondents and others.

Paradigm, X1V(2), 13–20, July-December 2010.

**ID 115**

## **GS and the UN Sustainable Development Goals**

Pieter van der Hijden

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pvdh@sofos.nl



**सतत विकास लक्ष्य**

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	

Poster Presentation  
**Gaming/Simulation and the UN Sustainable Development Goals; Introduction to the ISAGA 2021 Conference Track**

Pieter van der Hijden (pvdh@sofos.nl)  
Amsterdam, Netherlands

Portal page: <https://bit.ly/isaga2021-edgs>

- A. What are the UN Sustainable Development Goals (SDGs)
- B. Why are the SDGs important for the gaming/simulation community / ISAGA?
- C. What are we already doing?
- D. What else can we do?

**A. What are the UN Sustainable Development Goals (SDGs)**

The 17 UN Sustainable Development Goals

- Global Socio-Economic Development Agenda for 2030
- Agenda 2030
- Made up of 17 goals, 169 targets (DCPP included)
- <https://bit.ly/fab-sdgs-en>
- All governments report to UN every 2 years
- Leading principle is "Leave No One Behind (LNOB)"

**B. Why are the SDGs important for the gaming/simulation community / ISAGA?**

Screenshot: Dharadam - online RPG for pre service training of social workers

- Agenda 2030 counts on help from professional associations
- Environmental games, disaster risk reduction and policy exercises have a long history within ISAGA
- We exist 50+ years and with presence in many countries
- This mega challenge offers many opportunities for our G/S community as well

**C. What are we already doing?**



Groupwork during SDG Alignment workshop

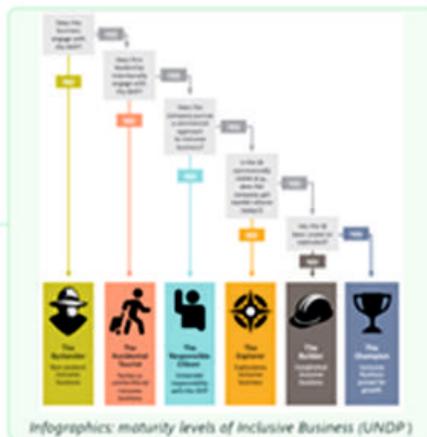
Our members are active as practitioners and scientists, system thinkers and trainers, in a variety of cultures

We developed a growing number of SDG related games and exercises

ISAGA recently started Special Interest Group on Sustainability

ISAGA 2021 now hosts a special track on G/S and UN Sustainable Development Goals

**D. What else can we do?**



Infographics: maturity levels of Inclusive Business (UNDP)

Align individuals and institutes with SDGs

Compiling a (meta) catalog of games and people

Accelerate game development via modularization and re-assembling

Act on a global level, express your views, come up with initiatives and respond to tenders



# SHRI VAISHNAV VIDYAPEETH VISHWAVIDYALAYA, INDORE

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