



# Systems Science Working Group Agenda

Saturday, January 29<sup>th</sup>

Room TBD

Session #	Topic	Presenter	Start Time	End Time	Total Time
1a	Welcome to SSWG	Javier Calvo and James Martin	10:30 AM	11:30 AM	1:00
	Objective:	Introduce the Systems Science Working Group goals, schedule and objectives for IW2022.			
	<b>LUNCH</b>		12:00 PM	1:00 PM	1:00
1b	Systems Science and Enterprise Systems	Javier Calvo, James Martin and Tom McDermott	1:00 PM	3:00 PM	2:00
	Objective:	Identify key issues facing enterprises that can be explored and improved through systems science perspective.			
		<ol style="list-style-type: none"> <li>1. Introduce ES and SS WGs collaboration goals and meeting purpose (30 minutes)</li> <li>2. Identify three problems that enterprises are facing that could be alleviated with the development and/or assistance of a systems theory (90 minutes).</li> </ol>			
	<b>BREAK</b>		3:00 PM	3:30 PM	0:30
1c	Future of Systems Science	George Mobus	3:30 PM	5:00 PM	1:30
	Objective:	Geroge Mobus is President of the International Society for the Systems Sciences			
				<b>Total Time</b>	<b>6:00</b>

**Sunday, January 30<sup>th</sup>**  
 Room TBD

Session #	Topic	Presenter	Start Time	End Time	Total Time
2a	Systems Science and Natural Systems	Javier Calvo and Curt McNamara	9:00 AM	12:00 PM	3:00
	Objective:	Identify key issues facing enterprises that can be explored and improved through systems science perspective. <ol style="list-style-type: none"> <li>1. Introduce ES and SS WGs collaboration goals and meeting purpose (30 minutes)</li> <li>2. Identify three problems that enterprises are facing that could be alleviated with the development and/or assistance of a systems theory (90 minutes).</li> </ol>			
<b>LUNCH</b>			12:00 PM	1:00 PM	1:00
2b	Category Theory	Complex Systems WG, Systems Science WG, NIST	1:00 PM	3:00 PM	2:00
	Objective:	Introduction on Category Theory for Systems Engineering			
<b>BREAK</b>			3:00 PM	3:30 PM	0:30
2c	Category Theory Discussion	Complex Systems WG, Systems Science WG, NIST	3:30 PM	5:00 PM	1:30
	Objective:	Discussion on Category Theory for Systems Engineering			
				<b>Total Time</b>	<b>8:00</b>

**Monday, January 31<sup>st</sup>**

Room TBD

Session #	Topic	Presenter	Start Time	End Time	Total Time
3a	SE Principles and Heuristics	David Rousseau	9:00 AM	10:00 AM	1:00
	Objective:	SE has many “guiding propositions”, variously called heuristics, principles, axioms, tenets, elementary assumptions, basic rules, fundamental truths, hypotheses, etc. These terms are not clearly defined and often used interchangeably. This workshop will present a model of how such ‘guidelines’ originate, how they relate to each other, and how they evolve to enhance the capability of SE. It will argue that the ultimate evolutionary aim of SE principles is to support design elegance, holistic responsibility and transdisciplinarity based on universal systems patterns. The workshop will outline the processes and stages by which this could be achieved. (1 hour – 25 mins presentation, 35 mins discussion)			
3b	Transdisciplinary Systems Engineering	Michael Pennotti, David Rousseau, Peter Brook	10:00 AM	12:00 PM	2:00
	Objective:	Current SE is largely based on heuristics, which encode ‘best practice’, i.e. lessons learned from past experience. However, we are now entering the Fourth Industrial Revolution, and seeing the emergence of “Industry 4.0” and “Society 5.0”. The future we are entering has no precedent, and hence there is no ‘best practice’ for dealing with its challenges. Going forward, current SE heuristics might be increasingly ineffective. To ensure the future relevance and value of SE, we have to find a way to base SE more on principles and less on heuristics. In this workshop the INCOSE FuSE “Bridge Team” will present a model of the nature of SE that shows how the focus of our conversation about the future of SE has to shift to ensure we evolve to deliver the elegant solutions, holistic accountability, and transdisciplinary inclusiveness that will be required of a relevant future SE. (2 hours – 1 hour presentation, 1 hr discussion)			
<b>LUNCH</b>			12:00 PM	1:00 PM	1:00
3c	Critical Systems Thinking and Practice	Mike C. Jackson	1:00 PM	3:00 PM	2:00
	Objective:	Extending the Scope of Application of Systems Engineering to Complex Sociotechnical Systems through discussing 3 possible ways in which SE might realise this ambition: 1. Carry on as before 2. Seek 'scientific foundations' in systems science 3. Enhance SE drawing upon the findings of critical systems thinking			
				<b>Total Time</b>	<b>6:00</b>