	MONDAY	
TIME	**TITLE**	**NOTES / MODE**
09:00 - 09:05	**Welcome**	**5 Co-Organizers, Introduction of the Co-Organizers**
09:05 - 09:20	**Visual Computing in Materials Science**	(C. Heinzl) Introduction of seminar
09:20 - 10:45	**Interactive Introduction session**	**5 Co-Organizers**
	Random match making forming groups of two. Participants should connect to participants they do not know. Each participant introduces him-/herself to the other.	(Participants 10 min)
	Each participant gets introduced by the other to the panel	(Participants 40 * 2 min)
10:45 - 11:15	Coffee and tea break	
11:15 - 12:00	**Overview talk**	**1 x OT (30 min + 15 min discussion)**
	Machine Learning for Material Sciences: Computer Vision at Scientific Facilities	(D. Ushizima)
12:00 - 13:30	Lunch	
13:30 - 14:30	**"The Visual Debugger Challenge"**	**4 Regular Talks (15 minutes each without discussion) Panel Discussions (PD): panelists are the proceeding speakers**
	Reformation and Sparse Interaction in Visualization	(E. Gröller)
	A Visual Interface and Knowledge-Based System to Balance Dose, Quality, and Reconstruction Speed in Iterative CT Reconstruction with Application to NLM-Regularization	(K. Müller)
	Visual Comparison of Ensemble Datasets	(J. Schmidt)
	Visual Debugging in Particle-Based Simulation	(D. Weißkopf)
14:30 - 15:00	**Panel Discussion**	**PD**
15:00 - 15:30	Coffee and tea break	
15:30 - 17:45	**Work Group Discussions**	**(Participants)**
	Organizing Working Group Discussions	5 Co-Organizers
	Defining deliverables	(Participants)
	Setup discussion topics and deliverables	(Participants)
17:45 - 18:00	**Wrap up of Day 1**	
18:00	Dinner	

	TUESDAY	
TIME	**TITLE**	**NOTES / MODE**
09:00 - 09:15	**Recapitulate / Information**	**5 Co-Organizers**
09:15 - 10:00	**Overview talk**	**1 x OT (30 min + 15 min discussion)**
	Application of Machine Learning tools for quantitative 3D-4D materials science?	(G. Requena + F. Sket)
10:00 - 10:30	Coffee and tea break	
10:30 - 11:30	**"The Integrated Visual Analysis Challenge 1"**	**4 Regular Talks (15 minutes each without discussion) Panel Discussions (PD): panelists are the proceeding speakers**
	Tomography and the challenges in visualization	(G. Doga)
	Tomviz: An open source integrated tool for analysis, visualization, and debugging	(M. Hanwell)
	Experiences with synchrotron users working in material science and some of their challenges in the domain of 'The integrated Visual Analysis'	(L. Mancini)
	Multivariate Data Analysis using Fiber Surfaces for Material Science	(G. Scheuermann)
11:30 - 12:00	**Panel Discussion**	**PD**
12:00 - 13:30	Lunch	
13:30 - 14:30	**"The Integrated Visual Analysis Challenge 2"**	**4 Regular Talks (15 minutes each without discussion) Panel Discussions (PD): panelists are the proceeding speakers**
	Quantitative X-ray computed tomography for materials sciences	(J. Kastner)
	Imaging and Tracking Dynamic Phenomena in Materials Research	(W. Heidrich)
	The visualization challenge of tensor-valued strain data from loading experiments to predict mechanical failure	(C. Gollwitzer)
	Why do we need visual and automatised data reduction schemes in X-ray experiments?	(R. Mosko)
14:30 - 15:00	**Panel Discussion**	**PD**
15:00 - 15:30	Coffee and tea break	
15:30 - 17:30	**Work Group Discussions**	**WGD**
	Organizing Working Group Discussions	(Participants 5 Co-Organizers)
	Working Group Discussions	(Participants)
17:30 - 18:00	**Working Groups Reporting Back / Wrap up of Day 2**	WGR
18:00	Dinner	

	WEDNESDAY	
TIME	**TITLE**	**NOTES / MODE**
09:00 - 09:15	**Recapitulate / Information**	**5 Co-Organizers**
09:15 - 10:00	**Overview talk**	**1 x OT (30 min + 15 min discussion)**
	Real-time data analysis and experimental steering: Do we need it? Are we ready for it?	(F. De Carlo)
10:00 - 10:30	Coffee and tea break	
10:30 - 11:30	**"The Interactive Steering Challenge"**	**4 Regular Talks (15 minutes each without discussion) Panel Discussions (PD): panelists are the proceeding speakers**
	Intuition-based Visual Analysis of Microstructures	(A. Aboulhassan)
	Methods to estimate an unknown 3D object pose from few-view data (e.g. starting from 1 projection) to dynamically steer the acquisition for e.g. inline inspection or robotic CT	(J. De Beenhower)
	MESHFREE: CFD-simulation with interactive/computational steering	(H. Hagen)
	Next Generation NDT – An Enabling Technology for the Industry of the Future	(A. Osman)
11:30 - 12:00	**Panel Discussion**	**PD**
12:00 - 13:30	Lunch	
13:30 - 17:45	**Traditional Seminar Outing**	**(Participants)**
	Organizing Traditional Seminar Outing Discussions	(Participants 5 Co-Organizers)
	Traditionally, seminars have an outing on Wednesday afternoon and there is a variety of possible destinations. For suggestions and help, please contact our staff at the reception on the first day of the seminar. Weather permitting, it is always a good idea to just go on a hike. A hike offers more opportunities to talk to many people within a group than any other option.	(Participants)
17:30 - 18:00	**Working Groups Reporting Back / Wrap up of Day 3**	WGR
18:00	Dinner	

	THURSDAY	
TIME	**TITLE**	**NOTES / MODE**
09:00 - 09:15	**Recapitulate / Information**	**5 Co-Organizers**
09:15 - 10:00	**Overview talk**	**1 x OT (30 min + 15 min discussion)**
	Through the micro-CT and what we found there? Quantifying images of fibrous materials	(S. Lomov)
10:00 - 10:30	Coffee and tea break	
10:30 - 11:45	**"The Quantitative Data Visualization Challenge 1"**	**4 Regular Talks (15 minutes each without discussion) Panel Discussions (PD): panelists are the proceeding speakers**
	Visually assisted reconstruction of geometric objects in microscopic data	(H.C. Hege)
	Uncertainty Quantification and Its Role in Materials By Design	(M. Kirby)
	Advanced impact damage characterisation of composite laminates by X-ray Computed Tomography	(F. Leonard)
	Topology-driven approaches for analysis and visualization of material structures	(V. Natarajan)
	Droplets, Bubbles and other Material Structures	(T. Ertl)
11:45 - 12:15	**Panel Discussion**	**PD**
12:15 - 13:30	Lunch	
13:30 - 14:30	**"The Quantitative Data Visualization Challenge 2"**	**4 Regular Talks (15 minutes each without discussion) Panel Discussions (PD): panelists are the proceeding speakers**
	Features of tensor fields (latent model) extracted from Kalman filter tracking data	(J. Simmons)
	Image modelling and computational materials science	(K. Schladitz)
	Quantitative analysis of CT data using Machine Learning	(S. Paciornik)
	Visualization of Quantitative Data Derived from Volumetric Imaging	(T. Wischgoll)
14:30 - 15:00	**Panel Discussion**	**PD**
15:00 - 15:30	Coffee and tea break	
15:30 - 17:30	**Work Group Discussions**	**WGD**
	Organizing Working Group Discussions	(Participants 5 Co-Organizers)
	Working Group Discussions	(Participants)
17:30 - 18:00	**Working Groups Reporting Back / Wrap up of Day 4**	WGR
18:00	Dinner	

	FRIDAY	
TIME	**TITLE**	**NOTES / MODE**
09:00 - 10:00	**Recapitulate / Information / Working Groups Reporting**	**5 Co-Organizers, WGD**
	Working Groups Reporting	(Participants)
10:00 - 10:30	Coffee and tea break	
10:30 - 11:30	**Working Groups Reporting**	**WGD**
	Working Groups Reporting	(Participants)
	Wrap-up discussion	(Participants 5 Co-Organizers)
12:00 - 12:15	**Closing Remarks**	**5 Co-Organizers**
12:15 - 13:45	Farewell Lunch	

Overview talks (OT):	45 + 15 minutes discussion.		
Regular talks (RT):	15 minutes each without discussion		
Panel Discussions (PD):	panelists are the proceeding speakers		
Working Groups Breakout Discussion (WGD)	TBD		
Working Groups Reporting Back (WGR)	TBD		