ENVISION2018

Zemax Conference Agenda

Monday, November 5

Mark Nicholson
Zemax Chief Executive Officer

Dan Hamann
Zemax Chief Revenue Officer

Sanjay Gangadhara
Zemax Director, R&D

Matthew Sutton
Zemax Principal Product Manager

Zemax

7:00 am – 7:45 am	**Welcome breakfast**	
8:00 am – 8:20 am	Conference kick-off and welcome **Dan Hamman, Zemax Chief Revenue Officer** Join us to get Envision 2018 off to a great start!	
8:20 am – 9:50 am	Gamechangers in optical design **Mark Nicholson, Zemax Chief Executive Officer and Sanjay Gangadhara, Zemax Director, R&D** The industry is moving faster than ever—pressure to keep up is enormous. You must continue to evolve. You must stay ahead of it. You must change your own game. We're going to help you change the way you work, solving not just the problems you have today, but also those you will face tomorrow. Join Mark Nicholson and Sanjay Gangadhara for a joint presentation about the future of virtual prototyping, the nexus of optimization and tolerancing, and much more. Come join the discussion on next-generation design tools!	
10:00 am – 10:45 am	Looking forward: Zemax Virtual Prototyping **Matthew Sutton, Zemax Principal Product Manager** With the game changing constantly, what's ahead for Zemax? Find out what Zemax Virtual Prototyping is and how it will help you speed time to market, save costs and produce better results. Join us for a tour of what's ahead for Zemax products as we know them today and where we are taking them into the future.	
11:00 am – 11:45 am	Optical design of a compact DUV spectrometer for entry, descent, and landing applications **Waylin Wing, Optial Engineer, Lumenflow** Learn about the design of a compact deep ultraviolet (DUV) spectrometer which is a component of a recently awarded NASA grant, where the objective is to demonstrate feasibility of rugged and small spectrometers for DUV analysis of atmospheric properties during the entry, descent, and landing (EDL) phase of a mission for planetary landing craft.	
12:00 pm – 12:45 pm	**Lunch**	
	Track 1	**Track 2**
1:00 pm – 1:45 pm	What's ahead for OpticStudio **Dr. Thomas Pickering, OpticStudio Product Manager** Learn about new, recently added features and updates in OpticStudio to take your optical design to the next level and improve your design workflow. Plus, get a sneak peek into features that are coming up soon!	Customer Presentation - Coming soon
2:00 pm – 2:45 pm	Customer Presentation - Coming soon	How mechanical engineers are using LensMechanix **Isis Peguero, LensMechanix Product Manager** In this session, you'll learn about the five ways that mechanical engineers packaging optical systems in CAD are using LensMechanix. Find out how this enhanced process leads to faster time to market and lower costs. You will also get the opportunity to learn where the LensMechanix team plans to expand capabilities in the future and what that means for you.
3:00 pm – 3:45 pm	Addressing and simplifying STOP **Sanjay Gangadhara, Zemax Director, R&D** Analyzing the Structural Thermal Optical Performance (STOP) of an optical product can be challenging. In this session we'll review common roadblocks, share thoughts on how to simplify the STOP process, and discuss the tools Zemax is currently developing to make STOP analysis easier and more accurate in the future.	How to Properly Analyze Designs that Violate Standard Approximations for Low-cost Imaging Applications **Jeremy Huddleston, LightPath Technologies** A review of novel techniques and lessons learned for evaluating compact, low-cost IR imaging lenses. These lenses are particularly challenging to design due to stringent limitations on cost, size, available materials and number of elements. As a consequence, the necessary performance trade-offs often lead to unexpected but significant inaccuracies for standard calculations of imaging design metrics, such as EFL, f/#, FOV, MTF, distortion, relative illumination, and even achromatic and athermal analysis. Design examples will be used for lenses currently on the market, including patent-published details of the original Lepton lens inside the successful FLIR ONE thermal imager for cell phones – a design that broke conventions and began the trend towards thermal imaging in consumer applications.
4:00 pm – 4:45 pm	Going the Extra Mile with Contrast Optimization: A Practical Comparison of Micro-Imaging System Optimization **Bob Householder, Access Optics** With the introduction of the Contrast Optimization feature in 2017, imaging system designers have another option for targeting imaging quality. The new technique is not only an alternate to direct MTF optimization, speed and performance improvements are possible. The seminar will take a practical approach in the use of Contrast Optimization in the development of a micro imaging system as is commonly used in robotic surgery, general surgery and precision small-scale imaging in defense, industrial and commercial markets. A comparison will be made using other optimization methods and also look at results using an alternate lens design program.	Tools for effective heads-up display design and analysis **Alissa Wilczynski, Zemax Global Engineering Services Manager** How do you effectively use OpticStudio to design and analyze the performances of a Heads-Up Display? Learn how to use tools like the NSC Sag Map, the Full-Field Aberration, the Reverse Elements Tools and many others in this informative session.
	Hosted dinner	

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Tuesday, November 6

Dr. Thomas Pickering
OpticStudio Product Manager

Isis Peguero
LensMechanix Product Manager

Alissa Wilczynski
Zemax Global Engineering Services Manager

Erin Elliott
Zemax Principal Optical Engineer

Zemax

	Track 1	Track 2
7:00 am – 7:45 am	**Breakfast**	
8:00 am – 8:45 am	What's ahead for OpticStudio **Dr. Thomas Pickering, OpticStudio Product Manager** Learn about new, recently added features and updates in OpticStudio to take your optical design to the next level and improve your design workflow. Plus, get a sneak peek into features that are coming up soon!	Incorporating commercial photographic lenses into your optical system designs **Craig Unick, Senior Optical Designer, Keo Scientific** Proof of concept experiments and home-made instruments have served a broad community of researchers well. In many cases, off-the-shelf lenses from Canon, Nikon, Fujinon, and others, are used where a high-resolution flat image with accurate color registration is required. But, newer generations of instruments require better performance, which can only be achieved via thorough optical design. OpticStudio provides the framework to model these optical systems, but finding the information on the actual lens prescriptions can be challenging. During this session, you will learn the background on instrumentation designed using camera lenses and the patents of commercial photography lenses. The talk will culminate with an example of how to implement a lens prescription from a patent in OpticStudio, verifying that the performance of the lens prescription matches the real-life lens.
9:00 am – 9:45 am	Gaussian beam calculations compatible with general astigmatism **Paul Colbourne, Director, Optical Switching Technology Advanced Research, Lumentum** Most calculations of Gaussian beam properties, such as beam size and waist position, assume "simple astigmatism," in which the beam and all cylinder lenses are aligned with the x-y axes, so if a system doesn't meet this condition, the results re invalid. Even if an optical system does not have intentionally rotated elements, astigmatism caused by off-axis incidence on optical elements can create a state of "general astigmatism." This causes calculations which assume simple astigmatism to give incorrect results. During this session, learn a new methodology that has been developed for calculating Gaussian beam properties using rays, which is compatible with general astigmatism, so you can achieve accurate results with no restrictions on the orientation of optical elements.	How mechanical engineers are using LensMechanix **Isis Peguero, LensMechanix Product Manager** In this session, you'll learn about the five ways that mechanical engineers packaging optical systems in CAD are using LensMechanix. Find out how this enhanced process leads to faster time to market and lower costs. You will also get the opportunity to learn where the LensMechanix team plans to expand capabilities in the future and what that means for you.
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1:00 pm – 1:45 pm	Fireside chat Join us for a panel of Zemax users as they discuss the future of optical engineering.	
2:00 pm – 2:45 pm	The technical training, tools, and team supporting you **Alissa Wilczynski, Zemax Global Engineering Services Manager** Get an introduction to all of the resources in the Zemax customer support organization available to help users of OpticStudio and LensMechanix. Learn how Zemax Support is growing to incorporate more customer feedback, better respond to customer needs, and work to build long-lasting relationships.	
3:00 pm – 3:45 pm	Collaborating on the OpticStudio roadmap **Matthew Sutton, Zemax Principal Product Manager** Put on your thinking cap on and get ready to collaborate on the future of OpticStudio. In this interactive session, attendees will be asked to contribute ideas to the OpticStudio product roadmap through fun collaboration and group brainstorming activities.	
4:00 pm – 4:45 pm	Customer Presentation - Coming soon	
4:45 pm – 5:00 pm	Locknote: Reflections **Mark Nicholson, Zemax Chief Executive Officer** Join us for reflections on two days of learning, growing, and envisioning as a community. Mark will share his key takeaways and set the stage for the final day of workshops.	

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Zemax Conference Agenda

Wednesday, November 7

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	Workshops
7:00 am – 7:45 am	**Breakfast**
8:00 am – 9:30 am	LIDAR: Developing low-cost systems for autonomous vehicles **Erin Elliott, Zemax Principal Optical Engineer** For driverless cars to see mainstream adoption, engineers must solve critical lidar design challenges—including improving the detection range and field of view, ensuring adaptability to environmental factors, and ensuring safety. This workshop will cover: • Tools available to quickly try and identify new solutions • How to incorporate manufacturing and assembly limits into design constraints to ensure manufacturability and production efficiency • Simulating the impact of the mechanical design on the optical system performance
9:45 am – 11:30 am	How to validate an optomechanical prototype in LensMechanix **Isis Peguero, LensMechanix Product Manager and Dr. Thomas Pickering, OpticStudio Product Manager** LensMechanix empowers mechanical engineers to quickly design, test, and validate their designs to ascertain compliance with optical engineer's specifications. LensMechanix addresses all issues associated with the optomechanical process, from sharing the initial optical design, assessing the change in optical performance, and achieving final validation prior to building the first prototype. This workshop will go over key features of LensMechanix including how to: • Load an OpticStudio file directly into Creo • Design using exact optical geometry • Apply a surface finish for stray light control • Run a ray trace to validate your designs • Generate ISO 10110 drawings
11:45 am – 1:00 pm	**Lunch**
1:00 pm – 2:45 pm	Hologram modeling overview and application to augmented reality systems **Erin Elliott, Zemax Principal Optical Engineer** Weight and size are important considerations for wearable augmented reality systems, and holograms are a great way to maintain compactness in a system. In this workshop, we will: • Review the theory behind holograms • Introduce several options for modeling holograms in OpticStudio and discuss their capabilities and limitations • Examine a hologram-coupled waveguide currently available on the market • Create a model of the hologram waveguide and visualize the results
	End of Conference