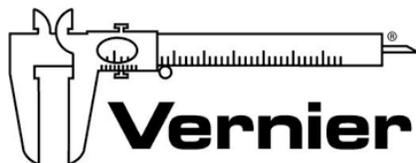# IsLAND

2015

6th Annual Independence Science
Learning a New Direction
Conference on Disability

Hotel Rose
Portland Oregon
Friday, November 20, 2015

50 SW Morrison St.
Portland, OR 97204

Sponsored by:
Vernier Software & Technology

Vernier

Conference Mission

The IsLAND conference on Disability serves to inform and connect educators and future educators to the latest assistive technology, while exploring alternative teaching methods and simple access solutions for learning. Multi-sensory and hands-on approaches are emphasized during this conference in order to generate elevated student interest in classroom material and, thus, improve concept development. Symposium topics also include factors that contribute to Science, Technology, Engineering, and Mathematics (STEM) underrepresentation and strategies for increasing representation among students with disabilities.

Schedule of Presentations
-Friday, November 20-

8:00 a.m:	Breakfast

9:00 a.m.:	Welcoming and Introductions	
9:10 a.m.:	Cary A. Supalo:	*Emerging Trends in STEM Education for Students with Disabilities*
9:40 a.m.:	Holly Stowell:	*Tactile Graphics for Science and Math*

10:25 a.m:	Morning Tea and Coffee

10:40 a.m.:	Ed Summers:	*Accessible Analytics Using SAS*
11:25 a.m.:	Richard Ladner:	*Making Computer Science Accessible*

12:10 p.m.	Lunch

1:20 p.m.:	Paul Thorman:	*A More Accessible Lab in Electronics and Optics for the Blind or Visually Impaired*
2:15 p.m.:	John Gardner:	*Universally Accessible Figures*

3:00 p.m.:	Afternoon Tea and Coffee

3:15 p.m.:	Robert Jaquiss:	*Innovations in Tactile Graphics and Three-Dimensional Printing*
4:00 p.m.:	Ken Perry	*The Power of SALS: A device that brings STEM to all students*
4:45 p.m.:	Discussion and Concluding Remarks	

ISLAND Conference 2015

Presenter: **Cary A. Supalo**
Title/Affiliation: President, Independence Science
Address: 3000 Kent Ave. West Lafayette, IN 47906
E-mail: csupalo@independencescience.com

Abstract Title: **Emerging Trends in STEM Education for Students with Disabilities.**

With the unveiling of the Sustainable Development Goals in September 2015, the landscape of the field of STEM education for students with disabilities is positioned to experience a sea-change. An overview of the current and emerging landscape includes considerations such as: what are some current opportunities and emerging trends that are now being seen with regards to the full inclusion of the disabled into the STEM work force?; why should access technology, science education faculty, and other rehabilitation experts focus time, energy, and effort on supporting persons with disabilities to pursue STEM career paths; how can the many misconceptions and low expectations of persons with disabilities be overcome and thus open doors of opportunity to contribute to the science professions and participate in a global knowledge economy?

Presenter: **Holly Stowell**
Title/Affiliation: Technical Director, Irie-AT Inc.
Address: 1750 SW Third Street, Suite C, Corvallis, Oregon 97333
E-mail: holly.stowell@irie-at.com

Workshop Title: Tactile Graphics for Science & Math.

This workshop will focus on the TactileView Tactile Graphics Suite as a cost-effective method for producing quality tactile graphics for STEM (and other) subjects. The presenter will demonstrate new features of TactileView, including compatibility with Duxbury DBT and "dot-view" editing. The presenter will also show other special features of TactileView, like bitmap filtering, automatic chart creation and translation of braille math codes from LaTex and MathType.

ISLAND Conference 2015

Presenter: **Ed Summers**
Title/Affiliation: Senior Manager, Accessibility, SAS

Workshop Title: Accessibility Analytics using SAS.

Success in the 21st century knowledge economy requires quantitative skills including numerical literacy and the ability to analyze data. However, students and professionals with visual impairments are at a disadvantage because the tools that are used to analyze data typically use data visualization.

This presentation will demonstrate recent progress towards accessible analytics and accessible data visualization using SAS – the market leader in Business Analytics software that is used at more than 70,000 customer sites around the world including more than 3,000 institutions of higher education.

ISLAND Conference 2015

Presenter: **Richard E. Ladner**
Title/Affiliation: Computer Science and Engineering, University of Washington

Abstract Title: **Making Computer Science Accessible.**

Computer science is a broad field encompassing a broad range of topics from theory to software/hardware engineering. Important topics such as artificial intelligence, machine learning, computer vision, natural language processing, and human-computer interaction have huge applications in making the world, including education, more accessible. In this presentation I will talk about specific technologies that have been developed at the University of Washington. These include processes to reduce the time to produce tactile graphics, audio-tactile graphics using QR-codes, tools to improve blind programmer productivity, Braille-based text input for touch screens, buttonless numeric input for touch screen, secure password entry for blind users, and Braille-based games for blind youth.

In addition to technology development I will present AccessComputing, a NSF-funded project with the goal of increasing the participation of people with disabilities in computing fields. AccessComputing has helped sponsor many activities with blind students including professional development workshops and academic internships.

ISLAND Conference 2015

Presenters: **Paul Thorman (Haverford College), Suzanne Amador Kane, Kerstin Perez, Kevin Setter, Daniel Gillen, and Sacha Nandlall**

Abstract Title: **A More Accessible Lab in Electronics and Optics for the Blind or Visually Impaired.**

Our team at Haverford College has modified a standard second-year lab to be more accessible for one of our physics majors, who is blind. This lab covers electronics of AC circuits, wave and resonance phenomena, and multi-lens geometric optics. To replace the standard oscilloscope, we used off-the-shelf software from Vernier (LoggerPro) to read out voltages through a LabPro device, lowering the frequency of our AC circuits to ensure good sampling by the LabPro. For optics, we used a translucent screen with a standard photometer to create a sonified "focus detector" that performs comparably to visual assessment of focus. These solutions are based on modifications of standard lab equipment and should be in reach for most high school or college physics programs.

ISLAND Conference 2015

Presenter: **John Gardner**
Title/Affiliation: ViewPlus Technologies Inc.
Address: 1750 SW Third Street, Suite C, Corvallis, Oregon 97333
E-mail: john.gardner@viewplus.com, http://www.viewplus.com

Abstract Title: Universally-Accessible Figures.

Figures are an essential part of scientific literature, but people with severe print disabilities do not presently have good access to figures. Most figures are potentially very accessible through a combination of tactile and audio description, but audio-tactile technology has been considered too labor-intensive and difficult for widespread use. ViewPlus software currently in beta test could greatly reduce those barriers. The new IVEO Transformer permits quick conversion of bit-map graphics to excellent audio-tactile accessible SVG. And its new end-user InSight system gives end users simple hassle-free access to even very complex figures. Transformer and InSight will be demonstrated.

ISLAND Conference 2015

Presenter: **Robert Jaquiss**
Title/Affiliation: Independence Science
Address: 3000 Kent Ave. West Lafayette, IN 47906
E-mail: rjaquiss@independencescience.com

Abstract Title: **Innovations in Tactile Graphics and Three-Dimensional Printing**

There are a variety of methods for creating tactile graphics and models. Each has its place. The transcriber should view the available as options rather than choosing one option over another. Some methods are better for displaying graphics while others are better for displaying 3d objects. The presentation will feature show and tell.

ISLAND Conference 2015

Presenter Name: Ken Perry
Title/Affiliation: Software Engineer / Project Leader, Technical Product
Research, American Printing House for the Blind
Address: 1839 Frankfurt Ave, Louisville, KY 40206

Abstract Title: **The Power of SALS: A device that brings STEM to all
students**

Individuals with visual impairments are underrepresented in professional STEM fields. This consequence can take root early if elementary school students with visual impairments are unable to participate in hands-on activities during science lessons. Thus, experiences that spark the beginning of a science career are irretrievably missed. The Submersible Audible Light Sensor, or SALS, addresses this issue. The device consists of a light detecting probe connected to a unit that converts light to sound. When the probe is placed in a reaction vessel, changes in light intensity caused by a chemical reaction are converted to a series of tone changes. Real time observations of typical science phenomena such as changing pH and chemical precipitation come alive as never before. This device will restore the wonder of chemistry and biology to young students with visual impairments and no doubt enhance it for their sighted peers.

ISLAND Conference 2015

Presenter Name: Ken Perry
Title/Affiliation: Software Engineer / Project Leader, Technical Product
Research, American Printing House for the Blind
Address: 1839 Frankfurt Ave, Louisville, KY 40206

Abstract Title: **Introducing an Accessible Electronics learning tool**

In partnership with Elencro, APH is researching making Snap Circuits accessible for all. As with other STEM fields electronics has been a field where blind or visually impaired students have been left out. Now with Snap Circuits and minor adjustments a blind or visually impaired student can work with their peers and do the same experiments. Students as young as 3rd grade and as old as 108 years old can learn electronics with everything from basic circuits to robotic rovers. Using the Snap Circuits Junior kit, the presentation will show how the kits have been made accessible by teaching the participants the differences in the properties of series and parallel circuits. Input from participants is requested on the need of this product.

ISLAND Conference 2015

Presenter Name: Ken Perry
Title/Affiliation: Software Engineer / Project Leader, Technical Product Research, American Printing House for the Blind
Address: 1839 Frankfurt Ave, Louisville, KY 40206

Abstract Title: **Inclusive education with the powerful family of Orion calculators**

Developed for the American Printing House for the Blind by Orbit Research Inc. working with Texas Instruments, the Orion TI-84 Plus Talking Graphing Calculator and the Orion TI-30Xs Talking scientific Calculator brings inclusion in the classroom to a new level by adding seamless accessibility to two of the most popular hand held calculators. Using the Orion TI-84 or the Orion TI-30XS, blind or visually impaired students can work alongside their sighted peers doing complex mathematics such as fractions, matrixes, graphing, and statistics; and professionals can complete mathematical tasks independently in fields such as finance, engineering, the sciences, and technology. No special training is required to achieve this high level of access. The seamless access to all features of the Orion TI-84 Plus Talking Graphing Calculator and the Orion TI-30XS Talking Scientific Calculator makes them Must HAVE tools for students and professionals with visual impairments in STEM fields.