U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Enhanced Functionality and Building Integration Panel:
New and Innovative Form Factors Enabled by SSL

Kelly Gordon, Pacific Northwest National Laboratory

January 31, 2018 – DOE SSL R&D Workshop
Nashville

What do we mean by new form factors?

OLED installation experience

NGL/NGLS experience

Getting from here to there

Non-traditional shapes, sizes and forms

Integrated into architecture and furniture

Smaller, thinner

Dematerialized

Uncluttered

Innovative form factors with OLED

Aurora Lighting Design, Inc, office space
Photo courtesy Acuity Brands Lighting

But the drivers have to go somewhere

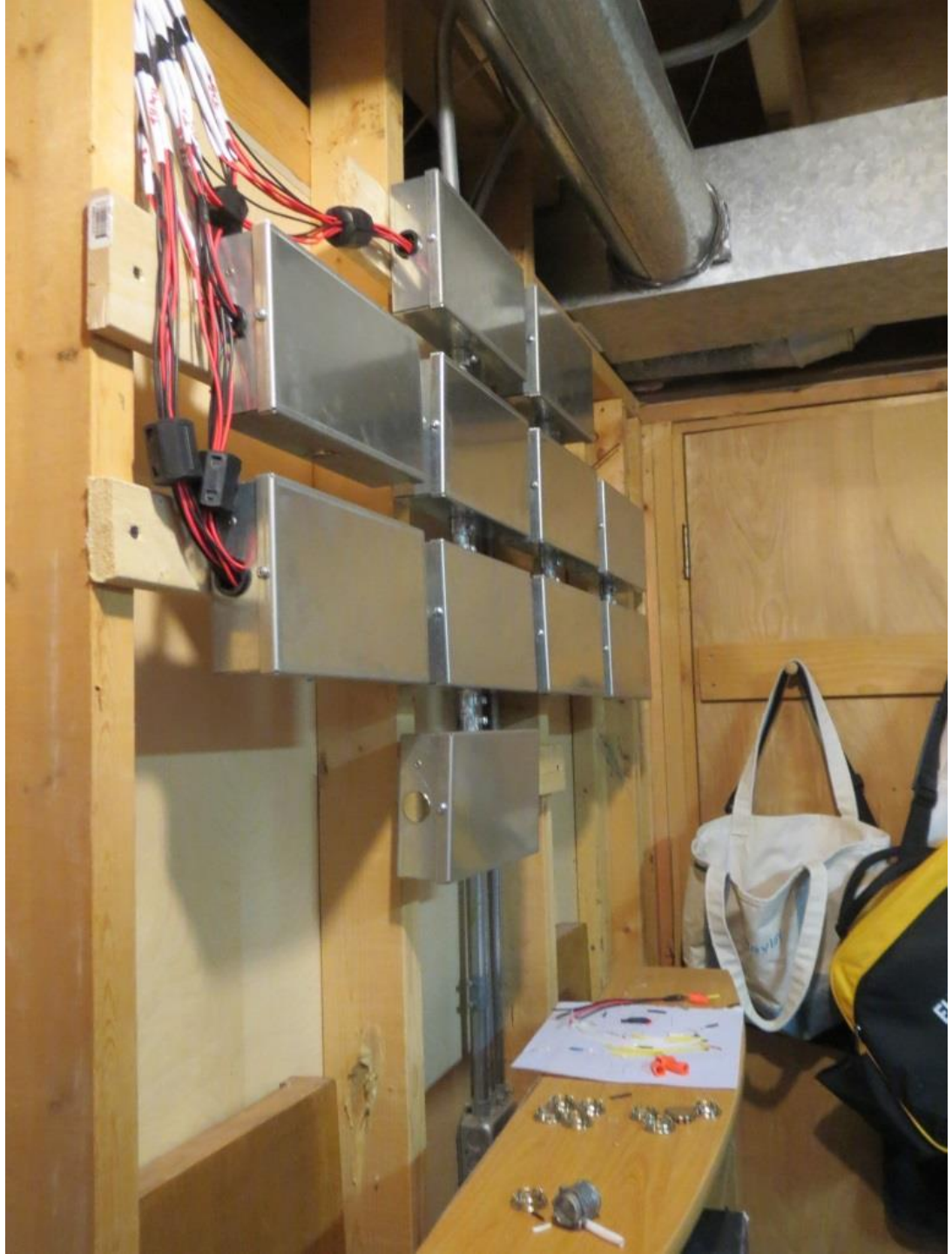
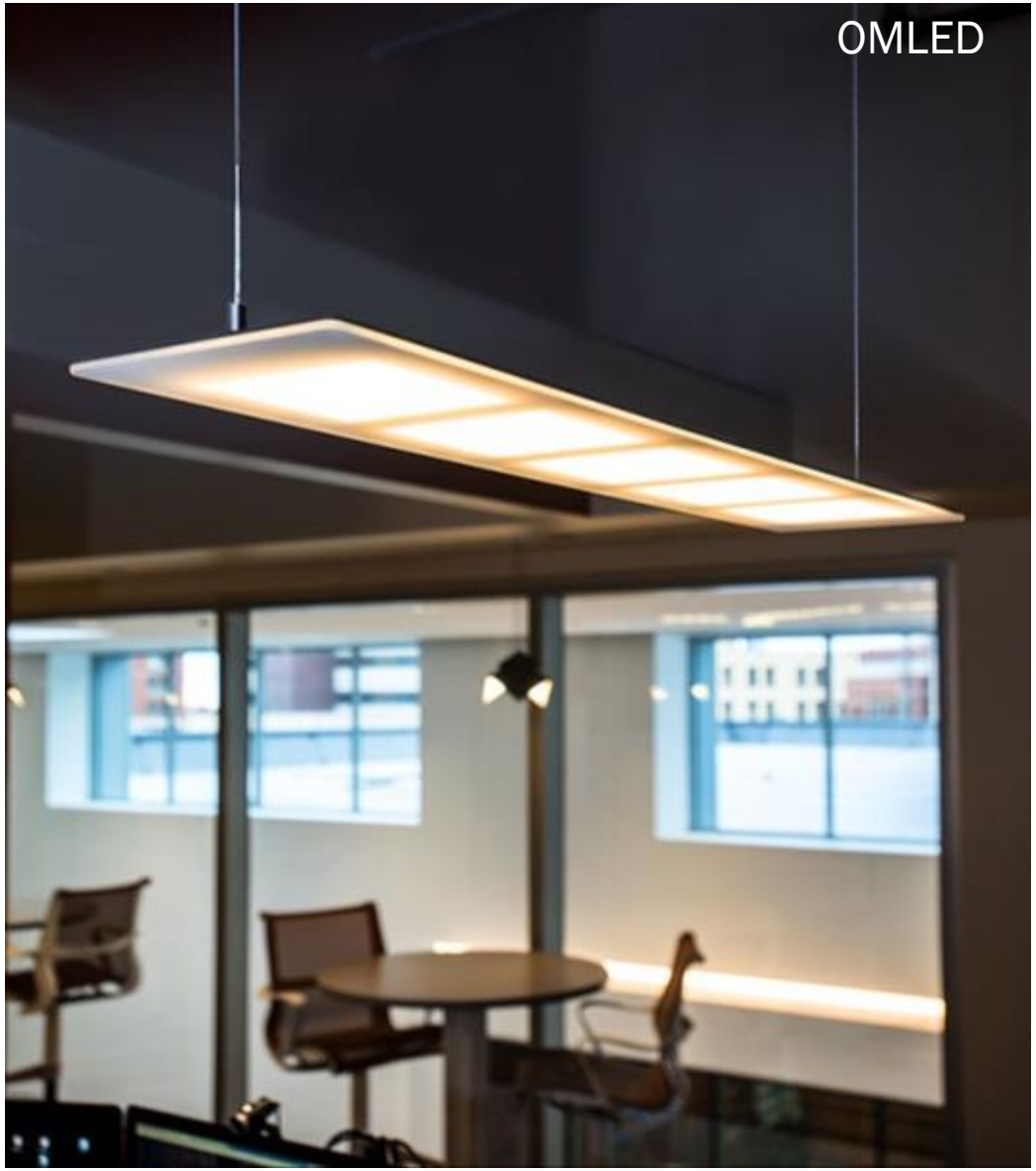


Photo courtesy Aurora Lighting Design, Inc.

OLEDs in a renovated office



Visa Lighting
Photo: DKB LLC


Birot


DesignPlan

DKB Accounting Offices
Photo courtesy OLEDWorks LLC

DKB Accounting Offices
Photo courtesy OLEDWorks LLC

Lighting designer's wish list for innovative form factors

- Easy frames for electrified luminous tiles, wall and ceiling surfaces with rugged, standardized connectors (ala USB) so they are easy to pop in and out
- Drivers should be sleekly integrated
- Light units that clip together in 3D shapes and configurations as decorative pendants or cubes used as shelving or cabinets
- Make them desirable as objects, with curvable shapes or wrappable materials, rather than rigid 4" x 4" panels
- Ability to change the light distribution, with snap-on lenses to allow angling the light downward, or upward, or batwing distribution

Experience from NGL/NGLS competitions

Characteristics of the historical NGL competitions:

Demanding requirements

Expert evaluations

Seeking to learn and spur improvement

NGL invited innovative approaches and form factors


Quarkstar LLC

Blackjack Lighting


Finelite

Cree

Eaton


Landscape Forms

New NGLS looking at connected lighting systems

Long term installations in real facilities

Installation issues

Configuration complexity

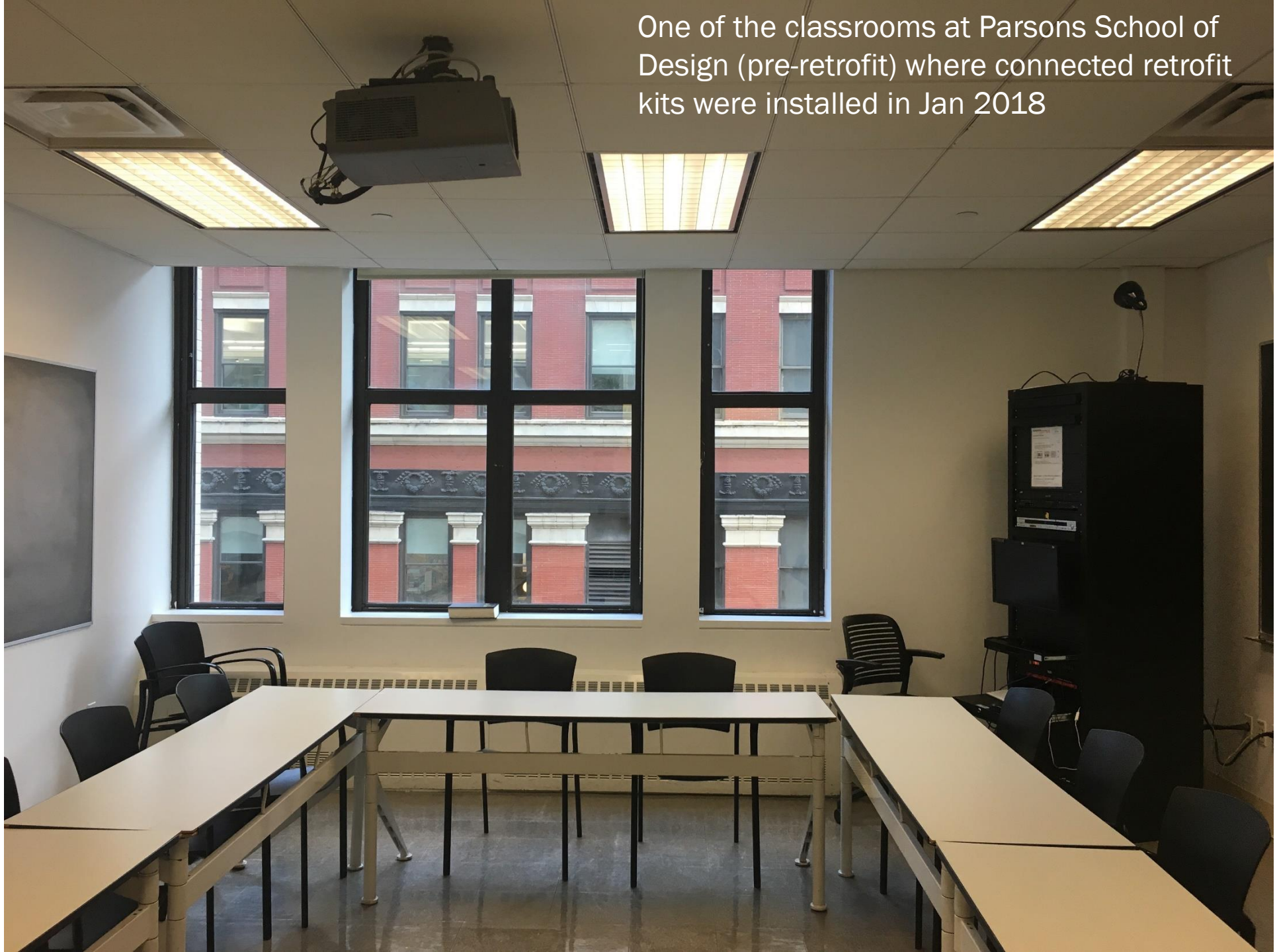
User interface


YORK

Configuration Complexity

- Systems that are overly complicated and time-consuming to configure have historically delivered less than ideal performance.
- Reduced configuration complexity increases the likelihood that deployed lighting controls will be correctly and consistently operating, increasing energy savings.

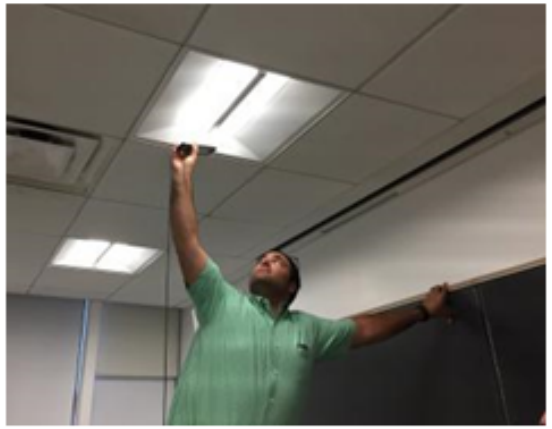




One of the classrooms at Parsons School of Design (pre-retrofit) where connected retrofit kits were installed in Jan 2018

Learn more

Webinar Feb 13



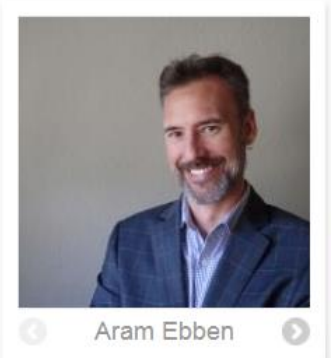
Webinar: Lessons Learned from the NGLS "Living Lab"

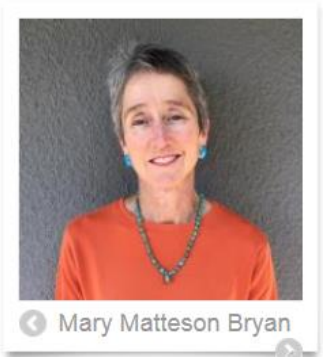
On February 13 at 1:00 pm Eastern Time, DOE will host a one-hour webinar to share lessons learned to date from NGLS competitions 1 and 2. Ruth Taylor from Pacific Northwest National Laboratory will provide an inside look at the challenges encountered in the installation and configuration of these lighting systems in working classrooms. How did specifier, manufacturer, and installer preconceptions create delays? How did issues related to user interfaces and conflicting control strategies cause confusion? And what can we learn from feedback from lighting experts and users in the classrooms? Register now.

https://energy.gov/eere/ssl/next-generation-lighting-systems-webinar

Learn more

Workshop at Light Fair May 7





So You Think Your System is Easy to Install and Startup?

Aram Ebben, exp Services, Mary Matteson Bryan, Energy Engineering, Ruth Taylor, Pacific Northwest National Lab

Room: S403B
Session Type: 3-hr Conference Workshop
Pre-Requisites: none
CEU: 3
Date: Monday, May 7
Time: 2:00 PM - 5:00 PM
Session Code: L18W08
Type of Session: 3-hour workshops
Session Level: All Levels
Teaching Method: Lecture, Panel, Interactive
Type of Track: Applications Research, Design Tools and Technologies, Intelligent Lighting and Connectivity
Short Course Description:
Join the US DOE NGLS evaluation team for a frank discussion of helpful and painful lessons learned from evaluation of seven easily installed and configured connected lighting systems.
Learning Objectives:

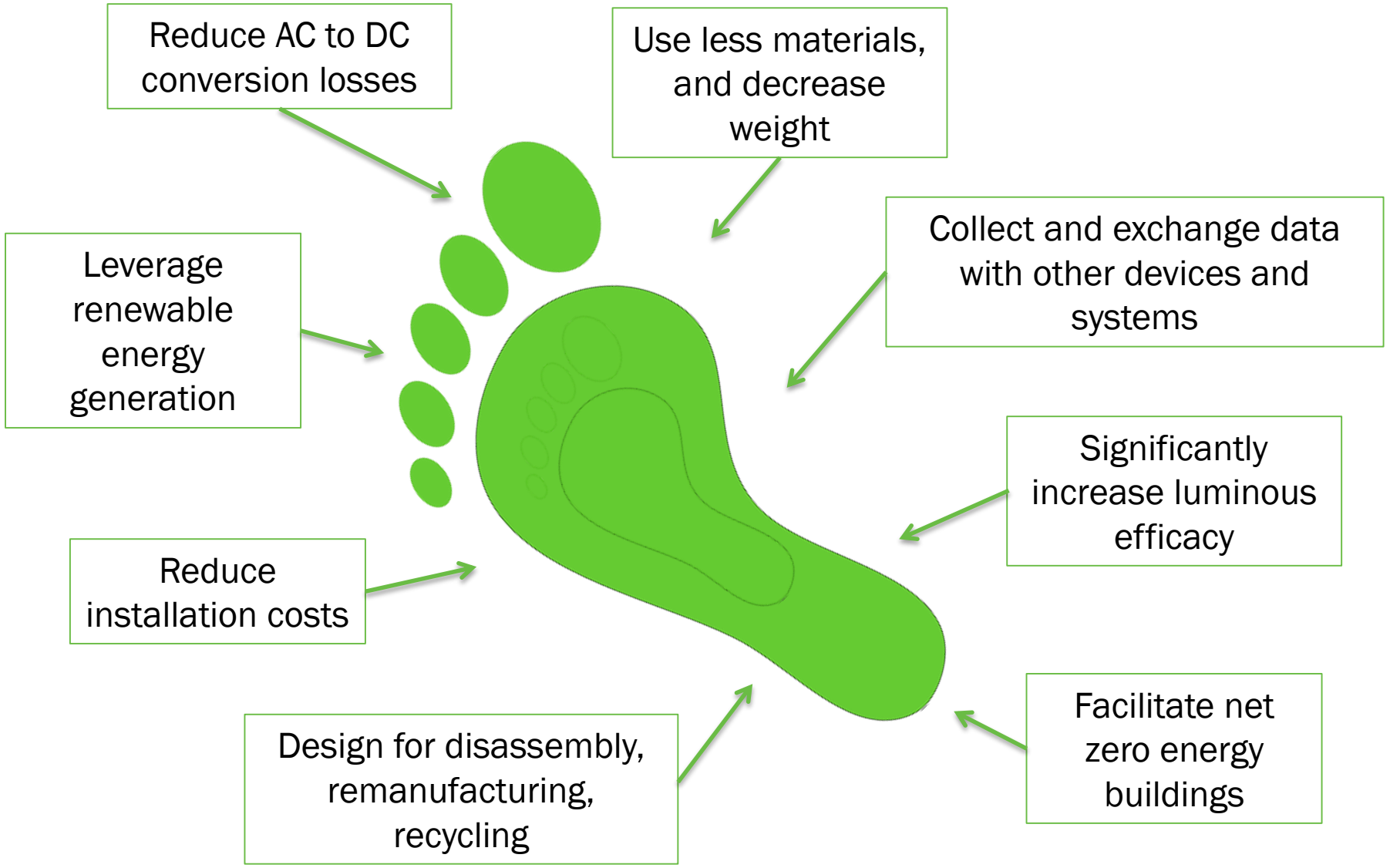
- Understand important criteria for specifying easily installed and configured connected lighting systems
- Formulate criteria and test plans for evaluation of connected lighting systems
- Understand suitable installation and configuration methods for connected lighting systems
- Specify documentation requirements and communication methods for successful installation of connected lighting systems

Target Audience:
Architect / Interior Designer / Landscape, Lighting Designer / Engineer, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor, Utility/ Energy Services, Government Official / Municipality, Intergrator / Aggregator, Sustainability Officer

https://www.lightfair.com/conference/conference-program

From here to there

Smaller lighting footprint



Take-aways

- **The sky is the limit – everything is possible with SSL**
  - Anything non-standard is more complicated, more costly
  - Can commoditization and customization co-exist
- **Higher efficacy LEDs will only help**
  - Makes smaller heat sinks and less mass possible
  - More degrees of freedom in design
- **Old forms, new forms, we want them all**
- **Turning over existing infrastructure takes a long time**

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