Scaling “makerspaces” across the Web
By Rick Luce & Carl Grant, University of Oklahoma Libraries
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Provost Goals

Defined As:

P1. Student Success
P2. Faculty Impact
P3. Community Impact
P4. Brand Equity
Library Goals

The OU Libraries has set the following supporting goals:

• Creating Excellence in the Library Experience: Virtual & Physical
• Building on Excellence in Special Collections
• Supporting OU Campus Research and Data Stewardship
• Charting a New Role for Scholarly Communications
• Strengthening Skills and Capabilities (the team)
Starting point? Building a Collaborative Learning Commons
With a classroom supporting collaboration
And Collaborative Space for Faculty/Graduate Students
Our latest collaborative space
What is the Innovation @ the Edge?

• Located in Bizzell Memorial Library – center of campus.

• **Combination of** Makerspace/FabLab/Startup Incubator, Classroom, Seminar Room, Laboratory – Applied work space.

• A **culture (or mindset) of experimentation** with the latest hardware and software.

• Constant **training, workshops, clubs, and events** to build a supportive, interdisciplinary culture.
What is the Innovation @ the Edge?

- Open to all
- Peer innovators & experts on staff/faculty
- Collaborative Learning
- New methods of pedagogy, research and creativity
Why the Innovation @ the EDGE?

Books/Serials are tools for creating & conveying knowledge.

So are Innovation Laboratories for the physical/virtual expressions of new digital knowledge.
Why the Innovation @ the EDGE?

“Academic libraries… the intellectual hub of campus—a place where students, faculty and staff from all disciplines can gather to explore, create and gain new knowledge... by bringing maker spaces into libraries, we can provide more options for self-directed, innovative learning; we can provide a space that acts as an incubator for ideas; and we can provide tools for the rapid prototyping of those ideas.”

http://acrl.ala.org/techconnect/post/makerspaces-move-into-academic-libraries
What are those tools?
Microcontrollers

• Classes taught in use of microcontrollers

• Low barrier to entry

• Supports reproducible research
3D Printing

Physical expressions of virtualization
Dr. Madura's team (our NASA collaborator’s) hints at the potential long-term value of these systems when describing how, "...3D prints and visualizations reveal important, previously unknown [information]...", and, provide new means for, "conveying complex ideas.." (Madura et al. 2015).
Informatics

- Experienced researcher & programmer
- Primarily grant funded
- OU Libraries buys 20% of his time from IT
- Addresses researcher needs at lower-end (where 80% of research is done)

Mark Stacy
Sign up here for Innovation @ the Edge courses:
http://libraries.ou.edu/edge
Host a Workshop

Find out how to host a workshop at your institution or organization

More »

Attend a Workshop

Most workshops are coordinated by local hosts. Find out if there is a workshop in your area or how to attend one.

More »

Get Involved

Data Carpentry is a volunteer effort. Find out how you can be an instructor, help develop content, or support us.

More »
Virtual Reality

• Featuring the O.V.A.L. – Oklahoma Virtual Academic Laboratory

• Networked (distributed) analysis & manipulation of any 3D asset.

• Remotely upload 3D model from anywhere
Virtual Reality

Click this link and watch this video to see actual projects underway:
https://www.youtube.com/watch?v=tml3T28Ud1k
Virtual Reality partnerships already being formed across campus (and beyond) with professor(s) from:

- College of Architecture (installing OVAL)
- Chem/Bio-Chem
- NASA
- English
- Sam Noble Natural History Museum
- College of Law (installing OVAL)
- College of Engineering (planning on an OVAL)
- Innovation Hub (installing OVAL)...

wait, what’s an Innovation Hub?!?!
What is the Innovation Hub?

- Located in the Research Park
- 20K sq ft w/high-end equipment
- Separate/same... staffing as Innovation @ the Edge
- Open to all
- Peer innovators on staff/faculty
- Experts available
- Collaborative Learning
- New methods of pedagogy, research and creativity
What is the Innovation Hub?

Run by multiple units/colleges acting as equal partners:
1. OU Libraries
2. OU Information Technology
3. Office of Vice President of Research
4. Price College of Business
5. Gallogly College of Engineering
Geographically Dispersed Units Involved

1. OU Libraries
2. OU Information Technology
3. Office of Vice President of Research
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- Innovation @ the Edge
- Innovation Hub

• 2 Miles
Opening May 2016
Mobile unit we take to local events: Barnes and Noble Maker Space Day, Local Schools/Libraries & University Events
Inside of mobile unit
How do we **scale** Innovation Spaces?
How do we **scale** Innovation Spaces?

![Number of Makerspaces Worldwide](http://www.popsci.com/sites/popsci.com/files/styles/large_1x_/public/makerspaces-total-over-time.jpg?itok=YRSN_WRo)

**Nerd box:** Charts are based on user-reported data. The graph omits any spaces marked as closed. Data current as of January 2016.
How do we scale Innovation Spaces?

http://www.bostonmakers.org/the-maker-map/
A typical day at Innovation @ the Edge
Innovation @ the Edge Website
Innovation @ the Edge GitHub
How do we scale Innovation Spaces?

- Space, equipment – difficult, but not impossible.
- Sharing people, space, expertise, collaboration across wide areas – very difficult
How are we scaling at University of Oklahoma?
Sandbox at University of Oklahoma
Sandbox at University of Oklahoma

Looking for this: If found, please contact us! Looking for this: If found, please contact us!

Microsoft Productivity Future Vision: https://www.youtube.com/watch?v=w-tFdreZ894
Touchdown @ the Edge

• KS team members each spend 4hrs/month in the Innovation @ the Edge.

• Why?
  o Provide coverage using existing resources
  o Learn new technologies and how to apply them
  o Interact with end-users
  o Ascertain new opportunities to meet user needs

• We advertise their skills and times present so they can consult with end users.
Staffing by volunteers – Community Members:
• Awarded a certificate,
• List their name on the I.E. webpage as a “Community Member” and
• Award a digital badge they can link to from their LinkedIn (or similar) pages.
• When leave OU - move them to a “Past Supporter” page and maintain the digital badge.
Staffing by volunteers – Community Builders:
• Regularly teach one (or possibly more Edge courses)
• Have taken a pedagogy class.
• Awarded a certificate,
• List their name on the I.E. webpage as a “Community Member” and
• Award a digital badge they can link to from their LinkedIn (or similar) pages.
• When leave OU - move them to a “Past Supporter” page and maintain the digital badge.
Staffing by volunteers – Community Leaders:
• Can do demos of Edge & associated equipment.
• Can and does teach classes.
• Certified in pedagogy & can train instructors.
• Awarded a “Community Leader” certificate.
• Name listed on webpage as a “Community Leader.”
• Award a digital badge they can link to from their LinkedIn (or similar) pages.
• When leave OU - move them to a “Past Supporter” page and maintain the digital badge.
Bringing volunteers and Researchers together for mutual benefit:

• Using Software Carpentry Workshops
• We offer:
  • Social lunch (pizza, drinks)
  • Researchers talk about their projects
  • Volunteers talk about experiences in Edge/Hub
• We’re hopeful job opportunities result
• If so, another reason to volunteer in Edge/Hub
The Knight News Challenge accelerates media innovation by funding breakthrough ideas in news and information.

**Engineers in Academic Libraries**

University of Oklahoma Libraries will employ faculty to facilitate university and community STEM.

Written by Cody Taylor
Updated on 18:21, Mar 20, 2016

- This person could be shared across web by providing:
  - Courses via webinars, Skype
  - Consultation, advice
  - Shared expertise
- Other universities, colleges could do same in other fields, thus:
  - Leveraging off each other
  - Building a much wider base of expertise across institutions.
Creating a lot of new types of content/data that we want to:

• Capture
• Organize & Access
• Network
• Standardize
• Share
• Federate
• Preserve & Archive

The question is... how?
Plus, how do we scale that answer?
Costs and time invested so far??
(not including team time)

Innovation @ the Edge
• Cost-to-build? $49,000
• Time? 3.5 Months (started Aug 2015, opened Jan 2016)

Innovation Hub
• Budget-to-build? $4,000,000
• Time? 2 Years, 2 Months (started Feb 2014, opens May 2016)
Lessons learned:

• Library Team - You will have:
  – C.A.V.E. Members (Colleagues Against Virtually Everything)
  – Members who embrace
  – To prepare them to communicate out to campus
  – To embrace opportunities when they knock
  – To encourage use of space
  – To encourage librarians/staff/faculty to work together

• Design scaling in from beginning

• Share ideas/failures/successes (widely!)

• Collaborate! Collaborate!
This presentation honors the memory of Dr. Paul Risser
Chair of the University Research Cabinet,
University of Oklahoma
and a driving force in the creation of the Innovation Hub.