

**BOF Title:** Community MOOC's for Computing Technologies and Applications

**Organizer:**

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**Abstract (Maximum 100 words):**

This BOF discusses the possible value of Massive Open Online Courses (MOOC) for training and education in computing technologies and applications (HPC, Clouds, Software, Algorithms, Applications, Infrastructure, Systems Administration, Computational Science). We will explore community interest in building and using such MOOC's in a new "X-MOOC" repository (which could be set up as a result of this BOF). Speakers will briefly describe using and building MOOC's including open source learning management software from Google and EdX. Comments from partners with commercial companies Udacity and Coursera will be presented. We will discuss how to support computing laboratories associated with MOOC's.

**BOF Proposal (Maximum 500 words):**

This BOF will explore the possibility of setting up computing technology and applications related community activities suggested by the growing interest in MOOC's. We focus on ways that MOOC's could add value to relevant education and training rather than discussing their disruptive effect on the educational ecosystem. MOOC's gained attention with online courses offered by Stanford in early 2011, which saw massive enrollments and positive student feedback. Since then at least two companies (Udacity and Coursera) and the not for profit Khan Academy have made rapid progress. Other influential developments are the Harvard-MIT EdX online environment which offers a new learning management system as does Google with Course Builder. Georgia Tech has had impact on the academic Computer Science community with its announced low cost MOOC-based Masters in Computer Science starting in spring 2014. Open general questions include how one should mentor and grade such courses and for computing community how one should support computing laboratories where choices include cloud and HPC backends or virtual appliances for student machines. We will present a short review of these developments and then facilitate an open discussion of the use of MOOC's in the computing community and how that can be supported and enhanced. We will note that MOOC's are typically built from short (10-15 minute length) modules (called lessons in Course Builder) that can be assembled "dynamically". This suggests supporting MOOC's with a repository such as <http://iucloudsummerschool.appspot.com/> of lessons and building training sessions or course lectures <http://cloudmooctest.appspot.com> as a "play-list" of repository lessons augmented by custom additions. This is being explored at Indiana University as a way of injecting cloud computing curricula into courses offered by Minority Serving Institutions (MSI's). We are also re-using core technology MOOC lessons across multiple courses that require training in this material. (This is illustrated by a growing set of FutureGrid training MOOC's at <https://fgmoocs.appspot.com>). This is a way we can support computational science classes with a rich set of supporting technology MOOC's.

Our introductory presentation will be based on that at <http://grids.ucs.indiana.edu/ptliupages/presentations/OGFMOOC-July24-2013.pptx>. Other experts with experience of Udacity, Coursera and EdX approaches will be invited and we will welcome other short presentations.

We will discuss relation of these ideas to existing activities such as HPC University and the various MOOC's announced by universities. Our goal is to build a community in this area and explore the value and interest in building and using a shared "X-MOOC repository" with possible use in traditional courses, summer schools, tutorials, training for use of computing systems and for augmenting classes with special value such as those at MSI's. We will discuss the curricula

areas which can span K-12 to graduate education where course material would have value and where organizations and individuals might be interested in contributing. The proposed new community activity will not only share such curricula ideas and material but also insight and experiences in the open areas such as support of mentoring in MOOC's and the possible use of HPC and cloud infrastructure to support MOOC students.

### **Session Structure**

Presentation by Fox (see <http://grids.ucf.edu/ptliupages/presentations/OGFMOOC-July24-2013.pptx>)

Presentation on other MOOC experiences by invited and volunteer speakers

All Presentations Interactive with Audience (Fox has found tremendous audience interest in this subject at his last 2 talks on subject)

Presenters stay at front as Panel and Discussion themes are posed to audience and Panel Themes could include: Value of community repository; Use of HPC systems to support MOOC's; Value of MOOC's in K-12. The different uses of MOOC's including flipped classroom and customized courses as well as basic high volume ( $\geq 500$  student) classes.

The last section will be about half total time