University of California Research Seminar Network: A Prospectus

James R. Carey1*, John Christian Laursen2, Steven D. Glaser3, Stephen Raphael4, Gregory H. Miller5, John Crawford6, Timothy F. Lane7, Patricia J. LiWang8, Kimberly Hammond9, Theodore Groves10, Jean-Francois Pittet11, David Stuart12, Phokion G. Kolaitis13, Laura Serwer14, Mengfei Chen15,16, Kenneth Feer17

1 Department of Entomology, University of California Davis, Davis, California, United States of America, 2 Department of Political Science, University of California Riverside, Riverside, California, United States of America, 3 Department of Civil and Environmental Engineering, University of California Berkeley, Berkeley, California, United States of America, 4 Department of Public Policy, University of California Berkeley, Berkeley, California, United States of America, 5 Department of Applied Science, University of California Davis, Davis, California, United States of America, 6 Department of Arts and Dance, University of California Irvine, Irvine, California, United States of America, 7 Department of Obstetrics and Gynecology, University of California Los Angeles, Los Angeles, California, United States of America, 8 School of Natural Sciences, University of California Merced, Merced, California, United States of America, 9 Department of Biology, University of California Riverside, Riverside, California, United States of America, 10 Department of Economics, University of California San Diego, La Jolla, California, United States of America, 11 Department of Anesthesia, University of California San Francisco, San Francisco, California, United States of America, 12 Department of Physics, University of California Santa Barbara, Santa Barbara, California, 13 Department of Computer Science, University of California Santa Cruz, Santa Cruz, California, United States of America, 14 School of Pharmacology, University of California San Francisco, San Francisco, California, United States of America, 15 School of Social Sciences, University of California Irvine, Irvine, California, United States of America, 16 College of Health Sciences, University of California Irvine, Irvine, California, United States of America, 17 University of California Office of the President, Oakland, California, United States of America

The infectious enthusiasm of scholars speaking about their research is often perfectly complemented by the never-ending quest of academic audiences for new knowledge, making seminars one of the most forceful and efficient mechanisms for transmitting scholarly information. Indeed, seminar attendance is an integral part of the experience for University of California (UC) researchers, with an estimated 300 to 500 seminars during a typical week of the academic year across 900 departments or programs in the UC system. This translates to well over 10,000 seminars annually that are presented in diverse formats and various frequencies—weekly department, graduate group and center seminars, monthly or quarterly talks in distinguished scholar lecture series, and annual university lectures by eminent faculty.

Although the importance of sponsoring and attending research seminars is universally acknowledged by UC scholars and administrators, time and travel constraints limit the potential for maximizing transmission and exchange of the massive amount of information contained in these seminars. The schedules of researchers (particularly faculty) are often packed so tightly that they cannot accommodate the additional time needed to walk to many seminars on their own campus, let alone travel to a neighboring campus. Consequently, the number of UC researchers who attend seminars on UC campuses other than their own is negligible.

The UC Seminar Network was conceived as a way to address these time constraints and open up numerous new possibilities for information exchange by delivering scientific presentations to a researcher’s office computer using webinar technology that links seminars across the 10-campus UC system. This network would increase intra-, inter-, and off-campus seminar access, encourage speaker sharing, reduce travel, augment outreach, and provide electronic feeds for on-demand streaming and archiving.

Background

To provide both context and perspective for creation of the UC Seminar Network, we briefly describe four seminar webcasting enterprises. (1) webcast.berkeley (http://webcast.berkeley.edu/) is a lecture webcasting system developed by the UC Berkeley Multimedia Research Center in conjunction with UCB’s Education Technology Services (ETS) to stage and videotape on-site events and publish them online for on-demand viewing. The UC Regents retain the copyright to all media recordings. (2) University of California Television (UCTV) (http://www.uctv.tv/ondemand/) is a non-commercial channel featuring programming from throughout the UC system. Programs, transmitted by television or through the Web, include documentaries, faculty lectures, research symposia, and artistic performances, as well as postings related to K–12 education and a Med Ed Hour that offers up-to-date research on health and medicine. (3) Technology, Entertainment, Design (TED)—these 4-day conferences (http://tinyurl.com/kpmvbo), run by the not-for-profit Sapling Foundation in New York City, have a strict time limit

The Community Page is a forum for organizations and societies to highlight their efforts to enhance the dissemination and value of scientific knowledge.


Published January 19, 2010

Copyright: © 2010 Carey et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Funding: This work has been supported in part by the following funded P01 program: The Biodemographic Determinants of Life Span (2003–2010), National Institutes of Health/National Institute of Aging, grant number P01-AG022500. Publication costs covered by grants to JRC from the National Institute on Aging (P01-AG022500-01; P01-AG08761-10). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Competing Interests: The authors have declared that no competing interests exist.

* E-mail: jrcarey@ucdavis.edu
Presentations are delivered, recorded and at a scientifically untutored listener level. Slides, and emphasize speaker engagement interactions, include few or no PowerPoint of 18 minutes, incorporate no audience existence for talks presented in more routine seminar series. Indeed, webinars are Considerations''), webcasting technology is currently used in academia much less than in other areas such as business, law, and medicine. Indeed, webinars are relatively rare for talks given in distinguished seminar series and are almost non-existent for talks presented in more routine seminar series.

Although there are a number of important exceptions (see "Intellectual Property Considerations"), webcasting technology is currently used in academia much less than in other areas such as business, law, and medicine. Indeed, webinars are relatively rare for talks given in distinguished seminar series and are almost non-existent for talks presented in more routine seminar series.

of 18 minutes, incorporate no audience interactions, include few or no PowerPoint slides, and emphasize speaker engagement at a scientifically untutored listener level. Presentations are delivered, recorded and edited using state-of-art technology, with extraordinarily high quality products post-ed for on-demand viewing. (4) National Institute of Health [NIH] VideoCasting—
the Center for Information Technology (CIT) makes special events, seminars, and lectures available on the NIH network and their VideoCast website [http://videocast.nih.gov/PastEvents.asp]. The talks by invited scientists (typically 50-minute PowerPoint presentations followed by 5–10 minutes for questions) feature original research in, for example, biology, medicine, and bioethics.

Despite the differences in speakers, topics, production quality, and search and indexing capabilities across these four seminar webcasting enterprises, the seminars suggest what will be possible with a full-scale UC seminar network. Indeed the veritable treasure-trove of seminars that would be available in a UC Seminar Network can be glimpsed from the offerings of webcast.berkeley alone, which features topics ranging from the Mars Rover mission, the great transitions in evolution, and emerging infectious diseases and global health to those involving equity and equality, war and presidential politics, and the constitution, the military, and political accountability.

The seminars available at these four websites differ from those that will be produced in the proposed UC Seminar Network in at least two respects. First, whereas most speakers featured in the two UC operations and in nearly all the TED webcasts are distinguished scholars and prominent policy makers, the speakers in the UC Seminar Network series will also

**Box 1. How Webcasting Works**

Webcasting is a generic concept referring to the transmission of linear audio or video content over the Internet and can occur in a number of forms [2]. These include a web conference consisting of many-to-many connections, a webinar consisting of one-to-many connections (i.e., speaker to audience), and podcasts (usually) referring to episodic releases of webcast lectures or webinars. A webcast is created through the use of special web conferencing software such as the multimedia program Adobe Acrobat Connect Pro, which electronically streams encoded video/audio data from a lecture to a server and then to an online audience. The different types of webcasts are distributed from the web server as either a file or a stream, the first providing the user the ability to play the webcasts multiple times offline (e.g., media players) and the latter allowing the user to skip portions of the file without completely downloading it. For both on-demand viewing and archiving, the digital data containing the audio and video information are stored electronically either in a local digital storage device or through a service such as iTunes U (created to manage, distribute, and control access to educational audio and video content for students within a university).

Although there are a number of important exceptions (see "Intellectual Property Considerations"), webcasting technology is currently used in academia much less than in other areas such as business, law, and medicine. Indeed, webinars are relatively rare for talks given in distinguished seminar series and are almost non-existent for talks presented in more routine seminar series.

1. Permission 1. Individuals who participate in the presentation (i.e., opt in) and could be recognized must voluntarily consent to the recording using a form which is available through the iTunes U process (see Figure S1). It is unnecessary to include individuals who ask occasional short questions or when the videographer pans the room with the camera. UC requires that each unit (department) keep these forms in the event of a later dispute.

2. Permission 2. Any copyright-protected materials that will be audible or visible in the presentation and are owned by someone besides the presenter may require the presenter to obtain a copyright license. If a license is not obtainable, the material may be scrubbed from the recording by campus technology staff prior to distribution.

The recording goes online via a relatively simple process at each campus, which requires certification that permissions 1 and 2 are satisfied. The authority and responsibilities for copyright and IP are allocated differently at each campus, so there can be no common procedure/process for all issues concerned with IP. There is no one unit at most UC campuses (UC Davis is an exception) that addresses all phases of copyright.

Other kinds of direct-to-web exposure in seminars have the potential to create thorny IP problems that are currently unresolved. For example, science-bloggers can—and often do—photograph and immediately post slides on their blog site while attending meetings or seminars. This can create problems for applied researchers who must file patent applications within a year of any information becoming public [4].

**Box 2. Intellectual Property (IP) Permission for Presenters**

Seminar webcasting will involve copyright of the seminar content and copyright of the actual seminar recording. Copyright ownership is governed by several UC copyright policies and depends primarily upon the relationship of the presenter to UC (i.e., Senate or Federation faculty, staff member, student, visitor, or hired presenter). For purposes of this paper, the copyright to the content of most academic seminars will belong to the speaker, while the copyright to that particular recording of the talk belongs to the UC Regents [3].

Streaming live presents few copyright issues so long as the viewing sites are classroom-like, limited to UC viewers, and the speakers sign a consent form allowing the broadcast (see S1). Later broadcast, however, requires more steps. For members of several UC campuses, (Berkeley, Davis and Los Angeles to date) publishing their own presentation can be done relatively easily through iTunes U through a three-step process. Campuses which are not currently participating in iTunes U may have similar tools available. The presenter is responsible for two types of permissions:

- **Permission 1.** Individuals who participate in the presentation (i.e., opt in) and could be recognized must voluntarily consent to the recording using a form which is available through the iTunes U process (see Figure S1). It is unnecessary to include individuals who ask occasional short questions or when the videographer pans the room with the camera. UC requires that each unit (department) keep these forms in the event of a later dispute.

- **Permission 2.** Any copyright-protected materials that will be audible or visible in the presentation and are owned by someone besides the presenter may require the presenter to obtain a copyright license. If a license is not obtainable, the material may be scrubbed from the recording by campus technology staff prior to distribution.

The recording goes online via a relatively simple process at each campus, which requires certification that permissions 1 and 2 are satisfied. The authority and responsibilities for copyright and IP are allocated differently at each campus, so there can be no common procedure/process for all issues concerned with IP. There is no one unit at most UC campuses (UC Davis is an exception) that addresses all phases of copyright.

Other kinds of direct-to-web exposure in seminars have the potential to create thorny IP problems that are currently unresolved. For example, science-bloggers can—and often do—photograph and immediately post slides on their blog site while attending meetings or seminars. This can create problems for applied researchers who must file patent applications within a year of any information becoming public [4].

**Box 1. How Webcasting Works**

Webcasting is a generic concept referring to the transmission of linear audio or video content over the Internet and can occur in a number of forms [2]. These include a web conference consisting of many-to-many connections, a webinar consisting of one-to-many connections (i.e., speaker to audience), and podcasts (usually) referring to episodic releases of webcast lectures or webinars. A webcast is created through the use of special web conferencing software such as the multimedia program Adobe Acrobat Connect Pro, which electronically streams encoded video/audio data from a lecture to a server and then to an online audience. The different types of webcasts are distributed from the web server as either a file or a stream, the first providing the user the ability to play the webcasts multiple times offline (e.g., media players) and the latter allowing the user to skip portions of the file without completely downloading it. For both on-demand viewing and archiving, the digital data containing the audio and video information are stored electronically either in a local digital storage device or through a service such as iTunes U (created to manage, distribute, and control access to educational audio and video content for students within a university).

Although there are a number of important exceptions (see "Intellectual Property Considerations"), webcasting technology is currently used in academia much less than in other areas such as business, law, and medicine. Indeed, webinars are relatively rare for talks given in distinguished seminar series and are almost non-existent for talks presented in more routine seminar series.

1. Permission 1. Individuals who participate in the presentation (i.e., opt in) and could be recognized must voluntarily consent to the recording using a form which is available through the iTunes U process (see Figure S1). It is unnecessary to include individuals who ask occasional short questions or when the videographer pans the room with the camera. UC requires that each unit (department) keep these forms in the event of a later dispute.

2. Permission 2. Any copyright-protected materials that will be audible or visible in the presentation and are owned by someone besides the presenter may require the presenter to obtain a copyright license. If a license is not obtainable, the material may be scrubbed from the recording by campus technology staff prior to distribution.

The recording goes online via a relatively simple process at each campus, which requires certification that permissions 1 and 2 are satisfied. The authority and responsibilities for copyright and IP are allocated differently at each campus, so there can be no common procedure/process for all issues concerned with IP. There is no one unit at most UC campuses (UC Davis is an exception) that addresses all phases of copyright.

Other kinds of direct-to-web exposure in seminars have the potential to create thorny IP problems that are currently unresolved. For example, science-bloggers can—and often do—photograph and immediately post slides on their blog site while attending meetings or seminars. This can create problems for applied researchers who must file patent applications within a year of any information becoming public [4].
include junior speakers. Second, unlike the use of state-of-the-art technology for both producing and recording the seminars in the UC operations and by TED, excepting seminars in elite series, the technology used in the UC Seminar Network will generally be off-the-shelf and thus less high-tech—a necessary concession to allow universal implementation.

Overview

Piloting

A seminar webcasting pilot project was conducted at UC-Davis in 2009 during the spring and fall terms, the purpose of which was to field-test live streaming and recording seminars with special emphasis on ease of use of the basic equipment and software, efficiency of set up and recording mechanics, and note reactions of both the speaker and the audience. Because of the emphasis on testing rather than promotion, the webcasting aspect of the seminars was only minimally advertised. A total of 49 seminars or presentations were webcast including 16 in the Department of Entomology, eight in the Graduate Group in Ecology and Evolution, and 23 from a two-day conference hosted by the Humanities Digital Institute.

The piloting results laid to rest a number of concerns about seminar webcasting that were raised a priori. For example, there was no fall-off in attendance due to the accessibility of seminars via live-streaming or on-demand, only two of 49 speakers did not “opt in” to the webcasting, and the audiences were universally supportive of the webcasting operation with no evidence of distractions due to the presence of the technology and videographer. The pilot project shed light on a number of operational aspects of webcasting including the importance of compact and thus portable equipment, of adopting basic “best practices” protocols including speaker requirements for microphone use and movement restrictions (i.e., stay near podium), of basic checklists to reduce the risk of mistakes, and use of background drapes and/or podium logos to identify the department/university as well as to provide a clean and professional looking set. An important operational principle applied to all seminars was that any problems that were encountered with the equipment were not allowed to delay seminar start-times.

Beneficial Byproducts

It’s likely that a UC seminar network would improve the quality of many seminar, as speakers often take talks more seriously when they know their presentation will be recorded and transmitted widely. Additionally, invited speakers and job applicants could be prescreened from their video-streamed or on-demand seminars. On-demand videos could also be used in training modules for undergraduates, graduate, and professional students. Finally, a seminar network would heighten UC scientist’s awareness of the remarkable diversity of off-campus UC research sites

Box 3. Implementing the UC Seminar Network

Successful development and implementation of the UC Seminar Network concept, much like distance learning [5], depends on simplicity and ease of set up at the venue and lack of any need for special technical expertise [6]. The main operational concepts are buy-in by hosting departments (see example flyer in Figure S2) and prioritizing transmission of content over peripheral concerns such as high-definition images of the speaker, ideal lighting, elaborate speaker introductions, and institutional branding.

The following is a general description of how the proposed UC Seminar Network would work.

1. Announcements. Key information (host department, speaker/affiliation, seminar title, time, date, location) entered to campus website by sponsoring department or unit along with a URL address for accessing seminar via video streaming. This information would be distributed to a central seminar listing website for all UCs using the Shibboleth Authentication System.

2. Speakers. Seminar speakers will be given an “opt in” choice for having their seminar webcast by requesting that they sign the “consent to record” form. Some committees responsible for distinguished lecturer series offering generous honoraria to speakers might consider mandating webcasting to all invitees.

3. Technology. Minimal requirements for weekly seminar series would involve camera, laptop, microphone, and appropriate video streaming hardware/software. Graduate students (or other designees such as departmental IT person) would set up equipment and log in to the webcasting site. More sophisticated equipment and IT personnel would be used for seminars involving distinguished speakers.

4. Mechanics. Speakers would be required to use the microphone and asked to restrict their movements to the podium area. The tripod-mounted camera operated by a videographer would be trained on the speaker at the podium. The host would be responsible at the start for introducing the speaker and at the end for directing questions from the in-person audience as well as for reading selected emailed queries. Straightforward protocols would be distributed to seminar committees.

5. Video. Beside the option of streaming the video images but not saving them, two levels of recording include: (i) temporary for on-demand streaming but with an expiration date e.g., 30, 60, 90 days; and (ii) archiving for permanent storage (e.g., in cooperation with the California Digital Library).

6. Capture Data and Infrastructure. The schematic in Figure 1 shows the main categories of activity and equipment in the proposed webcasting system [7] including the flow of digital data from the seminar speaker (presentation) to the video camera and audio equipment (recording/processing) to the server (hosting) and, from there, to the websites for viewer access to live-stream or on-demand viewers (distribution/playback) as well as to the digital archives (storage).

Sponsoring units would be responsible for supplying laptops and video cameras with the campus IT units responsible for software and licensing. Because full-scale implementation (e.g., file hosting, system administration) of the seminar network across all 10 UC campuses will be costly, both internal and external funding sources will need to be identified. However, vetting proof-of-principle and field testing on a limited basis can be done with the existing technology and infrastructure, the results of which will help provide cost estimates and identify constraints.
with talks originating from locations ranging from the Scripps Institute of Oceanography in La Jolla and the Los Alamos National Laboratory in New Mexico to the Burns Píon Ridge Reserve in the Mohave Desert and the Gump South Pacific Research Station in French Polynesia.

Open Access

Inasmuch as most UC research is funded by taxpayers, it can be argued that the public should have direct if not immediate access to the results [1]. This is currently the case with some of the open-access scientific journals such as the Public Library of Science (PLoS) and should be considered when developing the proposed system to link seminars across the UC System. For example, people might wish to listen to a seminar speaker who presents new results on a family illness or on wellness concepts. Or, people who have serious hobbies, such as amateur astronomers, reptile hobbyists, or bird-watching enthusiasts, may wish to view a scientific seminar. People who do not read scholarly articles can also benefit indirectly from open-access seminars. For example, patients benefit when their doctor has access to the latest research, growers benefit when their farm advisors have access to experts speaking about the most effective pest control technologies, and the public benefits when legislators and their staff have direct access to cutting-edge scientific information. Science teachers who work at schools with high proportions of minorities could be alerted to seminars to be presented by minority scientists and thus expose his/her students to potential role models via webcast seminars. Seminars of general interest could also be publicized in local newspapers, along with a website address listing scheduled seminar details and URL sites.

Future Prospects

As other university systems and institutional clusters adopt a similar idea for making their seminars available via webinar technology, the UC Seminar Network would become part of a University Seminar Network.
Notes and References

3. Additional details of the UC intellectual property and copyright compliance policies are available at http://webcast.berkeley.edu/wp/policies/#copyright.