

Portable collaborative utility for classroom and offsite instruction. Cesar D. Fermin, PhD. Associate Dean. Graduate Studies & Research. John A. Kenney Hall 44-320. Tuskegee University, Alabama 36088. Phone 334-725-2336. fermin_c@mytu.tuskegee.edu
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Summary: Distance learning instruction allows participants to share didactic materials between the field and classrooms. Various utilities available to academic settings such as Tuskegee University are curtailed by a lack of true portability needed to exchange materials in any instructional setting. Collaborative tools for sharing materials between classrooms and offsite settings need flexibility for data transfer with minimal delay and federal compliance. **Unity** is a true portable collaborative suite that permits real-time exchange with the above features.

Goals: a) To establish capacity to simplify and facilitate students, trainees, and faculty learning via the Internet, b) to expand participation via collaborative distance learning, and c) to record progress of the impact of outreach training on participating members.

Participants (012-02263)

Name	Role	Organization
Cesar Fermin	PI	College of Arts and Sciences, Tuskegee Univ.
Goppal Reddy	Co-PI	Coll. Vet. Med. N. A Health, Tuskegee Univ.
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Frank Bartol	Collaborator	Coll. Vet. Med., Auburn University
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Project Information (Fermin PI) Teaching Project: 2010-02263
 USDA-NIFA-CBGP-002695-Education-Global-Food-Agricultural, for graduate and undergraduates (EP-A, B, V) Portable Distance Learning Utility and International Veterinary Outreach. \$137K/3 years. This project is supported in part by project 2020-02459 - Establishing an Integrated Program in Aquatic Animal Health at Tuskegee University - K. Srivastava (PI).

Past Technical Variables Affecting Project: The timetable was affected by two critical OS upgrades after the proposal was submitted. There was a need to redo the user interface and change the majority of the program to accommodate the new build introduced by Apple for feel-like-an-iOS application similar to iPad/iPhone. To accomplish that feel, Apple introduced changes that animated the interface with modalities not built into previous OS releases. For instance, the latest xCode abandoned the older Mac OS APIs making the core Genesis build difficult to work without significant reprogramming. After researching, it was necessary to move back to the version whose xCode was released before Mountain Lion, while still supporting Snow Leopard's APIs. Doing this allowed a debugger to be run under Lion to identify the sources of the crashes. The culprit was audio-related (a problem plaguing other developers as reported throughout the net), tracing it back to Quicktime's audio APIs that were in Apple's code, but not Unity's Audio API). Due to these technical issues, Unity users and developers could not predict such variables when the grant application was initially submitted.

A three-member real-time session with audio, video, & interactive media

As demonstrated in these examples and via live conference sessions Unity combines features offered by a least three other non portable collaborative suites into a single tool, allowing instructors in classrooms, offices, laboratories and the field to divulge information to target audiences. The number of participants and the quality of media exchanged is only limited by the available bandwidth.



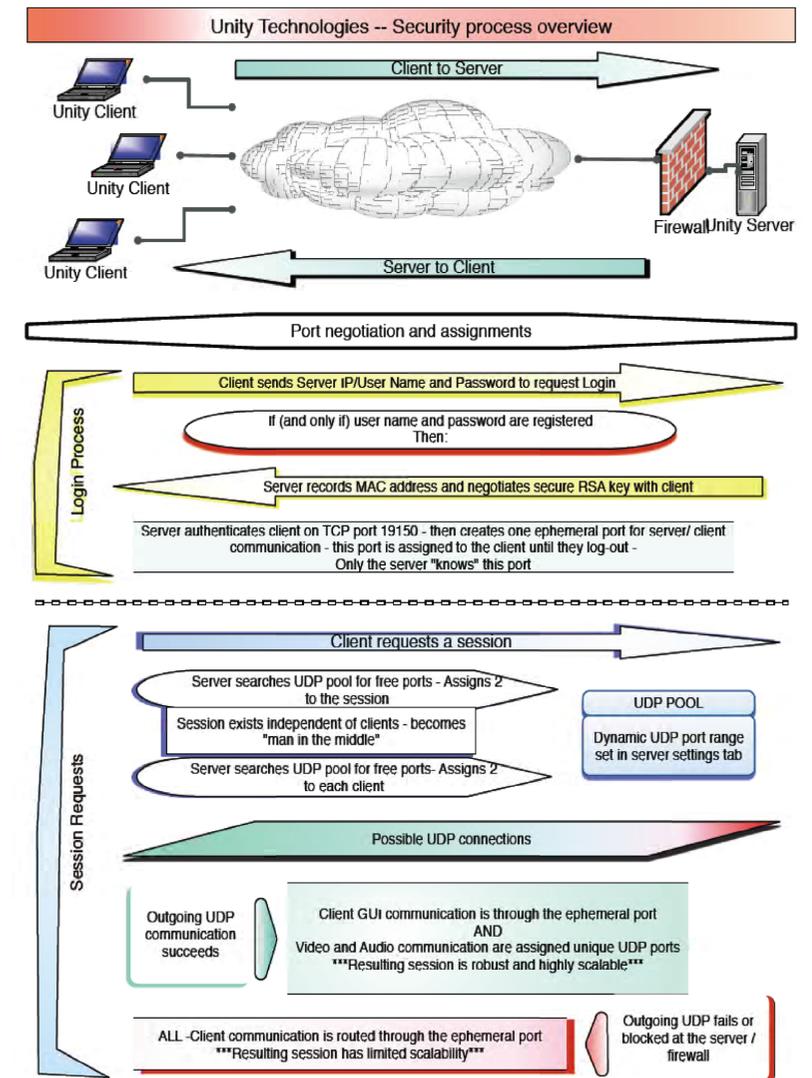
Efficient real time delivery of fish lesion (right) or chicken embryo staging (left) for immediate viewing, recording, annotating, and/or transporting across the Internet from classroom to the field. A real-time video feed from a surveillance camera was brought into the session (RT).



MacBookPro running OS 10.7x (Lion), but Unity works equally well with Microsoft Windows. Speed and efficiency of multimedia handling during instruction takes advantage of the true 64 bits addressing capability of Apple Macintosh.

True portability

While many systems depend on a complex combination of devices tethered to a fixed location, Unity permits real time multiple sessions with audio, video, and interactive media Unity offers efficient delivery of content from classrooms, office, laboratories and the field, where ecological variable affecting livestock and biomass that sustain them are found. The three-member session shown in these examples was performed via Verizon 4G Mobile Modem.



Conclusion: Every session's participant can share any media (bitmaps, audio, video, pdf and visual cues) via a single interface in real-time. Sound and video streams are consistent up to 30 frames per second with bandwidth as the only critical variable. The moderator's control of the utility can be handed off to other users and taken back at any time by the session initiator. Systems such as BlackBoard, Adobe Connect, Gotomeeting, Oracle Collaborative Suite and others lack default features in Unity. Yet, portability is the salient feature of Unity for funded project, because contrary to other suites that require a static IP and fixed equipment with a prior handshake communication setting, Unity goes on line as soon as Internet services are secured. This capacity building project represents an excellent example of the foresight that program review committees and USDA/NIFA program administrators had in recognizing the potential of the project for advancing the agency and Tuskegee University outstanding outreach programs in food/nutritional training programs.