

OUTLINE
FOR
PARTICIPATION
IN THE
DSC
COLLABORATIVE
TECHNOLOGY
LAB



Digital Sister Cities Collaborative Technology Lab

INTRODUCTION

This document outlines the goals of the DSC Collaborative Technology Lab. It is not intended to limit the discussion or creative possibilities of the DSC Lab but rather intended as a starting point for further discussion and refinement. This document will cover in general terms all the known aspects of the collaborative process for the DSC Lab contributors as well as delve into the specifics related to the first proposed world class tool to be created and developed as a pilot project by the DSC Lab collaboration.

Overview

Summary

The DSC Collaborative Technology Lab is intended as a technology and education incubator operated by SFSU (San Francisco State University), INGI (Institute for Next Generation Internet) and its DSC Partners. The project will be staffed by graduate and undergraduate students from SFSU and national and international partner schools. Full time guidance and management will be provided by senior mentors who are experienced technologists, business developers and educators.

The Real World Mission is to develop software tools for creative professionals through one to two year pilot research and development projects that will advance the growth of the next generation internet and will enable realtime collaborative development of digital media between Digital Sister Cities.

The Educational Mission for the DSC Lab is to create an incubator environment that gives students both the real world experience in creating and developing new tools and a unique opportunity to develop advanced technical expertise in a technology and that will form one of the core foundations of the future growth in the internet.

We believe that within the timeframe of the development of these tools the Next Generation Internet capabilities will become accessible to the the creative professional community. The first tool to be developed, Sebastian, will focus on enabling real time collaborative development of digital media between companies located in the DSC. Sebastian will be a crucial enabling technology in the growth of the Next Generation Internet as well as in the growth of collaborative business opportunities for the DSC.

The significant increase in bandwidth inherent in the Next Generation Internet is not simply a change in the medium of the internet, it represents a new medium. The DSC Lab will position the DSC partners, its digital media businesses, its educational institutions and its future entrepreneurs to take full advantage of the future of the internet.

Results Driven

Although structured as a research and development project the end results are multi-fold and thoroughly aimed at a tangible market advantage and practical business and technology development for the DSC members.

- Tools and GLIF (Global Lambda Integrated Facility) connectivity give members a market advantage. For a period of time this technology will only be readily accessible to the DSC members and the digital media companies within those cities.
- Students, Educators and Professionals involved in the incubator and pilot project development gain a technology advantage in the industry since they are working with core technologies not presently available to the public sector.
- As a parallel benefit, business relations will be developed between DSC digital media companies who participate in the real world testing of the pilot project.
- Goals of the DSC Initiative will be realized -
 - Growing the digital media industry by encouraging greater integration of and investment in digital media companies located in sister cities
 - Developing joint educational programs and exchange opportunities between Digital Sister Cities to prepare our students for the global future
 - Enhancing next-generation connectivity between digital sister cities
- Potentially valuable Intellectual Property will be created that will allow growth in the business and technology of the Next Generation Internet.

Sebastian - The First Tool

Pilot Project

Sebastian is the first proposed Pilot Project and the first tool to be developed by DSC Lab.

Sebastian will be a next generation internet desktop designed specifically for remote realtime collaborative development of digital media.

Sebastian is focused on hitting the “sweet spot” of collaborative digital media production which is real time remote review and approve with feedback. Sebastian will give creative professionals the ability to collaborate remotely using their favorite software applications in a realtime synchronous environment.

We believe that this can only become an accessible reality to the creative community with the convergence of the GLIF based next generation internet and Sebastian.

Sebastian will be developed in the present for the future. We believe that within the timeframe of the development of this tool the next generation internet capabilities will become accessible to the the creative professional community. Thus Sebastian will be a crucial enabling technology in the growth of the next generation internet as well as the growth in collaborative business opportunities between the DSC.

Development Environment

In order to facilitate rapid UI and video application development we have chosen the Mac platform as our development platform. The first three commonly used design applications that are targeted for integration with Sebastian are Final Cut Pro, Maya and Quicktime Player. All of which are supported on the Mac platform. See the “Workflow Overview” section below for more of the working details of Sebastian.

- MacOSX
- Cocoa and XCode development Frameworks
- Requires Apple Developer License
- Mac G5 desktop for development - migrates to Intel Based Desktop for actual deployment
- Dual 23 or 30” displays - dual display environment will be required for Sebastian and developers.
- FCP and Maya installed on all machines
- Source code control - TBD
- Network infrastructure for connecting to GLIF backbone

Building Blocks

Sebastian will consist of a number of technical building blocks integrated to enable an easy to use tool for digital creative professionals to collaborate remotely. To the extent possible

- SD/HD Desktop Viewer
- Desktop Viewer UI
- HD Video Conferencing Viewer
- Configuration Setup Window
- QT Video Driver(s)
- Mid-Level API - wraps network and video interfaces
- Network Driver/API for synchronous media transmission
- Professional User Interface Design and Graphics

Proposed Development Stages

Pre-Development

- Complete Viewer Specification
- Finalize DSC’s who will participate in Code development
- Preliminary list of Business “Test Partners” at each DSC
- Define implementation approach for Video Conferencing Viewer

Stage One

- Begin Desktop Viewer Design and Development
- Validate GLIF Connectivity between participating DSC’s
- Complete Specifications for Configuration Setup Window
- Assign and begin all driver and API development
- Begin development of Video Conferencing Viewer of integration of pre-existing viewer

Stage Two

- Pre-Alpha completion of Desktop Viewer
- Complete simplified “hardcoded” version of Configuration Window
- Begin development of complete version of Configuration Window
- Pre-Alpha completion of all driver and API development
- Pre-Alpha integration of Video Conferencing Viewer
- User testing and feedback

Stage Three

- Alpha completion of Desktop Viewer
- Alpha completion of Configuration Window
- Alpha completion of all driver and API development
- Alpha integration of Video Conferencing Viewer
- User testing and feedback
- Refine UI

Stage Four

- Beta completion of Desktop Viewer
- Beta completion of Configuration Window
- Beta completion of all driver and API development
- Beta integration of Video Conferencing Viewer
- User testing and feedback
- Final Target feature set and workflow locked

Stage Five

- Final completion of Desktop Viewer
- Final completion of Configuration Window
- Final completion of all driver and API development
- Final integration of Video Conferencing Viewer

Schedule

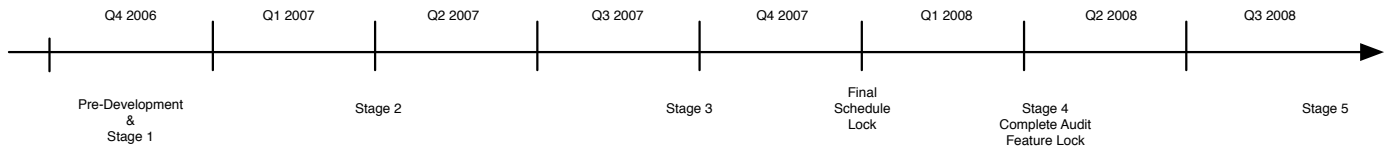
Schedule

The schedule will be developed and refined during the early stages of development. The target is complete the Pilot Project within one and a half to two years of development starting in September of 2006.

- Develop a target schedule in calendar Q4 based on completion of all development requirements and the target feature set.
- Soft schedule once Alpha is reached
- Hard schedule once Beta is reached and feedback from test users is complete. All features reviewed.

- Schedule revision and GM date locked at mid Beta. Complete assessment of application and feature set. Revisions and feature reduction occur at this time in order to meet deadline.
- Final production level version of Sebastian complete.

Preliminary Timeline



Participation

DSC members will be able to participate in two ways.

Development & Test or Test Only

Test

DSC partners identify one to three digital media content creation companies, “Business Test Partners”, that agree to test the development software within their facilities. Each DSC provides a primary contact person to coordinate with these companies and facilitate setting up of test equipment and any required training.

Development

Each participating DSC establishes a small local lab for software development. Each DSC will take on responsibility for one or more of the Application Building Blocks. A minimum of two software developers, graduate students or professionals, will be assigned to this lab full time for development. Each DSC will assign a primary contact responsible for managing the code development.

Business Test Partners

These are Digital Media Content Creators. In order to develop a world class tool that is truly useful for creative professionals the tool needs to be developed with the guidance of those professionals. DSC partners will identify a small number of digital media companies who will work together on collaborative projects using Sebastian.

The Business Test Partner component is a fundamental component of the DSC Lab. A primary goal of the DSC Initiative is “growing the digital media industry by encouraging greater integration of and investment in digital media companies located in sister cities”. As part of the DSC Lab the Test Partners will work closely together on real projects using Sebastian in their collaborations. This will foster not only the design that fully meets their needs but will also foster business relationships in the digital media industry.

Lab Prototyping

DSC San Francisco is prototyping the first development lab and will have an example lab in place in September of 2006. DSC San Francisco will act as operation central for overall coordination of the project development. DSC SF will be responsible for managing the source server and maintaining overall project management.

IP, Commercialization and after 1.0

Management of Intellectual Property is under a great deal of research and discussion at present. As can be imagined finding a solution that satisfies all parties is both import and not without complexity. The current recommendations from outside consultants points to the formation of an equity Advisory Board. DSC members would contribute to the selection of the board and this board would manage distribution of any license fees that may arise from use of the developed technology.

Since development will take place collaboratively at an international level new challenges present themselves in developing a Commercialization and IP business model. Success will rely on the involvement of experienced business and technology leaders.

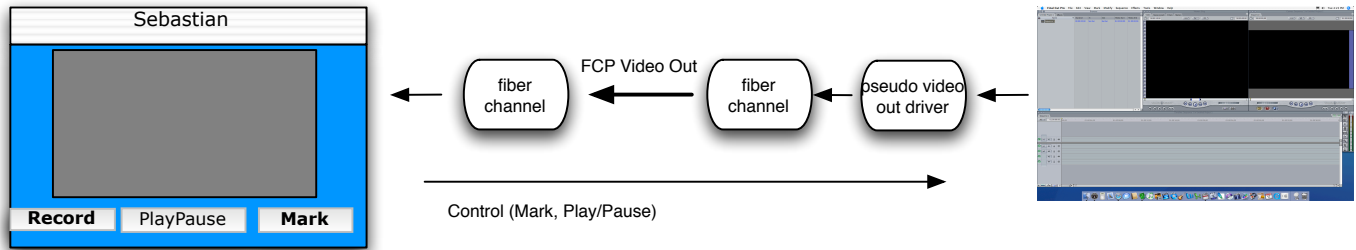
The Advisory Board will bring together business and technology leaders to establish a working structure by which intellectual property, early stage products and fully developed products can be brought to the public market place through either commercialized or through public domain and open source models.

Again, it must be emphasized that this discussion is at the formative stages and recommendations and suggestions are not only welcome but encouraged.

A critical objective is to adopt a structure as soon as possible and one that will not encumber or restrict the dissemination of the technologies developed by the DSC Collaborative Pilot Projects. We are foremost a structure for incubating technology and new technologists, which implies birth and growth of those unique and new ideas, concepts and tools that are created.

The goal is to have the IP structure in writing and agreed upon by all parties in Calendar Q4 of 2006.

Workflow Overview (Preliminary)



As a First Generation effort the goal for Sebastian is to create a tool that not only improves productivity but is also very easy to use. It is crucial to focus on the primary needs of the creative professionals and make those elements work simply, understandably, reliably and with high performance for Editorial decision making and review and approve.

After a number of discussions with creative professionals in film, effects and animation design a preliminary workflow and interface design has been developed.

Referring to the diagram above, the basic setup models a typical editor/director collaboration. The editor is making the actual scene changes and the director is calling out places for review, playback is stopped, shuttled etc., notes are taken and applied to the scenes.

In a situation where the editor and director are in different physical locations, regardless of distance, it is necessary to provide the same immediacy.

Sebastian consists primarily of a fullscreen viewer or desktop that lives on the directors end. On the editors side a version of Sebastian exists that facilitates system configuration and handles receipt of control and data from the director.

(In fact in both cases Sebastian is launched and preset configurations defined by the user ahead of time determine the network connectivity and the functionality of Sebastian at that location. A single button click configures Sebastian and the network to support either the editor or director.)

Once the configuration is complete the editor launches their familiar application of choice. For example they would launch Final Cut Pro which would contain the media, scenes, effects clips, sound etc., that are to be reviewed. Through the Sebastian Desktop the director is able to play, pause, mark, locally record and add notes to the content selected on the timeline of Final Cut Pro. Time code that mirrors the timeline time code would also be displayed.

To complete the collaborative environment a real time HD Video Conferencing system will be running on a second identical display. Both the director and editor will have identical color calibrated dual display systems. Research will be focused on proper adaptation of the video conferencing system to meet the needs of the collaborative visual creative environment. Feedback from discussions with professionals indicates that a minimum of 1080i and preferably 1080p is required to provide the immediacy for collaboration. Video Conferencing is integrated into Sebastian. The configuration window will also handle proper connectivity, setup and launching of the video conference component.

The goal for both the Sebastian Desktop and the Video Conferencing display is to support up to 200 Mbits per second. Two simultaneous 1G pipes each one dedicated to the Sebastian Desktop and Video Conferencing respectively will be required.