Teamwork & the Museum Interactive:
First Experience with the Hybrid Model at the San Francisco Museum of Modern Art

Peter S. Samis

The San Francisco Museum of Modern Art moved into its new home a modernist palace designed by Swiss architect Mario Bottain July of 1994, and opened to the public in January of this year. The move represented far more than a change of venue: the entire perception and profile of the Museum on a local, national, and international scale were redefined. In the past, annual attendance was on the order of 225,000; suddenly, in the first year of the new building, it has tripled. Located adjacent to downtown and next door to the convention center, we have suddenly become a *de rigueur* tourist destination, and a source of civic pride to many local residents who may never before knew we existed. It was in anticipation of this vast increase in our visiting public, and in the desire to aid them in their approach to the often challenging works that are the province of a modern and contemporary art museum, that the Museum undertook a New Technologies Initiative, comprising educational programs running on multimedia computers and CD-based audio tours. Following enabling grants of funds and equipment from the James Irvine Foundation and Apple Computer, I was promoted from my longtime position as interdepartmental Curatorial Assistant to a newly created position, Program Manager for Interactive Educational Technologies and Assistant Curator of Education.[1] Given a six-month initial timeline, an adequate but not ample budget, and the lack of other available personnel, the task was to formulate and implement a strategy that would lead to the timely development of three different multimedia programs, and nurture a budding in-house multimedia expertiseperhaps even an infrastructure. In this paper I shall discuss the strategy we developed, the flaws that surfaced in the heat of multimedia production, and the preliminary lessons we are drawing from our experience.

---

[1]   The decision to place the multimedia development in the Education Department was predicated on the following factors: 1. The other four curatorial departments were focused exclusively on the collecting and presentation of one medium or aspect of the museums collection, e.g., photography, painting & sculpture, media arts, or architecture & design. 2. The Registration Department, while responsible for the creation and maintenance of the Museums collection database, were not interpretive experts. 3. The Public Relations Department, currently responsible for the Museums WorldWide Web page, was not composed of trained art historians, either. My own background, as an art historian with extensive experience working with the various departmental curators, a familiarity with multimedia design and production, and a populist, interpretive bent (having long ago served as a docent) proved fortuitous, and I was transplanted to the Education Department by the new curator, who was firmly committed to exploring the utility of these new technologies in reaching our expanding public.

Background

The first question, What are we going to produce?, had thankfully been answered in prior discussions between myself and John Weber, SFMOMA Curator of Education and Public Programs, as we had formulated the grant proposals that would allow SFMOMA to undertake its New Technologies Inititative. We proposed to make inaugural implementations of three programs, sufficient to show the general directions we proposed to take with our multimedia program in the future, each one reflecting a different aspect of the Museum (and the Education department)s mission. The programs were:

- *Making Sense of Modern Art* — an in-depth look at selected works from the collection (as distinguished from a superficial look at many works, or an online catalogue). This program reflects the international mission of the museum, to showcase works from 1900 forward, both historic and contemporary.

- *Voices & Images of California Art* — an audio-visual archive of film, audio and video clips, artworks, snapshots, correspondence, and other memorabilia regarding California artists represented in the Museums collection. This program reflects our mandate to serve as a public resource regarding the artists of our state.

- *Bay Area ArtFinder* — a map-based guide to other non-profit spaces in the greater San Francisco Bay Area specializing in modern or contemporary art, featuring visual highlights from their recent exhibitions and detailed text background summaries about each space. This program reflects our commitment to nurturing the contemporary art scene in our own local region.

We will not go into the specific programs in depth here.[2] Suffice it to say that we were shooting for a first version that would have enough material to keep a museum visitor absorbed for anywhere between 5 minutes and a half hour, on repeated consultations, without hitting a wall. We fully anticipated that we would continue working on each title long after the Museum openedfor years, in factand so made each program an open-ended endeavor. The goal was to create a different template, or shell, for each program, so that we could gain experience with a variety of approaches to using multimedia as a communications and teaching tool. We could then add to and further develop the content of each program over time.[3]

---

2   See Appendix A for a concise comparison of the three programs.

3   In the case of the ArtFinder,this updating was conceived of as an annual replacement of its contents, reflecting the exhibitions held in the Bay Areas art spaces over the previous year.

Defining the Production Team: The Hybrid Model

With this array of projects in mind, the defining questions became: *Who is going to develop these templates?* and *What is our production model going to be?* A number of factors constrained our choices here, ranging from time and budget to staffing. Prior models were clear: the in-house production solution, as successfully practiced at the Minneapolis Institute of Art; and the outside consultancy, which the National Gallery in London had used to produce its famed *MicroGallery*, and which the National Gallery in Washington, D.C., was now adopting for its own version of that program. But we had neither the dedicated in-house expertise of the MIA, nor the budget of the *MicroGallery* (upwards of a million dollars). In fact, I was the only staff member assigned to the task. A third solution had to be developed: we adopted a hybrid model. For each of the programs we hoped to produce, we selected an experienced multimedia firm with an established track record—a firm that had produced programs about which we ourselves were enthusiastic. We asked them to submit bids that spelled out the value of their contribution and the value of our own. The contracts we negotiated with them—each of less than six months—specified that the Museum would: a) retain rights to the code they produced, and b) take care of the research, storyboarding, and production work necessary for the programs, in-house.

It was not just budgetary constraints that persuaded us to opt for a hybrid model. We had no illusions about being the best programmers in the business, nor the best interface designers. I had worked on multimedia projects before and felt it was necessary to continue to grow the in-house expertise and familiarity with the multimedia production process. We also wanted to play an active role in both the editorial and design processes.

Our decision to work with *three* outside design teams—one for each program—was predicated on a number of factors. It would:

1. Maximize the variety of the interfaces, providing us a broad range of look and feel and navigational design

2. Give us the opportunity to work with a number of veterans of the industry, to test our ideas and learn from each of them

3. Offer us experience with different multimedia authoring tools, identifying their respective strengths and weaknesses in light of our needs

4. Assure that, when the production crunch came (as it inevitably would), no one would turn to us and say, Okay, weve got two weeks left, which project do you want us to focus on? Each firm was only responsible for getting one project to the ballpark, come January 18, when the new museum opened

We saw the confluence of this grant and the new building as a singular opportunity, and wanted to derive as much present and future benefit from our short production window as possible. The hybrid solution would enable us to pay for expertise where we needed it while saving us the expense of paying top dollar for the parts of the projects we *could* assume, such as:

- researching and writing about the artists and works represented in our collection

- locating archival film clips, audio clips and photos

- scanning and processing the many hundreds of documents and images we found

- storyboarding and producing the audio and video clips

- database/asset management

- securing of licenses from copyright holders

- workflow administration

This mix of flexibility and ultimate accountability was predicated on a leap of faith: that we would be able to recruit and supervise a team of qualifiedor at least smart and enthusiasticinterns to help us with the research and production tasks outlined above. Only in that way would we have the content ready to flesh out the bare bones templates being prepared by our outside consultants.[4]

In our case, the gamble paid off.

An Interlude: Of Time, Labor, and Multimedia

At this point, something has to be said about Time and Multimedia. Those who are experienced will know this already. Those who are just considering embarking on a multimedia project will not. There is a fundamental difference between a standard museum daywith its meetings, phone calls, correspondence (electronic or otherwise), exhibition preparations, all winding down somewhere between 5 and 6 p.m. until recommencing the next morningand working in multimedia. The number

---

4   This leap of faith was not entirely irrational: we specified in the contracts with our consultants that they
    would provide technical guidance when necessary to assure a high level of production quality. We also
    retained rights to source code for each of the programs, and assured training so we would be increasingly able
    to assume responsibility for developing the programs after the Museums opening.

---

of person-hours it takes to produce a multimedia title invariably surpasses the most extravagant estimates. (There is a reason why sleep is considered a luxury among programmers.) People who are getting paid by the hour are of limited use in a production cycle. (Ever wonder why those budgets *are* so high?) The rhythms are different. The relations to machines are different. When a computer or a network goes down you dont simply say, Oh, its 5:00. Well go home now and figure it out tomorrow. You stay and figure it out then, even if it takes an hour or two, because other people will be coming in laterpeople you wont see, who may have just worked a full day somewhere else and are donating their time here, and the show must go on. You're on deadline. All other boundaries lose focus. When youre in multimedia production, youre in it for the long haul, and you kiss your family life, your leisure life, and your personal life good-bye.

That is true of only the most senior-level museum jobs, by and large: directors, senior curators. Many of us are used to watching them go out every evening to event after event, dinner or opening after opening. We know their life is not their own. Well, with multimedia production, get used to it. Your life will be like that, too.

Multimedia takes time. There is no getting around the fact that new technologies, while looking effortless to the user, are *extremely* labor intensive. It is notoriously difficult to estimate how much time it will take or how many people will be needed on a given project. Even one of our principal consultants, when checking their records to see how many hours they had put in on the program template, code, and media integration, found that it was almost twice what they had thoughtand these are people who do multimedia for a living! This rule applies *a fortiori* for interns. System crashes, init conflicts, extensions, preferences files that have to be tossed, etc.: in multimedia, Murphy's Law applies.

Given a typical museums 35- or 40-hour a week labor model, it takes either many paid full-time staffers working at once or a few working over a very long horizon to realize anything of real tangible benefit on a grand scale. And it looks like things will remain this labor-intensive until software and hardware improvements meet us halfway and expedite the production process.[5]

As a supervisor, I never would have dared request from an employee, paid or unpaid, the level of commitment the Museum received from volunteers and interns from mid-November through mid-January, the last two months of the production cycle. Nor could the museums budget have supported it. Fortunately, a few had independent means of support. They worked on the project tirelessly. Others working forty hour weeks elsewhere regularly showed up at our door to process

---

5   On the software side, producing eye-pleasing, anti-aliased text onscreen in a multimedia program is, as of this writing, still an anachronistic process, closer to the ways of Johannes Gutenberg and his bible than to Marshall McLuhan and his galaxy. Hopefully, with the new software applications coming on the market, by the time you read this that situation, at least, will have changed. On for hardware side, built-in MPEG compression promises to greatly shorten the time it takes to produce digital video, as well.

images in the eveningand I mean regularly. Still others getting by through part-time work elsewhere spent their days at the museum, in the Lab. The outpouring of interest, talent and dedication to these programs surpassed our wildest expectationsas did the time needed to make them. In all, eight thousand hoursclose to five person yearswere logged by paid staff, principal consultants, freelancers, and interns or volunteers in less than six months.

Division of Labor, Time, & Expense

The division of labor looked something like this:[6]

Principal Consultants	Freelance Consultants	Interns & Volunteers
Interface design Coding & debugging Screen building Media Integration On-call help	Video production Audio engineering Project manager w/ programming skills Voice talent	Research Database Maintenance Rights licensing Scanning Image Processing Video Production & smone screen building

The role of the Program Manager for Interactive Educational Technologies was to:

- evaluate, select, and negotiate contracts with principal and freelance consultants

- screen, brief, and assign duties to interns and volunteers

- meet regularly with principal consultants to define look and feel for each program determine editorial content

- establish production priorities and assign interns and volunteers accordingly

- work with consultants and interns to establish production routines

- act as a liaison with the rest of the Museums staff, including the Curatorial, Registration, and Computer Information Services departments

---

6   In this paper, the words intern and volunteer are used virtually interchangeably. An intern represents a more serious and ongoing commitment, howeversometimes, but not always, within the context of an academic program at a degree-granting institution. For a full description of intern/volunteer roles, spanning the continuum from pure research to pure production, see Appendix 1.

- purchase (or secure donations of) additional hardware and software as needed

- watch the budget

- offer general encouragement, appreciation, and moral support

- see that whenever possible, blockages were removed from the path of the negentropic system, hurtling toward its January 18 encounter with destiny

The following table and attached pie chart (Figure 1) break down the percentage of total hours and total dollars spent according to the above categories.[7]

	SF MOMA staff	Principal Consultants	Freelance Consultants	Interns & Volunteers	Totals
Team Members Time	2,588	1,547	766	3,320	8,221
% of hours	31%	19%	9%	40%	100%
Potential Cost (if outsources)	$36,300	$92,500	$33,307	$66,544	$228,651
Actual Expense	$36,300	$82,500	$11,530	<$500	$130,830
% of human Resource Budget	28%	63%	9%	0%	100%
% of total budget	24%	55%	8%	0%	87%

For the purposes of the table, it is useful to understand the composition of each category of personnel: SFMOMA staff[8], Principal Consultants[9], Freelance Consultants[10], and Interns & Volunteers[11].

---

7   Both video producers on the project had extensive film and/or video experience. Only one had worked with digital video before. We were exceedingly fortunate to have the other, a seasoned filmmaker who wanted to learn desktop video production, sign onto the team as a pro bono intern. The figures in the pie charts that follow are reflective of this situation: of the 3,147 total volunteer hours, 900 reflect this one persons immersion in his new medium and the steep learning curve it required. The other video producer, with his extensive desktop video experience, understandably worked fewer hours, which he then billed to us at only half his going rate. The result is that in pie chart #1 (Time), video production is included under both freelance and intern rubrics. In Pie Chart #2 (Dollars), only a small portion of the video production hours are billed, and even those are at a 50% discount. The audio engineer gave us a similarly preferential rate.

8   SFMOMA staff here includes: Program Manager, Interactive Educational Technologies (full-time and then some x 8 months); Curator of Education & Public Programs (8 hrs/week x 13 mos.), which includes both the time it took to co-author the grants that resulted in the New Technologies Initiative and participation in actual design and supervision; and Computer Information Systems and Registration/Rights & Reproduction

At the San Francisco Exploratorium, the exhibit builders are fond of saying: Do you want it good? Do you want it fast? Or do you want it cheap? You can have any two. You can have it good and fast (and pay for it), or good and cheap (and wait for it). You can even have it fast and cheap but in that case they make no guarantees as to the quality of the results. What the Exploratorium shop formula does'nt take into account is the presence of an enthusiastic and talented work force that is willing to *donate their time* towards a goal they believe in. The privileged position museums are in in this respect is something we should never forget. It was only thanks to an incredible team of interns and volunteers that we were able to open the museum with inaugural implementations of all three programs.

Esprit de Corps and Communication

Tell everybody everything you know. Make a deal with a handshake. Have fun.

Harold Doc Edgerton's credo

No pressure, no diamonds.

Mary Case's email signoff

---

departments (4 hrs/week x 7 mos.), for aid in setting up and troubleshooting systems and locating existing photography of works in the collection. We would recommend more extensive involvement of both of these departments in future endeavors; due to the pressures of inaugurating a new building, we were lucky to get as much cooperation as we did. We have also included a small allocation (16 hours) for the hours put in by curators and conservators whom we invited to discuss key artworks on camera during the data gathering phase for Making Sense of Modern Art.

9   Principal Consultants comprise the three outside firms with whom the Museum contracted to execute interface design, underlying programming, and debugging for the three titles, Making Sense of Modern Art; Voices & Images of California Art; and the Bay Area ArtFinder. The firms were Modular Arts, C-Wave, and Red Dot Interactive, respectively.

10   Freelance Consultants include principally one video producer and one audio engineer. Smaller sums were disbursed to one project manager with programming skills, one guest author, and professional voice talent. Pro bono contributions that fall under this rubric included our lawyer, as well as outside art historians and artists whom we invited to discuss key artworks on camera during the data gathering phase for Making Sense of Modern Art.

11   Interns & Volunteers comprise: four researchers, as many as seven scanners, four image processors, one video producer and three project manager/rights gatherers. Pro bono donation value for multimedia production tasks was calculated at 60% of prevailing market rates. 12 Lynn Robinson, notes on internship for JFK University Museum Studies course.

I like to think that the secret to our teamwork ethos lay somewhere between the two above quotes. This lesson, I noted at one point, is about creating without effort: matching talents/energies & channeling them for maximum benefit. Word seemed to get outand out of nowhere more volunteers would magically appear. Where did they really come from?

Reflecting back, it is clear they came from a variety of sources. The researchers included graduate students in art history and museum studies, and two interns loaned from another museum department to assure its holdings would be properly represented. Other team members were referred by the Museums volunteer office, or by one of our principal consultants. Two team members who worked tirelessly were referred by mutual friends; another was referred by someone who had considered volunteering but didnt. One was met over dinner one night; on hearing of the project, he grew interested, volunteered, and then enlisted his own friends. Together they spent many an evening in the Multimedia Lab, scanning and tweaking over Chinese food. People seemed to find us: one stalwart member of the team caught mention of the project in the electronic design trade papers, called the same day, and has been working with us ever since. When the production madness of the last months set in, a call went out to local multimedia studies programs for aid, which brought a flurry of new scanners and tweakers, along with some personality problems. Fortunately, the atmosphere was mainly congenial, and the system proved to be self-regulating. Those who struck a discordant note didnt stick around. Doc Edgertons quote about having funeven if under the pressurized circumstances of a deadlinedefinitely did apply.

Our experience leads us to believe that finding interns and volunteers eager to help is the least of your worries. The Museumany museumholds an inherently respected place in the community; if your museum is building a new building or embarking on a new campaign, so much the better. Volunteers know that museums are not in business to make money, and are correspondingly generous with their time and skills, especially when they can be applied to something as exciting and cutting edge as a multimedia project.

That said, creating the infrastructure so that the team members have the right materials ready when they come in at their wildly scattered times, and scan them at the right resolution, and tweak them to the right specthat's the challenge. Communication between a disparate group of individuals who may never actually see one another, but who may be handing off files from one to another, using the same computer, and sharing the same space requires the establishment of a clear set of directions and protocols. What we did not have was a resident technical troubleshooter to be there day in and day outan indispensable part of any bona fide multimedia operation. What we did have was phone numbers and a whiteboard on which to leave instructions and urgent messages about what (not) to do.

As one team member later wrote in her internship summary:

Peter, as project director, was writing and supervising all three programs at the same time Consequently, he was not always available as much as was needed to communicate, guide and

coordinate team members. This project went as smoothly and efficiently as it did because all of the team members worked well together and had established and competent experience and skills. However, it became apparent by October that what was sorely needed was a daily project manager to coordinate all the different aspects of this complex production [*Voices & Images of California Art*, one of the three programs]. One of the team members did assume that saintly role, but as a result was clearly spread too thin.

As befits a self-regulating, negentropic system (blessed by the gods), interns did rise to the challenge and expand their commitment to match the need. In the process, real leaders emerged: project managers saw to it that each program moved ahead on track and that assignments were properly communicated to the evening shift. Crises and decision points were brought to the attention of the program manager, although with three projects going at once and the usual load of museum meetings, I was not as available as I would have liked.

This lack of availability reached crisis proportions while working on the program *Making Sense of Modern Art*. After getting an early start with videotaped workshops in which curators, conservators, leading docents, and outside artists and art historians were asked to speak in front of a video camera about a given work of art, providing a kind of collective, multi-layered brain dump, the project was then delayed while research and production ramped up for the other two programs. By the time we returned to *Making Sense* it was mid-autumn. Trying both to prepare the program contentwhich in this case meant drafting up to sixty storyboardsand to run the production process for the three programs proved to be more than one person could reasonably take onand it directly conflicted with the impartiality that an executive producer must maintain in determining what gets left on the cutting room floor in a time crunch. The project came through, but at the price of frayed nerves, sleepless nights, and a cost add-on for the *Making Sense* consultants last-minute intervention, saving the day.

A testament to the *esprit de corps* and sense of mission that characterized the team even in its hour of supreme triumph (read: burn-outfor both came together, hand in hand) was a remark made at the wrap party we held at a nearby caf. After toasts, testimonials, and distribution of the newly minted team t-shirt, one volunteer came up and asked, So, Peter, what do we do next?

Get a life! I cried.

I guess some people were more burned out than others.

Looking Back/Planning Ahead

So where does that leave us now? Now that we have recovered from our monumental burnout in the winter, had a retreat and debriefing in the Spring, how have the distance and discussions impacted our plans for the future?

The first thing we did was to free up enough additional funds at mid-year budget review to begin paying a monthly consulting stipend to those interns who had made themselves indispensable over the course of the initial production cycle. They were immensely appreciative, and it was the least we could do. While the Museum had no intention of further expanding its permanent staff infrastructure so hard on the heels of the move, it was clear to me that the multimedia effort could not proceed without the continued involvement, and the accumulated wisdom, of those who had learned each programs style and production norms. Furthermore, there were a hundred loose ends to be tied up. So we hired these intern-project managers to tie up loose ends, to put the assets, digital and otherwise, in order, and, perhaps most importantly, to draft production manuals that would explain to future interns how the programs are put together. The great imponderable with volunteers is how long they will stay; when they leave, their accumulated knowledge goes with them.

Now that we had an infrastructure in place, the next thing we did was take a detailed look at each of the programs we had created, and how the public was interacting with them. Out of these sessions came a list of both informational corrections and interface improvements, and the project managers set to work on remedying them. This included retrofitting all screens affected by the interface improvements. That process is coming to an end now, as I write, in mid-summer. It is infinitely time-consumingmuch of the time is spent looking at the watch-cursor rotate on the Macintosh screen as the computer processes the new screen enhancements, but we are committed to improving the programs in view of user feedback before we publish any CD-ROMs.

In May we held a retreat in which, with the aid of a graphic facilitator, we tried to figure out just what we had done last fall, the aspects of it that made it worthwhile and those we would never want to repeat again. The pictorial representation of our process, which erupts into a blather of circles and arrows at the far right end as it arrives in the end-of-year production madness, now stretches across the wall of our multimedia lab; the next steps are on my office wall. We have implemented several of those steps already, including a weekly team lunch for anyone from any of the projects who can make it, on Wednesdays.

Research-wise we are much more focused now. Rather than try to gather material about thirty-five, or twenty, or even ten, artists at once, as we found ourselves doing in the early days of preparing *Voices & Images of California Art*, we are now focusing on one or two artists at a time. We are also much more adept in targeting appropriate materials, given the existing model of the program.

As a result, the research and production cycles become somewhat conflated. When we go out into the field, to an artists studio or an archive, we take a notebook computer, a hard drive, and a scanner with us, and capture the images right on the spot. The permissions process is begun in advance of our visit, and followed up after we know precisely which images we hope to use. Both the researchers and production people enjoy this new model, where they get to share in each others pleasures, and learn about each others skills.

Focusing on only one artist at a time also enables us to discuss that artists assets in detail, as a group, and make qualitative decisions about how the program will evolve. Researchers will be better able to work with the video producers, and help in the storyboarding of our short QuickTime clips.

We are moving more slowly now, conscious that whatever model we set up for our process will inflect our overall quality of life in the long term. For several months we were loathe to bring on any new interns, although many were begging. But now, with the paid project manager infrastructure in place, we are able to bring on volunteers again, with the assurance they will receive proper training and supervision.

As for *Making Sense of Modern Art*, we are working with two different project teams there. One, made up of expert lookers and describers, strolls through the galleries and brainstorms ways of describing the works, and relating them to each other. The other, a software/interface group in the process of formation, will program the extension of the current interface to accommodate these comparisons. Another hybrid model. More on where that goes at the next conference.

Overall, while days are still quite full, we are learning to take them more slowly, and savor themand the mere fact of being togetheragain. There was little time for savoring last fall. Now our funding for outside consultants, with the expertise and structure they provide, is reduced. It remains to be seen whether the hybrid model, dependent as it is on the good will and interest of a continually renewable intern pool, will survive and thrive absent what one volunteer called the big bananathe inauguration of a dramatic new building, a once-in-a-lifetime event erupting on the personal and cultural landscape.

APPENDIX 1

INTERN ROLES in SFMOMA Multimedia Development

There is a continuum that runs from pure research to pure production. Be aware that these need not be mutually exclusive categories, permanently sealed off from one another. With that in mind, here is a non-exhaustive list of some of the tasks on which this team will be engaged

More research-oriented tasks: compile bibliography & filmography for each major artwork in *Making Sense of Modern Art* compile database of audio, video, & stills of California artists locate artists (if living); artists representatives if not screening of available footage reading of available transcripts; listening to available tapes e.g., Dorothea Lange: oral history tapes, PBS video interviews with living artists & content experts

More production-oriented tasks: video: screening, scripting, storyboarding, digitizing, editing, choosing and adding transitions/effects; optimizing for delivery platform still image acquisitionthrough scanning, from slidesPhoto-CD, or capture with digital camera; color correction; tweaking in PhotoShop figure out the metricsways of maximizing productivity with minimal efforte.g., batch processing of photos, writing macros for team, scripts for database familiarity with video editing, photo processing, multimedia authoring and/or presentation software (e.g., Aldus Persuasion) an asset

Cognitive Psych./Learning Styles Component work with docents to develop approaches to material set up test situations with focus groups of a variety of ages and backgrounds perform formative and summative evaluation suggest mechanisms for evaluation that can be built into the programs

Project Management secure rights to images and video footage; negotiate based on budget and content dilution maintain research files on artists; keep track of approval tapes and deadlines for their return; maintain resource and reference library, including CD-ROMs, multimedia books and journals; serve as clearinghouse for new purchase ideas generated by team find ways of maximizing productivity with minimal effort e.g., batch processing of photos, writing macros for team, scripts for database (see figuring out the metrics above maintain content database and establish file protocols familiarity with relational database and/or project management software (or willingness to learn same) an asset

Figure 1

SFMOMA Multimedia Team:
Percent Hours vs. Percent Expense

SFMOMA
Staff
31%

Interns &
Volunteers
41%

Freelance
Consultants
9%

Principal
Consultants
19%

Freelance
Consultants
9%

Interns &
Volunteers
0%

SFMOMA
Staff
28%

Principal
Consultants
63%