Portal Business Models

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November 12, 2001

There are two distinct Portal business models before the ACM EC and Council. While these two models share many aspects, they represent fundamentally different approaches and visions for the Portal. Each model presents significant opportunities as well as significant risks, getting to the heart of what ACM represents and the financial resources that ACM requires. It is important that the EC and Council decide between these two models, so that that path can be taken with vigor and confidence.

The purpose of this short (one page plus appendixes) document is to provide backup for this decision. The two models are introduced and briefly compared. Several appendixes provide a more detailed comparison, one possible compromise business model, two popular web databases that illustrate the Portal's potential, and the SGB Proposal.

The initial proposal emphasized that the Portal be a free service. The hope was that through its comprehensiveness, accessibility and convenient interface, the Portal will become the starting point for searching the computing literature and the people in the computing discipline, thereby establishing ACM as *the* source for information about the IT profession. The SGB wishes to fund the Portal (see Appendix D). I term this model the "Community Model."

The business model included in the FY'02 Budget and three-year plan presented to Council at its June 2001 in-person meeting proposed charging for the Portal by paid subscription. The rationale was that the portal represents a major revenue stream with significant financial potential and thus should be an ACM product. I term this model the "Proprietary Model."

The fundamental decision before the ACM EC and Council is thus between two conflicting viewpoints.

1. The "Community Model" views the Portal data and interface as community resources that ACM nurtures as a service to that community.

2. The "Proprietary Model" views the Portal data and interface as belonging to ACM and of value as a revenue stream.

Very briefly, the proprietary model maximizes revenue, is sustainable and is supported by HQ, while providing less content to a smaller audience. The community model maximizes content and access and is supported by the SGB, while providing no profit to be used for other ACM activities. Appendix A provides details, comparing and contrasting these models and identifying their strengths and weaknesses.

There are at least three ways to proceed. One is to embrace the proprietary model. That tack is perhaps the easiest, as the proprietary model is the one currently in place. A second is to embrace the community model. This approach would require a change in advertising and promotion efforts.

A third approach might be a middle position consistent with the SGB proposal yet providing ACM with a services revenue stream to complement its content revenue stream in the DL. Appendix B provides the outline of a possible compromise model that inherits some of the benefits of both competing models while avoiding some of their drawbacks. It is not known whether such a middle-ground approach is palatable to either ACM HQ or the SGB.

Independent of the approach taken, the ACM Portal, implemented very quickly and professionally by the publications and information systems staff at ACM with support from the SIGs, already represents a significant and impressive achievement and a valuable resource for the computing community.

A Comparison

This appendix presents a detailed comparison of the two models. For each aspect (price, content, availability, viability, constituents) the similarities and differences between the two models are listed. The differences are stated using an informal rating scheme of **[- -]** (significant drawback or disadvantage), **[-]** (drawback or disadvantage), **[?]** (unclear what impact the aspect will have), **[0]** (neither a disadvantage nor an advantage), **[+]** (definite advantage or opportunity) and **[+ +]** (significant advantage or opportunity). These ratings are somewhat subjective; reasonable people can (and will!) disagree on the ratings.

The various components involved have been referred to with various terms. This document employs the original terminology: the *Portal* is "is a web-based repository of bibliographic information of all the computing literature. It will provide pointers from each bibliographic entry to the digitized version of the relevant book, paper, or article, if it resides on the World Wide Web." This is in contrast to the *ACM DL*, which contains the digitized version of, shortly, all ACM literature.

A.1 Pricing

Community Model: The original Portal proposal [1] did not include a business model. The SIG Governing Board strongly approved in August 2001 the following motion to entirely fund the Portal, providing over $1M to ensure that the Portal remains free.

> That the SGB accept the proposal that the SIGs finance the development of the Guide, in exchange for making the Guide free to all and enabling SIG-specific enhancements to the Guide.
>
> That the SGB EC constitute a group to work with HQ and the ACM EC to agree on the details.
>
> That the SGB EC respond to requests from individual SIGs, if help is needed in meeting this obligation.

More specifically, the SIGs will in concert contribute $1,057,000 to fully fund the development, deployment and maintenance of the Portal for the next three years. This contribution totally covers the $1,036,000 in projected expenses for the Portal through FY'04, as listed in the FY'02 budget. Details are presented in Appendix D.

Proprietary Model: The Portal has been added to individual Digital Library (DL) subscriptions, whose rate has increased by $11 now and by another $15 next year. New individual subscribers are charged for the bundled Portal and Digital Library (and Online Computing Reviews) a single fee of $125 ($26 over the original DL subscription price, which is no longer available). It appears that the Portal is also available to those with an institutional subscription to the DL for $55 annually. The Portal to non-members costs $175.

The Portal is available to academic institutional subscribers for $1,200 and to corporate institutional subscribers for $1,700 per year.

Commonality: In both models, browsing the Portal table of contents would be free with registration. In both models the DL continues to be fee-based.

[1] `http://www.cs.arizona.edu/people/rts/Portal`

Community Model		*Proprietary Model*	
[- -]	The Portal adds no new revenue to MOP, other than encouraging personal and institutional subscriptions to the DL.	**[+ +]**	The Portal adds an estimated $7.6M over five years to MOP revenue.
[+]	The Portal represents no risk to MOP, as the entire cost is covered by the SGB.	**[-]**	The Portal represents substantial risk to MOP, as much as $1M over five years in required investment.
[+]	DL rates remain below $100.	**[-]**	DL rates are increased by $26, due to bundling.
[+ +]	The Portal is free to members and non-members.	**[-]**	The Portal costs at least $55 and over twice that when bundled with the DL.
[+]	The fee structure is simpler.	**[-]**	The fee structure is more complicated. There are four products (ACM DL, ACM Guide, ACM Portal, Hosted Collections) with five different levels of access (browse metadata, search metadata, search full-text, download full-text, PECS).
[+]	By virtue of being free, the Portal can compete successfully with fee-based services such as INSPEC and the IEEE's nascent portal and with free services such as CiteSeer.	**[-]**	Because of fees that approximate that of other society-based services, the Portal will experience stiff competition.
[-]	Being free, the Portal may be viewed by the community as having little value.	**[+]**	Being costly, the Portal may be viewed as having great value.

A.2 Content

Community Model: The original proposal included the following content: 1M bibliographic entries, 10M citations and 1M full-text documents. The major publishers of database literature would be asked to donate their digital content only for indexing and for mining the bibliographies to compute the citation links. The Portal would also accept donations of bibliographic metadata, such as the HCI Bibliography[2] sponsored by SIGCHI, the DBLP bibliography [3] with 236K bibliographic entries and over 100K citation links, the Collection of Computer Science Bibliographies [4] with some 930K bibliographic entries, and other smaller bibliographic collections [5]. In addition, new entries and corrections of existing entries can be contributed by individuals, a phenomenon already observed for other on-line free databases (see Appendix C).

[2] `http://www.hcibib.org/`
[3] `http://www.acm.org/sigmod/dblp/db/`
[4] `http://liinwww.ira.uka.de/bibliography/index.html`
[5] `http://www.library.cmu.edu/bySubject/CS+ECE/bibs.html` provides an impressive list of such resources.

Proprietary Model: The ACM PDF files have been mined for their bibliographies, from which citation links have been extracted. It seems that there are no plans to acquire electronic content from other publishers for searching and for bibliography and citation extraction. Rather, the plans are to "work with the SIGS to complete the bibliographic database as originally envisioned."

Commonality: The current Portal contains about 350K bibliographic entries, approximately one-third of the total. It also contains perhaps 275K citation links (about 3% of the total), all originating in ACM documents (these were mined from the PDFs) but referring to papers and books in the entire corpus.

Community Model		*Proprietary Model*	
[+ +]	The Portal will have substantial non-ACM content to perform full-text searches over. From this content, bibliographies and citation links can be extracted.	**[-]**	Bibliographies and searchable full-text is restricted to the primarily ACM-only content already in the ACM DL.
[+ +]	It is expected that through citation mining and use of donated online bibliographies, all 1M bibliographic entries can be collected.	**[-]**	It is doubtful that manual work by the SIGs will increase the current collection beyond 500K bibliographic entries (50%).
[+ +]	The Portal will have citation links to and from articles and books from all computing publishers. It is hoped that 5M citation links (50%) can be collected.	**[-]**	The Portal will have citation links from ACM content only, to the rest of the literature. Such content has yielded about 750K citations. It is doubtful that more than 1M citation links (10%) can be generated in total, due to the high expense of manual data entry.
[- -]	The Portal's success depends on donations by publishers of digitized material for bibliography extraction and by others of metadata.	**[+ +]**	The success of the Portal does not depend on material or metadata from others.
[+]	By virtue of including a good part of the total computing corpus, the Portal can very effectively compete with existing fee-based and free services and will discourage initiation of competing products.	**[-]**	Because it will be substantially incomplete, the Portal will be hard pressed to differentiate itself from other services.

A.3 Availability

Community Model: Because it is free to all, the full Portal will be available to members and nonmembers alike. The SIG portals would be available to their entire community.

Proprietary Model: Only those who paid the $125 annual subscription or those at institutions subscribing to the Portal have access.

Commonality: The table of contents for the Portal bibliographic entries are available freely to all in either model.

Community Model		*Proprietary Model*	
[+ +]	The full Portal is available to the entire community.	**[-]**	The full Portal is available only to those paying $125 and those at institutions paying the institutional subscription rate.
[+]	SIG members who are not ACM members will be able to access SIG-specific portals.	**[- -]**	SIG members who are not ACM members and not at institutions that subscribe to the Portal must pay $175 for access.
[+]	The Portal will show up on Google and CiteSeer and other web search engines.	**[-]**	The Portal and thus ACM are not visible to such undirected searches.

A.4 Viability

Four years is an eternity in internet time, so it is unclear how the Portal will fare after 2005.

Community Model: The SGB has decided to pay for the infrastructure and populating of the Portal, as well as the running expenses for the first four years. However, there will be significant continuing expenses after that, which must be covered.

Here are a few possibilities, ranging from optimistic to pessimistic.

Scenario 1: As a result of the free Portal, ACM's visibility is enhanced and both membership and subscriptions, to the DL and to the PECS, increase substantially. In addition, a capital campaign is possible because ACM is viewed as providing unique and valuable services to the community.

In this scenario, it makes sense for ACM MOP to support the Portal after this startup period from revenues from increased membership and subscriptions and proceeds from a capital campaign.

Scenario 2: Membership and subscriptions are stabilized and usage of the Portal is significant.

In this scenario, the SGB would need to decide whether it is willing to continue supporting the Portal. The budgeted $250K per year represents very roughly 20% of the annual profit (increase in discretionary fund balance) of the SIGs.

Scenario 3: The Portal is swamped by other free databases on the web and never achieves significant mindshare.

The SGB could pull the plug at any time. The SGB assumes all risk.

Proprietary Model: Continuing revenues will fund the maintenance and extension of the Portal.

Scenario 1: It is doubtful that the Portal as a new fee-based product will significantly increase membership or DL subscriptions or enable a capital campaign.

Scenario 2: Membership and subscriptions are stabilized and usage of the Portal is significant.

In this scenario, the (substantial) Portal revenue can directly fund operating expenses.

Scenario 3: The Portal is swamped by other free databases on the web and never achieves significant mind share.

In this scenario, ACM could drop the Portal, though the MOP portion of the ACM budget would be significantly burdened by the $1M development cost.

A.5 Constituents

The decision between business models should take into account the impact on the various ACM constituencies: members, SIG-only members, non-members, institutional subscribers, institutional non-subscribers, SIGs and ACM staff.

Community Model		*Proprietary Model*	
[- -]	ACM HQ has to date not supported this model. It will be very difficult to impose a business model on the staff. Staff support and buy-in are necessary prerequisites.	**[+ +]**	ACM HQ supports this model and is geared up to support it.
[+ +]	The Portal would establish ACM and the SIGs as innovative, premier sources of information about computing.	**[+]**	The Portal product provides a service to the community, but also encourages the view that ACM is primarily an umbrella organization with many individual products.
[+]	The Portal serves as an innovative and productive partnership between the SGB and the publications arm, enhancing ACM's visibility and knowledge dissemination throughout the IT profession.	**[?]**	It is unclear what the SIG's future role will be in a Portal product.
[?]	The free Portal may reduce value of ACM membership, or may increase the visibility of ACM and thus increase membership.	**[?]**	The Portal product may decrease membership, because it raises the cost of services, or increase membership, for those desiring this service.

B A Layered Business Model

In an effort to assemble a possible middle-ground proposal, this appendix proposes a set of four principles that identify what should be free and what should be fee-based.

It is agreed by all that some aspects of the Portal, starting with the tables of contents (TOC) of the publications in the Portal, be free to all. It is also agreed that the ACM DL should continue to be fee-based and that some services, starting with the bookshelf/binder service, should not be free (i.e., should either be subscription-based or a member benefit). What is at issue is where the line is drawn between free to the world and restricted access.

Each principle is first stated, then elaborated upon.

1. *The Portal should be entirely free.*

   This ensures that the computing community feels ownership, so that it will provide content as well as apply pressure on publishers to cooperate and will ensure that publishers are not polarized against the Portal, so that accessibility and contributed content is maximized.

   (The "Portal" is as originally defined: bibliographic entries, author pages, citation links, searching over PDF, across all publications and publishers of computing literature.)

2. *The Portal should not threaten revenue that publishers (including ACM) derive from their DL.*

   In fact, the Portal should provide access to the DLs of computing publishers, increasing their revenue.

3. *ACM, as a publisher, should be treated symmetrically to other publishers.*

   Publishers (including ACM) should be encouraged to provide meta-data and electronic content (e.g., PDF files) for full-text searching and citation extraction. A primary encouragement is the visibility of participating in the Portal and having Portal users directed to their DL.

   This is an important principle. Users and publishers will contribute content only if it is clear that the project treats publishers equally, in terms of what resources are requested of publishers and what information is made available to the community.

4. *Since the Portal is branded as an ACM service, Personal Electronic Community Services (PECS) provided by ACM should be permitted to include information that resides in the Portal.*

   While the Portal database is owned by the community, ACM is in a special position by virtue of it incubating and nurturing this service.

   The PECS services range over the wide variety of ACM content, including the DL but also career services, Computing Reviews and the Guide to Computing Literature. Such services can be fee-based, or provided as member benefits. In additional to returning information from other parts of the ACM umbrella, these services can utilize information in the Portal.

Here are a few ramifications and examples of applying these principles.

- The CCS categories have been developed as part of the Guide to Computing Literature. Thus associating specific articles with these categories and searching over literature in the Portal via CCS categories both properly belong in PECS, perhaps marketed as the "ACM Guide" or as "The ACM Enhanced Portal". Or perhaps these should be separated into the currently specified Guide and PECS products, both fee-based, with the Portal free.

- Binders, notification, technical interest profiles, bookshelf services, and discussion groups on content across the ACM site, including the Portal, are appropriate for the (fee-based) PECS.

- Reviews in Computing Reviews can be seen as an important component of a citation page, but only in the Enhanced Portal/Computing Reviews product.

  (Envision a citation page in the free Portal with links labeled “CCS categories”, “reviews in Computing Reviews”, “add to Binder”, all of which work only if one has subscribed to the “enhanced portal”. There could be a link to “Subscribe to the Enhanced Portal” on each page.)

- The citation extraction expenses already spent ($125K) should be reimbursed to MOP out of the SGB Portal fund.

  The net effect is that a profit of $37K for FY’02 ($281K projected revenue minus $244K expense) is replaced with a $125K profit ($125K reimbursement with all expenses paid by the SGB), or almost $100K available for other projects within ACM, this fiscal year.

- Since the Portal is an ACM-branded service, ACM MOP staff will help build and run the Portal, again with financial support from the SGB (similar to how the SGB funds the SIG Services staff). Important objectives of the Portal are to increase ACM’s visibility and increase its membership and DL subscriptions.

This is but one principled way to draw the line between free and fee-based services. Again, it is not at all clear whether such a middle-ground approach is palatable to either ACM HQ or the SGB.

C Precedents

The vision of the Portal as a freely-searchable database of meta-data on the computing literature has precedents in other domains. Consider `www.gracenote.com`. This project was started in 1995 to create a database of audio CDs, specifically title, performer(s), publisher, genre and, most importantly, the title of each track.

This is now one of the most popular music databases. It serves almost a million users a day (27M a month). Searching is free on the web. In addition, software (and some hardware) CD and MP3 players look up the track information while playing music; this access is also free. One can find all versions of a song (e.g., Simon and Garfunkel's *Feelin' Groovy* has been recorded over 100 times, including in some 10 compilations of S&G's songs), or a particular artist or CD.

Rather than setting up a complex and expensive system of collecting CDs and having data entry clerks input this information, the content flows from individuals all over the world, who type in this information from their own CDs, for no other reason than to allow others access to this meta-data in a comprehensive database, and in appreciation for those who have typed in CDs for them.

Thousands of CDs are entered each day in this way. Other entries come from music publishers. This service originated as a volunteer effort, but now is a large-scale commercial effort. Revenue comes from licenses of products that use the database (6 cents a license).

Or consider `www.imdb.com`, the preeminent "Internet Movie Database," with 8 million visitors a month ("Best Movie Site on the Web": Roger Ebert, 1999). Searching is available for free over this database containing information on 280,000 movies and the people who helped make them. Its database is similar to the Portal's citation web, in that one can follow an actor to get to a movie, or a movie to get to a director, etc. For example, Steve Bourne has worked on six movies as a sound designer in two movies and as an actor in two movies, including *Skatetown USA*, which is associated with over 75 data items in the database.

This database started in 1990 as an outgrowth of `rec.arts.movie`. Users of the database would enter information on their favorite movies, including the title, actors, director(s), writers, producers and other people involved with the movie, as well as other details about the movie (genre, plot, awards, rating, running time). (From the FAQ: "Though we do some active gathering of information, the bulk of our information is submitted by people in the industry and visitors like you.")

The site also has includes reviews, movie times, message boards and a "My Movies" feature. It has over 900K credit pages, where everything a person has been in is listed (this is similar to Author pages in the Portal). People can correct their own credit page, or submit a "head shot" for their page, which costs $35 (!). 45K such pictures have been submitted, realizing a revenue of $1.5M. This free service was bought in 1998 by Amazon.com, which uses it to steer people to its video, DVD, book and celebrity photo offerings, as well as the offerings of its partners.

The amazing thing about both of these sites is that their underlying content is provided for free, from users who appreciate the ability to search a database that dominates others through sheer size and scope. Both started as a volunteer effort, then added more content as there was demand (for example, IMDB now includes many television shows). It should be clear that these sites have captured the interest of so many people by starting and remaining free. It is highly doubtful that such databases could be populated and maintained through a commercial venture that had to pay to assemble and enter this content. A niche fee-based product will never capture the imagination nor the extensive resources of the worldwide community that a freely accessible database can.

D SGB Proposal

This appendix collects the entire proposal discussed by the SGB and subsequently adopted at its August 2001 in-person meeting.

Portal Proposal

July 3, 2001

The ACM FY'02 budget includes individual and institutional rates for the ACM Portal, now in development. The individual rates are especially worrisome (the professional rate for the ACM DL plus Portal will go from $90 to $125).

Our alternate proposal is simple: that the SIGs finance the initial development of the Portal, in exchange for (a) making the Portal free to everyone and (b) enabling SIG-specific enhancements to the Portal. The SIGs will in concert contribute $1,057,000 to fully fund the development, deployment, and maintenance of the Portal for the next three years. This contribution totally covers the $1,036,000 in projected expenses for the Portal through FY'04, as listed in the FY'02 budget.

The vision of the ACM Portal as originally proposed was that it be a free service that would establish ACM and the SIGs as premier sources of information about computing. The Portal would show up on search engines such as Google and CiteSeer, would highlight ACM and its DL, and would encourage personal and institutional subscriptions to the DL and membership in ACM. Being free would motivate the community to contribute novel search technology and data. It is our view that, by charging for the Portal, most of these benefits are jettisoned.

There are several significant expenses: (1) setting up the infrastructure and loading the initial 300K citations, (2) populating the rest of the estimated 700K references, primarily by mining the bibliographies of material already in the ACM DL, (3) maintaining the Portal with new citations, (4) ensuring multi-cultural sensitivity and access by the disabled, and (5) adding SIG-specific new content.

Each of the SIGs will contribute 5% of their FY'00 fund balance (that portion over their required fund balance). Further, the SIGs will commit the next year 2% of their FY'01 fund balance, to complete tasks (1) and (2) and get us well on the way to setting up efficient mechanisms for tasks (3) through (5). Any SIG can request that the SIG Project Fund cover part or all of their contribution.

Given that five SIGs (SIGARCH, SIGCHI, SIGDA, SIGGRAPH and SIGPLAN) are providing the bulk (78%) of the funding, they will be initially given preference in the Portal. The Portal will first be populated with meta-data to the literature of the computer architecture, computer-human interaction, design automation, graphics, and programming language communities, before any other computer science literature. Our hope is that we can get all of the literature from these five communities into the Portal within the first year. Additionally, 10% of these funds will be allocated specifically to the development of SIG Portals for these five SIGs, customized to these SIGs. After these initial obligations are met, the Portal will be populated with material in areas covered by the other SIGs, and assistance will be given to creating other SIG-specific Portals, utilizing the infrastructure previously developed.

ACM will constitute a Portal Board, initially with nine members: four representatives from each of ACM Council, the Publications Board, the SIG Governing Board, and the Membership Activities Board, and a representative chosen by each of SIGARCH, SIGCHI, SIGDA, SIGGRAPH, and SIGPLAN, in recognition of their significant contributions to the Portal. This Board will have technical and financial oversight on the development of the Portal.

We feel that the Portal must be free for it to realize its full potential of becoming a major resource for the whole community, and a beacon for ACM and the SIGs.

D.1 Details

- All the funds provided by the SIGs under this agreement will be spent on Portal development, deployment, and maintenance, as managed by the Portal Board.
- The Portal will remain free to the world through June 30, 2006, at which time the policy of free access will be reviewed by the Portal Board. This includes free browsing of the meta-data, free searching of the meta-data, and free searching of the full-text. Downloading the full-text would still require a DL subscription, or paying a per-copy fee.
- The estimated amounts are as follows (see next page).

  SIGs with a FY'00 fund balance (minus the required fund balance) of less than $50,000 are excluded from a requested contribution. The estimated second year commitment assumes that the fund balance during FY'01 grows at the same rate of the previous year: 11%. The total over two years is substantially less than the profit over FY'99 alone (which was $1.5M).
- Funds for the continued maintenance of the Portal, an expense which is expected to be significantly less than the initial 3-year startup, would come from increased institutional DL subscription prices. We propose that the new DL subscription rates for next year be those listed in the FY'02 Budget as ACM Portal subscriptions: $4,895–$7,695 for academic institutions and $9,200 for corporate subscriptions. This would cover the cost as well as provide additional revenue to the Association.
- The FY'02 plan lists as "portal expenses" $244K in FY'02 budgeted, $394K in FY'03 planned, and $394K in FY'04 planned, for a total of $1036K for three years.
- The first year's contribution will be paid October 2001; the second year's contribution will be paid October 2002.
- ACM will not charge an allocation on this expenditure.

SIG	FY'00 Fund Balance	Requested Contribution
SIGACT	$505,966	$25,298
SIGADA	negative	—
SIGAPL	$56,077	$2,804
SIGAPP	$36,479	—
SIGARCH	$1,059,358	$52,968
SIGART	$142,818	$7,141
SIGCAPH	$27,013	—
SIGCAS	$13,892	—
SIGCHI	$922,617	$46,131
SIGCOMM	$351,106	$17,555
SIGCPR	$16,121	—
SIGCSE	$34,944	—
SIGCUE	$153,208	$7,660
SIGDA	$1,891,788	$94,589
SIGDOC	$13,183	—
SIGECOMM	negative	—
SIGGRAPH	$4,750,277	$237,514
SIGGROUP	$274,546	$13,727
SIGIR	$332,536	$16,627
SIGKDD	$83,364	$4,168
SIGMETRICS	$256,283	$12,814
SIGMICRO	$7,593	—
SIGMIS	$80,355	$4,018
SIGMOBIL	$17,509	—
SIGMOD	$158,051	$7,903
SIGMM	$67,025	$3,351
SIGOPS	$249,824	$12,496
SIGPLAN	$2,598,947	$129,947
SIGSAC	$1,632	—
SIGSAAM	$37,963	—
SIGSIM	$29,068	—
SIGSOFT	$419,435	$20,972
SIGUCCS	$227,471	$11,374
SIGWEB	$62,952	$3,148
TOTAL		$732,204
Estimated second year commitment		$325,000
TOTAL from SIGs		$1,057,000