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**THE ECONOMICS OF PUBLISHING CULTURAL
HERITAGE CONTENT ONLINE: THE AMICO
EXPERIENCE**

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Abstract

Although the literature suggests that it is not possible, even with significant up front funding, to establish self-sufficient, sustainable cultural digital publishing systems, the Art Museum Image Consortium (AMICO) has proven otherwise over the past five years. The business model that has made this possible, and the concrete financial results of the undertaking over the past five years, are explored in this article in order to detail how this was done and identify the problems that are resolved (and sometimes created), by undertaking such a venture. Elements of the business plans that have proven important are examined in more depth as are the specific sources of income and expenditure in order to reveal what would be needed to use market forces to replicate the AMICO experience in a different context.

Keywords: Digital publishing economics, cultural heritage digitization, image database, art historical data publishing, museum economics, cultural heritage business models, AMICO

Cultural Publishing Economics

For the past fifteen years, since the advent of the videodisc, governments and private foundations have been interested in finding ways for cultural institutions to publish and disseminate more widely the primary materials of cultural heritage. They have given significant grants to explore these new technologies and to create pilot products, often with the stated intention of establishing mechanisms and partnerships that will continue after the funding has ended. However there are few examples of self-sufficient digital publishing efforts in the cultural sector.

Apparently concerned with this funders have paid to conduct studies of whether cultural publishing could be self-sufficient. In 1997, following the Getty supported Museum Educational Site Licensing (MELS) Project, Howard Besser received a grant from the Mellon Foundation to study the economics of the enterprise and concluded that such a service could not support itself (Besser and Yamashita, 1998). In 2001, the Department of Canadian Heritage hired Wall Communications to survey government cultural staff to

determine what they felt was economically viable – not surprisingly they saw no alternatives to government funding (Wall 2001) In 2002, the Canadian Heritage Information Network (CHIN) reported on several alternative models for digital publishing of museum content, but they effectively concluded that government support is required (CHIN, 2002). In the last year, the Mellon Foundation and the European Union have funded similar studies, with similar results (Tanner and Deegan, 2003; OpenHeritage, 2003, Donnelly and Ross, 2003).

Perhaps we should not be surprised at these results considering those conducting the studies and their clients, the government funders, foundations, and educational users both have a vested interest in demonstrating that outside sources of support are essential. But it seems odd to us that five years after publishing about and launching a cultural digital heritage publishing venture with the stated aim of establishing new social and economic structures to support sustainable, self-sufficient, publishing by cultural repositories, so little attention has been paid to a model that makes it possible (Bearman and Trant, 1998).

Doubtless the skeptics have been waiting for a report on the concrete economic facts of the venture, which had predicted economic self-sufficiency after five years. So in this paper we examine the state of affairs at the end of the target period and speculate on elements of the model that are extensible and how they might be applied in other contexts.

The Formation of AMICO – the Art Museum Image Consortium

In the spring of 1997, following the first Museums and the Web Conference in Los Angeles, representatives of almost 40 North American art museums met for a day under the auspices of the Association of Art Museum Directors (AAMD) to discuss what potentials were affected by the Internet and consider what they could do together that they would not be able to achieve alone. By the end of the first day of discussion it was decided there was value in publishing their collections online for educational use and that this activity could be supported by charging subscription fees to universities and other

educational institutions that used the service (AMICO, 1997). Over the course of three more meetings and six months, plans to launch the Art Museum Image Consortium were finalized. When it was formed, the organization had 22 members.

AMICO Members

The basic elements of the AMICO business plan were that it was a membership organization, run by its Members who were cultural institutions with collections they wished to publish for educational use. Institutional Members agreed to pay annual dues equivalent to the cost they would incur if they subscribed to the collective resource. Each would receive the collective resource as a benefit of membership. Members further agreed to each contribute documentation of at least 500 works of art to the collective resource each year. In this way the collective resource would grow; it would grow faster as the number of Members attracted to the organization increased. Presently AMICO has 35 members and the resource includes about 125,000 works of art.

Subscribing Institutions

The bulk of AMICO income (and the basis for its becoming a self-supporting entity), was to be derived from licensing the collective resource, known as The AMICO Library™, to subscribing institutions with fees based on the numbers of end users served and the level of education. The license fee structure, established at the outset and unchanged over the past five years, was \$0.25 per undergraduate student, \$0.10 per elementary or secondary school student, and \$0.01 per public library patron. It was assumed that the bulk of subscriptions would initially come from higher education, which was most anxious for this kind of resource and also had the online subscription mechanisms in place to support it. Elementary and secondary education markets were envisioned as difficult to tackle and the plan was to approach them later, once university subscriptions were well established. It was not clear whether public library use would be viable at all, but if so it was also seen as a secondary target..

Distributors

AMICO decided from the outset not to create a distribution capability. Instead, the AMICO Library™ was made available to subscribers through existing online information providers who were permitted to charge a fee equal to the licensing fee for their service.

Distributors bore, on AMICO's behalf, the cost of developing (or customizing) the software, providing the telecommunications, and supporting users including collecting fees. By using this mechanism, AMICO saved itself the cost of up-front investments in delivery software development and the need to construct and maintain a major technological infrastructure, though in doing so we sacrificed half our potential income to agents that marketing the AMICO Library on our behalf.

No new research studies were undertaken to validate the business model or predictions of economic viability. David Bearman and Jennifer Trant who led the AMICO planning process, were closely involved with the Museum Educational Site Licensing Project (MESL), between 1994 and 1997 (Trant was Executive Director, Bearman a member of the Management Committee) during which time they had reached the conclusion that such an effort could be self-supporting over the long term. When the Getty Trust chose not to take MESL forward, the Bearman and Trant were delighted to work with Maxwell Anderson, Director of the Art Gallery of Ontario, by bringing together suppliers, users, and distributors in this new relationship.

The First Year – Building a Testbed

Developing a Subscriber Base

AMICO was organized on the wave of great enthusiasm in September 1997. In order to achieve its aims, AMICO needed to build a library of art documentation, find a way to distribute that content, and obtain subscriptions from an adequate number of institutions to pay its bills. It decided to offer the Library initially to a group of subscribers who would apply to test the contents, both in order to obtain their feedback, and to work around the fact that AMICO had no mechanism for marketing. By early October 1997, AMICO issued a call for proposals for a test-bed project to begin in the fall of 1998 (AMICO, 1997-2). By “offering an opportunity” to universities to participate, we were able to receive proposals from numerous institutions to take part and ensure we had subscribers paying for the use of the database one year before we were ready to offer it publicly as a subscription resource. A dozen institutions were selected to participate in the

Testbed which was framed as a research project. In retrospect, if this had been thought of equally as a marketing method we might have accepted all the proposals we received and had twice the baseline number of subscribers.

Start up Costs

The second prong of AMICO financing was to be a start-up grant from a foundation. After researching potential funders and sounding them out, AMICO staff began to work with the Secretary of the Board of the Mellon Foundation on a proposal to provide five years of start-up funding to enable AMICO to achieve self-sufficiency and test new economic models for digital libraries. The Mellon seemed quite enthusiastic about the economic research aspects and Bearman and Trant worked with Mellon staff to prepare a grant proposal to be sent to the Mellon Board in June 1998. In the process, detailed financial projections and business models were developed as part of what was submitted to the Foundation. Unfortunately, at the last moment before the Mellon Foundation Board meeting in June, we were informed that staff was not going to submit the AMICO proposal because the Library was perceived insufficiently scholarly and the Mellon Foundation was not interested in creating a resource for undergraduate education.

Membership dues

The third element in financing AMICO was to collect dues from its Members. Initial plans called for dues for at least the first five years, though no concrete plans were formulated about what membership obligations might replace dues if the dues were abolished. At first, dues was all we had. From September 1997 to the end of June 1998, the total income of AMICO was derived from dues of \$110,000 assessed to its 23 members.

Of course ultimately the plan was to have the first income stream, subscription fees for universities and other institutions subscribing to the AMICO Library, pay all of AMICO's expenses and provide funding for programs that Members felt were important, in order to create greater adhesion in the membership organization and improve the quality of the AMICO Library™

Financial Status Prior to Public Subscriptions

Without the anticipated funding from the Mellon Foundation, AMICO began its July 1 1998 to June 30, 1999 fiscal year with only the income from its membership dues and \$60,000 in subscription fees it charged to its “testbed” universities for access to the test database of 20,000+ images. Ultimately two other small grants (from the Delmas Foundation and the Getty Trust) pushed the income to about \$240,000. While AMICO was able to create a database of 50,000 works of art during its first 21 months of operation, develop software tools for its members to contribute and edit their records, and make the AMICO Library™ available under subscription in Europe and North America, it spent about \$750,000 of which only \$375,000 had been earned as income. Thus, by the time AMICO launched its first year of public subscriptions, it had incurred \$375,000 in debt.

Costs had been minimized in these early stages by using outside agents as distributors, using the services of museum staff to capture the images and data contributed to AMICO, obtaining many rights from members, and having senior staff take back some of their salaries in AMICO promissory debt.

Subscriptions to The AMICO Library™

Subscriptions to The AMICO Library™ were first offered from July 1, 1999. In 1998 and early 1999, AMICO was engaged in discussions with numerous non-profit organizations to distribute the AMICO Library. Museum consortia, such as the Canadian Heritage Information Network (CHIN), the Scottish Cultural Resources Access Network (SCRAN) and library consortia were the principal candidates. OhioLINK and the Research Libraries Group (which operated the AMICO Testbed), ultimately agreed to develop the software necessary to distribute AMICO. AMICO agreed to the Research Libraries Group an exclusive right of distribution for two more years in return for its hosting the university testbed. The OhioLINK agreement was limited to the State of Ohio.

Working with the Research Libraries Group as an exclusive distributor provided an intellectually and socially supportive environment for AMICO, because RLG is a very

similar organization to AMICO, but it was not ideal financially because RLG lacks an aggressive marketing function. Indeed, for the two years that RLG was the sole distributor, two consortial subscriptions that were directly negotiated by AMICO - to the State of Ohio (worth about \$35,000/pa) and to the Joint Information Systems Committee in the UK (worthy about \$140,000/pa) – constituted almost half the income received from subscriptions.

Each year we saw a gradual increase in the number of universities subscribing to AMICO with no dropped subscriptions. But the growth curve was about 25% slower than we had predicted in the business plans developed for the Mellon Foundation in 1998. To some extent, the slower subscription growth might be correlated with the fact that the Library itself grew less quickly than we anticipated, and could therefore have been less desirable. Of course the slower growth of the Library was in turn a consequence of membership growing slower than projected, which reflected the fact that membership benefits were slow in coming online because all our resources were committed to building the Library. Indeed, the overall curves of subscriptions, library growth and membership being lower than projected can, in part, all be explained by our lack of funding and staff to pursue opportunities. However, there was something more at work.

Barriers to Sustainable Cultural Heritage Publishing

University Infrastructures

By 1997, after three years with the MESL Project, it was clear that there were more infrastructure problems associated with access to large databases, including image databases, than Universities initially perceived. University libraries were, quite simply, less prepared to subscribe (and especially subscribe successfully) to image database services than anyone imagined. When faculty were interested in access to AMICO, they usually had to discover a way to acquire the resource with funding from outside their departments. When asked, we recommended they speak with the Provost or Dean (who believed that the university needed to have electronic resources for strategic reasons and would pay for them), rather than with the departmental librarians (who quite reasonably resisted subscribing to resources whose use they would not be able to support). By

making an humanities image resource available in 1999, AMICO was pushing the technological ability of many potential subscribers. Even now, in 2003, we know that many institutions do not subscribe because they feel they could not support use, and many that do subscribe are not ensured an appropriate level of support. The AMICO resource appears to be underutilized.

Art Museums

AMICO's founding Members discovered that belonging to AMICO and meeting the target of contributing 500 works per year was extremely challenging. Though the museum directors and staff had established the 500 contribution number as something they felt, in the abstract, that they could easily achieve, in actuality staff found this annual commitment a great challenge AMICO was forced to respond in a number of ways. AMICO found that it needed to spend more resources supporting the contribution process, carrying out on-going editorial work and quality control, and assisting with technology. In addition, AMICO was flexible about the commitment; if an institution couldn't make its numbers in a given year, they were encouraged to try harder the following year. Secondly, because clearing intellectual property rights was one of the barriers that museums, especially contemporary art museums, faced in publishing their collections, AMICO negotiated agreements with the artists rights societies to clear rights to works under copyright on behalf of its members. Finally, beginning in 2001, AMICO began to offer partial rebates on dues to its Members based on their contribution of the agreed amount of documentation and also to reward deeper documentation (including audio and video) being provided by some members and appreciated by subscribers.

These last two measures – clearing copyright and providing dues rebates – had significant financial implications for AMICO. Without these two expenses, AMICO would have shown a profit of subscription income over expenses after the third year. With these sources of expense it covered its operating costs only by incurring additional small debt.

Subscriptions

Even with added costs and slower than anticipated growth in subscriptions, AMICO developed a subscription based service that became fully self-sufficient based on subscriber payments in the fourth year of subscriptions (July 1, 2002 – June 30, 2003).

Currently AMICO's over 400 subscribing institutions are paying over \$1.25M for access to the AMICO Library through six distributors. At various points in the past few years, we have examined the possibility of supporting AMICO from a broad public subscription rather than just institutional subscriptions. But exploration of ways to offer The AMICO Library™ to all www users, or through AOL or a similar popular service, have floundered due to the high transaction costs of supporting individual users. The way in which use of the Internet has evolved, and the availability of tremendous resources for free on the World Wide Web, seem to be pretty complete barriers to a general offering. Nevertheless, in collaboration with Cartography Associates, one of AMICO's distributors, we are initiating a personal subscription offering for independent scholars in 2003 in order to test the potential of some non-institutional support and make the Library available to unaffiliated scholars..

Expanding Subscriptions through Multiple Distribution Partnerships

From the outset, AMICO planned to use multiple agents for distribution of its Library. The reasoning was that different agents would have different customer bases that they would be best prepared to serve and also that these different customer bases would be best served with software tools customized to their needs. In addition, buyers prefer to deal with information service providers they know, and it is easier for them to expand the offerings to which they subscribe than to initiate a relationship with a new information provider. It was hoped that by having different distributors compete against each other the software available might improve over time. A mechanism to permit distributors to cross-license software developed to deliver the AMICO Library™ was incorporated into all the distribution agreements to promote that outcome (AMICO. 1998).

In July 2001, when the semi-exclusive agreement with RLG expired, AMICO, had negotiated distribution agreements with H.W. Wilson and VTLS, was ready to offer the AMICO Library™ to the market through more than one source. We did not know exactly how this would impact our existing subscribers, but felt we should gain subscribers in the aggregate. In the case of H.W. Wilson, which had a broad base of existing database

subscribers that were not being reached by RLG, and which had a sales force attuned to selling subscription resources, we hoped to be able to reach the elementary and secondary school market and the public library community. Though we were not disappointed in Wilson's sales to universities, especially to colleges that would be unlikely to subscribe through RLG, we have seen only dozens, rather than hundreds, of subscriptions by K-12 schools via Wilson. In the case of VTLS, which had neither a subscriptions oriented sales force nor a broad existing subscriber base, we saw very few sales. But the marginal costs to AMICO of additional distributors are quite small; as long as the distribution is serving the aims of the partner, and meeting the minimum requirements established by AMICO, we are happy to have such minor distributions. The Wilson experience gave us confidence to approach other for-profit database suppliers as distributors – an agreement was reached with Cartography Associates in the spring of 2002/.

By the summer of 2003, Cartography Associates and H.W. Wilson were approaching the levels of distribution that RLG had achieved in its first year – over \$350,000 in subscriptions between them. Mostly they were doing this with new subscribers, rather than poaching each others existing subscriptions, though some users did change sources, largely to obtain different interfaces and tools or a slightly better price point.

In the spring of 2003, OhioLINK increased its subscription to reach all public libraries and schools in the State of Ohio. Not only did this provide AMICO with a fourth significant stream of income, it suggested that jurisdiction-wide contracts might constitute a different, and more effective, way of reaching the schools and public libraries. We have had trouble pursuing this model in other jurisdictions, since none of them have quite the same infrastructural support that OhioLINK provides to the State of Ohio.

A few universities, for reasons of their own, have preferred to receive The AMICO Library™ not through a subscription from one of our distributors, but rather through their own in-house support services. This option has been available for the past few years, but AMICO does not consider it a scalable option (at least as long as its involves, as it does now, the physical distribution of tapes to more sites). We have permitted self-service distribution largely where we see some potential future advantage to AMICO from the

Research and Development that the host institution might conduct as at the University of Michigan digital library.

In sum, in its fifth year, The AMICO Library™ is available to approximately 2M end-users through a wide variety of distribution services, though the vast majority of AMICO subscribers use RLG, Wilson, Cartography Associates or OhioLINK to obtain access. We have recently begun to conduct comparative assessments of these services, for the benefit of subscribers and the distributors themselves and are encouraging more studies that would focus on how well certain features of these systems serve the needs of other users (Sayre and Wetterlund, 2003). It seems that third-party distribution, and multiple distributions, have served AMICO very well; indeed it is inconceivable that so many different interfaces with different strengths would have been developed by any single organization supporting an image database. In addition, AMICO income of over \$100,000 each now comes from four independent distribution streams, making it less susceptible to disruption and better positioned for competitive growth.

Lessons Learned

A. The Literature

The literature of cultural heritage publishing is unanimous that there can be no self-sufficient marketplace for cultural content. The AMICO experience would seem to prove otherwise. Is this a discrepancy, or is the literature taking into account the fact that the government funding agencies and foundations will, in fact, prevent the emergence of truly self-sustaining cultural publishing activities?

To some extent, we think that the studies have been skewed to satisfy the funders that they are needed. We saw evidence of this in the MESL project, where the Getty Trust (MESL's sponsor) resisted efforts to continue MESL as a self-supporting activity, preferring to fund its slowly going out of existence for a year and a half rather than seeing it evolve into AMICO.

It is, however, not easy to answer the obvious counter-example. AMICO received virtually no grant funding and became fully self-sufficient in four years. In another year

or two it should have fully repaid all its debts and been able to sustain itself indefinitely. There is a demonstrated growing interest in the subscriber community in such resources and the costs of creating them have been falling for several years. Future efforts if architected correctly should succeed at achieving self-sufficiency.

B. Funding Sources and their Impact on Self-Sufficiency

Despite their rhetorical support for sustainability, funding sources whether governmental or private actually discourage the development of self-sufficient systems of cultural publication. It is not simply that they fund studies that report such self-sufficient systems are not possible, they engage in patterns of activity that systematically discourage and ultimately defeat sustainable activities.

At the simplest level, the availability of funds to do specific projects discourages the development of internal programs devoted to those same kinds of projects using base resources. Cultural institutions are encouraged to identify digital publishing undertakings they would like to engage in and to seek outside support for them. The typical model is to divide these projects into two and three year chunks and get special appropriations. The result is that staff hired for such special activities are not part of the permanent staff of the institution and the methods that are created to conduct the work do not change the workflow and business methods of the organization to which they are attached. At the end of the project there is little or no organizational learning and the work does not continue with internal funds, it simply ends.

At the most complex level, funding bodies like the EU and the Mellon Foundation, put huge amounts of funding into creating exactly the kinds of cultural publications that a self-sufficient consortium such as AMICO produces, thus competing with the cultural institutions attempting to establish a market based mechanism. In the case of the Mellon Foundation's ARTstor, the competition goes as far as imitating every major foundation of the AMICO effort and leaving the market uncertain about whether the product will ultimately also compete in price. The result is likely to be that it will put AMICO out of business before ARTstor is offered publicly, thereby creating a monopoly where price won't matter.

C. The Cost of Publishing

In part because the money comes from somewhere else, and in part because the expenses must be estimated up-front in a grant proposal, the costs of conducting funded projects for cultural publication is far greater than the cost of self-sufficient publishing efforts.

The Mellon Foundation provides an example with ARTstor which has spent, in two and a half years almost ten times as much as AMICO spent in five years and to date has not published any content. In order to become self-sufficient, which is the stated goal of ARTstor, the community as a whole will need to provide much higher levels of funding to ARTstor that they would have had to provide to AMICO. Hopefully this will not cause ARTstor to establish higher subscription charges which would impede market acceptance; given the luxury of several years of underwriting, they could just as easily afford to lower the charges significantly and achieve near-universal market penetration.

Hopefully the additional spending will ultimately lead to an increase in quality. AMICO had to cut quite a few corners in its rush to market with limited resources. In particular, we were unable to fund the kind of standards development and implementation process that would have made exporting data for digital publication a more routine matter for cultural heritage institutions in the way it is with Libraries due to the widespread acceptance of MARC formats. In addition, we were unable to support the degree of integration possible through fully implementing a wide range of thesauri and vocabularies within the documentation environment so that the many different ways that cultural institutions choose to describe their holdings could be privileged (as they are desired by specialist communities) while enabling integrated access for those with different views approaching the content with different terminology.

D. The Added Cost of Membership Organizations

If AMICO, ultimately fails, it will not be because we could not publish a digital resource that was self-sufficient, but rather because the organization was unable to satisfy enough needs of its members to be valued in itself. Unfortunately the two are inter-related. One of the casualties in trying to achieve sustainability without a major start-up grant was always

that we were unable to support the member services component of the organization. A few member services and benefits were developed and some members continue to benefit in significant ways from them, but overall AMICO membership still counted more as an obligation than as a privilege.

To some extent, the conflict between successful publishing and success to the museum members was built into the business plan. North American art museums have, historically, not provided educational programs directed at university age students. Yet because the economics of digital publishing demanded it, we created a product that mostly satisfied that market. Not until 2001 were we in a position to offer The AMICO Library to elementary and secondary schools which were of most interest to the AMICO museum Directors. When we did, uptake was very slow. Through an agreement with Nylink in New York State we found a way to lower the cost to \$100 per school and were close to a pilot for a statewide implementation when 9/11 struck and New York State teachers were forbidden to leave classrooms for professional training of the sort we were offering. In 2003, we received subscriptions from every school in Ohio through OhioLINK. But efforts to reach every school in California through the California Digital Library and to reach schools in the UK through SCRAN, both of which were pursued for several years, ultimately foundered. AMICO explored models for indexing the AMICO Library™ to college textbooks in the University Testbed project and some model assignments; now it is exploring similar strategies for elementary and secondary school distribution.

E. The Cost of Copyright Clearance

The AMICO model is, above all, a cost effective method for sharing copyright fees within a framework of exceptionally low transaction costs; each subscribing institution makes one agreement with AMICO and AMICO makes a very small number of agreements with artists rights societies for a very large number of works. In addition, AMICO was built on agreements by each contributing museum to license its works for educational use. This saved AMICO the costs of seeking such rights from the museums on a work by work basis. It made it possible for AMICO to assure its subscribers that all rights were cleared

for the same concrete set of educational uses, which was the value that subscribers were seeking.

Since the museums themselves were not always the owners of all the relevant rights. In order to enable contemporary art museums to participate fully in AMICO, we entered into agreements with artists rights societies to pay the royalties associated with digital publication of copyright works in The AMICO Library™ and, in some cases, on member's own websites. This was a tremendous benefit to those members with contemporary art in their collections, and resulted in the AMICO Library having an excellent representation of modern works that we feel is also important to the user community, however the costs to AMICO grew rapidly as members took advantage of the opportunity to publish their contemporary holdings through AMICO. Since subscribers do not value the added contemporary content sufficiently to pay more for the AMICO Library as additional contemporary works are added, the number of subscriptions must increase more rapidly than the costs of paying for rights.

The costs of entering into agreements with individual artists and estates that are not represented by larger artist rights societies has largely prevented the works of such individuals from being included within the AMICO Library™. A mechanism for reducing the transaction costs that are involved in such one-on-one agreements will need to be found before this can become regular practice.

Conclusions

With no capitalization or start up funding, the Art Museum Image Consortium has created a subscription based digital cultural library resource that now pays its own way and, on current projections, will recover the debt that AMICO incurred in building it within two more years. The basis of this success is a model that reduces transaction costs for all parties; subscribers enter into one agreement to obtain all educational use rights for all their users for one year. Members enter into one agreement to contribute the documentation of their collections. AMICO enters into a few agreements with distributors and rights holders. All parties share in the benefits – subscribers through low cost access,

members by broad distribution of their holdings, distributors and rights holders by sharing liberally in the income generated.

The model works despite predictions by many studies. It enables cultural repositories to publish digital documentation on their own terms and support the added cost of making it available for educational uses. And it does so without government or foundation support in a fashion that is sustainable and should be replicable. The market can support cultural heritage, but systems to do so require very careful balancing of interests and frugality in management because there is little room for error.

References

AMICO, 1997-1 AMICO Founding Report, March 22 1997.
<http://www.amico.org/docs/papers/1997/AMICO9703.20.rpt.html>

AMICO, 1997-2, University Testbed 1998-99 see
<http://www.amico.org/univ/univtestbed/index.html>

AMICO. AMICO Model Distribution Contract, 1998 see <http://www.amico.org/distribute.html>

To date none of AMICO's distributors have taken advantage of this provision to cross-license software, though we continue to think it is useful. We have tried to interest distributors in making their applications integrate better with third party software such as the image toolset developed by James Madison University, but we have not succeeded there either, probably because the JMU tool is not very flexible with respect to interfacing

Bearman, David and Jennifer Trant, "Economic, Social, Technical Models for Digital Libraries of Primary Resources", invited contribution, *New Review of Information Networking*, #4, 1998, pp 71-91. Paper available at <http://www.archimuse.com/publishing/amico/>.

Besser, Howard and Robert Yamashita, The Cost Of Digital Image Distribution: The Social and Economic Implications of the Production, Distribution and Usage of Image Data. Final Report, 1998 see: (<http://sunsite.berkeley.edu/Imaging/Databases/1998mellon/>)

Canadian Heritage Information Network, An Analysis of Economic Models for Administering Museum Intellectual Property, 2002 see
http://www.chin.gc.ca/English/Intellectual_Property/Economic_Models/index.html

Donnelly, Martin and Seamus Ross, DigiCULT Technology Watch Briefing 8: Technologies and New Socio-Economic Business Models, first public draft 27/06/2003 see
<http://www.digicult.info/pages/download.php?doc=1056724300&twb=y>

European Union, OpenHeritage project, 2003. Though designed to explore new economic models, seems to have not done so from all the reports it has given publicly, and concluded in March

2003 without any sign of long-term structures for sustainable publishing. see <http://www.openheritage.com/fact.html>

Sayre, Scott and Kris Wetterlund, Addressing Multiple Audiences with Multiple Interfaces to the AMICO Library, Museums and the Web Proceedings, 2003 <http://www.amico.org/docs/papers/2003/sayremw2003.pdf> or <http://www.archimuse.com/mw2003/papers/sayre/sayre.html>

Tanner, Simon and Marilyn Deegan, Exploring Charging Models for Digital Cultural Heritage, 2003 see (<http://heds.herts.ac.uk/mellon/title.html>)

Wall Communications Inc., A Study of Business Models Sustaining the Development of Cultural Content., White Paper prepared for the Department of Canadian Heritage, 2001 see http://www.pch.gc.ca/progs/pcce-ccop/reana/wall_e.cfm