

Public description of your project

Please provide a brief statement that best describes your proposed work.

This description will appear on our website and in our annual report. It can be no longer than 250 characters including spaces.

For general operating support of the Connexions Project to focus on improved usability.

Proposal Summary

Give a brief summary of your proposed work using no more than 300 words. Please write this description in plain English (no jargon). Assume the people reading it are knowledgeable, but are not educators. Describe the purpose of the proposal, including its importance; the way you plan to achieve your aims; expected outcomes; and the way you will evaluate your success.

Founded in 1999 at Rice University, Connexions, one of the first open educational resources available on the web, is changing the way educational materials are developed and used. Connexions values equally the participation and *contribution* of anyone, anywhere in the world to not only read and use materials, but take them, modify them, and deposit them back into the repository. As usage soars (unique visitors now hover at 500,000 per month), Connexions proposes to focus on those elements critical to its ultimate sustainability: usability, author workflow, and printing. These elements are the basis for three potential revenue streams that Connexions will develop and test. First, following Rice University's recent resurrection of its decade-long shuttered press as a digital-only enterprise, Connexions proposes to build a consortium of struggling university presses who will similarly use it to create and distribute scholarly works, particularly in the humanities. Second, Connexions proposes to develop, with input from selected institutions and with assistance from dedicated authors, the most popular community college course content, which can then be spooled into low-cost textbooks. Finally, Connexions proposes to partner with businesses who wish to use customized versions of its software for in-house training and publication. With the addition of its first full-time usability expert, Connexions will develop and evaluate the components necessary to support these three ventures as it implements its first professional business plan. Ultimately, Connexions will become a sustainable global standard for teaching and learning without ever betraying its mission to make all of its material available for free.

Section 2. PROPOSAL NARRATIVE

You may provide responses to this section on separate pages (i.e. without the questions).

Please note that items B through E in this section should correspond to the logic model and program chart in Sections 3 and 4.

Name of Organization: William Marsh Rice University

Program Unit within Organization (if appropriate): The Connexions Project

A. Background. Please describe the mission of your organization and/or program unit. Explain why your organization or unit is particularly well suited to carry out the proposed project, citing recent relevant accomplishments, including those under a Hewlett Foundation grant, if applicable.

Founded in 1999 at Rice University by Professor Richard Baraniuk, Connexions (www.cnx.org), one of the first open educational resources available on the web, is changing the way educational materials are developed and used. Baraniuk had been stymied by his students' difficulty in seeing the connections between elements in the curriculum and was convinced that part of the problem lay in the linear progression of textbooks and course syllabi. He cast about for a way to make the curriculum more dynamic—a living, breathing “educational commons” able to represent the interconnectedness of ideas both within and across disciplines. Rather than write yet another engineering textbook, he set about to “do something modern.” With the assistance of one of his graduate students, Brent Hendricks, and with the initial support from Rice trustees and Rice University itself, the Connexions Project was born.

To implement this vision, Baraniuk and Hendricks looked to the open software movement that had rapidly gained momentum under the guidance of Linus Torvalds and Linux. This movement offered a novel approach to education: not only should the tools be free, but so should knowledge itself. As with open software, they were convinced that Connexions' strength would lie in finding communities of people who would together create and contribute material to the commons. The material in the commons could then be re-used by instructors and students anywhere in the world, for free.

The key to reusability was to conceive of knowledge in small chunks of information, called “modules.” This concept held two distinct advantages. On the one hand, it would enable more people to contribute information by requiring substantially less time than writing a traditional textbook. On the other, it enabled instructors and students to re-use information much more readily—reassembling and adapting it in ways that suited their needs.

Free to anyone, anywhere in the world, Connexions overcomes some of the serious problems associated with the traditional method of transmitting educational information: publishing. First, Connexions strives to bring *people* back into the educational equation, in particular those people who have been “shut out” of the publishing world, like K-12 teachers, scientists and engineers out in industry, and people who don't read and write English. Now these individuals are able to participate not solely as consumers of educational content, but as active contributors to a shared global repository of knowledge. (Indeed, a new Spanish version of an engineering course is much more popular than its English counterpart.) Second, even as all of the Connexions material is available for free, it contains other options for the end-user that bring down the extremely high cost of teaching

materials, with no compromise in the quality of the presentation or print. With Connexions, for example, a new 300-page, hard-bound engineering textbook can be purchased for \$25, as opposed to \$125 from a traditional publisher. Third, Connexions reduces the time lag between producing a textbook and getting it into the hands of students. This is particularly important in fast-moving areas of science, technology, and medicine. Moreover, it allows instructors to rapidly customize and remediate textbooks, course by course, or even week by week. Fourth, Connexions can help re-vitalize scholarly communities around subjects that lie in the “long tail” of a distribution curve—areas like art history or poetry—whose relatively small consumer bases are threatened to be cut off completely by traditional publishers. In sum, Connexions’ goal is to become an international standard with a globally distributed repository, allowing authors and students direct access to each other.

Under two previous grants from the William and Flora Hewlett Foundation, Connexions has successfully completed two overlapping phases: (1) “proof of concept,” in which the team defined and built the underlying architecture and (2) “build-up,” in which the team largely focused on improving usability. Connexions software and architecture reinforce Connexions belief that knowledge should be free, open to use and *re-use*. Connexions developed its own open-source software system, *Rhaptos*, a Plone-based educational content management system (<http://rhaptos.org>). Its content architecture is embodied in CNXML, a variant of XML. In October 2005, Connexions announced the open source release of the full system software under the GNU General Public License (GPL), a milestone for the project.

The architectural philosophy maximizes the use of meta-data and semantic content, thereby facilitating searching and construction of semantic webs. More importantly, CNXML enables all Connexions content—contained in the smallish chunks or “modules”—to be woven together seamlessly, creating powerful interdisciplinary, multi-lingual combinations, which can then form courses or textbooks. Connexions’ modules now number in excess of 3,250. We expect that roughly 1,600 more modules will be created by the end of next year. As the number of modules in the system grows, more and more authors are choosing to utilize existing modules as the core of their new courses. For example, Professor Minh Do of Vietnam authored a course titled “Fundamentals of Signal Processing” in less than a week. The course included both his modules as well as modules written by 14 other authors. The 174-page textbook was printed and delivered to Vietnam within a week at a cost of less than \$10 per book.

As the number and variety of modules in Connexions grows, it will become increasingly important to help users preferentially locate and view modules and courses rated high quality by choosing from a range of different “lenses,” each with a different focus. Lenses are controlled by third parties, who are invited to establish their own quality criteria and review processes. This is the case, for example, with the National Council of Professors of Educational Administration (NCPEA), which will now include practitioners for the first time in the development and peer review of its material, all of which will then be certified by the NCPEA and available for viewing based on that preference. In short, a lens can be viewed as a portal into a particular community’s material in Connexions and, as is described in more detail in this proposal, a fundamental part of the team’s upcoming work is working with partners to develop additional community-specific content.

With constant improvements to its usability—including the world’s first open-source XML document editor, a Microsoft Word-to-XML converter, and an on-line XML editor—Connexions is now being used in traditional college and K-12 settings, in distance learning, and by lifelong learners around the globe. The University of California at Merced, for example, is committed to using Connexions across its curriculum while the El Paso Independent School District is experimenting with Connexions’ use as a district-wide platform for K-12 open education content, including textbook production. Authors contributing content range from professors from

major universities to a private music teacher in Champaign, Illinois, whose content on music theory is among Connexions' most popular. Others are volunteering to translate Connexions material, contributing new modules in Spanish, Japanese and Chinese. Connexions is working, as well, with a number of organizations worldwide. These include National Instruments, which is contributing a free "player" version of its popular LabVIEW signal processing tool; and the Vietnam Education Foundation, Vietnam's Ministry of Education and Training, and the Vietnam Advanced Software Company to deploy Connexions to improve education and research throughout Vietnam. Finally, to encourage even broader use, Connexions recently made the important move away from *rice.edu* to its own domain, *cnx.org*. Indeed, usage statistics are soaring. In the first six months of 2006, Connexions has averaged 484,000 unique visitors per month as compared to 287,000 during the same time last year, an increase of 69%. This growth trend is expected to continue, with unique visitors per month exceeding 1 million in 2007.

With the help of the William and Flora Hewlett Foundation, Connexions has now become one of the most heavily used open education resources in the world.

B. Problem/Theory of Action. Please describe the issue or problem you are planning to address and the evidence you have that the problem is important, and your theory of action for addressing the problem. If relevant, include a brief literature review or a discussion of your hypothesis and alternative hypotheses. Explain how your goal relates to the Foundation's grant-making priorities. Discuss how your work advances the Open Educational Resources field beyond its current state and how it relates to any similar work being carried out. Please note that Sections 3 and 4, Logic Model and Program Chart, should be drafted before you complete items B through E of this section.

Over the past year, under the leadership of its first external executive director, W. Joseph King, Connexions has made particular progress in identifying sustainability models, all of which rely on the unique ability of its underlying Rhaptos software to create an "author artifact." Under the proposed grant, Connexions will focus on those Rhaptos enhancements critical to its ultimate sustainability--usability, author workflow, and printing--which are the basis for the three potential revenue streams that Connexions will develop and test. These include: (1) a **Community College Consortium**, in which a set of community colleges will develop materials in Connexions for their top ten courses; (2) with the recent announcement that Rice University Press will reopen as the nation's first fully digital university press using Connexions, the project will build a **University Press Consortium** to help provide cost-effective conduits for other university presses; and (3) outsourcing, on a fee-split basis, customized, ancillary software components to Connexion's Rhaptos system under the trademarked **Connexions Open for Business™**. All sustainability models require that the educational materials are also always available for free on the web.

In this proposal, we anticipate a large, multi-year effort supported by multiple foundations and donors. However, we have developed two contingency plans for more modest levels of support. The first contingency plan (Plan I) anticipates support only from the Hewlett Foundation and Rice University. The second contingency plan (Plan II) anticipates \$1 million in additional support for the university press initiative. The budgets for each of these plans are included.

Plan I:

This plan will allow us to complete all of the usability and user interface redesign discussed in this proposal. This effort would include substantial changes to author workflow, both to improve the ease of use and to support the authoring and editorial process required by academic presses. Finally, this plan will provide for

the completion and refinement of book printing. Since this element is required for all of our sustainability efforts, we must concentrate resources on making the system robust and reliable.

The university press initiative has the quickest and most substantial effect upon Connexions' sustainability. It is also the most scalable effort. This plan provides for basic support of Rice University Press, and its second label, Long Tail Press. Efforts with other presses must be financed utilizing revenue generated from our work with RUP/LTP. The community college and open for business initiatives would have to be financed over the long-term via revenues generated from our press efforts. However, open for business might grow organically out of our need to provide support for more and more presses and organizations.

Plan II:

This plan assumes all of the development in Plan I and provides for a large scale university press initiative. In addition to supporting RUP/LTP, this plan would support business development within the university press community, as well as other scholarly publishing communities: think tanks, policy institutes, etc. This plan would also support additional development of the platform to facilitate greater flexibility in the editorial process. It would also support further development of the print system to allow more formatting options and the development of lenses, as described in this proposal.

This plan would generate revenues in the first year with substantial growth as the scale of the university press initiative increased. Revenue could be used for further development of the platform and to support content development, namely the community college initiative.

The rationale behind each of the sustainability models we hope to test are described in more detail here.

- 1. University Press Consortium.** In 1996, the Rice University Press (RUP), like many university presses before and since, closed after years of losing money. However, as announced in this week's *Wall Street Journal* (article attached), Rice University is being brought back to life as the first fully digital university press in the United States. Thanks to the phenomenon described by Chris Anderson in his recently published "The Long Tail: Why the Future of Business is Selling Less of More," technologies like the Internet now make it possible to store, access, and distribute the vast stores of information about a range of topics whose limited and esoteric consumer base were previously seen as money-losing and thus unattractive markets. Because most academic titles lie in this "long tail," the closure of university presses, or the reduced catalog they publish, has meant that the pipeline for scholarly books in areas such as art history, poetry, philosophy, and sociology has been increasingly narrowed.

Working in collaboration with Rice's Fondren Library, Connexions' Rhaptos system will provide the backbone of a revitalized RUP which both promises tremendous economic and scholarly benefits. On the business side, digital technology will provide a nearly ubiquitous delivery system over the Internet; avoid costs associated with backlogs, large inventories, and unsold physical volumes; and greatly speed up the editorial process. On the academic side, the use of the Connexions system will enable the inclusion of new media in publications; a wider range of options for contextualizing a scholarly work in a discipline; and much greater ease of maintenance for published content. RUP publications will be peer-reviewed, professionally vetted, and high quality. Like the community college textbook model, users will be able to view the content online for free. Alternatively, thanks to Connexions' partnership with QOOP, users will be able to order printed books in every style from softbound black-and-white on inexpensive

paper to leather-bound full-color hardbacks on high-gloss paper.

The re-conceptualization of Rice University Press using Connexions illustrates—perhaps more clearly than does any other effort to date—the enormous societal potential of Connexions. For RUP represents not merely a new storage and distribution system for existing knowledge, but a means for the creation of new knowledge as well. RUP will focus, for example, on putting out original scholarly work in fields particularly impacted by existing high-cost distribution models, but will foster as well new models of scholarship by seamlessly accommodating images, video, audio, and Web links. Or, to think of it another way, the mode of creation, storage, and distribution is one and the same. Under this model, academic authors will keep their copyrights, something they have never been able to do before.

We will explore, over the course of the next two years, extending this model to work with selected university publishers to inexpensively publish approved works as part of a University Press Consortium. Discussions have already taken place with university presses at Stanford, Michigan, and Princeton as well as with the National Institute for Technology and Liberal Education, many of whose member liberal arts college have university presses. There is real interest in working with RUP to reduce backlogged titles. In this model (as in the Community College Consortium model above), Connexions will receive a portion of each book's purchase price.

- 2. Community College Consortium.** The cost of textbooks has nearly tripled in the past 20 years, according to the U.S. Government Accountability Office. Textbook cost increases have out-paced inflation 2-to-1. Community college students now routinely spend almost as much on textbooks as tuition, according to the U.S. Department of Education. Solutions, ranging from textbook rental to used book marketplaces, have been suggested, but they require more intermediaries and cooperation from academic publishers. In the Connexions' Community College Initiative, we propose an alternative solution: open educational resources combined with the disintermediation of textbook publishing.

Connexions modularity, combined with our use of Creative Commons' least restrictive attribution license and partnership with QOOP, Inc., an on-demand press, allows community college instructors and their students incredible and unprecedented flexibility. Using Connexions, an instructor can create "modules" of information and then string these modules together to create fully customized course materials. The system is so nimble that an instructor could even give an assessment test on the first day of class and customize the online materials that afternoon. Similarly, the students are able to choose among a variety of possible options to view the resulting course materials. Students could use them online for free, print them themselves, or purchase, at dramatically lower cost, a traditional-looking textbook. (Connexions, in partnership with QOOP, has already produced a new 300-page, hard-bound engineering textbook which sells for \$25, rather than for \$100-\$150 from a traditional academic publisher.)

Our goal is to dramatically affect the economics of textbooks by providing high-utility courses in Connexions that can be customized and affordably printed. Although not exclusive to Community Colleges, by piloting this initiative among its large student population, we will be able to test its potential as a revenue stream for Connexions, which will receive a modest percentage of each book's purchase price.

- 3. Connexions Open for Business™.** The modularity of Rhaptos, Connexions' open-source platform, coupled with its translation tools and the ease with which material can be updated and edited means it holds enormous potential for supplanting in-house corporate training programs and manuals. This is particularly true for companies with huge product lines and the need to train a lot of people, in different languages, on products that change constantly. Two clients in particular, Texas Instruments (www.ti.com) and Omron (www.omron.com), have expressed interest in going to a digital system for training, which has led us to begin to explore providing customizations and support of the free open-source Rhaptos system for use by business. To explore the potential of this model, Connexions will outsource the work on a fee-split basis to a company like either Electronic Data Systems or Perot Systems. We anticipate forming a consulting model, with a for-profit entity owned by Connexions/Rice, similar to Mozilla Corp.

C. Inputs. Inputs include money, staff time, knowledge and expertise, equipment, and facilities. Please describe the major inputs that will be devoted to the project. Attach a one-page curriculum vitae of each key participant as well as any significant advisors or consultants. Please discuss resources (including in-kind) that are to be contributed by your organization as well as other sources, including foundations and government agencies. Explain why you believe your proposed project is likely to succeed with the resources you intend to devote to it. If there is a strategic plan and/or business plan, describe briefly and attach.

All three components that we propose to test over the next two years as potential sustainability models are described in more detail in the attached business plan. It is worth reiterating here, however, that even as we identify and test potential revenue streams, our intent is to remain an open education system. Certainly these activities are inherently beneficial (lowered textbook prices, for example), but our overriding goal is to nurture and secure Connexions' presence in those areas where resources are scarce, particularly in the developing world.

Hewlett funds will be dedicated to support staff time associated with improved usability, particularly to improved user interface and author workflow. Rice University will continue to provide space for the project and is building out new space which will immediately give the project 40% more room as well as also allow expansion in the future. In addition to the contribution of overhead costs and faculty advice, Rice University also provides substantial hardware and technological support.

- 1. University Press Consortium.** Funds to support the start-up of Rice University Press are coming from Fondren Library. We plan to continue discussions about potential support of this effort with Don Waters (Program Officer, Scholarly Communications) at the Andrew W. Mellon Foundation, who has expressed considerable enthusiasm for this effort. We are also hopeful that the Open Society Institute, which has an interest in open textbooks, may also be interested.
- 2. Community College Consortium¹.** If we secure additional funds (beyond those supplied by the Hewlett Foundation) we will begin to content development efforts including the top 10 community college courses. These funds will largely support stipends for course authors as well

¹ We are exploring a major K-12 initiative with a private donor. This initiative would support both substantial content development and platform development. The anticipated platform development has significant overlap with the work described in this proposal. Therefore, funding may be freed to provide greater support for the initiatives described in this proposal. Further, AP courses are included in the K-12 initiative which can be repurposed as courses in our community college initiative.

as staff time to support these authors and to develop and further refine authoring tools (conversion utilities, XML editors), lenses, and community tools. Additional funds will be devoted to meetings of the consortium members. We are also exploring the nascent possibility that the Lumina Foundation (Senior Vice President Leah Austin), which has a focus on community colleges, might also help with this component of the project. Ms. Austin has reacted favorably to some preliminary information on this effort. We have also had discussions with Frank Mayadas of the Alfred P. Sloan Foundation, who has seen samples of QOOP-Connexions books. Dr. Mayadas has explored with George Otty at CUNY the possible use of Connexions in CUNY community colleges and we expect a three-way phone conversation in the near future.

- 3. Connexions Open for Business™.** Over two years, we will pilot this model by adding only a manager of client relations, who will coordinate with the contracting company, but not engage in any sales. We estimate this will cost roughly \$300,000.

D. Activities. Describe the activities you will undertake to achieve your intended outcomes. Explain why these activities will lead to your intended outcomes and how you will overcome any obstacles. Describe how you will measure whether or not you have successfully carried out your activities. What key constituencies, including traditionally underserved groups, participate in the work of the project? Discuss any significant collaborations with other organizations or program units.

1. Usability

Given the critical mission to support learners and authors, our primary focus continues to be improved usability of Connexions. In general, usability refers to how well users can learn and use Connexions to achieve their goals and how satisfied they are with that process. Our Human Computer Interaction Expert is preparing a plan addressing overall usability in each of the key areas identified below. Her team has mapped out the current workflow of users and discovered areas that need improvement. We will use User-Centered design (UCD) methodology to improve the existing website and tools, as well as the development of all future features. Involving users in every step of the design and development process is a key aspect of UCD, and we will use various user research techniques like focus groups, interviews, surveys, task analysis and usability testing to do a through user needs analysis, site usage analysis and redesign.

The following areas have been identified as key areas of focus for improving the usability of Connexions:

Improve Site Navigation and Search: Site visitors and learners need to understand and be able to use the website and its navigation and they need to be able to find content easily.

Improve Content Creation and Review: Authors increasingly use our import tools for publishing their educational and scholarly writing and thus we are focusing on improving usability of the import tools. Connexions provides tools and work spaces for authors to collaborate and much of the content in Connexions is created collaboratively. Academic Presses will rely heavily on these tools for editing and review.

Improve Customization Tools: Connexions technology provides for a huge opportunity in customizing and translating materials. Connexions users customize materials by creating custom

collections (courses and books) for navigation and for printing specialized books. Translation tools provide world-wide impact for Connexions.

2. University Press Consortium.

We propose to put together a consortium consisting of ten university presses who, unlike the coordinating function of the group of community colleges above, will not work as a group, but who rather will produce co-branded books with RUP. Each member will pay a fee (see attached business plan) which will cover the start-up costs associated with any customizations made for that specific press (a unique portal, for example, or help marking up content). Under publisher Chuck Henry, vice provost and Rice university librarian, RUP anticipates assembling a variety of editorial boards, largely in the humanities, and producing 20 titles by 2008.

RUP will soon be hiring an editor and assembling its first editorial board in art history, the area in which we expect to generate—given incredible pent-up demand—five original RUP titles by 2008. While this pace is ambitious, we think we can identify five titles in late 2006 or early 2007 which are either complete or nearly complete, allowing the bulk of the allotted time for editorial review and integration into Connexions.

We plan on 10-15 co-branded titles by 2008, titles which have already received editorial review approval at other presses, are in digital format (usually MS Word), and are out-of-print. For titles such as these, we will work with the authors to move the content into Connexions while providing partner presses (we are currently in conversations with Stanford University Press and University of Michigan Press) 50% of the revenue.

Both the Community Colleges and University Press Consortia will rely on a communities' subsystem, consisting of community tools such as discussion lists and message boards to stimulate active author and learner communities. Features will be added to the system based on feedback from the partners. Because of its importance in driving increased market in a grassroots organization such as Connexions, work on community building tools—conducted by a dedicated developer—is included in the \$2 million core budget.

3. Community College Consortium.

To kick-start this initiative, we propose to develop the *Top 10 community college courses* in Connexions. We envision a contractual relationship with a community college, with fees scaled according to the size of the student body (to range from \$10,000-\$25,000 per year). The resulting portal will be designed to address the particular needs of that system (be it a district, state, or region) and will direct users to the appropriate system community; allow limited content customization; allow the printing of PDF books as well as of individual modules; and allow that system to participate in decisions over future developments, including course and tool development. Students in these systems can thus purchase, via the QOOP-Connexions partnership, a softbound textbook at 2-3 cents per page, or even print the books on their own at anywhere from 3-5 cents per page on a home laser printer, or 8-10 cents per page on a home inkjet printer. We expect each consortium member to help inform the printing capabilities available to their students through its unique portal: some colleges might be wary of absorbing

the costs of having students printing whole books on computer lab printers. On the other hand, those community college systems with print centers may want the capability to print and sell the books themselves.

Based on preliminary discussions with systems in Arizona, California, and Texas, the top ten courses currently slated for development are (1) English Composition I; (2) English Composition II; (3) Fundamentals of Mathematics (with remediation); (4) General Psychology; (5) Introduction to College Writing (with remediation); (6) Computer Concepts; (7) General Sociology; (8) College Algebra; (9) Anatomy and Physiology; and (10) Biology I. Additional for-credit courses will likely include Chemistry I, United States History I and II, Government, and General Accounting. We also expect that English-As-A-Second-Language, while not a top for-credit course, might well be requested by our community college partners because it has such high utility for students.

Community college partners will have input into all materials comprising these texts, particularly with respect to state-based curricular requirements and remediation. The material itself will be developed by authors specifically engaged for this purpose, who will be identified either by the community colleges themselves or found through Connexions' extensive academic network. Ideally, we will be able to acquire some of the texts in completed digital form, either because publishers have opted out of contract or because an author has regained his or her copyright from a publisher (one such author has already identified himself for the Biology I textbook). Whatever the case, funds are budgeted (see inputs) to pay the authors and to pay a content specialist to help get the materials into Connexions, although, as noted above, some of the books are likely to come quickly and cheaply.

After an initial meeting, work will largely progress on an individual system basis to customize the look and feel of the resulting courses, and on an individual author basis, to support the production of course-specific modules. Should Lumina and Sloan become more involved, we expect that they too will help the project make content with other community college systems.

Upon confirmation of a Hewlett award in October, we will begin immediately to work on the Biology I textbook with Maricopa; the rest of the authors will be selected by April 2007. We expect that five courses will be completed in the first two years with the remaining five, developed with grant funds, completed within the following third year.

4. Connexions Open for Business™.

The manager of client relations will be responsible for day-to-day operations in conjunction with the contracted business partner, who will oversee this effort, admittedly our biggest unknown and farthest a field. The \$300,000 initial investment, spread over five years, is conservatively expected to generate \$475,000 in revenue. We expect to implement this effort in stages so that we can curtail further spending if they do not return positive results. In 2007, for example, we will test this concept with Texas Instruments at a cost of \$50,000; in 2008, we will run two more trials at a cost of \$75,000. If these two trials are successful, we will embark on a full roll-out in 2009 at a cost of \$275,000.

Alternatively, we may decide to lean heavily on our chosen partner (EDS, for example) to

support the deployment costs. In that case, we would take a lesser percentage of the ongoing revenue, but we would not have to bear the up-front cost burden, leading to a better return on investment.

E. Outcomes. Outcomes are expected effects from the proposed project on the target population. They may be intermediate outcomes or ultimate outcomes. Please describe the outcomes you wish to accomplish with this project and how you will demonstrate whether you have achieved them. Describe the key obstacles to accomplishing your intended outcomes. Discuss how you believe the work of your project will generalize beyond its current setting.

- 1. Usability.** The most important outcomes of improving usability are increased visitation to the website and increased content in the repository. These two outcomes are directly related to the overall educational impact of the project. Website understandability, navigation and search improvement will increase usage for learners. Authoring tools are critical for enabling a broader group of authors to contribute to the content repository, thus expanding its breadth and depth.

Important additional outcomes are reduced user error rates, increasing enjoyment and productivity, and reduced support costs.

- 2. University Press Consortium.** Our goal is to revitalize the creation and publication of scholarly work, particularly in the humanities. There are a number of potential synergies with respect to the press model, not the least of which is the transparency between “plain old” Connexions modules and those modules that make up book production in the press, potentially leading to a fuller integration of leading-edge research into the curriculum. Further, the model is extensible to scholarly societies and academic centers, which could rely on RUP to provide affordable publishing for annual reports, reflections on their field of study, or original research resulting from grants.
- 3. Community College Consortium.** Our goal is to dramatically affect the economics of textbooks in community colleges by providing high-utility courses in Connexions that can be customized and affordably printed. We will easily be able to measure the number of students enrolled in these first-effort classes across the United States. Further, it is our intention that this more intensive course development effort will act as a catalyst and encourage other authors to develop modules entirely on their own. The potential student audience—community colleges enroll 8-10 million students each year—is vast, and is expected to continue to increase. In our attached business plan, for example, we are conservatively estimating reaching only 1% of this population initially, and thus basing projected revenue on the approximately 600,000-800,000 books. Note, too, that the revenue model we are testing is based almost entirely on that generated from book printing, not on the consortium memberships. We see the latter is more a marketing tool than a revenue source. It is the considerable price advantage offered by the partnership with QOOP (\$2.00/book for softbound and \$2.50/book for hardbound) that helps to protect this revenue stream.
- 4. Connexions Open for Business™.** Even though this model is viewed solely as a way of generating income at this point, it could potentially lead in interesting directions. If a company so chooses, for example, their material could be searchable on Google, potentially driving new business to them, but potentially complementing traditional educational sources as well. The integration of “real world” applications could be incredibly useful to students, particularly in

those subjects where it is hard to grasp their later relevance.

As is discussed in the attached business plan, the biggest obstacle facing these initiatives is an unwillingness to try new, all-digital solutions.

F. Evaluation. Discuss your plans to evaluate both your strategy and your outcomes, noting the measures and methodologies you intend to use and the percent of your budget you will allocate. Please keep in mind that the intention of evaluation is to ensure accountability, provide ongoing feedback about how well you are moving toward your goals, and capture knowledge developed for your organization, the Foundation, and others in the field.

- 1. Usability.** For the past few years, Connexions has been in an intense build-up phase with new tools and functionality being added for content creation and use, community building etc. As a next step, we are creating a comprehensive summative evaluation plan, including both qualitative and quantitative measures, which will be in place by December 2006. We will measure the efficacy of all the tools, the website and the overall Connexions system using empirical scientific methodology like lab-based usability testing, as well as satisfaction and usage measures obtained from web metrics, surveys and focus groups. The evaluation plan will be designed and managed by Dr. Manpreet Kaur who joined the Connexions team as its new Usability Researcher in March 2006.

Additionally, detailed web server logs have been kept since the inception of the project. Currently, this amounts to 10 GB of compressed log data. These are not aggregate data, but individual hit data. These logs are currently used for four purposes: overall load analysis and problem tracking, general usage tracking, specific content usage (author feedback, content popularity), and specific usage queries (user interface testing and design). Since users of the Connexions repository are not required to log in to view content, we have only these logs to answer questions about our learner communities. Nevertheless, there are significant questions that can be answered: What are the temporal, institutional and geographic distributions of our users? What other sites are they coming from? What search terms, on which search engines, find what content? How have all these answers changed over time? For specific content groupings (specific authors, subject matter, etc.)? What pages do users leave from? Do they move between content on the site? Are new features in use? Detailed click stream analysis will be used to answer these questions.

Answering deeper questions involving learning effectiveness will require more direct interactions with users. Addition of simple 'Rate this content' and 'Was this content useful for you' type feedback ratings on each content page is planned for the near future. Combining these ratings with characteristics derived from the base log data (geography, institution, etc.) will allow us to use them as more than a simple 'beauty contest' results, to find subgroups of users who we are currently serving well, or particularly poorly, as well as identify 'affinity groups' of users and authors - which authors reach which learner communities particularly effectively.

In addition to overall system evaluation, the following specific measures will be tracked for the three main initiatives outlined in this proposal:

- 1. University Press Consortium.** We will be able to measure the number of titles in production as well as those completed and available for use (in either digital or print form),

as well as assess under what conditions what form is used. We will also be able to assess the number of books sold, and begin to get an idea of the viability of this as a revenue stream for the long-term sustainability of Connexions.

2. **Community College Consortium.** As consortium members discuss and settle on the final list of top ten courses, we will track the conversation and enumerate not only the top ten, but compile a second list of courses that, while not making the final list, are nevertheless deemed ripe for development. This, coupled with what are likely discussions about the kind of remediation community college leaders see as needed across several states, will paint an interesting portrait of our secondary school system and the aspirations of the vast majority of the nation's future workforce. Simple metrics will enable us to follow the creation of each course, the potential stumbling blocks for each author (awkward authoring tools, for example), and feed these back into system-wide improvements. Toward the end of the two-year period, we should see the first printings of textbooks associated with these courses and we will be able to gauge whether or not these numbers match our estimates.
3. **Connexions Open for Business™.** We will readily be able to assess the number of business using customized Rhaptos systems, and what that means in terms of money coming back to support Connexions' operation.

G. Intellectual Property Rights. In every grant where Foundation resources are used to create products, agreement about the licensing of these products must be made explicit in the grant application. Products include but are not limited to reports, papers, publications, content, and software.

If you are developing content or producing articles, reports, white papers, or other written materials, please identify which of the Creative Commons licenses you will use to license the content. See <http://creativecommons.org/about/licenses> for more information.

Creative Commons attribution 2.0 license; possibly attribution, non-derivative license with RUP

If you are developing software, please identify which of the Open Source Initiative-approved licenses you will use to license the software. See <http://opensource.org/licenses/> for more information.

GNU General Public License (GPL)

If your work involves the creation of data sets, please see <http://sciencecommons.org/data/dbfaq> and be prepared to discuss the open license plans with program staff.

N/A

H. Compelling Reasons for the Grant. Briefly, what are the three most compelling reasons this grant should be made this year?

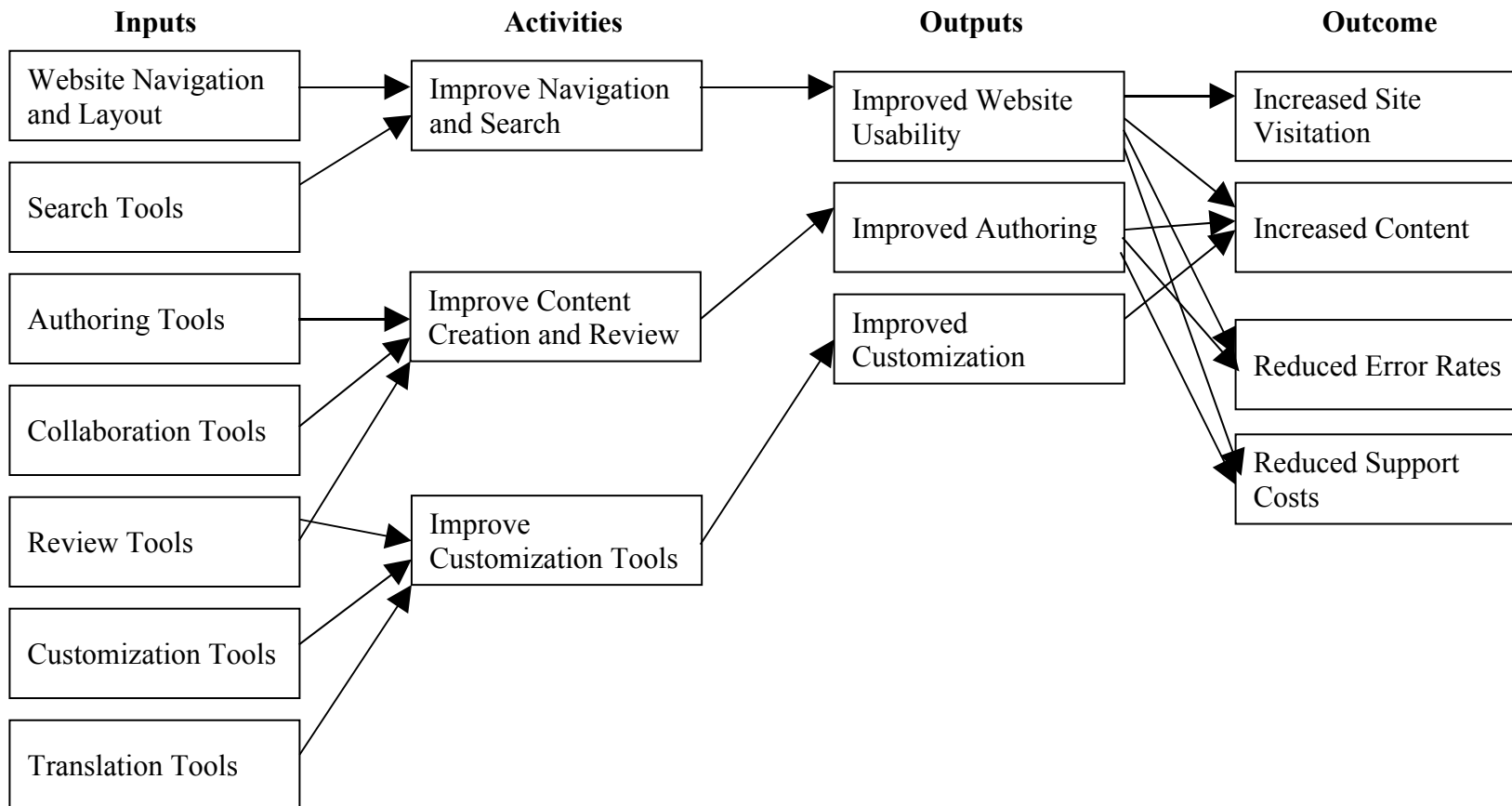
1. With the recent media coverage surrounding the resurrection of Rice University Press using Connexions, now is the time to test revenue models built on our unfolding reputation as an alternative to traditional publishing.

2. We will be testing two models, in particular, which not only support Connexions' core mission, but which have the added benefit of addressing two pressing needs: to lower the cost of textbooks and to revitalize scholarly publication in the humanities.
3. Connexions core mission—to distribute free educational material for use across the globe—deserves sustaining for its rapidly expanding community of users who now make it one of the world's most-used open education resources.

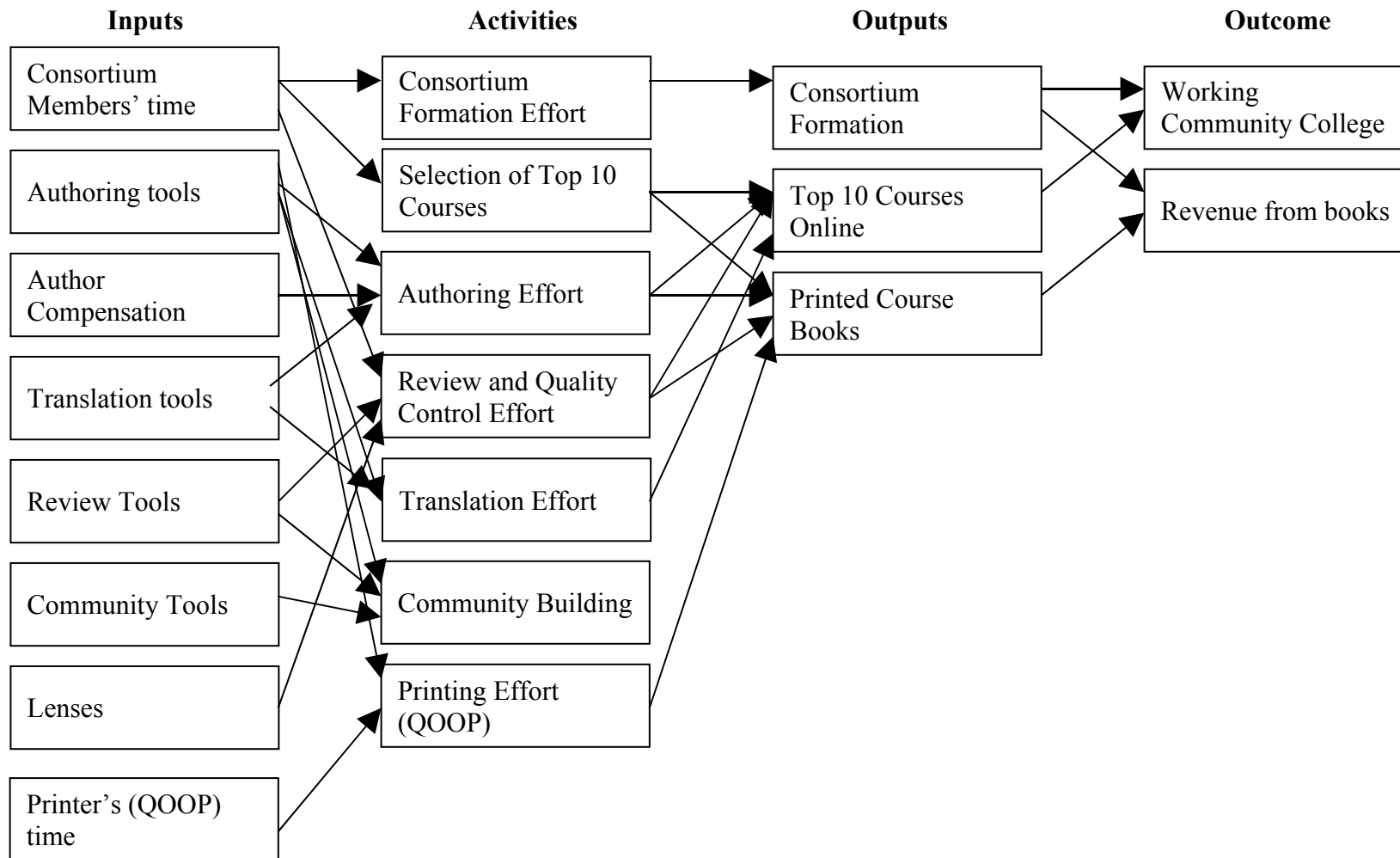
Section 3. LOGIC MODEL

A logic model is a graphical representation of cause and effect that links inputs to activities to outcomes, typically by tracing events over time. It describes how an organization or project plans to get from here (inputs) to there (outcomes). Although the model shows forward movement, an organization often begins its planning process by articulating its intended outcomes and then working backward to determine how to achieve them.

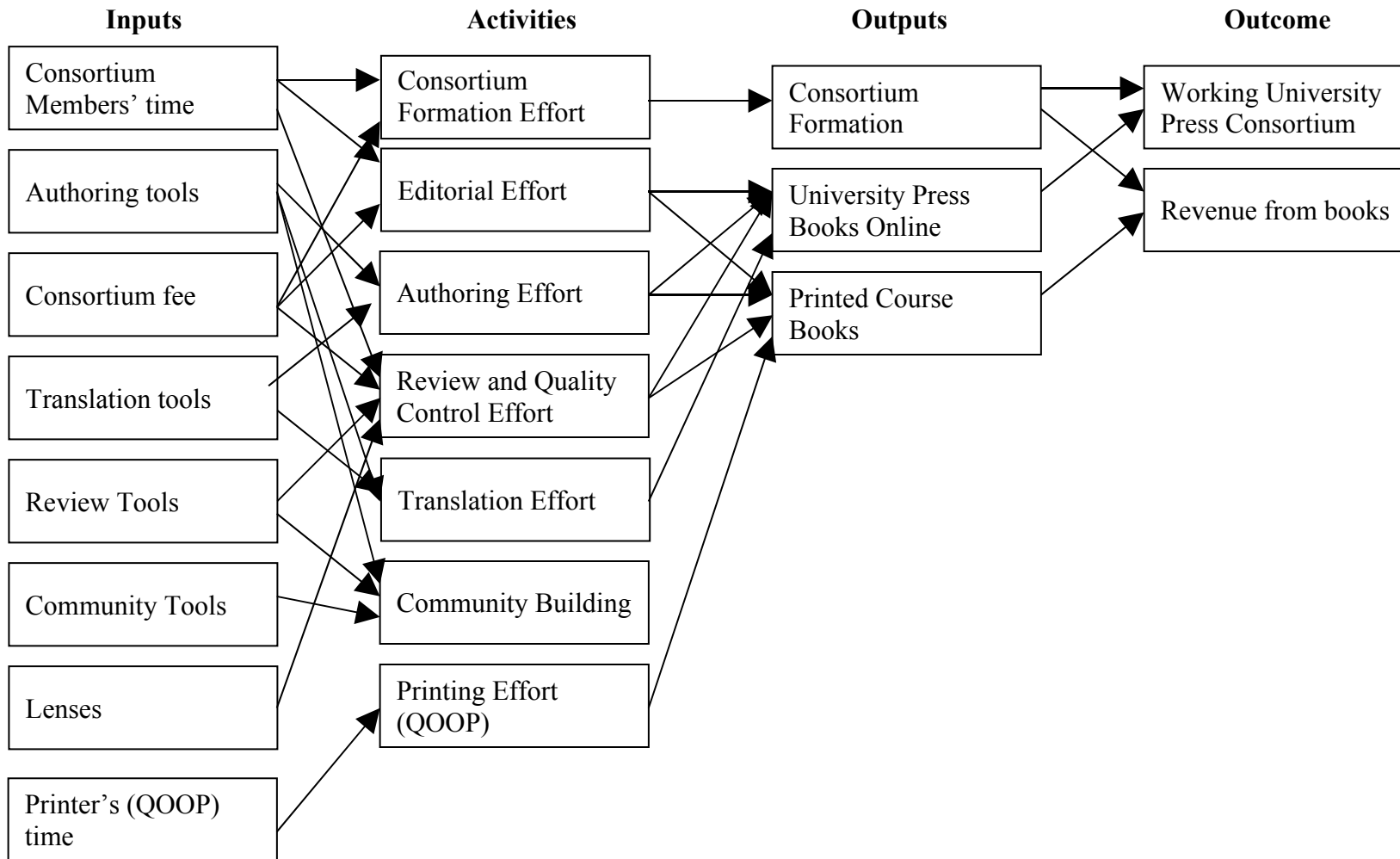
USABILITY



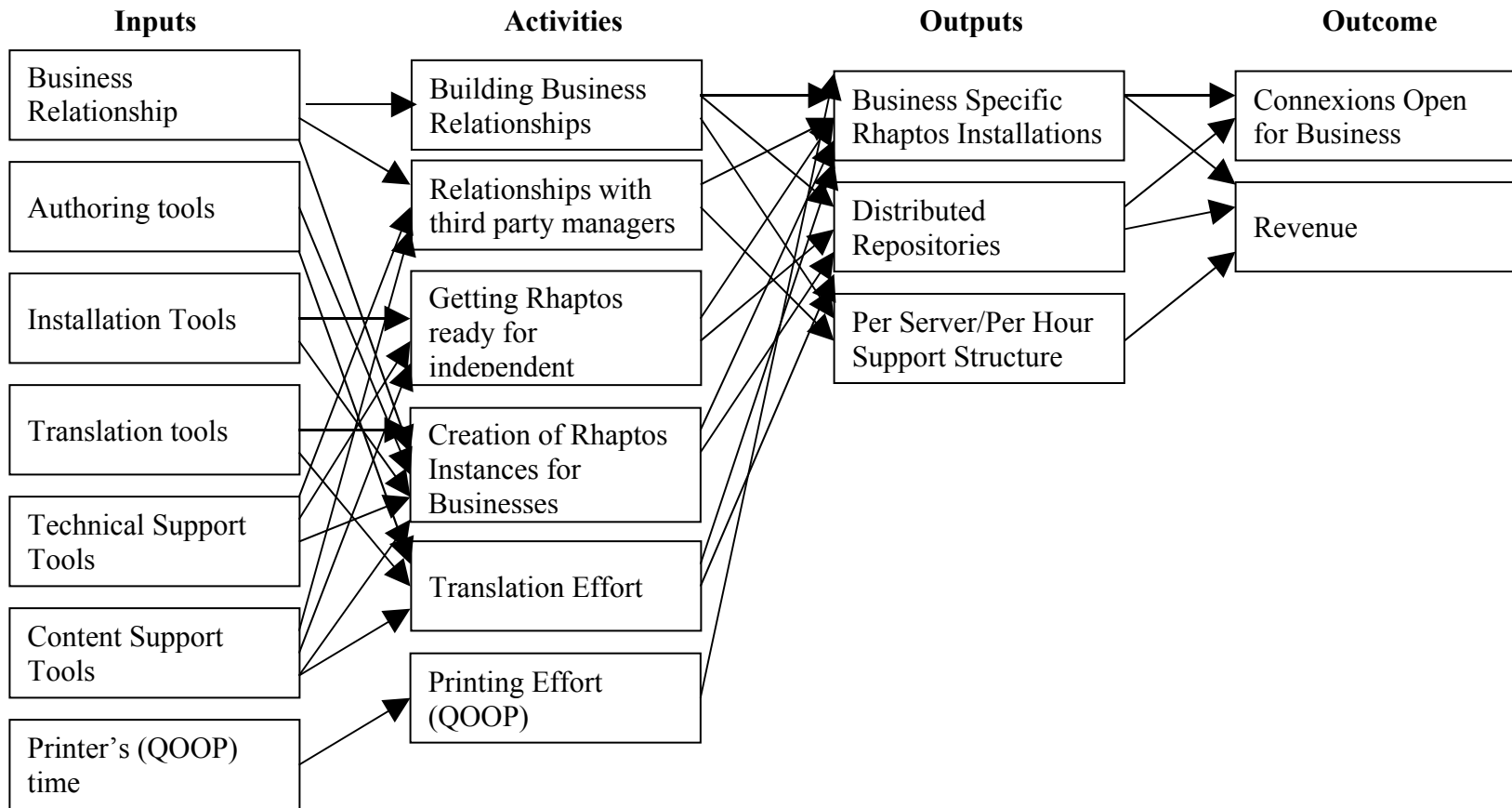
COMMUNITY COLLEGE CONSORITUM



UNIVERSITY PRESS CONSORTIUM



CONNEXIONS OPEN FOR BUSINESS™



Section 4. PROGRAM CHART

Please provide a program chart, using the categories below, to help the Foundation understand your intended outcomes and activities and how you plan to track your progress on both. (See Example on next page.)

CATEGORY	INDICATORS	BASELINES	TARGETS AND TARGET DATES
<u>Activities/Outputs</u>			
♦ Selection of community college courses	♦ Number of courses selected by the community college consortium	♦ Collected National Statistics on Top 10 courses	♦ All 10 courses by April 2007 ♦ Some books will commence immediately (Nov 2006)
♦ Course Authoring, Review and Translation efforts	♦ Number of community college courses added to the repository	♦ Tools are currently available	♦ 5 courses completed and released by the end of the grant period. ♦ Remaining 5 courses completed and released the following year (but funded during the grant period).
♦ Community Building	♦ Availability of community tools e.g. discussion lists and message boards to stimulate active author and learner communities	♦ Community tools available in Beta	♦ Release a production version of the Communities subsystem by April 2007 ♦ Add features based on feedback
♦ Book Authoring and Editing activities	♦ Number of University Press books added to the repository	♦ Tools are currently available	♦ Training by December 2006 ♦ Content support by December 2006 ♦ Modifications to communities function to support editorial boards by April 2007 ♦ Customized portals available by April 2007 ♦ Local content hosting by April 2007, distributed content hosting by April 2008 ♦ Customized print functions by July 2007
♦ Getting Rhaptos.org ready for business specific installations	♦ Per Server/Per Hour support structure	♦ Initial open source release	♦ Follow-on release with full documentation by July 2007
♦ Creation of Evaluation Plan	♦ A comprehensive evaluation plan in place	♦ Currently does not exist	♦ Evaluation plan created by Dec 2006
<u>Intermediate Outcomes</u>			
♦ Creation of Community College Consortium	♦ Consortium related activities e.g. selection of members, meetings, documentation etc.	♦ Currently does not exist	♦ Initial Consortium members identified by April 2007
♦ A repository of top 10 courses for Community Colleges	♦ Number of community college courses in Connexions	♦ Repository structure exists	♦ 10 courses by January 2010

- | | | | |
|---|---|---|--|
| ◆ Creation of University Press Consortium | ◆ Consortium related activities e.g. selection of members, meetings, documentation etc. | ◆ Currently does not exist | ◆ Initial Consortium members identified by January 2008 |
| ◆ A repository of archival quality University Press books | ◆ Number of University press books | ◆ Repository structure exists | ◆ 5 titles by January 2008 (Rice University Press)
◆ 15 titles by January 2009 |
| ◆ Availability of Business Specific Rhaptos.org installations | ◆ Number of business sites for training and related materials | ◆ Rhaptos.org available for installation | ◆ Outsourcing partner identified July 2007
◆ Initial Texas Instruments trial in mid-2007
◆ Wider Client trials by January 2008 |
| ◆ Distributed Repositories | ◆ Number of cross-indexed, searchable repositories | ◆ Independent repository set up at International University of Bremen | ◆ Architecture defined by July 2007
◆ Initial deployment by July 2008 |
| ◆ Print Relationship | ◆ Ability to print material from the online repository | ◆ Able to print PDF | ◆ Relationship with QOOP
◆ QOOP able to print native CNXML by January 2007 |

Ultimate Outcomes

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- | | | | |
|---------------------------------------|--|--------------------------------------|--|
| ◆ Active Community College Consortium | ◆ Community College Courses available Online & in Print | ◆ Situation currently does not exist | ◆ Courses in use by July 2008 |
| ◆ Active University Press Consortium | ◆ University Press Books available Online & in Print | ◆ Situation currently does not exist | ◆ Titles available by January 2008 |
| ◆ Connexions Open for Business | ◆ Specific Instances of Rhaptos.org available for businesses | ◆ Situation currently does not exist | ◆ Full client installations by July 2008 |

Section 5. FINANCIAL INFORMATION

Please attach the following documents:

- A project budget for each year of the proposed project, indicating the expenses to be allocated to the proposed Hewlett Foundation grant. Budgets should include **income by source** (e.g. contributed income from grants as well as other sources) and **expenses by category** (e.g. salaries, benefits, consultants, professional services, facilities, equipment travel, program costs, fundraising) and totals for each. If your request is for more than \$200,000, please show project budget by activity. Please provide an explanation of any items in your budget that you believe need clarification and describe your plans to diversify your funding base.
- A list of current foundation funders, including the level of their support.
- For U.S. organizations, **your IRS letter showing determination of tax status.**
- For non-U.S. organizations, if applicable, your tax affidavit form, your financial support schedule, and your charter document in English.