

# The Public Radio Exchange: Station Collaboration Project

## Project Narrative

### 1. PROJECT PURPOSE

The Public Radio Exchange (PRX) is a nonprofit Internet-based service for peer review, licensing, and digital distribution of radio content. As a new portal, toolkit, and marketplace for the public radio system, the PRX is a platform on which stations can select extraordinary peer-reviewed content to assemble unique and compelling programming to enrich their public service.

This project will use the emerging PRX platform to foster station-to-station collaboration and exchange around news, information, and cultural projects based on local, state, regional and thematic coverage. The project will create new opportunities for public service programming of exceptional quality, interest, and importance to reach public radio's listeners.

#### Background

Every week, one out of every ten Americans in communities across the country goes to their public radio station for information, culture, and dialogue. Public radio today is one of the country's most trusted editorial voices, with surveys consistently ranking the stations and their services as among the most trusted, respected, and reliable of the nation's institutions. Today there are over six hundred locally-controlled public radio licensees operating more than one thousand stations nationwide. These stations are deeply engaged in questions of mission, public service, connection to community, and meaningful roles in local civic and cultural affairs. They share a powerful impulse towards choosing, producing, and exchanging content that extends public radio's core values and gives richer meaning to their goals of significant programming.

#### Problem: Obstacles to Content Exchange

- The acquisition, evaluation, and exchange of non-network programming are cumbersome and expensive. The time and costs associated with this process—locating work of interest, reviewing for quality, determining the status of rights clearances, and confirming carriage costs—effectively filters out serious station consideration of programming that is not part of public radio's best-known national program vehicles, including station-to-station exchanges.
- The technical architecture of national satellite-based distribution—the backbone of the public radio system—allows only one-way “live” transmission of content from a central source to receivers at connected stations. On-demand transfer, station-to-station exchanges, and program archiving are not supported.
- As a result, natural affinity groups of stations organized around local and regional issues are unable to support content exchange; many station pieces are made accessible for just one broadcast; many previously distributed pieces with lasting value are no longer accessible; duplication of production efforts and missed opportunities for significant collaborative programming are widespread.

#### Solution

Our proposal is to **deploy**, **use**, and **evaluate** the PRX as a platform for peer review, acquisition brokering, and digital distribution of radio content for station subnetworks, station-to-station exchanges of content, and inter-station collaboration.

The PRX will hire a full-time station collaboration manager to work with existing and emerging station subnetworks within the target group to provide and extend the tools and services of the PRX platform for the purposes of station-to-station content exchange. The PRX executive director and technical manager will work with the station collaboration manager to integrate the TOP project activities into the overall PRX development strategy and technical implementation.

### ***End Users***

Our target is 635 public and community radio stations operating 1,069 broadcast stations.

### ***Beneficiaries***

Beneficiaries of the PRX include the listeners of participating stations, a potential audience of several million individuals.

### ***Geography***

End users and beneficiaries of the PRX are dispersed throughout the entire United States. Some international users may also participate in the project but are not the prime target group.

### ***Activities***

The main activities of the PRX take place via a database-driven web application that enables stations and producers to upload, store, search, audition, rate, review, and download radio pieces, as well as manage and monitor transactions, rights, usage statistics, and payments through individual and group accounts. These activities drive the majority of the measurable outcomes of the project, and the PRX web application is being designed to support them.

Additional project activities include:

- outreach to stations to participate in the project
- familiarizing station-based producers, program directors, news directors, and engineers with PRX technology and services
- public presentations and discussions about station programming approaches, strategies and opportunities using the PRX
- technical support to end users
- maintenance and modification of the PRX software
- ongoing, iterative evaluation of the PRX

### **Outcomes**

The PRX will bring about significant changes in the public radio landscape. Stations will begin to introduce new programming to their schedules—discovered, considered, and acquired on the PRX. Stations will begin to use the PRX as an alternate—and increasingly preferred—means of marketing and distributing their pieces to other stations. Previously isolated or marginal stations will begin to have direct input into a vital participatory network of content exchange. Station-to-station exchanges and station consortia will be supported. Collaboration around specific topics and events will take place using the PRX platform and services.

As part of the extensive research and planning phase of this project “value chains” were developed, articulating the benefits delivered by the PRX to end users. A prime outcome of the

project will be to deliver on the high level and specific elements of the value chains. (For the complete value chain description, see the Appendix.)

Specific anticipated outcomes:

- 1) Increase in the number of station-to-station exchanges of content
- 2) Increase in number of collaborative station projects executed around specific topics
- 3) Significant peer review of station pieces posted to the PRX
- 4) Increase in number of hours of station-exchanged content broadcast to the public

## 2. INNOVATION

### Leveraging Technology

The PRX matches the interconnected, distributed power of the Internet with broadcast radio's established presence. The PRX uses streaming and downloadable digital audio as an audition tool and delivery channel to terrestrial radio stations, who in turn broadcast it to their listeners over the air or online. Stations are themselves exploring new media channels to reach their listeners. The PRX supports this more expansive service by deploying technology in the crucial gap between increasingly diverse and dispersed content sources and the public media service companies that public radio stations are becoming. As stations continue to develop live, on-demand, and "side" audio streams through their websites, the PRX will provide the platform and tools for content exchange, leaving it to stations to make programming choices for their listeners.

### Adapting Best Internet Practices

The PRX takes advantage of the lessons learned over the short but productive history of web application development, content management, and digital audio distribution. In researching the technology and tools to support PRX services, we examined dozens of commercial and community-based websites that exemplified one or more of the features and functions planned for the PRX. Sites like Amazon.com, MP3.com, Photo.net, Slashdot.org, and many others have developed and refined various content management and community and user interface approaches that have inspired aspects of the PRX development.

**Digital Storage and Delivery.** The PRX will operate almost exclusively in a digital environment. Stations will encode and upload their own pieces to the PRX site in a digital format. Streaming and downloadable preview versions will be created. PRX users can search, browse, and audition pieces. Authorized station acquirers can download air-quality versions of pieces for broadcast. The PRX will provide some measure of "transition technology" such as CD delivery and encoding on behalf of stations that are unable to fully take advantage of digital means of distribution.

**Searchability and Indexing.** One of the important assets of a dynamic database-driven digital content management system is the powerful capacity to search, sort, categorize, list, and present pieces in the system. The PRX database and user interface is designed with these tools at the forefront. Stations uploading pieces will place them in subject and format categories, as well as add keywords, transcripts if available, and other descriptive elements in each piece profile.

**Peer Review.** The PRX provides a comprehensive system for peer review of work uploaded to the site. The goal is threefold: to identify and promote the best work uploaded to the site; to give station-based producers feedback and dialogue with their peers; to give programming decision-

makers additional context and information for evaluating work. (A more detailed overview of these and other areas of PRX functionality is included in the Appendix.)

### **3. COMMUNITY INVOLVEMENT**

#### **Partners**

The PRX is a collaboration of the Station Resource Group (SRG) and Atlantic Public Media (APM), a partnership that brings together two of public radio's most experienced organizations, each representing significant stakeholders in the development and success of the PRX. SRG is the fiscal agent and parent organization of the PRX.

The Station Resource Group's focus is strategy, planning, and collaboration for and among America's leading public radio stations. SRG's founders, Terry Clifford and Tom Thomas have shaped national policy, programming strategies, and technology investments throughout public radio for over 25 years. SRG's member stations have defined public radio's signature of quality, significance, and public service.

Atlantic Public Media's focus is creative and experimental approaches to program production, training, and distribution. APM and its head, producer Jay Allison, have been leaders in the creative radio arts, both in producing work and in developing new media approaches to showcasing, community discussion, and training, most recently with the acclaimed website *Transom.org*.

APM and SRG have an existing agreement between the organizations that governs the management, strategic development, and division of resources regarding the PRX.

#### **Community Involvement**

The Public Radio Exchange has gone through concept, research, planning, and development stages over a two-year period, with ongoing consultation and discussion with a wide variety of community stakeholders. The PRX concept was initially discussed at the Public Radio Conference in spring 2001. Further discussions took place at the Association for Independents in Radio (AIR) Producers Summit in October, 2001. Since then, representatives of the PRX have been invited to participate in over a dozen conferences, workshops, and system events where the Exchange was a topic of discussion and inquiry. In addition, in July 2002 the PRX secured a Ford Foundation grant to develop a comprehensive business plan for the Exchange. As part of the subsequent research and planning, we conducted several surveys, compiled research from other sources, and conducted numerous interviews, discussions, and meetings with station representatives and producers over the course of a six-month period. We completed a full PRX business plan in February 2003. (Excerpts of the PRX business plan are included in the Appendix.)

#### **Collaboration**

Strategic relationships are important to the success of the PRX, and also indicate the level of involvement by stakeholders.

The Public Radio Satellite System (PRSS) is the provider of satellite distribution services to over 400 public radio stations across the country. PRSS is also developing the ContentDepot—a

digital audio storage and management system that will offer additional services to existing PRSS users. The PRX is collaborating with the PRSS on several aspects of its operations: integrating audio storage with the PRSS system; developing standards for digital audio encoding and transmission; training and educating stations and producers about the digital tools available and necessary for new distribution services.

The Berkman Center for Internet and Society at Harvard Law School is a research center that focuses on the field of Internet law and its broader impact on society in the United States and abroad. The Berkman Center has advised the PRX on legal questions through its clinical program. In addition, the Berkman Center has consulted with the PRX on technology questions regarding software and web application development. The PRX will continue to consult with faculty, fellows, students, and staff of the Berkman Center throughout the development and launch of the service.

### **Modeling Usage**

The PRX will work with stations to model usage of the PRX platform and tools for various uses. This includes helping station-based producers gain the capacity to use digital encoding and uploading technology, and helping station personnel integrate PRX tools into existing systems and practices for acquiring and airing content. It also entails working with programming decision-makers at stations to explore new approaches for introducing pieces to existing broadcast schedules and Internet content strategies.

## **4. EVALUATION AND DISSEMINATION**

### **Evaluation**

The evaluation is intended to determine the effectiveness of the proposed solutions by assessing project processes, activities outputs, and outcomes. The main evaluation questions will address to what extent the PRX has increased content exchange between and among end users of its services. We have dedicated a significant portion of the proposed budget for evaluation services.

We intend to work with independent consultant Quentin Hope to develop and execute a comprehensive evaluation program for the PRX TOP project. Hope brings extensive experience as a public broadcaster – he founded and led a small network of rural stations in western Kansas – and business planning and evaluation credentials as an organizational development specialist with McKinsey & Co., for which he now serves as a consultant as head of his own firm. Hope consulted on initial research and business planning of the PRX during 2002, including initial needs assessments and baseline information gathering. SRG will work with Hope to implement an evaluation program that builds on the extensive modeling and task definition developed during the planning phase.

The PRX goals and services allow for several methods of direct evaluation of the project's activities, outputs, and outcomes. The PRX value chain establishes a series of criteria that can be used throughout the project as part of the evaluation matrix. In addition, the PRX web application tracks activity along several key indices related to the overall goals of the project: number of producers and stations participating; number of pieces uploaded; number of pieces auditioned; number of pieces downloaded by stations; number of pieces reviewed. These and other dynamic statistics are essential tools for monitoring the operation of the PRX for both

administrators of the project and its users, and can be used as quantifiable output data for evaluation.

## **Dissemination**

### *Replication and Adaptation*

There are several elements of the PRX which are well-suited to adaptation by other organizations. The PRX is creating a set of tools and services that link creators and presenters, manage the flow of content, and add community context and interaction. The platform and services will provide a model for other cultural, arts, and community information organizations that are seeking better means to support their goals. We are publishing technical overviews and plan to make available further technical documentation and business planning materials for non-profit organizations that might benefit from specific information.

### *Plans to Disseminate*

Best practices and lessons learned from the PRX project will be disseminated through ongoing project publicity via electronic newsletters and the PRX website, and through participation in over a dozen system conferences and events scheduled during the grant period, including: Public Radio Program Directors annual conference, Third Coast International Audio Festival, Public Radio News Directors annual conference, National Federation for Community Broadcasters annual conference, Integrated Media Association conference, and six annual regional station association workshops.

## **5. PROJECT FEASIBILITY**

### **Technical Approach**

The PRX technical strategy is threefold:

- 1.) *Use the Internet to connect end-users at low cost and high accessibility.*  
Any station with a basic Internet connection may access the PRX, audition pieces, and interact. A broadband connection enables exchange of broadcast-quality audio.
- 2.) *Construct PRX using flexible, robust, cost-efficient, open source components.*  
PRX selected MySQL database, Java J2EE, Struts web application framework, Apache web server, Linux OS, and XML adapters – a proven architecture.
- 3.) *Conform to public broadcasting system-wide technical standards.*  
The PRX is being developed in broad consultation with technical advisors from a variety of public radio organizations to ensure that PRX content and metadata is portable across public broadcasting systems.

After a competitive bidding process, in January 2003 SRG contracted with GGA Software Services, LLC, and Kanda Software for development of the PRX web application software. Each is an experienced firm with an international client base in web-based software development. The project began with functional requirements gathering, interface design, and multiple rounds of end-user interviews. Development then proceeded with technical specification, architecture design, software development, and usability testing. The PRX web application will be complete in June 2003. This base software will undergo some modification and customization throughout the grant period based on ongoing evaluation of PRX services, feedback from end users, and the specific needs of station subnetworks.

***Interoperability and Integration.*** The PRX is being developed in coordination with the Public Broadcasting Metadata Dictionary project to ensure interoperation with this evolving standard, funded and overseen by the Corporation for Public Broadcasting. The PRX is collaborating with the PRSS to standardize digital audio formats for uses of both services. The PRX is HTML 4.01 compliant, and is accessible using any common web browser. PRX uses Java's standard interface adapters. All components are open and non-proprietary.

***Alternative Approaches and Established Technology.*** For each system component, solutions were selected that are widely proven, open source, and cost effective. (See Appendix for a technology comparison chart) PRX leverages the existing PRSS infrastructure to offload heavy lifting of audio storage and delivery.

***Maintainability and Upgrades.*** Object Oriented Java code provides a straightforward platform for future upgrades. The Struts web application framework provides a universal, documented, and maintainable web architecture. Each component is abstracted via a common protocol such as SQL, HTTP, or XML, allowing each to be individually upgraded, maintained, or changed in the future. There is no user-facing hardware to maintain, and the common web server hardware can be upgraded or replaced invisibly to the end user.

***Additional Users and Scalability.*** MySQL, Apache, and Java J2EE are optimized for high user demand and scale well alone and in parallel installations. Additional services can be incorporated through the highly modular Object Oriented data model. The PRX site will include an easily modified documentation system that can serve any number of user types.

### **Applicant Qualifications**

***Jake Shapiro, PRX Executive Director.*** Prior to joining PRX, Shapiro was Associate Director of the Berkman Center for Internet & Society at Harvard Law School, where he oversaw multiple projects related to intellectual property, distance learning, digital media, and Internet architecture, as well as holding responsibility for core strategic and administrative duties. Shapiro has also worked in public radio as a station-based producer of a public affairs call-in talk show.

***Stephen Schultze, PRX Technical Manager.*** Schultze has a background in optimized SQL databases, industry metadata standards such as XML and RDF, and a variety of network services, and specializes in the design of standards-based web applications, building user-centered online communities, and implementing collaborative filtering technology.

***Station Collaboration Manager.*** As part of the PRX TOP project we will hire a full-time station collaboration manager. The primary task of the station collaboration manager will be to facilitate existing and emerging station efforts to coordinate content exchanges by using the PRX platform. The manager will be the main point of contact between the PRX and the project's end users. Responsibilities will also include assisting stations with managing their user accounts; advising station representatives on content use; reaching out to new station prospects; working with managing editor on station-related content on the PRX site, and gathering high level functional requirements for software modifications and extensions. The position will require significant travel for the manager to attend regional radio gatherings, national conferences, and single station visits.

(Complete personnel bios and organizational profiles are included in the Appendix)

### **Project Implementation and Completion**

The first fully functional version of the PRX web application will be launched in June of 2003, after a 4-5 month design and development phase. During June-September of 2003 the PRX will enlist beta testing groups of stations and producers who will begin to use the system and report back on functional issues, user interface suggestions, bugs, errors, any general feedback.

This development and evaluation lead time positions the PRX to begin the two-year grant period with sufficient time and resources for the project be deployed, used, and evaluated.

### **Privacy and Security**

We are developing a privacy policy for the PRX in partnership with the Berkman Center for Internet and Society. The policy will be displayed prominently on the PRX site and will include clear descriptions of our policies, adhering to strict best practices for the protection and sharing of personal and organization information. Data integrity and security are a priority in the development of the web application and database, and no financial or other sensitive user data will be accessible online

### **Sustainability**

The design, development, and deployment of the PRX and this project are based on core needs and values of the public radio system as it transitions to new distribution and programming models. Early success in fundraising from diverse sources (Corporation for Public Broadcasting, National Endowment for the Arts, Ford Foundation) points to a continuing ability to cover the costs of the infrastructure and operations of the PRX. In addition, the PRX and this TOP project represent great value to funders and producers of content that intend to make the content accessible and enduring through emerging technology and distribution paths.

Further, as the PRX platform becomes a part of the overall architecture of content distribution in public radio, we are confident that user fees and ancillary revenue will constitute a growing component of supplemental income to help sustain the PRX over the long term.