Program Narrative

1. Project Purpose

a. Overview: Psychosocial support for children is a major determinant of adjustment to severe illness (1). Frequent hospitalizations induce a sense of isolation from the familiar world and impair recovery. Appendix 1 (page 10-11) is the story of one such adolescent patient. We propose to offer physically and emotionally challenged children in and out of hospital access to a computerized multimedia environment that enriches their life experience and provides non-pharmacological symptom relief. *HeArts & Hope* marries art to computer technology to create a readily reproducible national model. Through multicast IP broadcast and video-on-demand technology, with wireless broadband networking solutions, it aims to significantly lessen the suffering of ill children, translating into lasting improvements in long term health.

b. Background and Rationale: Children with serious illnesses experience a range of physical and emotional symptoms. They have limited social communities, need greater support than healthy children, and are at risk for psychosocial maladjustment (2,3). Hospital settings restrict mobility and psychosocial interactions, particularly for those segregated by their disease and its treatment. At large referral hospitals, they are removed from familiar environments, with economic and travel constraints limiting visits. Internet access is also limited. Most important, low socioeconomic status (SES) is associated with both poorer outcomes from serious illness and less access to psychosocial resources. Based on demographic studies of 1400 of our patients with cancer and sickle cell disease in the past 5 years, 55% are from low SES families (Appendix 2, figures 1 and 2, page12). Due to advances in the past 30 years, many children are cured of once fatal illness. The cure rate for cancer rises 1.4% a year, with at least 10,000 of the 15,000 children diagnosed annually becoming long term survivors (4). The increase in those needing repeated hospitalizations, limited professional resources, and advances in technology, all make the Internet and virtual communities ideal to meet psychosocial needs. The arts are also a highly effective healing resource for ill children (5).

c. Specific Aims are to evaluate: (1) a model of technology-based arts programming for ill children; (2) the ability of creative self-expression using this technology to relieve their physical and psychological symptoms; (3) problems and solutions associated with this network technology. *HeArts & Hope* aims to marry art and network technology through a multi-faceted approach including (a) *Virtual Arts in Medicine (V-AIM)*, on-line arts programs based on Shands Hospital's Arts in Medicine, (b) *Immersive Multimedia Environments* (*IME*), a virtual-reality type of arts experience, (c) *Lifescapes,* on-line arts programs fostering interactive creativity, and (d) *Patient-to-Patient (P-2-P)*, on-line peer mentorship (Appendix 3, page14). These four components will be blended through a multicast IP system on a broadband digital network into a self–paced virtual support environment.

d. Anticipated outcomes are: (1) establishment of this model for national diffusion; (2) resolution of the start-up technical problems; (3) significant lessening of physical and psychological symptoms in study patients compared with control patients.

2. Innovation

The use of the *HeArts & Hope* on-demand interactive arts programming, virtual environments, and on-screen/on-line symptom assessment , are all innovations in network technology and palliative care*,* aiming to relieve the physical and psychological suffering of children with serious illness, for which few if any non-pharmacological interventions exist. This novel approach to pediatric illness builds on the best features of existing initiatives: Steven Spielberg's Starbright National Children's Hospitals Network, Batson Children's Hospital's Connect-2-Tomorrow, the Vermont Millennium Arts Project and the Cleveland Museum of Art.

Their similarities and differences are detailed in Appendix 4 (page 15). In sum, Starbright does not offer a permanent technology installation within the hospital, an integrated interface for patient-report of symptoms, or self-contained research outcomes. Connect-2-Tomorrow targets ill children but focuses on education. The Vermont Millennium Arts Project, a potential partner, uses internet connections and MIDI to create musical community. The Cleveland Museum of Art offers cultural/educational programs through IP multicast streaming video for assisted living facilities. Its Cisco IP/TV platform has eliminated many problems associated with such projects.

HeArts & Hope will be integrated into patient rooms *via* existing hospital LAN and PC-compatible patient computers installed at the onset of the project (see Appendix 5, page 16 for technology hardware and software). Flat-screen monitors and 5.1 surround sound will create an easily accessible palliative environment for the child, who can activate the system on demand through a menu-driven interface with a wireless tablet. A novel way of evaluating symptoms pre- and post-use is an on-screen visual analog scale of both pain and anxiety called "Doc-in-the-Box:" It incorporates age-appropriate animated characters to guide patients through self-report measures (Appendix 6, page 17), and will be immediately available to nurses to integrate into evaluation and treatment, a further innovation in technology for palliative care.

3. Community Involvement (Appendix 7, page 18)

HeArts & Hope has established the following ***local*** partnerships: **(1) *Shands Children's Hospital (SCH):*** This is our initial site, with access to patients, studio and office space. Its Information Technology (IT) department will help in design, installation, and integration into existing systems. **(2) *Shands Arts in Medicine (AIM):*** Visual art created within the *AIM* Bedside Arts program will be the core of the *Lifescapes* program. Live performances will be archived for VOD programming. (3**) *UF Department of Pediatrics:*** Pediatricians, nurses, social workers and child life workers will be the primary source of patient referral. The program will be widely advertised via in-house publications, notices, email, and departmental and hospital websites. **(4) *UF Center for Arts in Healthcare Research and Education (CAHRE):*** CAHRE faculty and students will serve as trainers and assistants for patients and staff in using the technology and programs. We will cultivate new partnerships as we expand training to other hospitals and communities. CAHRE will also facilitate new research stemming from *HeArts & Hope*. ***(5) UF Clinical Psychology Department:*** Dr Glueckauf and his staff from this department will design and implement the independent program evaluation. The following ***national*** and ***regional*** partnerships have been formed: **(1) *Society for the Arts in Healthcare (SAH):*** *HeArts and Hope* has received seed funding from this international organization to begin production of video productions for the *Patient-2-Patient* video-mentoring program (beta site: www.bigmediastudios.org/hh). Four completed videos are already available on line and via DVD. **(2) *Tampa Bay Performing Arts Center:*** This, the largest performing arts center in the southeast, will offer the resources of its outreach program in the form of 8 donated performances by national touring children's acts to be performed live, and archived for VOD viewing on the network. **(3) *Imperial Symphony Orchestra (ISO), Polk County:*** The ISO will offer 3 seasonal concerts yearly, designed for young audiences, that will be videotaped and transferred to the network. Orchestra members will visit patients and present ensemble performances for live and VOD viewing, and will collaborate with them in creating music in the *Lifescapes* component. **(4) *CLC Music Program, Columbus, OH and North Florida Public and Private Schools:*** These two community organizations will provide on-line partners for patients in the *Lifescapes* program. **(5) *Wrightwood Labs, Inc:.*** This multimedia and video distributor has given $40,000-worth of professionally archived pre-edited video footage to serve as the foundation for the *IME* component. Letters of commitment and in-kind support can be found in Appendix 8-12 (page 19-22). While each contributor plays an essential part, the most important partners are the patients. At the outset, focus groups

of past and present patients, families, and *HeArts & Hope* staff will ascertain specific and common needs, and the effectiveness with which these needs are met will be evaluated on a continuing basis.

4. Evaluation and Dissemination

a. Patient Demographics: All evaluations will be conducted by Dr Glueckauf and his staff, and include **Input**, **Process** and **Outcome**, focusing on service utilization, network reliability, implementation fidelity, user satisfaction, and efficacy. Appendix 13 (page 23) summarizes this evaluation, with the specific measures. The project focuses on patients aged 5-21 with cancer and sickle cell disease at SCH. Based on admissions in the past 5 years (Appendix 2, figures 3-5, page 13), we anticipate enrolling 90 eligible patients in year 1, who will undergo 300 total admissions with a mean length of stay of 5 days, representing 1,500 days of patient-network interaction. We expect a slight increase in year 2 and 3, for a net 5,000 inpatient-network interaction days over 3 years. Each patient will be on study for 6 months. A recent survey of 60 outpatients revealed that, although more than 50% are from low SES families (Appendix 2, figure 1-2, page 12), 48 (80%) own computers, 42 (87.5%) of whom have Internet access. Although only 7 use high-speed access currently, national surveys show broadband Internet use tripled in the past 2 years, and is growing at 9% per month. We estimate that patient high-speed access will grow to almost 50% over the next 3 years. At that point full *HeArts and Hope* program content, unlimited by bandwidth limitations, will be available for over 15,000 network usage-days annually. During this growth trend in broadband access the non-bandwidth-intensive *HeArts and Hope* programs will be available to out-patients (Appendix 14)

b. Registration, Random Assignment and Training of Subjects: On admission, every eligible patient will be offered the chance to enroll in the program, and be randomized to either **immediate-study** or **wait-list control** group. Wait-list patients will serve as a comparison during their initial hospitalization, and become test patients at subsequent hospitalization. (Almost every child with cancer and most with sickle cell disease are hospitalized repeatedly). Appendix 14 (page 24) shows access to *HeArts & Hope* programming for different populations; Appendix 15 (page 25) summarizes the key *HeArts & Hope* staff and their roles, all of whom will receive HIPAA training. All equipment will comply with HIPAA requirements and patient data will be encrypted according to HIPAA identifier criteria. Patient orientation and consent-signing will be followed by a detailed guide to navigating the network, equipment use and evaluation tools. These sessions will be woven into necessary medical activities through close communication with professional caregivers. *HeArts and Hope* staff will match the patient roster and room number, and during the first run-through the staff member and patient will hear the welcome screen address the patient by name, to assure synchronization between room number and project databases. This process will be repeated if the patient is moved to another room or if the computer is "cold" rebooted, to confirm accurate data records. A *HeArts & Hope* profile with all patient demographic data will be stored in a specific database.

c. Input Evaluation: Extensive consultations have been conducted with Dr Glueckauf and his team, who have provided input on research design and evaluation of program use, fidelity of implementation, user satisfaction and efficacy. Further consultation will take place before the project's onset concerning technology design, evaluation and data collection, education, dissemination and diffusion.

d. Process Evaluation: *HeArts & Hope* will be evaluated quarterly in year 1 and 6-monthly in years 2 and 3, including: (1) technology protocols and instrumentation, (3) fidelity of program implementation, (4) quality, utility, and ease of use of the website, (5) reliability of network performance, (6) program implementation integrity, (7) utilization rates. Random quality control evaluations will stress soundness of

data collection, patient and parent satisfaction, and reliability (uptime/downtime and mechanical problems encountered). Interim analyses will be carried out and modifications made according to feedback received.

e. Outcome Evaluation: The evaluation team will analyze the following: (1) frequency and extent of patient use of program components; (2) physical and psychological symptoms, by on-line visual analogue scales (VAS) and standard paper-and-pencil questionnaires; (3) patient and parent satisfaction with both technical and programmatic components. Waitlist controls and their parents will complete all outcome evaluations bar the satisfaction measures. All data will be incorporated into quarterly and annual evaluation reports.

f. Utilization: This will be evaluated during initial hospitalization and at home at 3 and 6 months, assessing (1) total log-ins; (2) total number of web pages accessed; (3) total time spent on the website; (4) total time spent with each website component.

g. On-Line VAS "Doc in the Box": To ensure comparability, consistency, and accuracy of frequently repeated pain and anxiety measures across a wide age range, we will use a very child-friendly on-line VAS symptom assessment tool ("Doc in the Box"), with good validity and reliability properties (Appendix 6, page 17). It consists of a 100-mm vertical line with descriptive incremental measures. Each study and waitlist patient will be trained in recording "Doc in the Box" ratings using the wireless tablets and video monitor screen. The interactive portion will resemble a web interface that greets the child at scheduled intervals, requests the data, and records ratings into the local and network database. It will be scheduled to prompt test patients to enter their ratings just before and just after use of the program, and at 3 additional non-intervention times each day (morning, afternoon, evening) for the anticipated average 4-5 day hospital stay. Waitlist controls will enter 3 daily morning, afternoon and evening VAS ratings. The wireless writing tablets will make it easier for sick children to enter their self-report data, and research assistants will make frequent visits to encourage completion of the ratings. Test (but not waitlist) patients attending the Pediatric Hematology Clinic after discharge will still have access to all *HeArts & Hope* programming, and will enter their pain and anxiety ratings pre- and post-use of any of its components.

h. Paper-and-Pencil Evaluations (Appendix 16-19, page 26-28): 5 measures will be used: the STAIC State Anxiety Inventory for Children (7); the CDI Childhood Depression Inventory (8); VAS analogue pain and anxiety scales; the AVERS and AVEUS consumer satisfaction measures (9). The STAIC evaluates current anxiety in children aged 9 or older. The CDI evaluates current mood in children aged 6 or older. The AVERS and AVEUS evaluate satisfaction with the technical and therapeutic aspects of AV technology in children aged 9 and older. Both test and control subjects of appropriate age and one parent will complete the STAIC, CDI, and VAS pain and anxiety scales on enrollment and on hospital discharge, then 1 and 6 months later. The test subjects only and a parent will complete the AVERS and AVEUS on each discharge. Data from the first 6 months will be used to modify our evaluation process if necessary.

i. Statistical Analysis: All the technology, feasibility, satisfaction and health outcome efficacy variables will be summarized using descriptive statistics at each time point. The primary purpose will be to understand the reliability and satisfaction ratings of the network as well as efficacy over time for each intervention. The primary outcome measures will be analyzed for time effects and the time course estimated using a mixed effects linear model (11,12). Specifically, *HeArts & Hope* test patients are predicted to show significant reductions in VAS ("Doc in the Box") ratings of pain and anxiety with each use, whereas waitlist control children will show no significant change from one rating to the next. Test patients will also be expected to show significantly greater lessening of anxiety and depression over time compared with control children on

paper-and-pencil measures. We anticipate that these treatment gains will be maintained through the 6-month period of study. The correlation structure of the random effects terms is unknown, but because of the nature of the serial measures it is anticipated that there may be different structures for the *HeArts & Hope* use (test) and non-use (control) phases. Several correlation structures will be estimated and the one that best describes the data will be used. Age and sex will be incorporated into this model, each being considered a fixed effect and their interaction with time a random effect. Flexibility to handle unequal time points from patient to patient, to estimate various correlation structures, and to add factors into the model, is a major advantage of this method of analysis.

j. Dissemination Potential**: **(1) Publications, Presentations & Workshops: Through (a) publications in medical, nursing, technology and arts therapies journals, (b) presentations at national and regional healthcare and arts- and technology-related conferences and (c) the *HeArts & Hope* website's how-to guides and workshops, we will disseminate the innovative, cost-effective, and replicable nature of this project locally, regionally and nationally. ***(2) Research:*** We will use data from this project, together with anticipated spin-off research studies initiated by *HeArts & Hope* staff and students, as a basis for future grant applications to national agencies, including the National Cancer Institute, National Institute of Nursing Research, National Institute of Mental Health and National Institute for Complementary and Alternative Medicine. Resources dedicated to the project's dissemination are indicated in the budget narrative.

5. Project Feasibility

a. Technology Plan (Appendix 20, figures 1-3, pages 29-30): Our approach to the technology was to first grasp the scope of the project, then combine expertise and creativity to reach optimal solutions. The result is a unique assembly of network and local applications of integrated software and hardware that lets seriously ill children and adolescents take better charge of their environment, have less physical and emotional symptoms, and express themselves more freely and creatively. For a complete list of *HeArts & Hope* hardware and software technology see Appendix 5 (page 16). It will be a multi-cast-capable network with 100 megabit bandwidth to the desktop to handle streaming video broadcast and video-on-demand (VOD) needs, with a comprehensive automated storage and back-up system and an uninterrupted power supply for all servers. These will consist of a web content server, a streaming real-time broadcast server, two VOD servers (to insure constant programming availability) and an SQL server. They will be configured with a level of redundancy as recommended by the Pediatrics IT department to insure "uptime" reliability. The servers will provide the active web content and gather data on network utilization and patient health outcomes. Local computers in 25-30 patient rooms will serve both as network workstations and, with removable USB 2.0 or IEEE 1394 drives, as non-linear DVD-quality VOD playback devices for *V-AIM, Lifescapes, IME,* and *P-2-P*.The infrastructure will consist of 30-40 patient network points in semi- and private rooms, with capacity for expansion. Using local computers and removable drives for broadcast offers benefits of non-linear playback unavailable in most DVD and VHS hardware, including instantaneous rewind-to-start and –restart, utilization data capture, and unsupervised patient choice. Removable drives for VOD viewing will allow for DVD quality, easy recovery and replacement, and will be updated at least weekly with current VOD media from the media servers.

Live *V-AIM* broadcasts will originate from various UF production spaces and be streamed and archived ("store/forward") from the broadcast server, then archived and transferred to firewire drives for later VOD viewing. V-Brick encoder and decoder appliances will allow for "store and forward" broadcast of live content at DVD quality. Recent advances also offer a novel approach to "store and forward" streaming technology in that, while the media are being archived and broadcast to the hospital's broadband LAN, the content can also be compressed to industry-standard Windows Media MPEG-2 type format, offering more

opportunity for outpatients with bandwidth issues to have access to streaming content. We are aware of possible limitations in the form of computer access and connection speed for outpatients, and have taken steps to insure that even those with 56K dial-up computers will have access to *HeArts & Hope* program components (See Appendix 14). Editing and post-production will be accomplished using cross-platform software on a G4 Macintosh computer. The following section gives details of the *HeArts & Hope* website and program components.

b. Web Design: HeArts & Hope Website: This will serve as "command central," a colorful and inviting way for children to point-and-click or speech-command their way through the network. SQL demographics databases linked via ASP active server page scripts will first be designed and constructed, providing patient information for dynamic graphics assembly. All graphics elements needed for assembly of age-appropriate web pages will then be constructed. Dynamic "on the fly" assembly assures that each age group in the study will view the most appropriate animations, streaming media content, and other elements, allowing for a responsive website catering to each patient population. Before engaging in any *HeArts & Hope* component, users will pass through a common "gateway" consisting of an age-appropriate animated character who will coax them to complete on-screen symptom assessment using the "Doc-in-the-Box" VAS scales. We have contracted with a database and web development company (Appendix 21, page 31), with specific background in telehealth web design for Cancer and Diabetes patients under a contract to the Veteran's Administration, to provide a comprehensive web interface. Under the guidance of the project's Medical Director, the company will also be responsible for the on-screen touch-sensitive symptom assessment tools and the design for sharing this information real-time with professional caregivers. Patient privacy will be assured by integrating a HIPPA-compliant user name and password scheme, and a security certificate that will encrypt any data moving onto the World Wide Web. We are seeking the best solution for restricting patients from unlimited internet access. Options include a software-based network "cyber patrol" and a screen design that excludes text input into an address bar. For patients confined to bed, flat-screen monitors on flexible swing arms close to the head of the bed will allow positioning into multiple viewing angles and distances, allowing for different patient positions and for visual impairment, with sound delivered using 5.1 Surround-Sound audio systems with non-intrusive wireless speakers, also wall-mounted.

c. Program Components: An overview of all four *HeArts & Hope* components, and the way they are integrated into a patient-centered program, is graphically represented in Appendix 22 (page 32).

i. Virtual Arts in Medicine (V-AIM): This program will deliver live streaming and video-on-demand performances to patients. The nationally recognized AIM program was established 12 years ago to offer performances and interactive bedside arts programs to ambulatory and bed-bound patients. However, even with a staff of 17 part-time artists plus student volunteers, only a small proportion of the hospital's patients can participate. *V-AIM* will broadcast performances, including music of all kinds, dance, clowning, theatre, and magic shows, via live and VOD technology. Using an instant messaging platform, patients can also be virtual participants in live broadcasts and communicate simultaneously. Following a broadcast, artists will bring patients tangible examples of some aspect of the performance. For example, after a youth orchestra broadcast they will bring classical instruments for patients to experience and learn about firsthand. Chat room and instant message environments will be available for communication and fellowship, but they carry some risk of inappropriate communication. To address the logistical issue of supervising patient communications, only the live *V-AIM* broadcasts, with their defined and less frequent broadcast times, will include this virtual audience feature.

ii. Lifescapes: This program will stress interactive communication by bringing patients and healthy children together on-line through art activities, including journaling, visual art and musical collaborations.

Work created by patients will be shared by secure HIPAA-compliant encrypted email with art and music students from local and non-local schools, who will add midi score, digital audio or visual arts through a supervisory conduit to existing patient journals and visual arts pieces. Ultimately, a compilation of these collaborative *Lifescapes* On-Line Galleries will be published using a multi-media CD-ROM, and made available to patients new and old, as well as to healthy children and adolescents. The aim is to explore the feasibility of using Internet technology to link sick and well children, to promote the value of the arts for emotional expression, communication and coping, and to increase understanding in the healthy community of these patients' journeys, building open-minded communities of children who are more accepting of differences. Private and public schools in Alachua County, the CLC Music Program, and the Imperial Symphony Orchestra have made commitments to participate.

iii. Immersive Media Environments (IME): This program will deliver a selection of streaming videos at bedside several times a day via the in-room computers and flat-screen monitors accompanied by Surround Sound to create a virtual or "immersive" environment. They will consist of 15-20 different age-appropriate (ages 5-9, 10-13, 14-17, and 18-21) sets, natural environments, sporting activities, and other appealing, motivational and comforting scenes, accompanied by contemporary music and other sound effects. Their precise content and duration will be determined from initial focus groups. Once age-related preferences are established, video material will be gathered from libraries, museums, aquariums, film and TV distributors of appropriate and topical material. *HeArts & Hope* already has 12+ hours of professionally archived digital footage that will serve as a foundation to the VOD media library. It includes sunsets and sunrises, space launches, underwater scenes, parasailing, skiing, mountains and forests. The library will be built around 7-10 minute multimedia productions pre-assembled into 25-30 minute compilations. They will also be offered "a la carte" to give variety and control, an important feature for adolescents. The child's choices will be stored and available for the next session, allowing easy access to an IME previously effective in easing physical and/or psychological distress. As with all *HeArts & Hope* components, symptoms will be assessed at intervals pre- and post-use through the "Doc-in-the-Box" on-line assessment tool.

iv. Patient-To-Patient (P-2-P) Peer Mentorship Video Series: This VOD program will use the same streaming technology as IME to allow "experienced" patients to offer support to, and answer the questions of, newly diagnosed patients. By sharing their clinical and creative expression as a way to cope with serious illness ("I've been there"), they will offer a source of information and inspiration. *HeArts & Hope* technology allows videos to be sorted by age and diagnosis to heighten their relevance to the recipient.

d. Implementation: There are four elements to designing, installing, and implementing *Hearts & Hope*: (1) Technology Infrastructure; (2) Interactive Website and Program Components; (3) Participant Registration, Random Assignment, and Training; (4) Evaluation and Dissemination. (1) and (2) are detailed in Appendix 20 (page 29-30) and are outlined here; (3) and (4) were addressed in **Section 4** above.

i. Technology Infrastructure: A comprehensive site survey will be performed, the optimal delivery method and materials identified, and the *HeArts & Hope* IP network hardware, software, back-up hardware and streaming video software (Appendix 5, page 16) purchased and installed. The quality of the content will be assessed and modified as needed and encoded for on-demand viewing. At the study onset, focus groups of past and present patients, families and caregivers will be conducted to identify the best applications of the components, including assessing patient preferences for multimedia genres, immersive videos, surround sound music, and favorite art activities. Based on these findings, we will integrate the technical, psychosocial and creative components using high-speed Ethernet network and multicast IP broadcast technology for inpatients, and web-associated broadband Internet access for clinic and home-bound children. The Internet will allow hospital-to-clinic and hospital-to-home links with patients and healthy children in other communities as part of the *Lifescapes* program.

ii. Interactive Website and Program Components: After installation, the network's website and its four components will be implemented and the content reviewed. Training sessions will be set up with nursing, psychology and students ("tek heads"), whose role will be to train patients and families in the technical aspects. Other research assistants will serve as patient recruiters, advocates and ambassadors.

e. Diffusion: The vast diffusion potential for *HeArts & Hope* is schematically represented in Appendix 23 (page 33). Resource-sharing between communities and project partners is integral to diffusion and sustainability, and we have assembled an array of local, regional and national resources (Appendix 7, page 18). The Shands Hospital IT infrastructure and AIM program combine to form a fertile and stable basis for this type of programming, which has the potential to yield two distinct marketable products: (a) the inclusive *HeArts & Hope* model; (b) the "Doc-in-the-Box" on-line symptom assessment package. We see diffusion potential in the following areas: ***i. UF Health Science Center:*** We will begin "at home," by establishing an intra-institutional revenue-raising model that makes the modular media and trained personnel available to all UF medical departments. As well as the all-inclusive package, we will establish the technical reliability and product potential of the "Doc-in-the-Box" component and integrate it into existing telehealth clinical care technology. The project's Executive Director and PI are respectively Director of Technology for the Florida Initiative for Telehealth and Professor of Pediatrics and Director of Pediatric Hospice of North Central Florida, and are overseeing this hospital/community-wide approach. The UF Department of Pediatric Dentistry has already expressed interest in using *HeArts & Hope* for pediatric patients as well as piloting it as a teaching tool for "bedside manner" assessment of students. ***ii. Other Healthcare Facilities:*** Arts and educational programming and optimal computer technology are growth areas in hospitals. AIM has established bedside arts programs at 11 other Florida hospitals by partnership with the Florida chapter of the international VSA Arts organization (Appendix 24, page 34). The AIM programs in these and other Florida hospitals reflect a national trend toward hospital arts programming and personnel. As a board member of the International Society for the Arts in Healthcare, the PI will help disseminate this program nationally. Dialogue has already begun with pediatric and medical oncologists in private practice in Florida and Arizona to use *HeArts & Hope* for day-long outpatient services. Health Heroes, a national California-based telemedicine company with an outpatient focus, has voiced interest in incorporating the "Doc-in-the-Box" package into expanded inpatient services. We anticipate similar buy-in from other hospital inpatient and outpatient departments, and can offer easily replicable and cost-effective digital media and networking. With our experienced team of artists and trainers and our digital media library (CD-ROM, DVD and VCR), we can readily put in place replicas of *HeArts & Hope* in any hospital with a typical network. ***iii. Foundation and Individual Giving***: The University of Florida Foundation is a longstanding partner and advocate of the AIM and CAHRE programs and has a proven track record in development and fundraising. UFF has committed the matched funds needed for this 3-year project (Appendix 8, page 19). Other letters of commitment and in-kind support are shown in Appendices 9-12 (page 20-22). A letter of support from the PI's UF Division Director is shown in Appendix 25 (page 35). The final Appendix 26 (page 36) lists the Program Narrative's Bibliography.

For any project, before technology comes into play, there must be a goal worth reaching: one that stands on its merits but is raised to a new level by technology. Hospital arts programs have lessened the burden of thousands of ill and disabled children. By marrying art to multimedia and streaming technology, *HeArts & Hope* seeks to further lighten and enrich these lives.