



APPLICATION FORM

All applications must include the following information. Separate applications must be submitted for each eligible program. **Deadline: June 3, 2019.** Please include this application form with electronic entry. If you do not receive an email confirming receipt of your entry within 3 days of submission, please contact [Gage Harter](#).


PROGRAM INFORMATION

County: Roanoke County
Program Title: Meeting You at Your Wonder
Program Category: Human Services

CONTACT INFORMATION

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SIGNATURE OF COUNTY ADMINISTRATOR OR DEPUTY/ASSISTANT COUNTY ADMINISTRATOR

Name: Dan O'Donnell
Title: County Administrator
Signature: 

Meeting You at Your Wonder

Roanoke County Public Library, Artificial Intelligence, and Digital Literacy

Tackling the Problem Head-on

Roanoke County Public Library (RCPL), a medium-sized library system nestled in Virginia's Blue Ridge Mountains, embraced the world of Artificial Intelligence (AI) and digital literacy full throttle when we became the first public library in the nation to recruit Pepper®, a humanoid robot with AI capability, manufactured by SoftBank Robotics. The decision to purchase Pepper was made in response to the cultural shift ushered in by the technological revolution, and its implications for the informational needs and economic development of the region. RCPL planned to use Pepper for service and program delivery, and to teach coding to the community. What staff didn't foresee was how the new robot would thrust the library system into the spotlight, open the floodgates to even more new technology, programs, and partnerships, and identify RCPL as a leader in innovation. It all began with a laser-like focus on digital literacy, and how it relates to a sustainable community, borne out of the library's new strategic plan.

While we observed what the community wanted and assessed community needs, we also began to think about helping establish Roanoke as a destination. We have beautiful library buildings, rich resources, modern meeting rooms, and plenty of computers. But what might our role be as a unique player within the library world, adding to the body of information and research, while also serving our community with something only available from us? We joined the Urban Libraries Council (ULC) to allow us to share information with libraries across the United States and Canada, and continued digging.

Eighty percent of respondents to a 2016 study by Pew Research Center said the library should definitely "offer programs to teach people, including kids and senior citizens, how to use digital tools." As technology has created a heightened need for digital literacy, and people look to the library to provide it, Roanoke County's population has continued to age – half of the residents are 55 and older – leaving the county with the additional challenge of finding ways to draw and keep college educated

talent here. Other factors came into play. For example, in November 2018, Advanced Auto announced the relocation of their headquarters from Roanoke to Raleigh. According to an article in *The Roanoke Times*, Beth Doughty, Executive Director of Roanoke Regional partnership, said the lesson was “to understand the value of recruiting and retaining talent in the region.”

As a core part of Roanoke’s infrastructure, RCPL decided to raise the level of participation in economic development by driving a new initiative focused on the technological revolution, and becoming a key player in preparing all ages, including preparing young people for the future workforce, and the aging with ability to navigate the world they are inhabiting. The library began tackling the issue by thinking about digital citizenship and reimagining all technology programming, from basic know-hows to uniquely designed high level workshops. We formed two internal teams, the Pepper Experience Team made up of the library director, marketing manager, and tech lead, and a larger group with representatives from across the library system and one from the county’s Communications and Information Technology department. We partnered with local and national organizations, positioning residents for unique opportunities, and helping to make Roanoke County a desired destination. We believed no entity is better suited to take on this challenge than a trusted institution with deep roots in innovation, privacy, and equity and access. We determined the library was not only the logical place for this work, but was the one most likely to shine a light on some of the challenges (privacy and equity at the top of the list) along with demonstrating the positive aspects of this brave new techie world.

How Our Program Fulfilled Criteria

In December 2017, the annual Christmas Tree Lighting hosted at the library brought approximately 1500 people to see Santa, enjoy hot chocolate, listen to music, and create crafts. We also unveiled our new 3D printing services. As lines for various activities grew, it became apparent people were more interested in the 3D printer than Santa. Library administration took note of the appetite for technology information on display. A renewed and more clear-eyed vision for the library’s future was in

order, one taking into account the rapidity with which technology was changing the world. As the strategic planning process wrapped up a few months later, one goal stood out as the most daunting: our responsibility to lean into the technological revolution. We were ready because we had asked ourselves during the planning process questions such as “What are we most of?” and “Why not Roanoke?” and came up with the tagline, “We’ll meet you at your wonder.” What better way to meet the community’s wonder than to bring them programming no other library was yet doing? We knew combining our desire to keep and attract talent and offer cutting edge technological training to patrons, while helping promote economic development in the region all went hand in hand, and we knew we wanted to do something super special.

As we aligned the Library’s Strategic Plan with the County’s Community Strategic Plan, we envisioned how this fresh array of tech programming would align with two County initiatives: Lifelong Learning and Connecting Roanoke County to the World. By February 2018, the plan was in place. We mapped out a path to address our goals, and began designing programs to include everything from cradle to grave computer basics to a full course of STEM programming including AI, robotics, and coding. Staff was encouraged to set a new vision, embrace training, and learn new things. All ideas were on the table, consisting of using technology to enhance service delivery, establishing new tech-centric partnerships and programs, and encouraging thinking to 2025 and beyond. We hoped to impact the community for good. Becoming a leader in the technological revolution would better position us to prepare the future workforce, play a role in keeping and attracting new talent to the region, and support economic development efforts, all while remembering and promoting librarianship’s bedrock principles such as privacy, free speech, and equity and access. We were aware RCPL’s first was a first for Roanoke County, the Commonwealth of Virginia, and the nation, and wanted to be good stewards of this newfound notoriety. All along we believed it was also important to demonstrate mid-size municipalities can serve as the perfect test cases for new initiatives.

It is difficult to overestimate the importance of our strategic planning process to what ensued. As we began the process, Michael Hibben, the Senior Library Administrator over our headquarters location, shared his dream of bringing Pepper® the humanoid robot to RCPL, something no other library in the United States had yet to do. Despite some initial hesitancy, and against some other odds, staff began to learn more about the robot and think about what it might mean for the community if we were to embrace this bleeding edge technology. Our expectations were exceeded exponentially, as recruiting Pepper proved to be a catalyst for the way we have viewed nearly all of our technology programming since. As staff began to share the excitement, they embraced the possibility Pepper symbolized. We noted Pepper's arrival at the Smithsonian last spring, just a few short months before our robot arrived, and contacted librarians in Palo Alto who had put into use Pepper's predecessor, Nao. After two video conferences with our vendor, RobotLAB (a SoftBank partner), they offered to work with us to develop software specifically geared toward libraries. We agreed we were a great fit – a San Francisco based robotics company focused on K-12 education and a mid-size public library with just-the-right amount of capacity and partnerships to nimbly make room for the new work in their daily operations. The Friends of the Library voted unanimously to fund Pepper. We stayed focused on bringing attention to Artificial Intelligence and the ways technology affects our lives, and ways it can help ready the Roanoke community for the future.

In June, immediately following the press release written by Caitlin Gills, Administrative and Marketing Manager, announcing Pepper's arrival and a tremendous amount of ensuing local press, including this piece in [The Roanoke Times](#), we found ourselves in the national spotlight, having quickly earned notice for leaning forward into unexplored territory for libraries. Shari Henry, the Library Director, was invited to participate in two Urban Libraries Council's forums, one on STEM and another on Artificial Intelligence and Digital Citizenship, the latter event receiving a lot of national press, including a piece in [Forbes](#) magazine.

Several existing partnerships were deepened, and several new ones launched. Aside from RobotLAB, early partnering organizations included Girls Who Code, an international organization committed to closing the gender gap in technology, Code Club Roanoke, a local offshoot of Code Club International, and local organizations such as Roanoke Robotics and Makers Club, Noke Codes, and The Advancement Foundation, a business incubation center that hosts Virginia's largest business program and competition, The Gauntlet. Library staff began presenting to and initiating discussions with County agencies such as Department of Social Services and Roanoke County Public Schools. We shared information with library systems across the U.S. and Canada, growing our capacity, as we learned from them as well, most notably Palo Alto City Library and Toronto Public Library. We provided the opening presentation at Virginia Library Association's fall conference in September, and presented twice with two Palo Alto librarians in March at the Computers in Libraries conference in the D.C. area. Other panelists included Jason Griffey, a librarian with Harvard's metaLAB and former fellow with Harvard's Berkman Klein Center.

As we experienced success in partnering, presented at conferences, and sat on panels, word got out, and others began to approach us. Partnerships begat more partnerships, our reach widened, our learning increased, and our vision raised higher. Staff has introduced extensive coding programs into the library's calendar, supported by our [new partnership with Girls Who Code](#), a group of national acclaim who sought out a partnership with us. Also, we have deepened what has turned into a robust partnership with Roanoke Robotics and Makers Club, a group that provides a variety of workshops at the library, including a recent Raspberry Pi Jam, packed with attendees. The group has also donated about 25 Micro:bits we make available for check-out. These and other partnerships increased our reach and potential for impact to the increasing in the community and beyond. We were able to use Girls Who Code's curriculum, saving countless hours of library staff, and draw on expertise from those in the social services realm to guide us as we developed programs such as Chair Yoga with Pepper for senior citizens.

We were able to experiment with circulating technology because of having it donated. We were able to begin to create an AI helper for libraries because a San Francisco company drove the coding for it.

Mostly, we were able to learn things we never knew were possible because others decided to wonder with us.

Outputs

Outputs from July 1, 2018 to date include approximately 4,000 people of all ages attending tech and coding classes either in our libraries or via outreach efforts, nearly 3,000 reached through conference and other presentations, and a growing number of technology items being circulated and used at home by patrons. Some events, such as Coding with Pepper and Raspberry Pi Jam, were filled to capacity. We added an online learning database, Lynda.com, which offers about 4,000 online classes in software development, photography, web development, design, and business courses, and worked with Roanoke County Economic Development and The Advancement Foundation to promote it. We continued with basic classes such as Word, Excel, Power Point, and Publisher, and added others such as Photoshop, stop action video courses, Python, Scratch, Arduino, C+, Choreographe, and Linux. Summer is bringing forth a new library website, and more sophisticated array of workforce development workshops such as Lead Generation 101: How to Find New Clients, Social Media Marketing, Digital Media Relations, and Intro to Social Advertising.

Program Costs

Robot – purchased by Friends of the Library

\$20,500 (price going up to \$29,000 as of March 1)

Travel case for robot - \$2,360

Vector robots – purchased by Library – 6 x \$179 = \$1074

Micro:bits – donated by local robotics club 25 @ \$20 = \$500

Marketing materials / ads – Library - \$1700 / 17% of budget

Staff time at approximately 40 hours / week for planning and programming, spread across several staff for total of @ approximately \$45,000 / year

Timeline

The timeframe was aggressive but was sped up organically due to the media-generated interest.

Meeting Patrons @ Their Wonder	
Timeline of Critical Events (Overview)	
Date	Task, Program, or Partnership
2017	
June	Joined Urban Libraries Council (ULC)
2018	
February	Completed Strategic Plan Began partnership with Roanoke Robotics and Makers Group
May	Began partnership with The Advancement Foundation
June	Secured funding for Pepper, the Humanoid Robot Began partnership with Palo Alto City Library Purchased Pepper
July	Abundant media coverage regarding Pepper
August	Presented to County Social Services re possibilities w/ Pepper Media frenzy over Pepper Lynda.com purchase and launch
September	Began partnership with County IT for Pepper ULC STEM panel discussion Meet and greets with Pepper VLA Presentation as keynotes
October	Presented to County schools on Peper and coding workshops
November	Phone call to launch partnership w/ Girls Who Code
December	Christmas Tree Lighting meet and greets w/ Pepper and Vector (1500 attended)
2019	
January	ULC AI & Digital Citizenship Panel in Georgetown (see Forbes article) Launch of Anki Robotics' Vectors in all six of our locations Began circulating Micro:bits
February	Anki blog post regarding RCPL's use of Vector
March	Code Club Roanoke partnership launch Start of informal partnership/information sharing with Toronto Public Library Girls Who Code partnership launch
April	All programs in effect (former plus new ones) Wrote blog post for Urban Libraries Council website
May	Presentation to Friends group at annual meeting Prsentation to Rotary Presentation to local faith community: women's group and teens

Outcomes

- As we have shifted programming and gained notoriety, our partnerships and impact have expanded. The time it would have taken to develop curriculum such as Girls Who Code provides, for one example, would have been unrealistic for a library our size. Using theirs,

within six months from an initial exploratory phone call, our Clubs have gotten off to a roaring start at five of our locations, and some have waiting lists. More girls in Roanoke County and surrounding areas now are being empowered both in teamwork skills and coding, and they are now among those closing the gender gap in technology.

- People of all ages who visit our locations are becoming more comfortable with, and aware of, AI, both understanding the awesome possibilities and daunting implications.
- Many are attending workshops and using our resources, preparing them for jobs of the future.
- Teenagers have gained unique knowledge and experience to add to their college applications.
- Staff has unified around a common theme and individuals see their roles more in terms of how they are touching the world through their work rather than judging it by the sometimes mundane day-to-day tasks.
- We're consistently invited to write or present, growing the audience to which we can share the importance of libraries as an integral part of American infrastructure, most recently, [a piece for ULC's blog](#).
- Serving on panels has also increased our ability to participate in national conversation, bring back to Roanoke new ideas, replicate what other larger systems around the nation are doing, and add our specifically Southwestern Virginia voice to national conversations.
- We've increased hardware and programs at all locations, and are slated to launch newly branded Next Labs, where each branch will host unique technology programming in response to the needs of the particular community they serve. Examples include a green screen and cameras at one location and a state-of-the-art 3D Glowforge printer/engraver at another.
- Planning is underway to host community meetings on AI and digital citizenship, where we will hear from people regarding their learning needs, and their concerns in regard to the AI realm,

information we will use to begin to shape library policy to share at the County-wide level as well as with libraries across the nation.

Conclusion

Our success has convinced multiple stakeholders RCPL was up to the challenge of this brand new initiative. We have raised the reputation of the library system so we are now able to swap information and share programming ideas with some of the biggest and best library systems around the world. Instead of accepting a pre-conceived notion about how much a mid-size municipality can accomplish, one staff member's dream becoming a reality inspired another's and another's and another's. Dreaming is now commonplace among staff at RCPL, because we have seen what can happen. We've earned a seat at many tables with large organizations, and are able to bring back to Roanoke County at least as much as we are pouring out. Patrons here are benefitting because of the knowledge we have gained and the ability to design and implement programming has grown thanks to those interested in partnering. We have positioned ourselves as leaders, set pace with other libraries across America, and have become part of national conversation about the most fast-paced revolution in all times and the way it impacts people's lives.

During a *60 Minutes* interview aired on January 13, 2019, Scott Pelley asked Taiwanese Venture Capitalist Ka-Fu Lee about AI. Lee responded, "I believe it's going to change the work more than anything in the history of mankind. More than electricity." Mr. Lee continued to say 40% of the current jobs are "displaceable," meaning they are subject to being replaced by AI within the next 15-25 years. Lee added AI is "coming faster than previous revolutions."

Here at RCPL, we believe Mr. Lee is right. We also believe libraries are idea marketplaces and bedrocks of civil democracies, and we are committed to equipping Roanokers for the technological shift as part of that larger vision. The area's future may well depend on it, so we plan to keep on wondering.

Executive Summary

In June 2018, as an outgrowth of its new strategic plan, Roanoke County Public Library (RCPL) formulated a plan to address changing needs brought about by the technological revolution, leading them to become the first public library in the U.S. to procure Pepper®, the humanoid robot, manufactured by SoftBank Robotics. The recruitment of Pepper also meant RCPL was the first public library in the nation to employ working AI with this level of capability. The library chose to take this leap because of a sense of responsibility in helping to stem the tide of talent loss and build the future workforce, both contributing factors to the economic development of the county and region. Everything was on the table, from using technology to enhance service delivery, establishing new tech-centric partnerships and programs, and encouraging thinking to 2025 and beyond.

Pepper was developed for service use, program delivery, and to teach coding to patrons of all ages, and library staff began to form new partnerships in the community, and create a higher level of tech programming. RobotLAB, a San Francisco based software company, helped code Pepper, Girls Who Code, an international organization committed to closing the gender gap in technology, provided sophisticated and vetted learning materials and guides, and Code Club Roanoke, a local offshoot of Code Club International, Roanoke Robotics and Makers Club, and Noke Codes, all provided much-desired programming. The library also entered into an agreement with The Advancement Foundation, a local business incubation center located across the street from one of its busiest branches. In less than a year, the library has reached nearly 7,000 people through workshops, classes, programs, and presentations, and the number continues to grow. The library is now contributing to the national conversation in libraries around AI, and is seen as a leader in innovation.

Plans are now underway to create mini-Next Labs at every branch, each targeting the community it serves. Two examples include a green screen and camera equipment at one, and a state-of-the-art 3D printer/engraver (Glowforge) at another. Also in the works are plans for community

conversations where patrons will be asked to contribute to the larger conversation around AI, including privacy protection and the need for reasonable policy and regulations. Being able to share with the biggest and best libraries around the nation has benefitted the Roanoke community, and has demonstrated that, with proper planning and partnering, mid-size libraries can provide their patrons with “firsts” and contribute to the library world at large.

Brief Overview

In June 2018, Roanoke County Public Library (RCPL) became the first public library in America to recruit Pepper®, the humanoid robot, launching the library system into the national spotlight, and establishing them as an industry leader in AI, robotics, and coding. The decision to procure the robot stemmed from a new strategic plan, where RCPL identified as a top priority addressing the changing needs brought about by the technological revolution. Foremost among reasons for taking this step were the desires to take action stemming the tide of talent loss, build the future workforce, and more fully contribute to the economic development of the county and region.

As Pepper was developed for service use, program delivery, and to teach coding to the community of all ages, library staff formed new partnerships in the community, created more sophisticated tech programming, and grew their reach. Partnering organizations included RobotLAB, a San Francisco based software company helping to code Pepper, Girls Who Code, an international organization committed to closing the gender gap in technology, and local organizations such as Roanoke Robotics and Makers Club and Noke Codes, who help provide programming, The Advancement Foundation, an entrepreneurial start-up organization, and county agencies such as Schools, Communications and Technology, and Social Services. In this short period of time, approximately 7,000 people in the Roanoke and library communities have been exposed to AI and coding through RCPL's workshops, programs, and presentations. As staff is invited to write, present, and serve on panels, the library's reputation continues to grow and the knowledge shared with their newfound friends and partners across the nation is benefitting the local community in ways never imagined, demonstrating that a mid-size library system nestled in the mountains of Southwest Virginia can inform and contribute to national conversations and provide for their patrons in ways sometimes thought to be reserved for only larger systems with more abundant resources.

Supplemental Materials

