Brief Project Overview:

The focus of this project is the development, technology transfer, and commercialization of a new paradigm for personal independent mobility: the Automated Transport & Retrieval System (ATRS).

ATRS affords complete mobility independence by providing wheelchair users a safer and more economical transportation alternative to van conversions. This is accomplished by seamlessly integrating robotics and automation technologies with existing mobility products into structurally unmodified automobiles.

The project’s primary goal of commercializing ATRS has been achieved, and the system is currently in the hands of end-users who rely upon it on a daily basis for personal automobile.

Top Contributions/Outcomes:

1. FDA approval for ATRS. This was necessary for the system to enter the commercial market.
2. ATRS commercialization in June 2008.
3. ATRS has been in daily use with end-users for nearly two years!

Top Challenges:

1. Market acceptance of a disruptive technology. ATRS is attempting to replace a mobility paradigm that has been the standard solution for decades.
2. Regulatory requirements for commercialization.
3. Technical challenges of system development to ensure a reliable, robust solution for operations in outdoor environments.

Partners:

- Freedom Science LLC, (Mr. Thomas Panzarella), Philadelphia, PA
- Lehigh University, (Profs. John Spletzer & David Wu), Bethlehem, PA
- Sensible Machines, Inc., (Dr. Sanjiv Singh), Pittsburgh, PA
- Pennsylvania Department of Community & Economic Developmentt, Harrisburg, PA
- Philadelphia Industrial Development Corporation, Philadelphia, PA
- The National Science Foundation

Key Attributes of our Innovation Ecosystem:

Questioning & Curiosity:

The ATRS concept was a “back of the envelope” moment by Mr. Thomas Panzarella, Sr., CEO of Cook Technologies, as he questioned why there wasn’t a better solution to personal automobile for wheelchair users. The resulting partnership enabled his vision to be realized.

Risk Taking:

There were significant technical and marketing risks associated with the commercialization of ATRS. These were mitigated through a strong partnership. From an industry perspective, having an academic partner for technical collaboration and strong support from local government enabled us to weather most of the storm.

Openness:

Openness is fundamental to the ATRS partnership. The free exchange of information and ideas allowed our team to meet an aggressive commercialization timeline. Furthermore, results from system development were also disseminated through robotics conference and journal publications.

Collaboration Across Fields:

Our partnership included members of academia, industry, and the public sector. Merging the research expertise of Lehigh University with the commercialization experience of Freedom Sciences ensured a technically robust solution. Our public sector partners also played key roles in the success of ATRS through economic development programs such as the Keystone Innovation Zone (KIZ), and developmental funding.

Placing Partners in “New Environments” & “Playgrounds”:

Partnerships between industry and academia can be strained when the parties bring different expectations to the project. From the beginning, each partner was committed to ensuring that ATRS would not end as a technical paper, but rather a real-world product that would reach the people who needed it most. Our shared passion for addressing this very important social issue and spurring economic development in our region helped ensure the project’s success.

Leading/Inspiring, Surprising or Unexpected Results:

- The most surprising result was realizing how fundamental transportation is for an individual’s quality of life. People rely upon automobiles for employment, education, worship, job training, recreation, and many other activities of community life.
- The most inspiring result was seeing first-hand how ATRS could increase the independence of a wheelchair user, and significantly improve his/her quality of life.