Third Derivative

**Startup Application**
Apply to Third Derivative's Next Accelerator Cohort
Deadline to apply: Aug 25, 2022 at 5:00pm PT
We're looking for the world's most promising and impactful climate tech startups addressing billion-dollar markets in the areas of hard science, hardware, software, and business model innovation, to join our next accelerator cohort. If accepted, we'll help you bridge critical finance and resource gaps, and align you with Third Derivative's network of committed investors, corporate partners, market experts, and mentors.

**1. What is the name of your company?** *
*LoopWorks*

**2. Have you applied to D3 in the past?** *
*No*

**3. Please provide a link to your company's website.**
*https://MilpitasPRT.com/*

**4a. What is the best email address to contact you?** *
*Rob@MilpitasPRT.com*

**4b. If accepted, will you be the main point of contact for your organization?** *
*Yes*

**5a. What is your name?** *
*Robert Means*

**5b. What is your title in the organization?** *
*Worker Director/Secretary*

**5c. If accepted, will you be the main point of contact for your organization?** *

Yes
No

**5d. Please provide a link to your LinkedIn page.**
*https://www.linkedin.com/in/rob-means-17081822/*

**5e. Which of the following do you identify as?** *
(Ethnicity of founder/co-founder #1)

Black/African
East Asian (including Chinese, Japanese, Korean, Mongolian, Tibetan, Taiwanese)

Hispanic/Latino/Latina/Latinx
Middle Eastern/North African
Native American/American Indian/Indigenous/Aboriginal
Native Hawaiian/Pacific Islander
South Asian (including Bangladeshi, Bhutanese, Indian, Nepali, Pakistani, and Sri Lankan)
White/Caucasian/European
Southeast Asian (including Burmese, Cambodian, Filipino, Hmong, Indonesian, Laotian, Malaysian, Mien, Singaporean, Thai, and Vietnamese)
Two or more races
Not listed or prefer to self-describe
Other/Prefer Not To Say

**5f. Which of the following do you identify as?** *
(Gender of founder/co-founder #1)

Female
Male
Gender Non-Binary
Other/ Prefer Not To Say

**6a. What is the name of one of your colleagues in a leadership position within the organization?** *
*Tiffany Vuong*

**6b. What is your colleague's title?** *
*Community Director*

**6c. Please provide a link to your colleague's LinkedIn profile.**
*https://www.linkedin.com/in/tiffany-vuong/*

**6d. Which of the following does your colleague identify as?** *
(please select all that apply)

Black/African
East Asian (including Chinese, Japanese, Korean, Mongolian, Tibetan, Taiwanese)
Hispanic/Latino/Latina/Latinx
Middle Eastern/North African
Native American/American Indian/Indigenous/Aboriginal
Native Hawaiian/Pacific Islander
South Asian (including Bangladeshi, Bhutanese, Indian, Nepali, Pakistani, and Sri Lankan)
Southeast Asian (including Burmese, Cambodian, Filipino, Hmong, Indonesian, Laotian, Malaysian, Mien, Singaporean, Thai, and Vietnamese)
White/Caucasian/European
Two or more races
Not listed or prefer to self-describe
Other/Prefer Not To Say

**6e. Which of the following does your colleague identify as?** *

Female
Male
Gender Nonbinary
Other/Prefer Not To Say

**7. In which country / region is your company registered?** *
*United States*

**8. In which countries / regions are your leadership team members based?** *
*United States*

**9. Which countries / regions does your company currently serve / have customers?** *
*None*

**10a. How did you hear about D3?** *
RMI

**10b. How did you hear about Third Derivative?**
*Online research*

**11. Please attach your pitch deck** https://milpitasprt.com/wp-content/uploads/presentation-VC-pitch-deck.pdf

**12. What problem are you solving? What is your value proposition? Who are your customers?** *
***PROBLEM:***
*Our Climate Crisis is the problem; Personal Rapid Transit (PRT) is a fresh, out-of-the-box solution that is networked and scalable. While transportation accounts for a large percentage of $CO_2$ emissions globally, it hits 59% here in Milpitas. Electrified PRT is a catalyst technology that can substantially reduce those emissions. Rather than electrify privately-owned cars that sit idle most of the time, PRT electrifies a high-use, community-shared transit system that offers low-cost, convenient, and quick trips within its service area.*

*When considering the potential for reducing carbon emissions, PRT ranks as a high-impact solution with gigaton-scale drawdown potential in a global market. Using electric-motive force rather than fossil fuel combustion to move vehicles allows use of carbon-free, renewable energy sources. The highly efficient, non-stop trips provided by PRT use about 90% less energy than cars. That efficiency – combined with a dramatic increase in public transit ridership – will substantially reduce greenhouse gas emissions in the area served.*

*PRT can provide 24/7 service to an area of 100 square miles for $7B – and that includes 8 stations per square mile. By achieving door-to-door times within the service area comparable to or less than driving, PRT can replace many or most conventional single-occupant vehicles currently congesting*

*roads and compounding our Climate Crisis. Such a service level could dramatically impact the area and reset what people can imagine for moving themselves and their stuff.*

***VALUE PROPOSITION:***
*LoopWorks is a non-profit, mutual benefit corporation creating the first domestic PRT system. PRT is like a "horizontal elevator" that awaits you at a nearby station. Have a bicycle or a wheelchair? No problem! Roll in and get whisked away to your destination! PRT promotes transportation equity, mobility for handicapped, and safety for elders – simply put, it will help people live healthier and more connected lives.*

*PRT systems can reduce dependence on oil, reduce greenhouse gas emissions, and reduce congestion. These three benefits are the primary societal advantages over most public transit. Additionally, another 10 advantages benefiting people and their community are noted on page 24 of the LoopWorks Business Plan. Following that list, the Plan delves into $CO_2$ Reductions, Ridership, Energy Consumption, Level of Service, and Resilience. In each of these areas, PRT offers a strong competitive advantage.*

*Unlike traditional transit systems, PRT systems can be profitable due to various factors and trends. For example, construction costs for small-scale PRT are far less than "big box" mass transit due to light-weight vehicles and elevated guideways needing minimal ground-level contact. Also, O&M costs will run about half what public transit systems currently pay. An in-depth study of PRT economics (bit.ly/3zxu9gG) indicates that PRT systems of sufficient size can pay for themselves by charging moderately-priced fares. Growing market forces to reduce both $CO_2$ emissions and resource consumption will accelerate adoption of this zero-carbon, community-shared technology. Additionally, future PRT projects will benefit from increased government spending to rebuild failing infrastructure.*

***CUSTOMERS**:*
*In the words of the Sierra Club (bit.ly/3EWxiaU), "While this project would serve Milpitas and its residents, resulting data that confirms cost estimates in the LoopWorks Business Plan could impact most metropolitan areas of this country and the world. We see high-leverage projects like this as necessary in order to reverse Global Warming before it is too late."*

*Customers for the technology can range from single property owners (ski resort, large real estate development, amusement park, airport, corporate/university campus) to cities with severe traffic congestion and/or walking/cycling barriers (like Milpitas) up to transit agencies serving a wide metropolitan area (both downtown and suburban). Successful completion of this $60M R&D project will kick-start a $1T advanced transit industry that employs replication, scaling, and network effects to rapidly wean us off carbon-based fuels.*

*Additionally, sections of the LoopWorks Business Plan (https://milpitasprt.com/wp-content/uploads/business-plan.pdf ) raise the possibility of 1) using PRT ferries to safely convey people over barriers instead of building traditional, more expensive pedestrian/bicycle overcrossings, and 2) using 80-mph PRT for inter-city transit instead of commuter rail that averages 40 mph and costs 10 times as much. The minimal land requirements of PRT give it a major advantage over both commuter and high-speed rail technologies, especially in rough terrain. One visionary sees high-speed PRT as the glue to create 400-mile-wide regions that share physical, cultural, employment, and residential resources (SmartRegions.US, http://SmartRegions.US/ ).*

***END USERS:***

*By choosing to serve the most vulnerable members of our society – whether special needs, aged, or children – LoopWorks is able to provide outstanding service to all segments of our population.*

*Details of how people use the PRT system is outlined in Human Interface Ergonomics of the LoopWorks Business Plan (page 55-57, https://milpitasprt.com/wp-content/uploads/business-plan.pdf ). Those details make clear that most anyone, regardless of abilities, will be able to use the ITNS-designed vehicles and user interface to travel between any of the PRT system stations.*

*In a time of historic societal inequality, providing "safety net" transportation for our most vulnerable residents can help create balance. Wide-area, high-quality, low-cost transit could shift how people think about mobility – and about the need for personal cars and parking.*

**13. How big is your market? (TAM / SAM / SOM)? Explain your calculations.** *
*LoopWorks sees the potential of advanced transit becoming a $1T industry. While the LoopWorks technology and mutual-benefit governance model may be supplanted by a capitalist model using the same or similar technology, the industry awaits a bold move – like the Milpitas PRT project.*

*A total addressable market (TAM) of $1T is assessed by starting with a $15M/mile estimate for PRT hardware which includes guideways, cabs, and stations. As shown at https://milpitasprt.com/wp-content/uploads/wide-area-PRT-coverage.pdf, covering 25 square-miles with PRT service will require 110 miles of guideway which will cost $1650M (or $1.65B) at $15M/mile. A quadrupling of those numbers will put the price for covering 100 square-miles at about $6.6B.*

*Because LoopWorks does not plan to extend beyond Milpitas, the number of potential 10-mile by 10-mile metropolitan areas needing improved transit is unknown. A ballpark estimate of 150, however, would yield a TAM of $1T. If the entire nine-counties of the San Francisco Bay Area were served with PRT, it would require 69 of those 10-mile by 10-mile plots (6,966 sq mi / 18,040 km2). By offering people in the service area the option of quiet, non-stop 24/7 travel at 30+ mph between all system stations, PRT can replace many of the conventional single-occupant vehicles currently congesting roads and compounding our Climate Crisis.*

**14. How does your product work from a technical standpoint?** *
Note: Please provide as much non-confidential technical detail as possible. To assess a technology properly we need to understand how it works.
*PRT is an elevated, zero-carbon, electric, on-demand, private, non-stop point-to-point, and networked transit system with many small neighborhood stations. Briefly, linear induction motors (LIMs) quietly move vehicles along an elevated guideway providing non-stop, efficient conveyance for people, packages, and recycle/waste materials.*

*Many people, when they hear about Personal Rapid Transit (PRT) and its elevated guideways, think of the monorails in Seattle or Disneyland. PRT is like a "personal monorail" because 1) it is electric and elevated, and 2) it uses small cars that carry up to 4 people to their selected exit station -- without stopping! Thus, "personal". In some ways, PRT is more like a "horizontal elevator" that awaits you at a local station. Have a bicycle or a wheelchair? No problem! Roll in and get whisked away to your destination! This 3-minute video (https://milpitasprt.com/wp-content/uploads/Microsoft-campus.wmv )presents a high-level view of the technology.*

*Using light-weight vehicles (1100 lbs.) on light-weight, elevated guideways, a transportation network can be built above most existing obstacles. Moderate speeds of 25 – 40 mph are expected in dense areas, and the Intelligent Transportation Network System (ITNS) design allows for higher speeds of 80+ mph where appropriate. Learn more about the hardware on our website (https://milpitasprt.com/technology/hardware/ ) and in Technical Specifications for ITNS Technology (https://milpitasprt.com/wp-content/uploads/technical-specifications.pdf ). The innovative ITNS design resulted from thousands of engineering hours and hundreds of peer-reviewed articles and papers (http://www.advancedtransit.org/library/research-projects/ ). Briefly, it is light-weight, simple, and robust. The control software was specified similarly, and can be purchased today.*

**15. What is your key differentiation from competitors or alternatives? Please name your three competitors (they don't need to be exact analogs). How does your product fare in comparison?** *
*The existing public transit alternatives provide poor service. In the words of Alain Kornhauser, Director of Princeton University's Transportation Program: "Even with enormous subsidy, Transit, especially bus transit, is hardly ever the 'mode of choice' for anyone because its level-of-service is fundamentally poor. It serves relatively few locations, loosely connected by a route which delivers service only at infrequent fixed times. Essentially no other consumer commodity today operates with so little regard to its customer's real-time needs and desires."*

*PRT will provide a customer-friendly alternative. While few PRT systems have been implemented, research and development has been extensive. These 3 systems appear to be competitive with the Intelligent Transportation Network System (ITNS) design that LoopWorks will use.*

***ULTra PRT** (http://www.ultraglobalprt.com/ ) which was development at Bristol University in the United Kingdom, is now moving people and their luggage between a remote parking lot and Terminal #5 at Heathrow International Airport. This system uses a wide guideway, which has a large visual impact and is a snow-catcher in winter months. This system possesses the following characteristics, which will limit its use to fair weather, low-speed, low capacity systems that are small:*
- *Rotary motor propulsion and wheel braking limit minimum headways to about 6 seconds.*
- *Synchronous control software limits the practical system size.*
- *On-board battery power limits both speed and range while adding weight.*

*Similar issues exist for the latest PRT company working the the San Francisco Bay Area, Glydways (https://www.glydways.com/ )*

***Vuba Corp.** (https://go-vuba.com/ ) and the Government of Rwanda have achieved a significant milestone with the signing of a Memorandum of Understanding (MOU). The parties have agreed to proceed together toward the development of Smart City Mobility technology in Rwanda, culminating in a proposed Advanced Transport Network (ATN) in the capital city of Kigali. To avoid the extra weight and cost of a wide guideway as used in ULra's supported-vehicle system (SVS), Vuba chose a hanging-vehicle system (HVS) design. In the section entitled The Tradeoff between Supported vs. Hanging Vehicles, Dr. Ed Anderson PhD P.E. reviews various factors (visual impact, cost for posts and foundations, ease of switching, guideway natural frequency, winter weather, and torsion in curves), and concludes that ITNS supported-vehicle design yields better economics and rider acceptance. (See pages 135-138 of Contributions to the Development of Personal Rapid Transit, http://www.advancedtransit.org/wp-content/uploads/2016/02/Anderson-JE-Contributions-to-the-Development-of-PRT-I.pdf .)*

*Since the weight - and therefore cost - of the guideway is proportional to the weight of the vehicle, weight minimization is important. That factor sets ITNS hardware apart from most other PRT options. Specifically, ITNS vehicles are expected to weigh only 1100 pounds – with the empty cabin weighing 500 lbs., and the assembled chassis weighing no more than 600 lbs.*

***Swyft Cities** (a Google spin-off, https://www.swyftcities.com/ ) also understands the importance of keeping weight down. Their design will use fixed cables between posts and switches to reduce weight. While such a design is expected to cost less than the ITNS design, how it will perform on the various factors mentioned above has yet to be demonstrated. In particular, extreme weather conditions may prove challenging for such an exposed cable system. Rider acceptance and feeling of security are both adversely affected by hanging vehicles; people feel more secure with supported cabs that don't sound and feel different at every merge and diverge. Less important for small-area networks is the top speed of 30 mph for Swyft; wide-area networks could benefit from a top speed of 80+ mph available with the ITNS design. Capacity (number of vehicles/riders per span) may likewise be limited well below that available with ITNS.*

*An HVS confronts another problem. For safety and maintenance reasons, simplification of switching is one of the most important considerations in the design of a PRT system. In an SVS, the path through each of the merges and diverges is continuous. In an HVS, there must be an arm extending down from a chassis inside the guideway to support the vehicle and, with gravity always acting downward, the support structures for the wheels cannot be continuous. There must of necessity be a mechanism to unload one set of wheels as the vehicle passes across the slot in a merge or diverge section of guideway. This is one more mechanism that can fail. In an SVS no such mechanism is needed.*

*The ITNS design represents a culmination of research and development directed at achieving an economical and reliable solution to urban transportation that will*

- *minimize use of land*
- *minimize use of materials and energy*
- *minimize pollution of all kinds*
- *provide an unparalleled level of service.*

*Remarkably, this combination of benefits will also minimize capital and operating costs for the LoopWorks PRT system in Milpitas. The work that led to ITNS was conducted by Dr. Anderson and colleagues at two major research universities, in cooperation with three government agencies and five major private companies. In brief, the ITNS design has been extensively peer reviewed.*

**16. Briefly outline who the co-founders of the company are and their history working together. Please also mention any other key executives (technical / commercial / other leads) and their backgrounds & strengths.** *

*After a 20-year career in computer communications helping lay the foundation for the Internet, **Robert Means** opened a business promoting electric scooters and bikes in the late 90's - long before they were popular. As that market matured, Mr. Means turned his focus to creating a PRT system for the Metro Area of Milpitas. His vision for systems that reduce energy needs, enhance life, and help society has drawn him to PRT technology and this project. While Robert Means has been the driving force on this project, many others have contributed time and skills to this effort.*

*LoopWorks Advisory Board member **J. Edward Anderson** PhD. P.E. is arguably the most knowledgeable and renown PRT expert in the world. Both his long career and impressive*

*accomplishments speak to his integrity and that of his work results. (Find both his resumé and values in the ITNS Business Plan, pages 2 and 92-94, https://milpitasprt.com/wp-content/uploads/Business_Plan_2019.pdf .) In his most publicly acclaimed work, Dr. Anderson designed and supervised the construction of the fully automatic PRT vehicle for a budget of only $600,000 and 6 months from the initial order-to-proceed until operation. The vehicle operated on a 60-ft section of covered-steel-truss guideway at the 2003 Minnesota State Fair 12 hours per day for 12 days with no failures. Dr. Anderson is a principal in Intelligent Transportation Network System (ITNS), which owns the 1500-page, 3-volume product of his decades of experience designing PRT systems. Titled Contributions to the Development of Personal Rapid Transit, the multi-volume work provides the details underlying the broad concepts offered in the LoopWorks Business Plan.*

***Tiffany Vuong** is a Community Organizer who worked for affordable housing before running for Milpitas City Council in 2020 - placing 4th of 8 candidates (just behind the incumbent). As the Community representative on the LoopWorks Board, she led the effort for the PRT Station Design & Art Contest that involved over 100 high-school students and produced these results: https://milpitasprt.com/art-contest/*

***Eugene Nishinaga**, President and CEO of Transit Control Solutions, Inc. (TCS) – a company considered likely to supply the control software – has been a technologist in the field of public transportation for 45 years, including 25 at SF BART. There he was involved in developing cutting edge transportation control technology for the BART system, and later managed BART's R&D Division. In this latter role, he discovered that PRT systems can achieve a cost-benefit that is approximately four times better than what can be achieved by more conventional means.*

***Tam Overacker**, LoopWorks Treasurer, specializes in small business monthly accounting. She has provided knowledgeable bookkeeping services for over 15 years with over 35 years of accounting experience. As a life-long resident of Milpitas, she cares about the City's future – and acts from that motivation.*

**17a. How many full time employees work at your company (do not include advisors, mentors, etc.)?** *

While Ms. Vuong and Ms. Overacker are paid monthly for their part-time services, LoopWorks has no full-time employees at this time.

Because LoopWorks does not plan to expand beyond Milpitas or become a manufacturer, the need to employ people and their skills will mostly be restricted to O&M after PRT operations begin. Until then, LoopWorks plans to follow a strategy similar to that of Swyft Cities (a Google spin-off, https://www.swyftcities.com/ ), another company in the PRT industry. Swyft founder and CEO Jeral Poskey said this: "We are not the ones putting in a $500M system. There's capital for that. There are construction partners for that. We're supplying the vehicles, and the control system, and a few other parts that are our competitive advantage." (https://techcrunch.com/2022/05/19/swyft-cities-is-the-winner-of-the-techcrunch-mobility-2022-pitch-off/ ) LoopWorks extends that strategy by also contracting out the vehicle manufacturing and control system for the Milpitas PRT system while avoiding the complications of proprietary information.

**17b. Are there any hiring needs that you plan to address? Please include a timeline.** *

*The first round of funding ($600K) will enable LoopWorks to employ someone in the role of President. The primary tasks will be related to public relations and the effort to overcome the real barrier to Personal Rapid Transit (PRT) -- political/perception issues. Public presentations and lobbying of*

*stakeholders will be his/her primary activities. Either our Community Representative (Tiffany Vuong) or Worker Representative (Rob Means) will act as "wing man" in all public outreach so in-depth knowledge of PRT is not necessary. Initially, the President could accept a very limited time commitment to LoopWorks, and extend that commitment as appropriate. Our business plan includes a list of first-year tasks that will be his/her focus (see page 84 of https://milpitasprt.com/wp-content/uploads/business-plan.pdf).*

**18. How do you defend your position (through intellectual property, trade secrets, network effect, etc.)?** *

*LoopWorks holds a worldview following that of nature where cooperation and synergy are the primary operating principles, not competition. Since transparency is a key LoopWorks value, information about the company's operations will be publicly available. By making documentation freely available, it's easier and quicker to accomplish the company's vision: The LoopWorks PRT project inspires rapid adoption of advanced transit that dramatically reduces transportation sector emissions.*

*No intellectual property or trade secrets exist to be protected because all such proprietary information used by ITNS for this project is already in the public domain. On the contrary, LoopWorks seeks to disperse what is learned from this R&D project to empower others throughout the world to create their own systems. Investors and entrepreneurs looking for a reasonable profit will certainly find opportunities as the $1T advanced transit industry moves through a 30-year growth curve.*

*The choice of open-source hardware provides another advantage – rapid network growth. Easy access by new individuals or businesses into network operations is essential for rapid growth. Therefore, any successful PRT system should welcome new independent guideway operators to join the existing network, and also allow the addition of new public or private stations. Fast-growing networks may also allow independent vehicle operators to use the entire network of guideways with access to public stations. Vehicle design and manufacturing by independent firms is another possibility that could accelerate network expansion.*

**19. What is your revenue model? If possible, please describe the basic unit economics.** *

*Like Uber, a unit is one ride or trip in a PRT cab from any station in the system to any other station. Until LoopWorks begins operations and starts collecting real-world data, we rely upon the work of others that indicate fare box recovery from a modest-sized service area is adequate to pay for both capital costs and Operations and Maintenance (O&M) of a PRT system.*

*For example, Intelligent Transportation Network System (ITNS) shows what is possible in the Economics section (pages 35 – 37) of the ITNS Business Plan (https://milpitasprt.com/wp-content/uploads/Business_Plan_2019.pdf). By charging a mere $1.10 fare, the company expects to break even on a PRT system with 30 miles of guideway and 60 stations serving 9 square miles. Reasonable underlying assumptions include capturing 20% of trips taken in the service area, and transporting 1.35 occupants per trip over an average distance of 1.6 miles. An offer of off-peak light-freight trips (at $2.50 per trip plus $1.00 per mile) is expected to attract half as much traffic as passenger trips. By adding fares from both sources to advertising revenue of $0.40/pasenger-trip, annual revenue can pay for both O&M and retiring a capital debt of $390M that costs 4.5% annually to service.*

*Due to automation and a low-maintenance design, Operations and Maintenance (O&M) is expected to need 1% - 3% of capital costs rather than the 3% - 5% common in the transit industry. Through both reduced costs and higher service levels, PRT could transform the transit industry while dramatically reducing the sector's carbon footprint.*

*Any for-profit company looking to enter the PRT field is advised to read sections 13 - 19 of the Plan for Commercialization (Contributions to the Development of Personal Rapid Transit by J. Edward Anderson, Volume I, pages 322 – 325, http://www.advancedtransit.org/wp-content/uploads/2016/02/Anderson-JE-Contributions-to-the-Development-of-PRT-I.pdf ) which addresses:*

- *The Potential Market for ITNS*
- *The Gross Profit from Building and Operating PRT Systems*
- *The Size of the Market*
- *Strategy for Market Entry*
- *The Business*
- *How the Enterprise will make Money*

*The Alternative Revenue Streams section of the LoopWorks Business Plan (pages 80 – 83, https://milpitasprt.com/wp-content/uploads/business-plan.pdf ) offers 27 potential income streams grouped into these categories: Advertising, Donations, Community Support, Data Sales, and Add-On Services. LoopWorks anticipates that these added revenue streams will cover O&M for the initial dual-loop system. As the system grows, fares will be charged for trips in and out of the initial area at rates set by the Board.*

**20. What sector best categorizes your startup?** *
*Transportation – other*

**21. What is the status of your product?** *
Pre-prototype
Prototype working in a lab
Prototype working in a real-world setting
LOI for a scale prototype
One commercial deployment
Two or more commercial deployments
Other

**22. Describe the status of your prototype and/or commercial deployment, including the scale (eg. kWh capacity, # of pilot customers, % of full- scale, integrated), how long it has been running (e.g. total time, continuous time, cycles), and who the counterparties are.** *
*In his most publicly acclaimed work, Dr. Anderson designed and supervised the construction of the fully automatic vehicle for a budget of only $600,000 and 6 months from the initial order-to-proceed until operation. The vehicle operated on a 60-ft section of covered-steel-truss guideway at the 2003 Minnesota State Fair 12 hours per day for 12 days with no failures. The system operated exactly as designed.*

*In 1992, Dr. Anderson's PRT system was selected unanimously by a 17-person committee over various bus and rail systems proposed for deployment at the Seattle-Tacoma International Airport. In 1998, his work led to acceptance of his PRT system out of over 60 elevated systems as the preferred technology promoted for the Greater Cincinnati Area by a committee of Forward Quest, a Northern Kentucky business organization.*

*Dr. Anderson is a principal in Intelligent Transportation Network System (ITNS), which owns the 1500-page, 3-volume product of his decades of experience designing PRT systems. Entitled Contributions to the Development of Personal Rapid Transit that multi-volume work provides the details underlying the broad concepts offered in this business plan. Volume 1 is on-line. Volumes 2 & 3 will be provided to LoopWorks after 2nd stage funding is secured.*

*The intellectual knowledge and expertise presented in the 1500 pages of detailed plans and specifications of ITNS are both remarkable and unique. Thus, a financial evaluation of it is not possible. Its value results not only from the direct activity that has gone into it, but in the associated work by many companies and governments without which ITNS could never have been developed. Building upon that intellectual foundation, LoopWorks will implement the physical reality of their PRT vision.*

**23. What are the performance and cost metrics you must hit to be competitive (e.g. $/kWh, C-rate, model accuracy)? How well does your current product perform according to those metrics? ***

*To be competitive with public transit is a low bar. For example, bus service in Milpitas costs users $2.50 per ride – and costs taxpayers an additional $16.60 to cover the other 85% of the overhead. On average, directly generated revenues, including passenger fares, fund 21.9% of public transit operating expenses for urban agencies in the U.S. – leaving 78% to be covered by federal, state, and local dollars. [https://www.transit.dot.gov/sites/fta.dot.gov/files/2022-01/2020%20National%20Transit%20Summaries%20and%20Trends%201-1.pdf ] Thus, to be competitive with public transit simply requires that PRT not require an additional $3 or more subsidy for every dollar collected in fares. As a rule, breaking even – not requiring a subsidy at all – is not possible with currently deployed technologies. The closest in the United States is the New York City Subway, which brings in about three-fourths of the system's ongoing operating costs.*

*PRT, however, has the potential to break that rule. Intelligent Transportation Network System (ITNS) shows what is possible in the Economics section (pages 35 – 37) of the ITNS Business Plan. By charging a mere $1.10 fare, the company expects to break even on a PRT system with 30 miles of guideway and 60 stations serving 9 square miles.*

*To be competitive with commuter rail is even easier. As shown at https://milpitasprt.com/wp-content/uploads/wide-area-PRT-coverage.pdf, covering 25 square-miles with PRT service will require 110 miles of guideway and cost $1650M (or $1.65B) at $15M/mile. Serving 4X the area, 100 square-miles, is estimated to cost nearly $7000M ($7B). To make a comparison, consider the proposed BART underground extension (BART Burrow) that will provide 4 stations along a 6-mile corridor for $7B ($7000M). A visual of the dramatic difference is presented here: https://milpitasprt.com/wp-content/uploads/BART-PRT-flyer.pdf .*

**24. What needs to happen for your product to achieve the desired performance and cost benchmarks (e.g. economies of scale, technical breakthrough)? How and when will that occur?** *

*What is needed is an institutional breakthrough. PRT has been technically and financially viable for the past 40 years, but institutional inertia and fear of political consequences has impeded progress. To reduce fear and avoid institutional resistance, LoopWorks will use 3 innovative strategies:*
*1) Use a vehicle design that minimizes guideway size and markedly reduces cost.*
*2) Adopt a California Mutual Benefit Corporation legal structure to provide flexibility and transparency unavailable through governmental, for-profit, and tax-exempt corporate structures.*
*3) Seek gratis/free funding from foundations, investment groups, and government agencies (federal/state) for designing and building the system in order to minimize delay and ensure financial viability.*

*LoopWorks expects a breakthrough that makes a significant advance in 1 of 3 primary resource areas will precipitate advances in the other 2. The 3 resources LoopWorks needs to accomplish the initial dual-loop PRT system are funding, easements from property owners, and public support.*

**25a. Have you hit first commercial revenue (not including grants, loans, etc.)?** *
*No*

**25b. If you didn't, when do you plan to hit the first revenue? ***
*More than 18 months*

**26a. Have you received investment for this company?** *
*No*

**27a. Have you received capital raised through grants, accelerators, and/or other forms of non-dilutive money?** *
*No*

**28. What is your current monthly cash burn rate?** *
*Less than $50,000*

**29a. With which of our corporate partners would you be interested to pursue a pilot, product sales, or other commercial partnership?** *
(Please list all that apply)

AT&T
Berkshire Hathaway Energy
BHP
BP
ENGIE
Envision
FedEx
Microsoft

Shell
Wells Fargo

**29b. What type of partnership deals do you imagine?**
*The tremendous potential of PRT warrants gratis funding from either philanthropic organizations or investment groups more focused on emissions reduction potential than short-term profits. Any organization partnering with LoopWorks agrees that this project will provide transit experts and decision-makers with real-world data. That data and the knowledge we gain from building this initial PRT system is the biggest payoff to investors.*

*In exchange for financing, LoopWorks will establish monitoring metrics for both performance monitoring and reporting purposes. As the first ITNS-based PRT system built in the world, nearly every fact about the system will be useful to others considering PRT for their own applications. Therefore, keeping detailed records will be invaluable. In addition to standard census data, accounting figures and design specifications that will be a part of building the system, details about operations and maintenance will be recorded. Involving an independent third party to verify and record such information will help ensure the integrity of the data.*

**29c. When would be the best time for a serious conversation with these corporate partners?** *
*We're ready now*

**30a. How much are you looking to raise next?**
(Please input in USD)
*$600,000*

**30b. Which round would be your next raise? ***
*Pre-seed*

**30c. When do you anticipate your next raise to close?** *
*In 3-6 months*

**31. What support are you looking for from D3 during the 18-month program?** *
(Select max 5)

Corporate pilots
Commercial service provider agreements
Strategic investment
Non-Strategic investment
RMI network/policy insights
Cohort/Startup networking
Mentorship
D3 convertible note
Other

**31b. If you selected other, please briefly describe the support you are looking for.**
*LoopWorks welcomes any effort that adds credibility and support for the project including 1) write a letter of support (https://milpitasprt.com/support-prt/#write),*

*2) inform any foundations on this list (https://milpitasprt.com/support-prt/#foundations) of the potential of this project to reduce $CO_2$ emissions,*
*3) become a Community Member (https://milpitasprt.com/support-prt/#community), and*
*4) recommend someone to take on the role of LoopWorks President who can do public presentations and lobbying of stakeholders. See the answer to 17b for details.*

**32. Is there anything else you would like to share with us to differentiate your application?**

*D3's use of Direct Mitigation Measures (DMMs) favors PRT technology. The Climate Crisis already impacting our lives requires a dramatic reduction in $CO_2$ emissions – which PRT promises. Emissions (DMM 1) are reduced through the use of electricity to move people around the service area. A PRT system also opens up innovative and long-lasting solutions for moving freight, recyclable materials, and garbage – leading to more reductions in $CO_2$ emissions.*

*DMM 2, efficiency-improving solutions that reduce resource consumption, recognizes a world of resource limits that requires innovative and frugal ways of using those physical resources. Rather than electrify privately-owned cars that sit idle 95% of the time, PRT electrifies a high-use, community-shared transit system that offers quick, efficient trips around its service area.*

*DMM 3 is an "add-on" product/service that improves the performance of another low- or net-zero-GHG solution. Studies show that when included with existing public transit options, PRT induces far higher ridership of all low- or net-zero-GHG public transit (https://milpitasprt.com/technology/service-levels/#ridership). As shown in this chart (https://milpitasprt.com/technology/service-levels/#share), PRT service is expected to dramatically increase transit ridership by factors 2X to 10X. Such a utilization increase in existing transit assets has a knock-on DMM 2 effect due to higher use of existing public transit resources.*

---

https://www.third-derivative.org/startup-application?submissionGuid=848a89bd-fb23-451e-83e8-71389df711ff
Thank you for applying! Your application has been received. Please join the New Energy Network slack for program announcements, direct messages and other opportunities from our global network: http://bit.ly/_JoinTheNetwork_

---