



## ATN Development and Demonstration Program and Partnership

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### Overview

The **Automated Transit Network (ATN) Development and Demonstration Program** is a means to establish the *value* of ATNs and reduce the technical, acceptance, and revenue *risks* associated with their introduction. Its goal is to mature as quickly as possible the ATN concept, technology, business case, codes and regulations, supply base, and planning/acquisition capabilities and methods – that is, to create a market for ATNs as a viable transit alternative.

The Program is one of a portfolio of programs that Urban Systems Laboratories, a California non-profit corporation, proposes in its mission to assist government in the conceptualization, development, and acquisition of advanced, large-scale infrastructure technologies.

The **ATN Development Partnership** is a public-private partnership organized in a manner similar to that of large-scale science programs. It is composed of public and private sector participants that stand to benefit directly from the Program, and others that share an interest in its goals and wish to play a significant role in its structuring and execution.

A principal goal of the arrangement is to establish key municipalities and regions - those we call Pathfinders - as *drivers* of ATN technology rather than its mere consumers. The approach will afford Pathfinders new capabilities (and resources) to assess and articulate their technological needs in the form of system requirements and specifications, and a means to evaluate and ensure safety, reliability, and economic performance. They will thus be able to engage securely and productively with both the developers and the financiers of ATN systems to rapidly advance ATN technology.

**Urban Systems Laboratories** will anchor the effort by providing trusted multi-disciplinary R&D, systems, and economic analysis, evaluation and test, regulatory coordination, program management, and fundraising functions on behalf of the Partnership. These essential services along with the structure and focus provided by the overall approach will attract the considerable resources necessary to introduce and mature ATN technology.

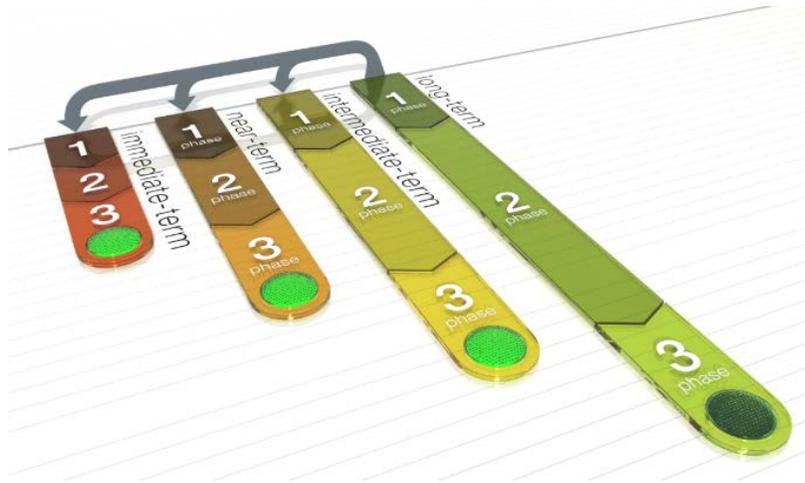
### The Program

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The ATN Development and Demonstration Program is designed to overcome a plethora of seemingly intractable issues that have been impeding the market introduction of ATNs. It does so in part by establishing precursor ATN projects *identified strictly as demonstrations or pilots as part of a clear and unambiguous technology maturation program*.

Municipalities will specify the requirements for and host (i.e. provide right-of-way for) these demonstration systems. They will be financed via a Partnership Trust or other appropriate mechanism with funds raised from a variety of sources, public and private. This approach will allow for the building of pilots on a specified-source basis, enabling the necessary evaluation of a number of design approaches and the identification of appropriate applications as part of a rational (i.e. coordinated) and relatively speedy overall technology maturation process.

Depending on the application and on expectations regarding future expansion, pilot systems will, after their service as demonstrations, be either decommissioned and replaced, or commissioned as long-term stand-alone solutions.<sup>1</sup>



- Multiple demonstration tracks (multiple demonstrations per track) of increasing complexity and performance leading to a final track of a mature, open, ATN specification *capable of broad-area service*
- Up-front “backcasting” evaluation to establish value of fully-realized ATNs in non-proprietary, objective terms - crucial to the acquisition of significant funding and investment
- Multiple-phases per track:
  - planning
  - research, development, test, and evaluation (RDT&E)
  - demonstration and validation (D&V)
- Comprehensive technical and economic analyses, regulatory coordination, and standards development; numerous early study and R&D opportunities
- Stringent safety and reliability testing
- Integral fundraising and education/public outreach efforts
- Establishment of Regional Development Centers (laboratory + integration & test facilities)

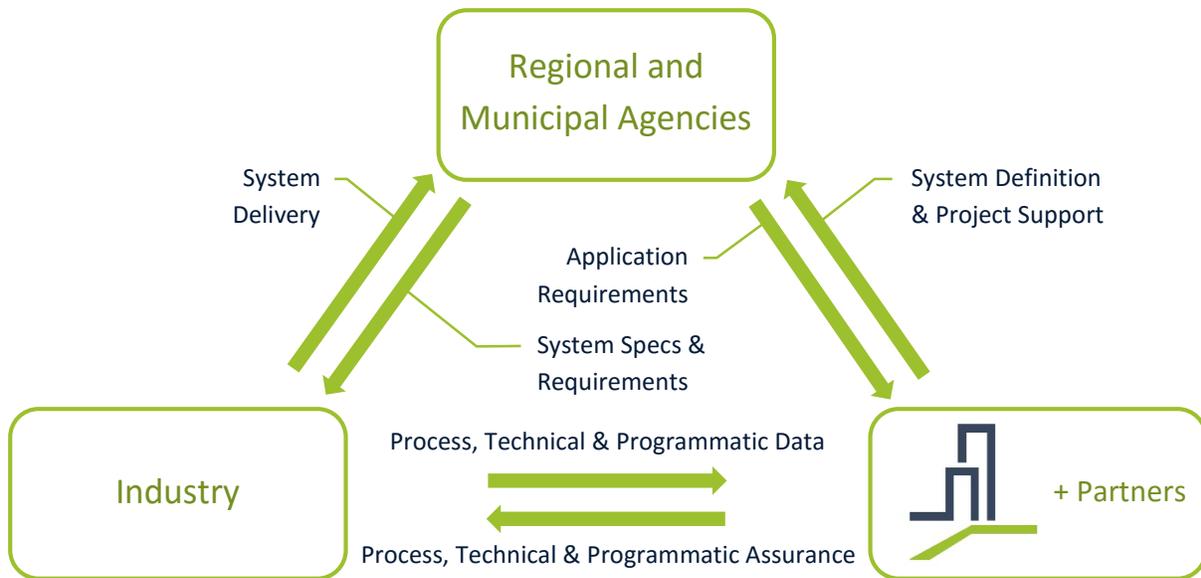
## The Partnership

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Exploratory discussions with government agencies and private investors strongly suggest that a well-planned, well-managed, and comprehensive technology development effort is likely to garner both the political and financial support necessary to fully develop the ATN concept. The ATN Development Partnership is a formal (i.e. governed by formal bylaws and other agreements) public-private technology development partnership designed to provide the necessary structure, focus, and leadership for such an effort.

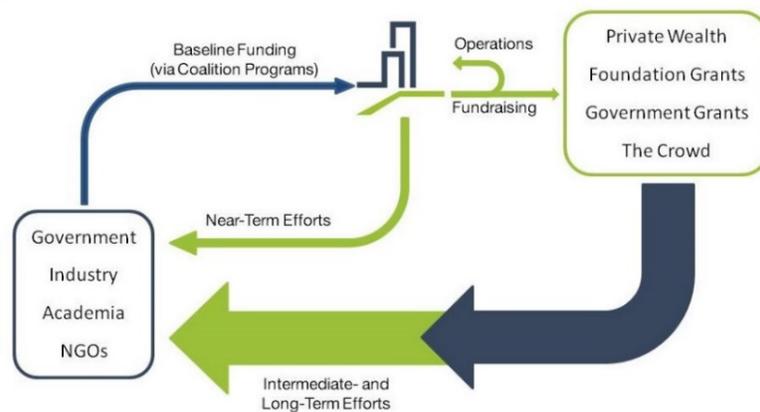
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<sup>1</sup> A number of options regarding preparatory actions (e.g. CEQA and CPUC review) to support ex post facto commissioning (e.g. long-term operation, transfer of system ownership) will be pursued.



- Trusted 3<sup>rd</sup> party model to maintain objectivity and arms-length public-private relationships
- Technology development based on transit needs
- Public and private participants contribute expertise and staff time to the structuring and execution of the Program, regulations development, and fundraising efforts
- Pilot projects open to Partnership members; transit agencies may elect to consider members having participated in process as a-priori qualified suppliers for post-demonstration-program procurements
- Urban Systems serves as program manager, independent evaluation/testing, demonstration system architect/integrator, regulatory coordinator, fundraising lead; represents public interest
- Organizationally similar to BART development approach<sup>2</sup>

Partnership members provide early baseline financial support to fund the initial technical, economic, and planning work that will be used to justify acquisition of the more substantial funds needed to mature the technology and finance the Program's large-scale testing and demonstration phases.



<sup>2</sup> BART was developed by a three-county San Francisco Bay Area Rapid Transit District managed by a joint venture of three private construction firms with funding from a sales tax.

## Summary of Benefits

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- Ensures representation of the public interest
- Provides regional and municipal agencies with the assurance and capabilities needed to enable their essential participation in the development process
- Firmly establishes the performance/cost characteristics of ATN systems, identifies appropriate applications, and reduces technical, acceptance, and revenue risk
- Ensures safety, reliability, and business case viability via independent analysis, evaluation, and test
- Overcomes first-adopter risks in order to conduct demonstrations more quickly
- Reconciles near-term projects with long-term standards development
- Provides substantial public education, fundraising, and investment value; provides visibility
- Provides near- and long-term revenue and economic development opportunities
- Protects proprietary information
- Provides a more certain and timely pathway to mature ATN designs, standards, industrial capability, and procurement capability

## Rough Schedule

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### Phase 1 (1+ yrs.)

1. Acquire bootstrap funding; negotiate and execute formal Partnership structure and agreements
2. Ensure Partnership and Program Plan compliance with all state and federal laws and regulations
3. Acquire startup funding; initiate Urban Systems operations
  - a. fast track core staff/staff exchange agreements; establish regional operations office
4. Initial analysis & planning forms basis of major fundraising activity
  - a. Establish capabilities baseline (incl. proprietary)
  - b. Integrated technical and economic analyses
  - c. Near-term demonstration projects; intermediate & long-term (i.e. broad-area) applications
  - d. Regulatory/certification plan
  - e. Identify Regional Development Center (laboratory and test) site options
5. Pathfinder/Partnership building; Phase 2 fundraising

### Phase 2 (2+ yrs.)

1. Establish test facility; begin operations
  - a. multi-scale prototype RDT&E
  - b. regulatory certification testing
  - c. physical simulation for human factors, design requirements, and economic risk reduction
  - d. education and public outreach
2. Phase 3 fundraising

### Phase 3 (3+ yrs.)

- Full-scale, revenue service, demonstration/validation projects