Using Partnerships to Power a Smart City: A Toolkit for Local Communities

NOVEMBER 2016
# CONTENTS

**INTRODUCTION**

Why Partnerships Are the Foundation of Smart Cities..................................................2
Developing a Partnership Strategy..............................................................................3
Building Successful Partnerships..............................................................................3

**STEP 1: UNDERSTANDING TYPICAL PARTNERSHIP STRUCTURES** ................................4
Private Sector-Led Partnerships..............................................................................4
Government-Led and Private Sector Supported Partnerships...............................4
Government-Led and Non-Profit Supported Partnerships..................................4
Joint-Ownership Model.........................................................................................4

**STEP 2: SELECTING THE RIGHT PARTNERS**.................................................................5
Assessing Strengths..............................................................................................5
Categories of Partners.........................................................................................6
The Selection Process..........................................................................................7

Step 3: **DETERMINING EACH PARTNER’S CONTRIBUTION** ........................................8
Mapping Contributions.......................................................................................8
Funding..............................................................................................................8
Inventory of Assets............................................................................................8
Assessment of Resources.................................................................................8

Step 4: **DEVELOPING THE PARTNERSHIP FRAMEWORK** ..........................................10
Developing Formal and Informal Partnership Agreements..............................10
Assessing the Regulatory and Operational Context.......................................10
Maintaining Strong Partner Relationships......................................................11
Conclusion..........................................................................................................11

**APPENDIX A: PARTNERSHIP ASSESSMENT CHECKLIST** .............................................12

**APPENDIX B: PARTNERSHIP CONTRACTS & AGREEMENTS** .....................................13
INTRODUCTION

Many cities and local communities are eyeing advances in technology as a way to increase efficiency, reduce costs, and improve quality of life for their residents – all in the face of shrinking budgets. They are seeking to become “Smart Cities” by embedding new digital technologies into municipal infrastructure. The range of smart-city solutions includes smart grids, intelligent transportation systems, connected street lighting, and remote healthcare to name a few.¹

By investing in smart-city infrastructure today, local governments will be laying the foundation for the sustainable societies of tomorrow. But many municipalities lack the resources and in-house expertise to develop, deploy, and operate large-scale technology projects. One way to meet these challenges is to harness the resources and strengths of private-sector stakeholders – innovators, businesses, anchor institutions, educators, and more. Private-sector partners can be an important source of funding, technical knowledge, continuing innovation, and workforce development.

This Toolkit is for government officials, urban planners, citizen groups, and others who want to implement successful smart cities projects. Drawing from lessons learned, it provides a framework for getting the most out of public-private partnerships, including what to look for in a partner, assessing each partner’s contribution, and guidance on how to structure the most fruitful partnership agreements. The Appendices provide helpful checklists to use during the planning process. Our goal is to equip communities with the know-how to build long-lasting partnerships that contribute to vibrant and sustainable smart cities.²

Why Partnerships Are the Foundation of Smart Cities

Partnerships drive successful smart city initiatives because each partner contributes unique knowledge and expertise to the project. In addition, although local, state, or federal funding may be available to support smart cities projects, those funds rarely cover the entire cost. Partners can provide additional resources that help defray capital expenditures. Collaborating with multiple partners also increases operational efficiency, broadens technical expertise, and increases buy-in from the broader community. The types of benefits partners can provide include:

- **Cost-sharing:** Certain communities, particularly those in rural areas, might have significantly higher infrastructure deployment costs due to low population density or challenging terrain. Forming a partnership with a cost-sharing component can help defray these deployment costs and might provide access to new cost-saving technology, such as digital sensors that communicate remotely with healthcare professionals.

- **Increased revenue potential:** Private-sector partners might provide ideas or assets that could enhance revenue potential.

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2. Additional assistance to local communities is being led by the Commerce Department’s National Institute of Standards and Technology (NIST) through the Global City Teams Challenge (GCTC). GCTC is a collaborative effort to bring together two key groups – communities with challenges and innovators with the technology to overcome them. GCTC’s long-term goal is “to establish and demonstrate replicable, scalable, and sustainable models for incubation and deployment of interoperable, standard-based Internet of Things (IoT) solutions and demonstrate their measurable benefits in Smart Communities/Cities.” Over 120 cities and communities are collaborating with more than 300 companies and universities. For more information, see: https://www.nist.gov/el/cyber-physical-systems/smart-america/global-cities.
Expertise and support: Partnerships with commercial entities can supplement public funding opportunities, provide workforce training, and offer technical assistance among other things. A partner might contribute specialized knowledge to enhance the project.

Institutional collaboration: Partnerships with community institutions (e.g., schools, libraries, nursing facilities) offer the opportunity to increase citizen engagement and participation and build greater support for the project.

Developing a Partnership Strategy
Questions to ask during the planning stage when developing a partnership strategy:

- What are the areas of highest need?
- Which project functions would be better implemented through a partnership model versus a contract with a vendor?
- What types of partners would add the most value?
- What criteria should drive partner selection?
- What methods should be used during the selection process?
- What kind of relationship should be formed and how should it be formalized?

Building successful partnerships requires the following:

How Can BroadbandUSA Help?
NTIA’s BroadbandUSA program provides expert advice and field-proven tools for assessing and improving broadband access and digital literacy, and engaging a wide variety of partners in broadband projects. BroadbandUSA also brings stakeholders together to solve problems, improve broadband policies, share best practices, connect communities to other federal agencies and funding sources, and improve coordination among agencies. BroadbandUSA offers online and in-person technical assistance to communities; hosts regional workshops around the country; and publishes guides and tools that provide communities with proven solutions to address problems in broadband planning, financing, construction, and operations.

If you are interested in receiving assistance from BroadbandUSA, please contact us at BroadbandUSA@ntia.doc.gov or 202-482-2048. For more information, visit our website at www.ntia.doc.gov/broadbandusa.

BroadbandUSA is publishing a series of guides and tools for communities determined to take steps to secure the robust broadband services and digital literacy skills needed to compete in today’s global economy. These publications provide practical advice for developing programs that will meet the needs of communities:

- Introduction to Stakeholder Outreach. Learn how to engage local stakeholders to increase project awareness and involvement. go.usa.gov/xKtAe
- Planning a Community Broadband Roadmap. Learn to develop a Community Broadband Roadmap to help plan new broadband initiatives. go.usa.gov/xDQN4
Step 1: Understanding Typical Partnership Structures

Partnerships take many forms. Here are four of the most common models. Many projects combine elements of all four models:

- Private sector-led partnerships
- Government-led and private sector supported partnerships
- Government-led and non-profit supported partnerships
- Joint ownership

Private Sector-Led Partnerships
In this partnership structure, private companies — e.g., equipment vendors, developers, technology firms — lead the project and provide the expertise and resources needed to implement a community’s smart city plan. The role of local governments, community anchor institutions, and economic development authorities is to provide the vision, strategic plan, facilities, framework, and metrics. They also assist with the project by, among other things, aggregating demand, engaging local residents, and making a long-term commitment to utilize the services provided by private-sector partners.

Government-Led and Non-Profit Supported Partnerships
In this type of partnership, a government entity takes the lead and partners with other city agencies or non-profit organizations to provide community services.

Joint-Ownership Model
Under this structure, private companies and the public entity jointly invest in the underlying infrastructure. All partners contribute a mix of financial, in-kind, and other support to build and operate the smart cities project.
STEP 2: SELECTING THE RIGHT PARTNERS

Strategic partnerships enable local governments to join forces with partners that have common interests and can contribute valuable resources and expertise. When selecting partners, it will be important to:

- **Pick partners carefully**: A prospective partner’s experience, credibility, management and operational capability, financial standing, and ability to carry out the work on the scale required by the project should be evaluated carefully. Communities will need to investigate and assess a prospective partner’s skills, experience, and cultural fit with local government and other organizations involved in the project.

- **Offer champions**: A key role in partnership development: Advocates from community anchor institutions, universities, non-profits, and local government agencies can encourage interest in smart cities, build demand for consumer participation in specific initiatives, and provide access to valuable partners. Advocates involved in the project planning or development process will be more invested if their input is included in the objectives and terms of the partnership agreement.

- **Engage a comprehensive set of partners**: A broad set of commercial, government, and community partners provides advantages in executing ambitious projects and ensuring long-term sustainability.

Assessing Strengths

Partnerships must offer value to all parties to be successful. Selecting the right partner or partners will accelerate near-term results and increase the likelihood that the project will grow, expand, and be sustainable over the long term. During the selection process, consider whether a particular partner can help increase:

- **Awareness**: A prospective partner’s marketing expertise might be able to improve credibility and awareness of the service a community is offering or implementing.

- **Market reach**: Leveraging a partner’s customers, geographic service area, or knowledge base might facilitate the delivery of services to places or people that a community is trying to reach.

- **Expertise**: Gaining access to a partner’s physical assets, expertise, cost-saving technologies, etc., can play a critical role in reducing expenses and accelerating the deployment of new services.

- **Funding or in-kind contributions**: Financial support from a partner and its suppliers, or in-kind contributions in the form of research, training programs, and other assistance, will help increase a project’s long-term sustainability.

- **Operational efficiency**: Combining efforts with a resourceful partner can improve the project’s effectiveness and value to the community.

- **Quality**: Joining forces with a trustworthy and experienced partner that can be used as a sounding board will improve the overall quality and worth of the project.
### Categories of Partners

The following chart lists examples of partners and the resources and expertise they offer.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Examples</th>
<th>Partner Role</th>
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<tbody>
<tr>
<td><strong>Institutional Partners</strong></td>
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| Educational institutions and networks | Universities and colleges  
Tribal institutions  
Local school districts  
University extension offices | Education and workforce training  
Outreach and services related to digital inclusion  
Research and testbeds  
Participate in smart cities projects |
| Libraries                           | Local libraries  
State libraries | Offer community outreach and digital literacy expertise  
Host smart cities health, education, and workforce development programs |
| Healthcare institutions              | Private hospitals  
Public hospitals  
Clinics | Sponsor smart cities telemedicine projects that include rural areas  
Participate in smart cities projects |
| **Government & Community Partners** |                                                                          |                                                                              |
| Economic development organizations  | Local  
Regional  
State  
Federal | Identify champions for smart cities projects  
Provide long-term planning for local and regional projects  
Identify needs, resources, partners, and potential users  
Promote smart cities projects |
| Community non-profits and anchor institutions | Neighborhood and community centers  
Community-based organizations | Identify and market to target community and end users  
Provide facilities and staff for training  
Help with planning and encourage community participation |
| Governments                         | Consortium of local governments  
State governments  
Inter-state collaboration where users cross state lines  
Federal agencies | Participate in planning and implementation  
Develop plans to scale successful projects  
Develop and use municipal and public safety applications  
Provide funding and loans  
Conduct research on spectrum use, smart cars, energy, transportation, science, telecommunications, etc. |
| Foundations                         | Private/non-profit foundations | Funding and support  
Promote the benefits of smart cities |
| **Private Sector Partners**         |                                                                          |                                                                              |
| Private sector partners             | Sector-specific industries (e.g., telecommunications, utilities, transportation, entertainment, etc.)  
Internet platforms, IT, cloud, security, data analytics or other vertical service providers  
Equipment vendors  
Landlords, developers, real estate companies | Infrastructure expertise and facilities  
Capacity, networks, services, operations  
Workforce training  
New technology  
Cost-saving solutions  
Funding, capital investment, cost-sharing  
Risk management |
The Selection Process

Federal, state, tribal, or local laws and policies may govern the partner selection process. If funding sources are from grants or loans, local governments should check applicable laws or requirements for guidance about selecting and implementing partnerships.

Partnership selection might begin through collaboration on a new smart cities project or a Request for Proposal (RFP) or Request for Information (RFI), which specifies what the government seeks in a partner. The potential partner is asked to explain how the arrangement will meet government needs for the project. A formal RFP or RFI might not be suitable for every project, but the framework and questions serve as a guide for soliciting important information about a prospective partner.

Through the RFP or RFI process, each potential partner provides the following characteristics from its own perspective: capabilities, experience, relationships, expertise, and resources. Project leaders must determine whether the partner has:

- The requisite knowledge, skills, personnel, services, capacity, equipment, or resources for the project
- A proven record of performance and the capacity to scale the project in a timely, appropriate manner
- Fiscal stability and strong management
- A shared vision for the project
- A clear vision for the scope and timing of the resources it will contribute
- Understanding of why public processes are in place and required

Even if the competitive RFP process is not used, project leaders should still consider the same selection factors.
**STEP 3: DETERMINING EACH PARTNER’S CONTRIBUTION**

An effective partnership spreads the risks and costs related to capital investment, operations, and long-term sustainability among partners.

**Mapping Contributions**
During the planning stage, a useful technique is to draw a graphic illustration of how the funding, resources, services, and assets will flow among the various organizations involved in the project. At a minimum, this mapping exercise should depict the timeline and flows of:

**Funding:** How much will each partner contribute and what will they receive for participating in the project?

**Inventory of Assets:** What assets will each partner contribute and/or own?

**Assessment of Other Resources:** What resources (e.g., facilities, labor, data analysis) will partners provide?

**Impact of Partner Contributions:**
Mapping these contribution flows within the partnership framework will assist the parties in answering key questions about their relationships and agreeing upon commitments before the project begins.

**Funding**
Knowing the timing and scope of each partner’s financial contribution is critical, particularly in capital-intensive infrastructure projects. As funding contributions are mapped out, project leaders need a full understanding of:

+ The source of all funding required to commence and sustain operations.
+ Each partner’s funding commitments and requirements.
+ The precise valuation of each partner’s in-kind contribution (e.g., equipment, service, technology).
+ The agreed-upon timeline of all financial and in-kind contributions (a significant factor if multiple, large contributions are involved).

**The schedule of any payments due.**

**All agreements, formal and informal, relating to deliverables (e.g., services, third-party contractors).**

**All agreements relating to patents or newly-developed equipment, software, or intellectual property**

**Contingency plans if project is not completed on time or runs over budget.**

**Inventory of Assets**
To be successful, partners must reach consensus on the range of details concerning contribution of assets.

+ Which party provides each specific asset and the timeline associated with delivery.
+ Which party owns each contributed asset, the point at which ownership occurs, and whether any transfers of ownership are expected.
+ Which party maintains the collective inventory of assets.
+ Agreements related to the asset-accounting process.
+ Agreements related to distribution, maintenance, accounting, and ownership of assets (e.g., time, activities, accomplishments).

**Assessment of Resources**
Partners often contribute services, such as telecommunications, construction, engineering, planning, auditing, staff support, or customer service. Key points for discussion among potential partners include:

+ The specific resources being provided and the timing.
+ The scope and experience level of supporting personnel and the length and timeline of availability.
+ The customer, monitoring, data analytic, or other services being provided;
+ Any financial services being provided.
+ The timing of the other resources being committed.
Step 3: Determine Each Partner’s Contribution

- How partner services and resources will be integrated with services provided by local governments and other organizations.
- Agreements associated with the resources provided and the timing and duration.

**Additional Resources:**

Partnership agreements should reflect local needs and circumstances. The type of project and partnership model will determine the right blend of experience, qualifications, knowledge, resources, and vision needed for the partnership to be successful. *Appendix A* includes a helpful checklist to use as a tool for assessing each partner’s contribution.
STEP 4: DEVELOPING THE PARTNERSHIP FRAMEWORK

Partnerships with a high degree of interdependency, or where funds are exchanged, require more formal partnership agreements, such as a Memorandum of Understanding (MOU) or a contract. If parties are not transferring funds or assets or the partner’s deliverables are not central to the project’s goals, then a more informal agreement might suffice. Nevertheless, a clear understanding of roles and responsibilities will be important and should be agreed to in writing. The framework for partnerships includes:

- Developing formal or informal partnership agreements
- Assessing the regulatory and operational context
- Maintaining strong partner relationships

Developing Formal and Informal Partnership Agreements

Contracts, MOUs, and other agreements increase the probability of a successful partnership, because all parties understand what is expected. The goal of all partnerships should be to execute a fair deal, known as a “win-win.” When incentives are aligned, conflict is much less likely to arise.

In formal partnerships, the responsibilities are recorded within contracts, grant agreements, or other legally binding documents. Formal partnership agreements are necessary when:

- Funds change hands in exchange for deliverables
- Parties commit to provide assets, facilities, and/or equipment
- Staffing will be provided
- Services or capacity will be provided
- Existing partnerships or contracts with third parties will be leveraged
- Informal partnerships can be important to a project. These arrangements are often implemented without a traditional contracting process and occur in cases where:

- The project can further the goals of partner organizations
- Both parties can mutually aid each other (e.g., announcements in each other’s newsletter)
- The informal partner’s mission is compatible with the project

Even with these informal partnerships, the project’s partnership policy or plan should still specify how the lead organization will maintain these affiliations and any dispute resolution procedures.

Assessing the Regulatory and Operational Context

In order to achieve successful partnership outcomes, local governments should develop a formal framework that entails:

Statutory, Legislative, and Regulatory Context: The state and local statutory requirements for entering into partnerships should be reviewed to ensure compliance. Official action or new legislation might be required. Some states and localities restrict the types of projects that governments can undertake and/or operate. Government sovereignty and indemnification rules and requirements need to be clarified prior to entering into an agreement.

Policy Approach: Reviewing local policies on partnerships will determine if a smart cities policy framework should be developed by the local government – that is, how smart cities applications will be integrated into goals and long-term plans. If a local government has experience with partnerships in an area other than smart cities projects, it is useful to understand any problems that arose and how to build upon what was learned.

Procurement: The procurement rules and regulations that apply to contracts, MOUs, Indefeasible Rights of Use (IRUs), or other instruments used for the partnership should be assessed. As partners are identified and selected, it is crucial to comply with these regulations (e.g., “best value” or “sole source”). A thorough understanding of the required
procurement procedures will help evaluate what each potential partner brings to the table during the partner selection process.

**Operations and Financing:** The existing management structure of the local government will define any operational or financing role a government partner undertakes. This ensures that management is aware of the resources, staff, and financing required and works with local governmental bodies to address project needs on a timely basis.

**Partnership Agreements:** Agreements take many forms, such as contracts, MOUs, and service-level agreements. The agreement should detail the assets, resources, and funding flows for the partnership, reporting requirements, and standard contract terms (e.g., termination, dispute resolution, principal contacts). All financial obligations or critical paths to the project’s success should be documented in the agreement.

**Monitoring and Oversight:** The type and purpose of each partnership will determine the level of monitoring and oversight required; however, most partnerships benefit from establishing a process to report and monitor partner progress and provide oversight.

**Evaluation:** Incorporating project evaluation as part of the partnership plan or agreement greatly enhances partners’ project buy-in and ensures that everyone is aware of the project’s outcomes.

**Maintaining Strong Partner Relationships**

Although trust, mutual benefit, and mission alignment are core components of any partnership, clarity on roles, responsibilities, timelines, and deliverables is critical to the long-term success of these relationships. The best partnerships are purposeful relationships built upon well-defined processes, open communications, and flexibility. Regular meetings, status reports, and progress reports are important tools to ensure partners are on track to meet commitments. Many smart cities projects dedicate a full-time or part-time project manager to track partner obligations, identify issues, and maintain strong communication with partners and vendors. Partners might miss deliverables or commitments, but maintaining regular and frequent communications allows all partners to be responsive to issues before problems occur. Useful communication methods include regular calls, in-person meetings, and written reports on key activities, annual reports, assessments, and audits. The following best practices will help ensure successful long-term partnerships:

- **Designate a lead:** Identify a representative for each partner to participate regularly in group calls or meetings. To avoid misunderstandings, a single person should feel ownership and be held accountable.

- **Establish measures to facilitate coordination early in the process:** Start with a strong understanding of roles and responsibilities. A large number of partners make coordinating the project, resolving conflicts, and governing the operations more complex. A robust governance model will facilitate decision-making and conflict resolution, and foster inclusiveness, transparency, and accountability.

- **Communicate regularly and convey important information and decisions in writing:** Relationships among all the partners should be transparent. The value and relevancy of the partnership should be communicated openly to build support for the project and mitigate potential misconceptions. Communicate regularly through conference calls and at meetings. Memorialize decisions in writing and distribute to all partners so they remain well-informed.

- **Actively manage partnership agreements to reflect changes as they occur:** Monitor progress on milestones and deliverables on a regular basis. No matter how clearly defined roles and deliverables are at the start of the project, expect change. Partnership agreements need clauses that include procedures for managing change and dispute resolution.

- **Listen and build trust:** Relationships grow as partners develop trust.

**Conclusion**

New digital technologies will transform today’s communities into tomorrow’s sustainable and vibrant societies. This toolkit provides helpful guidance for local officials considering public-private partnerships as a cost-effective way to expedite smart city deployment. As outlined above, careful planning, aligned incentives, clear deliverables, and regular communication are all key components to long-term success.

**Additional Resources:**

The checklist in Appendix B is a helpful tool for planning contractual relationships between and among partners. It includes the key components of partnership agreements, although additional components might be necessary depending on the circumstances. Legal advice should be obtained prior to entering into any legal agreement.
APPENDIX A: PARTNERSHIP ASSESSMENT CHECKLIST

Checklist: Partner Assessment

Potential Benefit of Partnership
☐ Expanded awareness of Smart City opportunities
☐ Technical, operational, or other expertise
☐ Access to funding or resources
☐ Vertical program or applications expansion
☐ Client demographic
☐ Geographic coverage
☐ Community awareness and trust or prestige

When a Partnership Should be Considered
☐ The goals are central to another potential partner’s mission
☐ Another organization has more experience in the specific area of need
☐ Partnership enables new Smart City services or initiatives
☐ Partnership increases community support for the Smart City initiative
☐ Both parties benefit from working together

Partner Assessment
☐ Are the parties’ goals, objectives, and timeframe aligned?
☐ For which party is the proposed service or function a core area of expertise?
☐ Will the partnership expand the parties’ reach to constituents and consumers?
☐ Does the partnership expand geographic coverage to the desired market areas?
☐ Will the partnership expand service and/or program offerings and increase the impact of the program in different fields such as education, economic development, or health?
☐ Will the partnership reduce the cost of planning, financing, deploying, or operating the Smart City project?
☐ Which of the parties has a track record for performance and strong references?
☐ Does each partner carry the required level of insurance?
☐ If one of the parties is part of a larger entity, does the Smart City initiative have broader support within that organization?
☐ Do the parties have strong management, organizational capacity, and fiscal stability?
☐ Are levels of personnel appropriate to carry out the work?
☐ Is the governance structure understood?
Appendix B: Partnership Contracts & Agreements

APPENDIX B: PARTNERSHIP CONTRACTS & AGREEMENTS

Checklist: Partnership Contracts and Agreements

Form of Partnership Agreement
- Handshake
- Mutual agreement
- Memorandum of Understanding
- Written contract
- Contract with performance penalties

Legal and Regulatory Context of the Partnership
- Local
- State
- Policy
- Procurement
- Financing parameters
- Operational parameters

Key Components of a Partnership Contract
- The parties involved
- The expectations of the partnership
- Roles and responsibilities
- Expected deliverables
- Project timelines and milestones
- Dependencies and/or risks that could inhibit performance
- Remuneration (e.g., cost-sharing, rates, charges)
- How intellectual property (IP) will be shared and managed
- Procedures for managing change
- Terms for dispute resolution
BroadbandUSA hopes this toolkit provides communities with practical information, tools and guidance to improve partnership outcomes for broadband programs. BroadbandUSA welcomes feedback and requests for other guidance as part of our ongoing support to communities that are advancing the important work to increase broadband access and adoption.

CONTACT US

NTIA’s BroadbandUSA initiative is dedicated to helping communities achieve their broadband missions. NTIA can offer assistance to communities as they plan for broadband efforts, including stakeholder outreach activities. If you have additional questions about the information contained in this guide, please contact us at BroadbandUSA@ntia.doc.gov or 202-482-2048.

ABOUT NTIA

The National Telecommunications and Information Administration (NTIA) is the Executive Branch agency principally responsible for advising the President on telecommunications and information policy issues. NTIA’s programs and policymaking focus largely on expanding broadband Internet access and adoption in America, expanding the use of spectrum by all users, and ensuring that the Internet remains an engine for continued innovation and economic growth.