



Unlocking the Potential: Smart Cities for Small Towns

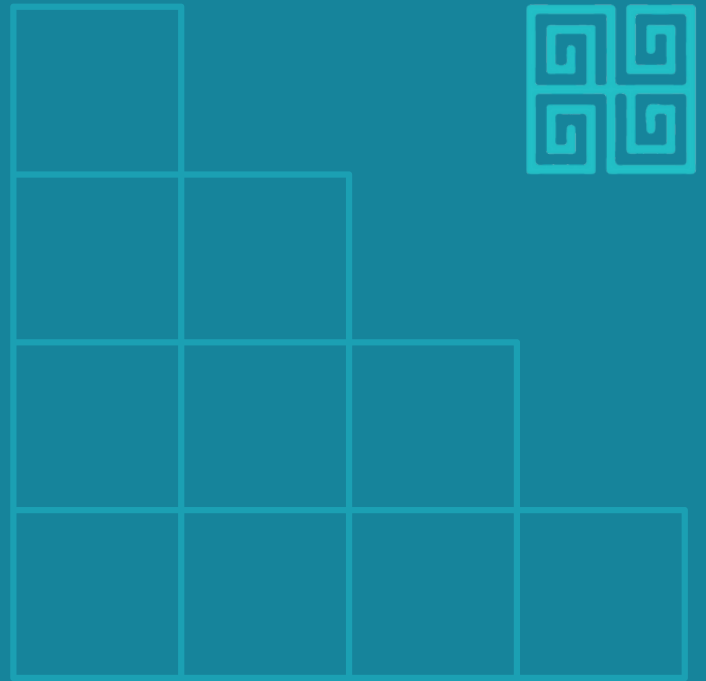
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While much attention has been given to the implementation of smart city solutions in large metropolitan areas, it is equally important to consider their potential impact on smaller towns and communities.

Executive Summary

Small towns are often overlooked in discussions surrounding urban development and smart city innovation.

Yet they possess unique characteristics and opportunities that make small towns ideal candidates for smart city initiatives. These towns exhibit a strong sense of community, close-knit relationships between government and residents, and a desire to preserve their local heritage and values.

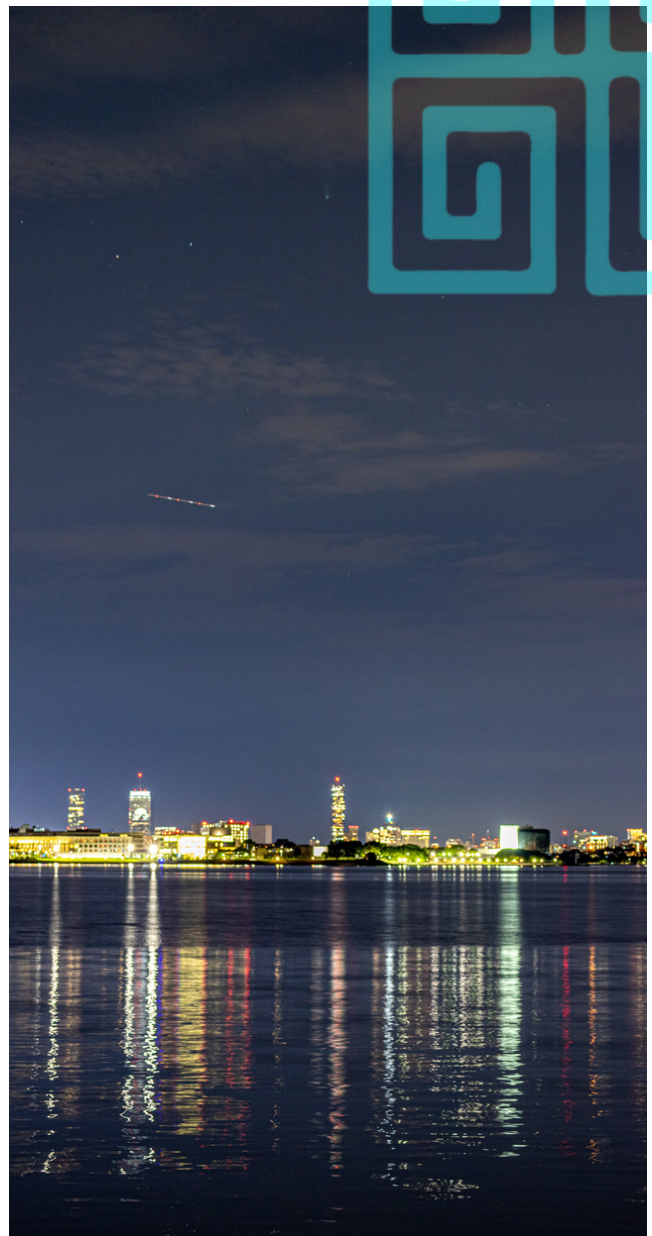
By leveraging technologies that enhance their inherent strengths, small towns can build resilient and prosperous communities for their residents and visitors alike.

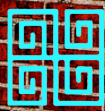
Wikipedia defines a smart city as a “technologically modern urban area that uses different types of electronic methods and sensors to collect specific data. Information gained from that data is used to manage assets, resources, and services efficiently, thus improving operations across the city.”

We think it’s a lot simpler than that. At Manzana, we define a smart city as a community that implements fundamental solutions to:

- Improve city services
- Save operating—and therefore taxpayer—dollars
- Augment a dwindling workforce
- Enhance quality of life for all residents

This white paper highlights a step-by-step Smart Town Framework (the Framework) that communities of all sizes and budgets can follow to develop their own Smart City Masterplan and capitalize on their local initiatives. It was developed to provide guidance and inspiration for town leaders, policymakers, and community stakeholders to take the first steps toward innovation.



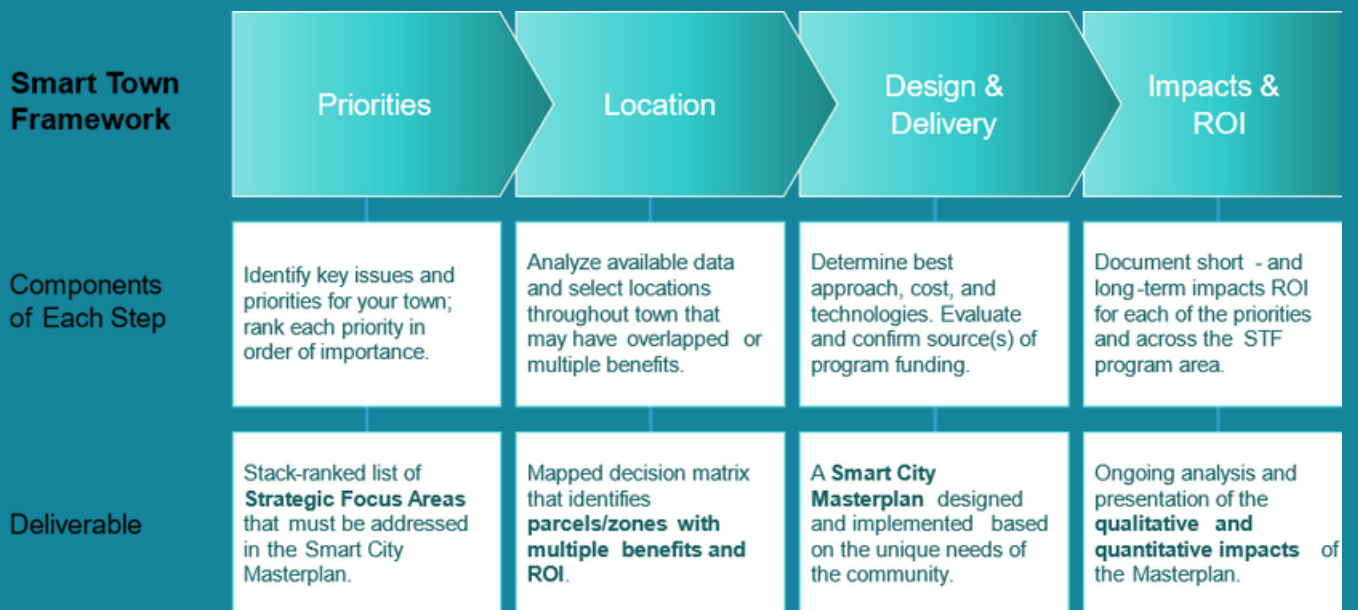


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Introduction

The Framework is a tool designed to evaluate and deliver innovative solutions that enhance efficiency, safety, sustainability, transparency, and infrastructure within the community, and that therefore facilitates a streamlined development of a customized Smart City Masterplan.

The Framework is straightforward and comprised of four key components; each component has a series of subcomponents that help ensure the plan and its execution meet the needs of the town.



Step 1—Prioritization

Prioritization includes understanding—and agreeing upon—your community’s vision and goals, incorporating stakeholder feedback, and drafting a series of Strategic Focus Areas and associated initiatives that could be implemented to support them.

Step 2—Location

Conduct a comprehensive assessment of the community’s current infrastructure, technological capabilities, governance, funding, and available data. The assessment culminates in a mapped decision matrix that identifies locations with overlapping benefits and ROIs of each initiative.

Step 3—Design & Delivery

Develop, finalize, and implement the Smart City Masterplan. The Masterplan summarizes the output of the preceding steps, identifies which initiatives you will pursue, and provides the roadmap you follow as you execute the plan. Delivering on the plan requires funding, resources, and procurement, as well as implementation.

Step 4—Impacts & ROI

In order to ensure the Masterplan is successful, the initiatives are monitored and tracked on an ongoing basis. KPIs, insights from ongoing analyses, and resident/stakeholder feedback are highlighted throughout to ensure the initiatives are successful, and if not, that adjustments are made accordingly.





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Step 1: Prioritization

Prioritization often starts with the town's existing strategic plan, and it also includes engaging with community stakeholders, local officials, and residents to gain a comprehensive understanding of the town's challenges and opportunities, and ultimately its priorities.

The evaluation should include such areas as transportation and parking, infrastructure, energy efficiency, public safety, healthcare, education, economic development, and climate risk.

1

Clarify Your Vision & Goals

Outline the vision statement for your Smart City Masterplan, emphasizing the desired future state of the city, i.e., the definition of success. Define the overarching goals that will help guide the development and implementation of each of the smart city initiatives.

2

Engage Stakeholders

Identify the stakeholders, including representatives of government agencies, residents, private sector partners, and any other stakeholders whose needs and desires ought to be considered throughout the Masterplan development process. Develop an engagement plan and program, as well as a means to effectively incorporate stakeholder feedback into the Masterplan.

3

Develop & Present the Strategic Focus Areas

These focus areas will serve as the guide for developing the core of the Smart City Masterplan. They will be developed based on the outcomes of the preceding tasks and may include—but are certainly not limited to—mobility, sustainable energy, digital infrastructure, climate resilience, tourism, and open data.

Clearly Define Each Strategic Focus Area.

Describe why the Strategic Focus Area is or should be a crucial component of the Smart City Masterplan. Highlight the challenges, opportunities, and potential benefits of the focus area, and explain how it will contribute to the community's vision, goals, and well-being of its residents and visitors.

Strategic Focus Area	City Offices	Stakeholders	Residents	Score
Flooding	65	65	65	195
Traffic	51	65	65	181
Heat Islands	65	50	32	147
New Business	30	56	21	107
Education	23	40	34	97
Parks	25	12	46	83
Affordable Housing	45	7	22	74
Health Services	16	12	29	57
Waste Management	7	4	35	46

It is important to note that each of these factors is unique to each community, so while the overall approach for the framework is the same, the output is different for everyone.



For Each Strategic Focus Area:

Justify the Strategic Focus Area

Describe why the Strategic Focus Area is or should be a crucial component of the Smart City Masterplan. Highlight the challenges, opportunities, and potential benefits of the focus area, and explain how it will contribute to the community's vision, goals, and well-being of its residents and visitors



Define the objectives

Identify the key objectives and outcomes that you anticipate achieving with each Strategic Focus Area. Ensure that the objectives align with the overarching goals of the Masterplan.



Make an action plan

Provide an overview of the strategies and initiatives that will be implemented to accomplish the key objectives, and explain how the initiatives will leverage technology, data, and partnerships to facilitate positive change. If possible at this stage, define specific projects or programs that are or will be in place to address the focus area.



Leverage synergies

Where possible, integrate each Strategic Focus Area with other Strategic Focus Areas within the Smart City Masterplan. By demonstrating synergy between different aspects of the masterplan, you can illustrate how progress in one area can positively impact others. It also enables cross-collaboration and shared resources to minimize cost and maximize overall impact of the initiatives.



Monitor for success

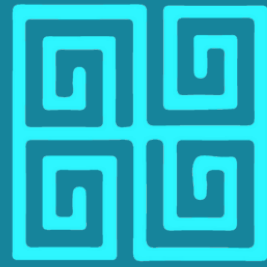
Identify the methods and metrics used to measure the progress and impact of the focus areas. Include the indicators, data sources, and evaluation processes that will be utilized to measure success.





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Step 2: Placement

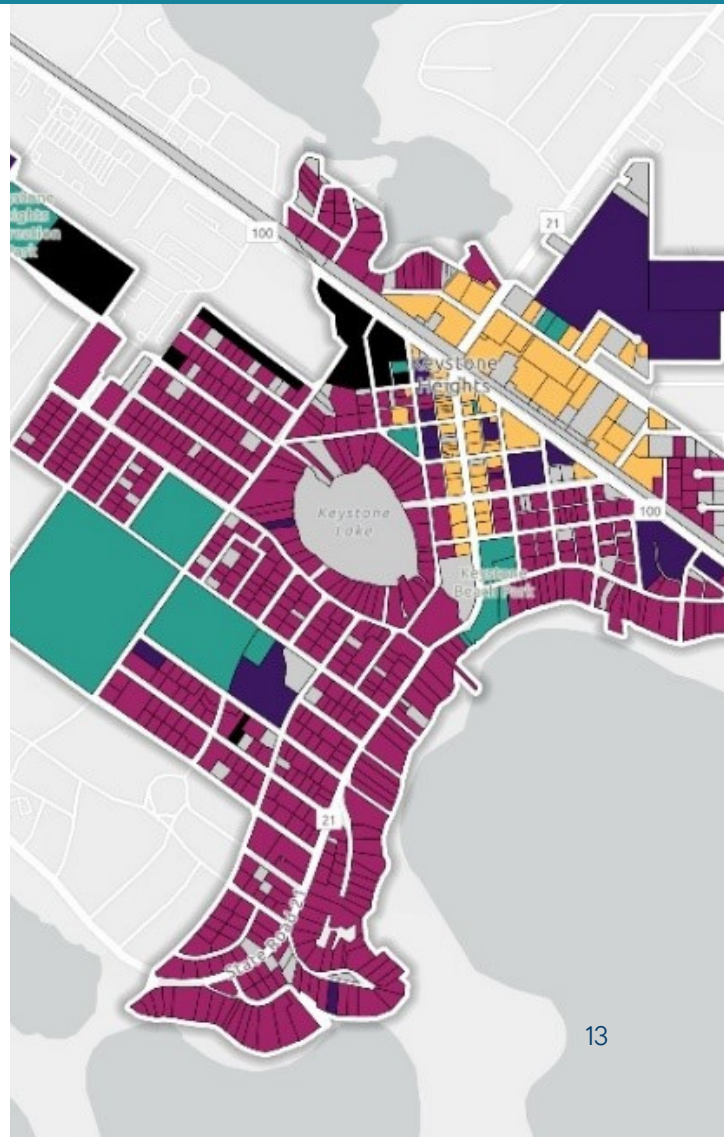


Now that you have the issues identified and prioritized, you need to conduct an objective analysis of community-specific data that allows you to identify areas of greatest impact and highest ROI once the Smart City Masterplan is implemented.

Methodology

Identify available data layers specific to the community, including zoning and land use, climate risk (primarily fires, drought, flooding, and heat), education, transportation, infrastructure, etc., and incorporating additional city-, census tract-, and parcel-level data layers for customized analyses.

For each Strategic Focus Area, data layers can be assigned a weight and combined with other layers related to that focus area. Relative weights highlight locations throughout the town whose characteristics make them ideal candidates for initiatives identified within each Strategic Focus Area. This map clarifies deployment or rollout prioritization.



Return on Investment

A critical next step is determining ROI for each of the initiatives based on the candidate areas identified above. Key steps involved in evaluating ROI include the following;

Identifying Costs

Start by identifying all upfront costs (e.g., city labor, expenses, infrastructure development, technology acquisition, installation, and integration), as well as operational costs (e.g., maintenance, monitoring, and training) associated with each of the initiatives identified to fulfill the Strategic Focus Areas.

Quantifying Benefits

Determine the value generated by each initiative, including cost savings, improved efficiency, enhanced services, economic growth, clean air/water, and better quality of life. Assign a dollar value wherever possible or use other relevant metrics to measure impact.

Defining KPIs

Establish KPIs that align with the objectives of each initiative. Example KPIs might include increased revenue, improved response times, minimized flooding, improved traffic flow, and happier residents. And make sure the KPIs you select are SMART: specific, measurable, achievable, relevant, and time bound.

Estimating Financial Impact

Use financial models to consider both the direct and indirect financial impacts. Direct impacts can include cost savings, revenue generation, or increased tax base. Indirect benefits can include more job opportunities, new businesses, and improved property values. Be conservative and consider the timeframe over which you will realize the benefits.

Conducting Cost-Benefit Analyses

Compare the total costs with the total benefits estimated for each initiative to evaluate financial viability. You may want to consider conducting a series of sensitivity analyses to assess the potential impact of different scenarios on the calculations.

$$\text{Return on Investment (ROI)} = \left(\frac{\text{Amount Gained} - \text{Amount Spent}}{\text{Amount Spent}} \right)$$

Considering Long-Term Sustainability

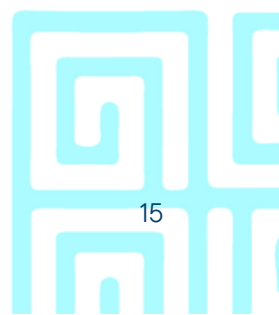
For each initiative you will want to evaluate/understand the durability of any technology used, its ability to adapt to future needs/incorporate changes, and its scalability. These factors lead to understanding future costs (and cost savings), expansion possibilities, and/or revenue generation.



While some of these benefits, e.g., quality of life, may be difficult to quantify, understanding both financial and indirect impacts provides valuable insights into the overall benefit of your initiatives.

Output

Combine your Strategic Focus Area Map with a map of ROI to develop a contextual representation of priority, costs, and benefits, as well as the KPIs you will use to track success. While the map works for you as a comprehensive decision matrix, it can also serve as an excellent tool to communicate your approach with stakeholders and residents.

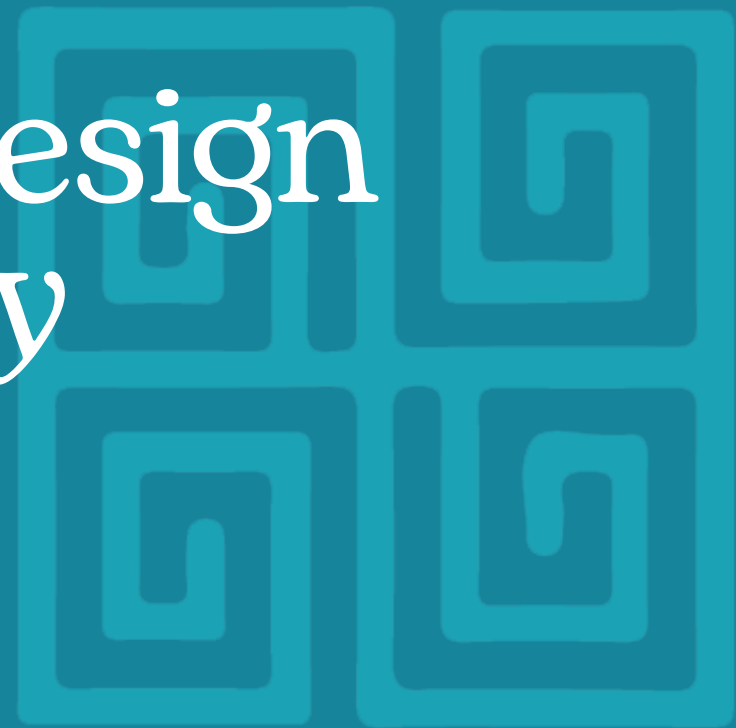




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Step 3: Design & Delivery

Step 3 is a big one! Designing and finalizing the Masterplan provides the roadmap you will follow, and all the reasons why, as you execute your plan.



The Masterplan integrates the output from all of the above tasks. It outlines specific initiatives, projects, and milestones for each strategic focus area and includes timelines, responsible parties, resources/funding, and KPIs to monitor progress and ensure accountability.

The action plan also identifies potential funding sources, the implementation framework, and the roles and responsibilities of different stakeholders involved in executing the Masterplan.

Month	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Task 1: Digital Twin Development										
Task 2: Vision & Goals										
Task 3: Stakeholder Engagement										
Task 4: Assessment & Analysis										
Task 5: Strategic Focus Areas										
Task 6: Monitoring & Evaluation										
Task 7: Action Plan										



Execution

Once the plan is finalized, it's time to execute. Execution typically includes:

1. Acquiring funding, typically via budget appropriations, grants, financing, or public-private partnerships

2. Scoping individual initiatives and developing RFPs

3. Identifying, selecting, and overseeing solution providers

4. Tracking KPIs

6. Creating insights and mapping improvementstst

5. Facilitating public education and engagement



The execution stage can last over several phases of implementation, with the expectation that few communities will be able to implement their entire strategy within a single scope.

Additionally, there is value in taking a phased approach, learning what works well for a specific community, and adjusting subsequent implementations to fit the town's unique personality. As the program scales, approaches can be streamlined to meet the town's operational and political needs.





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Step 4: Impacts & ROI

Perhaps the single greatest key to a successful STF is the ability to communicate insights, make adjustments based on those insights (all KPIs should result in a decision!), and use your findings to design and improve the next set of smart city initiatives quickly, easily, and effectively.

To do this well, the monitoring program should incorporate:

Data Analysis, Interpretation, & Reporting

Regularly analyze the data to evaluate performance against KPIs. Any number of dashboard tools are available to help you run analyses and visualizations that give you insights into trends, patterns, and progress. Additionally, you should be able to spot any gaps or areas for improvement.

Stakeholder Feedback

This feedback provides valuable insights from alternative perspectives, which helps ensure that the initiatives align with community needs and expectations.

Continuous Improvement

Look at the data as a set of facts, embrace the opportunity to change and improve based on those facts, highlight lessons learned both internally and outside your community, and refine and optimize your approach moving forward.

Conclusion

In recent years, the concept of smart cities has emerged as a transformative force, revolutionizing the way we live, work, and interact within urban environments. Smart cities harness the power of technology and data to enhance the quality of life for residents, improve sustainability, and foster economic growth. While much attention has been given to the implementation of smart city solutions in large metropolitan areas, it is equally important to consider their potential impact on smaller towns and communities.

Oftentimes the apparent complexity of implementing smart city solutions—think self-driving cars—pushes even the idea of implementing innovation at a small scale well beyond the grasp of many communities. But it doesn't have to be that way!

Innovative solutions can range from managing available parking, facilitating traffic flow, enhancing public safety, and any number of basic services that enhance the quality of life for residents and visitors. And with a wealth of new technologies—and state and federal funding—available to address these needs, the cost to deploy becomes far more achievable as well.

Get in touch!

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An aerial night photograph of a town, likely a waterfront community, with illuminated buildings, streets, and a dock extending into the water. The scene is dark with warm lights from buildings and streetlights, creating a contrast against the night sky.

"Manzana aims to accelerate the adoption of smart technologies in towns across the U.S., with each solution suite tailored to your community's specific challenges and opportunities. "

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