FULFILLING THE PROMISE:
SEVEN STEPS TO SUCCESSFUL
COMMUNITY-BASED INFORMATION STRATEGIES

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SUMMARY OF PUBLICATIONS*

2006

The Affordability Index: A New Tool for Measuring the True Affordability of a Housing Choice

2005

Federal Statistics: Robust Information Tools for the Urban Investor

Market-Based Community Economic Development

Using Information Resources to Enhance Urban Markets

2004

Using Information to Drive Change: New Ways of Moving Markets

* Copies of these and Brookings metro program publications are available on the web site, www.brookings.edu/metro/umi.htm, or by calling the program at (202) 797-6131.

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ABSTRACT

While some neighborhoods in American cities are resurgent, many others remain stubbornly entrenched in a cycle of underinvestment. A contributing factor is that—despite thriving immigrant populations, high volumes of cash transactions, and relatively stable housing markets—these neighborhoods are victims of an urban information gap which undervalues their commercial potential. The importance of good information for private and public investments is widely acknowledged, but fragmented funding, lack of standards, and spotty data has impeded either effective or universal use of these tools. This paper sets forth seven steps for practitioners and investors to follow in investing in local community information initiatives and, in turn, close the urban information gap and accelerate investment in these markets.

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I. INTRODUCTION

Over the past decade, major technology, market and economic changes have buffeted American cities. Some neighborhoods are in resurgence, often through the efforts of community developers, advocates, philanthropies, retailers, developers and others. But others remain stubbornly entrenched in a cycle of underinvestment--despite thriving immigrant populations, high volumes of cash transactions and relatively stable housing markets. A contributing factor is that these neighborhoods are victims of an urban information gap which undervalues their commercial potential and does not allow them to attract the external investments that they need to prosper. Some communities have used urban information tools to close this gap to help drive change and positive investment outcomes.[1] Communities without this capacity are unilaterally disarmed in the global competition for jobs, capital and progress.

But successfully using information tools to close the urban information gap is not without complications. While powerful new technologies developed over the past decade hold the promise of helping communities attract new capital, their potential to drive investment decisions made in favor of urban neighborhoods has yet to be realized. The importance of good information for private and public investments is widely acknowledged, but fragmented funding, lack of standards, and spotty data has impeded either effective or universal use of these tools[2]. This paper sets forth seven steps for practitioners and investors to follow in investing in local community information initiatives. Using them will spur development of successful community-based information strategies that will meet the promise of closing the urban information gap, spurring accelerated investment in these markets.

[1] See Virginia Carlson and Pari Sabety, “Using Information to Drive Change: New Ways to Move Urban Markets” (www.brookings.edu/metro/umi/pubs/framingpaper.htm) and the complementary monographs by Robert Weissbourd and Ricardo Bodini, “Using Information Resources to Enhance Markets” http://www.brookings.edu/metro/umi/pubs/20050314_inforesource.htm) and “Market-based Community Economic Development” (http://www.brookings.edu/metro/umi/pubs/20050314_communitydev.htm)

[2] In a speech to the Greenlining Institute's Thirteenth Annual Economic Development Summit, Ben Bernanke, Chairman of the Federal Reserve Board, argues that better data on economically distressed communities and better analytic tools are "essential for continued progress in community economic development." http://www.federalreserve.gov/BoardDocs/Speeches/2006/20060420/default.htm

II. THE STATE OF THE FIELD: COMMUNITY-BASED INFORMATION STRATEGIES TODAY

In the past decade, as the information revolution yielded powerful information tools for urban economic development and planning, they seemed to hold the promise of helping neighborhood advocates and academics to better understand the accelerating pace of change in their communities. Local communities armed with information tools could react quickly to change, stem neighborhood decline and adapt their asset-building strategies to the dynamics of new populations and businesses.

In rising to meet this challenge, community information systems have garnered support from multiple sources: government, philanthropy, universities and industry groups. Many of these groups originally focused on analyzing Home Mortgage Disclosure Act data to understand community change. Layered on these applications, many have added datasets from other areas of interest, such as school outcomes, or health and human services data. Municipalities, themselves significant users and producers of community data, also have contributed to the growth of community information systems. Their first priority was to build e-government applications to speed transactions for citizens. Now, some cities are aggregating that data to generate statistical information useful for measuring outcomes and change at the community level.[3]

Moving to the next stage, many community information systems have started using data to develop indicators or "early warning" tools to monitor the harbingers of neighborhood change—from vacancy and abandonment, to investment and gentrification. Today, this is a rapidly growing area--there are over 400 community information systems or indicators initiatives actively operating in cities and towns throughout the United States.[4] But these systems are highly fragmented, making efforts to share data, tools, best practices, knowledge and strategies difficult, if not impossible. Efforts to leverage the investments made in some advanced community information systems so that they can benefit other jurisdictions or be applied to different issue areas have met with limited success.

Information tools developed from these systems are often used to build the business case for return on long-term community investments in infrastructure, amenities and services in the individual market for which they have been designed. But the highly individual, uncoordinated way in which these tools have been developed now stands in the way of allowing them to achieve the payback they should--spanning thousands of communities or hundreds of issue domains in which community groups specialize. While government and philanthropies have invested resources in many discrete information tools to portray or drive change in urban markets, each one has been narrowly developed to solve a particular problem in one place at one time.

Without technical standards, few communities can reuse or derive benefit from tools developed in another area. Best practices are not shared. And many communities never develop the

[3] The CitiStat program in Baltimore has been credited with effectively targeting city services to areas truly in need, and the widely heralded CompStat program in New York has been widely used and imitated to enable flexible response and lower crime.
[4] See "Informing Our Nation" at http://www.gao.gov/cgi-bin/getrpt?gao-05-1

capacity to use or deploy these tools. This fragmented approach has impeded both universal access to a broad range of information tools or the development of a pervasive grassroots capacity to effectively use information tools for community change.

Despite this, a number of communities are showing the way to a more effective approach. With the help of visionary civic leaders, local government groups, city councils, regional planning agencies and universities, they have recognized the importance of information as a broadly supported, widely used, and openly available community asset. In Pittsburgh, this concept has been dubbed an "Information Commons" approach[5]. A broad range of planning, development, advocacy and government organizations in Boston, Chicago, Baltimore, Providence, Memphis, Indianapolis, and Jacksonville sustain long-term initiatives that recognize the value of information as a community asset[6]. A rich store of community-based data and information developed over years of investment allows them to create, validate and support information-based transformational community investment strategies. These strategies are embedded deeply in an understanding of conditions in urban neighborhoods, and allow concrete results and outcomes to be measured. In this way, they have the potential to more effectively target resources and accelerate the pace of private and public sector investment to turn around neighborhoods in decline.

[5] The Information Commons concept was first conceived through the visionary work of Peter Lucas and his "Civium" concept at www.maya.com. It has been implemented through the efforts of a unique local technology intermediary in Southwestern Pennsylvania, www.3rc.org. A new technology tool developed through this collaborative, www.humanservices.net, has been a critical tool for local case workers across a wide spectrum of public and private social service providers.

[6] The Community Indicators Consortium is developing an awards program to recognize communities that have innovatively used indicators projects to spur community change among stakeholders, policy leadership or advocates. See http://www.communityindicators.net/ for more.

III. THE PROMISE OF EFFECTIVE URBAN INFORMATION SYSTEMS

Information is critical to spurring markets and powering investment decisions made in urban markets, whether it is to open a retail location, find a business partner, locate a good daycare center or open a grocery store. Used more widely, intelligently and strategically, information can help to make urban areas compelling places for public and private investment in the next decade and connect low income urban residents to the economic mainstream.

As Doug Nelson, President of the Annie E. Casey Foundation, has observed, "if we are to spur 'transformative investments' and effective urban markets, we need to develop new tools that go beyond the traditional resources and approaches that historically have been used in urban community development." [7] Information is just one of those tools. It supports transformative investments in four ways:

- **Information tools are translators.** Good information tools allow decision makers and civic leaders to translate priorities between subject matter areas and jurisdictions, addressing inter-related community issues, such as healthcare, schools and affordable housing across the silos that afflict many local government organizations and jurisdictions. In 10 "Making Connections" cities, the Annie E. Casey Foundation has supported the work of community groups devoted to measuring progress on key community goals.[8] By making information on outcomes for children and families accessible and available, AECF has changed the way in which health care providers, educators and legislators invest in the services critical to boosting America's most vulnerable populations. The National Neighborhood Indicators Partnership has been a trailblazer in developing systems that track indicators of community progress. The Community Indicators Consortium is an association dedicated to the art and science of building and using indicators in communities.[9] The Key National Indicators Initiative has also been constituted to measure the nation's progress on a wide variety of topics, and expects to move its analysis to a more local level in time. The success of all these initiatives rests on a network of strong community-based information intermediaries with a rich complement of local socioeconomic data. [10]

- **Information tools illuminate a 'systems approach' to community issues.** Information tools can demonstrate the logic behind community change, allowing community organizers to observe trends, track correlates of decline and resurgence, and understand how to intervene

[7] Speech given by Doug Nelson at the Brookings Roundtable on Maximizing Returns to Retail and Commercial Development using Advances in Information, March 21, 2005. Transcript available at http://www.brookings.edu/metro/umi/events/20050322.htm

[8] KIDS COUNT is a $100 million effort that has been documented to change the perceptions of state legislators and congressional leaders, arguably some of the most important investors in direct services and support for low income children in America's cities.

[9] See www.communityindicators.org

[10] See www.aecf.org for Annie E. Casey Foundation's work, particularly in the Making Connections cities and through KIDS COUNT. See National Neighborhood Indicators Partnership at www.ui.org and the Key National Indicators Initiative at www.keyindicators.org

in a particular urban market for maximum return. For example, the Memphis Shared Urban Data System (SUDS) has been able to use a database that unifies criminal justice statistics, home mortgage data, local property transactions and data from government agencies to track patterns of corruption and disinvestment in middle class neighborhoods in Memphis. Rather than taking years to uncover these patterns, they were perceived in a matter of months, and local community organizations were able to develop a proactive strategy to stabilize the neighborhood in conjunction with community development corporations, local banks and Freddie Mac.[11] In this way, information tools allow the discerning organization to respond to the underlying causes of neighborhood change, rather than merely measuring and observing their effects.

- **Democratizing data and using it to create new markets.** New platforms, technologies and tools "democratize" data by making it available to a wide variety of users, not just a narrow group of experts. Under the old model, data and information moved one way up or down a stovepipe--provided by one authoritative source and given to a user. Today, any cellphone or PDA user can upload images and data to a web-enabled application. With these tools almost universally available, one can imagine a not too distant future where the realtime conditions of neighborhoods can be instantly reviewed and updated, annotated and reconfirmed as part of a vital community information system[12]. And this system can become the information "heartbeat" of a community, measuring and displaying change as it happens. In this world, every citizen and resident is a "participant" in the information marketplace. An example of this phenomenon is Living Independently in Los Angeles (LILA). This site allows disabled residents to annotate map locations of ADA accessible ATM locations, bus stops and a myriad of other local resources to continuously and accurately update their status and accessibility.[13] We can anticipate that as technology advances, these innovations will continue to realign the relationships between information providers and users and participants in urban markets.

- **Information to Measure Results and Outcomes.** Robust neighborhood change strategies require good management, robust measurement of actual results and the ability to collect and compellingly describe neighborhood "ground truth". Good information tools help to accomplish all those tasks. Success Measures, recently acquired by Neighborhood Reinvestment Corporation, helps local groups measure their performance for social investment programs through a combination of surveys, neighborhood statistics and other evaluative tools.[14] Several major commercial banks involved in community lending programs

[11] The Memphis Shared Urban Data System is lodged at the University of Memphis and closely linked to Memphis' Urban Child Institute. It has received funding from the Urban Markets Initiative to support its work. This case study is to be documented in an upcoming UMI publication.
[12] Hartford's CityScan handheld monitoring system demonstrates an early application of this type of approach. See http://www.city-scan.com/.
[13] LILA is at http://lila.ucla.edu. Started by the UCLA Department of Urban Planning, it was funded through development funds provided by the U.S. Department of Commerce's Technology Opportunities Program.
[14] Success Measures is now a product of NeighborWorks, more information is available at http://www.nw.org/network/comstrat/measuringWhatMatters/

across the country are working to develop methods by which to measure the performance of their portfolios, believing that its development will be a major competitive advantage for them. The Office of Management and Budget has been investigating ways to use federal statistics on neighborhoods to better understand the payback on Community Development Block Grant (CDBG) and economic development programs.[15] Living Cities, a national collaborative of funders,[16] has invested in Impact Manager to track production by financial intermediaries and community development corporations.[17] All these tools are ways in which better use of information is helping to "tell the story" of neighborhood change.

In these four ways, information tools can drive neighborhood change, and spur public and private investment. Successful communities can use information tools to better see what is happening, understand why, map out how to intervene to change the situation and measure their performance in doing so. But for investors, community supporters and sponsors, it is harder to know how to implement an effective, scalable, community-based urban information strategy. Doing so is critical; many observers agree that the lack of universally available tools to compare and contrast performance across communities has weakened the ability of investors—whether government, individuals or philanthropy--to support the business case for ongoing community investments at the scale and scope to transform our communities in a profound way.

[15] See "Informing Our Nation" at http://www.gao.gov/cgi-bin/getrpt?gao-05-1 p. 90.
[16] Living Cities is an investor collaborative of 15 major financial institutions, foundations and government agencies committed to the revitalization of America's great urban centers (www.livingcities.org)
[17] Impact Manager is a product of B2P, more information is at http://www.b2p.com/

IV. Opportunities to Make Community Information Systems Effective Tools for Neighborhood Transformation at a National Scale

Information technology advances over the past decade have enabled new and innovative approaches to community information systems that have potential to "scale", allowing universal access to these tools at a lower cost than the piecemeal approach used today. But it will require a different way of investing in these tools. Investors must take advantage of the opportunities to: (1) use new models to enable universal access to information tools; (2) leverage open source approaches and tools; and (3) build local capacity of communities to provide and use information tools.

A. New Models to Enable Universal Access to Information Tools

A robust, nationally scalable, community-based urban information system can use an "enterprise" approach to enable diffusion of the technologies, tools and skills to allow thousands of communities to access and use these tools at an affordable cost.

An enterprise[18] approach enables distributed groups to exchange knowledge and collaborate across distances, and different issue or interest "silos". By harmonizing their information systems, networks of community developers can communicate with one another seamlessly. An organization can combine business information generated by one group—say, children's services—with information from another group—say, pre-K and elementary schools--to gain insights into ways to improve school outcomes for a particular group of at-risk youth. Applying the enterprise approach to the world of community development would help CDCs and others better manage their most important asset—community knowledge. They could better understand what other sectors and actors in the market are doing in their neighborhoods, such as neighboring community groups, lenders, realtors, funders and government agencies.

Another positive aspect of an enterprise approach is that it has the potential to provide many community groups more affordable access to better information sources on their communities. For example, multiple sponsors or funders could cooperate to supply software tools and data to a variety of community users requiring different levels of access to those tools, customizing them to meet very local, specific neighborhood needs. Such an approach would at once reduce redundant purchases of expensive data sources and tools, and extend the availability of these resources to multiple groups in various geographic markets at a significantly lower cost. This would enable the funding community to support information initiatives across multiple issue areas, at an affordable cost.

Three simple steps will help investors to leverage new models to enable universal access to information tools community-based information strategies:

[18] Enterprise architecture and concepts like "service-oriented" architecture have been developed in the private sector as a way to leverage components developed by one area of the business, reusing them for other areas of the business, or allowing heterogeneous systems to be linked together in a seamless way.

⇒ ***STEP 1: Invest for scale.*** Every neighborhood should have the information tools they need to adapt to the quickening changes in their local economies and spur market-based community economic development. A transformative community information investment strategy should use an enterprise approach to provide affordable access to a broad range of information resources in all communities.

⇒ ***STEP 2: Invest for replicability and impact.*** Historically, funders have opted to invest in a myriad of "one-off", innovative information tools, typically tailored to the needs of a very specific community application or market. As urban information systems mature, new investments should support the development of community-wide standards, tools and technologies that can be easily replicated from community to community, recognizing that a significant upfront investment may be required to do so.

⇒ ***STEP 3: Make it easy to share data and tools.*** An infrastructure must be built to share data, applications and tools, and spread innovations and resources to many communities easily and cost effectively. Standards must be developed to enable data and tools to be exchanged. An emerging National Infrastructure for Community Statistics has the potential to provide open access to these tools for a broad range of community data users interested in precise data on their neighborhoods.[19]

B. Leveraging Open Source Platforms and Approaches

Advances in information technology, mapping and rendering technologies are reshaping, creating and eliminating information products, markets and services at a rapid clip. New open source players in the market, such as Map Server[20], Yahoo, Google Maps and Google Earth are enabling local community groups strapped for cash to make use of online mapping tools at little or no cost. [21] To quote a recent observer in the trade, "…the availability of high quality and freely available map data and maps over the internet along with open source software (and some creative minds) has finally been the catalyst to unleash a true revolution in the use of digital spatial data." [22] Notable in this regard is Fannie Mae Foundation's extensive investment in KnowledgePlex (www.knowledgeplex.org) and DataPlace. These platforms have led the way by using open source software and building an open architecture platform that allows any user to reuse components of the system on their own websites or embed them within their own information tools.[23]

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[19] See www.nicsweb.org

[20] Developed by the University of Minnesota at http://mapserver.gis.umn.edu/. This system is deployed on Data Place, the data portal for KnowledgePlex is at www.dataplace.org

[21] "Just Googling It Is Striking Fear Into Companies", New York Times, Sunday November 6, 2005.

[22] Quoted from ZDNet's coverage of the O'Reilly Where 2.0 conference June 29-30, 2005. At this conference, the "open source" hacker impact on GIS applications and platforms was heralded as a significant new dynamic in the community information space.

[23] The financial implication of this revolution in geospatial and information technologies is immense. In one Midwestern city, the affordable housing program director estimates that she spent $100,000 in hardware, and $100,000 in annual maintenance to build a community information system from the "bottom up", and customize it for her local applications. Using the tools available on DataPlace, she would have spent about 5-10% of this amount to have tools with the same level of functionality.

To leverage open source technologies to successfully implement community-based information strategies, investors should take a fourth important step:

⇒ ***STEP 4: Embrace open source approaches.*** The increasing availability and functionality of open source tools and applications will continue to transform the cost equation for local groups and boost universal access to mapping tools. An approach that builds on open architecture and data standards will help these legacy systems to gracefully and cost-effectively adapt to technology change.

C. Building Local Capacity to Provide and Use Community Information

With the advent of the information revolution, a live, passionate and very local marketplace of information intermediaries has grown up at the local level. As noted in the opening discussion, these groups are somewhat fragmented. As experts on local information issues, they deeply understand the barriers facing local community developers using information to power change in their communities. Closely linked to neighborhood advocates, chambers of commerce, social service groups and government agencies, information intermediaries provide robust local information about conditions at a neighborhood level to better target resources to those most in need.

Information intermediaries assemble, combine and analyze local community data in service of local community goals. They are based at universities, CDCs, or separate non-profits. Some large communities have numerous information intermediaries, each specializing in a particular dataset or issue area. The most advanced groups got their start through the U.S. Department of Justice's COMPASS program, the Casey Making Connections program, the Knight Foundation or other community-funded initiatives. Indeed, some large communities have numerous information intermediaries, each specializing in a particular dataset or issue area, and performing the vital day-to-day work required to continuously improve the community information asset.[24] But for the vast majority of urban neighborhoods without the resources or the capacity to support such an information intermediary capacity, the urban information gap persists.

The importance of information intermediaries goes beyond the fact that they are often the most sophisticated users of information to drive community change at a grassroots level. They function as conveners, bringing together key players in the community who need to collaborate to build broad-based applications. They develop custom-built information tools, tailored to their local market or application, resulting in highly innovative solutions in many communities, but little replication or diffusion of those innovations to other markets.[25] But without a more broadly based

[24] For National Neighborhood Indicators Partnership, see http://www.urban.org/nnip/ and the Community Indicators Consortium at http://www.communityindicators.net/

[25] The National Neighborhood Indicators Partnership has operated through the Urban Institute for the past 5 years and has provided guidance and information sharing to a small group of 20 partner cities. Over the past 2-4 years, they have focused significant resources on automating and providing access to parcel-based community information systems. With support from the Urban Markets Initiative, they recently have started to focus on ways to develop tools that can be used in multiple applications.

network of information intermediaries, a comprehensive infrastructure, and the pervasive adoption of standard technologies, the funding and investment community will be unable to use information as effectively as they might to catalyze transformative change at a national scale.

Critical to a successful approach to community-based information strategies is the fifth step investors must take:

⇒ ***STEP 5: Build local capacity to provide and use community information.*** If information tools are to meet the promise of spurring transformative investments in communities across the country, the breadth, number, and capacity of these groups will need to be increased sharply. Investors need to provide the support to raise the number of local information intermediaries, and deepen their skills and capabilities. These groups are often the groups that provide the leadership to convene key players in government, social services, community development, industry, retail and commercial development. Without a clear leader in the community on these issues, information projects will struggle for focus and outcomes.

V. CHALLENGES TO INVESTING IN EFFECTIVE COMMUNITY-BASED URBAN INFORMATION SYSTEMS

There are two fundamental data-related challenges for investors in the field of community information: (1) the poor quality of neighborhood data available at low enough levels of detail to be useful for neighborhood action; (2) the complications brought on by the use of two worlds of public and private information on communities, resulting in widely divergent perceptions of neighborhood investment risk.

A. Good Neighborhood Data and Statistics Are Hard to Find

The most consistent, comprehensive and extensive dataset on the demographics and characteristics of communities is found in the decennial census. But the very fact that the census is only taken once a decade means that current data on fast-changing neighborhoods is only available for a limited time.[26] While this will change somewhat in 2010 with full implementation of America's Community Survey, other data sources have neither the size nor the scope to allow for reliable sampling at a neighborhood level. And in neighborhoods where there are large and growing populations of new immigrants, and a large percentage of money in cash transactions, purchasing power calculations based upon standard datasets are highly inaccurate[27]. Often, the neighborhood data just does not exist—and can only be collected by a local organization at the level required to be useful locally.

The sixth step that investors can take to develop a successful community information strategy is to:

⇒ ***STEP 6: Improve the data available on neighborhoods.*** Advocate for a robust Federal, state and local government investment in neighborhood statistics and data. There is a need to invest in community efforts to collect neighborhood data at a level to be really useful. And strong links need to be built between community users and data providers to educate policy leadership about the importance of data to drive investment decisions in urban markets and local neighborhoods.

B. Two Urban Information Worlds: Public and Private

While community developers and decision-makers in the public sector rely extensively on public data sources, this is not true of the private sector.[28] Information for lenders, realtors, and

[26] For more information on the data gaps presented for urban neighborhoods and a detailed Federal data agenda to close these gaps, please see the Brookings Urban Markets Initiative website at www.brookings.edu/metro/umi.htm

[27] Social Compact has done pioneering work in this area, and with funding and support from the Brookings Urban Markets Initiative, they are developing a stand and authoritative method by which to value cash economies. See www.socialcompact.org

[28] See discussion notes from Brookings Retail Industry Roundtable, March 21, 2005 described at http://www.brookings.edu/metro/umi/industryinitiatives.htm

developers is typically highly precise, transaction-based datasets. Often, while these datasets start with repackaged public information, “value-added” components are added to make the information more usable for the decision-making frame of the investor. Approximations and forecasts are also a major tool used by private sector investors to value neighborhoods for commercial investments. And they are often relied upon to a breathtaking extent--driving investment decisions that will impact communities for decades to come. Because investment strategies implemented by the private sector and local groups are driven by different types of data and operate from different assumptions, this often leads to major conflicts because of the inherent differences in valuing neighborhoods using different data sources.

The seventh and final step that investors should take in seeking to develop a successful community-based information strategy is to:

⇒ ***STEP 7: Recognize and leverage the tremendous role of the private sector in urban information.*** Use new tools being developed by the private sector to guide local community action. Consider providing the most useful and valuable ones to communities using an enterprise approach, because having each community attempt to develop these applications using homegrown approaches will be cost-prohibitive.

VI. CONCLUSION

Pervasive and universal reach of community information systems hold the promise of facilitating the investment and action required for wholesale neighborhood transformation across our nation. But today, this promise remains unfulfilled. Without technical standards or well-accepted definitions and structure, few communities can reuse or derive benefit from tools developed in another area. Best practices are not shared. And many communities never develop the capacity to use or deploy these tools.

The fragmented investment approach to community information systems to date has impeded both universal access to a broad range of information tools or the development of a pervasive grassroots capacity to effectively use information tools for community change. Developing a strong community-based information strategy is critical to every investor's ability to fulfill the promise of using information to drive urban markets and spur strategies with the potential to transform our communities. Seven steps should inform the development of such a strategy:

⇒ ***STEP 1: Invest for scale.*** Every neighborhood should have the information tools they need to adapt to the quickening changes in their local economies and spur market-based community economic development. But the availability and use of these tools in neighborhoods is hardly universal. A transformative community information investment strategy should use an enterprise approach to provide affordable access to a broad range of information resources in all communities.

⇒ ***STEP 2: Invest for replicability and impact.*** Historically, funders have opted to invest in a myriad of "one-off", innovative information tools, typically tailored to the needs of a very specific community application or market. As urban information systems mature, new investments should support the development of community-wide standards, tools and technologies that can be easily replicated from community to community, recognizing that a significant upfront investment may be required to do so.

⇒ ***STEP 3: Make it easy to share data and tools.*** An infrastructure must be developed to share data, applications and tools, and spread innovations and resources to many communities easily and cost effectively. Standards must be developed to enable data and tools to be exchanged. An emerging National Infrastructure for Community Statistics has the potential to provide open access to these tools for a broad range of community data users interested in precise data on their neighborhoods.

⇒ ***STEP 4: Embrace open source approaches.*** The increasing availability and functionality of open source tools and applications will continue to transform the cost equation for local groups and boost universal access to mapping tools. An approach that builds on open architecture and data standards will help these legacy systems to gracefully and cost-effectively adapt to technology change.

⇒ ***STEP 5: Build local capacity to provide and use community information.*** If information tools are to meet the promise of spurring transformative investments in communities across the country, the breadth, number, and capacity of these groups will need to be increased sharply. Investors need to provide the support to raise the number of local information intermediaries, and deepen their skills and capabilities. These groups are often the groups that provide the leadership to convene key players in government, social services, community development, philanthropy and education. Without a clear leader in the community on these issues, information projects will struggle for focus and outcomes.

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Clearly, communities are using information tools every day to better see what is happening, understand why, map out how to intervene to change the situation and measure their performance in doing so. But for investors, community supporters and sponsors, it is harder to know how to implement an effective, scalable, community-based urban information strategy that has the potential to spur transformation change in communities across the nation. But we must meet this challenge. The lack of universally available tools to compare and contrast performance across communities has weakened the ability of investors—whether government, individuals or philanthropy--to support the business case for ongoing community investments at the scale and scope to transform our communities in a profound way. Communities without this capacity are unilaterally disarmed in the global competition for jobs, capital and progress.