2017 URISA ESIG™ Award Nominee--IndyVitals

A. System

1. Name of system and ESIG™ category for which you are applying: *Enterprise System*

2. A letter from the executive administrator authorizing submission of the system application (letters must be signed and scanned). *(Attached)*
May 25, 2017

URISA
701 Lee Street, 3680
Des Plaines, IL 60016

Re: 2017 URISA Exemplary Systems in Government (ESIG) Award

Dear Selection Committee:

I am pleased to acknowledge that The Polis Center at IUPUI is nominating its IndyVitals tool for the 2017 URISA Exemplary Systems in Government (ESIG) Award.

We developed the digital neighborhood monitoring tool for Plan 2020, the City of Indianapolis’ bicentennial planning initiative that features collaboration with the Greater Indianapolis Progress Committee, the Department of Metropolitan Development, the Department of Public Works, the Indianapolis Chamber, and other community leaders.

One of the four main elements of the bicentennial plan, the tool helps organize endeavors and monitor the impact of the plan blueprint within neighborhoods so Plan 2020 members can determine if the results match the desired outcome. Awareness of the tool has quickly reached various other sectors in the community who find great value in the data for their own strategic planning and programming.

We appreciate the opportunity to share this useful and free resource with other industry professionals.

Sincerely,

David J. Bodenhamer
Executive Director
3. One (1) page, or less, summary of what the system accomplishes and why it is exemplary.

We created the IndyVitals tool initially for Plan 2020 (a planning initiative of the Greater Indianapolis Progress Committee), the Department of Metropolitan Development, the Indy Chamber, and other community leaders with a US Department of Housing and Urban Development (HUD) grant to the Greater Indianapolis Progress Committee. IndyVitals is one of the four main elements of the city’s bicentennial plan.

Organizations from multiple sectors trying to make Indianapolis a great place to live and work faced the challenge of telling a common story about a particular neighborhood and making meaningful comparisons. Each entity saw a different version about a neighborhood from its perspective, which impacted the effectiveness of varied efforts to transform negative conditions into positive ones. In essence, apples were compared to oranges rather than apples to apples.

IndyVitals was developed to offer a user-friendly digital solution to this problem. Launched in June 2016, the digital tool allows users to track change and compare neighborhoods on several sustainability measures. IndyVitals puts everyone on the same page, puts the data in a common framework, and simplifies access, revealing the areas of critical need and opportunity in Indianapolis neighborhood areas to guide more successful endeavors to develop and improve these communities. All organizations are able to see the same data and read the same story, responding with programs, resources, and initiatives that are relevant to the specific needs of every neighborhood.

The true power of IndyVitals is its ability to coordinate actions of community partners through data. This consequently aligns diverse planning partners toward a common goal and better organizes municipal government using common “building blocks” of neighborhood geographies.

As data can be very complex, IndyVitals offers a range of approaches to tell the story for each neighborhood. A simple one-page dashboard for neighborhood quickly tells residents and leaders how a neighborhood area has changed and how it compares to other areas or the metro. For those who want to dive deeper, such as policy analysts and decision-makers, the tool provides charts and maps that review trends, comparisons, and disparities by race, age, income, and education levels.

IndyVitals has proven useful for many other sectors since its inception. For organizations involved in quality-of-life, social services, and economic development programming, the tool provides a common geographical approach that tells a single story. It helps measure progress and the success of efforts. It identifies a neighborhood’s greatest strengths and gaps in services, and targets the people and assets that can efficiently and effectively transform negatives into positives. The expectation is that multiple agencies will read the same story, resulting in greater synergy in making Indianapolis a great place to live and work.

Note: While the product was developed as a free resource to improve efficiencies in government, nonprofits and community-based organizations, it also has commercial potential for licensing in other communities. The technology would allow us to replicate the template and data model for another community outside of Indianapolis and license the use of that product. We have successfully replicated the full scale SAVI technology in Des Moines, Iowa.
4. Three “user testimonials.” These testimonials should include the title of the system, the person’s name, job title (if relevant), a statement of what specific ways the system improves their work and/or the work of their organization, and how frequently they use the system (testimonials may be signed and scanned). (Attached)
May 3, 2017

To Whom it May Concern:

I serve as the Administrator for Long-Range Planning for the Department of Metropolitan Development at the City of Indianapolis. I also served as one of the co-managers of a collective-impact community planning and visioning process known as Plan 2020, which has aligned more than 40 community partners alongside city government to make our city a healthier, more resilient, more inclusive, and more competitive place to live. A key element of collective-impact theory is the use of shared data among all implementing partners. IndyVitals, built by our partners at The Polis Center, fulfills that important purpose.

IndyVitals helps me plan for our city in several ways. By defining discrete geographies, partners, including myself, can see the same, consistent story of how neighborhoods are doing over time as well as relative to one another. Whether partners are officially part of the Plan 2020 process or not, by seeing a consistent story, and easily highlighting the key strengths and challenges of neighborhoods, data serves to help guide partner investments to the true needs of different neighborhoods. By using data to encourage coordinated investments, IndyVitals inherently promotes the collective-impact planning need I have.

Furthermore, as my staff capacity and resource levels have dwindled, IndyVitals provides easy access to neighborhood-level data that my team no longer has the ability to provide to partners and the public on a timely basis. When we receive data requests, our first response is to direct people to IndyVitals, saving us time and providing better customer service.

Finally, and more philosophically, city planning has become increasingly democratized with access to online mapping, surveying, and related web-based resources. As this occurs, I believe it critical that “resident planners” in Indianapolis have access to data that is easy to understand and does not require a planning education or relationship with someone on my team to access. IndyVitals empowers the residents of my community to be more informed advocates for their neighborhoods.

Thank you for your time and consideration, and if you have any further questions, please contact me.

Respectfully,

Brad M. Beaubien, AICP
Administrator for Long-Range Planning
317-327-5133
brad.beaubien@indy.gov
May 30, 2017

Urban and Regional Information Systems Association
701 Lee St
Des Plaines, IL 60016

Re: Exemplary Systems in Government (ESIG) Award

Dear ESIG Selection Committee,

On behalf of the Greater Indianapolis Progress Committee, the City of Indianapolis-Marion County, Department of Metropolitan Development, and the numerous partners, programs, and projects under the Plan 2020 Initiative, I submit this letter in support of IndyVitals (IndyVitals.org) as an exemplary system in government. In brief, Plan 2020 is a pioneering planning process that engages the Indianapolis community in a new way to define a collective vision to make Indianapolis healthier, more inclusive, more resilient, and more competitive over the next 100 years. Thought leadership of the Plan 2020 Initiative sought to create an online portal to enable collective impact by using data to convey the same story for the same geographic area to multiple users.

Like many online portals, IndyVitals aggregates and quickly communicates data so that anyone can assess the relative health of Indianapolis neighborhoods. In order to use data to facilitate collective impact, we had to define discrete neighborhood boundaries so that all partners—public, private, non-profit, and philanthropic—that work to improve our neighborhoods could easily see the same needs, challenges, and opportunities. Partners working to achieve the same outcomes are no longer hindered by conflicting jurisdictional or service-area boundaries. Limited resources can now be deployed in a way that is more relevant to the needs of any given neighborhood, and more stakeholders and decision makers can work together to achieve meaningful change on very specific issues at the neighborhood level.

Since its inception, the platform has drawn a large audience of users. From engaged citizens and funders, to policy analysts and elected and appointed officials, there is a growing desire for Plan 2020 leadership to continue to enhance IndyVitals. The tool launched with 50 indicators of community health and sustainability; our goal is to continue to expand the system to include additional public health data, local government capital improvements or citizen complaints, and the work and investments of various community stakeholders. The end result would be a more effective coordination of programs and services to better utilize limited resources for maximum impact.

The future of Indianapolis and IndyVitals.org is bright. Thank you for your consideration of our transformative tool for this honor.

Sincerely,

Ann Solzak
Plan 2020 Co-Manager
Deputy Director, Greater Indianapolis Progress Committee
May 30, 2017

To Whom it May Concern:

I am pleased to offer my full support for the nomination of the IndyVitals tool for recognition by the Urban and Regional Information Systems Association Exemplary Systems in Government award. King Park Development Corporation is a non-profit community development corporation that fosters comprehensive community development in Indianapolis. I also served on the IndyVitals taskforce that helped The Polis Center and the City of Indianapolis develop and test the tool to ensure that it was intuitive and user-friendly while still a powerful tool for accessing shared data. The result is a robust tool widely used in the community development industry in Indianapolis.

King Park regularly uses the IndyVitals tool for a broad range of applications. Most frequently we use it during the grant writing process to provide needed demographic, economic, and housing-related information. IndyVitals allows us to quickly access dozens of different data sets to allow us to compile a comprehensive view of a neighborhood.

IndyVitals also allows us to track performance over time. The ability to compare data during and after strategic initiatives to evaluate the efficacy of our programs and determine whether the programmatic goals were achieved. Having a reliable source of current and historic data allows us more effectively set goals as well as compare performance to set metrics.

Finally, IndyVitals is also a powerful tool for strategic planning. With IndyVitals, we can recognize trends, identify opportunities for strategic investment, and ensure that the organization’s resources are closely tied to leading indicators of neighborhood health. IndyVitals gives access to more and better information than we’ve ever had before, which is critical as funding for community development continues to dwindle. With IndyVitals, our Board of Directors, funders, and residents are assured that our resources are targeted intentionally, deployed thoughtfully, and impactful to the community.

I strongly support IndyVitals for the Exemplary Systems in Government award. Please contact me directly if you have any questions or concerns.

Regards,

Steven Meyer
Executive Director
King Park Development Corporation
(317) 924-8116
smeyer@kingpark.org
B. Jurisdiction

1. Name of jurisdiction

City of Indianapolis-Marion County, IN

2. Population served by the organization/agency

The tool was created for Plan 2020 (a planning initiative of the Greater Indianapolis Progress Committee), the Department of Metropolitan Development, the Indy Chamber, and other community leaders with a US Department of Housing and Urban Development (HUD) grant to the Greater Indianapolis Progress Committee (GIPC). IndyVitals is one of the four main elements of the city's bicentennial plan. IndyVitals has proven useful for many other sectors since its inception.

The website targets three primary groups of users: interested citizens who want high-level metrics about a neighborhood, nonprofit and community-based organizations that want detailed data about a neighborhood, and policymakers that need to explore patterns and trends in the data.

3. Annual total budget for jurisdiction

$1.1 billion

4. Name, title, and address of chief elected and/or appointed official

Joe Hogsett, Mayor of Indianapolis, 133 W. Market St. #190, Indianapolis, IN 46204

5. Name, title, address, telephone, FAX, and email for contact person for system

Sharon Kandris, Associate Director, The Polis Center, 1200 Waterway Blvd. #100, Indianapolis, IN 46202; phone 317.278.2944; Fax: 317.278.1830; email skandris@iupui.edu
C. System Design

1. What motivated the system development?

The tool was created for Plan 2020 (a planning initiative of the Greater Indianapolis Progress Committee), the Department of Metropolitan Development, the Indy Chamber, and other community leaders with a US Department of Housing and Urban Development (HUD) grant to the Greater Indianapolis Progress Committee (GIPC). IndyVitals is one of the four main elements of the city’s bicentennial plan.

IndyVitals was conceived as a means to measure the long-term impact, at a neighborhood-level, the work of Plan 2020, the city planning initiative for the Indianapolis Bicentennial. It measures the health and sustainability of neighborhoods. A second goal was to help organizations by making comparative neighborhood-level data transparent. The true power of IndyVitals is its ability to coordinate actions of community partners by highlighting the strengths and challenges of diverse neighborhoods in Indianapolis.

Organizations from multiple sectors trying to make Indianapolis a great place to live and work faced the challenge of telling a common story about a particular neighborhood and making meaningful comparisons. Each entity saw a different version about a neighborhood from its perspective, which impacted the effectiveness of varied efforts to transform negative conditions into positive ones. In essence, apples were compared to oranges rather than apples to apples.
2. What specific service or services was the system intended to improve?

IndyVitals was developed to offer a user-friendly digital solution to the problem noted above. Launched in June 2016, the digital tool allows users to track change and compare neighborhoods on several measures of neighborhood health and sustainability. IndyVitals puts everyone on the same page, puts the data in a common framework, and simplifies access, revealing the areas of critical need and opportunity in Indianapolis neighborhood areas to guide more successful endeavors to develop and improve these communities. All organizations are able to see the same data and read the same story, responding with programs, resources, and initiatives that are relevant to the specific needs of every neighborhood.

Examples of the types of services this will improve include: city government can better target investments to areas in greatest needs, community development corporations have data to justify the need for grants/investments in their communities, social service providers can understand the need for cross-sector collaboration to improve outcomes, and community organizers are empowered with data to prioritize community-improvement efforts that build upon existing community assets.

The true power of IndyVitals is its ability to coordinate actions of community partners through data. This consequently aligns diverse planning partners toward a common goal and better organizes municipal government using common "building blocks" of neighborhood geographies.

As data can be very complex, IndyVitals offers a range of approaches to tell the story for each neighborhood. A simple one-page dashboard for neighborhood quickly tells residents and leaders how a neighborhood area has changed and how it compares to other areas or the metro. For those who want to dive deeper, such as policy analysts and decision-makers, the tool provides charts and maps that describe trends, comparisons, and disparities by race, age, income, and education levels.

3. What, if any, unexpected benefits did you achieve?

We have been able to repurpose many of the new data visualization designs, data model, and architecture for other initiatives, creating efficiency in how we serve audiences.

4. What system design problems were encountered?

The system is designed to be maintained by data analysts (not programmers), which allows them to control and easily manage data as well as data display characteristics. To assist with this requirement, we had to introduce many extra system tables that could be used to program around to generate data visualizations dynamically.

One requirement was to include Exploratory Spatial Data Analysis (ESDA) capability for advanced users. The ESDA tool we choose was called Weave, an open source software framework developed by researchers at Boston University. The visualization components of ESDA was programmed using a language called ActionScript, and it targets Flash player under an Internet browser. With lack of time to develop our own ESDA tool, or leverage commercial options, this can be a maintenance issue for the future as most of the modern browsers deprecate the support of Flash player.
5. What differentiates this system from other similar systems?

This system is a unique application of data visualization at a neighborhood level. This is achieved by aggregating the data to fit neighborhood areas defined by the City of Indianapolis. The initial dashboard provides a glance at vitality of the neighborhood compared to different regional statistics. It provides multiple ways to dig deep and visualize data in a variety of ways including offering an Exploratory Spatial Data Analysis (ESDA) capability.

From a technical perspective, the innovation of IndyVitals is demonstrated in several ways. First and most importantly, it is a thoughtful, deliberate, and intentional data mash-up product. It is a purposeful combination of data and visualizations based primarily on SAVI data and custom data developed around Indianapolis neighborhoods. An advisory committee of community stakeholders informed the design and selection of indicators to measure a specific set of goals around neighborhood health and sustainability. IndyVitals uses an amalgamation of multiple data visualization methodologies and techniques to show the data in useful ways that measure the vitality of neighborhoods. This, in turn, helps guide decision-making at multiple levels, including at the neighborhood level.

It is innovative because it is a blend of loosely-coupled inter-computer integration of data, intermediate computations, and visualizations. Many different database and visualization components that run independently of each other are loosely coupled so the visualizations all connect together for the user.

The result is a product that provides simple and seamless access to otherwise unusable data for the purpose of helping residents, organizations, and government agencies improve our community. Data visualization of many neighborhood facts—including geographic, as well as temporal dimensions—is a complex problem that requires quick absorption of information as well as a deep understanding of spatial and temporal data and its distribution.

Innovation is also demonstrated by how viewers use the resulting data. The data that informs neighborhood vital indicators prompts new ways of thinking about how to solve some complex challenges. And, that outcome is the most satisfying element of all.

D. Implementation

1. What phases did you go through in developing the system?

We went through the typical iterative application development process. That included vision, envisioning, planning, development, testing, and stabilization.

We use an iterative design and feedback process that has been honed over our many years of experience in web-based applications. This process takes into account recommendations from a group of stakeholders throughout the design and development process to ensure the product will meet the needs of the intended audience and to gain stakeholder buy-in early in the process. Here is a description of our development cycle for IndyVitals:

1. **Established an advisory committee** to give input on the product requirements, wireframes, and interface design, and to test products.
2. **Developed a set of requirements** outlining the data and functional needs of the product.
3. **Created website wireframes and the user navigation schema.** The wireframes are black and white depictions of the user interface to model the layout of the tools and features of the product, define the user interactions with the tools, and identify where additional content will need to be developed. At this stage, we also clarified how the data will be accessed and displayed on the site. The wireframes were shared with the committee for feedback – including several iterations for the dashboard. This important step allows our team to gather immediate feedback on the proposed solution and make adjustments based on committee feedback before any time is invested in programming and application development.

4. **Established the general look-and-feel of the website.** At this stage, the wireframes come to life. The designer incorporates branding elements, establishing the overall design scheme – how the buttons, dashboard elements, and text will look in the final project. Again, the committee is engaged for review and feedback following the preliminary designs. The designs are turned into HTML templates for implementation.

5. **Next, we began product development.** This phase included database modeling and development, creation of data access API’s and other API’s as appropriate, developing the application, developing GIS layers using ArcGIS server, and creating the data visualization tools.

6. **Data analysis** occurs in parallel with the application development. This involves analyzing data for quality, meaning, and context within the applicable audience framework. We use GIS and statistical methods to clean, quality check, geo-enable, process, and aggregate administrative data into neighborhood-level indicators. We also test potential data visualizations and determine the best way to portray the data on the website. This step typically introduces data challenges or quality issues that warrant committee feedback.

7. **Published “beta” version of the website.** This is a functional version of the web data portal. It did not have all of the graphical design elements in place, but it allowed a user to interact with and test the web-based tool and indicators. The purpose of this version was to gather feedback from the committee and designated test users to inform Polis on necessary adjustments and modifications before finalizing it. This was an iterative process: testing the tool and indicators, discussing problems and glitches, making adjustments, and re-testing.

8. **Published “final” version of the website.** Based on the testing and feedback of the Beta version of IndyVitals, Polis made edits to the website to correct bugs and address usability issues. The final version incorporated all graphical design elements to create a clean and polished look and will include a stabilization period to ensure reliability and a help file to guide users how to use the site.

9. **Maintenance** is performed periodically to address bugs, upgrade software, and tune the database as needed.

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2. **Were there any modifications to the original system design? Why? What?**

The most significant changes to the design were the neighborhood dashboards and data calculations to support the dashboard. In the design phase, we went through several iterations of the paper dashboard mock-ups based on feedback from the advisory committee and further testing by residents and boards of
advisory committee members. The data needs for the dashboard changed as a result from the initial design, requiring we extend the data model to accommodate comparison geographies and alternate metrics to measure access to community assets.

E. Organizational Impact

1. What user community does the system serve and how?

For organizations involved in quality-of-life, social services, and economic development programming, the tool provides a common geographical approach that tells a single story. It helps measure progress and the success of efforts. It identifies a neighborhood’s greatest strengths and gaps in services, and targets the people and assets that can efficiently and effectively transform negatives into positives. The expectation is that multiple agencies will read the same story, resulting in greater synergy in making Indianapolis a great place to live and work.

For example, you can see whether its residents have access to jobs, quality childcare, and quality education. Do the jobs match the education and skills of its residents, or do residents have to commute out of the neighborhood? Do they have access to transportation to do so? Are the neighborhood walkable? Safe? And, IndyVitals allows you go even deeper --- you can easily explore disparities across race groups, genders, education levels, income levels, and geography. Are some race groups disproportionately impacted by an issue such as unemployment, poverty or education attainment than others? And what is that gap? As a community envisions its future, all of this helps those involved in the process start to think about positive solutions to address the disparities and gaps and how to leverage the resources that already exist in a community.

2. What are the ultimate decisions/operations/services being affected? If appropriate, provide a few examples including, but not limited to: screen input/output forms, paper products, or other descriptive graphics.

King Park Community Development Corporation, for example, is using IndyVitals to make informed arguments about how resources are used across the city. It used IndyVitals to advocate for resources needed in its neighborhood by demonstrating existing need and gaps compared to other neighborhoods. It also is using IndyVitals for data needed for grant applications.

Below you can see that the Mapleton/Fall Creek Neighborhood Area that King Park CDC serves ranks 96th out of 99 neighborhood areas on housing vacancy (30% vacancy rate) and 93rd for housing cost burden (49% of residents pay more than the recommended portion of their income on housing costs, suggesting a potential lack of affordable housing).
**Mapleton/Fall Creek Neighborhood Dashboard**

**Mapleton / Fall Creek Neighborhood Area**

- **2015 Poverty Rate:** 25%
- **2010 Total Population:** 6,482
- **2015 Median Age:** 37
- **2015 Median HHLD Income ($1000s):** $32.6

**BUILT ENVIRONMENT**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Current</th>
<th>Town</th>
<th>Change</th>
<th>Rank</th>
<th>Change 2013</th>
<th>Rank 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Density (Units per Acre)</td>
<td>211</td>
<td>92</td>
<td>-1</td>
<td>4th</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Tax Delinquent Properties</td>
<td>2.0%</td>
<td>2.0%</td>
<td>-1</td>
<td>91st</td>
<td>22</td>
<td>91%</td>
</tr>
<tr>
<td>Walkability/Average Walk Score</td>
<td>57.0</td>
<td>N/A</td>
<td>5th</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Housing Cost Burdened</td>
<td>49%</td>
<td>9%</td>
<td>1st</td>
<td>16</td>
<td>13.9pt</td>
<td>19.6pt</td>
</tr>
<tr>
<td>Median Assessed Value</td>
<td>$10,993</td>
<td>$419</td>
<td>69th</td>
<td>3rd</td>
<td>11,907</td>
<td>N/A</td>
</tr>
<tr>
<td>Vacancy Rate</td>
<td>30%</td>
<td>4%</td>
<td>96th</td>
<td>1</td>
<td>18.7pt</td>
<td>19.2pt</td>
</tr>
<tr>
<td>Non-Car Work Commuters</td>
<td>3%</td>
<td>4%</td>
<td>3rd</td>
<td>11.2%</td>
<td>12.8%</td>
<td>12.1%</td>
</tr>
</tbody>
</table>

*SAVI Community Profile*
Drilling further into the data, you can see the trend over time how the Mapleton/Fall Creek is much lower than the county, metro, and state for housing cost burden.

It allowed them to explore who is most impacted – in this example (see below), renters in Mapleton Fall Creek are much more housing cost burdened then owners, suggesting a lack of affordable rental options for residents. (Note: The tool also allows you to explore disparities by race, income, education level, and gender, when applicable.)
3. What were the quantitative and qualitative impacts of the system?

During its seven months in 2016, IndyVitals was visited 11,180 times by 7,826 visitors, with an average session duration of four minutes. Six months past the launch, 48% of visitors were returning and 52% were new. The most important impact of IndyVitals is that access to the data have improved, program and policy decisions are more informed through the data, and ultimately, quality of life will improve as a result.

4. What effect has the system had on productivity?

IndyVitals makes it much quicker for stakeholders to gain access to the data they need. It compiles data that would otherwise not be available and publishes them in meaningful ways to make the data available to the public. The dashboard includes about 50 metrics, but the tool allows you to drill into the data and slice each metric by race, gender, income, education level, and more when available, so the user really has access to hundreds of community-level metrics all within 1 click. And, it puts it into meaningful context using a framework that describes the challenges and opportunities for communities.

5. What, if any, other impacts has the system had?

Our team continues to learn while creating these project, including increased knowledge about how organizations use data for effective decision making and how data can be presented in meaningful ways. We continue to build on and refine system architecture with each project, but this project represented a significant change in the way we manage and disseminate data. We are repurposing some of the data visualization components and the data model in other initiatives, which allow us to serve other audiences more effectively and cost-efficiently.
6. How did the system change the way business is conducted with and/or service delivered to clients? Give specific examples comparing the old way with the new.

Imagine thousands of people having to go and find all the data in IndyVitals themselves, clean it, geocode it (if they can figure out how), synthesize it, and figure out how to visualize it, and turn it into the reports they need for their grant, planning process, and awareness campaign. That is no longer necessary with IndyVitals. IndyVitals does the data work, and now organizations can focus on using the data to inform action.

F. System Resources

1. What are the system’s primary hardware components? Give a brief list or description of the hardware configuration supporting the system.

The hardware system is based on the Windows OS platform. There are three computer servers involved in this design. One is dedicated for the Oracle database, the second is used for data access API’s, and the third for providing a web application. Each computer has Windows 2008, 2GB RAM, 2.0GHz CPU and plenty of hard drive space.

2. What are the system’s primary software components? Describe the primary software and, if a commercial package, any customizations required for the system.

IndyVitals uses a blend of loosely-coupled inter-computer integration of data, intermediate computations, and visualizations. A lot of data are drawn into the system, integrated, transformed into meaningful indicators, and displayed through the website. It offers many visualizations for each indicator, and different software is used for each. The advanced view leverages an open sources exploratory spatial data analysis software while the trend charts are created using Telerik, and the choropleth maps use a cached tiled structure on top of Google map API and OGC compliant KML for rendering Maps. The choropleth maps are colored using Color Brewer color schemes as well it uses a k-means algorithm to generate data breaks. Many different database and visualization components that run independently of each other are loosely coupled so the visualizations all connect together for the user.

The operating system is Windows 2008. Back end database is Oracle. The webservers for both data access API’s and web application are based on Microsoft IIS. The Web API and web applications are developed using .NET MVC architecture. The ESDA tool is running under Apache Tomcat and MySQL database as the back end. Adobe ActionScript was also used in development.

3. What data does the system work with? List and briefly describe the database(s).

IndyVitals draws data from the nation’s largest community information systems called SAVI, which includes data from over 30 major local, state, and national data sources (e.g., police department, health department, state department of education, US Census Bureau, state Family and Social Services Administration). The data in SAVI are aggregated to various geographic units to mask confidentiality and put them into context. We also used other data acquired from the City of Indianapolis-Marion County, such as code compliance reports and the properties up for tax sale). For IndyVitals, multiple methods are used to transform those data into meaningful metrics. When possible, address-level data are used to obtain an exact count or value of the item being measured. For other data, the statistics were obtained by
assigning census tracts, block boundaries, or parcel boundaries to approximate each neighborhood boundary.

The 50 indicators in IndyVitals cover the following eight categories from the STAR rating system (a national system for rating cities on progress toward sustainability).

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Built Environment</td>
<td>Quality, Choice &amp; Access Where We Live, Work &amp; Play</td>
</tr>
<tr>
<td>Climate &amp; Energy</td>
<td>Increase Efficiency, Reduce Impact</td>
</tr>
<tr>
<td>Economy &amp; Jobs</td>
<td>Quality Jobs, Shared Prosperity</td>
</tr>
<tr>
<td>Education</td>
<td>Education, Arts, &amp; Community - Vibrant, Connected &amp; Diverse Culture</td>
</tr>
<tr>
<td>Equity &amp; Empowerment</td>
<td>Inclusion &amp; Access for All Community Members</td>
</tr>
<tr>
<td>Health &amp; Safety</td>
<td>Strong, Resilient &amp; Safe</td>
</tr>
<tr>
<td>Natural Systems</td>
<td>Protect &amp; Restore the Resources of Life</td>
</tr>
</tbody>
</table>

STAR was used as a framework to guide the selection and creation of neighborhood-level metrics, but applying this rating system at a neighborhood level was quite unique and to our knowledge has not been done before (typically it is done at a city level).

A complete list of metrics and sources is accessible at: [http://indyvitals.org/AboutTheData](http://indyvitals.org/AboutTheData)

4. What staff resources were required to implement the system? (i.e., report approximate staff and consultant time as FTE’s)

The project team included 1 project manager, 2 programmers, 1 database administrator, 1 system designer, 2 data analysts, 1 information designer, and 1 graphic designer. Together their time was roughly 1 to 1.5 FTE over 7 months.

5. Comment on anything unusual about the resources used to develop your system, such as data, software, personnel and financing.

From a technical perspective, the innovation of IndyVitals is demonstrated in several ways. Foremost, it is a thoughtful, deliberate, and intentional data mash-up product. It is a purposeful combination of data and visualizations based primarily on SAVI data and custom data developed around Indianapolis neighborhoods. An advisory committee of community stakeholders informed the design and selection of indicators to measure a specific set of goals around neighborhood health and sustainability. IndyVitals uses an amalgamation of multiple data visualization methodologies and techniques to showcase the data in useful ways that measure the vitality of neighborhoods. This, in turn, helps guide decision-making at multiple levels, including at the neighborhood level.

It is innovative because it is a blend of loosely-coupled inter-computer integration of data, intermediate computations, and visualizations. A lot of data are drawn into the system, integrated, transformed into meaningful indicators, and displayed through the website. Clicking one indicator on a dashboard allows the user to drill into the many views of the same indicator, and different software is used for creating different visualizations. The advanced view, for example, leverages an open sources exploratory spatial data analysis software while the trend charts are created using Telerik and the choropleth maps are presented used cached tiled structure on top of Google Maps. Many different database and visualization components that run independently of each other are loosely coupled so that the various visualization elements all
connect together for a single indicator for the user interface. This is much more complex than a typical dashboard with drill-down capabilities that are available in existing commercial software. The result is a product that provides simple and seamless access to otherwise unusable data for the purpose of helping residents, organizations, and government agencies improve our community.

Data visualization of many neighborhood facts—including geographic, as well as temporal dimensions—is a complex problem that requires quick absorption of information as well as a deep understanding of spatial and temporal data and its distribution. IndyVitals data can be viewed in a few clicks, ranging for simple bar chart or trend line to advanced analysis using the Exploratory Spatial Data Analysis (ESDA) technique.

Innovation is also demonstrated by how viewers use the resulting data. The data that informs neighborhood vital indicators prompts new ways of thinking about how to solve some complex challenges. And, that outcome is the most satisfying element of all.