A. System

1. Name of system and ESIG™ category for which you are applying (Enterprise System or Single Process System).

Single Process Systems: Cook County Medical Examiner Maps and Data Portal

2. A letter from the executive administrator authorizing submission of the system application (letters must be signed and scanned).

Attached

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

Two issues facing the County are taking a tremendous toll on the lives of our residents – the epidemics of opioid addiction and gun violence. In cases of fatalities, the victims of these epidemics fall under the jurisdiction of the Medical Examiner. We knew the data was important and wanted to make it easily accessible to residents, journalists, researchers, medical professionals and other stakeholders as part of our efforts to confront the issues our County is dealing with.

In 2017, more than 1,000 people died in Cook County due to an opioid or opiate overdose and there were 833 homicides, with 743 of those caused by gun violence. Last year, the Medical Examiner’s Office received nearly 400 FOIA requests, more than any other county department.

In 2017, the Cook County Medical Examiner’s Office and Bureau of Technology teamed up to provide the public with crucial information about deaths -- including those caused by gun violence and the opioid epidemic. They created first-of-their-kind interactive dashboards, maps and an open dataset providing the public with a geographic visualization of every Medical Examiner case since 2014.

The maps and dashboard are populated by an online database, updated nightly and are open to the public on the County's website. Information provided includes the cause and manner of death, demographic information about the deceased and the location of the incident. This program was created to provide transparency and real-time data to researchers, law enforcement, journalists and the public as our County grapples with gun violence and the opioid epidemic.

The maps and data set were also made public to help reduce the number of Freedom of Information Act (FOIA) requests received by the Medical Examiner's Office. The Office
last year received nearly 400 FOIA requests, which is significantly more than other departments. By March 1, 2017, the office had received 51 statistical requests. Since the tool came online, the number of FOIA requests received has been reduced significantly with just 14 statistical requests submitted in 2018 by March 1.

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).

“This newly public data from the Medical Examiner’s office will greatly assist the READI team of Heartland Alliance and our community partners as we seek to reduce violence and promote sustained positive lifestyle change in our participants. The data on gun and opioid-related deaths in addition to suicide rates at the local level describes the burden of victimization and hopelessness disproportionately experienced in certain communities. This data will assist our team and partners in understanding community challenges and formulating appropriate interventions in a more complex and nuanced way. I believe that the rate of gun-inflicted homicides is interconnected with the rate gun-inflicted suicides, and this should inform our strategy to restore hope in the communities we work in.”

—Eduardo Bocanegra, Senior Director for Heartland Alliance READI Chicago

As a community development professional for the past 20 years, I continue to look for innovative ways to partner with others to improve the quality of life of residents. Cook County’s efforts to disseminate data to the public is an example of such a partnership. Their data will provide researchers the tools to develop health oriented interventions to make our communities healthier. The consistently updated data will also help community based organizations like Enlace Chicago, develop best practices and design interventions to prevent violence, particularly gun homicides.

—Katya Nuques, Executive Director, Enlace Chicago

The CCGISMAP team has been indispensable in our efforts to quantify and map the opioid epidemic in Cook County. They created effective systems to help us gather data. Prior to their contribution, both the Chicago HIDTA and the Cook Medical Examiner’s Office spent countless hours pulling, compiling, and reconciling data. The CCGISMAP team has streamlined the process saving several weeks’ worth of work annually and providing more accurate results.

Furthermore, the CCGISMAP team has also been patient enough to teach the Chicago HIDTA analysts about some of ArcGIS’ more advanced capabilities. On several occasions they have worked with our analysts in troubleshooting problems. Without their diligent
work and their abundant patience, we would not be as far in our current threat assessment of the opioid epidemic.

—Sean Geraghty, Investigative Support Center Manager, Chicago High Intensity Drug Trafficking Area

A fourth testimonial – from Steven E. Aks, Director of the Toxikon Consortium – is attached with this submission, also.

B. Jurisdiction

1. Name of jurisdiction

Cook County, Illinois

2. Population served by the organization/agency

5.2 million

3. Annual total budget for jurisdiction

$5 billion

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

Toni Preckwinkle
Board President
118 N. Clark
Suite 500
Chicago, IL 60602

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

Joel Inwood
Public Information Officer
Cook County Bureau of Technology
69 W. Washington, Suite 2700
Chicago, IL 60602
joel.inwood@cookcountyil.gov
Phone (312) 603-7306
Fax: (312) 603-9904
C. System Design

1. What motivated the system development?

We knew the data was crucial to confronting the opioid and gun violence epidemics facing our county. We knew that making the data easily accessible to residents, journalists and, researchers, medical professionals and other stakeholders would help in the effort to confront the issues our County is dealing with.

2. What specific service or services was the system intended to improve?

The system was designed to improve public access to case-level and bulk information from the County Medical Examiner’s Office.

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

We did not expect the reduction in FOIA requests to be as pronounced as it was.

4. What system design problems were encountered?

It was difficult to analyze data from the Medical Examiner’s LabLynx case management application, which needed to be mined for text that described various conditions. The cause of death and notes fields were not standard, and it was challenging to mine the relevant data. We were tasked with filtering out the data regarding gun violence and opioids from these fields.

5. What differentiates this system from other similar systems?

This is the only application of its kind in the country, displaying case-level data for all deaths investigated by a county medical examiner's office.

D. Implementation

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

- **Step 1:** Medical Examiner made a business case.
- **Step 2:** GIS reviewed the business case and clarified the requirements for the application and the data.
- **Step 3:** GIS DBA explored the data with the Medical Examiner to figure out the relevant fields in the data and figure out which fields would be shared with the public.
- **Step 4:** Pulling the data from LabLynx to a GIS SQL environment, which was later automated to update with new and completed cases daily.
- **Step 5:** Geocoded the medical examiner data to make point locations on the map.
- **Step 6:** Developed the interactive mapping applications based on the business case requirements.
- **Step 7:** Registered the data service to the Cook County GIS Open Data Portal.
- **Step 8:** Released the interactive maps to the public.
• **Step 9:** Added a dashboard with summaries and graphic visualizations of the Medical Examiner data.

2. **Were there any modifications to the original system design? Why?**
   **What?**
   Yes, the dashboard was added later after we saw a local news report summarizing the data from the site.

### E. Organizational Impact

1. **What user community does the system serve and how?**
   The system provides residents, journalists, researchers, medical professionals and other stakeholders with up-to-date information on causes, spatial patterns, and temporal trends of untimely deaths in Cook County.

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.
   The real-time data assists law enforcement agencies in knowing where to deploy resources. The data also helps nonprofits and healthcare organizations know where to deploy resources to save lives by preventing fatal opioid overdoses.

3. **What were the quantitative and qualitative impacts of the system?**
   As mentioned above, the Medical Examiner’s Office last year received nearly 400 FOIA requests significantly more than other departments. By March 1, 2017, the office had received 51 statistical requests. Since the tool came online, the number of FOIA requests received has been reduced significantly, with just 14 statistical requests submitted in 2018 by March 1.

4. **What effect has the system had on productivity?**
   As noted above, the system freed up County resources previously working to fulfill complex statistical FOIA requests to instead focus their efforts on other needs of the office.

5. **What, if any, other impacts has the system had?**
   The first-of-its-kind portal has increased transparency by providing the public with real-time data about life-threatening issues in the County. Also, considering a lack of federal funding for gun violence research, Cook County recognized that state and local governments need to be proactive in providing information.
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.

Previously anyone interested in this information would have had to submit a FOIA request. They would have received the information in the form of a digital table. Now the information is freely accessible and displayed in several ways which shed light of different aspects of life and death in Cook County.

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.

   - LabLynx Cloud database (SQL Server 2012)
   - Medical Examiner database (SQL Server 2012)
   - GIS database (SQL Server 2012)
   - GIS Map Service Servers – 2 public facing servers (Windows Server 2012 R2)
   - GIS Web Adaptor Servers - 2 public facing servers (Windows Server 2012 R2)
   - Esri Managed Cloud Services as the disaster recovery back-up

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

   - ArcGIS Server 10.2
   - ArcGIS Desktop 10.4
   - ArcGIS SDE 10.2
   - ArcGIS Online
   - Windows Server 2012 R2
   - SQL Server 2012
   - LabLynx
   - Python 2.7
   - Windows Task Scheduler

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

   Medical Examiner enters data into LabLynx, a vendor-based cloud application. The data is then pulled from LabLynx into the Medical Examiner database. Driven by a SQL script, the relevant data gets copied from the Medical Examiner database into a GIS database. And then, driven by a Python script, the GIS table is geocoded to create a point feature class.

4. What staff resources were required to implement the system?
This application was developed entirely by County staff. The whole project would take about 2 dedicated months for 3 FTEs from Cook County. The total project timeline took about 10 months.

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

We were able to develop the app and the data using existing tools and resources at no additional cost.
June 1, 2018

Wendy Nelson
Executive Director
Urban and Regional Information Systems Association
701 Lee Street, Suite 680
Des Plaines, Illinois 60016

Dear Ms. Nelson,

I am writing to support the nomination of the Cook County Medical Examiner's Maps and Data Portal for the Urban and Regional Information Systems Association (URISA) Exemplary Systems in Government (ESIG) Award.

The Medical Examiner Portal provides transparency into two crises facing the residents of Cook County: opioid overdoses and gun violence. Mapping these crises provides the public with a clear picture of what is happening and where. The maps and data provide law enforcement, the public and journalists with crucial, up-to-date information, and they provide healthcare professionals and nonprofits with key information for designing responsive public health programs.

I believe that recognizing this innovative program with an ESIG award may spur additional work among geographic information systems professionals on areas impacting public health and public safety. I also believe that promoting transparency and fact-based decision making through the use of geospatial data will be beneficial to future generations.

Thank you.

Sincerely,

Toni Preckwinkle
President
June 3, 2018

To Whom It May Concern:

It is my pleasure to write a letter of support and testimonial to the Medical Examiner App used by the Cook County Medical Examiner. I am an Emergency Physician, and a Medical Toxicologist at Cook County Health and Hospitals System. We have expended tremendous effort to improve our response to the opioid epidemic. At our hospital we have developed a prescription naloxone program, introduced Medication Assisted Treatment in our ED, clinics and throughout our system. We have ramped up our response in general. Much of our rationale for this increase in effort is because of the very important data that has informed us of patterns of fatalities in Cook County. We have learned that in 2015 there were approximately 665 opioid related fatalities, approximately 1100 in 2016, and even more in 2017.

The pattern of increase in death rate has allowed us to direct our clinical interventions. Following the real-time data on the ME interactive site keeps us informed of day to day trends and allows us to respond. We have learned that an uptick in overdose, sometimes seen by EMS and ED’s will follow with an uptick in fatalities at the Cook County Medical Examiner.

We have also begun testing for fentanyl in our clinical specimens, and hope to match out patterns with that seen by the Medical Examiner.

I give my highest endorsement to the work being done at the Cook County Medical Examiner’s office, and support any effort to improve the epidemiology-related resources to care for our patients better. These trends lead to clinical interventions.

Sincerely,

Steven E. Aks, DO, FACMT, FACEP
Director, the Toxikon Consortium,
Division of Medical Toxicology,
Professor of Emergency Medicine, Rush Medical College