

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT (CRADA)

21-TCSP-006

The Department of Homeland Security (“DHS”) Sponsor and the Collaborators (collectively referred to as the “Parties”) enter into this CRADA (“Agreement”) under the authority of the U.S. Federal Technology Transfer Act of 1986 (codified at 15 U.S.C. § 3710a). The Parties will work collaboratively to execute the Statement of Work in Appendix A. The utilization of DHS personnel, resources, facilities, equipment, skills, know-how, computer software and information will be consistent with its own policies, missions, and requirements.

Article 1. PARTIES

a. Sponsor:

DHS Science and Technology Directorate
Mr. Jeffrey Booth
Director, Sensors and Platforms Technology Center
Jeffrey.Booth@hq.dhs.gov
(202) 254-6347

b. Collaborators:

i. Local Collaborator:

Metropolitan Government of Nashville and Davidson County, TN
Mr. Tom Palko, PE, CFM
Assistant Director, Metro Water Services
tom.palko@nashville.gov

ii. ISI:

Intellisense Systems Inc.
Ryan Guerrero
Business Development Manager – Environmental Sensing
RGuerrero@intellisenseinc.com

Article 2. DEFINITIONS

Definitions of terms used in this Agreement are located on the DHS website at: <https://www.dhs.gov/publication/st-crada-definitions>, dated August 2018 and are incorporated by reference herein.

Article 3. RIGHTS IN EQUIPMENT

Any Party may provide Equipment to another Party for purposes of joint research, development, test and evaluation. Unless otherwise specified, each Party shall retain title to all Equipment to which it held title prior to the Effective Date of this Agreement or that it purchased for purposes of this Agreement. Any directions regarding the return or disposal of Equipment after test and evaluation activities are completed shall be included in the Statement of Work in Appendix A. All Equipment intended for use under this Agreement will be listed by the appropriate Party in Appendix B spreadsheet and Appendix C.

The Party providing Equipment hereby asserts that it owns or possesses sufficient property rights in the Equipment for the test and evaluation activities conducted under this Agreement.

Article 4. RIGHTS IN PROPRIETARY INFORMATION

- a. Each Party shall identify and list in Appendix C any Proprietary Information, which shall be marked with appropriate markings, before sharing with any other Party. No Party shall disclose to the public any Proprietary Information obtained from any other Party without prior written approval of that Party.
- b. License to Background Intellectual Property (IP). Solely for the purpose of and for the duration of this Agreement, each Party grants to each other Party a temporary, nonexclusive, nontransferable, paid-up license to use its Background IP. Background IP shall also be identified and listed in Appendix C.

Article 5. RIGHTS IN TECHNICAL DATA

Each Party shall grant each other Party unlimited rights in any Technical Data, including copyrighted materials, first created as a result of the activities conducted under this Agreement, unless specifically provided otherwise in the Statement of Work in Appendix A.

Article 6. RIGHTS IN INVENTIONS

- a. Each Party shall disclose to each other Party any Inventions conceived or reduced to practice as a result of the activities conducted under this Agreement within 60 days of the Conception or Reduction to Practice of the Invention.
- b. A Party that solely conceives an Invention or reduces the Invention to practice shall retain all rights allowed by applicable laws. For any Invention arising from this Agreement made by Collaborator employees, Collaborator agrees to grant to the U.S. Government on Collaborator's Inventions a nonexclusive, nontransferable, irrevocable, paid-up license to practice the Invention or have the Invention practiced throughout the world by or on behalf of the Government for research or other Government purposes.
- c. If Parties jointly conceive an Invention or jointly reduce it to practice, those Parties shall retain all rights allowed by applicable laws and shall work together to prosecute a patent application.

- d. If a Party elects not to continue prosecution of a patent application, that Party shall notify each other Party with sufficient time to allow it/them to continue to pursue a patent based on the application.

Article 7. RESTRICTIONS ON COLLABORATOR PUBLICATIONS

Publications produced by any of the Collaborators as a result of this Agreement, as well as publication of this Agreement, shall carry the following notices:

- a. Acknowledgement. “This publication is based upon work conducted under the U.S. Department of Homeland Security Cooperative Research and Development Agreement No. 21-TCSP-006.”
- b. Disclaimer. “The views and/or conclusions contained in this document are those of the author(s) and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Department of Homeland Security (DHS), and do not constitute a DHS endorsement of the equipment tested or evaluated.”

Article 8. EXPORT CONTROLS

Nothing in this Agreement shall be construed as an approval of, certification of, or waiver for an export’s compliance with applicable laws and regulations regarding Export-Controlled Items. Each collaborator maintains the responsibility for its own due diligence regarding its compliance with export control regulations.

Article 9. WARRANTY

The Parties make no representations and extend no warranty of any kind, either expressed or implied, as to any matter associated with this Agreement. There are no expressed or implied warranties of merchantability or fitness for a particular purpose.

For purposes of the activities described in Appendix A of this Agreement, DHS S&T assumes no liability associated with the sensors, their installation, or operational performance.

Article 10. LIABILITY

- a. DHS shall be liable for any damages incurred as a result of activities conducted under this Agreement only to the extent provided under the Federal Tort Claims Act, 28 U.S.C. §§ 2671 through 2680.
- b. Each Collaborator shall be liable for any damages incurred as a result of its activities conducted under this Agreement in accordance with applicable Federal and State laws.

Article 11. FORCE MAJEURE

No Party shall be liable for any unforeseeable event beyond its reasonable control. A Party unable to perform shall promptly notify each other Party.

Article 12. GOVERNING LAW

This Agreement shall be governed by applicable Federal and State laws.

Article 13. DHS SPONSOR CONTRACTOR SUPPORT

DHS reserves the right to use contractor support to fulfill its obligations under this Agreement and agrees to notify each collaborator in writing 15 days prior to doing so.

Article 14. GUESTS OR ATTENDEES

Each Party shall require that its employees, guests, or attendees associated with the engagement appropriately sign Non-Disclosure Agreements to protect and prevent disclosure to the public of any Proprietary Information or Technical Data.

Article 15. FUNDS

No U.S. Government funds will be transferred to any Collaborator under this Agreement. The Statement of Work in Appendix A will address all funding requirements and processes, if any, for funds that any Collaborator transfers to DHS. All expended funds provided by any Collaborator to DHS Sponsor are nonrefundable.

Article 16. DATES, MODIFICATIONS, EXTENSIONS, TERMINATION, SURVIVABILITY, AND DISPUTE RESOLUTION

- a. This Agreement is effective upon the date of signature of the last Party to sign. It will remain in effect for **36** months from that date.
- b. The Parties must agree in writing to all modifications to this Agreement and to any extensions or changes to the termination date of this Agreement.
- c. A Party may unilaterally terminate this Agreement at any time by providing written notice to each other Party.
- d. The Articles of this Agreement shall survive its termination.
- e. The Parties agree that the signatories to this Agreement will resolve all technical disputes arising from the Agreement.

Article 17. POINTS OF CONTACT

DHS Technical POC:

Mr. Jeffrey Booth
Director, Sensors and Platforms Technology Center
DHS Science and Technology Directorate
Phone (202) 254-6347
Jeffrey.Booth@hq.dhs.gov

DHS Technology Transfer POC:

Patricia Reichenbach, DHS CRADA Program Manager
Science and Technology Directorate
Department of Homeland Security
CRADA@hq.dhs.gov

DHS Office of the General Counsel POC:

Technology Programs Law Division
DHS Science and Technology Directorate
Lavanya.Ratnam@hq.dhs.gov

Collaborator POCs:

Mr. Tom Palko, PE, CFM
Assistant Director, Metro Water Services
Metropolitan Government of Nashville and Davidson County, TN
Phone: (615) 862-4510
tom.palko@nashville.gov

Ryan Guerrero
Business Development Manager – Environmental Sensing
Intellisense Systems, Incorporated
Phone: Direct: 424-319-7873
RGuerrero@intellisenseinc.com

Article 18. SIGNATURES FOR 21-TCSP-006

Accepted for Local Collaborator:

I, the undersigned, am duly authorized to bind the Metropolitan Government of Nashville and Davidson County, TN to this Agreement and do so by affixing my signature hereto.

John Cooper, Metropolitan Mayor

Date

APPROVED AS TO THE
AVAILABILITY OF FUNDS:

APPROVED AS TO FORM AND LEGALITY:

Saul Solomon ~~Kevin Crumbo~~, Director
Department of Finance

Tara M. Ladd
Assistant Metropolitan Attorney

Accepted for Intellisense:

I, the undersigned, am duly authorized to bind Intellisense Systems, Inc. to this Agreement and do so by affixing my signature hereto.

Frank T Willis Digitally signed by Frank T Willis
DN: cn=Frank T Willis
Date: 2021.09.10 09:33:35 -07'00'

Frank T. Willis
President and CEO
Date:

Accepted for DHS Sponsor:

I, the undersigned, am duly authorized to bind DHS S&T to this Agreement and do so by affixing my signature hereto.

Kalpana Reddy
Branch Chief, DHS Technology Transfer and Commercialization

APPENDIX A

STATEMENT OF WORK

I. Background

The Department of Homeland Security (DHS) Science and Technology Directorate (S&T) funded Small Business Innovation Research (SBIR) contracts to design, develop, deploy, test, evaluate and deliver operational Internet of Things (IoT), low-cost flood inundation sensors. DHS S&T intends to foster the use and adoption of these flood sensor products by working with the sensor developer and municipal, State, Federal, and international communities to test and evaluate the sensors in operational field deployments.

Flooding is the nation's leading natural disaster, accounting for the greatest loss of life, property damage and economic impact. Current flood damage for the 30-year period (1985-2015) is estimated at \$8.2 billion in damages and more than 105 fatalities per year. In support of the Federal Emergency Management Agency, DHS S&T is evaluating low-cost flood sensors to determine their utility in preparing communities to become more resilient from flood disasters. Mitigation measures like flood sensors will prepare communities to respond by providing alerts, warnings and notifications of flooding. Deployable flood sensors can monitor flood-prone areas in real time for rapid detection to alert officials, industry and citizens to potential flood hazards.

II. Purpose

The purpose of this Agreement is to facilitate collaborative testing and evaluation (T&E) of the flood sensors developed by Intellisense Systems, Incorporated (hereafter Intellisense) under a DHS SBIR contract. The DHS S&T Sponsor will use the data resulting from this T&E activity to assess the functionality of the flood sensors for commercial viability and broad adoption. The Local Collaborator will receive flood sensors to promote community resilience while performing operational T&E in their local field environments over a 36-month evaluation period. In turn, Intellisense will be able to determine any needed enhancements to the flood sensors based on feedback provided by Local Collaborator during the 36-month T&E period.

III. Expected Results

By testing the flood sensor equipment in an operational field environment, Local Collaborator will be able to evaluate the performance of the equipment as it meets their needs for flood alerts, warnings and notifications within their jurisdictions, while also identifying any potential deficiencies and/or vulnerabilities in the sensors. The results of this evaluation will enable DHS S&T to gain further knowledge of the performance of the flood sensors and allow Intellisense to develop enhancements to mitigate deficiencies in sensor performance. This collaboration will result in improved sensor capabilities that increase community resilience to flood hazards, potentially leading to commercial availability and adoption of the sensors by Local Collaborator and other users.

IV. Obligations of DHS S&T:

DHS S&T is responsible for the following specific activities:

- a. Flood Sensors – Work with Intellisense to provide a total of twenty-four (24) flood sensors to Local Collaborator in an initial distribution. Additional sensors will be considered in a subsequent distribution if the Parties concur. S&T will work with Local Collaborator to inventory and track the flood sensors on a quarterly basis using the format provided in Appendix D.
- b. Flood Sensor Ownership – Maintain ownership of the flood sensors per DHS policy during the period of this Agreement.
- c. Privacy Requirements – Complete requisite privacy risk analysis and ensure implementation of privacy protections by completing appropriate privacy compliance documentation as required by law and DHS policy. DHS S&T may request information from Local Collaborator to inform the privacy risk analysis.
- d. Data Rights – DHS S&T shall use any data first produced by Intellisense under this Agreement for Government purposes only and shall not publicly disclose any such data without the written permission of Intellisense.
- e. Coordination – Conduct quarterly status meetings with Local Collaborator and Intellisense to review the operational performance and status of the flood sensors.
- f. Flood Sensor Signage – Ensure that notification is affixed to each sensor to alert the public that the flood sensors belong to DHS.
- g. Telecommunications – Cover the telecommunication costs for the first 24 months associated with the operation of the flood sensors under this Agreement. Local Collaborator will be responsible for all communication costs after 24 months.
- h. Flood Sensor Evaluation – Provide a flood sensor evaluation form (see Appendix E) for use by Local Collaborator in assessing the performance of the flood sensors.
- i. PII Data Deletion or Destruction – After the testing and evaluation of the flood sensors is completed, acknowledge receipt of email from Local Collaborator containing the Certificate of Data Disposal (see Appendix F). This Certificate confirms that all imagery data containing personally identifiable information (PII) captured during the testing and evaluation of the flood sensors has been deleted or destroyed from all Local Collaborator systems and equipment such that there is reasonable and consistent assurance that the data cannot be easily retrieved or reconstructed.
- j. Flood Sensor Disposition Determination – Review the final quarterly status report with Local Collaborator to assess operational status of the flood sensors. Pursuant to the DHS property disposition and evaluation process, DHS will determine if the sensors are to be returned by Local Collaborator. In the event DHS determines the property has no commercial or monetary value, or the cost of care, handling and preparation of the property for sale would be greater than the expected sales proceeds, then DHS will collaborate with Local Collaborator to dispose of the sensors.
- k. Flood Sensor Disposal/Excess Property - DHS S&T shall execute the disposal/excess property process based upon DHS policy. DHS will collaborate with Local Collaborator to determine the appropriate disposition for the sensors including the possible disposal of the sensors in accordance with the National Environmental Policy Act of 1969 (or equivalent state or local requirements), the Solid Waste Disposal Act of 1965, as amended by the Resource Conservation and Recovery Act, and guidelines found in Appendix G.

V. Obligations of Intellisense:

- a. Shipping - Ship the flood sensors directly to Local Collaborator's primary office location and/or other location(s) designated by Local Collaborator.
- b. Flood Sensor Signage – Prior to shipment, affix notification to each sensor to alert the public that the flood sensors belong to DHS.
- c. Installation & Deployment - Provide the flood sensor Installation Guide and User Guide documentation and videos (see links below) to ensure that Local Collaborator has the necessary information to independently install and operate the flood sensors.
 - i. <https://www.intellisenseinc.com/thank-you/aware-flood-installation-guide-download/>
 - ii. <https://youtu.be/y6zF1UAPZGk>
 - iii. <https://www.intellisenseinc.com/resources/document-library/aware-flood-user-guide/>
 - iv. <https://youtu.be/qwElSSG-PsA>

This documentation shall preclude the need for in-person training and limit the amount of technical support consultation.

- d. Flood Sensor Data
 - i. Intellisense grants the Local Collaborator permanent ownership and control of any flood sensor data obtained from the normal operation of the flood sensors that the Local Collaborator stores on computer systems that the Local Collaborator controls.
 - ii. For any flood sensor data obtained from the normal operation of the flood sensors but stored on servers that Intellisense controls, Intellisense grants the Local Collaborator permanent ownership and control of any Technical Data that the Local Collaborator exports from such servers to computer systems that the Local Collaborator controls.
 - iii. Intellisense agrees that, if any of the flood sensor data is stored on Intellisense servers, Intellisense shall restrict its use of such data to customer support and/or product development and commercialization.
- e. Technical Consultation - Provide technical consultation to Local Collaborator as needed but not to exceed 40 hours, to ensure proper installation and operation of the sensors. Level of support, if deemed necessary, shall be determined and agreed to by the Parties.
- f. Coordination and Reporting – Participate in quarterly conference calls with DHS S&T and Local Collaborator to discuss the use and performance of the flood sensors.

VI. Obligations of Local Collaborator:

Local Collaborator shall deploy, install, operate, maintain and evaluate the flood sensors and be responsible for all aspects of the sensor field deployment and operation. Responsibilities include the following specific activities:

- a. Receipt of Sensors – Receive shipment(s) of the flood sensors at office location(s) determined in advance by Local Collaborator and provide to DHS S&T and Intellisense in agreed-upon format by all Parties.
- b. Flood Sensor Data - Local Collaborator shall maintain control over any flood sensor data, obtained from the normal operation of the flood sensors, that the Local Collaborator stores on computer systems that the Local Collaborator controls, including a) water height, environmental and related sensor performance data, and b) imagery data, if any, captured by the attached camera.
- c. Privacy Requirements – if requested by DHS, provide information to DHS S&T to inform the privacy risk analysis.
- d. Data Rights – Local Collaborator shall not publicly disclose any data first produced by Intellisense under this Agreement without the written permission of Intellisense.
- e. Sensor Site Location – Identify and gain access to all site locations where the flood sensors will be installed.
- f. Authorized Site Access and Permits – Secure all necessary rights-of-way access for easement and encroachment requirements including any permits if necessary, for the selected site locations (e.g., government and/or private landowner requirements).
- g. Installation / Deployment – Install the flood sensors at the selected site locations using the Intellisense-provided Installation Guide and User Guide documentation and videos. Local Collaborator is responsible for purchasing supplies and materials (e.g., t-posts, conduit, fasteners, etc.) necessary to install the sensors.
- h. Maintenance and Operation – Operate and maintain the flood sensors and be responsible for all aspects of the sensor field operation.
- i. Coordination and Reporting – Participate in quarterly conference calls with DHS S&T and Intellisense to discuss the use and performance of the flood sensors and provide reports using the spreadsheet in Appendix D.
- j. Flood Sensor Evaluation – Evaluate the flood sensors using the DHS-provided evaluation form in Appendix F at the beginning and end of the Period of Performance of this Agreement. Local Collaborator also may perform its own internal evaluation of the flood sensors and provide the findings to DHS S&T.
- k. PII Data Deletion or Destruction - After the testing and evaluation of the flood sensors is completed, Local Collaborator shall delete or otherwise destroy all imagery containing PII captured during the testing and evaluation period from all systems and equipment. Local Collaborator shall send the Certificate of Data Disposal (see Appendix F) via email to DHS S&T confirming that all PII images captured during the testing and evaluation of the flood sensors were deleted or destroyed such that there is reasonable and consistent assurance that the data cannot be easily retrieved or reconstructed.
- l. Flood Sensor Disposition - Prepare and provide a final sensor inventory and operational status report to DHS S&T 90 days prior to the end of the period of performance of this Agreement. DHS S&T will collaborate with Local Collaborator to determine the appropriate disposition for the sensors including the possible disposal of the sensors in accordance with the National Environmental Policy Act of 1969 (or equivalent state or local requirements) and the Solid Waste Disposal Act of 1965, as amended by the Resource Conservation and Recovery Act. As such, and pursuant to the DHS property disposition and evaluation, Local Collaborator will collaborate with DHS to dispose of the sensors according to DHS disposal/excess property policy and the guidance in Appendix G.

VII. Outputs

- Quarterly coordination calls and operational status reports (Appendix D) involving all the Parties to address the use and performance of the flood sensors.
- Flood Sensor Evaluation Form (Appendix E) completed by Local Collaborator at the beginning and end of the Period of Performance of this Agreement.

VIII. Period of Performance

The period of performance shall be thirty-six (36) months from the date of execution of this Agreement.

IX. Other Considerations

a. Delivery of Equipment

Local Collaborator is responsible for transporting the flood sensors received from Intellisense and all necessary flood sensor equipment, supplies and materials for installation to and from the selected site locations. Local Collaborator shall retain control of the sensors and any installation equipment during installation and for the thirty-six (36) month test and evaluation period.

b. Return and Disposition of Equipment/Material

Due to the environmental conditions at each of Local Collaborator's field sites, there is potential that a portion or all of the flood sensors will be damaged by debris associated with rising water events. The Parties are also aware that, despite manufacturing processes to deter theft and vandalism, these activities may occur.

Defective, damaged, vandalized, stolen or non-functioning flood sensors will neither be replaced, repaired or refurbished by the DHS Sponsor or any Party, nor will there be a responsibility or obligation by any Party to replace/repair the flood sensors.

On a quarterly basis, Local Collaborator will coordinate with DHS S&T on the status and performance of each of the deployed flood sensors using the spreadsheet shown Appendix D. DHS S&T and Local Collaborator shall review the final quarterly status report of the 36-month period of performance to assess operational status of the flood sensors. Based upon the assessment, DHS S&T shall execute the disposal/excess property process based upon DHS policy.

c. Other Conditions

Per Article 3.a: Rights in Equipment. Without express written permission by DHS S&T, Local Collaborator shall ensure that neither it nor its state and local government entities/partners re-distribute, disseminate, loan or lose possession of the flood sensors.

Per Article 4.a: Rights in Proprietary Information. The Parties agree that they will not disclose any of the Proprietary Information outside their respective organizations without prior written permission from the other Parties unless required to do so pursuant to the law.

Per Article 4.a: Rights in Proprietary Information and Article 5, Rights in Technical Data. DHS S&T may designate information resulting from activities conducted under this Agreement as For Official Use Only information. The Parties shall not release, disclose, publish, promote, or otherwise share with the public or third parties any DHS-provided information or any information related to the activities conducted under this Agreement (including but not limited to the field site location, installation activities, evaluation materials or results, and equipment performance) without the prior written approval of DHS S&T and/or prior coordination among all the Parties.

Per Article 4.a: Rights in Proprietary Information. Local Collaborator is granted permission to retain any user-related documentation (e.g., Installation Guide, User Guide, etc.) for the flood sensors beyond the term of this Agreement. DHS S&T and Local Collaborator agrees they will not disseminate any non-publicly available user-related documentation provided by Intellisense outside their respective agencies without prior written permission from Intellisense.

Per Article 4.b: Rights in Proprietary Information. Local Collaborator is not permitted to, and must protect against, the reverse engineering of the flood sensor including the unit's computer hardware and firmware.

Per Article 14: Guests or Attendees. Local Collaborator's employees are exempt from the requirement to sign a DHS Non-Disclosure Agreement if Local Collaborator describes in writing to DHS a program of reasonable measures to ensure that, prior to being given access to ISI proprietary information, such Local Collaborator employees are made aware of Local Collaborator's obligations to protect ISI proprietary information that are in Section VI (Obligations of Local Collaborator) of Appendix A (Statement of Work) and in this Section IX (Other Considerations).

APPENDIX B

EQUIPMENT

DHS S&T will provide the following flood sensors¹ to Local Collaborator for the period of performance of this Agreement.

24 flood sensor packages: Each Intellisense flood sensor package includes an upper node /communications module, a camera, and an in-stream pressure transducer. Any additional flood sensors or ancillary materials (e.g., extension cables) provided to Local Collaborator will be tracked and categorized in Appendix D.

¹ Flood Sensor includes (unless otherwise noted): Flood node and Antenna; water level pressure (WLP) sensor and 15 meter cable; camera sensor and 2 meter cable; and incidentals such as a node mounting bracket, two hose clamps, torx screws, and torx driver (*1 for every 10 nodes). All are delivered within a custom packaging.

APPENDIX C

PROPRIETARY INFORMATION AND BACKGROUND INTELLECTUAL PROPERTY

I. DHS Proprietary Information

N/A

II. Intellisense Proprietary Information

Flood sensor documentation.

III. Local Collaborator Proprietary Information

N/A

IV. DHS Background Intellectual Property

N/A

V. Intellisense Background Intellectual Property

Flood sensors and associated sensor documentation.

VI. Local Collaborator Background Intellectual Property

N/A

APPENDIX D

APPENDIX D

DHS S&T Flood Sensor¹ Equipment: City of Nashville, TN

3/19/2021

^[1] Flood Sensor includes (unless otherwise noted): Flood node and Antenna; water level pressure (WLP) sensor; camera sensor; and incidentals such as a node mounting bracket, two hose clamps, torx screws, and torx driver (*1 for every 10 nodes). All are delivered within a custom packaging.

Distribution #1: 24 Flood Sensors shipped during week of _____

Distro #1	Flood Sensor Model	Serial #	Collaborator Name	Operational Status								Comments	
				2021 Q1	2021 Q2	2021 Q3	2021 Q4	2022 Q1	2022 Q2	2022 Q3	2022 Q4		
1	F210V		City of Nashville, TN										
2	F210V		City of Nashville, TN										
3	F210V		City of Nashville, TN										
4	F210V		City of Nashville, TN										
5	F210V		City of Nashville, TN										
6	F210V		City of Nashville, TN										
7	F210V		City of Nashville, TN										
8	F210V		City of Nashville, TN										
9	F210V		City of Nashville, TN										
10	F210V		City of Nashville, TN										
11	F210V		City of Nashville, TN										
12	F210V		City of Nashville, TN										
13	F210V		City of Nashville, TN										
14	F210V		City of Nashville, TN										
15	F210V		City of Nashville, TN										
16	F210V		City of Nashville, TN										
17	F210V		City of Nashville, TN										
19	F210V		City of Nashville, TN										
20	F210V		City of Nashville, TN										
21	F210V		City of Nashville, TN										
22	F210V		City of Nashville, TN										
23	F210V		City of Nashville, TN										
24	F210V		City of Nashville, TN										
25													

Operational Status Codes
XX - Not Installed (Still In Box)
O1 - Operating As Defined
N1 - Node Not Reporting
C1 - Node Reporting, Camera Not Imaging
W1 - Node Reporting, No Water Depth Reporting
M1 - Awaiting Maintenance Prior to Re-Installation
D1 - Damaged, Sensor Removed From Field
D2 - Damaged, Sensor Vandalized
D3 - Destroyed, Sensor Disposed Of By Collaborator
D4 - Destroyed, Sensor Lost / Not Retrievable

¹ Flood Sensor includes (unless otherwise noted): Flood node and Antenna; water level pressure (WLP) sensor and 15 meter cable; camera sensor and 2 meter cable; and incidentals such as a node mounting bracket, two hose clamps, torx screws, and torx driver (*1 for every 10 nodes). All are delivered within a custom packaging.

APPENDIX E

DHS S&T Flood Sensor Evaluation Form

Thank you for your participation in this evaluation of the DHS S&T low-cost IoT flood sensors deployed in your community.

If you have any questions during the evaluation period, please contact the DHS Technical Point of Contact.

Name of Collaborator:

Organization:

Address:

Address:

Contact Name:

Contact email:

Contact phone:

Date of Evaluation:

Operational Evaluation

* Responses provided at the beginning of the agreement (Questions 1 & 2)

** Responses provided at the end of the agreement (Questions 3- 9)

Please provide a summary of your experiences for each of the Sections below. Identify issues and opportunities to improve the support function listed.

1. Shipping*: Collaborator's experience may include but is not limited to: receiving the flood sensors from the DHS S&T support contractor; clear communications for shipping expectations (e.g., Tracking number, Number of expected packaging, Shipment size and delivery); accuracy of Bill of Materials; damage to the sensors during transport; any return shipping of sensors back to the DHS S&T support contractor.

ANSWER:

2. Documentation & Support*: DHS S&T support contractor's documentation or instructions (e.g., user guides, videos, etc.) provided Collaborator with clear/concise path forward (similar to receiving a commercial product via on-line provider) for installation, mounting, calibration, operational use and monitoring of sensors, and data format documentation. DHS S&T support

contractor's support included responsiveness via phone or email and resolution of the issues presented.

ANSWER:

3. DHS S&T Support Contractor Website: As appropriate per Collaborator installation, DHS S&T support contractor's website was easy to use and provided the information needed, satisfactory interaction for Settings changes, and data accessibility.

ANSWER:

4. Field Installation: Collaborator's experience may include, but is not limited to: level of effort, materials, tools, mobile application, cameras, antennas, etc. with installing, re-installing or taking corrective actions with DHS S&T support contractor's sensors at various site environments.

ANSWER:

5. Power: Collaborator's experience may include but is not limited to: sensor's ability to maintain power in various light and weather conditions to send data to the Collaborator's preference for a data aggregation site.

ANSWER:

6. Calibration: Collaborator's experience may include but is not limited to: default parameter adequacy; sensor triggers; remote trigger setting functionality; accuracy compared to higher order sensor readings (e.g., USGS, NOAA, other).

ANSWER:

7. Communications: Collaborator's experience may include but is not limited to: cellular signal strength, communications sufficiency of data and imagery, and sufficiency of sensor antenna.

ANSWER:

8. Data & Transmission: Collaborator’s experience may include but is not limited to: Transmission of data from sensors and viewable by the DHS S&T support contractor’s website (or by 3rd party website), suitability of data ingest to the Collaborator’s software solution (i.e., Contrail) from DHS S&T support contractor’s / sensor’s environment.

ANSWER:

9. Capabilities: Collaborator’s experience may include but is not limited to: suitability of sensors camera/imagery, suitability of “on-demand” functionality, imagery setup via DHS S&T support contractor mobile application, retrievability of past imagery, and GPS capabilities that proved adequate for Collaborator’s needs.

ANSWER:

CONCLUSIONS: Collaborator’s candid assessment of DHS S&T support contractor’s sensor operational performance and interest in acquiring additional sensors.

ANSWER:

Final Remarks: Please provide final remarks and commentary on any topic that may or may not have been included in the survey questions above.

APPENDIX F

CERTIFICATE OF DATA DELETION OR DESTRUCTION FOR TESTING AND EVALUATION OF FLOOD SENSORS



Homeland Security

CERTIFICATE OF DATA DISPOSAL

The undersigned Collaborator hereby certifies that all copies, both physical and electronic, of the imagery data containing PII captured during the testing and evaluation of flood sensors has been deleted or destroyed such that there is reasonable and consistent assurance that the data cannot be easily retrieved or reconstructed. Description of files that were deleted or destroyed:

Data set / File name	Data Medium (physical, electronic)	Method of disposal	Date of disposal
Imagery data containing personally identifiable information ²	Electronic		
Submitter:			

Please Print or Type Name and Job Position

Signature

Date

² Examples of imagery that contains PII include but are not limited to, participating and non-participating individuals, any belongings of individuals that identify the individual (e.g., name tag), and license plates.
Note: See NIST Media Sanitization, SP 800-88 guidelines for consideration

APPENDIX G

Sensor Disposal Guidelines:

In the event the flood sensors stop working, first contact Intellisense to determine if the technology can be repaired for continued use. If it is determined irreparable, please follow these steps to dispose of the equipment in a thoughtful and environmentally sensitive manner.

Early Warning Flood Sensors come equipped with a variety of parts and technologies that must be managed in different ways. These parts include:

- Various plastics and metals
- Standard E-material
- PV (solar) panel(s)
- Lithium Ion Battery

Do not dispose of PV panels or the lithium-ion batteries in a landfill; both contain reactive and environmentally damaging heavy metals. To recycle the flood sensor's lithium battery, simply locate your community's nearest drop-off location for "used rechargeable batteries." It is likely that this facility will also accept the electronic waste (e-waste) generated from the flood sensor. If not, locate a nearby location that does accept e-waste and drop off at that location. These facilities can be identified through a simple Internet search – common e-waste and used battery receptors include hardware stores, battery retailers, and municipal/county recycling facilities.

To recycle the PV panel, first contact the local waste/recycling authority, waste services of nearby localities, or an independent PV recycling organization to inquire about options. Should none of these be viable, contact Intellisense for direction.

Plastics and metals that make up the casing and structure of the flood sensor can likely be recycled in your city's general recycling services. If uncertain, be sure to call and ask about a specific material. Dispose of nonrecyclable parts according to general landfill waste guidelines.

For more information on disposal options, contact Intellisense.