Internet Society
Artificial Intelligence
SIG

Concept Note

Purpose and Objectives: The main objective of the **"Wire-Free Sewer Vision" Hackathon** is to expedite the creation of novel, autonomous, and remotely controlled technology that can examine, identify, and fix obstructions in wastewater and municipal sewer systems. Our goal is to challenge participants to develop a new generation of vision and intervention devices that are smart, nimble, and disposable or recoverable in order to move beyond conventional, unwieldy wired solutions. In the end, this will shorten emergency response times, save maintenance expenses, and increase the dependability of crucial urban infrastructure.

Theme and Challenge: A **"Wire-Free Sewer Vision"** system is required due to serious shortcomings and inefficiencies in the existing techniques for maintaining and inspecting essential urban wastewater infrastructure. Urban crises are largely caused by blockages, and current technology is frequently too sluggish, expensive, and constrictive to deal with them in a preventative manner.

The Problem with Current Methods:

Current Method	Major Drawback	Why Wire-Free is Essential
CCTV/Crawler Cameras	**Limited Reach & Complexity:** These systems are heavy, require large service trucks, and are limited by the length of the tethered cable. They struggle to navigate tight bends, complex connections, or significant debris, leaving vast stretches of pipes uninspected.	A wire-free, agile unit can be deployed quickly and navigate deep into inaccessible side-laterals and small-diameter pipes where blockages typically begin.
Reactive Maintenance	**High Cost & Public Health Risk:** Most maintenance is *reactive*—responding only after a blockage causes sewage backups, street flooding, property damage, and public health hazards. This is expensive, disruptive, and involves significant clean-up costs.	A remote monitoring system allows for predictive maintenance, catching minor build-ups (like FOG—Fats, Oils, and Grease) *before* they turn into catastrophic "fatbergs."
Manual/Physical Inspection	**Extreme Safety Hazards:** Workers are exposed to toxic gases (like Hydrogen Sulfide), biohazards, and the risk of flash flooding in confined spaces.	Remote deployment eliminates the need for human entry into hazardous sewer environments, drastically improving worker safety and reducing labor costs.
Diagnostic Time	**Lack of Immediate Solutions:** Current inspection and clearing are two separate, time-consuming steps. A camera must first find the blockage, then a separate crew with different tools must be dispatched to clear it.	Integrating remote clearing capability (even minor) with vision and detection enables a single unit to *detect, diagnose, and intervene* in a single deployment, dramatically reducing service time.

The Value Proposition of Wire-Free Technology

A successful **Wire-Free Sewer Vision** system offers immense value by transforming sewer maintenance from an emergency-response operation into a proactive, intelligent infrastructure management program:

- **Public Health & Environmental Protection:** Rapidly detecting and clearing blockages prevents sewage overflows, protecting waterways, soil, and reducing the spread of waterborne diseases.
- **Cost Efficiency:** Replacing multi-vehicle, multi-crew tethered inspections with agile, smart, self-contained units drastically cuts operational costs (labor, fuel, road closures, and emergency response).
- **Data-Driven Decisions:** Wireless units can collect high-fidelity data (video, sensor readings, and location) for long-term analysis. This AI-ready data enables municipalities to create **predictive models** to identify and prioritize high-risk pipes for preventative maintenance.

The goal of this hackathon is to create the technological leap necessary to bring this safety, efficiency, and intelligence to a critical but long-neglected piece of urban infrastructure.

That is a tight and exciting schedule for a **hybrid hackathon!** Organizing a 16-hour hybrid event that accommodates both in-person and online participants, plus a remote and live audience, requires extremely precise timing and communication.

16-Hour Hybrid Hackathon Event Schedule:

This schedule is broken into four phases: **Kickoff & Ideation**, **Development & Mentorship**, **Finalizing & Judging**, and **Finale & Follow-up**.

Time (Duration)	Phase	Key Activities & Responsibilities	Hybrid Notes (In-Person & Online)
Phase 1: Kickoff & Ideation (2 Hours)			
0:00 – 0:30 (30 min)	Event Welcome & Logistics	Welcome address, Sponsor recognition, Review Hackathon Rules, Set up communication channels (Internet Society Artificial Intelligence SIG).	Hybrid Audience: Live stream the Welcome/Rules. Participants: All required to be present (physically or virtually) for key briefing.
0:30 – 1:00 (30 min)	Challenge Deep Dive & Keynote	Detailed presentation of the "Wire-Free Sewer Vision" problem statement, available APIs/resources, and judging criteria.	Hybrid Audience: Live stream the keynote.
1:00 – 2:00 (60 min)	Team Formation & Ideation	Teams finalize (or form) and spend time brainstorming concepts based on the theme. Organizers facilitate matching for remote/solo participants.	In-Person: Dedicated physical ideation zones. Online: Use breakout rooms on Zoom/Discord for team collaboration.

Phase 2: Development & Mentorship (10 Hours)			
2:00 – 7:00 (5 hours)	Core Hacking & Building	Teams begin coding, building, and developing their prototypes. Technical Support team is fully active.	In-Person: Access to power, Wi-Fi, and workstations. Online: Persistent help channels for immediate technical support.
7:00 – 9:00 (2 hours)	Mentor Check-in Sessions	Scheduled, mandatory check-ins for mentors to rotate among teams, offering technical/business guidance and assessing initial progress.	Hybrid: Mentors visit in-person teams; use pre-booked Internet Society Artificial Intelligence SIG private calls for online teams.
9:00 – 12:00 (3 hours)	Final Development Push	Teams lock down their core features and focus on data integration, presentation design, and refining the prototype.	Audience/Spectators: Optional mid-event update stream with organizer interviews.
Phase 3: Finalizing & Judging (3 Hours)			
12:00 – 12:30 (30 min)	Submission Deadline	All code repositories must be frozen, and the final project pitch deck/video must be submitted via the designated platform.	Hybrid: Submission platform open to both in-person and online teams.
12:30 – 13:30 (60 min)	Judging (Initial Review)	Judges conduct a preliminary review of all submitted materials (code, documentation, and videos) to narrow down the finalists.	Hybrid: Judges meet in a private room (physical or virtual) to score submissions based on criteria.
13:30 – 15:00 (90 min)	Final Pitch Presentations	Top 5-8 Finalist Teams present their solutions live (or via high-quality video) to the judges. Q&A follows each pitch.	In-Person: Teams present on stage. Online: Remote finalists join the main live stream for their presentation and Q&A. Audience: Live stream this highly engaging session.
Phase 4: Final & Follow-up (1 Hour)			
15:00 – 15:30 (30 min)	Judges Deliberation & Audience Break	Judges retreat to finalize scores and determine winners. Audience views sponsor content, short tech talks, or pre-recorded interviews.	Hybrid Audience: Maintain a continuous live feed with engaging content.
15:30 – 16:00 (30 min)	Closing Ceremony & Awards	Announcement of winners, presentation of prizes, final closing remarks, and next steps for winning projects.	Hybrid Audience: High-energy live stream of the full ceremony. Participants: All are encouraged to stay until the final minute to celebrate.

II. Preparation

1. **Build Your Organizing Team:** Assign clear roles and responsibilities (logistics, marketing, technical support, judging, etc.).

2. **Venue (for in-person/hybrid):** Found a suitable space with reliable, fast Wi-Fi, enough power outlets, comfortable seating, and necessary facilities.
3. **Prepare Rules and Judging Criteria:** Rules will prepare the judges & be published.
4. **Secure Mentors and Judges:** Recruit knowledgeable mentors to guide the teams and qualified judges to evaluate the final projects.

III. Execution and Promotion

5. **Promote the Event and Drive Registration:** Use various channels (social media, email, internal channels) to build excitement and recruit the target audience. The promotion should emphasize the benefits for participants.
6. **Manage Registrations and Team Formation:** Use a platform to manage sign-ups. Offer pre-event team-matching or ideation sessions to help participants feel prepared.
7. **Event Kickoff:** Clearly present the challenge, rules, judging criteria, and schedule. Provide inspiration and guidance.
8. **During the Hackathon:**
    - ***Ensure all logistics (food, internet, power) run smoothly***.
    - Facilitate **mentorship** sessions and support.
    - Maintain high **energy** with breaks, activities, and continuous encouragement.
9. **Pitching and Judging:** Manage the final presentation of projects and the judging process according to the pre-defined criteria.
10. **Award Ceremony:** Announce the winners and recognize all participants, judges, and mentors.

IV. Post-Event Follow-up

11. **Follow-up and Momentum:** Collect all project submissions and identify next steps for promising ideas (e.g., further development, internal presentation). Assign ownership to keep the momentum going.
12. **Post-Event Communication:** Thank all participants, judges, sponsors, and organizers. Share photos and highlights from the event.
13. **Gather Feedback and Review:** Collect feedback from participants, organizers, and stakeholders to identify successes and areas for improvement for the next hackathon.