

Wild Sensing in the **Smart City**

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What kinds of **benefits** could we see by implementing **RFIDs/Sensors** into our **smart city** homes through **domestic/wild animals**?

Could **monitoring animals** and their **environment**
in a **Smart City** help **develop** a more **organic**
Smart City of the **future**?

In **what ways** can we use **wireless sensor networks** (WSNs) to **monitor animals** & their environment in the **Smart City** to **gather data** to develop a more **Organic Smart City** of the **future**?

Urban Wildlife (Global)

- **Deer**
- Coyotes
- Foxes
- **Raccoons**
- Opossums
- Skunks
- **Squirrels**
- Rabbits
- **Mice**
- **Bats**
- Gulls
- Pigeons
- **Hawks**
- Falcons
- Sparrows
- Crows
- **Rats**
- Boars
- **Dogs**
- **Cats**
- **Ducks**
- Monkeys
- Chimpanzees
- Orangutangs
- Bobcats
- Alligators
- **Snakes**
- **Turtles**
- Owls
- Leopards
- Black Bears
- Mountain Lion
- Woodchucks
- **Insects**
- **Fish**
- **Plants**

Wired Woods at James Reserve

A diagram showing the **sensor ecosystem** developed and tested through the Center for Embedded Networked Sensing (CENS) research project.



“There is always a subject, though not necessarily a human one. Even a rock – and for that matter even an electron – has experiences, and must be considered a subject/superject to a certain extent. A falling rock ‘feels,’ or ‘perceives,’ the gravitational field of the earth. The rock isn’t conscious, of course; but it is affected by the earth, and this being-affected is its experience...Sensor technologies are constitutive of sense—they too ‘experience’ the world and generate perceptive capacities.”

– Steven Shaviro

Could a 'sensor ecosystem' be applied to an urban setting?

How to equip wildlife in the Smart City

- Wireless Sensor Networks (WSNs)

Current WSNs are deployed on land, underground, and underwater. Depending on the environment, a sensor network faces different challenges and constraints.

5 Types:

1. terrestrial WSN
2. underground WSN
3. underwater WSN
4. multi-media WSN
5. mobile WSN

2 Applications:

1. Monitoring
2. Tracking

Data Collection & Management

- Gathering Protocols:

Differs with respect to size of data attributes:

1. communication & networking attributes
2. event-time attributes
3. Sensor Node attributes
4. environmental attributes

Features:

1. scalability
2. adaptability
3. robustness
4. energy-efficient design
5. dynamic topology

Analyzing & Potentialities

- Hypothetical Questions:

Depending on gathered data from specific wildlife:

1. how are we creating new habitats in the urban environment?
2. how are animals adapting to drastic urban change?
3. do animals affect the way we interact with our urban environment?
4. what sort of impact does sensing wildlife have on a city?
5. how can data gathered from wildlife sensing in smart cities change the way we approach the developments of new cities?
6. how can data gathered from wild sensing in the smart city affect the way we design architecture in terms of experience?

“...Organisms are tuned to particular problems in their milieus. They are affected in differing ways according to their interests as well as what the milieu proposes — and they have effects on their milieus.”

– Jennifer Gabrys

Notes

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