Common Sense a Public Access Wireless Sensor Network for Environmental Monitoring

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In the past years there have been numerous environmental disasters some of which are the British Petroleum oil spill in the Gulf of Mexico, the Fukushima nuclear disaster, the Gypsum pond leak in Finland, among others. In order to restore an ecosystems health it is necessary to constantly monitor its state, but monitoring programs are expensive, the U.S. alone has spent 1.5 billion USD, since 2009 in great lake restoration and since 1990 more than 15 billion dollars in river restoration but due to the lack of proper monitoring it is difficult to prove the success of these and many other environmental projects.

A common denominator in most environmental disasters is information discrepancy between the local government, the scientific community and the media. Through better monitoring of disasters we can achieve consensus, as well as better models of the affected ecosystem's state and behavior. Thus making it easier to detect a canary in a coal mine. Many of the natural reserves that researchers would like to get data from are in remote areas without internet access, thus making it difficult to constantly get data from a sensor.

As a solution we propose the use of Common Sense, a public access wireless sensor network that communicates through cellphone networks. To get access to the data what you need to do is as easy as sending an SMS to the sensor and wait for a reply. Each unit is packed with its own energy harvesting system, GPS and cellphone antenna and chip that allows it to function in most countries worldwide. By allowing each unit to harvest its own energy supply, sensors can gather data not only for months but years. Furthermore users will be able to combine a set of sensors (e.g. temperature sensors, geiger counters, current flow sensor, among others) to best suit their application's needs. Each unit will be able to determine hostile environments, (e.g. if parameters exceed safe operating conditions or it's being tampered with) and flush the data to an emergency contact, so the information won't get lost. A map with the location of the Common Sense units as well as their contact information will be available online for everyone to access. All of these features will be easily accessible through a smartphone app, while remaining compatible with regular cellphones.

Help us improve environmental protection by using Common Sense.

REFERENCES

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