

A society of things

system design document

Subject to change at any time. Last revised: 2014-8-12

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1. Brief description

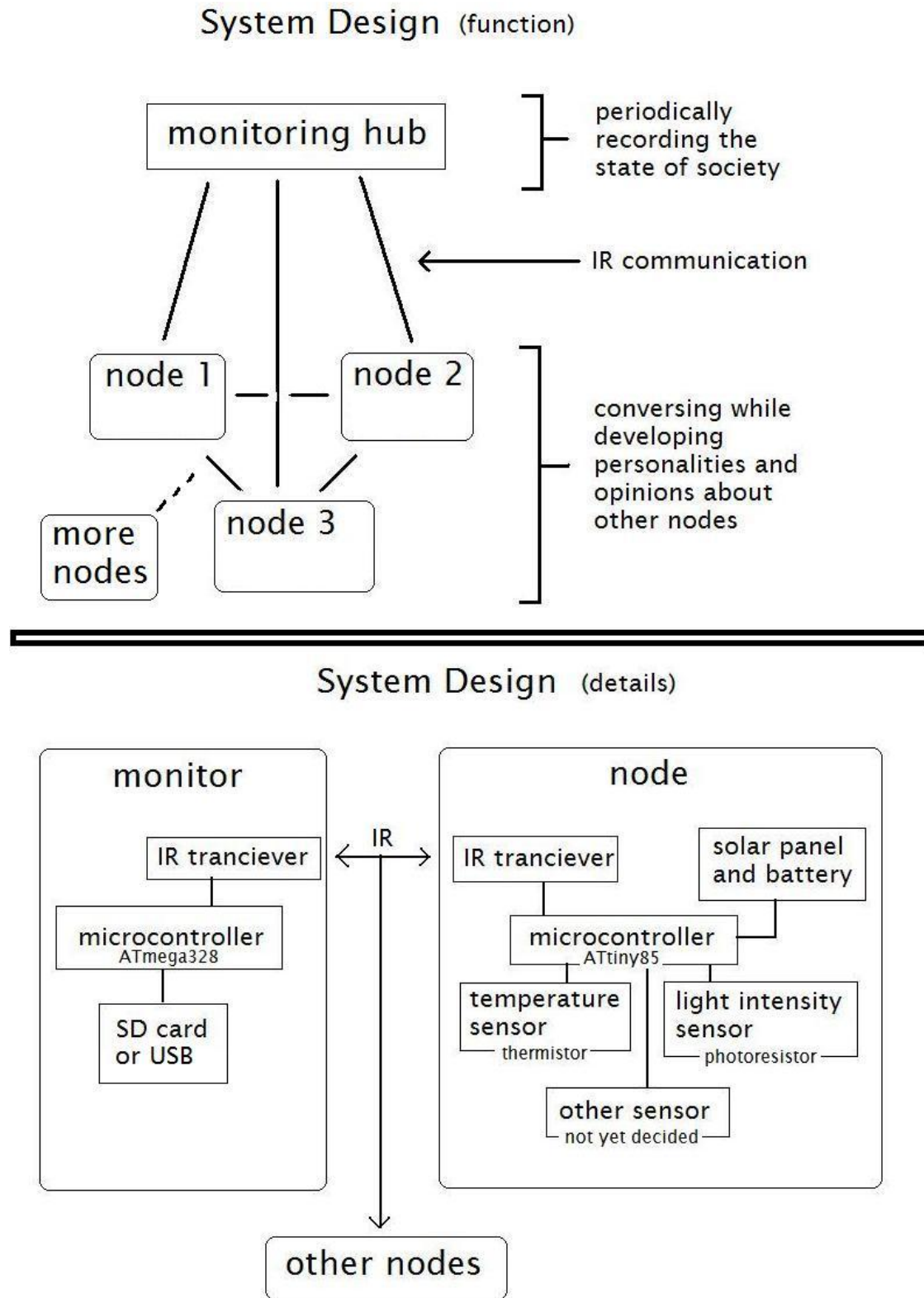
This project is an entry for the Hackaday Prize contest. It is documented on the HackaDay Projects site at <http://hackaday.io/project/2160-A-society-of-things>

The goal of this project is to create a network of household objects that emulate a social network of humans. The objects communicate with each other about their environment, using sensor data, and develop personalities and opinions about other objects.

Here are some terms used throughout the project:

- Model – The social aspect of the programming including all interactions and parameters.
- Exchange – The basic message type in which two nodes exchange sensor data either about themselves or a third party node.
- Proposal – Each node maintains a “relationship” with each other node. They can propose to set the relationship as friend or enemy. The default is neutral.
- Parameter – Each node maintains three personal parameters: confidence, honesty, and desire to socialize. They also maintain four parameters for each other node(4 x nodeCount values): affection, trust, perceived social status, and relationship.

2. System outlines



3. Currently reached milestones

- Prototype schematic published
- Code repository set up
- Social aspect of software functioning as expected
- Temporary monitoring hub and node for testing purposes constructed
- IR communications system fully functional
- Prototype node constructed

4. Next steps and future goals

- Construct additional nodes
- Construct a standalone monitoring hub using an SD card for recording data
- Refine electronics and design a pcb to be fabricated
- Design a more accessible enclosure that doesn't require these specific keychain lights
- Refine the model to make things more interesting and perhaps add new features.
- An additional possibility is to have the nodes directly make use of the objects to which they are assigned. For example, a lamp node could actually control the lamp. Of course this would only work with certain objects.

5. List of components

Qty.	Name/number	Source	Price(JP yen)
1	ATtiny85	Ebay	145
1	ATmega328-P	Mouser	230
2	IR receiver TSOP38238	Mouser	50
2	IR LED OS15LA5113A	Akizukidenshi	20
2	thermistor NTC-MF52	Ebay	15
2	photoresistor GL5537	Ebay	10
1	LIR2032 3.6V battery	100yen shop	100
1	small 5V solar panel	100yen shop	Included with batt
1	5x7 hole piece of protoboard	Akizukidenshi	10
1	8-pin DIP socket	Akizukidenshi	10
2	100uF electrolytic capacitor	Recycled	0
1	1uF ceramic capacitor (smd)	Mouser	<5
4	10k ohm resistor	Akizukidenshi	<5
2	100 ohm resistor(smd)	Mouser	<5
2	330 ohm resistor(smd)	Mouser	<5
1	plastic enclosure	100yen shop	Included with batt

6. Links to file repositories and useful resources

- Code repository <https://github.com/shlonkin/SocietyOfThings>
- First concept video <http://youtu.be/Y7paAILGM6s>
- Prototype progress video http://youtu.be/oDueFMV9_AY
- Arduino site, source for Arduino libraries used <http://arduino.cc/>
- Source for ATtiny85 support libraries <http://highlowtech.org/?p=1695>
- A patch for the compiler that arduino uses which fixes a bug affecting large ATtiny85 programs <https://drive.google.com/file/d/0B0-PE-lARnk1R3hpTVNDN1ZmWUE/edit?usp=sharing>

7. Notes regarding open-source licenses and such

The source code for this project is under a GNU GPL v.3 license as mentioned in the files with the following information:

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This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License version 3 as published by the Free Software Foundation.

The Arduino libraries used are covered under their respective licenses as found on the Arduino site linked to above.

The ATtiny85 support libraries from the link above contain the following license information:

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