UNIVERSITÄT PADERBORN
Die Universität der Informationsgesellschaft

Precision Agriculture

Project
Networked Embedded Systems – W17/18

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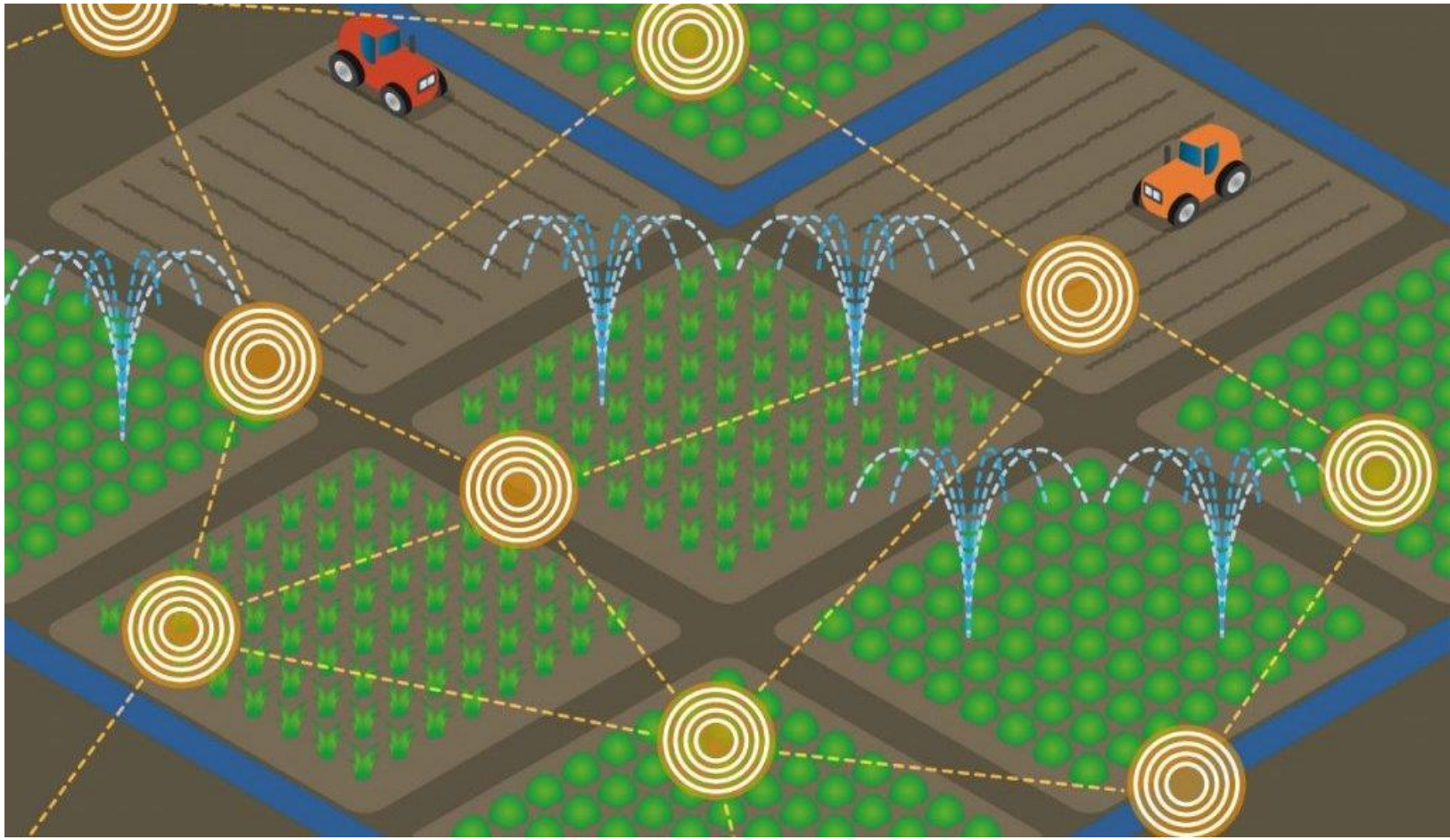
Project goal

Implement an energy conserving way of monitoring incident sunshine on a patch of land, reporting whether some patches receive less sunlight than others.

Additionally do actions based on measured data.

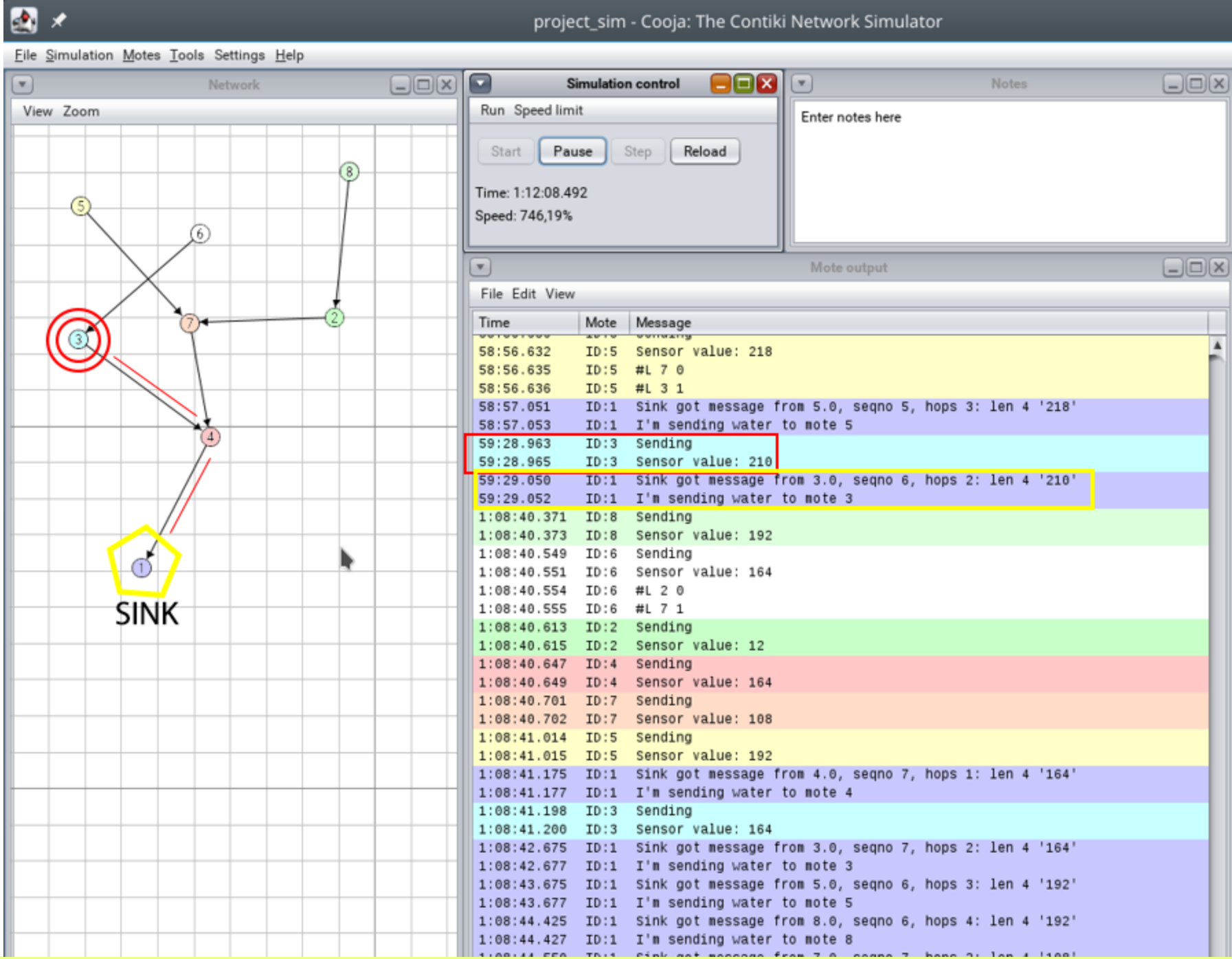


Work cycle

- measure light value with light sensor e.g. every hour or some random time
- if measured value is big enough to know that light source is present on some patch of land send that value to sink
- send data from sink to main server for future analysis
- based on retrieved sensor value make action, e.g. send less or more water to patch of land
- every mote go in power saving mode when no activities

Simulation of sensors network in Cooja with 7 + 1 mote, where mote 1 is sink and it is receiving data from all other motes (2-8).

Disadvantage in this approach is if the number of motes is large – sink overload. One of the solutions would be to use more than one sink for collecting data.



Light sensor values - actions table

- values may differ for other types of plants
- sink mote contain preprogrammed actions that are executed based on this table

Intensity	Action	Action ID
<= 10	POWER SAVE / SLEEP	1
> 10 and <= 100	SEND WATER	2
> 100 and <= 200	SEND MORE WATER	3
> 200	WARNING / VERY HOT	4

Tools

- Contiki OS v3.x
- Cooja Contiki Network Simulator

- Suitable for Moteiv Tmote Sky sensor motes
- Program written in C language

Contiki

The Open Source OS for the Internet of Things