windy
_or theNaturalBehaviour

design by: Stefanie Sixt. Min-Chieh Chen. Ma Hai Dong. Jakob Przybylo

about_ pattern recognition & feedback in realtime

> **simulation of natural conditions**

> **about the environment and human behaviour**

**windy
_or theNaturalBehaviour**

windy_ is

an **interactive design object** ... *nodes of simple white balloons*

...reflects and simulates natural conditions & reacts on the behaviour of people

**windy
_or theNaturalBehaviour**

windy_ provides you :

      with *actual, useful information in a surprising manner...*

**windy
_or theNaturalBehaviour**

windy_or theNaturalBehaviour

windy is a student project developed at the chair of CAAD at the ETH in zurich during the Physical Computing Module.

windy is an interactive design object which reflects and simulates natural conditions and also reacts on the behaviour of people.
This object, a combination of nature and technology, exists out of many nodes - a set of simple white balloons.

The idea is to embed functional properties within a simulation of natural attributes like wind and temperature.

The object moves indoor as an object outdoor does - influenced by exterior weather conditions (e.g. grass and wind). It reacts, but is also able to provide you with actual, useful information in a surprising manner.

These features are split up in 3 modes and are supported by using a smart phone.

pattern recognition + feedback "simulation of natural conditions"_ about the environment and human behaviour

ETH Swiss Federal Institute of Technology Zurich
Place

Physical Computing_ MAS 2009/2010 CAAD ETHZ Prof. Hovestadt
Module

APRIL 2010
Date

20 to 40 sqm
Size

white balloons, 3D printed parts, LEDs, sensors, xbee, servomotors, joysticks and other media
Materials

Stefanie Sixt. Min-Chieh Chen. Ma Hai Dong. Jakob Przybylo
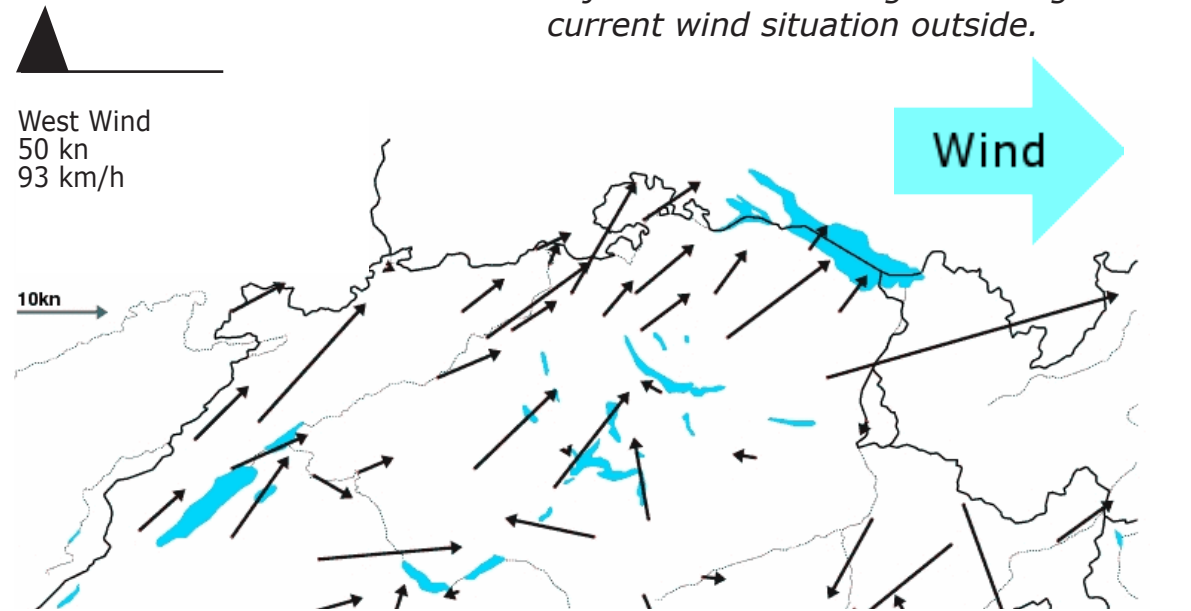Designers

mode1_reaction in real time: *direct input from* **actual outdoor data (phys.)**

>> wind situation in real time

windy_or theNaturalBehaviour

mode1
_wind situation in realtime

mode2
_infoMode

mode3
_events

West Wind
50 kn
93 km/h

10kn

Wind

objects indoor moving according to the current wind situation outside.

setup indoor - outdoor = 1 element indoor (physical)
+ 1 element outdoor (physical)

object indoor
***moves as an** object outdoor*
does

mode2_InfoMode: input from database/web as functional_behaviour

windy_or theNaturalBehaviour

mode1
_wind situation in realtime

mode2
_infoMode

mode3
_events

**input from the web via mobile phone and XBee (smart phone device).
>> simulation of global weather data**

objects indoor moving acoording to the wind data from the weather station

+ informing about temperature by changing their color modes.

Zurich
H: 56° L: 40°

		54°
SATURDAY		56° 40°
SUNDAY		57° 44°
MONDAY		64° 45°
TUESDAY		57° 47°
WEDNESDAY		50° 40°
THURSDAY		49° 40°

Updated 10/18/08 5:56 AM

**setup indoor =   1 element indoor (physical)
+ web data input (virtual)**

**reaction to virtual data
(windSPEED_DIRECTION
+ temperature)**

mode3_events_ about occupancy and different moods*

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mode1
_wind situation in realtime

mode2
_infoMode

mode3
_events

reaction to to actual physical data (movement people)

>> elements reflecting the mood and occupancy of people in space

output: obj changing color according to **distance people - nodes**

cool mood   **warm mood**
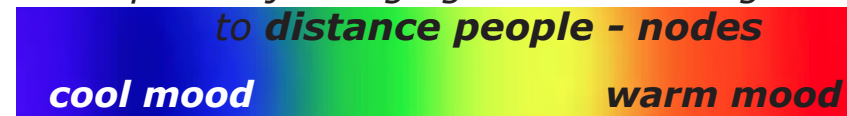
less activity   ⟷   high activity
low occupancy   high occupancy

setup outdoor =   **1 element outdoor (physical)**
          + human input (physical)

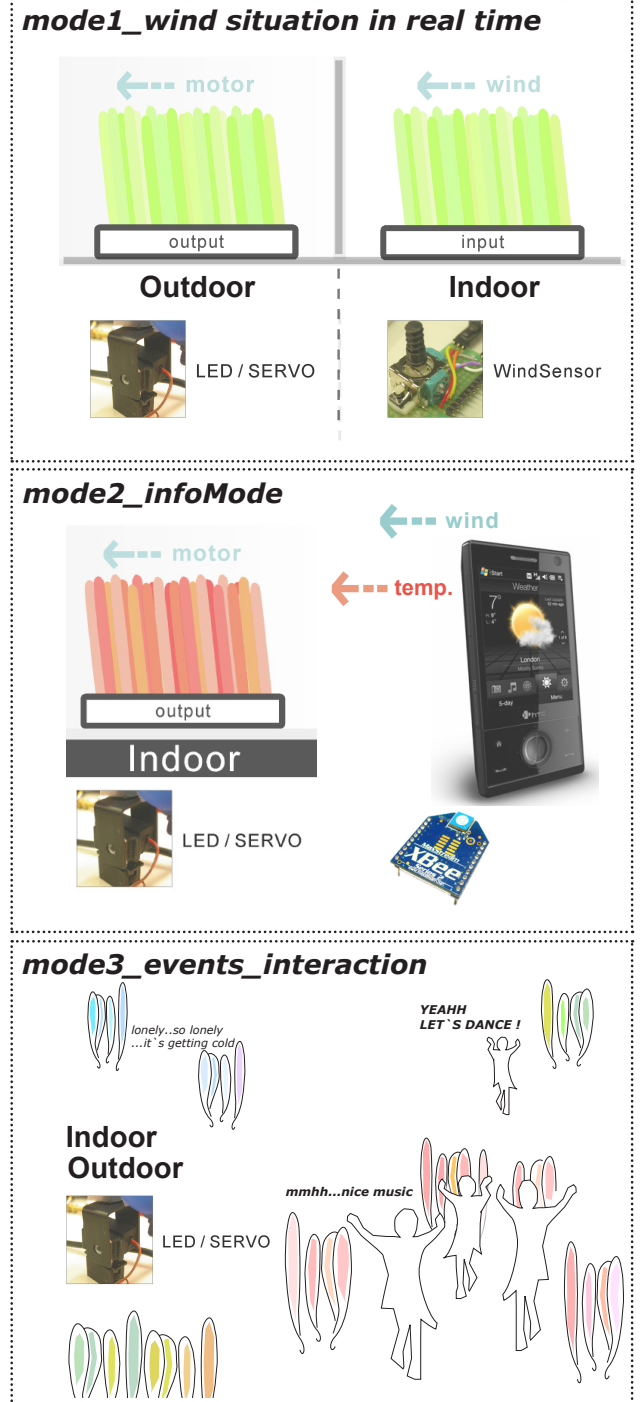## controlling function_additional device:

smart phone

MODE 1
MODE 2
MODE 3

**an application for your mobile phone which allows you to switch directly between the 3 modes.
for direct feedback of information and
better control.**

The idea is to embed functional properties within a simulation of natural attributes AND is also able to provide you with actual useful information.

mode1_wind situation in real time

← motor   ← wind

output   input

Outdoor   **Indoor**

LED / SERVO   WindSensor

mode2_infoMode

← motor   ← wind

← temp.

output

Indoor

LED / SERVO

mode3_events_interaction

lonely..so lonely
...it`s getting cold

YEAHH
LET`S DANCE !

Indoor
Outdoor

mmhh...nice music

LED / SERVO

userInterface: for smart phone_ controlling function as additional device

windy
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mode1
_wind situation in realtime

mode2
_infoMode

mode3
_events

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mode1
_wind situation in realtime

mode2
_infoMode

mode3
_events

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_wind situation in realtime

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windy_or theNaturalBehaviour

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mode3
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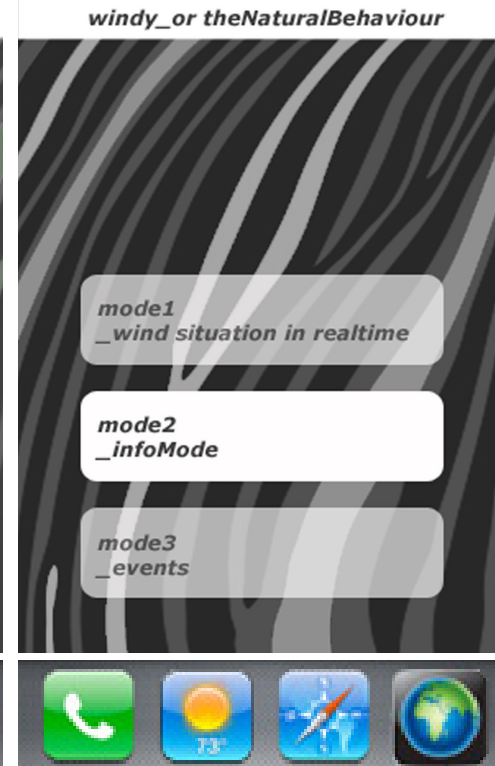
userInterface: for computer

diagram setup_

live input

internet

smart phone

processing

computer

node 1 | node 2 | node 3

node 4 | node 5 | node 6
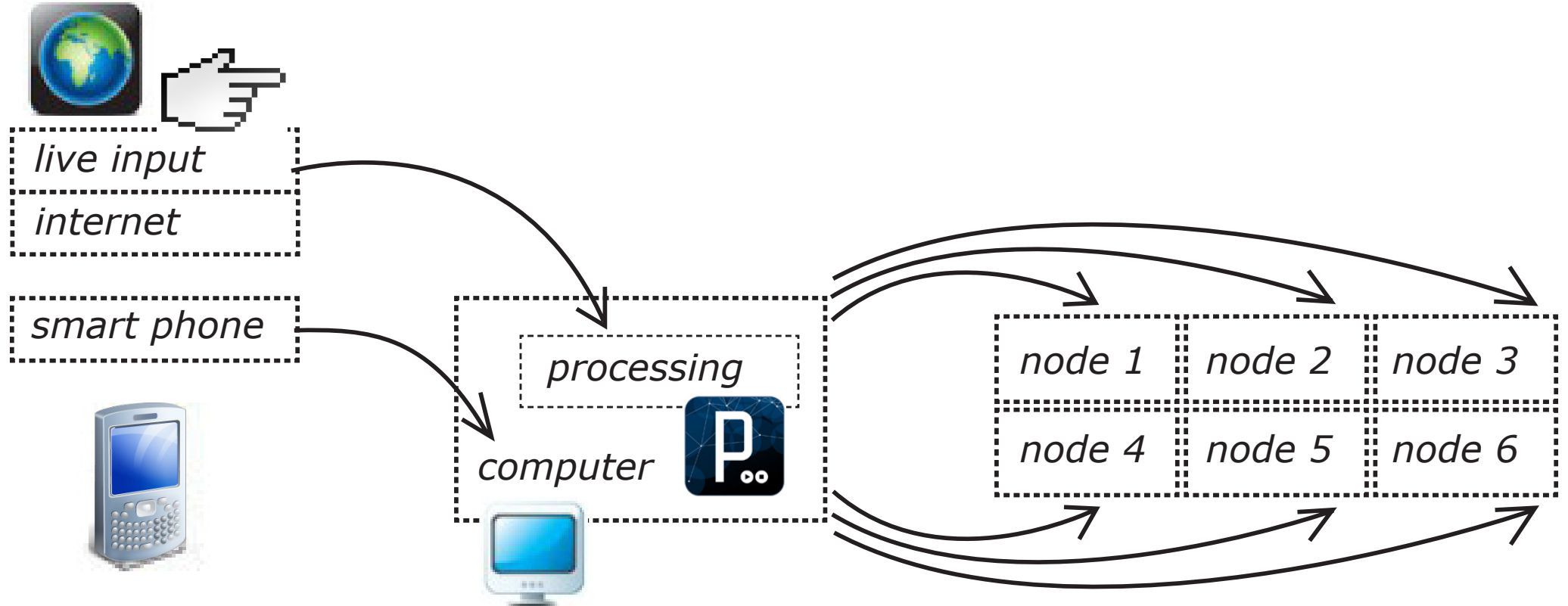
_physical parts connected
to seeduino board_

**power supply
system**

**2-Axes + 2 button
Joystick**

RGB LED

**extra-power
6.0 voltage**
_____
**idle   17mA
busy   70mA
            x2**

RGB LED
_____
**Red   2.0 V 18mA
Green 3.2 V 19mA
Blue   3.2 V 19mA**

Servo x2
_____
**idle   2mA
busy 16mA**
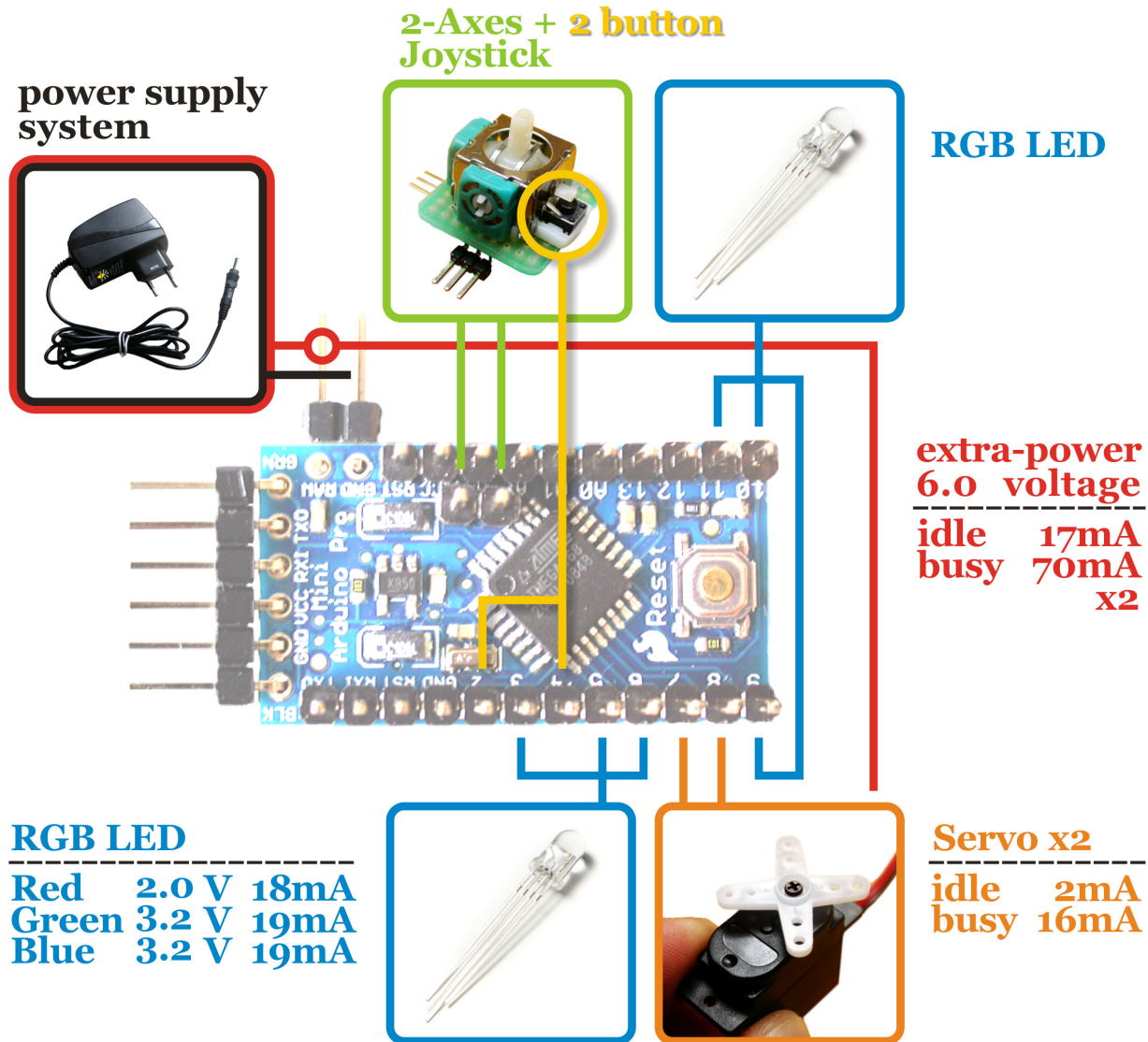
setUp 1 node_physical

set
of white balloons

+
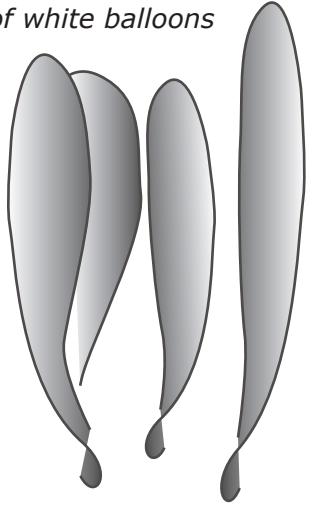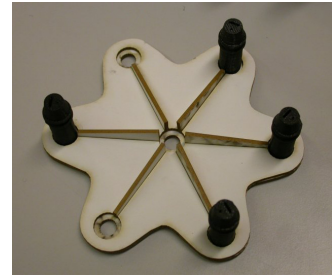
3D printed parts
+ cardboard
lasercuts

+
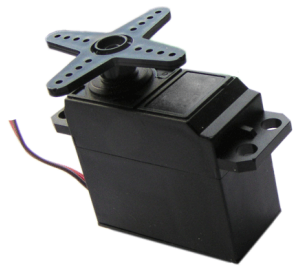
servo motors

LED_3colored range in
each balloon
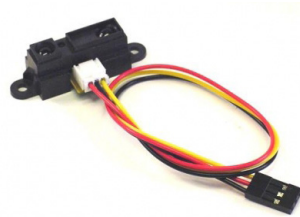
SHARP i/R distance sensor

xbee

seeduino board

motor 1   control

motor 2

led1 led2
led3 led4

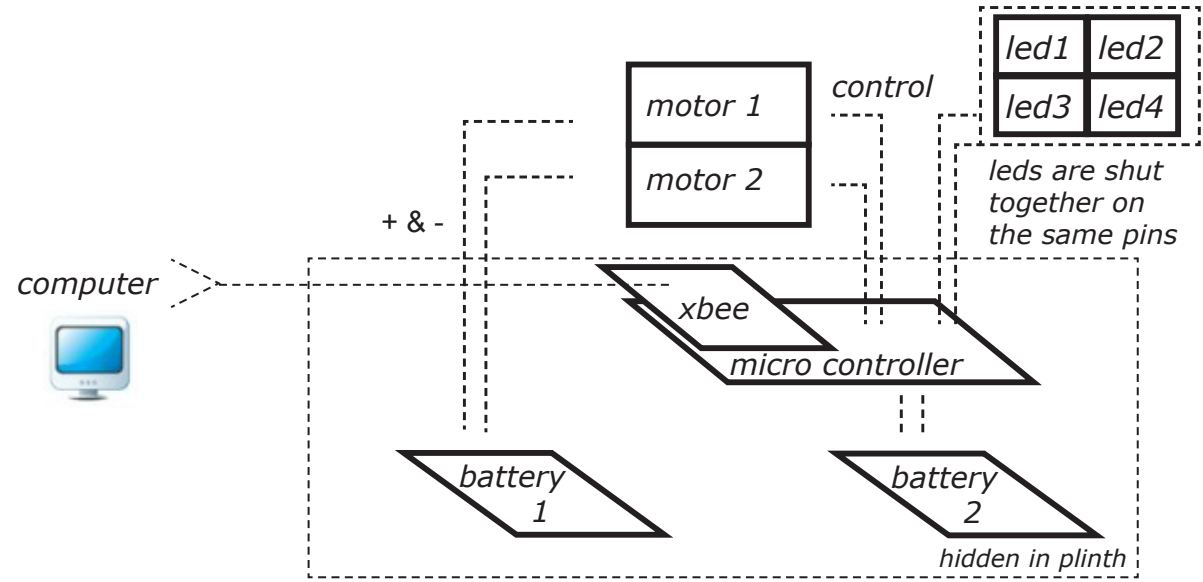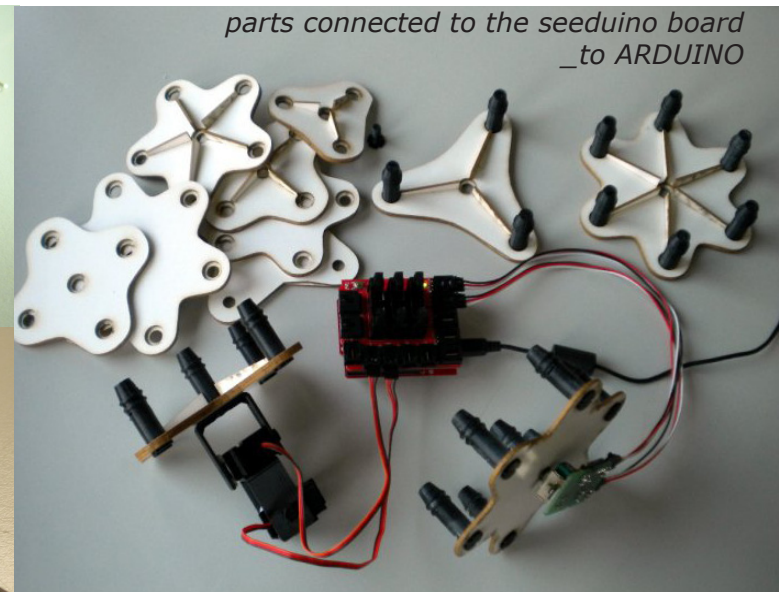leds are shut
together on
the same pins

+ & -

computer

xbee

micro controller

battery
1

battery
2

hidden in plinth
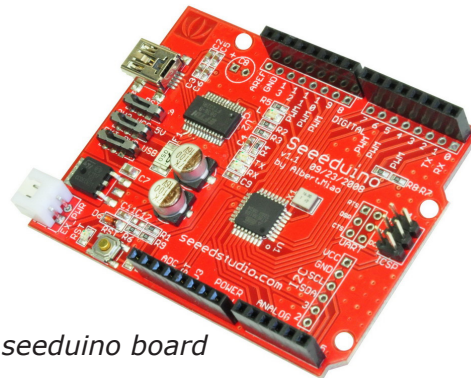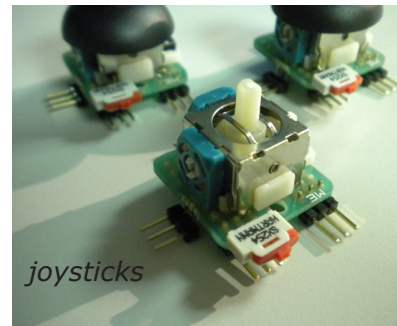
joysticks

parts connected to the seeduino board
_to ARDUINO

SpringSummerBBQ_MasCAAD2010

when: friday 14th of may, start 5:00 pm - open end
where: in front of the - HPZ building (CAAD Department) at the ETH Hönggerberg

feel free to bring friends - music - some food for barbecue... and booze