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Environment Design to Sustain Users - Workshop 23

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Environment Design to Sustain Users

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Ecosystem - Homes

Overlap or Common Patterns
How do we identify it, personalise it, conceptualise it, act on it

Form, Fit, Function
System Patterns - Example

Flood Light Fitting

Light Detection (Darkness)

Presence Detection

Industrial Integrated Solution

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System Patterns - Example

Now
Individual key
Adjust seat
Adjust control sensitivity

These common patterns have weightings and context for individuals

Offer customised personalised experience
A person’s “connection” to the ecosystem is based on a number of factors:

- **Gender**
  - Woman
  - Man
  - Unknown

- **Ethnicity**
  - Shared cultural heritage, ancestry, history, homeland, language or ideology.

- **Age**
  - 0 to 150!

- **Education**
  - Level Kindergarten to PhD and discipline Nursing, Engineering, hospitality.

- **Experience**
  - Experience is something you get after you need it. Theoretical or practical. Low or high level.

- **Physical and Mental**
  - Physical (Visual, Hearing, Smell etc) and mental ability.

Every one of these and many other factors affects the individual’s “connection”.
Perfect User Experience in Sustainable Design?

So you want me to show you a perfect user experience in sustainable design that is suited to every member of the population equally?

Now YOU are talking Fantasy and Fiction!

But we will show you today some tricks and knowledge you need to employ, so YOU....yes....YOU can be better prepared.

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Discussion of Systems

Traditionally Wired System
On/Off and Analogue

Fieldbus Wired System

Intelligent Wired System

Warning
Simplistic View
To show issues and concepts
Traditionally Wired System – On/Off

Hence a basic lighting circuit. The switch turns on the light.

Steps:
1. Place the components switch and light
2. Place the wiring
3. Label the system.

Warning
Cheap & Easy
But
Reuse/multiuse of signal?
Individual preferences
On/Off Sensor **Switch** Concept

- **Push to Make**
- **Push to Break**

**Single Pole**
- Single Way or Throw

**Double Pole**
- Single Way or Throw

---

Passive infrared-motion sensor block diagram

- Fresnel lens
- PIR
- +V Amplifier
- Comparator
- Thermal energy
- IR filter
- Pyroelectric sensor
- Output

---

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On/Off Actuator Concept

Blinds

Doors, Gates, Fans

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User in Traditionally Wired

Jane moved in bed
John stepped out of bed
James moved in a room

Title:___________
Activity:_________
Location:_________
Traditionally Wired System - Analogue

Hence a basic lighting circuit.
The switch turns on the light.

Steps:
1. Place the components dimmer and light
2. Place the wiring
3. Label the system.

Warning
Cheap & Easy
But
Reuse/multiuse of signal?
Individual preferences
Analogue Sensor Concept - Examples

Warning
Could vary Voltage, Resistance or Current to do the same thing

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Analogue Actuator Concept - Examples

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Fieldbus Concept - Simplified

Circuit 1

10010101 1100101 10010101

On, Off, Off, On, Off, On, Off, On

This is the default baud rate of the switch.
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1001110 could equate to the alpha character N
Fieldbus Concept - Wireless

WIFI is frequency based - 2.4Ghz and 5Ghz

High or Low Frequency or Amplitude

10010101 1100101 10010101

High, Low, Low, High, Low, High, Low, High

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### Header

```
1010;1011
```

### Body

```
*>! 1010;1011
```

### Trailer

```
1010;1011
```

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<td>X2</td>
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Fieldbus Concept - Wireless

Header: 1010;1011
Body: *!>
Trailer: 1010;1011

Address: _______
Memory

Data:
X0 0
X1 0
X2 0

Logic
OS

Title: _______________
Activity:: ____________
Location:: ____________

Jane moved in bed

John stepped out of bed

James moved in a room
Fieldbus Concept - Messages

- Simple 1 or 0 messages
- Hexadecimal messages, still transmitted as 1 or 0
- XML or JSON messages, still transmitted as 1 or 0

But this is only sending information. How is it intelligent!!!
Intelligence - Device

Robust and Reliable? Not an app on a phone or PC

Where is it located?

How is the logic expressed?

When is it used?

How do we capture different users?

How do we capture different Situations?

Warning
Every time a new device is added it needs to be included in the big logic

Can this be different?

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In essence

One app does not exclusively own the screen function
Or battery, or vibration or calendar or alerts.
They reuse and share the functions through apps

In a similar way

One user does not exclusively own the fridge function
Or TV, or shower or front door or alerts.
They reuse and share the functions through intelligent ubiquitous interaction
Thank you