



# Design, mental models & behaviour change

Dan Lockton



27  
Elevators Only  
and The Post





## WARNING

Please beware of sharp points on  
the top of the wall!

Do not rest your arms or hands on  
the top of the wall!



WRONG  
WAY

STOP

SEVERE TIRE  
DAMAGE





**Electronic System for  
Travel Authorization**

U.S. Department of Homeland Security

[Help](#)

# Welcome

[English](#) [Čeština](#) [Dansk](#)  
[Français](#) [Íslenska](#) [Italiano](#)  
[Lietuvių](#) [Magyar](#) [Nederlands](#)  
[Slovenščina](#)

Welcome to the Electronic System for Travel Authorization

International travelers who are seeking to travel to the United States under the Visa Waiver Program are now subject to enhanced security requirements. All eligible travelers who wish to travel under the Visa Waiver Program must apply for authorization using the following process:

The page at <https://esta.cbp.dhs.gov> says:



You are about to access a Department of Homeland Security computer system. This computer system and data therein are property of the U.S. Government and provided for official U.S. Government information and use. There is no expectation of privacy when you use this computer system. The use of a password or any other security measure does not establish an expectation of privacy. By using this system, you consent to the terms set forth in this notice. You may not process classified national security information on this computer system. Access to this system is restricted to authorized users only. Unauthorized access, use, or modification of this system or of data contained herein, or in transit to/from this system, may constitute a violation of section 1030 of title 18 of the U.S. Code and other criminal laws. Anyone who accesses a Federal computer system without authorization or exceeds access authority, or obtains, alters, damages, destroys, or discloses information, or prevents authorized use of information on the computer system, may be subject to penalties, fines or imprisonment. This computer system and any related equipment is subject to monitoring for administrative oversight, law enforcement, criminal investigative purposes, inquiries into alleged wrongdoing or misuse, and to ensure proper performance of applicable security features and procedures. DHS may conduct monitoring activities without further notice.

OK



## The Japan Association welcomes you

to the Ishikawa Takuboku meet.

Date: 28-29 November, 2008



Client Name: **Japan Association**

Title: **Greeting**

### Requirement

A cost effective and impactful way of greeting patrons at an Indo-Japan cultural event (Ishikawa Takuboku meet) organized by the Japan Association in India.

### Creative (Panel at the entrance)

A red panel was placed at the entrance of the Japan Association where the event was being held.

In order to read the fine print, every visitor thereby ended up bowing in the traditional Japanese way.

### Target Audience

A select group comprising enthusiasts, media persons, delegates, sponsors and students.



RUBBISH  
BIN!  
USE  
ME  
PROPERLY  
PLEASE!

Chloe Johnson  
Whitstable Junior School



Jamie Beaton  
Stable Junior School



# Donor Card

I would like to help someone  
to live after my death.

Let your relatives know your wishes,  
and keep this card with you at all times.

MRS

40-19-1

CODE NUMBER

British

# Organ donation bid to target new drivers

Drivers applying for new licences from July will have to respond to a question about organ donation, as the government bids to increase donor numbers.

Under the "prompted choice" system, applicants must register to donate, say they have already signed up or state: "I do not want to answer this now."



Under the DVLA's current scheme, people can skip the question, but nearly 8m people have still signed up as donors.

It is hoped to increase numbers by making people consider a response.

If the DVLA pilot scheme is successful it could be rolled out to other areas.

Twenty-seven per cent of the UK population are registered donors, but the



National clinical director for transplantation Chris Rudge: "Around the world similar schemes have made a significant difference"

**Related storie**



**Brunel**  
UNIVERSITY  
WEST LONDON



**“We can never do  
merely one thing”**

**Garrett Hardin, 1963**



PLEASE  
DO NOT SIT  
ON THE  
HISTORIC  
STAIRS

FERRY  
BUILDING



















# Tickets for travel today



pay by cash



pay by card



collect pre-paid

All tickets are issued subject to National Rail Conditions of Carriage, available at staffed ticket offices or at [www.firstgreatwestern.co.uk](http://www.firstgreatwestern.co.uk). Tickets are not transferable and, unless indicated, are valid for travel by any permitted route & on the services of participating operators. This machine is operated by First Greater Western Ltd. 1 Milford Street, Swindon SN1 1HL. To apply for refunds please apply to the nearest staffed ticket office or contact Customer Services Team, First Great Western, Freepost SWB40576, Plymouth PL4 6ZZ.




**First Great Western**  
When using coins in this machine  
**BE PATIENT!**  
Listen to the mechanism work before inserting the next coin.  
Please do not rub the coin on the body of this machine - this makes no difference as to whether the coin is accepted by the machine or not.

**Coins**

**SMILE YOU ARE ON CAMERA**  
We care about your safety and security so we monitor this area with CCTV.  
This ticket machine is security cameraed.  
Please do not attempt to tamper with this machine and the items on premises.  
Cash emptied daily

**Cards**



**First**  **Great Western**

**When using coins in this  
machine**

**BE PATIENT!**

**Listen to the mechanism work before  
inserting the next coin.**

**Please do not rub the coin on the body of  
this machine – this makes no difference  
as to whether  
the coin is accepted by the machine or  
not.**



**Coins**



**SMILE YOU ARE ON CAMERA**

*We care about your safety and security so  
we monitor this area with CCTV.*

*This ticket machine is security alarmed.  
Anyone who attempts to tamper with this  
machine will be liable for prosecution.*

**Cash emptied daily**

EL







Touch handle  
and pull gently  
door will now  
open automatically



Touch handle  
and pull gently  
door will now  
open automatically



**NO SMOKING**  
SMOKING IS NOT PERMITTED  
ANYWHERE IN THIS BUILDING.

NG  
TTED  
LDING



**Touch handle  
and pull gently**  
door will now  
open automatically



Home Profile Find People Settings Help Sign out

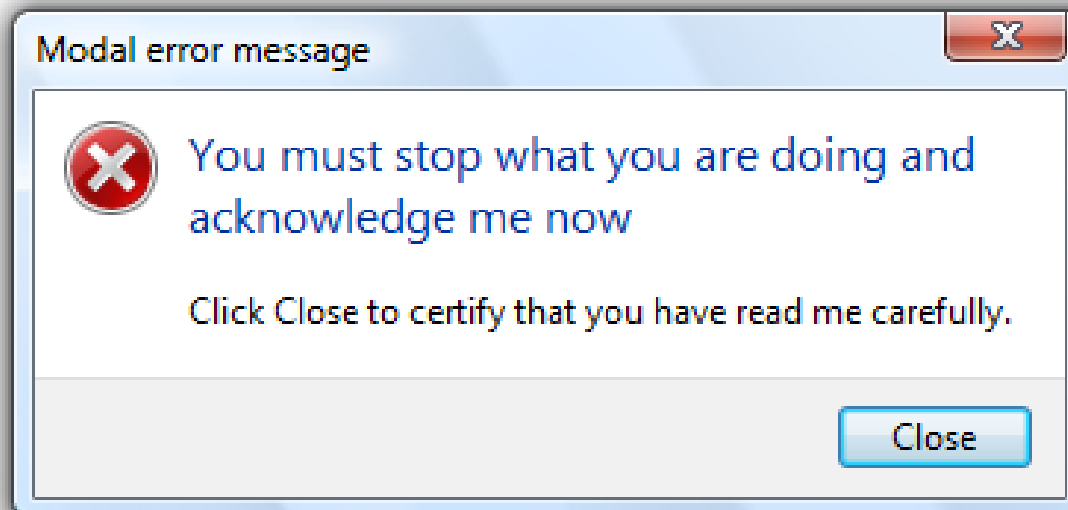
If I want to copy and paste my email address into the second box, I WILL GOD DAMMIT! How dare you disable right-click and CTRL+V. And how?!

less than a minute ago via SocialOomph Retweeted by you

Reply Retweeted (Undo)



YourLocalGP George Preston



Modal error message



You must stop what you are doing and  
acknowledge me now

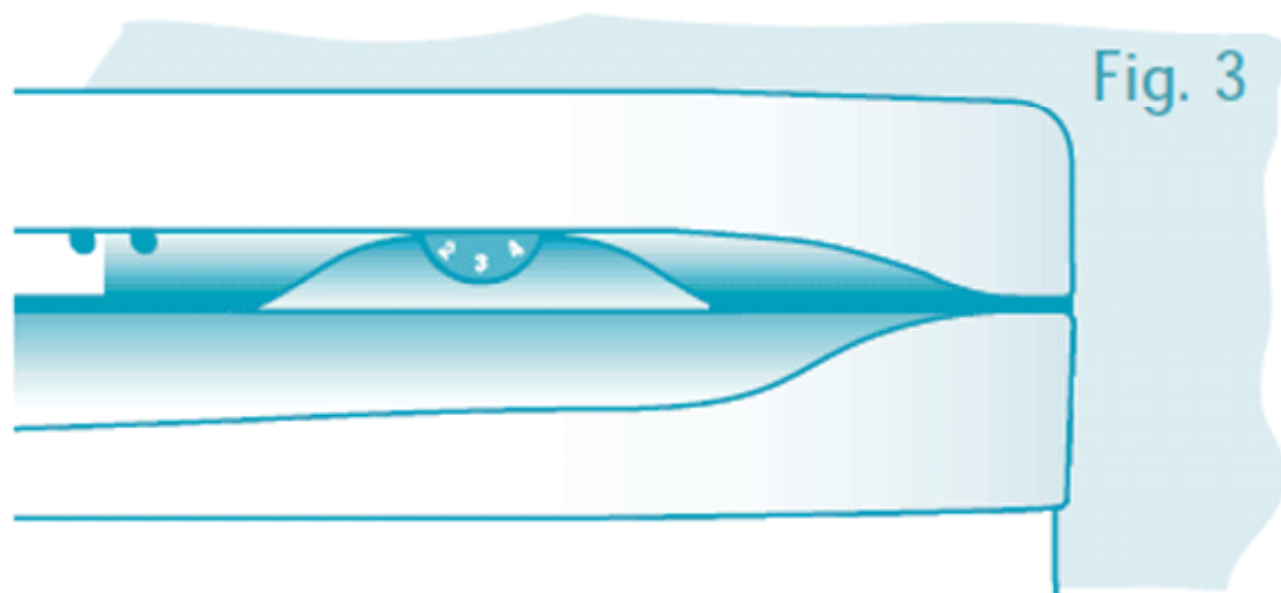
Click Close to certify that you have read me carefully.

Close



## ADJUSTING THE THERMOSTAT

The internal temperature of your Elan is controlled by a thermostat as shown below (Fig. 3).



The dial has 6 temperature settings.

When your Elan was manufactured the dial was set to between 3 and 5, the correct setting for use in normal room temperature. You can adjust the temperature by turning the dial.

## USING

Your Freezer makes your food stay at its usual temperature for approximately 6 to 8 hours. Two uses

After defrosting the freezer is quicker, freezing will freeze

You should sparingly

Fast Free

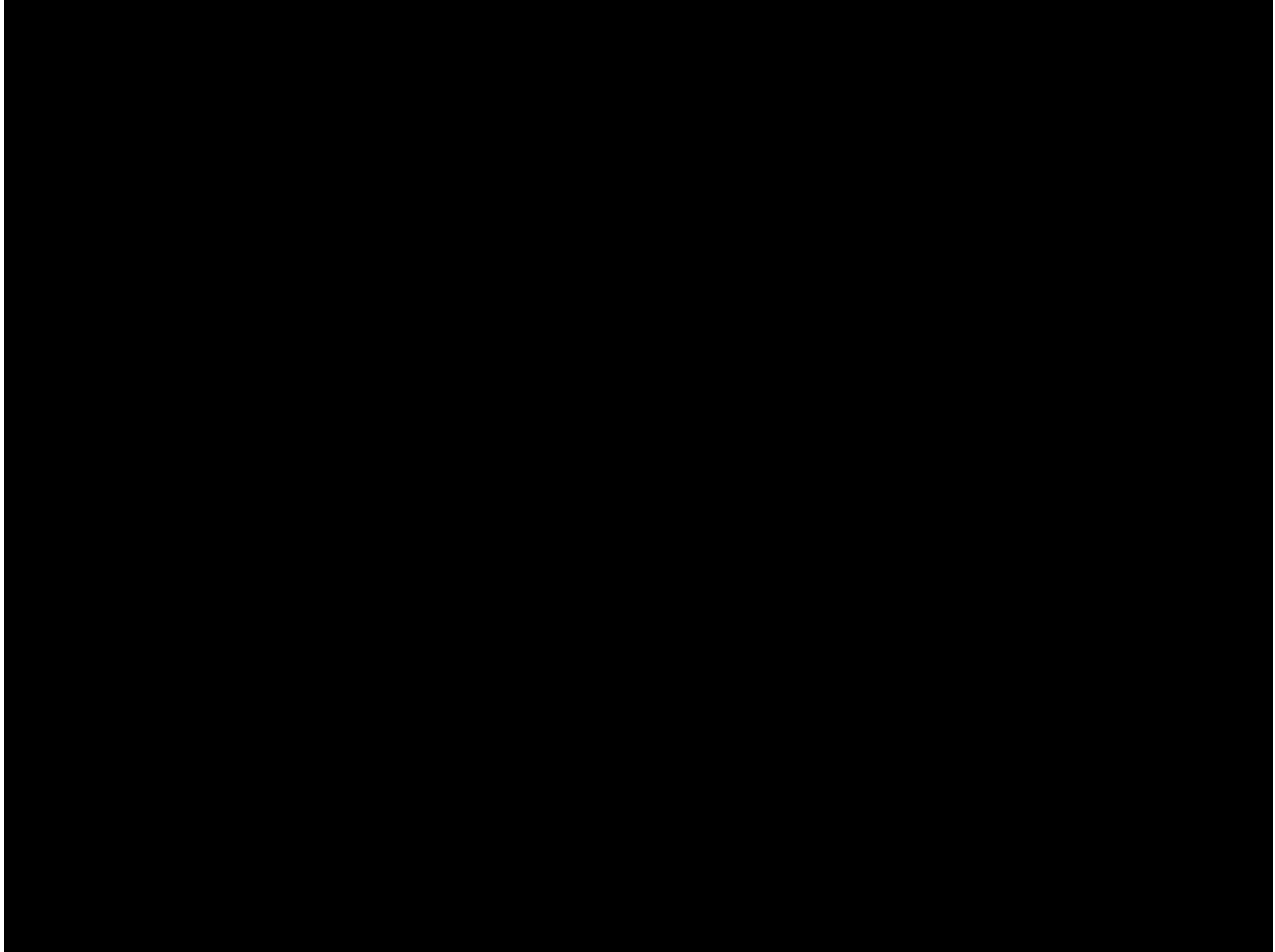
## REFRIGERATORS

450, 550 & 750 and  $-6^{\circ}\text{C}$  in the

## REFRIGERATORS

250) when the thermostat is

set between 3 and 5 and should hold these temperatures. If it isn't, adjust the thermostat dial half a number (e.g. from three and a half to four). See Adjusting the thermostat on page 6. Don't forget, the thermostat numbers are NOT temperature degrees. The higher the thermostat number, the colder the Fridge or Freezer will be.







Intersection of lots of fields

**[As designers]  
"Behaviour is  
our medium"**

Robert Fabricant, frog design, February 2009

**frog** design

**“By looking at how others have used design to influence behaviour it is easier to transpose those ideas to the behaviours that you are trying to change...**

**We need that idea-generating process to help policy-makers work with designers, behaviour experts and people to make the leap into practice.”**

**Jamie Young, RSA Design & Behaviour project**

OBLIQUE STRATEGIES



48 Principles

4	Segmentation
5	Folding Fun
6	Local Curiosity
7	Reorganization
8	Mixing
9	Uniqueness
10	Natural Dots
11	Form Height
12	Prior Counteraction
	Prior Action
	Cushion to Advance
	Engagement
	The C...

# IDEO METHOD CARDS





# Design with Intent

101 patterns for influencing behaviour through design













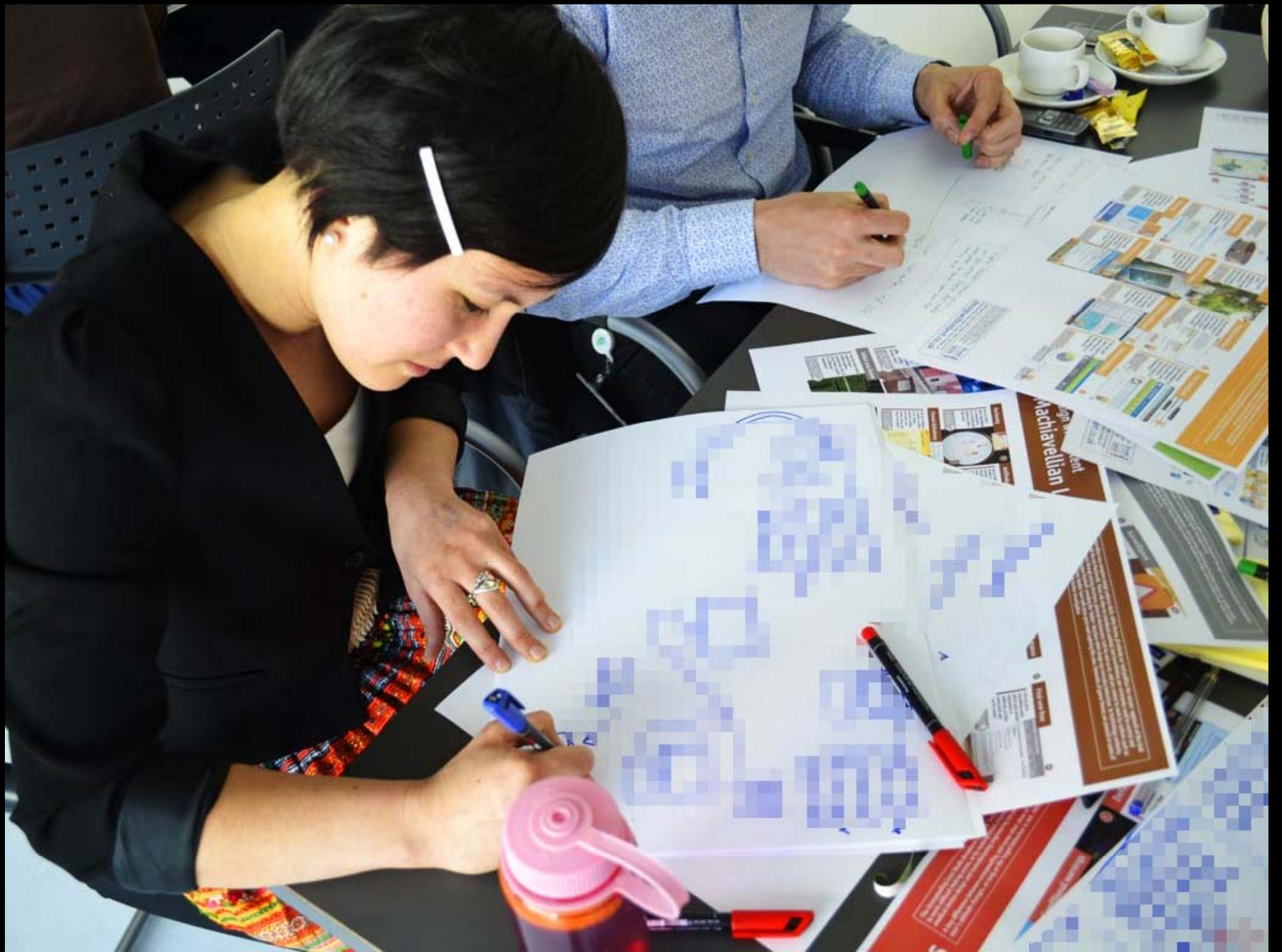














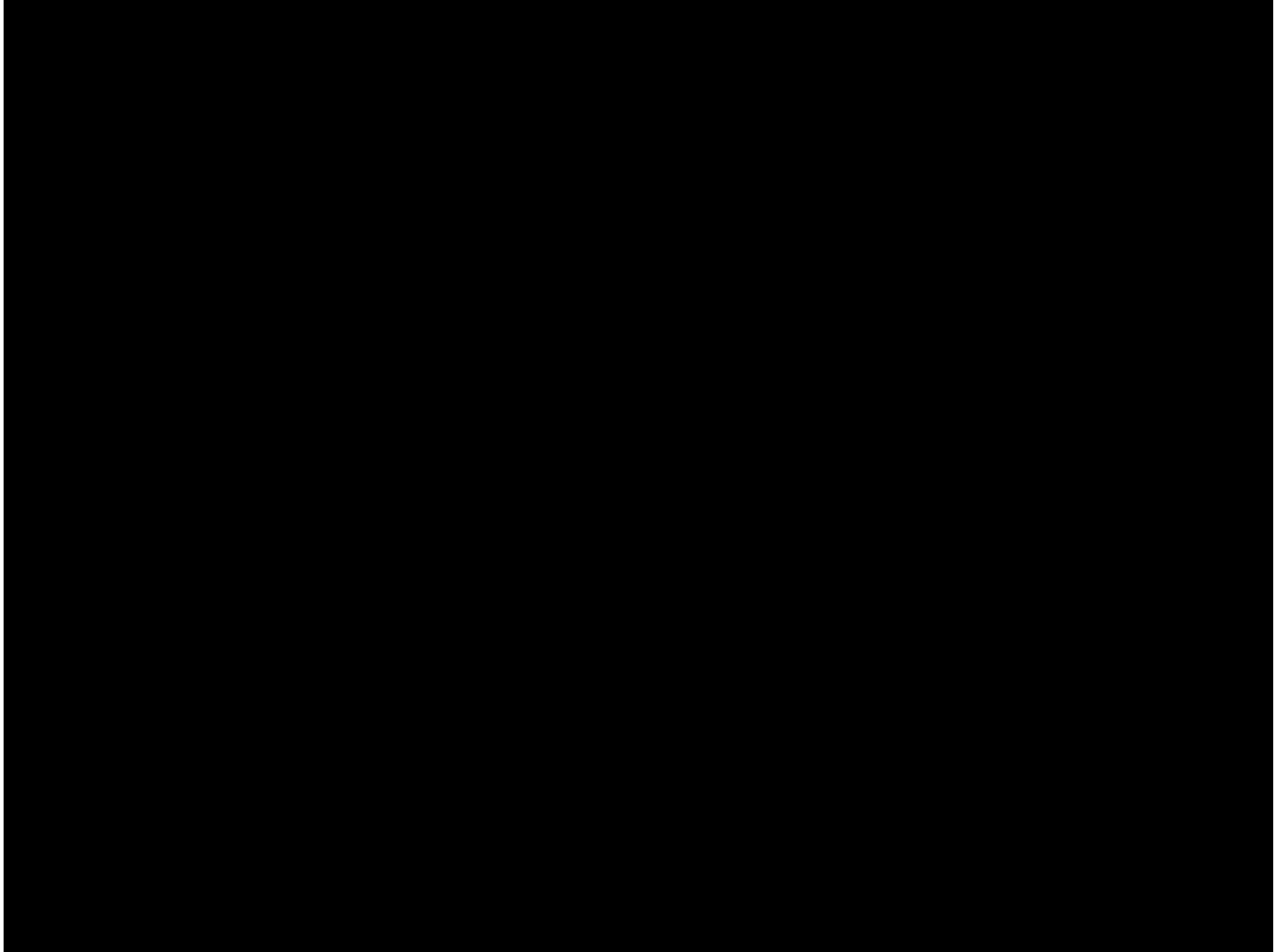














**DANGER**  
**CO<sub>2</sub>**



**More sustainable  
user behaviour**

026158-00  
(for water plus)





**1.27 TWh wasted  
each year in the UK  
simply from unnecessary  
overfilling of kettles**



**“Enough electricity to run  
practically all the street  
lighting in the UK” (DEFRA)**



# Twist

## A variable temperature kettle

Consumers are increasingly aware of the environmental impact of their decisions, but many are reluctant to change their behaviour. Technology brings improvements to people's lives, but some sustainable design neglects the user's needs, leading many to associate ecological living with compromise. Heating water requires a lot of energy; conventional kettles boil water to around 100°C, but often this is unnecessary. A cup cooling to drinking temperature is a common sight and brewing tea or coffee above 92°C can leave a burnt flavour. The Twist kettle enables the user to easily vary the water temperature, saving energy. The novel but intuitive interface allows users to choose the temperature by twisting the kettle. Its 360° base becomes a temperature dial, setting the temperature is an extension of an existing movement.



Alexander Ambridge  
Product Design BSc

DEPARTMENT OF  
**ENERGY**  
& CLIMATE CHANGE

Technology Strategy Board  
Driving Innovation

**EPSRC**  
Pioneering research  
and skills



# EMPOWER

**more**  
WVG  
Innovative Solutions

**Brunel**  
UNIVERSITY  
WEST LONDON

From midnight on 16 Sep to 12:07 on 22 Sep, 1 Horse Guards Road has used:

**129139kWh**

Energy use

115364kWh in Electricity  
13775kWh in Gas

Average 768kWh per hour

**£9565.84**

Energy cost

£9164.19 from Electricity  
£401.64 from Gas

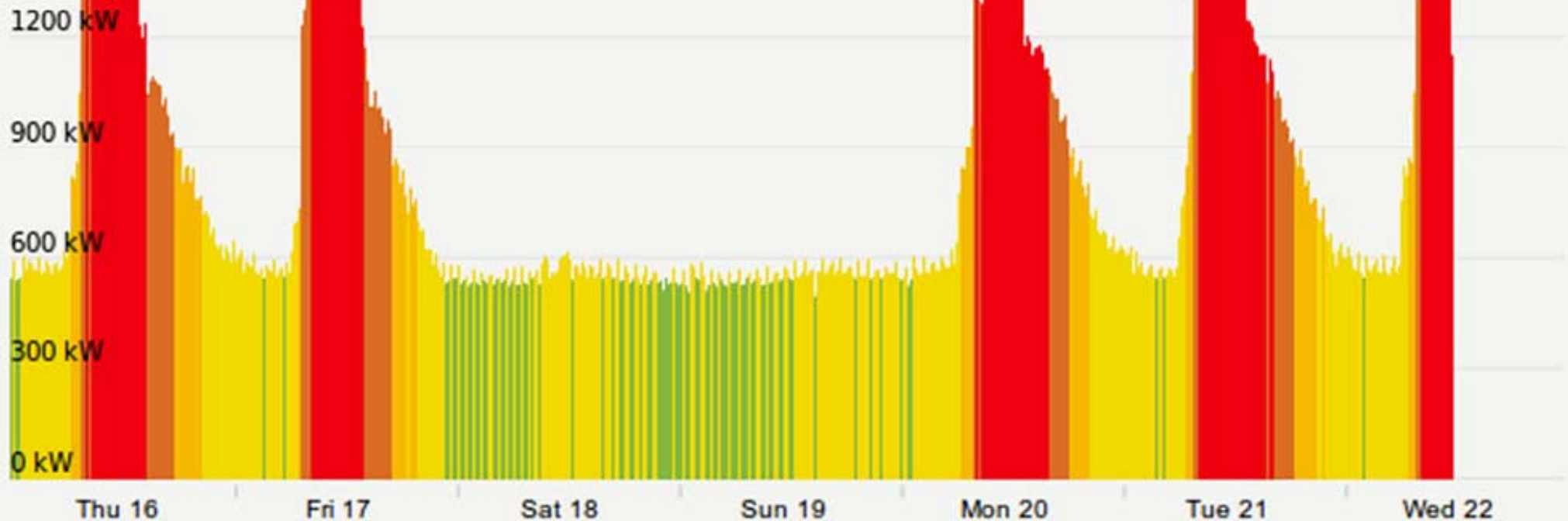
Average £56.94 per hour

**64889kg**

Carbon impact

62360kg for Electricity  
2528kg for Gas

Average 386kg CO2 per hour



◀ 24 hours **Week**

Total **Electricity** Gas



SCOTLAND YARD  
METROPOLITAN POLICE  
1830

DEPARTMENT FOR  
ENERGY  
& CLIMATE CHANGE

DEPARTMENT FOR  
ENERGY & CLIMATE CHANGE

DEPARTMENT FOR  
ENERGY & CLIMATE CHANGE

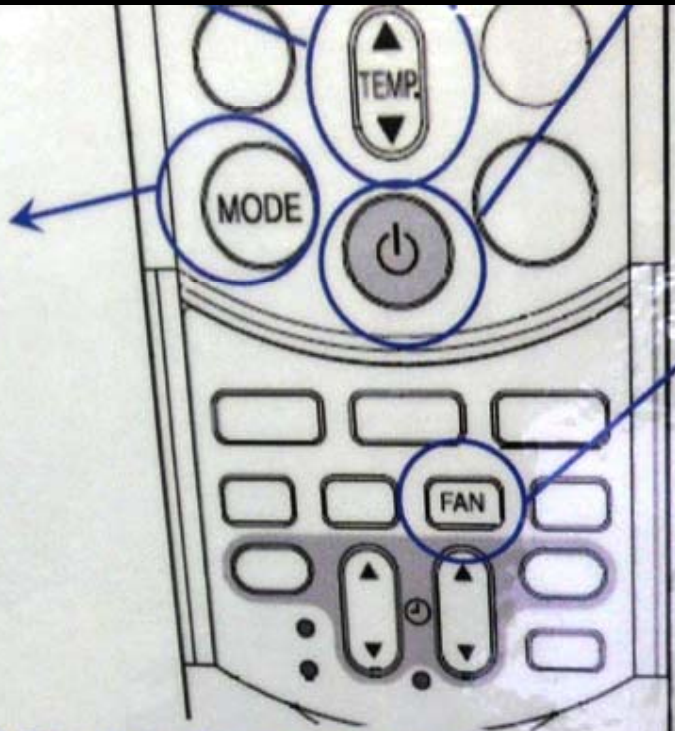
5 →

DEPARTMENT FOR  
ENERGY & CLIMATE CHANGE

DEPARTMENT FOR  
ENERGY & CLIMATE CHANGE

**select button (MODE)**

Push this button to select a mode. Each time you push the button, the modes cycle in order from A: changeover control, ❄️ : COOL, 💧 : DRY, ☀️ : HEAT and back to A. (A receiving beep is heard.)



**Fan speed button (FAN)**

Push this button to select the fan speed. When you select AUTO, the fan speed is automatically adjusted according to the room temperature. You can also manually select the desired fan speed from five available settings. (LOW \_\_, LOW+ \_\_\_\_, MED \_\_\_\_, MED+ \_\_\_\_, HIGH \_\_\_\_) (A receiving beep is heard.)

**PLEASE, DO THINK OF OTHERS BEFORE MAKING ANY CHANGES, THANK YOU**







DAIKIN




22°C

8:48

Control panel with various buttons and icons:

- Power button (top right)
- Mode buttons (left side)
- Temperature adjustment buttons (center, yellow background)
- Directional buttons (up/down arrows)
- Special function buttons (right side)
- TEST button (bottom left)

**CAUTION**




- Inspection is required if the OPERATION lamp or the MALFUNCTION code flashes. Notify the flashing MALFUNCTION code to the service personnel. As to the content of malfunction indication, refer to manuals of the unit.
-  button is used for the inspection.
- If indoor unit does not have a function, "NOT AVAILABLE" is indicated when pressing buttons for the function.
- When  is indicated, cooling/heating cannot be changed over.
- When  is indicated, ON/OFF, temperature setting, and timer operation, etc. are sometimes impossible to control.

BRC1D52


4P112942-2A

B08,09,10,11 CAUTION

BRC1052

- Inspection is required if the OPERATION lamp or the MALFUNCTION code flashes. Notify the flashing MALFUNCTION code to the service personnel. As to the content of malfunction indication, refer to manuals of the unit.
-  button is used for the inspection.
- If indoor unit does not have a function, "NOT AVAILABLE" is indicated when pressing buttons for the function.
- When  is indicated, cooling/heating cannot be changed over.
- When  is indicated, ON/OFF, temperature setting, and timer operation, etc. are sometimes impossible to control.

4P112942-2A

A white rectangular sign with four black circular fasteners is pinned to the side of a dark-stained wooden cabinet. The sign is held in place by a white vertical rod on the left side. The text on the sign is printed in a black, monospaced font. The cabinet has a visible metal latch or handle on the top edge.

Do not adjust the  
controls on this unit



DOUBLE BLINDS

SINGLE BLIND

SCREEN

BLIND CONTROL  
RELAY  
DANGER - MOVING  
SCREENS BEFORE  
MOVING  
SCREEN TO OFF  
TYPE 100-000000  
Gardline Controls

LIGHTS

1-FULL  
2-3/4  
3-1/2  
4-1/4

OFF

ON

SCREEN LIGHTS



**Business School**  
**STAFF ONLY**

it  
e

E  
B

STAPLES

**PLEASE  
WASH YOUR OWN  
DISHES.**

**THE CLEANING SERVICE DOES NOT  
PROVIDE THIS SERVICE.**

**THANK YOU!**

-Karen-  
That is your  
job  
QUIT  
BITCHING



Hosts  
are  
watching

dish-  
leavers.



109

THIS LIGHT  
IS OFTEN  
ON ALL  
DAY



Lights - ~~under~~ ways on  
too sleepy when  
low

Lights  
always  
on



M  
Fo  
Ap  
of

**Fire**  
If you  
for the  
On heat  
Do not  
Report to  
authorise

**Assembly**  
Your Assen

**Evacuation o**  
Lecturers shou  
Disabled peopl  
an "evac-chair"  
should report the  
or otherwise by p

**Threatening, Abu**  
Security should be c  
felt to be threatened

**Maintenance Issues**  
Between 0830 and 1630  
or external 01895 26780

*Issued by Brunel Secur*

What  
does  
this do?  
→

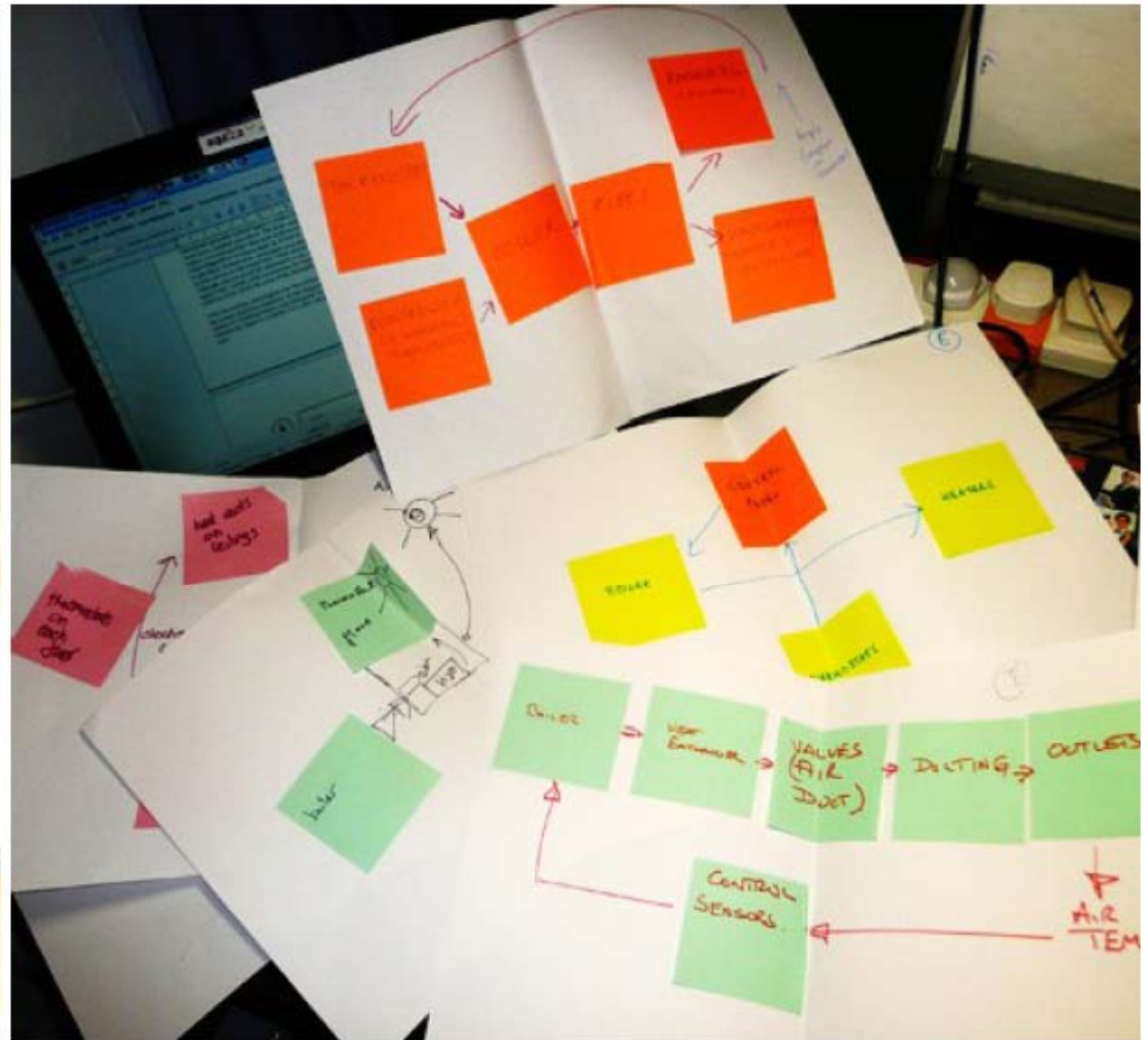


What can  
this bin  
accept?



→ This dump  
seems to be on -  
creating an echo.





*Mental model diagrams of the HVAC system*

Participants generally seemed happy to produce diagrams using Post-It notes, although some

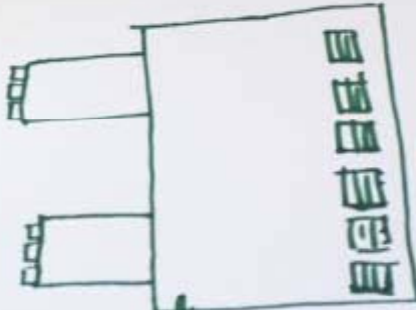
Ne Vork

www.network.it.de



BOLER

Handwritten notes and arrows on sticky notes, including the word 'Landscape'.

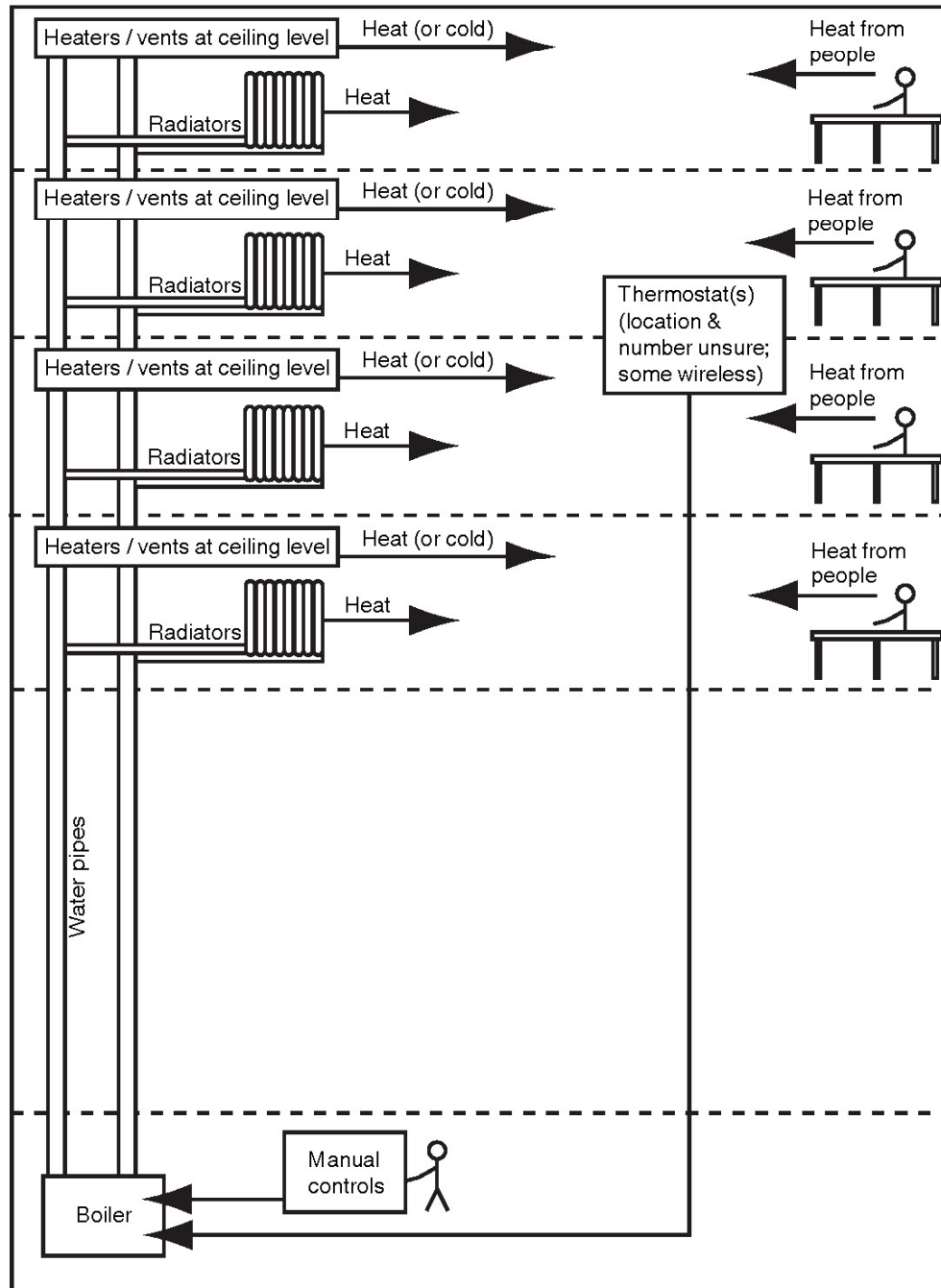


always  
into  
probably  
multiple  
has found  
serial killers  
U.S. & Kern  
Africa

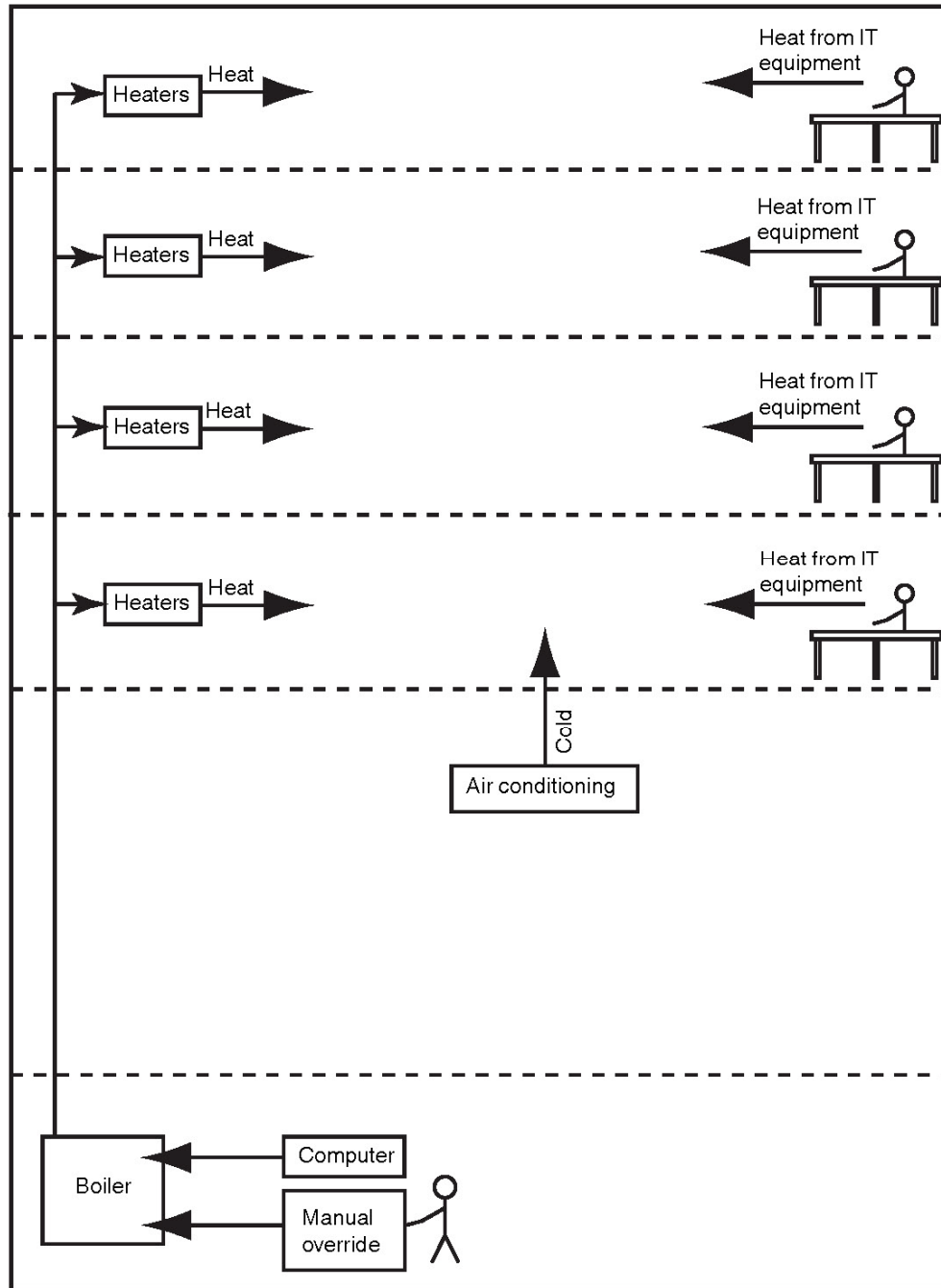
100%

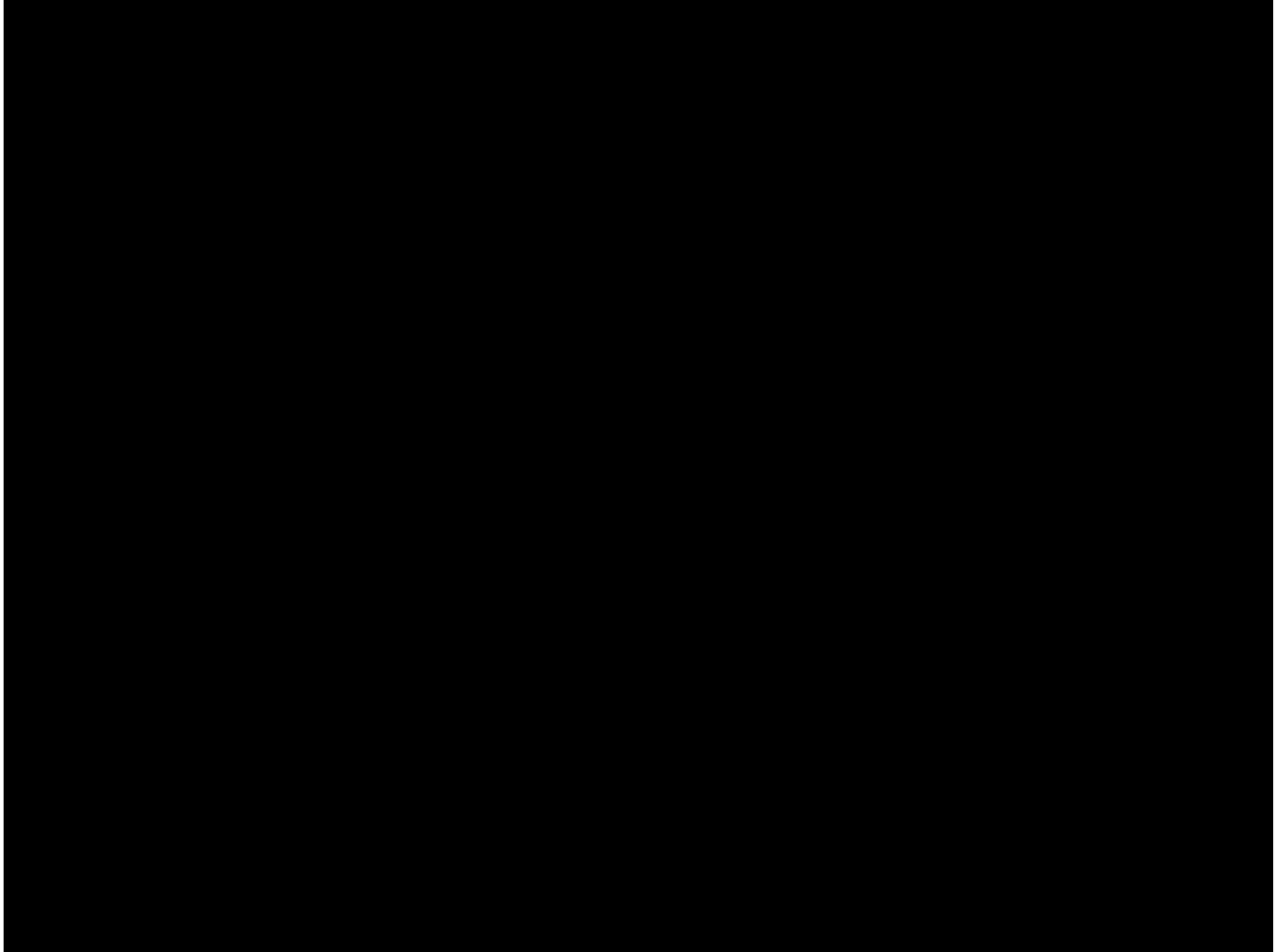


B



H





**[As designers]  
"Behaviour is  
our medium"**

Robert Fabricant, frog design, February 2009

**frog** design

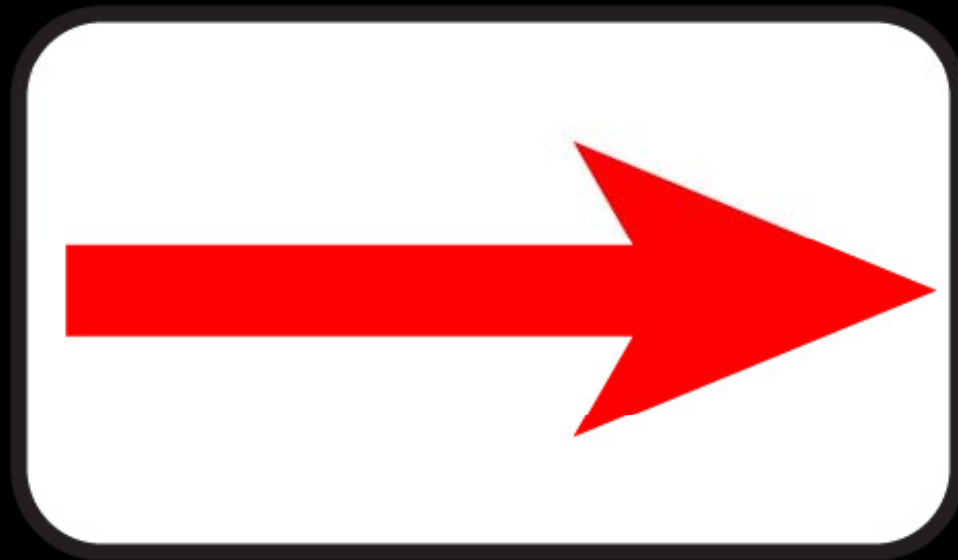
A close-up photograph of a hand wearing a yellow rubber glove. The hand is holding a white pen and is positioned over a document with horizontal lines. The background is slightly blurred, showing a blue and white pattern, possibly a book cover or a folder. The text is overlaid on the right side of the image.

**Explore the  
medium:**

**Do we try to:**

- ignore**
  - work with**
  - change**
- users' mental  
models?**

**IGNORE** users'  
mental  
models









# Choice editing

Can you edit the choices presented to users so only the ones you want them to have are available?

*Choice editing can be driven by legislation, e.g. leaded 4-star petrol being phased out in the EU by 2000 (when this photo was taken)*



Design  
with  
Intent

# Interlock



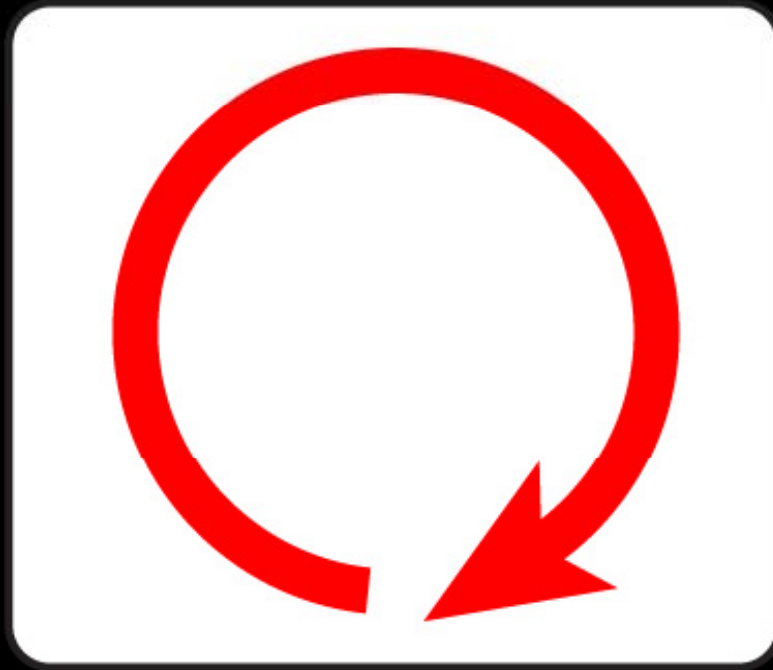
Can you set things up so one action can't be performed until another is completed?

*Most modern cash machines don't dispense cash until you remove your card, making it less likely you'll leave it behind*

Design  
with  
Intent



# WORK WITH users' mental models





Monthly Thorough  
Inspection completed on  
unit shown above.  
For thorough examination report  
contact your supplying depot.

66JX'227  
29900

Access Services



HIRERS ARE RESPONSIBLE FOR  
FUEL - ENGINE OILS  
BATTERIES - WATER  
HYDRAULIC OILS  
AUXILIARY FLUIDS  
GENERAL MAINTENANCE  
ANY DAMAGE RESULTING FROM  
FAILURE TO MAINTAIN



# GumTarget 2

				the		
		<b>new</b>				
			way to			
		<b>dispose</b>				
				of your		
		<b>chewing</b>				
				<b>gum</b>		

**STICK YOUR GUM HERE!**

[www.gumtarget.com](http://www.gumtarget.com)

# GumTarget

STICK YOUR GUM HERE!

*guess with your gum*

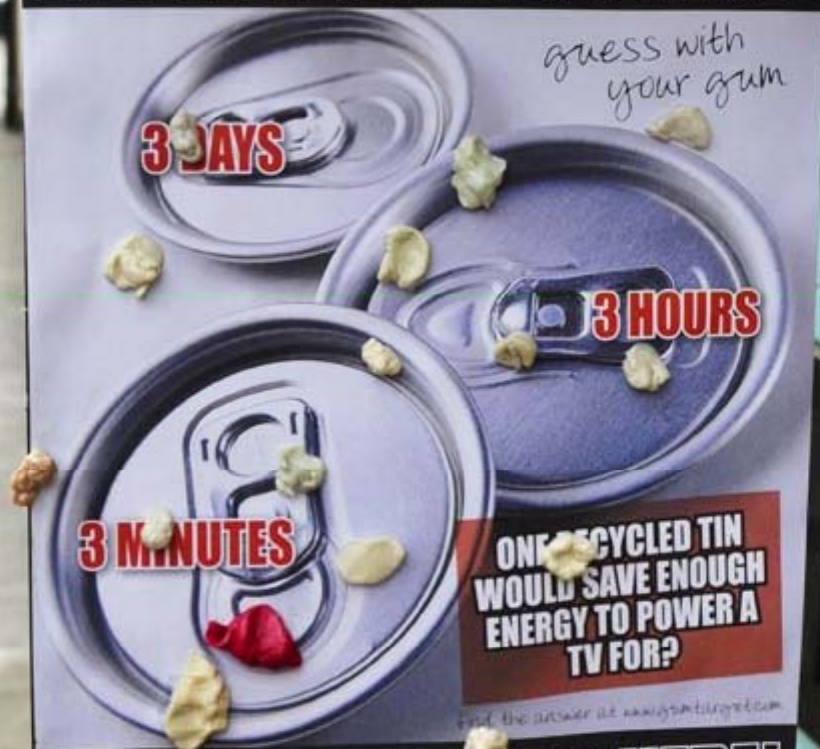
**3 DAYS**

**3 HOURS**

**3 MINUTES**

**ONE RECYCLED TIN  
WOULD SAVE ENOUGH  
ENERGY TO POWER A  
TV FOR?**

find the answer at [www.gumtarget.com](http://www.gumtarget.com)



STICK YOUR GUM HERE!

[www.gumtarget.com](http://www.gumtarget.com)

Your Litter  
Here Please





Your Litter  
Here Please



Royale  
EUROPEAN

LONDON HEATHROW

01895 233 748

07036 786830

K120 NHR



# Simplicity

**How simply can you structure things, to make it easier for users to do what you'd like them to do?**

*EcoButton allows a user to put a computer into a low-power state with just one press, making it much easier for users to save energy.*



RML

NC

ENTER



STOP



EMERGENCY STOP



RELEASE

HANDY PANEL

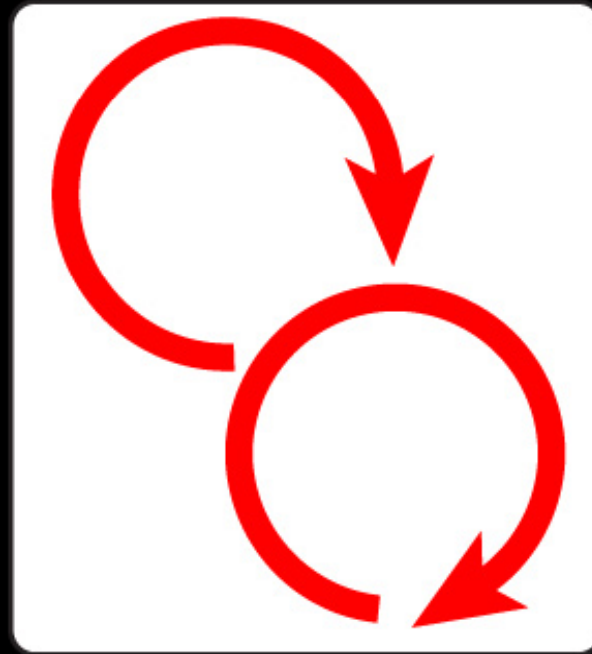
SENSOR

WARNING



# CHANGE

users'  
mental  
models



If these blinds are  
closed, it's to stop the  
sun coming in not you.

Visit us at [www.barclays.co.uk](http://www.barclays.co.uk)

Canon C-EXV18 Toner

Color: Couleur: Farbe: Farbe  
Black / Noir / Schwarz

Canon  
C-EXV18  
Toner  
Black

# 02 barbarian blog

## Skeletons and The Department Of Transportation

posted by Philip Stockton on May 16, 2011 at 05:35 PM

Tweet 17

The **New York City DOT** came to us with a startling statistic: When a pedestrian is struck at 30mph by a vehicle, there is an 80% chance they will survive. If a pedestrian is struck at 40mph, there is a 70% chance they will die. 10mph, a seemingly subtle difference while you are behind the wheel, is the difference between life and death as a pedestrian.

As part of the DOT's 'that's why it's 30' campaign, the barbarians took it to the streets. Using the DOT's wanco matrix sign, a speed radar, and 48x27 dot matrix (think microsoft paint), we created a speed board to remind New Yorkers to slow down. The speed board displays a graphic of the familiar pedestrian walking man, with the posted speed limit of 30mph.



The on board radar detects passing cars speed, and if a car breaks the limit, the pedestrian changes to a skeleton, with SLOW DOWN in giant letters.



**Henry Lai** came up with the skeleton graphic. This was an exercise in classic video game illustration, adhering to just a simple dot-matrix with lit or non-lit pixels. Originally we had created looping animations for each state of the pedestrian, a walking man, and a walking skeleton.

### Recent Posts

*The future never gets old.*

- The Ad Agency ...
- Screenstagram
- Behind the UK: The ...
- Having David Hasselhoff ...
- Skeletons and The ...

### Latest Topics

*Where our attentions lie today.*

- San Francisco
- Alcoholic Beverages
- Entertainment
- Advertising
- Travel Industry
- User Experience
- Art

[→ more](#)

### Recent Authors

*Eager beavers.*

- Kim Miller
- Doug Pfeffer
- Sadia Latif
- Rick Webb
- Philip Stockton

### Archives

*The past, in blog form.*

- May 2011
- April 2011
- March 2011
- February 2011
- January 2011

[→ more](#)



**Zone**

ACT ON



It's time to act

# Calculator

Before you start 

Welcome to the CO<sub>2</sub> calculator. Find out what your carbon footprint is and how you can make some simple changes to help tackle climate change.

## Ready to act?

Use our CO<sub>2</sub> calculator to find out your carbon footprint.

 **start**

[More about your CO<sub>2</sub> calculations - FAQs.](#)



w. complete or

Save your



# Display Energy Certificate

## How efficiently is this building being used?



Brunel University  
ELLIOTT JAQUES  
Brunel University  
Kingston Lane  
UXBRIDGE  
UB8 3PH

Certificate Reference Number:  
9720-6974-0110-4963-3060

This certificate indicates how much energy is being used to operate this building. The operational rating is based on meter readings of all the energy actually used in the building. It is compared to a benchmark that represents performance indicative of all buildings of this type. There is more advice on how to interpret this information on the Government's website [www.communities.gov.uk/epbd](http://www.communities.gov.uk/epbd).

### Energy Performance Operational Rating

This tells you how efficiently energy has been used in the building. The numbers do not represent actual units of energy consumed; they represent comparative energy efficiency. 100 would be typical for this kind of building.

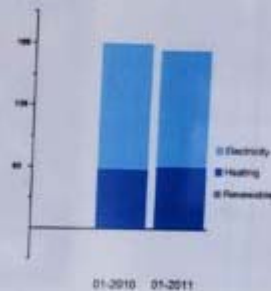
More energy efficient



Less energy efficient

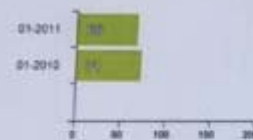
### Total CO<sub>2</sub> Emissions

This tells you how much carbon dioxide the building emits. It shows tonnes per year of CO<sub>2</sub>.



### Previous Operational Ratings

This tells you how efficiently energy has been used in this building over the last three accounting periods.



### Technical information

This tells you technical information about how energy is used in this building. Consumption data based on actual meter readings.

Main heating fuel: Natural Gas  
Building Environment: Heating and Natural Ventilation  
Total useful floor area (m<sup>2</sup>): 3173  
Asset Rating: Not available.

	Heating	Electrical
Annual Energy Use (kWh/m <sup>2</sup> /year)	104	68
Typical Energy Use (kWh/m <sup>2</sup> /year)	183	95
Energy from renewables	0%	0%

### Administrative information

This is a Display Energy Certificate as defined in SI 2007/991 as amended.

Assessment Software: iProphets Energy Services, digiteenergy, v3.0  
Property Reference: 96174364003  
Assessor Name: Richard Hopkin  
Assessor Number: NP0300949  
Accreditation Scheme: Netigate Information Solutions  
Employer/Trading Name: iProphets Energy Services  
Employer/Trading Address: iProphets Energy Services, Coventry University Technology Park, F  
Issue Date: 22-02-2011  
Validated Date: 01-01-2011  
Valid Until: 31-12-2011  
Related Party Disclosure: Not related to the assessor  
Recommendations for improving the energy efficiency of the building are contained in the accompanying Advisory Report.



# Real-time feedback



Can you let users know how what they're doing is affecting the system?

*Energy meters can allow householders to see which appliances use the most electricity, and how much this is costing*



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# Summary feedback



Can you give users a report on what they've been doing, or its effects?



*GreenPrint, software that reduces wasted prints through better usability, provides users (and their bosses!) with a summary of resources saved*

# Peer feedback

Can you give users feedback on their behaviour from other users of the system, equal in status to themselves?

*Peer feedback on comments and stories is central to sites such as Slashdot ('karma' scores) and Digg ('digging' and 'burying')*

The screenshot shows a Digg website interface. At the top, there are several story titles with their respective scores and user information:

- [Please Explain](#) (Score:2, Informative) by [Anr](#)
- [Re:Please Explain](#) (Score:2) by [stoborrobo](#)
- [Apache anf RFID?](#) (Score:1, Offtopic) by [Chasuk \(62477\)](#)
- [Same technology as proximity cards...](#) (Score:5, Insightful) by [stienman \(51024\)](#) <[adavis@@@ubasics...com](#)> on Tuesday August 0

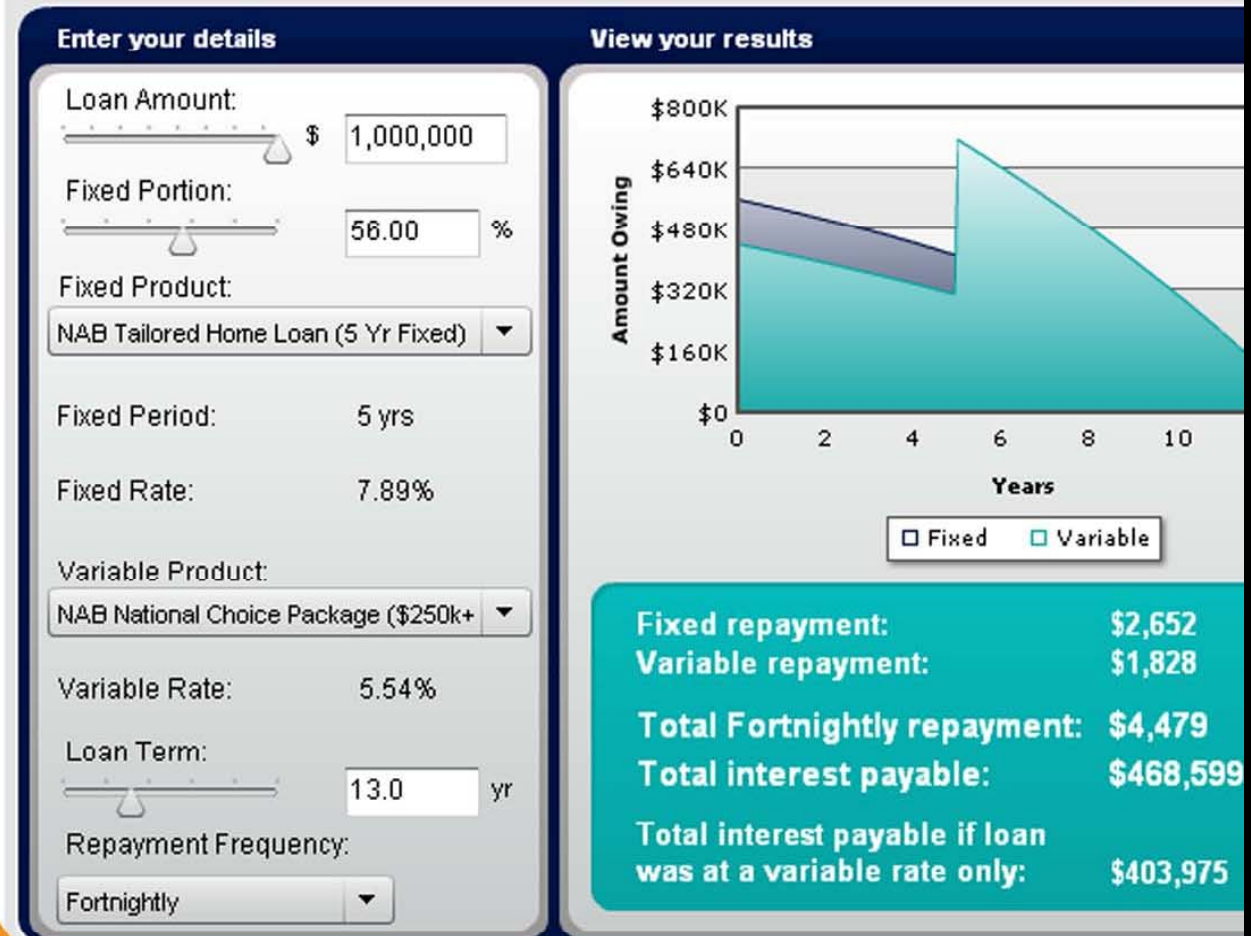
The main content area features a Digg article titled [Walmart shopper takes a bat to 29 TVs \(Video\)](#) from [engadget.com](#). It has 185 diggs and a video thumbnail. Below the article, there are social media sharing options (Facebook, Twitter, Bury, Who dugg this?) and a comment section with 36 comments. A comment from [GamingForever](#) (8 hr 42 min ago) reads: "Everyone just watches, no one tries to stop him...". The comment has 4 replies and the best reply has 13 diggs. There are also icons for '+2 diggs' and 'Reply'.

On the right side of the page, there is a logo for "Design with Intent".

# Simulation & feedforward

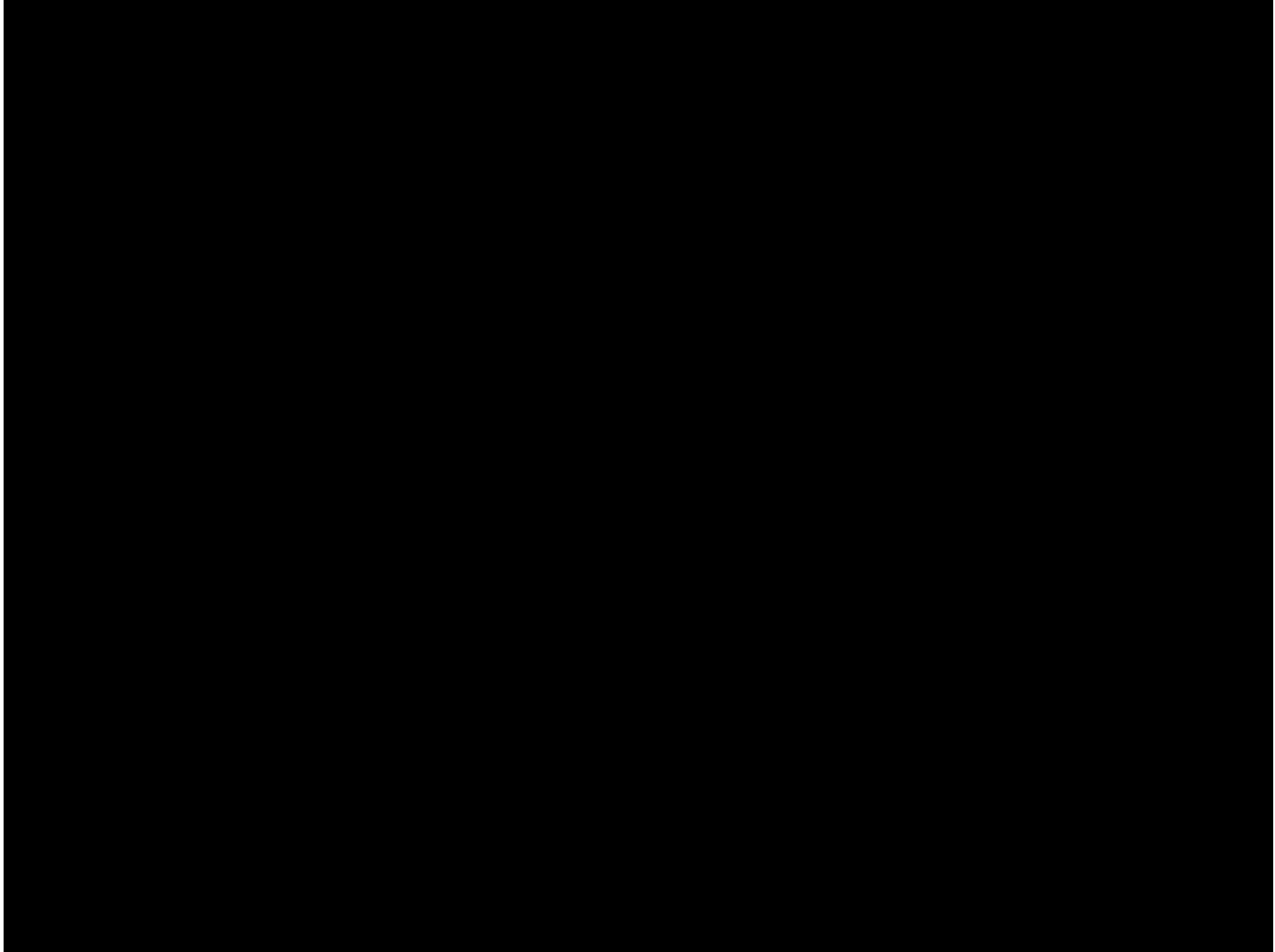
Can you give users a preview or simulation of the results of different actions or choices?

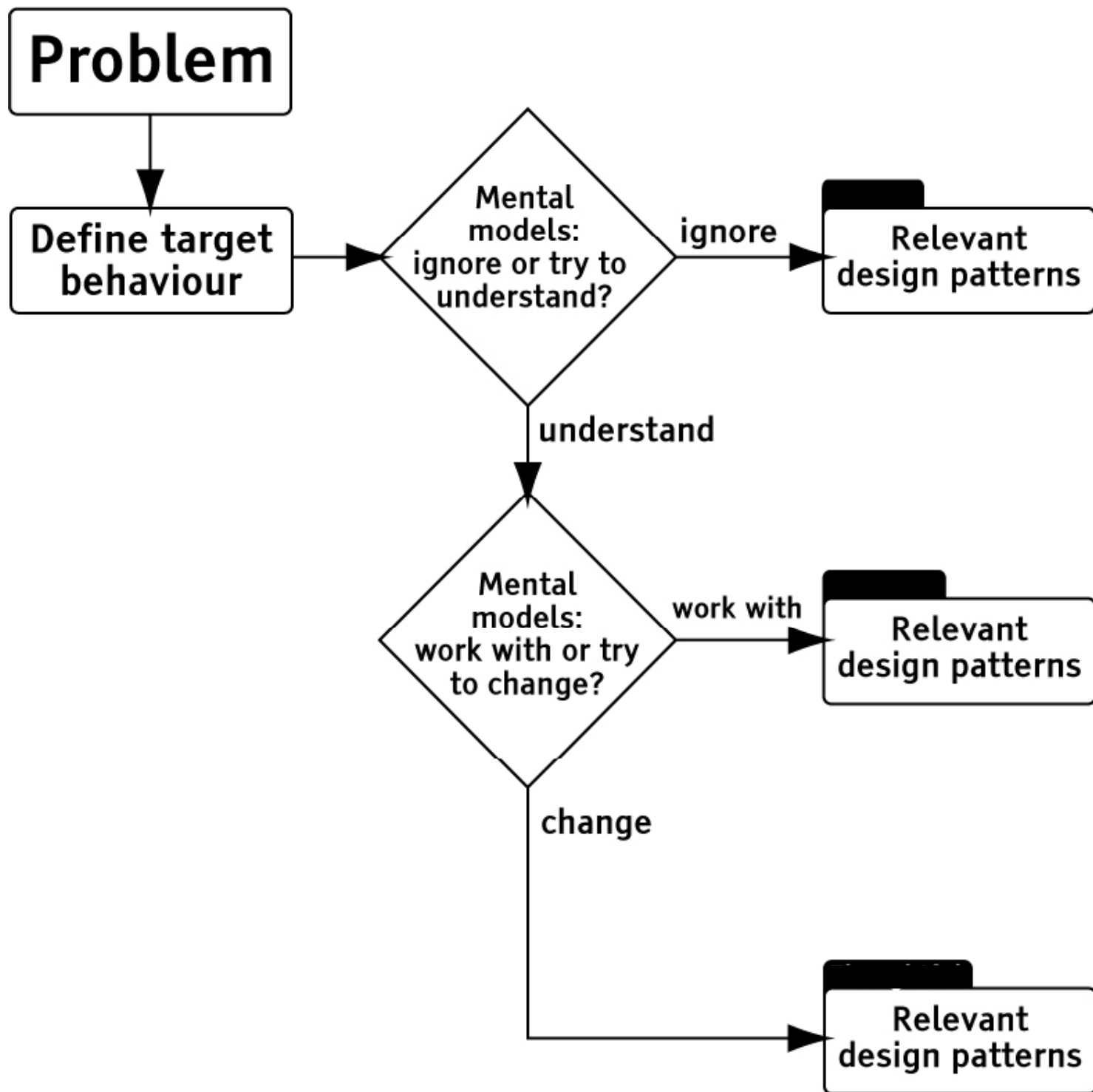
*Interactive savings / loan simulators such as this from Yahoo! are increasingly common, and can influence customer decisions*



**Start ahead and stay ahead**

Find out more  
**Design with Intent**







# Thanks for listening!

Get in touch:

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Twitter: @danlockton

Download the cards or order printed packs:

[designwithintent.co.uk](http://designwithintent.co.uk)



Consultancy:

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[requisitevariety.co.uk](http://requisitevariety.co.uk)

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<https://esta.cbp.dhs.gov>; <http://www.carbonculture.net/orgs/decc/whitehall-place/>;

<http://actonco2.direct.gov.uk/actonco2/home.html>; <http://www.barbariangroup.com/posts>;

<http://www.bbc.co.uk/news/health-12097225>; <http://twitter.com/yourlocalgp>; <http://madeinbrunel.com/projects/twist/>;

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