

SIM 18/19 – T4

Design Concepts

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Summary

- Affordance
- Mapping
- Feedback
- Visibility
- Consistency
- Transfer effects

Design Concepts

design concepts are at a very high level and open to interpretation; they are a *starting point*

- Affordance
- Mapping
- Feedback
- Visibility
- Consistency
- Conceptual models

Other factors:

- Transfer effects
- Cultural associations
- Individual differences

“The design of everyday things”, Don Norman, 1988

Affordance

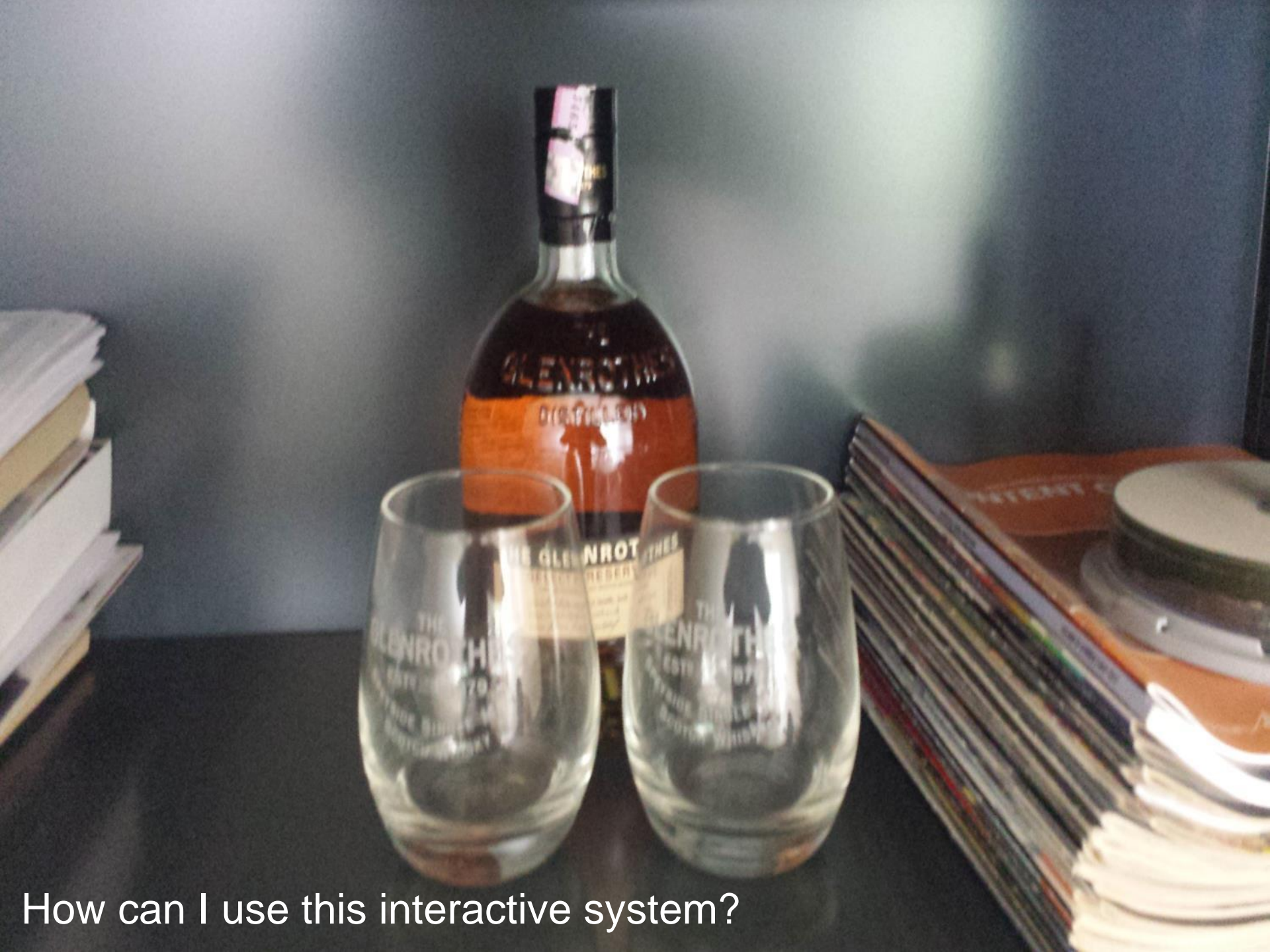
“the term affordance refers to the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used.”

“A chair affords ("is for") support, and, therefore, affords sitting.”

“The design of everyday things”, Don Norman, 1988

- Visual structure indicates how the object should be used
- Complex things may need explaining
- Simple things should not
 - when simple things need pictures, labels, instructions
-> Design has failed!



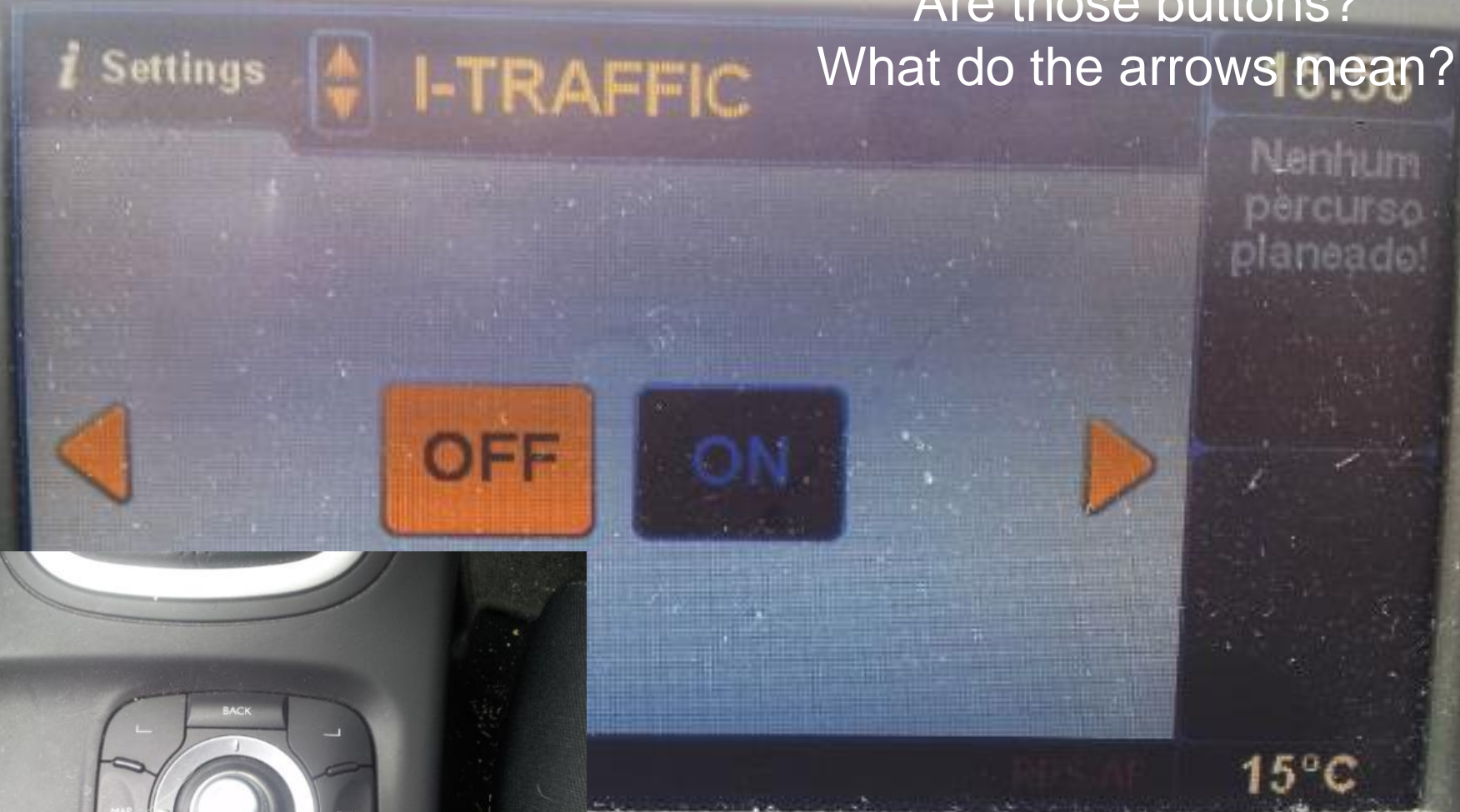


How can I use this interactive system?



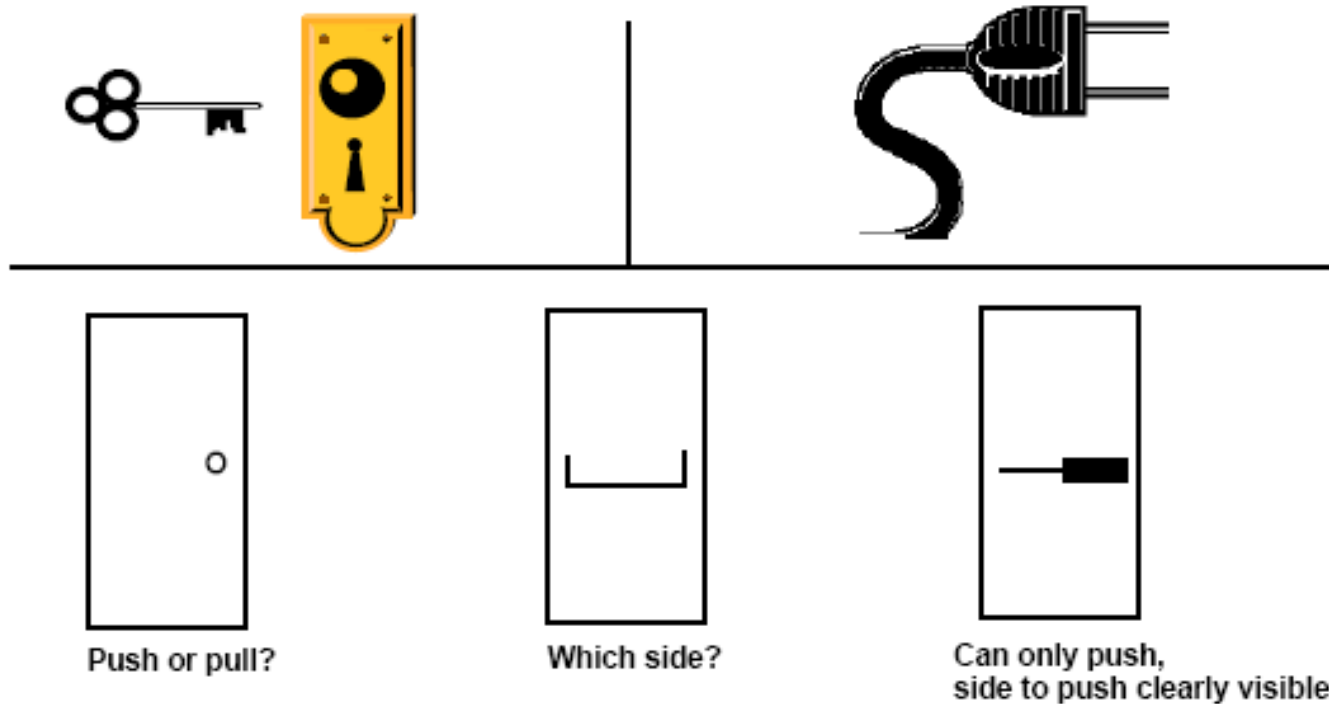
Do I push? Do I pull?

Can I touch this screen?
Are those buttons?
What do the arrows mean?



Visible constraints

Object's appearance indicates *limitations of possible actions*



A progression of visible constraints to enter a date

Form1

Date:

Month Day Year

May 22 1997

Month Day Year

May 22 1997

Appointment

General Attendees Notes Planner

When

Start: 8 : 30 AM Wed 5 /14 /97 All day

End: 4 : 30 PM Wed 5 /14 /97

Description:

Smart Technology Ser

Where:

May 1997

S	M	T	W	T	F	S
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

To answer a call, I
have to turn the
wheel?



Mapping

the link between what you want to do and what is perceived possible. It is the relationship between moving a control, and the results in the real world

- Can I do this?
- How can I do this?
- What is the sequence of actions that enables me to accomplish my objectives?

Which knob controls which hot plate?



Centenary

Could you guess
the 'hidden' mode?



Position 'up' means light on?
Light off? Does it matter?



EVERYONE can do ANYTHING
a.k.a. how awesome is Multibanco??

1

Levantamentos

Serviço MB NET

3

4

Consultas

Débitos
Directos

6

Transferências

9

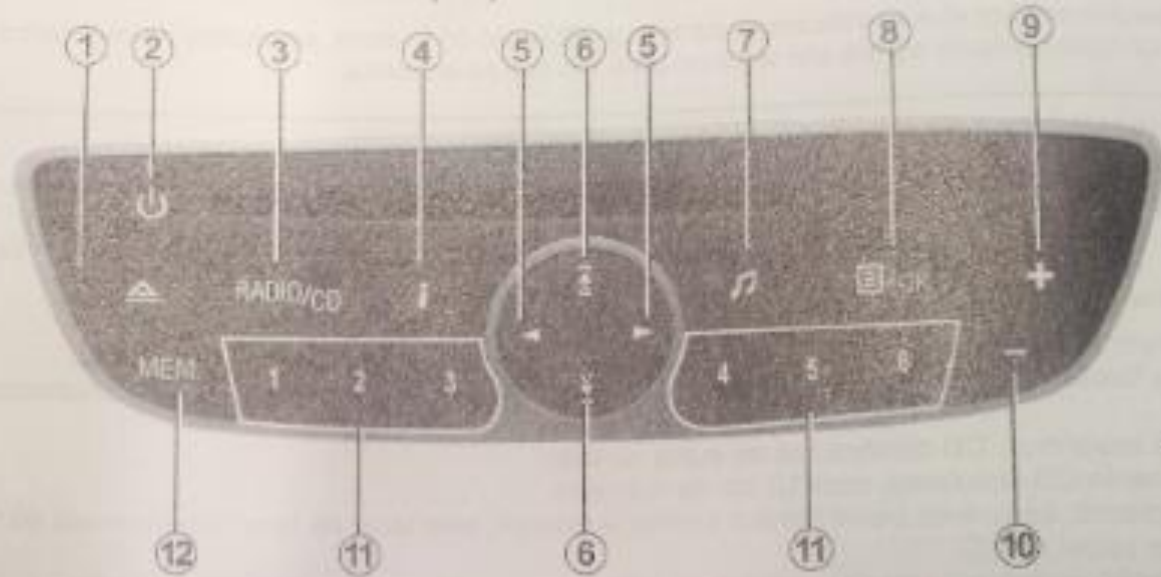
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Pagamentos e
Outros Serviços

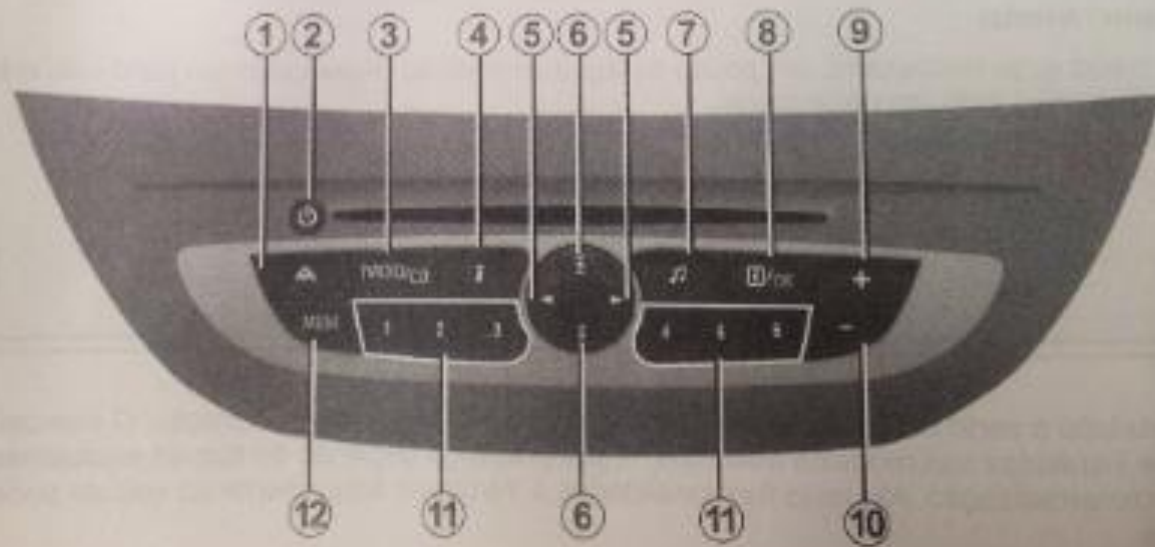
Outras Operações

00

APRESENTAÇÃO DOS COMANDOS (1/4)



001



010

Mapping explained
(a.k.a. how you failed as a designer...)

Feedback

- Sending information back to the user about what action has actually been done and what result was accomplished
 - What is the system's state?
 - Did *this* cause *that* effect?
 - Was my action successful?



All commands have feedback except the on/off one
Why is one light yellow, the other green?

AC is on and going up. Wait. The light is red. Is AC off?



Feedback and causality

Causality: A caused B to happen

True causality != perceived causality

- We usually assume that the thing that happens right after an action was caused by that action

False causality

- Incorrect effect:
 - Starting up an unfamiliar application just as computer crashes causes “superstitious” behaviors
- Invisible effect:
 - Command with no apparent result often re-entered repeatedly
 - e.g., hitting esc, or alt-ctrl-del, on unresponsive system

Visibility

- “The more visible functions are, the more likely users will be able to know what to do next. In contrast, when functions are "out of sight," it makes them more difficult to find and know how to use.”

Preece, J., Rogers, Y., Sharp, H. (2002), Interaction Design: Beyond Human-Computer Interaction, New York: Wiley,

- Directly linked with our *working memory*. We can process only 7 pieces of information at one time!
- *Change blindness* phenomena



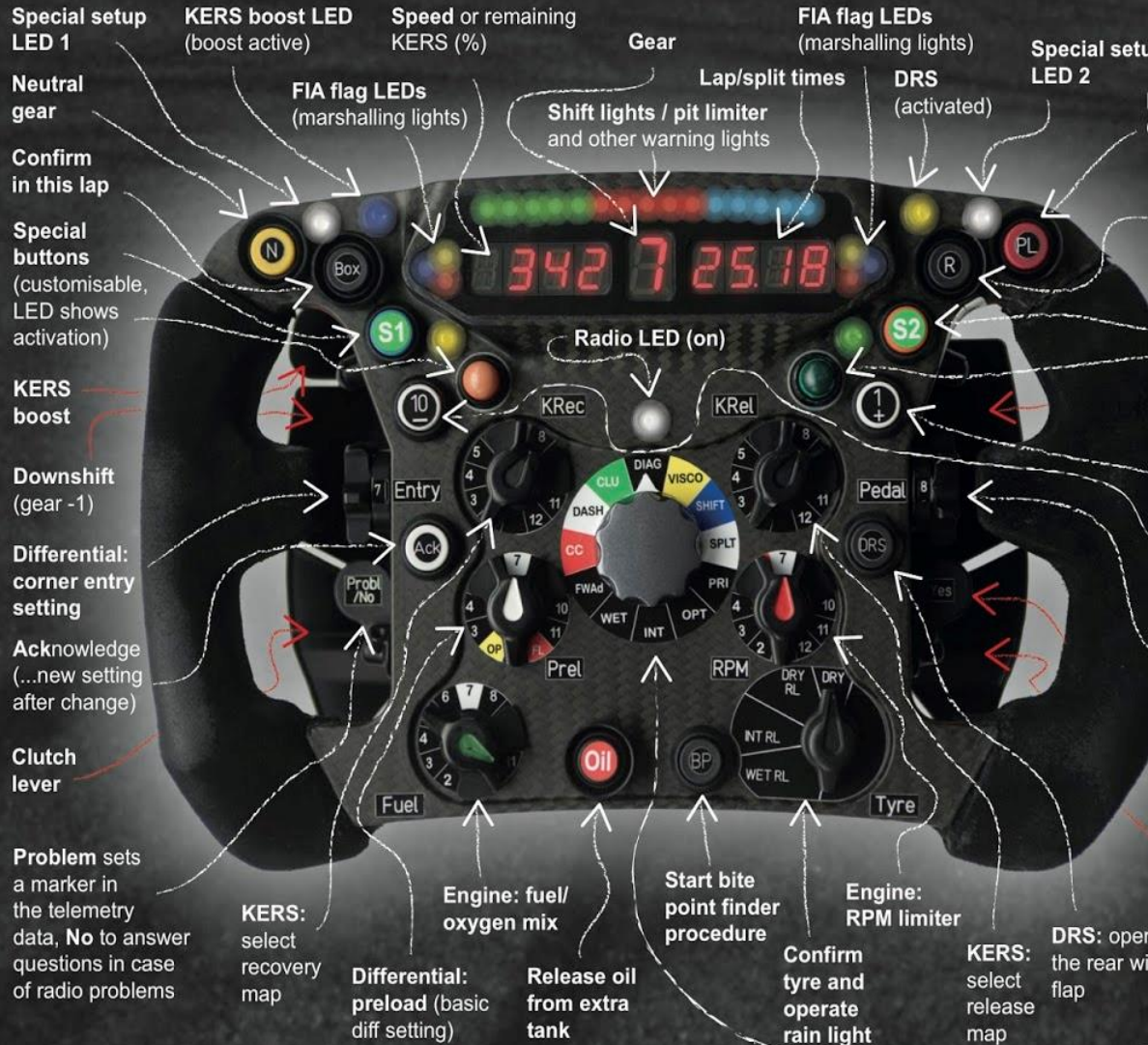
www.useit.org



Sauber F1 Team

Buttons, switches, levers, LEDs and display on a Formula One™ steering wheel.

Any comment I can write here is irrelevant.
By the way. Did you read this at all?



Multi-Functional Rotary Switch (MFRS): select function, change setting using -10/+1 buttons, press „Ack“ to acknowledge new setting.

Diagnostics switch sensors on/off

Clutch offset bite point
Dash display options
Cruise control (testing only)

Differential corner exit setting
Shift selects shift type
Split time control

Front wing adjust wish for next pit stop (in addition to team radio)
Tyre wish for next pit stop (in addition to team radio)

Why is there no reverse gear button?
F1 cars must be equipped with a reverse gear. If needed, the driver presses „N“ to change to neutral and then pulls and holds the downshift lever for more than half a second.

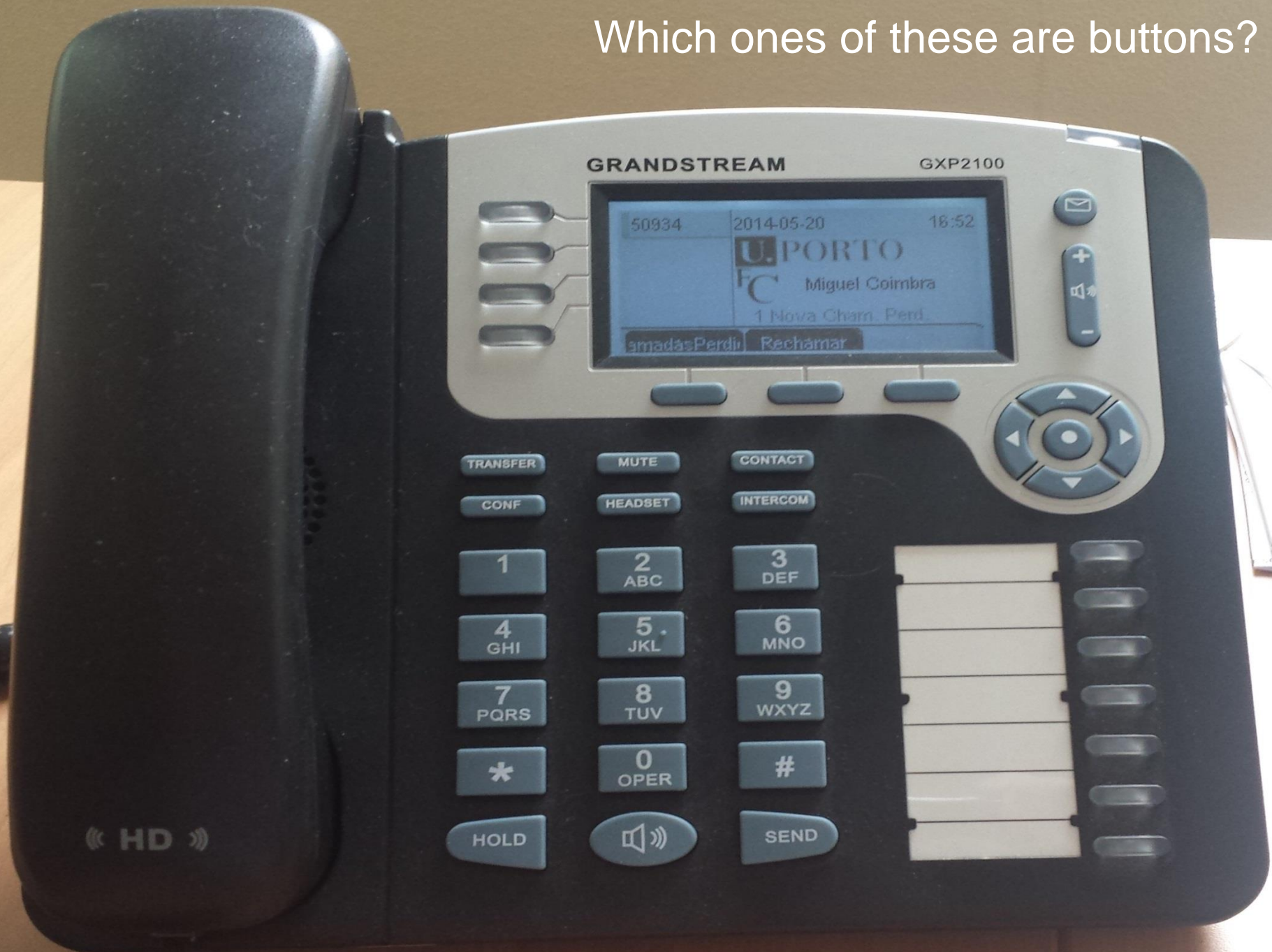
Consistency

- “Designing interfaces to have similar operations and use similar elements for achieving similar tasks”

Preece, J., Rogers, Y., Sharp, H. (2002), Interaction Design: Beyond Human-Computer Interaction, New York: Wiley,

- Where have I seen this before?
- Enables me to transfer knowledge to new contexts
- Internal consistency – same elements inside a system
- External consistency – coherence with external metaphors (transfer effects)

Which ones of these are buttons?

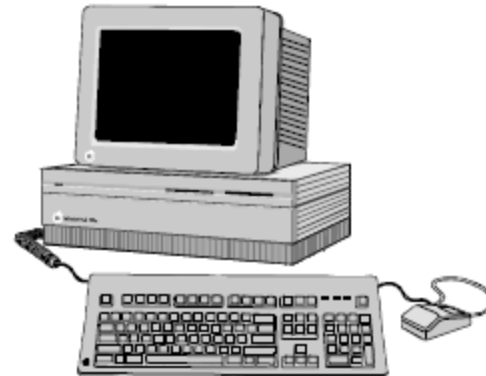




Different cars. Different radio controls

Transfer effects

- People transfer their learning/expectations of similar objects to the current objects
 - **Positive transfer**: previous learning **applies** to new situation
 - **Negative transfer**: previous learning **conflicts** with new situation



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