# Strategies for Digital Wellbeing

## Introduction

Alberto Monge Roffarello

# About Me

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  - Department of Control and Computer Engineering
  - Research Topic: Digital Wellbeing
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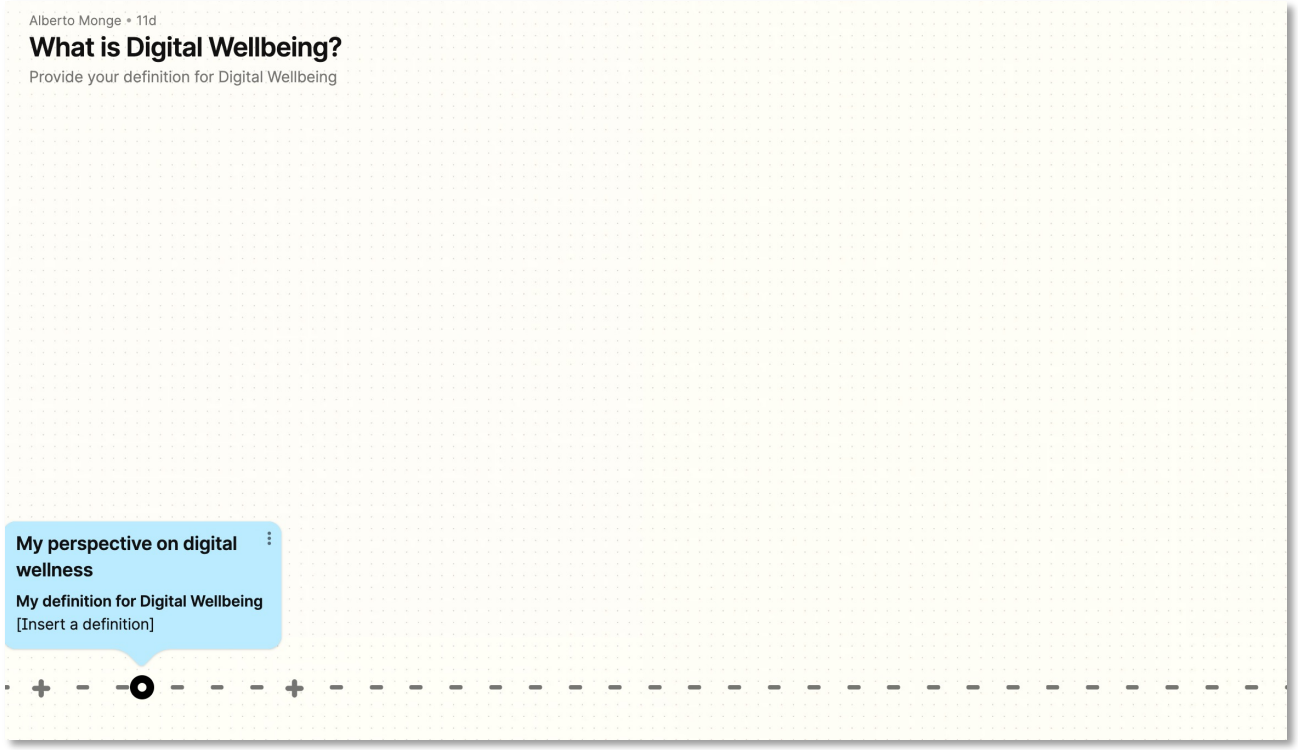
# About You (hello!)

- 18 (enrolled) students
  - 12 from the Ph.D. in Computer and Control Engineering
  - 4 from the Ph.D. in Management, Product, and Design
  - 1 from the National Ph.D. in Artificial Intelligence
  - 1 from the Ph.D. in Electrical, Electronics and Communications Engineering

# What Do You Mean For Digital Wellbeing?

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# Digital Wellbeing Definitions

- "The impact of digital technologies on what it means to live a life that is good for a human being in an information society."

*Christopher Burr, Mariarosaria Taddeo, and Luciano Floridi. 2020. The Ethics of Digital Well-Being: A Thematic Review. Science and Engineering Ethics.*

- " We define digital wellbeing as a state where subjective wellbeing is maintained in an environment characterized by digital communication overabundance. Within a condition of digital wellbeing, individuals are able to channel digital media usage towards a sense of comfort, safety, satisfaction and fulfilment. These conditions are favoured both by specific individuals' skills and by the socio-cultural context they live in. "

*From https://www.digitalwellbeing.eu*

- "It is about crafting and maintaining a healthy relationship with technology. It's about how technology serves us and moves us towards our goals, rather than distracting us, interrupting us or getting in the way. Being in control of technology enables us to use its full potential and gain all the benefits of it."

*Google*

# Let's Try to Set a Baseline… Why are we here?

# Let's Try to Set a Baseline… Why are we here?

Tristan Harris, a former Google Design Ethicist, founder of the Center for Humane Technolgy (https://www.humanetech.com/) and promoter of the documentary “The Social Dilemma”.

# Let's Try to Set a Baseline… Why are we here?


https://www.youtube.com/watch?v=uaaC57tcci0

# Our (narrow?) view of digital wellbeing: respecting people's attention

https://www.youtube.com/watch?v=C74amJRp730

https://www.youtube.com/watch?v=D55ctBYF3AY

# Digital Wellbeing: a Ph.D. Course

- “There’s entire teams of engineers whose job is to use your psychology against you.”
- “That’s not by accident, that’s a design technique.”
- “There were meaningful changes happening around the world because of these platforms.”
- “We built these things, and we have a responsibility to change it.”

The Social Dilemma

# Digital Wellbeing: a Ph.D. Course

- Growing interest in **research**!
  - Digital self-control tools, dark patterns, technology "addiction" …
  - you are "training" as researchers, after all
- The topic is being recognized by **tech companies**, too:
  - The Digital Wellbeing by Google (https://wellbeing.google/)
  - Apple Screen Time (https://support.apple.com/en-us/HT208982)
- The course will give some starting points and directions
  - research-based (exploiting the HCI perspective!)
  - if you want, you can go deep on different topics
  - the tools, frameworks, and guidelines presented in this course can be applied to your research

# Some Other Relevant Courses @ PoliTo

- DIGITAL WELLBEING
  - Benessere Digitale, 6 credits, B.S. in Computer Engineering
- HCI
  - Human-Computer Interaction, 6 credits, M.S. in Computer Engineering
  - Human-Machine Interaction, Ph.D. course
  - Human-AI Interaction, Ph.D. course

# Course Logistics

# "Teaching Philosophy"

- Put persons first!
  - different backgrounds and expectations in this room
  - how to do something "good" for all of you?
- Interactivity
- Learn by doing, do by learning
  - mix of lectures and "practical" exercises
    - programming included, if you want!

# A course on Digital Wellbeing (from the HCI perspective!)

## Course Topics

- Introduction to Digital Wellbeing
- Current strategies for Digital Wellbeing
  - Digital self-control tools
- Designing in the Attention Economy
  - From design patterns to dark patterns
  - Persuasive technology
  - Attention-capture damaging patterns
- Shifting the paradigm
  - The Leverage Points Framework
  - Digital wellbeing guidelines

## Course Assignments

- **ASSIGNMENT 1: NEEDFINDING**
  - Interviews, (auto)ethnographies and diary studies, observations
  - **OUTPUT:** selection of a digital service that has some negative impacts on people's digital wellbeing
- **ASSIGNMENT 2: PROTOTYPING**
  - High fidelity prototypes
  - Chrome extensions and prototyping tools (e.g., Figma)
  - **OUTPUT:** a prototype of a digital self-control tool for the identified service
- **ASSIGNEMENT 3: EVALUATION**
  - Heuristic evaluation
  - **OUTPUT:** a list of violations of the digital wellbeing guidelines found on the identified service

# Course Information

- Material
  - https://elite.polito.it ->Teaching -> Current  Courses -> 01GOFIU – Strategies for Digital Wellbeing
  - short link: http://bit.ly/polito-design4dwb
  - Slides, exercises, etc.
- Students are encouraged to attend the classes with their laptops, to work on the proposed exercises.

# The Plan: Overview


- 5 classes
  - around 50% interactive lectures and 50% exercises
- 4 hours per class
- Schedule
  1. 19/01/2023 h. 14:00-18:00, room C
  2. 26/01/2023 h. 14:00-18:00, room C
  3. 02/02/2023 h. 14:00-18:00, room C
  4. 09/02/2023 h. 14:00-18:00, room C
  5. 16/02/2023 h. 14:00-18:00, room C

# TODO: Group Composition

- Form a group for the upcoming activities
- **2-3 people** per group
- Fill up this spreadsheet:
  - https://docs.google.com/spreadsheets/d/1sDoPScPahJlvaiIp8quNxlTXjbgdoCInUU1Cnwc4bh4/edit?usp=sharing
  - **Deadline**: Today!

# The (Tentative) Detailed Plan

| Class | Type | Topic |
|---|---|---|
| 1 | Lecture | Course introduction, fundamentals on Digital Wellbeing. |
| | Exercise | **Needfinding** |
| 2 | Lecture | Current strategies for Digital Wellbeing, digital self-control tools. |
| | Exercise | **Needfinding (cont'd)** |
| 3 | Lecture | Design patterns, dark patterns, persuasive technology and attention-capture dark patterns. |
| | Exercise | **Prototyping** |
| 4 | Lecture | The Leverage Points Framework, Digital Wellbeing Guidelines. |
| | Exercise | **Prototyping (cont'd)** |
| 5 | Exercise | **Heuristic Evaluation** |
| | Exercise | **Heuristic Evaluation (cont'd)** |

# Exam

Three assignments to be carried out **in class** (and partially at home, if you need more time):

1. Assignment 1 - Needfinding (in group, deadline: 26/01)
2. Assignment 2 - Prototyping (in group, deadline: 09/02)
3. Assignment 3 - Heuristic evaluation (individual and in group, deadline: 16/02)

All the assignments include a very brief presentation to the class (at the end of lesson #2, #4, and #5, respectively). To **pass** the exam:

- 2 assignments completed with success
- **MERIT** with all the three assignments (successfully) done

# Logistic

- The preferred way to follow the course is *in person*.
- However, "life happens":
  - Lectures will be video-recorded and shared after each class.
  - Group exercises and presentations can have *hybrid* groups, with at least one person of the group in the room.

# About Programming…

- Programming skills are not strictly required to follow the course:
  - You will be able to use a visual prototyping tool (Figma) to develop the prototype of the second assignment.
- You will have the possibility to develop your prototype with code or with other tools, if you prefer.

# Questions?

# Fundamentals

# Technology Overuse and Technology “Addiction”

- The “Digital Wellbeing” term was made famous by Google some years ago:
  - *"We’re committed to giving everyone the tools they need to develop their own sense of **digital wellbeing**. So that life, not the technology in it, stays front and center”*
- However, researchers in different areas, including HCI, are discussing the negative aspects of **overusing technology** since decades.

# Technology Overuse and Technology “Addiction”

- Technology has **tons of positive effects** on people and society, including positive effects on people’s subjective wellbeing.
- An excessive use of devices like smartphones or digital services like social networks, however:
  - induces severe breakdowns of **self-regulation**;
  - is associated with negative effects on **mental health** and **social interaction**;
  - **distracts** users from their current goal, e.g., studying or working;
  - affects like physical activities like **sleeping**.

# Technology Overuse and Technology “Addiction”

- In the past decades, several studies used a **"technology addiction"** framing to describe compulsive behaviors when using devices, digital services, and the Internet in general.
  - Several tools and validates scales to assess addiction exists as well, e.g., the *Smartphone Addiction Scale* and the *Facebook Addiction Scale*.
- The idea of considering technology use under the umbrella of clinical addictions is however currently debated:
  - Lanette et al., *How Much is ‘Too Much’?: The Role of a Smartphone Addiction Narrative in Individuals’ Experience of Use.* CHI 2018. https://doi.org/10.1145/3274370

# Share your story

- What **positive** influences have technology had on me so far?
- What **negative** influences have technology had on me so far?

https://polito.padlet.org/albertomonge/hswgrm8232yhwtbx

# The Role of Persuasive Technology

- **Attention** is one of the most valuable resources of the digital age:
  - most of the contemporary digital services, e.g., social networks, are free! How do we pay for them?
- Researchers point out that this attention capture is *by design.*
- Through persuasive technology, digital platforms can **deliberately** change users' opinions, attitudes, or behaviors to meet their goals:
  - because social media apps are fighting for our attention, they tend to promote more provocative, attention-grabbing content;
  - social networks and video streaming platforms make extensive use of attention-capture **"dark patterns"**, e.g., infinite scroll and content autoplay.

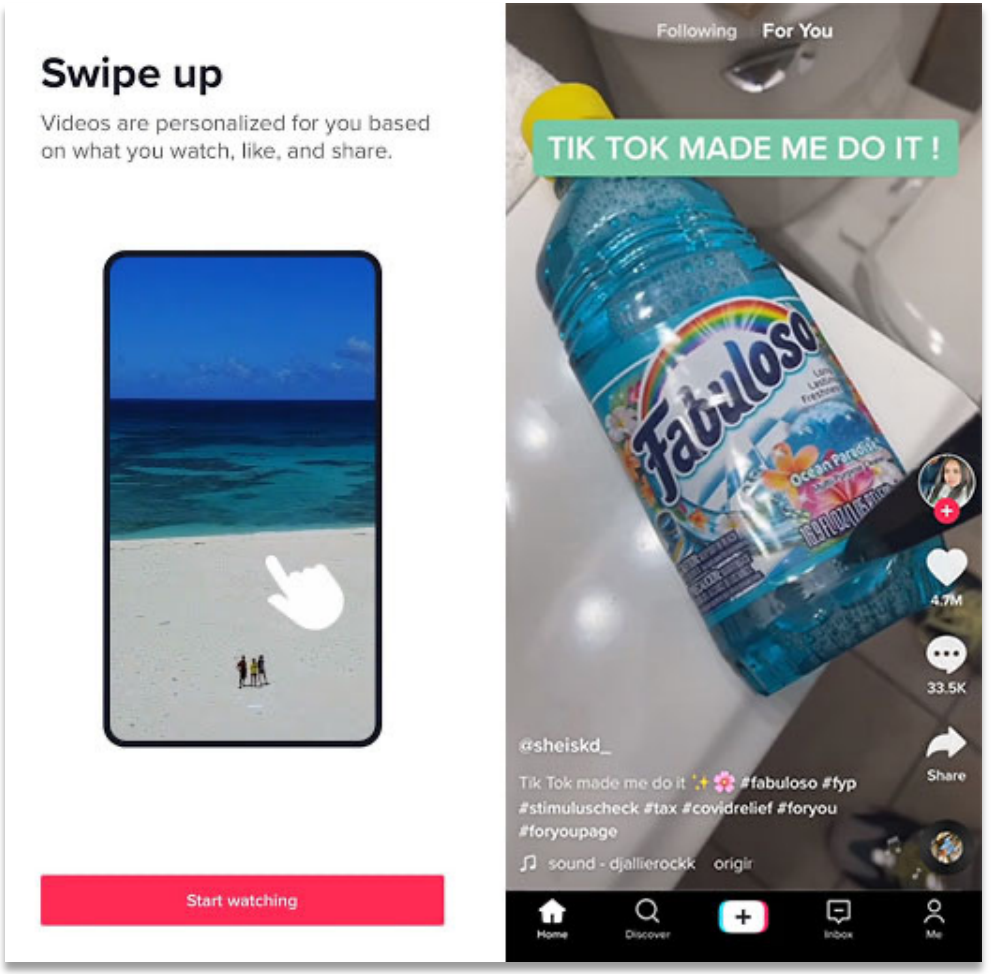
# The Role of Persuasive Technology

- **EXAMPLE:** ByteDance, the company that owns TikTok and several other apps worldwide, is a persuasive AI company – not a social media company.
  - Their success as a business comes from the sophisticated algorithms their apps are built on.
  - They study how people use TikTok, considering everything about their users from the websites they browse to how they type to keystroke rhythms and patterns.
  - These algorithms have made ByteDance the most valuable startup in the world.

SOURCES:

https://www.humanetech.com/youth/persuasive-technology

https://www.bloomberg.com/news/articles/2021-04-22/who-is-tiktok-owner-bytedance-the-chinese-tech-giant

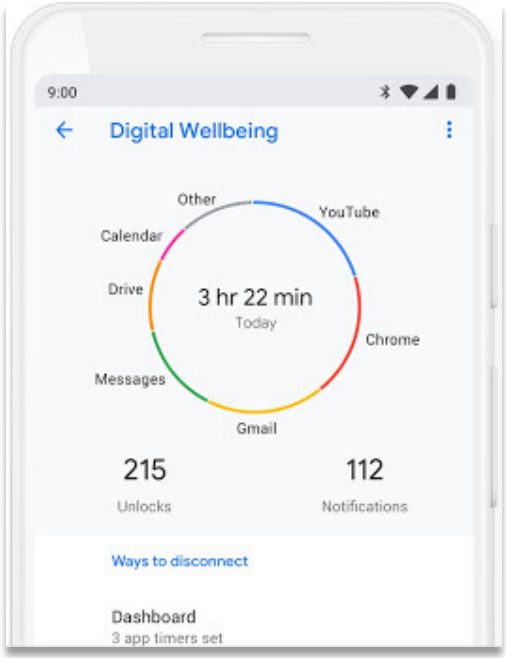


# The Role of Persuasive Technology

- Persuasive technology is designed to exploit psychology and push users towards certain behaviors:
  - **value-alignment problem:** the challenge of ensuring that the values and goals of an intelligent system are aligned with those of the people who are building, using, or interacting with the system.
- Examples of challenging value-alignment problems in our context :
  - the possibility of new comments or "likes" keeps us compulsively monitoring for updates, seeking feelings of pleasure and reward.
  - design features like infinite scroll (where when you reach the bottom of the page and more content loads automatically) keep us continuously engaged.

# Digital Self-Control Tools

- Right now, the main strategy to support users' digital wellbeing is the develomplemt of **Digital Self-Control Tools (DSCTs):**
  - dedicate, additional tools (apps, browser extensions, ...) to help people **self-regulate** their use of technology;
  - propose interventions to **reduce/block** problems (blocking apps, usage timers, etc.).



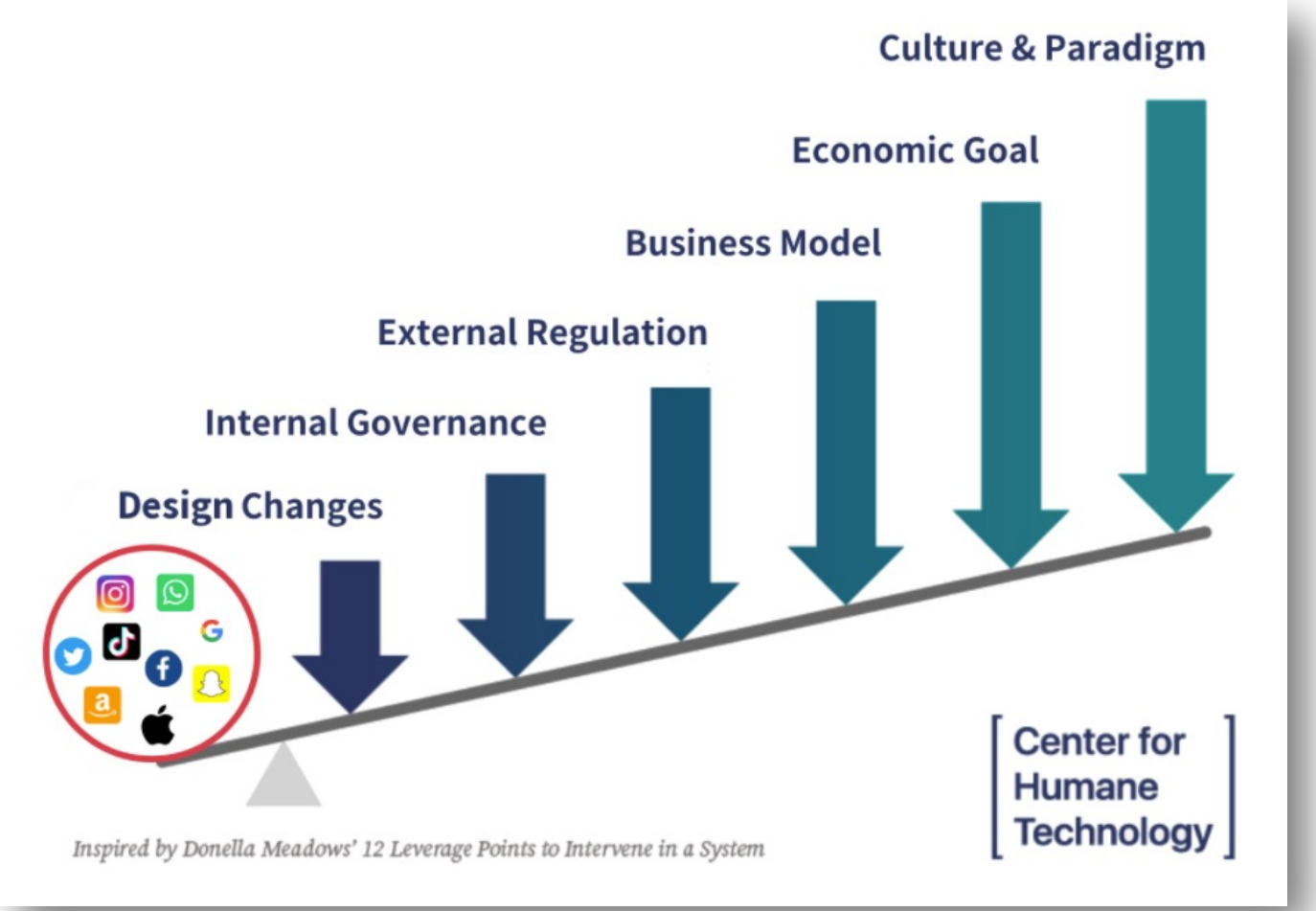
# Known Gaps in the Digital Wellbeing Literature

- **self-monitoring nature:** through contemporary DSCTs, people need to figure out for themselves the causes of their problems and possible solutions;
- **short-term effectiveness:** contemporary DSCTs are not effective in the long term, as they do not promote the formation of new habits;
- **theoretical gap:** DSCTs and the digital wellbeing research area are not sufficiently grounded in HCI and behavioral theories;
- **focus on (single-device) screen-time:** is reducing screen time the right way to support people's digital wellbeing?

# The Problems of Screen Time

- People are not particularly good at estimating their use of technology:
  - are you able to estimate how much time you spend on [choose an app] on average?
  - Make your estimate and then check on the DSCT installed on your phone (Google Digital Wellbeing or Apple Screen Time)
- Screen time is a measure that is often unreliable:
  - If I have to use Instagram for work, what is the problem with having a screen time of 2 hours a day on Instagram?
  - Why should I not use Facebook if I am on a long train ride alone?

# Towards Designing for Digital Wellbeing




*Leverage points (LP) for intervening in the extractive tech ecosystem.*

https://www.humanetech.com/

# Measuring Digital Wellbeing

- If we want to measure digital wellbeing, we need to do:
  - combine multiple measures;
  - use objective and self-perceived measures;
  - consider the context of use, along with other factors;
  - consider an extended period of time.

# Measuring Digital Wellbeing

- There are several state-of-the-art and validated questionnaires that you can use to measure some aspects of people's digital wellbeing:
  - from the level of "addiction" toward a given device or service…
  - to how technology influence personal characteristics like the level of stress, impulsivity, etc.
- They are usually based on Likert scale-based questions:
  - "how much do you agree with the question/statement?" 1: not at all, 5: completely agree"
  - the processing of the scores (e.g., the sum) on the individual questions constitutes the user's "level" with respect to the measured aspect

# Internet Addiction Test (IAT)

- Developed by psychologist Kimberly Young in 1998
- First questionnaire to measure addiction to the Internet and technology in general that the scientific community has validated
- Contains 20 questions on a Likert scale from 0 (Does not apply) to 5 (Always):
  - *Do you feel restless, moody, depressed, or irritable when attempting to cut down or stop Internet use?*
  - *Do you stay online longer than originally intended?*
  - *Have you lied to family members, therapist, or others to conceal the extent of involvement with the Internet?*
  - *[…]*

# Smartphone Addiction Scale (SAS)

- Originated in South Korea in 2013, now validated and used in several countries around the world.
- Assesses smartphone addiction according to 6 factors: lack of self-control, withdrawal, tolerance, unsuccessful attempts to cut back, loss of interest in other activities, and continuing to use despite negative consequences.
- There is also a "short" version for adolescents and youth, with 10 questions on a Likert scale from 1 (Strongly disagree) to 6 (Strongly agree):
  - *I find it hard to control the amount of time I spend on my smartphone.*
  - *I get anxious when I don't have my smartphone with me.*
  - *I check my smartphone more often than I would like.*
  - *[...]*

# General Self-Efficacy Scale (GSE)

- Developed by Jerusalem and Schwarzer in 1992.
- Assesses self-efficacy, or the belief that one is able to cope with a wide range of stressful or challenging demands.
- It can be specialized for different contexts/situations, such as the use of technology.
- It contains 10 questions on a Likert scale from 1 (Not at all true) to 4 (100% true):
  - *If I try hard enough, I can limit my use of the smartphone and apps (social networks, chat, etc.).*
  - *I am confident that I can effectively deal with unexpected distractions from my smartphone and apps (social networks, chat, etc.).*
  - *I can limit the use of my smartphone and my apps (social networks, chat, etc.) if I put in the necessary effort.*
  - *[...]*

# Let’s make a research experiment!

- Questionnaires like IAT, SAS, and GSE are often used to measure the impact of an intervention strategy in a user study:
  - participants answers to the same questionnaire before and after the study;
  - variations in the computed scores can highlight positive (or negative) effects.
- Is this course having an impact on our own Digital Wellbeing?
  - https://forms.gle/3Gqe5WsNhfZjTfuK6

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