



POLITECNICO
MILANO 1863

PROJECT PRESENTATION

OUTLINE

✓ PROJECT CONTEXT

✓ PROJECT MAIN ACTIVITIES



THE MOBILE HEALTH (mHEALTH) REVOLUTION

Today, > 400,000 **health apps** are available online (+200/day)



But.... We have a problem: Apps pollution!

→ tool to help people to understand what app is available in a certain field

WHICH APP IS VALID, RELIABLE AND ADOPTED IN CLINICAL OR PRE CLINICAL CONTEXT?

How to choose the best app in a specific context?

Which app is valid, reliable and already translated in clinics?



NOVEL TECHNOLOGIES ADOPTED FOR LEARNING AND EDUCATION

App for children at school, in the very first years of education, which have the aim of let understanding and development ability of writing, reading..

Technology can be useful? Are there any applications useful for training, which are recognized as reliable

Technologies are available, but we want to understand which are the best.



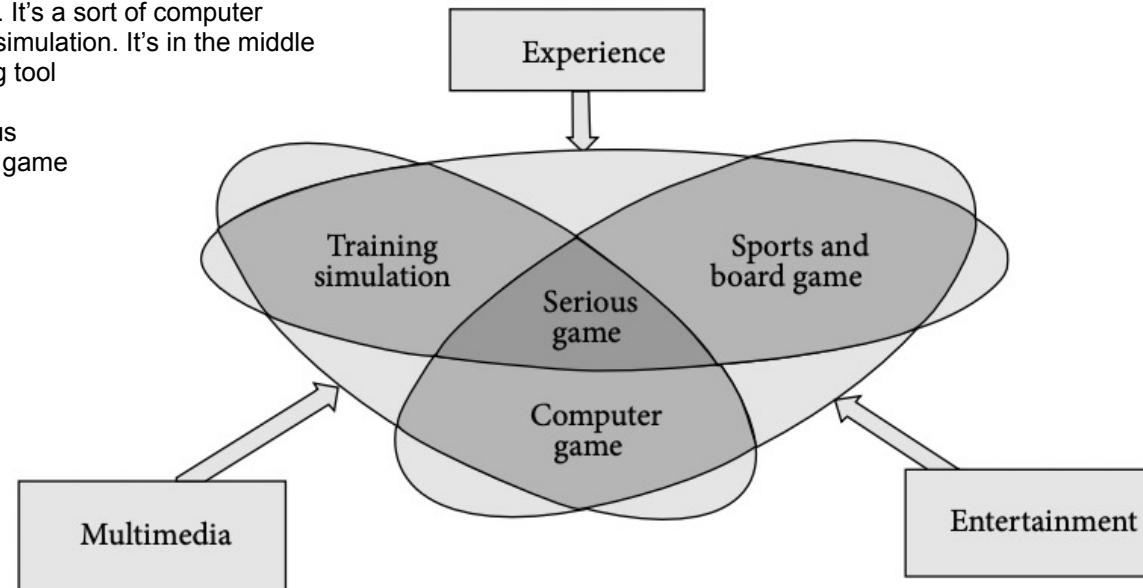
THE FOCUS ON SERIOUS GAMES FOR LEARNING AND EDUCATION

WHAT IS A SERIOUS GAME?

Middle point in the graph. It's a sort of computer game, sport game, train simulation. It's in the middle = entertainment + learning tool

Serious: the aim is serious
Game: in reality they are game

Find in the world of application serious games



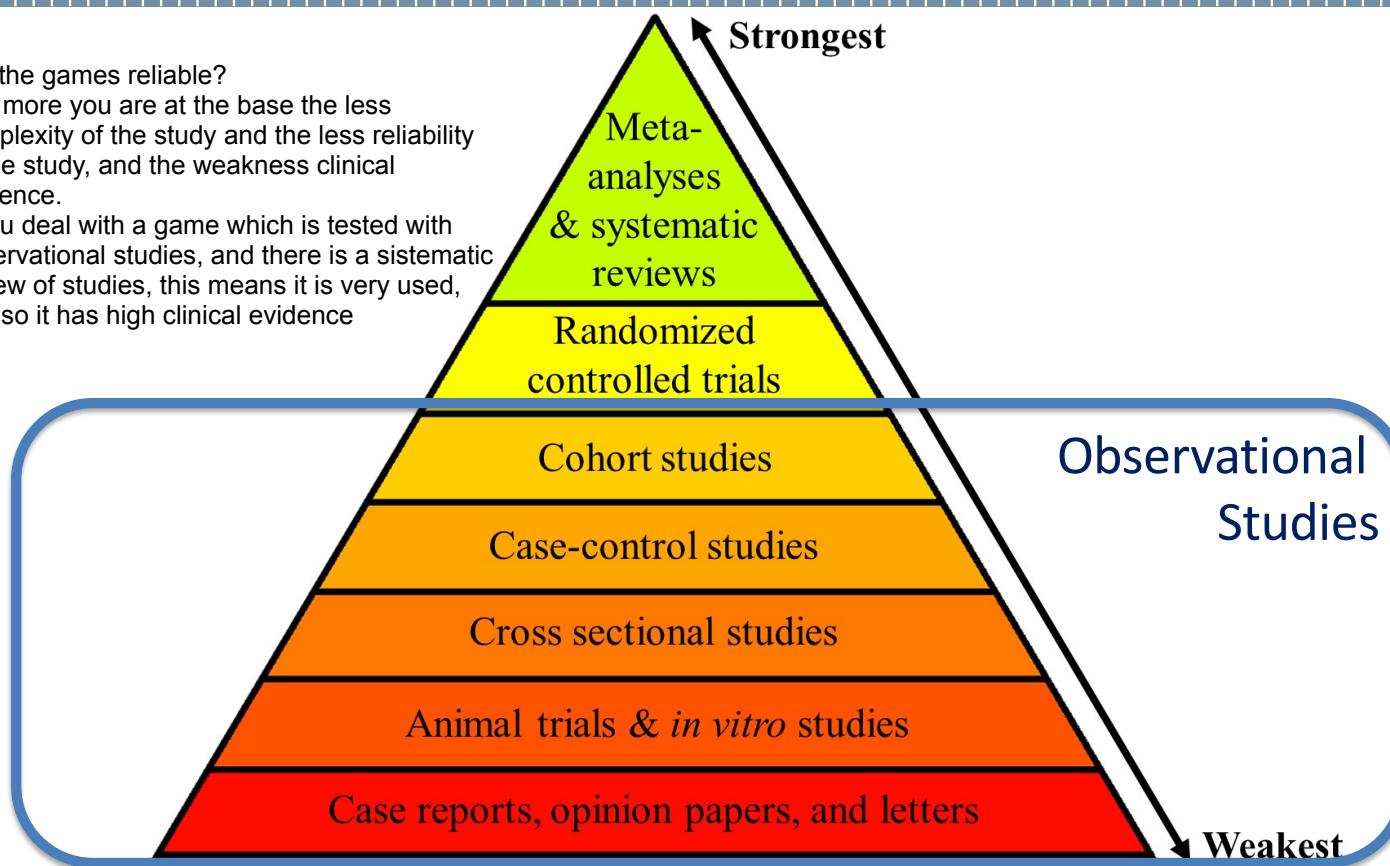
**IS THE SERIOUS GAME
IDENTIFIED RELIABLE
AND VALIDATED?**

THE HIERARCHY OF CLINICAL EVIDENCE

Are the games reliable?

The more you are at the base the less complexity of the study and the less reliability of the study, and the weakness clinical evidence.

If you deal with a game which is tested with observational studies, and there is a systematic review of studies, this means it is very used, and so it has high clinical evidence



STUDY DESIGN DEFINITIONS

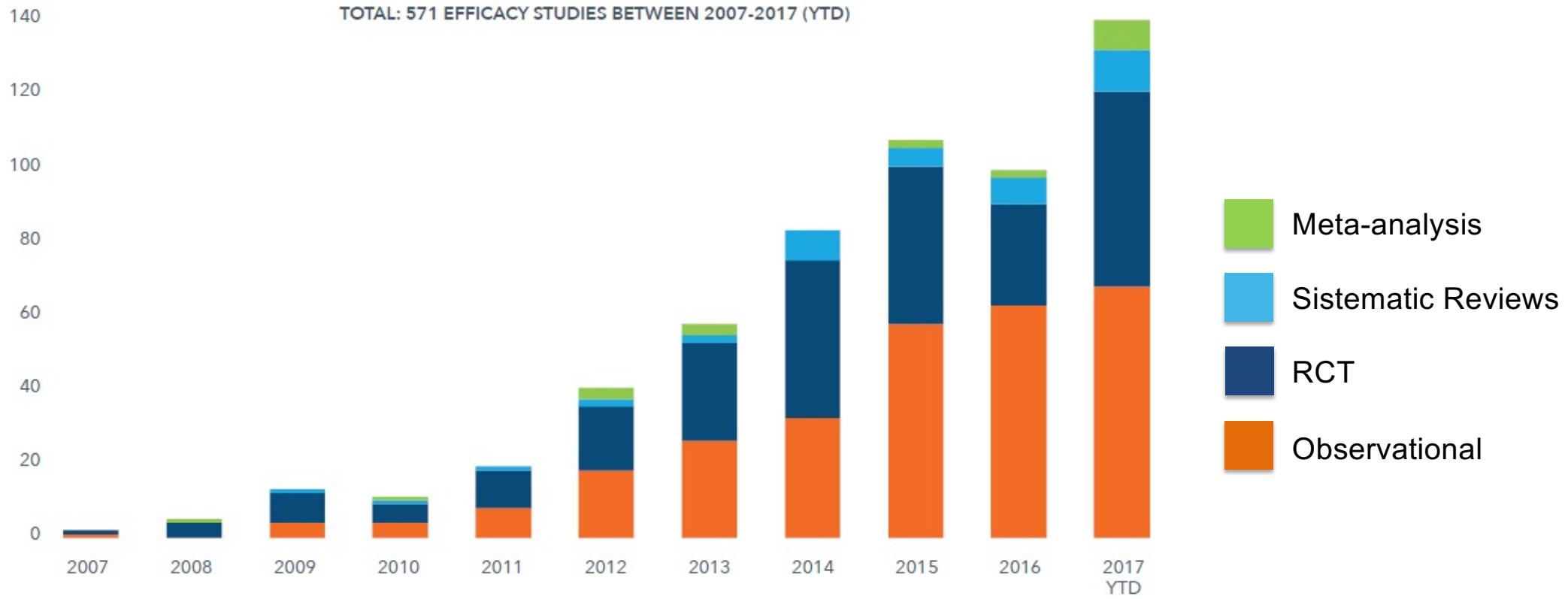
An ***observational study*** is a type of study in which individuals are observed and certain outcomes are measured

A ***randomized controlled trial*** (RCT) is a scientific experiment used to test the efficacy and efficiency of a service in healthcare, such as a new technology, methodology, treatment or drug therapy. RCTs are the ***gold standard*** to appraise the effectiveness of new treatments or technologies

A ***systematic review*** provides a complete, exhaustive summary of current literature relevant to a research question.

Well-designed systematic reviews with ***meta-analyses*** synthetize and evaluate data from RCTs

AMOUNT AND CHARACTERIZATION OF CLINICAL STUDIES IN DIGITAL HEALTH



AIM OF THE PROJECT

Generate a **tool** that : i) collects and analyse existent serious game for children (PLAYSTORE); ii a) put in relation the serious games found with material available in literature on the clinical validation of such games; ii b) starting from specifications try to design and develop a serious games to train learning abilities in Unity 3D

Working Groups

– **about 4 to 6 students per group** –

Please tell us your preferred group arrangements AS SOON AS POSSIBLE

OUTLINE

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PROJECT ORGANIZATION

Project phase I



IDENTIFICATION
OF SERIOUS
GAMES FOR KIDS



The software searches automatically for certain type of apps



Project phase IIa

CHARACTERIZATION
OF RELEVANT
SERIOUS GAMES



Project phase IIb

DEVELOPMENT OF
A SERIOUS GAME



PHASE I: IDENTIFICATION OF SERIOUS GAMES FOR KIDS

Project Phase I

PLAYSTORE for kids



extracting
information



DATABASE
of serious games
for learning



Identify all the games, and put in the database:
- description but not only, many other features

From the whole Apps present in the PLAYSTORE:

- we will develop automated methods to extract information about the serious games (title, description, learning category, ratings, expert validation...)
- we will build a database of serious games
- we will clean the database

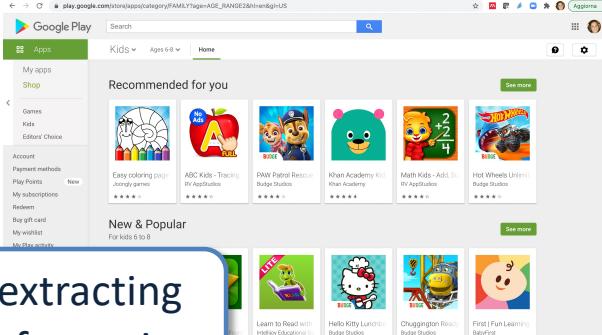
Software to filter out some details not of interest

Phase 1 will end in the 1st month

PROJECT ORGANIZATION

Project Phase I

PLAYSTORE for kids



extracting information

DATABASE
of serious games
for learning



Starting from the database, created in python. I want to choose the characterization of the games. From the database i want to search for the most evidence app.

Project phase IIa



search evidence on specific games

Extracting info from text



CHARACTERIZATION
of games

We can choose:

- pubmed (contains publications) for example

BUT automatically: it screens automatically

We can analyze the text of abstract for example: language processing tools to characterize the game

If during the project the group wants to understand something else in the abstract, ask to teacher if some information in addition could be relevant

PHASE IIa: CHARACTERIZATION OF RELEVANT SERIOUS GAMES

INPUT: The serious game DB



search evidence on specific games

Extracting info from text



CHARACTERIZATION
of games

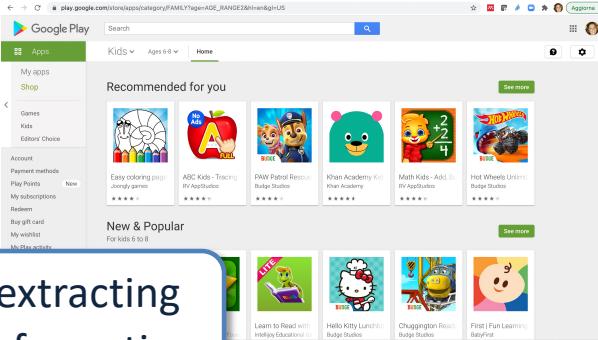
From the DB of serious games we identify the most relevant and look for evidence on them:

- we will develop automated methods to extract information from the PUBMED webpages
- we will select relevant publications and build a DB of publications
- we will develop automated methods to characterize publications, specifically to identify relevant info from the text

PROJECT ORGANIZATION

Project phase I

PLAYSTORE for kids



extracting
information

DATABASE
of serious games
for learning



python™

Project phase IIa



search evidence on
specific games

Extracting
info from text



CHARACTERIZATION
of games

Project phase IIb

We have to create an environment

Game
specifications

Learn how to
develop with us

unity

Develop a simple
serious game

PHASE IIb: DEVELOPMENT OF A SERIOUS GAME



- we will develop a basic serious game for learning in kids
- we will learn how to add gamification to the serious games
- we will test the game

Provide some animals already created and they will teach us how to move them

PROJECT SCHEDULING



FINAL Deadline: December 23

To be uploaded: a brief report (no more than 4 pages), your presentation slides, the code, the results of automated characterization or a video of the developed game, and supporting files

Group presentations: Dec 22-23