Next-gen advocacy for respiratory health: fun, empowering, participatory, freely adaptable

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1 mHealth to better prevent and control respiratory diseases

While the burden of chronic respiratory diseases grows, many individuals around the globe adopt apps and devices that continuously collect health data. In 2017, 325,000 mhealth apps were available, mostly on Android [1]. In 2016, seven million patients were remotely monitored [2]. Fostering self care and close follow up, these apps and devices transform health delivery, and gather unprecedented data.

The Global Alliance against Respiratory Diseases (GARD) leads a mHealth project to deliver phone messages for the prevention and management of respiratory diseases (mBreatheFreely) [3]. GARD members presented additional mhealth projects including messaging (mTobaccoCessation, mCOPD), symptoms and treatment follow ups in allergy (Allergy Diary), asthma (SpiroSmart), chronic sinusitis (mySinusitisCoach), as well as air pollution alerting [4-9].

This aligns with GARD goals to enhance available data and technical capacity [10].

2 The example of asthma: a need for better pedagogy?

Beyond on-demand information, mHealth often provides the user with personalized recommendations. Is this however sufficient to engage individuals in the long run?

In asthma for example, 1% of the people affected use mHealth apps [1]. Despite their increase, most asthma apps provide partial information, and are not aligned with guidelines. While showing results in asthma control, most apps fail at showing significant clinical outcomes. Neither behavioral change theories, nor game elements, such as achievements or points systems, are well integrated [11-13].
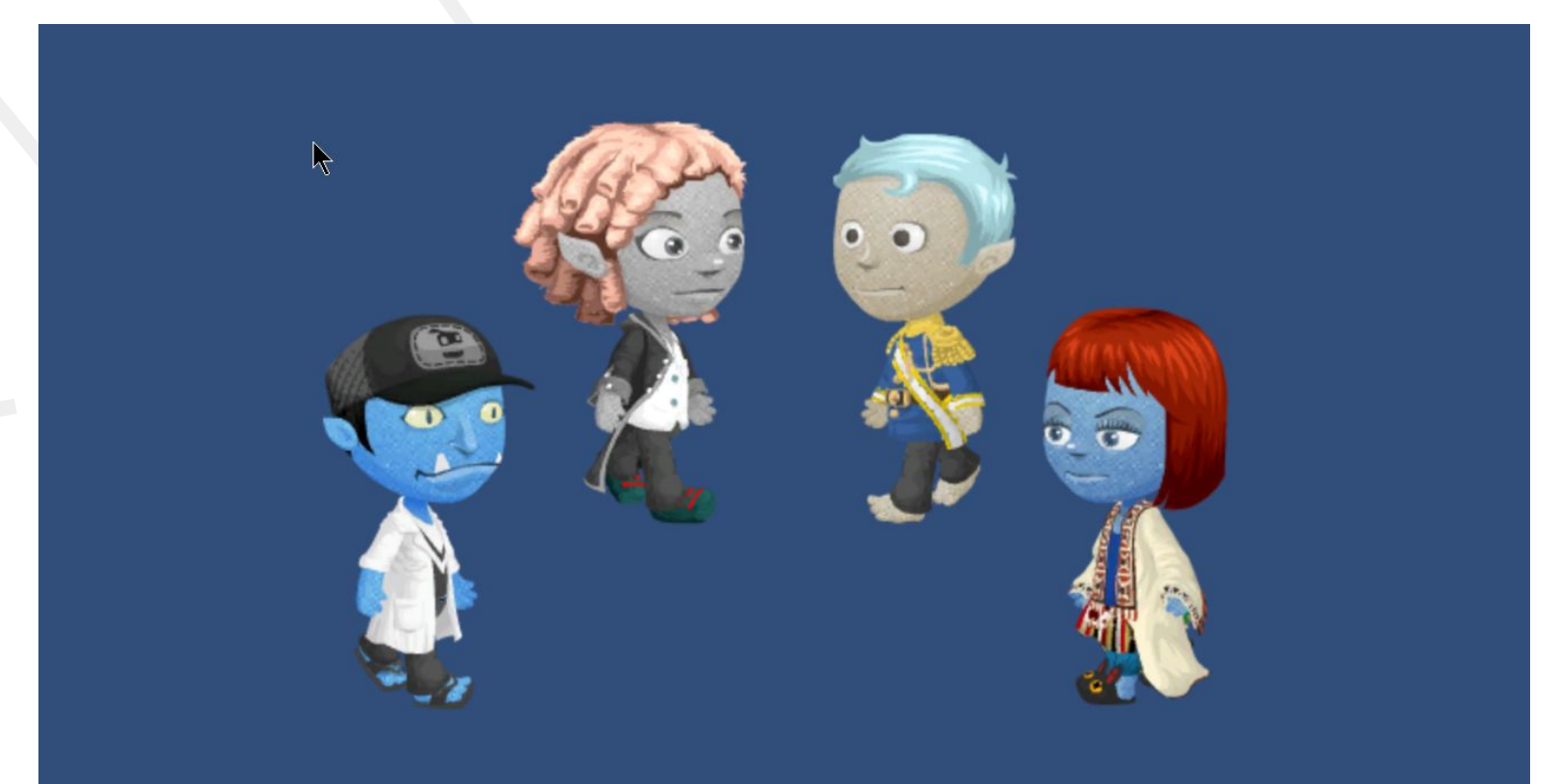
Play is a natural way to learn and explore new behaviours. For psychiatrist Brown, play is, like oxygen, "all around us, yet goes mostly unnoticed or unappreciated until it is missing." Playfulness is a key factor in wellbeing [14-15].

Recently created games on asthma encourage perseverance and show high rates of satisfaction. However, mobile games on asthma have not yet been evaluated [16].
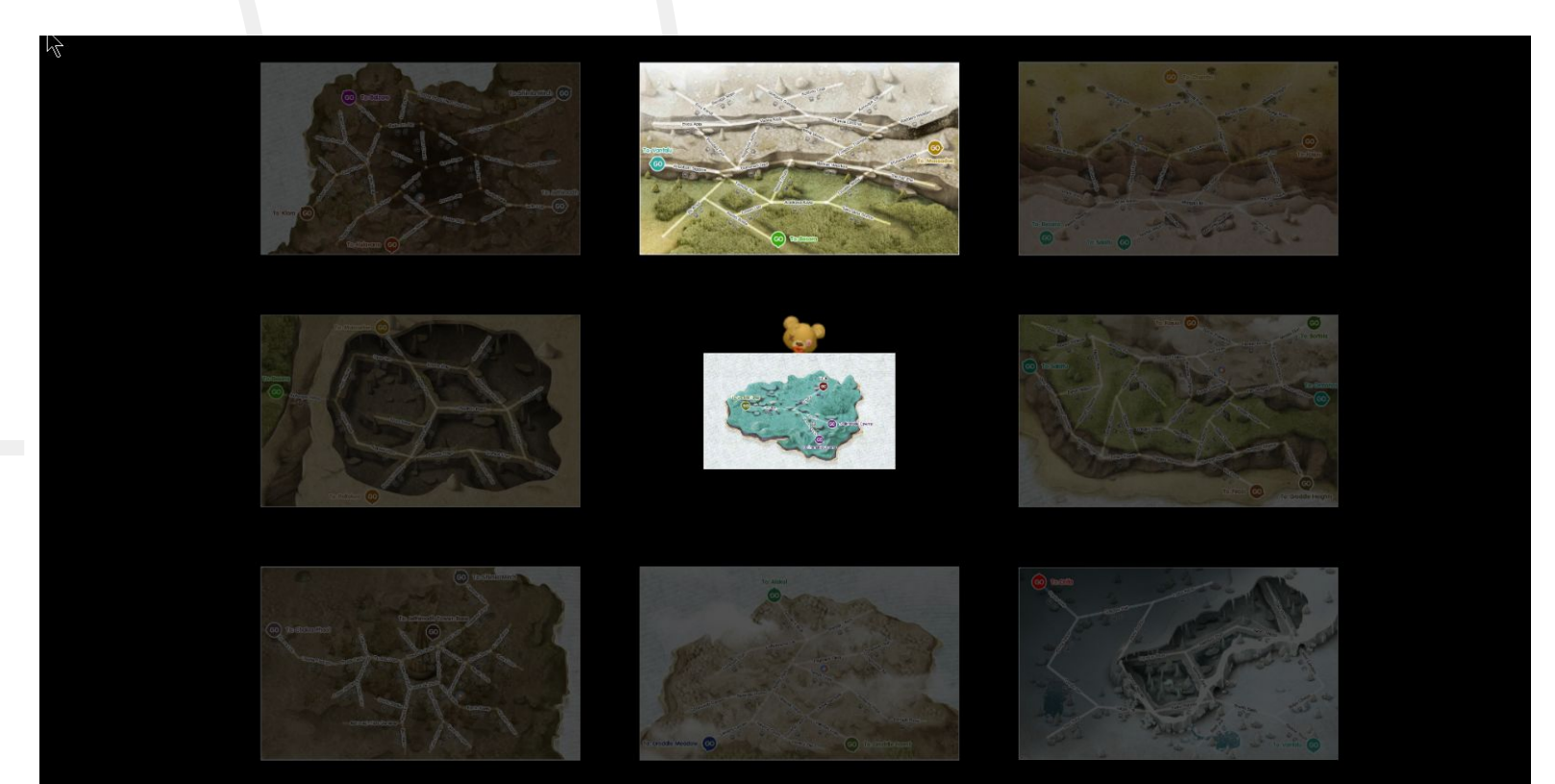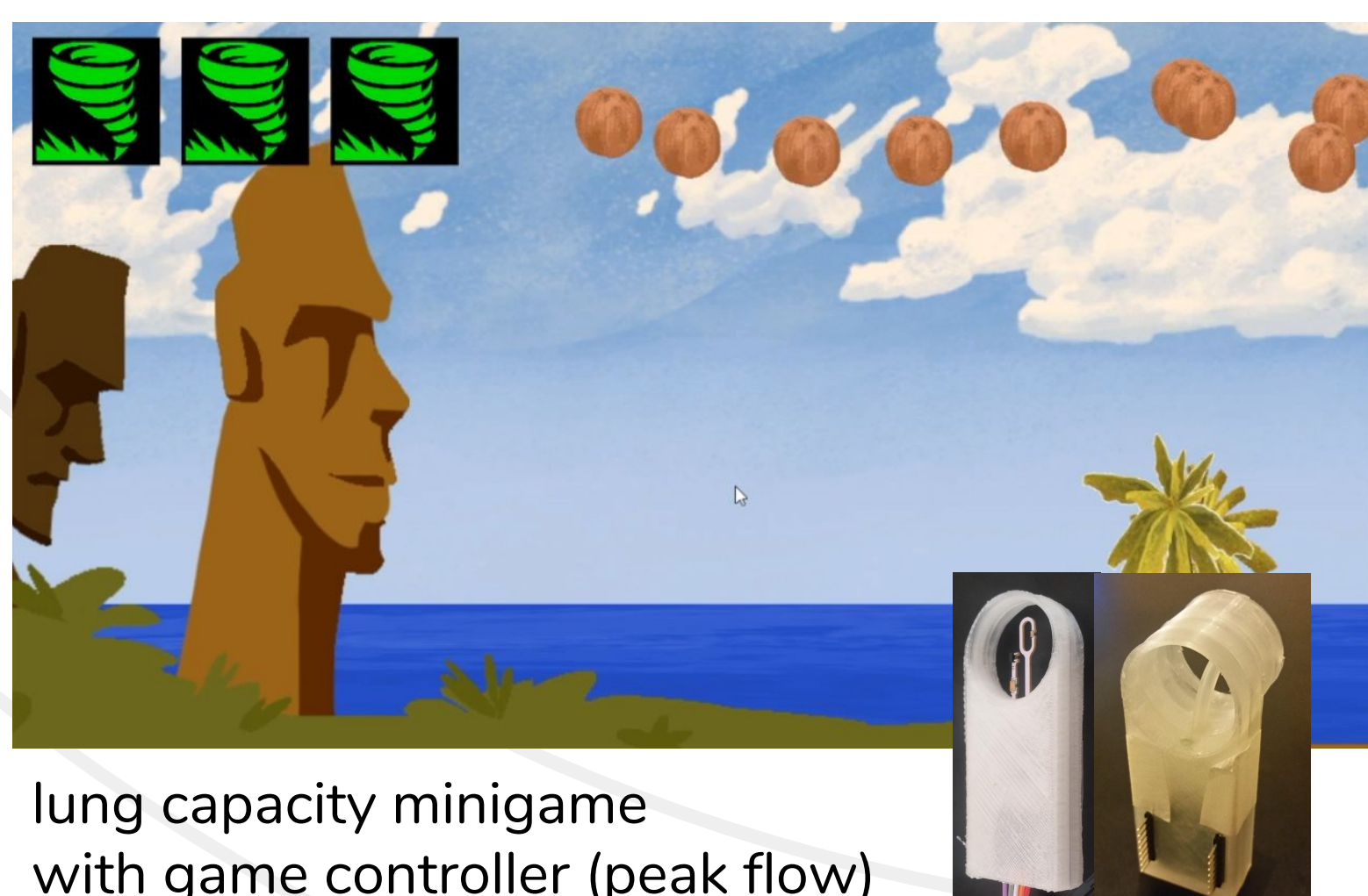
3 BreathingGames.net

character selection

map with access to different regions

region to explore with real-life situations – access to minigames

triggers minigame

lung capacity minigame with game controller (peak flow)
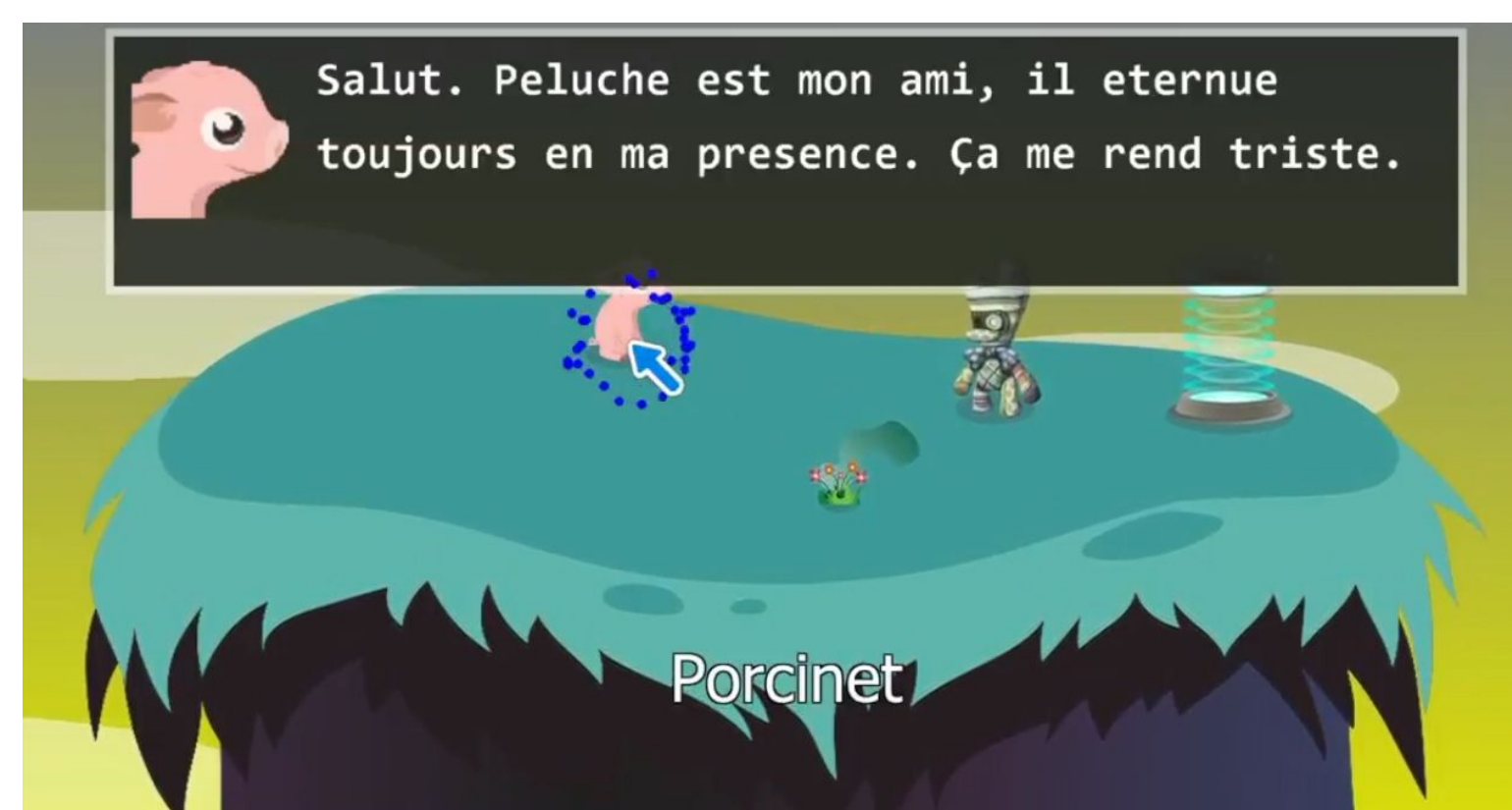
symptoms and treatments game
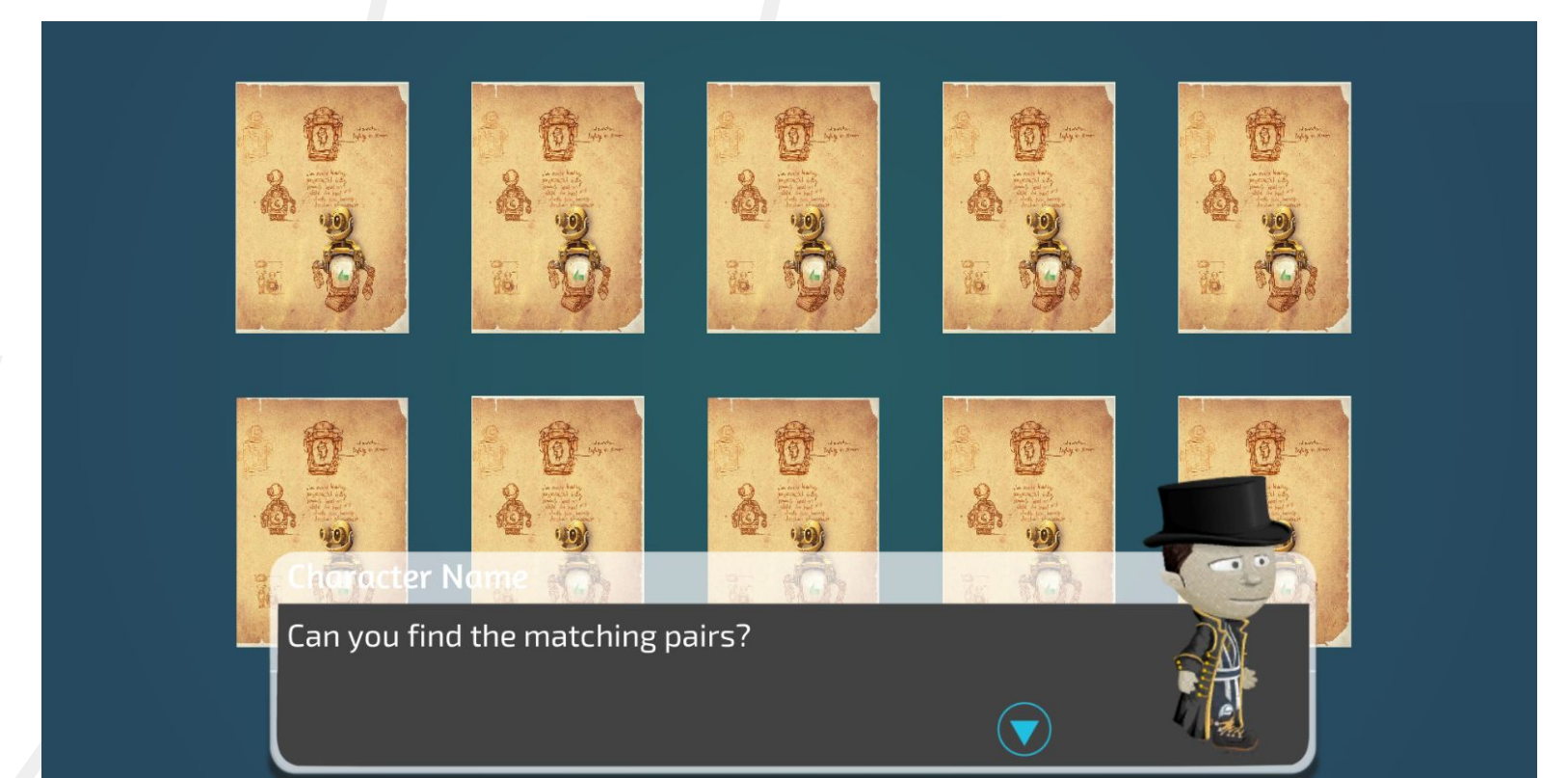
interactive poster

Watch the games: breathinggames.net/video
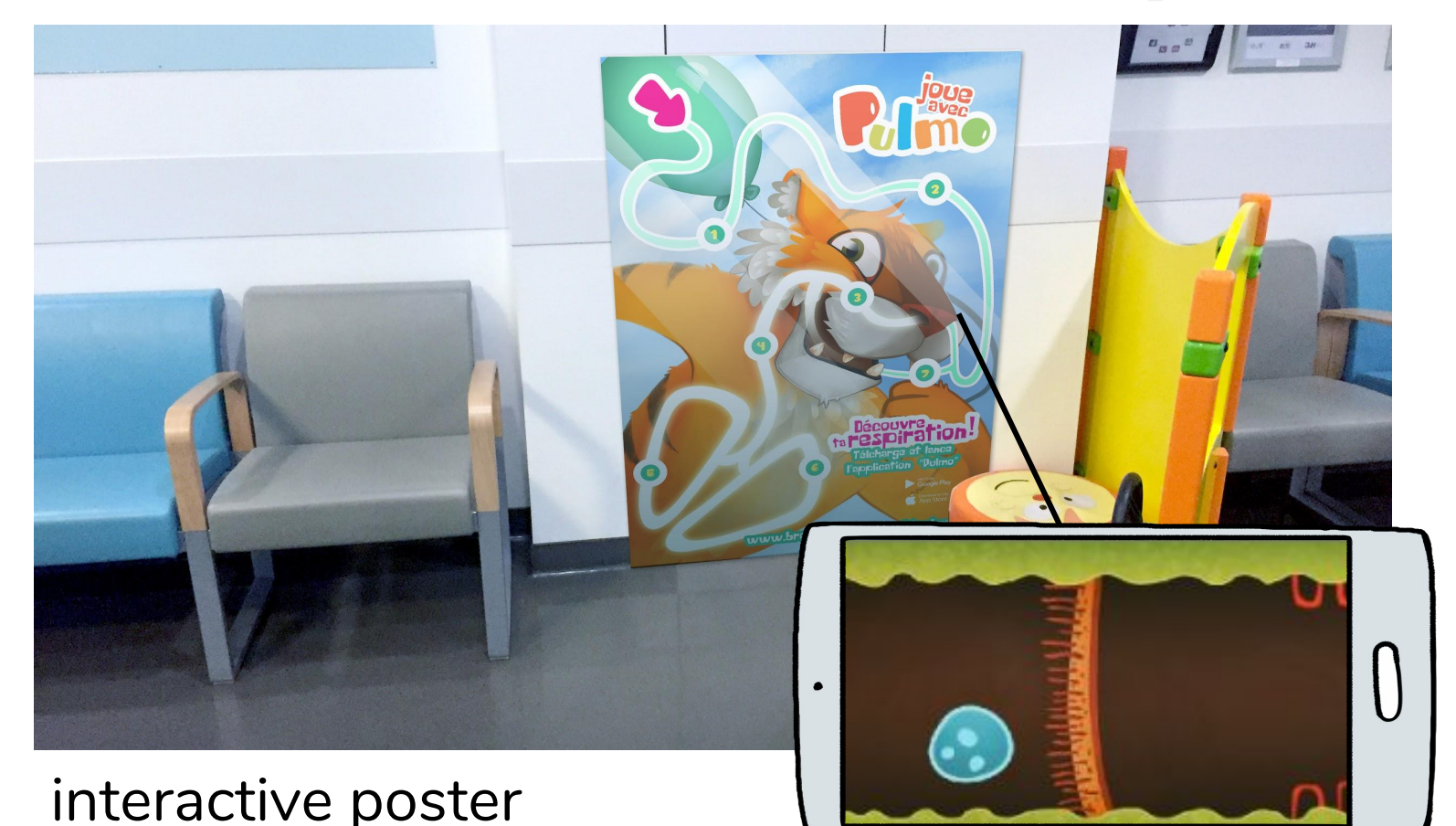
4 Transforming health care into fun, rewarding experiences

At Breathing Games, we have been mobilizing 250 professionals and researchers to brainstorm and prototype games. Our aim is not only to release innovative tools, but to inspire social transformation, by encouraging every interested person to take part in the creation of ludic, frugal respiratory health technologies [17-19].

By February 2019, we will have evaluated children's gaming experience and knowledge on asthma with the games and game controller illustrated above. A six-month study is being prepared to evaluate health outcomes. We will continue to organize multidisciplinary co-creation events – 14 up to day – to raise awareness of respiratory health, and prototype further gameplays.

The goal is to create a game ecosystem which provides different challenges depending on the player's health condition so that they can envision their ideal lifestyle. Players who have a respiratory disease will have access to specific screening and treatment games. Game content will combine humor and culture with a variety of topics: the air, cell respiration, the lung system, the meaning of breath in different traditions, nutrition, physical activity, etc. Behind the game, a distributed data system will enable people authorized by a community of users to access, visualize and analyze the data collected. For example, results of lung capacity tests could be mapped to show discrepancies across regions.

5 Testing the games locally: join forces!

As an open science, not-for-profit commons, Breathing Games provides a research kit to evaluate the games locally. Research and co-creation events are being held in Canada, Switzerland and France, with the support of: French Hospitals Federation, Canadian Institutes for Health Research, Sustainability Action Fund, Concordia University, Sensorica, Lift Events, Swiss Game Center, Geneva CF Foundation, WeMake, and the university hospitals Sainte-Justine, Necker, Cochin, Geneva.

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