



# NEW AND EMERGING TECHNOLOGIES

Dr. Victoria Baines, Safer Internet Forum 2021

# Hype Cycle for Emerging Technologies, 2020



## THE NEXT TEN YEARS

- AI WITH EVERYTHING
- NEXT GEN PERSUASIVE COMPUTING
- IMMERSIVE ENVIRONMENTS (XR)

[gartner.com/SmarterWithGartner](https://gartner.com/SmarterWithGartner)

Source: Gartner  
© 2020 Gartner, Inc. and/or its affiliates. All rights reserved. Gartner and Hype Cycle are registered trademarks of Gartner, Inc. and its affiliates in the U.S.

**Gartner.**



[thispersondoesnotexist.com](http://thispersondoesnotexist.com)



# AI WITH EVERYTHING

- Greater automation of potential safety issues and threats to children

## BUT ALSO

- Better provision of 'live', non-human support to children and young people who need help
- We may see children who do not exist outside of data, and even robot children. Do they have rights, too?

DISCUSSION POINT: AI will require large data sets to be effective.

- Do we accept that we may need to collect more personal data from children in order to keep them safe?
- What might the limits be, and who would set them?

# A real boy? Abel the '12-year-old' child robot is coded to read your emotions



# PERSUASIVE COMPUTING



# PERSUASIVE COMPUTING

- When we develop internet safety education programmes, to some extent we want to prevent adverse experiences.
- In the next few years, our ability to affect perception change and behaviour change in
  1. children and young people
  2. those who may pose a risk to children and young peopleis likely to increase.

QUESTION: If our education and intervention tools become more persuasive, will we need new transparency and accountability measures? When bad actors manipulate, this is social engineering / influence operations.



**THE VERGE**







# CAPTURE THE WORLD AS YOU SEE IT

TAKE PHOTOS AND VIDEOS HANDS FREE AND STAY IMMERSED IN THE MOMENT

Source: Ray-Ban

# IMMERSIVE ENVIRONMENTS (XR)

- An even greater focus on harmful experiences (360°) as opposed to content such as information, images and videos.
- Increased emotional impact of both positive and negative experiences – feeling like you're 'really there', also with physical sensation (haptic feedback)
- Young people who are enabled by immersive environments may not want to leave them.
- Already being used extensively in education, and to generate empathy for others, e.g. refugees and trafficking victims.



Image Credit: Unit 2 Games Limited



# IMMERSIVE ENVIRONMENTS (XR)

## QUESTIONS:

- We are used to being able to trust our own eyes. What are the implications for critical thinking of seeing something in physical space?
- Will children and young people need to be constantly capturing their surroundings – and the activities of other children - to prove that something bad has happened to them?
- Are there use cases that should be prohibited – such as exposing a real child to a traumatic experience, or those in which it's possible to behave inappropriately towards an artificially generated child?



Source: Neuralink

# BRAIN-MACHINE INTERFACES

- Medical uses already exist.
- Mainstream use of bi-directional interfaces that both capture data from the brain and transmit data to it is likely >10 years away.
- We should consider in advance the potential to literally change someone's thinking.
- Whether for positive or negative impact, this will be the most intrusive manifestation yet of persuasive computing.





## Scenarios for the Future of Cybersecurity

Dr Victoria Baines & Rik Ferguson

Technologies do not emerge in isolation.  
They **converge**.

**Artificial Intelligence**  
will direct  
**robots**  
that will populate  
**immersive environments**  
in which children and young people will  
interact.

Much of this – especially the benefits and risks – are already familiar to us, and the tech is already in development. The big question is when exactly...

An abstract graphic at the top of the slide featuring a series of overlapping, wavy bands of color. From left to right, the colors transition from a warm orange-red to a bright yellow, then to a vibrant green, and finally to a cool cyan-blue. The waves appear to flow from the top left towards the top right, creating a sense of movement and energy.

# THANK YOU

vbaines@bournemouth.ac.uk  
@cyberbaines