

From Framework to implementation Responsible XR in Education

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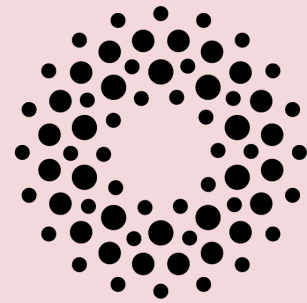
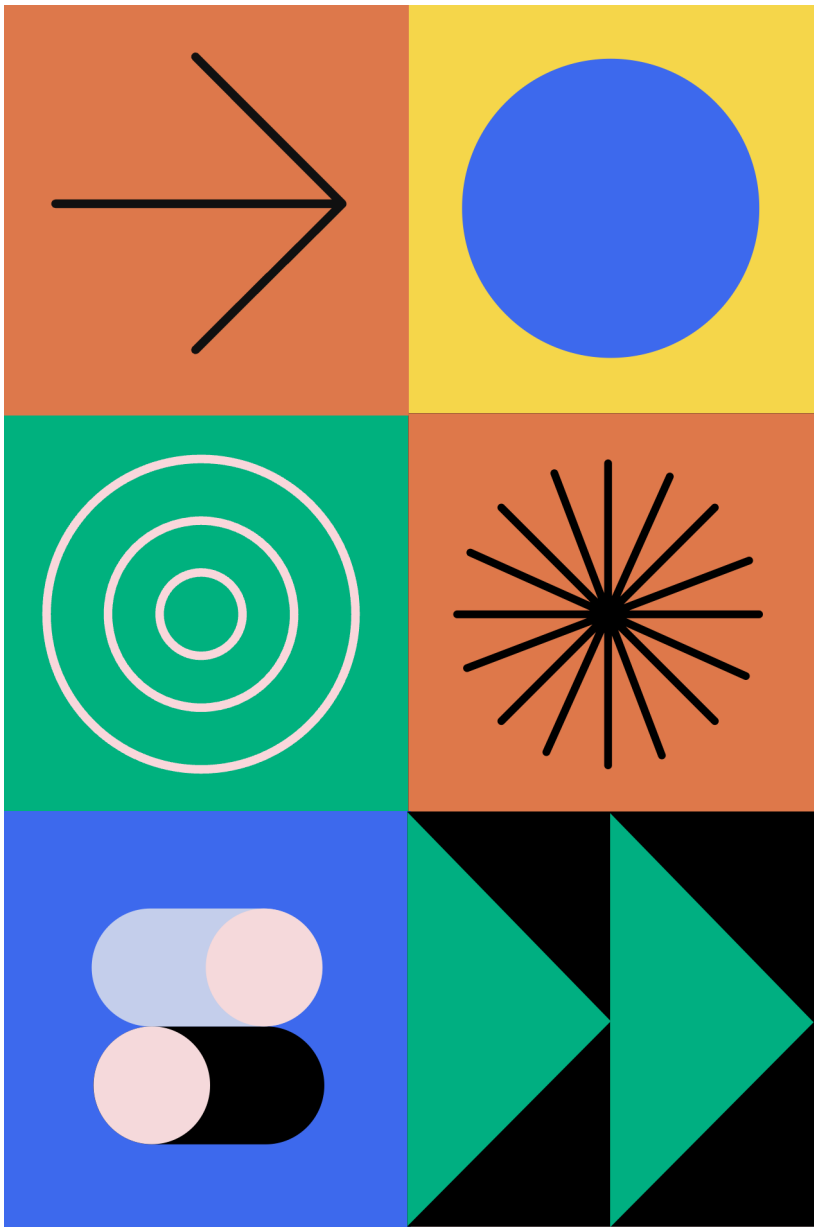


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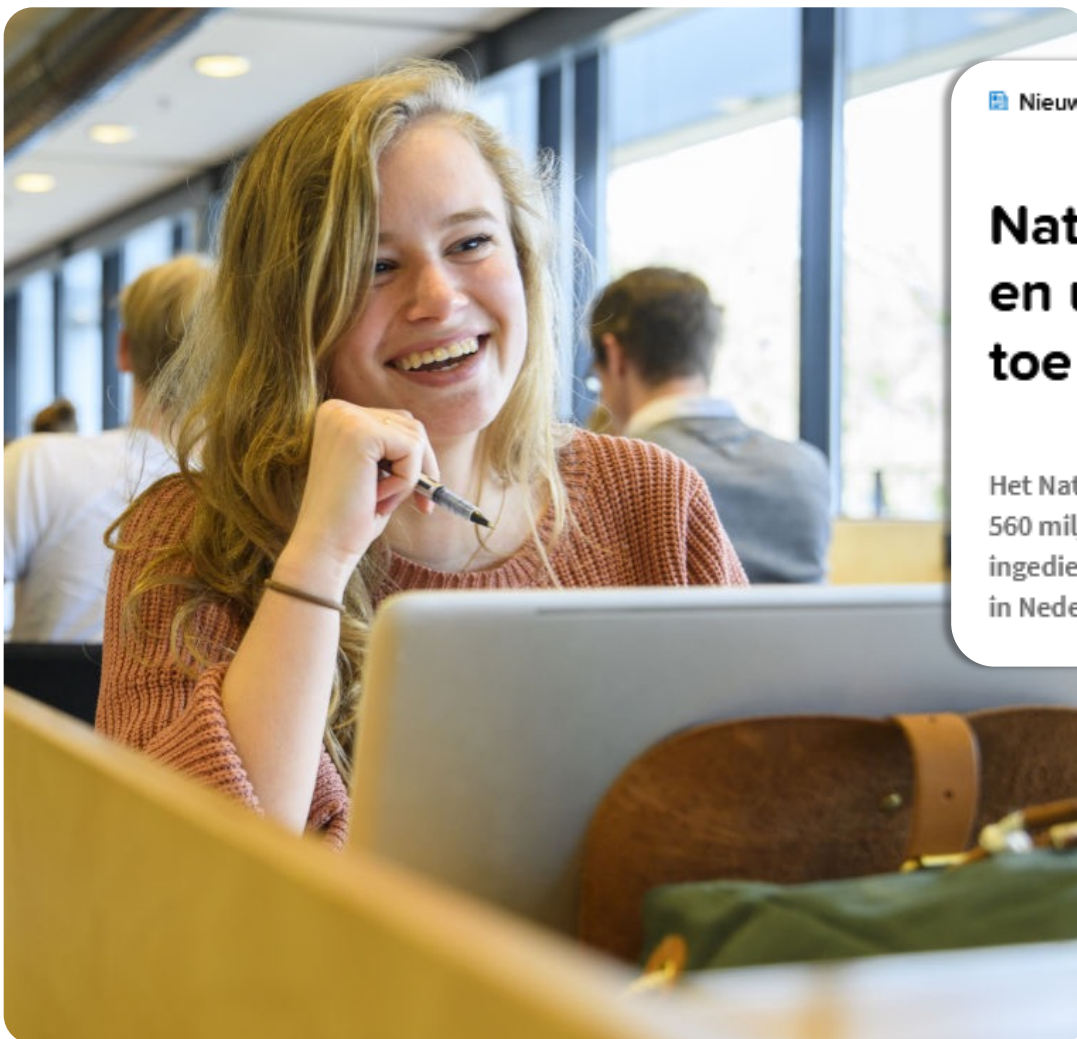
SURF





Npuls





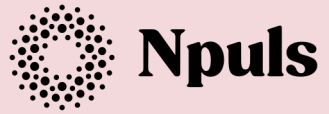
Nieuws — 14 april 2022

Nationaal Groeifonds kent mbo, hbo en universiteiten 560 miljoen euro toe

Het Nationaal Groeifonds kent het programma Digitaliseringsimpuls Onderwijs 560 miljoen euro toe. De aanvraag voor het programma is gezamenlijk ingediend door alle publieke mbo-instellingen, hogescholen en universiteiten in Nederland.



Universiteiten
van Nederland



This is why we need (an i)Npuls

In the Dutch tertiary education system



The Dutch tertiary education system

- Insufficiently uses the opportunities of digitalisation to enhance the quality of education, putting learners at risk of falling behind internationally;
→ Leads to international backlog



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- Insufficiently uses the opportunities of digitalisation to enhance the quality of education, putting learners at risk of falling behind internationally;
→ Leads to international backlog
- Insufficiently integrates functional and critical digital skills into the curriculum. This increases the opportunity inequality of learners;
→ Leads to opportunity inequality learners

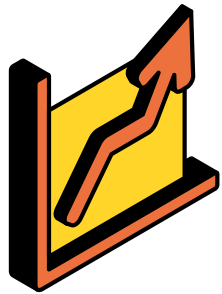


The Dutch tertiary education system

- Insufficiently uses the opportunities of digitalisation to enhance the quality of education, putting learners at risk of falling behind internationally;
→ Leads to international backlog
- Insufficiently integrates functional and critical digital skills into the curriculum. This increases the opportunity inequality of learners;
→ Leads to opportunity inequality learners
- Isn't equipped to facilitate changes in the labour market and society in a timely manner with up-to-date schooling. This poses a threat to Dutch innovation capacity;
→ Leads to lack of responsiveness



Three goals



Improving the
quality of
education



Enhancing the
adaptivity
of education

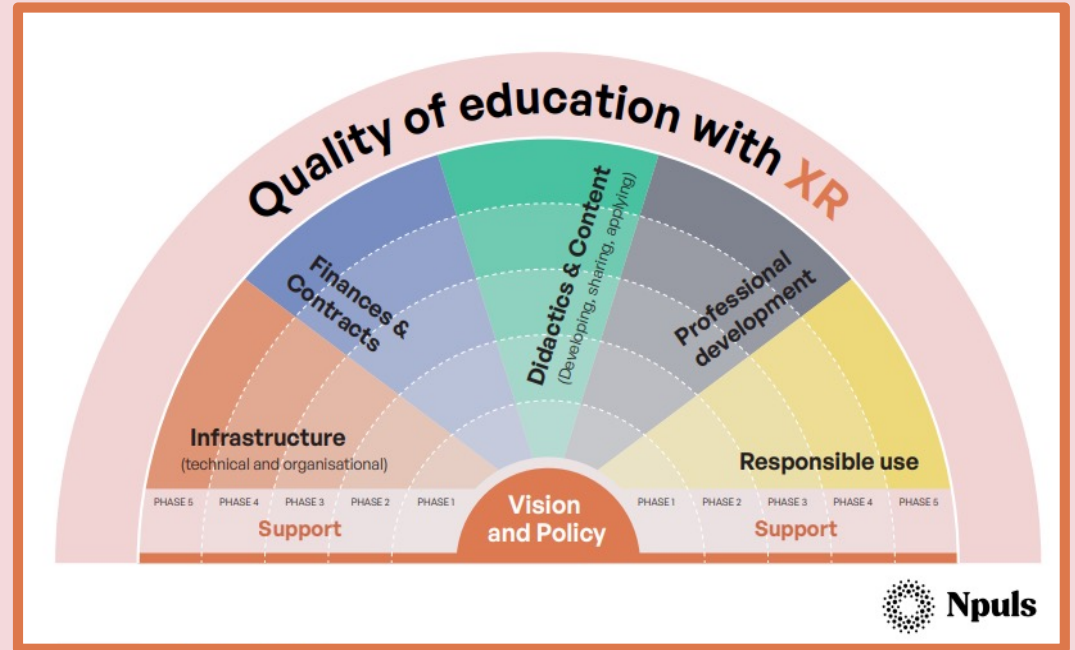


Improving functional and
critical digital skills of learners
and teachers





XR Framework



Goal Project Framework XR

- There is a framework that provides an institution with insight into all aspects that need to be organised and facilitated regarding XR.
- This framework can serve as a guideline for the educational institution to map the progress of the XR implementation and make adjustments where necessary.
- It offers a holistic approach that includes strategic, technological, and operational aspects.



Workinggroup XR Framework

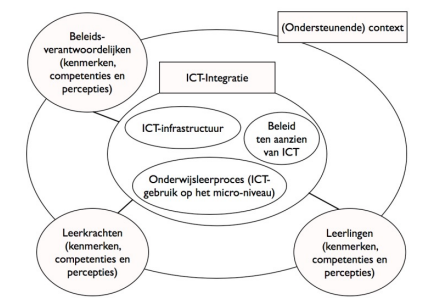
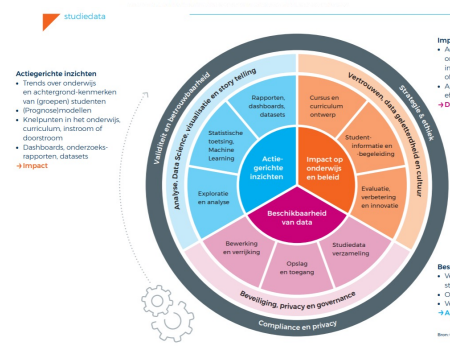
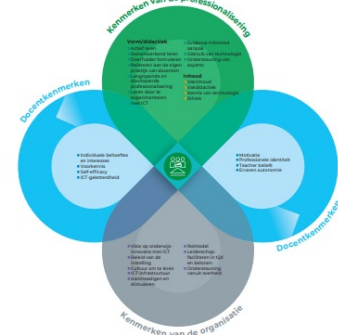
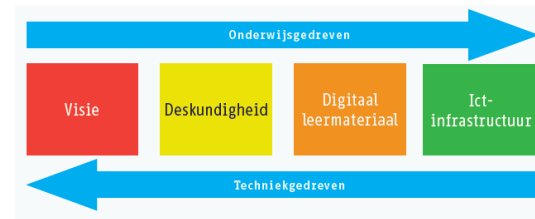


Research Framework

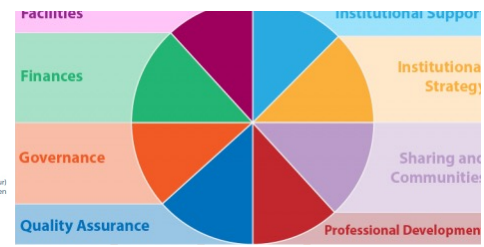
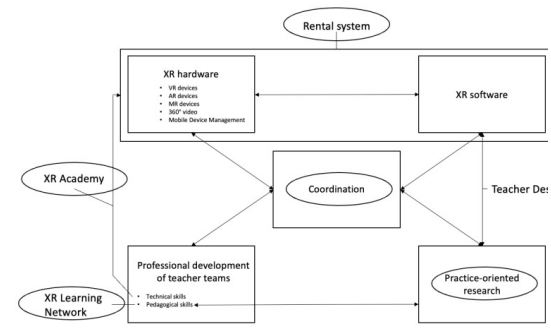
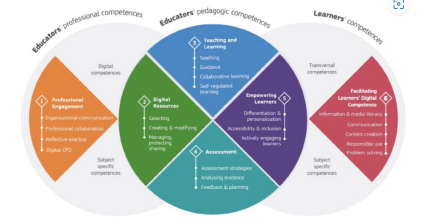
Framework Research

Inhoud

- Framework Research 1
- Gevonden modellen in de literatuur 2
 - Open XR for Education Framework (OXREF) 2
 - Het Vier in Balans Model: 4
 - MICTIVO-model: 5
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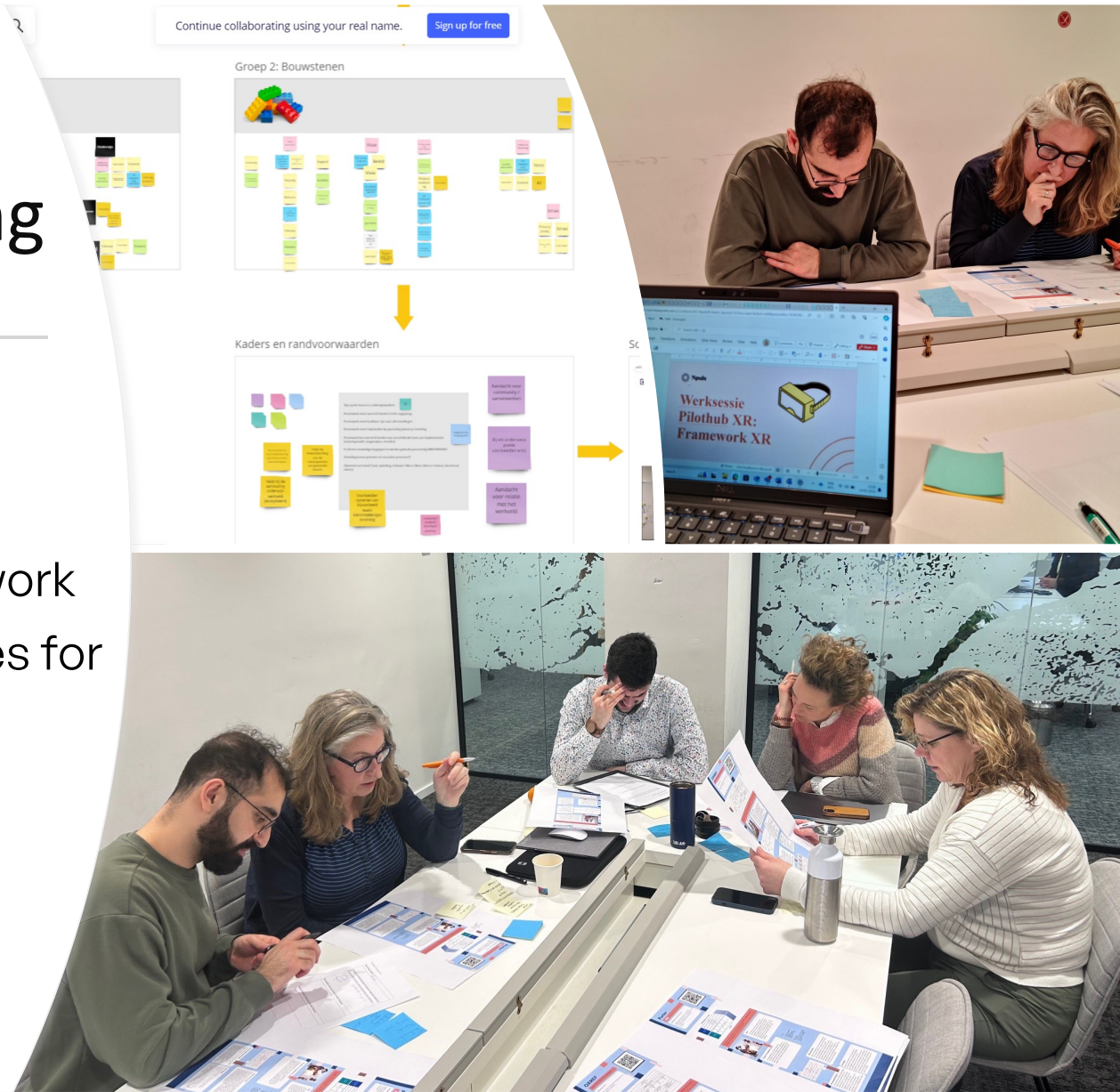


Figuur 1. MICTIVO-model voor ICT-integratie

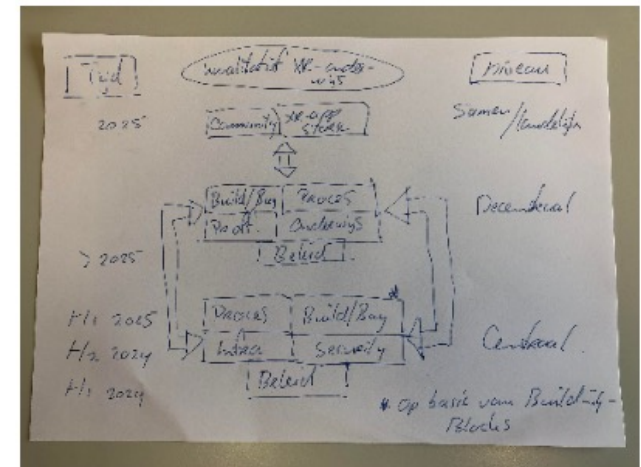
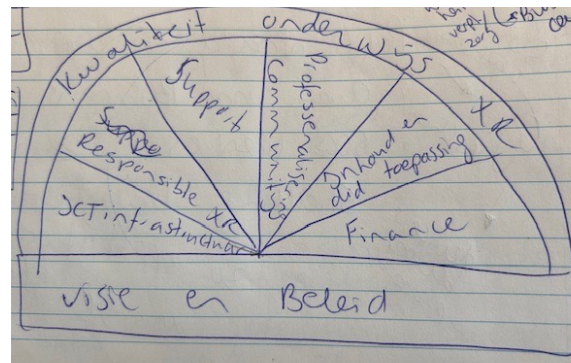
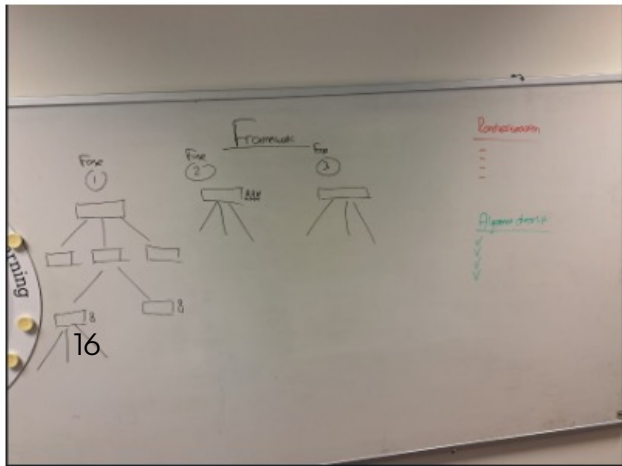
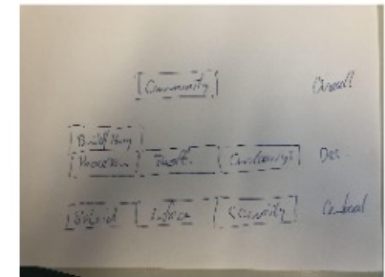
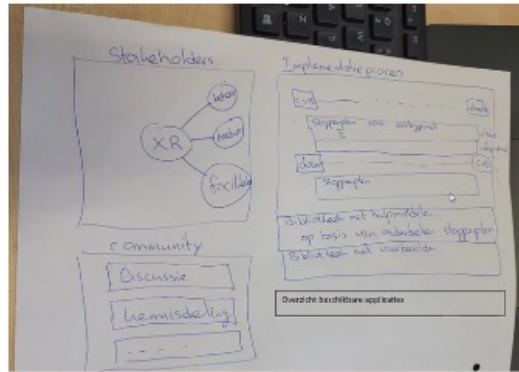
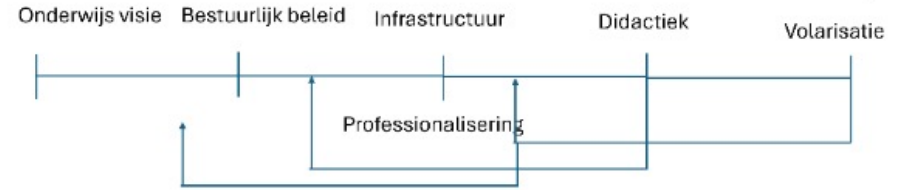


Work Sessions Pilot Hub XR & Working Group

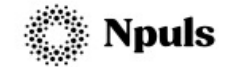
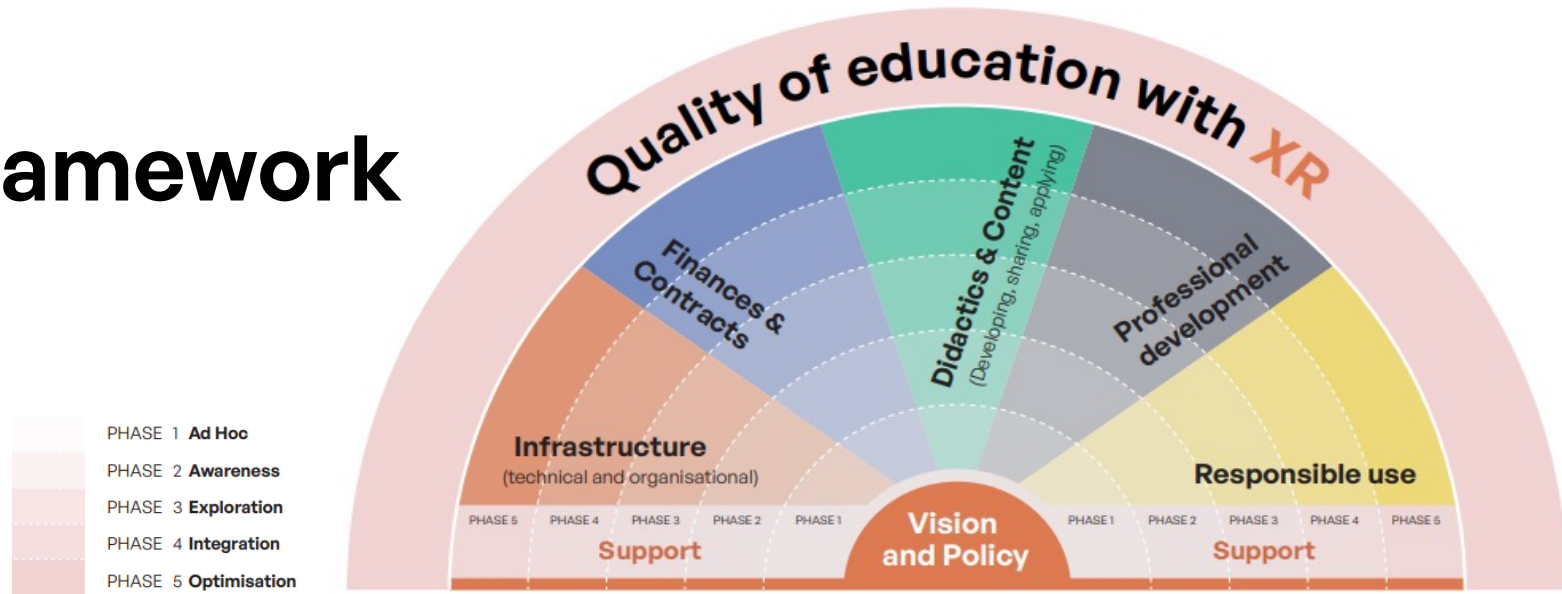
- Literature Research
- Analysis of models
- Defined categories for the framework
- Defined characteristics & principles for the framework



Sketches Framework



XR Framework



Vision and Policy



Didactics & Content



Support



Professional development



Infrastructure



Responsible use



Finances & Contracts



XR Framework Toolbox



Vision and Policy

- Vision
- Strategy
- Policy
- Quality cycle



Support

- Support



Infrastructure

- Hardware
- Software
- Network
- Data storage
- Management
- Architecture



Finances & Contracts

- Grants
- Purchasing
- Contract management
- Valorisation



Didactics & Content

- Designing content
- Developing content
- Sharing content
- Didactic commitment



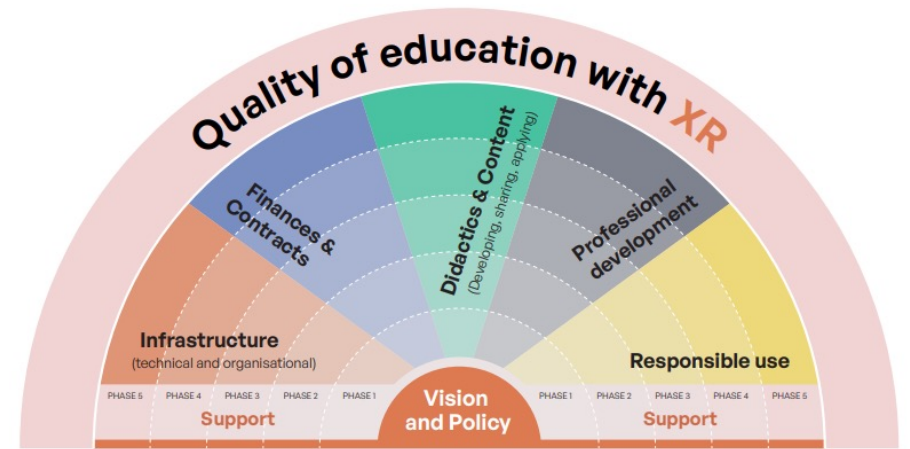
Professional development

- Expertise enhancement (all XR-related roles)
- Required competencies (all roles)
- Communities










Responsible use

- Privacy
- Security
- Ethics
- Accessibility
- Public values



Maturity model

-  Vision and Policy
-  Support
-  Infrastructure
-  Finances & Contracts
-  Didactics & Content
-  Professional development
-  Responsible use

| | PHASE 1 Ad Hoc | PHASE 2 Awareness | PHASE 3 Exploration | PHASE 4 Integration | PHASE 5 Optimisation |
|--------------------------|-------------------|----------------------|------------------------|------------------------|-------------------------|
| Vision and Policy | | | | | |
| Support | | | | | |
| Infrastructure | | | | | |
| Finances & Contracts | | | | | |
| Didactics & Content | | | | | |
| Professional development | | | | | |
| Responsible use | | | | | |



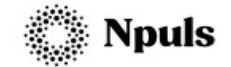
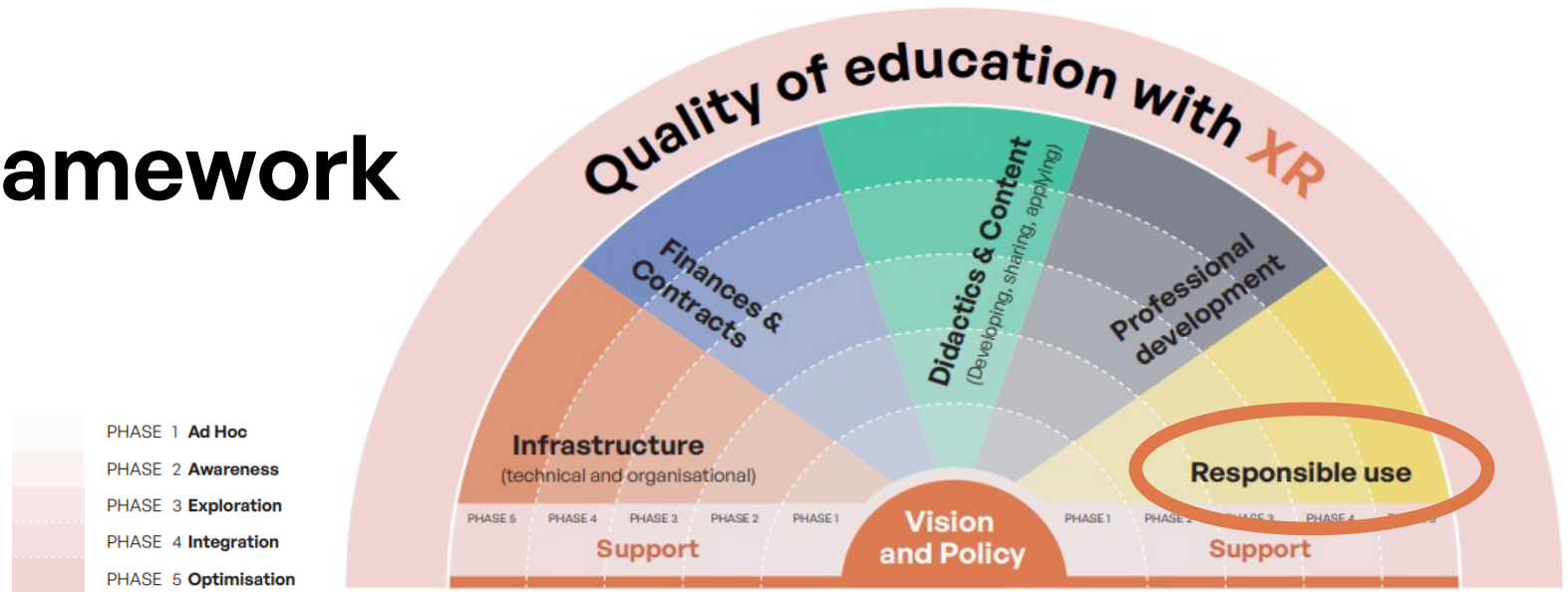


Vision & Policy

Maturity model example

| PHASE 1 Ad Hoc | PHASE 2 Awareness | PHASE 3 Exploration | PHASE 4 Integration | PHASE 5 Optimisation |
|---|---|--|--|---|
| In this initial phase, the educational institution does not yet have a clear vision or policy regarding XR. XR may be occasionally used by some teachers or researchers for experimental purposes, but a coordinated strategy is lacking. There is little to no guidance on the use of XR technologies and there is limited awareness of their potential impact on education. | In this phase, the educational institution is beginning to become aware of the opportunities and challenges that XR offers for education. Discussions are being held about integrating XR into the curriculum, and interest is growing among teachers and administrators. Some pilots may be launched to explore the effectiveness of XR in education, but no standardized policy has been established yet. | In this phase, the educational institution is actively seeking ways to integrate XR into education. Working groups are being formed to develop policy proposals, and investments are being made in training teachers and support staff in the use of XR technologies. Collaborations may be established with companies or other educational institutions to build expertise. | In this phase, XR is fully integrated into the institution's education policy. Clear guidelines and protocols have been established for the use of XR in various educational contexts. Teachers are encouraged and supported to use XR as a supplementary learning tool, and resources are allocated for the purchase and maintenance of XR equipment and software. Evaluation criteria are developed to measure the impact of XR on learning. | In this final phase, the goal is continuous improvement and optimization of the use of XR in education. Monitoring and evaluation systems are set up to measure the effectiveness and efficiency of XR applications, and feedback from teachers and students is collected to adjust policies and implementation. The educational institution stays updated on new developments in XR technologies and adjusts its strategies accordingly to maintain a consistently high level of educational innovation. |

XR Framework



Vision and Policy



Didactics & Content



Support



Professional development



Infrastructure



Responsible use



Finances & Contracts





Polder Perspectives XR

A card game about the complexities of eXtended Reality, education and ethics

26 June 2024



**Today I want
to talk with
you about**

- Technologies are **not neutral**
- **Social Perspectives** on tech
- **What we can do** next on this winding trail

| What is good technology?

SURF

| How can we shape tech to our public values?

SURF

**How can we be more prepared
disruptive technologies in the future?**

**How can we have
conversations like these?**

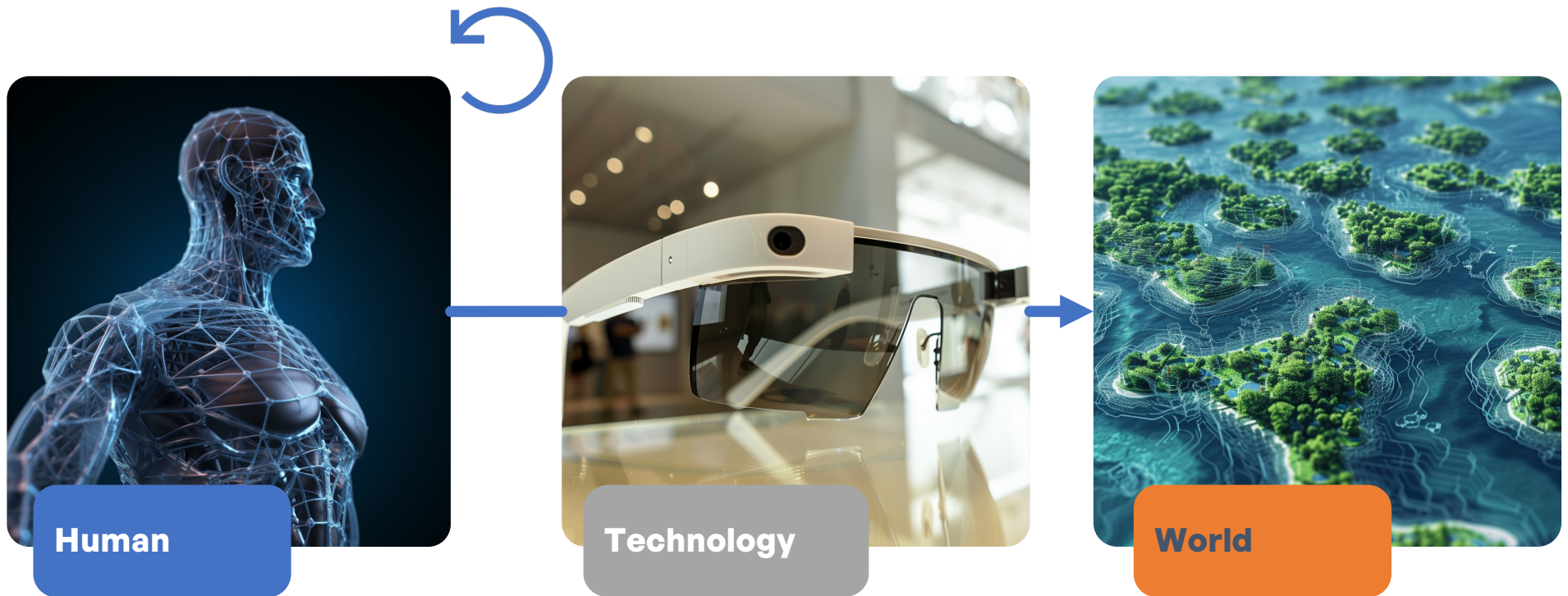
SURF

**Ethics
tricky**

is...

- **Extra** – No one can make you 'responsible'.
- Has **many answers**
- Technologies like XR continue to **develop** rapidly.

Relationships with technology



SURF

Tech is in relation with you

XR Technologies are uniquely and *intimately* situated in this discussion

A better question may be how do technologies like XR shape our relationships to each other, our institutions and our communities?

Responsible XR (RXR) tries to capture this through facilitating ethical discussions, tools and models for the future of XR in education and research.

SURF



**How does XR tech help us
relate to our (better) selves?
Our Communities?**

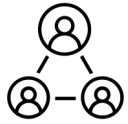
To better education and research?

RXR in a Nutshell 🥜

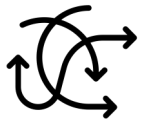
Education | Research



Responsibility
as a *practice*



Public Values in
Action



Understanding
our priorities
and what's at
stake



Today we can do some of this!

26 June 2024



POLDER PERSPECTIVES XR

Let's Play: Polder Perspectives XR

- New Challenges, Solutions
- Ambitions
- Target Audience
- Dialogue
- What it changes





Responsible XR Has Challenges

- Complexity of topic
- Diversity of stakeholders/roles
- Scaling challenges
- Lack of resources
- Lack of awareness on topic



**How do we account for these
| challenges while still being
engaged with our stakeholders?**

And make it fun?!

Be Ambitious

- A card game to help facilitate conversations **about** ethics **in** XR **for** education.
- Scale the message of Responsible XR to across the higher education
- Create a game that can be shared without the need for a ‘game leader’.
- Available to beginners who have experience with XR technologies.



Target Audience

Educational Professionals

- Encompasses a wide range of roles within the educational sector.

Specific Professional Groups

- **Higher Education**
 - MBO, HBO, WO
- **Teachers**
 - Using XR in education, or want to.

Specialized Roles

- Privacy Officers
- Educational Innovators
- Policy Advisors

Direct Beneficiaries

- Students benefit as well from a game that can open new questions and challenges



Dialogue

What does an XR headset actually do?

- Sensors
- Capabilities
- Hazards

Building Perspective

- How can the context change our perception of the technology?
- What do we expect from others when we use XR?
- How can these technologies impact our public values?



What changes after playing this game?

A social perspective on a complex technology

- Players develop the ability to view technology from a **social and ethical perspective**, enabling them to make informed and responsible choices about its use.

Responsible XR awareness and discussion

- Build awareness around institutional impacts that XR **currently** has on education as well as the **futures** it may bring.
- Vocabularily building of public values and technologies is cultivated.
- Scaling our impact





The Goal:

The ultimate goal is to create a game that helps players to see the ethics behind XR technologies in a new and fun way!

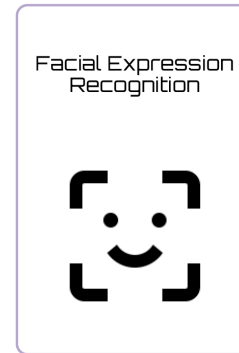
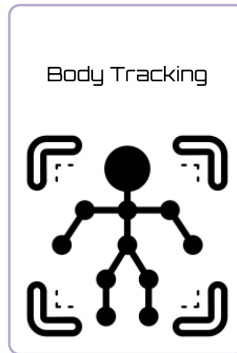


The Game: In a Nutshell

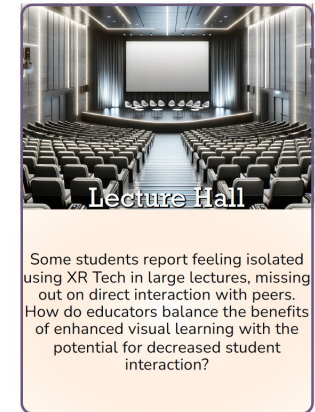
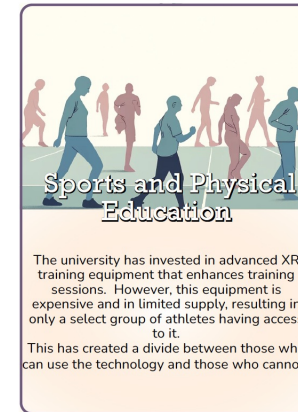
Choose 1 'base'



Enhancements



1 Scenario



Example Scenario

Scenario:

Medical and Health Sciences
Education

Chosen Sensors:

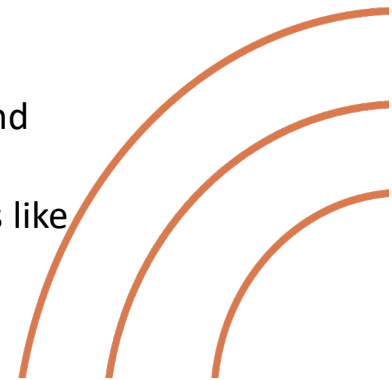
- Eye Tracking
- Heart Tracking
- Haptic Feedback

Application:

In a virtual surgical training session, **Eye Tracking** technology is used to assess the focus and attention of medical students during complex procedures. **Heart Tracking** monitors their stress levels, providing real-time feedback to instructors about the student's emotional state. **Haptic Feedback** enhances the realism of the virtual environment, allowing students to 'feel' the texture and resistance of tissues and organs during surgical simulations.

Players example question:

How *should* this data be handled?
What are we okay with in this scenario and what doesn't feel right?
In what ways should we talk about values like privacy and well-being?



Part 1

Reveal your scenario card

- Discuss amongst your group

Write down questions you have about the scenario or ethical perspectives

If possible, decide on a course of action or solution to the ethical dilemma posed. Write this down.



Part 2

Discuss the following questions

- What values are at stake?
 - Public Values like:
 - Privacy
 - Learner autonomy
 - Meaningful Contact
 - Etc.
- What do you find difficult to answer in a dilemma like this?

