

The logo graphic for iTEC consists of several overlapping, semi-transparent purple squares of various sizes and shades, arranged in a cluster that suggests a digital or networked environment.

# iTEC

Designing the future  
classroom

## Supporting teachers to develop their pedagogical practices using technology

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20/11/2013

*Futurelab and  
Manchester  
Metropolitan  
University*

# Background

- ▶ Use of ICT in classrooms is low (EACEA P9 Eurydice, 2011) and where it is used does not always lead to a change in pedagogical practices (Law, 2009; Shear, Novais et al, 2010)
- ▶ Need to mainstream e-learning in national policies (EC, 2012)
- ▶ Technology can act as lever for pedagogical innovation (Law, 2008)

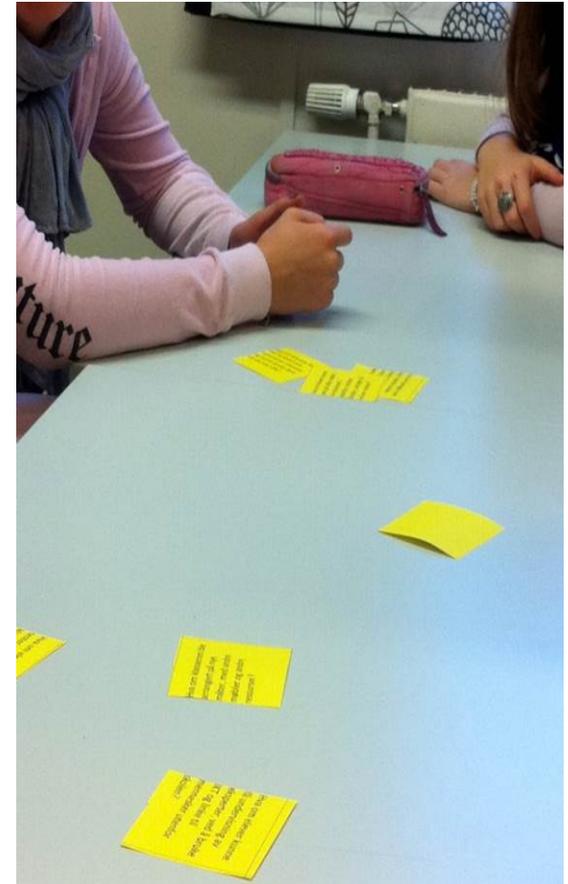
# Innovative Technologies for Engaging Classrooms (iTEC)

- ▶ Large-scale, high-profile, European project from Sep 2010 – August 2014 with up to 1000 teachers (from 17+ countries) trying out new ideas in the classroom, over 5 cycles
- ▶ Targeted at lower-secondary and upper-primary levels



# Innovative Technologies for Engaging Classrooms (iTEC)

- ▶ Ideas for ‘future classrooms’ involving student-centred pedagogical approaches, new assessment approaches and new digital tools (e.g. smartphones, widgets, web 2.0, tablets)
- ▶ iTEC focuses on sustainable mechanisms for supporting wide-scale adoption of innovation



# Objectives

- ▶ To introduce innovative teaching approaches (grounded in realities of everyday practices)
- ▶ To increase the use of technology in the classroom
- ▶ To produce meaningful pedagogical scenarios
- ▶ To make technologies interoperable and discoverable
- ▶ To mainstream innovative outputs/processes

# Innovation

- ▶ Difficult to define: based on subjective assessments – accounting for context essential (Kozma, 2003)
- ▶ Must lead to positive value (Fullan, 2007)
- ▶ In iTEC can be technological or pedagogical or both
- ▶ Innovation can involve technologies that are not ‘new’
- ▶ Can be incremental (build on existing practices) or be disruptive (fundamental change)

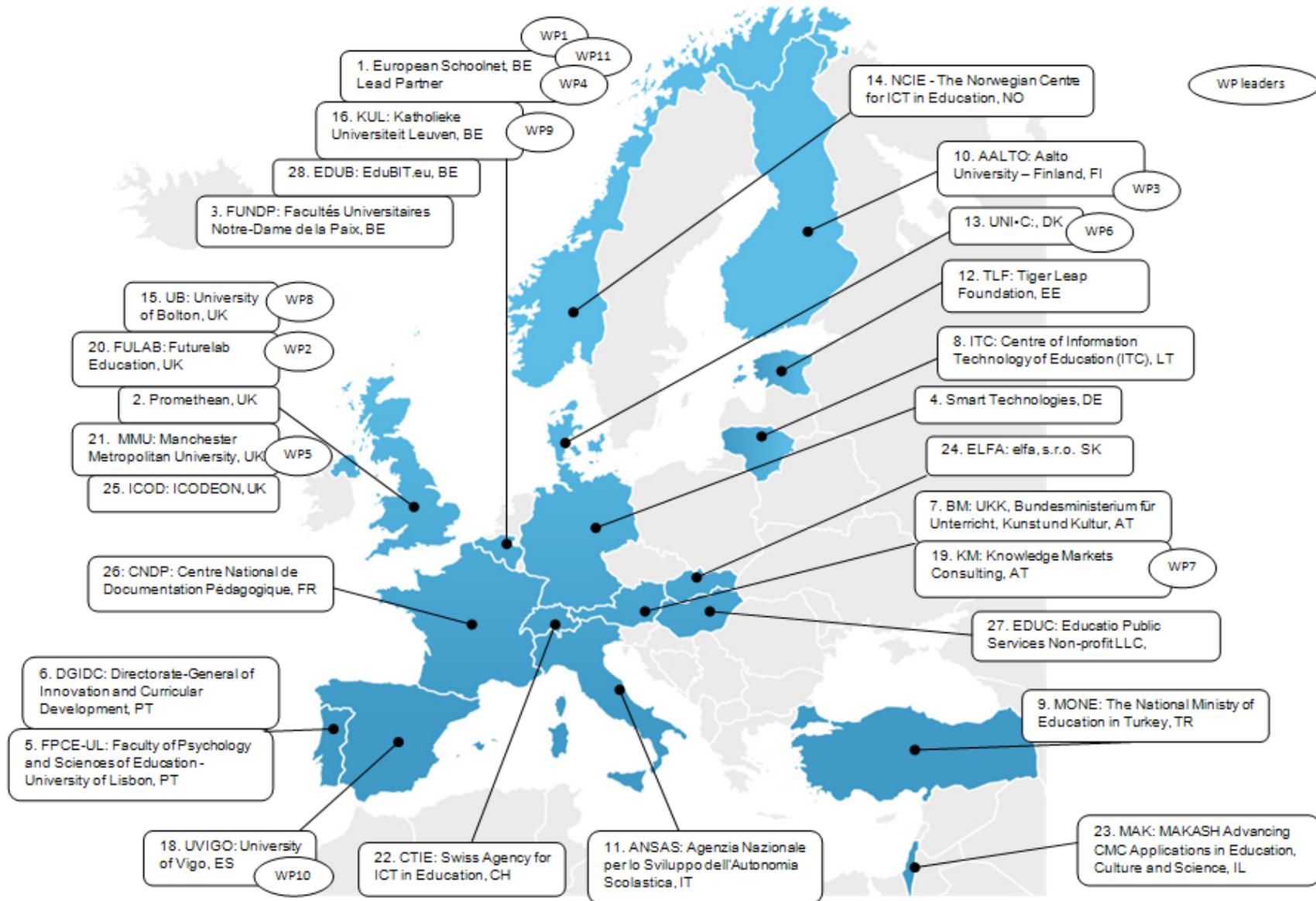
# Project Workplan 1

11 work packages

<b>WP1 &amp;11</b>	Coordination and mainstreaming - European Schoolnet
<b>WP 2-5</b>	Creation of pedagogical scenarios, learning stories and activities
<b>WP6</b>	Training and support of teachers
<b>WP 7-10</b>	Creation and curator of tools for supporting the development of the scenarios



# Innovative Technologies for an Engaging Classroom



# Project cycle

2010 Sep

Oct

Nov

Dec

2011 Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sept

Oct

Nov

Dec

2012 Jan

Feb

WP2

## Scenarios

WP3

## Pre-pilots

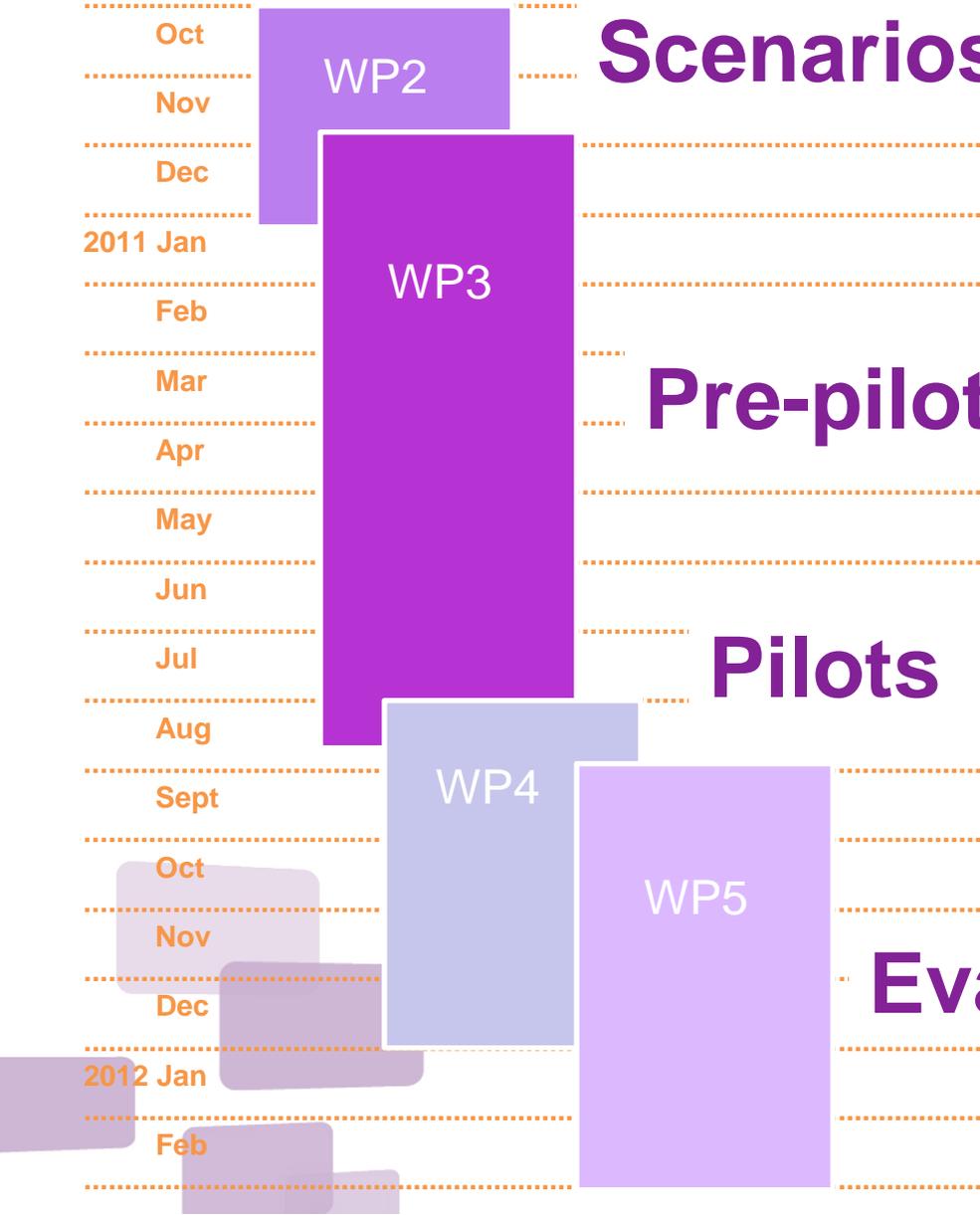
## Pilots

WP4

WP5

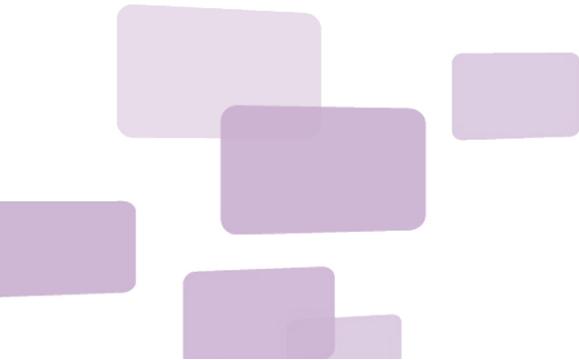
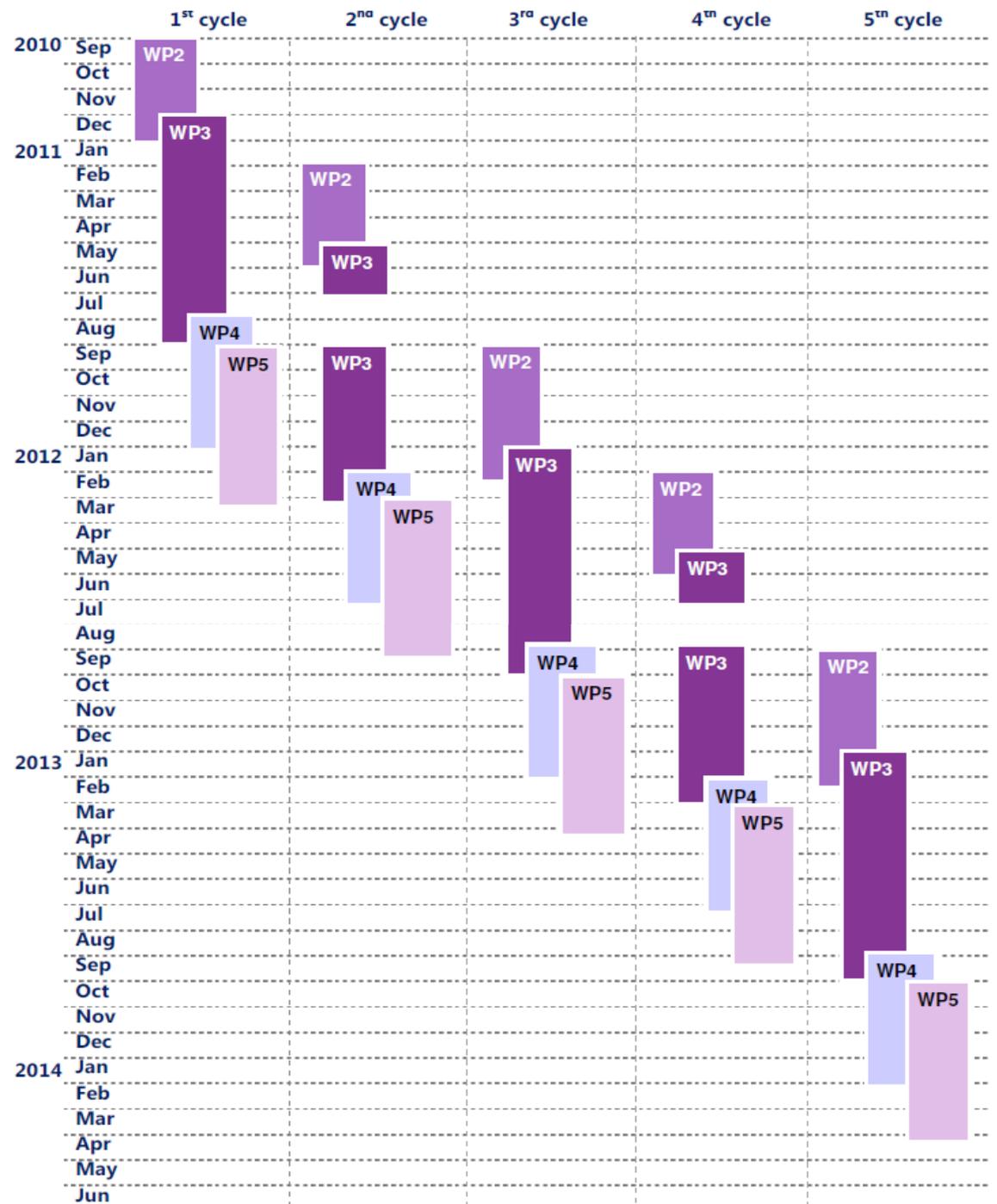
## Evaluation

Scenario focus group  
stimulus material



# Project Cycles

## WP2 - 5



# WP2 Futurelab: Development of scenarios

- ▶ Starting point of the project
- ▶ Plan of work: “short narrative descriptions of preferable learning contexts which are set within a model learning environment”.
- ▶ Intention was to inspire teachers to change practice supported by tools and training
- ▶ Not lesson plans



# How are scenarios made?

- ▶ The building blocks of the scenario are trends in education, society, technology - challenges/possible changes to education.
  - ▶ These trends are derived through research and consultation including with young people themselves!
  - ▶ The scenarios are built collaboratively by **educationalists; academics; technologists, policy makers and young people.**
  - ▶ They are built around a vision of the future classroom combining technical possibilities, teacher realities, and policy and strategy objectives.
  - ▶ Used as the inspiration for iTEC Learning Stories and Learning Activities
- 

# How are scenarios made?

Scenarios underpinned by an adaptation of the Delphi method:

- ▶ Group of experts and stakeholders identified at the beginning of the project
  - ▶ Series of prescribed steps, work together to construct scenarios
  - ▶ Aim is to represent the interests of the group and are designed to encourage and support the group to move to new practices
- 

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Normal Page Layout Page Break Custom Full Ruler Formula Bar Zoom 100% Zoom to Selection New Arrange Freeze Hide View Side by Side Synchronous Scrolling Save Switch Macros

Workbook Views Show Zoom Window All Panes Unhide Window Workspace Windows Macros

A1 WP 2: ROLE AND TIME COMMITMENT FOR ALL PARTNERS IN DEVELOPING THE SCENARIOS IN CYCLE 2

Participant Shortname		Tasks	Start	Finish	How long (timescale for this set)	Time required for the activity (i.e. half a day, four days etc)	Location
<b>WP2 partners</b>		sub-tasks	Work brief				
<b>Other partners</b>							
FULAB (LEAD WP2)							
European Schoolnet							
PROM							
SMART							
DDIC							
AALTO							
ARSAS							
FUMOP							
FPCE							
BRUKK							
ITC							
MOONE							
TIF							
UMIC							
HOE							
UB							
KULLEVEN							
LVIGO							
KM							
MRU							
CTE							
MAKASH							
ELFA							
ICOD							
CNDP							
EDUC							
EDUB							
		<b>T2.1 Stakeholder identification and survey design</b>					
		2.1.1 All partners to receive a description of their role and time commitment to developing the scenarios	04-Mar	N/A	-		Online
		2.1.2 All partners to make suggestions for members of the Pedagogical Board for Year 2 at Gen Assembly	10-Mar	01-Oct	6 months - KO during General Assembly meeting 2011	0.5 days	General Assembly Meeting, Aarhus
		2.1.3 Complete survey design					
		<b>T2.2 Descriptors of educational change</b>					
		2.2.1 Desk research in UK to develop short descriptors of challenges and possible changes to education	03-Feb	07-Mar	4 weeks	6 days each WP2 partner, 1 day Aslto	Online
		2.2.2 Desk research by WP2 partners to develop short descriptors of challenges and possible changes to education	03-Feb				Online
		2.2.3 Draw up long list of descriptors	14-Mar	18-Mar	5 days	1 day for each WP2 partner	Online
		<b>T2.3 Stakeholder engagement and surveys</b>					
		2.3.1 Survey of trends descriptors to be completed by at least 60 stakeholders	23-Mar	06-Apr	2 weeks	0.5 days for EUN as have to put request in newsletter to stakeholders, teachers	Online
		2.3.2 Survey of trends descriptors to be completed by all ITEC partners	23-Mar	06-Apr	2 weeks	0.5 days (assumes 2 people complete per organization)	Online
		2.3.3 Survey of trends descriptors and review to be completed by Pedagogical Board	23-Mar	06-Apr	2 weeks	1.5 days	
		2.3.4 EU Schoolnet to arrange translation of survey	Underway				
		2.3.5 Distribution of survey link to target teachers in 1000 classrooms	26-Feb	25-Mar	Partners need to distribute asap, teachers have 4 weeks to complete	1 day (SMART, PROM, EUN) 0.5 all partners	Online
		2.3.6 EU Schoolnet to arrange translation of Power League					
		2.3.7 Partners to translate the descriptors (cycle 1 only) to be used in the Power League	17-Jan	13-Feb	4 weeks	N/A	Online
		2.3.8 Fulab to upload the translations to the Power League tool					
		2.3.9 Distribution of Power League link to target teachers in 1000 classrooms	28-Feb	25-Mar	Partners need to distribute asap, teachers have 4 weeks to complete	1 day (SMART, PROM, EUN) 0.5 all partners	Online
		<b>T2.4 Analysis and reflection on stakeholder responses</b>					
		2.4.1 Analysis and reflection on stakeholder responses					
		2.4.2 Categorization of responses against taxonomy of teaching and learning practices					
		2.4.3 Create building blocks of the mini-scenarios					
		2.4.4 Share with all stakeholders and ask for feedback/comments (Fulab to put presentations online with key findings - include emerging tech trends which not been "voted" on)	08-Apr	15-Apr	1 week	Optional for partners to review the findings and feedback	Online
		2.4.5 Review feedback from stakeholders					Online
		<b>T2.5 Workshop 1 to create mini scenarios</b>					
		2.5.1 Partners to be invited to workshops 1 and 2 (see list below)	25-Feb	11-Apr	6 weeks		
		2.5.2 Mini-scenarios to be co-authored through workshop activities	19-Apr	20-Apr	4 days	4 days per participant	Promethean Offices, Paris
		<b>T2.6 Stakeholder engagement II: mini-scenario ordering</b>					
		2.6.3 20 mini-scenarios to be shared online with project partners					Online
		2.6.4 Survey/assessment to rank 20 mini-scenarios	29-Apr	20-May	3 weeks	0.5 days for ranking (assumes 2 people per organization)	Online
		2.6.5 Selection of 4-5 highly likely, 4-5 less likely scenarios (ordering based on analysis of responses to online assessment)					
		<b>T2.7 Workshop 2: Scenario authoring workshop</b>					
		2.7.1 Partners to be invited to workshops 1 and 2 (see list below)	25-Feb	20-May	12 weeks		
		2.7.2 Production of detailed scenarios	25-May	26-May	4 days	4 days per participant	Bristol, Venue tbc

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# Workshops

- ▶ Process always started with the trends
  - challenges and possible changes to education



- face to face communication cannot be replaced, student feedback is important  
- not always see the DS feedback

Maybe should be recordings of feedback sessions teacher - student can go back to it 2 per term

### 1. Audio/feedback on the VLE

Comments on/alternative suggestions for title:

Collaborative writing with teacher support?

**CORE PURPOSE:** Using video or audio-recording equipment to record feedback given to a piece of student work. The recordings are uploaded to the VLE. Students are given extra-credits if they access the recordings and if they can demonstrate that they acted on the recommendations. The recordings give clues and direct students to additional resources (books, web-based, etc.). Advantages: quicker and more efficient (and more personalised) way of providing feedback; increased chance of students acting on feedback.

### NARRATIVE OVERVIEW:

Ms L is familiar with the VLE and is interested in new approaches to assessment for learning through technology. She agrees with the head teacher to start a pilot project that will attempt a radical change in the way feedback is given to students, and in how students act on such feedback. Students in a number of classrooms are involved in the pilot. Over a semester, Ms L agrees with her students on two or three "feedback target weeks". During these weeks, holistic feedback about students' overall performance up to that point will be provided. Ms L will tailor the feedback to individual students, but such feedback will not be given during time consuming and potentially embarrassing face-to-face sessions. Instead, it will be recorded and uploaded to the VLE. This will allow Ms L to save a huge amount of time.

The feedback produced is stored in audio or video form on the VLE - or on the [ITEC resource]. Students can only see the feedback that concerns them by logging in the system with their credentials. They can do so in their own time and in the privacy of their homes if they wish so. The feedback stored on the VLE is accompanied by a number of "recommendations" made by Ms L, e.g. "read these papers"; "research the following websites"; "complete this quiz only when you feel ready", etc.

The aim of this new approach to feedback is to help clarify what good performance is (goals, criteria, expected standards), by providing opportunities to close the gap between current and desired performance, and allowing students to use the feedback to produce improved work. The system could easily allow the teacher to create a "general" feedback, applicable to all students, in which criteria and expected standards are spelt out. Students will be able to access this part of the feedback as a "refresher" in their own time, in addition to the part of the feedback that is tailored to them and hence only visible by them. The VLE could allow the teacher to easily make and edit recordings which have public, accessible by all, sections and personal sections.

The system could also allow other teachers to add their recommendations and make suggestions to encourage cross-curricular learning and assessment. Ms L can track whether the students have acted on the recommendations. She and the head teacher are thinking of expanding the program to the whole school, and they are planning to use the permanent audio records to showcase the school's good work during future school inspections.

### Comments on narrative/other feedback:

Questioning how innovative this is? Move 2-way communication, students feedback to teachers too.

Feedback needs to be more immediate, not wait for a few weeks  
Not necessary, should feel supported if need themselves

Video preferable to audio. Really quick - lots of screenshots  
Able to value but doesn't take place of regular feedback  
What is the added value over face to face? Maybe record face to face conversations.

### POSSIBLE APPROACHES TO TEACHING AND ASSESSMENT

Teachers will need to give clear + constructive feedback -> may need prof dev to give useful feedback  
Self assessment -> assess selves against criteria  
Peer assessment

### ENVIRONMENT

Base  
Accessing from home.  
Attention needs to be paid to security.

### PEOPLE & ROLES

Students -> must respond as well, teacher gains better understanding of student misconceptions  
Teacher -> can give whole class feedback and individual feedback/recordings  
Parents -> General feedback could also be added to portfolio accessible to pupils  
Teacher -> Needs expectations clear

### ACTIVITIES

Students need to learn how to give feedback to each other (could start with fixed phrases/comments)

### RESOURCES (INCL TECHNOLOGIES)

Screen-to-note  
-> One note? Click on part of feedback, hear teachers verbal feedback + see visual. Student can respond  
-> Also recording IWB software (links talk also smart same)  
-> (VoiceThread) -> SpeakPipe  
Free tools online

Concerns: re number student's time consuming  
Reality: Too much work  
-> Document camera record wording of text.

Little bit  
Not enough to look at to use it.  
So in some ways this could be innovative but? feasibility.

Other teachers cannot have time for it  
Students can be embarrassed if other teachers see their problems (personal rights?)  
DS feedback

Is this idea new?  
We've had the same with team-up tool.  
DS

What's



Activities

- Awareness raising + promotion across school community
- Games created by students in different levels
- Use Scratch or similar program
- 'eco-game' - how school community can reduce carbon use & output

Vision (aspirations & aims)

Environment

- School clusters
- Home
- web site -> each cluster has own web site/page

People and roles

Teachers - across all levels + subjects + schools

- organize students, demonstrate actions, motivate students, organize other teachers

Interactions (incl. pedagogies)

Across levels + schools, within a school community

Between schools in different countries + in local areas

Cooperation between schools

Collaboration between students -> web page + video

Resources (incl. technologies)

- Web page + technical support
- Widgit -> data entry
- Video/multimedia presentation
- online collaborative space

20.04.2011

# A breath of fresh air

## ASPIRATION STATEMENT:

To achieve traditional learning objectives through exciting means, while developing independent learners

## NARRATIVE OVERVIEW:

The students go out to explore the school grounds tasked with a problem or challenge. They have to either capture authentic data, or explore how concepts can be applied in the real world.

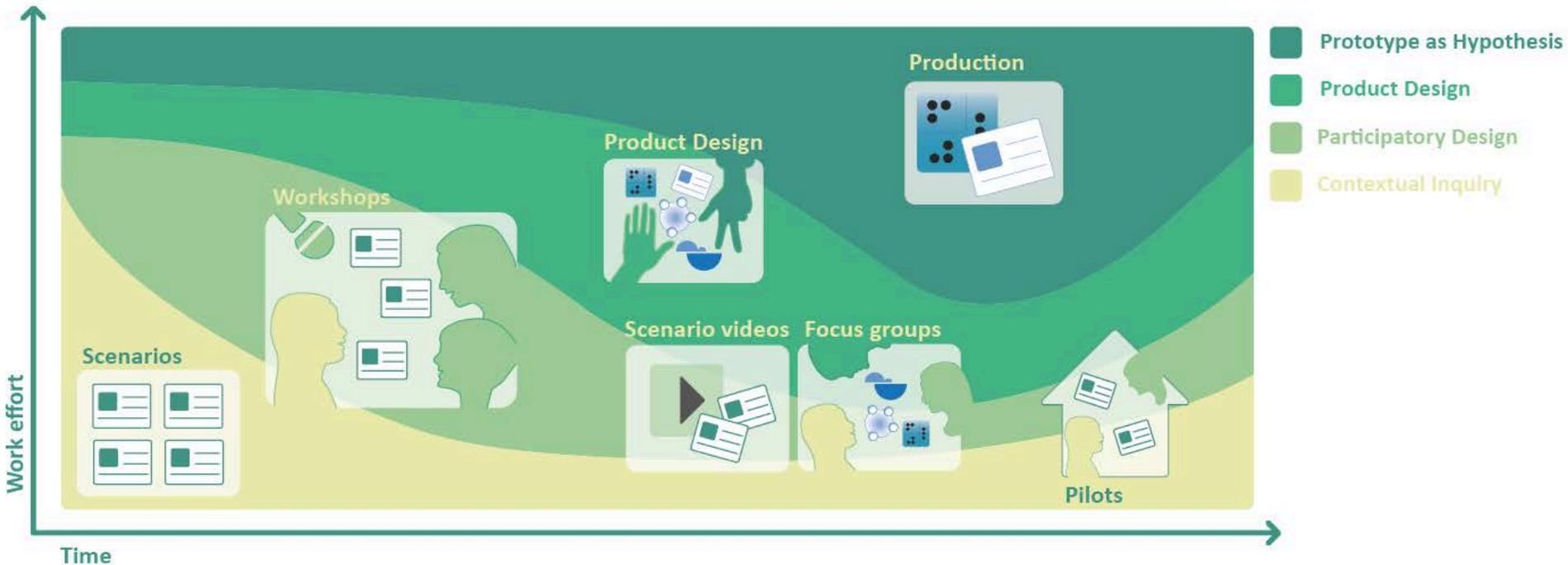
Ms Rossi, a science teacher, has been liaising with the geography teacher and they have noticed that their students need to develop a more in depth understanding of the local natural environment and wildlife. Ms Rossi has also noticed that although her class works well as individuals, they would benefit from more group learning. She decides to get the group to work collaboratively on a problem based activity to do with nature and the local environment. When deciding on a specific activity for the class she liaises with the geography teacher to ensure the chosen activity could also support learning in geography. She sets her class the challenge of finding out why the population of ladybirds has decreased in the school grounds over the last year. Carmen, a student, goes outside with her group to collect real data to help the class's investigation. Each group member has a different role and a different instrument to capture authentic data. Carmen uses her mobile phone to capture images of the areas where most ladybirds live, whilst others in the group record the temperature and survey habitats. Ms Rossi lets the students work together in groups so she can take the role of observer and coach. This helps her understand what skills the students need to practice. She notes down what skills the students need to develop to help her design future learning activities. She realises the group need more training on using instruments without disturbing wildlife, and also how to set specific group goals. After gathering a series of photos Carmen comes back to class with her group and they share their data and findings with each other. They get some specific support from Ms Rossi on how to use a software package to draw conclusions from the group's numerical data. Having drawn their conclusions, the group choose to create a short film from their photos and data to share their findings with other students in the class. They work together using laptops and a web tool to create a short digital film explaining what they found. Carmen and another student upload their photos while the rest of the group write a script to present their findings. They each record a part of the presentation script and use the automatic editing software on the web tool to create the film. This film is posted on the school's learning platform for the class to view for homework, and also for students in a geography class, who are doing similar work, to comment on. The group also decide to post it on the public area of the learning platform so they can show their parents/carers when they get home.

## TECHNOLOGY / RESOURCES:

Internet enabled mobile devices, learning platform, cameras (could be a mobile phone), film editing software, spreadsheet or other numeric analysis software



# Aalto University: Scenarios to learning activities



Transforming the future classroom scenarios WP2 into design challenges and developing into learning activities that can be tested with a pre-pilot focus group of teachers in classrooms across twelve countries.

# Cycle 3 Learning Stories

- ▶ **Redesigning School (RS)**: This LS requires students to think about spatial design and the different motivations of people who use the space. A new space for future use is designed based on identified current challenges in relation to school-based activities.
- ▶ **Visualizing the plant surface (VPS)**: This LS requires students to design a guided walk that highlights aspects (wildlife, buildings/monuments/geographical features) of the local environment for community members or tourists. The final walk should be based on geocaching, a location-aware smartphone game, Google map or printed map, or QR codes.
- ▶ **Designing a physics simulation (DPS)**: This LS requires students to design a simulation that can be used to teach a physics concept (eg friction) to other students. The simulation can be virtual or physical.
- ▶ **Designing a math learning game (DMG)**: This LS requires students to design a math learning game to teach a maths concept (eg simple geometry) to younger students. Students are asked to consider what younger students might find challenging and what they might find engaging.

## Design Brief

- Students are presented with an initial design brief linking the tasks to curriculum topics, students form teams and refine the design considering purpose and initial design challenges ([TeamUp](#), [blogs](#), [Google sites](#), [corkboard.me](#))

## Contextual Inquiry

- Benchmark: based on who they are designing for and what they are designing, students collect exemplars of the artifact they are trying to design, share the resources and analyse them, refining their design brief further ([social bookmarking](#), [AudiBoo](#), [Instagram](#), [Dropbox](#), [Google Docs](#))

## Product Design

- Students create a prototype and refine the design brief ([collaboration tools](#), [Prezi](#), [Sketchup](#))

## Participatory Design Workshop

- **Students meet with 3-4 potential users, present prototypes and elicit feedback, analyse feedback, and refine design brief** ([AudioBoo](#), [Instagram](#), [Dropbox](#), [Google Docs](#), [Corkboard.me](#))

## Final Product Design

- Students create final design prototype, draw on recorded reflections and consider how identified challenges were overcome, finalise blog and present work to their peers ([blogs](#), [Dropbox](#), [Google Docs](#), [Google Sites](#), [Prezi](#), [SketchUp](#))

## Reflection

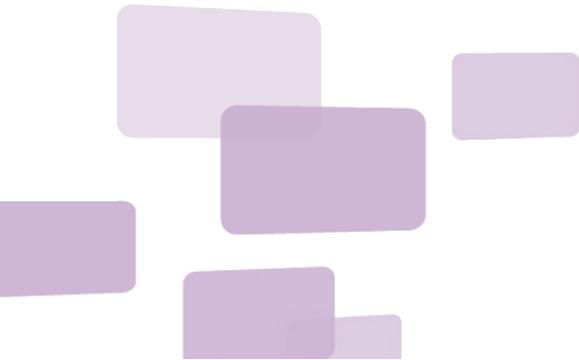
- After the end of each of the above Learning Activities, post and share audio updates of perceived challenges ([TeamUp](#), [VoiceThread](#), [AudioBoo](#), [Bambuser](#))



# Video Florence, Italy

<http://www.youtube.com/watch?v=EAfZdLctkDk>

# The impact of iTEC on learning, teaching and sustaining innovation



# Evaluation approach

## Classroom

- Teacher survey; Case study; Multimedia stories

## Process

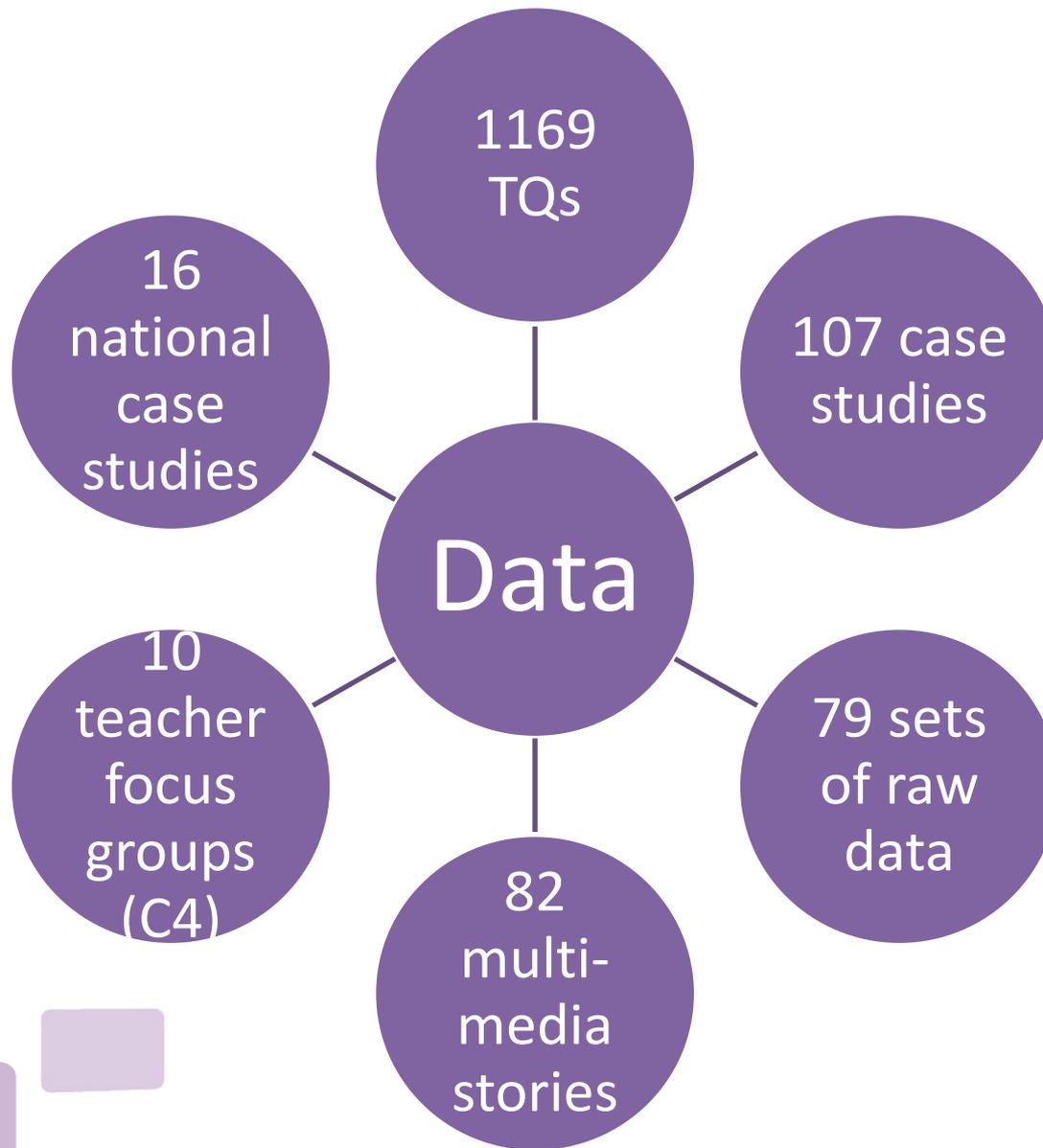
- Focus group; Teacher survey; Case study; Interview

## Sustainability

- National case study

## Technology

- Teacher Survey; Teacher focus group;



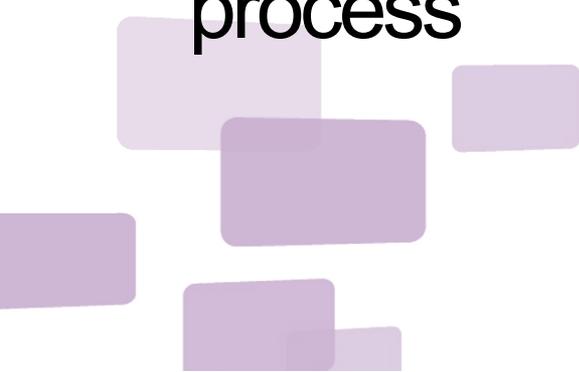
# iTEC outputs

- ▶ Library of scenarios, Learning Activities, Learning Stories
- ▶ Scenario development process - toolkit
- ▶ Learning activity development process toolkit
- ▶ Suite of CPD modules (face-to-face, online) that can be localised/adapted
- ▶ iTEC technologies (prototypes)
  - Widget store
  - Composer
  - Widgets (TeamUp, ReFlex)



# Key messages to date

- ▶ The impact of iTEC on students and teachers in the classroom
- ▶ Innovation in classroom practices
- ▶ The role of Learning Stories and Learning Activities in sustaining classroom innovation
- ▶ The impact of the scenario development process



# iTEC has positively impacted in the classroom on:

Students'

Knowledge,  
skills and  
understanding

21<sup>st</sup> Century  
skills

Motivation,  
engagement  
and attitudes

Teachers'

Technology-  
supported  
pedagogy

Digital  
competence

Motivation,  
engagement  
and attitudes

# Conditions for success

- ▶ Access to reliable and sufficient infrastructure
- ▶ Appropriate school ICT policies
- ▶ Pedagogical and technical support for teachers
- ▶ Teacher pedagogical and digital competence
- ▶ Positive attitudes at all levels towards change
- ▶ Suitable digital learning resources

# Innovation in the classroom through iTEC

The difference between the maths lessons and the other lessons is that in these lessons we work a lot with Geogebra, with Facebook, and with Glogster and we record things and in other lessons we don't. In the other lessons the most we can do is some work on the computer once in a while. (Portugal, student, C2)



- Pedagogically-led approach
- Increased effective use of ICT
- Introduced innovative technologies and tools



# Sustainability: Learning Stories and Learning Activities



iTEC Learning Stories and Learning Activities provide concrete examples, emphasize innovation and flexibility, and encourage teachers to become learning designers.

I am convinced that iTEC is an innovation not only here, in our school, but also throughout Hungary. Finally, we have something useful in hand as we don't have Learning Stories like that, which give us guidelines, step-by-step description and ideas. I feel strongly that this is something that fills a gap. So I'm pretty sure this will lead to more and more joining us who will incorporate modern technologies and use them in a deliberate way. (Hungary, ICT co-ordinator, C2)

# iTEC Learning Stories and Learning Activities

*“Today’s simple lesson plans that we use consist of just books, notebooks and other class materials. This learning story has created lessons plans which are full of discovering, thinking, creating and achieving success as well as [centred] in the real world around us.” (Turkey, teacher)*

*“I think the main enabler is... the iTEC structure itself: the Learning Story/Learning Activities paradigm/structure. Teachers feel inspired and engaged by this kind of structure, and also they feel themselves as part of a wider community of ‘early adopters’.” (Italy, NPC)*

# Sustainability: the impact of the scenario development process

## The scenario development process:

- is widely viewed as innovative
  - supports curriculum planning
  - brings a wide range of stakeholders together
  - highlights new pedagogies and new technologies
  - standardises approaches to developing and documenting good practice
  - provides flexibility to respond to local, regional or national issues
- 

# Sustainability: individual/institutional level

- ▶ Participating countries will continue to disseminate library of resources and toolkits

The Austrian National Coordinators and teachers have found the new ideas, encapsulated within the Learning Activities to be of greatest benefit in achieving their personal goals. The emphasis on innovation and flexibility (opportunities to experiment), have been most inspiring, with new elements such as bringing in external experts as an example. (AT)

The scenario development toolkit is seen as a real asset in Hungary...it is seen to facilitate a professional approach to developing and documenting best practice. (HU)

The concrete benefits [the interviewee] sees arising from iTEC is that it encourages schools to start with a pedagogical scenario rather than focus on technology. He believes that this could be the main reason why iTEC will be successful, "because it gives the teachers and the schools the ammunition to work with technology from a pedagogical perspective." (BE)

# Sustainability: regional/national level

- ▶ Still viewed as a pilot project (evidence of impact) (FI, HU, IT, LT)
- ▶ Level of influence over policy making varies (challenging in CZ, EE, FI, TR)
- ▶ Top-down approach (policy directive) not appropriate in some countries (BE, HU, SK, UK)
- ▶ Object of iTEC fits with national strategies in some countries (AT, BE, EE, FI, FR)

# For further information

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