Extending Design Thinking with Emerging Digital Technologies

M9 Scientific & Technical Report
M9 Financial Reporting

WP1: Project Management

Task 1.1: Project Coordination and administration

The CA was signed before the project commenced. The Kick-Off meeting was organised in the first week (5-7 September 2023) and well attended by all partners, as was the second 6-monthly physical meeting organised by NKUA in Athens, Greece 29-31 March 2023. Regular monthly Operational Management Teams (OMT) meeting have occurred with WP leaders and the PIs of partners who do not lead a WP. Updates from the EC, progress on deliverables, milestones and risks are reviewed, as well as progress in each WP. Relevant strategic, administrative and financial aspects are also discussed at these meetings. The CO has liaised between the consortium, the PO, other sister projects. It helped establish the Ethics Advisory Board which includes an independent external advisor. At M9 it prepared templates for scientific and financial reporting to help monitor progress according to contractual agreements and flag any matters for attention. Work is progressing to plan.

Task 1.2: Monitoring of Scientific Progress

The monthly OMT meetings (see above) and individual WP Meetings - some on monthly, some bi-monthly and others on an as need basis - have helped monitor the scientific and technical progress and quality at strategic and day-to day level. Deliverables are reviewed on a peer basis with at least two other project partners involved as lead reviewers and a final quality check is carried out by the CO before submission. The project receives complementary independent scientific, strategic, and planning advice from two external advisory experts: Prof Barbara Wasson (University of Bergen) and Prof Tilde Bekker (Eindhoven University of Technology). They are recognised leaders in AI analytics and design thinking in mainstream education respectively. Prof Bekker virtually attended and provided advice during the Athens meeting.

The Innovation Management Strategy (IMS) was to be established at M3 and reviewed at M9 and M15. This has been covered in D8.1: Dissemination and Exploitation Plan (submitted in M6) with a final version to be submitted in M36 as D8.3.

Task 1.3: Open Access and Data Management

The Data Management Plan (D1.2), submitted in M8 covers handling of research data during /after the project; what data will be collected, processed/generated; what methodology and standards will be applied; whether data will be shared/made open and how; and how data will be curated and preserved. This deliverable together with complementary D8.1 (see above) and D9.1 (Initial ethics assessment) also address and discuss how the project adheres to the obligatory open access related to scientific publications and research data and the data management policy of the EU and to the GDPR.

The project partners additionally opted to draw up a Joint Data Controller Agreement early on in the project.

Status of Deliverables and Milestones due at M9:
D1.1 (M3); and D3.1 (M8) were submitted as scheduled with the PO.

Deviations and Corrective Actions:
There are no significant deviations.

Work on the IMS and plans for open access will need to be further coordinated with WP8 as the project progresses.

WP2: The Exten.(D.T.)^2 Framework

Task 2.1 Theoretical Review (M1-M6).

This task is finished in M6, with the respective deliverable submitted. The review identified the best practices in pedagogical design and innovations for each technology, relevant to the project, current trends in curricula development, frameworks or reports on necessary digital competencies for educators. This happened with the contribution of all partners and is relevant to all WPs as is can as it provides a grounding of the work based in the literature and provids information to the work of all the WPs that can be used in future actions.

Task 2.2: Development of the Exten.(D.T.)^2 Framework (M7-M35)

For this task in month 9 the first version of the Framework was submitted with the respective deliverable. This first version of the Framework, gives inspiring and insightful information for other WPs. For example, the Framework provides the foundation for the design and development of WP4, which aims to enhance learning technologies and WP3, which concerns DT activities, resources, and material, and making use of the learning technologies from WP4. Furthermore WP4 and WP3 provide input for implementing WP5 and WP6 (and informing the evaluation process in WP7). In turn, WP7 evaluates the experiences of WPs 5 and 6 and informs the further development and refinement of the Exten.(D.T.)^2 Framework (WP2), the educational resources (WP3) and the technologies (WP4).

Task 2.3: Guidelines for mass deployment

For this task a set of guidelines was developed to support the deployment of the Framework in different learning contexts (online & blended) and for all students. The focus of the Guidelines in this first version is primarily on teachers but also on other stakeholders who may be interested in incorporating DT and ET into their practices. It is important to note that the current version of the Guidelines serves as a starting point with aspects to consider and will be revisited to reflect the findings from the project's work and the WPs in the upcoming years

Status of Deliverables and Milestones due at M9:

D2.1 Report on the theoretical review (M6) – submitted
D2.2 The Exten.(D.T.)2 Framework (v1. M9, v2. M35) – v1. Submitted (M9), contributes to MS9: End of Cycle 3 evaluation and final ExtenDT2 Framework
D2.3 Guidelines for Mass Deployment (v1. M9, v2. M35) – v1 Submitted (M9)

Deviations and Corrective Actions:

Nothing to add, the work is progressing as planned.

WP3: Co-design of Educational Resources and Materials

Task 3.1: Co-design and development of educational activities using project technologies

Educational activities using the project's technologies have been designed by teachers and researchers from LNU, UGent, NTNU, NKUA and the OU. Activities made use of all technologies including Choico, Sorbet, Malt2 and nQuire for students. Aligning with WP3 objectives, at least one activity has been created using each technology. Details of the process and actual educational activities can be found in Deliverable 3.1. It is noted that the process of co-designing with teachers varied across countries, with the OU and NKUA audio recording the process while the rest of the partners taking notes. The process and associated documentation should be reconsidered before the start of Year 2 activities to ensure data are captured in a similar manner across countries.

Task 3.2: Co-design online supporting material for stakeholders

This task should start M12 and end M24. A plan is needed as to how these resources should be designed and ensure they address different audiences, as stated in the deliverable: teachers, students, parents, policy makers. The OU team will consider what the best approach is and invite partners to a workshop to discuss and decide on next steps.

Task 3.3: Co-design teacher training material

At the moment, there is a list of resources on the project website that had been devised by partners prior to the project start. Also, there is a set of activity plans that have been completed by teachers and which could be used as exemplars. An online meeting will take place end of June 2023 to discuss these resources and how they could be refined following piloting with teachers in Year 1. It is noted that these resources should be revised with the help of teacher trainers, education and technology scientists and should include presentations, tutorials, templates/lesson plans, examples of use and videos. They are aiming to support teachers in professional development events and when implementing activities with students. Teacher trainers should support the process.

Status of Deliverables and Milestones due at M9:

Deliverable 3.1: Report on educational activities for students (v1. M9, v2. M24; OU) has been submitted timely and in good order. Milestone 3: Learning activities and resources for school interventions and for Professional Development (related to WP3, WP5, WP6) by M9: Learning activities and other resources are accessible via the project website including supporting material in using technologies, URLs to games, 3D modeller and nQuire for students.

Deviations and Corrective Actions:

There are no significant deviations in this reporting period.

WP4: Shaping Technologies

Task 4.1: Extend the nQuire platform

Partner OU has developed a new version of nQuire named as 'nQuire for students'. This is accessible via the following URL: https://learn.nquire.org.uk/signin. This version allows to access this platform only for teachers and students. The nQuire platform is not connected yet to Exten DT2 platform. Work done towards nQuire extension are: a) Geo-coded (single and multiple) data upload and dynamic map visualisation has been developed as follows: responses from one question can link and show on a map while also participants can manually add the location where an observation was made on a map. The map shows all observations using pins and it can be zoomed in and out. Also, regarding c) offering of capabilities for interactions between stakeholders (teachers, students, local communities, scientists etc) of diverse ages a new version of nQuire. Searchable metadata is under development while links to games (Choico and Sorbet) are under discussion with developers from NTNU. All of these changes will be described in Del 4.2.

Task 4.2: Extend ChoiCo and SorBET game applications with AR components

Partner NKUA based on literature review recognized the requirements for extending the two game applications and described them in Del 4.1. Based on the requirements, on collected feedback from co-design activities (WP3) and on pilot implementations with the original versions (WP5) NKUA improved ChoiCo and SorBET with new features (e.g. block-based programming, stabilization for mobile usage) and further extended them with AR components. SorBET has been extended with gesture recognition by any web camera allowing users to move the falling objects horizontally using their gestures. ChoiCo has been extended with geolocation and real-time map design features using google maps API[1], allowing the user to find their location and add game pins on real-time google maps. The design of the new versions will be described in Del 4.2. By M9 both applications had reached TRL 3. The new versions will be used and validated year 2 interventions (WP3 & WP5). There are no deviations in this reporting period.

Task 4.3: Extend MaLT2 programmable modeler with 3D printing/scanning technologies

Partner NKUA recognized the requirements for extending MaLT2 which are described in Del 4.1. Then they extended MaLT2 application so that it extracts any 3D model programmed by the user into file formats that can be printed by any 3D printer. They first transformed the old JavaScript version into JavaScript ES6[2] and then used the latest three.js library[3] (r153) for model creation and extraction. The object extraction functionality has been added to the user interface, allowing the user to easily extract and download the created models into .obj or .stl files. NKUA collaborated with Simple for creating and printing a number of test models with Creality 4 printer. By M9 MaLT2 was at TRL 4. The new version will be used and validated year 2 interventions (WP3 & WP5). There are no deviations in this reporting period.

Task 4.4: Extend learning tools to capture and generate data for analysis

Partner NKUA have developed data collection extension in each educational tool (ChoiCo, SorBET, MaLT2) and created a first list of events captured by educational tools (see D4.1 Appendix A Educational Tools Data Description). The list of events will be refined after gathering teacher's, student's and researcher's requirements and needs. This information provided important input for Task 4.5 (developing authorable learning analytics) and Task 4.6 (knowing what type of data will be used for visualization dashboard).

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[1] https://developers.google.com/maps
[2] https://www.w3schools.com/js/js_es6.asp
[3] https://threejs.org/

Task 4.5: Development of an Authorable Learning Analytics and Adaptive Feedback component for DT constructionist activities

Partner SIMPLE did an initial experimental prototype for the Authorable Learning Analytics and Adaptive Feedback component for DT constructionist activities has been designed and developed. The implementation details will be reported in Del 4.2 It has been integrated with the Extendt2 platform in a loosely coupled manner, as an individual member component of the ecosystem. Initial configuration experiments have shown that it integrates well with the platform and is able to interoperate effectively with some of the constructionist activity components present in the platform. At this stage of the development a lot of effort is being given into testing the robustness of the component in terms of facilitating interchange of data with learning components that may follow diverse data formatting schemes.

Task 4.6: Development of a customizable Dashboard

Partner LNU, NKUA, and SIMPLE collaborated to identify initial requirements for customizable dashboard (see D4.1: 3.2.1 Authorable LA visualization dashboard). In addition, the identified requirements in Task 2.1 in WP2 (D2.1: Literature Review) are also considered in the customizable dashboard requirements. More needs and requirements from teachers and researchers among different partners/countries will be collected and the initial requirements list will be updated. This information is a basis for initial development of customizable visualization dashboards.

Status of Deliverables and Milestones due at M9:

D4.1 Technical Specification (due at 6m) submitted, contributes to MS4 and MS6

Deviations and Corrective Actions:

Due to lack of available web-based, open-source, and API-enabled virtual robotics tool, the Task 4.5 partially has a delay in integration of VRobotics in Exten DT2 platform. Otherwise, work is progressing as planned with no major deviations.

WP5: School Interventions

Task 5.1: Design Exten.(D.T.)2 interventions for schools

NKUA developed the "Design Thinking Activity Plan Template" document (link) for supporting stakeholders in the design of the DT activities using the project's technologies. They also developed four examples of use. NKUA then organized a workshop with partners and teachers to receive feedback on the first version of the template. Based on the workshop results, the partners' feedback, and the literature review (WP2), NKUA refined the Activity Plan Template and finalised the examples of use. The template was used by 6 teachers to design the pilot DT activities (WP3 & WP5) and in WP6 professional development activities. NKUA collaborated with the OU for creating a digital version of the template that was integrated into the NQuire platform (WP3 & WP4). Activity Plan design was also part of a conference paper presented in MIS4TEL conference. Work is progressing as planned with no deviations. Milestones reached: "M3 - Learning activities and resources for school interventions and for Professional Development are ready", Del 5.1. was submitted on time.

Task 5.2: Pilot intervention in schools

In Y1 NKUA, NTNU and UGent partners designed 6 pilot DT activities using the Activity Plan template which were then implemented as interventions with students in real school settings. The activities used the existing versions of project technologies to gather feedback for their extension. The pilot interventions engaged 175 students 6 primary students and 159 secondary education students (more information in this datasheet). NKUA collaborated with TCD to determine the research dataset to be collected during the interventions and they created 2 data collection checklists; one for the participant teacher and one for the researcher(s). The collected data will inform year 1 evaluation (WP7) which will in turn will inform the technology development (WP4), the redesign of the activity plan template (WP5) and the design of DT learning activities for year 2 (WP3 – WP5) . Work is progressing as planned with no deviations.

Task 5.3: Second and Third Cycle interventions in schools

This task starts on M12

Task 5.4: Informing the design and testing of the LA and the Adaptive Feedback feature for learner input

NKUA collaborated with UCL and SIMPLE partners to engage with teachers for informing and testing the learning analytics and the feedback components developed in WP4, following a participatory design method. The methodology used for designing the activities was based on Repertory Grid in the context of Design Thinking, a widely used technique in user research that elicits user requirements and provides feedback on conceptual models while minimising researcher bias. For Year 1 the participants will be Greek teachers already familiar with at least one of the project technologies. The implementation will take place on M10 and the results will feed into the project evaluation (WP7) and the iterative design of the ALA and dashboard systems (WP4, Tasks 4.5-4.6). Work is progressing as planned with no deviations.

WP6: Professional Development

Task 6.1: Design of Professional Development activities

Task 6.1 concerns the design and development of a learning module that provides pre- and in-service teachers the necessary tools for developing and organising a design thinking (DT)project involving digital tools. During M 1-9, learning modules were developed, one in UGent and one in NKUA. In each module, the pre- and in service teachers get taught what design thinking is, and how to use and integrate the digital tools ChoiCo, Malt2 and/or SorBET in a design thinking project for a specific group of learners. The necessary supporting material to guide the PD activities. In both universities, the PD modules followed a constructivist approach.

Task 6.2: Three-cycle implementation of Professional Development activities

In Year 1, an exploratory pilot study was performed by implementing the developed PD modules (see Task 6.1) in existing courses in teacher education programmes at UGent and NKUA. The aim was to explore whether the developed PD modules were effective and to explore students' experiences with the modules. In UGent, the module was implemented as a blended activity in a class with 64 students. The students learned about DT and ChoiCo by means of video tutorials, and then followed two classes of 2.5h in which they in smaller groups designed and developed ChoiCo games on SDG's. At NKUA the module was implemented in a class of 15 students. The students had to implement the DT methodology in a small design project that involves the co-creation of a digital product for educational purposes. In 5 sessions, taken in 5 consecutive weeks, students created ChoiCo and SorBET games. Surveys, observations, interviews, were used to gather data for WP7 (evaluation)

Task 6.3: Design and development of open online courses

N/A

Status of Deliverables and Milestones due at M9:

M3: At month 9, a first version of the learning activities and resources for Professional Development are ready. At NKUA as well as at UGent, the learning activities and resources were used for a first implementation and are now evaluated.

Deviations and Corrective Actions:

N/A

WP7: Development of Cycle 1 Evaluation Toolkit

Task 7.1: Development of Cycle 1 Evaluation Toolkit

At the commencement of this task, the primary aim was to establish a shared vision for the evaluation across the consortium through collaborative meetings and shared documents, through which the project aims and requirements of the evaluation from the perspective of each WP were identified. TCD then developed an evaluation toolkit for use in co-design activities (WP3), school interventions (WP5) and professional development activities (WP6) in collaboration with those WP leads. The draft evaluation plan was shared with all partners for feedback, followed by revisions and the construction of the evaluation instruments which were also provided to all partners for review. The final toolkit includes data collection instruments and guides as well as data analysis and reporting templates were made available for use by all partners and will be made available in Deliverable 7.1.

Task 7.2: Literature Review

A systematic review of the literature commenced on schedule. TCD lead the 21st century skills and Design Thinking reviews, while NKUA lead on the Digital Competencies review. Each review has a lead person and those people collaborated to develop search strings that were both specific to their topics but would enable reliable comparison at later stages. The search strings were used in several education, psychology, social science and computer science databases. These resulted in a total of 13172 results for the 21st Century Skills review; 5587 results for the Design Thinking review and 10144 results for the Digital Competencies review. Title and abstract screening is currently ongoing.

Task 7.3: Teacher's Evaluation Toolkit

This work is not due to commence until M13

Task 7.4: Survey Development

This work is not due to commence until M13

Task 7.5: Development of Cycle 2 and Cycle 2 Toolkits

This work is not due to commence until M13

Task 7.6: Evaluation of activities and tools

Partners are currently collecting data at their sites.

Task 7.7: Evaluation data analysis and reporting

Partners have spent time with the WP lead discussing the data analysis approach and a reporting template has been provided to ensure consistency across teams. Data analysis will commence once data collection is complete at each site.

Status of Deliverables and Milestones due at M9:

Work on deliverable 7.1 has not yet commenced as it requires the reports from partners' evaluations. This is due in M13. Subsequent deliverables will be due at the end of each cycle of evaluation.

Deviations and Corrective Actions:

None

WP8: Professional Development

Task 8.1: Dissemination and exploitation activities

A project website has been created – a new version of it is expected to be ready in the next few weeks with a special section for teachers (an advanced Wordpress package has been purchased for this purpose). Social media accounts on Linked-in and Twitter have been created. The twitter account is updated weekly. Internal project presentations are taking place across institutions as well as external presence in events such as EDEN. The first newsletter of the project has been created and is available on the project website. A second one will be produced by the end of July. First versions of supporting material for teachers are on the website.

Task 8.2: Engagement activities

An online workshop introducing design thinking and project technologies took place in Oct 2022 in which teachers mainly from Greece and the UK joined (alongside project partners). Announcements seeking teachers to take part in the project have been circulated during the first year of the project in social media and local networks of schools, and another round of recruitment is planned for Sept 2024 for year 2 activities. The OSOS network has not been approached yet. Preliminary discussions are in place at the OU about the design of the OpenLearn course.

Task 8.3: Production of conference and journal publications including a policy report

An EARLI poster (extended abstract) has been accepted for presentation at the EARLI 2023 conference. A full paper has been accepted for presentation at the MIS4TEL conference. A conceptual paper about design thinking and constructivism has been submitted to the Constructionism conference. It is noted that the original objective as written in the proposal is to produce 3 conference papers and one journal paper per year. Given that data from the pilot phase has not yet been analysed, journal papers are expected to be published in Year 2 and 3, meeting this objective. A policy report will be produced in Year 3 of the project, likely in collaboration with other cluster projects.

Status of Deliverables and Milestones due at M9:

Deliverable 8.1: Dissemination and Exploitation plan (M6, OU) has been submitted timely and in good order. Milestones – N/A. to WP8 for this period of reporting.

Deviations and Corrective Actions:

There are no deviations in this reporting period.

WP9: Ethics

Task 9.1: Set up Ethics Board

The Ethics Board is comprised of Dr Carina Girvan (TCD) (Chair), Ms Johanna Velander (LNU) and Prof Adam Hedgecoe (Independent Expert Advisor, Cardiff University, UK). The scope of the team and terms of working were verbally discussed and agreed at the first meeting.

Task 9.2: Review and input into initial project developments

WP leads provided the Ethics Advisory Board with an update on the status of their WPs, highlighting any issues or questions they had regarding ethics in terms of their own WPs and/or the project as a whole. These were reviewed by the Board. Members of the Board attended WP7 meetings with all partners during the development of the initial evaluation toolkit to gain familiarity with the proposals and raise questions regarding ethics. It was noted that at this stage in the project there the design of the evaluation followed very standard social science approaches and there were no concerns raised regarding technology or approaches to gaining informed assent from children. The Board explored hypothetical issues regarding project technology developments, noting that there were too many unknowns at this stage to make a clear determination but there is value in raising issues so that mitigation measures can be considered in advance and included in the design.

Task 9.3: Periodic Review

Due to delays in Task 9.2, this task is yet to commence.

Status of Deliverables and Milestones due at M9:

Deliverable 9.1 was completed and submitted on time (M8).
Deliverables 9.2 and 9.3 are yet to commence.

Deviations and Corrective Actions:

Due to delays in setting up the Board, Task 9.2 was delayed and so to Deliverable 9.1. It was also recognised that there was value in moving Deliverable 9.1 to align with the delivery of the DMP. These changes were agreed by the PO in advance.

Task 3.1. Co-design and development of educational activities using project technologies

Description of the work carried out
SIMPLE collaborated with NKUA and OU to define a framework that will help partners approach things in a DT manner. In the context of this effort SIMPLE presented an implemented design thinking project and participated in activities involving reflection and ideation on this project aiming to enhance it with the use of emerging technologies.

Task 4.3 - Extend MaLT2 programmable modeller with 3D printing/scanning technologies

Description of the work carried out
SIMPLE collaborated with NKUA in two phases. The first phase comprises consulting sessions regarding 3D printing technologies, 3D printers, materials for printing and health & safety issues related to 3D printing especially in school environments. As a result, a reliable and cost-effective 3D printer was acquired by NKUA for experimentation with typical 3d models generated in the Malt2 environment. The second phase comprises co-design activities about a web-based library that gives 3D printing capabilities to environments like Malt2. The output of this part was the idea to implement a component that will translate user input into G-code (Geometric Code), which is the standard programming language used in computer-aided manufacturing (CAM), to control 3D printers. This is in line with the requirements specified in the GA for this particular task as it will feed into the implementation phase for this particular library that follows until M30.

Task 4.4 - Task 4.4. Extend learning tools to capture and generate data for analysis

Description of the work carried out
SIMPLE collaborated with LNU, NKUA, NTNU, OU to derive a technical specification of the content along with the data format of the data generated by the learning tools that will be used by the LA components for analyses and visualisation. The diverse data formats of those tools were considered, and a flexible architecture was designed to allow integration in a non-invasive manner and ingestion of this information into a single data repository for analysis. This task relates to the development of data integration and interoperability techniques in the context of the authorable LA component. The output of this task was translated into a technical report that was submitted as part of deliverable 4.1.
In the context of this task we determined and specified user and technical requirements for the ExtenDT2 platform and we clarified GDPR related issues to inform the design of the platform.

Deviation: The output of this task led to an important decision related to the development of a learning platform that will operate as an ecosystem of diverse components and that will allow the seamless integration and interoperability of the technologies developed by NKUA and OU as well as any web component in the context of DT processes. The platform to be implemented is based on previous work done by SIMPLE in collaboration

with UCL that is called SmILE (Smart Interactive Learning Ecosystem) and will operate as the "ExtenDT2 platform".
Finally, in this task we did an initial preparation and planning for the development of the infrastructure and the platform.

Task 4.5: Development of an Authorable Learning Analytics and Adaptive Feedback component for DT constructionist activities

Description of the work carried out
In this task SIMPLE designed and developed an initial experimental prototype for the Authorable Learning Analytics and Adaptive Feedback component for DT constructionist activities. The component has been integrated with the Extendt2 platform in a loosely coupled manner, as an individual member component of the ecosystem. Initial configuration experiments have shown that it integrates well with the platform as well as with some of the constructionist activity components present in the platform like Malt+. SIMPLE collaborated with LNU, NKUA, NTNU & OU to verify technical requirements and test early versions of the prototype.

Interdependency between tasks 4.6 "Development of a customisable Dashboard" and 5.4 "Informing the design and testing of the LA and the Adaptive Feedback feature for learner input"

Description of the work carried out
SIMPLE collaborated with UCL, NKUA and OU to design the process that actively involves teachers and elicits requirements regarding the design of the LA dashboard. The result was the design of a teachers' requirements elicitation workshop based on the methodology of Repertory Grid. The main advantage of the methodology, which is the ability to provide feedback on conceptual models by minimising researcher bias, is expected to generate feedback that will inform deliverables 4.5 and 4.6.

LNU: 1 September 2022 - 31 May 2023 (M1-M9)

Person Months (PM)			Personnel Cost (€)			Travel and Subsistence (€)			Equipment (€)			Other Goods, Works & Services (€)		
Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used
69	11,7 PM	16,96%	528 671	80 378	15,20	55 800	5 533	9,92%	5 000	0	0%	5 000	191	3,82%

Explanation of any deviations (only needs to be done if "% used" at M9, is < than 20% or > 30% for any of the five headings)

- Personnel costs are lower than budgeted. Further technical staff will be required in years 2&3.
- Travel and subsistence costs are low due to the Kick-Off meeting being held at LNU which meant no flights or large travel costs, and virtually no hotel or subsistence costs
- The budget for equipment is relatively small and will be utilized in years 2 and 3
- Other goods and services relate to audit costs which will be incurred in year 3.

NKUA: 1 September 2022 - 31 May 2023 (M1-M9)

Person Months (PM)			Personnel Cost (€)			Travel and Subsistence (€)			Equipment (€)			Other Goods, Works & Services (€)		
Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used
78	14	18%	347 287	64 422	19%	48 000	6 011	13%	10 000	4 791	48%	9 000	1 701	19%

Explanation of any deviations (only needs to be done if "% used" at M9, is < than 20% or > 30% for any of the five headings)

- Person Months & Personnel Cost (18 & 19 %):
  The first year was the pilot phase of WP5 (The one with the most PMs) and thus fewer PMs were necessary. Some contracts were delayed due to administrative reasons.
- Travel and Subsistence 19%:
  The second Project Meeting was organized by NKUA so there was one travel less for that year. Since it was Year 1 there was very little dissemination travel (only to one conference)
- Equipment 48%:
  Equipment for software development and testing (laptop, mobile devices & 3D printers) was necessary to be purchased early in the project to start the technology development process (WP4)
- Other goods & Services 19%:
  There was a low need for consumables in Y1. A license for data analysis software will be purchased for Year 2 analysis.

UGent: 1 September 2022 - 31 May 2023 (M1-M9)

Person Months (PM)			Personnel Cost (€)			Travel and Subsistence (€)			Equipment (€)			Other Goods, Works & Services (€)		
Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used
53.5	3.40	6.36%	248 877	34 485	13.86%	21 600	3 310	15.32%	0.00	0	0%	15 000	0.00	0 %

Explanation of any deviations (if "% used" at M9, is < than 20% or > 30%)

- Universiteit Gent was able to execute the project tasks of M1-M9 in 3.4 person months. In M10-M12, the PhD student worked full-time on the project, which allowed us to finish the deliverables.

NTNU: 1 September 2022 - 31 May 2023 (M1-M9)

Person Months (PM)			Personnel Cost (€)			Travel and Subsistence (€)			Equipment (€)			Other Goods, Works & Services (€)		
Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used
58	9,94	17%	373 659	57 275	15%	15 000	1 798	12%	0	0	N/A	11 000	0	0%

Explanation of any deviations (only needs to be done if "% used" at M9, is < than 20% or > 30% for any of the five headings)

(please note that the below text is for internal use for the coordinator of the project and not for the official reporting to the EU portal)

- The percentage used is 17% , less, but close to 20%.One of the explanations is that the Post-doc is hired to the project with starting date 1.08.2023, therefore there was less staff available to officially register hours. However, the work in these reported months was executed and the hours will be registered retrospectively.

TCD: 1 September 2022 - 31 May 2023 (M1-M9)

Person Months (PM)			Personnel Cost (€)			Travel and Subsistence (€)			Equipment (€)			Other Goods, Works & Services (€)		
Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used
30	7.5	25	261 480	56,648	21.6	20 000	4159	20.8	500	0	0	500	0	0

Explanation of any deviations (only needs to be done if "% used" at M9, is < than 20% or > 30% for any of the five headings)

- No planned expenditure for equipment and other goods and services in M1-9.

SIMPLE: 1 September 2022 - 31 May 2023 (M1-M9)

Summary table

Person Months (PM)			Personnel Cost (€)			Travel and Subsistence (€)			Equipment (€)			Other Goods, Works & Services (€)		
Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used
13.4	2	14.9	55734	8290.44[1]	14.9	12000	2263.36	18.8	22000	3084.02	14	2000	236.86[2]	11.8

Explanation of any deviations (If "% used" at M9, is < than 20% or > 30%)

Personnel Cost

SIMPLE is mainly involved in Tasks and Deliverables that start after M9. This justifies the fact that expenses in every category do not exceed the 20% threshold. M1-M9 constitutes a preparatory phase for SIMPLE in order to elicit needs, extract technical requirements, define models or frameworks and consult other partners accordingly. This precedes the phase of design, development, and implementation.

Equipment & Consumables

Similarly, the equipment bought is necessary for the development of the initial infrastructure.
The main budget is dedicated to the purchase of 3D printers. This will be done later on, for two reasons:
1. Experimentation by NKUA on 3D printing will inform the decision of buying the suitable equipment for the 3D models produced my Malt+.
2. Expected technological depreciation due to the fact of very rapid progress and innovation in this particular sector of the tech industry may render the 3D equipment obsolete. Hence, it is decided to proceed with the purchasing as close as possible to the school interventions.

In-kind contribution

Dr. Sokratis Karkalas[3] contributed as a volunteer for 2 PM in order to design and develop the initial infrastructure for the project at a technical level. More specifically, two main components of technical work have been carried out during this period:
- The development of an early prototype learning platform that will host all the learning tools and services as well as facilitate the DT processes.
- The architectural design and the actual implementation of the technical infrastructure to enable the deployment of the previously mentioned platform on the cloud.

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[1] calculated based on the equation:
230,29 per unit   (Greek coefficient rate = 81.6%)
      x
36 units   (2 PM)

OU: 1 September 2022 - 31 May 2023 (M1-M9)

Person Months (PM)			Personnel Cost (€)			Travel and Subsistence (€)			Equipment (€)			Other Goods, Works & Services (€)		
Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used	Plan M1-M36	Actual M1-M9	% used
59	9.2	16%	373 486	65371	18%	10 350	2038	20%	N/A	0	0%	16 140	3461	21%

Explanation of any deviations (only needs to be done if "% used" at M9, is < than 20% or > 30% for any of the five headings)

- Project months are <20% and Personnel cost is underspent to date due to delay in recruiting Researcher (appointed Feb 2023)