CONSORTIUM MEEETINGS

D03

IDEALVis Consortium

http://idealvis.inspirecenter.org/

European Union
European Regional Development Fund

Republic of Cyprus

Structural Funds
of the European Union in Cyprus

ΙΔΡΥΜΑ ΕΡΕΥΝΑΣ ΚΑΙ ΚΑΙΝΟΤΟΜΙΑΣ

Kickoff Meeting 2nd September 2019

Participants:

- PA: Panayiotis Andreou (InSPIRE)
- MH: Milto Hadjikyriakou (InSPIRE)
- LP: Lilia Psalta (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CK: Christos Karpasitis (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- VR: Vanja Radivojevic (KPMG)
- CM: Cristina Michael (RAI Consultants)

Discussion Topics
Presentation of Project

Project Kickoff Presentation

During the kick off presentation all the members of the consortium were informed about the project's goals, plan, and excepted outcomes.
Moreover, all consortium members / partner organizations were introduced, ensuring that all members are familiar with each other, for further operating in a friendly environment.
Towards the end of the presentation all Work Packages were presented detailing the approach towards starting and successfully finalizing the IDEALVis project.
At the very end of the presentation a Questions and Answers session was available for ensuring that everyone is up to speed with the project's aims / timeline etc.

Next Meeting:

The next meeting should take place on: 9th October 2019

Next Action Points	Responsible/Deadline
Discuss with potential PhD candidates and technical staff	PA: Provide update during next meeting
Consider the project’s website design	CK: Provide update during next meeting

Meeting 9th October 2019

Participants:

- PA: Panayiotis Andreou (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- CK: Christos Karpasitis (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- OT: Olympios Toumazou (RAI Consultants)
- CM: Cristina Michael (RAI Consultants)

Discussion Topics
Introduce the new PhD student, his responsibilities and next steps.
D05: Project's website
Task 3.1: Research on state of the art for data visualizations techniques for Business Data Analytics
Task 3.3: End-user Requirements Analysis

New PhD recruit:

Introduce CA and discussed his involvement in the project. CA brings a lot of value to the team as he has a very strong technical background and will support both research and development tasks.

D05: Project's Website

Discussed website requirements: The website should contain project objectives, working packages, project activities, outcomes, publications, the team members, and the news of the project.

Main website sections: Home, Overview, Partners, Publications, News and Contact information.

- Find an appropriate single page template.
- Collect the team and partner details e.g., names and images.
- Write down the project objectives that will serve as the overview sections.
- Create a subdomain on the inspirecenter.org website and host the IDEALVis website
- Create appropriate graphics for the website e.g., logo in different sizes and colours to accommodate various website sections.

Task 3.1: Research on state of the art for data visualizations techniques for Business Data Analytics

Task 3.2: Research on state of the art for adaptive personalization techniques for Business Data Analytics

Task 3.4: Elements of Data Visualizations

We need to create a pool of relevant literature that will aim as the source of information for conducting further research.

- Go through relevant conferences and journals and collect relevant papers. Some prominent sources are:
  - ACM User Modeling, Adaptation and Personalization
  - ACM Conference on Human Factors in Computing Systems
  - ACM Intelligent user Interfaces
  - ACM Transactions on Interactive Intelligent Systems
  - IEEE Computer Graphics and Applications
  - IEEE Information Visualization
  - IEEE Transactions on Visualization and Computer Graphics
  - IEEE Conference on Visual Analytics Science and Technology
- Start writing summaries for relevant research papers - forming the backbone of upcoming research / deliverables

Task 3.3: End-user Requirements Analysis

Discussed how the analysts operate in their environment.
RAI Consultants: Retail and Consumer Analytics
KPMG: diverse group of analysts, such as Audit, Risk Assessment, Fraud Detection
Main steps in the process: Data Collection/Integration, Data Pre-processing, Data Selection, Modelling, Reporting. All steps are supported by appropriate visualizations besides data collection – typically done by data/software engineers.
Software used: RAI: InfoStar, Excel, PowerBI, KPMG: SAS, SPSS, R-Studio, (many other custom software and development tools)
Languages used: RAI: VBA, SQL, R, KPMG: SAS, R, Python (varies per department)

Next Action Points	Responsible/Deadline
Task 3.1-2: Create pool of papers	CA, PA, PG: Provide update during next meeting
Task 3.3: Arrange individual meetings with organizations	PA: Provide update until next meeting
Task 3.4: Identify key elements from T3.1-2 (this should be ongoing)	CA: Provide update during next meeting
D05: Finalize the design of the website	CK: Next week
D05: Collect content for website	All partners: Two weeks
D05: Finalize website	CK: End of October

Next Meeting:

The next meeting should take place on: 30th October 2019

Meeting 30th October 2019

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- LP: Lilia Psalta (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- CK: Christos Karpasitis (InSPIRE)
- ES: Eliana Stavrou (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- CM: Cristina Michael (RAI Consultants)

Discussion Topics
D05: Project's website
Task 7.1: Platform Architecture
Task 7.2 KnowledgeBase Design and Development
Task 7.3 Algorithms Repository
Task 7.4 Security and Data Protection infrastructure
Task 7.5 Complete platform integration
Task 3.1-2, 4: Research on state of the art for data visualizations techniques for Business Data Analytics
Task 3.3: End-user Requirements Analysis

D05: Project's website

The website was reviewed and found to be of high-quality and fulfills the requirement. Decision to deploy the website publish it through appropriate media.

WP7: Discuss the platform's technology stack and development methodology (Task 7.1: Platform Architecture, Task 7.2: KnowledgeBase Design and Development, Task 7.3: Algorithms Repository, Task 7.4: Security and Data Protection infrastructure)

The envisioned architecture was discussed. It was decided to follow a Service-oriented Architecture (SOA) approach, where every major component of the platform is a separate service. SOA will allow for highly interoperable decoupled data/knowledge base services, algorithms, etc. that can interact with minimum errors. Moreover, for the first phase of the development (User Modelling) some development frameworks were discussed, and the consensus was to use the SQL Server and ASP.NET webforms since most members had prior experience using it. Discussion from ES about security and data privacy by design and how it can be incorporated.

Task 7.5: Complete platform integration

The platform development must begin early in the project life cycle. Therefore, the goal in the next two weeks is to find the appropriate tools needed for development and start building the basic building blocks of the web platform. The following should be considered:

- Build the authentication mechanism e.g., register, login, forgot password.
- Allow for different roles of users e.g., Admin, Researcher, Participant etc.
- Setup basic CRUD (edit, view, list, create - components) that will aid as the base for building other forms later.

Task 3.1-2, 4: Research on state of the art for data visualizations techniques for Business Data Analytics

The literature collected since the last meeting was examined and found to be useful. Appropriate comments were provided to CA for how to move on with reviewing and summarizing the relevant papers.

Task 4.1: Identification of Cognitive Factors

Discussed possible psychometric tests related to the project goals. PG/LP had some suggestions ready about possible psychometric tests, that would likely be used as means for collecting more of the user's "intrinsic" characteristics. Several tests were discussed such as Control of Attention, Speed of Processing and Working Memory.

Task 3.3: End-user Requirements Analysis

The meetings should be setup with the users for requirements collection. The questionnaires will need to be setup accordingly.

Next Action Points	Responsible/Deadline
WP7: Search for appropriate tools that will aid the development processes e.g., a theme that we can use, a suitable hosting solution.	PA,CA: Provide update during next meeting
WP7: Decide on the software stack and build platform structure	PA, ES, CA: Provide update during next meeting
Task 3.1-2,4: Discuss progress	CA: Provide update until next meeting
Task 4.1: Detect literature that justifies the usage of those psychometric tests and their correlation with information processing.	LP,PG,CA: Provide update during next meeting

Next Meeting:

The next meeting should take place on: 15th November 2019

Meeting 15th November 2019

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- ES: Eliana Stavrou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- MH: Milto Hadjikyriakou (InSPIRE)
- LP: Lilia Psalta (InSPIRE)

Discussion Topics
WP7: Review the platform architecture and components
D18, D18.1: Platform Architecture and Security
D10: Requirements Analysis and Specification
D09: A survey on adaptive data visualizations techniques for Business Data Analytics
D04: Dissemination Strategy and Plan

WP7: Review the platform architecture and components

The first architectural platform components and user interface were validated by the team and comments regarding the next steps were provided.

- Extend the login page with a remember me feature
- In the register page the user should be able to select a role type e.g., Participant
- We need to create the several policies for when a user is about to register e.g., terms of service, privacy policy etc.
- The platform must accommodate for multiple languages i.e., English and Greek.
- Study some of the cognitive tests that exists in the literature and come up with a software architecture (component) that can accommodate the implementation of any of those (most relevant) tests by following easy steps.
- Create the form components needed for when it's the time to develop the questionnaires.

D18: Platform Architecture and Security

Decision to create the structure of D18 until the next meeting

D10: Requirements Analysis and Specification

For the purposes of this project, we need to extract information for the user that will help us identify data analyst personas (roles / experience levels). To achieve that we need questionnaires that capture the user's business role tasks, experience with various types of visualizations and data analysis tasks. Decisions to have the questionnaires and the cognitive tests ready for implementation until next meeting.

D09: survey on adaptive data visualizations techniques for Business Data Analytics:

This deliverable contains valuable knowledge that is essential for the team to progress with the project therefore it needs to start early in the project's lifecycle.

- Investigate other DA/BI platforms and detect what are their adaptive / personalized / state of the art visualization techniques.
- Start writing a review about the importance of individual differences in information processing.

D04: Dissemination Strategy and Plan

Discussion about deliverable objects, sharing of previous experience. Discussion about the difference of D04 with D08: Exploitation Plan. Decision to create the structure of D04.

Next Action Points	Responsible/Deadline
WP7: Search for appropriate tools that will aid the development processes e.g., a theme that we can use, a suitable hosting solution.	PA,CA: Provide update during next meeting
D18, D18.1: Create structure of deliverables	PA,ES,CA: Provide update during next meeting
D10: Prepare the questionnaires for end-user requirements analysis	PA, MH, PG, LP, CA, IP: Provide update during next meeting
D09: investigate other DA/BI platforms and assess their personalization capabilities	CA: Provide update until next meeting
D04: Create structure of deliverable	PA,PG: Provide update during next meeting

Next Meeting:

The next meeting should take place on: 16th December2019

Meeting 16th December 2019

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- ES: Eliana Stavrou (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- OT: Olympios Toumazou (RAI Consultants)

Discussion Points
WP7: Review the platform architecture for cognitive tests and questionnaires
D18, D18.1: Structure of deliverables
D10: Discuss and validate the final questionnaires and cognitive tests
D09: DA/BI platforms and their personalization capabilities
D04: Dissemination Strategy and Plan

WP7: Review the platform architecture for cognitive tests and questionnaires

The architecture for the cognitive tests and questionnaires was reviewed and comments were provided:

- Move all the question strings into the RESOURCE_MANAGER table.
- Make sure that the times being submitted by the cognitive test component are exact.
- Add an intro page for showing a task brief to the user before the initiation of a questionnaire / cognitive task.
- Add a finish page that will show statistics and results upon the completion of a cognitive test.

D18: Specification of overall platform architecture

D18.1: Security and Data Protection infrastructure

The structure of the deliverables was decided.

Task 3.3: End-user Requirements Analysis

The final questionnaires and cognitive tests were discussed. The following questionnaires will be added into the platform:

- Business Role Questionnaire
- Data Analysis Tasks Questionnaire
- Data Visualization Experience Questionnaire
- Emotion Regulation Questionnaire
- Eysenck Personality Questionnaire
- Decision Making Questionnaire
- Problem Solving Style Questionnaire

- Executive Skills Questionnaire

The following psychometric tests / cognitive tests will be added into the platform:

- Working Memory
- Speed of Processing
- Control of Attention
- FDI - Field Dependent Independent
- Digit Memory Span (to be sued for checking the platform's flexibility)

D09: DA/BI platforms and their personalization capabilities

Several platforms, such as Power BI, Tableau, Oracle Analytics Cloud and Sisense, MicroStrategy were investigated. The main findings are that Automation, Customization, Summarization and Expandability are some key aspects that summarize the visualization techniques incorporated by DA / BI Platforms. Our analysis revealed that the majority of tools can automatically generate multiple types of visualizations using a variety of data formats, but without considering human factors in the visualization process.

D04: Dissemination Strategy and Plan

Structure finalized. The deliverable will distinguish between communication and dissemination activities.

Next Action Points	Responsible/Deadline
WP7: Implement the questionnaires into the platform and validated them	CA: Finalize until 5/1/20
D18, D18.1: Finalize deliverables	PA,ES,CA: Finalize deliverables until mid Feb
D04: Dissemination Strategy and Plan	PA, IP: Finalize deliverable until mid Feb

Next Meeting:

The next meeting should take place on: 10th January 2020

Meeting 10th January 2020

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CK: Christos Karpasitis (InSPIRE)
- MH: Milto Hadjikyriakou (InSPIRE)
- LP: Lilia Psalta (InSPIRE)
- CM: Cristina Michael (RAI Consultants)
- OT: Olympios Toumazou (RAI Consultants)
- VR: Vanja Radivojevic (KPMG)

Discussion Points
Overall project progress
Preparation for the first study
Tasks 8.1-2: Trial Design, Setup and Support
WP7: Review the platform architecture for cognitive tests and questionnaires

Overall project progress

All the material that was added to the platform was reviewed, such as new questionnaires and cognitive tests that were added to the platform:

- Setup a notifications system that will inform the participants e.g., they were invited to a study
- Create a mechanism where a researcher can publish a research study
- Allow participants to join a research study - create an appropriate interface where participants can select whether to join a study.

Preparation for the first study

Tasks 8.1-2: Trial Design, Setup and Support

Industry partners provided their availability for testing the platform for the first study. Discussion on how the testing sites will need to be prepared.

- Participants will need their laptop with a mouse (no trackpads should be used)
- Sites will require a proper internet connection to accommodate 10 - 15 laptops
- Laptop screen sizes should be more than 14 inches and preferably with a 1920 by 1080 resolution to ensure that all participants have the same user experience

After a discussion with the team members, it was decided that a suitable date (for the majority) for testing the version 1.0 of the platform was on the 29 January 2020. Any member that cannot make it to the testing event will receive a link with instructions on how to test the platform and how to provide comments.

D09: Survey on adaptive data visualizations techniques for Business Data Analytics:

Discuss suggestions on how to enhance:

- Review the comments provided in the document and make changes where appropriate.
- Extend the list of DA/BI platforms - according to Gartner this list should probably contain at least 13 platforms.
- Start reading literature related to adaptive systems / adaptive visualizations etc.

D04: Review the draft version of the Dissemination Plan and activities

The following dissemination activities should be performed:

- Register new accounts on scientific digital publishing libraries such as ACM.
- Create social media accounts and share the projects aims and goals. Moreover, publish every major event that took place by now. Future events will also have to be published accordingly. Social media platforms to use include Facebook and Twitter.
- Note that the project's website will also have to receive the same updates as the social media accounts.

Next Action Points	Responsible/Deadline
Finalize days for user study 1	PA, OT, GN: Decide until next meeting within February
D18, D18.1: Finalize deliverables	PA,ES,CA: Finalize deliverables until mid Feb
D04: Dissemination Strategy and Plan	PA, IP: Finalize deliverable until mid Feb
D09: Survey on adaptive data visualizations techniques for Business Data Analytics	CA: Provide update in March after study 1 is completed.

Next Meeting:

The next meeting should take place on: 29th January 2020

Meeting 29th January 2020

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CK: Christos Karpasitis (InSPIRE)
- MH: Milto Hadjikyriakou (InSPIRE)
- LP: Lilia Psalta (InSPIRE)
- ES: Eliana Stavrou (InSPIRE)

Discussion Points
Tasks 8.1-2: Trial Design, Setup and Support
Preparation for the first study: final tests, feedback and launch date
D22: Trials and Evaluation Design

Tasks 8.1-2: Trial Design, Setup and Support

Final test of the platform by completing all the questionnaires and cognitive tests. All the team members tested the platform and comments were provided.

- Notes for improvements and bugs that are detected through testing were taken - D21
- Plan to enhance the platform according to team member comments - D20
- D18: Finalize deliverable according to updates (22/02/20)

User Study 1 launch

- RAI Consultants - 5th February 2020
- KPMG Cyprus - 10th February 2020

D22: Trials and Evaluation Design

D22 should be updated with the initial study setup, study design, and also examine issues like how the trial sites will be organized, what kind of training will be needed and detail how the evaluation data will be collected etc.

Next Action Points	Responsible/Deadline
D18: Finalize deliverable according to updates	PA, CA: 22/02/2020
User Study 1	RAI Consultants – 05/02/2020 KPMG Cyprus – 10/02/2020
D22: Trials and Evaluation Design	IP, CA, PA: Provide update in March

Next Meeting:

The next meeting should take place on: 3rd February 2020

Meeting 3rd February 2020

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- ES: Eliana Stavrou (InSPIRE) (InSPIRE)

Discussion Points
D18.1: Security and Data Protection infrastructure

D18.1: Security and Data Protection infrastructure:

With D18 almost completed and the data collection platform ready now it was time to document all the security and data protection infrastructure aspects of the system. The members of this meeting had a thorough discussion regarding parts of the implementation and ensured that all the security components were in place. ES requested a few assets and e.g., system pictures etc. that would help in the writing of D18.1. CA will provide ES with any platform asset that will be needed. PA will review the deliverable.

Next Action Points	Responsible/Deadline
Finalize D18.1: Security and Data Protection infrastructure	ES, PA: 24/02/2020

Next Meeting:

The next meeting should take place on: 14th February 2020

Meeting 14th February 2020

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- LP: Lilia Psalta (InSPIRE)
- MH: Milto Hadjikyriakou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CK: Christos Karpasitis (InSPIRE)
- CM: Cristina Michael (RAI Consultants)
- VR: Vanja Radivojevic (KPMG)

Discussion Points
WP4: Examine the data collected from user study 1
Discuss the analysis methodology and process (Jupyter Notebooks)
Plan for final versions of D04, D10

WP4: Multi-dimensional Human-centred User Model

The related meeting members inspected the data collected from user study 1. Several decisions regarding the different attributes of the dataset took place and a dataset was given to each member for further examination of the data. The Human-centered User Model for Adaptive Data Visualizations can begin to be formulated when the attributes will be finalized. It was decided that each member of this meeting should take the data examine it and come up with solutions to how it should be processed for creating user personas. This was decided since each member has a different approach to the analysis of user personas. Personas will essentially help the team see some categories or types of users using descriptive statistics. To facilitate the process, CA will produce one or more Jupyter Python Notebooks Including:

- Integration of all collected data into a unified dataset.
- Create procedures for cleaning the dataset and preparing it for further analysis.
- Identify methodologies that can help us analyze the qualitative data collected from the questionnaires.
- Produce graphs i.e., histograms and boxplots for examining distributions and outliers of quantitative variables.
- Impute missing values where appropriate and handle outliers.

Finale D10: Requirements Analysis and Specification

The deliverable should merge all information acquired. This report should contain:

- Analysis of the end-user requirements.
- Services/mechanisms that will be provided by the platform.
- Use case scenarios that will be supported by the platform.
- HCI aspects of the platform.

Finalize D04: Dissemination Plan

The Dissemination Plan Activities were all in place as planned. CK verified all created accounts i.e., social media and digital library accounts and PA suggested creating a safe repository for storing the relevant project account passwords.

Next Action Points	Responsible/Deadline
Finalize D18.1: Security and Data Protection infrastructure	ES, PA: 24/02/2020
Finalize D10: Requirements Analysis and Specification	CA, IP, PG, PA: 24/02/2020
Finalize D04: Dissemination Plan	IP, PA: 24/02/2020

Next Meeting:

The next meeting should take place on: 12th March 2020

Meeting 12th March 2020

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)

Discussion Points
D09: Survey on adaptive data visualizations techniques for Business Data Analytics Present the work so far and discuss next steps
WP4: Review Analysis Notebook

D09: Survey on adaptive data visualizations techniques for Business Data Analytics

The list of DA/BI platforms was extended as per suggestions. An excel file containing all findings regarding prominent DA/BI platforms and features of interest to IDEALVis, including adaptation/personalization techniques used in those tools was extracted.

Important adaptation / personalization features used in popular DA/BI platforms was selected and was composed in a section titled: Data Visualization Techniques in Leading DA / BI Platforms. Findings from this section suggest that no vendor implements any sort of adaptive visualization system that leverages the unique user's characteristics / intrinsic characteristics for adapting the visualization output.

Moreover, two new sections were added to D09. First a section called User Adaptive and Personalized Systems was added to further demonstrate techniques of adaptation used in existing visualization systems and other systems that can be of beneficial use in the development context of IDEALVis. The second section added is called Individual Differences in Information Processing and presents several works and how they leverage the user's characteristics to adapt information systems, primarily visualizations. It was decided that a number of comments will be provided by the 3rd of April 2020. Once all the provided comments are addressed this deliverable will be completed.

Review Analysis Notebook:

The analysis notebook was found to be at a very good first state. It was decided that a the analysis notebooks should be versioned using an online repository (e.g., GitHub) for pushing all analysis code i.e., notebooks and datasets. Make sure to add enough comments in the notebook to make sure non-programmers can understand the analysis flow that is performed.

Next Action Points	Responsible/Deadline
D09: provide feedback	All team members: 03/04/2020
D09: revise based on feedback	CA: 10/04/2020
Create online repository for analysis notebooks	CA, PA: 10/04/2020

Next Meeting:
The next meeting should take place on: 15th of April 2020

Meeting 25th March 2020

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- OT: Olympios Toumazou (RAI Consultants)

Discussion Points
Covid-19 outbreak in Cyprus

Covid-19 outbreak in Cyprus

Discussion about the general lockdown in Cyprus for dealing with the COVID-19 pandemic, from 24/03-24/04/2020. Discussion about how it may affect the project's further studies. Decision to wait until more data are available.

Meeting 15th April 2020

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- LP: Lilia Psalta (InSPIRE)
- MH: Milto Hadjikyriakou (InSPIRE)
- ES: Eliana Stavrou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)

Discussion Points
D12: The Human-centered User Model for Adaptive Data Visualizations Present the final User Personas from the data collected in Study 1
D20: Development of the operational platform Refining the technology stack to be used for the platform
D22: Trials and Evaluation Design Finalize deliverable

D12: The Human-centered User Model for Adaptive Data Visualizations

Present the final User Personas from the data collected in Study 1

PG presented the 3 main personas that were extracted from the analysis of the data collected via the First User Study. The personas are Novice, Expert and Competent business data analyst users. Extracting those personas gives us a clearer view on the needs, requirements, strengths, and weaknesses each type of user faces as well as information regarding how they go about their daily analysis tasks i.e., what visualizations are used, what tasks are mostly performed, what tools they utilize etc. This will enable a good first start when it comes to adaptation since we can get a preliminary view of who our users are.

The current analysis notebooks were presented to all members. All questions regarding the notebook were answered and CA collected several suggestions for further improving the analysis and graphics presented on the notebook.

D20: Development of the operational platform

Refining The technology stack to be used for the platform

During the meeting it was aggreged that the current technology stack requires enhancements. While the current stack was sufficient for building the data collection part of the platform i.e., used during User Study 1, further development of the platform necessitates a more flexible up to date framework that is supported by up-to-date tools. The following decisions were made:

- The database will remain as is i.e., Microsoft SQL Server
- The backend will be changed from ASP.NET Webforms to ASP.NET Core
- The frontend will be transformed from plain HTML, CSS, and JavaScript to Angular 10.
- A training needs to be performed for Angular 10, through training platforms, such as Udemy, Coursera, etc.

D22: Trials and Evaluation Design
Finalize deliverable

The deliverable should be enhanced by describe resources and a specification of what needs to be added, extended, or adapted for the support of the proposed pilots. The overall evaluation approach (e.g., the quantifiable success indicators, the evaluation methodologies and evaluation questionnaires) that will be used both for the pre-trials' and the trials' evaluation should be included. The success indicators should be mapped to the relevant objective indicators of the project.

Next Action Points	Responsible/Deadline
Purchase and have a training on Angular	CA, PA: until 16/06/2020
D22: Trials and Evaluation Design Finalize deliverable	IP, CA, PA, MH: 29/04/2020

Next Meeting:

The next meeting should take place on: 13th of May 2020

Meeting 13th May 2020

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- OT: Olympios Toumazou (RAI Consultants)

Discussion Points
COVID-19 restrictions and their implications
D20: Development of the operational platform: Next Steps

COVID-19 restrictions and their implications

Discussion about the COVID-19 restrictions and their implications on the project. The restrictions prohibit the gathering of the analysts on confined spaces. We will monitor the situation and hope for the restrictions to be removed but it may affect user study 2. As such we may need to conduct the user study 2 in an online manner. This imposes additional development requirements on the study platform.
A decision was to focus on tasks related to the development of the platform until there are more updates on the pandemic progress.

D20: Development of the operational platform - Next Steps

It was decided that there will be more focus on development until restrictions on the pandemic are eased and allow for conducting user study 2. The following were decided:

- Identify a template that is built using Angular and make sure that the template comes ready with multiple components e.g., theme color variations, buttons, dropdown lists etc., to cater for the requirements of study 2 related to D11.
- Enhance the security and data protection of the platform in case the study will need to be performed in an online manner. In particular, a new authentication system using Microsoft's Identity Library should be creates using a single page application using of tokens for authentication (similar to JWT). All the relevant privacy should be transferred, terms of use statements from the data collection platform. Additional data protection components should be developed and integrated. Furthermore, a new page where the user can handle their profile e.g., change password and settings or manage data related requests e.g., account deletion.

Next Action Points	Responsible/Deadline
D20: Development of the operational platform	CA: provide an update next meeting

Next Meeting:

The next meeting should take place on: 16th of June 2020

Meeting 16th June 2020

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- OT: Olympios Toumazou (RAI Consultants)

Discussion Points
COVID-19 restrictions and their implications
WP5, WP6, D20: Development of the operational platform: Next Steps

COVID-19 restrictions and their implications

The third phase of easing restrictions has been enabled. The second study can be planned accordingly. Consultation with the partner organizations revealed that the end users are very skeptical about performing the study in a physical environment due to COVID-19. Furthermore, it was mentioned that July and August are not good months for conducting the study since the employees take most of their annual leaves. The best time for a study is after 15 of September and preferably in October. This means that we will need to deliver a partial version of D11 or request an extension for D11.

WP5, WP6, D20: Development of the operational platform: Next Steps

The software developments done since the last meeting were reviewed. The software development training for ASP.NET and Angular Training was completed, enabling the team to speed up development efforts. The training can enable the team to leverage all latest development features provided by the selected modern frameworks.

The adopted theme seems to be well-supported by the open-source community as it receives regular updates.

All developments were verified, and minor comments were given to CA.

At this point the architecture and authentication i.e., user management systema and GDPR features are in place. The following were decided:

- Find a good visualizations library that is preferably open source and compatible with Angular and Webpack.
- Start developing the visualization engine that is responsible to return a visualization given data and metadata.
- Make sure that the visualization engine can produce the basic visualization i.e., bar-, line-, area-, column- charts, scatter plots etc.
- Produce some examples of how this visualization engine can be operated.
- Consider tracking mechanisms for WP5.

Next Action Points	Responsible/Deadline

WP5, WP6, WP7: Platform Development	CA: provide an update next meeting

Next Meeting:

The next meeting should take place on: 16th of July 2020

Meeting 16th July 2020

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)

Discussion Points
WP7: Development of the operational platform: Overview and Next Steps
WP5: Discuss interaction tracking mechanisms
WP6: Review the current version of the Visualization Engine
D01: Interim Progress Report

WP7: Development of the operational platform: Overview and Next Steps

The current version was presented.

- Extend the visualization engine's functionality by adding parameters and metadata that can control the appearance of the visualization. This is going to be used when we will apply adaptations. Those parameters and metadata should enable the system to modify several visual elements of each type of data visualization. Visual elements include the size of bars in a bar chart, the thickness of a line in a line chart, coloring, axes lines, axes labels, font options etc.
- Make some research into existing rule-based engine libraries and find one that can be used for building the rule-based adaptation engine.

WP5: Discuss interaction tracking mechanisms

The metadata required for internal tracking were discussed. Data analysis functions, such as data selection, pre-processing, filtering, attribute selection, visualization should be monitored. Appropriate frameworks need to be investigated.

WP6: Review the current version of the Visualization Engine

The data visualization engine, its architecture, definition of its metadata and documentation were inspected. A list of usage examples was composed for easier reference on how to use the visualization engine. The list of visualization examples was demonstrated to PA and PG. Moreover, we brainstormed on how this will be used in the upcoming user study that requires the use of the visualization engine.

The selected visualizations library used is am4Charts since it offers a highly usable and immersive visualizations library that can be adapted based on specific metadata.

Extract adaptation rules from the current literature and test the potential rule-based engine libraries with some of those rules before we make a final choice on which library to use.

D01: Interim Progress Report

Overview of the sections and support required to complete the deliverable.

Next Action Points	Responsible/Deadline
WP7: Platform Development	CA: provide an update next meeting
WP5: Investigate interaction tracking mechanisms	CA: provide an update next meeting
WP6: Integrate am4Charts	CA: provide an update next meeting
D01: Interim Progress Report	PA, IP: provide an update next meeting (with the support of all)

Next Meeting:

The next meeting should take place after the holidays on: 16th of September 2020

Meeting 16th September 2020

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- OT: Olympios Toumazou (RAI Consultants)

Discussion Points
WP7: Development of the operational platform: Overview and Next Steps
WP6: Review the current version of the Visualization Engine and am4Charts integration
D16: Discussion about the design of the adaptation engine
WP5: Discuss interaction tracking mechanisms
D12: The Human-centered User Model for Adaptive Data Visualizations
D01: Interim Progress Report
User Study 2: Planning
D11: The Impact of Cognitive Factors on Data Visualizations

WP7: Development of the operational platform: Overview and Next Steps

A lot of software components are already in place (e.g., web controllers, communication with the database etc.) that will further support and speed up the development of the Service Manager and Knowledge Base. The next step is to build the data management API that will enable querying the datasets setting the foundations for the final versions of D17 and D19. The following were decided:

- Build the service manager (D17) as a separate library that the platform can use as a dependency to access all endpoints i.e., APIs.
- At this point we should enable the knowledge base (D19) to connect on a database using a descriptor file.
- The descriptor file should be able to provide metadata to the knowledge base about a database, its tables, and their columns.
- At this step we must think about a query definition expressed in JSON, that the knowledge base will be able to parse for generating an actual SQL query that will be executed against a specific dataset that is loaded.

WP6: Review the current version of the Visualization Engine and am4Charts integration

The integration of the visualization engine with am4Charts was presented. The visualization engine's list of demonstration examples and documentation was extended to include new examples that put the focus on modifying the different elements available to each visualization type.

D16: Discussion about the design of the adaptation engine

After a lot of experimentation, an open-source rule-based engine library maintained by Microsoft was selected for building the rule-based adaptation engine. This rule-based engine is called RulesEngine and it is found online at this repository.

PA mentioned that an important aspect on the system should be a way to easily store rules in the database in an appropriate format as it is dictated by the envisioned architecture. The ability to keep track (add, edit, or remove rules) on the fly without having to redeploy or recompile the whole platform will save us a lot of time when testing.

WP5: Discuss interaction tracking mechanisms

No progress at this moment. Focus was given on the mechanisms of WP6 and WP7. We will revisit during next meeting.

D01: Interim Progress Report

The interim report progresses well and will be finished by the deadline.

User Study 2: Planning

The current level of development provides the opportunity to combine the studies of data visualization type and experiments with different visual elements. This should be considered until the next meeting and plan accordingly.

D12: The Human-centered User Model for Adaptive Data Visualizations

This deliverable should explain the rationale behind each dimension that makes up the multidimensional user model. The envisioned user model currently extends existing user models that focus solely on user characteristics (in information processing) by including another three dimensions (Business Tasks, Data and Visualizations) to also consider the user's functioning context (business environment) characteristics when driving adaptation.

- For this iteration we should give the primary focus on the user (i.e., business user) dimension which is the focal point in the definition of the user model, referring on one hand to the understanding of the business roles, nature, and their contexts of functioning, and on the other hand to the identification of the intrinsic human factors that play the most significant role during their engagement with the data visualizations.
- Create a section that talks about the user dimension and focus on providing detail on the following human factors:
    - perceptual and cognitive processing characteristics
    - affective processing
    - domain expertise
- Moreover, in the user's dimension a paragraph or two should be devoted to the user's business role characteristics and their importance in adapting data visualizations.
- We should consider a publication of this report when it is finalized.

Next Action Points	Responsible/Deadline

WP7: Platform Development Start the Implementation of the Service Manager and Knowledge Base - (D17, D19) (First Iteration)	CA: provide an update next meeting
WP5: Investigate interaction tracking mechanisms	CA: provide an update next meeting
D16: Preliminary design of all components of the adaptation engine	PA: provide an update next meeting
D01: Interim Progress Report	PA, IP: finalize by the deadline
User Study 2	PA, OT, GN: provide an overview and discuss next steps
D12: The Human-centered User Model for Adaptive Data Visualizations Send draft for comments Team to provide comments Address comments	 CA: 28/09/2020 Team: 02/10/2020 CA: 06-13/10/2020

Next Meeting:

The next meeting should take place on: 15th of October 2020

Meeting 15th October 2020

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- OT: Olympios Toumazou (RAI Consultants)

Discussion Points
User Study 2: Overview and Planning
D01: Interim Progress Report
WP7: Development of the operational platform: Overview and Next Steps
D16: Preliminary design of all components of the adaptation engine
WP5: Discuss interaction tracking mechanisms for visualizations and user responses
D12: The Human-centered User Model for Adaptive Data Visualizations
D11: The Impact of Cognitive Factors on Data Visualizations

User Study 2: Overview and Planning

The Second User Study has the purpose of collecting the performance and the accuracy of our participants when they are solving data analysis tasks using data visualizations. PA - has suggested that we use an existing dataset of comic book sales that he had at hand for generating all the related visualizations tasks. PG - suggested that we build all tasks by following one of the prominent visualization task taxonomies found in literature (Amar's Paper "Low-Level Components of Analytic Activity in Information Visualization").

- For these experiments we will use visualizations that are commonly used in business analytics (as revealed by our analysis of data from user study 1).
- Create 4 experiments of data visualization tasks. Each experiment will differ on the types of tasks as follows:
    - Simple Comparison Tasks.
    - Tasks of calculation of two data points, novelty detection tasks and 2 level comparison tasks.
    - Tasks dealing with more data dimensions (2, 3 and 4 data dimensions).
    - Mixture of tasks from previous experiments while changing data visualizations in terms of specific visual elements e.g., size of bars, width of lines, colors etc.
- For each task a valid dataset must be created from the existing comic book sales data.
- For each task a data visualization specification that is compatible with the visualization engine needs to be created.

The discussion was to plan user study 2 for October-November in a physical manner, similar to study 1. However, due to the new restrictions, it appears that the situation is highly volatile, and it may jeopardize the project outcomes. As such, the decision is to move to an online version of study 2. Necessary measures will need to be taken so that we achieve the same

results (or as close as possible) as the physical version of the planned study. After consultation with the industry organizations, it was decided that the study be conducted last week of November until mid-December.

D01: Interim Progress Report

The interim report needs to be submitted by 09/11/2020. At this point we are aware that D11 will be delayed, and we will need to ask for an extension.

WP7: Development of the operational platform: Overview and Next Steps

Discuss about the Service Manager and Knowledge Base - (D17, D19):

Since the last meeting the knowledge base backbone was created i.e., dataset descriptor files (for loading a dataset) and JSON query representation (for executing a query). Moreover, the service manager was enhanced with appropriate endpoints for querying a dataset, along with helper endpoints for retrieving dataset and attribute descriptive statistics e.g., mean, max, min (if numerical attribute) or unique count (if categorical attribute).

- At this point we must implement the query engine that will be able to parse the JSON query representation sent by the front-end and produce an actual SQL query string from it.
- Once the knowledge base data service can translate a JSON query into a valid SQL string the next step is to create a function that will be able to send the query to the selected dataset for processing.
- Once the knowledge base can successfully send a query to the database, it then requires to employ a function that will be able to translate the returned dataset rowset into a valid JSON string representation that can be then consumed by the visualization library.

D16: Preliminary design of all components of the adaptation engine

This item will be postponed until after User Study 2.

WP5: Discuss interaction tracking mechanisms for visualizations and user responses

The preliminary mechanisms for recording navigation patterns have been devised and will be finalized before the study.

D12: The Human-centered User Model for Adaptive Data Visualizations:

Updates from the previous iteration were successfully completed and all content was verified by PA and PG. Now the next iteration of writing needs to focus on the remaining three dimensions (Business Tasks, Data and Visualizations) that describe the user's functioning context (business environment) characteristics needed for effective visualization adaptation in the business context. It was decided that a new a section should be included, describing why it is essential for each of the three dimensions to be a part of the user model for effective visualization adaptation in the business context.

D11: The Impact of Cognitive Factors on Data Visualizations:

Currently there is a lot of literature in place regarding Individual Differences in information processing. It was decided that the following tasks will be performed:

- Keep expanding the literature on Individual Differences in information processing with current findings and further literature review.
- Produce a summary for every article that is read e.g., including findings, strengths weaknesses of the article etc.
- Take all items read that relate to Cognitive Abilities / Styles and start writing a section that focuses on the human-centered user model factors e.g., Working Memory, Perceptual Speed, FDI etc.
- Include a section that describes the study design of User Study 2 (selection of elements, analysis tasks, conditions etc.).
- Finalization of D11 at this moment is not possible since we need to also have the results from User Study 2 so an extension will be required for this deliverable.

Next Action Points	Responsible/Deadline
WP7: Final versions of Service Manager and Knowledge Base to support User Study 2	CA, PA: provide an update next meeting
WP5: Final interaction tracking mechanisms to support User Study 2	CA, PA: provide an update next meeting
D01: Interim Progress Report	IP, PA: submit report and final versions of all deliverables
User Study 2	PA, OT, GN: decide on study dates in remote manner
D12: The Human-centered User Model for Adaptive Data Visualizations Send second iteration for comments Team to provide comments Address comments	 CA: 23/10/2020 Team: 30/10/2020 CA: 12/11/2020
D11: The Impact of Cognitive Factors on Data Visualizations Send iteration without impacts for comments Team to provide comments Address comments	 CA: 21/10/2020 Team: 28/10/2020 CA: 12/11/2020

Next Meeting:

The next meeting should take place on: 12th of November 2020

Meeting 12th November 2020

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)

Discussion Points
User Study 2: Planning
D12: The Human-centered User Model for Adaptive Data Visualizations
D11: The Impact of Cognitive Factors on Data Visualizations

User Study 2: Planning for launch

The current version of the platform has been thoroughly tested and validated. Additional testing and validation will be performed based on the comments already provided and of this meeting. The 4 visualization task experiments were tested by all meeting participants. While testing, a few issues and suggestions were collected in an excel document. CA needs to apply all agreed suggestions and fixes before the day that user study 2 will run. Some suggestions include: provide the participants with an intro page that will explain the whole process of how the study will run since this study will run fully remotely due to COVID-19. Perhaps you need to give them some hardware constraints that they must follow so we know that they all see the visualizations on their screens under the same conditions e.g., size etc. We don't want some of the participants to scroll between question and visualization because of small screen resolutions (a minimum requirement needs to be provided).
Moreover, an invitation email needs to be prepared for inviting all participants in the user study 2 that will run online.

The final dates of User Study 2 are the following:

- 02/12 - Chart Type experiment
- 04/12 - Task Complexity experiment
- 07/12 - Dimensionality experiment
- 09/12 - Visual Elements experiment

D12: The Human-centered User Model for Adaptive Data Visualizations:

Updates from the previous iteration were successfully integrated and all content was verified by PA and PG. At this point all the dimensions of the user model were successfully described in deliverable D12. The next step is to investigate the contextual building blocks of the business environment like tasks, data, and visualization types, so to crystallize a viewpoint around the expected adaptation and personalization specifications and to further justify our choice of business tasks, data and visualizations as important and distinct dimensions of the final user model. This justification needs to happen by analyzing already gathered data from user study 1.
The following research questions need to be answered by analyzing the existing data:

Research Questions to consider:

- Which are the most common tasks of the data analyst in the business domain regarding data visualization and exploration, and how do those differ from tasks in other domains?
- What kind of data, visualizations and methods are used for the defined tasks?
- Which are the main challenges and needs of data analysts in the business domain?

Possible publication venues for this kind of work should be investigated.

Next Action Points	Responsible/Deadline
Overview of progress so far and User Study 2	PA, all: prepare the presentation
D12: The Human-centered User Model for Adaptive Data Visualizations Send third iteration for comments Team to provide comments Address comments	 CA: 04/01/2021 Team: 08/01/2021 CA: 13/01/2021

Next Meeting:

The next meeting should take place on: 19th of November 2020

Note: all members of the consortium should be present to provide a thorough update of the progress performed so far across all dimensions.

Meeting 19th November 2020

Participants:

- PA: Panayiotis Andreou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- LP: Lilia Psalta (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- MH: Milto Hadjikyriakou (InSPIRE)
- CK: Christos Karpasitis (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- VR: Vanja Radivojevic (KPMG)
- OT: Olympios Toumazou (RAI Consultants)
- CM: Cristina Michael (RAI Consultants)

Discussion Points
Overall project progress
User Study 2

Overall project progress

A presentation of the project's progress was performed. Additionally, related findings from user study 1. A Q&A session was performed. During the meeting we made sure that everyone was up to date with the progress and next steps of IDEALVis.

User Study 2

The objectives of User Study 2 were presented. A Q&A session was performed.

Next Meeting:

The next meeting should take place on: 16th of December 2020

Meeting 16th December 2020

Participants:

- PA: Panayiotis Andreou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- LP: Lilia Psalta (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- MH: Milto Hadjikyriakou (InSPIRE)

Discussion Points
User Study 2: Aftermath
Upcoming deliverables and planning: D11: The Impact of Cognitive Factors on Data Visualizations D13: Guided Reflective Exploratory Analysis D14: Effective Practice Discovery using Collective Intelligence in Business Analytics D15: The IDEALVis adaptation engine D16: Design and Development of the IDEALVis adaptation engine D17: Design and Development of the Service Manager D19: Development of KnowledgeBase
ACM Conference on Intelligent User Interfaces (ACM IUI)/ HUMANIZE workshop publication
WP7: Development of the operational platform: Next Steps

User Study 2: Aftermath

User study 2 was conducted in a well-structured manner. End-users found the second study fun although it required some time to complete. The preliminary checks on the collected data reveal that they are very consistent. Several decisions regarding the different attributes of the dataset took place and a dataset was given to each member of this meeting for further examination of the data. The next steps of the analysis were discussed and are summarized below:

- Integration of all collected data into a unified dataset since data are coming from 4 experiments.
- Create procedures for cleaning the dataset and preparing it for further analysis.
- Identify methodologies that can help us quickly retrieve data regarding a specific type of task for later analysis. Here we should use the metadata for each experiment for quickly locating tasks.
- Produce graphs e.g., histograms and boxplots for examining distributions and outliers of quantitative variables.
- Impute missing values where appropriate and handle outliers.

Upcoming deliverables and planning:

D11: The Impact of Cognitive Factors on Data Visualizations

This deliverable should be considered top priority until completed as it provides input to several deliverables, such as D13, D14, D15. Delays in this deliverable will have cascading effects on all project activities.

All development efforts should be redirected to support the completion of the following deliverables:
D13: Guided Reflective Exploratory Analysis
D14: Effective Practice Discovery using Collective Intelligence in Business Analytics
D15: The IDEALVis adaptation engine
D13 and D14 will require the introduction of the Analysis Wizard and appropriate dashboard for analysis tracking. This should be considered in conjunction with the final pilot study, which will evaluate these components. The adaptation engine is in a good state, but it will require the extraction of rules from D11 as soon as it is complete.
Requirements for the analysis wizard, considering the future requirements of the pilot study is for the user interface to be implemented as a wizard that supports the following steps:

- **Select Dataset** (can also view descriptive statistics) - Appropriate algorithms must be set up.
- **Select Type of Analysis** e.g., use a line chart to display data - Appropriate algorithms that transform the data to be compatible with the selected data visualization must be created.
- **Select several attributes/dimensions** (can also view descriptive statistics per attribute) - Appropriate algorithms have to be set up. Filtering is also a must have feature.
- **View the Resulting Visual Report -** The produced result from the knowledge base is delivered to the client via the service manager and the visualization engine must process this data to display the appropriate visualization.

All steps should be tracked with appropriate loggers to support D13 and D14.

Software deliverables should be considered low priority as there may be changes to the platform requiring them to be enhanced. A decision was made that software deliverables will be structured as report deliverables to assist the reviewers with a quick overview of the interacting components and user interfaces:
D16: Design and Development of the IDEALVis adaptation engine
D17: Design and Development of the Service Manager
D19: Development of KnowledgeBase

IUI/HUMANIZE publication

The IUI/HUMANIZE workshop is a great venue to send our first publication regarding the work we have done until now specifically regarding the user model (Deadline for submission is on the 15th of January). This is the link to the HUMANIZE website. It was suggested that by the start of January we should have a first completed draft of a paper that talks about the four dimensions of the proposed user model i.e., user, business tasks, data, and visualizations.

WP7: Development of the operational platform: Next Steps

Since the last time the knowledge base was enhanced with the following:

- Can receive a JSON query specification
- Translates the JSON query to a valid SQL query string

- Executes the SQL query on the actual dataset (resides in the database)
- And finally returns the retrieved data in a JSON format

The third iteration of the service manager and knowledge base will focus on connecting the existing service manager endpoints to the front-end application so they can be consumed by the data analyst user. Moreover, the first set of analytical data discovery mechanisms will be set up. In this way the goal is to setup an intuitive user interface that will allow a user to select several attributes from a dataset and visualize those on a selected data visualization.

Next Action Points	Responsible/Deadline
(Highest Priority) D11: The Impact of Cognitive Factors on Data Visualizations Analysis of data collected from user study 2	CA, PA, PG, LP, MH: have a draft version of the analysis until next meeting
HUMANIZE Publication Send draft for comments Team to provide comments Address comments Submit	 06/01/2021 11/01/2021 14/01/2021 15/01/2021
D12: The Human-centered User Model for Adaptive Data Visualizations Send third iteration for comments Team to provide comments Address comments	 CA: 04/01/2021 Team: 08/01/2021 CA: 13/01/2021
WP7: First version of the Analysis Wizard	CA, PA: provide an update next meeting

Next Meeting:

The next meeting should take place on: 14th of January 2021

Meeting 14th January 2021

Participants:

- PA: Panayiotis Andreou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- MH: Milto Hadjikyriakou (InSPIRE)
- LP: Lilia Psalta (InSPIRE)

Discussion Points
D11: The Impact of Cognitive Factors on Data Visualizations
ACM IUI/HUMANIZE Publication
D12: The Human-centered User Model for Adaptive Data Visualizations
WP7: Development of the operational platform: Next Steps Final iterations of D17, D19 to support operations for D13, D14, D15 Integration of rule-based adaptation engine Integration of user model First version of the Analysis Wizard

D11: The Impact of Cognitive Factors on Data Visualizations

The first version of the analysis was presented. A discussion on appropriate analysis methodologies for identifying the impact of human factors on specific data visualization types was performed. The analysis should be performed on the data collected during the first three experiments of the study (i.e., Chart Type Experiment, Task Complexity Experiment, and the Dimensionality Experiment) since for those experiments the visual element conditions of the data visualizations are set to a default. The goal is to understand how participants of every human factor class (e.g., Working Memory Low) perform with different data visualization types on various task complexity levels.

ACM IUI/HUMANIZE Publication

Minor comments were provided. The submission will proceed as planned on 15/01/2021.

D12: The Human-centered User Model for Adaptive Data Visualizations

Material from HUMANIZE publication should be incorporated in D12. The final version of the deliverable should be produced.

WP7: Development of the operational platform: Next Steps

Currently the Development of the Operational Platform is in good progress - D20. Since the last time the analysis wizard was put in place. This wizard now enables a data analyst to use existing datasets and perform data analysis using multiple data visualizations. The system at this point does not yet produce adaptive visualizations.

- Integrates the adaptation engine on the platform and makes it accessible to and from the knowledge base through the service manager.
- Build a database table that will hold the adaptive rule definitions - D19.

- Create a front-end system that can track the user's interaction including:
    - What analysis the user is currently looking at and for how much time i.e., through the wizard's result or other dashboards – D13.
    - What is the analysis the user is currently working on and for how long is the user interacting with it i.e., through the analysis wizard – D14.
- Create the backend service manager endpoints that can retrieve the user's interaction (i.e., tracking data) and store it in an appropriate database table as dictated by the knowledge base – D17.

Currently the data collection platform operates as a separate system that stores all users' information (i.e., collected information that make up parts of the user model). We need to develop a secure link between the IDEALVis platform and the data collection platform so the adaptation engine can request the user model for each user as required for adaptation.
Moreover, we should also create a new database table on the IDEALVis platform for storing the user models of the users locally using manual extraction. This will most likely be used for the pilot run as manual loading of user models locally on the IDEALVis platform will ensure stability and generally it will speed the process of experimentation. In any case, the above secure link between the data collection and IDEALVis platforms should be in place for future studies.
At this point the rule-based adaptation engine will be connected to the service manager so the visualizations produced can be altered by the adaptation rules. Moreover, we need to build a database table that will hold the adaptive rule definitions. Although the adaptation engine will be added on the platform, at this point it will not add adaptation rules yet (this will happen after the data analysis of user study 2 has finished so appropriate rules can be extracted). This will finalize the development of the rule-based adaptation engine and the the only pending related matter is to incorporate the rules that will be extracted by the analysis.

Next Action Points	Responsible/Deadline
(Highest Priority) D11: The Impact of Cognitive Factors on Data Visualizations Deliver updates to analysis as recommended	CA, PA: provide update until next meeting
ACM IUI/HUMANIZE Publication Send draft for comments Team to provide comments Address comments Submit	 06/01/2021 11/01/2021 14/01/2021 15/01/2021
D12: The Human-centered User Model for Adaptive Data Visualizations Finalize deliverable	PG, CA, PA: until next meeting
WP7: First version of the Analysis Wizard	CA, PA: provide update next meeting

Next Meeting:

The next meeting should take place on: 18th of February 2021

Meeting 18th February 2021

Participants:

- PA: Panayiotis Andreou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)

Discussion Points
D11: The Impact of Cognitive Factors on Data Visualizations
ACM IUI/HUMANIZE Publication – Camera ready and Presentation
WP7: Development of the operational platform: Next Steps
Pending Deliverables: D13, D14, D15

D11: The Impact of Cognitive Factors on Data Visualizations

The next step is to identify the impact of human factors on specific data visualization elements e.g., colors, grid lines, visual element size. The analysis should be performed on the data collected during the last experiment of the study (i.e., Visual Elements Experiment) and a combination of data collected from the rest of the experiments (i.e., for every task exploring a visual element, there exists a corresponding control task in the rest of the experiments). The goal is to understand how participants of every human factor class (e.g., Working Memory Low) perform when a given visual element is present/enabled or not present/disabled on the data visualization, across various task complexity levels.

ACM IUI/HUMANIZE Publication – Camera ready and Presentation

Great news that the publication was accepted. The reviewer's comments must be examined and addressed appropriately.

A presentation should be prepared according to the following guidelines to tackle COVID-19 restrictions.

- Available time for presentation: 10 presentation + 10' Q&A.
- The conference requires that you send a pre-recording (video) of the presentation.
- Make sure that you prepare the presentation respecting the allocated time given.
- To maintain a unified format, videos should be prepared using:
    - 16×9 aspect ratio.
    - MP4/MP4V format.
    - The Video Codec is H.264 and the Audio Codec is AAC+ or AAC. MPEG4 PART 10 or AVC.
- Use a Picture-in-Picture capable video mixer to display both yourself and slide content.
- You may also accompany our presentation video with subtitles / captions to meet accessibility standards.

The publication should be uploaded to all appropriate media e.g., digital libraries and social media for the purposes of disseminating results.

WP7: Development of the operational platform: Next Steps

Since the IDEALVis platform resembles an intuitive data analysis tool we need to provide the user with the ability to pin analysis on their dashboard. This will be the general dashboard of the platform where the user will be able to rearrange pinned analyses using drag and drop. After a new analysis is produced using the analysis wizard the user should be able to pin that analysis on their dashboard using a unique name.
Moreover, we need to implement a dashboard that will enable the users to understand their interaction with the system and improve their analytical practices (analysis tracker dashboard). The data that will be utilized for this dashboard will be the tracking logger data for each step. Those will need to be aggregate to check their average performance with different analysis tasks. Using collective intelligence from all data analysts in the system, those dashboards should be able to provide the user with analytics on where he/she excels in terms of time spent and how often they use specific type of data e.g., attributes compared to all users' average performance.

Pending Deliverables: D13, D14, D15

The progress of D11 sets back several deliverables (D13, D14, D15). This is understandable due to the magnitude of D11 that investigates the impact of a large number of cognitive and other factors on the understanding of data visualizations. There is a significant amount of literature review needed especially for D13 and D14. Furthermore, the quality of D11 should not be jeopardized so it would be best to postpone those deliverables for one month, from April 2021 to May 2021.

D15: The IDEALVis adaptation engine

The first part to be written for this deliverable should be the formalized User Model so it can act as the basis for the next sections. The user model essentially should be explained in terms of its 4 dimensions i.e., User, Data, Visualizations and Tasks. The user model dimensions should be explained, each at its own section always providing examples presented as mathematical formal notations.
Once the user model is clearly defined the adaptation procedure should be provided as a diagram that helps the reader understand the adaptation process from start to finish. Moreover, a section should be dedicated to the adaptation rules explaining how those operate. Finally, the last and most important section that builds on top of the rest of the content should be the adaptation algorithm. This algorithm should be written in proper pseudo code, and its purpose is to demonstrate the main adaptation procedure that selects the best fit data visualization. A paragraph should be also written for a more in-depth explanation of the algorithm.

Next Action Points	Responsible/Deadline
(Highest Priority) D11: The Impact of Cognitive Factors on Data Visualizations Enhance update with the data visualization elements results	CA, PA: provide update until next meeting
ACM IUI/HUMANIZE Publication Send camera-ready and presentation for comments	CA:05/03/2021

Team to provide comments Address comments Submit	All:08/03/2021 CA:09/03/2021 CA:10/03/2021
WP7: First version of the Analysis Tracker dashboard	CA, PA: provide update next meeting
D15: The IDEALVis adaptation engine Provide formal user model and collaborating components. Include and explain adaptation engine.	PA, CA: provide update until next meeting

Next Meeting:

The next meeting should take place on: 5th of March 2021

Meeting 5th March 2021

Participants:

- PA: Panayiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)

Discussion Points
D11: The Impact of Cognitive Factors on Data Visualizations
WP7: Development of the operational platform: Next Steps
D20: Development of the operational platform
D21: Platform Validation
ACM UMAP/HAAPIE
Pending Deliverables: D13, D14, D15

D11: The Impact of Cognitive Factors on Data Visualizations

The deliverable is reaching is final stage. This deliverable should also provide a section that summarizes the most interesting findings regarding the effect of individual visual elements with regards to the participants' performance across all human factors (i.e., a general description of the prominent effect of each visual element across factors). This should be in addition to the impact of human factors on data visualization elements.
The results of this deliverable can be used for supporting additional publications.

WP7: Development of the operational platform: Next Steps

At this point, all the major components of the platform have been integrated besides the analysis tracker dashboard. The platform should be tested by team members and final comments should be provided. Further refinements may be performed before the final pilot.

D20: Development of the operational platform

This deliverable is a prototype, but it would be better to present an overview of the main operations of the platform, as recommended in a previous meeting.

D21: Platform Validation

The deliverable should report all steps made by the team to ensure the quality of the platform. This should include the System overview, adopted testing strategies (e.g., API testing, security testing, performance testing, functionality testing etc.), identification of the platform stakeholders (e.g., discuss different user roles so the effectiveness and efficiency of the functionality catering these roles' is clearly validated, activity testing (e.g., each user from a role is given a set of activities that they must test on the platform, feedback is collected and reported accordingly in this report).

ACM UMAP/HAAPIE publications

HAAPIE workshop is a great venue to send our next two publications regarding the work we have done until now specifically regarding:

- The user model (this time we will talk more specifically about exploratory analysis done for the user's functioning context - last part of Deliverable D12). We can present our user model dimensions as an extended business user persona that has the goal to provide visualization adaptations in the business domain. This business user persona will demonstrate how we are extending current user models by accounting also for the user's functioning context characteristics when driving visualization adaptation. (CA is the main author).
- The tool we used for capturing the user's perceived expertise (PET tool) in the area of business data analytics. This publication should present a preliminary evaluation in the data analytics domain (using data from user study 1) showing the accepted internal consistency and validity of PET as well as its significant correlation with other affiliated theoretical and domain-specific concepts. (PG is the main author).

Deadline for submission is on the 1st of April. This is the link to the ACM UMAP/HAAPIE workshop website.

Pending Deliverables: D13, D14, D15

The progress of D11 sets back several deliverables (D13, D14, D15). We will need to gather and present literature relating to reflective exploratory analysis and collective intelligence for practice discovery (D13 and D14). We can aim for a systems related conference to present the mechanisms, but we will be lacking in the evaluation.

D15: The IDEALVis adaptation engine

D15 draft deliverable presents a formal user model that explains how users, data, tasks interact. It should be extended with the adaptation rules extracted from D11.

Next Action Points	Responsible/Deadline
(Highest Priority) D11: The Impact of Cognitive Factors on Data Visualizations Finalize deliverable	CA, PA: provide update until next meeting
D21: Platform Validation Finalize deliverable	CA, PA: 29/03/2021
D20: Development of the operational platform Create draft deliverable	CA, PA: provide update until next meeting
ACM UMAP/HAAPIE Publications Send draft publications for comments Team to provide comments Address comments Submit	 CA, PG: 19/03/2021 All: 26/03/2021 CA, PG: 30/03/2021 CA, PG: 01/04/2021
Identify system-related conferences where the preliminary results of D13, D14 can be presented	PA: provide update until next meeting

WP7: First version of the Analysis Tracker dashboard	CA, PA: provide update next meeting
D13, D14: Review literature	CA: provide update next meeting

Next Meeting:

The next meeting should take place on: 23th of April 2021

Meeting 23th April 2021

Participants:

- PA: Panayiotis Andreou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)

Discussion Points
D11: The Impact of Cognitive Factors on Data Visualizations
D13, D14: system-related conference to publish preliminary results
D20: Development of the operational platform
ACM UMAP/HAAPIE results

D11: The Impact of Cognitive Factors on Data Visualizations

The deliverable has been finalized. It contains many interesting results. It will support many future publications including the adaptation engine and its end-user evaluation (D15/D24), which will be the main publication of the project, aiming at ACM UMAP 2022.
The results will now need to be transformed into rules to feed the adaptation engine.

D13, D14: system-related conference to publish preliminary results

A good conference we can publish the preliminary results is International Conference on Information Systems Development (ISD2021), however the deadline was missed 15/04/2021.

D20: Development of the operational platform

The structure of this deliverable was presented. It includes the development methodology and its main phases. The sections should be accompanied with appropriate figures for quick reference.

ACM UMAP/HAAPIE results

We had great news today as both papers sent for review at the HAAPIE Workshop were accepted for publication. We have to make sure that both publications are uploaded to all appropriate media e.g., digital libraries and social media for the purposes of disseminating results. Additionally, presentations should be created according to the following guidelines:

- Available time for presentation: 10 presentation + 10’ Q&A.
- The conference requires that you send a pre-recording (video) of the presentation.
- Make sure that you prepare the presentation respecting the allocated time given.
- To maintain a unified format, videos should be prepared using:
    - 16×9 aspect ratio.
    - MP4/MP4V format.
    - The Video Codec is H.264 and the Audio Codec is AAC+ or AAC. MPEG4 PART 10 or AVC.
- Use a Picture-in-Picture capable video mixer to display both yourself and slide content.
- You may also accompany our presentation video with subtitles / captions to meet accessibility standards.

D15: The IDEALVis adaptation engine

This deliverable is missing the results of D24 and the adaptation rules of D11. We should aim for publication at ACM UMAP 2022 (Feb'22) as this publication is a direct fit for the work performed. Any further comments should be sent so that the deliverable enters a final stage waiting only for the results.

Next Action Points	Responsible/Deadline
D20: Development of the operational platform Finalize deliverable	CA, PA: provide update until next meeting
ACM UMAP/HAAPIE Publications Send camera-ready publications and presentations for comments Team to provide comments Address comments Submit	 CA, PG: 29/04/2021 All: 02/05/2021 CA, PG: 06/05/2021 CA, PG: 07/05/2021
D15: The IDEALVis adaptation engine Send draft for comments Team to provide comments Address comments	 07/05/2021 13/05/2021 20/05/2021
D13, D14: Review literature (second iteration)	CA: provide update next meeting

Next Meeting:

The next meeting should take place on: 13th of May 2021

Meeting 13th May 2021

Participants:

- PA: Panayiotis Andreou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)

Discussion Points
Overall project planning
D23: Pilot setup and deployment
D15: The IDEALVis adaptation engine
D13, D14: Review literature (second iteration)
Pending Deliverables D24: Overall platform evaluation D06: Press Release D07: Workshop Organization D08: Exploitation Plan

Overall project planning

Overall, the progress of the project is satisfactory. However, there is a risk that the final pilot will be delayed because of the COVID-19 restrictions, which created cascading delays in the project. Even in the case where the pilot is ready to run during the summer, it will be obstructed by the summer holidays.

D23: Pilot setup and deployment

The deliverable is nicely structured. It will be used in conjunction with D20 to deploy the platform. It needs to be finalized when the final pilot details will be presented.

D15: The IDEALVis adaptation engine

D15 requires the rules to be extracted from D11. There are delays in the process because of inexperience with certain statistical/machine learning theory. CA should receive some more training on performing analysis to extract the finalized set of rules for the rule-based engine can be produced. The full, cleaned, and final dataset from both user studies was annotated with descriptions regarding each attribute and was forwarded to all meeting participants in order to assist in the process.

Several comments were noted regarding the Adaptation Engine deliverable and how the rules should be integrated. During the meeting the most important points of those comments were discussed.

D13, D14: Review literature (second iteration)

Discussed the relevant literature collected for reflective exploratory analysis and collective intelligence for practice discovery). The current version includes a list of tools developed for providing reflective analytics, and their features, Self-tracking for productivity, expense

management and educational learning, Learning Analytics and Educational Data Mining. Since a large number of research papers were analyzed for D13 and D14 and sine the reflective aspects of the platform are in place those deliverables can be completed until the end of the month.

Pending deliverables: D24, D06, D07, D08

The deadlines of those deliverables will be moved towards the end of the project since the pilot has not been scheduled yet. D07 will need to be schedules as soon as the evaluation results have been produced.

D08 can begin describing the exploitation actions. It can be supplemented with all the activities that occurred at the end of the project.

Next Action Points	Responsible/Deadline
D20: Development of the operational platform Finalize deliverable	CA, PA: provide update until next meeting
D08: Exploitation Plan Provide a structure	PA, IP: provide update until next meeting
D15: The IDEALVis adaptation engine	CA, PA: provide update until next meeting
D13, D14: Finalize deliverables	CA: provide update next meeting

Next Meeting:

The next meeting should take place on: 16th of June 2021

Meeting 16th June 2021

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- OT: Olympios Toumazou (RAI Consultants)

Discussion Points
Overall project planning
D20: Development of the operational platform
D15: The IDEALVis adaptation engine
D08: Exploitation Plan
D13, D14: Finalize deliverables

Overall project planning

The overall project progress was presented and discussed with the industry partners. Concerns were raised about the timeline of the pilot study especially since the availability to execute it was after mid-September 2021. It was decided that an extension of 6 months will be requested at a later stage.

D20: Development of the operational platform

The final deliverable was presented.

D15: The IDEALVis adaptation engine

Comments for the deliverable were addressed. The adaptation rules should be incorporated until the next meeting.

D08: Exploitation Plan

The structure was presented

D13, D14

The final versions of the deliverables were presented.

Next Action Points	Responsible/Deadline
Planning of the pilot study	PA: Provide update until next meeting
D15: The IDEALVis adaptation engine Incorporate adaptation rules	CA: Finalize until next meeting

WP7: Assess impact of adaptation rules on final implementation	CA: Provide update until next meeting

Next Meeting:

The next meeting should take place on: 15th of July 2021

Meeting 15th July 2021

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- OT: Olympios Toumazou (RAI Consultants)

Discussion Points
Planning of the pilot study
D15: The IDEALVis adaptation engine
WP7: IDEALVis Platform Development and Integration

Planning of the pilot study

Study to be performed after the summer holidays. COVID-19 restrictions should be monitored. A realistic dataset was generated for the pilot study. PA will work closely with the collaborator organizations which will help him achieve the generation of a realistic dataset related to the intersection of work performed by the two organizations daily. This dataset will act as the basis for building the sets of analysis tasks that will be used in the last user study.

D15: The IDEALVis adaptation engine

Final version presented with rules. The incorporation of the rules requires some adjustments on the development of the adaptation engine D16. These changes should be performed until next meeting.

WP7: IDEALVis Platform Development and Integration

The platform should be deployed in the cloud (Microsoft Azure) for some final testing before the study.

Next Action Points	Responsible/Deadline
D16: Design and Development of the IDEALVis adaptation engine	CA: Update with the current D15 changes
WP7: Assess impact of adaptation rules on final implementation	CA: Deploy platform on Azure

Next Meeting:

The next meeting should take place on: 17th of September 2021

Meeting 17th September 2021

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- OT: Olympios Toumazou (RAI Consultants)

Discussion Points
Project Extension
Planning of the pilot study
WP7: IDEALVis Platform Development and Integration

Project Extension

It was decided that a project extension will be requested by the funding authority. After consultation with the project officer, this is common because of COVID-19 for this kind of project.

Planning of the pilot study

After consultation with the industry partners, it would be better to plan the study in November.

WP7: IDEALVis Platform Development and Integration

Demonstration of platform on Microsoft Azure deployment.

Next Action Points	Responsible/Deadline
Request for extension	PA: until end of the month
Pilot Study setup: Provide examples of analysis tasks for the developed dataset	KPMG, RAI: provide an update until next meeting

Next Meeting:

The next meeting should take place on: 14th of October 2021

Meeting 14th October 2021

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)

Discussion Points
Project Planning and COVID-19 pandemic
Pending Deliverables

Project Planning and COVID-19 pandemic

An extension was granted for 6 months. However, the pandemic is still not allowing for a physical pilot. The Ministry of Health decided additional emergency measures for Limassol and Nicosia, due to the increase of Covid-19 cases. The final user study which is an important milestone of this project is delayed and could not be completed up to this point so the deadlines of the pending deliverables will have to be moved. Additionally, this means that the team should again prepare for a remote study. This has implications with development as appropriate measures will need to be integrated into the platform (e.g., Analysis Wizard) to monitor for users' activity in case they are not focused.

Pending Deliverables

The pending deliverables were discussed:

- D2 - Final Progress Report (End of project): This deliverable will be drafted at the end of the project timeline after all information has been collected.
- D6 - Press Release (End of project): This deliverable will be about publishing the workshop organization so that it can attract potential academic and industry collaborators
- D7 - Workshop Organization (End of project): The workshop will require a presentation tailored for academic and industry collaborators. The final evaluation results from D24 should be included.
- D8 - Exploitation Plan (End of project): The deliverable will be drafted during the last month of the project, compiling important exploitation activities so far and the plan forward.
- D24 - Overall platform evaluation (End of project)

The extension allows for the finalization of the pending deliverables until April 2022.

Next Action Points	Responsible/Deadline
Finalize Pilot Study setup	All : finalize until next meeting

Next Meeting:

The next meeting should take place on: 12th of November 2021

Meeting 12th November 2021

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- OT: Olympios Toumazou (RAI Consultants)

Discussion Points
Pilot Study Setup

Pilot Study Setup

A list of 20 non-personalized tasks were defined with a preselected visualization for each task, to be returned to the user exploring data to address an analysis task. Moreover, another set of 20 tasks, identical in complexity but not identical to the previous 20 adaptive tasks were created, where the system will select the best-fit visualization for each task based on the user's user model. CA should load the dataset on the IDEALVis platform so we can test each question's output.

The industry partners raised concerns for the time required for the study and for the duration. It was decided that the pilot study will be best executed between after the Christmas holidays, between 12/01/2022 and 15/02/2022, including one week for training, and the rest for the pilot.

Next Meeting:

The next meeting should take place on: 16th of December 2021

Meeting 16th December 2021

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- LP: Lilia Psalta (InSPIRE)
- MH: Milto Hadjikyriakou (InSPIRE)

Discussion Points
Pilot Study Setup
WP7: Final Testing
D24: Overall platform evaluation
D23: Pilot Setup and Deployment

Pilot Study Setup

The final dates for the pilot study were decided:

- User Platform Training: 12th January 2022
- User Study 3 - Part A: 17th-22nd January 2022
- User Study 3 - Part B: 24th January - 07th February 2022

Appropriate content will be created by the team for the training session.

WP7: Final Testing

Now that all analysis tasks are completed they should be loaded and tested with the existing adaptation engine. A simple user interface should be created that will enable the user to select the task they are currently working on.

D24: Overall platform evaluation

The User Experience Questionnaire (UEQ) and System Usability Scale Questionnaire (SUS) should be created as Google Forms. Those questionnaires will be answered by all participants twice. The first time participants will complete the two questionnaires will be after they completed the first set of analysis tasks using non-personalized data visualizations. The second time the participants will complete the two questionnaires will be after they were exposed to the second set of analysis tasks that use the adapted data visualizations.

D23: Pilot Setup and Deployment

After all updates after the testing have been integrated, the pilot will be deployed as final version on the cloud.

Next Action Points	Responsible/Deadline
WP7: Test all analysis tasks	All: finalize until 23/12/2021

D23: Pilot Setup and Deployment Deploy final version on the cloud Create training material Update deliverable	 CA: until 04/01/2022 CA: until 06/01/2022 PA: until 06/01/2022
D24: Overall platform evaluation Deploy UEQ and SUS using google forms	 CA: until 06/01/2022

Next Meeting:

The next meeting should take place on: 6th of January 2022

Meeting 6th January 2022

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- VR: Vanja Radivojevic (KPMG)
- CM: Cristina Michael (RAI Consultants)

Discussion Points
Pilot Study Setup

Pilot Study Setup

CA will assist any new user (i.e., users that did not participate in the first user profiling study) to complete their profile and perform some additional cognitive tests. Essentially, at this step we need to extract the user model of the new users and load this on the platform. CA will need to prepare appropriate invitation emails both for the User Study and Training Sessions and send them to all participants as soon as possible. Specific emails for new users will also have to be created since those users need to complete their profiles (i.e., User Models) before they are able to engage with the final User Study.

Next Meeting:

The next meeting should take place on: 10th of February 2022

Meeting 10th February 2022

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)
- MH: Milto Hadjikyriakou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- GN: Gerasimos Ntouskas (KPMG)
- OT: Olympios Toumazou (RAI Consultants)

Discussion Points
Pilot Study: After math
Planning for project finalization

Pilot Study

Pilot study was finalized successfully. The data need to be exported (preferably the whole database) so the next step of the analysis and system evaluation can begin. CA should export the data and send it to the team for analysis. PA should cancel the Azure subscription to avoid further unnecessary costs.

CA will have to obtain the extracted data from the platform and prepare it appropriately so it can be easily analyzed by the rest of the team so the overall platform evaluation can be finalized. The best way to go would be to prepare the collected data in 6 datasets as follows.

- System Usability Scale (SUS) Questionnaire Responses (before adaptation)
- System Usability Scale (SUS) Questionnaire Responses (after adaptation)
- User Experience Questionnaire (UEQ) Responses (before adaptation)
- User Experience Questionnaire (UEQ) Responses (after adaptation)
- Performance and Accuracy of all 20 Tasks per user (first set i.e., adaptation off)
- Performance and Accuracy of all 20 Tasks per user (second set i.e., adaptation on)

Planning for project finalization

First priority should be to finalize the analysis so that D24 can be finalized After D24, the workshop (D06, D07) should be organized to present the results. D08 can be finalized after the workshop is completed to include the results of the workshop.

Next Action Points	Responsible/Deadline
D24: Overall platform evaluation	
Export all data	CA: 11/02/2022
Cancel Azure subscription	PA: 11/02/2022
Start Analysis of results	All: 17/02/2022
Present results	CA: provide an update until next meeting

Next Meeting:
The next meeting should take place on: 10th of March 2022

Meeting 10th March 2022

Participants:

- PA: Panagiotis Andreou (InSPIRE)
- IP: Irene Polycarpou (InSPIRE)
- PG: Panagiotis Germanakos (InSPIRE)
- CA: Christos Amyrotos (InSPIRE)

Discussion Points
D06: Press Release
D07: Workshop Organization
D24: Overall platform evaluation

D06 and D07

In this meeting the team discussed about the next steps regarding the press release and the workshop. It was decided that the press release and the workshop presentation of findings should be both finalized by the 1st of April. Moreover, with the finalization of the above deliverables the press release should be published on social media for all interested people to be able to attend the workshop.

Moreover, it was decided that the workshop was to take place on the 8th of April. Delivery of the workshop had to be online (using MS Teams) to increase participation and to further contain the spread of COVID-19.

Next Action Points	Responsible/Deadline
D06: Press Release Finalize	PA, PG: 01/04/2022
D07: Workshop Organization Create presentation	PA: 01/04/2022

Next Meeting:

The next meeting should take place on: 8th of April 2022 after the workshop

Workshop 8th April 2022

Participants:

All the consortium members were present at the meeting. Moreover, several other guests had joined.

The Workshop Presentation was delivered to all participants via MS Teams. The findings are included in D07.

Team's Final Decisions:

From this date onwards the team decided that the remaining time would be spent for reviewing all deliverables for a last time prior to submission.