EDUCATION AND CULTURE

WP5 Usability Evaluation Report

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Version 1.4

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The WP5 Usability Evaluation ambition

The main purpose of the WP5 evaluation within the PAUSE project was to determine the 'usability' of the game-based products/services developed by the project and to do this by collecting evaluative information, insights and potential improvement proposals on the products/services being developed within the framework of this project.

Specification of the usability evaluation in the Pause WP5 project document

The implementation framework for the WP5 Usability Evaluation was initially derived from the WP5 specifications given in the PAUSE project document;

Aims & Objectives

The WP5 aims and objectives specified in the project proposal document are;

• To ensure that the four 3D interactive simulations are iteratively tested throughout the development cycle to ensure they meet their core aims (effectiveness in tackling barriers to employment, accessibility, engagement and usability)

• To include a range of stakeholders in evaluation using a range of methods suitable to the stage in development and the needs of the target audience

• To include both target end users and other stakeholders (sometimes referred to as 'Gate Keepers') in usability evaluation

• To adopt formal methods in the usability evaluation process

Agreements on a work plan for the Pause WP5 project work

Already at the project outset a quality management strategy and guide was formulated and provided the overall evaluative and quality management framework for the Pause project to provide the partnership with suggestions on how to approach the overall project and the respective WP implementations. This QM approach included among other the introduction of a project-wide and WP-based partner interaction and progress monitoring platform which contained a WP-level project activity planning and monitoring tool as well as various means for information exchange, info-resource sharing, storage of information materials, documents and files, and a range of tools for data collection such as online form design/processing tools and for web links. These services, available from http://Pause .EUproject.org and accessible from its logged-in front page, included an in-built 'virtual project office', which was utilised for the initial activity planning environment for the WP5, and are illustrated below;
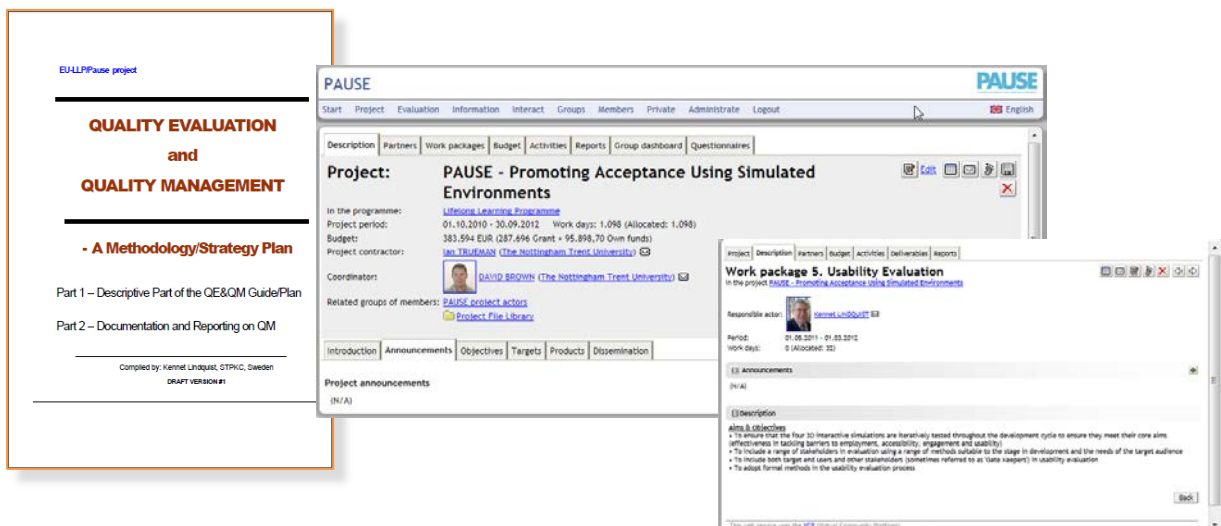
WP5 Work plan for the WP5 Usability Evaluation

The intended implementation format for WP5, the responsibility distribution among the project partner for the WP5 activities, and the involvement configuration for the engaged project actors were defined at the outset of the project, and documented within the VCP/VPO platform. The WP5 plan was also discussed and agreed upon during initial project partner meetings.

Definition of expected WP5 activities, and progress reporting

A work plan for WP5 was produced, documented in VPO and subsequently and progressively updated with periodic status information and reports on completion of the agreed-upon WP5 activities. The work plan included activity content, durations, status reports, and % completion rates for each WP5 milestone and each of the planned WP5 activities. The initial scheduling developed at the outset of the project was extensively followed through during the project timespan with only minor modifications to better suit the timing vis-a-vis other WPs.

Instructions and discussions on WP5 evaluative activities

Most of the instructions, guidance and support actions concerning the expected WP5 actions were provided as a combination of face-to-face presentations/discussions, via emails and Skype meetings as well as through the VCP environment and its blog / work-book message system. The expected involvement configuration for respective partners were also outlined in VPO and communicated via the WP5 'chapter' of the project's online work-book.

Documenting the stakeholders for Pause project and the WP5 efforts

The WP5 work plan starts with a discussion on the different perspectives of usability evaluation, implemented with the aim of generating a common view and consensus on what to embrace within the WP5 evaluation, in contrast e.g. to the overall project evaluation (WP7), followed by the formulation of a suggested approach to usability evaluation (reported on next) and the formulation of a proposal for stakeholder engagement for the usability evaluation to be carried out as part of WP5.

As indicated from the WP5 work plan extract below, one of the initial WP5 activities also included the identification of the stakeholder for the Pause project, its developed products/services, and for Usability Evaluation efforts, and to establish a contact database/repository for such contacts.

The establishment of such Contact Database, with online contact database storage, search mechanism as well as a categorisation structure for the identified stakeholders, were established during the first quarter of the WP5 time span, and was integrated into the overall interactive project environment. This VCP-based Contact Data base was subsequently integrated also with some of the dissemination support tools, and was utilised by project partners as a tool for maintaining a country-level contact data register for its stakeholders.

The contact data categorisation also enabled the project partner to refine their contact data as well to make selective dispatches to and/or interactions with their recorded stakeholders.

The proposed stakeholder engagement process for the Pause project

Within the Pause project it was realised and accepted early that the optimal stakeholder engagement approaches and processes to be applied are extensively dependant of the contextual environment in which it is to be applied, and that both cultural and relational factors have a heavy impact on what is the 'best' approach to stakeholder engagement.

With this in mind it was also accepted that each partner adopts a nationally relevant stakeholder engagement approach, even if it was recommended that proven approaches are to be considered, be adapted to the local context or used as inspirational sources for the adopted national-level stakeholder engagement approach. One of the suggested approaches for generating an effective stakeholder engagement and that was recommended to partners was the process illustrated to the right, and derived from 'The stakeholder engagement Manual', Krick, 2005.

One of the initial stages of an effective stakeholder engagement is in this approach said to be the performance of a thorough stakeholder mapping. This was also carried out by the project partners, using various tools to document and present their findings, such the example presented below from the Italian partner's national/regional stakeholder mapping efforts.

Based on such more comprehensive mapping of potential stakeholders in an initiative like the Pause project, it is also possible to determine an optimal 'engagement modality' for each of the identified stakeholder cluster.

An example of such stratified engagement level is illustrated here from the Swedish partner's stakeholder engagement process. Different public and/or more direct stakeholders are being engaged in the project initiative in different modalities as illustrated here.
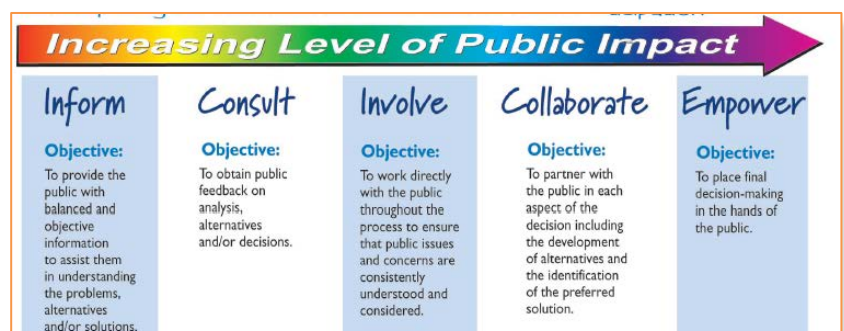
The proposed approach to Usability Evaluation for the Pause project

During the initial project partner meeting were different perspectives of usability evaluation ventilated and a common model, approach and process to usability evaluation were generated for the project. (these will be presented next in this WP5 report).

Usability evaluation as based on key contributors to learning effectiveness

The overarching model of evaluation are anchored to the perceived contributors to learning effectiveness, namely the learning processes themselves, the provided learning support services, and the interactive channels and tools made available for it. This model was adopted by the Pause project from usability research developed by UNSW in Australia ('Evaluation - TELT3 – A multi-definitional approach to educational technology evaluation ', S. Quinton, 2010), and elaborated upon as part of the Pause WP5 definition of the project's usability evaluation approach.

Contributors to Learning Effectiviness
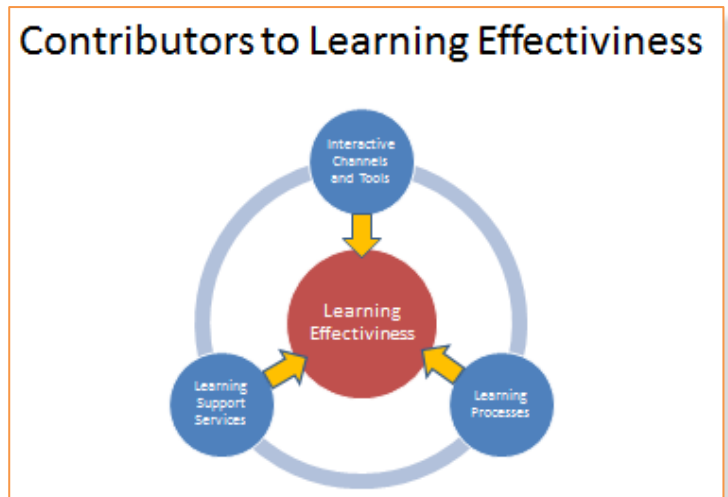
The two most significant contributors of to how the learning process actually takes place are seen as to derive from its direct stakeholders/actors, i.e. the learner and the facilitator.
The two main contributors to the learning support services are seen as the defined learning service processes and the learning support products used during the support provision.
The two most significant contributors in terms of the provided channels and tools as seen as being the interactive capabilities and the social interaction capabilities catered for in those channels/tools.

In terms of design of a particular learning service there are also three associated design considerations that ought to be included in the usability evaluations, namely the 'pedagogical design' and its interrelations with the characteristics of the direct stakeholders (learners and facilitators) engagement in the learning. From the learning support perspective it is the 'learning service design' that plays a key role, and for the channels/tools it is predominantly the 'content design that determines the generated contributions to the learning effectiveness of any given learning service. These considerations also apply to the game-based learning services being developed by the Pause project.

While the pedagogic and learning service design will be the main contributors will the combination of the channels/tools used determine its ' usability' and the channels/tool combined with the pedagogic design mainly contribute to the' usefulness' of the learning service for its stakeholders.

Implementation stages for the WP5 Usability Evaluation

As the usability of a learning service/product is affected from the very early conception of that service/product, and through decisions and action taken along its development path, a usability evaluation should also, especially if having the ambition to be formative, also embrace each development stage. This was also the case within the Pause project and its development of the learning-game pilots. For this purpose could also the overall perspective of the adopted usability evaluation approach be seen as including five stages, with its matching WP associations;

- Stage 1: Definition of prioritised game-application development areas (WP2)
- Stage 2: Learning service development / content definition for the games (WP3)
- Stage 3: Scenario production / definition of implementation-approach for the games (WP4)
- Stage 4: Stakeholder review of prototype version of learning games (WP5)
- Stage 5: Piloting with completed/final version of the learning-game products (WP6)

A summary of each of these usability stages are presented next, with extracts from the partner development efforts and contributions to the usability assurance at each of the five stages.

Stage 1: Definition of prioritised game-application development areas

Stage 1 is formally implemented with tools from and as part of the WP2. It focused among other on

identifying potential key /priority areas for development of game pilots. Based on the combined findings of each national/partner research report findings a set of prioritized game development areas were drawn up and were also distributed as the pilot game design tasks for respective partners. The game areas were distributed to partners based on the respective national needs/ prioritized areas, the competencies available by respective partner and the likelihood of being possible to engage stakeholders in. This selection process became therefore the first-stage usability evaluation effort by the project.

Stage 2: Learning service architecture / content orientation for the games

Stage 2 is formally implemented with tools from and as part of the WP3.
It focused on the process of formulation of the overall setting/architecture of the respective game development teams, and were carried out by the respective teams in close collaboration with the game tool development partner, and applied a combination of the game definition tools being provided to the partner and the learning service development processes which the game design partners were familiar with. These game definition processes did for the partners include either offline or online tools already in their 'arsenal' and/or developed with a combination of those.
The respective partner architectures were presented to the other project partners and were in this way undergoing an evaluation/ validation process that was also the second-stage of the usability evaluation effort.
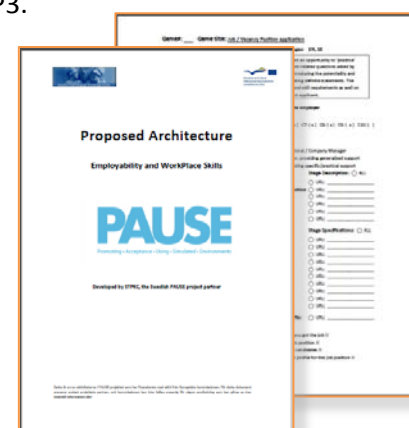
Stage 3: Production of the game scenario/script/implementation-approach

Stage 3 is formally implemented with tools from and as part of the WP4. It focused on a ensuring that the learning processes to be included in the learning game is free of flaws and that the content presented and interacted with are both correct, using a desirable language and conversation tone, as well as being technically correct. It could thereby be seen as a content validation process, and a next stage and preventive action-oriented usability evaluation. This stage of the usability evaluation was

carried out in different manner by the different game design teams, depending on the formats in which the game content were available to them, such as text based scripts, dialogue editors or process-oriented charts and learning scenario presentation/editing tools, as illustrated to the right (from the Swedish design team). In addition to the content evaluation there was in parallel also a channel/tool evaluation carried out, covering the technical functionality of the project-developed game design tools.

Stage 4: Stakeholder review of prototype version of learning games

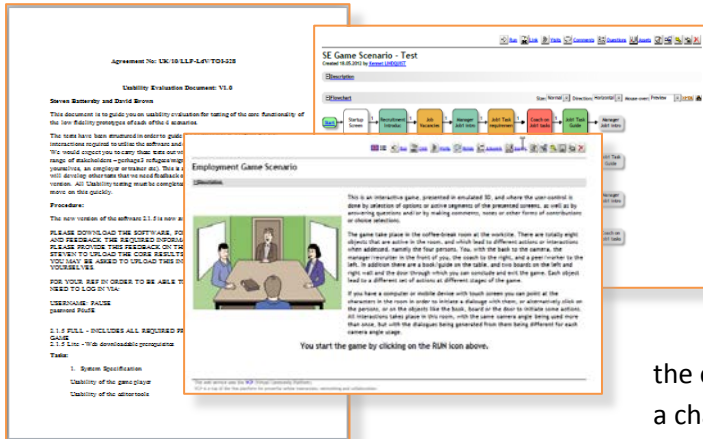Stage 4 is formally implemented with tools from and as part of the WP5. It focused mainly on the involvement/engagement of representatives of the direct stakeholders in the evaluation of the usability, from a usage perspective, for the learning-games under development, and by this stage also being made available in a prototype stage from the respective game-development teams. As such it could be said that this usability evaluation stage also could be considered as a learning service channel/tool evaluation, and as maintaining both ambitions of being formative and engage stakeholders.

A set of evaluation instruments was also developed for the response collection from the two types of direct stakeholders, the users and the facilitators. Both response forms were extensively compatible, but with questions being somewhat rephrased for the two response form variants. Both forms were also made available to the respective game-development teams in both print-based and online survey format. The latter was mainly envisaged useful if larger number of respondents would be engaged in the prototype evaluations, while the print-based were meant for off-line response collection and for

verbal/indirect response collection. The online response forms included also a statistical response generator, as well as a response comment/ reflection option available to the respective project partners/game-development teams.
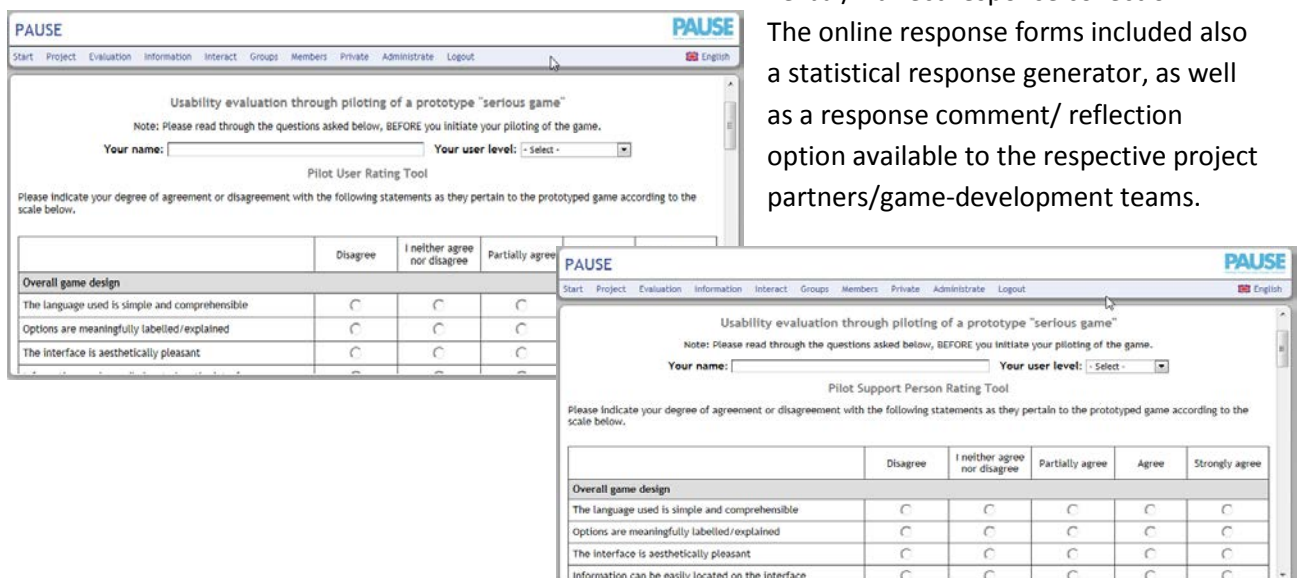
Stage 5: Piloting with completed/final version of the learning-game products

Stage 5 is formally implemented with tools from and as part of the WP6. It focused on the piloting of a fully workable / completed / final version of the respective games, and was carried out as an evaluation stage taking place during the final months of the Pause project.

Thepiloting of the respective learning-game developed by the Pause project were carried out and reported on in accordance with a predefined format provided by the WP6 coordinator. Each game-developing team carried out the piloting of either only their own developed game or also one or more of the games developed by the other teams. Each partner also produced a piloting report.

It is also expected that some of the teams will carry out broader piloting efforts as part of their continued development and utilisation of the developed games. Usability evaluation will therefore also be a continuing process carried out by the project partner both in connection with the post-project valorisation and exploitation efforts.
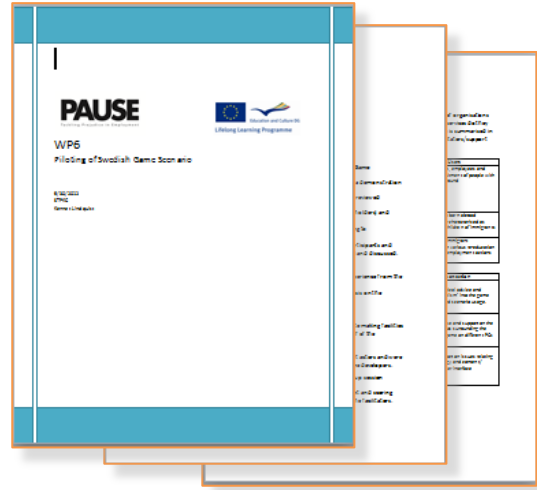
Usability evaluation results from respective game-development team

The obtained findings the usability evaluation efforts collected across the time-span of the five-stage usability evaluations have been and continue to be exchanged, reflected upon and act as important input contributions to the continually upgrading and refinement of both the develop game-based learning services/products as well as being valued contributions to the refinements of the tools and processes used for both development of the learning-games as well as for the usability evaluations.
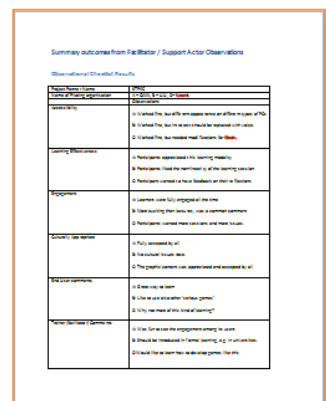
UK-based game-development team #1 – Job Centre

This UK game-development team carried out both a technology evaluation using the standard format produced by the technology developers as well as the WP5 usability evaluation for both end-users and for facilitators. The tool/technology evaluation related essentially to the game design tools which this team was early testers of, and valuable improvement proposals emanated from this channel/tool evaluation. The usability evaluation responses from the direct stakeholders had relatively positive response pattern, but did not point out any particular aspect as more positive or negative. The reflections and improvement proposals received included comments on navigation being jerky and that more realistic avatars were preferred.

UK-based game-development team #2 – Job seekers

The usability evaluation carried out by this UK game-design team carried out both end-user and facilitator evaluations and recorded their findings on the manual versions of the evaluation form as summative response data. The objective question replies were extensively positive from the respondents. There were also a number of improvement proposals provided by the respondents, such as that navigation was simple and instructions were clear. On the improvement side it was mentioned that avatars that represented real

people in appearance were preferred to those of more cartoon like appearance, and that they sometimes missed information on what to do next.

Italian-based game-development team – At the job centre

The objective of the Italian piloted game is to tackle the barriers encountered by migrants and refugees in addressing Italian "Centro per l'Impiego", such as language difficulties, misunderstandings, and tendencies to apply habits and behaviours from other contexts. The usability evaluation focused on the overall game design, the ease of use, the logics of the processes covered and the impact from the usage of the game. The feedback from its users was relatively positive and a number of improvement proposals were identified, with a lack of instruction in early versions expressed as a common problem.
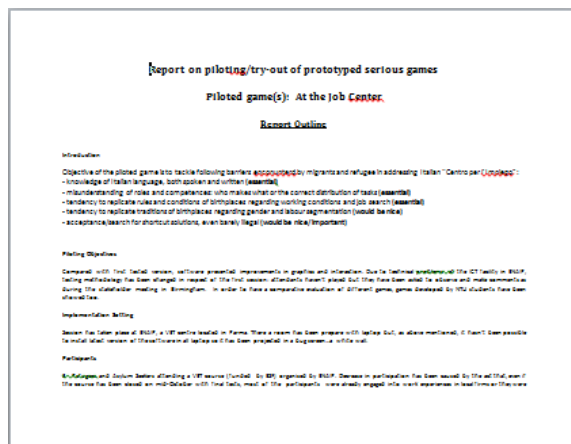
Sweden-based game-development team – Job recruitment interview

The learning game developed by the Swedish project team simulated a job interview session. There were three simulated people in the room, besides the game-playing user - the employer, the coach and a peer. This interactive game functioned very well and could easily be transferred to similar interactive situations. The usage of the Scenario generating online tool was also a very positive experience, and it functioned well as a pre-programming usability testing tool with which a high level of engagement was achieved (with this high fidelity prototype) allowing it to be reviewed, and interacted with, by potential end-users. The game scenario development engine was, in the Swedish case, also used for both prototyping and subsequent piloting, giving valuable insights into the perceived differences learner focussed on when using simulated 3D graphics (on the VCP) versus 'real' 3D games (via the XNA Authoring Environment).

Conclusions and recommendations from the Usability evaluation

Game-development for adults and serious learning purposes is just in its infancy both in terms of its establishment as a viable tool and as a main-stream learning service modality. The Pause project has however clearly, positively and practically, demonstrated its potential. The usability evaluation efforts made during the Pause project have also demonstrated its value as a formative and stakeholder-engaging force. The development approach, and the online tools used for the game design, has also highlighted the potentiality for, and the practicality of, the online and collaborative design solutions for pan-European partnership initiatives like it is in the case of EU-sponsored learning service development projects.

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