3D-LIVE
3D Living Interactions through Visual Environments

EXPERIENCING
THE TWILIGHT ZONE

Future Internet Research and Experimentation (FIRE)
Challenge 1 Objective 1.6 (FIRE) Call 8

Roberto Santoro, Project Coordinator
roberto.santoro@collaborative-engineering.it Tel +39.335470121
The 3D-LIVE project aims to develop and experiment a User Driven Mixed Reality (Twilight) platform connected to EXPERIMEDIA testbeds in order to investigate on the Quality of Experience (QoE) and Quality of Services when users are fully immersed into Future Internet (IoS and IoT) based live (sport) mixed environments. 3D high resolution dynamic models of skiing, marathon golfing tracks...
Twilight Platform

Create a FI Experiential Design methodology including a holistic User Experience model in order to enable the continuous evaluation of the Quality of Experience (QoE) including presence feelings and the Quality of Service (QoS);

Design the architecture of an open FI mediated Mixed Reality (Twilight) Platform supporting 3D Tele-Immersive Environments with social interaction in the context of live sportive events;

Prototype the Twilight Platform and 3D Tele-Immersive Environments supporting the use cases (skiing, running and golfing);

Experiment and evaluate the Twilight Platform and 3D Tele-Immersive Environments in implementing and conducting the skiing, running and golfing live scenarios within the EXPFRIM EDIA facilities.
Future Internet Mediated Mixed Reality Experiments

Augmented Reality (physical interaction context/IoT)
- Rendering & Visualisation
- Stereoscopic Glasses
  - Wireless Sensor Network
- Sensor Gateway
- Data Acquisition
  - 4G
  - Activity Recognition
  - Avatar Generation
  - 3D Reconstruction
  - Compression & Encoding

Augmented Virtuality (remote interaction context/FMI)
- Rendering & Visualisation
  - 4G
  - Internet?
  - 60 fps HD
  - 1 MBit/user
  - 10 FPS physics simulation
- Internet

IoT Modelities: location (EGNOS), 3D (G-Force)
- heart rate, position, speed, altitude

3D Reconstructi

Open Data API

Scene & Experience Authoring

Experience Author

Augmented Virtuality

Real-Time

Discrete

environment

land (depth, density, cohesion)

atmosphere (temp, wind)

human

tracking cameras (ARTS/Kinect)
Content Lifecycle
Focus on Real-time Authoring and Delivery

Future Internet Mediated Mixed Reality Experiments

Augmented Reality (physical interaction context/IoT)
Augmented Reality
Augmented Virtuality
Augmented Virtuality (remote interaction context/FMI)

CONTENT DELIVERY
1MBit/user
10 FPS physics simulation
3G
3D

REAL-TIME CONTENT AUTHORING
IoT Modelities: location (EGNOS), 3D (G-Force)
heart rate, position, speed, altitude

OFFLINE CONTENT AUTHORIZATION
Open Data

Scene & Experience

Experience Author
User Experience (ISO 9241-210):

User Experience is a person’s perceptions and responses that result from the use or anticipated use of a product, system or service. The ISO description presents UX as all users’ emotions, beliefs, preferences, perceptions, physical and psychological responses, behaviours and accomplishments that occur before, during and after the use of product, system or service.

1. Utility: Does the user perceive the functions in the system as useful and fit for the purpose?
2. Usability: Does the user feel that it is easy and efficient to get things done with the system?
3. Aesthetics: Does the user see the system as visually attractive? Does it feel pleasurable in hand?
4. Identification: Can I identify myself with the product? Do I look good when using it?
5. Stimulation: Does the system give me inspiration? Or wow experiences?
6. Value: Is the system important to me? What is its value for me?
7. Is it safe for the user to use the system (privacy, danger...)
8. Is it politically and culturally right? (societal and moral aspects..)

Facets of the User Experience (Morville, 2004)

The four elements of User Experience (Rubinoff, 2004)
Experience Design (Aarts & Marzano, 2003). Experience Design is the practice of designing products, processes, services, events, and environments with a focus placed on the quality of the user experience and culturally relevant solutions, with less emphasis placed on increasing and improving functionality of the design. Many disciplines are involved in Experience Design, such as cognitive and perceptual psychology, cognitive science, architecture and environmental design, interaction design (ergonomics & haptics), product design, ethnography, service design, heuristics, technical communication and design thinking.
The experience with 3D-LIVE environment in the Twilight zone has three Knowledge, Social and Business (KSB) dimensions and three mind state phases

• The three dimensions:
  – socio-emotional, (S)
  – sensory-cognitive (K)
  – value-utility (B)

• The sense-making phases are:
  – Anticipating (expectation associated with 3D-LIVE immersive environment),
  – Entering (connecting to the system, immediate awakening to new potentials, realizing new affordances for action),
  – Interacting (making sense of real-virtuality, acting and reacting to virtual and real objects and people, moving from and to virtual and real spaces)
Impact

The Twilight Platform is expected to speed-up the adoption of the Future Internet in enabling users' appropriation of both IoS and IoT through their early involvement within the research and innovation process for composing their own service ideas.

The expected impacts are the following:

1. Contribute to the design of the Future Internet with the support of a new kind of social interaction through collective experiences;
2. New business opportunities/models for supporting large investments in FI broadband infrastructures such as FTTH and 4G.
3. Enhance FIRE facilities range of experimentations (e.g. Experimedia) with TI broadband demanding applications and IoT synchronisation...

3D LIVE will also analyse the role of the "content mediator" to bring together 3D and IoT for new service opportunities.
Workplan 2012-2014

WP1 – UX Model & Methodology

WP2 – Design the 3D-LIVE Platform

WP3 – Prototype the 3D-LIVE Platform

WP4 – Experiment the 3D-LIVE Platform

WP5 – Dissemination & Exploitation

WP6 – Project Management

Concept Modelling
Exploration & Prototyping
Experimentation & Evaluation
3D-LIVE brings together a world class consortium with strong track record in Collaborative User Centric Innovation, Future Media Internet, Internet of Things and FIRE.