

## CONTENT USE CASE SCENARIO PROPOSAL

# ACAT - Any Content Any Time

- Collaborative multimedia experience over Future Internet platform -

### Summary:

*This document outlines a typical Content Usage Scenario (CUS) which is intended to serve two main purposes: To test and validate the Future Internet core technology platform and to show how the proposed CUS will serve European citizens in its own right. Below, a typical scenario is described, which is expected to be supported by the Future Internet, including varying content qualities and delivery channel/bandwidth as well as capturing and rendering technologies to suit diverse users and locations. The scenario is then further expanded on using a detailed block diagram level showing the technologies involved. In addition to the technological challenges there needs to be a business case for the development of such technologies. For this we propose a 3Q model: QoE based on QoS which is dependent on QoB (quality of business). In short many things can be done but at a cost which has to be not only justifiable but also acceptable by the users otherwise the business case cannot warrant such developments. Finally a list of existing projects (not comprehensive) is also provided, whose results can be used to build the main system, and where ever there is a need conduct new research so that complete integration is achieved.*

### SCENARIO:

Unlike Andy, Gilbert and George couldn't go to the finals. The three of them are big fans, but only Andy will go to the match. Gilbert will stay at home watching the match on his new large 3D TV, while George will be using his iPad while returning from a business trip. They are used to watching the sports together, but this time ACAT will make it happen in spite of the circumstances.

Andy, an ardent supporter of their sports team, brings his smart mobile camera phone to the match and records relevant events and posts them through the ACAT service to Gilbert and George. At the same time, he can follow their reactions on the phone screen or watch the official coverage. For Gilbert and George, Andy's experience and the atmosphere that surrounds him are sometimes more interesting than the official broadcast coverage. Using Andy's snapshot from his viewpoint, ACAT generates 3D video experience from the official multi-view coverage in HD, as if Gilbert was sitting next to Andy. In addition, live spatial sound from the audience that surrounds Andy brings fully immersive experience to Gilbert's living room. At the same time, Gilbert can feed extra information back to Andy: about the other match that he finds from the Internet, or other views from this match that he finds important to share.

George is on the go. On the way to the airport, he follows the match together with his friends on his iPad. Their team has scored, and he remembers that there was a similar action by the same player several years ago. Using an intuitive interface to the ACAT content management system, George reverses the replay of the action, sketches the player's motion and searches for the video clip that was broadcasted at

the time. He finds and retrieves the clip, swiftly combines it with the original and proudly sends the edited version to Andy's mobile and Gilbert's 3D TV. He gets on the plane, and seamlessly continues to follow the action using the networked entertainment service on board of the aircraft. His feed with real-time updates tells him that his video has been the most popular clip in the last hour, partly because Andy has added some funny bit to the end of it - a concluding celebration of the players seen from the sports ground.

George arrives home and he wishes to continue his current session on his 3D TV display. His preference is already registered on his iPad, and thus it discovers his 3D TV display at home automatically. George's new context information is fed back to the service provider that will analyse the availability of networks, the user's context information, and establish a network connection (wired broadband connection) to his 3D TV display. The transmitted content will also be scaled based on the network capability and the settings of George's 3D TV display accordingly.

All ACAT services are seamlessly optimising available network and content resources while offering anticipated quality of experience to all users. By balancing required resources and user-experience, ACAT scales the business to the optimal level. In addition, due to inherent profiling of ACAT users, the three friends will have different embedded advertising as well as access to different product and services offered during the course of the match.

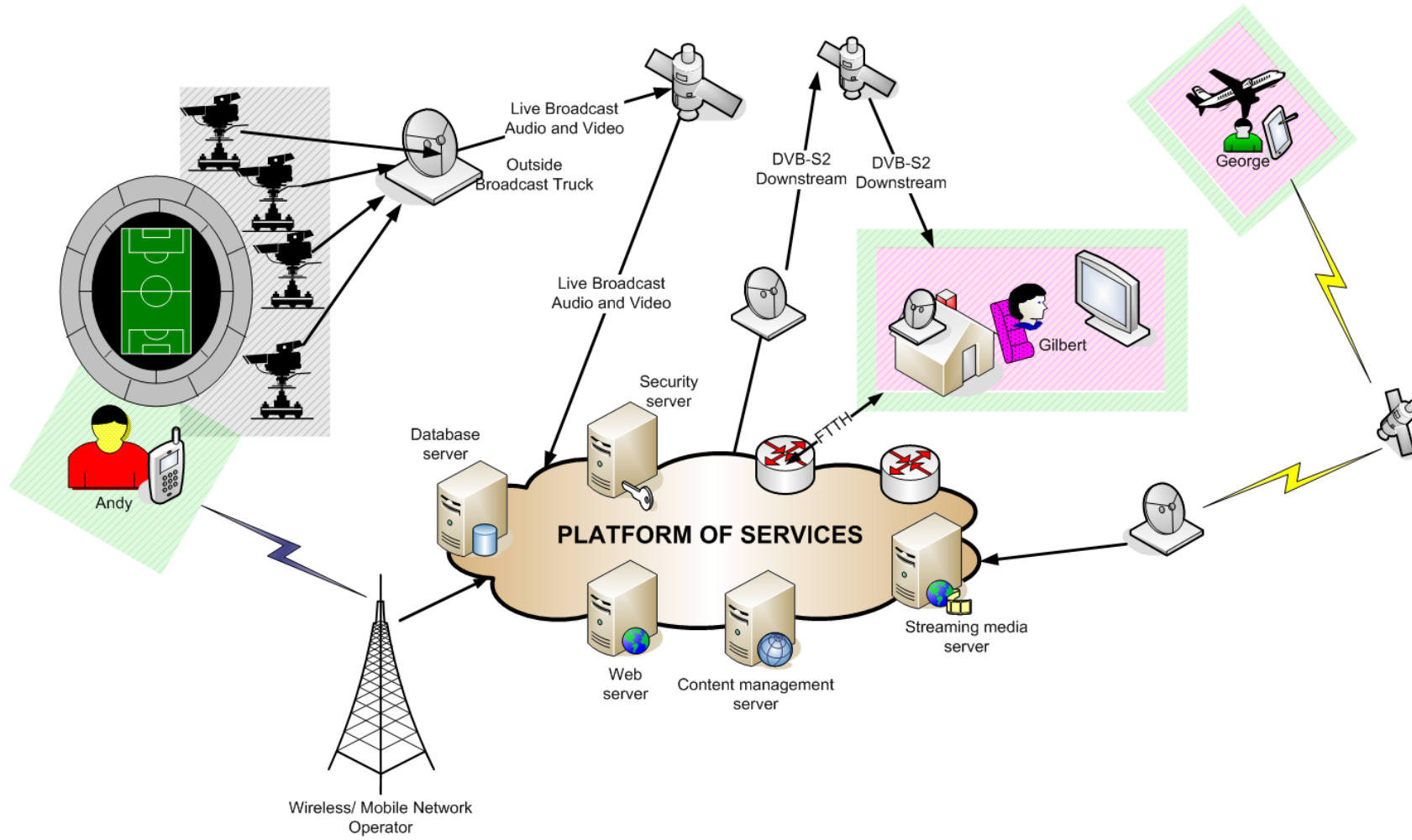
ACAT exploits the core services of the Future Internet platform some of which are:

- Seamless optimised connectivity
- 3D and multi-view video broadcasting and streaming
- Spatial audio which is synchronised to the video and backward compatible for rendering in high (3DTV), medium (good quality Lap-tops) and low quality terminals (mobile communication devices)
- Super-resolution to lower resolution from various of sources
- Real-time delivery across wired and wireless internet connections
- Adaptation to end-user terminal: coding (scalability, cropping, resolutions, object selections, interfaces and content
- Personalised search and retrieval by experience, interaction and social filtering
- Responsive multimedia interfaces

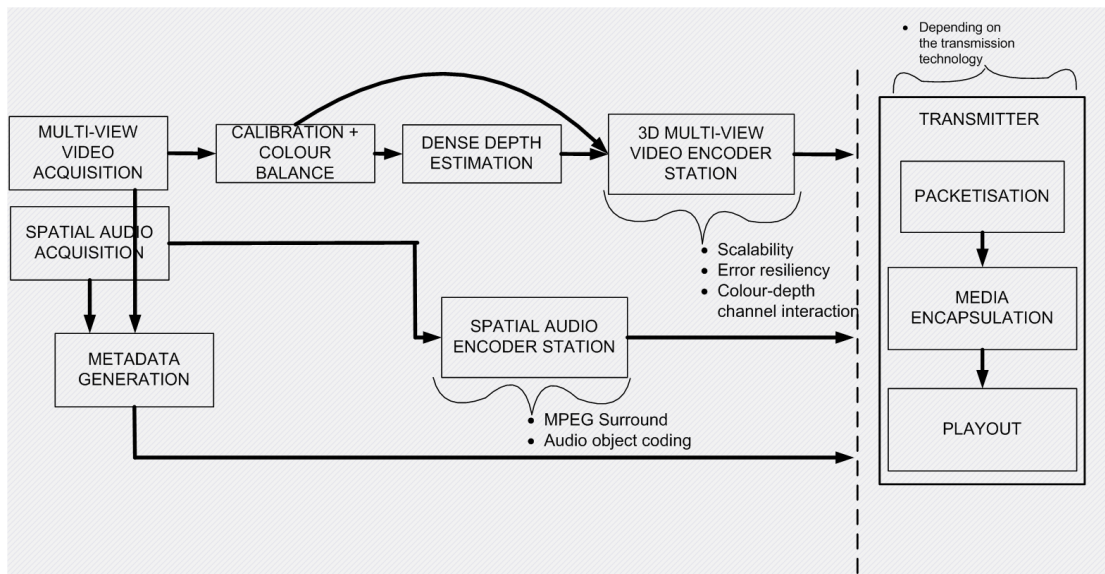
ACAT challenges are:

- Delivery: real-time content, real-time feedback, offline content on different network types (e.g. fixed and mobile) for the same user/same terminal
- Bandwidth: optimising resources for both high and low bandwidth channels
- Resilience: adapting to varying channel conditions, and data loss patterns, and use of multiple distribution paths
- Experience: modelling, measurement and validation of QoE, linking to QoB to optimise available resources, user requirements and corresponding costs
- Interaction: user-centred applications, search and retrieval, real-time updates

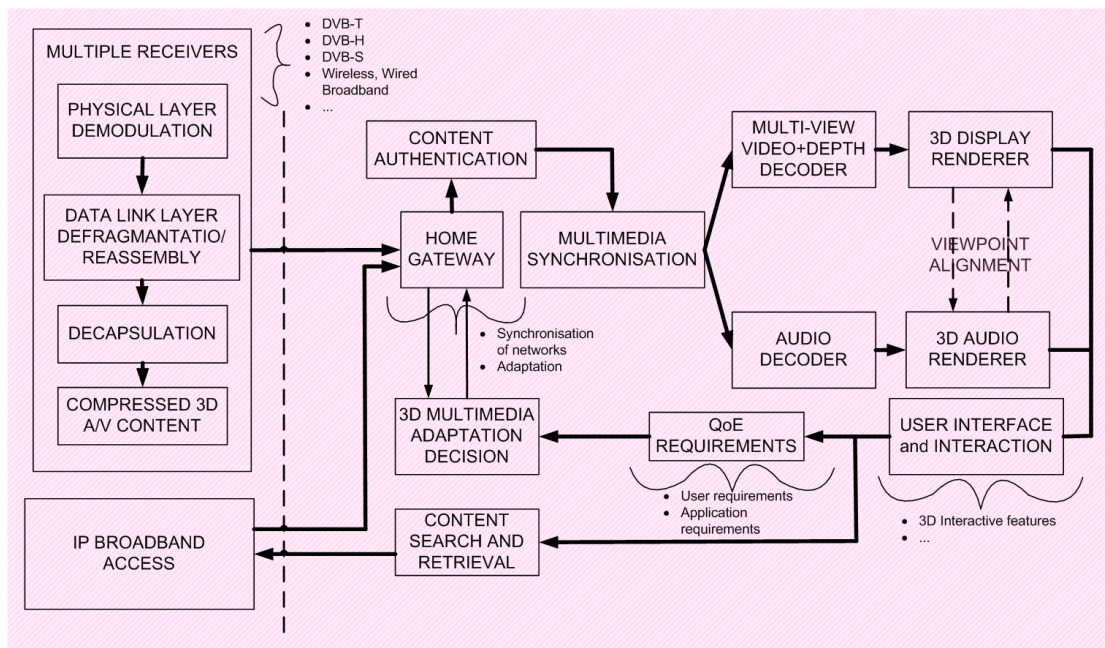
# ACAT block diagram



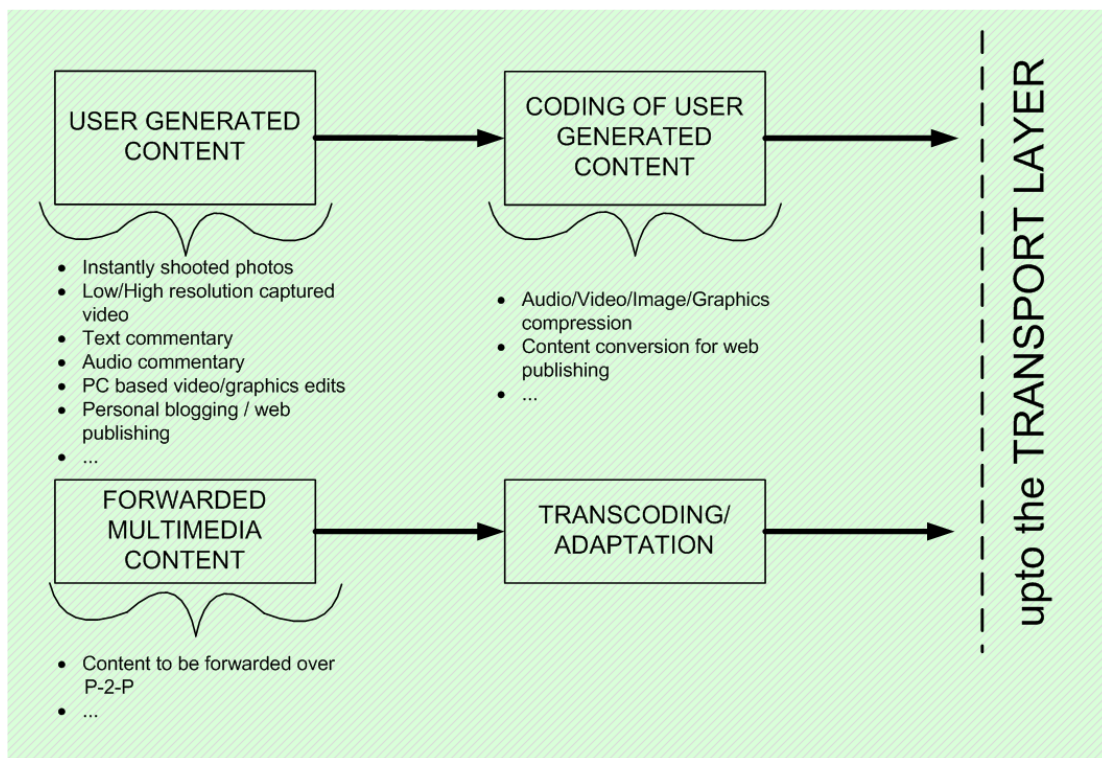
Overview of the end-to-end systems



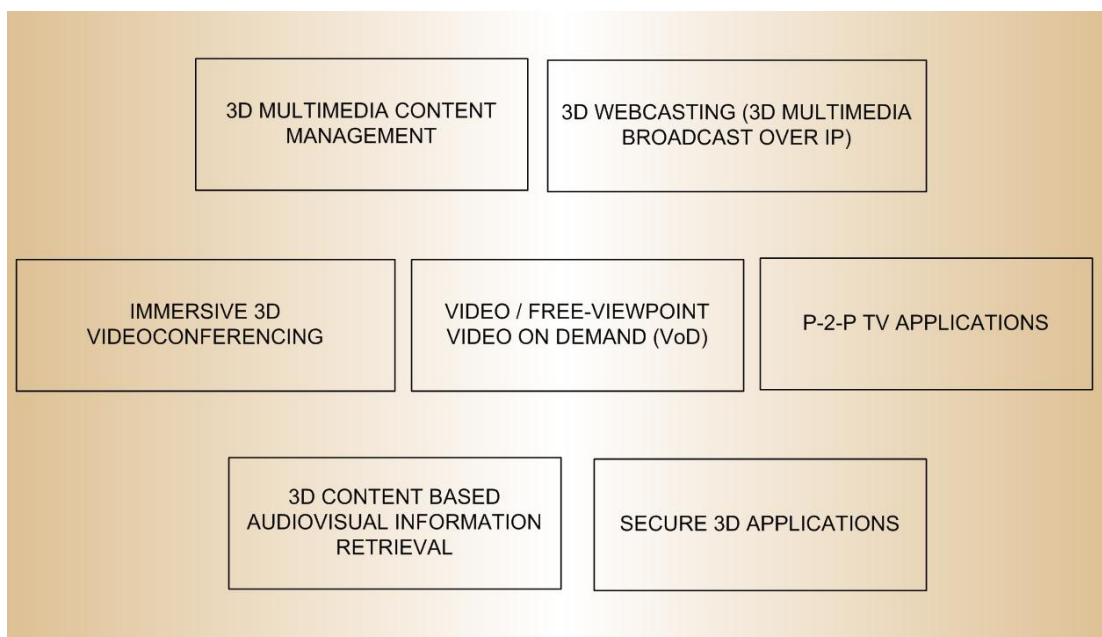
Sub-system 1



Sub-system 2

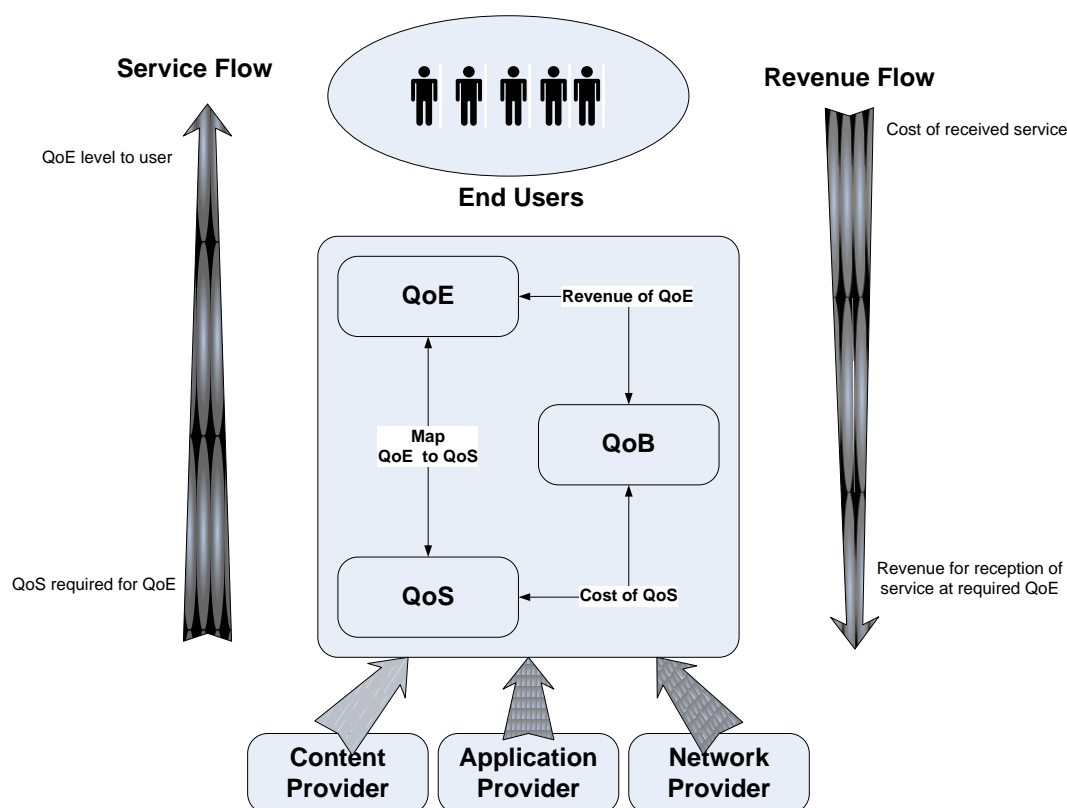


Sub-system 3



Platform of 3D multimedia services

**ACAT 3Q quality assessment scheme which will be incorporated in all aspects of design and development in order to make the system viable.**



Relevant EU FP6-FP7 Projects:

- 3Dphone, MOBILE3DTV: End-to-end 3D video services for mobile devices/systems
- 3D4You, MUSCADE, DIOMEDES: Advances in 3D Video broadcasting
- 3D Presence: Immersive 3D Videoconferencing services
- Helium3D, Real3D: 3D Display technologies
- 3DTV NoE, Visnet NoE, Visnet II NoE: 2D/3D Networked Multimedia systems
- ADAMANTIUM: Multimedia content management systems
- P2P-Next, 2020 3Dmedia, SEA, NAPA-WINE, PetaMedia, DIOMEDES, TA-2: Real-time/offline 3D content delivery
- i3DPost, Victory: 3D content description

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