

Use-case description template

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Abstract

The C-CAST Daily Commuter Scenario is a use case where users consume individual content based on context information. Specific context information is mixed with content and advertisements, according to the user's location and an environment responding to his individual profile. Commuters are travelling through a town on a train and watch personalised streams, possibly with small groups being subscribed to the same stream. Consequently, the commuters are mobile and travel either on the same train (same location) or on a different train (different locations), so they use different access networks and possibly different providers. Vending machines and shops allow for profiled advertising and purchases.

Table of Contents

- Table of Contents 2
- 1 Executive summary 3
- 2 Targeted users..... 4
- 3 Description 5
 - 3.1 Interfacing with the user 5
 - 3.2 Results acquisition..... 7
 - 3.3 Charging 7
- 4 Expected impact 8
 - 4.1 Research on the Future Internet..... 8
 - 4.2 The market..... 8
 - 4.3 Evolution of an independent entity..... 8

1 **Executive summary**

(Provide an outline description of the use-case, maximum half page)

The C-CAST Daily Commuter Use Case focuses on consumption of content enhanced with contexting information by daily commuters. Specific context information is mixed with content and advertisements, according to the user's location and an environment responding to his individual profile. Commuters are travelling through a town on a train and watch personalised streams, possibly with small groups being subscribed to the same stream. Consequently, the commuters are mobile and travel either on the same train (same location) or on a different train (different locations), so they use different access networks and possibly different providers. Vending machines and shops allow for profiled advertising and purchases.

The C-CAST project is based on the theory that multicasting will make mobile context-aware service commercially attractive. C-CAST thus uses two main competence areas: the creation of context-awareness and multicasting technologies. Context information defines groups that demand the same information or service. These services are delivered efficiently by multicasting bearers. With this use case, the project researches, investigates and defines ways to use the situation/environment of a user to initiate group communication. It is a way for the project to show that environment-mediated multicast can be triggered by an event or something in the physical environment and result in a situation-oriented or context-oriented service.

2 Targeted users

(In this section please provide information about the actors and stakeholders)

- A list of primary actors: commuters, travellers, tourists, residents, content providers, service providers, mobile network operators
List the Actor who's goal is being satisfied by this Use Case and has the primary interest in the outcome of this Use Case: the commuter
- A list of supporting actors: vendors (of vending machines), shopkeepers, SME's, advertisers, public transport authorities, ...
List the Actors who have a supporting role in helping the Primary Actor achieve his or her goal (optional)
A list of stakeholders and their interests:
 - User (e.g. commuter)
 - Individual content provider (e.g. commuter, shopper, traveller, visitor,...)
 - Professional content provider, service provider, mobile network operator
- A list of the various entities who may not directly interact with the system but they may have an interest in the outcome of the use case. Identifying stakeholders and interests often helps in discovering hidden requirements which are not readily apparent or mentioned directly by the users during discussions.
- Potential advertisers that will use the C-CAST platform as a platform for targeted, context-based advertising

Example

Indicate target users. Select one or more from the following list:

- Industry
- Academic users
- Operators

Then further specify the user, e.g. Industry- network manufacturers or networking components manufacturers or terminal manufacturers, etc.

Mobile network users commuting (employees, students, ...)

Mobile Network operators

Service providers

Professional content providers

Companies interested in advertising over the C-CAST channels

3 Description

Give a detailed description of the use-case taking into account the aspects indicated by the sub-sections below. Feel free to introduce additional sections in case there are additional aspects to be highlighted.

Daily Commuter Scenario

Specific context information is added to the content. Context information is mixed with content and advertisements, according to the user's location and an environment responding to his individual profile. Commuters are travelling through a town on a train and watch personalised streams, possibly with small groups being subscribed to the same stream. Consequently, the commuters are mobile and travel either on the same train (same location) or on a different train (different locations), so they use different access networks and possibly different providers.

At the train station, there is a vending machine that sells drinks and some of the commuters will pass this machine (something that can be predicted, as there are corridors). The commuters get an audio notification that video content is available.

On his/her way back and before entering the train, the commuter goes to the city centre for some shopping e.g. in a clothes shop. As soon as he passes a shop which is subscribed to the C-CAST service application, the commuter receives an audio notification, followed by a profile-related advertisement.

During the evening the commuter goes to a party with some close friends. The party is sponsored by tillate.com and offers many possibilities to exchange data material such as photos or videos between visitors subscribed to the C-CAST offerings.

3.1 Interfacing with the user

Please provide information at least on the following:

- **Goal** – The content provider produces the content and the related description, which is used by the service provider to match the content to the right context, to deliver to the commuter who receives personalised streamed content on his mobile device.
- **Actors** – List of actors involved in use case: commuters, travellers, tourists, residents, content providers, service providers, mobile network operators.
- **Platform set up**
 - proposed C-CAST infrastructure

Please provide information at least on the following:

- **Pre-conditions or assumptions**
 - - Supporting a distributed group of people
 - - Flexibility to move from one net to another
 - - Mobility between heterogeneous access networks
 - - Multicast to unicast switching
- **Trigger** – The event that starts this use case:

- Social network, group membership
- **Steps** – Interactions between the actors and the system that are necessary to achieve the goal. This should be expressed in natural language.

Morning:

- A number of persons are commuting to work (different destinations) starting from different locations of the same town (distributed group). They are viewing some content selected for them based on their context (big groups, social network). The service users may start or stop viewing the content as they wish (join or leave group).
- As they move around town (by car, bus, train) they change between access networks (heterogeneous network mobility). Some commuters may be served by networks with IP multicast capability and some are not, so as they move there may be a need for multicast-unicast switching. Users receive the same content, in different formats (bitrate, resolution, ad info) based on their terminal and network capabilities. At some point during their commute, they may be served by the same network or are at the same location. This may trigger a subgroup formation, based on access network connectivity and/or QoS.
- At the train station the commuter may pass next to a vending machine. This can trigger the vending machine micro scenario. Others may pass outside a department store and will see a specific ad on the store screens based on the group qualities (shopping preferences for majority, weather, time of day etc.)
- Some may reach their destination. As they enter their company's premises they are immediately switched to the local network (based on their profile, their company's rules, or QoS). This will trigger an IP multiparty transport network change.
- As they enter their office, their session is moved to a different terminal (session mobility based on location, adjacent terminal capabilities and user preference).
- Based on their agenda (taken from their phone or PC calendar) a notification may be sent to some (different group based on other WP3 context) that a meeting is starting.
- Registered user (cheapskate, likes coffee, coke and alcoholic beverages) watches DW-programme on mobile phone. News items could be selected through location (and maybe other context data) and be a part of a series of the latest news items, all are pre-recorded.
- The news item contains fixed cue tones, indicating that a 30 second DW-promo will be transmitted shortly. The promo is replaced by a targeted beverage ad, selected based on weather information (via context broker), time and profile:
 - a. Temperature: warm or cold beverage
 - b. Time: alcoholic or non-alcoholic
 - c. Profile: expensive (whiskey, first flush tea, coca-cola) or cheap (beer, tea bag tea, no-name orange fizzy drink)

Afternoon:

- The commuter and friends are walking in the main city street featuring many boutiques and there is a boutique subscribed to a C-CAST architecture based service. This system recognizes that there are a certain number (threshold) of women adhering to a certain profile (group management) inside a certain fashion boutique. This detection is based upon mobile terminals that these women own. From the environmental sensors, the system also deduces that it is raining outside, so it takes the decision to trigger the boutique on-line shop with the extracted context that this women group is potentially interested in offers in fashion clothes for the rainy season. The system triggers the online boutique shop with this context information and the boutique shop returns the proposed advertisement (name, picture and sale price or discount) back to the system. The system multicasts this information to the customer's

terminals, adapting multimedia content accordingly to the terminals' technical capabilities.

Evening:

- The same C-CAST user and five friends are going to a party in the evening. This group of people is registered to the C-CAST services so that they can directly send user-generated content like messages, pictures or videos to friends. This process is carried out right at the party. By following this offering, the friends can exchange about the current status of the party via their mobile devices. In this usage scenario a whole group of friends is connected with each other through their same mobile social network community, which is provided by the C-CAST system specifically in order to stay in contact with each single community subscriber when you are not at home.
- **Non-functional requirements** – Such requirements and related statements may include, but are not limited to performance, reliability, fault tolerance, security, user interface etc. Each requirement should be expressed in natural language or an appropriate formalism.

3.2 Results acquisition

Please provide information at least on the following:

- **Post-conditions** – Statements concerning the result of the execution, namely conditions that express success or failure of a use case. Similarly to the pre-conditions, the post-conditions should be expressed in a declarative manner, allowing for a true/false evaluation.
 - Provide content and related descriptions and the corresponding discovery, deliver and adapt mechanisms as well as content storage and distribution
 - Provide ad insertion
 - Manage multimedia session control, global space
 - Control content delivery from content provider to consumer
 - Provide context sensing
- **Success end condition** – The successful end condition of the use case where the primary actor's goal is met.
 - Provide business model
 - Provide demonstrator with overlay ad insertion
 - Provide context sensing
- **Failure end condition** – The failure end condition of the use case if the primary actor's goal has not been met.
- **Minimal Guarantee** – The guarantee or assurance that this use case provides to all actors and stakeholders to protect their interest regardless of whether the use case ends with success or failure.

3.3 Charging

The charging would be either over the mobile operator or based on registration over other channels as online .

4 Expected impact

This Scenario expects to have the following impacts :

- Develop an end-to-end demonstrator for this scenario
- Prototyping/Demonstration on initiation of action based on context change to call for an ad insertion
- Prototyping/Demonstration of overlay ad insertion on a selected mobile handset
- Provide business models for described scenario

4.1 Research on the Future Internet

e.g. contribution to the FIRE initiative, etc.

This use case will be the basis for the demonstrator of the C-CAST project, where the results of the projects will be actually implemented, demonstrating the development of the infrastructure itself, the interlinking of the various components, content retrieval and management, context sensing, session management, etc. Obviously all aspects of sensor networks that relate to this use case will be addressed. This includes context sensing, aggregation and reasoning and content matching algorithms based on user/group situation.

4.2 The market

End-to-end demonstrator and use case “Daily Commuter Scenario” on multicasting for context-aware services, where content is provided to the end-consumer, in this case a commuter, enhanced with contexting information, triggered by events and objects on his daily commute.

4.3 Evolution of an independent entity

e.g. how the use-case contributes to achieving self-sustainability of the facility, promoting attractiveness of the service offering toward large user groups, securing income, etc.

The key motivation for the C-CAST project, and by extension for this use case, is because multicasting is the key enabler that will make mobile context-aware services commercially attractive. Use of mobile multicast communication especially for multimedia content has always been a very attractive proposition.