OMVC Non-Real Time Mobile DTV

Use Cases

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Overview and Introduction

The following Use Cases represent the output of the OMVC Technical Advisory Group (OTAG) Ad Hoc Group on NRT Use Cases and describe device requirements to support non-real time (NRT) applications of Mobile DTV. An NRT use case is any activity that a user may do when consuming a Mobile DTV service and while using a Mobile DTV receiver that requires processing of protocols in the ATSC Non-Real Time Standard for implementation. NRT transmissions are file-based content designed to be stored in the consumer's device until the consumer chooses to access them. NRT content types can be video, audio, text, web content, etc.

This document focuses on describing use cases from the user's perspective.

Below are descriptions of some of the possible uses of this capability.

1. Clipcasting

Clipcasting consists of short form video and audio clips similar to podcasts that are broadcast periodically by the broadcaster and captured in the consumer's device. The consumer selects from clipcast services in a preference menu. The consumer then has available the most current version of the desired clip service stored in their device. The consumer could receive an alert when new content is available or just play the latest version. The clips are driven by title and metadata, and may or may not be related to other mobile video being broadcast.

Both subscription and ad-supported clipcasting can be supported. Clip content can be automatically refreshed and deleted if not played in a timely manner or when a newer version has been captured. Viewer measurement and ad targeting are also possible.

For example, a consumer selects Sports Highlights in his clipcasting preference settings. When new content is available, he will receive an alert on his mobile device telling him when there are sports highlight clips waiting for him to view. He will be able to queue up the clips and watch them all in succession.

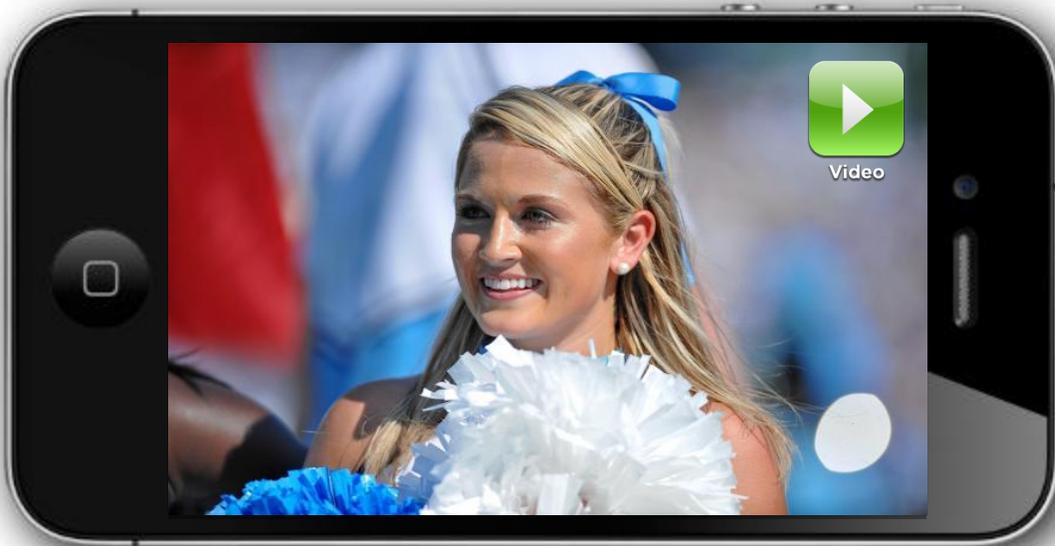An example of using a clipcasting sequence is shown on the following page.

Figure 1a: Video icon appears during a game indicating there are video highlights available.
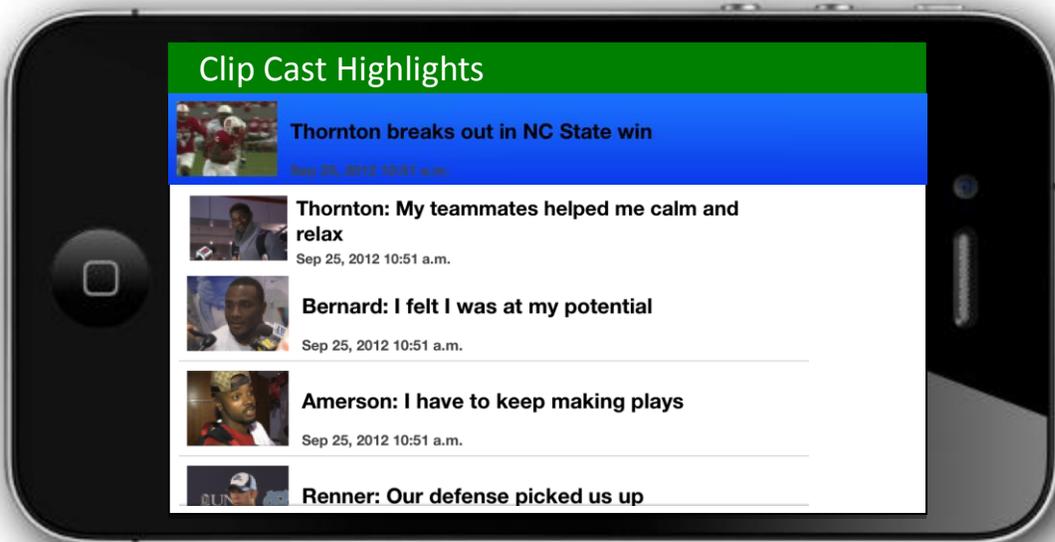

Figure 1b: When the user selects the icon a list of available video clips appears.

Figure 1c: When the user selects a clip the clip plays on their device and once complete it reverts back to the list.

Existing and well proven TV services that could use clipcasting include:

- News segments
- Weather segments
- Radar images
- Sports segments
- Sports scores
- Financial updates / Stock Market info
- School closings
- Traffic information

By using the metadata and preference settings entered in their mobile device the user could filter the results to what's relevant to them.

2. Video-on-Demand (VOD)

Video-On-Demand (VOD) allows the user to choose content that will be transmitted to their mobile DTV device and stored on that device for later viewing. The content may be transmitted based upon the user's previously entered information, whereby the device would select and store VOD material so that the user would have choices for later viewing. Or, the user may subscribe to specific program options that will be stored on the device. For example, the latest episodes of the user's favorite shows would be available each time he accesses his mobile device. The user can select whether or not to be notified by text or e-mail whenever new content is available on the device.

These subscriptions may include short-form content (YouTube-like), sports or news programs, music videos, standard length television programs or full-length movies. Other content could include magazine and newspaper articles, e-books, and video games. It may also include gadgets/widgets related to the current program content, and interstitial material that would be viewed during channel changes.

The user's device would require sufficient storage for the content, and would need to be in a receiver power-on mode when the content is delivered. The device battery life may be affected by these requirements.

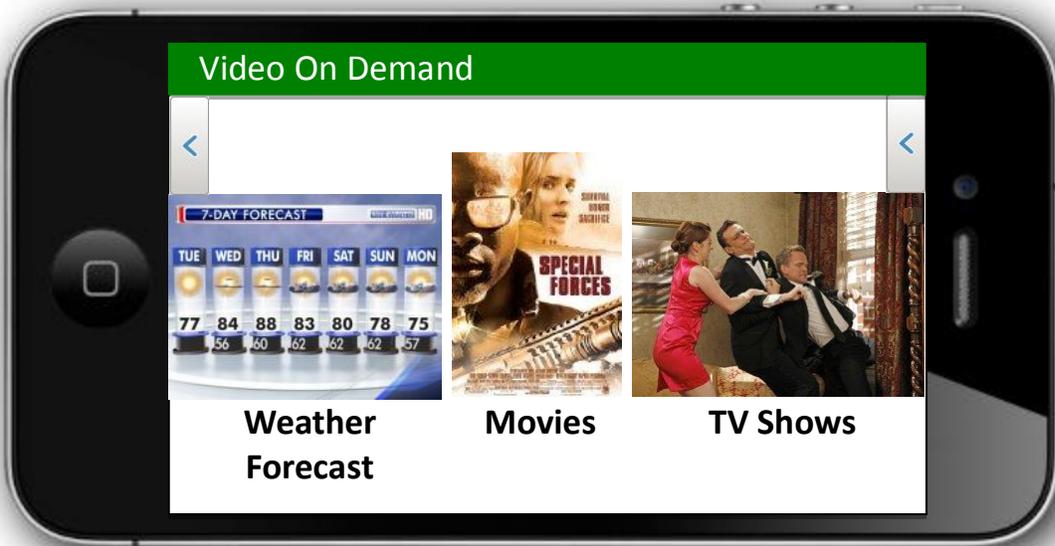An example of using a Video-On-Demand sequence is shown on the next page.

Figure 2a: A video-on-demand menu is available to the user with different classes of content that can be selected for download.
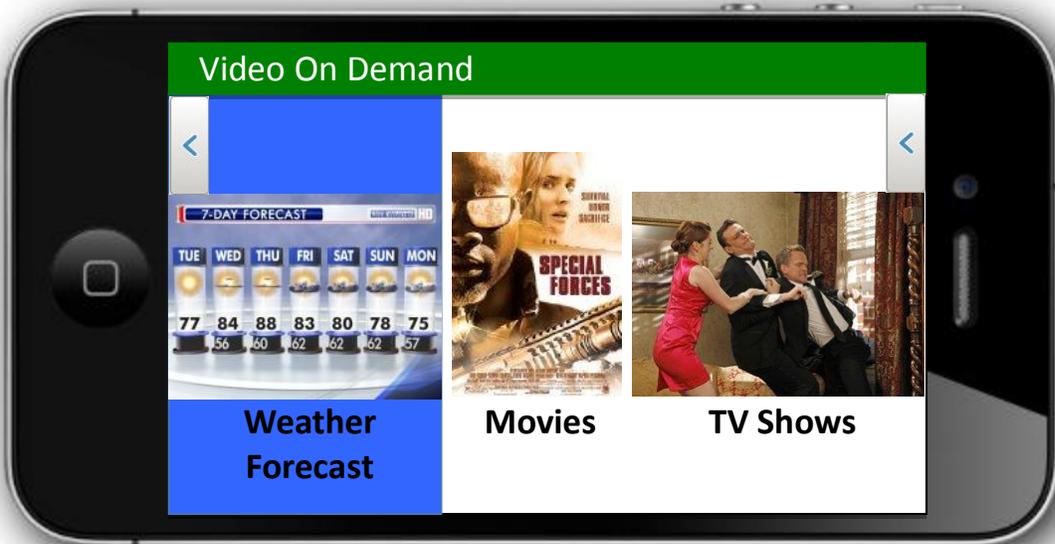

Figure 2b: The user selects the content that they would like to have downloaded to their device for on-demand viewing.

Figure 2c: Once the requested content has been downloaded per the schedule selected they are available for viewing on-demand.

3. Web Micro-site

An NRT service implementing a Web Micro-site offers a similar experience to browsing the Internet using a web browser, with pre-defined content that is downloaded to the user's device. Because the content is downloaded, it is delivered to the user's display with low latency. The NRT service can support a web portal, or web micro-site, with reduced complexity and graphics sized appropriately for a mobile DTV display.

The figure below shows an example NRT web micro-site service that is the home page of a hypothetical broadcaster called WMM as it might be rendered on a mobile DTV device.

Figure 3: Web Micro-site example for NRT in a mobile device

4. Out-Of-Home Content & Advertising - Digital Signage

Digital Signage has multiple components, such as the following:

1) Live simulcast of the mobile television channel
2) News and information content delivered via NRT
3) Advertising delivered via NRT

These systems can be installed in buses, cabs, trains and in the public areas that service these modes of transportation.

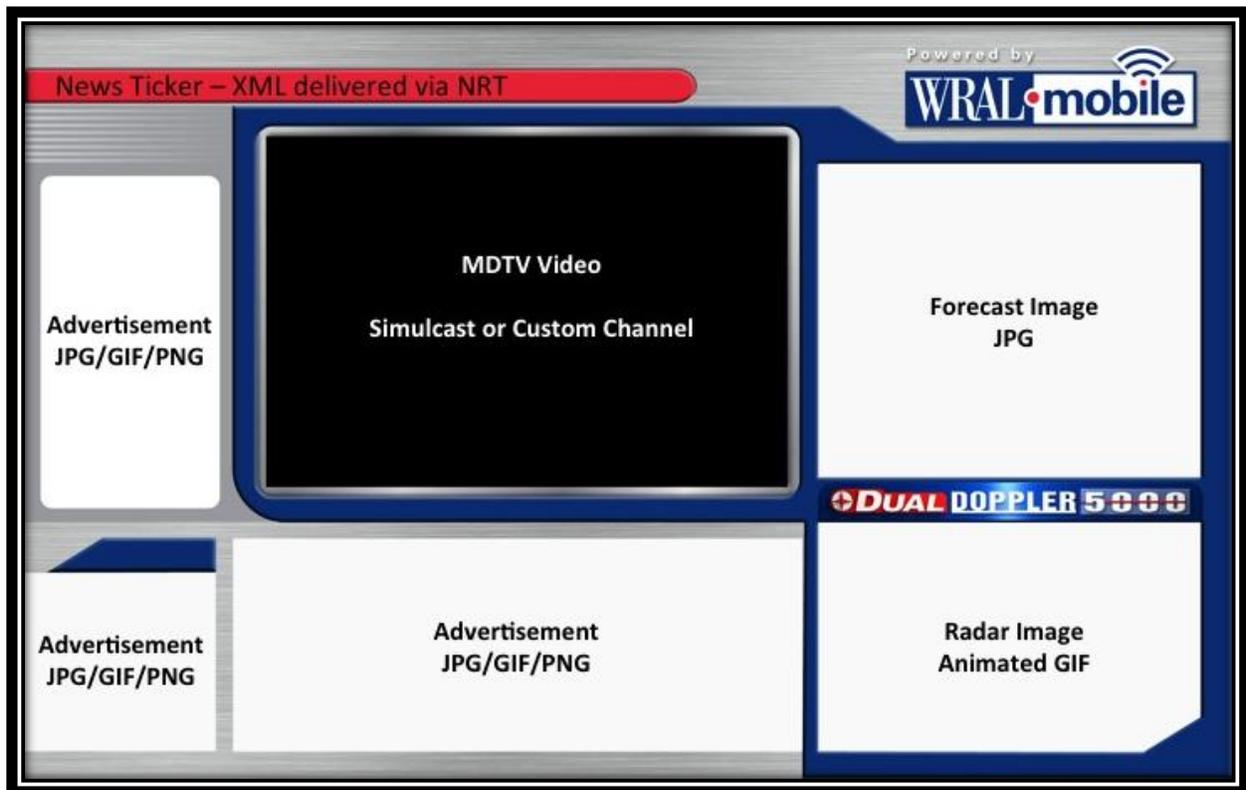An example of a digital signage use case is shown on the next page.

Figure 4a: Template for usage of screen display for digital signage

Figure 4b: Example of digital signage implementation

The rich media element types used in this example include:
- JPG images (advertising and forecast)
- Animated GIF (Doppler Radar)
- Text for ticker (XML)

Other examples of media types could include:

- Video-On-Demand (VOD) – Depending on the configuration and type of digital signage system, this could be tap-to-watch or auto-inserted as advertising or content.
- One can also envision a system where there is no live component, but all the video is delivered and updated via NRT and played in an ever-green loop where segments are continually updated.

The system is set up in a carousel mode where the latest content is always being pushed throughout the day. In the example shown it means the news ticker, forecast image and Doppler Radar image are continually being refreshed with the latest imagery and feeds from the station. Advertisements can be updated and trafficked as sold and can be scheduled to run during certain day parts and locales.

5. Apps and firmware upgrades

Popular applications (apps) and mobile device firmware updates are potential users of NRT as a delivery method since they both use large data files and would have to be sent to a large number of devices. The use of a broadcast medium would thus be more efficient than using a multitude of carrier based downloads. For example, even with a transmission frequency of only once a week consumers could always have the latest version of software. In cases where this functionality was implemented, updates could be automatic or signaled when available as shown in the figure below.
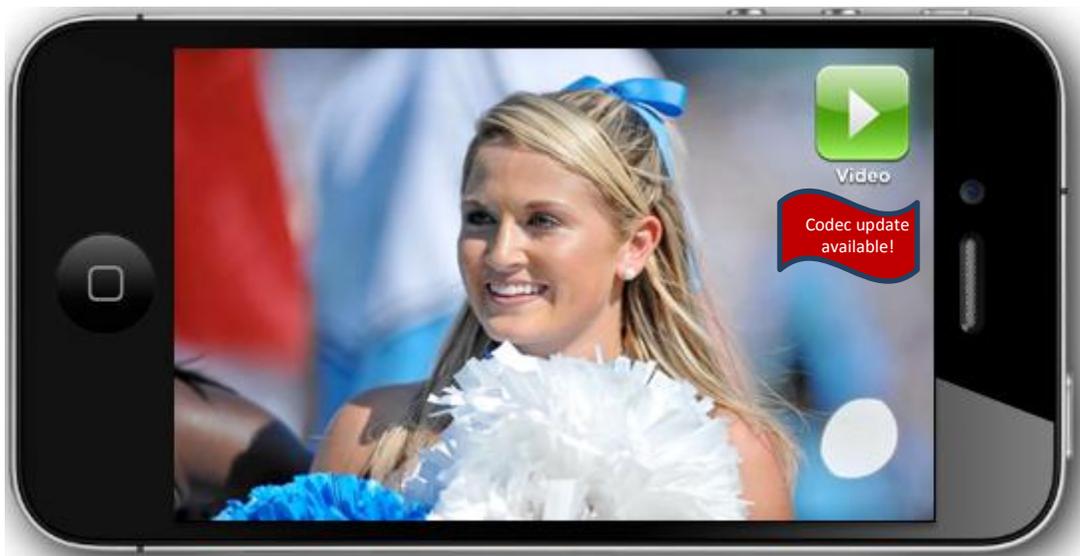

Figure 5: Upgrades for software and apps can be announced when available.

6. Commercial applications

Commercial applications of NRT are those where a third party pays the broadcaster to broadcast data. While this may include conventional video services to normal consumer devices it may also include special purpose devices. NRT using Mobile DTV transmission is well suited to these applications due to the wide coverage, high data capacity, signal robustness, and the use of simple low profile antennas. Examples would include:

> • *Utility load shedding services*
> Electric utilities already use broadcast services for this function in the form of FM broadcast, but the data capacity is limited and thus the possible control is also limited. Utilities use these signals to operate the "Savers Switch," or similar trade name, which turns off selected water heaters and air conditioning systems to help them manage loads during periods of peak electric demand. A broadcast service is essential for this kind of application due to the number of users, but with the expanded capability of Mobile DTV even better power grid management is possible consistent with new "Smart Grid" initiatives and applications could expand to outdoor lighting and distribution control as well. While Mobile DTV would provide greatly increased available bandwidth to the utility, the data requirements are still small compared to audio or video thus resulting in a very profitable business on a dollar per bit basis.

> • *Traffic control systems*
> Every region whether it be a city, county, or larger region has tens of thousands of traffic control devices than need to work together in order to move traffic around efficiently. Beyond those devices cities and towns also have all sorts of public facilities like parks, athletic fields, bandshells, and parking lots with lighting that does not need to be on full time. In the past these devices were simply programmed with timers or sensors. More recently some are radio, Internet, or Wi-Fi connected to central sites, but simple timer programming still predominates. Mobile DTV data transmission could substantially improve management of municipal facilities, traffic systems and programming of freeway signs using relatively low cost receivers and simple antennas. Like the utility services example described above this promises to have a very good dollar per bit return.

7. Mobile EAS

Mobile EAS (M-EAS) has two components: 1) the headline message text that is transmitted in real time and which is intended to be superimposed by the receiver over the program video, and 2) the rich media components that are transmitted using the NRT standard. Depending on the receiver implementation the real-time component may also alert the viewer through an audio alert and/or a vibration alert.

The rich media element types can be:
- jpg images (photos, maps, etc.)
- mp4 video clips (or audio clips with fixed images)
- HTML pages with or without embedded images

The intent of the use of the two components (real-time and non-real-time) is two-fold. The real-time component alerts the viewer of an impending or current situation and this component requires no viewer intervention in order to be seen (or heard or felt). The non-real-time components can be optionally selected from a table and viewed according to the timeliness of the emergency. Different emergencies will have different timelines and the viewer can determine themselves what and when to view the non-real-time components.

The NRT content can be a variety of element types, including the examples shown on the following pages.

Example 7a: Video images of the emergency event or related video

Figure 7a: Photo of tornado in central Massachusetts

Example 7b: Maps of event areas such as the area of harsh weather, affected chemical spill, or safe area

Figure 7b: Predicted path of tornado in Springfield, MA

Example 7c: Safe evacuation routes during flooding, chemical spills, bomb threats or similar routes
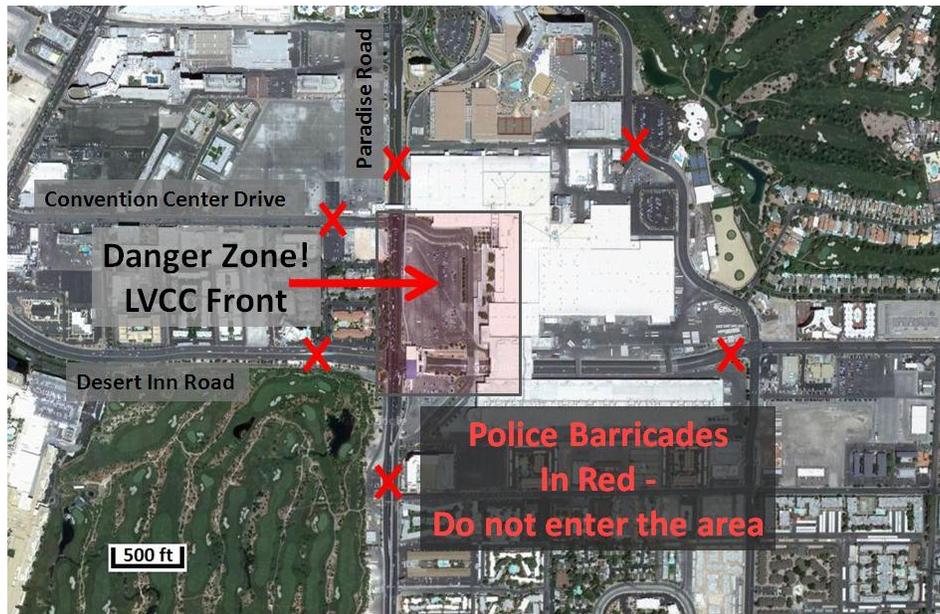

Figure 7c: Simulation of barricaded area of a bomb threat in Las Vegas
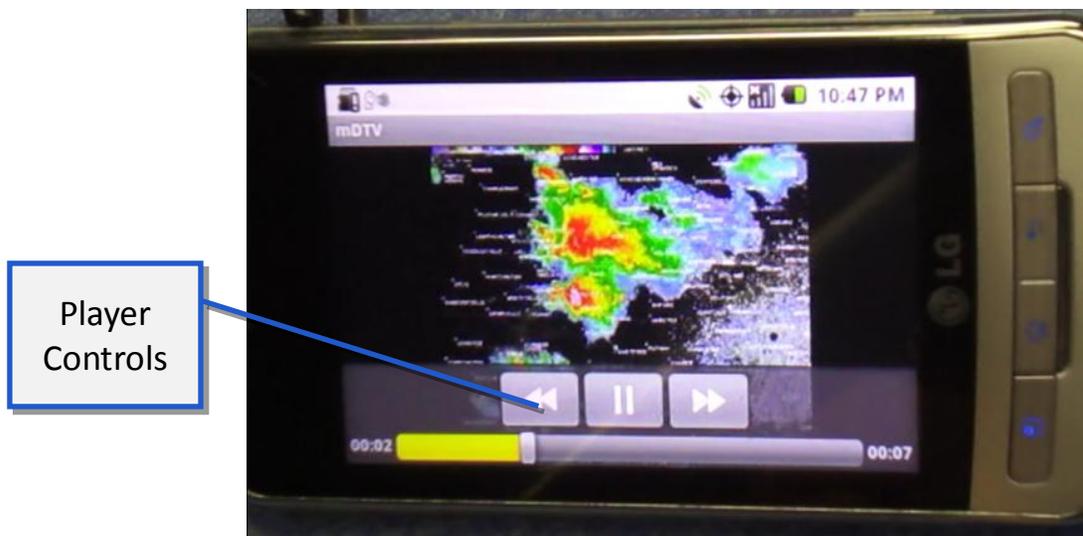
Example 7d: Weather radar images or video

Figure 7d: Still frame of a video playback showing a radar image of a tornado

Example 7e: Detailed emergency instructions on what to do in cases of various kinds of emergencies or display of other emergency information

Characteristic	
Name	Chuck Edwards
Answers to	Chuck, Charlie, Charles
Photo	
Height	5 foot 6 inches
Weight	205 pounds
Features	- Balding with mostly grey hair, flag tattoo on right arm - Subject suffers from Alzheimer's. - Was last seen at his residence in Helena, Alabama talking to an unidentified white male. - Was last seen wearing grey pullover hooded sweatshirt and blue jeans.

Figure 7e: HTML page with embedded photo showing a missing person and his description