

Domain Specific Multimedia Testing of Mobile Handsets

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Agenda

- Introduction
- Composition and Testing of sub domains of Multimedia
- Developing Domain specific Test cases
- Best Practices in Multimedia Testing of Mobile Handsets
- Domain Specific Testing tool
- Conclusion

Introduction

- Domain Specific Multimedia Testing is the process of checking and evaluating all the Multimedia services and applications of a Mobile handset domain wise.
- Testing each domain and its sub features with various interactions, to make sure that each component not only performs its intended task but also integrates perfectly as a component of the Multimedia domain.
- This paper will present in depth what is Domain specific Multimedia testing of Mobile Handsets, how it is done and what are the best practices and approaches that are effective in this field.
- This paper will also focus on various sub domains under Multimedia domain

Composition of Multimedia Domain

- Multimedia Domain is mainly divided into following sub domains, which deals with their respective functions:
 - Media Player: Media viewing and playback.
 - Media Navigation: File listing/navigation, file management.
 - Media Capture: Still/video capture, media editing.
 - Media Telephony: Video calling and rich voice calls.
 - Miscellaneous: Other miscellaneous areas like voice recognition, audio manager and themes.

Testing Sub Domains of Multimedia

Media Player Testing:

Testing multimedia playback of audio or video files, streaming, progressive download or DRM Testing comes under this category. Following features are tested under it.

■ **Playback:**

Use Cases related with the Playback of Audio/Video files are tested in this, for e.g. any corruption of PUT screen during playback or hanging of the phone etc. Playback testing team is also concerned for checking proper playback of the media files while progressive download (PDL) of the files.

■ **Streaming:**

Whenever we play any media file directly from some remote server without downloading that file it is called as streaming. In this process PUT establishes a streaming session with the server in which the file is stored, then plays it and after the playback is finished it ends the session. So this team is concerned with all the streaming related testing

■ **DRM:**

DRM stands for Digital Rights Management. In this type of testing we test those Media Files which are right protected. For playing these files licenses are required, so licenses are purchased or downloaded with the files and then the files are tested

Testing Sub Domains of Multimedia contd...

Media Capture Testing:

This testing is concerned with all types of Audio/video recording, picture capture and viewing of stored/captured pictures. Following features are tested under it.

■ **Capture Still:** Testing image Capture

■ **Capture Audio:** Testing Audio Capture

■ **Capture Video:** Testing Video Capture

■ **Capture Picture Viewer:** Testing proper display of stored or captured pictures

Testing Sub Domains of Multimedia contd...

Media Navigation Testing:

All the Use Cases related with File error or browsing any multimedia file are tested in this domain testing. Following Features are tested under it.

■ **File System:**

Testing of all the file system related use cases for e.g. whenever the file system of the PUT is accessed File System comes into picture, for e.g. copying media file from phone to PUT.

■ **Media Locator:**

Testing of use cases related with the cataloguing of files based on the extension of the file, for example testing that the audio file should be placed in the audio folder and video file in the video folder.

Testing Sub Domains of Multimedia contd...

Media Telephony Testing:

All the issues related to Video Telephony and Rich Voice Call (RVC) is tested by this team.

■ **Video Telephony (VT):**

Video Telephony is the enhancement of simple voice call, in which the two persons who are talking to each other can also see each other on the PUT screen simultaneously during the call. In VT both the Voice data and the Video Data are transferred on a circuit switch network.

■ **Rich Voice Call (RVC):**

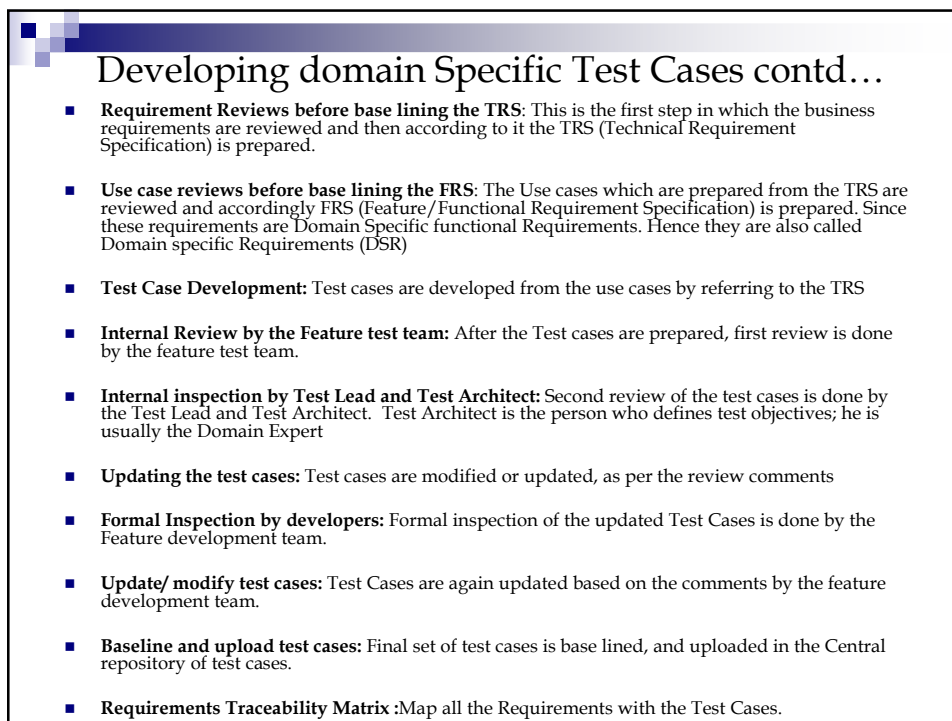
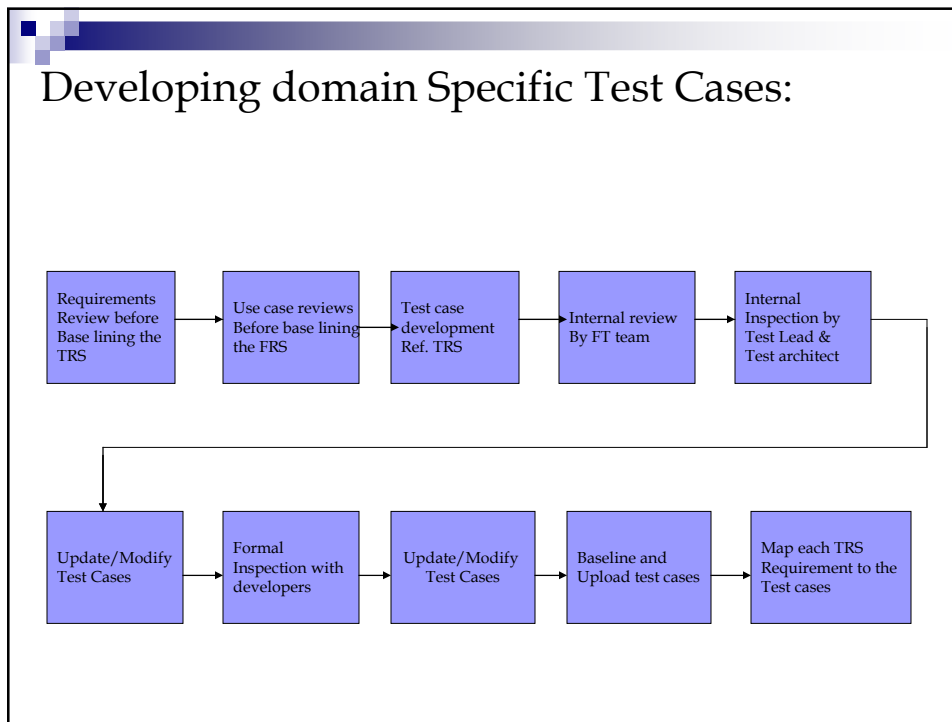
In Rich Voice Call the persons who are talking to each other can see a common video on the PUT screen, that video is the live video being captured by any of the two phones simultaneously while voice call is going on. In Rich Voice Call Voice data is transferred on a circuit switch network and Video data on a Packet Switch Network, where as in P2P both the Voice data and the Video Data is transferred on a circuit switch network

Miscellaneous Testing:

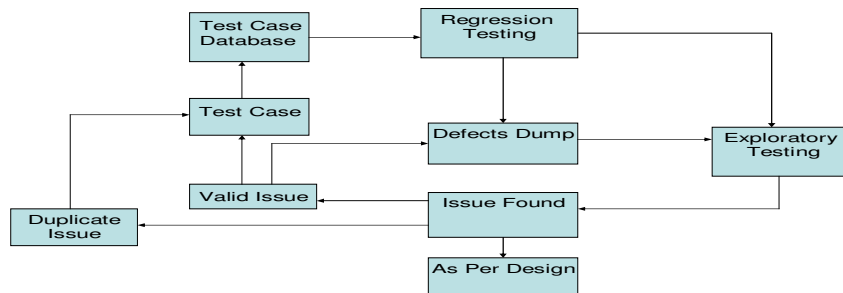
This team tests feature such as audio quality and voice recognition. Following features are tested under it.

■ **Audio management:** This team tests use cases related to audio quality, while playing the media files.

■ **Voice Recognition:** This team tests the use cases related to Voice recognition System of the phone.



Best Practices



- As explained before, to find maximum number of defects in Multimedia domain all possible variations should be tried. But then all scenarios if made into test cases will make number of test cases very huge. So the solution is to have a perfect balance between Regression Testing and Exploratory Testing, to have a process that will provide maximum defects every time as shown above

Best Practices contd.....

Content Testing:

Content Testing is also done as a part of the Media Player Best Practices. Following steps should be followed for effective content testing:

- Go through the Multimedia Capability Document of the handset to be tested.
- Make a list of all the supported File Formats and their range.
- Generate all the variations of supported file formats, (i.e. media files with different bit rates, frame rates etc) by any content generation tool like Helix, Super tool etc.
- Generate some non supported File formats also.
- Load all the generated media files into the handset
- Execute Test cases on the Generated Media Files

Domain Specific Testing tool (Test Automation Tool)

Test Automation is used to reduce the Test Cycle time and to fully exploit various stress scenarios, content execution and Sanity Testing. There are many test automation tools available, but domain specific testing tools are very effective now days because of the following reasons:

- Domain Specific Testing Tools use very easy scripting languages, so any test engineer can write scripts in it.
- Domain Specific Language (the scripting language used in the Domain specific test tool) has less number of commands so is easy to understand, learn and implement.
- The scripts written in DSL (Domain Specific Language) are almost in simple English so they are easy to understand and debug.
- Domain Specific Tools offer special features like checking the audio quality of the playing media file by parsing the DSP Logs.

Summary

- Multimedia is a rapidly growing market in the Mobile handsets today. Companies are introducing more and more exciting features into their products every day. Delivering these features in excellent quality and in bug free state to the customer is the prime goal of every Vendor company. To achieve this, domain specific Multimedia Testing can be an effective and reliable strategy for testing.
- A well planned and executed Domain Specific Multimedia testing can help the Vendor Company in containing defects at the correct stages, thus reducing the cost of rework. Mobile Vendors can offer high quality Multimedia features to its customers and gain customer satisfaction.

