

## Enabling Information Access through Mobile Based Dialog Systems and Screen Readers for Urdu

### Step-By-Step Progress:

<i>Qtr No.</i>	<i>Elapsed time from start (in months) of the project</i>	<i>Milestone</i>	<i>Deliverables</i>	<i>Status/Remarks</i>
1.	3 (1 <sup>st</sup> Jul 2013 to 30th Sep 2013)	<ul style="list-style-type: none"> <li>i. Project Initiation, hiring, tendering</li> <li>ii. Training of new research staff in Phonetics, Phonology and Speech Processing</li> </ul>	<ul style="list-style-type: none"> <li>i. Project initiation report</li> <li>ii. Training report on Phonetics, Phonology and Speech Processing</li> </ul>	<b>Received</b>
All team hiring and training is completed , team is fully prepared for speech processing.				
2.	6 (1 <sup>st</sup> Oct 2013 to 31 <sup>st</sup> Dec 2013)	<ul style="list-style-type: none"> <li>i. Finalize ASR and TTS toolkit</li> <li>ii. Design telephony framework</li> </ul>	<ul style="list-style-type: none"> <li>i. ASR and TTS toolkit report</li> </ul>	<b>Received</b>
Text to Speech toolkit design is completed this toolkit is like APIs for desired speech processing				
3.	9 (1 <sup>st</sup> Jan 2014 to 31 <sup>st</sup> Mar 2014)	<ul style="list-style-type: none"> <li>i. Develop prototype ASR system</li> <li>ii. Setup telephony framework</li> </ul>	<ul style="list-style-type: none"> <li>i. Prototype ASR system</li> <li>ii. Demonstration of developed modules</li> <li>iii. Report on Telephony framework design</li> </ul>	<ul style="list-style-type: none"> <li>i. <b>Received</b></li> </ul>
Prototype of ASR is completed; Telephony framework setup is also completed.				
4.	12	<ul style="list-style-type: none"> <li>i. Develop prototype TTS</li> </ul>	<ul style="list-style-type: none"> <li>i. Prototype TTS NLP module</li> </ul>	<b>Received</b>

	(1 <sup>st</sup> Apr 2014 to 30 <sup>th</sup> Jun 2014)	<ul style="list-style-type: none"> <li>ii. NLP module</li> <li>Finalize screen reader domain requirements</li> </ul>	<ul style="list-style-type: none"> <li>ii. Demonstration of developed modules</li> <li>iii. Domain finalization for screen readers</li> </ul>	
Natural Language Processing module is completed.				
5.	15 (1 <sup>st</sup> Jul 2014 to 30 <sup>th</sup> Sep 2014)	<ul style="list-style-type: none"> <li>i. Record and annotate 200 word vocabulary, 10 hours of speech from 200 speakers for baseline ASR system in covering both domains</li> <li>ii. Design system response for weather domain</li> </ul>	<ul style="list-style-type: none"> <li>i. Prototype weather dialog system</li> <li>ii. Demonstration of developed modules</li> <li>iii. TTS corpus design report</li> </ul>	<b>Received</b>
TTS corpus design report and Prototype is provided.				
6.	18 (1 <sup>st</sup> Oct 2014 to 31 <sup>st</sup> Dec 2014)	<ul style="list-style-type: none"> <li>i. Develop baseline speech recognition system for weather domain</li> <li>ii. Record and annotate 500 word vocabulary, 6 hours of speech corpus from 200 speakers for weather domain ASR system</li> </ul>	<ul style="list-style-type: none"> <li>i. Baseline speech recognition system for weather domain</li> <li>ii. Prototype location dialog system</li> <li>iii. Demonstration of developed modules</li> </ul>	<b>Received</b>
Baseline speech recognition system for weather domain is completed and demonstrated , it could be tested online by dialing 042-36821315				
7.	21 (1 <sup>st</sup> Jan 2015 to 31 <sup>st</sup> Mar 2015)	<ul style="list-style-type: none"> <li>i. Record and segment 5 hours of speech from a single speaker for baseline TTS system</li> </ul>	<ul style="list-style-type: none"> <li>i. Prototype TTS system</li> <li>ii. Demonstration of developed modules</li> <li>iii. Test report for baseline speech</li> </ul>	<b>Received</b>

			recognition system for weather domain	
<p>Prototype is completed and demonstrated successfully, Test Report and Progress reports are submitted.</p>				
8.	24 (1 <sup>st</sup> Apr 2015 to 30 <sup>th</sup> Jun 2015)	<ul style="list-style-type: none"> <li>ii. Develop speech recognition system for weather domain trained up to 200 speakers</li> <li>iii. Record and annotate 500 word vocabulary, 6 hours of speech corpus from 200 speakers for location finder domain ASR system</li> <li>iv. Record and segment 2.5 hours of speech from a single speaker for weather domain TTS system</li> <li>v. Integrate weather data in dialog system for weather domain</li> <li>vi. Integrate TTS with Localized screen reader</li> </ul>	<ul style="list-style-type: none"> <li>i. Speech recognition system for weather domain</li> <li>ii. Dialog manager for weather domain</li> <li>iii. Localized screen reader compatible with a web browser</li> <li>iv. Baseline TTS system for 5000 words</li> <li>v. Demonstration of developed modules</li> </ul>	Received and found to be satisfactory
9.	27 (1 <sup>st</sup> Jul 2015 to 30 <sup>th</sup> Sep 2015)	<ul style="list-style-type: none"> <li>i. Develop speech recognition system for location finder domain trained up to 200</li> </ul>	<ul style="list-style-type: none"> <li>i. ASR speech recognition system for location finder domain</li> <li>ii. Dialog system dialog manager for</li> </ul>	Received and found to be satisfactory as reflected by Technical Closure Report.

	ii. speakers Record and segment 2.5	location finder domain iii. TTS quality report	
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		<ul style="list-style-type: none"> <li>hours of speech from a single speaker for location finder domain TTS system</li> <li>iii. Perceptual testing of TTS system</li> <li>iv. Integrate location data in dialog system for location finder domain</li> <li>v. Conduct usability testing for the screen reader</li> <li>vi. Conduct usability for weather dialog system</li> </ul>	<ul style="list-style-type: none"> <li>iv. Screen reader field tested screen reader (intermediate version) and test report</li> <li>v. Demonstration of developed modules</li> </ul>	
10.	30 (1 <sup>st</sup> Oct 2015 to 31 <sup>st</sup> Dec 2015)	<ul style="list-style-type: none"> <li>i. Integrate ASR and TTS into dialog system based on weather domain</li> <li>ii. Improve accuracy of TTS based on results of perceptual testing</li> <li>iii. Conduct usability for location finder dialog system</li> </ul>	<ul style="list-style-type: none"> <li>i. Spoken dialog system for weather domain</li> <li>ii. Improved TTS system for 10,000 words and test report</li> <li>iii. Screen reader integrated with TTS system and test report</li> <li>iv. Demonstration of developed modules</li> </ul>	Received and found to be satisfactory as per Technical Closure Report
11.	33 (1 <sup>st</sup> Jan 2016 to 31 <sup>st</sup> Mar 2016)	<ul style="list-style-type: none"> <li>i. Integrate ASR and TTS into dialog system based on location finder domain</li> </ul>	<ul style="list-style-type: none"> <li>i. Final ASR system for weather and location finder domain and test report</li> </ul>	Received and found to be satisfactory as per technical Closure Report.

		reader based on the results of usability testing	iii. system for location finder domain General	
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		iii. Finalize general framework	framework for dialog system iv. User Guides for dialog system, TTS and Screen Readers. v. Demonstration of developed modules	
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