Field Trials of Aptus Prototype: An overview of results from 15 countries

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Background

Aptus is a server with its own WiFi router. It can be deployed in areas with no access to grid electricity or data connectivity, and the users (with Tablets, smart phones or Laptops) can access several thousand Open Educational Resources of repute and quality- such as videos from Khan Academy, Wikipedia for Schools, Simple English Wikipedia) and Moodle 2.7 or Drupal 7 (a content management system). Aptus prototype was launched in Sep 2013. During the 7th Pan Commonwealth Forum (PCF) at Abuja, Nigerai (Dec 2013), a series of demonstrations were conducted with Aptus. In one, a market place event, about 120 individuals attended a demo and gave written expressions of interest in testing the prototype in their respective sites and locations. Aptus was also demonstrated in the UNESCO Mobile Learning week (Paris, Feb 2014) and drew a significant audience.

Following these events, Aptus Team contacted all of them with a testing protocol (appendix 1). Those who agreed to the protocol formally were provided an Aptus device. COL bore the costs of the device and courier. The participants bore all the other costs (Customs if any and local testing charges).

During March-June 2014, COL provided Aptus to participants in 15 countries: Cameroon, Canada, India, Jamaica, Kenya, Morocco, Nigeria, Republic of Kiribati, Solomon Islands, South Africa, Tanzania, Trinidad and Tobago, USA, Vanuatu and Zimbabwe.

Testing Protocol

The testing protocol is focused on core performance of Aptus as a device that can deliver a sustained and consistent experience to users and testers over multiple sessions. A number of parameters are included in this protocol, starting from warm-up time to performance of Moodle 2.7. Number of simultaneous users and the maximum distance of access were also tested for. Maximum duration of Aptus service on a single charge under user load was also measured. Ease of upload of new files to Aptus was tested was as well.

Results and Discussion

As of July 2014, results have been reported from India, Morocco, Nigeria, Kiribati, Solomon Islands, Vanuatu and Zimbabwe. Following is a compilation of results:

- Aptus is easy to set up and the instructions are clear and easy to follow;
- Aptus has a consistency of performance; it can start-shut down and start again many times and the memory does not get corrupted;
- Testing distances ranged from near the device (1 m or less) to 25 meters; content was accessible well up to 25 m;
- Testing processes lasted from 15 minutes up to eight hours on a single test run;
- Maximum of 20 users were connected simultaneously without any slowdown in access
- Multiple users could view videos simultaneously;
- Heating of the processor was not noticed although in one test, there is a report about re-boot of server after one hour;
- Home Page was simple and self-explanatory: navigation was simple and easy to use;
- Up to 14 users could access and work on Moodle 2.7.

All testers were of the view that this is a functional and relevant invention that fulfilled an important need. It can potentially a play an important role in contexts where Tablets are deployed in support of education at senior schools or in colleges.

According to David Leeming from Solomon Islands (July 2014):

- Overall a very impressive miniaturisation of the school server concept, very appropriate for remote off-grid schools.
- Good choice of the "default" open content
- The "dropbox" tool is a great choice, as it makes it very easy to upload and share local content. Much easier than the OLPC XS.

Dennis Pack from Kiribati (June 2014) mentioned that "Overall everyone was excited with the potential of the Aptus, especially the prospect of its use in distributing library resources to the outer islands". Dennis Pack wrote further: "I am so excited about the possibilities that exist by using a system of tablets and Aptus. It could have such a huge impact on education in Kiribati, especially on the outer islands. And it is a much more affordable and sensible solution to the needs here".

George Maeltoka, a senior official in the Ministry of Education in Vanuatu, wrote as follows (June 2014):

"The government in its new ICT initiative for schools is embarking on supplying tablets to schools and it is timely to have your new device to bring the government ICT project to the next level of elearning materials for students throughout the archipelago".

Alapati Taupo and Ian Thomson (University of the South Pacific) noted that the Aptus contents and software had been put together quite well (June 2014).

Ved Sharma from MANAGE, the federal extension management agency in India, wrote (July 2014):

> "APTUS is a device for TODAY. We need to take it all across the country. The connectivity in Districts (and below) is still an issue, and that is where APTUS is the apt answer. With 128 GB content, and providing instant wi-fi connectivity in its vicinity, that too without regular power, APTUS can make a huge difference in our Extension system."

A few important suggestions for improvements were also provided:

- Extra USB cables
- Improved inter-faces for file transfer
- Use of Simple English Wikipedia

The team has acted on these suggestions. The current version of Aptus incorporates all of them.

Way Forward

Aptus is now ready for deployment in a regular school or college situation. It is a robust device and has a valuable content eco-system. It is easy to maintain. In the event of loss, it can be replaced easily.

Appendix 1 Testing Protocol agreed to by participants

This document has only one purpose. It is meant to harmonise the understanding of processes and steps involved in testing Aptus device between the partner that is willing to carry out the testing and COL. All contact with COL may be made on email: aptus@col.org. COL's full postal address is listed on COL's corporate website, www.col.org.

COL will provide a functional and tested Aptus device and will have it delivered using a courier service (ordinarily, DHL). The receiving partner agrees to receive it after paying Customs and applicable duties if any.

COL bears the costs of the device and of courier and will declare a value for Customs as USD 100.

The receiving partner agrees to test Aptus with teachers/facilitators and learners with details provided to COL via the form already filled and made available to COL and will bear all costs associated with testing. The partner also agrees to provide data to COL covering as many of the parameters listed below as possible.

 For every test run with teachers/facilitators, these data would be collected and shared with COL:

1. Date and time of test run

2. Location information (village/town/city, district/province, country)

3. Context: school/college classroom/contact center/informal learning contact place/open field site

4. Number of access devices connecting (including facilitator/teachers)

5. Number connecting simultaneously

6. Types of devices and Operating Systems Please provide number in each case):

    a. Smartphones (Android/Windows/iPhone/other):

    b. Tablets (Android/Windows/iOS/Other)

    c. Laptops (Linux/Windows/Apple/Other)

    d. Desktop computers (Linux/Windows/Apple)

7. Start-up time (Aptus normally requires three minutes, please mention if longer)

8. Maximum physical distance between a user and Aptus device

9. Total duration of Aptus use in this session:

10. Content use (principally):

    a. Khan Academy

b.		Wikipedia for Schools

c.		Moodle

11.	User feedback is principally (in terms of ease of start-up, speed of access, consistency of access):

a.		Well above expectations

b.		Above expectations

c.		As expected

d.		Below expectations

e.		Negative

12.	If Moodle was used, please provide a concise statement on overall experience

13.	Were you. The teacher/facilitator and learners able to add and exchange content?

14.	If yes, this experience was

a.		Above expectations

b.		As expected

c.		Below expectations

COL at no stage will request for any information on personal identifiers of teachers or learners. Information provided above is used by COL to improve Aptus device for its performance and functionalities and may be used in research reports with due attribution to the testing partner. COL requests that it be acknowledged as the designer and source of Aptus device by the testing partner in appropriate reports.

Neither COL nor the recipient of Aptus for testing has any liability in this collaborative endeavor.

Partner agrees and affixes signature (please state name in CAPS, and date!)

Please provide partner's address for receiving the Aptus device (packed in a hard case to prevent accidental transit damage). Please provide as many details as a typical service such as DHL would require. Landline numbers - cell phone number where landlines are not used- are considered essential.