



June 2006

R-EVOLUTION

Newsletter for the Developer Community

For Private Circulation only



Editorial

Dear Developers,

The Reliance Developer Programme will cross this month yet another important milestone on its highway of progress. Three ambitious young students from Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT) in Gandhinagar, Gujarat will turn brave entrepreneurs by the end of June with the launch of their innovative and award winning mobile application *Prashnavali* on Reliance World—the mobile information, communication and entertainment portal of Reliance Communications.

A certain percentage of the revenue will also go to DA-IICT, paving way for a unique tripartite revenue sharing model. This, we believe, will greatly help in catalysing the developer ecosystem to innovate and commercialise mobile software product development in the country. Our heartiest congratulations to the *Prashnavali* team. Read more about this application in our previous (May 2006) issue of *R-evolution*.

Content has become an integral part of mobile applications. In the 'Lead Story' we bring you an expert's views on the significance of content in mobile phone applications of today and in the future.

The 'Tech Tip' section features the second and concluding part of 'XML Parsing in J2ME', while our guest columnist Saurabh Jain talks more about m-Learning and its relevance.

Look out for exciting announcements coming up for developers on www.dadp.com and keep writing to us.

Saurabh Chakrabarti

Reliance Developer Programme Team

WHAT'S INSIDE YOUR PHONE?

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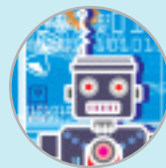
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CONTENT – THE SOUL OF APPLICATIONS

Raghunandan Dhar of Application Solutions and Content Group talks about the importance of content in mobile applications. He affirms the imminence of a content - driven future.



A well planned and designed content in the driver's seat can spearhead a mobile data services revolution

Mobile data services started evolving in India only in 2002. Realising that data and content services will be a key enabler of the knowledge economy, Reliance Communications (previously Reliance Infocomm) made sure that at least almost 90 per cent of its customers had access to data services through its Reliance World (previously R World) mobile data portal on their handsets.

From news to entertainment, information to festivals, financial to devotional, Reliance World revolutionised the mobile data services landscape in the country by transforming the ubiquitous mobile phone into a powerful information and entertainment access device.

Having put the power of information and entertainment into the hands of millions in India, the challenge was to make content mobile-ready in a format suitable for mobile devices given their limited screen size, processing power, and capability to handle multimedia content. Content offerings at that time were mainly limited to text services via SMS, with its own typical language style that did not capture the full flavor of the information, and hence had limited appeal. Reliance's efforts were, therefore, focused towards offering full-fledged content services that combined not just depth of content available across various genres but also in a form and manner that users would find convenient and simple.

To ensure standardisation in the format and style of

its content services for a rich user experience, the Reliance Content team designed a style book that laid down guidelines for content services on its Reliance World data portal. These guidelines were developed after conducting a focused research on specific content types and tracking user behavior of the same. And these guidelines served as a reference to all content offerings of Reliance and paved the way to offer a seamless and enhanced experience for the user for various types of content services irrespective of their device configurations.

Reliance content services achieved a landmark during the 2003 World Cup Cricket series in South Africa, when the demand for updated scores and other cricket-related information was much sought-after. The next big achievement for the Content team was getting live news posted on Reliance World which captured news headlines on a 24x7 basis with short capsules of each news item for the mobile user. Today, the Reliance Content team successfully offers streaming news from TV channels like NDTV, Aaj Tak, CNBC, India TV and others as part of its mobile TV offerings.

Customers' demand

Customers' biggest demand is authentic information. They don't want content providers opinion, but just plain, information in the form of content.

The exercise of providing content was truly a learning experience for Reliance Communications. Over time, subscribers began to get comfortable with content and craved for more. That made the content-related operations grow.

Using meta data

The use of 'meta data' helped a lot in improving Reliance services. Meta data gives various details about a particular subject or item or topic. Suppose a content provider comes out with a Hindi song sung by Madhubala in a particular film, the subscribers

may want more information like who composed it, when was it composed, when was it filmed etc. Information like these have become critical and should be made readily available to users.

Users also usually prefer to listen to a song first, and then watch the video. So, the value of meta data in content services is growing.

No prime time

Since customer's choices are vast and varied there is no such thing like a 'prime time' slot in the evening or morning. All 24 hours are prime time for them. Content providers should bear this in mind and keep their content ready.

For example, if a cricketer or footballer makes a score, mobile users want to know more about the player and statistics related to the game. Anticipating customers' needs and to be prepared to offer them the relevant content is the most formidable challenge faced by content providers.

Users are sometimes not satisfied with textual information. They want a visual experience as well. So, there is a lot of scope for value added services for content. As new applications come, content providers have to decide how to improve the user experience. The network being the same, they have to create visually appealing content. Motion pictures and information about important games should be included in the handsets to satisfy customers.

Content of the future

Blogging is likely to predominate in the coming years. Users will blog about topics like launch of products, sports, and movies. Future elections, national referendums, opinion polls could be conducted by mobile phones. Everybody can safely vote from home and the results will be out very fast.

Future mobile phones will have the contents of a

newspaper, TV, radio and Internet all rolled into one. Plus the mobile phone will become one's personal organiser. One can pay bills; buy and sell articles; book air, train, cinema tickets; and make payments.

Technology will have to meet customers' demands very quickly, efficiently and at affordable rates.

A content-driven future is becoming imminent. Technology came first. It was followed by content. But now content drives technology. The mobile telephony is going through a very exciting phase. It can marry video, text, audio, and provide multiple applications to the subscribers across the globe. Applications like job and home searches will also be much sought after. And the role of content will become very critical for the success of every new application.

About the author



Raghunandan Dhar has a vast journalistic background. He entered the 'fourth estate' in 1984 and worked with leading publications like The Indian Express, India Today, The Economic Times, and The Hindustan Times. He was also the western India correspondent for BBC Radio and later its TV service. Next he became the News Editor in ETV and Zee News. Then he joined Reliance Communications (then Infocomm) in 2002 to head the Content section (news) for the Application Solutions and Content Group at DAKC

XML PARSING IN J2ME – PART II

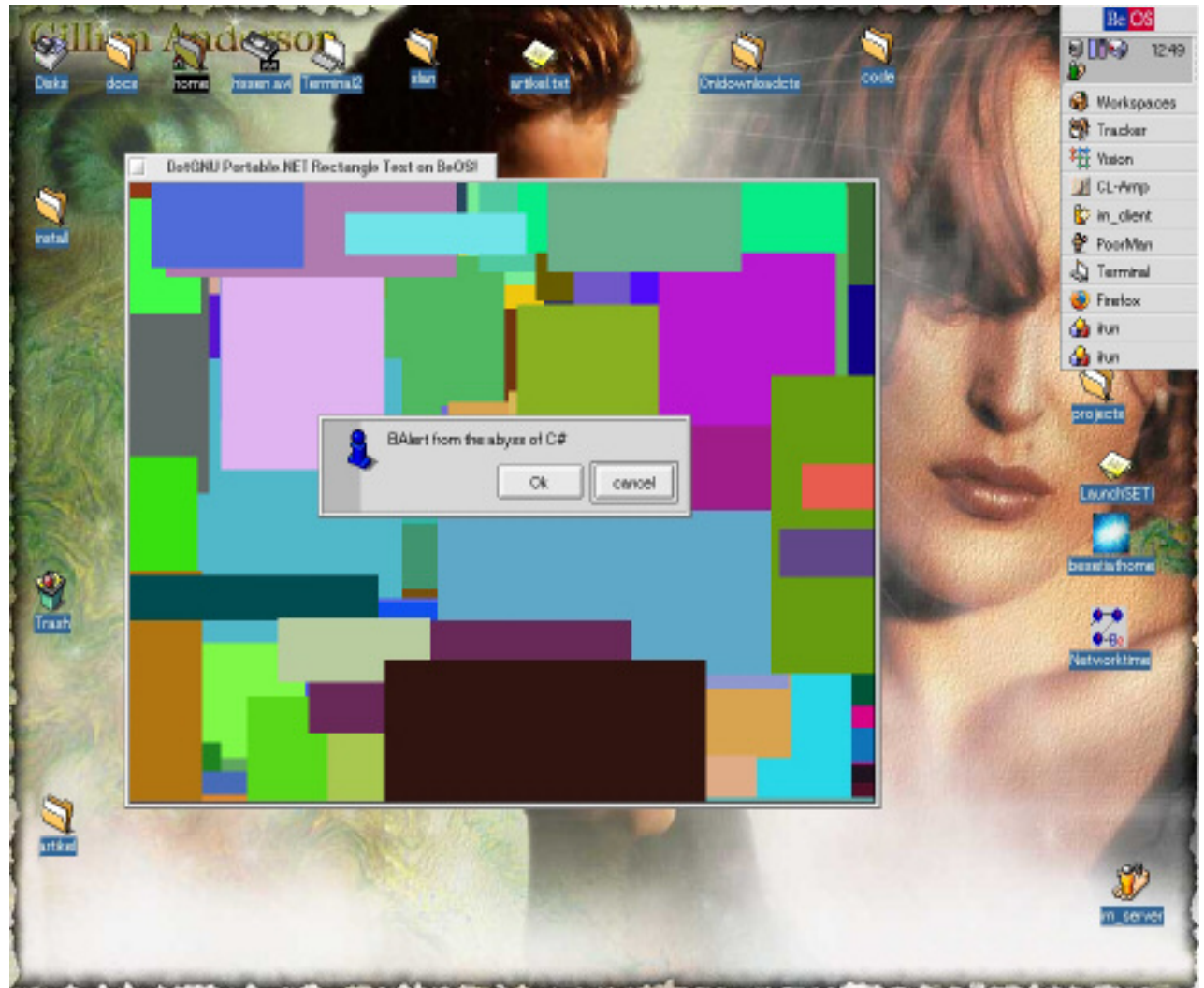


TECH TIP

Part I of this feature in the previous issue dealt with XML Parsers, their three important process phases, and models. This second and concluding part talks about the processes for creating an instance of XMLParser and capturing the RSS data from an aggregator site. It tells the reader how to use J2ME to fuse Java technology and XML, and also shows how to integrate portable code with portable data.

A J2ME application initially displays a textbox, a button that triggers the display of parsed XML data, and an 'Exit' button. The viewXML () method is called in, when the Display XML button is pressed. In this method, the application creates an instance of XML Parser to cruise through the document. On every item it finds the 'parser looks' for the title of the subcontents and description in order to figure out the text that one wants to display. This process goes on recursively. The user can exit the application during this process by clicking Exit.

The RSS data is made available to the application in the form of a String. As an XML Parser works on a stream of bytes, the String is converted into a byte array, which is used to construct an instance of ByteArrayInputStream. The ByteArrayInputStream in turn creates an instance of InputStreamReader, which then produces an instance of an XML Parser. This process of creating an instance of XML Parser to parse a string containing RSS data is illustrated in the next page:



```
byte[] xmlByteArray = xmlStr.getBytes();
ByteArrayInputStream xmlStream = new
ByteArrayInputStream( xmlByteArray );
InputStreamReader xmlReader = new
InputStreamReader( xmlStream );
XmlParser parser = new XmlParser( xmlReader );
```

Capturing data

In order to capture data from an aggregator site, the application should open a URL connection and get RSS data on an InputStream.

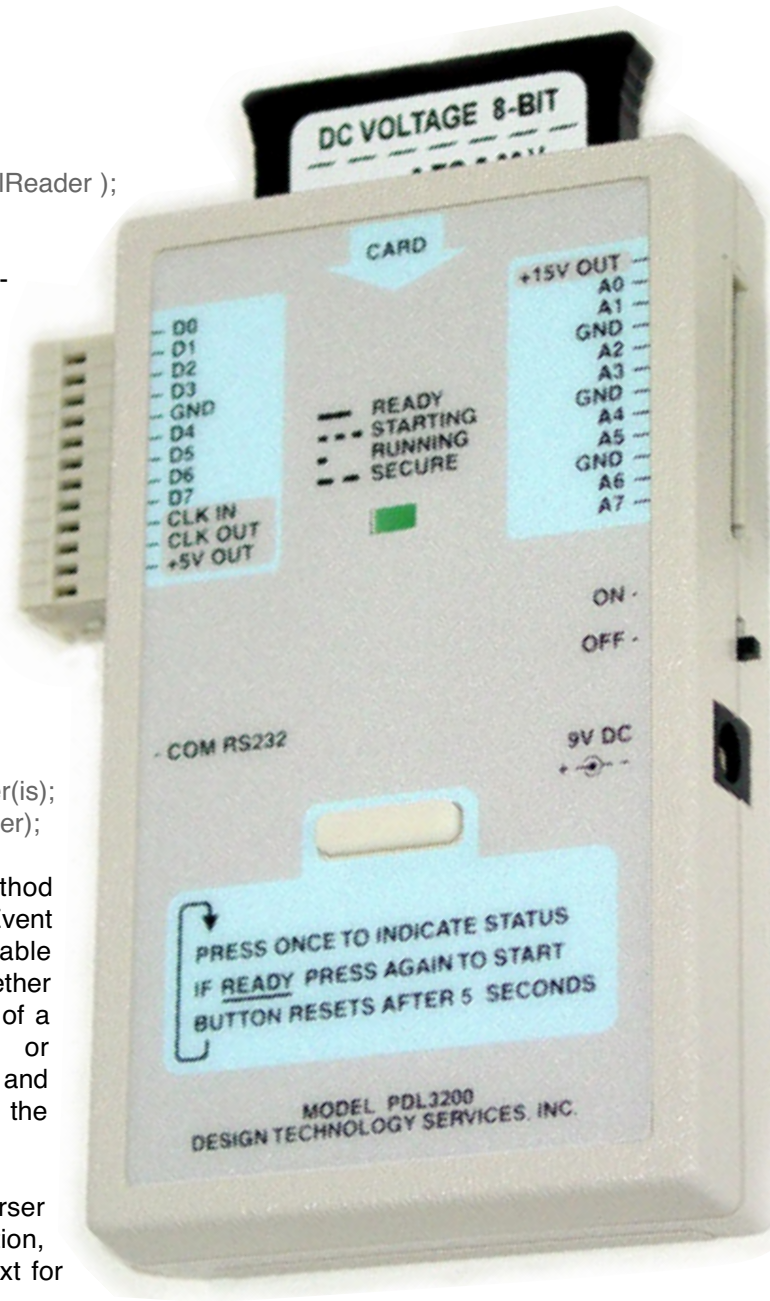
The InputStream is made available to the XMLParser through an InputStreamReader.

The process of capturing the RSS data from an aggregator site is illustrated below:

```
HttpConnection hc =
(HttpConnection)Connector.open(url);
InputStream is = hc.openInputStream();
Reader reader = new InputStreamReader(is);
XmlParser parser = new XmlParser(reader);
```

When the XMLParser's read () method encounters an item, it returns a ParseEvent object. This object contains valuable information, such as the event type (whether it represents the start of a tag, the end of a tag, the end of a document, text, or whitespace), the event name (tag name), and the event text (text enclosed between the start and end tags).

As illustrated in the example, the Parser finds the tag name's title and description, and then reads further to extract the text for display purposes.



The ParseEvent generates the Event types Xml.START_TAG, Xml.END_TAG, Xml.END_DOCUMENT, Xml.WHITESPACE, and Xml.TEXT when it encounters the start of a tag, end of a tag, end of a document, whitespace, and text between tags, respectively.

The process of picking up the title and description from the RSS data is illustrated below:

```
case Xml.START_TAG:
// see API doc of StartTag for more access methods
// Pick up Title for display
if ("title".equals(event.getName()))
{
    pe = parser.read();
    title = pe.getText();
}
// Pick up description for display
if ("description".equals(event.getName()))
{
    pe = parser.read();
    desc = pe.getText();
}
```

Fusing Java and XML

One can use J2ME to fuse Java technology and XML by learning how to fuse portable code with portable data. Designing J2ME applications with embedded parsers can be a challenge because of the resource constraints inherent in J2ME devices. However, with the gradual availability of compact parsers suited to the MIDP platform, XML Parsing will soon be a widely used feature of the Java platform on mobile devices.

For clarifications mail dadp.newsletter@relianceada.com.

m-LEARNING IN DEVELOPING COUNTRIES – PART II



GUEST COLUMN



In the previous issue, I talked about technology's role in meeting the twin challenges of poverty and illiteracy, and the scope for content delivery through m-Learning. In this second and concluding part, I'll focus on essential roles of m-Learning in improving administrative efficiency, its advantages, various business models, and emerging technologies.

The administrative staff of educational institutions in developing countries is a classic example of slow bureaucracy. Mobile phones can be of great help in accelerating the process of work.

Admission forms could be made available on a portal developed by the university. Students could download the forms through their mobile phones and fill in all relevant details. Wireless Application Protocol (WAP) browser-based solutions can be

very effective here. Even J2ME technology-based applications can be used. There could be a provision for payment of fees online.

Since the students reside at various places in the city, a class schedule updating system will add value. Students usually have to spend between three and four hours to reach their college campuses. An SMS, browser, or J2ME-based schedule change alert system can save a lot of time of the students.

Exam results are generally declared when students are on vacation. At that time it is very difficult for students to get timely access to the mark list. Sensing an opportunity, a mobile operator in India has started to publish mark sheets on mobile

The administrative staff of educational institutions in developing countries is a classic example of slow bureaucracy. Mobile phones can be of great help in accelerating the process of work.

handsets using J2ME technology. Such solutions when implemented at every level of the education system will add a lot of value for the students. Thus administrative efficiency can be increased manifold using mobile solutions.

The m-Learning advantage

I remember, around ten years ago, when mobile services were launched in India, one of my teachers remarked that it was a rich man's toy. The situation has completely changed now. In developing countries you will find lots of common people with mobile phones. There are operators who have provided mobile phones with an active connection for less than Rs 2,250 (US\$ 50). Thus mobile phones have a definite advantage when it comes to reaching the masses.

The cost of mobile solutions on a per user basis is generally very low. An SMS or J2ME based solution can be built for as low as Rs 45,000 (US\$ 1,000). When spread over a large potential user base this

cost works out to be very little per subscriber. In developing countries many operators dole out free value added services or charge nominally for them. Therefore, even for the end user, the cost when compared with other media is not much.

The convenience of using one's own mobile handset

is relatively more than when accessing the same content from a cyber cafe or a friend's PC. And there is an added advantage mobile devices have over the traditional print and paper medium—there is scope for instant interactivity, multimedia exchange, and instant delivery of content.

Business model

A viable business model is necessary to sustain any service. Some of the business models that could be tried in developing countries like India are:

- Free content without advertisements
- Free content with advertisement-based revenue stream
- Add-on to existing solutions
- Subscription based delivery
- Pay per use tariff

Market forces will decide which model ultimately succeeds.

Technologies

Like in any other new field, there are already a host of technologies competing to gain prominence. Some of them are:

- Messaging – SMS and MMS
- Browser - based – WML and xHTML
- Device Resident Applications – J2ME, Symbian and Microsoft.NET

Fragmented mobile space

As the mobile space is quite fragmented in terms of manufacturers, telecom operators, technology providers and value added service providers, any practical solution has to involve more than one technology.

An example of this is an application which can send MMS presentations for m-Learning. To order a particular course, Reliance Communications in India uses its J2ME-based system. Airtel employs SMS or interactive voice response systems for ordering



value added services. Other operators have a mixed approach.

For content delivery, instead of MMS, we could use J2ME, Symbian, BREW, and Flash Lite. Thus any practical solution will generally involve a hybrid approach when it comes to technologies. Slowly but surely SMS, WML, and J2ME are emerging as technologies of choice for providing solutions.

So we see that developing countries are unique in terms of their needs. Certain services which would not find any takers in developed countries due to efficient public utilities and broad penetration of PC will however find large number of users in the developing countries. Also, sometimes service

providers do not have any other medium for reaching a large population.

From the point of view of learning, the alternatives provided by m-Learning are either superior or more practical than many other existing solutions. As mobile phones will increase their penetration as well as their computing power they will become more central

to providing learning solutions to the masses in developing economies.

About the author



Saurabh Jain has authored a book on J2ME titled 'Mobile Phone Programming'. He is an active member of RDP and also prestigious bodies like Microsoft Software Architect Program, American Association for Artificial Intelligence (AAAI) and others. He has also written several articles on technology.



QUIZ

BRAINGYM

1. Which one of the following methods is used for software testing?

- a) Performance, logical, functional and recovery
- b) Boundary, range, extreme and invalid
- c) Recovery, performance, logical and invalid
- d) Black box, white box, valid and invalid.

2. Software maintenance does not include one of the following. Name the one.

- a) Finding and resolving errors
- b) Hardware compatibility
- c) Re-writing an existing system
- d) User request for a change.

3. Which one of the following fields can be validated by using a numeric check?

- a) Surname
- b) Address
- c) Stock number
- d) Telephone number

4. A methodology for systems development provides a:

- a) Set of template solutions
- b) Set of customised solutions

- c) Collection of diagrams
- d) Collection of methods

5. Where do you find the data type and format of every data item in a system?

- a) Data dictionary
- b) Entity-matrix
- c) Domain list
- d) Data analysis grid

Answers: 1. a 2. c 3. d 4. a 5. a

Monthly poser

What is the original name of C++

- 1) C
- 2) C with classes
- 3) C+
- 4) CPP

Answer to last month's poser: Power PC

The winner of last month's poser (through a lucky draw) is **N Suresh Babu, Kancheepuram, Tamil Nadu**
Winner will receive prize by courier.

Answers to the Monthly Poser should be sent to dadp.newsletter@relianceada.com mentioning Monthly Poser—June 2006 as the subject with the sender's location stated. The winner will be decided on the basis of a lucky draw and walk away with a prize.

You can contribute ideas and information to *R-evolution* at the following e-mail address: dadp.newsletter@relianceada.com. Please note that contributions may be edited for clarity, style or length.

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FEEDBACK

Letters to the Editor

The article in the 'Tech Tip' section of R-evolution, May 2006, titled 'XML Parsing with J2ME' was very informative. I have worked on XML parsing but it was only for Web Interfaces. The article has thrown light on XML parsing for Mobile Interfaces.

In your next issue, please talk about applications that can be developed using XML parsing for Mobiles.

Gautam Arora, Ludhiana, Punjab

Editor: Dear Gautam, thank you for the appreciation. We shall certainly look into your suggestion.

I am studying in the final year at MBM Engineering College in Jodhpur, Rajasthan. I have read about your University Relations Programme (URP) and am interested to join it. Please explain the procedure.

Nirmal Khatri, Jodhpur, Rajasthan

Editor: Dear Nirmal, thank you for your interest in joining the URP of Reliance Developer Programme. If you have interesting ideas on mobile application development, please write to us with details.