

Mobipocket as a tool for logging  
and content delivery  
on Personal Digital Assistants (PDA)

***Poster handouts***

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## **Introduction**

The PDA can be a valuable tool in modern medicine: medical knowledge grows and changes rapidly, staying up to date is a cumbersome task and knowing all by heart has become impossible. On the other hand, patients expect their doctors to deliver the best possible treatment, and statistics show an increasing frequency of sued doctors. Although the latter mostly depends on failure of communication, doctors should be aware to avoid mistakes. Therefore an increasing number of medical professionals and students relies on PDA. Compared to earlier documentation on paper it can be a huge step forward, as this digital form of information can be easily updated, shared, and has a high degree of portability. In the future, wireless networks will find their way and offer immediate access to all sorts of information. Now, data are synchronized with a pc using a cradle, and the stored information is taken on the road. Secondly, PDA offers a mobile way to enter data that can be transferred to a server – immediately through a wireless network, or later when synchronizing. Clinically this can be applied to diminish logistical workload, and in medical education to monitor students' performance (or residents' operations) by an electronic logbook or portfolio.

## **PDA software development**

Software development for PDA is quite a new branch in IT business: it requires specific skills and until some years ago, most programmers had to use C code, which is hard to master. Gradually more Integrated Development Environments (IDE) found their way, e.g. NS Basic, CASL and embedded Visual Basic. Recently Microsoft added .NET support for the mobile platform and now Visual Studio.NET 2003 has a good support for Microsoft powered handhelds (Pocket PC's). All these lack one substantial element: they don't provide the tools to develop a conduit, the piece of software that enables synchronisation with a pc. This is essential for a good client/server application where a pc or laptop is used to enter and read large amounts of data, and the PDA serves as a mobile tool for quick access on the fly. Besides, this forms a convenient way to update the handheld's data. AppForge Crossfire, a Visual Studio.NET extension, closes this gap a bit but not completely.

If an organisation has specific interest in a cross-platform client/server application to deliver and acquire mobile content, AvantGo has been high on the list. But it comes at a price, which may be a huge drawback for many faculties. This poster presents an alternative for a lower price, but offers basically the same functionality.

## **Mobipocket**

The approach relies on Mobipocket, a universal document reader for PDA. Besides eBooks and eDocs, the software also offers mobile News channels like AvantGo (eNews). The eNews Creator offers several options to create news channels: from standard sites, mobile device optimized sites, and RSS feeds. The Creator permits to deploy eNews channels that *receive* content, but exploring hidden options below the surface reveals that channels can also be set up to *send* data. For this, we must leave the Creator's graphical interface and use a text editor to edit the .enews file manually.

## Content delivery

To create a news channel for downstream only, just follow the instructions in the eNews Creator. First build a website using plain HTML, PHP/MySQL, ASP or ASP.NET, then make the .enews file for synchronisation. To have more control over the result for the PDA, you could use fputs() in PHP [box 1] or StreamWriter() in ASP.NET [box 2] to extract automatically updated plain HTML files for the PDA from an interactive database driven web page [figure 1-2].

## Electronic logbook

Creating a channel with upstream capacities requires three steps:

- every form should have a unique name
- the form tag's action attribute should contain an absolute URL to the file that processes the data [box 3]
- after creation, the .enews-file should be edited manually. This can be done in any ASCII text editor, in this case NfoDiz is used. Delete occurrences of html-filter="no-form" and change occurrences of html-filter="no-form get-pics" to html-filter="get-pics" [box 4]. Related examples are shown [figure 3-5].

## Password protection

Channels can be password protected. In that case, Mobipocket Web Companion prompts for the username and password during synchronisation [figure 6].

## Websites

- Mobipocket, <http://www.mobipocket.com>
- NS Basic, <http://www.nsbasic.com>
- CASL, <http://www.caslsoft.com>
- AppForge, <http://www.appforge.com>
- Microsoft ASP.NET, <http://msdn.microsoft.com/asp.net>
- PHP, <http://www.php.net>
- MySQL, <http://www.mysql.com>

## Contact

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Box 1: Example of `fputs()` in PHP

```
<?php
. // Create handheld content file
. $pdafilename = "<html><head><title>$Title</title></head>".
. . . . . "<body>".$Title."<p>Author: ".$AuthorID."<p>".
. . . . . "<a href=\"#content\">Content</a><br>".
. . . . . "<a name=\"#content\">".$Content.
. . . . . "</body></html>";
. $pdafilename = str_replace(" ", "_", $Title).".htm";
. $file = fopen("pda/$pdafilename", "w");
. fputs($file,$pdafilename);
. fclose($file);

. // Create handheld index file
. $indexfile = "<html><head><title>My PDA Content</title></head>".
. . . . . "<body><br>";
. // Put items in alphabetical order
. $res = mysql_query("SELECT Title FROM t_Info ORDER BY Title ASC")
. . . . . or die(mysql_error());
. $nr_rows = mysql_num_rows($res);
. if ($nr_rows > 0) {
.     for ($i = 0; $i < $nr_rows; $i++) {
.         $title = mysql_result($res, $i, 'Title' );
.         $pdafilename = str_replace(" ", "_", $title).".htm";
.         $indexfile = $indexfile."<a href=\"#$pdafilename\">$title</a><br>";
.     }
. }
. // Complete index
. $indexfile = $indexfile."</body></html>";
. $file = fopen("pda/index.htm", "w");
. fputs($file, $indexfile);
. fclose($file);
```

?>

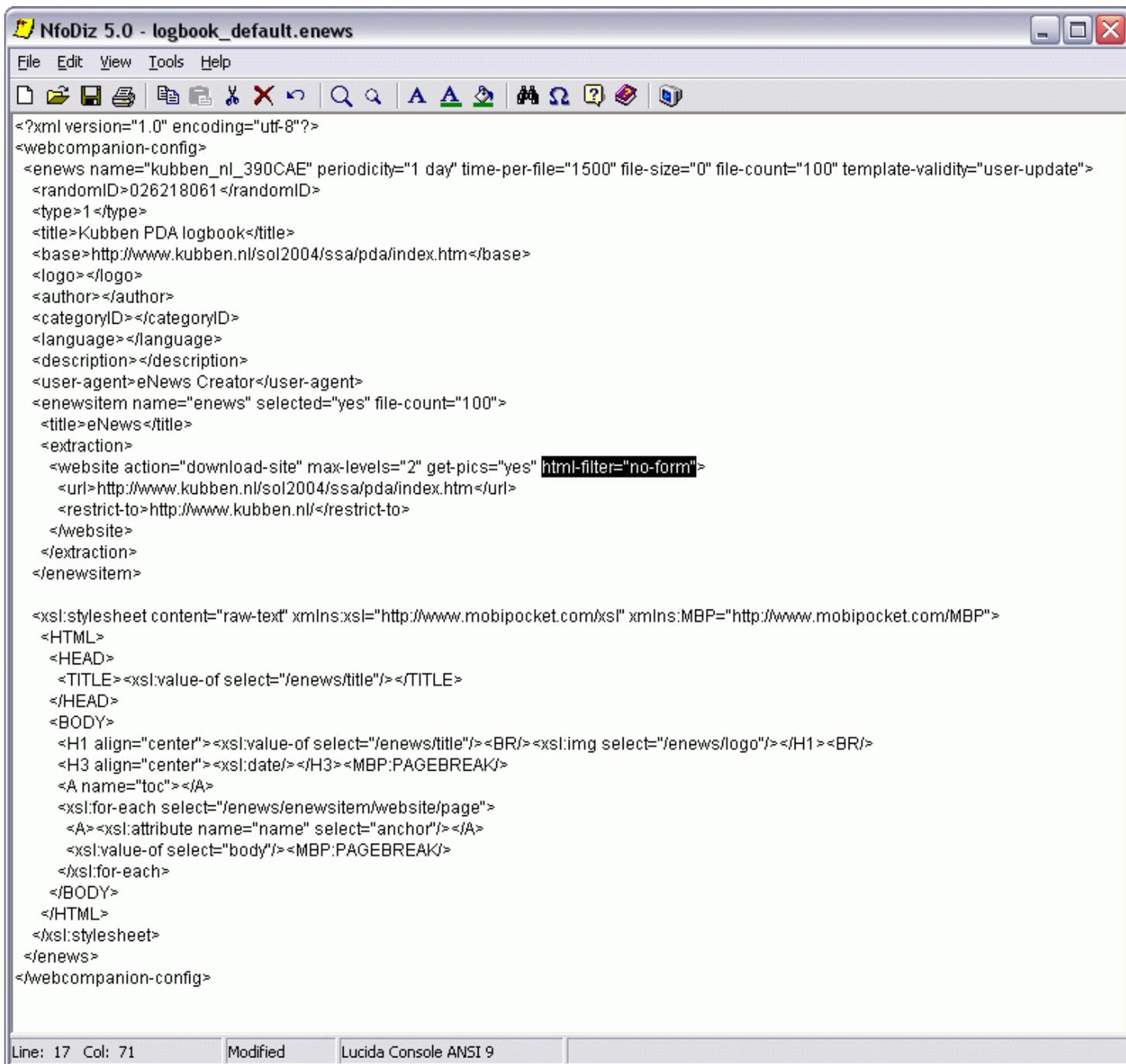
```
// Create handheld content file
string pdafilename      = txtTitle.Text + ".htm";
pdafilename             = pdafilename.Replace(" ", "_");
StreamWriter pdafile    = new StreamWriter(new
    FileStream(Server.MapPath(pdafilename), FileMode.Create));
pdafile.WriteLine("<html><head>" + txtTitle.Text + "</head><body><p>");
pdafile.WriteLine(txtContent.Text);
pdafile.WriteLine("</body></html>");
pdafile.Close();

// Create handheld index file
StreamWriter indexfile = new StreamWriter(Server.MapPath("index.htm"));
ArrayList TitleValue   = new ArrayList();
indexfile.WriteLine("<html><head>My PDA Content</head><body><p>");
for (int i=0; i<dataTable.Rows.Count; i++)
{
    TitleValue.Add(DataSet1.Tables[0].Rows[i][2].ToString());
}
TitleValue.Sort();
for (int j=0; j<dataTable.Rows.Count; j++)
{
    string url = TitleValue[j] + ".htm";
    url       = url.Replace(" ", "_");
    indexfile.Write("<a href=\"\" + url + \"\">" + TitleValue[j] +
        "</a><br>");
}
indexfile.WriteLine("</body></html>");
indexfile.Close();
```

Box 3: Absolute URL in the <FORM action>

```
<FORM action="http://www.kubben.nl/sol2004/ssa/addlog.php"
method="post" name="form_mbp" id="form_mbp">
```

Box 4: Edit the .enews file



The screenshot shows a window titled "NfoDiz 5.0 - logbook\_default.enews". The window contains an XML configuration file for a web companion. The content is as follows:

```
<?xml version="1.0" encoding="utf-8"?>
<webcompanion-config>
  <enews name="kubben_nl_390CAE" periodicity="1 day" time-per-file="1500" file-size="0" file-count="100" template-validity="user-update">
    <randomID>026218061 </randomID>
    <type>1 </type>
    <title>Kubben PDA logbook</title>
    <base>http://www.kubben.nl/sol2004/ssa/pda/index.htm</base>
    <logo></logo>
    <author></author>
    <categoryID></categoryID>
    <language></language>
    <description></description>
    <user-agent>eNews Creator</user-agent>
    <enewsitem name="enews" selected="yes" file-count="100">
      <title>eNews</title>
      <extraction>
        <website action="download-site" max-levels="2" get-pics="yes" html-filter="no-form">
          <url>http://www.kubben.nl/sol2004/ssa/pda/index.htm</url>
          <restrict-to>http://www.kubben.nl/</restrict-to>
        </website>
      </extraction>
    </enewsitem>

    <xsl:stylesheet content="raw-text" xmlns:xsl="http://www.mobipocket.com/xsl" xmlns:MBP="http://www.mobipocket.com/MBP">
      <HTML>
        <HEAD>
          <TITLE><xsl:value-of select="/enews/title"/></TITLE>
        </HEAD>
        <BODY>
          <H1 align="center"><xsl:value-of select="/enews/title"/><BR/><xsl:img select="/enews/logo"/></H1><BR/>
          <H3 align="center"><xsl:date/></H3><MBP:PAGEBREAK/>
          <A name="toc"></A>
          <xsl:for-each select="/enews/enewsitem/website/page">
            <A><xsl:attribute name="name" select="anchor"/></A>
            <xsl:value-of select="body"/><MBP:PAGEBREAK/>
          </xsl:for-each>
        </BODY>
      </HTML>
    </xsl:stylesheet>
  </enews>
</webcompanion-config>
```

At the bottom of the window, the status bar shows "Line: 17 Col: 71", "Modified", and "Lucida Console ANSI 9".

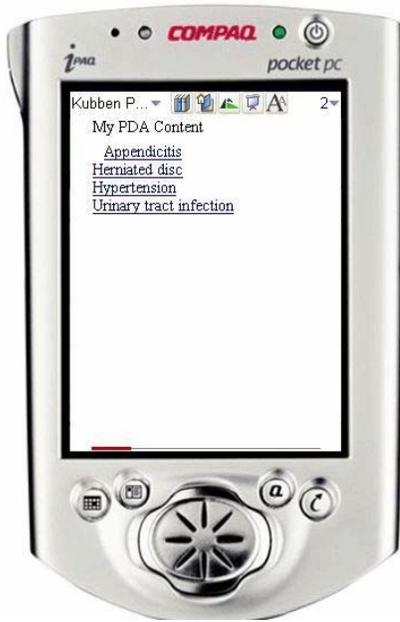


Figure 1: Index of handheld content

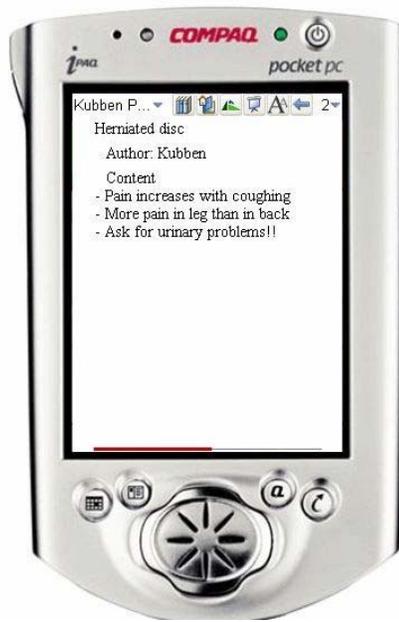


Figure 2: Detailed content information

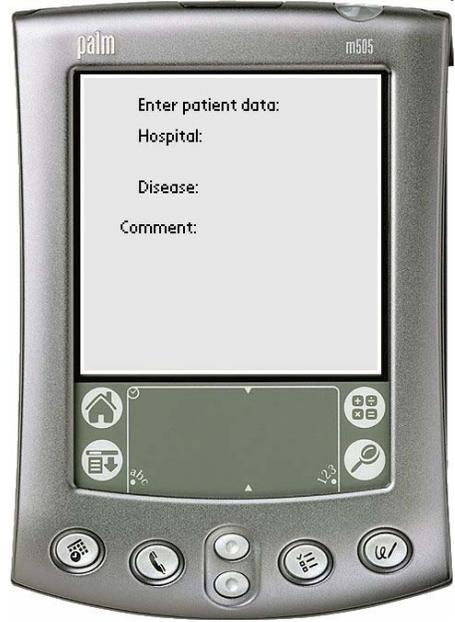


Figure 3: Default eNews channel

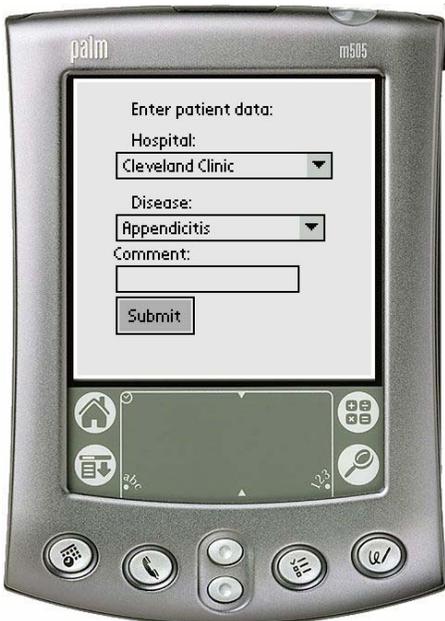


Figure 4: eNews channel after editing

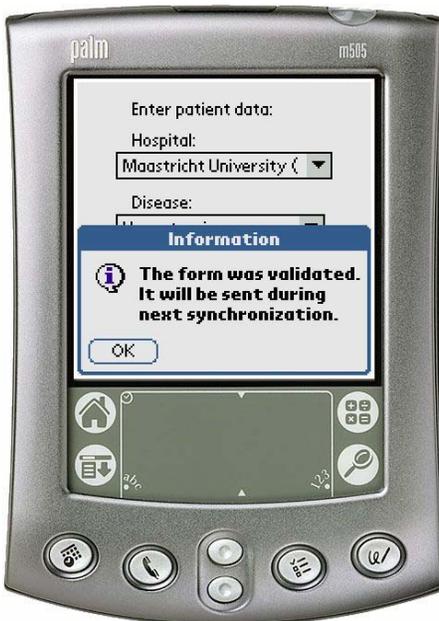


Figure 5: Data are stored and ready for upload



Figure 6: Password protected channel