



# **PDA-Based Tour Guide**

**Installation Guide & User Manual**

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# 1 Minimum System Requirements

To install the tour guide application, you must have:

- A Dell Axim X30 PocketPC
- The PocketPC 2003 Platform (installed by default on Dell PocketPCs)
- The Ekahau client application installed on the PocketPC
- A PC with a CD or DVD drive and Microsoft ActiveSync installed
- At least 5 MB of free disk space on the PocketPC for the tour guide application

Typical users will check out a properly configured PocketPC from the EECS building and can ignore the installation instructions provided below. These instructions are of an advanced nature and have been provided for tour administrators who are configuring new PocketPCs to run the tour guide application or advanced users that wish to modify tour content.



*The Dell Axim X30 PocketPC*

## 2 Installation Instructions

The tour guide application was designed to run on the PocketPC 2003 platform. Some steps must be taken prior to launching the setup application on a PocketPC:

- Microsoft ActiveSync must be installed on your PC. If ActiveSync is running, the ActiveSync icon appears on the Windows taskbar. ActiveSync is used to synchronize communication between your PC and PocketPC. You can download the newest version from [Microsoft](http://www.microsoft.com/windowsmobile) at <http://www.microsoft.com/windowsmobile>
- The Ekahau client must be installed on your PocketPC. Ekahau is the location sensing system that has been installed in the EECS building, and the client application is used to communicate with Ekahau. The client must be installed prior to the launch of the tour guide application. If Ekahau is running on

*If you see this icon, ActiveSync is installed and running on your PC*



your PocketPC, a “blue bubble” icon will appear near the bottom right of your screen. Detailed installation instructions can be found in section 2.2, or can be accessed using a web browser on the [wherefid project home page](http://www.eecs.umich.edu/~wherefid/ekaha), found at  
 <<http://www.eecs.umich.edu/~wherefid/ekaha>  
[u/ekahau-ppc.html](http://www.eecs.umich.edu/~wherefid/ekaha)>.

*If you see this icon, Ekahau is installed and running on your PocketPC*



Installation steps have been detailed in sections 2.1-2.5.

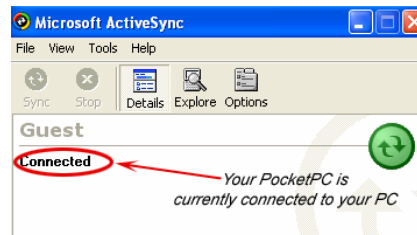
## 2.1 Installation of Microsoft ActiveSync

If you have never connected your PocketPC to a computer, Microsoft ActiveSync may not be installed. To install ActiveSync:

1. Download the latest version of ActiveSync (MSASYNC.EXE) onto your PC from Microsoft’s website.
2. Run MSASYNC.EXE and follow the on-screen instructions.
3. Verify that your PocketPC is recognized by connecting it to your PC.
4. When prompted to choose a partnership type, select “Guest” and hit the Next button.
5. ActiveSync will verify connectivity by displaying “Connected” near the top of the window. Setup is complete.

What kind of partnership would you like to establish between your device and this computer?

- Standard partnership  
I want to synchronize data between my device and this computer, keeping data such as e-mail and calendar items up-to-date in both places.
- Guest partnership  
I want to only copy and move information between my device and this computer, add and remove programs, or restore a backup image on a device whose memory has been reset. I do not want to synchronize data.



## 2.2 Installation of Ekahau Client

To set up Ekahau on your PocketPC:

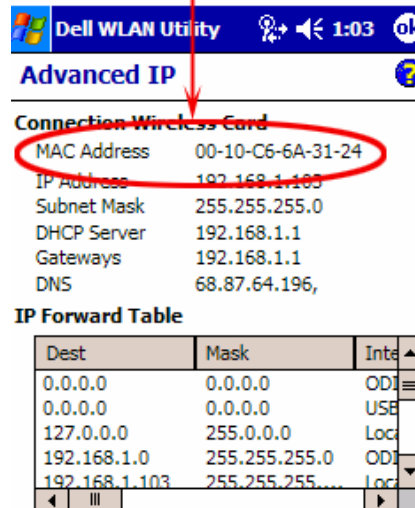
1. Write down your MAC address. Ekahau will use your MAC address to uniquely identify your PocketPC when you are in the EECS building. To find your MAC address, follow these steps in order:
  - o Click the Start button
  - o Select Settings from the Start menu
  - o Click the Connections tab
  - o Double-click on the “Dell WLAN Utility” icon

- Click on the Advanced menu
- Click on Network Troubleshooting
- Click on the Advanced menu

Your MAC address will be the first number listed on the screen.

2. Connect your PocketPC to a computer to synchronize it (ActiveSync must already be installed using the instructions in section 2.2).
3. Download [the latest Ekahau client for the PocketPC](http://www.ekahau.com/products/client/) found at <http://www.ekahau.com/products/client/>.
4. Execute the Client32-install-wince.exe that you just downloaded. To install on additional devices, you can use ActiveSync by selecting Tools|Add/Remove Programs. Follow the instructions on your computer and PocketPC screens.
5. Download a newer copy of the device driver from the [Wlan development page](http://www.eecs.umich.edu/~wherefid/ekahau/Wlan.dev) at <<http://www.eecs.umich.edu/~wherefid/ekahau/Wlan.dev>>. Copy this file onto your PocketPC, into the directory My Device\Program Files\Ekahau\Client. Ekahau will need to be shut down for this to work (if you're following these instructions, it's not running yet).
6. Make sure your wireless internet has been enabled (a flashing green light on the antenna on the upper-right indicates that wireless is enabled; you may have to use the button on the lower-right of the device to turn it on) and that you have followed the authentication instructions detailed in section 2.1.
7. Now start up the Ekahau client. You'll find it at the top of the Programs group. When it starts up, a little "blue bubble" (the Ekahau logo) will appear in the lower-right corner of your PocketPC display.
8. Click on the Ekahau logo and follow the instructions below the set things up:
  - Select the Status tab, and press "Start Ekahau Client"
  - Select the Settings tab, and check "Start Ekahau Client automatically"

*Your PocketPC's MAC Address*



*Finding Your MAC Address*

*Will flash green if wireless is enabled*



*Enable/disable wireless using this button*

- Select the Engines tab
  - Uncheck "Accept by default"
  - Click "Add..." under Engines with saved settings. Under Engine details, enter:

Name:	RFIDsrv
IP address:	141.213.10.73
IP port:	8545
Accept Data Requests:	√ [Checked]

- Press OK (upper-right corner)

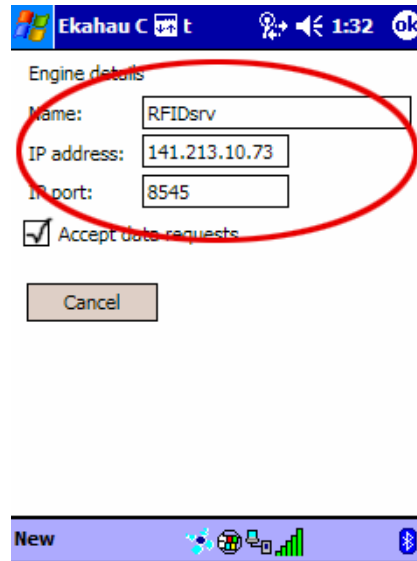
- Now press Apply

9. Confirm that your device is now visible to Ekahau by browsing to the [QDRLP stream](http://rfidsrv.eecs.umich.edu/) at <http://rfidsrv.eecs.umich.edu/>. Your device should be identified by the MAC address that you wrote down. Look for a line like this:

ISEE Ekahau.<*your\_mac\_address*> FROM  
 <zone> COORDINATES <x,y> RELCOORD  
 <x,y> AT # CONFIDENCE #

If your device is not visible in the stream, try resetting the PocketPC with the button on the back. Don't forget to re-connect to the Internet when it comes back on. If all else fails, see [the wherefid troubleshooting guide](#) at <http://www.eecs.umich.edu/~wherefid/ekahau/ekahau-ppc-trouble.html>.

*NOTE: These instructions have been modified from the Ekahau installation instructions provided by the wherefid project. Team Tour is not responsible for their accuracy and the instructions are subject to change at any time. Ekahau is an experimental system. As such, it is prone to periodic crashes. If the application is not responding, Ekahau is rebooting. Exit the application, wait five minutes, and try again.*

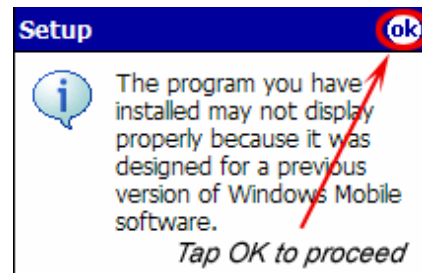


Setting Up Ekahau

## 2.3 Installation of Tour Guide Application

To install and run the tour guide application on your PocketPC:

1. Connect the PocketPC to the computer to start an ActiveSync session. The typical method is using the USB wire that came with the device. Make sure both the computer and the PocketPC are turned on, and then attach the appropriate end of the cable to the bottom of the PocketPC, and the other end to one of the computer's USB ports.
2. Insert the installation CD into the PC's drive. Browse to Start|My Computer and locate the file called "PDA-Tour\_PPC2.ARMV4.CAB" on your CD drive. Copy the file to your Mobile Device (also accessible from My Computer). Navigate to where you stored the CAB file and tap the file.
3. The program will take a moment to install. Use the progress bar displayed on the screen to gauge the time remaining until the installation is complete.
4. The PocketPC may display a warning about not appearing properly in this version of Windows Mobile. You can safely ignore this warning. Tap OK.
5. Make sure you are authenticated (see section 2.4 below if you are not familiar with CAEN authentication) on the CAEN Wireless network and that the Ekahau client is running.
6. Browse to Start|Programs and click PDA-TOUR.
7. Start touring!



## 2.4 Authentication

To authenticate while inside the EECS building:

1. Open a web browser. You will automatically be redirected to the CAEN Wireless login page. If nothing loads, make sure your wireless

Ethernet card is running by following the steps in section 2.5 below. If a page loads, but it is not the wireless authentication page, try to access a webpage such as <http://www.umich.edu/>.

2. Type your U-M unquname and password in the appropriate fields.
3. Click the “login” button.
4. You are now authenticated. Close the browser window.



*Authenticating with CAEN*

## 2.5 Enabling a Wireless Connection on a Dell Axim

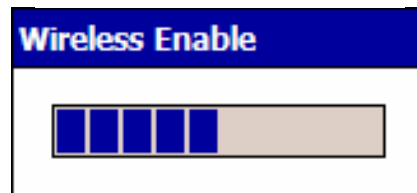
To enable wireless on a Dell Axim PocketPC:

1. When running, the Dell Axim’s built-in wireless device causes a blinking green light to appear at the top of the PocketPC.
2. If there is a green light flashing on the top of the PocketPC but a web browser is unable to connect to a webpage, you may not be in range of a wireless access point. Try moving to a different spot (the atrium or the air bridges are good spots to try in the EECS building).
3. If there is no green light, wireless has been disabled. To enable wireless, press the button located near the bottom-right corner of your PocketPC. You should see a message indicating that wireless is being enabled, and can monitor the progress using the blue status bar displayed below the message.
4. If wireless is now enabled, but you cannot access the authentication page, try the instructions listed under step 2.
5. If you are still having problems, you may need to consult the CAEN helpdesk located on the second floor of the Duderstadt center.

*Will flash green if wireless is enabled*



*Enable/disable wireless using this button*



## 3 Using the Application

When you launch the application, you will be directed to the Main Menu. You should specify what kind of tour to take before starting a tour:

*Architecture vs. Computer History Tour:* By default, the Architecture tour is selected. The type of information selected on the main menu will be displayed first when you walk into a new zone.

*Guided Tour vs. Free Walk Mode:* In Guided Tour mode, you will follow a predefined tour path that begins at your current location. In Free Walk mode, you are free to move anywhere in the building. Any information pertaining to the surrounding area will be made available on the PocketPC display automatically when you enter a new zone. Detailed information about Guided Tour and Free Walk modes is available in the sections below. After selecting the desired options, you are free to proceed on the tour.

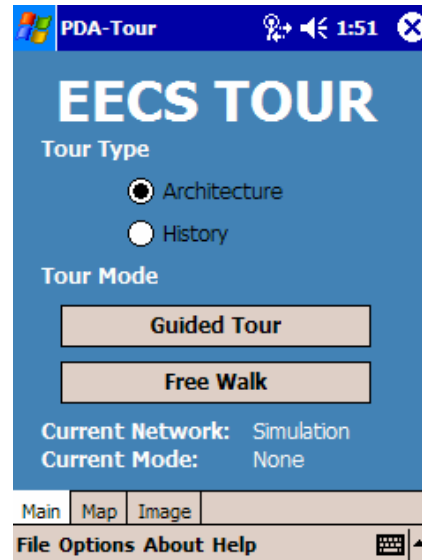
“Current Network” and “Current Mode” can be altered using settings from the Options menu as described in section 3.3.2.

### 3.1 Free Walk Mode

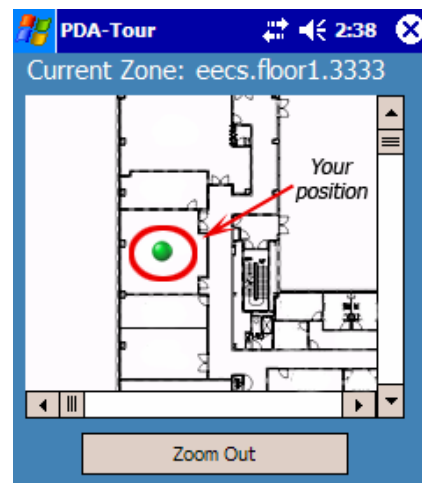
When the application is in Free Walk mode, your position is indicated at all times on the Map as a green beacon and is updated roughly once per second if the application is using Ekahau. You are free to move about the building and tour whichever locations interest you the most. When you move into a new area, new tabs pop up near the bottom of the application window, allowing you to access all of the information pertaining to the area. For example, imagine that the EECS atrium contained both computer history and architectural information. The application would display tabs corresponding to these two types of information when you entered the area. If you moved from the atrium into 1311 EECS (which contains only computer history information), the architecture tab would disappear, leaving the computer history tab with updated information relevant to 1311 EECS.

### 3.2 Guided Tour Mode

You can also switch to Guided Tour mode by selecting it from the Main Menu. In this mode, the tour will



*The Main Menu*



*Free Walk Mode*

follow a pre-defined path through the building. As in Free Walk mode, your position is indicated by a green beacon on the Map.

To start a Guided Tour, you must be at a tour stop. If you attempt to start a Guided Tour when you are not at a tour stop location, a message is displayed indicating that you must move to a tour stop location before starting a Guided Tour. A default tour stop location will now be displayed on the map as a red beacon—if you move to this location and attempt to start a Guided Tour again, the tour will commence.

When a Guided Tour is active, there are always two beacons displayed on the map: your green beacon and a red beacon indicating the next stop on the tour. When you move to the next stop in the series, the beacon positions are updated on the map. You can zoom in and out on the map using the button below the display, allowing access to an overview of the whole floor plan.

### 3.3 File, Help, and About

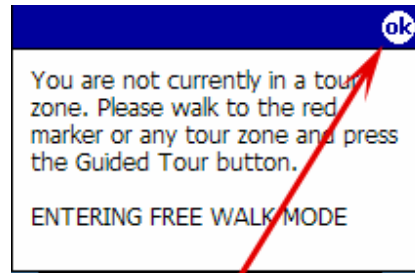
You will notice four menus near the bottom of your PocketPC display: File, Options, About, and Help.

#### 3.3.1 File

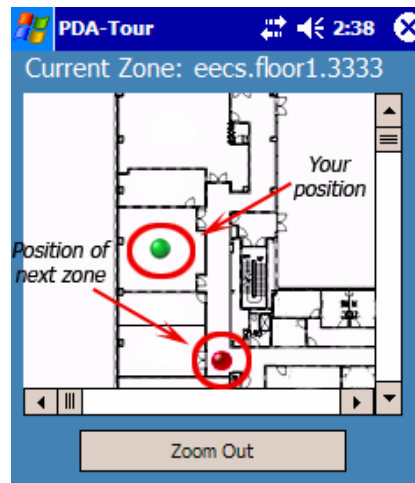
The File menu only contains the Exit option. Tapping Exit will close the tour application.

#### 3.3.2 Options

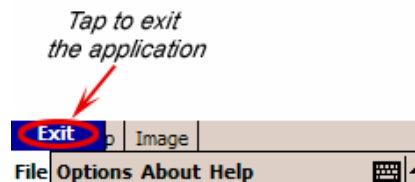
Using the Options menu, you can switch between Simulation and Network mode, and turn Auto Follow on and off. In Simulation mode, position data is read from a file called "log.txt" stored in the application's root directory. In Network mode, position data is read in real-time from the Ekahau location sensing system. If you turn Auto Follow on, the Map window will center on your position as you move around.



Tap OK



Guided Tour Mode



Use these options to toggle Auto Follow and change the active Network mode

### 3.3.3 About

Clicking on the About menu item will provide you with information about the authors of the application

### 3.3.4 Help

Clicking on the Help menu will bring up help within the application. .

## 3.4 Tabbed Browsing

A number of tabs are available directly above the File, Help, and About menus:

*Main Tab:* Returns you to the Main Menu.

*Map:* Provides a display of your position relative to the floor plan of the EECS building.

*Image:* Contains an image associated with a zone (if one exists).

The Main, Map, and Image tabs will always exist while the application is running. Additional tabs will appear dynamically depending on the tour information associated with your current position.

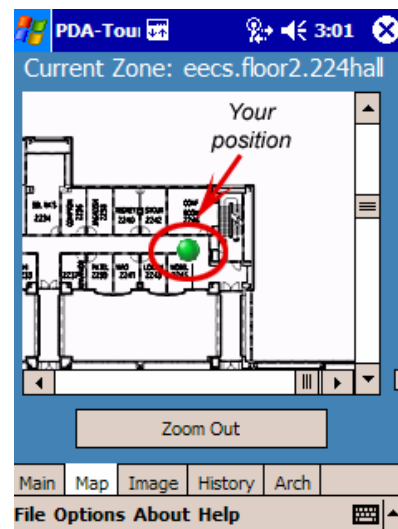
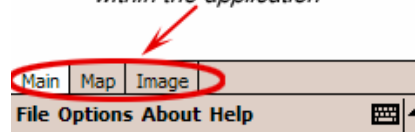
### 3.4.1 Map Tab

The Map tab provides a display of your position relative to the floor plan of the EECS building. Your position is indicated on the map by a green beacon. The scrollbars on the edges of the map display can be used to examine different portions of the map; the map will automatically focus on your location when you move into a new area if Auto Follow is turned on.

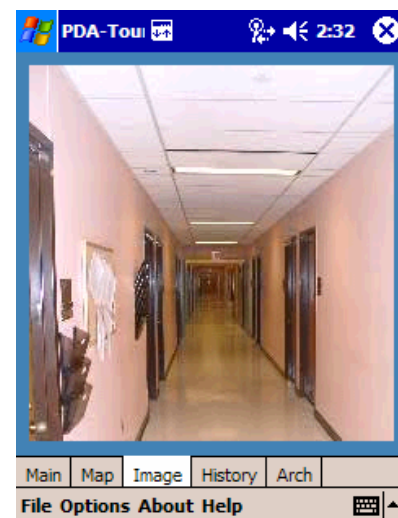
### 3.4.2 Image Tab

The Image tab contains an image associated with your current area (if one exists). This image is always stored in .bmp format and should be less than 500 KB in size to ensure the program runs smoothly.

*These tabs are used to navigate within the application*



*Map Tab*



*Image Tab*

### 3.4.3 Tour Type Tabs

Tabs that appear dynamically while running the application are Tour Type tabs. All areas included in a tour contain computer history information, appearing on the “History” tab, and architecture information, appearing on the “Arch” tab.

## 4 Adding Information

To make adding location information simple, none of the tour information is stored inside the program, but is instead read from text files found in a subdirectory of the program. The section below describes the purpose of each directory within the application, and the diagram to the right describes the hierarchy on disk:

**Root:** The application’s root directory

**text:** Contains all the text that will be contained inside the application, including init.txt and help.txt. If you want to run the program in Simulation Mode, a file called log.txt should exist in the text directory as well. This file should contain a log of Ekahau’s operation to be parsed for simulation data.

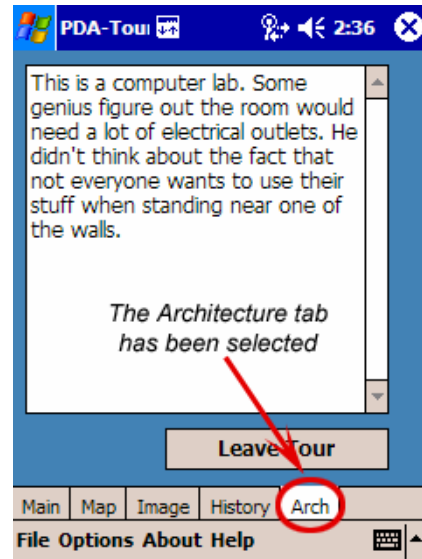
**tourInfo:** Contains the information that will be displayed for each tour type inside of a zone

**zones:** Contains the files that describe each zone (these files include information about the zone name, associated image file, number of tour types, names of tour types, files associated with types, and the next zone on a Guided Tour for each type)

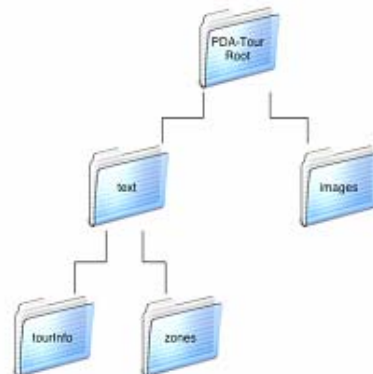
**images:** Contains a map image for each floor in a building (stored as a 24-bit bitmap file) and all images associated with a zone

Certain rules will apply to text files associated with the application:

- A pound symbol (#) at the beginning of a line represents a comment. Any line beginning with # is ignored by the parser.
- All filenames are case-sensitive.



*Tour Type Tabs*



*The PDA-Tour Folder Hierarchy*

- Descriptions of tour types are placed in the tourInfo folder and must have file names that correspond to the name given in the zone file (zone files are stored in the zones directory). For example, if zoneEECS1311.txt specifies “eecs\_1311\_history.txt” as the file containing relevant historical information for 1311 EECS, then the tourInfo directory must contain a file called eeecs\_1311\_history.txt.

## **4.1 *init.txt***

The init.txt file contains a short description of the zone file format and one integer attribute that represents the total number of zones. The format of the file is as follows:

```
#  
# short description of zone file format  
#  
numZones = ...  
zoneFile = zoneA.txt  
zoneFile = zoneB.txt  
.  
.  
.
```

The name of each zone file contained in the zones folder must be specified individually in init.txt using a “zoneFile =” identifier.

## **4.2 *Zone Files***

The following attributes are defined in a zone file (and must be represented in a specific syntax and order):

<i>Attribute [#]</i>	<i>Sample Syntax</i>
Zone name [1]	zoneName = ZoneA
X-coordinate of the zone on the floor plan [2]	zoneX = 1331 (specified in pixels)
Y-coordinate of the zone on the floor plan [3]	zoneY = 506 (specified in pixels)
Image file corresponding to the zone [4]	imageFile = image.bmp
Number of tour types in the zone [5]	numTypes = 2 (less than or equal to 5)
Name of tour type [6]	typeName = History (this name will appear on the corresponding Tour Type tab during run time)
Information file name for specific type [7]	infoFile = zone1History.txt
Zone name for the next tour stop on a guided tour [8]	nextZone = eecs.floor2.2420

*NOTE: Attributes 6-8 must be repeated for the number of tour types specified by attribute 3; if numTypes = 3 then there would be 9 attributes. Each zone file must contain attributes 1-8.*

For each tour type specified by the typeName field in a zone file, a .txt file must be included in the tourInfo folder of the project root. This file can contain any text to describe the surrounding area of a zone. It will automatically be read into the application at run time and will be displayed when the corresponding zone is entered.

### **4.3 Associating an Image with a Zone**

Images can also be associated with a particular area in the building. To associate an image with a zone, copy the image into the images directory on your PDA and update the corresponding zone file's imageFile field with the image's filename. You can access any image associated with an area using the Image tab while standing in the area. Images are automatically stretched or compressed to fit within the display area and must be in .bmp format.



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