

Sierra Engine

Applications development for Psion Teklogix
radio-frequency terminals with Sierra Engine

Introduction

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Applications Development

If you have to develop applications for Psion Teklogix radio-frequency terminals you will find there are different choices.

If you want that your application could be used in the greater possible range of Psion Teklogix terminal models (hand terminals 7025 / 7030 / 7035 / 7535 / WORKABOUT PRO) and vehicle-mount terminals in 8055 / 8255 / 8260 / 8560 / 8570), your options are:

- To develop console applications for **ANSI** terminals. This would be a possible option if you work in UNIX environment or similar.
- To use **TESS** (Teklogix Screen Subsystem), the protocol developed by Psion Teklogix, to allow communication between the application server and the terminals.

If you decide to use TESS, you will be able to develop applications in Windows environment.

Programming applications using TESS can be quite difficult. Psion Teklogix offers 2 tools to simplify your work:

- The **TekHTML** emulator, that allows terminals using TESS to display HTML pages provided by an external web server.
- The **Teklogix Software Development Kit - TSDK**, tool kit to control the terminals and the base stations.

The TekHTML emulator

The TekHTML emulator accepts HTML pages from a web server, converts them in TESS pages and sends them to the terminals.

Accepts the answers of the terminals transforming them from TESS to the web appropriate format and send them to the web server.

TekHTML runs in Windows NT and requires the Teklogix Base Station Server – TekBSS program.

The TekHTML emulator has the following **limitations**:

- Graphics, fonts and stylesheets are not supported.
- Frames are not supported.
- Some HTML markers are not supported (<LAYER>, <MAP>, etc).
- Paragraph alignment is not supported.
- The HTML pages will not have to exceed the number of lines of the terminal display; the emulator will display only the upper part of the page. There is no way to scroll the page to see the rest of contents.
- The emulator uses http 1.0.
- Only the **http://** y **file://** access protocols are supported.
- Only not encrypted connections are supported.
- Users authentication is not supported.
- The MIME types sent by the web server are not used.
- Drop-down list boxes, radio buttons and checkboxes are not supported.
- Advanced web servers characteristics (like redirection) are not supported.

These limitations cause that, in case you already have an application with a web interface, you surely *have to re-write it completely*.

Developing your application to be compatible with TekHTML emulator will not probably be the best choice.

Teklogix Software Development System - TSDK

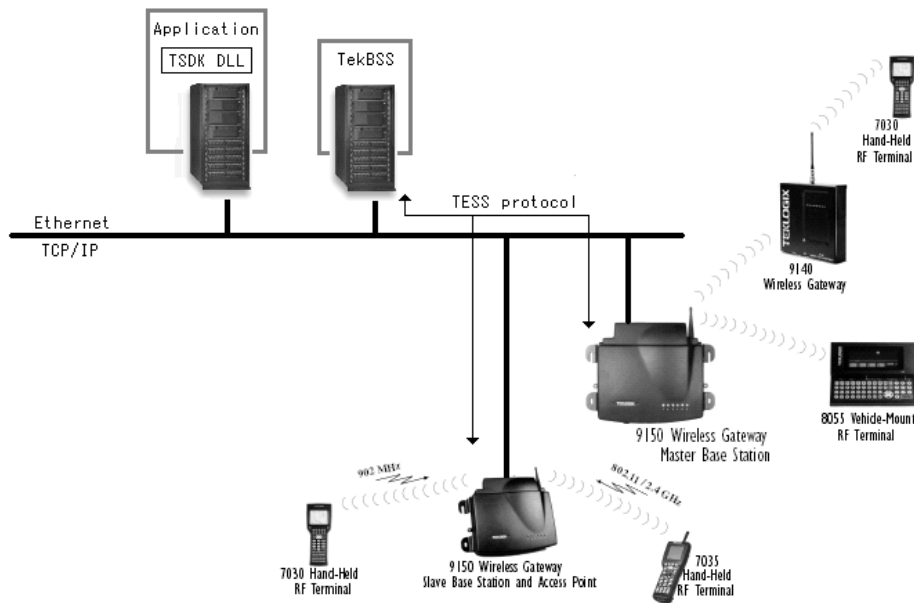
Programming using the Teklogix Software Development System - TSDK is easier than doing it directly with TESS, also you will be able to design the screens with a visual editor and to reference the pages and fields by names.

The TSDK offers you reliable communications with the base stations and with the terminals, the support for multiple terminals per application and the tools to develop client/server applications.

You will count on the Teklogix Base Station Server – TekBSS program, that will be able to be executed as a Windows NT service; the Windows Teklogix Screen Formatter – WinTSF and; the TSDKVC.DLL / TSDKBC.DLL dynamic link library (compiled versions with Microsoft Visual C++ 5.0 and Borland C++ 4.5).

In addition to a pair of simple examples of programs with their source code for Visual Basic 4 and 5, Delphi, C and Cobol and; the TekSIM program that emulates base stations and terminals and allows you testing your developments without the need of having a radio-frequency installation.

A simplified graph of a radio-frequency system with an application based on TSDK, is shown below:



If you take a look to some of the example programs that come with the TSDK, will see that to do something like a simple "Hello world" program, you will have to write quite code.

Your programmers will have to contend with calls to library functions, which require -unless they are using the language C-, some care with passing parameters. They will need to understand terminals' messages own structures, and in fact, to acquire a complete knowledge of the library.

This last results quite bothersome since the provided examples, even though result illustrative, they make use of only some of the necessary basic functions to develop a real application.

You would refer to the TSDK library and get the necessary knowledge to develop your applications, but this certainly will not be a simple process.

While you would be making your best efforts in programming specific modules for your business application, you will have to dedicate many hours

training your development team about the particularities of the TSDK library, and your programmers to use it.

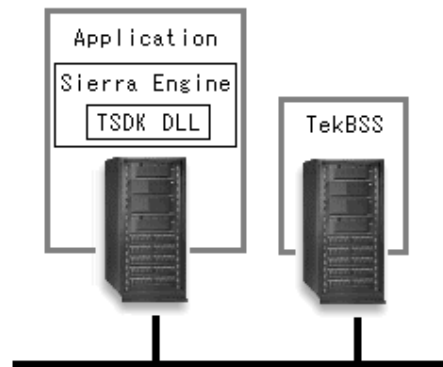
Santa Fe Tech proposes you to cut drastically the development times.

We have called to our solution **Sierra Engine**.

Sierra Engine

Sierra Engine is a dynamic link library that encapsulate the TSDK library, simplifying enormously the applications development for Psion Teklogix radio-frequency terminals.

With Sierra Engine you have a tool to generate your application **in the shortest time**, and will obtain a rich interface for the terminals administration without additional effort.



The goal pursued in the Sierra Engine creation has been to simplify the programmers' task of business applications, isolating all the aspects that have to do with the programming and the administration of terminals.

Also, the user interface of the applications developed with Sierra Engines allows:

- To define the physical numbers of the terminals to use.
- To define which of the terminals will be enabled to use the application.
- To define the base station to use.
- To see the screen content of any terminal in any time.
- To operate from a virtual terminal.
- To know all time the user logged to the application in every terminal, with indication of date and time.
- To send text messages to the terminals.
- To end or restart the application in a given terminal.
- To recognize all the terminals status (connected, blocked, etc.) at first sight.
- To consult the log file.

In addition, the interface of Sierra Engine allows to be personalized. The programmer can define:

- The application title.
- The application logo displayed in the main window.
- The language to use (currently available English and Spanish)
- The button icon reserved to the application on the main window toolbar.

This last, allows you to widen the Sierra Engine interface with its own windows.



Figure 1

Figure 1 shows the main window of Sierra Engine in Spanish language. The following characteristics are highlighted:

1. The customizable application title.
2. The customizable application logo.
3. The customizable toolbar (only the second button from the left).
4. The events log of Sierra Engine and of the application.

The toolbar of the main window allows accessing to different functions.



Figure 2

Figure 2 shows the buttons and they have been identified with numbers.

1. Terminals status.
2. Customizable. Reserved for the application.
3. Parameters of Sierra Engine.
4. Display of the log file.
5. Virtual terminal.

The functions are described below:

1. Terminals status

Shows the Terminal Status Dialog.

This screen has two operation modes depending on the Sierra Engine status, if it has been begun in normal mode or in setup mode.

Note: When the application begins and Sierra Engine displays the main window (see Fig.1), the following message is shown during 3 seconds:

Press F1 to setup mode...

If F1 key is pressed within this time, Sierra Engine enters to the setup mode, otherwise starts in normal mode.

Operating in setup mode, only some functions will be accessible, the terminals are not initialized and no message is sent to them.

In normal mode the terminals' status is shown, including, the physical number, the user name of the user logged to each terminal -with date and time- and, a status graphic indicator.

It is possible to see the status up to 15 terminals together. Clicking on the small screens of the icons that represent the terminals, it can be seen what is showing the real screen of that terminal in that moment (screenshot). See Figure 4.

Clicking on the terminal number is acceded to a dialog that allows:

- To send a message to a terminal.
- To lock / unlock the terminal.

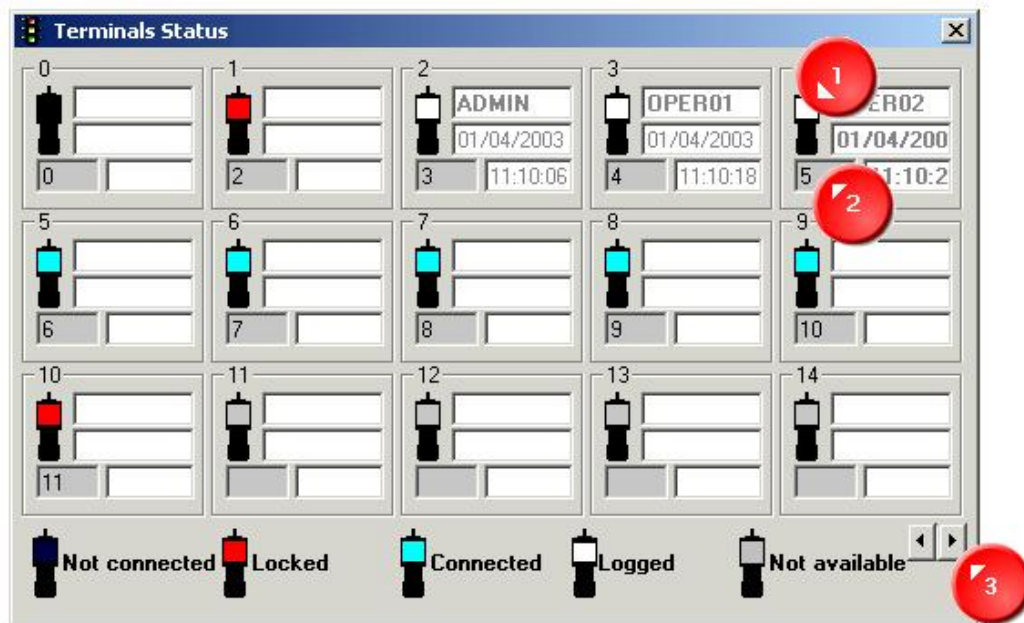


Figure 3

The status of the first 15 terminals is shown in Figure 3, from terminal 0 (virtual terminal) to 14. To see the status of the following terminals, the button indicated in the figure with the number 3 is pressed. This allows to advance or to go back in the visualization of the terminals' status of 15 by 15.

The number located under every icon that represents the terminal, is the physical number of the terminal or radio number.

The statuses represented are:

- a. Turned off
- b. Locked
- c. Connected
- d. Logged
- e. Not available

Description of each status:

- a. **Turned off.** This status corresponds to a terminal that is enabled to operate from Sierra Engine but it has not answered to the request of beginning the operation. It is concerned generally to a terminal turned off or out of the coverage area in the moment of beginning the application. In case of the virtual terminal this status means that is not in use.
- b. **Locked.** This status corresponds to those terminals that have been locked from Sierra Engine during the normal operation or during the configuration. Usually are locked those terminals that are not using the application temporarily, for example, a terminal that it has been sent to repair or affected eventually to other task. The virtual terminal can not be locked.
- c. **Connected.** Represents that the terminal has answered and it has begun to operate with the application.
- d. **Logged.** Represents that the terminal is operating with the application and has an associated user. Usually, after doing the login procedure of the application.
- e. **Not available.** In the Sierra Engine configuration is set the maximum number of terminals to use. This value will be between 1 and 3840¹, which is the limit of terminals that supports Sierra Engine. The status of the represented terminals that correspond to positions over to the established value and until 3840 will be "Not available".

¹ Note: They are applied restrictions according to the licensing plan contracted for Sierra Engine.

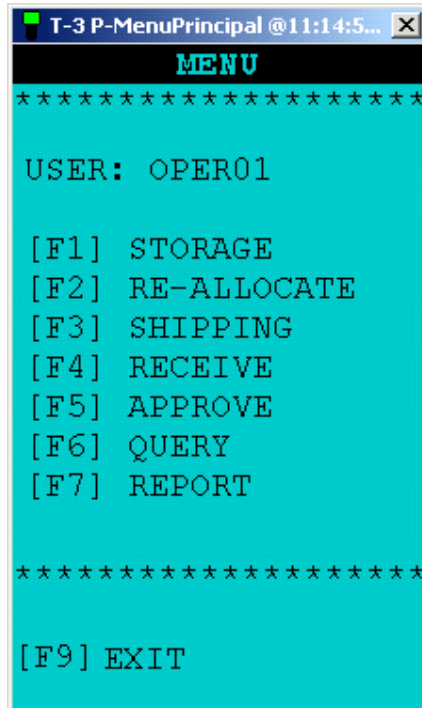


Figure 4

Figure 4 shows an example of screenshot of one of the terminals, obtained from the Terminal Status Dialog. The number of rows and columns match with the values of the parameters in the physical terminal.

Also, in the title bar of this window is shown the terminal number, the screen name that it is being displaying to the terminal operator, and the time when the screenshot was requested.

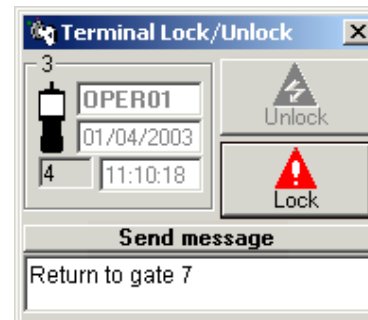


Figure 5

When it is acceded to the Terminal Status Dialog in setup mode, the following operations are allowed:

- To lock / Unlock terminals, clicking on the small screens of the icons that represent the terminals, except those that are in "Not available" status.
- To Define / Modify the physical number -or radio number- of every terminal. Attention: every enabled terminal must have a different physical number. The permitted values are between 1 and 3840.

2. Customizable. Reserved to the application.

This button allows making a call from the Sierra Engine main window to the application.

If, for example, the application requires of entering configuration data for the data access, clicking on this button, can be displayed the dialogue to enter the parameters, or any other operation.

When this button is pressed, Sierra Engine gives the control to the application indicating if it is in normal mode or in setup mode.

The icon of the button can be set. Also it is possible to hidden it.

3. Sierra Engine parameters.

This button displays the configuration dialog of Sierra Engine.

Allows defining the values for:

- IP number or host name of the base station to use.
- TCP port number of the base station to use.
- Number of terminals to use.
- Greater physical number or radio number to use.
- Timeout in seconds for communication with the base station.
- Number of items that are registered in the log before be recorded in disk.
- Number of columns for the virtual terminal display.
- Number of rows for the virtual terminal display.

This option is available only in setup mode.

4. Log visor

This button calls the application that permits to check the log file.

Sierra Engine keeps a record of great number of events in a plain text file delimited by tabs (ASCII 09).

This file is located on the application directory and is named Sierra_log.txt.

The events that are recorded are:

- Sierra Engine is started.
- A terminal is connected to the application.
- A user is logged (login process successfully)
- A user logouts the terminal operation.
- The virtual terminal window is opened.
- The virtual terminal window is closed.
- A change in the configuration is made.
- The status of any terminal is changed.
- A message is sent to a terminal from the Terminal Status Dialog.
- An error is detected.

Also it is possible to register an event in the log file from the application. The last 10 log entries are shown in the main window.

Every log entry has the following fields:

- Event type
- Date and Time.
- Terminal physical number.
- Name of the user logged to the terminal.
- Event description.

5. Virtual terminal

This button opens the window of the virtual terminal.

The virtual terminal is a powerful characteristic of Sierra Engine that allows to emulate a RF terminal, and to do the same operations that the user of the application does from a terminal.

This option is only available in normal mode.

The virtual terminal is supported automatically by Sierra Engine without need of additional programming.

