



Data exchange between WAP application and SIM Application Toolkit application with technical details

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Data exchange with new 11.14 command

- Not yet approved by SMG9!
- Following use case was given to WAP and WAP&SMG9 ad-hoc earlier without technical solution.
- This time with technical solution, as a potential solution!
- Use case is modified, a bit.

Use Cases

In order to get deeper understanding of applying Data exchange, there is one use case explained below:

- Pizza ordering based on location information.
- Technical details are included.

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Case 1, Pizza ordering based on location information



- The user browses to a WAP Pizza Service.
- Before a pizza can be ordered, the Pizza Service has to know the location of the user.
- However, in this case needed location information is not directly available from Origin Server side.

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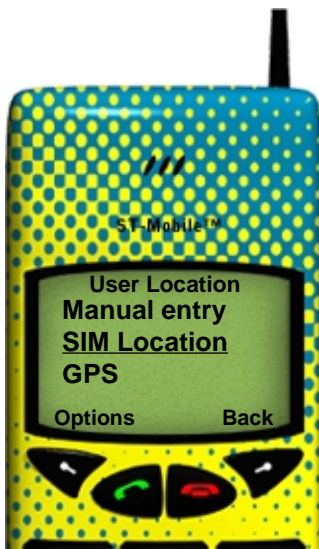




- There is a menu item, Location.
- The user selects it.

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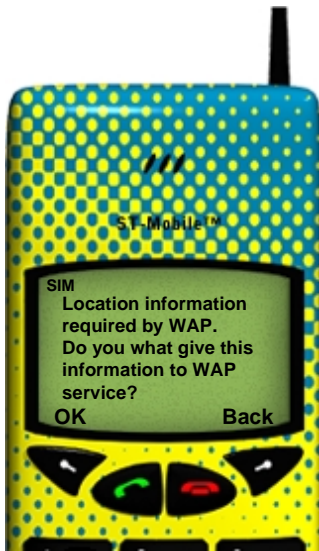


- The user gets a WML page which inquires the method for getting the location information (enter manually, use SIM Location, GPS).
- The user selects the SIM Location method.
- This method must deliver some data to the SIM Card (STK). This data enables SIM Application Toolkit software to know that the user location information is required and it must be returned to WAP. This can be done via starting Menulitem or using data exchange command (used in this case).

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- After selection user permission is asked by SIM Application toolkit before user's location is returned to EFI application (WMLScript).
- This permission is done by asking PIN code.

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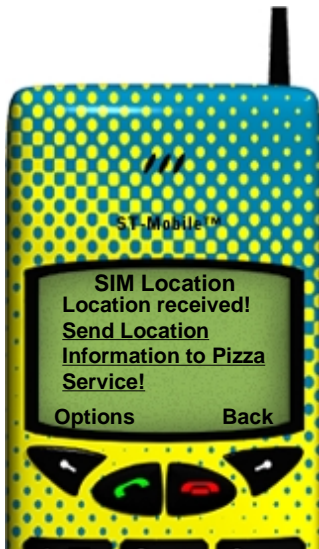


- User enters PIN code for this Application
- -> OK

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- The SIM Application Toolkit Location Software returns the location information to the EFI (WMLScript).
- The user is prompted to send the location information to the Pizza Service.
- (This can also be done without user interaction)

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- From now on the Pizza Service follows normal logic.
- And finally informs the user that the Pizza order has been received.

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Use Case 1 in General

Use Case1

- Limited quantity of data exchange.
- STK receives limited amount of control data from EFI.
- and then returns Location information and possible some application dependent information.
- Control data is more than just starting Location application.
- EFI is not used to display STK application menu structures, but returned data can be displayed by the EFI.

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Technical Solution for Pizza use case



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1 Introduction

This is a study for Use Case that must be done for WAP Forum (Toolkit group and EFI). I am using the old Pizza use case as base line here. This use case will introduce how data exchange is done between WAP/EFI and SIM/STK.

There is also Power Point presentation that illustrates the user interface and use case very well. If you have not read the use case before, you should do so before reading this paper.

This paper will be used for making the use case for WAP.

2 Content

2.1 Data flow

Figure 1 shows the events when data exchange is used in the use case. Before 1 user is browsing normally with WAP browser and also after 22 user is browsing normally.

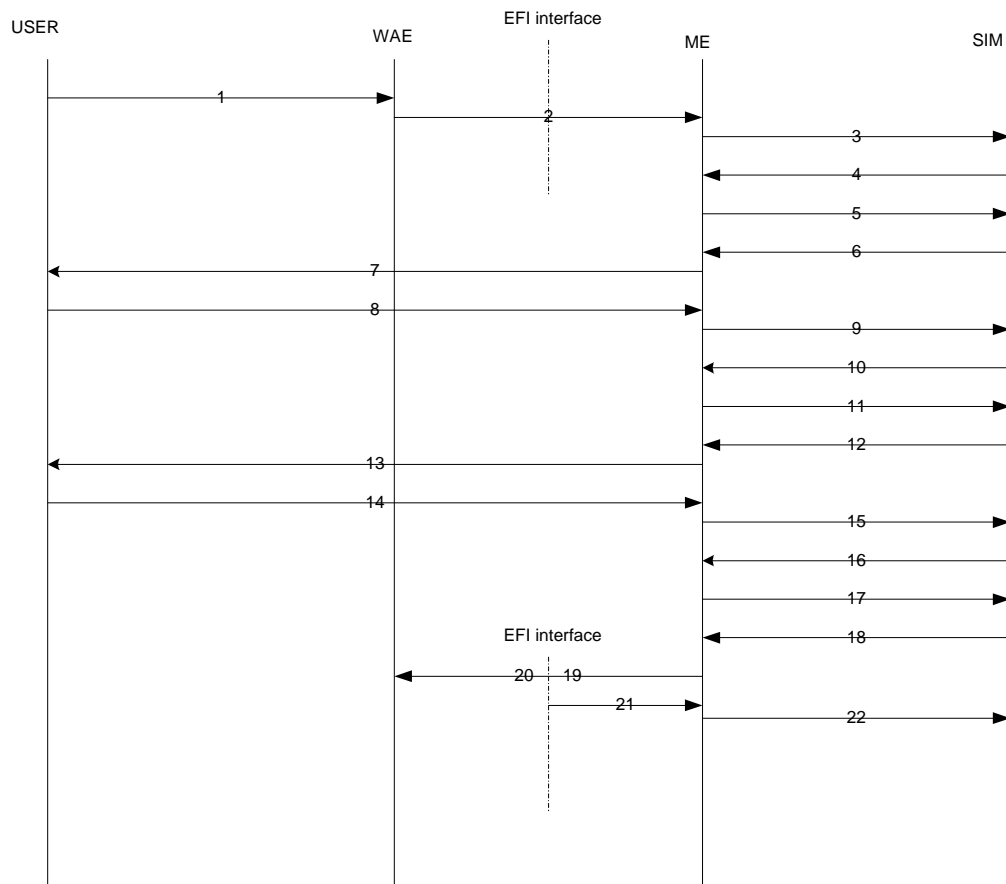


Figure 1, What happens when user selects link to STK.

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- 1) SIM Location link
- 2) EFI WMLScript call
- 3) ENVELOPE(LOCAL DATA DOWNLOAD)
- 4) 91 XX
- 5) Fetch
- 6) Display Text
- 7) ME Displays text to user
- 8) User selects OK
- 9) Terminal Response
- 10) 91 XX
- 11) Fetch
- 12) Get Input
- 13) ME asks input from user
- 14) User enters pin and presses OK
- 15) Terminal Response
- 16) 91XX
- 17) Fetch
- 18) Local Data Upload (new command to send data from SIM to local application environment in ME), to EFI
- 19) ME returns data to EFI
- 20) A) EFI returns the data to WAE (21 and 22A can be other way around)
B) WAP service (WML deck) continues and possible STK also!
- 21) Ack
- 22) Terminal Response

2.2Content of data

This chapter is defining the data transfer from WAE to STK and back. Here the data means the data given as parameter to EFI call and also the returned data passed back to WAE.

In order to enable the STK location service to start the Pizza service has to give some data to STK. What kind data of is it, and how about the returning data?

In this use case, the Pizza service must provide information that enables SIM card/STK to know that location information is needed. In this case location service it not a menu item service.

So, the location service on the SIM card has it operator specific data structure that must be download with Local Data Download command, this data enables the location service to be started. This data can be very simple or it can contain very cool features, like billing information. There is no point of defining this data in details for this use case, it is just a string of data that STK can use.

Returning data can also be operator specific location information, but in case it would be standard return value of Provide Local Information proactive command.

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2.3GSM 11.14

With this use case one can see that the CR for 11.14 on Local Data Download is not totally correct and that new proactive command is needed to enable data exchange both ways. Current CR to 11.14 on Local Data Download does not permit STK to return data later, e.g. after “display text” and “get input” proactive commands.

This new Local Data Upload has to be included in 11.14. Launch Browser command does not solve the problem; how to return data to EFI application that is requesting the data in the data exchange session. This can happen so that the EFI and STK application know what kind of Local Data Download data is needed to start this upload process (or one can specify new command for that).

There must be a time out for EFI for how long it waits return data, this time out should be as parameter in the WMLScript call for data exchange (sending data) to SIM. Maximum and minimum limits must be defined in EFI Class.

These are valid requirements, when EFI is starting the session with SIM. It is not realistic to expect EFI to support SIM initiated data change (Push from SIM). In the WAP environment Push must be done with Launch Browser command from SIM.

If ETSI approves Local Data Upload it should be used in current WAP environment as part of EFI initialized data exchange. This new proactive command can be used with other environments as well, these other environments can be able to process local push.

From 6 to 21 WAP browsers’ “UI” is “replaced” with STK UI, in the case of one screen phone. WAP Browser must not be terminated because STK application is using UI.

Input data to SIM:

This data can be relatively large – 1KBytes. Local Data Download command should enable this, but at least 700 Bytes of downloadable data must be supported. Download can be done with concatenated messages/commands! These data sizes can be argued, how big should they be?

Output data from SIM:

Local Data Upload should support 700 Bytes and must support 256 Bytes upload. Coding of upload data in the ME must be defined, but in general this data must be transported transparently, i.e. ME must not change the data, except the well-defined data coding. These data sizes can be argued, how big should they be?

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2.4EFI

In this chapter we are going to introduce data exchange's input to EFI specification. EFI core team should clarify this.

EFI needs to define:

- Time limits for waiting return data as a parameter.
- How to find out that Local Data Download and Upload is supported by ME and SIM Card.
- How to pass data from WAE to EFE.
- How to return data from EFE to WAE.
- How big data "blocks" can be transported from WAE to EFI (EFE).
- Etc

Some of these issues are defined in the Jonathan Main's (Motorola) input paper "Abstract Definition of start Application EFI Class version 1.0." But it is not valid any more since many of the features there are now part of EFI Framework. Where are the implementation notes now?

Time limits are not defined and STK implementation notes are not addressing the data exchange issues.