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ELECTRONIC HEALTH SOLUTIONS

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Abbreviations and Acronyms

Abbreviation/Acronym	Expansion
VistA	**V**eterans **I**nformation **S**ystems and **T**echnology **A**rchitecture
EHS	**E**lectronic **H**ealth **S**olutions
API	**A**pplication **P**rogramming **I**nterface
HL7	**H**ealth **L**evel 7
GT.M	**G**reystone **T**echnology **M**
ADPAC	**A**utomated **D**ata **P**rocessing **A**pplication **C**oordinator
DHCP	**D**ecentralized **H**ospital **C**omputer **P**rogram

ELECTRONIC HEALTH SOLUTIONS

Table of Contents

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1.   Introduction

This documents covers the configuration and technical side of UJO7 Version 2, its includes the following:

- Technical side:
    - UJO7 files and fields.
    - UJO7 APIs.
- ADPAC and configuration side:
    - Adding a new message configuration into the UJO7 MESSAGE CONFIGURATION file #400037007.
    - Adding a new trigger.
    - Activating/Deactivating triggers.
    - Configuration of Acknowledgment Message.

In order to send HL7 message correctly from source to destination, it should have a proper configuration. And a trigger has to be built and activated. The trigger is responsible for initiating message building and sending process.

1.1 Prerequisites and Dependencies

1. Sufficient knowledge of M language and programming skills.
2. Familiar with GT.M environment and GT.M triggers

    Find more information about GT.M and M language at the link below:

    http://fis-gtm.com
3. FileMan and Kernel functionalities and HL7 main concepts

    Find more information at the link below:

    http://www.va.gov/vdl
4. Understand UJO error-handling.

    Link will be added later
5. Install all patches that are related with UJO7 version 1.0

    Find more information at the link below:

    http://10.123.30.30/svn/HL7/HL7_Interface/Define

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2. UJO7 files and fields

The following table mention the new files and new fields (on existing files) that were added for UJO7 version 2.0.

File Number	File Name	Description	Field Number	Field Name	Type
400037007	UJO7 MESSAGE CONFIGURATION	This file holds the message structure that will be used by the HL7 message builder to construct the HL7 message.	.01	NAME	FREE TEXT
			1	HL7 MESSAGE TYPE	POINTER
			2	HL7 VERSION	POINTER
			3	HL7 EVENT TYPE CODE	POINTER
			4	DESCRIPTION	FREE TEXT
			5	SEGMENTS (multiple)	POINTER
			5 →.01	HL7 SEGMENT TYPE (subfield)	POINTER
			5 → 1	PROCESSING ROUTINE (subfield)	MUMPS

			6	REQUIRED VARIABLES (multiple)	FREE TEXT
			6 → .01	VARIABLE NAME (subfield)	FREE TEXT
			6 → 1	VARIABLE TYPE (subfield)	POINTER
			6 → 2	VARIABLE VALIDATION (subfield)	MUMPS
			6 → 3	DESCRIPTION (subfield)	FREE TEXT
			7	WORK ARRAY	FREE TEXT
400037008	UJO7 GTM TRIGGER DEFINITION	A trigger definition file is used for adding new triggers/modifying existing triggers, or removing obsolete triggers. A trigger definition file consists of one or	.01	TRIGGER NAME	FREE TEXT
			1	GLOBAL VARIABLE	FREE TEXT
			2	COMMAND	FREE TEXT

		more trigger definitions.	3	DELIM	FREE TEXT
			4	PIECES	FREE TEXT
			5	TRIGGER CODE	MUMPS
			6	ACTIVATED/DEACTIVATED FLAG	SET OF CODE
400037009	UJO7 GTM TRIGGER ACT/DEACT LOG	This file holds the log of activating or deactivating the GT.M triggers from the GT.M trigger file	.01	DATE TIME	DATE
			1	ACTIVATOR/DEACTIVATOR	FREE TEXT
			2	ACTIVATION STRING	FREE TEXT
771.3	HL7 SEGMENT TYPE	MULTIPLE FLAG field is a set of code that contains the	400037000	MULTIPLE FLAG	SET

* Find more details about the fields description in the ADPAC and configuration section.

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3.   UJO7 API's

The following API's are used with HL7 messages and HL7 acknowledgment message:

3.1 $$MSASEGB^UJO7ACK

This API is used to build an array contains the session variables of MSA segment in the acknowledgment message and their values.

Syntax:	MSASEGB^UJO7ACK(ACK,ID,TXT,CON,SARR,MSGERR)
Input parameters:	ACK : Acknowledgment code (ACKCODE) session variable.
	ID : Message control ID (MSGCONID) session variable.
	[TXT] : Text message (TXTMSG) session variable. (optional)
	[CON] : Error condition (ERRCON) session variable. (optional)
Output parameters:	SARR : This array to hold the resulted MSA variable array.
	QUDA [MSGERR] : Passed by reference to contain error messages. (optional)
Return :	0 : Fail
	1 : Success

3.2 $$ERRSEGB^UJO7ACK

This API is used to build an array that contains the session variables of ERR segment in the acknowledgment message and their values.

(**Note:** you musts use the same array to build MSA and ERR session variables array)

Syntax:	$$ERRSEGB^UJO7ACK(ERRSEGID,CODELOC,LOC, CODE,APPERR,APPERRP,USRMSG,PIND,SARR,MSGERR)
Input parameters:	ERRSEGID : Sequence number of ERROR segment.
	[CODELOC] : Error code and location (ERRCL) session variable. (optional)
	[LOC] : Error location (ERRLOC) session variable. (optional)
	[CODE] : HL7 Error condition (ERRCODE) session variable. (optional)
	[APPERR] : Application Error code (APPERR) session variable. (optional)

	[APPERRP]	: Application Error parameter (APPERPAR) session variable. (optional)
	[USRMSG]	: User message (USERMSG) session variable. (optional)
	[PIND]	: Inform person indicator (PIND) session variable. (optional)
Output parameters:	SARR	: This array to hold the resulted ERR variable array (must use the same array used to build MSA array).
	[MSGERR]	: Passed by reference to contain error messages. (optional)
Returns:	0	: Fail
	1	: Success

3.3 $$MAINACK^UJO7ACK

This API is used to build and send the acknowledgment message.

(**Note:** use the array you built before using the above API's)

Syntax:	$$MAINACK^UJO7ACK(VARARR,EVDRVR,MSGCFGN,MSGERR)	
Input parameters:	VARARR	: Array which holds session variables as subscript and their values.
	EVDRVR	: Event driver name.
	MSGCGFN	: Message configuration name.
Output parameters:	[MSGERR]	: Passed by reference to contain error messages. (optional)
Return:	0	: Fail
	1	: Success

3.4 GETFLDVL^UJO7FPUT

This API is used to append the value to the work array, based on input parameters. This is used mainly in the processing routine.

Syntax:	GETFLDVL^UJO7FPUT(FILENUM,FIELDNUM,VALIEN,	
	MSGNAME,SEGNAME,FLDNAME,RPNUM,CMPNUM,SUBCMNUM)	
Input parameters:	FILENUM	: The file number to get the data from
	FIELDNUM	: The field number to get the data from
	VALIEN	: The internal number of the recored to get the data from
	MSGNAME	: The name of the message configuration

SEGNAME   : The name of the segment configuration

FLDVALUE   : The value of the field

[REPNUM]   : The repeater position number (optional)

[COMPNUM] : The component position number (optional)

SUBCOMNUM: The sub component position number

3.5 GFLDPRTN^UJO7FPUT

This API is used to append the value to the work array, based on input parameters. This is used mainly in the processing routine.

Syntax: GFLDPRTN^UJO7PUT(MSGNAME,SEGNAME,FLDNAME,FLDVALUE,

RPNUM,CMPNUM,SUBCMNUM)

Input parameters: MSGNAME   : The name of the message configuration

SEGNAME   : The name of the segment configuration

FLDNAME   : The name of the field configuration

FLDVALUE   : The value of the field

REPNUM   : The repeater position number

COMPNUM   : The component position number

SUBCOMNUM: The sub component position number

3.6 $$APWRKARY^UJO7FPUT

This API will append the value to the work array, based on input parameters. This is used mainly in the processing routine.

Syntax: APWRKARY^UJO7FPUT(VALUE,RETARY,SEGNAME,SEQNUM,FLDNUM,

REPNUM,COMPNUM,SUBCOMNUM)

Input parameters: VALUE   : The value of the field

RETARY   : The work array name (STRING)

SEGNAME   : The segment name

SEQNUM   : The segment sequence number

FLDNUM   : The field position number

[REPNUM]   : The repeater position number (optional)

[COMPNUM]   : The component position number (optional)

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SUBCOMNUM: The sub component position number

Return: 1 : success

                       0 : fail

3.7 $$MAIN^UJO7TRGR

This API is used to build and send HL7 message, based on the message configuration file.

Syntax: MAIN^UJO7TRGR(EVDRVR,MSGCFGN,MSGERR)

Input parameters:	EVDRVR	: Event driver name.
	MSGCGFN	: Message configuration name.
Output parameters:	[MSGERR]	: Passed by reference to contain error messages.(optional)
Return:	0 : Fail	
	1 : Success	

4.   UJO7 Message Builder

UJO7 Message Builder is developed to build all HL7 messages from one function. "Message Builder" constructs the message segments and fields based on UJO7 MESSAGE CONFIGURATION file #400037007.
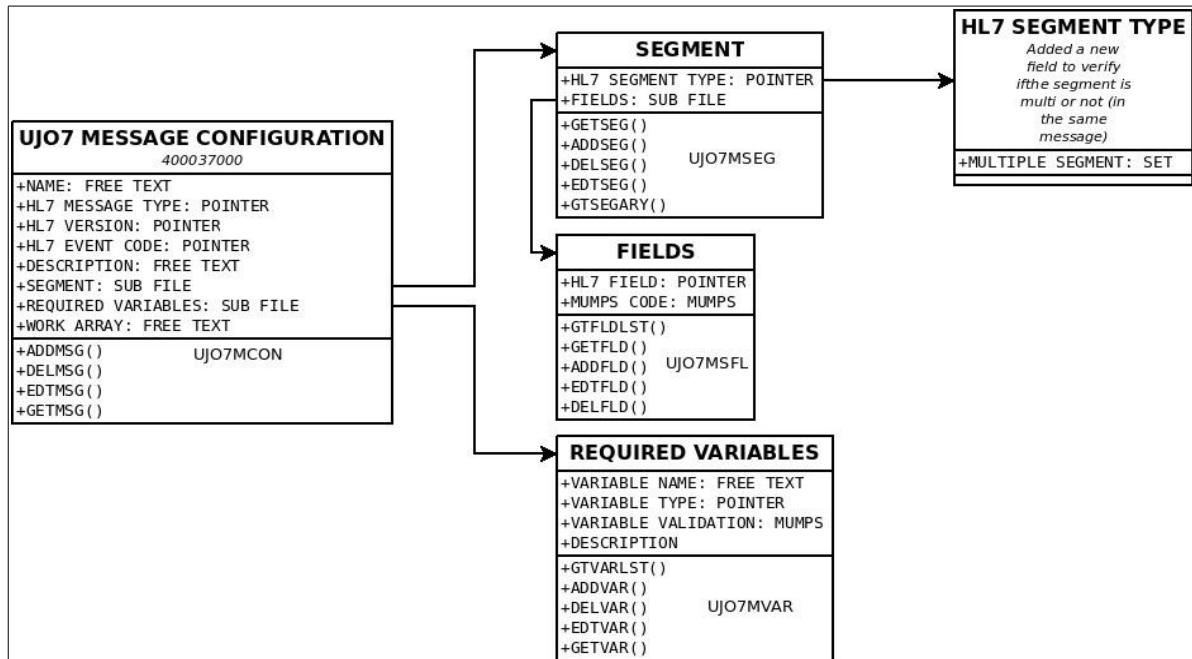
4.1 Message Builder Configuration

The following menus must be assigned for those user needs to configure message builder:

- UJO7 Framework Main Menu [UJO7 FRAMEWORK MAIN MENU]

- Message Builder Main Menu [UJO7 MSG BUILDER CONFIG. MENU]

```
CHOOSE 1-5: 3  UJO7 FRAMEWORK MAIN MENU      UJO7 Framework Main Menu


   BLD    Message Builder Main Menu ...
   TRG    UJO7 GT.M TRIGGER MANAGAMENT ...

Select UJO7 Framework Main Menu Option: MESSage Builder Main Menu


   1      Enter/Edit Message Configuration
   2      Enter/Edit HL7 Field
   3      Enter/Edit HL7 Segment
```

4.1.1 Message Configuration

"Enter/Edit Message Configuration [UJO7 MSG CONFIG. ENTER/EDIT]" option is used to To create a new HL7 Message, this option prompts to enter:

- **UJO7 MESSAGE CONFIGURATION NAME**: the name of the new HL7 message.

- **HL7 MESSAGE TYPE**: type of the message (pointer to the HL7 MESSAGE TYPE file #771.2).

- **HL7 VERSION**: HL7 version (pointer to HL7 VERSION file #771.5).

- **HL7 EVENT TYPE CODE**: pointer to the HL7 EVENT TYPE CODE file #779.001.

- **DESCRIPTION**: write a brief description of the HL7 message.

- **HL7 SEGMENT TYPE**: this a multiple field that contains segments in the message.

- **HL7 FIELD**: this is a multiple field that contains HL7 fields that related to a segment.

- **PROCESSING ROUTINE**: the routine that will get the value of the HL7 field.

  You can use the following API's as processing routine:

  ○ GETFLDVL^UJO7FPUT(FILENUM,FIELDNUM,VALIEN,MSGNAME,SEGNAME,FLDNAME,RPNUM,CMPNUM,SUBCMNUM)
  This processing routine will get the value of the field from a file using the IEN of the record:

    ▪ FILENUM   : The file number to get the data from

- ▪ FIELDNUM : The field number to get the data from
- ▪ VALIEN   : The internal number of the recored to get the data from
- ▪ MSGNAME   : The name of the message configuration
- ▪ SEGNAME   : The name of the segment configuration
- ▪ FLDNAME   : The name of the field configuration
- ▪ REPNUM   : The repeater position number (optional)
- ▪ COMPNUM   : The component position number (optional)
- ▪ SUBCOMNUM : The sub component position number

- ○ GFLDPRTN^UJO7FPUT(MSGNAME,SEGNAME,FLDNAME,FLDVALUE,RPNUM,CMPNUM,SUBCMNUM)
  This processing routine will get the value of the field from a file using a session variable variable:

  - ▪ MSGNAME   : The name of the message configuration
  - ▪ SEGNAME   : The name of the segment configuration
  - ▪ FLDNAME   : The name of the field configuration
  - ▪ FLDVALUE : The value of the field
  - ▪ REPNUM : The repeater position number
  - ▪ COMPNUM : The component position number
  - ▪ SUBCOMNUM : The sub component position number

- • **VARIABLE NAME**: Session variable that the processing routine need to set values to HL7 field in the segment

- • **VARIABLE TYPE:** This is the variable type, pointer to the variable type file.

- • **VARIABLE VALIDATION:** This field holds a code that can validate the data inside the variable.[OPTIONAL]

- • **DESCRIPTION:** This field holds the description for this variable,and (why and where) i ts used.

- • **WORK ARRAY**: Holds the name of the working array that will hold the message data that will be filled by the builder and the fields processing routines.

Ex. to create a new HL7 message named TESTPID:

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```
Select UJO7 MESSAGE CONFIGURATION NAME:


   1      Enter/Edit Message Configuration
   2      Enter/Edit HL7 Field
   3      Enter/Edit HL7 Segment

Select Message Builder Main Menu Option: 1  Enter/Edit Message Configuration

Select UJO7 MESSAGE CONFIGURATION NAME: TESTPID
  Are you adding 'TESTPID' as
    a new UJO7 MESSAGE CONFIGURATION (the 6TH)? No// YES  (Yes)
NAME: TESTPID//
HL7 MESSAGE TYPE: ADT        ADT message
HL7 VERSION: 2.4       HEALTH LEVEL SEVEN
HL7 EVENT TYPE CODE: A08        ADT/ACK-Update patient information
DESCRIPTION: THIS IS A TEST MESSAGE
Select HL7 SEGMENT TYPE: PID        Patient Identification
  Are you adding 'PID' as a new SEGMENTS (the 1ST for this UJO7 MESSAGE CONFIGU
RATION)? No// YES  (Yes)
   Select HL7 FIELD: PATIENT NAME    PID  PID
   Are you adding 'PATIENT NAME' as a new FIELDS (the 1ST for this SEGMENTS)? No
// YES  (Yes)
     PROCESSING ROUTINE: DO GFLDPRTN^UJO7FPUT("A08TEST","PID","PATIENT NAME",VARR
,1,1,1)
   Select HL7 FIELD:
Select HL7 SEGMENT TYPE:
Select VARIABLE NAME: VARR
  Are you adding 'VARR' as a new VARIABLE NAME (the 1ST for this UJO7 MESSAGE C
ONFIGURATION)? No// YES  (Yes)
  VARIABLE TYPE: NUMERIC
  VARIABLE VALIDATION:
  DESCRIPTION:
Select VARIABLE NAME:
WORK ARRAY: TESTARR
```

4.1.2 HL7 Segment Configuration

"Enter/Edit HL7 segment [UJO7 HL7 SEGMENT ENTER/EDIT]" option is used to to add a new HL7 segment, this option prompts to enter:

- **HL7 SEGMENT TYPE ABBREVIATED NAME**: a three letter abbreviated name of the segment.

- **HL7 SEGMENT TYPE FULL NAME**: HL7 segment full name.

- **VERSION**: HL7 version.

- **PROCESSING ROUTINE**: The routine that will be run to process data in the segment.
  For more details about "processing routines" Refer to: http://www.va.gov/vdl/application.asp?appid=8
  The following example use EN1^HLO to build ZRD segment.

- **GENERATION ROUTINE**: The routine that generate the segment.

- **MULTIPLE FLAG**: If set to 1 then this segment is a multiple segment, this means that it can be repeated in the same HL7 message.

Ex. to create a new ZRD segment:

```
Select Message Builder Main Menu Option: 3  Enter/Edit HL7 Segment

Select HL7 SEGMENT TYPE ABBREVIATED NAME: ZRD
  Are you adding 'ZRD' as a new HL7 SEGMENT TYPE (the 176TH)? No// YES  (Yes)
   HL7 SEGMENT TYPE FULL NAME: ZRD TEST
ABBREVIATED NAME: ZRD//
FULL NAME: ZRD TEST//
Select VERSION: 2.4       HEALTH LEVEL SEVEN
  Are you adding '2.4' as a new VERSION (the 1ST for this HL7 SEGMENT TYPE)? No
// YES  (Yes)
  PROCESSING ROUTINE: DO EN1^HLO
  GENERATION ROUTINE: DO EN2^HLO
PROCESSING ROUTINE:
MULTIPLE FLAG:
```

4.1.3 HL7 Field Configuration

"Enter/Edit HL7 Field [UJO7 HL7 FIELD ENTER/EDIT] "option is used to to add a new HL7 field that doesn't exist in the HL7 FIELD file #771.1, this option prompts to enter:

- **NAME**: HL7 field name.

- **SEGMENT**: the segment that will use this HL7 field (this is a multiple, you can enter more than one segment).

- **DHCP FILE**:Each HL7 filed that has a table number must have a corresponding DHCP file that contains the list of valid table entries.
  For more details about DHCP Refer to: http://www.va.gov/vdl/application.asp?appid=8

- **SEQUENCE**:The HL7 sequence number associated with the HL7 field

- **MAXIMUM LENGTH**: maximum length of the hl7 field.

- **DATA TYPE**: data type of hl7 field.

- **REQUIRED?**: enter 1 to make this field required and 0 to make it not required.

- **REPETITION**: The number of times the HL7 field can repeat within an HL7 segment. If the field cannot repeat, leave this field blank.

- **TABLE NUMBER**: Only fields that have an HL7 data type of ID (Coded Value) have a table number. The ID data type is equivalent to a Set of Codes or Pointer data type in VA FileMan. For locally defined fields, the table number should begin with the 2-4 character DHCP package namespace.
  For more details about "table number" Refer to: http://www.va.gov/vdl/application.asp?appid=8

- **ITEM NUMBER**: The HL7 (or locally defined) table number associated with the HL7 (or locally defined) field (e.g., 0008 or RA0001).

- **PARENT**: If this entry is a component of a field or a subcomponent of a component, then the parent of the field/component is entered here.

- **APPLICATION**: the application that will use this HL7 field in its messages.

- **VERSION**: the HL7 version.

- **SAMPLE DHCP VALUE**: this a sample of DHCP value.
  For more details about DHCP Refer to: http://www.va.gov/vdl/application.asp?appid=8

- **SAMPLE HL7 VALUE**: this is a sample of what the field data my look like.

- **DESCRIPTION**: the description of the field.

Ex. to make a new HL7 field that will be used in the PID segment:

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```
Select Message Builder Main Menu Option: 2  Enter/Edit HL7 Field

Select HL7 FIELD NAME: TESTFIELD
  Are you adding 'TESTFIELD' as a new HL7 FIELD (the 531ST)? No// YES  (Yes)
   HL7 FIELD SEGMENT: PID       Patient Identification
   HL7 FIELD SEGMENT: PID//
NAME: TESTFIELD//
SEGMENT: PID//
DHCP FILE:
SEQUENCE: 4
MAXIMUM LENGTH: 10
DATA TYPE: NM    Numeric
REQUIRED?: 1  REQUIRED
REPETITION:
TABLE NUMBER:
ITEM NUMBER:
PARENT:
Select APPLICATION:
Select VERSION: 2.4       HEALTH LEVEL SEVEN
  Are you adding '2.4' as a new VERSION (the 1ST for this HL7 FIELD)? No// YES
  (Yes)
SAMPLE DHCP VALUE:
SAMPLE HL7 VALUE:
DESCRIPTION:
  No existing text
  Edit? NO//
```

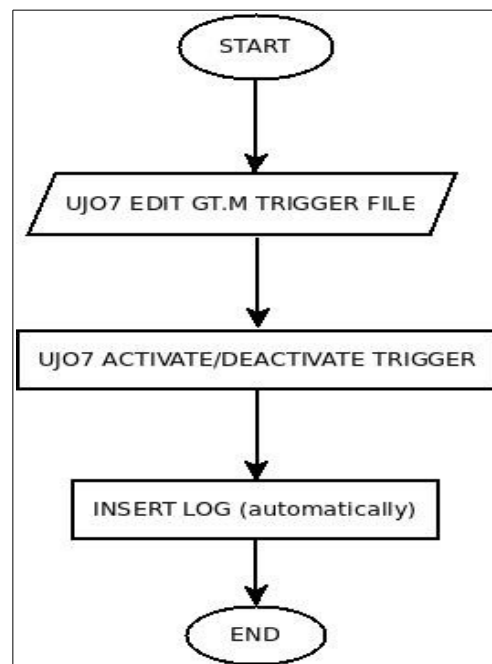## 5. UJO7 GT.M Trigger

Triggers are implemented to fire based on a database field(s) change that will allow execution of MUMPS code which is responsible of initiating the process of building and sending the HL7 message.

UJO7 present an options to facilitate the way to add, configure, and activate/deactivate a trigger, also you can view the trigger log and trigger operations logs. The figures below show the design and the work flow of the UJO7 GT.M trigger:

UJO7 GTM TRIGGER DEFINITION
```
+TRIGGER NAME: FREE TEXT
+GLOBAL VARIABLE: FREE TEXT
+COMMAND: FREE TEXT
+DELIM: FREE TEXT
+PIECES: FREE TEXT
+TRIGGER CODE: MUMPS

+UJO7 EDIT GT.M TRIGGER FILE(): EDIT
+UJO7 ACTIVATE TRIGGER(): RUN ROUTINE
```

UJO7 GTM TRIGGER ACT/DEACT LOG
```
+DATE TIME: DATE
+ACTIVATOR/DEACTIVATOR: FREE TEXT
+ACTIVATION STRING: FREE TEXT

+UJO7 VIEW LOG(): INQUIRE
+UJO7 PURGE LOGS(): RUN ROUTINE
```

START

↓

UJO7 EDIT GT.M TRIGGER FILE

↓

UJO7 ACTIVATE/DEACTIVATE TRIGGER

↓

INSERT LOG (automatically)

↓

END

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5.1 UJO7 GT.M Trigger Configuration

The following menus must be assigned for those user needs to configure GT.M trigger:

- UJO7 framework main menu [UJO7 FRAMEWORK MAIN MENU]
- UJO7 GT.M trigger management [UJO7 GTM TRGR MANAGEMENT] menu.

```
CHOOSE 1-5: 3  UJO7 FRAMEWORK MAIN MENU     UJO7 Framework Main Menu


   BLD    Message Builder Main Menu ...
   TRG    UJO7 GT.M TRIGGER MANAGAMENT ...

Select UJO7 Framework Main Menu Option: UJO7 GT.M TRIGGER MANAGAMENT


        VIEW CURRENT GT.M TRIGGERS
        EDIT UJO7 GTM TRIGGER DEFINITION FILE
        ACTIVATE/DEACTIVATE UJO7 GT.M TRIGGER
        LOG GT.M TRIGGER DEFENITION FILE OPERATIONS ...
```

1. "View current GT.M triggers [UJO7 VIEW CURRENT GTM TRIGGERS]" option to view the active triggers

```
Select UJO7 GT.M TRIGGER MANAGAMENT Option: VIEW CURRENT GT.M TRIGGERS

;trigger name: TEST3#  cycle: 5
+^DPT(IEN=*,0) -name=TEST3 -commands=S -delim="^" -pieces=1 -xecute="DO NAME^UPD
ATE"
;trigger name: USERSSN2#  cycle: 7
+^VA(200,IEN=*,1) -name=USERSSN2 -commands=S -delim="^" -pieces=9 -xecute="DO SS
N^UPDATE"
```

2. "Edit UJO7 GT.M trigger definition file "[UJO7 EDIT GT.M TRIGGER FILE]" option is used to create/edit a trigger. This option prompts to enter:

   1. **NAME**: trigger name

   2. **GLOBAL VARIABLE**: the global location of the field which will fire the trigger.(enter global variable without the ^).

   3. **COMMAND**: mumps command that the trigger will be fired on. ex(set, kill, ….)

   4. **DELIM**: the delimiter sign to be used to get field value from global location.

   5. **PIECES**: the pieces of the global node that will be used in the trigger.

6. **TRIGGER ROUTINE**: the routine that will execute when the trigger occur.

 (**Note that** you cannot edit a trigger after activate it, you must deactivate it and then edit this trigger.)

The example below show how to create a trigger that will be fired on the set command on the SSN field of the NEW PERSON file #200:

```
Select UJO7 GT.M TRIGGER MANAGAMENT Option: EDIT UJO7 GTM TRIGGER DEFINITION FIL
E

Select UJO7 GTM TRIGGER DEFINITION TRIGGER NAME: SSNUP
  Are you adding 'SSNUP' as
    a new UJO7 GTM TRIGGER DEFINITION (the 7TH)? No// YES  (Yes)
TRIGGER NAME: SSNUP//
GLOBAL VARIABLE: VA(200,IEN=*,1)
COMMAND: SET
DELIM: "^"
PIECES: 9
TRIGGER CODE: DO SSN^UPDATE
```

3. "Activate/Deactivate UJO7 GT.M trigger [UJO7 ACTIVATE TRIGGER]" option is used to activate/deactivate a trigger. The example below show how to activate a trigger:

```
Select UJO7 GT.M TRIGGER MANAGAMENT Option: ACTIVATE/DEACTIVATE UJO7 GT.M TRIGGE
R
Select UJO7 GTM TRIGGER DEFINITION TRIGGER NAME: USERSSN

     Select one of the following:

         +          ACTIVATE
         -          DEACTIVATE

Please select either to activate or deactivate the selected trigger: +  ACTIVATE

Added trigger on ^VA named USERSSN#
```

4. "Log GT.M trigger definition file operations [UJO7 TRIGGER LOG]" menu contains the following option to manage the log activities

   1. "View GT.M trigger definition file operations logs [UJO7 VIEW LOG]" option is used to view the log

```
Select UJO7 GT.M TRIGGER MANAGAMENT Option: LOG GT.M TRIGGER DEFENITION FILE OPE
RATIONS


        VIEW GT.M TRIGGER DEFINITION FILE OPEARTIONS LOGS
        PURGE ALL LOGS BETWEEN TWO DATES

Select LOG GT.M TRIGGER DEFENITION FILE OPERATIONS Option: VIEW GT.M TRIGGER DEF
INITION FILE OPEARTIONS LOGS

Select UJO7 GTM TRIGGER ACT/DEACT LOG DATE TIME: T   JAN 04, 2014
    1   1-4-2014@21:32:16
    2   1-4-2014@21:36:07
    3   1-4-2014@21:36:31
    4   1-4-2014@21:57:32
    5   1-4-2014@21:57:40
Press <RETURN> to see more, '^' to exit this list, OR
CHOOSE 1-5: 1  1-4-2014@21:32:16

DEVICE:   TELNET
UJO7 GTM TRIGGER ACT/DEACT LOG LIST             JAN  4,2014  22:23    PAGE 1
-----------------------------------------------------------------------------


DATE TIME: JAN 04, 2014@21:32:16        ACTIVATOR/DEACTIVATOR: MANAGER,SYSTEM
  ACTIVATION STRING: -^DPT -command=SET -delim="^" -xecute="DO X^Y" -name=TST -p
ieces=4
```

2. "Purge all logs between two dates [UJO7 PURGE LOGS]" option is used to delete a specific period of log

```
Select UJO7 GT.M TRIGGER MANAGAMENT Option: LOG GT.M TRIGGER DEFENITION FILE OPE
RATIONS



        VIEW GT.M TRIGGER DEFINITION FILE OPEARTIONS LOGS
        PURGE ALL LOGS BETWEEN TWO DATES

Select LOG GT.M TRIGGER DEFENITION FILE OPERATIONS Option: PURGE ALL LOGS BETWEE
N TWO DATES
Please enter the DATE FROM which you want to purge logs:  T-1
Please enter the DATE TO which you want to purge logs:  T
```

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6.   Acknowledgment Message Configuration

You need to do the following configuration to be able to use Acknowledgment API's and send it:

First you need to add the multi flag for ERR segment:

for more information about multiflag refer to: 4.1.3 **HL7 Field Configuration**

```
Select OPTION NAME: UJO7 FRAMEWORK MAIN MENU      UJO7 framework main menu
  BLD   Message builder main menu ...
  TRG   UJO7 GT.M trigger management ...
Select UJO7 framework main menu Option: BLD  Message builder main menu
  1     Enter/Edit message configuration
  2     Enter/Edit HL7 field
  3     Enter/Edit HL7 segment
Select Message builder main menu Option: 3  Enter/Edit HL7 segment
Select HL7 SEGMENT TYPE ABBREVIATED NAME: ERR      Error
ABBREVIATED NAME: ERR//
FULL NAME: Error//
Select VERSION: 2.5//
 VERSION: 2.5//
 PROCESSING ROUTINE:
 GENERATION ROUTINE:
PROCESSING ROUTINE:
MULTIPLE FLAG: 1  MULTIPLE SEGMENT
```

Then, change the sequence of ERROR CODE AND LOCATION FIELD and add the following fields to HL7 field file:

```
Select UJO7 framework main menu Option:  Message builder main menu
  1     Enter/Edit message configuration
  2     Enter/Edit HL7 field
  3     Enter/Edit HL7 segment

Select Message builder main menu Option:  Enter/Edit HL7 field

Select HL7 FIELD NAME:   ERROR CODE AND LOCATION  ERR  ERR
NAME: ERROR CODE AND LOCATION  Replace
SEGMENT: ERR//
DHCP FILE:
SEQUENCE: 1// 2
MAXIMUM LENGTH: 80//
DATA TYPE: ID// ^
```

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Select HL7 FIELD NAME: ERROR CONDITION   MSA MSA
NAME: ERROR CONDITION//
SEGMENT: MSA//
DHCP FILE:
SEQUENCE: 6//
MAXIMUM LENGTH: 250//
DATA TYPE: CE//
REQUIRED?: NOT REQUIRED//
REPETITION:
TABLE NUMBER:
ITEM NUMBER:
PARENT:
Select APPLICATION:
Select VERSION: 2.4//
SAMPLE DHCP VALUE:
SAMPLE HL7 VALUE:
DESCRIPTION:
  No existing text
  Edit? NO//

Select HL7 FIELD NAME: ERROR LOCATION   ERR ERR
NAME: ERROR LOCATION//
SEGMENT: ERR//
DHCP FILE:
SEQUENCE: 3//
MAXIMUM LENGTH: 18//
DATA TYPE: ST//
REQUIRED?: NOT REQUIRED//
REPETITION:
TABLE NUMBER:
ITEM NUMBER:
PARENT:
Select APPLICATION:
Select VERSION: 2.4//
SAMPLE DHCP VALUE:
SAMPLE HL7 VALUE:
DESCRIPTION:
  No existing text
  Edit? NO//

Select HL7 FIELD NAME: HL7 ERROR CODE   ERR ERR

ELECTRONIC HEALTH SOLUTIONS

NAME: HL7 ERROR CODE//
SEGMENT: ERR//
DHCP FILE:
SEQUENCE: 4//
MAXIMUM LENGTH: 500//
DATA TYPE: NM//
REQUIRED?: REQUIRED//
REPETITION:
TABLE NUMBER:
ITEM NUMBER:
PARENT:
Select APPLICATION:
Select VERSION: 2.4//
SAMPLE DHCP VALUE:
SAMPLE HL7 VALUE:
DESCRIPTION:
 No existing text
 Edit? NO//

Select HL7 FIELD NAME: APPLICATION
   1   APPLICATION ERROR CODE   ERR ERR
   2   APPLICATION ERROR PARAMETER   ERR ERR
CHOOSE 1-2:

Select HL7 FIELD NAME: APPLICATION ERROR CODE   ERR ERR
NAME: APPLICATION ERROR CODE Replace
SEGMENT: ERR//
DHCP FILE:
SEQUENCE: 6//
MAXIMUM LENGTH: 500//
DATA TYPE: ST//
REQUIRED?: NOT REQUIRED//
REPETITION:
TABLE NUMBER:
ITEM NUMBER:
PARENT:
Select APPLICATION:
Select VERSION: 2.4//
SAMPLE DHCP VALUE:
SAMPLE HL7 VALUE:
DESCRIPTION:
 No existing text

Edit? NO//

Select HL7 FIELD NAME: R   ERR ERR
  Are you adding 'R   ERR ERR' as a new HL7 FIELD (the 539TH)? No// CHOOSE 1-

??
    Answer with 'Yes' or 'No': NO (No) ??

Select HL7 FIELD NAME: APPLICATION ERROR PARAMETER   ERR ERR
NAME: APPLICATION ERROR PARAMETER Replace
SEGMENT: ERR//
DHCP FILE:
SEQUENCE: 7//
MAXIMUM LENGTH: 80//
DATA TYPE: ST//
REQUIRED?: NOT REQUIRED//
REPETITION: 10//
TABLE NUMBER:
ITEM NUMBER:
PARENT:
Select APPLICATION:
Select VERSION: 2.4//
SAMPLE DHCP VALUE:
SAMPLE HL7 VALUE:
DESCRIPTION:
  No existing text
  Edit? NO//

Select HL7 FIELD NAME: USER MESSAGE   ERR ERR
NAME: USER MESSAGE//
SEGMENT: ERR//
DHCP FILE:
SEQUENCE: 9//
MAXIMUM LENGTH: 250//
DATA TYPE: TX//
REQUIRED?: NOT REQUIRED//
REPETITION:
TABLE NUMBER:
ITEM NUMBER:
PARENT:
Select APPLICATION:
Select VERSION: 2.4//

```
SAMPLE DHCP VALUE:
SAMPLE HL7 VALUE:
DESCRIPTION:
  No existing text
  Edit? NO//

Select HL7 FIELD NAME: INFORM PERSON INDICATOR    ERR  ERR
NAME: INFORM PERSON INDICATOR  Replace
SEGMENT: ERR//
DHCP FILE:
SEQUENCE: 10//
MAXIMUM LENGTH: 20//
DATA TYPE: ST//
REQUIRED?: NOT REQUIRED//
REPETITION:
TABLE NUMBER:
ITEM NUMBER:
PARENT:
Select APPLICATION:
Select VERSION: 2.4//
SAMPLE DHCP VALUE:
SAMPLE HL7 VALUE:
DESCRIPTION:
  No existing text
  Edit? NO//
```

Finally, add the acknowledgment configuration:

```
1     Enter/Edit message configuration
2     Enter/Edit HL7 field
3     Enter/Edit HL7 segment

Select Message builder main menu Option:  Enter/Edit message configuration

Select UJO7 MESSAGE CONFIGURATION NAME: ACK MSG
  Are you adding 'ACK MSG' as
   a new UJO7 MESSAGE CONFIGURATION (the 6TH)? No// Y  (Yes)
NAME: ACK MSG//
HL7 MESSAGE TYPE: ACK      General acknowledgement
HL7 VERSION: 2.4      HEALTH LEVEL SEVEN
HL7 EVENT TYPE CODE:
DESCRIPTION: This is the configuration for acknowledgement
```

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Select HL7 SEGMENT TYPE: MSA   Message Acknowledgement
  Are you adding 'MSA' as a new SEGMENTS (the 1ST for this UJO7 MESSAGE CONFIGU
RATION)? No// Y (Yes)
  Select HL7 FIELD: ACKNOWLEDGEMENT CODE   MSA MSA
  Are you adding 'ACKNOWLEDGEMENT CODE' as a new FIELDS (the 1ST for this SEGME
NTS)? No// Y (Yes)
  PROCESSING ROUTINE: DO GFLDPRTN^UJO7FPUT("ACK
MSG","MSA","ACKNOWLEDGEMENT CODE",ACKCODE,1,1,1)
  Select HL7 FIELD: MESSAGE CON
    1   MESSAGE CONTROL ID   MSA   MSA
    2   MESSAGE CONTROL ID   MSH   MSH
CHOOSE 1-2: 1 MESSAGE CONTROL ID MSA MSA
  Are you adding 'MESSAGE CONTROL ID' as a new FIELDS (the 2ND for this SEGMENT
S)? No// Y (Yes)
        PROCESSING ROUTINE: DO GFLDPRTN^UJO7FPUT("ACK MSG","MSA","MESSAGE
CONTROL ID",MSGC ONID,1,1,1)
  Select HL7 FIELD: TEXT MESSAGE   MSA MSA
  Are you adding 'TEXT MESSAGE' as a new FIELDS (the 3RD for this SEGMENTS)? No
// Y (Yes)
         PROCESSING ROUTINE: DO GFLDPRTN^UJO7FPUT("ACK MSG","MSA","TEXT
MESSAGE",TXTMSG,1,1,1)
  Select HL7 FIELD: ERROR CONDITION   MSA MSA
  Are you adding 'ERROR CONDITION' as a new FIELDS (the 4TH for this SEGMENTS)?
 No// Y (Yes)
         PROCESSING ROUTINE: DO GFLDPRTN^UJO7FPUT("ACK MSG","MSA","ERROR
CONDITION",ERRCON,1,1,1)
  Select HL7 FIELD:
Select HL7 SEGMENT TYPE: ERR   Error
  Are you adding 'ERR' as a new SEGMENTS (the 2ND for this UJO7 MESSAGE CONFIGU
RATION)? No// Y (Yes)
  Select HL7 FIELD: ERROR CODE AND LOCATION   ERR ERR
  Are you adding 'ERROR CODE AND LOCATION' as a new FIELDS (the 1ST for this SE
GMENTS)? No// Y (Yes)
     PROCESSING ROUTINE: DO GFLDPRTN^UJO7FPUT("ACK MSG","ERR","ERROR CODE
AND LOC ATION",.ERRCL,1,1,1)
  Select HL7 FIELD: ERROR LOCATION   ERR ERR
  Are you adding 'ERROR LOCATION' as a new FIELDS (the 2ND for this SEGMENTS)?
No// Y (Yes)
        PROCESSING ROUTINE: DO GFLDPRTN^UJO7FPUT("ACK MSG","ERR","ERROR
LOCATION",.E RRLOC,1,1,1)
  Select HL7 FIELD: HL7 ERROR CODE   ERR ERR
  Are you adding 'HL7 ERROR CODE' as a new FIELDS (the 3RD for this SEGMENTS)?

No// Y (Yes)
    PROCESSING ROUTINE: DO GFLDPRTN^UJO7FPUT("ACK MSG","ERR","HL7 ERROR CODE",.E RRCODE,1,1,1)
  Select HL7 FIELD: APPLICATION ERROR CODE   ERR ERR
  Are you adding 'APPLICATION ERROR CODE' as a new FIELDS (the 4TH for this SEG MENTS)? No// Y (Yes)
    PROCESSING ROUTINE: DO GFLDPRTN^UJO7FPUT("ACK MSG","ERR","APPLICATION ERRORCODE",.APPERR,1,1,1)
  Select HL7 FIELD: APPLICATION ERROR PARAMETER   ERR ERR
  Are you adding 'APPLICATION ERROR PARAMETER' as
   a new FIELDS (the 5TH for this SEGMENTS)? No// Y (Yes)
    PROCESSING ROUTINE: DO GFLDPRTN^UJO7FPUT("ACK MSG","ERR","APPLICATION ERRORPARAMETER",.APPERPAR,1,1,1)
  Select HL7 FIELD: USER MESSAGE   ERR ERR
  Are you adding 'USER MESSAGE' as a new FIELDS (the 6TH for this SEGMENTS)? No
// Y (Yes)
      PROCESSING ROUTINE: DO GFLDPRTN^UJO7FPUT("ACK MSG","ERR","USER MESSAGE",.USERMSG,1,1,1)
  Select HL7 FIELD: INFORM PERSON INDICATOR   ERR ERR
  Are you adding 'INFORM PERSON INDICATOR' as a new FIELDS (the 7TH for this SE GMENTS)? No// Y (Yes)
      PROCESSING ROUTINE: DO GFLDPRTN^UJO7FPUT("ACK MSG","ERR","INFORM PERSON INDI CATOR",.PIND,1,1,1)
  Select HL7 FIELD:
Select HL7 SEGMENT TYPE:
Select VARIABLE NAME: ACKCODE
  Are you adding 'ACKCODE' as a new VARIABLE NAME (the 1ST for this UJO7 MESSAG E CONFIGURATION)? No// Y (Yes)
  VARIABLE TYPE: FREE TEXT
  VARIABLE VALIDATION:
  DESCRIPTION: Determine whether the message successed, has error, or rejected
Select VARIABLE NAME: MSGCONID
  Are you adding 'MSGCONID' as a new VARIABLE NAME (the 2ND for this UJO7 MESSA GE CONFIGURATION)? No// Y (Yes)
  VARIABLE TYPE: FREE TEXT
  VARIABLE VALIDATION:
  DESCRIPTION: MESSAGE CONTROL ID
Select VARIABLE NAME: TXTMSG
  Are you adding 'TXTMSG' as a new VARIABLE NAME (the 3RD for this UJO7 MESSAGE
  CONFIGURATION)? No// Y (Yes)
  VARIABLE TYPE:
  VARIABLE VALIDATION:

 DESCRIPTION: TEXT MESSAGE
Select VARIABLE NAME: ERRCL
  Are you adding 'ERRCL' as a new VARIABLE NAME (the 4TH for this UJO7 MESSAGE
CONFIGURATION)? No// Y (Yes)
  VARIABLE TYPE: FREE TEXT
  VARIABLE VALIDATION:
  DESCRIPTION: ERROR CODE AND LOCATION
Select VARIABLE NAME: ERRCON
  Are you adding 'ERRCON' as a new VARIABLE NAME (the 5TH for this UJO7 MESSAGE
 CONFIGURATION)? No// Y (Yes)
  VARIABLE TYPE: FREE TEXT
  VARIABLE VALIDATION:
  DESCRIPTION: ERROR CONDITION
Select VARIABLE NAME: ERRLOC
  Are you adding 'ERRLOC' as a new VARIABLE NAME (the 6TH for this UJO7 MESSAGE
 CONFIGURATION)? No// Y (Yes)
  VARIABLE TYPE: FREE TEXT
  VARIABLE VALIDATION:
  DESCRIPTION: ERROR LOCATION
Select VARIABLE NAME: ERRCODE
  Are you adding 'ERRCODE' as a new VARIABLE NAME (the 7TH for this UJO7 MESSAG
E CONFIGURATION)? No// Y (Yes)
  VARIABLE TYPE: NUMERIC
  VARIABLE VALIDATION:
  DESCRIPTION: HL7 ERROR CODE
Select VARIABLE NAME: APPERR
  Are you adding 'APPERR' as a new VARIABLE NAME (the 8TH for this UJO7 MESSAGE
 CONFIGURATION)? No// Y (Yes)
  VARIABLE TYPE: FREE TEXT
  VARIABLE VALIDATION:
  DESCRIPTION: APPLICATION ERROR CODE
Select VARIABLE NAME: APPERPAR
  Are you adding 'APPERPAR' as a new VARIABLE NAME (the 9TH for this UJO7 MESSA
GE CONFIGURATION)? No// Y (Yes)
  VARIABLE TYPE: FREE TEXT
  VARIABLE VALIDATION:
  DESCRIPTION: APPLICATION ERROR PARAMETER
Select VARIABLE NAME: USERMSG
  Are you adding 'USERMSG' as a new VARIABLE NAME (the 10TH for this UJO7 MESSA
GE CONFIGURATION)? No// Y (Yes)
  VARIABLE TYPE: FREE TEXT
  VARIABLE VALIDATION:

 DESCRIPTION: USER MESSAGE
Select VARIABLE NAME: PIND
 Are you adding 'PIND' as a new VARIABLE NAME (the 11TH for this UJO7 MESSAGE
CONFIGURATION)? No// Y (Yes)
 VARIABLE TYPE: FREE TEXT
 VARIABLE VALIDATION:
 DESCRIPTION: A code to indicate who (if anyone) should be informed of the error
Select VARIABLE NAME:
WORK ARRAY: UJOACKARR

7.   Example of sending HL7

The following example show how to send HL7 using UJO7 configuration file and UJO7 GT.M trigger:

- DO ^XUP and do the following:

Select OPTION NAME: UJO7 FRAMEWORK MAIN MENU   UJO7 framework main menu

  BLD   Message builder main menu ...

  TRG   UJO7 GT.M trigger management …

Select UJO7 framework main menu Option: BLD Message builder main menu

  1   Enter/Edit message configuration

  2   Enter/Edit HL7 field

  3   Enter/Edit HL7 segment

Select Message builder main menu Option: 1 Enter/Edit message configuration

Select UJO7 MESSAGE CONFIGURATION NAME: UJO TEST

  Are you adding 'UJO TEST' as

   a new UJO7 MESSAGE CONFIGURATION (the 5TH)? No// Y (Yes)

NAME: UJO TEST//

HL7 MESSAGE TYPE: ADT   ADT message

HL7 VERSION: 2.4   HEALTH LEVEL SEVEN

HL7 EVENT TYPE CODE: A08   ADT/ACK-Update patient information

DESCRIPTION: This is a test message.

Select HL7 SEGMENT TYPE: PID   Patient Identification

  Are you adding 'PID' as a new SEGMENTS (the 1ST for this UJO7 MESSAGE CONFIGU

RATION)? No// Y (Yes)

  Select HL7 FIELD: PATIENT NAME   PID PID

  Are you adding 'PATIENT NAME' as a new FIELDS (the 1ST for this SEGMENTS)? No

// Y (Yes)

    PROCESSING   ROUTINE: DO   GFLDPRTN^UJO7FPUT("UJO   TEST","PID","PATIENT NAME",PATNAME,1,1,1)

  Select HL7 FIELD:

Select HL7 SEGMENT TYPE:

Select VARIABLE NAME: PATNAME

  Are you adding 'PATNAME' as a new VARIABLE NAME (the 1ST for this UJO7 MESSAG

E CONFIGURATION)? No// Y (Yes)

  VARIABLE TYPE: FREE TEXT

  VARIABLE VALIDATION:

  DESCRIPTION: THIS IS THE PATIENT IEN

Select VARIABLE NAME:

WORK ARRAY: TSTWRKARR

• Now You need to create a GTM trigger that will initiate the process of building the message and sending it.

UJO7 FRAMEWORK MAIN MENU   UJO7 framework main menu

  BLD   Message builder main menu ...

  TRG   UJO7 GT.M trigger management ...

Select UJO7 framework main menu Option: TRG UJO7 GT.M trigger management

      View current GT.M triggers

      Edit UJO7 GT.M trigger definition file

      Activate/Deactivate UJO7 GT.M trigger

      Log GT.M trigger definition file operations ...

Select UJO7 GT.M trigger management Option: EDit UJO7 GT.M trigger definition file

Select UJO7 GTM TRIGGER DEFINITION TRIGGER NAME: TSTMSG

  Are you adding 'TSTMSG' as

  a new UJO7 GTM TRIGGER DEFINITION? No// Y (Yes)

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TRIGGER NAME: TSTMSG//

GLOBAL VARIABLE: AUPNPAT(IEN=*,0)

COMMAND: S

DELIM:

PIECES:

TRIGGER CODE: S PATNAME=IEN DO MAIN^UJO7TRGR("KJOX ACK","UJO TEST","ERR")

View current GT.M triggers

    Edit UJO7 GT.M trigger definition file

    Activate/Deactivate UJO7 GT.M trigger

    Log GT.M trigger definition file operations ...

Select UJO7 GT.M trigger management Option: Activate/Deactivate UJO7 GT.M trigger

Select UJO7 GTM TRIGGER DEFINITION TRIGGER NAME: TSTMSG

  Select one of the following:

    +   ACTIVATE

    -        DEACTIVATE

Please select either to activate or deactivate the selected trigger: + ACTIVATE

Added trigger on ^AUPNPAT named TSTMSG#

- SET command is used to test if the message building process is working fine. This command set the same global variable used in the trigger definition.

ehs-hl7> SET $P(^AUPNPAT(1234,0),"^",1)="TEST 123"

ehs-hl7> ZWR ^AUPNPAT(1234,0)

^AUPNPAT(1234,0)="TEST 123^3130203^^^^^^^^^94^94^^^^3130203"

You can inquire the HL7 MESSAGE TEXT file #772 and HL7 MESSAGE ADMINISTRATION file #773 to make sure that the message was sent correctly:

OUTPUT FROM WHAT FILE: HL7 MESSAGE ADMINISTRATION// `772   HL7 MESSAGE TEXT

Select HL7 MESSAGE TEXT DATE/TIME ENTERED: T   JAN 07, 2014

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    1   1-7-2014@16:25:46   UJO7 KHCC

    2   1-7-2014@16:25:46

    3   1-7-2014@16:25:46

    4   1-7-2014@16:25:46

CHOOSE 1-4: 1 1-7-2014@16:25:46   UJO7 KHCC

ANOTHER ONE:

STANDARD CAPTIONED OUTPUT? Yes//   (Yes)

Include COMPUTED fields: (N/Y/R/B): NO// - No record number (IEN), no Computed Fields

DATE/TIME ENTERED: JAN 07, 2014@16:25:46

 SERVER APPLICATION: UJO7 KHCC   TRANSMISSION TYPE: OUTGOING

 MESSAGE ID: 0200340   PARENT MESSAGE: JAN 07, 2014@16:25:46

 PRIORITY: DEFERRED   RELATED EVENT PROTOCOL: KJOX ACK

 MESSAGE TYPE: SINGLE MESSAGE

 MESSAGE TEXT:

PID|||1234|

 STATUS: ERROR

 DATE/TIME PROCESSED: JAN 07, 2014@16:25:46

 ERROR MESSAGE: MSA Segment Missing   ERROR TYPE: Application Reject Error

 NO. OF CHARACTERS IN MESSAGE: 12   NO. OF EVENTS IN MESSAGE: 1