NAVAN LTD.

# LTF

*A Language Translation Facility for the IBM iSeries*

An overview

*June, 2022*

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## http://www.navan.co.uk

# VERSION 6 RELEASE 5, MODIFICATION 1

This edition applies to Version 6 Release 5, Modification level 1 of the LTF Program Product.

Unless otherwise stated, all pages in this edition are to Version 6, Release 5 and refer to the iSeries Operating System, Version 7.3 or greater.

LTF Version 6 Release 5 Modification level 1 is certified to be operationally compliant with iOS V7R4.

Any references in this manual to Navan Utilities or NUTIL refer to standard Navan Utility products.

Information on these products can be obtained from your nearest Navan agent.

# LTF - An Introduction

The primary objective of LTF is to provide programmer-level tools to assist in converting iSeries user application displays and reports from being in ONE LANGUAGE:

```
UPD_MST2              Item Master File Maintenance

 Item number ......: 50246-E              Status...........: L
 Description ......: FILTER
 Date introduced ..:  1/01/88             Current cost .....:
 New model? .......: NO                   Average cost .....:        22,87
 Country of Origin.: DE                   Retail Price......:        41,00
 Product group ....: 00685
 Duty code ........: 8421230
 Reference ........: Join
 Nato number.......:                      Part Discount Code: G
 Vehicle code .....:                      Sales tax code ...:  1
 Vehicle set ......:                      Price freeze flag.:
 Lead time (days)..:                      Sell Pack Size....:    10
 Inventory UOM ....:                      Surcharge Amount..:
 Purchase UOM .....:                              Reason..:
 Weight per unit ..:    0,482             Prod. start ......:  0/00
 In-line Part No...:                      Prod. end ........:  0/00
 Service Exch Code.:                      Campaign code ....:
 Discontinued Part?:                      Season code ......:
 Obsolete Part Code:                      Order at request..:
 Price Sim Code....:                      Default Supplier..: 29980

 Enter - to change    F3=Exit   F12=Cancel to prompt
```

into being capable of translation into ONE OR MORE OTHER LANGUAGES:

```
    UPD_MST2              Vedlikehold - Varefil

    Varenummer .......: 50246-E            Varestatus........: L
    Varenavn..........: FILTER
    Dato innfart......:  1/01/88           Gjeldende kostpris:
    Ny modell? .......: NO                 Gj.snitt. kostpris:        22,87
    Opprinnelsesland..: DE                 Prisliste 1.......:        41,00
    Produktgruppe ....: 00685
    Tollkode..........: 8421230
    Referanse ........: Join
    Nato nummer.......:                    Varerabattkode....: G
    Kjoretoyskode.....:                    M V A - kode......:  1
    Kjoretoysett......:                    Prisstopptegn ....:
    Ledetid (dager)...:                    Kvantumsant. salg :    10
    Enhet - salg......:                    Tilleggsbelop.....:
    Enhet - innkjop...:                              Arsak...:
    Vekt pr. enhet....:     0,482          Produksjon-start..:  0/00
    Ensartet Varenr...:                    Produksjon-slutt..:  0/00
    Byttekode.........:                    Kampanjekode......:
    Utgatt ?..........:                    Sesongkode........:
    Kuranskode........:                    Best. ved foresp..:
    Prissimul.kode....:                    Hovedleverandor...: 29980

    Entre - for endrin    F3=Retur til meny    F12=Retur til prompt
```

with as little programmer development effort as possible.

Most software today is designed and developed with only one language in mind - that of the end user of the application. It is normally only considered when developing a new software application if that application is intended to be distributed to other countries, or if users of the system are required to work in more than one language.

Provided that the designers of a new application take the multi-lingual requirement into consideration when in the design stage, the facilities that exist on the IBM iSeries computer can more than adequately cope with that requirement; the supplied programming development tools provide the necessary facilities to cover all phases of the development. Some of the facilities may not be the most user-friendly, but they do work.

But what if a requirement exists for the conversion of an existing application into a foreign language? Can it be done?

The answer is, of course, yes - but at a cost. Basically the concept of conversion is straightforward enough; it is simply a matter of converting any screen or report based text - Literals - from the local (or base) language into the foreign (or target) language by some means or another. The easiest means of doing this is for a programmer to sit down and change the OS/400 display file and printer file source statements. However, this is neither the cheapest nor the most effective means of doing the translation. Firstly, you would have to find a multi-lingual programmer willing to sit down and do such a 'menial' task. Secondly, the method does not allow for system modifications or upgrades, which would require two sets of source to be maintained in parallel. Finally, it makes the task of translation into a third, fourth or fifth language no simpler.

The purpose of LTF (Navan Language Translation Facility) is to provide a programmer level utility to assist in this translation process. It is designed specifically for the OS/400 environment and takes full advantage of the facilities provided by the iSeries.

LTF allows an unlimited number of systems or applications to be translated and into an unlimited number of languages, completely independent of one another.

LTF works on DDS source. If you do not have access to the source members for your application you cannot process the application within LTF.

# Summary of LTF Facilities

LTF is designed to assist a programmer level person in translating an application for use by an end-user of the application.

The LTF utility consists of five phases

- Ensuring all DDS source is externally defined

- Converting DDS source to 'externalise' literals

- Providing a Literal Translation facility

- Providing a 'mass re-create' facility

- Allowing facilities to translate other text objects

All options are available via a normal IBM Command Entry screen, but for ease of use in a translation environment the main functions of LTF have been grouped together in the form of a menu. To access this menu from any command entry point, just type in LTF/STRLTF and press the F4 key to prompt the command, as follows:

```
ADDLIBLE LIB(LTF) POSITION(*LAST)          ...ENTER
LTF/STRLTF                                 ...F4 (prompt)
```

The object, created after translation, is directly compatible with the original (untranslated) object and thus no recompile of related programs is necessary. To switch between languages is simply a matter of switching the users library list...

## The LTF main menu

When you enter the LTF/STRLTF (Start LTF) command you will be presented with the LTF Main Menu:

```
 LTF                      Language Translation Facility

 Select one of the following:

   Main options
      1. Convert source member to use message literals         LCVTDDS
      2. Translate the literals                                LTRXLIT
      3. Rebuild the translation environment                   LRBLTRXENV
      4. Create display/printer files from converted source    NCRTOBJ
      5. Create display/printer files based on literal usage    NXRFCRTOBJ
      6. Rebuild the word cross reference                      LRB010
      7. List all literals/translations                        LPRTLIT

   Support functions
     10. Create a duplicate object in the translation library   CRTDUPOBJ

     15. Modify a message file (error messages, etc)           WRKMSGD

     16. Modify a data file (parameters, etc)                  UPDDTA
     17. Work with converted source                           WRKMBRPDM

     20. Use the programmers menu                             STRPGMMNU

     35. Display LTF installation attributes

   Other options
     90. Sign off

 Selection or command
 ===>

 F3=Exit   F4=Prompt   F6=DSPMSG    F9=Retrieve   F12=Cancel   F14=WRKSBMJOB
 F15=Statistics       F18=WRKSPLF   F20=Set System   F21=Set Language
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```

The LTF Main Menu is the main access point for LTF activities.

From this screen you can also access other functions normally associated with a programming environment. The menu operates in a similar way to an IBM 'GO' menu.

## Translating Literals

## LTRXLIT - Translate Literals command

LTF menu Option 2 processes the Translate Literals (LTRXLIT) command:

```
                        Translate Literals (LTRXLIT)

 Type choices, press Enter.

 Display Sequence:  . . . . . . . > *LITID

 System to Translate: . . . . . .   *CURRENT
 Start from Literal:  . . . . . .   *START

 Source Member Name:  . . . . . .   *ALL
```

| | |
|---|---|
| Display Sequence | This determines the order in which the literals will be displayed on the list screen. The normal sequence is *LITID (Literal ID) sequence. The advantage of this sequence is that related literals (such as column headings) will be shown one after the other.<br>Other sequences available are:<br>*ALPHA (Literals are displayed in alphabetic sequence);<br>*LITWRD (Literals can be accessed by any word in the literal);<br>*TRXWRD (Literals can be accessed by any word in the translated literal);<br>*WRDCOR (Allows corrections to be made of a specific word in all literals that use the word). |
| System to Translate | The default of *CURRENT will allow you to translate literals within the system you are currently accessing.<br>An entry of *ALL will allow you to process all literals in all systems.<br>Alternatively, you may enter a specific system identifier to access any other system. |
| Start from Literal | This option allows you to go to a specific point in the literals file.<br>*START will commence displaying literals from the beginning of the file.<br>*LAST will start the display from the last literal that you accessed (valid for sequence *LITID or *ALPHA only).<br>Or you can enter a specific literal number (valid for sequence *LITID only). |
| Source Member Name | This feature allows you to select and process only those literals that are used in a specific display or printer file. Valid for *LITID sequence only. |

## Literal Translation, Literal ID sequence

The actual layout of the translation work display will depend upon the display sequence you requested, but all four function in the same manner. Below is an example of the *LITID sequence work display:

```
 LTX003D1                       Translate Literals
 Select      Language: 2929    German Translations  System: INVT

 Type options, press Enter.          Member . . . . .  *ALL       F4 for list
   2=Change    5=Display

Opt Literal Sts Text Description
    INV1201 ALL
    INV1201     A - Add new part number
    INV1202     C - Change existing part number
    INV1203     D - Delete existing part number
    INV1204     R - Reinstate deleted part number
    INV1205     T - Maintain Descriptive Text
    INV1206     - to proceed
    INV1207     - Return to menu
    INV1208 IGN STFA5002
    INV1209     Part number ......:
    INV1210     Part Status.......:
    INV1211     Description ......:
    INV1212     Date introduced ..:
                                                            More...

 F3=Exit   F4=Prompt   F10=Continuous Update   F11=Change View   F13=Switch
 F15=Statistics   F16=Search Lit   F17=Search Trx   F20=Initialise Literals
```

The 'list' area of the screen will show 12 literals at a time. You can scroll through the literals by pressing the PAGE UP or PAGE DOWN keys. You can reposition the list to a specific section of the file by entering a literal ID in the 'Position Literal Start' prompt and pressing the Enter key.

The information displayed in the list section is as follows:

| | | |
|---|---|---|
| Opt | Select Literal to change | If you enter a '5' beside any literal you will be shown the current translation for the literal. If you enter a '2' beside any literal, you will select the literal for processing (see next section 'Entering the Translation'). |
| Literal ID | | This is the unique identifier for the literal. |
| Sts | Status | This is the status of the literal in regards to its translation. The entry in this column may be one of the following: '***'  Not yet translated 'IGN' Translation ignored 'RPL' Literal is being replaced '   '   Translation entered |
| Untranslated Text | | The first 60 characters of the literal text. An arrow delimiter '<' at the beginning of the literal signifies that the literal has leading blanks and the literal has been 'shuffled up' so that the first non-blank character in the literal is displayed. This function is purely for display purposes. The actual literal remains unchanged. |

As previously stated, you can enter '2' beside any literal in the list to select it for processing. If you enter a '2' beside more than one literal you can process multiple literals without having to return back to this screen.

## Entering the Translation

The next screen will be displayed for every Literal that you selected for processing (or for all untranslated literals if you are in continuous update mode):

```
LTX003D2                    Translate Literals
Change   Language: 2929    German Translations  System: INVT


 Literal ID.........: INV1209

 Literal Length.....:   19
 Number of uses.....:

 Original Literal Text:
   Part number ......:


 Translation:
   Teile Nummer......:



 Replaced by Lit ID.:


 F3=Exit   F9=Ignore translation (no translation required)   F10=Reset
 F12=Previous   F13=Switch to *ALPHA   F15=Display Literal Usage
```

This screen shows you the original literal text and provides you with a prompt to enter your translation.

The information displayed in the list section is as follows:

| | |
|---|---|
| Literal ID | The unique identifier for this literal |
| Literal Length | This is the actual length of the literal. Your translation can not exceed this length. |
| Number of Uses | This information tells you how many DDS source members use this literal. |
| Original Literal Text | This is the actual text of the literal, as it was extracted via the LCVTDDS (Convert DDS) command from the original DDS source. |
| Translation | This is the current translation loaded for this literal. If the text is *exactly the same* as the original literal it means that no translation has yet been entered, and the original literal text has been loaded into the field as a 'template' for you to work with. |
| Replaced by Lit ID | This feature allows you to replace one literal with another throughout the system. |

### 3.1.6.4　Displaying the usage of the Literal

If you used the F15= Display Literal Usage function key within the LTRXLIT command you will be shown a list of DDS source members that use the literal you are currently referencing:

```
 LTX510D1                 Display Literal Usage
 Select    Language: 2929   German Translations  System: INVT
 Literal ID: INV0964  Order Number:

 Type options, press Enter.
   1=Display source member   2=Display screens/Print report

      Source      Source     Member
 Opt  Library     File       Name       Text Description
                             SABO10D
      LTF         QDDSINVT    SABO10D    Create Supplier Orders
      LTF         QDDSINVT    SAOE55D    Credit Note Entry
      LTF         QDDSINVT    SAOE63P    Repricing Audit Report
      LTF         QDDSINVT    SAOE68D    Credit Sundry Charges Maintenan
      LTF         QDDSINVT    SAOE70D    Order Entry Function
      LTF         QDDSINVT    SAOE70D    Order Entry Function
      LTF         QDDSINVT    SAOE72D    Sundry Charges Maintenance
      LTF         QDDSINVT    SAPO58D    Purchase Order Maintenance
      LTF         QDDSINVT    SAPO81D    Purchase Order Inquiry by Order


                                                      Bottom


  F3=Exit   F12=Previous   F18=Work with spool files

```

If you wish to see the actual DDS source code for any of the members listed, select the member by typing a '1' beside it and press ENTER. This will then cause the actual (converted) DDS source for the member to be displayed (for control functions of this display screen, refer to the iSeries manual relating to using the STRSEU command[1] ).


If you wish to show the layout of the screen, or print the layout of the report, select the member by typing a '2' beside and press ENTER. This will then use IBM facilities to either display the screens (via SDA[2]), or print a 'prototype' report (via RLU[3]). Note that, for this feature to work, you must have the IBM Application Development Tools program product (product code 5738-PW1) installed on your iSeries.


The F18 function key option will allow you to view any prototype reports that you have generated from this feature.

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[1] Source Entry Utility User Guide. Refer chapter 6, 'Browsing Members'

[2] For a discussion of the SDA 'test' function, refer to the Screen Design Aid Users Guide, chapter 5 'Testing Display Files'.

[3] For a discussion of the RLU 'prototype' report feature, refer to the Report Layout Utility Users Guide, chapter 6, 'Prototyping a report'.

## Searching for the Usage of a word in a literal

If you used the F16= Search Literals function key within the LTRXLIT command you will be given an enquiry screen allowing you to perform a keyword search on all literals defined in the system you are currently accessing:

```
 LTX501D1                    Word Search on Literal
 Select    Language: 2929    German Translations  System: INVT

 Type options, press Enter.
   5=Display

    Keyword               Literal  Literal Text
    NUMBER
    NUMBER                INV0964  Order Number:
    ORDER                 INV0964  Order Number:
    SEL                   INV5674  Sel  Sundry Charge to apply           Char
    SELECT                INV4667  ?=Select
    STAND                 INV2722  STAND
    SUNDRY                INV0958  Sundry Charges
    SUNDRY                INV5674  Sel  Sundry Charge to apply           Char
    TAX                   INV5674  Sel  Sundry Charge to apply           Char
    TESTED                INV7529  Time:
    TIME                  INV0021  Time:
    TO                    INV5674  Sel  Sundry Charge to apply           Char
    VALUE                 INV2724  Charge Value
                                                              More...

 F3=Exit   F12=Previous   F13=Switch to Translation Search
```

By entering a word on the 'Select key' prompt you will position the list to the usage of that word within all literals. To display further detail for one of the literals shown you can select it by typing a '5' beside it and pressing ENTER.

You will then be shown this detailed information for each literal selected on the previous screen:

```
 LTX501D                       Word Search on Literal
 Display  Language: 2929    German Translations  System: INVT


 Literal ID.........: INV0021

 Literal Length.....:   5
 Number of uses.....:    52

 Original Literal Text:
   Time:

 Translation:
   Zeit:


 F3=Exit   F12=Previous   F13=Switch to Translation Search
```

## Searching for the usage of a word in a Translation

If you used the F17= Search Translations function key within the LTRXLIT command you will be given an enquiry screen allowing you to perform a keyword search on all translated literals defined in the system you are currently accessing:

```
  LTX502D1                Word Search on Translation
  Select   Language: 2929   German Translations  System: INVT

  Type options, press Enter.
    5=Display

 Opt Translated keyword     Literal  Translation Text
     AB
     AB                     INV5857  <Ab          Teilenummer              Preis
     AB                     INV5880  G~ltig ab:
     AB                     INV6139  Folgende R~ckstandsorder wurden reserviert ab
     AB                     INV7406  Nummer Reihe ab....:
     ABBRECHEN              INV0143  - Anfrage abbrechen
     ABBRECHN              INV7033  F2=Order¦ffng abbrechn
     ABBRUCH               INV0246  EINGABE AKZEPTIERT; Y -> WEITERFAHREN, N -> A
     ABER                  INV2342  2- Kredit Result. eingegeb.aber ni
     ABER                  INV2344  3- GU-Resultat eingegeben aber GU
     ABER                  INV3588  1- Adresse eingegeben aber keine
     ABF                   INV0373  ALPHA LIEFERANTENSTAMM ABF.
     ABF                   INV3265  Drucker Datei~berschreib. - Abf.
                                                                 More...

  F3=Exit   F12=Previous   F13=Switch to Literal Search
```

By entering a word on the 'Select key' prompt you will position the list to the usage of that word within all translations. To display further detail for one of the translations shown you can select it by typing a '5' beside it and pressing ENTER.

You will then be shown this detailed information for each literal selected on the previous screen:

```
  LTX502D                   Word Search on Translation
  Display  Language: 2929   German Translations  System: INVT


  Literal ID.........: INV7406

  Literal Length.....:  20
  Number of uses.....:     1

  Original Literal Text:
    Number range from..:



  Translation:
    Nummer Reihe ab....:


  F3=Exit   F12=Previous   F13=Switch to Literal Search
```

## Using the LCRTDDS command to convert an Internally Described Printer File

As previously stated, the MSGCON/MSGID keywords are available in DDS only and therefore all Printer Files and Display files must be externally defined from the programs that use them. If you have originally written your programs using the IBM System 34, System 36 or System 38 environments it is possible that you may still have some Internally Defined printer files. This command allows the conversion of these internal descriptions into corresponding external descriptions.

The LCRTDDS command is not shown on the LTF menu; you must request it from a command entry line. The command will not be processed interactively. If the command is requested from a command entry line, it will automatically submit itself for processing after the user has pressed enter.

```
                       Create PRTF source (LCRTDDS)

 Type choices, press Enter.

 From RPG Source File:  . . . . .    QRPGSRC       Name, QRPGSRC
 Library Name:  . . . . . . . . .     *LIBL        Name, *LIBL
 Source Member Name:  . . . . . .                  Name
 To RPG Source File:  . . . . . .    QRPGSRC       Name, QRPGSRC
 Library Name:  . . . . . . . . .     *LIBL        Name, *LIBL
 To DDS Source File:  . . . . . .    QDDSSRC       Name, QDDSSRC
 Library name:  . . . . . . . . .     *TORPGLIB    Name, *LIBL, *TORPGLIB



 F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
 F24=More keys
```

The LCRTDDS command allows the modification of an RPG program that contains program described printer files, to use externally described printer files. The DDS source for the printer file(s) required is automatically generated in the source file specified. An RPG source member will also be generated (in the source file specified). This new RPG source member will be based on the old member, but will have additional code included - to process the new externally described Printer File.

In most cases you will need to access the new source to perform some modifications before attempting to compile it. The extent of these manual changes will vary, depending on how complex your Printer output is.

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