ASTRONICS
TEST SYSTEMS

PAWS Studio
Release Notes

Version 1.42.0 May 3, 2018

Table of contents

1 Paws Developer's Studio

Version 1.42.0

Release date: May 3, 2018

1.1 Critical Items

1.1.1 PAWS and WRTS sources are built with Visual Studio 2017(v141); No support for Windows XP

Starting with version 1.41.0 we have stopped our support of having Paws Developer’s Studio and RTS run on Windows XP.

1.2 Known Limitations

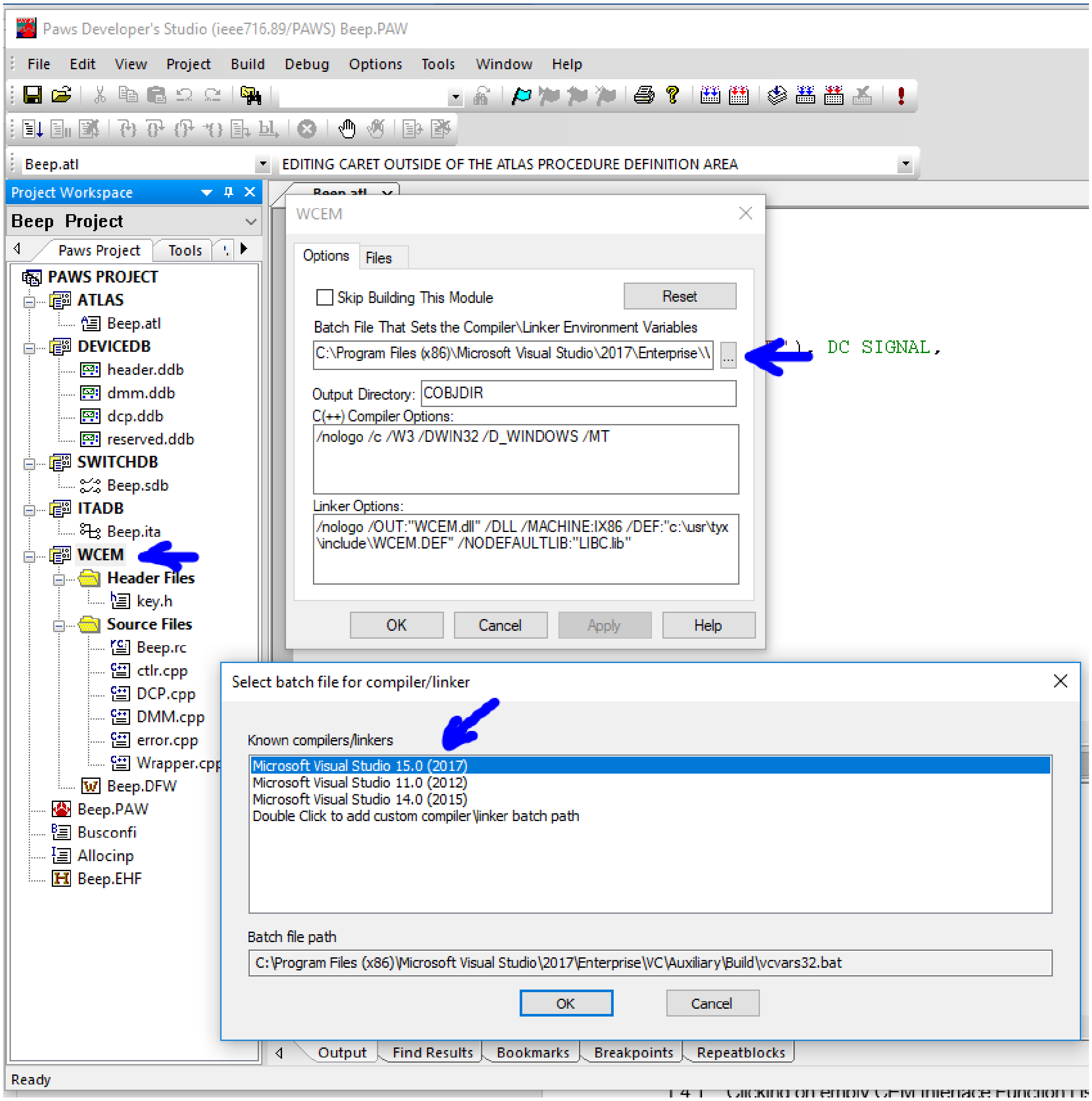
1.2.1 No known limitations addressed in this release

No limitations

1.3 Enhancements

1.3.1 Paws Studio is able to build CEM Drivers With Visual Studio 2015 and 2017 Compilers (TaskID 1848)

This version of Paws Studio is now allowing its CEM modules to be built with C/C++ compilers belonging to Microsoft Visual Studio 2015 and 2017:



Paws Developer's Studio (ieee716.89/PAWS) Beep.PAW

WCEM

☐ Skip Building This Module

Batch File That Sets the Compiler\Linker Environment Variables: C:\Program Files (x86)\Microsoft Visual Studio\2017\Enterprise\\

Output Directory: COBJDIR

C(++) Compiler Options:

```
/nologo /c /W3 /DWIN32 /D_WINDOWS /MT
```

Linker Options:

```
/nologo /OUT:"WCEM.dll" /DLL /MACHINE:IX86 /DEF:"c:\usr\tyx
\include\WCEM.DEF" /NODEFAULTLIB:"LIBC.lib"
```

Select batch file for compiler/linker

Known compilers/linkers

- Microsoft Visual Studio 15.0 (2017)
- Microsoft Visual Studio 11.0 (2012)
- Microsoft Visual Studio 14.0 (2015)
- Double Click to add custom compiler\linker batch path

Batch file path: C:\Program Files (x86)\Microsoft Visual Studio\2017\Enterprise\VC\Auxiliary\Build\vcvars32.bat

1.4 Problem Reports

2 Run Time System

Version 1.42.0

Release date: May 3, 2018

2.1 Critical Items

2.1.1 PAWS and WRTS sources are built with Visual Studio 2017(v141); No support for Windows XP

Starting with version 1.41.0 we have stopped our support of having Paws Developer's Studio and RTS run on Windows XP.

2.2 Known Limitations

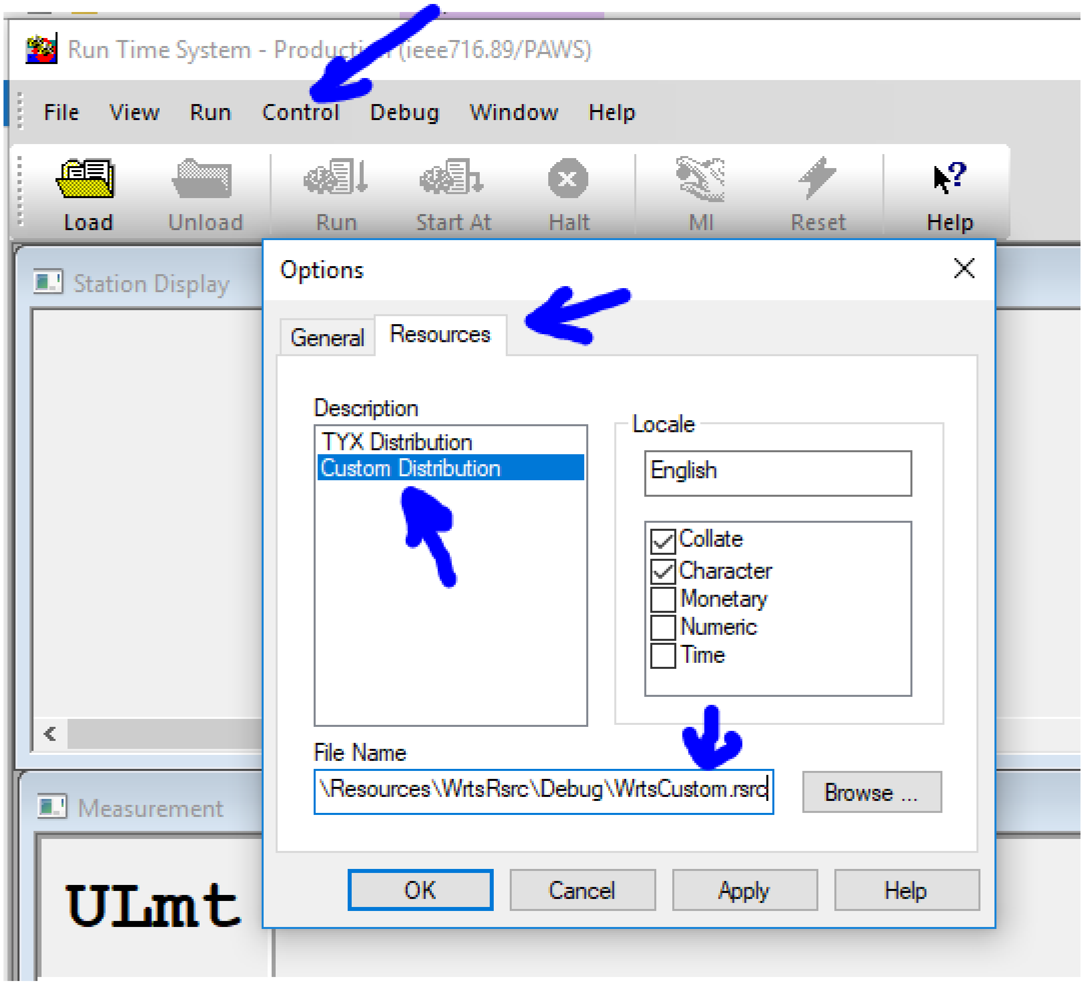
2.2.1 No known limitations addressed in this release

No limitations

2.3 Enhancements

2.3.1 RTS Resource Visual Studio Solution Upgrade (TaskID 1708)

This version of Paws Studio and RTS package includes a Visual Studio 2017 solution of the RTS Resources that can be translated into a different language. Its location is C:\usr\tyx\Resources\WrtsRsrc\WrtsRsrc.sln. This solution builds WrtsResources.rsrc which can be loaded in RTS through Control | Options | Resources menus:



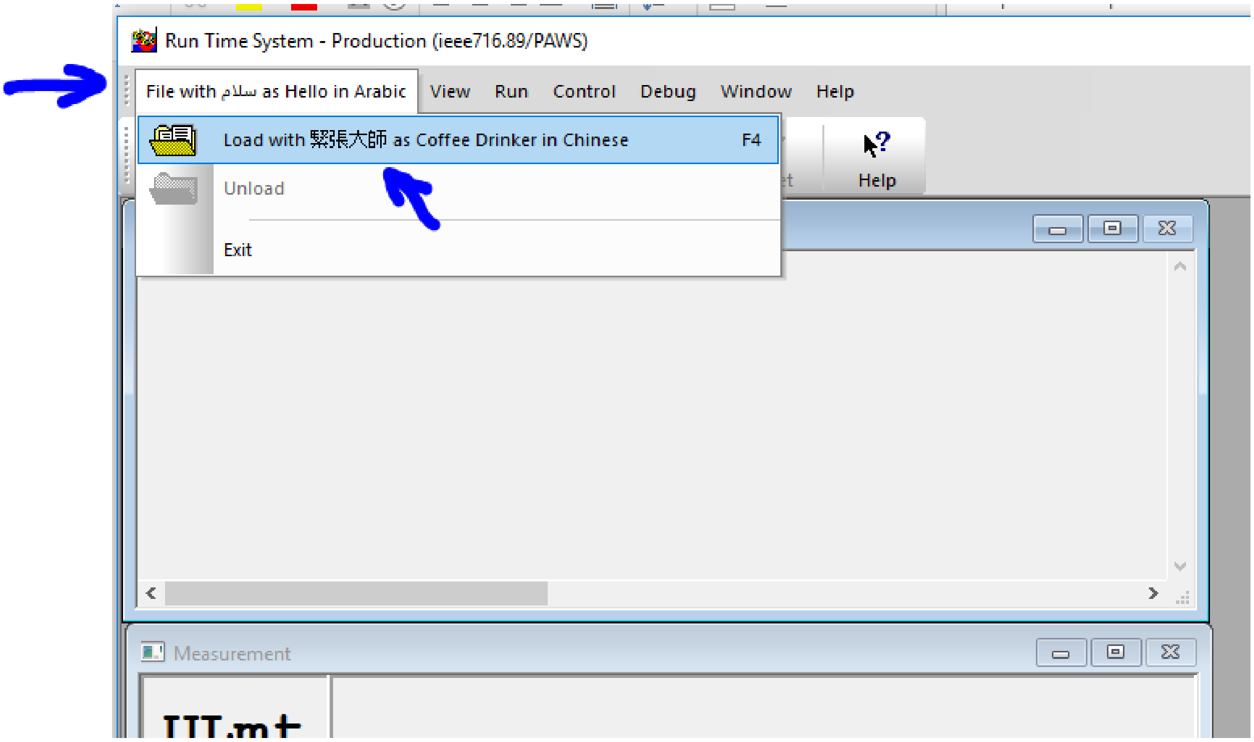
Description
- TYX Distribution
- Custom Distribution

Locale: English

☑ Collate
☑ Character
☐ Monetary
☐ Numeric
☐ Time

File Name: \Resources\WrtsRsrc\Debug\WrtsCustom.rsrc

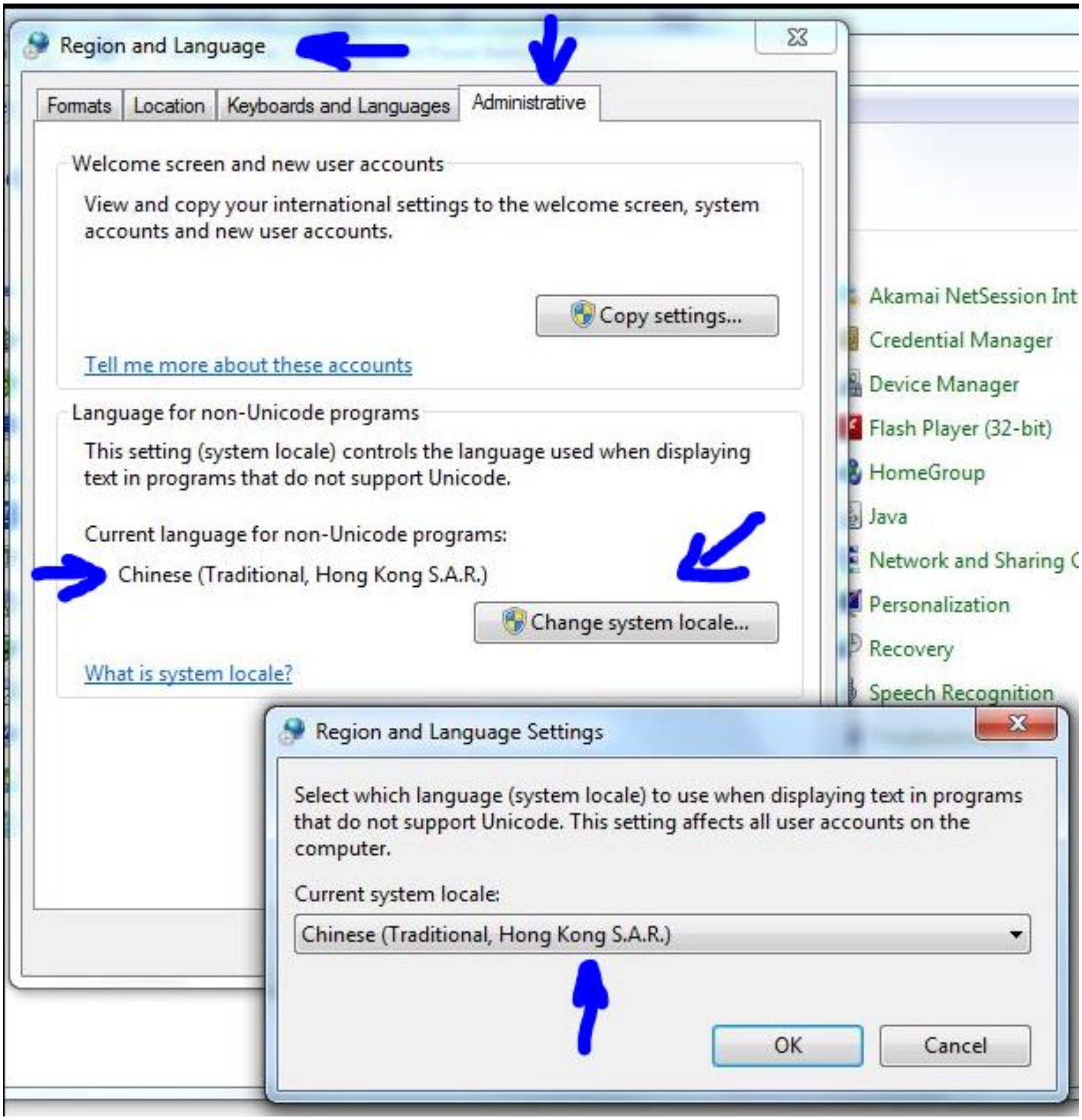
This solution demonstrates the possibility of translating RTS menus into a different language:


Run Time System - Production (ieee716.89/PAWS)
File with سلام as Hello in Arabic
View
Run
Control
Debug
Window
Help
Load with 緊張大師 as Coffee Drinker in Chinese
F4
Unload
Exit
Help
Measurement
IIT.mt

In order to be machine independent (when the foreign language translated solution is developed and built), the Code Page of all solution included .rc and .rc2 source files is 1200 (Unicode UTF-16 with BOM).

2.3.2 RTS is Able to Enforce UTF8 Encoding

RTS allows the operator to enforce UTF8 encoding regardless of the machine Current Language for the Non-Unicode Programs:



Welcome screen and new user accounts

View and copy your international settings to the welcome screen, system accounts and new user accounts.

Language for non-Unicode programs

This setting (system locale) controls the language used when displaying text in programs that do not support Unicode.

Current language for non-Unicode programs:

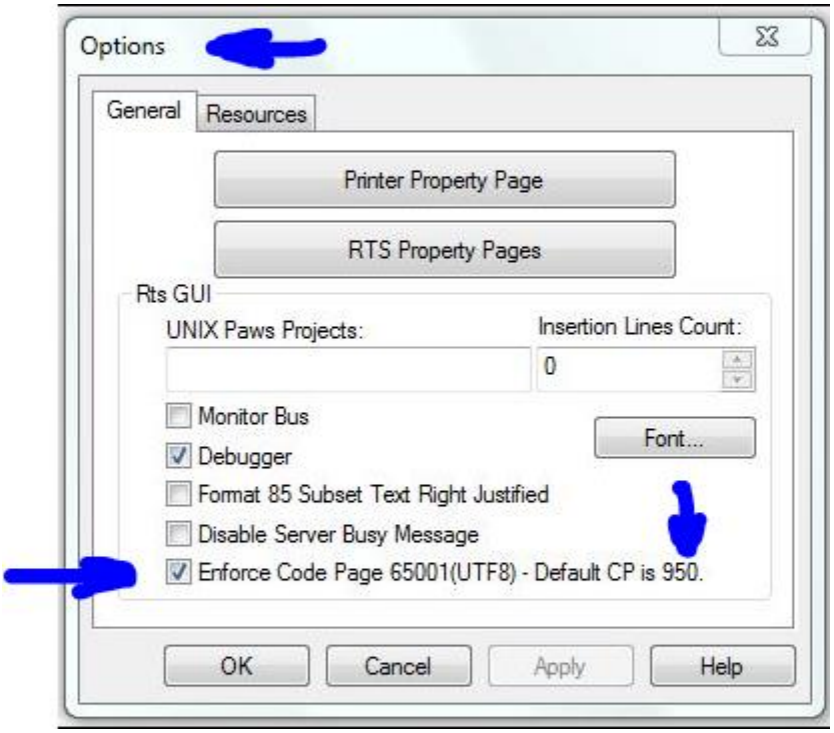
Chinese (Traditional, Hong Kong S.A.R.)

Select which language (system locale) to use when displaying text in programs that do not support Unicode. This setting affects all user accounts on the computer.

Current system locale:

Chinese (Traditional, Hong Kong S.A.R.)

The location of this setting is present RTS | Control | Options:



Rts GUI

UNIX Paws Projects:

Insertion Lines Count: 0

□ Monitor Bus

☑ Debugger

□ Format 85 Subset Text Right Justified

□ Disable Server Busy Message

☑ Enforce Code Page 65001(UTF8) - Default CP is 950.

In the pictures above, the Traditional Hong Kong Chinese Code Page is 950.

When the Default CP in the General Tab is 65001 (there is no system locale for non-unicode programs set up), this checkbox setting does not matter. However, it matters if RTS runs its Paws projects on machines with specific system locales for non-unicode programs.

It is very important to restart both Paws Studio and RTS applications after this setting is motified.

2.4 Problem Reports

2.4.1 Monitor Bus Feature Fails on SENSE Statement in 716.89 and Newer Atlas Subsets (BugID 1710)

This is the simplest test case that still exhibits the issue:

```
 000000 Begin, Atlas program 'Bus Monitor Issue' $
 000010 DECLARE, VARIABLE, 'ID-READ16' IS STRING (16) OF BIT $
 000030 DECLARE, VARIABLE, 'OHM' IS DECIMAL $
 000045 DEFINE, 'ITA-Signature', DIGITAL CONFIGURATION $
 000050 DEFINE, 'ITAID_OUTPUT', DIGITAL SENSOR, (VALUE), LOGIC DATA,
              VOLTAGE-ONE  3.5V,
              VOLTAGE-ZERO 1.0V,
              CNX HI 3A2-A1-J6-A16 $
 000055 END, 'ITA-Signature' $
E100000 ENABLE, DIGITAL CONFIGURATION 'ITA-Signature' $
 200000 SENSE, (VALUE INTO 'ID-READ16') ,  ON 'ITAID_OUTPUT' $
C 300000 PROVE, (VALUE INTO 'ID-READ16')  , ON 'ITAID_OUTPUT' $
 400000 DISABLE, DIGITAL CONFIGURATION 'ITA-Signature' $
 500000 OUTPUT, C' After SENSE or PROVE' $
 600000 VERIFY, (RES INTO 'OHM'), IMPEDANCE, GT(14) OHM, RES MAX 1000 OHM,
        CNX HI 3A1 LO 3A2 source-hi 3A2-A2 source-lo 3A2-A2 $
 700000 OUTPUT, C' After VERIFY' $
 800000 MEASURE, (RES INTO 'OHM' ), IMPEDANCE,  RES MAX 1000 OHM,
        CNX HI J3 LO K3 source-hi J4 source-lo K4 $
 900000 OUTPUT, C' After MEASURE' $
 999999 TERMINATE, ATLAS PROGRAM 'Bus Monitor Issue' $
```

When RTS Monitor Bus feature is on, the RTS is expected to run the code between the INX and DCV Atlas Intermediate Language (AIL) instructions in a loop, until the user clicks Manual Intervention.

The loop is set up properly for PROVE, VERIFY and MEASURE Atlas verbs. All three have distinctive INX and DCV AIL instructions, and the RTS identifies and runs correctly their monitor bus loops. This is the interlace listing for these three atlas verbs:

```
300000 PROVE, (VALUE INTO 'ID-READ16')  , ON 'ITAID_OUTPUT' $
    L06432: STM 300000 PRV S1 'BusMonitorIssue.ITA-Signature' WRN
    L06504: DEV S1 'BusMonitorIssue.ITA-Signature'
    L06513: =E= FNC DCF VALU
    L06603: DEV S2 'BusMonitorIssue.ITAID_OUTPUT' -> (S1
'BusMonitorIssue.ITA-Signature')
    L06612: =E= =X= FDD VALU
    L06522: NOP
    L06632: INX VALU
    L06457: NOP
    L06466: DEV S1 'BusMonitorIssue.ITA-Signature'
    L06475: INX
    L06623: DEV S2 'BusMonitorIssue.ITAID_OUTPUT' -> (S1
'BusMonitorIssue.ITA-Signature')
    L06531: FTB VALU I0160464
    L06540: UNL D2(0):0160430 I01144
    L06547: DEV S1 'BusMonitorIssue.ITA-Signature'
    L06556: DLD LT UL = I01144
    L06565: FTH FLTC I0160470 I01144
    L06574: DCV I0160470 LT UL = I01144

600000 VERIFY, (RES INTO 'OHM'), IMPEDANCE,    GT( 14) OHM, RES MAX 1000 OHM,
        CNX HI LO source-hi source-lo $
    L07000: STM 600000 VER S3
    L07043: DEV EOR @    L07077 S3
    L07052: FNC IMP RESI
    L07061: =E= SRX RESI R0160540
    L07070: STA
    L07077: MVV B0154 := B0110
    L07106: =X= CON
    L07117: CLS
    L07126: INX RESI
    L07135: =X= DLD GT LL = R0160550 C9(0):02377
    L07025: NOP
    L07034: FTH RESI R0160434 I01144
    L07146: DCV R0160434 GT LL = R0160550
    L07155: OPN
    L07164: =X= DIS
    L07175: RST IMP RESI

800000 MEASURE, ( RES INTO 'OHM' ), IMPEDANCE,  RES MAX 1000 OHM,
        CNX HI LO source-hi source-lo $
    L07260: STM 800000 MEA S4
    L07323: DEV EOR @    L07357 S4
    L07332: FNC IMP RESI
    L07341: =E= SRX RESI R0160540
    L07350: STA
    L07357: MVV B0154 := B0110
    L07366: =X= CON
    L07377: CLS
    L07406: INX RESI
    L07415: =X= DLD  C9(0):02377
    L07305: NOP
    L07314: FTH RESI R0160434 I01144
    L07426: DCV R0160434
    L07435: OPN
    L07444: =X= DIS
    L07455: RST IMP RESI
```

However, the SENSE instruction misses the DCV AIL instruction:

```
200000 SENSE, (VALUE INTO 'ID-READ16') ,  ON 'ITAID_OUTPUT' $
    L06432: STM 200000 SNS S1 'BusMonitorIssue.ITA-Signature'
    L06504: DEV S1 'BusMonitorIssue.ITA-Signature'
    L06513: =E= FNC DCF VALU
    L06540: DEV S2 'BusMonitorIssue.ITAID_OUTPUT' -> (S1
'BusMonitorIssue.ITA-Signature')
    L06547: =E= =X= FDD VALU
    L06567: =E= SET WRDC I01144
    L06576: INX VALU
    L06457: NOP
    L06466: DEV S1 'BusMonitorIssue.ITA-Signature'
    L06475: INX
    L06560: DEV S2 'BusMonitorIssue.ITAID_OUTPUT' -> (S1
'BusMonitorIssue.ITA-Signature')
```

```
L06522: FTB VALU I0160464
L06531: UNL D2(0):0160430 I01144
```

As a result of this situation, the RTS set up the monitor bus loop starting with the INX of SENSE and ending with the next DCV which happened to belong to the following executed VERIFY. This is why the Monitor Bus was incorrectly running all ATLAS code in between these statements.

The replacement of SENSE with PROVE solves this issue because PROVE provides a local DCV AIL instruction. However, this cannot be considered a permanent solution.

The code correction implemented in this RTS release consists in having the UNL AIL instruction belonging to SENSE supply the role of missing DCV when the Bus Monitor feature is on.

3 Paws Compilers All Subsets

Version 1.42.0

Release date: May 3, 2018

3.1 Critical Items

3.1.1 No critical items addressed in this release

No critical items

3.2 Known Limitations

3.2.1 No known limitations addressed in this release

No known limitations

3.3 Enhancements

3.3.1 No enhancements addressed in this release

No enhancements

3.4 Problem Reports

3.4.1 No problem reports addressed in this release

No problem reports

4 Paws Compilers CASS Subset

Version 1.42.0

Release date: May 3, 2018

4.1 Critical Items

4.1.1 No critical items addressed in this release

No critical items

4.2 Known Limitations

4.2.1 No known limitations addressed in this release

No known limitations

4.3 Enhancements

4.3.1 No enhancements addressed in this release

No enhancements

4.4 Problem Reports

4.4.1 No problem reports addressed in this release

No problem reports