



SAAB

SBD GTE

New base test equipment for Saab Dynamics products
Based on the PXI platform and National Instruments software

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Why GTE (General Test Equipment)

- Production outside company.
- Several products from different subcontractors.
- Shared by several project.
- Common measurement data storage.
- Quickly from design to production test solution

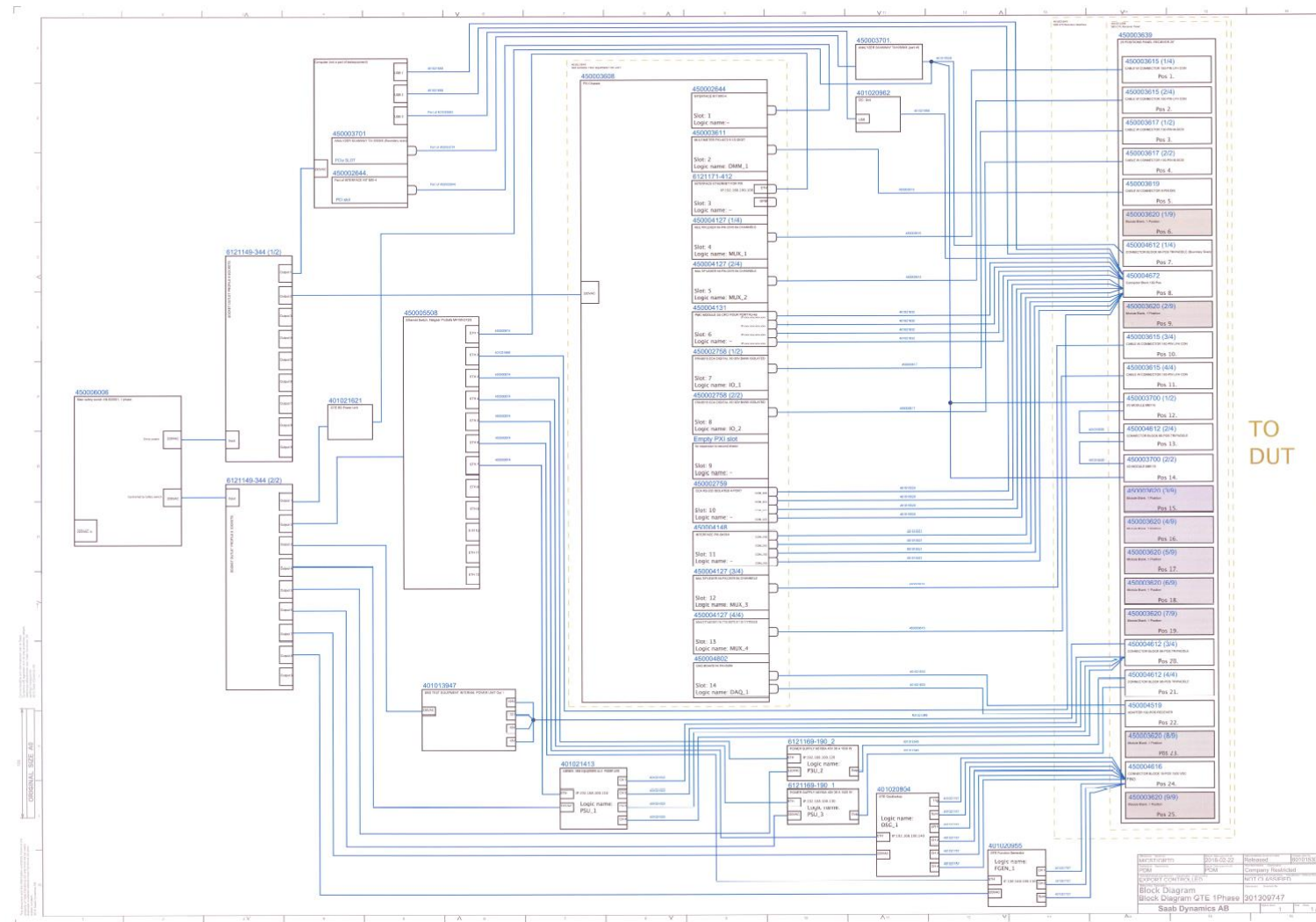


Principle

- Oscilloscope
- Function generator
- 6x power supply
- Boundary scan
- DMM (PXI-4072)
- 4x MUX (PXI-2576)
- 2x I/O (PXI-6515)
- 1x DAQ (PXI-6289)
- 5x Ethernet (one for instruments)
- 4x RS422
- 4x RS232
- 1x I2C



GTE block diagram



Workflow for new products at SBD Linköping

(under Construction)

Designer has new CCA or unit
(use the GTE for power up and
simple functional tests boundary-scan etc.)

Test Designer productize.

- Design fixture (VPC-ITA)
- Create the test sequence in teststand
(Use of instrument driver DDL)
- Update the Instrument driver or create
new unit unique functionality
(if necessary).

GTE at RT
(Teststand, CVI, switch-executive, NI-MAX
TSTAP Development)
SBD Generic instrument driver (DLL)



GTE at subcontractor or intern test facilities
(Teststand switch-executive Debug runtime)
SBD Generic instrument driver (DLL)



Teststand sequence difference Lkp/Kga

Lkp

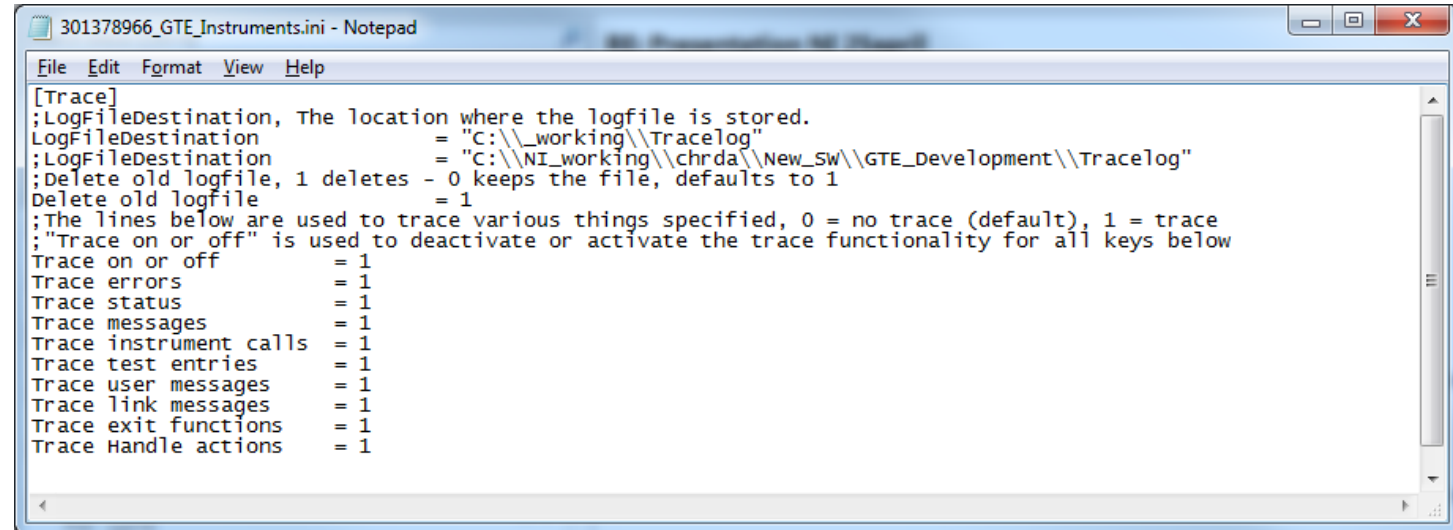
- Switch Executive
- SBD Generic instrument driver (DLL)
- **GTE-MMI**
- **Mesan database**
- Logic in Teststand
- Product specific SW if needed

Kga

- Switch alias driver in SW (lib)
- Generic instrument drivers (lib)
- **GTE-MMI**
- **Mesan database**
- Logic, switch and instrument communication in product specific SW dll

SBD Generic instrument driver (DLL)

- LabWindows /CVI
- Trace logging to file (on/off level)
- Used by all SBD Lkp projects
- Simple functions
- Logics handles in teststand
- VISA read/write
- Well verified
- Extensible (10 instances of each instruments)
- Use MAX logical names (handles stored inside the dll)

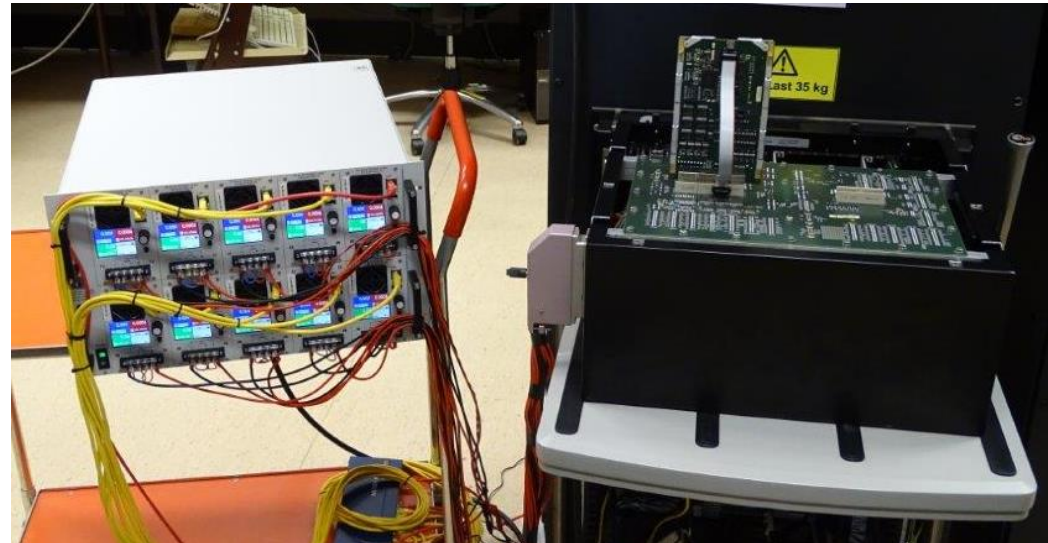


```
301378966_GTE_Instruments.ini - Notepad
File Edit Format View Help
[Trace]
;LogFileDestination, The location where the logfile is stored.
LogFileDestination = "C:\\_working\\Tracelog"
;LogFileDestination = "C:\\NI_working\\chrda\\New_SW\\GTE_Development\\Tracelog"
;Delete old logfile, 1 deletes - 0 keeps the file, defaults to 1
Delete old logfile = 1
;The lines below are used to trace various things specified, 0 = no trace (default), 1 = trace
;"Trace on or off" is used to deactivate or activate the trace functionality for all keys below
Trace on or off = 1
Trace errors = 1
Trace status = 1
Trace messages = 1
Trace instrument calls = 1
Trace test entries = 1
Trace user messages = 1
Trace link messages = 1
Trace exit functions = 1
Trace Handle actions = 1
```

Transfer product to subcontractor

(GTE already in place)

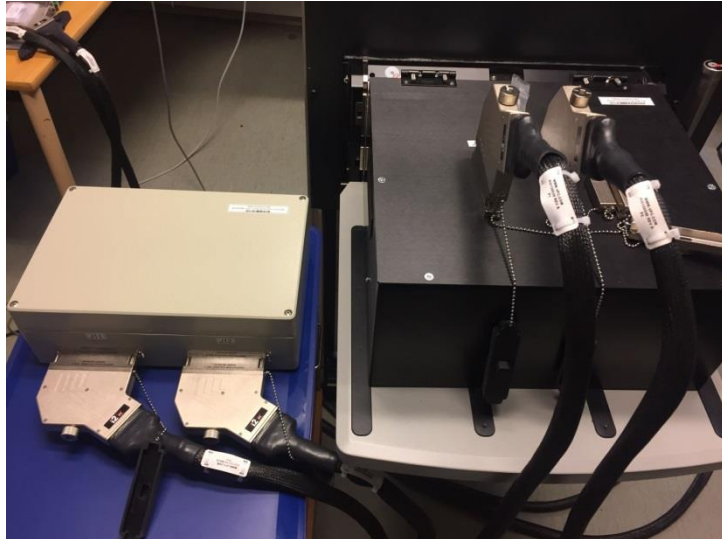
- ITA fixture (or generic ITA fixture with cabling)
- Teststand sequence (SEQ)(validated to match Mesan)
- SBD Generic instrument driver (DLL) (lkp)
- Product specific SW (dll) (kga, special requirements lkp)
- External testequipment if needed for the test (connects through ITA)
- Switch Executive file (lkp)



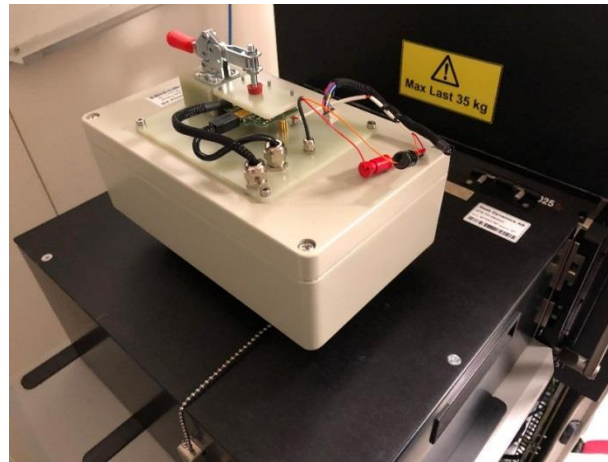
General components

- Base Unit ITA
- GTE Medium ITA

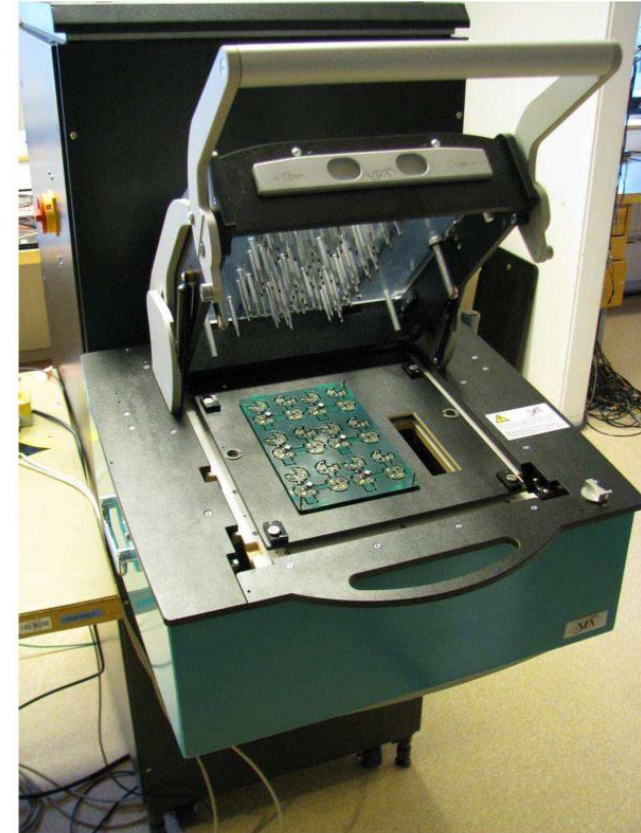
GTE Medium ITA
Generic cables and self test box



GTE Medium ITA
Project unique adapter



Base unit ITA
Cassette project unique



GTE used in all product testing steps

(RBS15)

CCA test

GTE with ITA for cca

Unit test

GTE with ITA for Unit
and external equipment

Unit ESS test

GTE With ITA for ESS
and external equipment

- External equipment are connected through the ITA
(GTE can still be used for other products)
- The external equipment has own instruments driver (DLL)
(**SBD Generic instrument driver (DLL)**
are used for GTE instruments)

System test (missile)

GTE With ITA for missile
and external equipment

Maintenance test (missile)

GTE With ITA for missile
and external equipment

GTE concept benefits

- Designers and test developers use the same platform.
- Discontinued equipment must be replaced.
- Easy to create test sequences.
- The receiver interface (ITA) is decided.
- Reused instrument driver (DLL).
- Database connection (Mesan)
- Easy to use own programs by use of logical names from "MAX".
- Selftest ITA exists to verify the ITA interface of the GTE
- GTE MMI

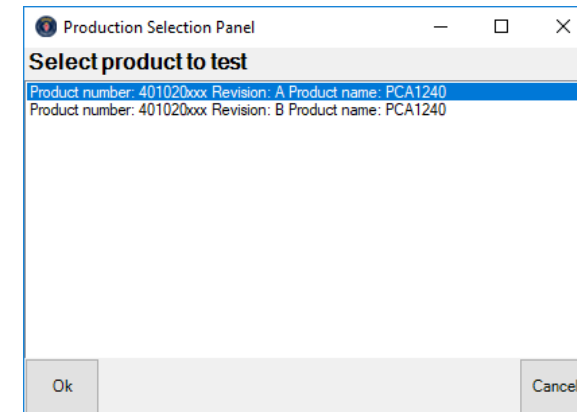
Projects that use the GTE so far

- RBS15 (Lkp)
- NLT (Lkp)
- NLAW (Kga)
- RBS70 (Kga)
- BOLIDE (Kga)
- ROQUETTE (Kga)

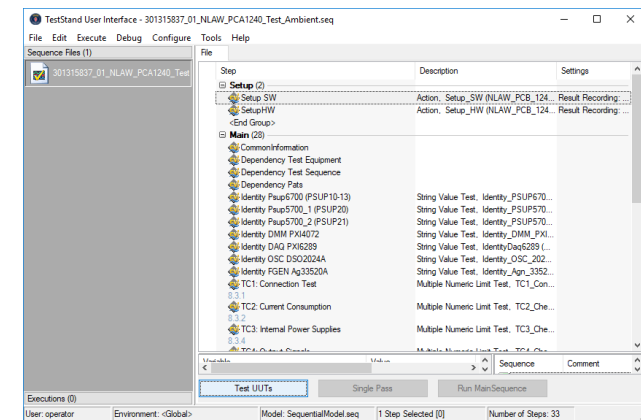
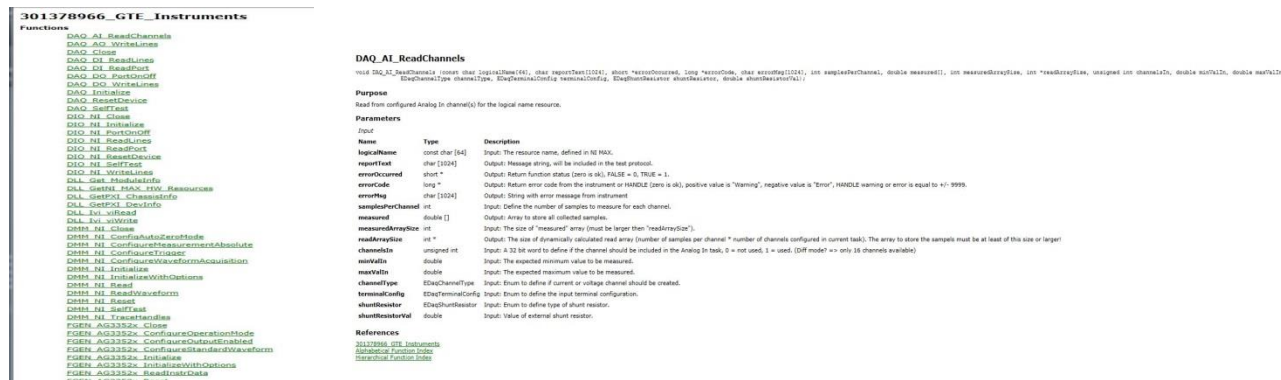
References

- GTE 1phase 401020956
- GTE block schematic 301309747
- GTE Instruments driver dll file 301378966
- Interface Specification GTE 301210246
- GTE-MMI 401023776

GTE-MMI 401023776



GTE Instruments driver 301378966



The background of the slide features a large, semi-transparent image of the SAAB logo and wordmark. On the left is the circular SAAB logo, which includes a crown and a griffin. To the right of the logo is the word "SAAB" in a large, stylized, three-dimensional font. The entire background is a dark, muted grey.

Thank you

Michael Ströberg/ORTOE
