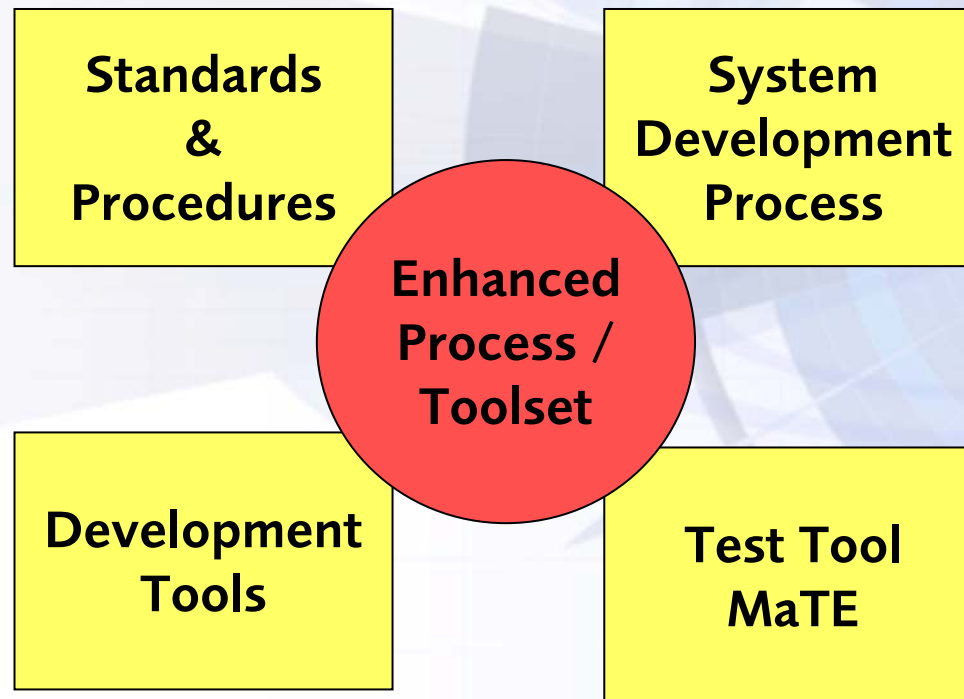


# Neue Wege im Avioniksystem Test des Eurofighter



DGLR Workshop Garching  
7. Oktober 2008  
Frank Westerbuhr, MET45

## Eurofighter EP/T – Bestandteile



## **Eurofighter EP/T – Ziele**

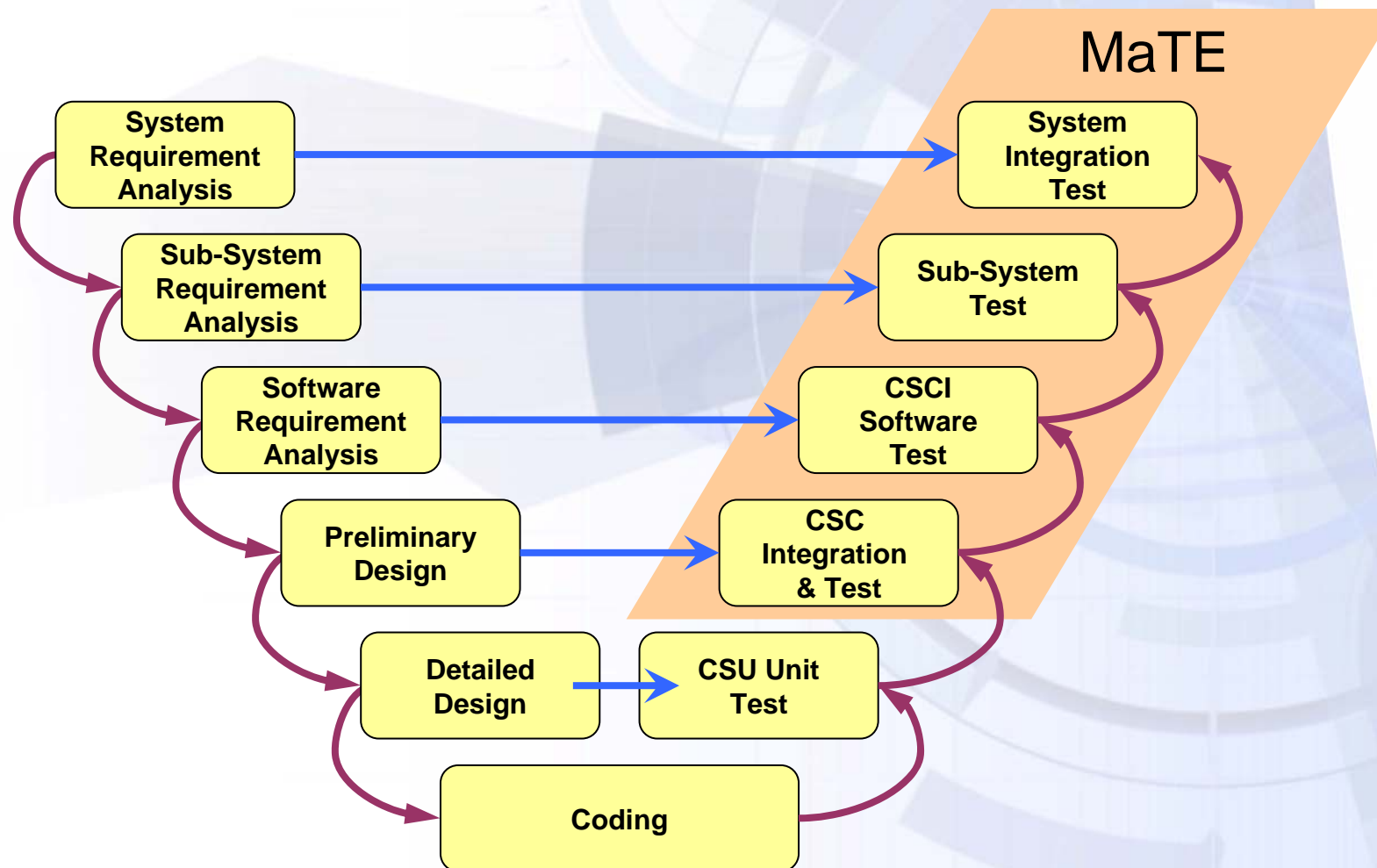
- Verbesserte Requirement Definition
- Frühzeitigere Aufdeckung von Problemen
- Verbessertes Varianten-Management
- Effizientere Integrationstests
- Entwicklungsprozess-weiter Einsatz gleicher Simulationen
- Wiederverwendung von Simulationen aus der Systementwicklung in Trainingssimulatoren

## **Eurofighter EP/T – Umsetzung**

- Requirements Capturing & Analyses mit Use Cases
- Model Based System Design mit Statemate
- HMI Definition im Virtual Cockpit
- Requirements Managemen mit DOORS
- Neues Interface Definition Werkzeug
- Neuer Ada95 Compiler Adamulti
- Verbessertes Software Design Werkzeug
- Varianten Management und Config Control mit PVCS
- Allgemeine Testanlagen (Rig) Umgebung
- Einsatz Virtueller Rigs

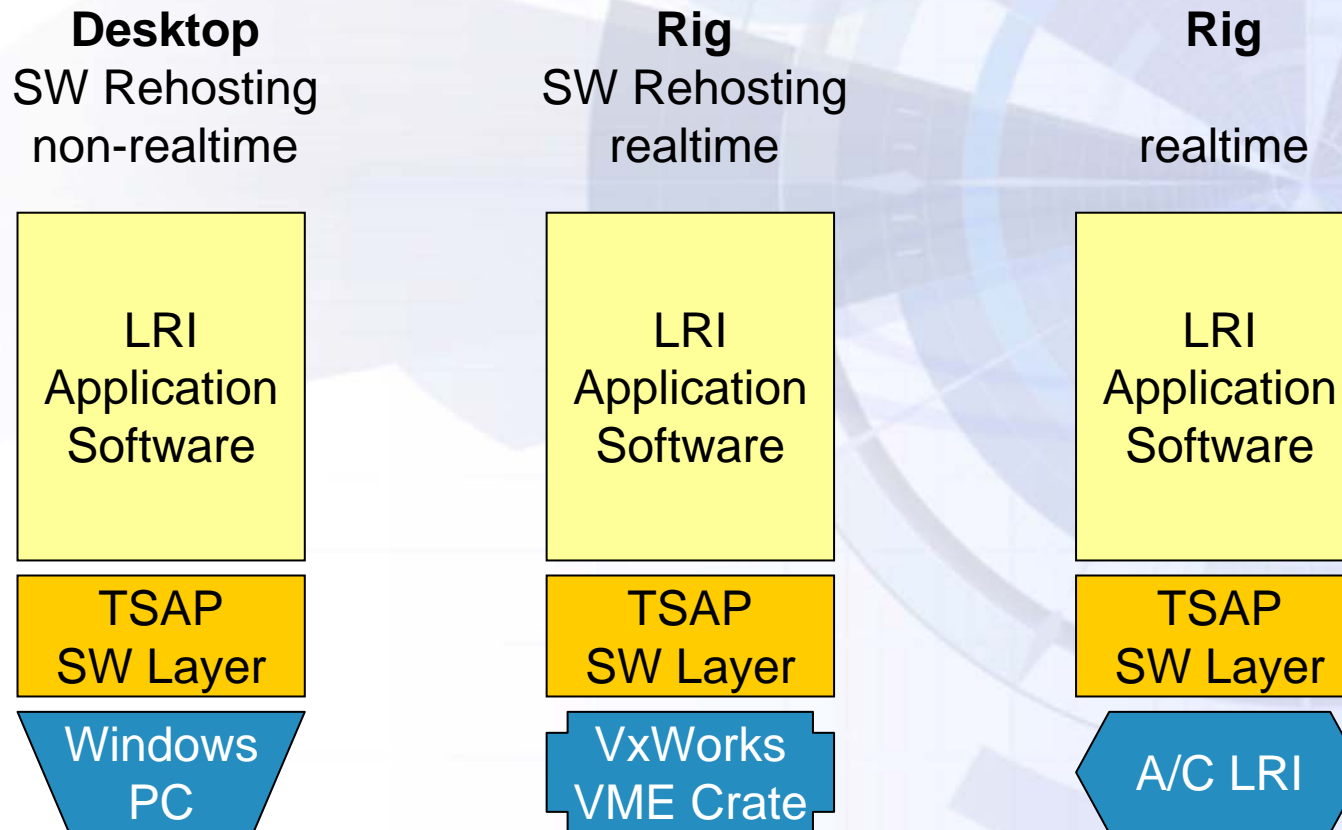
PVCS: Project Versions Mngmt System

# Einsatz des Testtools MaTE in allen Testphasen



MaTE: Modelling and Test Environment

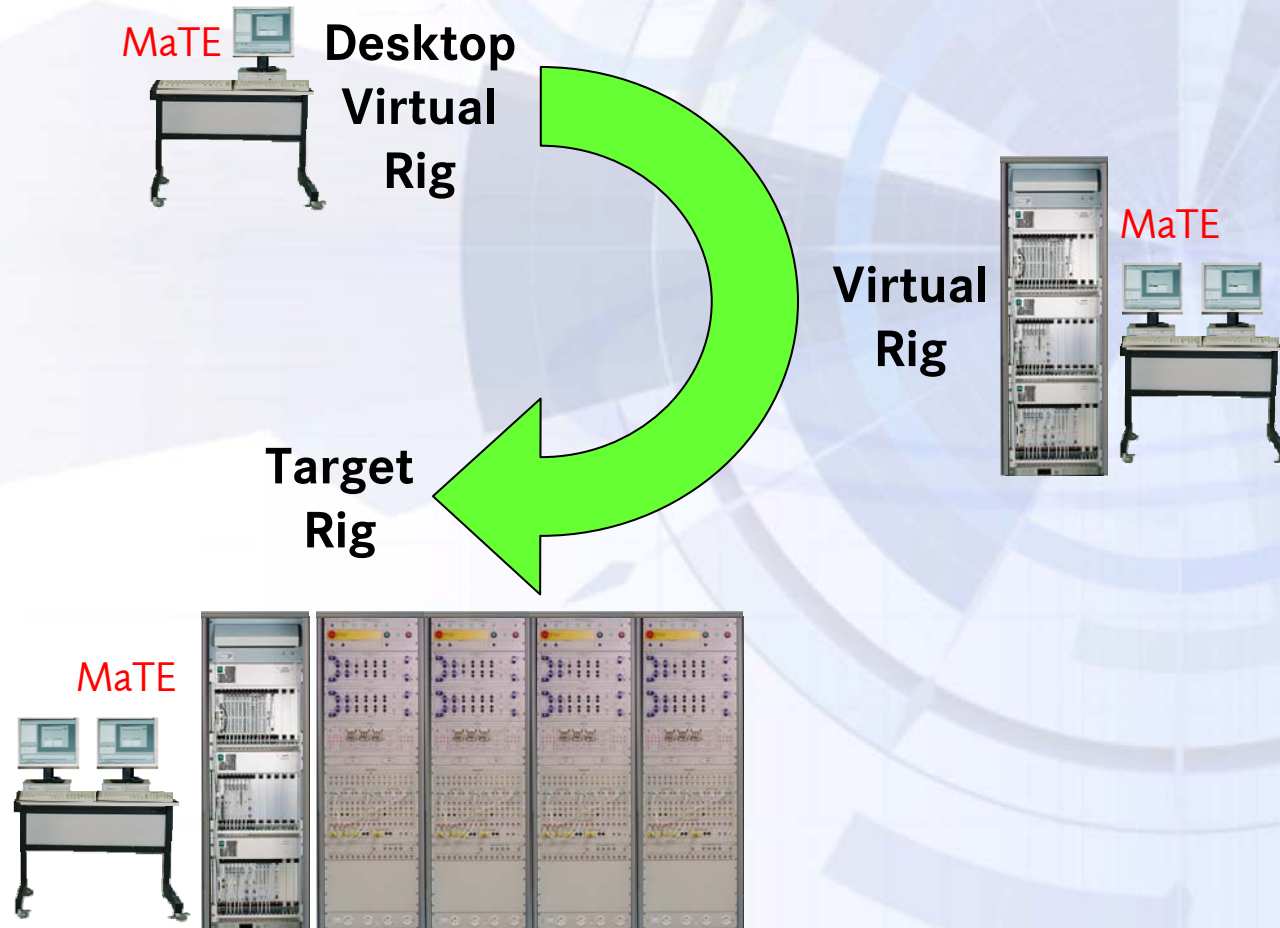
# Software Re-hosting mit MaTE



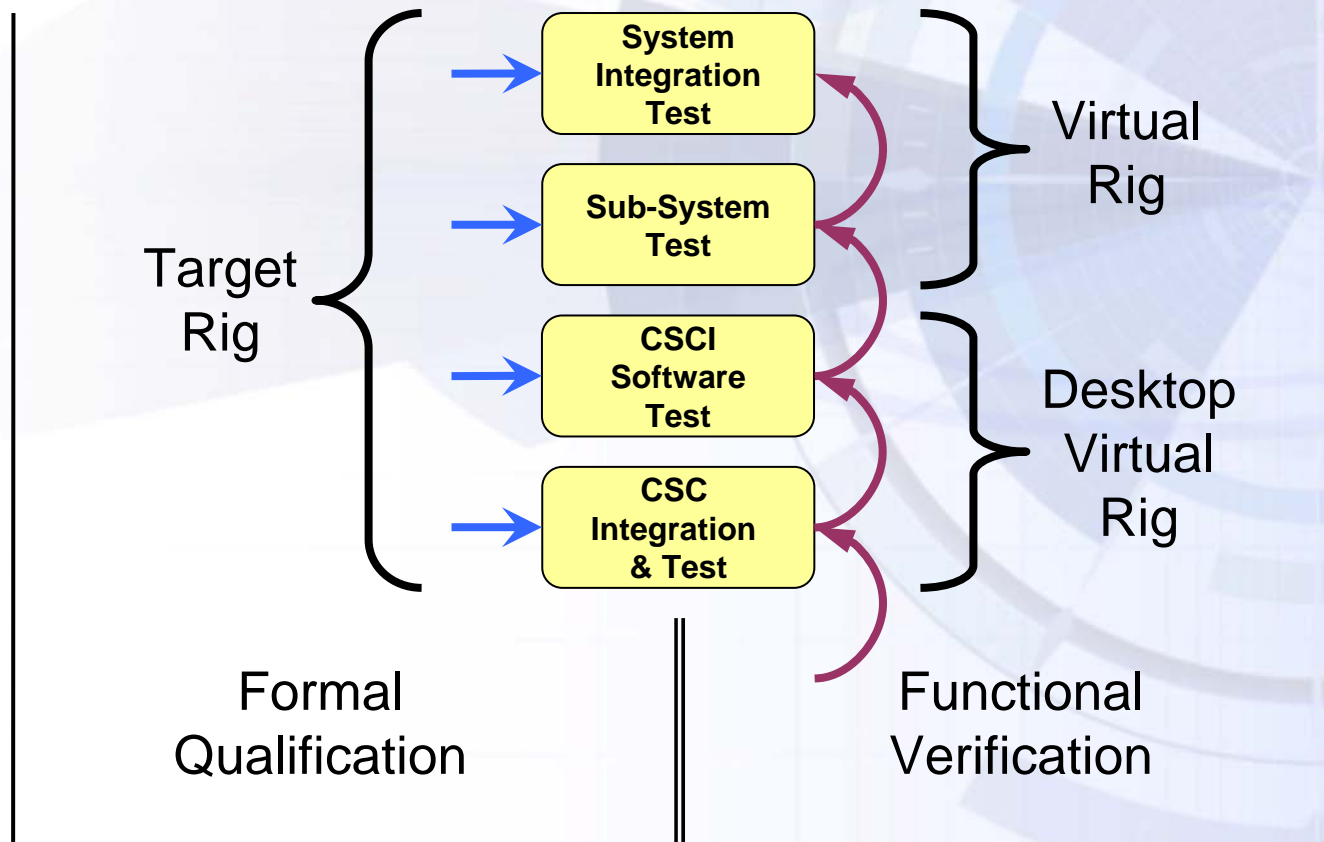
TSAP: Target Specific Ada Packages



# Vom Desktop zum Target

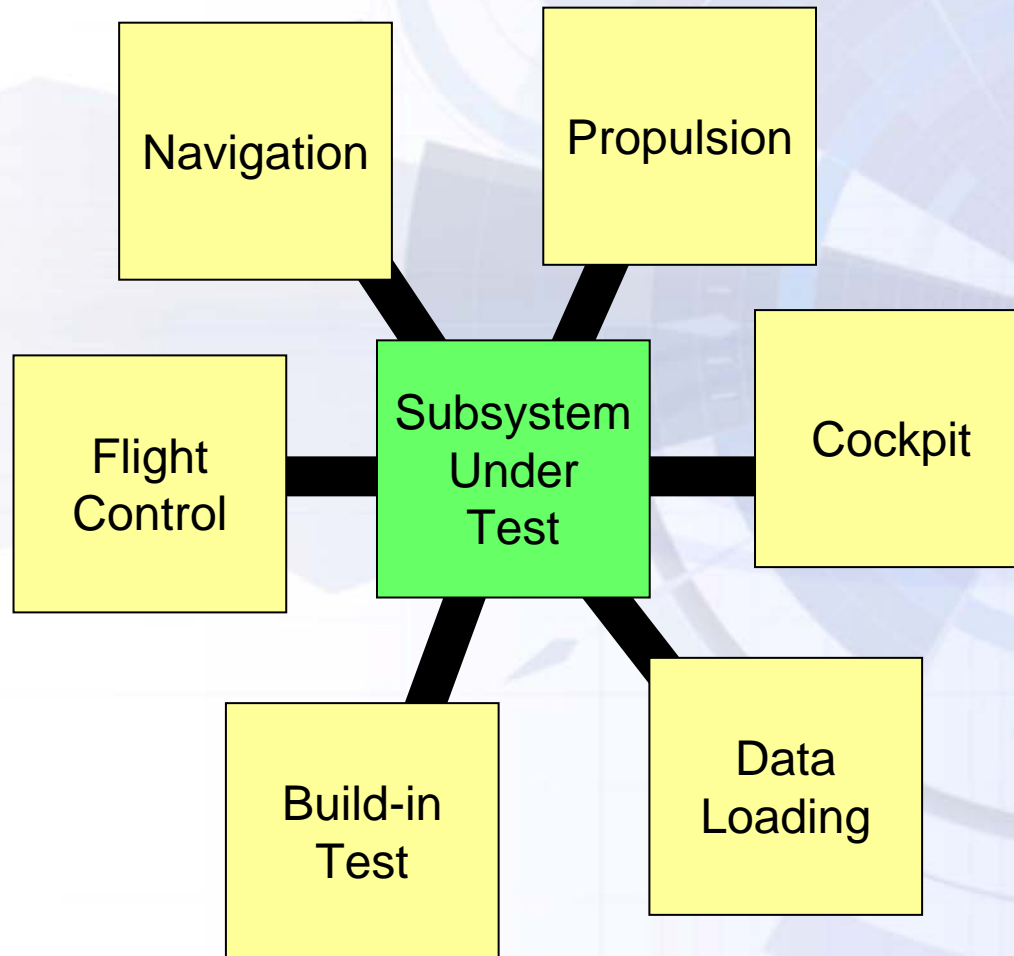


# Rigs für die Qualifikation / Verifikation

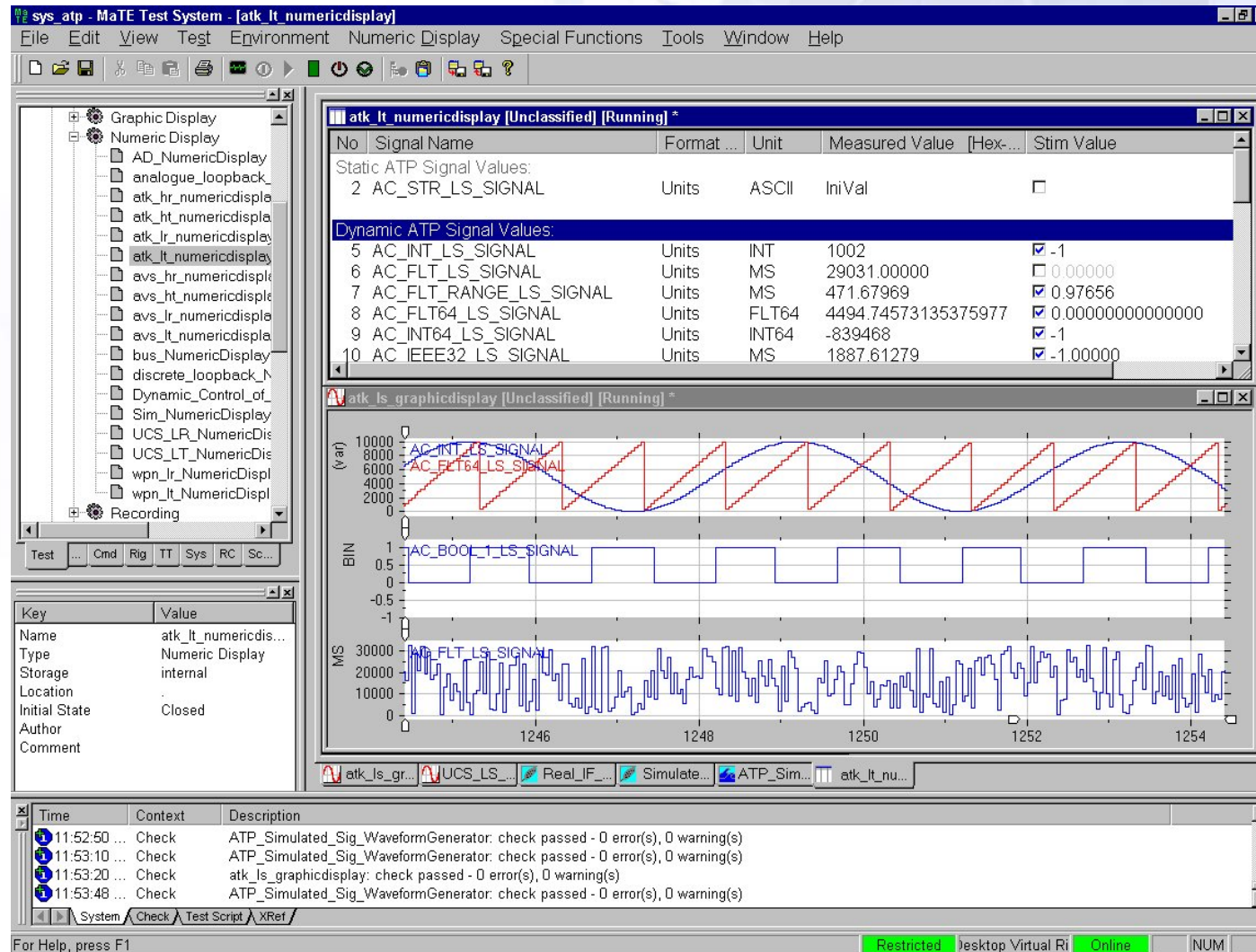




## Subsystem Under Test



# MaTE Signal-Stimulation / -Evaluierung



The screenshot displays the MaTE Test System interface with the following components:

- Left Panel:** A tree view showing the project structure, including 'Graphic Display', 'Numeric Display', and 'Recording' sections.
- Top Window:** 'atk\_it\_numericdisplay [Unclassified] [Running] \*' showing a table of signal values.
 

No	Signal Name	Format ...	Unit	Measured Value	Hex...	Stim Value
Static ATP Signal Values:						
2	AC_STR_LS_SIGNAL		Units	ASCII	IniVal	<input type="checkbox"/>
Dynamic ATP Signal Values:						
5	AC_INT_LS_SIGNAL		Units	INT	1002	<input checked="" type="checkbox"/> -1
6	AC_FLT_LS_SIGNAL		Units	MS	29031.00000	<input type="checkbox"/> 0.00000
7	AC_FLT_RANGE_LS_SIGNAL		Units	MS	471.67969	<input checked="" type="checkbox"/> 0.97656
8	AC_FLT64_LS_SIGNAL		Units	FLT64	4494.74573135375977	<input checked="" type="checkbox"/> 0.000000000000000
9	AC_INT64_LS_SIGNAL		Units	INT64	-839468	<input checked="" type="checkbox"/> -1
10	AC_IEEE32_LS_SIGNAL		Units	MS	1887.61279	<input checked="" type="checkbox"/> -1.00000
- Middle Window:** 'atk\_ls\_graphicdisplay [Unclassified] [Running] \*' showing three signal waveforms:
  - Top: AC\_INT\_LS\_SIGNAL (blue sine wave) and AC\_FLT64\_LS\_SIGNAL (red sawtooth wave).
  - Middle: AC\_BOOL\_1\_LS\_SIGNAL (blue square wave).
  - Bottom: AC\_FLT\_LS\_SIGNAL (blue high-frequency noise).
- Bottom Window:** A log window showing test results:
 

Time	Context	Description
11:52:50 ...	Check	ATP_Simulated_Sig_WaveformGenerator: check passed - 0 error(s), 0 warning(s)
11:53:10 ...	Check	ATP_Simulated_Sig_WaveformGenerator: check passed - 0 error(s), 0 warning(s)
11:53:20 ...	Check	atk_ls_graphicdisplay: check passed - 0 error(s), 0 warning(s)
11:53:48 ...	Check	ATP_Simulated_Sig_WaveformGenerator: check passed - 0 error(s), 0 warning(s)

# MaTE Testscript

```
1 //*****
2 // Script File
3 // Sample . a t l
4 //
5 // Contains a sample test Script.
6 //*****
7
8 // Uses library script file
9 include "LibFunctions.tsc"
10
11 signal sig = use 'M001_WORD02_E02'
12
13 -----
14 // Main script routine
15 -----
16 function main()
17 begin
18     string canDo
19     float speed, sigValue
20     integer i
21     integer value
22
23     for i = 2 to i < 100 step 2
24         value = doSomething(i)
25         if value > 1500
26             speed = doSomethingElse("Speed")
27         elseif value == 1280
28             speed = MAX_SPEED / pow(2, PI)
29         else
30             speed = 1.73
31         endif
32         Console.WriteLine("Current speed: " + speed)
33     endfor
34
35     sigValue = Signal.Measure(sig)
36     if sigValue <= 28.75
37         canDo = "True"
38     else
39         canDo = "False"
40     endif
41
42     Log.WriteLine("The Test is " + canDo + ", the value is " + sigValue)
43 end
44
```

# Eurofighter Subsystem Testanlage

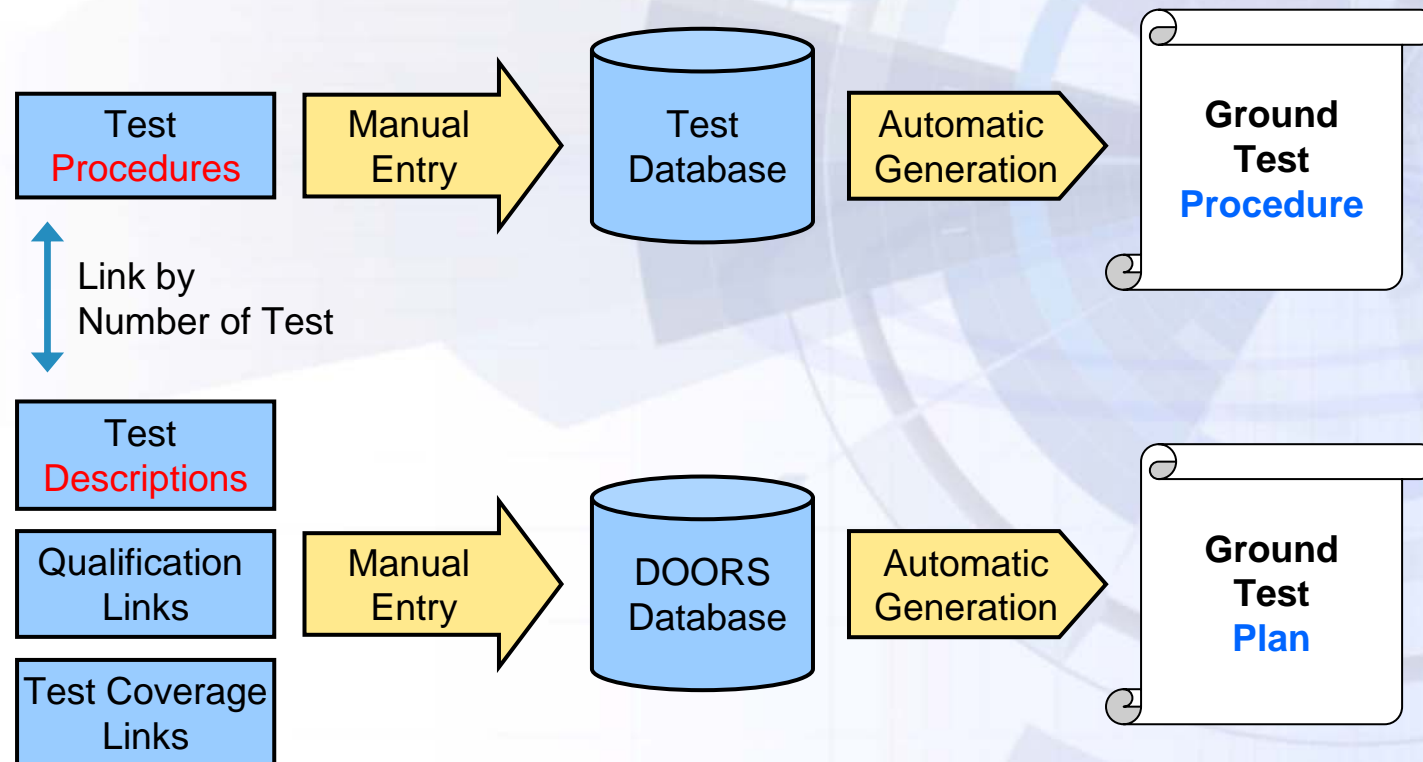


Avionik  
Subsystem  
Testrig

National Support Center  
Eurofighter  
Manching

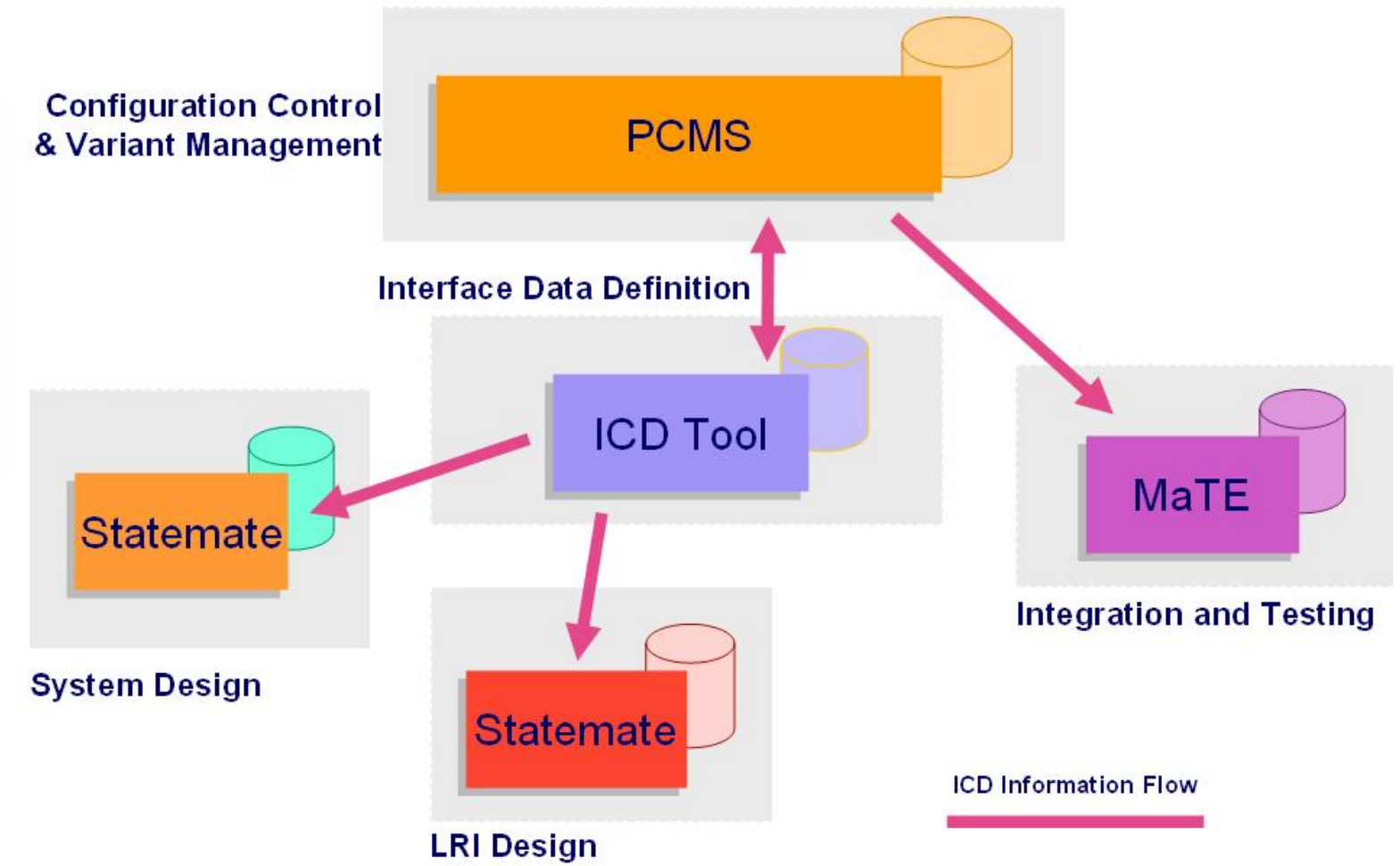


# Erzeugung der Testdokumente





# Prozessübergreifende Schnittstellenbeschreibung





# Tagesaktueller Datenabgleich

