

ADM L1b Lab in the DLR's Virtual Laboratory

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Scientific Software Just A Mouse Click Away (1)

A 1968 vision:

... Back to our hypothetical user. He seats himself at his console [...]. He dials his local computer and 'logs in' by presenting his name, **problem number**, and password to the monitor program. **He calls** for either a public program, one of his own programs, **or a colleague's program that he has permission to use**. The monitor links him to it, and **he then communicates with that program...**

J.C.R. Licklider et al. , "The Computer as a Communication Device" in Science and Technology, April 1968



Scientific Software Just A Mouse Click Away (2)

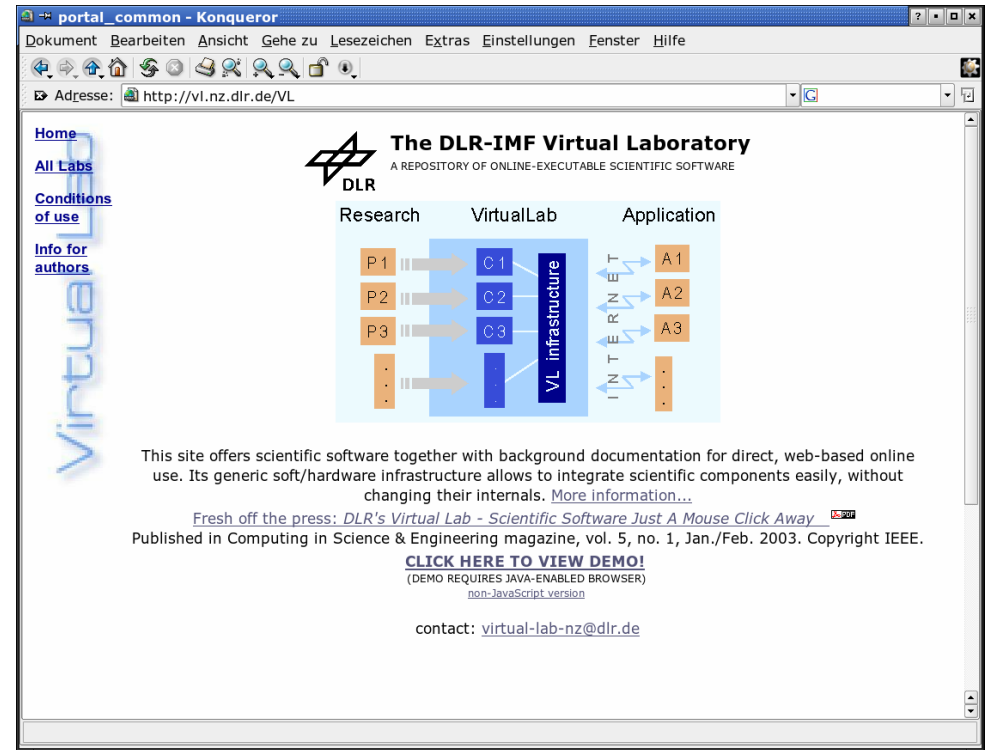
2006: Are we there?

- Internet & WWW are ubiquitous and have revolutionized the exchange of scientific information
- But progress w.r.t. scientific **software** lacks behind the access to scientific **documents** today
- „Reuse by download“: requires installation or even porting to the users hardware – limiting factor for broad exchange
- Distributed computing technologies exist (remote shells, CORBA, Java-RMI, Web Services) but there is no reliable, ubiquitous infrastructure to which Licklider’s request could be addressed.

Answer: No.

DLR's Virtual Lab: Web based scientific software repository

- Low barrier:
 - For authors to implement applications
 - For users to get access to the application
- „Black-box“ integration: no internal modifications necessary
- Online help and background information available
- Public domain: Zope/Python, OpenPBS, mySQL, OpenLDAP



The screenshot shows a web browser window titled "portal_common - Konqueror" with the address bar displaying "http://vl.nz.dlr.de/VL". The page content includes the DLR logo and the title "The DLR-IMF Virtual Laboratory" with the subtitle "A REPOSITORY OF ONLINE-EXECUTABLE SCIENTIFIC SOFTWARE". A diagram illustrates the workflow: "Research" (P1, P2, P3) feeds into "VirtualLab" (C1, C2, C3), which then feeds into "Application" (A1, A2, A3). The central component is labeled "VL infrastructure". Below the diagram, text states: "This site offers scientific software together with background documentation for direct, web-based online use. Its generic soft/hardware infrastructure allows to integrate scientific components easily, without changing their internals. [More information...](#)" A link is provided: "Fresh off the press: [DLR's Virtual Lab - Scientific Software Just A Mouse Click Away](#)". Below this, it says "Published in Computing in Science & Engineering magazine, vol. 5, no. 1, Jan./Feb. 2003. Copyright IEEE." A prominent link reads "CLICK HERE TO VIEW DEMO!" with a note "(DEMO REQUIRES JAVA-ENABLED BROWSER) non-JavaScript version". The contact information is "contact: virtual-lab-nz@dlr.de".

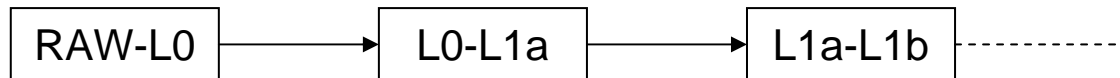


Processor development ADM-Aeolus (1)

DLR: L1b prototype processor

MDA: L1b operational processor

processing chain:

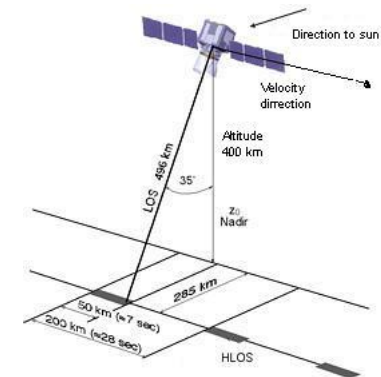


Prototype processor in the Virtual Lab:

- Compare with the operational processor
- Compare different scientific versions of the same module

Easy update of the prototype processor modules:

- Only update in VL necessary
- All participants have the same version
- they can use the processor online



Processor development ADM-Aeolus (2)

Adresse: http://vl.nz.dlr.de/VL/users/wauer/my_exps/EXPS/ADM_L1bP-1.3_2/

ADM_L1bP-1.3_2 - readyToRun Start ViewInput HOME myEXPS myPROGs RTaskDir

PROG=ADM_L1bP-1.3 RTaskDir=/VL/tasks/wauer/@2946.22DEV, JobId= ExecNode=

ENTER/next *prev - 1 - 2 - current - all* Clear all

Input data set for: ADM_L1bP-1.3 [ALL]

Quantity	VarName	Unit	Remark
AEOLUS LEVEL 1B PROCESSOR (1)			
Select: Processor	<input type="text" value="RAW L0"/>		
Select a file (*.DBL) for uploading raw data	AE_TEST_TLMX_VC1_20071002T000002_20071002T005825_0001.DBL		<input type="checkbox"/> change
Select a header file (*.HDR) for uploading raw data	AE_TEST_TLMX_VC1_20071002T000002_20071002T005825_0001.HDR		<input type="checkbox"/> change

ENTER/next *prev - 1 - 2 - current - all* Clear all

Run the job (points to Start button)

Online help (points to help icon in Processor selection)

Upload files (points to help icon in file selection)

Processor development ADM-Aeolus (3)

Adresse: http://vl.nz.dlr.de/VL/users/wauer/my_exps/EXPS/ADM_L1bP-1.3_2/

ADM_L1bP-1.3_2 - inOutput Abort Task HOME myEXPS myPROGs RTaskDir

PROG=ADM_L1bP-1.3 RTaskDir=/VL/tasks/wauer/@2946.22DEV, JobId=1719.portal.virtual-lab.int ExecNode=vl-3

Results

```
2006-09-19T13:47:51.000000 vl-3.virtual-lab.int AE_RAW_L0 01.00 [0000015234]: [P] Processing task nar
2006-09-19T13:47:51.000000 vl-3.virtual-lab.int AE_RAW_L0 01.00 [0000015234]: [P] Processing task ver
2006-09-19T13:47:51.000000 vl-3.virtual-lab.int AE_RAW_L0 01.00 [0000015234]: [P] Job order type: Nor
2006-09-19T13:47:51.000000 vl-3.virtual-lab.int AE_RAW_L0 01.00 [0000015234]: [I] Level Zero Process:
2006-09-19T13:47:51.000000 vl-3.virtual-lab.int AE_RAW_L0 01.00 [0000015234]: [I] Starting signal han
2006-09-19T13:47:51.000000 vl-3.virtual-lab.int AE_RAW_L0 01.00 [0000015234]: [P] Input filename: ./a
2006-09-19T13:47:51.000000 vl-3.virtual-lab.int AE_RAW_L0 01.00 [0000015234]: [P] Input filename: ./a
2006-09-19T13:47:51.000000 vl-3.virtual-lab.int AE_RAW_L0 01.00 [0000015234]: [P] Input filename: ./a
2006-09-19T13:48:04.000000 vl-3.virtual-lab.int AE_RAW_L0 01.00 [0000015234]: [P] Processing exit co
```

Download all results as .tar file here: [ADM_L1bP-1.3_2.tar](#)



Virtual Lab – outlook beyond the ADM prototype processor

- Possible next step: DE2S simulator

- The Virtual lab contains higher level applications from remote sensing:
 - Scattering Lab
 - Radiative Transfer Lab
 -

- Used in education (e. g. aerosol course at the Leipzig Univ)

Online demonstration possible

Web: <http://vl.nz.dlr.de>