

Status of BEAN

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BEAN-wiki:

<http://docbes3.ihep.ac.cn/~offlinesoftware/index.php/BEAN>

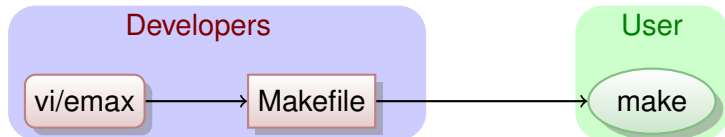
- BEAN is a ROOT-based analysis framework.
- The goal is to develop a lightweight analysis software, more simple and easy to use than BOSS.

Outline

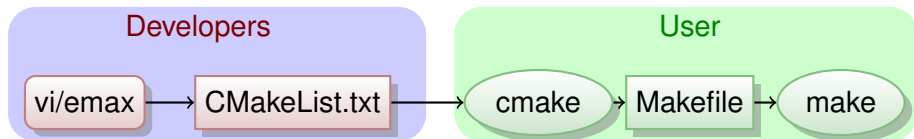
- Build the BEAN with CMake
- Features of the BEAN in Windows
- Recent changes



- “Classical” build system

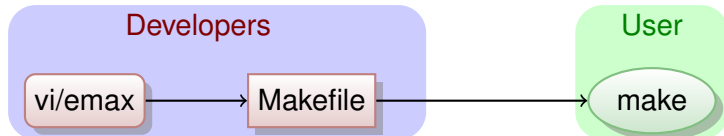


- CMake build system

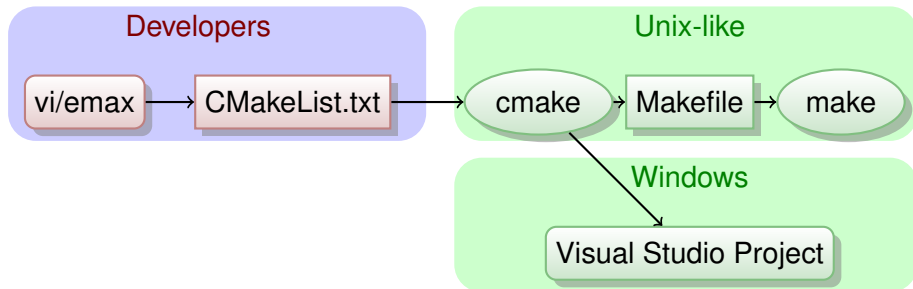




- “Classical” build system



- CMake build system



Using CMake

Developers provide CMakeList.txt

- This is text file that contains the project parameters and describes the flow control of the build process.
- User can edit this file for changing parameters, but there is a better way: `cmake-gui`.

User

- Create a build directory (“out of source build”):
`mkdir build; cd build`
- Configure:
`cmake [options] <BEAN dir>; (cmake ../)`
There are GUI version to change parameters and options:
`cmake-gui` or `ccmake`
- Build:
`make`

BEAN Installation in Windows

Prerequisite Libraries and Tools

- 1 C/C++ compiler: Visual Studio C++ 2010 Express Edition
- 2 CMake-2.8 or later
- 3 ROOT: version ≥ 5.28
- 4 CLHEP: version $\geq 2.0.0.0$
- 5 *[Optional] python, wget – to get and update database
cvs, openssh – for access to BEAN CVS repository*

Build BEAN

- Download source code from CVS:

```
cvs -d :pserver:usr@koala.ihep.ac.cn:/bes/bes login  
cvs -d :pserver:usr@koala.ihep.ac.cn:/bes/bes co bean
```

- Create a build directory → configure → build ...

Features of the configuration in Windows

Visual Studio Project

- Start → Programs → CMake-GUI
 - ▶ Where is the source code of the BEAN
 - ▶ press **Configure**:
 - ★ Specify the generator: "Visual Studio 10"
 - ★ Use default native compilers
 - ▶ Where is the ROOT, where is the CLHEP.
 - ▶ Change any other parameters, if you want to ...
 - ▶ Repeat pressing **Configure** until **no more red rows are highlighted**.
 - ▶ When ready, press **Generate**.
- Start → Programs → Microsoft Visual Studio 2010 Express
 - ▶ Open the build directory, where you will find the **BEAN.sln** file.
 - ▶ After MSVC has finished parsing all of the files:
Debug → Build Solution

Configuration in Command Line

Generation Make, NMake(WIN) Makefile

- [WIN] launch `cmd.exe` and run `vcvars32.bat` which sets up all the necessary environment variables for MS compiler

```
...\Microsoft Visual Studio 10.0\VC\bin\vcvars32.bat
```

- Go to build directory and run `cmake`:

```
cmake ../ -DROOT_CONFIG_SEARCHPATH="C:/root" \  
-DCLHEP_SEARCHPATH="C:/study/CLHEP/2.1.1.0_debug"
```

- ▶ `-D` – cmake option to definition a variable
- ▶ `ROOT_CONFIG_SEARCHPATH` – the directory with `root-config`
- ▶ `CLHEP_SEARCHPATH` – the directory where CLHEP is installed

- run `make` (or `nmake` in Windows)

Advantages of “out of sources build”

More than one version of build

- Create another build directory:
`mkdir build2; cd build2`
- Configure with `cmake-gui` or `ccmake` the directory to install program: `workdir2`
- Change other parameters, for example use **Debug** type of build ...
- Build with `make`

Very simple uninstall

- 1 `make uninstall`
- 2 Delete build directory:
`cd ../; rm -fr build`

Features of the BEAN in Windows

Restrictions

- PROOF-Lite is not available (ROOT does not support it in Windows)
- The debugging is possible only in Visual Studio

Programming

The user functions must use the macros `BeanUserShared_EXPORT` which is defined in the file `DLLDefines.h`. Below is an example of the use of this macros:

```
#include "DLLDefines.h"           // mandatory!
...
BeanUserShared_EXPORT
void User1StartJob(ReadDst* selector) { ... }
```

The other examples you can find in the directory `BeanUser/`

What's new in BEAN

- BEAN is synchronized with BOOS 6.6.1
- You can update the database with the following command:
`make updatedb`
- To run BEAN in PROOF-lite (or PROOF) mode you have to create PAR files: `make proofbean`
- In some cases it may be useful to run `workdir/setup.sh` script that sets the environment variable `LD_LIBRARY_PATH`

Summary & Plans

- New version of the BEAN can be used on Linux, MacOS and Windows
- Documentation on the BEAN wiki page is being updated and supplemented
- Unfortunately we have limited opportunity to test BEAN on MacOS and Windows. Therefore any tests on these OS are welcome.

Thank you!