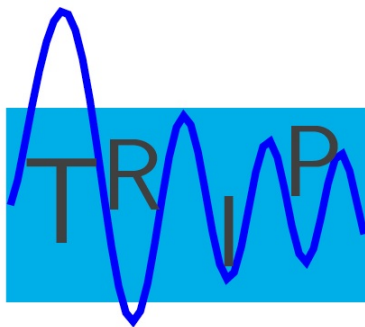


age



January 2013

Standard directory organization

- ▶ `include` - header files
- ▶ `lib` - source for object files, static archive (“library”)
- ▶ `main` - commands (“main programs”) source and binaries
- ▶ `doc` - documentation

Naming convention (automatic with TRIP build): for package root directory `foo`, library is `foo/lib/libfoo.a`.

Standard directory organization

top level auxiliary files:

- ▶ `hclasspath` - paths to other package directories with standard org

Colon-separated list, like environment path

Pathnames can be relative to package root, or fully qualified - macros automatically expanded.

```
../foo:/home/symes/bar:$FOOBAR
```

Standard directory organization

For headers, libs in “foreign” packages, not conforming to standard org:

- ▶ `hincpath` - paths to header file directories - give only parent directory path, headers in `foo` assumed to live in subdir `foo/include`
- ▶ `hlibpath` - paths to libraries (`(...)/liblapack.a`) - full pathname, cannot assume anything about location, names of “foreign” libs!!!
- ▶ `hsubpath` - for super package (eg. IWAVE), names of sub packages to be included, assumed to be local paths immediately below super.

SConstruct

Download TRIP admin package:

```
svn co https://cvs.caam.rice.edu:3129/svn/trip/trunk/admin
```

For convenience: env variable TRIPADMIN = path to this

Install standard scons setup:

- ▶ `copy $TRIPADMIN/scons/SConstruct` to package root directory
- ▶ `scons --install=$TRIPADMIN/scons`

To uninstall, use `--uninstall` option

Doxygen

Document each struct, class, function with double-star comment *above declaration in header file* - describe parameters and return values:

```
/**  
return axis lengths of computational virtual subarray  
@param[in] a - rarray struct to be queried  
@param[out] n - array of axis lengths on return  
*/  
void ra_size(RARR * a, IPNT n);
```

Doxygen

Group functions sharing doc with defgroup [group name]:

```
/** \defgroup fffaccess Parameter access - first  
occurrence  
@param[in] par - parameter array  
@param[in] key - search key (null-terminated string)  
@param[out] p - pointer to value of indicated type  
@return (int) 0 if successful, else nonzero code  
Note: the string case allocates memory, (...)  
/*@{*/  
int ps_ffcstring(PARARRAY par, const char *key, char  
**p);  
int ps_ffchar(PARARRAY parr, const char *key, char  
*p);  
(...)  
/@}*/
```

Doxygen

Can include LaTeX math (`\f$ {\bf f} = \nabla u\f$`), figures - see docs, examples. Do lists, bold/italic, spacing etc. with html commands.

Put main package docs for foo in `foo/include/doc.h`, format with `@mainpage`:

```
/** @mainpage IWAVE Basic Utilities Package
```

```
Author: Igor Terentyev <p>
```

```
Utilities used throughout IWAVE:
```

```
<ul>
```

```
<li>parser : "getpar" facility, interprets lists of  
key=value pairs, provides functions for  
initialization from command line or file, structured  
access </li>(...) */
```


Doxygen

Installation:

- ▶ Create doc subdir of package dir
- ▶ Create doc/Doxyfile - use IWAVE examples, or Doxygen documentation
 - ▶ creates links to doxygen-generated html in other directories via *tags*
 - ▶ creates tag for this package so that others can link to it
- ▶ `scons --doc`

Testing: Google Test

- ▶ download, install Google Test
- ▶ build test directory with `hincpath`, `hlibpath` set up to point to `$GTEST_DIR` headers and library
- ▶ follow tutorial example on gtest web site, also `$IWAVEPP/tests`
- ▶ test everything! test first!