

Trilinos 102: Advanced Concepts

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Overview

- **How to Create a Trilinos (Compatible) Package**
- **Adding Files to the Build System and Tarball**
- **Adding Configure Options**
- **Using Makefile.export for Tests and Examples**





How to Create a Trilinos (Compatible) Package

- **Two primary cases**
 - Using Autotools with an existing package
 - Starting a new package using Autotools
 - Both cases are similar
- **In either case, the package might be**
 - Stand alone
 - Used via Trilinos/packages/external
 - Added to Trilinos



How to Create a Trilinos (Compatible) Package

- Look at the new_package package
- Customize the following files for your package
 - `configure.ac`
 - `Makefile.am`
 - `src/Makefile.am`
 - `test/Makefile.am`
 - `example/Makefile.am`
 - `Makefile.export.<package>.in`
 - (Some of the necessary changes can be made using scripts supplied by new_package)
- Additional instructions are supplied with new_package



Adding Files to the Build System and Tarball

- Library source files:

```
CORE = \  
    $(srcdir)/Epetra_BLAS.cpp \  
    ...  
    $(srcdir)/Epetra_Object.cpp
```

```
CORE_H = \  
    $(srcdir)/Epetra_BLAS.h \  
    ...  
    $(srcdir)/Epetra_ConfigDefs.h
```

- Conditionally compiled files listed with ‘EXTRA_’ prefix
- Don’t forget to list header files!



Adding Files to the Build System and Tarball

- Makefile.am/.in:
 - Add the directory the new files are in to 'SUBDIRS' in the Makefile.am one level up
 - **SUBDIRS = DIR1 DIR2**
 - Add the Makefile that will be generated to 'AC_CONFIG_FILES' in configure.ac
 - **AC_CONFIG_FILES([Makefile ... src/Makefile ...])**
 - Don't forget to 'cvs add' both files
 - ./bootstrap
- Other types of files (scripts, plain text, etc):
 - Add the name of the file to EXTRA_DIST
 - **EXTRA_DIST = script1 README ...**
 - ./bootstrap



Adding Configure Options

- **TAC_ARG_ENABLE_CAN_USE_PACKAGE**(epetra, Teuchos, ...)
 - ‘**#ifdef HAVE_EPETRA_TEUCHOS**’ in source code
- **TAC_ARG_ENABLE_FEATURE_SUB**(epetra, abc, ...)
 - ‘**#ifdef HAVE_EPETRA_ARRAY_BOUNDS_CHECK**’ in source



Adding Configure Options

- **TAC_ARG_WITH_PACKAGE**(zoltan, [Enable Zoltan interface support], ZOLTAN, no)
 - **AM_CONDITIONAL**(HAVE_ZOLTAN, [test "X\$ac_cv_use_zoltan" != "Xno"])
 - 'if HAVE_ZOLTAN' in Makefile.am
- **AC_SEARCH_LIBS**(pow,[m],,AC_MSG_ERROR(Cannot find math library))



Using Makefile.export for Tests / Examples

- Makefile.am:

```
include $(top_builddir)/Makefile.export.epetra
```

```
EXEEXT = .exe
```

```
noinst_PROGRAMS = CrsMatrix_test
```

```
CrsMatrix_test_SOURCES = $(srcdir)/cxx_main.cpp
```

```
CrsMatrix_test_DEPENDENCIES=$(top_builddir)/src/libepetra.a
```

```
CrsMatrix_test_CXXFLAGS = $(EPETRA_INCLUDES)
```

```
CrsMatrix_test_LDADD = $(EPETRA_LIBS)
```



Questions?