EPICS Core Status

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Andrew Johnson, Ralph Lange, Marty Kraimer, ...

What is EPICS Core?

- EPICS Base
  - libCom, db, ca, database
- PVA Modules
  - PVD, PVA, pvaClient, pvDatabase, pva2pva
- Andrew, Marty, Michael, Ralph

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Milestones since June. 2018

- https://epics.anl.gov/

- Releases:

  - 3.14.12.8 (Sept. 2018)   Last in series

  - 3.15.6   (Oct. 2018)

  - 3.16.2   (Dec. 2018)   Last in series

  - 7.0.2 (Dec. 2018)

  - 7.0.2.1   (Mar. 2019)

  - 7.0.2.2   (Apr. 2019)

  - 7.0.x (June 2019?)

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Futures of Platform Support

- Linux
- Windows
  - MSVC >= 9.0
    (as long as MD supports python 2.7)
- RTEMS
  - 4.9, 4.10
  - 5.x in progress
- vxWorks
  - 5.5 is dead

- Darwin
- iOS
  - Build but not run testing
- **Deprecated?**
  - **Solaris**
  - **Cygwin**
  - **freebsd**

C++11 !?!

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~Recent work

- Grand source-code reorganization
  - Git Branches Recombined
- Simulation mode improvements
- Status reporting for the callback and scanOnce task queues
- GNUmake targets for debugging
  - make -C …. PRINT.PROD_SRCS
- All array recordTypes post monitors on their array-length fields
- Propagate PUTF across Asynchronous record processing
  - Fix DB_LINK loop breaking in 7.0.2.1
- RSRV expanding large buffer causes crash
  - 3.16.1 eliminates EPICS_CA_MAX_ARRAY_BYTES
  - 3.16.2 fixes regression (also in 7.0.1)

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Survey (1)

- Who has compiled Base from source in the past 6 months?
  - 3.14
  - 3.15
  - 3.16
  - 7.0

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Survey (2)

- Who has spent more than 30 min. troubleshooting a Makefile problem?

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Retrospective

- MD joins NSLS2 in March 2009
  - http://mdavidsaver.github.io/epics-doc/epics-starting.html

- First Base contribution in April 2009
  - Email to ANJ

  39eaa0e335ae6d84db02e1e0d8e26d4a19758893

- First EPICS meeting in June 2010 @ITER

- Only person to gain Base commit privileges in a decade

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How to start contributing?

- Start small

- Start simple

Mar 16, 2010

```
@@ -236,6 +236,12 @@ void epicsShareAPI dbScanLock(dbCommon *precord)
    epicsMutexLockStatus status;
    epicsThreadId idSelf = epicsThreadGetIdSelf();

+    /*
+     * If this assertion is failing it is likely because iocInit
+     * has not completed.  It must complete before normal record
+     * processing is possible.  Consider using an initHook to
+     * detect when this occurs.
+     */
    assert(dbLockIsInitialized);
    while(1) {
        epicsMutexMustLock(lockSetModifyLock);
```

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First Steps

- Ansification (bye bye K&R)

- remove STATIC

- softIoc: extra dep for generated header

- remove unused iocRegister stub

- Added CONTAINER() and STATIC_ASSERT()

- https://bugs.launchpad.net/epics-base/+bug/693534
  - errlog causes crash on IOC exit

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Help yourself, help others

- If you trigger an error, so will others

- Miss-matched .dbd

3e6597be90848ccfd4f9449ada2d12aeac9b3475

```
@@ -228,12 +228,14 @@ int main(int argc,char **argv)
     fprintf(outFile,"#ifdef __cplusplus\n");
     fprintf(outFile,"extern \"C\" {\n");
     fprintf(outFile,"#endif\n");
+       fprintf(outFile,"#include <epicsAssert.h>\n");
        fprintf(outFile,"#include <epicsExport.h>\n");
     pdbRecordType = (dbRecordType *)ellFirst(&pdbbase->recordTypeList);
     while(pdbRecordType) {
         fprintf(outFile,"static int %sRecordSizeOffset(dbRecordType *pdbRecordType)\n{\n",
         pdbRecordType->name);
         fprintf(outFile,"    %sRecord *prec = 0;\n",pdbRecordType->name);
+        fprintf(outFile,"  assert(pdbRecordType->no_fields==%u);\n", pdbRecordType->no_field
         for(i=0; i<pdbRecordType->no_fields; i++) {
         char name[256];
         int     j;
```

How to start contributing? (2)

- Incremental cleanup

- Writing unit-tests

  - Record support!

- Create/Update Documentation

  - RRM!

- Climb the learning curve

  - Needs Mgmt support!

- Build relationships

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What does a Maintainer do?

- Answer questions

- Triage bug reports

- Mentor new contributors

- Review code
    - Our big bottleneck!

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Bootstrapping Base Development?

- High quality threshold + small reviewer bandwidth

    → few new contributors

- Few contributors

    → Little incentive to review

- How to break the loop?

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