

Asyn for motor drivers

Peter Denison
Diamond Light Source



EPICS Collaboration, Archamps, Oct 2005



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Current situation

- Motor drivers/record have some problems
 - No feedback when not moving
 - Mix of common code and controller specific
 - Messy interface layers
 - No support for new features of modern controllers
 - Large (7200 lines of dev support)
 - Multi-axis controllers can have bottlenecks in driver



But... many people use the motor record interface



History

- Originally developed for the OMS series of VME card controllers from Jan 1993
- Extended to many others – 11 manufacturers + soft motor
- Most are some form of string protocol



Aims

- Simpler to write motor controller driver
- Extensible API
- Allow trivial use with standard records in base



Proposed API

- void motorAxisInit(void)
- void motorAxisReport(int level)
- int motorAxisSetLog(motorAxisLogFunc logFunc)

- AXIS_h motorAxisOpen(int card, int axis, char *param)
- int motorAxisClose(AXIS_h pAxis)



Proposed API (2)

- `int motorAxisSetPosition(Axis_h pAxis, double position)`
- `int motorAxisSetEncoderRatio(Axis_h pAxis, double enc_counts, double mot_counts)`
- `int motorAxisSetLowLimit(Axis_h pAxis, double low_limit)`
- `int motorAxisSetHighLimit(Axis_h pAxis, double high_limit)`
- `int motorAxisSetClosedLoop(Axis_h pAxis, int loop_on)`
- `int motorAxisSetPGain(Axis_h pAxis, double pgain)`
- `int motorAxisSetIGain(Axis_h pAxis, double igain)`
- `int motorAxisSetDGain(Axis_h pAxis, double dgain)`



Proposed API (3)

- `int motorAxisMove(Axis_h pAxis, double position, int relative, double min_velocity, double max_velocity, double acceleration)`
- `int motorAxisHome(Axis_h pAxis, double min_velocity, double max_velocity, int forwards)`
- `int motorAxisVelocityMove(Axis_h pAxis, double velocity, double acceleration)`
- `int motorAxisStop(Axis_h pAxis)`

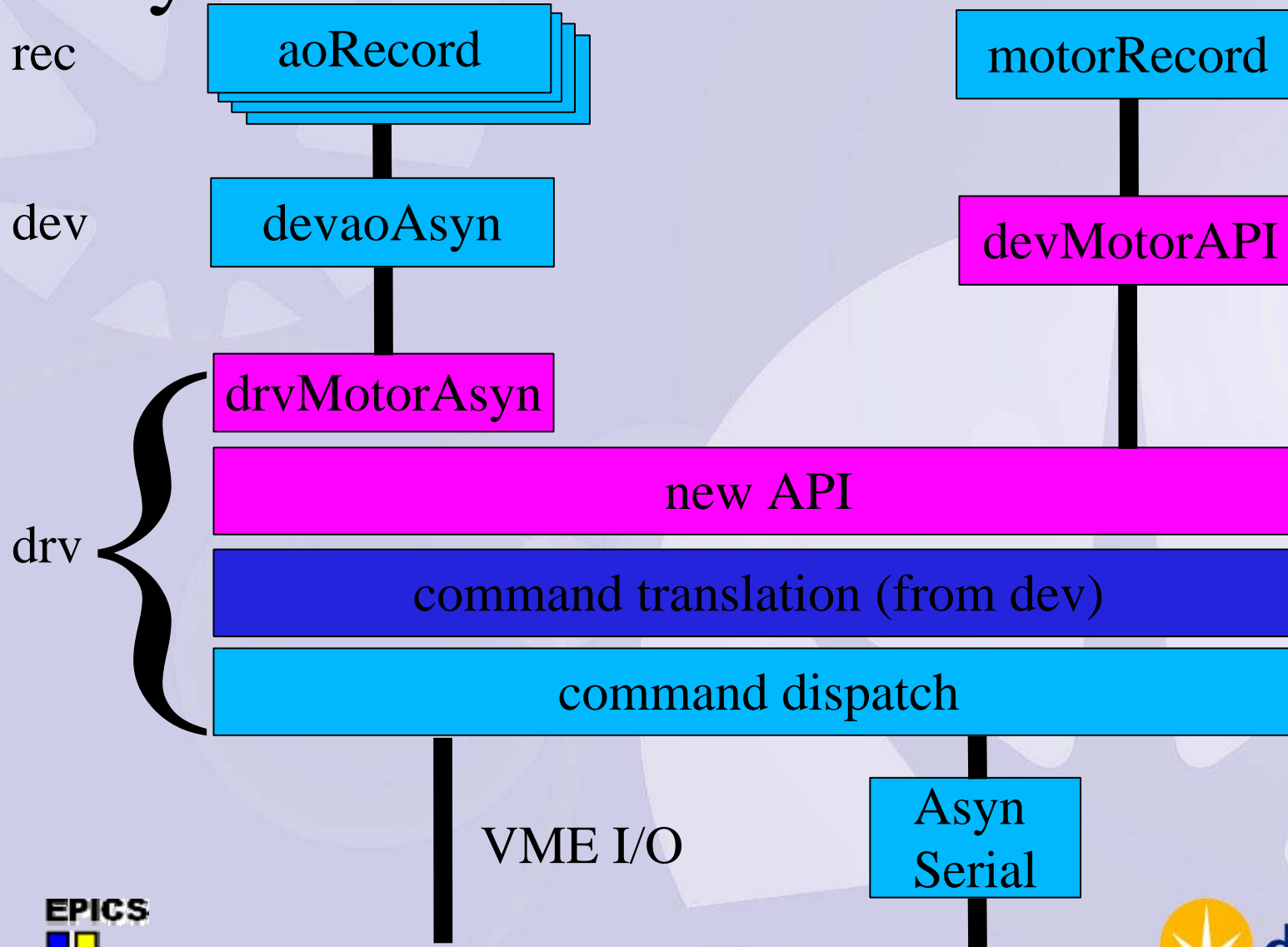


Proposed API (4)

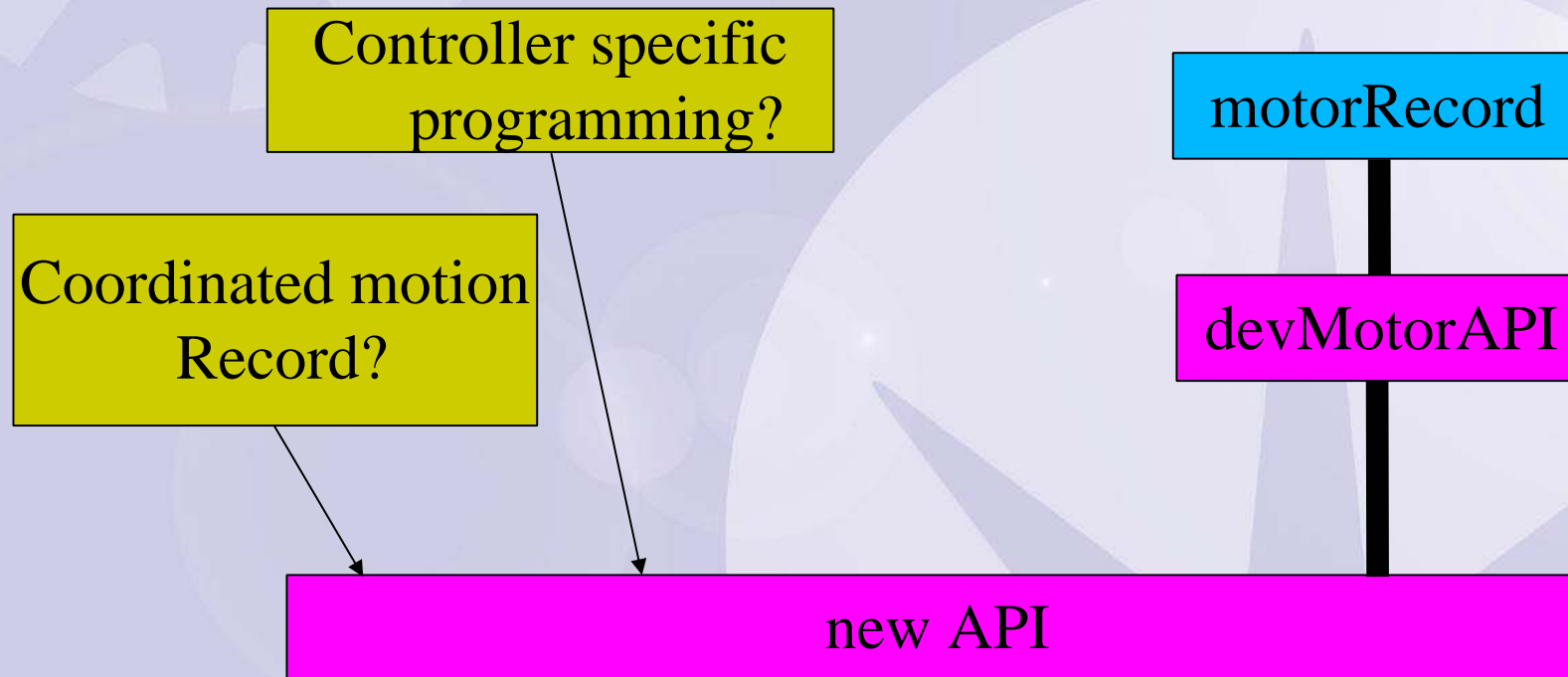
- `int motorAxisGetStatus(Axis_h pAxis, motorAxisStatus_t status)`
- `int motorAxisSetCallback(Axis_h pAxis, motorAxisCallbackFunc callback, void* param)`
- `int motorAxisProfileMove(Axis_h pAxis, int npoints, double positions[], double times[], int relative, int trigger)`
- `int motorAxisTriggerProfile(Axis_h pAxis)`



Layers



Layers (2)



Future

- Work initially on DeltaTau PMAC, OMS and Newport MM4000 (maybe XPS)
- Depends on “real work”!
- Depends on interest



Thank you

- Nick Rees, Diamond – new API
- Mark Rivers, APS / CARS
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