

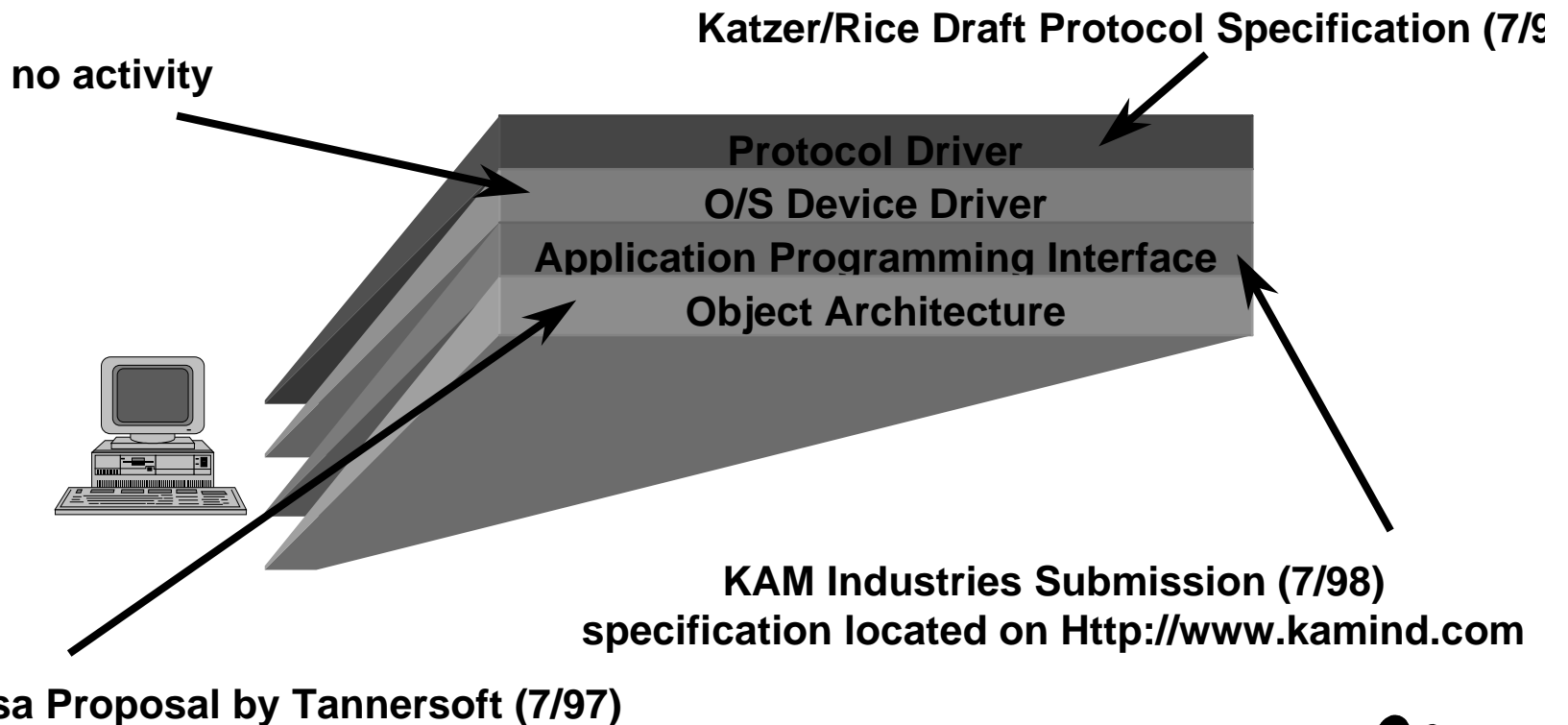
# NMRA Software Architecture Status

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# Status of NMRA Application S/W Architecture Model

- There are four parts to the NMRA DCC software architecture model



# Status of NMRA Application S/W Architecture Model (cont.)

- **Protocol Level**

- **hardware Products**

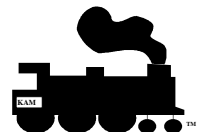
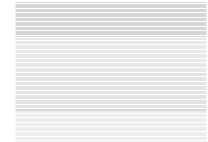
- » North Coast Engineering, Wangrow Electronics
    - » Easy DCC
    - » ZTC systems

- **Software drivers for command station hardware**


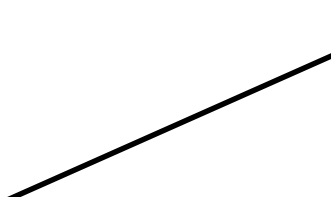
- » WinLok, Engine Commander®, Railroad Company  
Tayden Design

- **Generic draft protocol driver**

- » Engine Commander®



# Status of NMRA Application S/W Architecture Model (cont.)

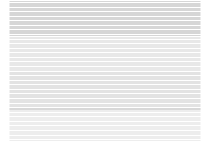
- **Device Driver Level** 
  - » no activity
- **Application Interface Level** 
  - **hardware Products**
    - » not applicable to hardware
  - **Microsoft COM/DCOM implementation of API**
    - » Engine Commander®
    - » Computer Dispatcher® (March 98)
    - » Generic type library available for linking with application written in Java, Visual Basic, C/C++
  - **CORBA support**
    - » no activity



# Status of NMRA Application S/W Architecture Model (cont.)

- **Object level**

- Rosa application model proposed (update on <http://www.digi-toys.com>)
- **hardware Products**
  - » not applicable to hardware
- **Software products**
  - » Engine Commander® and Train Server® conforms in architecture model
- **COM support**
  - » no activity
- **CORBA support**
  - » no activity



# API command summary

- **API Command classes**

- CV
- Engine
- Consist
- Accessory
- Command
- Programming
- Communications
- Command
- Decoder
- Cab
- Feedback
- Callback methods

**These are the major classes of commands needed in most DCC software applications.**

**We have implemented Engine Commander® and are in the development phase of Computer Dispatcher®**



# •Train Tools API

- **Fuctions**

- `DccCVGetValue();`  
`DccCVSetValue();`  
`DccCVGetStatus();`  
`DccCVSetStatus();`  
`DccCVGetName();`  
`DccCVGetMaxRegister();`  
`DccCVGetMinRegister();`

- **Accessory Commands**

- `DccAccGetFunction( );`  
`DccAccSetFunction( );`  
`DccAccGetFunctionAll( );`  
`DccAccSetFunctionAll( );`  
`DccAccGetFunctionMax( );`  
`DccAccGetName( );`  
`DccAccSetName( );`  
`DccAccGetFunctionName( );`  
`DccAccSetFunctionName( );`



# Train Tools API (cont.)

- **Engine**

```
DccEngGetSpeed( );  
DccEngSetSpeed( );  
DccEngGetFunction( );  
DccEngSetFunction( );  
DccEngGetFunctionMax( );  
DccEngGetName( );  
DccEngSetName( );  
DccEngGetFunctionName( );  
DccEngSetFunctionName( );  
DccEngGetSpeedSteps( );  
DccEngSetSpeedSteps( );
```

- **Consist**

```
DccEngConsistGetMax( );  
DccEngConsistSetParent( );  
DccEngConsistAddUnit( );  
DccEngConsistRemoveUnit( );  
DccEngConsistGetParent( );
```



# Train Tools API(cont.)

- **Command Station**

```
DccOprGetStationStatus();  
DccOprTurnOnStation();  
DccOprStartStation();  
DccOprClearStation();  
DccOprStopStation();  
DccOprPowerOn();  
DccOprPowerOff();  
DccOprHardReset();  
DccOprEmergencyStop();
```

- **Programming**

```
DccProgramGetStatus();  
DccProgramSetMode( );  
DccProgramGetMode( );  
DccProgramWriteCV( );  
DccProgramReadCV( );  
DccProgramWriteDecoderToDataBase( );  
DccProgramReadDecoderFromDataBase( );
```



# Train Tools API(cont.)

- **Communications**

```
DccProgramGetStatus();  
DccProgramSetMode( );  
DccProgramGetMode( );  
DccProgramWriteCV( );  
DccProgramReadCV( );  
DccProgramWriteDecoderToDataBase( );  
DccProgramReadDecoderFromDataBase( );
```

- **Command**

```
DccCmdCommand( );  
DccCmdConnect( );  
DccCmdDisConnect( );
```

- **Cab**

```
DccCabWriteMessage( );  
DccCabReadMessage( );  
DccCabSetDccObject( );  
DccCabGetDccObject( );  
DccCabAdd( );  
DccCabDelete( );  
DccCabTranslate( );  
DccCabLookupDccObject( );
```



# Train Tools API(cont.)

- **Decoder**

```
DccDecoderGetMaxModels();  
DccDecoderGetModelName();  
DccDecoderGetMaxAddress();  
DccDecoderCheckAddrInUse();  
DccDecoderGetMfgName( );  
DccDecoderGetPowerMode( );  
DccDecoderAddAddr()  
DccDecoderGetModelFacility()  
DccDecoderReconnectObject( );  
DccDecoderChangeAddress( )  
DccDecoderTranslate( )  
DccDecoderSetModelToObject()  
DccDecoderGetMaxSpeed( );  
DccDecoderGetObjectCount()  
DccDecoderGetObjectAtIndex()  
DccDecoderDel( );  
DccDecoderGetErrorState( )
```



# Train Tools API(cont.)

- **Feedback**

DccFeedbackErrorMessage( );  
DccFeedbackAccessoryBit( );  
DccFeedbackAccessoryAll( );  
DccFeedbackEngineResponse( );  
DccFeedbackCV( );  
DccFeedbackMessagesCab( );  
DccFeedbackMisc( );

- **Callbacks**

DccResponseErrorMessage();  
DccResponseAccessoryBit();  
DccResponseAccessoryAll();  
DccResponseEngineResponse();  
DccResponseCV();  
DccResponseCabMessage();  
DccResponseMisc();



# Train Tools Api(cont.)

- **Time**

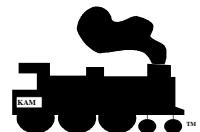
```
DccMiscGetClockTime( );  
DccMiscSetClockTime( );
```

- **Command Station**

```
DccMiscGetControllerName( );  
DccMiscGetControllerNameAtPort( );  
DccMiscGetCommandStationIndex( );  
DccMiscMaxControllerID( );  
DccMiscSetCommandStationValue( );  
DccMiscGetCommandStationValue( );  
DccMiscGetControllerFacility( );
```

- **Misc**

```
DccMiscGetErrorMsg ( );  
DccMiscGetApiName( );  
DccMiscGetInterfaceVersion( );  
DccMiscSaveData( );
```



# Questions ?

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