

Embedded Runtime Dual Licensing

Eclipse Board Meeting - June 2008
Steve Saunders, Doug Gaff
Wind River Systems

Embedded & Mobile



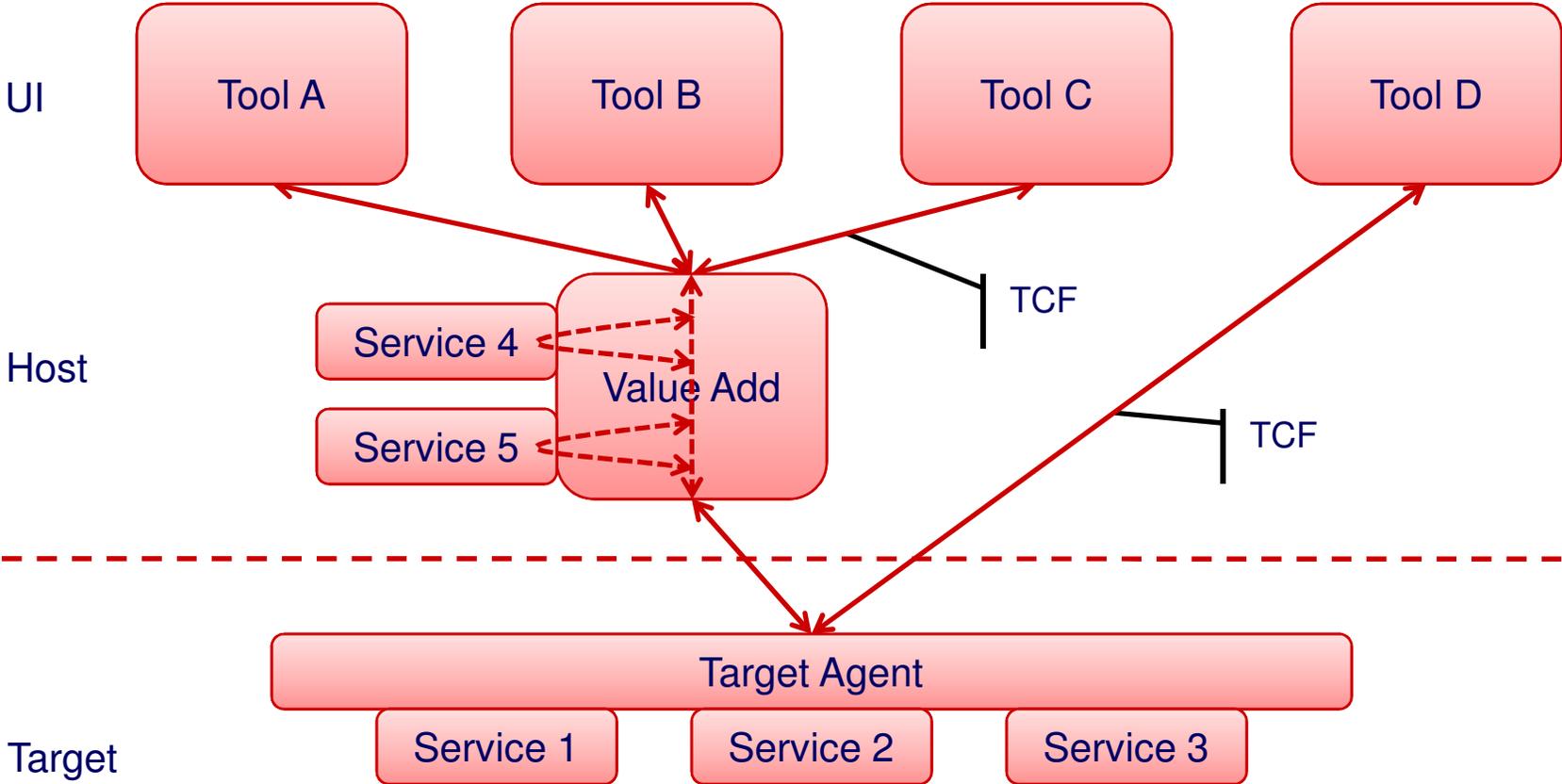
Introduction

- Recent technology contributions into two projects in DSDP include *embedded runtime components* for which use of the EPL is an impediment to commercial adoption of these technologies.
- These runtime components are c-based agents that
 - *Must be ported* to the real time operating system on the device.
 - *May be customized* for the specifics of the device and its application.
- **Affected technologies**
 - Target Communications Framework (TCF)
 - Real-Time Software Components (RTSC)

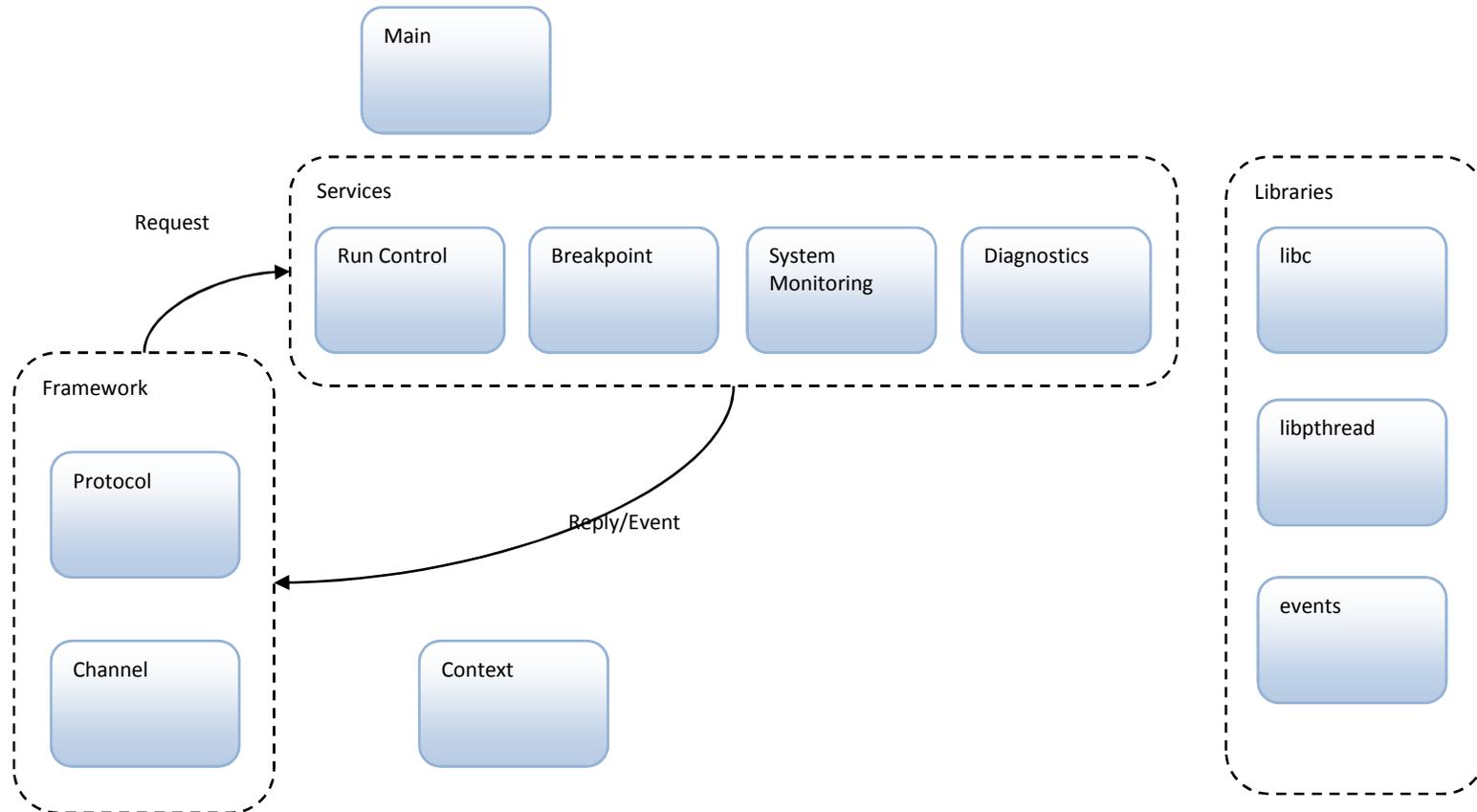
Target Communications Framework (TCF)

- **Part of the DSDP Target Management (TM) project**
- **Extensible protocol – unifies communication with devices during development time.**
- **Intended for development, debug, monitor, analysis and test.**
- **Extended by vendors**
 - **Device and OS specific services**
 - **Host-side tools**
 - **Ported to embedded operating system**
- **Framework includes**
 - **Eclipse plug-ins**
 - **C-based exemplary agent that runs on the device**

Architecture Overview



TCF Agent – Debugging Example



Real-Time Software Components (RTSC)

- **A scalable component model suitable for any device that supports a C compiler tool-chain**
- **Design-time tooling generates highly-optimized C code for the embedded device.**
- **Generated code interacts with a small runtime agent**
 - **manages component instance lifecycle - real-time creation and deletion of instances,**
 - **monitors the state of components**
 - **provides minimal system services necessary to support the functionality above**

RTSC Architecture

Application-specific Tools

Eclipse Int + 3rd-party tools

Essential Tools

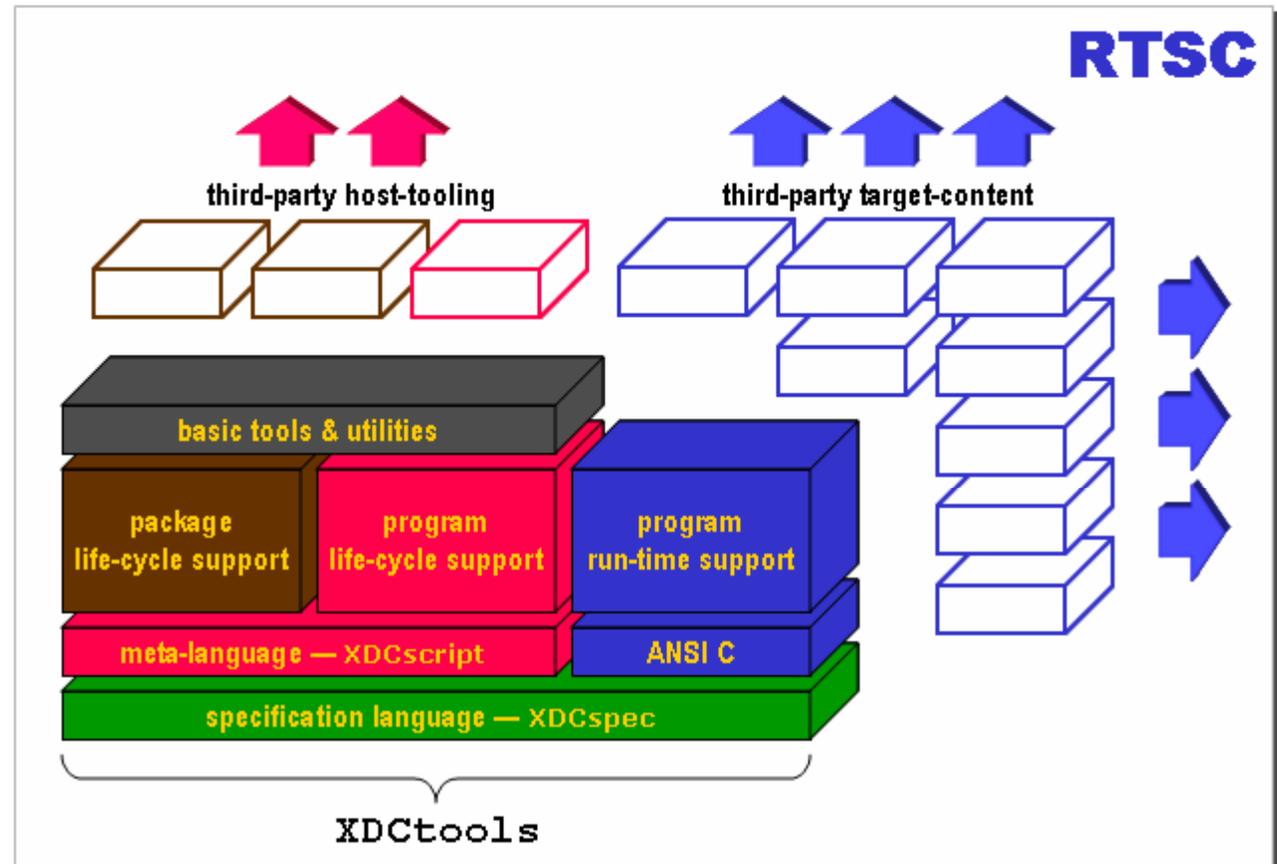
install, doc, config, build, run

Core Packages

tools & target runtime support

Language Support

IDL, C, JavaScript



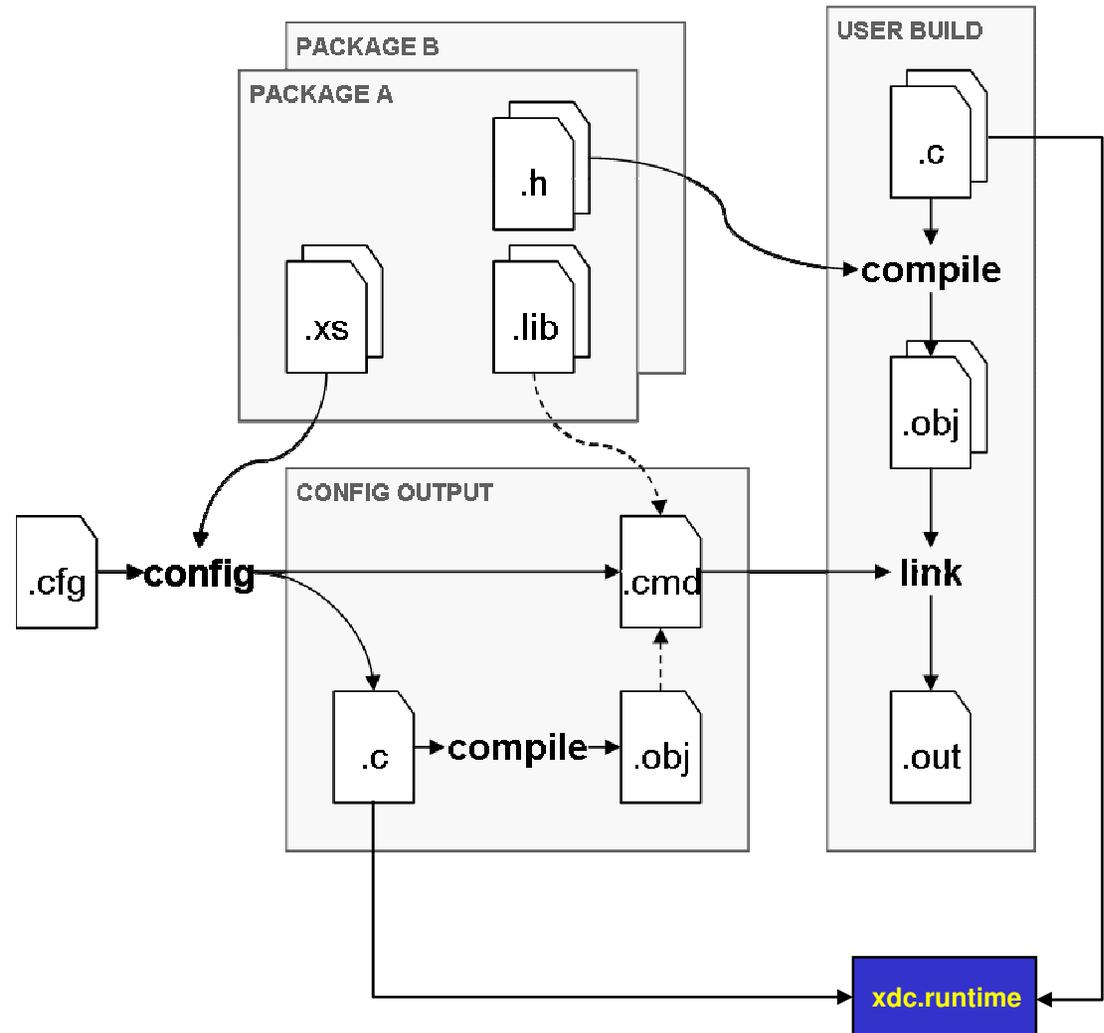
XDCtools is delivered as a bundle of over 125 packages

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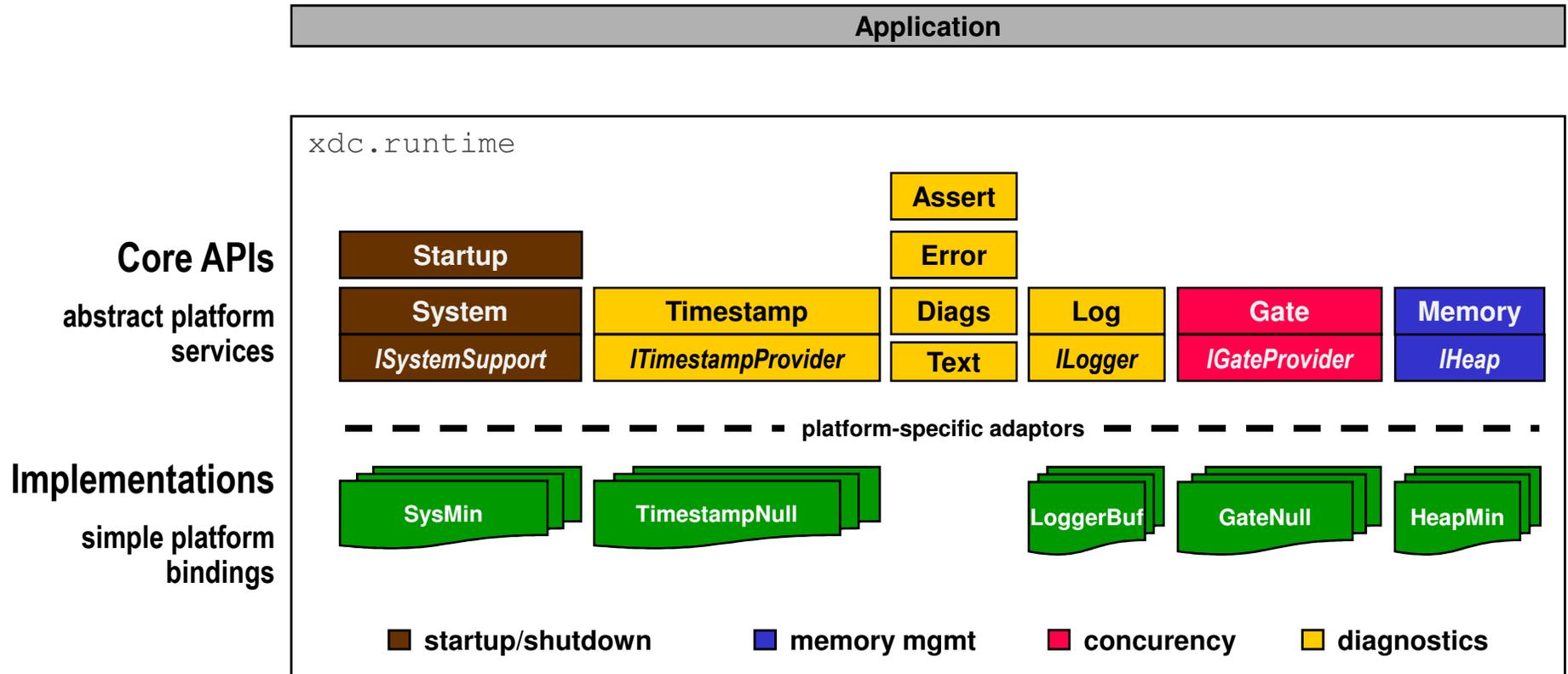
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RTSC Configuration Flow

- All exe's have .cfg config script
gens files to assemble app from pkgs
- config generates C-Code "glue"
bind components, manage object
lifecycle, trace inter-component calls, ...
- "glue" is platform independent
uses xdc.runtime for basic services
- xdc.runtime available to *all* code
keeps exe footprint minimal



The xdc.runtime Package



xdc.runtime only provides services needed by all apps

Runtime Licensing Challenges

- **Eclipse Adopters**
 - **For devices running Linux**
 - (Some believe) EPL and GPL are not compatible.
 - Vendors with a device running Linux are unable to utilize runtime technology from Eclipse.
 - **For devices running operating systems with commercial licenses:**
 - Device manufacturers often don't want to open their runtime code.
- **End Users (Customers of Adopters)**
 - Device manufacturers are looking for *reduced cost, risk, and complexity* in license compliance, especially the distribution requirements.

Commercial Adoption Blockers!

Recent Industry Examples

- **Verizon GPL compliance lawsuit**
 - **Actiontec MI424WR wireless router**
 - Includes GPL-licensed BusyBox (set of unix command line utilities bundled for use in embedded systems)
 - **Software Freedom Law Center (SFLC) sued Verizon on behalf of makers of BusyBox claiming that Verizon must give the BusyBox source code to its FiOS customers.**
 - **SFLC also sued Xterasys, High-Gain Antennas, and Monsoon Multimedia**
- **D-Link and GPL**
 - **Linux kernel changes**
 - **Source code only violation**

Recent Industry Examples

- **Linksys and GPL**
 - WRT54G Router running Linux
 - Source code violation
 - Viral violation

- **Android**
 - Analysts believe Google chose the Apache license specifically to attract mobile computing partners.

Proposal #1

- **Assertions**

- The RTSC and TCF agents must be licensed in a compatible way with common embedded operating systems.
- Future eclipse projects in the embedded and mobile space will also have runtime components as part of their exemplary implementation.
- We need to strive for a complete technology stack in Eclipse projects that provide frameworks and tools completely downloadable from eclipse.org.

- **Recommendation**

- Dual license these runtime components with the Eclipse Distribution License (EDL).

Proposal #1 – Pros and Cons

- **Pros**
 - One-stop shopping (download.eclipse.org) for the entire technology stack.
 - A Board bias towards fostering commercial adoption.
 - A Board recognition of a growing market segment.
- **Cons**
 - Dilution of EPL usage.
 - The possibility that potentially useful agent code changes never return to open source.

Proposal #2

- **Assertions**

- *The RTSC and TCF agents must be licensed in a compatible way with common embedded operating systems.*
- *Future eclipse projects in the embedded and mobile space will also have runtime components as part of their exemplary implementation.*
- **Maintaining the EPL on code is more important than commercial adoption...for these types of cases.**

- **Recommendation**

- **Suggest the Copyright owners of the TCF agent (Wind River) and the RTSC runtime (TI) host this code elsewhere (SourceForge, Corporate) using the license of their choosing.**

Proposal #2 – Pros and Cons

- **Pros**
 - EPL usage consistency
- **Cons**
 - Agent code will go offsite – now and in future projects with similar cases.
 - User and adopter complexity, as technology stack must be obtained from multiple sources.
 - ***The possibility that potentially useful agent code changes never return to open source.*** Perhaps exacerbated by the lack of usage of Eclipse infrastructure and process.

Discussion

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