Introduction to ARM

Bobby Clarke, ARM

Eclipse Members Meeting – Sept '06

ARM®

ARM Ltd

- Founded in November 1990
  - Spun out of Acorn Computers

- Designs the ARM range of RISC processor cores
- Licenses ARM core designs to semiconductor partners who fabricate and sell to their customers.
  - ARM does not fabricate silicon itself

- Also develop technologies to assist with the design-in of the ARM architecture
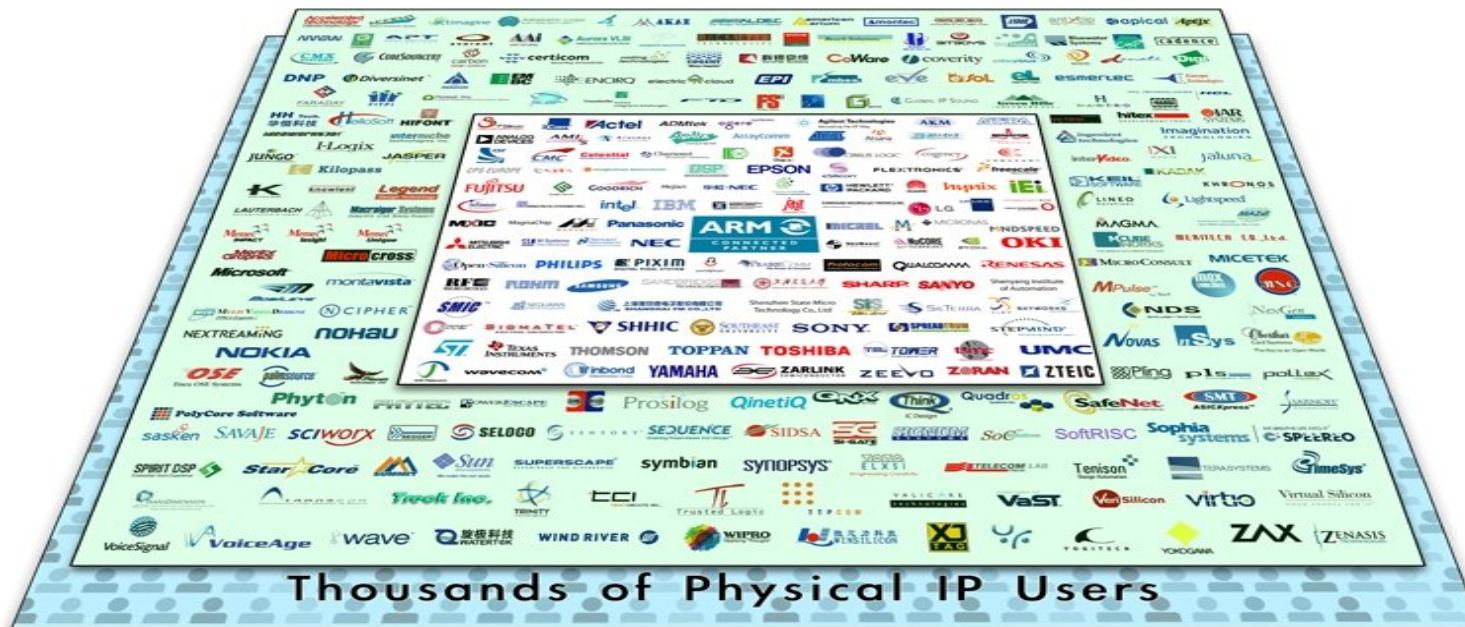 - Software tools, boards, debug hardware, application software, bus architectures, peripherals, memory, etc.
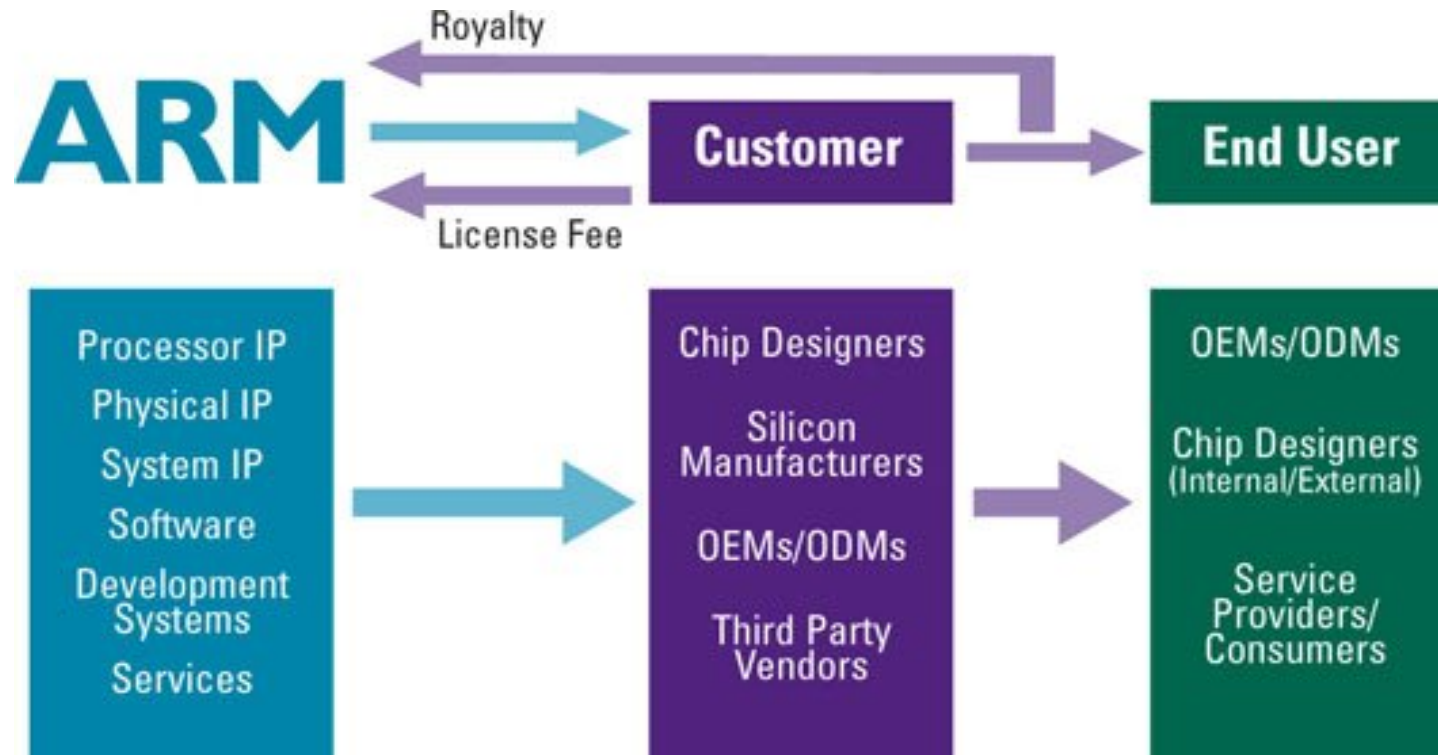
ARM Offices Worldwide

ARM Partnership Model

- ARM business model is based on partnership
  - With our silicon partners
    - ARM licenses processor cores (and other IP) to partners for use in their own products
    - Remember: we don't fabricate silicon ourselves
  - With third parties who support the ARM architecture
    - OS vendors, Tools vendors, Applications software providers, Design services

ARM Business Model

ARM creates SoC infrastructure from CPU, EDA tools, Software development tools, and Physical IP

Silicon partner applies expertise to differentiate product around standard CPU

OEM builds final system based on partner silicon

ARM Powered Products

Nokia N93

MOBILE SOLUTIONS

TomTom Go

VOIP Phones

Blackberry 7130c

iPod Video

Nintendo DS-Lite

HOME SOLUTIONS

Samsung Blu-Ray DVD player

JVC Digital Camcorder GR-DV3000

Philips iPronto Digital Home Controller

Symbol Technologies MK2000 Micro Kiosk

ENTERPRISE SOLUTIONS

Martin Professional Maxxyz Lighting Console

Symbol Technologies VRC7900 Vehicle Radio Computer

ThingMagic Mercury4 RFID reader

Alfa Romeo

Lego Mindstorms NXT

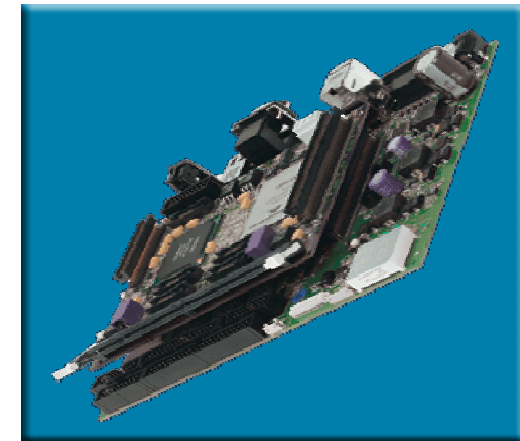EMBEDDED SOLUTIONS

vtech vsmile

Sony Ericsson Chatpen CHA-30 Bluetooth Pen

RealView DEVELOP Product Family

- Development Suite (RVDS):
  - Compilation Tools
  - Debug Tools
  - Instruction Set Simulator
  - CodeWarrior IDE

- Debug Hardware:
  - System Control
    - RealView ICE
  - Data Capture
    - RealView Trace

- Hardware Platforms:
  - System Prototyping
    - Integrator Family
    - Versatile Family
  - System Emulation

ABI for the ARM Architecture

- ARM Application Binary Interface (ABI) is a collection of file format, library content, and procedure standards

- Primarily designed to allow different build tools to produce object code which is compatible at the binary level

- The various standards are available for download at:
    - http://www.arm.com/products/DevTools/ABI.html

- ARM compilation tools (from RVDS 2.1 onwards) are ABI compliant

- ARM is working with open source community to produce more efficient ABI compliant versions of the GNU compilation tools (GCC)

- For GCC tools details and downloads:
    - http://www.codesourcery.com/gnu_toolchains/arm.html

RealView CREATE Product Family

- SoC Designer with MaxSim® technology

    - System design tool for creating cycle accurate models

    - Extendable through RealView ESL API

- Core Generator with MaxCore® technology

    - High speed cycle accurate processor core modeling tool

- RealView Model Library incorporating MaxLib®

    - Set of ARM and third party processor models for use with CREATE tools

- System Generator

    - Allows users to generate fast instruction accurate models for software development
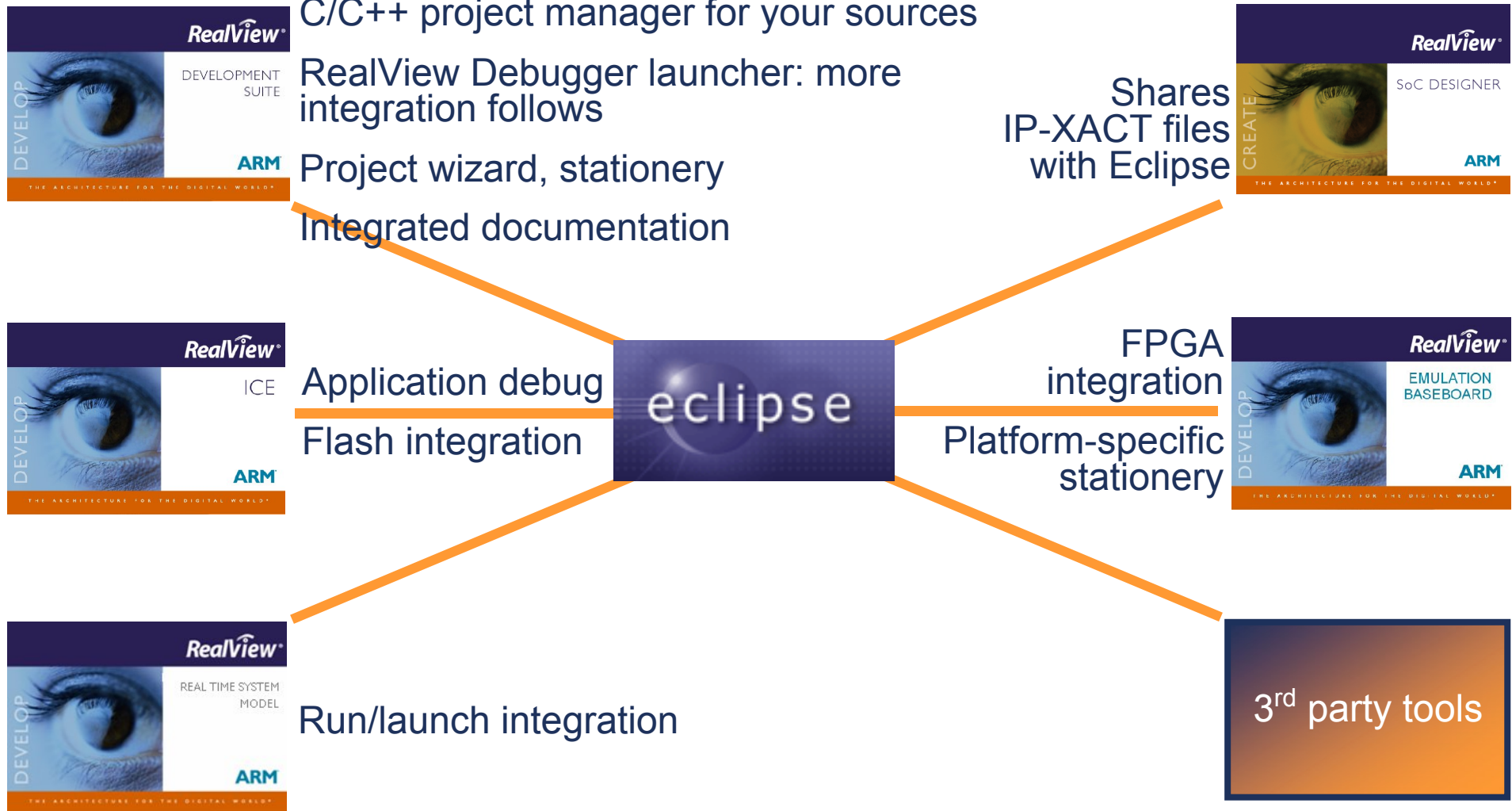
ARM and the Eclipse community

- ARM joined the Eclipse Foundation as an Add-in Provider on 25 July 2006
  - ARM is engaging with, and plans to contribute to, several Eclipse projects

- To support Eclipse, and to continue our product development, we will be:
  - Donating extensions to the Eclipse community
  - Developing proprietary plug-ins to existing interfaces
  - Endeavouring to provide leadership in the community where we have unique knowledge

- Contributing to the CDT (C/C++ Development Tools) project
  - Attending CDT Developer Conference in Ottawa (QNX) on Sep 19-21, 2006
    - Mikhail Khodjaiants, Neil Rickards
  - RVDS 3.0 Plug-ins for Eclipse now available on the web:
    - http://www.arm.com/eclipse/
    - Also includes project stationary and tutorials
  - Working within the community to extend debug functionality in CDT 4.0 and beyond (with our RVD debug engine and gdb)

ARM and the Eclipse community (2)

- Contributing to the DSDP (Device Software Development Platform) project
  - Attended DSDP Meeting in February 2006
    - Hobson Bullman
  - Championing the concept of using SPIRIT files within Eclipse
    - Anthony Berent
  - Preparing extensions to the Eclipse XML viewer for donation to the community

- Observing the TPTP (Test and Performance Tools Platform) project
  - No active engagement yet, but an area we are interested in for embedded performance analysis tooling
  - Our profiling and analysis team in Olympia (Washington) is working on embedded software tools for Eclipse

Vision: Eclipse Integrates ARM SW Tools

RealView® DEVELOPMENT SUITE — ARM

C/C++ project manager for your sources

RealView Debugger launcher: more integration follows

Project wizard, stationery

Integrated documentation

RealView® SoC DESIGNER — ARM

Shares IP-XACT files with Eclipse

eclipse

RealView® ICE — ARM

Application debug

Flash integration

RealView® EMULATION BASEBOARD — ARM

FPGA integration

Platform-specific stationery

RealView® REAL TIME SYSTEM MODEL — ARM

Run/launch integration

3rd party tools

Contact information

- Main contact point in ARM for eclipse.org:
  - Hobson.Bullman is at arm.com (Engineering Manager)
  - +44 1223 400572

- CDT contact point:
  - Mikhail.Khodjaiants is at arm.com (CDT Committer)

- US support contact point:
  - Bobby.Clarke is at arm.com (US Development Systems Support Lead)
  - +1 512 381 2925

Product information

- RealView DEVELOP Product Family:

  - http://www.arm.com/products/DevTools/RealViewDEVELOP_Family.html

- RealView CREATE Product Family:

  - http://www.arm.com/products/DevTools/RealViewCREATE_Family.html

- Eclipse Plug-ins for RVDS:

  - http://www.arm.com/eclipse/

- ARM Processor Cores:

  - http://www.arm.com/products/CPUs/index.html

- ARM Product Documentation:

  - http://www.arm.com/documentation/