Legal Issues for FOSS-based Supply Chain Management

Herve Guyomard, Black Duck Software

Agenda

- Legal Case in Supply Chain
- Open Source in Mobile
- Mobile devices
- Supply Chain Management
- Summary

Recent Legal Example: Open Source in the Electronic Industry Supply Chain

BusyBox

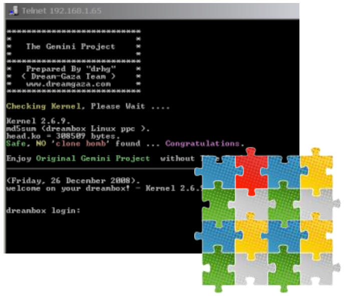
Popular utility **uses the GPLv2 license**

GCI TECHNOLOGIES
GEMINI • CORTEX • iKEY

COMTREND
Leading the Communication Trend

WD Western Digital®

Device OEMs **embedded the code in components**



```
Telnet 192.168.1.65
****************************
*                          *
*   The Gemini Project     *
*                          *
****************************
*   Prepared By "drhg"     *
*  ( Dream-Gaza Team )     *
*   www.dreamgaza.com      *
****************************

Checking Kernel, Please Wait ....

Kernel 2.6.9.
md5sum (dreambox Linux ppc ).
head.ko = 308509 bytes.
Safe, NO 'clone bomb' found ... Congratulations.

Enjoy Original Gemini Project  without

(Friday, 26 December 2008).
welcome on your dreambox! - Kernel 2.6.

dreambox login:
```

Westinghouse

JVC

HDTV manufacturers **used components in their products**

BEST BUY

Sold the HDTVs

SFLC sued 14 OEMs/retailers

Settlement: Westinghouse assessed monetary damages and legal fees, lost revenue due to injunction, and lost inventory (all HDTVs donated to charity).

“BusyBox” Current State

- 100s of companies have settled
- Court cases, dating back to 2009 are still pending
- Free Software Foundation (FSF) is still aggressively pursuing potential violators

Ongoing Issues

- Litigation as a means to settle open source disputes continues
  - Developers find advocates in influential groups such as the Free Software Foundation (FSF) and the Software Freedom Law Center (SFLC)
- Lawsuits
  - Not about monetary gain, but are about enforcing license obligations
- SFLC strategy
  - The SFLC has taken on a number of open source cases, all pro-bono, with the hope of setting in motion a new paradigm of awareness and compliance

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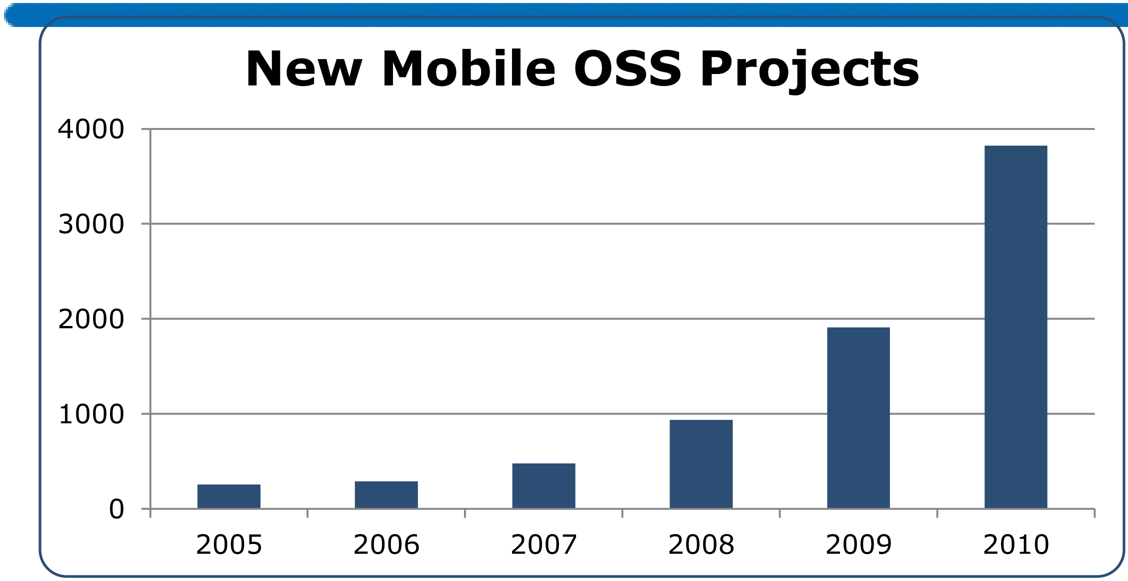
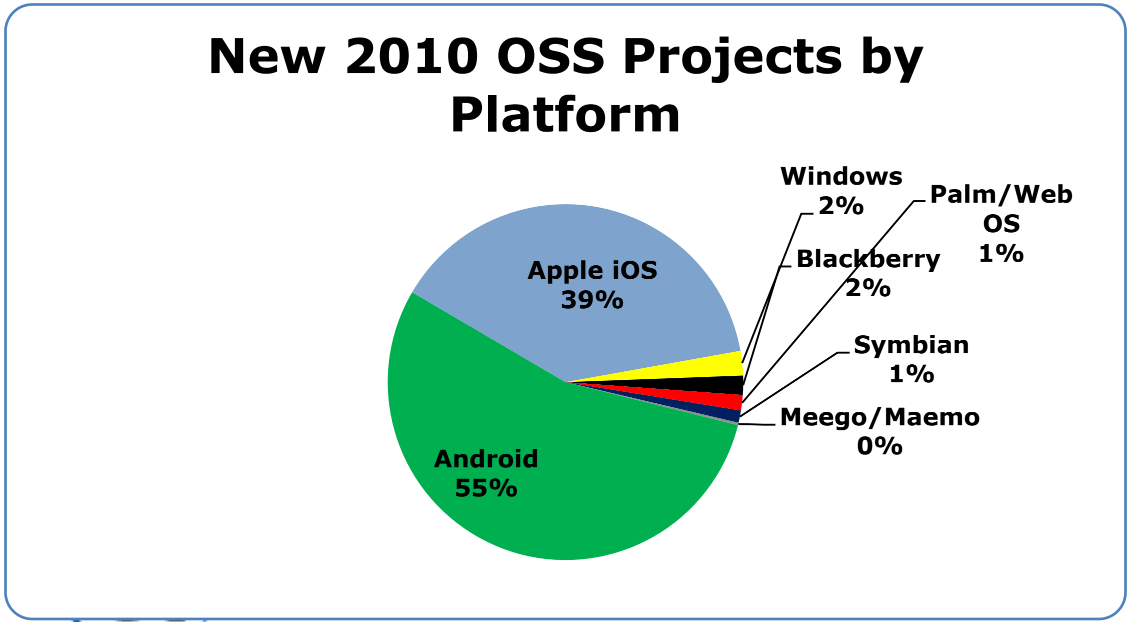
Open Source Drives Mobile Innovation



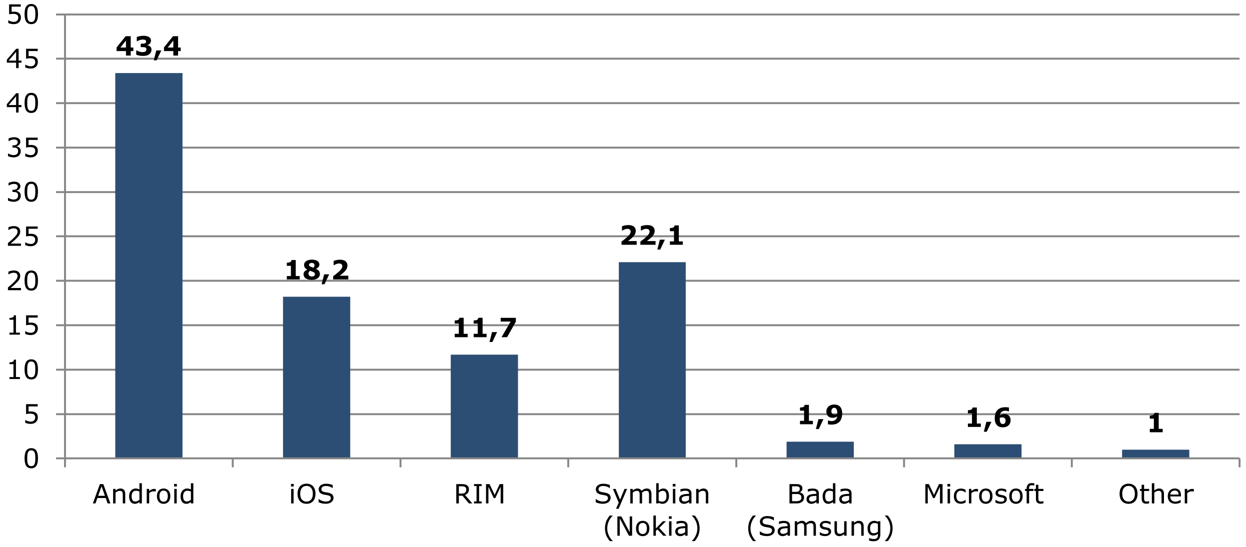


- Over 3,800 new OSS projects in 2010, doubling each of the last 3 years
- 94% of new projects that specify a platform are targeting Android and Apple/iOS
- Open source has redefined the mobile industry and is spreading far beyond

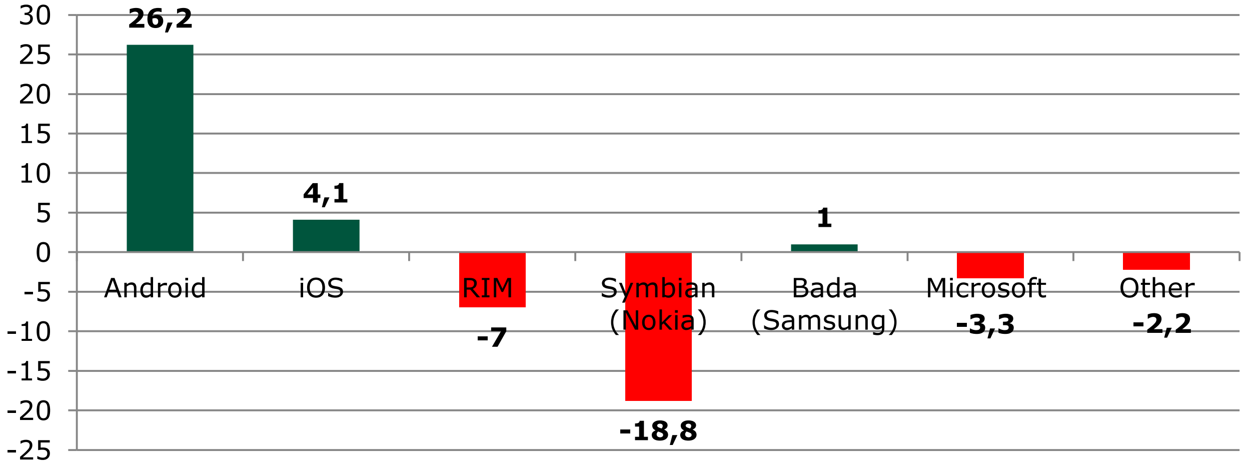
Know Your Code.

Open Source is a Large, Growing Opportunity

O/S Market Share: Q2 2011



Share Gain (Loss) 2010 to 2011



- 428.7 million units
- 16.5% growth form Q2 ’10

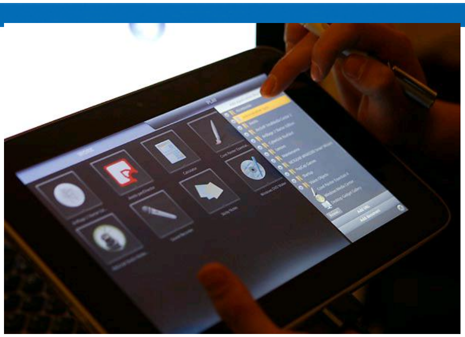
Source: Gartner , August 2011

Know Your Code.

Open Source Devices: Phones, Tablets, eReaders, TVs, Autos, more…..

Automobile: Android powered SaaB

Barnes & Noble Nook



Lenovo LePad

Droid 3 by Motorola

Samsung Galaxy

Dell Streak

Motorola Xoom

HTC Evo Shift

Sony Internet TV

Panasonic Toughbook

HP Touchpad (?)

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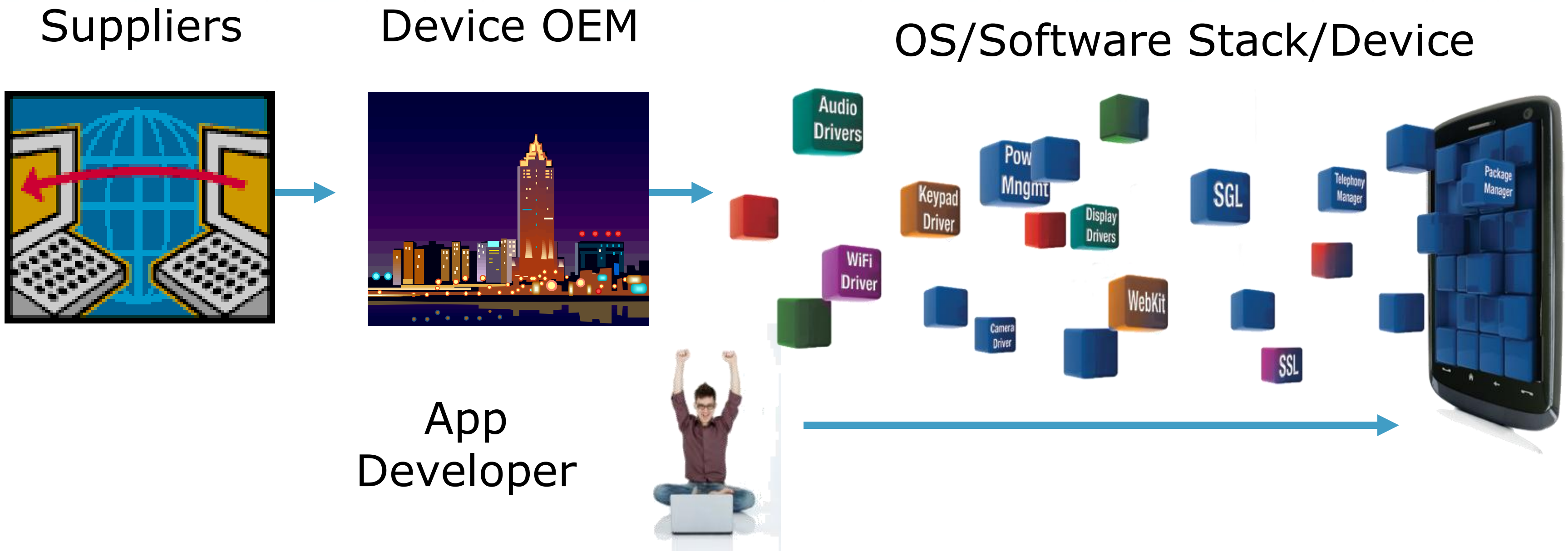
Know Your Code.

Managing OSS in the Mobile Ecosystem and Software Supply Chain



Suppliers

Device OEM

OS/Software Stack/Device

App Developer

Typical Smartphone has over 300 components

- *Corporate-Owned IP*
- *Proprietary/Licensed IP*
- *FOSS*
- *Outsourced development*
- *Multi-level supply chains*

- *Security*
- *Networking*
- *Email*
- *Graphics*
- *Database*
- *Web Services*
- *Many more…*

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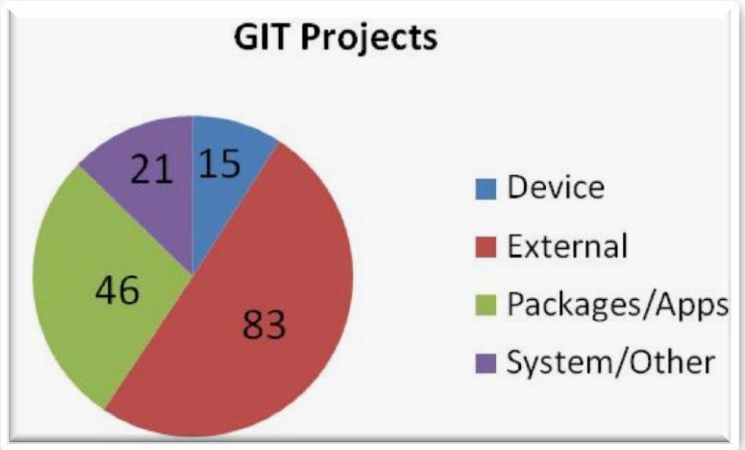
Complexity for Device Manufacturers

- Components and code from many suppliers
- Need to control and manage building software on a rapidly changing O/S
  - Multiple releases per year
- Customize Android for:
  - The type of device (phone, tablet, TV, etc.)
    - Device drivers, power consumption, etc.
  - User experience
- Do it all while ensuring compliance

What’s Inside Android?

Android

- 165 Projects
  - 83 are “External”
  - Does not include Kernel Mirror
- Total Size
  - Over 80,000 Files
  - Over 2GB total size
  - Does not include Kernel Mirror



A Look Inside Two Android Components: Bionic & Webkit

License types in: Bionic

BSD 2.0*
CMU License
Cryptix License
Free clause
FreeBSD
Historical free
INRIA OSL
Intel OSL
Internet Software Consortium
MIT
Public Domain
Python InfoSeek
X.Net License

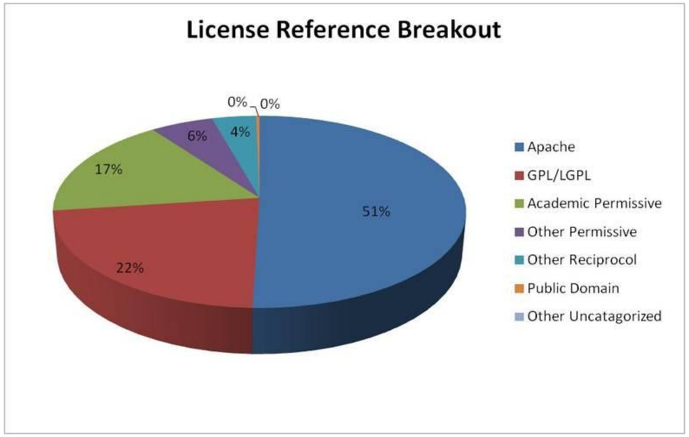
License types in: Webkit

BSD 2.0
David M. Gay License
GPL 2.0
ICU License
LGPL 2.1*
MIT License V2
MIT v2 with Ad Clause License
Mozilla Public License 1.1
PCRE License
Public Domain
SWIG License
The wxWindows Library License
zlib/libpng License

***Declared license**

Android's Composition

- Licenses
  - Declared license: Apache 2.0
  - Components reference 19 different licenses
  - External components
    - Linux, Webkit use reciprocal licenses (GPLv2, LGPL)
  - Other components: more than 30 of them use reciprocal licenses (GPL, LGPL, CPL, etc.)
    - e.g. dbus, grub, emma, e2fsprogs, bluez, Bison
  - Non-OSI approved licenses are used, including OpenSSL and Bzip2



Obligations and Misperceptions

- No “small device” exceptions
- Must provide source for the specific device
- Compliance is required by every vendor that ships the platform
- There is no “downstream defense for upstream” violations

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Software Supply Chain Management

- Open source is typically outside of normal commercial s/w procurement processes
- The Challenges
  - An increasingly diverse and distributed set of development resources
    - Internal teams
    - Commercial software vendors
    - Outsourcers
    - Open source communities
  - Little/no visibility into the origins of the software

Supply Chain Comparison: Hardware vs Software

- Hardware supply chain techniques
  - ERP systems brought together different users and processes
  - Workflow automates task creation
    - Notifications
    - Process Monitoring
  - Central repositories of data
  - Business Process Integration is the key
- Technology companies have software supply chains
- Software products have bills of materials (BOM’s)

The Golden Rule for Proper Software Supply Chain Management

Treat the management of open source software as an integrated, cross functional **business process**, and not simply as a development process.

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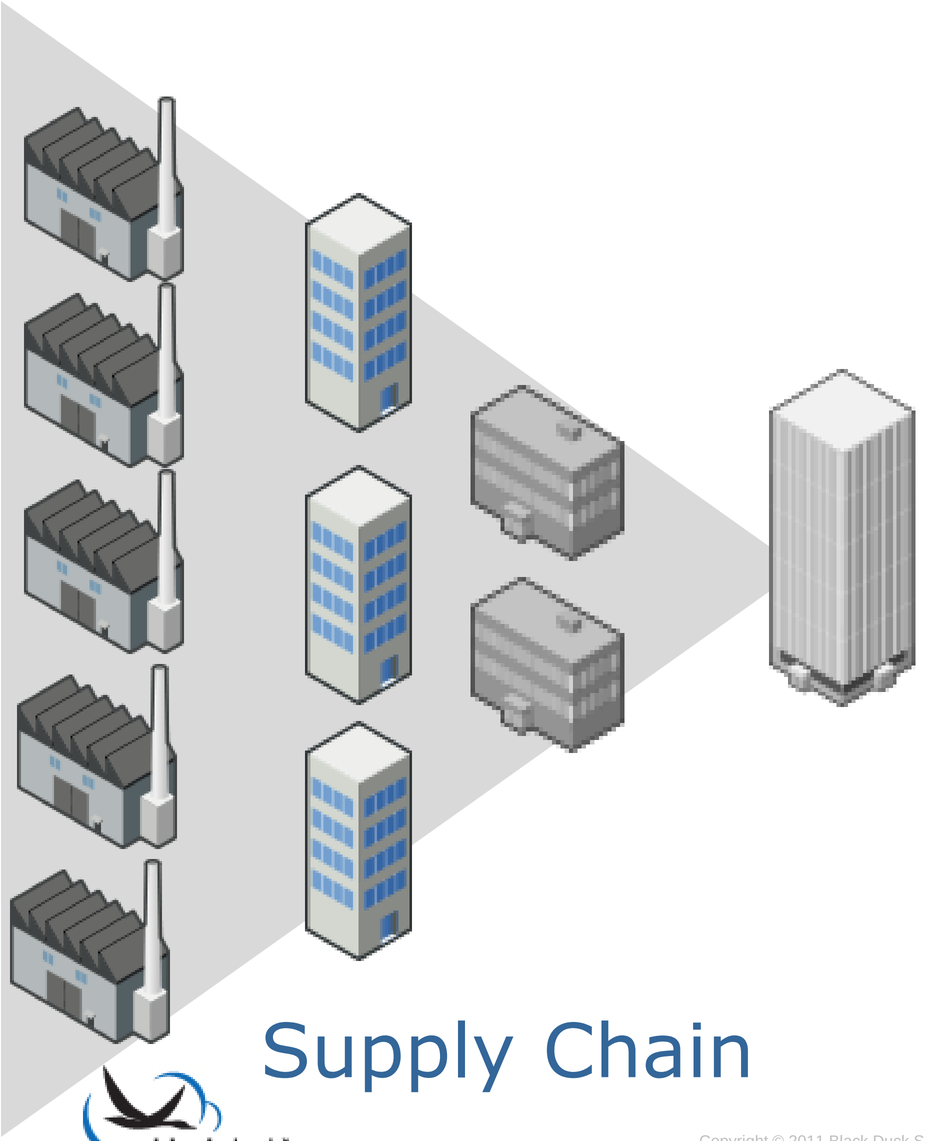
Know Your Code.

Supply Chain Program Elements

1. Published Policy
2. Open Source Process Owner
3. Approval Processes
4. Monitoring & Tracking Process
5. Obligation Verification Process

Compliance in a Supply Chain is a Challenge



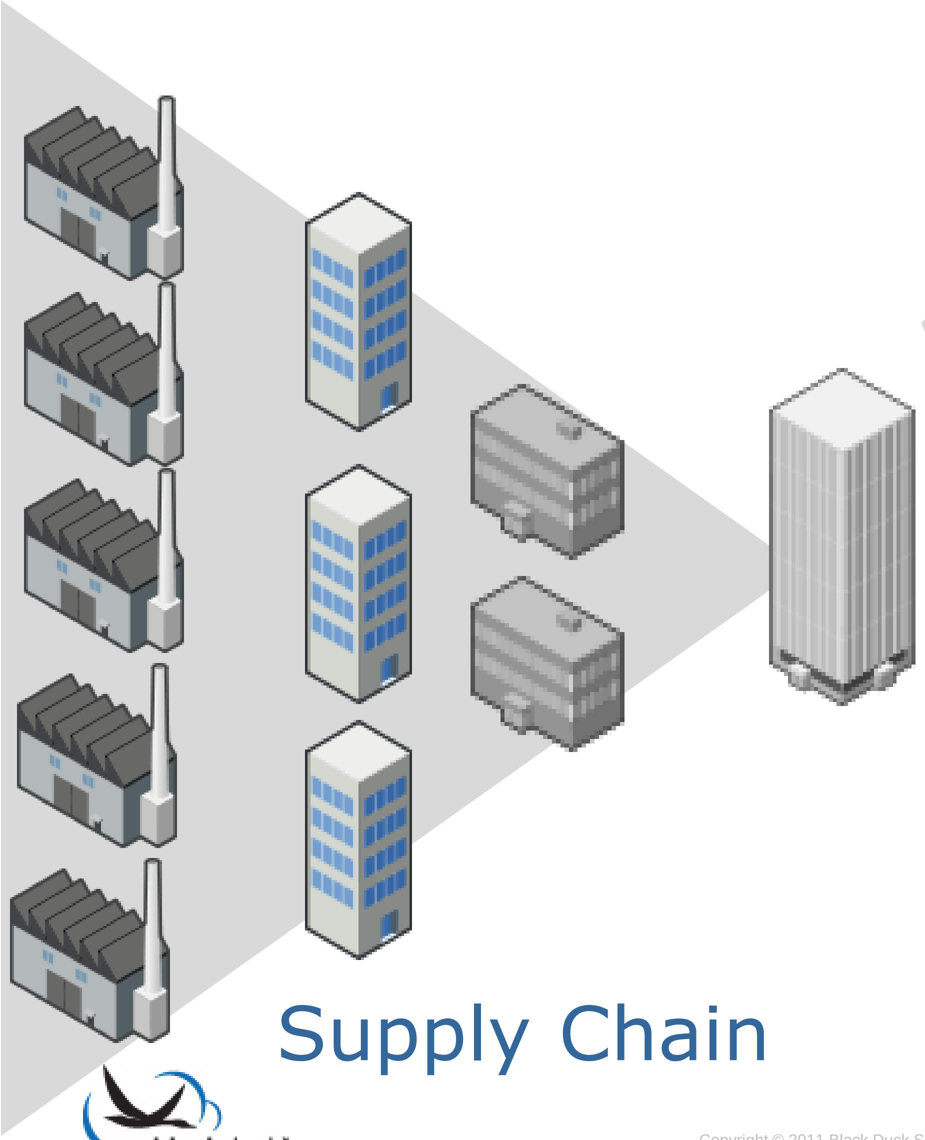
One Product =

Many Suppliers

Many OSS Packages

Many OSS Licenses

In Supply Chains SPDX™ Can Help

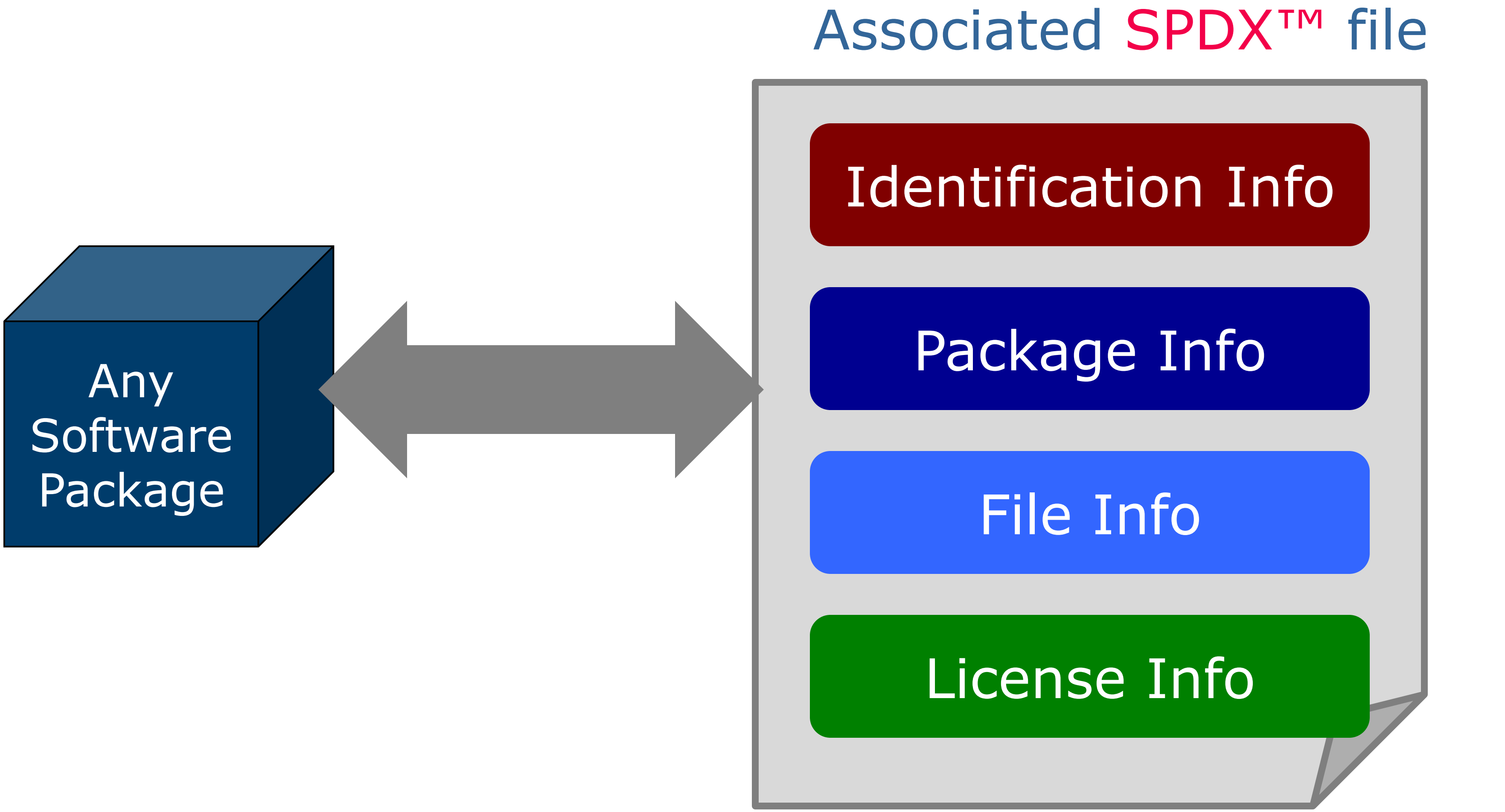


A standard format for communicating a software Bill of Materials across the supply chain.

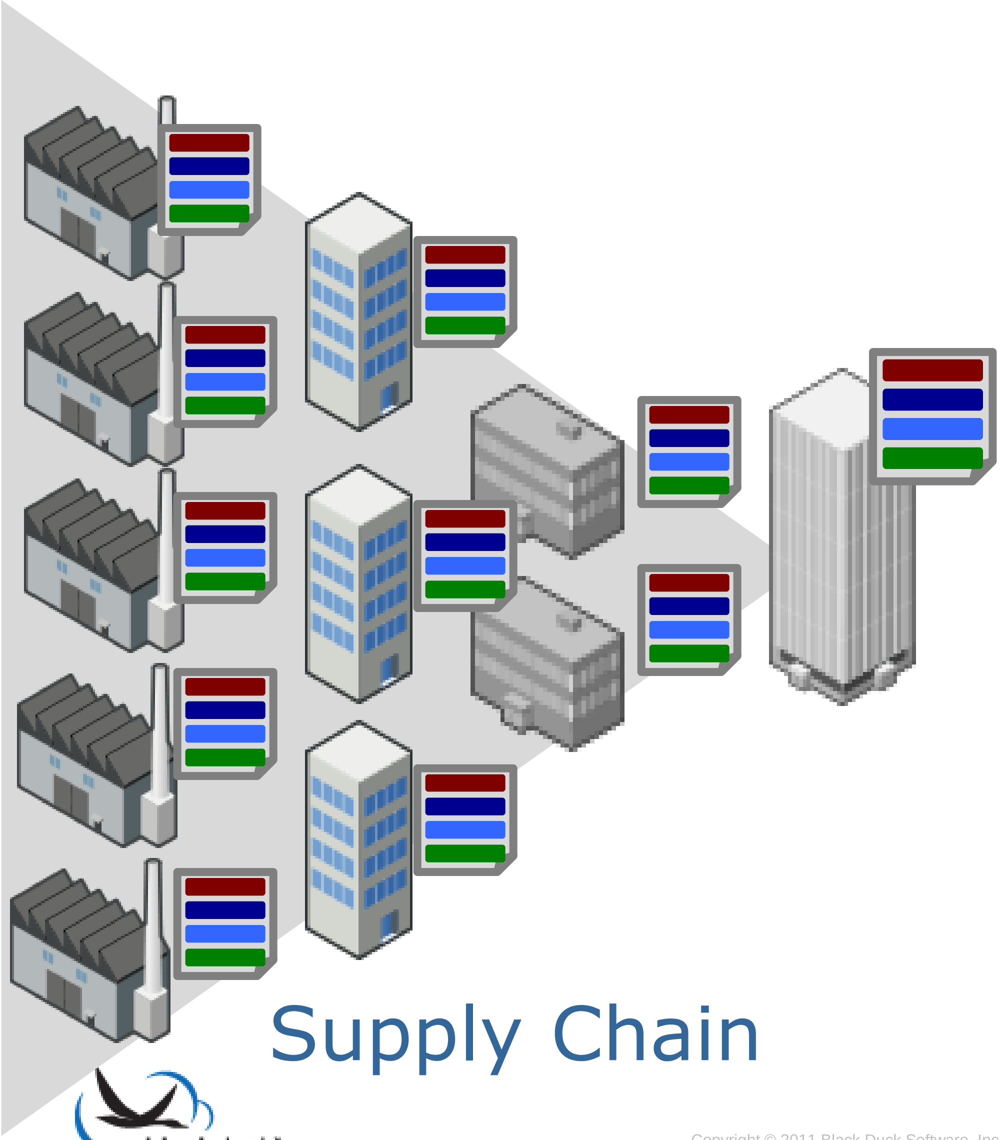
Software Package Data Exchange™ (SPDX™)

- Working group under Linux Foundation
- Charter:
  - Create data exchange standards to enable license and component information sharing (metadata)
- Participation from organizations including software, systems and tool vendors, consultants and foundations

SPDX™ File = Software BOM



SPDX Benefits



Supply Chain

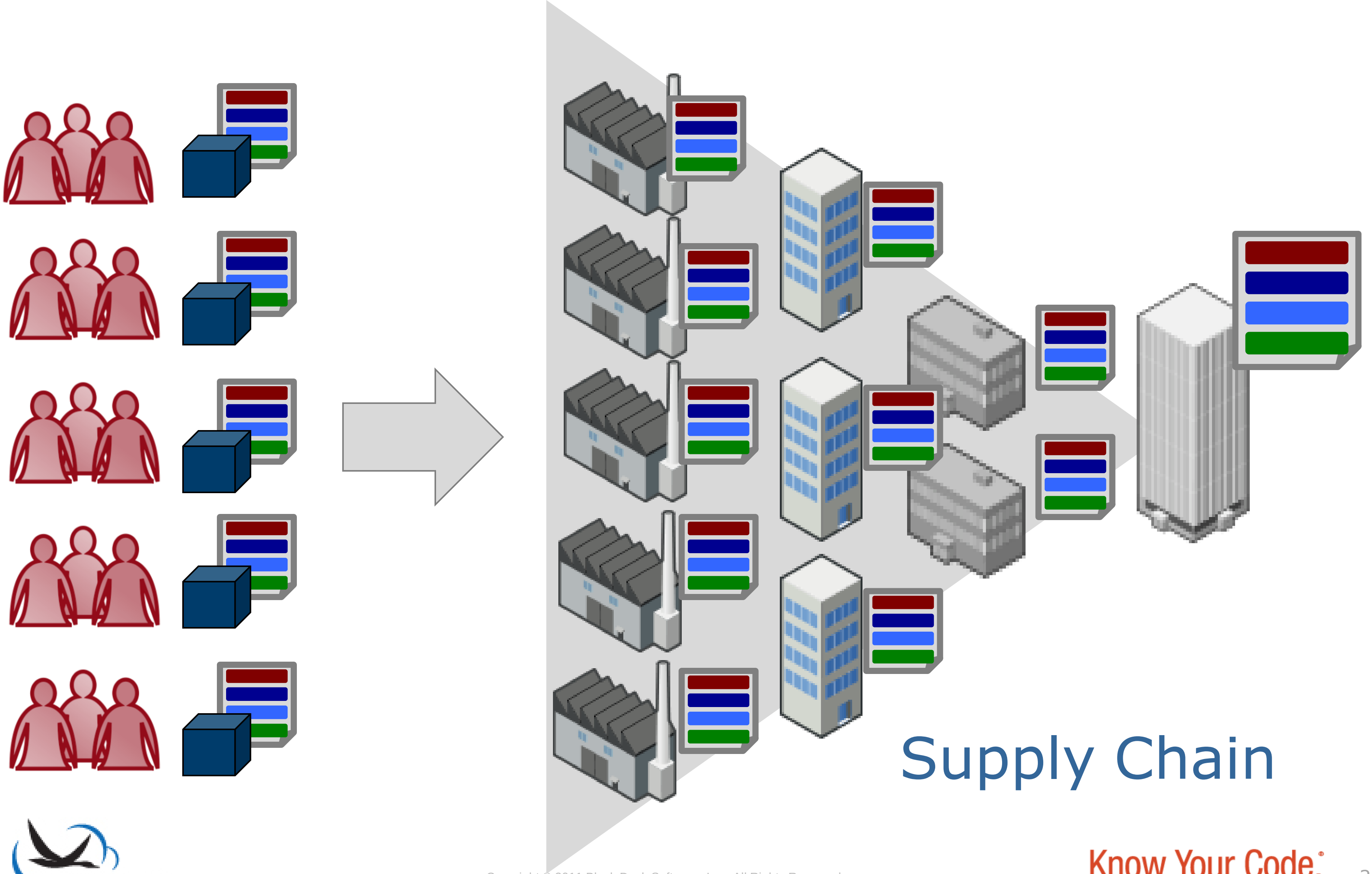
Benefits

Reduce effort

Reuse analysis

Improve compliance

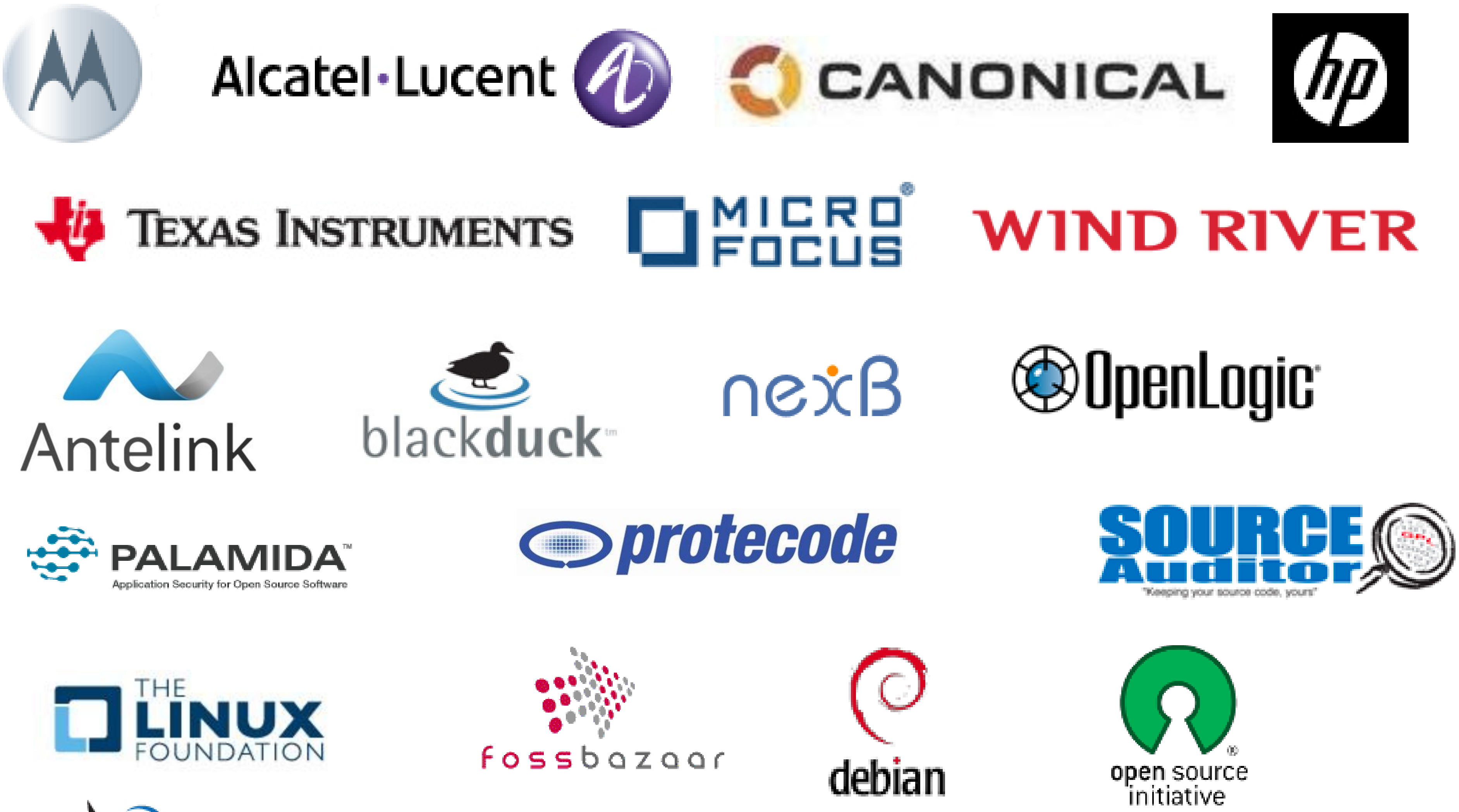
Communities Can Use SPDX™



Summary

- Open source has revolutionized the mobile and device landscape, other industries will follow
- Supply chain management techniques from hardware are useful for managing software
- “SPDX is a crucial building block in an industry-wide system of automated license compliance administration” Eben Moglen
- Effective management and control requires training, tools, processes and standards

Broad Participation



Thanks!

- Questions?

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