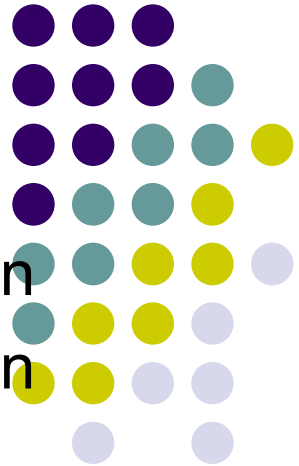
Open Source (OS)

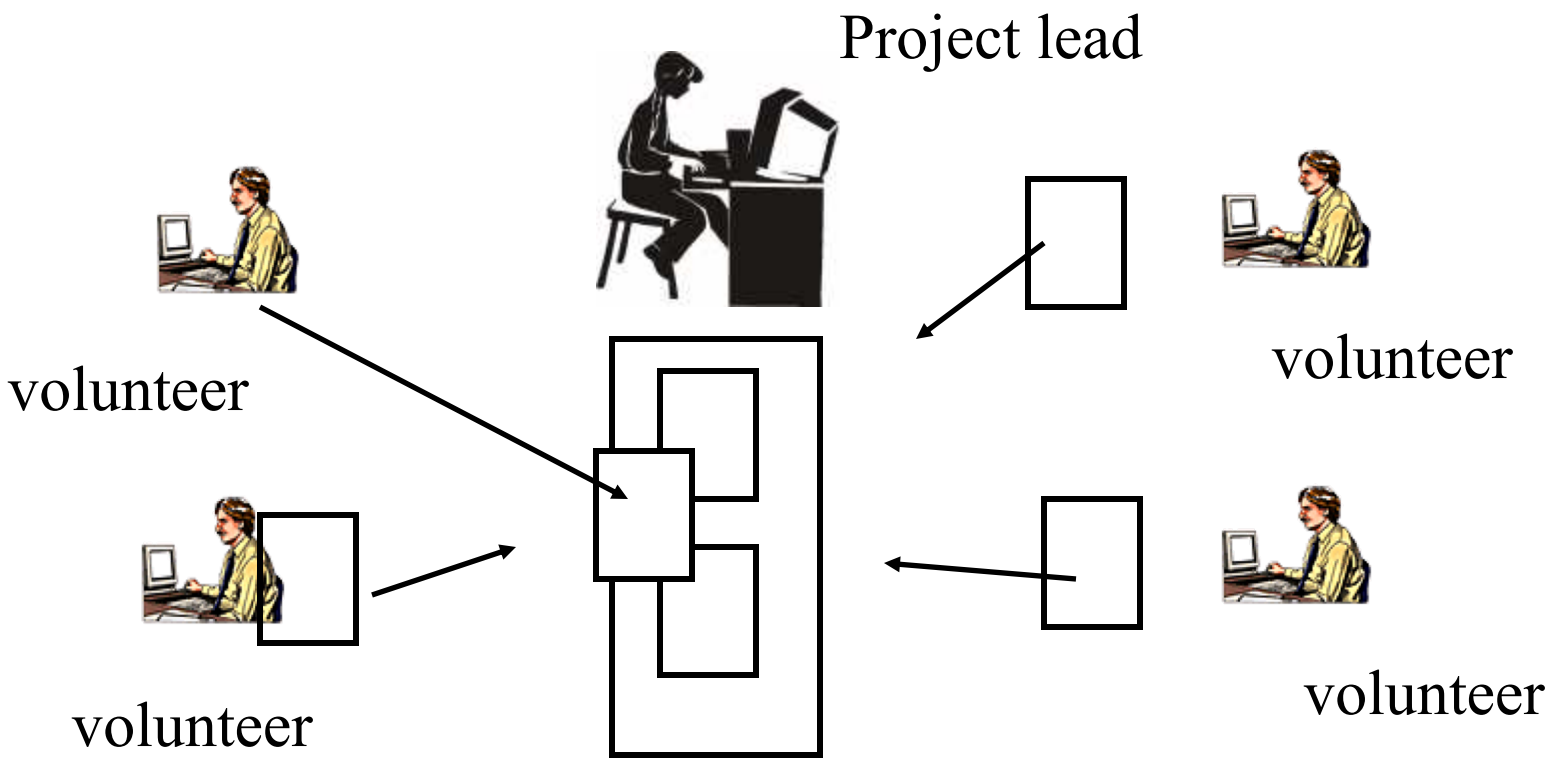


Presentation: Ass.Prof.Dr. Vu Thanh Nguyen

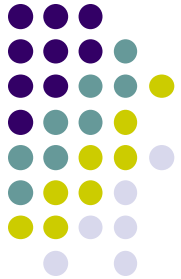
Msc. Nguyễn Công Hoan

What Is Open Source?

- *Open Source is a development model*



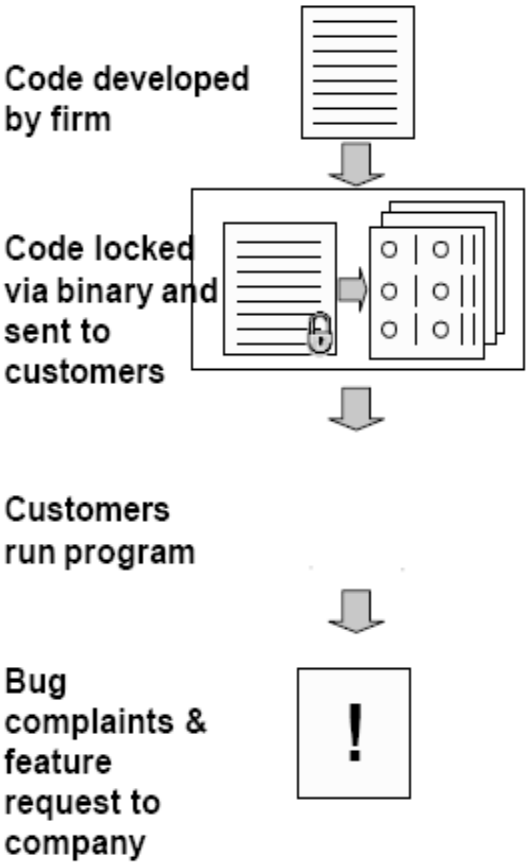
Urban Myths???



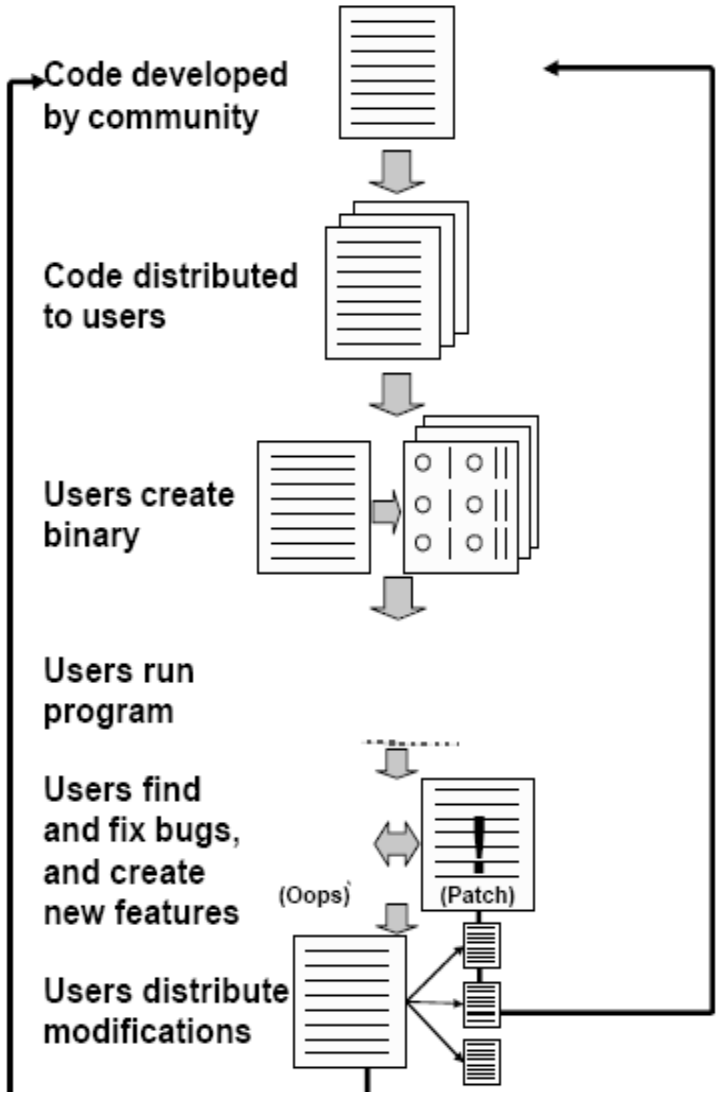
- Open Source is just a way to publish -- No
- Open Source is Public Domain -- No
- Open Source is Viral – Not Necessarily
- Open Source is Immune from Patent Rights – No

WHAT IS OPEN SOURCE?

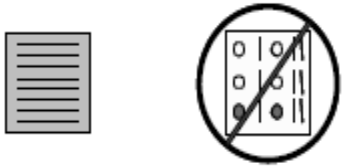
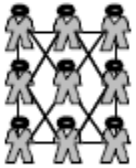
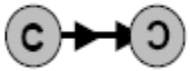
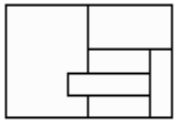
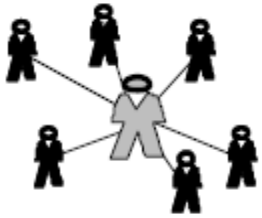
Firm-based software development



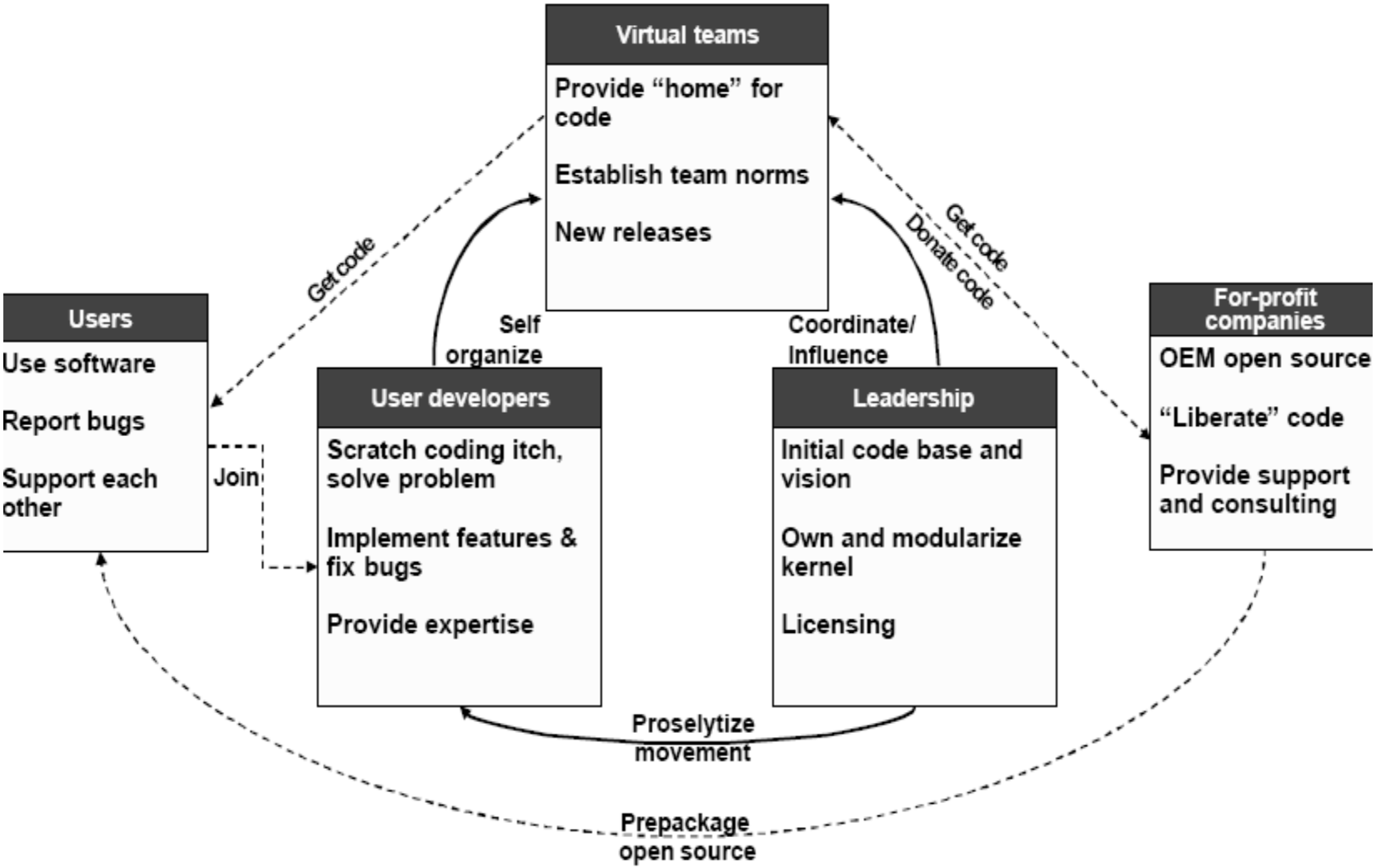
Open Source software development



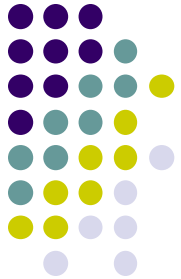
OPEN SOURCE PRINCIPLES

Intellectual property	Development paradigm	Resource model
		
Code should always be open - "Free speech, not free beer"	Extensive involvement of user/developer community	Good ideas come from solving a problem or scratching an itch
		
"Copyleft"	"Release early, release often"	"The three obligations: to give, to receive, to reciprocate"
		
"Use copyright to ensure copyleft"	Modularize code	Peer leadership - vision, engagement, code

HOW DOES OPEN SOURCE WORK?

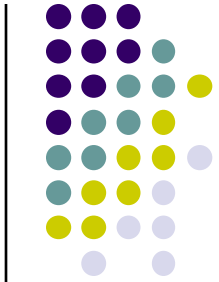


What is Open Source?



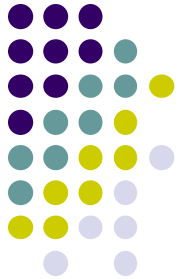
- Copyright Still Exists in Software
  - And the Open Source Development Model is Premised on That
  - Copyright is an intangible right – it exists independent of the code
- Copyright Attaches On Creation of Original Code
  - Copyright Notice and Registration Not Required
  - Ownership Initially Vests in Authors or Institution

What is Open Source?



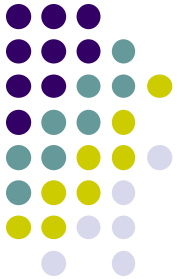
- By Distributing Code Under an Open Source Model, the Owner is
  - Not Dedicating the Code to Public Domain
  - Is Attaching Strings to Recipient's Use

What Is Open Source?



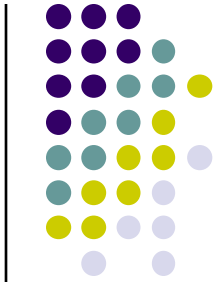
- Freely available for others to use, view and modify
- But It's More Than Just Free and Open Software
  - A software development model
  - A set of software licenses
  - A catalyst for new businesses and new business models
  - A force that is accelerating software commoditization (Hein, 2004)

What is Open Source?



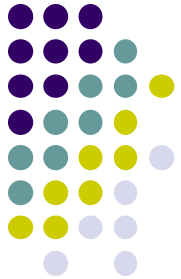
- *Open Source is a licensing distribution model too*
  - In many ways, just like commercial software
  - You need to pay attention to restrictions and obligations
- There are many kinds of Open Source licensing models
  - GNU General Public License (“GPL”)
  - GNU Lesser General Public License (“LGPL”)
  - BSD, MIT, Apache
  - Mozilla, IBM, Apple, Sun

Open Source Software – Main Features



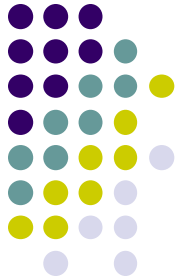
- Non-proprietary software which may or may not be used commercially (*See def. terms*);
- Typically licensed under an Open Source license (not given away)
  - License terms differ from proprietary software license terms
- Source code is generally made available
  - Legal restriction on reverse engineering (under the DMCA) do not apply.

Open Source Software License - Licensees



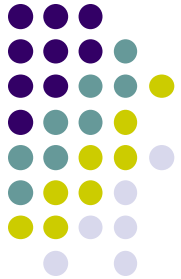
- Original software owner or developer chooses to limit the rights that he asserts over licensees
- Licensees, subject to license terms, can:
  - make and distribute copies of software;
  - build upon software to create modifications or other works.

Open Source Software Licenses - Source Code



- Source code to original product always provided;
- Licensee can modify or enhance source code (create “derivative works”) or include source code with other license types (create “larger works”);
- Licensee may be required to share modifications with the world (in source and/or binary form), but not necessarily;
- Licensee may be prohibited from charging royalties for derivative and larger works, but not necessarily.

Open Source Software License – Warranties and Support

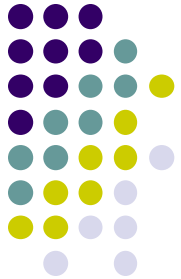


- Generally, software provided “AS-IS” with no warranties, warranties excluded;
- No indemnification;
- No maintenance or support.

Open Source Software Development Model

- Decentralized, community-led
- Release “early, and often”
- Community of programmers contribute to maintenance and development
- Users traditionally were programmers and vice-versa
- Users work on aspects useful to them and contribute back any broadly useful developments
- Distributed responsibility for quality assurance

New Businesses and Business Models



Commercial vendors are responding through:

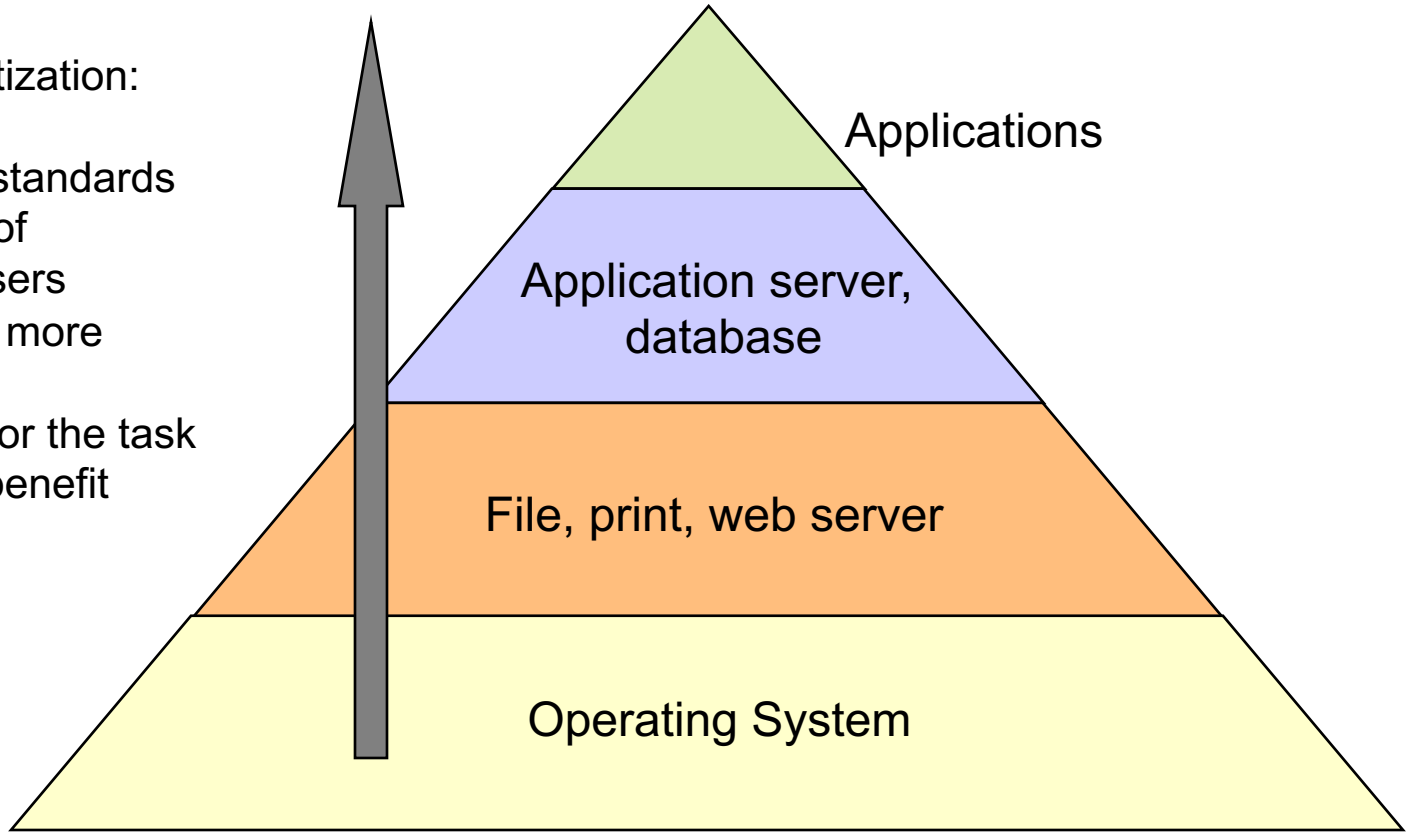
- Dual-license subscriptions
- Service and support offerings
- Implementation and integration services
- Other value-added services

Commoditizing Software

Open Source is commoditizing the stack, from the bottom up

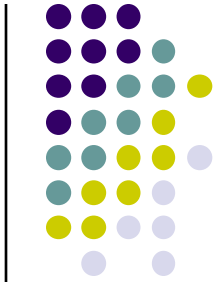
Ripe for commoditization:

- Well defined by standards
- Large audience of developers and users
- Less innovation/ more adaptation
- “Good enough” for the task and delivers 10x benefit



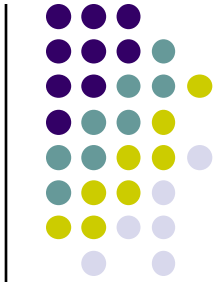
(Hein, 2004)

Benefits of Open Source Software



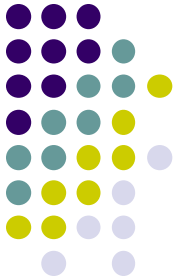
- It's free! (like a free puppy)
- Transparency encourages higher quality software
- Greater control and input into the development process
- Allows user customization

Advantages: Proprietary Software



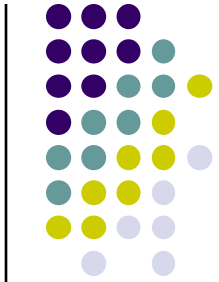
- Indemnification;
- Maintenance and support;
- Licensee doesn’t have to have open source savvy staff;
- Licensees’ rights if:
  - media is defective;
  - software contains viruses, backdoors, etc.;
  - product fails to meet written technical/business specifications.

Disadvantages: Proprietary Software



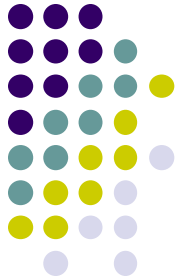
- COST!
  - License fee
  - Product bundling—example: Microsoft office.
- Licensee cannot modify or enhance the code;
- Often not built to open standards, leading to interoperability problems;
- Shut off from continuing development and information sharing in open source community;
- Some proprietary code is not as good as its open source counterparts.

Advantages: Open Source License



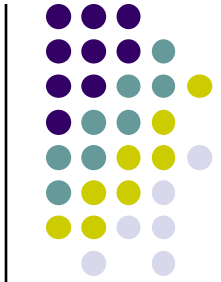
- PRICE: Generally no or low license fees;
- Availability of source code coupled with permission to make modifications;
- Access open source development community, which may be very active with respect to code used. Continuing improvement; outstanding development;
- More likely to be built to open standards, so interoperable with other open standards systems.

Disadvantages: Open Source Licensing



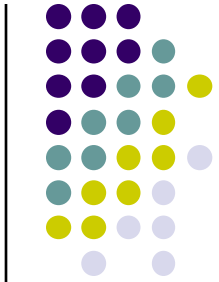
- No indemnification; if a third party claims that licensee is using code that the third party developed, the licensee has no one to pay his legal fees and damage award (*SCO v. IBM);*
- No maintenance and support (unless purchased separately);
- No warranties regarding media, viruses, and performance;
- Staff must be open source savvy;
- License terms are NOT standard: thus important to pay close attention to terms.

Note on Disadvantages: Open Source



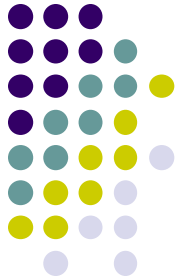
- Many disadvantages of open source licensing can be addressed by procuring open source software through a third party vendor that will provide maintenance, support, additional warranties, etc.

Sharing Proprietary Software Within the Commonwealth



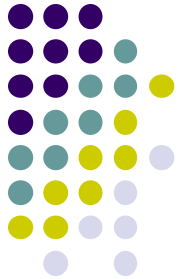
- Agencies can share proprietary software ***if*** proprietary license names the Commonwealth, rather than agency, as licensee and other license restriction terms are satisfied. Source code licensed under a proprietary license can only be shared if proprietary license permits.

Sharing Open Source Software within the Commonwealth



- Agencies can share source code for open source software subject to the terms of the license under which it was obtained.
  - Some open source licenses allow for portions of open source code to be included within proprietary software which may as a result prohibit interagency sharing.
- Always refer to the terms of the license before considering sharing open source software within your organization.

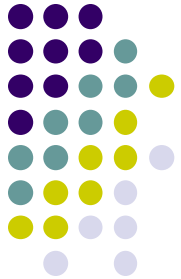
Additional Note on Sharing Software:



- Agencies can share source code for software that they own, based on a careful, documented determination regarding ownership.

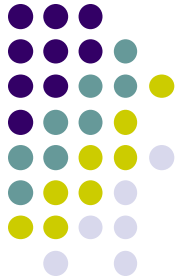
- **Agencies should not share software until agency counsel has reviewed the legal status of the software that is to be shared.**

Common Open Source Models



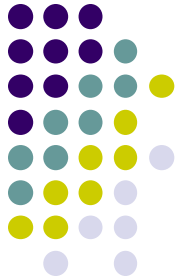
- GNU General Public License ("GPL")
  - Grants right to copy, modify and distribute
  - Requires that source code be made available to future licensees
  - Generally Seen as "Viral"
    - Applies to separate works that are combined with distributed code
    - Effect may depend on how code linked
  - Disclaims Warranties
  - May blow-up in face of patent assertion
  - Proprietary distribution models difficult

Common Open Source Models



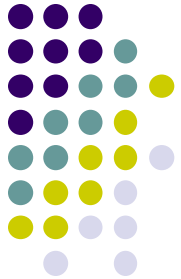
- GNU General Public License (“GPL”)
  - No standard open source license, but GPL most widely used (roughly 85% of open source software)

Common Open Source Models



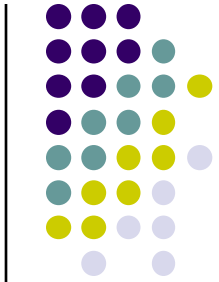
- GNU Lesser General Public License (“LGPL”):
  - Similar to GPL
  - Somewhat easier for licensees to combine the LGPL code with a separate program and distribute the combination under separate licenses
  - Often used with Open Source Libraries that are compiled into an application program

The Mozilla Public License



- Developed by Netscape for the Mozilla browser
- Terms include:
  - Very similar to the GPL but,
  - Can charge royalties for modified versions;
  - Can include source code within larger works licensed under different license types, thus license does not ‘infect’ all downstream projects;
  - Must retain copyright notices and warranty disclaimers;
  - May provide additional warranties to downstream users but may have to indemnify original developer for any claims arising as a result;
  - Includes grant patent licenses;
  - Less viral than the GPL.

The IBM Public License

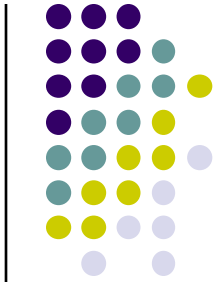


- Terms include:
  - User freedom to distribute and/or modify;
  - No requirement for source code availability in downstream distribution;
  - The program can be distributed in executable form thus allowing downstream users to develop, sell, and install customized software packages without having to make all customizations available to the world;
  - Must retain all copyright notices and warranty disclaimers;
  - Includes grant of patent licenses.

The Apache Software License

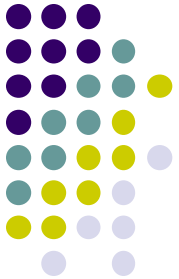
- Governs the Apache web-server software.
- Terms include:
  - User freedom to distribute and/or modify;
  - No requirement for source code to be made available to the world in downstream distribution;
  - Must retain all copyright notices and warranty disclaimers;
  - Not a viral license.

The FreeBSD License



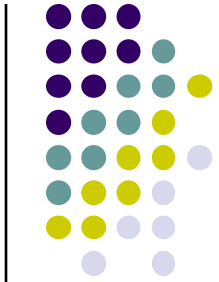
- Unrestrictive license:
  - Only requires preservation of copyright notices and warranty disclaimers.

Existing open source licenses



- Terms will always include preservation of copyright notices and warranty disclaimers;
- Some licenses will be extremely viral: thus prohibiting any other type of downstream licensing apart from under the terms of the original license;
- Some with permit inclusion of code within proprietized programs;
- In some instances, provision of additional warranties and support will trigger indemnification provisions to the original developer.

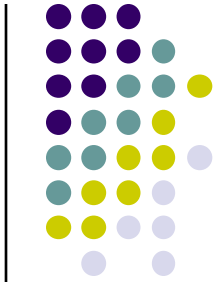
Freeware



- Freeware is free software, software that the licensee can use without paying a license fee.
- Free software may be proprietary software for which source code is not provided (Adobe Acrobat) or open source software (Linux).

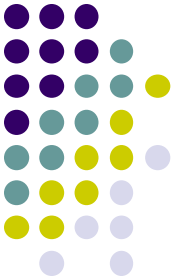
Note: Not all open source software is free; not all proprietary software is licensed for a fee.

Take Note Message:



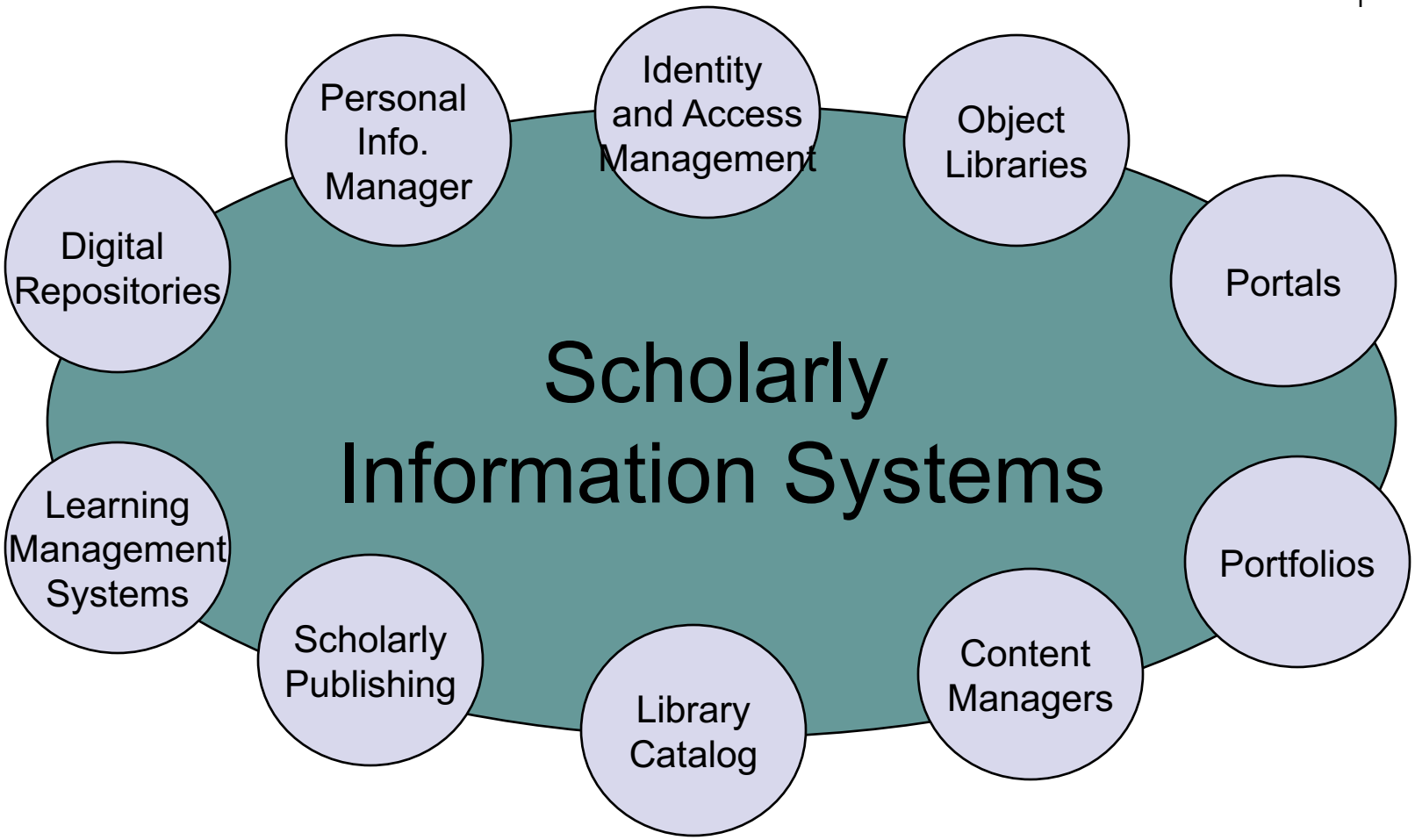
- Before using of open source products:
  - Educate your staff about the difference between proprietary, open source, and freeware software;
  - Educate yourself about the legal, business and technical risks involved in using open source software, and balance them in making a business decision as to what kind of software to use.
  - Procure for best value, taking into account the risks and benefits of using proprietary vs. open source software along with other business and technical best value criteria

Higher Education Software Market

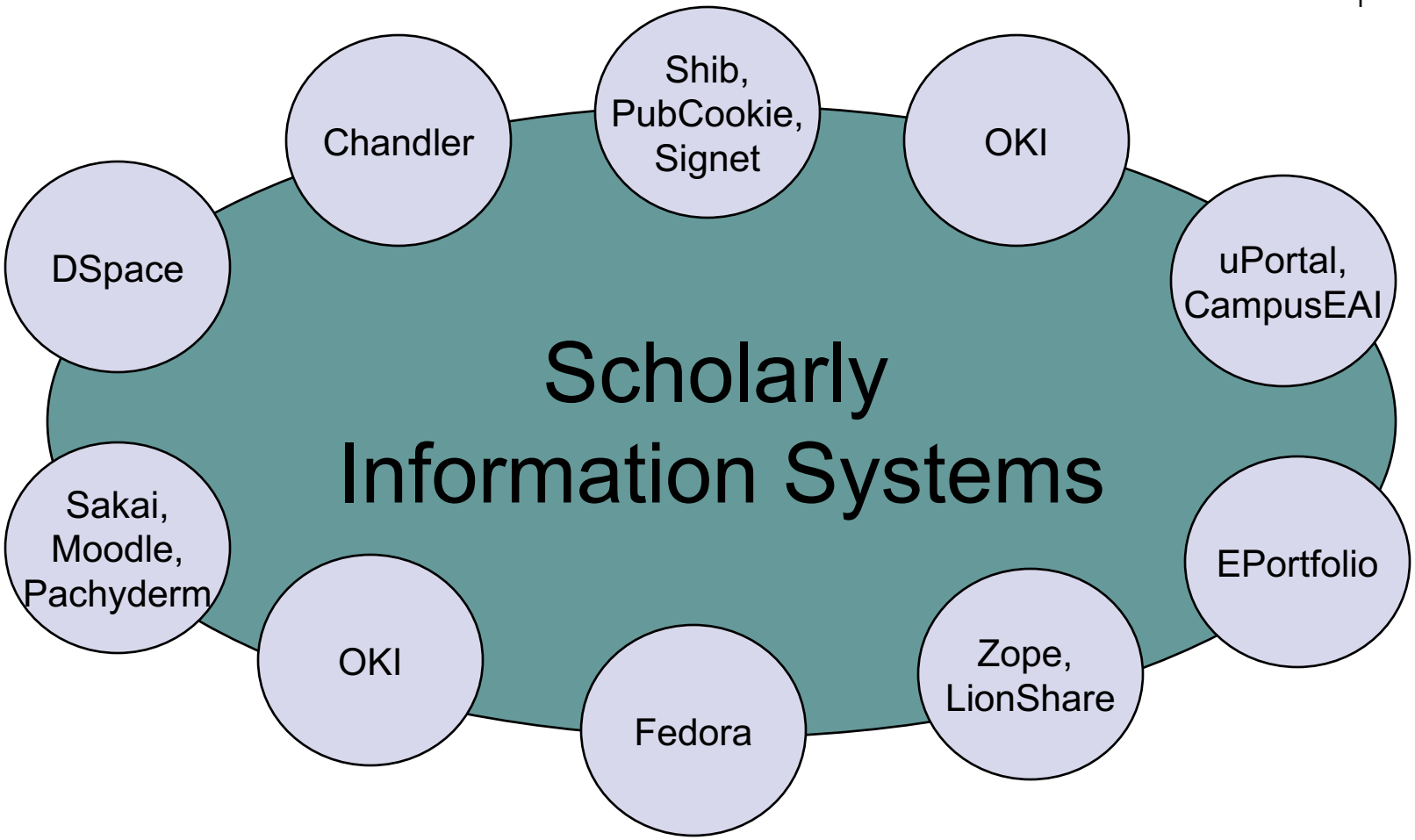


- Small market with specialized needs
- Dependency on commercial software vendors
  - Poor adaptations to higher education's needs
  - Market control by few vendors
    - Inflated prices
    - Poor quality
    - Lack of input to development process
- Build In-House v. Buy v. Collaborate

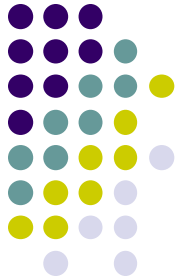
Higher Education OSS Projects



Higher Education OSS Projects



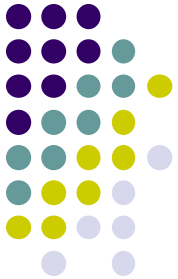
Is OSS the Solution for Higher Education ?



It is a promising alternative, but concerns exist:

- Lack of formal support structure
- Economic stability
- Reiterative governance infrastructures
- Total cost of ownership
- Legal issues
- Free-riders
- Applicability to end-user software

Additional Resources

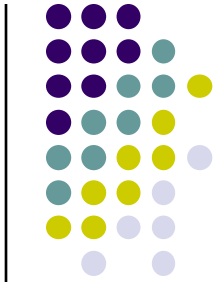


- www.opensource.org
  - General open source tools and licenses
- http://creativecommons.org
  - Q&A for reviewing models
- www.gnu.org
  - All things GPL
- http://otl.stanford.edu

Open Resource Useful Software

- Mozilla Firefox:
  http://www.mozilla.com/en-US/firefox/
- Mail:
  Webmail: Yahoo, Gmail, Hotmail
  Evolution:
  http://sourceforge.net/project/showfiles.php?group_id=159440&package_id=194380&release_id=492523

Open Resource Useful Software



- Application

  OpenOffice

  http://www.openoffice.org/

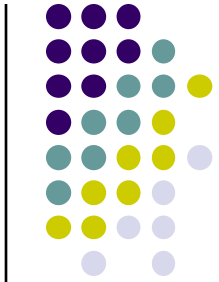
  Unikey:

  http://www.unikey.org/

  Font: TCVN3-ABC, VNI Windows:

  http://support.vnn.vn/tiengviet/

Open Resource Useful Software



- Application

  Read, Write CD, DVD (Nero)

  http://cdburnerxp.se/download

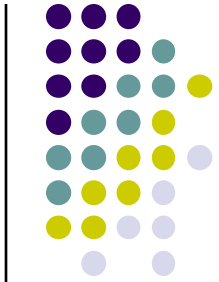
  Compress file (ZipGenius)

  http://www.zipgenius.it/eng/?page_id=12

  PDF (Adobe Reader:)

  http://www.adobe.com/products/acrobat/readstep2.html

Open Resource Useful Software



- Application

  Chat

  Yahoo Messenger:

  http://messenger.yahoo.com/download.php

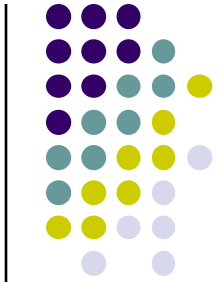
  Google Talk:

  http://www.google.com/talk/

  Skype:

  http://www.skype.com/intl/en/

Open Resource Useful Software



- PHP
- MySQL
- PostgreSQL