How Apache works

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Who am I

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- **Fellow**/Software Architect at **Talend**
- **Member** of the Apache Software Foundation (started in 2004)
- **PMC member on ~ 20 Apache projects** from system integration (Karaf, Camel, ActiveMQ, Archiva, Aries, …) to big data (Beam, CarbonData, …)
- **Mentor** on Apache ServiceComb incubator project

Why open source ?

For Companies & Organisations

- **Impact on development and direction**
- Sense of membership in a community
- **Save on expensive resources and go to market**
- Ability to focus on what differentiates yourself
- Allows to nimbleness and agility
- **Increased vision, revenue and market share**

Why open source ?

For developers

- **Not alone, part of a community**
- Personal satisfaction
- Sense of accomplishment
- **Innovation: you do it !**
- Tinker !

Why open source ?

For users

- Access to code source
- **No vendor lock-in**
- **Better software, more reliable (security)**
- Much more nimble development (frequent releases)
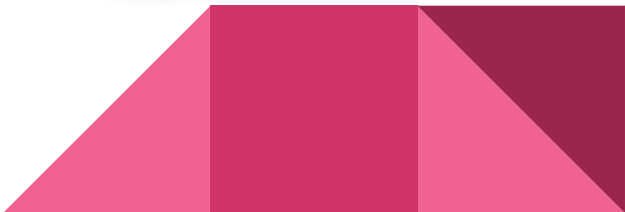- Direct user input
- **Open standards**

Open source promises

Let's pretend software is a cookie

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Open source promises

Use !

Open source promises

Modify !

Open source promises

Share !

Open source licenses

Give me credit ! (Apache, BSD, MIT)

Open source licenses

Give me fixes (LGPL, EPL, MPL)

Open source licenses
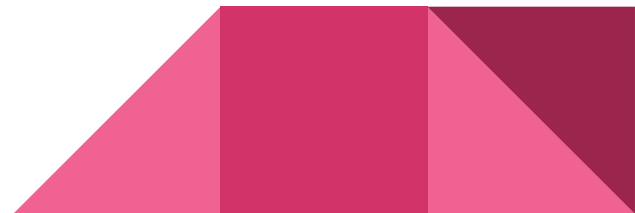
Give me everything (GPL)

Open source community

Walled Garden (company community)
"All your base are belong to us."

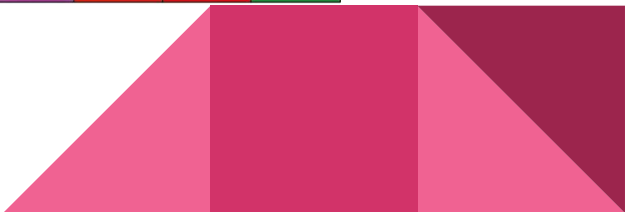# Open source community

Meritocracy (open community)

"Out of chaos comes order."

Open source community

Building community

- Use mailing list
- Drive and accept consensus
- Avoid poisonous people
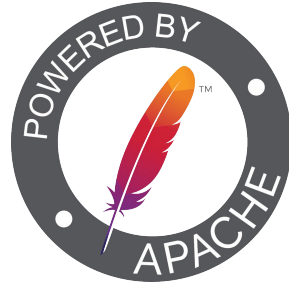- Play nice, share, have fun

Apache Software Foundation

The Foundation

- Non-profit corporation
- 501(c)3 charity
- Volunteer organization
- Virtual world-wide organization
- Exists to provide the organizational, legal and financial support for various OSS projects
- Biggest open source foundation

From Apache group to the ASF

- Apache Group
- Informal corporate structure
- 8 members
- Resumed the work on NCSA httpd in Feb 1995 ("a patchy" server)
- Choose permissive licensing
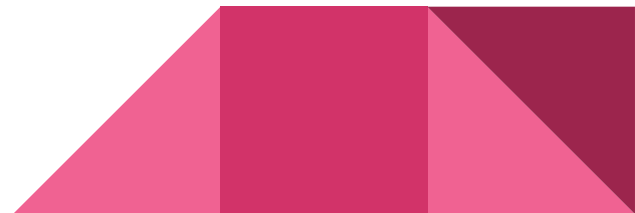
ASF

Then

- Incorporated in 1999
- Started with 21 members
- 2 projects
- All servers and services donated

Now

- ~650 members
- ~300 projects (TLPs, podlings)
- ~5400 committers
- ~2200 PMCs
- ~8000 signed ICLAs
- Large and growing infrastructure

ASF mission

- Provide open source software to public free of charge
- **Let the coders code - foundation deals with the rest** ➡️

How ?

- **Infrastructure** for open source development
- **Legal** entity for donation purposes
- Shelter from law suits
- **Protection** of the Apache brand
- Project **governance** and guidance

THE APACHE
SOFTWARE FOUNDATION

ASF org chart

Development/Project

Foundation/Administrative

Project People

| PMC Members |

| Committers |

| Contributors |

| Users |

| Members |

| Officers |

| Board |

report quarterly

elect

delegates

Structure of the ASF - Project Management Community

- Volunteer driven organization
- Projects are managed by Project Management Committees (PMCs)
  - Vote in new PMC members and committers
  - Vote in new releases
  - Establish rules, report to board
  - Oversee legal aspect, and community health
- Each PMC has a Chair (appointed by the board) - eyes and ears of the board (oversight only)
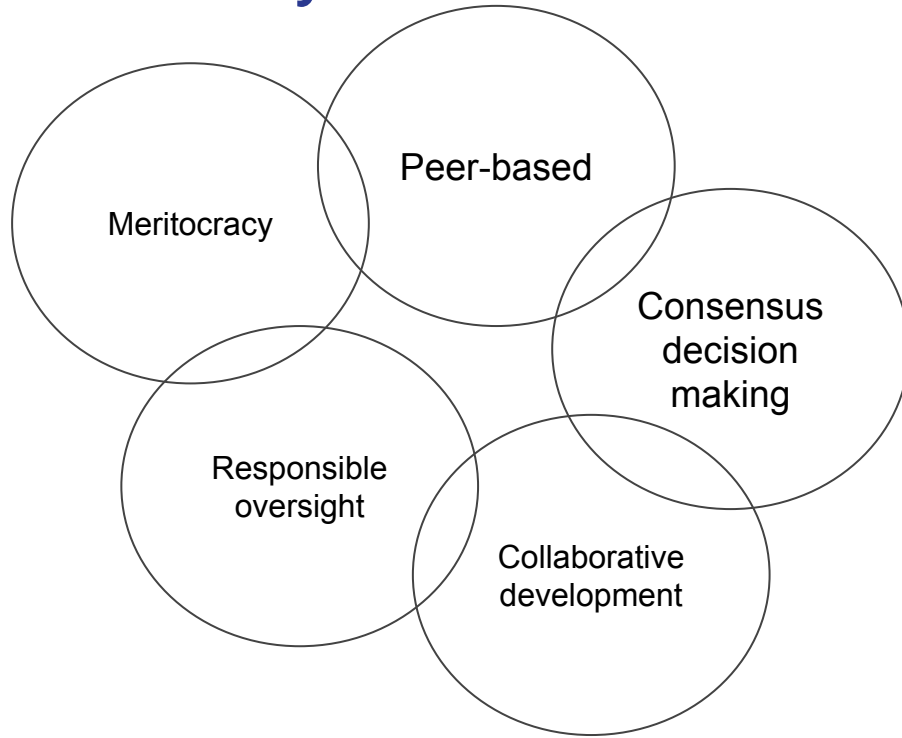
Structure of the ASF - Foundation Members and Board

- Again only **volunteer** effort
- Member-based corporation - **individuals** only
- Members nominate and elect new members
- Members elect a **board** - 9 seats
  - Manage and oversee the corporation, its assets and resources
- Annual meeting via IRC
- Board elects 10 officers
 - Oversee the day-by-day affairs

The Apache Way

Meritocracy

- Govern by **merit**
- Merit is based on what you do
- Merit never expires
- Those with merit, get more responsibility
- The best ideas win
- Any constructive contribution earns merit
- **Not just code** (bug reports, documentation, evangelism, …)

Peer-based

- Developers represent themselves - **individuals**
- **Mutual trust and respect**
- All votes hold the same weight
- **Community over code**
  - Healthy community creates healthy code
  - Poisonous communities don't
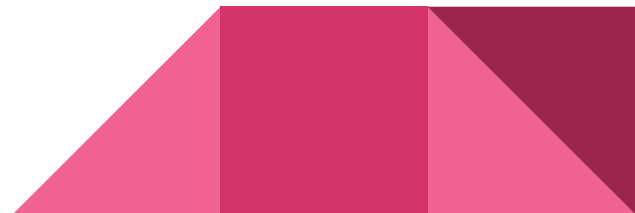
Why community > code

- Since we are all volunteers, people's time and interests change
- A healthy community is "warm & inviting" and encourages a continued influx of developers
- Poisonous people/communities turn people off, and the project will die
- End result - **better code, long-term code**

Consensus and vote

- Key is the idea of voting: +1, 0, -1
- Main intent: gauge developer acceptance
- -1 must be justifiable

Commit processes

### Commit Then Review (CTR)

- Commit on the code and review after
- Good for dev branches
- Depends on people doing the review
- Allows very fast development

Review Then Commit (RTC)

- Based on patches/pull requests
- Review on the pull request
- Merge the pull request
- Needs enough "reviewers"
- Lower pace, higher quality and governance
- *Probably the recommended and preferred process*

Lazy Consensus

- Variant of RTC
- Introduce deadline in the review
- Lower quality, higher flexibility
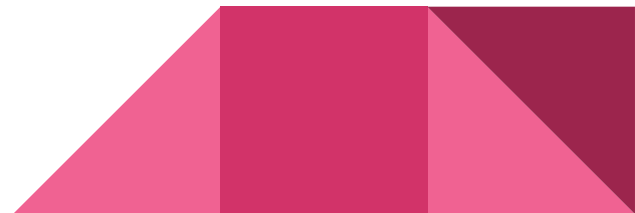
Collaborative development

- Code is developed by the community
- Voting ensures at least 3 active committers
- Decisions done on mailing list: ***"If it didn't happen on the mailing list, it didn't happen"***
- Shared vision
- Real-time updates
- Real-time help requests
- Self-service archives

Responsible oversight

- Ensure clean IP in all Apache releases
- Ensure license compliance
- Quality code
- Quality community

Apache projects

- Responsible for their own code, community and direction, following the Apache rules
- Community over Code !
- Diversity: Java, C, C++, Perl, Scala, …
- Leading technology (webservers, tools, big data, container, …)
- Projects can be in the same area if they have their own community (ant/maven, axis/cxf, pig/hive, …)
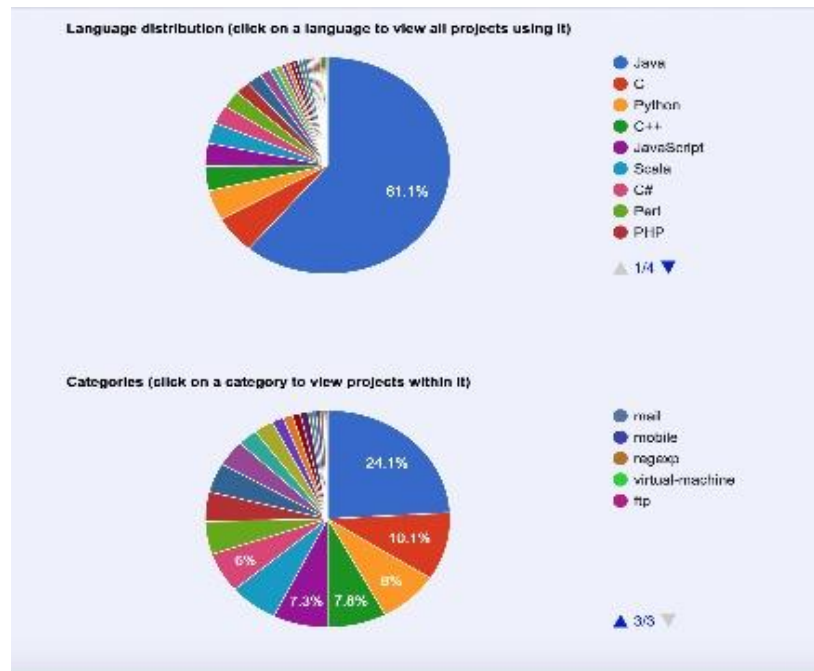
Apache projects

Apache projects

Apache incubator

- Entry point for all new projects
- Indoctrinates the Apache Way to the podling
- Ensures and tracks IP
- PPMC helped by mentors (foundation members)

Who pays ?

- Apache doesn't pay for development ! Voluntary contribution only !
- Many (not all) developers are paid by third-party to work on a project (form of sponsoring)
- Foundation bears indirect support costs
  - Infrastructure
  - Advertising and conference
  - ...

Who are we ?

"We are more than a group of projects sharing a server, we are a community of developers and users."
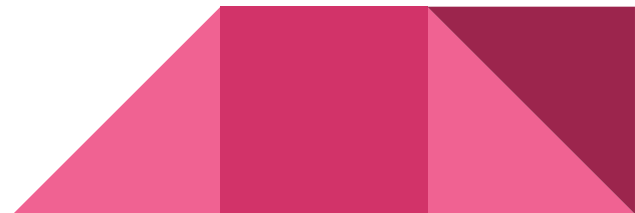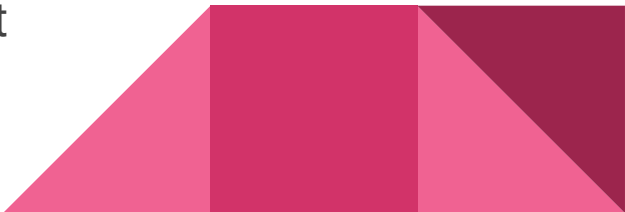
How to start ?

Why to contribute ?

- **Better and easier recognition of work**
- Publicly verifiable resume
- **Work with great guys in great teams**
- No manager, no boss
- Work on what you like, when you like, where you want
- **Discuss technical designs and by part of the innovation**
- Build software used by millions around the world
- Networking opportunities

How to contribute ?

- **ASF wants voluntary contributions**
- Documentations, tutorials, examples
- Helping others with queries and questions
- Issue / bug tracker triage
- Testing new fixes, helping reproduce problems
- Bug fixes and new features
- Writing add-ons and extensions
- Mentoring, volunteering for the foundation
- Many different ways to get involved, all are important

Start contributing

Requirements

Choosing the right project

How to start
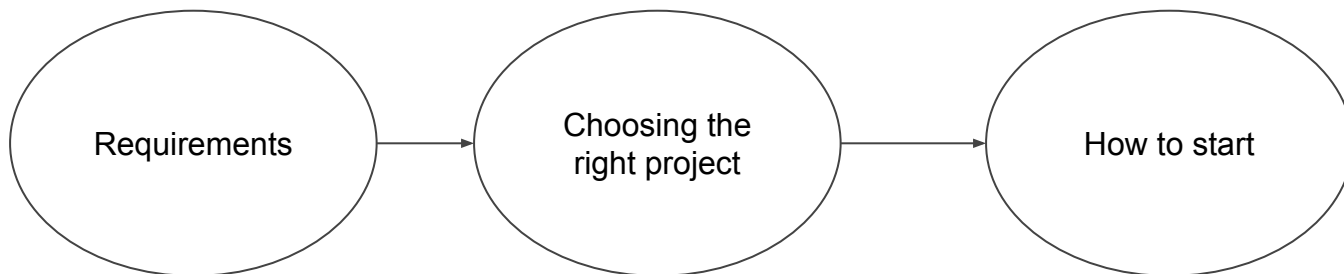
- English
- Programming language
- Debugging
- Passion
- Perseverance
- Time

- Filter by your interest area
- Filter by language
- Something you use
- Something you want to learn
- Using the project is very important

- Choose your project
- Subscribe to mailing lists
- Checkout code
- Play with binaries
- Find issues and features requests
- Ask
- Sign ICLA

Become a committer/PMC

Invitation of commit access
- Current PMC member nominates individual
- Discussion on the private@ mailing list
  - Key question ? Do I trust this individual ?
- PMCs are free to define the bar level

Beyond a committer
- Once you are committer, you can then become:
  - PMC member
  - Foundation member
  - Director/VP
  - Even President !
- You can
  - Nominate other foundation (or PMC) members
  - Can serve as mentor for incubating projects
  - Vote for board

Beam: from incubation to TLP

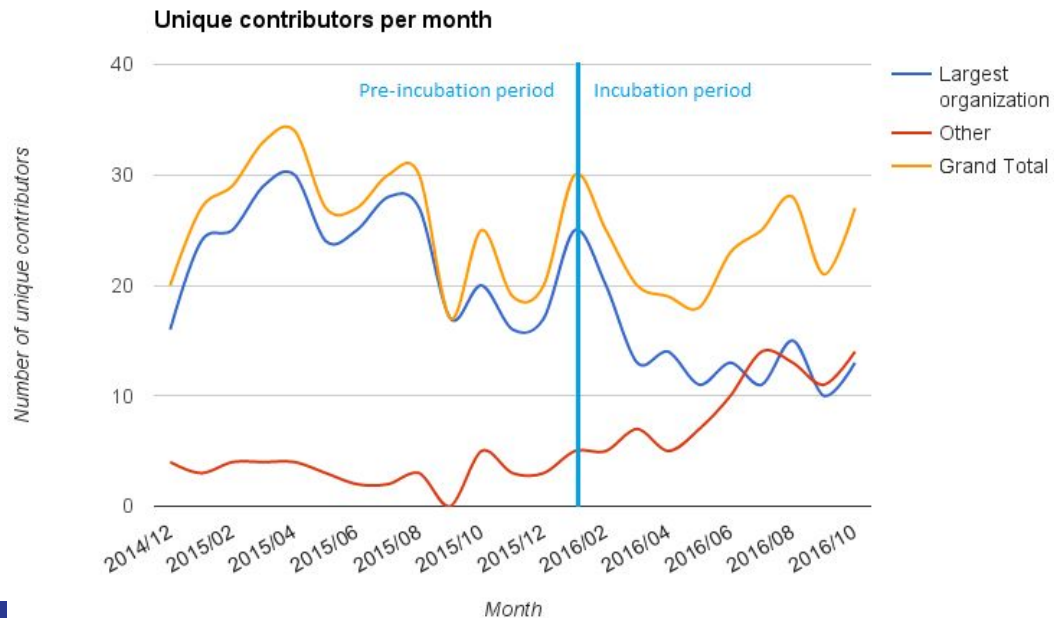| 01/16	06/16	07/16	10/16	12/16	01/17	03/17
Incubation	First release	0.2.0-incubating	New committers	0.4.0-incubating	TLP	0.6.0
Code donation	0.1.0-incubating		0.3.0-incubating release		0.5.0	
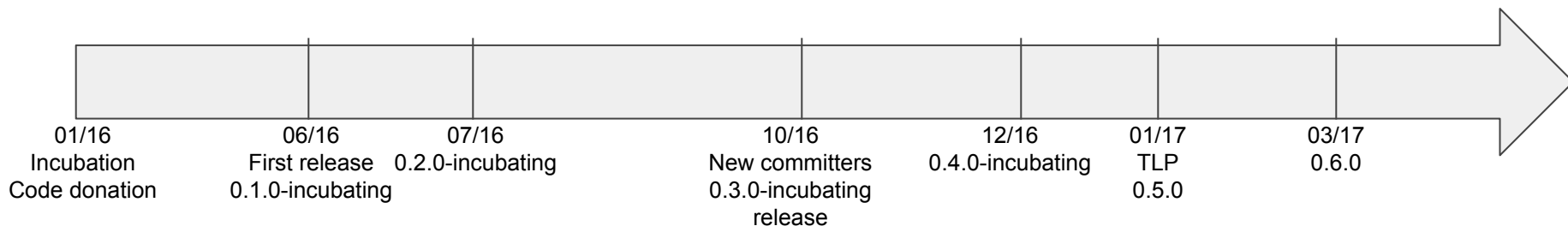
- Incubation started in January '16
- TLP in January '17
- 1500 Pull Request during incubation
- 3 incubating releases
- 120+ individual contributors
- 3 new committers from new companies

Apache Beam, ASF values

- Larger community
- More features provided by more people:
  - New IOs contributed by Talend
  - Spark runner improvements
    by PayPal & Talend
  - Apex runner
  - ...
- Extended use cases and users
  - AliBaba, eBay, ...

Unique contributors per month

Pre-incubation period | Incubation period

Legend:
- Largest organization
- Other
- Grand Total

Y-axis: Number of unique contributors (0, 10, 20, 30, 40)
X-axis: Month (2014/12, 2015/02, 2015/04, 2015/06, 2015/08, 2015/10, 2015/12, 2016/02, 2016/04, 2016/06, 2016/08, 2016/10)

Thanks !

Q&A