

# 오픈소스: 100% IoT 세상의 해답

Daniel Park, Ph.D.  
Samsung Open Source Group  
Email: [soohong.park@samsung.com](mailto:soohong.park@samsung.com)

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# ① 오픈소스란



# 오픈소스 정의

(Open Source Initiative – <http://opensource.org> )

01. 자유롭게 배포할 수 있어야 한다.
02. 소스코드가 제공되어야 하며 소스코드의 재배포도 허용해야 한다.
03. 소스코드를 수정하여 파생저작물을 만들 수 있어야 한다.
04. 변경된 소프트웨어에는 다른 이름이나 버전을 부여함으로써 원저작자의 코드를 보장해야 한다.
05. 특정인이나 특정그룹에 대해서 차별이 없어야 한다.
06. 특정 분야에 대해서 차별이 없어야 한다.
07. 소스코드를 받는 사용자가 동일한 라이선스로 사용할 수 있어야 한다.
08. 라이선스는 특정제품에 국한되어서는 안 된다.
09. 라이선스가 파생저작물이 아닌 다른 소프트웨어를 제한해서는 안 된다.
10. 라이선스는 기술에 대해서 중립적이어야 한다.

Development based on the sharing and collaborative improvement of software source code has a history essentially as long as software development itself. In the late 1990s, interest and participation in this phenomenon increased markedly with mainstream recognition of Linux [in publications like Forbes](#) and [the release of the Netscape browser's source code](#).



**@ 1991**

# The Rise of Open Source: Linux and OpenStack

## Linux

- 2013**  
94% of the world's top 500 supercomputers run Linux  
15 million lines of code are contributed by 8,000 developers and 800 companies
- 2012**  
Linux-based Android leads the worldwide smartphone market
- 2000**  
IBM announces \$1B investment in Linux
- 1999**  
IBM announces an extensive Linux project
- 1998**  
IBM, Compaq and Oracle publicly announce support
- 1995**  
Broad hardware support rapidly ramps adoption
- 1993**  
More than 100 developers contribute code to Linux
- 1991**  
The Linux kernel is developed to access large UNIX servers independent of an operating system

## OpenStack

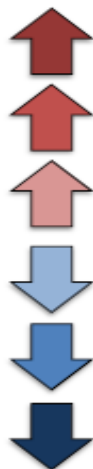
- 2013**  
IBM unveils SmartCloud Orchestrator, a new private cloud offering based on OpenStack  
Community of 8,200+ individual members representing 1,000 organizations  
2013 predicted as the year of "OpenStack Services Firms"
- 2012**  
IBM, RackSpace, Red Hat, AT&T and others establish the OpenStack Foundation  
Leading cloud technology companies as well as large ISVs bet on OpenStack for their core business
- 2011**  
Head and shoulders above the rest with respect to contributors, members, followers and community
- 2010**  
One among many competing open solutions for cloud infrastructure  
OpenStack comes out of the gate with favorable Apache license terms

오픈소스는 사회에 대한 순수한 기여인가..

# 오픈소스 사용은 무료, 라이선스 검증은 사용자 몫

| 라이선스 명      | Contribution 시 의무사항 요약 |           |        |        |             |             | 대표적 SW(예) |
|-------------|------------------------|-----------|--------|--------|-------------|-------------|-----------|
|             | 소스공개                   | 라이선스 전문명시 | SW명 명시 | 저작권 표시 | 상용 SW 사용 가능 | 수정 소스 코드 공개 |           |
| GPL v2.0    | O                      | O         | O      | O      | O           | O           | Linux     |
| LGPL 2.1    | O                      | O         | O      | O      | O           | O           | glibc     |
| MPL v2.0    | O                      | O         | O      | O      | O           | O           | Firefox   |
| Apache v2.0 | X                      | O         | X      | O      | O           | X           | Android   |
| BSD         | X                      | O         | X      | O      | O           | X           | FreeBSD   |

Strict



Permissive

# 5 ways to make money with open source

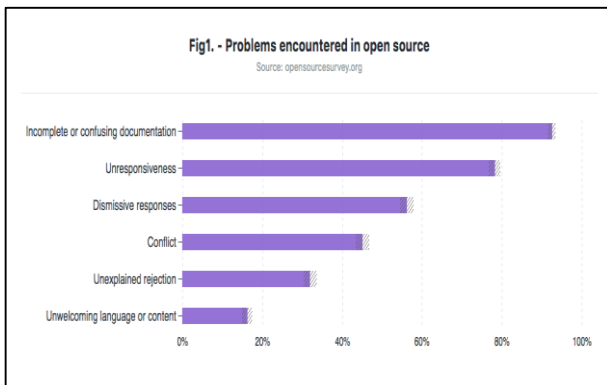
– Aaron Weiss

- Sell Support Contracts
- Sell Value-Added Enhancements
- Sell Documentation
- Sell Binaries
- Sell Your Expertise as a Consultant



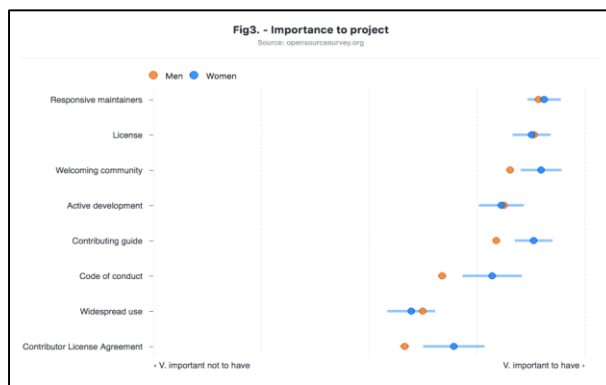
# Github Open Source Survey, 2017

## Problems encountered in open source



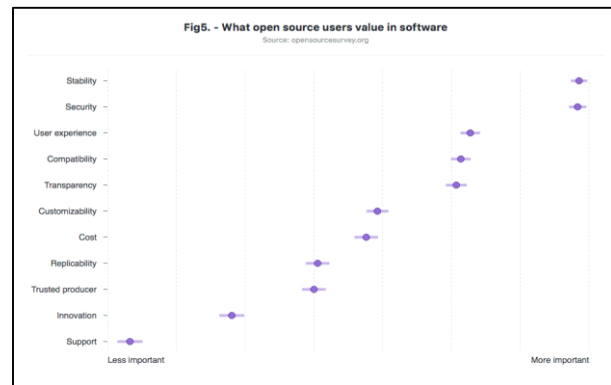
- **Incomplete or confusing documentation**
- **Unresponsiveness, Dismissive responses**

## Importance to project



- **Responsive maintainer, License**
- **Welcoming community, Active development**

## What open source users value in software



- **Stability, Security, Compatibility, Cost (+)**
- **Innovation, Support (-)**

GitHub.com: 5,500 responses / Off Site: 535 responses, 12 communities

Full report and data download at [opensourcesurvey.org](https://opensourcesurvey.org)

## ② 왜 오픈소스인가

## 경제적 측면

Billions of dollars of free software harnessed to create products and services

## 효율적 측면

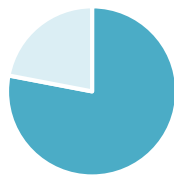
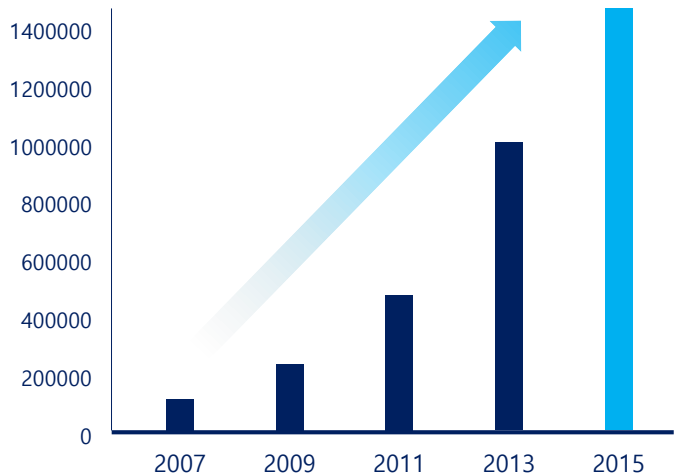
Business aligned with upstream open source projects enables faster time to market

## 문화적 측면

Organizations with strong external R&D attract top software talent

# 약 150만개 오픈소스 프로젝트 중

최근 5년간 100만개 이상 증가 [참조: 2015 Future of Open Source Survey Result, 블랙덕 소프트웨어]



78%

이상 기업이 오픈소스 사용

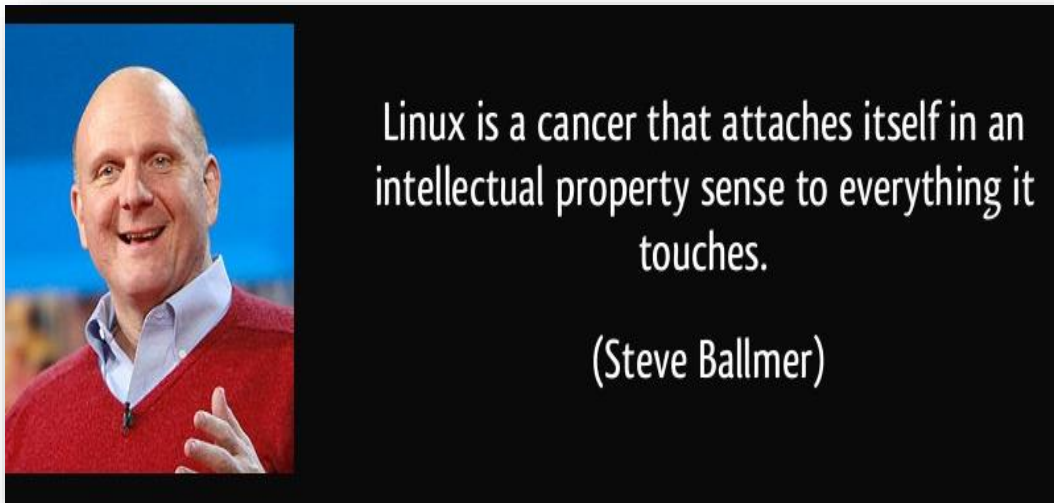


65%

이상 기업이 오픈소스 참여



# Talk Openly, Develop Openly



Linux is a cancer that attaches itself in an intellectual property sense to everything it touches.

(Steve Ballmer)



***문화의 변화?, 인식의 전환? ...***



[Video] [https://www.youtube.com/watch?v=iBOBv2\\_rwj8](https://www.youtube.com/watch?v=iBOBv2_rwj8)

플랫폼 비즈니스 구축





## 전문 단체 성행

- 프로젝트 운영, 인프라 제공  
[Git, Jira, Forum, Slack, Website]
- **Developer Relation (DR)**  
[Hackathon, Conference, PR]
- 법률 지원/대응  
[License, IP Policy, Compliance]
- 회원사 관리



# 54개 프로젝트 (as of 2017.03)



- Programming Frameworks
- Application Layer
- VM/VIM Machines
- Containers
- Operating Systems
- Virtual Machines
- Network Management Orchestration
- Carrier Networking
- Network Controller
- Data Plane Services

Licensing and IPR

Training and Certification

Governance, Operations, & Ecosystem

Security

O'REILLY®

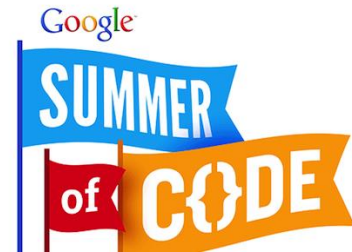
OSCON



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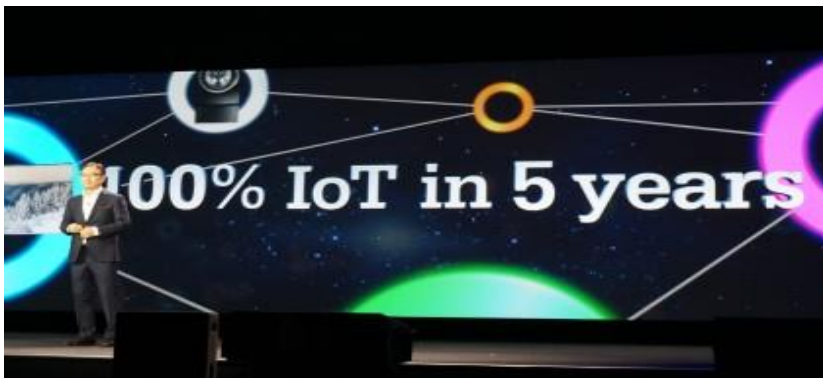


[Video] <https://www.youtube.com/watch?v=BS4kTgaiydQ&t=189s>



### ③ IoT 시대의 오픈소스 역할

# 100% IoT Products in 2020



2015 CES  
Samsung IoT: in sync with life



2016 CES  
Samsung IoT: in sync with **REAL** life

## Key is Inter-Operability

# 100% IoT ?

# ***Reasons for Standard***

- **Interoperability**
- **Collaborative deployment**
- **Cost efficiency**









Standards don't always  
mean interoperability

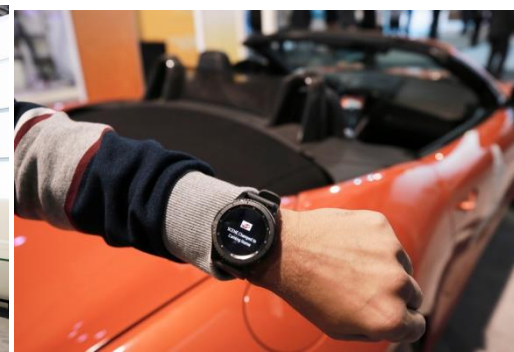
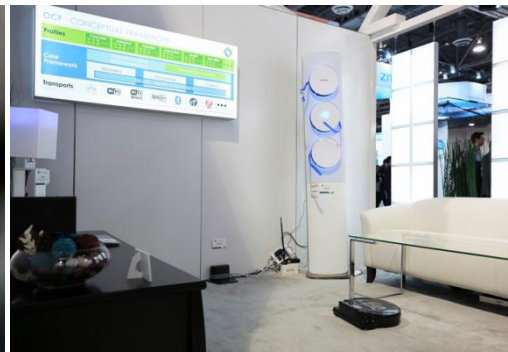


**Open Source is  
Standard**

# NEW OCF SPEARHEADING STANDARDS EFFORT FOR IOT

Open Connectivity Foundation: Providing the  
Software Linking the Internet of Things





[Video] <https://www.youtube.com/watch?v=3d0uZE6IHvo>

# OCF Basics

- Make it **easy for developers** to deal with the complexity of IoT comms
- Provide a **common data model** that developers can use to interface with all IoT devices
- Establish an architectural foundation that can achieve the necessary **scalability**
- Focus the architecture around **interoperability**
- Supports the needs of **multiple vertical markets**
- Provide a path towards future **consolidation** of standards

## OCF Specification

Defines OCF framework including standard model for apps & services to interact with IoT

## IoTivity Open Source

Delivers reference implementation of OCF framework & translation layers for non-OCF devices

## OCF Certification

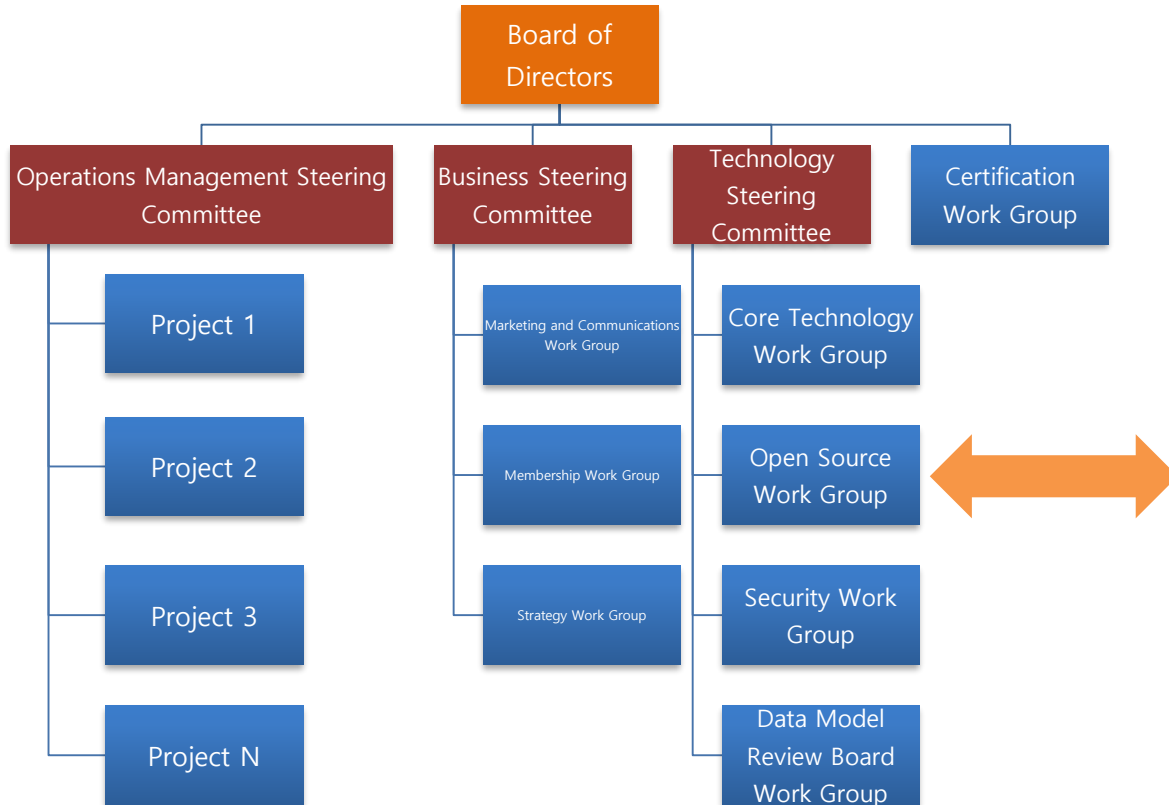
Ensures interoperability via compliance and interoperability testing



# IP Policy

- OCF is a **royalty free organisation**
- Open Source – Apache 2.0
  - Copyright & patent coverage for submitted code
- Standard – RANDZ
  - Cross licensing of patent claims covering “Compliant Portions” of a member company’s certified products

# Operational Structure



# Memberships

## OCF Diamond Members

Arçelik A.Ş.

CableLabs®

Canon

CISCO

Electrolux

GE Digital

Haier

intel

LG

Microsoft

QUALCOMM

SAMSUNG

## OCF Platinum Members

ARRIS

AwoX

Beechwoods

Bluewin  
Broadband

BUFFALO

CAICT 中国信息通信研究院

COMCAST

FABITA

hager

Honeywell

hp

IBM

innopia  
Building on the edge. Innovating in the cloud.

legrand

Midea

neustar

POZ

SOMFY

SONY

twobulls

阿里云 联科  
uni-cocloud

verizon

xped  
MAKING TECHNOLOGY  
EASY AGAIN

370+ Members



# Partners



# Significant Footnotes



OPEN  
INTERCONNECT  
CONSORTIUM<sup>SM</sup>

2014.9



2015.12

QUALCOMM<sup>®</sup>



Electrolux



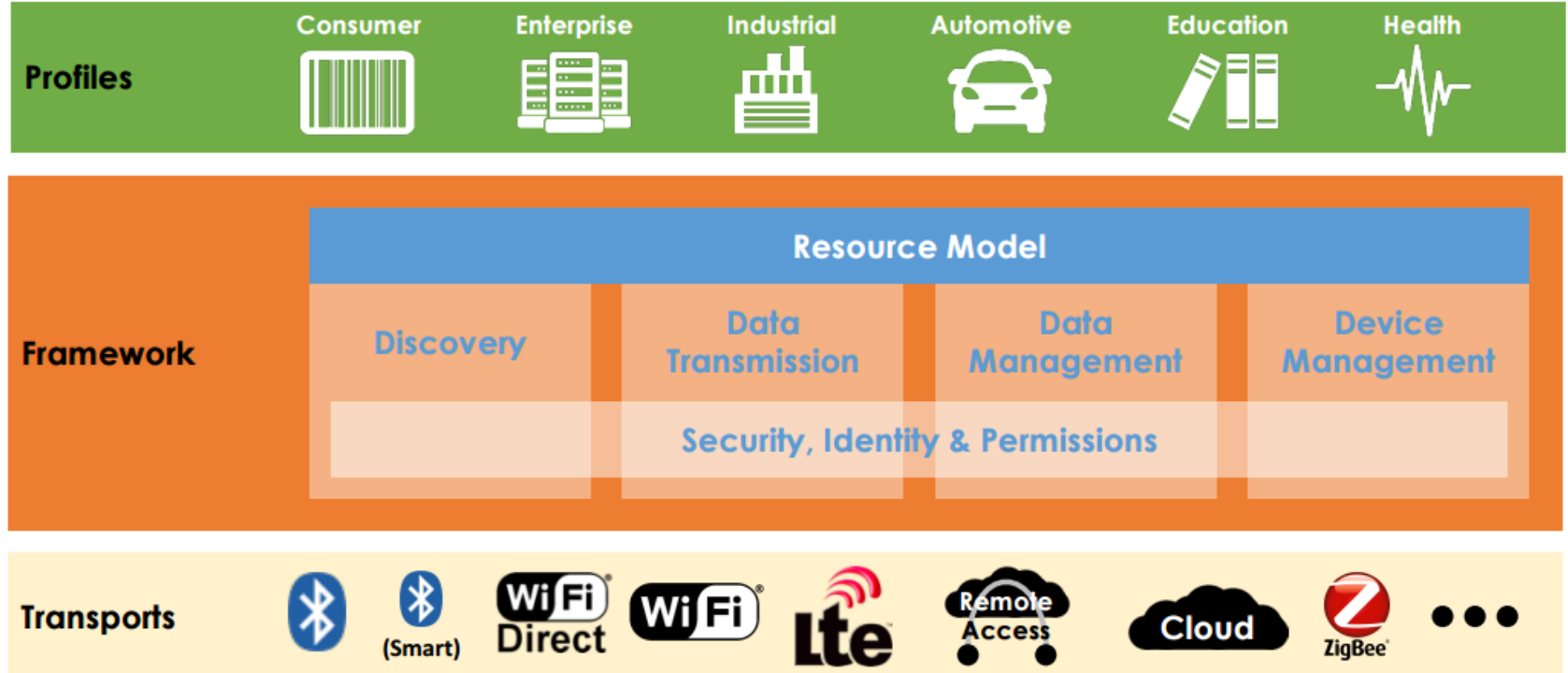
2016.3



ALLSEEN  
ALLIANCE

2016.10

# Overall Architecture



# OCF: How You Can Use

- Join as a OCF member
  - Certify spec compliant apps and devices
  - Use OCF branding
  - Benefit from patent cross-licensing protection
  - Go to [www.openconnectivity.org](http://www.openconnectivity.org) for membership agreement, etc...
- Use the code from IoTivity.org
  - Open to any individual or company
  - Code is available at [IoTivity.org](http://IoTivity.org) under the Apache v2.0 license

④ 마무리 생각들...

# IoT 핵심은 Interoperability

어떻게 수많은 사물들을 연결할 것인가...

→ 인터넷 진화에서의 시사점

→ 연결은 무료, 그 속에서의 비즈니스 발굴

# Open Source Guides

Open source software is made by people just like you.

Learn how to launch and grow your project.

<https://opensource.guide/>



## How to Contribute to Open Source

Want to contribute to open source? A guide to making open source contributions, for first-timers and for veterans.



## Starting an Open Source Project

Learn more about the world of open source and get ready to launch your own project.

오픈소스는 공유, 협력, 문화, 사람, 기술...

» 미국 중심, 기술 주도권을 통한 기업 이익 창출이 목적

@인터넷 시대, 우리는 강국

초고속 인터넷 인프라, 돈은 콘텐츠와 서비스

오픈소스 시대, 우리는 많은 오픈을 통해 강국 도약

실정과 방향성이 명확한 오픈소스화 필수.!!!



**Thank You**