기업에서의 컴플라이언스 리스크 관리와 실무 사례

kt ds 오픈소스SW팀

양한주

2015. 12. 03

kt ds

기업 환경의 변화

전통적인 통신 서비스에서 IT 융합 서비스로 영역 확장

전통적 통신 서비스

IT 융합 서비스

기업 환경의 변화

다양한 서비스의 증가는 수 많은 IT시스템 인프라를 요구함

전화국 교환원의 모습(서울신문)

현재의 데이터 센터
(http://www.madeinalabama.com/assets/2015/06/Google-Data-Center-Okla.jpg)

IT서비스의 증가와 비용에 대한 고민

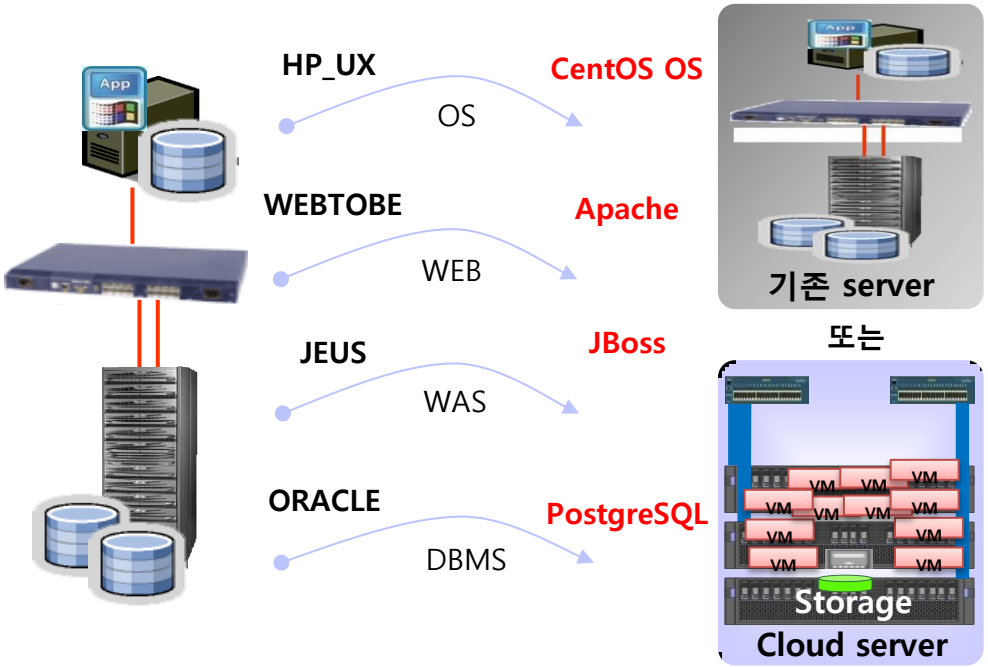
증가하는 IT시스템에 비례하여 SW에 대한 비용도 지속적으로 증가

- 시스템 증설에 따른 **추가 라이선스 구매**
- End of Service Life에 의한 **Upgrade 필요**
- 라이선스 비용 외 **높은 유지보수 비용**
- 솔루션 폐쇄성으로 인한 **벤더 종속성**
- Under License의 **Penalty 부담 및 소송비용**

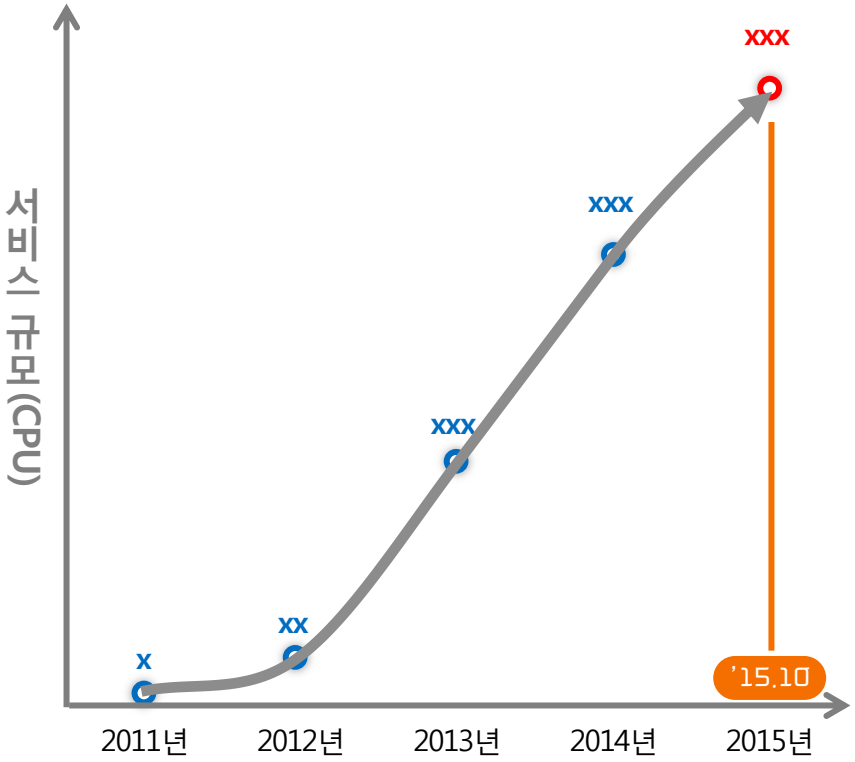
인프라 SW의 오픈소스SW 도입

기업 인프라의 상용 SW를 오픈소스SW 기반으로 전환

상용SW의 전환

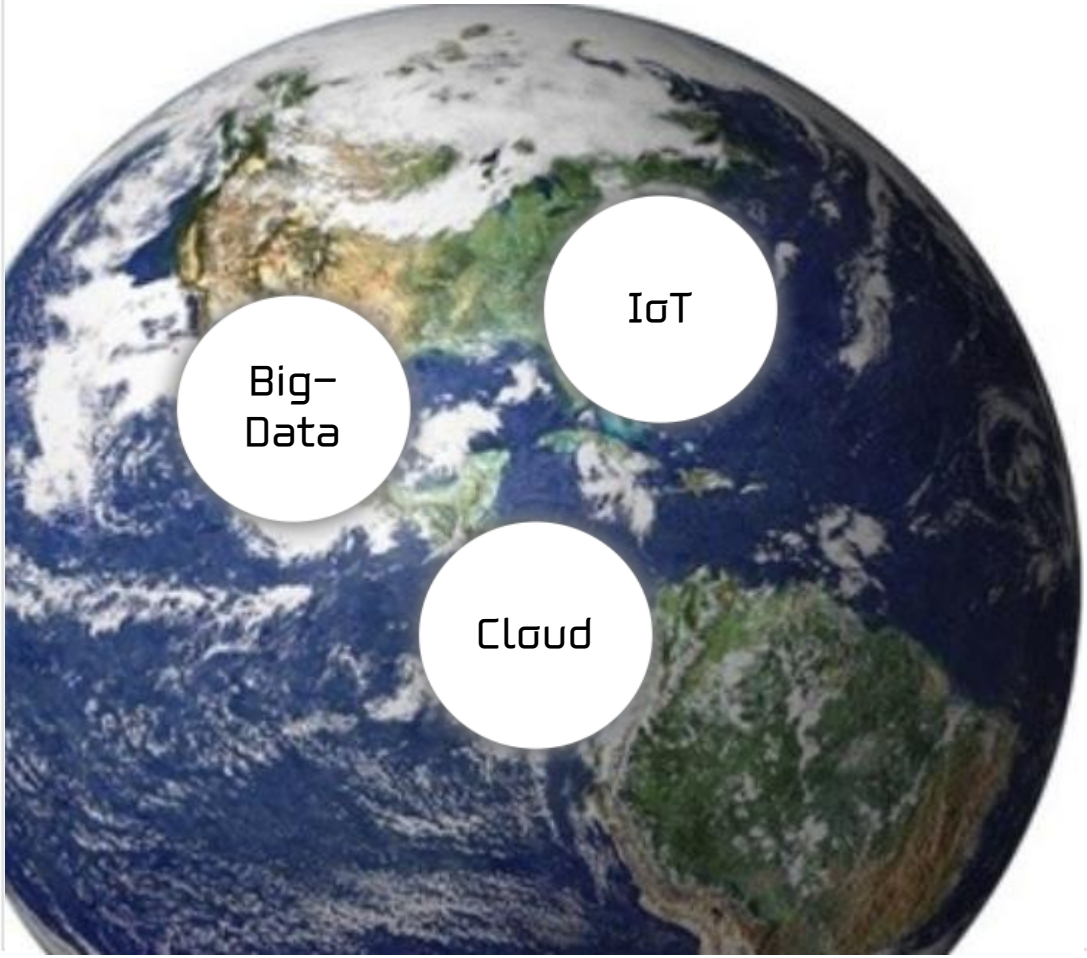


kt 그룹 오픈소스DB 도입 현황



어플리케이션 영역으로의 확장

기술의 발전과 트렌드에 민감한 IT영역의 오픈소스SW에 대한 폭넓은 수용과 지원 요구, 이로 인한 컴플라이언스 대응 필요성 부각



컴플라이언스??

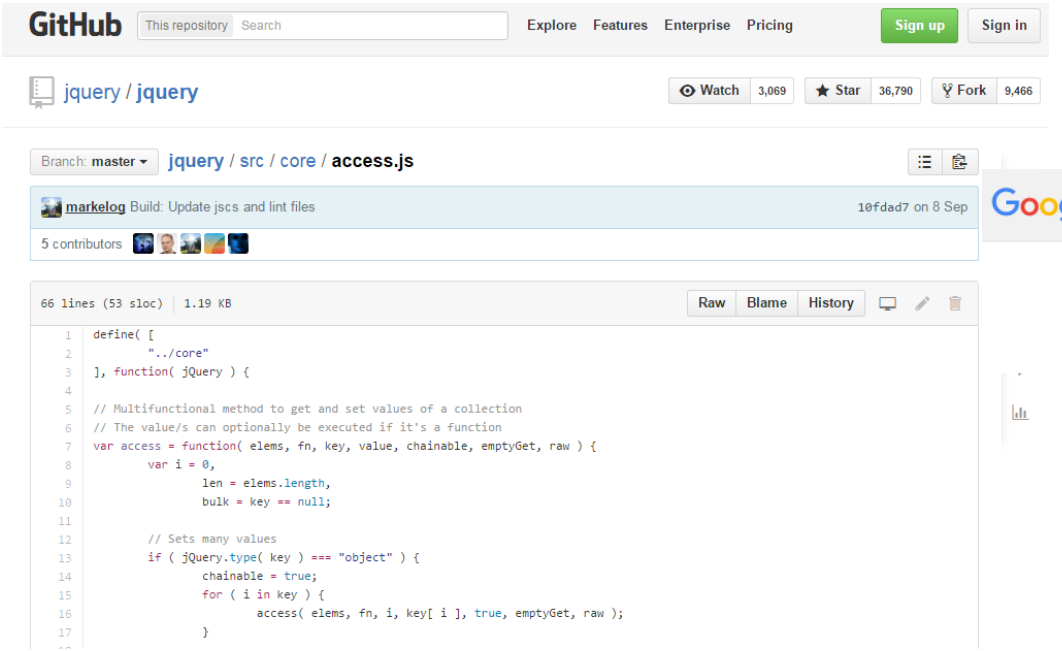
오픈소스SW의 정의

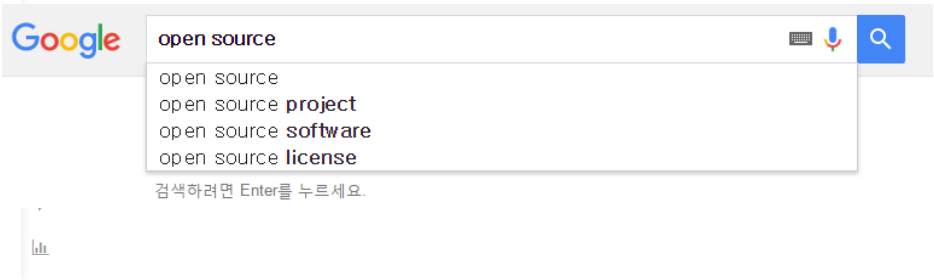
오픈소스SW의 정의는 시각에 따라 다양하게 해석될 수 있음

오픈소스SW는 소스코드가 공개되어 누구나 복제, 설치, 사용, 변경, 재 배포가 가능한 프로그램.

일반적으로 OSI(Open Source Initiative)의 10가지 조건을 충족해야 함

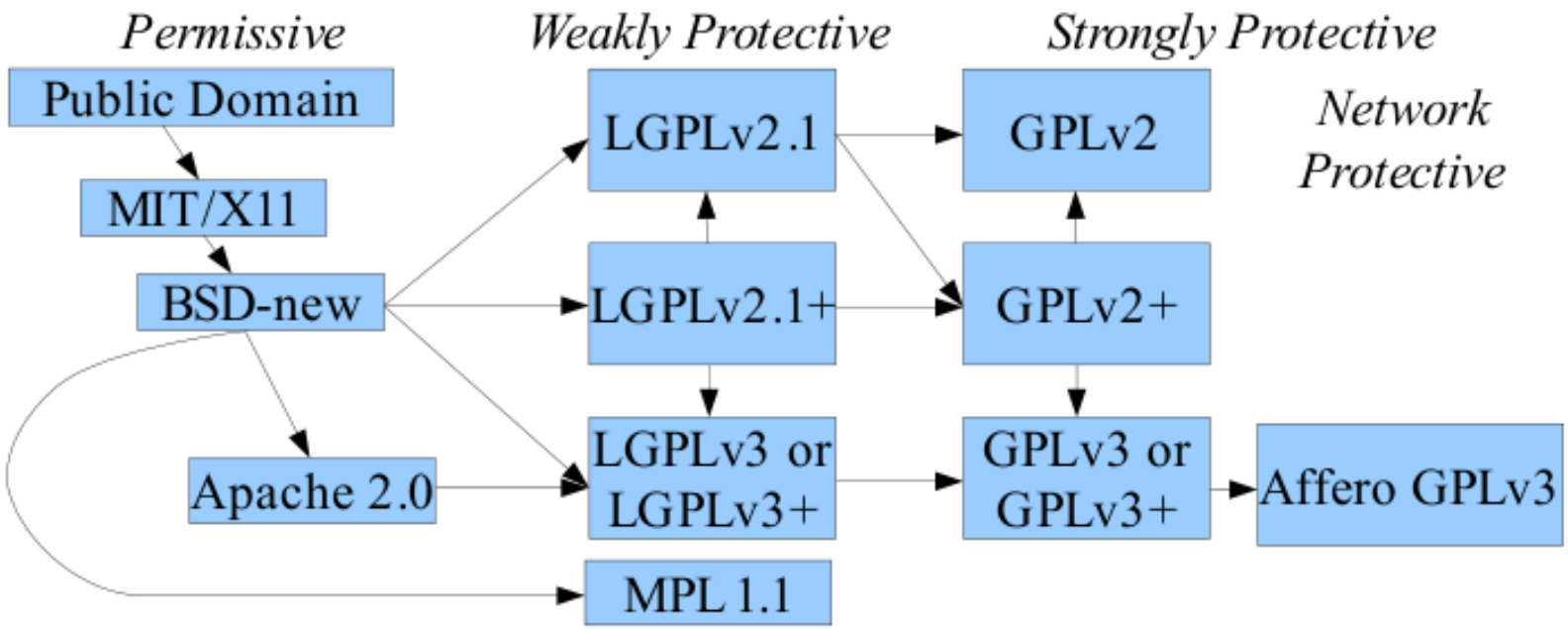
실제 개발자에게는?





오픈소스SW 라이선스

오픈소스SW 또한 저작권이 있으며, 복잡한 라이선스 정책은 많은 이슈를 발생 시킴



ref. www.dwheeler.com/essays/floss-license-slide.pdf

라이선스 위반 유형

대부분의 라이선스 위반 행위는 개발자의 실수나 무지에서 비롯됨

I 라이선스 삭제


```
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 * Dual licensed under the MIT (http://www.opensource.org/licenses/mit-license.php)
 * and GPL (http://www.opensource.org/licenses/gpl-license.php) licenses.
 *
 * Version: 1.3.0
 *
 */
```

II 저작권 정보 변경/삭제

```
/*****************************************************************************
 * *   vWindow version 1.0
 * *
 * * Copyright © 2015    corp. All rights reserved.
 * *
 * * This is a proprietary software of    corp, and you may not use this file except in
 * * compliance with license agreement with    corp. Any redistribution or use of this
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 * * intended publication of such software.
 *****************************************************************************/
```
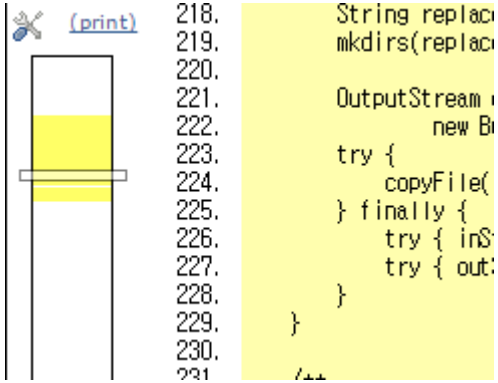
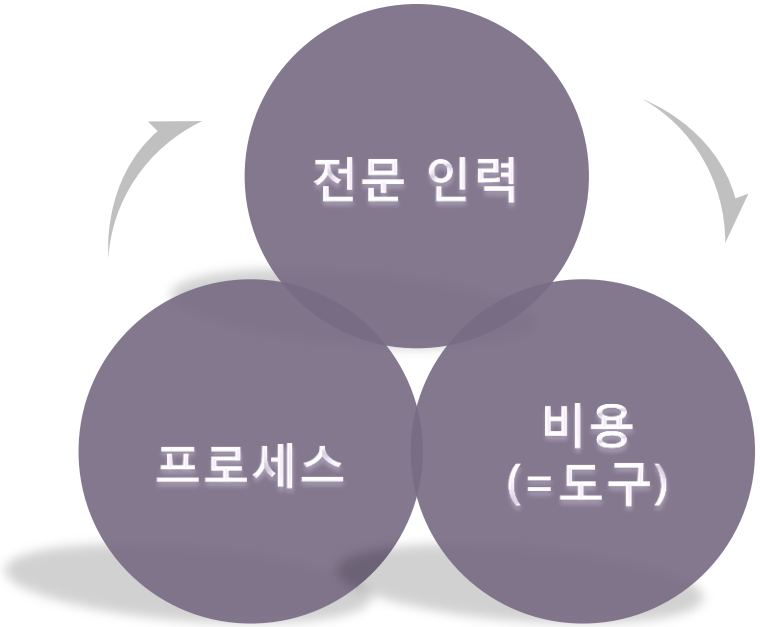

III 코드조각 임의 복제



오픈소스SW 컴플라이언스

What do we need ?



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오픈소스SW 컴플라이언스

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Version 2, June 1991

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단계별 검증 체계 구축

전사 라이선스 검증 및 관리를 위한 단계적 계획 추진

I 검증 체계 구축

1단계[도입]

- 검증 도구를 활용하여 오픈소스SW 라이선스 검증 프로세스 도입
- 오픈소스SW사용 현황 분석

II 관리 체계 구축

2단계[확산]

- 전사 및 협력사에 대한 관리정책 수립
- 표준화된 프로세스 설계를 통해 전사 관리 체계 구축

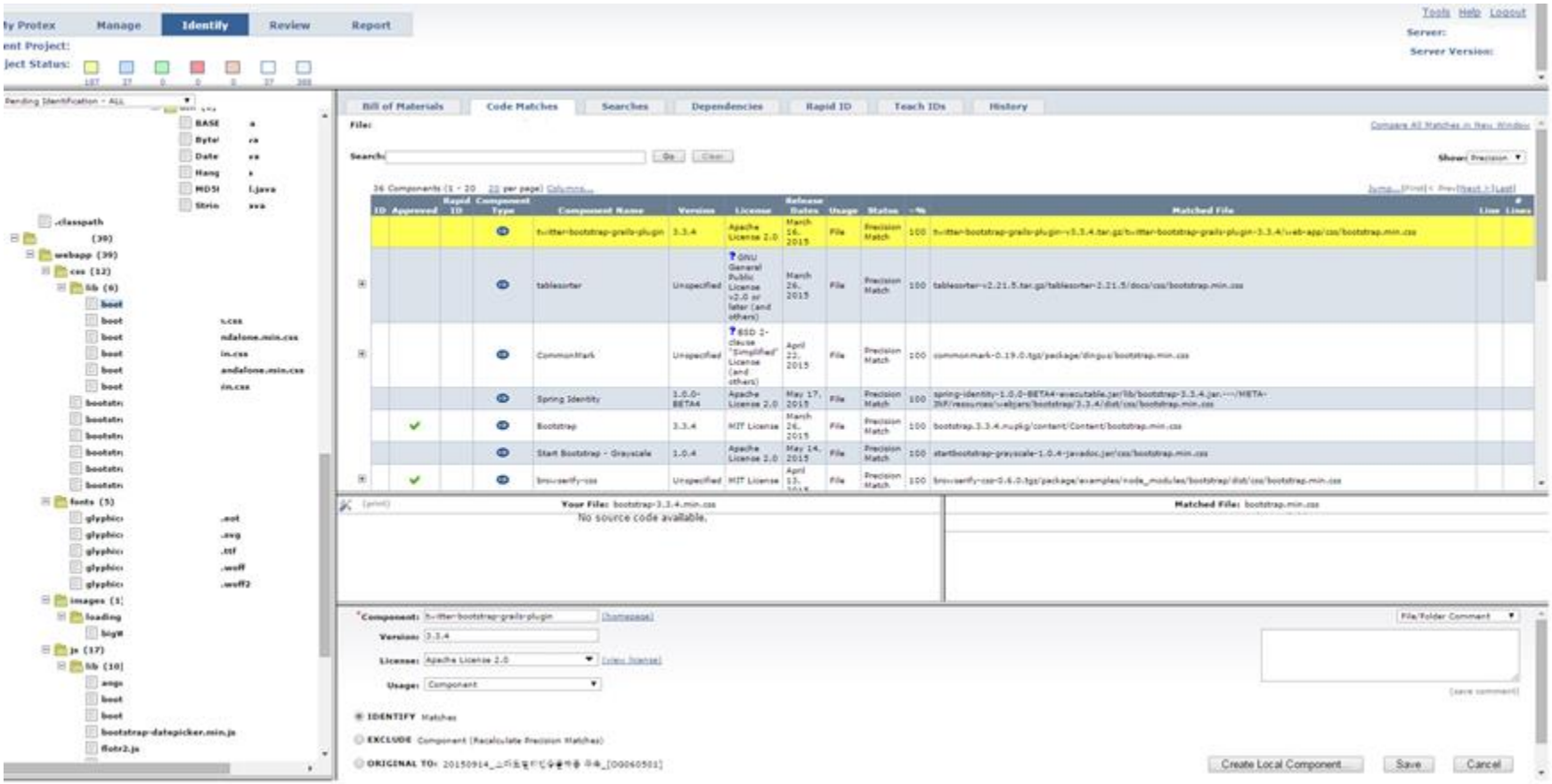
III 자산화 체계 구축

3단계[정착]

- 검증 및 승인된 오픈소스SW의 전사 통합 저장소 운영
- 그룹사 오픈소스SW 통합 관리 체계 운영

검증 도구의 활용

검증 도구가 모든 것을 해결해 주지는 않는다!



오픈소스SW의 범위와 판단

어떠한 기준으로 판단할 것인가?

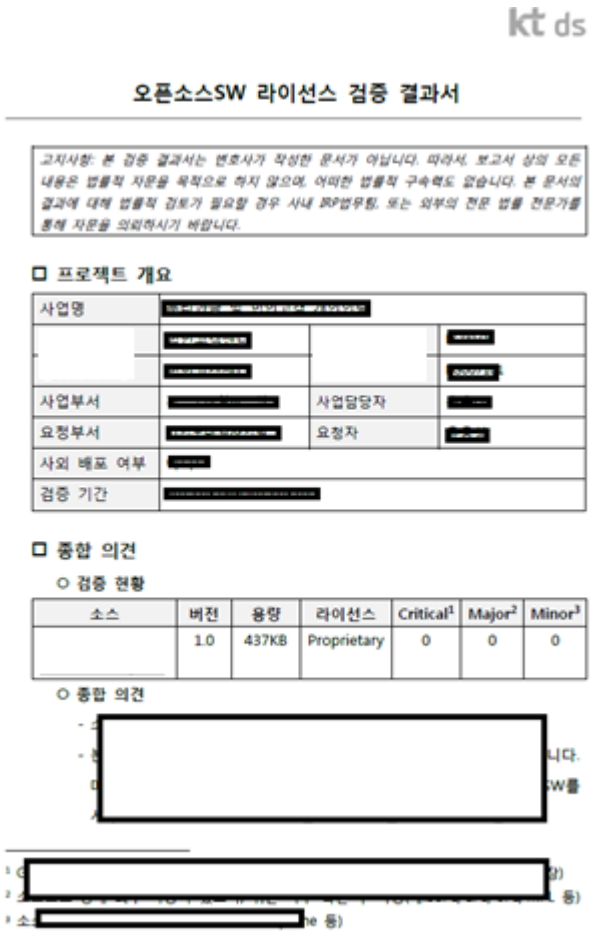
(print)

```java
/**
 * Usage:
 * String crypto = Crypto.encrypt(masterpassword, cleartext)
 * String cleartext = Crypto.decrypt(masterpassword, crypto)
 *
 */
public class Crypto {

    private final static String HEX = "0123456789ABCDEF";

    public static String encrypt(String seed, String cleartext) throws Exception {
        byte[] rawKey = getRawKey(seed.getBytes());
        byte[] result = encrypt(rawKey, cleartext.getBytes());
        return toHex(result);
    }

    public static String decrypt(String seed, String encrypted) throws Exception {
        byte[] rawKey = getRawKey(seed.getBytes());
        byte[] enc = toByte(encrypted);
        byte[] result = decrypt(rawKey, enc);
        return new String(result);
    }

    /*private static byte[] getRawKey(byte[] seed) throws Exception {
        KeyGenerator kgen = KeyGenerator.getInstance("AES");
        SecureRandom sr = SecureRandom.getInstance("SHA1PRNG");
        sr.setSeed(seed);
        kgen.init(128, sr); // 192 and 256 bits may not be available
        SecretKey skey = kgen.generateKey();
        byte[] raw = skey.getEncoded();
        return raw;
    }*/

    private static byte[] getRawKey(byte[] seed) throws Exception {
        KeyGenerator kgen = KeyGenerator.getInstance("AES"); // , "SC");
        SecureRandom sr = null;
        if (android.os.Build.VERSION.SDK_INT >=  17) {    //JELLY_BEAN_MR1 = 17
            sr = SecureRandom.getInstance("SHA1PRNG", "Crypto");
        } else {
            sr = SecureRandom.getInstance("SHA1PRNG");
        }
        sr.setSeed(seed);
        try {
            kgen.init(128, sr);
            // kgen.init(128, sr);
        } catch (Exception e) {
            // Log.w(LOG, "This device doesn't suppor 256bits, trying 192bits.");
            try {
```

```java
 * String crypto = SimpleCrypto.encrypt(masterpassword, cleartext)
 * ...
 * String cleartext = SimpleCrypto.decrypt(masterpassword, crypto)
 * </pre>
 * @author ferenc.hechler
 */
public class SimpleCrypto
{
    private final static String HEX = "0123456789ABCDEF";

    public static String encrypt(String seed, String cleartext) throws Exception
    {
        byte[] rawKey = getRawKey(seed.getBytes());
        byte[] result = encrypt(rawKey, cleartext.getBytes());
        return toHex(result);
    }

    public static String decrypt(String seed, String encrypted) throws Exception
    {
        if(!TextUtils.isEmpty(encrypted))
        {
            byte[] rawKey = getRawKey(seed.getBytes());
            byte[] enc = toByte(encrypted);
            byte[] result = decrypt(rawKey, enc);

            return new String(result);
        }
        else
            return "";
    }

    private static byte[] getRawKey(byte[] seed) throws Exception
    {
        KeyGenerator kgen = KeyGenerator.getInstance("AES");
        SecureRandom sr = SecureRandom.getInstance("SHA1PRNG");
        sr.setSeed(seed);
        kgen.init(128, sr); // 192 and 256 bits may not be available
        SecretKey skey = kgen.generateKey();
        byte[] raw = skey.getEncoded();
        return raw;
    }

    private static byte[] encrypt(byte[] raw, byte[] clear) throws Exception
    {
        SecretKeySpec skeySpec = new SecretKeySpec(raw, "AES");
        Cipher cipher = Cipher.getInstance("AES");
        cipher.init(Cipher.ENCRYPT_MODE, skeySpec);
        byte[] encrypted = cipher.doFinal(clear);
```

검증 결과에 대한 조치

요청자가 명확한 조치 사항을 확인할 수 있도록 요약된 라이선스 검증 결과서 제공



kt ds

오픈소스SW 라이선스 검증 결과서

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사업명	[redacted]		
	[redacted]		[redacted]
	[redacted]		[redacted]
사업부서	[redacted]	사업담당자	[redacted]
요청부서	[redacted]	요청자	[redacted]
사외 배포 여부	[redacted]		
검증 기간	[redacted]		

□ 종합 의견

○ 검증 현황

소스	버전	용량	라이선스	Critical[1]	Major[2]	Minor[3]
	1.0	437KB	Proprietary	0	0	0

○ 종합 의견

- [redacted]

- 라이선스의 구분
  - Critical, Major, Minor 3등급
- 구체적인 조치 사항 기술
  - 소스코드 공개 의무, 라이선스 고지 사항
- 기타 이슈 사항
  - 소스코드의 보안 취약 사항 등

라이선스 고지

복잡한 라이선스 고지문 생성

daumkakao 라이선스 고지문 생성기

daumkakao / legal-notice

Watch 4

Notification template for used list of open source libraries and components

5 commits | 2 branches | 0 releases | 1 contributor

Branch: master | legal-notice / +

Edit 3rd party libraries table

hooney authored on 5 Jun — latest commit 3d7e8aa2fa

ServiceName-PlatformName	first commit	3 months ago
lib	first commit	3 months ago
license	first commit	3 months ago
CONTRIBUTING.md	first commit	3 months ago
LICENSE.txt	first commit	3 months ago
README.md	Edit 3rd party libraries table	3 months ago

README.md

Legal Notice Template

This is notification template for used list of open source libraries and components.

github.com/daumkakao/legal-notice

OSS Notice | ServiceName for PlatformName Create .html

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- *SDK Support Libraries*
- *Support Library (v4)*

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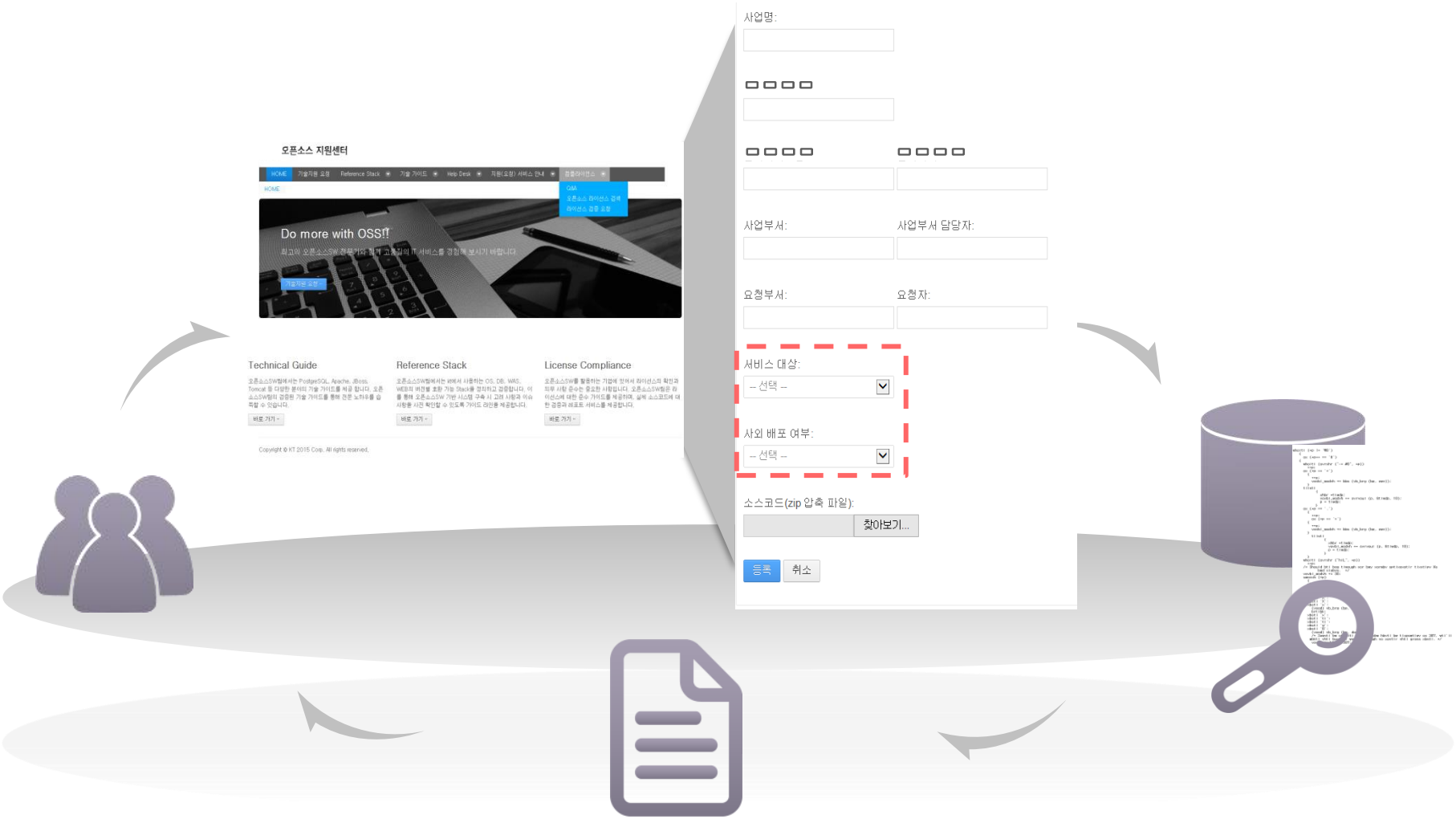
효율적인 커뮤니케이션과 관리의 필요성



내부적인 고민과 판단

책 사주세요. 라이선스

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내부적인 고민과 판단

기준과 판단에 대한 고민

- 라이선스 충돌에 대한 이슈
- 일반적인 소스코드에 대한 판단과 처리 문제
- 시간과 비용에 대한 고민
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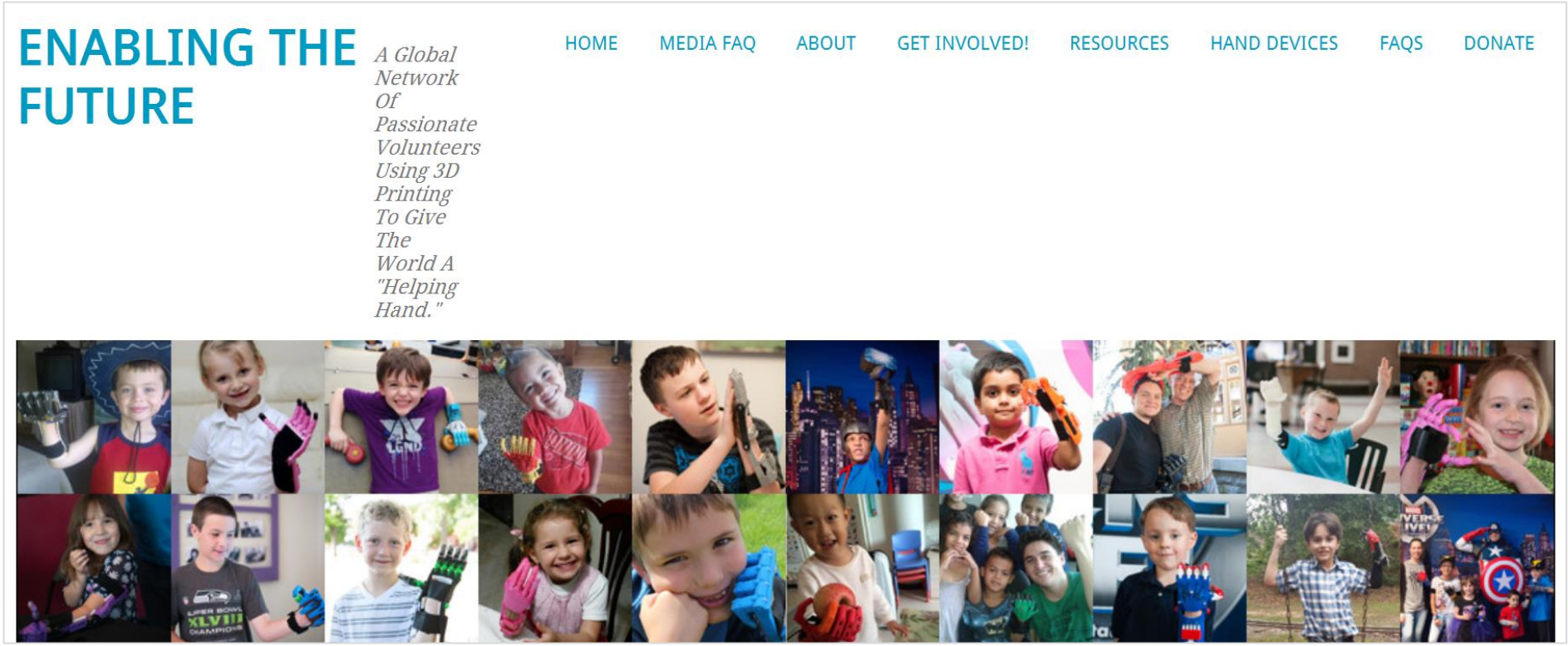

Q & A

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Thank you

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