

# LG Smart TV SDK 활용법

# Contents

1. Using LG Smart TV SDK
2. Testing & Publishing
3. UX Guideline

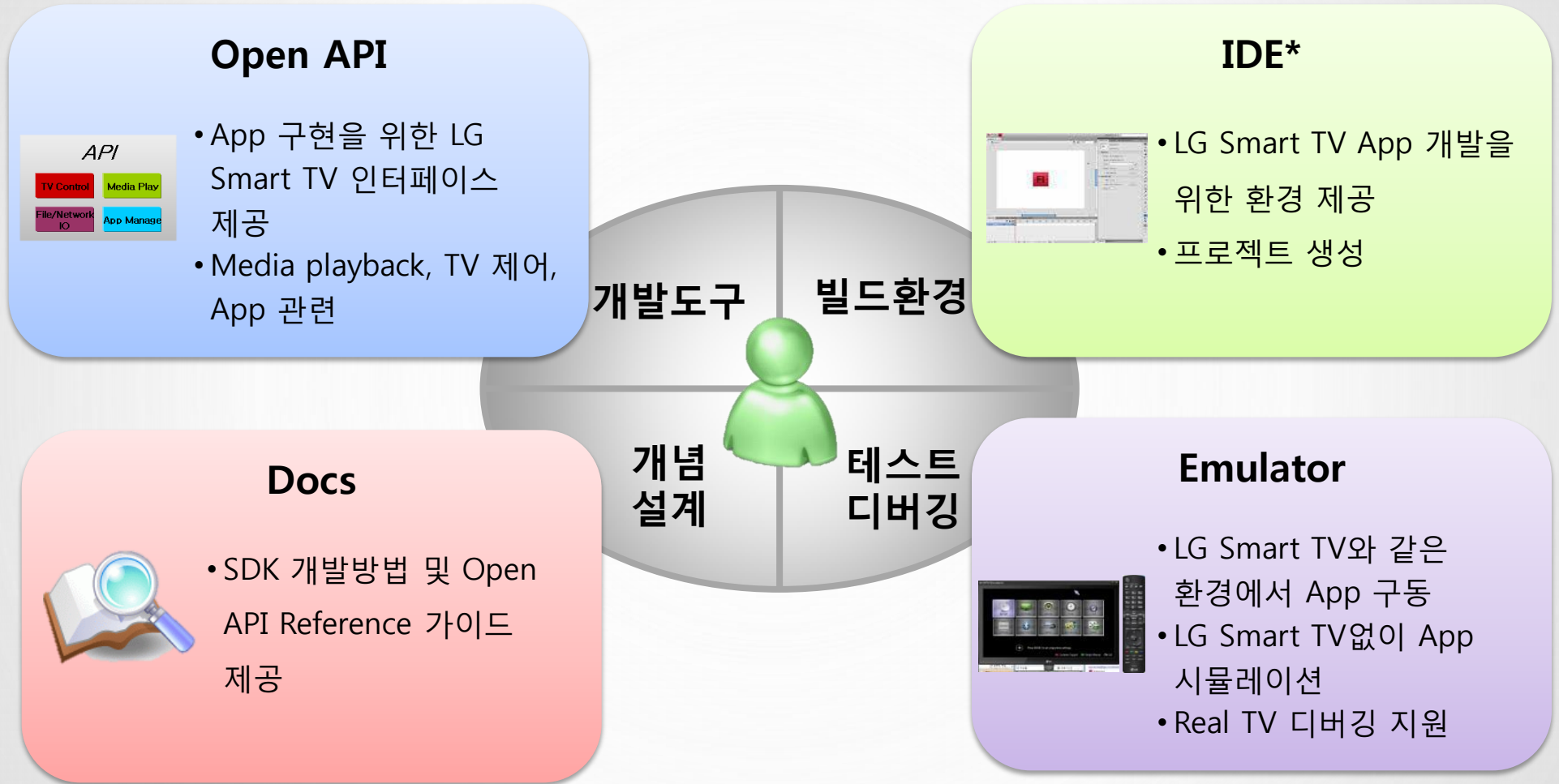


---

# Using LG Smart TV SDK

---

# LG Smart TV SDK 구성



SDK\* 다운로드: LG Developer (<http://developer.lge.com>)

# SDK 설치 환경

HW Category	상세 사항
Processor	Pentium 4 2.0 GHz or higher
RAM	1 GB or higher
Operating system	<ul style="list-style-type: none"><li>- Windows XP Service Pack 2 or higher</li><li>Windows 7 (32-bit/64-bit)</li><li>- Mac OS X : snow leopard or higher (32-bit / 64-bit)</li><li>- Ubuntu 10.04, 12.04 (32-bit / 64-bit)</li></ul>
Screen resolution	1280 x 1024 or higher
Video memory	256 MB or higher

SW Category	상세 사항
LG SDK	Oracle VirtualBox (for 2012, 2013 Emulator)
	Safari (for IDE)
	Microsoft DirectX (for 2011 Emulator)

# VirtualBox for LG Emulator

VirtualBox 다운로드

(<http://www.oracle.com/technetwork/server-storage/virtualbox/downloads/index.html>)

Oracle Technology Network > Server and Storage Systems > Oracle VM VirtualBox > Downloads

Engineered Systems

Ksplice

Oracle Linux

Oracle Optimized Solutions

Oracle VM

Oracle VM VirtualBox

SAN Storage

Secure Global Desktop

Server Management Tools

Solaris 10

Solaris 11

Solaris Cluster

Solaris Studio

SPARC Servers

StorageTek Tape Storage

Sun Blade 6000 Modular Systems

Sun Desktops & Peripherals

Sun Flash Storage

Sun NAS Storage

Sun Netra Carrier-Grade Systems

Networking and Data Center Fabric Products

Sun Storage Software

Sun Ray Products

Sun x86 Servers

Virtual Desktop Infrastructure

OverviewDownloadsDocumentationCommunitySupportLearn More

Oracle VM VirtualBox

The latest release is version 4.2.12.

On this page you can download:

▪ Oracle VM VirtualBox

▪ Oracle VM VirtualBox Extension Pack

▪ Oracle VM VirtualBox Source Code

▪ Oracle VM VirtualBox Pre-built Appliances

Oracle VM VirtualBox

Freely available for Windows, Mac OS X, Linux and Solaris x-86 platforms:

Platform	File
Windows (32-bit/64-bit)	VirtualBox-4.2.12-84980-Win.exe
Mac OS X	VirtualBox-4.2.12-84980-OSX.dmg
Solaris 10 5/08 and later (32-bit/64-bit)	VirtualBox-4.2.12-84980-SunOS.tar.gz
Linux 32-bit Platforms	
Ubuntu 12.10 (Quantal Quetzal)	virtualbox-4.2_4.2.12-84980-Ubuntu~quantal_i386.deb
Ubuntu 12.04 (Precise Pangolin)	virtualbox-4.2_4.2.12-84980-Ubuntu~precise_i386.deb



LG Smart TV SDK(2.4 이하) 를 설치하기 전, 먼저 반드시 VirtualBox가 설치되어 있어야 함















## LG Smart TV SDK 다운로드

- Android
- Java ME

### SDK

#### LG Smart TV SDK V3.0.1

LG Smart TV SDK 3.0.1 provides tools that help developers to develop the applications for 2013 LG Smart TV platforms including existing platforms.

Last Updated	23-APR-2013	Views	11393
Platform	Windows, Linux, Mac	Version	V3.0.1
Download	<div>  <a href="#">Linux32 LG Smart TV SDK Installer.part1.rar (503,316 KB)</a>   <a href="#">Linux32 LG Smart TV SDK Installer.part2.rar (476,902 KB)</a>   <a href="#">Linux64 LG Smart TV SDK Installer.part1.rar (503,316 KB)</a>   <a href="#">Linux64 LG Smart TV SDK Installer.part2.rar (470,884 KB)</a>   <a href="#">Mac32 LG Smart TV SDK Installer.app.part1.rar (480,000 KB)</a>   <a href="#">Mac32 LG Smart TV SDK Installer.app.part2.rar (323,564 KB)</a>   <a href="#">Mac64 LG Smart TV SDK Installer.app.part1.rar (503,316 KB)</a>   <a href="#">Mac64 LG Smart TV SDK Installer.app.part2.rar (299,489 KB)</a>   <a href="#">Win32 LG Smart TV SDK Installer.part1.rar (480,000 KB)</a>   <a href="#">Win32 LG Smart TV SDK Installer.part2.rar (480,000 KB)</a>   <a href="#">Win32 LG Smart TV SDK Installer.part3.rar (205,709 KB)</a>   <a href="#">Win64 LG Smart TV SDK Installer.part1.rar (503,316 KB)</a>   <a href="#">Win64 LG Smart TV SDK Installer.part2.rar (503,316 KB)</a>   <a href="#">Linux32 LG Smart TV SDK Installer.part2.rar (476,902 KB)</a> </div>		



# SDK 설치 과정

- ① LG Developer (<http://developer.lge.com>) 회원 가입 후 로그인  
> Resource Center > Smart TV > SDK & Tools > SDK 메뉴 클릭
- ② 파일 다운로드 클릭 > 약관 동의 체크 후 Download 버튼
- ③ PC에 파일 다운로드 진행
- ④ 압축 파일 해제 후 SDK 설치 시작

※ Linux와 Mac 의 경우 Installation Guide 참고



## • Installation Guide

✓ Resource Center > Library > Developing > Using SDK > "Installation Guide" 참조

### SDK

**LG Smart TV SDK V3.0.0**  
LG Smart TV SDK 3.0 provides tools that help de  
existing platforms.

Last Updated	08-FEB-2013
Platform	Windows, Linux, Mac
Download	<div><div>Linux32-LG Smart</div><div>Linux32-LG Smart</div><div>Linux64-LG Smart</div><div>Linux64-LG Smart</div><div>Mac32 LG Smart</div><div>Mac32 LG Smart</div><div>Mac64 LG Smart</div><div>Mac64 LG Smart</div><div>Win32-LG Smart TV SDK Installer.part1.rar (419,430 KB)</div><div>Win32-LG Smart TV SDK Installer.part2.rar (419,430 KB)</div><div>Win32-LG Smart TV SDK Installer.part3.rar (326,991 KB)</div><div>Win64 LG Smart TV SDK Installer.part1.rar (419,430 KB)</div><div>Win64 LG Smart TV SDK Installer.part2.rar (419,430 KB)</div><div>Win64 LG Smart TV SDK Installer.part3.rar (363,682 KB)</div></div>

#### SDK Download

Close X

**Terms of the SDK License Agreement**

Before downloading SDK, agree to the terms and conditions below. Read through it carefully and thoroughly in order to properly use the SDK download service.

LG Smart TV System Application Software Development Kit License Agreement

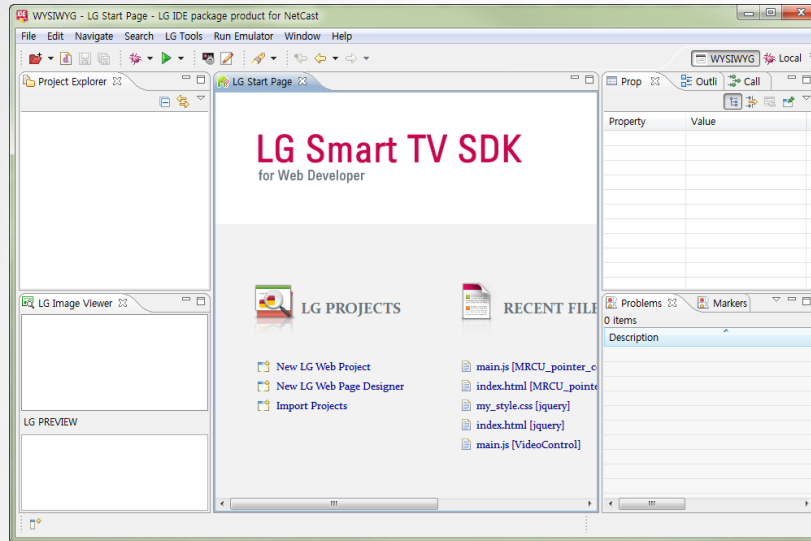
IMPORTANT: PLEASE READ THE TERMS AND CONDITIONS OF THIS END USER LICENSE AGREEMENT ("LICENSE AGREEMENT") CAREFULLY BEFORE DOWNLOADING, INSTALLING AND/OR USING THE LG SMART TV SYSTEM APPLICATION SOFTWARE DEVELOPMENT KIT, INCLUDING ANY UPDATES THERETO AND ANY RELATED

☐ I agree to the terms of the SDK License Agreement.

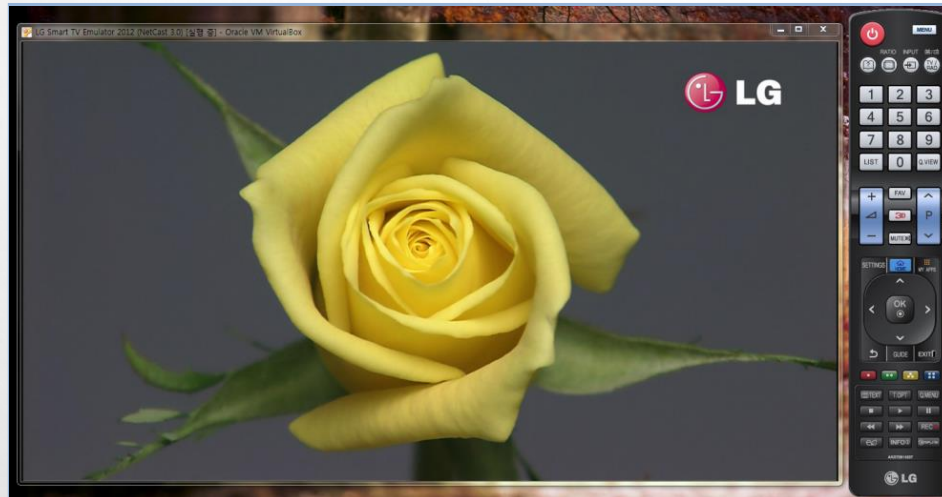
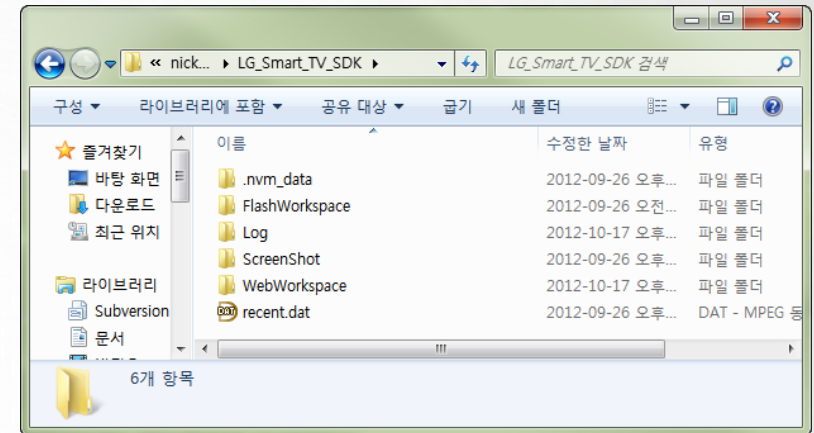
Download



# IDE & Emulator

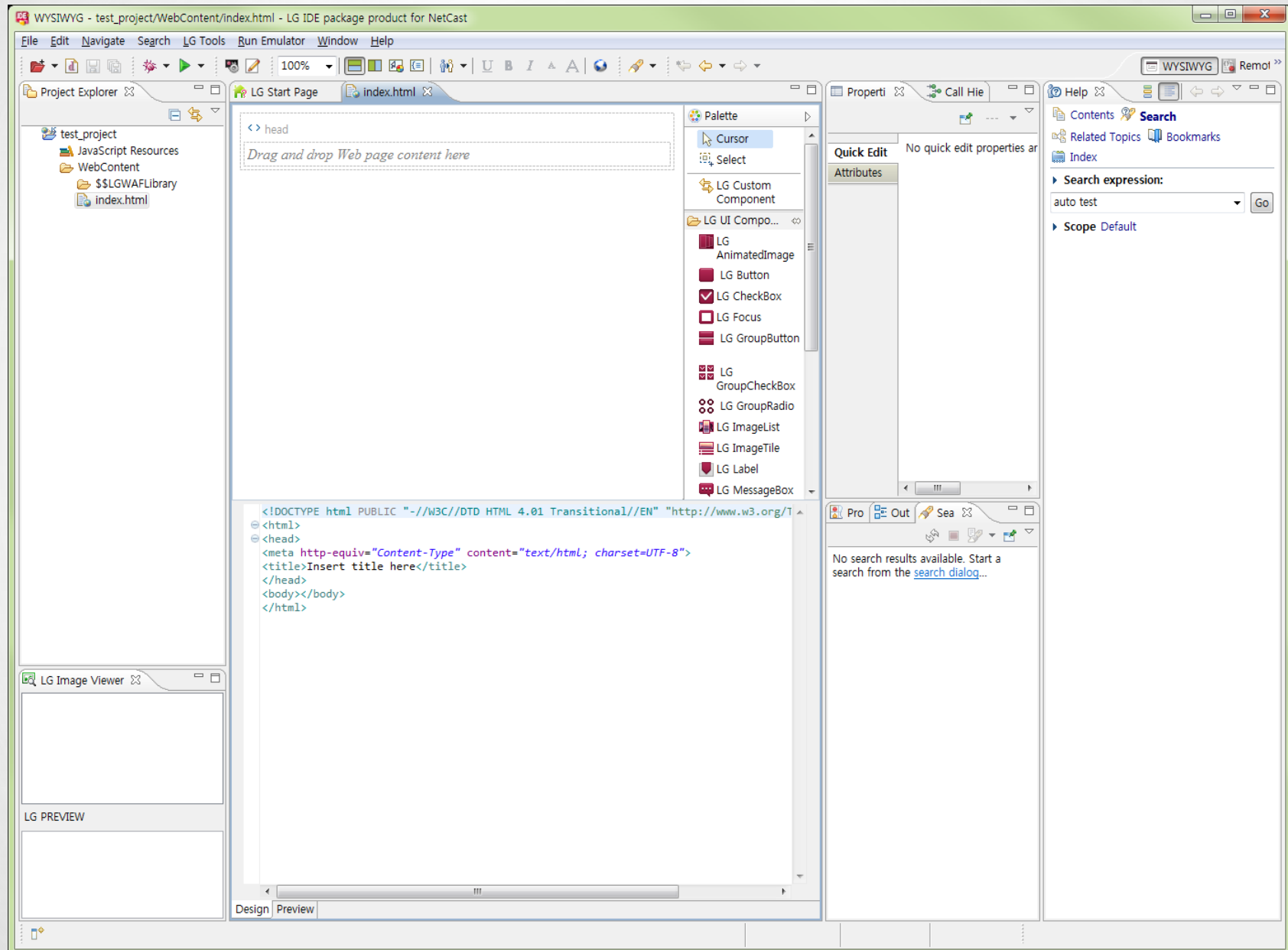


Linux와 Mac 의 경우 Working Directory는 다름



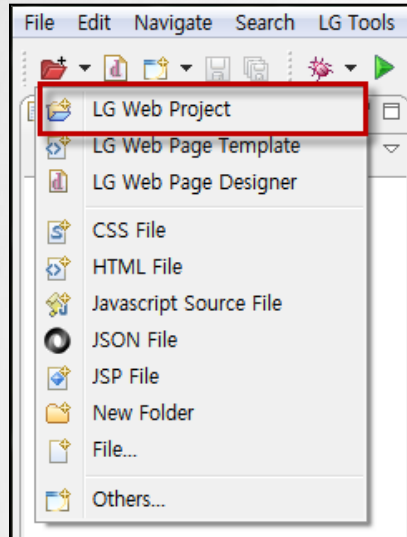
- **Emulator User Guide**
  - ✓ Resource Center > Library > Testing > Testing App on Emulator 참조

# IDE 실행 및 구조

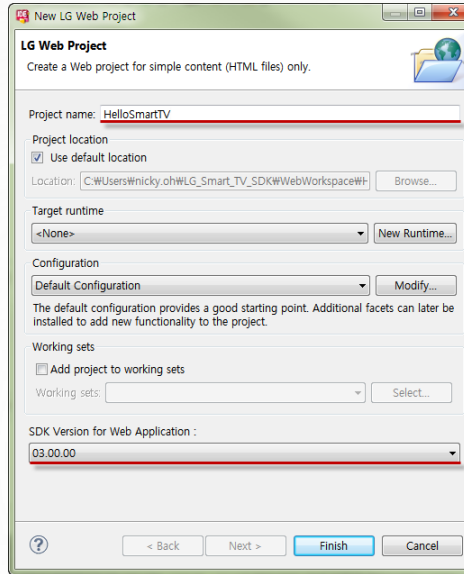


# 프로젝트 생성 및 동작

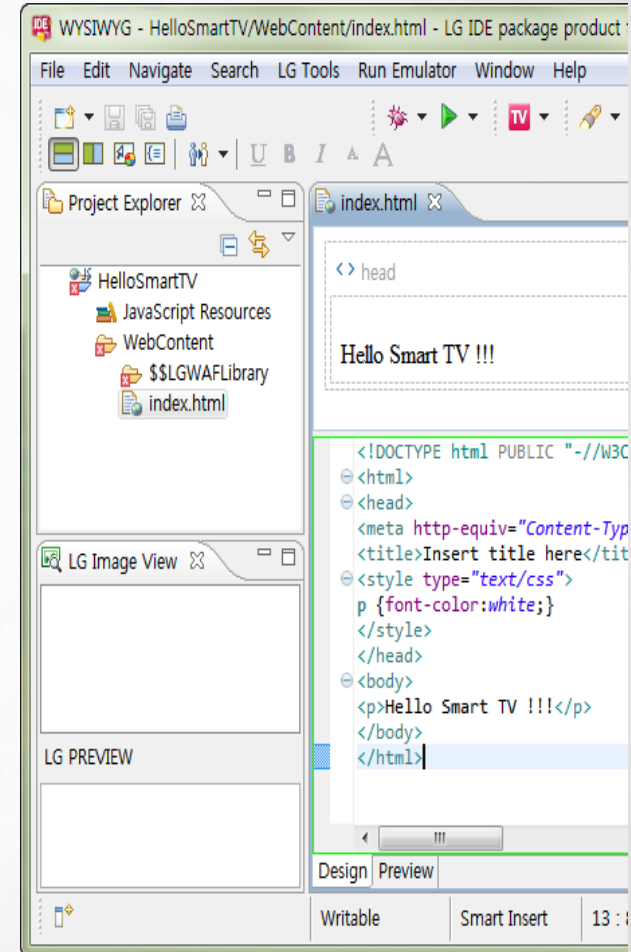
## Eclipse 메뉴 - [File > LG Web Project]



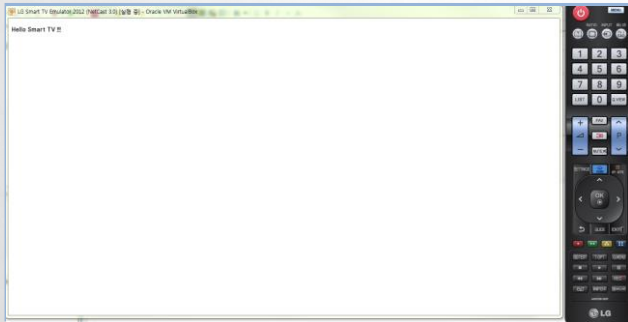
## Step 1. LG 웹 프로젝트 생성



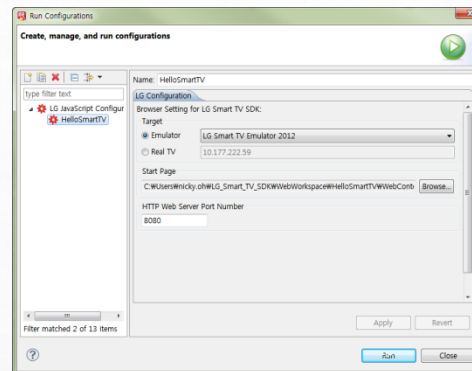
## Step 2. Application 개발 Web Content 폴더에서 Web Application 개발



## Step 4. Emulator에서 동작 테스트



## Step 3. Run LG 프로젝트



---

# Testing & Publishing

---

# 샘플 App

## | Web App 샘플

Web App Samples (10)	API Samples (17)
Music	Voice Recognition API App
Photo	Window Media Player API App #1
Video	Key Repeat App
Virtual Keyboard Library	Key Up/Down App
Advertisement Sample	Window Media Player API App #2
Broadcast Sample	Window Media Player API App #3
Tic Tac Toe Sample	Subtitle API App
HTML5VideoPlayer Sample	NetCastReturn/Back/Exit API App
ImageViewer Sample	NetCastPageLoadingIcon API App
MediaPluginVideoPlayer Sample	NetCastOutOfMemory Event App
	ASX Play App
	CE-HTML App
	Multi Audio App
	Full Screen App
	3D Video App
	...



샘플 및 튜토리얼 문서

Resource Center > Smart TV > SDK & Tools > Tools & Samples

LoginRegister

Search

LG Developer

Getting StartedResource CenterDistributionCommunitySupport

Tools & Samples

Utilize the tools and sample codes for your development.

Search

Sort ByLatestView Description

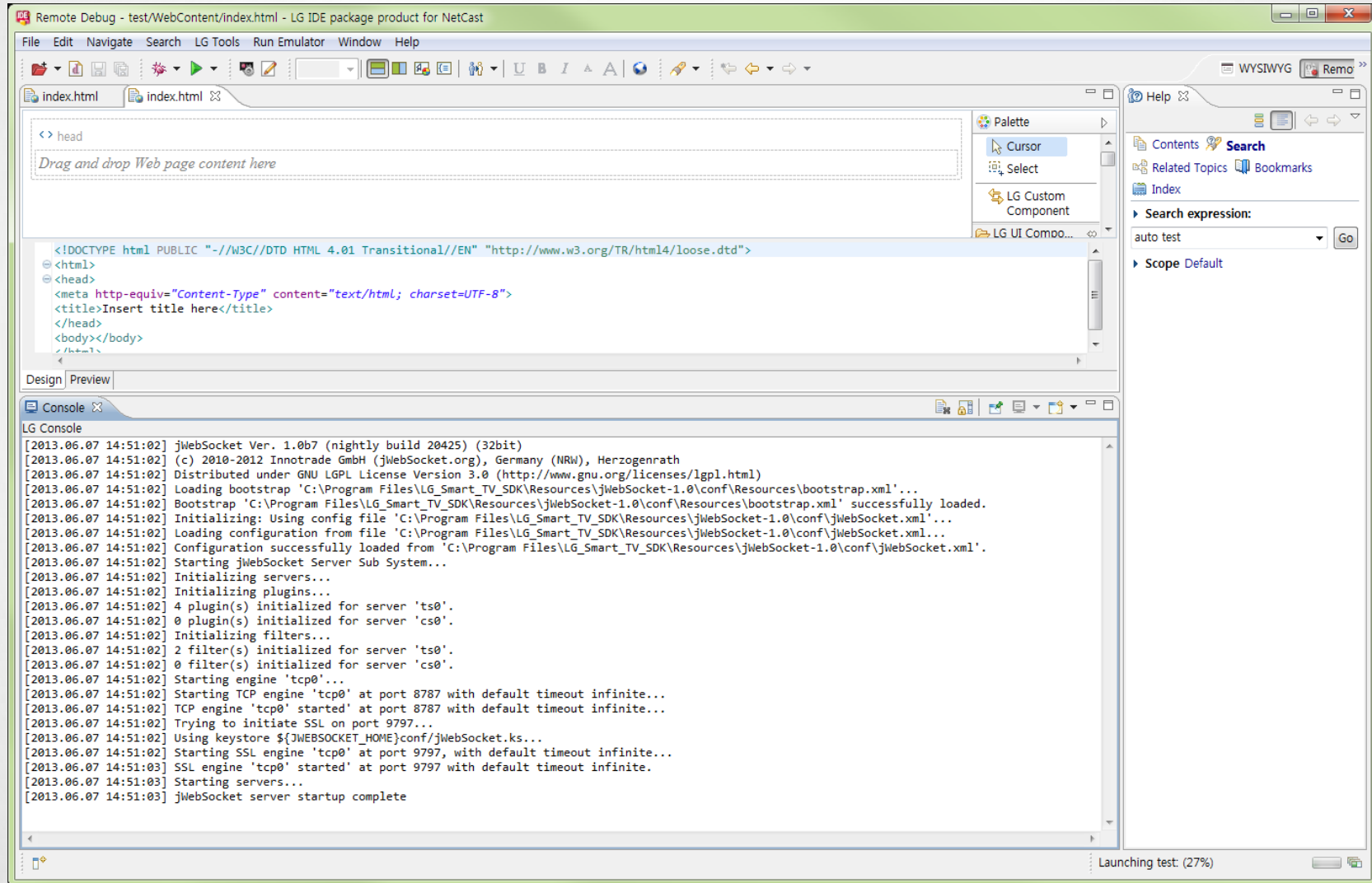
Web_Virtual Keyboard Library	25-FEB-2013
Web_Quick Start Sample App & Framework (ImageViewer)	11-JAN-2013
Web_Quick Start Sample App & Framework (HTML5VideoPlayer)	11-JAN-2013
Web_Quick Start Sample App & Framework (MediaPluginVideoPlayer)	11-JAN-2013
Web_Quick Start Sample App (Broadcast)	02-JAN-2013
Web_Quick Start Sample App (Tic Tac Toe)	02-JAN-2013
Web_LG API Sample Applications	18-OCT-2012
Web_Integrating Advertisement into Web Application	31-JAN-2012
Web_Video Sample Code	27-JUL-2011
Web_Photo Sample Code	26-JUL-2011

1 2 >>



# 디버깅 - Emulator

## 디버그 실행



\* 웹 인스펙터 더 알아보기 : <https://developers.google.com/chrome-developer-tools/docs/overview>



# 디버깅 - Real TV

## 디버그 실행

The screenshot displays the LG IDE Remote Web Inspector interface. The top menu bar includes File, Edit, Navigate, Search, LG Tools, Run Emulator, Window, and Help. The main workspace is divided into several panels:

- Elements:** Shows the DOM tree with the following structure:

```
<!DOCTYPE html> PUBLIC "-//W3C//DTD XHTML 1.1//EN" "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">
  <head></head>
  <body class="subguide" onload=...>
    <div id="mainContain"></div>
    <!-- 개발자:등록 안내 Layer -->
    <form id="layerForm" name="layerForm" method="post">
      <div id="registerGuideView"></div>
    </form>
    <script type="text/javascript" src="/dev/common/js/s_code.js"></script>
    <script language="JavaScript" type="text/javascript"></script>
    <script language="JavaScript" type="text/javascript"></script>
  </body>
```
- Computed Style:** Shows the computed style for the selected element, including Styles, Metrics, Properties, and Event Listeners.
- Console:** Displays the LG Console logs, showing the jWebSocket server startup complete and subsequent client connections on ports 60327 and 60544.
- Search:** Includes a search bar and a search expression field.

The bottom status bar indicates "Launching test2: (27%)".

# Digital Signing Tool

## 1. Issuing Certificate

- LG Developer의 ID와 Password 사용하여 Certificate 발행
- Certificate Password는 7-12자의 알파벳 또는 숫자

## 2. Selecting Certificate and application

- Certificate 선택
- Application Root 디렉터리 선택
- Uncheck "Developer Test with USB"

## 3. Signing Application

- LDS 포맷의 Signing 된 파일의 저장위치 지정



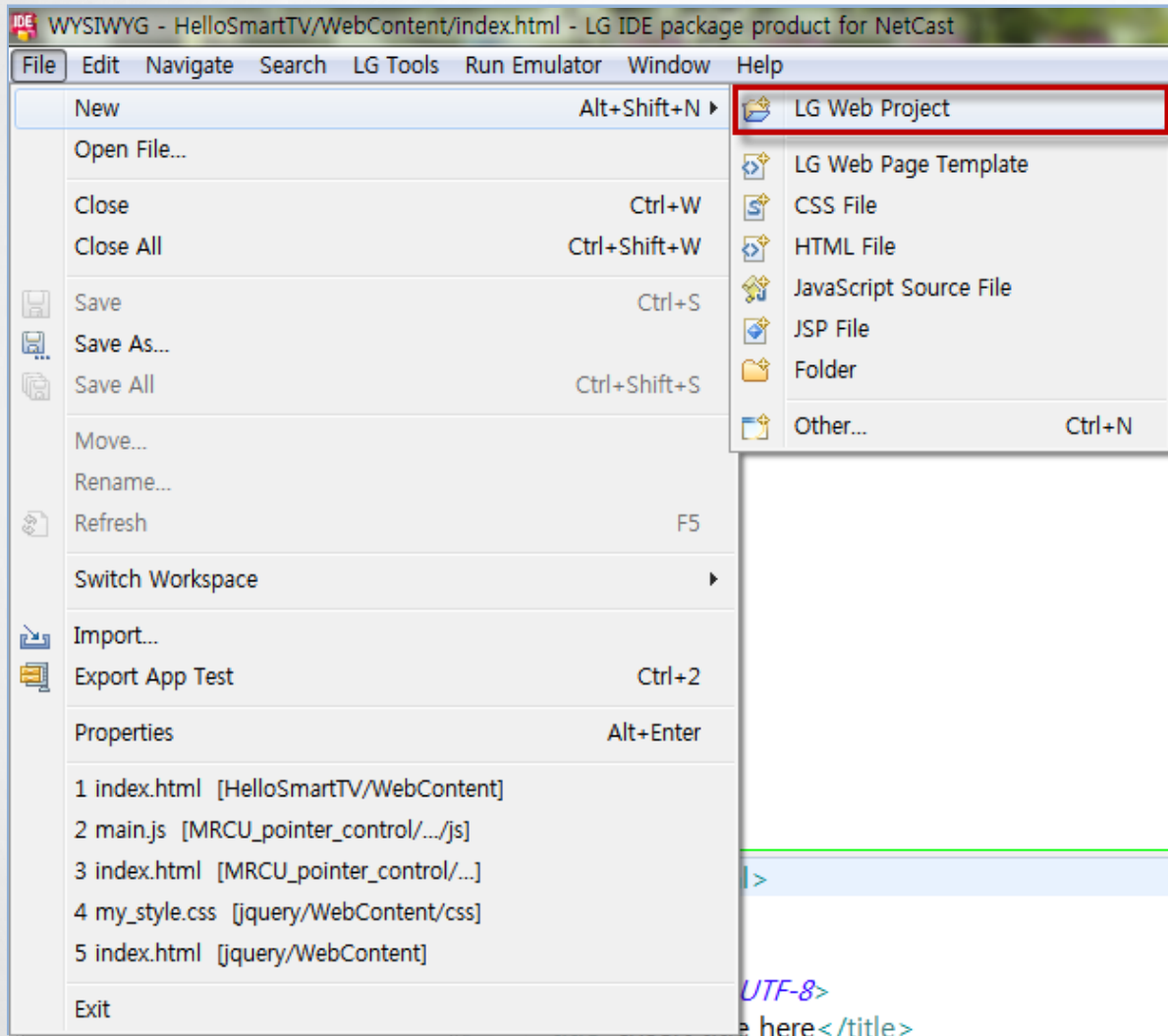
• **Digital Signing Tool 가이드**  
Resource Center > Library >  
Publishing > Packaging App >  
using LG Digital Signing Tool 참  
조

The screenshot shows the 'LG SDK Digital Signing Tool' window. It has a title bar with the LG logo and 'Developer Lounge'. The main area contains several sections: 'What is Certificate?' with an 'Issue Certificate' button; 'Certificate' section with a text field showing a certificate path and a browse button; 'Select root directory' section with a text field showing a directory path and a browse button; 'Directory Info' section with a table listing files and folders, a 'Path' field, and a 'Total' size; a checkbox for 'Developer Test with USB' and a 'Reset' button; and a 'Save To' section with a text field for the save location and an 'OK' button.

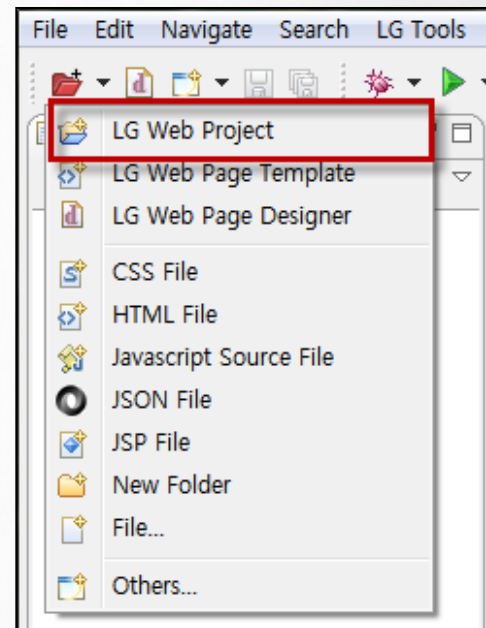
Name	Size	Type
.settings		Folder
WebContent		Folder
.classpath	1 KB	
.project	1 KB	

# Hello Smart TV 프로젝트

## 새로운 LG Web Project 생성



or



# Hello Smart TV 프로젝트

## Web 프로젝트 설정

**New LG Web Project**

Create a Web project for simple content (HTML files) only.

Project name: HelloSmartTV

Project location

☒ Use default location

Location: C:\Users\nicky.oh\LG\_Smart\_TV\_SDK\WebWorkspace\H- Browse...

Target runtime

<None> New Runtime...

Configuration

Default Configuration Modify...

The default configuration provides a good starting point. Additional facets can later be installed to add new functionality to the project.

Working sets

☐ Add project to working sets

Working sets: Select...

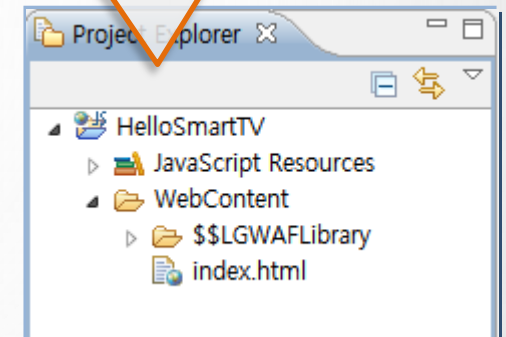
SDK Version for Web Application :

03.00.00

< Back Next > Finish Cancel

Project Name

Add a new Project





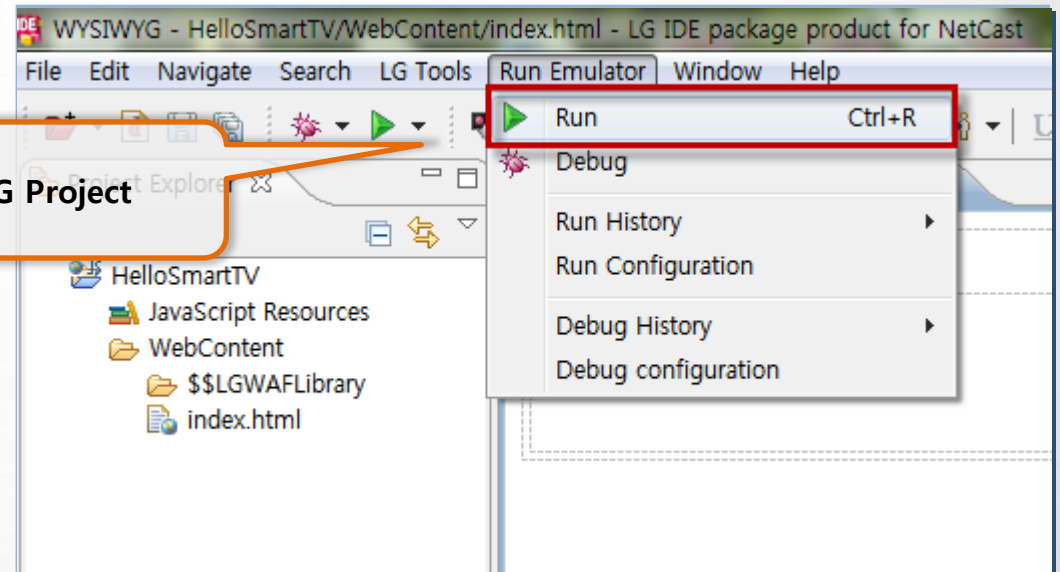
# Hello World 프로젝트

## App 제작 및 구동

```
<!DOCTYPE html>
<html>
<head>
<meta charset=EUC-KR>
<title>Insert title here</title>
<style type="text/css">
body {background-color:white;}
body p {font-family:LG Display; font-size : 30px; text-align:center;}
</style>
</head>
<body>
<p>Hello Smart TV !!!</p>
</body>
</html>
```

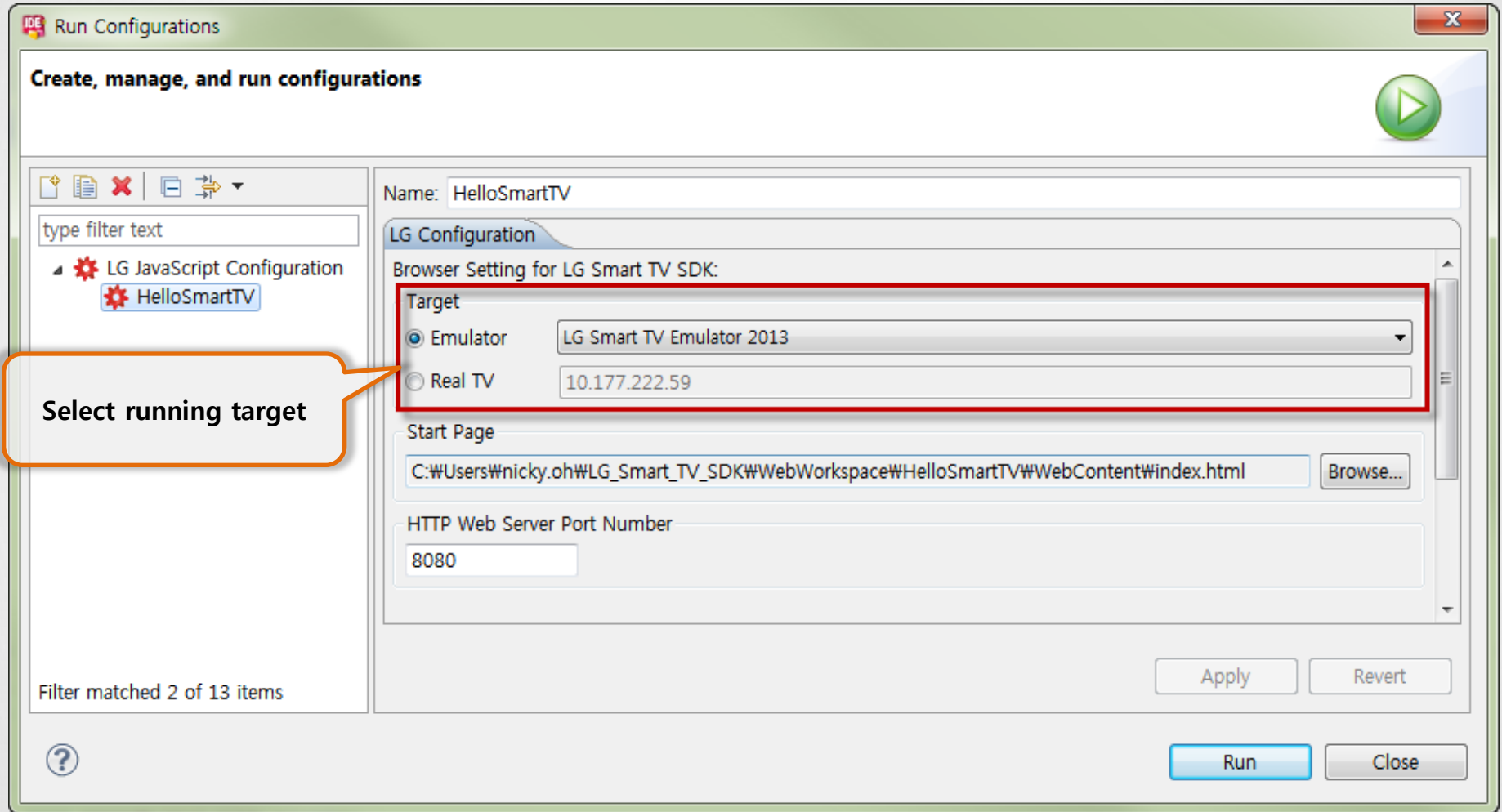
Make your Code

Run LG Project



# Hello World 프로젝트

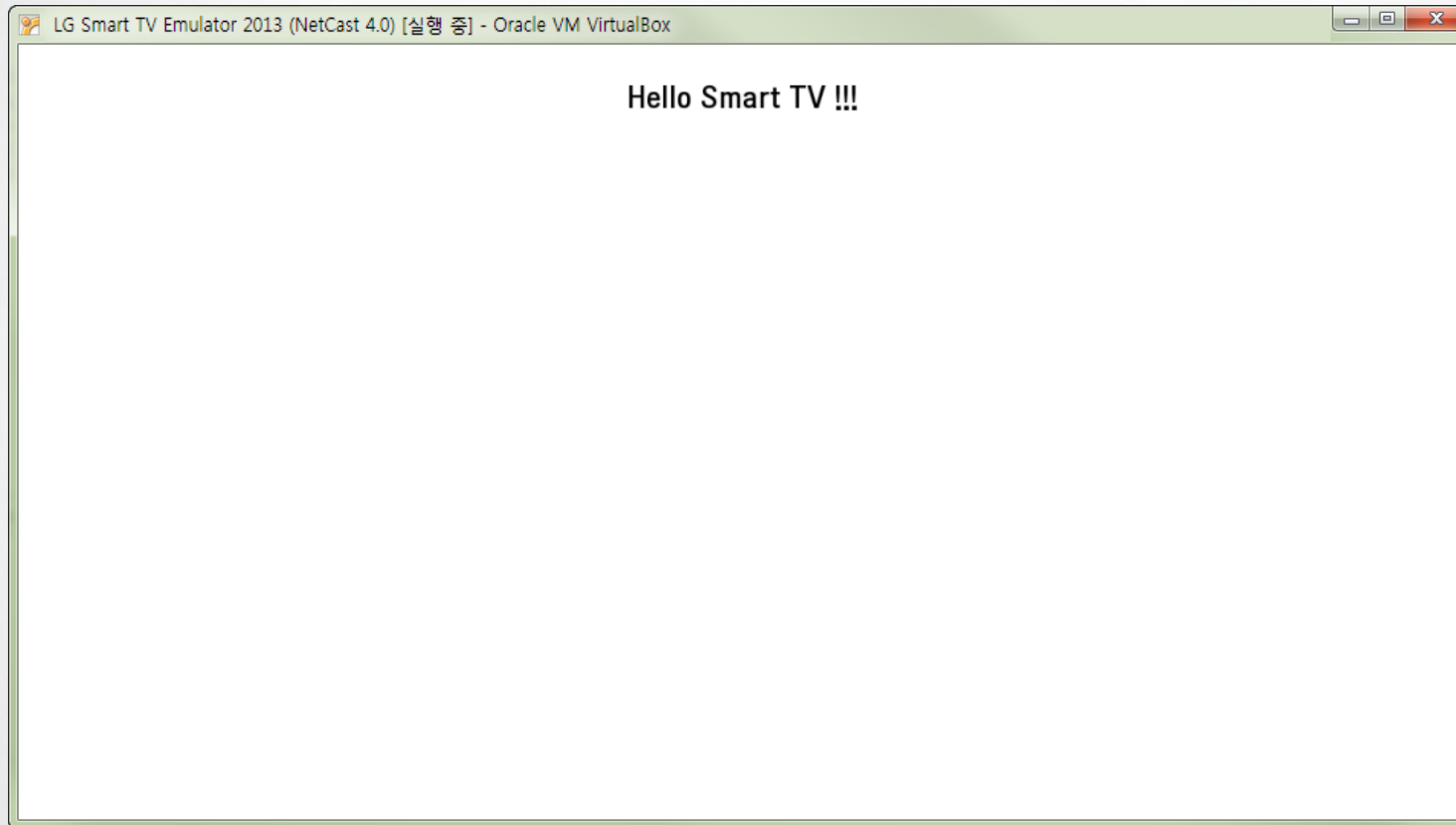
## 실행





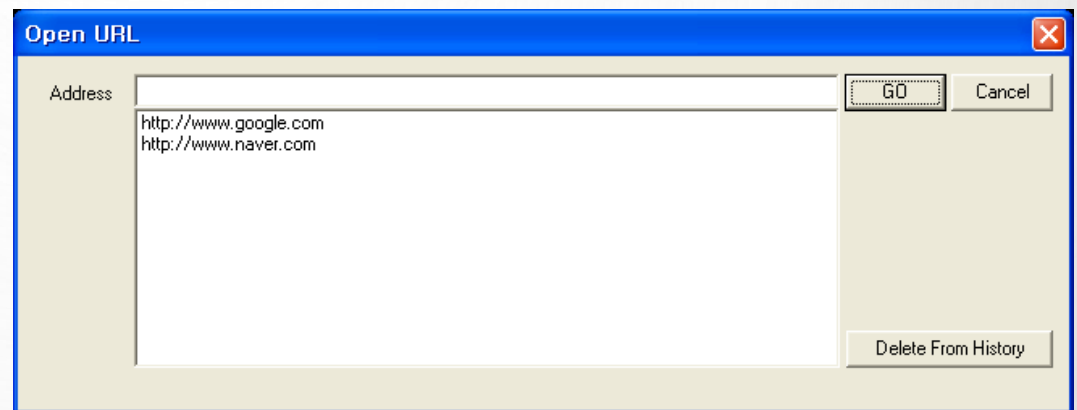
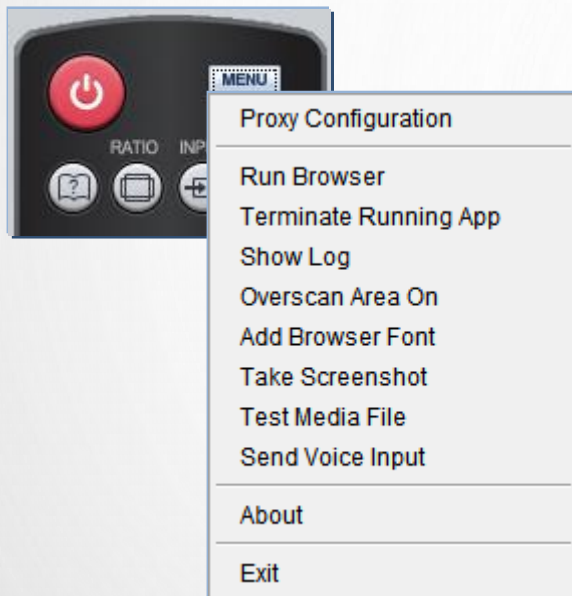
# Hello World 프로젝트

## Emulator 결과 확인



# App 테스트 환경 – Emulator

Emulator (NetCast 2.0, NetCast 3.0, NetCast 4.0)



Emulator 사용에 관한 설명은 Resource Center > Library > Testing > Testing App on Emulator 참조

# App 테스트 환경 - USB

## USB App 테스트 과정



Step 1. IDE에서 "Export App Test" 실행하여 ZIP파일 생성



Step 2. [App Test] 에 해당 파일 및 대표아이콘 Upload



Step 3. [App Test] 페이지에서 DRM 작업화된 파일을  
다운받아, USB로 이동



Step 4. LG Smart TV 로그인



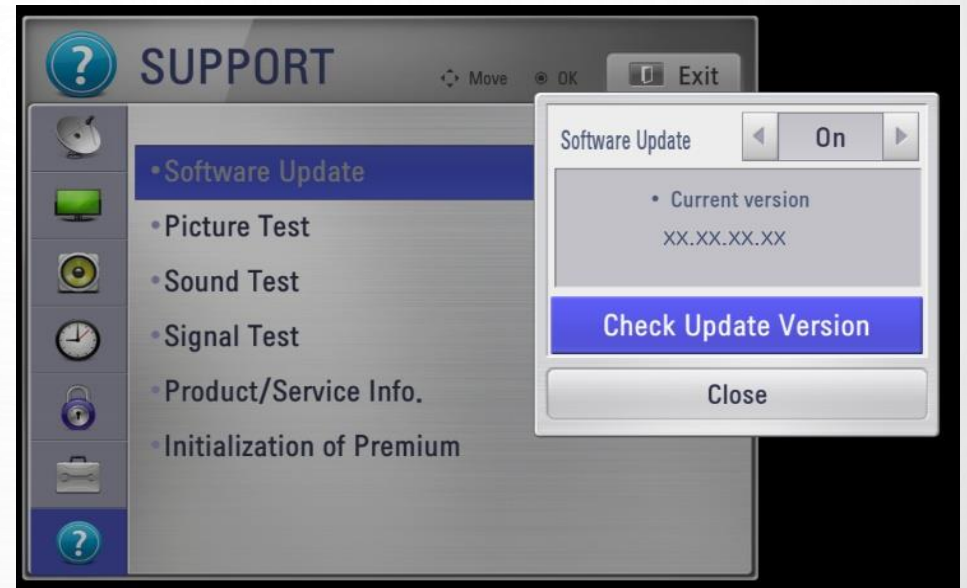
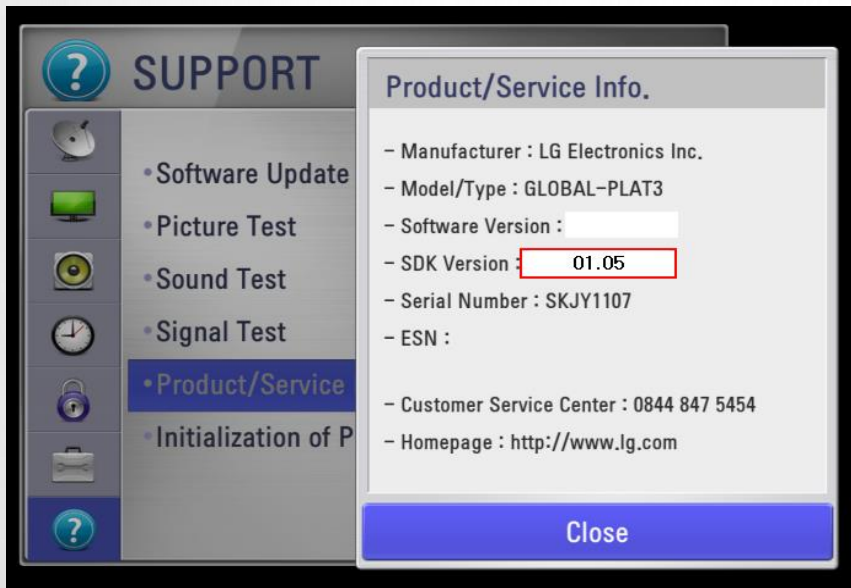
Step 5. LG Smart TV에 USB 연결하여, My App에서 실행



# App 테스트 환경 - USB 이용

## LG Smart TV 의 SDK 버전 확인

- LG Smart TV의 SDK 버전이 1.5 버전 이상이어야 함
- SDK 버전이 1.5 미만일 경우 소프트웨어 업데이트 필요



# App 테스트 환경 - USB 이용

## LG Developer의 App Test 페이지에서 App 업로드

- LG Developer (<http://developer.lge.com>)에 로그인 후  
[Resource Center] > [Smart TV] > [Test] > [App Test] 메뉴 클릭

Resource Center

Smart TV

Home > Resource Center > Smart TV

Smart TV

Mobile

- Android
- Java ME

Overview

SDK & Tools

Documentation

Test

Forums

FAQ

App Test | Virtual Test (Korea only)

### App Test

You can register your own application for testing purposes only from here. Once upload is done, you can download to USB in order to test it from device with DRM protected.

Please note that the App Test can be carried out in SDK V1.5.0 version or above.  
Currently, App Test is supported on LG Smart TV and Smart Upgrader (SP820).  
LG Media products does not support App Test using USB.  
For more information on testing application on Real TV using App Test Menu, please refer to Smart TV Documentation(Resource Center > Smart TV > Documentation).

New App Test

NO	App Title	App Type	Item	Country	Update Date GMT+0
18	130116	Web > Packaged	0		2013-01-16 08:14
17	Test130108	Web > Packaged	0		2013-01-08 08:50
16	daum	Web > Hosted	0		2012-11-23 07:36



# App 테스트 환경 - USB 이용

## 상세 정보 입력

### App Test

You can register your own application for testing purposes only from here. Once upload is done, you can download to USB in order to test it from device with DRM protected.

#### Basic Information

Please enter basic App information in English

App Title\*

①

Please enter basic App information in alphanumeric (Max of 100 characters) 0-9, A-Z, blank and underscore\_

App Type\*

② Web  --Select--

Please select your App type to upload

File Upload\*

③ URL \*

④ File Upload

- Web App - Available App Types: lds , zip  
- Recommended File Size : up to 20MB (Max 100MB)

App Icon\*

⑤

Recommended Picture Size : Greater than 200 X 200 pixels  
Available File Type : JPG, GIF, PNG  
Available File Size : 100KB

☐ Item ⑥

☐ Developer CP Service ⑦

⑧

- ① 제목 입력
- ② App 타입 선택
- ③ - Hosted app: Web 어플리케이션 서버 주소 입력  
예: `http://www.abc.com/`  
`http://www.abc.com/index.html`  
- Packaged app: 최초실행 HTML 파일의 상대 경로 입력  
예: `index.html`  
`./abc/index.html`  
`abc/index.html`
- ④ 업로드 파일 선택  
- Hosted app: 공란  
- Packaged app: 어플리케이션 압축 파일
- ⑤ App 아이콘 이미지 선택
- ⑥, ⑦ CP일 경우에만 선택 (Option 입력)
- ⑧ 저장하기



# App 테스트 환경 - USB 이용


## App Test

You can register your own application for testing purposes only from here. Once upload is done, you can download to USB in order to test it from device with DRM protected.

AppTest

2012-10-16 06:20 GMT+0

### File Basic Information

• File type	Web> Downloadable
• Upload File	index.html AppTest
• Icon	 app icon.jpg

### CP Option Information

- Loading Message :
- Accept Language :
- Progress : 95 %
- DRM Cookie :
- Default Language : en
- Background Color : 1
- Mouse-off Event : 0
- Magic RCU : 1
- Redirection Number : 0

### Download DRM applied file

Please read terms and conditions carefully before you start to download application [ [Terms and Conditions](#) ]

You can download DRM applied file.

- ① 아이콘 이미지 조회
- ② 약관 조회
- ③ **DRM이 적용된 어플리케이션 파일 다운로드**
- ④ 업로드 정보 수정
- ⑤ 업로드 App 삭제
- ⑥ 목록으로

④ Modify   ⑤ Delete   ⑥ List

# App 테스트 환경 - USB 이용

## Step 1. USB에 DRM 패키징된 어플리케이션 파일을 다운로드

Download DRM applied file

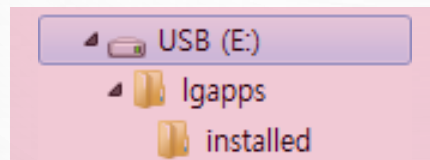
Please read terms and conditions carefully before you start to download application [ [Terms and Conditions](#) ]

You can download DRM applied file.

Download

ModifyDeleteList

USB에 다운로드된 파일을 압축 해제하면, 이름이 숫자로된 폴더가 있고 이 폴더를 아래 그림과 같이 USB의 lgapps\installed 폴더 아래에 복사



# App 테스트 환경 - USB 이용

## Step 2. Smart TV에 USB 삽입

LG Apps TV의 ID와 Password로 LG Smart TV 로그인 ► USB 포트에 USB 삽입

\*'12년 이전에 출시된 모델 중에서 USB 포트가 하나인 모델은 사용 불가

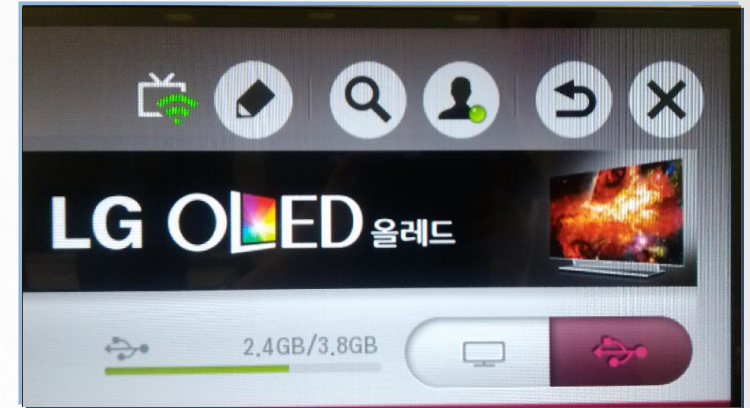


## Step 3. My Apps 페이지에서 App 확인

1. 마이앱 페이지로 이동 ►
2. USB 아이콘 클릭 ►
3. 자신의 App 확인



# App 테스트 환경 - USB 이용 (13년 TV)





---

# UX Guideline

---

# UX Guideline

## TV UX에 관하여



- 어디서?
  - 거실
- 누구와?
  - 가족과 함께

- 무엇을?
  - TV 프로그램, 영화, 게임 등
- 어떻게?
  - 편한 자세로



# UX 체크 리스트 - 필수사항

## LG Smart TV 앱 개발을 위한 체크 리스트

- **Screen Layout**

- 1280 x 720 해상도 (화면에 스크롤 바가 생기지 않도록)
- 클릭 가능한 오브젝트, 텍스트, 로고의 배치

- **Navigation**

- 매직리모컨 (4방향, OK, Back 버튼) 과 리모컨 센서

- **On Screen Button**

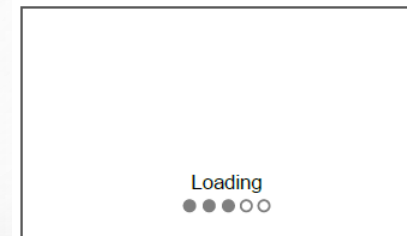
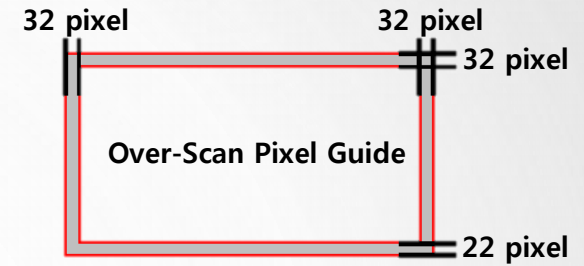
- 텍스트 입력 시 Screen Keyboard 이용

- **Font**

- Recommend: LG Display Font, Tiresias Font (이미지 제외)
- TV 시청 거리에서도 읽을 수 있는 Font 크기 (최소: 18 pt)

- **Visual Treatment**

- 화면을 Black으로 만들지 말 것
- 클릭 가능한 아이템은 최소 54 x 54 pixel로



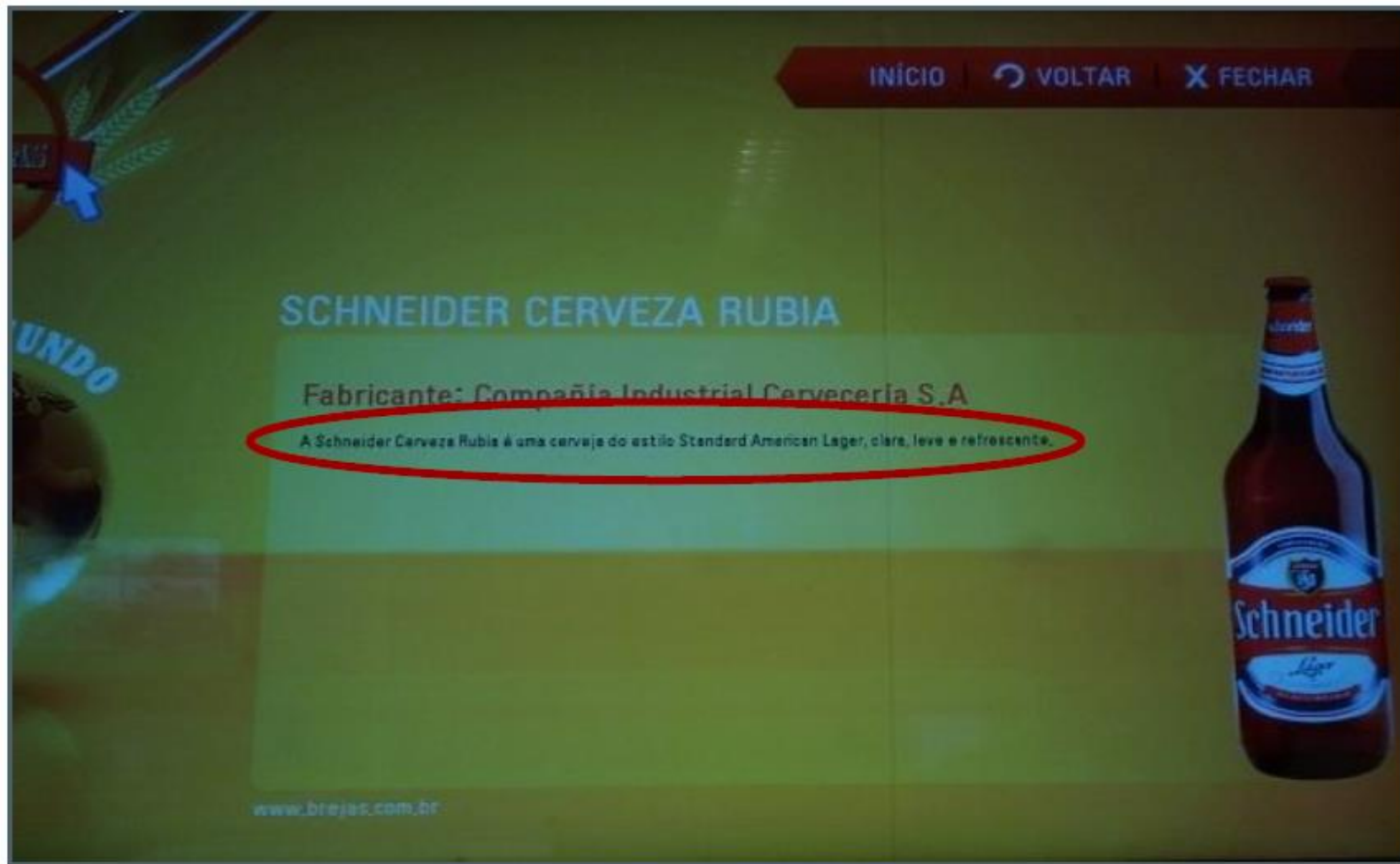
# 예시 #1

Over Scan 영역 및 포커스를 고려하지 않은 예



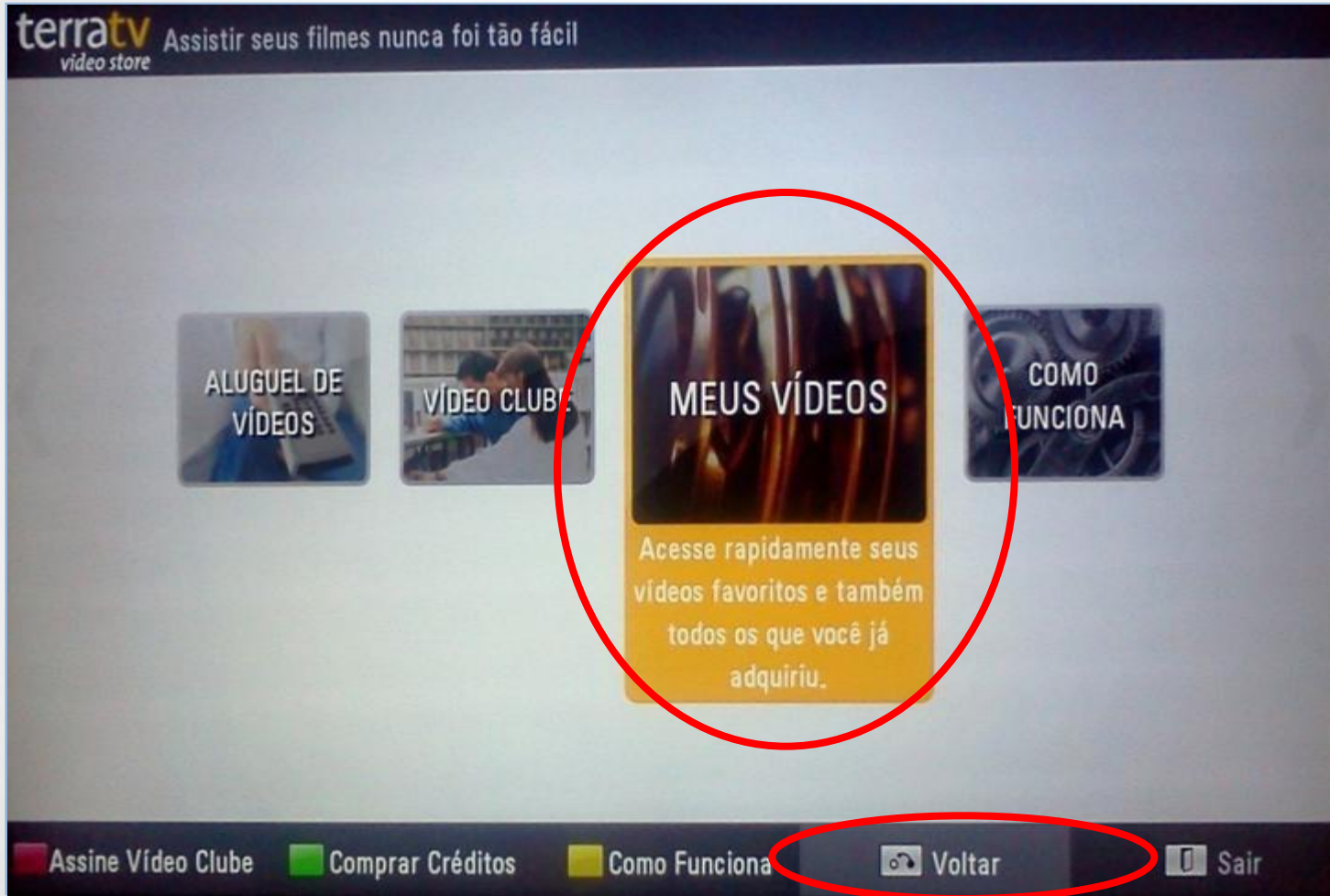
## 예시 #2

글자 크기를 최적화하지 못한 예



## 예시 #3

### 이중 포커스의 예





## 예시 #4

### 초기 포커스 부재의 예

