Tizen Platform SDK: The Easy Way to Develop Tizen Platform

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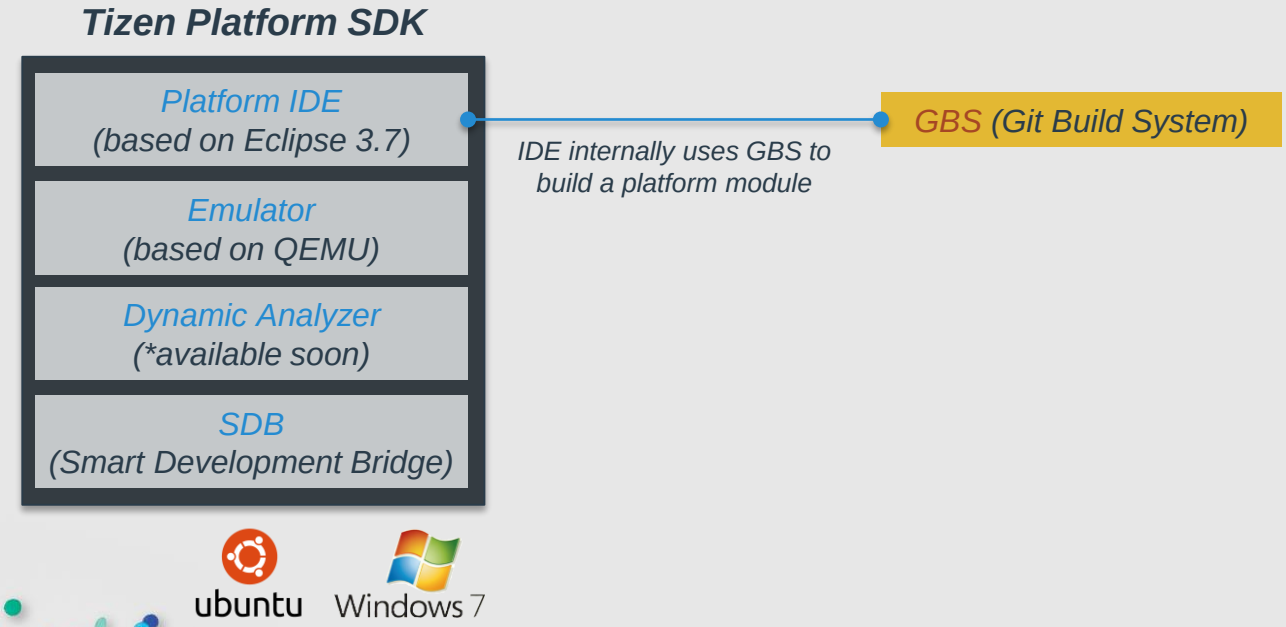
- Introduction
- Key features (with demo)
- Upcoming features
- Conclusion
- Q&A

Introduction

What is Tizen Platform SDK?

- **Development kit to develop Tizen platform module**



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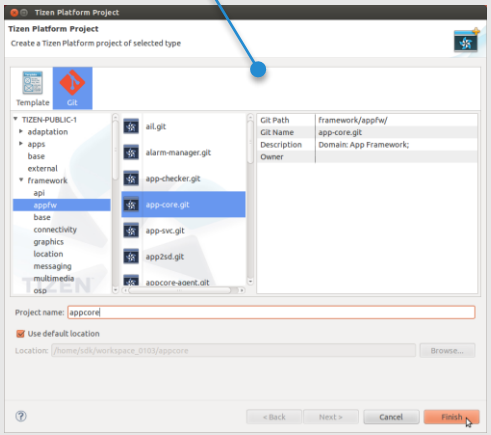
Platform IDE

Clone source and create project with project wizard

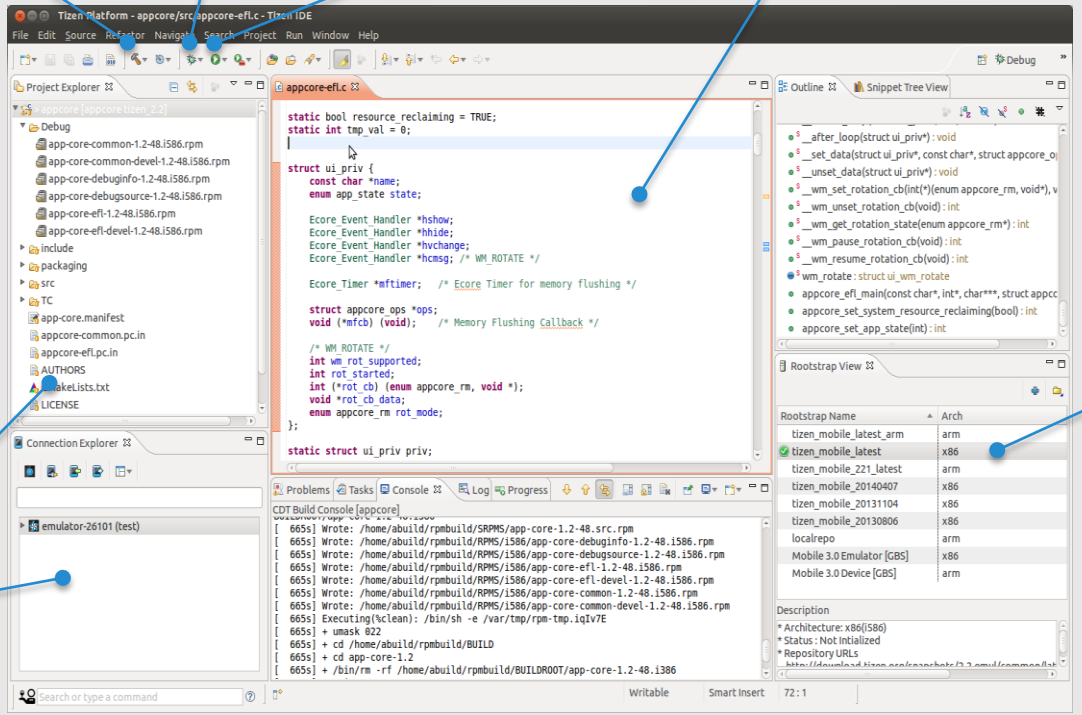


Build

Debug

Run

Edit sources



Manage resources

Manage emulator and target

Manage Rootstraps

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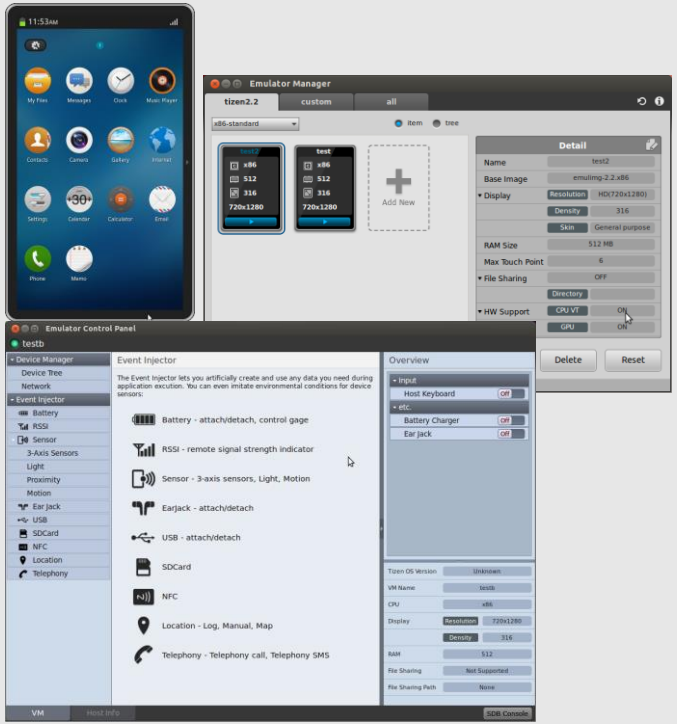
Emulator

- **Features**
  - Providing full system emulation, include CPU, memory and peripheral devices
  - Simulating events with the Emulator Control Panel
  - Accelerating guest operations using host CPU and GPU



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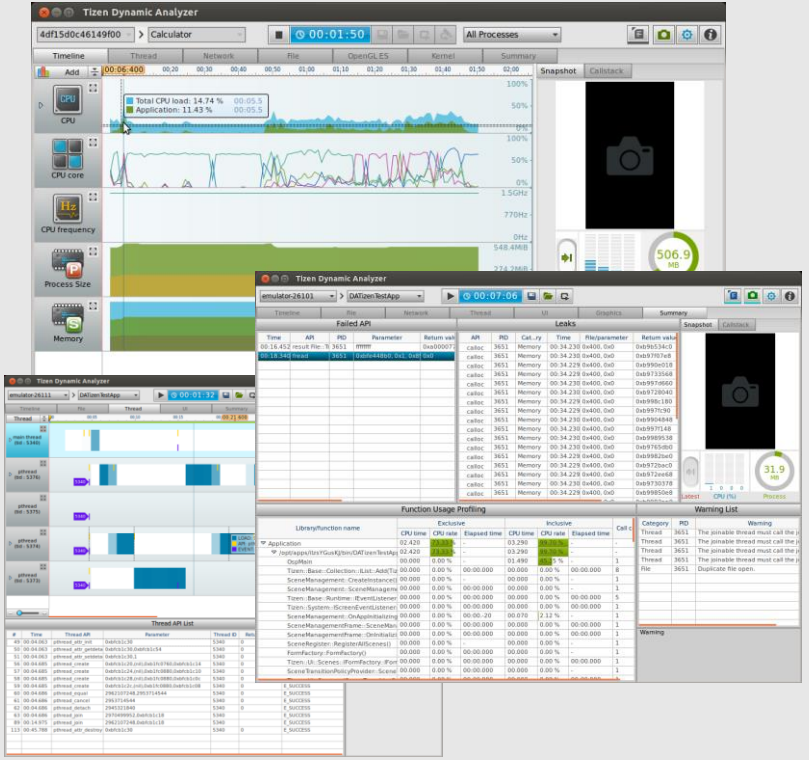
Dynamic Analyzer

- **Monitoring tool for improve performance and reliability of platform project**
- **Features**
  - Timeline chart
    - CPU load, Heap/Memory, UI event, Disk/Network…
  - Summary
    - Failed API, Leak, Function profiling..
  - UX and other information
    - Call trace, Call stack, Record & replay, Save the trace…



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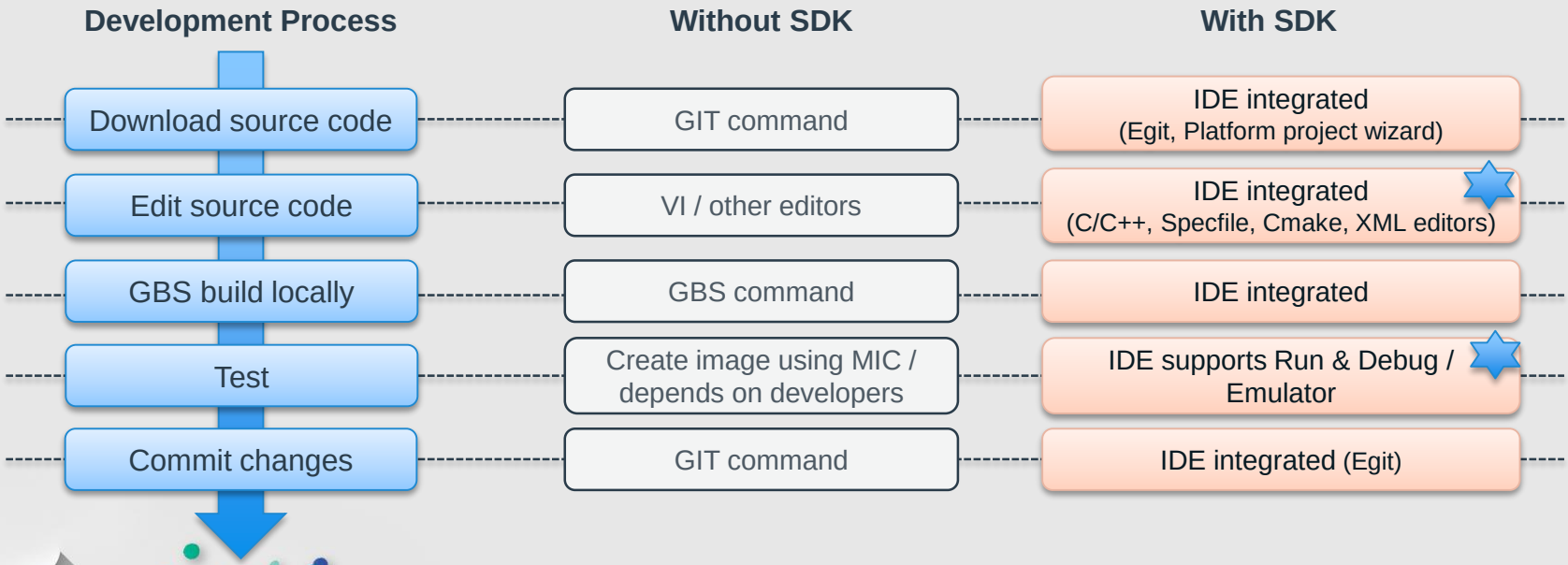
SDB (Smart Development Bridge)

- **SDB is device management tool**
  - It manages multiple device connections
  - It supplies basic commands for development
    - File transfer
    - Remote shell
    - Port forwarding for a debugger
    - Device log output
    - Connect remote device

```
commands:
 sdb root <on | off>           - switch to root or developer account mode
                                 'on' means to root mode, and vice versa
 sdb status-window             - continuously print device status for a specified device
 sdb get-serialno              - print: <serial-number>
 sdb get-state                 - print: offline | locked | device
 sdb kill-server               - kill the server if it is running
 sdb start-server              - ensure that there is a server running
 sdb version                   - show version num
 sdb help                      - show this help message
 sdb forward <local> <remote>  - forward socket connections
                                 For example: sdb forward tcp:9999 tcp:9999
 sdb uninstall <pkg_id>        - uninstall an app from the device
                                 the <pkg_id> is an unique 10-digit unique identifier for the application. The
following command shows an example:
                                 Ex.) sdb uninstall ko983dw33q
 sdb install <pkg_path>        - push package file and install it
 sdb dlog [<filter_spec>]      - view device log
 sdb shell [command]           - if argument is null, run remote shell interactively
                                 if argument is not null, run command in the remote shell
 sdb pull <remote> [<local>]   - copy file/dir from device
 sdb push <local> <remote> [--with-utf8]
                               - copy file/dir to device
                                 (--with-utf8 means to create the remote file with utf-8 character encoding)
 sdb disconnect [<host>[:<port>]]
                               - disconnect from a TCP/IP device
                                 port 26101 is used by default if no port number is specified
                                 using this command with no additional arguments
                                 will disconnect from all connected TCP/IP devices
 sdb connect <host>[:<port>]   - connect to a device via TCP/IP
                                 port 26101 is used by default if no port number is specified
 sdb devices                   - list all connected devices
```

Why use Tizen Platform SDK?

- **It makes platform module development easier**



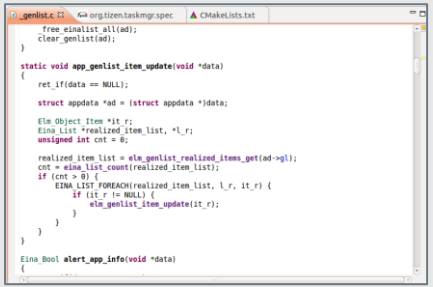
Key features of Platform IDE

- Visual & Easy Editing
- Build based on Rootstrap
- Easy Testing (Run & Debug)
- Quick Launch (RDS)
- Platform Crash Analysis (Core dump debug)
- Easy Package Management (Package Manager)

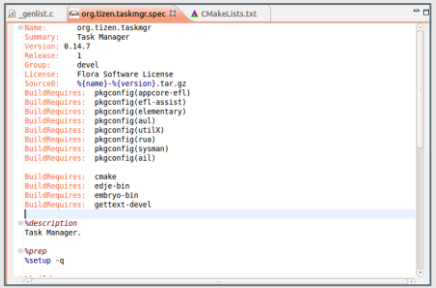
Key features

Visual & Easy Editing

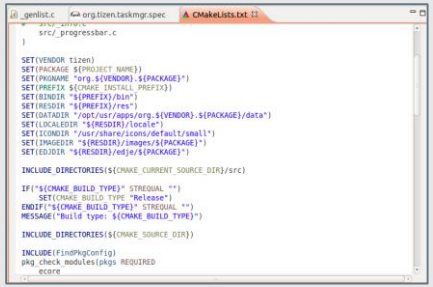
- **Editors**
  - C/C++ Editor
  - Spec File Editor
  - CMake Editor
  - XML Editor
- **Features**
  - Highlighting, Content assist
  - Open declaration, Hover
  - Outline view



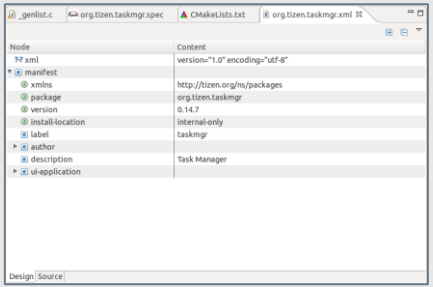
C/C++ Editor



Specfile Editor



CMake Editor



XML Editor

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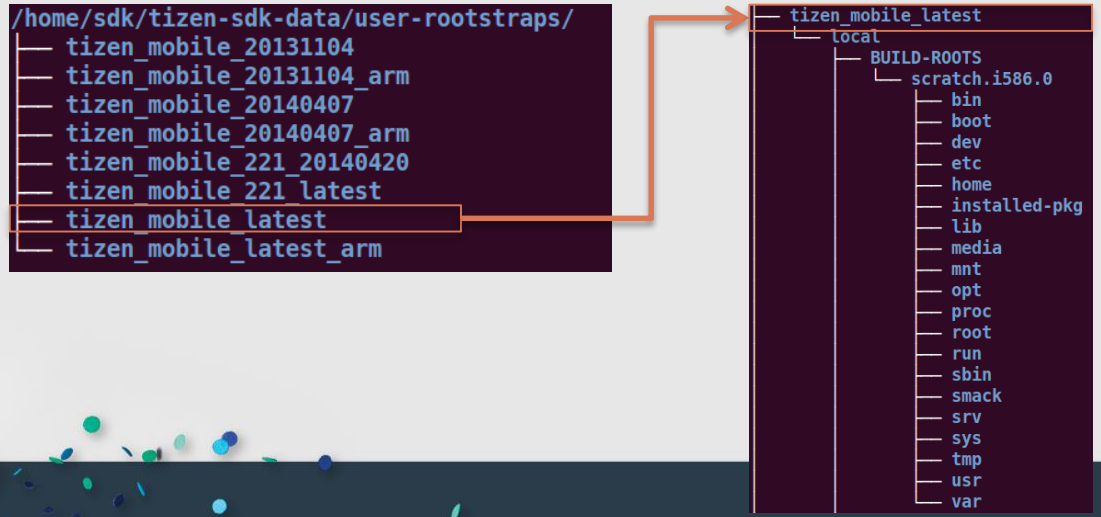
Build based on Rootstrap

- **What is Rootstrap?**
  - All required tools, libraries and include files for building a platform project
  - User creates multiple Rootstraps based on platform version and snapshot and can try to build platform module based on it.



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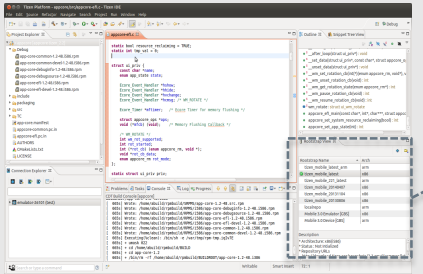
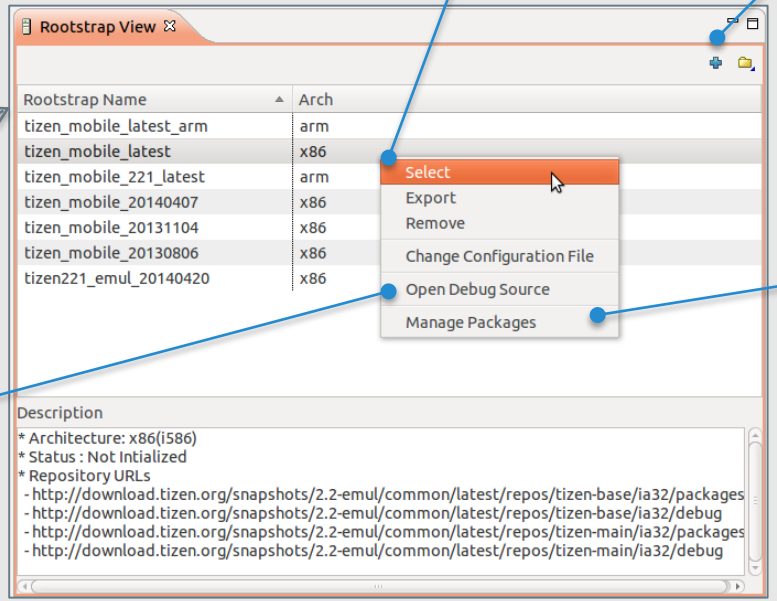
Build based on Rootstrap

- **Rootstrap View**

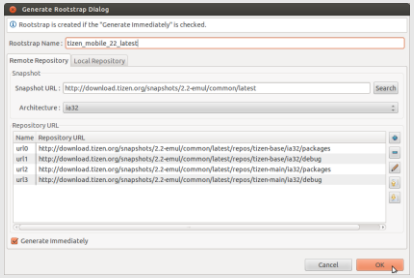


Open debug source to debug other platform module
1. Open debug source file which installed in Rootstrap
2. Set breakpoint

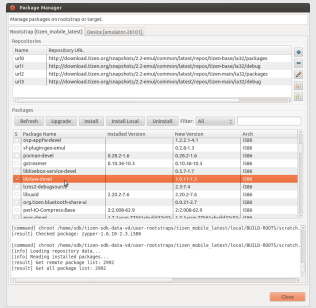
Select a Rootstrap for building and debugging a project



Create a new Rootstrap



Manage packages



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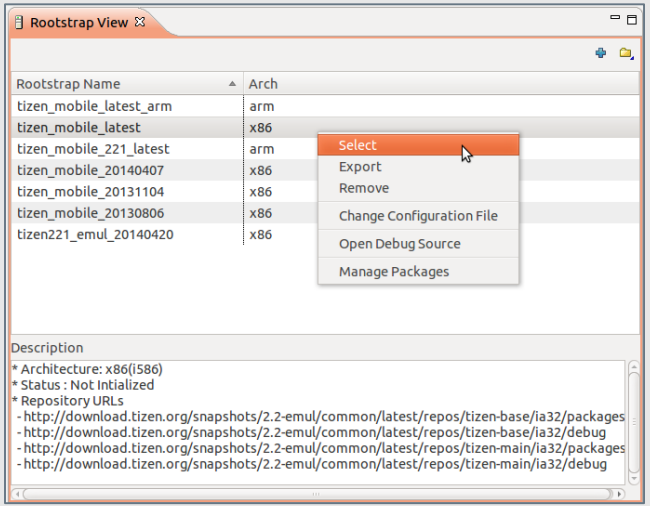
Build based on Rootstrap

- **How to build a platform project**
  1. Select a project
  2. Select a Rootstrap on Rootstrap View
  3. Click build icon



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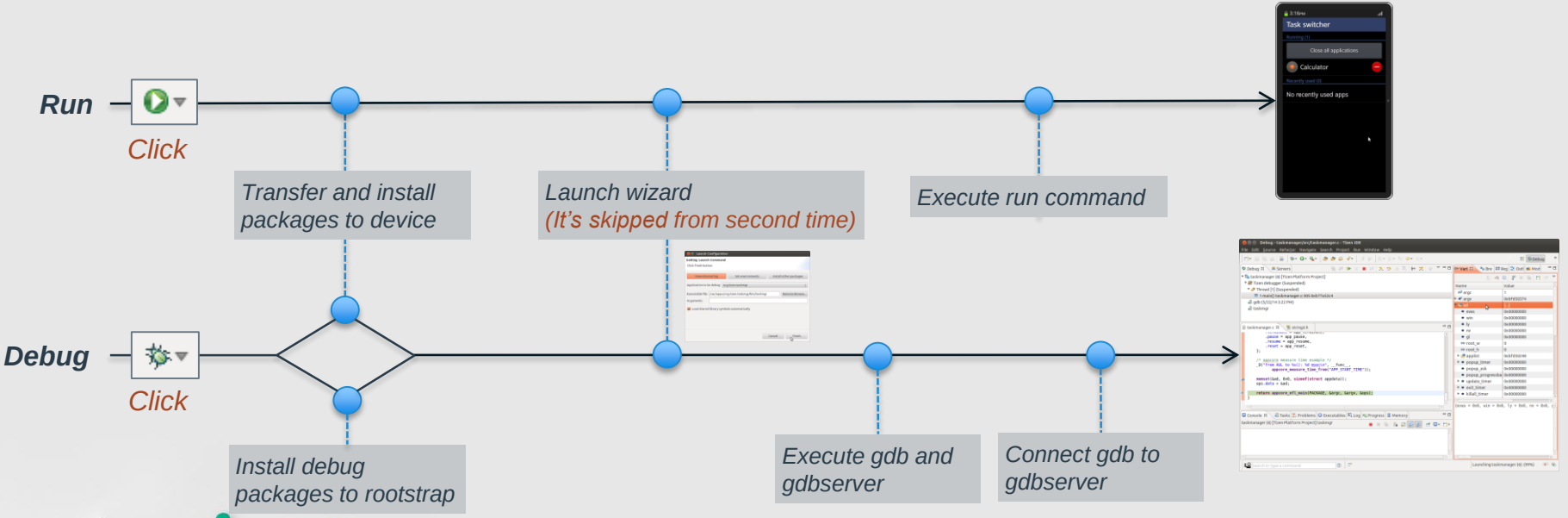
Demo (Create a Rootstrap & Build)

Easy Testing (Run & Debug)

- **IDE provides a simple way to test platform module**



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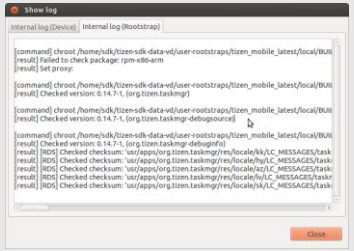
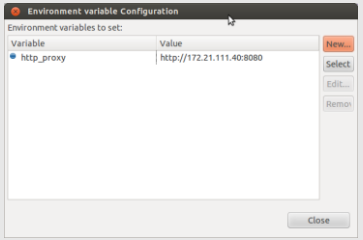
Easy Testing

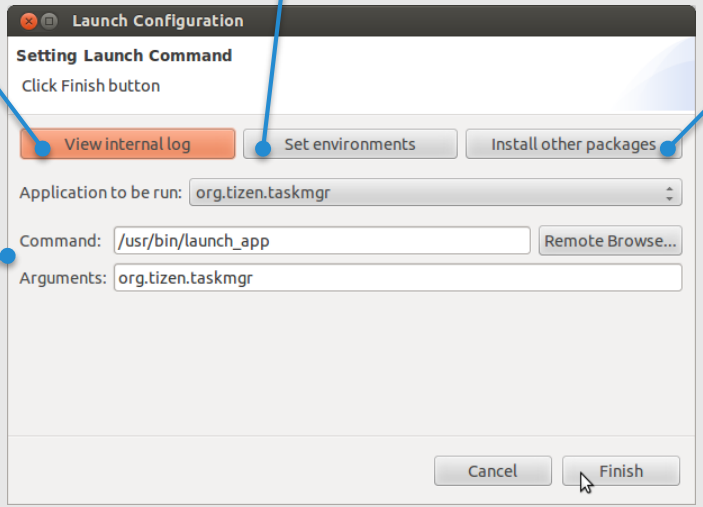
- **Launch wizard**

Check package installation log

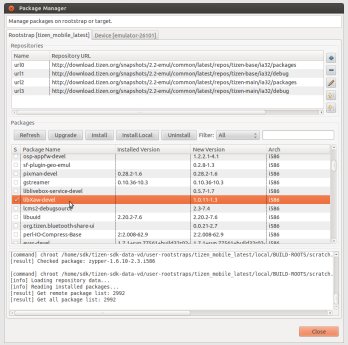


Set additional environment variables





Install additional packages



Set run command and arguments

- In case of application, It is set automatically
- In case of library, user set command manually

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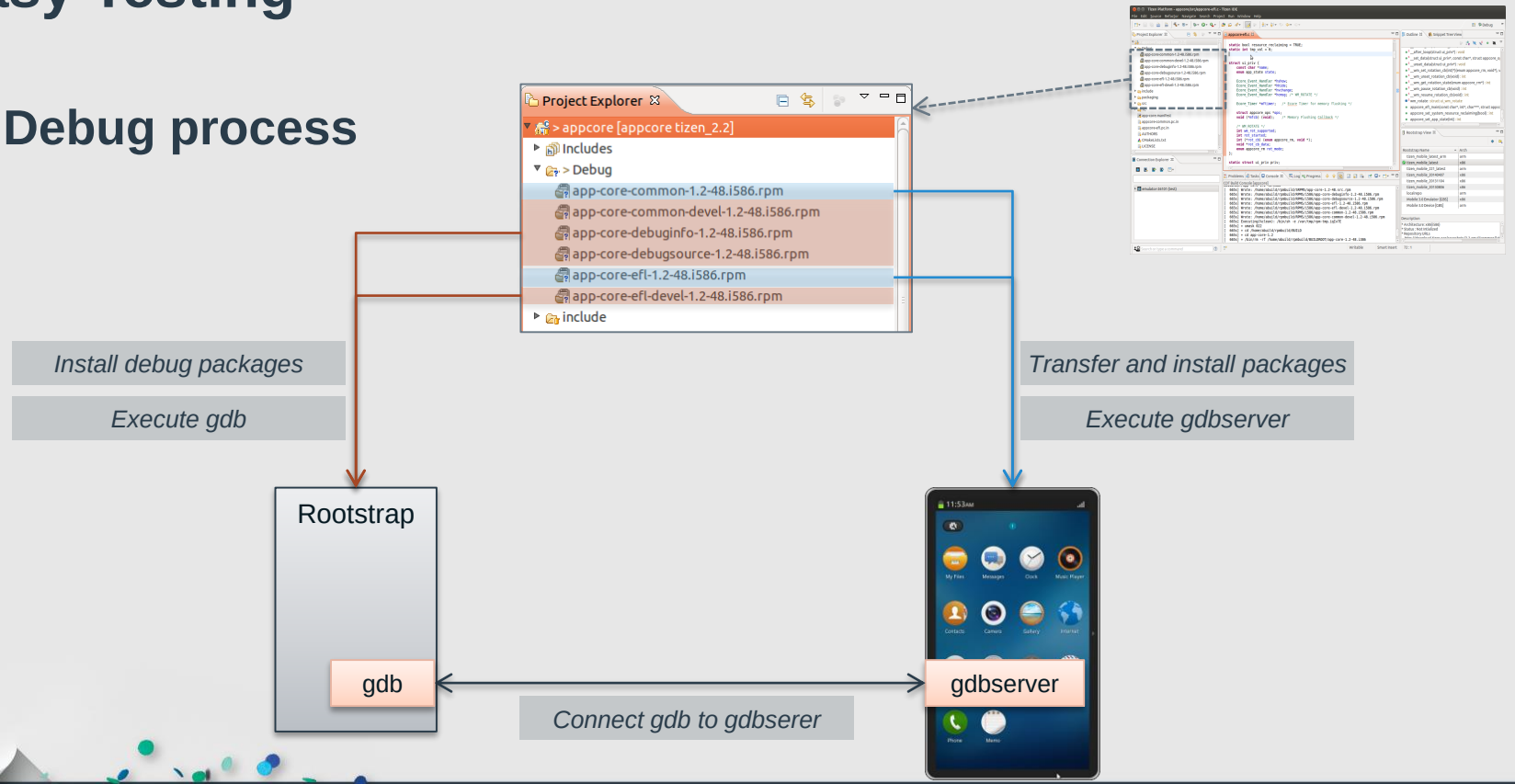
Easy Testing

- **Debug process**



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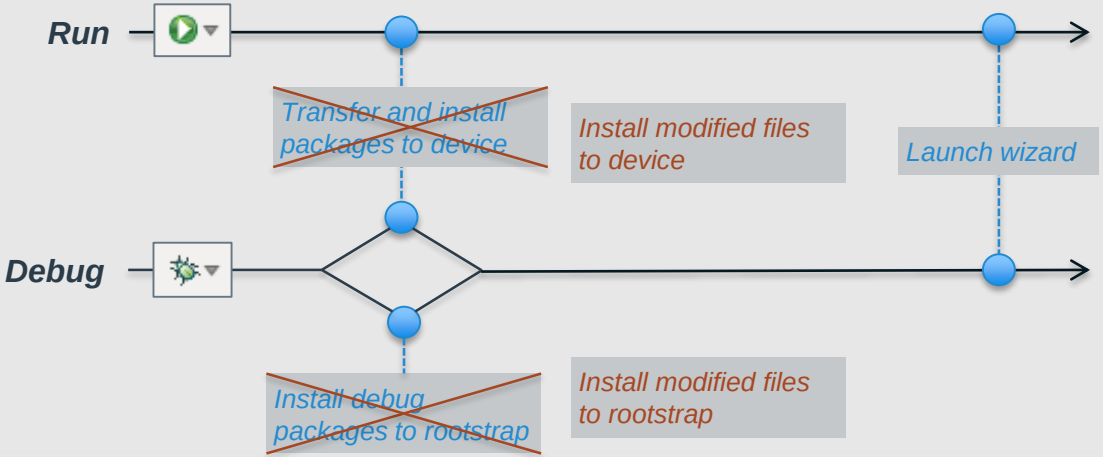
Demo (Run & Debug)

Quick Launch (RDS)

- RDS lets you develop a platform module rapidly by saving deployment time.
- After the first launching, rpm transfer and install process is skipped and only modified files are installed in the target.



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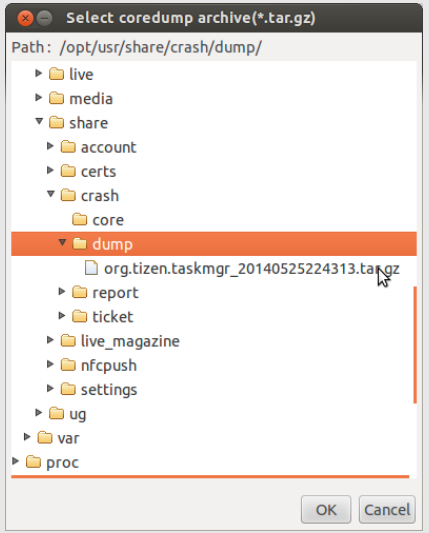
Quick Launch

- **Performance**
  - It depends on number of modified files.
  - In case of Debugging, launch time is reduced by more 74.27%
    - It has a good effect because package installation time for Rootstrap greatly reduce.
  - In case of Running, launch time is reduced by more 12.4%
    - It has an issue that launch time is increased if modified files are many.
    - RDS is not operated if modified files are more than 20.

Platform Crash Analysis (Core dump debug)

- **IDE provides feature to debug dump file**
  - To debug core dump
    - Debug As > Tizen Platform Project – Coredump
- **The needs for debugging core dump**
  - Snapshot information of target image
  - Core dump files (/opt/usr/share/crash/)
    - *.tar.gz
    - *.core / *.cs



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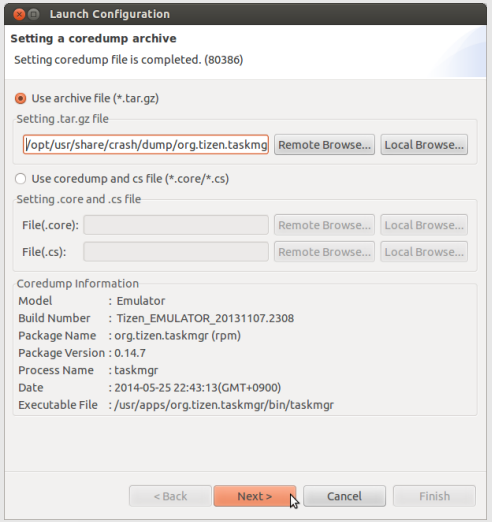
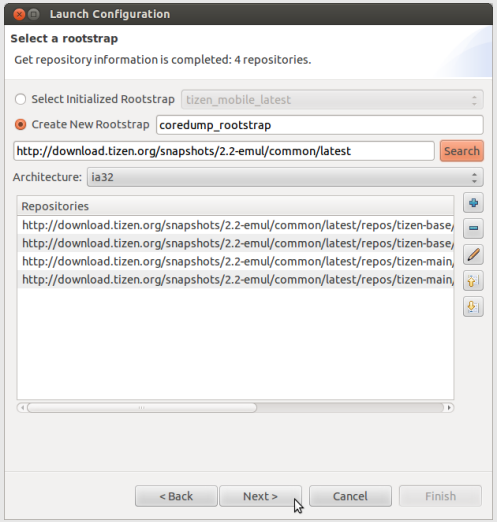
Platform Crash Analysis

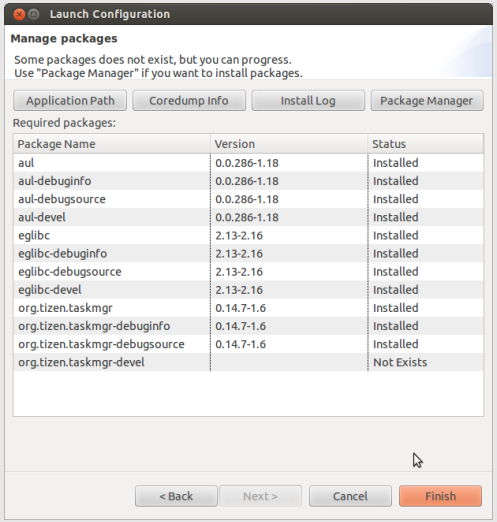
- **Launch wizard**



Set coredump files



Set Rootstrap. Packages for debugging are installed to Rootstrap automatically



Check installed packages and install additional packages if it is needed

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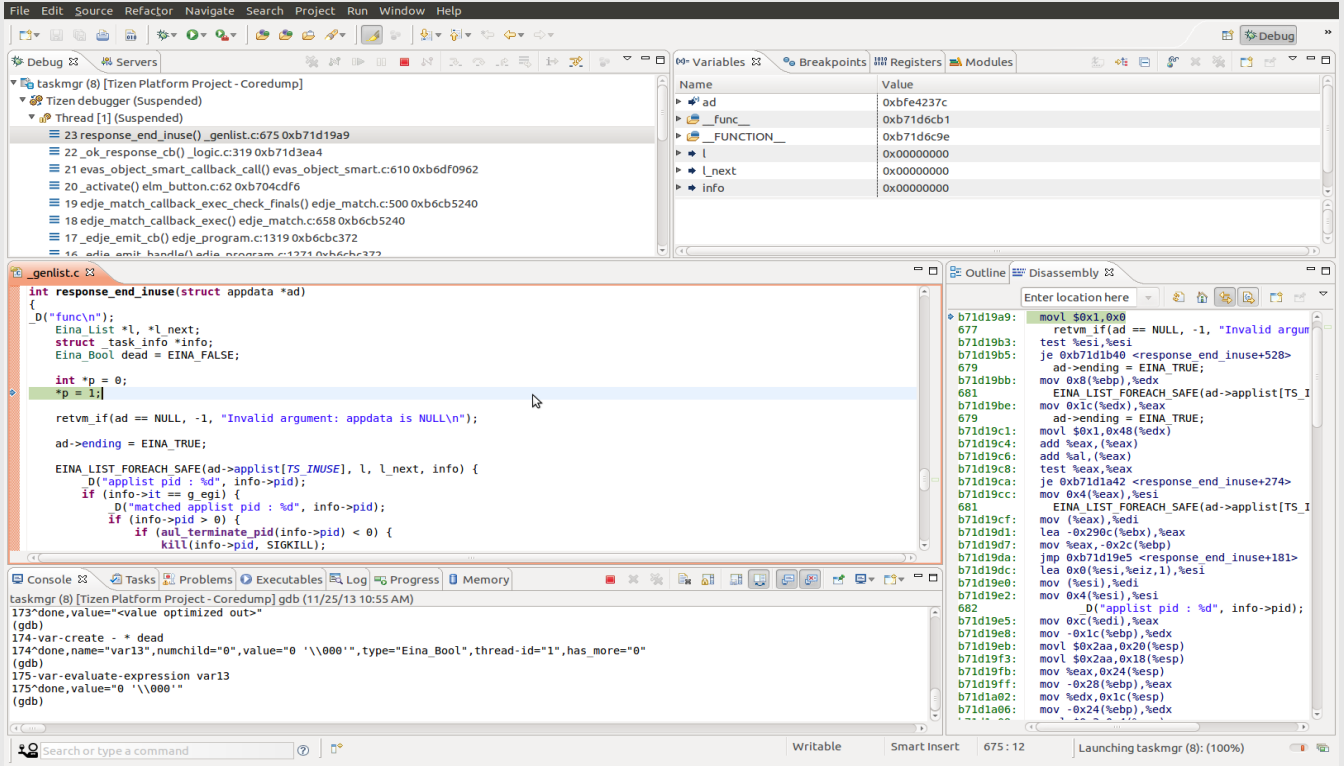
Platform Crash Analysis



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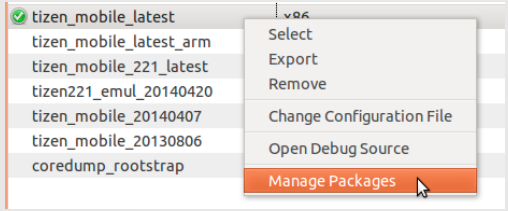
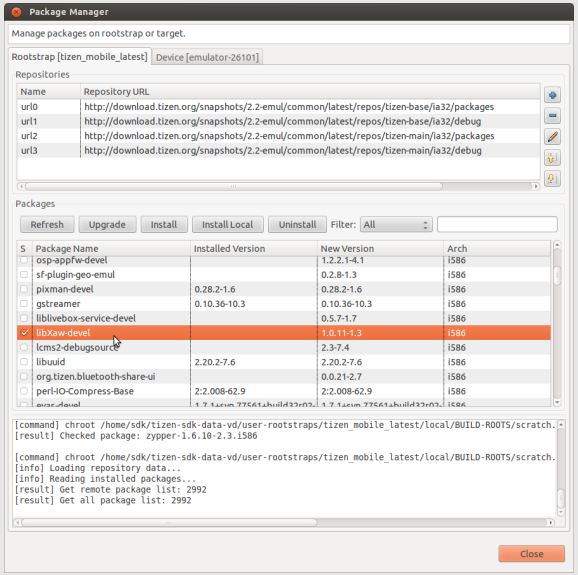
Demo (Core dump debug)

Easy Package Management (Package Manager)

- **Package Manager**
  - It provides features to manage package of Rootstrap and target.
    - Add / Remove / Modify repository
    - Install / Uninstall / Upgrade package
  - To run Package Manager
    1. Select a Rootstrap on Rootstrap View
    2. Click Manage Packages from the context menu





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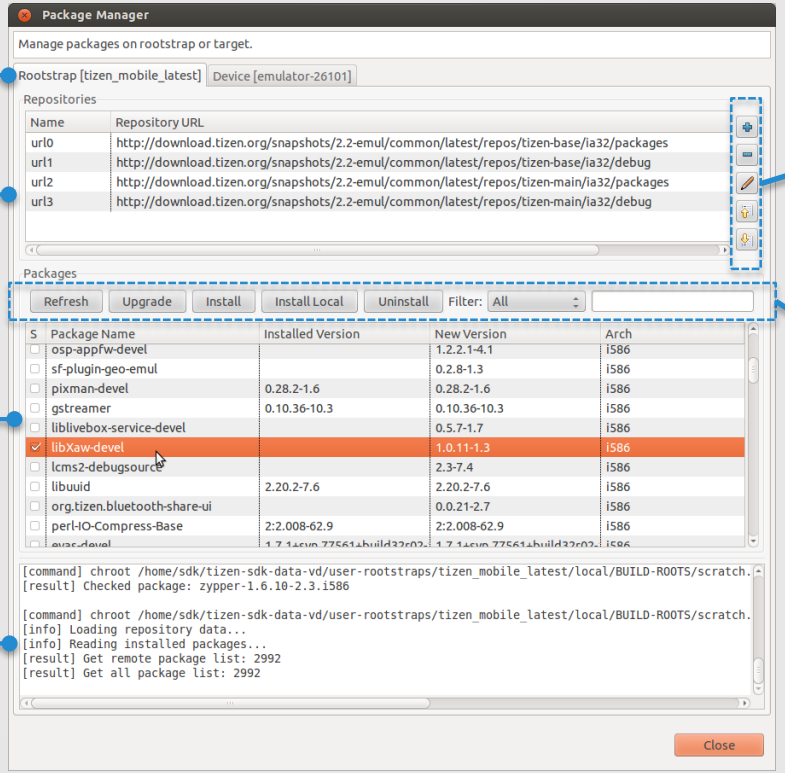
Easy Package Management

Rootstrap & Device tab

Repository list

Package list

Command log view



Add repository
Remove repository
Modify repository
Set priority of repository

Refresh package list
Upgrade packages
Install remote package
Install local package
Uninstall package

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Other features of Platform IDE

- **Multi device management** (Connection Explorer)
- **Build configuration** (Debug/Release)
- **Tool command management** (GBS/rpm/zypper/pkgcmd)
- **Profiling** (Oprofile/Valgrind)
- **Remote development environment on Windows**

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Upcoming features

- **Supporting Mac OS and other Linux distribution**
- **Build speed improvement**
  - Divide into build and packaging step
  - Supporting Predictive build
- **Supporting Attach debugging**

Conclusion

- **Tizen Platform SDK allows you to develop platform module easily and quickly**
- **Effective cases:**
  - If you develop platform application or library
  - If you need to debug core dump
  - If you are new platform developer