Getting started with Eclipse Cloud Dev Tools

Jonas Helming
EclipseSource
Build web- and cloud-based tools?

Desktop

?       Web/Cloud

THEIA

LSP

HTML

node

emf

Eclipse Che

Visual Studio Code

GLSP

The GNU Project Debugger

Eclipse Che

clangd
Web-based vs. Cloud-based
Web-based vs. cloud-based tools

- **Web-based:**
  - Use web technologies, especially in the UI, such as: HTML, CSS, JavaScript/TypeScript
  - Use a “browser” for UI rendering (real browser or Electron)
  - Usually split UI and a “backend” server for the business logic, even when deployed on the desktop

- **Cloud-based:**
  - Backend is deployed remotely (in the cloud)
  - UI is accessed via: Browser or Desktop tool connecting to the backend

- **Cloud-based tools are usually web-based, web-based tools are usually prepared for the cloud!**
How do web/cloud-based tools work?
Typical architecture of a web/cloud-based tool

- **Client**
  - Browser engine / HTML
  - Tool frontend

- **Cloud**
  - Node.js / Java / C / etc.
  - Tool backend

- **Server**

- **Electron (Desktop)**
What is the language server protocol? (LSP)
The Language Server Protocol (LSP)
Eclipse Theia vs. VS Code
Theia vs. VS Code (see also [this article](https://eclipsesource.com))

<table>
<thead>
<tr>
<th>VS Code</th>
<th>Eclipse Theia</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Most popular code editor</td>
<td>+ Very similar to VS Code</td>
</tr>
<tr>
<td>+ Extensible via VS Code extensions</td>
<td>+ Supports VS Code extensions</td>
</tr>
<tr>
<td>- Extensible tool, not meant as a platform</td>
<td>+ Very flexible and adaptable for fully customized tool distributions</td>
</tr>
<tr>
<td>- Mainly controlled by one vendor, partially restrictive licenses</td>
<td>+ Vendor-neutral governance</td>
</tr>
<tr>
<td>+ Growing ecosystem of supporting vendors and adopters</td>
<td></td>
</tr>
</tbody>
</table>

=> Some vendors follow a dual strategy: Some features as a VS Code extension, full tool based on Eclipse Theia
Some selected tools based on Theia

- SAP Business Application Studio
- Google Cloud Shell
- Mbed Studio
- Keil Studio Cloud (beta)
- Red Hat CodeReady Workspaces
- Arduino IDE 2.x (beta)
- Codeanywhere
- Logi.cloud by logi.cals
- D-Wave Leap
- Coffee Editor by EclipseSource
- …
Theia Blueprint

Eclipse Theia Blueprint

Version 1.17.2 (Beta)
VS Code API Version: 1.50.0

What is Theia Blueprint?
Eclipse Theia Blueprint is a template to showcase the capabilities of Eclipse Theia as well as how to build desktop-based products based on the platform. Theia Blueprint assembles a selected subset of existing Theia features and extensions. You provide installers for Theia Blueprint to be downloaded (see below) as well as documentation on how to customize this template to build a product and installers for your own Theia-based product.
What is openVSX?
openVSX Registry

VS Code Marketplace

openVSX

VS Code

VS Codium

Eclipse Theia

GitPod
What is Eclipse Che?
How to host cloud-based tools?
Architecture of modern IDEs / tools - workspace server
How to migrate?
Can I reuse pieces of my existing tool?

attend: “Migrating Eclipse-based Tools/Plugins to Eclipse Theia or VSCode”
Today, 4.50pm, room 4
How to build domain-specific tools?
What technologies to use?
How to build domain-specific tools

- Xtext
- Diagrams, GMF, GEF
- EMF Ecosystem
- Form-based UIs

- Eclipse GLSP
  - Sprotty

- EMF.cloud

- JSON Forms

“Diagram editors with GLSP - 1.0”, next session, 2.30pm, Room 2

“Model validation, diffing and more with EMF.cloud”, Wednesday, 4.10pm, Room 1

“Building a model application with Theia and EMF.cloud: the DISCO experience”, Thursday, 4.50pm, Room 1
The coffee editor
“BoF: Building (web-based) tools with Eclipse”, Wednesday, 6.15pm, Room 1
What else…?
Eclipse Cloud Developer Tools Working group

strategic Member

Participant Member

Participant Member

Participant Member

Participant Member

Guest Member
Any questions?
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- You may also rate a talk by locating the session from the "Agenda" or "My Event" buttons on the Event Home page. Click on the session and look for the "Give your feedback" box.
Backup slides
## Desktop vs. Online

<table>
<thead>
<tr>
<th>Desktop</th>
<th>Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Users get what they are used to</td>
<td>+ Easy set-up and onboarding for users</td>
</tr>
<tr>
<td>+ Modern rendering, but still all desktop features</td>
<td>+ Potential for new business models (SaaS or “device farms”)</td>
</tr>
<tr>
<td>- Local Set-up necessary</td>
<td>- Significant effort for the infrastructure for the provider (creation and maintenance)</td>
</tr>
<tr>
<td></td>
<td>- Might conflict with security and IP governance</td>
</tr>
<tr>
<td></td>
<td>=&gt; On-premise version might be necessary</td>
</tr>
</tbody>
</table>

Note that you can single-source most tools features between cloud and desktop

=> Many vendors follow a dual strategy: Web-based on the desktop first, add cloud offering as a second step