



FROM HACKATHON TO PRODUCTION IN A YEAR

Victor Kropp, JetBrains
Software Engineer





HI!

I am Victor Kropp

and I want to tell you a story how we went
from **hackathon** to **production** in a year



Qt

HACKATHON

and why you
should
do it to!

48 hours

Just few hours of sleep...

100+ participants

Mixed teams and not only developers!



winners' cup

And valuable prizes too



HACKATHONS

JetBrains Hackathon 2017





DO ANYTHING YOU WANT

100 kg musical instrument, drawing robot
or a plugin to your favorite IDE



Qt

IDEAFONE
ιδιόφωνο



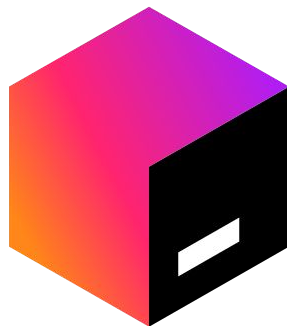


MANY PROJECTS WENT TO **PRODUCTION**

dotMemory Unit



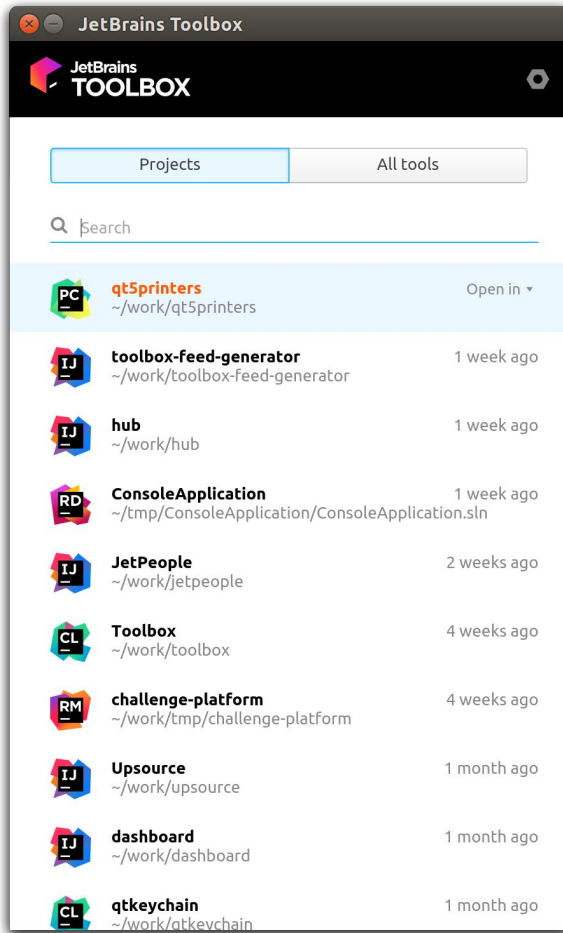
Toolbox App





TOOLBOX APP

A control panel for your tools and projects





THE **TOOLBOX APP** IS SPLIT INTO

Backend

Qt

C++

Frontend

QtWebEngine
(Chromium 56)
JavaScript

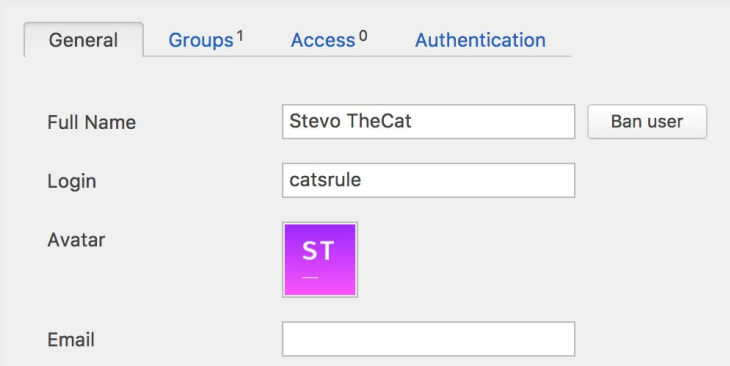
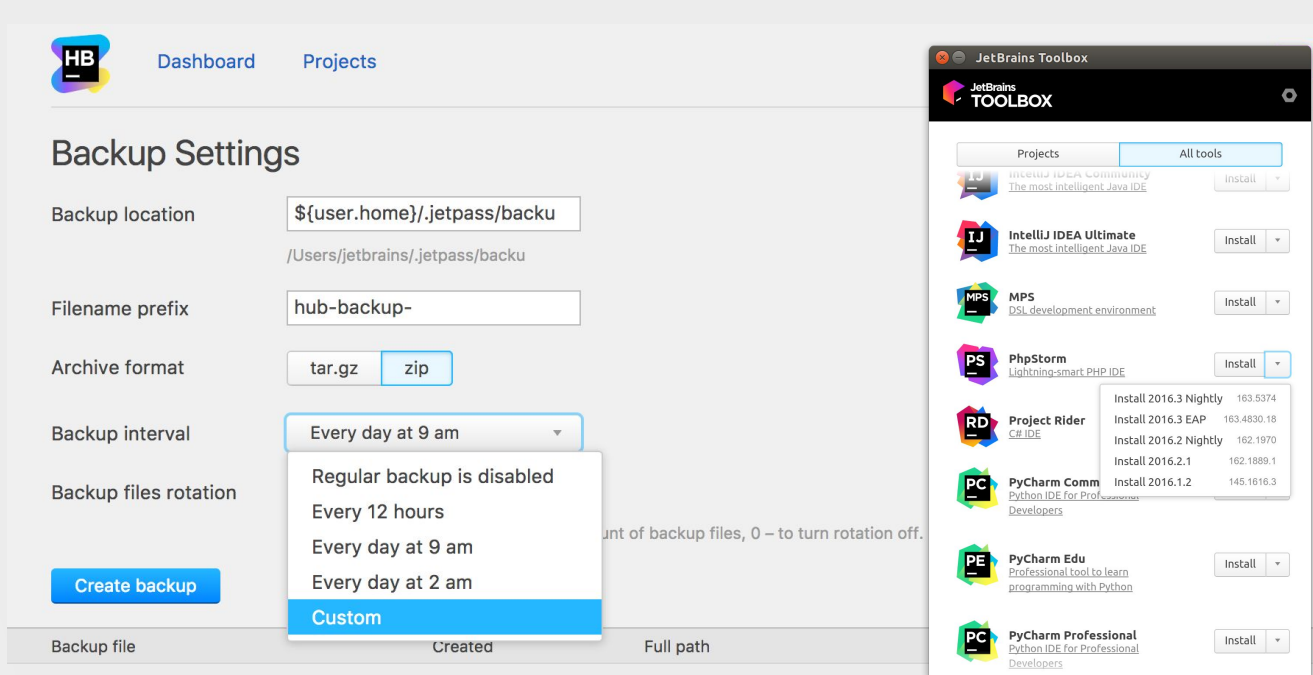
A small green square icon with the white text 'Qt' inside, positioned on a dark diagonal bar on the right side of the slide.

RING UI

Qt

Our Web
UI Controls
Library

jetbrains.org/ring-ui





UI IN HTML/CSS/JS

Pros

- ▶ Nice
- ▶ Modern
- ▶ Everywhere

Cons

- ▶ Embedded browser may be resource consuming
- ▶ Frontend expert required

The Qt logo, consisting of the letters 'Qt' in white on a green square background.



FRONTEND



React

declarative JavaScript library for building user interfaces

facebook.github.io/react

```
class ProjectList extends React.Component {
  render() {
    return (
      <div>
        <div className="project-list__search">
          <Icon size={Icon.Size.Size14} glyph={require('search.svg')} />
          <TextInput ref="input" placeholder="Search" />
        </div>
        <div>
          {recentProjects.map((project) => (
            <Project project={project} />
          ))}
        </div>
      </div>
    );
  }
}
```

EXAMPLE COMPONENT



WEBPACK

JS + dependencies are packed into
single `index.js` and `index.html`:

```
myWebView->load(QUrl("http://index.html"));
```





FETCHING **PRODUCT** DESCRIPTIONS

- ▶ Single file in **JSON**
- ▶ Update regularly
- ▶ The same JSON is used in both **C++** and **JS** code

```
{  
  "id": "IDEA-U",    "name": "IntelliJ IDEA Ultimate",  
  "description": "The most intelligent Java IDE",  
  "icon_url": "data:image/svg+xml;base64,...",  
  "licensing": { "product": "Idea" },  
  "build": "171.972.3",    "version": "2017.1.2",  
  "major_version": { "name": "2017.1" },  
  "package": {  
    "os": "windows",  
    "type": "nsis",        "command": "bin/idea.exe",  
    "url": "https://download.jetbrains.com/idea/ideaIU-2017.1.2.exe",  
    "size": 407042160,  
    "checksums": [ { "alg": "sha-256", "value": "..." } ]  
  }  
}
```

JSON FEED

Qt



SEPARATION OF
CONCERNS

Model Qt/C++



ViewModel JSON



View React/JavaScript

Qt

LESSONS LEARNED

Some obvious
things
worth repeating



DREAM TEAM

CORE DEVELOPERS

Windows

macOS

Linux



AND

UI/UX Designer

UI Developer

IntelliJ Developer



CROSS-PLATFORM DEVELOPMENT



- ▶ There are **lots** of platform specific things
- ▶ Every feature must be tested on all supported operating systems

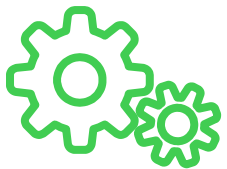
Qt

PLATFORM SPECIFIC

- ▶ .plist read/write
- ▶ Menubar icon theming
- ▶ System wide notifications
- ▶ OS integration



CROSS-PLATFORM
DEVELOPMENT



AUTOMATE EVERYTHING



- ▶ Continuous Integration server **compiles** the app after each commit
- ▶ and runs **tests**
- ▶ Release is published with a **single click**



TeamCity



JetBrains Toolbox | JetBrains Desktop Applications Launcher <Active branches>

- Installers (Stable) | Pending (100+)
- Build Smoke |
- Build All | Pending (100+)
- Test All | Pending (100+)
- Feeds Acceptance Tests |
- Upload Release | No builds to display Pending (100+)

Build | <Active branches>

- Build Number |
- Build UI |
- Build Chrome Extension |
- Build Mac OS X |
- Build Mac OS X Debug | Pending (100+)
- Build Windows |
- Build Windows Debug | Pending (100+)
- Build Linux AppImage |

Docker | Various Docker images used for building and testing Toolbox App <Active branches>

External Libraries | <Active branches>

- OpenSSL (Linux) |
- OpenSSL (Mac OS) |

Feed |

- v1 Internal Feed |
- v1 Public Feed |
- v1 Publish Internal Feed |
- v1 Publish Public Feed |



DESIGN FOR COMPATIBILITY

- ▶ Backward compatibility
- ▶ Forward compatibility





ALWAYS KEEP **SECURITY** IN MIND

- ▶ HTTPS only
- ▶ Signed data source
- ▶ Checksums for downloads



DOGFOODING

- ▶ Use your own application
- ▶ Get early feedback from colleagues





PRODUCTION

Successful
release



20% project

Side project supported by company



100,000+ **users**

estimated



Jan Zavrl

@jnzavrl

Just discovered [@JBToolbox](#) from [@jetbrains](#). Yet another amazing product from Jetbrains. Would definitely recommend.

<https://twitter.com/jnzavrl/status/897000758633168897>



Vedran Pavić

@vedran_pavic

The [@JBToolbox](#) app makes managing [@jetbrains](#) tools almost effortless! Highly recommended, see jb.gg/toolbox-app for more details.

https://twitter.com/vedran_pavic/status/753542146842562560

Qt



RECAP

- ▶ Hackathons are fun
- ▶ There is a lot to be done afterwards
- ▶ HTML UI is awesome
- ▶ Team is the most important



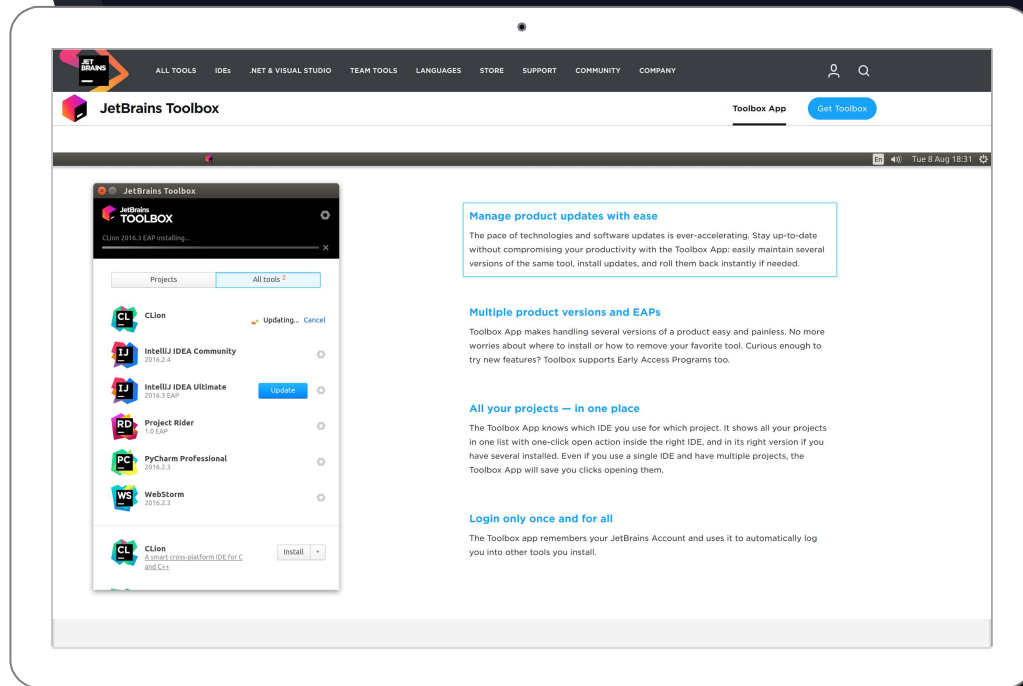


TOOLBOX APP

Check it out
at

jetbrains.com/toolbox/app

Follow @JBToolbox
for updates





THANKS!

Any questions?

Victor Kropp

@kropp

victor.kropp@jetbrains.com





Thank you!

Victor Kropp
@kropp
victor.kropp@jetbrains.com

