

Alire: Ada Has a Package Manager

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OUTLINE

- INTRODUCTION & MOTIVATION
 - Project Status
 - Design Basics
- DEMO 1: QUICKSTARTING A PROJECT
- DEMO 2: CONTRIBUTING A PROJECT TO ALIRE

MOTIVATION

- EXPECTATIONS
- REAL ADVANTAGES

MOTIVATION

- EXPECTATIONS
 - Of the younger generations
 - From other contexts
- REAL ADVANTAGES

```
$ sudo apt install libgtkada16.1.0-dev      # Linux systems
```

```
dependencies {                                // Java's Gradle
    compile 'com.example.android:lib-magic:1.3'
}
```

Ada world



Out there



MOTIVATION

- EXPECTATIONS
 - Code reuse
 - Simplicity
- REAL ADVANTAGES
 - Library awareness
 - Portability
 - Reproducibility
 - Security

PROJECT STATUS

- TIMELINE
- DEMO 0:
testing some Ada
software

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- DEMO 0:
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software

→ Feb 2016: first repo & discussions

→ Feb 2018: Ada-Europe 2018

→ Jun 2018: AdaCore ROS2 stay

→ Apr 2019: AdaCore support

→ Aug 2019: website goes live

→ Nov 2019: internal beta

→ Today! 🎉🎉🎉 Public beta

PROJECT STATUS

Right now

- Starting to come together
 - Many rough spots
- Known missing features

2020 projections

- Polish existing workflows
 - Publishing
- Missing features
 - Pinned versions
- First stable binary release
 - Linux/MacOS/Windows
 - Help needed!

PROJECT STATUS

- TIMELINE
- DEMO 0:
testing some Ada
software

```
$ alr get --build eagle_lander
```

```
$ alr get --build hangman
```

```
$ cd hangman_1.0.0_a5790492
```

```
$ alr run
```

```
***** W E L C O M E   T O   H A N G M A N   *****
```

```
By: Jon Hollan, Mark Hoffman, & Brandon Ball
```

```
$ alr run --list
```

```
Project hangman builds these executables:
```

```
    hangmain (found at /tmp/demo/hangman_1.0.0_a5790492/bin/hangmain)
```

```
$ alr list
```

```
ada_lua           An Ada binding for Lua
```

```
adacurses         Wrapper on different packagings of NcursesAda
```

```
adayaml           Experimental YAML 1.3 implementation in Ada
```

```
$ alr search x
```

NAME	VERSION	DESCRIPTION
------	---------	-------------

rxada	0.1.0	RxAda port of the Rx framework
-------	-------	--------------------------------

xml_ez_out	1.6.0	Creation of XML-formatted output from Ada programs
------------	-------	--

xstrings	1.0.0	Renaming of gnatcoll.strings w/o other dependencies
----------	-------	---

DESIGN BASICS

- Repositories
- Classification
- Underlying data types
- On-disk structure

REPOSITORIES @ <https://github.com/alire-project>



alire-project

Repositories 30

Packages

People 3

Teams 2

Projects 1

Settings

Pinned repositories

[Customize pinned repositories](#)



alire

Command-line tool from the Alire project and supporting library

Ada ★ 48 🍴 12



alire-index

Community index for the Alire project

★ 8 🍴 9



semantic_versioning

Semantic versioning in Ada

Ada ★ 4 🍴 2



alire.ada.dev

Official website for the project

CSS ★ 1 🍴 1



dockerfiles



alire-crates-ci

CI testing of crates in default alire index

Shell 🍴 1

alire-index vs **alire** vs **alr**

alire-index	alire	alr
Community index	Library project	Command-line tool
Describes “crates”	Common functionality	Interactive part
TOML files		

[https://.../alire-project/
alire-index](https://.../alire-project/alire-index)

<https://.../alire-project/alire>

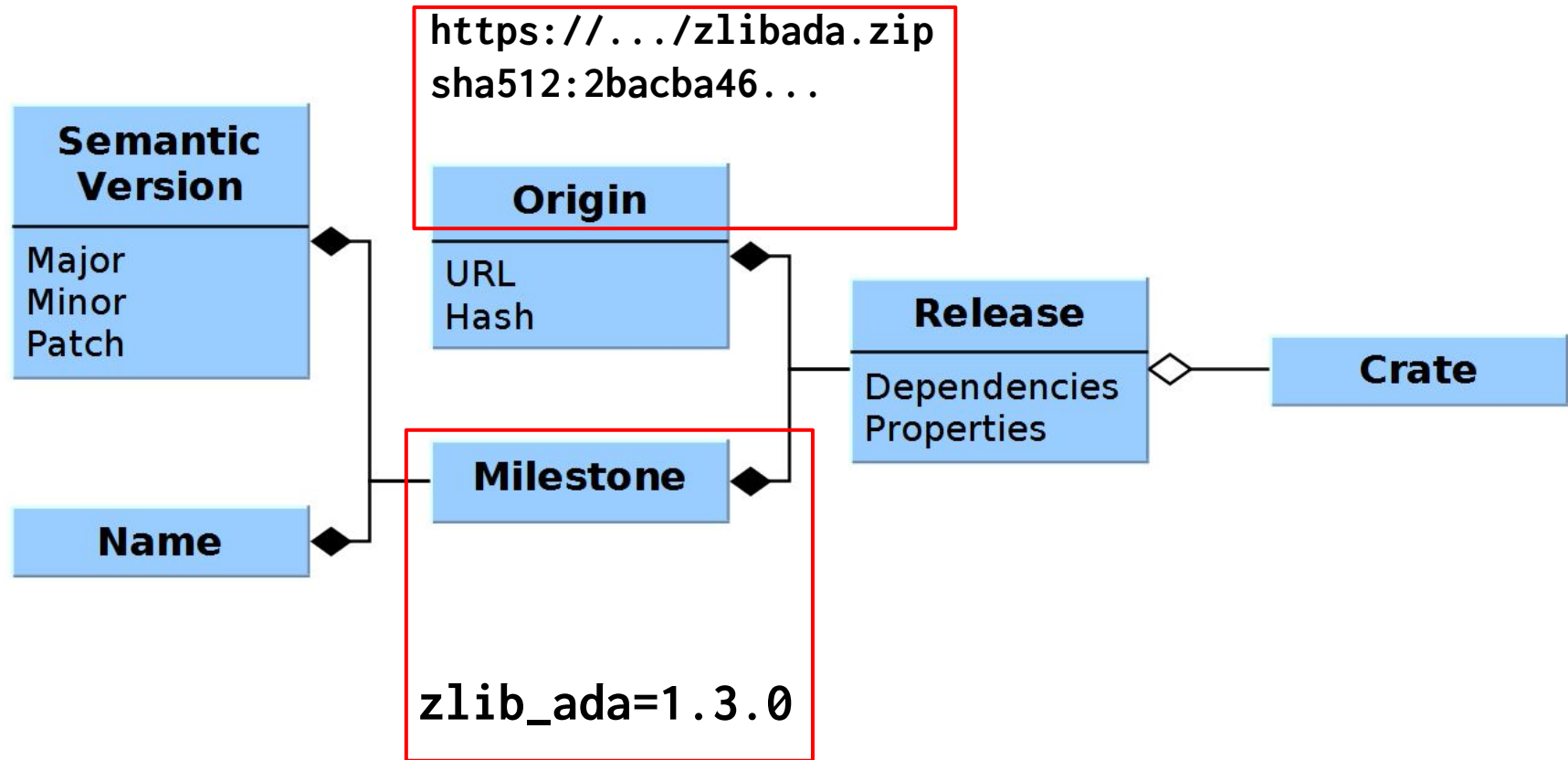
Types of Package Managers

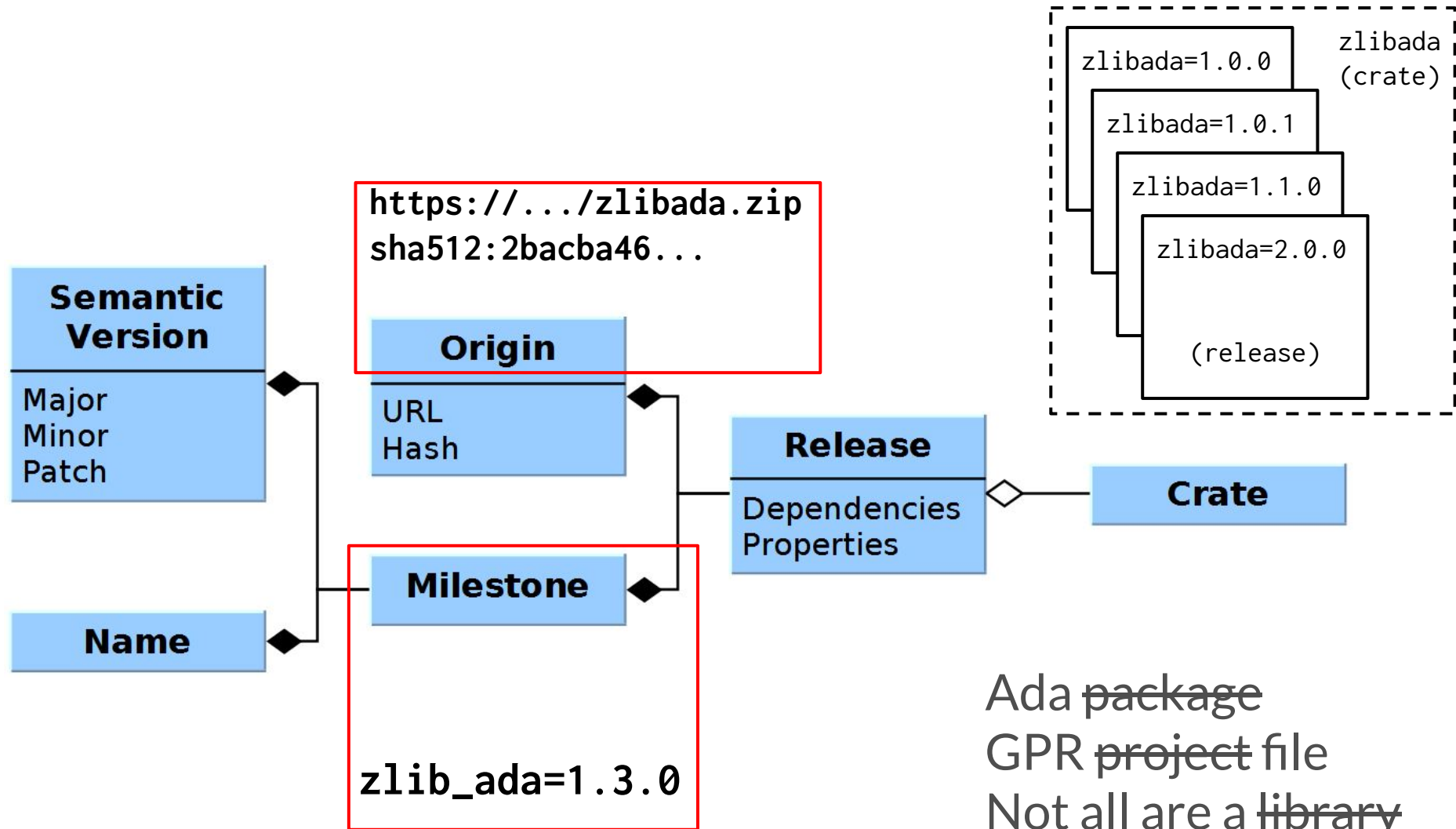
SYSTEM vs **SANDBOX**

PLATFORM vs **LANGUAGE**

BINARIES vs **SOURCES**

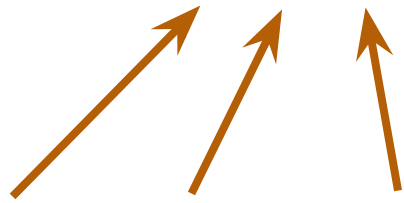
OFFICIAL vs **COMMUNITY**





Ada package
GPR project file
Not all are a library
Too general bundle
Crate

version 1.2.3-prerelease+anything



major . minor . patch

The diagram consists of three orange arrows pointing from the labels 'major', 'minor', and 'patch' to the corresponding digits in the version string '1.2.3'. The first arrow points from 'major' to '1', the second from 'minor' to '2', and the third from 'patch' to '3'.

- Major changes **break** compatibility
- Minor changes **add** functionality
- Patch changes **fix** bugs

Minor/Patch upgrades “should” be safe.

- Meaningful only when offering an API
- Can assimilate other versioning methods

Calendar versioning: 20180501.0.0

\$ alr show --solve pygamer_simulator

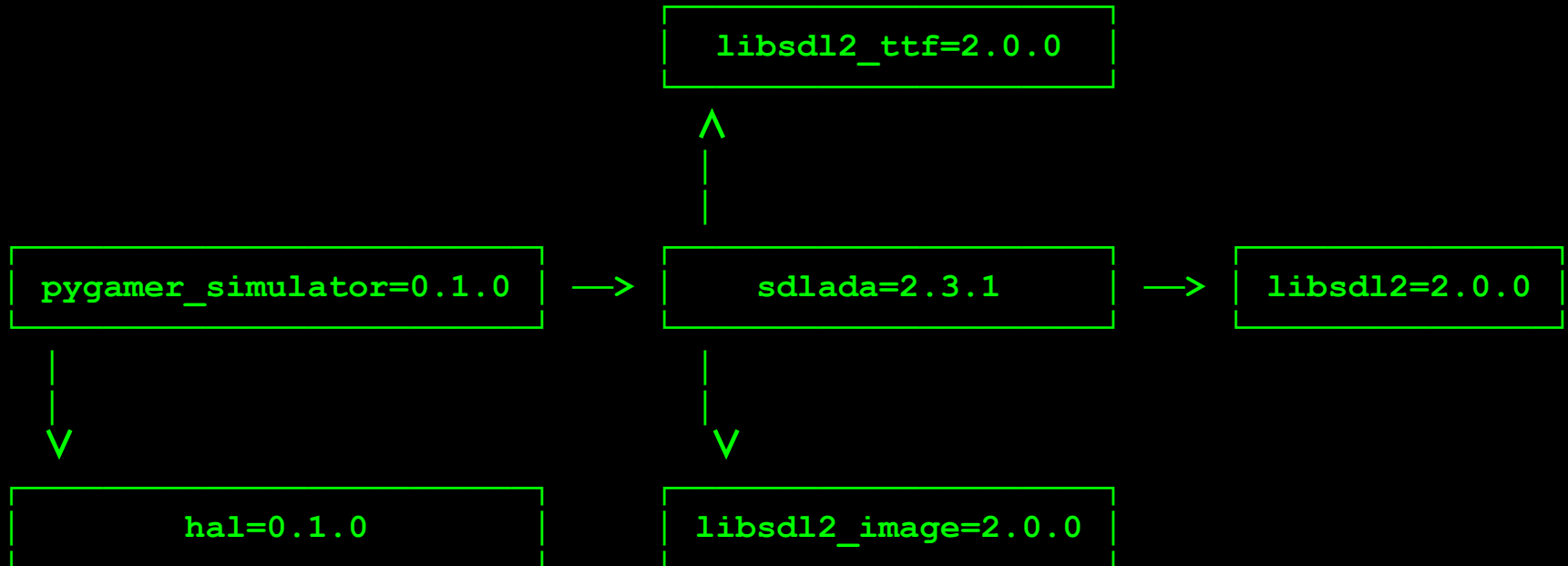
pygamer_simulator=0.1.0: SDL simulator of the AdaFruit PyGamer

Dependencies (direct):

hal^0.1.0
sdlada^2.3.1

Dependencies (solution):

hal=0.1.0
libsdl2=2.0.0
libsdl2_image=2.0.0
libsdl2_ttf=2.0.0
sdlada=2.3.1



```
$ alr get hello
```

```
$ tree hello*
```

```
hello_1.0.1_dcc36a2f/
```

```
|— alire
|   |— cache
|   |   |— dependencies
|   |       |— libhello_1.0.0_7bc7dcfd
|   |           |— libhello.gpr
|   |           |— LICENSE
|   |           |— README.md
|   |           |— src
|   |               |— libhello.adb
|   |               |— libhello.ads
|   |— hello.toml
|— hello.gpr
|— LICENSE
|— README.md
|— src
|   |— hello.adb
```

Contributing to the index (1/2)

- Clone the index repository
<https://github.com/alire-project/alire-index/>
- Let alr know about it
`$ git index --add`
- Describe the crate in a text file: `index/XX/XXX.toml`
<https://github.com/alire-project/alire/blob/master/doc/catalog-format-spec.rst>

Contributing to the index (2/2)

- Crate format spec:
<https://github.com/alire-project/alire/blob/master/doc/catalog-format-spec.rst>
- TOML syntax, contains:
 - General information about the crate : description, website, authors, ...
 - Release-specific information: where to get sources, dependencies, ...
- Demo time!

BETA



Alire




Crates Search

CI linux passing

CI Windows passing

CI macOS passing

chat on gitter

ALR

ALIRE: Ada Library REpository.

A catalog of ready-to-use Ada libraries plus a command-line tool (`alr`) to obtain, compile, and incorporate them into your own projects. It aims to fulfill a similar role to Rust's `cargo` or OCaml's `opam`.

Caveat emptor

Documentation at this time is minimal. Expect further efforts in this direction until this warning is removed.

TL;DR

Available for Debian stable / Ubuntu >=17.10 / macOS

`alr` is undergoing frequent changes in preparation for a first publicly announced beta. Hence, the current recommendation is to run the latest `master` branch version, and double-check in case of problems that no new PRs have been merged since your last compiled version.

To install run the following as user in a terminal, or see below for more details:

1. If running on macOS, `export OS=macOS`
2. `git clone --recursive https://github.com/alire-project/alire.git`
3. `cd alire`
4. `gprbuild -j0 -p -P alr_env`

After a succesful build, you will have a `bin/alr` executable that you can put in your path if desired.

To see available crates per platform/compiler, see the [alire-crates-ci](#) companion repository.

Design principles

BETA

LR

Alire

[Twitter](#) [GitHub](#)

[Crates](#) [Search](#)

A

- [Ada_toml](#)
- [Ada_voxel_space_demo](#)
- [Adayaml](#)
- [Ado](#)
- [Ado_postgresql](#)
- [Ado_sqlite](#)
- [Agpl](#)
- [Ajunitgen](#)
- [Apdf](#)
- [Asis](#)
- [Aws](#)

B

- [Bar_codes](#)
- [Basalt](#)

C

- [C_strings](#)
- [Cortex_m](#)

E

- [Eagle_lander](#)
- [Elada](#)

G

- [Geste](#)
- [Geste_examples](#)
- [Gid](#)
- [Glut](#)
- [Gnat](#)
- [Gnatcoll](#)

BETA



Alire



Crates Search

Geste

GENeric Sprite and Tile Engine

[Website](#)

Author: Fabien Chouteau

Maintainer: fabien.chouteau@gmail.com

License: BSD 3-Clauses

Version: 1.1.0

Dependencies: No dependency.

Tags: `game` `nostd` `rendering` `sprite`

Badge:

GESTE is a sprite and tile 2D render engine designed to run on micro-controllers low performance systems. GESTE also provides a basic math and physic engine using fixed point arithmetic.

Creating maps

GESTE is developed in parallel with [tiled-code-gen](#), a tool that generates code from the [Tiled Map Editor](#).

Examples

The crate `geste_examples` contains 3 examples of different game genre:

- platformer
- RPG
- racing

Design

Layers

BETA

LR

Alire




Crates Search



7 results (0.02 seconds)

Virtapu

</crates/virtapu.html>

A virtual Audio Processing Unit to simulate 8-bit era **game** sounds
 fabien.chouteau@gmail.com MIT ...

Geste_examples

/crates/geste_examples.html

Example for the GESTE **game** engine fabien.chouteau@gmail.com BSD 3-Clauses ...

Hangman

</crates/hangman.html>

Hangman **game** for the console alejandro@mosteo.com ...

Eagle_lander

/crates/eagle_lander.html

Apollo 11 lunar lander simulator fabien.choutea@gmail.com GPL 3.0 ...

Geste

</crates/geste.html>

GEneric Sprite and Tile Engine fabien.chouteau@gmail.com BSD 3-Clauses ...

Pygamer_bsp

/crates/pygamer_bsp.html