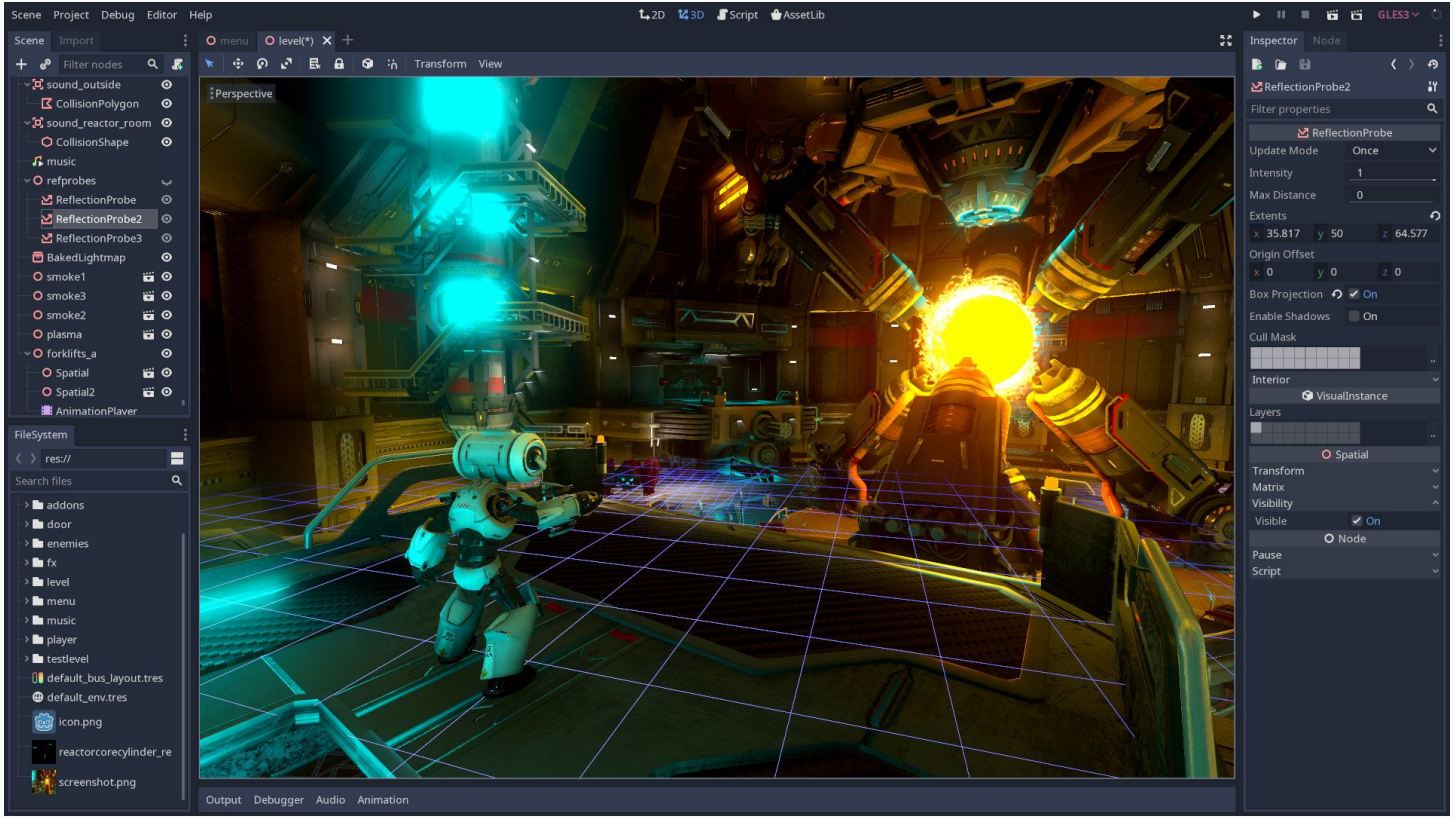
Bringing Python to Godot

01/02/2020

Emmanuel Leblond - https://github.com/touilleMan/godot-python

Godot ?



GODOT
Game engine

Open source (MIT)

Full featured

Linux support ❤️❤️❤️

Demo time !

Godot: dynamic from the ground

godot/node2d.hpp

```
class Node2D : public Node {

        void set_rot(float p_angle);
        float get_rot() const;
        ...

}
```

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godot/node2d.hpp

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class Node2D : public Node {
    GDCLASS(Node2D, Node);
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    void _bind_methods() {
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# C++ static traditional way
Node2D *obj = new Node2D();
obj->set_ret(4.2);
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# C++ Dynamic way
Variant obj = ClassDB::instance("Node2D");
MethodBind *mb = ClassDB::get_method("Node2D", "set_rot");
Variant args[1] = {Variant(4.2)};
Variant ret = mb->call(obj, args, ...)
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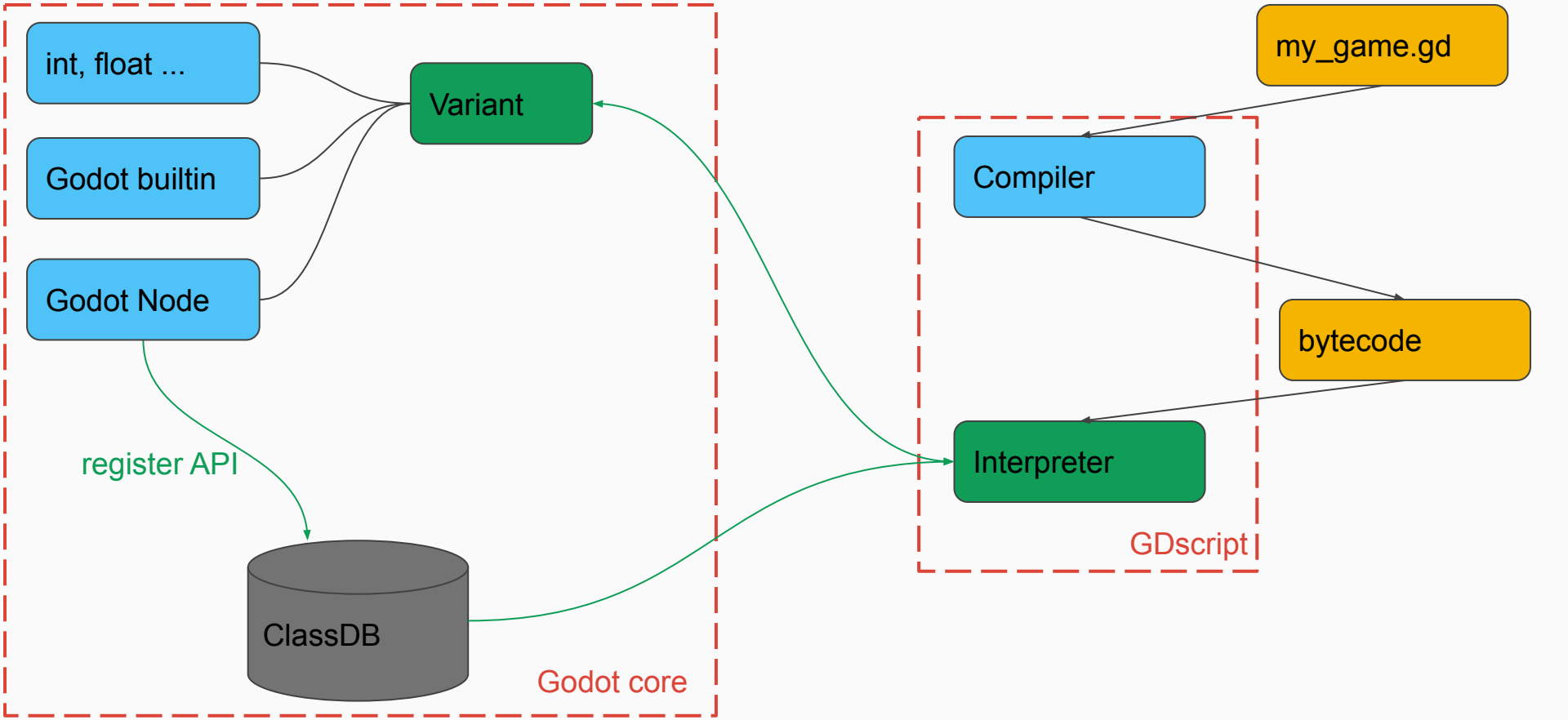
GDscript ? Why ?

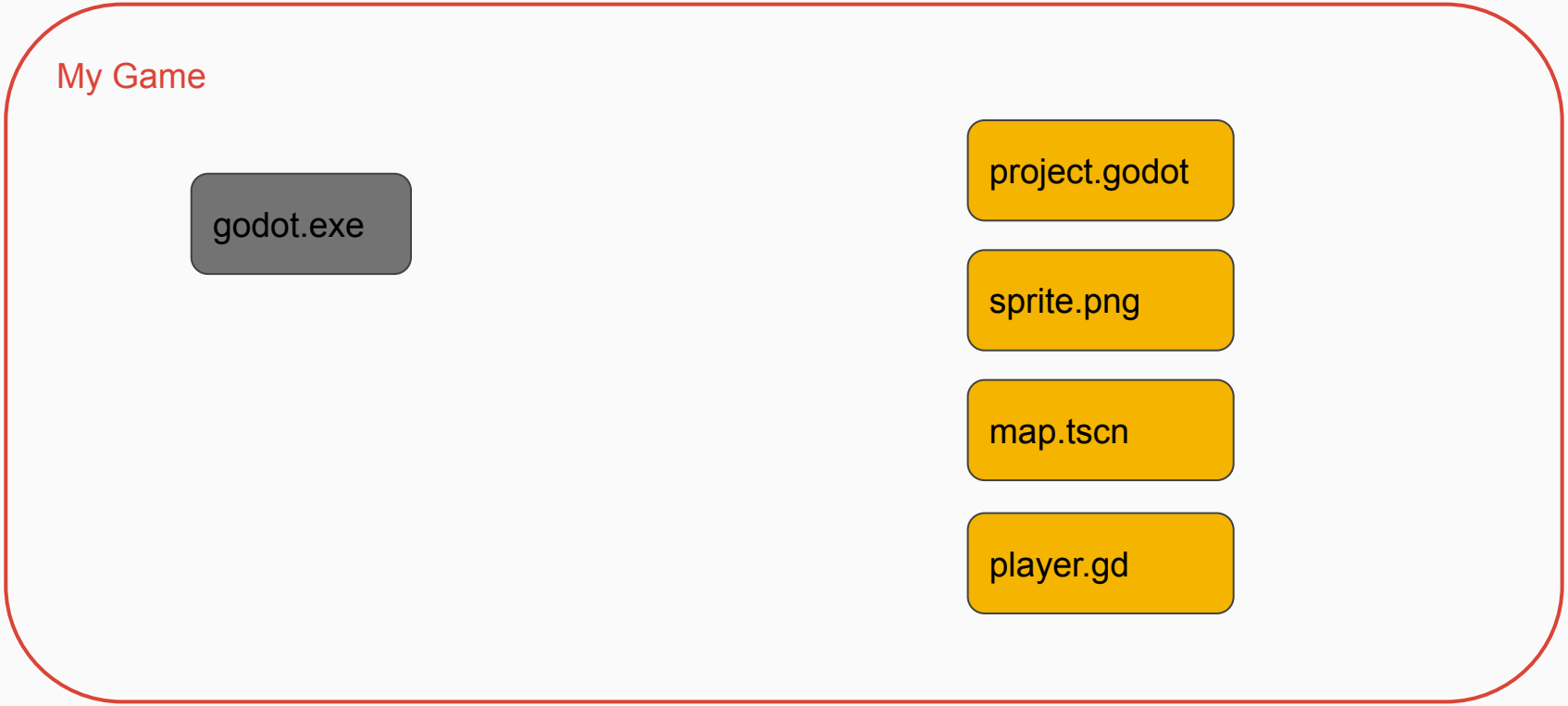


BUT...

Python ? What for ?

- Game scripting
- Testing
- Asset pipeline with Blender
- Bring Python ecosystem to Godot ;-)

Bind to Python to Godot



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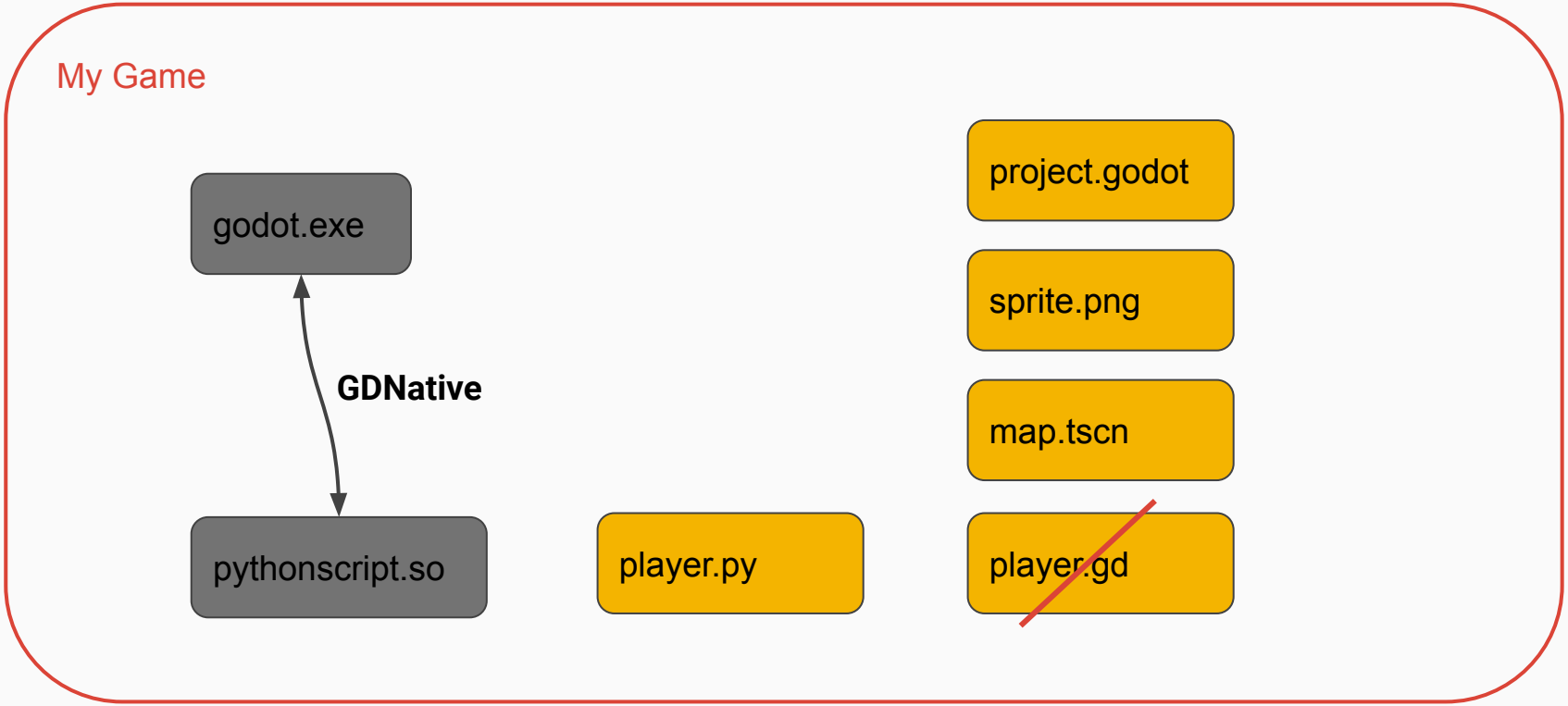
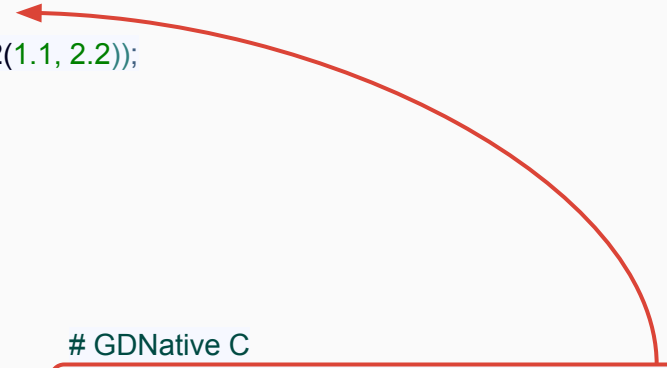


Control Godot from C with GDNative

```
# C++ static traditional way
Node2D *obj = new Node2D();
Vector2 new_pos = obj->translate(Vector2(1.1, 2.2));
```



```
# GDNative C
godot_class_constructor constructor = gdapi10.godot_get_class_constructor("Node2D");
godot_object *obj = constructor();
```

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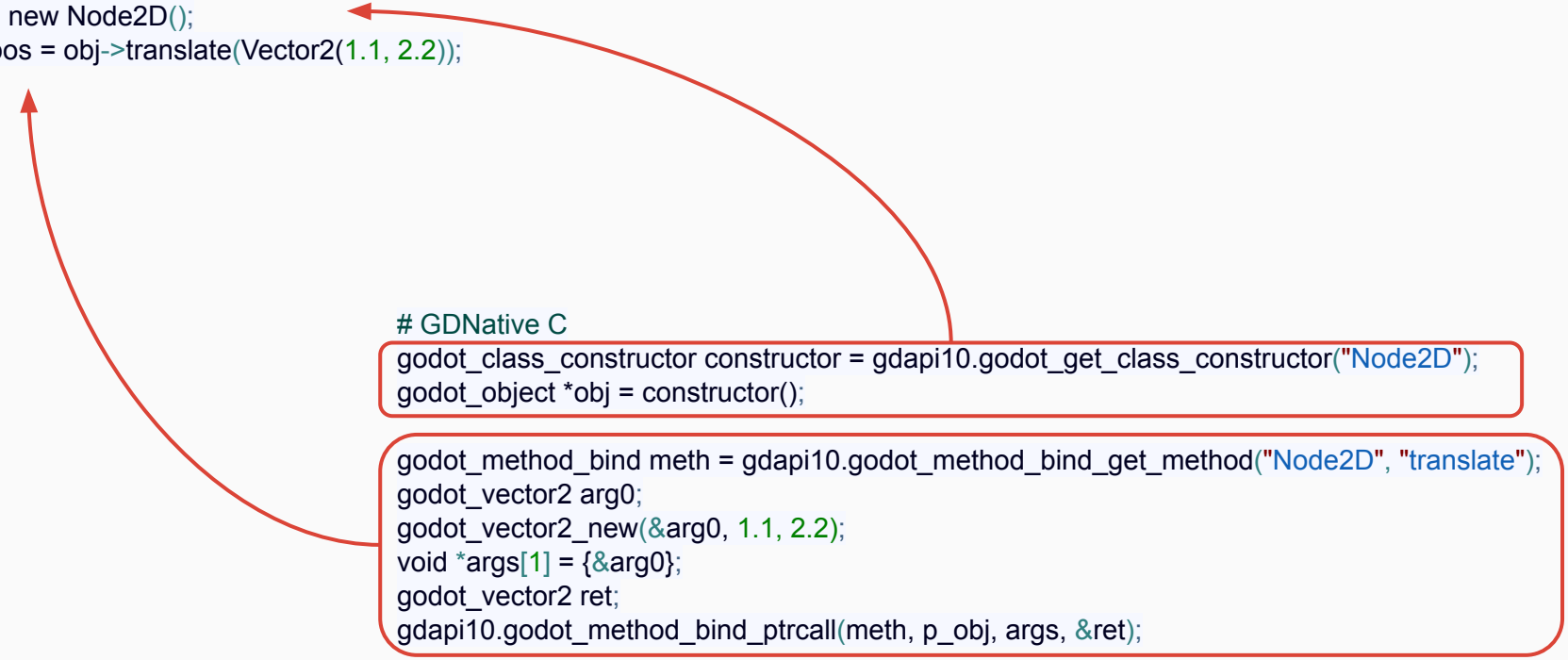

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# GDNative C
godot_class_constructor constructor = gdapi10.godot_get_class_constructor("Node2D");
godot_object *obj = constructor();
```

```
godot_method_bind meth = gdapi10.godot_method_bind_get_method("Node2D", "translate");
godot_vector2 arg0;
godot_vector2_new(&arg0, 1.1, 2.2);
void *args[1] = {&arg0};
godot_vector2 ret;
gdapi10.godot_method_bind_ptrcall(meth, p_obj, args, &ret);
```

Bind to Python to Godot

WHAT ?

HOW ?

- Python as script language
- Godot Callbacks
- Builtins bindings
- ClassDB bindings

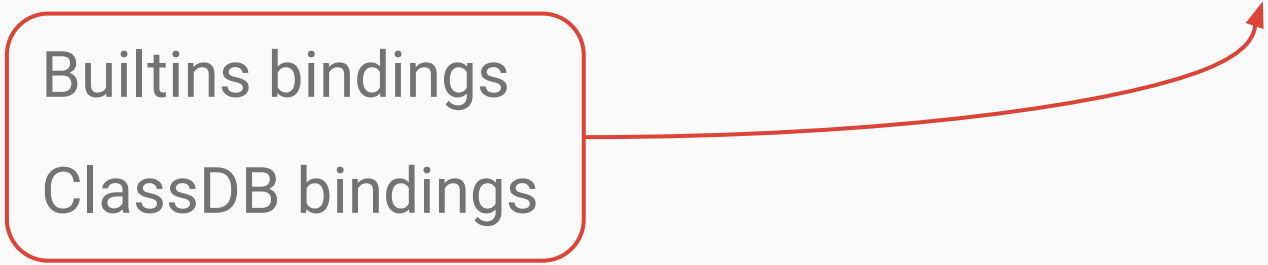
Bind to Python to Godot

WHAT ?

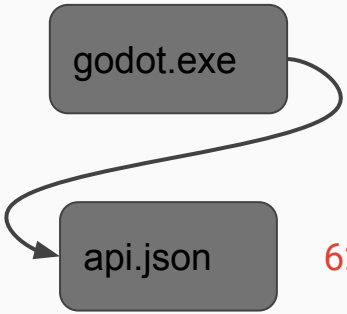
- Python as script language
- Godot Callbacks
- Builtins bindings
- ClassDB bindings

HOW ?

- Cython !
- A looot of templates ;-)

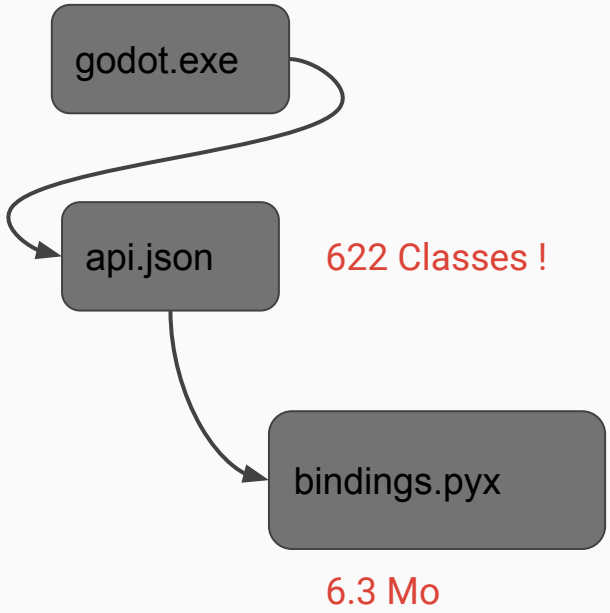


Generate ClassDB binding

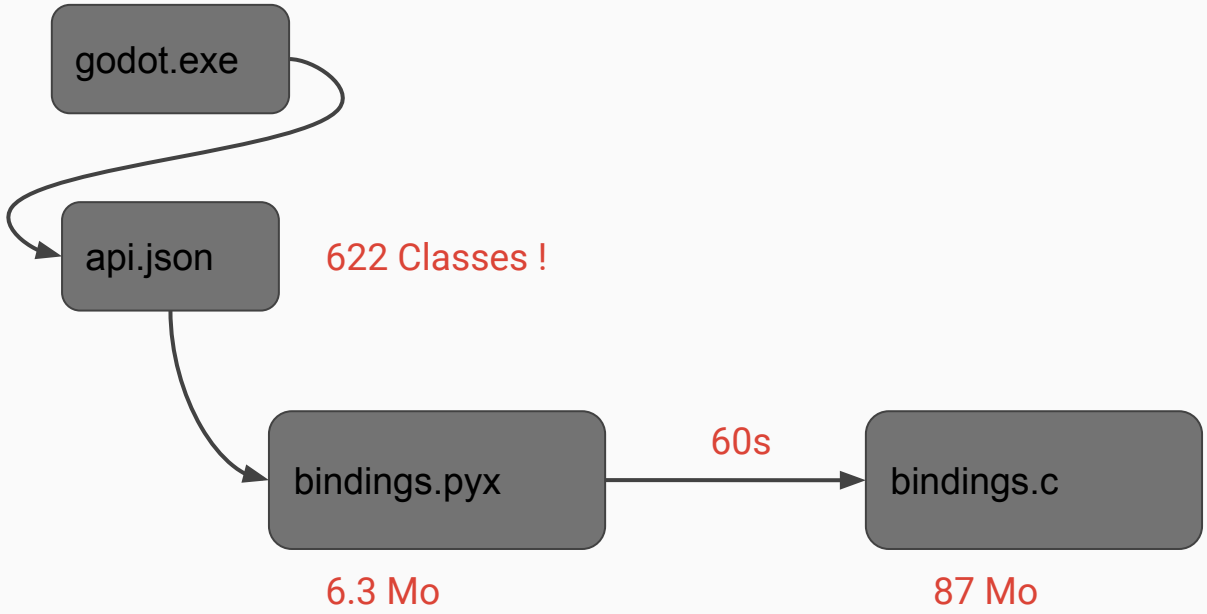


622 Classes !

Generate ClassDB binding



Generate ClassDB binding



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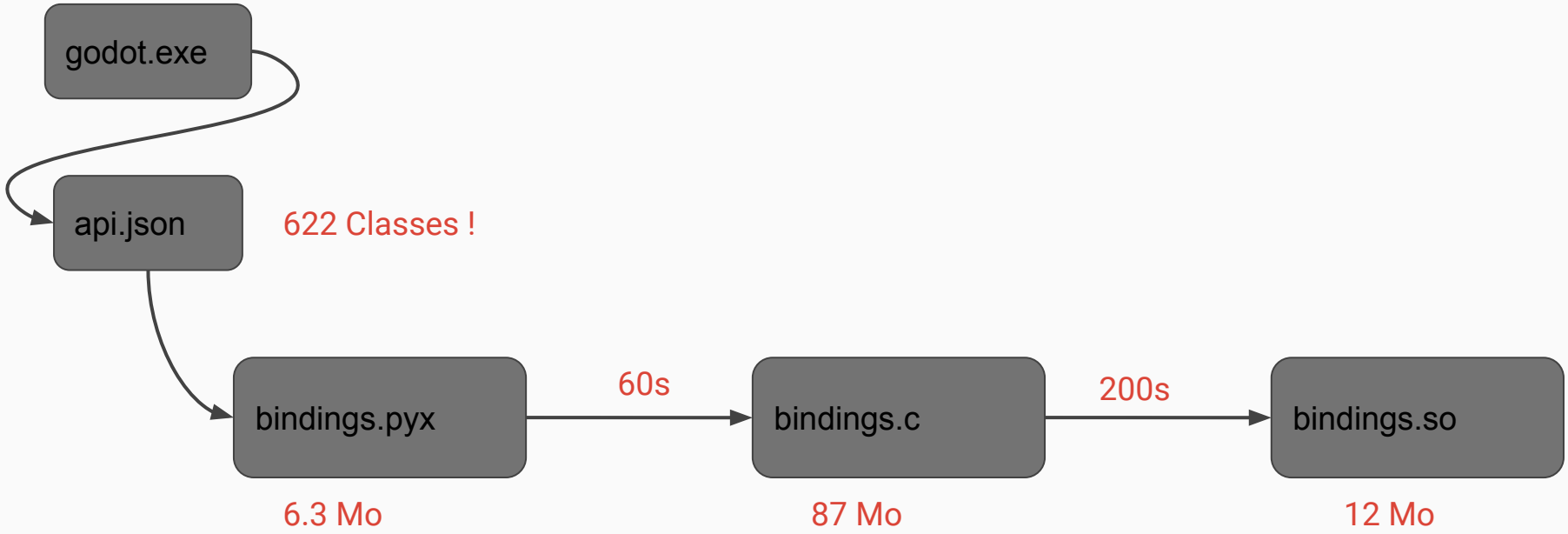

Roadmap

- Beta is here (we need you !)
- MacOS build :'-(
- Editor integration
- Cython in games \o/
- Godot 4.0

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Write a game !!!

Thank !
Q&A ?


touilleMan


@touilleMan

MicroPython

:’-(

- ~90% Python
- No pdb
- Static heap
- Documentation…

*^__^*/

- Smaller
- Embedding friendly
- Customization !
- GIL is optional

CPython + Pybind11

:’-(

- C++...
- ...with magic templates
- Compilation time
- Output size

*^__^*/

- C++ binding feels like Python
- Autogenerate bindings with api.json

CPython + CFFI

:’-(

- Memory management
- Overhead
- Dynamic binding not for Godot release

*^__^*/

- You bind in Python !!!!
  - Closure
  - Call resolution done by Python
  - Just in time binding
- Supports also Pypy

CPython + Cython

:’-(

- Compilation time
- Output size

*^__^*/

- C speed
- Python clarity
- Allow us to write games in Cython !!!!