



<https://github.com/SFTtech/openage>

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rC3 lightning talk++

What?

- Age of Empires II reimplementation in free software
- Project started in 2013
- Requires original assets, free replacement pack planned
- Clone of look and feel + improvements

→ Unlimited possibilities™

- **Modding!**
- > 8 Players, infinite maps, sane networking
- Competitive matchmaking
- Insane addons: fire, weather, zombies, cultures, immersion!

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Similar projects

- 0ad - Ancient warfare (AOE 3) <http://play0ad.com/>
- OpenMW - Morrowind <http://openmw.org>
- OpenRA - C&C Red Alert <http://openra.net>
- OpenRCT2 - Roller Coaster Tycoon <http://openrct2.net>
- OpenTTD - Transport Tycoon Deluxe <http://openttd.org>
- Unknown horizons - Anno 1503/1602 <http://unknown-horizons.org>
- XL Engine - Arena, Daggerfall <http://xlengine.com>
- ...

Used Techs

Technology	Component
C++17	Engine core
Python3	Scripting, media conversion
Cython	Python ↔ C++ glue code
CMake	Build system
OpenGL	Rendering, shaders
SDL2	Cross-platform Audio/Input/Window handling
Qt5 + QML	User interface
nyan	Configuration system
Humans	Combining the above in the “right” way

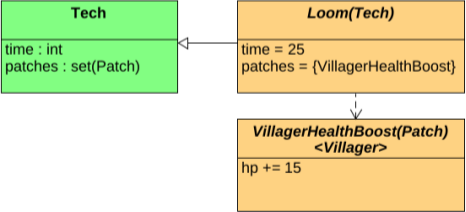
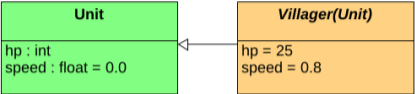
Advancements

- **Improved documentation**
 - **Contributing guide**
 - Format specifications
 - More beginner tasks
- **Modding API v0.3.0** definition to express all engine features in `nyan`
- **nyan v0.2.0**
- **Media conversion**
 - Age of Empires 1 (1997)
 - Age of Empires 2 (1999)
 - Age of Empires 2: Definitive Edition
 - Star Wars: Galactic Battlegrounds

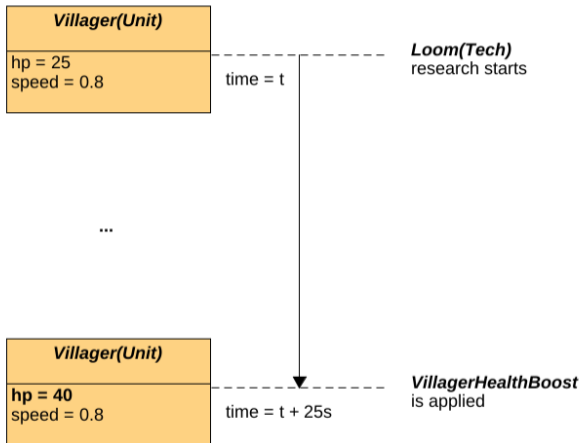
nyan Example

```
1 Unit():    # predefined
2     hp : int
3     speed : float = 0.0
4
5 Tech():    # predefined
6     time : int
7     patches : set(Patch)
8
9 ---
10
11 Villager(Unit):
12     hp = 25
13     speed = 0.8
14
15 Loom(Tech):
16     time = 25
17     patches = {VillagerHealthBoost}
18
19 VillagerHealthBoost<Villager>(Patch):
20     hp += 15
```

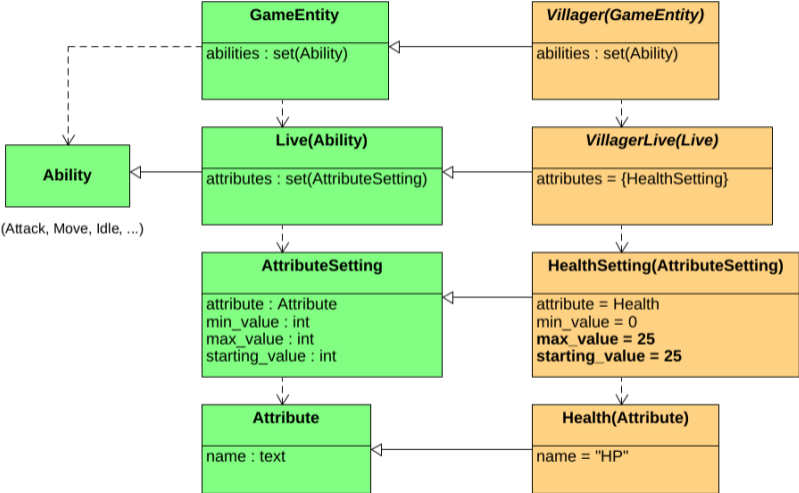
nyan Example (at load time)



nyan Example (at runtime)



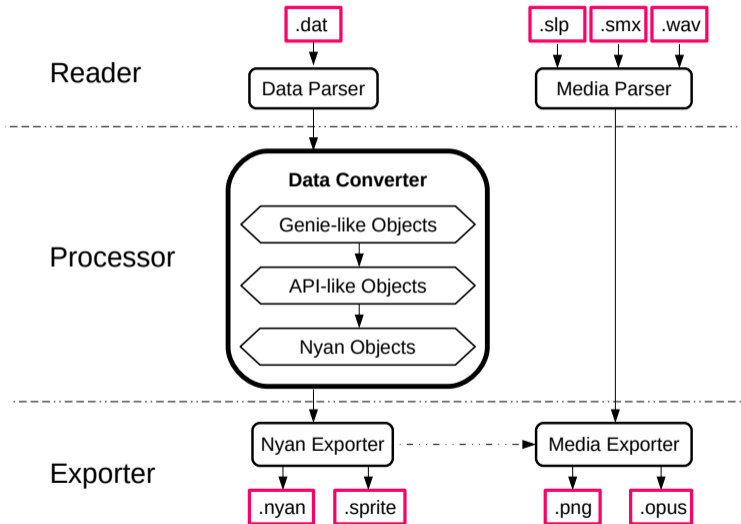
openage nyan API Example



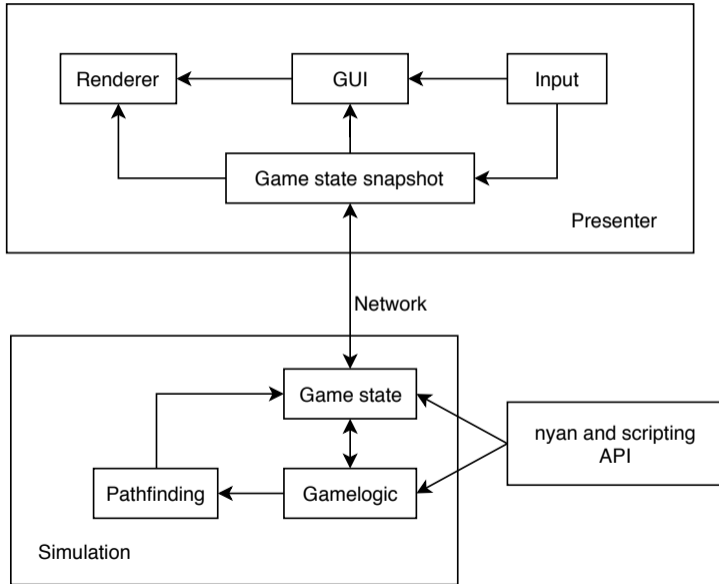
And the Tech...?

Modpack Example!

Data conversion to nyan



Engine architecture



Next Steps

- Draft ECS components and systems for **gameplay features**
- Implement **presenter** to display gamestate
- Support more games
 - Age of Empires 1: Definitive Edition
 - Age of Empires 2 (2013)
- Make a new **playtesting demo**

Contributions

156 past or active contributors, thank you so much :)

Join and get your hands dirty with open-source software

☰ **Implement a parser for the new sprite format** ✕

#1055 opened on 6 Oct 2018 by Vtec234

🟢 Open  8


☰ **Create test cases for existing subsystems** ✕

#189 opened on 8 Jan 2015 by TheJJ

🟢 Open  7

☰ **Fix doc for undocumented parts of the source code** ✕

#1113 opened on 26 May by simonsan

🟢 Open  1

Matrix `#sfttech:matrix.org`

IRC `#sfttech` on `freenode.org`

Meet us at **StuStaNet** assembly

Thx 4 listening!



Code repos:

engine

<https://github.com/SFTtech/openage>

modding

<https://github.com/SFTtech/nyan>

continuous integration

<https://github.com/SFTtech/kevin>

One thing that AOE2 is notorious for is the great pathfinding, specially considering unit formations, so my question is: how do you feel about taking on this challenge, specially taking into account that unit selection won't be restricted to 40 units like in the original?

How deterministic is your engine? In OpenRCT2 we find a lot of bugs in multiplayer due to inputs divergence. Are there floats (ieee754 or other) involved? These usually would be problematic to properly calculate across systems/CPU's/build settings

Do you plan a snapshot/replay system?

Do you have or plan any fuzzers?

How sure are you the Curves+Prediction based Simulation Engine is going to work (with reasonable performance) with the mechanics of AOE2. Do you have a working prototype or is this purely theoretical at this point?

Still in the theme of fuzzing/state handling - can a single process contain multiple instances of engine, so it could simulate multiple users without doing actual networking?

You've mentioned some ideas for the far future like fire, weather effects, zombies, etc... Any other crazy ideas you'd like to share? Don't be afraid to share your wildest dreams :)

What do you expect to achieve in the coming year in the openage project?

Do you plan to have GLES renderer? So I can play on my raspi?
what about openage on Linux mobile phones - PinePhone / Librem 5? Do you
consider giving them a shot?