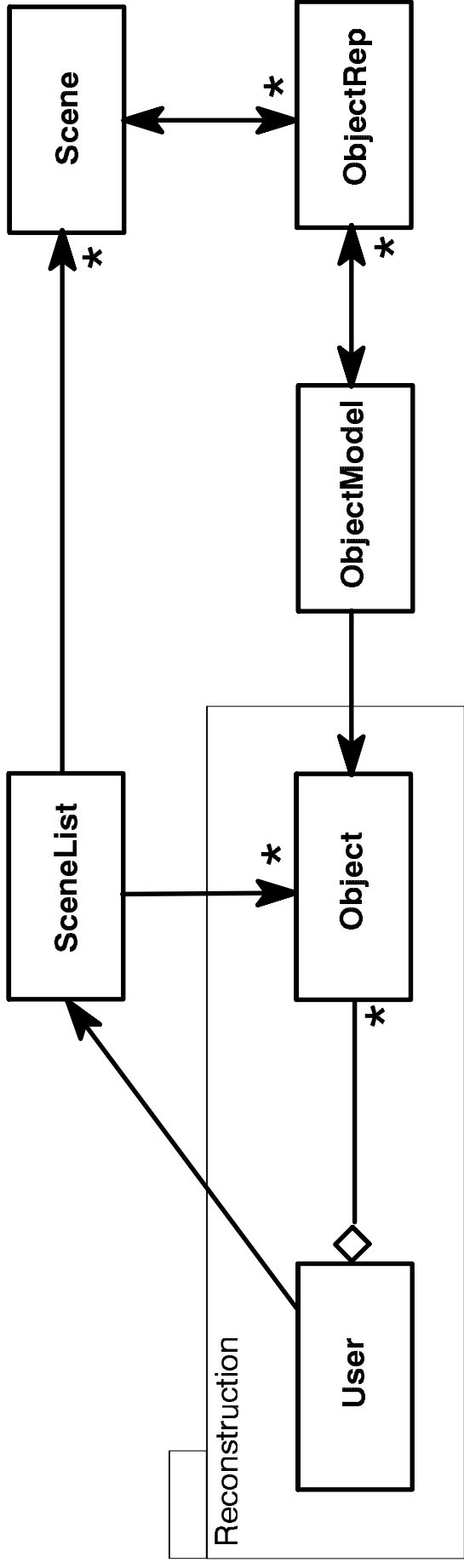


Can Java & C++ live together ?

(in Atlas Graphics)

- ☺ major Graphics & Analysis applications are written in Java (JAS, WIRED, soon jAtlantis)
- ☺ Java is better language
- ☹ Reconstruction++ software is written in C++
- major fear is interoperability between Java and C++
- ➡ we should try to see whether it is really so difficult
- I've tried (for about two weeks) and this is what I've found ...

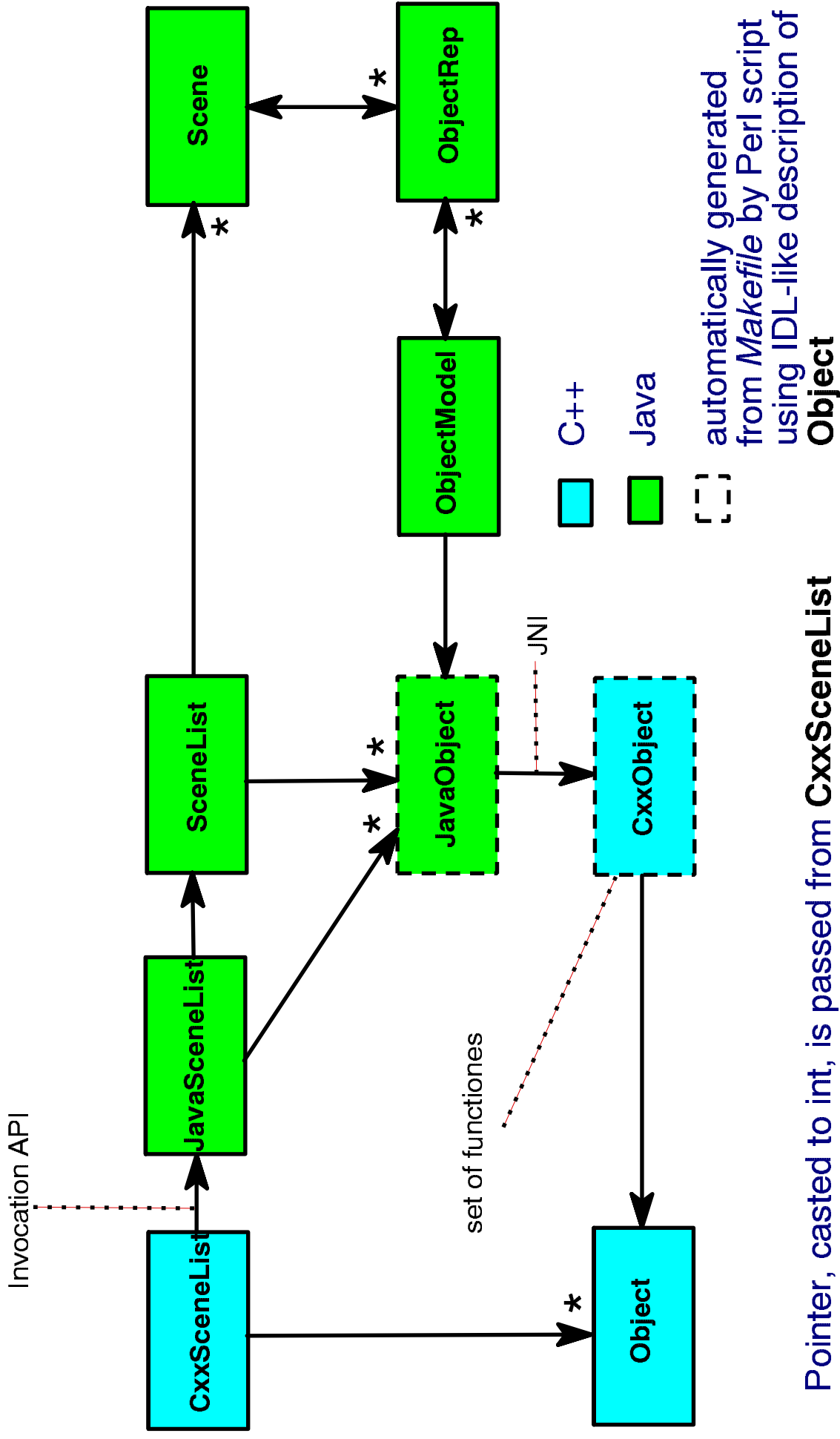
One Language Environment



o) very strict interface:

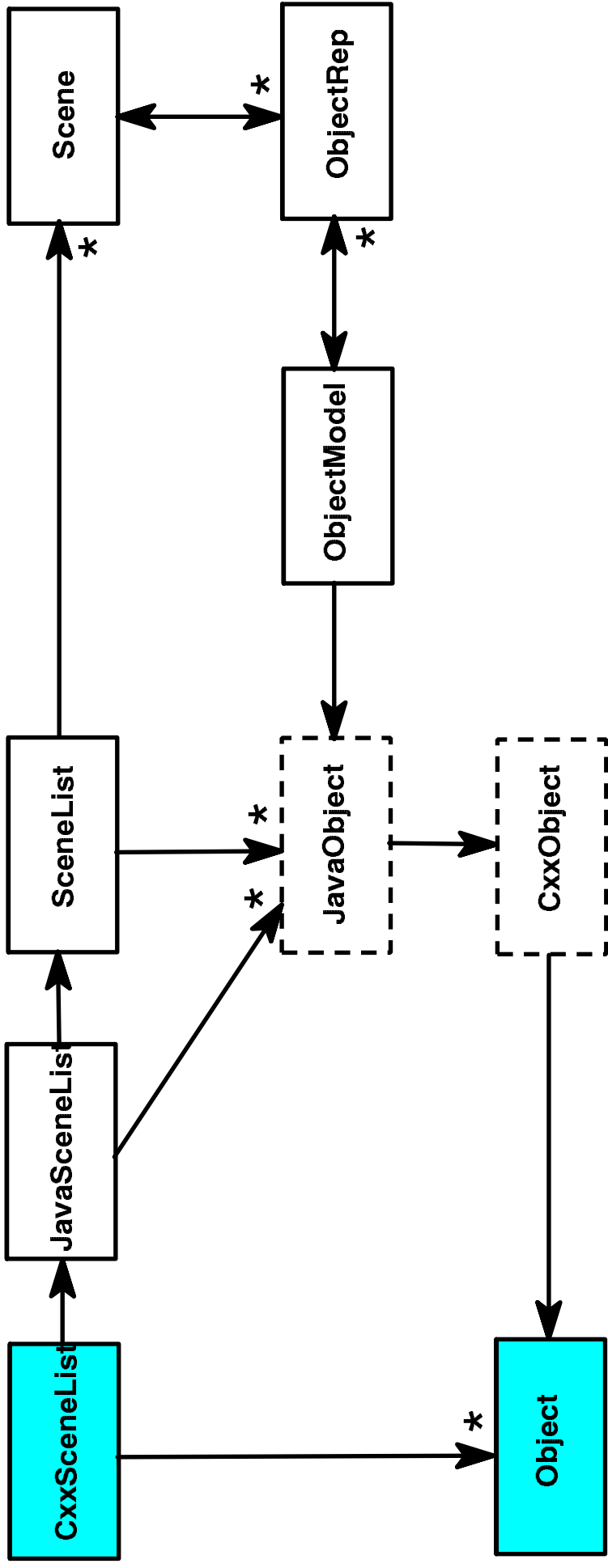
- oo) Reconstruction doesn't see details of Graphics
- oo) Graphics doesn't work directly with Reconstruction Objects
- o) language independent (both C++ and Java implementation exist)

Java & C++



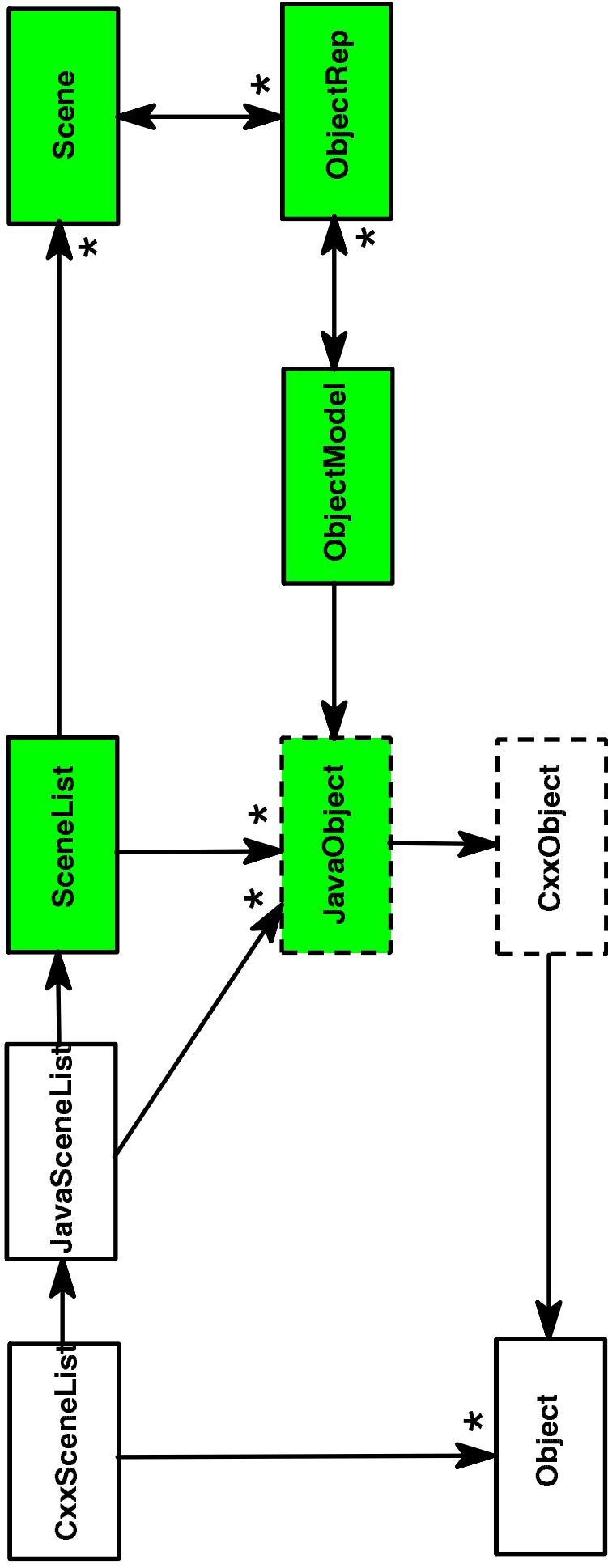
Pointer, casted to int, is passed from **CxxSceneList** to **CxxObject** so **SceneList** can access **Object** via **CxxObject** and **JavaObject** later.

Java & C++



Reconstruction (User) sees the same environment as before - all in C++.

Java & C++



Graphics (Developer) sees the same environment as before - all in Java.

Q & A

- could it
 - map
 - inheritance, relations, aggregation ? - possible
 - non-primitive arguments ? - tricky
 - templates ? - difficult
 - operate at runtime ? - Java easy, C++ difficult
 - be generalised ? - not much
 - be used for other (strict) interface ? - yes, after small re-design
- pass Exceptions ? - yes
- handle memory ? - ?
- be debugged ? - with difficulties (F77/C++/Java)

Conclusions

- 😊 it is possible
- 😊 it is not extremely difficult
- 😊 it can be done in a transparent way
- 😞 implementation is ugly (but only original developer sees it)
- it requires:
 - good Domain Decomposition with strict interfaces
 - one Domain = one Language
 - some effort (cca half FTE)
 - discipline ("Don't cross borders except on approved crossings !")