

Software architecture with OO paradigm

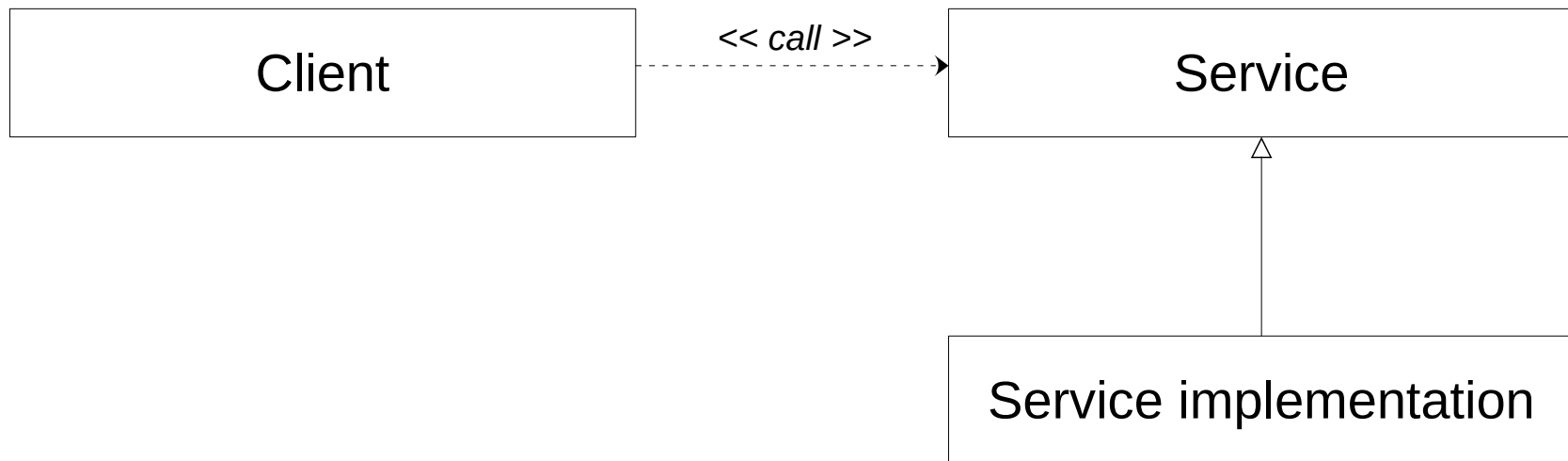
Jean-Luc Delarbre

Introduction

- **Architecture**
 - Structures of a software system
 - Elements in those structures
 - ***Relations among structure***
 - Properties of elements and structures
 - ...
- **What can OO do for architecture ?**



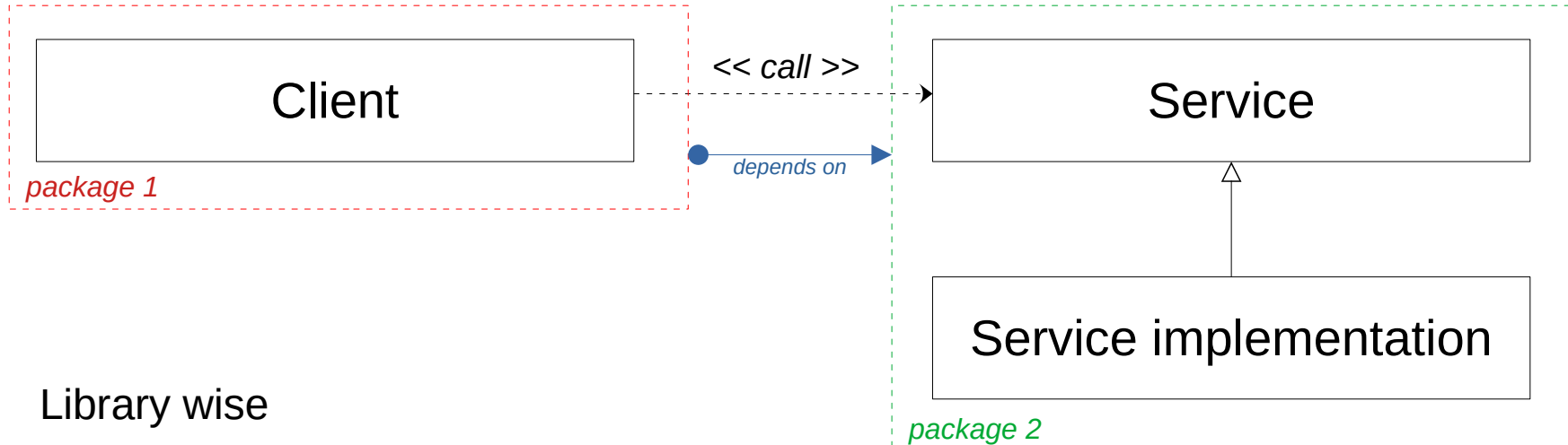
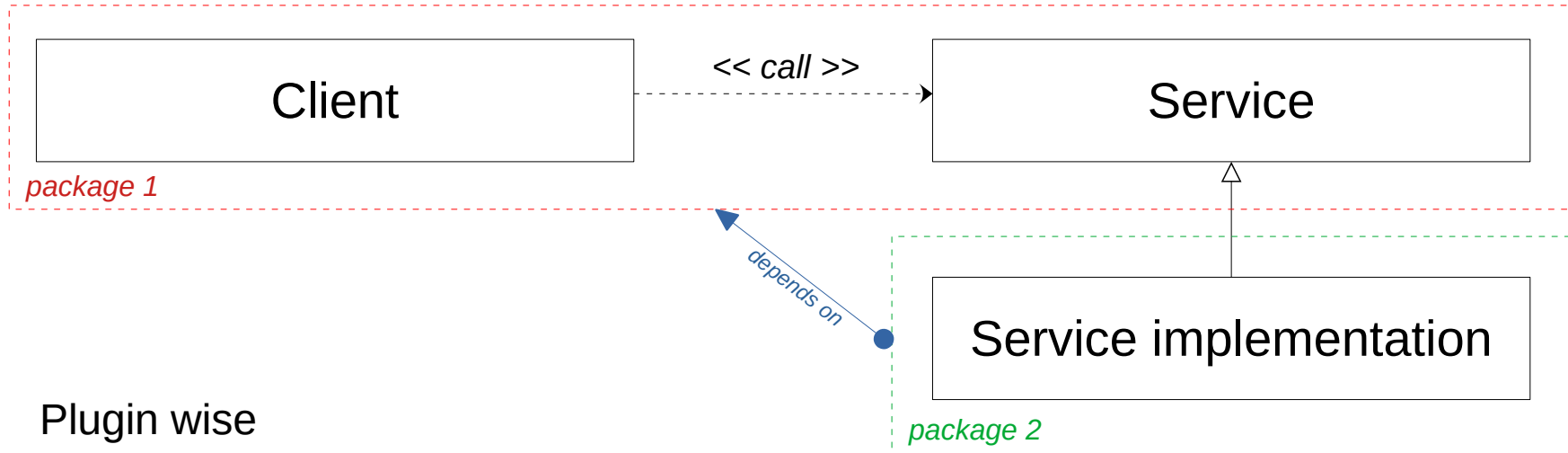
A well known pattern



How to store all those elements into packages ?

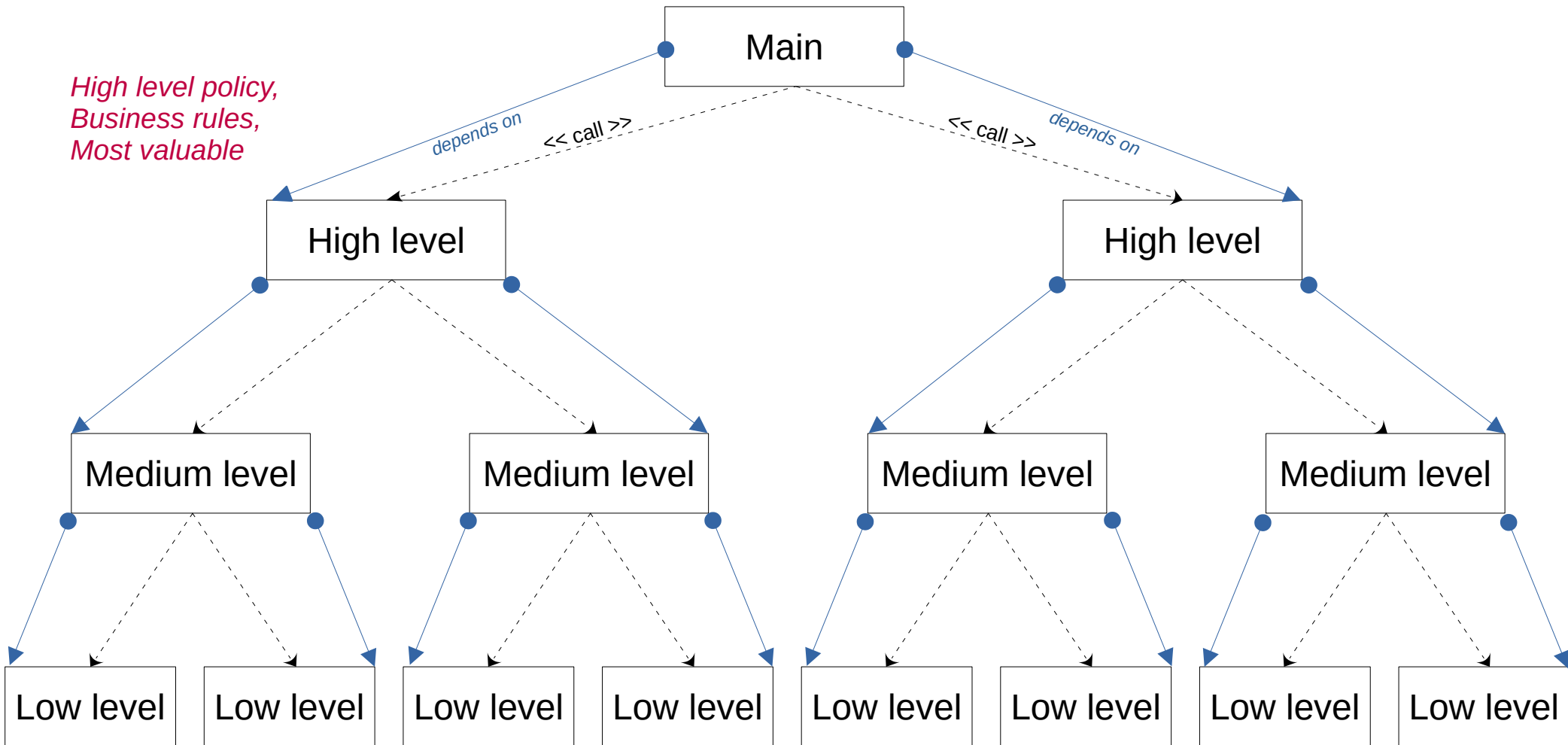


2 ways of separating components



Structured programming

*High level policy,
Business rules,
Most valuable*



Utilities: Network, disk management...

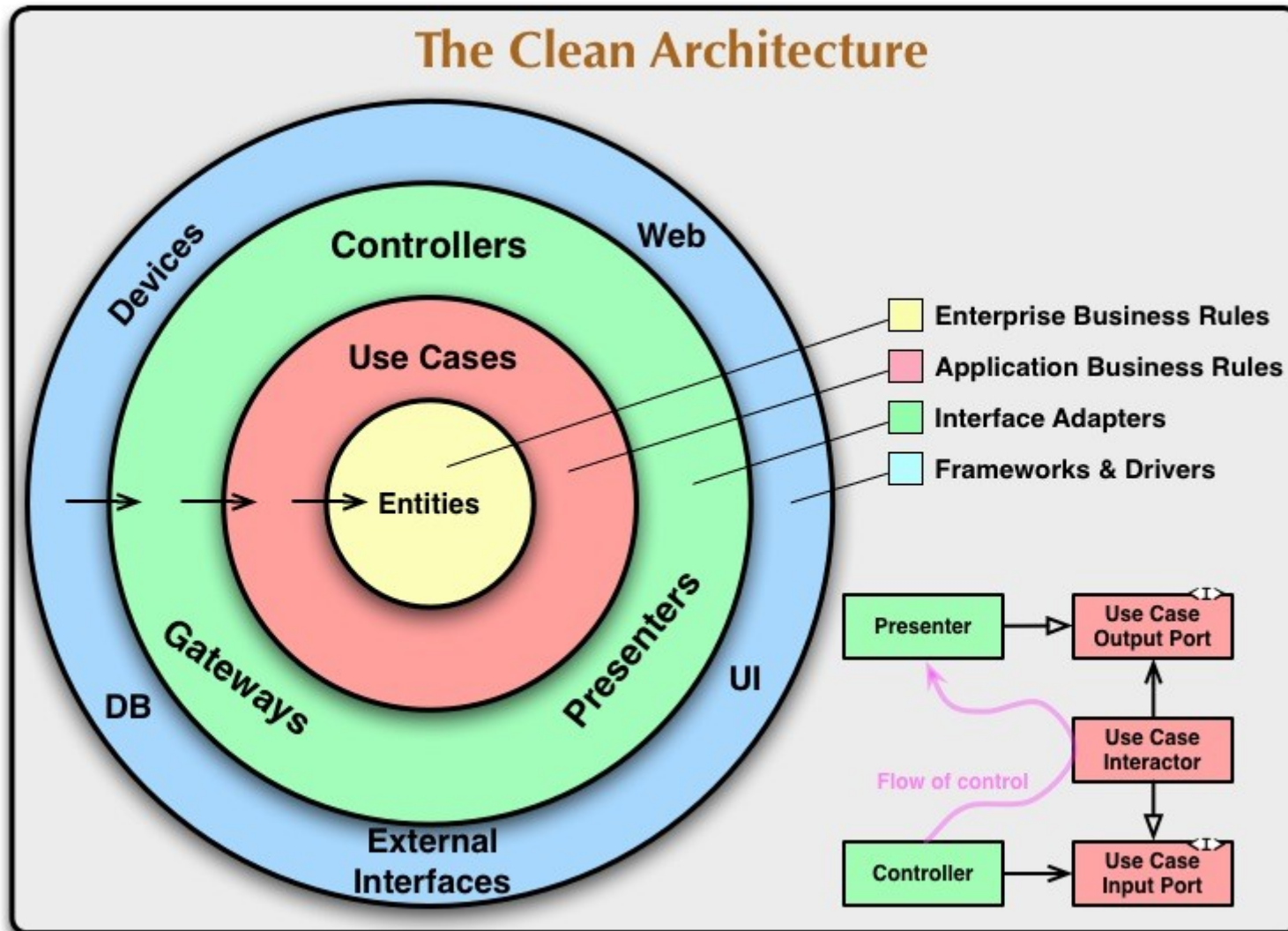


Some software architectures

- **Clean architecture**
- **Hexagonal architecture**
- **Onion architecture**
- **DCI**
- **BCE**
- **MVC ???**
 - <https://www.youtube.com/watch?v=Nsjsiz2A9mg>



Clean architecture



Designing a domain model

- **What about OOP for designing domain/business models ?**
 - It's another conception of OO
- **DDD (Domain driven design)**
 - Domain Driven Design, Tackling Complexity in the Heart of Software, Eric Evans
 - Domain-Driven Design Vite fait, Abel Avram & Floyd Marinescu
 - TDD, BDD, DDD



Oriented object programming paradigm

- **Oriented object programming**
imposes discipline on indirect transfer of control
- **Software paradigms imposes restrictions but leads to more freedom**



Structure programming paradigm

- **“No goto”**

- Controlled and hidden goto

```
if (condition) {  
    instructions  
} else {  
    other_instruction  
}
```

```
while (condition) {  
    instructions  
}
```

- **Structure programming**

imposes discipline on direct transfer of control



Next objective

- **Last software paradigm:**
 - Functional programming
 - Imposes discipline upon assignment
 - NO SIDE EFFECTS (control them)

```
int a = 2;
```

```
a = 5;
```



Reference

- **Clean Architecture, A craftsman's guide to software structure and design - Martin C. Robert**
- **<https://blog.cleancoder.com/uncle-bob/2012/08/13/the-clean-architecture.html>**
- **Structure and Interpretation of Computer Programs - Harold Abelson and Gerald Jay Sussman & Julie Sussman**
- **https://www.youtube.com/watch?v=-J_xL4IGhJA&list=PLE18841CABEA24090**

