

Builder

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13 and 14 October 2014

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Name and Classification

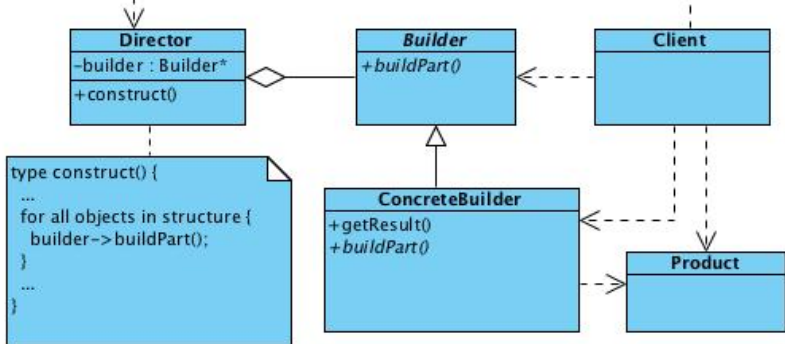
Builder (Creational)

Intent

“Separate the construction of a complex object from its representation so that the same construction process can create different representations” GoF(97)

Class Diagram

Visual Paradigm Standard Edition (University of Pretoria)



Builder

- Specifies an abstract interface for creating parts of the Product object

Concrete Builder

- builds the product's internal representation and defines the process by which it is assembled.
- defines and keeps track of the representation it creates
- provides an interface for retrieving the product

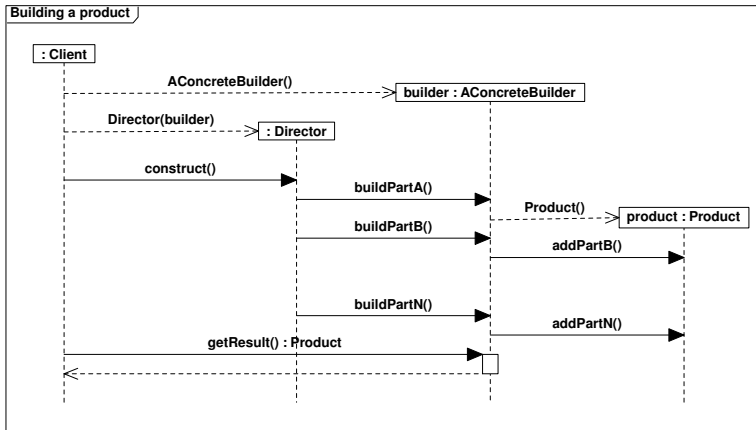
Director

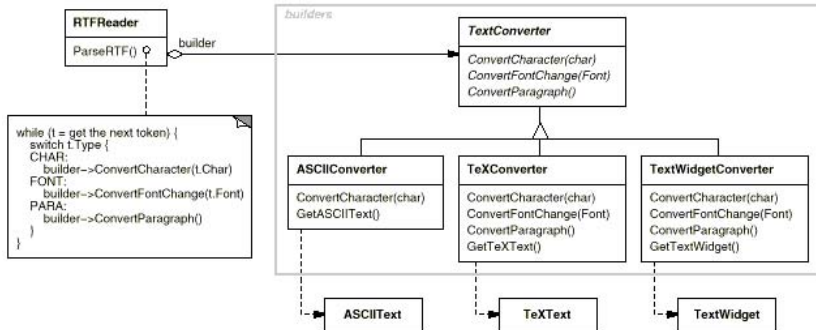
- constructs an object using the Builder interface

Product

- represents the complex object under construction.
- includes classes that define the constituent parts, including interfaces for assembling the parts into a final result.

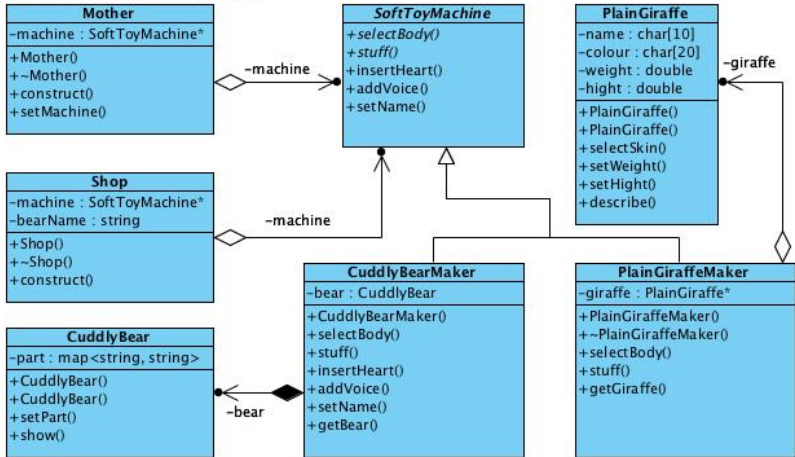
Collaboration





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Visual Paradigm Standard Edition(University of Pretoria)



Consequences

- Variation of product's internal representation:
 - Builder object provides the director with an abstract interface for constructing the product. The interface lets the builder hide the representation and internal structure of the product. It also hides how the product gets assembled.
- Separation of code for construction and representation:
 - Builder pattern improves modularity by encapsulating the way a complex object is constructed and represented. Clients need not know anything about the classes that define the product's internal structure
- Finer control over the construction process:
 - Unlike creational patterns that construct products at once, the Builder pattern constructs the product step by step under the director's control. Only when the product is finished does the director retrieve it from the builder.

Related Patterns

- **Abstract Factory (87):** Both do complex construction.
 - Abstract factory - construct families of product objects
 - Builder - construct one complex object step-by-step
- **Composite (163):** Most often a builder is used to construct a composite object.