Some things are too hard to understand without a historical perspective of the language and understanding of the JCP.

Often there are third parties that develop packages that perform a function or fill a gap that are not part of the official JDK. For various reasons that function may become part of the Java JDK through the JCP (Java Community Process)

Hibernate (in 2003) provided a way to abstract SQL and allow developers to think more in terms of persisting objects (ORM). You notify hibernate about your Entity objects and it automatically generates the strategy to persist them. Hibernate provided an implementation to do this and the API to drive the implementation either through XML config or annotations.

The fundamental issue now is that your code becomes tightly coupled with a specific vendor(Hibernate) for what a lot of people thought should be more generic. Hence the need for a generic persistence API.

Meanwhile, the JCP with a lot of input from Hibernate and other ORM tool vendors was developing JSR 220 (Java Specification Request) which resulted in JPA 1.0 (2006) and eventually JSR 317 which is JPA 2.0 (2009). These are specifications of a generic Java Persistence API. The API is provided in the JDK as a set of interfaces so that your classes can depend on the javax.persistence and not worry about the particular vendor that is doing the work of persisting your objects. This is only the API and not the implementation. Hibernate now becomes one of the many vendors that implement the JPA 2.0 specification. You can code toward JPA and pick whatever compliant ORM vendor suits your needs.

There are cases where Hibernate may give you features that are not codified in JPA. In this case, you can choose to insert a Hibernate specific annotation directly in your class since JPA does not provide the interface to do that thing.

It's a bit confusing because Hibernate predates JPA. Before JPA, you write native hibernate code to do your ORM. JPA is just the interface, so now you write JPA code and you need to find an implementation. Hibernate happens to be an implementation.