Dependency Management
Application vs Package

Application

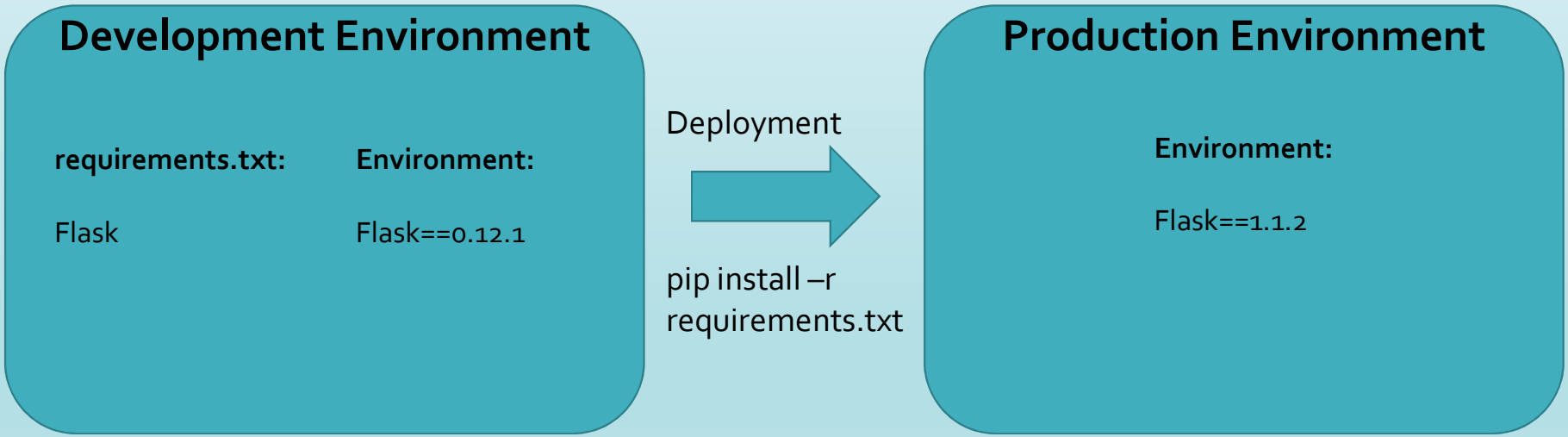
- requirements.txt
- requirements for a complete Python environment
- often exhaustive listing of pinned versions for repeatable installations of complete environments

Package

- setup.py
- minimal requirements for a single project to run correctly
- use of specific versions -> NOT best practice

Application dependency management with requirements.txt

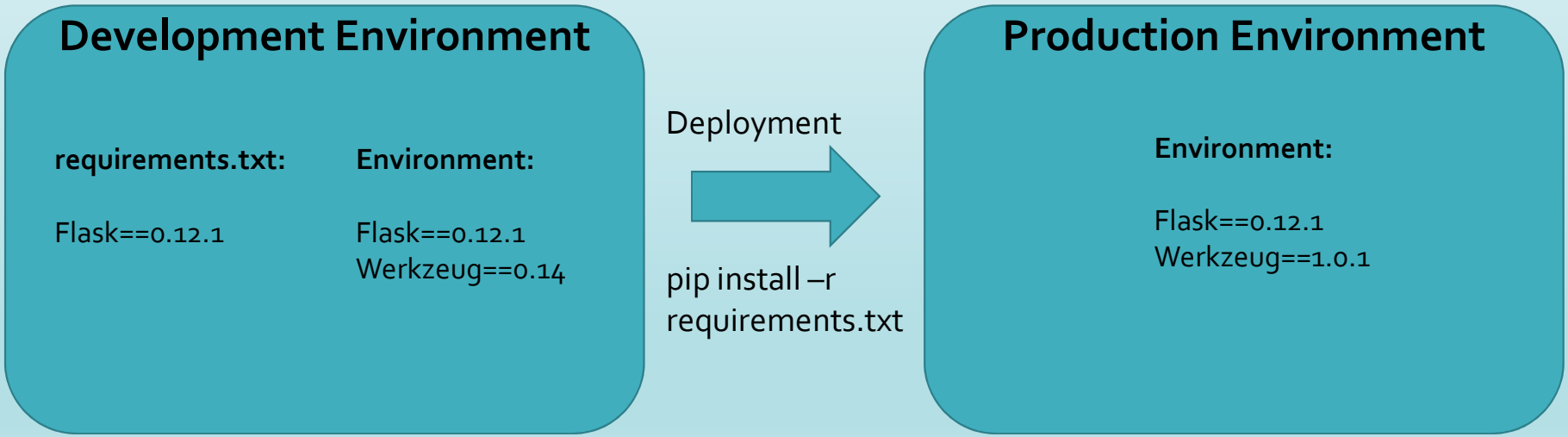
Unspecific packages



→ **The build isn't deterministic for required dependencies.**

Application dependency management with requirements.txt

Pinned dependencies + sub dependencies



→ The build isn't deterministic for required sub-dependencies.

Resolving dependencies of sub-packages with requirements.txt

requirements.txt:
package_a
package_b

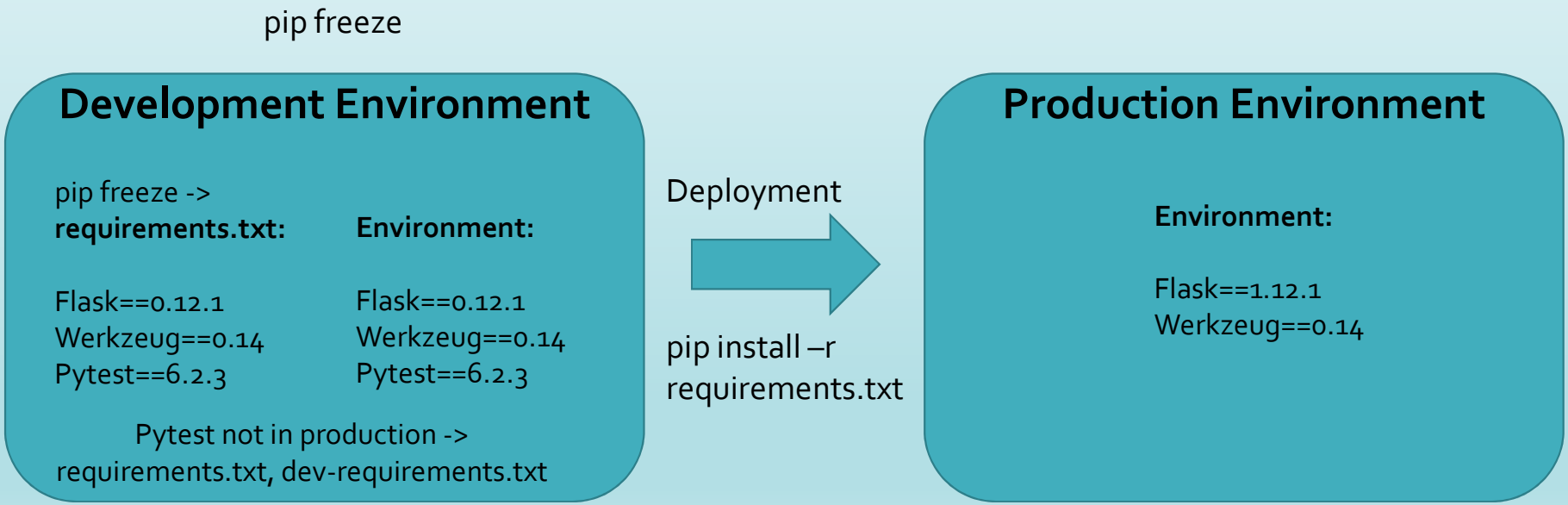
dependencies:
package_a → package_c >= 1.0
package_b → package_c <= 2.0

requirements.txt:
package_c >= 1.0, <= 2.0
package_a
package_b

dependencies:
package_a → package_c >= 1.0
package_b → package_c <= 2.0

→ Responsibility for updating sup-dependencies → Security Risk

Unwanted packages in production



→ **Responsibility for updating all (sub) dependencies -> Security Risk**

How do you allow for deterministic builds for your Python project without gaining the responsibility of updating version of sub-dependencies?

Pipenv -> Single tool for virtual environment and package management