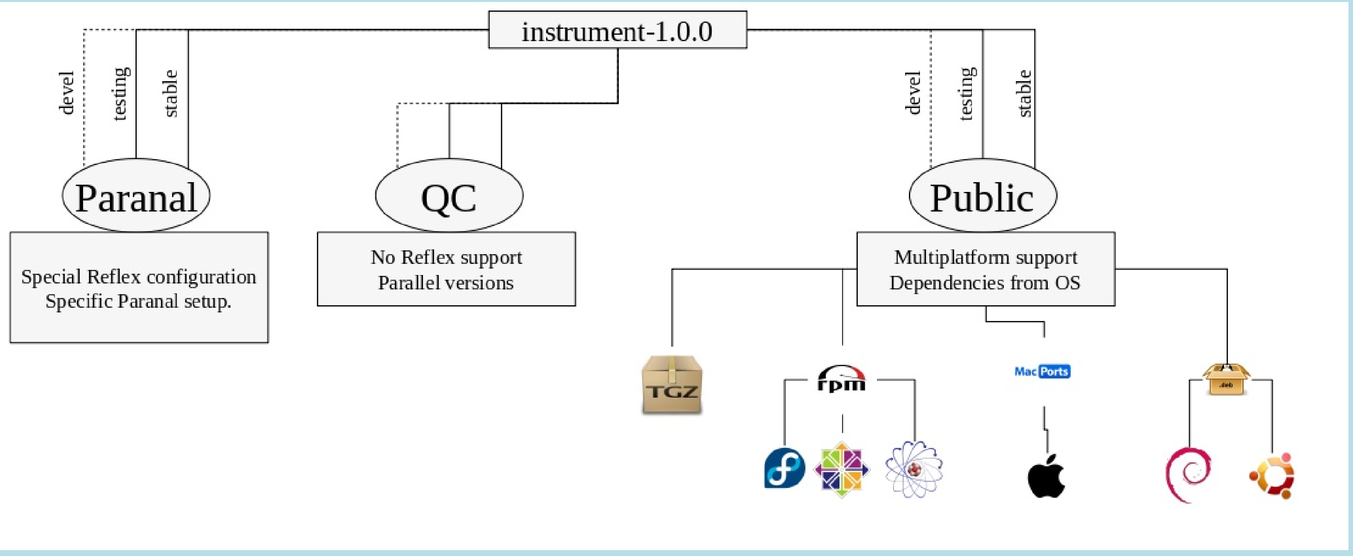
ESO VLT/I pipeline packaging system for releases

The complexity behind releasing 20+ pipelines at once

C.E.García-Dabó[1], A. Szostak[1]

1: European Southern Observatory – Karl-Schwarzschild-Str. 2 D-85748 Garching bei München, Germany

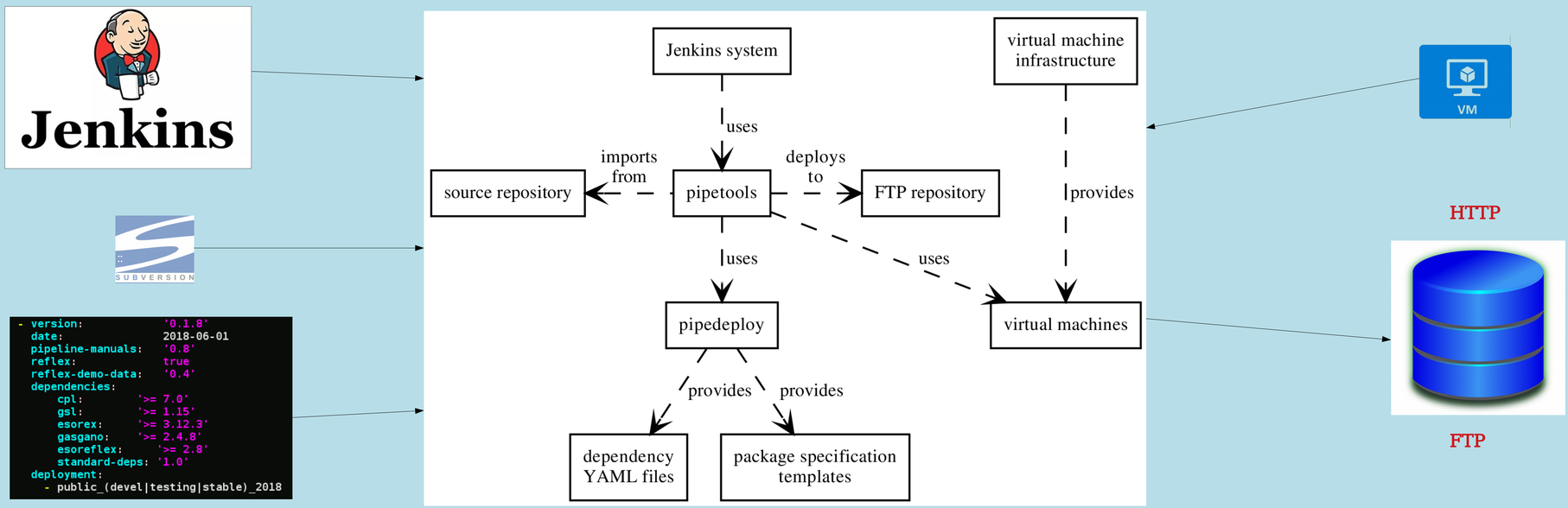
1. ESO delivers more than 10000 software packages



The VLT/I pipelines are deployed in 3 different environments: Paranal observatory, Quality Control group and external users. In total more than 15 platforms are supported. Pipelines can be installed with granularity: up to 7 different packages are delivered for each pipeline (recipes, Paranal configuration, GUIs, static data, etc..). Finally, customers can subscribe to 3 different channels: devel, testing and stable.

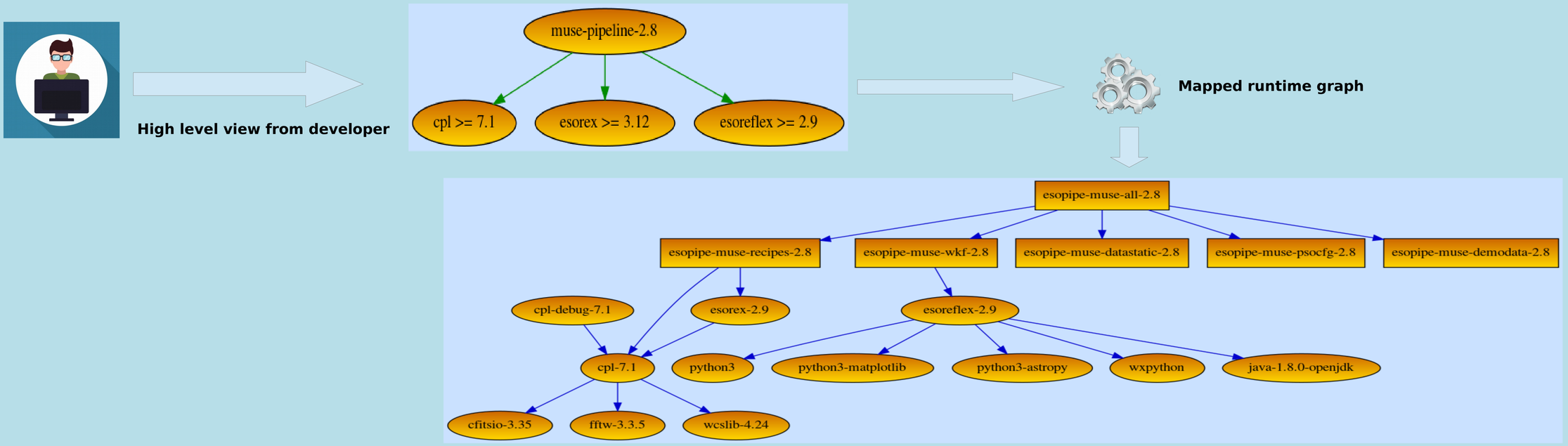
Taking into consideration all those variables in the deployment space the pipeline group at ESO delivers **10000+** binary packages! The packaging system automates most of the managing tasks.

2. Telling the system what you want, not how to do it



The packaging system is driven by a Jenkins server that triggers periodically the packaging tools (pipetools). The **developer specifies a high-level view** of the system by means of some YAML files. All the work done by the system is recorded in fingerprints, so that the system knows if something needs rebuild or not, effectively behaving as a **declarative language:** concentrate on what should be the end result rather than specifying the concrete actions to take

3. From source-level definition to the nitty-gritty details



The high-level configuration is translated into the runtime and build dependencies by means of a very **versatile mapping** system. Using regular expressions and the templating language Cheeta, any specific particular need of a package for a given target or platform can be taken into account.

4. A system in production since 2014

The system has been gradually introduced, first for the macports packages, later on for RPMs in the Paranal environment and finally for the public repositories. Currently Fedora-based systems with RPM, dnf/yum repositories as well as macOS with macports are supported. Support for Debian-based systems is being right now evaluated.

Since the introduction of the packaging system the number of bug reports related to installation needed to be addressed by the User Support Department have decreased significantly, by at least a factor of 3, **reducing maintenance** and support effort. Moreover, this python-based system is generic enough to be used by other software deployments at ESO, not only for pipelines.