Week 9
Platform as a Service (PaaS)

Mastering Cloud Computing

Coleman Kane
(based on material by Paul Talaga)

UNIVERSITY OF Cincinnati

Complexity of Infrastructure as a Service (IaaS)

Need to build/install/manage OS stack

Need to be “Always on” - inefficient

Server deployment is larger attack surface, security concerns

Varying solutions / stacks - highly variable

UNIVERSITY OF Cincinnati

Containers Can Help

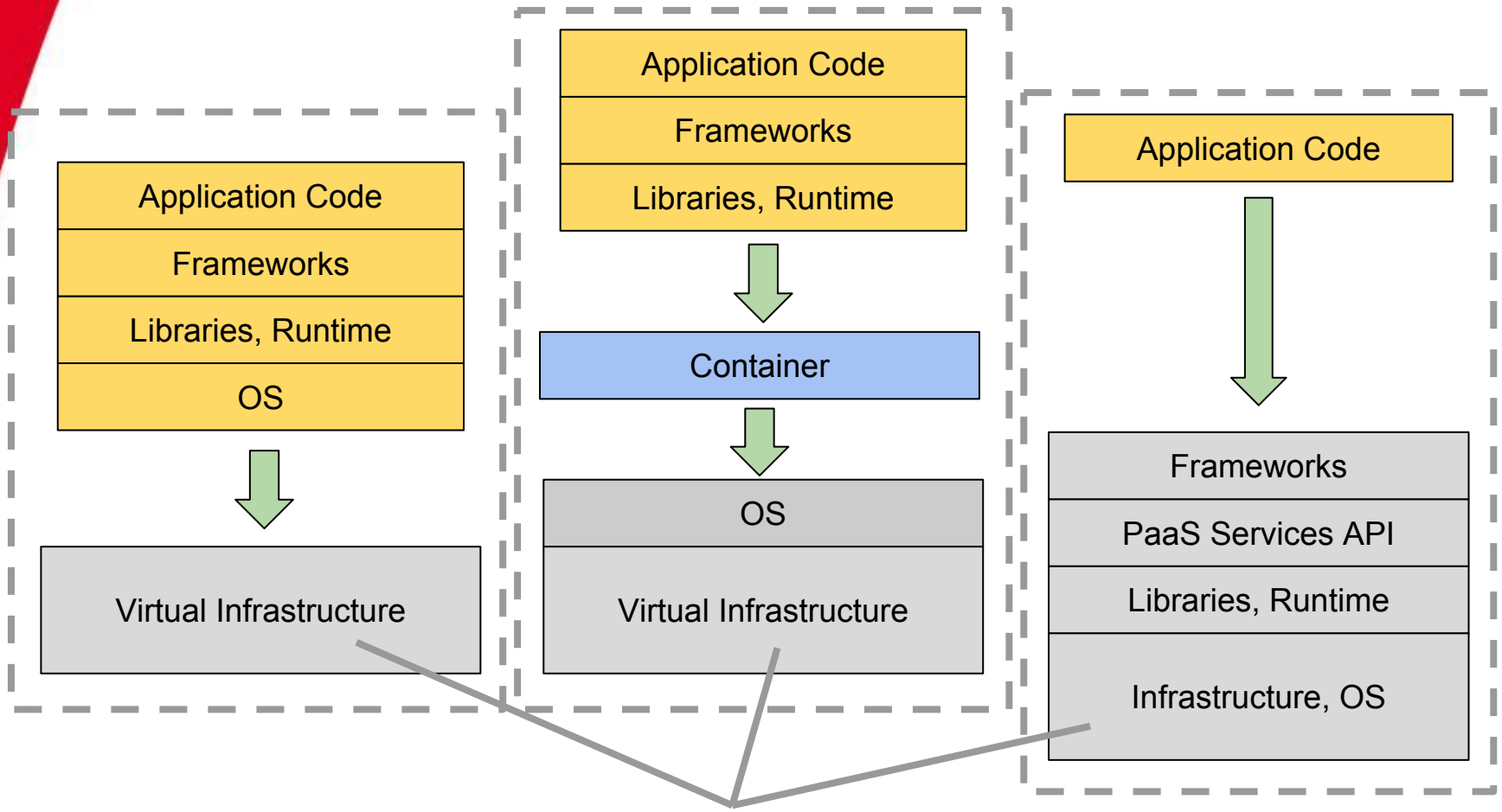
Containers provide “stand alone” app deployment arenas

Python / PHP / Java application:

- Create image with base Tomcat, Flask, etc. frameworks
- Define standard Python/Java/etc. app deployment path
- Normalized/Standardized build

UNIVERSITY OF Cincinnati

IaaS -> Container -> PaaS



Managed/supplied by "cloud service provider" in grey

UNIVERSITY OF Cincinnati

Platform as a Service

- PaaS provides environment in which to deploy your code
- Details beneath your application are abstracted away
- More efficient - code is executed (migrated onto CPU/memory) on request
- No “dormant VM” or permanent infrastructure needed
- Execution model is truly “on demand”

UNIVERSITY OF Cincinnati

PaaS Application Model

- Since no infrastructure, no maintaining service dependencies in your app
- External support (SQL database, for ex.) provided by other (possibly web-based) services
- Typically can bring language-native modules into application bundle

UNIVERSITY OF Cincinnati

PaaS Service Offerings

Common for PaaS providers to offer in-house services to extend your app:

- Heroku - https://elements.heroku.com/addons
- Google AppEngine - https://cloud.google.com/appengine/appengine_services
- GE Predix - https://www.predix.io/catalog/services/
- IBM Bluemix - https://console.ng.bluemix.net/catalog/

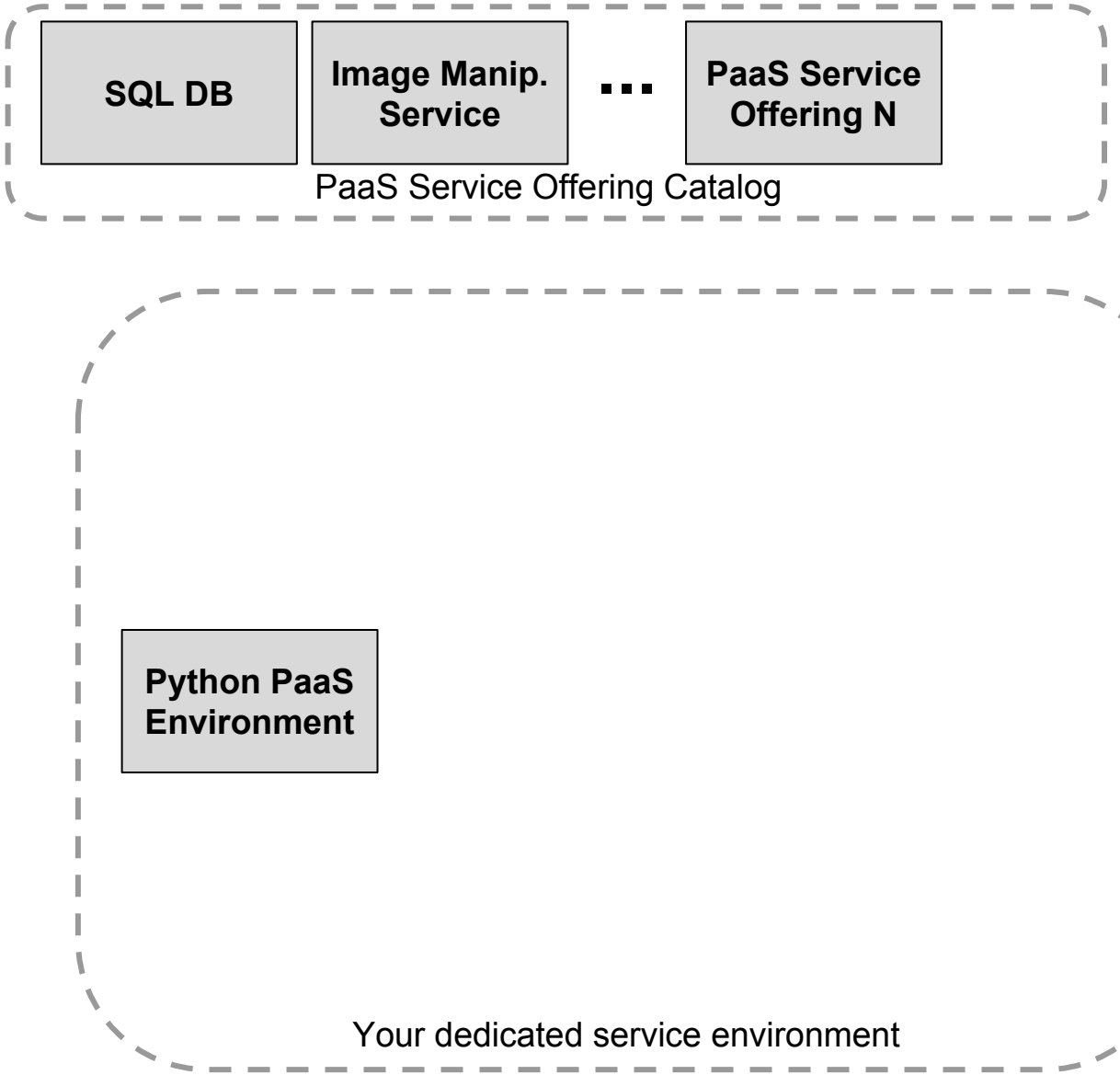
UNIVERSITY OF Cincinnati

SOA Revisited

- Deploy small, funtionally-dedicated applications
- Provision “instances” of services your application will utilize
- Manage inter-service access control through private networking and/or public Internet

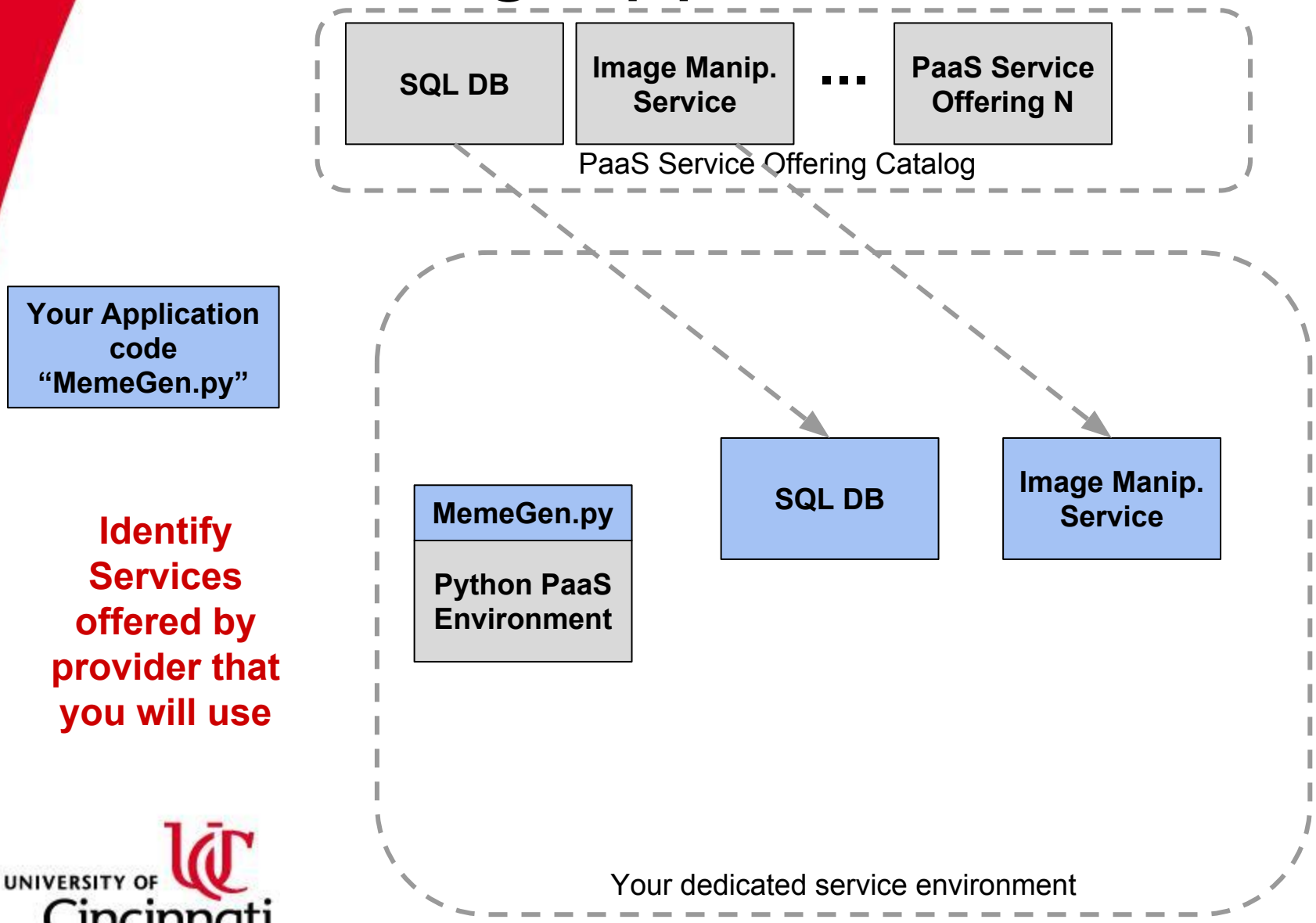
UNIVERSITY OF Cincinnati

Building Applications I



UNIVERSITY OF Cincinnati

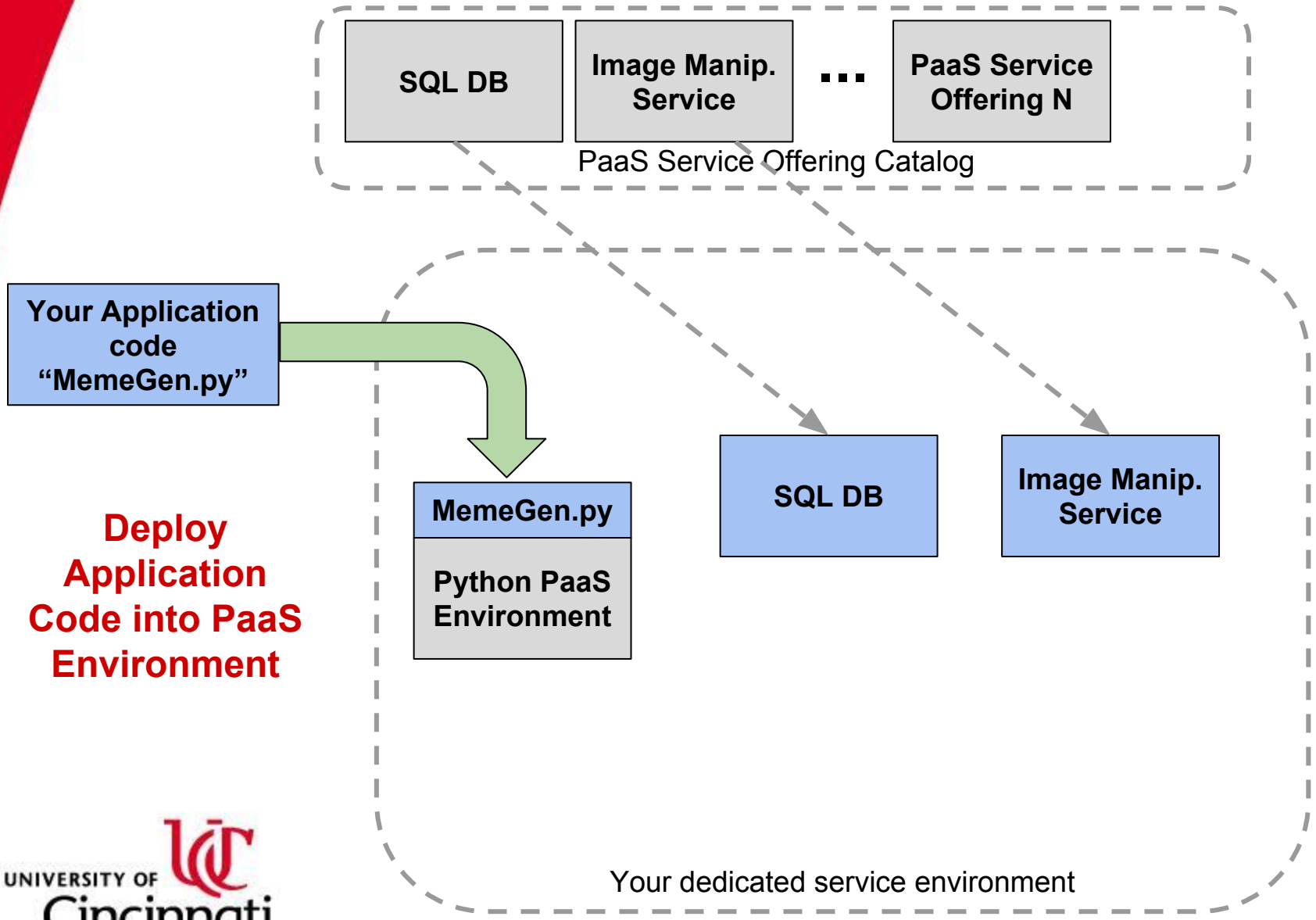
Building Applications II



Identify Services offered by provider that you will use

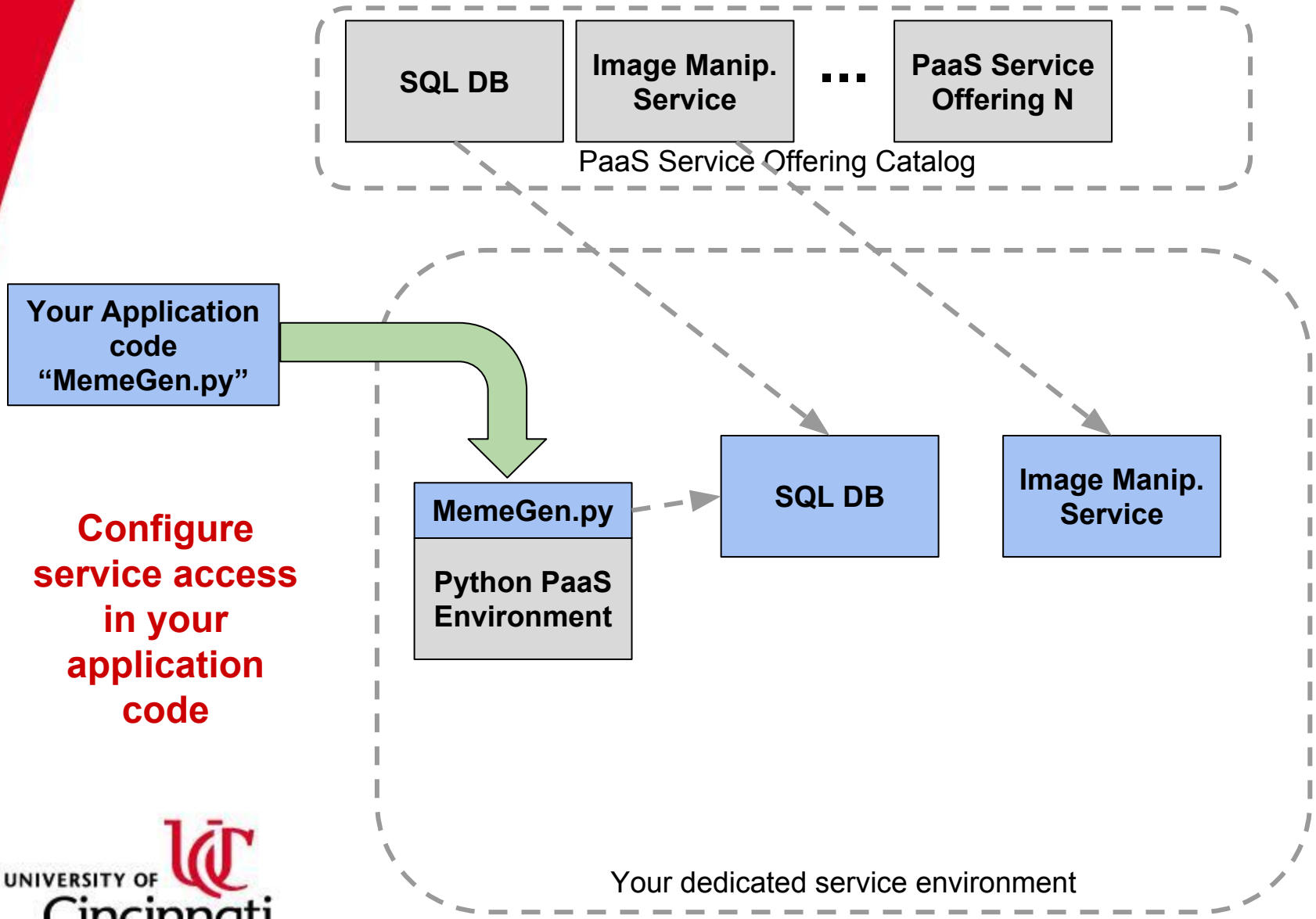
UNIVERSITY OF Cincinnati

Building Applications III



UNIVERSITY OF Cincinnati

Building Applications IV



UNIVERSITY OF Cincinnati

Try it Yourself

Google AppEngine

- Install gcloud: https://cloud.google.com/sdk/docs/
- gcloud init
- Quick Start: https://cloud.google.com/sdk/docs/quickstarts
- Also install original “AppEngine” 1.9 bundle: https://cloud.google.com/appengine/docs/python/download

UNIVERSITY OF Cincinnati