Deploying R(eplicable) Data Projects
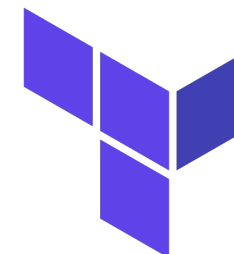
With the help of AWS, Docker, and Terraform

Tyler Sanders

Clawed Z. Eagle 2016-2019

Senior Solutions Architect, Red Oak Strategic
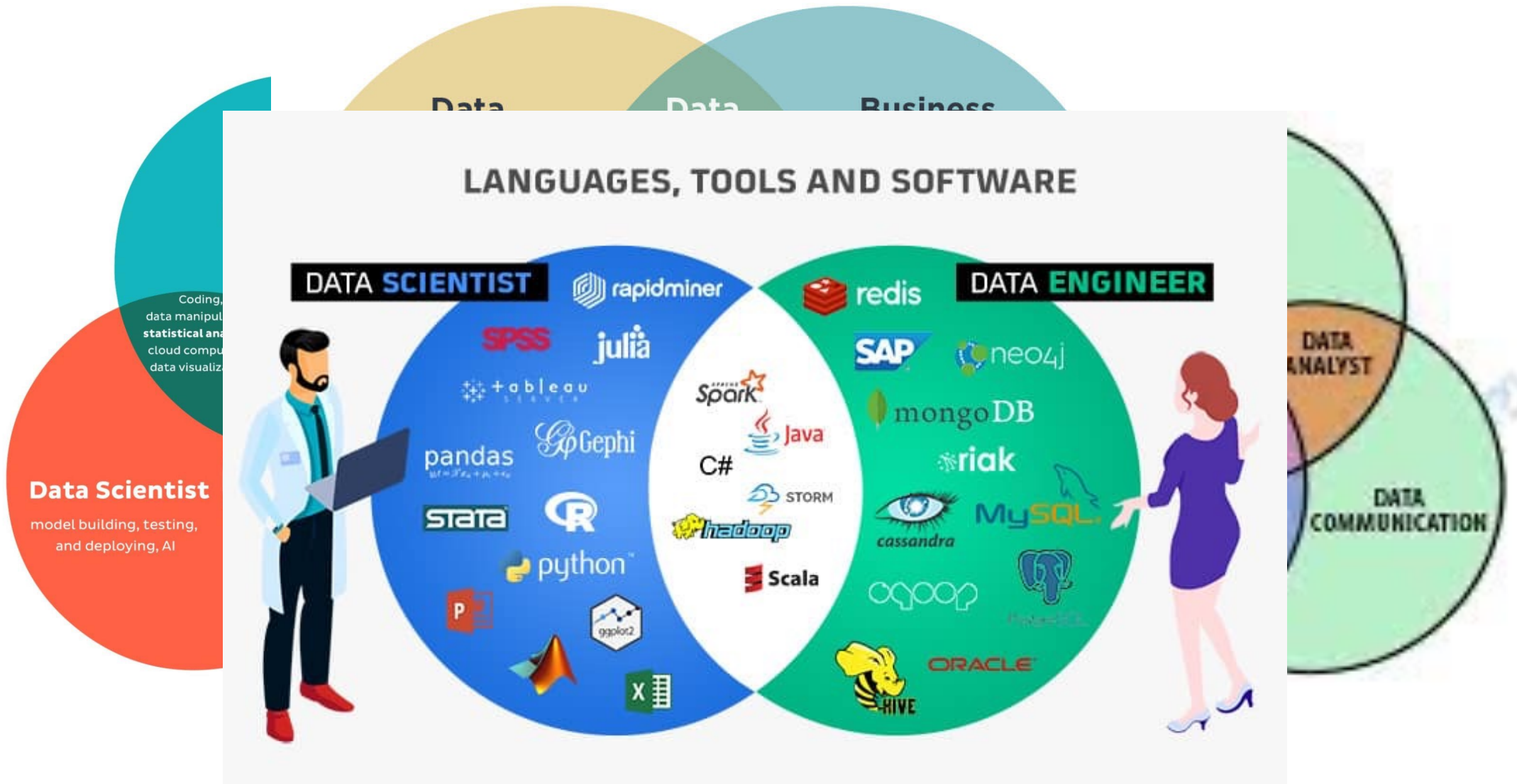
R & Data Science in Consulting

My Data Tool Belt

- Forever my first (and favorite) programming language
- Tidyverse fan and an improving functional programmer
- Reporting, Mapping, Modeling, Exploratory Analysis

- Used internally – now an "expert"
- 80% frustrating, 20% superpower
- Fast, managed services, low-risk, pay as you go

- Newbie
- Applying R best practices to infrastructure
- Cloud-Agnostic
- Command-Line Interface (bash)

And the of course VERSION CONTROL

- Stand on the shoulders of Giants
- Scale-out AND Scale-up
- No more package version mismatches PLEASE
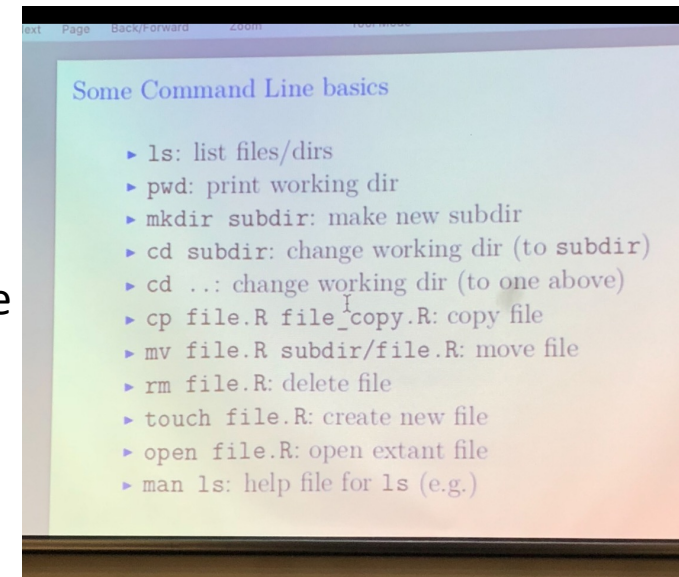- Secure (when used correctly)
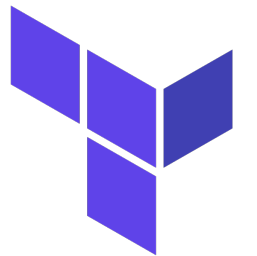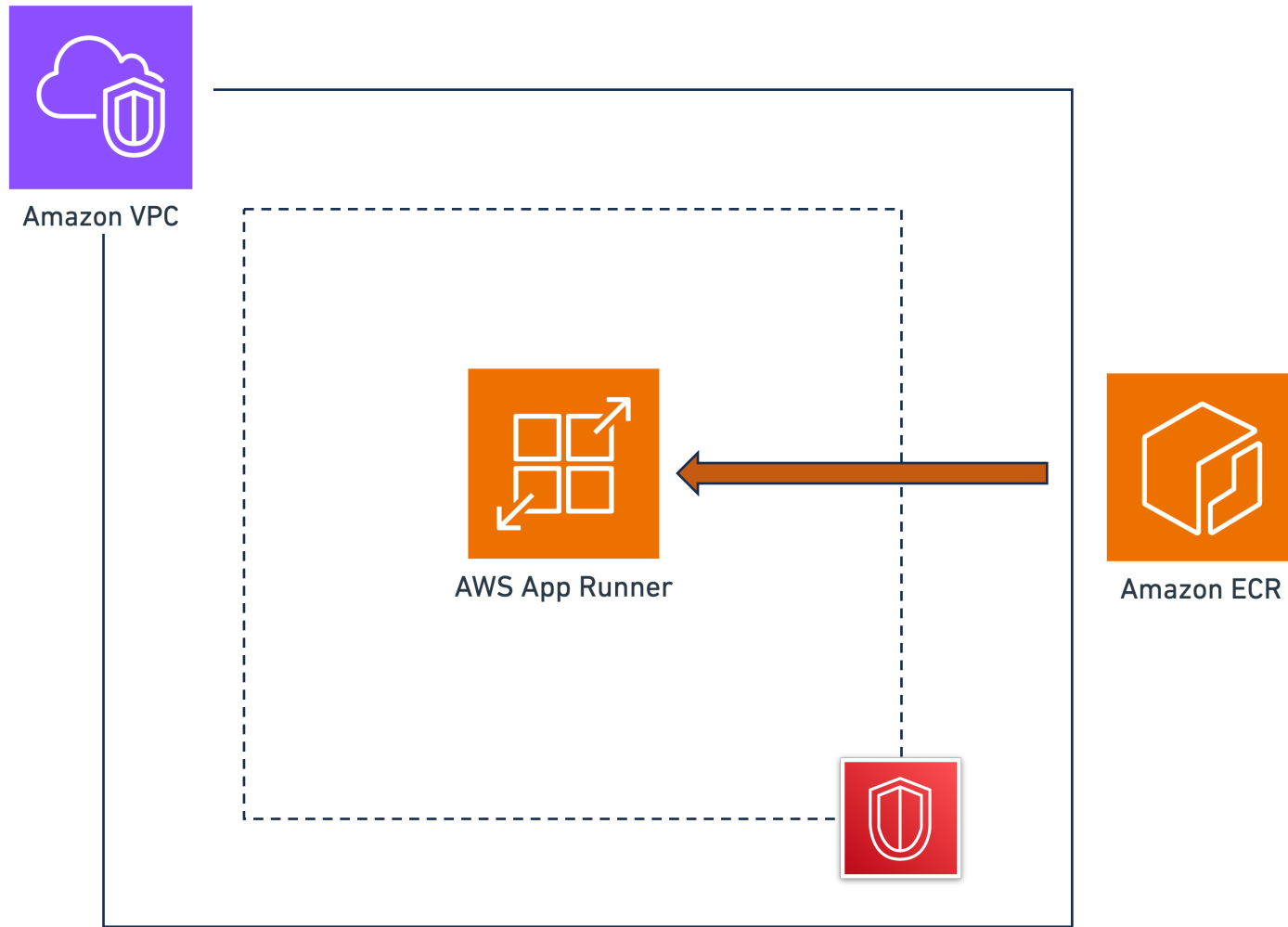
Let's (get ready to) Deploy!

Pre-Reqs:

- AWS Account created and IAM User with `AdministratorAccess` and Access Keys

- AWS credentials file updated with Access Keys (~/.aws/credentials but don't tell anyone)

- Your Favorite R Shiny Application and any local data inputs placed in a specific folder
  (that ideally is already its own R Project directory)

- Terraform installed

- Docker and DockerDesktop installed

- Access to a CLI (I'm using Mac Terminal running Bash) and a GUI (VSCode

Some Command Line basics

- ls: list files/dirs
- pwd: print working dir
- mkdir subdir: make new subdir
- cd subdir: change working dir (to subdir)
- cd ..: change working dir (to one above)
- cp file.R file_copy.R: copy file
- mv file.R subdir/file.R: move file
- rm file.R: delete file
- touch file.R: create new file
- open file.R: open extant file
- man ls: help file for ls (e.g.)

Architecture Diagram

Amazon VPC

AWS App Runner

Amazon ECR

Helpful Commands

Terraform Commands:

Terraform init

Terraform plan

Terraform apply

Docker to ECR Push Commands: (contextualized)

aws --profile=ros-sandbox ecr get-login-password --region us-east-1 | docker login --username AWS --password-stdin 088130860316.dkr.ecr.us-east-1.amazonaws.com

docker build -t r-shiny-app-runner .

docker tag r-shiny-app-runner:latest 088130860316.dkr.ecr.us-east-1.amazonaws.com/r-shiny-app-runner:latest

docker push 088130860316.dkr.ecr.us-east-1.amazonaws.com/r-shiny-app-runner:latest