Practical Data Visualization

Infrastructure, Tools, and Project Management

Jonathan Page

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Overview

- Infrastructure
- Development and Monitoring Tools
- Project Management

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Infrastructure

Virtual Machines and Server Applications

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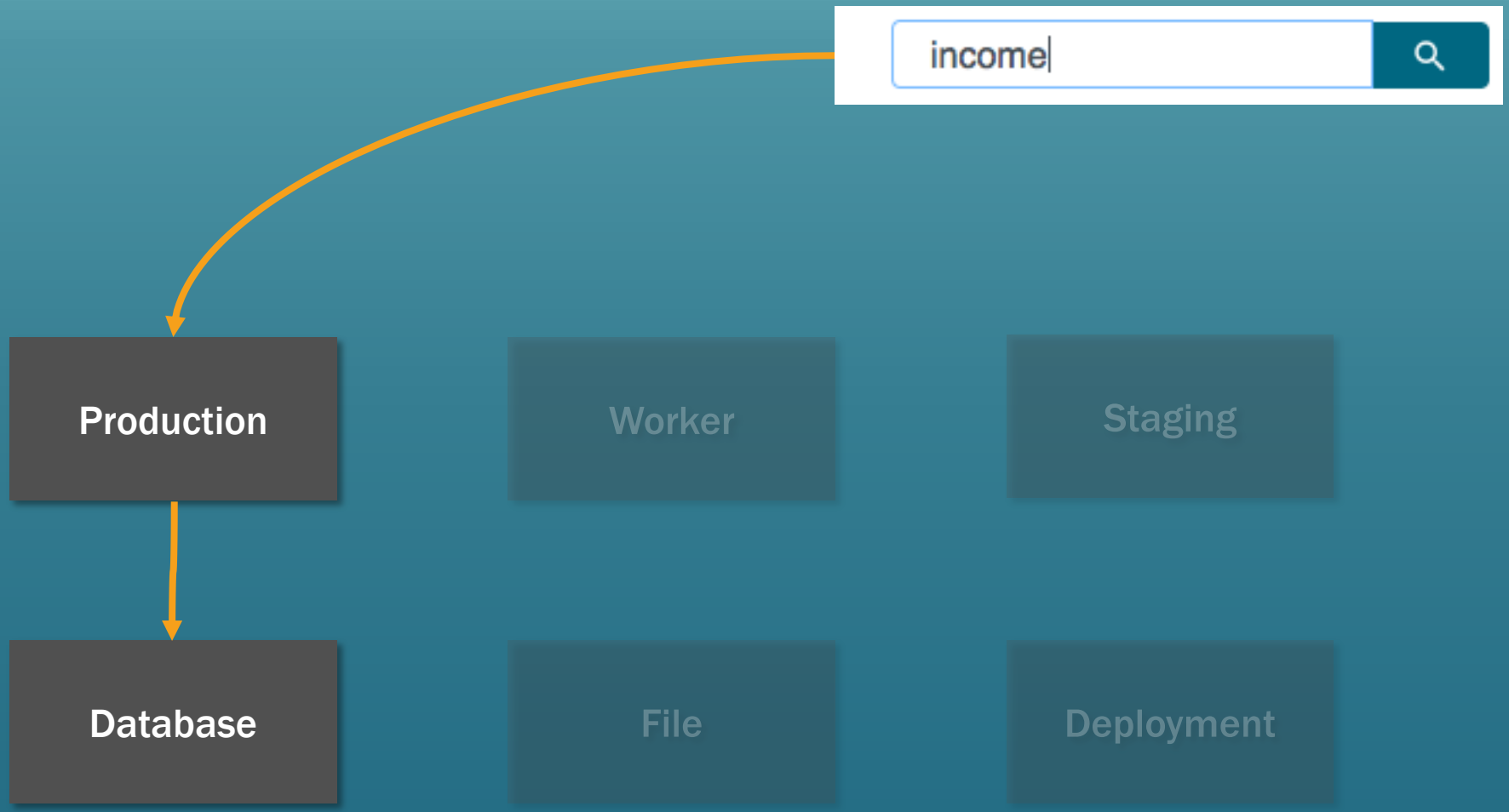
User perspective



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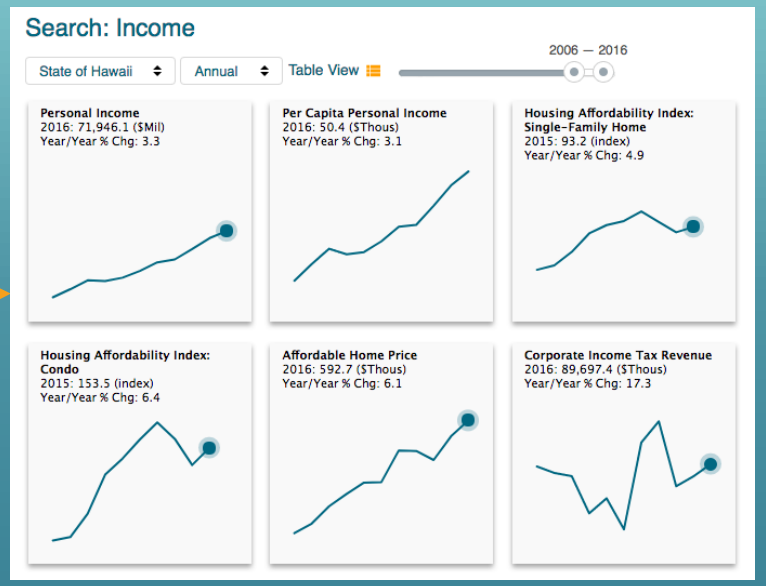
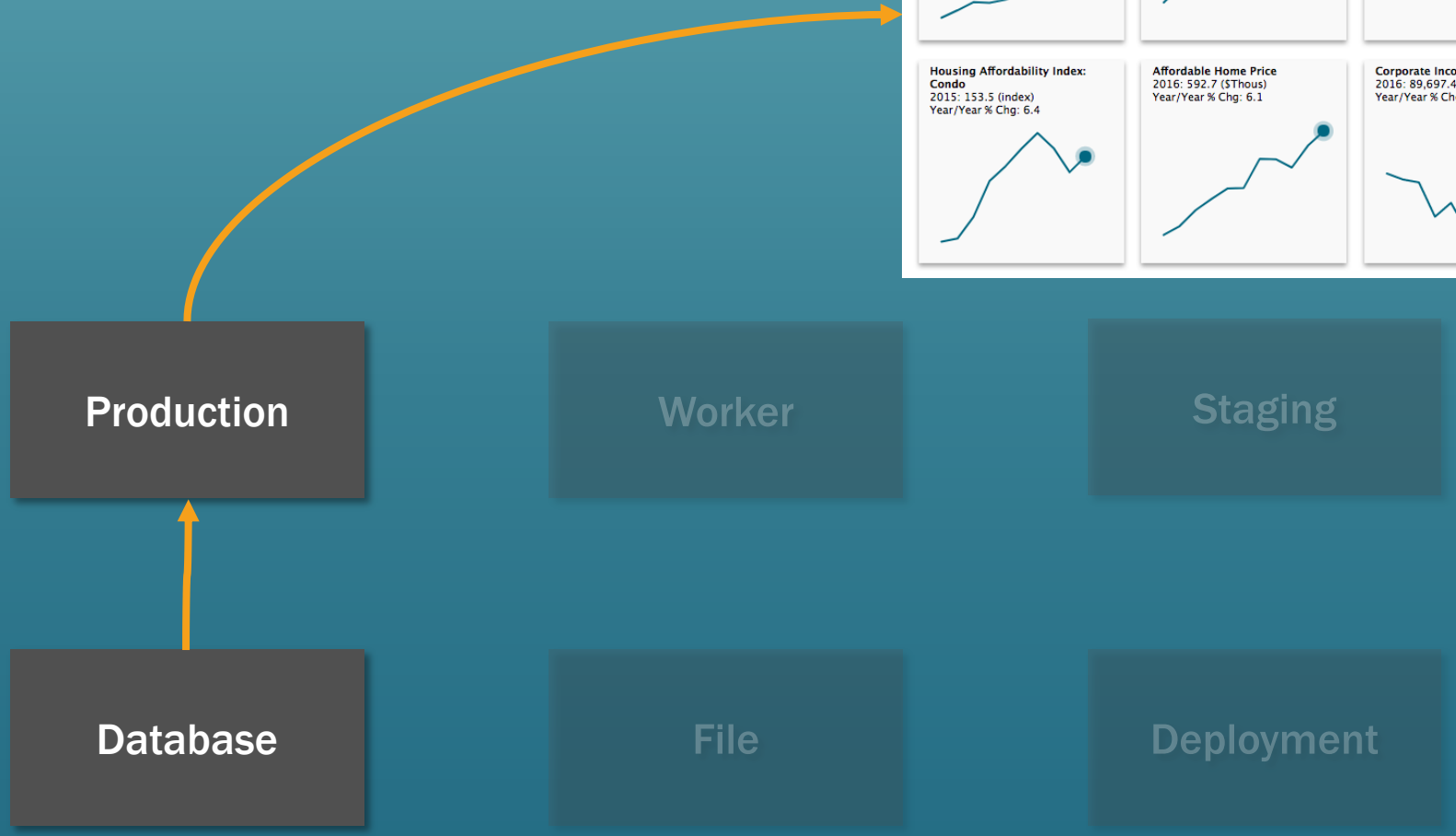
User perspective





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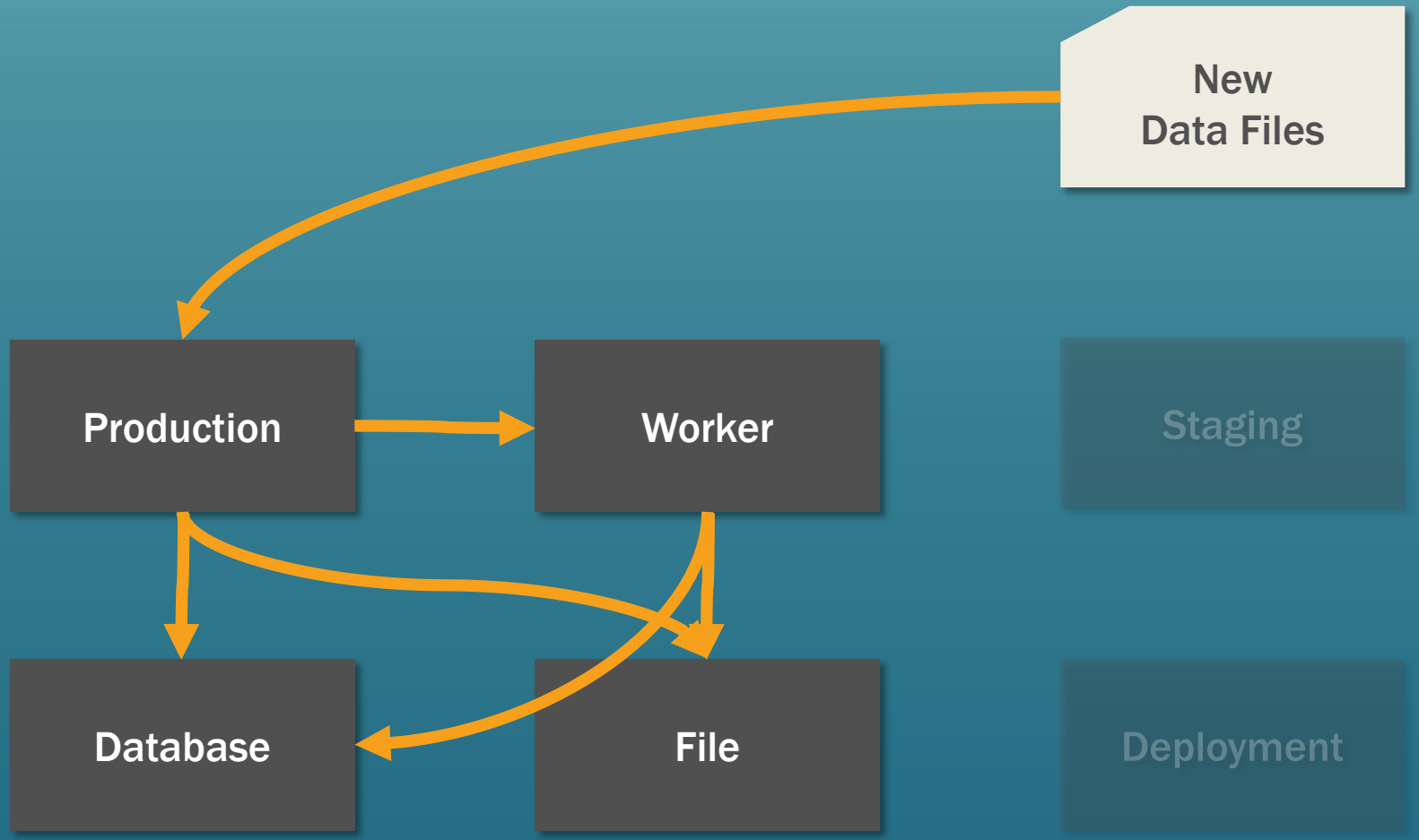
3rd Party Perspective



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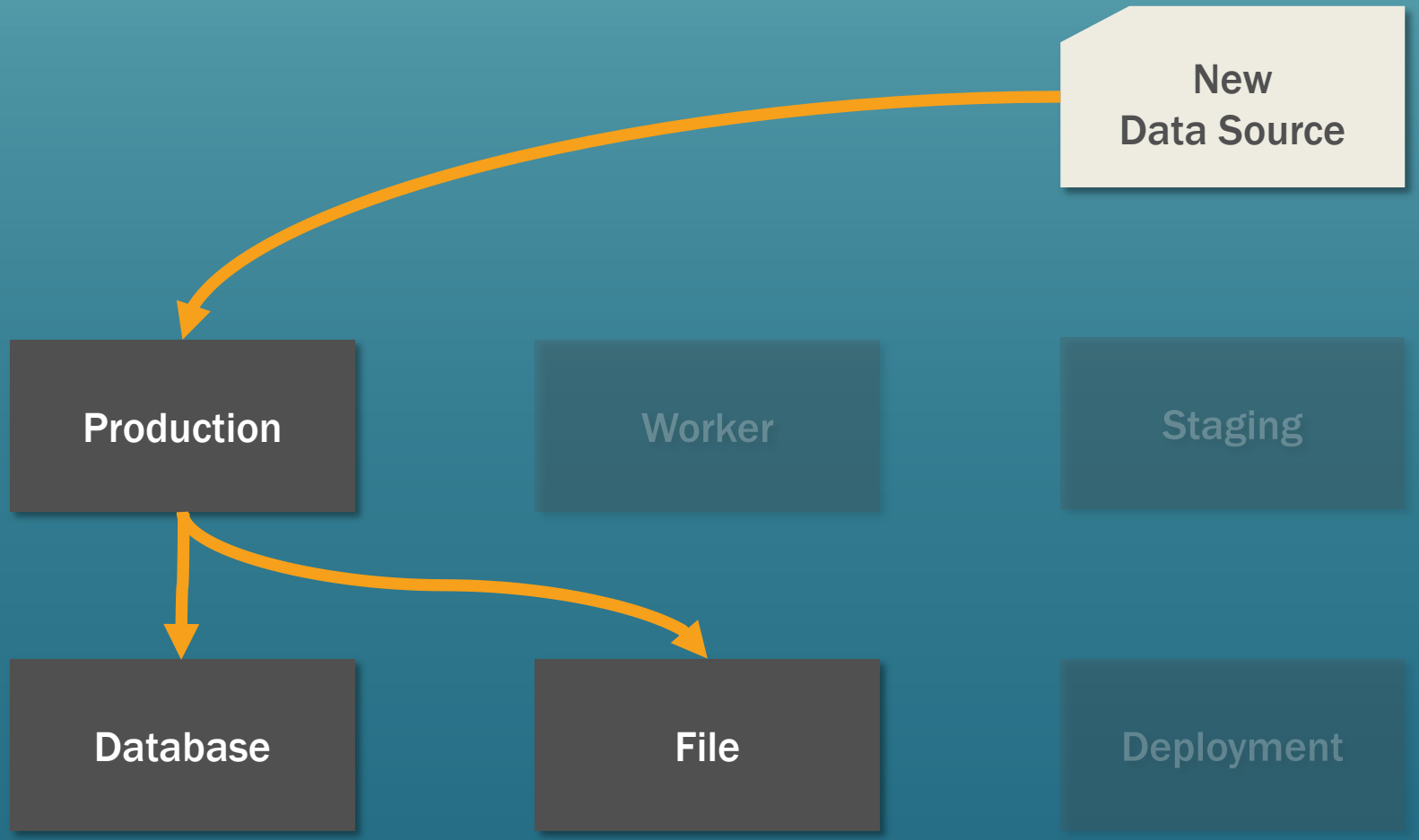
Admin Perspective



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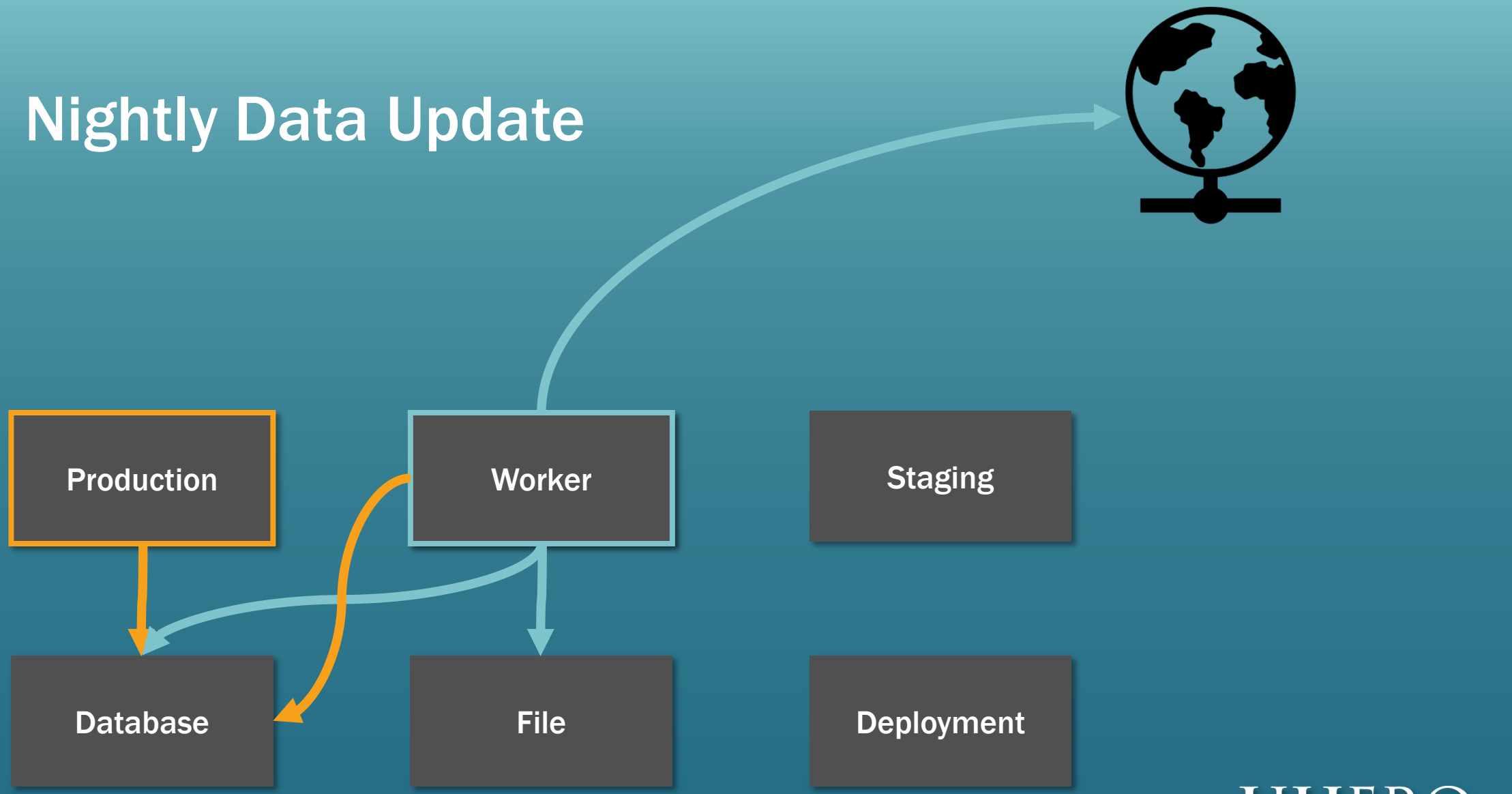
Nightly Data Update



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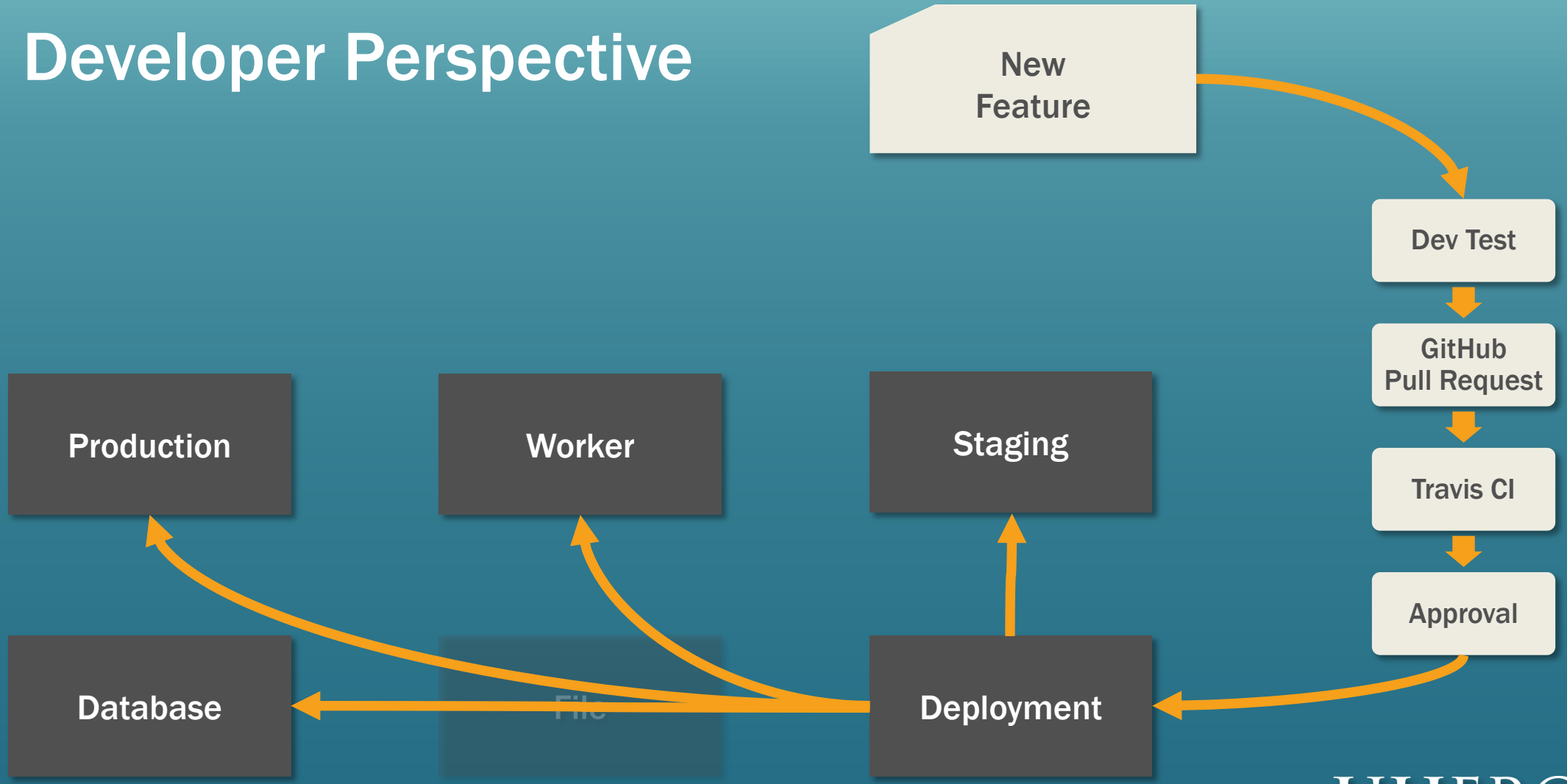
Developer Perspective



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Production Server

- UHERO Data Manager (Ruby on Rails)
- REST API (Go)
- NGINX – serves static files
  - UHERO Data Portal (Angular, Highcharts)
  - DBEDT Data Warehouse (Angular)

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Database Server

- MySQL
- Redis

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Worker Server

- Sidekiq Workers (Ruby on Rails)

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File Server

- SMB File Server
- Stores raw data files for future processing and backup

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Staging Server

- Sandbox for testing code/DB changes before move to production
- All applications on **Production Server**
- Nightly copy of DBs from **Database Server**
- Testing subset of **File Server** contents
- Sidekiq workers from **Worker Server**

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Open Source Software

- github.com/UHERO/udaman
- github.com/UHERO/rest-api
- github.com/UHERO/data-portal
- github.com/UHERO/dbedt-data-portal

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Lessons Learned

- AWS (the cloud in general) is more expensive than hosting with University ITS VMs
- Prefer a small group of well chosen programming languages
- Building is more fun than supporting, so build carefully

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Tools

Development and Monitoring

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Development Tools

- Development Environments
  - IDEs: RubyMine, WebStorm, SublimeText, Atom, Vim
  - Vagrant, [Future] Docker
- Version Control
  - Git, GitHub.com
- Code Review
  - GitHub Pull requests

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Development Tools (continued)

- Testing
  - Travis.CI
- Deployment
  - Currently manual runbook, [Future] Bamboo (Atlassian)
- Documentation
  - Confluence (Atlassian)
- Issue Management
  - JIRA (Atlassian)

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Lessons Learned

- Stick to industry standard tools as much as possible (community help is invaluable)
- There is always a newer, shinier tool; “if it aint broke, don’t fix it”
- Some tools allow you to build more reliable and more maintainable software
- Tool switching is not costless

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Project Management

Agile

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Agile

- Kanban for service teams
- Scrum for development teams
- JIRA (Atlassian)

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Scrum Ceremonies

- Daily Scrum (Standup)
- Sprint Planning (Story Grooming, Planning Poker)
- Showcase (Sprint Review)
- Sprint Retrospective

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Lessons Learned

- Scrum ceremony adherence should depend on development team size
- If the structure of Scrum is intimidating/overbearing, try Kanban
- If Kanban feels to unstructured, try Scrum
- It's not uncommon for development teams in the tech industry to switch between flavors of Agile
- See if your University ITS has a license for JIRA

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