



Git Together: Collaborative Coding and Source Code Management via Git and GitLab

Gabriel Tocci

10-OCT-2018 @ 8:30am - 9:30am

Session ID # 1015



EAST TENNESSEE STATE
UNIVERSITY

Session Format

- 60 minute time slot
 - Gitlab features used by ETSU
 - Development Workflow
 - Branching Strategies
 - CI/CD
 - Banner Tracking Repo
 - Banner Password Rotations
 - Infrastructure as Code
 - Q&A
- Can you see REAL good?
- gabrieltocci.com/talks



GitLab - Working Together

- Host remote Git repositories
 - Github, BitBucket, gitolite, etc.
- Open Source
- Hosted on-premises @ git.etsu.edu
 - Only accessible on-campus
 - SSH or HTTPS
- Security Model
 - Users, Roles, Privs







GitLab Features

- Core Git Functions
- Issue Management
- Developer Collaboration – source code references
- Snippets
- Notifications
- Team Activity
- Source Code Search
- CI/CD



GitLab Commit View

GitLab /  banner /  etsu ▾
Commits

Commit aa43eaf5  authored 6 months ago by  Gabriel Tocci

Browse files

Options ▾

bugfix: pidm was out of scope for dml

git-tfs-id: [<http://etsutfs:8080/tfs/ISCollection>]/DEV/Banner;C3785


parent e9e2c21a  master ...

Showing 1 changed file ▾ with 15 additions and 22 deletions

Hide whitespace changes

Inline

Side-by-side

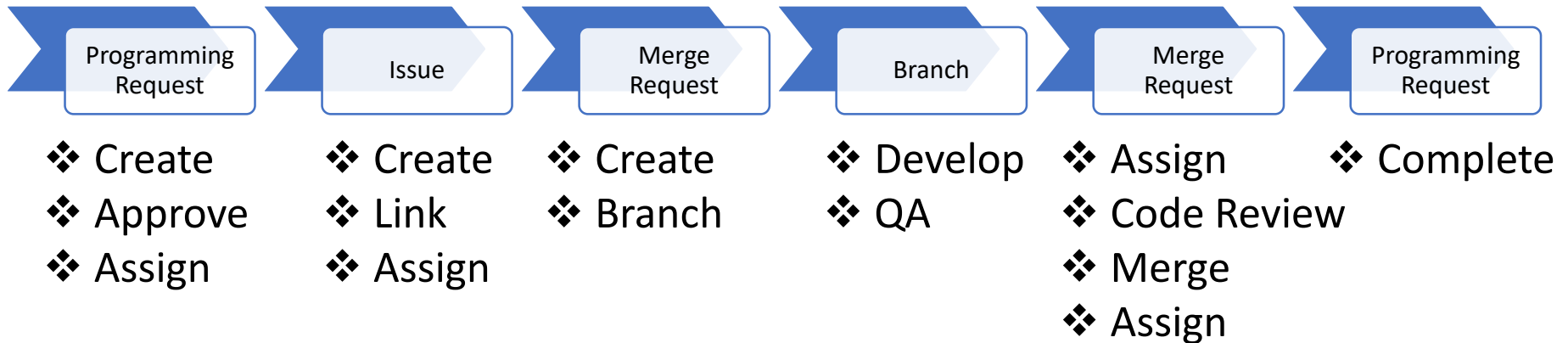
ProC/syrtrwf/syrtrwf 

View file @ aa43eaf5


```
...    ...    @@ -9,7 +9,7 @@ include FormatR
9      9      ## Author: Colton Spears; Gabe Tocci
10     10     ## Requested By: Higgins, Valerie M. (R#196572)
11     11     ## Purpose: Fix for Ellucian defect 000020842 - 1-1SPZ8A by deleting records
12     - ##           from SHRTRTK, SHRTRTK, and SHREGPA for a specific student.
12     + ##           from SHRTRTK, SHRTRTK, and SHREGPA for a specific student.
13     13     ## #####
14     14
15     15     # Initialize Banner Job
...    ...    @@ -26,9 +26,8 @@ include FormatR
26     26     SHRTRTK_SUBJ_CODE_INST,
27     27     SHRTRTK_CRSE_NUMB_INST
28     28     FROM SHRTRTK
29     - LEFT JOIN SPRIDEN ON SHRTRTK_PIDM = SPRIDEN_PIDM AND SPRIDEN_CHANGE_IND IS NULL
30     29     LEFT JOIN STVSBG1 ON SHRTRTK_SBG1_CODE = STVSBG1_CODE
31     - WHERE SPRIDEN_ID = :pEnumber
30     + WHERE SHRTRTK_PIDM = baninst1.get_pidm_from_id(id => :pEnumber)
32     31     SQL_END
33     32     shrtrtk_top_format = @ban_env.header + <<-EOS
34     33
```



ETSU Dev Workflow



Closed

Issue #71 opened a month ago by  Gabriel Tocci

Edit

Reopen issue

New issue

ITS#3094 Add FW students to SYRAPPR

<https://etsupws.etsu.edu/ITSRequest/ProgrammingRequest/3094>


Edited a month ago by Gabriel Tocci


1 Related Merge Request

!54 [Resolve "ITS#3094 Add FW students to SYRAPPR"](#) Merged



 New branch unavailable

 Gabriel Tocci @toccig changed title from **ITS#3094 Add FW students to SYRAPPR** to **ITS#3094 Add FW students to SYRAPPR** a month ago

 Gabriel Tocci @toccig created branch `71-its-3094-add-fw-students-to-syrappr` a month ago

 Gabriel Tocci @toccig mentioned in merge request [!54 \(merged\)](#) a month ago

 Gabriel Tocci @toccig assigned to @archerr and unassigned @toccig a month ago



Gabriel Tocci @toccig commented a month ago

Owner   

Right now there are 3 possible values for parameter 3 (Admit Type): FR, TR, GD, and she wants to add a fourth/FW. See <https://git.etsu.edu/banner/etsu/blob/master/ProC/syrappr/syrappr.pc#L436>

Edited a month ago by Gabriel Tocci



Gabriel Tocci @toccig commented a month ago

Owner   

Each combination of parameter 3 and 4 (sAppType and sReportType) has its own set of functions that get data and print the output. See main: <https://git.etsu.edu/banner/etsu/blob/master/ProC/syrappr/syrappr.pc#L299>




Gabriel Tocci @toccig commented a month ago

Owner   

So you will need to build another else if condition in the main if:
} else if (compare(sAppType, _TMC("FW"), EQS)) {
and all the functions to support the that code block.

Merged

Merge request !54 opened a month ago by  Gabriel Tocci


Edit

Resolve "ITS#3094 Add FW students to SYRAPPR"

Ref #71 (closed)

Edited a month ago by Gabriel Tocci

Request to merge 71-its-3094-add-fw-students-to-sy... into master

 Merged by  Gabriel Tocci a month ago Revert Cherry-pick

The changes were merged into master

The source branch has been removed

Mentions #71 (closed)



0



0



Discussion 0

Commits 1

Changes 2

Showing 2 changed files with 6 additions and 0 deletions

Expand all

Hide whitespace changes

Inline

Side-by-side

ProC/syrappr/add_fw_job_submission_syrappr.sql 0 – 100644



Edit

View file @ 0764193d

```

1 + INSERT INTO GJBPVAL (GJBPVAL_JOB, GJBPVAL_NUMBER, GJBPVAL_VALUE, GJBPVAL_DESC, GJBPVAL_A
  CTIVITY_DATE)
2 + VALUES ('SYRAPPR', '03', 'FW', 'Fee Waiver', sysdate)
3 + /
4 +
5 + COMMIT
6 + /

```

ProC/syrappr/syrappr.pc



Edit

View file @ 0764193d

```

... @@ -68,7 +68,10 @@ END AUDIT_TRAIL_C_I18N */
68 /* (SORDEGR) to inclusive gpa (SHRLGPA) */
69 /* o. Gabe Tocci 04/28/2017 - ITS#2638 Adding column for */
70 /* "Offered Admission" */
71 -
71 + /* o. Rob Archer 08/04/2017 - ITS#3094 Adding FW Admit Type option */
72 + /* Adding Race to FR and TR rpts */
73 + /* Change Ethnic Origin to New */

```

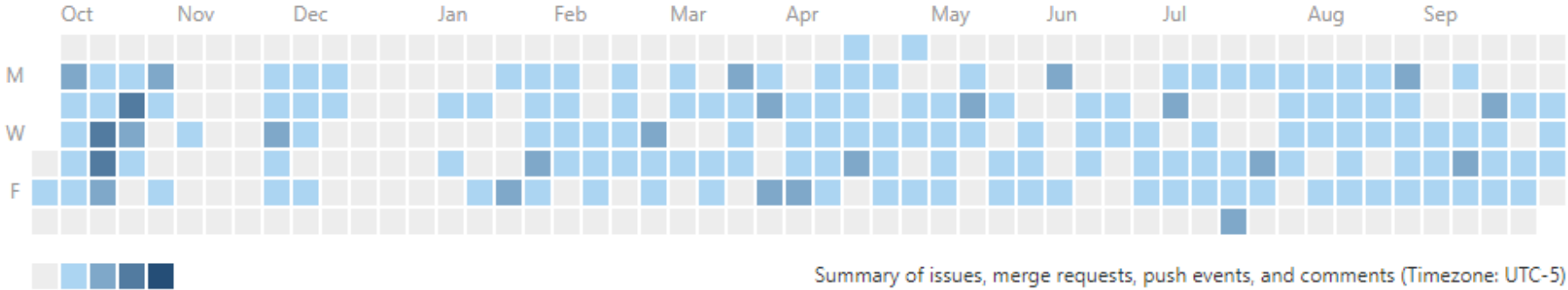
Gamification



Gabriel Tocci

@toccig · Member since June 8, 2015

Activity Groups Contributed projects Personal projects Snippets



Be like Stan...



Stan Hu

@stanhu · Member since October 23, 2014

[in](#) · [t](#) · GitLab

Engineering Fellow

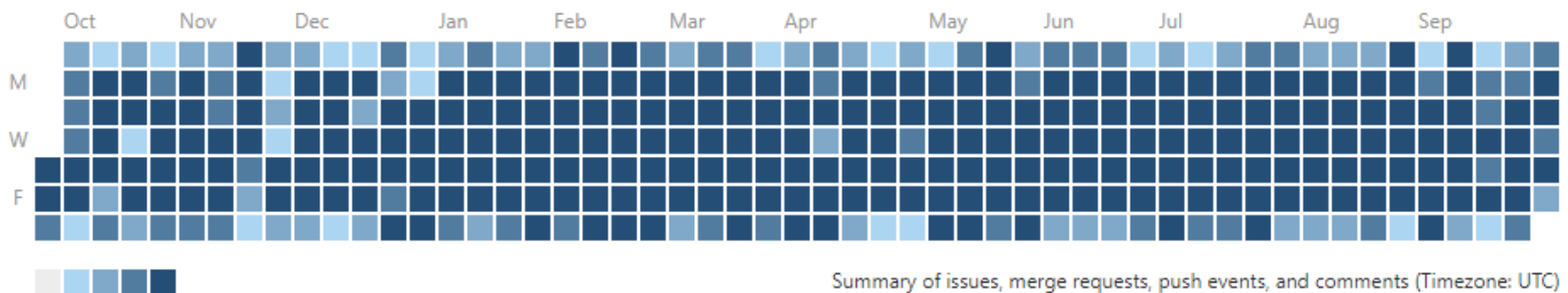
Activity

Groups

Contributed projects

Personal projects

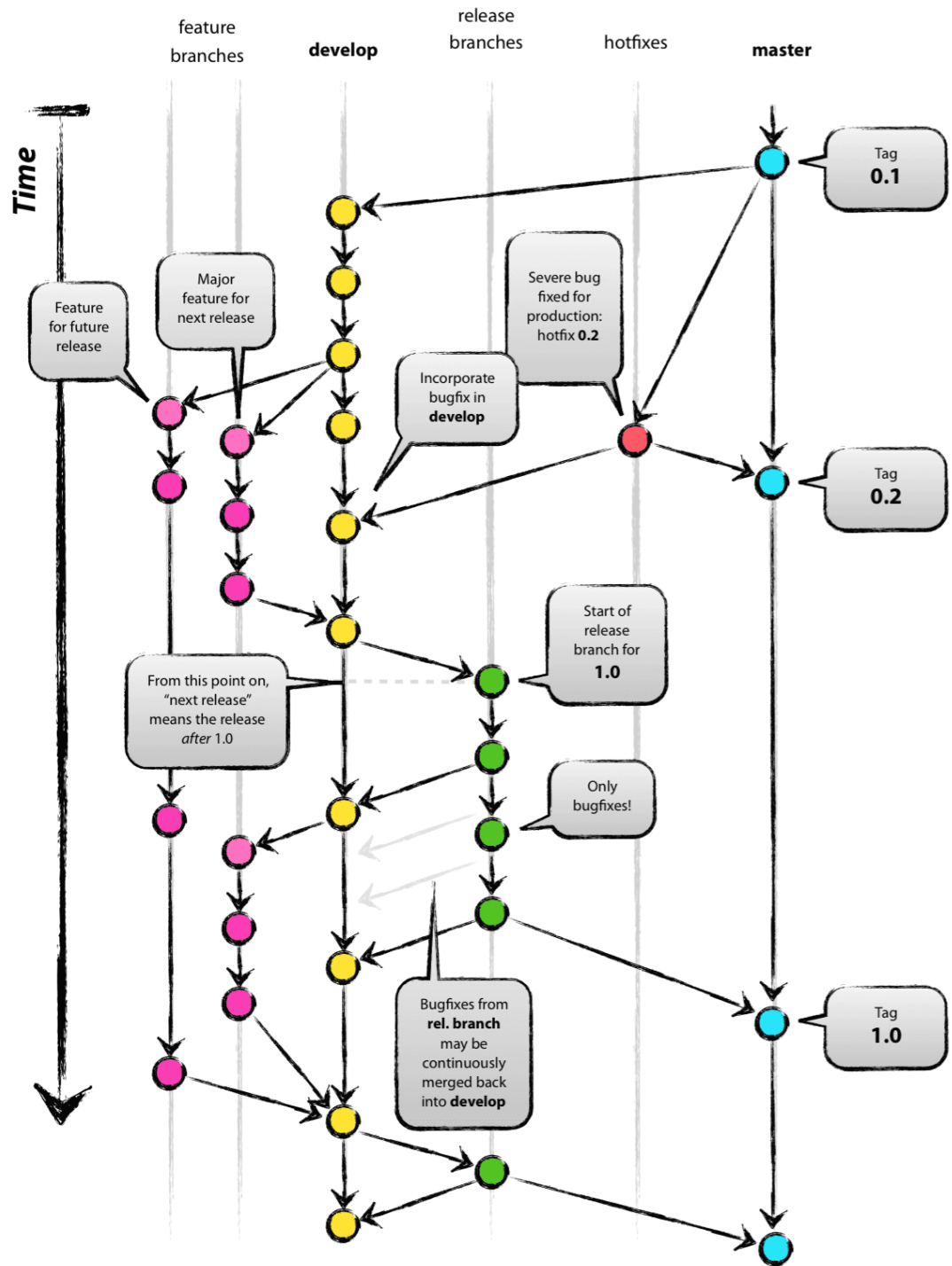
Snippets



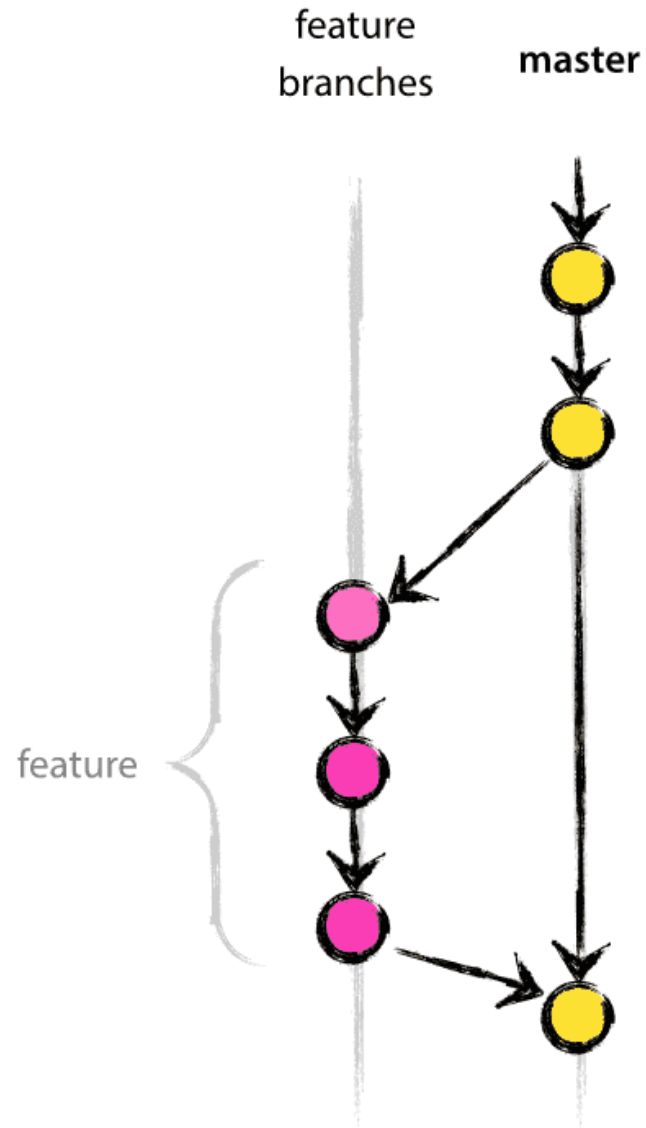
```
$ git commit -am "WIP" --amend  
$ git push -f
```



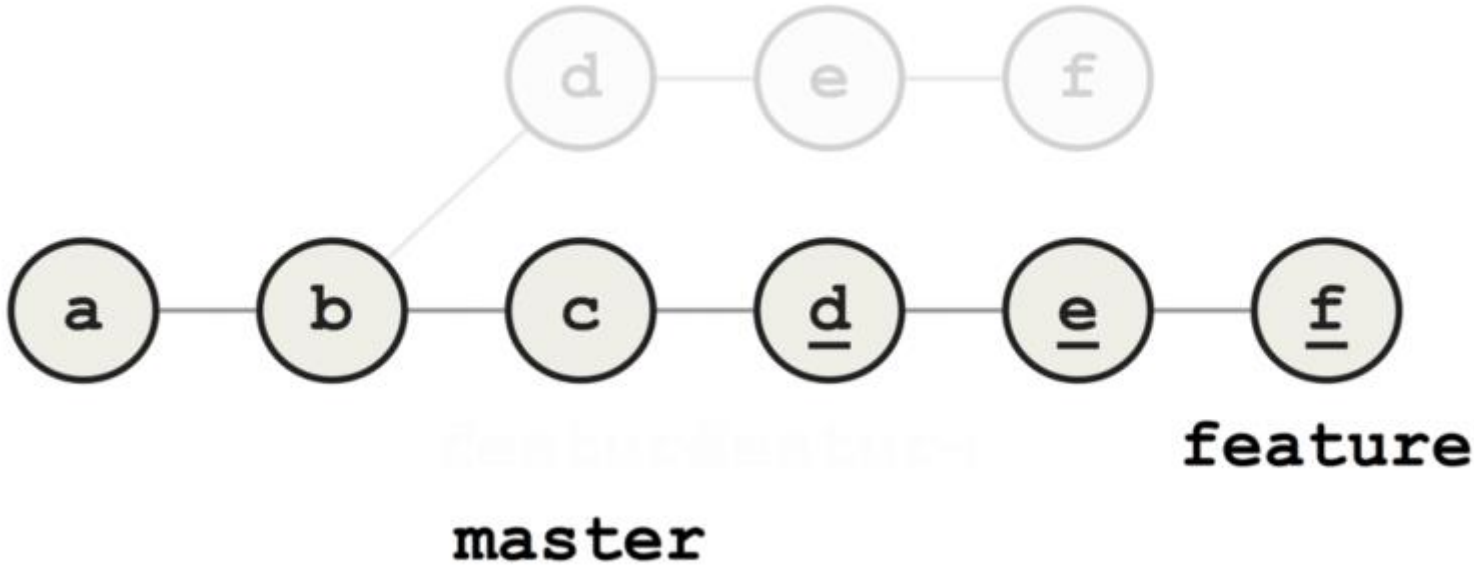
Branching Strategy for a Large Team/Project



Branching @ ETSU



on (feature)
\$ git rebase master



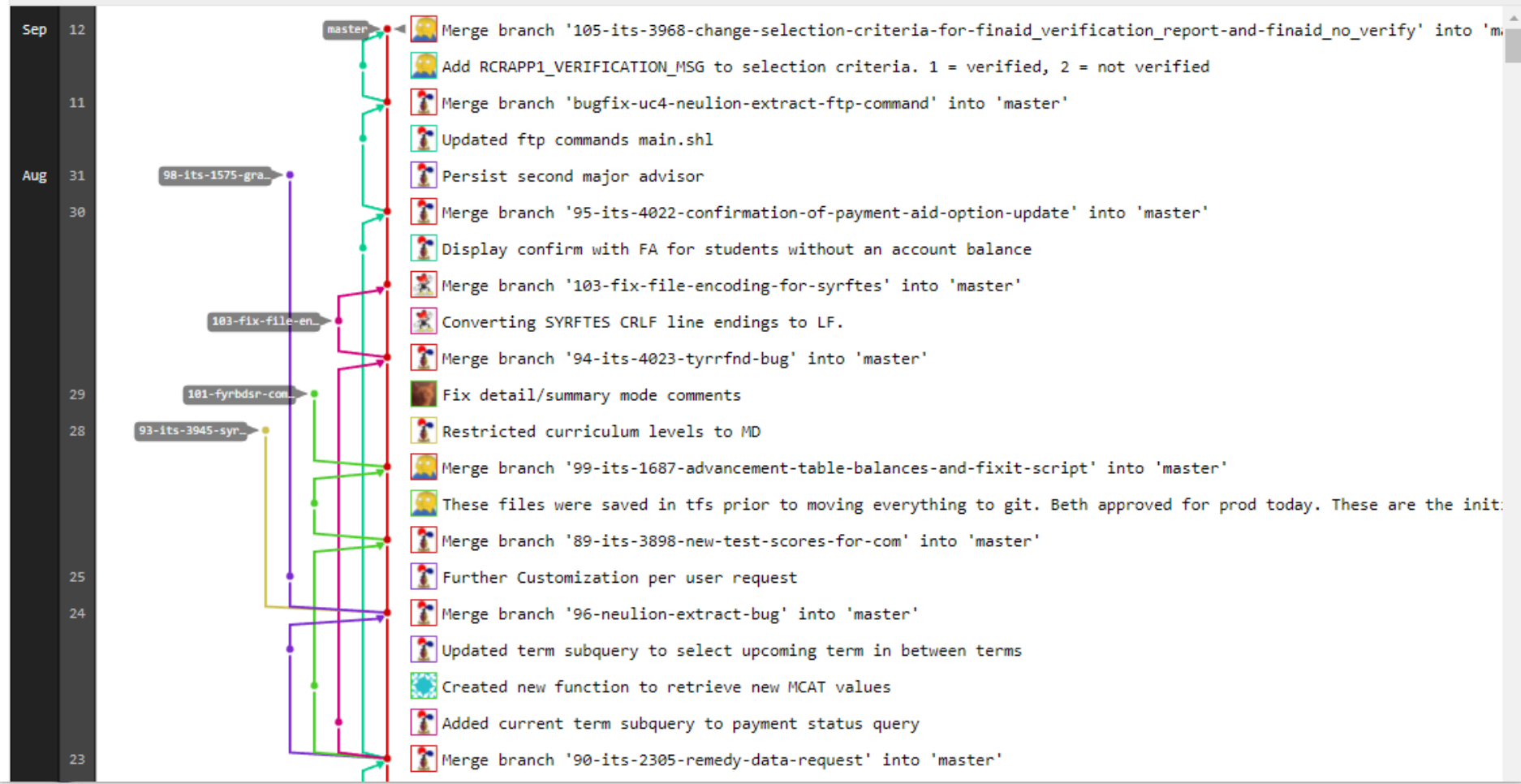
master

You can move around the graph by using the arrow keys.

Git revision



Begin with the selected commit



E etsu

- Overview
- Details
- Activity
- Cycle Analytics
- Repository
- Issues 21
- Merge Requests 8
- CI / CD
- Wiki
- Snippets
- Settings

« Collapse sidebar

etsu

ETSU mods to Banner

★ Unstar 3
🍴 Fork 0
SSH git@git.etsu.edu:banner/etsu.git
📄
⬇️
+
🔔 Participate

Leave project

Files (99.8 MB) Commits (1,771) Branches (10) Tags (0) README

master
etsu / +
History
🔍 Find file
⬇️

Merge branch... Gary Pleasant committed 5 days ago d6b89dc f

Name	Last commit	Last Update
📁 BDM		5 months ago
📁 ODS	Summer 2017 ELFile ODS Loads	a month ago
📁 Packages	Merge branch '95-its-4022-confirmation-of-payment-aid-optio...	2 weeks ago
📁 ProC	Converting SYRFTEs CRLF line endings to LF.	2 weeks ago
📁 Procedures	Added resd code = 3 to eRate codes	a month ago
📁 Security	Adding Director security scripts to repo. No changes, just migra...	4 months ago
📁 Sequences	for ayramrg	a year ago
📁 Tables	Added FINAID_TRACKING_CODE table to use as a look up for t...	4 months ago
📁 Triggers	Added audit trigger for SORTBRK	a month ago
📁 UC4	Add RCRAPP1_VERIFICATION_MSG to selection criteria. 1 = veri...	5 days ago
📁 Views	Fixed view for multile records when a user is part of multiple C...	a month ago

Banner Tracking Repo (banner/banner)

- Codetree Snapshot
- Database Schema Snapshot
- Pickaxe
- <https://git.etsu.edu/banner/banner>



sync_codetree.sh

```
1  #!/bin/bash
2  [ -z "$BANNER_HOME" ] && { echo "BANNER_HOME is not set."; exit 1; }
3  rsync -a -v -l -H --delete --exclude-from rsync_exclude.txt $BANNER_HOME/ codetree/
4  echo "Regenerating hashes for synced FMB files";
5  find -name "*.fmb" -exec sh -c 'md5sum {} > {}.md5; mv {}.md5 {}' \;
6  echo "Done generating FMB hashes";
```



sync_db.rb



```
18 #find modified objects
19 ddl_query = <<-SQL_END
20 select owner,
21         object_name,
22         decode(object_type,'PACKAGE BODY','PACKAGE',object_type) object_type,
23         dbms_metadata.get_ddl(decode(object_type,'PACKAGE BODY','PACKAGE',object_type), object_name, owner) ddl
24 from dba_objects
25 where object_type in ('FUNCTION','INDEX','PACKAGE','PACKAGE BODY','PROCEDURE','SYNONYM','TABLE','TRIGGER','VIEW')
26        and owner not in ('SYS','SYSTEM','CTXSYS','EXFSYS','GSMADMIN_INTERNAL','ORACLE_OCM','OUTLN','PUBLIC','STREAMSADMIN','TSMSYS','WMSYS','XDB')
27        and object_name not like '/%' --PUBLIC synonym filter
28        and object_name not like 'SYS_IL%'
29        and object_name not like 'SYS_IOT%'
30        and object_name not like 'GT_LOGIN_AUDIT_ACCESS'
31        and object_name not like 'GT_LOGOFF_AUDIT_ACCESS'
32        and last_ddl_time > sysdate-#{ARGV[1]}
33 SQL_END
34
35 puts "---These objects have DDL change dates in date range---"
36 c = conn.exec(ddl_query)
37 while r = c.fetch_hash() do
38     filename = get_path(r)
39     puts filename
40     File.open(filename, 'w') {|f| f.write( r["DDL"].read ) }
41 end
42 c.close
```



pickaxe

6:49 PM **gitbot** APP Commit on **master**: ITS9364 - tbr_gn_runner_20180630 closes banner/etsu#297
These files/objects may have lost ETSU mods:
M db/package/baninst1/bwgkprxy.sql
M db/package/baninst1/goktpty.sql
Gabriel **Tocci** pushed to branch **master** of **banner/banner** ([Compare changes](#))
| **57108768**: ITS9364 - tbr_gn_runner_20180630 closes banner/etsu#297
| - banner

 banner >  banner > Commits > 57108768

Commit 57108768  authored 2 weeks ago by  Gabriel Tocci

[Browse files](#)

[Options](#) ▾

ITS9364 - tbr_gn_runner_20180630 closes etsu#297

 parent [5bfe908c](#)  master 

 No related merge requests found

Showing **638** changed files ▾ with **815** additions and **62** deletions

[Expand all](#)

[Hide whitespace changes](#)

[Inline](#)

[Side-by-side](#)

```

1  #!/usr/local/bin/ruby
2  require 'net/http'
3  require 'json'
4  require 'uri'
5
6  branch = `git rev-parse --abbrev-ref HEAD`
7  msg = `git log -1 --pretty=format:%s`
8
9  pickaxe = `git diff HEAD~1 --SETSU --name-status`
10
11 unless pickaxe.empty? then
12     ..msg = "#{msg}\nThese files/objects may have lost ETSU mods:\n#{pickaxe}"
13
14     ..uri = URI('https://hooks.slack.com/services/F00')
15     ..req = Net::HTTP::Post.new uri
16     ..req.body = {:text => "Commit on *#{branch.strip}*: #{msg.strip}"}.to_json
17
18     ..res = Net::HTTP.start(uri.host, uri.port, :use_ssl => true) do |http|
19         ..http.verify_mode = OpenSSL::SSL::VERIFY_NONE
20         ..http.ssl_version = :SSLv3
21         ..http.request req
22     ..end
23 end
24
25 # Unset author email
26 `git config --global --unset user.email`

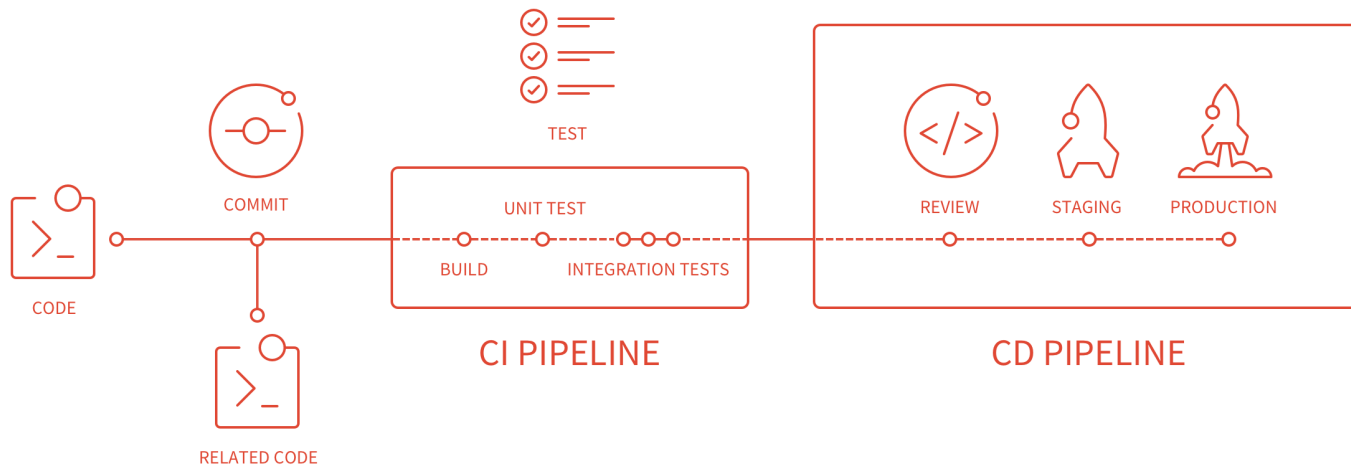
```



Password Rotations

- System Passwords
 - Fabric
 - <https://git.etsu.edu/banner/password-fabric/tree/master>
- User Accounts
 - SSH Pubkey Rotation





GitLab / degreeworks / dashboard ▾
Pipelines

All **22** Pending **0** Running **0** Finished **22** Branches Tags

Status	Pipeline	Commit	Stages
✔ passed	#258 by latest	<p>↳ ITS2680-graduat... -> bc34bc7c</p> <p> Added Gradterm to degree audit header</p>	✔
✔ passed	#257 by	<p>↳ ITS2680-graduat... -> 1c430309</p> <p> WIP</p>	✔



.gitlab-ci.yml

```
stages:  
  - build  
  - test  
  - deploy  
  
job 1:  
  stage: build  
  script: make build dependencies  
  
job 2:  
  stage: build  
  script: make build artifacts  
  
job 3:  
  stage: test  
  script: make test  
  
job 4:  
  stage: deploy  
  script: make deploy
```

[degreeworks dashboard example](#)



Admin Pages – Deployment Walkthrough



- Deploy via ESM to “dummy” host
- Update war files
 - <https://itswiki.etsu.edu/index.php/IS:AdminPagesWarConfig>
 - <https://git.etsu.edu/banner9/BannerAdmin/commit/d2b5e3be984dc09b60a070181bd6fabcb5daf7b2>
- Update repo w/war or new configuration settings:
 - <https://git.etsu.edu/ecs/AdminPages/tree/master/tsth>
- GitlabCI executes `deploy_to_s3.py`
 - <https://git.etsu.edu/ecs/AdminPages/blob/master/.gitlab-ci.yml>
- `Deploy_to_s3.py` builds tarballs and pushes them to s3
 - https://git.etsu.edu/ecs/AdminPages/blob/master/deploy_to_s3.py
- Ecs task
 - <https://git.etsu.edu/aws/terraform/blob/master/env-development/ecs-tasks/tsth-BannerAdmin.json#L4>
- Tomcat image has `entrypoint.py`
 - <https://git.etsu.edu/docker/tomcat8-jre7-base/blob/master/entrypoint.py>
 - Configures war (docker.ini)
 - Configures secrets (secrets.yaml)
- Secrets.yaml get updated on password rotations
 - <https://git.etsu.edu/banner/password-fabric/blob/master/aws.py>





ETSU Project/Repo Groups



  argos as Owner



  docker Owner


  webapps as Owner


  r10k
Puppet control repository for r10k and hieradata.



  ellucian-admin as Master

  terraform Developer

  ellucian as Master
Group / namespace for mirror'ed Ellucian git repos.

 banner / password-fabric Owner
Python Fabric project to automate Oracle database password changes.

  degreeworks as Owner

  banner as Owner



IaC

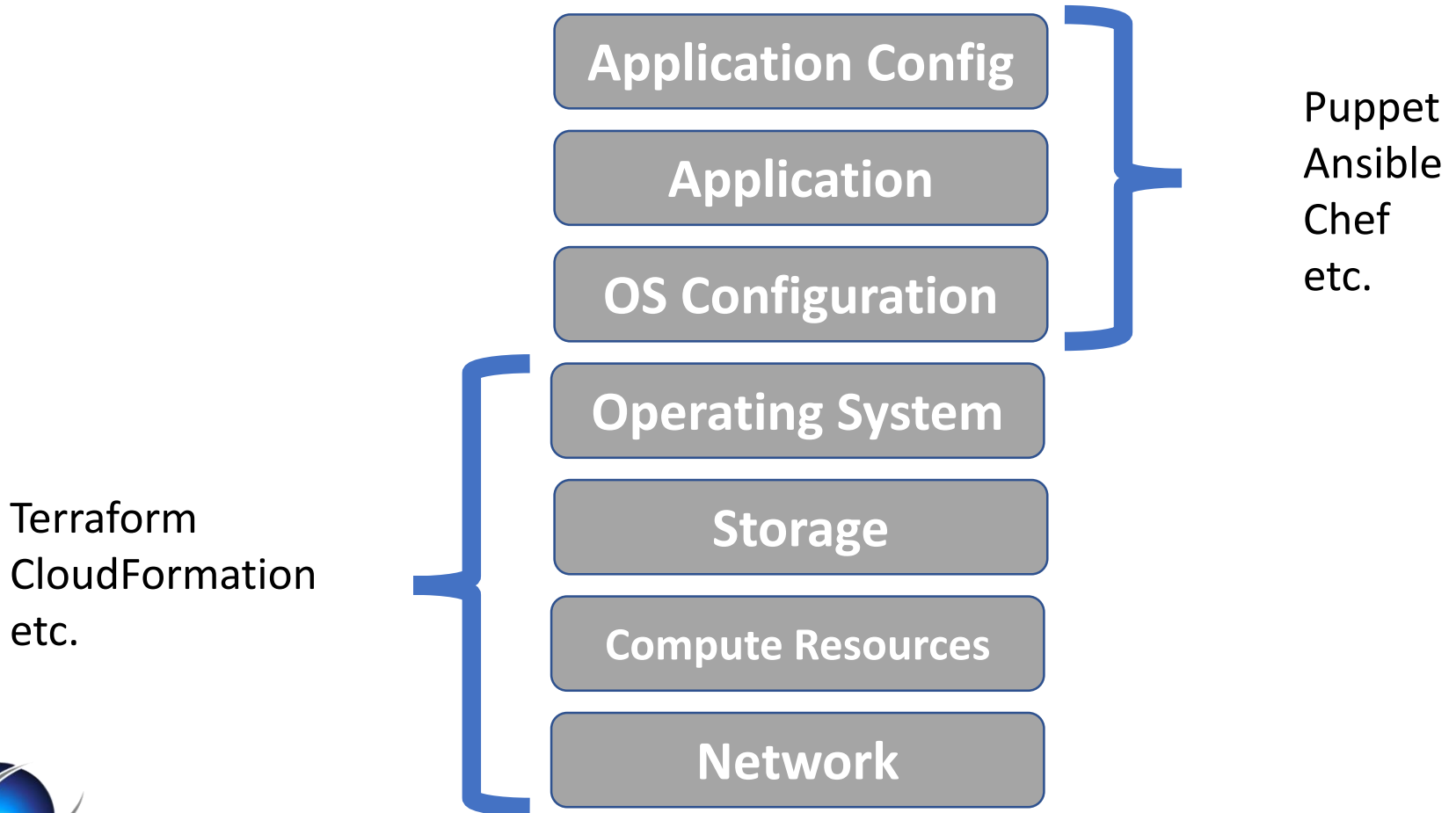
- Declares intent and interactions of resources
- Auditable infrastructure
- Increases recovery speed
- Reduces go-live errors
- Manages “drift” of configurations

Tools

- Puppet
- Terraform
- Docker
- Git



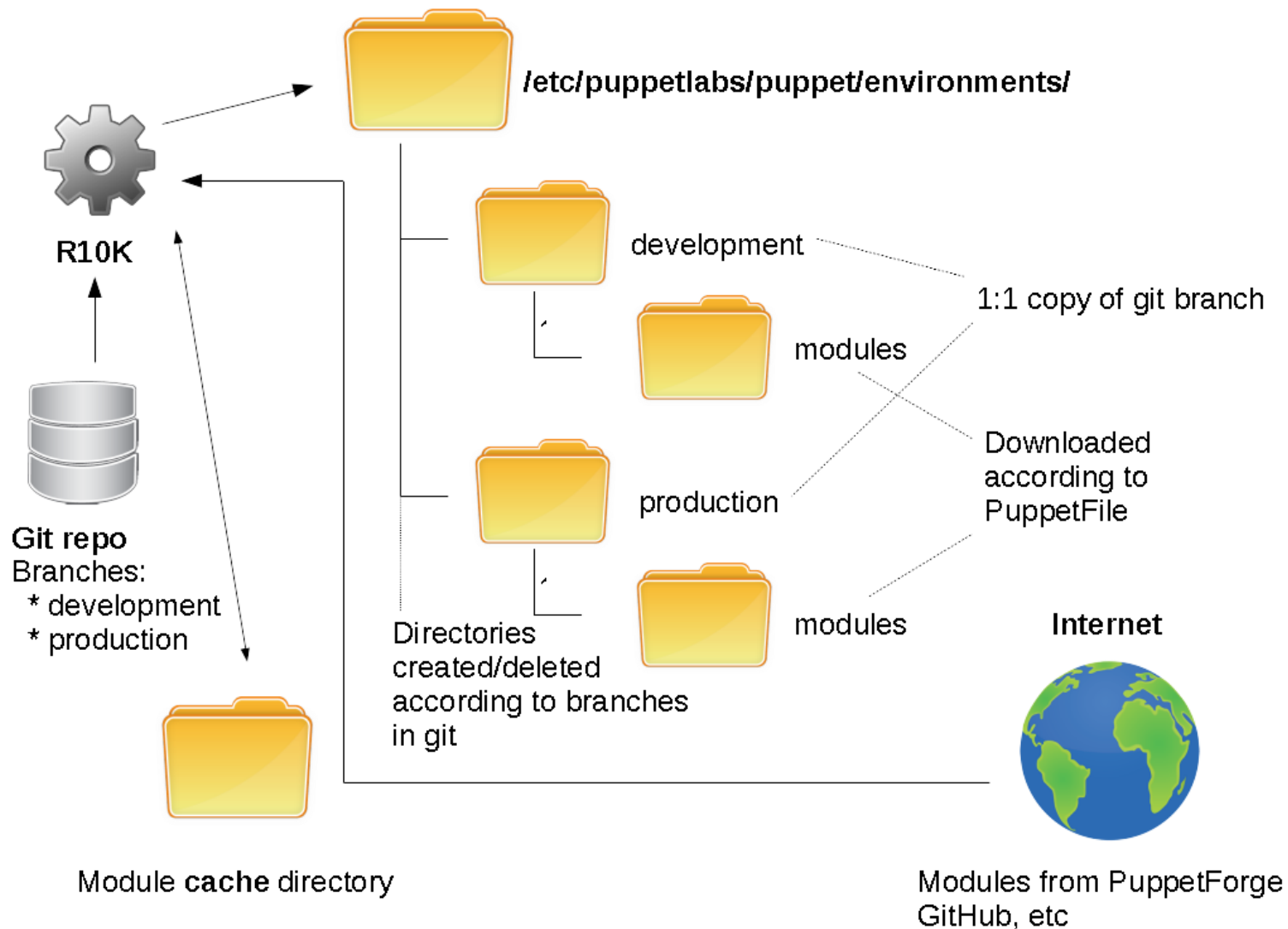
Provisioning vs. Configuration Management



Puppet

- <https://git.etsu.edu/puppet/profiles/blob/master/manifests/webloginc/ssomanager.pp>
- <https://git.etsu.edu/puppet/roles/blob/master/manifests/eis.pp>
- <https://git.etsu.edu/puppet/r10k/blob/production/hieradata/node/etsupbeis.yaml>





Declarative Infrastructure

- Terraform
 - AWS Resource Deployment Tool
 - Multi-Cloud
 - DSL
- Docker
 - Applications and any Dependencies
 - Increase Resource Efficiency and Scalability



Summary

- Proper Branching Strategies
- Push and Review Early and Often
- Collaborate on Issues
- Assign Work via Issues
- Track Banner changes via Git
- Integrate with other tools
 - Increase Productivity
 - Reduce Technical Debt



Whats Next?

- Management Analytics
 - Issue Boards
 - GitPrime
- Increase Usage of CI/CD
- Kubernetes Integration



Questions?





Banner in **AWS**: Technical Details

❖ Wednesday @ 1:30 PM - 2:30 PM

❖ Session# 1016

AWS services

- Docker container orchestration
 - ECS
- Serverless functions
 - Lambda
- Load balancing and Service discovery
 - ELB, ALB
- Continuous Delivery
 - Gitlab, S3, ECR
- Networking
 - Route53, VPC

Infrastructure as code (IaC)

- Terraform
- Puppet

Monitoring

- Prometheus, Alerts Manager, Graphana, Slack

Security

Disaster Recovery

EC2 Instances

