UIFCW R2O2R on EPIC

Collaborative effort between - Community Collaborators slide attached

Special Acknowledgments: Jong Kim, Dr. Mark Potts Dr. Stylianos Flampouris

Agenda

- Partners/EPIC Overview
- R2O
    a. Repeatable to SRW, RRFS, LandDA, HAFS, and future applications
- CI/CD stages and gates

Partners

Community Collaborators/Partners

Acknowledgement

- NOAA OAR: WPO, GSL, PSL, NSSL, CSL, AOML, GFDL
- NOAA Open Data Dissemination (NODD) Program
- NWS: EMC, OSTI
- DTC
- UCAR: CGD, JCSDA
- Academia: George Mason University, Oklahoma University, University of Michigan
- CSPs: AWS, Azure, and Google Cloud
- Cooperative Institutes: CIRES, CIMSS

UIFCW 2023

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R2O

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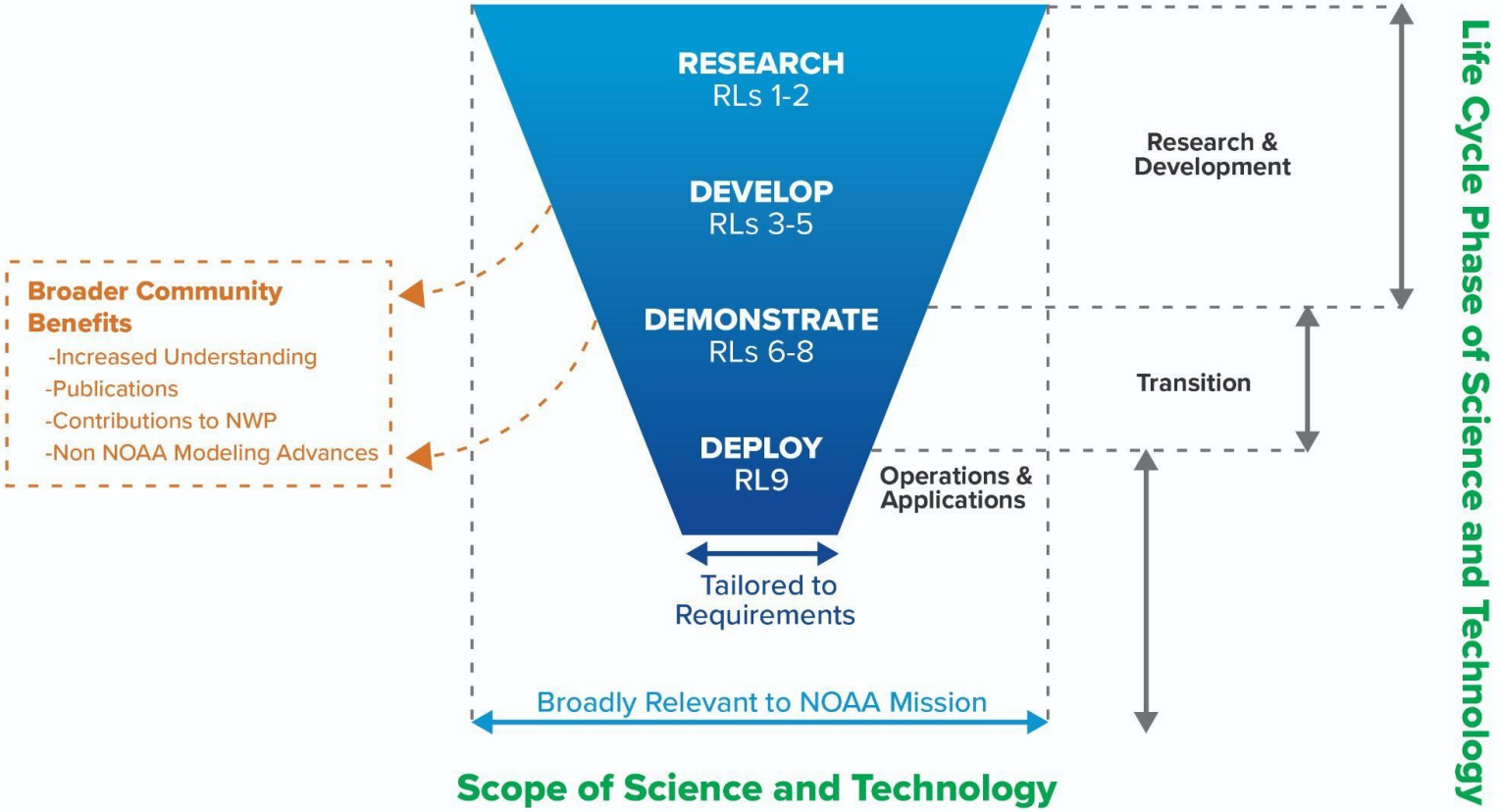

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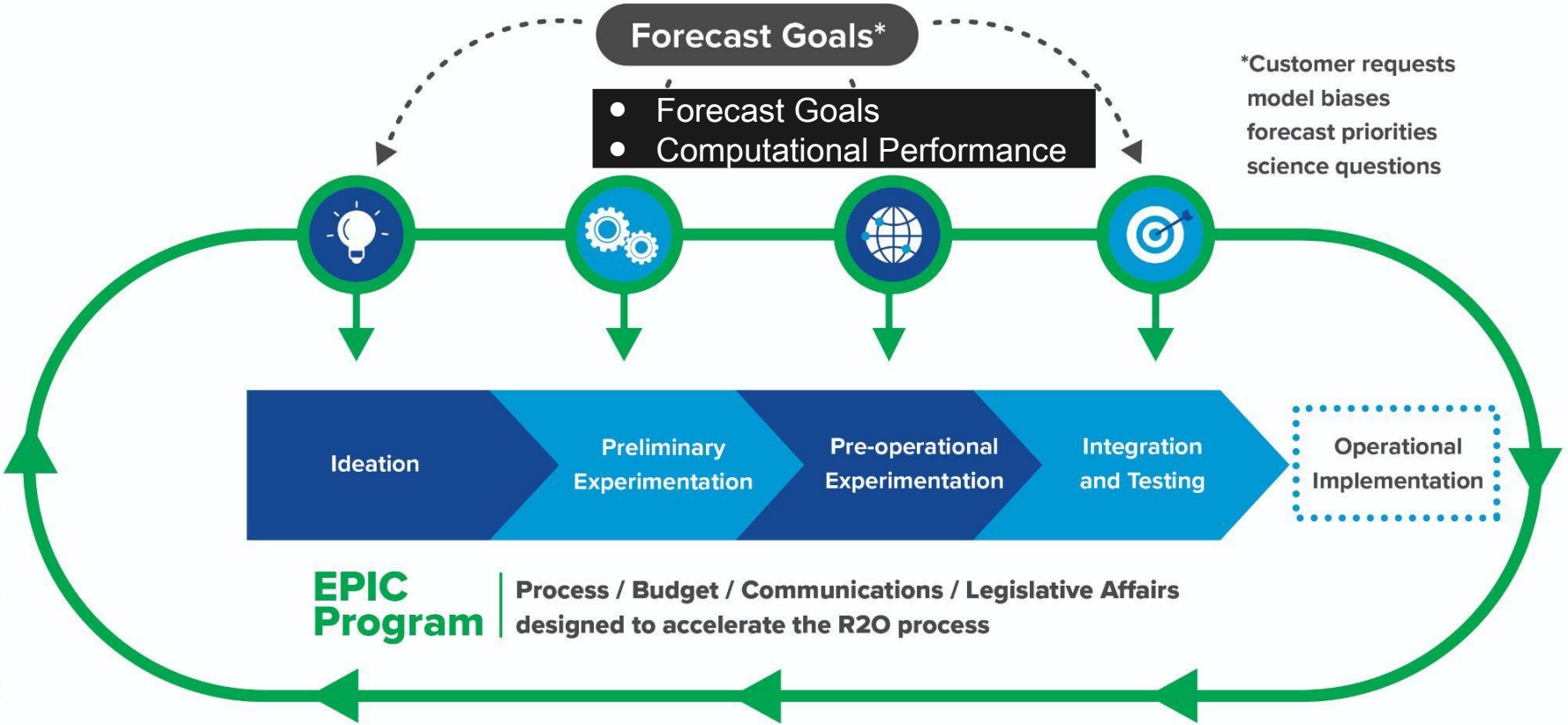

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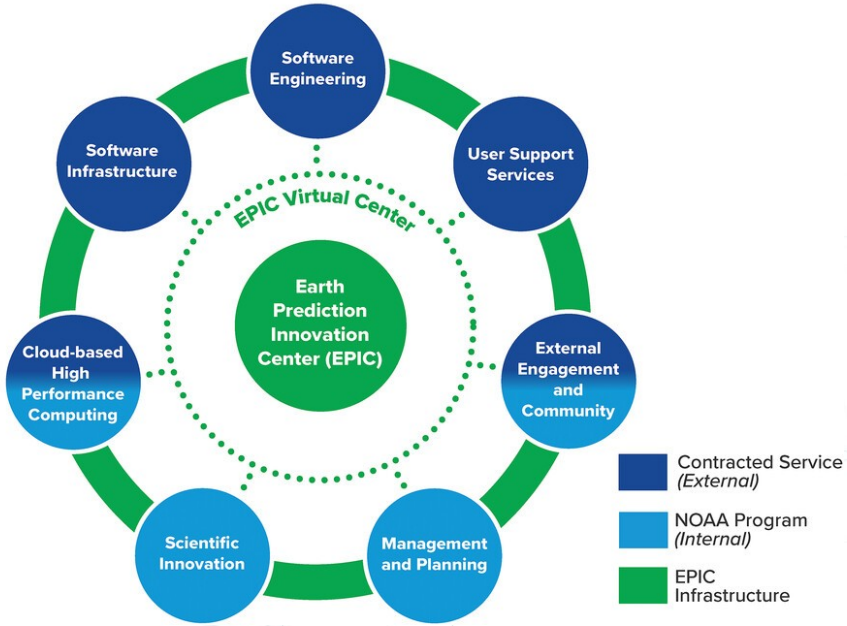
Building Open and Dynamic Collaboration within the Earth Sciences Community



Future Plans:

- CI/CD
- Repeatable Application runs
- Fail Quickly
- Enhanced testing frameworks
- Advanced User Support
- Configuration Management
- Cloud configuration scripts
- Community Tools
- Unified Workflow
- Community Events

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CI/CD Pipeline - Repeatable Innovation

Pipeline Gates

- Average Build time
- Average time per gate
- Average build time per platform
- Code Coverage
- Forecast Skill

Checkout Source Code	Pull source code from GitHub and stage the data for analysis before deploying code.
Unit Testing	Run available unit tests for projects and ensure that the tests run as expected Collect code coverage metrics for the available baselines.
Lint (Flake 8)	Perform static code analysis that enforces style consistencies across program languages.
Dependency Check	Scan third-party libraries and modules for current vulnerabilities.
Build the Cloud Stack	Terraform/Cloudformation scripts will create a repeatable process for deployin applications.
Lint Cloud Stack	Examine the cloud stack template and return various suggestions.
Nag Cloud Stack	Pinpoint security vulnerabilities in cloud stack templates.
Scan Secrets	Scan for any improper use of security passwords or credentials.
Static Code Analysis	Scan code in all programming languages using SonarQube to determine curre vulnerabilities, maintenance issues, and defects. Note: SonarQube also has t ability to utilize architectural metrics such as cyclomatic complexity and maintainability metrics. Cyclomatic complexity as the example infers is a valu tells the ability that a new engineer will be able to come in and maintain the ba If the number is high, then you have an application that is tough to upkeep, so tracking this number over time will make sure that your application is easy to maintain, which in turn reduces technical debt costs.
Package/Pull Artifacts/Deploy	This gate sequence will package up the artifacts and the application and deplo application as needed after completing all quality gate checks.
Run Regression Tests	Run a list of regression tests to test the overall end-to-end functionality.

CI/CD Pipeline

- Master Pipeline:

Stage View

	Build and Test	Matrix - SRW_PLATFORM = 'cheyenne', SRW_COMPILER = 'gnu'	Matrix - SRW_PLATFORM = 'cheyenne', SRW_COMPILER = 'intel'	Matrix - SRW_PLATFORM = 'gaea', SRW_COMPILER = 'intel'	Matrix - SRW_PLATFORM = 'hera', SRW_COMPILER = 'intel'	Matrix - SRW_PLATFORM = 'jet', SRW_COMPILER = 'intel'	Matrix - SRW_PLATFORM = 'orion', SRW_COMPILER = 'intel'	Initialize	Initialize	Initialize	Initialize	Initialize	Initialize	Build	Build	Build	Build	Build	Build	Test	Test	Test	Test	Test	Test
Average stage times: (Average full run time: ~26min 23s)	1s	2s	2s	2s	2s	2s	2s	3min 6s	0ms	0ms	0ms	0ms	0ms	12min 38s	0ms	0ms	0ms	0ms	0ms	1s	0ms	0ms	0ms	0ms	0ms
#40 Sep 25 09:34 1 commit	1s	2s	2s	2s	2s	2s	2s	1min 47s	1min 36s	5min 9s	4min 19s	2min 47s	3min 2s	15min 35s	9min 14s	23min 26s	8min 57s	8min 18s	10min 20s	1s	1s	1s	1s	1s	2s

Read Yaml	Source	List Files	OWASP Dependency Check	Python Lint	Python Unit Tests	Build Cfn Template	Cfn Lint	Cfn Nag	Secrets Scanning	SonarQube Scan	Build UI	Package Lambdas	Pull Layers from Artifactory	Deploy wdaimpact-spire-app Stack to wdaimpact-spire-devtest	Cleaning Up
79ms	41s	434ms	32s	4s	55s	1s	3s	3s	7s	1min 39s	0ms	0ms	0ms	0ms	75ms
123ms	39s (paused for 9s)	562ms	37s	5s	55s	1s	4s	3s	7s	1min 34s					73ms

EPIC Dashboard - Pipeline

EPIC CI Build Status - ufs-srweather-app

Last updated: Sun Mar 12 22:42:01 PDT 2023

ufs-srweather-app/job/pipeline/view/change-requests						
timestamp	**PR-build**	**inProgress**	**duration (min)**	**result**	**WE2E-tests**	**S3-artifacts**
2023-03-10 15:29:36	ufs-srweather-app/job/pipeline/job/PR-667/1/	true				
2023-03-10 17:13:46	ufs-srweather-app/job/pipeline/job/PR-663/1/	false	309.8	FAILURE	cheyenne-intel gaea-intel jet-intel orion-intel	srw_build-cheyenne-gnu.log
2023-03-08 17:06:26	ufs-srweather-app/job/pipeline/job/PR-657/3/	false	518.3	FAILURE		srw_build-cheyenne-gnu.log
2023-03-08 17:00:05	ufs-srweather-app/job/pipeline/job/PR-657/2/	false	1	FAILURE		
2023-03-08 16:53:00	ufs-srweather-app/job/pipeline/job/PR-657/1/	false	0	FAILURE		
2023-03-10 15:08:26	ufs-srweather-app/job/pipeline/job/PR-656/1/	false	274.9	SUCCESS	cheyenne-gnu cheyenne-intel gaea-intel jet-intel orion-intel	srw_build-cheyenne-gnu.log
2023-03-08 19:16:35	ufs-srweather-app/job/pipeline/job/PR-650/1/	false	438.7	FAILURE	cheyenne-gnu cheyenne-intel gaea-intel jet-intel	srw_build-cheyenne-gnu.log
2023-03-09 01:43:47	ufs-srweather-app/job/pipeline/job/PR-637/2/	false	117	FAILURE	cheyenne-gnu cheyenne-intel gaea-intel jet-intel	srw_build-cheyenne-gnu.log
2023-03-08 16:29:15	ufs-srweather-app/job/pipeline/job/PR-637/1/	false	554.5	FAILURE		srw_build-cheyenne-gnu.log
2023-03-06 16:44:27	ufs-srweather-app/job/pipeline/job/PR-632/1/	false	167.3	FAILURE	cheyenne-gnu cheyenne-intel gaea-intel jet-intel	srw_build-cheyenne-gnu.log
2023-02-24 18:37:40	ufs-srweather-app/job/pipeline/job/PR-628/1/	false	218.5	SUCCESS	cheyenne-gnu cheyenne-intel gaea-intel jet-intel orion-intel	srw_build-cheyenne-gnu.log
2023-03-03 18:51:37	ufs-srweather-app/job/pipeline/job/PR-627/1/	false	432.1	FAILURE	cheyenne-gnu cheyenne-intel gaea-intel jet-intel	srw_build-cheyenne-gnu.log
2023-02-23 16:50:45	ufs-srweather-app/job/pipeline/job/PR-626/1/	false	140.6	ABORTED	cheyenne-gnu cheyenne-intel gaea-intel jet-intel	srw_build-cheyenne-gnu.log

2023

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