



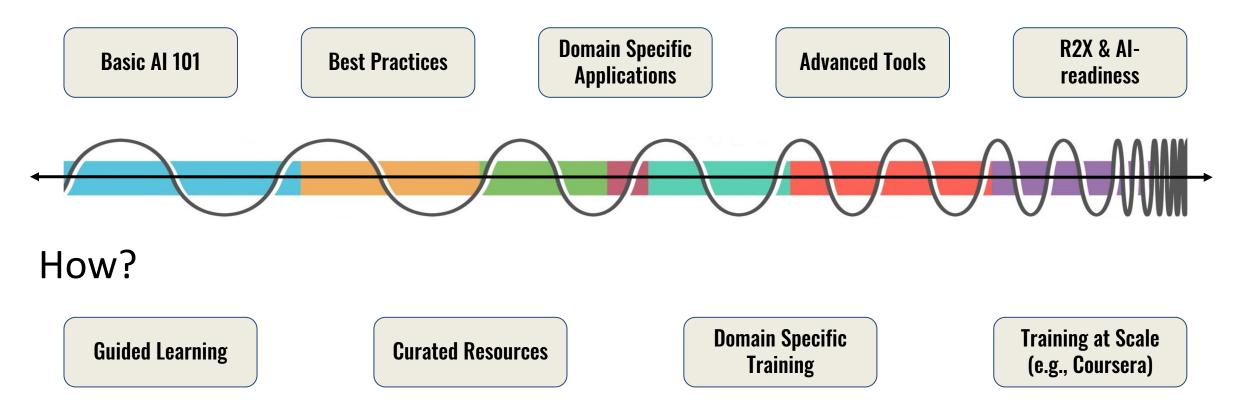
# Enabling Community Contribution of Cloud-based Training for AI/ML in Earth and Space Science

# Yuhan "Douglas" Rao, Chris Slocum Partly supported by 2021 ESIP Lab Grant



## Identifying Community Needs – A Training Spectrum

### What?

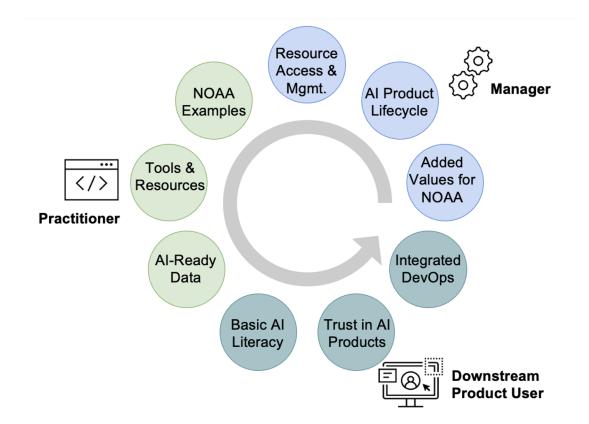




## Identifying Community Needs – Gap Assessment

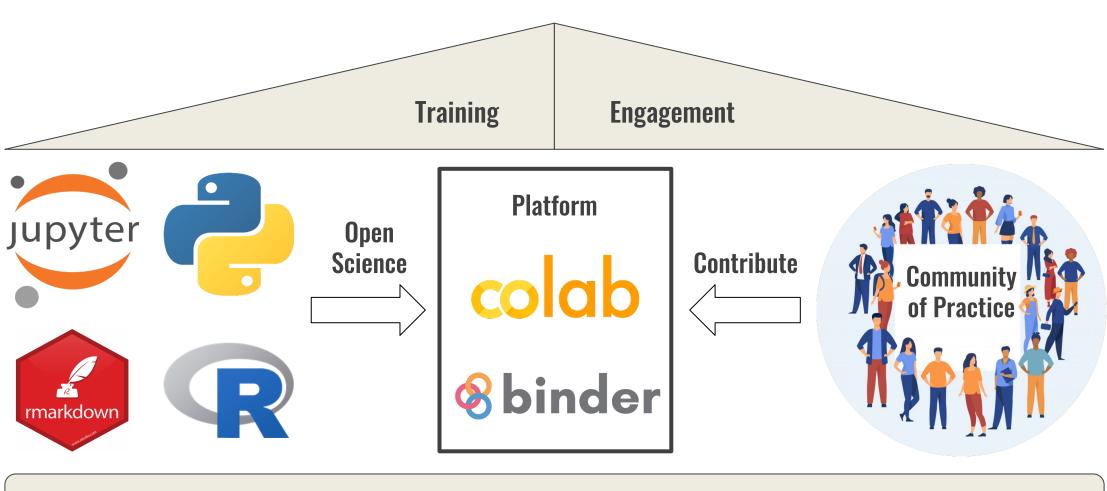
"To address the workforce training needs, resource creation should be prioritized to <u>convert NOAA AI success stories into</u> <u>interactive training material</u> in a computing environment that allows the workforce to immediately apply learning outcomes to support NOAA's mission via the AI strategy."

NOAA AI Community of Practice Pilot Resource Gap Assessment <u>https://noaa.gov/ai/training</u>



NOAA training action priority lifecycle highlighted by workforce role and relationship to AI.





#### Using Open Science to Enable Community Contribution

**Support & Facilitation** 



# Facilitate Community Contribution of Cloud-based Training Materials

#### Jupyter Notebook Template

- Provides consistent appearance & presentation
- Clear instructions on mandatory sections needed

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	File	Edit	View	Insert	Runtime	Tools	Help	
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≔	Table of contents X	+ Code + Text
Q	Collaborative Training Notebook Template (note to content creator)	Collaborative Training Notebook Template (note to content creator)
<>	Notebook Title	The purpose of the Training Notebook Template is to make sure that material has a uniform appearance and that contain similarly structured
-	Tutorial Material	material across different communities of practices. The main sections are:
	Exercises	Overview of the broad topic covered
	Next steps	<ul> <li>Prerequisites for what background information is needed to go through the notebook</li> </ul>
	Examples in the community	<ul> <li>Targeted level of this notebook</li> </ul>
	Data statement	<ul> <li>Learning outcomes from completing the notebook</li> </ul>
	References	The Tutorial with a balance of explanation and activity
	Metadata	Exercises for students to try that do not have solutions but maybe have an answer or benchmark to facilitate understanding
	License	Next steps
	Disclaimer (Optional)	Potential follow on material
	Section	Other relevant notebooks
		Examples in the community     Data statement     References
		As you fill out your notebook, make sure to delete the suggestion text.
		The notebook template is maintained by Chris Slocum (christopher.slocum@noaa.gov) and Douglas Rao (douglas.rao@noaa.gov).

#### Sections

- Overview
  - Prerequisites
  - Learning outcomes
- Tutorial Material
  - Background
  - Data section
  - Basic example
  - Complex example
  - Final thoughts
- Exercises
- Next steps & Examples in NOAA
- Data Statement
- References



Template via ESIP Lab Project GitHub: <u>https://github.com/ESIPFed/earth-science-community-ML-</u> <u>tutorials/tree/main/tutorial\_template</u>

# Facilitate Community Contribution of Cloud-based Training Materials

### **RATCHET -** *Readability Assessment Tool for Code that Helps with Effective Training*

- In-notebook & command line utility
- Provides time estimate for code & text
- Gives readability metrics



No	tebook metadata
	Language:Python 3
	Number Markdown Cells: 35
	Number of URLs: 7
	Number of valid URLs: 7
	Number Of Valid OKLS: 7
	Percent Text Output: 59%
	Percent Display Output: 50%
Re	adability metrics:
	Flesch reading ease:
	Score: 46.7
	Text interpretation:Difficult
	Grade level:College
	Flesch-Kincaid Grade Level: 12.8

Reading time	estimates:			
Estimated	text reading time:	13	to	25 min
Estimated	code reading time:	10	to	20 min
Estima	ated code annotation reading time:	4	to	7 min
Estimated	total reading time:	23	to	45 min

