



# Strengthening capacity in meaningful modeling of infectious disease dynamics

insights from the International Clinics on Infectious Disease  
Dynamics and Data Program

Juliet Pulliam, Director: SACEMA

IDM Symposium, 2023-05-24

# Mission

ICI3D cultivates **locally led application of modeling skills to inform decision-making for public health planning and policy in Africa** through coordination and support of training, career development, and networking activities that unite people across disciplinary and institutional boundaries.



# Origin story

“We have hit a ceiling and the important areas in the roof space that we need to access are as follows:

- Improved understanding of the true nature of the underlying biological system and its accurate depiction in our models
- Challenging models with data
- Estimation of appropriate parameter values for the models
- Application to questions of direct concern to policy makers”

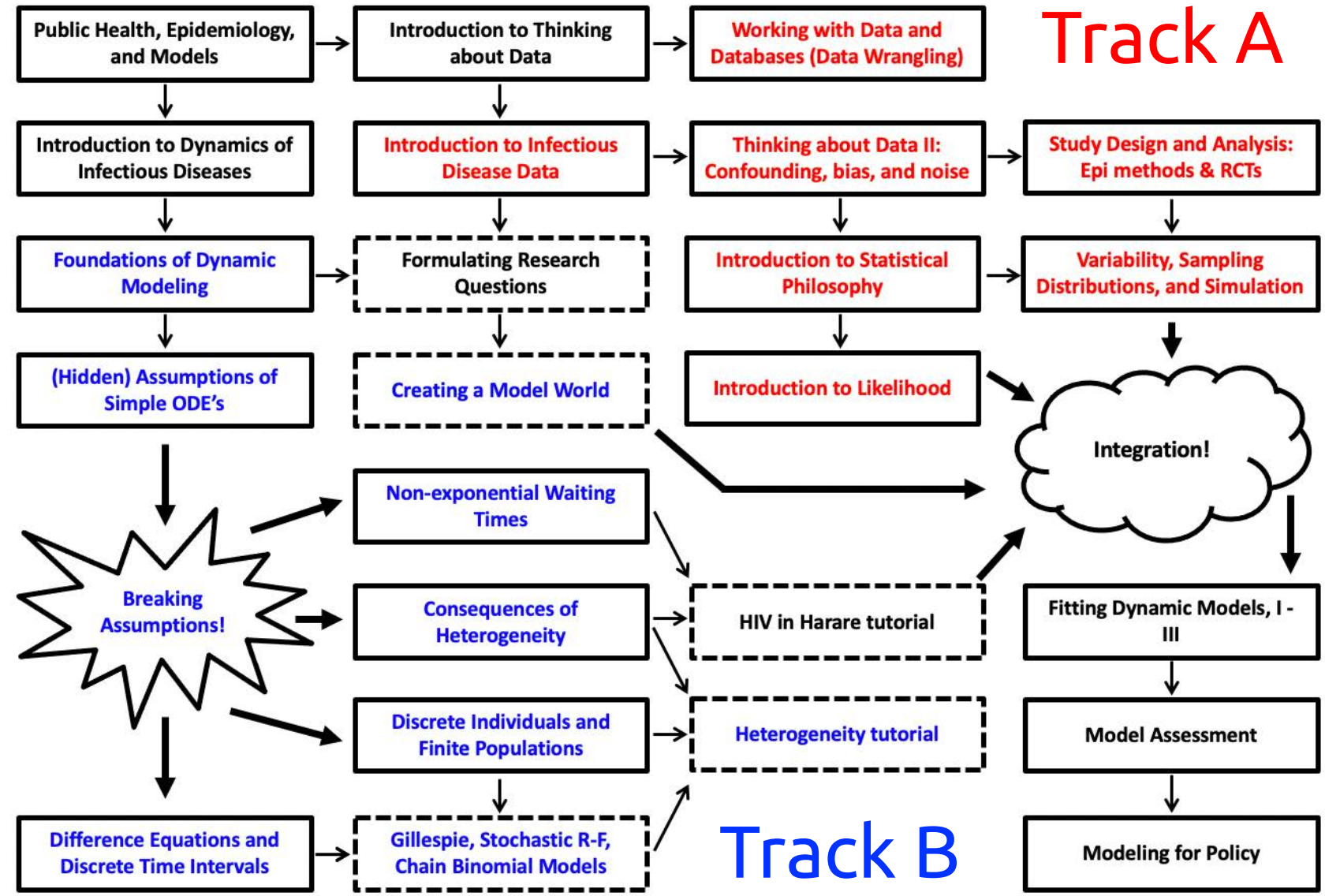
~ John Hargrove, Director: SACEMA (2007)



# 2009 Clinic on the Meaningful Modelling of Biological Data



# Clinic on the Meaningful Modelling of Epidemiological Data



Year	ASI	MedPH	MMED	DAIDD	SEAMS	I3D
2007						
2008						
2009			(pilot)			
2010						
2011						
2012				(pilot)		
2013						
2014						3
2015						3
2016						5
2017						
2018						
2019						
2020						(virtual)
2021		(virtual)	(virtual)			(virtual)
2022		(virtual)				(virtual)
2023		*	*			(virtual *)

**Key**

- ASI: Advanced Study Institute in Mathematical Epidemiology
- MedPH: Mathematical Modelling in Medicine and Public Health (Honours / MSc)
- MMED: Clinic on Meaningful Modeling of Epidemiological Data
- DAIDD: Clinic on Dynamical Approaches to Infectious Disease Data
- SEAMS: Software Engineering for the Applied Mathematical Sciences
- I3D: International Disease Dynamics and Data Research Scholars Exchange Program

\* denotes upcoming

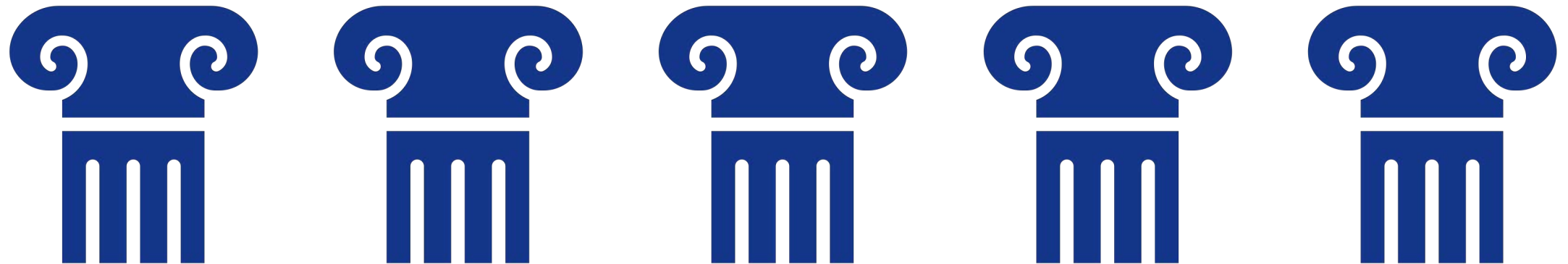
Bringing people together across institutional, national, and disciplinary boundaries

Meeting people where they are and allowing growth from wherever that is

High-quality, personalized interactions with instructors

Immersive experiences focused around development of a specific creative output

Repeated interactions and pathways to further development



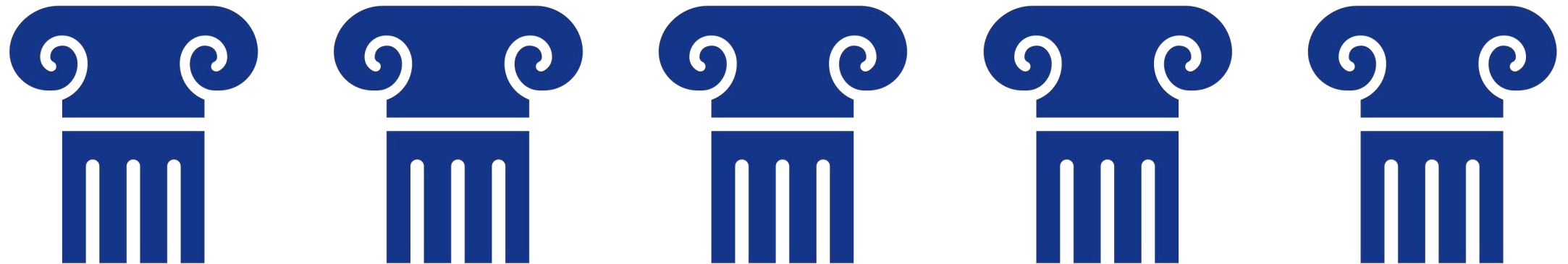
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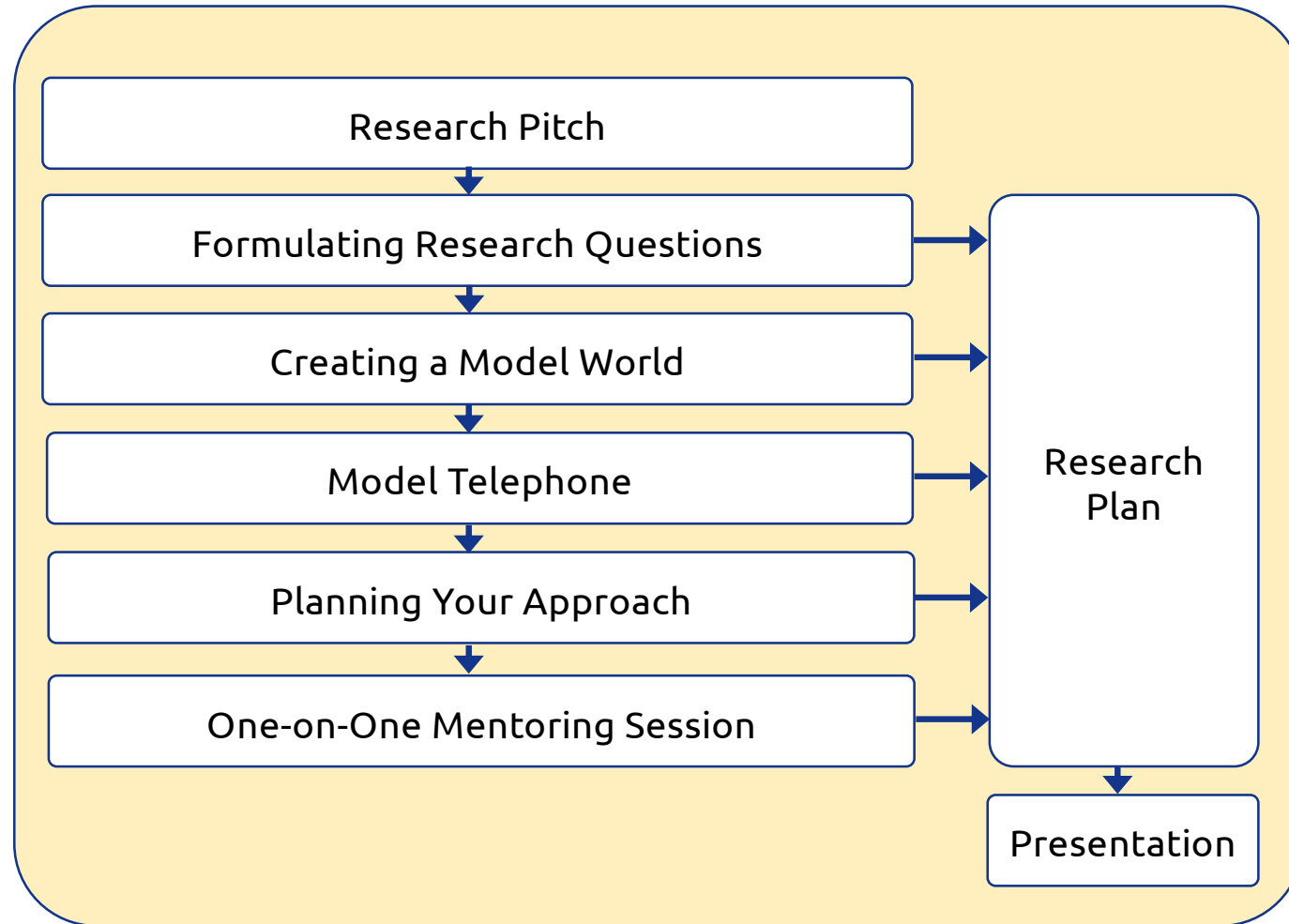
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# Clinic on Dynamical Approaches to Infectious Disease Data



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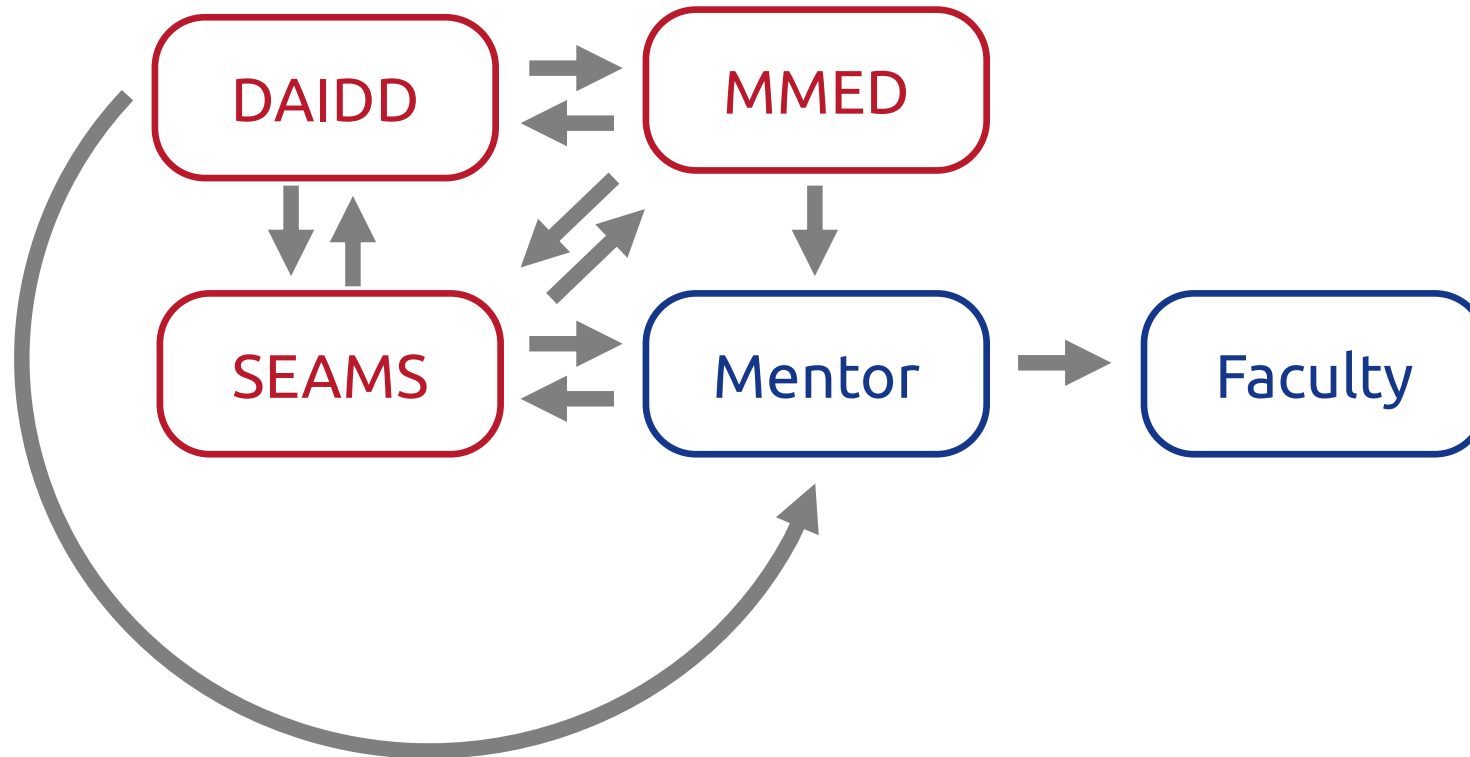
Repeated interactions and pathways to further development



# Training pathways

Red indicates the core research education program components.

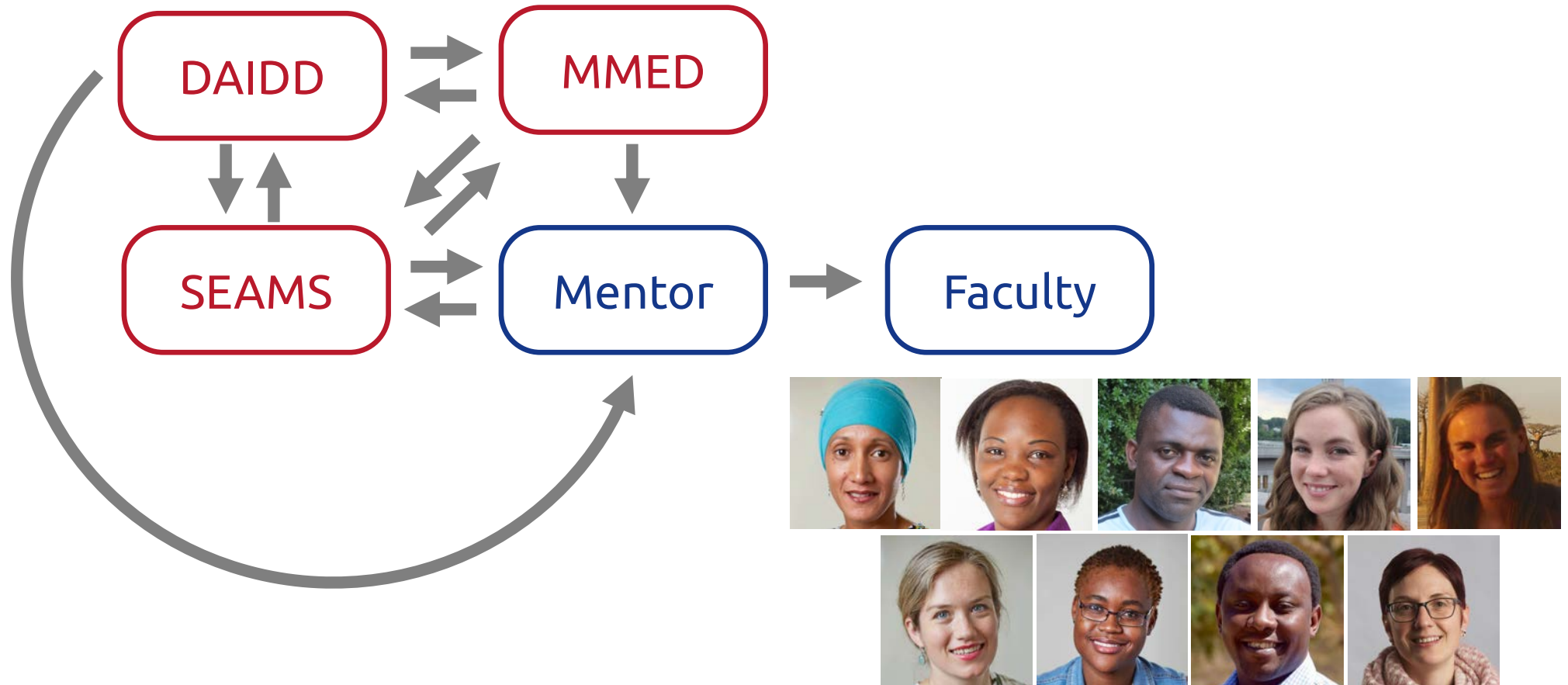
Blue indicates the faculty development pipeline.



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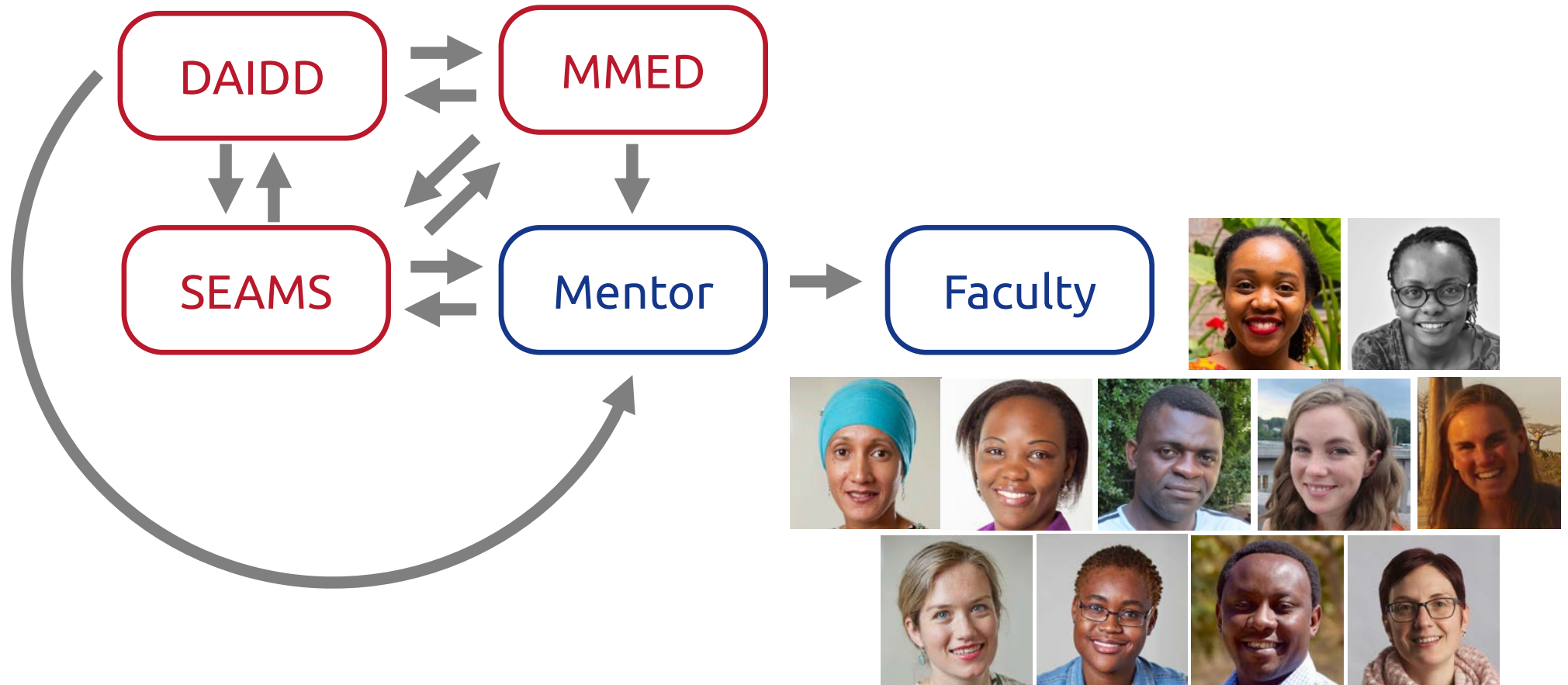
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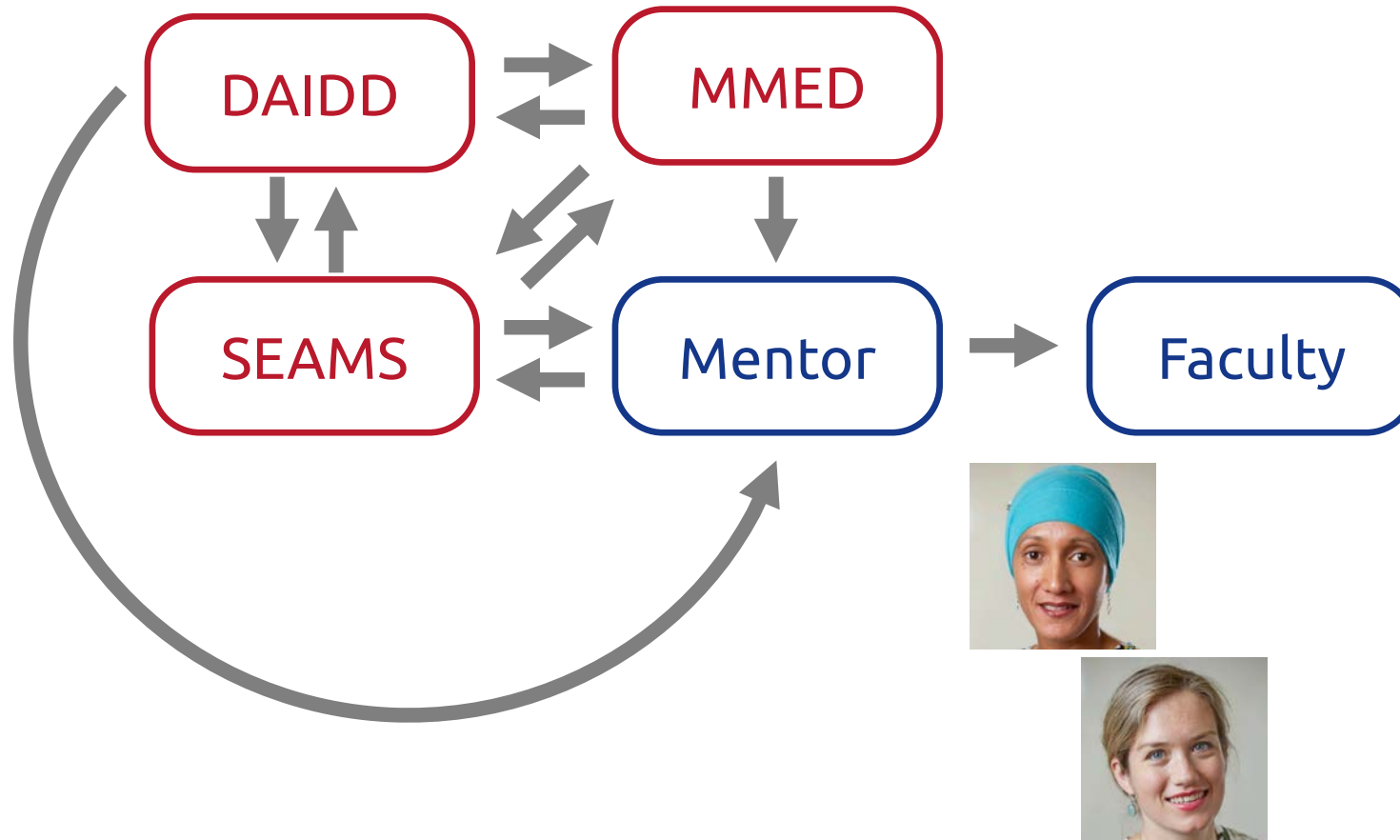
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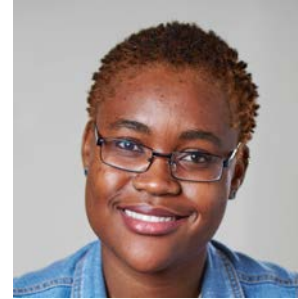
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# Going forward



Successful capacity development requires an ecosystem of both educational opportunities and institutional structures that promote long-term growth.



# Going forward

Short courses provide

- Intensive training
- Cross-fertilization



Silal *et al.* 2022

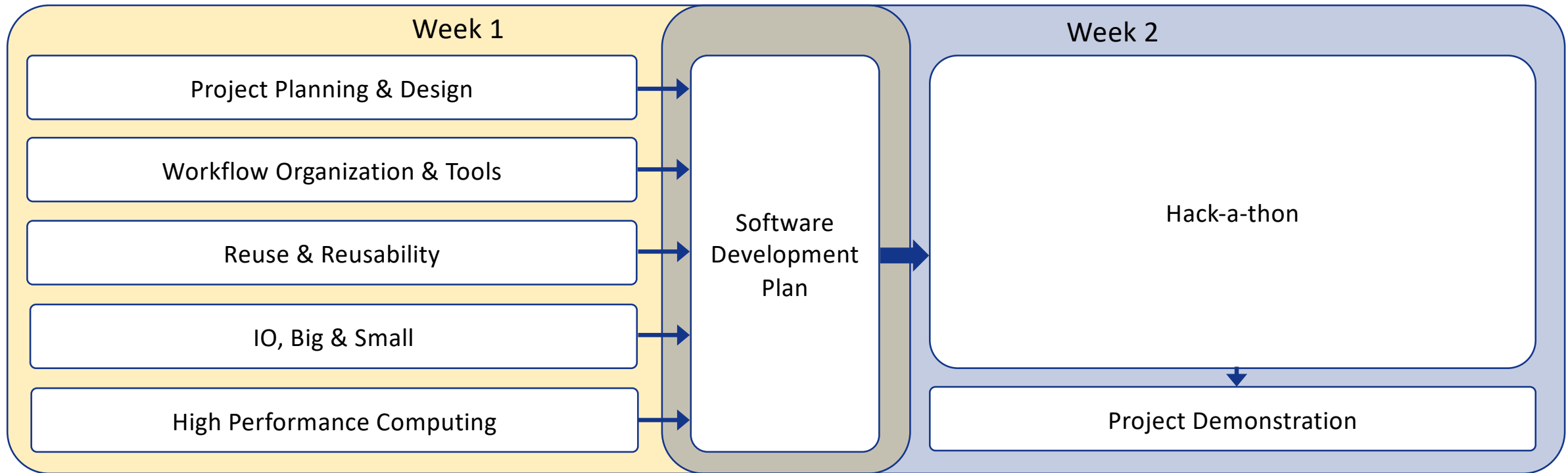


# Going forward

- Focus: response to changing needs



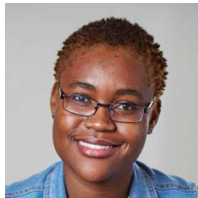
# Software Engineering for the Applied Mathematical Sciences



# Going forward

- Focus: next generation of leaders

MMED 2023



Logistics lead



Curriculum lead



Applications lead



Mentors lead



# Get involved!

- Spread the word to trainees

Clinic on Dynamical Approaches to Infectious Disease Data



Annually in December, Virtual on Microsoft Teams  
Upcoming clinic: Dates TBA

**DAIDD**



# Get involved!

- Spread the word to trainees
- Become a faculty observer
- Collaborate on development of new programs



# Thank you!



US National Science  
Foundation



**AIMS** | African Institute for  
Mathematical Sciences  
SOUTH AFRICA

**CEMA**   
Center for Epidemiological  
Modelling and Analysis



World Health  
Organization

Colby



US National  
Institutes of Health

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