



An EPIC Dive into Social Science: What is the Community of Community Modeling?

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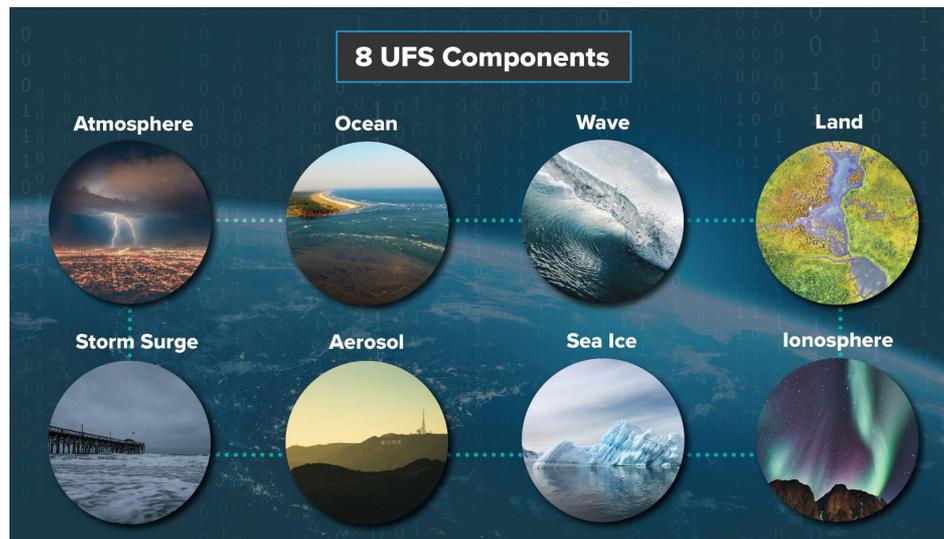
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Weather Program Office, OAR, NOAA



Unified Forecast System

A community-based, coupled, comprehensive Earth modeling system. Used for multiple forecast systems, which span local to global domains and predictive time scales from sub-hourly to seasonal predictions.

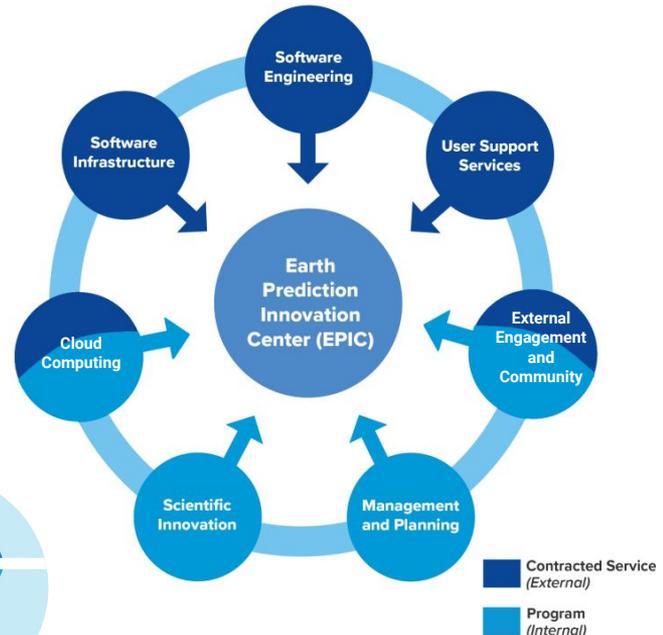
- Unify research and forecast applications
- Open development, open innovation, well-documented, community codes



Earth Prediction Innovation Center (EPIC)

Vision: Enable the most accurate and reliable operational numerical forecast model in the world.

Mission: To be the *catalyst for community research* and modeling system advances that continually inform and accelerate advances in our nation's operational forecast modeling systems.



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Project Questions:

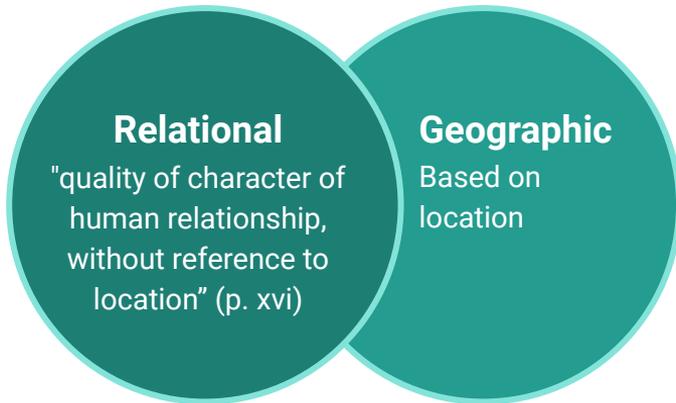
What is Community Modeling?

How can EPIC and the UFS strengthen community modeling?

What is a Community?

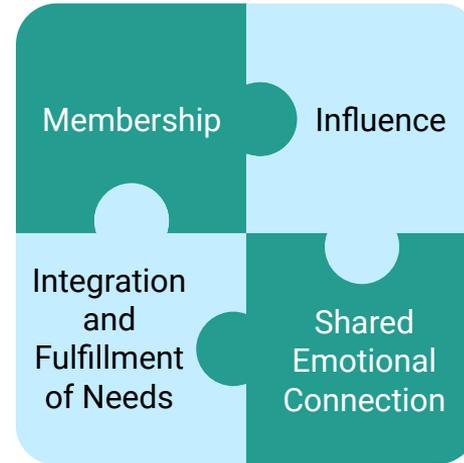
Community Definition

(Gustfield, 1975)



Sense of Community

(McMillan & Chavis, 1986)



What is Community Modeling?



Climate Systems Model

“Make the model readily available to, and usable by, the climate research community, and to actively engage the community in the ongoing process of model development” (Blackmon et al., 2001)



Unified Forecast System

“Involves NOAA, other federal partners (e.g., NASA, DoD, JCSDA, etc.), and the broader research and academic community” (UFS Strategic Implementation Plan, 2018)

Methods

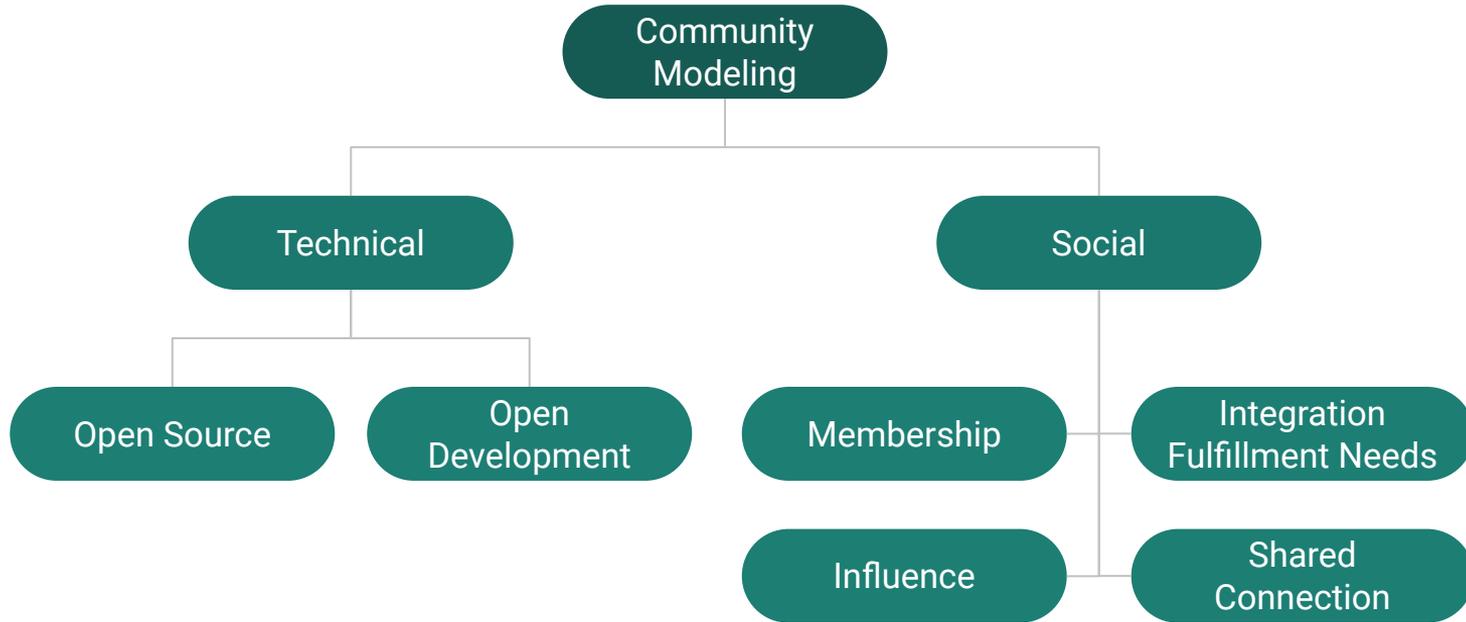
Qualitative Interviews

- Semi-structured Key informant interviews
 - Creators and managers of UFS and EPIC
 - Modeling community members (weather, climate, and oceans)
 - Representation from public (7), academic (5), and private (2) sectors (14 total, 7 non-NOAA)
- Focus
 - What is community and community modeling?
 - Interactions with UFS and EPIC
 - How do the different sectors interact?

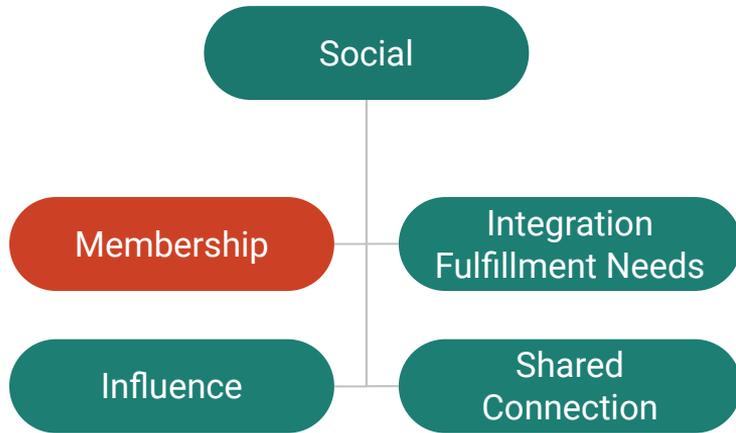
What is Community Modeling?

“It’s a Unified Forecast System in the sense that the code base is a single code base, but it’s also unified because they build a community that unifies people”

Community Definition of Community Modeling



Elements of Community Modeling

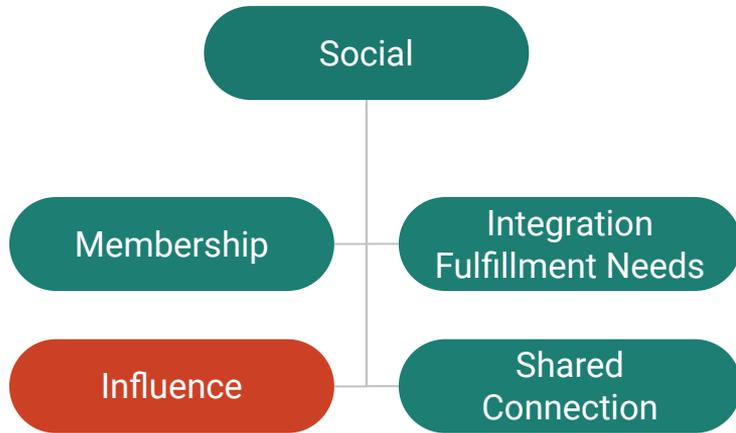


“You miss the real power of the community” by excluding people

“They wouldn’t feel unwelcome, but just not know.. how to engage”

“The people that I would like to not see in the community are those who take from the community but [are] not willing to give back”

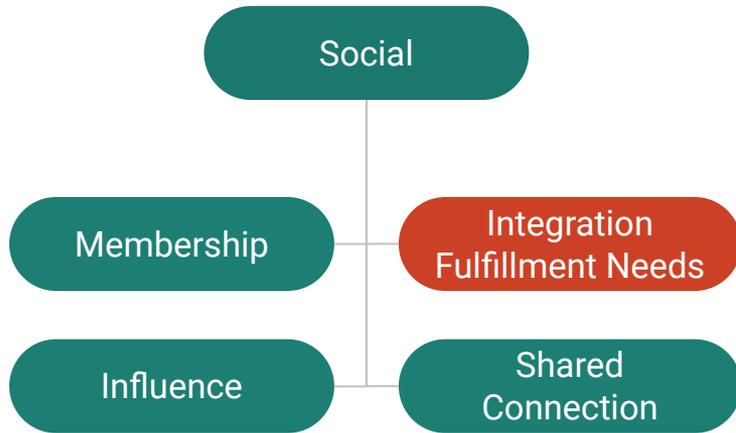
Elements of Community Modeling



“NOAA has to be the nucleus and has to support the community. They don't work for us, but we have an obligation to sort of be a convener”

“in order for a community... to thrive, everybody has to get something out of it, otherwise they're going to stop showing up.”

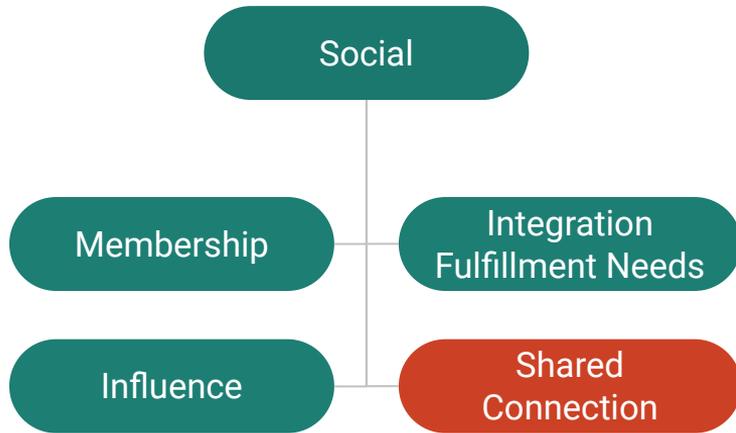
Elements of Community Modeling



“the historical way to do it is people come in and make a fancier new model and make it perform better and then they say they want to hand it off to the operational folks who **haven’t been in the conversation** and they’re using different IT structures and **it’s not even possible**”

“We’re moving from a system now where there’s a lot of specialization. And so we have to figure out how to work together.”

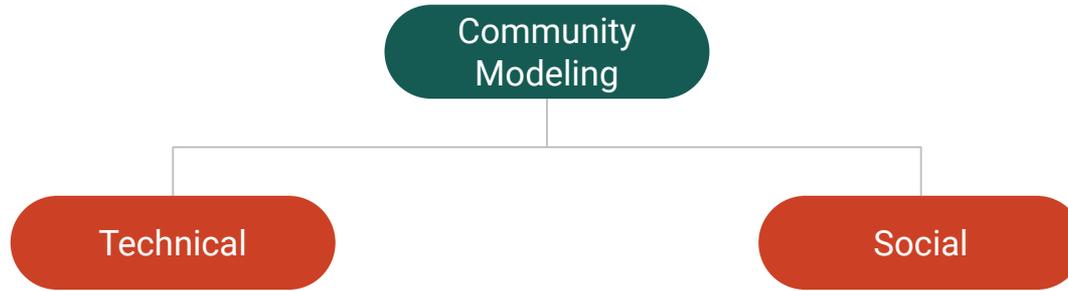
Elements of Community Modeling



"It's not like you can just toggle a switch. There has to be desire, trust and acceptance on all parties to some level to make this successful."

"Coming together and sharing ideas, discussing priorities, and then coming up with plans to work collaboratively... [is needed] in order to make timely advances in the science."

Elements of Community Modeling



“We need to invest in tools that bring the community together... to organize and cultivate this community, it's not going to come together on its own.”

“Innovation does not happen with code and seminars, it needs to be creative community collaboration which is a good long term goal”

Drafting Definitions

Community
Model

The **TOOL** used by a community

Community
Modeling

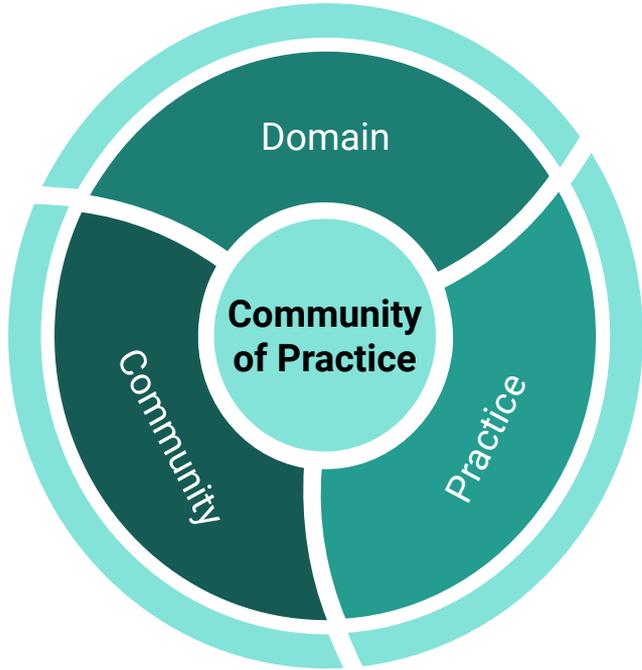
The act of working as a
COMMUNITY using a common
modeling tool

EPIC & UFS Recommendations



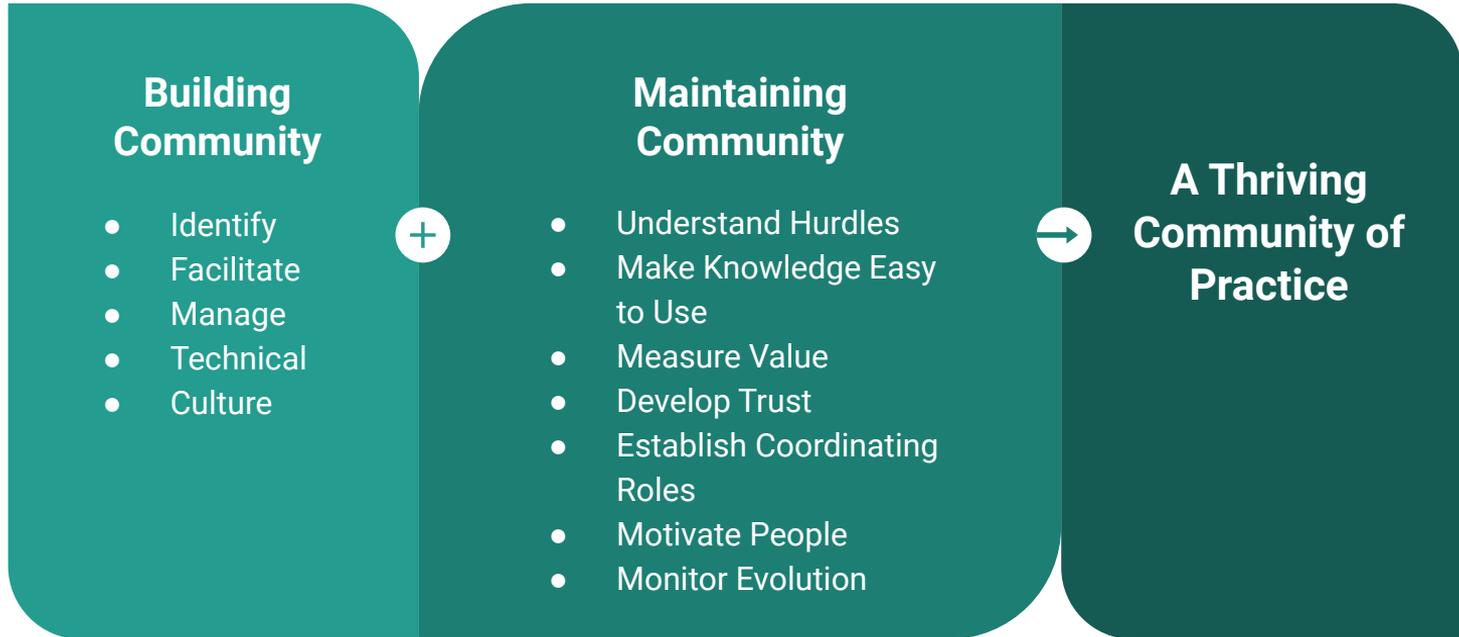
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Community of Practice

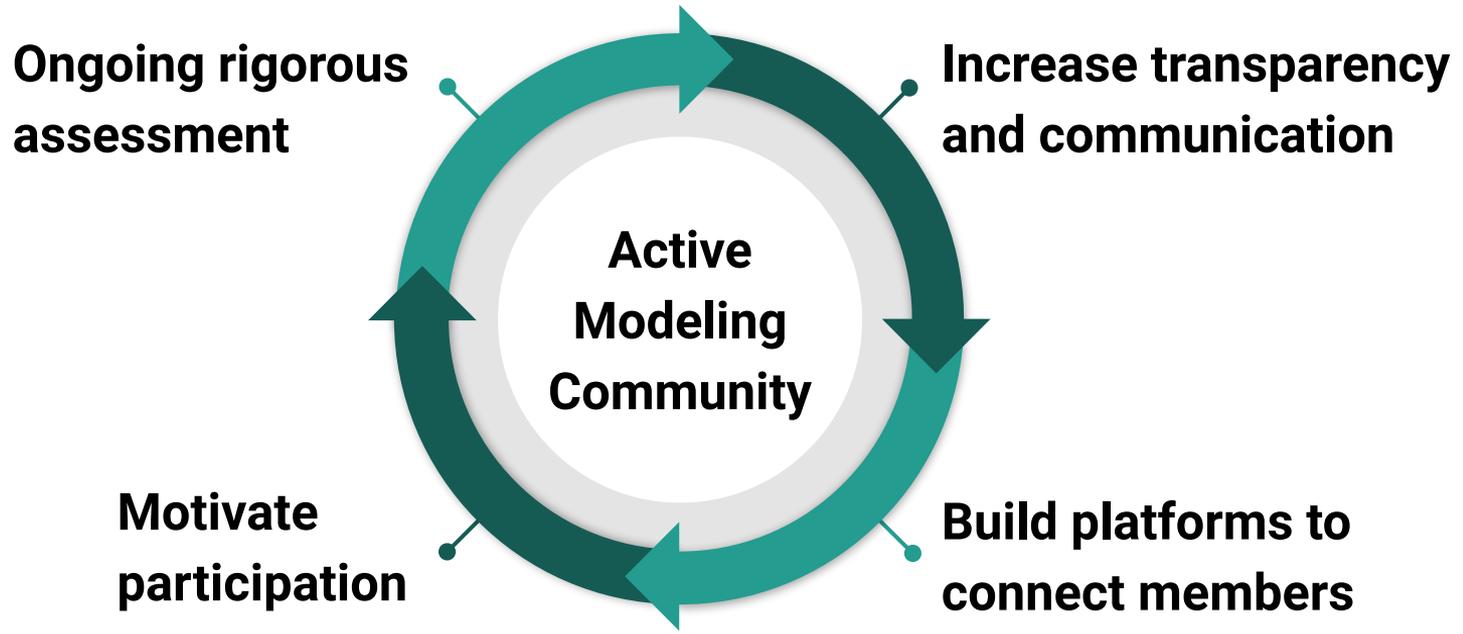


“Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.” (Wenger, 2001, p. 1)

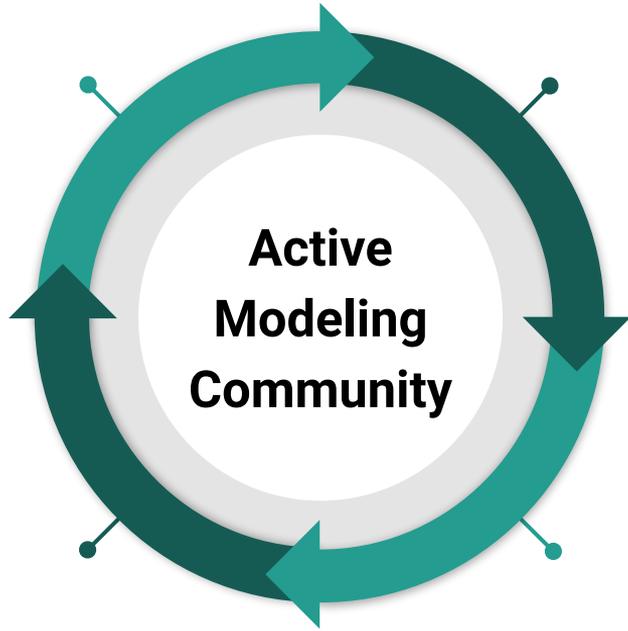
Community Modeling as a Community of Practice



Recommendations



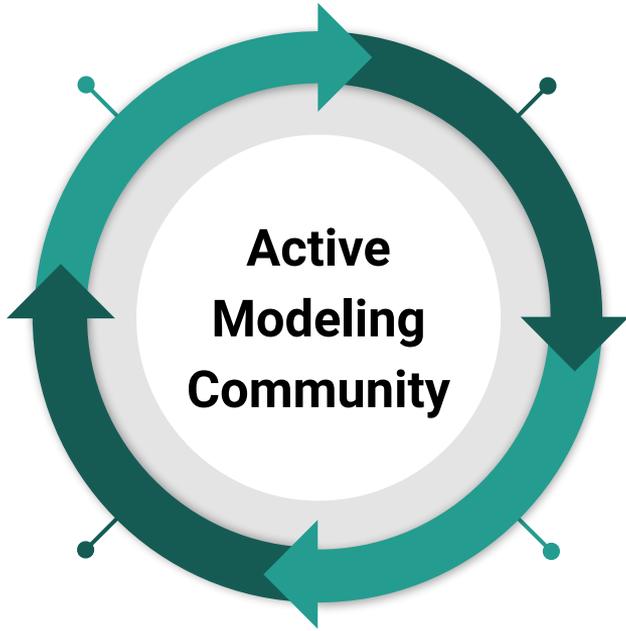
Recommendations



Increase transparency and communication

- Shared communication
- Regular updates

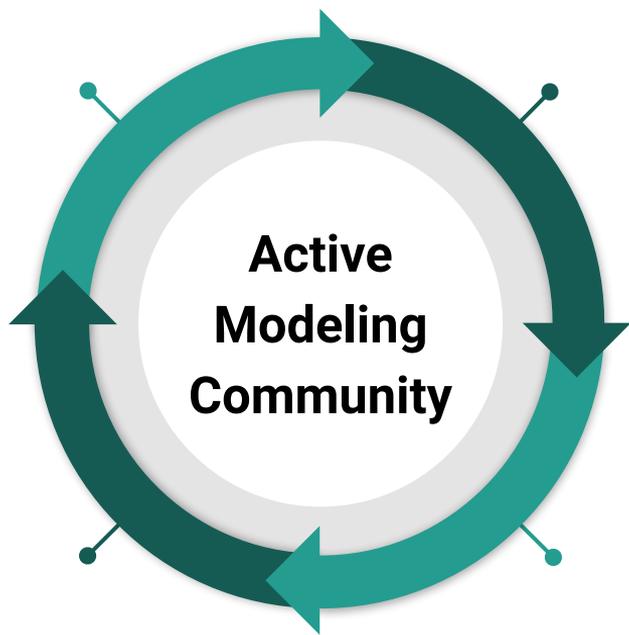
Recommendations



Build platforms to connect members

- Direct member engagement
- Utilize what exists
- Create co-working environments

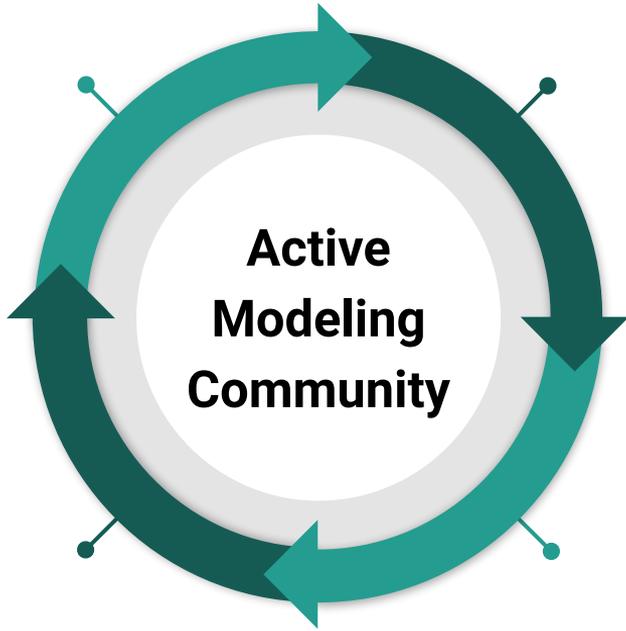
Recommendations



Motivate participation

- “Ambassadors”
- Reward members
- Recognize values
- Provide funding

Recommendations



Ongoing rigorous assessment

- Who is in the community?
- What do members need?
- Measure the “sense of community”
- Annual assessments

Thank You!

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What do you Think?

Are there elements we are missing in community modeling?

What makes you feel part of the community?

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