Dynamic Visualizations for Violence Prevention

Myanmar
- Rakhine
- Magway
- Bago
- Yangon
- Myawaddy
- Tak
- Mae Sot
Thailand
- Bangkok
- Phang Nga

Initial ABM study simulating migration across the Myawaddy - Mae Sot border region.

Agent-Based Modelling for Violence Prevention Intervention Development

We chose a two-phased approach to ABM development. First, we produced an empirically rich descriptive ABM of the labor migration system in context. Second, we conducted experiments in this descriptive model to test how the system might change under different intervention scenarios. At the descriptive modelling stage, initial ABM studies, literature reviews, data collection, and mixed-methods analysis informed the development of a descriptive conceptual model. The descriptive conceptual model was then translated into a computational model in JavaScript using the P5js visualization library. This descriptive computational model was reviewed by several audiences before moving on to the current intervention simulation modelling stage where we are conducting a desk-review on 'safer migration' interventions in Thailand to inform the design of intervention scenarios to test inside the initial descriptive model.

Preliminary findings from this ongoing work suggests that using dynamic visual representations of complex systems as a research tool can lead to more pluralistic and interdisciplinary methodological approaches to knowledge production in the field of violence intervention research. Dynamic visualizations can serve as a conduit for empirical richness, a touchpoint for interdisciplinary collaboration, a visual check for model verification, a supporting tool to assist with stakeholder validation of causal inference, and an instrument to inform intervention development through scenario testing.

Dynamic visualization tools played a critical role in bettering this research by reducing interviewees' cognitive burden, facilitating participatory data collection, enabling the collection of a complex dataset of actors and interactions, enhancing interviewers' qualitative probing, facilitating researchers' pattern recognition during analysis, and increasing data and model comprehension for viewers. Going forward we look to develop other ways to better assist migrants and policy makers with navigating complex systems of migration.
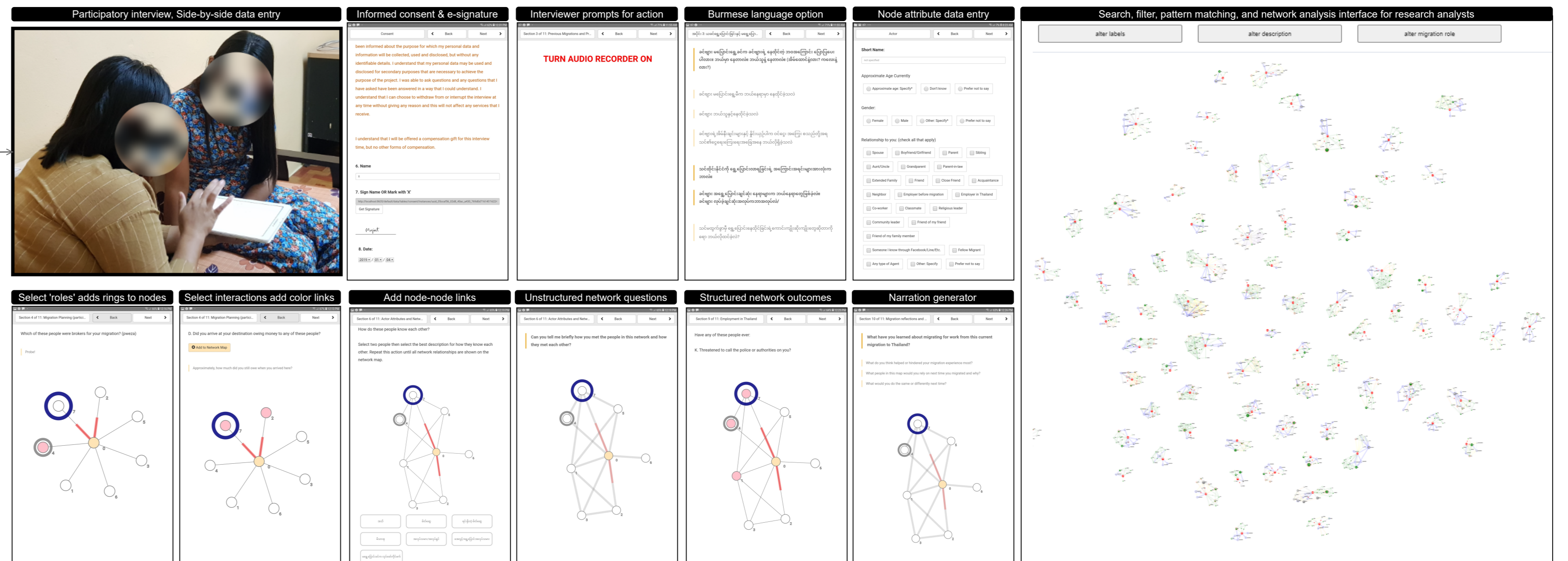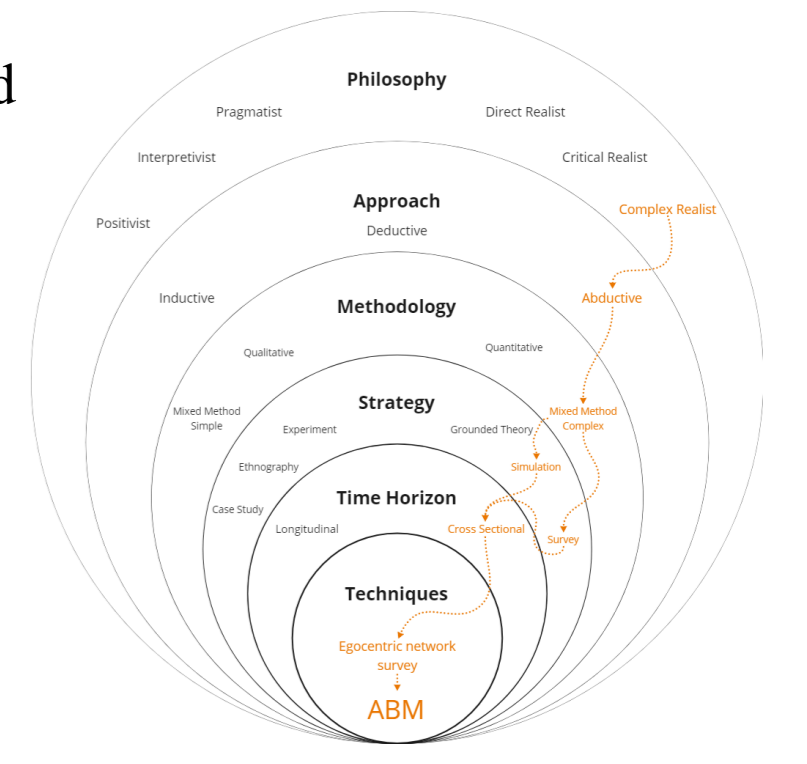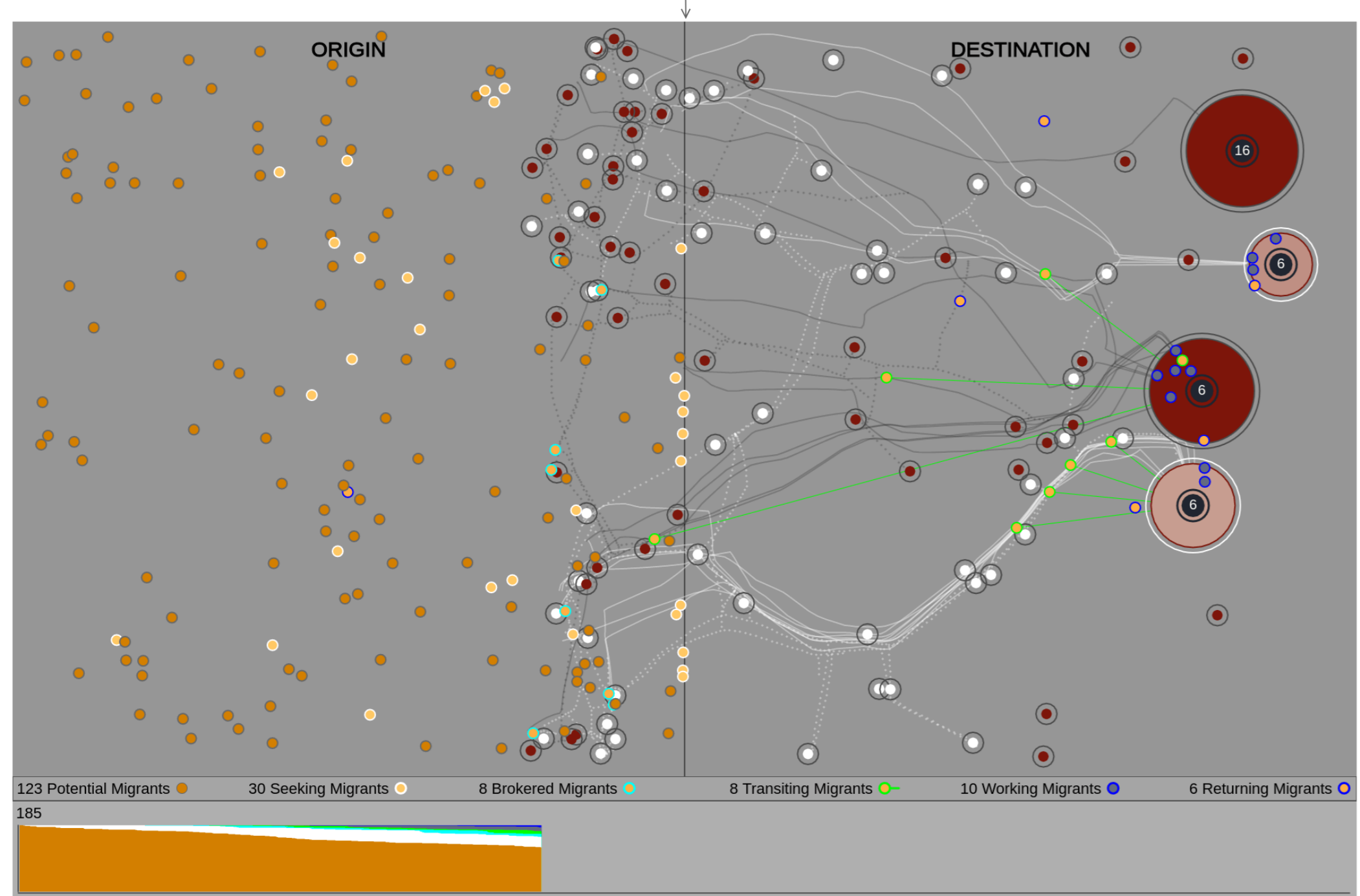
Violence and Migration Modelling Network

This poster documents the use of dynamic visualizations and data interfaces for an ongoing complex systems-based violence prevention intervention case study by the Violence and Migration Modelling (VaMM) Network. VaMM, funded by the UK Economic and Social Research Council, is an interdisciplinary cross-institutional group of researchers who are collaborating to develop innovative methods at the intersection of public health, complexity science, and data visualization.
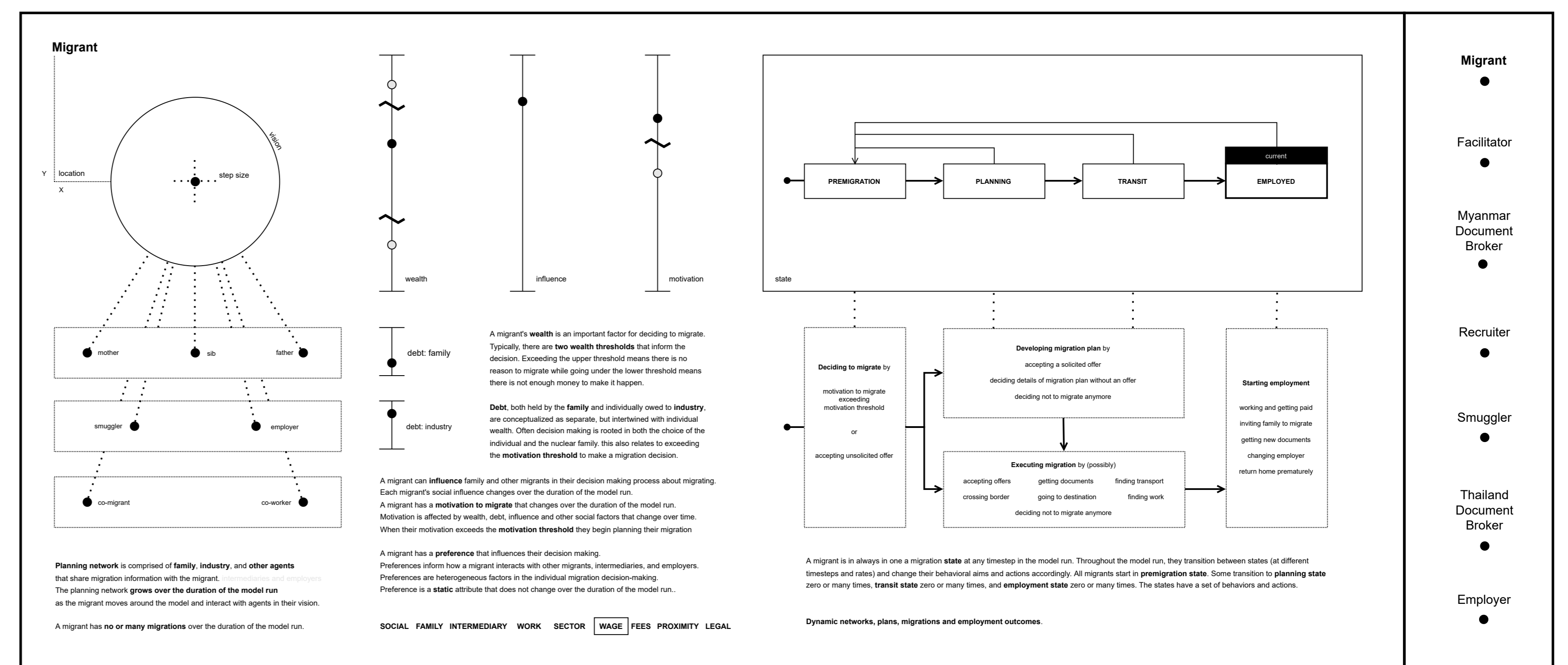
The scope of project visualizations used span the development, implementation, and evaluation of a social simulation that models a 'safer migration' intervention in the context of low-wage labor migration between Myanmar and Thailand. This project employed dynamic visualizations at various stages, including, participatory social network analysis, conceptualization of violence and migration systems theory, and generating and analyzing system and intervention simulations using Agent-Based Modelling (ABM).

Ethical approval by the Thai government and partnerships with local non-governmental organizations facilitated on-site interviews with labor migrants from Myanmar in three regions of Thailand. We chose a mixed-methods social network analysis (mmSNA) approach and created an encrypted OpenDataKit-based data collection tool for mapping (D3js) ego-centric networks during the audio-recorded interviews. The tool accommodated for interviews taking place at varying locations, times, and durations depending on the interviewees' current circumstances. This multilingual tool (Burmese/English) was co-developed, built, user-tested, and finalized on-site with migrant workers in an interdisciplinary context of co-production.

Myanmar — Thailand

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