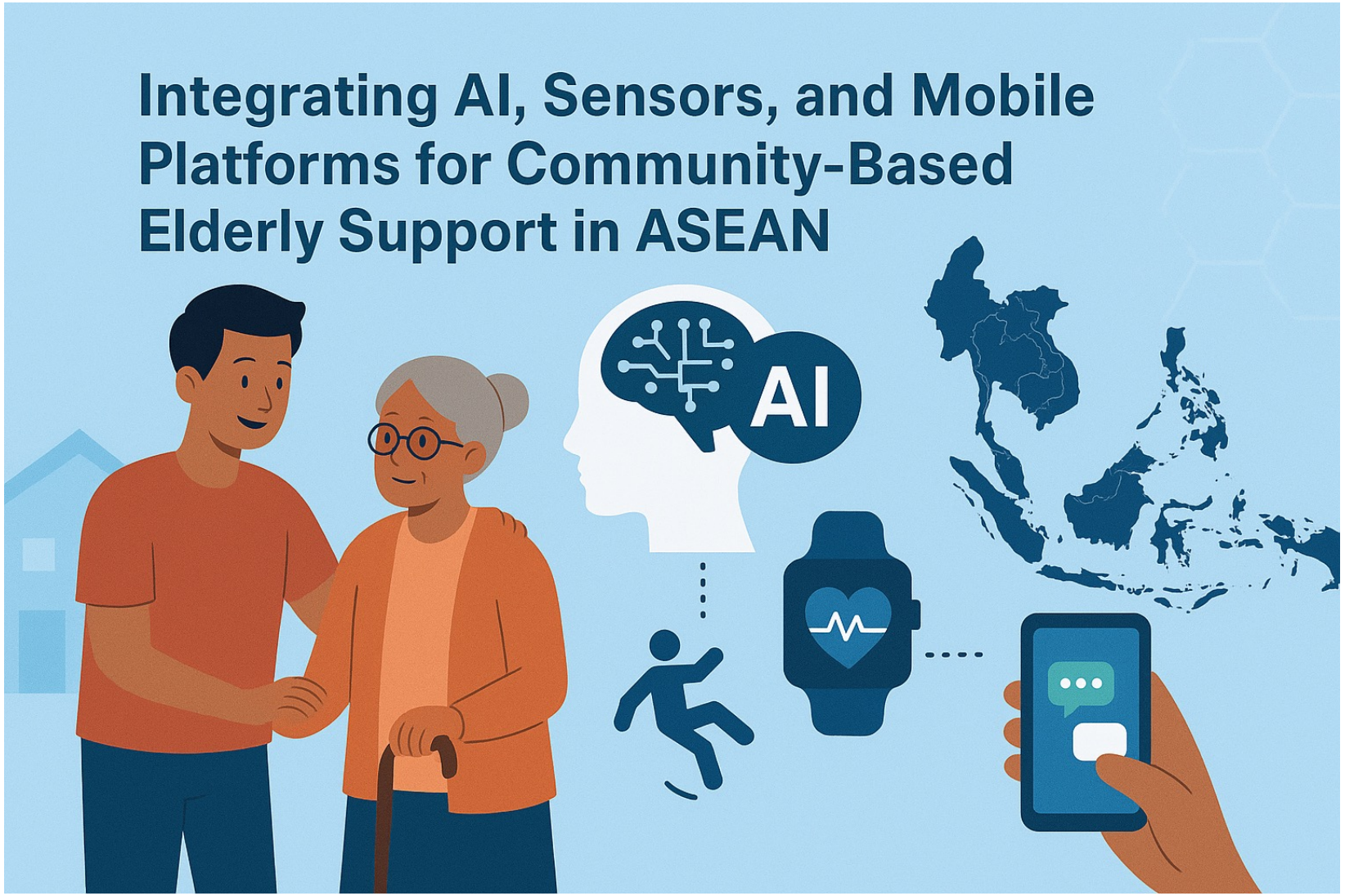
Integrating AI, Sensors, and Mobile Platforms for Community-Based Elderly Support in ASEAN



Dr. Kemas Rahmat Saleh Wiharja
Telkom University

Background :

- The increasing number of older adults in ASEAN, causes numerous challenges, including social isolation, declining physical and mental health, and a greater need for healthcare and psychosocial support.

- New technologies such as wearable sensors, medical sensors, and artificial intelligence (AI) have paved new ways for remote health monitoring.

- In ASEAN context, for solving the ageing problem, beyond technical issues, the social and cultural aspects play a significant role.

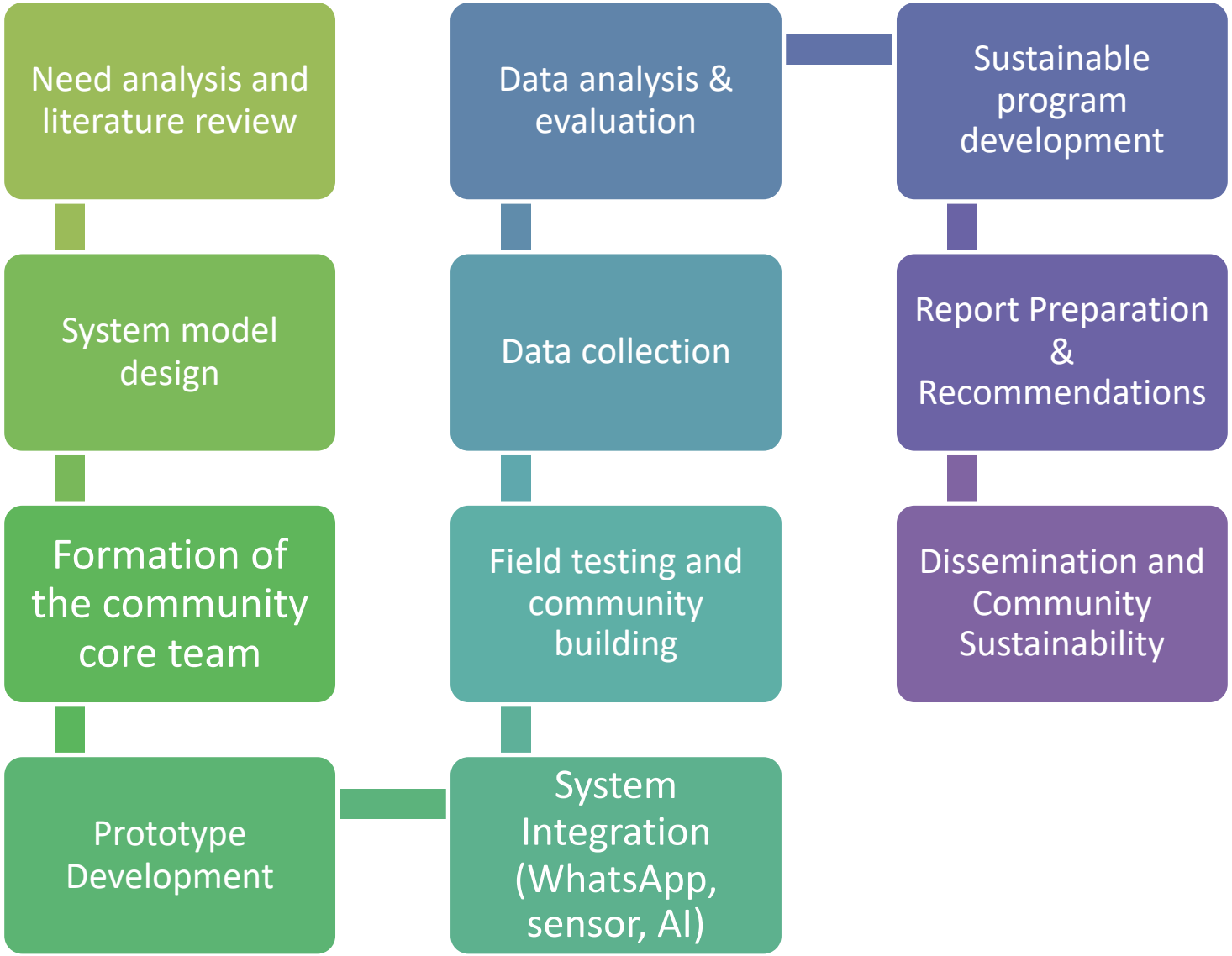
- As example, in Indonesia health and social services like the Posyandu Lansia, which has been operating since 2015, have been well-received by the community[1].

[1] I. Maryuni and R. H. Yana, "Peran Posyandu Lansia dalam Pemenuhan Kebutuhan Sosial Lansia di Desa Babul Makmur Kabupaten Simeulue, " COMSERVA: Jurnal Penelitian dan Pengabdian Masyarakat, vol. 1, no. 11, pp. 880–887, 2022, doi: 10.36418/comserva.v1i11.171.

Targets:

Developing a community-based support system that integrates **technology** and **the role of young volunteers** is believed to optimize companionship and empowerment for the elderly. This system focuses not only on health but also supports social interaction, security, and psychological well-being.

Proposed Method:



5 phases of Proposed Method

Planning and System Design

- Design of the system model
- Identification of stakeholders and development of a collaboration plan
- Formation of a community core team

Prototype Development and Training

- Development of all apps and platforms
- Integration with wearable sensors

Field Testing and Community Building

- Data collection
- Organizing routine community activities
- Comprehensive system testing and refinement

Data Analysis, Evaluation, and Community Development Phase

- Analysis of quantitative and qualitative data
- Drafting of the research report and policy recommendations
- Developing sustainable community programs

Dissemination and Replication

- Presentation of research findings
- Replicating to other ASEAN countries
- Mentoring new communities interested in adopting this model.

Proposed Method:

To analyze the data, researchers will use several techniques, including :

1. Descriptive and Inferential Statistical Analysis: To measure changes in perceptions and satisfaction levels of the elderly before and after system implementation.

2. Thematic Analysis: To identify key themes from interviews and FGDs regarding the barriers and potential of the community support system.

3. Validity and Reliability Testing: To ensure the validity of measurement instruments, especially for the health monitoring module and social interaction indicators.

Impact in Scientific and technological

- Establishes a new model of technological innovation for elderly care.
- Novelty in AI Application
- Development of a Replicable Model
- Capacity Building in AI and Sensor Research

Impact in Societal

- Improved Quality of Life for the Elderly
- Grow a strong social interaction between the young and the older people
- Growing the self-confidence of the elderly in carrying out routine activities independently and safely
- The elderly individuals will be more confident in adopt and utilize technology.
- Policy and Social Program Contribution

Impact in collaborative

- Cross-Country Academic Collaboration
- Partnership with Humanitarian Organizations
- Community and Government Engagement
- Interdisciplinary Team Formation

Output/Outcome in Scientific

Expected outputs:

- New Integrated Technological System:
- AI Modules for Social and Health Analytics:
- Prototype and Framework
- Scholarly Publications and Scientific Dissemination

Expected outcomes:

- Advancement in Interdisciplinary Research
- Foundations for Future Innovations
- Replication Blueprint

Output/Outcome in Societal and Collaborative

Expected outputs:
- New Integrated Technological System
- Publicly Accessible Datasets and Insights
- Policy and Practice Guidelines
- Educational and Training Resources

Expected outcomes:
- Enhanced Quality of Life for the Elderly
- Promotion of Digital Inclusion
- Adoption and Technology Transfer

Expected outputs:
- Institutional Partnerships:
- Engagement with Humanitarian and Governmental Bodies:
- Interdisciplinary Research Team:
- Educational and Training Resources

Expected outcomes:
- Sustainable ASEAN Research Network:
- New Research and Mobility Opportunities
- Community–Academia Partnership Model:

Conclusion

- The main target of our proposed project is to develop and test a community-based digital support system for elderly people in Indonesia and Malaysia that integrates **AI, wearable sensors, and mobile communication technologies**.

- The project adopts a **mixed-method, community-based design** that combines technological innovation with social participation.

- Our project expected to produce strong *scientific innovations* and *societal benefits* that advance both academic knowledge and real-world social welfare (especially for the elder) in Indonesia and Malaysia.