Age-Friendly Built Form and Infrastructure design Model and Knowledge Networking

Broad area

Design and development with selective demonstration

Need for the Study in the Context of Future of Cities

Contemporary demographic shift records alarming increase in the population of the elderly which is creating irreversible socio-economic changes in societies, deteriorating their living conditions, health and relationships. Further, the growing elderly population morphs the traditional population pyramid to a population rectangle. The gifts of longevity lead the designers and planners to center urban development and architecture on the healthy family and children and motorized traffic. While the US suburbia conceived as a great escape from pollution and hassles of urban life later lead to isolated and subserviced elderly habitation, in India the shift from joint family to nuclear family, separated the elderly. Younger generation shifted in search of job lead to the deprival of the elderly of care and destined them to loneliness and destitution, lack of medical care and insecurity. Thus, elderly are helpless, alienates themselves from family and society, bearing disrespect and worthlessness. However, the *Maintenance and Welfare of Parents and Senior Citizens Act* contains effective provisions for the maintenance and welfare of parents and senior citizens guaranteed and recognized under the Constitution. Current institutions that provide old age care; *after care homes* and other elderly facilities are not in an acceptable state. These only cater to a very small section of the large elderly population. Further, research in India to find out the specific preferences and needs of the various strata, gender and class of elderly are insufficient and in nascent state. Hence, it is important to tackle the alarming situation by developing appropriate Elderly-friendly built form design and infrastructure design model with the Government's intervention; reformed acts, programmes, awareness and incentives. Such a model shall be enabling the elderly and provide for their physical, social, and emotional requirements and integrated with services, medical and security required. Further, Aging profiles in India necessities an urgent compilation of *Standards and Design Heuristics or norms* that can be used by professionals in the scenario of Urban and Rural Infrastructure planning, design and management.

Objective and Scope of work

Age-Friendly Built Form and Infrastructure Design Model and Knowledge Networking is a potential panacea to the ever deteriorating life of urban elderly.

Appropriate built form and environment for the elderly as well as for all age-groups shall be well integrated and embedded within the emerging digital technologies rather than retrofitted. Such built forms shall be defined physically, culturally, and accommodating the requirements of the elderly in particular; *be it physical, medical, safety and security, communicational, access, or transport.* The project aims at:

- <u>Surveys and studies</u> to understand how the physical, social, emotional and support needs of the elderly differ by way of dimension, specification, design and performance and to generate dependable India-specific database of anthropometric and ergonomic aspects of the elderly and able-bodied alike to make the designs Age-friendly. Detailed list of equipments required for the setting up of Ergonomic Laboratory and facilities for conducting field studies are given along with detailed estimate(Annexure ll).

- <u>Detailed studies and analysis</u> on the data obtained and special needs of the elderly in specific, leading to type designs based on modular approach. <u>Integration of services and facilities</u> including Access, Safety and security, Fire, Health monitoring and early warning is proposed in the model using market available systems and providers. The built form design will be complimenting the life of elderly through living in an integrated age-friendly community.

- A 'Knowledge Network for the Age- Friendly Built Form and Infrastructure Design' - KNAFBFID, will be launched with chosen nodal centers. The data generated through studies and surveys will be made accessible to the designers and researchers through setting-up of dedicated knowledge portal, for effective diffusion and interaction.

- Adaptations for the existing built forms and infrastructure are proposed initially followed by designs for future built forms and infrastructure. Developing Age-friendly built form design and infrastructure design model with detailed design and development of environmental design, intelligent and efficient housing units for the urban elderly. Evolving standards and guidelines and specifications for designers.

- Integration of systems and services is an important factor and this has to be achieved through coordinating with other service providers. An appropriate level of intelligence is to be maintained in the built form design. Use of available electronic gadgets and elderly assistance tools will be integrated appropriately with the model developed. Single point control with marker keys using integrated security and management system will be a unique aspect of the model developed. Way-finding and Environmental Design aspects will be explored. Use of market available intelligent security and energy management systems will be explored.

- Demonstration on a selective mode will be attempted along with joint project implementation with large scale housing developers / State Housing Boards will

be worked out as appropriate. IIT Kharagpur will be used as the initial study field for the project, with the permission of appropriate authorities.

Scope

The project development would combine the joint wisdom of three investigators in Architecture, Environmental Design, Interaction Design and Usability Engineering and Infrastructure Design and Management, along with medical health care providers, doctors, mental health care providers and electronic networking to serve the needs of the elderly to make their life healthy, safe and secure. Use and integration of market-available electronic and elderly-assistance gadgets are proposed. Development of new electronic equipment for the elderly is beyond the scope of the project. However, elderly assistance products will be explored for possible production. Further, Built forms other than residential are beyond the scope of this project, but for further research.

Elderly / Senior Citizen/ Aged

Most developed world countries have accepted the chronological age of 65 years as a definition of 'elderly' or older person. However, unlike these westernized concepts, 65 years prescription does not adapt well to the situation in India. The definition of elderly / senior citizen / aged (65 years) is somewhat arbitrary. It is better associated with the age at which one can begin to receive pension benefits. At the moment, there is no United Nations standard numerical criterion, but the UN agreed cutoff is 60+ years to refer to the older population(1). Ageing process is a biological reality which has its own dynamics, largely beyond human control. However, it is also influenced by the constructions by which any society makes sense of old age. The age of 60 – 65 years, is the range of retirement ages in most developed countries and is the commencement of old age. In many parts of the developing world, chronological time has little or no importance in the meaning of old age. Other socially constructed meanings of age are more significant such as the roles assigned to older people; in some cases it is the loss of roles accompanying physical decline which is significant in defining old age. Thus, in contrast to the chronological prescriptions, old age in many developing countries is seen to begin at the point when active contribution is no longer possible(2). However, for the project lower age limit of 60 years is considered beginning of elderly life.

Friendly

Like other countries around the globe, India too must gear up to face the problems ageing of our population, plan and identify strategies, we need to adopt and the provisions we must make to create an age-friendly society, both now and in the future. Such age-friendliness is defined basically as the empowerment for independent or assisted life in a socially pleasing and communally harmonious setting without the fear of being isolated, vulnerable to abuse or lack of medical and other emergency assistance(3). Further, the elderly shall be made to feel 'aging a blessing' by providing rightful opportunities where they could contribute positively for the building-up of the Nation. As a society, we would not intentionally want to make inadequate provision for older people; that would mean making inadequate provision for our own future (4).
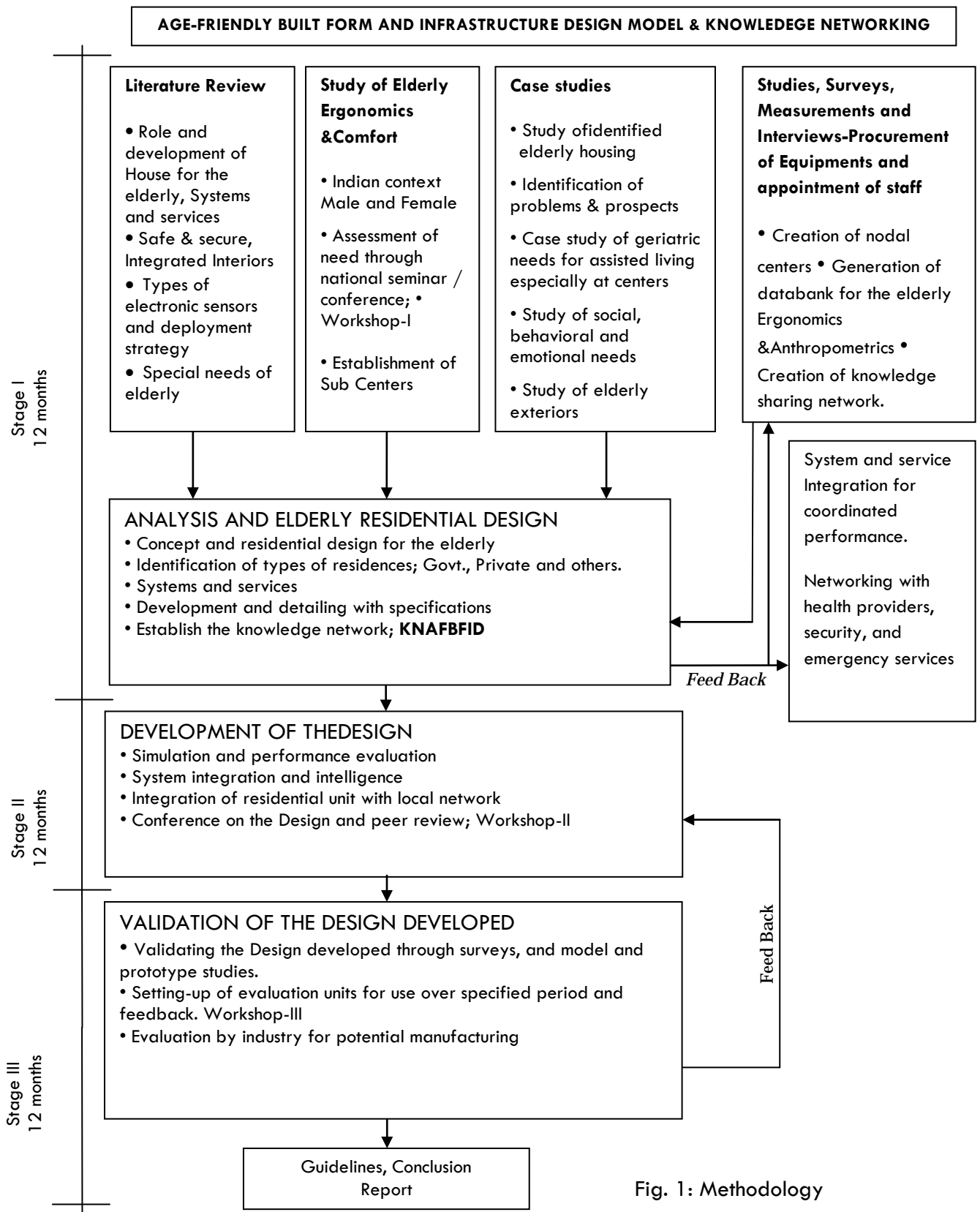
METHODOLOGY:

AGE-FRIENDLY BUILT FORM AND INFRASTRUCTURE DESIGN MODEL & KNOWLEDEGE NETWORKING

Stage I — 12 months

Literature Review

- Role and development of House for the elderly, Systems and services
- Safe & secure, Integrated Interiors
- Types of electronic sensors and deployment strategy
- Special needs of elderly

Study of Elderly Ergonomics &Comfort

- Indian context Male and Female
- Assessment of need through national seminar / conference; • Workshop-I
- Establishment of Sub Centers

Case studies

- Study ofidentified elderly housing
- Identification of problems & prospects
- Case study of geriatric needs for assisted living especially at centers
- Study of social, behavioral and emotional needs
- Study of elderly exteriors

Studies, Surveys, Measurements and Interviews-Procurement of Equipments and appointment of staff

- Creation of nodal centers • Generation of databank for the elderly Ergonomics &Anthropometrics • Creation of knowledge sharing network.

ANALYSIS AND ELDERLY RESIDENTIAL DESIGN
- Concept and residential design for the elderly
- Identification of types of residences; Govt., Private and others.
- Systems and services
- Development and detailing with specifications
- Establish the knowledge network; **KNAFBFID**

System and service Integration for coordinated performance.

Networking with health providers, security, and emergency services

Feed Back

Stage II — 12 months

DEVELOPMENT OF THEDESIGN
- Simulation and performance evaluation
- System integration and intelligence
- Integration of residential unit with local network
- Conference on the Design and peer review; Workshop-II

Stage III — 12 months

VALIDATION OF THE DESIGN DEVELOPED
- Validating the Design developed through surveys, and model and prototype studies.
- Setting-up of evaluation units for use over specified period and feedback. Workshop-III
- Evaluation by industry for potential manufacturing

Feed Back

Guidelines, Conclusion Report

Fig. 1: Methodology

OUTCOMES/DELIVERABLES:

AGE-FRIENDLY BUILT FORM DESIGN AND INFRASTRUCTURE DESIGN MODEL AND KNOWLEDGE NETWORKING			
Stage I	Study and Analysis	Stage II	
Stage II	Stage I	Development of Model	Stage III
Stage III			Validation of Model
DELIVERABLES	Assessment through surveys and interviews and Case studies. Knowledge network set-up.	Generated database analyzed, classified and coded for effective retrieval. Recommendations and strategies developed.	Methodologies and Design validation.
	Organize ergonomic studies and measurements. Databank Generated.	Modular Elderly-friendly built form design, elements and environment generated. Detailing done.	Feedback incorporated.
	Launching of Knowledge Network	System Integration and intelligence achieved with available equipments.	Industry Evaluation for production.
	Indian Data Set for elderly generated. Workshop l.	Deployment and validation of prototype developed. Workshop ll.	Workshop lll.
	Experimentation, calibration and validation	Report on the Elderly-friendly built form design, Integration and Intelligence.	Final Report on the Elderly-friendly design, methodologies & Infrastructure.

TEAM COMPOSITION

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