

Smart Villages: Introduction and Overview

V. Lakshmanan,
Vice Chair and CEO, Process Research Ortech Inc.
and
V. Kumar Murty, FRSC
Professor of Mathematics, University of Toronto

Introduction

Academic institutions around the world are talking about smart cities in terms of smart transportation systems, integrated health records, smart grid, smart government services, and so on. It is a huge opportunity for both academics as well as industry to invent the future city. MIT is talking about the downloadable city.

The University of Toronto is also involved in that as we are located in the largest city in Canada and a Presidential priority is to address the question of how we can leverage our urban location to play a greater role in shaping our city. The Faculty of Arts and Science will be the home of a new School of Cities. What that is and how different disciplines will participate in that School is still under discussion.

But in many parts of the world, including Canada and the US, there are village communities. By some estimates, India has more than 600,000 villages and China has more than a million. Indigenous populations in North America are spread in village communities spread over vast areas and largely under-served, even in terms of basic amenities, education and health-care. And throughout the developed world, there is a large network of communities outside of metropolitan areas which may be characterized as towns or villages.

Given this reality, one is led to ask whether there is a concept of a smart village? If there is, it is not clear that one can take the same approach in a village context that one takes for cities. Rural environments and small communities have their own challenges and opportunities. It may not just be a difference in scale, but may perhaps require a rethinking in the basic approach. There may be new parameters to take into account, and new metrics of progress and development that are waiting to be discovered.

The focus may not be on the building of physical infrastructure, and may only partially be on devising smart systems. It may be about reusing and retooling existing systems or technology. More importantly, it may be that what we are looking for is a total model that gives individuals and communities the opportunity to explore their own creative genius. Kalam and Singh¹ speak of the need for “a new-generation approach towards development”. They elaborate: “... the key to a bright future appears to be sustainable and inclusive development. Sustainability does not mean hindered development; it is an agenda for growth rather than a roadblock to it. Similarly, inclusive does not mean disbursing charity to the underprivileged but the empowerment of the deprived to unleash their potential. Individual empowerment will lead to happy homes; happy homes will make developed villages and towns; developed villages and towns will lead to prosperous nations; prosperous nations will be generators of enlightenment and, finally, it will be this enlightened society which will not merely coexist but also

¹ Kalam and Singh (2011), *Target 3 Billion, PURA: Innovative solutions through sustainable development*, New Delhi, Penguin Books, India, p. 276

collaborate in creating a peaceful world with sustainable growth. The road to magnificent global goals begins at the atomic level of the empowered individual, ...”²

From a global perspective, smart villages may be one of the big challenges of our time and a very interesting area for academic interaction with society. In our discussion below, we are interested in both the theoretical as well as the practical aspects of the subject. Our main contribution will be in providing the academic analysis that will enable intelligent and informed discussion of the problem and of potential solutions.

Goals of this seminar

Through this seminar, we hope to engage in discussion with subject matter experts to understand the problem and current efforts. Even a cursory reflection reveals that the subject is very interdisciplinary, requiring people in science and technology but also people from the humanities and social sciences as well as from business and industry. This expertise is scattered and one aim of the seminar is to bring it together, even within the University of Toronto. Today, in our inaugural meeting, we have four speakers with very different backgrounds and expertise who will share with us their knowledge and experience in this subject. In alphabetical order, they are T. Beaubois, S. Darwin, V. Ponraj and Y. S. Rajan.

Terry Beaubois is an Architect who has been working on smart communities for about 40 years. During 2005-2015, he was head of the Creative Research lab at Montana State University and supervised the research, design and construction of the Montana ecoSMART house. This was a precursor to his current work in the architecture of smart villages and smart communities. Terry has been a consulting member of Solomon’s project on Smart Villages in India. He has spoken at multiple academic venues on the concepts of a smart community.

Solomon Darwin is a Professor in the Haas School of Business, UC Berkeley and Executive Director of the Centre for Corporate Innovation. He works with students from business and engineering and teaches the concept of Open Innovation. His project based courses are meant to solve grand challenges. He is sought after by many companies for his expertise in Open Innovation. He is passionate about helping the poor to have access to good education and health care. He has been doing amazing work in Andhra Pradesh on smart villages.

Shri V. Ponraj is an expert on Information and Communications Technology in domains such as Aeronautics, e-Governance, and Education and Health care. He was a scientist in the Aeronautical Development Agency in Bangalore. During 2003-2007, he was the Director for Technology Interface in the Secretariat of the Office of the President of India. For many years, he worked with Dr. Kalam as an advisor on science and technology and public policy. He co-authored “A manifesto for change” (a sequel to India 2020) with Dr. Kalam.

Y. S. Rajan is an expert on satellite and remote-sensing technologies and the impact of technology on the environment. He has made key contributions during his work at the Indian Space Research Organization, both in terms of technology as well as in the organizational aspects. He is a recognized authority and thought leader on technology development, management and public policy. A prolific writer on science and technology, as well as business, social and ethical issues amongst others, he was awarded the Padma

² ibid, pp. 276-277.

Shri by the President of India in 2012. Dr. Rajan co-authored the book “India 2020: A vision for the new millennium” with Abdul Kalam.

Ultimately, we ask how to take this diverse expertise and integrate it to develop a framework, or more ambitiously a template or algorithm, that can be implemented. We are beginning in the context of the Indian experience, but the issue is of global importance. Perhaps all we are talking about is best practices, or perhaps it can be more definitive than that. We shall see.