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Avancing sustainable peace by technology

Mauro Romanelli
Parthenope University, mauro.romanelli@uniparthenope.it

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Mauro Romanelli,
University of Naples Parthenope,
Department of Business and Economics,
Via G. Parisi, 13, 80132 Napoli, Italy
{mauro.romanelli}@uniparthenope.it

Abstract. Communities achieve peace as a goal in order to enhance the wealth and prosperity within society and ensure better quality of life. Technology helps to support dialogue and cooperation in order to drive peace as a source for value creation, social and economic development within communities. The aim of this study is to elucidate how information technology helps communities to identify a pathway towards sustainable peace. Technology helps support peace-building and engineer peace as social innovation for peace-driven communities and social and economic growth within social ecosystems.

Keywords: sustainable peace, information technology, peace-building, engineering peace.

1 Introduction

Communities have to achieve and maintain peace as both ethical and moral value, driving peace as source for social and economic development and growth. A sustainable world is a peaceful world [1]. Peace is not static phenomenon but an ongoing process, which is continually worked on [2]. Developing conditions for enduring peace relates to sustainable development issues. There is no peace without development, and there is no development without peace coherently with respect of human rights and beings [3]. Constructing peace implies to pay attention to wealth of communities. Peace is emerging in community landscapes that concern interdependent social, economic and technological systems [1]. The nexus between sustainability and peace is a key driver of human and sustainable development [4]. In *The 2030 Agenda for sustainable development* peace helps to build inclusive societies and growth, and drive sustainable development. Information and communication technology (ICT) helps to support peace building within communities [5], economic wealth and participation [6] sustainable development within society [7] providing sources for social and economic growth [8].

Technology helps for peace driving towards the wellbeing of communities worldwide, and gives a stronger voice to communities, opening space for dialogue and peacebuilding [9]. Technology can contribute to peacebuilding processes helping societies to engage in reintegration, justice and reconciliation. Peacebuilding processes facilitate dialogue, participation and inclusion, communication and collaboration

between groups in conflict, and support communities to experiment pro-peace policies and assume peaceful attitudes [5]. Peacebuilding supports radical transformation of society towards an embedded culture of peace, promoting the rise of social and economic structures, participatory and people-centered processes [10], and enabling communities towards a peaceful and prosperous society [11]. Engineering peace helps to support conditions for peace bringing together science, technology's applications and system-based approaches [12]. In particular, engineering peace radically improves the wellbeing of people, transforming communities in a significant way. Peace engineering refers to sustainable future through collaborative ways that concern technology solutions, expertise and education, involving civil society, science and technology. Engineering peace supports prosperity, sustainability, social equity, entrepreneurship, transparency, community voice and engagement, ethics [13]. Engineering peace helps to continuously advance peace as a source for value creation within society and communities [14].

Even if there are studies that stress the importance of information technology as a driver of value creation within communities, few studies investigate the role of ICT for peace as an enabler of human development, social and economic growth. Few studies highlight the positive impact of peace on wealth and prosperity for economy and society, and elucidate the relationship between peace and ICT for wellbeing of communities. Few studies pay attention to the importance of technology for peace building and engineering, and do not offer a framework to understand how technology helps communities to evolve from post-conflict situations to building and engineering peace in order to achieve sustainable peace that enables wealthy communities. The aim of this study is to elucidate how the use of ICT helps communities to identify a pathway to promote sustainable peace. The study is theoretical and relies on the analysis and review of literature that considers the concepts of peace, value co-creation and ecosystems as oriented to sustainability.

Technology plays an important role in creating a peace culture versus a war culture, while addressing peace and development-related issues [1]. Peace is a source leading to value creation processes. Promoting peace supports peace-building initiatives and enables communities to identify a pathway for strengthening sustainable peace [15, 16, 17, 18]. ICT for peace helps to support post-conflict peace building and reconstruction. Peace is a goal. Sustaining peace is a process to build a common vision of society [17]. Promoting sustainable peace refers to cooperation, dialogue, and collaborative solving for social justice and well-being within social and organizational life [18]. The paper is articulated in five sections. After introduction and methodological section, in the third paragraph, understanding peace for wealth of communities is elucidated. In the fourth paragraph, information technology supports both peace-building and peace engineering, driving community wealth and development. Finally, discussion and conclusions are outlined.

2 Methodological section

The study relies on qualitative data that relate to the analysis and review of literature in the field of the relationships between peace and information technology, by considering peace as an issue that enables communities to contribute to value creation. Information technology helps to support peace-driven communities. This study aims only to provide an interpretive framework and refers to selected articles related both to information technology for peace building and to peace engineering as a vision and means to promote social and technological innovation. Literature review analyses the concepts of peace, positive peace and sustainable peace. The aim of the analysis and literature review is to elucidate how information technology helps community moving from post-conflict situations to building and engineering peace to achieve sustainable peace as a source leading to wealthy communities within social and economic ecosystems. Referred journal articles were selected from *Google Scholar* as the main web source and database. The selected contributions are summarized and interpreted [19] in a narrative synthesis as a flexible approach that accommodates differences between the questions, research design and the context of the studies considered. It helps provide a description of data in order to develop and present new perspectives on emerging issues and advance theoretical models [20].

3 Understanding peace for community development and wealth

It is no simple to define what peace is or should be. Peace as a concept opposite to conflict or war refers to a partial meaning. Peace is much more than the absence of violence. Peace is not only the absence of violence [21], but also an asset for sustainable value creation within society [22]. Peace is a source for driving value co-creation and supporting community development within society [23]. Communities construct peace as a permanent status and effective condition to drive social, economic and public value creation within society. Sustaining peace helps build a common vision of society [17], promoting dialogue and collaborative processes that enable wealth and prosperity, social justice and well-being within communities [18]. Peace helps social and economic development opportunities, security and freedom from violence [24]. Peace can really be built person by person, community by community [25], and relies on promoting science and education, dialogue among cultures, enhancing diversity, sustaining economic and social development, respecting human rights and equality between people, democratic participation in the policy-making [26]. Peace is a condition for enabling the human potential and development through harmonic cooperation and collaborative means [21]. Peace is multidimensional and multi-sectoral, cutting across different levels of human organization, rendering sustaining peace a highly collaborative task, including all key peace stakeholders (private and public actors), to build a sustainable peace. Inclusivity is key to ensuring that peace is maintained over time. Sustaining peace attempts to broaden the peace agenda to include proactive measures aimed at building on peace where it already exists by reinforcing the struc-

tures, attitudes, and institutions that underpin it [27]. Peace can be understood as a process or a synonym for stability. In particular, positive peace refers to a state (or a culture) of stability or dynamic equilibrium emerging from multiple system interactions in a community landscape of a specific context and scale [1]. The approaches to ending conflicts have to be re-thought in order to aid and support the creation of a positive and sustainable peace [28]. While negative peace relates to an absence of war and direct or organized violence, positive peace is defined as the attitudes, institutions and structure that create and sustain peaceful societies, promoting economic strength, resilience and well-being. High positive peace countries are likely to maintain stability, adapt and recover from shocks [29]. Positive peace can also be used to gauge the resilience of a society, or its ability to absorb shocks without falling or relapsing into conflict. Positive peace is associated with stronger economic outcomes, higher resilience, better measures of wellbeing, higher levels of inclusiveness and more sustainable environmental performance. Positive peace offers a framework for inclusive, innovative and value-oriented communities and for survival of the humanity in 21st century, sustainable growth and development of society. «Positive Peace provides a framework to understand and address the many complex challenges the world faces. Positive peace is transformational in that it is a cross-cutting factor of progress, making it easier for businesses to sell, entrepreneurs and scientists to innovate, individuals to produce and governments to effectively regulate» (p. 3) [30]. High levels of positive peace lead to stronger resilience, better environmental outcomes, higher measures of wellbeing, better performance on development goals, higher per capita income [29]. Positive peace creates an optimal environment in which human potential can flourish [31]. This optimum environment is founded on eight interdependent pillars: well-functioning government; sound business environment; equitable distribution of resources; acceptance of the rights of others; good relations with neighbours; free flow of information; high levels of human capital; and low levels of corruption [28]. Sustainable peace occurs where high levels of positive peace lead to high levels of negative peace, supporting strong institutions and attitudes towards peace [29].

4 Rediscovering peace as a source for value creation through information technology

ICT helps to support the wealth and prosperity of communities within an open inclusive society. ICT supports diversity, wealth and participation, and sustainable, social and economic development and growth within society [6, 7, 8]. ICT helps to achieve long-terms issues that benefit for future generations [32], to develop peace-building processes and construct sustainable peace by designing digital business ecosystems as drivers of economic growth and innovation for wealth and prosperity of communities. Information technology enables peace engineering as a source to readdress the community towards a peace-oriented society. The role of information technology is to encourage communication and interaction among individuals, groups, organizations,

leading economic and social activities that contribute to rebuilding a sense of community within social ecosystems.

4.1 Sustaining peace-building

Peace-building refers to a long-term process concerning the activities aimed to reduce the risk of lapsing or relapsing into conflict, to prevent violent outbreaks of conflict or to sustainably transform armed conflicts into constructive peaceful ways of managing conflict and provide the foundations for living in sustainable peace and development [24]. The peace-building has been defined «as the process of transforming conflict dynamics by influencing behavior and attitudes through inclusive dialogue and interaction» (p. 60) [15]. The concept of peace-building is dynamic and evolving ranging from «the action to identify and support structures which will tend to strengthen and solidify peace in order to avoid relapse into conflict» (p. 4) [15] to the «activities undertaken on the far side of conflict to reassemble the foundations of peace and provide the tools for building on those foundations something that is more than just the absence of war» (p. 3) [16]. The challenge of peacebuilding is to support and stimulate the creation of political, economic and social spaces that enable communities to build a peaceful and prosperous society [33].

ICT is becoming an agent of social change in supporting peace-building initiatives. Technology is opening up to new and more efficient ways to engage citizens in social processes. ICT contributes to managing and ending conflicts facilitating negotiations, increasing transparency and building trust. ICT helps peace-building programs leading to data processing to improve data collection, organization and analysis; communication to provide and share information and stories; engagement by opening to new ways to drive people to exert influence on their communities [1]. ICT helps to support peace by encompassing the varying types of activity that are carried out in relation to armed conflict, conflict prevention and management, peace operations, humanitarian relief and post-conflict peace-building and reconstruction [34]. ICT contributes to promoting and building peace by enabling people to communicate, access to information, make decisions and understand each other better. ICT helps build and maintain peace within post-war countries. ICT contributes to promoting peace by enabling people to communicate, access to information and understand each other better. ICT helps peace-making efforts by: providing information, strengthening the ties between individuals and communities; improving their ability to share, learn and interact with one another; ensuring connectivity, improving the decision-making processes, sustaining increased understanding of different cultures [35].

ICT permits to remove barriers between communities facilitating the creation of shared vision [36] decentralizing the input of liberal peace-building for mobilization towards more inclusionary peace [33]. As an agent of social change, technology supports peace-building initiatives and contribute to strengthening education for peace and reconciliation [37]. Technology supports empowerment, providing active support through donors and agencies, and producing policy-inputs [33]. ICT helps improve communication, facilitating negotiation, increasing transparency and building trust [34]. ICT helps to drive change moving from conflict to peace [1] and to aliment the process of peace-building in order to provide sources that enable communities to pro-

ceed towards humanitarian, democratic and peaceful values. Thereby, using ICT-enabled, social, communicative applications helps strengthen communication within communities for positive peace that is more than the situation of no war or the absence of war [38].

4.2 Engineering peace through a community-oriented view

Technology plays an important role in creating a peace culture, while addressing peace and development-related issues, supporting the wealth of communities [1]. Positive peace provides an environment in which development goals are more likely to be achieved. The relationship between positive peace and economic prosperity helps to promote inclusive and sustainable communities [24, 26]. Promoting the sustainability-peace nexus helps to develop more effective solutions for enabling more peaceful and sustainable communities in the future [39].

Engineering peace helps to continuously advance the idea and practice of peace as a source for creating value within society and communities [14] and address the potential of social and technological innovation within communities [40]. Peace tends to emerge in community landscapes consisting of multiple interdependent and interconnected (social, economic, financial, technical and environmental) systems [20]. Engineering peace is emerging as a vision sustaining a viable and vital enterprise for sustainable growth, economic and social changes and the survival of communities [41]. Engineering peace helps to support civil society, social economy and public policies, leading to social transformation towards peace attitudes and development centered in human values, that require experimentation and active engagement [42].

Promoting peace engineering helps to create sustainable systems that succeed even when conflict does occur, coherently with long-term growth of the communities. It enables collaboration and partnership between peace engineers and community. Peace engineering stresses a partnered approach and base of knowledge to benefit local community, government, policy, facing global challenges in a sustainable way [43]. Engineering peace supports technological and social innovation for peace, and helps serve people and the planet, proactively inventing for peace and working for human well-being, addressing a community approach to solving problems concerning future sustainable development and growth [41]. Peace engineering focuses on opportunity and innovation to target structural violence and create broad foundations for sustainable peace, facilitating communication between individuals or groups in conflict in order to address root causes of structural violence [12]. The nexus between sustainability and peace is a key driver of human and sustainable development [4]. Several stakeholders contribute to building peace. They play a critical role in making decisions about peace and contribute to positive peace, offering a diversity of perspectives and influence each other, identifying and addressing issues related to the infrastructure for the supply for goods and services as necessary to develop an economy and facilitate financial, technical, policy issues for community [9].

5 Discussion and conclusions

Information technology helps to support growth and prosperity, driving communities to achieve sustainable peace as a source that enables value co-creation. Rediscovering a pathway to sustainable peace helps to support the community development and ensure better quality of life. ICT helps communities to develop cooperation and collaboration for sustainable peace as a source to transform social and economic ecosystems in a positive way. The main contribution of this study is to identify a framework to understand how communities develop the potential offered by information technology to proceed towards sustainable peace. ICT helps to promote and build peace within post-conflict communities enabling people, groups and organizations to cooperate and communicate, by rediscovering and sharing a common vision for living in peace.
Constructing a pathway for sustainable peace follows different trajectories. Peace-building processes contribute to driving communities to rediscover the absence of conflict and rethink a common and shared pathway towards peace as an enduring stage. The aim of peace-building process is to drive the transition from post-war situations to maintaining peace removing social, economic and cultural barriers to construct a community and support wealth and prosperity. The aim of individuals and groups building a community for living in peace and reinforcing sustainable peace is to identify better opportunities to promote social, economic and public value co-creation. ICT helps for peace and contributes to managing post-conflict and/or post-war situations by rediscovering communities living by re-building social and economic ecosystems. Rediscovering the potential of information technology for advancing sustainable peace helps communities to co-design and co-implement innovative solutions to drive sustainable value co-creation. ICT helps peace-oriented policies and enables citizens, business and government institutions to rediscover the meaning and the importance to reconstruct the community as an entity able to employ all the energies for future social and economic growth and development. As shown in the figure 1, a framework of analysis is proposed in order to identify a pathway for advancing sustainable peace-oriented communities.

Figure 1 – Towards sustainable peace-oriented communities: a framework

Information technology for peace helps communities to restore a peace-driven dialogue, managing post-conflict situations, strengthening the peace-building as an opportunity for engendering social innovation, leading to collaboration and cooperative

patterns that enable to transform the community in a significant way. Engineering peace helps communities to support social innovation adopting a collaborative approach to advance towards sustainable peace by using the potential of information technology. This study has social, organisational and managerial implications. Peacebuilding and peace engineering enable the conditions for driving sustainable development and growth within communities. Information technology helps to support collaborative spaces as an organizational framework and engine of sustainable value creation for peace. Managing peace-driven communities relies on developing collective intelligence and collaborative leadership. This study has limitations. The study focuses on several concepts of peace. There are no case studies presented and empirical research. The analysis aims to reconstruct a wide pathway moving from conflict to driving the community promoting growth and development by information technology. Further research perspectives imply to investigate how population, countries and states have faced the stage of transition from peace-building to creating social and business ecosystems where ICT helped cities, governments, business and communities to create sustainable value.

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