Abstract

The objective of current paper is to propose methodological steps for determining the physical co-presence of people using spatio-temporal movement data. Co-presence is the presence of people at the same place at the same time. In spite of the fast developing information and communication technologies the importance of face to face meetings remains high. We assess the probability of people to be at the same place at the same time using passive mobile positioning data with 350,000 randomly selected respondents from Estonia during 10 days in April 2011. We test criteria for finding the best spatial and temporal resolution to discover co-presence from mobile positioning database. Results show that the most suitable space unit for finding co-presence is site of mobile network and time unit is one minute.

Keywords: co-presence, face to face meeting, mobile positioning, population geography, ICT, travel behaviour

17.1 Introduction

The aim of this study is to propose a methodological steps for determining the physical co-presence of people with the help of vast databases of spatio-temporal movement. We assess the likelihood of people to be at the same place at the same
time as a co-presence – a potential interaction. We propose the best spatial and
temporal resolution to discover co-presence from mobile positioning databases. For
empirical study we use the passive mobile positioning data of 350 000 people in
Estonia within 10 days of the April 2011 as an example.

Physical co-presence is the presence of people at the same place at the same time.
Physical co-presence does not necessarily mean direct contact, i.e. meeting face to face
and communication. But similar spatial behaviour is a precondition for communica-
tion. Its importance in the modern information and communication technology (ICT)
based world has been stressed by many (Urry et al.2007). In spite of the existence
of telephones, e-mail and the Internet, important decisions are made and important
communications take place being together with partners. Trust and the meaningful-
ness of decisions depend on it. Development of ICT itself has however changed the
forms of co-presence. The importance of virtual co-presence keeps growing; many
important ways of co-presence have been solved through ICT (Miller 2005).

The subject of this article is relevant, because the growth of spatial mobility
of society has increased the need to assess the existence of interaction between
people or its likelihood. The idea which spread from the “Global Village” idea of
a Canadian communication scientist McLuhan (1964) and its developments in the
1990s (Castells 1996), that the spread of ICT decreases the need for face to face
meetings, has been refuted by now. People need physical meetings with each other;
it is needed in personal life as well as in occupational communication. The method-
ology developed in this article is one possibility for determining co-presence.

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17.2 The Theory

17.2.1 The Meanings of Co-Presence

Simply put, co-presence means being at the same place at the same time. The impor-
tant things are seeing other people and feeling their nearness and the possibility for
interaction with them (Goffman 1966, Urry 2003, Zhao 2003, Lawrence at al. 2006).
Goffman (1966), one of the first to discuss co-presence, referred to co-presence as
the condition when people “sense that they are close enough to be perceived in
whatever they are doing, including their experiencing of others, and close enough
to be perceived in this sensing of being perceived” (Goffman 1966).