

# Intangibles and Innovation: The Role of Communication in the Innovation Ecosystem

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# Intangibles & Innovation: The Role of Communication in the Innovation Ecosystem

**As innovations are established in ecosystems of dynamic multi-channel networks of researchers, funders, entrepreneurs and experts, the question of what and who keeps this ecosystem thriving is central. Intangible assets are central for innovation through concepts such as trust, communication and social capital, though little previous research has focused on them. In this paper we look at the role of intangible assets for innovation through a literature review, and suggest that communication is vital, and that the different attention workers maintain the innovation ecosystem by brokering intangible assets, creating a shared language and setting the agenda for the future.**

## 1 Introduction

Previous literature has noted the importance of innovation and innovativeness for corporate survival (Nonaka & Takeuchi, 1995<sup>1</sup>; Schumpeter, 1950<sup>2</sup>; Subramanian & Nilakanta, 1996<sup>3</sup>). The value of innovation (Carlson & Wilmot, 2006<sup>4</sup>) is today especially strong in competitive markets (Baregheh, Rowley & Sambrook, 2009<sup>5</sup>; Schumpeter, 1950<sup>6</sup>), where a significant amount of revenue results from products and services no older than 5 years (Ruppel and Harrington, 2000<sup>7</sup>). The European Commission suggests innovation activities to be enhanced by creating an innovative and creative environment and investing in R&D activities, networking, and information technology (CEC, 2009<sup>8</sup>). Wang and Ahmed (2004<sup>9</sup>) note that

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<sup>1</sup> Nonaka, I. & Takeuchi, H. (1995): "The knowledge-creating company: How Japanese companies create the dynamics of Innovation". New York: Oxford University Press.

<sup>2</sup> Schumpeter, J.A. (1950), *Capitalism, Socialism and Democracy*, Harper & Row, New York, NY.

<sup>3</sup> Subramanian, A. & Nilakanta, S. (1996). Organizational innovativeness: exploring the relationship between organizational determinants of innovation, types of innovations, and measures of organizational performance. *Omega: The International Journal of Management Science*. Vol. 24:6. pp. 631-47.

<sup>4</sup> Carlson, C.R. & Wilmot, W.W. (2006) 'Innovation: The Five Disciplines for Creating What Customers Want', New York, NY; Random House

<sup>5</sup> Baregheh, A., Rowley, J. and Sambrook, S., (2009) "Towards a multidisciplinary definition of innovation", *Management Decision*, Vol. 47, No. 8, pp. 1323-1339.

<sup>6</sup> Schumpeter, J.A. (1950), *Capitalism, Socialism and Democracy*, Harper & Row, New York, NY.

<sup>7</sup> Ruppel, C. P. and Harrington, S. J., (2000) "The Relationship of Communication, Ethical Work Climate, and Trust to Commitment and Innovation", *Journal of Business Ethics*, Vol. 25, pp. 313-328.

<sup>8</sup> CEC, 2009. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Reviewing Community Innovation Policy in a Changing World.

what matters for business is the capability to innovate, the likelihood of producing innovative outcomes. How this innovativeness is achieved, however, has been less evident. Understanding innovative behavior in innovation ecosystems remains a challenge.

Innovations are understood to be established in ‘ecosystems’ of dynamic multi-channel networks of researchers, funders, entrepreneurs, legislators, experts and attention workers, where the dynamic process of innovation creation and experimentation takes place (Estrin, 2009<sup>10</sup>; Saxenian, 2006<sup>11</sup>). The metaphor of ecosystem draws on the interconnectedness of the players; an ecosystem is an environment where individual players alone do not succeed. We define innovation ecosystem as a permanent or temporary system of interaction and exchange among an ecology of various actors that enables the cross-pollination of ideas and facilitates innovation. Innovation is dependent on connections (Jansen et al., 2006<sup>12</sup>) and many of the virtues enabling innovation are intangible in nature (Kaplan & Norton, 2004<sup>13</sup>). Information circulation and communication are vital for the ecosystem to thrive (Ruppel & Harrington, 2000<sup>14</sup>).

Innovation occurs where intangibles, such as knowledge, social networks and trust abound (Moenaert, Caledries, Lievens & Wauters, 2000<sup>15</sup>). In fact, communication makes or breaks the innovation ecosystem: without cross-pollination of ideas (Estrin, 2009)<sup>16</sup>, a will to share information the ecosystem cannot operate. Despite this, little research has focused on the role of intangible assets for innovations and innovativeness, and intangibles remain a difficult area to measure and manage (Lev, 2001<sup>17</sup>). The concept of ‘innovation communication’ has received scholarly

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<sup>9</sup> Wang, C.L. & Ahmed, P.K. (2004). The development and validation of the organizational Innovativeness construct using confirmatory factor analysis. *European Journal of Innovation Management*. Vol 7: 4. pp. 303-313.

<sup>10</sup> Estrin, J. (2009) *Closing the Innovation Gap. Reigniting the spark of creativity in a global economy*. McGrawHill: San Francisco.

<sup>11</sup> Saxenian, A. 1991. The origins and dynamics of production networks in Silicon Valley. *Research Policy*, 20: 423–437.

<sup>12</sup> Jansen, J., Van Den Bosch, F., Volbera, H. 2006. Exploratory Innovation, Exploitative Innovation and Performance: Effects of Organizational Antecedents and Environmental Moderators. *Management Science* 52(11), 1661-1674.

<sup>13</sup> Kaplan, Robert S., Norton, David P. (2004) Measuring the Strategic Readiness of Intangible Assets *Harvard Business Review*, 00178012, Feb2004, Vol. 82, Issue 2.

<sup>14</sup> Ruppel, C. P. and Harrington, S. J., (2000) “The Relationship of Communication, Ethical Work Climate, and Trust to Commitment and Innovation”, *Journal of Business Ethics*, Vol. 25, pp. 313-328.

<sup>15</sup> Moenaert, R.K., Caledries, F., Lievens, A. & Wauters, E. (2000). Communication Flows in International Product Innovation Teams. *Journal of Product Innovation Management*, 17, pp. 360-377.

<sup>16</sup> Estrin, J. (2009) *Closing the Innovation Gap. Reigniting the spark of creativity in a global economy*. McGrawHill: San Francisco.

<sup>17</sup> Lev, B. (2001). *Intangibles. Management, Measurement and Reporting*. The Brookings Institution: Massachussetts, Washington D.C.

attention before (see Mast, Huck & Zerfass, 2005<sup>18</sup>) but the focus has not been sufficiently placed on the specific contribution of intangibles.

Some have suggested us to have entered the attention economy (Simon, 1971)<sup>19</sup> or attention market (Davenport & Beck, 2001)<sup>20</sup>, where attention is considered a scarce and valuable commodity. An attention economy is the natural economy of the internet, and some have suggested that attention transactions (Goldhaber, 1997)<sup>21</sup> might even replace financial transactions in the future. The attention economy is a challenge for innovators, as the survival and success of their innovations is influenced ever more by what publics and stakeholders perceive it to be (Troshani & Doolin, 2007)<sup>22</sup>. As attention becomes scarce, the influence of ‘attention workers,’ professional generators and brokers of attention (Nordfors, 2006)<sup>23</sup> rises.

In this paper we suggest innovation to be tied to communication which through other intangibles such as culture and trust either strengthens or weakens innovativeness. Maintaining relations inside the innovation ecosystem and cultivating an innovation-friendly culture is the task of attention workers. The different attention workers (Luoma-aho & Nordfors, 2009<sup>24</sup>) act as both tacit and visible members of the ecosystem (Hautamäki, 2007<sup>25</sup>), and via their own relations and practice, establish communication ties between the different parts of the ecosystem. A central selection criterion based on which social relations and transactions take place in this environment is reputation (Deephouse & Carter, 2005)<sup>26</sup>, and attention workers build and maintain not only their own, but also the reputations of the innovations they communicate about.

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<sup>18</sup> Mast, C., Huck, S. & Zerfass, A. (2005) Innovation Communication. Outline of the concept and Empirical findings from Germany. Innovation Journalism, Vol.2, No.7.

<sup>19</sup> Simon, H.A. (1971), ‘Designing Organizations for an Information-Rich World’, written at Baltimore, MD, in Martin Greenberger, Computers, Communication, and the Public Interest, The Johns Hopkins Press.

<sup>20</sup> Davenport, T. H. & J. C. Beck (2001), The Attention Economy: Understanding the New Currency of Business, Harvard Business School Press, p. 22.

<sup>21</sup> Goldhaber, M. H. (1997), "The Attention Economy and the Net", First Monday, 2(4), Available online: <<http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/519/440>>

<sup>22</sup> Troshani, I. & Doolin, B. (2007), “Innovation Diffusion: a stakeholder and social network view”, European Journal of Innovation Management, Vol. 10 No. 2, pp. 176-200.

<sup>23</sup> Nordfors, D 2006. “PR and the Innovation Communication System”, Innovation Journalism Vol.3 No.5. (2006), <http://www.innovationjournalism.org/archive/TNJO-3-5.pdf>, also published by Strategic Innovators ( July - Sept 2007, Volume I | Issue 3). The concept of Attention Work is modified and further developed in Nordfors D. “Attention Work vs Knowledge Work”, The Innovation Journalism Blog, March 15 2008, <http://www.innovationjournalism.org/blog/2008/03/attention-work-vs-knowledge-work.html>

<sup>24</sup> Luoma-aho, V. & Nordfors, D. (2009) ”Attention and Reputation in the Innovation Economy”, Innovation Journalism, 6(2), online: <http://www.innovationjournalism.org/archive/injo-6-2.pdf>

<sup>25</sup> Hautamäki, A. (2007). Multi-channel Innovation Networks. Learning and innovation in a networked, global economy. Sustainable innovation, Available online: <http://www.kestavainnovaatio.fi/Innovationnetworks-new.pdf>

<sup>26</sup> Deephouse, D. & Carter, S. (2005). ‘An Examination of Differences Between Organizational Legitimacy and Organizational Reputation’, Journal of Management Studies, 42(2), 329-360.

We suggest that *by brokering intangible assets and through functions such as journalism, public relations, lobbying, advertising and marketing, attention workers cross-pollinate the innovation ecosystem with ideas, and increase the amount of social capital* (Bourdieu, 1986<sup>27</sup>) *in the ecosystem*. Social capital is vital for the ecosystem, as it is linked with universal goods such as health, democracy, trust, collaboration and prosperity (Putnam, 1993<sup>28</sup>). Moreover, when trust is high, innovativeness has been reported to bloom (Ellonen, Blomqvist & Puumalainen, 2008<sup>29</sup>).

The paper is organized as follows: First, a short introduction is provided to both the process of innovation and the role of intangible assets. Second, the importance of communication for innovation and innovativeness is analyzed, and the role of attention workers is clarified. The results of a literature review into how communication is related to innovation in articles published between 1984-2009 in the *Academy of Management Review* are examined. Third, conclusions are drawn and four axioms are suggested that describe the role of intangible assets and attention workers for the innovation ecosystem. To end, suggestions are made for what future studies should address.

## 2 Do Intangibles Matter for Innovation?

“Specifically, the relentless competitive pressure induced by the globalization of trade far-reaching deregulation, and technological changes (more recently the Internet) forced companies in the last two decades to increasingly rely on continuous innovation (of products, processes, and organizational designs) for survival and growth. Innovation, in turn, is primarily achieved by investment in intangibles (research and development, Information technology, employee training, customer acquisition)- hence the steep rise in the role of these assets in the production functions of businesses.” (Lev, 2001<sup>30</sup>).

Intangibles can be defined as identifiable, separate assets that are non-monetary or non-physical in nature. Companies need innovations to be able to respond to changes in their operating environment ranging from policy processes to changing customer demands and lifestyles. Baregheg et al. (2009<sup>31</sup>) define innovation as “the multi-stage process whereby organizations transform ideas into new/improved products, services or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.” Drucker (1993<sup>32</sup>) views innovation

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<sup>27</sup> Bourdieu, P. 1986. *The Forms of Capital*. Teoksessa *Handbook of Theory and Research for the Sociology of Education*. Richardson, J. G. (toim.), 241-258. USA: Greenwood Press.

<sup>28</sup> Putnam, R. D. (1993), *Making Democracy Work*, Princeton University Press, Princeton, NJ.

<sup>29</sup> Ellonen, R., Blomqvist, K-M. and Puumalainen, K., (2008) “The role of trust in organizational innovativeness”, *European Journal of Innovation Management*, Vol. 11, No. 2, pp. 160-181.

<sup>30</sup> Lev, B. (2001). *Intangibles. Management, Measurement and Reporting*. The Brookings Institution: Massachusettes, Washington D.C., p. 2.

<sup>31</sup> Baregheg, A., Rowley, J. & Sambrook, S. (2009). Towards a multidisciplinary definition of Innovation, *Management Decision*, 47(8), pp. 1323-1339, p. 1334.

<sup>32</sup> Drucker, P. (1993) *Post-Capitalist Society*. Harper Collins: New York.

as simply the application of knowledge to produce new knowledge. The innovation process is understood to consist of different stages including initial research and knowledge acquisition, development and production of the ideas into artifacts and commercialization, marketing and adoption (Chesbrough, 2003<sup>33</sup>; Siebra et al. 2008<sup>34</sup>).

The role of intangible assets (Lev, 2001<sup>35</sup>) is of great interest for innovation (Kaplan & Norton, 2004<sup>36</sup>), as much of tangible capital is accumulated via intangible capital (Veblen, 1908<sup>37</sup>). Intangible assets provide shelter for innovators, as they are difficult to imitate, and may bring competitive advantage and lead to innovativeness (Cohen & Levinthal, 1990<sup>38</sup>; Cho & Pucik, 2005<sup>39</sup>; Nonaka, 1991<sup>40</sup>).

The basic assumption behind all intangibles is that they become capital only when they provide something useful and applicable, and are aligned with strategic goals of the company (Kaplan & Norton, 2004<sup>41</sup>). Investments can be made, but they often yield results only over long periods of time (Lev, 2001<sup>42</sup>). Moreover, the profitability of such investments is difficult to quantify accurately (Cinca, Molinero & Queiroz 2003<sup>43</sup>, Rothstein & Stolle 2003<sup>44</sup>).

## 2.1 Innovation or Innovativeness?

When innovations are discussed, often only the outcome or the product (innovation) itself is referred to. Innovations, however, result from a often time-consuming process and what matters for success is not the mere product, but the capacity to produce new ideas; the ability to innovate. Companies that aim at

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<sup>33</sup> Chesbrough, H. 2003. *Open Innovation, the New Imperative for Creating and Profiting from Technology*. Boston, Mass., Harvard Business School Press.

<sup>34</sup> Siebra, C., Filho, M., Silva, F., Santos, A. 2008. Deciphering Extreme programming Practices for Innovation Process Management. Proceedings of the IEEE ICMIT

<sup>35</sup> Lev, B. (2001). *Intangibles. Management, Measurement and Reporting*. The Brookings Institution: Massachusettes, Washington D.C., p. 2.

<sup>36</sup> Kaplan, Robert S., Norton, David P. (2004) *Measuring the Strategic Readiness of Intangible Assets* Harvard Business Review, 00178012, Feb2004, Vol. 82, Issue 2.

<sup>37</sup> Veblen, T. (1908). *On the Nature of Capital: Investment, Intangible Assets, and the Pecuniary Magnate*. The Quarterly Journal of Economics, Vol. 23, No. 1 (Nov., 1908), pp. 104-136.

<sup>38</sup> Cohen, W.M. & Levinthal, D.A. (1990). *Absorptive capacity: A new perspective on learning and innovation*. Administrative Science Quarterly, 35(1):128– 152.

<sup>39</sup> Cho, H.-J. & Pucik, V. (2005) *Relationship between Innovativeness, quality, growth, profitability and market value*. Strategic Management Journal, 26, pp. 555-575.

<sup>40</sup> Nonaka, I. (1991). *The knowledge-creating company*. Harvard Business Review, 69(6): 96–104.

<sup>41</sup> Kaplan, Robert S., Norton, David P. (2004) *Measuring the Strategic Readiness of Intangible Assets* Harvard Business Review, 00178012, Feb2004, Vol. 82, Issue 2.

<sup>42</sup> Lev, B. (2001). *Intangibles. Management, Measurement and Reporting*. The Brookings Institution: Massachusettes, Washington D.C.

<sup>43</sup> Cinca, C. S., Molinero, C. M. & Queiroz, A. B. (2003). *The measurement of intangible assets in public sector using scaling techniques*. Journal of Intellectual Capital. Vol. 4, No. 2, pp. 249-275.

<sup>44</sup> Rothstein, B. & Stolle, D. (2003). *Introduction: Social Capital in Scandinavia*. Scandinavian Political Studies. Vol. 26, No. 1, pp. 1-26.

producing innovations have been suggested to need innovativeness, “the overall internal receptivity to new ideas and innovation that is demonstrated through individuals, teams and management, and that enables the formation of an innovative culture” (Wang and Ahmed, 2004<sup>45</sup>).

Innovativeness is built around intangible assets; “a firm’s capability of being innovative and at the same time delivering high-quality products or services to customers is its intangible resources” (Cho & Pucik, 2005<sup>46</sup>). Though intangible assets mostly still remain outside the organizational balance sheets, it has been argued that including intangibles would allow for a more accurate quantification of the sources of economic growth and through it innovation would be improved (Corrado, 2009; in Mackie, 2009<sup>47</sup>). In fact, it is through intangibles such as flexibility (De Meyer et al., 1989<sup>48</sup>) that corporate innovation is enabled.

Intangibles include different types of capital such as social capital (Bourdieu, 1986<sup>49</sup>; Putnam, 1993<sup>50</sup>), human capital (Coleman, 1988<sup>51</sup>), intellectual capital (Nahapiet & Ghoshal, 1998<sup>52</sup>; Diefenbach, 2006<sup>53</sup>) and communication capital (Malmelin, 2007<sup>54</sup>). Examples of intangible capital in the context of companies and the innovation ecosystem could include employee skills, tacit and available market knowledge, trust, reputation, official and unofficial social networks, patents, trademarks and brands (Contractor 2000<sup>55</sup>; Gardberg & Fombrun 1996<sup>56</sup>). All these add value to the company and may open up tangible forms of capital, yet they

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<sup>45</sup> Wang, C. L. and Ahmed, P. K., (2004) “The development and validation of the organizational innovativeness construct using confirmatory factor analysis”, *European Journal of Innovation Management*, Vol. 7, No. 4, pp. 303-313. p.205.

<sup>46</sup> Cho, H.-J. & Pucik, V. (2005) Relationship between Innovativeness, quality, growth, profitability and market value. *Strategic Management Journal*, 26, pp. 555-575, p. 556.

<sup>47</sup> Mackie, C. (Rapporteur) (2009). *Intangible Assets: Measuring and Enhancing Their Contribution to Corporate Value and Economic Growth: Summary of a Workshop*. The National Academies Press, Washington, DC.

<sup>48</sup> De Meyer, A.; Nakane, J; Miller, J.G. & Ferdows, K. (1989): Flexibility: The next competitive battle. *Strategic Management Journal*, 10(2): 135–144.

<sup>49</sup> Bourdieu, P. 1986. *The Forms of Capital*. *Teoksessa Handbook of Theory and Research for the Sociology of Education*. Richardson, J. G. (toim.), 241-258. USA: Greenwood Press.

<sup>50</sup> Putnam, R. D. (1993), *Making Democracy Work*, Princeton University Press, Princeton, NJ.

<sup>51</sup> Coleman, J. A. 1988. Social capital in the creation of human capital. *American Journal of Sociology*, 94(Supplement): 340 *Academy of Management Review*, pp. 95–120.

<sup>52</sup> Nahapiet, J. & Ghoshal, S. (1998). Social Capital, Intellectual Capital, and the Organizational Advantage. *Academy of Management Review*. Vol. 22, No. 2, pp. 242-266.

<sup>53</sup> Diefenbach, T. 2006. Intangible Resources: A Categorical System of Knowledge and Other Intangible Assets. *Journal of Intellectual Capital*. Vol. 7, No. 3, 406-420.

<sup>54</sup> Malmelin, N. (2007) Communication Capital. Modelling corporate communications as an organizational asset. *Corporate Communications: An International Journal*. 12(3), pp. 298-310., p.300.

<sup>55</sup> Contractor, F. J. (2000): Valuing Corporate Knowledge and intangible assets: Some General Principles. *Knowledge and Process Management*, 7: 242-255.

<sup>56</sup> Gardberg, N. & Fombrun, C. (2006). Corporate citizenship: Creating intangible assets across institutional environments. *Academy of management review*, Vol. 31, No 2, pp. 329-346.

often remain uncalculated and unappreciated in corporate balance sheets (Lev, 2001<sup>57</sup>).

### 3 Communication and the Attention Workers

The link between innovations and communication has been established (Ruppel & Harrington, 2000)<sup>58</sup>, and communication is seen as a central success factor for innovations (Moenaert et al. 2000)<sup>59</sup>. Not only is this true for individual corporations and projects, but also the whole innovation ecosystem. In fact, “Business success depends more and more directly on organizational communications and its effectiveness” (Malmelin, 2006<sup>60</sup>). This is especially visible when information related to intangibles is lacking in a way that adversely impacts business operations and governance through impact on the different stakeholders (Lev, 2001)<sup>61</sup>. What organizations are and what they do are more connected than before (Cheney & Christensen, 2001<sup>62</sup>), and what is communicated makes all the difference, as in the attention economy appearance and image can sometimes matter even more than deeds (Davenport & Beck, 2001)<sup>63</sup>.

Communication co-creates shared social meanings and hence facilitates cooperation (Heath, 2006<sup>64</sup>). Communication is a boundary-spanning or interface function (Cornelissen et al., 2006<sup>65</sup>; Cheney and Christensen, 2001<sup>66</sup>) and as such

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57 Lev, B. (2001). *Intangibles. Management, Measurement and Reporting*. The Brookings Institution: Massachusettes, Washington D.C.

58 Ruppel, C. P. and Harrington, S. J., (2000) “The Relationship of Communication, Ethical Work Climate, and Trust to Commitment and Innovation”, *Journal of Business Ethics*, Vol. 25, pp. 313-328.

59 Moenaert, R.K., Caledries, F., Lievens, A. & Wauters, E. (2000). Communication Flows in International Product Innovation Teams. *Journal of Product Innovation Management*, 17, pp. 360-377.

60 Malmelin, N. (2007) Communication Capital. Modelling corporate communications as an organizational asset. *Corporate Communications: An International Journal*. 12(3), pp. 298-310., p.300.

61 Lev, B. (2001). *Intangibles. Management, Measurement and Reporting*. The Brookings Institution: Massachusettes, Washington D.C.

62 Cheney, G. & Christensen, L.T. (2001) “Organizational Identity: Linkages Between Internal and External Communication””, In: Jablin, Fredric M. & Putnam, Linda L. (Eds.): *The New Handbook of Organizational Communication: Advances in Theory, Research and Methods*, Thousand Oaks (Calif.)/ Sage, pp. 197-230.

63 Davenport, T. H. & J. C. Beck (2001), *The Attention Economy: Understanding the New Currency of Business*, Harvard Business School Press, p. 22.

64 Heath, R. (2006). Onward into more fog; thoughts on public relations’ research directions. *Journal of Public Relations Research*, 18, 93–114.

65 Cornelissen, J., Bekkum, T. van & Ruler, B. van (2006). Corporate communications: A practice-based theoretical conceptualization. *Corporate Reputation Review*, 9, 114–133.

66 Cheney, G. & Christensen, L. (2001). Organizational identity. In Jablin, F. & Putnam, L., *The new handbook of organizational communication: Advances in theory, research and methods*, London: Sage.

central for business today. It can be seen as a bridging activity (Grunig, 2006<sup>67</sup>), and this bridging takes place between the different actors of the innovation ecosystem. In an international context, communication should be both effective and efficient (Moenaert et al., 2009)<sup>68</sup>. Of value are the ability to codify knowledge and locate a receptive receiver, as well as minimizing the costs of communication and avoiding information leaks.

Many innovations result from combining existing knowledge in a novel way (Carlson & Wilmot, 2006<sup>69</sup>). Hence cross-pollination of ideas during the research, development and application stages is central for success of innovation (Estrin, 2009<sup>70</sup>). However, collaboration can happen only once meanings are shared and trust is established. For innovations to succeed, trust is required both on the levels of institutions and interpersonal relations (Ellonen, Blomqvist & Puumalainen, 2008)<sup>71</sup>. Communication is needed to establish both types of trust in the innovation ecosystem: trust between individuals and trust between institutions and industries. Trust and sharing are dynamic in nature as reality is constantly evolving and being re-defined, making communication an ongoing process (Jaatinen & Lavikka, 2008<sup>72</sup>).

Though the role of communication for the innovation ecosystem has only recently received interest, it has been discussed in previous research through concepts such as knowledge acquisition, attention and distribution. Early notions that view communication as important include the four central organizational learning constructs of Huber ranging from knowledge acquisition, information distribution and information interpretation to organizational memory (Huber, 1991<sup>73</sup>). Communication's role as handler of both incoming and outgoing messages (Sucliffe, 2001)<sup>74</sup> has also been discussed, and its role in organizational effectiveness has been established.

Previous research has acknowledged that public attention is a prerequisite for the adoption process of an innovation (Rogers, 1995)<sup>75</sup> but not necessarily beneficial

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<sup>67</sup> Grunig, J. (2006). Furnishing the edifice: ongoing research on public relations as a strategic management function. *Journal of Public Relations Research*, 18(2), pp. 151–176.

<sup>68</sup> Moenaert, R.K., Caledries, F., Lievens, A. & Wauters, E. (2000). Communication Flows in International Product Innovation Teams. *Journal of Product Innovation Management*, 17, pp. 360-377.

<sup>69</sup> Carlson, C.R. & Wilmot, W.W. (2006) 'Innovation: The Five Disciplines for Creating What Customers Want', New York, NY; Random House

<sup>70</sup> Estrin, J. (2009) *Closing the Innovation Gap. Reigniting the spark of creativity in a global economy*. McGrawHill: San Francisco.

<sup>71</sup> Ellonen, R., Blomqvist, K-M. and Puumalainen, K., (2008) "The role of trust in organizational innovativeness", *European Journal of Innovation Management*, Vol. 11, No. 2, pp. 160-181.

<sup>72</sup> Jaatinen, M. & Lavikka, R. (2008). Common understanding as a basis for coordination. *Corporate Communications, an International Journal*, 13, 147–167.

<sup>73</sup> Huber, G.P. (1991), *Organizational Learning: The Contributing Processes and the Literatures*, *Organization Science*, Vol. 2, No. 1, pp. 88-115

<sup>74</sup> Sucliffe, K.M. (2001) "Organizational Environments and Organizational Information Processing", In: Jablin, Fredric M. & Putnam, Linda L. (Eds.): *The New Handbook of Organizational Communication: Advances in Theory, Research and Methods*, Thousand Oaks (Calif.)/ Sage, pp. 197-230.

<sup>75</sup> Rogers, E.M. (1995), "Diffusion of innovations", New York: Free Press.

for all the different phases of the innovation process. Knowledge sharing and distribution of information are especially vital for the early stages of innovation (Estrin, 2009<sup>76</sup>), as well as the later marketing and adoption stages. Communication, on the other hand, is an overreaching function that needs to be taken care of throughout the whole innovation process (Moenart et al. 2000<sup>77</sup>), but so far the influencers of communication in the innovation ecosystem have remained unclear.

### 3.1 Data on the Connection Between Communication and Innovation

Rogers (1995)<sup>78</sup> divides innovation process into *initiation* and *implementation* separated by *the decision to adopt* the innovation. Another eligible basis for classification is provided by Estrin's (2009) view of the *innovation ecosystem* that asserts three stages in the lifespan of innovation: *research*, *development* and *application*. Baring in mind these remarks suggesting that the process of innovation can be classified according to its state, we aim to point out the importance of different communicational functions in the process.

To get a comprehensive understanding of how previous literature has understood the role of intangibles and more precisely communication for innovation, we analyzed all articles published between 1984-2009 in the Academy of Management Review. The journal was chosen due to its prestige and management orientation, and the search words were 'innovation' and 'intangible'. This search yielded 80 articles, which then were narrowed down to 68 that addressed communication in direct or indirect ways (use of the words 'communication', 'information', 'conversation', 'message' or 'interaction').

The results are presented in table 1. Altogether 8 different functions were found for communication ranging from one-way information providing to enabling a culture and sharing of ideas to reputation management and maintaining organizational structure. The 8 functions were: 1) informing internal stakeholders, 2) informing external stakeholders, 3) communication as a management function, 4) sharing and cross-pollination of ideas, 5) networking and establishing contacts, 6) reputation management, 7) creating organizational culture and 8) maintaining organizational structure. Due to the vast amount of sources used in the review (68), we mention only the last names of the authors and the years of publication the articles, but all the article details can be found in the Academy of Management Review between 1984-2009.

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<sup>76</sup> Estrin, J. (2009) Closing the Innovation Gap. Reigniting the spark of creativity in a global economy. McGrawHill: San Francisco.

<sup>77</sup> Moenaert, R.K., Caledries, F., Lievens, A. & Wauters, E. (2000). Communication Flows in International Product Innovation Teams. Journal of Product Innovation Management, 17, pp. 360-377.

<sup>78</sup> Rogers, E.M. (1995) Diffusion of Innovation. Free Press: New York.

Table 1. The 8 different functions of communication for innovation and innovativeness found in the literature review conducted on articles published in the Academy of Management Review between 1984-2009.

<b>Function of communication</b>	<b>Connection to innovation</b>	<b>How the connection occurs</b>	<b>Examples of sources mentioning this function</b>	<b>No. of sources</b>
1. Informing internal stakeholders (one-way communication)	Relevant to the innovation process	Openly informing employees crucial to decision making affecting the transfer of initiated innovations into implementation	Birkinshaw, Hamel & Mol (2008) Brodbeck, Kerschreiter, Cowan & Jonard (2009) Ford (1996) Lewis, & Seibold (1993) Mojzisch & Schulz-Hardt (2007)	5
2. Informing outside stakeholders (one-way communication)	Relevant to innovativeness	Informing about the adoption of innovations results in a more innovative image in the eyes of the competitors. As far as the image of an organization can positively (or negatively) affect the organizations functions and identity, informing outside actors affects the innovation ecosystem inside the organization.	Terlaak & Gong (2008) Benner (2007) Nambisan (2002)	3
3. Communication as a management function	Relevant to the innovation process	Communication is important for different management functions that affect the innovation process, for example: facilitating innovation adoption by strengthening employee commitment and obtaining information about innovations adopted by competitors and as a means of attaining knowledge that supports decision making towards more innovative organizations.	Aldrich & Fiol (1994) Benner (2007) Brodbeck, Kerschreiter, McKinley & Scherer (2000) Brown & Eisenhardt (1995) Fidler & Johnson (1984) Mojzisch & Schulz-Hardt (2007) Pouder & St. John (1996) Spencer, Murtha & Lenway (2005) Verona (1999) Zahra, Ireland, Gutierrez & Hitt (2000)	10
4. Sharing ideas, informal conversation, social interaction (cross-pollination)	Relevant to the innovation process	Commenting on others' ideas is seen as crucial to the life-cycle of an innovation. Informal conversations are valuable in the initiation and development of a novel idea and especially in terms of making the actors from different levels of the innovation process interact with each other. Social interaction is also seen as	Brodbeck, Kerschreiter, Mojzisch & Schulz-Hardt (2007) Brown & Eisenhardt (1995) Cowan & Jonard (2009) Dhanaraj & Parkhe (2006) Ford (1996) Glynn (1996) Griffiths & Zammuto (2005) Kessler & Chakrabarti (1996)	22

		relevant to the application/ implementation process in building legitimacy among the individuals inside and outside the organization by validating and making sense of the innovation.	<p>Labianca, &amp; Brass (2006)                  Lewis (2000)                  Litchfield (2008)                  Mahmood &amp; Rufin (2005)                  Moorman &amp; Miner (1998)                  Morand (1995)                  Nambisan (2002)                  Pil &amp; Cohen (2006)                  Shamir &amp; Salomon (1985)                  Spencer, Murtha &amp; Lenway (2005)                  Todorova &amp; Durisin (2007)                  Van de Ven &amp; Poole (1995)                  Verona (1999)                  Woodman, Sawyer &amp; Griffin (1993)</p>	
5. Networking, establishing new contacts	Relevant to the innovation process	Establishing new relationships e.g. by inter-firm cooperation is valued mostly in terms of the early stages of the innovation process (initiation).	<p>Abrahamson &amp; Rosenkopf (1993)                  Aldrich &amp; Fiol (1994)                  Dhanaraj &amp; Parkhe (2006)                  Ford (1996)                  Hargrave &amp; Van De Ven (2006)                  Mahmood &amp; Rufin (2005)                  Peng (2003)                  Spencer, Murtha &amp; Lenway (2005)                  Terlaak &amp; Gong (2008)                  Woodman, Sawyer &amp; Griffin (1993)</p>	10
6. Reputation management	Relevant to innovativeness	Reputation is linked to concrete business outcomes such as increasing switching costs. Profitable innovations have positive reputations which competitors hope to capture: a good reputation is seen as a result rather than an ingredient of innovation. A highly-reputed organization adopting an innovation can also trigger competitors to adopt and adoption can be used to be distinguished from organizations with poorer reputation.	<p>Abrahamson &amp; Rosenkopf (1993)                  Abrahamson (1991)                  Aldrich &amp; Fiol (1994)                  Benner (2007)                  Dhanaraj &amp; Parkhe (2006)                  Sheremata (2004)                  Kedia &amp; Bhagat (1988)                  McGrath (1997)                  O'Neill, Pouder &amp; Buchholtz (1998)                  Terlaak &amp; Gong (2008)</p>	10

7. Creating organizational culture	Relevant to both the innovation process and innovativeness	Transparency as a part of the organizational culture is referred to be important especially in the implementation phase to better involve different stakeholder groups, especially customers. Open organizational culture that enables organizational learning is seen crucial to innovativeness.	Benner & Tushman (2003) Brodbeck, Kerschreiter, Mojzisch & Schulz-Hardt (2007) Moorman & Miner (1998) Nambisan (2002) Wolter & Veloso (2008) Woodman, Sawyer & Griffin (1993) Zahra, Ireland, Gutierrez & Hitt (2000) Zammuto & O'Connor (1992)	8
8. Maintaining organizational structure	Relevant to the innovation process	Organizational structure enables information flows at the different stages of the innovation process. E.g. a flatter and more integrated structure possessing necessary communication channels allows fluid communication and knowledge transformation and is thus seen crucial to the initiation of the innovation process as it facilitates information exchange between different internal actors within an organization.	Abrahamson & Fombrun (1994) Fidler & Johnson (1984) Garud & Kotha (1994) Hill & Rothaermel (2003) Kessler & Chakrabarti (1996) Lewis & Seibold (1993) McKinley & Scherer (2000) Moorman & Miner (1998) Morand (1995) Nambisan (2002) Shamir & Salomon (1985) Spencer, Murtha & Lenway (2005) Verona (1999) Zahra, Ireland, Gutierrez & Hitt (2000) Zammuto & O'Connor (1992)	15

As we can see from table 1, the most mentioned function of communication is the sharing of ideas (mentioned in 22 articles) followed by maintaining organizational structure (15 articles). Often communication appeared in the articles simply as an act of *informing* others. To create structure to the analysis the inner and outer dimensions of organizational communication are viewed in the table separately. Besides one-way communication from organization to its stakeholders (altogether 8 articles) the aspect of communication as cross-pollination of ideas (Estrin, 2009)<sup>79</sup> was represented well. This appeared in the form multiple terms and concepts i.e. *sharing of ideas, having informal conversations, or engaging in social interaction*. Significant repetition was discovered in the use of the terms *networks* or *networking* (10 articles). An organization's *reputation* and further *reputation management* is a significant segment of corporate communications (Cornelissen et

<sup>79</sup> Estrin, J. (2009) *Closing the Innovation Gap: Reigniting the Spark of Creativity in a Global Economy*. McGrawHill: San Francisco.

al. 2006)<sup>80</sup> and its construct was visible in the articles included to the analysis as well (10 articles). In addition there were multiple references to both *organizational culture* (8 articles) and its *structure* (15 articles).

### 3.2 Attention Workers as Social Capitalists

Communication is all about creating the right culture, and Ahmed (1998)<sup>81</sup> notes that innovation can only be ensured in places where an appropriate organizational culture has been established, such as the Silicon Valley (Kenney, 2000<sup>82</sup>). In the dynamic innovation ecosystem attention is valuable and shaped by 'attention workers', professional generators and brokers of attention (Nordfors, 2006)<sup>83</sup>. Journalists and other attention workers (e.g. PR practitioners, marketers, advertisers, lobbyists) shape the way an innovation receives attention and contribute to its overall reputation, but beyond this, they maintain the communication needed for the ecosystem to exist. We propose that it is the different attention workers who are in charge of creating and maintaining communication in the innovation ecosystem.

The attention workers are professionals who in the field of communication aim at distribution of information and knowledge. Mast, Huck & Zerfass (2005<sup>84</sup>) highlight that innovation communication is needed for both the spreading of new information as well as shaping the image of the innovation. Some of attention work is done visibly, whereas much of it is in fact tacit, such as collecting background information, fact-checking, profiling and establishing relationships. Some attention-workers in fact, prefer to be out of the spotlight and let their products take centre stage (lobbyists, advertisers, public relations practitioners), whereas others are increasingly betting their own reputation on their work and products (journalists). Despite these differences, all the different attention workers are

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<sup>80</sup> Cornelissen, J., van Bekkum, T. & van Ruler, B. (2006) *Corporate Communications: A Practise-based Theoretical Conceptualization*. Corporate Reputation Review, Vol. 9, No. 2, pp.114-133.

<sup>81</sup> Ahmed, P.K., (1998) Culture and climate of innovation, European Journal of Innovation Management, Vol. 1, No. 1, pp. 30-43.

<sup>82</sup> Kenney, M. (Ed.) (2000). Understanding Silicon Valley. The Anatomy of an Entrepreneurial Region. Stanford, Stanford University Press.

<sup>83</sup> Attention work was first coined in Nordfors, D 2006. "PR and the Innovation Communication System", Innovation Journalism Vol.3 No.5. (2006), <http://www.innovationjournalism.org/archive/INJO-3-5.pdf>, also published by Strategic Innovators ( July - Sept 2007, Volume I | Issue 3).

<sup>84</sup> Mast, C., Huck, S. & Zerfass, A. (2005) Innovation Communication. Outline of the concept and Empirical findings from Germany. Innovation Journalism, Vol.2, No.7.

needed to maintain a balanced flow of knowledge and to keep the innovation ecosystem alive (Luoma-aho, Uskali & Weinstein, 2009<sup>85</sup>).

Ideas spread through people, and in practice attention work consists of establishing and maintaining relationships and networks. We distinguish between idea initiating attention workers and cultivating attention workers: The initiators (journalist and public relations practitioners) aim to come up with new ideas for the innovation ecosystem and hence set the innovation agenda, whereas the cultivators (marketers, advertisers, lobbyists, internal developers) make sure these issues maintain the attention necessary. As initiators, public relations practitioners aim to bring attention to new topics and journalists place new issues on the public agenda and guide therefore the attention. The line between the initiator and the cultivator is however, arbitrary in nature and it should be acknowledged that all the attention workers may take up both tasks at times.

Attention workers through their professional relations, practices and actions, establish both official and unofficial communication ties between the different parts of the innovation ecosystem (Luoma-aho & Nordfors, 2009<sup>86</sup>). As the products and services offered by companies continue to converge, communication through images, conceptions, stories and experiences rises in importance (Malmelin, 2006<sup>87</sup>). Moreover, when decisions are made quickly, emotions and other external cues may become more important than factual information (Finucane et al. 2000<sup>88</sup>).

Attention workers face the daily pressures brought about by the dynamic environment of innovations, and on their own part, they moderate not only the flow of knowledge but also set the agenda for which innovations matter (Coombes & Shaw, 1972<sup>89</sup>; Hautamäki, 2007<sup>90</sup>). If an innovation is not discussed and communicated, or if there is no shared language to do so, it simply does not exist according to the different players in the innovation ecosystem (Nordfors, 2007<sup>91</sup>).

In practice, attention work includes building bridges between different players in the ecosystem, sharing knowledge, maintaining trust, cultivating reputations and

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<sup>85</sup> Luoma-aho, V., Uskali, T. & Weinstein, A. (2009) "Pitfalls of Attention work in the Innovation Ecosystem", *Innovation Journalism* 6(4), online: <http://www.innovationjournalism.org/archive/injo6-4.pdf>

<sup>86</sup> Luoma-aho, V. & Nordfors, D. (2009) Attention and Reputation in the Innovation Economy, *Innovation Journalism*, 6(2), online: <http://www.innovationjournalism.org/archive/injo-6-2.pdf>

<sup>87</sup> Malmelin, N. (2007) Communication Capital. Modelling corporate communications as an organizational asset. *Corporate Communications: An International Journal*. 12(3), pp. 298-310.

<sup>88</sup> Finucane, M. L., Alhakami, A., Slovic, P., & Johnson, S. M. (2000). The affect heuristic in judgments of risks and benefits. *Journal of Behavioral Decision Making*, 13, 1–17.

<sup>89</sup> McCombs, M.E., & Shaw, D.L. (1972). The agenda-setting function of mass media. *Public Opinion Quarterly*, 36, 176-187.

<sup>90</sup> Hautamäki, A. (2007). Kestävä Innovointi. Innovaatiopolitiikka uusien haasteiden edessä (In Finnish: Sustainable Innovation. The innovation policy facing new challenges. Sitra Reports 76, Sitra. Available online: [http://www.tieke.fi/mp/db/file\\_library/x/IMG/24142/file/Antti\\_Hautamaki\\_080314.pdf](http://www.tieke.fi/mp/db/file_library/x/IMG/24142/file/Antti_Hautamaki_080314.pdf)

<sup>91</sup> Nordfors, D 2006. "PR and the Innovation Communication System", *Strategic Innovators*, July - Sept 2007, Vol. I, issue 3.

setting the agenda for the ecosystem (Luoma-aho & Nordfors, 2009<sup>92</sup>). Central for all attention workers in practice is their personal reputation: For journalists, attention work consists of daily contacts with the sources and the creative process of writing, but also includes increasingly following up on the feedback and ideas generated by the published stories. Every choice a journalist makes is therefore an attention shaping choice. For public relations practitioners, the focus is even more on relationship building, as it is through these networks that ideas can be spread and taken up. For many cultivating attention workers such as advertisers, marketers, lobbyists or internal developers of organizations, attention work in practice consists of maintenance of the existing relations and keeping awareness high via different channels and modes of communication. The ultimate success of an attention worker, however, is always measured by two criteria: 1) were they successful in getting the attention of the targeted group? and 2) did the generated attention lead to new value for the innovation ecosystem on the whole? The second principle is especially vital when considering the new requirements for innovations to be not only successful but also sustainable (Hautamäki, 2010<sup>93</sup>).

For communication to become capital, several dimensions such as juridical assets, documented information, the organization's culture and management systems, the skills and competencies of the staff and the organization's relations with its stakeholders must be perfected (Malmelin, 2006<sup>94</sup>).

Attention workers aim at increasing the amount of social capital in the innovation ecosystems. Social capital here refers to the resources embedded in social relations (Lin, 2001<sup>95</sup>), which enable and reward people who collaborate. Bourdieu's (1997<sup>96</sup>) definition of social capital as "the actual or potential resources which are linked to possession of a durable network of ... relationships of mutual acquaintance and recognition ... which provides each of its members with the backing of the collectively-owned capital, a "credential" which entitles them to credit, in the various senses of the word" is useful. Social capital facilitates cooperation, and it becomes productive through communication (Ojala & Luoma-aho, 2009<sup>97</sup>). In fact, social capital flourishes with ongoing interaction, and should communication fail, social capital will erode (Luoma-aho, 2005<sup>98</sup>). This outlines

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<sup>92</sup> Luoma-aho, V. & Nordfors, D. (2009) Attention and Reputation in the Innovation Economy, *Innovation Journalism*, 6(2), online: <http://www.innovationjournalism.org/archive/injo-6-2.pdf>

<sup>93</sup> Hautamäki, A. (2010) Sustainable Innovation. Publications of Sitra: Helsinki. [http://sustainableinnovation.fi/sustainableinnovation\\_book.pdf](http://sustainableinnovation.fi/sustainableinnovation_book.pdf)

<sup>94</sup> Malmelin, N. (2007) Communication Capital. Modelling corporate communications as an organizational asset. *Corporate Communications: An International Journal*. 12(3), pp. 298-310.

<sup>95</sup> Lin, N. (2001). *Social Capital: A Theory of Social Structure and Action*. Cambridge University Press: Cambridge.

<sup>96</sup> Bourdieu, P. (1997) "The Forms of Capital". In *Education: Culture, Economy, and Society*, edited by A. H. Halsey, H. Lauder, P. Brown & A. Stuart Wells. Oxford: Oxford University Press, 1997: 46-59, p. 51.

<sup>97</sup> Ojala, J. & Luoma-aho, V. (2008) 'Stakeholder relations as Social Capital in Early Modern International Trade', *Business History*, 50(6), pp. 749 – 764.

<sup>98</sup> Luoma-aho, V. (2005) "Viestintä, maine ja organisaation sosiaalinen pääoma. (Communication, reputation and organisational social capital)." In *Sosiaalisen pääoman kentät (Fields of Social Capital)*, edited by Pertti Jokivuori. Jyväskylä: Minerva, pp. 393-413.

the dynamic nature of the innovation ecosystem well, where the success will depend on the attention and communication established.

Attention workers can enable innovation ecosystems to prosper by creating a shared language, maintaining an innovation-friendly culture and by setting the agenda for innovations. In addition, attention workers build trust and nurture an ongoing dialogue vital for cross-pollination of ideas. Attention workers are also need to monitor (Vos & Shoemaker, 2006<sup>99</sup>) the ecosystem and find out the relevant issue arenas for different industries where important dialogue takes place (Luoma-aho & Vos, 2010<sup>100</sup>). In short, *attention workers are the social capitalists of the innovation ecosystem.*

## 4 Conclusion

As innovations are established in ecosystems of dynamic multi-channel networks of researchers, funders, entrepreneurs and experts (Estrin, 2009<sup>101</sup>; Hautamäki, 2007a; Saxenian, 2006<sup>102</sup>), the question of what keeps this ecosystem thriving is central. In this paper we suggested intangible assets (Lev, 2001<sup>103</sup>) to be of central value for innovation (Kaplan & Norton, 2004<sup>104</sup>), as much of tangible capital is accumulated via intangible capital (Veblen, 1908<sup>105</sup>).

The conclusions that can be drawn from the literature concerning the role of intangible assets for innovation is clear: innovations are created by investing in intangibles (Lev, 2001)<sup>106</sup>. Communication (Ruppel and Harrington, 2000)<sup>107</sup> in this process is both a facilitator and enabler: it is the way to broker the other intangible assets. Communication has a role in constructing and sustaining a fertile culture for innovations (Ahmed, 1998)<sup>108</sup>, as well as in maintaining trust (Ellonen

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<sup>99</sup> Vos, M. & Schoemaker, H. (2006). Monitoring the public perception of organisations. Amsterdam: Boom.

<sup>100</sup> Luoma-aho, V. & Vos, M. (2010) Towards a more dynamic stakeholder model: Acknowledging multiple issue arenas. *Corporate Communications, an International Journal*, 15(3), forthcoming.

<sup>101</sup> Estrin, J. (2009) *Closing the Innovation Gap. Reigniting the spark of creativity in a global economy.* McGrawHill: San Francisco.

<sup>102</sup> Saxenian, A. 1991. The origins and dynamics of production networks in Silicon Valley. *Research Policy*, 20: 423–437.

<sup>103</sup> Lev, B. (2001). *Intangibles. Management, Measurement and Reporting.* The Brookings Institution: Massachusetts, Washington D.C., p. 2.

<sup>104</sup> Kaplan, Robert S., Norton, David P. (2004) Measuring the Strategic Readiness of Intangible Assets *Harvard Business Review*, 00178012, Feb2004, Vol. 82, Issue 2.

<sup>105</sup> Veblen, T. (1908). On the Nature of Capital: Investment, Intangible Assets, and the Pecuniary Magnate. *The Quarterly Journal of Economics*, Vol. 23, No. 1 (Nov., 1908), pp. 104-136.

<sup>106</sup> Lev, B. (2001). *Intangibles. Management, Measurement and Reporting.* The Brookings Institution: Massachusetts, Washington D.C.

<sup>107</sup> Ruppel, C. P. and Harrington, S. J., (2000) “The Relationship of Communication, Ethical Work Climate, and Trust to Commitment and Innovation”, *Journal of Business Ethics*, Vol. 25, pp. 313-328.

<sup>108</sup> Ahmed, P.K., (1998) Culture and climate of innovation, *European Journal of Innovation Management*, Vol. 1, No. 1, pp. 30-43.

& al., 2008<sup>109</sup>) and organizational efficiencies (Moenaert et al., 2000<sup>110</sup>). Through a literature review of articles published in the *Academy of Management Review* between 1984-2009, we found 8 specific different functions of how communication contributes to innovation and innovativeness ranging from information provision to reputation building and maintaining organizational structure. The different attention workers as professional communicators have the task of creating and maintaining social capital and through it enable the whole ecosystem to thrive.

As the topic is new and little previous research exists on the role of communication for innovativeness and innovation, we propose 4 axioms that could guide future research:

AXIOM 1:

*Intangible assets are central for the innovation process and the whole ecosystem.*

AXIOM 2:

*Communication is required for the innovation ecosystem to thrive.*

AXIOM 3:

*Attention workers by brokering intangible assets act as social capitalists of the innovation ecosystem.*

AXIOM 4:

*Communication is the central mean through which attention workers operate.*

The axioms presented here also require testing in different settings and ecosystems, and studying the work of attention workers in practice is also recommended. An interesting question arising from the paper is whether innovation can exist without communication, and how precisely do attention workers operate. As the role of communication is here suggested to be central, further studies are also needed to establish whether efficient communication alone can suffice, or whether it is merely a precondition to other intangibles of greater importance. It would also be interesting to study which in stages of innovation is communication the most crucial. Future studies could also focus on the innovation process and the different communication needs related to the various stages of innovation.

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<sup>109</sup> Ellonen, R., Blomqvist, K-M. and Puumalainen, K., (2008) "The role of trust in organizational innovativeness", *European Journal of Innovation Management*, Vol. 11, No. 2, pp. 160-181.

<sup>110</sup> Moenaert, R.K., Caledries, F., Lievens, A. & Wauters, E. (2000). Communication Flows in International Product Innovation Teams. *Journal of Product Innovation Management*, 17, pp. 360-377.

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