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Containers, facilitators, innovators?
The role of cities and city employees in innovation activities

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Abstract: Innovation has long been considered one of the key engines of economic growth, and patents as important incentives for research and development activity. Particularly in terms of intellectual property rights (IPR), however, little is known about how cities contribute to regional innovation: are they containers, facilitators or innovators? This is investigated here through empirical material derived from 27 interviews with top departmental management in three Finnish cities (Helsinki, Espoo and Vantaa). The results show that local city governments (LCGs) consider cities as facilitators of innovation activities but also admit that there are limits (time constraints and lack of resources) to the influence of LCGs over the innovation environment. Still, many of the public sector innovations (especially social innovations) that do not necessarily have a clear market potential would not have been created without the active role of LCGs as innovators. City employees are innovative – the seeming lack of public sector innovation is actually a result of measurement issues that favour (patentable) technological innovations rather than those more common to LCGs, meaning service and organisational types. Therefore, LCGs can be seen as highly innovative organisations. There are, however, barriers to innovation in the public sector, such as the cost of innovation activity, the lack of incentives for it, and working culture that does not support it. Lastly, the results show that LCGs have not really fully considered the possibilities and potential of owning their own IPR; to be specific, potentially lucrative opportunities should be explored.

Keywords: Innovation; Intellectual property rights; Local government; Patents; Public sector

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INTRODUCTION

Innovation and patenting are both topical and recurrent themes in urban and regional research: innovation has been heralded as one of the main drivers of regional economic growth (Abbott and Powell, 2015), while patents have been seen as extremely important incentives for research and development investment and a core issue in science and public policy (Elsmore, 2009). The innovativeness and patenting behaviour of firms and universities have therefore long attracted sustained scholarly attention (Henderson et al., 1998; Brouwer and Kleinknecht, 1999; Veer and Jell, 2012). What has clearly attracted less attention has been the potential role that local city governments (LCGs)\(^1\) can play as organisations in developing (potentially patentable) innovations as well as the impact their employees can have on innovation and patenting. For example, in relation to patenting, a recent newspaper article\(^2\) designated a Helsinki tram engineer as the first inventor in Finland to apply for a patent to be owned by an LGC\(^3\). However, the reasons behind this apparent lack of patenting by LCGs are somewhat unclear. In fact, literature on LCGs and intellectual property rights (IPR) is almost non-existent. One factor, though, may partly explain the lack of patenting as well as the lack of research on the topic: the role of LCGs in innovation activities is not necessarily evident in official statistics due to the characteristics of public sector innovations; the literature on public sector innovation rarely discusses technological innovations that could be patentable (Gow, 2014).

Notions that “there is often a difference between the importance of a city as a location of innovation activities and to what extent they can be influenced by politics and public institutions at the city level” (Kaufmann, 2007: 75) have, for their part, led to remarks about the diminutive role of cities \textit{vis-à-vis} innovation (Sternberg and Ardnt, 2001; Nählinder, 2013). Contrarily, territorial innovation models literature maintains that cities can play a significant role in the total innovativeness of given regions through targeted policy interventions and other
measures (Fagerberg and Verspagen, 2009). As a point of departure, whereas the bulk of literature on the geography of innovation has approached cities as units of analysis that have either no role or a certain role in developing their innovation environments, here cities are considered as organisations. The paper thus argues that LCGs are innovative organisations in themselves, and not just a backdrop for innovation activity. In other words, cities are not only spatial entities but also institutional bodies of governance. This view is supported by the literature on public sector innovation, which argues that LCGs can have a direct role in introducing innovations developed by their employees (van Duivenboden and Thaens, 2008): the lack of patents does not mean that LCGs are devoid of innovation or that their employees are by definition non-innovative.

Following Sotarauta (2010), it is argued here that adding varying approaches and tools to the research agenda on regional innovativeness can potentially reveal processes and fresh views that would be unavailable by simply relying on macro-level quantitative analyses. Therefore, in this paper a qualitative approach was chosen to investigate, by means of 27 interviews with city employees (and employees of city-owned or associated establishments) in top management or other key positions, any issues concerning the role that the cities play and might envision for themselves \textit{vis-à-vis} innovation. The main research questions can be summarised as follows:

- How do LCGs define their role \textit{vis-à-vis} innovation: are the cities containers for, facilitators of, or active participants in, regional innovative activities?
- How do LCGs view their employees’ role \textit{vis-à-vis} innovation: are they innovative; do they patent; what are the main barriers to innovation in LGCs?
For empirical purposes, a decision to concentrate on Helsinki, Espoo and Vantaa, situated in the Finnish capital region, i.e. the Helsinki Metropolitan Area (HMA), was made in light of the evident success of the HMA in Finnish benchmark studies on regional development and innovativeness (Makkonen and Inkinen, 2015). As the administrative and economic capital of Finland, the HMA functions in many ways as a growth engine for the rest of the country (Inkinen, 2015). While based on a case study approach, the results, however, have wider relevance to other European regions with similar socio-economic characteristics and institutional arrangements, including other urban regions in the Nordic countries.

A) BACKGROUND: THE FIRM OR THE CITY?

B) What is innovation?

When discussing innovation, it is important to define how innovations are understood and applied within the context in question, since it is easy to become lost in the plethora of different technological and non-technological innovation typologies (Garcia, 2010) where basically anything new (or almost new) could be considered as an innovation of some sort:

1. In empirical studies, an “innovation” is commonly described as the first introduction of an invention to the market (Sternberg, 2009). These inventions are typically considered to be comprised of new products, which can potentially be patentable if they fulfil certain requirements such as novelty, usefulness and non-obviousness.

2. New or improved services as well as production or delivery methods (processes) are also often considered as separate and distinct types of innovation (Miles, 1993; OECD, 2005).
3. Organisational innovations, sometimes known as “administrative” innovations, refer to new business practices and new ways of organising work within an organisation (Tether and Tajar, 2008).

4. When discussing the tools and goals of innovation, labels such as “open” and “social” have been introduced to underline alternative paths to the market via “external organisations with business models that are better suited to commercialise a given technology” (Chesbrough and Crowther, 2006: 229) or their impact on societal well-being (Moulaert et al., 2007).

5. When it comes to the public sector, additional categories for innovation have been proposed to underline its varying innovative activities in comparison to the private sector. These include: position (new users), strategic (new goals or purposes of the organisation), governance (new forms of citizen engagement) and rhetorical (new language and concepts) innovations (Hartley, 2005).

To sum up, a multitude of different types of innovations have been identified. Yet the list above is by no means comprehensive. Thus, while the initial definition of “innovation” as an invention that enters the market works well for a wide range of empirical research settings, due to the nature of the public sector this definition would be quite narrow and restrictive when discussing innovation vis-à-vis LCGs. Rather, various types and degrees of improvements to services and organisational arrangements need to be taken into account when considering the public sector’s involvement in innovation activities.

B) The role of the city in innovation activity

Efforts to improve the innovative performance of cities require paying attention to the institutional capacity of LCGs to support this development: each LCG has its own institutional
assets for developing its local economy and, thus, increasing scholarly attention has been paid to exploring the role of cities in changing their own “economic fortunes” (Wolfe and Bramwell, 2008). Accordingly, Simmie and Wood (2002) commented on the issue through arguments concerning political agency, which assumes that cities do have a certain measure of control over their economic development and innovative performance. However, there are large differences globally between the roles and possibilities that LCGs have in promoting innovativeness. In Finland (and other Nordic counties) LCGs have a high degree of autonomy, a relatively wide set of powers over regional development, and taxation rights. This autonomy is safeguarded by the Finnish Constitution (Haveri and Airaksinen, 2007). However, in territories where LCGs may not be as strong due to differences in legislation on city-owned establishments and the right to levy taxes, or since power is centralised at the national level or held by regional governments, the role of LCGs in shaping the type and effectiveness of innovation policies is constrained. This is also true in cases where LCGs lack the resources to allocate to innovative activities. At the moment, these differences include, for instance, healthcare: contrarily to Finland, in many other countries healthcare is part of a separate public service, not the local authority (Haveri and Airaksinen, 2007).

Accordingly, the size of a city is also an important factor shaping the role that the LCG can have in promoting innovativeness. For example, a recent paper by Yigitcanlar et al. (2015) on knowledge-based urban development has empirically benchmarked the strong HMA against Finnish second-order city-regions. The results clearly showed that whereas the HMA is a leading growth engine of Finland, the investigated medium-sized Finnish city-regions (Oulu, Tampere and Turku) have managed to promote innovation by building on their own unique areas of indigenous assets rather than trying to compete with Helsinki. This underlines the point that the “lessons learned” from developments in the HMA are also relevant to other (smaller)
city-regions if and when national contexts, economic situations, locational peculiarities and regional strengths are properly taken into account.

B) Cities as containers for innovation activity

There is little doubt in the literature that cities are important places for innovation, but the role of LCGs in influencing the local innovation environment is debatable. As noted by Kaufmann (2007: 75) “only a minor share of the innovation relations of local firms can be influenced directly by the city’s institutions”. According to Sternberg and Arndt (2001), Fritsch (2004) and Beugelsdijk (2007), firm-related factors are far more significant in determining a region’s total innovativeness compared to region-specific factors. These results signal that rather than making a significant contribution to the overall innovativeness of a region, cities are in fact more relevant simply as the containers of innovation activities and innovative firms. Notably, this view has been supported by Paul Krugman, who has expressed his scepticism towards the way regions are expected to compete for innovation in a somewhat similar fashion to firms (Krugman, 1996). However, as Sternberg and Arndt (2001) explained, even though the role of cities is not as important as that of firms when innovation output is considered, LCGs can influence the environments (through their impact on the local workforce and infrastructure) that the firms are embedded in, and in this way enable them to innovate. Thus, there is little evidence of LCGs having no say in local innovation processes, and few researchers would suggest this. Rather, this view merely emphasises that a certain amount of scepticism is needed whenever “exaggerated” statements on the impact of LCGs on regional innovative activities are made (Beugelsdijk, 2007).
B) Cities as facilitators of innovative activity

In contrast with the view discussed above, the literature on various regionally oriented systemic approaches to innovation environments and innovation creation (territorial innovation models) – including such well-known concepts as regional innovation systems (Cooke, 2004), innovation ecosystems (Autio and Thomas, 2014), Porter’s (1990) cluster approach, and the triple (Etzkowitz and Leydesdorff, 2000) or quadruple helix (Carayannis and Cambell, 2009) and living lab (Bergvall-Kåreborn and Ståhlbröst, 2009) type of cooperation practices – points to a conclusion that cities do not merely act as the containers of innovative firms. In short, these approaches expect a much more dynamic role from LCGs as active promoters of innovation processes via planning, policies, funding and public procurement. The point of departure against the “container theorem” is the way that the territorial innovation models expect LCGs to strive to produce creative environments for innovation, attract skilled workers and retain them as well as lay out supportive settings for innovative start-ups and other firms (Florida, 2005). Territorial innovation models have met criticism in terms of their conceptual fuzziness, imprecise delineations, empirical treatment and relevance to policy making (Moulaert and Sekie, 2003; Simmie, 2005), but the basic idea behind the approaches discussed here – local governments taking an active role as facilitators of innovative activities – is generally accepted in many academic fields of inquiry (Marceau, 2008; Fagerberg and Verspagen, 2009; Crevoisier, 2014).

B) Cities as innovators

Contrary to the abundant literature on the “facilitator theorem”, it seems that little effort has been made to investigate either the patenting behaviour of LCGs or the innovativeness of their employees. The research on public-private partnerships and public procurement has begun to scratch the surface of the subject of LCGs as innovators and patentees, but this literature has
concentrated on discussing the partnership arrangements from the perspective of companies’ ownership and IPR of prospective inventions during the cooperation period as well as institutional and legislative hindrances related to public procurement for innovative products and services (Ghere, 2001; Rolfstam, 2012). The organisational culture within the public sector is often described as inhospitable to innovation (van Duivenboden and Thaens, 2008), but the discussion on the inventiveness of government employees (Borins, 2001a; 2001b) as well as the literature on innovation awards competitions (Makkonen and Inkinen, 2014) do suggest an ample potential for innovative activity within the domain of public administration and city employees. However, the innovations discussed together with the public sector (Walker et al., 2002; Nählinder, 2013; Gow, 2014) rarely conform to the patentability requirements of technological inventions (Grönqvist, 2009) since they are more commonly organisational or service-oriented in nature (Borins, 2001a; 2001b). Therefore, describing city employees as non-innovative could be a mistake, as it seems that numerous innovations take place within similar government organisations (van Duivenboden and Thaens, 2008). It could therefore be more a question of the types of innovations created (non-patentable) within LCGs, since non-technological innovations are more difficult than technological ones to measure and verify in a way that would transparently demonstrate their true innovativeness to those outside the LCG itself.

B) Conceptual summary framework

The discussion above leads us to the conceptual summary framework (Figure 1). The first part of the figure (A) depicts the container situation, where the city would not actually have much of a direct role in regional innovation. Rather, the firms, universities and other organisations located within cities are the ones patenting inventions and introducing innovations irrespective of what the cities do. The second part (B) depicts the facilitator theorem, where LCGs would
not as such necessarily actively engage in innovation activities, but have an important role in
directing and supporting the local innovation environment – through planning, policies and
other direct actions – which in turn boosts the innovativeness of local firms. The last part (C),
depicts the situation where LCGs themselves are innovative organisations either by introducing
innovations and applying for patents, or doing this in collaboration with local companies.

![Diagram showing A) Containers, B) Facilitators, C) Innovators]

*Figure 1. The conceptual summary framework*

It should be noted that Figure 1 depicts “the extremes of the debate”. In reality, the situation is
likely to be a mixture of these “ideal” cases, and therefore generalising all cities into a certain
predefined, clear-cut and replicable mould would clearly be a mistake. As such, the framework
is not a stage development model. Rather, it accepts that LCGs can, for instance, act as
facilitators and innovators simultaneously. Similarly, national and economic contexts
(legislation, administrative power of cities, economic realities, etc.) are important with respect
to the role that LCGs can play in promoting innovativeness. Again, the impacts of different
barriers that can hinder LCGs as facilitators and innovators are likely to vary on a case-to-case
basis. However, Figure 1 does provide us with a conceptual summary framework, to be applied in the empirical part of this paper and guiding the interpretation of the results.

A) INTERVIEW FRAMEWORK AND SAMPLE

The interview framework was arranged, according to the literature review, into three sets of interview items related to (1) the “firm or city” debate, (2) patenting and other innovative activities in LCGs, and (3) barriers to innovation. The interview framework included a predefined set of statements for the interviewees to evaluate as well as open-ended questions. In addition, the interviewees were also encouraged to present their remarks and opinions on any related topics and issues that might arise during the interview.

Altogether 27 employees in top managerial or other key positions gave their consent and were interviewed to assess the accuracy of the statements and assumptions made in the literature review. The interviewees represent various city departments in Espoo, Helsinki and Vantaa (including Executive offices, Education and cultural services, Housing, Planning, Social services and healthcare, and Technical services); city-owned establishments; and associated business incubators and hubs. The interviews were conducted in Finnish on-site (or in some cases by telephone) between October and December 2015, recorded and transcribed. All quoted excerpts in the results section have been translated into English by the authors.

The transcribed interviews were approached as texts. Content analysis was used to document the textual data. The interviews were first read (and re-read) to gain a general interpretative understanding of the empirical material, and the individual statements were categorised into “positive” and “negative” responses. The paragraphs were then analysed through the lens of the conceptual summary framework presented in Figure 1, to allow an investigation of the role
of the city vis-à-vis regional innovativeness. The reader is walked through the main results in the following section, which is divided in terms of three specific themes: (1) the interviewees’ perceptions of the role of the city in relation to firms and local innovation environments, (2) the interviewees’ standpoints towards patents and other IPR, and (3) whether the interviewees considered city employees to be innovative, and the types of issues they saw as barriers to innovation in the public sector.

A) RESULTS

B) Local innovation environment and the city

C) Containers: From the interviews it becomes evident that firms are the key players with respect to innovation within regions. Some interviewees held that LCGs have only a limited role in developing innovation environments. This was seen as being due to the basic operations that the LCGs are legally responsible for. Executing and providing these tasks and services (that define to a large extent the well-being of their citizens) including education, health and social services, consumes most of the resources of LCGs as well as the time of their employees. Consequently, little is left to be allocated to developing innovation environments, which has been seen as an important part of promoting local economic development but not the primary responsibility of LCGs. As many of the interviewees expressed, the question has more to do with how these basic operations should be carried out in a way that would incorporate and embed innovativeness as an essential part of them.

C) Facilitators: Most respondents associated the role of the city vis-à-vis innovation primarily with acting as facilitators of innovation. First and foremost, it was stated that LCGs play an important role in providing opportunities for the private sector through planning and innovation policies (by providing locations and the infrastructure for innovation). The interviewees felt
that in particular cases they themselves have provided important ideas and incentives for local firms. LCGs were commonly described as active participants in public-private partnerships as well as in living lab or quadruple helix type collaborations that also include universities and civil society. Much emphasis was given to the importance of LCGs as the convening organisations of different types of local collaboration networks orchestrated particularly through the cluster concept. Other forms of public support for the local innovation environment were seen to be manifested through public procurement for innovative products and services. For example, via pilot projects (for example in waste management), LCGs have been serving as test beds for potential innovations. Finally, it was seen that the basic tasks discussed above (for example education) are, broadly speaking, actions to improve the local innovation environment. Notwithstanding, it was admitted that there is still room for improvement in facilitating innovation through intensified collaboration with other cities (instead of competing against them, which can create under-optimised local solutions) and between different city departments, which often act as “silos” without proper coordination between them.

C) Innovators: While LCGs were considered to be somewhat innovative, being an innovator was not necessarily regarded as a goal for public organisations. Still, LCGs have been engaged in several types of activities that can be considered innovative, such as using “service design” and “lean services” processes, and participating in national innovation programmes and cooperative activities with other cities, such as Finland’s “6Aika” project\(^4\) to improve public services. The distinction between the private and public sectors also acts as the reasoning behind public sector innovations – related to, for example, social services and teaching – that do not necessarily have market potential and would not be created without LCGs. When innovations are developed in public organisations they are not usually considered to relate to business opportunities or economic benefits: some interviewees firmly believed that
innovations should make a difference in the “cash flows” of LCGs, but more often this was seen merely as an additional “plus”. As noted by some interviewees, in particular cases this way of thinking has led to the abandonment of potential business opportunities. Most of the respondents felt that the foremost goal of their innovation activity has been to improve the quality of services (or products) that the public sector produces. Moreover, effectiveness (or cost-effectiveness) was seen as an important objective of public sector innovations. This does create a paradox between improving the quality of services and balancing this with the goal of effectiveness. Therefore, it was considered that the rational for public sector innovations actually comes from the need to decrease the demand for their services:

“An improved service or product does not lead to cost savings, rather it is the other way around. The city will lose economically if it develops services and if as a result it will get more customers.”

(Executive offices)

At first this might sound counterproductive to innovation, since it is the complete opposite of the earning logic of the private sector, but it is actually fitting when considering the types of innovation that could potentially reduce the demand for public sector services. These include preventive actions that could decrease the need for social welfare, or new improved medical practices that speed up patients’ recuperation. One of the most commonly mentioned examples of these kinds of innovations was a treatment and rehabilitation programme (“Lonkkaliukumäki”) for patients with hip fractures, developed by the city of Espoo, which won a Quality Innovation of the Year prize in 2012. Another prizewinner (Quality Innovation of the Year prize in 2014) from the city of Espoo was a preventive family guidance project (“Konstit on monet”) aimed at decreasing the need for child protection services.
B) Patenting and IPR in cities

As suggested in the introduction, patenting is indeed extremely rare when it comes to LCGs or city employees: most of the innovations developed in LCGs were considered as small improvements to everyday practices with limited potential for acquiring IPR. Only a handful of patented inventions had already started to create pay-offs for an LCG through licensing (namely the tram-related patents held by the Helsinki-based engineer mentioned in the Introduction). Consequently, patents were considered to be only a small part of the innovativeness and IPR that LCGs themselves could potentially acquire, and, due to the types of (non-technological) innovations commonly developed within public organisations, actually a quite unlikely form of IPR to be owned by an LCG. Many innovations produced by city employees therefore clearly fall outside the technical realms of patents, and in many cases do not meet the requirements for other IPR such as trademarks. In line with this, most of the interviewees expressed their scepticism towards the whole idea of LCGs owning patents or other IPR due to their nature as public organisations run with taxpayers’ money, and felt that any data produced and ideas, inventions or innovations discovered by an LCG should be free and open for other actors to take advantage of. However, in some cases it was admitted that LCGs’ low interest in IPR can lead to negative consequences in terms of return on investments.

For example, the following case was described:

“An experiment was run in the city, where there was also a firm involved in the background. It was an innovation that became a flexible service. There the public sector and the city should have taken better care of the IPR. The city did not insist on it. [...] Eventually the firm was sold abroad. The city and the public sector had invested a lot of money. The city should have been on-board with the firm to get its investment back when it went global.” (Business incubator)

Due to the nature of LCGs as public organisations, it was considered that the most sensible way to own patents would be through city-owned establishments or companies. The opinions
of the interviewees towards institutional arrangements for IPR in LCGs were mixed: some believed that when patents or other IPR would be acquired as a result of work paid for by an LCG the patents should belong to that LCG, whereas others felt that if a city employee is the inventor he or she should definitely “pocket” something from it; otherwise there is no incentive for them to push for IPR even if it would make sense to do so. Additionally, when taking into account the fiscal arrangements of the LCG, the benefits of IPR (a reduced need for operating allowances for city-owned establishments or profits from licencing fees) can indirectly be utilised elsewhere in a socially acceptable way, for example on education or healthcare. Still, it is important to remember that according to Finnish law, while LCGs can own IPR they cannot cause market distortions. In this sense, it is imperative to make a distinction between protecting inventions just for secrecy’s sake as opposed to when LCGs could actually benefit from them economically. Thus, only inventions which seem to carry significant economic potential should be protected (in situations where no market distortion would be created) through city-owned establishments, whereas inventions or ideas that would be ethically or economically better suited to open innovation should be freely shared in hope that they will potentially benefit other cities, companies and society as a whole. In this regard, there is a definite need to raise awareness of the potential value of IPR for LCGs.

B) The innovativeness of city employees and the barriers to innovation in the public sector

In this section a series of statements on the potential barriers to innovation in LCGs, as suggested in the literature, are presented. The percentage points (in brackets) describe the share of interviewees (26 of the 27 interviewees responded to the statements) who considered that the individual statement constitutes a barrier to innovation in the public sector.
C) Employees’ lack of ability (8%): The supposition that city employees might be lacking in their ability to innovate was almost unanimously ruled out as ridiculous. It was emphasised that in the public sector a vast number of employees are highly educated professionals (such as engineers, doctors, nurses, architects and teachers) with extensive knowledge of their own fields and, thus, more than capable of innovating: nothing makes them inherently less innovative than employees in any other organisation. However, many interviewees felt that it should still be more explicitly clarified to employees that:

“Developing their work is part of their work.” (Education and cultural services)

C) Lack of incentives (73%): Lack of incentives was considered a barrier to innovation by almost three-fourths of the interviewees. For example, lack of time was seen as a major constraint – in many city departments the employees are overloaded by their principal tasks and simply have no time to develop new ways of doing things – and incentives should therefore be given in the form of working time to be allocated to innovation activities:

“We should have a process to encourage innovativeness. In some firms, they can allocate 10% of their working time to development. This would be a really good way to support innovativeness.”

(Social and healthcare services)

It was considered that incentives other than monetary types would probably work better in motivating city employees to innovate and that, even though many examples of incentives for innovation activities were in practice in the LCGs, such as innovation and quality prizes as well as innovation funds, most of the interviewees still felt there was room for improvement in motivating and enabling city employees to innovate.

C) Lack of innovative working culture (67%): The working culture was described as highly conducive to innovation in some departments but at the same time as a barrier in others. The
size of the LCG itself was considered a hindering factor for innovation: city employees work in different departments ("silos") and therefore developing innovations can seem quite segmented and therefore unrealistic. Additionally, the barriers in the working culture were seen to be related to over-cautiousness and a lack of courage: employees are held responsible for their mistakes in the media (especially if large sums of taxpayers’ money are involved). This is clearly counterproductive for innovation (Potts, 2009). In this sense it was stated that a definite need exists for a more supportive working culture when it comes to the risk of failure inherent in all innovation activity. This leads directly to the reported lack of leadership skills among management in relation to innovation. To this end, development programmes had already been launched.

C) **Procurement rules (58%)**: About half of the respondents considered the rules of public procurement to be counterproductive and a major obstacle to innovation. These rules were viewed as cumbersome and inflexible. Still, it was seen as more a question of how to use the rules in an innovative and flexible way: if one can do this, the rules for procurement are not a barrier at all.

C) **Modest economic benefits for the organisation (61%)**: Insufficient benefits were felt to be a barrier to innovation activities in public organisations in cases where the LCG would need to make substantial investments and if the end result would mostly benefit other actors such as companies, or in cases where these benefits could not be accurately identified prior to the investment. The element of time was also mentioned: benefits should usually appear already in the short run, and therefore ideas with impacts that would be manifested only in the long run might not make it into practice. It was also considered problematic that due to the fiscal
arrangements of LCGs, the economic benefits from innovations do not necessarily match with the departments that actually introduced them:

“My experience is that it does not necessarily benefit your own department. Instead, in large organisations the benefits are spread out. This is a commonly mentioned factor for low motivation to innovate.” (Executive offices)

**C)** *High costs for the organisation (84%):* Costs and benefits were seen as strongly interlinked issues, but high costs were considered a more serious barrier to innovation than the lack of economic benefits: improved and more efficient ways of doing things might be completely ruled out just because their costs might be higher than the cost of existing processes. This related especially to the way LCGs were seen to be arranged as different departments (“silos”): even if an innovation would produce cost savings in other departments but not in the one developing it, the development work was quite often abandoned. Naturally, LCGs cannot engage in expensive research and development, but it was considered that the innovation activities in which city employees are commonly involved are not particularly capital intensive and, thus, the cost of innovation activities is a barrier only in certain larger and more expensive projects. At the same time, however, it was acknowledged that if the budget for a specific year has already been expended, then even small costs can become a barrier.

**C)** *The role of companies as beneficiaries (24%):* The commercialisation of innovations by companies was not widely seen as a barrier to innovation, rather as a normal way of doing “business” in public organisations – their mandate being to provide ideas, open data and incentives, whereas companies commercialise the end results. Benefits flowing only one way from LCGs to companies were, however, considered problematic:

“If we collaborate, let’s say that our hospital collaborates, and our employees are involved, then the company takes the innovation for itself and pushes forward and gets a patent. The role of the
company is to, I do not want to say, hog everything for itself, but something like that. It should be that the public organisations benefit more from these outcomes. We should have city-owned establishments or companies, or other new business models for this.” (Social and healthcare services)

It was therefore stressed that innovation should bring benefits to both the LCG and the company. Simply put, situations where city employees invent and collaborating firms reap all the benefits do not motivate LCGs or their employees to innovative or collaborate.

C) The nature of public sector innovations (57%): The nature of public sector innovations was considered a barrier by over half of the respondents, since it is hard to pinpoint the benefits of public sector innovations to the media, potential funders or managerial staff of the city itself to justify why the LCG should spend money in developing the innovations or why they should be implemented. Many of the interviewees maintained, however, that it is more a question of metrics than an actual barrier (there being ways to measure the benefits of non-technological innovations, such as shorter waiting or recuperation times in hospitals): an innovative culture was seen as much more important than the “number” of innovations.

A) Discussion and conclusions

This paper set out to investigate the role of cities and city employees vis-à-vis innovation. To achieve this goal, a conceptual framework discussing cities as containers of innovation, as facilitators of innovation activities or as actual innovators was proposed. The empirical material testing the framework was gathered through 27 interviews with top departmental management in three leading Finnish cities, namely Helsinki, Espoo and Vantaa. The interview framework itself incorporated a set of questions and statements related to innovation in cities and LCGs,
the innovativeness of city employees, IPR issues and the potential barriers to public sector innovation. The main findings can be summarised as follows.

Firstly, most of the interviewees felt that cities play an important role as facilitators of regional innovation. However, the LCGs’ possibilities of directly influencing their local innovation environments do have limitations, mainly because most of their work is in providing the basic services mandated by law. In this sense, LCGs have considered cities to be somewhere between the “ideal” cases of facilitators and containers: ideally they see themselves as facilitators, but realistically they admit that their resources do not always permit them to act as such.

Secondly, when considering the stringent and technologically oriented definitions of innovation, LCGs have only a limited role as innovators. However, when taking into account the more “lavish” interpretations of innovation, they do play a significant role in improving their everyday practices by themselves or in collaboration with local companies and universities. In fact, many of the public sector innovations that do not necessarily have a clear market potential would not exist without the active role of LCGs in developing them. It can therefore be concluded that while their innovativeness might not be reflected through such traditional technological innovation indicators as patents, LCGs are, in fact, highly innovative organisations, particularly in the area of social innovations.

Thirdly, the views were somewhat sceptical concerning the idea that innovations would create business opportunities for LCGs, but situations where the innovation is or would be commercialised through city-owned establishments or companies were perceived positively. The interviewees saw effectiveness and quality as the primary goals of public sector innovation. As such, if quality and effectiveness are combined, the interviewees concluded by
suggesting that the best innovations that the public sector can produce are those that reduce their customer demand (completely opposite to the goals of the private sector), including preventive actions that lower the need for social welfare or healthcare services.

Fourthly, patenting by LCGs is extremely rare. The fact is that LCGs have not fully considered the potential and possibilities of owning their own IPR. IPR might become more common if awareness about this would be raised and if there would also be incentives for the employees – not just the LCG – to consider it. However, for example the literature on university patenting and licensing has maintained that while some universities have succeeded in attracting substantial revenues via patents and licensing, for most universities these activities have not been profitable (Geuna and Nesta, 2006). Thus, while not insisting that all inventions by city employees should be protected, it is merely suggested here that in specific, legally suitable and potentially lucrative cases this option should at least be explored. If IPR would be considered as something to strive for, then the institutional arrangements for IPR at the organisational level of LCGs should be clarified and agreed upon.

Finally, city employees were felt to be as innovative as the employees in any organisation: if there was a lack of innovation in the public sector it was related to other factors. The most commonly identified barriers to innovation in the public sector were (1) the cost of, (2) the lack of incentives for, and (3) the unsupportive working culture (referring to the fear of failure) as regards innovation activities. It therefore seems that city employees are not sufficiently encouraged to innovate and that sometimes even small costs might present a barrier to innovation. It is suggested here that the management of city departments should look at the wider picture: the costs and benefits of innovation should be considered in a way that takes into account their impact on other departments, not just the department where the innovation is
made. This would alleviate the burden on individual departments of justifying the cost of implementing innovations when acting on their own. On the other hand, it would benefit LCGs to (economically) incentivise innovative departments: if the innovation produces economic pay-offs (such as cost savings) the department developing and implementing it should be rewarded. The same applies to innovative city employees. Also non-monetary incentives, such as allowing innovative employees to allocate working time to development activities, should be applied to raise the motivation of city employees to innovate. Management in particular should develop leadership skills in promoting innovativeness; the ability to incentivise their employees is part of these skills.

The limitations of this paper include interviewing only city employees in top managerial positions. For a novel and relatively unknown research area as the one discussed here, this approach was thought to be the most logical starting point, but it did restrict us from acquiring more comprehensive statements regarding (1) the role of the city in regional innovation (private firms should also be interviewed to see if they concur with what the public officials have described) and (2) the adequateness of incentives for innovation and IPR in LCGs (“grass-roots” employees should also be surveyed to assess whether they agree with the statements made by their managers). Further, while the cases presented here are relevant to other city-regions with similar institutional arrangements (particularly elsewhere in the Nordic countries) and resources (large or medium-sized urban regions), the paper explores a case study setting, so comparative cases from other cities around the world would strengthen our knowledge of cities vis-à-vis innovation and IPR.

Notes
(1) LCG is defined here as including the elemental parts of local government structure that in Finland (1) function through thematic divisions of governance such as healthcare, social welfare and economic
development; (2) can include city-owned companies that have been set up to support city development and, (3) which commonly follow a traditional organisational hierarchy from city councils to top management (such as the mayor) and supportive departments.


(3) According to the online data library (PatInfo) of the Finnish Patent and Registration Office, the only identified granted patents owned by an LGC have indeed been invented by this single pioneer.

(4) “6Aika” (The Six City Strategy) is a strategy for sustainable urban development funded by the Finnish State among others and carried out by the six largest cities in Finland (including Helsinki, Espoo, and Vantaa) to create new know-how, businesses and jobs (see: [http://6aika.fi/in-english/](http://6aika.fi/in-english/)).

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