

1 Article

# 2 New Public Institutional Forms and Social 3 Innovation in Urban Governance: Insights from New 4 Urban Mechanics in Boston

5 Carmelina Bevilacqua \*, Yapeng Ou, Pasquale Pizzimenti and Guglielmo Minervino

6 CludLab, University of Reggio Calabria, 89124 Reggio Calabria, Italy; yapeng.ou@unirc.it  
7 (Y.O); g; pasquale.pizzimenti@unirc.it (P.P.), guglielmo.minervino@unirc.it (G.M.)

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9 **Abstract:** This paper investigates how public sector institutions change their form and approach to  
10 achieve a socially innovative urban governance. The “Mayor’s Office of New Urban Mechanics”  
11 (MONUM) in Boston, Massachusetts (USA) proves a representative case of innovation in the public  
12 sector. As a new type of government agency, it is essentially an open innovation lab dedicated to  
13 innovative evidence-based policymaking. Following a new dynamic organizational pattern in  
14 urban governance, MONUM is conducive to project-oriented social innovative practices and  
15 horizontal multi-sectoral collaboration among the three societal sectors: public, private, and civil.  
16 Its results suggest that first, the peculiarity of MONUM lies in its hybrid and boundary-blurring  
17 nature. Second, new institutional forms that experiment with urban governance can rely on multi-  
18 sectoral collaboration. Third, MONUM has experimented with a systemic approach to social  
19 innovation following the “design thinking theory”. The MONUM case can contribute to the current  
20 debate in Europe on the need to harmonize EU policies for an effective social inclusion by promoting  
21 the application of the place-sensitive approach.

22 **Keywords:** urban governance; new public institutional forms; multi-sectoral collaboration; social  
23 innovation; MONUM  
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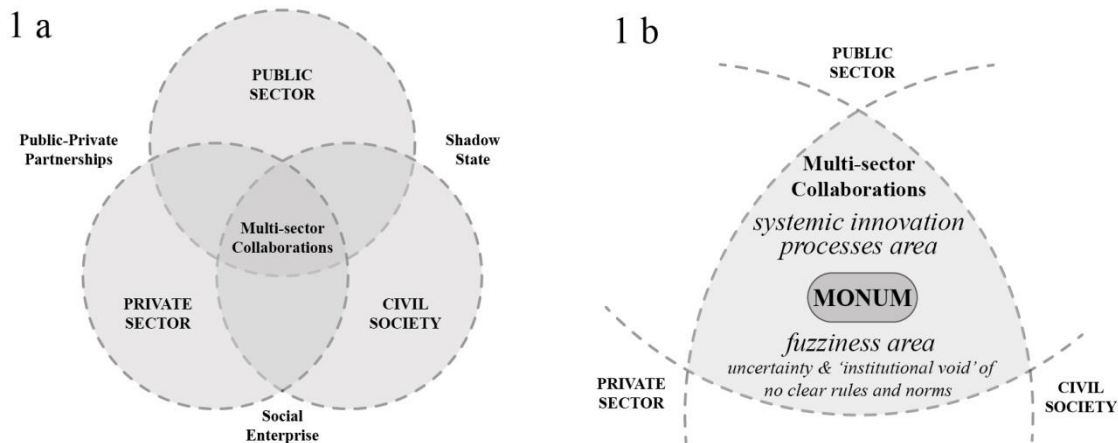
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## 25 1. Introduction

26 The innovation gap in the private sector is a subject of study that has raised much interest over  
27 the last 15 years [1-9]. Meanwhile, at a local scale, the public sector starts showing a growing interest  
28 in addressing the issue of urban governance. Public institutions are increasingly considered as  
29 important for driving systemic innovation and local development [10,11], which as facilitators of  
30 social cooperation can concretize social aspirations into realities and promote civil and political  
31 participation. Indeed, recent research has demonstrated that weak institutions, in general, and poor-  
32 quality government, in particular, constitute a crucial obstacle to development [12]. This has opened  
33 a broad research path concerning the relationship between public institutions and social innovation  
34 [13-17]. Social innovation can be spurred by new institutional forms, including experimental activities  
35 largely relying on greater involvement from all stakeholders [18-20]

36 Since the 1990s, socio-economic changes affected social policies in “re-drawing the boundaries  
37 of social citizenships” and “giving a more prominent role to cities” [21] (p. 302). Murray and others  
38 [22] clarified that social innovation manifests in boundary-blurring activities developed through the  
39 interaction of the three conventional spheres of society: the public, the private, and civil society. The  
40 linkage among these sectors has created space for the formation of new dynamic organizational  
41 patterns of urban governance underpinned by people-centered “design thinking” [23] and  
42 participatory methods enhanced by Information and Communication Technologies (ICTs) [24-26].  
43 Such a process is driven by a horizontal multi-sectoral collaboration among actors (Fig. 1a) that

44 responds to specific socio-economic issues with socially innovative practices [19]. Lemke [27] and  
 45 Swyngedouw [28] consider multi-sectoral collaboration as a new form of governmentality. Actors  
 46 from the three societal sectors have to interact (Fig. 1b) within a “fuzzy area”, namely, an  
 47 “institutional void” of unclear rules and norms and incomplete information and ambiguous  
 48 knowledge [29,30]. Such practices, often characterized by blurred boundaries between public and  
 49 private initiatives, result in flexible governmental forms [31] wherein actors can occasionally assume  
 50 different roles. This flexibility is critical to provide positive contributions to innovation [32–34].



51

52 Figure 1. a) New dynamic organizational pattern in urban governance; b) Fuzziness emerges from  
 53 multi-sectoral collaboration patterns (Source: Drawing by the authors, after Nicholls & Murdock,  
 54 2012)

55 In line with the objectives of the Cohesion Policy, social innovation is widely promoted by the  
 56 European Union [35]. According to the EU, social innovation is a main driver of socio-economic  
 57 development, in that it is “highly focused on meeting social needs by enhancing social interactions  
 58 and integrating ideas, knowledge and vision of civil society with urban development” [36] (p. 110).  
 59 It is acknowledged that cities have a key role to play in driving social innovation at local level. This  
 60 is because that they are drivers of technological development and economic growth, and citizen  
 61 empowerment to collaboratively mobilize locally embedded tangible and intangible assets to [36].  
 62 Since 2011, the EU has stressed the importance for cities to adopt a different organizational paradigm  
 63 based on seven principles: 1) holistic approach; 2) long-term strategic planning; 3) foresight and  
 64 vision-building; 4) community involvement; 5) collective mobilization; 6) long-term objectives; and  
 65 7) inter-city partnerships and co-operation (European Commission, 2011). To drive a more social  
 66 innovation-oriented development, cities need to 1) mobilize tangible and intangible resources; 2)  
 67 adopt new organizational forms and urban governance models; and 3) promote multi-sectoral  
 68 interactions and multi-stakeholder partnerships.

69 In this regard, this paper is aimed to explore how innovative public organizational paradigms  
 70 can lead to social innovation at the local level. Specifically, it provides an analytical outline of the  
 71 innovative project-oriented public organizational paradigm designed to implement a more effective  
 72 approach in delivering public services tailored on current citizens’ needs through social innovation  
 73 initiatives. ~~This topic is relevant to the current European debate on leveraging cities’ potential of~~  
 74 ~~place based innovation by promoting inclusive multi sectoral interactions, multi stakeholder~~  
 75 ~~governance and strategic investment [36].~~ It proposes the Boston-based (MA, USA) Mayor’s Office of  
 76 New Urban Mechanics (MONUM) as a representative explanatory case of innovation in the public  
 77 sector, following a new dynamic organizational pattern in urban governance. Such a pattern is  
 78 conducive to project-oriented social innovative practices and horizontal collaboration among the  
 79 three societal sectors (Fig. 1b, 5). Similar initiatives have been observed in other cities in the United  
 80 States and Europe, which have established relationships and exchange with MONUM.

81

82 The paper first conducts a critical review of the literature on social innovation from the public  
83 administration perspective, considering that cities need a more effective urban governance to address  
84 complex socio-economic and environmental challenges. Then, the MONUM case is investigated with  
85 a qualitative approach according to the eight characteristics of innovation in public government  
86 elaborated by Borins [7,8]. It is analyzed as a single exploratory case study using primary and  
87 secondary data to identify its main operational elements. The discussion section carries out a  
88 preliminary comparative analysis between the findings of MONUM and two cases selected by the  
89 EU as best practices for social innovation in 2015 [35], synthetically identifying their main similarities  
90 and differences [with the aim to gain a broad understanding of the urban governance approaches to](#)  
91 [social innovation practices between US and EU](#). Finally, the paper suggests new research trajectories  
92 to better address this topic, especially concerning the post-2020 European Union's Cohesion Policy.  
93 [The topic explored may be relevant for the current European debate on leveraging cities' potential of](#)  
94 [place-based innovation by promoting inclusive multi-sectoral interactions, multi-stakeholder](#)  
95 [governance and strategic investment \[36\]](#). Lessons learnt from the MONUM case can provide useful  
96 references to the current [debate on how need](#) to harmonize EU policies to effectively reduce socio-  
97 economic inequalities by shifting towards a place-sensitive approach [12].

98 [The study, by presenting the analytical description of the MONUM case together with the](#)  
99 [preliminary comparison with the two EU best practices, offers a possible framework to structure the](#)  
100 [change factors that public organizations address concerning social innovation rationale. This frame](#)  
101 [is intending to guide further analysis of the soundness of this change in terms of social benefits for](#)  
102 [local communities. The output of the latter activity may result in the definition of likely measurable](#)  
103 [indicators of social innovation-oriented policies \(in terms of effects/impacts\) to test and evaluate the](#)  
104 [transferability of the lessons learnt to European cities.](#)

## 105 2. Social innovation in public administration

106 Neoliberalism [37], in antithesis to the antecedent Fordist-Keynesian consensus [38], shifted  
107 economic power away from manufacturing to financial institutions [39]. This reduced the state to a  
108 mere organizer and protector of an institutional framework characterized by strong private property  
109 rights, free markets and free trade [40]. Truly, the changing territorial dimension at which social  
110 policies are designed and implemented together with the horizontal involvement of increased and  
111 variegated actors has led to a vertical decentralization of regulatory powers [21]. In this globalized  
112 context, two parallel phenomena occurred in cities. First, the role of cities and their governance  
113 morphed into a market-enterprise model [41,42]. The subsequent need of achieving competitive  
114 advantages led to the adoption of business management principles, concepts and tools [43,44].  
115 Second, since the beginning of the 21st century, an increasing number of people have committed to  
116 active innovation processes of development and social well-being through shared networks and  
117 agendas [20] [45]. Originally, these are grassroots initiatives aimed to produce solutions through  
118 atypical combinations of people, ideas and tools by mobilizing resources and knowledge around local  
119 issues [46-48]. Among others, Fressoli [49] argued that the encounter of innovative grassroots  
120 organizations with public and private institutions can lead to the development of new models of  
121 inclusion and knowledge production.

122 According to Brandsen and others [50], it is better to *conceptualize* rather than *define* social  
123 innovation as a complex societal process. Social innovation is therefore referred to as all activities,  
124 created mainly by networks and joint action in social realms beyond business and government  
125 routines, at any given moment, raise the hope and expectations of progress towards something  
126 "better" (a more socially sustainable/democratic/effective society). Social innovation, as a  
127 participatory process and relative outcome, is believed to be able to support progress and lead to the  
128 improvement of the urban system [51,52]. Common improvements may include products, services,  
129 procedures, policies, design, and models that simultaneously meet social needs and create new  
130 collaborative relationships [22,53-56]. The horizontal relationship-based approach to problem-  
131 solving is prone to generate effective, efficient, and sustainable solutions [57]. However, the link

132 between social innovation and organizational forms should be an empirical question, not a  
133 presupposition [50].

134 Innovation in the public sector aims at creating shared value [58,59], thereby achieving not only  
135 a more effective economic yield [6], but more democratic and just results, such as responsiveness,  
136 legitimacy, and legality [60] A fundamental aspect of innovation within the public sector refers to the  
137 “logic of appropriateness”, meaning the care for local specificities [61]. Community responsiveness  
138 to this kind of innovation largely depend on if: i) innovation is legitimate and politically sustainable  
139 [58] ii) it refers to democratic, shared, and relevant values such as accessibility, participation,  
140 empowerment, transparency, accountability, and equality [62], and iii) its results address citizens’  
141 needs [63].

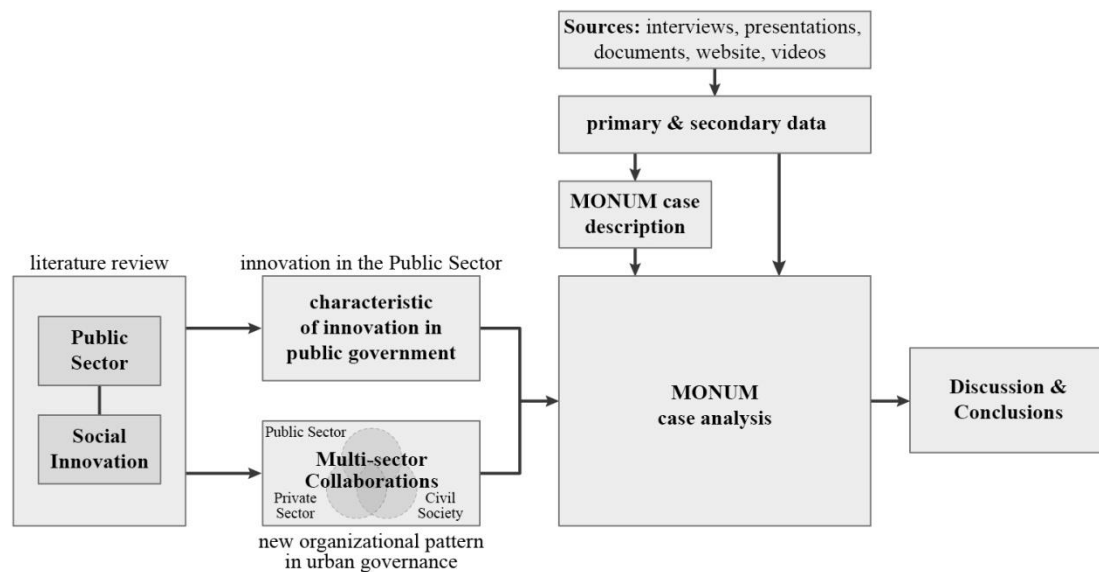
142 Social innovation requires a systemic approach. This is because that socioeconomic issues as it  
143 addresses cannot be perceived as isolated; rather, they must be considered within a “system”  
144 showing the inter-dependence between their own subsystems and the broader external ecosystem  
145 [64]. This explains why social model-based programs tend to fail to remedy complex socioeconomic  
146 problems [65]. Indeed, without an overall strategy, they have isolated the areas under intervention  
147 from their adjacent economy and social context. A systemic approach is critical to create a good social  
148 innovation environment, as it can create, by promoting “systems thinking” and interactions among  
149 societal sectors, opportunities for co-creation of shared social values [66]. Besides, such an approach  
150 is conducive to multi-sectoral collaboration, which is most likely to trigger large-scale social change  
151 rather than isolated intervention by individual organizations [67]. In this sense, coupling public,  
152 private and civil institutions and local communities is critical to driving social innovation [68].

153 The City of Boston is leading and fostering a social innovation ecosystem [69,70] while also  
154 embracing an experimental challenge. Its new urban governance mechanism led by the public  
155 administration addresses crosscutting socio-economic issues through a horizontal collaborative  
156 approach inclusive of all the three societal sectors. Such a mechanism enables the public  
157 administration to actively engage the civil society and meanwhile effectively play its intermediation  
158 role in the direction of the private sector. MONUM operates exactly as an interface between the public  
159 and private sectors and civil society where the opportunity for experimenting and capturing social  
160 innovation is higher [22,19,20].

### 161 3. Research Method

162 [The paper is aimed to explore how innovative public organizational paradigms can lead to social](#)  
163 [innovation at local level. Specifically, it provides an analytical outline of the MONUM innovative](#)  
164 [project-oriented public organizational paradigm. In pursuing this objective, t](#)The research (Fig. 2)  
165 follows a qualitative approach. Primary data were collected by four in-person interviews and by  
166 attending MONUM public presentations. Secondary data were collected by examining official public  
167 documents, the MONUM Website, and online videos about MONUM and its project.

168



169

170 Figure 2. Map of the Methodology

171 The literature review sets the ground for framing the case study analysis, highlighting the  
 172 relationship between social innovation and public institutions. The desk analysis of the MONUM  
 173 Web site, published projects [71] and video-documents [72-75] facilitated an initial description of the  
 174 case. It also provided a basis for preparing semi-structured interviews focused on MONUM's role  
 175 within Boston's public administration, institutional structure, and methodology to operate. Two  
 176 semi-structured interviews were conducted with key Office members, plus one with another member  
 177 retrieved from an online article [76], and an additional with an external MONUM collaborator. The  
 178 latter allowed for the comparison with the information obtained from internal sources. Lastly, one of  
 179 the authors also attended a public consultation meeting to gain first-hand information on the  
 180 implementation of MONUM projects.

181 The explanatory case study analysis is based on primary and secondary data. The main sources  
 182 are: semi-structured interviews, official documents, and online data on the MONUM initiatives and  
 183 projects. The case study analysis is aimed to, rather than outlining a model to be transferred and  
 184 replicated in EU context, point out the key aspects related to governance that can serve as useful  
 185 references for triggering social innovation in EU lagging cities/regions. The investigation sheds light  
 186 on the relevance of social innovation mechanisms led by the public administration for addressing  
 187 local socioeconomic problems. This is done mainly by conceptualizing and operationalizing an  
 188 inclusive and integrated form of urban governance that sees the collaboration among actors from  
 189 public and private sectors and civil society. The MONUM case is argued as an improved urban  
 190 governance pattern led by public institutions that respond better to the emerging socioeconomic  
 191 challenges by spurring social innovation with the horizontal collaboration amongst the three societal  
 192 sectors.

193 The MONUM case is analyzed according to the eight characteristics of innovation in public  
 194 governments elaborated by Borins [7,8], namely: organizational change in the public sector, process  
 195 improvement, collaboration within the government, external collaboration, citizen empowerment,  
 196 information technology, use of market incentives, and use of volunteers. The following is a brief  
 197 description of each characteristic retrieved from Borins' works [7,8,24,77] (Table 1). His work  
 198 analyzed the changes in the innovation in American public sector since the early 1990s and found  
 199 three significant points: 1) a major increase in inter-organizational collaboration; 2) shifts in the  
 200 innovation agenda regarding its content, and 3) an increased societal awareness of public sector  
 201 innovation that has become more transparent, with increased media attention, more external  
 202 evaluation, and more transfer of innovative ideas and practices [7] (p. 8). The strength of Borins'

203 framework lies in that the eight characteristics of innovation in public governments were derived  
 204 from continuous comprehensive questionnaire surveys of local governments that allow facilitating  
 205 research on current innovation and longitudinal comparison [7,8]. These characteristics emerged  
 206 from a systematic analysis of real cases that provide a reliable reference for practical research on  
 207 public sector innovation [7,8]. This is consistent with MONUM's innovative nature in the public  
 208 sector.

209 Table 1. Characteristics of innovation in public government according to Borins.

Characteristics	Description
Organizational change in the public sector	internal organizational improvement, often by importing private-sector practices (e.g., customer service enhancement, total quality management, etc.).
Process improvement	when a process was made faster, more accessible, and friendlier, or procedures for dealing with problems were simplified.
Collaboration within the government	collaboration within one government and/or across levels of government
External collaboration	collaboration with the private and/or the nonprofit sector
Citizen empowerment	programs enhance the ability of individuals or groups to overcome problems through their own initiative.
Information technology	ICT-supported institutional innovation by improving transparency and citizens' access to and interactions with the government.
Use of market incentives	along with, or as substitutes for, regulation to bring about socially desired behavior.
Use of volunteers	to gain program objectives.

210  
 211 MONUM has planned and implemented a number of projects in five categories: streets, housing,  
 212 engagement, education, and civic research. Table 2 describes each category according to MONUM's  
 213 specific mission/objective.

214 Table 2. Category, Mission and Objective of the projects.

Category	Mission	Objective
Street	Making Boston's streets safer, more efficient, and more delightful for all	to improve the flow of people throughout the City
Housing	Pioneer innovative housing models and systems, as well as accelerating the pace of innovation in the housing sector.	to increase housing affordability
Engagement	Government must create an open culture in finding ways to make civic engagement more meaningful for more people through new technologies	to find new ways to create democratic action in the 21st century
Education	Test ideas to improve education for people in the City, including students, parents, teachers, and other community members.	to improve the systems that support learning experiences in Boston
Civic Research	Quality and quantity of data and focus on short-term and long-term results.	to understand and explain civic behaviors and needs for City departments

215 In order to investigate the agency's systemic approach to developing new urban policies, all  
 216 projects have been re-categorized into eight common areas of intervention and analyzed through a

217 correlation matrix (Tables 3a-e, see the Appendices). Intervention areas include: ICT, social  
 218 relationships, built environment, mobility, health and safety, business, urban visioning & planning,  
 219 and procedures and policies. The following tables 3a-3e show the correlation matrix for each of the  
 220 five categories listed in table 2.

#### 221 4. The Mayor's Office of New Urban Mechanics

222 To understand the organizational and institutional peculiarities of the MONUM case, the first  
 223 step was to examine its activities according to the eight innovation characteristics in public  
 224 government [7,8].

225 The characteristics of collaboration within the government and external collaboration were  
 226 merged to better correspond to the systemic logic through which MONUM operates. Data derived  
 227 from both primary and secondary sources demonstrated a correspondence between data sources and  
 228 characteristics of innovation in the government, as is shown in Table 5.

229 Table 3. Correspondence between data sources and characteristics of innovation in the government

Data Sources	Innovation Characteristics
<b>Interviews</b>	Organizational change in the public sector
Web site, interviews, documents,	Process improvement
Web site, interviews, public presentations	Collaboration within the government
Web site, interviews, public presentations	External collaboration
Web site, interviews, public presentations	Citizen empowerment
Web site, interviews, public presentations	Information technology
Web site	Use of market incentives
<b>Interviews, videos</b>	Use of volunteers

230  
 231 In 2010, Thomas M. Menino, then Mayor of Boston, decided to establish the Mayor's Office of  
 232 New Urban Mechanics (MONUM) to improve citizens' quality of life. Located in Boston's City Hall,  
 233 the agency is part of the Mayor's Office. At that time, the Menino administration partially worked on  
 234 innovation though never with a specific focus. Therefore, a work team devoted to innovation was  
 235 established to better approach the future of Boston. The concept of "urban mechanics" came into  
 236 being and was meant to overcome the averseness of risk and innovation often present in public  
 237 administrations. The new team needed to explore the ground on which the government and citizens  
 238 could work together to plan their city and respond to their needs.

239 By the beginning of Walsh's mayoral term in 2014, the size of MONUM's team and its scope had  
 240 changed dramatically. The agency was not only kept, but provided with more authority and support.  
 241 The team received wide-ranging autonomy to experiment (and fail) in new areas. This changed the  
 242 MONUM's approach and organization, even though its main goal remained responding to people's  
 243 needs with innovative solutions.

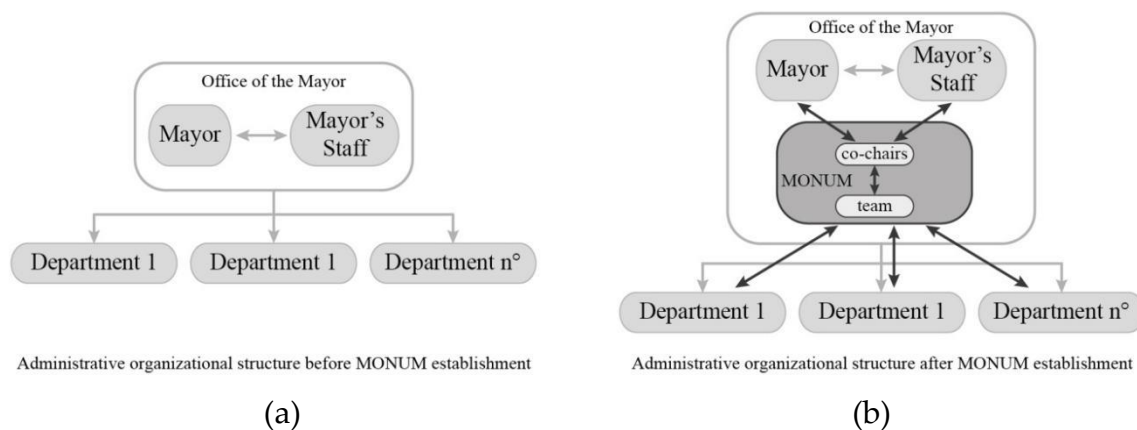
244 MONUM, as a public agency, takes risks that traditional city departments tend to be reluctant  
 245 to do [78,79]. Pilot projects always follow a problem-solving rationale. When an experimentation  
 246 succeeds, MONUM partners with one or more city departments to transform it into a permanent  
 247 service. In case of failure, the team documents the lessons learned and shares them with partners and  
 248 other cities around the world. In addition to pilot projects, MONUM acts as a "front-door" for start-  
 249 ups, universities, and residents willing to experiment social innovation activities with the city. A  
 250 mentoring activity is also carried out for other cities on how to establish innovation offices in their  
 251 local governments.

252 Potential negative effects due to MONUM's high autonomy to experiment social innovation  
 253 with risk-taking activities, such as confusion, chaos and poor quality of outcomes are mitigated with  
 254 highly organized and coordinated interventions from the public administration. Such interventions  
 255 include systematic monitoring and assessment of the pilot projects to provide references to evidence-  
 256 based public policy making.

#### 257 4.1. Organizational change in the public sector

258 Organizational change is the first characteristic of innovation in government that distinguishes  
 259 MONUM from other types of public sector innovation. Public organizational change generally refers  
 260 to internal improvement of the organization, which often occurs by introducing private-sector  
 261 practices, such as customer service improvement and service quality management [7]. The City of  
 262 Boston had already made considerable progress in that direction when it introduced a collaborative  
 263 problem-solving approach.

264 MONUM shows a reformed organizational structure (Fig. 3). On the one hand, it has a  
 265 traditional hierarchical structure: the agency is directly led by the Mayor and the team reports to two  
 266 co-chairs who are in direct contact with the Mayor's staff and meet the Mayor weekly (Fig. 3, right).  
 267 This simplified vertical organization has enhanced the efficiency of the office in activating initiatives  
 268 and projects, by allowing independence from other administrative departments and a direct  
 269 connection to the political power. On the other hand, MONUM enjoys a considerable degree of  
 270 autonomy. The working attitude and duties within MONUM are flexible. MONUM does not give  
 271 strong directives, encouraging team members to pursue what they consider as relevant in producing  
 272 evidence for public policies, be creative, and network. However, they must still meet mayoral  
 273 priorities. One major difference from a traditional agency that usually operates on safe ground is that,  
 274 MONUM allows "failing": team members are encouraged to be risk-taking, and failure is considered  
 275 as important for the learning and knowledge-building process. This reformed organizational  
 276 structure has created a "fuzzy area" of creativity, and supported a horizontal collaborative approach  
 277 to social innovation. This has ensured MONUM's legitimacy and authority to interact with all other  
 278 public, private and civil entities in the city.



280 Figure 3. Administrative and organizational structure before (a) and after (b) MONUM's creation .  
 281 (Source: Illustration by the authors)

#### 282 4.2. Improvement process

283 Improving an existing process means making it faster, more accessible, and friendlier [24] for  
 284 citizens and employees. It also indicates simplification via ICT and a better use of human resources  
 285 for improved procedures.

286 MONUM is committed to its problem-solving civic research agenda [79]. It addresses questions  
 287 raised during daily work, problems challenging the team, and required partnerships for problem  
 288 solving. This work attitude moves within a paradigm that widely embraces an ecological perspective  
 289 and systems theory [80-82]. Here, solutions to problems are achieved holistically. Such solutions are  
 290 more inclusive of society as a whole, as opposed to the specialized, sector approach of the mechanized  
 291 worldview [82]. MONUM's agenda democratizes the research process by being open to feedback and  
 292 interaction. Unanswered questions and initial assumptions from the community's different  
 293 perspectives are always welcome in urban policy [83,84]. For MONUM's team, civic research works  
 294 as a conversation where observations and experiences count as much as hard numbers. Under the  
 295 ecological paradigm, MONUM shifted from a hierarchy to a network [82]. Therefore, the public sector



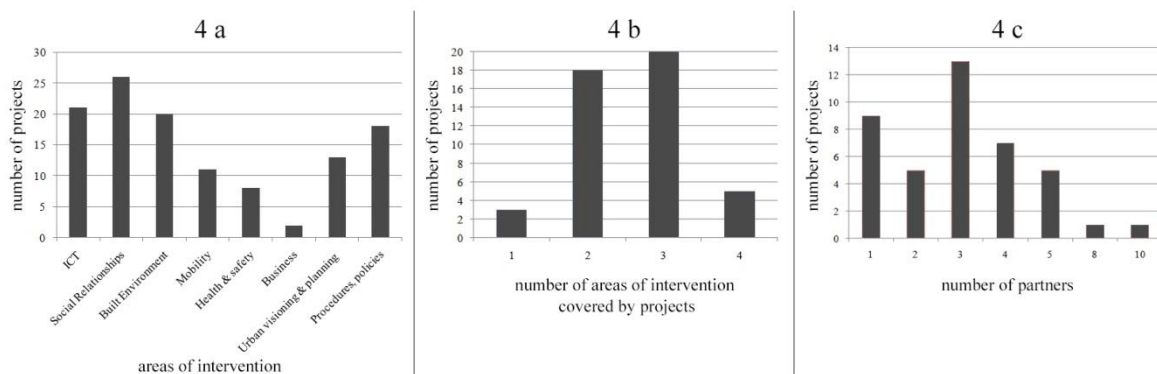
296 is seen as part of the community system where all elements produce and shape knowledge through  
 297 a participatory process.

298 MONUM works on three levels: project development, technological transfer, and knowledge  
 299 transfer. Those levels come together under the broader philosophical umbrella of a new, innovative  
 300 way of addressing public issues for multi-sectoral collaboration and social relationships among  
 301 partners. The improvements achieved by MONUM benefit from methodologies such as design  
 302 thinking and ICT-supported participatory processes.

303 A new project (Fig. 5) starts by raising questions and continues by listening to partners and  
 304 potential stakeholders in order to reach an initial step of understanding. Eventually, local experts on  
 305 the project's relevant matters are identified. Next, more questions are asked and data gathered. At  
 306 this point, the established relationships allow for ideas and solutions to emerge. These are usually  
 307 further analyzed by academics with the goal of developing an experimental prototype. Whether or  
 308 not an experimental project is successful, the resulting knowledge is shared and made available for  
 309 future use. If a project produces good results, it goes to the next stage, becoming permanent and  
 310 eventually improved.

311 Tables 4a-4e demonstrate that MONUM adopted “systems thinking” for project planning and  
 312 implementation. Indeed, 46 projects implemented have addressed social, environmental, and  
 313 economic issues in a systematic way, as all except for 3 projects had more than one intervention area  
 314 that showed the interconnectedness between the three spheres. Intervention areas included social  
 315 relationship (26 projects out of 46), ICT (21/46), built environment (20/46), procedures and policies  
 316 (18/46), urban visioning and planning (13/46), mobility (11/46), health and safety (8/46), and business  
 317 (2/46) (Fig. 4a). Twenty out of 46 projects cover three different intervention areas, 18 two, 5 four, and  
 318 3 projects only one (Fig. 4b). Another evidence of MONUM's “systems thinking” comes from the  
 319 diversity of partnerships established in various projects (to be discussed in the following).

320 The “systems thinking” approach of the agency benefits from cooperation among the actors from  
 321 the civil society, which, having put them together into experimental projects of common interest,  
 322 produced positive evidence (number and quality of the outcomes) regarding the adoption of a new  
 323 dynamic organizational pattern in urban governance.



324

325 Figure 4. Evidence of the systemic approach adopted by MONUM: a) number of projects per area of  
 326 intervention; b) number of projects per number of covered areas of intervention; c) number of projects  
 327 per number of partners that collaborated on a project. (Source: Image by the authors)

### 328 4.3. Internal and external collaboration

329 Collaboration may occur within the government and/or across different governmental levels  
 330 (“internal”), and/or with the private sector and/or nonprofit sector, which are considered “external”  
 331 [7]. MONUM has established valuable partnerships and know-how exchange mechanism, both at  
 332 home and abroad. As component of the Mayor's Office, MONUM has been able to connect with  
 333 various departments and people working on the city's problems. MONUM engages people with  
 334 multidisciplinary expertise and shared values and vision. This broadens its projects' scope, areas of  
 335 intervention, and partnerships. Although MONUM does not operate as a consultant beyond the  
 336 scope of its own projects, it often helps the departments that fall into a gray area when it comes to

337 responsibility. Consequently, it also works as a facilitator between public offices, researchers, start-  
338 ups, and local communities.

339 Internal and external collaboration has been promoted by establishing partnerships. In fact, all  
340 of the 46 projects developed by MONUM except for one were implemented with partnership(s). A  
341 total of 119 partnerships were established, most of which were public-private. Yet, thirteen projects  
342 saw a partnership solely between public entities. In six cases, MONUM only partnered with private  
343 entities.

344 Apart from the internal and external collaboration at the local level, MONUM also established  
345 partnerships with other similar public agencies around the world. The most significant international  
346 partnerships were with public administrations of Copenhagen (Denmark) and Cluj-Napoca  
347 (Romania). Both cities established a municipal office focused on civil innovation [85,86], like  
348 MONUM does. To expand its international connections, MONUM has disseminated its work at  
349 various occasions in the United States and Europe. According to the interviewees, those international  
350 relationships are as valuable to MONUM as to their international partners. Such external  
351 collaboration has played a key role in promoting valuable knowledge exchange about similar models  
352 operating in different geopolitical contexts.

#### 353 4.4. Citizen empowerment and information technology

354 Programs that help individuals or groups of people address problems by relying on their own  
355 initiative and resources tend to lead to citizen empowerment [24]. The experimental and participatory  
356 methods applied by MONUM require engaging a variety of actors from different societal sectors and  
357 making strong connections. The planning of new MONUM projects usually involve on-site  
358 investigations and direct communication with residents. The information helps conceptualize and  
359 implement strategies of empowerment. An example of citizen empowerment is the Community Plan  
360 IT project based on a game to find solutions to real life problems by engaging more people in  
361 community issues and improving the feedback mechanism for urban planning.

362 Similarly, the 10-year master plan for the Chinatown area involved residents through the  
363 exploration of their living area by a character-driven virtual world. This kind of participatory  
364 methods, using online interaction and in-person meetings, helped change the way in which people  
365 formulate and negotiate civic affairs with beneficial effects on both the community and municipal  
366 institutions. With regard to ICTs, the experimental nature of these projects facilitates learning based  
367 on citizens' use and modifies the technological design during construction. Peer-to-peer systems were  
368 also tested, for example, in the BOS:311 App project (later called Citizens Connect). This application  
369 nourishes residents' care for their communities by allowing them to report non-emergency issues and  
370 receive related solutions via smartphones.

371 These MONUM projects highlight how citizen empowerment activities became distinctive  
372 features of the Boston innovative urban governance model. Particularly, a sense of responsibility is  
373 fostered among citizens through certain programs which, by using ICTs, raise awareness on current  
374 issues and encourage people to proactively seek solutions. The use of ICTs can facilitate innovation  
375 in the public sector [8], because they improve citizens' access to and interactions with various levels  
376 of government. For example, supporting public feedbacks to proposed regulations, facilitating public  
377 participation in the planning process, and contributing to guarantee public sector transparency.

378 In this perspective, the municipalities of San Francisco and Philadelphia established an  
379 innovation office [87] for a proactive usage of ICT. The rationale is to harness available open data and  
380 technological solutions to stimulate citizen participation in generating new ideas from those open  
381 sources [87]. The MONUM case is different in that ICT has a complementary role in the innovation  
382 process. It is widely used, even though it is through a high infusion of research, relationship building,  
383 and a permanent learning process based on well-defined projects in which innovative solutions are  
384 generated. In the MONUM case, people are the main medium while ICT and technological devices  
385 have a more passive role. They are adopted to produce data and information through their interaction  
386 with human beings, such as using applications and virtual reality.

387 The initiative “Boston’s Safest Driver Competition” was developed as smartphone application  
388 in partnership with three public departments of City of Boston and a private company. In order to  
389 obtain useful data for improving street security threatened by bad drivers, MONUM decided to  
390 leverage a competition among people in order to provide citizens with driving feedback. The idea  
391 included a driving competition motivating citizens to download and use the data-gathering app. A  
392 private insurance company provided monetary prizes as an additional incentive. Citizens competed  
393 with their family and friends while covering three million miles in three months. The experiment  
394 showed a reduction of risky behaviors while driving, such as a 47% decrease in phone use and 35%  
395 speed reduction for the top 25 users. It also generated an amount of data that will be used to further  
396 develop street security projects and policies. Likewise, the Citizens Connect app facilitated the  
397 process of residents’ empowerment in caring for their communities. Several apps developed within  
398 the MONUM projects are code-free, allowing other cities that use them to avoid the initial effort and  
399 development costs.

400 These examples show that MONUM distances itself from the narrow view of technology as a  
401 primary and undisputed role in producing innovation. Rather, it focuses on an ecologic worldview  
402 [80],[82] in which ICT complements the experimentation process with new projects exploiting  
403 innovation-based solutions. This frees team members from focusing too much on technological  
404 solutions, allowing them to be more open-minded and creative in taking advantage of any available  
405 resource. This vision puts Boston’s case among the public innovation programs that indicate the  
406 systemic approach as one of their main characteristics of innovation [24,78].

#### 407 4.5. Market incentives and volunteers

408 Borins [24] recognized the use of market incentives as substitutes for regulation to bring about  
409 socially desired behavior. Market incentive strategies are sometimes applied by MONUM to projects  
410 when the participation of private sector plays a relevant role. This was the case for the Density Bonus  
411 Pilot project. Launched in January 2017, this program incentivized developers in exchange for more  
412 affordable housing units. The strategy allowed developers into the program in order to increase the  
413 height or floor area of their units in exchange for an income restriction on a percentage of their  
414 residential units. For that purpose, the City created new density bonus zoning for two Strategic  
415 Planning Areas. The reasons for that program is that the City has been increasingly losing funding  
416 for affordable housing every year. Therefore, it is always looking for new ways to create more  
417 affordable housing units. These kinds of policies can create lots of new affordable housing without  
418 using public funds as incentives will push developers to join the pilot program. Market incentives  
419 were implemented by MONUM in projects that needed leverage to gain the attention and  
420 involvement of necessary partners in making the project work, especially when the private sector  
421 constitutes the main partner.

422 The use of a volunteer workforce to gain program objectives is detected by Borins’ study [7] with  
423 a frequency of 12% among the characteristics of innovation in the government. MONUM’s public  
424 agency has no volunteers working within the office but, periodically, there are fellowships offered  
425 for collaborations open to individuals from different backgrounds and with a strong interest in  
426 innovation. Such individuals show creativity, curiosity, and entrepreneurial spirit. Further, a summer  
427 program offers the possibility of being involved in MONUM activities for a defined time. Overall,  
428 there is collaboration with people on a voluntary basis for specific projects due to on-site work with  
429 individuals and organizations from civil society.

430 We can conclude that although the Office does not envisage volunteers, the collaborative spirit  
431 of a common agenda that characterizes volunteering is present and strong under more defined forms.  
432 This can be found in several projects developed by MONUM.

## 433 5. Discussions

434 This research argues that MONUM can be seen as an evolution of public institutions that  
435 acknowledge a new governmentality aimed at tackling local socio-economic issues through

436 innovative approaches. MONUM is essentially an open innovation lab dedicated to innovative  
437 evidence-based policy making.

438 Public sector organizations, being fuzziness-averse, are used to working with limited  
439 uncertainty where everything was framed by codes and clear agreements and no space is left for  
440 “institutional voids” or unclear rules and norms. MONUM is unconventional in that it supports a  
441 new urban governance pattern conducive to social innovation by taking advantage of the fuzziness  
442 [32,33] that comes from the systemic nature of the innovation processes [31] and the dynamic  
443 organizational pattern (Fig. 1b). At the organizational level, the fuzziness stems from a horizontal  
444 multi-sectoral collaboration mechanism (Fig. 1a) made up of various entities from all societal sectors.  
445 The fuzziness on the condition of a multi-sectoral collaboration mechanism allows for a process of  
446 “open learning” and knowledge sharing among actors from all societal sectors. This complies with  
447 the modern innovation theory that emphasizes the open character of the learning process [88-92].  
448 Through such a learning process, the production of innovation requires the cooperation among  
449 different entities that share ideas, knowledge and experience, and exchange staff and resources  
450 beyond traditional organizational borders [93,94]. This process plays a crucial role in strengthening  
451 its capability of addressing nested socio-economic issues through socially innovative practices [19].  
452 In this respect, MONUM demonstrates the possibility of an effective urban governance through a  
453 new dynamic organizational pattern based on a horizontal multi-sectoral collaboration (Table 4). The  
454 new public agency’s set-up, represented by MONUM, allowed for the pragmatic management of  
455 fuzziness in governance mechanisms by working with experimental projects and clear partnerships.

456 Table 4. Elements of the new dynamic organizational pattern in urban governance that emerged from  
457 the case study

Characteristics	MONUM Characteristics
<b>Change</b>	MONUM’s organizational structure represents evidence of the need for an institutional form of the public sector that operates in a new form of dynamic organizational pattern in urban governance based on multi-sectoral societal collaboration.
<b>Improvement</b>	The process improvement derived from adopting a systems thinking approach produced positive evidence (number and quality of the outcomes) about the adoption of a new dynamic organizational pattern in urban governance based on a horizontal multi-sectoral collaboration and socially innovative practices.
<b>Collaboration</b>	Collaboration activity produced valuable results for MONUM as it has led to establishing new partnerships and exchange know-how with similar agencies worldwide.
<b>Empowerment</b>	Citizen empowerment at MONUM manifests through programs that foster responsibility in citizens, raising their awareness about issues and then pushing them to seek solutions.
<b>Innovation</b>	In the Boston MONUM case, ICT has a complementary role of data gathering and support of project developments for local engagement.
<b>Leverage</b>	MONUM uses market incentives as leverage to engage necessary partners for starting and developing projects. This is more frequent in private sector collaborations.
<b>Civic engagement</b>	The use of volunteers within the Office is not envisaged, but the spirit of collaboration characterizing volunteering is reflected in the action and behavior of individuals and civil society groups engaged with MONUM on specific projects.

458 The table above (Table 4) shows that the MONUM case complies with the eight characteristics  
459 of innovation in public government, revealing a new dynamic organizational pattern in urban

460 governance in addressing societal problems. These findings are in line with the EU's objectives of  
 461 promoting social innovation to enhance social cohesion. European cities face a common challenge,  
 462 that is, how to collaborate with citizens and harness the potential benefits of social innovation. It is  
 463 therefore commendable to conduct a preliminary comparison between the MONUM findings and  
 464 the key characteristics of two European social innovation best practices, i.e. Amersfoort (NL) and  
 465 Gdańsk (PL) highlighted in the EU report "Social Innovation and Cities" [35]. This paper chose  
 466 Amersfoort and Gdańsk as two contrasting cases: while the former is an advanced one which is  
 467 experimenting with leading-edge innovations, the latter a developing one which is starting  
 468 engagement with social innovation and citizens.

469 Table 5. Similarities and differences from the governance perspective between MONUM case key  
 470 characteristics and EU best practices [35].

MONUM Characteristics	Amersfoort	Gdańsk
<b>Change</b>	Changing towards a more collaborative urban governance between the city administration and citizens	Reforming the traditional hierarchical city administration system
<b>Improvement</b>	Public administration is shifting from a 'power role' to one of a 'learning administration'; fostering multi-disciplinarity and collaboration between the different departments; promoting transparency in public action; being less expert and more able to connect; making interdependent and integrated policies; fostering responsibility beyond silos; and learning how to learn from failures".	City administration is promoting horizontal multi-sectoral collaboration in order to avoid administrative silos
<b>Collaboration</b>	New forms of collaboration between citizens and the city administration, such as the New Collaboration conference, the G1000, Project Start-up	The municipality has extended its cooperation and partnership with NGOs for which a specific unit was set up within the City administration
<b>Empowerment</b>	Empowerment was achieved through the collaborative design and implementation of citizen-driven projects (e.g. the Elisabeth project, the Sustainable Food process)	Citizens were involved in 1) consultation processes and enabled to choose which city projects should take priority for funding; and 2) co-creation process
<b>Innovation</b>	The Municipality deployed ICTs to support citizen reorganization.	The municipality, together with NGOs, has supported innovation by creating online platforms for co-creation.
<b>Leverage</b>	No market incentives were reported	No market incentives were reported
<b>Civic engagement</b>	Citizens are not only users of social innovation results, but co-designers and co-creators of solutions.	Citizens are not only users of social innovation results, but co-designers and co-creators of solutions.

471 [The preliminary comparison presented in Table 5 aims at gaining a broad understanding of the](#)  
 472 [urban governance approaches to social innovation practices between US and EU. It allows to outline](#)  
 473 [the organizational response of the public sector to citizens' needs that may differ with respect the](#)  
 474

475 [different social, economic, political and, above all, administrative contexts. Other studies would be](#)  
476 [needed to assess the impacts of these approaches in order to set out useful indicators for testing and](#)  
477 [evaluating the transferability of the lessons learnt to European cities.](#)

478 The two best practices selected by the URBACT network show some similarities with and  
479 differences from the MONUM case. This allows for a preliminary comparative analysis of key  
480 characteristics of social innovation under different geopolitical contexts. The first similarity lies in the  
481 common need for “change” coming from citizens and local communities. Both in the US and the EU,  
482 cities’ traditional operational system of public administration seems inadequate to address the  
483 current socio-economic needs. This is especially true in Europe where the public administration  
484 regulates all the aspects of citizens’ life. There is an evident mismatch between the multi-level socio-  
485 economic needs of citizens and public administrations’ limited ability to respond. The current  
486 response by public administrations both in the US and the EU is characterized by multi-sectoral and  
487 horizontal collaborations among departments to prevent silos effect (especially in EU), citizen  
488 involvement and empowerment through a proactive participation in leading social innovation  
489 projects, and multi-stakeholder collaboration among all the three societal sectors. Another similarity  
490 is that ICTs have been deployed in all cases as an important tool to empower and engage citizens in  
491 social innovation initiatives.–

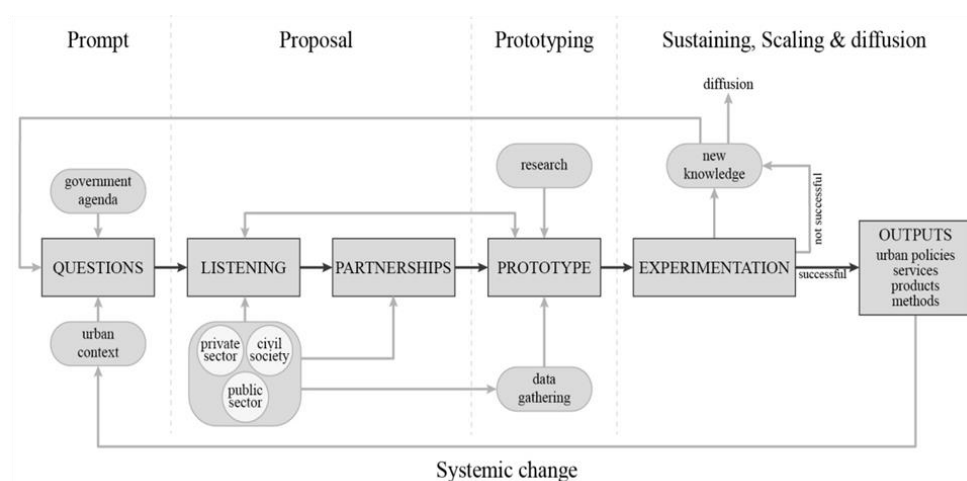
492 One noticeable difference is the leverage factor of social innovation. Market incentives in the  
493 MONUM case have played a stronger role than in the European cases. In MONUM case, market  
494 incentives were provided to make social innovation projects attractive for the private sector, and  
495 therefore build up public-private partnerships for promoting the social innovation process. In the  
496 European cases, the public sector was the key funder with a minor role played by the private sector.  
497 And the social innovation process has been leveraged mainly through operating initiatives that  
498 stimulate citizen engagement and participation as in the case of the URBACT network [35].

499 The emerging new role of the public sector as MONUM represents in facilitating social  
500 innovation in urban governance through public institutional reforms poses two main questions: 1)  
501 how much innovation will be generated, inclusively used, and fairly distributed by initiatives such  
502 as MONUM? and 2) how far the new approach will take root? The first question is about change in  
503 usual practice and equity of social innovation, whereas the second is about how to innovate within  
504 practice and the public administration in a continuous process. The answer to these two questions  
505 demands a critical lens of MONUM’s operation, which, despite all its organizational innovation and  
506 cross-cutting social innovation practices, is not free of potential limitations and risks. First of all,  
507 power asymmetries due to the predominant market-oriented context where such social innovation  
508 initiatives take place could undermine the effectiveness of citizen participation and multi-stakeholder  
509 partnerships. Indeed, participatory circumstances are decidedly non-ideal in many cases, marked by  
510 power asymmetries that often undermine the negotiation power of underprivileged social groups  
511 regarding issues of their interests. Consequently, the uneven interaction amongst stakeholders in  
512 terms of know-how and influence tends to pave the way for manipulative orchestrations in  
513 networking governance platforms [28]. Second, it is not unrealistic to question the sustainability of  
514 the participatory and multi-stakeholder partnership approach to lead social innovation initiatives,  
515 considering the inevitable presence of competing perspectives in the highly variegated civil society  
516 like Boston. All in all, how to prevent social innovation initiatives facilitated by public institutional  
517 reform from blurring competing perspectives, creating policy closures, and absorbing dissident  
518 societal voices, proves a highly relevant issue to investigate [95,96].

## 519 6. Conclusions

520 MONUM represents a new urban governance model in the form of a public agency operating in  
521 a market-oriented society and conducive to processes of social innovation. On the public sector side,  
522 the MONUM case positively indicates a way to approach the need for changes in contemporary  
523 urban governance. This approach requires the evolution of existing institutional forms from a static,  
524 hierarchical organization towards an organizational structure based on evidence-based and socially  
525 innovative practices and horizontal collaboration across the three societal sectors (Fig. 1b, 5). One of

526 the most significant innovative practices of MONUM is its evidence-based (project-based) and multi-  
 527 stakeholder partnership approach to problem-solving that constitutes a sensible change in usual  
 528 practice within the public sector. This working model operates in a non-linear way, incorporating  
 529 any elements of the urban governance system that can potentially influence positively the final result.  
 530 Therefore, the dynamic of the new organizational paradigm of MONUM requires new operating  
 531 methods that embrace creativity in problem solving and the acceptance of risk-taking in a climate of  
 532 uncertainty. The case study analyses suggest that, first, the peculiarity of MONUM lies in its hybrid  
 533 and boundary-blurring nature. Such a nature manifests itself as public responsiveness towards civil  
 534 society, while operating through methods and techniques common to the private sector. Second, new  
 535 institutional forms that experiment with urban governance can rely on a multi-sectoral collaboration.  
 536 Through flexible alignment of actors from public, private and civil entities with coherent political will  
 537 and budget support, MONUM has activated a series of community-based projects to address cross-  
 538 cutting socioeconomic issues. These aspects demonstrate reorganization, interdisciplinarity and  
 539 interrelationship as three fundamental characteristics of innovation [54]. Besides, multi-sectoral  
 540 collaboration seems to help improve the quality of project outputs. According to the opinion of the  
 541 interviewees, the best projects are those with a collaboration between various societal entities. Third,  
 542 MONUM has experimented with a systemic approach to social innovation in accordance to the  
 543 “design thinking theory”. Murray and others [22] expounded on this theory with six key stages in  
 544 the nonlinear process that social innovation usually goes through: prompts, proposals, prototyping,  
 545 sustaining, scaling and diffusion, as well as systemic change [9597,9698]. MONUM’s methodology is  
 546 a systemic one as it aims at developing evidence-based policies by following all such stages (Fig. 5),  
 547 thereby creating a system of “feedback loop”. This assures a permanent learning process producing  
 548 outputs with systemic impact and sensitive to local conditions and community needs, as is shown by  
 549 the analysis of MONUM projects (Fig. 4). Its systemic approach is also evidenced by the fact that its  
 550 projects were all first, based on a multi-sectoral collaboration among all the three societal sectors; and  
 551 second with crosscutting intervention areas that cover all social, economic and environmental  
 552 spheres.



553

554 Figure 5. MONUM’s operative process.

555

556 The implications of the MONUM case appear twofold. From the public sector’s perspective, they  
 557 can inspire public officers seeking to improve the efficiency and transparency of public  
 558 administration, and address local socio-economic issues with a systemic approach. From the  
 559 community’s perspective, they can offer more empowerment and engagement opportunities for  
 560 citizens, allowing for the dynamic interaction with a responsive public sector. Policy makers from the  
 561 public sector and researchers who explore the future of cities and urban governance with a close  
 562 attention to innovation in all fields may benefit from this research. The boundary-blurring MONUM  
 563 case makes it ideal for further research from a civil society and private sector perspective, which is  
 564 uncharted here. [However, the analysis of the MONUM case indicates market incentives as](#)

565 [leveraging element in the social innovation projects undertaken. The leveraging mechanism consisted](#)  
566 [in a bonus formula for private developers involved in the projects committed in realizing affordable](#)  
567 [housing units . This process helped the raising of private financial resources for the social innovation](#)  
568 [initiatives promoted by the MONUM office.](#)

569 –Another relevant research path concerns the comparison of MONUM with similar initiatives  
570 around the world, such as the aforementioned cases of Copenhagen and Cluj-Napoca. Moreover,  
571 investigating the application of such a model in non-market-oriented contexts could generate positive  
572 effects especially in the European context.

573 Mindful of the socio-economic and political differences between the US and the EU, this research  
574 is not meant to replicate the MONUM model in European cities. Rather, it is aimed to identify  
575 contributing factors to social innovation initiatives from the urban governance perspective. These  
576 factors can be useful references for designing social innovation initiatives and adapted to different  
577 institutional and administrative systems.—

578  
579 The MONUM case can contribute to the current debate in Europe on the need to harmonize EU  
580 policies for an effective social inclusion by promoting the application of place-sensitive approach [12].  
581 To meet such a need, promoting institutional improvement, rather than merely enhancing education  
582 and training, is crucial to build up the innovation capacities and stimulate entrepreneurship at local  
583 level [12]. If the place-sensitive approach is characterized by the need of improvements in  
584 government, i.e. through the promotion of e-government to improve transparency and effectively  
585 engage the civil society in any development intervention [12], then the MONUM case provides  
586 interesting mechanisms that can serve as useful references for EU lagging regions and cities. For  
587 examples, the application of ICTs in urban governance could support the creation of knowledge in  
588 those areas where the benefits of agglomeration and density are lacking.

589  
590 [The preliminary analytical comparison with EU best practices could represent the first step for](#)  
591 [further researches on the topic by analyzing the effects/impacts of the MONUM case in terms of social](#)  
592 [benefits for local communities. The output of this activity may result in the definition of likely](#)  
593 [measurable indicators of social innovation oriented policies \(in terms of effects/impacts\) in order to](#)  
594 [test and evaluate the transferability of the lessons learnt to European cities.](#)

595 [In this direction, further researches](#) may, first, integrate quantitative data on socio-economic,  
596 financial and physical context into the analytical discussions to understand how the implementation  
597 of these ICT-based solutions in urban governance affect local communities and how such initiatives  
598 are funded. A preliminary analysis of the City of Boston Fiscal Year 2020 revealed how the Operating  
599 Budget for the New Urban Mechanics Initiatives increased constantly since its operation in 2014 (over  
600 \$400,000.00). Second, deepened comparative analyses of social innovation initiatives supported by  
601 public institutional reforms from the US and the EU seems a promising research branch. Thereby, it  
602 is expected to develop and improve existing social innovation models applicable to EU lagging cities  
603 and regions. In view of the reform agenda of the post-2020 programming of the EU Cohesion Policy,  
604 this is critical to help narrow the gap between urban and inner areas and between core and lagging  
605 cities and regions.

606 **Supplementary Materials:** The following are available online at [www.mdpi.com/xxx/s1](http://www.mdpi.com/xxx/s1), Figure S1: title, Table  
607 S1: title, Video S1: title.

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609 contributions must be provided. C.B. conceived and designed the case study analysis, Methodology,  
610 Supervision, Y.O performed the literature review, writing—Review & Editing, P.P. performed the analysis and  
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842 Appendices

843 Table 3a. Correlation matrix: Category: Streets

Project name	Partners		Project Description	Specific objective	Areas of Intervention							
	type	n°			ICT	Social relationships	Built environment	Mobility	Health & safety	Business	Urban visioning & planning	Procedures & policies
Autonomous vehicles Boston's approach	PUB PRIV	1 3	Learn more about our plans for testing autonomous vehicles, and their potential future in the City of Boston.	safer streets, better access, better reliability				X				
Drive Boston	PUB PRIV	2 2	The City's program to provide parking spaces in municipal lots and on City streets for carshare vehicles.	better access			X	X				
Boston's safest driver competition	PUB PRIV	2 2	Boston's Safest Driver is a smartphone app that provides you helpful feedback on your driving	safer driving	X	X		X	X			
Smart Parking	PUB PRIV	2 1	A smart parking initiative in Boston's Innovation District to connect drivers with vacant spots by giving them real-time information on open spaces.	to give potential drivers real-time parking information	X		X	X				
City worker app	PUB PRIV	2 1	It is an app that gives to city workers real-time access to the City's internal systems while they're in the field.	to improve the City's response time for service requests.	X		X					
LED street name signs	PUB PRIV	1 0	Street name signs lit by LED lights.	To make streets safer for pedestrians at night			X	X	X			
Neighborhood slow streets	PUB PRIV	1 7	A City initiative to slow traffic speeds and improve safety on residential streets within a specific area. When a neighborhood is part of the program, the speed limit on its residential streets will be 20 MPH.	to reduce the number and severity of crashes on residential streets, lessen the impacts of cut-through traffic, and add to the quality of life in our neighborhoods.		X	X	X	X			
Vehicle side guards	PUB PRIV	2 0	Installation of vehicle side guards on 18 Public Works trucks to reduce the risk to cyclists in the case of a crash.	to reduce the risk to cyclists in the case of a crash				X	X			
Street bump	PUB PRIV	0 5	A mobile app that gathers data about Boston's streets using a smartphone's built-in sensors as a resident drive.	to plan long-term infrastructure improvements.	X		X	X				
Adopt a hydrant	PUB PRIV	2 0	Through the platform, participants locate one of the more than 13,000 public fire hydrants in the City. They then name it and commit to clearing the hydrant of snow after a snowstorm.	to make sure a specific fire hydrant is cleared of snow	X	X	X					
Boston Parklet Program	PUB PRIV	1 0	Parklets create seasonal pedestrian space, improving the quality of life in Boston's neighborhoods and commercial corridors.	to offers residents and local businesses greater public space on which to gather and relax.		X	X					
Soofa	PUB PRIV	1 4	A solar-powered seat that can charge smartphones and collect data on the environment.	to building greener, smarter, and more pedestrian-friendly streets.	X		X					
Smart streets	PUB PRIV	3 1	We use technology to learn more about how people navigate and interact on and with the City's streets.	to capture aggregated data that helps us better understand the hazards on our roads and improve street design and safety.	X		X	X	X			
Performance parking pilot	PUB PRIV	3 0	We are studying how the City can use flexible meter rates to reduce the amount of time it takes to find a parking space.	to set more parking spots aside for those trying to get to our busiest neighborhoods	X			X				

844

845 Table 3b. Correlation matrix: Category: Housing

Project name	Partners		Project Description	Specific objective	Areas of Intervention							
	type	n°			ICT	Social relationships	Built environment	Mobility	Health & safety	Business	Urban visioning & planning	Procedures & policies
Compact living pilot	PUB	4	The City is allowing new buildings to include small, efficient housing units as long as they meet certain requirements.	To build more homes that are well-designed and well-located, and to create living spaces where people have easy access to work and play.			X				X	X
	PRIV	2										
Plugin house initiative	PUB	1	The Plugin House demonstrates the possibilities of backyard homes and smaller living to provide housing affordable to all.	To provide opportunities for infill of vacant areas and additions in backyards to address the housing crisis.			X				X	
	PRIV	3										
Housing with public assets	PUB	9	Could building housing on top of, or next to, city buildings, such as libraries and community centers, benefit our communities?	To bring down costs and benefit communities.			X				X	
	PRIV	1										
Urban housing unit roadshow	PUB	1	The Urban Housing was a compact apartment on wheels. We took it from downtown Boston to Rosindale, Mattapan, Dorchester, Roxbury, and East Boston. Through our interactive exhibit, we heard from the community about what they think about smaller living.	to hear what residents thought about smaller living. To show people how smaller spaces can offer livability and comfort at a good price.		X	X					
	PRIV	4										
Housing innovation competition	PUB	1	We asked development teams to propose innovative compact living designs. The subjects of the competition were five city-owned properties in the Garrison Trotter neighborhood. The winning proposals in the competition would be built there.	to show that small, affordable family units are feasible.		X	X					
	PRIV	2										
Density bonus pilot	PUB	2	The program gives developers incentives in exchange for more affordable units.	to create more affordable units.			X			X		X
Clearing up the homebuying process	PUB	2	a new homebuying framework	to better support first-time buyers through the complex process.								X
Addition dwelling unit pilot	PUB	3	A 18-month pilot program for owner occupants in East Boston, Mattapan, and Jamaica Plain. They can carve out space within their home to create smaller, independent rental units, (ADUs).	to lower the cost of living in Boston. To prevent displacement, to develop more natural affordable housing options			X			X		X
	PRIV	0										
Intergenerational homeshare pilot	PUB	2	Exploring different housing options in communities through a "Homeshare" network. This network matches older homeowners with extra rooms to rent to people who need to rent a room	to open up new affordable rental units. To create sustainable living environments that support residents as they age in their homes		X						X
	PRIV	1										

846

847 Table 3c. Correlation matrix: Category: Engagement

Project name	Partners		Project Description	Specific objective	Areas of Intervention							
	type	n°			ICT	Social relationships	Built environment	Mobility	Health & safety	Business	Urban visioning & planning	Procedures & policies
Community made	PUB	1	A partnership with civic crowdfunding platform ioby.org	to support the creation of "third spaces" around Boston.		X	X				X	X
	PRIV	1										
Beta blocks	PUB	0	Exploring new approaches for community-led innovation in public spaces.	to build more meaningful relationships between communities that have a challenge and the companies, researchers, designers, and artists who might be able to offer a hand.	X	X					X	X
	PRIV	3										
Play around the city	PUB	3	When we add playfulness to untraditional spaces, we increase learning and resilience habits across the City.	to build on existing space-based play areas, such as our playgrounds and parks. To create a city where everyone feels welcomed and empowered to playfully imagine more.		X					X	X
	PRIV	2										
Boston Basics Nudges	PUB	0	Using MBTA Bus Stop PSAs to encourage to build Boston Basic into daily commutes	to encourage folks, especially families with wee ones, to build Boston Basic into daily commutes		X			X			X
	PRIV	0										
Participatory pokemongo	PUB	1	We'll work with middle school and high school students to choose the sites of new "PokéStops" for Pokémon GO.	to identify meaningful locations	X	X						
	PRIV	3										
BOS311 App - Citizens Connect	PUB	2	Residents report non-emergency issues with the City directly from their smartphones. These get sent into the City's work order management system, which then sends it to the right person in City Hall.	to empower residents to help take care of their communities.	X							X
	PRIV	1										
Community PlanIt	PUB	0	Community PlanIt is a game that makes planning playful. It includes online interaction and in-person meetings.	to create a bigger and more engaged audience for community talks.	X	X					X	
	PRIV	1										
Block quotes	PUB	1	We printed inspiring quotations from local authors on signs across the City. We also placed a phone number on each sign. If you called it, you would hear the author reading their quote.	to inspire residents of a neighborhood. To strengthen the sense of community and neighborhood values.	X	X	X					
	PRIV	2										
Twitter-tree menorah	PUB	2	Our interactive tree and Menorah change color when people tweet a color using the hashtag #WickedCoolTree.	to create a more inviting atmosphere in City Hall.	X	X	X					
	PRIV	1										
City hall to go truck	PUB	2	City Hall To Go will visit Boston's neighborhoods throughout the year and offer a select menu of City services directly to constituents.	to serve City residents		X						X
	PRIV	0										
Pulse of the City	PUB	0	At public art installations, a heart-rate monitor in the shape of heart would play music back to you in rhythm with your heart beat. We placed five installations at spots around the City of Boston.	to use a fun piece of street furniture and technology to advance a public health interest.	X	X			X			
	PRIV	1										
Participatory Chinatown	PUB	1	a character-driven virtual world that allowed residents to explore Chinatown.	To allows users to consider issues from many viewpoints. To engage more people, to led to a more balanced set of priorities for Chinatown's 10-year master plan.	X	X					X	
	PRIV	3										
Hub2	PUB	1	Participants were given the chance to explore the proposed space from multiple perspectives. They could also offer feedback on the design to project planners and developers.	to create constructive discussion between residents, planners, and developers.	X	X					X	
	PRIV	1										

848

849 Table 3d. Correlation matrix: Category: Education

Project name	Partners		Project Description	Specific objective	Areas of Intervention									
	type	n°			ICT	Social relationships	Built environment	Mobility	Health & safety	Business	Urban visioning & planning	Procedures & policies		
Boston Saves	PUB	3	Boston Saves gives each kindergartner an account with \$50 from the City of Boston. The money in this account can be used for college or job training costs after the student finishes high school. Families can earn more from the City	to help families of Boston's district and charter kindergarten (K2) students save for college or career training	X									
	PRIV	0												X
Safeboard	PUB	1	An experimental tap card system on Boston Public Schools (BPS) buses	to explore new ways to engage parents about their children's bus rides. To build stronger relationships between families and the district. To allow the district to make data-driven decisions about their service	X	X				X				
	PRIV	0												
Discovery BPS	PUB	1	The website helps parents find which available schools might be the best fit for their child.	to make that school chosen decision process easier to handle.	X	X								
	PRIV	2												X
Where is my school bus	PUB	1	Our program offers real-time tracking of school buses through a mobile web app.	to track the child's buses	X	X								
	PRIV	2												
Youth lead change	PUB	1	a participatory budgeting process where young Bostonians decide how to spend \$1,000,000 of the City's budget	to decide how to spend \$1,000,000			X					X	X	
	PRIV	0												
Lunch on the lawn	PUB	4	We offered nutritious lunches to young people 18 and under.	to make City Hall Plaza a welcoming space for all Bostonians			X			X				X
	PRIV	1												

850

851 Table 3e. Correlation matrix: Category: Civic Research

Project name	Partners		Project Description	Specific objective	Areas of Intervention								
	type	n°			ICT	Social relationships	Built environment	Mobility	Health & safety	Business	Urban visioning & planning	Procedures & policies	
Boston area research initiative	PUB	0	The initiative helped formalize partnerships with schools. This allowed us to expand our research and share data. We also built relationships between the region's	to strengthen the ties between local universities and the City. To spur original urban research that helped schools and the City			X					X	X
	PRIV	1											
Boston civic media consortium	PUB		Advancing civic media research, teaching, and practice in Boston.	to enhance education at colleges and universities. to build an active network of academic partners in the Boston area.			X						X
	PRIV	1											
Design action research with government	PUB	0	Design Action Research with Government (DARG) is a guide for creating civic innovation projects.	to build productive and sustainable ways of working together for: governments, research institutions, and local community groups.								X	
	PRIV	1											
New Urban Mechanics Summer fellowship	PUB	1	During this highly-selective, eight-week program, summer fellows work as a team, generating and implementing creative and thoughtful new policies to benefit the City of Boston.	to offer an job opportunity to people of with a passion for public service								X	X
	PRIV	0											

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