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Dossier central

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Motivations des acteurs de la société civile à réutiliser les données ouvertes. Une étude de cas d'acteurs discrets à Lyon

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Abstract: Open data platforms are being widely adapted in cities, with a promise to boost the economy and empower citizens. However, researchers have drawn attention to the ineffectiveness of such initiatives unless they are designed taking into account the local context and ecosystem of actors. Yet, literature review demonstrates a gap in addressing individual motivations of actors, particularly discrete civil society actors, to use open data. Building upon studies of individual motivations in open government, we propose a heuristic model of interconnection between societal outcomes of open data and actors' individual motivations.

Analysis of the open data initiative and its ecosystem in Lyon is based on interviews and platform analysis. Our findings show that civil society actors in Lyon have the expertise to create knowledge and services from open data, but fail to appropriate it for lack of communication channels with platform managers. Consequently, this paper discusses possible modalities of interaction and proposes a further research agenda to better understand the connection between individual motivations, open data platform design and broader societal outcomes.

Keywords: electronic governance, access to information, participation, civil society, motivation., gobierno electrónico, acceso a la información, participación, sociedad civil, motivación.

Resumen: Las plataformas de datos abiertos se están adaptando ampliamente en las ciudades, prometiendo impulsar la economía y empoderar a los ciudadanos. Sin embargo, los investigadores han llamado la atención sobre la ineficacia de tales iniciativas, a menos que estén diseñadas teniendo en cuenta el ecosistema de actores. Empero, una revisión de la literatura demuestra una brecha entre el tratamiento de las motivaciones individuales, en particular, de los actores discretos de la sociedad civil para usar datos abiertos. Con base en estudios sobre motivaciones en gobierno abierto, proponemos un modelo heurístico de interconexión entre los resultados sociales de datos abiertos y las motivaciones de los actores.

El análisis de la iniciativa de datos abiertos en Lyon se basa en entrevistas y análisis de la plataforma. Nuestros hallazgos muestran que los actores de la sociedad civil en Lyon tienen la experiencia para crear conocimiento con datos abiertos, pero no se los apropian por falta de canales de comunicación con los administradores de la plataforma. En consecuencia, discutimos las posibles modalidades de interacción y proponemos una agenda de investigación para comprender mejor la conexión entre las motivaciones individuales, el diseño de la plataforma de datos abiertos y los resultados societales.

Résumé: Les plateformes de données ouvertes sont largement adaptées dans les villes, promettant de stimuler l'économie et d'impliquer les citoyens. Cependant, les chercheurs ont noté l'inefficacité de telles initiatives, à moins que leur conception considère le contexte local et l'écosystème d'acteurs. Toutefois, la revue de littérature montre une lacune dans l'analyse des motivations individuelles, particulièrement des acteurs discrets de la société civile, pour utiliser les données ouvertes. En nous appuyant sur les études des motivations individuelles en gouvernement ouvert, nous proposons un modèle heuristique d'interconnexion entre les résultats sociétaux des données ouvertes et les motivations individuelles des acteurs.

L'analyse de l'initiative et de l'écosystème de données ouvertes à Lyon repose sur les entretiens et l'analyse de la plateforme. Nos résultats montrent que les acteurs de la société civile à Lyon possèdent l'expertise nécessaire pour créer des connaissances et des services à partir de données ouvertes, mais ils ne parviennent pas à s'en approprier par le manque de canaux de communication avec les gestionnaires de la plateforme. Par conséquent, nous discutons les modalités possibles d'interaction et proposons des questions de recherche afin de mieux comprendre le lien entre les motivations individuelles, la conception des plateformes de données ouvertes et les objectifs sociétaux.

Mots clés: e-gouvernance, accès à l'information, participation, société civile, motivation.

Resumo: Plataformas de dados abertos estão sendo amplamente adaptadas em cidades com a promessa de impulsionar a economia e empoderar os cidadãos. Entretanto, pesquisadores têm chamado atenção para a ineficácia dessas iniciativas, a menos que sejam projetadas levando em conta o contexto local e o ecosistemas de atores. Não obstante, uma revisão da literatura demonstra uma lacuna na abordagem às motivações dos atores e, em particular, atores discretos da sociedade civil ao usar os dados abertos. Com base em estudos de motivações individuais em um governo aberto, nós propomos um modelo heurístico de interconexão entre os resultados sociais dos dados abertos e as motivações individuais dos atores.

A análise da iniciativa de dados abertos e do ecossistema em Lyon é baseada em entrevistas e análise de plataforma. Nossas descobertas mostram que atores da sociedade civil em Lyon têm o conhecimento para criar serviços a partir dos dados abertos, mas não conseguem se apropriar destes últimos por falta de canais de comunicação com os gerentes da plataforma. Partindo desta conclusão, discutimos possíveis modalidades de interação e propomos uma agenda de pesquisa futura para melhor compreender a conexão entre motivações individuais, desenho de plataformas de dados abertos, e objetivos sociais mais amplos.

Palavras-chave: governo eletrônico, acesso à informação, participação, sociedade civil, motivação.

Open data is one of the lighthouse initiatives in numerous "smart cities" that seek not only to make use of the exponential growth of urban data for more adapted decisions, but also to take advantage of the Web 2.0 capabilities[2] to decentralise service provision and decision-making, thus empowering economic and civil actors (Copaja-Alegre & Esponda-Alva, 2019). It promises to produce ripples of impact in the economy and democratic processes. Janssen, Charalabidis & Zuiderwijk (2012) note that while myths on simplistic causalities of open data can ensure initial progress, they can impair the end results. Danneels, Viaene & van den Bergh (2017) and Sieber & Johnson (2015) draw attention to possible negative outcomes of an imbalanced approach to open data such as creation of public knowledge based on a prejudiced perspective and consequent risk of abandonment of open data initiatives.

For this reason, Ruijer, Grimmelikhuijsen & Meijer (2017) propose a context-sensitive approach to open data based on existing roles and relations within the local ecosystem of actors. Thus, open data initiatives should be studied in a broader perspective to ensure relative neutrality of created knowledge (Lourenço, 2015).

Why different actors use open data? Under which conditions can they make best use of it? These are key questions to designing impactful open data initiatives. However, a gap exists in research literature on open data in the area of individual goals and motivations.

This paper explores how institutional efforts towards promising societal benefits of open data can converge with individual motivations of ecosystem actors. First, we examine the open data initiative in Lyon through the lens of a heuristic ecosystem model based on societal objectives of open data and individual motivations of the civil society actors. Second, we outline the origins of the global open data movement and societal causes advocated by various global actors. Third, we assess various models of the ecosystem approach from the perspective of actors' objectives and motivations, namely societal objectives, such as economic development or advancement of participatory democracy, and individual motivations that drive actors to cooperate with each other. Fourth, we study the ecosystem around the Data GrandLyon platform. Finally, we present discussions and possible implications of this study for the initiatives in Lyon and other cities, followed by conclusions and a proposed research agenda.

Origins and motivations of the global actors regarding open data

The open data movement followed the Freedom of information movement that translated to corresponding legislation across many OECD countries (Ubaldi, 2013), and the drive towards a knowledge-based society at the beginning of this century (OECD, 2001). While the Freedom of information movement was driven by the defence of democratic rights, the notion of the knowledge society is based on the benefits of innovation for economic growth.

As opposed to the information published over the course of the above-mentioned movements in the form of textual reports and statistics, open data advocators call for standardized, machine-readable and interoperable data. The director of the World Wide Web Consortium, Tim Berners-Lee, called for opening "raw data now" on a 2009 TED talk, referring to data that can be made modular and scalable due to its code format. According to Berners-Lee (2009), the main reasons governments should open data are government accountability, value of information and efficiency.

On the political scene, a month earlier, Barack Obama committed to a transparent, participative and collaborative government in the Transparency and Open Government Memorandum. Later that year, the Open Government Directive ruled that US government agencies should

publish data that are "platform independent, machine readable, and made available to the public without restrictions that would impede the re-use of that information" (Orszag, 2009: 2). Two years earlier, the EU Directive INSPIRE addressed the necessity for geographical "data sets to be combined, and for services to interact, without repetitive manual intervention, in such a way that [...] the added value of the data sets and services is enhanced" (European Parliament & Council of the European Union, 2007). Due to the nature of data treated in this bill, the expressed reasons are primarily focused on efficiency and facilitation of decision-making on environmental issues. The EU Directive on the re-use of public sector information adopted in 2003 and amended in 2013 was motivated by supporting knowledge economy and encouraging social engagement. This directive recast in 2019, became known as the Open Data Directive, defining high-value datasets and focusing "on the economic aspects of the re-use of information rather than on access to information by citizens", according to the European Commission webpage on its digital economy and society policies.

The citizens' point of view, that can be traced through non-profit organizations, such as Open Knowledge Foundation going back to 2004, is that open data should serve for transparency and democratic control, participation, self-empowerment, improved or new private products and services, innovation, efficiency and effectiveness of government services, measurement of policies and new knowledge from combined data sources (Open Data Handbook version 1.0.0).

Efficiency and interoperability are one of the major reasons for opening data that can be traced through these legislative and civil society documents, technical efficiency being the first condition for open data to bring any further benefits. Further, economic value of open data is usually mentioned before the social engagement objectives, with the exception of the Open Knowledge Foundation and the Obama administration communications.

The next section analyses existing research literature in terms of potential benefits of open data for society and for ecosystem actors.

Societal and individual benefits of contributing to open data initiatives

Motivations of governmental, economic and civic actors in the field of open data differ, but as the previous section shows, similar goals are present with various intensity and balance in the argumentation of the three groups of actors. To identify potential points of convergence between open data providers and the ecosystem of actors around open data use, motivations should be differentiated according to an additional criterion. Huntgeburth & Veit (2013) propose the evaluation of open government initiatives from Kantian and Machiavellian perspectives. The Kantian approach emphasizes only potential public benefits, whereas the Machiavellian approach also argues for the necessity of sufficient support from the ecosystem actors to achieve a positive outcome in terms of

the intended public value. To ensure such support, we propose to assess motivations based on two types of benefits: societal and individual.

Societal benefits

In research literature, studied societal benefits generally evolve around two major goals: economic growth and democratic values (Reggi & Dawes, 2016; Mabi, 2015; Jetzek, Avital & Bjorn-Andersen, 2013). However, this distinction is not binary. Researchers distinguish such benefits as innovation, efficiency, effectiveness, law enforcement and collaboration (Figure 1).

	Social solidarity economy	Economic growth	Efficiency and effectiveness		Transparency and accountability	Participatory democracy
Sieber & Johnson, 2015	Economic development		Efficiency	Effective-ness	Ethics	
Jetzek, Avital & Bjorn-Andersen, 2013	Collaboration				Transparency	Participation
Gonzalez-Zapata & Heeks, 2015	Economic value through new products, services, revenue, profits, and jobs		Efficiency and effectiveness of public services	Improved government data infrastructure	Increased transparency, accountability, participation, and empowerment	
Janssen, Charalabidis & Zuiderwijk, 2012	Economic benefits		Operational and technical benefits		Political and social benefits	
Huijboom & van den Broek, 2011	Service and product innovation		Law enforcement		Democratic control and political participation	
Viale Pereira, Macadar & Gregianin Testa, 2015	Social	Economic	Stewardship	Strategic	Political	Social
	Quality of life				Ideological	

Figure 1.
Societal benefits in research literatureSource: author
Source: author.

Based on the literature review, we have identified five key categories of societal objectives: economic growth, efficiency, transparency and accountability, participatory democracy, and social solidarity economy. These benefits are rarely isolated from each other and often intersect or lead to one another. For instance, efficiency is necessary for other goals to be achieved, while transparency is essential to enable participation. In many areas, economic and democratic goals are mutually beneficial, since healthy competition and demonopolisation of power are as important for market economy, as they are for democracy. However, researchers stress the importance of balancing these goals (Sieber & Johnson, 2015), as otherwise open data can impair citizen engagement by favouring open data reuse by economic players and inadvertently excluding civil society actors (Bates, 2012).

Individual benefits

Many researchers conclude that published datasets will not automatically attract economic actors to create new services, unless there is a vibrant ecosystem of actors having various skills and different interests, collaborating, negotiating and exchanging knowledge such that societal

goals are being achieved in a mutually beneficial manner (Harrison, Pardo & Cook, 2012).

While societal objectives address what is good for the society, individual motivations are the benefits that drive individual choices.

We approach individual motivations using ethical egoism theory and its model of conditional egoism used by Adam Smith, whereby an act is considered morally right if it is aimed at selfish interests under the condition that it serves the interests of others. Therefore, the two types of motivations, individual and societal, are not a strict dichotomy. Firstly, individual motivations have the capacity to reinforce societal outcomes. Secondly, such individual motivations as altruism and ideology act as a link between the two groups of motivations.

In open data literature, we found three sources studying individual motivations. Davies (2010) analyses governmental and technological interests of participants. Le Corf (2016) concludes that recognition is the main drive for developers to make open data more user-friendly. Juell-Skielse, et al. (2014) undertake a quantitative study of individual motivations of computer developers to participate in open data contests and they identify the following intrinsic and extrinsic motivations listed in order of popularity: fun and enjoyment, intellectual challenge, status and reputation, user need, professional and individual identity, autonomy, learning and skills development, money, reciprocity, signalling and career concerns. Ferreira & Farias (2018) studied developers participating in hackathons in wider open government initiatives and found that most influential motivations are negatively: recognition, and, positively: fun, learning and financial rewards.

Concerning citizens of all professional categories, a few quantitative studies look at participatory platforms, which allow users to post suggestions and evaluate them. Wijnhoven, Ehrenhard & Kuhn (2015) found fun, perceived impact and ideology to be the most significant motivators. Schmidthuber, et al. (2019) also concluded that intrinsic motivation (enjoyment and fun) is the strongest. Nam (2012) identified four types of motivations in his theoretical study of citizen sourcing platforms: relationships, material incentives and career opportunities, altruism and amateurism, and efficacy (the desire of citizens to "let their voices be heard").

However, none of the above-mentioned publications study the motivations of citizens of all professional categories to reuse open data. They are also based on significantly different research settings, attaching varying meanings and survey questions to similar terms. Recognising these considerations, we grouped motivations present in the reviewed literature into five key categories of individual motivations (Figure 2).

Categories of motivations	Basic needs and quality of life	Interaction	Accomplishment	Self-fulfilment	Pro-social motivations
Motivations from literature	Fun/Pastime	Relationship	Status and reputation	Amateurism	Altruism
	Own-goals	Networking	Recognition	Autonomy	Ideology
	Money	Kinship	Self-esteem	Learning	Impact
	Career	Interaction	Feeling of being a 'good citizen'	Intellectual challenge	
	Reciprocity				

Figure 2.
Individual motivations from literature review, grouped in five key categories
Source: author.

Similar to societal motivations, these categories often overlap. Reciprocity can be linked both to own goals and to networking, while learning and career can be attributed to income, intellectual challenge or status depending on the situation. This illustrates the difficulty to compare the above-mentioned survey studies.

Ecosystem approach

Many researchers conclude that published datasets will not automatically attract economic actors to create new services, unless there is a vibrant ecosystem of actors having various skills and different interests, collaborating, negotiating and exchanging knowledge such that societal goals are being achieved in a mutually beneficial manner (Harrison, Pardo & Cook, 2012).

The ecosystem approach in open data research literature considers the roles of different groups of actors in creating value from open data through dynamic interaction. Dawes, Vidiasova & Parkhimovich (2016) distinguish open data providers, users and beneficiaries, who interact not only in the direction of value creation, but also through feedback loops. Pollock (2011) opposes the "one-way street" open data to the ecosystem approach, where interaction can exist in both directions and within the community of intermediaries. Gonzalez-Zapata & Heeks (2015) analyse open government data (OGD) stakeholders according to their levels of power and interest, separating them beforehand as primary stakeholders, comprised of public organizations, and secondary, including ICT providers, civil society activists, funding donors and academics.

Based on the ecosystem approach, Danneels, Viaene & van den Bergh (2017) propose an epistemological model to analyse OGD platforms as ecosystems of both actors and elements, such as data portal, data and results of data use. The authors distinguish three types of platforms based on knowledge representation and the varying need for interaction. The cognitivist approach to OGD platforms "equate[s] knowledge with information and data and thus believe[s] that no further interpretation is necessary" (Danneels, Viaene & van den Bergh, 2017: 67). The connectionist approach stresses the importance of fostering communication between platform actors through off-line activities

in order to facilitate knowledge creation through interaction and cooperation. Finally, the autopoietic approach focuses on the importance of plural interpretations and recursions between the ecosystem elements for knowledge production, therefore, OGD platforms cannot be neutral. Thus, "governing the autopoietic platform requires important trade-offs [...], balancing control over the platform and over the new value created with ways to stimulate more variety" (Danneels, Viaene & van den Bergh, 2017: 368).

We propose to study such platform characteristics as diversification (diversity of data sources, possibility of dataset and data analysis submission, links to other resources) and interaction (clarity of the website structure, editorial page, user tutorials, responsiveness to requests, interaction with other users, off-line activities). Since participation in knowledge creation requires substantial resources and, hence, a high level of motivation (Gonzalez-Zapata & Heeks, 2015), Figure 3 shows which individual motivations could be addressed by various platform types to attract broader contributions to knowledge creation.

The individual benefits in Figure 3 are placed according to various platform models and characteristics, but they should be regarded as fluid and dependent on the context.

Societal benefits		Social solidarity economy	Economic growth	Efficiency and effectiveness		Transparency and accountability	Participatory democracy
Open data models from literature	Jetzek, Avital & Bjorn-Andersen, 2013	Participation mechanisms	Innovation mechanisms	Efficiency mechanisms		Transparency mechanisms	Participation mechanisms
	Sieber & Johnson, 2015	Participatory open data	Code exchange	Data over the wall	Civic issue tracker	Code exchange	Participatory open data
	Danneels, Viaene & van den Bergh, 2017	Autopoietic	Connectionistic	Cognitivist		Connectionistic	Autopoietic
Open government platform models from literature	Linders, 2012	"Do It Yourself Government" (C2C)		"Government as platform" (G2C)		"Citizen sourcing" (C2G)	
	Nam, 2012	Social networking	Contest		Wiki		Social voting
	Motivator		Professional knowledge				
		Innovative ideas					Innovative ideas
	Collected wisdom	Relationship	Materials and career		Altruism and amateurism		Efficacy (impact)
Platform characteristics	Interaction	Forum and offline events, editorial page	Mainly through apps and services, comments on the platform	Explanation of licences, contact form	Clarification of goals and benefits, citizen-sourcing app	Editorial page, tutorials, comments	Forum and offline events, editorial page, external resources
	Diversification	Visualised data from different reuse cases, data submission	Datasets form different sources, re-use cases, external links	Open government data	Open government data including from citizens as sensors	Datasets form different sources, articles by independent journalists, external links	Visualised data from different reuse cases, data submission
Individual benefits	Basic		Career				
		Own goals					
		Reciprocity	Money				
	Interaction	Networking					Interaction
		Kinship					Kinship
		Relationship					
	Accomplishment	Recognition	Status and reputation		'Good citizen' feeling	Recognition	
					Self-esteem		
	Self-fulfilment	Autonomy		Intellectual challenge		Amateurism	Fun/Pastime
						Learning	
	Pro-social				Altruism	Impact	
						Ideology	

Figure 3.
Platform types, characteristics and addressed motivations
Source: author.

Figure 4 illustrates the connection between a few selected elements of Figure 3, namely societal and individual benefits, and their level of attraction towards interaction with the ecosystem members on the platform and outside it.

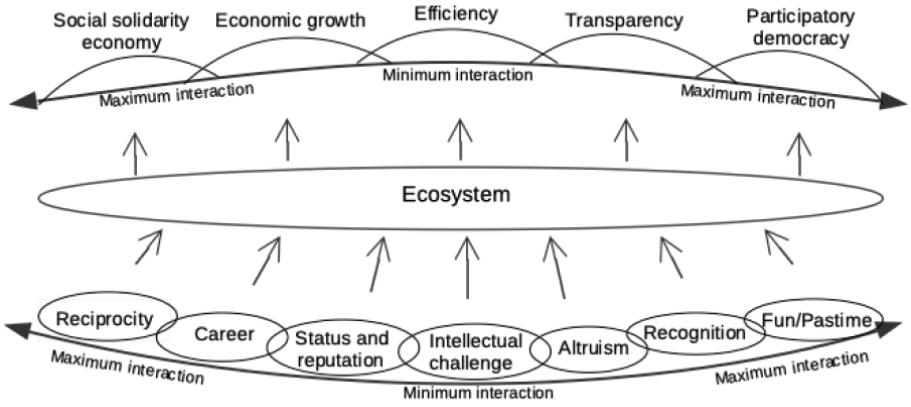

Figure 4.
Interconnection between individual and societal benefits of open data
Source: author.

The following section analyses the Data GrandLyon initiative and the ecosystem of civil society actors in Lyon from the perspective of societal and individual benefits.

Case study: data grandlyon

Research method

Based on the theoretical model of conditional egoism and drawing from existing research on individual motivations in open government, we proposed a heuristic model of open data ecosystem based on motivations. The open data ecosystem in Lyon was studied through this model by conducting 20 semi-directive interviews during the period from January to May 2019 and one update interview in February 2020. Eight interviews were with GrandLyon representatives from different departments and 13 interviews from the local civil society organisations. All interviews involved four main parts: interviewee's career and individual drives, approach to open data from the societal benefits standpoint, connections with other actors, and barriers. Four observations with a focus on motivations were carried out during participatory events organised by citizen associations. We also analysed Data GrandLyon platform, news entries from GrandLyon departments' webpages and their official reports, as well as websites, documentation and leaflets of citizen associations.

Interviews		
Organisation name	**Number of interviewees**	**Code**
Grand Lyon, Department of Economic Development and Employment	1	G01
Grand Lyon, Department of Digital Innovation and Information Systems	6	G02, G03, G04, G05, G06, G07
Grand Lyon, Department of Social Development and Associative Life	1	G08
TUBA	1	A01
CCO	1	A02
Coexiscience	2	A03, A04
La MYNE	2	A05, A06
Altercarto	1	A07
ALDIL	1	A08
Café Vie Privée	1	A09
Fabrique à liens	1	A10
OpenStreetMap Lyon	1	A11
Mediacités	2	A12, A13

Observations	
Organiser	**Code**
Coexiscience	E01
La MYNE	E02
ALDIL	E03
Café Vie Privée	E04

Figure 5:
Interviews and observations
Source: author.

Ecosystem of actors in Lyon

The next two sections look at two types of intermediary actors creating value, knowledge and services from open data: organisations directly involved in the open data initiative and organisations having the expertise to contribute to open data societal objectives, but who's individual motivations are not fully accommodated. Consequently, these discrete actors are not directly involved in the initiative.

Involved actors

The question of open data started emerging within GrandLyon as the European directive INSPIRE came into force in 2007 and with the creation of an inter-ministerial mission for open data Etalab in 2011 (A01). The administration started hiring employees with the skills to address the challenge of open data, mostly engineering profiles (G02, A01). From 2013 to 2019, the city saw three consecutive versions of the open data platform with different interfaces and evolving strategy behind it. The first platform GrandLyon Smart Data was launched in 2013 and published government data of GrandLyon and member towns of the urban agglomeration.

Seeing that potential re-users of the data, namely entrepreneurs and established businesses, were not taking advantage of this new resource to create new services, an internal working group decided to initiate a public-private partnership to enrich governmental data with infrastructure

data collected by private operators (A01). As a result, Lyon Urban Data Association was created in 2014. It brought together several large companies, such as public transport operator Keolis and electricity provider EDF, along with GrandLyon to work on opening public and private territorial data. The association founded a living lab TUBA the same year, which has since become an independent organisation (with GrandLyon only as a member) aimed at animating the ecosystem of economic actors. As of 2018, TUBA had 45 partners, including GrandLyon, private groups and academic actors. It has contacts with 150 start-ups, of which 15 have been accommodated in its incubator (TUBA, 2019).

In 2015, GrandLyon administration merged with the institutions of Rhône department creating a new territorial entity, Lyon Métropole that, unlike other French metropolitan areas, has a larger set of competences under its responsibility. Later in 2015, Lyon was the first French city to recruit a Chief Data Officer (Januel, 2018). Following these events, a new version of the platform Data GrandLyon was launched the same year, publishing public and private data.

In 2016, Grand Lyon opened a new position, Data Platform Product Manager, who was one of the initiators launching a more functional and flexible platform in 2019 based on a code that enables to add new features over time.

Discrete actors

Lyon is rich in citizen associations and various civic actions towards the co-construction of the city. We have conducted interviews with some of them (A02-A12).

Association Altercarto creates open source cartography tools with tutorials and proposes numerous visual data representations. Altercarto began when a group of unemployed citizens from Nantes wanted to find an explanation for unemployment in their region through statistics and data analysis. Now Altercarto provides tools for other groups of citizens looking for answers to various problems and helps them find and visualise data. Altercarto cooperates with the City of Lyon, but less so with the greater territorial entity GrandLyon (A07).

La MYNE (Eng.: Manufacture of Ideas and New Experimentations) was created by two PhD students as an independent research laboratory, but had quickly gained momentum and harboured a much wider range of citizen activities, from equipment repair to biohacking (A05, A06). Their close partners, Coexiscience, is an association committed to socially responsible collaborative research (A03, A04, E01), situated in the same building as CCO (Eng.: Laboratory of Social and Cultural Innovation), which was founded 50 years ago by a local priest and is still an active local actor for education and social inclusion organising workshops and round table discussions recorded as podcasts (A02).

ALDIL (Eng.: Lyon Association for Open Source Digital Technologies Development) promotes a widespread use of open source

software. Together with associations Café Vie Privée and Espace Numérique Public situated in the local neighbourhood centre, they organise workshops for citizens who come to learn how to protect their personal data and how to use available open source digital tools (A08, A09).

Mediacités is an independent local newspaper. Citizens often contact the newspaper asking it to investigate pressing local issues. There was at least one example of a political scandal uncovered after a report from citizens (A12) as of the date of the interview. However, in May 2019, the newspaper launched a collaborative investigation platform #DansMaVille (Eng.: InMyCity), where the readers can propose research questions, testimony or expertise on specific subjects for journalists to source (A13).

These civil society organisations are committed to open source and participatory culture, treating knowledge as a common good to be shared without restrictions. Many of them are involved in scientific and journalistic research on societal issues. Specifically, Altercarto and Mediacités report using data that they access on various ministerial and sectorial sources on the internet, but they report that they were never able to use the Data GrandLyon platform for reasons ranging from absence of needed datasets to insufficient granularity of published data (A07, A12).

Motivations of ecosystem actors in Lyon

Societal objectives of the open data initiative

The objectives of creating the GrandLyon SmartData platform in 2013 were to "facilitate data exchange between local actors, enhance the economic potential of public data at the heart of the digital economy, and encourage citizen participation and enable them to better understand public action" (Grand Lyon, 2013).

Modifications of the open data platform reflect three main underlying processes. First, the administrative reorganisation of the territorial entity in 2015. Second, if the first steps of opening data can be described as the "data over the wall" strategy, the city did not content itself with marginal impact of this strategy. With the first change it admitted the need to overpass the limits of strictly governmental data and with the second change it adopted a more flexible technical structure of the platform allowing for incremental changes. The third determining factor is that all the efforts are primarily targeted at economic reuse of open data, even though the initiative recognises both economic and democratic benefits of open data (Grand Lyon, 2013).

First societal objective: sustainable economic development

Projects of GrandLyon are controlled for ROI (return on investments) indicators, both in public-private partnerships and internally (G02,

G03). Our interviewees acknowledged the importance of non-economic benefits, but they also stressed the necessity of fiscal returns to continue ensuring the open data commitments of the administration, requiring financial expenditures (G02, A01). There is, however, a clear distinction between the interests of global groups and those of small local businesses.

This can be illustrated through what developers call "exotic" open data licenses (TeamOpenData.org, 2018) proposed by Lyon's open data platform. Apart from the nationally accepted Etalab Open Licence and internationally used Open Database Licence, which cover around 94% of its datasets (Data GrandLyon, s.d.), until recently GrandLyon had the so-called "engaged license" requiring authentication and declaration of data reuse objectives and the "associated license" requiring all the above and a fee. To comply with new European and national regulations, these licences had to be merged under GrandLyon's new "license for reuse of data of general interest", which does not involve payment for data use anymore (Extrait du Régistre des Délibérations du Conseil, 2019). It primarily covers real-time transport data, which potentially have more economic value than static data and could be used in conflict with societal benefits. Profit-based applications might, for instance, encourage use of roads next to schools and hospitals maximising individual benefit instead (A02). Another explanation is given by the Vice-President of Grand Lyon: "Google and Facebook have created their wealth on data. Therefore, we want to safeguard the data to prevent massive data capture by large groups. [...] We will have a case-by-case approach. If we can support economic growth, we will be more flexible".

An important element of Lyon's open data strategy is promotion of public interests through the ecosystem of local economic actors (G02, A01). There is an established channel of direct interaction with start-ups. Attentive to any opportunity to have the open data reused to create services and value for citizens, GrandLyon cooperates with a network of public and private organisations, including TUBA, the local chamber of commerce, social economy associations and others to advise entrepreneurs interested in reusing open data rapidly responding to demand from citizen for new urban services.

Second societal objective: citizen engagement in product development

Although less technically-skilled users are not taken into account in the Data GrandLyon design, as we will see below, citizens are often involved in testing the services created with the use of open data through projects like TUBA, Erasme experimentation lab and Eurika club targeting citizen in the Confluence district.

An iconic project positioned as a step towards citizen empowerment is SelfData, which aims at empowering citizens to extract their behavioural and personal data traced through their accounts in Google, Facebook and other platforms and re-appropriate it in order to make better individual choices, using a server and software of their choice. Users of SelfData may

also explicitly choose to share their anonymised data for analysis on the territorial scale towards optimisation of the urban services (G03).

At the same time, according to our interviewees from GrandLyon and TUBA, there is currently no well-established channel of interaction with non-profit associations (G02, A01). In TUBA the communication with citizen associations occasionally happens through mediations and public debates organised to learn opinions and suggestions of individual citizens as potential users of created services (A01), but there is no partnership relationship.

Individual motivations of the ecosystem members

Basic needs

Previous studies on individual motivations (Juell-Skielse, et al., 2014; Wijnhoven, Ehrenhard & Kuhn, 2015; Schmidthuber, et al., 2019) show that money has a direct influence on the number of participants, but that the power of such motivation is limited. Almost all the studied discrete actors are non-profit organisations, except for the newspaper Mediacités, but in order to exist and pay their employees, they need revenue and funding, thus often they cannot spend time on a project without getting something in return (A03). Sometimes instead of requiring payment for their services to organisations or as a form of membership fee, La MYNE proposes formal or verbal reciprocity contracts (A05).

Quality of life and interaction

La MYNE is situated in a former family house with a backyard garden, used for biohacklab and other experiments, as well as for enjoyment. Almost daily La MYNE members have shared lunches, where members can exchange news and ideas. "Quality of life" at La MYNE was, thus, the first explanation for its attractiveness (A05, A06).

The first contact with the associations tends to be motivated by networking and a person's own goals, like repairing a van or conducting a scientific experiment, for which citizens come to get help, equipment or exchange ideas. Some then become continuous members for other reasons like kinship and amateurism (E01, A05).

Self-fulfilment

According to an interviewee from OpenStreetMap, for most of its contributors, the desire to solve puzzles and find computational solutions to real world challenges is a hobby and genuine passion (A11).

Developers of Data GrandLyon have initiated an informal internal laboratory to experiment with open data re-use themselves. Apart from passion and intellectual challenge, our interviewee referred to the level of

autonomy to experiment and the flexibility to formally implement some of the results of this experimental work at GrandLyon (G04).

Desire for autonomous work can be traced in both Coexiscience and La MYNE, which were created by academic researchers who wanted to conduct independent studies on pressing social issues (A03, A05, A06). Excitement at intellectual challenges also drives their activity (E02). Several interviewees from different research and educational associations called themselves autodidacts, so their intrinsic motivation for autonomous learning brought them to participate in these associations.

Pro-social motivations

Pro-social motivations of the studied discrete actors revolve around transparency, empowerment, inclusion and participation. The general position of many actors can be referred to as "do-it-yourself" approach (A05, A06) and independence from public institutions (A03). Mediacités stands for independent journalism bringing to light obscure commercial and public processes and making public institutions accountable to taxpayers (A12). Altercarto aims at citizen engagement, striving to widen accessibility of their data analysis tools by creating tutorials (A07).

The goal of Café Vie Privée Association, comprised of developers, is to help users understand to what extent their personal data is available and used by groups like Facebook and Google through secret algorithms. They inform their workshop participants about alternative open source services, where all the algorithms can be verified by the user community to ensure that personal data is not extracted (A09).

According to one interviewee, the field of open source software attracts people of opposite ideologies. Left-wing liberals strive for transparency and inclusion, whereas right-wing ideologists are motivated by the creation of national alternatives to international platforms and software (A11).

The next section looks at the Data GrandLyon platform as the space for interaction between ecosystem actors and the medium to harness their expertise to contribute to societal goals by addressing their individual motivations.

Open data platform as a space for interaction between ecosystem actors

In 2019, GrandLyon published a new version of its Data GrandLyon platform (TeamOpenData.org, 2019), which was in beta testing until May 2020.[3]

The goal of this case study is not to analyse the technical characteristics of data, but to see how the need for open data from Lyon citizens and civil society actors can be served by the platform. To analyse the French national open data platform, Mabi (2015) used the following categories:

navigation, functionalities to act, functionalities to interact, animation and editorial aspects.

Based on our interviews, we have identified two major groups of platform characteristics answering actors' needs: diversification and interaction. Diversification of information sources and references is connected with such motivations as recognition, career, reciprocity, autonomy and impact. Interaction encourages learning, relationship, enjoyment and self-esteem.

Diversification

From the early stages of its open data initiative, GrandLyon adhered to the understanding of open data as broader than open government data. Several urban actors work in close partnership with the metropolitan authority to publish relevant territorial data that can be analysed in combination. Currently, there are 28 data providers listed on the platform, regional public and private organisations, but only two environmental associations.

Datasets cannot be submitted for publication directly on the website. Altercarto contributes its datasets to the national open data platform and can potentially contribute its local geographical dataset to Data GrandLyon, but our interviewee noted the lack of partner relationship with GrandLyon and the impossibility of contributing directly to the platform (A07).

The Reuses page references eight web services, including GrandLyon website and three of its own projects, which use from 1 to 23 datasets each. Until now, visualisation by journalists, geographers and other third parties has not been published here.

The Approach page lists hyperlinks to internal and external organisations, including TUBA, but no independent citizen associations.

Interaction

In the new version, the website navigation and clarity have been improved by highlighting the editorial entries about new datasets, partners, relevant projects and events.

There is a simple navigation menu, including the Documentation page with the principles of the platform offering a link to the Data GrandLyon's page with documentation for developers. Apart from this, a tutorial article on 3D models addressing developers and a general explanatory video on the Approach page, there are no tutorials for less technically skilled users. The platform is available in French and English.

Datasets can be filtered by eight different characteristics including publisher, theme, data format, licence or year. Datasets can be pre-visualised as a table or an interactive map without the need to download the file. There is contextual meta-data on each dataset page, such as

general description, origin, number of views, frequency of updates, date last published, licence and technical characteristics.

In terms of communication, during and after the beta version test period there is a slide-out window appearing on every page for visitors to leave their opinion. At the bottom of each page there is a link to the contact form. Using this form on the beta version of the platform, we sent a report of anomaly on the 23rd of May and received a reply on the 19th of June. There is neither a possibility to leave comments or questions under the datasets, nor a dedicated forum or chat page. However, the platform managers acknowledge the advantages of frequent questions being answered publicly by themselves, as well as by other users (G04).

Discussions and further implications

Lyon is rich in bottom-up groups and actions towards the co-construction of the city. These associations regroup experts in the fields of information technology, data analysis, cartography, sociology, scientific research methods, journalism and others. They are already heavily involved in collecting and analysing data, although rarely from the Data GrandLyon platform, sometimes for the lack of needed data or negative perception of its usefulness for civic actors (A07, A10, A12).

Individual citizens tend to contact these associations for expertise they are missing (E01, A06). According to one of our interviewees, open data can only be addressed to professionals for its technical nature (A11). Indeed, between data and the end result there are steps like information and knowledge creation, taking and acting out decisions that require economic and social resources (Gonzalez-Zapata & Heeks, 2015). The Data GrandLyon platform is not designed to provide these intermediary steps. This might be justifiedby the budget constraints and a risk of biased data interpretation.

Capital cities like London, Chicago and Seoul provide open data visualisation and analysis themselves. However, for the so-called secondary cities, that is, average-size non-capital cities with less resources, but having a well-developed ecosystem of civil society actors, such as Lyon in France and many Latin American cities rich in civic engagement initiatives, a more collaborative solution might be more adapted to their context.

The studied associations in Lyon have the expertise to fill in the missing elements between the open data and the end result in the field of transparency and citizen engagement. Additionally, they can offer solutions to many of the needs analysed in the case study, such as data co-contribution and analysis, user tutorials and animation of both online and offline interaction, if they are engaged to participate, taking into account their own motivations, like financial sustainability, their pro-social motivations that are usually the initial reason of their existence, and recognition. For example, citizens learn about Altercarto by word-of-mouth (A07), but their reference on the platform could be another channel for Altercarto to be known.

Conclusion

This paper has approached a largely unaddressed question of individual motivations in open data ecosystems through the study of discrete civil society actors in Lyon based on interviews, platform analysis and document analysis. This is a heuristic attempt to sketch out an ecosystem model through the lens of societal and individual benefits.

Based on the theory of conditional egoism, the ecosystem approach to open data and the existing research on individual motivations in a broader field of open government, this paper shows a connection between societal and individual benefits. This link is important in understanding the dynamics of open data reuse, requiring a more context-sensitive approach to open data initiatives. Moreover, closer interaction and contribution diversification enable governmental agencies to better understand the needs of the ecosystem actors, including discrete actors, encouraging their engagement and leading to a more inclusive knowledge creation.

We analysed a few interaction and diversification modalities of the Data GrandLyon platform. The Web 2.0 capabilities in combination with traditional participatory tools offer numerous instruments towards inclusion. At the same time, their straightforward application in an effort to achieve maximum openness without considering the existing ecosystem can lead to the lack of or even to negative results (Huntgeburth & Veit, 2013). This paper shows that analysis of motivations of particular categories of actors can help understand which interaction modalities would bring the most desirable outcomes for public good in a given context.

More qualitative and quantitative research is needed to understand the connection between specific individual motivations and the profiles of actors, as well as their behaviour strategies and contributions to different societal goals. Further, given these connections, it is important to look at how the modalities can encourage more widespread use of open data towards societal benefits.

Bibliography

BATES, J. (2012). ""This is what modern deregulation looks like": co-optation and contestation in the shaping of the UK's Open Government Data Initiative". The Journal of Community Informatics, 8 (2): 1-13. Retrieved from http://ci-journal.net/index.php/ciej/article/view/845

BERNERS-LEE, T. (2009). "Putting government data online". Design Issues. Retrieved from: https://www.w3.org/DesignIssues/GovData.html

COPAJA-ALEGRE, M. & ESPONDA-ALVA, C. (2019). "Tecnología e innovación hacia la ciudad inteligente. Avances, perspectivas y desafíos". Bitácora Urbano Territorial, 29 (2): 59-70. https://doi.org/10.15446/bitacora.v29n2.68333

DANNEELS, L., VIAENE, S. & VAN DEN BERGH, J. (2017). "Open data platforms: Discussing alternative knowledge epistemologies".

Government Information Quarterly, 34 (3): 365-378. https://doi.org/10.1016/j.giq.2017.08.007

DAVIES, T. (2010). Open data, democracy and public sector: a look at open government data use from data.gov.uk. Oxford: University of Oxford, MSc Dissertation.

DAWES, S., VIDIASOVA, L. & PARKHIMOVICH, O. (2016). "Planning and designing open government data programs: an ecosystem approach". Government Information Quarterly, 33 (1): 15-27. https://doi.org/10.1016/j.giq.2016.01.003

EUROPEAN PARLIAMENT & COUNCIL OF THE EUROPEAN UNION. (2007). Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE). Retrieved from https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32007L0002

FERREIRA, G. & FARIAS, J. (2018). "The motivation to participate in citizen-sourcing and hackathons in the public sector". Brazilian Administration Review, 15 (3). https://doi.org/10.1590/1807-7692bar2018180006

GONZALEZ-ZAPATA, F. & HEEKS, R. (2015). "The multiple meanings of open government data: understanding different stakeholders and their perspectives". Government Information Quarterly, 32 (4): 441-452. https://doi.org/10.1016/j.giq.2015.09.001

GRAND LYON. (2013). "Grand Lyon SmartData : nouvelles données disponibles et types de licences en décembre 2013". Grand Lyon Économie. Retrieved from: http://www.economie.grandlyon.com/actualites/grand-lyon-smartdata-nouvelles-donnees-disponibles-et-types-de-licences-en-decembre-2013-1533.html

GRAND LYON. (s.d.). https://data.beta.grandlyon.com/fr/recherche

HARRISON, T., PARDO, T. & COOK, M. (2012). "creating open government ecosystems: a research and development agenda". Future Internet, 4 (4): 900-928. https://doi.org/10.3390/fi4040900

HUIJBOOM, N. & VAN DEN BROEK, T. (2011). "Open data: an international comparison of strategies". European Journal of ePractice, 12 (1): 1-13.

HUNTGEBURTH, J. & VEIT, D. (2013). "A research agenda for evaluating open government initiatives". ECIS 2013 , 112. Retrieved from: https://aisel.aisnet.org/cgi/viewcontent.cgi?article=1335&context=ecis2013_cr

JANSSEN, M., CHARALABIDIS, Y. & ZUIDERWIJK, A. (2012). "Benefits, adoption barriers and myths of open data and open government". Information Systems Management, 29: 258-268. https://doi.org/10.1080/10580530.2012.716740

JANUEL, C. (2018l). "La métropole de Lyon et les données personnelles(2)". Millénaire 3. Retrieved from: https://www.millenaire3.com/Interview/La-metropole-de-Lyon-et-les-donnees-personnelles-2

JETZEK, T., AVITAL, M. & BJORN-ANDERSEN, N. (2013). "The generative mechanisms of open government data". In: ECIS 2013 Proceedings. Atlanta: Association for Information Systems.

JUELL-SKIELSE, G., et al. (2014). "Is the public motivated to engage in open data innovation?" In: M. Janssen, et al. (eds.), Electronic

Government. EGOV 2014. Berlin, Heidelberg: Springer, pp. 277-288. https://doi.org/10.1007/978-3-662-44426-9_23

LE CORF, J.-B. (2016). "Les pratiques d'innovation de services des développeurs web dans les territoires : le cas des projets Open Data". Communication & Organisation, 50: 123-136. https://doi.org/10.4000/communicationorganisation.5387

LINDERS, D. (2012). "From e-government to we-government: defining a typology for citizen coproduction in the age of social media". Government Information Quarterly, 29 (4): 446-454. https://doi.org/10.1016/j.giq.2012.06.003

LOURENÇO, R. (2015). "An analysis of open government portals: a perspective of transparency for accountability". Government Information Quarterly, 32 (3): 323-332. https://doi.org/10.1016/j.giq.2015.05.006

MABI, C. (2015). "La plate-forme « data.gouv.fr » ou l'open data à la française". Informations Sociales, 5 (191): 52-59. Retrieved from: https://www.cairn.info/revue-informations-sociales-2015-5-page-52.htm

NAM, T. (2012). "Suggesting frameworks of citizen-sourcing via Government 2.0". Government Information Quarterly, 29 (1): 12-20. https://doi.org/10.1016/j.giq.2011.07.005

OECD. (2001). Focus, 21. Retrieved from http://www.oecd.org/gov/digital-government/2536857.pdf

OPEN KNOWLEDGE FOUNDATION. (s.f.). Why open data? Retrieved from: http://opendatahandbook.org/guide/en/why-open-data/

ORSZAG, P. R. (2009). Memorandum for the heads of Executive Departments and Agencies. Retrieved from: https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/memoranda_2010/m10-06.pdf

POLLOCK, R. (2011). The present: a one-way street. Retrieved from: https://blog.okfn.org/2011/03/31/building-the-open-data-ecosystem/

REGGI, L. & DAWES, S. (2016). "Open government data ecosystems: linking transparency for innovation with transparency for participation and accountability". In: H. Scholl, et al. (eds.), Electronic Government. EGOV 2016. Guimarães: Springer, Cham, pp. 74-86. https://doi.org/10.1007/978-3-319-44421-5_6

RUIJER, E., GRIMMELIKHUIJSEN, S. & MEIJER, A. (2017). "Open data for democracy: developing a theoretical framework for open data use". Government Information Quarterly, 34 (1): 45-52. https://doi.org/10.1016/j.giq.2017.01.001

SCHMIDTHUBER, L., et al. (2019). "Citizen participation in public administration: investigating open government for social innovation". R&D Management, 49 (3): 343-355. https://doi.org/10.1111/radm.12365

SIEBER, R. & JOHNSON, P. (2015). "Civic open data at a crossroads: dominant models and current challenges". Government Information Quarterly, 32 (3): 308-315. https://doi.org/10.1016/j.giq.2015.05.003

TEAMOPENDATA.ORG. (2018). La clause share-a-like : un frein à l'innovation. Retrieved from: https://teamopendata.org/t/la-clause-share-a-like-un-frein-a-linnovation/428

TEAMOPENDATA.ORG. (2019). Nouveau portail open data de Lyon - version beta. Retrieved from: https://teamopendata.org/t/nouveau-portail-open-data-de-lyon-version-beta/1479

TUBA. (2019). Activity report 2017-2018. Lyon: TUBA.

UBALDI, B. (2013). Open government data: towards empirical analysis of open government data initiatives. Paris: OECD. https://doi.org/10.1787/5k46bj4f03s7-en

VIALE PEREIRA, G., MACADAR, M. A. & GREGIANIN TESTA, M. (2015). "Delivery of public value to multiple stakeholders through open government data platforms". In: E. Tambouris, et al. (eds.), Electronic government and electronic participation. https://doi.org/10.3233/978-1-61499-570-8-91

WIJNHOVEN, F., EHRENHARD, M. & KUHN, J. (2015). "Open government objectives and participation motivations". Government Information Quarterly, 32 (1): 30-42. https://doi.org/10.1016/j.giq.2014.10.002

Notes

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2 Such as social media, smartphone applications and blogging.

3 The analysed platform version is 2.6.3 last accessed on August 2020