Cluster management for cities: What, why and how?

Theory, best practice and self-assessment

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1. Introduction

During the last two decades, perhaps the most complex economic development challenge embraced by many Municipalities (and associated organizations) relates to cluster management. Many initiatives dubbed as "cluster policy" have been actively promoted, not only by large city-regions but also by smaller and medium-sized cities. These policies often combine a diverse set of firm-oriented incentives and supports, coordinated and executed by one or more appointed "cluster managers".

The task faced by such professionals is very demanding. Beyond off-the-shelf formulas, managing clusters requires the ability to clearly understand the specifics of each cluster, the types of knowledge and innovation involved and the dynamics of the cluster (*the clustering phenomena*). Moreover, it requires increasingly a number of soft skills to make things really happen when it comes to policy design and implementation, e.g. facilitating effective "triple helix" schemes, nurturing collective intelligence and pooling the required resources for concrete projects (*the cluster policy* and the *cluster management*). Learning from other success practices is important but incomplete – cluster managers should be able to translate best practice knowledge to their own reality. Moreover, they permanently need to adapt to new circumstances and self reflect on the value of their own practices.

The objective of this reference framework is to support cluster managers to take a step back from their hectic daily work and reflect on their own cluster management practice, i.e. to self assess "how and why they are doing what they do", and "how to (eventually) do it better". This document provides a framework to think about on "how to manage a cluster", based on state-of-the art literature, international good practices and the authors´ own experience. Within the coaching tradition, it doesn't provide a magic formula or ready-to-use recipe – it is intended to support cluster managers in finding their own ways of learning and doing things. It should motivate a whole process of reflection and (self) discovery towards improvement.

This reference framework draws inspiration from other cluster management guides and baseline frameworks, but was tailor-made to support the coaching activities of the Knowcities network on the field of cluster management. Different from *off-the-shelf* guides, we strongly believe that the practice of cluster management should:

i) Be adapted to the characteristics of the cluster being "managed" (reason why we briefly discuss some state-of-the-art knowledge about the functioning of clusters)

ii) Make a clear distinction between three different yet interrelated concepts in cluster management: the cluster as a *phenomenon*, the cluster *policy* and the daily *practice* of managing and implementing a cluster policy.

The remainder of this paper is organized as follows. Although it may look self-evident, section 2 presents a notion of cluster and the mechanisms that underlie them, in order to better understand the nuanced "objects" of cluster management. Section 3 is the core of the paper

and presents a "reference framework" for cluster management, i.e. the key issues that should be looked upon when reflecting about cluster management – this is the basis for the self-assessment and learning processes to be carried out by the involved cluster managers under the Knowcities network. Section 4 presents international best practices on cluster management and brings together experiences from the network Knowcities (exploring previous city-reports). Section 5 concludes by suggesting and detailing a working programme for the involved cluster managers in their self-assessment efforts, in close interaction with UrbanIQ.

2. What is a cluster, how does it work, and what can policies do?

The literature on clusters is very large, yet fraught with contradictions and debates. It is not the objective here to present a review or plug into the controversies, but simply to present some basics on clusters and the functioning of clusters[1]. This should provide some more formalized ideas on "what are we trying to manage and how".

Many authors and practitioners speak about clusters without providing a concrete definition. One of the most well-known definitions of cluster is the one of Michael Porter: "a cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by communalities and complementarities (2000, p. 16). Another interesting, simpler definition is the one of Belleflamme et al (2000, p 161): a cluster is a "full or partial agglomeration in one region of firms…that benefit from each other´s presence".

Without getting lost in the semantics, the above (and other) definitions share a communality: clusters exist – i.e. firms in a specific field tend to locate together – because firms *benefit* somehow from this proximity; or, in the jargon of economists, clusters exist because agglomeration and proximity generates some kind of "increasing returns", synergies and thus joint efficiency between firms. This phenomena of concentration existed way before any type of deliberate cluster policy had ever been conceived, in a spontaneous way.

There are three main mechanisms responsible for such advantages in well-functioning clusters (Duranton and Puga, 2004): i) possibilities for *sharing* of specific, indivisible infrastructures (e.g. an expensive lab) and service providers (e.g. specialized lawyers); ii) better/easier *matching* (e.g. employee-employer, provider-supplier, project partners, financiers, etc) and iii) joint *learning* possibilities about technologies, markets, trends, etc, both by cooperation in formal networks, informal knowledge exchange and even observation of rivals and competitors. These mechanisms may result in more fluid and specialized local labour pools, input-output relations and idea´s exchange between clustered firms and other organizations – as long recognized by Marshall (1890). It is due to such mechanisms that Porter (1990) suggested many firms do better when inserted in clusters of similar firms, contributing to regional and national economic development.

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[1] For other references and a comprehensive (and critical) review, please see Martin and Sunley (2003) or Asheim et al (2006).

Yet, the emergence of such mechanisms is not warranted for all types of firm´s agglomerations. It is to some extend a question of scale – a certain threshold is necessary. But beyond that, since the benefits that drive clustering cannot be fully appropriated by single firms, we can expect that firms tend to under invest (e.g. in knowledge diffusion and sharing, non entry of specialized providers, no development of specialized infrastructures or training) and that a number of market failures will emerge. In other words, since the social returns of "clustering" are larger than the private returns and there are a lot of information asymmetries at play, governments and other organizations develop cluster policies to try to "make sure" that matching, sharing and learning dynamics happen, in strategies that are often called of "collective efficiency". Typical examples of such policies are the promotion of meeting platforms between firms (such as CEO meetings), the provision of funding for joint projects, training schemes and the development of science and technology parks – they all have an eye on growing the cluster, share indivisible facilities and foster synergies among firms (Van Winden et al, 2012).

To be fair, it should be stated that these "standardized" policies have several pitfalls (e.g. Duranton et al, 2010). First, it is a complex task to know which types of inefficiencies are present and fine-tune policy accordingly (reason why "one-size-fits-all types of policies are often preferred, yet with limited results). Cluster managers should do their best to assess which types of inefficiencies and blockages are at play (too little sharing, matching or learning, and why) and at which scale they can be tackled (e.g. labour laws or science and technology funding is often not in the hands of local policy makers, calling for lobbying and cooperation across multiple administrative levels). Second, yet not unique to cluster policies, there is a risk that the policy gets captured by the interests of "old" and powerful industrialists willing to extract rents for their own (often declining) activities. Moreover, there is an expected political bias to favour more "visible" projects in spite of softer, perhaps more relevant initiatives – even when not in the position to fully control for such biases, cluster managers should be aware and minimize the risks, e.g. by involving "birds of different feathers" in the cluster initiative and by trying to diversify the types of coalitions. Finally, it is also important to assure that cluster policy doesn't turn into a way to give direct support to the needs of individual firms (redistribution of resources) – apart from not constituting a way of fostering collective efficiency, research shows that it often results in artificially supporting "losing" companies, violating rules of competition and privileged treatment[2].

Clusters from a dynamic perspective

The previous view on clusters and cluster policies is the most conventional. Yet it largely ignores the fact that clusters are dynamic realities – their characteristics change over time, and so should policies willing to support them. There is a large body of literature that studies clusters from a dynamic perspective, trying to understand how they emerge, develop towards maturity and rejuvenate (e.g. Braunerhjelm and Feldman, 2006; Boschma and Fornahl, 2011; Maskell and Malmberg, 2007). This literature provides an interesting and complementary framework for cluster policies and cluster managers.

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[2] In the face of such difficulties (and limited evidence of sound results), some commentators have made the case for cities to abandon cluster policies and focus instead in "doing the basics well" (general basic education, land planning, housing, good public transport and quality of life provisions).

According with this stream of thinking, cluster development runs through different stages: take-off, golden age and maturity. The *take-off or early stage* is often characterized by the presence of a hard-to-predict triggering event (e.g. a new national law, an external opportunity, the exploration of a new natural resource or technology), followed by an initial and often slow entrepreneurial wave during which firms start to grow and agglomerate in a specific city or region. If the emerging cluster proves its value, the "*golden age*" tends to follow: during this stage the entrepreneurial opportunities become clear and new companies emerge and grow fast, strengthening the cluster (in size and in the potential for matching, sharing and learning). Nudged by such entrepreneurial growth, during this stage a number of supportive organizations tend to develop (such as sector associations, financiers, etc) as well as new networks among firms and between firms and such organizations (e.g. to provide fitted training schemes). During this process a new institutional framework unfolds (e.g. cooperation patterns, routines of interaction, trust or distrust, reputation networks, etc), providing fertile ground for the cluster´s further growth, namely through the alignment between firms needs and the supporting infrastructure. In a later stage, the cluster gets *mature*, meaning that the entrepreneurial drive came to a halt, and the cluster is grounded in the set of routines and institutional features developed in the previous stage. From here on, the cluster has two possible paths: rejuvenation or decline. Box 1 below provides an example.

Box 1: The development of the audiovisual cluster in San Sebastian

According with *Fomento* (the City´s Economic Development Unit), San Sebastian hosts nowadays a cluster of approximately 300 audiovisual-related companies (e.g. cinema, TV, fiction, animation, documentaries). Yet, during the Franco regime, audiovisual activities were almost fully concentrated in Madrid. As the regional autonomy law of 1979 unleashed political powers and financial resources to the Spanish regions, it ignited the sparkle for the take-off of an audiovisual cluster in the Basque Country, and in San Sebastian in particular, through i) the emergence of a (subsidized and regional identity-promoting) film industry and ii) the implementation of the Public Basque broadcasting TV. This resulted in a number of projects between external directors and local staff, as well as business opportunities for script writers, actors, free-lancers, producers and post producers of small movies, documentaries, fiction, TV shows, advertising clips, and many other audiovisual services and products.

As a result, during the 80s and 90s, an audiovisual cluster emerged, developed and prospered in San Sebastian, with, among others, the presence of specialized providers, input-output relations, large players (TV), localized knowledge and information spill-over through labour mobility (e.g. free lancers), etc. Moreover, this cluster shares a specific set of institutions and contexts developed over the last decades, such as the presence of supportive producers and actor´s associations, audiovisual sector entities, municipal film commission, and, more recently, networking and external promotion initiatives supported by the Basque government. Universities and R&D centres developed working routines with some of these players (namely the TV), and provide relatively aligned courses and specializations for the sector's needs. Despite the relatively small size of the cluster, chambers of commerce started to pay extra attention to it, organizing specific trend-watching conferences and providing information about global developments in the industry. This set of institutions is complemented by soft features developed over time such as i) specific business outsourcing (TV) and subsidizing routines (Basque Ministry of Culture), ii) culture and establishment of "old boys" networks of established producers and iii) firms and free lancer´s reputation.

After almost 30 years of the initial sparkle, a first round of the cluster's development seems to have reached maturity. At this stage, saturation of more traditional business models (e.g. conventional audiovisual production) and the challenges imposed by general industry trends such as new media and platform convergence are opening a period of transition and discontinuity. Direct and indirect dependence of the cluster from TV outsourcing and Government subsidies is overall high, while the growth rates of firms, jobs and turnover are limited. Simultaneously, new entrepreneurs are adding novelty to the cluster, e.g. bringing external knowledge and access to new technologies and clients (3D technologies, FX and virtual reality); others are developing content for external

markets, based on new external networks of business contacts (e.g. documentaries). However, all in all, new private ventures and new applications didn't generate yet the "wave of entrepreneurship" and exploration needed to spur new rounds of innovation. At this stage a group of important players enjoy stable and rather captive markets and new entrants lack the structure to compete on the same business models. This is hampering the development of new activities' portfolios and delaying investments and responses to new challenges and trends. Institutionalized behaviours, culture and an understanding gap between new and former entrepreneurs may hamper the development of related combinations and new audiovisual activities.

According with this line of thinking about clusters "policy matters", yet in a nuanced way (Orsenigo, 2006; Carlsson, 2006; Wolfe and Gertler, 2006). Since clusters have different development stages, off-the-shelf policies are very likely to miss the point. Different types of policies seem to be required for early and latter stages of cluster development (even if some of them may overlap across stages).

For the *early stages* of cluster emergence (i.e. once there was already a trigger event and there are early dynamics of agglomeration and entrepreneurship at play), it can make sense to widen the "opportunity space". This can be done by, for example:

- Promoting experimentation and procurement of innovative products and services;

- Identifying the required knowledge, financial resources, technical and legal services needed by firms for their activities (which may largely vary across say, a biotech and an audiovisual cluster).

- Identifying the leaders and prime movers, and foster synergies within the cluster;

- Incentivizing the creation of associations and new supportive organizations.

For the *latter stages* of development and maturity, where "path dependency" is at play, the challenges are distinct. The cluster is already composed by many players, a number of supportive organizations and routines. Here policies have to be better tailored to the cluster´s specific condition. Here some critical measures are:

- Development of strategic planning exercises, in order to evaluate progress, develop shared understanding of the city/region specific assets, external threats and opportunities, identify knowledge gaps, steer mindsets and prepare the field for cooperation between involved partners, new "triple helixes", etc.

- Identification of the evolving "functional boundaries" of the cluster (e.g. the connections between the core activity of the cluster and new types of industries and activities), as well as its geographical reach (city, region, country?).

- Fostering a new generation entrepreneurship, by providing an environment conducive to the emergence of second and third generation start-up firms; sustain the entrepreneurial drive when business opportunities seem to be slowing down;

- Upgrading of innovation capacities within existing firms, technology absorption and diffusion;

- Development of new networks and better links among firms; brokerage and mentoring activities; empowerment of boundary spanners to connect the cluster´s key activities with other sectors of the regional economy;

- Facilitate the permeability to related variety in the region e.g. supporting the access to knowledge and business opportunities from outside that may complement the regional skills, e.g. through new entrepreneurs with working or studying experiences abroad.

From the above discussions it also results that cluster policies can hardly defined once and for all. The boundaries and needs of the cluster are likely to change overtime, as policy should be able to adapt to such circumstances. As cluster managers know well, cluster policy is often a process of approximation to (evolving) objectives, and the cluster manager should be able to understand such change and adapt to always evolving circumstances.

3. Reference framework for cluster management

Considering the previous, what can be a framework to think about the (demanding) activity of cluster management?

Differently from other *off-the-shelf* guides and general "good practice" check-lists, we strongly believe that the practice of cluster management should be nuanced according with the characteristics of the cluster being "managed". The bad reputation of cluster policies in academic (and increasingly in policy) spheres is largely the result of a poor identification of the problems and challenges at hand, and unguided ambitions. Moreover, cluster initiatives frequently attempt to fit a straight jacket of policies to a phenomenon that, notwithstanding sharing some communality, can be very diverse.

Therefore, in order to frame a coaching and self-discovery activity on "how to think about cluster management", we start by proposing a clear distinction between three different yet interrelated concepts: (A) the cluster as a *phenomenon*, (B) the cluster *policy* and (C) the daily *practice* of managing and implementing a cluster policy[3]. They can be represented as 3 vertices of a triangle (see Figure 1).

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[3] In cluster management guides (often developed by general business consultants), there is a strong bias towards the 3rd vertex of the triangle (the management practice). On the other hand, academic research and literature is traditionally more concerned with the functioning of the cluster and, at, best, with the nuts and bolts of the cluster policy. We believe that a "complete" cluster manager should be able to distinguish and understand the 3 dimensions together.

Figure 1: Reference framework for cluster management
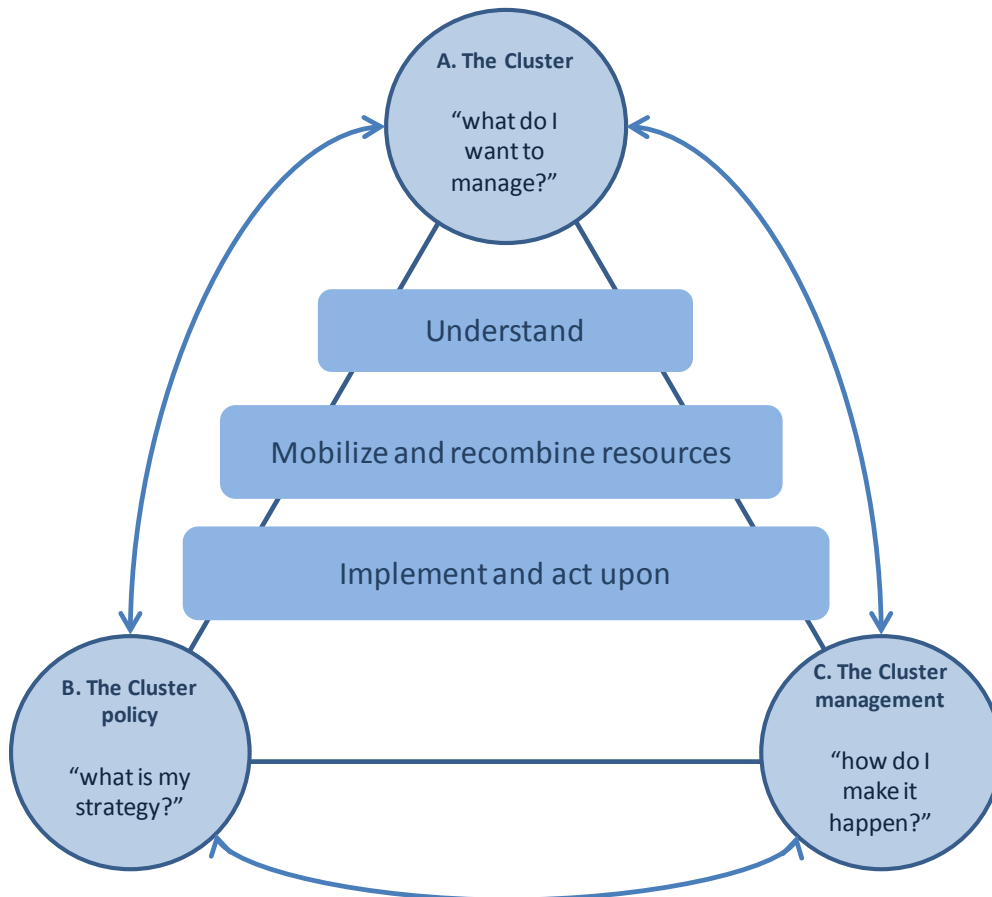
Source: Own elaboration

First, **the *cluster itself* (A)** is one of the key components to bear in mind when thinking about cluster management. Naturally the manager will have a good idea about the members of the "cluster organization" and of the firms that make part of the targeted cluster in the city/region. However, that is hardly enough as a diagnostic. As we saw before, there are many underlying dimensions that contribute (or not) for the dynamics of a certain cluster, in a certain place and time. Therefore, an essential question is "what do I want to manage", or "what is the cluster". Naturally, the answers are almost never written anywhere. They require the cluster manager (and its team) to dig deeper into the local reality, look into detailed statistics (e.g. evolution of the number and types of companies in a given activity), speak with many people and gain sensitivity to that context. In many cases the cluster manager will "know it without knowing", and hence the task is one of synthesizing the information; when not, the tasks can be more time consuming, but it is a necessary dimension in cluster management. Table 1 below provides some guidelines to think about this question.

A second dimension to bear in mind in cluster management is the concrete **cluster policy (B)**. There is a frequent conflation in policy circles between the cluster itself and the cluster policy. The cluster policy is a set of strategies and deliberate attempts to improve the conditions and functioning of the abovementioned cluster (as agglomeration of firms in a certain city/region). The cluster policy can imply actions for the cluster as a whole in the city/region, in which everybody is free to participate, or can be more limited to a certain "club" and its members (e.g. a cluster association). In most cases, the cluster policy has a combination of both elements and envisages making the cluster grow, spreading the benefits to the largest possible number of firms in the region. The cluster manager should ask her/himself what the vision and strategy in this respect is. In many cases, this is not formalized but in the heads of different persons, and the pressure to implement a number of on-going actions tends to suppress a concrete medium term strategy (which should be aligned with the concrete needs of the cluster).

Third is the **cluster management (C)** dimension, or, in other words the daily practice and activities of the cluster manager and its team. This is the "dimension" in which the cluster manager spends more time and its improvement is the ultimate goal of this framework. This has to do with the operational practice of implementing the cluster policy and constitutes the lion share of the cluster manager´s daily routine. It should be composed by a number of activities, procedures and intuitions that "make it happen", such as maintaining liaisons with firms and other players inside and outside the region, attending and organizing meetings and events, brokering actors, convincing industrialists and policy makers, promoting the cluster, etc. Naturally, the way of "making it happen" will vary with the type of cluster and their actors (e.g. a machine building cluster will be managed differently than an audiovisual cluster).

As suggested by the connecting arrows in Figure 1, the three vertices/spheres of the triangle are closely related: they should influence one another and work in tandem. The cluster policy should reflect and be aligned with the needs of the cluster itself; the cluster managing practice should be capable to implement such policy and ultimately tackle the cluster´s challenges ("make it happen"). Yet, managing these interactions requires a number of skills that go beyond the pure implementation drive. As suggested in the centre of the triangle, it requires a deep *understanding* (of the cluster, their players and development stages), the capacity to mobilize and recombine resources (towards a concrete cluster policy, involving skills, persons, "energies" and finance) and to implement and act upon it (the daily practice of cluster management).

In an "ideal world" there would be a specific sequence among the 3 vertices of the framework: the "diagnosis" of the cluster should be the starting point, guiding the specifics of the cluster policy, which on its turn would determine the type of skills/style of practice of the cluster manager (ABC). Yet, in the real "political" world, the sequences are much fuzzier: e.g. practice often starts without an explicit policy, and policies are defined without a sound understanding of the cluster in hands. As a self-assessment device, this framework allows a cluster manager to position her/himself from any starting point (A, B or C) and think on the best way to pursue the necessary alignments and adaptations.

Naturally, the cluster manager (and his/her team) does not have full control on the dynamics of the cluster (A), and many times cannot also fully control the cluster policy (B) – only perhaps influence it at higher political levels. The type and quality of cluster management (C) is the only dimension in which the manager has some direct influence, but such practice should be always seen in relation to the cluster and the cluster policy. Therefore two extra considerations are important:

i) "Excellence" in cluster management has not directly to do with a certain number of "ticks" in a "shopping list" of actions (e.g. involve the university, organize X meetings per month, support Y firms, etc), even though some of them might be very relevant. It is about the quality of the fit between the three dimensions of the framework, or, in other words, of the match between i) the cluster manager´s actions (C), ii) the strategies and resources of the cluster policy (B) and iii) the specific demands of the cluster at hands (A).

ii) The framework is dynamic. This means that the action of the cluster managers can change the cluster policy (e.g. on the basis of results, new knowledge acquired about the cluster and their own influencing/political power) and influence the development of the cluster overtime – the cluster manager becomes part of the cluster itself!

In the following Table 1, we provide a number of questions to support the self-assessment of the cluster manager, organized by the 3 vertices of the reference framework. The objective of the exercise is not to provide comprehensive and detailed answers, but to launch a first self discovery process and reflection. It is also a way of formalizing and synthesizing dispersed tacit knowledge pieces.

Table 1: Reference framework for cluster management: self-discovery and synthesizing information

Dimension	Questions	Hints and examples
A. The Cluster "What do I want to manage?"	What are the key activities and products of the cluster?	Electric machines; biotech&health solutions; software, sensors, movies, apps, surfboards, arts&crafts, pottery, touristic products, etc...
	Who are the most representative players in the cluster? (i.e. the most common type of player). Are there leader firms? Who drives the cluster with their knowledge/expertise?	SMEs, Multinationals, free-lancers & micro companies, R&D institutes and universities, sector associations, government, etc...
	From whom do the firm´s mainly get knowledge from?	Inside the firm; universities; users&clients; companies from other sectors; magazines; scientific journals; attendance in conferences, etc...
	Are there relevant business and knowledge exchange relations with other sectors of activity? If yes, with which ones?	(e.g. audiovisual cluster with ICT firms; food cluster with tourism activities? Machine building cluster with health activities)
	What is the geographical reach of the cluster?	Local, metropolitan, regional, national
	Are the actors of the cluster aware of each other´s activities? Why/Why not?	• Few/too many players; • Similar/different mindsets; • It is easy to plug in/there are restricted "clubs" and "old boys networks"; • There are good information sharing platforms/or not • (...)
	Which types of networks and relations are more *and* less dominant within the cluster?	• Sharing (e.g. infrastructures, advanced service providers, machinery and labs, specialized training, etc) • Matching (e.g. employee exchange, job poaching, free lancing, etc) • Learning (e.g. formal and informal/ad hoc partnerships and joint projects, learning from observing, spin-offs, etc)
	In which development stage is the cluster? Which types of firms have been emerging/growing and declining?	Take-off; golden age; maturity
	SUM UP: What are the 3 key problems/challenges of the cluster?	
B. The Cluster policy "What is my strategy?"	Which type of cluster policy is it?	Open (all firms of the city/region); closed membership/"club"
	Is there a vision for the cluster?	The "lighthouse", or, "where do we want the cluster to be in 5 year's time?"
	Are there concrete strategies selected to accomplish the vision?	Focus in a concrete activity of the cluster; Focus on supporting entrepreneurship, etc...
	Which concrete services are provided to the cluster´s members?	Fund training schemes, Fund joint projects, match-making, mentoring, office space, etc
	Which types of funding sources are allocated to the policy?	Government budget; member´s fees, etc...
	Who was involved in designing the strategy?	Only the government? The university? Private parties? Only members or other organizations?
	Who is currently committed with the policy, and how?	Only the government? The university? Private parties? Only members or other organizations?

	Which relevant players are NOT committed, and why is that?	Only the government? The university? Private parties? Only members or other organizations?
	Are there other cluster policies and initiatives in the region to support the same cluster? How complementary are they?	They complement each other/ there is some overlap (why?)
	SUM UP: What are the key strengths of this cluster policy? What are the main bottlenecks, and how to improve?	
C. The Cluster management "How do I make it happen?	How is the cluster management team composed? Which competences are there? Is the staffing adequate?	How many full time persons?; backgrounds?; outsourced competences?
	What is the legal form of my cluster organization? What are the main advantages and disadvantages?	Foundation; government department; Limited Liability Company?
	How often do I meet with firms in the cluster? And with other organizations (e.g. universities, sector associations, etc)?	Times per week; to speak about what?
	How often do I meet with other policy makers at the regional and national level?	Times per week; to speak about what?
	How often do I report to my superiors?	Times per week
	How often do I travel abroad for issues related with my cluster management activity?	Times per month
	What are my key "assets" vis-a-vis firms and other organizations of the cluster? Which kind of value do I add to the cluster?	• Access to other firms and organizations in the city/region; • Access to international networks; • Strong expertise in the sector; • Access to political power • Others
	Which types of joint events and meetings do I organize for the cluster´s firms and organizations? How do I help to link firms and other organizations together?	CEO meetings; expert talks; online platforms; one-to-one meetings; personal brokerage and contact bridging.
	Did I already help to link firms and organizations towards new projects (match-making)?	Examples
	Do I try to insert new entrants in the established networks? Or do I mainly deal with formerly established networks / older members?	Why?
	Do I learn with other similar organizations and initiatives abroad?	How? Specialized magazines; European networks, etc?
	Do I help branding the cluster / promoting it inside and outside the region?	How?
	SUM UP: What does work really well in my cluster management practice? What are the key bottlenecks, and how to improve?	

Source: Own elaboration

4. International good practices and the experience within Knowcities

This section contains references to some interesting and good-practice cluster initiatives in Europe, as well as within the partners of the Knowcities network. The number of cluster initiatives in Europe is voluminous, but, on the contrary, in-depth assessments of their functioning and success factors are very rare. The objective here is to illustrate some dimensions of cluster policy and practice, to serve as inspiration for in-depth and more comprehensive self-assessments of cluster managers.

We deliberately illustrate such dimensions on the basis of different types of clusters (such as machinery and equipments, food, media & audiovisual or life sciences), in cities and regions that don't immediately fall under the category of "usual suspects" or "knowledge stars". We do so to highly that some good practices of cluster management are not necessarily dependent on the "absolute" context of the region, but much more on the fit between the economic structures of the city/region and the design of the cluster initiative.

Styria: Successful public-private arrangements in cluster initiatives

Styria (a region in Austria) is an international reference concerning cluster policy and management. It was an old industrial region, hit very hard by an economic crisis in the 1980s. By that time, it started to develop its cluster approach. The following citation describes the main features and results of that cluster approach. It comes from a recent paper by Mc Neill and Steiner (2010, p. 446-447, references removed), who studied the management and development of the cluster and interviewed a large number of involved stakeholders:

"Respondents identified the creation of cluster organisations as the most important policy initiative. In each case the set-up, and succeeding strategy, was based on a significant piece of research, commissioned from universities and other research organisations (not only local ones), that set out the market trends and the threats and opportunities for Styrian companies. These strategies were based on an 8-10-year timeframe. The initial cluster organisations built on the structures of the 'old industrial area' which formed an essential part of the Styrian economy. These could be regarded as a form of 'petrified clusters' characterised by large vertically-integrated firms producing standardised goods at a late stage of their product cycle. The attempt to rejuvenate them and to create new clusters was an important step".

"The starting point, and first policy signal, was the automotive cluster (AC Styria). This action was appropriate as a number of firms, a few of them even dominant in niches, already existed, although there was no network linking them. Also, an automotive cluster is a good customer for steel the main product of the 'old' petrified cluster. As a result the sector was transformed from a concentration on industrial and public service vehicles to the manufacture of a wide range of premium products. Thus, by building on its existing skills and knowledge base a relatively high (wage) cost economy was able to attract significant inward investment, particularly, though not exclusively, from German vehicle-makers. In the process, the automotive industry became the most important sector in the Styrian economy. The initiative

also became a best-practice example for further cluster development not only in Styria but also in other Austrian regions". ~

"Following the success of AC Styria, eight other cluster organisations have been set up in 'Wood', 'Human Technology', 'Materials', 'Eco-cluster', 'Tech for Taste' (food technology) and 'Creative Industries'. Each has a cluster organisation comprising SFG, private-sector companies and other organisations such as universities. Each has the remit to define strategy, facilitate networking and cooperation between public facilities, politics and the economy, facilitate knowledge and technology transfer, provide a communication and information platform and promote the cluster. Policy is implemented in a staged manner where each cluster organisation is set up, by SFG, as a company limited by guarantee and with the level of public ownership decreasing as it develops (….) Thus, at the time of writing, the SFG stake in the automotive cluster organisation stands at just 28.67%. Five private companies make up the remaining parts of the ownership. However, the company is financed in part through the membership fees of some 180 cluster partners, who pay for basic (subscription) or advanced (contract) services and in part by bank sponsorship."

Brest: Integrated cluster management initiatives

Within Knowcities, the city of Brest is an interesting example of broad-minded and integrated cluster management. The city-region (there is close co-operation between central Brest and surrounding municipalities) has successfully created the "Pole Mer Bretagne", related to oceanic research. It is strongly supported by central government. The cluster builds on strong research expertise in related fields, like marine energy (project *France Energies Marines*). The ambition is to ensure academic and business leadership in this new field, demonstrating best practices, and top education (a master course opened on Marine Energy, in co-operation with different schools). All regional actors are behind this focus, and involved in different European cooperation projects such as Merific (Interreg IVa Manche), or Energy MARE (Interreg IVB Atlantic Area). The cluster has reached critical mass and international recognistion, despite the fact that Brest is a modest city at a peripheral location.

Brest successfully links the cluster with events. Examples are *fetes de la mer et des marins*; nautical manifestations like *Tonnerres de Brest*) and entertainment (Oceanopolis – 500,000 visitors per year). Congress tourisms is also a target. Some are linked to maritime activities such as the International Safer Seas conference, with global reach, the Sea Tech Week (oceanography and maritime environment), or the WPMC (Wireless Personal Multimedia Communications, held in 2011). A key player is the Technopole Brest-Iroise. This organisation co-ordinates activities that are relevant for the cluster, including R&D programmes, technology transfer policies, marketing, start-ups support, and the insertion of European projects. It is seen as a strong co-ordinating body by the relevant actors.

Skåne: A professionalized and knowledge-intensive cluster management

Skåne is the southernmost region of Sweden, encompassing cities such as Malmö or Lund. For many years now the Regional Authority is highly committed to the support of cluster policies, guided by the principle that a certain regional specialization in related activities is positive for

regional competitiveness. To this effect, the Regional Authority has been launching a number of cluster initiatives, e.g. in Life Sciences, ICT, Food, Packaging or New Media.

There are hundreds of cluster initiatives in Sweden, but the experience of Skåne is distinctive. First, cluster management is taken very seriously and understood as a knowledge-intensive activity in its own right; cluster management function is professionalized. The design and implementation of cluster policy is grounded on the most recent scientific insights on clusters and regional innovation policies. Supported by leading social-innovation scientists, all the cluster policies derive from a comprehensive analysis of the regional economy, its sectoral composition and institutional features.

Moreover, cluster policies and practices are permanently monitored and evaluated. Beyond more conventional evaluation studies (e.g. recently conducted by Oxford Research, 2011) a recently commissioned study analysed each cluster policy in the region in relation to the effective "skill´s relatedness" of the supported activities. This approach allows assessing which types of activities share complementary-related skills and thus provide better prospects for joint learning (Henning et al, 2010). This analysis is being used to fine-tune the cluster policy accordingly, namely to boost innovation and knowledge exchange within the cluster.

In the next paragraphs, we give provide some insights on two of the cluster initiatives and practices within the broader "Skåne Cluster Strategy": Food and "Moving Media". We chose the two initiatives because they focus on very different types of activities. Hence, despite sharing some communalities (creating meeting places, establishing relations with the innovation system, support members wishes, etc), their features differ. Moreover, while food is usually understood as a more traditional industry, media is the paradigm of a new growing cluster with high symbolic content. The following insights are based on the recent study of Henning et al (2010).

Food. During the last two decades, the food industry in Skåne changed considerably. Among others, on the face of competitive pressures from other EU regions, it has moved towards new niches products (e.g. functional and health foods); industrialists increasingly recognise the value of cooperation with universities, joint-ventures and other long-term costumer-supplier partnerships for innovation and new market development. Skåne concentrates actors from the whole food value chain – "from farm to fork" – and this is seen as an important strength. Moreover, companies tend to recognise the cluster organization as instrumental to access new networks.

In this vein, the "Skåne Food Innovation Network" is a cluster initiative whose aim is to foster stronger connections among food-related players in the region. Among its key activities are: i) strengthen networks (organization of seminars, lectures and workshops; CEO meetings, etc) ii) recruitment of students and attraction of skills to keep the competitive edge and change perceptions (career portal, career days, summer placements, etc); iii) direct innovation support (e.g. technical and market expertise for start-ups, consumer analysis) iv) foresight and development of common visions for the sector (workshops and seminars on issues such as private labels or social corporate responsibility); v) innovation and research support (e.g. management of large technological development projects).

Interestingly, the network recently development a number of web-based tools to provide an overview of the region´s food players and their projects, recruitment opportunities and company presentations ("food map") – this makes it easier for firms outside the region to identify partners, while allowing for "food knowledge" accumulation in the region.

Yet, a recent analysis suggests that the "farm to fork" value-chain strategy that grounds the cluster initiative requires some adjustments, namely if the objective is to steer knowledge spillovers – farmers and technologists don't share related skills. In this sense, fostering links with e.g. chemical-based industries might be more adequate, and the cluster managers are working to align the policy in this respect.

"Moving Media". "Moving Media Southern Sweden" (MMSS), launched by Region Skåne, is an "umbrella" organization (focusing on film, television, computer games and mobile technology), in which several more niche-oriented initiatives are included. The intention is to avoid overlap between local and regional initiatives that aim to support the cluster. In the start-up phase, Region Skåne took the lead in the initiative, but since mid-2009 it had been run under the framework of a non profit organization, and more concretely, through a non-profit limited Liability Company. In October 2009 it had 75 members, most of which very small companies. MMSS was funded with EU resources for the first 3 years of its activity, but much of its activity has since them focused on attracting more capital to bring the initiative sustainable over time.

MMSS explicitly focus on innovation and not on more conventional direct firm support; therefore, finding links between traditional and new media is a key objective, as well as in giving such a dispersed sector a "face". The activities of MMSS are divided in 7 areas: i) cluster strategy and cluster management; ii) business development; iii) R&D; iv) training and recruitment; v) marketing and communication; vi) cluster expansion and vii) creative modes. Each of these is run by a group of specifically assembled actors. While most of the innovation support in the region are focused on nurturing technological collaboration between industry and academia (e.g. food, engineering, and life sciences), MMSS also targets demand-driven and user-centred innovation (e.g. by supporting living labs for new media companies). Moreover, MMSS supports start-up companies in bringing products to market and brokering them to potential financial resources (which traditionally don't pay attention to such small ventures).

An important part of MMSS activities has to do with international branding of the cluster. Since the region is relatively small, its companies and products have necessarily to target broader markets. Thus, MMSS works to highlight the skills and expertise of the region in order to enhance its profile internationally. By grounding national and international communication on the basis of a number of rather successful regional products (e.g. film novels of well known writers) it is seem as a text book example of regional branding creation, as well as an example on how to create a common vision for a specific sector (e.g. by profiling the specificity of these industries vis-à-vis other more traditional types of activities).

Coimbra-Cantanhede: brokerage and cluster management without formal cluster policy

During the last years, a number of *life-science cluster management* practices unfolded in Coimbra (also a city within the Knowcities network), but not formally linked to any specific/explicit cluster policy or cluster organization. Those practices were (and still are) carried out by a number of players such as a well-connected University Professor and a number of transnational scientists. These actors managed to nudge the proactive mayor of Cantanhede (Coimbra´s neighbouring town) to establish a fully-dedicated biotechnology park (Biocant), with an eye on boosting (read: starting) the commercialization of the state-of-the-art research done in the region (namely in the University of Coimbra). The city of Coimbra is now active in developing life-science clusters and platforms, but it should be noted that the *cluster management* practices we refer to started way before the recent enthusiasm, and still largely happen independently of any formalized cluster organization (even if some of its "managers" are now also involved in the recently created Health Cluster Portugal).

Beyond the physical dimension of the park´s buildings (inaugurated in 2005), the development of Biocant was a first step in nurturing a new set of very effective and informal cluster management practices. Vale and Carvalho (2012) explored the features of such a model, where the role of "cluster manager" was early assumed by the Director of the park, vice president of CNC - Centre for Neuroscience and Cell Biology, University of Coimbra. First, since the sector was very recent in the region and in the country, a critical mass of new entrepreneurs had to be nurtured before knowledge interactions could unfold – to this effect and through his high-level network, the director attracted PhD graduates to located their starting ventures in the park, and also nudged expatriate PhDs in the US (MIT, Harvard, Austin) to do so, bringing in their state-of-the-art skills and market links to the region. In a second stage, the director started to act as a broker/boundary spanner, introducing and linking new companies to each other, supporting them to identify market and technology needs – these actions were informally carried out not at the level of the park only, but at the regional, national and international level.

As the park grew and developed as a "cluster ecosystem", new companies from other parts of the country and venture capitalists increasingly looked for the park to invest. They see the park as a very good and "safe" location to invest, since it hosts a differentiated "problem-solving" ecosystem and a good place to develop and learn from others. These features can be largely ascribed to the presence of good research centres and (now) experienced entrepreneurs, but the broker´s role of the park´s director is still a large plus.

Currently, many cluster initiatives exist but the "management" of the life science cluster in Coimbra still happens in a largely implicit and distributed fashion (i.e. there is not one single "cluster manager", but more). The director of Biocant, now with other successful "spin-off" entrepreneurs act as mentors for new companies and help to establish relations between new and old ventures in the region. However, Biocant has not a formal incubation service – this role and related services are provided by IPN (Incubator of *Instituto Pedro Nunes*), informally articulated with Biocant by tacit cooperation, informal contacts and trust – yet the two organizations "never signed a paper".

Life sciences and biotechnology are very specific activities, still fast growing and with distinctive and demanding innovation and learning modes. Managing such a cluster requires very specific knowledge and networks that are hardly in the hands of the city administration. In these cases, it is important to distribute the "cluster management" role in the hands of knowledgeable players, recognised by the sector´s agents as such.

5. In-depth assessment of the cluster management practice: working guidelines and expected results

In order to support cluster managers in their process of self-assessment, the UrbanIQ team will make a one-day visit to each city, to discuss the practice of cluster management and bring the managers on a higher level. The process has several steps:

- **Step 1:**

Decide which cluster manager(s) are going to be involved in the cluster management exercise in your city. We can handle a maximum of 4 managers per city.

When: by **15 June**, names must be known.

Deliverable: names and contacts of the involved cluster managers, and the cluster initiatives they represent.

- **Step 2:**

Each cluster manager reads this document carefully. Then, the local co-ordinator organises a first meeting with the cluster managers. They discuss the document, and check if things are clear (especially how to fill in the table). If some things are unclear, please formulate the questions for the UrbanIQ team and we will clear things up.

When: **Before 10 September**

- **Step 3:**

After this meeting, each cluster manager carefully fills in the self-assessment table individually. No need for large texts – bullet points and short explanatory notes should suffice; the objective is to guide the self-assessment and the meeting with UrbanIQ.

When: **Before 20 September**

Deliverable: one table filled in **per cluster manager**, based on its experience managing a specific cluster, sent before 20 September to UrbanIQ.

- **Step 4:**

The UrbanIQ team visits the city for one full day. They will make a presentation about modern cluster management and good practices, and have an in-depth discussion with the cluster managers based on their filled-in self-assessment.

When: **Before 15 October**, both visits are done.

- **Step 5:**

The cluster managers make an evaluation of the process: they will formulate key issues and bottlenecks that need to be solved, and also formulate how they will apply the lessons of the coaching exercise in their future work.

When: before **30 October.**

Deliverable: Short summary document *per* cluster manager, pointing key issues and bottlenecks in their cluster management practice (roughly 500 words) and potential solutions (500 words).

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