

1 Innovation and network leadership: The 2 bureaucracy strikes back?

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7 **Abstract.** This article focuses on the relationship between network leadership and innovation in the public sector. Data from
8 three case studies on digital-based municipal networks in Norway are presented, covering the period from 2006 to 2017.
9 Although the networks share key characteristics, their capacity to accomplish technical and organizational integration varies
10 considerably. Each network is thus analyzed according to four traditional leadership roles. A key finding is that there is a
11 connection between innovation and network leadership. Networks facilitate entrepreneurship, but without an integrator and
12 well functioning administrative superstructure, their ability to innovate could be compromised: the mix of leadership roles
13 therefore matters. Second, given the lack of formal authority in networks, power arises when professional ICT experts with
14 access to knowledge collaborate with Chief Executives Officers with access to decision-making structures. ‘Dyadic leadership’
15 and ‘Network conductors’ are terms introduced as contributions to this emerging insight. Third, informal networks and “ICT-
16 clubs” struggle to innovate as integration advances beyond relatively loose digital collaborations. A key explanatory factor is
17 the extent to which network leaders manage to mobilize political and administrative support towards formalizing the networks
18 and thus driving innovation.

19 **Keywords:** Municipalities, innovation, ICT, networks, leadership, management, dyadic leadership, network conductors, network
20 dynamics, governance

21 1. The integration of technical and organisational networks

22 New digital technology puts pressure on long-established governmental forms (hierarchies) while also
23 opening up opportunities for cooperation that span traditional institutional boundaries (networks). The
24 purpose of this article is to understand network dynamics, and to investigate the relationship between
25 leadership in networks and the capacity to implement digital innovations.

26 Increasingly, Norwegian municipalities are developing a variety of joint ICT-supported services across
27 municipal and institutional boundaries (Jacobsen, 2014). Municipal cooperation is not a new organiza-
28 tional form; however, the scale has gained momentum in recent years, not least because of technology.
29 Local municipalities join forces to master complicated projects such as building ICT infrastructure, to
30 gain access to expertise, reduce costs, enhance e-services and ultimately share case processing and joint
31 service production (Baldersheim et al., 2008, Haug, 2009, Haug, 2014). The main advantage is that a
32 fusion of technical and organizational networks provides local politicians and public service managers
33 with a new way of thinking about the relationship between the functioning of local administration and
34 the structure of municipalities (Haug, 2009).

35 In a network perspective, innovation is an open process, inspired by focusing on the use of a wide
36 range of internal and external resources for innovative opportunities (see e.g. Chesbrough et al., 2006).

37 Participation in innovation processes through co-creation and networks enables municipalities to become
38 “open institutions”. Recent estimates suggest that each of Norway’s current 426 municipalities, half of
39 which has less than 5,000 inhabitants, is a member of more than 14 different public sector networks. At
40 present a fast growing number of cross-institutional *digital* collaborative arrangements are emerging at
41 the local and sub-regional level in Norway as well as in the other Nordic states (NOU, 2005:6, ECON,
42 2006; Høykom, 2004a, 2004b & 2006; Baldersheim et al., 2008; Jacobsen, 2014).

43 Exploring the large literature on *innovation*, a distinction is sometimes made between invention and
44 innovation (Haug, 2014). Rogers (1983), who has been especially concerned with the diffusion of in-
45 novations, focuses on the individual and organizational levels: “An innovation is an idea, practice, or
46 object perceived as new by an individual or other unit of adoption” (Rogers, 2003: 36). The latter en-
47 capsulates a localist view of innovation applied by several studies of innovation and implementation of
48 ICTs (Andriessen & Koopman, 1996; O’Looney, 2002; Snellen, 2005; Fagerberg et al., 2005; Bessant
49 & Tidd, 2011) and this localist perspective will be employed here. Moreover, networks are considered
50 to be implementation structures for ICT and new ways to produce public services.

51 Although inter-organizational collaboration among public agencies is now commonplace, so too are
52 expressions of frustration by those involved (Rhodes, 1999; Heeks, 1999; Kickert et al., 1999). Sullivan
53 and Skelcher hold that ‘there can be considerable political, operational and financial obstacles to making
54 collaboration work’ (2000:7). Others have scrutinized the problem of the ‘democratic anchorage’ of
55 network organizations and a possible loss of legitimacy compared to conventional government (Stoker,
56 2004; Sørensen & Torfing, 2005; Olsen, 2006; Jacobsen, 2014; McGuire & Agranoff, 2011).

57 2. Innovation in three municipal networks in Norway

58 Three networks were first examined between 2005 and 2008 (Haug, 2009). The main data collection
59 methods were interviews with municipal mayors, CEOs and ICT managers, document studies of local
60 contracts, network plans, reports, budgets, financing, etc., as well as analyses of the websites of the
61 various networks.

62 Each network aimed at facilitating and implementing inter-agency ICT initiatives at the local and sub-
63 regional level in Norway. All are public sector networks (McGuire & Agranoff, 2011; Jacobsen, 2014)
64 of members with democratically elected leaders and all are subject to identical legal regulations, with
65 similar tasks and responsibilities. Although participation from universities or private businesses occurs,
66 each network was essentially initiated and developed by a group of neighbouring municipalities.

67 Despite their many similarities, the networks produced significantly different outcomes. The differ-
68 ence can be presented along two related dimensions: technical and organisational integration. *Technical*
69 *integration* concerns the extent and types of shared ICT solutions between the network members, rang-
70 ing from basic infrastructure, through shared ICT-applications, servers and professional systems to the
71 provision of e-services across the boundaries between municipalities. The second dimension relates to
72 *organizational integration*. This include structural variation and can vary from an informal ‘club’ of IT
73 managers established to exchange ideas through a contractual relationship to a ‘consortium’ with a board
74 of representatives, based on a formal and comprehensive agreement between the municipalities.

75 In Fig. 1 below, each of the three networks is positioned along these two dimensions (arrows illus-
76 trate the development from 2006 to 2016). In 2006, the Mountain Region was characterized by a high
77 level of technical and organizational integration. The Digital West Agder (DDV) was a moderately tech-
78 nically integrated network, although binding organizational integration was almost totally absent. The

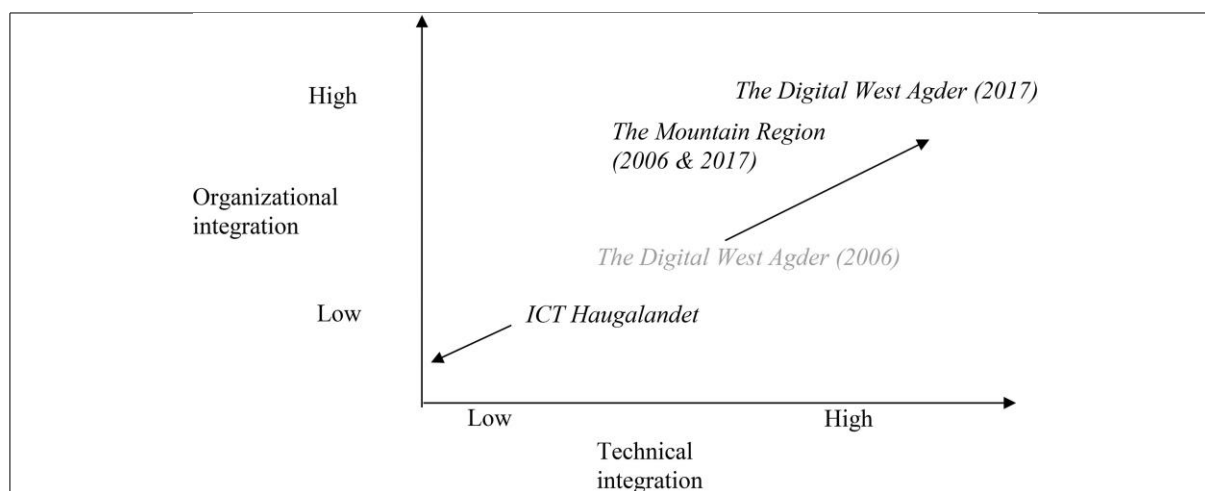


Fig. 1. Three Norwegian municipal networks according to level of technical and organizational integration.

79 third case, ICT Haugalandet, was situated close to the lower left corner. It has a similar low level of orga-
 80 nizational integration as the Digital West Agder, but is much less technically integrated. The latter case
 81 is particularly interesting because this network had earlier been viewed as a success story in a Nordic
 82 context (Baldersheim & Øgård 2003).

83 Placing each network as in Fig. 1 is, of course, a sweeping statement. A network might well be con-
 84 sidered successful despite moderate integration. Nevertheless, an important question arises: *why are the*
 85 *three networks – despite a number of similarities – positioned so differently along these dimensions?*
 86 *Moreover, how do these networks develop through time?* To answer this and related questions, we shall
 87 now undertake a more detailed description of each network paying particular attention network leader-
 88 ship.

89 3. Network leadership as explanatory variable

90 Northouse defines leadership as ‘*a process whereby an individual influences a group of individuals to*
 91 *achieve a common goal*’ (2012:3). Four elements in this definition should be emphasized. First, leader-
 92 ship is a *process*. Leaders continuously influence – or are influenced by – the person(s) they lead. As
 93 a result, leadership is not a linear or one-way process, but an interactive practice. Second, leadership
 94 emphasizes *influence*. Influence is about how leaders obtain power over those directed. Third, leadership
 95 normally occurs in *groups*, which differ in size and shape. A fourth key element is that leadership is
 96 about *pursuing goals*. Leadership takes place through instructions and other means and has its effect in
 97 a context where individuals and processes are moved towards a target. Based on these broad and general
 98 elements, a large number of more specific leadership categories are crystallized.

99 It is perhaps paradoxical to talk about network leadership or ‘the network manager’ (O’Toole et al.,
 100 1999). After all, networks are defined by a lack of authority, as in Powell’s (1991) classic study ‘Neither
 101 Market nor Hierarchy’. Yet, as O’Toole has pointed out, actors or sub-sets of actors sometimes gather
 102 individuals to support or move the network towards specific solutions or a particular policy (1999:137).
 103 At the same time, such actors cannot automatically expect full support. O’Toole’s suggests that in the
 104 absence of authority or suitable rules, a network leader must use a wider range of strategies than those

105 commonly recognised in the public sector. Agranoff and McGuire have argued that network management
106 can be described through four management functions or “Collaborative Management Skills”: Activation,
107 Framing, Mobilizing and Synthesizing (Agranoff & McGuire 2001a: 298–300; Cf. Agranoff, 2007).

108 However, what does ‘a wider range of strategies’ mean, and how are such functions held in practice?
109 A useful typology of leadership *roles* is developed by Adizes (1980), who devised what has become
110 known as the PAIE scheme (Producer, Administrator, Integrator and Entrepreneur). These four roles are
111 frequently referred to in textbooks on leadership (e.g. Strand, 2007; Northouse, 2012).

112 The *Producer* focuses on the importance of pursuing a goal. He or she is good at ‘getting things
113 done’, familiar with technology and other aspects of the field. A producer thinks logically, rationally and
114 is capable of strategic thinking. He or she typically serves as project manager or technical engineer.

115 The *Administrator* focuses on control, monitoring and legal regulations. He or she considers structure
116 and regulations as important, and is keen to keep things in order. Strict discipline, surveillance, docu-
117 mentation of working hours, specification of procedures, contracts, audit and total quality management
118 are techniques in the Administrator’s toolbox.

119 The *Integrator*, on the other hand, is more concerned with identity, interdependency and harmony.
120 He or she cultivates holistic thinking, compassion, inclusive training and social integration, and tries to
121 mediate when conflicts emerge. The integrator is a negotiator and a master of compromises.

122 Finally, the *Entrepreneur* is characterized by an ability to create a vision and to follow this up by
123 means of creative solutions. He or she values starting something new, e.g. exploiting a new technology or
124 initiating organizational changes. The Entrepreneur is also good at mobilizing support for ideas, building
125 alliances, etc. Personal capacities include a willingness to take risks, energy, endurance and charisma.
126 However, the Entrepreneur is sometimes criticized because he or she does unusual things that might
127 override social norms or has an unrealistic interpretation of business opportunities, etc. Thompson et al.
128 (1991) employ the term ‘cowboy’ to describe the ‘dark sides’ of the entrepreneur. Adizes (1988) uses
129 the term ‘arsonist’ to describe leaders not capable of pursuing their ideas from vision to implementation
130 and operation.

131 Given the vast leadership literature, it is, of course, possible to overlook other theories of leadership
132 that might be relevant. For instance, McKenney et al. (1997) operate with an interesting typology in
133 specific forms of ‘technological leadership’ (1997), and van Wart’s (2014) presents several leadership
134 styles in ‘The Leadership Action Cycle’. However, the choice of leadership perspective here is based
135 on a network leadership literature review (Haug, 2009). Adizes’s strength is that all the roles are simple
136 to define, transparent and subject to a number of previous empirical analyses of municipal leadership
137 in Norway and the Nordic municipalities (Strand, 2007). A further strength of the PAIE scheme is its
138 emphasis on various leadership roles being *complementary*. All roles must be covered, but the mix
139 matters. The PAIE scheme is generic, i.e. also suitable for explaining variation in results from network-
140 based organizations.

141 Below the PAIE scheme is applied to three municipal ICT based networks in Norway. The overall idea
142 is not to ‘test’ the PAIE approach per se, but to investigate the networks’ motivations and the relationship
143 between leadership in networks and the capacity to implement digital innovations.

144 3.1. Case 1: Network leadership in the Mountain Region

145 The Mountain Region (‘Fjellregionen’) in Southeast Norway covers an estimated 24,000 inhabitants,
146 but the area is comparable to Schleswig-Holstein or Thüringen in Germany. In the south of the region, a
147 digital partnership between five municipalities has been formed. The primary driver and host is the town
148 of Tynset in the largest municipality.

149 Here several initiatives and ICT projects are of interest. First, a common helpdesk and resource ‘pool’
150 for ICT-employees has been established. ICT staff from the five municipalities are in fact working an
151 estimated 40 percent of the time for their home municipality and 60 percent for the network on a rotating
152 basis. According to the CEO in Tynset, the solution is considered a major success due to both better
153 utilization of the ICT resources and because staff no longer have to work in isolation:

154 *The resource ‘pool’ made it possible to allocate ICT experts from day to day operations to new*
155 *initiatives. The pool of ICT-related ‘know-how’ plays a major role in generating and operating new*
156 *ICT-based projects*

157 From the centre of Tynset the network is coordinated by means of a ‘work central’ connecting or
158 disconnecting users and applications according to what is agreed upon. The bulk of the functions are
159 furthermore organized as technical yet professional ‘sub-networks’, e.g. a health network, a social ser-
160 vices network, rehabilitation and care network, etc. For instance, an employee dealing with child welfare
161 in one municipality can easily access necessary data (personal data, records, local regulations, etc.) from
162 a municipality situated on the other side of the region. In short, services can be carried out in neighbour-
163 ing municipalities thus facilitating organizational flexibility. Mutual ICT infrastructure has also stimu-
164 lated cooperation among local politicians and CEOs on issues such as writing statements on national
165 consultations or reports on regional issues.

166 In 2005 each Municipal Council decided to formalize the network into an Inter-Municipal Corporation
167 (based on a special Norwegian statute). The five municipalities are the formal owners of the company,
168 which has three steering structures: a Board of Representatives (mayors), a Steering Group (mainly
169 CEOs), and a General Manager (currently the ICT manager in Tynset municipality). Each municipality is
170 the formal owner of common resources. Yet, if a municipality decides to leave the group, the technology
171 stays behind. Another result of the agreement is that they act as *one* legal partner when dealing with
172 private ICT providers, thus gaining market power and further reductions in ICT costs. As a result, each
173 municipality is more formally as well as financially committed, although withdrawal is always an option.

174 If we take a closer look at network leadership in the Mountain region in 2006, the most prominent
175 role was the *Producer*. According to our informants, the network did not develop due to a top-down
176 approach or a visionary leader. On the contrary, the network emerged and developed gradually from
177 below, i.e. out of pragmatic and careful planning by the five municipal ICT-managers. As time passed,
178 the ICT personnel came to know each other – even forming friendships – while exchanging ideas about
179 technology and how to better utilize scarce resources. The process was problem-driven; based on the ex-
180 perience of severe pressure of work, professional isolation, stagnation and vulnerability. Even though all
181 ICT-managers participated, the ICT-manager in Tynset municipality in alliance with his Assistant Chief
182 Administrative Officer (CEO) were identified by the informants as particularly important. They were
183 the first to put a draft agreement on paper, they designed common work processes and organizational
184 models, arranged meetings, prepared common ICT purchases as well as conducting several negotiations
185 about the location of services and designing the common work pool.

186 The network also had a clear *Administrator*; or rather consensus was established as to the necessity
187 of formalizing this role. Local politicians, CEOs and ICT managers all wanted ‘to keep things in order’.
188 Yet none appeared as directly ‘bureaucratic’ in the negative connotation of the word. According to the
189 CEOs, the Administrative role has contributed to stabilizing the network, has enhanced transparency and
190 political influence, as well made it possible to fulfil legal obligations. The CEOs were also motivated by
191 binding agreements on issues such cost sharing, governability, accountability and liability. Among the
192 technicians, a formal model also made it easier to handle issues of information security. Data protection

193 was considered particularly important early on as each municipality handles a significant amount of
194 sensitive personal data. Yet, the most important driving force behind the formalization was probably
195 political power. When the Mayors entered the network, they soon demanded a formal model in order to
196 ensure political influence and control. This has even increased, as one of the Mayors explained (2006):

197 *In the beginning, the agreement was far too euphoric. Having the Board of Representatives to meet*
198 *once a year was not enough – too optimistic. The politicians wanted more influence.*

199 The third kind of leadership also evident in the Mountain region was the *Integrator*. Keywords used
200 to describe this role were ‘facilitator’ or ‘good at reducing barriers’. The integrator did not work on
201 an operative level, but was frequently in contact with ICT consultants and others involved. This was
202 of course partly the job of the Manager (a position established after they decided to set up the inter-
203 municipal company). However, according to our informants the most important architect and the key
204 Integrator in the Mountain region was the Assistant Chief Executive Officer in Tynset municipality. As
205 mentioned above, this person was also particularly active as an Administrator and assistant CEO for
206 the largest municipality. By initiating reports, carefully listening to politicians, designing work models,
207 utilizing local knowledge, and reconciling differences among the ICT managers, he has contributed
208 significantly to the network. He also appeared as a positive and unifying person. Moreover, because he
209 held an important position in the largest municipality, he easily gained access to political leaders in all
210 municipalities.

211 For example, he initiated the Plan of Actions, in which the local politicians consider on an annual
212 basis which ICT projects will be given priority. The plan has, according to the informants, contributed
213 significantly to increasing political governability while at the same time reducing unrealistic expecta-
214 tions as to what the network is going to deliver. It prevents potential conflicts and is recognized and
215 institutionalized as a key steering document. A second example concerns flexibility. Each municipality
216 is accepted as sovereign and does not have to commit itself to a particular ICT project. This was an im-
217 portant principle, emphasized by the assistant CEO as functioning almost as a ‘valve’ for the network. A
218 third integrating step, initiated by the ICT manager in Tynset, was to include ‘the users’ in ICT projects.
219 Permanent user groups (such as healthcare workers, teachers and administrative staff) were established
220 in relation to digital expert systems operated by the network and they continuously provide feedback.
221 This inclusive strategy also created a ‘sense of belonging’ and prevented negative attitudes towards ICT
222 activities. The ICT manager as well as the Assistant CEO emphasized that the comprehensive strat-
223 egy resulted in far better ICT systems, eased implementation, and also legitimized technical network
224 decisions on the operative level.

225 In short, three of Adizes’ four roles were apparent in the Mountain Region in 2006. However, we did
226 not find a typical *Entrepreneur*. Based on the conversations with the informants, there was no typical
227 enthusiast or visionary leader. The network was built as they expressed it, ‘stone by stone’ by Producers,
228 Administrators and Integrators.

229 Ten years later, the Mountain Region’s network is still vital and functioning well. Their ICT and inno-
230 vation processes remain organized as an Inter-municipal Company with no major changes. The network
231 manager is also the same person, still employed in Tynset municipality, but seconded full-time to the
232 company. The other employees are also seconded to the company for 60% of their time. The company
233 has, on behalf of the owners, duties and responsibilities similar to those in the municipalities’ main-
234 stream ICT units/departments. New ICT developments and rapid technological changes are analyzed
235 and selectively implemented. Enhanced system capacity through collaboration between the municipali-
236 ties in the Mountain Region promotes ongoing innovation. According to the ICT manager (2017) there

237 are still not, however, typical entrepreneurs in the forefront of the technological development. The CEO
238 in Tynset municipality confirmed this, emphasizing there are few conflicts, yet the need for cooperation
239 has increased as a result of increasingly comprehensive technical solutions.

240 3.2. Case 2: Network leadership in the Digital District of West Agder

241 The second case is the Digital District of West Agder in Southern Norway (DDV), encompassing 11
242 municipalities (2006–2012) and an estimated 57,000 inhabitants in an area of 6,250 sq km.

243 DDV consisted of three seemingly independent networks under an overarching structure. One, initi-
244 ated by the municipality of Kvinesdal, was responsible for e-mail systems and web solutions. A second
245 network was IDIVA, an initiative emerging from a common accounting system for six municipalities.
246 Thirdly, common software for district nurses, home care, social welfare offices and childcare was es-
247 tablished. Examples from the large portfolio included the development of a common ICT-strategy, joint
248 purchasing routines, shared servers and security systems, a joint helpdesk, IP-based telephones and
249 videoconferencing. A common ‘hub’ was in place in the municipality of Mandal (the largest of the 11
250 municipalities). Nevertheless, no ‘pool’ of ICT personnel was evident in DDV in 2006. In contrast to the
251 Mountain region, the ICT manager in Mandal emphasized the importance of keeping all ICT resources
252 at the local municipal level:

253 *Local access to ICT competence is vital to any organization. We do not want to change that. We do*
254 *not want to centralize personnel. What we are thinking about is to centralize certain functions, still*
255 *keeping a decentralized operative level. I think ICT personnel should work where people actually*
256 *work.*

257 DDV was at that time managed by a highly informal council consisting of municipal CEOs under the
258 daily supervision of the CEO in Marnadal municipality. Although there was no legally binding agree-
259 ment, ‘authority’ seems to have been exercised through the professional influence of the ICT heads, most
260 notably by the ICT team leader from Mandal. In the interviews, he appeared clearly production-oriented:
261 an ICT engineer more focused on the technical capabilities and limitations than on administration and
262 formalization of cooperation. This person also had a close relationship with the CEO in Marnadal mu-
263 nicipality and worked almost as a secretary to the CEOs.

264 In DDV trust was founded on a loosely constructed and highly flexible collaboration in which pragma-
265 tism, voluntarism and equality were outstanding features. This was also reflected in the fact that none of
266 the municipalities were committed to participating in projects (except basic infrastructure and security).
267 Every municipality had an equal say regardless of municipal size, effort and investment in DDV. Terms
268 used to describe the network were ‘mutual trust’ and ‘gentlemen’s agreement’.

269 Despite the network’s achievements, it was striking that there was extreme caution about initiating
270 new ICT schemes that might impact on the municipalities’ internal organizational structures. The ICT
271 team seemed to work somewhat in isolation although in an understanding with the CEOs. Collaboration
272 was apparently influenced by a ‘twin logic’: on the one hand an economic/technological logic facilitating
273 comprehensive collaboration and cost reductions due to standardization, specialization or centralization;
274 on the other hand, a political logic on the part of the CEOs, which shaped developments in proportion
275 to what was ‘politically possible’. Questions such as ‘do we need 11 accounting offices when we can
276 do with one’ were systematically avoided. Due to the consciousness of this twin logic, the ICT team as
277 well as the CEOs ‘feared’ initiating ICT projects that might cause political disputes over the location of
278 services and institutions or staff reductions.

As of 2006, only two decisions were made by the politicians: the first concerned participation in a regional broadband initiative; the second when they had to pay Å76,000 to cover the municipal part of the expenses incurred by building broadband. Thus, DDV was in 2006 by and large a technically and producer-driven process. Although there was occasionally talk about including ‘the political leadership’, politicians were reduced to ‘walk-on’ parts in a ‘theatre’ governed exclusively by ICT managers and CEOs. Compared to the Mountain region, DDV was in 2006 less technically and organizationally integrated. To remain undisturbed in their new ‘playground’, the CEOs and ICT managers chose not to involve the political level.

Can this be explained by difference in network leadership? As with the Mountain region, DDV encompassed a strong *Producer* role. According to our informants, this role was played largely by ICT managers through technical projects. The ICT personnel were united mainly through an informal ICT forum, which they considered to be ‘highly efficient’ and ‘a success story’. Coordinated by the ICT manager in Marnadal municipality, the forum discussed current challenges, introduced solutions to practical problems, and initiated new projects. There was little evidence of written agreements or a long-term strategy. No record of meetings, decisions taken or budgets were kept. Still, DDV always seemed able to access external financing, such as that provided by the state for broadband initiatives. This made the network independent of ‘being controlled in detail by politicians’ – according to the ICT manager in Mandal, who was straightforward on this issue:

If you got money, you don't need politics!

The role of *Administrator* was, in other words, almost entirely absent in DDV in 2006. As mentioned above, however, this was a conscious strategy to avoid ‘political interference’. As the leader of the informal steering committee put it: ‘we have not been much preoccupied with formalization’. The CEO in Marnadal described it in 2006 as ‘a rational marriage’.

The absence of an administrator role might also be explained by the fact that this network had a particularly well-developed *Integrator*. The key person mentioned spontaneously by the informants was the CEO in Marnadal municipality (usually addressed only as ‘Big Per’ due to his physical size as well as regional influence). Although integration in DDV was limited to administrative and technical staff, the CEOs ‘connected’ to local politicians from time to time and ‘informed’ politicians when it was considered necessary. As ‘Big Per’ expressed it himself:

In this collaboration it has been very little politics. The steering committee is the CEOs. We inform politicians if necessary. This is a genuine network. It only happened this way.

The CEO in Marnadal had been elected as chair of the board in IDIVA (see above) as well as head of the informal CEO forum in DDV. A combination of positions and personal capacities made this person function almost as an ‘intersection’ between the other CEOs, ICT managers and key political decision makers. He also gained trust because, as his own municipality did not have an ICT unit of its own, he could not be accused of ‘feathering his own nest’. The ICT manager in Mandal had, by serving his CEO, developed a close relationship with ‘Big Per’ and functioned in 2006 almost as a professional secretary to the CEOs in DDV. As in the Mountain region, each member of the network had flexibility about participating in projects. A ‘two-or-more-rule’ was implemented, meaning that if more than two members wanted to collaborate on a particular ICT project, the project was defined as a ‘DDV-project’. Nevertheless, the ICT manager from Mandal seemed to act as a fulcrum for most of the day-to-day coordination: he recorded and carried forward project initiatives to the CEOs, often informally through ‘Big Per’. Similarly, if the CEOs had a question, much of the contact went through these two leaders.

Big Per's comment

323 *I'll just have a chat with Roy [the ICT manager in Mandal]*

324 illustrates the close relationship between the head of the informal CEO steering committee and the leader
325 of the ICT forum. 'Roy' also describes this structure as informal and flexible, but still highly effective.
326 The following quote captures this efficiency argument, but also illustrates the importance of having top
327 level CEOs on board:

328 *We do not have to go home to get permission*

329 However, the *Entrepreneur* was only to some extent evident in DDV. It was difficult for the informants
330 to pinpoint one particular person as particularly creative or visionary. Elements of entrepreneurship were
331 evident in the ICT manager in Mandal, as well as the CEOs e.g. when contributing to providing financial
332 support to DDV.

333 Today, ten years later, the DDV network is indeed vital and developing. Several interesting changes
334 have occurred. A key modification is that the network had to abandon its 'independence' and develop into
335 a much more formalized Inter-Municipal Company in 2015. Local ICT resources were centralized and
336 about 40 employees are today located in new premises, serving nine municipalities. Both key initiators
337 (the CEO and the ICT-manager) have left the network, as have two of the original 11 municipalities.
338 According to the current manager, this was due to arguments about the location of services, with the
339 breakaway group wanting to keep technology in the municipalities to protect local jobs. An overall
340 management board is also in place, consisting of all nine municipal CEOs. The board is responsible
341 for the management of DDV, for setting out the e-strategy for cooperation and for budget decisions.
342 The current manager of the company cited three reasons for these changes: (a) the need for politicians
343 and administrative leaders to be in control of the costs and development; (b) the flexibility facilitated
344 by remote control technology, and (c) a need to better standardize technology by means of authority.
345 The 'voluntary procurement' and 'encouragement' strategy of 2006 gradually became inadequate: the
346 original model resulted in 'too much talk and difficulties to agree' and as he chose to formulate it: 'to
347 get an omelette, you have to break some eggs'.

348 The new DDV is currently developing several new and innovative ICT-related projects, monitoring and
349 implementing rapid technological changes, safeguarding data security, facilitating teaching, organizing
350 conferences, etc. Overall, the new DDV reflects significantly enhanced system capacity through more
351 formalized collaboration between the municipalities. In short, from a theoretical point of view, the role of
352 *Administrator* and the network's bureaucracy has been significantly strengthened. This clearly promotes
353 entrepreneurship and innovation.

354 3.3. Case 3: Network leadership in ICT Haugalandet

355 The third and final case is ICT Haugalandet. The network consisted of twelve municipalities in the
356 Southwest of Norway, encompassing around 130,000 inhabitants and crossed the boundary between
357 two Counties (Rogaland & Hordaland) as well as two political sub-regional counties ('regionråd'). The
358 network initiative can be traced back to the establishment of a common library system, originally estab-
359 lished by the ICT manager in Tysvær municipality in the late 1990s. Initially, much like in DDV, the ICT
360 managers were working 'in isolation' from administrative leaders and politicians.

361 Later, however, the network went through several processes of fragmentation. Competing networks
362 emerged, and it is perhaps more precise to describe ICT Haugalandet (2006) as a system of parallel net-
363 works. Yet, two structures provided some degree of integration: an informal ICT club called 'ISI' where
364 ICT managers met frequently to discuss current ICT-related issues and developments, and a coordinating

body consisting of all the CEOs. This group initiated several ambitious collaborative processes in which all the twelve municipalities were invited to participate. However, it was not possible to identify more than a very basic level of collaboration within the network. Despite a handful of ICT projects, ICT Haugalandet was far less technologically and organizationally integrated than the other two projects. After visiting the network twice (2003/2006) we formed an impression of severe problems of leadership and control.

However, ICT Haugalandet did have *Producers*. The ICT managers initiated and implemented interesting ICT projects such as the municipal ‘HUB’, established in Tysvaer to connect all the municipalities in the network. Despite their high level of technical skills, the Producers did not manage to mobilize sufficient support in terms of external funding or cost-sharing mechanisms to sustain a common and enduring portfolio of ICT systems. Technical integration was limited to maintaining basic infrastructure, informal project coordination and ICT purchases.

Constraints experienced by the Producers might well be explained by the fact that the role of *Administrator* was by and large absent. While the ICT consultants deliberately wanted to avoid ‘bureaucratization’ and ‘political interference’ this network was heavily dependent upon internal financial support, which required political decisions at municipal level. In addition, the absence of a comprehensive agreement and functioning superstructures eventually caused promising projects to fail.

To understand why the administrative role did not function properly in ICT Haugalandet, we need to review the development of the network. As promising results emerged from the ICT collaboration effort, combined with an increased demand in some of the municipalities for more efficient municipal services, several CEOs wanted to control the regional ICT efforts. In other words, a basically bottom-up approach changed from 2003 onwards into a top-down driven process. In 2005 the CEOs initiated a large report, in which for the first time questions of cost reduction became a priority for the network and on this basis a comprehensive agreement was designed to formalize the network structure.

However, in 2006, only two out of the twelve municipalities supported the initiative. Opposition came from the ICT specialists who argued that further integration required more not less investment in personnel and equipment. The differences in financial position of the network members made agreement difficult and there was a general fear of job losses in the light of previous experience of attempted municipal amalgamation.

Despite the failure of the agreement, the ICT managers continued to meet informally. The network was characterized as a truly useful ‘arena for learning’, a ‘think tank’ and ‘innovative forum’. They even tried to formalize it by establishing a more formal agreement and a steering committee. However, the initiative was quickly rejected by the CEOs. One of the ICT managers described the event as follows:

We collaborated well. And we wanted to be more formal, but this was rejected by the CEOs. They were afraid of us becoming a ‘state within the state’. We have selected a leader and that is it.

The response of another ICT manager points to the key issue of power and control:

We were looked upon as a power structure. For ICT managers to ‘talk together’ are ok. ‘The group think’ is not.

What is evident in this case, is an almost complete lack of the *Integrator* role. Divergent actors (professional forces, levels, and institutions) prevented the network from pursuing additional technical and organizational integration.

Projects accomplished at Haugalandet in 2006 occurred mainly due to the role of two archetypal *Entrepreneurs*. The (former) ICT manager in Tysvaer municipality, flanked by his colleague and friend from

408 Karmøy municipality, for years contributed significantly to regional ICT development. Their colleagues
409 and others described the two as ‘indefatigable’, ‘generous’, ‘enthusiastic’ and ‘passionate about shared
410 ICT solutions’. Some informants also emphasized their unique capacity to ‘sell ideas’ and ‘go-ahead
411 spirit’. Entrepreneurship was perhaps most evident with the ICT manager in Tysvær. He demonstrated
412 enormous tenacity in the face of official opposition in implementing such ICT innovations as fingerprint
413 log-in for laptops in the network and in driving a large Internet telephone project that encompassed 26
414 municipalities in a joint tender.

415 However, observing the network today, 10 years later, there is not much cooperation left: all the key
416 players have resigned or left ‘the club’. Three of the municipalities have, however, continued based on a
417 ‘letter of intent’ with some community services. Beyond this, both organizational and technical cooper-
418 ation have largely vanished. One of the former ICT managers ascribed the development to ‘demanding
419 political conditions in the region’. She referred to different power structures, the varying sizes of the
420 municipalities, fear of job losses, and an ongoing ‘positioning’ in connection with possible municipal
421 amalgamations in the region. She also highlighted the loss of “entrepreneurship” or the motivation of
422 the development. Theoretically, ICT Haugaland lost both the Producer and the Entrepreneur roles.

423 4. Network leadership across three networks – a comparison

424 In Table 1 below, the most important findings from the three networks are summarised (2006 findings
425 in parenthesis if changed). The table is structured according to the four PAIE leadership roles presented
426 initially (Producer, Administrator, Integrator and Entrepreneur).

427 The table is of course simplified, and each role should not be viewed in isolation. Indeed, this study
428 confirms one Adizes’ (1980) key arguments, namely that the four leadership roles are *complementary*.
429 The point is that each role is important for an organization to function well. This also seems the case with
430 networks. If one or more of these leadership profiles are missing or functioning poorly, technical and
431 organizational integration suffers. Furthermore, as networks lack formal authority, the *balance between*
432 *the four PAIE-roles is different* compared to traditional hierarchical public sector organizations.

433 Looking at Table 1, a first impression is that all three networks did have a more or less functioning
434 *Producer* role. However, only one network at that time had recognized an *Administrator* role: the Moun-
435 tain Region alone made an explicit point of ‘keeping things in order’. This was also the most technically
436 and organizationally integrated network and has maintained a strong position in the region. A well func-
437 tioning network administration was considered vital by key stakeholders. By deciding to formalize the
438 network, political participation was accomplished and recognized. In theoretical terms, the Adminis-
439 trator role was flanked by a vigorous Integrator role (mobilization of political expertise). This in turn
440 facilitated a new and much needed arena for the Producers to innovate (the ICT ‘pool’). In the Digital
441 District of Agder as well as ICT Haugalandet, the Administrative role was deliberately toned down in
442 2006, if not totally absent. In the former, however, innovations were limited to ‘safe’ projects to avoid
443 potential conflicts about the location of personnel and institutions. In the latter, the role of Integrator
444 was missing. Lacking both Integrator and Administrator, ICT Haugalandet was struggling despite ac-
445 cess to the Producers and enthusiastic Entrepreneurs. Here, however, these two networks chose different
446 paths between 2006 and 2017. DDV further developed the Administrator role, ICT Haugaland did not
447 (or would not) do so. As we will see below, this is important for understanding the further network
448 dynamics and development.

449 In addition, networks to a much larger extent than hierarchies require an *Integrator* capable of bridging
450 institutions. This calls for compromising skills, attentiveness, negotiating experience and holistic judg-
451 ments. In single municipalities, integration is an important task of the local political council. Municipal

PAIE roles	The mountain region	The digital west agder	ICT haugalandet
<i>[P] Producer. Emphasis technical issues. Prepares processes and network models. Occupied by getting things done, yet capable of long time planning. 'Keeps the wheels in motion'</i>	Yes. Probably the most dominating position. The network built 'stone by stone'. Yet, lacking leaders capable of mobilizing external financial support.	Yes. Originally, it varied between sub networks. Today, a very successful strategy aimed at several novel projects. Increased system capacity due to co-location producers.	No (Yes 2006). In the beginning leaders good at initiating new ICT projects. Not leaders capable of modelling well-functioning superstructures and external support.
<i>[A] Administrator. The network's bureaucrat. Likes to keep things in order, follow budgets and standards. Inclusive politics that follows rules and regulations. Secures political participation.</i>	Yes. The role comes into play among both technical leaders, CEOs and politicians. Partly explains why the network early became formalized as an inter-municipal company. Substantial political involvement and support.	Yes (No 2006). At first consciously avoiding 'red tape' formalization and political 'interference'. Gradually changed into a full inter-municipal company to achieve better governance, project and budget control.	No. As in DDV, conscious about establishing any kind of 'bureaucracy' or 'political interference'. Exposed to several challenges because they do not manage to mobilize external financial support. Lacking political support
<i>[I] Integrator. Negotiator and reconciler. 'Good with people' and integration between actors, and establishing trust between professions and levels. A social 'fire-fighter' and a master of compromises.</i>	Yes, but of less importance after the network was formalized with permanent steering processes, annual plans and boards. Local politicians clearly integrated. Few conflicts.	Yes, but varies from level to level. Good chemistry between CEOs and ICT managers. Local politicians deliberately not integrated. In 2006, further integration considered to be challenging without political incorporation.	No. Mainly missing. Several conflicts between levels, functions and professions. Good milieu between ICT managers. Local politicians not integrated. No 'founding father' or reconciling leader.
<i>[E] Entrepreneur. Enthusiast and visionary leader. Sees opportunities and capable of placing ICT on the agenda. Mobilizes personnel and finances. Avoids 'red tape'. Energetic and ready to take risks.</i>	No. Difficult to identify a typical entrepreneur or visionary leader. Little resistance against 'bureaucratization'. Traces of critique concerning capacity to innovate. In 2017, still vital although not typical 'innovators'.	Yes (Partly 2006). No typical entrepreneurs or visionaries in the beginning. Today, a formal company structure that works to realize Norway's "e-strategy" gradually replaced the strong resistance against 'bureaucratization'.	No (Yes 2006). Particularly well developed among a few ICT managers in 2006. Some considered the entrepreneurs agitating and even provocative. Divergent incentives and motivation. Today lacking entrepreneurs, trust and motivation. Dissolved network.

networks that do not manage to incorporate the political level, might well in the end fail not only because an important stakeholder is ignored, but because local politicians are usually well trained in negotiation and compromising.

Finally, networks *do not depend on a particular Entrepreneur*. As pointed out in the introduction, previous studies of leadership have revealed that public sector leaders on average emphasize the roles of Administrator (A) and Integrator (I) more than leaders in the private sector do (Strand, 2007; Agranoff, 2007). Public organizations are typically designed to minimize private judgements, initiatives and unpredictability among public servants. The room for leadership is made tight, and the Entrepreneur has an uncertain existence in the public sector (Strand, 2007:331). Networks seem to foster the Producer role (P) and the Entrepreneur (E). Without exception, a more or less informal ICT 'club' is established facilitating free dialogue and inspiration. These informal institutional settings facilitate alternative interpretations and critical judgements – and thus innovation. Although this varies, there is reason to believe that networks complement traditional public sector leadership by enabling innovation.

However, innovation does not depend on access to a particular 'Entrepreneur'. In the Mountain Region, which mainly lacked this figure, significant innovation still emerged, although 'stone by stone'.

467 Unlike the two other networks, the Mountain Region also managed to create a well functioning super-
468 structure supporting the Producers. The same later happened in DDV. Well-functioning Entrepreneurs
469 might indeed initiate interesting technical projects. This is the case particularly at ICT Haugaland, but
470 without some sort of superstructure, indefatigable efforts and initiatives are not sustainable long-term.

471 **5. Is the PAIE-framework sufficient?**

472 Overall, the PAIE leadership typology has proved to be a helpful tool with which to analyze network
473 management. While there is a certain lack of clarity about the roles and the boundaries are sometimes
474 blurred, both the functions and roles were easily recognised by the informants in this study. There are
475 however two categories that may supplement the PAIE-framework. The first is what we might label
476 *network conductors*, i.e. a leader that manages to link several networks in such a way that seemingly in-
477 dependent networks start functioning as a whole. He or she is not necessarily particularly visible, rather
478 operates behind the scenes, pulling strings, giving advice, making connections and building alliances.
479 To achieve this, he or she eagerly takes on assignments such as being on boards in different networks at
480 different levels. A ‘network conductor’ also constantly visits different networks and single stakeholders,
481 thereby gathering and sharing information about what is going on elsewhere and identifying potential
482 constellations, mutual projects, etc. The most important ability is to ‘conduct’, that is fostering holistic
483 thinking, synthesising and synchronizing (almost like conducting musical instruments in a symphony).
484 The CEO in Marnadal municipality (‘Big Per’) is an illustrative example of a ‘network conductor’. The
485 initial structure, consisting of three independent networks, caused challenges relating to coordination,
486 technical incongruence and security problems. DDV managed to unite these network structures techni-
487 cally as well as organizationally into parallel yet complementary ‘networks within networks’, which later
488 developed into a more formal structure. ICT Haugaland failed to do this, and lost out due to competing
489 sectional interests.

490 The second category is *dyadic leadership*, which occurs when two leaders collaborate in such a way
491 and to such an extent that they dominate the development of a network. Even though single leaders
492 may hold key roles in networks, in each network in our study certain pairs of leaders became apparent.
493 That is, people who work especially well together and form a good team. In the Mountain Region, the
494 administrative leader and assistant CEO in Tynset municipality and the ICT manager constitute such a
495 dyad. The ICT manager has little experience of influencing political and administrative processes. The
496 assistant CEO does not understand the technology in detail. However, when they join forces they appear
497 as particularly effective leaders, capable of dominating the local network agenda. Similarly in DDV the
498 ICT manager in Mandal municipality and the administrative CEO in Marnadal joined in a highly capable
499 leadership dyad. This twosome is typically referred to simultaneously as ‘negotiators’ ‘mediators’ and
500 ‘facilitators’. By a unique ‘chemistry’ and shared view on important network policies, as well as com-
501plementary skills, exceptionally good cooperation emerges. A third example of dyadic leadership is the
502 professional alliance between the two municipal ICT managers in Tysvær and Karmøy in Haugalandet.
503 However, in this case the leadership dyad did not combine complementary and consolidating skills but
504 reinforced an already heavily technically oriented entrepreneurship.

505 **6. Conclusion: Innovation and network leadership: The bureaucracy strikes back?**

506 The focus of this study has been to understand the relationship between innovation and network lead-
507 ership. Three ICT-based municipal networks were studied in Norway in the periods 2005/6 and 2017,
508 using Adizes’ PAIE model (1980) to examine leadership roles in each.

Innovation certainly occurred in all three networks. However, the degree of innovation and the ability to sustain it depended to a large extent on the leadership structures in each case. In each network innovation began with Producers (P) coming together informally to exchange ideas. In the most successful network (the Mountain Region) Producers joined with Administrators (A) and Integrators (I) from the beginning. It took some time for the Producers (P) and the Integrators (I) in the DDV network to overcome their initial suspicion of bureaucrats (A) and pursue integration but when they did, they enjoyed considerable success in innovation. While the Haugalandet network Producers initially showed some Entrepreneurship (E) they were unable to move beyond the informal collaboration stage and the network could not sustain itself.

Our study confirms Adizes' findings that the different leadership roles are complementary. In our case, the configuration of the roles turned out to be crucial: not all of the networks combined the roles in the same way. Indeed, somewhat surprisingly, the most successful network did not seem to have an Entrepreneur (E) and the least successful network did.

We have proposed 2 additional categories to supplement the PAIE typology: the network conductor and the leadership dyad.

The networks studied here, in Norwegian municipalities, are mainly focused on ICT. We clearly need more and broader studies to confirm or reject the findings presented. Several studies of network development are necessary – not least to further develop a theoretical framework that can explain the network's life cycle and network dynamics.

For the moment it is worth noting that a common factor in the successful networks was the incorporation of the Administrator role in the promotion of innovation: the bureaucracy strikes back!

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