

## THE CONTEMPORARY HISTORY OF ESTONIAN TELECOMMUNICATIONS – A EUROPEAN PERSPECTIVE

Per HÖGSELIUS

Department of Technology and Social Change, University of Linköping, S-581 83 Linköping,  
Sweden; perho@tema.liu.se

Telecommunications represent a large technical system with origins in the latter half of the 19th century. In Estonia, this system has grown and developed within dramatically varying political contexts, starting in tsarist Russia and currently heading towards the European Union. The present paper concentrates on the more recent historical developments in the sector. Starting in the Soviet era, the paper analyses the difficult re-orientation of Estonian telecommunications towards the West in connection with the re-establishment of political and economic independence. It focuses especially on the process by which Estonian organisations and enterprises in the sector were incorporated into technological, industrial and regulatory European structures.

### INTRODUCTION

Estonian telecommunications have grown and developed within dramatically varying political contexts, starting in tsarist Russia and currently heading towards the European Union. Like in other countries, telecommunications have contributed to shaping Estonian history. Clearly, however, Estonian history has also heavily influenced the paths along which its telecommunications have grown and developed. Focusing on the late Soviet period and on the difficult decisions that had to be made in the years around 1990, the present article studies the process by which Estonian history is embedded into the development of telecommunications. This development cannot be understood, however, in a purely domestic perspective. Rather, the history of Estonian telecommunications is deeply connected to technological, industrial and administrative developments in other European countries – reaching from Estonia's relationships to the public telephone

administrations in the Soviet Union as well as the Nordic countries, to its involvement in the industrial networks of Western and Northern Europe as well as those of Russia and the Comecon countries.

The article begins with an outline of the telecommunications history of Estonia before the first Soviet occupation in 1940. The following section explores the development of Estonian telecommunications under Soviet rule up to the mid-1980s. The next two sections, which form the core of the study, deal in detail with the reorientation of the telecommunications sector in the years around 1990. Thereafter, the outcome of this difficult process is investigated from the perspective of infrastructure modernisation and sectoral governance. Finally, the last section briefly relates the preceding sections to the Estonian telecommunications sector of today and summarises the findings of the study.

## BACKGROUND: TELECOMMUNICATIONS IN ESTONIA PRIOR TO 1940

Telecommunications in Estonia were from the very beginning related to Estonia's political and economic relationships to other parts of Europe. In Western Europe, the first long-distance telegraph lines had been opened in the late 1840s, and as a few years later the Crimean War started, tsarist Russia discovered the *administrative* and *military* advantages of building telegraph lines between the most important cities of the empire. Tallinn was thus connected to St. Petersburg in 1855 and to Riga in 1857.<sup>1</sup> During the following decades, however, telegraph connections played an important role also for the *economic* development of Estonia. Telegraph lines were built between the larger Estonian cities, and although direct connections to most West European countries were opened only after World War I, Estonia had then, via its connections to St. Petersburg, Riga and Helsinki, in practice already been part of a pan-European network for more than half a century.<sup>2</sup>

In contrast to the telegraph, the *telephone* had, from a technical point of view, a much more local character in its infancy, and it served initially as a complement to the telegraph rather than as a competing system. The first telephone call in Estonia is said to have occurred already in 1877 in Tartu,<sup>3</sup> but the systemic introduction of telephony was an act of the *Börsikomitee* in Tallinn, who in 1884

<sup>1</sup> Sirkel, E. Eesti telefoniside 1877–1917. – *Kõnetraat*, 1999, no. 4, p. 14.

<sup>2</sup> A hint of the importance of the telegraph in the decades after the Crimean War is given by the ten-fold increase in the number of telegrams sent, which according to Kaasik-Aaslav, V., Maripuu, H. *Tallinna Telefonivõrk 110 aastat 1886–1996*. Tallinn, 1999, p. 177, grew from about 18 telegrams per day in the 1860s to 180 in the 1880s. Cf. also Pihlamägi, M. *Eesti industrialiseerimine 1870–1940*. Tallinn, 1999, p. 26.

<sup>3</sup> *Postimees*, 1877, 14 December, no. 50, p. 1.

applied for permission to build a telephone network in the city.<sup>4</sup> The realisation of this network, which was opened in 1886, was a complex process that involved bureaucratic negotiations with St. Petersburg and Riga, as well as the installation of apparatus from Western companies.<sup>5</sup> Though local from a technical point of view, the development of telephony in Estonia was thus dependent upon a complex network of relationships, tying it to the bureaucracy in St. Petersburg and Riga as well as to the emerging telephone industry in West European countries.

The Estonian telephone system remained very small during the tsarist period. At the time of the fall of the empire, there were not more than about 2500 subscribers to the public networks.<sup>6</sup> Also, it was not possible to make telephone calls to other European countries during the tsarist period. It was only in 1919 – during the War of Independence – that the first international connection (to Finland) was established. By 1930, however, it was already possible to make a phone call from Estonia to nearly any European country.<sup>7</sup> The Estonian telecommunications system grew quickly during these years, and by 1939 there were already 28,000 subscribers to the public networks.<sup>8</sup>

In the course of Estonia's first independence period, the country also became an important European hub in the Swedish *L. M. Ericsson's* rapidly growing multinational telephone company. Ericsson had a strong interest in the growing markets on the Eastern shores of the Baltic Sea, and the Swedish company had even planned to move its headquarters to St. Petersburg.<sup>9</sup> When the Bolshevik revolution put an end to this idea, some of the leading engineers from Ericsson's St. Petersburg factory and from the local telephone network moved to Tartu and contributed to the development of the telephone factory that had existed there since 1907.<sup>10</sup> Ericsson itself invested heavily into the factory in 1929, and *Tartu telefonivabrik* became the company's most important partner in Eastern Europe, producing telecommunications equipment with the Ericsson label. The Tartu factory developed close relationships to the Estonian telecommunications administration during the country's first period of independence. Thus when the Soviet Union occupied Estonia in 1940, nearly all automatic telephone exchanges in operation were Ericsson stations which had been manufactured in Tartu.<sup>11</sup> Strategically

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<sup>4</sup> **Kaasik-Aaslav, V., Maripuu, H.** *Tallinna Telefonivõrk 110 aastat 1886–1996*, p. 49.

<sup>5</sup> *Ibid.*, p. 49–57.

<sup>6</sup> **Merilaid, A.** *Sidetehnika ajalooline areng. Telegraaf, telefon, raadio, kaugnägemine, pilditelegraaf*. Tallinn, 1938, p. 64.

<sup>7</sup> *Ibid.*

<sup>8</sup> *Eesti Statistika*, 1939, no. 215 (10), p. 507.

<sup>9</sup> **Jangfeldt, B.** *Svenska vägar till St. Petersburg. Kapitel ur historien om svenskarna vid Nevans stränder*. Stockholm, 1998, p. 182. The importance of Ericsson's Eastern activities was demonstrated, for example, at the World Exhibition in Paris in 1900, where the company was represented by its Russian subsidiary.

<sup>10</sup> Tarkon, *History of Enterprise*, 2001 (unpublished document).

<sup>11</sup> **Kaasik-Aaslav, V., Maripuu, H.** *Tallinna Telefonivõrk 110 aastat 1886–1996*, p. 101.

located between Tallinn, St. Petersburg, Pskov and Riga, Tartu telefonivabrik also exported large parts of its production to Latvia, Lithuania and Finland, as well as to Russia – although the sales to the latter became increasingly difficult after 1918.<sup>12</sup>

## ESTONIAN TELECOMMUNICATIONS UNDER SOVIET RULE

World War II had destructive effects on the Estonian telecommunications system. At the time of the first Soviet occupation in 1940, around 32,000 telephones had already been connected to the public networks. The destruction in connection to the events in 1944 was so far-reaching that it took around fifteen years before the pre-war level was reached again.<sup>13</sup>

As Estonia was incorporated into the Soviet Union, its public telecommunications system was transferred administratively to a new republic-level Ministry of Communications, which was subordinated both to the Supreme Soviet of the Estonian SSR and to the union-level Ministry of Communications (*Minsviazi*) in Moscow.<sup>14</sup> Estonia was from now on no longer free to choose its equipment suppliers, and most larger projects such as inter-republic connections were to be developed by the Leningrad-based *Lengiprosvyaz* institute. However, the republic-level ministry in Tallinn had also an important development organisation under its own supervision, *Sideministeeriumi Projekteerimis-Konstrueerimisbüroo*.<sup>15</sup> The republic-level (Estonian) ministry therefore appears to have retained a certain autonomy from the central Soviet institutions in the post-war development. The whole structure of the telephone system had in the interwar period gained such a momentum that a republic-based sectoral organisation appeared to be the clearly most efficient way of organising republic-level network operation and service provision. The resulting relative independence of the Ministry of Communications of the Estonian SSR was reflected, for example, in a much more rapid expansion and automation of the networks than in other Soviet republics (see below). On the other hand, the central *Minsviazi* in Moscow took over the responsibility for all long-distance communications across republic or national borders. Communications to other European countries now had to go via Moscow.

Whereas it was regarded as natural from a technical–organisational point of view to administer the *operation* of telephone networks regionally, the development and production of *equipment* tended to follow another Soviet logic. Estonian manufacturers that had survived the war were incorporated into union-level conglomerates, which consisted of a variety of production units that were

<sup>12</sup> Kaasik-Aaslav, V., Maripuu, H. *Tallinna Telefonivõrk 110 aastat 1886–1996*, p. 70–73.

<sup>13</sup> Calculated from *Eesti NSV rahvamajandus 1967. aastal. Statistiline kogumik*. Tallinn, 1968, p. 157.

<sup>14</sup> Campbell, R. *Soviet and Post-Soviet Telecommunications*. Boulder, 1995.

<sup>15</sup> See Kaasik-Aaslav, V., Maripuu, H. *Tallinna Telefonivõrk 110 aastat 1886–1996*, p. 159.

located to various places all over the Union. The Estonian manufacturing units lost their independence, in the sense that they could no longer develop linkages to other firms and organisations in accordance with their own desire, but had to follow the principal plan of the relevant ministry. The dynamic cooperation between Ericsson, Tartu telefonivabrik and the Estonian telephone administration was terminated, whereby the new republic-level Ministry of Communications had to manage by itself many of the tasks that had earlier been organised in cooperation with the manufacturers.<sup>16</sup> All linkages with leading firms in Western Europe were cut off, and the subsidiaries of foreign telecommunications companies (which had typically been established in Estonia already during tsarist times) were shut down or taken over by the state. The attempts to keep old linkages with Western Europe alive were further hampered by the establishment of the Coordinating Committee for Multinational Export Controls (CoCom) in 1949, whose mission was to hinder high-tech exports to the East – including telecommunications equipment. Throughout the Cold War, Estonia was even explicitly mentioned in the list of ‘forbidden’ countries, since several of the countries behind CoCom refused to recognise Soviet annexation of the republic.

A peculiar reason behind the problematic situation that followed after the war was that the development of the telecommunications sector was not in line with the ideological claims of the Soviet state. In Marxist thought, telecommunications were identified as a ‘materially unproductive’ sector, and were therefore deliberately neglected in budget negotiations and five-year plans.<sup>17</sup> In addition, point-to-point communications were seen as a potential danger with respect to the political stability of the totalitarian state. Throughout the Soviet era, the state thus spent only about 0.1% annually of the national budget on civilian telecommunications, compared to around 2% for the Nordic and West European countries.<sup>18</sup>

Moreover, from the perspective of technological renewal, the weak links between the organisations involved in *service provision* and those involved in *manufacturing* became increasingly problematic. In the Nordic countries and in Western Europe, it is well known that the success of dominant firms such as Ericsson and Nokia has been very much the result of fruitful collaborative relationships between network operators and equipment manufacturers.<sup>19</sup> In contrast to this, the Soviet system was characterised by an artificial separation between these two functions. While network operation and service provision were tasks to be administered under the union- and republic-level Minsviazis, the production of equipment belonged under a number of other ministries, of which the most important one was the Ministry of Communications Equipment Industry (*Minpromsredsviaz*, MPSS). MPSS was a *military* ministry, with a conglomerate

<sup>16</sup> Kaasik-Aaslav, V., Maripuu, H. *Tallinna Telefonivõrk 110 aastat 1886–1996*, p. 110.

<sup>17</sup> See e.g. Campbell, R. *Soviet and Post-Soviet Telecommunications*, p. 1ff.

<sup>18</sup> *Financial World*, 1992, 15 September, p. 62.

<sup>19</sup> See e.g. Edquist, C., Hommen, L. & Tsipouri, L. (eds.). *Public Technology Procurement and Innovation*. Boston, 2000.

of R&D and production facilities whose customers, however, were not primarily the operators of civilian telecommunications networks; the (civilian) Minsviazis accounted for only a few percent of MPSS's sales, and in times of output problems – which were frequent – the equipment supply to public telecommunications networks had no priority, since there were more important customers within the military.<sup>20</sup> This effectively prevented the organic development of dynamic relationships between equipment producers and the network operators.

Given these conditions, the achievements of the Estonian Ministry of Communications and the organisations under its control have to be regarded as considerable. Especially in comparison with other Soviet republics, Estonia was very successful in building up public telecommunications. Estonian telecommunications representatives were successful lobbyists in Moscow, whereby the smallness of the republic seems to have made it easier to acquire an over-proportional share of the produce of MPSS and other relevant ministries. The good relations to Moscow are reflected, for example, in the successful acquisition of one of the DX-200 exchanges that the Soviet Union bought from the Finnish company Nokia in 1986 and which were originally planned to be used in the telephonisation of Siberia.<sup>21</sup>

The relative success of Estonia was mirrored in a telephone density of 203 telephones per 1000 population in 1985, which among the Soviet republics was the second highest figure (after Latvia, where the corresponding figure was 229). Telephone density in the Soviet Union as a whole in 1985 amounted to 112 telephones per 1000 population.<sup>22</sup> Also, Estonia managed to fully automate its telephone system already in 1975.<sup>23</sup> Given the technology available, Estonia thus performed exceedingly well. All these figures, however, were far below those in Western and Northern Europe, where countries such as Sweden and Finland had a telephone density about twice as high as in Estonia or Latvia and where the radical process of *digitalisation* had already begun.

A serious problem was the production and procurement of technology and equipment. Estonia was not a centre for the production of telecommunications equipment in the Soviet Union (especially after Ericsson's withdrawal from Tartu and the telephone factory's destruction in 1944), and it had to buy almost all its equipment from other parts of the Soviet Union or other Comecon countries. The

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<sup>20</sup> See **Campbell, R.** *Soviet and Post-Soviet Telecommunications*, where an attempt is made to map Minsviazis's complicated procurement regime in greater detail. According to Müller, about 80% of the equipment produced in the Soviet telecommunications sector was intended for military use. See **Müller, J.** Restructuring of the telecommunications sector in the West and the East and the role of science and technology. – In: Hirschhausen, C. von, Bitzer, J. (eds.) *The Globalization of Industry and Innovation in Eastern Europe. From Post-socialist Restructuring to International Competitiveness*. Cheltenham, 2000, p. 196.

<sup>21</sup> Former director of Tallinna Telefonivõrk, interview with the author, 21 November 2000.

<sup>22</sup> **Campbell, R.** *Soviet and Post-Soviet Telecommunications*, p. 17.

<sup>23</sup> See *Eesti NSV rahvamajandus 1975. aastal. Statistiline aastaraamat*. Tallinn, 1976, p. 192.

manufacturing chain from research and development and production to the actual use of the technology was highly decentralised. The Estonian republic-level ministry of communications bought equipment not only from *Krasnaya Zarya* and other Leningrad factories, but also from *VEF* in Riga, from the East German *Robotron* (who produced the pseudo-digital ISTOK exchange), the Yugoslavian *Iskra* conglomerate, and other Central and East European countries.<sup>24</sup> In general, the Estonian ministry tried to direct its demand for equipment to the Central and East European countries, since the experience was that the equipment from these countries was technically more reliable than the Soviet equipment.<sup>25</sup> However, still in use in the Estonian telecommunications system were also the old Swedish–Estonian Ericsson exchanges as well as parts of equipment from Siemens, which had been acquired by the Soviet Union as trophies during the war.<sup>26</sup> The Estonian telephone system resembled an unusual exhibition of telecommunications technologies from a whole array of both East and West European countries.

Soviet Estonia itself was thus not a centre for the production of telecommunications equipment, although it can be observed that the Baltic rim of the USSR as a whole was an important region for the Soviet telecommunications sector. Riga was the centre of gravity for the telecommunications industry in the Soviet Baltics, with the RUNIS research institute and the well-known Latvian VEF company, which had a long pre-war tradition and which emerged as an important hub in the Soviet telecommunications sector.<sup>27</sup> From an Estonian perspective, the proximity of Leningrad is also worth noting. This city was a highly important centre for Soviet telecommunications, with research institutes such as LONIIS and factories such as *Krasnaya Zarya* – although the activities in Leningrad came to concentrate heavily on *military* telecommunications technologies during the post-war period. In Estonia's immediate Western proximity, Sweden and Finland belonged to the absolute world leaders in telecommunications, especially towards the end of the Cold War, as mobile telephony was about to take off. Estonia was in fact surrounded in all directions by a considerable dynamism in the field of telecommunications. Under different political–economic conditions, it would have been natural for Estonia to be part of a dynamic, all-Baltic Sea telecommunications region. Under Soviet conditions, however, this did not happen.

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<sup>24</sup> **Kaasik-Aaslav, V., Maripuu, H.** *Tallinna Telefonivõrk 110 aastat 1886–1996*; **Müller, J.** Restructuring of the telecommunications sector in the West and the East and the role of science and technology, p. 199ff.

<sup>25</sup> Former director of Tallinna Telefonivõrk, interview with the author, 20 November 2000.

<sup>26</sup> Ulman, J., interviewed in **Kaasik-Aaslav, V., Maripuu, H.** *Tallinna Telefonivõrk 110 aastat 1886–1996*, p. 128.

<sup>27</sup> See **Müller, J.** Restructuring of the telecommunications sector in the West and the East and the role of science and technology, p. 210. VEF was responsible for the production of the long-distance digital Kvant exchange, which was officially based on Soviet technology but was produced in Riga under a licence from Nokia in the years 1983–91.

The union- as well as the republic-level Minsviazis had, as a matter of fact, for decades tried to make telecommunications a high priority in the budget negotiations with the government, presenting ambitious plans for the expansion and modernisation of the whole sector. These plans were mostly presented in vain, as shown by the figures for public spending on telecommunications (see the preceding section). As mentioned above, Estonia performed surprisingly well, given the minimal resources. Of a certain importance for the developments in the 1980s was in this connection also the Olympics in 1980. These were held in Moscow, but a number of water-sport events were located to Tallinn. This circumstance allowed Estonia to acquire finance for the construction of the television tower in the capital, as well as for the realisation of other projects.<sup>28</sup> However, these and other achievements were still far too small to allow Estonia to catch up with the accelerating developments in West European telecommunications.

On the other hand, the general political changes in the Soviet Union during the 1980s worked in favour of the communications ministries and the telephone companies under them. For decades, the evolution of civilian telecommunications had been severely hindered not least by the peculiarities of Marxist reasoning in connection to the telecommunications sector and by the interests of the totalitarian state. The result had been that the regime regarded the counter-revolutionary dangers of public telecommunications as much greater than any social or economic benefits. With *glasnost*, however, interests were gradually redefined, and the opening-up towards the West following Gorbachev's call for *perestroika* also broke the isolation of the Soviet and Estonian telecommunications sector. Cooperative projects with West European firms and organisations became possible and easier. During 1987, a series of decrees created an opportunity, for the first time, to legally establish joint ventures between Soviet and Western companies.<sup>29</sup>

In the process that eventually led to Estonia's full political re-independence, the situation in the field of telecommunications (as in many other sectors) was extremely unstable. Telecommunications were of strategic importance for a separatist republic – especially for one striving for democracy and a market economy system – and intense attempts were thus made to break out of the USSR system. These attempts were mostly directed towards the search for contacts with Western partners (an activity which was in line with the 1987 decrees), and the seeds of direct cooperation with West European countries can be traced at least

<sup>28</sup> Former director of Tallinna Telefonivõrk, interview with the author, 20 November 2000; Kaasik-Aaslav, V., Maripuu, H. *Tallinna Telefonivõrk 110 aastat 1886–1996*, p. 126 and p. 150.

<sup>29</sup> Bell, M. Technology transfer to transition countries: are there lessons from the experience of the post-war industrializing countries? – In: Dyker, D. (ed.) *The Technology of Transition. Science and Technology Policies for Transition Countries*. Budapest, 1997, p. 63.



as far back as to 1988.<sup>30</sup> In that year, the Estonian communications minister Toomas Sõmera met with Tony Hagström, general director of the Swedish state-owned operator Televerket.<sup>31</sup> The meeting focused on the discussion of the possible creation of new international lines to Finland and Sweden – countries which Estonia at that time could reach only through Moscow.<sup>32</sup> Interestingly, it was only one week after this meeting that the Estonian Supreme Soviet declared the sovereignty of the republic.<sup>33</sup> In 1990, the first direct lines to Helsinki (via a microwave link across the Gulf of Finland, using the Tallinn television tower) and to Stockholm (via Helsinki) were realised.<sup>34</sup> The political importance of the six direct lines that were opened between Tallinn and Stockholm was demonstrated during the August events in 1991: the chaotic situation during these days resulted in an overload in the international traffic through Moscow, but through its new international connections, Estonia's risk of being cut off from its international communications was considerably lowered.<sup>35</sup>

In 1990, the Estonian ministry also established its first serious business contacts to West European *equipment manufacturers*. As mentioned above, *Nokia* had delivered a DX-200 exchange to the Estonian SSR already in 1986, but this was an agreement that had been signed in Moscow between Nokia and the central Minsviazi, and it was thus not a contract between Finland and Estonia. During the following years, it had also become popular among the local Estonian telephone network organisations to establish contacts with local telephone networks in Finland. Estonian representatives visited various local Finnish networks, and in some cases Finland sent parts of its old equipment (which was still regarded as modern in the Soviet Union) as development aid to Estonia.<sup>36</sup> It was not until

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<sup>30</sup> In connection to the installation of the Nokia DX-200 digital exchange (see above) in the Lasnamäe suburb of Tallinn in 1986, Finnish engineers visited Estonia to supervise the project. However, this was part of the major collaborative venture for the digitalisation of the Soviet telecom system that was based on Nokia's DX platform. The main partners were Nokia and the central Minsviazi in Moscow, and it was thus not a collaborative project between Estonia and Finland. See **Dokuchaev, V. A., Pshenichikov, A. P., Sokolov, N. A.** Digitalization of urban and rural telephone networks in Russia. – *IEEE Journal on Selected Areas in Communications*, 1994, no. 7, p. 1182.

<sup>31</sup> Sõmera, T., interviewed in **Kaasik-Aaslav, V., Maripuu, H.** *Tallinna Telefonivõrk 110 aastat 1886–1996*, p. 141; cf. *Dagens industri*, 1988, 9 November.

<sup>32</sup> **Hultén, S., Mölleryd, B.** Estonia, Latvia and Lithuania: Balancing the demands for short term profitability and network expansion. – In: Schenk, K.-E., Kruse, J., Müller, J. (eds.) *Telecommunications Take-Off in Transition Countries*. Aldershot, 1997, p. 169. Prior to 1990, there were only 15 international lines outgoing from Estonia, all of which went through the international exchange in Moscow.

<sup>33</sup> **Vahtrre, S.** (ed.). *Eesti ajalugu. Kronoloogia*. Tallinn, 1994, p. 221.

<sup>34</sup> **Hultén, S., Mölleryd, B.** Estonia, Latvia and Lithuania: Balancing the demands for short term profitability and network expansion, p. 172; *Dagens industri*, 1990, 17 September.

<sup>35</sup> See Televerket, press release, 1991, 'Kraftigt ökat ringande till Sovjet', 19 August.

<sup>36</sup> Former directors of Tallinna Telefonivõrk, interviews with the author, 20 and 21 November 2000.

1990, however, that the first *business* relations were established in the equipment field. In that year, the Estonian communications minister, Toomas Sõmera, visited Ericsson's Finnish subsidiary in Helsinki. Representatives of Ericsson Finland, in their turn, were invited to Estonia, and in June 1990, the Estonian ministry could sign its first business agreement with Ericsson, for the delivery of an X.25 data communications system.<sup>37</sup>

Ericsson was also the equipment supplier in the first large-scale project that Estonia entered in collaboration with West European countries. Having successfully established the first direct international lines from Estonia to the West – a project that had a certain symbolic as well as (as we have seen) a substantial instrumental value – the Estonian ministry felt confident to enter a second cooperative project with the Swedish and Finnish public telecommunications administrations (*Televerket* and *Tele*, respectively), in the form of the establishment of an Estonian system for *mobile telephony*. Building its own, independent infrastructure was part of the separatist government's strategy to secure its emerging sovereignty, and mobile telephony seemed unusually suitable for this purpose. The government would certainly have liked to immediately rebuild also its *fixed* telephone system to bring it in line with Western standards, but such a project was likely to be successful only in a politically stable situation, since it involved large long-term commitments and a large investment capital. A system for mobile telephony was easier and cheaper to install (though expensive for the users). Moreover, Estonia's two Nordic partners, with whom cooperation had already been established, were known for their countries' expertise in this relatively new civilian mode of communication.

The mobile project started in April 1991 and had the form of a consortium, *Eesti Mobiiltelefon* (EMT), between the Estonian Ministry of Communications and the two Nordic state-owned operators, Televerket (Sweden) and Tele (Finland). NMT-450 technology was used and the equipment was supplied by Ericsson. The first client joined the system on 5 July 1991, i.e. a few weeks before the dramatic August events.<sup>38</sup>

In parallel with the mobile project, a deeper and more fundamental transformation of the whole telecom sector began in Estonia. In connection to the preparations for the mobile project, the Estonian Ministry of Communications took the brave decision to officially secede its telecommunication functions from the rest of the USSR, a step which was accomplished in spring 1991 and which at that time was seen as a unique measure for a Soviet republic.<sup>39</sup> In July, the first step was then taken towards a more Western-like structure, as the Ministry of Communications handed over the network operation function to a new state-owned company, *Eesti Telekom*, which was created for this purpose.<sup>40</sup> Through

<sup>37</sup> Representative of Ericsson, interview with the author, 23 November 2000.

<sup>38</sup> *EMT Infoleht*, 1996, no. 2 (5), p. 1.

<sup>39</sup> *Telecommunications*, 1991, October, p. 170f.

<sup>40</sup> *Вестник связи*, 1992, no. 6, p. 33.

this measure, the ministry in practice removed itself. Its remnants were transferred to the Ministry of Transport, which was now renamed the Ministry of Transport and Communications, with only a small telecommunications department that was to function as a regulator of the market.<sup>41</sup>

Apparently, Estonia was pleased with its emerging collaborative linkages with the Nordic countries and their internationally well-known network operators and equipment manufacturers. In defining a strategy for radically restructuring and modernising the Estonian telecommunications system, these foreign organisations were important discussion partners and advisors – and potential investors. Swedish Televerket, in particular, was seriously interested in heavily investing in the Estonian telecommunications sector, and Ericsson, its traditional partner on the manufacturing side, was interested in getting involved as the main equipment supplier in the planned projects. After the official recognition of political independence in Estonia following the events in August 1991, negotiations were intensified. In October 1991, during the international meeting of the telecommunications industry in Geneva, Estonia and the other Baltic states were reported to be aggressively looking for Western partners for telecommunications ventures.<sup>42</sup> During the meeting, a schooling agreement was signed between Estonia and Sweden, with the purpose to let Estonian telecommunications engineers and administrators acquire a more thorough knowledge of West European – and in particular Swedish – telecommunications technologies and telecommunications administration.<sup>43</sup> Toomas Sõmera and Tony Hagström also signed a Memorandum of Understanding that foresaw a ‘very far-reaching’ cooperation between Eesti Telekom and Televerket. Televerket already announced that it was to become a major owner of the Estonian telephone administration and that a new company was to be created for this purpose.<sup>44</sup>

During the following months, the partners came to discuss concretely the conditions under which Swedish organisations could take part in the restructuring and modernisation. The Finnish interest in taking part in a large-scale Estonian project was initially somewhat weaker than for the mobile project – possibly as a result of Tele’s deep involvement in Latvia, a country which offered both a larger market and a well-developed expertise also on the manufacturing side, through the VEF company and the RUNIS research institute. From the Estonian perspective, Televerket also appeared as a richer and therefore more reliable long-term partner than Tele.<sup>45</sup> In official reports and in the joint Estonian–Nordic press conferences

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<sup>41</sup> Campbell, R. *Soviet and Post-Soviet Telecommunications*, p. 134; Cunningham, G. Telecommunications Regulation in Estonia. – *Computer and Telecommunications Law Review*, 1998, no. 7, p. 234.

<sup>42</sup> *Telephony*, 1991, 21 October, p. 8.

<sup>43</sup> Kaasik-Aaslav, V., Maripuu, H. *Tallinna Telefonivõrk 110 aastat 1886–1996*, p. 142.

<sup>44</sup> Televerket, press release, 1991, ‘Nytt baltiskt telebolag – Televerket blir delägare i estniska televerket’, 10 October.

<sup>45</sup> Former director of Tallinna Telefonivõrk, interview with the author, 21 November 2000.

that were held regularly to discuss the development, Tele did not take part until spring 1992.<sup>46</sup> However, while Televerket was seen as Eesti Telekom's main partner, Tony Hagström, who had initiated the Swedish–Estonian contacts in 1988, hesitated to let Televerket invest in a large-scale modernisation project. The financial risks were seen as considerable, not least because of the absence of a stable currency in Estonia before June 1992. This contributed to delaying the results of the negotiations. The financial risks that were perceived by the Swedes finally resulted in Televerket's desire to share its participation in the Estonian project with Finland.<sup>47</sup>

The radical outcome of the Nordic–Estonian negotiations was the creation of a three-country joint venture, *Eesti Telefon*, between Televerket (Sweden), Tele (Finland) and Eesti Telekom (Estonia). This joint venture was to take over the functions that had until recently been under the responsibility of the Ministry of Communications of the Estonian SSR. The new company was also to take the responsibility for the expansion and modernisation of the old Soviet Estonian network. The two Nordic operators together held no less than 49% in the new company. With the help of Nordic capital, a ten year investment programme worth \$25 million per year was launched, to cover the installation of 30,000 digital lines annually. The goal was to reach a public telephone penetration of 45%.<sup>48</sup> In the concession agreement that was signed in December 1992, Eesti Telefon was awarded a monopoly licence by the government for fixed telephony in Estonia until the end of the year 2000.<sup>49</sup>

There was considerable dispute over the agreement in the government and parliament, and critical voices could be heard also within the ministry and the telephone network organisations that had until recently been subordinated to the ministry. However, Estonia was in clear need both of capital and of new technological and organisational knowledge, and the experience of earlier

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<sup>46</sup> At the press conference held on 21 January 1992, the Nordic interests were represented by Televerket and Ericsson, Tele being absent and not mentioned. In May, however, it was reported that Tele was taking part in planning an Estonian–Swedish–Finnish joint venture. See *BNS*, 1992, 21 January, 'Estonian and Swedish firms set up joint venture for developing digital communication in Estonia', and *BNS*, 1992, 18 May, 'Talks going on to set up Estonian–Swedish–Finnish telecommunications company'.

<sup>47</sup> Representative of Eesti Telekom, interview with the author, 8 November 2000; representative of Telia, interview with the author, 20 November 2000.

<sup>48</sup> *Telecommunications*, 1993, November. The sum \$250 million in ten years was enormous for the small country. But a comparison of the undertakings of the Swedish and Finnish operators in Estonia with those of the West German operator in the ex-GDR at the same time, within the \$36,000 million 'Telekom 2000' project, lets the Estonian money appear more like a negligibly small development aid to the Baltic neighbour.

<sup>49</sup> *Kontsessioonileping Eesti Vabariigi valitsuse ja kontsessionääri vahel*, 1992, 16 December. The concession agreement was signed by A. Meister and K. Saar (representing the Estonian government) and T. Sõmera, T. Hagström and P. Vennamo (representing Eesti Telefon); see also **Cunningham, G.** *Telecommunications Regulation in Estonia*, p. 234. The agreement mentioned a possible extension of the monopoly rights for another six years, but this was never realised.

cooperation with the same Nordic operators tended to reduce the perceived uncertainty. It was believed that Televerket and Tele would have the capacity to enhance and accelerate the transfer of technology and administrative knowledge. The Nordic partners themselves, on the other hand, saw a unique opportunity to enhance their knowledge of the Soviet telecommunications sector, which could turn out to be a strategic advantage for future activities and further expansion in the East. The foreign partners also hoped that the venture would turn out to generate profit, although this was regarded as highly uncertain – a circumstance that was demonstrated by Televerket's hesitation to enter Estonia as its single foreign partner.

Moreover, once the Nordic network operators had been chosen as the main partners of the Estonians, it also became probable that the Nordic equipment manufacturers would have a good chance to do business in Estonia. These had been the operators' traditional technology procurement partners in the Nordic home countries, and the corresponding operator–supplier relations were now extended to Estonia. Ericsson – and to a smaller extent Nokia and Siemens<sup>50</sup> – were chosen as suppliers by Eesti Telefon. However, this decision to rely on foreign equipment suppliers was not uncontroversial. Talks had been held with several European manufacturers to investigate the possibility of re-establishing a modern telecommunications factory in Estonia itself. However, it was clear that the realisation of this idea presupposed that such an Estonian factory would be able to export a large part of its produce, in order to achieve economies of scale – and it appeared unrealistic that Estonia would be able to establish itself as a telecom manufacturer on the global market.<sup>51</sup> On the one hand, the technological gap between the Soviet Estonian technological capabilities and those asked for by the Nordic operators would have required expensive and time-consuming efforts to adapt the local firms to the modernisation project. On the other hand, the enthusiasm for investing in a potential recovery of existing domestic firms was also considerably lowered by the historic absence of dynamic linkages between the operator and the manufacturers – a peculiar feature of the Estonian system, inherited from the organisational structure of the Soviet telecommunications sector (see above).

Instead, Eesti Telefon was to a large extent incorporated into the technology supply networks of its Nordic investors, which above all meant Ericsson and Nokia and their respective sub-suppliers. It was mostly only in sub-areas such as building and construction that Estonian firms were contracted.

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<sup>50</sup> A Siemens EWSD exchange was installed in early 1993 as Estonia got a new national dialling code (see **Hultén, S., Mölleryd, B.** *Estonia, Latvia and Lithuania: Balancing the demands for short term profitability and network expansion*, p. 172). Estonia got the code from the ex-GDR, whose history went the opposite way, the country having lost its independence through the reunification with West Germany in 1990.

<sup>51</sup> Former directors of Tallinna Telefonivõrk, interviews with the author, 20 and 21 November 2000.

## THE REORIENTATION OF THE EQUIPMENT INDUSTRY

The reborn Estonia inherited no dynamic linkages between network operators and equipment producers from the Soviet telecommunications sector. As we have seen, even at the Union level such links had been very weak, and within Estonia itself they had been virtually non-existent after 1944. In Russia, the remnants of the central Minsviazi in Moscow aimed at retaining its linkages with the suppliers within MPSS – however problematic they had been – and using Western capital and knowledge to modernise the existing plants. In Estonia, in contrast, the virtual absence of domestic linkages between network operators and equipment manufacturers stimulated the re-independent country to re-orient itself in a more radical way, letting Eesti Telefon direct its demand for equipment towards the Nordic countries. There existed no natural links between Eesti Telefon and local equipment suppliers, and local manufacturing firms were thus hardly involved in the modernisation of the telecommunications infrastructure. It should be stressed that this did not contradict the liberalisation of the equipment market that was actually being carried through simultaneously;<sup>52</sup> the exclusion of Estonian telecommunications firms and the channelling of demand towards Nordic equipment suppliers was rather an effect of the monopsonist market (with Eesti Telefon as single buyer) that had been created through the award of monopoly rights for fixed telephony.

Eesti Telefon's decision to rely on foreign suppliers did not mean, however, that the domestic equipment industry was doomed to death. In contrast, the activities in the equipment sector were intense. Some of the old Soviet companies were successfully privatised, and in parallel a number of new companies were established. Foreign investors were very interested in the (inexpensive) knowledge base that Estonia offered. Although telecommunications only represented a small share of the republic's electronics industry during the Soviet era, the extremely rapid world-wide growth of the telecom sector and the geographical as well as mental proximity to two of the Western world's leading telecom countries made Estonia an unusually attractive location for *subcontracting* companies – in particular for subcontractors to the large Swedish and Finnish telecom companies. For example, *Tarkon*, the successor (after a number of metamorphoses) of the old Tartu telephone factory, was soon approached by Ericsson, who could now re-establish the production – although on a different scale – of telecommunications equipment that had been terminated by World War II and Soviet occupation (during which the rebuilt and expanded Tartu plant had been producing 'black boxes' for Soviet aircraft).<sup>53</sup> Another venture that sought to build on an existing plant was the collaboration between Nokia's cable division and the old Soviet Harju Elekter plant, forming the joint venture *Keila Kaabel*.<sup>54</sup> There were also

<sup>52</sup> Cf. Cunningham, G. Telecommunications Regulation in Estonia, p. 234.

<sup>53</sup> Hallberg-Sekrom Fabriks AB and Tarkon, 2001, Presentation of HSF and Tarkon.

<sup>54</sup> See e.g. *BNS*, 1993, 26 October 1993, 'Finnish Nokia, Estonian Harju Elekter join forces'.

'greenfield' investments such as that of the Finnish telecommunications subcontractor *Elcoteq*, who opened a plant in Tallinn in 1993. The Estonian division of *Elcoteq*, producing, among other things, parts for mobile phones, later grew to be the largest division of the (Finland-based) company. By 1995 it had already become Estonia's largest exporter.<sup>55</sup>

An overwhelming majority of subcontracting agreements within the Estonian electronics industry were signed for Sweden (55% in 1995) and Finland (34%).<sup>56</sup> For the sub-sector of telecommunications, this Nordic dominance turned out to be self-sustaining. The strong presence of important suppliers to Ericsson and Nokia made it attractive for other firms in the same supply networks to follow. Thus an entire array of supplier firms such as *Nolato*, *Merab*, *Traction*, *Nefab* and *PMJ* – all of which had Ericsson and/or Nokia as their most important customers – established production in Estonia, forming a local cluster within the global networks of the Nordic multinationals.<sup>57</sup>

Ericsson and Nokia themselves also launched activities in Estonia. The strong presence of these companies, however, had very little to do with their suppliers and sub-suppliers that were active in Estonia. Especially the presence of Ericsson was much more linked to its deep involvement in infrastructure modernisation, where it worked closely together with *Eesti Telefon* and *Eesti Mobiiltelefon*, rather than linked to the domestic equipment industry.<sup>58</sup>

## COMPLETING THE INFRASTRUCTURE

The two Nordic operators' engagement in Estonia had, according to themselves, begun with a mixture of curiosity and development aid thinking and the initially somewhat unpredictable opportunity of real business rather as a marginal interest.<sup>59</sup> One might possibly also suspect that Sweden and Finland through their eager activities in Estonia followed a long-term desire to transform the other side of the Baltic Sea into an area as similar as possible to the Nordic countries themselves in terms of technologies, network architecture, supply networks, regulation and organisation. *Televerket's* aim to become the leading network operator in the Baltic Sea region and its definition of this region as its home market may be seen

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<sup>55</sup> **Hernesniemi, H.** *Evaluation of Estonian Innovation System*. Tallinn, 2000, p. 31.

<sup>56</sup> **Berg-Andersson, B.** Den estniska industrins framtidsutsikter. – *Ekonomiska samfundets tidskrift*, 1998, no 1, p. 24.

<sup>57</sup> See e.g. BNS's interview with *Nolato's* Lars G. Persson (18 May 1999), who explicitly referred to the already strong presence of *Elcoteq* as an important reason for opening a *Nolato* factory in Tallinn.

<sup>58</sup> Representatives of Ericsson, interviews with the author, 23 November and 14 December 2000.

<sup>59</sup> According to Mart Nurk in an interview with *Dagens industri*, 1997, 18 October.

in this light. Allusions to Swedish hegemony in the 17th century Baltic Sea region and even to the age of the Vikings were not uncommon.<sup>60</sup>

In any case, Telia's and Sonera's undertakings in Estonia soon turned out to be highly successful also from a pure business point of view. Eesti Telefon and its sister company, Eesti Mobiiltelefon (EMT), developed to become unusually profitable companies.<sup>61</sup> Behind this success lay the monopoly rights and the intense on-going work with modernising the telecommunications infrastructure of the country, which happened to take place in parallel with an unprecedented growth of the European telecommunications sector. The new infrastructure was seen as the backbone that would make it possible for Estonia, in general, and Eesti Telekom, in particular, to exploit these international technological developments. The technical system that emerged involved the installation of digital (mostly Ericsson) exchanges, a new trunk (transmission) network, based on fibre-optics, and local networks of a more heterogeneous nature.<sup>62</sup> The system was established in accordance with internationally recognised standards, but in contrast to the parallel case of East Germany, where investments were much more substantial, fibre-optic technology was used only in the trunk network. (In the ex-GDR, fibres were drawn nearly all the way to the user.<sup>63</sup>) Installing new digital numbers at a rate of about 30,000 lines annually, fixed telephone penetration increased by about two percentage points per year.<sup>64</sup> This was about three times as fast as during the 1980s.<sup>65</sup>

With the transition to Western technologies, the old linkages to the Russian and East European telecommunications equipment industry were finally cut off. The new relationships with Ericsson and other suppliers replaced the imports from the former Eastern bloc. Soviet and East European technologies would continue to be used for many years, as everything could not be replaced immediately, but the Soviet equipment that was taken out of operation in connection with modernisation was a reliable source of spare parts, so that contacts with Krasnaya Zarya and other factories were not needed anymore. Estonia even started to *export* some of the old Soviet equipment back to the East (where the modernisation was a much slower process).<sup>66</sup>

Apart from the physical creation of a new domestic infrastructure system, a key outcome of the modernisation programme was the dramatic gain in

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<sup>60</sup> See e.g. Telia, Annual report 1999, Stockholm, 2000, p. 8f. ('Det ledande telekombolaget i Norden och Östersjöområdet').

<sup>61</sup> As the Estonian state privatised a large part of its stake in Eesti Telekom at the beginning of 1999 and the company entered the Tallinn stock exchange, Eesti Telekom immediately became the dominant Estonian firm, standing for almost half of the total stock exchange.

<sup>62</sup> *Telecommunications*, 1995, October, p. 62.

<sup>63</sup> *Telecommunications*, 1993, November.

<sup>64</sup> According to statistical data in Eesti Telefon, Annual Report 2000, Tallinn, 2001, p. 16.

<sup>65</sup> Calculated for the years 1980–85 from *Eesti NSV rahvamajandus 1985. aastal. Statistika aasta-araamat*. Tallinn, 1986, p. 137.

<sup>66</sup> Former director of Tallinna Telefonivõrk, interview with the author, 21 November 2000.



technological and administrative *knowledge* within Eesti Telefon and Eesti Mobiiltelefon with respect to network operation and service provision. A dynamic potential was built up in the domestic sector, preparing the Estonian telecommunications companies for knowledge-based growth through developmental activities such as experimentation with new services. The importance of such a domestic potential was to become particularly obvious towards the latter half of the 1990s, as mobile telephony and the Internet started to grow, offering a whole new world of potential innovation conditioned by the availability of physical infrastructure and corresponding skills.

There was often a strong scepticism in Estonia towards the deep involvement of the Nordic companies in the modernisation of the country's telecommunications infrastructure, and the cooperation between Eesti Telekom, Televerket and Tele was often regarded as an unfortunate necessity. In view of the profitability of Eesti Telefon and Eesti Mobiiltelefon – in which the Nordic investors controlled 49% of the shares – this scepticism was particularly obvious. However, of the three involved countries, Estonia appears to have been the one which gained most strongly from the joint activities. The Estonians quickly learned to use its close contacts to Televerket and Tele for accelerating the inward transfer of knowledge, and they quickly learned also to develop the acquired knowledge further. It was much more difficult for Televerket and Tele to do the same – a fact that had to do with the gradual liberalisation of Western telecommunications markets, which was turning Televerket and Tele into competitors on the European stage. Both Televerket and Tele realised that Estonia – with its radical need for modernisation and its surprising readiness to use new telecommunications services – would be a perfect place for experimenting with new technologies and services, but the *joint* involvement of Televerket and Tele implied that such experimental activities in Estonia would be associated with considerable risks for leakage of valuable knowledge. Obviously, this situation may have looked different if Televerket had accepted to enter Estonia as *single* foreign investor in 1992.<sup>67</sup>

Eesti Telefon and Eesti Mobiiltelefon were sometimes involved in interesting collaboration with the European equipment suppliers – and in particular with the Swedish giant Ericsson. As indicated above, Ericsson lived a double life in Estonia. Whereas the company through its sub-suppliers sought to take advantage of *cheap labour* and *existing manufacturing capabilities*, its presence in its own name was driven by an interest in the new telecommunications service *market* in Estonia and by the opportunity to exploit collaboration with the Estonian operators. The Estonian market was small, but it was unusually dynamic and offered opportunities for trying out new technologies. In addition, it was easy for Ericsson to build up cooperation with Eesti Telefon, since its traditional partner for more than a century, Televerket, was a strong stakeholder in the restructured Soviet-era operator. The modernisation of the antiquated telephone network made

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<sup>67</sup> Representative of Telia, interview with the author, 20 November 2000.

it possible to try out technologies such as the wireless RAS 1000 system. This Ericsson system was installed in Estonia for the first time in July 1994 and was at that time the seventh of its kind in the world.<sup>68</sup>

However, modernisation and expansion of the telecommunications infrastructure was a slow process, and Eesti Telefon was by no means a popular company among the population, who – especially in the countryside – found it difficult to see the logical link between the continuing scarcity of telecommunications in large parts of the country and the image of welfare and progress that Eesti Telefon wished to establish of itself. These critical voices were accompanied by an increasingly tough attitude towards the company also in political circles. In August 1996, the Minister of European Affairs, Endel Lippmaa, resigned, one reason being his criticism towards what he regarded as a policy of monopolism in the telecom business. ‘In telecommunications, Estonia has become a Swedish company’s colony to pump profit from’, it was argued.<sup>69</sup> In the years that followed, it became increasingly harder for Eesti Telefon to get its further development plans approved by the government in accordance with the concession agreement from 1992, the government judging the expansion of the infrastructure as too slow.

## CHANGING THE RULES OF THE GAME

There is no doubt that the gradually tougher attitude towards Eesti Telekom had very much to do with the appearance of competitors to the Estonian–Nordic joint venture on the Estonian telecommunications market. In 1995, second generation mobile telephony (GSM) was launched in the country, and in contrast to fixed communications, Eesti Telekom had no exclusive rights on the mobile market. Eesti Mobiiltelefon (EMT), which had introduced analogue mobile telephony in Estonia in 1991 in connection with the on-going national liberation movement (see above), was the first company to offer GSM, but this time it was quickly followed by a newly created subsidiary of the private Finnish *Radiolinja*. A year later, competition on the Estonian mobile market was already characterised as ‘fierce’ – a fact which, however, did not prevent a third GSM operator, *Ritabell*, from entering the quickly growing market.<sup>70</sup>

A strong private lobby against both EMT and Eesti Telefon appears to have developed steadily in the years after the introduction of GSM. Frequent complaints about what the private actors regarded as discrimination (for example concerning interconnection between the private networks and those controlled by Eesti Telefon and EMT) served as a basis for trying to influence the governance

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<sup>68</sup> Eesti Telefon, Annual Report 1994, Tallinn, 1995, p. 7.

<sup>69</sup> *Äripäev*, 1996, 7 August, p. 5.

<sup>70</sup> See e.g. *BNS*, 1995, 27 December, ‘Millicom to invest into third cellular network in Estonia’. *Ritabell* was a joint venture between Millicom and the Estonian firm Levicom.

of the sector. The regulatory-institutional framework was frequently challenged and re-interpreted, sometimes even through processes in court. The adoption of the new telecommunications law, which would harmonise the Estonian legislation with the EU and WTO, was strongly delayed. In September 1999, it was revealed that Levicom, the main company behind Ritabell and with further strong interests in the Estonian telecommunications sector, had been working out an alternative telecommunications bill together with a parliamentary fraction.<sup>71</sup> This indicated an obvious lack of consensus about the ways in which the experience and knowledge of telecommunications companies should and could be integrated into the important process of institutional change. In the early years around 1990, the involvement of Televerket and Tele in re-regulating the sector had been relatively unproblematic, but the structure of the domestic sector had already changed considerably since then and there were now a whole array of companies and other organisations with a direct interest in contributing to changing the rules of the game.

A series of interesting but time-consuming debates thus came to characterise the working out of a new regulatory regime during the late 1990s. It was only in February 2000 – one year before the termination of Eesti Telefon's fixed-line monopoly – that a new Telecommunications Law could be adopted by the parliament. The most important reform compared to the earlier version of the law was probably the explicit discrimination of firms controlling more than 25% of the market.<sup>72</sup> The aim of this paragraph was to encourage diversity and competition – although the law may also be interpreted as a result of lobbying against Televerket and Tele (who had now gone through a number of internal reforms including changing their names to Telia and Sonera, respectively). Since the Nordic operators each held 24.5% of Eesti Telefon and Eesti Mobiiltelefon, the law effectively seemed to limit the prospects for the two Nordic partners to further expanding their Estonian activities.

## EPILOGUE

Towards the end of the 1990s, the rise of the Internet and of mobile telephony was about to change the structure of the Estonian telecommunications sector again, and the expected liberalisation of fixed communications through the termination of Eesti Telefon's monopoly in January 2001 effectively boosted the number of new actors in the business already during the preceding years.

The private Internet providers in Estonia that were starting to compete with Eesti Telefon in this rapidly growing market had a history which deviated considerably from a public telecommunications operator. Many of the private

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<sup>71</sup> BNS, 1999, 20 September, 'Levicom's lobbying seen behind new telecommunications bill in Estonia'.

<sup>72</sup> Telekommunikatsiooniseadus, vastu võetud 9. veebruaril 2000. a., § 8.

companies were recent start-ups whose main activity was the development and sale of software, typically in cooperation with West European companies or as contractors in connection to the rapid computerisation of private and public domestic organisations.<sup>73</sup> Others had started in the early 1990s as computer assemblers, responding to the high demand for Western electronic technologies in Eastern Europe after Soviet break-up and focusing on the domestic and surrounding markets. Most of the Estonian computer manufacturers – there were a handful of them in the mid-1990s – subsequently diversified into software and the growing field of data communications and Internet services. Both groups of firms – software specialists and computer assemblers – consisted mainly of firms that had not existed prior to 1991. Their employees were typically graduates from Tallinn Technical University who had not had any previous contact to the Soviet telecommunications industry.

Eesti Telefon and Eesti Mobiiltelefon themselves were well aware of the ongoing convergence of computer and telecommunications technologies, and of the consequent shift in market focus towards data communications and the Internet, which tended to alter the technological boundaries of the telecommunications system. In 1999, Eesti Telefon declared that its future priority – after accomplishing the build-up of the basic national infrastructure – would be the development of data communication.<sup>74</sup> This strategic shift of Eesti Telefon was also pursued by the rapidly growing (public and private) operators of the mobile networks, and this was to have far-reaching consequences for the dynamics of the domestic sector.

So far, the large operators of fixed (Eesti Telefon) and mobile (EMT, Radiolinja and Ritabell) networks had relied heavily for their development upon cooperation with leading foreign firms such as Ericsson and other traditional partners of the foreign stakeholders in the above operators. The domestic telecommunications industry – and in particular the remnants of the Soviet equipment sector – had been more or less isolated from the large modernisation projects, acting instead as subcontractors to large foreign manufacturers. Companies such as Elcoteq had developed considerable technological capabilities by being part of Ericsson's and Nokia's multinational supply networks, but they had developed no dynamic links to the Estonian market. And young firms in the software industry had developed their potential without any close interaction with the operators of telephone networks. Through the gradual re-orientation of these operators, however, towards the field of data communication and new advanced services, demand for the corresponding expertise increased dramatically, forcing Eesti Telekom and the other operators to look for new partners. Perhaps to their surprise, they discovered that an impressive domestic potential had developed in the field since the early 1990s.

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<sup>73</sup> According to, for example, NUTEK. *IT-översikt i Östersjöregionen*. Stockholm, 2000, many Estonian IT firms were able to grow thanks to their involvement in large public projects.

<sup>74</sup> Eesti Telefon, Annual Report 1999, Tallinn, 2000, p. 3.

This domestic potential could hardly have developed without intense relationships to other European countries – and in particular to Sweden and Finland. Through its cooperation with the Nordic network operators and their partners on the manufacturing side, and through the intense subcontracting that Sweden and Finland had been exploiting in Estonia, the country had from the late 1980s gradually established a tradition of dynamic interaction with its Nordic neighbours. Towards the end of the 1990s, many Estonian experts shared the view that Estonia was on its way to becoming part of the Swedish and Finnish telecommunications clusters.<sup>75</sup>

The Nordic countries themselves have been very eager to integrate Estonia and Estonian telecommunications into their economic and political spheres. Sweden, for example, contributed heavily to the funding of the IT college in Tallinn. Telia has announced that its goal is to be the leading telecommunications firm in the Baltic Sea region and to build up a joint Nordic–Baltic system of telecommunications. And the city of Stockholm plans to use its linkages to the Eastern shores of the Baltic to boost its own economic growth; there are numerous cooperative projects such as the ‘Baltic Palette’, in which telecommunications technology is seen as an instrument for a much broader economic integration of Riga, Tallinn, Helsinki, St. Petersburg, Stockholm and surrounding regions.<sup>76</sup>

This development should not be a surprise in view of the history of Estonian telecommunications. Telecommunications in Estonia were, as we have seen, deeply connected to a complex network of relationships with other European countries already in the first half of the twentieth century – both from a technological and an administrative point of view. In parallel to the Estonian telephone administration’s success in connecting the first independent Estonia to a pan-European telephone network in the interwar period, the country developed close relationships with the Swedish Ericsson company for the manufacturing of equipment. However, Soviet occupation resulted in a radical shift – especially on the manufacturing side – which made the continued dynamic integration with other parts of Europe virtually impossible. Given the minimal resources and weak relationships between important actors, the Ministry of Communications of the Estonian SSR performed surprisingly well, but it was at the same time clear that the achievements were not enough in themselves to pave the way for the reborn Estonia’s successful transformation in the field of telecommunications. Also clear, however, is that Estonia managed at an early stage to establish stable cooperative relationships with the Nordic countries both in terms of network operation and equipment production. In network operation and service provision, Estonia reoriented itself towards the West through complex negotiations and other contacts with the Nordic operators Televerket and Tele and their equipment suppliers. It took about four years for the partners, from the first serious contacts

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<sup>75</sup> HERNESNIEMI, H. *Evaluation of Estonian Innovation System*, p. 33.

<sup>76</sup> NUTEK. *IT-översikt i Östersjöregionen*, p. 30.

with Televerket in 1988 to the signing of the concession agreement at the end of 1992, to form the three-country joint venture Eesti Telefon, which was to take over the expansion and modernisation of the public telephone network. In the field of equipment production, there was initially the idea to re-establish a major plant that could supply the domestic telephone networks with the necessary equipment. However, this idea was soon given up, and Estonia was instead to a large extent incorporated into the supply networks of their Nordic partners. This does not mean that there was no equipment production going on in Estonia after 1991, but the Estonian manufacturing plants continued to be largely isolated from the domestic operators – just as they had been under Soviet rule. With the recent global technological dynamism in the fields of mobile telephony and the Internet, however, Estonian companies appear to get more involved in collaboration with the domestic operators.

## EESTI TELEKOMMUNIKATSIOONIDE LÄHIAJALUGU: EUROOPALIKUD PERSPEKTIIVID

Per HÖGSELIUS

Telekommunikatsioonid kujutavad endast ulatuslikku tehnilist süsteemi, mille arengu aluseks võib pidada elektrilise telegraafi ja telefoni sünni 19. sajandil. Eesti telekommunikatsioonisüsteem on kasvanud ja arenenud dramaatiliselt varieerunud poliitilises kontekstis, hakates kujunema Vene impeeriumi ajastul ning olles nüüdseks integreerumas Euroopa Liidu ja teiste lääneriikide tehnoloogilistesse, organisatsioonilistesse ja institutsioonilistesse struktuuridesse.

Käesolev artikkel keskendub Eesti telekommunikatsioonisektori lähiajaloole alates Nõukogude Liidu perioodist ja analüüsib raskusi telekommunikatsiooni taasiseseisvumisjärgsel ümberorienteerumisel läände. Seejuures on põhitähelepanu protsessidel, mille kaudu Eesti organisatsioonid ja ettevõtted on arendanud tehnoloogilisi, tööstuslikke ja institutsioonilisi suhteid Lääne-Euroopa riikidega ning eriti Põhjamaadega. Kirjutise autori hinnangul on ida-lääne-dimensioonis toimunud suhete muutumist arvestamata võimatu mõista Eesti telekommunikatsioonisektori ajaloolist dünaamikat.