E-Residency: A Business Platform for Smart Rural Development?

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E-Residency: Бизнес Платформа за креативно развитие на селските райони

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Резюме

E-government (електронното правителство) е популярна тема, залегнала в политическия дневен ред на много страни, в които се работи по развитието и усъвършенстването на електронните услуги. Но електронното правителство е много повече от предоставянето на обществени услуги по електронен път – то е и инструмент за имплементиране на процесно-ориентирани процедури, подпомагащи управленско-организационните структури в рамките на публичните и частните организации. До момента нуждите на потребителите и по-специално изискванията на предприемачите и на малките и средни предприятия (МСП) в контекста на international supply chains (интернационалните пласментни канали) не бяха във фокуса на развитие на повечето услуги на електронното правителство.

Също така и селските райони в повечето страни вече се радват на обновено внимание, породено от използването на „умни“ концепции, които до скоро бяха запазени за урбанизираните и промишлени територии. Всички интелигентни подходи за селските райони се базират на цифровизация, т.е. по-добър достъп до интернет, засилено използване на дигитални технологии и развитието на нови бизнес модели, което би могло да даде възможност за преодоляване на различието с урбанизираните и индустриализирани територии. По този начин това би могъл да бъде моторът за преодоляване на селските недостатъци и осигуряването в тези територии на нови възможности за правене на бизнес, създаване на добавена стойност на бизнес единиците. Следователно новите IT-базирани бизнес платформи са призвани да предлагат нови и „ушити по мярка“ електронни услуги, предназначени за нуждите на селските райони, които да подпомогнат интелигентното им развитие.

Първата голяма стъпка към изпълнението на такава бизнес платформа за интелигентно развитие на селските райони е внедрената в Естония концепция за “e-Residency”, която може да бъде подходящ подход за електронен бизнес за управление на интелигентни процеси в селските райони. Тази концепция взема предвид гледната точка на международно оперираща предприемачи и малки и средни предприятия. Настоящата публикация се занимава с научно из-

следвания въпрос: Как концепцията за "e-Residency" може да подпомогне умното развитие на селските райони и как предприемачите от селските райони и малките и средни предприятия, ситуирани в тях и в други страни, биха могли да се възползват в по-голяма степен от новите бизнес модели с помощта на добрите практики на "e-Residency" платформата на Естония.

Ключови думи: "e-Residency", интелигентни селски райони, дигитализация, умна специализация

Introduction

Government seems to be a major factor influencing the development of SMEs development (Smallbone and Welter, 2001). Consequently, European Union and most countries explicitly consider e-government as an instrument for cutting red tape. But e-government is more than the provision of public services in an electronic form – it also means the implementation of consequent process-oriented procedures, i.e. the design of e-governmental solutions should cope with the organisational structures of business and public administration and it should also map the organisational perspective into technical substructures (Reidolf and Prause, 2012). It is, therefore, important to understand the needs of the target groups of e-government services in order to create suitable e-service solutions.

This challenge appears during the era of digitalization where "smart" seems to be the property which promises prosperity. Until now many "smart" initiatives have been started in different parts of the world and very promising seems to be the fusion of the virtual and the real world, i.e. the linkage between internet and manufacturing aiming to develop cyber-physical systems (CPS) and dynamic production networks in order to achieve flexible and open value chains in manufacturing of complex mass customization products in small series up to lot size 1 (Ramsauer, 2013). The German approach has been called "Industry 4.0" and aims for energy and resource efficiency, increased productivity, shortening of innovation and time-to-market cycles together with a horizontal and vertical integration through value networks and an end-to-end digital integration of engineering across the entire value chain. Internet–linked production facilities and networked manufacturing systems open up a machine-to-machine-communication and interaction (Kagermann et al., 2013).

Unfortunately most of the smart approaches are targeting on urban conditions by neglecting rural areas but first steps are undertaken towards a smart rural development and case studies of existing smart rural SME's revealed a strong link between company success and internet access (Prause and Boevsky, 2015). By following Reidolf (2016) it can be added that also rural innovation benefits from proactive and strong relationships with extra-local actors, usually from the international level, so it underpins that fact that internet access facilitate the building of rural innovation networks. But rural internet access represents only the starting point which must be followed by the offering of smart e-services helping to overcome the rural development obstacles like low accessibility, remote location to market and public and private service providers, availability of high-qualified work-force and reduced mobility of goods and personnel. This applies especially for Bulgaria due to large rural areas, underdeveloped infrastructure and to high importance of agricultural sector for national economy as well as for national exports (InvBG, 2014). Here smart e-services open the opportunity to strengthen rural economy and the improve compatibility of rural SMEs.

Consequently the question raises how to design appropriate e-services for smart rural entrepreneurs and SMEs. By scanning the European arena of e-services solutions it turns out that the

Republic of Estonia represents one of the leading e-governmental countries in Europe and it is the first country worldwide offering a transnational e-business platform called "e-residency" (e-Estonia, 2016). The background idea of e-residency is to offer to foreigners an Estonian "digital citizenship" allowing alien entrepreneurs or SME employees to get access to the Estonian e-service systems which bears the opportunity to run a location-independent business online. Despite the facts that e-residency targets more on high-tech and IT companies it turns out that big parts of the concept can be also used to strengthen smart rural entrepreneurs.

Until now, only little research has been carried out on the requirements of e-governmental services in the context of smart rural development. The literature review of existing e-governmental solutions for rural entrepreneurs and SMEs indicate a research gap in this specific field. For this reason, the paper addresses the research question of how e-services for smart rural development might look like and can the Estonian e-residency concept serve as an e-business platform for rural entrepreneurs and SMEs, especially in Bulgaria.

Theoretical background

Smart technologies focus on the fusion of the virtual and the real world, i.e. the linkage between internet and supply chain management. In Germany, the most important industrial EU country, this approach has been called "Industry 4.0" and aims to spur manufacturing, re-industrialisation and industrial competitiveness in Western countries by developing cyber-physical systems and dynamic production networks in order to achieve flexible and open value chains in the manufacturing of complex mass customisation products in a small series up to lot size 1. These targets shall be reached with energy and resource efficiency, shortening of innovation and time-to-market cycles, as well as with a rise in productivity (Kagermann et al., 2013).

Despite the fact that smart technologies rather focus on urban areas a variety of projects try to embrace the use of new technologies for rural development and to bring the country life on the fast track. A German initiative is called "Smart Rural Areas" lead by the Fraunhofer-Institute for Experimental Software Engineering (IESE) in Kaiserslautern (IESE, 2015). So technology is becoming a crucial means for development, hence technology and even more so ICTs, can be of particular importance for rural areas. From different studies it is well-known that rural economy is characterised by small average business size and weak innovation levels, which results in limited ability to attract investments, high qualified workforce and market attention (Kalantaridis, 2009; Smallbone et al., 2003; Terluin, 2003). Furthermore, Stathopoulou et al. (2004) highlighted that entrepreneurship is also difficult in rural areas due to scarcity of resources and thin networks. In a recent study Reidolf (2016) analysed stressed to structure and impact of higher-level innovations and knowledge networks for rural SME and found out that successful rural SME tend to be well connected to preferably international actors such as customers, scientific organisations and non-human actors such as trade fairs since customers and other market-based actors are the main knowledge providers for needed innovations.

So internet and access to broadband networks are crucial for rural development and even if until now not all parts of rural areas have appropriate access to internet, applications and intelligent IT solutions the transition time should be bridged by using smartphones. More sophisticated ways to overcome rural shortcomings are related to smart e-services. Prause and Boevsky (2015) showed the possibility to develop smart rural solutions and to run an international operating SME from a rural area by using internet – based technologies. During the development of these e-services it must be kept in mind that especially for small firms the costs for implementation and updating of hard- and software and the transaction costs are often so important that benefits do not matter (Eierle, 2008). An important issue of the IT – related development in rural areas is to keep in mind the threat of a "digital divide" between large and small firms since large companies have more resources and financial means to cope with

digital progress (Lockett and Brown, 2006). ICT can help to reduce transaction and administrative costs and enhance productivity and efficiency of technologies but only of the companies are able to use the benefits of IT - solutions. So policies should encourage SMEs to use ICT as studies show that ICT users are more likely to innovate (Higon, 2011). Research results show that those companies that make greater use of the Internet for their business processes are indeed those that have greater and sustained growth (Amoros et al., 2007).

In the case of the administration of location-independent business the Republic of Estonia represents one leading actor in Europe offering to anyone who is interested in a transnational digital identity such internet-based business solutions. A very sophisticated form of e-business which Estonia offers as the first country worldwide is called "e-Residency" which comprises a government-issued digital identity enabling the user to run a trusted company online. One important target of Estonian e-residency is to unleash the world's entrepreneurial potential but the e-residency concept is also compatible with ongoing approaches for smart production and logistics, especially in the context of Industry 4.0, since the fusion of cyber space and material world in Industry 4.0 leads to virtual structures in the value and supply chains, which require organisational and managerial tasks for related cross-company operations processes in networks touching manufacturing, logistics and distribution (Sydow and Möllering, 2009). But offering only e-service solutions for SMEs are not sufficient to capitalize the opportunities and efficiencies of smart, also new business models and structures are required, capitalising and controlling the information flows within the production networks which are running parallel to the physical value and supply chain flow (Jacobs and Chase, 2014). Consequently, the physical value streams in smart supply chains require an appropriate cyber–platform to be able to control the parallel information streams and to handle the related business administration tasks no matter if smart business takes place in urban or rural areas (Prause, 2015b).

Smart e-Business Administration

Prause and Boevsky (2015) identified some important topics which have to be supported for rural e-business systems in order to overcome the obstacles in rural development:

• "Postbus": Using the regional bus transport not only for people but also for packages and cargo delivery between fixed stations. Related organisational issues can be solved via mobile IT solutions including shared delivery activities of neighbours.

• Agriculture can be improved by digitalization through remote consulting, coaching and training between central competence centres and rural entrepreneurs.

• Remote work places in rural areas as well as access of rural SMEs to high qualified workforce can be organized via digitalization.

• Administrational tasks can be improved through e-governmental solutions including application of agricultural subventions, taxation and other administrational tasks.

• Mobile IT systems can improve the cooperation among rural entrepreneurs and farmers by organizing the use of shared resources (i.e. machines), shared transportation and common product marketing.

• Renewable energy sources can be used, managed and shared more efficiently.

Some of the e-eservices are related to logistics and mobility problems as well as to specific administrational topics but a closer look reveals that some of these topics which are appearing in the context of smart rural areas are in line with the aims of Industry 4.0 since they go far beyond sophisticated production and logistics expertise, so what is also required is especially ICT related knowledge covering cyber security, e-commerce and e-government (Prause, 2015b).

A special requirement appears in Bulgaria where the agricultural sector is of great importance for the national economy and contributes strongly to the export. A closer look to the export figures show that an important group of target countries for Bulgarian agricultural companies are laying outside European Union like Russia, Ukraine or Turkey so there is a special need

for e-service solutions which are able to handle international business beyond European borders. Empiric results from the Baltic Sea region which were gained in the frame of the EgoPrise project gave an inside view about the demands and needs concerning e-services for internationally operating entrepreneurs and SMEs (Prause et al., 2012). Firstly, the survey results confirmed the observation made by Lille and Prause (2011) that the needs and expectations towards e-services depend also on the company size and the business sector. Secondly, they revealed that there exists a huge difference among the countries investigated concerning the governmental online-ability. Furthermore, the results of the study showed that even in highly developed e-government countries the offered e-services are scattered between varieties of different web-sites so that they are not integrated and they do not reflect the business processes and needs of companies. Finally, an important point was related to safety issues since SMEs can be only encouraged to use new ICT services when trusted third parties are able to confirm the safety and usefulness of the system, which emphasises results from Lockett and Brown (2006). Especially internationally operating SMEs and entrepreneurs pointed out the need for standardized, secure, integrated and culturally independent e-services in order to facilitate transnational operations. Consequently, these results confirm the findings of Beckinsale et al. (2011) who pointed out, based on studies of ethnic minorities, that to fight digital divide and to facilitate transnational and intercultural entrepreneurial activities standardized processes between countries would help enormously to support operations and to decrease administrative burdens.

By taking into account these considerations the Estonian ministry of Economic Affairs and Communication initiated a study for analysing the sore points for entrepreneurs and SME's participating in international supply and value chains (e-Estonia, 2016). The results of these investigations brought to light that the crucial business administration tasks for internationally operating SMEs and entrepreneurs are related to incorporation and administration of legal entities, contracting with clients, suppliers and other companies, access to banks and payments, invoicing as well as exchange with legal and public authorities including taxation (e-Estonia, 2016). These business administration tasks are exactly those which are necessary to control the information streams which are related to material value added streams of transnational smart supply chains (Fig. 1; e-Estonia 2016).

An additional aspect of the survey of the Estonian ministry of Economic Affairs and Communication is depicted in figure 1 highlighting that all stakeholders of a company and its full supply chain are considered in the business administration approach comprising of customers, employees, shareholders, creditors, suppliers, company management and public authorities.

The Estonian e-residency offers a transnational digital identity to internationally operating SMEs and entrepreneurs which is equipped with a portfolio of integrated, standardised, secure and multi-lingual (Estonian, English and Russian) e-services. The attributed digital services of e-residency are enabling a secure and convenient way to sign and verify the authenticity of digitally signed documents and contracts, to encrypt and transmit documents securely, to establish an Estonian company online and to administer the company from anywhere in the world. Linked to e-residency is the possibility to conduct e-banking and remote money transfers, which represent the payment opportunity of European banking and access to Single European Payment Area (SEPA) system as well as to EU legal space including the advantage of quick and cheap financial transactions inside EU, contracting and enforcing in a reliable Estonian law system as well as the possibility of a remote foundation of an Estonian holding company. Additionally, the e-resident is able to participate in the highly developed Estonian e-government system comprising the declaration of Estonian taxes online as well as all other efficient and easy-to-use e-services (e-Estonia, 2016).

An important question in academic literature is how to encourage entrepreneurs to use e-government services. Usually dissemination and learning process should be started with promotional campaigns and success stories to build ex-

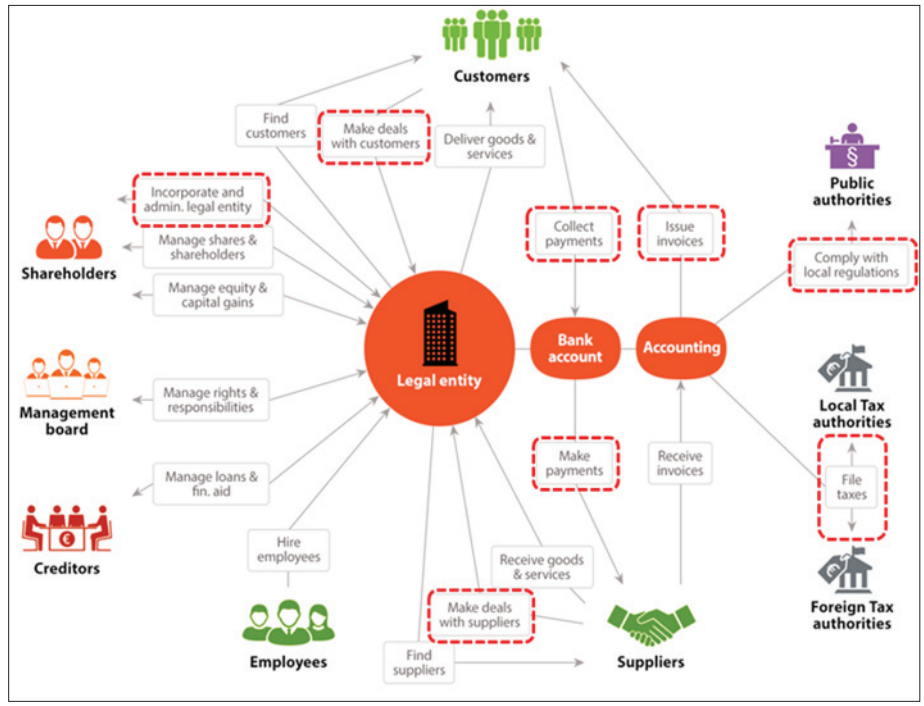

Fig. 1. Crucial business administration tasks of supply chains for entrepreneurs
Source: e-Estonia (2016).

perience of using e-government services and to improve social characteristics and knowledge of the end users in order to widen the number of users (Warkentin et al., 2002; Mahadeo, 2009). In the case of Estonian e-residency program the development was different since director Kaspar Korjus (2015) states that "What we aim to do is to create a worldwide virtual business environment, where people from both the developed and developing countries can easily become entrepreneurs and start doing business anywhere in the world. Physical national borders and restrictions will no longer present an obstacle. You can start a business, open bank accounts, make transactions, sign contracts and even declare taxes, all on your computer".

Since the start of e-residency in May 2015 there were about 12 000 applications from 135 countries until now and about 11 000 applications have been approved where 75% of the applicant came from Europe. Bulgaria ranges on 41st place in the ranking with only 41 applications representing only 0.32% (e-Estonia, 2016). This is very surprising because a view on the Top 10 countries shows that Finland is responsible for 18%, Russia for 9%, the USA with 7% and the Ukraine for 6% of the applications. All together are four Non-EU-countries among the Top 10, where the fourth Non-EU-country is India on tenth place. This situation is quite astonishing because Russia and Ukraine are important trade partners of Bulgarian agricultural sector but whereas these Non-EU-counterparts of Bulgarian trade recognize the possibilities of "e-residency" the Bulgarian companies are still reluctant.

Cases, Implications and Discussions

Prause and Boevsky (2015) investigated the story of the rural high-tech company Meritx OÜ and pointed out how the smart Estonian rural infrastructure together with the smart specialisation approach facilitated the entrepreneurial and innovation activities and finally impacted the business success of Mertix. By doing so Meritex helps to mitigate and even to reverse the develop-

ments of brain drain and accelerated demographic change together with its consequences in supply of work-force, mobility and health care for rural areas. But this process is not limited to Estonia. Another case from Germany has been studies by Asendorph (2015) who described the business success of the instrument producer Jens Ritter (2016) from Deidesheim who has clients all over world including musicians like George Benson or group members of Madonna or Christina Aguilera.

Jens Ritter explained that without internet there would not have been any chance to convince musicians to visit him in his village. Only due to his website and his internet access it is possible to disseminate his instruments because they are presented with photos and sound. Both cases, the Estonian as well as the German are highlighting the importance of IT for the future perspective of rural areas.

The Bulgarian situation leads to comparable results which come out after a look to the agricultural sector. InvBG (2012) highlights some success stories of rural SME from different branches with up to 200 employees that are operating from the Bulgarian countryside all over the world. The rural companies Konex-Tiva (2016), Emiroglio (2016) and Deroni (2016) are located in Bulgarian villages and operate on global markets Konex-Tiva produces and offers a complete variety of preserved and ready-to-eat dishes whereas Edoardo Miroglio is a winery which is located in in the village of Elenovo and Deroni grows and produces healthy and conserved vegetable products. All three companies are present with their own web-site and they use internet for business purposes. Another common characteristic is the high importance of export market where all three firms have clients inside and outside EU comprising the USA, Russia, Ukraine, Belarus, Israel or Turkey.

The cases from different rural areas in Europe reveal that internet access and a well-developed ICT infrastructure play a crucial role for the company's success. This statement applies even stronger for Bulgaria than for Estonia and Germany because a look into the Logistics Performance Index from 2016 (LPI, 2016) reveals that Germany holds the first place and Estonia is ranked in rank 38 whereas Bulgaria ranks at place 72 with a falling trend due to weak logistics infrastructure making internet accessibility even more important than for Germany and Estonia. But beside a well-developed ICT infrastructure also a strong e-service portfolio can additionally support the entrepreneurial activities in rural areas and like Beckinsale et al. (2011) pointed out by highlighting integration, standardisation and multi-lingual e-services as important features to spur business development and success. Already the original e-governmental services of Estonia besides the digital identity enjoyed these features since all Estonian e-services are offered in Estonian, English and Russian language enabling entrepreneurs and SMEs the online administering of location-independent business. Until May 2015 the access to the services of e-Estonia was restricted to Estonian residents but with the introduction of e-residency this restriction has been removed so that all global citizens can apply for access to the service portfolio of e-Estonia.

In all mentioned company cases the availability of e-residency for business partners and suppliers outside Europe bear the possibility to facilitate the full global supply chain activities of the considered companies and to accelerate the business operations beyond European Union. The related efficiency gains can be capitalized in contracting, purchasing, marketing, financial management via SEPA procedures between European banks as well as in the settlement of legal issues between business partners by using Estonia as a business and legal platform. E-residency allows to handle and to manage all these tasks fully online under the precondition that the business partners of the considered companies apply for Estonian e-residency and they open EU bank accounts. By doing so all business partners who are involved in the international supply chains are enabled to run via e-residency all related business administration tasks online including sales and procurement Russia, Ukraine, Turkey and all other important markets, i.e. the use of e-residency services touches the full supply chain from marketing to contracting, payment, logistics up to delivery for low costs.

Additionally, e-residency enables the case company partners to handle online efficiently and quickly all governmental tasks related to Estonia. Further advantages are related to intra- and extra-company online processes in personnel management, financial transactions and exchange of information and material flows. This also applies to teleworkers inside and outside Estonia under the precondition of being an e-resident since all documents can be signed, transmitted and handled fully electronically so that the supply chain-related information and business administration tasks can be treated virtually, i.e. e-residency integrates and brings efficiency and business benefits to all stakeholders in the value chain. But until now the existing e-residency services are neglecting workflow-oriented solutions, i.e. the integration of cross-company applications of the e-residency services are just starting to evolve. Here more R&D activities would be preferable.

In this sense e-residency might be considered as a concept for the management of information streams and business administration issues within supply chains focussing on the needs of internationally operating entrepreneurs and SME's and joining cyber – physical aspects in business administration (Prause, 2015a). By following Prause (2015b) it can be stated that the opportunities of e-residency concept are also supporting new business models which are more geared towards individual, last-minute customer requirements, providing new solutions for dynamic pricing by taking into account the customers' and competitors' situations and by embracing openness and more networking and cooperation aspects between partners in the supply chain compared to now.

Conclusions

Smart approaches are neglecting rural areas since smart concepts are often attributed to smart manufacturing, smart logistics or smart cities. For all smart approaches the Internet of things and services represents one key component for implementation. First steps are taken on the way towards "Smart rural areas" by using new technologies for rural development in order to make the country life more attractive. Case studies of a successful rural medium sized companies from Bulgaria, Estonian and Germany point out how strongly linked the company success is to the highly developed internet access and smart e-services. Consequently, smart approaches can successfully contribute to sustainable rural development.

The Estonian e-residency concept represents a first step towards the fusion of the cyber and business administration world taking into account all stakeholders of a company and its full supply chain. The concept is open for international business models in the context of smart rural development and due to its focus on internationally operating entrepreneurs and SME's it enables online business via Estonia. Special features of e-residency are access to the EU–banking system (SEPA) including the advantage of quick and cheap financial transactions inside EU, contracting and enforcement in a reliable Estonian law system.

The case studies also revealed the potential of the Estonian portfolio of e-services for international business operations so that e-residency might play the role of international business administration platform for rural located SME. Additionally, the further discussions highlighted additional efficiency gains by using e-residency for non-European stakeholders in the international company supply chain. In this sense e-residency possesses important characteristics of a transnational business administration platform for smart rural development and bears the potential to spur the evolvement of new business models.

By summing up the Estonian e-residency offers a transnational digital identity to internationally operating SMEs and entrepreneurs which is equipped with a portfolio of integrated, standardised, secure and multi lingual e-services which enable the online administering of location-independent business. E-residency facilitates international business operations for rural entrepreneurs and SMEs and offers a portfolio of e-services which might play the role of suitable platform for the business administration processes. Further research is required to specify new e-services according to the needs of smart rural development.

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E-Residency: A Business Platform for Smart Rural Development?

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(Summary)

E-government is a popular topic on the political agenda and many countries are working on the development and improvement of e-services. But e-government is more than the provision of public services electronically – it also means the implementation of consequent process-oriented procedures supporting management and organisational structures within public and private institutions. Until now the customers' needs, especially the requirements of entrepreneurs and small and medium-sized enterprises (SME) in the context of international supply chains have not been in the focus of most e-governmental service developments.

Likewise the rural areas are enjoying a new attention due to "smart" concepts which were usually reserved for an urban or industrial context. All smart approaches for rural areas are based on digitalization, i.e. a better internet access, an enhanced use of digital technologies and the development of new business models can help to bridge the distance to cities, to overcome rural shortcomings and to provide new revenue and value-producing opportunities. Consequently, new IT-based business platforms are required to offer new and tailor-made e-services for the needs in the countryside and to facilitate a smart rural development.

A first big step towards the implementation of business platform for smart rural development is embodied by the Estonian development of "e-Residency", which might be an appropriate e-business approach for managing smart processes in the countryside and which takes into account the perspective of internationally operating entrepreneurs and SME's. The paper addresses the research question of how the e-residency concept might facilitate smart rural development and how rural entrepreneurs and SMEs may benefit more from new business models by using the e-residency platform of Estonia.

Key words: e-Residency, smart rural areas, digitalization, smart specialization