

5G Safety - Phase 1 Industrial Research, Sub-phase IR.1

Business Models and Exploitation

Result IR.1, Task T.1.1 Business Models and Exploitation

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Explanation of relevant Acronyms and Abbreviations

Kratika	Pomen	Razlaga
5G	5th Generation	Mobilna tehnologija pete generacije, ki prinaša tudi številne nove tehnične lastnosti za področje PPDR.
ACPDR	Administration of the RS for Civil Protection and Disaster Relief	Uradni angleški prevod za Upravo RS za zaščito in reševanje (URSZR).
AML	Advanced Mobile Location	Je storitev, ki omogoča točnejšo določitev lokacije kličočega z mobilnim telefonom, ki ima GPS-sprejemnik in možnost samodejnega pošiljanja podatkov o lokaciji ob klicu z SMS sporočili.
DMR	Digital Mobile Radio	Radijski standard za profesionalno rabo. Poleg prenosa govora omogoča tudi prenos podatkov v omejenem obsegu. V Sloveniji ga uporablja URSZR in reševalna služba.
DPaaS	Dispatcher as a Service	Iskratelova programska rešitev za organizacijo dispečerskega mesta, ki zagotavlja vključevanje različnih sistemov in multimedijskih komunikacijskih poti skozi enotno rešitev. Programska rešitev praviloma teče v oblaku in je zato geografsko neodvisna.
eCall	eKlic	eKlic je klic v sili, ki ga lahko ročno sprožijo potniki v vozilu ali pa se sproži samodejno takoj, ko senzorji, vgrajeni v vozilu, zaznajo hudo nesrečo. Ob sproženju eKlica se vzpostavi govorna povezava s pristojnim centrom za obveščanje, prenesejo pa se tudi določeni podatki o nesreči (lokacija, pojemek, tip vozila, itd.).
EENA	European Emergency Number Association	Evropsko stanovsko združenje z več kot 1500 člani, ki so organizacije in posamezniki s poslanstvom izboljšanja javne varnosti in zaščite ljudi.
ETA	Estimated Time of Arrival	Kratika, ki opredeljuje predviden čas prihoda osebe, vozila oz. reševalne ekipe na ciljno destinacijo.
GIS	Geographical Information System	Geografski informacijski sistem je namenjen za vizualizacijo prostorskih podatkov, ki geografske podatke prikaže na čim bolj realističen način (na zemljevidu).
ICE	In Case of Emergency	Telefonska številka ICE, ki jo shranimo v mobilni telefon, namenjena reševalcem, da lahko v primeru nesreče hitro pokličejo vaše najbližje. Lahko vam reši življenje s pridobitvijo pomembnih zdravstvenih podatkov ali pomiri vaše najbližje.
IoT	Internet of Things	Internet stvari. Če smo v preteklosti govorilo internetu, kjer smo se povezovali ljudje, potem IoT kratika opredeljuje povezljivost naprav v skupno omrežje, komunikacija pa poteka po IP protokolu.
Klic v sili 112	Emergency Call 112	Klic v sili je klic na številko 112, ki klicatelju ob nesreči ali nevarni situaciji omogoči komuniciranje s službami za prvo pomoč.
M2M	Machine to Machine	Izraz, ki definira komunikacijo med dvema napravama (brez posredovanja človeka). Pogosto gre za povezovanje senzorja v namensko omrežje.

Kratica	Pomen	Razlaga
MCx	Mission Critical Services	Skupno poimenovanje storitev kritičnih komunikacij, ki jih definira združenje za mobilne komunikacije 3GPP. Poznamo več vrst teh komunikacij: MCDATA, MCVideo, MCPTT, vse skupaj nosijo oznako MC X.
NMP	Nujna medicinska pomoč	NMP pomeni izvajanje nujnih zdravstvenih storitev, katerih opustitev bi v kratkem vodila v nepopravljivo in hudo okvaro zdravja ali smrt pacienta (Pravilnik o službi nujne medicinske pomoči).
OKC	Operativno Komunikacijski Center	Operativno-komunikacijski center je operativna služba znotraj policije, ki sprejema obvestila in zbira podatke o dejanjih, dogodkih in pojavih, ki so pomembni za delo policije ter za tekočo dnevno oceno varnostnih razmer na območju Republike Slovenije (na telefonski številki 113). Spremlja, usmerja, usklajuje in ocenjuje izvedene ukrepe osmih regijskih operativno-komunikacijskih centrov policijskih uprav v zvezi s hujšimi kaznivimi dejanji, prometnimi nesrečami, naravnimi in drugimi nesrečami ter ob drugih pomembnejših ali večjih dejanjih, dogodkih in pojavih. Interventni klic na številko 113 sprejme in evidentira policist operativno-komunikacijskega centra (OKC), ki deluje znotraj vsake policijske uprave. V Sloveniji je 8 takšnih centrov.
PEMEA	Pan-European Mobile Emergency App	Evropski standard (ETSI TS 103 478) za načrtovanje mobilnih aplikacij za izmenjavo informacij v kontekstu nujnih klicev (112), ki ga je definirala EENA, predvsem v primerih, ko uporabniki gostujejo v omrežjih v tujini (izmenjava podatka kot sta številka kličočega in natančna lokacija).
PPDR	Public Protection and Disaster Relief	Področje javne varnosti, zaščite in reševanja.
PSAP	Public Safety Answering Point	Odzivni centri za evropsko številko za klic v sili 112, v Sloveniji so to nacionalni center in regijski centri (ReCO).
PTT	Push-to-talk	Storitev poznana iz klasičnih radijskih komunikacij, ko klicatelj s pritiskom na tipko govorno sporoča vsem terminalom v kanalu hkrati. V tem času drugi ne morejo oddajati sporočil. V modernih komunikacijah je PTT poznan tudi kot »skupinski klic«.
ReCO	Regijski Center za Obveščanje	Regijski centri za obveščanje so odzivni centri za evropsko številko za klic v sili 112 in zagotavljajo službo za nudenje pomoči v primeru naravne ali druge nesreče. V Sloveniji je 13 takih centrov ReCO.
SAR	Search and Rescue	Izraz iskanje in reševanje (SAR) označuje operacijo iskanja in nudenja pomoči ljudem v stiski oz. neposredni nevarnosti. Zajema vrsto postopkov, ki so odvisni predvsem terena, na katerem se operacija izvaja, npr. v gorah, na morju in v urbanih okoljih.
SRIP	Strateško razvojno in inovacijsko partnerstvo	V Sloveniji so se oblikovala strateška razvojna in inovacijska partnerstva, med njimi tudi Pametna mesta in skupnosti, ki vključuje tudi vertikalno področje Varnost (Safety).
TETRA	Terrestrial Trunked Radio	Radijski standard za profesionalno rabo. Odlikuje se z večjim dosegom, možnostjo uporabe brez posredovanja bazne postaje in povečano zaščito komunikacije. V Sloveniji ga uporablja policija.

1. Abstract

The development and early validation of innovative business models and business potential specific to 5G PPDR is one of the metrics of the objective “To catalyze the emergence of a new market ecosystem for 5GSafety technologies”. The 5GSafety project involves early pre-commercial activities in the framework of a dialog with members of the Expert Council and the organization of demonstration events for potential buyers, which will help raise the visibility of the business value of 5GSafety products and services and create market demand.

We have carried out research and examined business models and the possibilities of exploiting the results of the project, looking at the business models that the technology provides and the market expects. The fundamental research problems we have addressed in this document are as follows:

- Business models in the 5G PPDR domain and extended stakeholder value chains,
- Whether there are and what are the real possibilities and opportunities for new business models, based on a careful market analysis by country and on the analysis of guidelines for the implementation of new business models,
- The suitability of 5G PPDR business models for business-critical communications, services, and applications.

We began by setting out the main challenges of developing a business model, which we divided into social ones, which are linked to protecting and saving lives and the public good today, on the one hand, and those related to mission-critical and urgent communications, on the other.

Further, we examined the impact of new technologies — with emphasis on 5G — on business models for the construction and operation of PPDR solutions, both in terms of network technologies as well as services and applications, and information security. The 5G network/platform as such enables the creation of partner ecosystems with a significant impact on the proposed 5G PPDR business models. We have established 10 starting points for efficient business models and partner ecosystems:

- What are the key parameters of the PPDR project’s success for a specific country?
- What are the main drivers of the new business models? How do they differ from the current ones?
- What is the situation with regard to the adoption of legislative and regulatory frameworks by country?
- What are the business models for PPDR applications linked to ownership, the regulatory and legislative framework, and usage?
- How are socio-economic impacts addressed in the PPDR business models addressed and what is their impact on the key performance indicators of the business models?
- What are the impacts of existing solutions on migration scenarios and the related new business models?
- What is the potential of the PPDR market in SLO, EU, CIS, and the world?
- How to ensure long-term sustainability and profitability growth in different forms of integration?
- What are the possible roles of partners and supporters of 5G Security in level-based organization?
- What other factors are there, and do they also have examples of best practice?

Further on, we have studied approaches to broadband networks, PPDR services and applications, as well as experience and best practices in advanced countries across the world as well as those that are part of our markets. We reviewed the United States of America, South Korea, Great Britain, France, Germany, Belgium, Finland, Norway, and Sweden, also examining the situation in the nearby markets, including Slovenia, the countries of the Adria region, Turkey, Russia, and other CIS countries.

We have constantly monitored the development of the Broadway project, which is pre-commercial procurement of PPDR solutions in 11 European countries initially, joined by 7 more EU countries and 3 associate member states. We have been paying equal attention to its predecessor, Broadmap, as well as the guidelines for commercial deployment of the Broadnet broadband network, or commercial procurement of PPDR solutions, and compliance with the SpiceNet service architecture.

We have explored approaches and experiences in 112 mobile applications worldwide and reviewed selected examples of applications by country. We have reviewed the legislative and regulatory frameworks for mobile applications in Europe.

We particularly focused on approaches to business models for each of the 5G Security project partners, related to their content areas and solution portfolio. We have identified the key areas of business modeling. For each of the fields:

- Infrastructure with integrated networks and IT infrastructure,
- Dispatcher solutions for operational centers, control rooms, and command and control centers,
- 112 applications, and
- PPDR safety,

we have prepared:

- A synthesis of study results by country,
- Criteria for creating business models,
- The business outline of the solution (5G network, dispatcher system, 112 applications, and audit trail) for different types of ownership.

The technological deliverables of 5G Security are a demonstration environment with a 5G network, dispatcher systems, applications, and PPDR security, together with user problems and needs, and an overview of the strategies for the deployment and management of broadband communication systems in the European area and beyond. They have naturally led to the final phase of business modeling for the organizational form in Slovenia, whose key task is the introduction and management of state-of-the-art PPDR communication solutions and the digitalization of this sector, all of it being user-specific in order to ensure efficient use and save lives and property. Leading commercially-oriented 3GPP 4G/5G technologies are becoming standardized for the first time for emergency action purposes. It is entirely realistic to expect them to replace narrowband PPDR networks (such as TETRA and DMR), services, and applications over the decade. In developed countries, this process is already under way; it will come to developing countries with a corresponding delay. During the transition period, all countries will implement a migration scenario from narrowband to full broadband networks.

The “PPDR Agency” would be therefore the leading facilitator and catalyst for the roll-out of broadband communication systems and digitalization in the field of PPDR, in line with European guidelines, both in the technological and regulatory fields. Considering the insights into the best practices of the most advanced technological and domain-specific environments, the 5GSecurity consortium proposes the most possibly comprehensive and integrated, proactive, professional, and well-synchronized country approach in this area.

With its portfolio of services for founders (state, ministries, wider public interest), professional PPDR users, key development and partner companies, and end users (natural and legal persons), i.e. for the Slovenian society as a whole and its stakeholders and for the European space, the PPDR Agency will offer:

- Technological (infrastructure) interoperability and compatibility between PPDR stakeholders in Slovenia and across the borders in EU countries and beyond with the establishment and operation of a broadband network, services and applications;

- Information (data) interoperability and compatibility between PPDR units in Slovenia and across the borders in EU countries and beyond with the establishment of a common information space and unified access to external databases;
- Organizational (operation and process) interoperability and compatibility between PPDR stakeholders in Slovenia and across the borders in EU countries and beyond with the establishment of processes that facilitate the operational mobility of PPDR stakeholders and their mutual assistance, which is not limited to assistance from and to neighboring countries, but is Pan-European and worldwide;
- Legislative and regulatory interoperability and compatibility with the methodology of an integrative approach between individual vertical areas, including a comprehensive approach to the principles of precaution and resilience, the latter being particularly strongly represented in the European guidelines.

Within the project, we do not wish to define the organizational form and the positioning of the “PPDR Agency”. At this point, we would like to stress that these are demanding subjects in terms of organization, content, and technology, which can be applied in many different ways, but the basic condition is that this is done by highly professional human resources, hand in hand with the stakeholders of the PPDR and the rest of the interested public. It is especially important to emphasize that this should be a uniform organizational form that has the capacity and competence to govern this area in a solid and comprehensive manner.

Let us note that the positions formulated in this document are those of the researchers who are members of the 5G Security consortium and do not necessarily represent the business standpoint of these members.