

5G Enabled Public Safety Services and Applications

ANA ROBNIK, 5G Safety Coordinator
Advisory Board Meeting, 25.11.2019

This project has received funding
from the European Union's ERDF
under Contract no. C3330-18-952019 .

Agenda



The 5G Safety Project and its Alignment to
a Broader Pan-European PPDR Strategy



5G Safety Progress and Results



About our results and achievements



Final thoughts



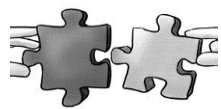
The 5G Safety Project

Aligned with broader Pan-European PPDR strategy

5G Safety Project at a Glance



The strategic goal is to deliver **research and innovation** towards a **new generation of 5G-ready products and services** tailored to the needs of the **PPDR sector**.



Beneficiaries

Project Coordinator:
Iskratel, d.o.o., Kranj (ISK)

Partners:
(1) OSI d.o.o. (OSI - SME)
(2) Telekom Slovenije, d.d.
(TS – National Operator)
(3) Univerza v Ljubljani,
Fakulteta za
elektrotehniko (ULFE-PRO)



Advisory Board & Supporters

- Slovenia:**
- AKOS
 - MJU DID
 - URSZR
 - Fakulteta za varnostne vede
 - Gasilska brigada Celje
 - EIDES
 - SRIP PMiS & IKT HM
- European Union**
- EENA
 - PSCE



Finance & Contract

Project Total Costs:
3.024.274 €
Maximum Grant Amount:
Up to 1.943.964 €

Contract No:
C3330-18-952019, Ministry
of education, science and
sport



Time Frame

Project Start: 1.9.2018
Project End: 31.8.2021
Duration: 3 years

Reporting Periods:
1.9.2018-31.1.2019 and
each 6 months after

5G Safety Journey Aligned with European PPDR/5G Plans



2012/15

Safe Society

S4 – Smart Specialisation Strategy Slovenia.

2016/17

SRIP PMiS Safety

Action plan for Safety domain within Strategic Research and Innovation Partnership “Smart Cities and Communities”.

Iniciativa 5G PPDR

“5G Action Plan for Europe” as a Driving force for 5G PPDR Initiative in Slovenia.

2018/2021

Project 5G Safety

National call RRP2, 5G Safety project selected for funding.

5G PPDR Strategy in Slovenia

National PPDR strategy under development by the State and other 5G and PPDR stakeholders.

2021/2025

Exploitation

Pilots on a smaller and larger scale suitable to verify 5G PPDR services and applications.
Practical trials for testing interoperable solutions.

Broadmap

PSCE and the PPDR users have specified operational and regulatory needs for network, applications, devices and interoperability.

Broadway

PSCE coordinates R&D and pre-commercial procurement of solutions based on Broadmap requirements.
Result: At least 2 PPDR pilots (TRL8).

Broadnet

Public procurement in EU countries with a focus on SpiceNet network and services.
Objective 2025 - A functioning interoperable pan-European PPDR.

5G Safety Journey Based on Standards & EU Projects



2012/15

2016/17

2018/2021

2021/2025

The beneficiaries partnering in EU PPDR and 5G projects

GEN6 (CIP), H2020: Charisma (5G), iCIRRUS (5G), ARCADIA (5G), NEXES (PPDR),
CEF: I_HeERO (PPDR), SAFE (PPDR), EENA: PEMEA Apps project (PPDR)

5G and PPDR Standardards

3GPP/ETSI (5G and MC X): Rel.13: MC PTT, Rel.14: MCPTT+MC Data/Video Rel15 and next: 5G (NSA, SA) + MC IWF + IoT+MC PTT/Video/Data+MBMS
ETSI tehnologije in EMTEL: 5G: NFV, MEC, NGP, mWT PPDR: PEMEA-NG112, ESINET (draft), IoPST
EENA/ATIS: NG 112 LTD, ESInet+i3PSAP



5G Safety

Progress and Results

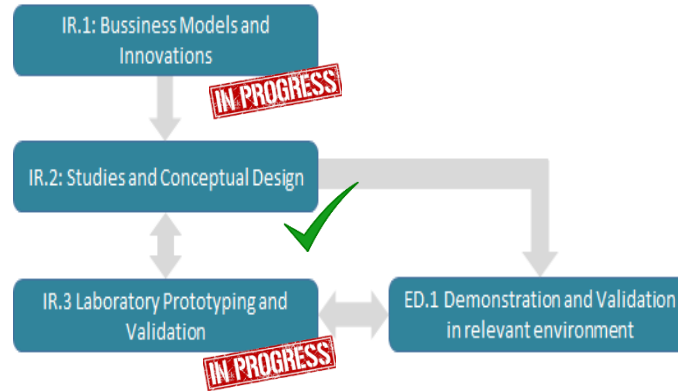


5GSafety approach, Technological Deliveries

PHASE 1 :Industrial research (IR)



PHASE 2: Experimental development (ED)



5G Safety Technological Deliverables

Dispatcher as a Service

Mobile Apps for Citizens and PPDR professionals

Novel interactions modality and User Experience

Operational Communications for Disaster Scenarios

E2E Security and Integrity

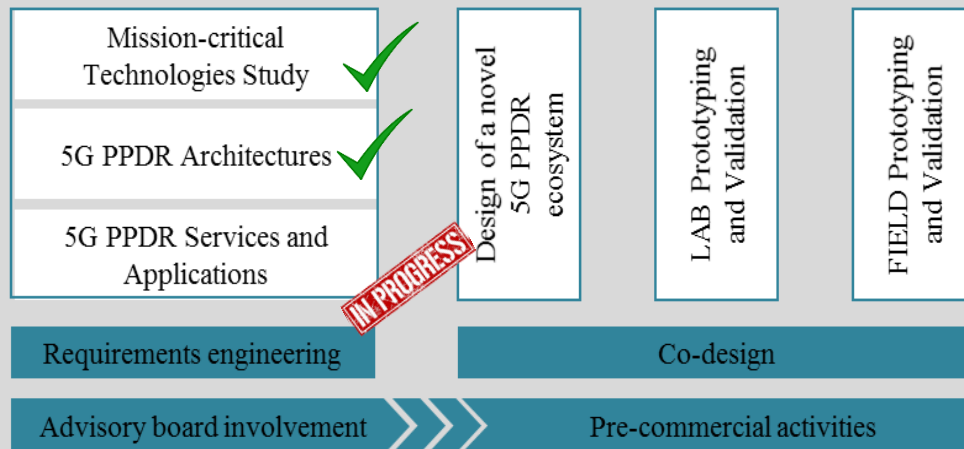
5G PPDR Experimentation Environment

PHASE 1

PHASE 2

TRL 3 – TRL 4

TRL 5 – TRL 6



5GSafety

Next Gen
5G PPDR
products
and services

Working hand in hand with users and other stakeholders of our services and applications.



Project Results up-to-now

– Subphase IR.1 Business models and Innovations – In Progress

Deliverable	Title of Deliverable	Responsible	Type (TRL) /Status	Document
IR.1	Business Models and Exploitation	ISK	Document (3-4) IN PROGRESS	M.1 (M36)
IR.2	Innovation Management	OSI	Document (3-4)	M.1 (M36)

– Subphase IR.2 Studies and Conceptual Design – Almost Finished

Deliverable	Title of Deliverable	Responsible	Type (TRL) /Status	Document
IR.3	5GSafety Use Cases and Requirements	ULFE	Document (3) ✓	M.2 (M09)
IR.4	Mission-Critical Technologies in scope of 5GSafety	TS	Document (3) ✓	M.2 (M09)
IR.5	Studies and conceptual design for 5G PPDR architectural concepts	ISK	Document (3-4) – In Review	M.3 (M15)
IR.6	Studies and conceptual design for network agnostic services and applications	ISK	Document (3-4) – In Review IN PROGRESS	M.3 (M15)

IR.3 and IR.4 – Summaries of the documents available on home page ([here](#))

IR.5 and IR.6 – Documents under review, summaries available in December

– Subphase IR.3 Laboratory Prototyping and Validation – Started in June 2019



Advisory Board and Stakeholders Involvement

- **14.12.2018** - The open workshop Where is 5G PPDR Taking us in Bled (co-located with the PSCE Conference)
<https://5gvarnost.iskratel.com/en/5g-safety-where-is-5g-ppdr-taking-us/>
- **7.3.2019** - Advisory and Innovation Board conducted an Innovation Workshop in the Iskratel Training Center in Kranj, the report is available
<https://5gvarnost.iskratel.com/portfolio-item/inovacijska-delavnica-kranj-2019/>
- **27.11.2019** - Advisory Board Meeting at the Faculty of Electrical Engineering of the University of Ljubljana
- **5.12.2019** - Innovation workshop “5G PPDR for mass events and incidents” in Kranj



About our results

and achievements



What new 5G and PPDR Technologies enable?

5G Networks and Interoperability Standardized for PPDR sector

- Heterogeneous interoperable networks with managed transition to 5G infrastructure
- 5G Architecture together with VNFs&SDN&MANO enable slicing (Network Slice as a Service - NSaaS)
- Dedicated PPDR Slices with Guaranteed QoS on public infrastructure or private one
- 5G Network in Case of Emergency Situation

Services

- Dispatcher as a Service (DPaaS) in Heterogeneous Environment
- Advanced Operational Communications in Disaster Scenarios
- End-to-end Security and Integrity

Applications

- Applications for Citizens based on WebRTC and DPaaS
- Applications for PPDR Users
- Application Ecosystem for PPDR Users and Citizens

Requirement Engineering based on Use cases

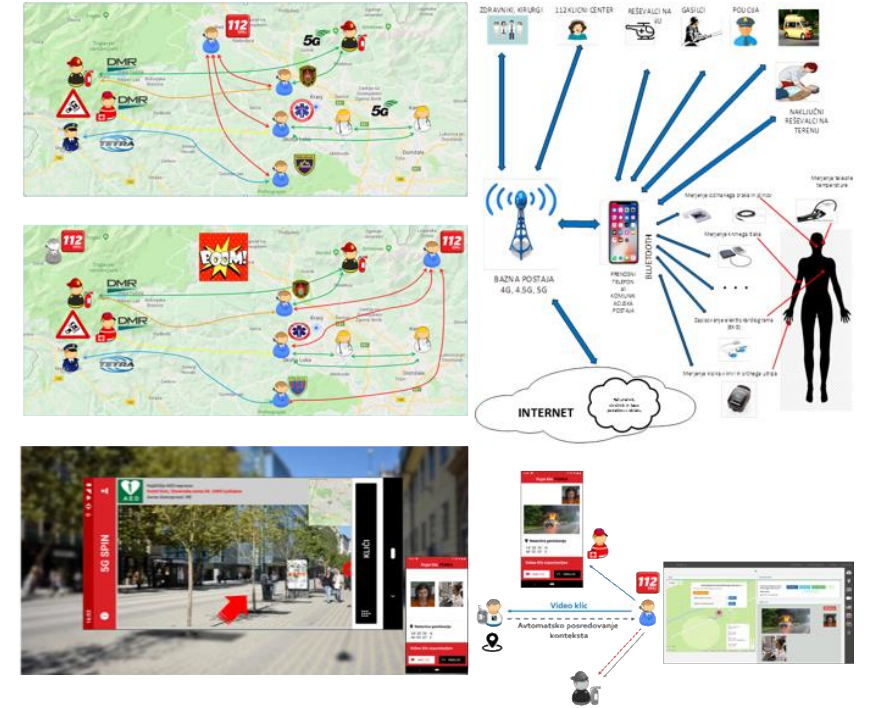
In 5G Safety Stakeholders Play a Key Role

- Common understanding of Expectations and Needs in the Deployment of 5G technologies for PPDR Sector is Crucial
- Innovation workshop made progress

Common Validation of User Scenarios

New 5G Services and Applications

- Multimedia Assistance On-side, UAV (drones) Usage, Emergency AR / VR, 112 Positioning, Medical Sensors and Enriched Health Assistance,...





Heterogeneous Networks for PPDR Services and Apps

- **Interworking** between existing **Narrowband** (TETRA, DMR, ...) and **4G/5G Broadband** networks is possible today by using **proprietary interfaces** if available
- **Standardized interfaces** for connectivity and interoperability among networks are under preparation (3GPP IWF standards).
- Gradual **Migration Scenarios** from existing to future PPDR systems are feasible
- By using 4G / 5G technology **Advanced Capabilities** (eg critical video communications, URLL) for operational communications are available, also for emergencies situations and mass disaster scenarios



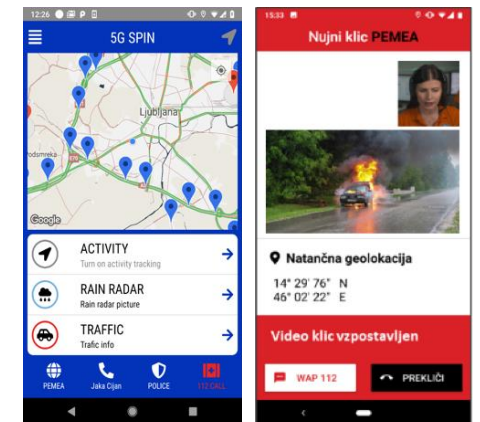
Dispatcher as a Service and 112 Applications

Dispatcher as a Service:

- Standardized Services MC PTT, MC Data and MC Video for Emergency Operations Centers Offered from the PPDR Cloud
- Intelligent adaptation to the quality of heterogeneous networks and to organizational schema
- Communication Services Support also for Emergency call Takers

NG 112 Applications for Citizens : dedicated 112 features in apps that are frequently used in everyday life

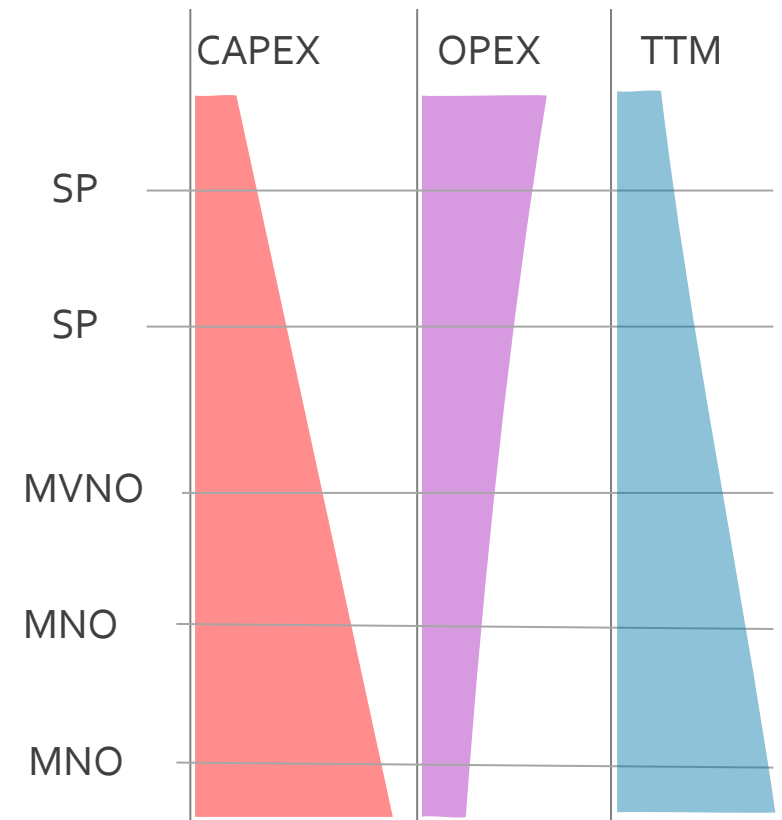
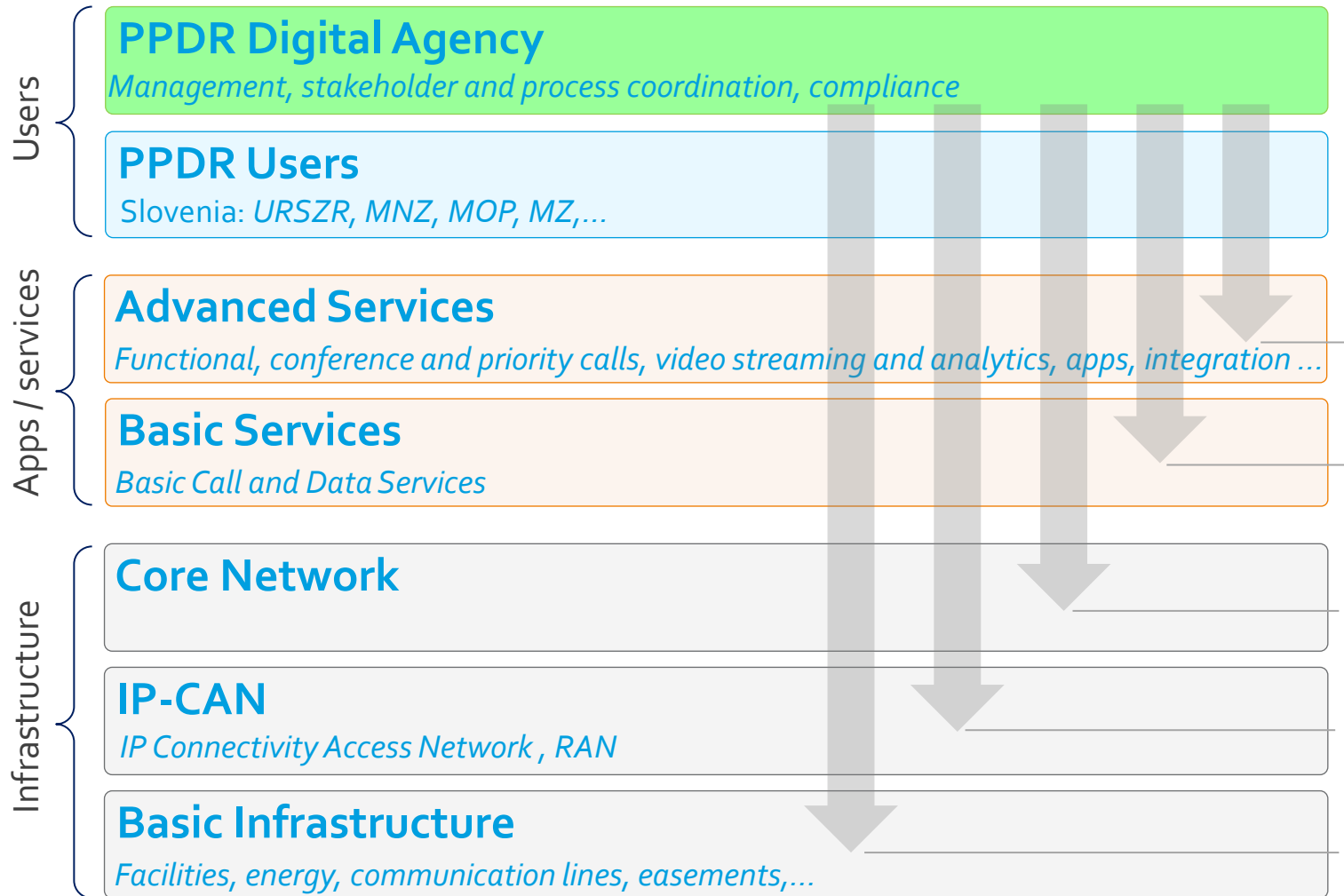
- Fully automated operation triggered by a NG 112 call
- Transfer of Context to NG 112 center - ID, LOC ++, MED, ICE
- Field application support: “eyewitnesses” video
- EENA PEMEA Compliant





Business models are a key element for the success

Business model with efficient and fast implementation with balanced financial and security risks sharing. The socio-economic impact is NOT taken into consideration.



Proposal: To set up an organization that connects PPDR stakeholders to implement PPDR programme in Slovenia.



Final thoughts

5G Safety Members are Thankful and Appreciate Support

– From Stakeholders in Slovenia

- Agency for Communication Networks and Services of the Republic of Slovenia
- University of Maribor, Faculty of Criminal Justice and Security
- Ministry of Public Administration, Information Society and Informatics Directorate
- Professional fire brigade Celje
- Ministry of Defence, Administration of Republic of Slovenia for Civil Protection and Disaster Relief
- SRIP Smart Cities and Communities
- IKT Horizontal Network
- The Slovenian Association for Electronic Identification and Electronic Trust Services

– From Stakeholder in European Union

- European Emergency Number Association
- Public Safety Communication Europe

– ... and are open for new supporters and new collaborations



Fakulteta za varnostne vede



REPUBLIKA SLOVENIJA
MINISTRSTVO ZA JAVNO UPRAVO



REPUBLIKA SLOVENIJA
MINISTRSTVO ZA OBRAMBO
UPRAVA REPUBLIKE SLOVENIJE
ZA ZAŠČITO IN REŠEVANJE

 SRIP Pametna mesta in skupnosti



e·id·e·s





5G Varnost

<https://5gvarnost.iskratel.com/>



twitter.com/Iskratel



[linkedin.com/company/Iskratel](https://www.linkedin.com/company/Iskratel)

Links to 5G Safety events and 5G information:

<https://5gvarnost.iskratel.com/viri>

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Naložbo financira Republika Slovenija
in Evropska unija iz Evropskega sklada
za regionalni razvoj.



REPUBLIKA SLOVENIJA
MINISTRSTVO ZA IZOBRAŽEVANJE,
ZNANOST IN ŠPORT



Acronyms

- PPDR – Public Protection and Disaster Relief (civilna zaščita in pomoč pri nesrečah, zaščita in reševanje)
- AKOS - Agencija za komunikacijska omrežja in storitve RS (Agency for Communication Networks and Services of the Republic of Slovenia)
- FVV - Fakulteta za varnostne vede, Univerza v Maribor (University of Maribor, Faculty of Criminal Justice and Security)
- RS MJU, DID - RS Ministrstvo za javno upravo, Direktorat za informacijsko družbo in informatiko (Ministry of Public Administration, Information Society and Informatics Directorate)
- URSZR - Uprava RS za zaščito in reševanje, Administration of the Republic of Slovenia for Civil Protection and Disaster Relief
- MNZ – Ministrstvo za notranje zadeve, Ministry of the Interior
- MZ - Ministrstvo za zdravje, Ministry of Health
- MOP – Ministrstvo za okolje in prostor, Ministry of the Environment and Spatial Planning
- SRIP PMiS – Strateško razvojno-inovacijsko partnerstvo Pametna mesta in skupnosti, SRIP Smart Cities and Communities
- IKT HM - IKT horizontalna mreža, ICT Horizontal Network
- EIDES - Slovensko združenje za elektronsko identifikacijo in elektronske storitve zaupanja, The Slovenian Association for Electronic Identification and Electronic Trust Services
- MIZŠ – Ministrstvo za izobraževanje, znanost in šport, Ministry of Education, Science and Sport
- CEF – Connecting Europe Facilities
- H2020 – Horizont 2020
- IP-CAN – Internet Protocol-Connectivity Access Network
- R&D – Research and Development
- AR/VR – Augmented Reality/Virtual Reality
- M(V)NO – Mobile (Virtual) Network Operator
- SP – Service Provider
- PEMEA - pan-European mobile emergency applications
- ESINet – Emergency Services IP Network
- MC PTT – Mission Critical Push to Talk
- NG 112 – Next Generation 112
- EENA - European Emergency Number Association
- PSCE - Public Safety Communication Europe
- 3GPP - 3rd Generation Partnership Project
- ETSI - The European Telecommunications Standards Institute
- PSAP – Public Safety Answering Point
- E2E – End-to-End
- ID - Identity, LOC - Location,
- MED – Medical, ICE – In Case of Emergency
- CAPEX - CAPital EXpenditure
- OPEX - OPErational EXpenditure
- TTM – Time-To-Market