



Business & Societal Aspects in 6G Networks

Alexandros Kostopoulos, Ioannis P. Chochliouros

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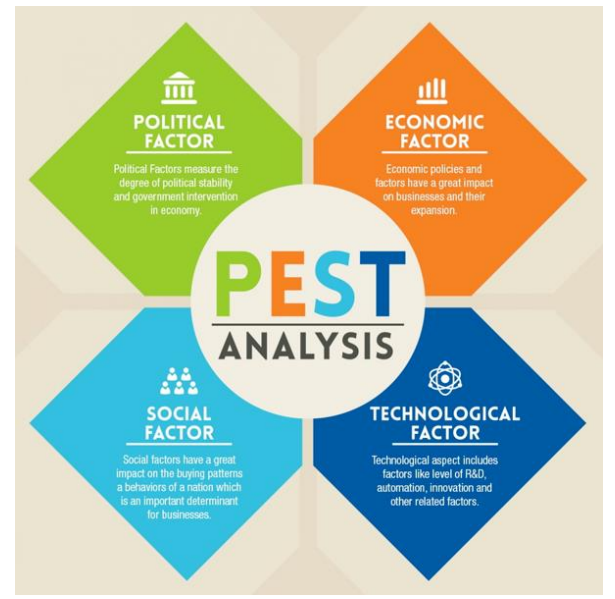
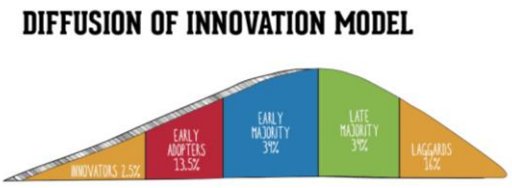
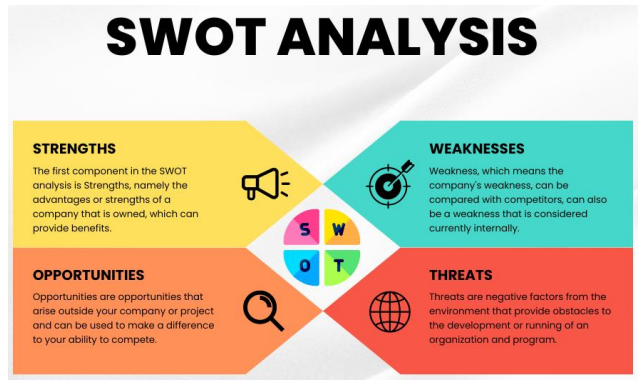
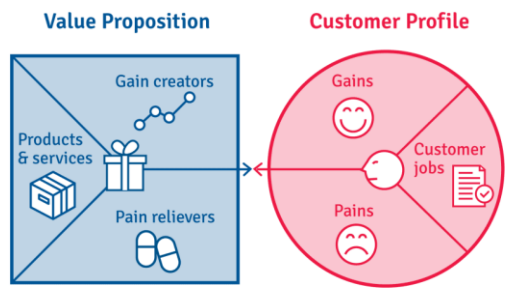
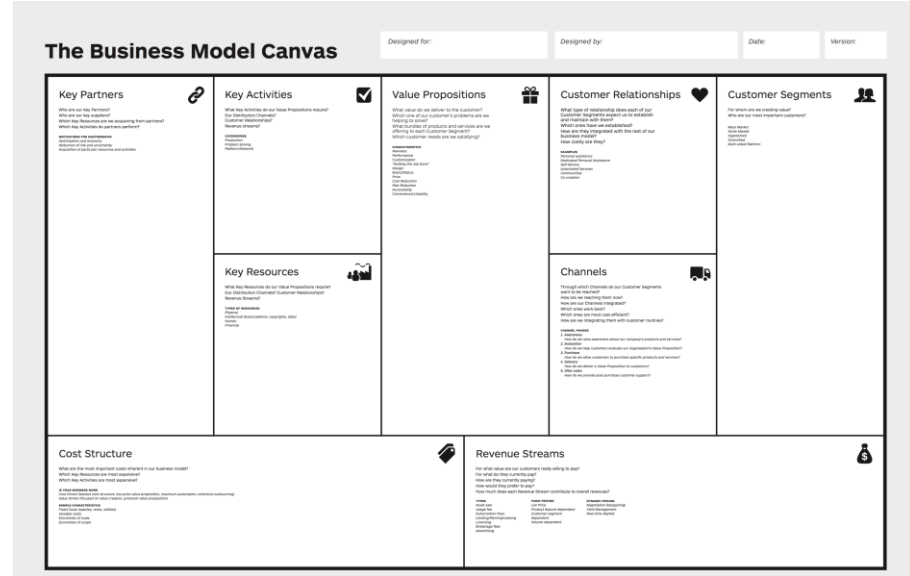
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- 6G is expected to emerge by as key enabler for the intelligent digital society of 2030 and beyond, providing superior performance via *groundbreaking access technologies* (e.g., joint communication and sensing, cell-free, Radio Intelligent Surfaces) and *ubiquitous wireless intelligence*.
- 6G promotes a much more sustainable approach to architect future networks that encourages *infrastructure sharing* and *collaboration* among MNOs via **NiaaS** models.
- To facilitate research and experimentation at scale, **SUNRISE-6G** adopts *common tools* as well as *converged data collection* and *resource management APIs*, while sharing of experimentation data and interoperability is facilitated via the *European Open Science Cloud* (EOSC).
- Apart from the technical challenges, it is important to also consider the **business aspects** of the telecom ecosystem.

- Deliver a **sustainable** and **evolvable Experimentation facility for 6G**, federating Beyond-5G platforms and enablers from *all over Europe* under a *common test, validation, and vertical application deployment infrastructure*.
- Inspired by the “**network of networks**” concept of 6G Networks, aiming to integrate all private and public infrastructures under a massively scalable internet-like architecture.
- Similarly, SUNRISE-6G aspires to create a **federation of 6G test infrastructures** in a pan-European facility that will support:
 - *converged Testing as a Service (TaaS) workflows and tools,*
 - *a unified catalogue of 6G enablers publicly accessible by experimenters,*
 - *cross-domain vertical application onboarding.*
- Experimentation and vertical application onboarding via a Tenant Web Portal (single-entry point to the facility, serving end users and tenants).

- **Implementation of new 6G enablers**, complementary to existing ones being developed in other projects.
- A **truly scalable** and **3GPP compliant Federation solution** that provides access to heterogeneous resources and devices from all Europe as a cohesive and unified continuum, with the potential of cross-domain vertical application deployment in future Stream D trials.
- A **Federated AI plane** aligned with AlaaS and MLOPS paradigms, which promotes a collaborative approach to AI research which benefits immensely from scaling-up datasets and models. Rather than relying on proprietary models, testbeds now adopt common ML workflows, exchange and collaboratively finetune models via streamlined MLOPS processes, while capable testbeds (“Supernodes”) can support smaller ones via AlaaS.
- All SUNRISE-6G **testbeds** are **federated** under the **Facility Experimentation Plane**, which offers common workflows to experimenters and a publicly accessible Tenant Portal which is hosted by the SLICES-RI Central node at SU, ensuring access to the federated library of externally accessible 6G components and frameworks even after the project ends.



- ❑ **SWOT:** *technique for assessing the performance, competition, risk, and potential of a telecom operator. Using internal and external data, the technique can guide operators toward strategies more likely to be successful.*
- **Strengths:** What an operator excels at and what separates it from the competition (e.g., a strong brand, loyal customer base, unique technology, etc.).
- **Weaknesses:** The obstacles to an operator from performing at its optimum level.
- **Opportunities:** The favorable external factors that could give an operator a competitive advantage.
- **Threats:** The factors that have the potential to harm a telecom operator.

- ❑ **Business Model Canvas:** strategic management tool for developing business models for launching new services. It offers a visual chart in order to align the activities of a telecom operator by illustrating potential trade-offs.
- **Key activities:** The most important activities in executing an operator's value proposition.
- **Key resources:** Resources necessary to create value for the customer. Assets needed to sustain and support the business of the telecom operators (e.g., *human, financial, physical, intellectual*).
- **Partner network:** To optimize operations and reduce risks of a business model, the telecom operators usually cultivate buyer-supplier relationships so they can focus on their core activity. Complementary business alliances can be also considered through joint ventures or strategic alliances (e.g., ICT services).
- **Value propositions:** Service portfolio. What distinguishes it from its competitors (e.g., *connectivity services, VoD platform, etc.*).
 - **quantitative** (e.g., price and delay)
 - **qualitative** (e.g., overall customer experience and outcome).

- **Customer segments:** Sets of customers segmented based on their different needs and attributes to ensure appropriate implementation of corporate strategy to meet the characteristics of selected groups (e.g., end-users, business customers, public institutions, etc.).
- **Channels:** Different physical or virtual channels (e.g., own channels, call centers, physical stores, website, mobile application, partner channels and major distributors, combination of both).
- **Customer relationships:** Consider how they will attract new customers, how they will keep the existing ones using their provided services and how they will increase their revenues from the existing customers' base.
- **Cost structure:** Monetary consequences while operating under different business models.
- **Revenue streams:** The way a telecom operator makes income from each customer segment.

- ❑ **PEST analysis:** *management method whereby an operator can assess major external factors that influence its business to become more competitive in the market.*
- ❑ **PESTLE analysis:** *includes the additional aspects of legal (e.g., regulatory authorities) and environmental (e.g., corporate responsibility)*
 - **Political:** *Areas in which government policies and changes in legislation affect the economy and the telecommunications industry. Areas of policy that may particularly affect an operator include tax and employment laws.*
 - **Economic:** *Key factors of interest and exchange rates, economic growth, supply and demand, inflation, recession, ROI, etc.*
 - **Social:** *Could be demographics and age distribution, cultural attitudes, and workplace and lifestyle trends (e.g., customers' clustering and discrimination).*
 - **Technological:** *Considers the specific role and development of technologies within the telecommunications sector, as well as the wider uses, trends, and changes in technology. Also aspects related to standardization activities.*

❑ Pillar 1:

- ✓ Considered *use cases* of the proposed 6G architecture, and *PoCs*.
- ✓ Specific *experimentation scenarios*
- ✓ *Objectives* and *main challenges*.
- ✓ *Value proposition & main benefits* of the proposed technical solution.
- ✓ Main *actors* and *roles* in the 6G ecosystem, as well as their *interactions* and the *value chain*.
- ❖ Stakeholders' **incentives** for adopting 6G services.

Use Cases & PoC Analysis

- Detailed Description
- Objectives & Challenges
- Value Proposition
- Actors & Roles
- Value Chain

Societal and Business Impact

- Business Requirement Questionnaires
- Collection, consolidation & results structuring
- Business requirements outcome
- KVIs clustering

Market Overview

- Verticals Overview
[research-oriented]
- Market Analysis (related products / services / industrial initiatives / competitors)
[business-oriented]
- Mapping experimental scenarios to 6G Architecture

□ Pillar 1:

❖ UC1: Federated Metaverse

❖ UC2: Collaborative Robotic exploration of mining environments

❖ UC3: Federated NTN

- **ES1: Mobile Industrial Assets supported by NTN Edge Cloud and Communications**
- **ES2: Multi-Operator and Multi-Access in NTN**

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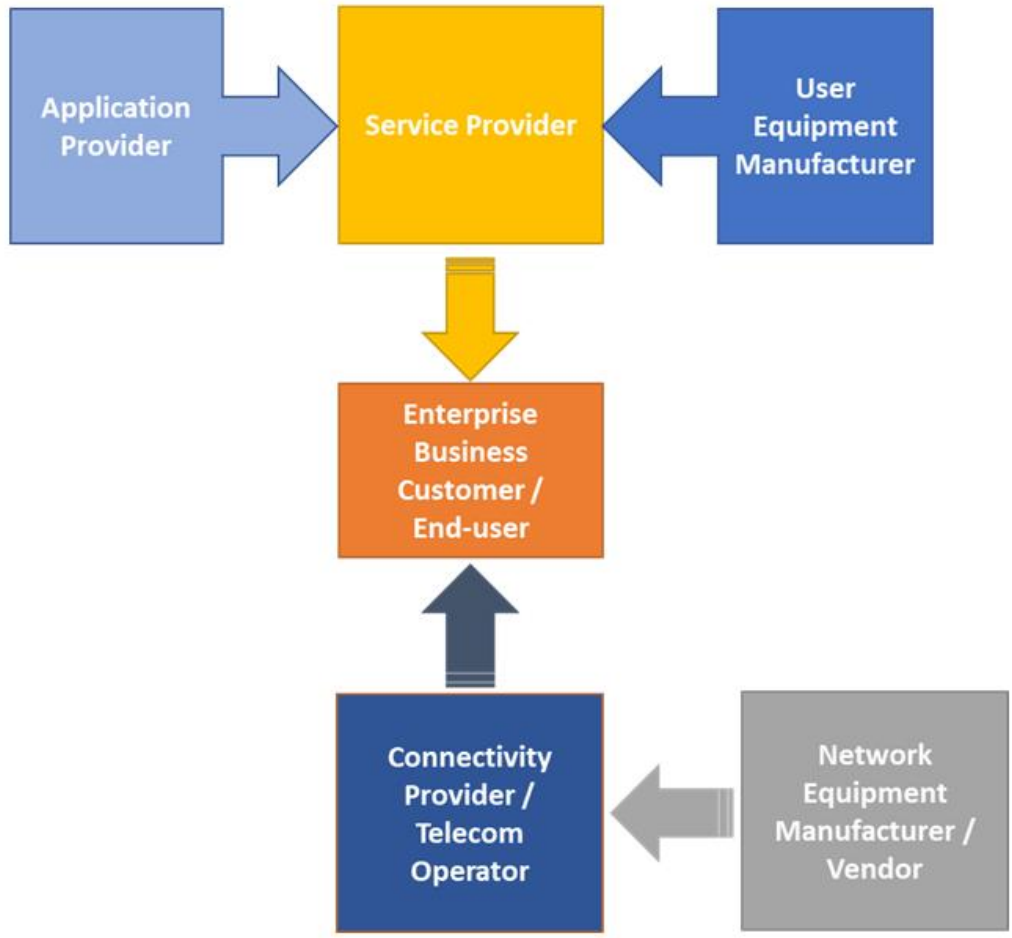
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❑ Pillar 2:

- ✓ **Qualitative aspects** (e.g., interviews and questionnaire).
- ✓ Methodology for **questionnaires design** and the **definition** of the **business requirement questionnaires**.
- ✓ Based on the **distributed collection** of requirements, the **consolidation** and the **structuring** of the **results**, we can proceed with the business requirements outcome.
- ✓ **KVIs definition** and **clustering** to measure the impact in terms of performance, but also in terms of overall **“societal/human” value**, (e.g., democracy – *fairness*, *digital inclusion*, responsibility, energy efficiency).
 - *Measurable KVIs or estimable in some form (e.g., interviews, questionnaires, trials, etc.).*
 - *KVIs assessment subjective (e.g., trials, experiments, measurements), or objective (e.g., questionnaires, interviews, focus groups).*

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❑ Pillar 3:

- ✓ **Research-oriented:** Existing use cases and verticals (e.g., O-RAN, 3GPP, ITU-R, 5G-PPP, 6G SNS IA).
- ✓ **Business-oriented:** Related products and services and the industrial initiatives monitoring (e.g., NGMN, ATIS, NEM).
- ✓ Experimental scenarios **mapping** to the considered **6G Architecture**
 - *constraints between the business and the technical aspects.*

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Thank you for your attention!



OTE Group



Alexandros Kostopoulos, Ioannis Chochliouros



{alexkosto},{ichochliouros}@oteresearch.gr



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 Beyond 5G Testbeds

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