



DIGITAL GREECE: THE PATH TO GROWTH

COMMUNICATIONS INDUSTRY DIGITAL STATE

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1. Identifying the perceived digital maturity of the Greek Communications industry

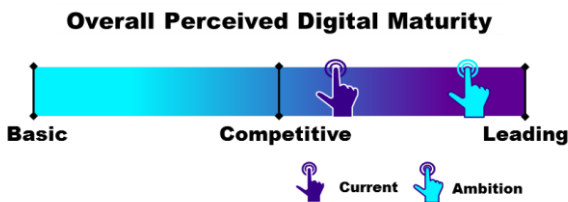
The growth of digital is resulting in a tremendous amount of disruption for telecommunications operators and wireless carriers. As Accenture research confirms, competition has become fierce, especially from digital giants as consumers consider turning to companies such as Google and Apple for broadband, voice and messaging services.

Customers are no longer “owned” but shared across multiple providers, including over-the-top players such as WhatsApp, Skype, Waze and Netflix. Alternative short-range, public hotspot and white label networks are emerging. And operators’ traditional business model - founded on revenue from voice and messaging—is under assault.

In order to thrive in the digital era, operators must re-imagine their core businesses and find ways to turn disruption to their advantage. Historically, operators enabled the economy via communications. Now they have the potential to become the enabler at the middle of the digital economy, providing the network for other companies to deliver digital services and customer experiences.

This transformation begins when operators update core technologies to digital and leverage existing assets - strong and trusted brands, unique locality, established billing relationships, robust networks, and a large quantity of unique customer and usage data - to compete more effectively. The enablement continues when operators become Integrated Digital Service Providers (IDSPs), operating as a platform for all things digital for both their own and third-party services.

As shown by a recent global study ran by Accenture with communications executives, digital is recognized to be a priority to stay ahead of the game. 89 percent of Communications’ executives agree that new technologies will rapidly change their industry in the next 5 years, while only 19 percent of the executives believe that their companies are prepared for sudden industry disruption to a very large extent.¹ Leading companies clearly state the need to leverage digital capabilities to primarily enhance their existing products and services. In this context, their Greek counterparts who were surveyed by Accenture², also acknowledge the opportunity behind accelerating their digital transformation to continue being at the forefront of innovation.



Source: Questionnaire of Perceived Digital Maturity, Accenture Analysis

Figure 1: Overall Perceived Digital Maturity - Communications Industry (Current State - Ambition)



Source: Questionnaire of Perceived Digital Maturity, Accenture Analysis

Figure 2: Perceived Digital Skills Maturity – Communications Industry (Current State – Ambition)

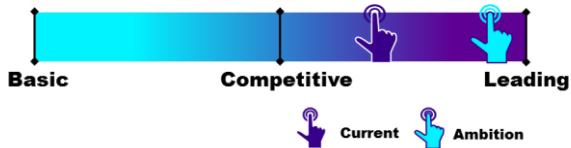
Focusing on the Greek Communications industry, surveyed executives appear not only currently strong, but also ambitious about their five-year expectations, aiming to adopt leading digital practices across their operations (Figure 1). As expressed during Accenture’s workshops with executives of the Communications industry, digitalization is already part of their strategies.

If we drill further into the underlying components of the perceived digital maturity score, we get a better picture of the key drivers behind digital maturity. Regarding the **digital skills** maturity, surveyed executives consider themselves to perform around the market-competitive level (Figure 2). Nonetheless, they have already planned for major organizational changes in the next five years, which are expected to have a positive impact on their digital skills maturity.

¹ “Thriving on Disruption”, Accenture Institute for High Performance, 2016

² The performed analysis and the respective conclusions were based on data recorded through the “Questionnaire of Perceived Digital Maturity”, launched on December 19, 2016 and remained open until January 30, 2017.

Digital Technologies



Source: Questionnaire of Perceived Digital Maturity, Accenture Analysis

Figure 3: Perceived Digital Technologies Maturity – Communications Industry (Current State – Ambition)

Digital Accelerators



Source: Questionnaire of Perceived Digital Maturity, Accenture Analysis

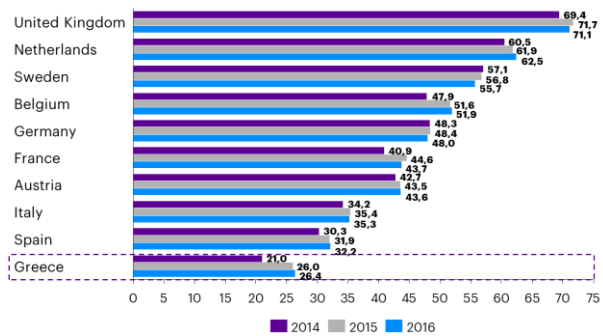
Figure 4: Perceived Digital Accelerators Maturity – Communications Industry (Current State – Ambition)

With regards to **digital technologies** (Figure 3), Greek Communications companies perceive themselves to have already leveraged several digital capabilities. Greek companies are ready to invest in big data capabilities to improve their internal operations and gain an in-depth understanding of their customers. They also appear ambitious about creating an omni-channel experience for their customers, thus enhancing the Customer Experience & Interaction area.

Finally, as indicated by our survey results, the Greek companies view their maturity related to the industry's **digital accelerators** to be on par with international competitors (Figure 4). The marked ambition of those surveyed indicates a commitment to working closely with regulators to improve the business environment within which they operate.

1.1 Evaluating the Greek Communications Industry's digital maturity

Moving one step further from our initial analysis, we examined secondary data against the executives' opinions, in order to extract an additional layer of understanding. To further evaluate the Greek industry's digital maturity and identify the primary factors that can drive economic growth in their digital economic output, we have applied the Digital Economic Opportunity Index (DEOI) for the Communications industry.



Source: Oxford Economics, Accenture analysis

Figure 5: Communications Digital Economic Opportunity Index from 2014 to 2016

Our analysis for the Greek Communications companies with regards to their digital maturity suggests that the Greek companies score at the bottom of the list compared to their European peers over the last three years (Figure 5). It should be noted that, since 2014, the Greek Communications industry's digitalization seems to be gaining momentum relative to European industry peers and has increased its Digital Economic Opportunity score by 5,4 points.

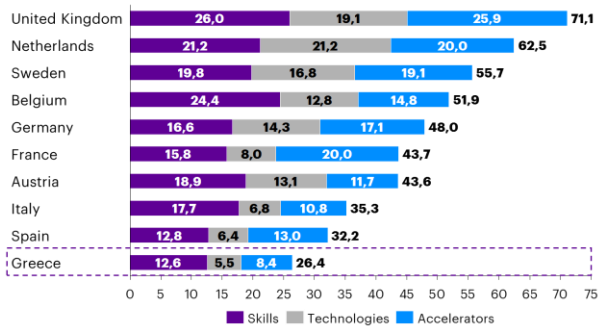
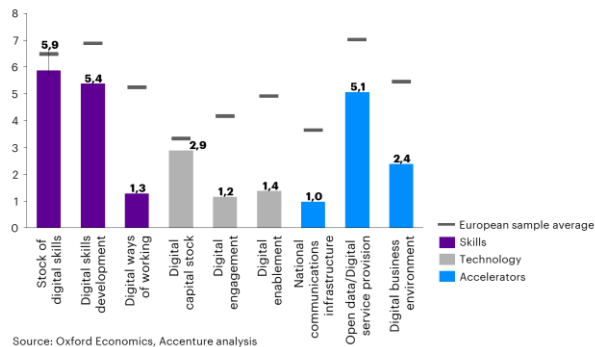


Figure 6: Communications Digital Economic Opportunity scores by country

The dissection into the three levers that make up the Digital Economic Opportunity Index, namely, digital skills, digital technologies and digital accelerators expresses the following picture (Figure 6).



Source: Oxford Economics, Accenture analysis

Figure 7: Communications Industry - Digital Economic Opportunity Index Components Breakdown

To drill down and closely analyze the key drivers behind the Digital Economic Opportunity Index, we deep dive into the nine underlying components to get a more granular view of the elements that factor into the poor performance of the Greek Communications industry (Figure 7).



If we take a closer look at the **digital skills** lever, the Greek Communications industry appears to be lagging its European peers. The “stock of digital skills” and “digital skills development” pillars contribute to a greater extent on the overall solid score, indicating that ICT skills within the industry are closer to the average of other European industry peers and that organizations are committed to upskilling their workforces. Low performance in the “digital ways of working” component reflects a relatively poor dedication to leveraging digital tools and capabilities to facilitate its workforce’s mobility (i.e. remote access to enterprise IT systems) In fact, Greek companies are scoring almost 4 points below their competitors.

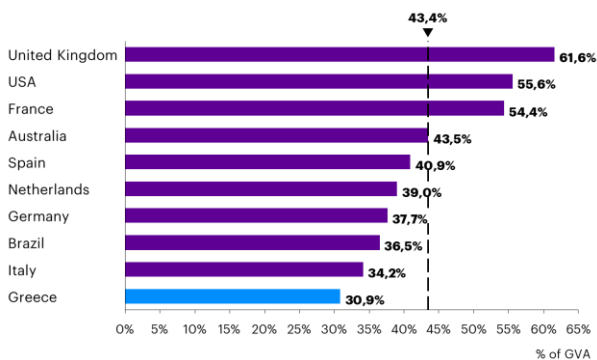


Moving on to the **digital technologies** lever, the low score suggests that although Greek companies have made some digital investments, there is significant room of improvement under all three components that comprise the digital technologies lever. More specifically, Greek Communications companies have made significant investments in their software and hardware stock but have not yet extensively adopted leading technologies like the Internet of Things, cloud computing and big data analytics. In addition, we see more room for engaging with their customers through the usage of digital channels, for sales and self-servicing.



Finally, looking at the **digital accelerators** lever, it is apparent that Greek Communications companies are lagging their European peers, suggesting that the market conditions and business environment in Greece today may be putting a damper on their digitalization. Heavy regulation and rigid policy-making with regards to data protection and sharing may also inhibit also the Greek industry from reaching their full digital potential.

1.2 Defining the contribution of digital to the Communications industry’s economic output



Source: Oxford Economics, Accenture analysis

Figure 8: Percentage Contribution of Digital to Communications Industry’s GVA

Accenture’s analysis with regards to the digital contribution of the Communications industry to the Greek economy, indicates that the overall digital inputs contribute to 30,9 percent of the industry’s Gross Value Added (GVA) and are equal to €1.143,8 million. This score is more than 12 percentage points below the sample average and positions the Greek Communications industry at the bottom among the international peers that we examined. At the top of our analysis we find the UK Communications industry, which currently exhibits the highest contribution of digital to its GVA, with a digital output estimated to cover 61,6 percent of the industry’s GVA followed by US with a 55,6 percent of digital contribution.

1.3 Analysing the high digital maturity of the Communications industry, as one of the Greek “Multipliers”

The Greek Communications Sector, together with the Banking Sector and Business Services & Technology industries are considered the “Multipliers” for the digitalization of Greek industries and in effect the country. Organizations that belong to the “Multiplier” subset are expected to enact a double role with regards to Greece’s digital transformation: they shall progress their own digital transformation and to that end, increase their digital maturity, whilst, at the same time, they shall accelerate “Traditional”, “In Transition” and “Customer facing” industries’ rotation to digital.

According to Figure 9, the digital “Multipliers” appear to drive indeed both Greece’s and its EU neighbors’ overall digital maturity.

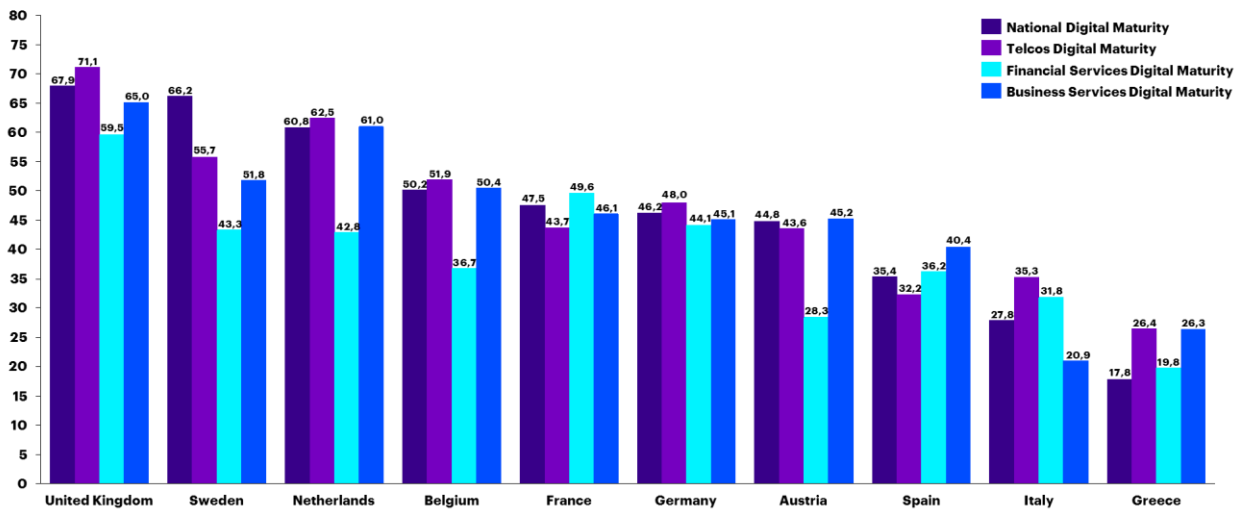
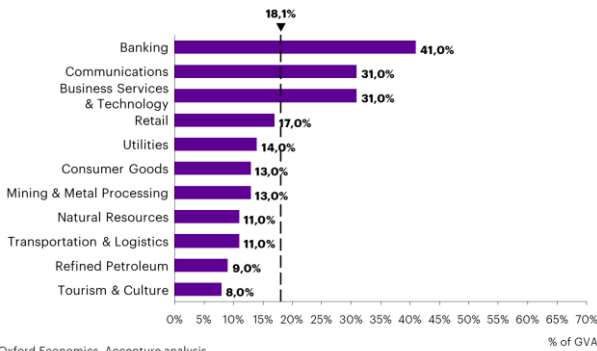


Figure 9: Digital Maturity scores – National, Financial Services, Telcos & Bus. Services digital maturity 2016 (# out of 100)



Source: Oxford Economics, Accenture analysis

Figure 10: Percentage Contribution of Digital to Communications Industry's GVA

As indicated in Figure 10, Greece's Communications sector is amongst the three most "digital" industries, with 31 percent of the GVA in that sector derived from digital inputs, approximately 13 percentage points above the average contribution of digital to the Greek industries. Banking and Business Services & Technology industries demonstrate also an increased level of digitalization, with 41 and 31 percent of their GVA's respectively deriving from digital.

2. Communications Industry - Rotation to Digital

There is wide-spread evidence that all industries are impacted by digital. In fact, as per Accenture research, “every business is a digital business”. However, as each industry is also unique, its digital rotation puts the emphasis on different parts of the value chain, which we refer to as “digital pivot points”.

What are the digital pivot points?

Companies organize their business activities against value chains that typically consists of strategy, production, sales and customer services and operations. There is widespread evidence that all industries are impacted by digital. However, as each industry is also quite unique, its respective digital rotation places emphasis on different areas of the value chain. These areas are referred to as digital pivot points.

This below mentioned value chain (see Figure 11) will be used as our framework to identify the digital “pivot point(s)” of the Greek industries.

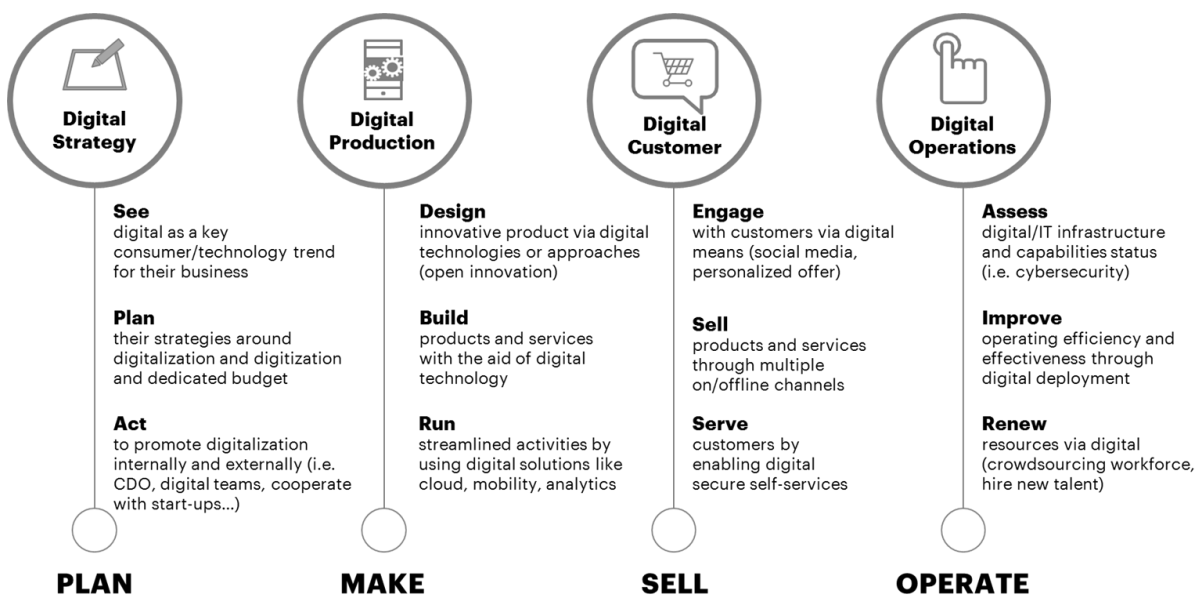


Figure 11: The typical Value Chain

2.1 Industry Clustering

According to our analysis on how digital impacts the Greek industries' value chain, we have placed the Greek Communications industry within the fourth group of the Greek industries, the "Multipliers" (see Figure 12).

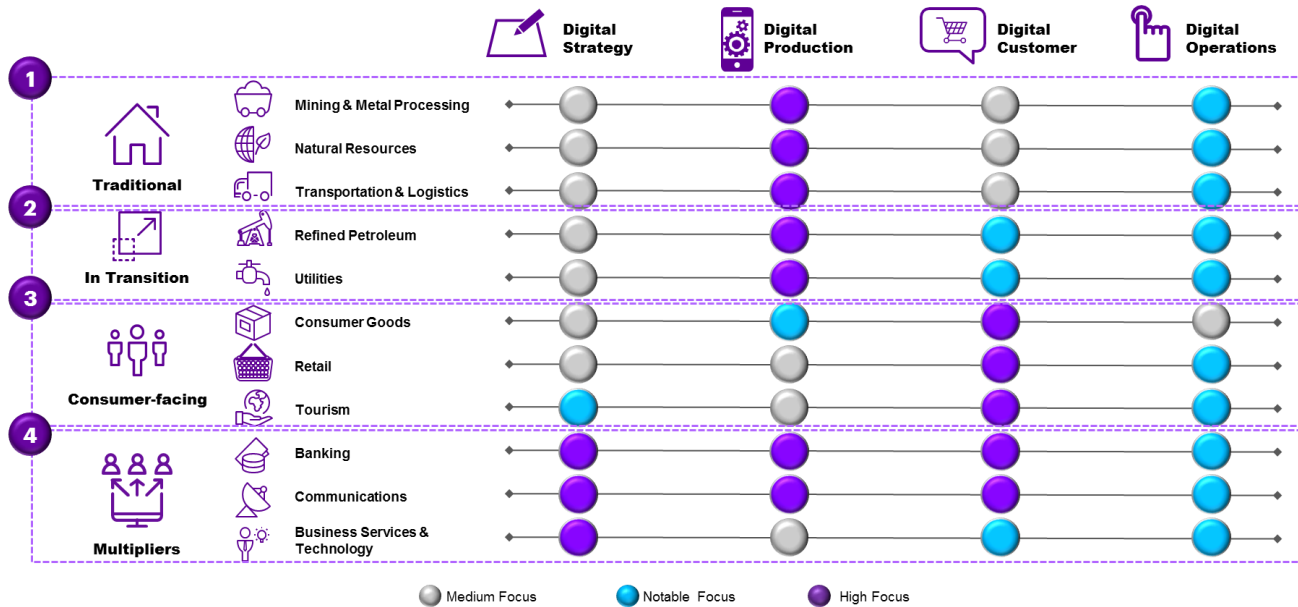


Figure 12: The Clustering of the Greek industries

These industries are primarily service oriented, they demonstrate a double market orientation (both Business to Business and Business to Consumer). "Multiplier" organizations shall have a double role with regards to Greece's digital transformation: they shall progress their own digital transformation and to that end, increase their maturity. At the same time, they shall act as the national "multipliers", in order to accelerate "Traditional" and "Customer facing" industries' rotation to digital. Digital technologies have a significant impact across the "Multipliers" value chain. Eleven digital themes influence the "Multipliers" as presented in the Figure 13 below. The description of the digital themes is presented in Figure 15.

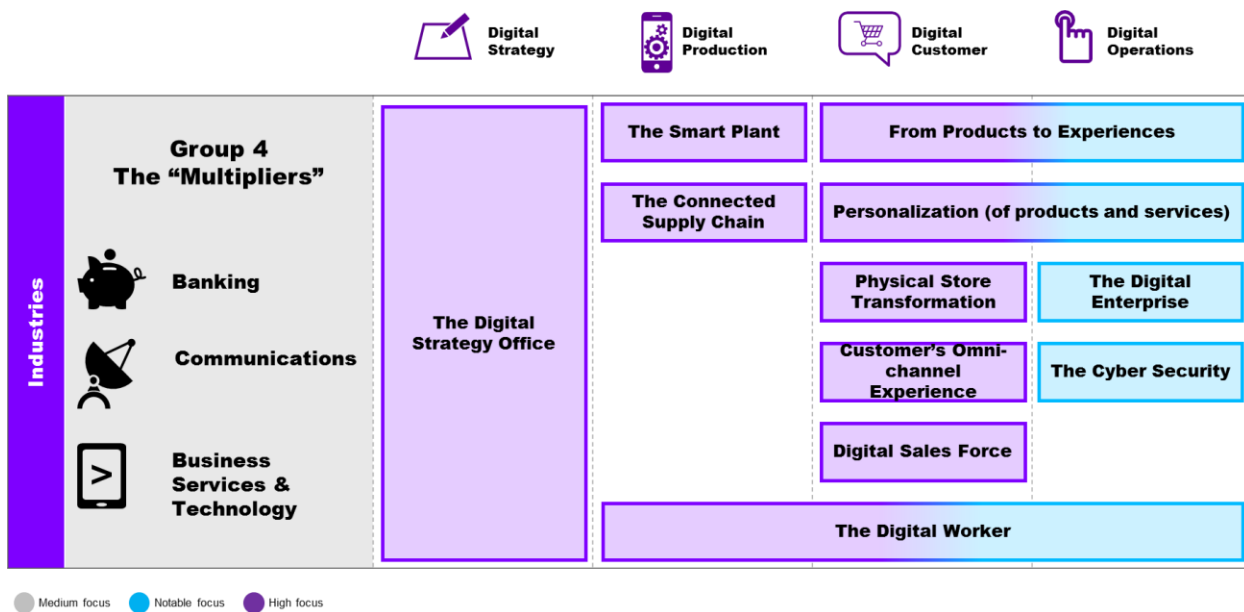


Figure 13: The "Multipliers"

International best practices suggest that, at the core of their digital rotation, Communications companies have leveraged digital technologies to reimagine their core business by changing the way they charge for services, digitalization their operations and creating seamless customer experiences. In addition, Communications companies are now investing in next generation fixed and mobile networks that can set them up to provide new services like IoT and cybersecurity. Figure 14 illustrates elements of the above.



Figure 14: Digital Communications Retail Store



Figure 15: Digital Themes

2.2 Digital Pivot Points

Contextualizing these observations with industries' executives, we have identified that, being digital companies by principle, Communications companies identify the update of their corporate strategy to account for digital, the digitalization of all their products and services, as well as the improvement of the customer experience through digital means, as primary areas for digital attention. The improvement of their internal operations through digital technologies is another area of attention. Figure 16 illustrates the emphasis on the different pivot points for the Communications industries.

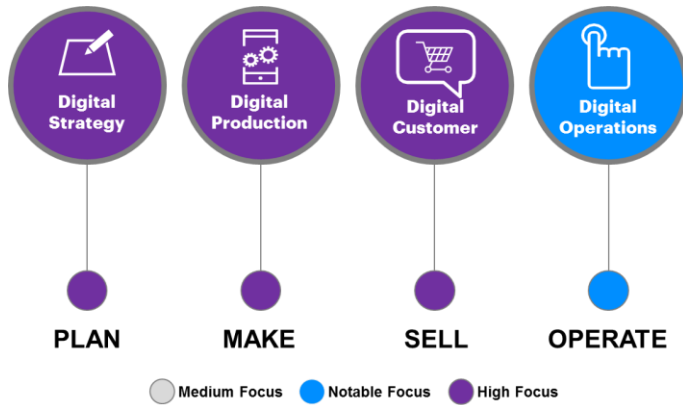


Figure 16: Communications Industry - Digital Pivot Points

2.3 Initiating the digital transformation

With global best practices as our reference point, we propose a set of initiatives that will accelerate the industry's digital rotation.

These incorporate:

- initiatives that refer to individual organizations within the industry under review
- initiatives that can be jointly undertaken by the organizations to enable the industry's and ultimately Greece's rotation to digital

2.3.1 Initiatives that refer to individual organizations within the industry

With regards to the initiatives that refer to individual organizations, it is evident that not all of these may be applicable for the organizations within this industry; indeed, digital initiatives are recommended to be selected in accordance to the different strategy, business model, size, available budget and most importantly, each company's own digital aspirations and vision. The initiatives that follow, are broken down into tactical, which we call **"tactical moves"** and disruptive, which we call **"cut new ground"**. In addition, they are linked to the digital themes presented previously that influence the specific group of industries. The classification of the identified initiatives is depicted in Figure 17.

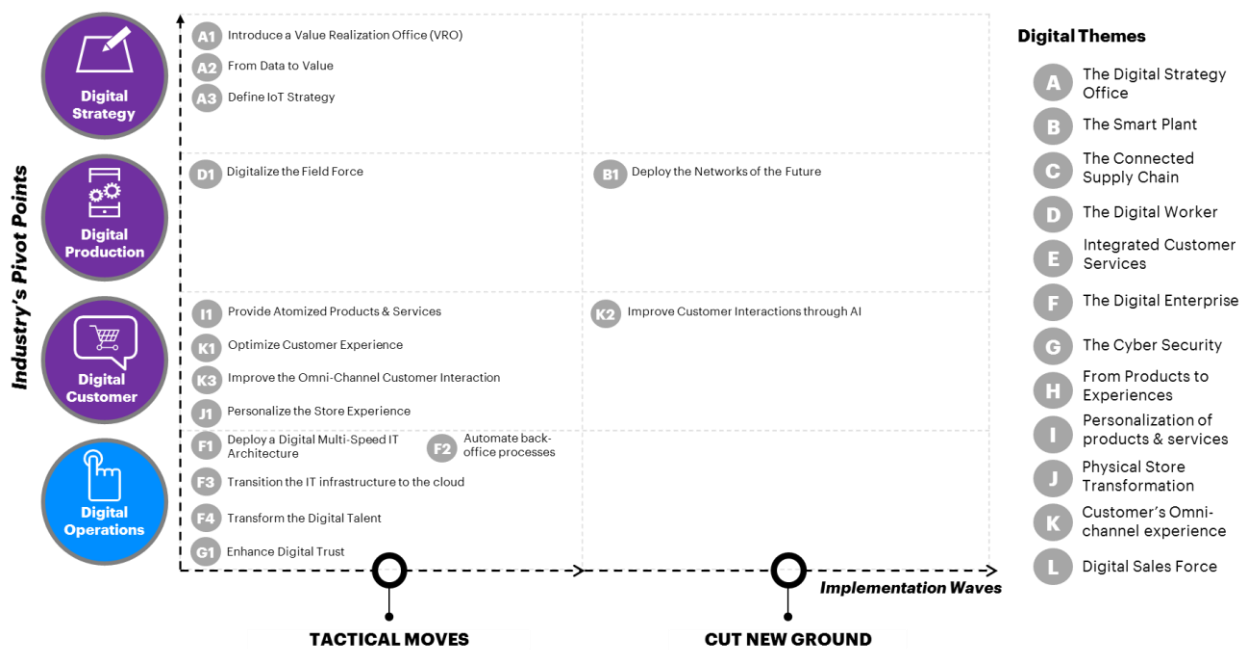


Figure 17: Classification of Suggested Initiatives Across Three Dimensions

A description of the proposed initiatives is presented in the table below:

#	Digital Initiative	Description	Value Chain Area
A1	Introduce a Value Realization Office (VRO)	Introduce a Value Realization Office that will monitor and steer the business value delivery of the ongoing digital transformation	Digital Strategy
A2	From Data to Value	Data is the new digital capital. Organizations shall innovate, build differentiated data insight solutions and transform into Data Powered Enterprises. In more detail, telco companies shall: <ul style="list-style-type: none"> • Design their Data Strategies, Operating Models and perform data diagnostics to assess their datasets' quality and quantity consolidated. Dataset may include: (User Data, Transaction Data, Field Data, Inventory Data, Performance Data, etc.) • Introduce structured data governance models and establish regulations, policies and 	Digital Strategy

#	Digital Initiative	Description	Value Chain Area
		<p>standards to ensure data cybersecurity and ePrivacy. This is further reinforced by the General Data Protection Regulation (GDPR)</p> <ul style="list-style-type: none"> • Design new or optimize the existing data engineering tools and mechanisms • Build data management platforms (either on cloud or on premise) to enable data consolidation, management and seamless sharing 	
A3	Define IoT strategy	Leverage IoT technologies to create a platform-based business model in one or more vertical market use cases (i.e. Entertainment, Health, Smart Homes, etc.)	Digital Strategy
B1	Deploy the Networks of the Future	Design and deploy software defined and virtualized core networks	Digital Production
D1	Digitalize the Field Force	Implement wearables, mobile, analytics, etc. to drive efficiencies and monitor task completion of field workers	Digital Production
F1	Deploy a Digital Multi-Speed IT Architecture	Implement a new multi-speed IT Architecture to decouple the System of Engagement from the System of Record and increase speed of technology evolution to address digital customers liquid expectations while remaining reliable and cost effective	Digital Operations
F2	Automate back-office processes	Digitalize and automate end-to-end internal processes (i.e. finance, sourcing & procurement) powered by artificial intelligence (robotics) and big data analytics	Digital Operations
F3	Transition the IT infrastructure to the cloud	Move the IT infrastructure to the cloud, in order to improve efficiencies, enable the seamless integration of business processes and provide immediate, on-demand access to the latest solutions and approaches and ready-to-deploy environments for creating and delivering the innovative business strategies and products	Digital Operations
F4	Transform the Digital Talent	Define the new digital roles, capabilities and skillset, assess the active workforce and design digital academies to digitally upskill and reskill the organizations' personnel according to their personal development needs	Digital Operations
G1	Enhance Digital Trust	Complement existing cyber security investments with advanced Cyber Intelligence Platforms and a dedicated Cyber Defense Center to help identify and respond to new cyber threats in near real-time	Digital Operations
I1	Provide Atomized Products & Services	Contextualize interactions and provide digital products/services tailored to customer needs via real-time analytics	Digital Customer
J1	Personalize the Store Experience	Design a retail assistance platform that will arm the store associates with customer and product intelligence to better know and service their customer, shifting the interactions from transactional to consultative, and enabling concierge like services	Digital Customer
K1	Optimize Customer Experience	Introduce and rollout customer journeys to improve the customer experience across channels in the context of the personalized treatment and strengthen the B2C and B2B interfaces	Digital Customer
K2	Improve Customer Interactions through AI	Deploy artificial intelligence via the introduction of digital assistants for the provisioning of digitalized customer services	Digital Customer
K3	Improve the Omni-Channel Customer Interaction	Provide a seamless customer experience across all customer interfaces (store, mobile, call center)	Digital Customer

2.3.2 Initiatives that can be jointly undertaken by the organizations to enable the industry's and Greece's rotation to digital

In addition to the suggested set of initiatives that each individual organization can undertake in order to accelerate their digital rotation, another set of digital initiatives has emerged. These initiatives carry the potential to be undertaken jointly by organizations belonging to this group. Such initiatives can cover a wider breadth of digitalization, enabling faster and more pervasive digital rotation.

These initiatives have been also recorded in full detail in the main study for the Digital Strategy for Greece and consist part of the first strategic axis "Fix the brilliant basics". In terms of consistency and completeness, these are presented also below.

In addition, we have added as a last point (see cross-organizational digital initiative 8) the opportunity for telcos to collaboratively explore the potential for an infrastructure driven IoT joint play. Whilst respecting each individual organization's study and commercial proposition, we see room for cooperation in the emerging IoT space.

#	Cross-Organizational Digital Initiatives
1	Rapidly deploy integrated nation-wide fiber and wireless networks to enable ubiquitous and seamless high-speed connectivity
2	Government to invest public resources in a complementary way to private investments, to expand the next generation broadband infrastructure across the "White NGA areas"
3	Government to provide initiatives (e.g. subsidies) to boost the demand for broadband services and to bridge the digital gap
4	Government to reevaluate the necessity for special taxes that burden each citizen for the consumption and usage of Fixed, Mobile and TV services, as those work towards a completely opposite direction with regards to the goals of the interdependent digital strategy and may negate any multiplier effects
5	Design an action plan for the harmonization of Greece with the European Radio Spectrum Policy Program and the coordinated use of the 700 MHz band for mobile services. This is expected to improve internet access for all Europeans and facilitate the development of cross-border applications
6	Develop an action plan to facilitate and accelerate the deployment of 5G networks, including the provision of the required spectrum, in cooperation with the private sector and their respective linkages
7	Prepare a set of future initiatives beyond the current national NGA plan to meet the EU's new long-term objectives and cover the period up to 2025 for the Gigabit Society
8	Investigate the opportunity to create a joint IoT play that will support selected Greek industries (i.e. Education, Municipalities, Tourism) and enable their digitalization

2.4 Global Leading Practices

- **Case Study – Portugal Telekom Workforce Management System**

Portugal Telecom is the largest telecommunications carrier in Portugal and a global operator with more than 97 million customers in 11 countries. With a workforce of more than 4,500 technicians and dispatchers, the company implemented a new workforce management system as part of Portugal Telecom's operational transformation program. As a result of the project, Portugal Telecom realized significant improvements in service quality, customer satisfaction, operational efficiency and productivity— which, in turn, are driving higher profitability. Specific benefits include a 21 percent increase in on-time technician arrival, a drop in mean repair time by up to 50 percent, and a 43 percent increase in technician productivity

Source: https://www.accenture.com/t20150523T042403_w_/us-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Industries_15/Accenture-Transforming-Field-Force.pdf

- **Case Study – KPN Adopting Omnichannel**

Until recently consumers experienced KPN, the Dutch landline and mobile telecommunications company, in different ways, depending on which product (mobile telephony, fixed telephony, Internet and TV) and channel (retail outlet, call center, Internet) the customer chooses. KPN had created an online shopping and service environment, called myKPN, aimed to offer uniform experiences to its customers. In 2015 the company rolled out a uniform digital layer, ONE KPN, and enabled its customers to have a unique customer experience, independent of product or channel chosen. The development of the uniform digital customer services begun with online sales experiences in 2015 and then focused on online service experiences in 2016, providing a seamless customer experience across all customer interfaces (store, mobile, call center).

Source: <https://inform-reports.s3.amazonaws.com/CaseStudyHandbook2017DigitalBusinessHowToMakeTheLeap.pdf?AWSAccessKeyId=AKIAIG7QQJPA4DD54X7A&Expires=1495470896&Signature=a8dH16%2BO4Qe03FxnQfPqFfCx3UE%3D>

- **Case Study – Deutsche Telekom Connected Car Traffic and Diagnostics**

Connected Car Traffic and Diagnostics from T-Systems (Deutsche Telekom) is a platform-based big data solution that provides value-added services, opening up new opportunities for auto-owners, repair shops and carmakers. With Connected Car Traffic & Diagnostics, customers can arrange service intervals to correspond with predicted wear and tear – cutting costs and improving safety. The platform also delivers valuable information on potential road hazards in real time. Connected Car Traffic & Diagnostics gives OEMs access to a treasure chest of information that can be leveraged to help avoid costly product recalls. What’s more, this data could prove to be particularly useful in vehicle development, where manufacturers are constantly looking at how they can meet the real-world needs of diverse customers. With Connected Car Traffic & Diagnostics, dealerships and repair shops can generate new revenue. They can harness big data to create offerings tailored to the precise wants and driving habits of their customers. Plus, they can alert clients to potential problems, such as a loose fan belt or a stuttering engine cylinder, long before there is an actual breakdown.

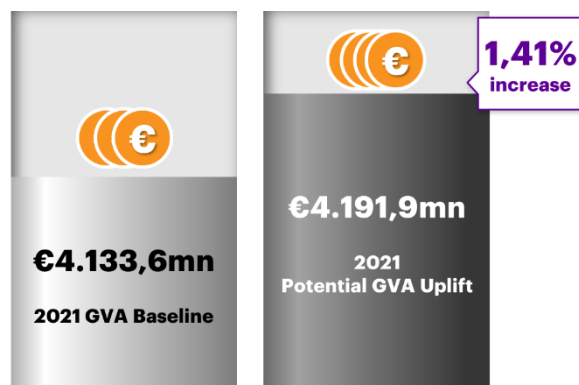
Source: http://www.iot-automotive.news/download/i/mark_dl/u/4013281300/4625193023/T-Systems-Use-Case_Big-Data-Connected-Car.pdf

2.5 Maximizing the Communications industry’s economic output (GVA)

Our econometric analysis suggests that by 2021 the initiation of the digital rotation for the Communications industry is expected to result to a moderate increase in the economic output by 1,41 percentage points equals to approximately €58,2 million³. The projected GVA uplift is a product of macroeconomic analysis assuming a 10% increase on the industry’s digital maturity (Figure 16).

This projected uplift refers only to the direct effect that the implementation of the digital initiatives, that were presented in section 2.3.1, will have on the industry’s economic output.

The implementation of the cross-organizational digital initiatives, mentioned in section 2.3.2, are expected to have a significantly larger effect on



Source: Oxford Economics, Accenture analysis

Figure 18: Communications GVA Uplift as % of the 2021 GVA baseline, (Million Euros, %)

³ 2021 Gross Value Added is calculated from Eurostat data using Oxford Economics projected growth rates. The spill-over effect to the economic performance of other industries is not included in this figure.

Greece's GDP uplift. It has been estimated that the contribution of the "Fix the basics" digital initiatives⁴ can contribute approximately 50% of the overall estimated GDP uplift.

⁴ "Fix the basics" digital initiatives include a set of initiatives with regards to: digital skills, national communications infrastructure and regulatory frameworks & policies.

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