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Why Are Cable Operators A Natural Fit To Support Telehealth

An Inter-Industry Perspective

A Technical Paper prepared for SCTE•ISBE by

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1. Abstract

Cable and healthcare industries are crossing paths at many places including in the area of Telehealth. This paper explores how mutually beneficial collaborations can be created between the two industries.

In the process we evaluate different building blocks of Telehealth. A case will be made for the cable operators supporting some of these building blocks. We will provide a quick survey of some of the publicly known Telehealth inter-industry collaborations. We will analyze different stakeholders in the Telehealth ecosystem and their needs.

We are going to highlight the low hanging fruits in this collaboration where Cable operators can begin. And finally provide a preliminary recommendation on how cable operators to venture into a mutually beneficial opportunity.

2. Evolution of Telehealth and challenges

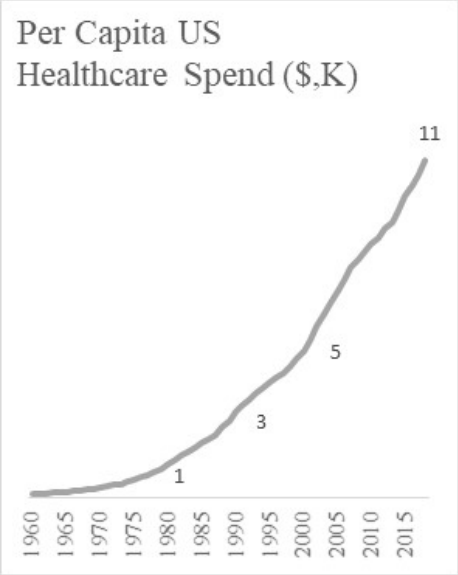

Figure 1 - US healthcare spend 1960-2018

Healthcare expenses are skyrocketing in United States [1]. Per Capita national expenditure rose from $146 in 1960 to $11,160 in 2018 (refer to Figure 1) at a rate of 4.6%. It is expected to rise at a yearly rate of 5.4% from 2019 – 2028 (refer to [2]).

In the market, there are many healthcare and technology initiatives to reduce wastage, reduce cost and increase productivity [3]. As will be discussed later in the document, many inefficiencies can be addressed by Telehealth initiatives. With this brief motivation, we will discuss the background of Telehealth and its promises in detail in the rest of the section.

Although, this is not a primer on healthcare definitions, it is essential to understand tele terms that are often confused by non-healthcare professionals. Telehealth and Telemedicine are defined by HIMSS as [4] – Telehealth: *A broad variety of technologies and tactics to deliver virtual medical, health, and education services. A collection of means to enhance care and education delivery. This term encompasses the concept of "telemedicine," which refers to traditional clinical diagnosis and monitoring delivered by technology. The term "telehealth" covers a wide range of diagnosis, management, education, and other related healthcare fields including but not limited to dentistry, counseling, physical and occupational therapy, home health, chronic disease monitoring and management, and consumer and professional education.* Figure 2 gives a high-level summary of the above terminology and different types of Telehealth services offered. For a bit more discussion and relevant references from Telecom operators' point of view refer to [5]. In this paper we focus only on Telehealth aspects of the telecom and healthcare inter industry puzzle.

Telehealth [6], in a nutshell,

- Addresses lack of access to quality care specifically in the remote communities
- Reduces provider burnout in unnecessary activities such as traveling between facilities

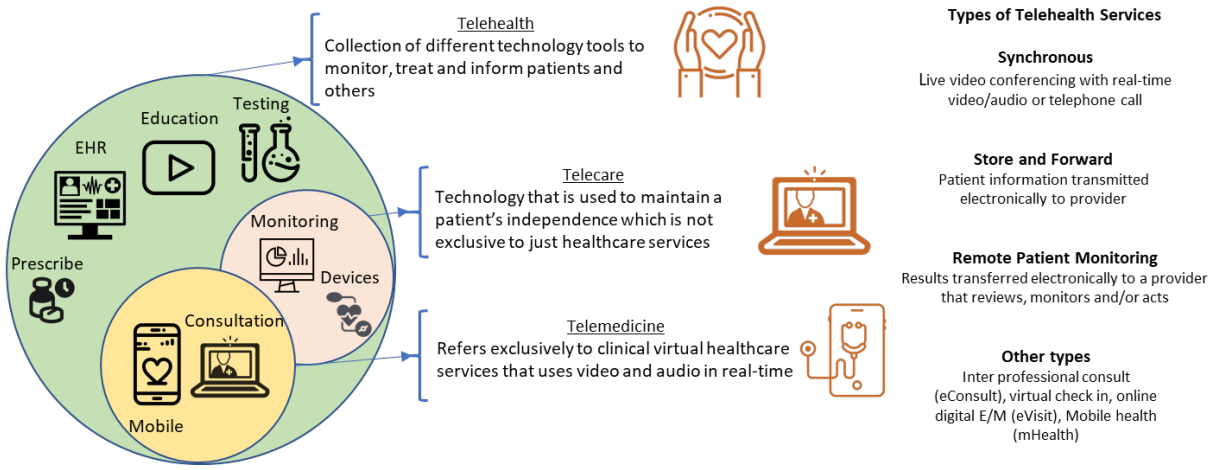

Figure 2 - Types of Telehealth and relation between Telehealth, Telemedicine and Telecare

- Assists with care gaps in chronic disease management with different patient's providers
- Increases and manages hospital staff utilization through effective capacity management
- Controls the escalating costs the providers are caught in the fee schedules and no-shows

The question is, if Telehealth is solving inefficiencies in the healthcare industry, why is it not taking off? There are some significant technological, policy and perception issues that need to be addressed for Telehealth to be widely adopted. These are briefly mentioned in the insert – "Telehealth Challenges."

Telehealth Challenges

Telehealth is envisioned in 1960s. Why did it not take off yet, if the healthcare industry unanimously agrees to its benefits? We have three roadblocks **Error! Reference source not found.** -

Payment: Payment codes are not available for many Telehealth services yet

Policy: Federal and state healthcare agencies have different policies that restricts the adoption of Telehealth

Proof of Quality: Healthcare professionals must prove that the quality of care provided by Telehealth matches non-Telehealth

These barriers are, atleast temporarily, lifted due to COVID-19. Radipidly in the last few months Medicare, who is the largest government sponsored health insurance, relaxed their restrictions around the communication mechanisms, payment restrictions etc. [8], [9], [10]. The Telehealth community has gained their long deserved recognition in a hurry. Telehealth solutions or services adoption has surged from roughly 54 percent in 2014 to 85 percent in 2019, indicating a higher level of acceptance and desire for telehealth solutions and services [11]. We will need to wait and see if these policies and payment structures will be continued after the COVID-19 scare subsides. A generic agreement in the healthcare community is that we will not go back to the pre-COVID status, but will also not have the same level of policy and payment relaxation.

Even before the COVID situation itself, there had been significant tailwinds that are driving the innovation and adoption in the Telehealth industry [12]. These tailwinds are mainly around expanded funding availability, increased adoption, proven results, disruptive acquisitions [13], availability of 5G and 10G [14] networks.

Telehealth focus has been catching attention from different industries. Firms are trying to solve a portion of the problems. For example, there are over 300 companies claim that they are addressing Telehealth needs [12]. This early adoption stage of the Telehealth industry is heavily fragmented due excitement in the market. In addition, the government agencies, such as The U.S. Department of Health and Human Services (HHS), are trying to control these disruptions in an orderly fashion through relevant Telehealth success metrics [15]. Such a ripe innovation grounds are becoming more and more favorable to the Cable Industry, as we will discuss in the next few sections. The question will be more on what strategy an operator needs to employ when addressing Telehealth needs rather than if they should enter this market.

3. High level stakeholder needs

As shown in Figure 3, Telehealth ecosystem has many stakeholders. Of course, it begins with the *patient* and their *family members* that are involved in the decision making of a healthcare visit. If the patient needs additional care, such as taking care of an elderly person, the *care giver* will also need to be part of the ecosystem.

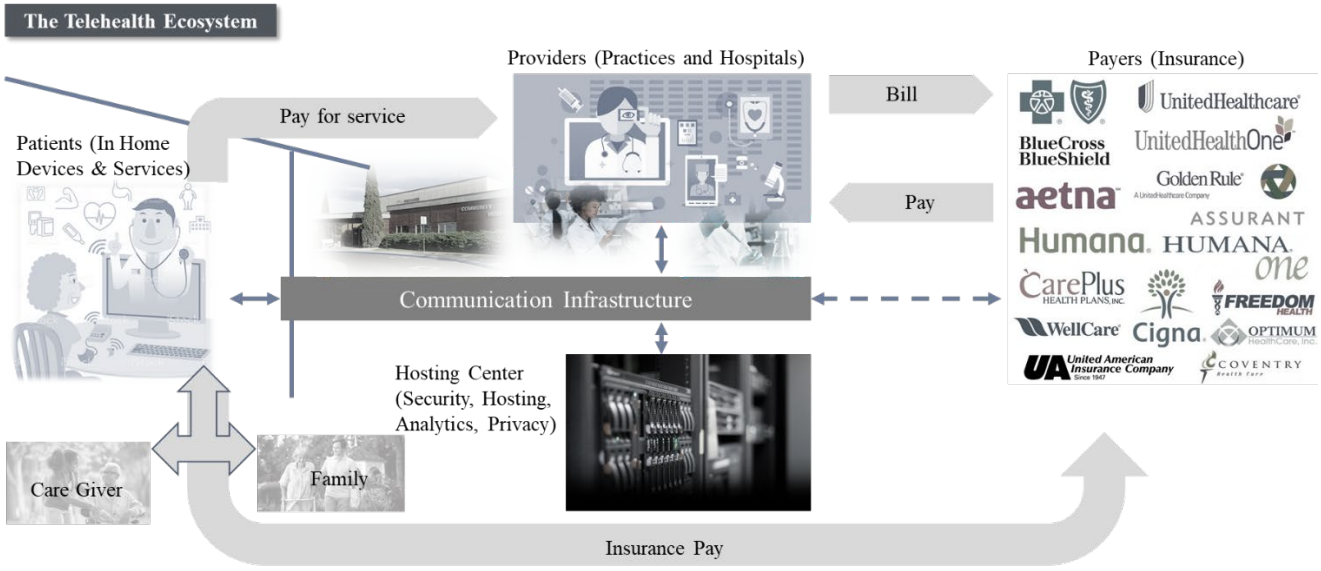

Figure 3 - The Telehealth ecosystem consists of patient, provider and payer side partners

The patient interacts with the *provider(s)* (Doctors, Physician Assistants, CNP, etc.) for guidance and treatment. Note, that there could be multiple providers as part of their treatment. In addition, the provider ecosystem includes their *satellite* or *community hospitals* (such as the VA Telehealth services [16]), *pharmacies, labs,* and/or *imaging group*. The providers and the patients interact with the *payers* (the public or private insurance companies) for billing and getting paid for the services. In addition, the *state and federal policy makers* (not shown in the figures) sets the guidance to the whole ecosystem. Note, in case of Telehealth, all these interactions are happening on the infrastructure provided by the *operators*. Before diving too deep into the details, lets understand the goals of Telehealth. The policy makers, who are the gate keepers for the Telehealth services, are interested in understanding the efficacy of the Telehealth services in the following dimensions [15] –

- **Access to care:** Access to information for patient, family, care team, and caregiver
- **Financial impact:** Cost to patient, family, caregiver team, society, and the health system
- **Experience:** Patient, family caregiver, care team member, and community experience

- **Effectiveness:** System, clinical, operational, and technical effectiveness

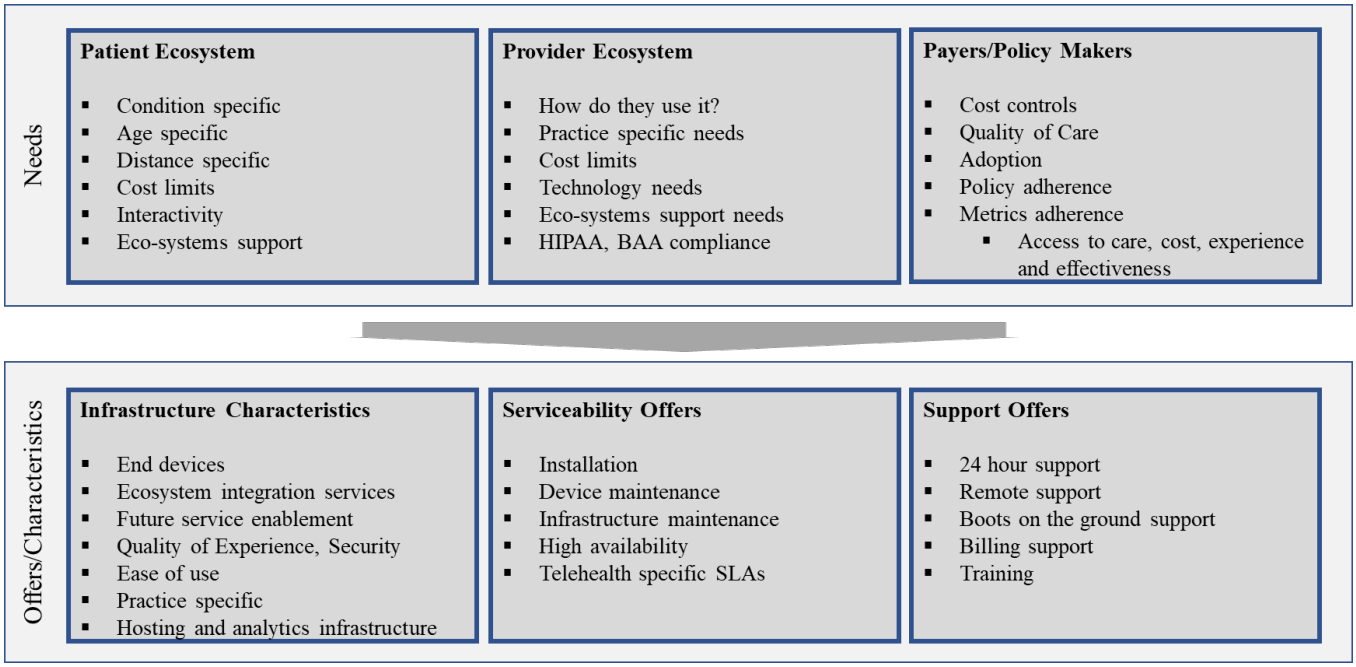

Figure 4 - High level needs and offer alignment of a Telehealth ecosystem

Not going too much into the details, we would like to highlight some of the Telehealth needs as shown in Figure 4. These needs can be classified into patient ecosystem needs, provider ecosystem needs, payer needs and policy maker guidance. These needs are self-explanatory and aligns with the Telehealth metrics. To meet the needs of the Telehealth environment, in addition to the most important aspect of the health care involvement, the supporting solution characteristics can be classified into the infrastructure characteristics, the serviceability offers, and the support offers. These are essential to turn a fragmented Telehealth offer into a manageable solution. In the following sections we will build a case on how cable operators can, with their current capabilities, become the Telehealth environment managers.

4. Building blocks of Telehealth Environment

The Telehealth environment can be offered as a B2C (Business to Consumer), B2B, and B2B2C business models. As a preliminary step towards offering the Telehealth environment, the Cable operators should investigate which business model they would enter with to ensure success in this highly fragmented healthcare market. Cable operators have a unique relationship with customers through their broadband services. But keep in mind, healthcare is a more emotional and demanding (from service agreements point of view) service. If you are selling to the Telehealth environment through providers and their satellite offices, we need to first consider what are their incentives. These incentives can be identified through the Telehealth metrics identified before. The other more attractive model is to reach consumer through healthcare establishments. There have been multiple studies performed showing this as a valid approach for entering into the Telehealth environment. Many operators have created their healthcare IT initiatives ([17], [18], [19], [20]) to get their feet wet in this inter-industry activity. Lately we have seen the Telco and Cable operators are turning their head to the more profitable Telehealth initiatives (Refer to [22], [23], [24]).

The best way to understand the building blocks of the Telehealth solution is by looking at the day in the life of a patient. As shown in Figure 2, Telehealth offers are classified into Synchronous, Store and Forward, Remote Patient Monitoring and Other categories (Tele-education, metrics gathering, analytics, mHelath, eHealth etc.). These are elaborated in Figure 5 from a patient's point of view to gain more insights into the Telehealth service offerings.

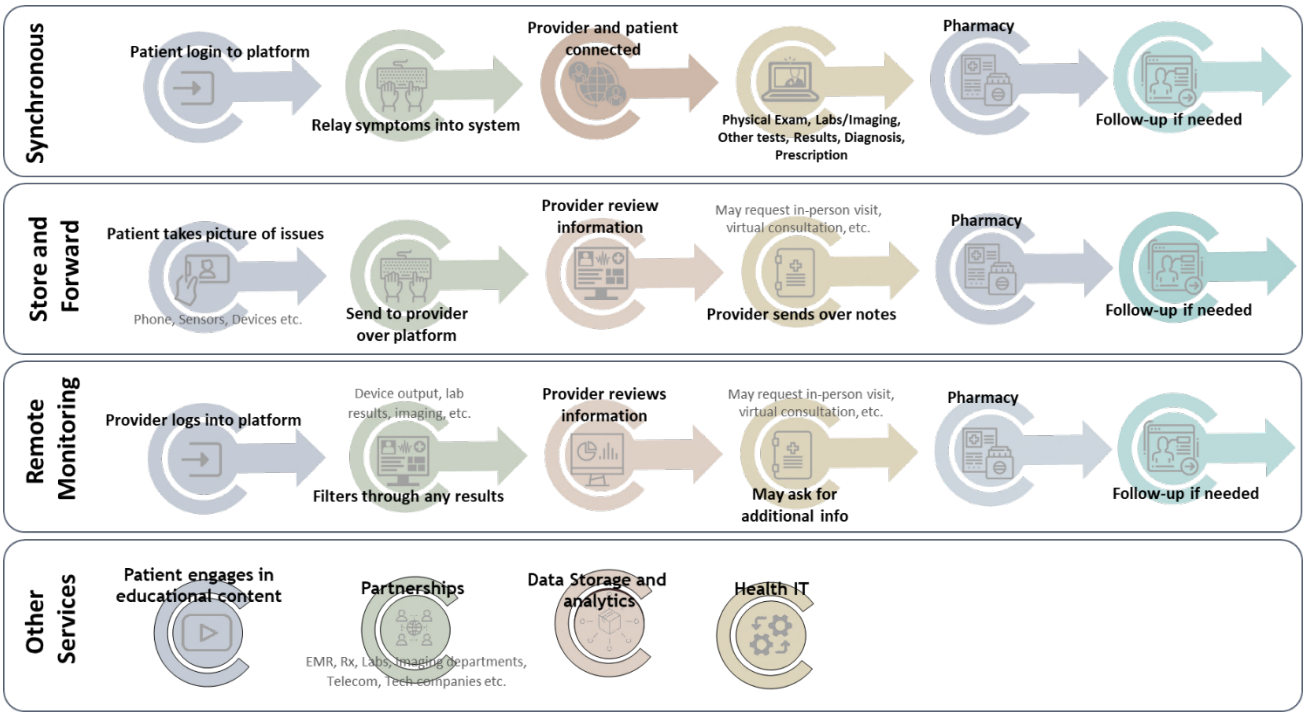

Figure 5 - Day in the life of a patient in different Telehealth scenarios

Telehealth is a rapidly evolving industry. The question is how can Cable operators get onto this fast moving train? Looking at the Telehealth environment, as shown in Figure 5, from Cable Operators point of view, one can identify three sets of building blocks as below:

- Patient environment support
  - Communication platform
  - (Future) Consumer oriented unified communications
  - (Future) Device Integration of current and future in home care devices
  - (Future) Usability and accessibility
  - (Future) Supporting team integration
  - (Future) Installation services
  - (Future) Support services
  - (Future) Training support
  - (Future) Build homes to meet future needs
- Provider environment support
  - Communication platform
  - Infrastructure support
  - Unified communications

  - Secure infrastructure
  - (Future) Integrating the provider ecosystem partners
  - (Future) Patient monitoring infrastructure
  - (Future) Integrate with store and forward components
  - (Future) Increased installation and services relationships
  - (Future) Training and education support
  - (Future) Telehealth related ML algorithms
- Policy and payer environment support
  - (Future) Telehealth metrics tracking
  - (Future) Telehealth ML algorithms for problem centric analysis
  - (Future) Policy organizational support

Once we understand the business model and the building blocks of services to be offered in the Telehealth environment, we need to address the incentives to get the right priorities for the stakeholders. This process will refine the roadmap of Telehealth environment execution by the cable operators.

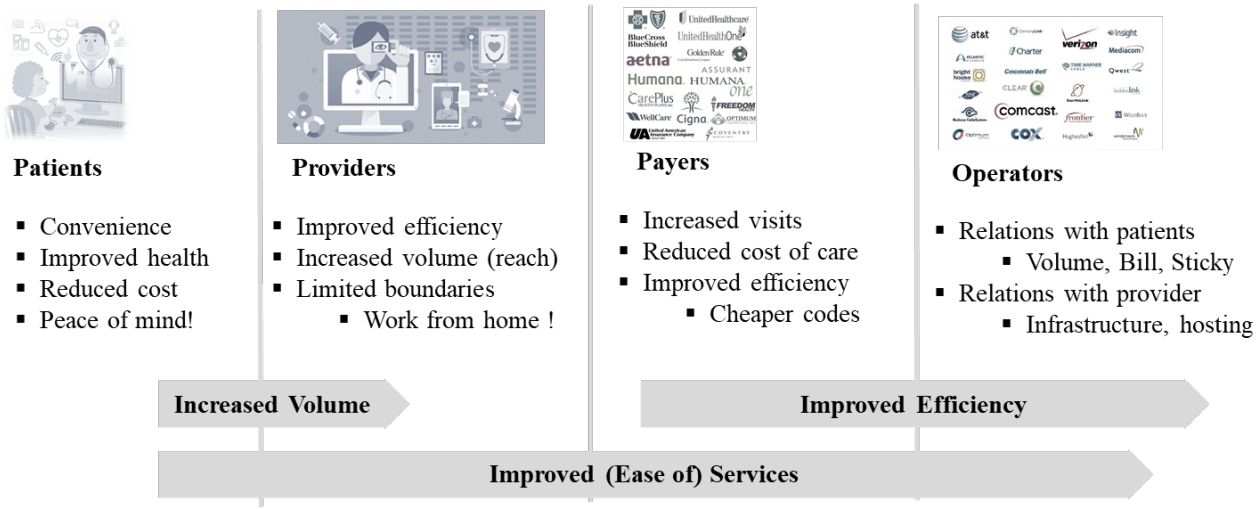

Figure 6 - Telehealth environment incentivized for different ecosystem players

Figure 6 provides a quick capture of different incentives in the Telehealth environment. When the cable operators are creating their solutions, we recommend elaborating their offering in a framework, such as above, to address the incentives of different stakeholders in the environment. In the following section we evaluate such a framework to create high level recommendations and a roadmap for the cable operators.

5. Cable Operator supported Telehealth recommendations

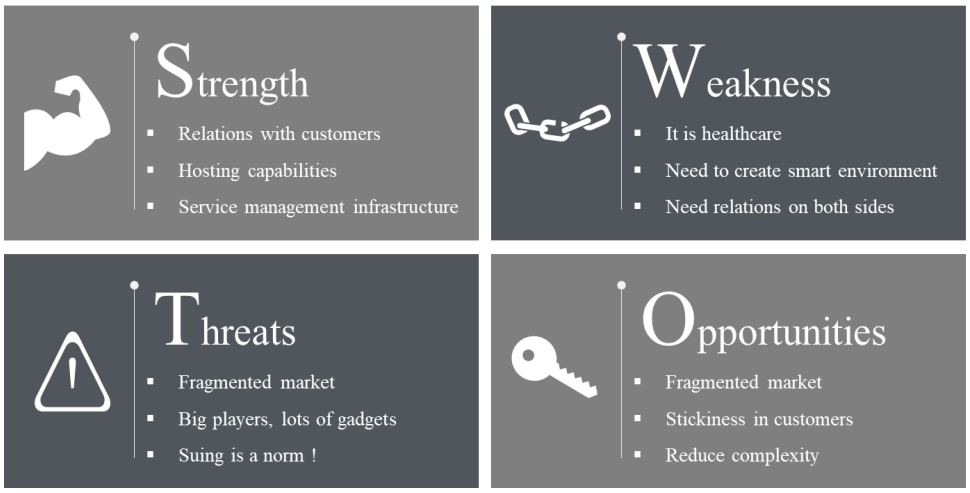

Figure 7 - Cable operator high level SWOT analysis

Figure 7 shows the top differentiators that a cable operator can use to their advantage in this rapidly evolving Telehealth industry, and the risks they need to overcome. To become a formidable player in this inter-industry activity they need to create a razor sharp strategy enhancing their strengths to meet healthcare needs, fostering targeted relations, and offering aggressive enhanced services with commitment.

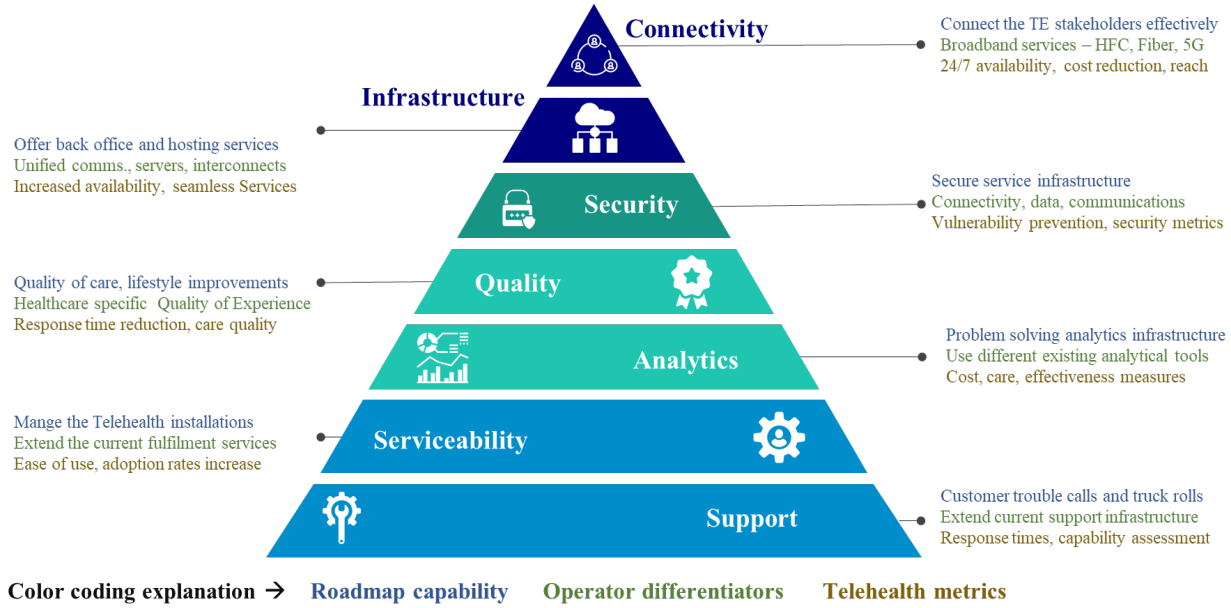

Figure 8 - A potential roadmap prioritization for executing Telehealth solutions by the cable operators

Bringing all the concepts, metrics, and capabilities together, in Figure 8, we propose a potential roadmap for the Cable Operators to successfully offer a Telehealth environment.

1. Offer your existing capabilities to healthcare industry:
    a. We propose the operators to play to their strength to start with. This include the *ubiquity of reach and relations* through **connectivity**. It is observed that the biggest challenge for the Telehealth customers is still the broadband connectivity. This is certainly understandable in the rural areas. Even in the urban and suburban areas, this seem to be one of the main concerns. The lowest hanging fruit for the cable operators is to bundle these connectivity services in the healthcare language to address the customer needs. The wireline services such as HFC and Fiber based solutions, along with the wireline services with the future 5G etc., can solve these basic needs. Some of the metrics the healthcare industry understand related to connectivity are the *24/7 availability*, *cost reduction through efficient use of time and increased reach of the patients*.
    b. Extend the existing **service oriented infrastructure** to meet the healthcare needs. These include the managed back office and hosting services – specifically focused on the supporting the above mentioned communication relations. This includes services such as Unified communication services. Assist the healthcare providers in hosting their important data (such as EMR data, patient specific data, billing information etc.) and a portfolio of seamless interconnection (between the stakeholders) services. These services can be measured through the *availability and seamless access* metrics.
    c. Offer a state-of-the-art **secure platform**. The healthcare industry is longing for the day-to-day security infrastructure that the cable operators offer for connectivity, data, and communications. Working with their security infrastructure, the providers by solving the security related issues will be welcome by the healthcare industry. Such an infrastructure's effectiveness can be measured through *vulnerability prevention and other security metrics*.
2. Adopt your capabilities to the healthcare needs:
    a. Adopt the service **quality metrics** that the cable operators are using to monitoring to the healthcare services. Develop healthcare specific quality of care and lifestyle improving service – like what we call the Quality of Experience metrics for the services we offer for the triple play services. Metrics such as *response time improvements, cost reduction, quality of care improvements* etc. need to be measured on the data that is mined for these healthcare services. This increases the adoption of the Telehealth services and hence the Cable Operator supported healthcare services.
    b. Use your **service oriented analytical platform** to assist the complex healthcare issues. Put the complex digital infrastructure that Cable Operators have developed to solve Telehealth related problems. These metrics will be in cost of care reduction, quality of care improvements, Telehealth effectiveness etc. This, in our opinion, is a simple redirection of the analytical infrastructure to the healthcare industry.
3. Increase the capabilities of the operators to meet the future needs of the healthcare industry:
    a. Develop **Telehealth installation services** as a first step to turn the Telehealth as a standard portfolio service. Extend the fulfilment PPTs (people, processes, and tools) to offer the Telehealth installation services. Implement different fulfillment learning that you have, such as self-service and assisted service combinations, to make the customer's life easy when deploying these services. Measure your stakeholders and your successes through metrics such as *ease of use and adoption increase*.
    b. Offer **Telehealth support services** to turn the fragmented market to your advantage. Use your customer's support infrastructure through care centers, truck rolls to address their healthcare needs. This comes at the expense of mobilizing your support organizations to gain healthcare expertise. The size of the Telehealth opportunity foreshadows the complexities reshaping your service organization. The reward for the operators is significant enough that this is a necessary step to gain the full control of your inter-

industry opportunities. Success can be measured by *response time, and problem solving capability assessment* metrics.

In addition to the step-by-step Telehealth services, the Cable Operators have to make the appropriate decisions to develop a go-to-market strategy either through partnerships, building some of the solutions, or by applying the BOT (build, operate and transfer) model. For such a solution they need a clear roadmap for execution, deciding which market they are after: B2B, B2C or B2B2C. For additional information reach out to the authors.

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