

Strategic Advisory Project



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Agenda

- Project Overview: Scope and Deliverable
- Executive Summary
- Element 1: Current MEA HTS
- Element 2: Market Size & Market Potential
- Element 3: Competition & Barriers to Entry

Global in Reach

Local in Knowledge

Bottom Line Analysis



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Introduction

- FrontierX Technology (FXT) is pleased to present the following market assessment as an Analysis Overview.
- The scope of this analysis is to provide the “potential customer” with a high level review of the market potential for the Ka-band HTS (High Throughput Satellite) payload planned for a designated satellite payload. Engaged to:
 - ✓ Review the range of reasonably feasible Ka-band/HTS end market opportunities in the coverage areas of the satellite including: video content distribution, government, video contribution, mobility, enterprise connectivity, and wireless backhaul.
 - ✓ Review the demand potential for satellite broadband access services in the coverage area of the designated satellite.
 - ✓ Review the competitive landscape in regards satellite broadband access services.
 - ✓ Provide an independent outlook on the market to provide potential new partners/investors.

Project Overview: Scope and Deliverable – cont. 2

Project Objectives – Satellite Broadband Access Market Review

- Current Middle East – Africa (MEA) HTS (high throughout satellite) Market Structure / Satellite Positioning
- Market Size & Market Potential
- Competition & Barriers to Entry
- **Bottom Line:** Market Assessment for Broadband Access the Designated Satellite

Project Overview: Scope and Deliverable – cont. 3

Project Matrix – Satellite Broadband Access Market Review

- Current MEA HTS Market Structure / Satellite Positioning
 - ✓ Overview of current and planned HTS satellite missions including expected end-market(s), including the global activity and more in-depth discussions of the regional activities.
 - ✓ Review of the satellite broadband access market players in MEA.
 - ✓ Review of the HTS market opportunities for MEA coverage.
 - ✓ Current and projected HTS and wide beam Ka-band capacity pricing per Mbps/MHZ in the target region over 2018-2026.
- Market Size / Market Potential
 - ✓ Market Sizing: Population covered by mission, demographic characteristics and customer Internet access.
 - ✓ Market Potential
- Competition / Barriers to Entry
 - ✓ Profile of current and emerging competitive forces.
 - ✓ Overview of range of business models.
 - ✓ Competitive type of profile, selling/distribution model, etc.

Executive Summary

Broadband Access is a real market in MEA but -----

- **The addressable market potential is technically huge.** Some 500 million people in the countries covered by the regionally covered satellite.
- However, need much more detailed study to narrow down what is realistically achievable. Prior detailed studies show **the real addressable market for MEA region is much smaller.**
- If addressable market is a fraction of the top level number, the “Potential” goal of 100 K to 600K broadband access subscribers is **attainable.**
- **Distribution is by far the key determining factor in success** of growing a satellite broadband access subscriber base.
- Signing with **strong and motivated reseller partners** in each country where the service will be offered ultimately determines rate of subscriber.
- With some 28 million households, **tying a broadband access service offering a double/triple play service helps make the case for broadband access** but this is a second order factor in determining success after the distribution issue.

Executive Summary – cont. 2

Broadband Access is a real market in MEA but ----- cont. 2

- Further, **many of the same investors in the “potential” satellite as well as other clients are major telecoms and mobile companies the the MEA region.** Again, this helps make the case for broadband access assuming one can tap into these players to resell services.
- Similarly, better technology such as SpeedNet helps the competitive position but at end of day **subscribers do not care about technology.** They just want a good service that works at a fair price.

Addressable market --- its there

- In the 21 countries potentially covered by HTS payload: the **total population is over 1 billion** and households from 215 million in 2017 to almost 300 million in 2022.
- Of these households, FXT’s top estimation is that **about 50% are addressable based on income levels**
 - ✓ Equals about ½ billion in population and 100-150 million households
 - ✓ Fixed Internet subs will exceed 110 million by 2020 with over 300 mobile internet subscribers

Executive Summary – cont. 3

Addressable market --- its there - cont. 2

- Lots of room for growth in video services **where Ka-spot beams could be very effective in delivery of video content** in a triple-play configuration in specific markets.
- The main challenge in the market is not “is there an addressable market?” It is instead developing **a strong distribution network** and **addressing the upfront cost of installation**.
- With “stating the goal” to reach 100K to 600K broadband access subscribers in 4-5 years, FXT holds the view that **the addressable market in MEA certainly is capable of supporting this goal**.
 - ✓ The 100-150 million households that could afford the service are hundreds of times above the subscriber uptake goal.
 - ✓ Even a more refined addressable market would still leave the market potential well in excess of the established subscriber goal.

* NOTE: Source – United Nations population Division, ITU & World Bank

Executive Summary – cont. 4

Distribution Options

- Most common structure today is **many small/medium sized ISPs and VSAT service providers act as distributors in MEA market**. This will most likely be structure of most future satellite broadband access service players in MEA.
 - ✓ Typically each distributor may only roll out a few tens to a few hundreds of subscribers per month.
 - ✓ Issue for the provider is that this could imply a slow take up of capacity on “potential satellite” payload, hence one needs to de-risk project by using capacity for other services while broadband access market builds.
- **MEA could see large telecoms/mobile companies (e.g. Etisalat, Vodacom) get behind satellite broadband as triple-play service** in MEA like Telefonica’s Media Networks group in Latin America
 - ✓ However, most large operators focused on quicker returns growth in 4G services in MEA. Hence, satellite broadband may be low on priority list.

Executive Summary – cont. 5

Get known in industry for “multi-service” business plan from the start

- Thaicom with IPSTAR, YahSat with YahClick and Avanti made mistake of initially becoming “known” in the industry only for satellite broadband access services.
 - ✓ The industry then “pigeon-holed” these players as just addressing satellite broadband access.
 - ✓ Since these players have **re-branded as “multi-service” operators** as the best way to ramp up capacity usage as fast as possible.
 - FXT recommends **emphasizing multi-service offer from the beginning** in order to de-risk the investment in the satellite capacity.
 - ✓ Emphasizing the “loop-back” option and readiness to serve all applications will provide with a broad gamut for market opportunities in the MEA region.
- * NOTE: YahSat’s current product portfolio: YahClick, YahSecure, YahLink, YahService, YahLive & YahCarrier.

Executive Summary – cont. 6

Coverage ---- target your market

- It is understood that intention is to **supplement the Ka-band spot coverage with overlay Ku-band coverage.**
 - ✓ Allowing placement of higher performance Ka spots over high density demand zones, while Ku-band overlay ensures complete coverage within each country.
- **Advantages** of this approach include:
 - ✓ Satellite broadband access resellers, especially if targeting large telecoms and mobile operators, would tend to have a preference to market the product over the entire territory of each country they chose to serve.
 - ✓ Similarly, important to have 100% coverage of a country when seeking to address other verticals like school network, or rural connectivity projects.
- Allowing to **target the CAPEX investment in Ka-band capacity to markets that can use the lower cost capacity** while still offering wide coverage areas of Ku-band beams to ensure serving all clients requirements.

Overview: The deliverable for this element are as follows:

- Overview of current and planned HTS satellite missions including expected end market(s), including a summary of global activity and more in-depth discussion of regional activity.
- FXT review of satellite broadband access market players in MEA.
- FXT review of HTS market opportunities for “potential satellite” MEA coverage, overview of feasible or potentially attractive applications for the satellite capacity.
- Current and projected HTS and wide beam Ka-band capacity pricing per Mbps/MHZ in the target region over 2018-2025.

Advancement of technology and specifically the affordability of it have been providing exciting opportunities to close the gap between underdeveloped and developed countries like no other time. In the last few years the importance of socio-economic development to solve global issues has been on the top of any list of major organizations involved in global affairs.

Infrastructure building is the most critical, time consuming and costly section of each development plan. There are great arguments on the role and impact of communication infrastructure in 21st century. Arguments and studies have been made to calculate the contribution of communication infrastructure and its effectiveness to shift the economies of underdeveloped countries to leap into **knowledge based** economies and leaving behind the agriculture and manufacturing centric proposals.

Element 1: Current MEA HTS - cont. 3

We are offering visual, voice & data solutions to build an infrastructure of 21st century for the transformation of the prospect of development. This infrastructure will have several key attributes which will make the impact of its deployment beyond traditional means.

This proposal is based on a solution to be:

- Deployable in regional and continental setting
- Independent from existing infrastructure
- Expandable and Modular architecture
- Single platform to address multiple segments of economy
- Rapid deployment and rollout
- Low cost of operation
- Sustainable to absorb new technology advancements

There are important and proven segments of economy that can benefit and grow by using this FXT platform.

Thank you for your kind attention

