



## Episode 223 – Middle East Space, Connectivity Hub and Sovereignty

Speaker: Steve Bochinger, Affiliate Executive Advisor, Novaspace – 29 minutes

John Gilroy:

Welcome to Constellations, the podcast from Kratos. My name is John Gilroy and I will be your moderator. The Middle East is one of the most dynamic and fast evolving regions in the global space economy. As nations in the area turn space ambition into action through satellite programs and partnerships, the region is fast becoming a global space and connectivity hub. Here to discuss the space sector development in the Middle East, including the vision for space, investment opportunities, strategic partnerships, and drive for sovereignty is Steve Bochinger, affiliate executive advisor at Novaspace. Steve has over 20 years of experience in the space sector and has vast knowledge across the space value chain from a commercial and government perspective.

Steve, it's a big topic. Are you ready?

Steve Bochinger:

Yeah. Hi, John. Thanks for having me.

John Gilroy:

Looking across the Middle East, how would you describe the region's overarching vision for space? What are governments and industry here really trying to achieve over the next decade?

Steve Bochinger:

Yeah. Well, first, as a matter of introduction, I think that we should remember that space is considered as a broader strategy perspective in the countries, in this region. As you know, countries in the Middle East, specifically in the Gulf, I would say, are embarked in a profound transformation of their economy and of their society that is formalized in this national vision 2030 KSA, you have Oman Vision 2040, you have UAE Centennial 2071. So all these national framework formulate national transformation and space is seen as a key pillar of these transformation.

So I think there's, I would say, three-dimensional aspects with respect to these national space strategies, economic diversification, because they want all to reduce the dependency from oil and gas and move towards an economy driven by technology and innovation. So economic diversification is number one, sovereignty, national sovereignty to secure independent capabilities, especially for defense and security in the geopolitical context.

So economic diversification, sovereignty, and soft power, very important in these countries as well. They are all investing in domains that can help raising their leadership and the profile in the global stage, and space is one of that. They may invest in sport, in environment and green technologies, and in space because it is a very impactful sector. So I think these are the three-dimensional aspects that you can see in the commonalities in this strategy in the region.

John Gilroy:



Well, Steve, I've been at conferences, you've been to conferences, and you always sit in the audience and someone on stage sit on the couch and talk about visions. And you can just talk about visions here. And visions are great, but let's compare a vision with the reality. So how would you characterize the current state of the region in the space and satellite market?

Steve Bochsinger:

First, let's see what's the stage with respect to the vision compared to the current situation. I think most countries in the region have passed the stage of defining ambitions to implementing plans. What you said, basically turning vision into action, which is actually the situation. So what we've seen in the last 10 years is really a massive trend. We really have to consider that I would say a dozen of countries in the region have formulated their vision, formulated their strategies, creating their national space agencies and programs and so on. So many, many, many countries. And now they are turning into these action plan, implementing their roadmaps, creating their national champions, developing their national roadmaps, and orchestrating these investments, these government investments to develop this ecosystem, develop the market. So I think we are in this transition phase, and within the next couple of years, we will see the first results of these implementation plans. I think that's going to be interesting.

So that's just to indicate first that we have shifted from this formulation of objectives to implementation of plans. Now, with respect to space economy, space markets and so on, we are still in a sector in an ecosystem that is very much dominated by independent from government investments. That's number one. This is true worldwide, but it is even more true in the region. Government investments have doubled in 10 years, so that shows the dynamics. I think we are reaching around 2.5 billion, and I think we are going to be close to four billion by the end of the decade. So strong increase in this government investment to organize and to develop the market. But even if it's raising, if it's increasing, these investments remains low compared to international standards. Just a ratio, if you take government investment in space on GDP, in the US, it's 0.25%. In the Middle East, it's 0.05%. So you can still see that there is room for improvement on this side.

On the space economy at large and space market at large, the region accounts, I think, from around 8% of the global space economy at around \$45 billion, and we can go into the details later on, but this is growing at 10%, and this is essentially driven by applications, SATCOM, SATNAV earth observation, which is not surprising. This is where the money is, and this is where the growth potential is the biggest.

John Gilroy:

Steve, let's talk a little bit more about investment here. So what types of investors are becoming most active in Middle East space deals? Sovereign funds or regional telcos, global VCs, and how does that shape the kinds of satellite businesses that can succeed?

Steve Bochsinger:

Yeah, that's an interesting question because everybody sees the Middle East as a financial hub, including from space investments. And you can see many Western company turning into funds in the region, whether sovereign funds, corporate funds, family offices to fund the series ABC, because of the financial power of the region. And said the reality is a bit different. The funds, and especially the sovereign funds, have been essential to structure and finance the development of the national ecosystem, and especially national champions.



You take PIF with NSG in Saudi, you take Mubadala with Space42 in the UAE, you take OIA in Oman with Oman broadband. These funds are the financial arm of the government to implement the vision. So they have been active in supporting the implementation of the space strategy through these national champions. But outside this, they have been quite conservative in investing in other opportunities, especially overseas, just I think because space doesn't match really much with their investment profile in terms of deals, size deals, in terms of risk profiles and so on.

Now, the type of funds and framework, financial framework, which I think is more active and going to be even more active, start to be active and going to be more active, are corporate strategic funds such as, for instance, SDF with EDGE, Aramco Ventures, NSG in Saudi Arabia is developing its own venture as well, because they have this financial arm to develop the capabilities for their own company, for the corporate development, for the capability building at corporate level, and they are starting to be active in space. And we have seen, for instance, SDF investing in Ramon Space, recently US company.

So for the moment, I would say rather more conservative that's what people think and very careful in investing. And I think the corporate strategic funds are the ones that are going to accelerate their funding because they are attached to companies that have ambitious strategy with respect to development of their space capabilities and space portfolio.

John Gilroy:

You used the word sovereignty. I think that's kind of a hot topic in many areas of discussion today. So how are countries in the region balancing this need for national sovereignty and security in space with the desire to attract foreign investment and international partners? That's a push-pull there, isn't it?

Steve Bochinger:

No, I don't think we should oppose the two. National sovereignty and international partnerships on the contrary, I think come together, especially when you don't have the national capabilities to develop your sovereign solutions. Most countries is not specific to the Middle East, but it's also true and very much true in the Middle East, but most countries have relied on foreign partners and foreign suppliers to develop systems, sovereign systems, always in the spirit of building capabilities and progressively get the know how and the technology to develop their sovereign solutions.

So they actually require from the contractor, from the partner, to invest in the country, to develop the skills, to develop the knowledge, to develop the technology that will progressively lead and conduct the country in having these sovereign capability solutions. You take example, for instance, of Turkey, you take Egypt, you take UAE, the international partners, often European, have been essential in fulfilling these sovereign capability developments through contracts, through investments. And today in these countries, are able to manufacture to be self-sufficient and self-capable of developing between 60% to 100% of satellite missions because of these partnerships. So again, for me, this is not one or the other, this is one and the other altogether.

John Gilroy:

I think I looked at your background, you spent about the last decade just diving into the Middle East here. So Steve, what makes the Middle East a compelling region for international space partnerships compared to other areas in the globe?



Steve Bochsinger:

That would be simple answer. I don't think there's any other region in the world where you have high requirements, pro business environment, political vision, and financial wealth. If you have these four elements, I don't think you have that elsewhere these days. So that's not a mystery why you have all the companies and all the agencies-

John Gilroy:

No.

Steve Bochsinger:

... coming to the region to find opportunities for collaboration at institutional level and at commercial level. In the past, you may have the money, but you did not have necessarily the vision, or you have a kind of combination, a magic combo, I would say, of factors.

John Gilroy:

So Steve, how are national space strategies, we mentioned the companies, Oman, UAE, and maybe even Saudi Arabia, how are they shaping opportunities for satellite operators and service providers?

Steve Bochsinger:

I think they do so because they identify all downstream applications and services as a key element of their strategy. They all have their own strategy, they have their specificities, their own objectives and rationale and so on. But at some point they have some common areas of interest and common objectives. And one, which is one of the top, is developing commercial solution, catching business opportunities, and building a self-sustainable ecosystem at some point, reducing the dependence to government investments. And if you want to do that, you need to invest where the money is and where the money is downstream. It's 85% of the market value in space, business is in applications.

So they all have somehow a strategy to develop ecosystem, to facilitate the market, to have regulatory reform, to enable the development of these services and take Oman, you take the UAE, you take Saudi, you mentioned them, they all have these objectives. So this is all positive for satellite operators and service providers to develop solutions and have a market that can expand.

John Gilroy:

It looks like each country has a different strategy here. So how do you see competition and cooperation playing out between different nation space programs in this region?

Steve Bochsinger:

Again, I think this is coming together. I will not oppose competition and cooperation. And I think on the contrary that you can only have competition if you have cooperation. Let me explain what I mean. Here, competition can work on the business side, if you are in open market environment. And the reality in the region today is that you have a coexistence of national markets that are not really open to each other in terms of competition. And if there is competition, it's on leadership side, it's on political leadership, it's political competition. You have healthy competition if you have cooperation in the



region. And again, I'm based in Europe, I'm based in Paris, and we know in Europe that we have an open market environment because we have political cooperation, that's where it has been built. And I think that's the same in the Middle East. They will be able to have a true competition, a healthy competition in the region when they will be in position to have true cooperation at political level, at national to national level and cross-regional level, I would say.

And for the moment, the competition is more... The collaboration, I'm sorry, collaboration takes more the form of a dialogue between leading countries, but there is limited joint initiative. So they need to pass that scale and there is obviously politics behind, but you will see competition that is necessary at some point to have more successful products, services, efficient products and services. You will have competition only when cooperation between countries will take form. And for the moment, unfortunately, this is not the case here.

John Gilroy:

So Steve, what parts of the space sector such as satellite communications, earth observation, and maybe even launch and manufacturing, are there key growth areas in this region? Why? Are they key growth areas?

Steve Bochsinger:

Yeah. Yes, hopefully. Fortunately, yes. And I will say many. So that can be a long answer. So let's try to make it short and synthetic. So you said SATCOM.

John Gilroy:

First Earth observation?

Steve Bochsinger:

Yeah. Not necessarily about constellation and not only, but these services represent the bulk of the market opportunities. I say it's 80% of them are the business opportunities in the region comes on the services side. And as part of this, I would say it's 90% satellite communication related. If you exclude satellite navigation, which is a very specific market, not 100% correlated to pure space business. So SATCOM is really the bulk of the market opportunity. It's a \$10 billion total market today in the region. So this is clearly upstream to downstream. So this is really what the bulk of the business is. And because this is a mature market environment, you have established players, you have experienced users and proven market developments and so on. So clearly SATCOM, number one, and there has been developments as well, we may discuss that later on in D2D or in other domains that can provide some interesting prospects.

So I would say first, SATCOM. Then earth observation on the application side, earth observation has a lower level of maturity, but this is true as well. As well on the global stage, you don't have B2C applications, you don't have consumer market in earth observation. So that limits the market potential. And it's more a few hundred million dollar market opportunity today in the region, 300 something million dollar market opportunity. So much less than satellite communication, but this is a very strategic application for governments. So there's also a lot of investment to develop capabilities, and we may discuss that later. So that's downstream. Downstream, I would say SATCOM, 90% market opportunity, and then the rest, and especially earth observation. If you go upstream in terms of developments,



there's been a lot of development recently because of the dynamics from government programs, government initiatives, and commercial system developments as well.

Just to give you an idea, between last decade and next decade, we went from 150 satellite launched last decade to 600 satellites this decade, so from 150 to 600. So significant developments pushed by this vision, this plan, these roadmaps. That creates obviously opportunities for manufacturing. I think market value multiplied by two, it's a billion market. So this is pushing the market opportunities, but because we are still in a market which is in silos with national markets, again, not necessarily open to each other, the key question for the suppliers that are developing capabilities nationally is how you will expand beyond your national market. That's something to serve your national government, but then how you compete international. And this is when there is some, I would say, challenges for national players to be competitive in the global market. So opportunities for manufacturing, but with challenges for market expansion outside the region.

On the launch side, it's a much tricky question. Globally speaking, only a few launch companies succeed and survive. We know that it's a tough market, it's a tough sector. I would say the opportunity to have a fully domestic launch vehicle and technological development, for a moment, I don't see that coming. What we see coming potentially, because that's true, there is no launch option in the region, is the opportunity to have launch sites with partnerships with foreign launch vehicle. And this is what several countries and players are looking at right now in the region. And you have, for instance, Oman, which is actively pursuing some international partnerships to potentially create a launch site in the region, and there's all the other initiatives. So on the launch side, I would say it's more partnership strategy rather than fully indigenous development.

John Gilroy:

5G is a pretty hot topic here, with so much focus on 5G integration and multi-orbit architectures globally. So how ready is the region's satellite ecosystem to adopt these new models at scale?

Steve Bochsinger:

Yeah, another complex topic. I would say for 5G, so 5G and multi-orbit. On 5G, I think it's essentially a direct-to-device question D2D story, and especially on the regulatory side. It's very much linked to regulatory authorization. And in the Middle East, in MENA region, more generally speaking, only a few regulators so far have been in position to approve direct-to-device services. I think we had Bahrain lately, but there are lower level of readiness in the region from regulators to approve the development, the service authorization, and especially the authorization from satellite services to use terrestrial frequencies. So there is regulatory work to be done, but I think there is regulatory... They are maybe more slower on the regulatory side because there is a question of the interest in the country to develop pretty much D2D compared to other regions because the connectivity, terrestrial connectivity in most countries is pretty good. So interest for D2D is not necessarily that pertinent or that urgent compared to other countries. So that's on the 5G thing, which is a very much regulatory question.

On the multi-orbit question, which is different. So GEO and NGSO. On the GEO side, the region has very established players in Egypt, in Turkey, in UAE, in Saudi, and very soon in Oman, they announced the GEO satellite program. So very much experienced and established GEO infrastructure. The question is how you move towards NGSO? And that is a key question because a number of players in the region, especially government and customers, are pushing because for these NGSO development to reduce and



to avoid a full dependency towards foreign NGSO suppliers such as OneWeb or Starlink, [inaudible 00:22:02], Amazon LEO play, and so on. So there is this willingness to potentially reduce and avoid this dependency. The question now is how you build this?

Because for the moment, there is no player with NGSO capability. There is no multi-orbit architecture ready in the region. So far, the strategy has been to work through partnerships such as, for instance, ArabSat with Telesat, Space42 announcing this partnership with Viasat on D2D. Having a fully domestic NGSO architecture is very costly. A multi-billion CapEx. So for Oman strategies, more to work with partnerships. In any case, this move in the satellite industry towards multi-orbit architecture is challenging the historical position in the region of operators relying on GEO. The question is how you mitigate how you manage the potential transitioning. This is a costly potential strategy. And for the moment, again, the strategy is more to rely on partnerships. So we'll see if one or two operators in the region go in a full integrated strategy with their own constellation. But again, it's quite costly.

John Gilroy:

Earth observation and space-based data are increasingly important for climate, agriculture, and urban planning. So which EO use cases are gaining real traction with Middle Eastern governments and enterprises?

Steve Bochsinger:

I won't be very much original there. I would say defense and security. Again, this is true as well, and this is true on the global side. 50% of the businesses in earth observation, it's defense and security, and I guess it's even increasing these days, and this is also true in the region. So half of the business opportunities is defense and security. And in the region, customers, so defense organizations are more and more experienced in using data and services and have higher requirements and one more complex requirements in terms of sophisticated services for predictive analysis and complex analytics and so on. And you have suppliers in the region as well who are developing their capabilities, local suppliers such as NSG and Space42 as examples, and they make as well external acquisitions. And you have as well international suppliers very much like BlackSky, Airbus, Maxar, who are very much present in the region to serve defense and security customers.

So for me, number one, defense and security. Then you have second level markets. I would say energy infrastructure are key pillars, energy because this is a historical user of observation solution for exploration, especially on the exploration side. And they are as well increasing user for environment impact monitoring to monitor the environmental impact and their environmental strategy. So they are developing all the type of needs. And on the infrastructure development, considering the huge, huge urban development plans and then infrastructure developments in the region that is really massive, they have increasing requirements as well for observation data and services to support project monitoring. So that will be the main number three application. Obviously you have environmental impact and environmental, natural resource, climate change. They are also using some free data. So in terms of pure business opportunities, I would put this at the lower level.

John Gilroy:



We'll, Steve, it's January and a lot of people make predictions about the next year, but I'm going to ask make a prediction maybe beyond 2026. So let's look at maybe 2030 and beyond. What do you think will define the success of the region as a global space contender?

Steve Bochsinger:

With that, I want to avoid repeating myself. I think we're closing the loop with respect to what we said at the beginning.

John Gilroy:

Yeah.

Steve Bochsinger:

The region is really transitioning from a period again of defining plans and priorities to implementing projects and initiatives. They are in a delivery stage. Players in the region are in delivery stage whether agencies, private companies, regulators are implementing programs, implementing initiatives to pursue the national visions and national ambitions.

So the key questions for the next few years and for 2030 horizon is the question whether they will be in position to actually deliver and match the level of expectation that was formulated in these national ambitions. In terms of economic potential, in terms of technological autonomy, in terms of national sovereignty. In the next few years, we will see whether these initiatives have been able to deliver these expectations. And depending, and I don't know, nobody knows, but depending on the level of success, that we will see whether the countries, governments will decide to continue, reduce, maybe stop in some countries their investments, because of the return on investment they got from these early stage programs and vision.

So this is why it's really interesting because we are really in this implementation in this. We'll see soon the return of experience in the region. And I would say maybe to conclude, we should not forget and we should not forget that space is costly. Maybe on the opposite of what some people have pushed in the sector with the new space and so on. It's true that you have maybe a lower entry ticket compared to what it was two decades ago. But if you really want to be contender, that was your question, to be contender, to be part of the tier one players, this is more and more costly. And you see that investments in the US, in Europe, in Asia, Russia, everywhere, the top leaders, they are massively increasing their investment in space. If you really want to be a real player, a tough player, you need to invest a lot. Entry ticket may be low, but if you really want to be a sizeable player, this is a massive investment. So we'll see who in the region will be able to follow that pace.

John Gilroy:

Well, Steve, I think you've given the listeners a real good handle on what's going on with innovation in the Middle East in the world of satellites and space. I'd like to thank our guest, Steve Bochsinger, affiliate executive advisor at Novaspaces.

Steve Bochsinger:

Thank you, John.