Advisory Committee on Commercial Remote Sensing (ACCRES)
Tuesday, April 27- Wednesday, April 28, 2021 11:00 AM – 3:00 PM via GoToWebinar

Meeting Attendees

Committee

- Mr. Gil Klinger (Chair), President, Gil Klinger Consulting LLC
- Ms. Krystal Azelton, Secure World Foundation
- Dr. Asha Balakrishnan, Science & Technology Policy Institute (STPI)
- Mr. Payam Banazadeh, Capella Space
- Mr. Gregory Black, National Geospatial-Intelligence Agency
- Dr. Chris Boshuizen, Data Collective Venture Capital (DCVC)
- Ms. Patricia Cooper, Space Exploration Technologies Corp. (unable to attend)
- Mr. Tony Frazier, Maxar Technologies
- Mr. David Germroth, Airbus U.S. Space and Defense
- Dr. Henry Hertzfeld, Space Policy Institute
- Mr. Adil Jafry, Chandah Space Technologies
- Mr. Tony Lin, DLA Piper
- Ms. Pamela Meredith, KMA Zuckert LLC
- Mr. Chirag Parikh, Microsoft Azure Space (unable to attend)
- Mr. Kevin D. Pomfret, Centre for Spatial Law and Policy
- Mr. Tommy Sanford, Commercial Spaceflight Federation
- Mr. Robert H. Schingler Jr., Planet Labs

Special Guests

- Mr. David Gauthier, Director, Commercial and Business Operations Group, National Geospatial-Intelligence Agency (NGA)
- Mr. Peter Muend, Director, Commercial Systems Program Office, National Reconnaissance Office (NRO)
- Mr. Shawn Barnes, Deputy Assistant Secretary of the Air Force or Space Acquisition and Integration, US Space Force
- Dr. Mukund Rao, Adjunct Professor, National Institute of Advanced Studies, Bangalore, India
- Ms. Estelle Chou, Senior Policy and Licensing Officer, Global Affairs, Canada Department of Commerce/National Oceanic and Atmospheric Administration

Department of Commerce/National Oceanic and Atmospheric Administration

- Mr. Mark Paese, Deputy Assistant Administrator for Satellite and Information Services, NOAA
- Ms. Tahara Dawkins, Director, Commercial Remote Sensing Regulatory Affairs and Committee Designated Federal Official, NOAA

Meeting Minutes

Day 1
11:00 EDT, Tuesday, 27 April, 2021

ACCRES Welcome

Mark Paese

- Mr. Paese, Deputy Assistant Administrator for Satellite and Information Services, welcomed everyone to the 29th meeting of the Advisory Committee on Commercial Remote Sensing (ACCRES), and thanked the members of the committee for their service.
- He welcomed the following new members to ACCRES:
  - Mr. Tommy Sanford, Commercial Spaceflight Federation

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He noted that since ACCRES last met, NOAA’s Commercial Remote Sensing Regulatory Affairs (CRSRA) has been working hard to implement the new regulations. Since October, CRSRA has approved 14 new licenses. There have been some bumps in the road with implementation but, with the help of this Committee and its Task Groups, CRSRA has made significant progress including streamlining several of the Tier-3 license conditions. Additionally, since the new regulations, CRSRA has managed to further reduce its processing time by an average to 24%!

He also gave a brief overview of the meeting agenda.

Opening Remarks & Introduction of Committee

Gil Klinger

Mr. Klinger (G.K.) welcomed all of the new and existing members and asked each member to introduce themselves and to provide brief comments on their background.

Trends and Strategies for Commercial Remote Sensing

David Gauthier

Introduction by Tahara Dawkins (T.D.): David Gauthier is the Director, Commercial and Business Operations at NGA, and also the chair of the IC Commercial Space Council. Welcome.

David G: Good morning and thank you to NOAA and the ACCRES members for having me today. I am very passionate about space. In 2018 when I was asked to stand-up NGA’s new commercial business group, I was very excited to improve our security with new forms of commercial dealings. At about the same time I became chair of the IC commercial remote-sensing working group and that also had a charter to help protect national security by reviewing commercial licensing and during my tenure as the chair, I think we all experienced a paradigm shift that was brought about, by what some call, new space; but which really included the rapid growth of a global market for commercial remote-sensing. These advances of the commercial market have driven new thinking about how to protect national security.

We all experienced a slight paradigm shift that was brought about by what some call new space, but really included the rapid growth of a global market for commercial remote-sensing.

So our collective economic security, the space infrastructure we use, and space technology advantage all make it more important to advance our commercial space industry than to try and restrict it in any way. Due to this commercial space nexus within the Intel community, the DNI chartered an IC commercial space council, of which I am the chair. I will discuss this briefly at the end of my presentation.

(Mixup with regard to slides - not sent / received)

My office at NGA creates a commercial reference list that describes the capabilities of 130 RS constellations (over 600 satellites), about ½ of these are US based. The predominant EO (constellation) is Planet, for RF [collection] it is Spire.

We also projected constellation quantities out to 2030. During that time we expect an almost 10x increase (to 5000 satellites). The Rest of World (RoW) will catch up with the US, including China. The US will have a shrinking share of the global satellite pool.
Now, we were recently asked to provide senior U.S. policymakers with a simple overview of the global competition for commercial remote-sensing capabilities and with the Tokyo Olympics coming up this summer, I chose a set of performance markers [similar to the gold/silver bronze medal used at the olympics]. So what we looked at was; who had the best resolution, the best electro-optical persistence, the best MWIR, best SAR persistence, best SAR resolution, best video etc. We ultimately picked nine categories in which to showcase this global competition.

- Does the US dominate? The results were not intuitive, as [foreign] satellites have greatly proliferated.
- But these results were a huge surprise for our policymakers in D.C.
- The U.S. earns top honors in PAN/EO/SAR resolution, but China exceeds in video, in EO persistence, and in HSI resolution. People were surprised at Argentina with (Satellogic) for HSI, S. Korea for MWIR, and Finland for SAR persistence.
- An overall Gold/silver /bronze medal count finds that the US and China are neck & neck.
- (Slides received and projected) (on slide 5)
- Projecting this out 5 years, the U.S. can take home more medals only if U.S. industry is allowed to compete with the absolute best technologies that our industry is capable of building and so therefore we must not restrict our industry in the midst of this global competition, otherwise I would say there would be no gold medals for the United States and no star-spangled banner playing at the podium in the next remote-sensing Olympics.

Knowing that the commercial industry will only continue to innovate and develop greater remote-sensing performance, especially in persistence, we must all plan for hybrid commercial and government hybrid architectures to meet the needs of the U.S. government.

- We recognize that the information advantage achieved from it will come from integrating hundreds of different unique sources and sensors while the numbers of imagery data providers continue to increase.
- NGA is increasingly becoming more interested in purchasing value-added information services and analytic services. This is because we can more easily evaluate and integrate at a service level [the] capabilities higher up what we call the data technology ladder.
- Now I will mention the NGA functional manager who advises Admiral Sharp. He's right now coordinating an enterprise strategy for commercials across the national system for geospatial intelligence. And we are telling our community that it is important they consider and use commercial sources as primary sources for their intelligence production. This means commercials should no longer be thought of as augmenting a primary source. We get to be first fiddle. So I think that is an important paradigm shift and a mindset that we take going forward.

G.K: How is this going over within DoD/across government?

- David G: COVID helped drive move to commercial because commercial & open sources could be used from home, but there is more work to continue to “shift” the use of commercial...All the infrastructure we have in the office in the intelligence community made it very difficult for people to look at open source or commercial sources as a primary use for creating value and information. What happened was that when people were at home all of a sudden they looked to those [commercial] sources as the only source that they could use to continue the mission and that experience has carried forward and has helped shift the culture a little bit. But we still have backend infrastructure work to do to make that integration more seamless, and we have I think a lot of requirements work to do across the department and the intelligence community in order to fully embrace the shift we all know is necessary but there is certainly less resistance because of the experience we had using a lot of commercial sources over the past year, year plus. Hopefully I answered your question.
• G.K: Absolutely, thank you very much.
• Okay. Perfect. So my office at NGA is set up to enable the community with knowledge of commercial capabilities and [to] access to their solutions through a multitude of contract vehicles and licensing regimes. So we sort of govern this rigorous process of bringing the lens of mission needs to our discovery of what is in the market, and assessing the best capabilities that we find there in against mission operations as best we can and then run acquisitions program(s) in order to bring those [capabilities in] and integrate them into operations and we keep all of this information in the knowledge repository for our community so that if we have discovered and done the market research and assessed and evaluated certain parts of the industry, and the Army is really interested in procuring something they can benefit from that knowledge base.
• This is [also] a deliberate change in our relationship with industry - to partner with industry all the way through this process and I think we've done a good job at actually bringing new and unanticipated offerings through the process and into mainstream operations. Some great examples of that would be using commercial SAR to measure the heights of storage tanks and trend those on the level of thousands of storage tanks per week to understand the flows of oil in and out of nations. Another example would be looking at open source aggregator services. We've been able to partner with those and find some real value-added to the activities of interest that we need to be doing. In short - a deliberate change in relationship with industry.
• (Slide 8) While buying pixels has moved to NRO (Enhanced View and Planet contracts etc.), in the last decade, new types of imagery have been purchased by NGA (GEOINT platforms) and there is a new focus on commercial geoint platforms solutions, analytics, and services (vs pixels).
• (Slide 9) - There is a great increase in analytic services and more RF data. Commercial RS is diversifying and “we” have to keep up with that
• The last thing I’d like to talk about is the IC commercial space council. The council caps the 4 working groups (WG); 1) the Commercial RS WG (CRSWG), 2) the commercial RF WG, 3) commercial space operations, and 4) outreach & engagement …
• We needed something like this council because commercial activities and opportunities in space have expanded well beyond just remote-sensing and they needed a form of experts to coordinate our efforts and inform policy and strategy discussions. So we find it really useful to have this arrangement and you can see the intelligence community uses their understanding of [the] space industry to recommend strategy and policy and then supports the space industry to be responsive. So I think that third bullet gets that mutual support, which is a new focus based upon the latest round of policy and rulemaking that have occurred under the leadership and guidance of the Department of Commerce, NOAA.
• Going back to the chart that showed the medal winners for the nine different categories - you can see a multitude of flags [of countries] from around the world [that] are engaged in this community of commercial remote-sensing and we are really thrilled to be able to showcase what that global competition looks like. Why it is important to the health of the industry and why we need to really, you know, sort of unleash our technology advances and enable them to market. That concludes my briefing. Thank you very much.

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• G.K: How did you adjudicate Gold vs silver vs bronze levels?
• David G: We used the market research we do in NGA, and worked with partner agencies to verify our research agreed with theirs. NASIC evaluated the RS instruments. So we had quite a few eyes on this and feel pretty good about it.
• G.K: Were the results a surprise?
● David G: Yes, policy makers believed the U.S. was dominant, but this is not accurate, foreign sources are eclipsing us.
● R.S: Love to see this medal podium over the last 5 years to see where the trends are going…
● G.K: Other questions from committee?
● G.K: [It is] troubling to look at SAR persistence and other frequency bands from a national security and national economic perspective. If this was a trend vs a snapshot there are some very serious questions the IA needs to ask itself. I can imagine getting this (ppt) cleared for release must have been challenging. [We did get the slides but we had a firewall problem.] I would be interested in your or the committees thoughts - what are the messages that are coming back to us when you look at slide 4 (medal slide)
● T.F: So I had a comment and then a bit of a question related to this topic. There is U.S. competitiveness with global competition, but then there's also, what is a U.S. capability and on the other hand what is a true commodity and then something in between, which is, how do we partner with different allies on this journey. So I'm curious [what] your thoughts are given all of the focus by the administration and also the strategies around working with our partners more collaboratively in regions like in the Pacific, how that could factor in and how this would look over time if we take it through kind of a global competition analysis.

● David G: Yeah, that's a great comment. And you are right on the money with the idea of [establishing] partnerships. And I mentioned that functional managers are coordinating a strategy for our entire enterprise. And that is not just, you know, U.S. partnerships but also allies and others. So, when you look at a chart like this, that is an immediate response that through allies and partnerships we can really put together some amazing capabilities and so I think that that is a fantastic comment. I’ve also seen it in industry where companies are now doing more to partner where they can bring their strengths together to create a sum that is more than the whole of its parts. Or a whole that is more than the sum of its parts. So I think that is an important point, and thanks for bringing that up.

● R.S: [I] loved the perspective on commercial but concerned about sufficient culture change. Some longer term programs are hard to change to favor commercials. How do we partner in a new way, innovate - how will we create that culture change in residents?
● David G: We are concerned about requirements, acquisition cycles are long. Institutional momentum is hard to push back on. Some amount of “show the government what you can do and they will believe” is helpful as you will get “pull” from the analysts. So, push from the top (policy makers) and organic pull from the bottom will help move the entrenched middle.
● K.P: I guess I have two comments. One is I wonder how much of what we are seeing is simply a function of the globalization of space and technology and the way things are developing in a whole host of other industries and sectors as well? Also, from a government security standpoint - I think Gil mentioned sort of two aspects, both national security and economic security, which area is important for the U.S. to be a leader in? And then the second part of that is what are the impediments to us getting there? Is it a demand side? Is it the supply side? Is it a regulatory side? Is it a combination? It seems to me those are sort of the next step associated with this but those are just some of the thoughts I had when listening to your talk.
● G.K: Dave, one thing I want to emphasize for everyone, the committee members and especially for members of the public who are tuning in here, there are very good reasons for the processes, the procedures and the security requirements associated with taking material that is very frequently inherently classified and/or otherwise needs to be protected and making it available for broad public
access and use and those of us who have worked in the government, in this business, you know, it is a fact of life. And it is, in fact, part of the responsibility of every person in uniform and every civilian in the government to protect those things that are critical to national security. So, I bring that up because what Dave and NGA have done here for the committee and for the public is an enormous service in making available this information and going through what was certainly a difficult and laborious process. So on behalf of the committee, Dave, I just want to thank you and your team for that because this is really a terrifically valuable presentation and really a wealth of information that is certainly helpful, I would imagine helpful to your colleagues in the government but certainly enormously helpful to the committee and to NOAA and more broadly useful to the public and the members so that on behalf of the committee, thank you for that. And, you know, conscious of the time, the only other thing I wanted to bring up here, not because it is within the jurisdiction of the committee, because it is really not, I'm sure you noted the reactions on the part of some in the industry and others to the memorandum that was sent by the NRO regarding the definition of what will be eligible as a provider for national security purposes in terms of commercial remote sensing and, you know, really my only comment here is to hope that in the context of the committee that you chair, that there will be some sort of discussion about the broader context and the broader framing of the contents of that memo and what happens next and what are the implications for U.S. industry and for U.S. industries whose parent may be foreign flags, but have gone through yet another very difficult and complicated process to establish what is by statute and policy, a U.S. company. And so, you know, I don't mean to put you on the spot but it is just sort of a comment to suggest a hope that that will be something that is taken on by the intelligence committee.

- David G: Yes, you know, we are discussing that policy internally and I'm not really at liberty to disclose anything about that but we understand that there are concerns from a number of folks with that.
- G.K: Thank you for your time Dave, let us know how we can support you.

### Remote Sensing Capabilities & On orbit Activities

**Shawn Barnes**

- Speaker – Shawn Barnes, Assistant Secretary of Defense (ASD) for Space Acquisition and Integration, the Office in the Department of the Air Force that carries out space system acquisition for the Space Force.

- The ASD office addresses organization, architecture, and value of commercial ISR. After the establishment of the new Space Force, 2 offices also stood up at DAF level. ASD Space Policy, and ASD Space Acquisition and Integration. Integration is just as important as Acquisition but what is the best way to integrate is very important. Full responsibilities for the new office, including acquisition authority, will be in place on October 1, 2022.

- A “Big-Eye”, or wide view approach is being used on how to integrate multiple capabilities in the space structure. Considering “3 flavors” of integration for the future. 1- assets from other US government organizations (i.e. the US Army, Navy NGA, NRO, NOAA, NASA and others) 2- foreign Allies and Partners, there is an increasing number of allied nations the bring important capabilities to the table, and 3- commercial systems also which provide a special challenge to integration. We look to innovation in the commercial sector to help bring down costs. Strategic aspects provide us with a roadmap to architecture integration and assists in understanding what the “should-be” architecture will look like.
Understanding the “Should-be” goals can identify gaps and seams in the architecture and facilitate a discussion on what is the right structure. We should have more discussion on how to stay in front of potential adversaries. We are asking ourselves the strategic question: Are we building and buying the right stuff? (vs are we doing it correctly?)

- It helps us to figure out what we should build, buy or rely on others for, helps us makes trades

Q: Where is the DoD going in the remote sensing world?

A: This [commercial remote sensing] is a new world for DoD and DoD is moving more slowly than the IC. Job #1 is providing support to the warfighter. Job #2 is to ensure that we can provide that support.

S.B: DoD has traditionally done four things in space - missile warning, COMM, PNT, weather. I expect we will grow beyond those in the future. There is a growing desire for tactical awareness among the warfighters and that will continue to grow. Capabilities such as JSTARS and AWACS may move to space. If new requirements come, there will be a new bill attached to that. To better understand how to engage with the commercial world we will need to work with the IC, study the IC model and understand the relationships. We don’t do this now. We will look to better understand the short range and long range plans of the commercial sector.

- Thank you for the opportunity to speak.

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Discussion:

- K.P: Thank you for your presentation, my question is for Peter. I was intrigued by the chart: price vs user groups - was that built into your system…
- P.M: We are pricing in … most of our experience is on the EO side. I am looking forward to understanding price differences on the SAR side.
- D.G: You talked about the requirements for a company to be considered viable for imagery sales to NRO.
- P.M: Yes there are many requirements, but we will need to wait for the RFP. Intend to procure from US providers.
- Where is the DOD going in the RS world? The Space Force is at a different place. Number 1 job is to provide support to terrestrial war fighters. Support is continuing to grow.
- Limited budget will be a barrier
- If asked to provide additional capabilities may have to take resources from other services.
- Kevin Pomfret question to Pete Meund – Price and user groups, who has access to what? Pricing accordingly. Does it vary on sensor type? Most experience is EO side. Looks forward to gaining experience on the radar side.
- D.G: question for Pete – Company requirements, have they changed? Need to get to a draft RFP to determine how it will be implemented. Procure from US domestic providers.
- T.L. question to David G. and CRSRA – Confirm analysis was for commercial systems? Difference vs how NGA views commercial and how CRSRA views commercial? NGA views commercial as those
who are selling on the market. Some are considered dual use. Allowed those to compete. T.D. – not new information. Unique way to display it.

- T.D. question – Was there consideration to NOAA licensees who have foreign parent companies. What flag were they given? The Finland flag was ICEYE Finland. French flag was for Airbus. How to view NOAA licensees with foreign parent companies?
- R.S. question for Pete – EOCL acquisition, intend to award close of FY or CY? Leaning towards the calendar year.
- A.B. question to David G. – How would you redo the study looking forward? David G: Did look forward and forecast based on what we know today.

The Intelligence Community ongoing efforts to acquire commercial EO

Peter Muend

- Peter Muend is the Director, Commercial Systems Program Office at the National Reconnaissance Office (NRO)
- P.M: Glad to be here and happy to give a bit of background: where we are, what our evolving role is and some competitions and other activities that we have moving forward.
- N.R.O is the primary acquirer of commercial imagery for the Department of Defense, the intelligence community and frankly a large part of the civilian sector as well.
- N.R.O responsible for developing and executing strategies to satisfy commercial class requirements determined by GEOINT functional manager (Director of NGA).
- Look at NGA to establish Requirements stability and funding stability
- Commercial imagery acquisition strategy – executed via architecture of national and commercial constellations.
- If there is a commercial source that is appropriate for us to purchase, we will look there first, consistent with all of the guidance we’ve been given and really only build the national systems to meet those more difficult, harder problems where we have to, where commercial industry is not able to step up and make those requirements for security or other reasons.
- Building towards a hybrid architecture
- Numerous operational contracts, primarily with electro optical systems...want to increase with more systems and phenomenologies in the future to increase overall flexibility of the architecture
- Nexview integration study contracts with Capella and Hawkeye 360. License carried over from previous NGA contract.
- Restrictions are in place. Understand companies need to make money.
- Subscription service w/ Planet. Dove-class and Skysat. Taskable Operational contract with access to BSG global constellation
- Emerging electronic interfaces with each of these providers.
- Consume back into architecture for all use cases.
- Commercial imagery during COVID was proven to be very useful for personnel at home still able to do their mission. Able to operationalize it to another level.
- Electro optical commercial acquisition – longest program in record. Intend to put out a RFP soon. Intend to award multiple contracts to U.S providers.
- Unclassified ARC has its challenges. Pushing forward as much documentation as allowed
- EULA, Family of licenses, not just one. Developed a new construct of EULA
EULA made concise and building out architecture to handle licenses. Precluded from going to places that would violate license.

As they buy it perhaps can share a common architecture

Commercial radar acquisition – eager to move forward with radar study contracts

Integrated GEOINT architecture. Automated architecture. Able to get as much out of both sides of architecture, classified and unclassified. Able to incorporate emerging vendors and diverse phenomenologies.

Able to get more out of radar architecture to include what is available and the utility of it.

Updates to the Global Remote Sensing Market

Welcome Carissa Christensen, CEO BryceTech

CC: Good afternoon, pleasure to be here

The report I will present will be public in ~1 month (similar to presentation at Oct 2020 ACCRES but updated for 2021)

(Slide 1) RS systems - operational and planned - Lot of activity (launch, constellation buildout) in 2020

What else did we see in 2020 (stats)?

(Slide 2) investment activity: $25 Billion over 2015-2020

2020 will break records (>7 Billion in investment), of which $3.3B was focused on RS and geoanalytics Co’s. Most of balance focused on launch

SPAC acquisitions provided exits (cashouts) for early angel investors. These SPAC valuations rely on huge growth projections.

Industry went from on average, from adding 100 new satellites per year, to >1000 satellites deployed in 2020 (unprecedented - 3000 overall launched from 2010-2020)

small satellites dominate these numbers - though not satellite mass

What are the satellites being used for? (slide 8) Remote sensing is growing as a % of all satellites launched (outside OneWeb & Starlink - which operate hundreds of telecom satellites)

About 50% of the satellites are operated by 4 Co’s; SpaceX, OneWeb, Planet and Spire. Rest spread over 500 operators

Commercial small-sats deployed 50% SpaceX, OneWeb, and PLanet and Spire (30%)

Thank you, any questions?

K.P: Of the 3000 sats launched 2010-2020, in the future how many new satellites will be RS vs telecom?

C.C: (see chart 9)

K.P: What factors will influence (limit) how many satellites can be launched in the future?

C.C: Availability of spectrum, Space traffic, availability of launch, supply chain, …

R.S: Is this chart (2010-2020) over 10 or 11 years? Planet should be more…

C.C: Good question...

K.P: What are the metrics used to track satellites? Launch?

C.C: Can launch many small satellites on a single launch vs 1 large satellite, this results in more diversity of satellites

H.H: The recent SPAC acquisitions have had (overly) high valuations…what can you say about recent regulatory efforts to tone down these excessive valuations…
C.C: Good question. High valuations are good and bad, tech overall currently has high valuations. The sales projections for these RS companies (such as Blacksky) do advertise sky-high growth - it is a reasonable question to ask where these sales are going to come from.

Committee Discussion

- A.B: How can we help with the implementation of new regulations?
- C.B: - might shoot ourselves in the foot with regards to access to space if there is a debris incident. Be mindful of SSA. Education for operators, regulators, investors, etc.
- Pamela M: - What happened to ITAR? ITAR-free satellites. Congrats to NOAA for inputting very workable policies.
- T.F: - increase in supply while trying to increase demand.
- D.G: - There is a change of paradigm. Clashing visions of what people think it should look like in the future. Make the right decision in the best interest of US national security.
- H.H: - How the commercial data enables IC and DOD to get work done [from home]. How many different types of data are available. How do we become flexible and adjust quickly?
- Pamela M: - Disconnect when it comes to timing and how fast we need to move forward. How to meet requirements and procurement? Are we going to classify foreign capabilities as US if they have a NOAA license?
- R.S: - Next 5 years will look like the last 5 years. Momentum will grow. More civil participation. Gov’t to send a market signal to drive the industry. Give recommendations to White house. Take a look at the Land Remote Sensing Act to see what can or needs to be changed. See what role ACCRES can play.
- T.L: - How does industry relate to NOAAs jurisdiction? How satellite companies directly or indirectly fall into NOAA. Regulations liberally reach systems that are not normal CRS systems.
- T.S: - Would like implementation to be long term effort to ensure we get it right. Would like OSC to be a strong leader and soon. CRS to play a critical role in measuring the world for climate change.
- K.P: - Policy, different viewpoints for DOD, IC, NOAA?

Public Comments

- Q: Anne Cortez via ACCRES.COMMITTEE@NOAA.gov: Just as it makes no sense to send up a satellite without any ability to command, control, communicate with and get data from satellites, . . . Doesn’t it make sense to think that the future will be satellite operators – watching their satellite operate while on orbit – whether they are manufacturing, cleaning up space debris, or otherwise keeping track of the satellite’s operational state and, if that future is likely, how does CRSRA prepare for it?

- A: T.D: – are you speaking to the Non-Earth Imaging (NEI) issue? Largely the regulations focus on commercial remote sensing systems but we do have a NEI protocol and temporary conditions which we will be looking at this year again. If I have not addressed your question, please reach out to us at CRSRA via email.

Closing Remarks

Tahara Dawkins/Mark Paese
Kevin Pomfrett (K.P.) to G.K: “The future ain’t what it used to be” (Yogi Berra). Supply and demand have evolved, but much is still to be done. There are still demands to be filled and many moving parts for the industry. Tomorrow we will hear from overseas regulators in Canada and India. Looking forward to continuing this good discussion at that time.

Ms. Dawkins noted NGA’s (D. Gauthier’s) research and presentation this morning was very useful as we continue to brief our new political team to show that this isn't just NOAA saying things about the state of the industry in light of global competition. To this, committee member’s comments about projecting this analysis into the future and trying to change the medal count, was precisely NOAA’s rationale for the new regulations. As we described in the preamble to the regulations, we recognize this new reality of global competition, and need to limit any restrictions on innovative U.S companies. We don't want to prevent a U.S company from winning gold with restrictive temporary conditions.

There are still bumps in the road but we are working through that...we are adjourned and will pick this up tomorrow morning.

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**Meeting Adjourned, 2:35 pm EDT**

Dawkins

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**Day 2**

11:00 am EDT, Wednesday, 28 April, 2021

**Welcome & Day 1 Recap Gil Klinger**

- Thanked Kevin Pomfrett for taking over yesterday afternoon. Eager to get to today’s briefing, so let’s get started.

**Remote Sensing Space Systems Act (RSSSA) update**

- Ms. Estelle Chou, Sr Licensing and Regulatory Officer, Global Affairs (GA) Canada
  - Thank you Tahara
  - Good morning/afternoon, thank you for inviting GA Canada, always a pleasure
  - Today we will provide an overview of the origins of the RSSSA (Remote Sensing Space Systems Act) and describe the status of the 3-year process that we are currently engaged in to update the Act
  - The Radarsat program in 1998 raised national security, defense, and foreign policy concerns
  - This led to the passage of various Acts, including Canada’s access control policy announced in 1999 and culminating in the 2007 passage of the RSSSA
  - The RSSAA applies when a system is capable of RS. GA regulates both private and public RS systems end-end.
  - Independent review of the Act is mandatory every 5 years. We do not license space launch (working on it).
  - Act is flexible - many items up to Ministerial discretion: Exemptions, additional conditions, period of license, acceptability of disposal plan
  - There have been 2 Independent reviews of the Act since 2007
Recommendations since 2007 - need to be transparent, account for technological advancement, …(slide 5)
Cyber security is a major issue
Reviews indicted more significant modernization of the Act was required
Thus, the current modernization effort was envisioned as a 3 part process over three years (2019-2021)
Year 1 focus - process: training regulators, streamline application review process, …
Year 2 focus: keeping positive momentum despite pandemic
Year 3 focus - staying healthy (note effort was delayed in 2020 - year 2)
Year 1
  o We established an Ad-Hoc Advisory Committee, which made a number of recommendations
  o Satellite registration process - raised by Ad-hoc committee as too cumbersome etc.
Year 2
  o WFH made progress difficult, personnel changes, further alignment with international standards and obligations, impact of new technology, coordination with other space faring nations, ..(slide 11)
  o Result - continued functioning of Ad Hoc advisory committee, praise for the Operating License Application Guide, made decision to edit the Guide vs make regulatory changes, staff training, assessment of new US RS regulation (CFR 960) (note this was delayed to year 3 or beyond)
Year 3
  o Continued outreach, bilateral / multilateral engagement
  o Reduce timeline to get a license, application should have expectation of success
  o Consider new Advisory committee
That concludes my presentation. Thank you
T.D: Thank you. Any questions for Ms. Chou?
T.D: How long does it take to get a license?
E.C: We have 180 days [to issue a license] under the Act. Since 2007 our average time is about 60 days. Applicants do not know when an application is complete however - have made efforts to communicate more openly.
P.M: Thank you for the presentation. We had a problem with licensing an ES, I was wondering if you had considered changing your applications for licensing an ES that is used by other countries? The process seems cumbersome, unclear if / when a ES needs to be licensed?
E.C: Thank you. Good question. The RSSSA is a bit unique in that it regulates end-end, but the Act is flexible. We look at many aspects - the business applications, the country(s) involved. It takes time to research the various entities and the people involved. We hold bilateral meetings as part of this - this takes time. We are learning from consultations with foreign counterparts to improve the process.
P.M: Do you have industry (that is impacted) input to improve your regulatory process?
E.C: Yes - the Ad Hoc committee includes industry members, we obtain feedback and engage in international forums to see what users need and to get industry/user feedback.
Tony L: My understanding is that GA treats RS beyond remote sensing. Can you share what all is covered.
E.C: The Act focuses on the sensing capability, not the application. AIS is one of the strange applications that is regulated under the Act. There is a need for a general Space Law in Canada. We have to seek legal opinions to see if they fall under the Act.
T.D: That is similar to how we do things in the U.S.
- T.D: public Q: With this relook of the remote sensing rules in Canada, is there also going to be a review of the global areas that have imaging restrictions?
- E.C: Yes - that is part of the review. The review involved a broad consultation across GOV Canada including our counterparts. We try to regulate in a similar fashion as our close allies.
- G.K: Can you comment on the [new] U.S RS regulations. What do you think of them?
- E.C: Thank you - you ask very good difficult questions. With the review of the U.S regulations in the year 3 tasking, we don’t have a good enough understanding to give an opinion yet. But, we hear that the industry seems to like it. The Tiering system is appreciated. It’s like our exemptions.
- E.C: We have learned the importance of consultations with (the U.S.) and plan to review the new regulation before we coordinate licenses that fall across the two countries and we can then provide an opinion.
- T.D: Can you explain how you (GA Canada) and CRSRA work together on dual licenses?
- E.C: Sure, so when we have an application that crosses both jurisdictions, it was a crisis due to the timelines and different licensing regimes. It was a lot of work to get rid of duplicative conditions. We really need to regularize our consultation to handle these cross border licenses.
- T.D: Thank you again for your presentation, Ms. Chou.

Remote Sensing Regulations in India

Mukund Rao

- Vast experience in remote sensing
- India has its own satellites, launch vehicles. India has a wide range of space capabilities
- Private EO is the top of the policy ecosystem.
- They also screen or mask sensitive areas...i.e. GEAs
- Liberalised mapping, surveying and GIS applications
- PAN, SAR and MSI capabilities
- 5 day revisit capability
- Size is 700-1500 kg
- Impacted by gov’t/private ownership, blurring of boundaries of military and civil systems, performance uplift, growth in actors and variety of data, EO driving GIS expansion, easier and wider access….cell phones, open access for high quality data, big data, small sat revolution - high res, high cadence, assembly line production
- Indian way ahead - GEO orbit 50m resolution (new fleet), 3rd gen system - improving coverage/revisit, wide swatch 10-20m imaging, 1-2 day revisit, 5 MSI bands standard imaging, Thermal and HSI coming.
- SAR - bands C, L, S and P bands
- Maintain cutting edge tech in EO
- Maximise Indian HR and manufacturing capability
- Policy on international collaboration
- national security guidelines
- Gov’t investment/procurement assurance policy
- Need Holistic EO/GIS policy
- Need higher end value professionals
- Match and surpass “state of the art”
- Position EO policies with present day needs and standards Promote Indian private entrepreneurship and innovation to build/own/operate EO systems for India and global market
- Reinvent approach to Indian EO that brings long term vision and strategy for developing EO for next 20-25 years

Futures Task Group Report Out  

Tony Lin

- Greetings and thank you. My committee presentation today is a repeat of the last ACCRES presentation.
- The question is whether this working group should continue or should be finished.

The goal for the working group was to look at upcoming future commercial space activities and then assess what the regular new regulatory framework might be appropriate for such new activities or will the current regulatory framework suffice.

- It’s difficult to predict the future and understand the emerging technologies. Perhaps we did not capture everything in the group but did identify a number of that may be coming in the near future. We took a quick look at the 10 to 20-year horizon in space activities.
- The U.S. government has had a significant role in the development of new technologies.
- Such technologies examined were:
  - Space based solar power for Earth
  - Orbital propellant depots for refueling
  - Kilometer scaled space structures
  - Active debris removal
  - Scientific data collection
  - Cislunar and deep space remote sensing
  - Commercial PNT
  - In-space nuclear propulsion
  - Activities deemed too dangerous on Earth

- Next the group looked at possible regulatory frameworks for such activities.
  - It would be covered by the NOAA regulations
  - It could be covered by the NOAA regulations
    - Orbital propellant depots for refueling
    - Kilometer scaled space structures
    - Active debris removal
  - It is regulated by another agency
    - Scientific data collection
    - Commercial PNT
  - There is currently no regulatory framework
    - Space based solar power for Earth
    - Cislunar and deep space remote sensing
In-space nuclear propulsion

- NOAA’s regulatory framework is focused on Earth remote sensing
- NOAA and policy makers need to consider if additional efforts may include statutory changes to ensure that there will not be any regulatory gaps in the future.
- G.K: - What are your thoughts about this working group?
- T.L: - I’m not sure if there’s further analysis we can do here on this topic. I think we’ve come to a point where we don’t know if it’s ACCRES place to analyze whether or not NOAA should have jurisdiction over certain matters.
- A.B: - I think that this is an area where this group could potentially keep an eye out for things in the future to think through possible future needs. I agree that policymakers on the Hill need to weigh in on what is within the purview of CRSRA. I would advocate to keep the working task going. I would be interested in having further discussions on this so we could think more about it.
- T.L: - Thank you for weighing in on this. I think there’s value to the group. I’m not sure if it needs to be updated every six months. Maybe refreshing every year or two to cover things we didn't see a year ago.
- A.B: - I think it would be helpful to CRSRA to let us know and understand what licensing requests are within the jurisdiction of NOAA for them to regulate because there seems to be gaps in the regulatory scheme where not everything has a place.
- T.D: - We will get a license application and we determine if it’s outside of our regulatory authority because right now we’re the only licensing authority for applications for systems with a camera on it. We regulate the camera but not the other functions of the spacecraft 9 times out of 10 it’s a new technology we don’t have jurisdiction over. It goes away for about a month and then comes back to us to look at again. NEI is one thing we promise to continuously look at to understand if we need to regulate it. There doesn’t seem to be anything controversial that we are regulating this.
- Thank you for the update. What is the problem this group is trying to solve? Do you think it’s just a solution looking for a problem?
- T.L: - We wanted to take a hard look at the future of space and assess whether or not the current regulatory regime is properly situated to address these new space services a lot of it touches on national security and related matters. I think that was our direction for the working group.
- G.K: - Technology outpaces policy in space and specifically remote sensing. Implications for U.S national and economic security and foreign policy especially for U.S industry have been significant if not profound. There has been a tendency, and this is my perception, when I was a federal government we always dealt with a shark closest to the boat. When a company would appear with a new remote sensing technology, immediately the first thing that happens was things slow down dramatically and from the federal government viewpoint for national security reasons, but from a business standpoint that can be very problematic. My thought for looking at the future was to try to see how far we can look out to the edge of what we see happening with respect to changes in space understanding those issues that reflect directly on remote sensing to better understand what affects NOAA’s CRSRA regulatory responsibilities.
I can put this before the committee to understand if this is something that needs to be regulated. Understanding the statutory authorities of NOAA or if further changes to those authorities are necessary. How do we go about thinking about this systematically so we are not caught flat-footed?

G.K: - We in the U.S government inter-agency and industry are at some level on the receiving end of the regulations and that was my point. Also when I think about this activity in the future It ties to the future of the Land Remote Sensing Policy Act and any modifications that might be considered. Any changes that may be needed are going to be made. Those changes could account not only for the advances that are occurring but also considering the trends we see. Therefore the review of the statute could take account of trends because it is so difficult, it’s very hard, to change a statute and equally difficult in certain respects to modifying policy.

Greg Black (G.B.) - I don’t have a lot more to add to that. I got a lot of value added presentations yesterday that showed the landscape and a picture of what is and some folks think about what is to come and talk about the development of something like a roadmap. I do see some intersections between what the committee is doing and what the committee might do in the future and whether or not it’s a likely committee issue. Maybe there’s a way to capture what is updated here and present it on an annual basis for instance in a roadmap?

E.C: Have you considered even NOAA regulations could be stretched to cover missions of new technologies that were not intended to be regulated under existing NOAA regulations, what additional support NOAA would need to cover these new types of missions?

T.L: - That’s a good question. There are two general responses to that one. If it exceeds NOAA’s regulatory statutory authority additional grant of authority would be required to regulate that activity. I think the grayer area, one with which maybe you should probably be most concerned, is the interpreting of the regulations in such a way that would include new space activities. That’s something worth tracking or keeping an eye on. I think those are the two general areas that the committee and NOAA could tackle together.

R.S: - Thanks Tony. I think we should look at our working groups here at ACCRES especially with a lot of new members. We can come up with some kind of priorities for the year like a couple specific things that would be recommendations to move forward on behalf of the committee. I’m an advocate for keeping this task group. I think it’s good to have a place where we can envision or look toward the future. The second thing I would say there’s a similar working group that is being formed at USGS playing a similar role in accelerating commercial remote sensing so that might be a tie-in between the two FACA committees. I look forward to hearing all the rest of the updates to make sure we have the right working groups and invite all committee members to participate.

G.K: - Thank you very much for the presentation and in the interest of time will address this topic later on during the group discussion.

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**Data Availability Task Group Report Out**

Henry Hertzfeld
H.H: Thanks Gil, I’ve been on the Implementation group, we have not had a Chair. David Langan left this committee at the end of the last ACCRES period. We have not met [since then] and I do not have slides.

We hit a roadblock early on, and this hits on a definition problem. “Data availability” hinges on items that restrict them. This overlaps with the Implementation Working Group that we will hear from later, and also need to look at the LRS act (1992). There is imagery coming from an instrument (not a system), commercial availability is not defined in the Act - gov’t or commercial, but commercial can mean different things in foreign nations vs the US.

Also the definition of systems: NOAA has a long list of what the U.S companies have, but no insight on what foreign is, not of enhanced data or when data can be combined with other sources or systems, so we are really hampered by [lack of] definitions. So back to the original recommendations; 1) to abandon the … treat foreign systems as dual use systems 2) grapple with getting adequate data of how they evaluate their system.

We’ve come as far as we can go w/o more clarity and recognize that technology is changing so fast that NOAA may be outdated for what it is supposed to do. I suggest we look at this in light of what is being done on other committees. Or to look at the 1992 Act carefully to see what changes might be done to better address these issues. May be advantageous to fold [the work of this] committee into the Implementation Working Group.

T.S: Quick comment,. I completely agree with your assessment Gil. It applies across government wrt commercial services.

**Synthetic Aperture Radar (SAR) Task Group Report Out**

*David Germroth*

- David Germroth (D.G.). - The SAR task group reported out they looked at the parameters for benchmarking the SAR systems. David, Payam, and Greg were the working group but they had support from actual industry for input.

- The NGA team that got involved during the benchmarking issue was very helpful. It's important to keep our purpose in mind so thanks to Gil for that. We started the work group to look at the current barriers to US commercial SAR and see what we can do to nurture the industry to reverse the conditions that made it difficult for US SAR in the past.

- The group worked to understand what might be some of the proper parameters to assess a SAR system.

- Different parameters such as azimuth resolution, range resolution, spatial resolution radiometric resolution, slant range were looked at and the group considered whether it was one parameter or a combination of those.
● It seemed that slant range resolution was a common parameter amongst all systems although there are a lot of other dynamics that play in there.

● Did agree that range resolution didn’t really tell the whole story about the quality of the products coming from the systems.

● G.K. - Can you provide us with a definition of slant range?

● D.G: - Slant range is the distance between the actual sensor and the actual ground.

● D.G: – The group used the so-called Shannon-Hartley method for looking at slant range which considers the band of the system and the signal to noise ratio of the system. Where \( C = \text{Blog}(1+\text{SNR}) \).

● The group considered what the information density of an image looks like. Basically, we all agreed to go out and see if this new formula, would call it a neo radar NIIRS works.

● For the formula/concept to work, everyone has to have the same perspective on SAR. There needs to be a single definition and also agreement on the information required to calculate would be available not just from U.S. companies but also from Global providers.

● Addition to the benchmarking issue we still have to understand what the global competition marketplace really looks like because the foreign systems have a 25 year lead on developing systems. We need to understand what the actual competitive edge looks like for us, it includes addressing traditional and virtual constellations, advanced capabilities, and any realistic nextGEN capabilities such as bistatic data capability and systems.

● These are all things we need to look at when considering the competitive nature of the competition carryover from us are working group 1st are working group

● We haven’t really figured out how the U.S. government can support the SAR industry in the U.S. so we can develop systems that would go toe-to-toe with the foreign systems.

● Actually, it would be better to leapfrog the existing technologies that are commercially available that are in the foreign market.

● T.D: - We need to really compare apples to apples when it comes to SAR when it comes to benchmarking and work preparing understanding what the U.S. can do against the global community. Also when we’re tiering an initial SAR application we are comparing the best capability of your system to products available on the global market. We’re not comparing U.S. capabilities to foreign capabilities, we're comparing it to what U.S. competitors and what foreign competitors are actually selling.
D.G: - I think with the cooperation of our colleagues from the NGA we’re moving in the right direction.

T.D: - We can get information from all providers in the U.S. in the application process but can we get that information globally? It depends on what the definitions are and how we apply them.

I want to get direction from the committee and then we can understand this and discuss with the committee I’ll be able to ask that information. The question is whether not we can get the same level of detail for a system that is not under NOAA’s authority.

A.B: - In the recent world radio communications conference we have looked into the issue of the protection of certain spectrum that can be used for SAR and what impact it has when such bandwidth is not protected.

D.G: – The SAR community is working very diligently together to look into the spectrum issue. There’s a global effort to build enough support.

G.K: – With commercial SAR there is no doubt there are significant challenges in producing a useful regulation with consistent benchmarks.

Industry can plan better using consistent regulatory framework but also having a consistent framework NOAA can use to meet its regulatory responsibilities.

There’s an elephant in the room that is the unresolved discomfort that the national security community has with commercial systems.

The inter-agency community inadvertently put the brakes on the early development of U.S. commercial SAR industry we are now nearly 10 years behind the competition we are clearly behind as we say we’re getting further behind but yet any conversation with a national security continues to have a first reaction that constitutes hand ringing for the elimination of national security risks associated with any regulatory framework.

G.K: - There are real national security to be addressed here but let’s assume for the sake of discussion we know what the industry may come up with a standard for the regulatory framework that met requirements that both industry and NOAA needs, that’s only half of the problem the other half is that there needs to be a fundamental reassessment for the need of risk management instead of a risk avoidance-based calculus when it comes to this licensing framework.

D.G: - To nurture the SAR industry the government has to provide some kind of support. Industry needs to look at leapfrogging technologies over the existing commercial systems out there globally.
outside the U.S. is it these issues that need to communicated to the government if they seriously want to nurture this industry.

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**Discussion:**

G.K: Thank you Dave. Let me start with the committee members. This is a topic about which there is a lot of discussion and I’d be interested to hear from CM about what they thought about Dave’s presentation.

T.D: I’ll start. What CRSRA would like is a way to compare apples-apples when it comes to benchmarking the US against the global community and to tier companies in the US, we are comparing the best capacity against the foreign competitors are actually selling.

D.G: I agree Tahara, we are heading in that direction, with the cooperation of our colleagues in the NGA, the question is can we get the data we need to perform the calculation.

T.D: Once we get that definition.

C.B: I want to jump in on behalf of Payam. We are very familiar with the go-to market approach of SAR companies. Unlike EO marketing, SAR is still very nascent. I think the U.S. companies really need to focus on informing and understanding the market. They need to improve the quality of their product, get to a use case that the customer wants/needs.

E.C: Thank you Gil. In the recent WRC, there were discussions about using SAR spectrum for telecom (5G). Are you looking at protecting the spectrum? What would be the impact of losing spectrum?

D.G: This is one area where the global SAR community is working well together, we have enough support to protect the spectrum - and we have support from the military community.

G.K: SAR has inherent complexity in creating a flexible, consistent, transparent regulatory structure that NOAA can use to meet their regulatory responsibilities. But let me put that aside and discuss the 800 lb elephant. The U.S. DoD has discomfort with commercial SAR as a general matter. I was a member of the general community that put the brakes on the early development of the US SAR industry. We are behind and getting more behind. Any conversation on the national security level results in hand wringing about national security risks. I do not deny the risks that need to be addressed. ½ the problem is getting a usable regulatory structure, the other ½ is the need for a risk mgt vs a risk avoidance approach to the licensing conditions. We need balance between turning [the SAR] industry loose vs protecting DoD. Usually the IC is the angel here. What I know is that … including a metric of whether a company is a viable company during the licensing consideration should not be considered. The USG is not good at this. Greg what are your views on this.

D.G: Agree - USG should not look at the viability of a company. SAR [the SAR market] is inherently governmental - we need to do what every other country has done, which is to subsidize the SAR industry. A USG report on SAR from 7 years ago said that: 1) the USG needs to provide anchor support to commercial SAR, and 2) the industry needs to look at leapfrogging technology.
G.K: There will be new forms of RS and it would be more damaging to U.S. natl security if the regulatory framework looks like it did in the past for SAR.

T.D: We (CRSRA) do not look at company viability when we tier/license.

G.K: I was not speaking about NOAA but about a mindset. SPD-27 calls upon the USG to create an environment where US industry can become dominant, but that policy guidance is not how the USG/DoD approach conditioning licenses. Managing risk is different from elimination or avoiding risk.

T.D: Any further questions? I have a question from the public. “Can you comment on importance, when assessing data on different SAR systems, to assure that data received is a “single shot” as opposed to a post-processed multi-look aggregated image from starting mode?”

Also, can you comment on the importance of SAR constellation is not just about resolution but like one of the criteria that Dave Gauthier from NGA mentioned yesterday is the frequency of revisit?

T.D: Yes we look at different characteristics. including revisit. Let me check with my experts and get back to you.

**Implementation Task Group Report Out**

**Kevin Pomfret**

[K.P]: I am the chair of the Implementation Working Group. Here is a list of our members as of December 2020. Hat’s-off to the working group, the work was interesting and everyone participated.

[Let me] give you an update on what the terms and references are. We are the implementation working group. There is probably an opportunity for a spinoff task order to merge [or work with] different other groups as a part of this. We do have a broad spectrum of issues to address. We are going to talk about a couple of them but I wanted to work through what those are. The need for clear and transparent guidelines and how [license] Tiers are established. Aligning the conflict between capabilities and foreign operators. It also took on that mandate [about determining Tiers] primarily because Brandon Weeden was on the committee back then. We really haven't made much progress and probably don't have the skill set for that in this group. Next slide, please.

Some additional topics if the time permitted for us. Also, looking at models that can be used to analyze capabilities of new technologies. That Tiering is not just based on sampling data from other parties but actually developing simulations or models or somehow being able to determine that with our own capabilities. Next slide, please.

To Robbie's point we were talking about looking at the Land Remote sensing Act [1992] and whether that needs to be updated. We have some discussions with the Department of Interior's [Landsat] group. They were in the middle of a report which Robbie I believe dimensioned was finalized or approved yesterday. Our thought was maybe after that and they sent that over we would have a chance to review it. Maybe the two groups can work together to discuss those issues. Next slide, please.
Our last meeting was in December. We focused on two particular aspects of the task. What steps can NOAA take to keep current with each development per industry. Next slide, please.

First of all, right after the meeting I do think there were FAQs added to the website, [that we reviewed for] today's call. They are very helpful but I do think they probably can be updated particularly in light of some of the new issues that are arising and new technology and new systems. We would encourage NOAA to continue to use that as a mechanism by which we can go [to obtain information/ answers].

Some other folks were questioning why the actual licenses themselves weren't made available by NOAA. They pointed out that the FCC makes [licenses] available. Again, there are some proprietary concerns and other concerns associated but the response we got in the discussions was that the FCC has a lot of the same issues and it makes the information available. One third aspect of transparency was holding an industry day on a periodic basis. I know that there was one -- probably in 2019. Tahara, correct me if I am wrong. Those types of activities where the staff and industry can get together and talk about various issues, get feedback. The industry can learn more about what you are seeing and what your concerns are. Possibly hold it in conjunction with a meeting so they can participate in that. It is something we looked at a way to increase transparency.

Next slide, please.

The other aspect of this, as we know, is the ability for NOAA to stay [informed] on what is developing particularly within foreign operators is important in the licensing process because of the Tiering. One of the things that would be helpful is a summary of the steps the office is taking to remain current on the website. That is so there is more awareness within the broader industry in terms of what they are doing, how often what they are getting and what they are not getting. That type of thing. That is one thing that came up. I didn't have a chance to look at the website.

This goes somewhat to the discussion on the previous slide. [NOAA provides] more information. I think David talked about this. It came up on various discussions. There are so many different ways to compare apples to apples, oranges to oranges, and having greater insight and what the capabilities are, recognizing that is a challenge for NOAA and possibly to get those. It is something that would be helpful for U.S. companies to be able to know what the foreign capabilities are when they are submitting their licensing and when they are considering what restrictions they will operate on when thinking about building a business model.

This is a literal more than an esoteric one. It is something that has been discussed in some of these meetings. As I understand it anyway, and as folks on the committee understand it, there is a process by which NOAA takes to go out in determining what capabilities they can acquire from the foreign providers. They may be calling it up to suppliers and asking if they can acquire a certain capability and what they can acquire. This point is tied to the fact that if you -- if you are making a big enough acquisition and willing to pay a certain amount of money, you may be able to get better capabilities than would be otherwise commercially available from providers. Particularly providers that are dual-use providing to Gov’t and commercial customers. Building that into the process by which foreign capabilities are determined is considering if we do a different acquisition strategy. If we buy more, if
we buy more often. Are we likely to get a better capability? That is just something the group suggested would be something to think about going forward. I believe that is it.

Thank you, Kevin.

I was just going to ask if we had any questions from the committee. While folks are thinking about this what are your thoughts about next steps for this working group?

I think there is more work that can be done on the implementation and transparency side if they want us to do that. This was a very high level assessment. I think we could maybe identify particular ways to help particularly now that the regulations have been in place for a year and [NOAA has] a team that has a much better experience in dealing with it. I think there is some work to be done and that. I am not sure if that is the maximum benefit we can provide. I think given the broader scope that it does deal with some of the broader issues, even some of the future capability sections. I am not sure if the group has constituted the broader mission it has now. I think it probably needs to be more narrowly tailored and maybe broken up into two groups. I do think the advisory review is an important one. That is one aspect. This is a broader discussion. It relates to what you talked about earlier. That is that NOAA has a certain role in this process. There are certain things that we can play an important role in. I think some of the issues we are talking about, for instance, your discussion about how you change the culture within certain components. Tony Frazier mentioned on the call about different aspects and different triggers or levers on how to make this work. I think this involves ACCRES and our committee included working with other segments of the policy - other communities and other factors. I do think if we want to break through some of these barriers and discussions we have it is going to go a little bit outside of the charter as I understand.

Maybe that is something we have to talk about more and how we may proceed along those lines. Pam, I think you had a question or a comment?

[K.P]: I did have a comment. That was on the public release of licenses and compared to the FCC. Yes, the FCC is open about the applications and the licenses going to public file. The reason is slightly different. The FCC controls access to the frequency spectrum which is a public resource. Their licensing mandate or Touchstone is the public interest. There may be reasons why they should be subject to a higher standard of public release then NOAA should. I just wanted to mention that as a consideration.

[K.P]: We did recognize agencies have different responsibilities and mandates and priorities. I also think it is worth considering. There is not much that is released now. Maybe there are certain things that can be released without impacting the proprietary nature of the technology or the partners that people are working with but can also provide greater clarity to the industry going forward.

Thank you!

Other questions or comments? Carissa? You have a question, I am sorry.
Yes, I do. Thank you for the overview of this working group. I am very interested in how the rest of the committee decides to move forward. I was hoping you could talk more about what you see as a possibility for the land remote sensing policy act. I understand the other group just released the report and I would be very interested in how ACCRES can contribute to that discussion.

I have my thoughts, I guess. We haven't really discussed it within the committee. I don't feel like I can speak on behalf of the committee. With that caveat, I do think it is time to take another look at it given all that has developed from the technology standpoint, a commercial standpoint and an international standpoint. I think it is worthwhile to go through and probably even going to the effort could in and of itself address some of the concerns that Gill and many others on this call have raised over the past couple of days of raising awareness of this technology and the role of the industry and remote sensing for a lot of different things. I am supportive of this process. How we work and how we contribute to the process and also as I mentioned earlier, when the group initially stood up there was only a certain line we can cross -- only a certain line we can go up to. We need to be careful we don't cross that line. Understanding what the limits are and how we can maybe work within them internally or with other groups I think will be important.

Yeah. For the record I agree with that Allied. Obviously we want to stay within the group's mandate but I think this is a good time to be putting out information. Is a good matter of raising awareness and understanding within the government. I think that is an important role. I am happy to support that effort.

That is a good point, Carissa. Thank you for raising that. Tony, did you have a question or comment?

One of the comments I wanted to make is I think this issue of how they engaged with other parties is important. We talked yesterday about the commercial space working group that he is chairing and has interactions across the community. I talked yesterday about how he would bring DOD to the discussion. That is important. I think I addressed some of the issues you raised yesterday and this morning. The other thought is if our goal is to increase the competitiveness in this industry the market is changing. There are many other companies trying to compete. How do we use the focus of this group - how to use that to our advantage? How do we ensure that there is a level playing field in terms of how we compete globally? We were going through the policies that Dr. Rao referenced at the end of his presentation. Within other countries not [just] within India but anything we can market globally would fall under that. Would think that can undermine our ability to get a return on the capital investments we are putting in and creating a vibrant industrial base around imagery. I think we need -- to me, if this work has gone into establishing a framework for how the U.S. is trying to foster the competitive market, we need to make sure they are going that way. It doesn't create headwinds that ultimately we all would be optimizing within our individual markets. The goal is to create a global market. I was going to raise that earlier but that may be a mechanism to move forward.

[G.K]: Good thoughts. Tell me something -- definitely something we will come back to shortly. I want to give time for people to voice questions and comments. I am also trying to keep us as relatively on schedule as possible. Were there any comments or questions for Kevin? If not, I think Tahara will give us an update.
CRSRA Implementation of the Final Rule

- Tahara Dawkins is the Director of NOAA’s Commercial Remote Sensing Regulatory Affairs office
- Please ask questions at any time during my presentation
- Overview slide - This presentation I will focus on our licensing metrics for FY 2021 so far, compliance updates, a quick update on existing tier 3 conditions, we have already gone over SAR so I will kind of skip over that one, and I will go over a little bit on what we are doing with our SAR metrics. Then, we have upcoming and frequently asked questions (FAQ) that we are getting from the industry.
- This is our FY 2021 metrics. We have received 45 initial contact forms from industry. From those 45, we have had 12 license required letters and 33 no license required letters. Of those 33, 15 of them would have required licenses under the old regulatory regime. That is kind of a good news story for industry. To compare this to our statistics for FY 20, our average timeline in FY 2020 was on average 39 days. Right now, I think we are at 36 days. Before we implemented the new regs, our average was 35 days and after the new regs, it was 29. We are kind of maintaining a good healthy timeline as far as processing license actions
- Tier 3 conditions. We went through a 9 month process to update & streamline these conditions so they were more in line with the new regs. 6 of the 16 owners of Tier 3 NOAA licenses accepted the new conditions. Licensees could keep their old ones or accept the updated ones.
- Expiration of temp conditions - 1 year marks the potential expiration of these conditions. DoD will have to provide justification if they need to keep these, this is the point at which we are at - currently awaiting to hear from DoD. We will do this process very transparently.
- Compliance update. Last meeting was just prior to the annual update. (stats discussion). What we want the industry to know is that a company must request a license modification 60 days prior to the annual update if anything has changed otherwise you may be in violation when reporting in October.
- SAR performance metrics. As discussed we are working with the ACCRES SAR WG and other USG experts to better compare apple-apples on a global scale. We really appreciate the SAR WG and the NGA experts. If there is a change per the current recommendations we expect to move some Tier 3 licenses to a Tier 1.
- Upcoming. Cyber symposium May 5. Reviewing licenses for erroneous and missing data. Summer 2021 CRSRA will be resuming on-site inspections. We have 230 active GS that have not been inspected.
- Frequently asked questions. I wanted to go over some questions we are getting over and over from the industry when they are applying and throughout the process.
  1. How would CRSRA like me to report my recent launch? We require licensees to report a launch, detection of an anomaly or of financial insolvency and the solution within seven days. When reporting a launch, licensees are required to provide confirmation of parameters and data collection characteristics. If this information doesn't match what is in your license, you have to provide a license modification request along with your notification.
  2. What should I do if I have information concerning data available on the market from a foreign source that NOAA may not be aware of? If you would like to make us aware of a foreign source of data please visit our website and click on “Tiering” on the left-hand side. We have a form. It is a data availability
notification form. Once we receive your notice we do everything we can to investigate and evaluate the source of the data you provided.

- 3. How do I submit a license modification? This is a question that comes up repeatedly. License modifications must be approved prior to changing material back into your license. Please submit a letter and it can take up to 60 days to complete. We want to make sure the companies are not confused that they make the modification and then inform us. We need to be informed at least 60 days before it takes effect.

- 4. What does license capability mean? Your license capability is a material fact in your license that you are not permitted to surpass in collection or distribution. This is the absolute best capability you can have. If you would like to perform better than the license capability you have to submit a modification request.

- Implementation has been a steady process for us. We are gearing up to make sure we are on track for the regs and licenses. With help from ACCRES we need to understand if the new regs go far enough or need modification. The ACCRES committee has been very helpful.

- Introduction of/ to CRSRA staff…

- Last slide - link to the DOC/DHS Cybersecurity symposium coming up on May 5, along with CRSRA POC.

- I will end on that note, I am open for questions
- GK: Thank you Tahara.

T.L: I have a couple of questions. Can the temp conditions on Tier 3 licenses, or generic ones, be made public. Second, regarding one year after data is delivered to CRSRA - the onus is on the licensee to deliver data. What if no one ever asks them?

T.D.D: On the first one, no. We have no generic conditions we can make public. They are tailored for each license. Maybe we could make public the name of the conditions (category).

Derek: I think Tahara summed it up well. In the final rule we went to custom conditions for novel systems.

T.L: I have seen several licenses and I note that some of the data encryption conditions are similar. Derek: Additional data protection measures are imposed to protect sensitive data. Many of these are fairly standard.

T.L: It would be helpful if companies knew these in advance.

T.D: All companies are tiered and given advance notice of conditions and allowed to respond to see if they can mitigate them. On the 1 year clock, it only starts if we ask the company for data.

T.L: Thanks.

**Discussion**

K.P: To the extent that the temporary conditions can be posted, it would be better for industry. We really need to understand the conditions, and although we have seen them mid-stream, it would be better to understand them sooner than that.
T.D: We are always open to meeting with industry in order to discuss and clarify. As we move forward in the process, we are focusing down on the minimum conditions required. We have to balance standardized conditions in light of actual system capabilities.

T.D: The SAR and implementation groups had recommendations, but SAR is not ready to finalize as they are waiting on additional information from NGA.

K.P: We had discussion items but these were not intended as recommendations.

K.A: As a new member, I’d like to know what is happening with the workings groups.
A.B: I echo what KA just said, would like to get more involved with working groups.
C.B: I would like to be more involved with this community, it has a lot of potential.
G.B: I echo what CB just said...there could be more done with ACCRES, possibly linking up with the LANDSAT community.
T.F: Need to look at all things to ensure that the US leads and how the USG can be more responsive to industry growing needs...how can/should we evolve the committees?
D.G: Praised CRSRA for all its efforts, in particular in SAR issues. We are working together to make fixes, but maybe a new work group on the global competition.
H.H: Technology is rapidly changing, I don’t know that NOAA is doing the best job it can because of their restrictions.
T.L: NOAA needs to become even more transparent, although steps have been made in this arena, regulation changes need to make even bigger impacts. Changing license material facts need to be more flexible.
P.M: I can help on any of the committees, there are areas I still have questions...when does a USG owned system need a license, especially if privately operated? Why?
K.P: We discussed many issues which are actually outside of ACCRES, but still need attention. We need to get the law updated from its 1990’s text.
T.S: echoing others, thanks to all for this meeting. Need to keep looking at implementation as we go forward and not lose sight of this area. Need to review the law and policies (NSPD 27).

Public Comment

From: Joane Stahl (Audience)
Q: Regarding the availability of commercial data on the international market, especially SAR, would you consider data from a foreign EO system that is operating in the market under the restrictions of foreign regulations as "freely / readily and consistently available" and therefore consider the requirement fulfilled to rate a comparable US-system Tier 1?
T.D: - We consider these systems regulated by foreign governments, but only if the data from such systems is publicly available.

Closing Remarks

- Mr. Klinger closed the meeting with a final request for any committee comments.
- He re-welcomed all the new members
- Thank you to CRSRA for setting this up and all your work
- Members to send a list of 1-3 working groups that should be in ACCRES, what is the topic and why. Prioritize the groups you submit as we can’t do everything
- I will boil down the list of inputs, coordinate with CRSRA and then we will determine what groups go forward.

Meeting Adjourned 3:00 pm EDT

Tahara Dawkins