

# Meeting Notes

Texas Shared Technology Services  
Geographic Information Systems Solution Group Meeting  
February 26, 2019 • 2:30PM – 4:00PM

Texas General Land Office, 9<sup>th</sup> Floor  
1700 North Congress Avenue  
SFA Conference Room 940A

Meeting Chair                    Richard Wade (TWDB/TNRIS)  
Co-Chair                         Ed Kelly (DIR)

Participants                    **(Attendees in Bold)**  
Raj Nadkarni (TCEQ), **Scot Friedman (GLO)**, Monica Watt (CSEC), **Vonda Payne (CSEC)**, Felicia Retiz, Gayla Mullins, **Ilyanna Kadich (TWDB/TNRIS)**, **Chris Bardash (TxDOT)**, **Travis Scruggs (TxDOT)**, Jeremy Rogers (TxDOT), **Jeremy Nobles (TPWD)**, Michelle Swindle, Bobby Bruner (Atos), Michael Kersey (DIR), Michelle Valek (THC), Laura Rojas; Susan Seet (CSEC), Jodie Erickson (DIR), Chad Lersch (DIR), Dave Ballinger (DIR), Jennifer Neutzler (DIR), **Jennifer Kirby (TCEQ)**, Michael Chamberlain (TxDOT), **Burhan Girgin**, Terese Shade (DIR), Lorie Ramirez (DIR), Carrie Davie (Capgemini), Dan Otto (DIR), **Brooks Myers**, Greg Smithhart (UT), **Mary Ann Smither (Capgemini)**  
**Guest Presenter: Randy Mayden (Hexagon)**

Conference Number        1-877-226-9790    Access Code: 9101076

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**Welcome and Introductions** (Richard Wade)

**Agenda:**

- Hexagon Imagery Program (Randy Mayden)
- General Discussion (Group)
- Current Initiatives (Group)

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**Hexagon Imagery Program** (Randy Mayden)

- Hexagon AB Company
  - Swedish Company - well known in Europe
  - Purchased Intergraph & Leica
  - Geospatial office currently located in Maryland



# Meeting Notes

- Hexagon Content Program – started in 2014
  - Mission is to create global high quality datasets to meet the needs of the geospatial professional
  - Participate in NAIP as a contractor, but Hexagon Content Program is not NAIP
    - NAIP is 60cm data / Hexagon can provide 15cm data
    - Elevation model used by NAIP for orthorectification is the national elevation dataset
      - Can impact the quality and accuracy of the ortho final generation
        - Edge matching - pixel offset can be up to 8 meters off
        - Possible linear offset
        - Spliced seam line quality
          - Not likely with current technology but possible to meet NAIP specs
    - NAIP is a great service but does not meet the needs of the professional
  - Start with the same imagery but provides higher resolution than NAIP requires
    - 2 Processes
      - Add additional ground control
        - Stringent image acquisition specifications
        - New digital elevation model every flight
        - Pay more attention to orthorectification spec
        - All data goes through Quality Assurance and Quality Control
          - Managed by certified photogrameters
        - **Question:** With regard to additional ground controls, what percentage 'additional' is that?
          - Hexagon did not have specific answer but while NAIP's required accuracy is 4 meters, Hexagon requirement is 1.2 meters
            - Testing done in Aspen, CO rough terrain, verified by independent field surveys at .68 meter horizontally accuracy
        - **Question:** Does Hexagon fly all of those flights for NAIP?
          - Hexagon does not do all flights, but their subcontractors do and they are also NAIP providers
      - Professional program
        - Leading NAIP contractors are Hexagon subcontractors
        - Leading European and US firms
        - Provide 30cm nationwide
          - Provide 15cm/6in in populated areas (>50,000 by metropolitan area)
            - Currently ~250 municipal areas at 15cm in US
        - All data is both RGB and CIR
        - Tile caching service
        - Partners: Surdex, Quantum, Flucrum, Northwest Geomatics (purchased by Hexagon)
          - Premiere ortho image providers as Hexagon subcontractors
          - Compass Data does ground control
        - All partners require to use the Leica ADS100
          - Push-broom scanner collects a swath of data



# Meeting Notes

- Only orthorectify one row of pixels 20K pixels wide
    - Better seam lines
  - Defined requirements for processing
    - All subcontractors required to use same sensor and software
  - Authoritative Data – provide meta-data that comes with all services that Hexagon produces (QA'd and QC'd)
    - Provides the human element to look at imagery collected to find any issues before letting the image go through to final products and provides consistent imagery
    - Update an entire state
    - **Question:** What is the refresh frequency?
      - Statewide: Currently it is every 3 years (30cm) but would like to go to 2 year refresh. For 15cm (highly populated areas only), it is an 18 month refresh but would like to go to 1 year refresh
      - Entire state is flown at 30cm and then when aircraft are available (usually during winter), the highly populated areas will be flown for new imagery at 15cm
        - Two separate flight lines
        - Two different layers within the service
  - Two basic business models to provide imagery
    - Streaming service straight to desktop (WMS/WMDS)
      - Single license – no limitation across US (available in 15 and 30 cm)
    - Physical delivery – take licensed pixels and store on premises
- State Program
  - Discussed with various GIOs 'what would a state need if Hexagon were to provide a service' in order to develop the program
    - 3 year program – paid over 3 years
    - Pricing based on 30cm statewide plus all of the 15cm in state
      - Store on premises
    - Once data is refreshed, the state will get a perpetual license for the old data
      - Value of old data decreases as it 'ages', but when the data is refreshed, the value increases for change analysis purposes
        - Since use same sensor and flight lines – fewer false positives
          - Reduces bad data and decreases inaccuracy
        - Historical data is stored on premises
    - 3 year streaming service
      - ALL state agencies/municipalities/universities/PSAPs are considered 'authorized users' of on-premise data
      - Any commercial firm hired by state can use/access data
      - Public Domain
        - Hexagon data is licensed and not allowed to go into the public domain
          - If double the resolution (2x), then it would be eligible for public domain access
    - **Question:** What happens with data that is sitting on the shelf after a certain timeframe?



# Meeting Notes

- Once has reached perpetual use after a subsequent refresh, it is eligible for public domain access at 30cm and 15cm
  - State keeps all perpetual data – does not have to give data back
  - **Concern:** State works off of a biennial budget and don't know what the budget will be for all the agencies
    - Hexagon suggested an option to pay in one year but still get the benefits for the full 3 years worth of refresh
- Hexagon refreshed 22 states last year
  - Texas is currently 98% collected
    - Difficulty getting into Mexico airspace (5 nautical miles)
      - Slow progress but confident it will be approved
  - **Question:** Do you do a parallel?
    - Lay out in manageable flight blocks
    - Difficult to do parallel by a border
  - **Concern:** Imagery of Brownsville to the coast is missing
    - Major projects: SpaceX, Liquid Natural Gas Plant, Other
      - State of Washington: some counties that wanted additional data and Hexagon allowed them to buy up data to cover the entire county, so willing to discuss and will need to be decided upon early on
    - Same with Corpus Christi/Galveston (Chambers County)
      - Industry and population growth that goes around a liquid natural gas plant
      - Collection criteria for 30 vs 15: different altitudes and quadruples flight lines
  - Over 15K square miles of 15cm imagery in Texas currently
- Cost
  - \$2.9M over 3 years for the entire state (~\$900K/year)
    - 30cm/15cm
    - Access
    - 3 years streaming service and a hard copy for on premises
  - Option to reduce cost: go through the GSA (General Services Administration) could decrease to \$2.5M (federal government agency)
    - Hexagon GeoSpatial no longer contracted with DIR
- Discussed with TNRIS/Richard Wade about Hexagon long-term goals
  - 15cm nationwide / 5cm cities (could include oblique and LIDAR imagery)
  - Country Mapper Sensor in development would give the ability to collect LIDAR data and imagery program simultaneously (DL2)
  - Three cities already collected (5cm) as a pilot but not completed nationwide
    - 5cm city imagery would probably happen sooner than a 6in nationwide
      - Need to look at the value of high resolution imagery in some US rural locations
      - Texas ortho imagery project is ½ meter
  - For Texas – following NAIP schedule, but things got postponed
    - Hexagon decided to fly Texas regardless of what NAIP had planned so just finishing up the state
      - This is not a 'normal' schedule



# Meeting Notes

- **Question:** Is Hexagon tied to the NAIP calendar?
    - Using same imagery and following the NAIP schedule (NAIP would also like to go to a 2 year schedule), but collecting at a much higher resolution than NAIP
      - Not a re-sampling of data or pan sharpening
    - **Question:** Will flights over Texas continue on past current flight or is NAIP still in trouble?
      - Farm Bill has allocated \$25M specifically for NAIP, so US will keep NAIP program
  - Current data being collected/processed will be available the end of 2<sup>nd</sup> quarter/start of 3<sup>rd</sup> quarter
  - 15 day free evaluation account to streaming service is available to look at 30cm/15cm imagery
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## General Discussion of Hexagon Presentation (Group)

- Birhan Girgin (TMD) put forward the possible option of taking advantage of the GSA costing route through his agency
- Chris Bardash (TxDOT) expressed concern about waiting three years for updated imagery when currently the imagery data that Google provides is generally working for TxDOT.
- If there is money funded in Strategic Mapping, we could buy the program through Hexagon with better resolution than with standard program
  - Hexagon is flying NAIP - don't want to use NAIP/Leaf On
  - If doing at this timeframe, most of the areas with industrial plants are being updated on yearly basis by Google
    - Renegotiate contract with Google to get back to some semblance of a 3- or 4-year schedule and to agree that after any contractual schedule expires, the data goes public to remove it from the 'public domain' fray
      - Competition provides leverage with Google for renegotiating
        - Who else is out there besides Hexagon? Bing, Nearmap (although cannot currently compete at the scale that this program requires but may be a prime candidate for a quick order/disaster recovery, etc.)
    - Emergency Management – (coastal erosion/emergencies) had updates on a finer scale 3 or 4 years ago than currently
      - With regard to Hexagon – if waiting on a 3 year platform, we are not going to be getting potential updates when something has changed
        - Data seems to be coming from the NAIP program, so what if NAIP says no to Texas after 3 years?
          - The understanding is that this is where the money paid to Hexagon would be used
            - If NAIP goes away, is Hexagon obligated to complete and fulfill the three years?
- CSEC: Not looking to replace Google, but rural areas are not getting flown within the 3 years yet those areas are the 2<sup>nd</sup> highest users of the data, so agency is not currently getting what it needs out of the Google program and Leaf On is a problem especially in East Texas so they are unable to justify project funding if the product doesn't do what the agency needs it to do



# Meeting Notes

- Another leveraging opportunity to renegotiate with Google
  - If not going to deliver, then reduce your cost to the state because not meeting up to spec and will have to go to other sources
  - Current contract has no teeth behind the 3 year schedule – more of an intention
    - Are we getting a year’s worth of fly time for \$1M or this is just what you get for \$1M?
- Felicia Retiz mentioned the data map to provide an update that much of South Texas area shown in pink (2014) has been flown and is currently being processed
  - Bulk of flying is happening this winter season to address 2015 & 2016 areas
- TNRIS is receiving messages from Kyle Smith for a needed discussion later this week
- What if we bought Hexagon data? (not as a service but as another layer to Google)
  - One-time purchase as TOPS program to come out of TNRIS budget from legislature
  - What’s the advantage of Hexagon vs. our own acquisition?
    - What’s the purchase price for 2018 flight?
      - No server access – we could serve it (through Capgemini)
- Conversation with Google needed regarding ½ the state is still 2015/2016 flight data

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## General Discussion (Group)

- Invitation sent to Kyle Smith to attend next meeting
- Move meeting up ½ hour and location will be TBD

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## Next Agenda and Action Items

### Action Items:

Owner	Description
Richard Wade	Send out Hexagon presentation to members
Richard Wade	Discussion with Google regarding ½ the state has 2015/2016 flight data

**Next Meeting:** April 2, 2019 (2:00P-3:30P – TIME CHANGE) at a TBD Location

### Next Meeting Agenda Items:

