Hexagon Geosystems – A Solution for Every Application!

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ABSTRACT

In ever changing world with rapidly increasing complexity, customers require total photogrammetric and geospatial solutions beyond the sensors and software tools used in the past. As the demand for geospatial data rapidly grows, solution providers are expanding their products and services to meet the requirements and appetite of today's world. It is no longer enough for a vendor to provide just hardware sensors or generic software tools, they must provide comprehensive solutions required to support an ever expanding and less technical consumer of geospatial data.

Hexagon, with the Leica and Z/I imaging sensors, combined with the ERDAS and Intergraph software tools can truly provide a solution for every application. More importantly, The Hexagon of today is positioned to provide the comprehensive geospatial solutions required in the future for the customers and industries we serve.

1. INTRODUCTION TO THE "NEW" HEXAGON

In the fall of 2010, Hexagon acquired Intergraph. Intergraph's expertise and leadership in GIS and CAD software development significantly enhanced Hexagon's ability to further develop and provide fully-integrated geospatial solutions (sensor and software) to the industries served. Intergraph's addition positions Hexagon to successfully deliver the comprehensive solutions required to meet the challenges of the future.

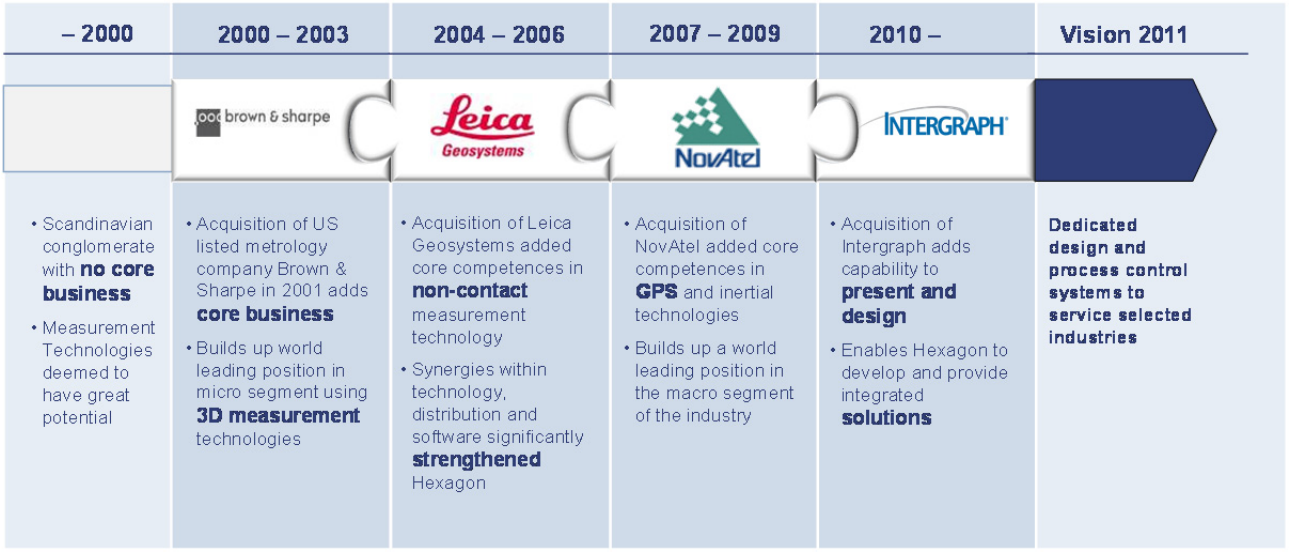

Figure 1: Acquisition of Intergraph by Hexagon – Historical timeline

Under the Hexagon umbrella, Intergraph functions as a standalone software business. As a result of the Intergraph acquisition, the Z/I Imaging business was moved from Intergraph to the Geosystems business unit. Under Hexagon Geosystems, the Leica Geosystems Airborne Division was combined with Intergraph's Z/I Imaging business to form the Geospatial Solutions Division.

The ERDAS imaging business was moved to Intergraph to consolidate all software development under Intergraph, maximizing synergy and value. Although there has been some reorganization to

create synergy internally, the solutions provided to our customers will be comprehensive "Hexagon" solutions combining the total range of products across all businesses.

Figure 2: Hexagon Organizational structure – post Intergraph acquisition

2. HISTORY OF HEXAGON GEOSYSTEMS – GEOSPATIAL SOLUTIONS DIVISION

The Geospatial Solutions Division of Hexagon Geosystems has a rich history, tracing its Leica roots back to the very beginnings of Photogrammetry to Kern / Wild and on a parallel branch tracing the Z/I Imaging roots back to the beginnings with Zeiss.
The combined organization has over 80 years of experience producing professional airborne imaging cameras; over a decade of experience in digital imaging sensors; and with the addition of ERDAS and Intergraph; the most comprehensive solutions available in the market today.

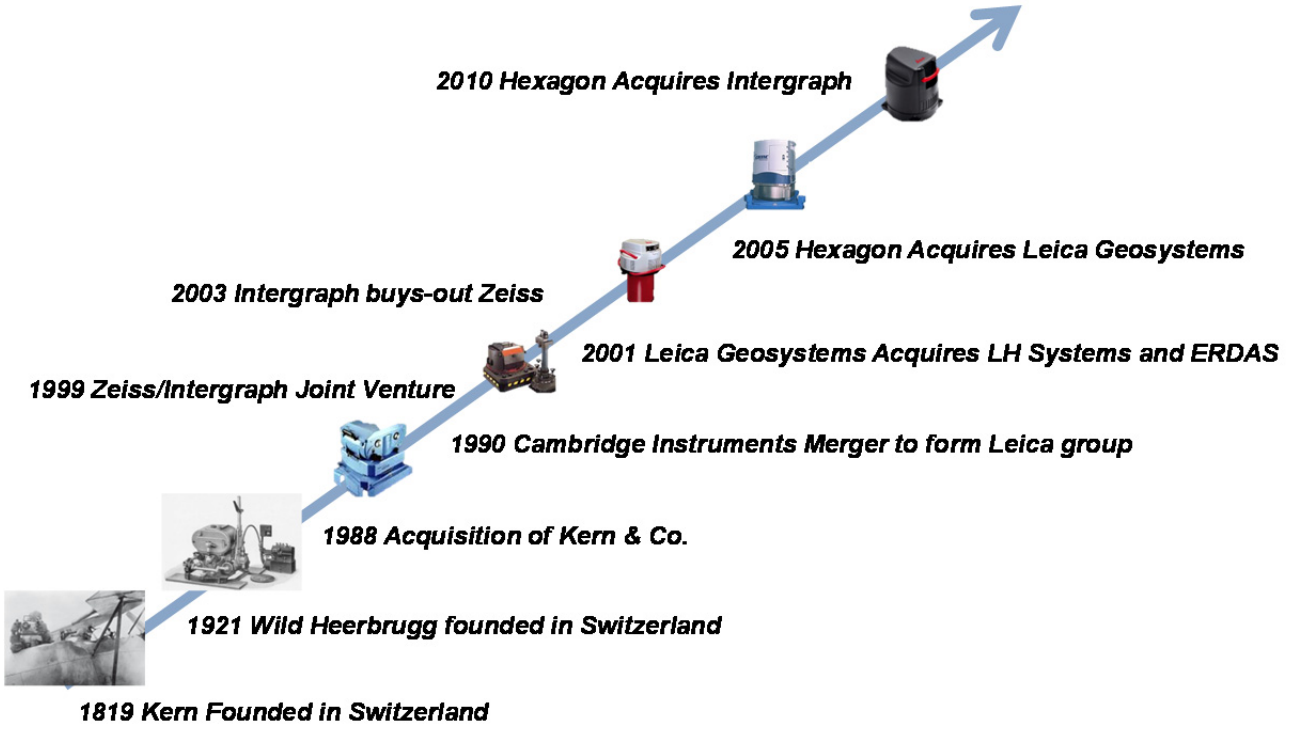

Figure 3: Hexagon Geosystems – Photogrammetry history

3. HEXAGON AIRBORNE SENSOR PORTFOLIO

Hexagon will continue to develop both the Leica line scanners and the Z/I Imaging framing sensors. Both sensors have their own specific applications and are complementary in their use by the combined customer base. The addition of Z/I Imaging sensors to the Leica Sensor products results in a professional-grade portfolio unmatched in the industry. A solid best-of-class foundation provided for any geospatial solution to the challenges of today and the future.

Leica ADS80 Large-Format Line-Scanner Sensor

- Multi spectral Pan and RGBN sensor
- Innovative beamsplitter design provides equal resolution in all bands
- 12000 pixels, 6.5µm, in all bands in standard mode (Ratio 1:1)
- 24000 pixels swath in HiRes Mode (Ratio 1:2)
- Two Sensor Heads SH91 and SH92
- Focal Length 65mm (single lens design)
- 100% forward overlap at all times
- Continuously recordable strip length
- Dedicated Workflow
- Rapid orthoprocessing and AT
- DSM extraction
- Installed system weight 140-145kg

Figure 4: ADS 80 Line Scanner

Z/I Imaging DMCII Large-Format Digital Frame Sensor

- Multi spectral sensor, RGB and IR
- 2 to 3.2:1 pan-sharpened color resolution
- FMC forward motion compensation
- 1.7 second frame rate
- 92 or 112 mm focal length
- B/H ratio of 0.29 to 0.36 @ 60% overlap
- 4x42 MPixel, 7.2µm MS CCD
- 1x140, 230, 250 MPixel, 5.6µm PAN CCD
- Finished Image Size:
  - DMCII140 – 12,096 x 11,200
  - DMCII230 – 15,104 x 14,400
  - DMCII250 – 17,216 x 14,656
- installed system weight 151kg

Figure 5: Z/I Imaging DMCII Sensor

Leica RCD30 Mid-Format Digital Frame Sensor

- Multispectral, coregistered RGB and IR
- Mechanical motion compensation, 2 axes
- >1 second frame rate
- 50mm and 80mm focal length
- Stabilized lens system
- Exchangeable central shutter
- B/H ratio of 0.32 @ 60% overlap (50mm)
- 2 x 60MP, 6µm CCD for RGB and NIR
- Image size single head 8956 x 6708
- 15cm GSD @ 3780ft flying height (50mm)
- CCD made by DALSA
- Optics made by Zeiss
- Weight CH6x 4kg, CC3x 6kg

Figure 6: Leica new Mid-format digital-frame sensor

Leica ALS70 LIDAR Sensor

- 3 models: –HA@5000m AGL, –HP@3500m AGL, –CM@1600m AGL
- Dual-output scanner on –HP and –CM uses single laser and scan mirror
- for ruggedness and reliability; >2x effective pulse and scan rates of current systems
- 3 user-selectable scan patterns for ultimate control over point pattern on ground
- Improved receiver dynamic range to better accommodate low-reflectivity or small targets
- Fully upgradable from ALS60

Figure 7: Leica new ALS70 LIDAR Sensor

4. HEXAGON SOFTWARE SOLUTIONS

ERDAS LPS and Intergraph's Imagestation software tools provide a complete suite of remote sensing and ortho production software tools. LPS and Imagestation generate terrain models, Ortho-mosaics, and 3D feature extraction. They support panchromatic, color and multispectral imagery. It is acknowledged that there is some overlap between the LPS and Imagestation software suites. Over time, Hexagon will take the best of Intergraph Imagestation and ERDAS LPS to produce the next generation best-of-class tools required for the challenges of the future.

Workflow tools are becoming critical as the demand for imagery grows, the period between acquisition and delivery is shrinking even faster. Workflow tools available now and under development by Hexagon will accelerate production, reduce errors, improve efficiency and deliver professional grade final products in the minimum amount of time. I acknowledge that is a bold statement. We are not there yet. We do however within Hexagon have the foundation to develop and deliver the workflow tools required for the comprehensive solutions – important today and mandatory for the demands of the future.

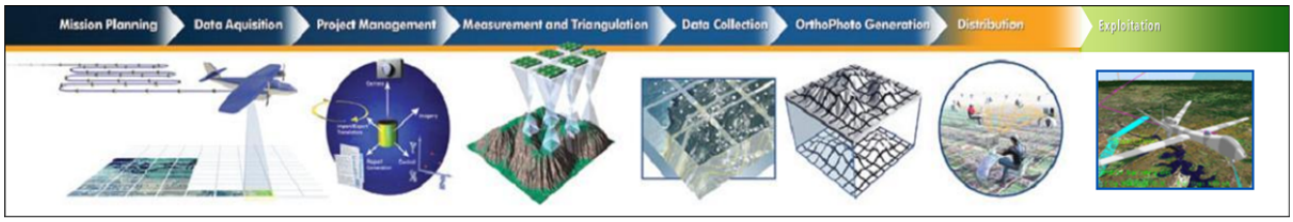

Figure 8: LPS and Imagestation software exploitation and production workflow

5. CONCLUSION

As we all know, the demand for geospatial intelligence is increasing rapidly. The demand for near-real time updates of this intelligence will challenge all of us as we work to provide solutions for the near future. The future of photogrammetry is dynamic – rapidly changing over our professional lives – we must jointly provide solutions to keep pace and meet the requirement of our every changing environment. The dynamics of photogrammetry and remote sensing today are as large as any time in the past – it is truly an exciting time in our industry!

Hexagon provides comprehensive geospatial solution for today and is well positioned to provide them for the challenges we face in the future. The sensors of Leica Geosystems and Z/I Imaging combined with GIS and photogrammetric software products from ERDAS and Intergraph provide professional grade solutions for markets that require the highest accuracy and quality.