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### Role of Unmanned Aircraft and Sensor Miniaturization in Geology

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Unmanned Aircraft are steadily finding their way into the mining industry. There is a wealth of potential applications where UAV offer major advantages compared to existing exploration and mapping technologies.

Well accepted in the industry are now applications based on aerial photography, such as photogrammetry and mapping. Using off the shelf consumer cameras and very affordable photogrammetric software we are able to generate elevation models with better than 3cm horizontal and vertical accuracy.

More advanced applications, such as geophysics, thermal infrared, hyperspectral, lidar etcetera are still less well established, and usually restricted to experimental projects. This has to do with the fact that often completely new concepts have to be developed in order to be able to adapt existing sensor technology to the limitations inherent to small UAV.

This fundamentally innovative process of creating new concepts for sensors, development and prototyping, testing and validation, system integration, data processing, and finally the acceptance by the industry is a lengthy and costly affair. Issues such as funding, legislation and a conservative attitude of the potential users are obstacles that significantly delay this process.

In this presentation we will provide an overview of the current status of sensors that are or will eventually be operated on a UAV on a routine basis, with emphasis on geological and mining applications.

