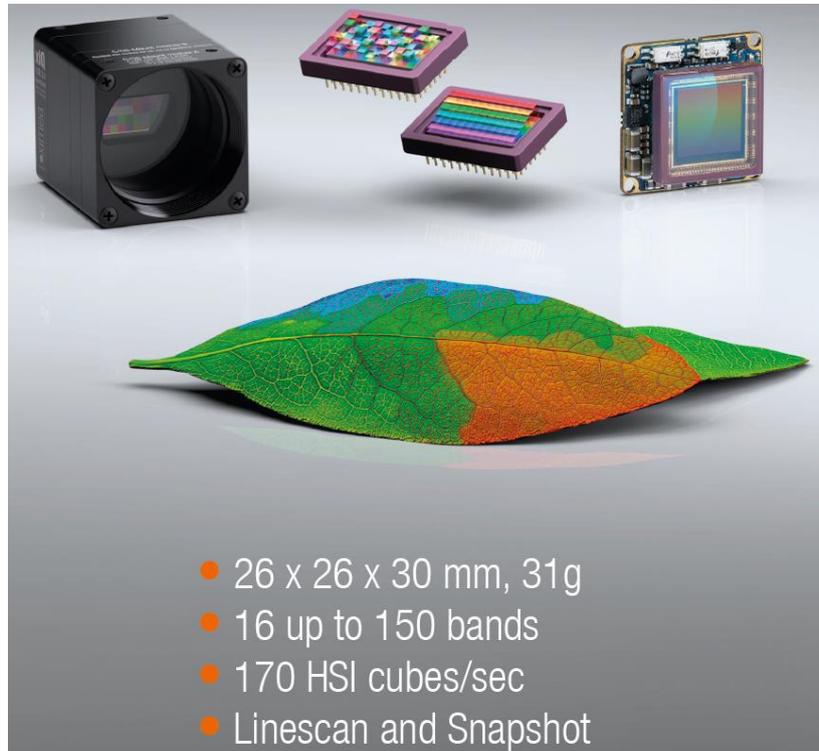


xiSpec

Mobile applications (designed e.g. for UAVs)

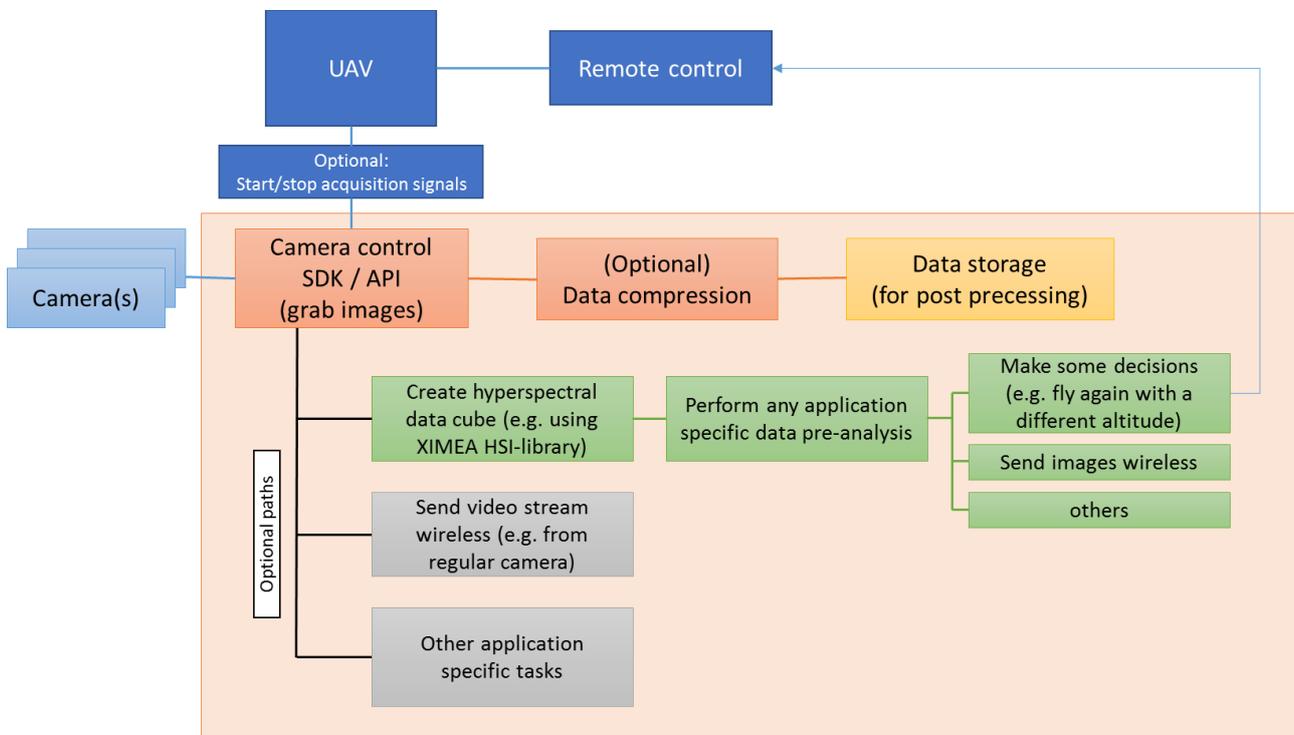


Mobile hyperspectral UAV applications

One part of a UAV based hyperspectral solutions is the camera setup:

- (main) HSI camera looking to the ground
- (optional) additional HSI camera looking to the ground (e.g, with another wavelength range)
- (optional) additional RGB / mono camera looking to the ground for reference images, optional: 3D reconstruction
- (optional) additional HSI camera or spectrometer to measure the ambient light conditions.

A mobile solution should be able to handle the set of cameras used for the specific application and store all data for post-processing. Other application specific tasks are possible:



Hardware solution for mobile applications xEc (designed e.g. for UAVs)

XIMEA is developing a very compact (HSI) imaging and recording unit for mobile applications, e.g. installable in payload compartment of UAVs with

- massively parallel computational resources onboard
- storage on fast SD (UHS-II SDHC/SDXC) or M.2 PCIe x 4 SSD (1000-1200 MB/s)
- integrated IMU 9-axis
- interface to a UAV control unit
- interface to connect GPS / wireless connection

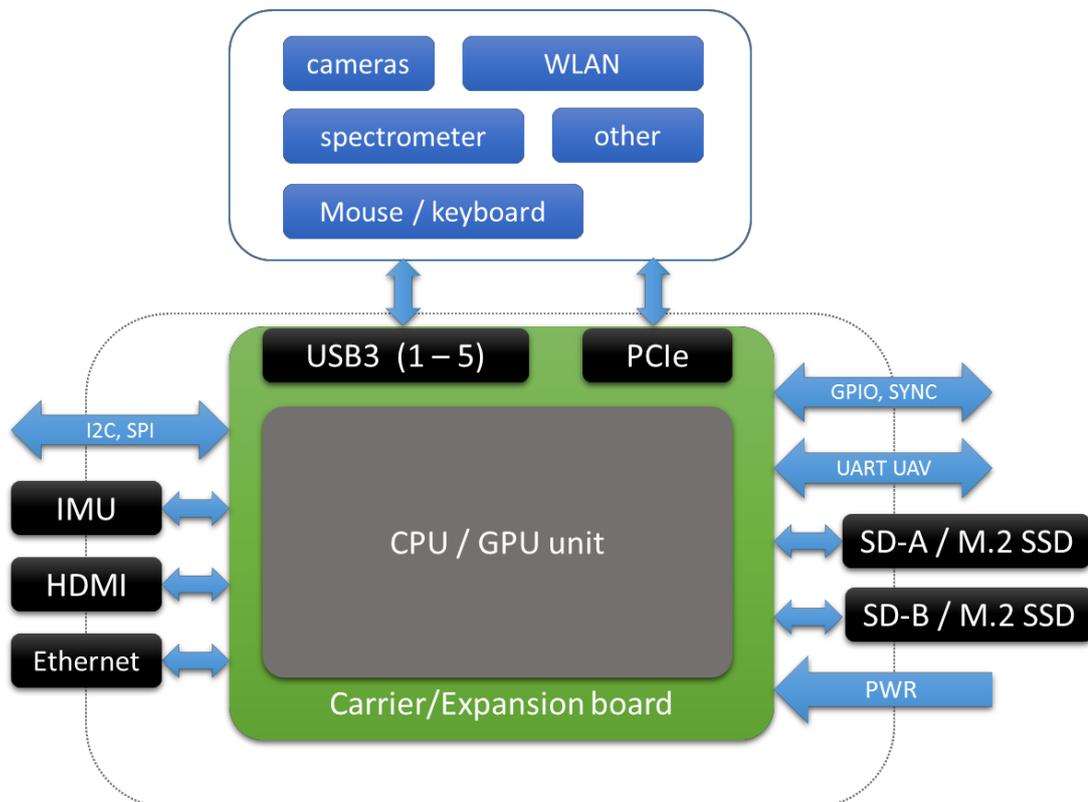
This system is able to handle several cameras at once, e.g.

- 1 or 2 HSI cameras (looking downwards)
- visible light sensor (looking downwards)
- additional HSI-camera or spectrometer for ambient light measurement

The system is designed to (e.g.)

- create the corrected hyperspectral imaging cube for the connected xiSpec cameras in real-time
- match spectral signatures against pre-learned signatures
- perform a data self-clustering / principal component analysis (PCA)
- check whether differences against expected results occurs
- perform a multi-pass flight (other directions, different flight altitude for detailed data)
- optional data reduction (store only not expected info, e.g. possible plant diseases for a detailed post processing)

HW block diagram and interfaces (concept)



XIMEA plans to deliver this device, based on NVIDIA Jetson TX1, by end of 2016.

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