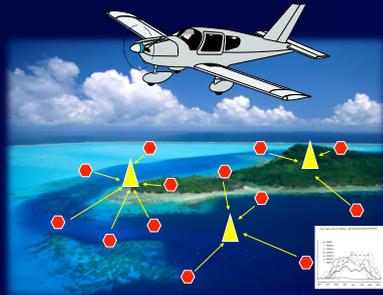


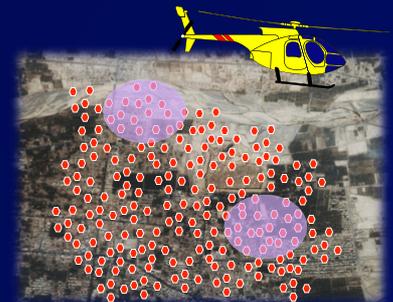
# LOW-COST WIRELESS IMAGE SENSORS FOR SURVEILLANCE APPLICATIONS



Adhoc deployment of environmental monitoring networks

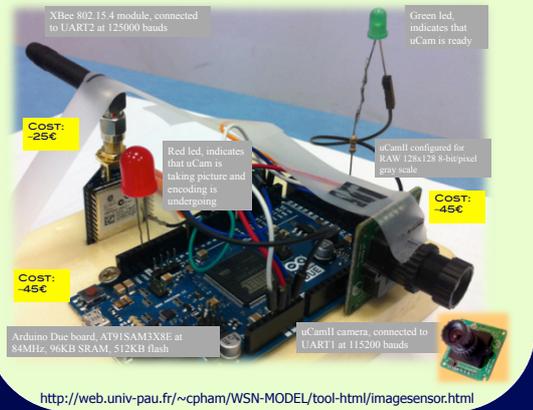


Collect image data to improve the responsiveness of rescue operations

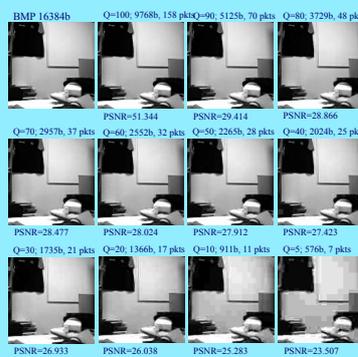


Situation-awareness, search&rescue, disaster relief operations

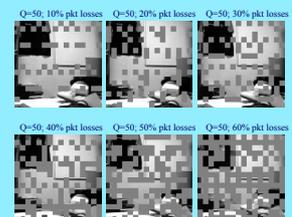
## Image sensor built off-the-shelves components: Arduino Due & uCamII



## Includes robust and efficient image encoding scheme adapted to low-resource wireless sensor nodes and lossy radio channel. Adjustable Quality Factor to meet network conditions.



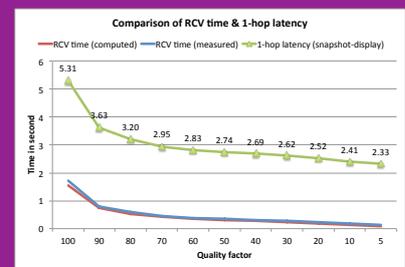
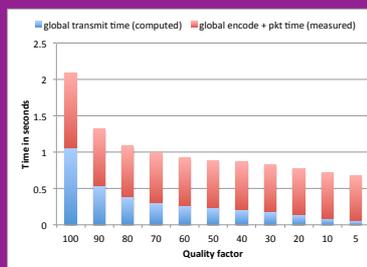
Traditional JPG compression can hardly support more than 20% packet losses



Scientific cooperation with V. Lecuire from CRAN laboratory for the optimized image encoding algorithm

## Image sensor performance measures, 128x128 gray scale

	N	R	A	B = D - A'	C = B / N	D
Quality Factor Q	size in bytes (MSS=90)	Number of packets	time to read data from ucam	global encode + pkt time (measured)	global transmit time (computed)	global encode + pkt + transmit time (measured)
100	9768	158	1.512	1.027	1.064	2.091
90	5125	70	1.512	0.782	0.539	1.321
80	3729	48	1.512	0.704	0.384	1.088
70	2957	37	1.512	0.686	0.304	0.99
60	2552	32	1.512	0.662	0.263	0.925
50	2265	28	1.512	0.646	0.233	0.879
40	2024	25	1.512	0.657	0.207	0.864
30	1735	21	1.512	0.649	0.177	0.826
20	1366	17	1.512	0.638	0.14	0.778
10	911	11	1.512	0.628	0.093	0.721
5	576	7	1.512	0.624	0.058	0.682



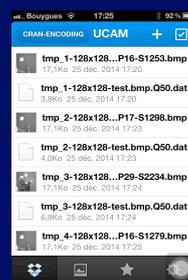
## Intrusion detection applications



Sends image to gateway on intrusion detection



Real-time synchronization with your smartphone through cloud applications, e.g. DropBox



- Simple and efficient intrusion detection mechanism based on simple-differencing
- No additional cost for image processing: image data are read from camera and compared on-the-fly to reference image
- Image capture frequency can be dynamically configured or can follow a criticality-based scheduling mechanism to provide maximum responsiveness
- Images can be stored and timestamped on gateway, and synched in real-time with a smartphone through cloud apps such as DropBox