



**SINGLE QUANTUM**

Quantum Sensors for longer,  
healthier, personalized Healthcare

Sander Dorenbos – CEO

# Mission



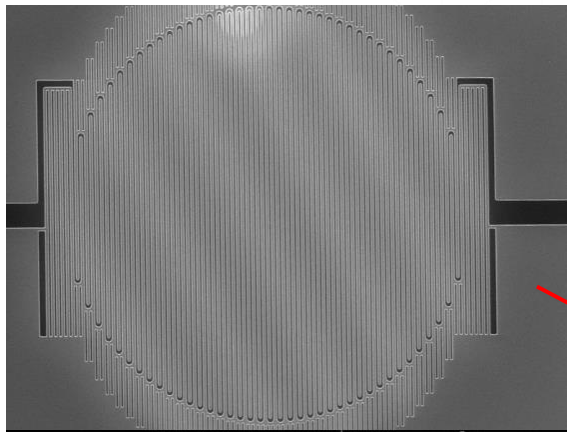
*To develop the world's fastest and most sensitive light sensors  
limited only by the laws of physics*

## Detector specifications:

- High efficiency
- Low noise
- Short dead time
- High time resolution



# Superconducting Nanowire Single Photon Detector

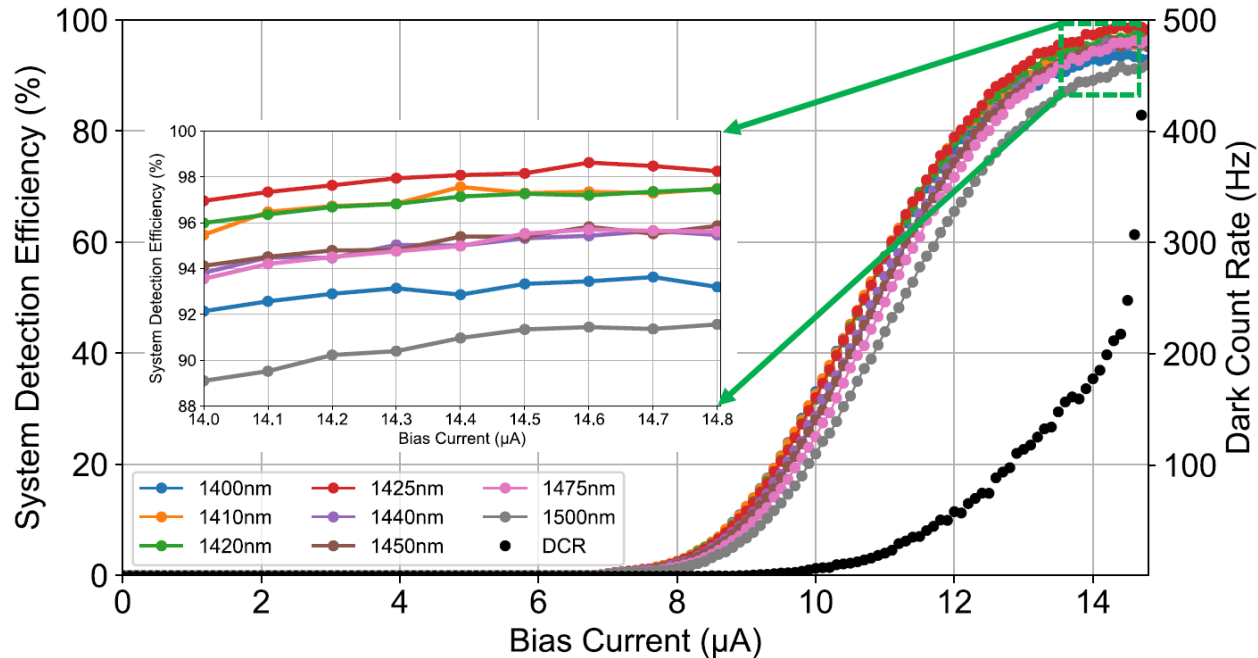


x1-24

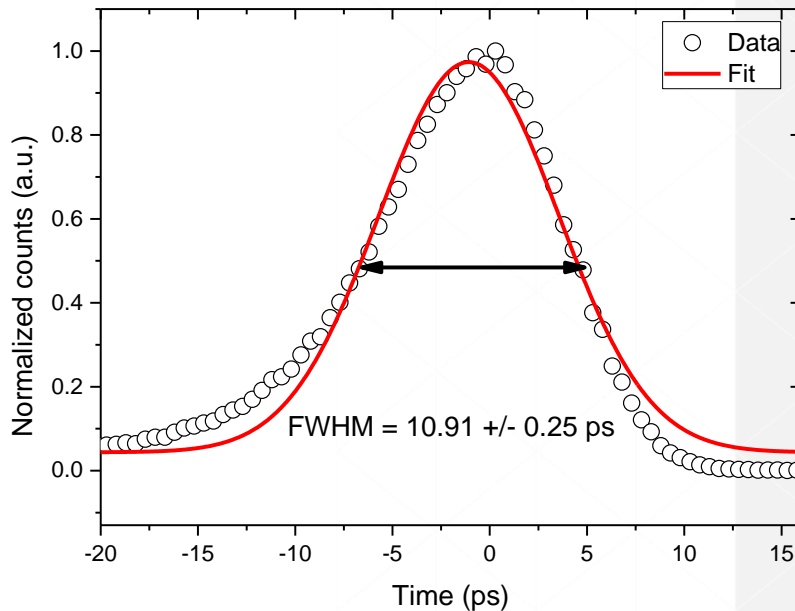


# High detection efficiency

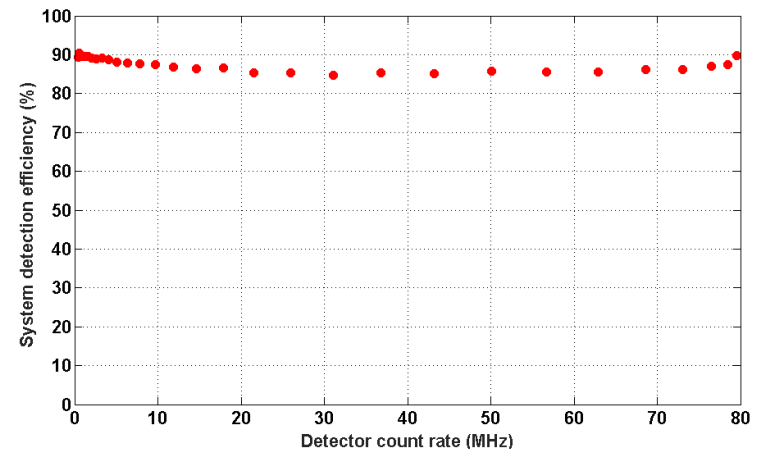
**System detection efficiency of >95 % at telecom wavelength**



# With high time resolution and high count rate



Time resolution is now < 15 ps, time for light to travel 5 mm.



InGaAs APDs, 150 ps  
Si APDs, 50 ps  
Silicide SNSPDs, 70-100 ps  
Photomultipliers, 20 ps

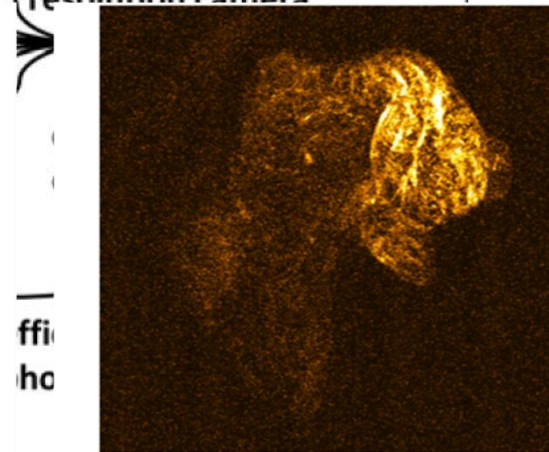
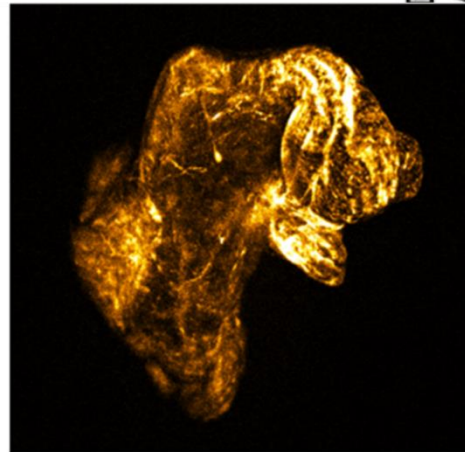
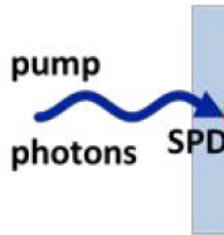
# Infrared (Quantum) microscopy

Basic idea: optical access limited by scattering. Deeper access at higher resolution needs imaging further in the infrared

Single Quantum's  
SNSPD

fast high-  
resolution camera

Photomultiplier image of object



 **fastGHOST**

Easily detectable photons reveal what happened to their invisible partners  
[www.fastghost.eu](http://www.fastghost.eu)

Challenge: fiber coupling and suppress black body radiation

**Advantage:**

- No camera necessary of signal at extreme wavelength (e.g. MIR)
- Principally measurement of two-photon wave function below diffraction limit