



Company presentation

Leading hi-tech in a different light and for a safer world

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About IRnova



- **EU based IR detectors OEM Supplier**



- Started in 1986 as a governmental research laboratory
- Independent and Privately owned since 2007

- **30+ years of IR sensor R&D and Manufacturing**

- Leading QWIP and T2SL detector manufacturing
- Several 1000's of QWIP & T2SL detectors fielded
- Contract manufacturing for III-V material and SWIR detectors

- **Pioneers in Optical Gas Imaging**

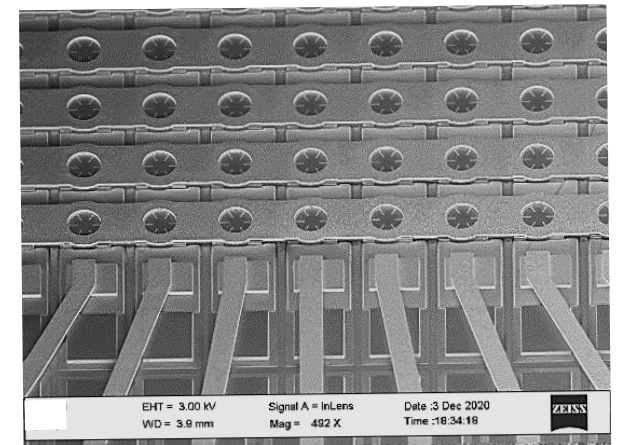
- MWIR and LWIR solutions for all addressable gases
- QVGA (320x256) and VGA (640x512) solutions available

- **Strong Team and Excellent Facilities**

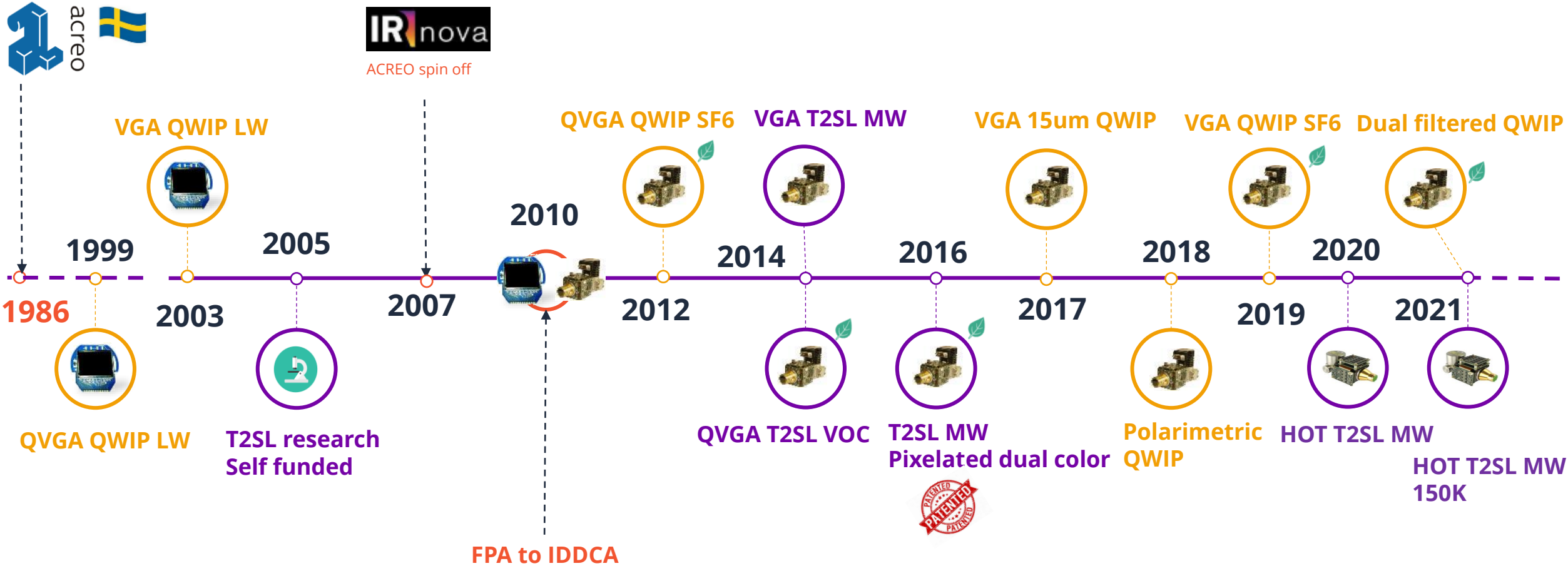
- 70% staff share of PhD's and MSc's
- 2500 m² manufacturing facilities including 1300 m² of clean room
- ISO9001 : 2015 certified



Kista (30km from Stockholm airport)



30+ years on II-V at a glance



T2SL – QWIP

4" Wafer



Plasma etching machine



Bonding



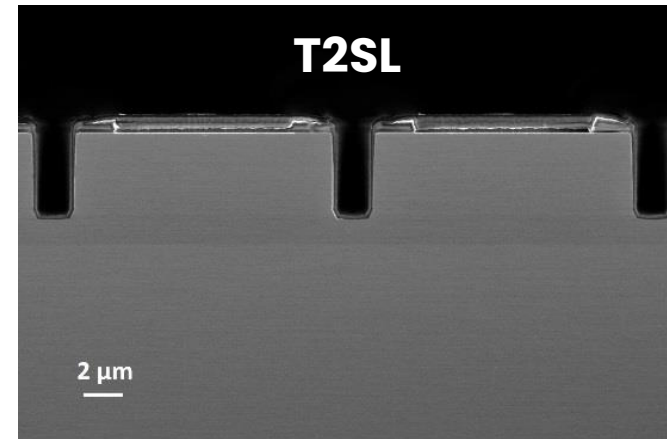
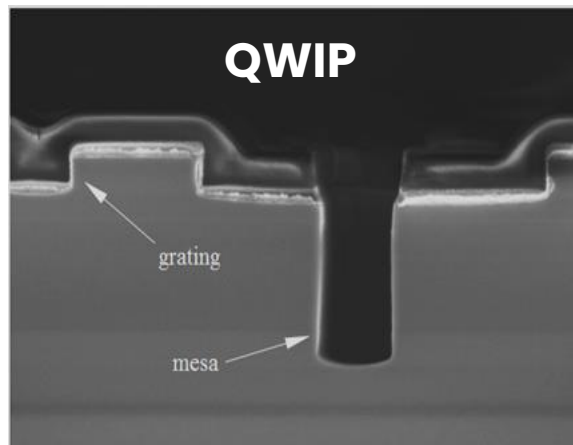
Flip chip machine



One team & One clean room

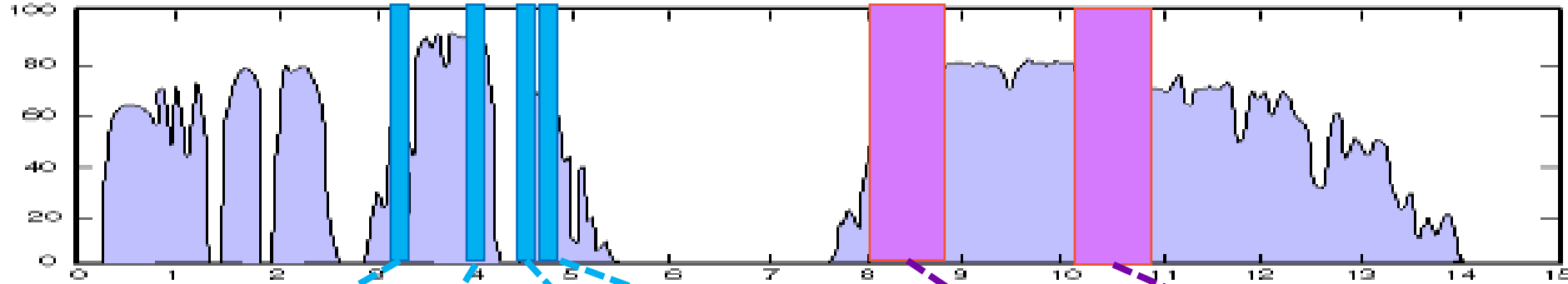


Stepper



Automatic tracker

Optimized sensors for each harmful gas



T2SL	Freja 330	Freja 390	Freja 430	Freja 460	IRnova 320ER-830	Idun 1055 Embla 1055	QWIP
	VOCs Methane Ethane	Furna ce inspe ction	CO ₂	CO, Ketene, N ₂ O	HFC, R404A, R407C	SF ₆ , Ethylene, Ammonia	
320x256	F#2 and F#1.2				F#2		
640x512					F#1.2		

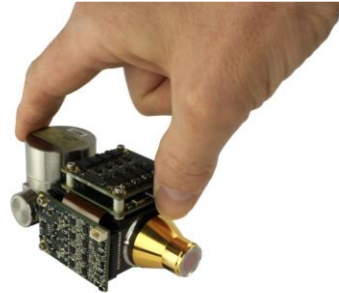


T2SL are a game changer for IR imagery !



Example : IRnova's Oden MW VS regular MWIR VGA format

- ✓ **Size:** 2/3 !
- ✓ **Weight:** 1/2 !
- ✓ **Power:** 1/2 !



HOT T2SL (SWAP) already a game changer for :

- ❑ Mobile/portable/battery-powered EO systems









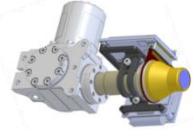
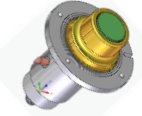
T2SL ideally addressing :

- ❑ High volume applications
- ❑ Next gen high-resolution / small pitch IR detectors :
- ❑ Dual color / dual band & multispectral applications :

No compromise on picture quality



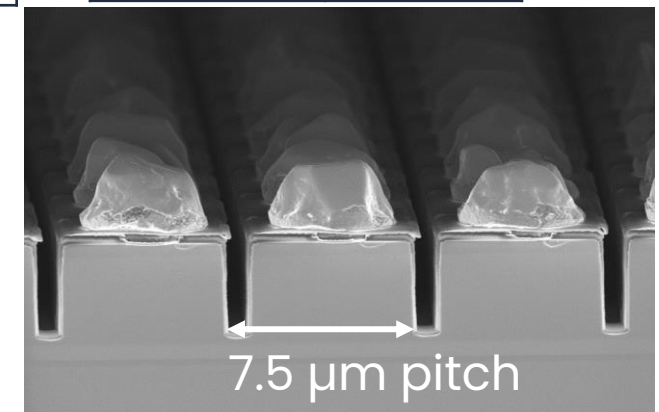
IRnova's T2SL portfolio

	Heimdall MW	Freja 330 	Freja 390 	Freja 430 	Freja 460 	Ragnar DC  	Dag MW	Oden MW 	Njord MW 	JT cooler 
λ (μm)	3.7<>5.1	>3.3<	>3.9<	>4.3<	>4.6<	3.7<>5.1 Filter on demand	3.7<>5.1	3.7<>5.1	3.7<>5.1	3.7<>5.1
Array format	QVGA						VGA			
Pitch	30 μm						15 μm			

HOT - SWAP

Already commercially available ...

... but we can also customize the detector...



HD Coming soon!

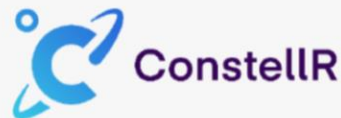
Fraunhofer's first TIR remote sensing mission on board of the ISS will demonstrate spin-off (ConstellIR) technology

Mission Objective:

- Measuring the land surface temperature of our planet to enable advanced application in agriculture business: Crop yield prediction, irrigation, etc.
- Demonstrate ConstellIR technology on ISS. First step of a constellation of Cubesats. Once the technology is validated, ConstellIR will launch first satellites starting from 2023 (<https://constellr.space/>)

Launch in Feb 2022

- Combination of cryocooled infrared detector and free form optic.





IRnova
INFRARED DETECTORS