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camēras

every photon counts

How CSA's innovation support initiatives helped Nüvü Cameras increase the TRL of its core technology

2019 CASI conference
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Presented by

Olivier Daigle — Nüvü Caméras — CTO

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Agenda

01 A Brief History of Time (of Nüvü Caméras)

02 CSA's contributions to Nüvü's core technology TRL increase

03 Yield

04 Conclusions

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A Brief History of Nüvü Caméras

Founded in 2010 by CEO Marie-Eve Ducharme & CTO Olivier Daigle, the company is now recognized around the world for its expertise in low light imaging cameras.

Incubated at Université de Montréal/École Polytechnique from 2010 to 2016. Now located in Montreal's innovation district, Nüvü Caméras focuses on manufacturing and highly sensitive cameras.

Their Canadian designed and manufactured cameras are currently sold around the world to answer demanding applications from space exploration to medical diagnostic.

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CSA's contributions to Nüvü's core technology

1. EMCCD technology study for space instrumentation (Preliminary assessment of technology, market analysis, demonstration, TRL-3)
2. Low light imaging EMCCD camera (STDP, commercial controller development, oriented towards SQ, TRL-4)
3. UV-VIS Low Light Imaging System Study (STDP, gap analysis of potential missions, SQ development plan)
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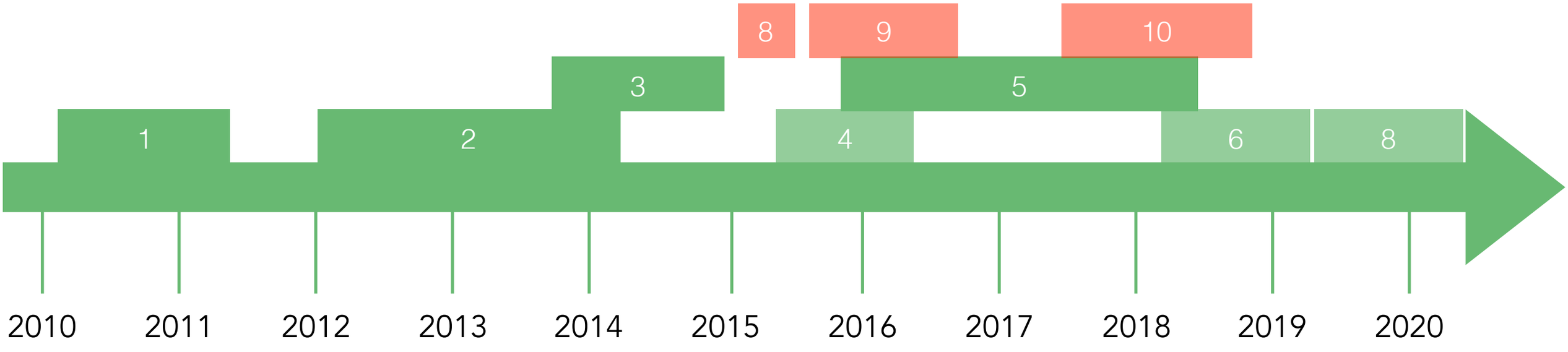
9. Advanced Single Photon Counting Auroral Ultraviolet Imaging (STDP, UV-enhanced EMCCD study, contract from Honeywell)
10. HiCIBaS - High-Contrast Imaging Balloon System, TRL-6



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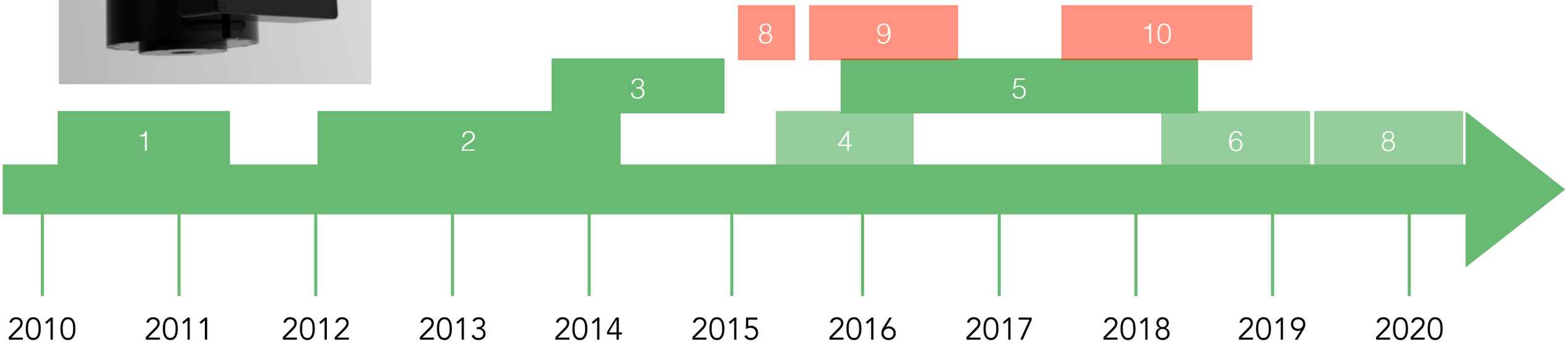

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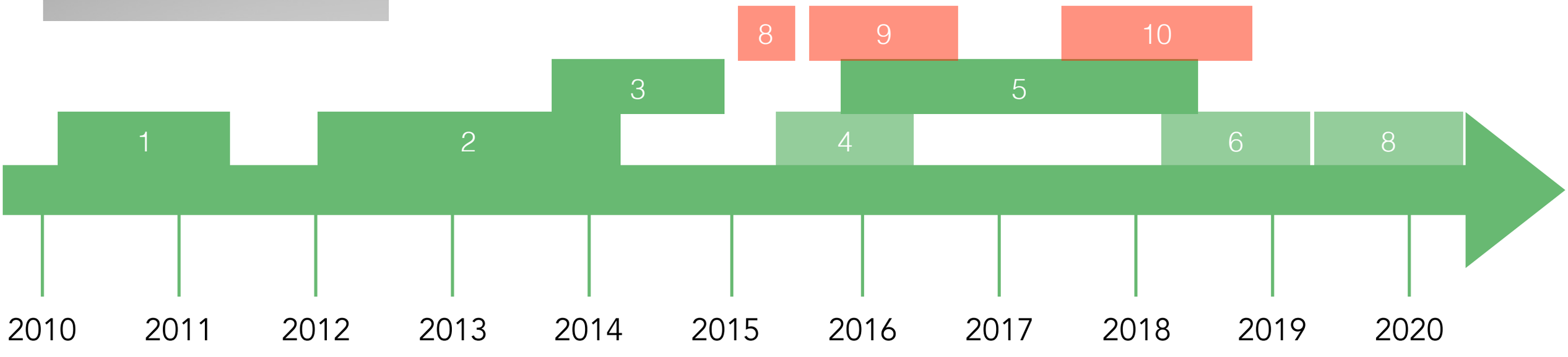

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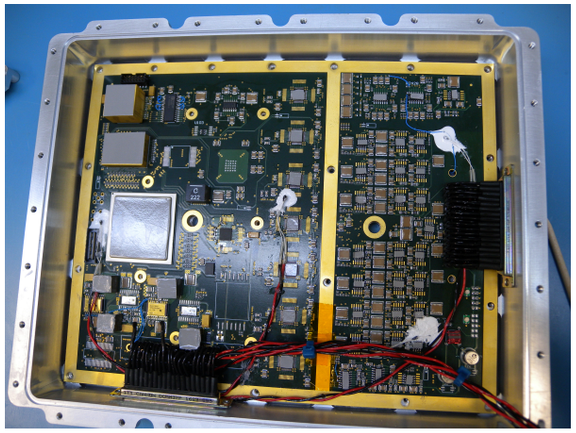

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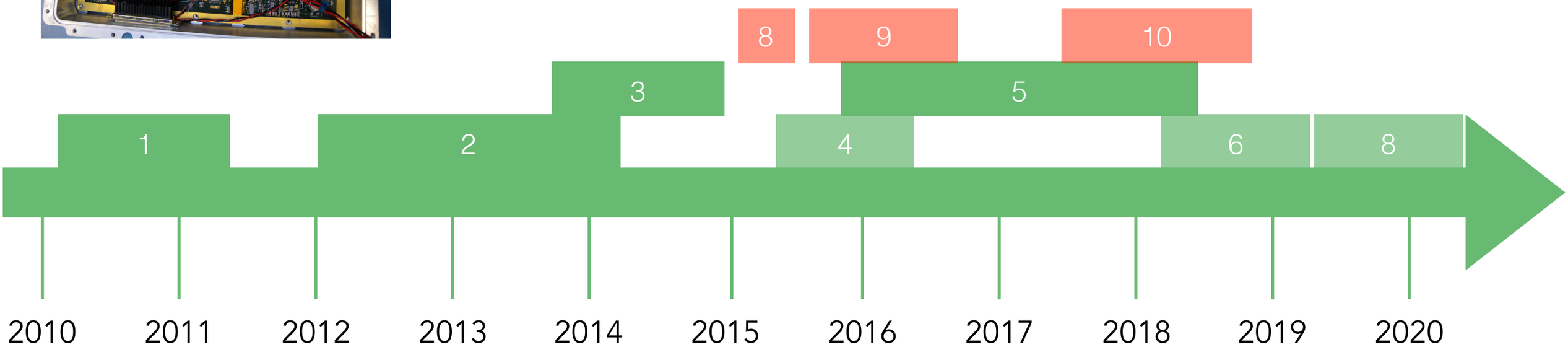

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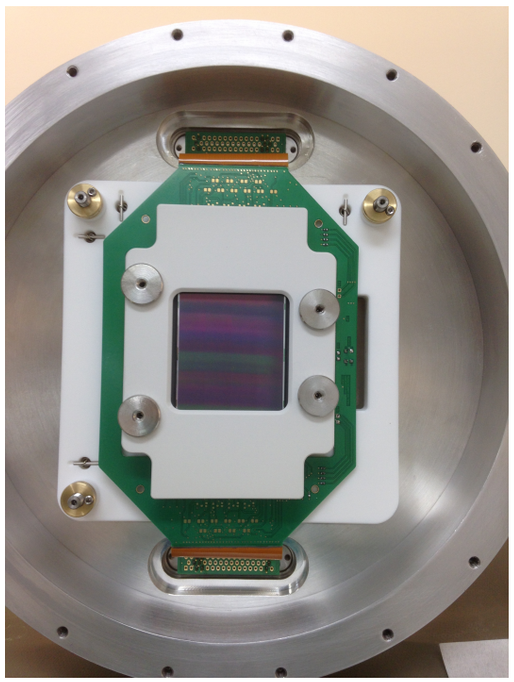

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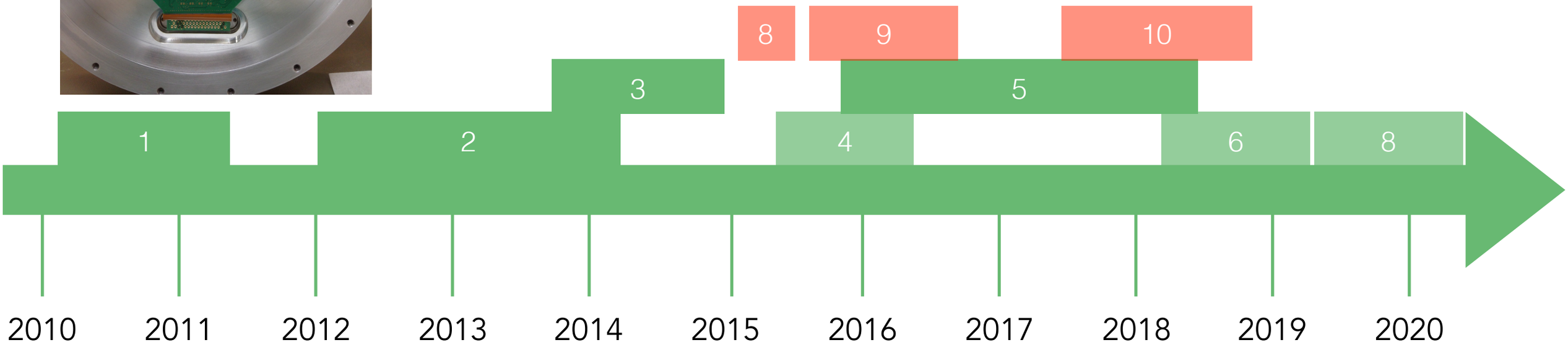

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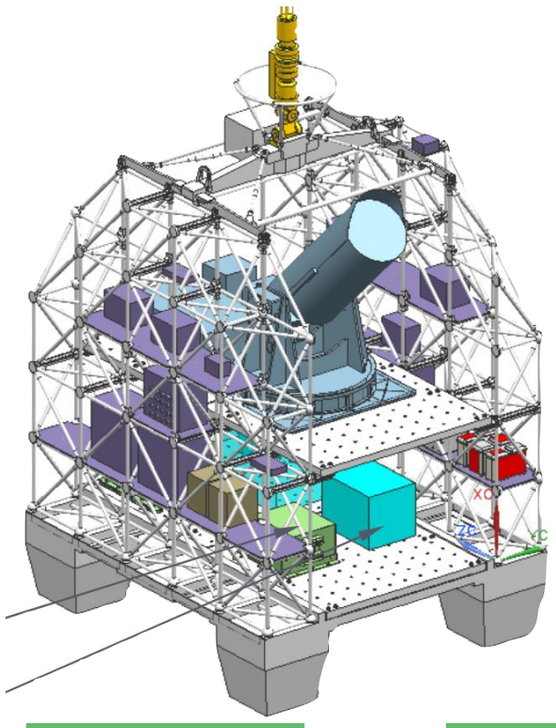

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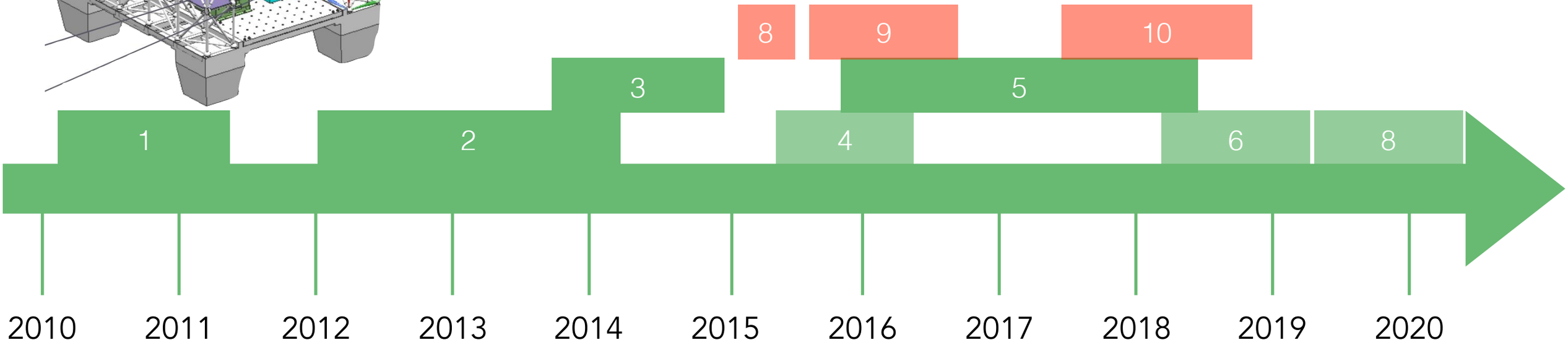

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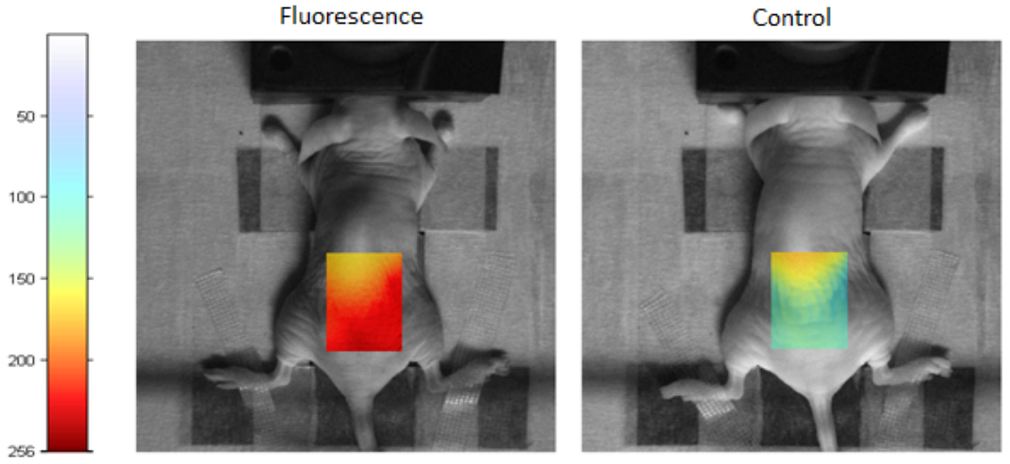
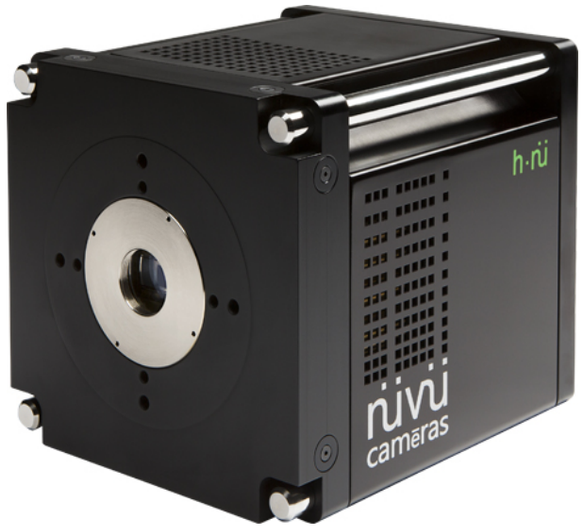
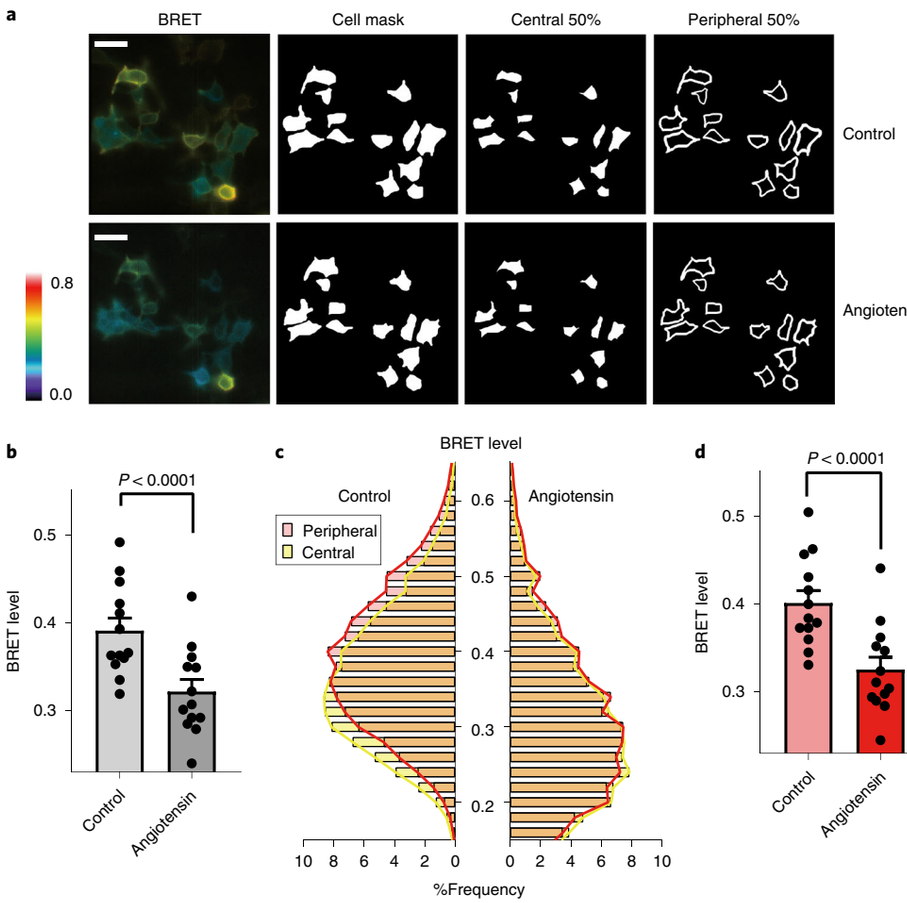
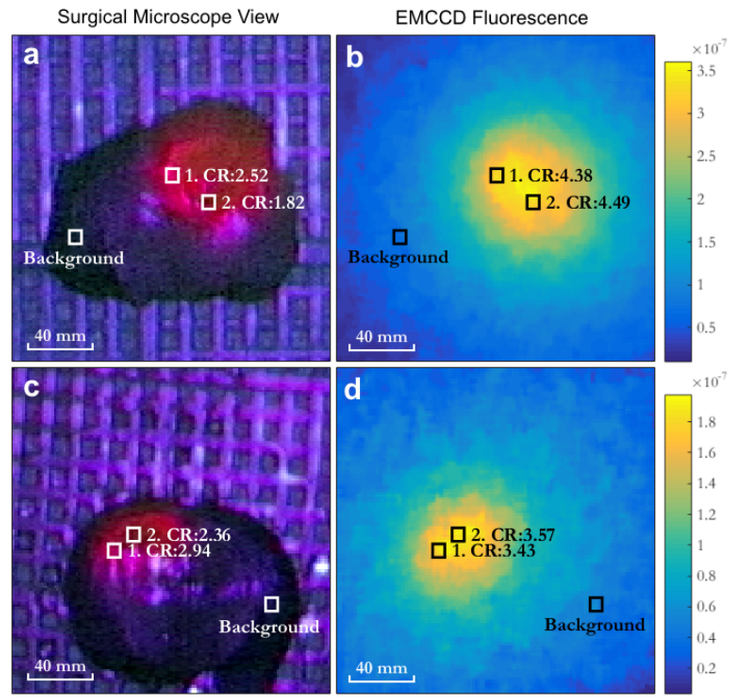


Baoqiang Li et al. (2014)





Hiroyuki Kobayashi, Louis-Philippe Picard,
Anne-Marie Schönegge and Michel Bouvier (2019)



Michael Jermyn et al. (2015)

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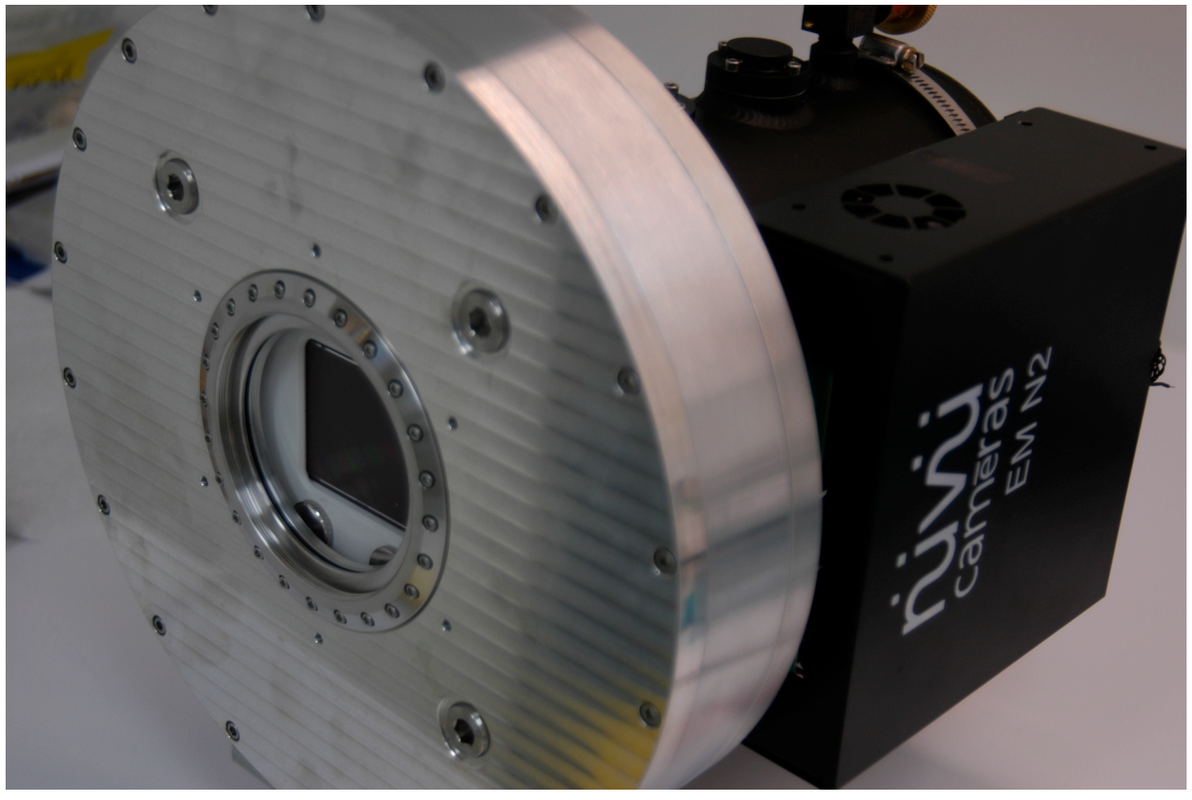
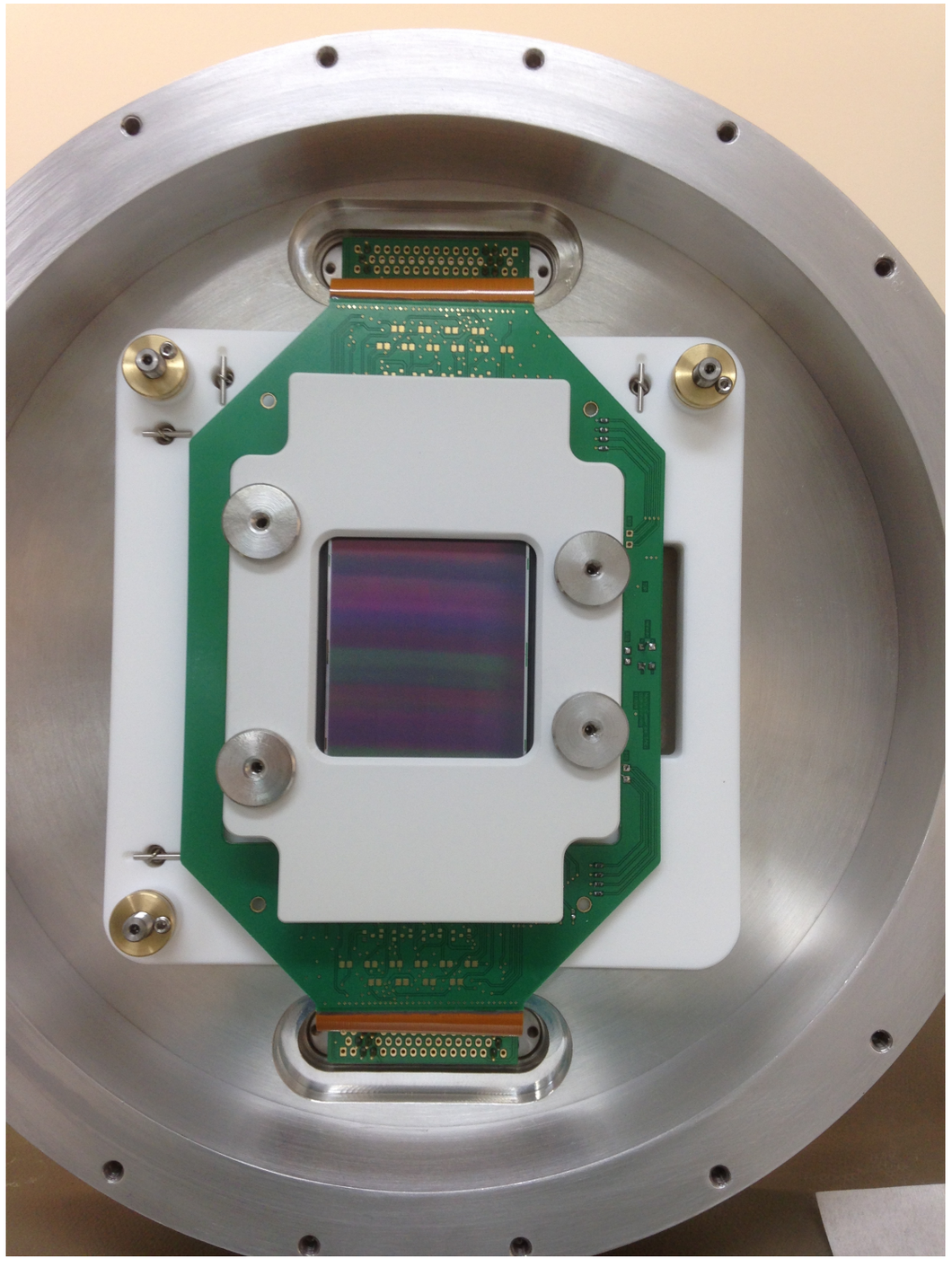


4k x 4k EMCCD support



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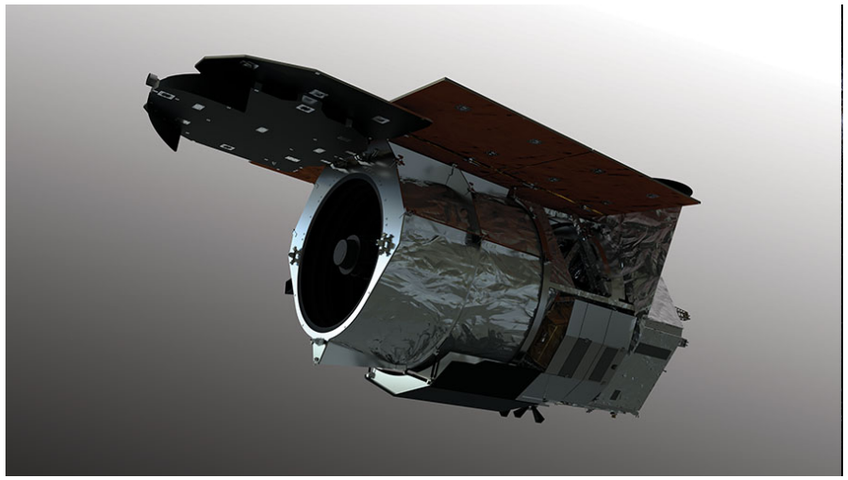

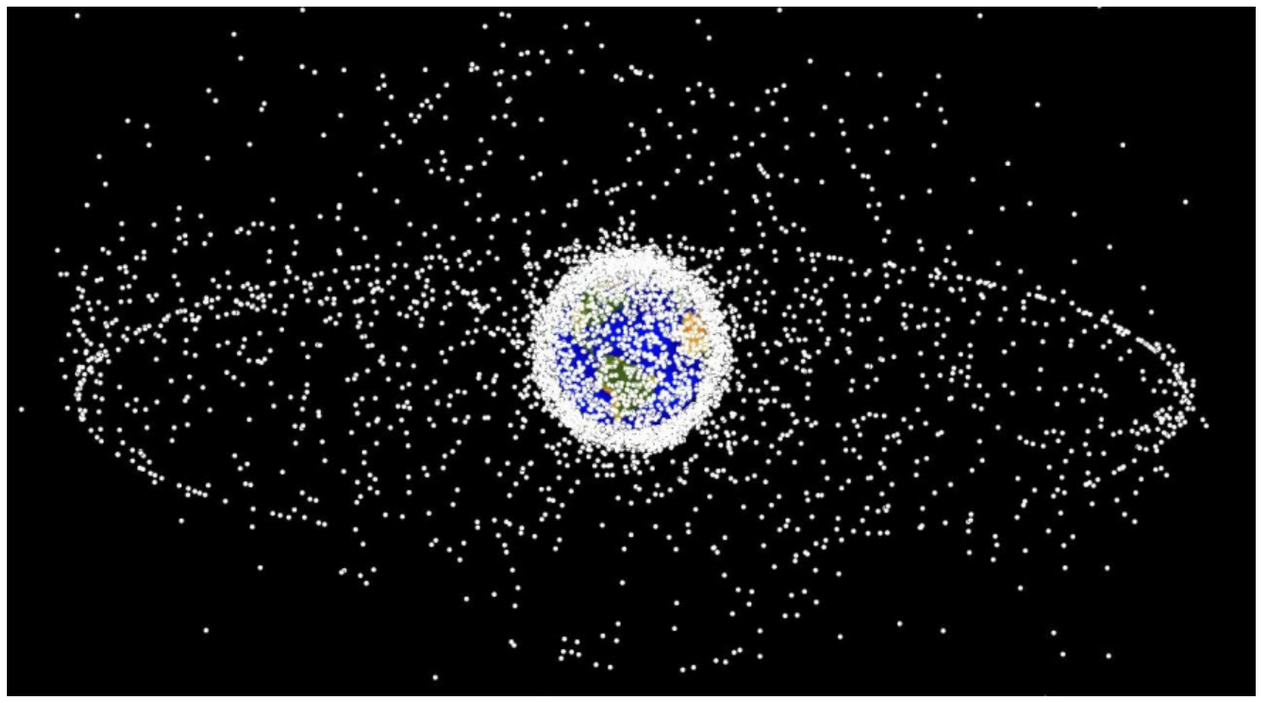

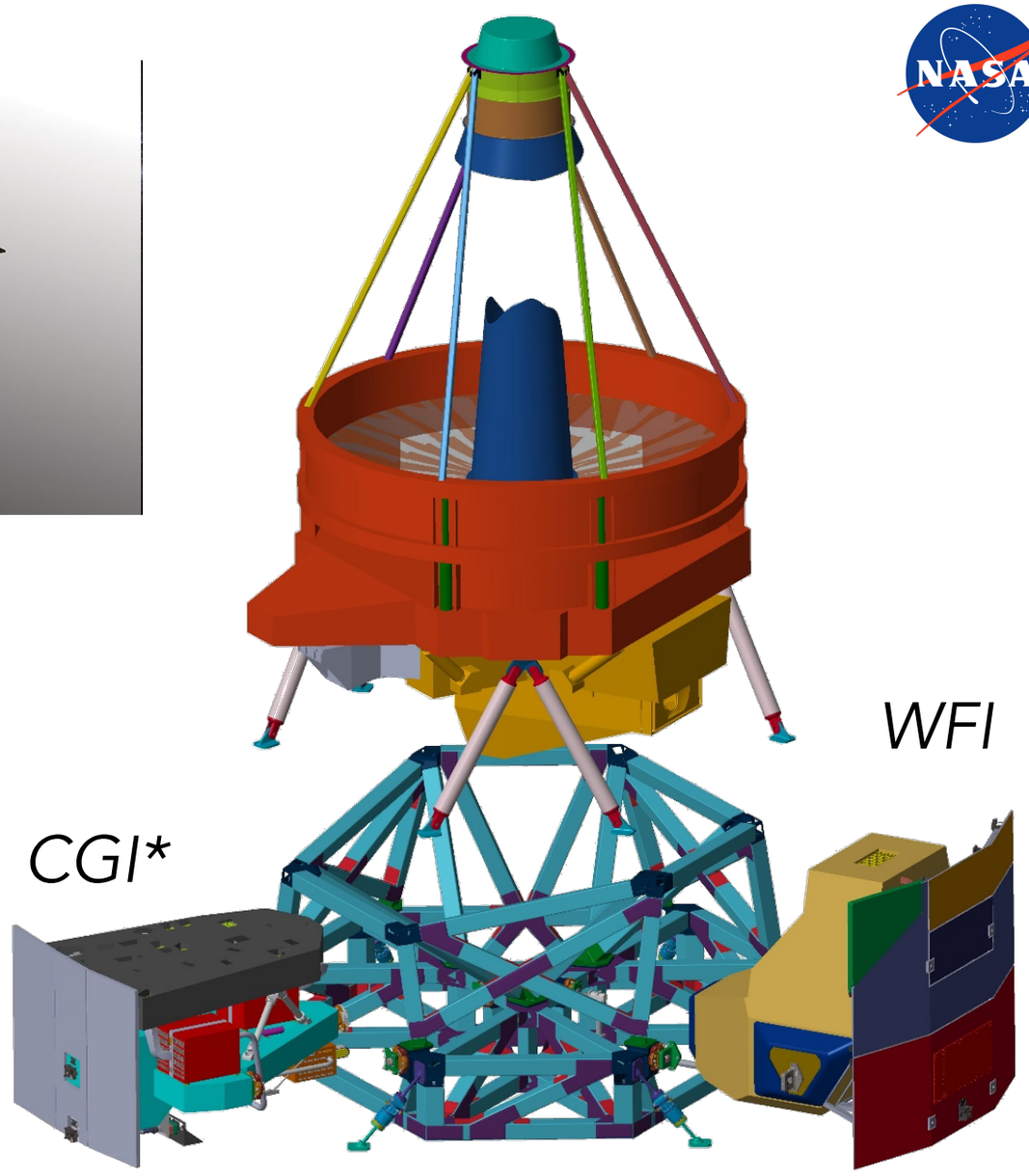

WFI

*CGI**

WFIRST

** We are here*

SSA

** Not there yet*

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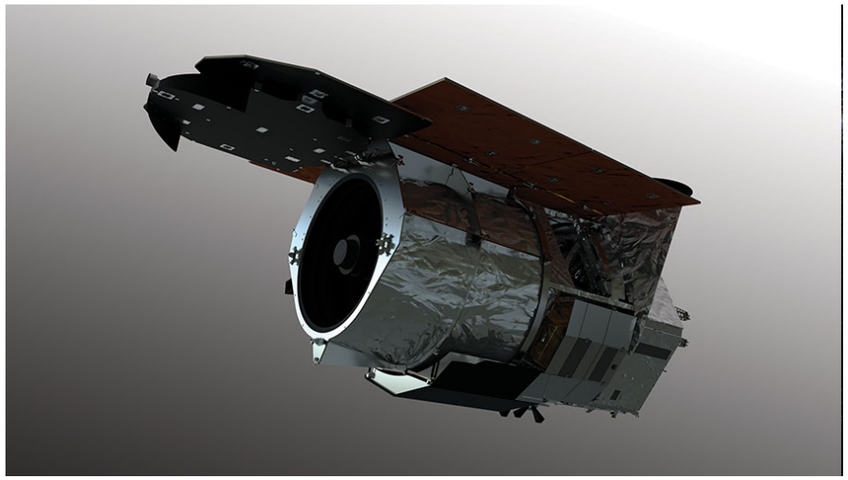
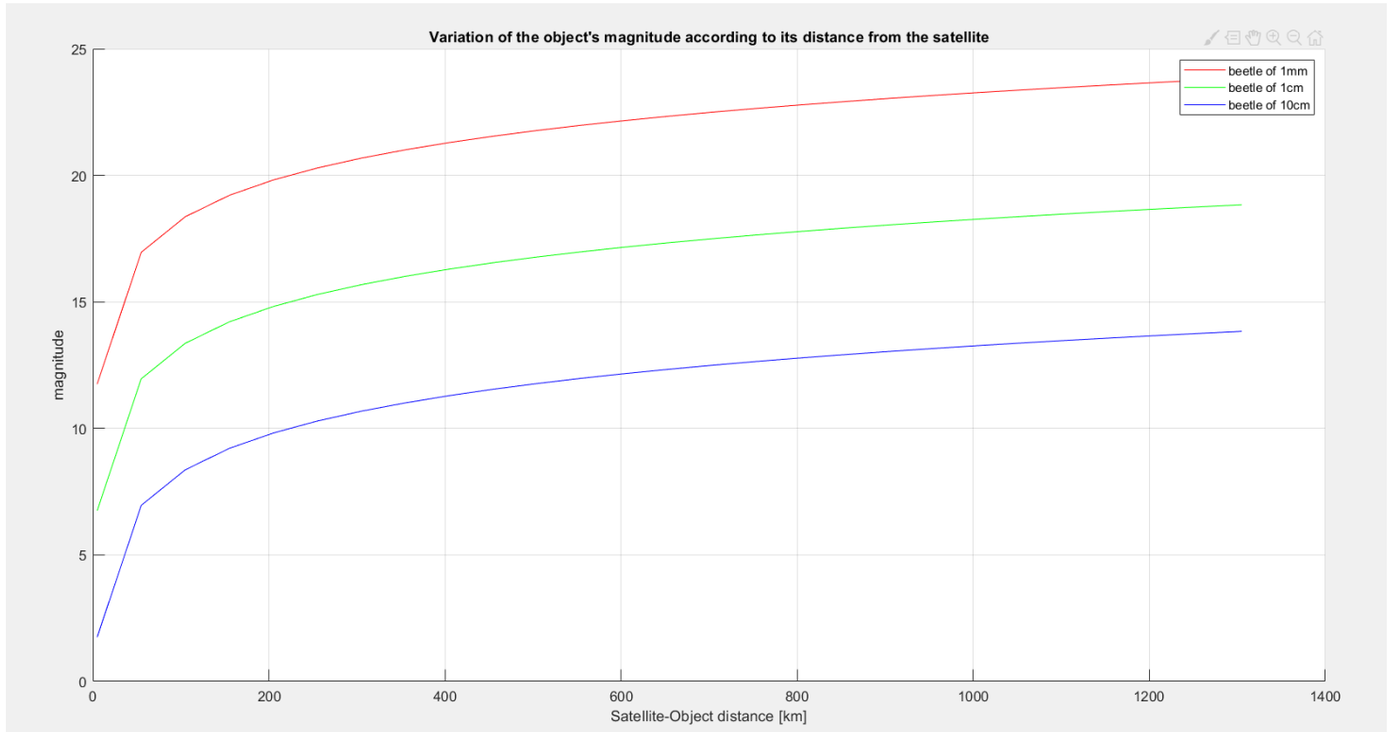
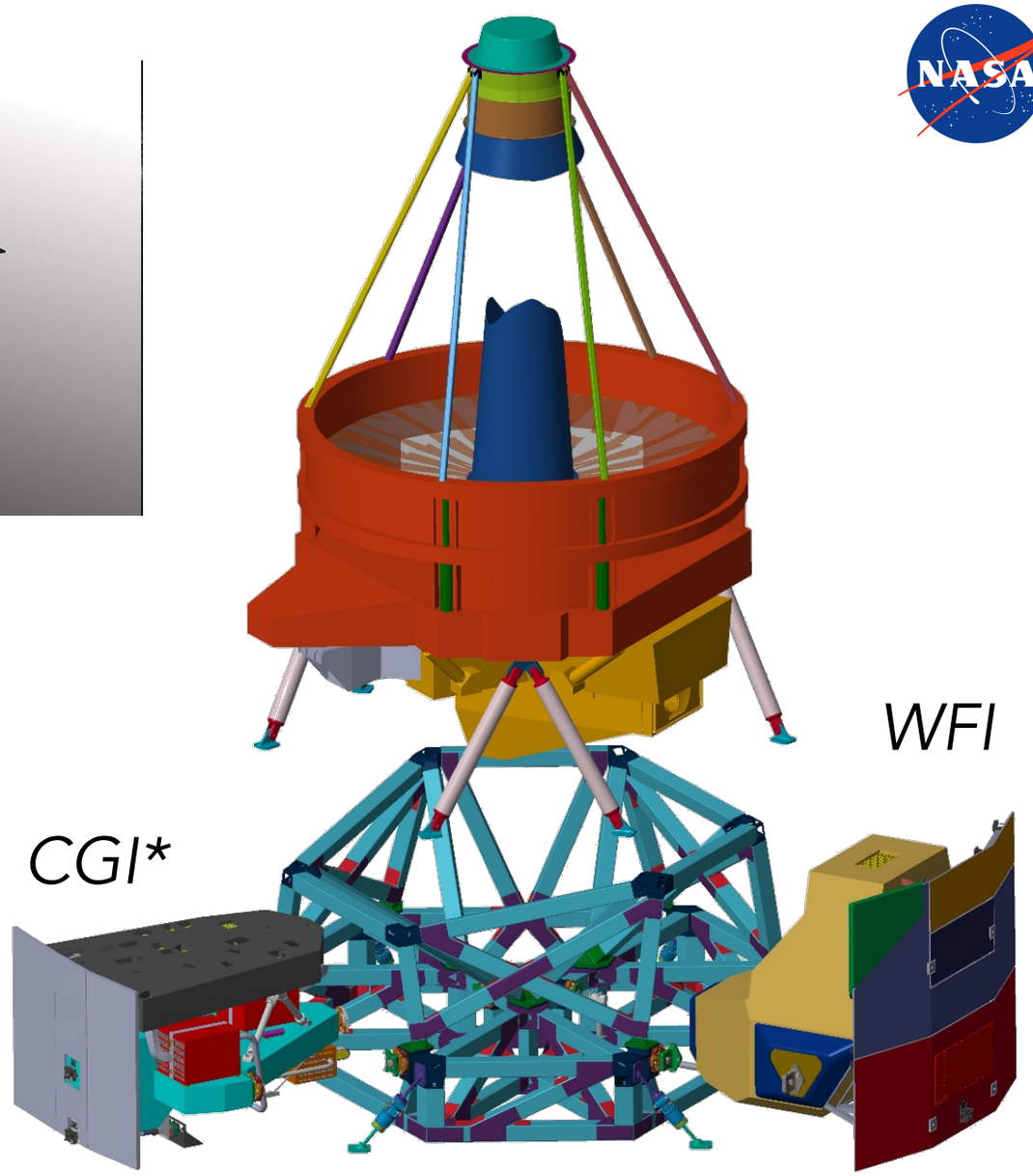
Yield







WFIRST

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SSA

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Conclusions

- CSA's innovation initiatives was a strong support for our commercial products development and an enabler for our space products development
  - It also helped us maintain our position as the world's leaders in extreme low light imaging in the visible
- Gap analysis of potential missions, SQ development plan and SQ development made us ready to answer our customer's needs
- FAST project with academia allowed us to gather SRL as well as TRL
- Next project will continue to strengthen Canada's leadership in ground and space based extreme low light imaging solutions

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