GEMINI OBSERVATORY

Exploring the Universe, Sharing its Wonders

Plans for the Future

Markus Kissler-Patig

Gemini Director

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The Partnership

International Partnership between USA, Canada, Brazil, Australia and Argentina, hosted by Chile and Hawaii

Annual Budget 2013-2015: ~$28M operations + ~$4M instrumentation

Users' feedback through the Science and Technology Advisory Committee (STAC), the Users' Committee (UCG) and the National Gemini Offices (NGOs)

US 65.50 %
CA 18.65 %
BR 6.53 %
AU 6.21 %
AR 3.11 %

Shares 2013-2015

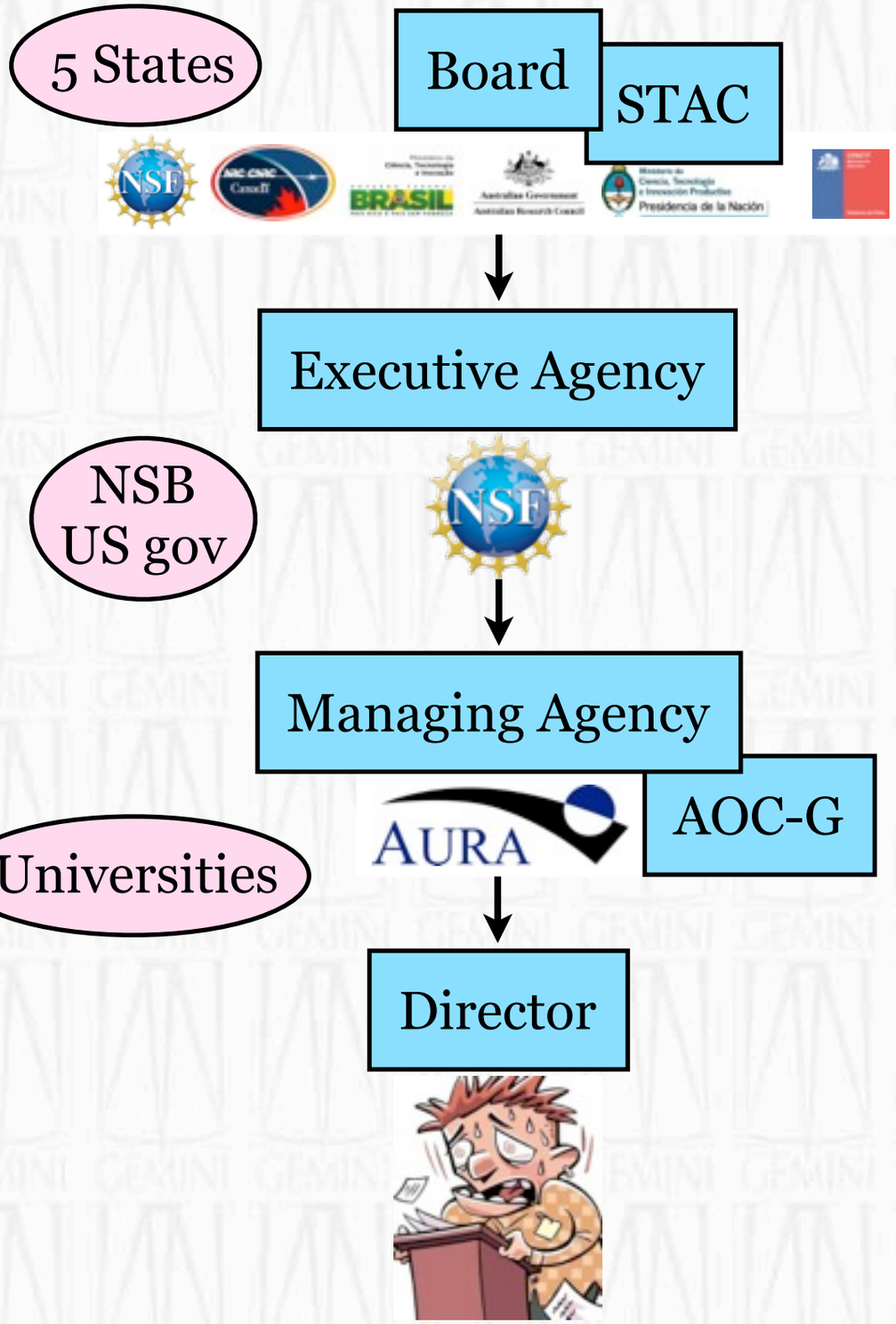
Gemini is managed by

AURA

on behalf of the

NSF

The Governance



International Agreement

current: 2013-2015 (without UK)
next: 2016-2018 (without AUS?)

by International Agreement [§9.11/9.12]
i.e. currently until 2018

Appointed by Executive Agency
AOC-G oversees Gemini's management
current: until 2015
re-competed for 2016-2022

Appointed by Managing Agency
current: 2012-2017

Gemini 2016-2018

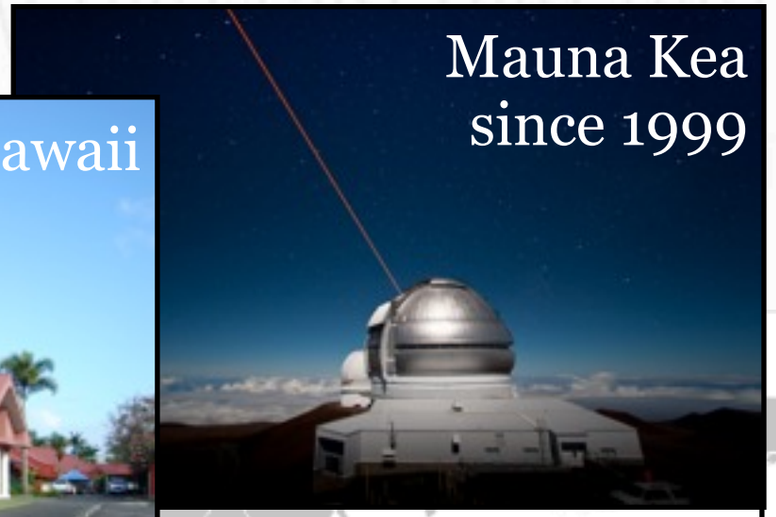
On the International Agreement 2016-2018:

"**2012.B.1.** The Board has executed an Assessment Point in accordance with Article 4 of the International Gemini Agreement. At this Assessment Point, all the Parties except Australia have stated their intentions to remain in the Partnership post-2015. The position of Australia at this time is that it cannot commit funding for the Observatory post-2015, but expresses a desire to remain engaged in Gemini for access to the telescope in a non-party status.

?

2012.B.2. The Board will work with the Executive Agency to seek potential new Parties."

One Observatory Two Telescopes



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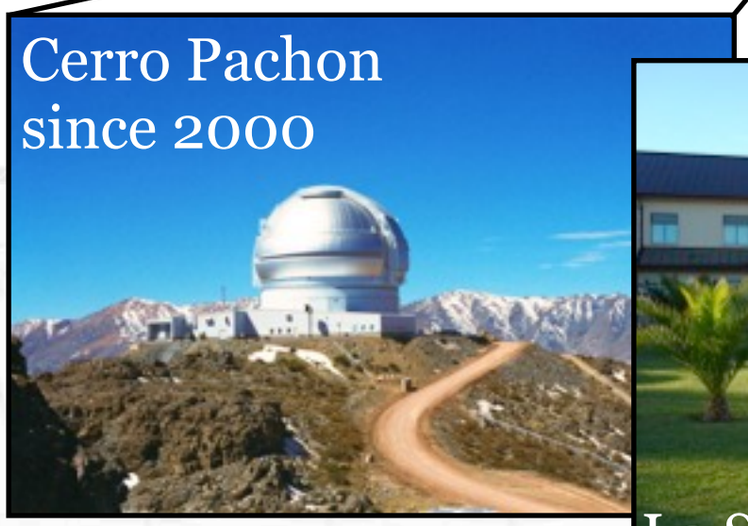


The Telescopes

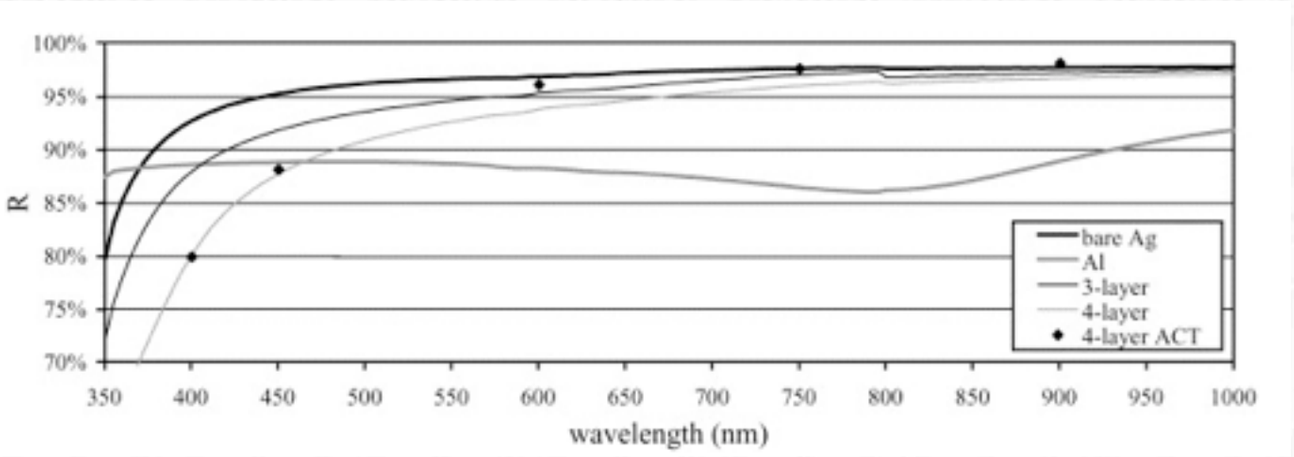
Optical configuration:
Ritchey-Chrétien Cassegrain

Primary Mirror:
f/1.8, 8.1 m diameter, 20cm thick, 22 tons
ULE glass by Corning's Canton and REOSC

Secondary Mirror:
1.0 diameter, Zerodur by Schott and Zeiss
Tip-tilt corrections up to 200Hz

At Cassegrain:
f/16, 1.610mm/arcsec

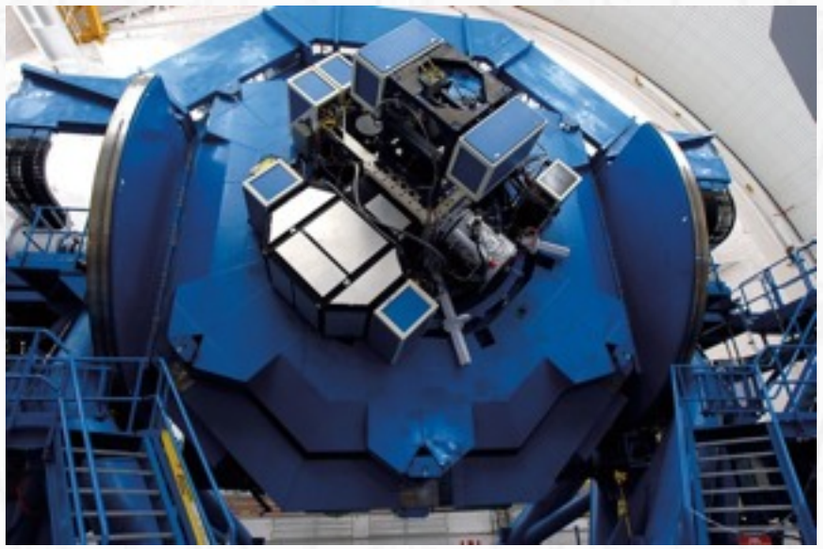
Coating:
Four-layer protected Silver



Instrumentation

Current Instrumentation

SITE	Instrument	Wavelength range	FoV, Mode, Resolution	AO Support
Gemini-N	GMOS-N	360-940 nm	img 5.5‘x5.5’ LS, MOS, IFS (5”x7”) R:600-4,000	(ALTAIR)
	NIRI	1-5 µm	img 20”x20” - 120”x120” ~~LS R:500-1,000~~	ALTAIR
	NIFS	950-2400 nm	IFS (3”x3”) R:5000	ALTAIR
	GNIRS	1-5 µm	LS R:1,800-18,000 (+img)	ALTAIR
2013	*(GRACES)*			none
Gemini-S	GMOS-S	360-940 nm	img 5.5‘x5.5’ LS, MOS, IFS (5”x7”) R:600-4,000	(GeMS)
	NICI	1-3 µm	img 18”x18” , coronagraph	NICI AO
	GSAOI	950-2400 nm	img 85”x85” with MCAO	GeMS
2013	FLAMINGOS-2	950-2400 nm	img 6.1’ ∅ LS, ~~MOS~~ (2’x6’) R: 1,200-3,000	(GeMS)
2013	*(GPI)*	900-2400 nm	IFU 2.8”x2.8” contrast: 10^7 at 0.4”	(XAO)
2016	*(GHOS)*	360-1000 nm	2 IFUs in 7’ ∅ R: 50,000 + 75,000	(None)



No mid-IR facility instruments
(but see visiting instruments!)

Strategic vs Tactical instrumentation

Strategic:

Build a complement of facility class instruments to cover the parameter space span by wavelength, spatial and spectral resolution

This is the task of the observatory

Tactical:

React to a science case; deploy on a short time scale

⇒ visitor instruments by the community

The Strategic Plan

The observatory can operate max. 4+1 facility-class instruments per telescope

and provide 1 new instrument/AO system every ~3 yrs
(cycle through all every ~30 years)

Gemini has funding to support your R&D (~$100k/year) and instrument upgrades (~$500k/year)

The next Strategic Instrument

A request for proposals is going out in 2013 for the next strategic instrument (a.k.a GIROS). The STAC recommends:

- The instrument should be a workhorse instrument (…)
- The proposals should be science driven and include science cases. Science cases that provide synergies with new capabilities coming online (e.g. LSST, JWST, ALMA, etc) are highly desirable, especially including capabilities needed to follow up survey discoveries.
- (…)
- Although proposals for all instruments fitting these criteria will be fully considered, it is the majority opinion of the STAC that a wide-bandwidth moderate-resolution spectrograph is likely to prove most compelling.

Following the request for proposals, 2 to 3 feasibility studies will be funded in 2014

The Tactical Plan

We encourage more visitor instruments

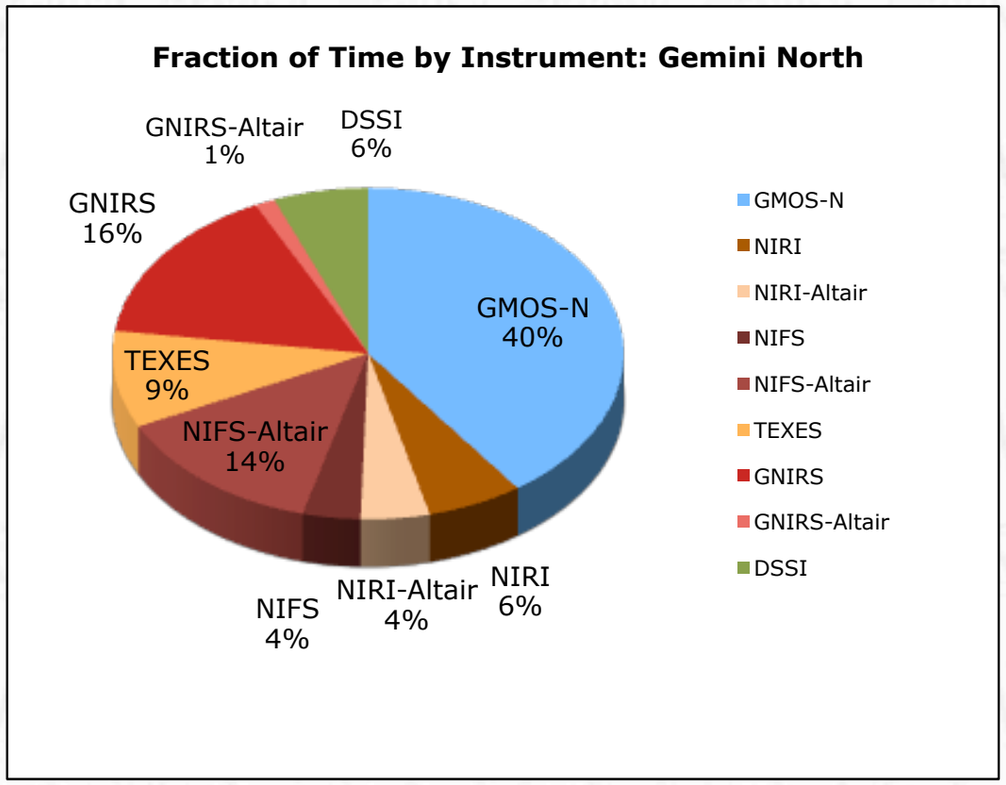
- Contact Gemini to get your instrument “certified”
- Apply for time at your favorite TAC
- Install your instrument and observe with it!

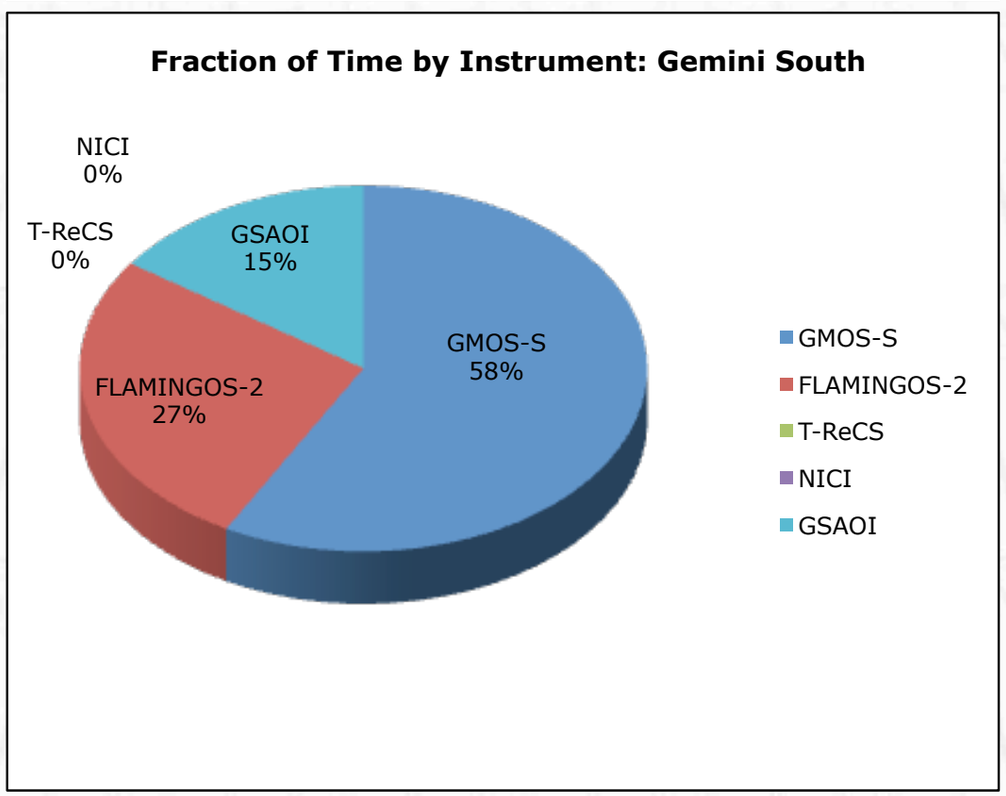
A typical visit would be for 2 weeks;
Repeated visits are possible;
The instrument gets offered to the community after the first visit

Large program proposals will allow to request campaigns

Win over the competition: think about deploying tactical visitor instruments on Gemini

Instrument demand (2013B)





Workhorses (>25%):

- GMOS-N & GMOS-S
- Flamingos-2 ! NEW

10-20% instruments:

- NIFS
- GNIRS
- GSAOI
- NIRI

Visiting instruments:

- DSSI: 6%
- TEXES: 9%

Summary

Gemini finishes to implement a very competitive suite of facility-class instruments

The Gemini Observatory will continue to deliver a new work-horse instrument or AO system every ~3 years

Current work-horse instruments will be upgraded for enhanced capability and against obsolescence

Visiting instrument will complement the facility-class ones for dedicated science cases

Gemini has funding to support your proposed R&D (~$100k/year) and instrument upgrades (~$500k/year)

Operations

Observing modes

- Queue mode (80-90%) - supported by eavesdropping (2013+)
  Gemini's unique flexibility, opening the time domain
- Classical mode (10-20%) - supported by remote observing (2015+)

Proposal application

- Standard - semester based through National TACs
- Large/Long proposal - through single LP-TAC (2014+)
  (20% of the total time / yearly deadlines)

- Monthly, fast-turn-over deadlines (2014+)
  (~10% of the time / fast peer review [not TAC] process)

Large/long programs at Gemini

Campaigns can be called for by the Board (e.g. NICI, GPI)

The Board has agreed to place 20% of the time in a pool for large/long programs (conveniently the UK share)

Yearly call for proposals (preceded by letters of intend)

Up to 3 years in length; Anywhere between a few hours to many nights per semester

Aimed at starting in 2014A

Fast turn-over at Gemini

Peer instead of TAC review

More flexible time allocation

(Sneak preview: the scheme is being discussed with the Gemini Users' Committee)

Semesterly deadlines …

July	Good idea
End of September	Deadline
November	Got time?
End of January	Phase 2 deadline
February	
August	bserving
September	Got data?

Faster turn-over?

14 months…

Monthly deadlines …

Deadline every end of the month

The proposers are the reviewers
(with two weeks to review)

A month of observing is added to the queue

4-6 weeks!!

Immediately observable

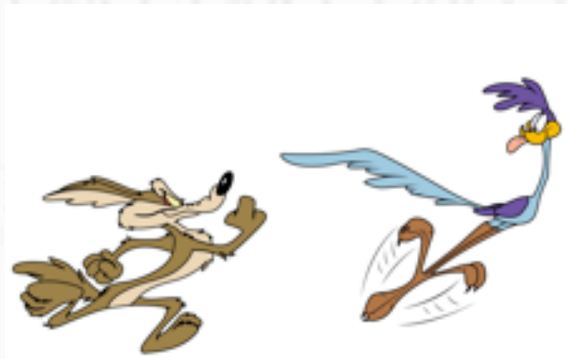
Example in Practice
(to be adapted to the users needs/choice)

Proposer commits to review 10 proposals
within two weeks of the deadline

Proposer ranks according to a given scheme
(e.g. 1 B1, 2 B2, 2 B3, 5 rejections)
optional: add incentive to do a good job

Each proposal got evaluated by 10 peers
(e.g. compute median, clip high/low)

Add B1, B2, B3 proposal to the queue



Example in Practice cont'd
(to be adapted to the users needs/choice)

Proposals are observed until partner percentage is reached

Rejected proposals cannot be re-submitted e.g within 6 months

Scheduled proposal remain in the queue for 1 year
(or until target is not visible anymore)

The scheme wins about 12 months over the competition

It could be started on a trial basis
with 10% of the available time

Mauna Kea

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On-going Projects with the neighbors

with CFHT:

- explore the possibility of sharing instruments - GRACES: the fiber link from Gemini to ESPaDOnS

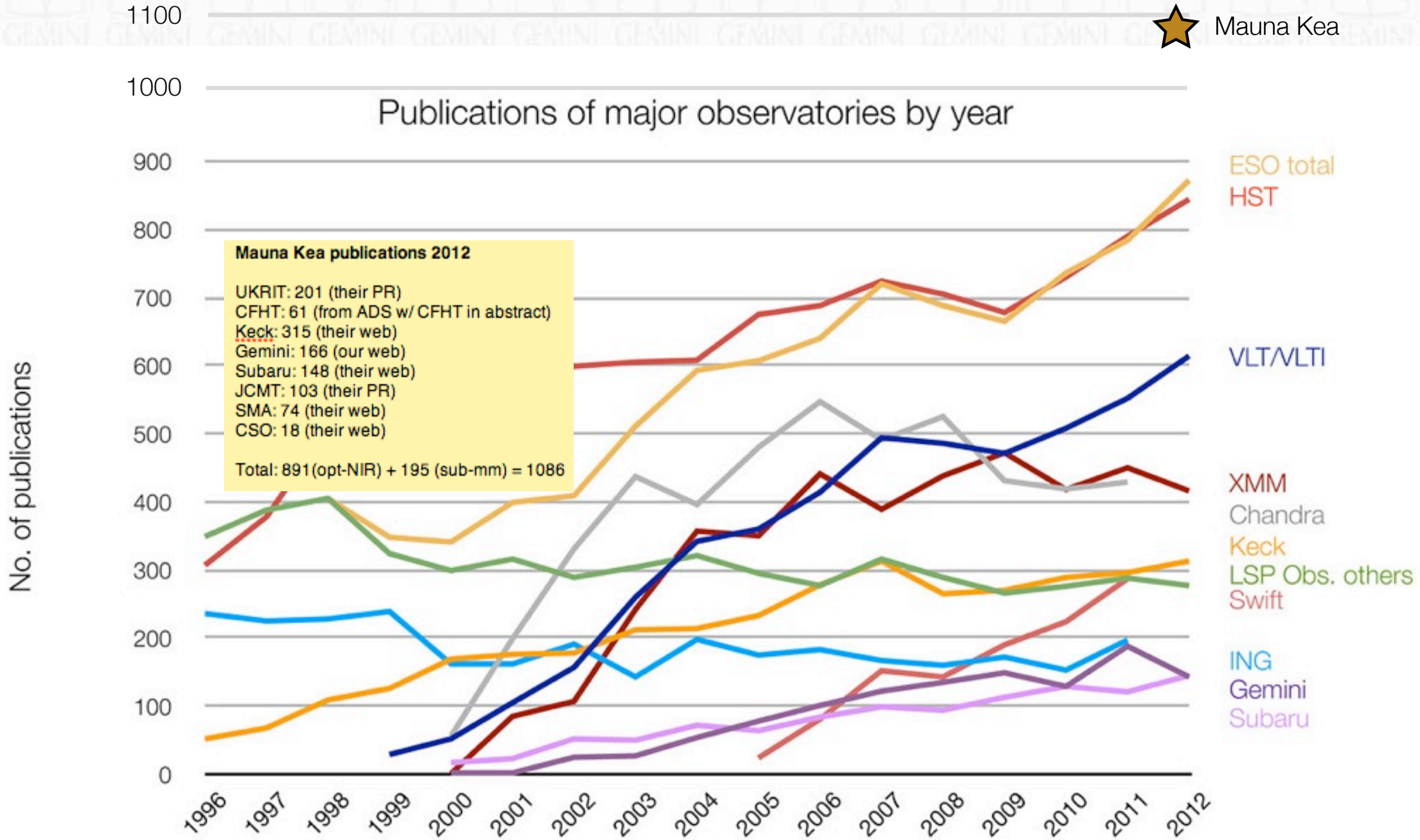
with SUBARU:

- formal time exchange program (driven by user demand)
- shared staff for shared knowledge

with Keck:

- common project to replace laser spotters by transponders

Not unthinkable to integrate Gemini North into a broader Mauna Kea scheme post 2018


Publications of major observatories by year
No. of publications
1100
1000
900
800
700
600
500
400
300
200
100
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Mauna Kea
ESO total
HST
VLT/VLTI
XMM
Chandra
Keck
LSP Obs. others
Swift
ING
Gemini
Subaru
Mauna Kea publications 2012
UKRIT: 201 (their PR)
CFHT: 61 (from ADS w/ CFHT in abstract)
Keck: 315 (their web)
Gemini: 166 (our web)
Subaru: 148 (their web)
JCMT: 103 (their PR)
SMA: 74 (their web)
CSO: 18 (their web)
Total: 891(opt-NIR) + 195 (sub-mm) = 1086

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Mauna Kea has the potential to expand its world leadership

Thank You!