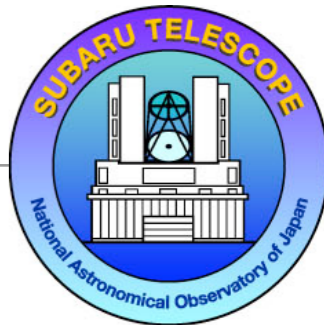


Subaru Telescope Instrument Plan toward 2020s



2014/12/24 I. Iwata for Subaru Advisory Committee (2016/12/16 some updates)

Instrument Planning Task Force Members:

H. Fujiwara, T. Hattori, M. Imanishi, N. Kashikawa, Y. Minowa, N. Narita,
N. Takato, Masaomi Tanaka, I. Iwata

- Instrument Planning 2015 web page
 - <http://www.naoj.org/Projects/newdev/instplan2015/>
- Instrument Planning Task Force web page
 - <http://www.naoj.org/Projects/newdev/instplan2015/TF/>

Background

Why Instrument Planning is necessary Now

- Two Major Milestones
 - PFS commissioning - Starts in 2017, EFL in 2019
 - HSC + PFS operations
 - TMT operations - FL in late 2020s
- Carry-out PFS commissioning while operating Subaru open-use
- Carry-out HSC + PFS operations, including SSPs
- Enforcement of Infrared Facility Instrument(s)
 - Competitive among 8-10m telescopes
 - ULATIMATE-Subaru
- International Partnership

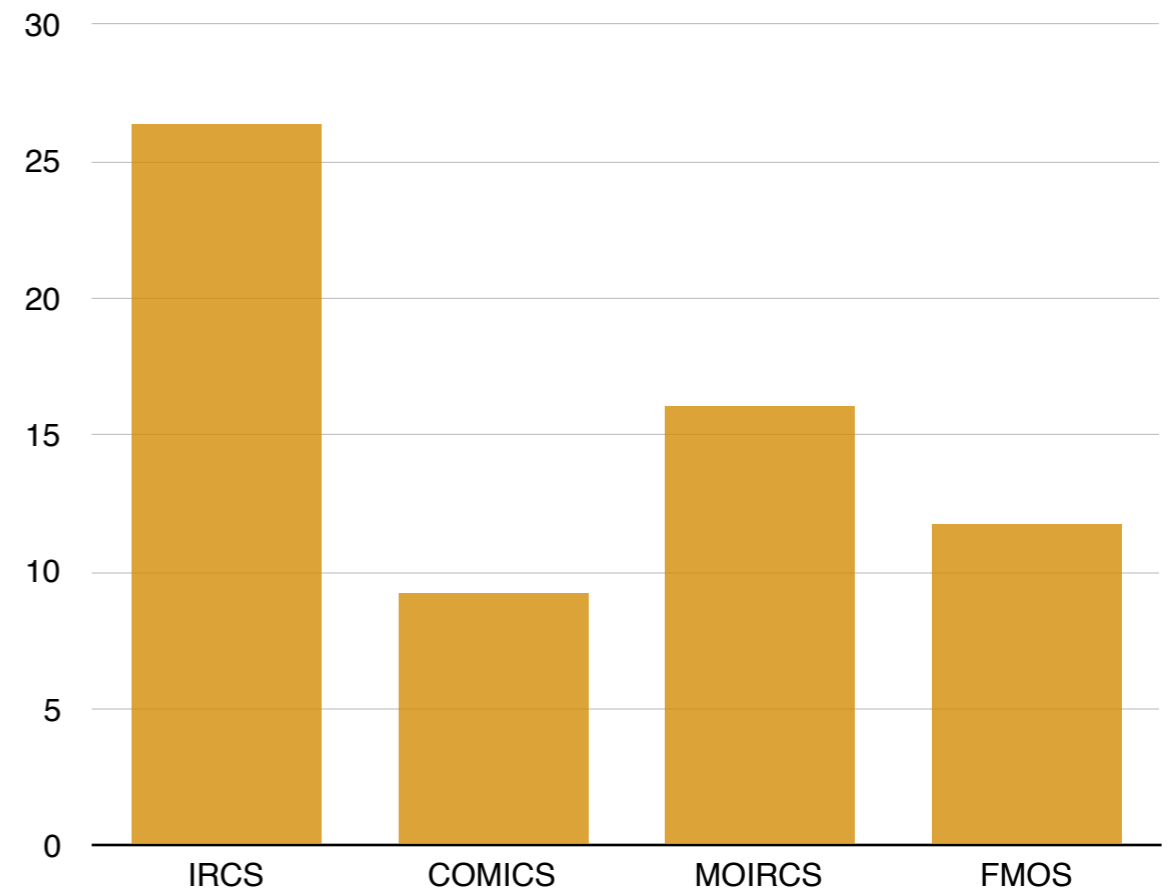
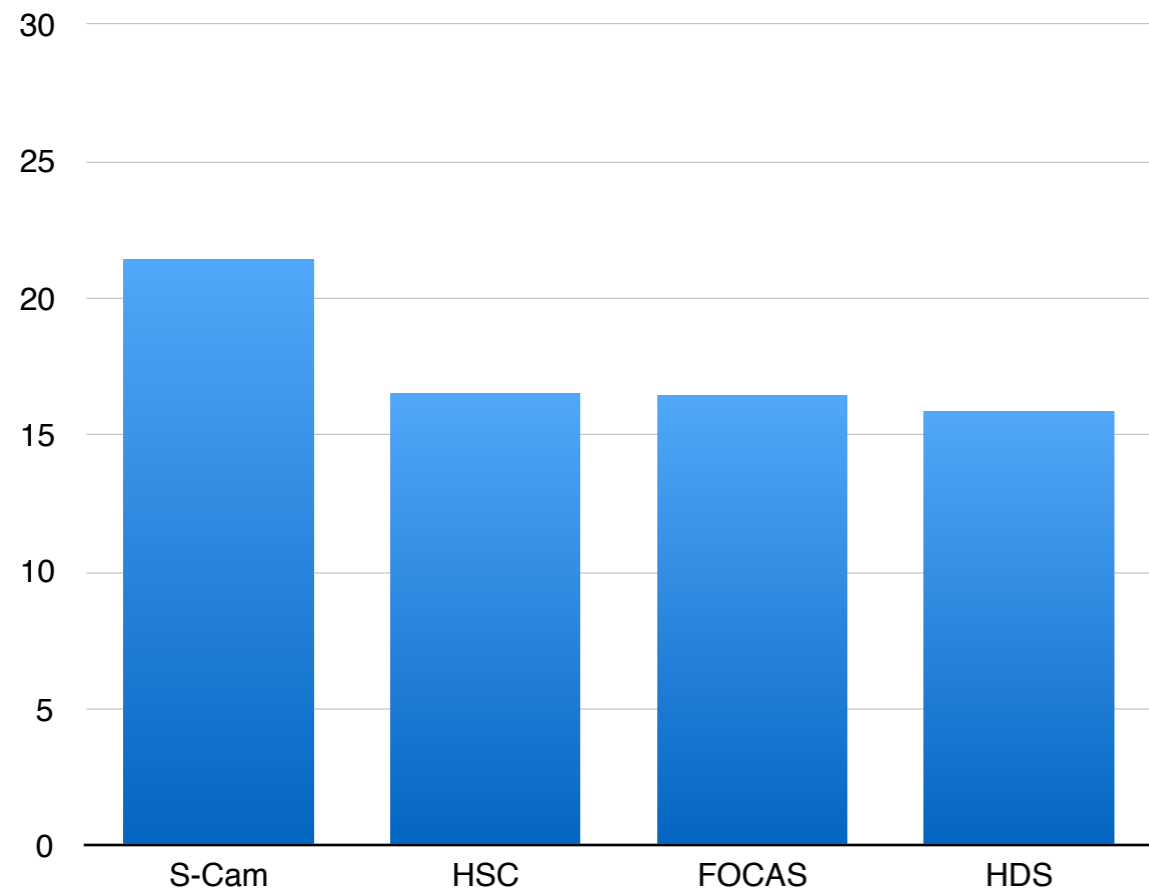
Instrument Radar Charts

Instrument Radar Charts

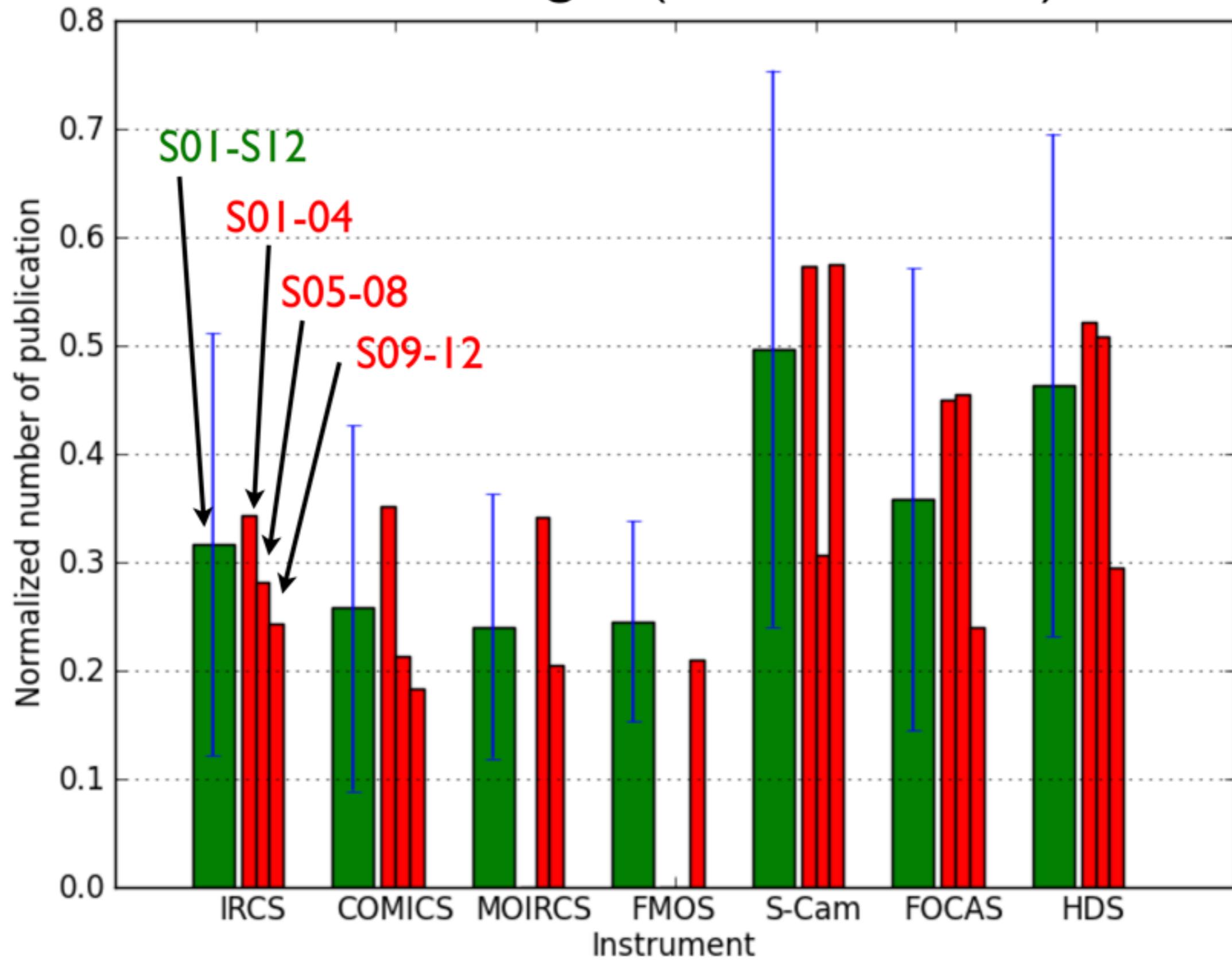
- Demand - From number of submitted proposals from S10A to S14B
- Performance - From results of publication survey
- Competitiveness - From proposal referee scores (fraction of proposals with score ≥ 6)
- Troubles - From nightlog reports from S10A - S14B
- Work loads - Day crews and instrument division / SA works
- Uniqueness - Existence of alternative instruments in Keck / Gemini / TAO

- Scores: 5 (good) - 1 (bad)

Number of Proposals, S10A - S14B (average)



Publication/night (time evolution)

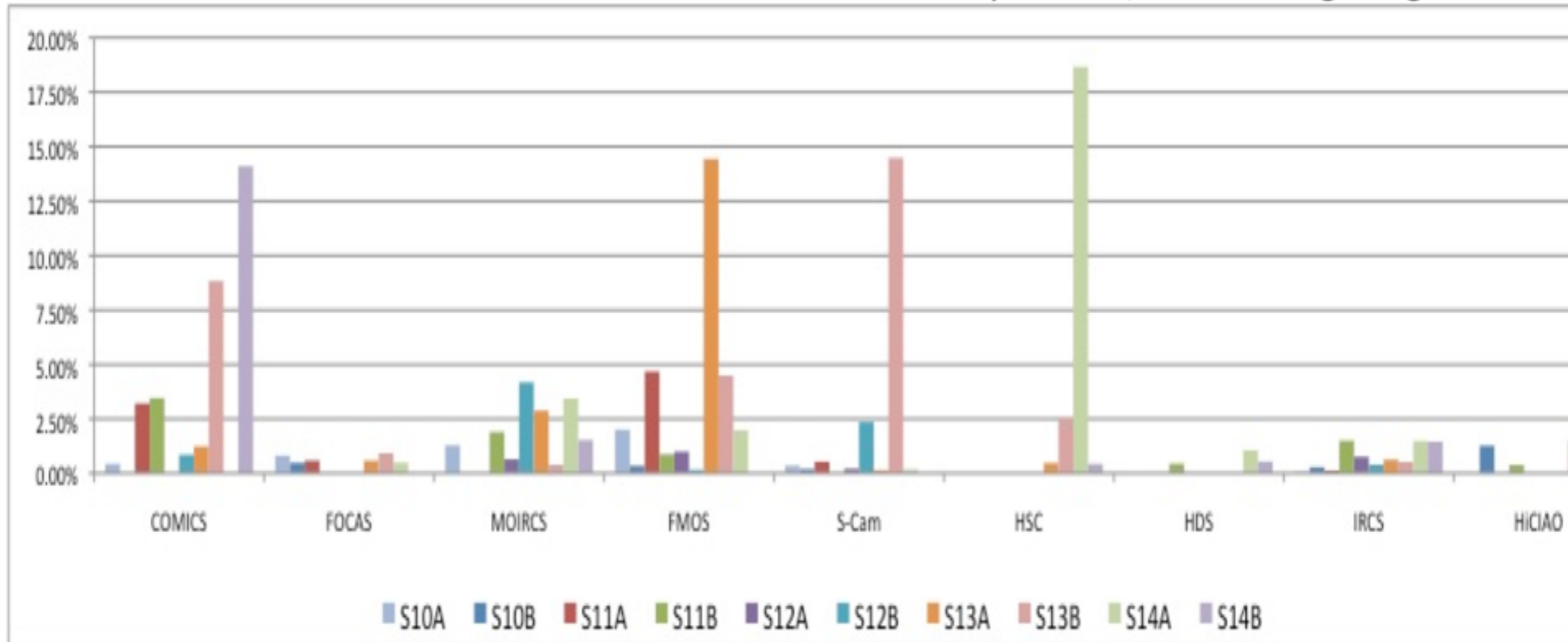


Competitiveness: Fraction of proposals with high referee scores (≥ 6)

- #1 group (~40%): HDS, SCam, Keck, HSC
- #2 group (~35%): FMOS, IRCS
- #3 group (~30%): MOIRCS, COMICS, FOCAS
- #4 group (~25%): Gemini

Instrument Troubles

By Nakano, based on night log



In addition to this,

**One spectrograph was not used many times (2011-2013)
for FMOS**

One array was not used many times (2007-2013) for MOIRCS

Regular Workload

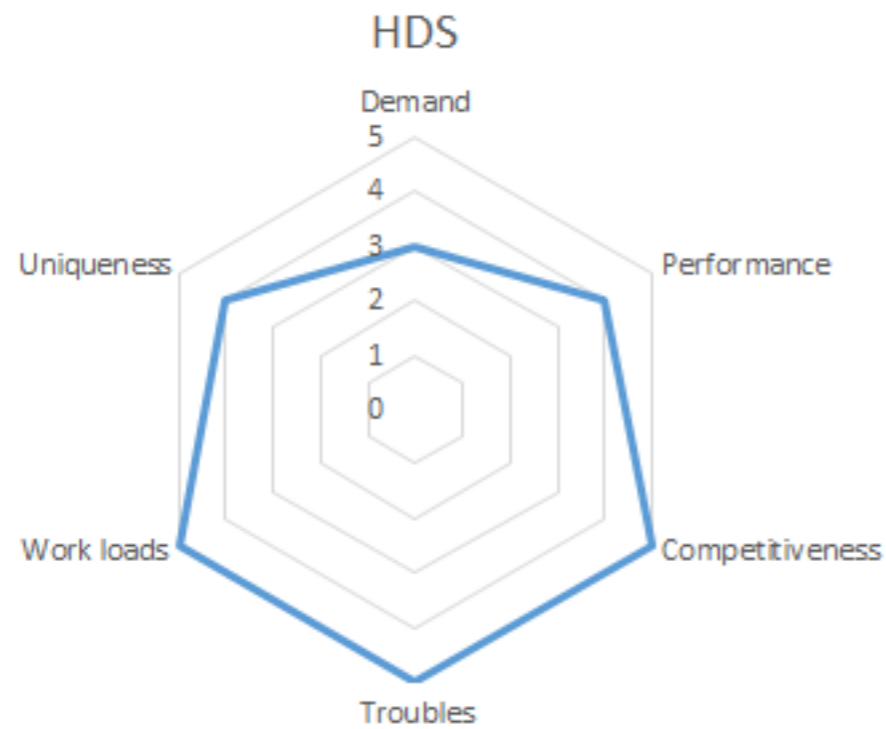
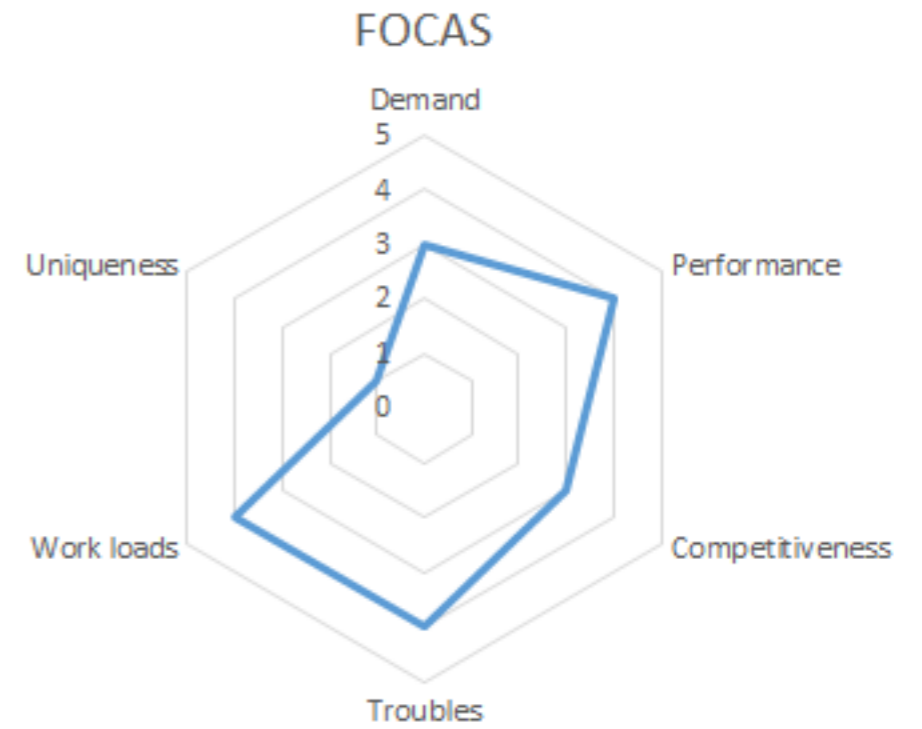
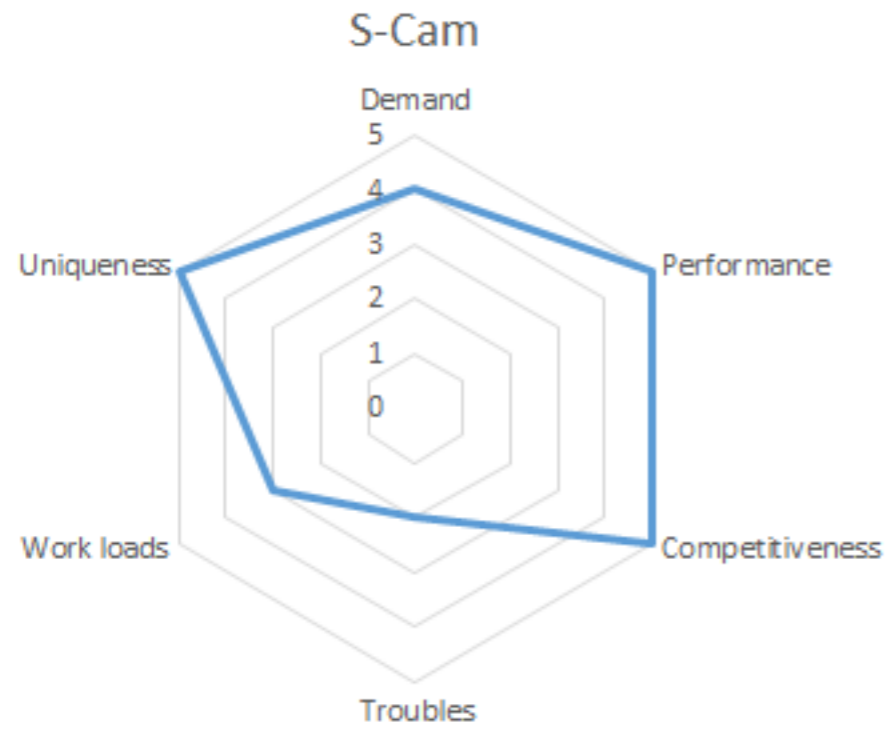
(FTE-Days/Year)

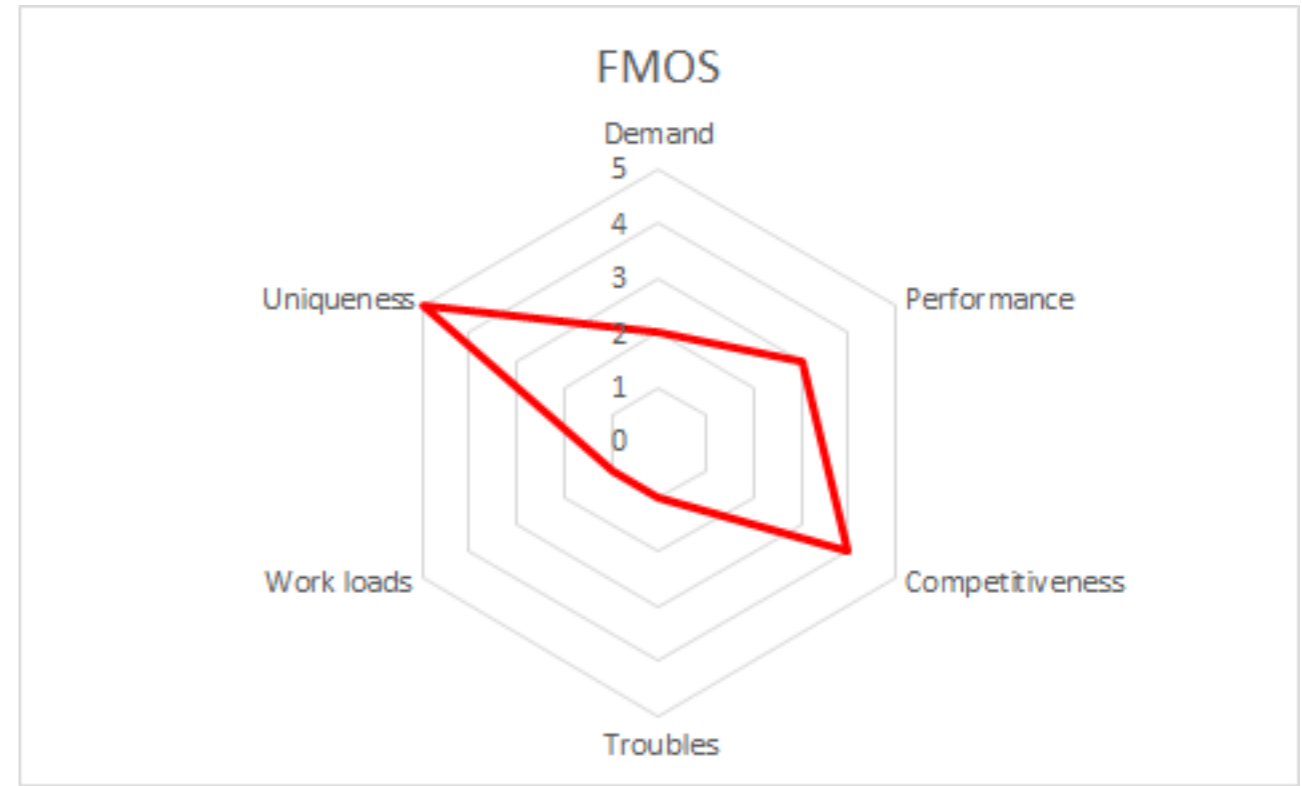
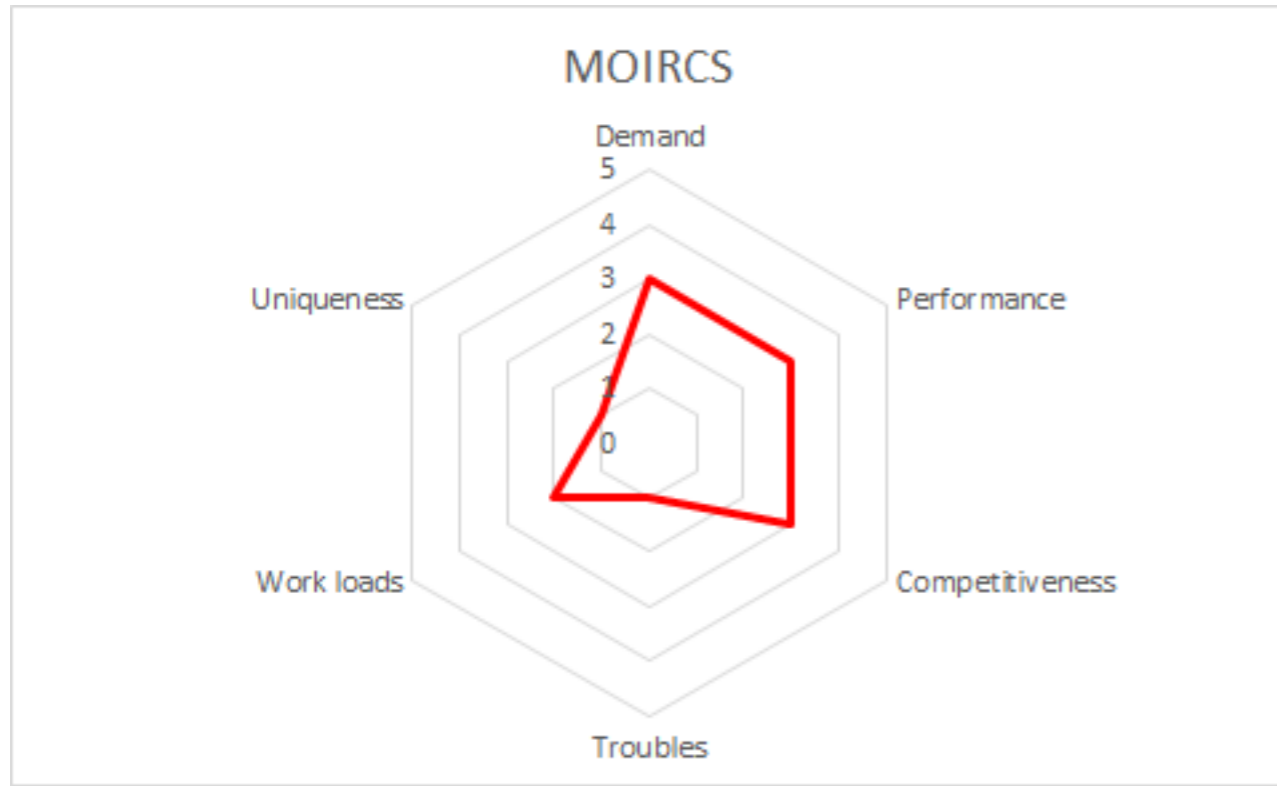
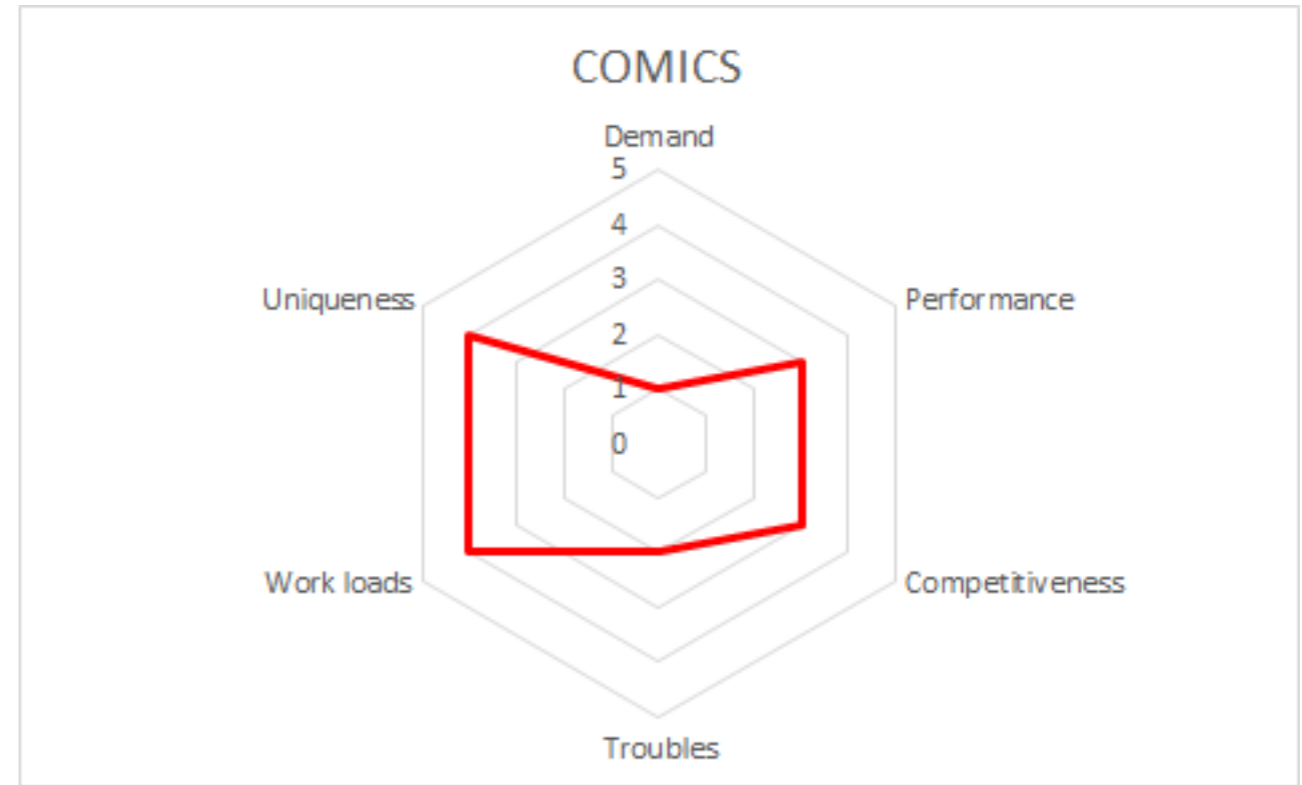
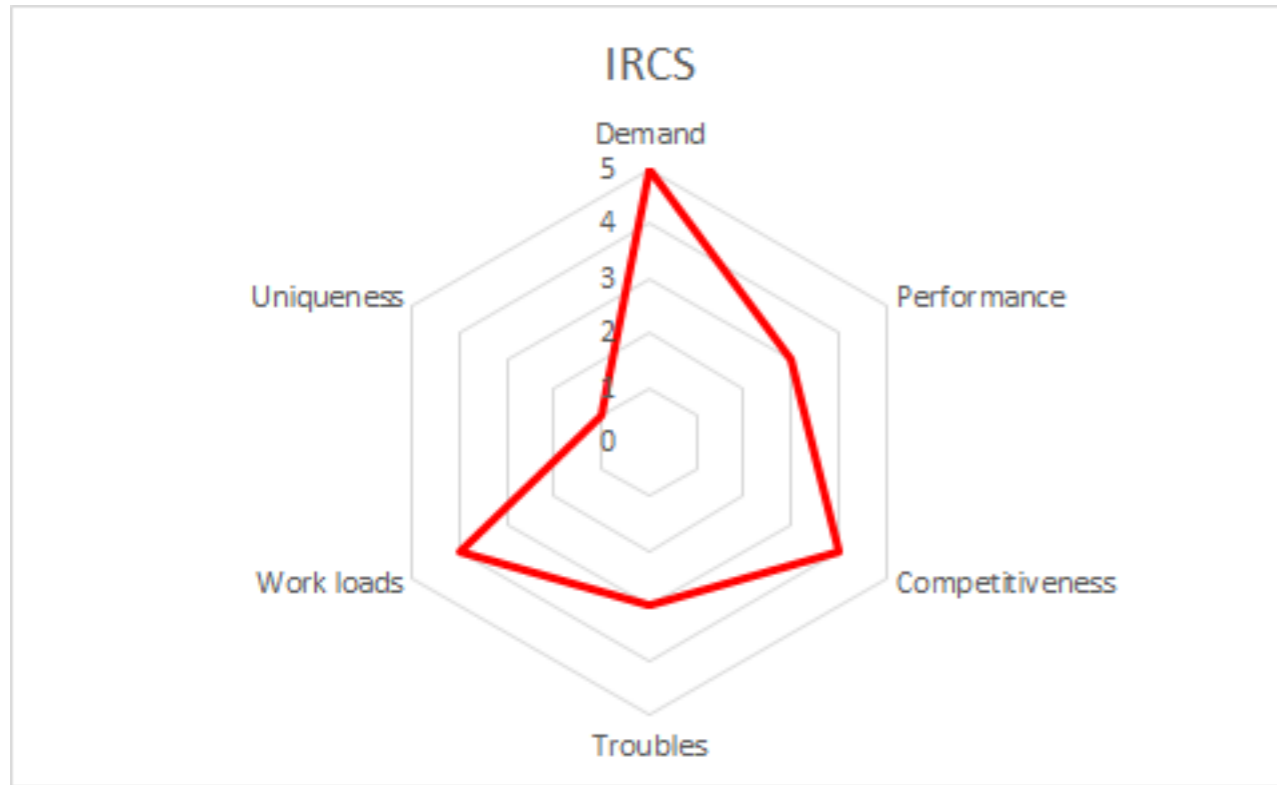
	IA/SA	ID tech	DC	Total
COMICS	3.3	10.5	30.6	44.4
FMOS	12.4	2.7	19.5	34.6
IRCS+AO	11.7	21.2	19.3	52.3
MOIRCS	15.8	44.8	33.3	94.0
FOCAS	12.4	2.7	19.5	34.6
HDS	10.6	0.5	22.1	33.2
SCam	20.8	7.0	36.0	63.9

* this does not include Prep work in Hilo and sudden troubles, which often occupies most man power (but very difficult to quantify).

Alternatives / Uniqueness

Subaru	Keck	Gemini	TAO
IRCS	OSIRIS NIRC2 NIRSPEC	GNIRS NIFS	
COMICS		TEXES	MIMIZUKU
MOIRCS	MOSFIRE	NIRI GSAOI FLAMINGOS-2	SWIMS
FMOS			
HSC			
FOCAS	LRIS DEIMOS ESI	GMOS	
HDS	HIRES		
HiCIAO		GPI	





Radar Chart Scores

	S-Cam	HSC	FOCAS	HDS	IRCS	COMICS	MOIRCS	FMOS
Demand	4	3	3	3	5	1	3	2
Performance	5		4	4	3	3	3	3
Competitiveness	5	5	3	5	4	3	3	4
Troubles	2	2	4	5	3	2	1	1
Work loads	3	1	4	5	4	4	2	1
Uniqueness	5	5	1	4	1	4	1	5
Score	24		19	26	20	17	13	16
Score (normalized)	0.94		0.78	1.05	0.81	0.68	0.51	0.61

Timeline (Subaru UM, Jan. 2015)

