

Cadence & scheduling

- Various talks this week mentioned the impact of observing cadence on time-domain science, ranging from seconds to years.
- With its stable orbit, wide field, IR coverage and sensitivity, Roman will be transformative for a huge range of TD science discussed during the meeting.
- As of right now we have 5 basic modes of observations:
 - HLTDS (cadence optimized for SN Ia science, not locked in!)
 - HLWAS (no cadence?)
 - GBTDS (cadence optimized for microlensing, not locked in!)
 - TOO? (2 week turnaround?)
 - GI? (minimum of 25% of time available?)

DISCUSSION: Choice of fields, filters, cadence, TOO response and fraction of time, and GI boutique surveys. **MAXIMIZE THE SCIENCE RETURN!**

Where the community can engage

- To begin thinking about how to maximize the impact of Roman for TD, we might consider the following:
 - What cadences are most important for different science cases? What do these imply for the Roman survey designs and the ToO latency capabilities of the observatory?
 - What science is best achieved with untriggered vs. triggered surveys?
 - What's the best balance of multi-band imaging photometry and spectroscopy (with either the grism or prism) for each science case for both untriggered and triggered surveys?
 - What additional TD science could be achievable with the Roman core surveys (as currently designed) vs. general surveys proposed by the community as part of open time? Could small changes to the core surveys open up entirely new science areas?

Notional Observing Program Overview (from Mission PDR)



OBSERVING PROGRAM LAYOUT

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MISSION YEAR 1 (2026)	HLS	EMS	EMS	HLS	EC	GO	HLS	EMS	EMS	HLS	GO	HLS
	GO			GO	HLS	PA/C	EC			EC	EC	GO
MISSION YEAR 2 (2027)	EC	EMS	EMS	HLS	HLS	SNS	SNS	SNS	SNS	SNS	SNS	SNS
	GO			EC	GO	HLS	GO	HLS	GO	GO	HLS	HLS
MISSION YEAR 3 (2028)	SNS	SNS	SNS	SNS	SNS	SNS	SNS	SNS	SNS	SNS	SNS	SNS
	HLS	GO	HLS	GO	GO	HLS	HLS	GO	HLS	GO	GO	GO
MISSION YEAR 4 (2029)	SNS	SNS	SNS	SNS	SNS	HLS	GO	EMS	EMS	HLS	GO	HLS
	HLS	HLS	GO	HLS	GO	PA/C	HLS				HLS	PA/C
MISSION YEAR 5 (2030)	HLS	EMS	EMS	HLS	HLS	GO	HLS	EMS	EMS	GO	HLS	GO
	GO			GO	GO	PA/C				HLS		PA/C

LEGEND

HLS	High Latitude Survey (Imaging & Spectroscopy)
SNS	Supernova Survey (Imaging & Spectroscopy)
EMS	Exoplanet Microlensing Survey
GO	General Observer Program
EC	Exoplanet Coronagraphy Program
PA/C	Payload Alignment/Calibration

- Notional Observing Program activities are represented in each month as a **percentage of time dedicated to that activity**
- Durations range from 1 week (25%) to 4 weeks (100%) →
- Routine mission overheads (e.g. large slews between observing programs, momentum unloads, station-keeping) are interleaved with the observing program activities

1-month
25%
25%
25%
25%

Notional layout demonstrates capability to meet science objectives within scheduling constraints

- Current Roman core surveys as outlined in the Design Reference Mission (DRM) meets high level science requirements.
- The details of these surveys and their design will be re-assessed by the Project Infrastructure Teams to be solicited with the upcoming Roman ROSES call.