Thinking about an annual release DRP (like DR2) from a bird's eye view.

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Bird's eye DRP run metric estimates:

Previous DRP campaign metrics with similar stack pipelines:

DRP	RTN	Year Mos	visits	det/visit	tracts	steps/stages	core-hours	storage	days
DC2		2 days	**300**	150	2	steps 1-7	**5K**	10TB	2d
RC2		3 days	**423**	100	3	steps 1-7	**10K**	25TB	3d
DP1		3 days	**1800**	9	22	steps 1-7	**10K**	25TB	3d
DP0.2	rtn-039	2022 1-6	**20K**	150	150	steps 1-7	**2.5M**	2.5PB	180d
PDR2	rtn-063	2023 5-9	**14K**	100	400	steps 1-7	**1.5M**	2.5PB	120d
(projection)									
DR 1		2026 1-9	**240K**	189	8000	stages 1-4	**40M**	50 PB	**150d**
DR 2		2027 1-9	**500K**	189	10000	stages 1-4	**80M**	100 PB	**300d**

Rough numbers in an early DRP (DR1-DR2)

800 exposures/night, 300 nights/year = **240,000 visits/year.** Each visit has ~**200** (189) detectors (**50M raws/year**). Sky is divided into **10K tracts** of 2.5 sq degrees/tract (25,000 sq degree LSST footprint) Early DR depth will scan the sky **N=10** times/year.

Stage 1 (ISR, PSF) runs on 200 x 1M/4 = **50M quanta** wallclock time is 2 min/quanta → 100M minutes = **2M core-hours**. If we have **3 DFs x5000** cores, this would take running full out at 100% efficiency: ~**6 days.**

Stage 2 (photometric calibrate (fgcm), astrometric calibration (gbdes), finalCharacterization (time chewing step): Currently takes almost as half as long to run stage 2 as running stage 3 (may not be able to use all 15K cores, say 10K): **8M core-hours: ~35 days.**

Rough numbers in a full year DRP (early years)

800 exposures/night, 300 nights/year = **240,000 visits/year.** Each visit has ~**200** (189) detectors (**50M raws/year**). Sky is divided into **10K tracts** of 2.5 sq degrees/tract (25,000 sq degree LSST footprint) Early DR depth will scan the sky **N=10** times/year.

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Stage 3 (Coadds) generated for 10K tracts of 100 patches each (**1M patches**) wallclock time is 8x that of step 1, or perhaps **16M core-hours** (with 10K cores): **~66 days** .

Stage 4 (DIA,light curves) runs on patches x visits (1M x 10 visits/patch =10M quanta)

Takes a similar amount of time to Stage 3 (currently **16 M core-hours,** all 15K cores): **45 days.**

Total 4 stages DR2 DRP: 6+ 35 + 66 + 45 = 152 days.

Requirement: Must run in 200 days.   Risks: cores-filling, data movement, restarts.

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A DRP 'grouping' example

DRP	RTN	Year Mos	visits	det/visit	tracts	steps/stages	**core-hours**	storage	days
DR	1	2026 1-9	**240K**	189	8000	stages 1-4	**40M**	50 PB	**150d**

Stage 1: 50M quanta 2 min/job: 8M x 6 (1,1,3,1) at (RAL, LANCS, FR, US) reasonable max Group size might be 800K jobs/group → 10-30 groups for CM to manage/site. **6 days**

Stage 2: 1M quanta 8 hours/job: group size might be 500K jobs/group → 2-6 groups at each DF: **35 days**

Stage 3: 1M quanta 20 hours/job: group size might be 20 tracts/group (2K quanta/group) need 500 groups (100,100,300,100) at (RAL,LANCS,FR,US) managed: **66 days**

Stage 4: 10M quanta 1 hr/job, group size similar to step1 (800K jobs/group), 2-6 groups/DF: **45 days**

2x3 multisite step-by-step

Step1

Step2a

Step2b

fan-in-step2c

Step2c

fan-out-step2c

Step2d

Step2e

Step3

fan-in-step7

Step7

Step4

Step5

Step6

Make-Collections-of-everything

Generate-Resource-Usage

fan-in-plotsoutputs

Make-collection-of-everything-at-USDF

Load Plot Navigator

move-from-ukdf-step2cin.sh

export CONFIG_FILE=rucio_register.cfg

Needs:

export BUTLER_REPO=hsc_pdr2_multisite

rucio-register \
 -r \$BUTLER_REPO \
 -c HSC/runs/PDR2/VVDS/w_2025_04/DM-48570/step2a_output/ukdf \
 -t visitSummary \
 -d Dataset/HSC/runs/PDR2/VVDS/w_2025_04/DM-48570/step2a_output/ukdf/2cinputs \
 -C \$CONFIG_FILE \
 -s 30

2x3 multisite step-by-step (Rucio move sample)

RUCIO add-rule to launch data copy:

rucio add-rule
hsc_pdr2_multisite:Dataset/HSC/runs/PDR2/VVDS/w_2025_04/DM-48570/ukdf/2cinputs
2 LANCS_BUTLER_DISK\|SLAC_BUTLER_DISK

Check if dataset is done moving (try this in a loop):

rucio list-dataset-replicas
hsc_pdr2_multisite:Dataset/HSC/runs/PDR2/VVDS/w_2025_04/DM-48570/ukdf/2cinputs