Euclid-France
et
le Centre de Calcul de l'IN2P3
(CCIN2P3)

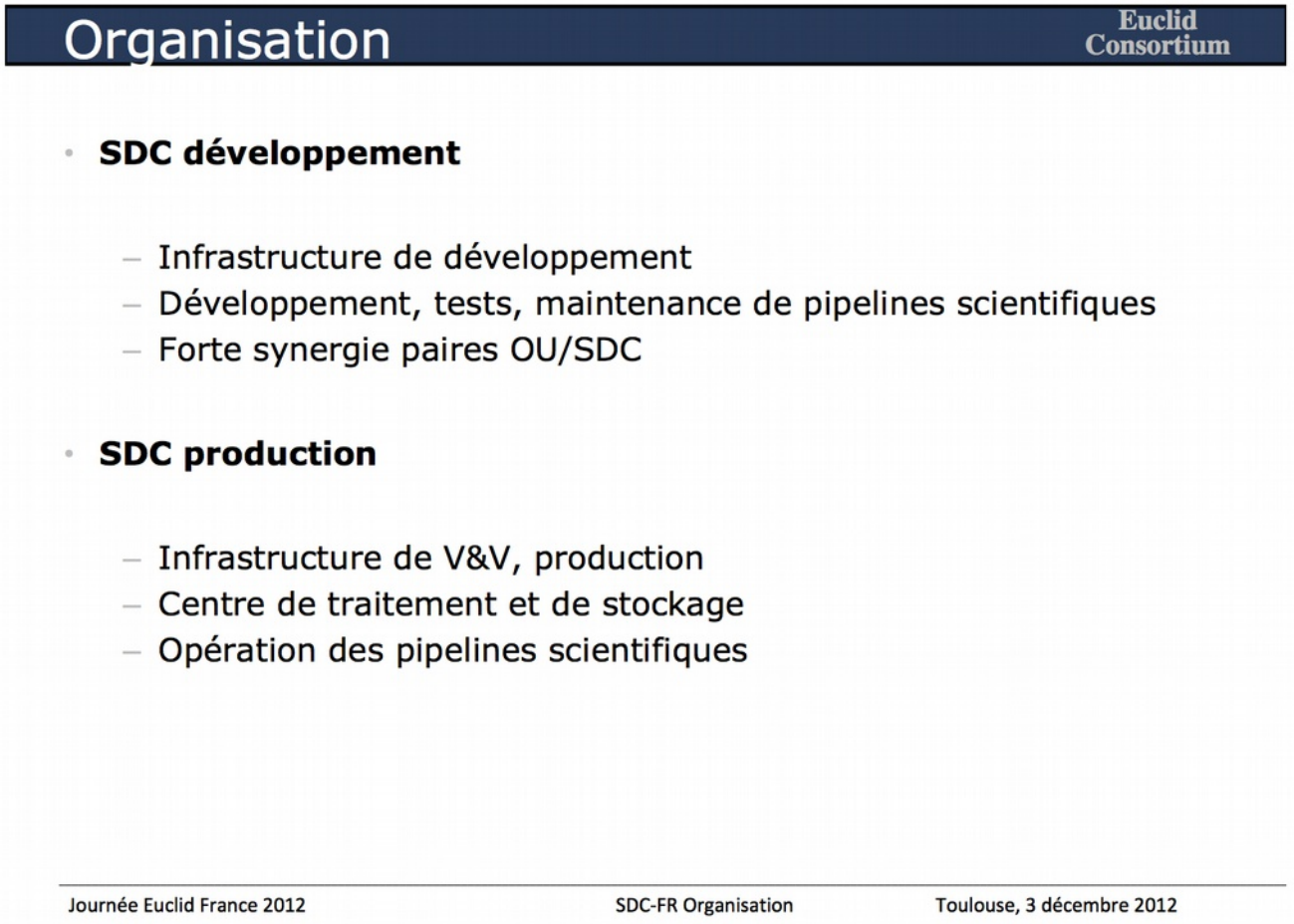
SDC Production

Euclid Consortium

- Hébergé au CC-IN2P3 à Lyon
  - Tier-1 LHC, PoP Renater, …
  - 16 000 cœurs (80 000 en 2015)
  - 10 PB de stockage (120 en 2015)
  - lien Internet à 10 Gb/s
  - Bâtiment de 850 M2

CCIN2P3

- The IN2P3 Centre de Calcul (CCIN2P3) is engaged to be the SDC-PROD (different from the SDC-DEV) and a platform for science exploitation of the data.

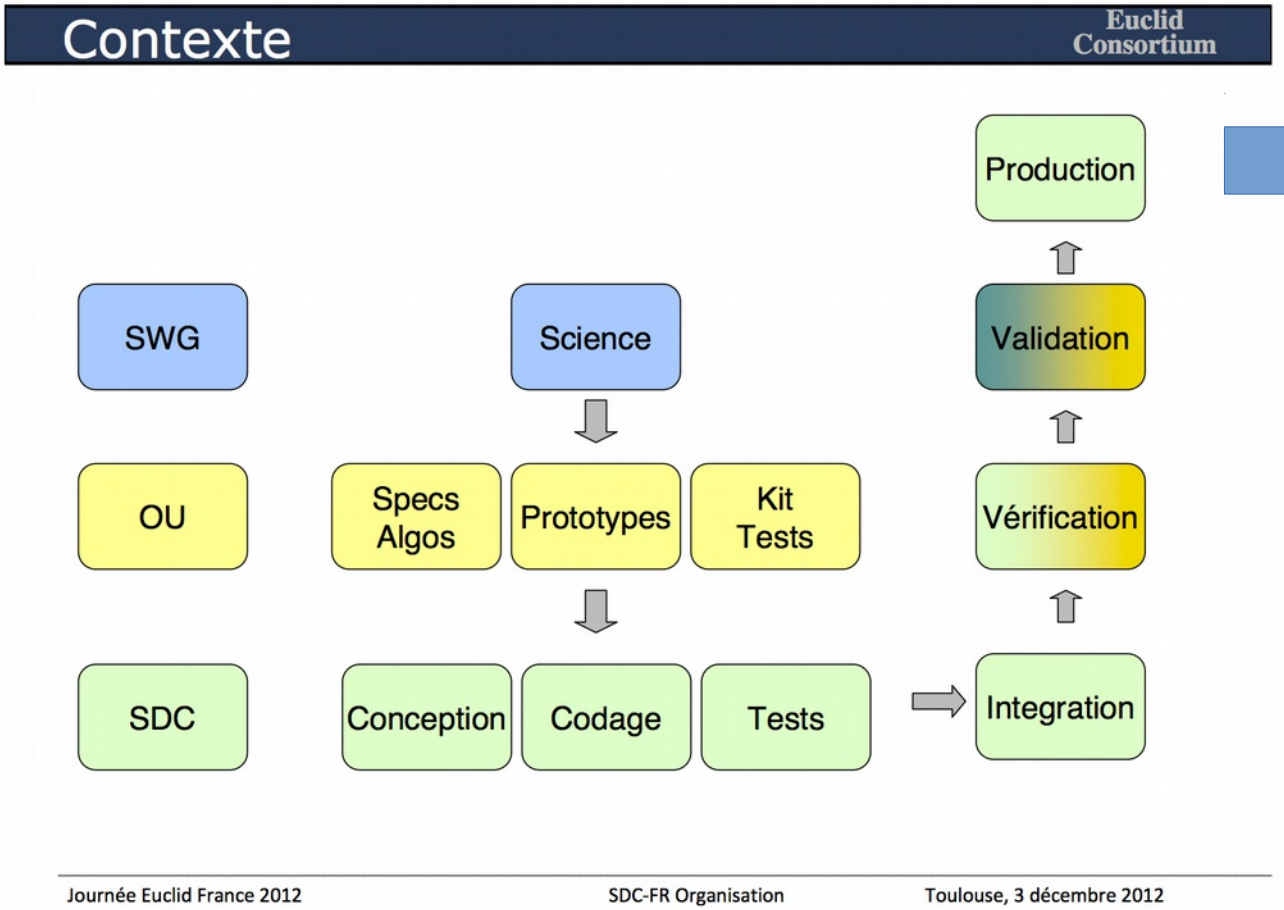


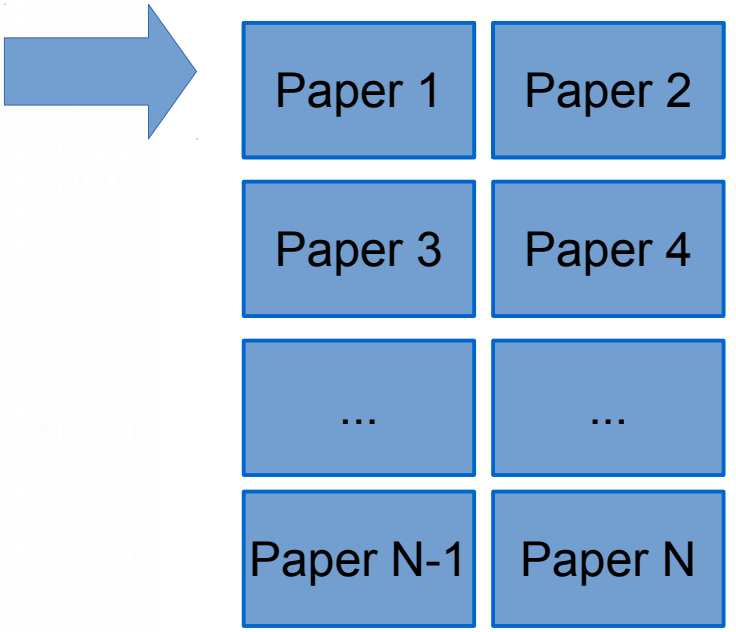
Usage to Date

- IAP: BerkeleyDB tests by Jean-Marc Delouis
- IPNL: IR detector test bench storage
- IRFU: LE3 analysis code and test data storage
- Lagrange: Prototype WAZP: “Cluster Finder” challenge
- CPPM: TIPS optimizations
- APC: OU-EXT simulation prototypes

Science (as opposed to OU) Needs

- Can't do, for example, n-body simulations.
- What can we do?





Next Steps

- Finalize 2014 CC resource request
  - TIPS needs ~100 TBytes in ~2014
  - LE3 needs ~150 TBytes in ~2015/2016
  - Others?
- Specific tests of using HPSS (tapes vs. disks)
- What can we do to help “transition” to the CC?
  - Start “challenges” there?

And now for something somewhat different...

Preliminary Requirements Review

EuclidSGS ArchitectureOverviewV1.doc

Ressources foreseen			Ressources needed			
Year	Gflops	Output throughput [GB/s]	Storage [PB]	Gflops	Output throughput [GB/s]	Storage [PB]
2014	855	8	0,3	0,001	0,00	0,01
2015	1357	9	0,5	0,02	0,01	0,1
2016	2154	11	1	0,1	0,05	0,5
2017	3420	13	1,9	0,1	0,05	0,5
2018	5429	15	3,6	0,8	0,3	3
2019	8618	18	10	1,2	0,5	5
2020	13680	21	19	4,2	2	16
DR1	21715	25	24,3	4,8	3,0	29,6
DR2	86860	41	165,8	13,4	8,4	82,8
DR3	347440	67	1130,1	28,8	17,9	177,4

Figure 7: Comparison between resources foreseen and resources needed

What is the relation between these numbers and the 20-30 petabytes Yannick presented yesterday?

- CC is mostly (but not exclusively) interested in the computing resource requirements
- Also:
  - Number of cores and Memory
  - Support needs

Raw Data Rate Context

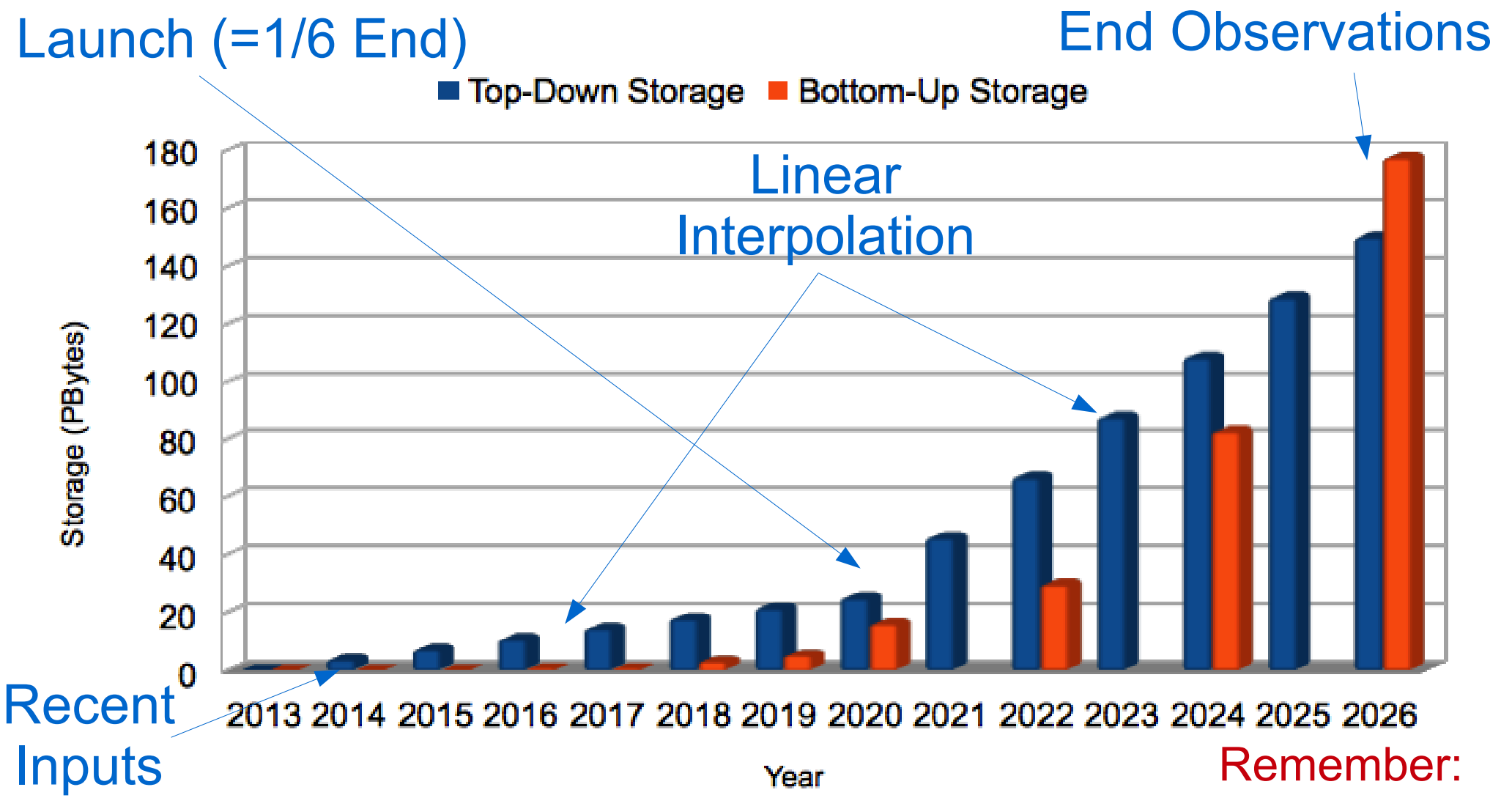
- 6.5 GBytes/4000 second Observation Sequence ~ 140 GBytes/day ~ 50 TBytes/year
  Euclid : ~ 0.05 PByte/year (2-byte numbers)
- Planck: ~ 0.001 PBytes/year (2-byte numbers)

Space-based

- LSST : ~ 6 PBytes/year (http://www.lsst.org/lsst/science/concept_data)
- CTA : 2-25 PBytes/year (http://www.isgtw.org/feature/grand-vision-cherenkov-telescope-array)
- LHC : ~15 PBytes/year (http://home.web.cern.ch/about/computing)

Ground-based

Storage Needs (including Analysis)



Rachid points out that we may be able to address some these needs using HPSS. We have little experience with this, but perhaps can implement a “data challenge”.

Remember: we ~~assume~~ that we are responsible for ~30% of this

Assuming 7% Yearly Decline in Price

Planning

File Edit View Insert Format Data Tools Help All changes saved in Drive

Satellite Euclid

Comments Share

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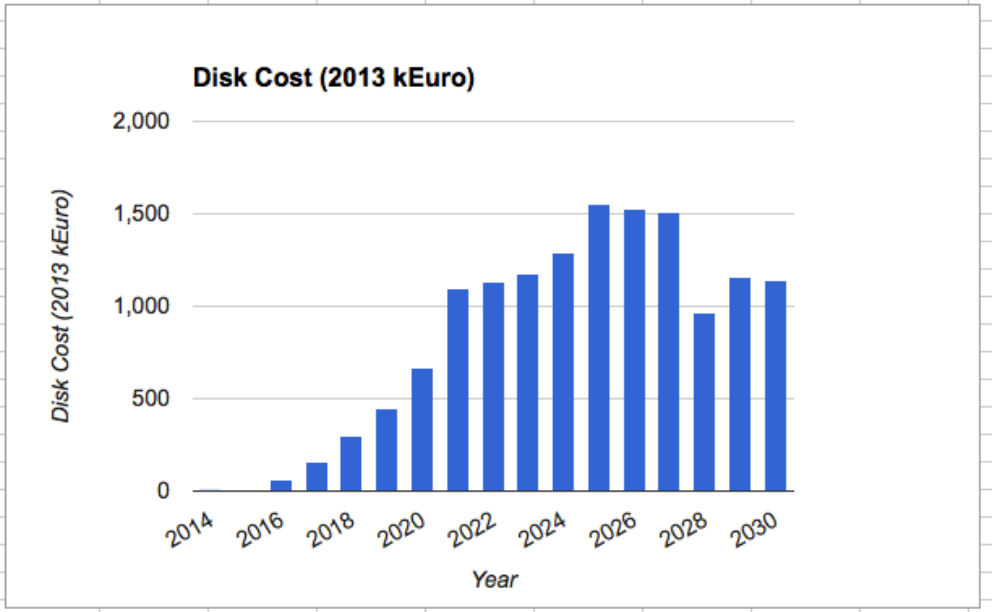
	A	B	C	D	E	F
1	Year	Total Disk (PB)	French Disk (PB)	New Disk Purchase (PB)	CC TB Cost (Euro)	Disk Cost (2013 kEuro)
2	2014	0.1	0.03	0.03	259.47	8
3	2015	0.1	0.04	0.01	241.31	3
4	2016	1.1	0.32	0.28	224.42	63
5	2017	3.6	1.09	0.77	208.71	160
6	2018	8.6	2.58	1.52	194.10	296
7	2019	16.8	5.05	2.47	180.51	446
8	2020	29.2	8.75	3.99	167.87	669
9	2021	50.0	15.00	7.02	156.12	1,096
10	2022	70.8	21.25	7.77	145.19	1,129
11	2023	91.7	27.50	8.72	135.03	1,178
12	2024	112.5	33.75	10.24	125.58	1,285
13	2025	133.3	40.00	13.27	116.79	1,549
14	2026	154.2	46.25	14.02	108.61	1,523
15	2027	175.0	52.50	14.97	101.01	1,512
16	2028	175.0	52.50	10.24	93.94	962
17	2029	175.0	52.50	13.27	87.36	1,159
18	2030	175.0	52.50	14.02	81.25	1,139
19	Total			122.61		14,178
20						
21	Disk Index	3.0				
22	2013 TB Cost	279.00				
23	TB Cost Decline	7.00				
24						
25						



Input Values | CC Request | JMD-Feuil1 | JMD-E22

>14 MEuro

Assuming 15% Yearly Decline in Price

Planning

File Edit View Insert Format Data Tools Help All changes saved in Drive

Satellite Euclid — Comments — Share

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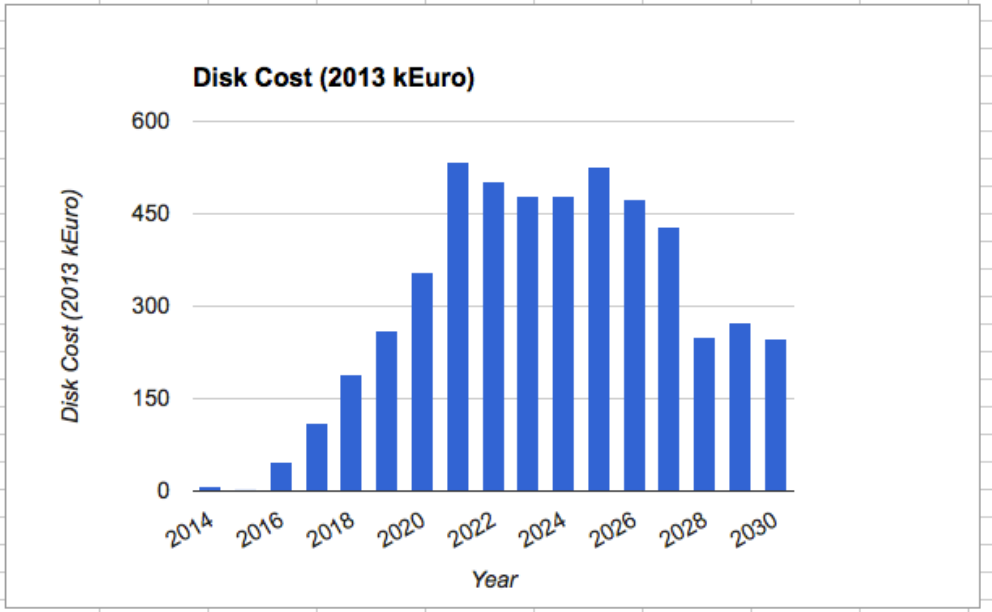
	A	B	C	D	E	F
1	Year	Total Disk (PB)	French Disk (PB)	New Disk Purchase (PB)	CC TB Cost (Euro)	Disk Cost (2013 kEuro)
2	2014	0.1	0.03	0.03	237.15	7
3	2015	0.1	0.04	0.01	201.58	2
4	2016	1.1	0.32	0.28	171.34	48
5	2017	3.6	1.09	0.77	145.64	112
6	2018	8.6	2.58	1.52	123.79	189
7	2019	16.8	5.05	2.47	105.22	260
8	2020	29.2	8.75	3.99	89.44	357
9	2021	50.0	15.00	7.02	76.02	533
10	2022	70.8	21.25	7.77	64.62	502
11	2023	91.7	27.50	8.72	54.93	479
12	2024	112.5	33.75	10.24	46.69	478
13	2025	133.3	40.00	13.27	39.69	527
14	2026	154.2	46.25	14.02	33.73	473
15	2027	175.0	52.50	14.97	28.67	429
16	2028	175.0	52.50	10.24	24.37	249
17	2029	175.0	52.50	13.27	20.72	275
18	2030	175.0	52.50	14.02	17.61	247
19	Total			122.61		5,168
20						
21	Disk Index	3.0				
22	2013 TB Cost	279.00				
23	TB Cost Decline	15.00				
24						
25						



Input Values | CC Request | JMD-Feuil1 | JMD-E22

~5 MEuro

Assuming 30% Yearly Decline in Price

Planning

File Edit View Insert Format Data Tools Help All changes saved in Drive

Satellite Euclid

Comments Share

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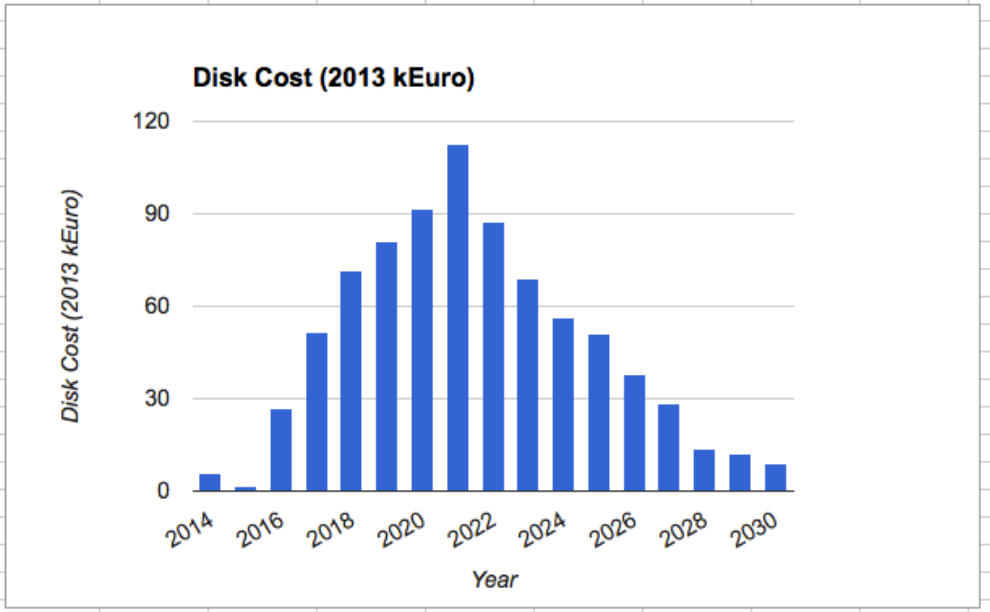
	A	B	C	D	E	F
1	Year	Total Disk (PB)	French Disk (PB)	New Disk Purchase (PB)	CC TB Cost (Euro)	Disk Cost (2013 kEuro)
2	2014	0.1	0.03	0.03	195.30	6
3	2015	0.1	0.04	0.01	136.71	1
4	2016	1.1	0.32	0.28	95.70	27
5	2017	3.6	1.09	0.77	66.99	51
6	2018	8.6	2.58	1.52	46.89	71
7	2019	16.8	5.05	2.47	32.82	81
8	2020	29.2	8.75	3.99	22.98	92
9	2021	50.0	15.00	7.02	16.08	113
10	2022	70.8	21.25	7.77	11.26	88
11	2023	91.7	27.50	8.72	7.88	69
12	2024	112.5	33.75	10.24	5.52	56
13	2025	133.3	40.00	13.27	3.86	51
14	2026	154.2	46.25	14.02	2.70	38
15	2027	175.0	52.50	14.97	1.89	28
16	2028	175.0	52.50	10.24	1.32	14
17	2029	175.0	52.50	13.27	0.93	12
18	2030	175.0	52.50	14.02	0.65	9
19	Total			122.61		808
20						
21	Disk Index	3.0				
22	2013 TB Cost	279.00				
23	TB Cost Decline	30.00				
24						
25						



Input Values | CC Request | JMD-Feuil1 | JMD-E22

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