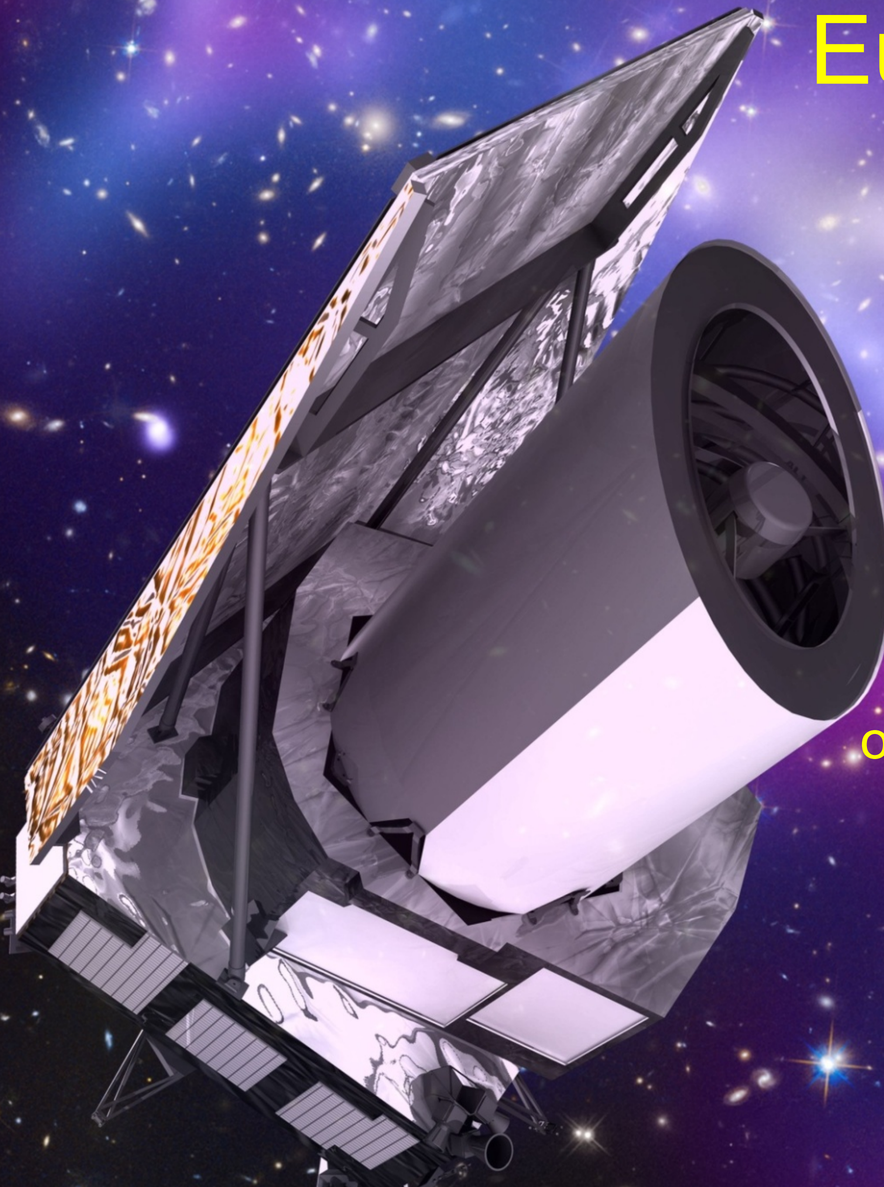
Euclid Science and Euclid data



Y. Mellier
on behalf of the Euclid Consortium

www.euclid-ec.org

Euclid Top Level Science Requirements

Sector	Euclid Targets
Dark Energy	• Measure the cosmic expansion history to better than 10% in redshift bins $0.7 < z < 2$. • Look for deviations from $w = -1$, indicating a dynamical dark energy. • Euclid *alone* to give $FoM_{DE} \geq 400$ (1-sigma errors on w_p, & w_a of 0.02 and 0.1 respectively)
Test Gravity	• Measure the growth index, γ, with a precision better than 0.02 • Measure the growth rate to better than 0.05 in redshift bins between $0.5 < z < 2$. • Separately constrain the two relativistic potentials Ψ, Φ. • Test the cosmological principle
Dark Matter	• Detect dark matter halos on a mass scale between 10^8 and $>10^{15}$ M_{Sun} • Measure the dark matter mass profiles on cluster and galactic scales • Measure the sum of neutrino masses, the number of neutrino species and the neutrino hierarchy with an accuracy of a few hundredths of an eV
Initial Conditions	• Measure the matter power spectrum on a large range of scales in order to extract values for the parameters σ_8 and n to a 1-sigma accuracy of 0.01. • For extended models, improve constraints on n and α wrt to Planck alone by a factor 2. • Measure a non-Gaussianity parameter : f_{NL} for local-type models with an error < +/-2.

- DE equation of state: $P/\rho = w$, and $w(a) = w_p + w_a(a_p - a)$
- Growth rate of structure formation: $f \sim \Omega^{\gamma}$;
- FoM=1/(Δw_a x Δw_p) > 400→ ~1% precision on w's.

Euclid cosmological probes

Observational Input	Probe	Description
Weak Lensing Survey	Weak Lensing (WL)	Measures the expansion history and the growth factor of structure
Galaxy Redshift Survey: Analysis of *P(k)*	Baryonic Acoustic Oscillations (BAO)	Measure the expansion history through D(z) and H(z) using the "wiggles-only".
	Redshift-Space distortions	Determine the growth *rate* of cosmic structures from the redshift distortions due to peculiar motions
	Galaxy Clustering	Measures the expansion history and the growth factor using all available information in the amplitude and shape of P(k)
Weak Lensing plus Galaxy redshift survey combined with cluster mass surveys	Number density of clusters	Measures a combination of growth factor (from number of clusters) and expansion history (from volume evolution).
Weak lensing survey plus galaxy redshift survey combined with CMB surveys	Integrated Sachs Wolfe (ISW) effect	Measures the expansion history and the growth
Weak lensing survey plus galaxy redshift survey combined with CMB surveys	Weak lensing on CMB anisotropies	Measures the high redshift expansion regime and growth of structures

Euclid:
Level1 WL and GC Requirements

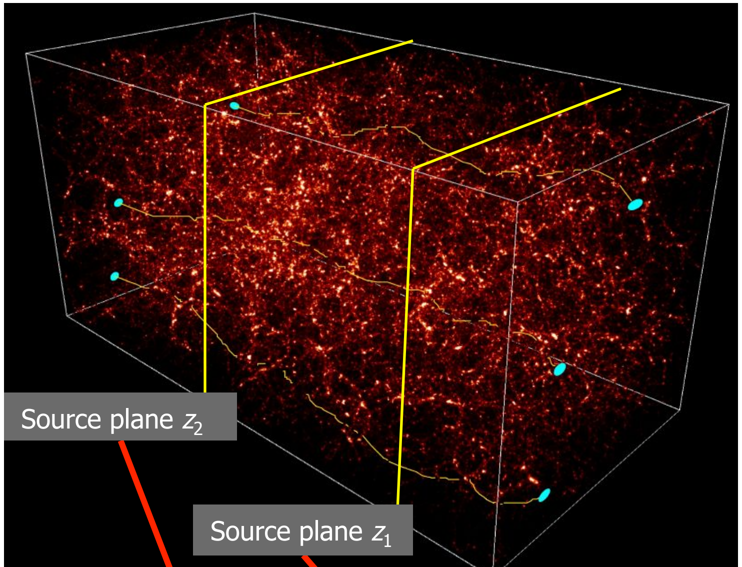
Req. ID	Parameter	Requirement	Goal
WL.1-1	Survey Area (A)	>15,000 deg^2	>20,000 deg^2
WL.1-2	Density of galaxies (Ng)	$\geq$30 gals/amin^2	>40 gals/amin^2
WL.1-3	Median redshift (zm)	>0.8	
WL.1-4	Systematics (σ^2_{sys})	10^{-7}	
WL.1-5	Redshifts error ($\sigma(z)/(1+z)$)	$\leq$ 0.05	$\leq$ 0.03
WL.1-6	Catastrophic failures (fcat)	10%	5%
WL.1-7	Bin mean redshift (δz)	<0.002	
GC.1-1	Survey Area (A)	>15,000 deg^2	>20,000 deg^2
GC.1-2	Galaxy sky density (sd)	1,700 / deg^2	2,500 / deg^2
GC.1-3	Redshift accuracy	$\sigma(z)<0.001(1+z)$	
GC.1-4	Systematic offset in redshift	<1/5 redshift accuracy	
GC.1-5	Redshift range	0.9<z<1.8	also 0.7<z<0.9 and 1.8<z<2.05 or parts thereof
GC.1-6	Median of redshift distribution	Suppressed	Suppressed
GC.1-7	Upper quartile of redshifts	>1.35	
GC.1-8	Bias of all galaxies	>1	
GC.1-9	Bias of galaxies, upper quartile in redshift	>1.3	
GC.1-10	fraction of catastrophic failures	f<20%	
GC.1-11	fraction of catastrophic failures	known to 1%	
GC.1-12	mean redshift in 0.1 redshift bin	known to 0.1%	
GC.1-13	spurious fluctuations, uniformity in counts	<1% over patches of 0.5 deg2	

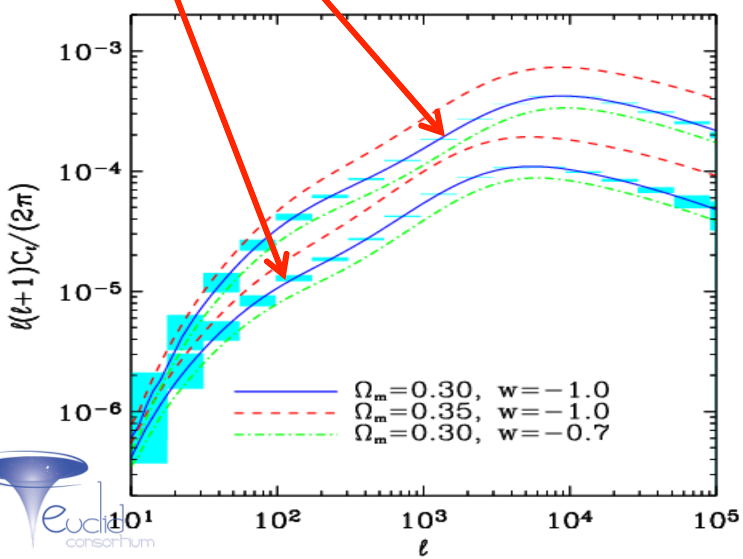
WL probe: Cosmic shear over 0<z<2 :

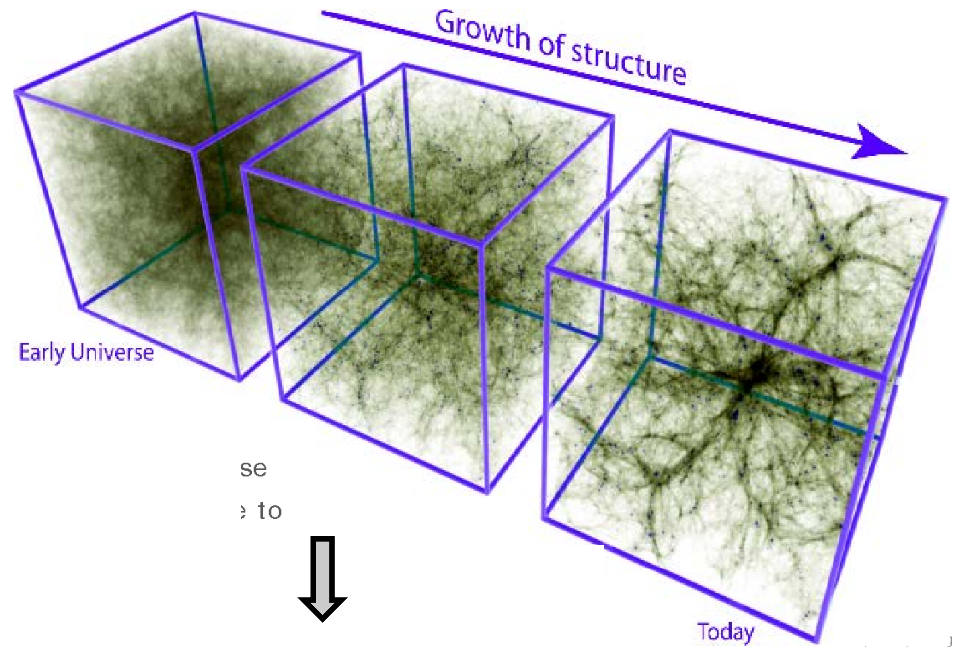
1.5 billion galaxies shapes, shear and phot-z (u,g, r,i,z,Y,J,H) with 0.05 (1+z) accuracy over 15,000 deg^2

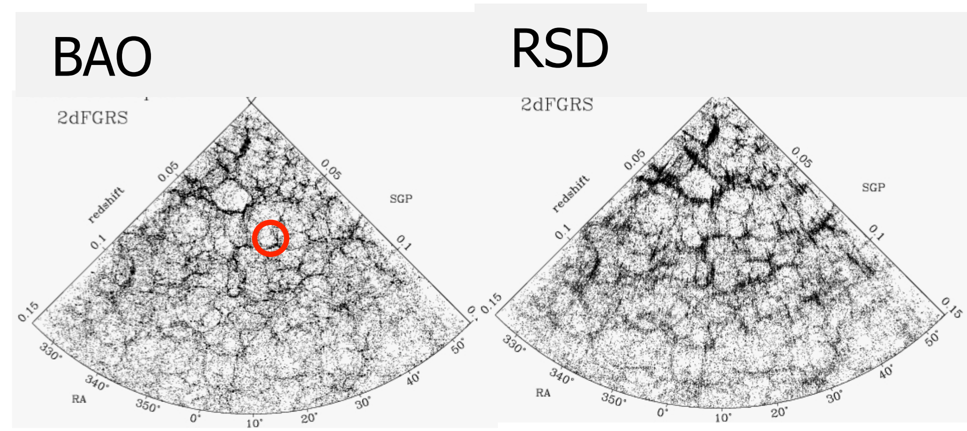
GC; BAO, RSD probes: 3-D positions of galaxies over 0.7<z<1.8 :

35 million spectroscopic redshifts with 0.001 (1+z) accuracy over 15,000 deg^2

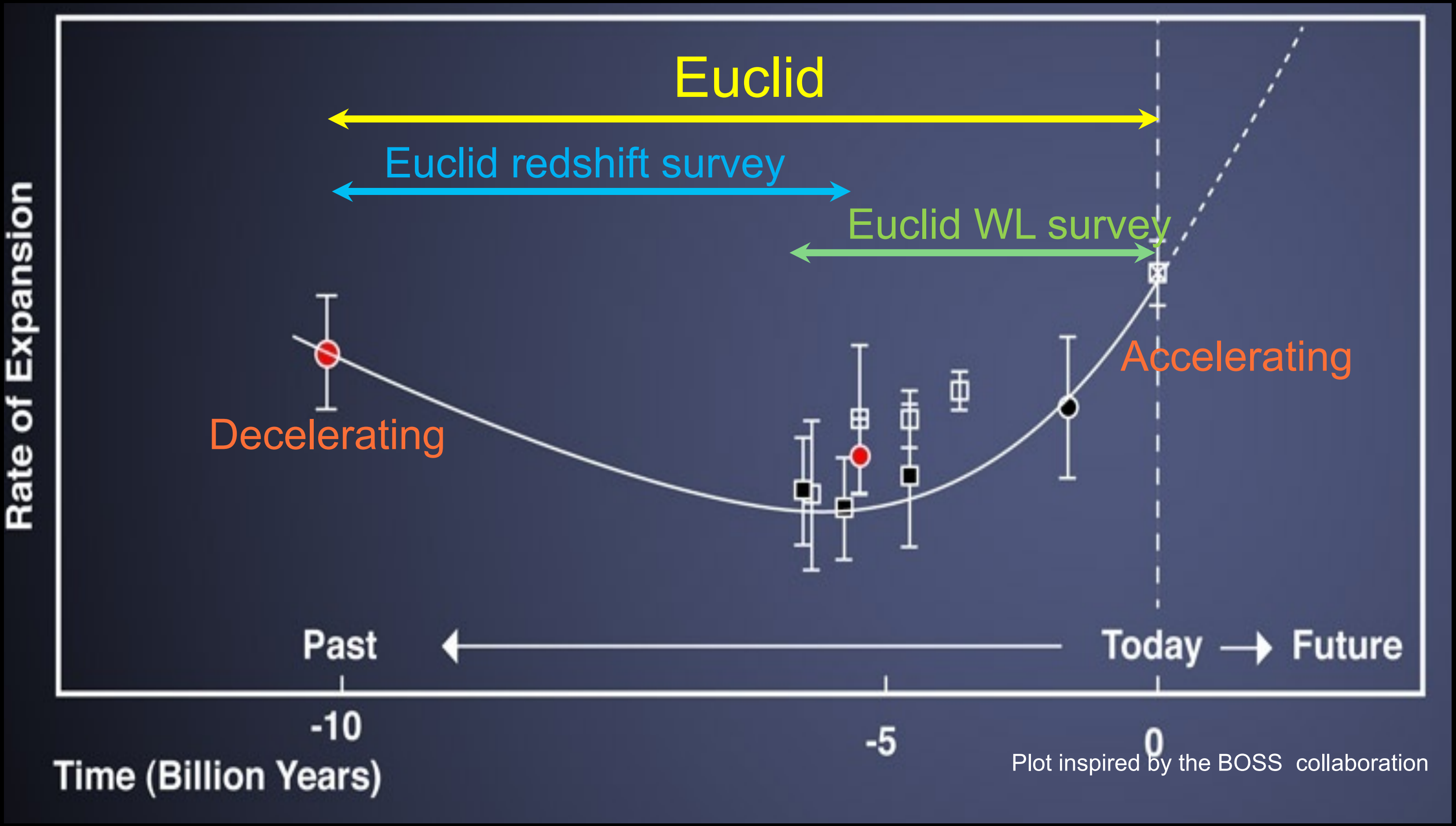




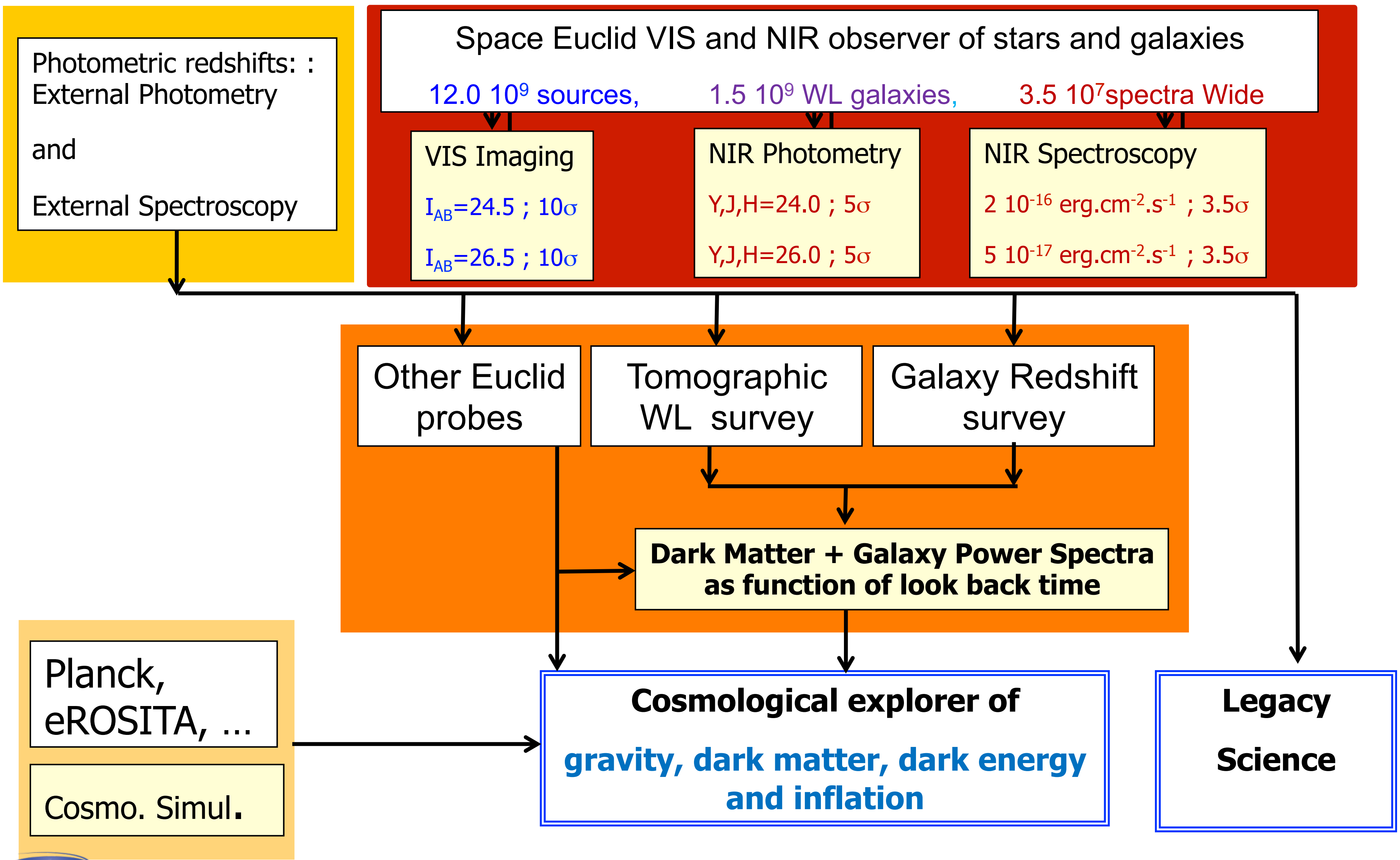




Euclid and the DM-dominated / DE-dominated transition period



Euclid Survey Machine:15,000 deg^2 + 40 deg^2 deep

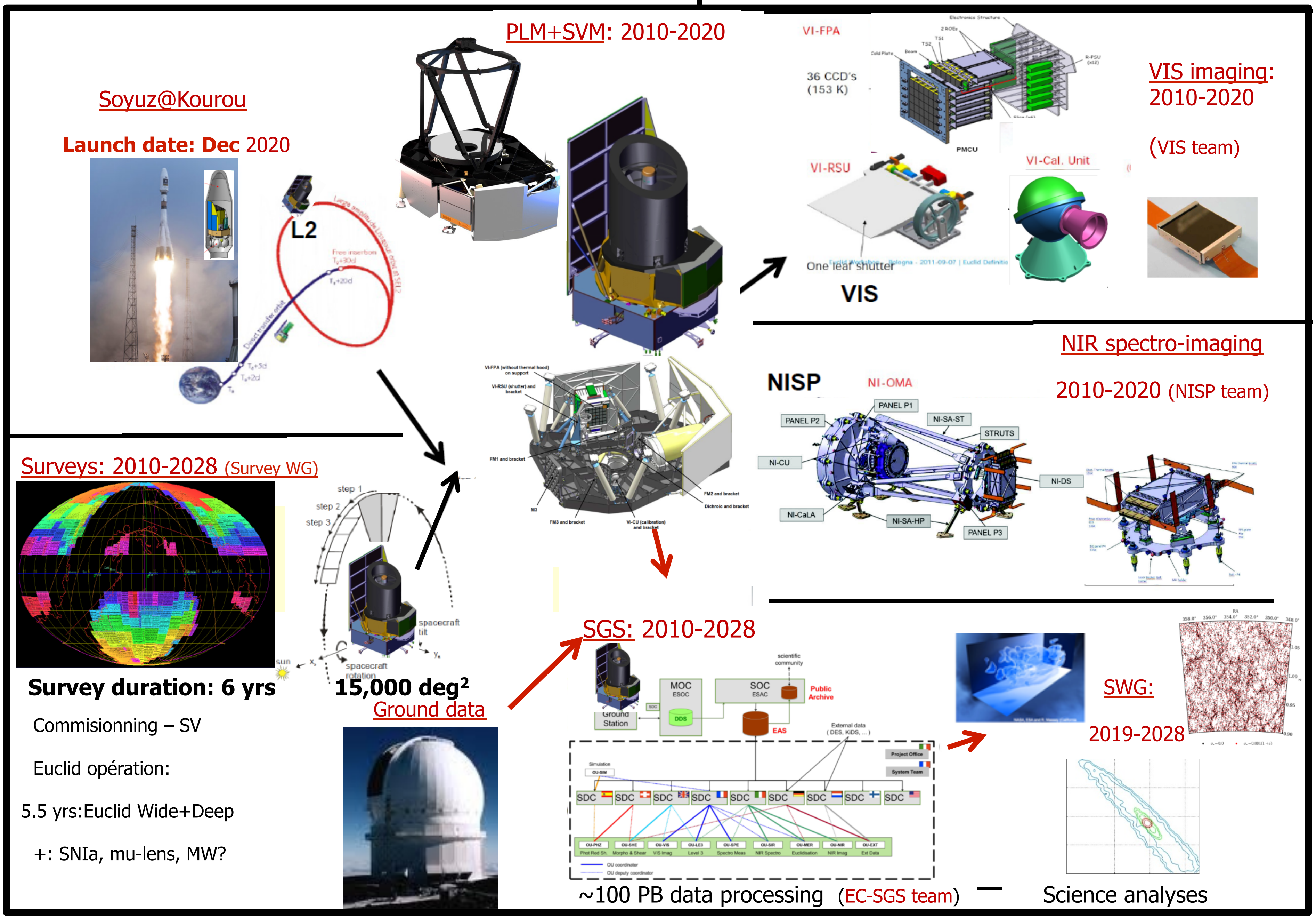


Euclid Level2 WL and GC Requirements

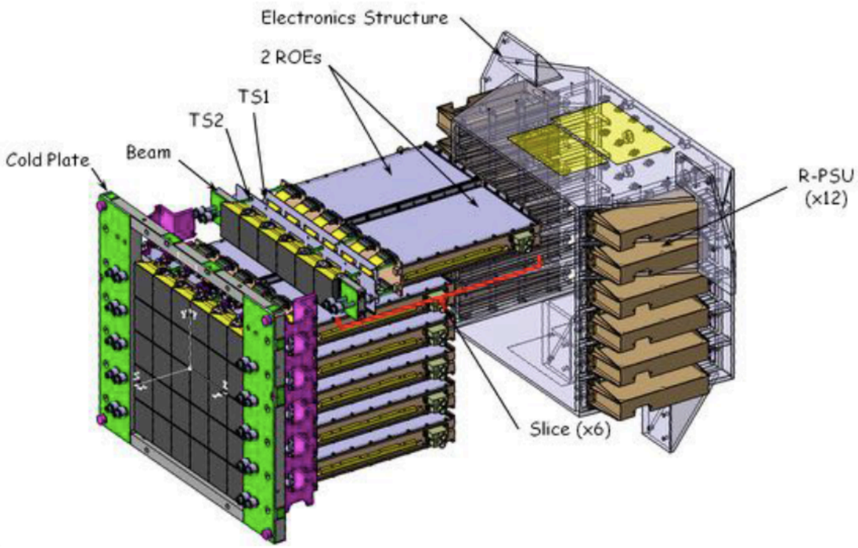
Req. ID	Description	Requirement	Goal	Parent Req.
WL.2.1-1	Wavelength Coverage: $\Delta\lambda_{vis}$	550nm–900nm		R-WL.1-2, R-WL.1-3
WL.2.1-2	Number of visible Filters: NF	Suppressed	Suppressed	R-WL.2.1-24
WL.2.1-3	Vis PSF Size: FWHM	$\leq$ 0.18 arcseconds		R-WL.1-2, R-WL.1-4
WL.2.1-4	Vis pixel scale: qpix	0.1 ± 0.01 arcseconds		R-WL.1-4
WL.2.1-5	PSF ellipticity: ePSF	<0.15		R-WL.1-4
WL.2.1-6	PSF profile:	$(R_{PSF}/R_{REF})^2<4$ where R_{REF}=0.2 arcseconds for Gaussian profile	$(R_{PSF}/R_{REF})^2<3$	R-WL.1-4
WL.2.1-7	PSF degrees of freedom:	Suppressed		
WL.2.1-8	PSF ellipticity Stability: $\sigma(e_{res})$	$<2\mathrm{x}10^{-4}$		R-WL.1-4
WL.2.1-9	PSF size Stability: $\sigma(R^2)/<R^2>$	$<10^{-3}$		R-WL.1-4
WL.2.1-10	PSF wavelength dependence (α)	<0.9		R-WL.1-4
WL.2.1-11	Instrument linearity	Suppressed		R-WL.1-4
WL.2.1-12	Stray light	<20% of eclip zod		R-WL.1-2, R-WL.1-4
WL.2.1-13	Lost pixels:	Suppressed	suppressed	WS.2.2-2
WL.2.1-14	Clustering of lost pixels	Suppressed		
WL.2.1-15	Precalibration distortion	Suppressed	suppressed	R-WL.2.1-24
WL.2.1-16	Postcalibration distortion	<0.003%	<0.001%	R-WL.1-4
WL.2.1-17	NIR wavelength range	920 to $\geq$1600nm		R-WL.1-5, R-WL.1-6
WL.2.1-18	NIR number of filters:	$\geq$3		R-WL.1-5, R-WL.1-6
WL.2.1-19	NIR PSF size:	rEE50 < 0.4 arcseconds rEE80 < 0.7 arcseconds at 1486nm		R-WL.1-5, R-WL.1-6
WL.2.1-20	NIR Pixel scale:	0.3$\pm$0.03 arcseconds		R-WL.1-5, R-WL.1-6
WL.2.1-21	Relative Photometric Accuracy	<1.5%		R-WL.1-5, R-WL.1-6
WL.2.1-22	CTI/CTE ellipticity correction	Suppressed		R-WL.1-4
WL.2.1-23	Contrast ratio of ghost images	Suppressed		WS.2.2-2

Req. ID	Description	Requirement	Goal	Parent Req.
WL.2.1-24	Accuracy of shape measurement	$\sigma[\mu]\leq 2\mathrm{x}10^{-3}$ $\sigma[c]\leq 5\mathrm{x}10^{-4}$	$\sigma[\mu]\leq 2\times10^{-3}$ $\sigma[c]\leq 5\times10^{-4}$ and $\lvert\mu\rvert\leq 10^{-3}$	R-WL.1-4
WL.2.1-25	Non-convolitive contribution to ellipticity uncertainty	$\sigma(e_{NC})_{per\_exposure}\leq 1.1\times10^{-4}$		R-WL.1-4
WL.2.1-26	VIS relative photometry	relative photometric error < 1%		
WL.2.1-27	VIS absolute photometry		absolute photometric error < 5%	R-WS.2.2-2
WL.2.1-28	NISP-P absolute photometry		absolute photometric error < 5%	R-WS.2.2-3
GC.2.1-1	Flux limit	$\leq 2\times10^{-16}$ erg cm^{-2} s^{-1} In 0.5 arcsec diameter		R-GC.1-2, R-GC.1-6, R-GC.1-7, R-GC.1-8, R-GC.1-9
GC.2.1-2	Completeness	>45%	>65%	R-GC.1-2
GC.2.1-3	Flux limit at all wavelengths	<120% of GC.2.1-1		R-GC.1-6, R-GC.1-7
GC.2.1-4	Spectral range: lower limit Spectral range: upper limit	less than 1.25 micron greater than 1.85 micron	> 1.11 micron < 2.00 micron Or parts thereof	R-GC.1-5
GC.2.1-5	Spectral resolution	>380 in 0.5 arcsec diameter		R-GC.1-3, R-GC.1-4
GC.2.1-6	Resolution element	Suppressed		R-GC.1-3, R-GC.1-4
GC.2.1-7	Wavelength error	f < 0.25		R-GC.1-3, R-GC.1-4
GC.2.1-8	PSF size and shape in spectroscopic mode	Suppressed.		R-GC.1-2, R-GC.1-3, R-GC.1-10
GC.2.1-9	Stray light	Suppressed		R-GC.2.1-1, R-CG.2.1-3
GC.2.1-10	Subsample of galaxies	>140,000 gals, with >99% purity		R-GC.1-10, R-GC.1-11, R-GC.1-12
GC.2.1-11	Spectroscopic redshift purity	>80%		R-GC.1-10
GC.2.1-12	Spurious fluctuations, flux limit uniformity	<0.7% rms in flux limit over 0.5 deg2 area		R-GC.1-13
GC.2.1-13	NISP-S absolute spectrophotometry		absolute spectro-photometric error < 5%	R-GC.2.1-1

The ESA Euclid space mission



VIS

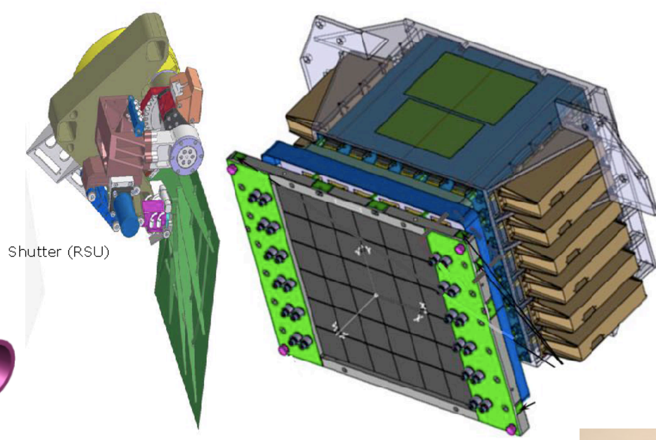


Courtesy: S. Pottinger, M. Cropper and the VIS team

Table 1: VIS and weak lensing channel characteristics

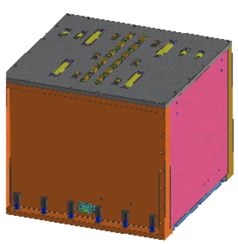
Spectral Band	550 – 900 nm
System Point Spread Function size	≤0.18 arcsec full width half maximum at 800 nm
System PSF ellipticity	≤15% using a quadrupole definition
Field of View	>0.5 deg^2
CCD pixel sampling	0.1 arcsec
Detector cosmetics including cosmic rays	≤3% of bad pixels per exposure
Linearity post calibration	≤0.01%
Distortion post calibration	≤0.005% on a scale of 4 arcmin
Sensitivity	$m_{AB} \geq 24.5$ at 10σ in 3 exposures for galaxy size 0.3 arcsec
Straylight	≤20% of the Zodiacal light background at Ecliptic Poles
Survey area	15000 deg^2 over a nominal mission with 85% efficiency
Mission duration	6 years including commissioning
Shear systematic bias allocation	additive $\sigma_{sys} \leq 2 \times 10^{-4}$; multiplicative $\leq 2 \times 10^{-3}$

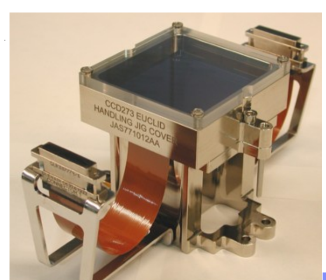
Cropper et al 2016.SPIE

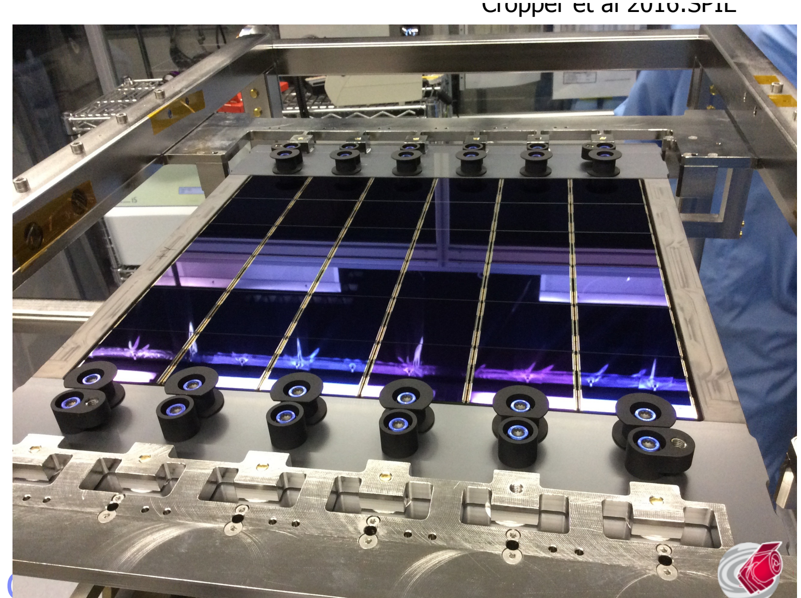


Warm Units in Service Module

Payload and Mechanism Control Unit (PMCU)

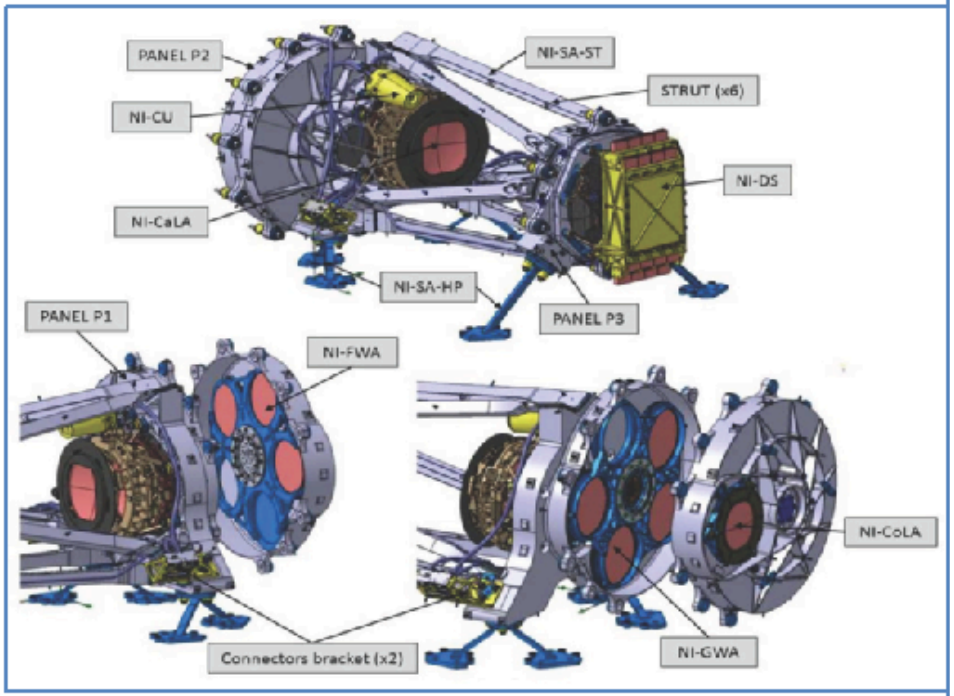


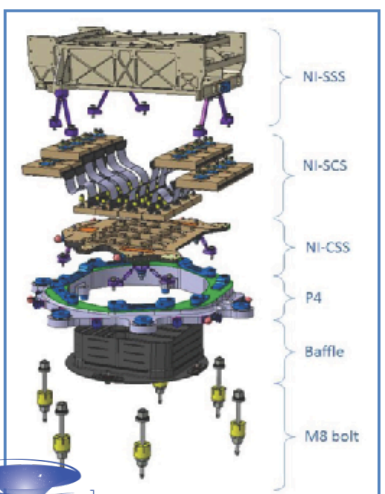


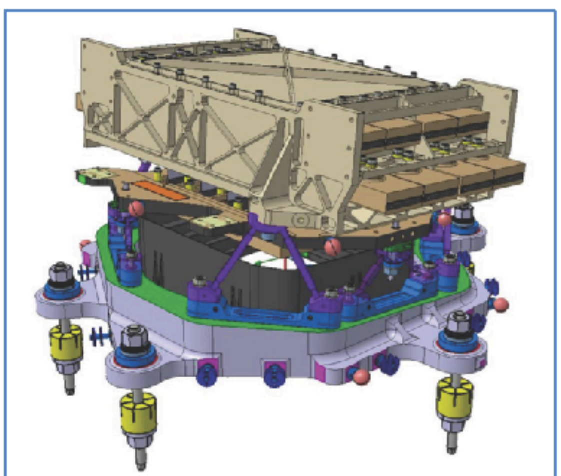


NISP

Courtesy: T. Maciaszek and the NISP team







- FoV: 0.55 deg^2
- Mass : 159 kg
- Telemetry: < 290 Gbt/day
- Size: 1m x 0.5 m x 0.5 m
- 16 2kx2K H2GR detectors
- 0.3 arcsec pixel on sky
- Limiting mag, wide survey AB : 24 (5 σ)
- **3 Filters**:
- Y (950-1192nm)
- J (1192, 1544nm)
- H (1544, 2000nm)
- **4 grisms**:
- 1B (920 – 1300) , 1 orientation 0°
- 3R (1250 – 1850), 3 orientations 0°, 90°, 180°

Maciaszek et al 2016:SPIE

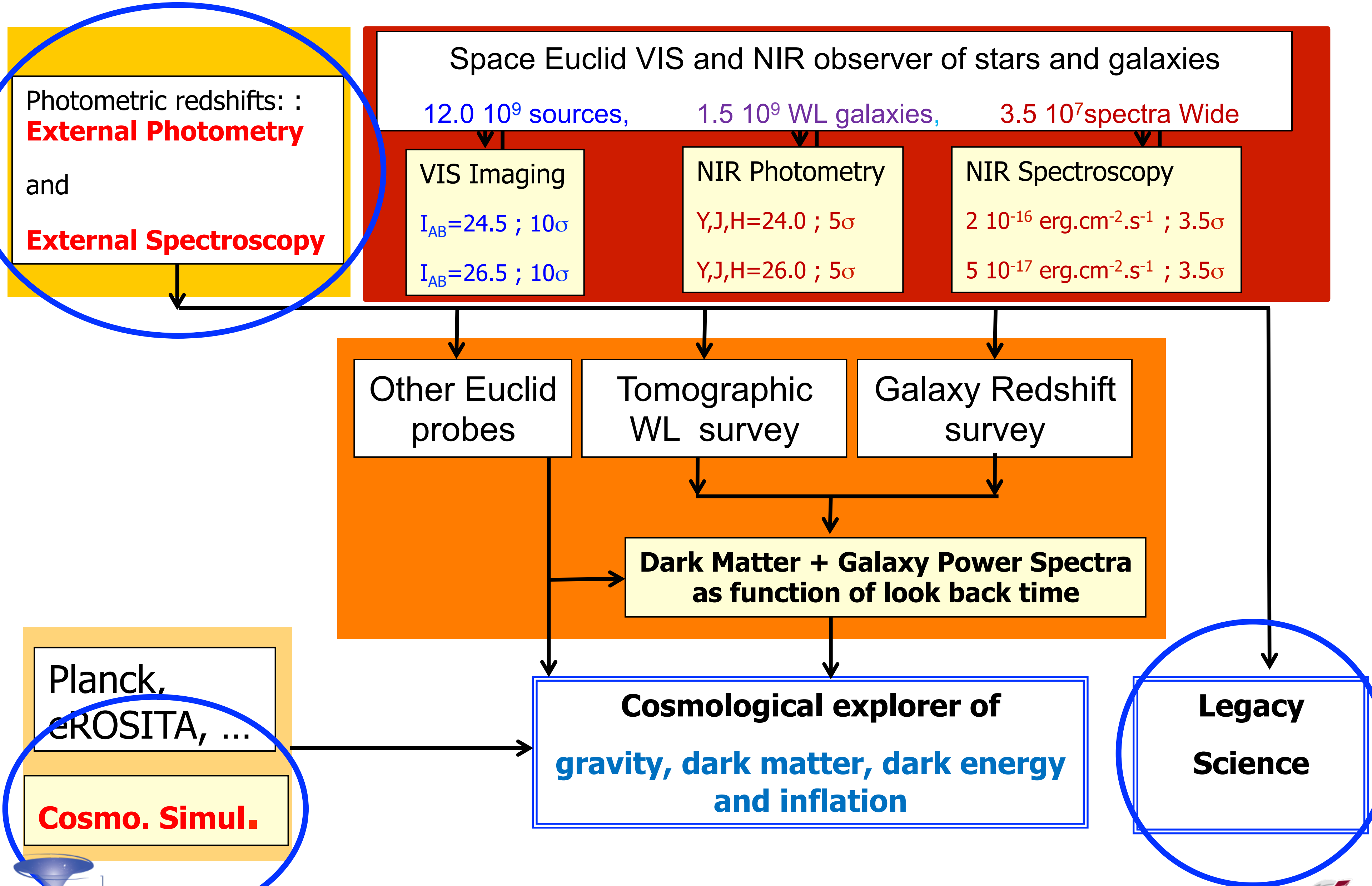
Technical Performance Measure		Requirement	CBE
Image Quality			
VIS Channel	FWHM (@ 800nm)	180 mas	163 mas
	ellipticity	15.0%	5.9%
	R2 (@ 800 nm)	0.0576	0.0530
	ellipticity stability σ(εi)	2.00E-04	2.00E-04
	R2 stability σ(R2)/<R2>	1.00E-03	1.00E-03
	Plate scale	0.10 "	0.10 "
	Out-of-band avg red side	1.00E-03	1.13E-05
	Out-of-band avg blue side	1.00E-03	2.12E-04
	Slope red side	35 nm	15 nm
	Slope blue side	25 nm	8 nm
NISP Channel	rEE50 (@1486nm)	400 mas	217 mas
	rEE80 (@1486nm)	700 mas	583 mas
	Plate scale	0.30 "	0.30 "
Sensitivity			
VIS SNR (for mAB = 24.5 sources)		10	17.1
NISP-S SNR (@ 1.6um for 2xe-16 erg cm-2 s-1 source)		3.5	4.87
NISP- P SNR (for mAB = 24 sources)	Y-band	5	5.78
	J-band	5	6.69
	H-band	5	5.35
NISP-S Performance			
Purity		80%	72%
Completeness		45%	0.52
Survey			
Wide Survey Coverage		15,000 deg2	15,000
Survey length [years]		5.5	5.4

ESA Mission PDR October 2015 successful:

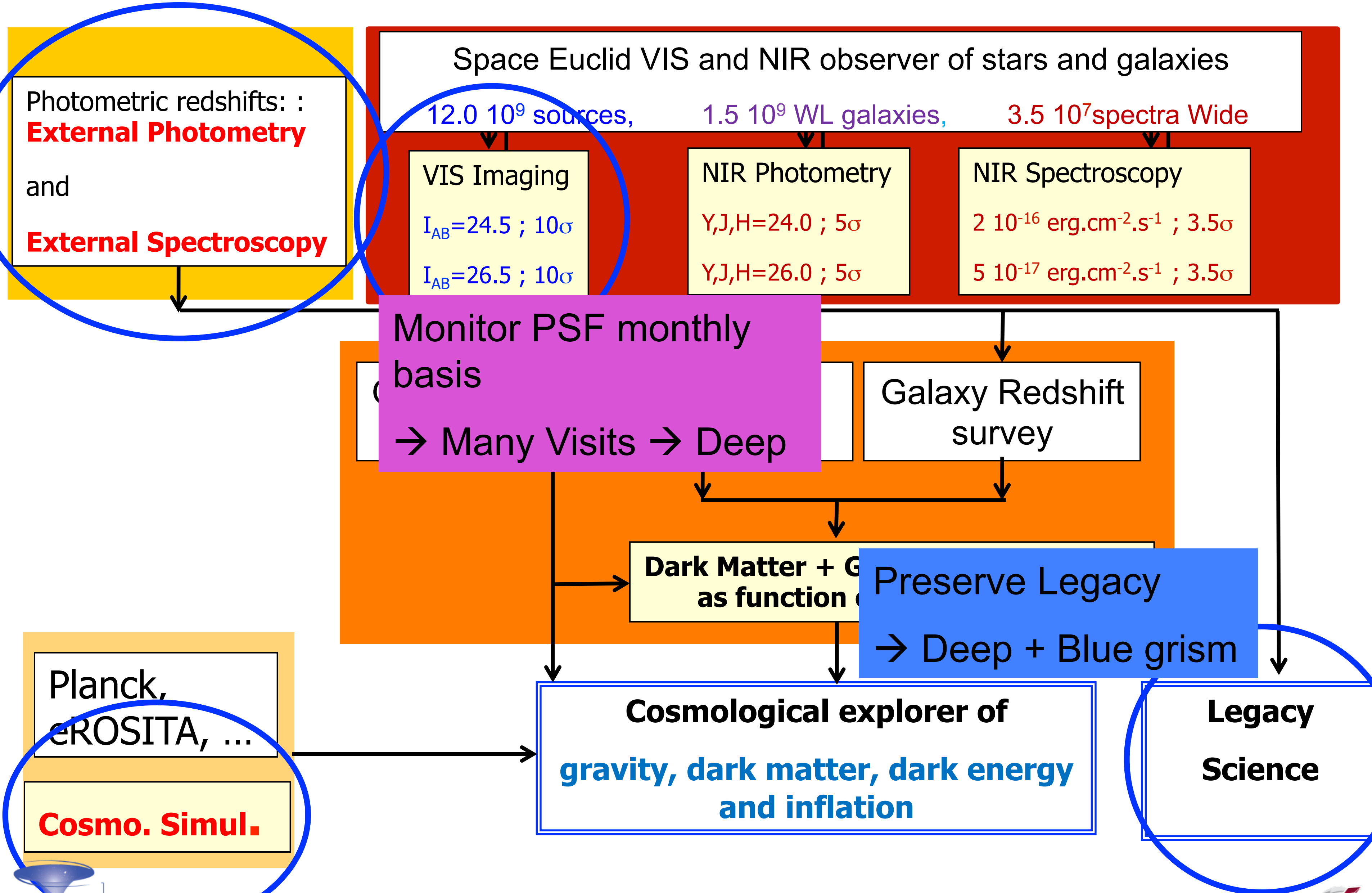
Euclid performances meet the scientific and survey requirements

- Image quality of the system fully in line with needs.
- Ellipticity, R^2 stability and Non-convolutive errors performance dictated mainly by ground processing
- *Purity* not compliant with current data processing methods but expected to be recovered with Euclid specific algorithms (not yet installed at this stage).

Euclid Survey Machine:15,000 deg^2 + 40 deg^2 deep

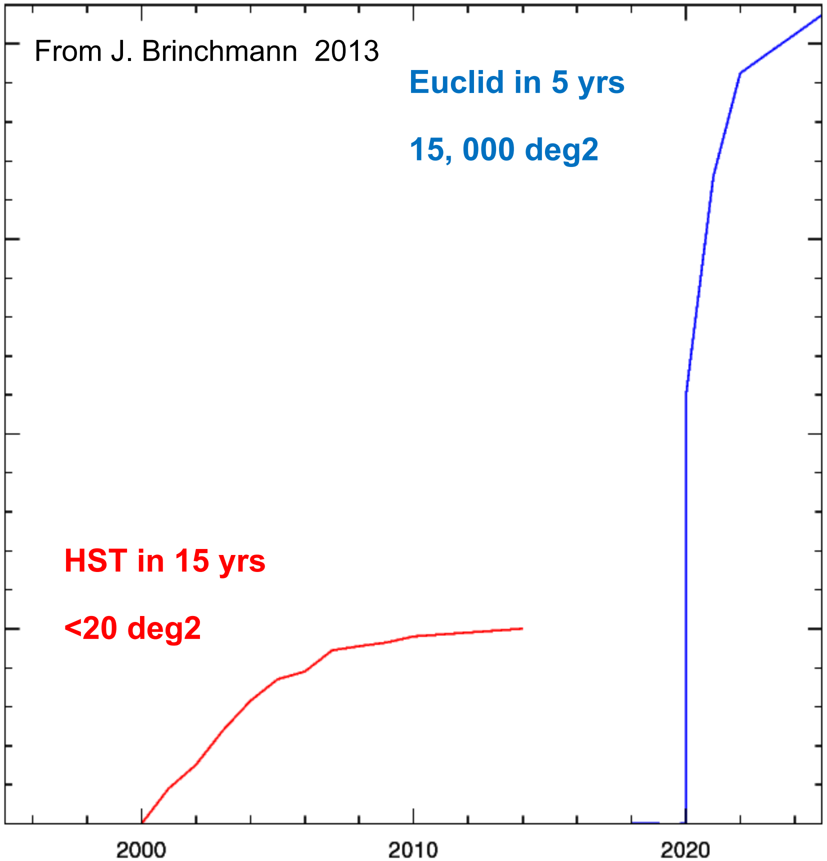


Euclid Survey Machine: 15,000 deg^2 + 40 deg^2 deep



Euclid and the next generation wide field VIS/NIR surveys

Objects	Euclid	Before Euclid
Galaxies at 1 < z < 3 with precise mass measurement	~$2x10^8$	~$5x10^6$
Massive galaxies (1< z< 3)	Few hundreds	Few tens
Hα Emitters with metal abundance measurements at z~2-3	~ 4 10^7 ?	~10^4 ?
Galaxies in clusters of galaxies at z > 1	~$1.8x10^4$	~10^3 ?
Active Galactic Nuclei galaxies (0.7 < z< 2)	~10^4	<10^3
Dwarf galaxies	~10^5	
T_{eff} ~400K Y dwarfs	~few 10^2	<10
Lensing galaxies with arcs and rings	~150,000	~10-1000
Quasars at z > 8	~30	None



- Targets for JWST, E-ELT, TMT, Subaru, VLT, MSE, etc…
- Synergy with LSST, eROSITA, Subaru/HSC, WFIRST, Planck, SKA

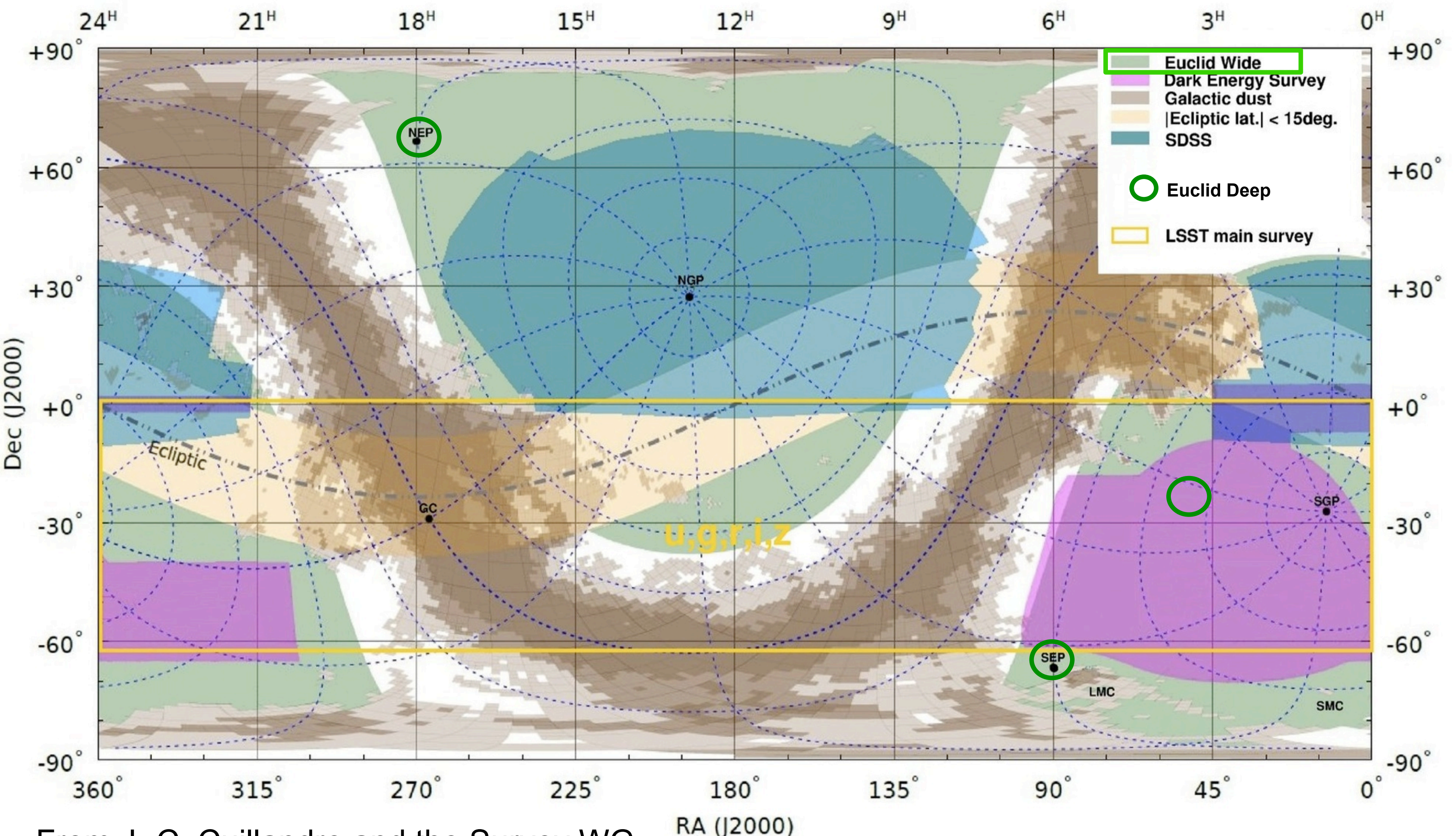
Need Wide+Deep Surveys: photom+spectro

- **Euclid Wide:**
  - 15000 deg^2 outside the galactic and ecliptic planes
  - 12 billion sources (3-σ)
  - 1.5 billion galaxies with
    - Very accurate morphometric information (WL)
    - Visible photometry: (u), g, r, i, z , (R+I+Z) AB=24.5, 10.0 σ +
    - NIR photometry : Y, J, H AB = 24.0, 5.0σ
    - Photometric redshifts with 0.05(1+z) accuracy
  - 35 million spectroscopic redshifts of emission line galaxies with
    - 0.001 accuracy
    - Halpha galaxies within $0.7 < z < 1.85$
    - Flux line: 2 . 10^{-16} erg.cm^{-2}.s^{-1} ; 3.5σ

- **Euclid Deep:**
  - 1x10 deg^2 at North Ecliptic pole + 1x20 deg^2 at South Ecliptic pole

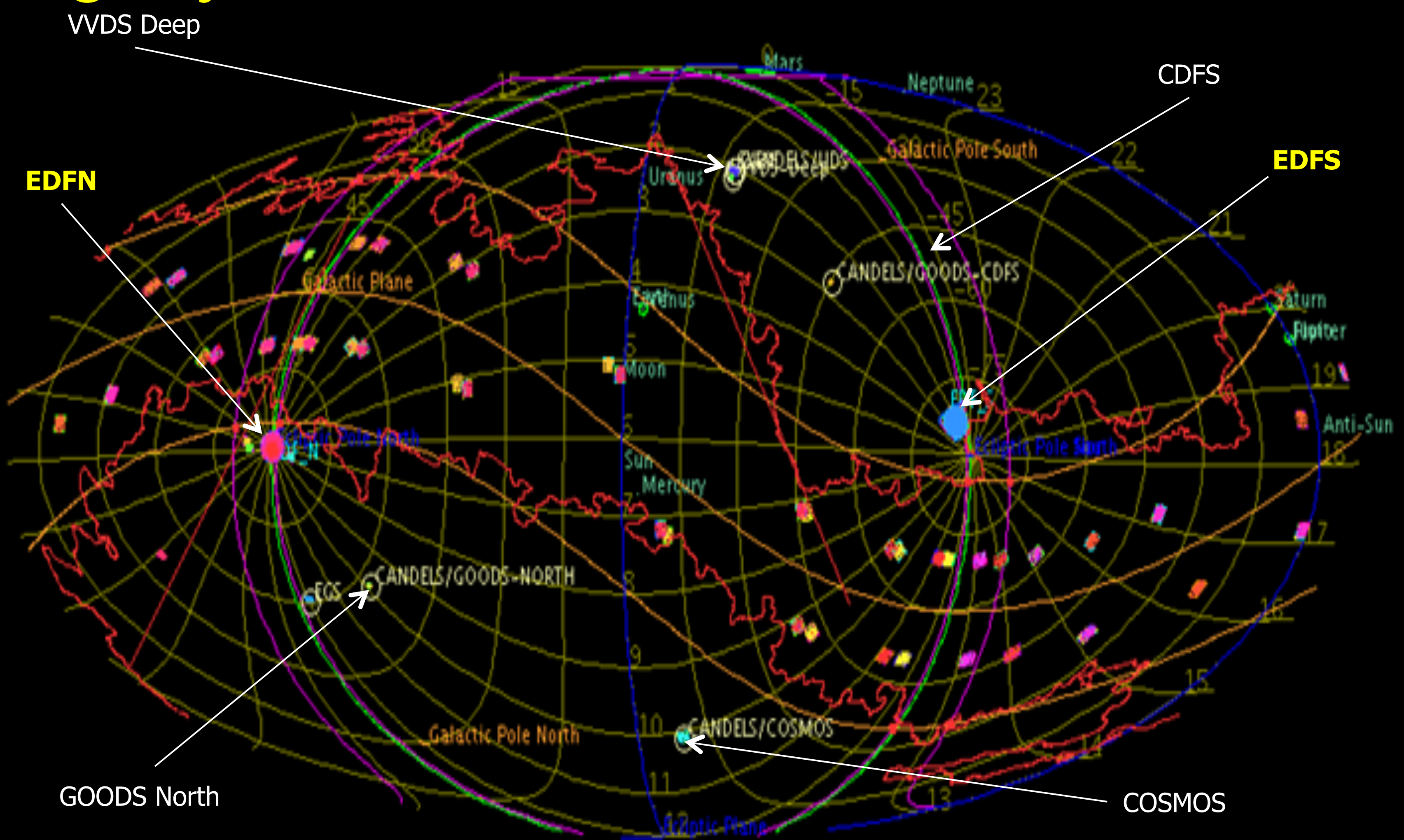
    + 1x10 deg^2 South close to Equatorial area
  - 10 million sources (3-σ)
  - 1.5 million galaxies with
    - Very accurate morphometric information (WL)
    - Visible photometry: (u), g, r, i, z , (R+I+Z) AB=26.5, 10.0 σ +
    - NIR photometry : Y, J, H AB = 26.0, 5.0σ
    - Photometric redshifts with 0.05(1+z) accuracy
  - 150 000 spectroscopic redshifts of emission line galaxies with
    - 0.001 accuracy
    - Halpha galaxies within $0.7 < z < 1.85$
    - Flux line: 5 . 10^{-17} erg.cm^{-2}.s^{-1} ; 3.5σ

Euclid Wide and Deep Surveys



From J.-C. Cuillandre and the Survey WG

Legacy value of Euclid calibration fields



- Calibration sequence over 6 years (ecliptic coordinates, Mollweide projection)
- → All calibration fields are shown, including HST targets and the EDFS and EDFN near the ecliptic poles. The ecliptic is shown as a vertical line, jagged lines show background level contour E(B-V)=0.08

Euclid Deep Fields: need to define EDF-S1

- **Euclid EDF-N** as defined below is definitely recommended to EST, centered of the geometrical position of NEP:
  - EDF-N: RA $17^h\ 55^{mn}\ 00^s$, DEC 66° 33' 38.35" (J2000.0)
  - 10 deg^2 , circular (see next figure: large circle: 20 deg^2 for CPC (angles), 10 visits; inner circle: 10 deg^2 30 more visits for noise bias)
- **Euclid EDF-S2** as defined below is definitely recommended to EST:
  - Chandra Deep Field South
  - EDF-S2: RA $03^h\ 32^{mn}\ 28.0^s$, DEC -27° 48' 30'' (J2000.0)
  - 10 deg^2 , circular
  - The selection of this field will cost 1 month of extra observing time with respect to the current baseline.
- **Euclid EDF-S1:** contamination by high stellar density and stellar density gradient in Magellanic Cloud → TBC asap for PI programmes

EDF-S1: MOCD-A new : SAA to 110 deg?

RA 05^h 13^{mn} 34.5^s

DEC -60° 25’ 50”

(J2000.0)

Magenta: quasi-rectangle area option

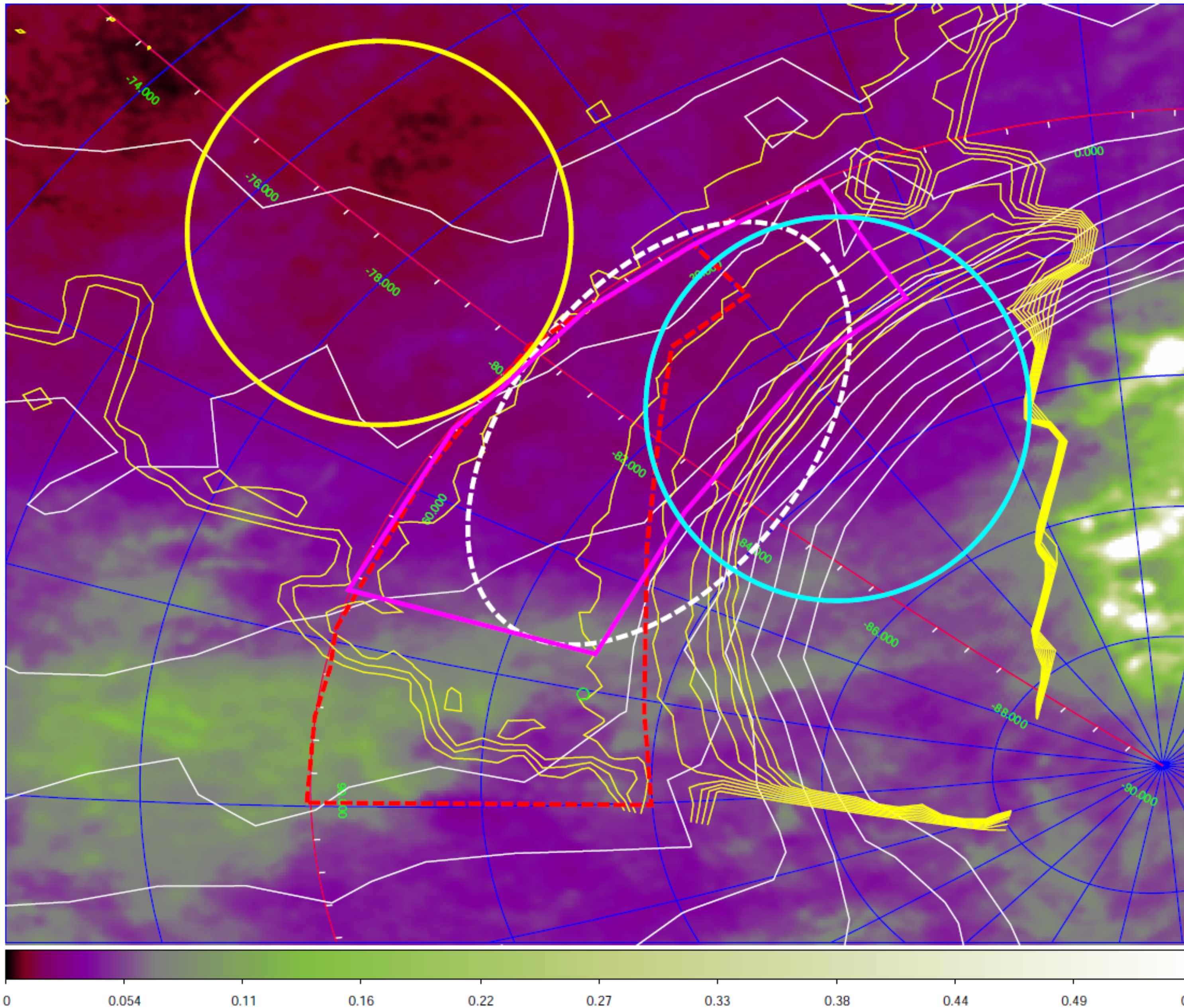


Photo-z wide :what we need

- Euclid Y,J,H, AB 24
- 4 optical bands *g*, *r*, *i*, *z* (ground based) to I_{AB} 24
- Sky coverage 15,000 deg^2
- Characterise WL galaxies (are they identical to GC galaxies? Is the Euclid-Wide z-survey for GC enough for WL?)
- Spectroscopic survey of WL galaxies (not only GC galaxies) to calibrate photo-z to I_{AB} 24.5

Photo-z and Legacy Deep : what we need

- Euclid Y,J,H, AB 26
- 4 optical bands *g*, *r*, *i*, *z* (ground based) to I_{AB}=26
- Sky coverage 40 deg^2
- Characterise WL galaxies (are they identical to GC galaxies? Is the Euclid-Deep z-survey for GC enough for WL?)
- Spectroscopic survey of WL galaxies (not only GC galaxies) to calibrate photo-z to I_{AB} 26.5

Euclid : what we expect to have

- 45 nights at Keck telescope for spectroscopy on Euclid fields
- 20hr pilot program at GTC for preparation of a spectroscopic large programme
- 5300 hrs on Spitzer: period 13, 2 Euclid Deep field (20 deg^2)
- 271 nights at CFHT u, r data on Euclid Wide North
- 110 nights at JST/T250 g data on Euclid Wide North

- A proposal at Subaru/HSC for g,i,z bands over 2000 deg2 (40 nights) on the northernmost sky
- A VLT proposal for deep spectroscopic survey
- MUCH more to come: EC PI proposals on deep fields

Summary ground based observations for Euclid

Wide survey

Wide North Imaging LSST+CFHT +Subaru+T250?	Wide North Spectroscopy	Wide South Imaging DES+LSST	Wide South Spectroscopy
YJH ugriz dec<30° ugriz dec>30°	Keck 15+15	YJH ugriz dec<0°	ESO+**GTC**?

Deep survey

Deep North Imaging LSST+Subaru	Deep North Spectroscopy	Deep South Imaging LSST	Deep South Spectroscopy
YJH ugriz	Subaru+ GTC?	YJH ugriz	ESO+ **GTC**?

Spitzer and Euclid Legacy

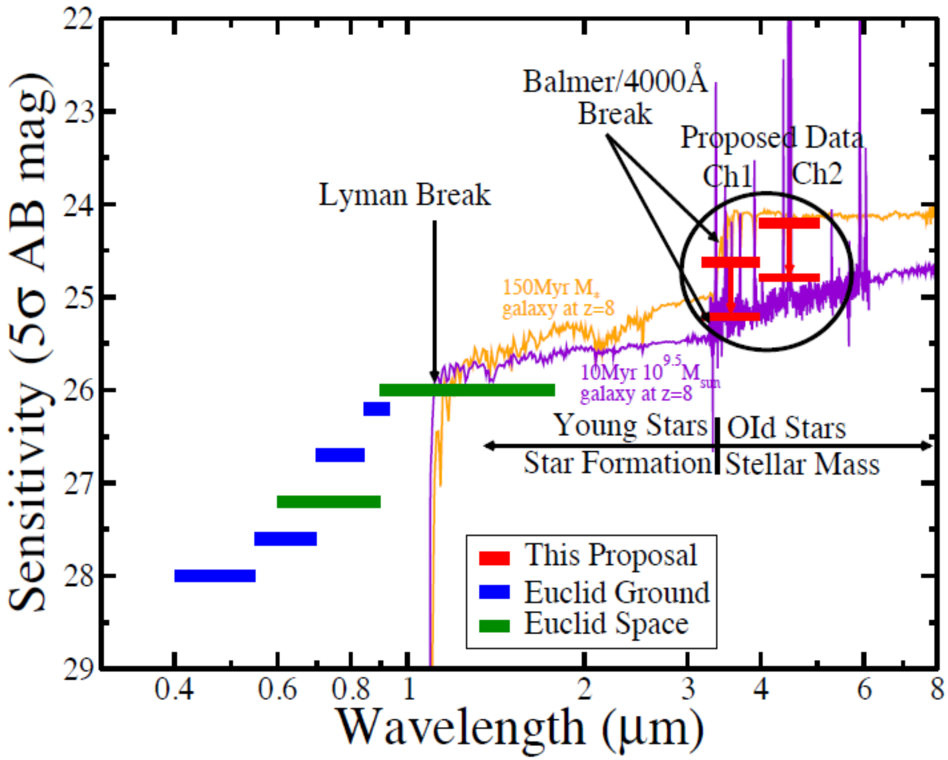


Figure 1 The 5 (thick red) and 3 (thin red) sigma depth of the proposed data is shown in red along with 5 sigma Euclid depths and a typical 150Myr old $\sim M_*$ ($10^{10.4}$ $M_\odot$) galaxy template at z=8 from Bruzual & Charlot (2003) and a ~10Myr old ($\sim 10^{9.5}$ $M_\odot$) galaxy wtih strong emission lines. Younger galaxies are brighter for a given stellar mass. The survey depth was chosen to be sensitive to M* galaxies to z~8, complement the depth probed by future Euclid and WFIRST, and to find brighter galaxies at even higher redshift.

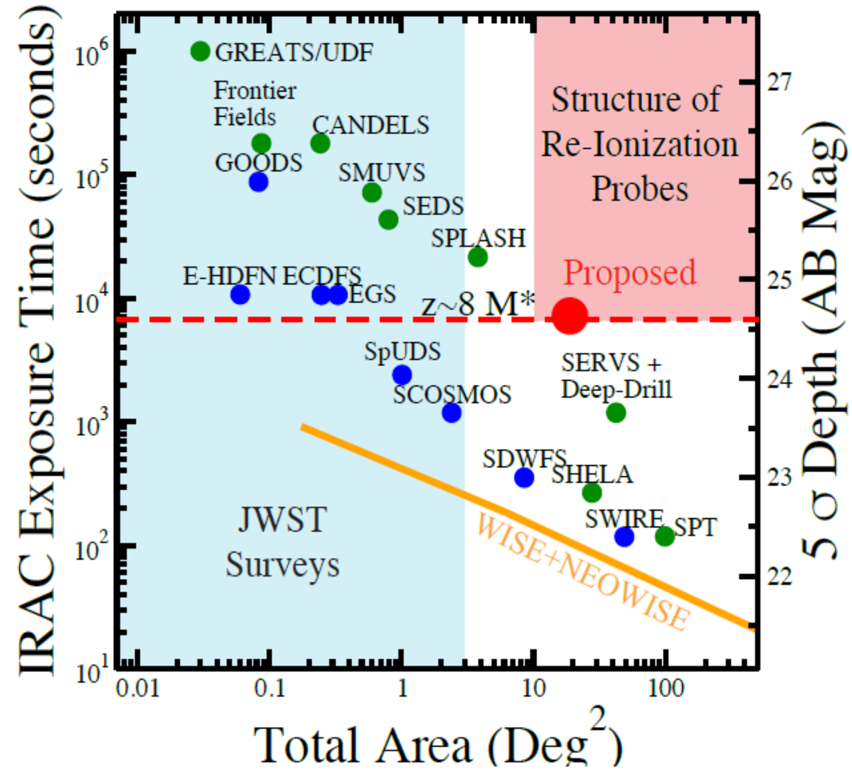


Figure 2 Depth vs area for representative Spitzer surveys. The pink shaded area shows the region of survey space that probes a represenative volume during re-ionization and the dashed line indicates M* ($10^{10.4}$ $M_\odot$) at z~8. JWST will likely supersede surveys shown in the blue area of this plot. See section §1.10 for a discussion of alternative surveys.

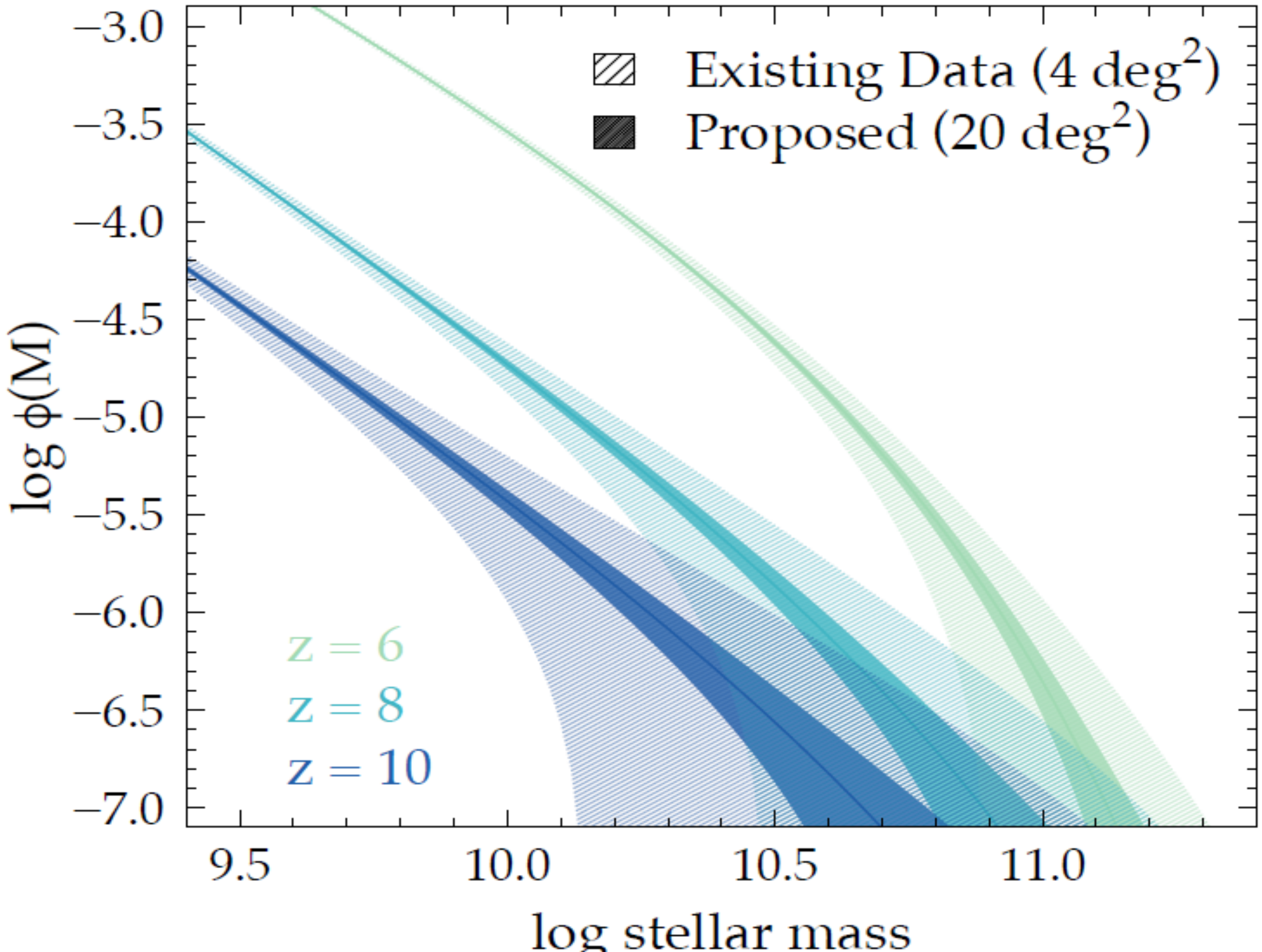
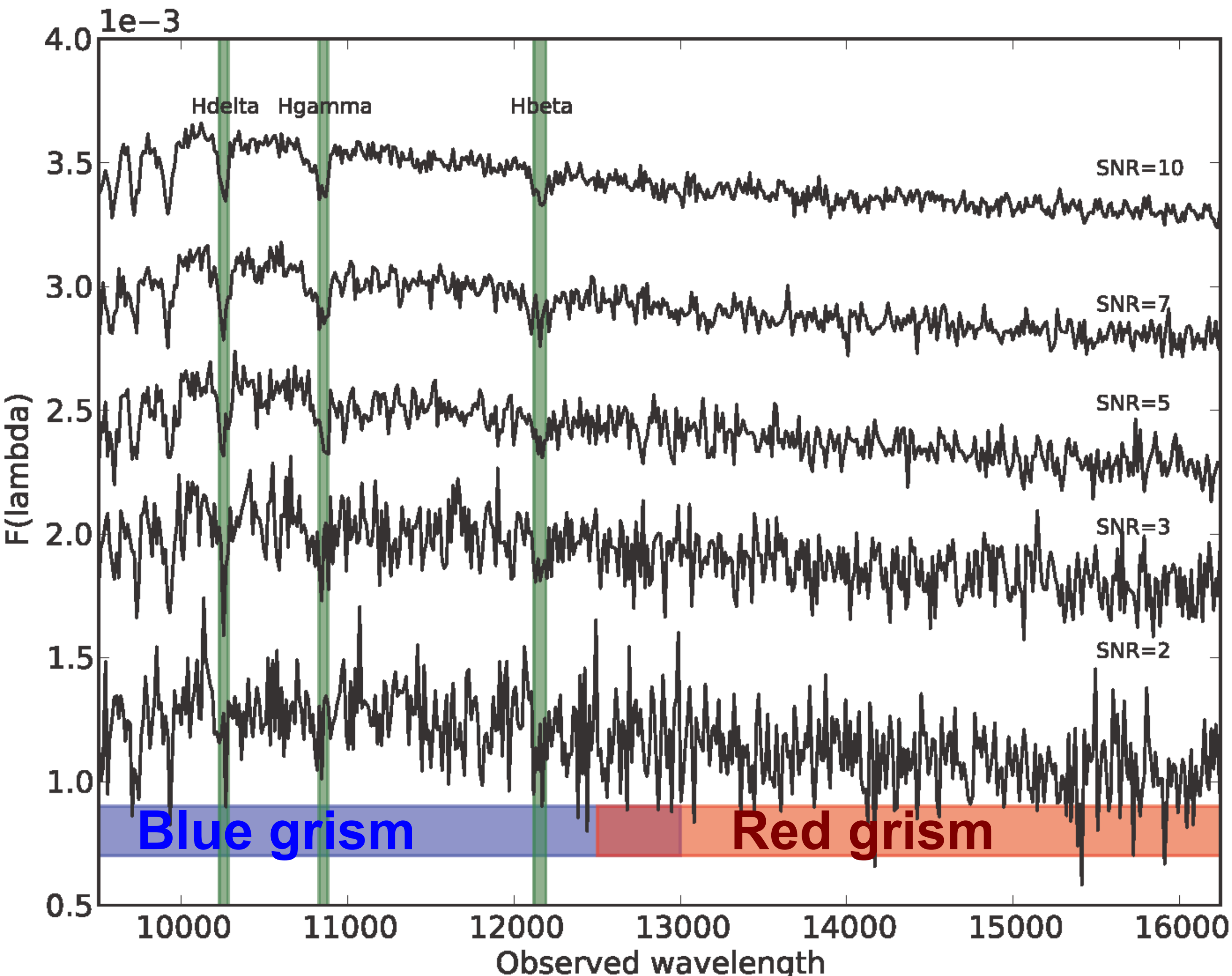


Figure 6 Expected 3 sigma constraints on the mass function with Euclid at z~6,8,10 from existing and proposed data are shown. These models are based on measurements from (Grazian et al. 2015) extrapolated to z~8,10 using the evolution of the halo mass function (Genel et al. 2015, Finkelstein et al. 2015, Steinhardt et al. 2015). This proposal is aimed at masses $>10^{10.5}$ $M_\odot$ where existing data is insufficent to differentiate models. The 3 sigma results are needed to effectively differentiate between galaxy formation models using a combination of clustering and abundance matching combined with stellar synthesis models (e.g. Lee et al. 2012, Steinhardt et al. 2015).

Spitzer and Euclid Legacy

Euclid Legacy and the blue grism?

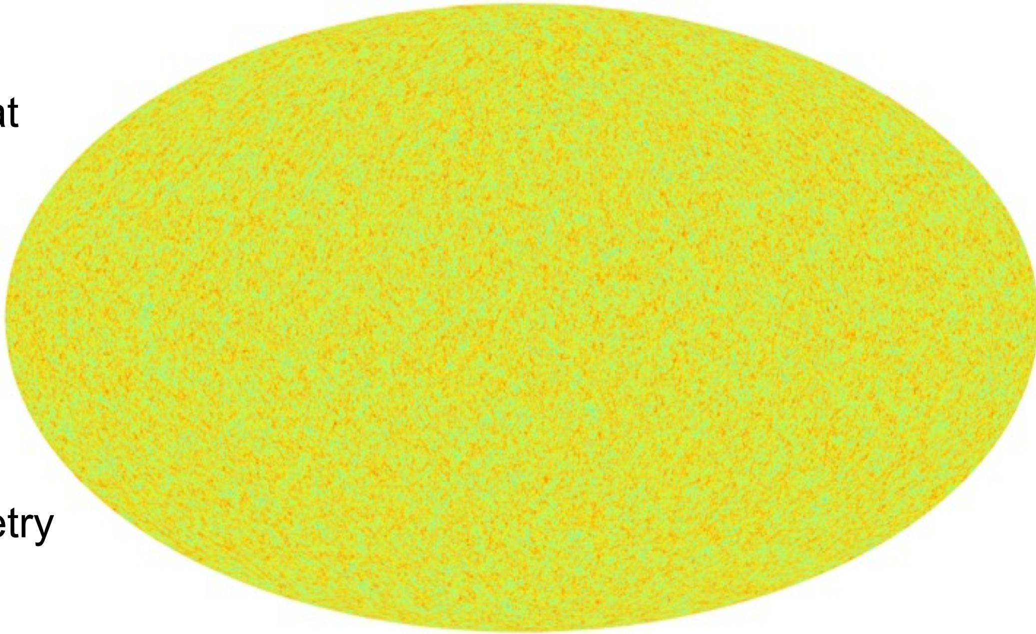
absorption lines on Euclid spectra



age=0.5 Gyr
z=1.5

Euclid Cosmological Simulation: for the whole EC

- 2 Trillion particles N body simulation down to z=0
- 400 Healpix maps (nside = 8192) of the projected matter density and potential density
- 100 redshift slices
- 10 different HOD and halo catalogues up to z=2.3
- **Consistent mocks for WL and GC data**
- SED fitting with 23 bands from u to IRAC at fixed redshift with
- 213 Bruzual&Charlot models with different ages and star formation history
- Includes dust absorption
- Normalisation: reproduce H-band photometry
- Galaxy sizes and morphologies
- **Official release Jan 15, 2017**



- Key innovation: analysis is done entirely on the fly (light cone and halo catalogue)

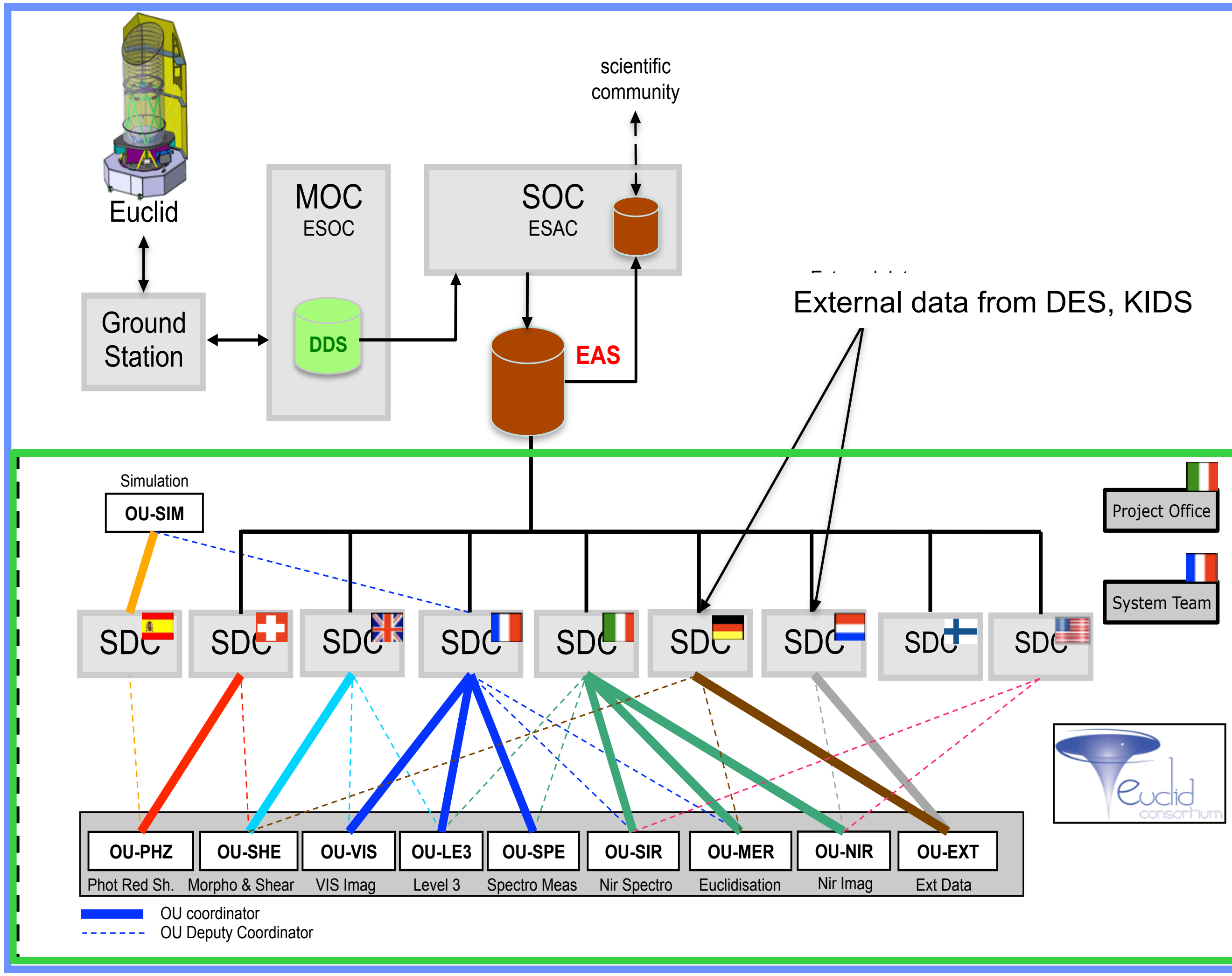
Ground Segment

Complex organisation:

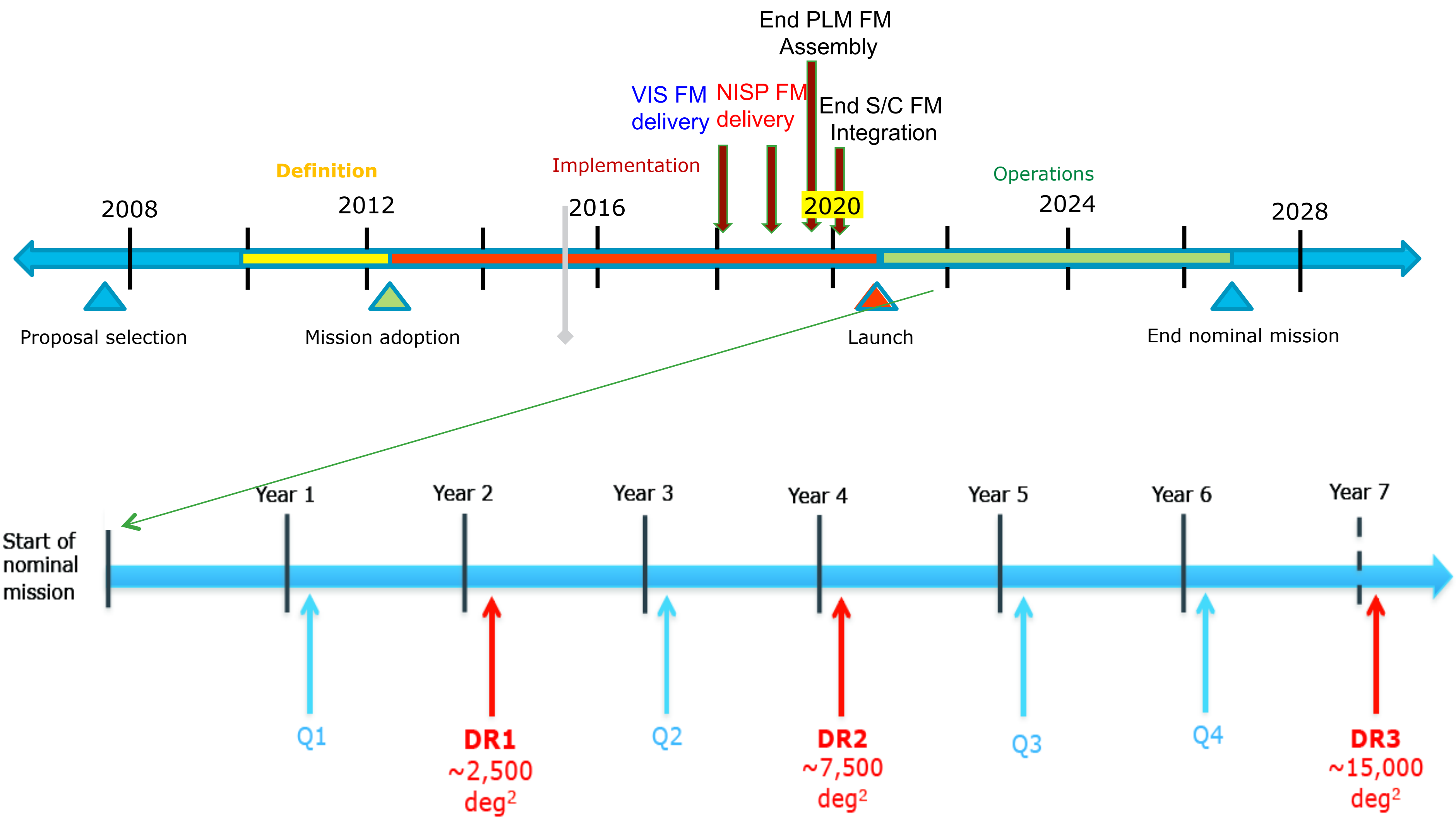
- 10 Organisation Units
- 9 Science Data Centers

Data: huge volumes, **heterogeneous data sets**

- VIS+NIR imagery, morphometry, photometry , spectroscopy, astrometry, transients
- data ground + space
- ~100 Pbytes
- 1^{+} million images
- > 10^{10} sources (>3-σ)



Overview mission timeline



Science with Euclid will start in 2022 with Q1 and in 2023 with DR1

Euclid Survey: the challenges (1/2)

- Get all the data ! Deep, wide, imaging, spectroscopy
- Inter-Calibrations of all ground based data obtained with more than 10 diffrent telescopes/cameras
- Inter-Calibrations between Euclid and DESI spectra?

→ Set Euclid/non-Euclid data inter-calibration group?

- Set a new group: Organising observations coming from all telescopes in line with the content of DR1, DR2, DR3

- Organise the data processing OU-EXT's: DES, LSST, JST/T250, CFHT, Subaru, HSC, KiDS + spectroscopy ?

Euclid Survey: the challenges (2/2)

- Get Deep g,r,i,z photometry to I=26 over 40deg^2: ??
- Get Deep spectroscopy to I=26 : Keck, VLT, GTC, Others?

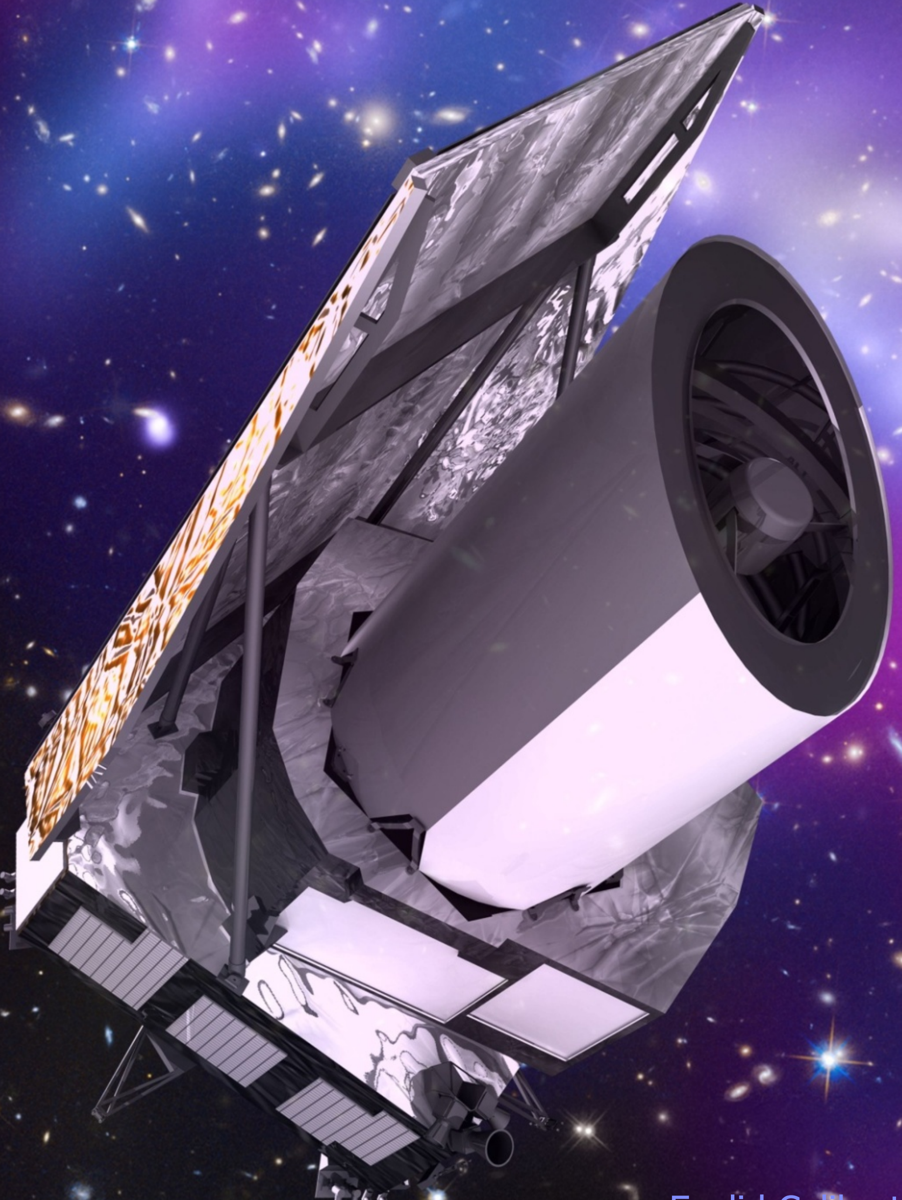
- Organise/coordinate the EC PI (legacy) programmes: done with all ground based telescopes and satellites

- Get the relevant cosmological and OU-SIM simulations

- Organise the position transient science and follow up

Important Euclid actions to come

- Finalise the negotiations with LSST
- Organise the Deep visible surveys to I=26
- Simulation meeting in Barcelona on Nov 10-11
- Release Euclid simulations on jan 15
- Science with the blue Grism on Dec 1st at IAP
- (Re-)organisation OU-EXTs
- Organisation /coordination of all non-Euclid satellite data (Euclid and PIs)
- Calibration and inter-calibration of this huge heteroneous data set: this meeting
- Optimisation of the survey (spring 2017?)



Thank you

www.euclid-ec.org