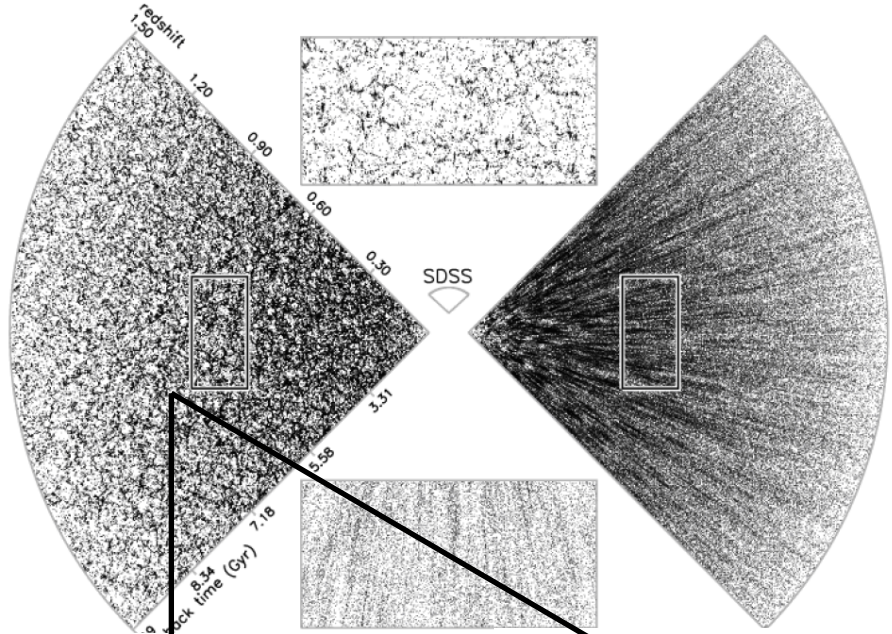
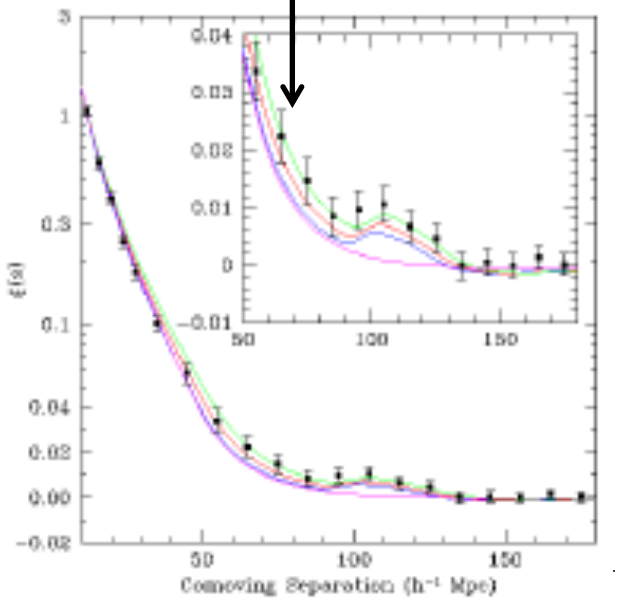
OU-SPE
Current status

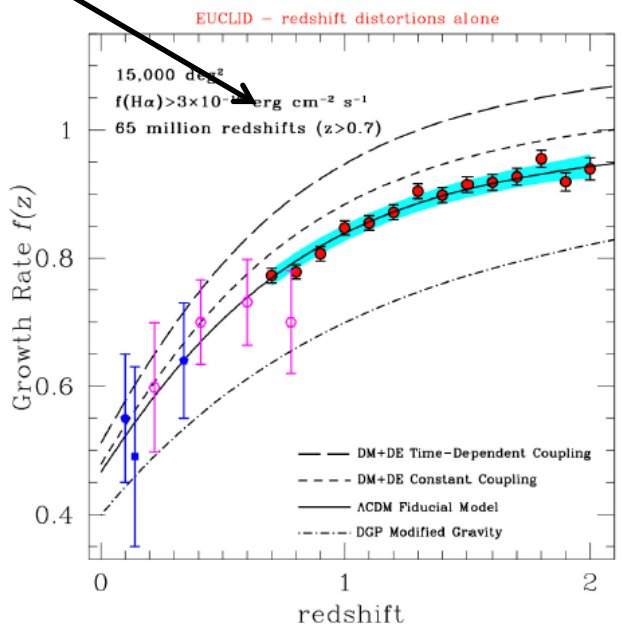
Main goal
Main issues
Work progress

Redshift : a key measurement for Euclid

- Main clustering probes:
  - BAO
  - RSD
- Requires velocity accuracy







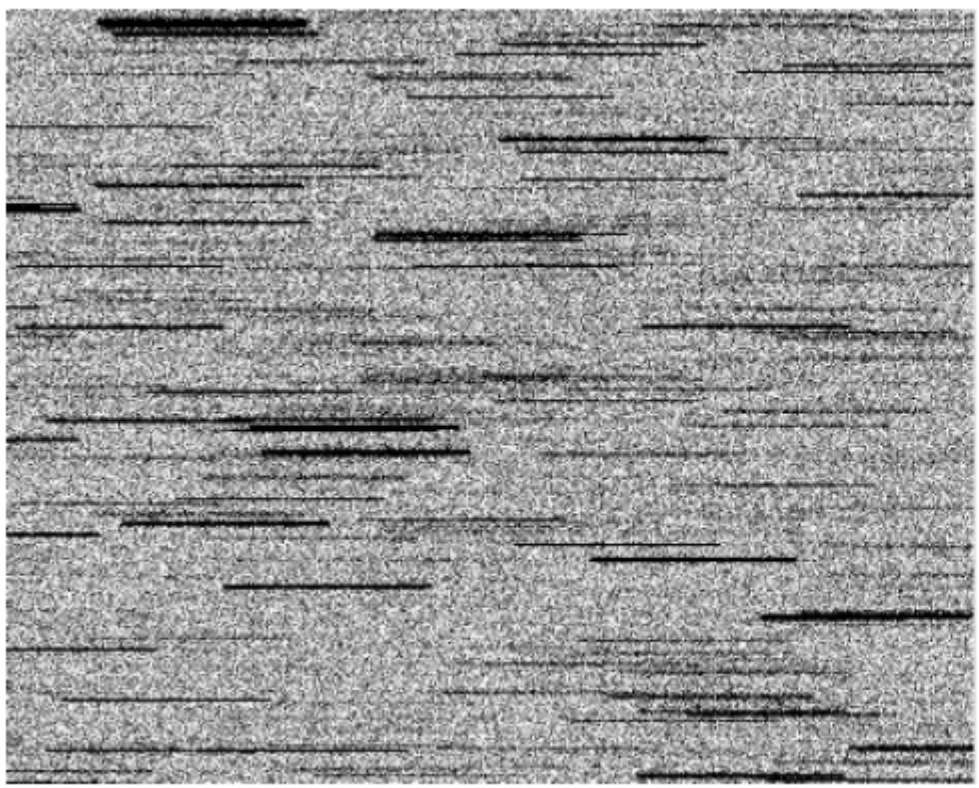
OU-SPE GOALS

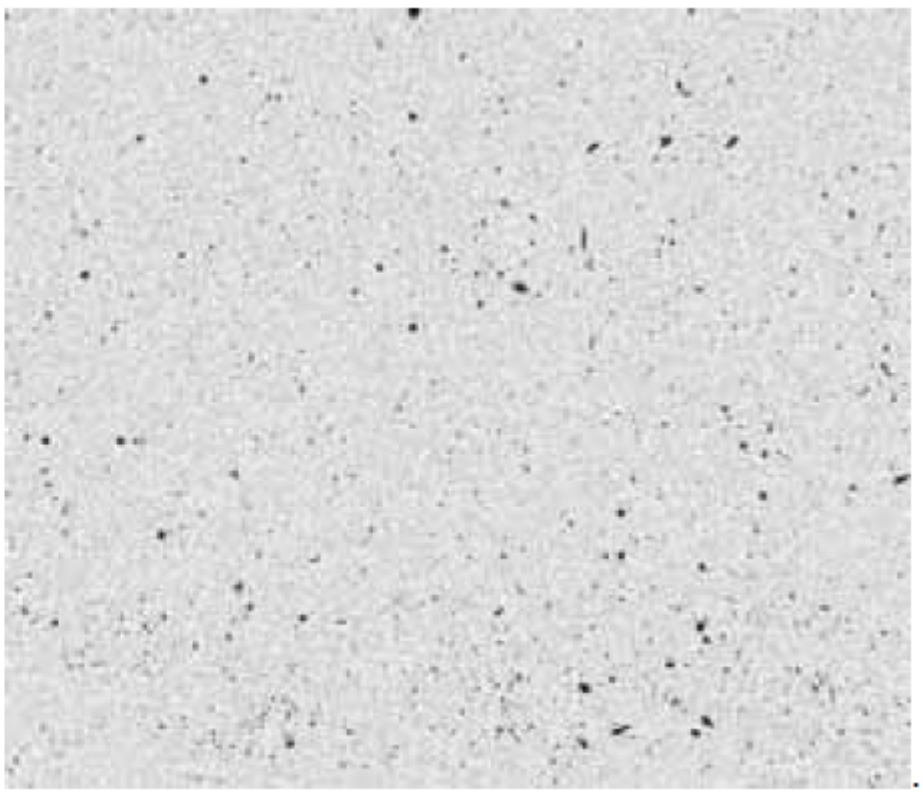
Produce methods and algorithms for spectrophotometric measurements from NISP spectroscopy data:

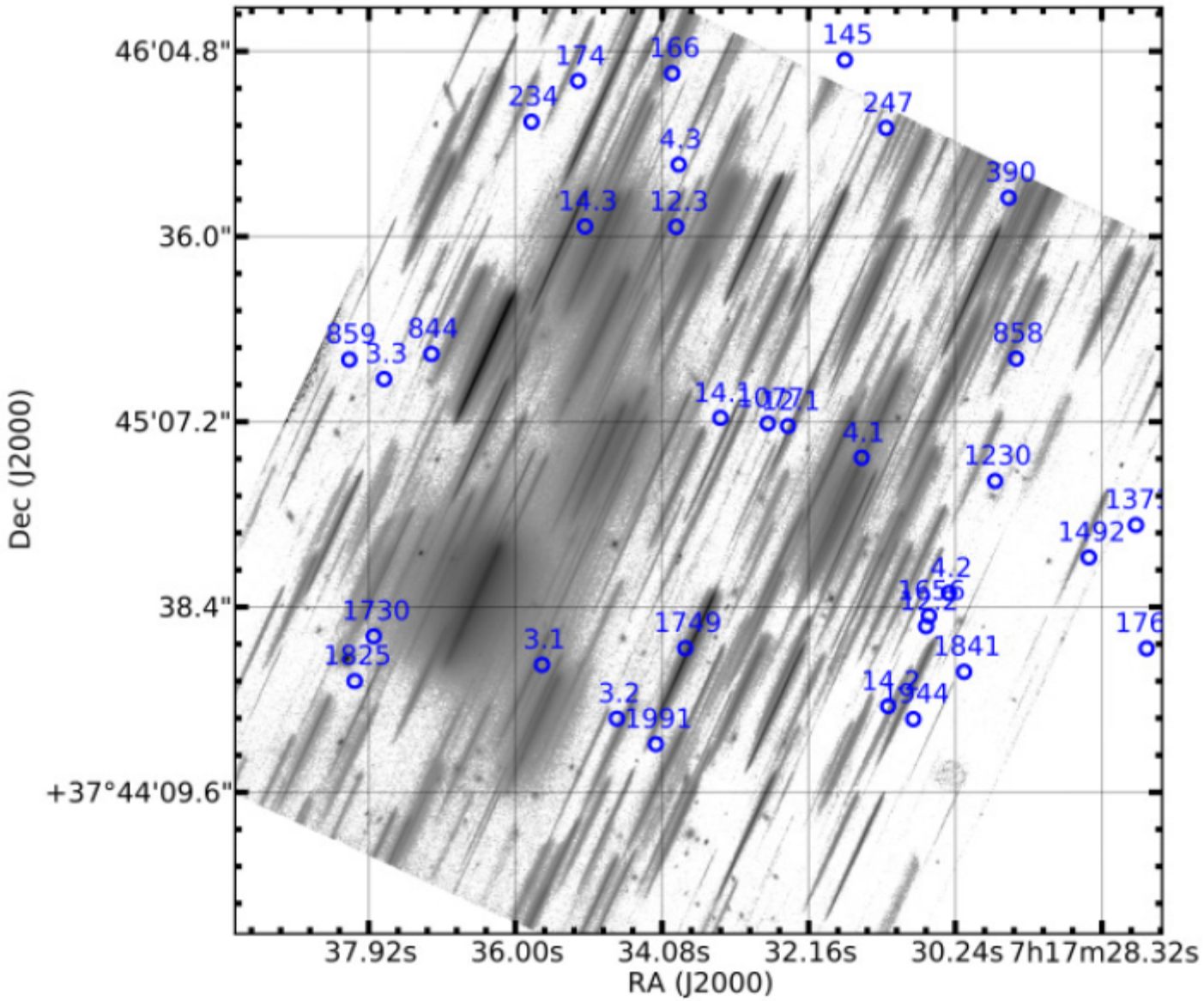
- Spectral lines, continuum
- REDSHIFT
- Rest-frame / absolute parameters

OU-SPE: main issues

- NISP will produce slitless spectroscopy
- This implies superimposition of spectra from different objects (at different redshifts…).
- The challenge is to get rid of this contamination and ensure a robust redshift measurement
- Evaluate the reliability of the redshift measurement per object
- Do all this automatically for ~50 million objects

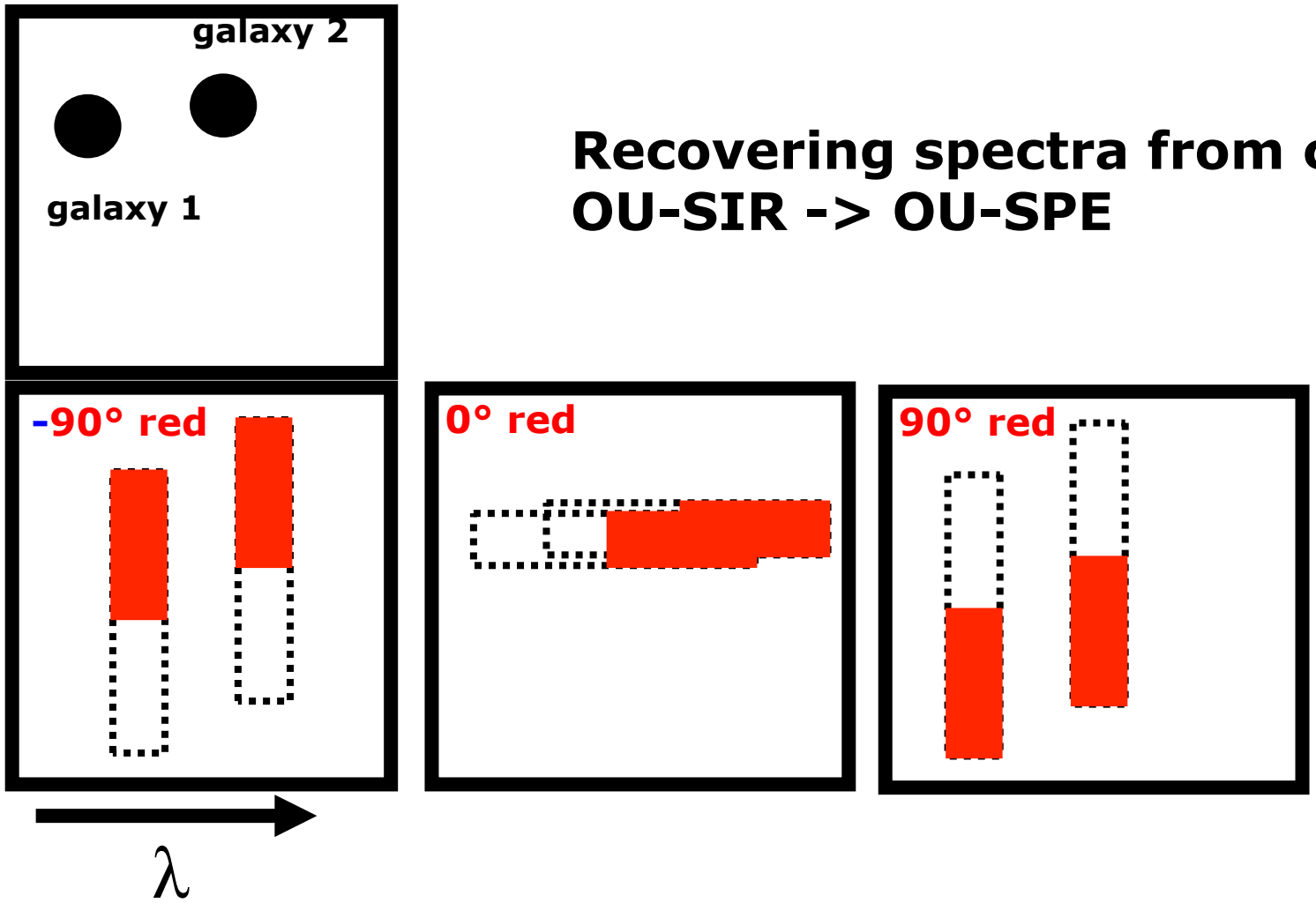






GLASS survey: HST grism

2D spectra from the Wide



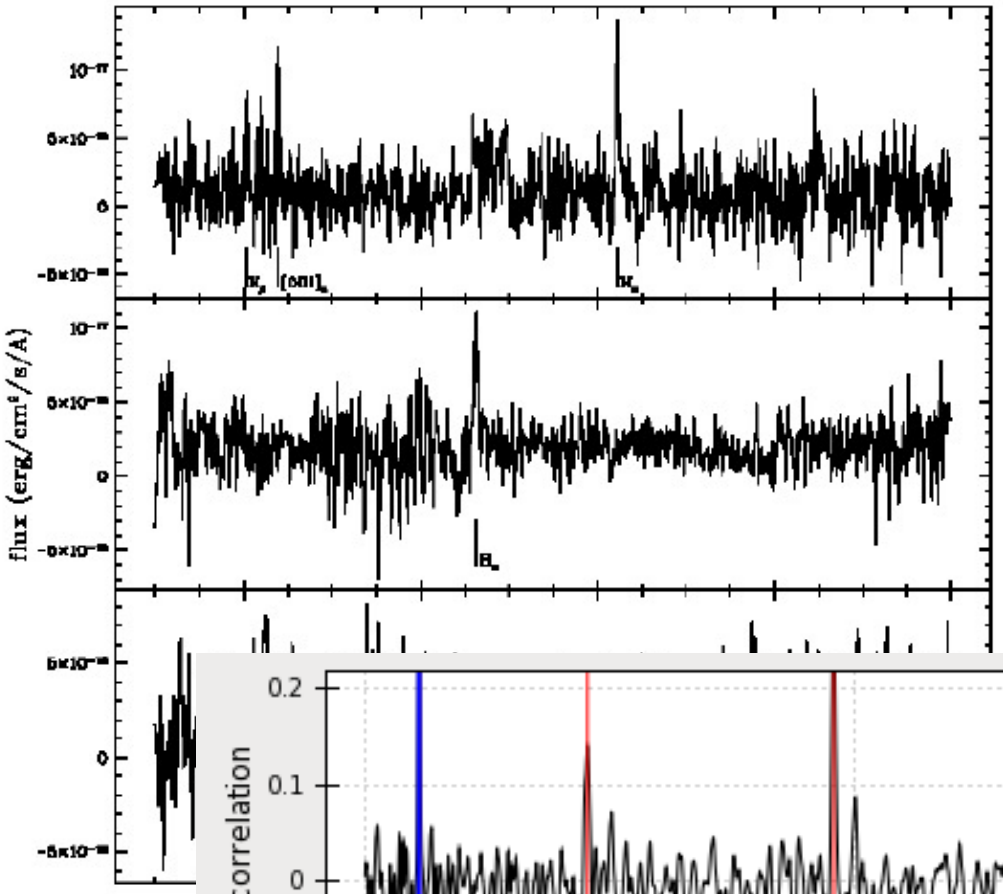
Recovering spectra from confusion:
OU-SIR -> OU-SPE

4 sub-integrations (dithers)
3 roll angles of the dispersion axis (-90°, 0°, 90°)
1 spectral range (red grism)
Sequence : 0° – 90°0° 90°

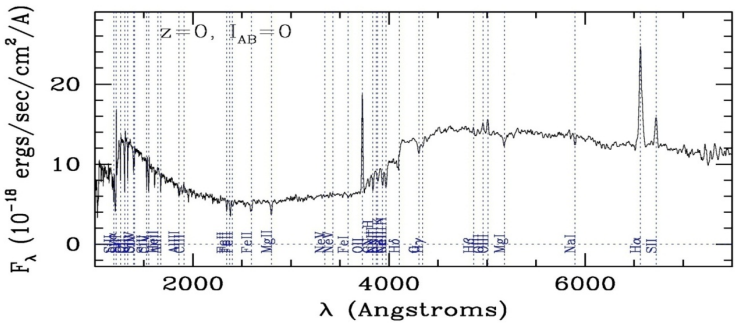
1D spectra: input and redshift engine

Observed

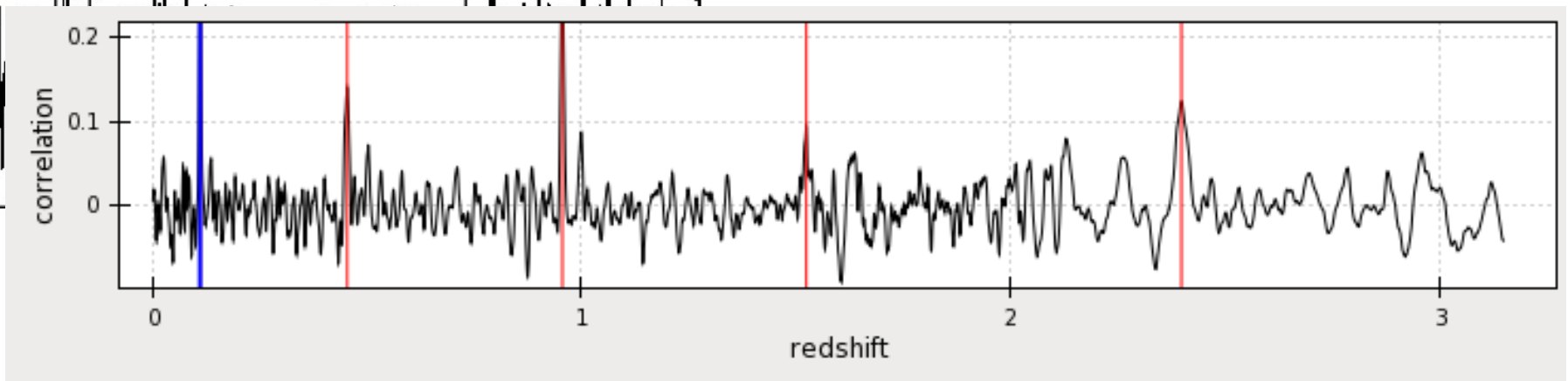
Hα



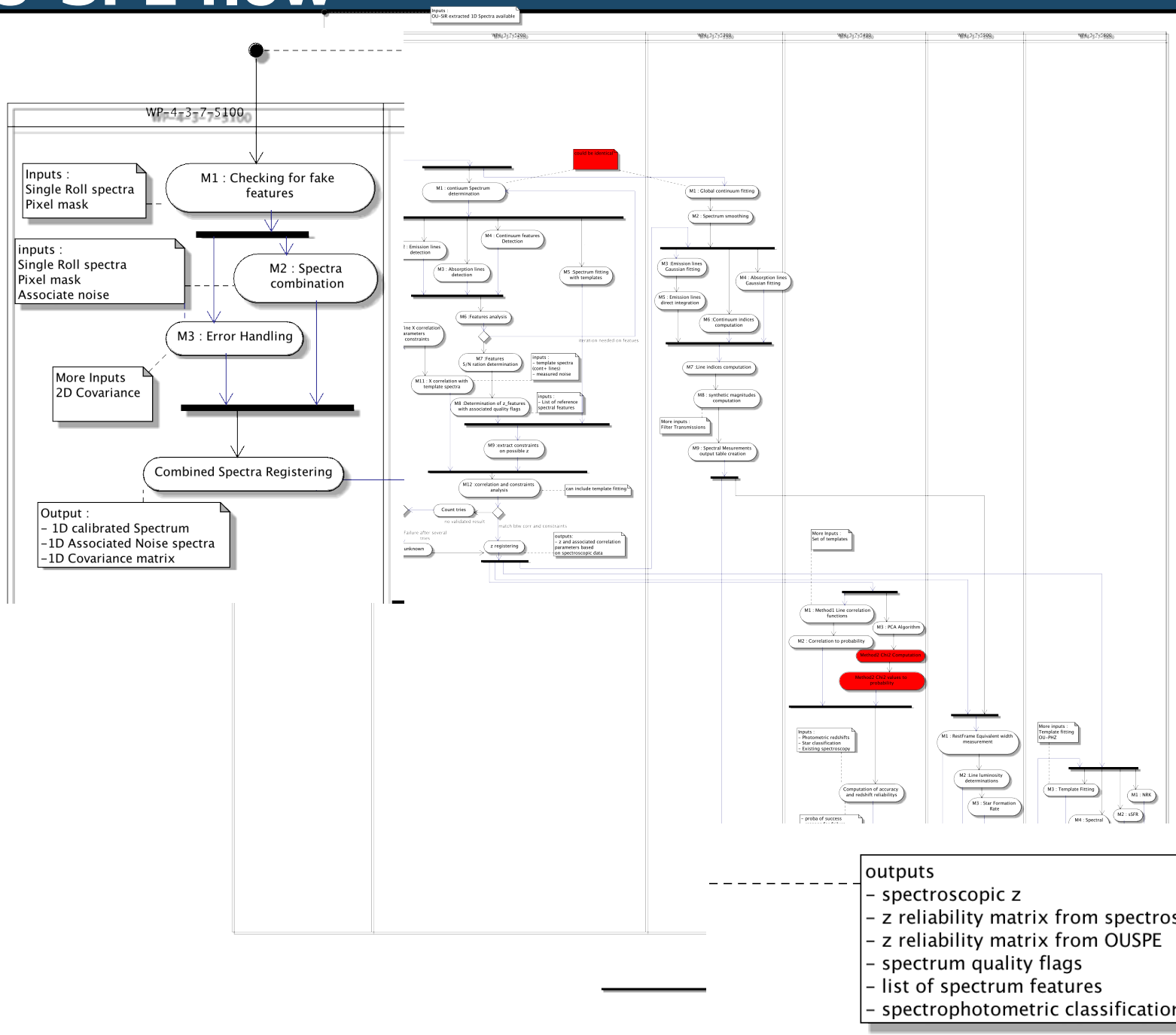
X-correl with templates



Correlation vs. redshift



OU-SPE flow



outputs
- spectroscopic z
- z reliability matrix from spectroscopy
- z reliability matrix from OUSPE
- spectrum quality flags
- list of spectrum features
- spectrophotometric classification

Key elements

1. Receive clean combined and calibrated spectra from SIR (and associated noise model)
2. Produce a reference database with template spectra
3. Identify spectra features: emission and absorption lines, continuum
4. Cross-correlate obsverved spectrum with template base
5. Spectroscopic redshift measurement
   - From spectral features
   - From cross-correlation
   - Compare and decide
6. Produce a list of redshifts (e.g. peaks in correlation)
7. Assign a reliability estimate to the redshift(s)
   - Correlation peak strength
   - Compare to photo-z
8. Measure spectral features: flux, EW, width

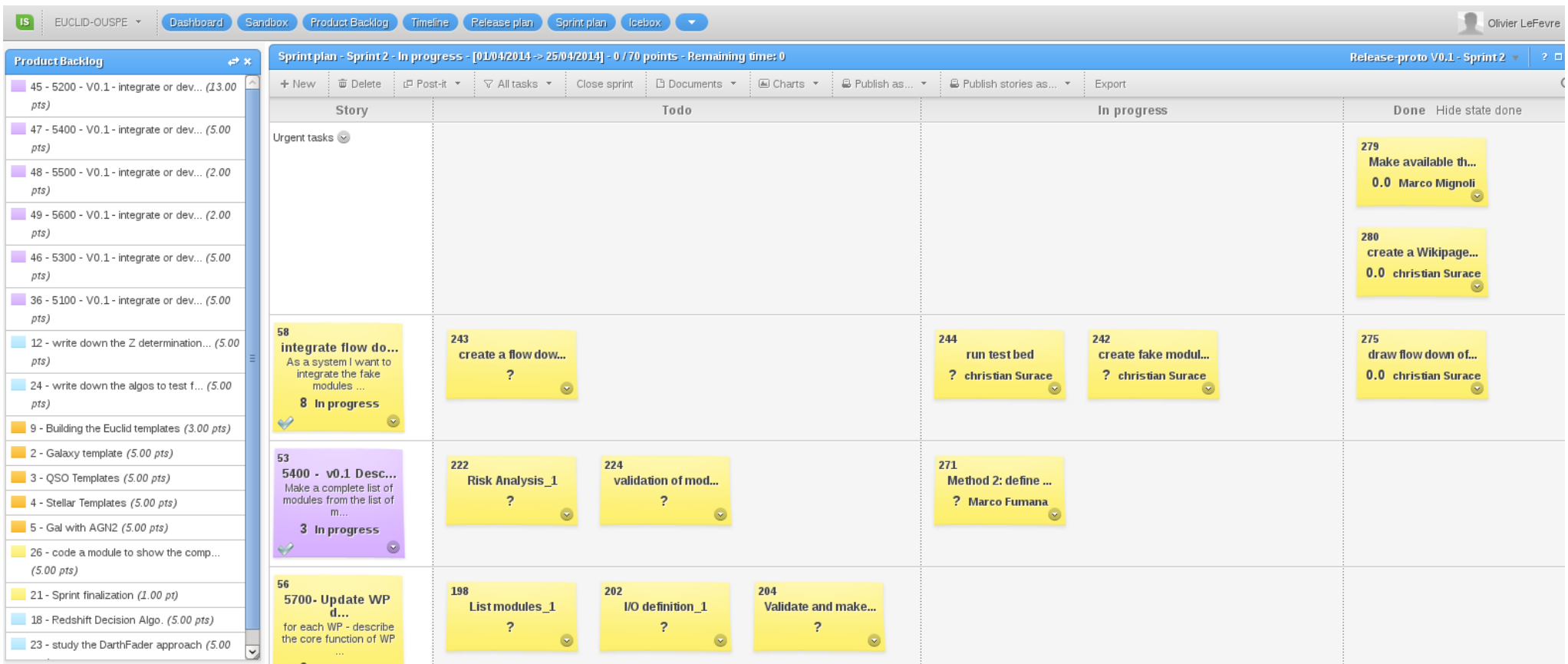
OU-SPE responsibilities

Role	Name	Laboratory
Leader	Olivier Le Fèvre	LAM
CoLead	Marco Mignoli	OABO
Integration Validation and Verification Reference Person (IV&V RP) :	B. Garilli -C. Surace	INAF-Milano
Product Assurance / Quality Assurance Reference Person (PA/QA RP):	C. Surace	LAM
Simulation Contact Point	Bianca Garilli	IASF

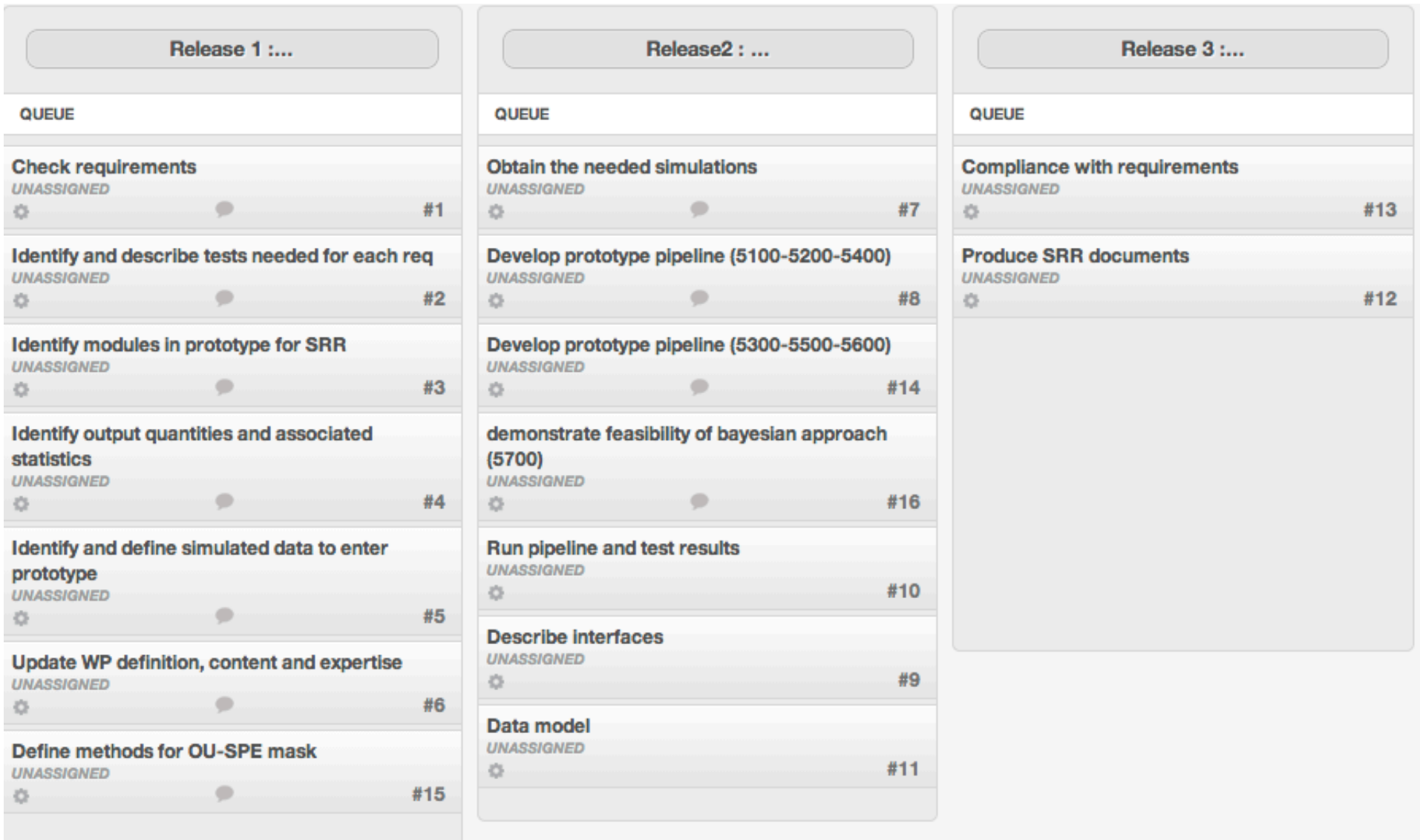
Work packages

WP Number	WP Name	WP Leader	WP Followers
Wp-4-3-07-1000	OU-SPE Management (3.5 FTE)	O. Le Fevre	M. Mignoli
Wp-4-3-07-2000	OU-SPE Interfaces (0.5 FTE)	C. Surace	N. Apostoliakos
Wp-4-3-07-2100	OU-SPE Interfaces with SDC and System (1 FTE)	C. Surace	
Wp-4-3-07-2200	OU-SPE interfaces with Ous (0.5 FTE)	M. Scodeggio	
Wp-4-3-07-3000	OU-SPE Requirements, Performance, Validation (1.7 FTE)	B. Garilli	W. Percival, L. Samushia, P. Norberg
Wp-4-3-07-4000	OU-SPE Data Management (0.5 FTE)	C. Surace	
Wp-4-3-07-4100	OU-SPE Data Model (0.5 FTE)	C. Surace	
Wp-4-3-07-4200	OU-SPE Data Calibration (0.7 FTE)	M. Scodeggio	E. Palazzi, E. Maiorano
Wp-4-3-07-4300	OU-SPE Quality Mask (0.7 FTE)	C. Surace	T. Contini, L. Tresse
Wp-4-3-07-5000	OU-SPE Algorithms Management (2 FTE)	O. Le Fevre	
Wp-4-3-07-5100	Spectra Combination (5 FTE)	O. Le Fevre / E. Rossetti	W. Percival, L. Samushia, B. Millard, D. Vibert, L. Tasca , M. Mignoli, Y. Copin, C. Scarlata
Wp-4-3-07-5200	Lines Identification and Redshift Measurement (8 FTE) (Uses the Agile management method)	O. Le Fevre	D. Vergani, M. Mignoli, A. Cimatti, E. Rossetti, G. Zamorani, E. Vanzella, D. Machado, C. Adami, C. Scarlata
Wp-4-3-07-5300	Spectral Features Measurement (3 FTE)	M. Mignoli	E. Palazzi, D. Vergani, E. Rossetti, P. Ciliegi, A. Cimatti, L. Pozzetti, M. Moresco, G. Cresci, T. Contini, L. Tasca, C. Scarlata, E. Maiorano
Wp-4-3-07-5400	Redshift Quality Determination (3 FTE)	B. Garilli	M. Fumana, L. Tresse, L. Tasca, C. Adami, P. Norberg, M. Mignoli, G. Zamorani, C. Scarlata, V. Le Brun
Wp-4-3-07-5500	Rest-frame Parameters (1.5 FTE)	P. Ciliegi	T. Contini, L. Pozzetti, M. Moresco
Wp-4-3-07-5600	Spectro-photometric Classification (1.5 FTE)	O. Ilbert	D. Vergani, L. Pozzetti, C. Adami,
Wp-4-3-07-5700	R&D Global decontamination and redshift measurement	D. Vibert	
Wp-4-3-07-6000	OU-SPE Infrastructure (0.75 FTE)	T. Fenouillet	

Working with Agile: Sprint plan



Working with Agile: Roadmap



Documents / reviews

Docs required for SRR:

- Requirements Specifications Document
- Development plan
- Etc.

Next step: prototyping