



plato



PLATO WP122

Non-seismic parameters and model
atmospheres

WP122: data products

Non-seismic parameters (Teff, abundances, L and R from ‘classical’ methods, ...)

- ✓ Input for seismic analysis
- ✓ Characterising the targets without seismic data

Grids of 1D/3D model atmospheres

- ✓ Outer boundary conditions for interior models

Grids of gravity- and limb-darkening coefficients

- ✓ Transit fitting

WP120: basic structure

WP121 - Stellar models

Aldo Serenelli



WP122 - Non-seismic diagnostics
and model atmospheres

Thierry Morel



WP123 - Stellar activity and rotation

Antonino Lanza



WP124 - Seismic diagnostics

Margarida Cunha



WP125 – Determination of stellar
parameters

Jørgen Christensen-Dalsgaard



WP126 - Mode physics

Jérôme Ballot



WP127 - Seismic constraints from
ageing stars

Benoît Mosser

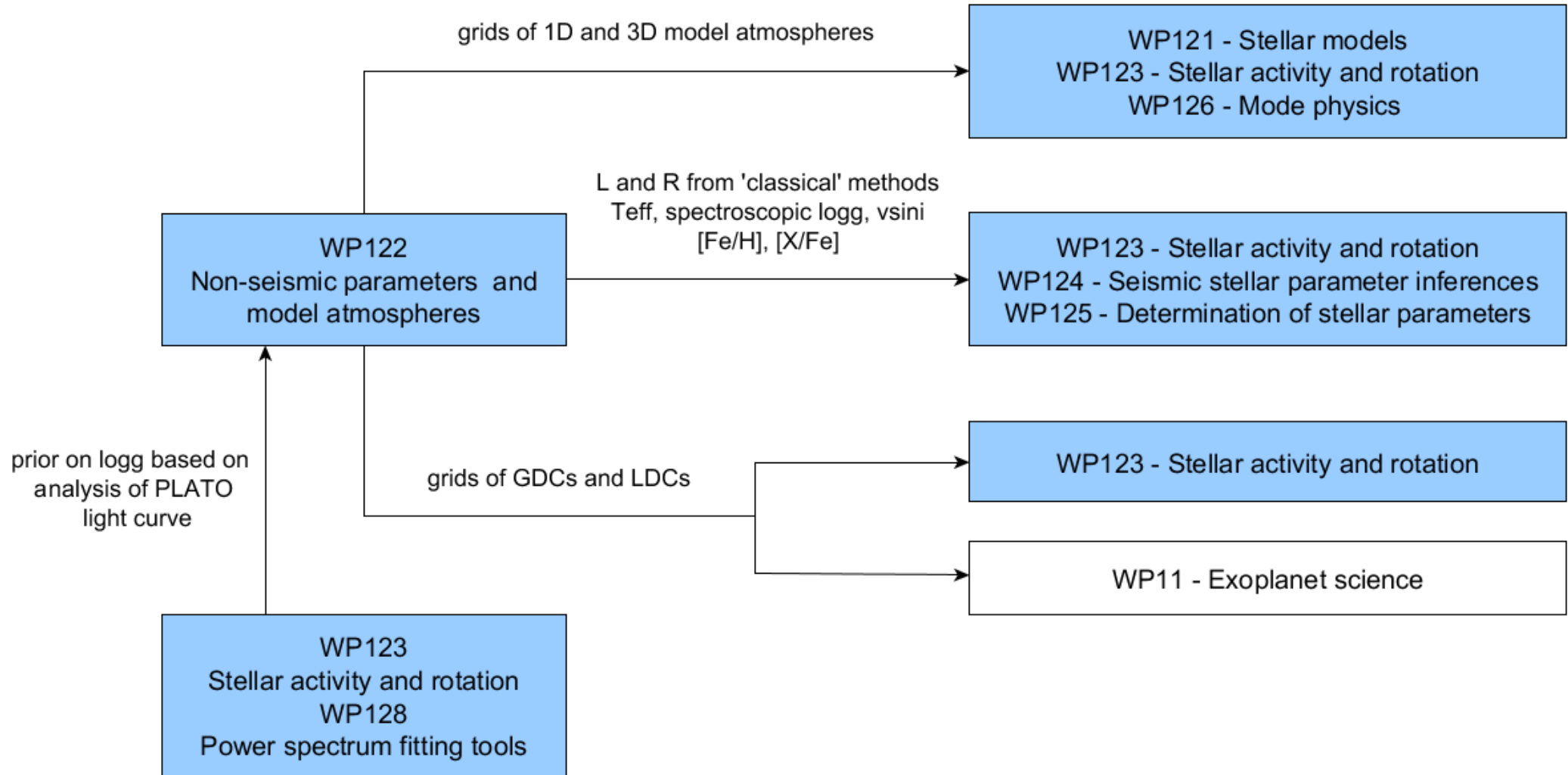


WP128 – Power spectrum fitting
tools

William Chaplin



WP122: interfaces



WP122: basic structure

WP122100 – 1D Model atmospheres

Bertrand Plez



WP122200 – 3D Model atmospheres

Remo Collet



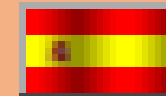
WP122300 – Fundamental stellar parameters

Carlos Allende Prieto



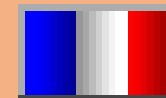
WP122400 – Limb darkening

Antonio Claret



WP122500 – Interstellar extinction

Douglas Marshall



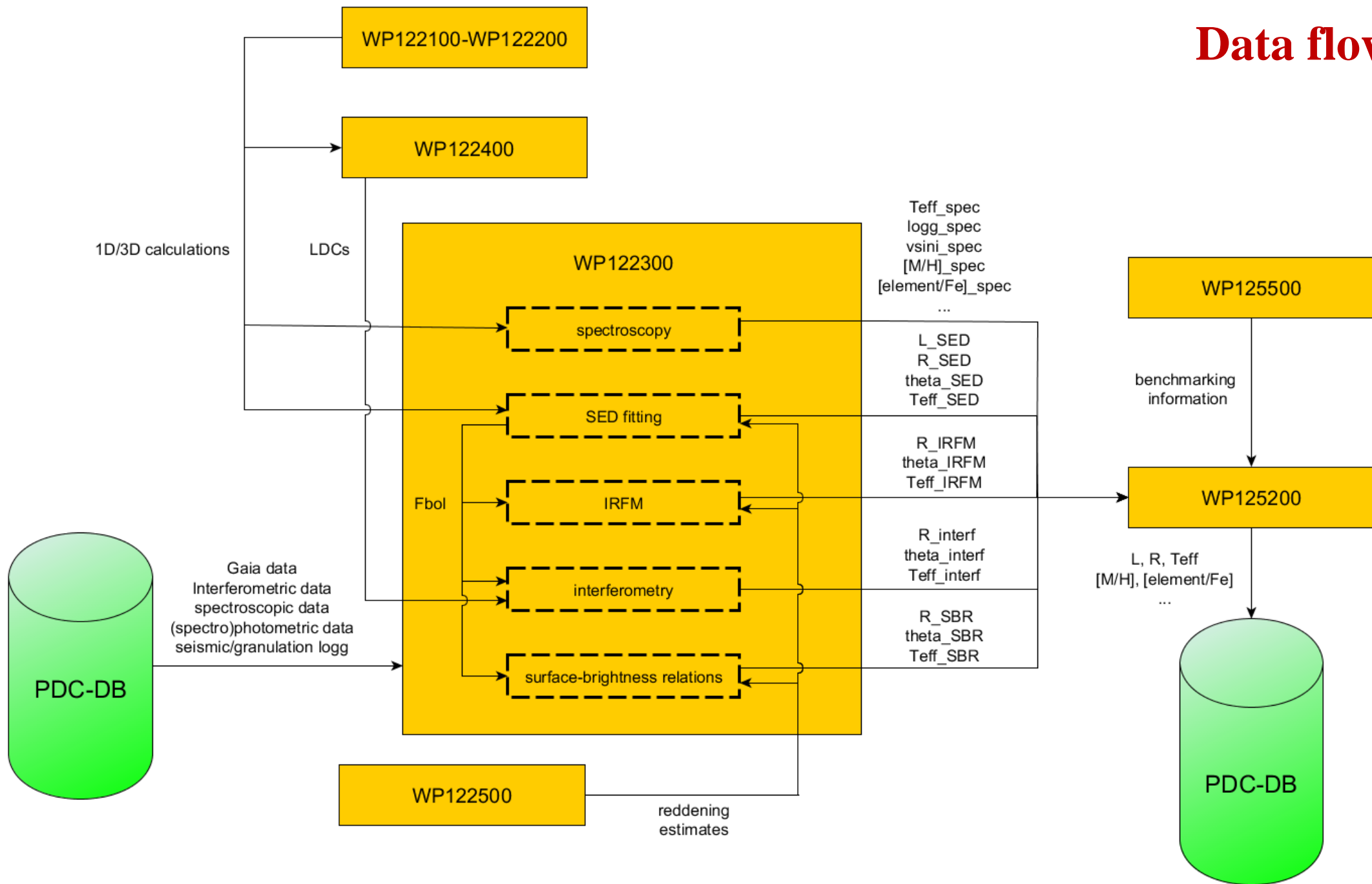
PLATO core programme samples

	P1 Detection of planets	P2 Exo-planetary atmospheres	P4 Earth-like planets in habitable zone	P5 Statistical planet sample	Future sample? Improvement of models, Galactic archeology
N	> 15000	> 1000	> 5000	> 245000	?
Spectral type	F5-K7 IV-V	F5-K7 IV-V	M V	F5-K7 IV-V	RGs
Magnitude	V < 11	V < 8.2	V < 16	V < 13	?
Seismology?	YES	YES	for some??	yes?	YES

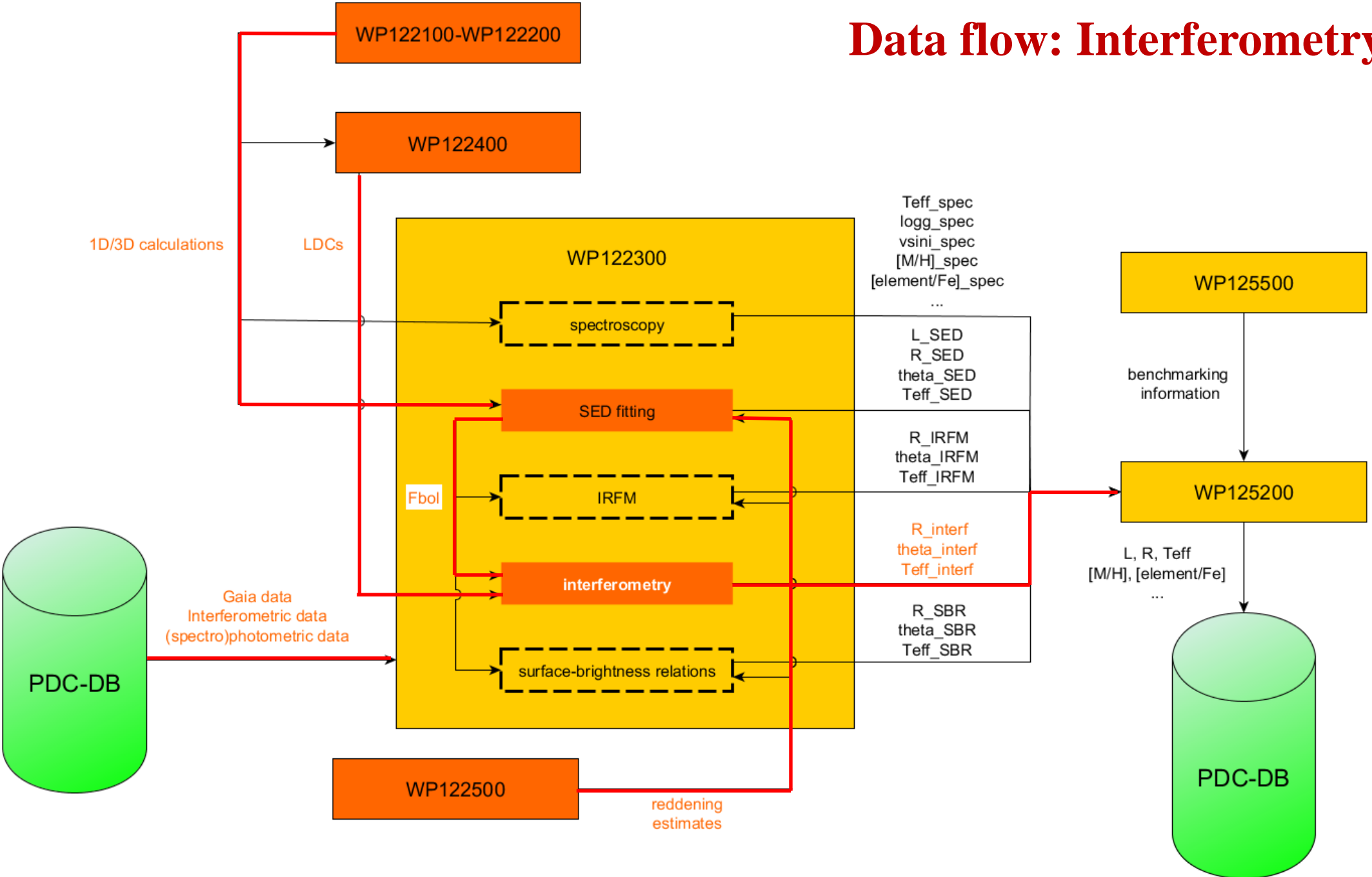
PLATO core programme samples

	SBR	Interferometry	SBR??	SBR	Interferometry + SBR
	P1 Detection of planets	P2 Exo-planetary atmospheres	P4 Earth-like planets in habitable zone	P5 Statistical planet sample	Future sample? Improvement of models, Galactic archeology
N	> 15000	> 1000	> 5000	> 245000	?
Spectral type	F5-K7 IV-V	F5-K7 IV-V	M V	F5-K7 IV-V	RGs
Magnitude	V < 11	V < 8.2	V < 16	V < 13	?
Seismology?	YES	YES	for some??	yes?	YES

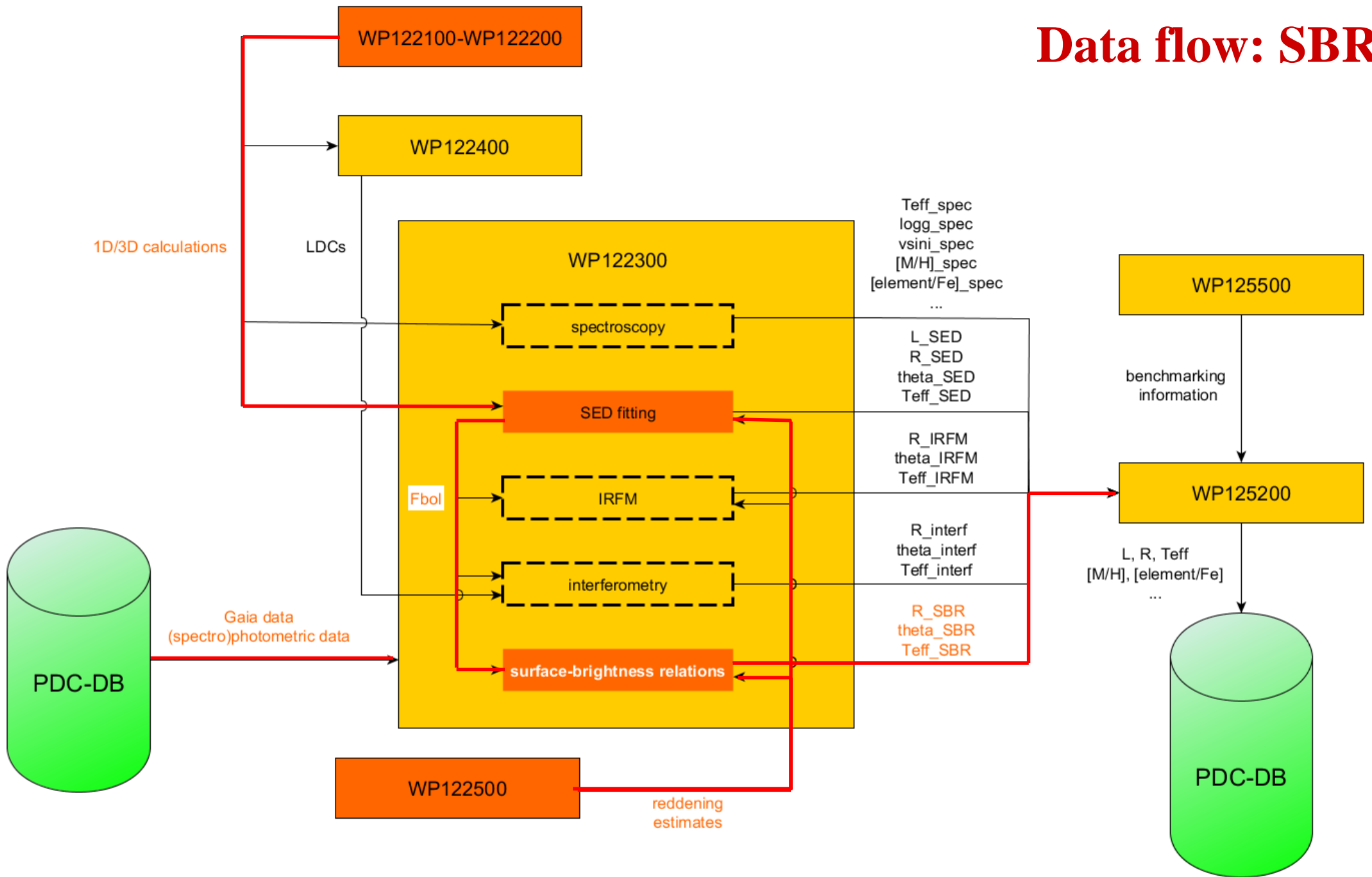
Data flow



Data flow: Interferometry



Data flow: SBR



Take-away messages

The interferometric and CHARA/SPICA communities can greatly contribute to PLATO core programme in several ways, including:

- ✓ Determining the radius of the targets: direct interferometric measurements for P2 sample + SBR for fainter samples
- ✓ Develop the module for the treatment of interferometric data in WP122 pipeline, which must be validated and operational as soon as the fields/targets are defined (about 2 years prior to launch)!
- ✓ Benchmarking within WP125

Take-away messages

The interferometric and CHARA/SPICA communities can greatly contribute to PLATO core programme in several ways, including:

- ✓ Determining the radius of the targets: direct interferometric measurements for P2 sample + SBR for fainter samples
- ✓ Develop the module for the treatment of interferometric data in WP122 pipeline, which must be validated and operational as soon as the fields/targets are defined (about 2 years prior to launch)!
- ✓ Benchmarking within WP125

BUT: need to plan/coordinate work within WP122300 ASAP + define what input data are exactly needed and must be made available in the PDC-DB (e.g. what photometric bandpasses for SBR?) .

Proposed action for WP122300 members: issue a document about SBR in PLATO (state of the field, input data needed, expected performance for the various samples, ...).



The main objective of this workshop is to bring together people from the exoplanet and stellar communities working on this topic, with particular emphasis on the work to be done in the context of the ESA PLATO mission.

The limb-darkening parameter is nowadays an essential ingredient in stellar and planetary studies, hence the importance of this dedicated WP for the scientific preparation and future exploitation of the PLATO space mission. This parameter is frequently found during the exoplanetary transits' fitting process. In this workshop we will discuss about alternative methods to determine the limb-darkening that help us to validate the values obtained.

Moreover, precise knowledge of limb-darkening is also crucial for the accurate determination of interferometric radius of the stars hosting planets. This raises some open questions, such as the use of limb-darkening models, or the use of different limb-darkening models.

<http://platoldmeeting.iaa.es/>

Deadline for registration and contributed talks: January 31st!