



Pellet tracking activities

- + **Uppsala Pellet Test Station (UPTS) at TSL**
- + **Preparation of a PTR measurement module (prototype)**
- + **Interplay between the Pellet tracking and other sub-systems**
(more details were given at Target session, PANDA CM, December 2015 in Wien)
- + **Status and planning**

UPTS at TSL

TSL has now ceased as an independent unit within Uppsala University. The responsibility for the decommissioning of TSL has been given to the Department of Physics and Astronomy.

Within the decommissioning project, there will be some accelerator operation, at least during the spring 2016, which means that infrastructure, also needed for operation of the UPTS, will be maintained.

Most UPTS equipment can stay in its present place until further notice



Prototype of integrated PTR measurement level module

Difficult to obtain the necessary alignment accuracy (< 0.01 mm) with independent camera and laser adjustment at the measurement positions (below).

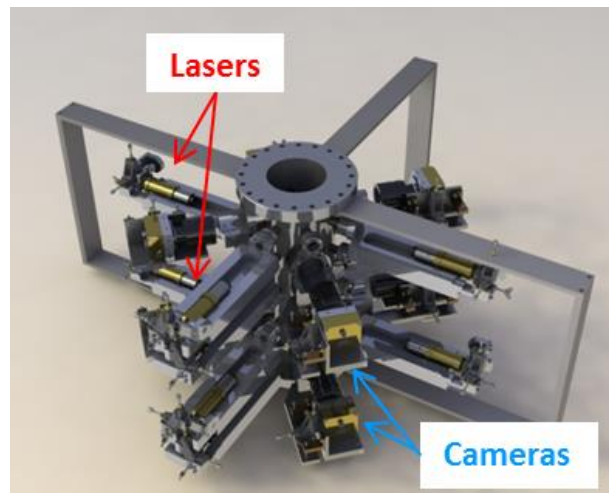
⇒ An integrated measurement level module that can be aligned externally and then be installed at the tracking section is being prepared (right).

Tests of first version were done in June 2015.



Integrated measurement level with 2 lasers and 2 LS-cameras being aligned in a desktop setup using 5 fishing lines.

TDR 2012: Tracking section with lasers and LS-cameras mounted in independent holders.





Connections between the Pellet tracking system and other systems (sub-projects):

System	Item	Status
Cluster-Jet generator	Pumps and valves in upper yoke-pit. Space for 4-layer PTR section and possibility for pumping below a second skimmer.	Not clear if PTR (pellet target) requests are met. They should be considered in the final design.
Vacuum	Piping & pumping at upper yoke-pit.	Not clear.
Vacuum, Physics, Accelerator	Vacuum at IP region. Need for more pumps at target dump.	Reduces pressure at least with 50% (Report by J.Löfgren, Apr 14)
Target dump, Vacuum	Pumps and piping in lower yoke-pit. Space for 3-layer PTR section. Access.	No draft design available?
Accelerator	Beam size vertically ≈ 5 mm for PTR mode.	Not clear. (Simple?)
Pellet target generator	PTR mode operation ($\Phi_{\text{stream}} \approx 3$ mm, $\Phi_{\text{pellet}} \approx 25$ μm , $v \approx 70$ m/s, $f \approx 15$ k/s, ...)	Parameters well known. (Std pellet target operation so far).
Pellet target	Valves, pumps, skimmers, access space etc. just below the target generator.	No draft design available yet. Approximate space requirement for the PTR section itself is well known.
Control, monitoring	Eventual usage of PTR info	Not started.
Physics analysis	Merging of PTR data and hadronic event data	Not started. (Example from WASA-at-COSY exists (A.Pyszniak PhD thesis)).

PTR status

February 2016
Hans Calén



Project status and planning (February 2016)

Ongoing: Multi-camera r/o and control are being tested.
Integrated measurement level module prototype is being prepared.

Time line: Need for new funding to start the preparation of the main part of the equipment. Then it may take 1-2 years if our expert personnel and infrastructure is still available.

Present funding (CTS see below) makes possible only the preparation of one (out of seven) measurement module during 2015-16

Risks: Evaluation done (Autumn 2013 (TDR), Feb 2015 (SG)).

Funding: Running: **SRC application for 2015-18 rejected Nov2014. No new try !**
HPH2020 application not approved New try in 2016 !

Equipment: KAW application was rejected Oct13.

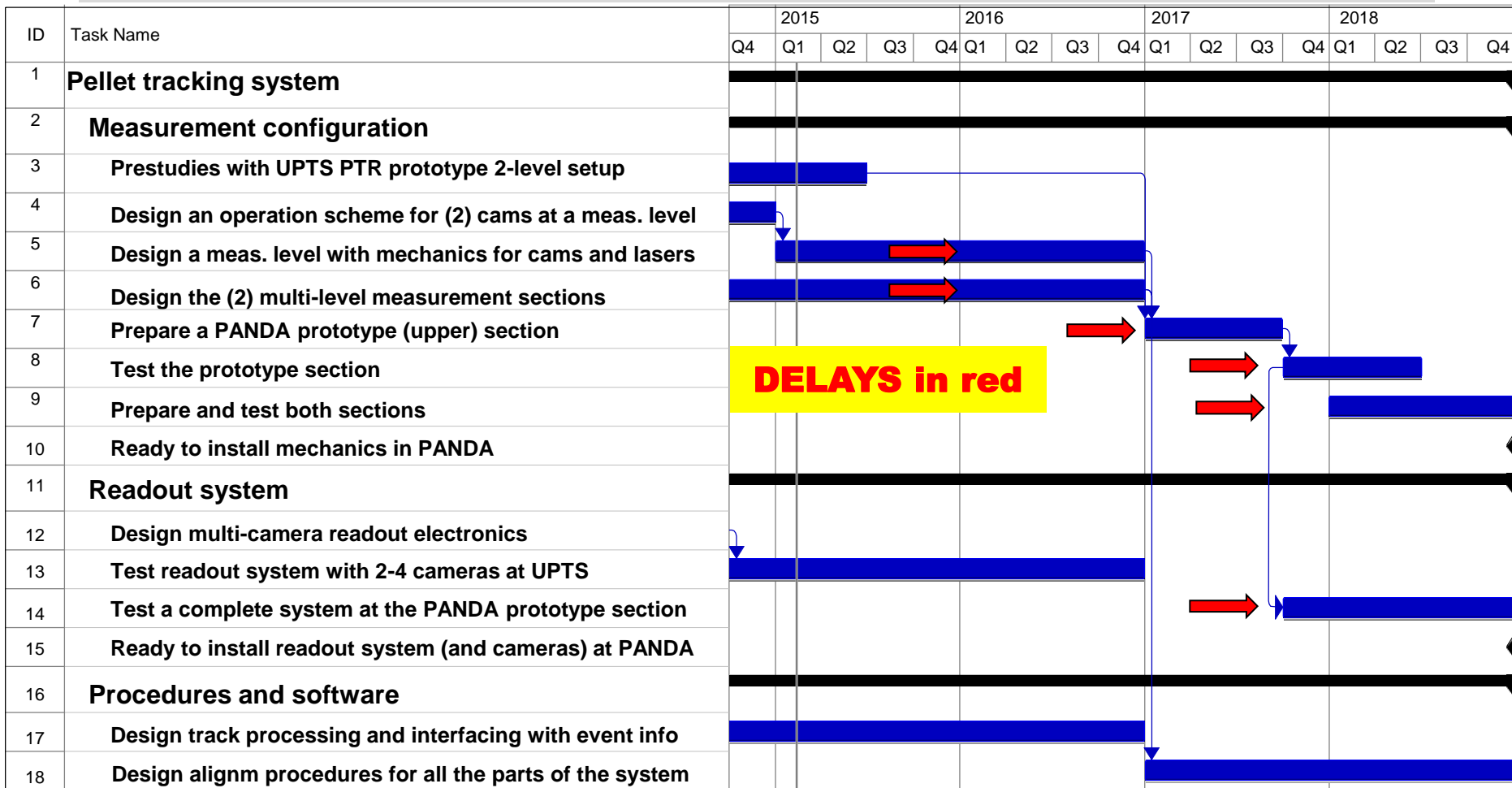
CTS grant (30k€) for 2015-2016. New application May 2016 ?

Scrutiny Group comment 2015: "Funding remains an open problem"

The pellet tracking project is not in the PANDA cost book and it is not a Swedish FAIR in-kind contribution. It can therefore not get part of the dedicated SRC support for PANDA. We see no possibility for substantial financing at present.

Project plan for the pellet tracking system developments 2015-2018

Feb 2016



DELAYS in red

UPTS at TSL

Need for new funding (pers+eqpt)

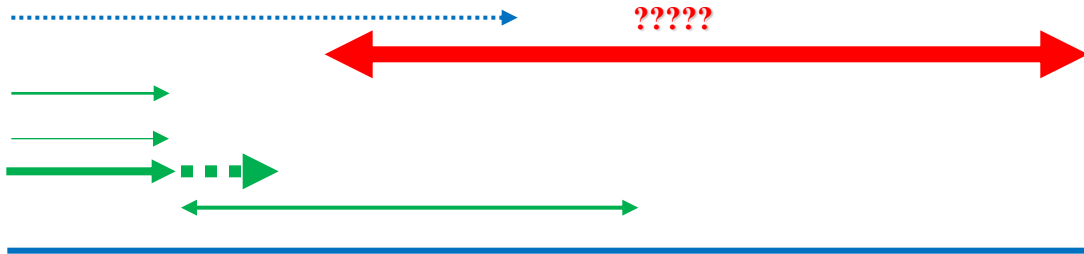
EC HP3: 30% eng (+cons)

SRC: 20% eng (+cons+eqpt)

PhD student: (JU/UU) ID=3,13,17

CTS: 13% eng (+30k€ eqpt) ID=5

UU pers (55% res, 5% eng (ID=12,13))



(pers=personnel, eqpt=equipment, cons=consumables, eng=engineer, res=researcher, UPTS=Uppsala Pellet Test Station, TSL=The Svedberg Laboratory, UU=Uppsala Univ., JU=Jagiellonian Univ., EC=European Commission, HP3=Hadron Physics 3, SRC=Swedish Research Council, CTS=Carl Tryggers Foundation)