

# TRT Plans and Tasks.

# Where we are?

Large number of areas with ongoing activities.

Many things done but we need to speed up work almost everywhere to be fully ready by 2015.

1. Progress reports of main activities today and tomorrow.
2. Detector activity very much limited by continuous perturbations at Point 1.
3. Calming down now (till 9<sup>th</sup> of November) then after 11<sup>th</sup> of December till CM.
4. In 2014 whole infrastructure most likely will be available after 10<sup>th</sup> of January (to be confirmed later).
5. Last months a big effort was done to consolidate TRT community around many tasks we have to deal with.
6. There are well covered areas but there are also open areas which require very qualified personal!
7. We need to increase a fraction of time which we spent for the TRT project!
8. OTP reviewed and we put everything up to date. Personal involvement is a subject of continuous review. Please inform me if you find something obsolete or not correct.

# What and when.

## The most critical areas.

*Many very important activities (for instance DCS) are not in this list because they are on good tracks or are the parts of the directions listed below.*

### *Milestones of 2014*

1. Gas studies (Ozone concentration, additives ...) => exact mixture composition we will be running with: **by February.**

2. Gas distribution modification - manual mode: **latest by February**

3. Gas distribution modification - remote mode: **latest by April-May** (complete integration to DCS - latest by September).

4. DAQ migration to a new TDAQ release: **by the end of January**

5. ROD FW ready for 100 kHz trigger rate: **by the end of Feb.**

6. HThr calibration and monitoring tools: **by October.**

7. PID for 25 ns and high occupancy (+validity gate effects) **by September** (fully ready, validated, understood... **by MC production in 2014**).

8. HT validity gate effects: **by January**

9. Ar simulation: **by February**

10. PID in mixed operation mode + geometry optimization: **by September**

11. Physics requirements and optimum TRT configurations in mixed operation mode: **by September.**

12. Fully open area: monitoring, we suppose to start using it in May (M3)!

Timing is defined by system parameter tuning needs.

Defined by ATLAS M runs and debugging periods.

Defined by MC readiness in 2014 and need to finalize the detector configuration.

# TRT Tasks (continuously reviewed)

<https://twiki.cern.ch/twiki/bin/viewauth/Atlas/TrtTasks>

Management (OTP Tasks: 529140, 529320, 529321, 113941, 113960, 292)	Lead Person(s)	E-mail, phone
<input checked="" type="checkbox"/> Project leader	Anatoli Romaniouk	<a href="mailto:Anatoli.Romaniouk@cernSPAMNOT.ch">Anatoli.Romaniouk@cernSPAMNOT.ch</a> , +417648760412 (160412)
<input checked="" type="checkbox"/> Project manager	Christoph Rembser	<a href="mailto:Christoph.Rembser@cernSPAMNOT.ch">Christoph.Rembser@cernSPAMNOT.ch</a> , +417648760497 (160497)
<input checked="" type="checkbox"/> TRT Run Coordinator(s)	Andrey Loginov	<a href="mailto:loginov@fnalSPAMNOT.gov">loginov@fnalSPAMNOT.gov</a> , +417648762288 (162288)
<input checked="" type="checkbox"/> TRT SW convener(s)	Andrew Beddall + Co-convener???	<a href="mailto:andrew.beddall@cernSPAMNOT.ch">andrew.beddall@cernSPAMNOT.ch</a>
<input checked="" type="checkbox"/> TRT Documentation manager	Frederick Luehring	<a href="mailto:luehring@indianaSPAMNOT.edu">luehring@indianaSPAMNOT.edu</a>

Long-term: hardware (OTP Tasks: 529138, 529139, 529140, 288, 529079, 529086, 529087, 529088)	Responsible Institute(s)	Coordinator(s)	Participating Institutes
<input checked="" type="checkbox"/> TRT DAQ and electronics	Penn	Sarah Heim	Penn, Indiana, Yale, CERN, Krakow
<input checked="" type="checkbox"/> TRT RODs	UBC	Colin Gay	
<input checked="" type="checkbox"/> TRT TTC	CERN	Peter Lichard	
<input checked="" type="checkbox"/> TRT DCS	INP (Krakow)	Jolanta Olszowska	
<input checked="" type="checkbox"/> GGSS	AGH UST (Krakow)	Bartosz Mindur	
<input checked="" type="checkbox"/> HV System	Lebedev	Konstantin Zhukov	Lebedev, MEPHI
<input checked="" type="checkbox"/> TRT Active Gas System	Lebedev	Serguei Konovalov	Lebedev, MEPHI, MSU, PNPI
<input checked="" type="checkbox"/> TRT Active Gas Studies	MEPHI, MSU	Anatoli Romaniouk	MEPHI, MSU, Lebedev
<input checked="" type="checkbox"/> TRT Point 1 infrastructure	INP (Krakow) Penn CERN	Jolanta Olszowska Sarah Heim Philippe Farthouat	

<b>Long-term: run-critical software (OTP Tasks: ...)</b>	<b>Responsible Institute(s)</b>	<b>Coordinator(s)</b>	<b>Participating Institutes</b>
✓ T0 and RT calibration and tools	NBI, Lund	Alex Alonso, Peter Hansen	Lund
✓ TMS calibration tool	NBI, Lund, Duke	Peter Hansen Doug Benjamin	
✓ HL calibration and monitoring	IU	Narei Lorenzo Sarah Heim	Indiana, Penn
✓ PID calibration and tools	NBI	Troels Peterson	NBI+....
✓ Alignment	Penn	Kurt Brendlinger	
✗ TRT Online Monitoring/DQ	Bonn?		
⚠ TRT Offline Monitoring/DQ	Bogazici?, Bonn?	Ozan Arslan, Enis Yazici?	Bogazici?, Bonn?
✓ TRT Viewer	Lebedev, MEPHI	Vladimir Tikhomirov, Serge Smirnov	
✓ TRT Data Base	NBI, MEPHI	Peter Hansen, Alex Alonso, Mikhail.Borodin	NBI, MEPHI

Long-term: continuous software support (OTP Tasks: ...)	Responsible Institute(s)	Coordinator(s)	Participating Institutes
<input checked="" type="checkbox"/> TRT drift circle tool	NBI, Lund	Peter Hansen, Jenny Ivarsson	
<input checked="" type="checkbox"/> GeoModel & tracking geometry			
<input checked="" type="checkbox"/> Common <a href="#">D3PDs</a> and tools	NBI	Troels Peterson, Ask Emil Jensen	NBI+....
<input checked="" type="checkbox"/> Simulation and digitization, tuning to data	Bogazici	Andrew Beddall	Bogazici, Indiana, Petersburg, York
<input checked="" type="checkbox"/> TRT data compression model	Penn	Paul Keener	
<input checked="" type="checkbox"/> Tracking, back-tracking			
<input checked="" type="checkbox"/> TRT DB explorer	PNPI	Sergey Kovalenko	

Studies and development: performance with Ar-mixture (OTP Tasks: ...)	Responsible Institute(s)	Involved people	Participating Institutes
<input type="checkbox"/> Validation of Argon PAI in the digitization		Konstantin Vorobev, Alexey Boldyrev	MEPHI,MSU
<input checked="" type="checkbox"/> Drift-time and dE/dX studies with Garfield		Konstantin Vorobev, Alexey Boldyrev	MEPHI,MSU
<input checked="" type="checkbox"/> Tracking properties studies using p-Pb runs, digitization tuning		Diane Shoaleh-Saadi	Montreal
<input checked="" type="checkbox"/> TR properties studies using p-Pb runs, digitization tuning		Alexey Antonov Serguei Timoshenko	MEPHI
<input type="checkbox"/> Ar dE/dX studies: simulation and data using p-Pb runs			
<input checked="" type="checkbox"/> Ar-mixture simulation and digitization implementation		Sasha Viazlo, Diane Shoaleh-Saadi	Lund, Montreal (Indiana?)
<input type="checkbox"/> Optimizing running configuration in mixed mode to minimize impact on trigger & physics		Artem Maevsky	MSU +...

These tasks are very coupled and name does not always reflect what people do because of many questions appear while doing the work!

We need overall coordination and effective participants to make synchronous effort!

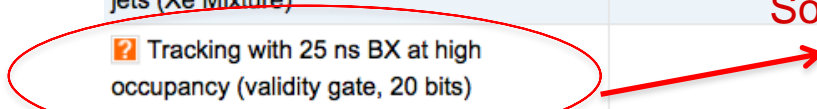
Studies and development: particle identification (OTP Tasks: ...)	Responsible Institute(s)	Involved people	Participating Institutes
❓ PID calibration for mixed Xe/Ar geometry			
✅ Impact of 20-bit readout (ToT)		Daria Zieminska	IU
✅ Xe ToT with 25 ns BX and high occupancy		Daria Zieminska	IU
❓ Busy environments Xe mixture (pp, HI)			
❓ Occupancy (and local occupancy) effect			
❓ Xe HT fraction at high occupancy and validity date effect			
❓ Ageing monitoring tool			
✅ Ar Mixture: HT optimization and use of ToT for dE/dx, Garfield		Konstantin Vorobev, Alexey Boldyrev	MEPhI, MSU
❓ Ar Mixture: dE/dx in busy environment and 20-bit readout			
❌ Ar Mixture: effect on physics			
❌ Xe/Ar mixed geometry optimization			
✅ Xe/Ar mixed geometry PID study		Artem Maevskiy	MSU
❓ Electron-pair identification (Hough Transform?)			

Recommendation from physics side.  
 Close work with physics groups is needed.  
 Ximo was doing this work in the past.



Studies and development: <b>high occupancy</b> (OTP Tasks: ...)	Responsible Institute(s)	Involved people	Participating Institutes
✓ Heavy-ion collision runs performance	MEPhi	Alexey Antonov, Evgeny Shulga, Natalia Korotkova	MEPhi, MSU
✓ Tracking in busy environments inside jets (Xe Mixture)		Dimitriy Krasnopevtsev	MEPhi
❓ Tracking with 25 ns BX at high occupancy (validity gate, 20 bits)			
✓ <del>Validity gate studies ROD/offline level</del>	NBI, Lund	Jenny Ivarsson	
❓ Tracking, sin(theta)/p timing correction study (incl. feasibility of use in standard tracking)			

Some studies done by Alex but we need to continue



Studies and development: <b>Fast OR project</b>	Responsible Institute(s)	Involved people	Participating Institutes
✓ Simulation		Andrew Beddall, Wendy Taylor	Bogazici, York
✓ Digitization		Andrew Beddall, Ximo Poveda, Gabriel Palacino	Bogazici, Indiana, York
✓ Hardware	Indiana	Hal Evans, Paul Smith, Jinlong Zhang	Indiana, ANL
✓ Standalone trigger efficiency study		Ximo Poveda	Indiana
✓ Streamer measurements		Ximo Poveda	Indiana
✓ Technical proposal	Indiana	Hal Evans et. al.	Geneva, Indiana, PNPI, York
❓ HT occupancy using new digi tuning - reproduce Jahred's results	Indiana	KyungEon Choi, Ximo Poveda	Indiana

# Conclusions

1. Work is going on in many directions
2. Quite many tasks are fully opened (no people behind)
3. There are even critical activities at coordination and expert level, which are not well covered now.

Most of the tasks must be done on time (to be fully ready for data taking in 2015)

## There few ways of doing it:

- *Better coordinate activities in all areas.*
- *Involve more qualifiers.*
- *Involve more experienced colleagues.*
- *Ask **GOD** to do what we are not able to do (most likely no effect because of a big competition - all ATLAS groups are doing this)*

Everything depends on all of us  
and we have to use all possibilities!

## Meetings in 2014 (to be finalized on the TRT IB meeting).

### February

TRT meeting 3-5th February

TRT institute We. 5thID

combined 7th February

ATLAS week 10-14 February

### May-June

ID commissioning WS May 19<sup>th</sup>

ID Week 19-23rd May ?

TRT meeting (outside?) Dates?

ATLAS 16-20 June (outside?)

### October

ATLAS 6-10 October (CERN)

TRT meetings 14-16 October

TRT institute 15th October.

ID commissioning 13 October