ATLAS EXPERIMENT	CERN	**ATLAS AGREEMENT 557/2015**

ATLAS AGREEMENT No. 557 /2015

Financing of the HCC ASICs for the Inner Tracker (ITK) R&D

BETWEEN

The **ATLAS Collaboration**
Represented by the ATLAS Resources Coordinator

on the one hand,

AND

The Institutes of the ATLAS ITK R&D effort represented by those responsible for their funding

on the other hand

CONSIDERING THAT:

- the ATLAS Collaboration Board, The Large Hadron Collider Committee (LHCC) and the Resources Review Board (RRB) have received the "Letter of Intent for the Phase-II Upgrade of the ATLAS Experiment" (CERN-LHCC-2012-022) https://cds.cern.ch/record/1502664?ln=en.

- that the LHCC has reported to the RRB that it considers "the case is compelling" https://indico.cern.ch/getFile.py/access?contribId=28&sessionId=4&resId=0&materialId=0&confId=233492;

- Phase-II includes the sub-project of Inner Tracker (ITK) for which the necessary R&D is currently on-going;

- the related ATLAS institutes need to place central contracts via CERN for small-scale R&D and prototyping contracts for common items the cost sharing of which will be managed between the participating institutes;

IT IS AGREED AS FOLLOWS:

ARTICLE 1 SCOPE OF THE AGREEMENT

1.1 The purpose of the Agreement is to agree on the funding of the orders made for ITK common items (HCC ASICs) as identified in Appendix 1 and to record the related financial arrangements made.

1.2 The participating institutes already jointly fund orders of prototype readout ASICs (ABC130) for the Phase-II upgrade of the silicon strip system. This is described by ATLAS Agreement 522/2013.

ARTICLE 2 OBLIGATIONS OF THE PARTIES

2.1 The ATLAS Collaboration helps in placing the order(s) through CERN, to be reimbursed by the institutes participating in the order, based on the agreed sharing as given in Appendix 1.

2.2 Each submission of the HCC will be paid by the interested communities as a fraction of the total request. Each submission will be paid in full, prior to the next submission.

2.3 The first two orders consisted of the initial MOSIS MPW run and the follow-on purchase of all remaining die from the first run at MOSIS. The detailed commitments of the participating institutions for these submission are given in appendix 3.

2.4 Prior to each additional submission, an addendum to this document will be made which will list the funding commitments of each participating institute.

ARTICLE 3 DURATION OF THE AGREEMENT

3.1 This Agreement is valid until the contract is fully reimbursed by the related ITK institutes

3.2 As the yield of the ASICs are unknown, institutes agree to continue to paying for additional runs at the fractions agreed to in appendix 2, until the request for good HCC is fulfilled for all interested parties. Orders beyond the request in appendix 2 will have to be negotiated after this initial request is delivered.

Signed in Geneva,

Steve McMahon	Fido Dittus
ITK Project Leader	Resources Co-ordinator
ATLAS Collaboration	ATLAS Collaboration

Participating institutes, represented by:

Carl H. Haber LBNL, US	Anthony Affolder STFC, UK	Carmen Garcia IFIC/CSIC-UVEG, Spain
Marko Mikuz JSI, Slovenia	Ulrich Parzefall BMBF (Freiburg), Germany	Ingrid Gregor DESY, Germany
Zdenek Dolezal Charles University, Czech Republic	Richard Brenner U. Uppsala, Sweden	Auke Pieter Colijn NIKHEF, Netherlands
Giuseppe Iacobucci U. Geneva, Switzerland	Yoshinobu Unno KEK, Japan	Wladyslaw Dabrowski AGH University of Science and Technology, Poland

ARTICLE 4 CO-ORDINATION AND ADDRESSES FOR CORRESPONDENCE

4.1 All documents concerning this agreement shall bear the reference:

"ATLAS Agreement No. 557/2015

4.2 The performance of this agreement shall be co-ordinated by the following persons:

for the ATLAS Collaboration:

ATLAS Resources Co-ordinator, CERN – Division PH, CH-1211 Geneva 23, SWITZERLAND (attn. F. Dittus)

for the related ITK institutes:

Project Leader, presently represented by A. Affolder.

ARTICLE 5 ARBITRATION

5.1 Any differences arising during the execution of this agreement will be submitted to the RRB which will propose solutions in the best interest of the Collaboration.

APPENDIX 1 – LIST OF REQUEST OF GOOD ASICs AFTER PROBING

Community	Funding Agencies	Number Requested	Fraction of Total
End Cap	Czech/Charles University, Germany/BMBF(Freiburg), Germany/DESY, Netherlands/NIKHEF Poland/AGH University, Slovenia/JSI, Spain/IFIC, Sweden/Uppsala	320	39%
Staves	UK/STFC, US/DOE	380	46%
Supermodules	Japan/KEK, Switzerland/Geneva	125	15%
	TOTAL	**825**	

APPENDIX 2 – ESTIMATE OF THE COST OF THE SUBMISSON

HCCs are produced in MOSIS MPW runs. There are many potential submission paths depending on number of variants desired or needed, and how many submissions desired to balance cost vs. risk. As such, it is not possible to give a solid estimate of the total cost for these submissions. Current estimate is roughly 150-250 kCHF, based on three or four step submissions. Details will be made available prior to submission.

APPENDIX 3- COMMITMENTS OF FUNDING FOR FIRST MOSIS RUN AND THE FOLLOW-ON PURCHASE OF THE AVAILABLE STOCK AT MOSIS:

There have been two orders of HCC at the time of the writing of this agreement:

- TID 5801483 for the MPW prototyping run of 40 ASICs for a cost of 42'591.72 CHF

- TID 5987921 for the 193 die remaining at MOSIS from first run for a cost of 28'022.47 CHF

Funds for both runs (70'614.18 CHF) have already been transferred. Below are the funding commitments of the participating institutes within the 3 communities.

Endcap	*27540 CHF*	*39%*
Czech/Charles U.	2118 CHF	3%
Germany/BMBF (Freiburg)	6356 CHF	9%
Germany/DESY	6356 CHF	9%
Netherlands/NIKHEF	6356 CHF	9%
Poland/AGH Univ.		
Slovenia/JSI	2118 CHF	3%
Spain/IFIC	2118 CHF	3%
Sweden/Uppsala	2118 CHF	3%

Stave	*32482 CHF*	*46%*
UK/STFC	16241 CHF	23%
US/DOE	16241 CHF	23%

Supermodules	*10592 CHF*	*15%*
Japan/KEK	*9180 CHF*	*13%*
Switzerland/Geneva	*1412 CHF*	*2%*