

ATLAS DETECTOR DESCRIPTION DATABASE ARCHITECTURE

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NOVA Database

- MySQL “primary numbers” database NOVA is currently a unified source of **30K** parameters for Detector Description in ATLAS Combined Testbeam and Data Challenge 2 operations
- Common to all ATLAS subsystems
- Combined Testbeam support:
 - another detector geometry in the database
 - NOVA technologies for conditions/calibration data

Tools for Data Navigation

Address: <http://cern.ch/atlas-php/NOVA/>

open all | close

NOVA_900
coil
cops
cryostats
em_barrel
em_endcap
forwrd_cal
had_endcap
muon
mintnova
MINT
NMRI
muchgeo
muchdig
pixel
sct
tile_cal
trt
util
atrecon
MagneticFie
AMDB
Toroids
Material
tb2004
atlsgeotb
copsgeotb
pixbgeotb
zsctgeotb
xtrtgeotb
cryogeotb
accbgeotb
tilogeotb
tilbgeotb
ctbhgeotb
ctbhgeotb
ctbhgeotb
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ctbhgeotb
ctbhgeotb
matenova
tb2003

Welcome to

NOVA Parameters Database

prototype storage of primary numbers for ATLAS Detector

Revision history

Developed by KB, PN, AV and TW

NOVA tag : 900
Number of different structure types: 340
Structures with more than one version: 29
Total structures: 15966
Number of unique parameters that are not arrays: 11280
Number of parameter array types: 857
Unique parameter arrays: 1433

To browse database use left frame

<- click in left frame on the plus of the name to
<- click in left frame on structure NAME to fetch it f
<- click in left frame on the minus of the opened f
<- click at the top of left frame on the NOVA_000 ta

Select modules/structures (matching selection text in the module name or cor)

Enter selection text:

Limit selection to current path

- Selection of tags and versions
- IExplorer, Netscape 6, Mozilla, Safari

Address: <http://cern.ch/atlas-php/NOVA/nova.php>

Welcome to

NOVA Parameters Database

prototype storage of primary numbers for ATLAS Detector

Revision history

Developed by

NEW Jan Dec

Select version

nightlies_reldev_atlrel_0
nightlies_rel_atlrel_6
nightlies_rel_atlrel_5
nightlies_rel_atlrel_4
nightlies_rel_atlrel_3
nightlies_rel_atlrel_2
nightlies_rel_atlrel_1
nightlies_rel_atlrel_0

dev

ctb_2

ctb

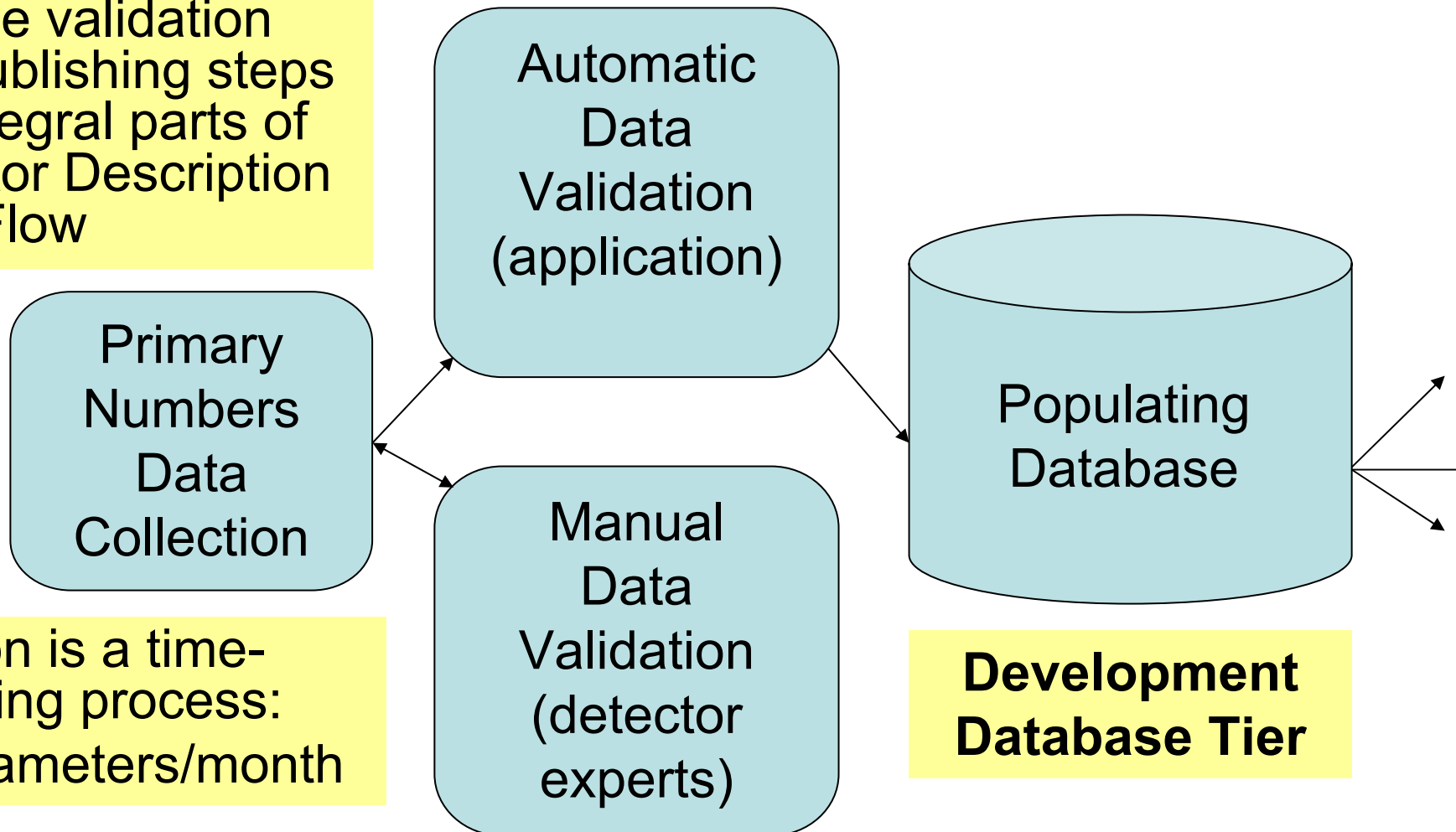
NOVA_900

Go

<http://cern.ch/atlas-php/NOVA>

Data Flow

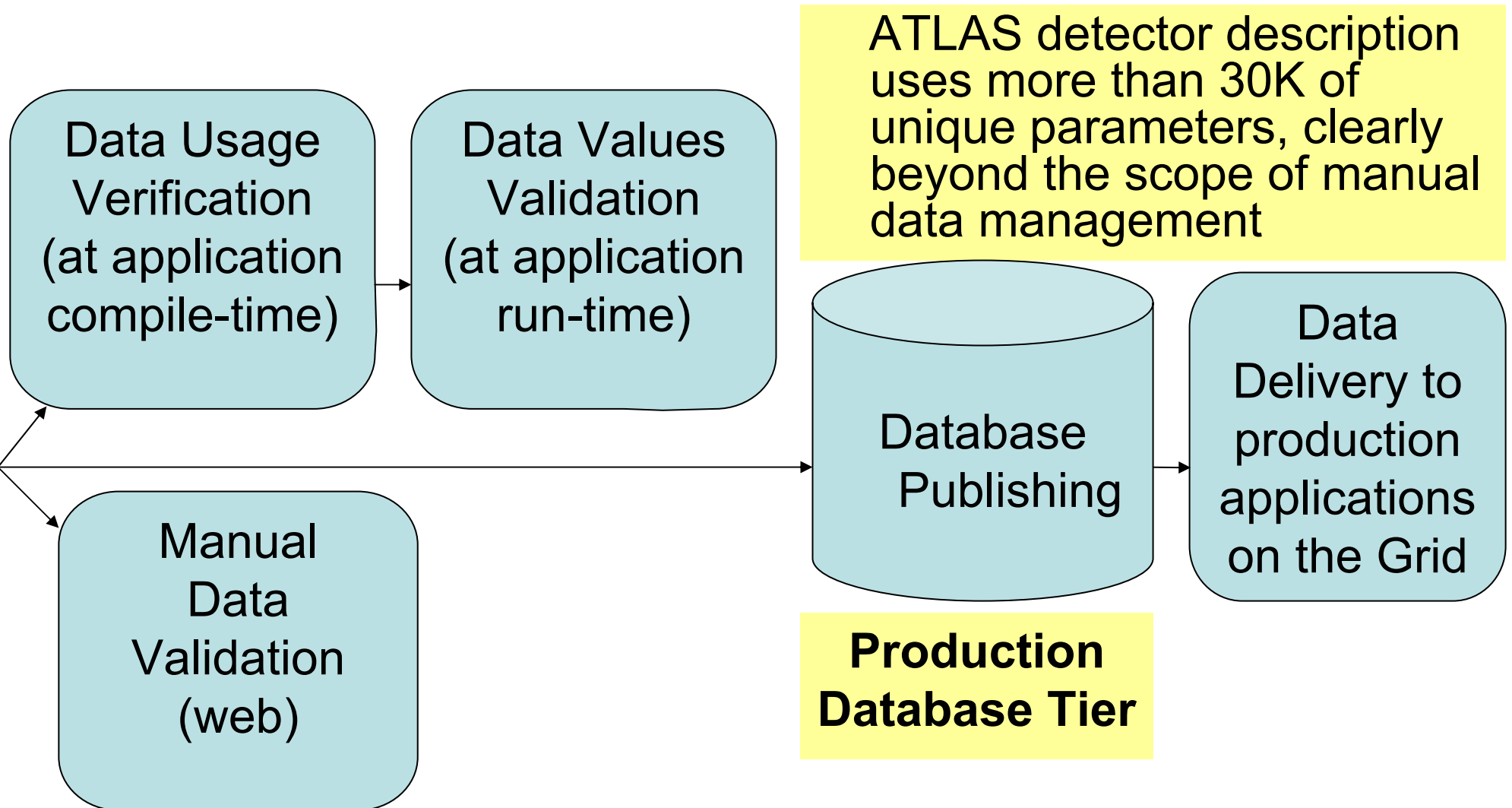
Multiple validation and publishing steps are integral parts of Detector Description Data Flow



Validation is a time-consuming process: 100 parameters/month

Development Database Tier

Architecture



Components of Success

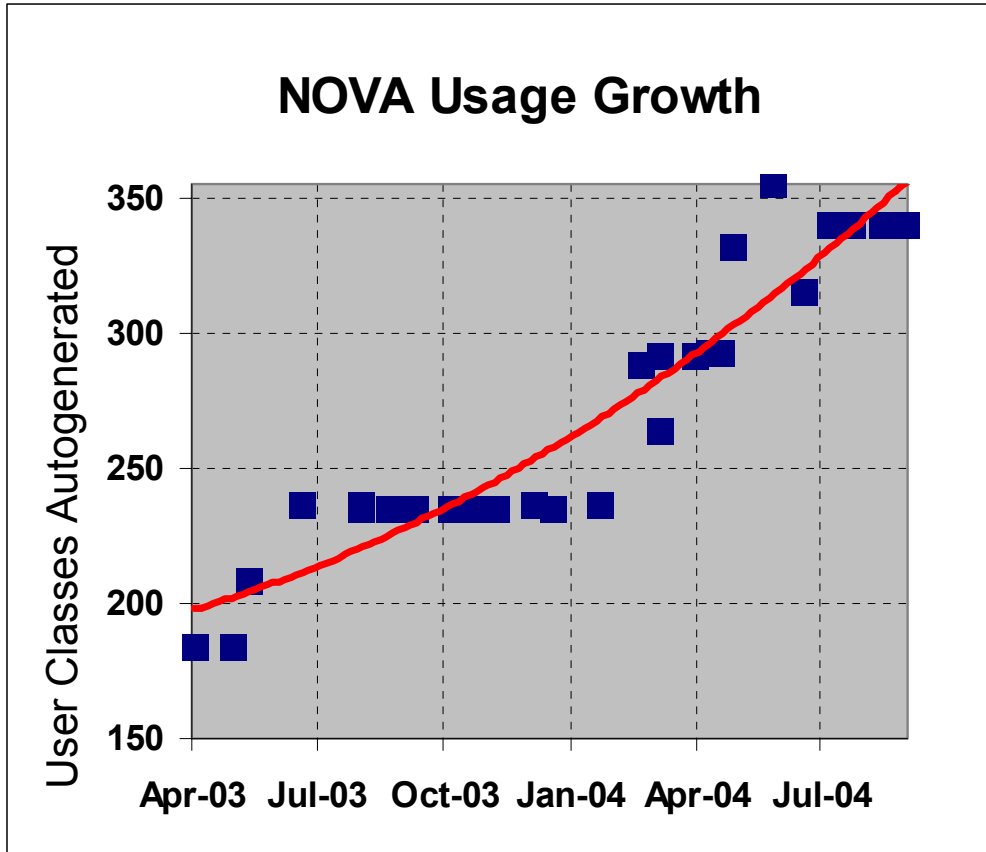
- Access from ATLAS software framework Athena:
 - NOVA Conversion Service independence on database tag and NOVA objects shapes or versions
 - Automatic generation of more than 300 converter classes facilitating strict C++ type-checking for all of the 30K unique parameter names at compile-time:
 - about 10% of ATLAS offline code

- Multiple versions of geometry
- Geometry versions tagging
- NOVA Web Browser
- Conditions data browser integration for Combined Testbeam



condDBrowser

Knowledge Discovery



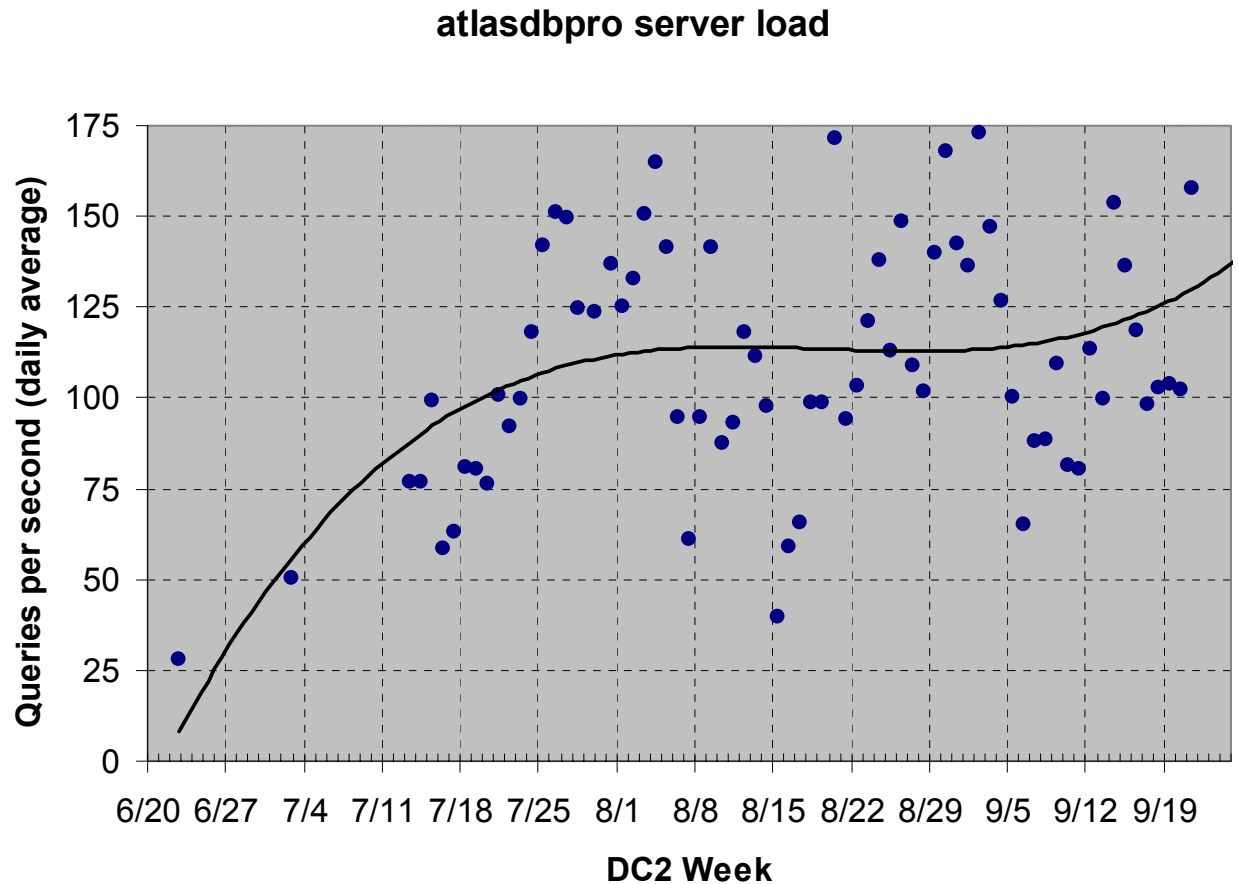
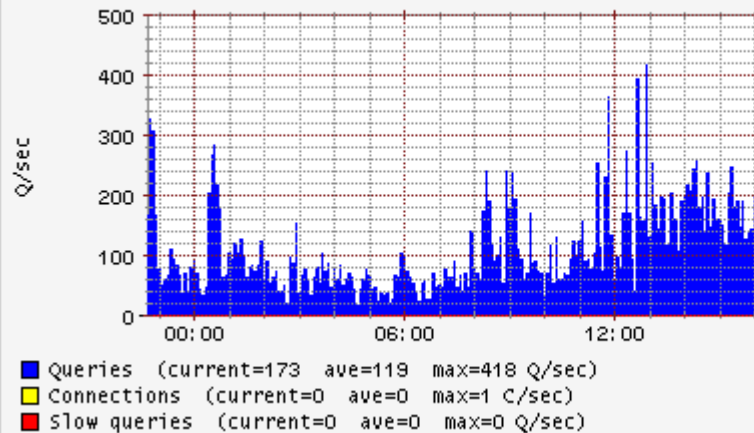
Across all subsystems
Detector Description
knowledge grow over time

- Transition to Oracle rapidly gained a very strong momentum
- Tools for generation of SQL scripts for Oracle data input
- Most of NOVA structures are now in the new Oracle database

Validating Computing Model in DC2

Data flow is monitored to probe database server limits and identify potential bottlenecks from chaotic access patterns on the Grid

atlasdbpro, Version: 4.0.18-standard-log, Uptime:



Most of DC2 database-resident data flow comes from NOVA

NOVA Database Access on the Grid

Failure rate is less than 0.1%

