

# Track 5 Summary

Computing Model + Computing Activity  
+ Data Preservation

S. Amerio, S. Campana, M. Hildreth,  
T. Maeno, S. Roiser, G. Watts

INFN, Italy

CERN, Switzerland

University of Notre Dame, USA

Brookhaven National Laboratory, USA

University of Washington, USA

CHEP2015, Okinawa, Japan, April 13-17 2015

## Track 5

- Computing Model, Computing Activity, and Data Preservation
- 23 talks and 27 posters

# Evolution of Computing System for LHC Run2

- 2 from CMS and 2 from ATLAS
  - Many development activities in LS
  - Good opportunity to show outcomes



Ian FISK

## Improvements in the CMS Computing System from Run2

CHEP 2015  
Ian Fisk and Maria Girone  
For CMS Collaboration

Ian Fisk and Maria Girone

- Overview of CMS Distributed Computing System

Dirk HUFNAGEL

The CMS Tier0 goes  
Cloud and Grid for LHC Run 2

Dirk Hufnagel (FNAL)  
for CMS Computing

- Focused on CMS Tier0

CHEP, 13.04.2015

Simone CAMPANA

## ATLAS Distributed Computing in LHC Run2

Simone Campana – CERN  
on behalf of the ATLAS collaboration

- Overview of ATLAS Distributed Computing



Federica LEGGER

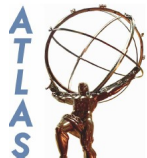
## Distributed Analysis in ATLAS

A. Dewhurst (RAL), F. Legger (LMU)

*on behalf of the ATLAS collaboration*

- Focused on evolution of ATLAS Distributed Analysis

April 13th, 2015  
21th International Conference on Computing in High  
Energy and Nuclear Physics (CHEP), Okinawa



- Going to the same direction
  - Reduction for resource requirements, improvements in data and workload management systems, leveraging opportunistic resources, ...
- Better if ALICE and LHCb had "overview" talks as well

# Computing Systems for Various Experiments

- Pierre Auger
- AMS
- NOvA
- SACLA

Jiri CHUDOBA

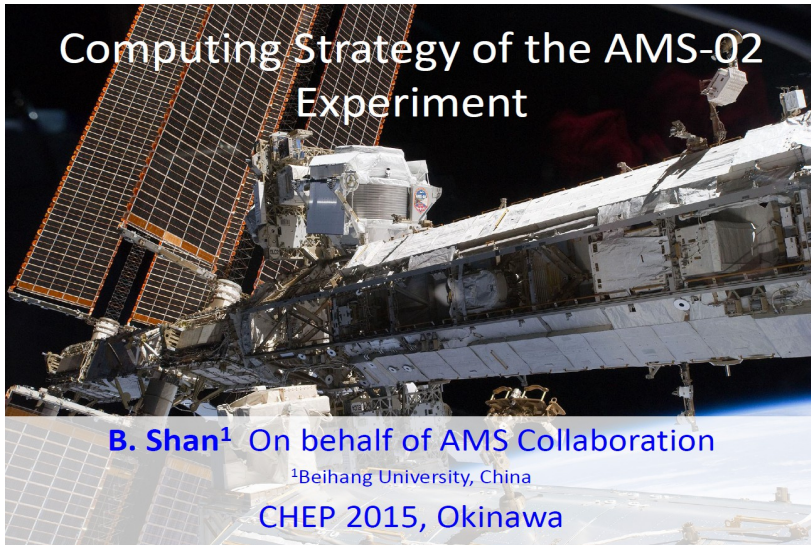
## Distributed Computing for Pierre Auger Observatory

Jiri Chudoba for the Pierre Auger Collaboration  
*Institute of Physics of the CAS and CESNET*

- Distributed Computing System for Pierre Auger

Baosong SHAN

## Computing Strategy of the AMS-02 Experiment



**B. Shan**<sup>1</sup> On behalf of AMS Collaboration

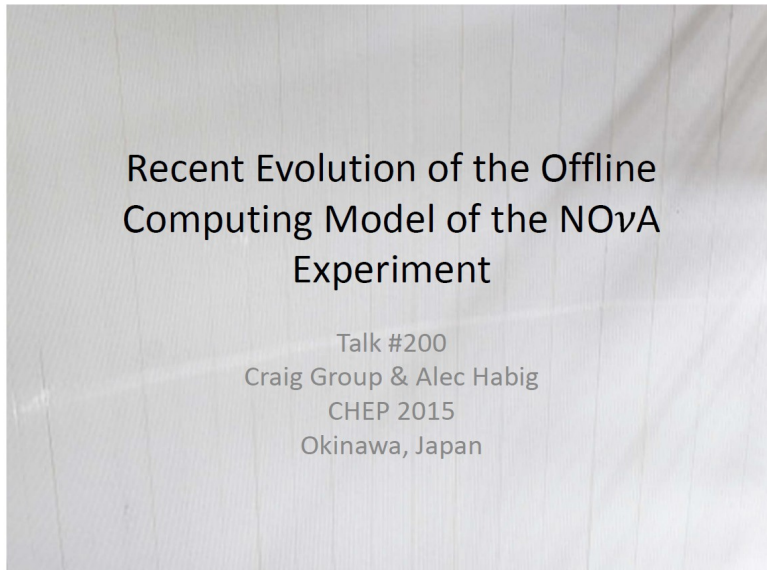
<sup>1</sup>Beihang University, China

CHEP 2015, Okinawa

- Focused on parallelization of the AMS reconstruction and simulation software



Alec HABIG



➤ **Computing Model for NOvA**



Andrew NORMAN

Managed by Fermi Research Alliance, LLC for the U.S. Department of Energy Office of Science

**Large Scale Management of Physicist's  
Personal Analysis Data without Employing  
User and Group Quotas**

[A. Norman](#), M. Diesburg, M. Gheith, R. Illingworth, M. Mengel

*Fermilab, Scientific Computing Division  
Scientific Data Management*

➤ **Data Management for NOvA  
using SAM (Sequential data  
Access via Metadata)**



Takashi SUGIMOTO



Data-analysis scheme and infrastructure  
at the X-ray free electron laser facility, SACLAL

T. Sugimoto, T. Abe, Y. Joti, T. Kameshima,  
K. Okada, M. Yamaga, R. Tanaka  
(Japan Synchrotron Radiation Research Institute)

T. Hatsui, M. Yabashi  
(RIKEN SPRING-8 Center)

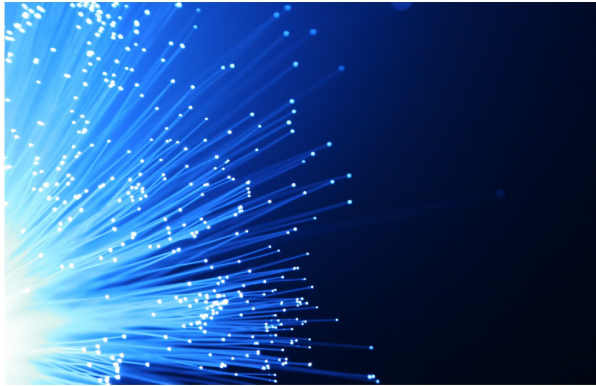
➤ Computing and analysis  
infrastructure for  
experiments at SACLAL

- Some collaboration might be possible
  - Data management tools/systems
  - Software for parallel execution
  - ...

# Dynamic Data Management

- 3 from CMS and 1 from ATLAS
  - Producing huge amount of data
  - Dynamic placement and reduction are key issues

Stephen GOWDY



Designing Computing System  
Architecture and Models for  
the HL-LHC era

Stephen Gowdy - FNAL

- A simple simulation tool to model the computing system architecture for the HL-LHC era, in particular for data storage, placement and access

Thomas BEERMANN

**A Study on Dynamic Data  
Distribution for the  
ATLAS Distributed Data  
Management**

CHEP 2015, 13.04.2015, Thomas Beermann  
CERN / University of Wuppertal

- Simulation study for dynamic data distribution to minimize waiting time for analysis jobs



## Christoph PAUS



- The dynamic data management system works for CMS based on ranking algorithm
- Need to develop tools for monitoring and optimization

## Daniele BONACORSI

Exploiting CMS data popularity to model the evolution of data management for Run-2 and beyond

*V. Kuznetsov, T. Wildish, D. Giordano, N. Magini,  
T. Boccali, M. Neri, M. Gironi, D. Bonacorsi*

April 13th, 2015



- Building an adaptive data-driven models for data/workflow management using analytics approaches

- Trying to address the same issues
- Collaborative work would be possible.  
E.g.,
  - Comparison of results from two simulators
  - Use the same simulation framework and describe each DDM system as a plugin or simulation parameters
  - Share strategy, algorithm, experiences
  - ...

# Data Preservation and OpenData

## ➤ Data Preservation

### - Tevatron

- A complete example of data preservation
- Useful for other HEP experiments

### - ATLAS

- Focus on keeping replicability
- Requiring forward porting of software, adaptation of new data formats

## ➤ OpenData portal, VISPA Internet platform, CRISTAL for Analysis Provenance



Bodhitha JAYATILAKA



Managed by Fermi Research Alliance, LLC for the U.S. Department of Energy Office of Science

## Data Preservation at the Fermilab Tevatron

*Bodhitha Jayatilaka, Ken Herner, Joe Boyd, Willis Sakumoto*  
CHEP 2015 - Okinawa, Japan  
14 April 2015

- Tevatron Run 2 data preservation project completed



Roger JONES



## ATLAS Data preservation

April 2015  
Roger Jones for the ATLAS Collaboration



- Strategy to preserve ATLAS data
- Reproducibility vs Replicability

Tim SMITH

## Open Data and Data Analysis Preservation Services for LHC Experiments

Jake COWTON, Sunje DALLMEIER-TIESEN, Pamfilos  
FOKIANOS, Laura RUEDA GARCIA, Patricia Sigrid HERTERICH,  
Jiri KUNCAR, Tibor SIMKO, Tim SMITH

CHEP2015, Okinawa, Japan

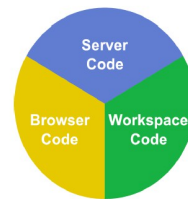
➤ Open Data portal



Martin URBAN



## The VISPA Internet Platform for Outreach, Education and Scientific Research in Various Experiments



➤ VISPA provides web-based  
GUI for scientific research,  
teaching and outreach

Martin Urban, Daniel van Asseldonk, Martin Erdmann, Benjamin Fischer, Robert Fischer,  
Christian Glaser, Fabian Heidemann, Gero Müller, Thorben Quast, Marcel Rieger, Christoph Welling

III. Physikalisches Institut A  
RWTH Aachen University

GEFÖRDERT VOM



Jetendr SHAMDASANI

## Analysis Traceability and Provenance for HEP

Dr J Shamdasani, R McClatchey, A Branson and  
Z Kovacs

Contact : jet@cern.ch



University of the  
West of England

- CRISTAL is used to track analysis provenance for Neuroscience experiments on N4U
- Work for HEP is ongoing with the DPHEP initiative

# Grid Organization

- Worldwide LHC Computing Grid
- Open Science Grid

Andrea SCIABA

CERN IT-SDC

## Optimising costs in WLCG operations

M. Alandes, M. Dimou, J. Flix, A. Forti, A. Sciabà

on behalf of the WLCG Operations Team



- Possible approaches to optimize WLCG operation costs



Bodhitha JAYATILAKA

## The OSG Open Facility: A sharing ecosystem

Bodhitha Jayatilaka, Tanya Levshina, Chander Sehgal, Marko Slyz

*Fermilab*

*Mats Ryngge*

*ISI/USC*

CHEP 2015  
Okinawa, Japan  
April 13, 2015



- OSG Open Facility provides access to opportunistic OSG resources for any researcher from US institutions

# Various Topics

- "Cross-border" topics
  - Software collaboration, openlab V, security

Elizabeth SEXTON-KENNEDY



Managed by Fermi Research Alliance, LLC for the U.S. Department of Energy Office of Science

**A Review of Event Processing Frameworks used in HEP**

Elizabeth Sexton-Kennedy  
21st International Conference on Computing in High Energy and Nuclear Physics  
13 April 2015

- Software collaboration across experiments
- The beginning of a new paradigm shift (serial → parallel) maybe a better time to look for collaboration

**Fons RADEMAKERS**

**Exciting New Technologies Being Researched in CERN openlab V**

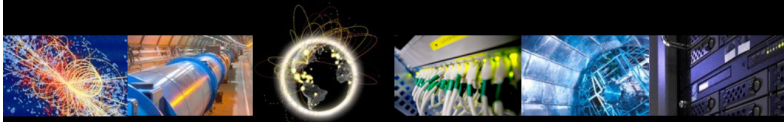
Fons Rademakers  
CERN openlab CTO

- A science - industry partnership to drive R&D and innovation
- Many interesting projects
  - Parallelization, data analytics, storage server,

...

Romain WARTEL

Surviving and operating  
services despite highly skilled  
and well-funded organised  
crime groups



Romain Wartel, CERN  
CHEP 2015, Okinawa

 **WLCG**  
Worldwide LHC Computing Grid



- Security
- International collaboration is the key aspect of defense
- Good to have this kind of educational talk periodically



# Thanks

- Enormous thanks to all speakers and poster contributions on behalf of Track 5 conveners