PROGRAM

DAY 1 (May 11th)

Start time	Activity	Speaker/s	Chair
14.45h Doctoral Symposium waiting room			
15.00h	**Welcome**	**Maria-Ribera Sancho,** Education&Training Manager	
15.10h	**Opening**	**Josep Mª Martorell,** BSC Associate Director	
15.30h	**Keynote talk:** Redesigning Computing Systems in the Age of Huge Data and Sparse Computation	**Dr. Wen-mei W. Hwu** Senior Distinguished Research Scientist, NVIDIA Professor and Sanders-AMD Chair Emeritus, ECE University of Illinois at Urbana-Champaign	**Maria-Ribera Sancho**
	Abstract: We have been experiencing two very important developments in computing. On the one hand, a tremendous amount of resources have been invested into innovative applications such as first-principle based models, deep learning and cognitive computing. On the other hand, the industry has been taking a technological path where traditional scaling is coming to an end and application performance and power efficiency vary by more than two orders of magnitude depending on their parallelism, heterogeneity, and locality. A "perfect storm" has been formed from the fact that data movement has become the dominating factor for both power and performance of high-valued applications. It will be critical to match the compute throughput to the data access bandwidth and to locate the compute at where the data is. Much has been and continuously needs to be learned about of algorithms, languages, compilers and hardware architecture in this movement. What are the killer applications that may become the new driver for future technology development? How hard is it to program existing systems to address the date movement issues today? How will we program future systems? How will innovations in memory devices present further opportunities and challenges in designing new systems? What is the impact on long-term software engineering cost on applications (and legacy applications in particular)? In this talk, I will present our vision for and initial results from the IBM-Illinois C3SR Erudite system inside this perfect storm		

16.30h Event screenshot

16.30h Break

16.40 First Poster Session: Data-based solutions for medicine, astronomy and society

1. Adaptive Optics Control with ReinforcementLearning: First steps **Bartomeu Pou**
2. Lindaview: An OBDA-based tool for self-sufficiency assessment **Victor-Alejandro Ortiz**
3. Multiplex network uncovers Chronic Obstructive Pulmonary Disease endotypes **Núria Olvera Ocaña**

17h Break

17.10h First Talk Session: **Life Sciences & Genomics**

17.10h	Epigenetic Characterization of Cholangiocarcinomas	**Winona Oliveros Diez**	**David Torrents**
17.30h	Unveiling the Transcriptional and Cellular Landscape of Age across Human Tissues	**Aida Ripoll Cladellas**	
17.50h	From Comorbidities to Gene Expression Fingerprints and Back	**Beatriz Urda**	
18:10h	perSVade: personalized Structural Variation detection in your species of interest	**Miquel Àngel Schikora Tamarit**	

18.30h Adjourn

DAY 2 (May 12th)

Start time	Activity	Speaker/s	Chair
9.00h	Opening of the second day		

9.20h Second Talk Session: Modelling & HPC

9.20h	startR: A tool for large multi-dimensional data processing	**An-Chi Ho**	**Rosa Badia**
9.40h	Curved geometry modeling: interpolation of subdivision features	**Albert Jiménez Ramos**	
10.00h	Optimizing Execution on Large-scale Infrastructures by Integrating Task-based workflows and MPI	**Hatem Elshazly**	
10.20h	VIA: A Smart Scratchpad for Vector Units with Application to Sparse Matrix	**Julián Pavón**	

10.40h Break

10.50h Third Talk Session: Computer Architecture

10.50h	Predicate-Based Filtering for Multi-GPU Utilization in Directive-Based	**Kazuaki Matsumura**	**Petar Radojkovic**
11.10h	Pushing the Envelope on Free TLB Prefetching	**Georgios Vavouliotis**	
11.30h	Cost-Aware Prediction of Uncorrected DRAM Errors in the Field	**Isaac Boixaderas**	
11.50h	Optimizing the SpMV kernel on long-vector accelerators	**Constantino Gómez**	

12.10h Break

12.20h Fourth Talk Session: HPC applications in Earth and Life Sciences

12.20h	Determining the structure of small molecules via their pseudo-electrons and atoms 3D models using FPGA	**Cesar Gonzalez**	**Xavier Martorell**
12.40h	Mining the essential motions of pyruvate kinase	**Luis Jorda**	
13.00h	Constraining the chemical composition of particulatematter in an atmospheric chemistry model	**Hector Navarro Barboza**	
13.20h	The multilayer community structure of medulloblastoma	**Iker Núñez Carpintero**	
13.40h	Tsunami inundation forecast in central Chile using stochastic earthquake scenario	**Natalia Zamora**	

14.00h Lunch break

15.00h Tutorial part 1

Title: Cognitive Abilities for Team Innovation ¨CATI¨ part 1	**Queralt Prat-i-Pubill**
Content&Goals 1. INQUIRY. We will inquiry about our mechanisms of interpretation. 2. AWARENESS. We will become aware of the two dimensions of reality 3. SUCCESS. We will apply what we learn from the ¨get go¨	
We will use the way we deal with conflict as an inquiry entry to our mental models. We will work on understanding the creative implications of automatically responding to our particular models.	

17.30h Adjourn

DAY 3 (May 13th)

Start time	Activity	Speaker/s	Chair
9.30h	Opening of the third day		

10.00h Fifth Talk Session: HPC and Modelling for Earth Science

10.00h	High Resolution Decadal Prediction - Impacts on the predictability of the Pacific variability	**Aude Carréric**	**Pablo Ortega**
10.20h	Climate Forecast Analysis Tools Framework	**Núria Pérez-Zanón**	
10.40h	Bias-adjustment method for street-scale air quality models	**Jan Mateu Armengol**	
11.00h	Exploiting parallelism for CPU and GPU linear solvers on chemistry for atmospheric models	**Christian Guzman Ruiz**	
11.20h	Super-resolution for downscaling climate data	**Carlos Alberto Gómez Gonzalez**	

11.40h Break

11.50 Second Poster Session: Dust modelling and genome sequencing

1. Analysis of Hybrid Genomes in the Candida parapsilosis Clade **Valentina del Olmo**
2. Sensitivity of soluble iron deposition to soilmineralogy uncertainty **Elisa Bergas-Massó**
3. Modeling nitric acid uptake by mineral dust **Rubén Sousse Villa**

12.10h Break

12.20h Sixth Talk Session: Machine Learning and Quantum computing

12.20h	An architecture for autonomic ML/AI workflow management and supervision	**Peini Liu**	**Josep Lluís Berral**
12.40h	Quantum Singular Value Decomposer	**Diego García-Martín**	
13.00h	Algebraic Linelet Preconditioner for the solution of the Poisson equation on boundary layer flows	**Ramiro de Olazábal**	
13.20h	TunaOil: A Tuning Algorithm Strategy for Reservoir Simulation Workloads	**Felipe Portella**	
13.40h	A Machine Learning based Wall Model for LES of Turbulent flows	**Sarath Radhakrishnan**	

14 00h Lunch break

15.00h Tutorial part 2

Title: Cognitive Abilities for Team Innovation ¨CATI¨ part 2 — **Queralt Prat-i-Pubill**

Content&Goals

2. AWARENESS. We will become aware of the two dimensions of reality
3. SUCCESS. We will apply what we learn from the ¨get go¨

We will practice differentiating our automatic mechanisms of interpretation, what we call the relative dimension from the absolute dimension.

Inquiring about our mechanism and being able to distance and silence them will foster a different approach to collaboration.

17.30 End of the Doctoral Symposium