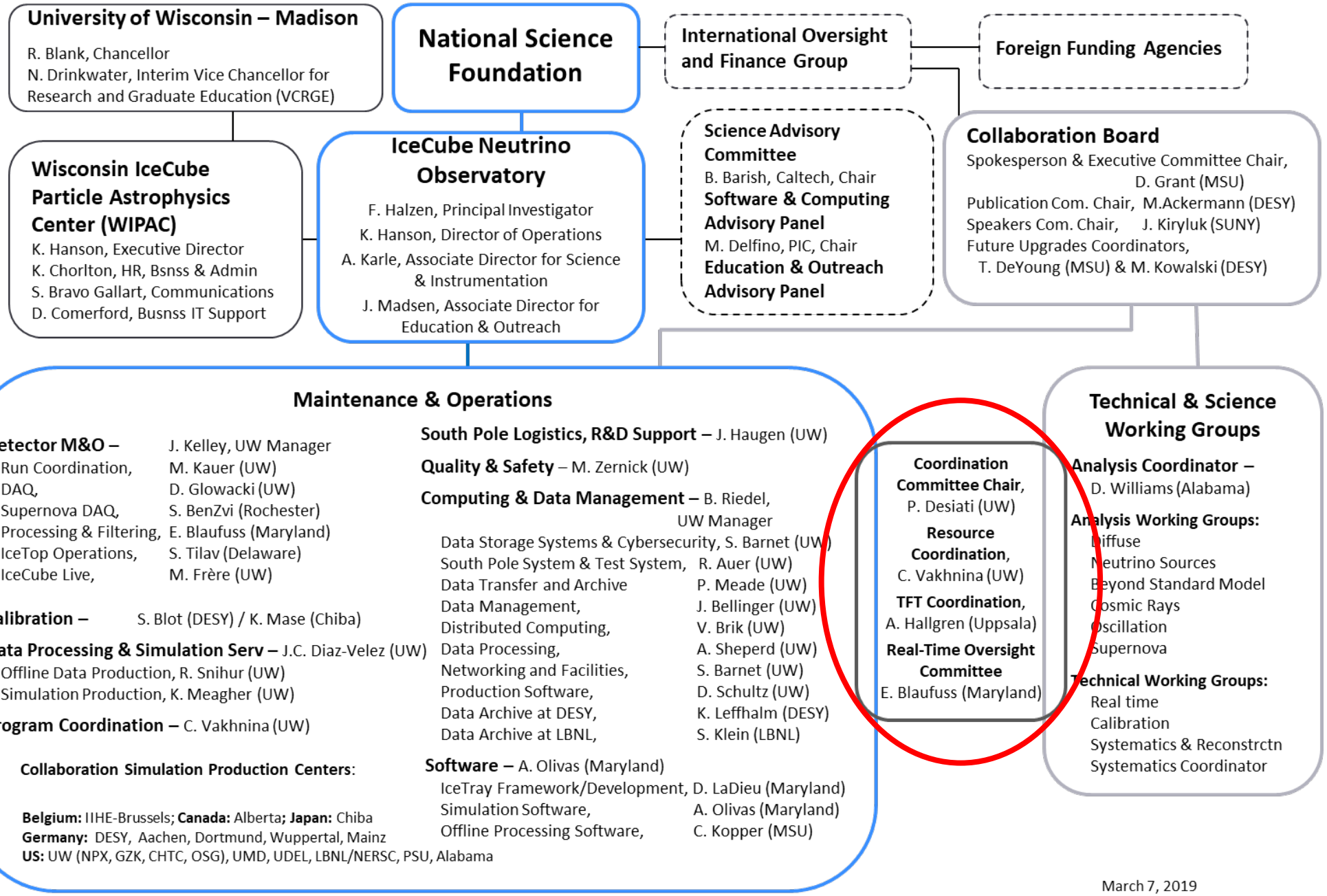
WBS and Reporting Structures of the U.S. and In-Kind Contributions

Kael Hanson / Catherine Vakhnina

March 11, 2019

Overview

- To be added


University of Wisconsin – Madison
R. Blank, Chancellor
N. Drinkwater, Interim Vice Chancellor for Research and Graduate Education (VCRGE)
National Science Foundation
International Oversight and Finance Group
Foreign Funding Agencies
Wisconsin IceCube Particle Astrophysics Center (WIPAC)
K. Hanson, Executive Director
K. Chorlton, HR, Bsnss & Admin
S. Bravo Gallart, Communications
D. Comerford, Busnss IT Support
IceCube Neutrino Observatory
F. Halzen, Principal Investigator
K. Hanson, Director of Operations
A. Karle, Associate Director for Science & Instrumentation
J. Madsen, Associate Director for Education & Outreach
Science Advisory Committee
B. Barish, Caltech, Chair
Software & Computing Advisory Panel
M. Delfino, PIC, Chair
Education & Outreach Advisory Panel
Collaboration Board
Spokesperson & Executive Committee Chair, D. Grant (MSU)
Publication Com. Chair, M.Ackermann (DESY)
Speakers Com. Chair, J. Kiryluk (SUNY)
Future Upgrades Coordinators,
T. DeYoung (MSU) & M. Kowalski (DESY)
Maintenance & Operations
Detector M&O – J. Kelley, UW Manager
Run Coordination, M. Kauer (UW)
DAQ, D. Glowacki (UW)
Supernova DAQ, S. BenZvi (Rochester)
Processing & Filtering, E. Blaufuss (Maryland)
IceTop Operations, S. Tilav (Delaware)
IceCube Live, M. Frère (UW)
Calibration – S. Blot (DESY) / K. Mase (Chiba)
Data Processing & Simulation Serv – J.C. Diaz-Velez (UW)
Offline Data Production, R. Snihur (UW)
Simulation Production, K. Meagher (UW)
Program Coordination – C. Vakhnina (UW)
Collaboration Simulation Production Centers:
Belgium: IIHE-Brussels; Canada: Alberta; Japan: Chiba
Germany: DESY, Aachen, Dortmund, Wuppertal, Mainz
US: UW (NPX, GZK, CHTC, OSG), UMD, UDEL, LBNL/NERSC, PSU, Alabama
South Pole Logistics, R&D Support – J. Haugen (UW)
Quality & Safety – M. Zernick (UW)
Computing & Data Management – B. Riedel, UW Manager
Data Storage Systems & Cybersecurity, S. Barnet (UW)
South Pole System & Test System, R. Auer (UW)
Data Transfer and Archive P. Meade (UW)
Data Management, J. Bellinger (UW)
Distributed Computing, V. Brik (UW)
Data Processing, A. Sheperd (UW)
Networking and Facilities, S. Barnet (UW)
Production Software, D. Schultz (UW)
Data Archive at DESY, K. Leffhalm (DESY)
Data Archive at LBNL, S. Klein (LBNL)
Software – A. Olivas (Maryland)
IceTray Framework/Development, D. LaDieu (Maryland)
Simulation Software, A. Olivas (Maryland)
Offline Processing Software, C. Kopper (MSU)
Coordination Committee Chair, P. Desiati (UW)
Resource Coordination, C. Vakhnina (UW)
TFT Coordination, A. Hallgren (Uppsala)
Real-Time Oversight Committee E. Blaufuss (Maryland)
Technical & Science Working Groups
Analysis Coordinator – D. Williams (Alabama)
Analysis Working Groups:
Diffuse
Neutrino Sources
Beyond Standard Model
Cosmic Rays
Oscillation
Supernova
Technical Working Groups:
Real time
Calibration
Systematics & Reconstrctn
Systematics Coordinator

March 7, 2019

Bridge Between Collaboration and M&O

- ICC manages scientific needs of collaboration:
  - High priority tasks assigned to in-kind labor from MoUs,
  - Software strike team
  - Coordination of passX
  - New re-org of WG technical leads to serve as PoC on ICC
- Coordinates in-kind resource pledges:
  - Labor → high priority tasks or software strike team
  - Distributed computing resources
- Maps needs to resources.

Composition and Execution

- Membership – evolution of L2 Board in MREFC
  - ICC Chair – P. Desiati
  - M&O Resource Coordinator – C. Vakhnina
  - Each Level 2 coordinator
  - TFT Chair – A. Hallgren
  - ROC Chair – E. Blaufuss
  - Analysis Coordinator – D. Williams
  - Science Working Group Technical Leads
- Monthly teleconference Wed 9.00 am
- Bi-weekly teleconference Tue 10.30 am open for general technical discussion leading up to ICC.

IceCube Neutrino Observatory

F. Halzen – PI
K. Hanson – Director of Operations
A. Karle – Assoc Director for Science and Instrumentation
J. Madsen – Assoc. Director for Education and Outreach

WBS 2.1 Program Coordination (C. Vakhnina)

- WBS 2.1.1 Administration
- WBS 2.1.2 Engineering and R&D Support
- WBS 2.1.3 USAP Support and Safety
- WBS 2.1.4 Education & Outreach
- WBS 2.1.5 Communications

WBS 2.2 Detector Operations & Maintenance (Online) (J. Kelley)

- WBS 2.2.1 Run Coordination
- WBS 2.2.2 Data Acquisition
- WBS 2.2.3 Online Filter (PnF)
- WBS 2.2.4 Detector Monitoring
- WBS 2.2.5 Experiment Control
- WBS 2.2.6 Surface Detectors
- WBS 2.2.7 Supernova System
- WBS 2.2.8 Real-time Alerts

WBS 2.3 Computing & Data Management Services (B. Riedel)

- WBS 2.3.1 Data Storage & Transfer
- WBS 2.3.2 Core Data Center Infrastructure
- WBS 2.3.3 Central Computing Resources
- WBS 2.3.4 Distributed Computing Resources
- WBS 2.3.5 SPS
- WBS 2.3.6 SPTS

WBS 2.4 Data Processing & Simulation Services (J. C. Diaz-Velez)

- WBS 2.4.1 Offline Data Production
- WBS 2.4.2 Simulation Production
- WBS 2.4.3 Public Data Products

WBS 2.5 Software (A. Olivas)

- WBS 2.5.1 Core Software
- WBS 2.5.2 Simulation Software
- WBS 2.5.3 Reconstruction
- WBS 2.5.4 Science Support Tools
- WBS 2.5.5 Software Development Infrastructure

WBS 2.6 Calibration (S. Blot)

- WBS 2.6.1 Detector Calibration
- WBS 2.6.2 Ice Properties

WBS Dictionary

IceCube Management and Operations WBS Dictionary can be found at:

DocuShare Collection-15435

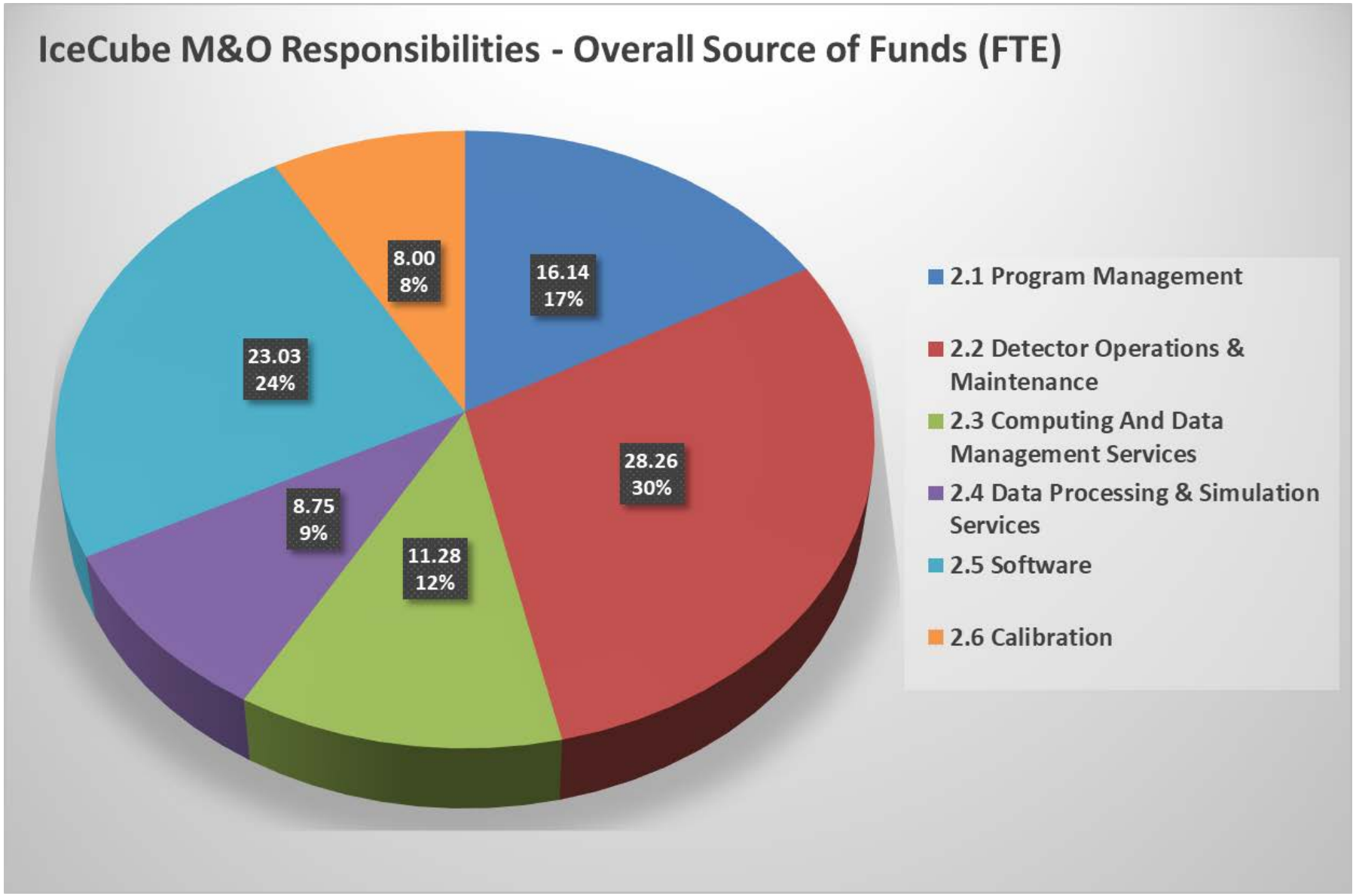
FY2019 M&O Responsibilities
By WBS and Funds, v25.1 December 2018

WBS L2	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Europe & Asia Pacific In-Kind	Grand Total
2.1 Program Management	5.08	0.40	4.26	6.40	**16.14**
2.2 Detector Operations & Maintenance	13.48	1.98	3.75	9.05	**28.26**
2.3 Computing And Data Management Services	7.85	0.05	1.38	2.00	**11.28**
2.4 Data Processing & Simulation Services	3.50	0.95	1.05	3.25	**8.75**
2.5 Software	4.05	1.90	5.93	11.15	**23.03**
2.6 Calibration	1.05	1.30	1.75	3.90	**8.00**
Grand Total	**35.01**	**6.58**	**18.12**	**35.75**	**95.46**

IceCube M&O MoU's are posted at:

DocuShare: https://docushare.icecube.wisc.edu/dsweb/View/Collection-6627

FY2019 IceCube M&O Responsibilities



FY2019 M&O Responsibilities
By WBS and Funds, v25.1 December 2018

WBS 2.1 Program Management

WBS L2	WBS L3	NSF M&O Core	Base Grants	US In-Kind	Non-US In-kind	Grand Total
2.1 Program Management	2.1.1 Administration	2.7 FTE	0.2 FTE	2.4 FTE	4.3 FTE	**9.6 FTE**
	2.1.2 Engineering and R&D Support	1.1 FTE	0.3 FTE	0.8 FTE	0.9 FTE	**3.1 FTE**
	2.1.4 Education & Outreach	0.8 FTE		1.1 FTE	1.2 FTE	**3.1 FTE**
	2.1.3 Usap Support & Safety	0.2 FTE				**0.2 FTE**
	2.1.5 Communications	0.3 FTE				**0.3 FTE**
2.1 Program Management Total		**5.1 FTE**	**0.4 FTE**	**4.3 FTE**	**6.4 FTE**	**16.1 FTE**

FY2019 M&O Responsibilities
By WBS and Funds, v25.1 December 2018

WBS 2.2 Detector Operations and Maintenance

WBS L2	WBS L3	NSF M&O Core	Base Grants	US In-Kind	Non-US In-kind	Grand Total
2.2 Detector Operations & Maintenance	2.2 Detector Operations & Maintenance	1.6 FTE			0.1 FTE	**1.7 FTE**
	2.2.1 Run Coordination	3.6 FTE				**3.6 FTE**
	2.2.2 Data Acquisition	3.2 FTE		0.5 FTE		**3.7 FTE**
	2.2.3 Online Filter (Pnf)	0.5 FTE	0.9 FTE	0.9 FTE	5.1 FTE	**7.3 FTE**
	2.2.4 Detector Monitoring	2.1 FTE	0.6 FTE	0.9 FTE	2.2 FTE	**5.8 FTE**
	2.2.5 Experiment Control	0.8 FTE				**0.8 FTE**
	2.2.6 Surface Detector Operations	1.6 FTE		0.8 FTE	1.1 FTE	**3.5 FTE**
	2.2.7 Supernova System			0.5 FTE		**0.5 FTE**
	2.2.8 Real-Time Alerts	0.3 FTE	0.5 FTE	0.3 FTE	0.6 FTE	**1.6 FTE**
2.2 Detector Operations & Maintenance Total		**13.5 FTE**	**2.0 FTE**	**3.8 FTE**	**9.1 FTE**	**28.3 FTE**

FY2019 M&O Responsibilities
By WBS and Funds, v25.1 December 2018

WBS 2.3 Computing & Data Management Services

WBS L2	WBS L3	NSF M&O Core	Base Grants	US In-Kind	Non-US In-kind	Grand Total
2.3 Computing And Data Management Services	2.3.0 Computing And Data Management	0.9 FTE		0.1 FTE		**1.0 FTE**
	2.3.1 Data Storage & Transfer	2.2 FTE				**2.2 FTE**
	2.3.2 Core Data Center Infrastructure	1.3 FTE				**1.3 FTE**
	2.3.3 Central Computing Resources	0.6 FTE		1.3 FTE	1.4 FTE	**3.3 FTE**
	2.3.4 Distributed Computing Resources	1.6 FTE	0.1 FTE		0.6 FTE	**2.3 FTE**
	2.3.5 Sps Operations	0.7 FTE				**0.7 FTE**
	2.3.6 Spts Operations	0.6 FTE				**0.6 FTE**
2.3 Computing And Data Management Services Total		**7.9 FTE**	**0.1 FTE**	**1.4 FTE**	**2.0 FTE**	**11.3 FTE**

FY2019 M&O Responsibilities
By WBS and Funds, v25.1 December 2018

WBS 2.4 Data Processing & Simulation Services

WBS L2	WBS L3	NSF M&O Core	Base Grants	US In-Kind	Non-US In-kind	Grand Total
2.4 Data Processing & Simulation Services	2.4.1 Offline Data Production	0.2 FTE	0.5 FTE	0.5 FTE	1.7 FTE	**2.8 FTE**
	2.4.2 Simulation Production	3.0 FTE	0.5 FTE	0.6 FTE	1.6 FTE	**5.7 FTE**
	2.4.3 Public Date Products	0.3 FTE				**0.3 FTE**
2.4 Data Processing & Simulation Services Total		**3.5 FTE**	**1.0 FTE**	**1.1 FTE**	**3.3 FTE**	**8.8 FTE**

FY2019 M&O Responsibilities
By WBS and Funds, v25.1 December 2018

WBS 2.5 Software

WBS L2	WBS L3	NSF M&O Core	Base Grants	US In-Kind	Non-US In-kind	Grand Total
2.5 Software	2.5.1 Core Software	1.7 FTE		1.1 FTE	1.1 FTE	**3.9 FTE**
	2.5.2 Simulation Software	1.1 FTE	0.5 FTE	1.1 FTE	2.4 FTE	**5.0 FTE**
	2.5.3 Reconstruction	0.6 FTE	1.5 FTE	3.4 FTE	7.3 FTE	**12.8 FTE**
	2.5.4 Science Support Tools			0.3 FTE		**0.3 FTE**
	2.5.5 Software Development Infrastructure	0.8 FTE				**0.8 FTE**
	2.6.2 Ice Properties				0.6 FTE	**0.6 FTE**
2.5 Software Total		**4.1 FTE**	**1.9 FTE**	**5.9 FTE**	**11.4 FTE**	**23.3 FTE**

FY2019 M&O Responsibilities
By WBS and Funds, v25.1 December 2018

WBS 2.6 Calibration

WBS L2	WBS L3	NSF M&O Core	Base Grants	US In-Kind	Non-US In-kind	Grand Total
2.6 Calibration	2.5.3 Reconstruction				0.4 FTE	**0.4 FTE**
	2.6.1 Detector Calibration	1.1 FTE	0.6 FTE	0.9 FTE	2.9 FTE	**5.4 FTE**
	2.6.2 Ice Properties		0.8 FTE	0.9 FTE	0.4 FTE	**2.1 FTE**
2.6 Calibration Total		**1.1 FTE**	**1.3 FTE**	**1.8 FTE**	**3.7 FTE**	**7.8 FTE**

M&O Responsibilities

May 2016 → January 2019

MoU v.20.0 April 2016	U.S. Head Count	U.S. FTE	Non-U.S. Head Count	Non-U.S. FTE
Key Personnel				
Scientists				
Post Docs				
Grad Students *				
Other Professionals **				

Data to be added

MoU v.25.1 January 2019	U.S. Head Count	U.S. FTE	Non-U.S. Head Count	Non-U.S. FTE
Key Personnel				
Scientists				
Post Docs				
Grad Students *				
Other Professionals **				

- Grad Students' Full Time Employment equals to 0.50 FTE
- Other professionals include engineers, data science, software engineers, winterovers, program mngt

Summary

- IceCube M&O Program receives significant contributions of in-kind labor from the IceCube Collaboration, heavily in WBS 2.5 Software and 2.6 Calibration
- Also, significant in-kind contributions of Distributed Computing
- The Collaboration updates the Scope of Work and M&O Responsibilities in the MoU's twice a year.
- All resources are coordinated by IceCube Coordination Committee (ICC)

Presenter's Background

- Project Controls Manager, IceCube Gen-2 Phase 1
- IceCube Maintenance and Operations Resource Coordinator
- 8+ years with IceCube Collaboration (2010-present)
- CMB PolarBear Project Control & Systems Manager (2015-2016)
- 12+ years of financial & project management experience in academia and private industry
- Master of Business Administration (MBA) degree (2008)
- Project Management Professional (PMP), license ID 1820230
- Member of Project Management Institute, PMI (2014–present)

Backup material