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Summary

The following table summarizes our team-wide efforts. Details are in separate sections below.

Science Metric	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Enabled Publications	558 (2014)	664 (2015)	817 (2016)		
Supported Allocations (#, SU)	7 awards, 16,990,000.00 SU	9 awards, 19,134,890 SU	19 awards, 27,861,384 SU (includes both gateway community and power user accounts)		
Collaborating Grants (#, $)	1 Grant, $263,000	4 Grants, > $2,000,000	7 Grants, > $10.3 M		

Operational Metric	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Gateways Using one or more SciGaP services	2	6 (see XSEDE allocations table below)	10 (see XSEDE allocations table below)		
Number of Users Supported	4205	7451	9351		
Number of Experiments (Jobs Executed)	129,242	212,933	300,522		
Resources Available to Users	6 clusters made available	13 XSEDE, Campus, and International Resources	> 10 XSEDE, Campus, and International Resources		

Jira Tickets Created/Closed	515/288	370/148	272/151		
New Apache Airavata Committers and PMC Members	8 committers, 0 PMC members	2 committers, 2 PMC members	1 PMC member		

Science Metrics

Number of Publications Enabled

Totals

We separate publications into those supported directly by the grant and those enabled by the grant. Totals for the year are below. For simplicity, we count enabled publications by calendar year rather than project year.

- SciGaP Team Publications: 15
- SciGaP Supported Science Publications: 817

Details are below.

Team Publications

Since the project began, team-authored publications supported by this award have been cited 228 times (Google Scholar). Eight cyberinfrastructure and science papers supported by this award have been cited at least 8 times since 2013 (Google Scholar).

1. Brookes, Emre H., Nadeem Anjum, Joseph E. Curtis, Suresh Marru, Raminder Singh, and Marlon Pierce. "The GenApp framework integrated with Airavata for managed compute resource submissions." Concurrency and Computation: Practice and Experience 27, no. 16 (2015): 4292-4303.
2. Gesing, Sandra, Rion Dooley, Marlon Pierce, Jens Krüger, Richard Grunzke, Sonja Herres-Pawlis, and Alexander Hoffmann. "Science gateways-leveraging modeling and simulations in HPC infrastructures via increased usability." In High Performance Computing & Simulation (HPCS), 2015 International Conference on, pp. 19-26. IEEE, 2015.
3. Brookes, Emre H., Abhishek Kapoor, Priyanshu Patra, Suresh Marru, Raminder Singh, and Marlon Pierce. "GSoC 2015 student contributions to GenApp and Airavata." Concurrency and Computation: Practice and Experience (2015).
4. Saha, Pankaj, Madhusudhan Govindaraju, Suresh Marru, and Marlon Pierce.

"Integrating Apache Airavata with Docker, Marathon, and Mesos."Concurrency and Computation: Practice and Experience (2015).

5. Pamidighantam, Sudhakar, Supun Nakandala, Eroma Abeysinghe, Chathuri Wimalasena, Shameera Rathnayaka, Suresh Marru, and Marlon Pierce. "Community Science Exemplars in SEAGrid Science Gateway: Apache Airavata Based Implementation of Advanced Infrastructure." Procedia Computer Science 80 (2016): 1927-1939.
6. Nakandala, Supun, Sudhakar Pamidighantam, Shameera Yodage, Nipurn Doshi, Eroma Abeysinghe, Chathuri Peli Kankanamalage, Suresh Marru, and Marlon Pierce. "Anatomy of the SEAGrid Science Gateway." In Proceedings of the XSEDE16 Conference on Diversity, Big Data, and Science at Scale, p. 40. ACM, 2016.
7. Pierce, Marlon E., Suresh Marru, and Chris Mattmann. "Patching It Up, Pulling It Forward." Journal of Open Research Software 3, no. 1 (2015).
8. Chandrathilake, H. M. C., H. T. S. Hewawitharana, R. S. Jayawardana, A. D. D. Viduranga, HMN Dilum Bandara, Suresh Marru, and Srinath Perera. "Reducing computational time of closed-loop weather monitoring: A Complex Event Processing and Machine Learning based approach." In 2016 Moratuwa Engineering Research Conference (MERCon), pp. 78-83. IEEE, 2016.
9. Nakandala, Supun, Sachith Dhanushka Withana, Dinu Kumarasiri, Hirantha Jayawardena, HMN Dilum Bandara, Srinath Perera, Suresh Marru, and Sudhakar Pamidighantam. "Schema-independent scientific data cataloging framework." In Moratuwa Engineering Research Conference (MERCon), 2015, pp. 289-294. IEEE, 2015.
10. Demeler, Borries, and Gary E. Gorbet. "Analytical ultracentrifugation data analysis with ultrascan-III." In Analytical Ultracentrifugation, pp. 119-143. Springer Japan, 2016.
11. Miller, Mark A., Terri Schwartz, Brett E. Pickett, Sherry He, Edward B. Klem, Richard H. Scheuermann, Maria Passarotti, Seth Kaufman, and Maureen A. O'Leary. "A RESTful API for access to phylogenetic tools via the CIPRES science gateway." Evolutionary Bioinformatics 11 (2015): 43.
12. Miller, Mark A., Terri Schwartz, and Wayne Pfeiffer. "User behavior and usage patterns for a highly accessed science gateway." In Proceedings of the XSEDE16 Conference on Diversity, Big Data, and Science at Scale, p. 46. ACM, 2016.
13. Sivagnanam, Subhashini, Amit Majumdar, Kenneth Yoshimoto, Vadim Astakhov, Anita Bandrowski, MaryAnn Martone, and Nicholas Carnevale. "Early experiences in developing and managing the neuroscience gateway."Concurrency and Computation: Practice and Experience 27, no. 2 (2015): 473-488.
14. Majumdar, Amit, Subhashini Sivagnanam, Kenneth Yoshimoto, and Ted Carnevale. "Understanding the Evolving Cyberinfrastructure Needs of the Neuroscience Community." In Proceedings of the XSEDE16 Conference on Diversity, Big Data, and Science at Scale, p. 45. ACM, 2016.
15. Majumdar A, Sivagnanam S, Carnevale NT, Yoshimoto K, Gleeson P, Quintana A and Silver RA (2016), "Neuroscience Gateway - Cyberinfrastructure Providing Supercomputing Resources for Large Scale Computational Neuroscience Research,"

Front. Neuroinform. Conference Abstract: Neuroinformatics 2016. Neuroinformatics 2016, Reading, United Kingdom, 3 Sep - 4 Sep, 2016. http://www.frontiersin.org/10.3389/conf.fninf.2016.20.00008/event_abstract

SciGaP-Supported Scientific Publications: 2016

These are scientific (rather than Cyberinfrastructure) publications and posters that were enabled by the SciGaP project. It is out of scope for our metric reporting, but it would be interesting to measure the impacts of these enabled publications.

UltraScan Enabled Publications: 2016

Total: 29

1. G Plascencia-Villa, B Demeler, RL Whetten, WP Griffith, M Alvarez, DM Black, and M José-Yacamán. Analytical Characterization of Size-Dependent Properties of Larger Aqueous Gold Nanoclusters J. Phys. Chem. C, DOI: 10.1021/acs.jpcc.6b00448
2. Karabudak E, Brookes E, Lesnyak V, Gaponik N, Eychmüller A, Walter J, Segets D, Peukert W, Wohlleben W, Demeler B, H Cölfen. Simultaneous Identification of Spectral Properties and Sizes of multiple Particles in Solution with sub-nm Size Resolution. Angewandte Chemie 2016 Jul 27. doi: 10.1002/anie.201603844.
3. Wong SJ, Gearhart MD, Taylor AB, Nanyes DR, Ha DJ, Robinson AK, Artigas JA, Lee OJ, Demeler B, Hart PJ, Bardwell VJ, and CA Kim. KDM2B recruitment of the Polycomb group complex, PRC1.1, requires cooperation between PCGF1 and BCORL1. Structure, 2016 Aug 23. pii: S0969-2126(16)30222-2. doi: 10.1016/j.str.2016.07.011.
4. Bhattacharya A, Wang Z, White T, Buffone C, Nguyen L, Shepard C, Kim B, Demeler B, Diaz-Griffero F, and D Ivanov. Effects of T592 phosphomimetic mutations on tetramer stability and dNTPase activity of SAMHD1 can not explain the retroviral restriction defect. Sci Rep. 2016 Aug 11;6:31353. doi: 10.1038/srep31353.
5. Alvarez MM, Chen J, Plascencia-Villa G, Black DM, Griffith WP, Garzon IL, José-Yacamán M, Demeler B, Whetten RL. Hidden Components in Aqueous Gold-144 Fractionated by PAGE: High-Resolution Orbitrap ESI-MS Identifies the Gold-102 and Higher All-Aromatic Au-pMBA Cluster Compounds. J Phys Chem B. 2016 Jun 8. PMID: 27275518
6. G Plascencia-Villa, B Demeler, RL Whetten, WP Griffith, M Alvarez, DM Black, and M José-Yacamán. Analytical Characterization of Size-Dependent Properties of Larger Aqueous Gold Nanoclusters J. Phys. Chem. C, DOI: 10.1021/acs.jpcc.6b00448
7. Demeler B., and G. Gorbet. Analytical Ultracentrifugation Data Analysis with UltraScan-III. Ch. 8, In Analytical Ultracentrifugation: Instrumentation, Software, and Applications. Eds: Uchiyama S., Stafford W. F. and T. Laue. Springer, 119-143 (2016)
8. Villarreal OD, LY Chen, RL Whetten, B. Demeler. Aspheric Solute Ions Modulate Gold Nanoparticle Interactions in an Aqueous Solution: An Optimal Way to Reversibly Concentrate Functionalized Nanoparticles. J. Phys. Chem. B 11/2015; DOI:10.1021/acs.jpcb.5b09864
9. Boswell-Casteel RC, Johnson JM, Duggan KD, Tsutsui Y, Hays FA. Overproduction and

biophysical characterization of human HSP70 proteins. (2015-02-01 Epub: 2014-09-27) Protein Expr Purif 106:57-65
10. Urbauer JL, Cowley AB, Broussard HP, Niedermaier HT, Bieber Urbauer RJ. Solution structure and properties of AlgH from Pseudomonas aeruginosa. (2015-06-01 Epub: 2015-04-29) Proteins 83:1137-50
11. Tsutsui Y, Johnson JM, Demeler B, Kinter MT, Hays FA. Conformation-Dependent Human p52Shc Phosphorylation by Human c-Src. (2015-06-09 Epub: 2015-05-26) Biochemistry 54:3469-82
12. Yudina Z, Roa A, Johnson R, Biris N, de Souza Aranha Vieira DA, Tsiperson V, Reszka N, Taylor AB, Hart PJ, Demeler B, Diaz-Griffero F, Ivanov DN. RING Dimerization Links Higher-Order Assembly of TRIM5? to Synthesis of K63-Linked Polyubiquitin. (2015-08-04 Epub: 2015-07-23) Cell Rep 12:788-97
13. Zhang S, Hinck AP, Fitzpatrick PF. The Amino Acid Specificity for Activation of Phenylalanine Hydroxylase Matches the Specificity for Stabilization of Regulatory Domain Dimers. (2015-08-25 Epub: 2015-08-13) Biochemistry 54:5167-74
14. Ranaivoson FM, Liu Q, Martini F, Bergami F, von Daake S, Li S, Lee D, Demeler B, Hendrickson WA, Comoletti D. Structural and Mechanistic Insights into the Latrophilin3-FLRT3 Complex that Mediates Glutamatergic Synapse Development. (2015-09-01 Epub: 2015-07-30) Structure 23:1665-77
15. AbdulHalim LG, Bootharaju MS, Tang Q, Del Gobbo S, AbdulHalim RG, Eddaoudi M, Jiang DE, Bakr OM. Ag29(BDT)12(TPP)4: A Tetravalent Nanocluster. (2015-09-23 Epub: 2015-07-07) J Am Chem Soc 137:11970-5
16. Aly SM, AbdulHalim LG, Besong TM, Soldan G, Bakr OM, Mohammed OF. Ultrafast static and diffusion-controlled electron transfer at Ag29 nanocluster/molecular acceptor interfaces. (2015-11-09 Epub: 2015-11-09) Nanoscale
17. Klein BJ, Muthurajan UM, Lalonde ME, Gibson MD, Andrews FH, Hepler M, Machida S, Yan K, Kurumizaka H, Poirier MG, Côté J, Luger K, Kutateladze TG. Bivalent interaction of the PZP domain of BRPF1 with the nucleosome impacts chromatin dynamics and acetylation. (2015-11-30 Epub: 2015-11-30) Nucleic Acids Res.
18. Villarreal OD, Chen LY, Whetten RL, Demeler B. Aspheric Solute Ions Modulate Gold Nanoparticle Interactions in an Aqueous Solution: An Optimal Way To Reversibly Concentrate Functionalized Nanoparticles. (2015-12-17 Epub: 2015-12-03) J Phys Chem B 119:15502-8
19. Wang W, Damm C, Walter J, Nacken TJ, Peukert W. Photobleaching and stabilization of carbon nanodots produced by solvothermal synthesis. (2016-01-07 Epub: 2015-11-30) Phys Chem Chem Phys 18:466-7
20. Ballandras-Colas A, Brown M, Cook NJ, Dewdney TG, Demeler B, Cherepanov P, Lyumkis D, Engelman AN. Cryo-EM reveals a novel octameric integrase structure for betaretroviral intasome function. (2016-02-18 Epub: 0000-00-00) Nature 530:358-61
21. Rubio-Marrero EN, Vincelli G, Jeffries CM, Shaikh TR, Pakos IS, Ranaivoson FM, von Daake S, Demeler B, De Jaco A, Perkins G, Ellisman MH, Trewhella J, Comoletti D. Structural Characterization of the Extracellular Domain of CASPR2 and Insights into Its Association with the Novel Ligand Contactin1. (2016-03-11 Epub: 2015-12-31) J Biol

Chem 291:5788-802
22. Cockburn, Darrell W., Nicole I. Orlovsky, Matthew H. Foley, Kurt J. Kwiatkowski, Constance M. Bahr, Mallory Maynard, Borries Demeler, and Nicole M. Koropatkin. "Molecular details of a starch utilization pathway in the human gut symbiont Eubacterium rectale." *Molecular microbiology* 95, no. 2 (2015): 209-230.
23. Tsutsui, Yuko, Jennifer M. Johnson, Borries Demeler, Michael Kinter, and Franklin Alan Hays. "Conformation-Dependent Human p52Shc Phosphorylation by Human c-Src." *Biochemistry* (2015).
24. Ranaivoson, Fanomezana M., Qun Liu, Francesca Martini, Francesco Bergami, Sventja von Daake, Sheng Li, David Lee, Borries Demeler, Wayne A. Hendrickson, and Davide Comoletti. "Structural and Mechanistic Insights into the Latrophilin3-FLRT3 Complex that Mediates Glutamatergic Synapse Development." *Structure* 23, no. 9 (2015): 1665-1677.
25. Gorbet, Gary E., Joseph Z. Pearson, Aysha K. Demeler, Helmut Cölfen, and Borries Demeler. "Next-Generation AUC: Analysis of Multiwavelength Analytical Ultracentrifugation Data." *Methods in Enzymology* (2015).
26. Ivanov, Dmitri, Zinaida Yudina, Rory Johnson, Nikolaos Biris, Alexander Taylor, P. Hart, and Borries Demeler. "The Role of RING Dimerization in the E3 Ubiquitin Ligase Activity of the TRIM5α Retroviral Restriction Factor." *The FASEB Journal* 29, no. 1 Supplement (2015): 888-9.
27. Kim, Haram, Emre H. Brookes, and Borries Demeler. "A performance predictor for UltraScan supercomputer calculations." In *Proceedings of the 2015 XSEDE Conference: Scientific Advancements Enabled by Enhanced Cyberinfrastructure*, p. 42. ACM, 2015.
28. Pearson, Joseph, Frank Krause, Dirk Haffke, Borries Demeler, Kristian Schilling, and Helmut Cölfen. "Next-Generation AUC Adds a Spectral Dimension: Development of Multiwavelength Detectors for the Analytical Ultracentrifuge." *Methods in Enzymology* (2015).
29. Yudina, Zinaida, Amanda Roa, Rory Johnson, Nikolaos Biris, Daniel A. de Souza Aranha Vieira, Vladislav Tsiperson, Natalia Reszka et al. "RING Dimerization Links Higher-Order Assembly of TRIM5α to Synthesis of K63-Linked Polyubiquitin." *Cell reports* 12, no. 5 (2015): 788-797.

CIPRES-Enabled Science Publications 2016

Total (including In-Press): 623 inb 2015, 545 to date in 2016.

A complete list can be found here: http://www.phylo.org/index.php/portal/enabled_publications.

NSG-Enabled Science Publications 2016

Total: 22 publications

A complete lists is availalbe from http://www.nsgportal.org/citation.html.

SEAGrid-Enabled Publications 2016

Total: 32

A complete list is available from https://seagrid.org/pages/publications.

SciGaP-Enabled XSEDE and Related Allocations

XSEDE science gateways use community allocations obtained by the PI. CIPRES and SEAGrid encourage power users who will use significant allocation time to obtain personal allocations that can be used through the gateway. These personal allocations are included in the listing below.

Allocation	**Allocation Size (SU)**	**Comments**
SciGaP	200,000	Startup award
UltraScan	893,161 SUs (UltraScan, 2016 XSEDE TG-MCB070039N) 1,000,000 SUs (UltraScan, 2016 UT TG457201 TACC)	XRAC award (2016) TACC UT internal (2016)
NSG	3,813,782.0 Comet 725,896.0 Stampede 157,380.0 Bridges	XRAC award (2016)
CIPRES	3,850,074.87 Gordon 10,665,187.17 Comet 50,000 Jetstream	XRAC award (2016)
Influence of relaxed-clock model (mis)specification on molecular divergence-time estimates	92,227 Gordon 50,000 Stampede 208,000 Comet	CIPRES Allocation for PI Michael May
Conservation genomics of Oreocarya crassipes	50,000 Gordon	CIPRES Allocation for PI James Cohen
Annelid and Cephalopod Phylogenomics	50,000 Gordon	CIPRES Allocation for PI Frank Anderson
Systematics and evolution of a family of ant parasitoids	50,000 Gordon	CIPRES Allocation for PI John Heraty
Parallel Unstructured Mesh Infrastructure: Mark Shephard (RPI), Cameron Smith (RPI)	424,383 Stampede	PHASTA gateway, https://phasta.scigap.org

Computational support for small angle scattering for advanced analyses of structural data in chemical biology and soft condensed matter: Emre Brookes (UTHSCSA)	17,520 Jetstream 50,000 Comet 50,000 Stampede	GenApp and Airavata based gateways to support the NSF-funded CCP-SAS gateway.
Gateway-based flow simulations for remote users: Arne Pearlstein	50,000	ECSS support effort using Apache Airavata, SEAGrid, and GenApp
The Science and Engineering Grid (SEAGrid) Gateway: Sudhakar Pamidighantam	128,568.0 Bridges 2,090,505.0 Comet 1,194,900 Gordon 50,000 Jetstream 664,800 Stampede 100,000 Wrangler	XRAC Allocation (2016)
Chemistry Domain Champion Award: Sudhakar Pamidighantam	200,000 OSG 50,000 SuperMIC 50,000 Comet 50,000 Bridges 50,000 Stampede 50,000 Gordon 50,0000 Jetstream	XSEDE Domain Champion Allocation for Sudhakar Pamidighantam
Prashant Jain, UIUC TG-CHE160018 (Chemistry)	140,000 Stampede 10,000 Bridges	SEAGrid User's XSEDE Allocation
Robert D. Bach, U Delaware TG-CHE160042 (Chemistry)	50,000 Bridges 100,000 Comet 75,000 Gordon	SEAGrid User's XSEDE Allocation
Yassin Jeilani, Spelman College TG-CHE140119 (Chemistry)	20,000 Bridges 30,000 Comet 20,000 Stampede	SEAGrid User's XSEDE Allocation
Iwona Jasiuk, UIUC TG-MSS160009 (Mechanical and Structural Systems)	50,000 Comet	SEAGrid User's XSEDE Allocation
Leticia Velazquez, Rice U TG-TRA140037 (Training)	100,000 Gordon 200,000 Stampede	SEAGrid XSEDE Training Allocation
Ari Berman, BioTeam TG-BIO150051 (Biological	50,000 Gordon 50,000 Stampede	BioTeam Gateway XSEDE Allocation for Airavata-based

Sciences)		science gateway
University of Oklahoma - http://oscer.scigap.org/	N/A	Campus Gateway
University of South Dakota - https://cybergateway.usd.edu/	N/A	Campus Gateway

Grants Awarded to Gateway Users and Collaborators

Awardee	**Award #**	**Amount**	**Comment**
Borries Demeler, UTHSCSA	NIH GM120600	$1,201,700.00	New NIH RO1 8/1/2016-7/31/2020 Funds Multi-wavelength AUC developments
Ari Berman, BioTeam	USDA	$525,000	Working with BioTeam's Bhanu Rekepalli to prototype a gateway using Airavata and PGA for the USDA.
Amitava Majumdar, SDSC	NSF 1458840	$774,000.00	See http://www.nsf.gov/awardsearch/showAward?AWD_ID=1458840. Awarded August 2015.
Google Summer of Code Students	NA	$22,000	Google pays $5,500 directly to mentored students. 4 total students were supported in GSOC 2016. See https://summerofcode.withgoogle.com/.

Andrea Donnellan	NASA ACCESS: Enhanced Access to NASA Heterogeneous Geodetic Imaging Products through GeoGateway Analysis, Modeling, and Response Tools	$947,470.00	Marlon Pierce is a Co-PI
Nancy Wilkins-Diehr	NSF ACI - 1547611	$6,599,000.00	S2I2 Science Gateways Community Institute. Marlon Pierce is a Co-PI

Other Meritorious Activities

These include promotions, awards, recognition, etc given to team members and collaborators.

- IU PTI Science Gateways Research Center: Marlon Pierce has been promoted to be the director of the newly created Science Gateways Research Center, part of the Pervasive Technology Institute. Promotion for Co-PI Suresh Marru is pending.

Operational Metrics

Gateways Using SciGaP Services

SciGaP services are hosted on IU's Quarry Gateway Hosting Service (https://portal.xsede.org/iu-quarry). This list includes only the Gateways using or developing with one or more SciGaP services and does not include gateways using Airavata software elsewhere.

1. UltraScan
2. Neuroscience Gateway
3. CIPRES
4. PGA: http://test-drive.airavata.org. This hosts the PHASTA code gateway as well as several demonstration applications.
5. PHASTA: this is an XSEDE ECSS project to support finite element simulations and uses the PGA. Cameron Smith at RPI is the contact.
6. UltraScan SOMO: gateway for small angle scattering codes usn GenApp front end developed by Emre Brookes, UTHSCSA
7. BioTeam gateway, using PGA and Airavata to support USDA researchers. Bhanu Rekepalli is the point of contact.

8. SEAGrid Science Gateway is revamped from GridChem infrastructure to use Airavata based services.
9. University of South Dakota: https://cybergateway.usd.edu/
10. University of Oklahoma Cybergateway: http://oscer.scigap.org/

The PGA is a reference implementation in PHP of the Airavata API that is used for tutorials and interested gateways are encouraged to reuse. We run a persistent version at https://testdrive.airavata.org.

Number of Users: 15 September 2015 to 15 September 2016

Gateway	**# of Users**
UltraScan	83
CIPRES	8,785
NSG	380
SEAGrid	103

Number of Computational Experiments

The follows totals are for the period September 15, 2015-September 15, 2016

Gateway	**# of Experiments**
UltraScan	451,729 submitted to XSEDE, UTHSCSA, and Juelich resources.
CIPRES	231,765 jobs submitted to XSEDE
NSG	7,193 jobs submitted to XSEDE resources
SEAGrid	24,012 jobs submitted to XSEDE resources

Resources Used

Gateway	**Resources**
UltraScan	Alamo (UTHSCSA), Comet (SDSC), Gordon (SDSC), Jureca (Juelich), Lonestar (TACC), Stampede (XSEDE)
SEAGrid	Karst (IU), Big Red 2 (IU), Comet, Stampede, Bridges, Jetstream,

	and Gordon
NSG	Comet, Stampede, Bridges
CIPRES	Comet, Gordon, TSCC

Airavata Jira Tickets

JIRA Tickets between 15 September 2015 - 15 September 2016.

Type	**Created**	**Closed**
All	272	151
Bugs	164	109
Improvements	35	18
New Features	12	6
Epic/Story/Task/Subtask	58	16
Other	3	2

New Committers and Project Management Committee Members

Committers are contributors who have been granted full access to the Airavata code base. PMC members are committers of merit who have been granted full (binding) voting writes in the project. The following additions were made between September 2015 and September 2016

1. Committers: No new committers
2. PMC Members: Nipurn Doshi

Number of Downloads of Airavata Software

This information is available from https://repository.apache.org/index.html (login required, Apache ID required, more information available on request). During the period of September 2015-September 2016, Airavata had over 310 IP-unique downloads.

Additional available statistics:

- All Airavata mailing lists: http://airavata.markmail.org/
- Airavata Developer mailing list: http://airavata.markmail.org/search/?q=#query:%20list%3Aorg.apache.incubator.airavata-dev+page:1+state:facets

- Airavata Architecture mailing list: http://airavata.markmail.org/search/?q=#query:list%3Aorg.apache.airavata.architecture+page:1+state:facets
- Apache Airavata GitHub mirrors:
    - https://github.com/apache/airavata
    - https://github.com/apache/airavata-php-gateway
- OpenHub Analysis:
    - https://www.openhub.net/p/airavata
    - https://www.openhub.net/p/airavata-php-gateway