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VI-SEEM

VRE for regional Interdisciplinary communities in Southeast Europe and the Eastern Mediterranean

Deliverable D2.6

1st Dissemination, training and marketing report

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Abstract: Deliverable D2.6 – "1st Dissemination, training and marketing report", provides an overview of these activities performed during the first project reporting period.

The VI-SEEM Consortium consists of:

GRNET	Coordinating Contractor	Greece
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Document Revision History

Date	Issue	Author/Editor/Contributor	Summary of main changes
February 21st, 2017	a	Aneta Karaivanova	Initial version of ToC
February 27th, 2017	b	A.Misev, A.Karaivanova	Final version of ToC
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March 30, 2017	e	Aneta Karaivanova	Final

Preface

In the last decade, a number of initiatives were crucial for enabling high-quality research - by providing e-Infrastructure resources, application support and training - in both South East Europe (SEE) and Eastern Mediterranean (EM). They helped reduce the digital divide and brain drain in Europe, by ensuring access to regional e-Infrastructures to new member states, states on path to ascension, and states in European Neighborhood Policy area – in total 14 countries in SEE and 6 in EM.

This VI-SEEM project brings together these e-Infrastructures to build capacity and better utilize synergies, for an improved service provision within a unified Virtual Research Environment (VRE) for the inter-disciplinary scientific user communities in the combined SEE and EM regions (SEEM). The overall objective is to provide user-friendly integrated e-Infrastructure platform for regional cross-border Scientific Communities in Climatology, Life Sciences, and Cultural Heritage for the SEEM region; by linking compute, data, and visualization resources, as well as services, models, software and tools. This VRE aspires to provide the scientists and researchers with the support in full lifecycle of collaborative research: accessing and sharing relevant research data, using it with provided codes and tools to carry out new experiments and simulations on large-scale e-Infrastructures, and producing new knowledge and data - which can be stored and shared in the same VRE. Climatology and Life Science communities are directly relevant for Societal Challenges.

The driving ambition of this proposal is to maintain leadership in enabling e-Infrastructure based research and innovation in the region for the 3 strategic regional user communities: supporting multidisciplinary solutions, advancing their research, and bridging the development gap with the rest of Europe. The VI-SEEM consortium brings together e-Infrastructure operators and Scientific Communities in a common endeavor.

The overall objective is to provide user-friendly integrated e-Infrastructure platform for Scientific Communities in Climatology, Life Sciences, and Cultural Heritage for the SEEM region; by linking compute, data, and visualization resources, as well as services, software and tools.

The detailed objectives of the VI-SEEM project are:

1. Provide scientists with access to state of the art e-Infrastructure - computing, storage and connectivity resources - available in the region; and promote additional resources across the region.
2. Integrate the underlying e-Infrastructure layers with generic/standardised as well as domain-specific services for the region. The latter are leveraging on existing tools (including visualization) with additional features being co-developed and co-operated by the Scientific Communities and the e-Infrastructure providers, thus proving integrated VRE environments.
3. Promote capacity building in the region and foster interdisciplinary approaches.
4. Provide functions allowing for data management for the selected Scientific Communities, engage the full data management lifecycle, link data across the region, provide data interoperability across disciplines.
5. Provide adequate user support and training programmes for the user communities in the SEEM region.
6. Bring high level expertise in e-Infrastructure utilization to enable research activities of international standing in the selected fields of Climatology, Life Sciences and Cultural Heritage.

The VI-SEEM project kicked-off in October 2015 and is planned to be completed by September 2018. It is coordinated by GRNET with 15 contractors from Cyprus, Bulgaria, Serbia, Hungary, Romania, Albania, Bosnia-Herzegovina, FYR of Macedonia, Montenegro, Moldova (Republic of), Armenia, Georgia, Egypt, Israel, Jordan. The total budget is 3.300.000 €. The project is funded by the European Commission's Horizon 2020 Programme for Excellence in Science, e-Infrastructure.

The project plans to issue the following deliverables:

Del. no.	Deliverable name	Nature	Security	Planned Delivery
D1.1	Project management information system and "grant agreement" relationships	R	CO	M01
D1.2	3-Monthly progress report	R	CO	M03n *
D1.3a	First period progress reports	R	CO	M18
D1.3b	Final period progress reports	R	CO	M36
D2.1	Internal and external communication platform, docs repository and mailing lists	DEC	PU	M02
D2.2	Promotional package	DEC	PU	M04
D2.3	Dissemination and marketing plan	R	PU	M05
D2.4	Training plan	R	PU	M06
D2.5	Promotional package with updates	R	PU	M16
D2.6	1st Dissemination, training and marketing report	DEC	PU	M18
D2.7	2nd Dissemination, training and marketing report	R	PU	M35
D3.1	Infrastructure and services deployment plan	R	PU	M04
D3.2	Service registry, operational and service level monitoring	R	PU	M12
D3.3	Infrastructure overview, assessment and refinement plan	R	PU	M18
D3.4	VRE AAI Model and compatibility with other eInfrastructures	R	PU	M27
D3.5	Final infrastructure overview and assessment report	R	PU	M36
D4.1	Data sources and services deployment plan	R	PU	M06
D4.2	Description of the initial deployed data services	R	PU	M11
D4.3	Description of the final data platform available to VRE users	R	PU	M23
D4.4	Final report on data, services, availability and usage	R	PU	M35
D5.1	Detailed technical implementation plan for VRE services and tools	R	PU	M04
D5.2	Data management plans	R	PU	M06

D5.3	User-oriented documentation and training material for VRE services	R	PU	M13
D5.4	Report on integrated services and the VRE platform	R	PU	M14
D5.5	Final report on integrated services and the VRE platform	R	PU	M36
D6.1	Framework for VRE resource and service provision	R	PU	M09
D6.2	1st Report of open calls and integration support	R	PU	M20
D6.3	Sustainability and business model	R	PU	M24
D6.4	2nd Report of open calls and integration support	R	PU	M36

Legend: R = Document, report, DEC = Websites, patent fillings, videos, etc., PU = Public, CO = Confidential, only for members of the consortium (including the Commission Services).

**n=1,2,3,…12*

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References

[1] Project VI-SEEM-675121 - Annex I - Description of the action

[2] Project VI-SEEM-675121 – D2.1 Internal and external communication platform, docs repository and mailing lists

[3] Project VI-SEEM-675121 – D2.2 Promotional package

[4] Project VI-SEEM-675121 – D2.3 Dissemination and marketing plan

[5] Project VI-SEEM-675121 – D2.4 Training plan

[6] Project VI-SEEM-675121 – D2.5 Promotional package with updates

[7] VI-SEEM official website, https://vi-seem.eu/

[8] VI-SEEM VRE portal, https://vre.vi-seem.eu/

[9] VI-SEEM training portal, https://training.vi-seem.eu/

[10] VI-SEEM Wiki, https://wiki.vi-seem.eu/index.php/Main_Page

[11] VI-SEEM agenda system, https://events.hpc.grnet.gr/

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Glossary

CC	Climate community
DCH	Digital cultural heritage
EM	Eastern Mediterranean
GPU	Graphics processing units
HPC	High Performance Computing
KPI	Key Performance Indicator
LS	Life science
MMAC	Mathematical Modeling and Advanced Computing
PM	Project Month
PRACE	Partnership for Advanced Computing in Europe
PSC	Project Steering Committee
SEEM	South East Europe and Eastern Mediterranean
SESAME-NET	Supercomputing Expertise for SmAll & Medium Enterprise NETwork
SME	Small and medium-sized enterprise
VI-SEEM	VRE for regional Interdisciplinary communities in Southeast and the Eastern Mediterranean
VRE	Virtual Research Environment
WP	Work Package

Executive summary

What is the focus of this Deliverable?

Deliverable D2.6 “1st Dissemination, training and marketing report” represents the first report of the VI-SEEM dissemination, training and marketing activities. The focus of this deliverable is to provide a detailed overview of the training, dissemination and marketing results during the first half of the VI-SEEM project. D2.6 also presents innovation activities and the innovation results. D2.6 shows statistics about the dissemination and training events that are organized by the VI-SEEM project, as well as the ones with VI-SEEM presence. It gives an overview about the dissemination and use materials, web presence, standardized training materials and dissemination and training tools and documents.

What is next in the process to deliver the VI-SEEM results?

The conclusions and recommendations from this deliverable will help improve the future dissemination, training and marketing activities in all partner countries during the second project half. It will help to further enhance the quality of the dissemination and training events. The initial dissemination, training and marketing plans defined in project deliverables D2.3 and D2.4 will be refined according to the project needs. The dissemination and training materials, web pages and communication channels will continue to be regularly updated and kept active.

What are the deliverable contents?

The contents of this deliverable are:

- dissemination and use material produced (brochure, poster, presentation, scientific papers and media presence), VI-SEEM official web site [7], VI-SEEM VRE portal [8], VI-SEEM training portal [9] and VI-SEEM wiki pages [10];
- overview of the regional and national level dissemination and training events organized by VI-SEEM consortium as well as the overview of the related events with VI-SEEM presence;
- overview of project innovation management and brief presentation of innovative project developments;
- presentation of marketing activities during the period.

The document finishes with the conclusion which summarizes the results of this deliverable.

Conclusions and recommendations

The presented dissemination, training and marketing activities reported for the first 18 months of the project are in-line with the Annex-I - Description of Work [1] and the initial dissemination, marketing and training plans presented in project deliverables D2.3 [4] and D2.4 [5]. These plans are further updated according to the needs of targeted Scientific Communities (DCH, LS and CC).

Trainings, dissemination and marketing events are organized by the project consortium at a national and regional level enabling the users to efficiently access and use the Virtual Research Environment developed by the project. Reusable training material is made available in the Training portal and it is based on the presentations given during VI-SEEM trainings as well as on the external material available from other related initiatives.

The VI-SEEM web pages, portals and wiki along with social media and additional online tools are an important medium for dissemination the project information and marketing of the project results, and for communicating ideas, materials and best practices.

Innovation strategy and planned activities developed by the project presented initially in D2.3 resulted in 9 project innovative developments, described in the project innovation register, and briefly presented in D2.6.

1. Introduction

Deliverable D2.6 “1st Dissemination, training and marketing report” is the sixth deliverable in the framework of the VI-SEEM activity WP2 “Communication, Marketing, Training and Innovation”. This activity has to provide platform for networking, collaboration and training for the users from 3 target communities (DCH, LS and CC). It deals with the project and its VRE services, dissemination and marketing functions, organises and delivers dissemination and training events, and supports innovation management functions. The work started from the first day of project lifetime and some of the accomplishments are already documented in the following deliverables: D2.1 “Internal and external communication platform, docs repository and mailing lists” [2], D2.2 “Promotional package” [3], D2.3 “Dissemination and marketing plan” [4], D2.4 “Training plan” [5] and D2.5 “Promotional package with updates” [6].

The overall ambition of this activity is to stimulate the VRE services take-up and ease of end-user access to the services through broad range of training, dissemination, marketing, and outreach communication activities. The dissemination aims to go beyond researchers and scientists, including the general public, government officials, academic senior staff, industries/SMEs, and other key players. Our aim is to speed up significantly the learning (or incubation) process of new users and application developers, raise the regional expertise and end-user adoption, and manage the innovative project and community developments. We have developed and now we are implementing a comprehensive VRE-specific training program, aiming to enable end users for seamless and efficient use the underlying data, resources and services.

The deliverable D2.6 “1st Dissemination, training and marketing report” represents the first report VI-SEEM dissemination, training and marketing activities during the first half of the VI-SEEM project. D2.6 also presents innovation activities and the innovation results. The document is organized as follows: After a short introduction, summary of dissemination activities which includes overview of the dissemination and use material, the project web presence, short description of main dissemination events, is presented. The next chapter presents training activities with their planning and implementation, training material and organization, and short descriptions of regional, national and related training events. Chapter 4 presents results of implementation of the innovation strategy developed by the project and describes the project innovative developments. The final chapter contains overview of the marketing activities complimentary to the dissemination activities, and reports on the implementation. The document ends with conclusions which present the quality metrics implementation and gives recommendations for the second project period.

2. Dissemination activities’ summary

The VI-SEEM dissemination activities spread awareness of the VI-SEEM project in the region, encourage human networking within the VRE community and beyond, promote widespread VI-SEEM infrastructure and services, and disseminate the achieved scientific results. The target audiences in the region are broad, and range from the three scientific communities (Digital Cultural Heritage, Climate, and Life Sciences), other interested R&E communities and researchers, general public and policy makers. Dissemination is carried out trough organizing dissemination events (regional and national), setting up and maintaining communication channels and developing, updating and expanding content-rich web portals. VI-SEEM also uses social media to disseminate main results of the project. In addition to this, dissemination is organized by public lectures and participation of VI-SEEM team members at events related to the popularization of science, by interview in the press, participation in scientific conferences etc.

2.1. Dissemination and use materials

2.1.1. Project brochure, poster and presentation

The VI-SEEM brochure, poster and presentation constitute the project core promotional package, an essential tool for the implementation of its strategic communication and marketing plan. The core presentation has been updated so as to reflect the project progress and to communicate its results to the respective target audiences.

The promotional package has been distributed to the VI-SEEM partners for further dissemination through their local channels.

The material is built on a common graphic style that reflects an effective visual brand identity.

The project promotional package together with additional dissemination material such as press releases, newsletters and power point presentations are significant for maximizing the effectiveness of the VI-SEEM expected outcomes.

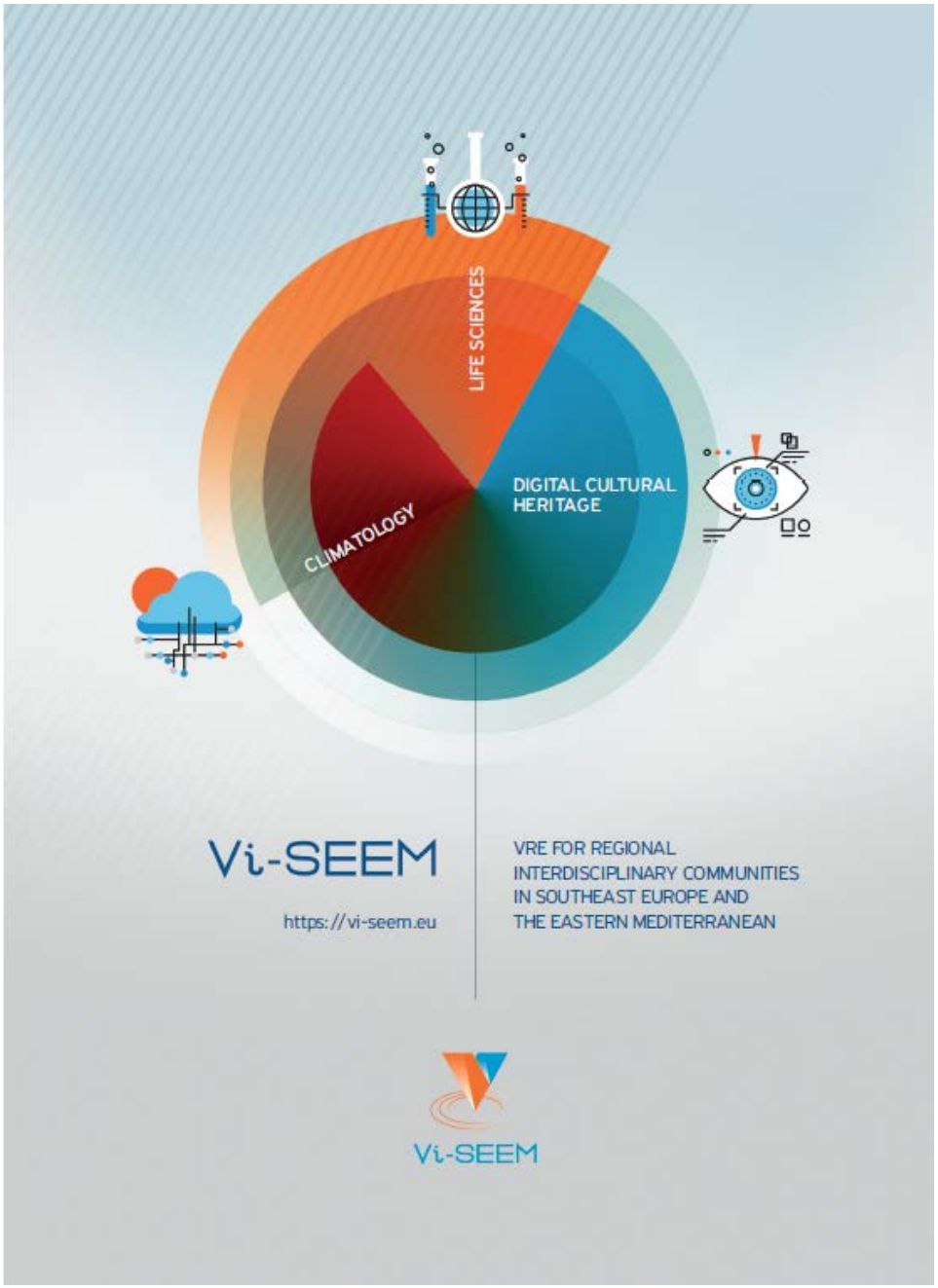

Figure 1: Cover page of the VI-SEEM brochure

The VI-SEEM brochure consists of attractive graphics combined with well-structured text that provides an overview of the project, its administrative data, and information on its objectives and the target user communities. It also describes the envisaged project impact on the target scientific communities in the region.

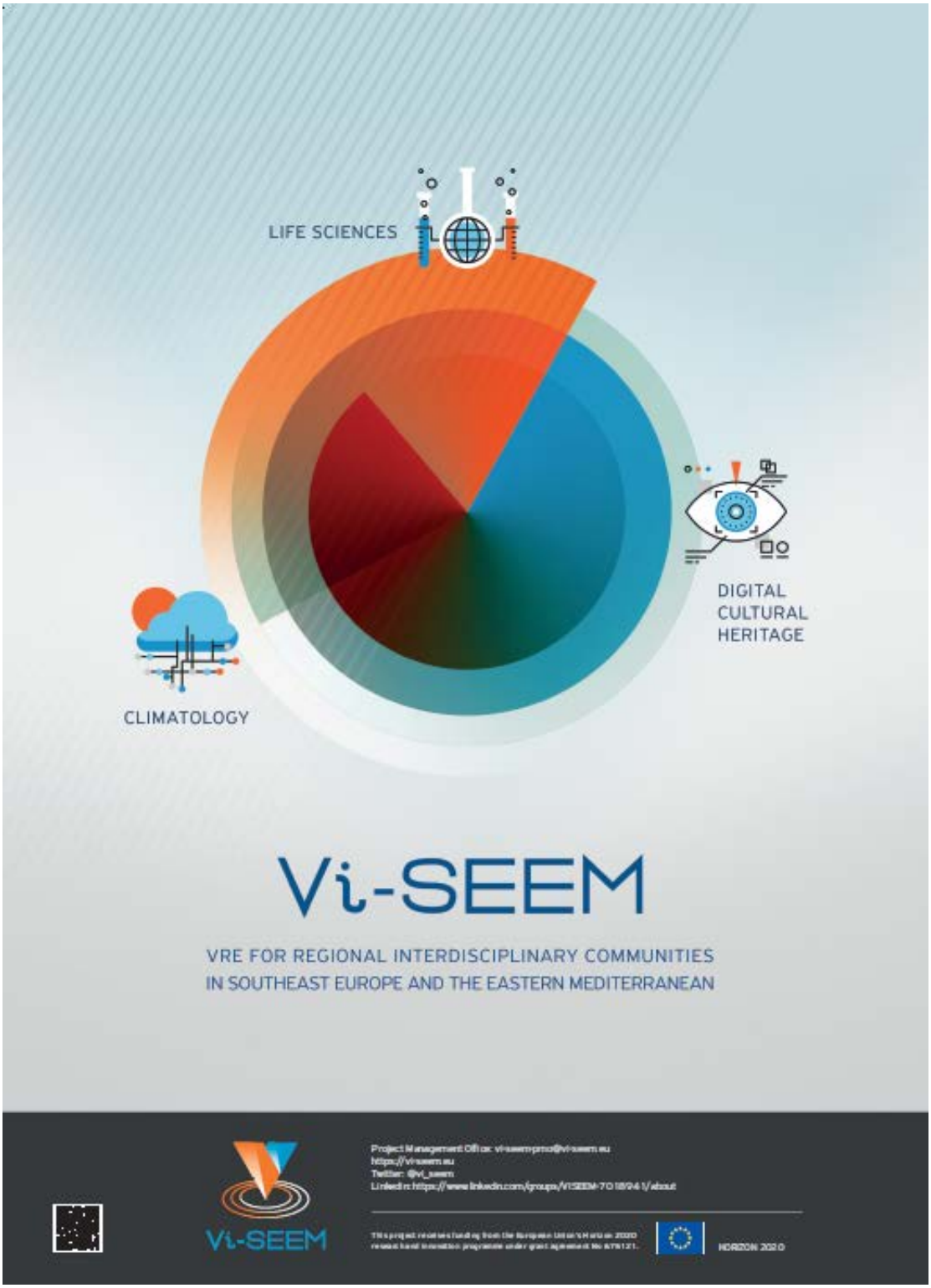

Figure 2: The VI-SEEM poster

The poster has been used in several events organized or attended by VI-SEEM members. It is an integral element of the project's core dissemination package that enhances the VI-SEEM brand identity.

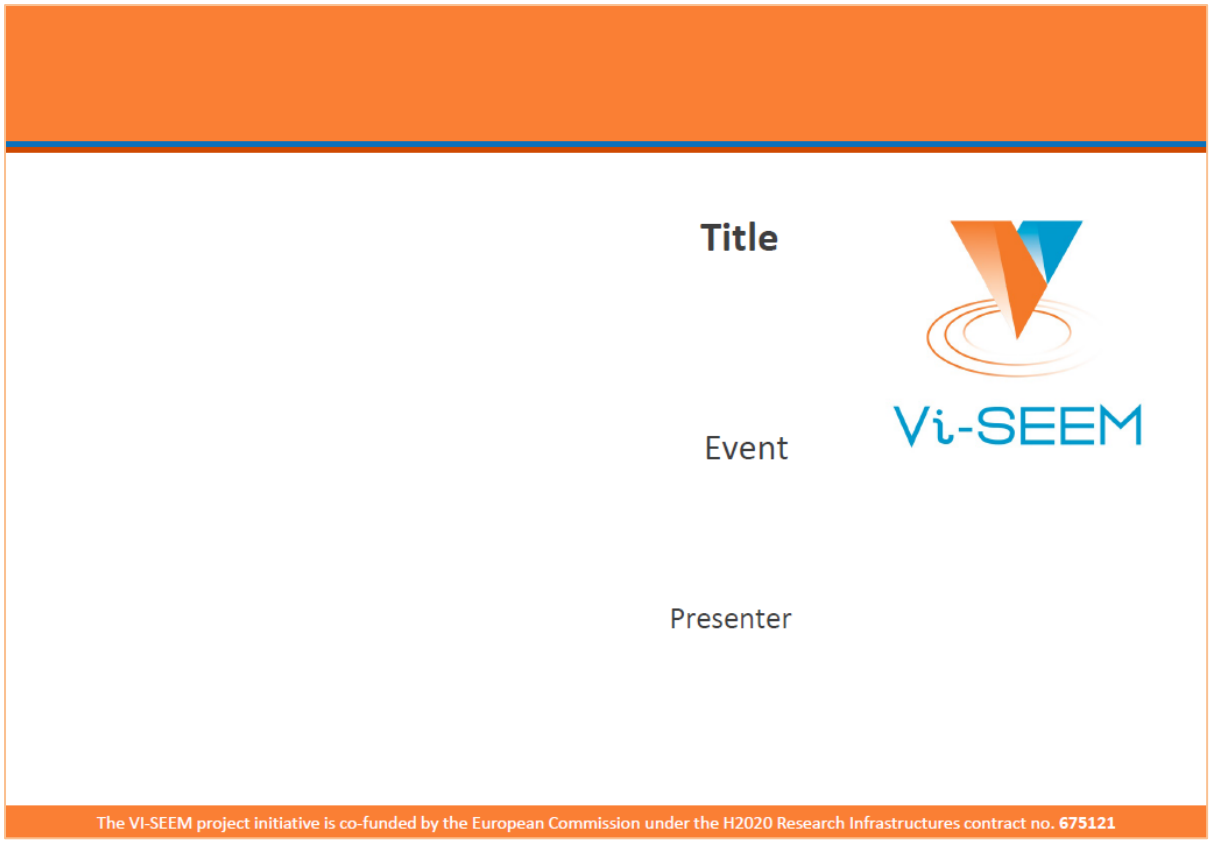

Figure 3: Cover slide of the VI-SEEM presentation

The VI-SEEM core presentation provides an overview of the project, its objectives, structure and activities. It describes the project service catalogue, the available e-Infrastructure services and resources, as well as applications of the VI-SEEM virtual scientific communities. The presentation has been already used in a number of events, and it is gradually updated to follow the project progress.

2.1.2. Project newsletter

VI-SEEM has released two newsletters via email campaigns that reached more than 1,000 recipients, specifically:

- Contacts from the South East and Eastern Mediterranean region, including universities, research centers and public bodies
- EC services and policy makers
- Related portals and newsletters of global coverage
- Related projects and collaborations

Further dissemination of the VI-SEEM news has been achieved through the GÉANT PeaR, the news service by and for the research and education networking community

http://www.geant.org/News_and_Events/News/Pages/pear-community-news.aspx

Figure 4: VI-SEEM newsletter #01

The newsletter design supports and signifies the brand identity of the project. It is built on a specific and consistent graphic style that reflects the project brand.

Newsletter #01, June 2016

http://us13.campaign-archive2.com/?u=d1f2abf0a4402811d2eb843be&id=199695f183

Newsletter #2, November 2016

http://us13.campaign-archive1.com/?u=d1f2abf0a4402811d2eb843be&id=195bbb2c0e

2.1.3. Media presence

Social media:

- LinkedIn: Social media channels were used to increase the visibility of the VI-SEEM project among both scientific and general community. Initially, there was a VI-SEEM group created on LinkedIn, but for better presence we switched to the VI-SEEM company page. The page is used to promote important project activities and events (such as trainings and dissemination events). It is also used to present the partnering institutions and their current significant achievements related to the VI-SEEM project and its research communities. The updates are done on a monthly basis.
- Twitter: With Twitter we try to be fast and engaging. Tweeting from conferences and events is still a great way to engage people who are not at the event. In between events we select relevant community news to tweet about. Tweets by @vi_seem are also posted at the main project web site.

Online media, TV and newspapers:

- (IICT) TV interview on NovaTV (one of the 3 national TVs in Bulgaria), 19.02.2017, with Assoc. Prof. E. Atanassov about the supercomputer system "Avitohol" and applications in climatology and air pollution: https://nova.bg/news/view/2017/02/19/174336/%D1%81%D1%83%D0%BF%D0%B5%D1%80%D0%BA%D0%BE%D0%BC%D0%BF%D1%8E%D1%82%D1%8A%D1%80-%D1%89%D0%B5-%D0%B1%D0%BE%D1%80%D0%B8-%D0%BC%D1%80%D1%8A%D1%81%D0%BD%D0%B8%D1%8F-%D0%B2%D1%8A%D0%B7%D0%B4%D1%83%D1%85/
- (IICT) Publications in online media about supercomputer Avitohol and applications:
  - trud.bg (16.02.2017): https://trud.bg/%D1%81%D1%83%D0%BF%D0%B5%D1%80%D0%BA%D0%BE%D0%BC%D0%BF%D1%8E%D1%82%D1%8A%D1%80-%D0%B1%D0%BE%D1%80%D0%B8-%D0%BC%D1%80%D1%8A%D1%81%D0%BD%D0%B8%D1%8F-%D0%B2%D1%8A%D0%B7%D0%B4%D1%83%D1%85-%D0%B2-%D1%81/
  - BNews.bg (17.02.2017): http://www.bnews.bg/article/222867-superkompyutar_shte_preduprezhdava_za_mrasen_vazduh_v_stolitsata
  - Dnes.dir.bg(17.02.2017): http://dnes.dir.bg/news/sofia--vasduh-zamarsjavane-kazusat-dnite-25280584
  - Novini.bg (19.02.2017) http://www.novini.bg/news/407730-%D1%81%D1%83%D0%BF%D0%B5%D1%80%D0%BA%D0%BE%D0%BC%D0%BF%D1%8E%D1%82%D1%8A%D1%80-%D1%89%D0%B5-%D0%B1%D0%BE%D1%80%D0%B8-%D0%BC%D1%80%D1%8A%D1%81%D0%BD%D0%B8%D1%8F-%D0%B2%D1%8A%D0%B7%D0%B4%D1%83%D1%85.html
  - Ekonovini.bg (22.02.2017) http://ekonovini.bg/bg/supermashinata-avitohol-shte-prognozira-nivoto-na-finite-prahovi-chastitsi-v-balgariya/

2.1.4. Scientific papers

During the reported period 24 scientific papers were published, 14 of them in open access journals (58%). The papers are divided in two categories: VI-SEEM research-oriented papers and VI-SEEM service-related papers. Each paper with an acknowledgement to VI-SEEM describes a service, method, algorithm, tool, approach, experience, benchmark, related to the project - useful for the project, or using project results. The papers are accessible through vi-seem.eu [7] - https://vi-seem.eu/category/events-training/scientific-papers/, and through local sites.

The list of papers is divided in two groups:

(1) VI-SEEM research-oriented papers:

1. A.H. Poghosyan, L.H. Arsenyan, A.A. Shahinyan, J. Koetz, Polyethyleneimine Loaded Inverse SDS Micelle in Pentanol/Toluene Media, Colloids and Surfaces A: Physicochemical and Engineering Aspects. 506 (2016), 402-408 (OPEN ACCESS), www.sciencedirect.com/science/journal/09277757/506/supp/C2.
2. Hrachya Astsatryan, Zaruhi Petrosyan, Rita Abrahamyan, Anna Shahnazaryan, Vladimir Sahakyan, Yuri Shoukourian, Hamlet Melkonyan, Vassiliki Kotroni, WRF-ARW Model for the Prediction of High Temperatures in South and South East Regions of Armenia, 11th IEEE eScience Conference, Munich, Germany, 31 August – 04 September, 2015, pp. 207-113, DOI 10.1109/eScience.2015.82.
3. Vladimir Risojević, "Analysis of Learned Features for Remote Sensing Image Classification", Proc. 13th Symposium on Neural Network Applications in Electrical Engineering NEUREL 2016, Belgrade, Serbia, pp. 151-156, November 2016.
4. E. Atanassov, T. Gurov, A. Karaivanova, S. Ivanovska, M. Durchova and D. Dimitrov, On the Parallelization Approaches for Intel MIC Architecture, Citation: AIP Conf. Proc. 1773, 070001 (2016), http://dx.doi.org/10.1063/1.4964983, (OPEN ACCESS)
5. Atanassov, E., Karaivanova, A., Gurov, T., "Services And Infrastructure For Virtual Research Environments - For Use By Science And Business", International Scientific Journal Industry 4.0, Issue 2, 2016, pp. 110-113, Published by Sci Tech Union of Mechanical Engineering, ISSN:2543-8582, (open access) http://stumejournals.com/i4/2016/2-2016.pdf. (OPEN ACCESS)
6. S. Nikolova, D. Toneva, I. Georgiev, Y. Yordanov, N. Lazarov, "Two cases of large bregmatic bone along with a persistent metopic suture from necropoles on the northern Black Sea coast of Bulgaria", Anthropological Scieence, vol. 124 (2) (2016), pp. 145-153, https://www.jstage.jst.go.jp/article/ase/124/2/124_160530/_pdf (OPEN ACCESS)
7. T. Christoudias, M. Alvanos, Accelerated chemical kinetics in the EMAC chemistry-climate model, In Proceedings of HPCS 2016, http://dx.doi.org/10.1109/HPCSim.201
8. S. Stoykov, E. Atanassov, and S. Margenov, Efficient sparse matrix-matrix multiplication for computing periodic responses by shooting method on Intel Xeon Phi, Citation: AIP Conference Proceedings 1773, 110012 (2016); http://dx.doi.org/10.1063/1.4965016 (OPEN ACCESS)

9. T. Davitashvili, N. Kutaladze, R. Kvatadze, G. Mikuchadze, Z. Modebadze, I. Samkharadze, Precipitations Prediction by Different Physics of WRF Model, International Journal of Environmental Science Volume 1, 2016 pp 294-299
10. Anastas Mishev. "Bridging the computer and life sciences: the case of VI-SEEM". Macedonian pharmaceutical bulletin, short communications from the Sixth Congress of Pharmacyin Macedonia with International participation, 62 (suppl) 27 - 29 (2016) ISSN 1409 - 8695 UDC: 004.7 (OPEN ACCESS)
11. Bojana Koteska, Anastas Mishev, Ljupco Pejov, Maja Simonoska Crcarevska, Jasmina Tonic Ribarska, and Marija Glavas Dodov. "Computational Vibrational Spectroscopy of Hydrophilic Drug Irinotecan", SIMUL 2016 Conference, Rome, Italy, August 21-25, 2016, pp. 11-16, ISBN 978-1-61208-501-2 (OPEN ACCESS)
12. A. Golubev, P. Bogatencov, G. Secrieru. Updating DICOM Network Architecture for its Integration at International Level. Networking in Education and Research, 15th RoEduNet IEEE International Conference, Bucharest, Romania, 7-9 September 2016, pp. 161-166. ISSN 2068-1038;

(2) VI-SEEM service oriented papers:

13. Hrachya Astsatryan, Vladimir Sahakyan, Yuri Shoukourian, Pierre-Henri Cros, Michel Dayde, Jack Dongarra, Per Oster, Strengthening Compute and Data intensive Capacities of Armenia, IEEE Proceedings of 14th RoEduNet International Conference - Networking in Education and Research (NER'2015), Craiova, Romania, pp. 28-33, September 24-26 2015, DOI: 10.1109/RoEduNet.2015.7311823.
14. A. Radenski, T. Gurov, et al., "Big Data Techniques, Systems, Applications, and Platforms: Case Studies from Academia", in: "Annals of Computer Science and Information Systems", Volume 8, "Proceedings of the 2016 Federated Conference on Computer Science and Information Systems" FedCSIS'16, pp. 883 – 888, Sep, 2016. DOI: http://dx.doi.org/10.15439/978-83-60810-90-3 (OPEN ACCESS)
15. V. Kyovtorov, I. Georgiev, S. Margenov, D. Stoychev, F. Oliveri, D. Tarchi, "New antenna design approach – 3D polymer printing and metallization. experimental test at 14–18 GHz", AEU-International Journal of Electronics and Communications, Volume 73, March 2017, Pages 119–128, http://www.sciencedirect.com/science/article/pii/S1434841116315643 (OPEN ACCESS)
16. P. Bogatencov, G. Secrieru, N. Degteariov and N. Iliuha. Scientific Computing Infrastructure and Services in Moldova. In Journal "Physics of Particles and Nuclei Letters" (SpringerLink online: 04 September 2016, DOI: 10.1134/S1547477116050125), http://link.springer.com/journal/11497/13/5/page/2. (OPEN ACCESS)
17. I. Vasic and A. Balaz: "Excitation Spectra of a Bose-Einstein Condensate with an Angular Spin-orbit Coupling"; Phys. Rev. A 94 (2016) 033627; doi: 10.1103/PhysRevA.94.033627; arxiv: 1602.03538 (OPEN ACCESS)
18. R. Messina and I. E. Stankovic: "Assembly of Magnetic Spheres in Strong Homogeneous Magnetic Field"; Physica A 466 (2017) 10; doi: 10.1016/j.physa.2016.08.079; arxiv: 1602.00861 (OPEN ACCESS)

19. M. Mladenovic and N. Vukmirovic: "Spontaneous Polarization Induced by Side Chains in Ordered Poly(3-hexylthiophene)"; J. Phys. Chem. C 120 (2016) 18895; doi: 10.1021/acs.jpcc.6b05551
20. Lj. Budinski-Petkovic, I. Loncarevic, Z. M. Jaksic and S. B. Vrhovac: "Jamming and Percolation in Random Sequential Adsorption of Extended Objects on a Triangular Lattice with Quenched Impurities"; J. Stat. Mech.-Theory Exp. 2016 (2016) 053101; doi: 10.1088/1742-5468/2016/05/053101
21. T. Mertz, I. Vasic, M. J. Hartmann and W. Hofstetter: "Photonic currents in driven and dissipative resonator lattices"; Phys. Rev. A 94 (2016) 013809; doi: 10.1103/PhysRevA.94.013809; arxiv: 1601.07451 (OPEN ACCESS)
22. Z. Gacevic, N. Vukmirovic, N. Garcia-Lepetit, A. Torres-Pardo, M. Muller, S. Metzner, S. Albert, Z. A. Bengoechea-Encabo, F. Bertram, P. Veit, J. Christen, J. M. Gonzalez-Calbet and E. Calleja: "Influence of Composition, Strain, and Electric Field Anisotropy on Different Emission Colors and Recombination Dynamics from InGaN Nanodisks in Pencil-like GaN Nanowires"; Phys. Rev. B 93 (2016) 125436; doi: 10.1103/PhysRevB.93.125436
23. I. E. Stankovic, M. Dasic and R. Messina: "Structure and Cohesive Energy of Dipolar Helices"; Soft Matter 12 (2016) 3056; doi: 10.1039/C5SM02774H, http://www.scl.rs/papers/Stankovic_SoftMatter2016.pdf
24. M. Opacic, N. Lazarevic, M. M. Radonjic, M. Scepanovic, H. Ryu, A. Wang, D. Tanaskovic, C. Petrovic and Z. V. Popovic: "Raman Spectroscopy of KxCo2–y Se2 Single Crystals Near the Ferromagnet–paramagnet Transition"; J. Phys. Cond. Matt. 28 (2016) 485401; doi: 10.1088/0953-8984/28/48/485401; arxiv: 1605.05871 (OPEN ACCESS)
25. W. van Gerven Oei, D.Tanaskovic and R. Zitko: "Magnetic Impurities in Spin-split Superconductors", Phys. Rev. B 95 (2017) 085115; doi: 10.1103/PhysRevB.95.085115; arxiv: 1611.08442 (OPEN ACCESS)

2.2. VI-SEEM web presence

2.2.1. Official VI-SEEM web site

VI-SEEM official website is an essential part of the communication infrastructure as it is the focal point for all the project information and links regarding the VI-SEEM objectives, activities, events, available infrastructure - networking, computing and storage resources, VRE services, applications, etc.. The website is accessible via https://vi-seem.eu.

The homepage features the latest news and provides direct links to the project training portal and Virtual Research environment.

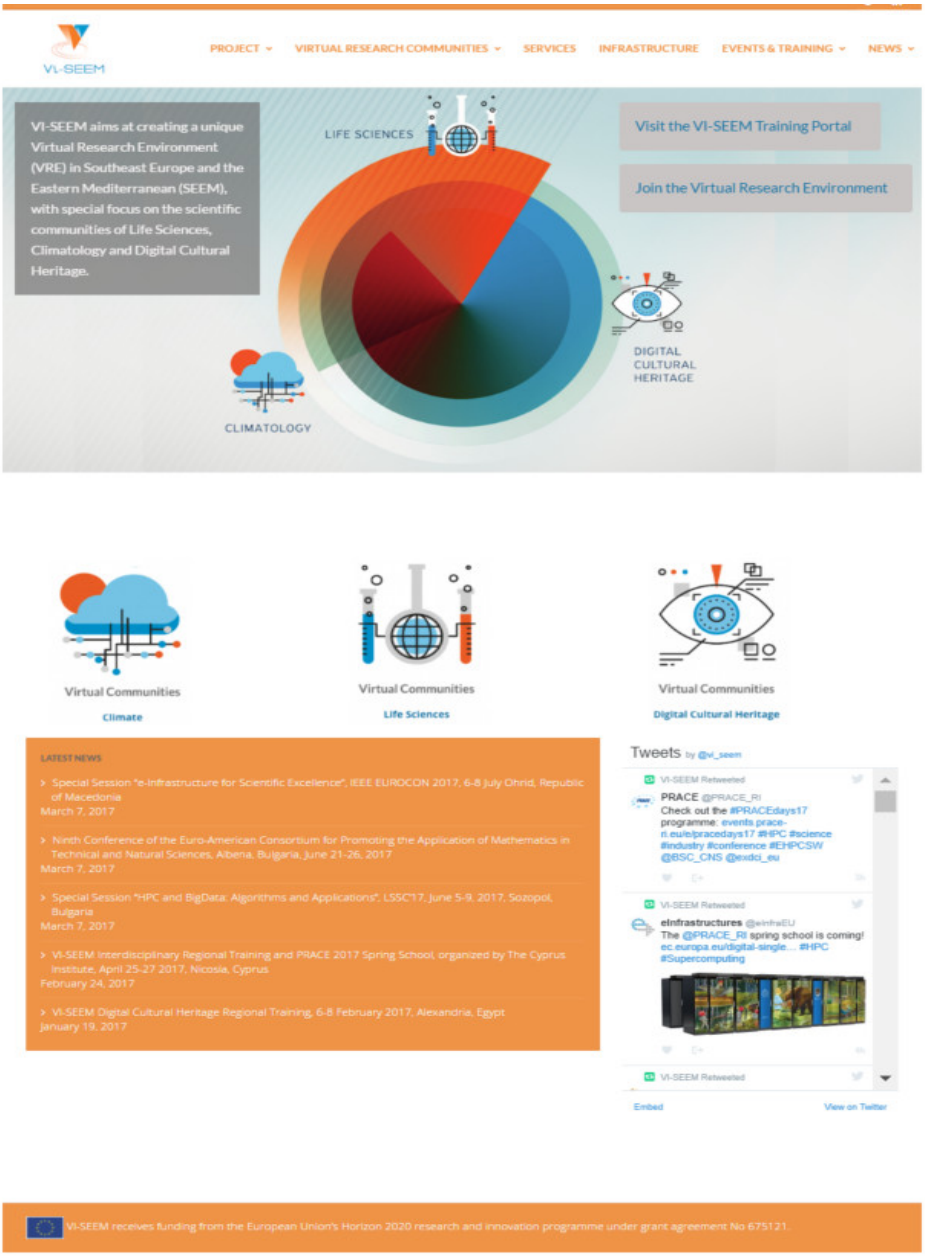

Figure 5: VI-SEEM-portal homepage

2.2.2. VI-SEEM VRE portal

The VI-SEEM VRE portal can be accessed through the official project web site or via a web-browser by entering the url: https://vre.vi-seem.eu/ which directs the user to the VRE homepage (Figure 6). The VRE homepage provides an easy access to the VI–SEEM resources and the Virtual Communities through distinctly annotated images and buttons. These links direct the user to the relevant sections of the VRE–portal, the VI–SEEM training portal and other pages related to VI–SEEM. Through the VRE–portal homepage, a user can access all the available information and services provided by the VI-SEEM Virtual Research Environment.

Figure 6: VRE portal homepage

The VRE menu which is depicted on the top of Figure 6 and under the header, is structured in a way that provides instant access to the different information available to the VRE users.

2.2.3. VI-SEEM training portal

The VI-SEEM training portal is built using the Joomla content management system coupled with an Apache webserver and a MySQL Database. An SSL certificate is also installed to allow for secure connections between guests of the training portal and the web server.

The training portal is hosted by The Cyprus Institute upon a Docker container which runs in a virtual machine and since its first deployment has had about 98% uptime.

The training portal can be found at https://training.vi-seem.eu/ and is organized into the following main menu sections:

- *Cloud*: This link directs the user to the list of topics that he/she can consider when considering Cloud.
- *Data*: This button directs the user to the list of material related to Data.

- *Domain Specific Software and Tools*: This section is further organized to the three sections:
    - *Climate Software and tools*: This link directs the user to a list of material he/she can consider for the case of Climate Sciences.
    - *Digital Cultural Heritage Software and tools*: This link directs the user to a list of entries useful when consider the Digital Cultural Heritage.
    - *Life Science Software and tools*: This button lists a whole sets of topics a user could consider when considering Life Science Software.
- *HPC*: This is further organized to:
    - *Practical HPC*: This is further organized to:
        - *Super Computer Basics*: This link directs the user to content which helps guide people who have never used a supercomputer before and can explain the very basics of what parallel computing is, basic Linux commands and how to log on and use the educational supercomputer.
        - *Scripting*: The content of this link help users to write scripts.
        - *Version Control*: This link provides information on how to use Version Control Software such as git.
        - *Parallel Tools Platform*: This option provides an integrated development environment to support the development of parallel applications written in C, C++, and Fortran.
    - *Development*: This button directs the user to a list with a whole set of topics one can consider when working in HPC Development. This is further organised to
        - *Programming*: This includes information on "Introduction to C++", "Introduction to C" and "Introduction to Fortran".
        - *Python*: This link includes topics such as "Introduction to Python – Part 1", "Introduction to Python – Part 2", "Python Unit - Testing", "Python for High Performance".
        - *OpenMP*: This link provides information on the use of OpenMP parallelization.
        - *MPI*: This link provides information on the use of MPI parallelization.
        - *GPU programming*: This button directs the user to a list of topics useful for an introduction to General-Purpose computing on graphics processing units.
    - *Improvement*: This is further organized to:
        - *Performance Analysis*: This link provides access to a list of topics related to Performance Analysis.
        - *Code Improvement and Debugging*: This button provides a whole set of topics that the user could consider when working on improving the performance of an application.
    - *Applications*: In this option we list a whole set of topics that you could consider when considering different practical applications of HPC.
- *GRID*: This link directs a user to a list with a whole set of topics that you could consider when working with Grid.
- *Scientific Visualization*: This option directs the user to a webpage with all the necessary information on the visualization of three-dimensional phenomena (architectural, meteorological, medical, biological, etc.).

- *Storage Services*: This link directs the user to all the information he/she needs to know when considering Storage Services.
- *Trainings*: This button directs the user to the "VI-SEEM training events webpage" with url: http://events.hpc.grnet.gr/category/5/.

Each of the above sections and their relative sub-sections includes recommended material on the given subjects. Most of the material are linked by the training portal – meaning that the material is in general not hosted by the training portal but instead the training portal provides the links where the material can be found.

The "Trainings" section of the main menu lists all the VI-SEEM training events that have taken place so far and includes links to their relative page on the VI-SEEM events website.

A snapshot of the training portal home page can be seen below:

Figure 7: VI-SEEM Training Portal Homepage

As can be seen, the home page includes icons for all the main menu sections of the training portal.

Google analytics has also been enabled since the end of October on the training portal so as to monitor the visits. The figure below (Figure 8) provides training portal visit statistics for the period of October 25 2016 – March 5 2017.

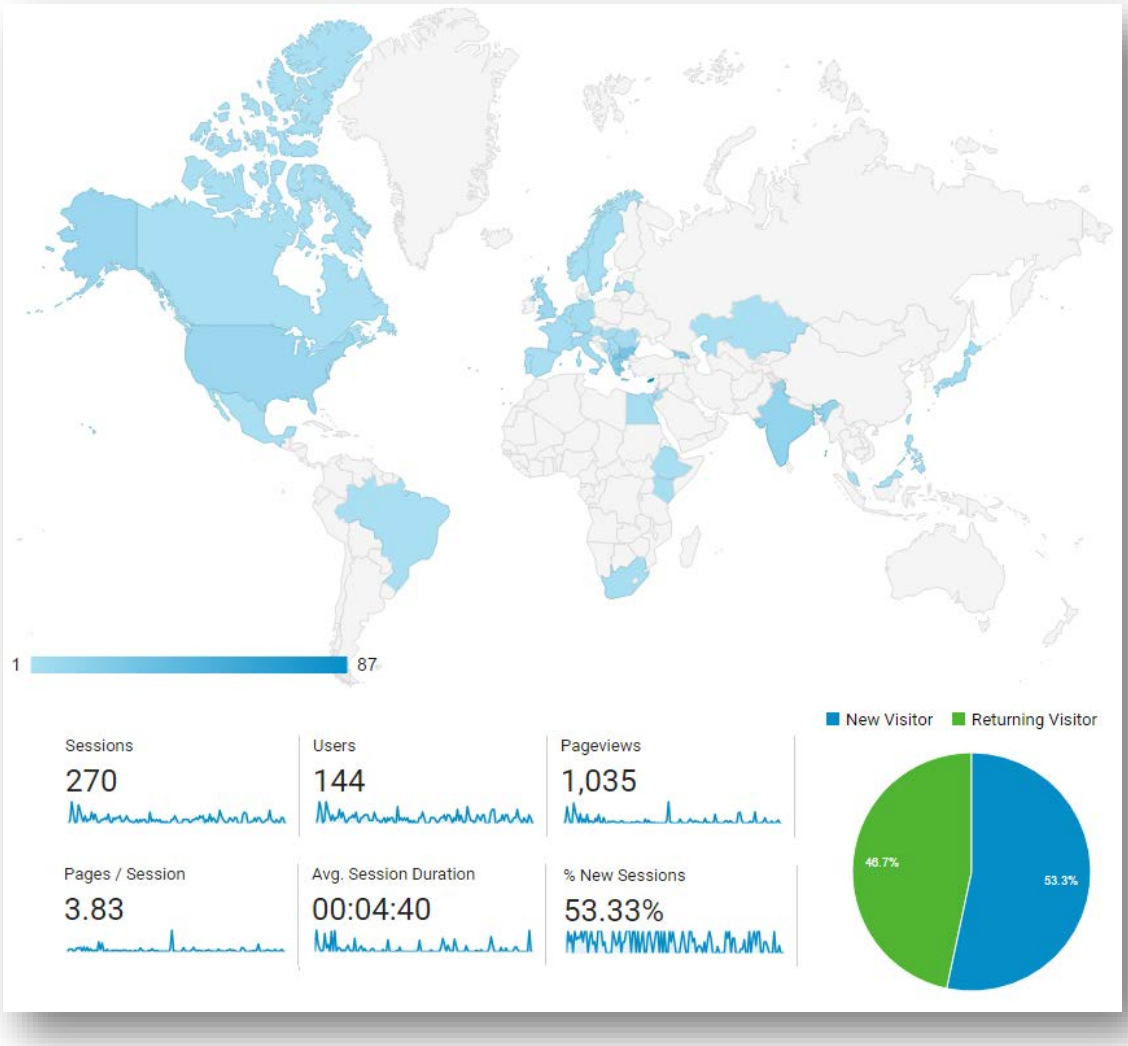

Figure 8: Vi-SEEM Training Portal visit statistics October 25 2016 – March 5, 2017

2.2.4. VI-SEEM wiki

The technical wiki of the VI-SEEM project is based on the MediaWiki platform. It's designed to be run on a large server farm for a website that gets millions of hits per day. MediaWiki is extremely powerful, scalable software and a feature-rich wiki implementation that uses PHP to process and display data stored in a database, such as MySQL.

The VI-SEEM wiki can be found at https://wiki.vi-seem.eu/. The first part of the homepage provides the contents as these appear in Figure 9. The contents include the following options:

- Infrastructure Resources.
- Operations and Resource Management.
- Service and Application Enabling.
- Training Procedures.

A description of the above options follows:

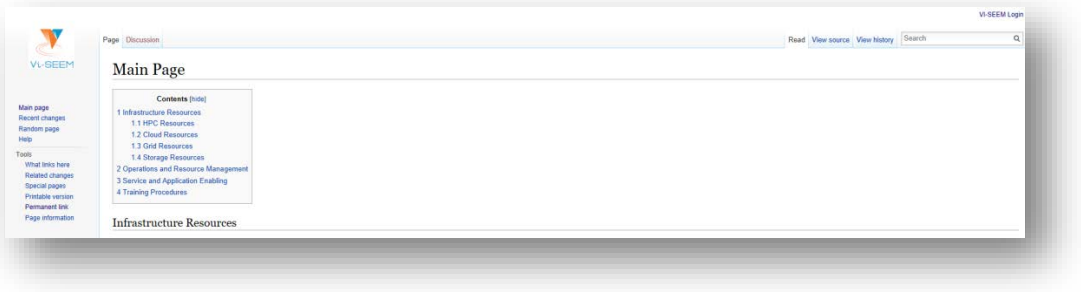

Figure 9: Contents in Main Page of VI–SEEM Wiki

2.3. Dissemination events

During the first 18 months of the project there have been lots of activities related to dissemination events. The project plan includes 16 national dissemination events organized by the project and one regional dissemination event. Generalized information about status of these events is given in Table 1 where the already performed events (7) are marked in blue. Information about the national dissemination events can be found in the project web site [7] and their agenda is given in the project agenda system [11]. Short description of the national dissemination events is given in subsection 2.3.1.

The information about major events where VI-SEEM has been presented can also be found at the project web site [7]. The current number of these events is 26. Short descriptions are given in subsection 2.3.2. Additionally to this, each partner distributes project promotional materials at the main local project related events – reports of these activities can be found at the project 3-monthly reports, at the end of this section (page 46) we give information about one project partner (GRENA) as an example.

Project Month	Organizer	Country	Framework [national/regional]
M10, 13.07.2016	11-RENAM	MD	National
M12, 27.09.2016	12-IIAP-NAS-RA	AM	National
M13, 7.10.2016	13-GRENA	GE	National
M14, 3.11.2016	03-IICT-BAS	BG	National

M14, 8.11.2016	08-UoBL	BA	National
M15, 7.11.2016	02-CyL	CY	National
M17, 27.02.2017	10-UOM	ME	National
M19	16-SESAME	JO	National
M19	04-IPB	RS	National
M20	05-NIIFI	HU	National
M20	07-UPT	AL	National
M22	14-BA	EG	National
M22	15-IUCC	IL	National
M22	09-UKIM	MK	National
M24	01-GRNET	GR	National
M24	06-UVT	RO	National
M25	01-GRNET	GR	Regional

Table 1: General information about the organized dissemination events

2.3.1. National dissemination events

VI-SEEM national dissemination event in Moldova, 13 July 2016, Moldova

VI-SEEM National Dissemination Event entitled "AITT DICOM NETWORK - Applications and Computational Resources for regional Virtual Research Communities Support", jointly organized by RENAM and AITT, was held on the 13 of July 2016, at the Academy of Sciences of Moldova, the Agency for Innovation and Technology Transfer. The program included presentations about the VI-SEEM project, computing infrastructure and resources for support of regional VREs and the Life Science and Climate applications in Moldova. More information: https://events.hpc.grnet.gr/event/32/.

Figure 10: Picture from National dissemination event in Moldova

VI-SEEM national dissemination event in Armenia, 27 September 2016, Yerevan

The VI-SEEM national dissemination event in Armenia was held on the 27th of September 2016 in Yerevan collocated with the Workshop on Computing and Networking. The program included VI-SEEM presentation and discussion about LS and Climate applications. There were 50 participants, among them were representatives from Leibniz Supercomputing Center (Munich, Germany), Université Toulouse III – Paul Sabatier (Toulouse, France), Université Pierre et Marie Curie Paris (Paris, France), Institute for System Programming of the Russian Academy of Sciences (Moscow, Russia).

VI-SEEM national dissemination event in Georgia, 7 October 2016, Tbilisi

VI-SEEM project national dissemination event on October 7, 2016, was collocated with the 1st Eastern Partnership e-Infrastructure conference http://www.eapconference.org/ held in Tbilisi, Georgia. The conference was organized by the European Commission within the scope of its EaPConnect project, by the Georgian Research and Educational Networking Association GRENA and the University of Georgia. Conference was held at the University of Georgia. During the first session of the conference on October 6, Minister of Education and Science Aleksandre Jejelava, General Director of Shota Rustaveli National Science Foundation Marine Chitashvili, and a member of European Commission Directorate (via video call) Laurence Meredith addressed the participants. Representatives of the Office of State Minister on European and Euro-Atlantic Integration and the University of Georgia also welcomed participants of the conference.

The following VI-SEEM related presentations were given: “VRE for regional interdisciplinary communities in Southeast Europe and the Eastern Mediterranean” (Ramaz Kvatadze); “Showers prediction by WRF model above complex terrain” (Teimuraz Davitashvili); “Quantum-chemical study of the proton transfer in some chemical and biochemical reactions” (Jumber Kereselidze).

VI-SEEM national dissemination event in Bulgaria, 3 November 2016, Sofia

The goal of the Workshop on Virtual Research Environment for Interdisciplinary Computations was to present all relevant information about the VI-SEEM project: objectives, activities, events, available computing and storage resources, data, applications, tools and services developed and maintained by the project. A special focus was given to the scientific communities in the fields of Life Sciences, Climatology and Digital Cultural Heritage.

The workshop was organized by VI-SEEM project and was held in the IICT-BAS building (Bulgaria, Sofia, Acad. G. Bonchev, Bl.25A, Room 218) on 03 Nov 2016.
Audience: https://events.hpc.grnet.gr/event/30/registration/registrants

Figure 11: Picture from the National dissemination event in Bulgaria

VI-SEEM national dissemination event in Bosnia and Herzegovina, 8 November 2016, Banja Luka

More information: VI-SEEM project was presented at a dedicated workshop on the 8th of November 2016 in Banja Luka. The program of the event included presentations on: VI-SEEM overview, VI-SEEM project infrastructure, Cultural Heritage Content-Based Image Retrieval, Metadata and cultural heritage and 3D scanning and Visualization, followed by discussion. More information on:

Figure 12: Picture from the National dissemination event in Banja Luka

VI-SEEM national dissemination event in Cyprus, 9 of December 2016, Nicosia

The VI-SEEM national dissemination event in Cyprus took place at the first Cyprus Science Festival on Friday 9th December 2016 at UCLan Cyprus.

The festival hosted various technological, scientific and engineering companies and projects which showcased their work to the participants. The festival was open to everyone, and thus the audience included members of the general public, primary school students, high school students and college/university students too.

VI-SEEM was part of this festival in a booth-type presence, and VI-SEEM staff where present that day to present VI-SEEM and hand out leaflets/fliers about VI-SEEM to interested audiences.

Most of this interest came from students – especially computer science students, who better understood concepts concerning the VI-SEEM project.

This festival will be repeated again towards the end of 2017 and VI-SEEM staff in Cyprus will look into being present at this event again. Hopefully more material will since then become available (in the form of Integration Project results – such as posters) for the VI-SEEM exhibition space to seem more complete and attract more visitors.

VI-SEEM national dissemination events in Montenegro, 27 of February, Zabljak

The VI-SEEM national dissemination event in Montenegro was organized during XXII International Scientific Information Technology Conference 2017, which took place in Žabljak, Montenegro. The conference covered interesting presentations and round table discussions on development trends in the field of information and communication technologies including current activities in this field in Montenegro.

At 27th February, during the plenary part of the conference, we presented all relevant information about VI-SEEM project objectives, activities, available computing and storage resources, research areas and their applications. After overview of the project, special focus was given to the Montenegrin contribution i.e. molecular dynamics simulations performed by our team. PSOMI application was presented, achieved results and planned activities in future work. Finally, we explained importance of molecular dynamics simulations in drug design, life science and medicine at all. There were 20 participants from three Montenegrin universities, Institute for marine biology, the first Montenegrin center of excellence and other participants from technical faculties from region. The possibility of including other researchers from Montenegro in the project next call is considered. Meeting agenda and presentations: https://events.hpc.grnet.gr/event/43/ .

Figure 13: Picture from the National dissemination event in Montenegro

2.3.2. Related dissemination events

VI-SEEM presentation at the Forum "Big data acquisition, storage, processing, and visualization", 13 November 2015, SOFIA, BULGARIA

In the framework of the National Conference on Informatics, 12-13 November 2015, Sofia, a Forum "Big data acquisition, storage, processing, and visualization" with a moderator

professor Atanas Radenski from Chapman University, USA was organized. Prof. T. Gurov presented the project VI-SEEM with special attention to the HPC infrastructure and services provided for the benefit of the scientific communities in Bulgaria and in the South East European region.

Audience: About 40 participants from the Bulgarian Informatics community.

More information: http://www.math.bas.bg/infres/cib80/CIB80_bigdata_frame.htm

VI-SEEM dedicated session during the 13th SESAME user meeting, 25-26 November 2015, AMMAN, JORDAN

VI-SEEM project was presented at a dedicated session during the 13th SESAME User Meeting. Mr. Salman Matalgah introduced VI-SEEM project and the upcoming opportunities which are coming as a continuation of many EU projects to build scientific and technological bridges between Europe and the Middle East.

Participants showed high interest and relevant comments were raised about the access technology and service architecture of the project, Mr. Salman highlighted the importance of having an interactive community input to utilize VI-SEEM resources, so the user survey where presented to assure having the potential users involvements.

Mr. Salman mentioned that SESAME is involved for the Jordanian dissemination activities and this will be followed by different outreach events to guide and prepare a good orientation for the Users of Synchrotron Radiation community.

Audience: This meeting was attended by more than 120 researchers from Jordan and the regional Synchrotron Radiation community.

Figure 14: Picture from the VI-SEEM session, 13th SESAME user meeting, 2015

VI-SEEM presentation at the Open Forum "Mathematical Modelling and Advanced Computing: Science for Intelligent Growth", 4 December 2015, SOFIA, BULGARIA

The Open Forum "Mathematical Modeling and Advanced Computing: Science for Intelligent Growth" was held on 4th December 2015 in Sofia and was jointly organized by IICT-BAS and IMI-BAS. Assoc. Professor E. Atanassov presented the HPC infrastructure at IICT, the present status, perspectives and future developments. The newest computing system in IICT is AVITOHOL, now in Top500 list, is fully operational since November 2015 and provides computing resources to VI-SEEM scientific communities.

Audience: About 50 participants (Policy makers from Ministry of Education and Sciences, Bulgarian mathematics and informatics community).

VI-SEEM presentation at the annual conference of the Bulgarian section of SIAM, 21-22 December, 2015, SOFIA, BULGARIA

The 10th Annual Meeting of the Bulgarian Section of the Society for Industrial and Applied Mathematics (SIAM) was held on 21-22 December 2015 in Sofia. The purpose of the meeting was to promote interdisciplinary collaboration and the role of applied mathematics in technology and industry, by presenting and discussing applications of mathematics to science and engineering. As part of the conference program, Assoc. Prof. Emanouil Atanassov from IICT-BAS presented a talk discussing problems and approaches for securing access to HPC infrastructures, with a focus on the upcoming Virtual Research Environment platform of the VI-SEEM project and its authentication, authorization and accounting framework.

Audience: About 60 participants from the Bulgarian section of the Society for industrial and applied mathematics.

More information:

http://www.math.bas.bg/IMIdocs/BGSIAM/bgsiam15_announcement.htm

Figure 15: Picture: VI-SEEM presentation, BGSIAM 2015

VI-SEEM presentation at the SPRUN 3.0 WORKSHOP, 24 December 2015, NOVI SAD, SERBIA

Antun Balaz, Nenad Vukmirovic, Dusan Vudragovic, and Vladimir Loncar, from the Institute of Physics Belgrade, participated in the SPRUN 3.0 workshop organized at the Faculty of Sciences of the University of Novi Sad on 24th December 2015. The meeting was attended by 20 researchers, educators, and professionals in scientific computing. During the meeting, Antun Balaz presented VI-SEEM project's objectives, its infrastructure and three main virtual research communities.

Audience: 20 researchers

Figure 16: Picture from the VI-SEEM presentation, SPRUN 3.0 Workshop, 2015

VI-SEEM dissemination event at the premises of IMI-ASM, 18 February 2016, CHISINAU, MOLDOVA

The VI-SEEM partner from Moldova, RENAM, in cooperation with the Institute of Mathematics and Computer Science, Academy of Sciences of Moldova, (IMI-ASM) organized a VI-SEEM dissemination event on the 18th of February, at the premises of IMI-ASM, Chisinau, Moldova.

VI-SEEM presentation at the conference "ENABLING VIRTUAL RESEARCH AND EDUCATION COMMUNITIES", 14-18 March 2016, DAKAR, SENEGAL

Date/Place ORGANISED BY WACREN ON 14-18 March 2016, DAKAR, SENEGAL

VI-SEEM was presented at the WACREN 2016 conference – Enabling Virtual Research and Education Communities, organised by WACREN (West and Central African Research and Education Network) on 14-18 March 2015, in Dakar, Senegal. Two presentations were given by Ognjen Prnjat of VI-SEEM and MAGIC projects: "Sharing e-Research services across borders" and "National, Regional and Global e-Infrastructures" at the main WACREN event.

More information: http://www.wacren.net/news/wacren-2016-conference-enabling-virtual-research-and-education-communities

VI-SEEM presentation for students from the Sofia University, 17 March 2016, SOFIA, BULGARIA

VI-SEEM seminar presentation followed by a discussion, distribution of the project brochure, and short tour to the HPC center at IICT-BAS (www.hpc.acad.bg) were organized for university students from Faculty of Mathematics and Informatics, Sofia University (presentation given by T. Gurov).

VI-SEEM presentation for students from the Plovdiv University, 31 March 2016, IICT-BAS premises, SOFIA, BULGARIA

VI-SEEM seminar presentation followed by a discussion, distribution of the project brochure, and short tour to the HPC center at IICT-BAS (www.hpc.acad.bg) were organized for university students from Faculty of Mathematics and Informatics, Sofia University (presentation given by E. Atanassov).

Figure 17: Picture from student tour in the HPC center at IICT, 2016

VI-SEEM presentation at the Open Workshop "Mathematical Modelling and Advanced Computing for Science and Industry", 12 May 2016, SOFIA, BULGARIA

VI-SEEM project has been presented at the Open Workshop "Mathematical Modeling and Advanced Computing for Industry and Society" organized by IICT-BAS on the 12 of May in Sofia, IICT premises.

The program included presentations of 3 European projects MMAC, VI-SEEM and SESAME-NET, and description of the current status and future plans for development of the two national research infrastructures, coordinated by IICT: National Centre for HPC and Distributed Computing and CLADA-BG (Research infrastructure for resources and

technologies for linguistic, cultural and historical heritage). VI-SEEM presentation has been given by Prof. Aneta Karaivanova, and project materials were distributed.

Audience: There were about 60 attendees from academic community, SME representatives and officials which took active part in the discussion.

Figure 18: Picture from student tour in the HPC center at IICT, 2016

VI-SEEM presentation at the 6th Congress of Pharmacy in Macedonia, 1-5 June 2016, OHRID, FYR. Of MACEDONIA

The VI-SEEM project and its aims and possibilities for the LS community was presented on the 6th congress of Pharmacy in Macedonia that took place from the 1st to the 5th of June, 2016. The VI-SEEM project information was presented during the plenary presentation titled "Bridging the computer and life sciences: the case of VI-SEEM" given by Prof. Anastas Mishev (UKIM). The audience included over 100 participants on the congress, where part of the community has already started to use the provided infrastructure and services, and has shown further interest by participating on the national training event that was held a few months later.

More information: http://congress.mfd.org.mk/plenary-lectures.html

VI-SEEM presentation during the joint event of ASM and RENAM, 4 July 2016, Chisinau, MOLDOVA

On the 4th of July 2016, at the joint event organized by ASM, Joint Institute of Nuclear Research and RENAM in the Academy of Sciences of Moldova – dedicated to Celebration of 50th Anniversary of JINR, RENAM presented VI-SEEM project within a presentation entitled "Computer Infrastructure and Services Development for Research and Education in Moldova".

VI-SEEM presentation at SCORG 4.0 workshop, 22 December 2016, NOVI SAD, SERBIA

SCORG 4.0 workshop was held in Novi Sad, Serbia on 22 December 2016. During the event Dušan Vudragović (IPB) presented VI-SEEM Virtual Research Environment and deployed services, and Vladimir Lončar (IPB) explained development and usage of these services.

VI-SEEM presentation at the workshop "HPC for science and technology", 24-27 September 2016, WEST UNIVERSITY OF TIMISOARA, ROMANIA

More information: http://synasc.ro/2016/

The UVT team organized in the framework of SYNASC 2016, held at the West University of Timisoara between 24 and 27 September 2016 a workshop on „HPC for Science and Technology" where VI-SEEM project has been presented. The schedule of the same event included a training in „HPC for Environmental Simulations" taught by Ralf-Peter Mundani from the Technical University of Munich and a tutorial on „Preservation of Cultural Heritage and Textual Content Processing" given by Dan Cristea from the A.I. Cuza, Iasi, Romania.

Audience: The training and the tutorial attracted around 40 participants including computer scientists, researchers in the field of geography, meteorology and specialists working at regional libraries.

VI-SEM presentation at SESAME user meeting, 3-4 December. 2016, AMMAN, JORDAN

The presentation about Vi-SEEM project was given by Salman Matalgah at a dedicated session on SESAME User meeting held on 3 December 2016 in Jordan. **More information**: http://www.sesame.org.jo/sesame/events/414-14th-sesame-users-meeting.html

VI-SEM presentation at the REGINA 2016 conference, November 22-23, 2016, MISKOLC, HUNGARY

REGINA is a regional IT conference for academy and industry in East-Hungary held in Miskolc-Lillafured, Hungary, on 22-23 of November 2016, organized by KIFU. At this event the Vi-SEEM project was presented by Dr Tamas Maray with a presentation entitled "VI-SEEM – the virtual, international research infrastructure", giving an introduction to the goals, participants, methodologies, infrastructure, resources, pilots and expected results. For more information: http://regina.comp-rend.hu/

VI-SEEM presentation at the Romanian Geo-spatial days, 18-19 November 2016, TIMISOARA, ROMANIA

The Romanian Geo-spatial days have been organized by the West University of Timisoara on 18-19 November 2016, in Timisoara, Romania (http://www.geo-spatial.org/osgeo/timisoara2016). The program of this workshop included an overall presentation of the VI-SEEM project, given by Daniel Pop from the VISEEM-UVT team, with a focus on VRE content for climate community. The session has been attended by 45 participants, specialists in geo-spatial data analysis, meteorology, teledetection an cartography from several Romanian universities (Bucuresti, Cluj-Napoca, Timisoara) as

well as national agencies (National Administration of Meteorology) and companies activating in the field of geo-spatial data processing.

VI-SEEM promotion at INDEL 2016 conference (http://indel.etfbl.net) XI International Symposium on Industrial Electronics - INDEL 2016, 3-5 November 2016, BANJA LUKA, BOSNIA AND HERZEGOVINA

The local VI-SEEM team in Banja Luka organized VI-SEEM project promotion (poster, fliers, discussion) during INDEL 2016 conference (http://indel.etfbl.net) XI International Symposium on Industrial Electronics - INDEL 2016, 3-5 November 2016, Banja Luka, Bosnia and Herzegovina. The Symposium is sponsored by IEEE Industry Applications Society and IEEE Power Electronics Society. All information available at https://drive.etfbl.net/index.php/s/QtQhIUGZrOAG5bt

Figure 19: INDEL 2016, 3-5 November 2016, Banja Luka, Bosnia and Herzegovina

VI-SEEM presentation at MAGIC Global eHealth Ground Rounds, October 11th 2016, CHISINAU, MOLDOVA

The Moldavian partner, RENAM, was invited to participate in the MAGIC Global eHealth Ground Rounds that took place on October 11th 2016 in Chisinau, Moldova. At this event, the presentation "DICOM Network application" was given and the VI-SEEM project resources dedicated to support this and other Life Science regional applications were presented.

VI-SEEM presentation at annual conference of the Shota Rustaveli National Science Foundation, 19 of December 2016, TBILISI, GEORGIA

The Georgian partner, GRENA, was invited to at the annual conference of the Shota Rustaveli National Science Foundation, on 19 of December 2016, in Tbilisi, Georgia, where three projects (GEANT, EaPConnect and VI-SEEM) in which GRENA participate were

presented. More information can be found at: http://www.rustaveli.org.ge/საახლოები/page/1472

VI-SEEM presentation at the 11th annual Conference of the Bulgarian Section of SIAM, December 20 – 22, 2016, SOFIA, BULGARIA

The annual conference of the Bulgarian section of SIAM (Society for Industrial and Applied Mathematics) was held in Sofia, Bulgaria on December 20-22 2016, with more than 70 participants. The VI-SEEM Virtual Research Environment and deployed services were presented Emanouil Atanassov from IICT-BAS. For more information: http://www.math.bas.bg/IMIdocs/BGSIAM/bgsiam16_announcement.htm

Figure 20: Participants in the annual conference of SIAM-Bulgaria, 20 December, 2016

VI-SEEM presentation at the first meeting of IT Employers Council of the Millennium Challenge Account, 9 February 2017, TBILISI, GEORGIA

On February 9, 2017 first meeting of IT Employers Council of the Millennium Challenge Account - Georgia project "IT Integration of a Unified Teaching Model and Introduction of International Certified IT TVET Programs in the Regional Colleges of Georgia" was held at Association GRENA office. During meeting VI-SEEM services were presented by Ramaz Kvatadze.

VI-SEEM presentation at the workshop "New possibilities of IT instruments implementation for biological research", 16 February 2017, CHISINAU, MOLDOVA

Presentation of VI-SEEM project, possibilities and perspectives of VI-SEEM regional platform at the workshop "New possibilities of IT instruments implementation for biological

research" (organized by the Institute of Genetics, Physiology and Plant Protection of ASM with participation of RENAM)

VI-SEEM presentation for students from the Sofia University, 23 February 2016, SOFIA, BULGARIA

The annual VI-SEEM seminar presentation at IICT-BAS for students from the Faculty of Mathematics and Informatics, Sofia University, followed by a discussion, and short tour to the HPC center at IICT-BAS (www.hpc.acad.bg) was held on the 23 of February (presentation given by A. Karaivanova).

VI-SEEM presentation at the workshop TRIANGLE 2017 23-24 March 2017, CHISINAU, MOLDOVA

Participation in the TRIANGLE 2017 - 3rd Edition of International Forum "Fostering International Cooperation for Strengthening Knowledge Triangle in Moldova", Chisinau, Moldova, 23-24 March 2017 with presentation "Regional e-Infrastructure and Services for Research and Education in EaP countries" (authors Dr. Petru Bogatencov and Dr. Grigori Secrieru from RENAM). Special section of the report was devoted to VI-SEEM project.

VI-SEEM presentation for students during the 13th International Particle Physics Masterclasses events, 4-6 March 2017, SERBIA

IPB's Vladimir Loncar and Vladimir Slavnic participated in the 13th International Particle Physics Masterclasses events in Serbia. The first event took place at the Faculty of Sciences, University of Novi Sad, in Novi Sad on 4 March 2017, and the second at the Faculty of Physics, University of Belgrade, in Belgrade on 6 March 2017. In these events, organized in conjunction with the International Particle Physics Outreach Group, they gave talks about Grid and HPC infrastructures, and have presented VI-SEEM infrastructure and services.

Apart from presentations, the VI-SEEM promotional materials were distributed at all of the above described events. The partners explore all the possibilities to distribute information about the project at all important related events at their countries. Here is an example project materials distributed by a project partner (GRENA):

- Horizon 2020 Information Day on May 30, 2016 in Tbilisi.
- ICT Conference organized by the European Commission EECA-2-HORIZON and EAST-HORIZON projects in Chisinau on June 13-14, 2016.
- Georgia-Germany Scientific Day on September 19, 2016 in Tbilisi http://rustaveli.org.ge/სიახლეები/page/1343.
- Final Conference of the European Union TEMPUS project: "Modernization of Mathematics curricula for Engineering and Natural Sciences studies in South Caucasian Universities by introducing modern educational technologies". More than 90 experts from Georgia, Germany, France, Finland and Armenia participated in the conference. GRENA together with Georgian Technical University organized this event.

2.4. Connection to other initiatives and projects

VI-SEEM is exploring cooperation possibilities and establishment of connections to various e-Infrastructures projects and communities.

The current cooperation with PRACE is mainly in the area of dissemination and training activities – the upcoming VI-SEEM interdisciplinary regional will be a joint event with PRACE 2017 SPRING SCHOOL, organized by the Cyprus Institute, April 25-27 2017, at Nicosia, Cyprus. There are 4 related to VI-SEEM developers training events, organized by PRACE during the reported period, which are described in section 3.3.3.

VI-SEEM has been presented at local events organized by other European initiatives and projects like GEANT, PRACE, SESAME-NET, MAGIC, etc. as well as Horizon 2020 Information days at participating countries.

BioExcel was presented at the VI-SEEM regional Life Sciences training event.

Each partner exploits national events and other opportunities to liaise with other initiatives and projects that are relevant for the project. Special attention is given to large national initiatives that are targeting the user communities.

There are specific links of the DCH community services of the project with other research activities:

- Standardize pipeline to integrate Digital Libraries and metadata management on CLOWDER across the DCH community by adopting and adapting the existing STARC repository ontologies;
- Integration of browser-based interactive preview of pointcloud models (3D laser scanner) with Potree http://www.potree.org (webGL);
- RIVEEL3D (Realtime Immersive 3D Virtual Environments for Education and Learning) (http://avl.ncsa.illinois.edu/realworld-software/riveel-3d) project which uses virtual environments to study and analyze historical sites. The specific case-study project contributes to the on-going study of the Green Line of Nicosia in Cyprus that still divides the city, and proposes the analysis of the use of public spaces in contested urban environments.

3. Training activities’ summary

During the first 18 months of the project there have been lots of activities related to national and regional training events, as well as gathering training material and building a long-term training platform that will provide further support to the climate, cultural heritage and life sciences communities.

For ease of access and reference, all of the training events related information is being maintained in a separate section of the VI-SEEM portal (https://vi-seem.eu/category/events-training/reg-nat-training/) where the summary information on all past and immediate next events is published together with information on joint, or related events that might be of interest to the research communities, such as Schools organized by related projects, i.e. PRACE.

The VI-SEEM portal provides access to the Agenda System for all national and regional events organized by the project where interested participants can browse the currently offered trainings and register for them. On the Agenda system, every interested party can access the information about the particular event, access the training material and review the summary report on the past trainings.

The initial timeline for the organization of the national and regional training events has been laid out in D2.4 “Training Plan” together with the procedure and means for organization using the VI-SEEM Agenda System, training portal and training infrastructure. Over time the initial timeline and procedure have been refined in order to reflect the changing user requirements and improve the efficiency of the organization process.

The VI-SEEM training portal (https://training.vi-seem.eu/) provides additional training material that is categorized in different sections that cover general topics and domain specific problems. The categorization and the material selection has been made in alignment with the results obtained in the training requirements survey that has been done at the beginning of the project. The detailed results from the training requirements survey can be found in the D2.4 deliverable titled Training plan.

All training activities have been supported by a training infrastructure that is actually a subset of the production infrastructure that is supported with an authentication and authorization layer that enables the training participants to use their Vi-SEEM AAI or social identities for authentication and thus obtain easy access to the infrastructure. After the training they continue to use the same infrastructure which makes the switch to the virtual research environment transparent.

3.1. Planning and implementation of training related events

Based on these three pillars (training events agenda system, training portal, training infrastructure) the implementation of the training plan is underway and very much on schedule with even more national training events than originally planned for this period.

The results from the training requirements survey have shown that there is a high demand for general type of training that will enable researchers to get familiar with the benefits of the infrastructure and how they can use it for their specific research purposes. Thus, the plan for the implementation of the training events has been made such that the first

training events are more focused on the general topics (i.e. Introduction to Hadoop and Introduction to Parallel Programming and Optimization for Intel Xeon Phi Architecture), followed by training events that are specific to the research communities. When choosing the topic of the national training events, the partners strived to make the decision based on the results from the survey, especially if there have been survey participants from the specific country and immediate region, in combination with the local expertise available. In cases when there are no local experts available, regional experts provided training sessions for the local national events via video conferencing facilities.

Similar analysis and process have been implemented when deciding on the topics of the two regional training events implemented so far (one focused on e-infrastructures for life sciences and another one on digital cultural heritage).

As previously mentioned, the initial planning of the national and regional training events timeline has also been changed in order to better reflect the needs of the communities and to make a more efficient use of the projects and partners resources. Thus, some of the national training events have been moved to be conducted sooner, so that the researchers from the different research communities can benefit from the training provided and be able to put it to use for a longer period during the project lifetime.

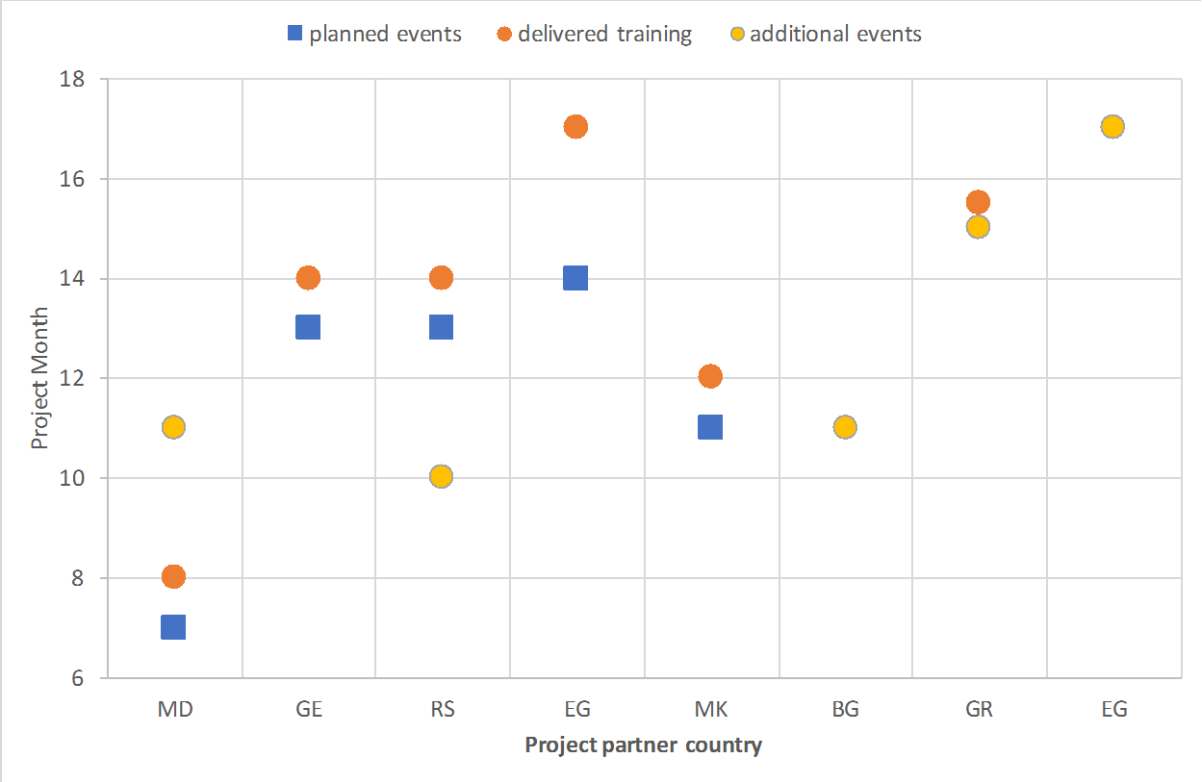

Figure 21: Planned, delivered and additional training events timeline comparison

Figure 21 depicts the timeline of the planned versus delivered training events during the first 18 months as defined per project partner country. The biggest discrepancy can be found for the two regional events (held in RS and EG) were it was decided that these two

event should switch places and another general regional training event should be introduced.

No.	Event	Framework [National/ Regional]	Project Month	Location
1	Characteristics, technical parameters and special features of distributed informational system «DICOM Network»	N	M8	MD
2	Introduction to Hadoop	R	M10	RS online WebEx
3	Introduction in Parallel Programming and Optimization for Intel Xeon Phi Architecture	N	M11	BG
4	VI-SEEM National Dissemination Event with support of AITT – "DICOM Network"	N	M11	MD
5	VI-SEEM Life sciences and Climate national training event	N	M12	MK
6	VI-SEEM e-Infrastructure services, Molecular Dynamics Simulations of Biomolecules and Computer-Aided Drug Design	R	M14	RS
7	VI-SEEM Climate national training event	N	M14	GE
8	Biomolecular modelling training on National HPC Infrastructure ARIS	N	M15	GR
9	Meteorological and Climate Modelling using WRF	N	M15	GR
10	DCH training event at BA	R	M17	EG

Table 2: General information about the organized training events

In the first 18 months period there were 2 planned regional events and 3 national training events. All of these planned events were successfully implemented, and in addition 5 more

national training events were offered together with 1 online regional oriented training event offered online as per the conclusions obtained from the training survey. The details of the timing, location and topic of the events are presented in Table 2. Thus, there were 10 training events in total, focusing on all aspects of interest to the surveyed research communities: general introduction and general advanced level, focused training on life sciences, climate and digital cultural heritage.

The results obtained with the training evaluation forms, represented with the training summary reports show that the past training events had a high number of participants that have been very satisfied with the training from both aspects: presentations and hands on labs, as well as the training facilities available. The detailed discussion of the obtained evaluation is presented in the training events statistics section.

3.2. Training material and platform

During the training events management and related data maintenance, the training event implementation procedure has also been expanded to involve steps that will enable improved synchronization between the training material available for the training events and the training material available on the training portal. For these purposes, the training portal has been expanded with a new Trainings section linking to the Agenda system. Also, it is planned that the additional training material used for the training events will be published in the corresponding categories so that the training portal can become one focal point for all training related material enabling a one stop shop experience for the users.

The training portal can be found at https://training.vi-seem.eu/ and is organized into the following main menu sections:

- Cloud
- Data
- Domain Specific Software and Tools. This is further organized to:
    - Climate Software and tools
    - Digital Cultural Heritage Software and tools
    - Life Science Software and tools
- HPC. This is further organized to:
    - Practical HPC
    - Development
    - Improvement
    - Applications
- GRID
- Scientific Visualization
- Storage Services
- Trainings

Each of the above sections and their relative sub-sections include recommended material on the given topic. Most of the material is linked with the training portal – meaning that the material is not hosted by the training portal but instead the training portal provides the links where the material can be found.

The "Trainings" section of the main menu lists all the VI-SEEM training events that have taken place so far and these link to the relative page on the VI-SEEM events website.

The training portal currently links to over 150 training materials. A full list of the training material available through the VI-SEEM Training portal can be found in Annex I: Training Material.

3.3. Training events statistics

According to the Training plan, all training events gathered general information about their registered participants, and asked all participants to fill out a training evaluation form after the end of the event. The registration and evaluation have been implemented using the existing functions in the Agenda system, see Figure 22.

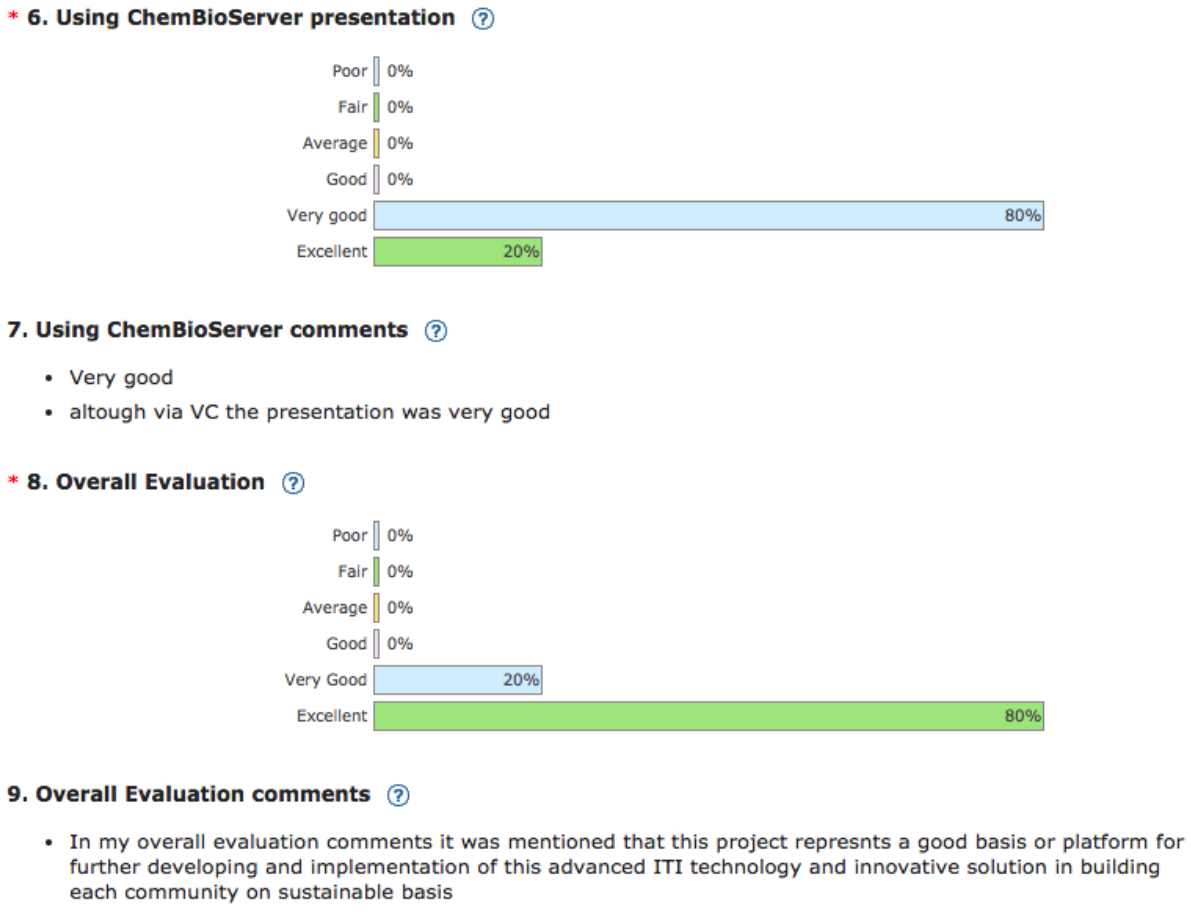

Figure 22: Example partial results report generated by the Agenda System

Based on the results of the evaluation, in the final step the training organizers complete the training summary report that provides the information about the number of participants and their gender and country structure, together with the average grades obtained for each section of the training, the theoretical and practical hands on part, the facilities and overall training event implementation. The summary reports for all training events are published on the main site of the training event on the Agenda system. In this

section, the main statistics and results obtained from the training evaluation and reporting are presented.

In Figure 23 the overall statistics for both national and regional training events is presented. The average overall evaluation grade is around 5 (out of 6 = excellent), regularly accompanied with high grades for all separate sections of the evaluation form. Also, the number of registered participants ranges from minimum 16 to maximum 42 for a national training event. More efforts need to be put into gender balancing. However, taking into account the topics of the event and the current gender balancing in the research communities of interest, it can be concluded that both genders have been adequately represented.

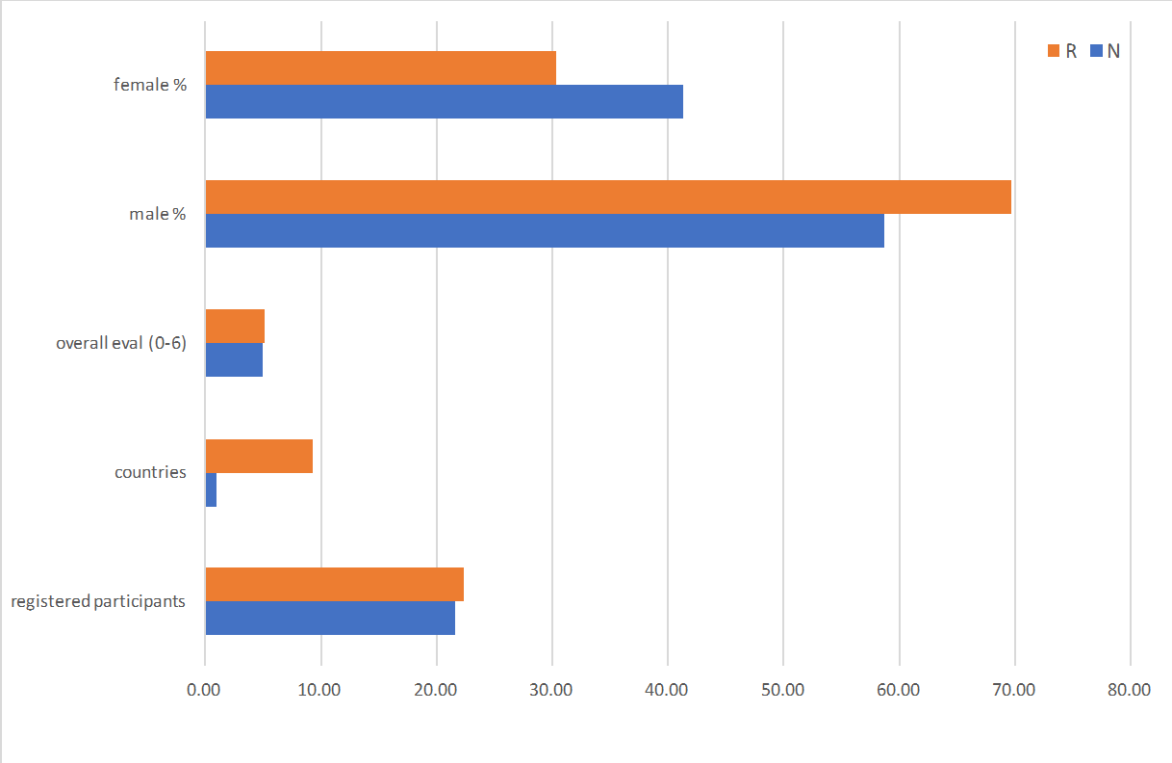

Figure 23: Averaged statistics of for all past national and regional training events

3.3.1. Regional training events

Instead of the planned 2 regional events, there have been 3 in total regional events, where the first of the events was additionally added in order to reflect the user requirements as they have been recorded with the training requirements survey. Namely, the surveyed users have expressed their desire to also have general training in the ways of using the infrastructure and the benefits. The requirements for big data and cloud training have been especially significant, and thus it was decided that an additional general regional training in the form of a WebEx online training will be organized so that the user requirements are met. The organizer of this event was the IPB partner and the event was aimed to be provided very early in the project, in M10.

Additionally, the timing of the two remaining planned regional events was switched in order to make more efficient usage of the project funding. Thus, the second regional

training was also organized by IPB in M14 planed so as to coincide with the project management meeting of the project steering committee and technical board. This event was focused on the life sciences community. The third regional event was held in Egypt, organized by the BA partner and focused on the digital cultural heritage research community.

According to the original training plan two more regional training events are due in the next months of the project that will target the rest of the research communities.

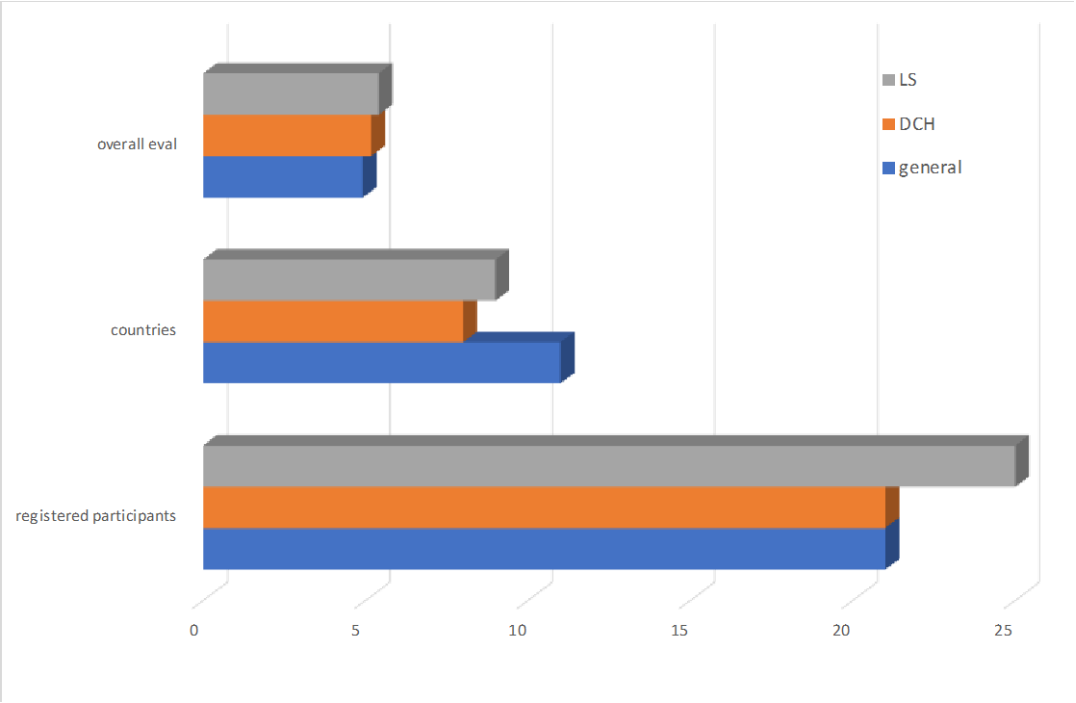

Figure 24: Regional training events general statistics

In Figure 24 the general statistics about the three separate regional training events are presented. With minimum of 20 participants from at least 9 different countries and an overall evaluation of the event of minimum 4.9, it is evident that the events were successfully organized and have managed to reach a wide audience from the south east European region. Figure 25 represents the gender balance for each of the regional trainings per the training topic. As expected, the life sciences training event has successfully managed to ensure a well-balanced inclusion of participants, while the other two reflect the current problems of imbalance that can be found in ICT topics in particular.

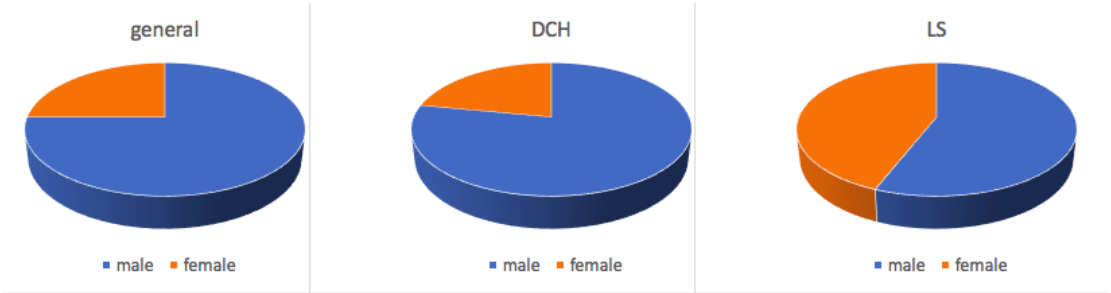

Figure 25: Regional trainings participants' gender balance

Here we give short descriptions of the VI-SEEM regional trainings:

VI-SEEM Introduction to Hadoop, 24 June 2016, online WebEx

The first general training is designed to provide an overview of Hadoop, HDFS, and MapReduce technologies. The training was made up of an introductory presentation, and a set of hands-on sessions. The participants were provided with demo accounts, and they were able to access the Institute of Physics Belgrade's Hadoop cluster, to interact with HDFS file system, and to submit MapReduce jobs. The provided demo accounts were left active for a week after the event, so that the participants are able to further test and explore Hadoop capabilities. The training event was followed by more than 20 participants from over 10 different countries.

VI-SEEM Life Sciences regional training, 19-21 October 2016, Belgrade, Serbia

The VI-SEEM Life Sciences regional training "VI-SEEM e-Infrastructure services, Molecular Dynamics Simulations of Biomolecules and Computer-Aided Drug Design" was held on 19-21 October 2016 in Belgrade. The goal of this interactive course was to introduce participants to VI-SEEM e-Infrastructure services, and then focus on the principles and applications of biomolecular modeling, and pinpoint how biomolecular problems, such as drug design, are being currently addressed by computational techniques.

The program included:

1. Introduction to VI-SEEM data and computational services, and their access methods.
2. Hands-on training in classical Molecular Dynamics (MD) simulations by examining the protein lysozyme of the NAMD program. Introduction to GROMACS.
3. Computer-aided drug design with Schrodinger Suite and ChemBioServer. An introduction to virtual screening for computer-aided drug design and application with the Schrodinger Suite software. The generated virtual screening results are then post-processed (filtered) for toxicity, chemical similarity and validity of docking pose using the ChemBioServer software.

VI-SEEM DCH regional training, 6-8 February 2017, Bibliotheca Alexandrina, Egypt

https://events.hpc.grnet.gr/event/36/

As digitization of cultural heritage artifacts progresses by the museums of Europe and access to their digital archives is provided to an ever-growing number of people from all around the globe, operating Digital Libraries and facilitating data-mining technologies for large repositories requires excessive amounts of computing power that only a HPC can offer. Responding to this pressing need the VI-SEEM Digital Cultural Heritage regional training was held on 6-8 February 2017 in Bibliotheca Alexandrina, Alexandria, Egypt. Objective of the workshop was to introduce participants to H2020 VI-SEEM project e-

Infrastructure services, and in particular focus on advanced techniques of 3D scanning and imaging for digital cultural heritage applications. The VI-SEEM project responds to the pressing need in the field of Digital Cultural Heritage for international collaborations and shared activities for the sustainable creation of multicultural inclusive environments and the untapped potential of digital technologies and ICT, which create the right conditions for developing and testing transregional strategies that enable the use of cross-media content and the creation of a polythematic agenda. The event received strong interest from members of regional and local communities with more than 25 attendees for the duration of the workshop. Participants were introduced to laser scanning and photogrammetric techniques for the documentation and 3D reconstruction of cultural heritage artefacts, and many more technical details of heritage sciences pipelines and workflows, including the use of HPC for parallel processing of big data in cultural heritage. Specifically the program of the training event included the following topics:

- Introduction to 3D Scanning Techniques and theoretical aspects
- Hands-on session on 3D Artifact scanning
- Scanning Data post processing using Scanner Software
- Extra software tools to optimize scans for Real-time software and web applications
- Hands-on Session on 3D photogrammetry photo-shooting
- Hands-on: Accessing the BA-HPC and running applications on the BA-HPC

CyI provided software regarding the use of HPC for structure-from-motion photogrammetric techniques of 3D reconstruction and the CyI team presented the DCH training portal of Vi-SEEM and offered training on the use of the CLOWDER data management system for cultural heritage and its advanced features, such as online viewers and OCR.

Figure 26: Regional training at Bibliotheca Alexandrina, Feb 2017.

Aside the training of the DCH community members, another objective of the event was to:

- Users to contribute their Digital Libraries to CLOWDER;
- Users to contribute their training material to the portal;
- Discuss about future needs of the community with regards to CLOWDER tools.

3.3.2. National training events

In addition to the regional training events, there are 7 national training events held in the considered period. Compared to the only 3 planned events for this period, the VI-SEEM training activities have been very successful aiming to provide trainings ahead of schedule whenever possible and thus answering to the needs in partner countries.

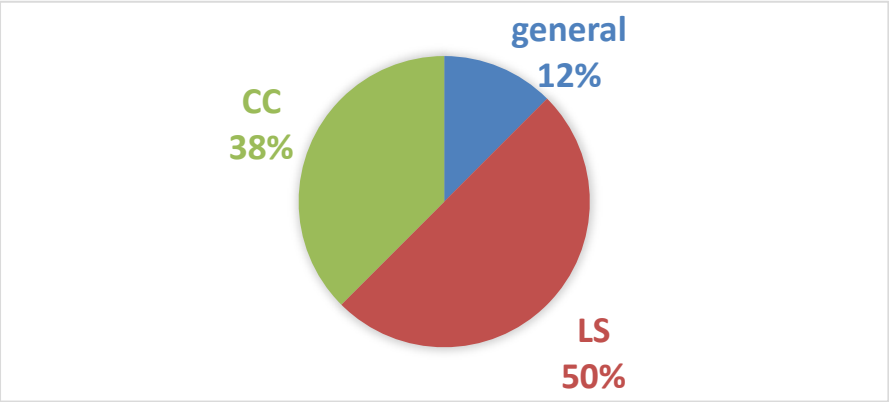

Figure 27: Topics of the national training events

As presented in Figure 27, the national training events were focusing on general training (1 event), life sciences communities (4 events), and the climate community (3 events), where one event was organized for both LS and CC.

Across all national training events there have been minimum 16 registered participants, and the minimum overall evaluation of the events is 4.5.

The feedback provided by the participants in the training events is showing that the training events are covering materials that are of high significance to the target communities, with many participants asking for more similar events, or at least longer events. Also, there is a high diversity of the means by which the participants have heard about the training and thus registered such as: e-mail, VI-SEEM portal, but also colleagues, other electronic media to which announcements were sent and alike.

List of the VI-SEEM national training events:

- **VI-SEEM national training event in Moldova, 22 April 2016, Chisinau**

The aim of the training event "Characteristics, technical parameters and special features of distributed informational system" held in the Institute of Emergency Medicine on the 22 of April 2016, was to present "DICOM Network" information system and to organize practical training and hands on sessions with doctors and other medical staff using "DICOM Network". The future "DICOM Network" system development was discussed in the context of usage of VI-SEEM infrastructure and regional computing resources for system

enhancement. More information can be found at http://grid.md/training-events/characteristics-technical-parameters-and-special-features-of-dicom-network/

- **VI-SEEM national training event in Bulgaria, 7 July, 2016, Sofia.**

The national training event in Bulgaria entitled "Introduction in parallel programming and optimization for INTEL XEON PHI architecture" was devoted to parallel programming with MPI, access to the HPC infrastructure at IICT-BAS, as well as software techniques needed for supercomputers with highly dense parallel architectures, both homogeneous (Intel Xeon) and hybrid with acceleration co-processor (Intel Xeon Phi).

The audience (32): end-users from the three VI-SEEM communities – Life Science, Cultural Heritage and Climate, as well as PhD students and young researchers, (see list of participants: https://events.hpc.grnet.gr/event/20/registration/registrants.

The programme and presentations are available at:
https://events.hpc.grnet.gr/event/20/timetable/#20160707

Figure 28: National training event in Sofia, 7 July, 2016

- **VI-SEEM national dissemination event in Moldova with support of AITT – "DICOM Network", July 13th, 2016, Chisinau**

The second DICOM network training held in Moldova on the 13th of July 2016 aimed to highlight regional opportunities to contribute to the development of future national initiatives in the field of complex scientific information systems and applications, including those that were supported by the Agency for Innovation and Technology Transfer. The training presented the aims and scop of the VI-SEEM project focusing on description of national experiences in collecting and processing medical images in DICOM format, as well as modeling climate change and other recovery activities related to priority social challenges. The event focused on the development of national information systems and applications research on new opportunities to use computing infrastructure for application development in the country both scientific and educational.

- **VI- SEEM Life Sciences and Climate national training event in Macedonia, August 30th 2016, Skopje**

The VI-SEEM Life Sciences and Climate national training event held in Skopje, Macedonia aimed to train targeted user communities from the Life Sciences and Climate communities for using the VI-SEEM infrastructure and services. The training event focused on accessing infrastructure and enabling researchers to productively use the available services. The presentations and hands on examples on the topic of ChemBioServer for the Life Sciences community was delivered via video conferencing with an expert from the neighboring country, Greece. The event was held on 30th of August 2017 and more information can be found at https://events.hpc.grnet.gr/event/22/overview

- **VI-SEEM Climate national training event in Georgia, 29 October 2016, Tbilisi**

Different climate models and tools were presented during the national training event in Georgia organized by GRENA. The main speakers were Nato Kutaladze from Department of Hydrometeorology of National Environmental Agency and Giorgi Mikuchadze from Tbilisi State University. More information can be found at https://events.hpc.grnet.gr/event/27/

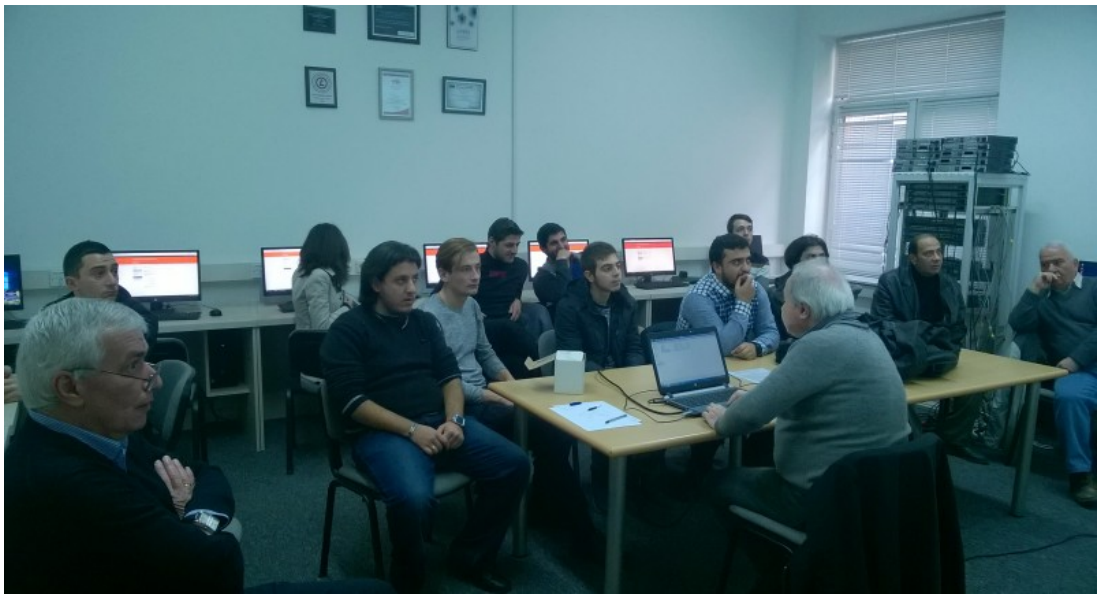

Figure 29: National training event in Tbilisi, 29 October 2016

- **VI-SEEM Meteorological and Climate Modelling using WRF, December 19th, 2016, Athens, Greece**

The Greek Research and Technology Network (GRNET), organized another national training event on December 19, 2016. The main topic to be covered during this event was the numerical weather prediction in high performance computing infrastructure - Application of WRF model in ARIS.

In this part the focus of the training was the application of meteorological model WRF (Weather Research and Forecasting) in high performance computing infrastructure, with the aim of numerical weather forecasts and, more broadly, the simulation of atmospheric environment. The steps required to implement the model, placing particular emphasis on

the ways in which the user can optimize computational implementation of a numerical simulation, and avoiding common mistakes were presented.

The second part of the training was a brief introduction to types of regional climate simulations (hindcasts / historical / projections) followed by the various physical configuration options that can be applied to model WRF. It was discussed how these options affect the execution times of the model and what is the physical interpretation / significance of the results together with examples of good practice in climate applications.

3.3.3. Related training events

In this section we present trainings organized by related projects with VI-SEEM trainees participation:

- **PRACE training event organized by INTEL together with NCSA, 15-17 December 2016, IICT-BAS premises, Sofia, Bulgaria**

Intel, Bayncore and STFC/ Daresbury Laboratory, together with the National Center for Supercomputing Applications (NCSA-BG), organized the training event “Enabling Software Scalability and Performance on Intel Xeon and Xeon Phi Platforms”, which took place on December 15-17 in Sofia at the Institute of Information and Communication Technologies, Bulgarian Academy of Sciences.

- **INTEL training event, 25-28 April 2016, Sofia, Bulgaria**

Intel together with National Center for Supercomputing Applications (NCSA) organized PRACE training event “Code Modernisation for Intel Multi Core and Xeon Phi Architectures”, which took place on 25-28 of April in Sofia at the Institute of Information and Communication Technologies, Bulgarian Academy of Sciences.

The training was focused on software modernization techniques needed for the next generation of supercomputers with highly dense parallel architectures, both homogeneous (Intel Xeon) and hybrid with acceleration co-processor (Intel Xeon Phi). Participants in the training were PhD students, young engineers, some users of the industry and community members of climate and life science virtual organizations. Keynote speaker from Intel was Stephan Blair –Chappell. Other trainers were Victor Gamayonov also from Intel and Dr. Alin-Marin Elena, Dr. Michael Seaton and Dr. Ilian Todorov from the Daresbury Laboratory. The last day was spent working in groups and trainees were given Certificates of Attendance.

Figure 30: Intel training event in IICT-BAS, Sofia, 25-28 April, 2016

- **Course on "PRACTICAL PROGRAMMING MODELS AND SKILLS ON INTEL XEON PHI FOR SCIENTIFIC RESEARCH ENGINEERS", 22-24 March 2017, Sofia, Bulgaria**

The course was organized by NCSA in assistance with Science and Technology Facilities Council (STFC) and Bayncore. This event was a follow up of the series of training events at NCSA that focus on training practical skills by demonstrations on how to test performance scaling on Xeon Phi of a few project codes.

The event took place on 22-24 March in Sofia at the Institute of Information and Communication Technologies, Bulgarian Academy of Sciences.

- **Course and Workshop on "Parallel Numerical Linear Algebra with Applications", March 28–31 2017, Sofia, Bulgaria**

The aim of the course was to present state of the art topics in the development of parallel direct and iterative methods for linear systems with sparse matrices. The second part of the course was dedicated on hand-on sessions.

The event took place on 28-31 March in Sofia at the Institute of Information and Communication Technologies, Bulgarian Academy of Sciences.

4. Project innovation strategy and results

VI-SEEM innovative potential can be summarized in the following key areas:

- The Virtual Research Environment as an integrated platform
- Modules of the platform as generic services with broad applications
- Services, tools and applications, serving specific needs of a target scientific community
- New processes and models of usage of the infrastructure, including new business models.

One of our key strengths is that the consortium integrates all types of e-infrastructure capabilities – HPC, Grid, Cloud, Storage, as well as substantial knowledge and capabilities with respect to networking. The innovative way of integrating these components can produce the best results. In order to maximise the benefit from these developments, we focus on usability, where we can expect that our integrated approach will be most advantageous. The large experience of the consortium in providing similar types of services and established processes with respect to monitoring and assessing the quality of the provided resources is a key point in ensuring the reliability of the services. The fact that the resource centers are geographically distributed provides ways to ensure failure and redundancy in a natural way. Although many European consortia provide distributed resources, here we have unique combination of strength in both distributed computing and storage, but also in HPC computing and especially in the use of accelerators like Xeon Phi or NVIDIA GPGPU devices. The combined use of these types of technologies has large innovative potential, since such applications are seen as one of the key trends in the IT in general. The ever-increasing energy requirements and costs make it unfeasible for scientific institutions to create, develop and maintain their own facilities. This is especially difficult in the region of South Eastern Europe and the Mediterranean, where there are whole countries that cannot afford to build a state-of-the-art computing or data storage facility.

4.1. Innovation strategy and activities

The project innovation strategy has been developed and described in the deliverable D2.3 submitted in M04. As a result of this strategy, the following set of activities has been planned and published in the D2.3. Here we report our work during the reported period:

- **Establish project innovation register**

An Innovation register has been created in order to keep track of the project innovative developments. The register, which itself is an Excel file, can be found in the project document repository and is updated regularly. The register is included in Annex 1 to this document. The register has been created by WP2 team at M12 and approved by the PSC.

- **Involve scientists with potential for innovations in the project work**

This recommendation is planned to be achieved within the project open calls. We started with the first open call and the results are very satisfactory.

- **Discover innovation opportunities**

This is done through collecting feedback from rejected applications in the project call and through analyzing the major failures or bottlenecks and propose solutions for fix them.

- **Work with IT industry leaders**

Contacts with key persons from development arms of big IT companies with presence in the region have been established, project results presented and possible joint work discussed. List of these meetings is included in the marketing report.

- **Follow up developments in open source licenses**

Developments in open source licenses are observed and partners are notified if interesting new trends appear in the protection of intellectual property when open-source licenses are used.

4.2. Innovative project developments during first 18 months

As a result of the VI-SEEM technical activities during first 18 months we report 9 innovative developments. For convenience, we present here their short descriptions, benefits, marketing actions, how intellectual property will be protected, and other important details:

Short name of innovation	Clowder for Digital Cultural Heritage		
Lead developer	Panayiotis Charalambous	E-mail address	ps.charalambous@cyi.ac.cy
Lead institution	CyI		
Country	Cyprus		
Type	New service, improving user experience		

Description:

A Content Management System for Digital Cultural resources. Data are processed, transformed and visualized based on data-type. Users can manage access to data

Area of impact:

Scientific community of Digital Cultural Heritage.

Targets:

The target of the Clowder CMS for DCH is to help users from the DCH communities to upload, organize and share their data.

Benefits for communities:

Users can share data, create communities to collaborate. Additionally, data are being processed and transformed on the background based on requirements.

Benefits for VI-SEEM:

This is a common platform for people in the DCH communities, therefore people come together to collaborate and exchange data more easily.

Marketing actions (What marketing actions are required):

This platform is and will be presented at various dissemination events such as workshops and training events.

Intellectual property:

Users can define intellectual property rights for the data. This includes Creative Commons, Public Domain, etc.

Collaborations:

The Clowder platform for DCH is extended by the CyI to accommodate the needs of the DCH community. Additionally, members of the consortium that are interested in different processing of their data closely collaborate with the CyI team to create appropriate extractors. Finally, researchers dealing with digital libraries started a collaboration to define the best possible schema for metadata.

Actions for further development:

There is continuous work to add and extend extraction services and previewers for the platform. Data are uploaded by the partners continuously.

Short name of innovation	Virtual Research Environment (VRE) portal		
Lead developer	Andreas Athenodorou	E-mail address	a.athenodorou@cyi.ac.cy
Lead institution	CyI		
Country	Cyprus		
Type	new service		

Description:

A unique, easy to use, Virtual Research Environment (VRE) portal for the southeast Europe and the Eastern Mediterranean region.

Area of impact:

Scientific communities of Life sciences, Climatology and Digital Cultural Heritage.

Targets:

The target of the VRE is to provide scientist working in the three scientific communities with computing, storage and connectivity resources as well as tools, applications, several datasets and workflows relevant to their work.

Benefits for communities:

Easy access to e-Infrastructure services, unique and user friendly domain-specific services, ability to set up collaborations with other groups/communities, numerus applications well as datasets/workflows.

Benefits for VI-SEEM:

Project contributors can easily access e-Infrastructure and speed up the integration of applications. User friendly portal can attract the interest of new users.

Marketing actions:

The VRE portal will be further presented at appropriate dissemination events such as workshops, conferences, science festivals. In addition it will be presented at universities and domain specific schools such as summer schools and training events. Furthermore, it will be communicated through social media such as LinkedIn, Twitter and Facebook.

Intellectual property:

The VRE portal supports open source licenses which protect the developer.

Collaborations:

The finalized VRE-portal with all the applications integrated will be developed by GRNET, CyI, IICT-BAS, IPB, NIIF, UVT, UPT, UNI BL, UKIM, UOM, RENAM, IIAP-NAS-RA, GRENA, BA, IUCC, and SESAME.

Actions for further development:

Further enrichment of the VRE-portal with more applications, datasets, workflows. Updating of the webpage so that access to e-Infrastructure is easier and improve user friendly character of the VRE. More dissemination events should take place.

Short name of innovation	VI-SEEM Service Catalogue / Portfolio		
Lead developer	Anastas Mishev	E-mail address	anastas.mishev@finki.ukim.mk
Lead institution	UKIM		
Country	Macedonia		
Type	new service, improving user experience		

Description:

VI-SEEM Service Catalogue is a customer facing list of services that are available within VI-SEEM VRE and provide value to the customers of the service providers. The Catalogue also provides different important information on each listed service.

Area of impact:

Community/Marketing

Targets:

VI-SEEM user groups / developers / stakeholders

Benefits for communities:

VI-SEEM Service Catalogue gives a concise overview of broad set of generic as well as application specific services that are offered to the supported scientific communities. It provides an easy way for a user to quickly lookup the information about each provided service.

Benefits for VI-SEEM:

Simplifying task of introducing users, scientific communities, and general public to provided VI-SEEM services.

Marketing actions:

VI-SEEM Service Catalogue will be presented at various dissemination events.

Intellectual property:

Open source license

Collaborations:

VI-SEEM Service Catalogue is developed by VI-SEEM and deployed at UKIM.

Actions for further development: Update when necessary.

Short name of innovation	VI-SEEM Login service		
Lead developer	Nicolas Liampotis	E-mail address	nliam@grnet.gr
Lead institution	GRNET		
Country	Greece		
Type	new service, security, improving user experience		

Description:

VI-SEEM Login service enables individual researchers to seamlessly and securely access VI-SEEM e-Infrastructure resources using federated authentication mechanisms.

Area of impact:

Community/Operations.

Targets:

User groups / developers / system administrators.

Benefits for communities:

Enabling research communities to access VI-SEEM e-Infrastructure resources in a user-friendly and secure way. VI-SEEM Login allows researchers whose home organizations participate in one of the eduGAIN federations to access the VI-SEEM infrastructure and services using the same credentials they are using at their home organization. VI-SEEM Login also supports user authentication with social identities, enabling even those users who do not have a federated account at a home organization to be able to seamlessly access the VI-SEEM services without compromising the security of the VI-SEEM infrastructure.

Benefits for VI-SEEM:

Service standardizes user access control and simplifies integration of different VI-SEEM services into a coherent system.

Marketing actions:

This service will be presented at different workshops, trainings and other dissemination events.

Intellectual property:

Open source license

Collaborations:

VI-SEEM Login service is developed by VI-SEEM and deployed at GRNET.

Actions for further development:

Short name of innovation	VI SEEM-ACCOUNTING		
Lead developer	Dimitar Dimitrov	E-mail address	d.slavov@bas.bg

Lead institution	IICT-BAS
Country	Bulgaria
Type	new service

Short description:

Easy single page integrated dashboard of the accounting data and usage quotas for HPC, Cloud, and Storage Services.

Area of impact:

Community/Operations

Targets:

System administrators/stakeholders/user groups/policymakers.

Benefits for communities:

Users can easily track and monitor their usage among all infrastructure services. Community leaders can monitor the used resources and use the data for dissemination purposes.

Benefits for VI-SEEM:

Project admins can easily monitor and visualize the usage of the infrastructure. Project managers can generate reports. Data can be aggregated for presentation to policymakers.

Marketing actions:

The accounting system will be presented at appropriate conferences and workshops. It will be marketed as a Software as a Service to potential user communities outside of the project.

Intellectual property:

The software will be released under appropriate open source license.

Collaborations:

Entirely developed within IICT-BAS, feedback from users and site-admins.

Actions for further development:

In the future there might be developed plugins for prediction of the usage and load based on the accounting data. A module for custom defined service usage and monitoring can be implemented. Orientation towards most popular KPIs for infrastructure services

Short name of innovation	AFMM		
Lead developer	Zoe Cournia	E-mail address	zcournia@bioacademy.gr
Lead institution	BRFAA		
Country	Greece		
Type	new service		

Description:

AFMM provides an automated platform with which the users can generate parameters for modeling small molecules with Molecular Dynamics simulations.

Area of impact:

Life Sciences Application

Targets:

Chemists, chemical engineers, biologists, physicists, pharmacists, mathematicians, computer scientists

Benefits for communities:

AFMM allows users to access parameters for their Molecular Dynamics simulation of small organic molecules that can be used as drugs or materials.

Benefits for VI-SEEM:

The first necessary step for a reliable Molecular Dynamics simulation is the parametrization procedure. Due to the abundance of organic molecules, no parameters have been created for the full chemical space. To address the limitations in small molecule parameter sets, we have developed AFMM, with which the user can develop parameters for new functional groups and linkers between existing groups in order to use them in biomolecular simulations.

Marketing actions:

The accounting system will be presented at appropriate conferences and workshops. It will be marketed as a Software as a Service to potential user communities outside of the project.

Intellectual property:

The software will be released under appropriate open source license.

Collaborations:

Entirely developed within BRFAA, supported by VI-SEEM.

Actions for further development

Short name of innovation	ChemBioServer		
Lead developer	Zoe Cournia	E-mail address	zcournia@bioacademy.gr
Lead institution	BRFAA		
Country	Greece		
Type	new service		

Description:

ChemBioServer is a publicly available web-application for effectively mining and filtering chemical compounds used in drug discovery.

Area of impact:

Life Sciences Application

Targets:

chemists, chemical engineers, biologists, physicists, pharmacists, mathematicians, computer scientists

Benefits for communities:

ChemBioServer allows for pre-processing of compounds prior to an in silico screen, as well as for post-processing of top-ranked molecules resulting from a docking exercise with the aim to increase the efficiency and the quality of compound selection that will pass to the experimental test phase.

Benefits for VI-SEEM:

Cheminformatics web applications play an essential role for searching, filtering, and clustering chemical compounds for drug discovery (Backman et al., 2011). In recent years, several chemical compound databases have been developed, including Zinc, chemDB, PubChem, and many others (Irwin et al., 2005; Chen et al. 2007, Li et al., 2010). Nevertheless, although knowledge integration can drastically increase the power and the predictive capability of large-scale computational comparisons of chemical structures, online open access web applications for compound mining are limited in number and, importantly, in pipeline integration level. To overcome all previously mentioned limitations, we have developed ChemBioServer as a free web-based application aimed to assist hit selection arising from CADD. ChemBioServer is a web application that automates pre/post-processing tasks during virtual screening. Through a customized workflow, molecules are discarded by evaluating parameters such as vdW energy, geometry, physicochemical properties, and undesired/toxic moieties. The web application is implemented so that the post-processing procedure can be tailored to the specific needs of the user as every compound query is unique.

Marketing actions:

The accounting system will be presented at appropriate conferences and workshops. It will be marketed as a Software as a Service to potential user communities outside of the project.

Intellectual property:

The software will be released under appropriate open source license.

Collaborations

Entirely developed within BRFAA, supported by VI-SEEM.

Actions for further development

We are continuing the development of this webserver. Additional functionalities will be available soon.

Short name of innovation	Nano-Crystal		
Lead developer	Zoe Cournia	E-mail address	zcournia@bioacademy.gr
Lead institution	BRFAA		
Country	Greece		

Type	new service

Description:

NANO-Crystal is a web-based tool, implemented for the construction of nanoparticles of a given radius.

Area of impact:

Life Sciences & materials design Application

Targets:

Chemists, chemical engineers, biologists, physicists, pharmacists, mathematicians, computer scientists

Benefits for communities:

A limiting factor in such modeling studies by the wider scientific community is the absence of a tool that constructs the morphology of nanoparticles. NANO-Crystal is a web-based tool, which constructs spherical nanoparticles of a given radius defined by the user. Apart from the creation of the spherical nanoparticles, we have already developed code that constructs crystal nanoparticles, which is going to be released as an update in NANO-Crystal within 2017.

Benefits for VI-SEEM:

Nanoparticles (NPs) as drug delivery systems have shown significant promise in cancer treatment, where they are used to improve the bio distribution of cancer drugs. Thus, nanoparticles need to be designed with optimal size and surface characteristics in order to decrease side effects and drug toxicity while maximizing treatment impact. Computational approaches assist researchers in this design by modeling nanoparticles to systematize how MNP attributes affect their interaction with cell components as well as with their drug loading. A limiting factor in such modeling studies by the wider scientific community is the absence of a tool that constructs the morphology of nanoparticles. NANO-Crystal is a web-based tool, which constructs spherical nanoparticles of a given radius defined by the user.

Marketing actions:

The accounting system will be presented at appropriate conferences and workshops. It will be marketed as a Software as a Service to potential user communities outside of the project.

Intellectual property:

The software will be released under appropriate open source license.

Collaborations:

Entirely developed within BRFAA, supported by VI-SEEM.

Actions for further development:

Apart from the creation of the spherical nanoparticles, we have already developed code that constructs crystal nanoparticles, which is going to be released as an update in NANO-Crystal within 2017. This computational toolbox computes the macroscopic morphology of any periodic crystal by forming different shapes based on Miller indices and is able to make a link between macroscopic morphology and atomistic structure for a periodic crystal, which is a valuable tool for scientists.

Short name of innovation	Subtract		
Lead developer	Zoe Cournia	E-mail address	zcournia@bioacademy.gr
Lead institution	BRFAA		
Country	Greece		
Type	new service		

Description:

Subtract is an online tool that can calculate the volume of a binding site found in a protein.

Area of impact:

Life Sciences Application

Targets:

Chemists, chemical engineers, biologists, physicists, pharmacists, mathematicians, computer scientists

Benefits for communities:

This tool enables access to the users to be able to calculate the volume of binding sites of proteins of interest in a fast and efficient way. Subtract is a tool that has been created to solve this problem, both for crystal structures downloaded from the protein data bank and for trajectories generated as Molecular Dynamics simulations.

Benefits for VI-SEEM:

Researchers engaged in computer-aided drug design often require an accurate measurement of the volume of a ligand-binding pocket in order to evaluate pharmacology. The volume of a binding site is of great pharmacological significance, both as a structural feature building its pharmacophoric characteristics and as one of the characterizations used in Quantitative Structure-Activity Relationships (QSAR). When the volume of a binding site is known, potential ligands that are too large to fit in that volume can be eliminated early in the drug discovery process, prior to virtual or high-throughput screening. Subtract is a tool that has been created to solve the problem of accurate measurement of the protein binding sites, and works both for crystal structures downloaded from the Protein Data Bank and for protein structures arising from Molecular Dynamics simulations trajectories.

Marketing actions:

The accounting system will be presented at appropriate conferences and workshops. It will be marketed as a Software as a Service to potential user communities outside of the project.

Intellectual property:

The software will be released under appropriate open source license.

Collaborations:

Entirely developed within BRFAA, supported by VI-SEEM.

Actions for further development:

We are continuing the development of this webserver. Additional functionalities will be available soon.

5. Marketing activities and results

5.1. Marketing plans and activities

We have planned some complementary actions that bring our dissemination plan to the next level of proactive marketing, making the services offered by VI-SEEM more attractive to the scientific communities. Here is a brief description of our activities:

- Support leading scientists in presenting and publishing the work achieved by using VRE services at high-profile conferences in the domains of Cultural Heritage, Life Sciences and Climate.
- Update regularly the project web site to give visibility of project results through dynamic and attractive manner.
- Regularly improve the training material collection reflecting changes in the infrastructure and users feedback.
- Promote technical documentation and porting guidelines to researchers of the region and beyond.
- Promote open calls for applications and access among the 3 target communities.
- Ensure VI-SEEM presence (presentation, poster, brochures) at various scientific conferences to promote the scientific results.
- Organize dissemination and introductory training events with emphasis on VI-SEEM services of interest to target audience and possibilities of obtaining access to computing and storage infrastructure. These events are broadly advertised to the research institutions and academic staff.
- Organize presentations targeting academics and general public, emphasising the importance of unified e-infrastructure platform and impact on scientific research, R&D, industry development and society in general under the VI-SEEM framework.
- Promote the VI-SEEM platform and results, through local media targeting different audience.
- Encourage visits of students to the resource centres.
- Establishing contacts with potential industrial users and SMEs and discussing their eventual needs and search for possibilities for future collaboration.
- Establishing contacts and possible collaborations with other e-Infrastructure related projects.
- Bring the activities of the VI-SEEM project to the attention of government and politicians and try to gain long-term support towards sustainability of national e-Infrastructures.

In the next section we present the implementation of the Marketing plan in the table proposed in D2.3.

5.2. Marketing report

Target Audience	Main Actions	Implementing Date
User communities (scientific, R&D, industry and SMEs)	**1.1. Organize one dissemination event at national level** *This event will be advertised to wide range of Institutions, research groups or SMEs/industry through personal invitations, mailing lists, bulletin board, regular mail, etc.*	
	Partner: All partners	Date: project duration
	*VI-SEEM national dissemination event in Moldova (organized by **RENAM**)*	*13 July 2016, Chisinau, Moldova*
	*VI-SEEM national dissemination event in Armenia (organized by **IIAP-NAS-RA**)*	*27 September 2016, Yerevan, Armenia*
	*VI-SEEM national dissemination event in Georgia (organized by **GRENA)***	*7 October 2016, Tbilisi, Georgia*
	*VI-SEEM national dissemination event in Bulgaria (organized by **IICT-BAS**)*	*3 November 2016, Sofia Bulgaria*
	*VI-SEEM national dissemination event in BiH (organized by **UniBL**)*	*8 November 2016, Banja Luka, BiH*
	*VI-SEEM national dissemination event in Cyprus (organized by **CyI**)*	*9 December 2016, UCLan, Pyla, Cyprus*
	*VI-SEEM national dissemination event in Montenegro (organized by **UOM**)*	*27 February 2017,* Žabljak, Montenegro
	1.2. Investigate the possibility to offer resources to new scientific communities. *The project intends to open calls for proposals, for access to VI-SEEM resources intended for scientists of the SEEM region in the fields of Cultural Heritage, Life Sciences and Climatology. We also will consider the option to help to new user communities.*	
	Partner: All partners	Date:
	1st VI-SEEM call for proposals *22 proposals submitted by scientific teams from 12 partners*	*Open: 14 October 2016* *Closed: 14 November*
	1.3. Create a concise and effective brochure with all VI-SEEM services clearly listed and distribute it at dissemination events and electronically to existing VI-SEEM users and other interested parties	
	Partner: All partners	Date:

	VI-SEEM services portfolio	*February 2017*
General public	**2.1. Publish a popular article about VI-SEEM results in a magazine or journal** (printed or online edition)	
	Partner: All partners	Date:
	(IICT-BAS) Atanassov, E., Karaivanova, A., Gurov, T., "Services And Infrastructure For Virtual Research Environments - For Use By Science And Business", International Scientific Journal Industry 4.0, Issue 2, 2016, pp. 110-113, Published by Sci Tech Union of Mechanical Engineering, ISSN:2543-8582, (open access) http://stumejournals.com/i4/2016/2-2016.pdf	*December 2016*
	(CyI) Christoudias, T., Alvanos, M., "Accelerated chemical kinetics in the EMAC chemistry-climate model", 2016 International Conference on High Performance Computing & Simulation (HPCS), Innsbruck, 2016, pp. 886-889. doi: 10.1109/HPCSim.2016.7568427 http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7568427&isnumber=7568299	*September 2016*
	(UniBL) Digitalna tehnika za arheologe (BLIC daily newspaper, page 23)	*8 November 2016*
	(UniBL) VI-SEEM: Sedmi u nizu istraživački projekat EU u kojem učestvuje Elektrotehnički fakultet UNIBL, University of Banja Luka Newsletter	*28 October 2016*
	2.2. VI-SEEM presence possibilities in a "popular science" events targeting schools and general wide public such as science fair, science competitions and science festival will be explored	
	Partner: All partners	Date: project duration
	(RENAM) Preparation of flier and booklet with information about DICOM application and its support by VI-SEEM platform that will be published in 1000 ex. and widely disseminated at national level.	*March 2017*
Students and academic staff	**3.1. Organize presentations of the VI-SEEM integrated platform and results to local universities** *These presentations can be part of lectures or seminars at local universities, or independent presentation at universities.*	
	Partner: All partners	Date:

	(IICT) VI-SEEM integrated platform presentation for students from Sofia University	*17 March 2016*
	(IICT) VI-SEEM integrated platform presentation for students from Plovdiv University	*31 March 2016*
	(GRENA) Presentation of VI-SEEM project results in Batumi Shota Rustaveli State University, http://gmu.ge/batumi2016/index.html. *(RENAM) Presentation of resources and services of VI-SEEM platform for students from three universities (The Technical University, the State University and the Academy of Economical Studies) participated in the NREN services promotional event organized by RENAM in the Academy of Economical Studies of Moldova (organized by RENAM).*	*5-9 September 2016* *Tbilisi, Georgia* *08 December 2016*
	(IICT) VI-SEEM infrastructure and services presented for from the Sofia University	*23 February 2017*
	(IPB) VI-SEEM infrastructure and services presented for from the University of Novi Sad	4 March 2017
	(IPB) VI-SEEM infrastructure and services presented for from the University of Belgrade	6 March 2017
	(UniBL) VI-SEEM Project Presentation for students from University of Banja Luka	*21 March 2017*
	3.2. Organize a short resource centre tour for a group of students	
	Partner: All partners	Date: project duration
	(IICT) Visiting AVITOHOL (*tour for students from Sofia University)*	*17 March 2016*
	(IICT) Visiting AVITOHOL (*tour for students from Plovdiv University)*	*31 March 2016*
	(CyI) Visiting Cy-Tera (tour for students from GCS School of Careers (Nicosia))	*11 November 2016*
	(CyI) Visiting Cy-Tera (tour for students from Leivadia High School (Larnaca))	*1 December 2016*
	(CyI) Visiting Cy-Tera (tour for Geosciences Masters' students from the University of Lebanon)	*15 December 2016*
	(CyI) Visiting Cy-Tera (tour for students from Pallouriotissa High School (Nicosia))	*19 December 2016*
	(CyI) Visiting Cy-Tera (tour for students from Agios Mamas Primary School)	*14 February 2017*

	(GRNET) ARIS system site visit. Tour for 25 students from Technical High School (1st EPAL of Galatsi)	*15 Feb 2017*
	(GRNET) ARIS system site visit. Tour for 20 students from Technical High School (6th EPAL of Athens)	*01 March 2017*
	(GRENA) Visiting GRENA data center GE-01-GRENA Grid site and virtual server facility (tour for students from Tbilisi State University	*29 October 2016*
	(GRENA) Visiting GRENA data center GE-01-GRENA Grid site and virtual server facility (tour for students from Cisco Networking Academy	*29 October 2016*
	(IICT) Visiting AVITOHOL (tour for students from Sofia University)	*23 February 2017*
	(UniBL) Visit to the ETF-CC01 – Student tour	*23 March 2017*
	3.3 Offering an internship position(s) at local resource centres to a student in suitable field	
	Partner: All partners	Date: project duration
	(IICT-BAS) Signed program for internship positions between IICT-BAS and Sofia University and Technical University - Sofia	2016
	4.1. Present VI-SEEM services and benefits of VRE usage for R&D, industry and SMEs at related events	
	Partner: All partners	Date:
	(IICT-BAS) VI-SEEM presentation at: • Open Forum "Big Data acquisition, storage, processing and visualization: • Open workshop "Mathematical Modeling and Advanced Computing for Science and Industry"; • International Scientific Conference "INDUSTRY 4.0", www.industry-4.eu • Annual Conference of the BG section of SIAM 2015 • Annual Conference of the BG section of SIAM 2016 (GRNET): VI-SEEM presentation at: • HPC for SMEs in Greece, Presentation at the annual meeting of the si-Cluster Partnering Meeting (~60 SMEs represented)	*13 November 2015, Sofia* *12 May 2016, Sofia* *12-15 Dec 2016, Borovets* *21-22 December 2015, Sofia* *20-22 December 2016, Sofia* *02 December 2016, Athens, Greece*

	(UniBL) VI-SEEM presentation at: XI International Symposium on Industrial Electronics - INDEL 2016 (GRENA) VI-SEEM presentation at: • First meeting of IT Employers Council of the Millennium Challenge Account, held in Association GRENA office. (RENAM) VI-SEEM presentation at: • Joint event "e-Infrastructures of RENAM and ACADEMICA Network – current state and development perspectives" organized by RENAM and the Information Society Development Institute in Moldova	*3-5 November 2016* *9 February 2017* *15 March 2017*
	4.2. Explore and specify other possibilities of reaching out to SMEs and industry and establishing contacts	
	Partner: All partners	Date: project duration
	(IICT-BAS): • Present VI-SEEM domain specific services for Life Sciences and discuss possibilities in follow-up meeting for use by SME making medical devices AMET Ltd. • Discuss VI-SEEM integration platform with SME representatives during the Conference: "IdeastIT 2016: Accelerating forward", organized by HPE Bulgaria, Sofia Event Center, Bulgaria. • Present VI-SEEM data services and discuss possibilities in follow-up meeting for use by IT SME Icom Ltd. • Present VI-SEEM integrated platform and discuss possibilities for collaboration in follow-up meeting by IT SME Technologica Ltd. • Discuss advantages of VI-SEEM VRE with SME representatives and academics working with them at Industry 4.0 international scientific conference, Borovets, Bulgaria. (UniBL) Series of presentations and meetings with representatives of institutions: • Museum of Republika Srpska • Museum of Modern Art of RS • National and University Library of RS	17 May 2016, 18 January 2017 9 June 2016 18 November 2016, 11 January 2017 8 December 2016, 4 January 2017 12-15 December 2016 M01 to M18

	• Archive of RS • Republic Institute for the Protection of the Cultural Heritage • Ministry of Science and Technology	
	(GRENA**)** Several meetings and discussions about GRENA projects (GEANT, EaPConnect and Vi-SEEM) with IT company “Orient Logic” - discuss state-of-the-art equipment for GRENA data center.	15 February 2017
	(RENAM): Presentation of DICOM Network Application and regional integrated VI-SEEM platform as a basis for its development and operational support for participation in the National Innovative Idea Competition organized by the he Agency for Innovation and Technology Transfer (AITT).	07 December 2016

6. Conclusions

The dissemination, training, marketing and innovation activities during the first project period were based on the initial dissemination and training plans presented in the project deliverables D2.3 and D2.4. These plans were further updated according to the needs of the three scientific communities (Cultural Heritage, Climate and Life Sciences). Dissemination and training events were organised at national and regional level. Complimentary dissemination events were included in the marketing plan. Three regional trainings and 6 national trainings were organized during the reporting period. Standard training evaluation form is made available to trainees after all trainings and their feedback is used as valuable input for increasing the quality of future trainings. The remaining planned regional and national dissemination and training events will be organized in the second half of the project.

Promotional package has been produced and distributed at a number of events. General project presentation is frequently used and it is updated regularly to include the new developments and achievements of the project. The web presence consists of the VI-SEEM official web site, VRE portal and Training Portal and VI-SEEM Wiki.

Innovation and marketing strategies have been developed and activities performed according to the plan.

In summary, the activity achieved:

- 7 country level dissemination events.
- 26 external event presentations.
- 25 published papers.
- 10 training events (3 regional, 7 national).

The activities are on track and cover well the region and the target user communities.

ANNEX 1: Innovation register

Name	Lead developer	Lead institution	Country	Type	Description	Area of impact	Targets	Benefits for communities	Benefits for VI-SEEM	Marketing actions	Intellectual property	Collaboration	Action for further development
Short name of innovation	**Name and email**	**Abbreviation**	**Name**	**Expand market, new service, safe money, improving**	**Short description of innovation**	**Community/Service/Data/ Computing/Operations/Marketing,…**	**Describe what is the target of an innovation - user groups, policymakers, developers,…**	**Describe benefit for user, if any**	**Describe benefit for the project from innovation**	**What marketing actions are required**	**Describe how the intellectual property will be protecting**	**List of collaborations**	**Describe actions for further development**
VISEEM-ACCOUNTING	Dimitar Dimitrov d.tsvetov@bas.bg	IICT-BAS	BG	new service	Easy single page integrated dashboard of the accounting data and usage quatas for HPC, Cloud, Storage Services	Community/Operations	system administrators/stakeholders/user groups/policymakers	Users can easily track and monitor their usage among all infrastructure services. Community leaders can monitor the used resources and use the data for dissemination purposes.	Project admins can easily monitor and visualize the usage of the infrastructure. Project managers can generate reports. Data can be aggregated for presentation to policymakers	The accounting system will be presented at appropriate conferences and workshops. It will be marketed as a Software as a Service to potential user communities outside of the project	The software will be released under appropriate open source licence.	Enterily developed within IICT-BAS, feedback from users and site-admins.	In the future there might be developed plugins for prediction of the usage and load based on the accounting data. A module for custom defined service usage and monitoring can be implemented. Orientation towards most popular KPIs for infrastructure services
Virtual Research Environment (VRE) portal	Andreas Athenodorou a.athenodorou@cyi.ac.cy	CyI	CY	new service	A unique, easy to use, Virtual Reasearch Environment (VRE) portal for the southeast Europe and the Eastern Mediterranean region	Scientific communities of Life sciences, Climatology and Digital Cultural Heritage.	The target of the VRE is to provide scientist working in the three scientific communities with computing, storage and connectivity resources as well as tools, applications, several datasets and workflows relevant to their work.	Easy access to e-Infrastructure services, unique and user friendly domain-specific services, ability to set up collaborations with other groups/communities, numerus applications well as datasets/workflows.	Project contributors can easily access e-Infrastructure and speed up the integration of applications. User friendly portal can attract the interest of new users.	The VRE portal will be further presented at appropriate dissemination events such as workshops, conferences, science festivals. In addition it will be presented at universities and domain specific schools such as summer schools and training events. Furthemore, it will be communicated through social media such as Linkedin, Twitter and Facebook.	The VRE portal supports open source licences which protect the developer.	The finalized VRE-portal with all the applications integrated will be developed by GRNET, CyI, IICT-BAS, IPB, NIIF, UYT, UPT, UNI BL, UKIM, UOM, RENAM, BAP-NAS-RA, GRENA, BA, IUCC, SESAME	Further enrichment of the VRE-portal with more applications, datasets, workflows. Uptating of the webpage so that access to e-Infrastructure is easier and improve user friendly character of the VRE. More dissemination events should take place.
Clowder for Digital Cultural Heritage	Panayiotis Charalambous ps.charalambous@cyi.ac.cy	CyI	CY	new service, improving user experience	A Content Management System for Digital Cultural resources. Data are processed, transformed and visualized based on data-type. Users can manage access to data	Scientific community of Digital Cultural Heritage.	The target of the Clowder CMS for DCH is to help users from the DCH communities to upload, organize and share their data.	Users can share data, create communities to collaborate. Additionally, data are being processed and transformed on the background based on requirements.	This is a common platform for people in the DCH communities, therefore people come together to collaborate and exchange data more easily.	This platform is and will be presented at various dissemination events such as workshops and training events.	Users can define intellectual property rights for the data. This includes Creative Commons, Public Domain, etc.	The Clowder platform for DCH is extended by the CyI to accommodate the needs of the DCH community. Additionally, members of the consortium that are interested in different processing of their data closely collaborate with the CyI team to create appropriate extractors. Finally, researchers dealing with digital libraries started a collaboration to define the best possible schema for	There is continuous work to add and extend extraction services and previewers for the platform. Data are uploaded by the partners continuously.
VI-SEEM Login service	Nicolas Liampotis nliam@grnet.gr	GRNET	GR	new service, improving user experience	VI-SEEM Login service enables individual researchers to seamlessly and securely access VI-SEEM e-Infrastructure resources using federated authentication mechanisms.	Community/Operations	User groups / developers / system administrators	Enabling research communities to access VI-SEEM e-Infrastructure resources in a user-friendly and secure way. VI-SEEM Login allows researchers whose home organisations participate in one of the eduGAIN federations to access the VI-SEEM infrastructure and services using the same credentials they are using at their home organisation. VI-SEEM Login also supports user authentication with social identities, enabling even those users who do not have a federated account at a home organisation to be able to seamlessly access the VI-SEEM services without compromising the security of the VI-SEEM infrastructure.	Service standardizes user access control and simplifies integration of different VI-SEEM services into a coherent system.	This service will be presented at different workshops, trainings and other dissemination events.	Open source licence	VI-SEEM Login service is developed by VI-SEEM and deployed at GRNET.	
VI-SEEM Service Catalogue / Portfolio	Anastas Mishev anastas.mishev@finki.ukim.mk	UKIM	FYRoM	new service, improving user experience	VI-SEEM Service Catalogue is a customer facing list of services that are available within VI-SEEM VRE and provide value to the customers of the service providers. The Catalogue also provides different important information on each listed service.	Community/Marketing	VI-SEEM user groups / developers / stakeholders	VI-SEEM Service Catalogue gives a concise overview of broad set of generic as well as application specific services that are offered to the supported scientific communities. It provides an easy way for a user to quickly lookup the information about such provided service.	Simplifiyng task of introducing users, scientific communities, and general public to provided VI-SEEM services.	VI-SEEM Service Catalogue will be presented at various dissemination events.	Open source licence	VI-SEEM Service Catalogue is developed by VI-SEEM and deployed at UKIM.	
AFMM	Zoe Cournia zcournia@bioacademy.gr	BRFAA	GR	new service	AFMM provides an automated platform with which the users can generate parameters for modeling small molecules with Molecular Dynamics simulations.	Life Sciences Application	chemists, chemical engineers, biologists, physicists, pharmacists, mathematicians, computer scientists	AFMM allows users to access parameters for their Molecular Dynamics simulation of small organic molecules that can be used as drugs or materials.	The first necessary step for a reliable Molecualr Dynamics simulation is the parametrization procedure. Due to the abundance of organic molecules, no parameters have been created for the full chemical space. To address the limitations in small molecule parameter sets, we have developed AFMM, with which the user can develop parameters for new functional groups and linkers between existing groups in order to use them in biomolecular simulations.	The accounting system will be presented at appropriate conferences and workshops. It will be marketed as a Software as a Service to potential user communities outside of the project.	The software will be released under appropriate open source licence.	entirely developed within BRFAA	
ChemBioServer	Zoe Cournia zcournia@bioacademy.gr	BRFAA	GR	new service	ChemBioServer is a publicly available web-application for effectively mining and filtering chemical compounds used in drug discovery.	Life Sciences Application	chemists, chemical engineers, biologists, physicists, pharmacists, mathematicians, computer scientists	ChemBioServer allows for pre-processing of compounds prior to an in silico screen, as well as for post-processing of top-ranked molecules resulting from a docking exercise with the aim to increase the efficiency and the quality of compound selection that will pass to the experimental test phase.	Cheminformatics web applications play an essential role for searching, filtering, and clustering chemical compounds for drug discovery (Backman et al., 2011). In recent years, several chemical compound databases have been developed, including Zinc, chemDB, PubChem, and many others (Irwin et al., 2005; Chen et al. 2007, Li et al., 2010). Nevertheless, although knowledge integration can drastically increase the power and the predictive capability of large-scale computational comparisons of chemical structures, online open access web applications for compound mining are limited in number and, importantly, in pipeline integration level. To overcome all previously mentioned limitations, we have developed ChemBioServer as a free web-based application aimed to assist hit selection arising from CADD. ChemBioServer is a web application that automates pre/post-processing tasks during virtual screening. Through a customized workflow, molecules are discarded by evaluating parameters such as vdW	The accounting system will be presented at appropriate conferences and workshops. It will be marketed as a Software as a Service to potential user communities outside of the project.	The software will be released under appropriate open source licence.	entirely developed within BRFAA	We are continuing the development of this webserver. Additional functionalities will be available soon.
Nano-Crystal	Zoe Cournia zcournia@bioacademy.gr	BRFAA	GR	new service	NANO-Crystal is a web-based tool, implemented for the construction of nanoparticles of a given radius.	Life Sciences & materials design Application	chemists, chemical engineers, biologists, physicists, pharmacists, mathematicians, computer scientists	A limiting factor in such modeling studies by the wider scientific community is the absence of a tool that constructs the morphology of nanoparticles. NANO-Crystal is a web-based tool, which constructs spherical nanoparticles of a given radius defined by the user. Apart from the creation of the spherical nanoparticles, we have already developed code that constructs crystal nanoparticles, which is going to be released as an update in NANO-Crystal within 2017.	Nanoparticles (NPs) as drug delivery systems have shown significant promise in cancer treatment, where they are used to improve the biodistribution of cancer drugs. Thus, nanoparticles need to be designed with optimal size and surface characteristics in order to decrease side effects and drug toxicity while maximizing treatment impact. Computational approaches assist researchers in this design by modelling nanoparticles to systematize how MNP attributes affect their interaction with cell components as well as with their drug loading. A limiting factor in such modeling studies by the wider scientific community is the absence of a tool that constructs the morphology of nanoparticles. NANO-Crystal is a web-based tool, which constructs spherical nanoparticles of a given radius defined by the user.	The accounting system will be presented at appropriate conferences and workshops. It will be marketed as a Software as a Service to potential user communities outside of the project.	The software will be released under appropriate open source licence.	entirely developed within BRFAA	Apart from the creation of the spherical nanoparticles, we have already developed code that constructs crystal nanoparticles, which is going to be released as an update in NANO-Crystal within 2017. This computational toolbox computes the macroscopic morphology of any periodic crystal by forming different shapes based on Miller indices and is able to make a link between macroscopic morphology and atomistic structure for a periodic crystal, which is a valuable tool for scientists.
Subtract	Zoe Cournia zcournia@bioacademy.gr	BRFAA	GR	new service	Subtract is an online tool that can calculate the volume of a binding site found in a protein.	Life Sciences Application	chemists, chemical engineers, biologists, physicists, pharmacists, mathematicians, computer scientists	This tool enables access to the users to be able to calculate the volume of binding sites of proteins of interest in a fast and efficient way. Subtract is a tool that has been created to solve this problem, both for crystal structures downloaded from the protein data bank and for trajectories generated as Molecular Dynamics simulations.	Researchers engaged in computer-aided drug design often require an accurate measurement of the volume of a ligand-binding pocket in order to evaluate pharmacology. The volume of a binding site is of great pharmacological significance, both as a structural feature building its pharmacophoric characteristics and as one of the characterizations used in Quantitative Structure-Activity Relationships (QSAR). When the volume of a binding site is known, potential ligands that are too large to fit in that volume can be eliminated early in the drug discovery process, prior to virtual or high-throughput screening. Subtract is a tool that has been created to solve the problem of accurate measurement of the protein binding sites, and works both for crystal structures downloaded from the Protein Data Bank and for protein structures arising from Molecular Dynamics simulations trajectories.	The accounting system will be presented at appropriate conferences and workshops. It will be marketed as a Software as a Service to potential user communities outside of the project.	The software will be released under appropriate open source licence.	entirely developed within BRFAA	We are continuing the development of this webserver. Additional functionalities will be available soon.