URGENT – Urban Resilience and Adaptation for India and Mongolia

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Report of Three-Day event for
URGENT eScience Development
Hybrid Workshop

**March 15th to March 17th 2023
in Halle, Germany**

Hosted by…

MARTIN-LUTHER-UNIVERSITÄT
HALLE-WITTENBERG

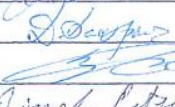**In Cooperation with Partner Institutions…**

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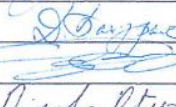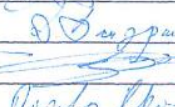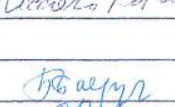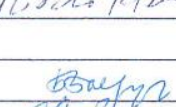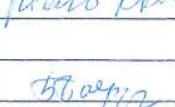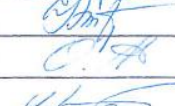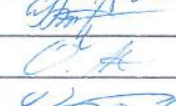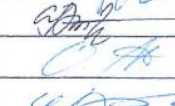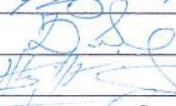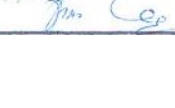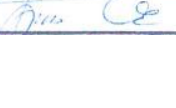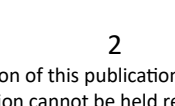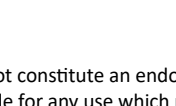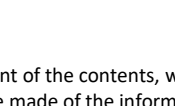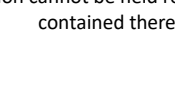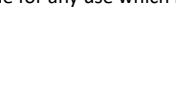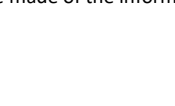
1. Attendees

1.1 In-Person Attendees

A total of 13 participants attended the eScience Development workshop hosted by the Martin Luther University of Halle-Wittenberg in person. A list of participants can be found below as well as signatures of the attendees for each day of the meeting. One participant from Italy had to cancel their participation last-minute and as such was not present during the meeting. From European partners, the University of Catania, Italy and the Martin Luther University of Halle-Wittenberg were represented, and from the Mongolian partners, the Khovd School of Science and Technology, the Mongolian University of Life Sciences, the National University of Mongolia and the National Garden Park were present.

- **Christine Fürst**, Martin-Luther University of Halle-Wittenberg (MLU)
- **Arjan de Groot**, Martin-Luther University of Halle-Wittenberg (MLU)
- **Riccardo Privitera**, University of Catania (UNICT)
- **Ochir Altansukh**, National University of Mongolia (NUM)
- **Chonokhuu Sonomdagva**, National University of Mongolia (NUM)
- **Davaasuren Davaadorj**, National University of Mongolia (NUM)
- **Bayarkhuu Bathbayar**, Khovd University (KHU)
- **Amarzaya Gulguu**, Khovd University (KHU)
- **Belguun Agvaanamkhaidorj**, Mongolian University of Life Sciences (MULS)
- **Banzragch Dalai**, Mongolian University of Life Sciences (MULS)
- **Bolor-Erdene Nergui**, National Garden Park (NGP)
- **Orgilsaikhan Bathuyag**, National Garden Park (NGP)

List of In-Person Participation at URGENT Workshop in Halle [15.03. - 17.03.23]				
Last Name	First Name	Signature Day 1	Signature Day 2	Signature Day 3
Fürst	Christine			
de Groot	Arjan			
Dalai	Banzragch			
Agvaannamkhaidorj	Belguun			
Privitera	Riccardo			
Pappalardo	Viviana			
Batbayar	Bayarkhuu			
Gulguu	Amarzaya			
Altansukh	Ochir			
Sonomdagva	Chonokhuu			
Davaadorj	Davaasuren			
Nergui	Bolorerdene			
Bathuyag	Orgilsaikhan			

1.2 Online Attendees

Representatives from the Indian partner institutions joined the meeting through an online conference room and participated in the meeting through that mode of communication. Participants from all Indian partner universities were present and all discussion on- and offline during official meeting hours were heard by both in-person and online attendees.

2. Day 1 - 15th of March 2023

2.1 Inauguration

After the arrival of the participants on the previous day, March 14th, the eScience Development Workshop at the Martin Luther University of Halle-Wittenberg officially began at 9:30 am. A full agenda is attached at the end of this report and can also be found online on the URGENT website. Once participants had arrived and signed in, Prof. Dr. Christine Fürst, Head of Department of Sustainable Landscape Department at MLU, provided Words of Welcome and started the three-day workshop. Prof. Dr. Christine Fürst outlined the aims and goals of the workshop and spoke about the objectives of the following days. Mentioned therein was specifically

- the state of the newly designed and updated university courses of both Indian and Mongolian universities
- the ongoing process of reviews of the above-mentioned courses by EU partners
- the state of the art and scientific research focus of the Martin Luther University
- the possibility of devising one or more new courses with a specific focus on strengthening the URGENT eScience portfolio
- exploring the Blended Learning concept within the remaining timeframe of the project
- making use of MOOC or MOOC-like structures to support the URGENT eScience development
- discussing planned and potentially additional and new mobility events in European partner countries as well as in Mongolia and India.

Prof. Dr. Christine Fürst,
MLU Halle-Wittenberg

2.2 MLU Facilities and University Structure

Following the inauguration, Prof. Dr. Christine Fürst gave a presentation on the university structure and especially the scientific research conducted by the Department of Sustainable Landscape Development. Prof. Dr. Fürst spoke about the various Institutes and Working Groups at the university as well as mentioned new research projects and ambitions for cooperation in the future. At the end of the presentation, there was a short discussion surrounding possible cooperative projects within the next year under the URGENT umbrella and their feasibility is currently being explored through bilateral means.

2.3 International Office

Next, there was a speech regarding the efforts of the International Office at the MLU. The International Office supports all areas of the university in their internationalization activities and works closely with the Halle-based research institutes of the Max Planck Society, the Helmholtz Association, the Leibniz Association and the Fraunhofer Society as well as with the National Academy of Sciences - Leopoldina and the City of Halle. The departments International Student Mobility, International Academic Mobility and International Service Office provide information and advice to international and domestic students, doctoral candidates and academics as well as staff, trainees and alumni of the University of Halle on opportunities for study abroad, semesters abroad at the University of Halle, financing options, their support services and their many and varied partnerships with universities and research institutions worldwide.

2.4 Ongoing Research Projects

Several researchers within the Departmen of Sustainable Landscape Sciences gave a presentation on their scientific projects in order to provide the attendees of the three-day workshop with an insight of the science being done at the university as well as to potentially exchange contact information and ideas for research methods.

- **Ecu-MAES and WASCAL**
  Dr. Hongmi Koo spoke about the Ecu-MAES project, a national ecosystem services assessment which aims to map the status and future development of ecosystem services and biodiversity in Ecudaor. She also reported about the WASCAL project, which aims to combat climate change and improve livelihoods in West Africa.
  More information about the projects can be found under the following links:
  Ecu-MAES
  WASCAL

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- **RENATUR**

  Dr. Nica Claudia Calò presented the RENATUR project. The project aims at improving regional policies to better protect natural heritage of peri-urban open spaces. More information about the project can be found here.

- **Faktencheck Artenvielfalt**

  Dr. Janina Kleeman spoke about a project funded by the Federal Ministry for Education and Research (BMBF) with the name "Faktencheck Artenvielfalt". The project assesses and values the state of biodiversity in Germany. It is a combined effort of approximately 140 scientists and aims at promoting biodiversity and developing efficient policy options to protect it. More information can be found on the project website.

2.5 **Session 1 – Partner Presentations**

Following the introduction of the Martin Luther University, its facilities, institutions and research focus, the workshop moved into its first session, allowing the in-person partners to showcase their latest scientific projects and development. Each Mongolian partner gave a brief presentation on latest developments, with a specific focus on eScience development and with regards to current and potential contributions to the URGENT Stakeholder Interactive Platform (SIP). Below is a list of the mentioned developments that were presented during the first session.

- o Development of a website with the goal of assisting research-training. All partners as well as all signatories for the URGENT SIP platform can visit and access information, consume video tutorials or listen to online seminars. The link to the website is: https://sites.google.com/view/envilab

- o Joint scientific projects were presented such as a project on UrbanLakes, Selenge-Land, UrbanNature and Selenge-Water. More information can be found here – although at present the information is only available in Mongolian.
- o Tutorials on how to apply and use the various tools and instruments developed and attained through the URGENT project. More information (in Mongolian language) can be found here.
- o The upcoming Summer School in Mongolia was also showcased and introduced during this session. The Summer School is scheduled to take place in late Summer at the National University of Mongolia and it is expected to last for 5 days and include (1) an SIP Workshop, (2) a Field trip and (3) another input that is yet to be decided and will be discussed during this workshop in Halle.
- o Additional scientific projects conducted in Mongolia that relate to the overall aims and goals of the URGENT project such as projects related to Green and Blue Infrastructure or Climate Change mitigation.

2.6 Session 1 – Review of University Courses developed under the URGENT project

The next input of Day 1 consisted of a review of the state of the new university courses in Indian and Mongolian universities. Prof. Dr. Ochir Altansukh provided an overview of the process of each Mongolian university course and detailed the current accreditation process as well as the expected inauguration of the courses. The necessary steps to develop and revise existing courses is listed below as well as an overview of the current state of the courses.

1. Analyze the topic and content of the same or similar subjects in the university.
2. Find and compare the same or similar course content from the top 100 universities in the world
3. Discuss with the department's curriculum committee and make a decision on whether the course can be further developed in the context of the content.
4. Prepare course descriptions according to the given format – Project format in English, the university format in Mongolian
5. Prepare video presentation of the course in English and Mongolian
6. Prepare a poster with the presentation of the course
7. Send to employers and collect their comments and recommendations
8. Send to partner university and collect their comments and recommendations
9. Collect comments and recommendations of the department to which the course belongs
10. Send to EU reviewer and collect his/her comments and recommendations
11. Make improvements according to the comments received, if necessary
12. Finalize your course description
13. Preparation of reading and additional materials
14. Preparation of examination materials
15. Discuss the developed/revised course with the department's curriculum committee
16. Prepare lecture and seminar PPT and video lectures/seminars/laboratories for each course topic
17. Create admin access in Open EDX
18. Develop e-courses and upload them to open EDX
19. Preparation of Teaching and learning materials for the subject,
20. Teach and get student feedback after the course
21. Make improvements according to the comments received, if necessary
22. Accredit by the department's curriculum committee – in 2023
23. Deliver to the National Project Coordinator and General Manager

№	E-course name	Course index and level	By	Course status new/revise	Content analysis	Comparative world level	Department curriculum committee – 1st	Course description MNG/ENG	Course introduction MNG/ENG	Poster	Employer review	Partner HEI review	Department review	Eu expert review	Revision – 1st	Revised course description MNG/ENG	Reading and supplementary materials	Test pool	Department curriculum committee – 2nd	Presentations – lecture, seminar, lab	Open EDX access	Public open online course	Teaching-learning material	Students comment	Revision – 2nd	Accreditation by department	Hand over to the department
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	Application of RS and GIS to environmental research	ENVI402 Bachelor	O.Altansukh	Revise	+	+	+	+	+	+	+	+	+				+	+			+	+					
2	Urban logistics and environment	ENEN301 Bachelor	B.Enkhchimeg	New	+	+	+	+	+	+	+	+	+				+	+			+						
3	Sustainable development	ENVI312 Bachelor ENVI618 Master	D.Davaadorj S.Enkhtsetseg	Revise	+	+	+	+	+	+											+						
4	Environmental management	ENVI801 Doctor	B.Ariunsanaa	New	+	+	+	+	+	+	+		+				+	+			+						
5	Nature conservation and protected area management	ENVI802 Doctor	N.Oyunchimeg	New	+	+	+	+	+	+	+	+	+				+	+			+	+	+	+			

The online participants from India also reported about their ongoing process and the results of the accreditation process and the design of new courses is listed on the URGENT website. Overall, the state of new courses in India proceeded well and it is expected that they are part of the new curriculum now.

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2.7 **Session 1 – Introduction to the Blended Learning Concept**

The agenda and preparations for the eScience Development workshop at MLU suggested the exploration of the Blended Learning Concept to investigate the potential use of the concept for developing a new eCourse focused on the aims of the URGENT goals and objectives. To this end, Arjan de Groot gave a presentation on the concept of Blended Learning, its uses and applications. This was carried out in order to provide all participants of the workshop with the necessary background information to then decide the feasibility of the concept for potentially devising a new course. Arjan de Groot also introduced the various types of Blended Learning concepts such as **Rotation Model, Flex Model, A La Carte Model** and **Enriched Virtual Model**. He then showcased an example of a Blended Learning course conducted by himself on the topic of Geographical Information Systems (GIS). The participants discussed the feasibility of the various models and its application for achieving the goals of the URGENT project.
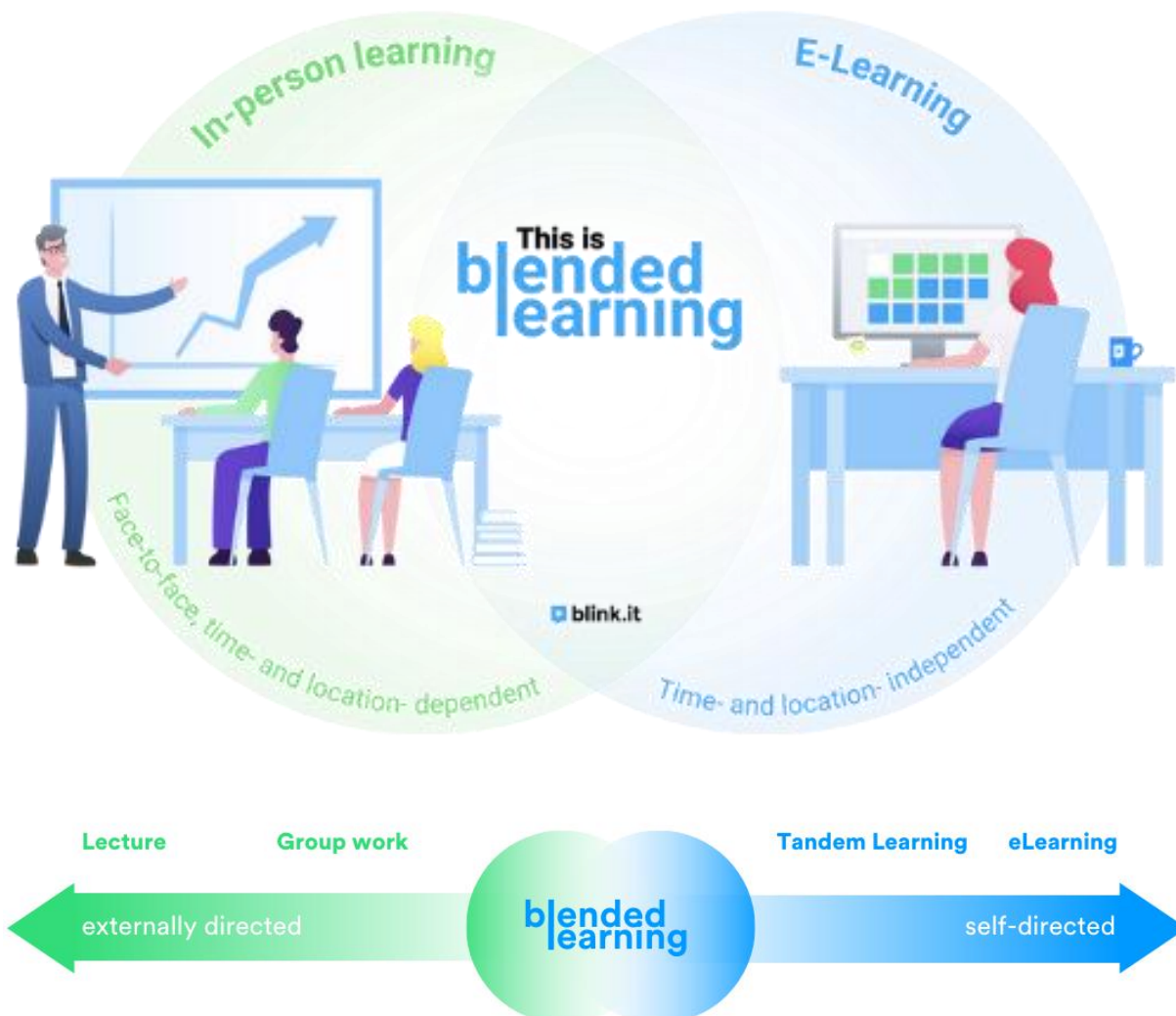
2.8 **Session 1 – Review of existing eCourses**

The final input of Day 1 consisted of a review of the existing eCourses at Indian and Mongolian partner universities. Due to this workshop's focus on strengthening the eScience portfolio, a breakout session took place in which the in-person attendees from Mongolia and the Online participants from India reviewed the current availability of eCourses and then presented their results to the plenary. Dr. Altansukh gave an overview of various eCourses in Mongolia and Prof. Dr. Jayakumar and Prof. Dr. Akhlaq Wani presented the results from India. At present, there are a variety of eCourses hosted at each partner university, but it became clear that there was a lack of eCourses related to the overall aims of the URGENT project.

As such, the final discussion of the day was spent on discussing potential topics for a new eScience course that could be developed for the Indian and Mongolian Universities with the help of the European partners. It was agreed to deliberate a potential topic for a new course the next day as well as explore the potential to develop a new eCourse by applying the Blended Learning concept and use one of the various models introduced earlier.

After the workshop activities concluded, Prof. Dr. Christine Fürst took all the participants for a walking tour through the city of Halle and showcased various buildings and important university facilities.

3. Day 2 - 16th of March 2023

3.1 Review and Preparation of Day 2

After all participants had arrived in the morning, a short recap and discussion on the experiences of Day 1 began. Participants reflected on the various inputs they received the previous day and a discussion surrounding the use of various models of Blended Learning concepts took place with both online and in-person attendees participating in the discussions.

3.2 Breakout Rooms for Developing a new (Blended Learning) eCourse

The morning and afternoon sessions of the second day of the eScience Development workshop were primarily spent in breakout sessions. The participants were spread into separate breakout rooms with the Mongolian in-person attendees constituting one group and the online Indian participants constituting another group. The tasks given to the breakout rooms are detailed below:

- What are the challenges related to implementing eCourses at your institution?

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- Which of the following URGENT topics are currently not part of the curriculum at your institution?
  - o Sustainable Landscape Development
  - o Green Infrastructure
  - o Blue Infrastructure
  - o Ecosystem Services
  - o Nature based Solutions
  - o Climate Action
  - o Geographic Information Systems
  - o Information and Communications Technology
  - o Urban Sustainability

After reconvening and presenting the results of their discussions, the group reflected on the knowledge gained. With regards to implementation challenges, it became clear that lack of experience in the subject was one of the primary factors that contributed to the difficulty of teaching eCourses. Likewise, problems with the software necessary to teach eCourse and a lack of knowledge on the various platforms (e.g. Moodle) was another issue that was mentioned frequently. With regard to missing or under-represented topics in the curriculum, the result was that nature based solutions was so far only explored very little in both Indian and Mongolian universities.

After an initial discussion, the participants could then fill out an online form with the input that they had discussed previously. The results were the following:

Green Infrastructure
17%

Blue Infrastructure
33%

Ecosystem Services
33%

Nature-based Solutions
83%

Sustainable Landscape Development
0%

Informations and Communications Technology
50%

Climate Action
17%

Geographic Information Systems
0%

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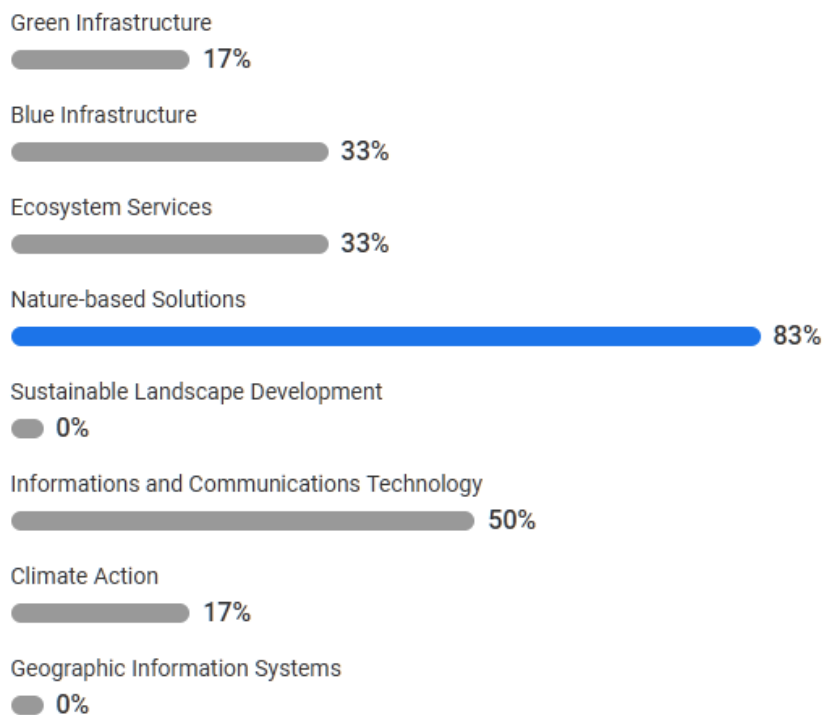
Following these initial topics for discussion, the participants were then asked to reflect on which of the missing or lacking topics (see above) would suit themselves as the focus of a Blended Learning eCourse that could be developed within the timeframe of the URGENT project. This was once again conducted in breakout sessions during the afternoon of Day 2.

Unsurprisingly, it was decided that a new course on nature based solutions could significantly strengthen both the Indian and Mongolian university curriculums. As such, a discussion surrounding the potential topic for a new Blended Learning eCourse delivered the following results:

1. Nature-based Solutions
2. Sustainable Landscape Development
2. Ecosystem Services
2. Information and Communications Technology
5. Green Infrastructure
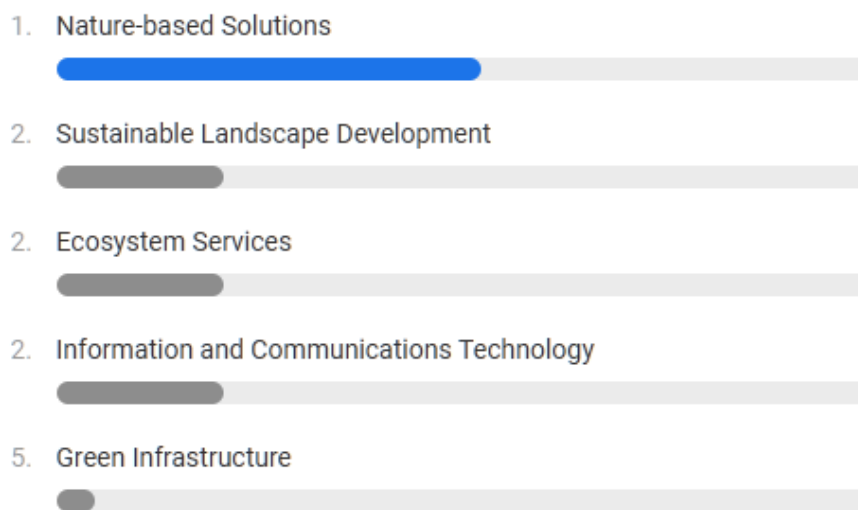
It was agreed that if a new eCourse applying the concept of Blended Learning was to be developed within the URGENT consortium, it should be focused primarily on the concept of nature based solutions. A secondary focus on Ecosystem Services and making use of geographic information systems was a further result of the ongoing discussions with both the in-person and online attendees during the morning session.

The second part of the afternoon session during Day 2 was spent on exploring the usefulness of the Blended Learning concept for developing an eCourse on nature based solution. Using the input provided by Arjan de Groot during Day 1, the participants once again spread into smaller groups to first discuss which model could be a best-fit for a potential eCourse on nature based solution and then presented their findings to the plenary.

After a discussion in the plenary, the general consensus was that the Flex Model would be the most preferred option, although it was conceded that further deliberation would need to be conducted to agree on a final concept. Nevertheless, after fruitful discussions, most participants were in favor of the Flex Model in which teaching happens on-site and in classrooms, but students receive homework assignments that are conducted with the help of software tools (e.g. ArcGIS). These homework assignments can either be done at home and submitted online or if the facilities allow, students can allow make use of university facilities

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and university computers to submit their coursework. As such, the Flex Model is an excellent representation of the concept of Blended Learning in which in-person lectures are complemented by individual electronic homework assignments that need to be submitted weekly. This model further allows for an easy assessment of each student's progress as well as balancing the traditional face-to-face teaching approach with the new concept of eLearning.

1. Flex Model — 3.56
2. A La Carte Model — 2.56
3. Enriched Visual Model — 2.33
4. Rotation Model — 1.56
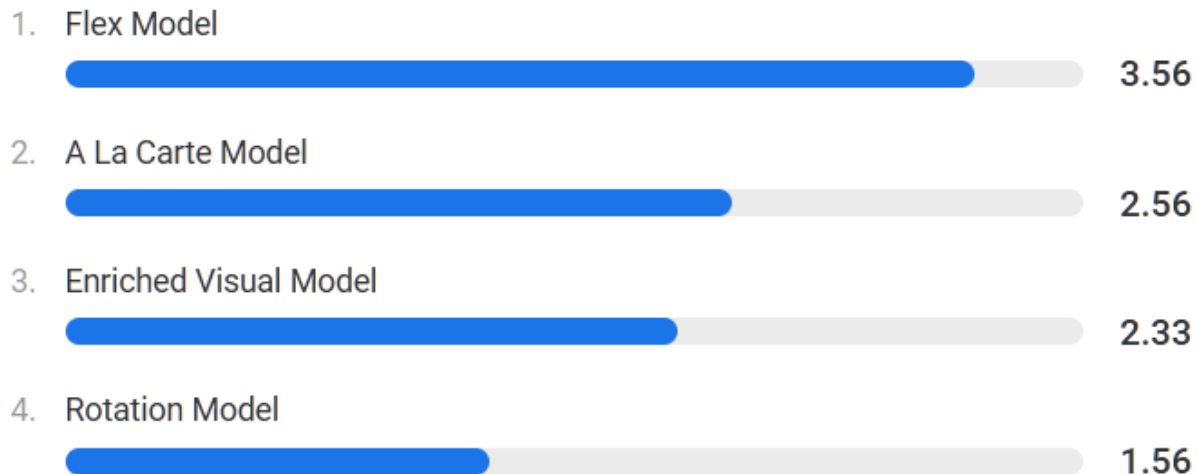
The last part of the second day was spent on discussing a potential platform on which the Blended Learning eCourse could be hosted and through which the students could sign up for the course and conduct the course with. In a plenary session, participants from India and Mongolia shared their experiences and a number of online eLearning platforms were discussed, such as:

- Moodle
- Ilias eLearning Platform
- Google Classroom
- In-house university eLearning platforms (e.g. Pondicherry's PULSE platform)

A preliminary consensus was that the **Google+ "Google Classroom"** platform would perhaps be most suitable due to its widespread application in India and the experiences that Indian partners have already had with the platform. No final decision was reached though, but licenses for Google Classroom would already be present at Indian partner universities and a new Blended Learning eCourse could complement the already existing repertoire of Google Classroom eCourses at partner universities. The last part of the day was spent on discussing the various functions and tools within Google Classroom and if these would be suitable for a Blended Learning course on nature based solutions.

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4. Day 3 - 17th of March 2023

4.1 Review and Preparation of Day 3

After all participants had arrived in the morning, a short recap and discussion on the experiences of Day 3 took place. Participants immediately started to again discuss the framework of the proposed nature based solutions course and a number of points were added to the agenda of the last day, such as the lack of experience in Indian and Mongolian teachers with regard to nature based solutions. These concerns were then addressed in later discussions during the day.

4.2 Needs and Deliverables

The morning session of the last day was spent on discussing the various needs that Indian and Mongolian partners would require to implement and teach a Blended Learning course on nature based solutions. Among the concerns of which platform to use was also a discussion regarding the lack of knowledge on the subject. Both Mongolian and Indian partners expressed great interest in developing and teaching a course focused on nature based solutions, but also mentioned that knowledge about the subject is currently scarce across all partner institutions. A lengthy discussions regarding this took place with both in-person and online attendees and it was agreed upon that European partners, especially MLU as the lead and UNICT as perhaps a sub-lead should impart their knowledge on the subject of nature based solutions to the Indian and Mongolian partners. This discussion continued and carried over into the afternoon session of the day, during which various mobility events within the URGENT project were discussed.

4.3 Mobility Events within the URGENT Project

Building upon the discussion in the morning, the afternoon session of Day 3 was spent on discussing various mobility events that were (1) planned to take place and (2) would need to be scheduled still during the remained of the project's lifetime. Following on the discussions in the morning, it was decided that Arjan de Groot of MLU would travel to both India and Mongolia to **deliver a training on nature based solutions**. The timing for this training was agreed to be during the late summer. In the case of Mongolia, it was agreed that the training could be an excellent addition to the proposed Summer School at the National University of Mongolia and could take one or two days. A date for a similar training in India would still need to be set.

In addition to this training on nature based solutions, Arjan de Groot also provided an overview of three other trainings developed by MLU that could be offered to students of Indian and Mongolian partners. The trainings offered by MLU would be:

- A one-to-three day training course on Ecosystem Services, explaining the concept in greater detail and its use in assessing the state of nature and intactness of biodiversity reserves

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- A training on integrating Ecosystem Services into Policy Development. This training specifically would target students related to Environmental Politics and would detail a step-by-step guide on how to best integrate environmental research into politics and how to devise political measures to protect and conserve nature.
- A training on the economic assessment of Ecosystem Services. The target audience for this training course would be students of Environmental Economics or similar programs. Within the training, the students would learn about various methods of economic valuation of nature, biodiversity and ecosystem services as well as would be introduced to case studies and challenges related to economically assess nature.

All three trainings would be based on the **Harvard Case methodology** which promotes an interactive approach in which participants conduct exercises accompanied by expert input through lectures to find suitable solutions for societal challenges.

Both Indian and Mongolian partners expressed interest in hosting one or multiple of these trainings within 2023 at their facilities and for their students. As such, the implementation of these trainings by Arjan de Groot in India and Mongolia as new mobility events was discussed – although final dates were not agreed upon. It was stated that further discussions and planning during the URGENT project meeting in Catania would be necessary to find suitable time slots.

Additionally, the upcoming project meeting in Catania (end of June) and the ENGAGE! Summer School hosted by the Estonian University of Life Sciences in Tartu were also discussed. Moreover, a number of bilateral visits from India/Mongolia to EU, from EU to India/Mongolia and from Mongolia to India were discussed. Due to the fact that some partner institutions were not present during the meeting, no dates were agreed upon, although several suggestions were made such as another meeting in Halle towards the end of the year or a potential meeting in Bremen – which would have to be discussed with the representatives of the Bremen University at a later date.

The last part of the meeting was spent on discussing the potential to upscale the Blended Learning course into a full MOOC or MOOC-like course. However, despite lively discussions, no consensus could be reached with regard to upscaling the course into a MOOC course. Some challenges and doubts remained, such as the length of development, the hosting platform, the accessibility of the material, the development of video material and the ownership of the material. Hence, the decision to potentially upscale a new course into a MOOC was not taken in Halle, also due to the missing representatives from other institutions.

The workshop was concluded by Arjan de Groot who summarised the main findings, which are detailed below:

- Discussions on course developments and EU reviews were clarified. New courses are to be reviewed as soon as possible so that implementation can proceed smoothly.

- New scientific research collaborations under the URGENT umbrella were discussed among the scientific staff of the MLU and the Monglian and Indian partners.
- Agreement on the topic of a new Blended Learning eCourse focused on nature based solutions was reached
- The model of Blended Learning was agreed upon and various platforms on which it could be hosted were discussed, among which Google Classroom seemed the most promising
- A one to two day training to be held at the Mongolian Summer School by Arjan de Groot was agreed upon, during which participants would learn the necessary theoretical information to develop and teach a course on nature based solutions. A similar training was agreed to take place in India, but no date was set yet.
- Additional mobility events were discussed and bilateral visits between partner institutions were explored
- The potential of upscaling the Blended Learning course into a MOOC course was explored and its potential is further to be discussed at later meetings such as the meeting in Italy in late June.