



# CGIAR.MOODLE.ERP

## *Proposal and Quotation*

for a hosted Moodle installation & support  
for the training of the CGIAR centres' staff  
on the new Corporate ERP system



## Table of contents

<b>0</b>	<b>Document Information.....</b>	<b>4</b>
<b>1</b>	<b>Proposal for the CGIAR.Moodle.ERP project .....</b>	<b>5</b>
1.1	Scope .....	5
1.2	Rationale.....	5
<b>2</b>	<b>Project phases.....</b>	<b>7</b>
2.1	Needs documentation, goals setting and project planning ( <i>m1</i> ) .....	7
2.2	Software installation and configuration ( <i>m2</i> ).....	7
2.3	Modules development and integration ( <i>m3-m4</i> ).....	7
2.4	Pilot deployment and testing ( <i>m4</i> ).....	7
2.5	Normal deployment and on-going support ( <i>m5-m16</i> ) .....	7
2.6	End-users support, training and analytics ( <i>optional, m5-m16</i> ) .....	8
2.7	System customisation and upgrades ( <i>optional, m5-m16</i> ).....	8
<b>3</b>	<b>Quotation .....</b>	<b>9</b>
3.1	Alternative #1 .....	9
3.2	Alternative #2 .....	10
<b>4</b>	<b>Profiles and useful background .....</b>	<b>11</b>
4.1	About Eummena.....	11
4.2	About ARIADNE .....	11
4.3	Moodle Ariadne search widget .....	12

## 0 Document Information

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Author (s)	Description	Version	Date
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Persons (s)	Role	Date
Tania Jordan (CGIAR)	CGIAR representative	12 Apr.12
Jad Najjar (Eummena)	Eummena Managing Director	12 Apr.12
Tasos Koutoumanos (Eummena)	Consulting Software engineer	12 Apr.12
Nikos Manouselis (ARIADNE Foundation, Agro-Know Technologies)	President of ARIADNE Foundation	12 Apr.12
Giannis Stoitsis (Agro-Know Technologies)	Agro-Know Technical Director	12 Apr.12

### ACRONYMS TABLE

Acronym	Definition or Description
CGIAR	Consultative Group on International Agricultural Research
CEN	Comité Européen de Normalisation (European Committee for Standardization)
ERP	Enterprise Resource Planning
FAO	Food and Agriculture Organisation
GLOBE Alliance	Global Learning Objects Brokering Exchange Alliance
IEEE	Institute of Electrical and Electronics Engineers
IEEE LOM	IEEE standard for Learning Object Metadata (1484.12.1 – 2002)
ISO	International Standardisation Organisation
OAI-PMH	Open Archives Initiative Protocol for Metadata Harvesting
OER	Open Educational Resources

# 1 Proposal for the CGIAR.Moodle.ERP project

## 1.1 Scope

This document presents the proposal of Eummena for the “CGIAR.Moodle.ERP” project, along with a quotation for the associated costs.

The scope of the project is the implementation of a custom-tailored Moodle installation and its deployment for the support of courses, targeted towards training of staff of CGIAR centres for the new ERP (Admin / Finance) system rollout.

The custom Moodle installation will be primarily used to manage the trainers, schedule classroom-based courses and keep track of scores in the e-learning, etc. Once the 6,000 people have been trained, the resources shall remain available, possibly after being revised, in order to train new staff in the future, while people can occasionally login to download course materials/refresh their memory.

There are 10 centres implementing and an estimate of 25 courses (using a hybrid classroom-based / e-learning approach) for each centre. The 25 courses will be slightly different for each centre (25 x 10) so the Moodle installation will be used to store these different versions and assign the people to the courses. The alternative of re-using and configuring the same 25 courses in order to be used by all centres is examined.

This is not a full list of system components and can be extended based on the agreement between the two parties.

## 1.2 Rationale

The rationale for the involvement of Eummena in this CGIAR’s training initiative is two-fold:

- a) Eummena has extensive experience in the use of learning technologies, and specifically in large scale Moodle installations, including its collaboration for the support of the AL-Quds University (member of the GLOBE Alliance).
- b) Eummena is the technology provider partner in GLOBE and ARIADNE foundations, taking care of Moodle 2.0 development of widgets and modules that enable access and indexation of learning resources to / into GLOBE and ARIADNE repositories, using open standards and specifications.
- c) Eummena team members are actively involved in the development of open standards in the field of learning technologies, both in the European level within the CEN workshops, and internationally, within IEEE’s and ISO’s teams and workgroups. This team will guide the implementation of the Moodle deployment for the needs of CGIAR, using the latest methodological and technological approaches, based on open specifications and standards, thus not only delivering the expected functionality but effectively providing an open learning infrastructure to cover future and emerging training needs of CGIAR.
- d) Eummena team have wide experience in user experience, customization and user-centred development, ensuring the delivery of applications that works for their end users across cultures and sectors.

- e) Eummena team is involved in standardization work around development and delivery of competence-based learning and training. Enabling delivery of courses material and assessment that target intended competence of learners is core part of this work, including management of competences, linking them to learning content and assessment and generation of standardized competence profiles of learners achieved and desired competences. We help our clients identify the gaps in competence profiles of their staff, so they offer them the appropriate training to fill-in the gaps.

## 2 Project phases

The project will involve seven phases, two of them being optional, as described in the following paragraphs.

### **2.1 Needs documentation, goals setting and project planning** **(m1)**

This phase will involve a needs analysis in order to specify the goals of the initiative and the specific requirements for the end-user trainings. Furthermore, during this phase, the project plan will be defined and approved along with a blueprint of the Moodle system, the modules and widgets that will be needed and any other the support services. The outcome of this phase will be documented in a Project and Software Planning report.

### **2.2 Software installation and configuration** **(m2)**

During this phase, the project team will implement decisions regarding deployment of the Moodle software, along with support services, such as backup planning, maintenance, branding and theme customisation. The best alternatives for the installation and configuration of the system will be explored, in order to meet the identified needs, either through hosting on dedicated server(s) or through deployment on cloud-based virtual machines.

### **2.3 Modules development and integration** **(m3-m4)**

This phase will include the configuration of the Moodle core components, along with the integration of additional components that have been identified within the first phase. Note that the preliminary estimation of effort is towards a minimum requirement for additional components, specifically including a bridge that shall allow integration of Active Directory services in order to simplify the process of account creation. Furthermore, the Ariadne widget will be integrated in order to facilitate inter-connection of the Moodle installation with an abundance of resources made available from Ariadne's interconnected repositories, thus enhancing the end-users learning experience, while at the same time making possible the open sharing of resources that will be published in the courses to open repositories, such as Ariadne, FAO's AGRIS, etc.

### **2.4 Pilot deployment and testing** **(m4)**

This phase will include the pilot deployment of the whole system, and the creation of one or more test courses. A set of test-cases will ensure proper operation of the system and any corrections or fine-tuning will be applied as needed.

### **2.5 Normal deployment and on-going support** **(m5-m16)**

This phase, being the core one, will include the daily operation of the Moodle deployment, during the training period. In particular it will start with the training of the first centre, approximately lasting for 3-4 weeks, and continue with the rest centres, one after another. The support team will undertake the daily management of the Moodle installation, including issue tracking, backups, detection of malfunction, security patches and version upgrades and overall maintenance of the Moodle implementation with a guaranteed response within 24 hours during the training periods.

## **2.6 End-users support, training and analytics** *(optional, m5-m16)*

This phase, being implemented in parallel with the core one (Phase 5) will include optional support services for the training periods. In particular the proposed services include the following:

- Elaborate end-users support, based on an online support system providing documentation in the form of wiki pages, issue tracking, e-mail support, frequently asked questions management, etc.
- Professional development of staff members and support for the trainers, including a digital teaching guide (printable manual, designed for teachers, with step-by-step instructions), webinars, wiki-based documentation and email support.
- Statistics related to the usage of the system by trainees, in the form of learner analytics, custom reporting, etc.

## **2.7 System customisation and upgrades** *(optional, m5-m16)*

The last phase is proposed to involve two iterations with a revision of the project's scope and update of the original specifications and planning (as defined in the first phase). The first iteration is suggested to take place during the initial phase of the implementation, possibly after the training period of the first centre, whereas the second at the project's end, in order to further improve and revise the description of all design, planning and implementation details, which will then drive the sustainable maintenance of the system and its further uptake for future CGIAR training needs. In particular, a proposed upgrade is the description of learning material with a standards-based approach, making use of the "IEEE Learning Object Metadata" (LOM) specification, "Open Archives Initiative Protocol for Metadata Harvesting" (OAI-PMH) as a protocol for exposing and retrieving all updated metadata and other related standards.

## 3 Quotation

### 3.1 Alternative #1

The first alternative accounts for approx. 25 courses offered by each of the 10 CGIAR centres, courses being different among different centres, thus totalling to approx. 250 distinct courses.

PHASE	Duration		Resources (man-months) *				COST
	months	Period	DEV	SE	SA	LTE	
1 Needs analysis, goals and project planning	1.0	M1		0.50	0.10	0.25	€ 6,100
2 Software installation and configuration	1.5	M1-M2	0.75	0.25	0.25		€ 7,600
3 Modules development and integration	1.5	M2-M3	0.75	0.25	0.25	0.25	€ 9,500
4 Pilot deployment and testing	0.5	M4	0.25		0.15		€ 2,300
5 Courses setup	1.5	M4-M5	1.00	0.50	0.25	0.50	€ 14,700
6 Normal deployment and on-going support	12.0	M5-M16	5.00	1.50	2.00	1.00	€ 58,900
		<b>TOTALS:</b>	<b>7.75</b>	<b>3.00</b>	<b>3.00</b>	<b>2.00</b>	€ 99,100
<b>OPTIONAL SERVICES &amp; ACTIVITIES</b>							
7 End-users' support, training and analytics		M5-M16	1.00	0.50	0.75	0.25	€ 15,600
8 System customizations		M5-M16	1.00	0.25		0.25	€ 9,500

\* DEV: Developer, SE: Software Engineer, SA: System Administrator, LTE: Learning Technology Expert

Our estimation for the associated cost, as shown in the Table above, totals to € 99,100 (without the optional services, phase 7 and phase 8). Given an estimate of approx. 6,000 trainees, this is translated as € 16.50 per trainee, which is within the average range for *simple* Moodle implementations, with minimum customisation, branding and module integration.

The cost is accounted for the first operational period, after which a maintenance cost will be adopted to meet the estimated needs, in terms of “active” users, an approximate cost being in the range of € 5 to € 10.

Note that these amounts include all costs related to hosting, i.e. the system's server(s), redundant storage, bandwidth allocation, firewall configuration, database administration, backup & disaster recovery. Furthermore, the costs include all associated taxes, license fees, and any overheads. Any other expenses, not specifically stated, are not included, such as traveling, dissemination costs, printing and distribution costs, etc.

### 3.2 Alternative #2

The second alternative is based on the assumption that all centres will reuse the same courses, therefore a initial setup of 25 courses will be performed and delivered, which CGIAR's staff will then use to perform the training for all 10 centres. Courses for all training centres will thus share the same appearance, layout and structure. Furthermore, CGIAR's trainees will uptake the periodic maintenance of the course material for each course, in order to reflect the different training periods, especially after the finish of the training period for one centre and before the start for the next.

Therefore this alternative accounts for a decreased need for support during the course setup (phase 5) and the normal deployment of the system (phase 6).

PHASE	Duration		Resources (man-months) *				COST
	months	Period	DEV	SE	SA	LTE	
<b>1</b> Needs analysis, goals and project planning	1.0	M1		0.50	0.10	0.25	€ <b>6,100</b>
<b>2</b> Software installation and configuration	1.5	M1-M2	0.75	0.25	0.25		€ <b>7,600</b>
<b>3</b> Modules development and integration	1.5	M2-M3	0.75	0.25	0.25	0.25	€ <b>9,500</b>
<b>4</b> Pilot deployment and testing	0.5	M4	0.25		0.15		€ <b>2,300</b>
<b>5</b> Courses setup	1.5	M4-M5	0.50	0.25	0.25	0.25	€ <b>8,100</b>
<b>6</b> Normal deployment and on-going support	12.0	M5-M16	4.00	1.50	1.50	1.00	€ <b>50,200</b>
		<b>TOTALS:</b>	<b>6.25</b>	<b>2.75</b>	<b>2.50</b>	<b>1.75</b>	€ <b>83,800</b>
<b>OPTIONAL SERVICES &amp; ACTIVITIES</b>							
<b>7</b> End-users' support, training and analytics		M5-M16	1.00	0.50	0.75	0.25	€ <b>15,600</b>
<b>8</b> System customizations		M5-M16	1.00	0.25		0.25	€ <b>9,500</b>

\* DEV: Developer, SE: Software Engineer, SA: System Administrator, LTE: Learning Technology Expert

## 4 Profiles and useful background

### 4.1 About Eummena

Eummena is a young non-profit organization, established with the aim to increase, advance, open up and exchange research and development practices in the field of learning technologies and digital media. To fulfil this aim, Eummena works towards the following objectives:

- Contribute to developing, adopting and adapting learning technologies standards, applications and services to the needs and cultures of users across cultures and countries;
- Provide university and school teachers with tools and training on best practices for the use of learning technologies and systems, outcome-based learning and open educational resources;
- Provide consultancy and professional support towards the exchange of open educational resources, learning outcomes and competences, learner achievements between learning and HR (Human Resources) systems and repositories;
- Provide training and seminars on latest technologies and services in the domain of learning technologies and open educational repositories;
- Encourage and facilitate collaboration, networking and mobility between practitioners and researchers in the domain; and
- Any other objectives seen as of high importance by the organization.

Since its establishment in 2011, Eummena serves as an associate member of Ariadne foundation and has been active in the exchange of EU research, development and practices with the neighbouring Mediterranean, Middle East and North Africa (MENA) cultures. In the last decade, a main challenge in the field of learning technologies has been to contribute and publish open educational resources (OERs) in online repositories. The next step is to inter-connect those repositories worldwide and, thus, make available a wealth of learning resources to all interested parties worldwide. To this end, the use of open standards and specifications is of great importance. Based on the fact that teachers and learners live in learning management systems cloud, we decided to offer them the OER finding and indexing services integrated in the learning management systems. Our approach is to develop widgets and modules that enable teachers and learners to access and publish OERs from within learning management systems like Moodle. As far as user interaction is concerned, the modules and widgets should track user activities and store relevant usage data in central repositories so it is used, via particular web services, for recommending teachers and learners relevant OERs based on their previous interaction with the learning management systems and OERs.

### 4.2 About ARIADNE

The ARIADNE Foundation is a not-for-profit association that aims to foster Share and Reuse of Learning Resources. Facilitating the reuse of digital resources that can be used to support learning (i.e. educational content or learning objects) has been its goal for several decades.

To support this goal, ARIADNE has created a standards-based technology infrastructure that allows the publication and management of digital learning resources in an open and scalable way. The vision that drives the continuous development of this infrastructure is to provide flexible, effective and efficient access to large-scale educational collections in a way that goes beyond what typical search engines provide. ARIADNE was initially set up by a network of European stakeholders, expanding now into a global network of member institutions sharing the same vision. It is currently making nearly 1 million learning objects available through interconnected repositories.

ARIADNE is a member of the Global Learning Objects Brokering Exchange (GLOBE) Alliance and contributing towards the development of a global learning infrastructure that can be accessible from all.

### 4.3 Moodle Ariadne search widget

The new Moodle 2.0 widget enables teachers to have access to Ariadne repository learning resources from within Moodle courses. This simple widget makes teachers be aware of open educational resources that are available in an ever-increasing pool of interconnected repositories, contributed by institutions and peers interested in the subject of the course.

In technical terms, querying and retrieving of data (resources) or references to data is performed making use of the IEEE LOM (Learning Objects Metadata) standard.

Moreover, the widget enables sharing resources via the social media channels and more importantly it enables the teacher to import identified resources from distributed repositories, directly into the Moodle course, automatically updating the students via the Moodle news block about the new added course material/resource. This widget works in Moodle 2.0, since most organisations around the globe are now shifting to Moodle 2.0 provided its new flexible framework and added functionalities.

