PROJECT PROPOSAL COVER SHEET

Project No. _____ (*For Treaty use. Do not write anything here)*

Project Title: **Multi-country Construction of A Test Platform for the Development and Allocation a Unique Identifiers for Rice Germplasm**

Project duration: 3 years

Target crops: Rice

Targeted developing country/ies Indonesia, Tanzania, India, Philippines and Brasil

Other Contracting Party/ies involved _____

Project geographic extension (km²): 24,500,000
Total requested funding :US$**467,707.40**

Total co-funding:

Please select the type of project you are applying for:

☐Single-country Immediate Action Project (Window 2)
☐ Multi-country Immediate Action Programme (Window 2)
☐ Single-country Co-development and Transfer of Technology project (Window 3)
v☐Multi-country Co-development and Transfer of Technology project (Window 3)

Applicant

Name of Organization: _Indonesian Agency for Agriculture Research

Type of organization _Public Research Organization

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SECTION A: EXECUTIVE SUMMARY

1.Executive summary

Rice is one of the major food crops contributing to food security and almost 20 percent of all the world holdings are included in the multilateral system of access and benefit sharing of the International Treaty. Nevertheless these accessions are maintained in collections distributed around the world and their discoverability and use is jeopardized by this fragmentation of location and databases. Additionally, other important information associated with those rice accessions is disconnected. The International Communication has tried in the last decade to agree on a common approach to facilitate the establishment of automated meaning links through the adoption of permanent unique identifiers. The rice community is, within the PGRFA sector, one of the best placed to make advancements in this area, particularly now that the International Treaty has set up the information infrastructure for the operations of the Multi-lateral system and that the Global Information System is being further developed. Under the leadership of Indonesia, this project aims at the adoption of permanent unique identifiers to add value and facilitate the use of PGRFA for the benefit of plant breeders and farmers. The project presents a participatory and science-based methodology with multi-country approach, involving both national and international institutions and initiatives with demonstrated experience, capacity, mandate and willingness to make a step forward in this area for the benefit of the rice community, first, but also for the benefit of other crop communities and PGRFA networks.

SECTION B: PROJECT DESCRIPTION AND CONTENTS

2.1. Problem definition

Rice is the staple food for nearly one-half of the world's population. It is grown in at least 112 countries; and about 95% of the crop is grown and consumed in Asia. Rice production, however, could not keep-up with population growth.World population was estimated to reach 9,6 billion in 2050 (FAO, 2012). If global per capita rice consumption follows the trend in the past two decades, then total consumption will grow at the rate of population growth. Total consumption growth may even exceed population growth if the recent uptrend in per capita consumption in the “big three” countries,i.e.,China, India, and Indonesia, continues. The effort to increase rice production and productivity is challenged by reduction of land availability, land fragmentation and the adverse effects of climate changes.

Climate change is projected to affect rice production through rising concentrations of carbon dioxide and other “greenhouse gasses”, and the consequences thereof, including rise in average temperature and other stresses, rise in sea level, increased flooding and salinity in low-lying areas, and changes in pathogens and pests. Increases in temperature above the current mean temperature are expected, ceteris paribus, to reduce yields by 7% for every 1 °C increase. In addition, an increase in climatic variability and the frequency of extreme events is expected, e.g., storms, drought, monsoon, heavy rainfall, flooding.

In Indonesia, rice farming is greatly affected by short-term climate variability and could be harmed significantly by long-term climate change. Planting for the main harvest usually begins in October with the coming of the monsoon rains. Rice production since 1983 has been greatly affected by year-to-year climate variability-years. During a warm El Niño, the arrival of the monsoon rains is delayed, prolonging the hungry season and disrupting the planting of the main

December-January crop. Understanding the current and future effects of changes in climate on Indonesian rice agriculture will be crucial for improving the welfare of the country's poor. Using output from 20 global climate models tailored to the complex local topography of the Indonesian archipelago, researchers found that the probability of experiencing a harmful delay in monsoon rains could more than double in some of the country's most important rice-growing regions.

One effort to meet such challenges is by improving the tolerance, adaptability and productivity of rice varieties through breeding. In addition to met the challenges of climate changes, these breeding programs could also be aimed at improving tolerances of rice varieties to pest and diseases, its nutrition values and eating-qualities as well as tolerance to abiotic stresses such as iron toxicity and salinity which may or may not be affected by climate changes. These breeding efforts require diverse genetic background for which exchanges of genetic resources are required aligned with the national strategies and plans. Assessing and identifying new sources of genetic variation is a critical part of any long-term strategy to enhance the productivity, sustainability and resilience of crop varieties and agricultural systems. Approximately seven million crop accessions are currently being conserved in genebanks collections worldwide. This resource represents one of the greatest, largely untapped, opportunities for accelerating yield gains and overcoming emerging crop productivity bottlenecks. However to access this wealth of diversity will require the characterization of this material via the application of state-of-the-art genomic, phenomic and molecular technologies, and the release of the subsequent data via an online, open-access portal.

As samples of plant genetic resources such as rice are grown and transferred from one place to another, they change and adapt. This is particularly significant for landraces and traditional varieties, because of the large amount of genetic variation that exists within and among samples that have the same name. Such varieties have not been purified or tested for identity or purity through the “DUS” (Distinctness, Uniformity and Stability) criteria that are applied to modern varieties; on the contrary, many traditional farmers deliberately maintain high levels of diversity within a traditional variety. Thus there is typically substantial genetic variation within samples. In addition, in most countries there are no legal controls over the naming of traditional varieties, so different communities may use the same variety name for many different genetic entities, resulting in substantial genetic variation between samples.

Yet collaboration among research organizations relies on certainty that partners are studying the same genetic entities. Moreover, research to identify genes and their functions is normally based on a single, preferably homozygous, genotype. Geneticists studying traditional varieties typically take just a single seed for study, often after genetically purifying it, for example through one or more generations of single seed descent. If two organizations independently purify the same sample, their resulting purified samples will be different. Therefore, a rigorous quality control system is essential to ensure that collaborating organizations know the precise relationship between the samples they are studying. The key is to identify each sample uniquely and identify its provenance. There is a need to design an agreed system of unique identifiers that will meet the needs of all stakeholders. The system must accommodate the diversity of naming system used by different stakeholders, without seeking to impose one common naming system. A central registry must be established to document the relationships between samples in different organizations, and there must be interconnectivity among data management systems. By this means, partners will be able to collect and maintain their own data in their own data management systems, while the central registry will enable the rational integration and analysis of data from different databases.

2.2.Overall and specific objectives

Overall objective:

To bridge the gap between the information requirements of genebank curators, rice breeders and more targeted upstream biological researchers, to support applied germplasm curation, forward-looking rice breeding programs and strategic rice research

Specific objective:

To adopt and implement the agreed method for the assignation of global, permanent and unambiguous identification of rice accessions and the development of a platform to establish automatized system-to-system connections to add value to the material being transferred within and from the Multilateral System, thus meeting both scientific needs and legal obligations of the SMTA.

2.3. Targeted outputs, activities and related methodology of implementation

Output 1: **A plug-in is developed to facilitate the connection with a central metadata registry needed to assign the permanent unique identifiers to the PGRFA material**

Activity 1.1: Developing guidelines for adoption of DOI[a]

The guidelines for adoption of the DOI will be developed by IRRI in parallel with the development of the software

Activity 1.2: Developing the software, testing and evaluation

The International Rice Research Institute (IRRI)(http://irri.org/) was the leading institution for developing the plug-in and will liaise with the Treaty Secretariat for the connection of the plug in to the transfers of material within the Multilateral System of Access and Benefit-sharing, where a central registry of PGRFA transfers already exists. IRRI will use IRIS (http://iris.irri.org/), which has served as a central registry for rice. The design and functionality of IRIS will be examined to assess whether it is sufficient for the needs of this project and the advantages that these activities will bring to other PGRFA at global level through the connection to the MLS registry.

Output 2: existing genebank software supporting the management of information related to the transfer of material with the SMTA is updated, adding a function to automatically register and identify the accessions.

This process will result in the use of a single unique and permanent identifier associated with the material being transferred. It is the necessary and critical step to allow automatic retrieval of subsequent information to be added by the recipient to the accessions, for example and the form of associated non confidential information resulting from the evaluation of the material. The final result will be a plug-in or a software package that integrates the allocation of unique and permanent identifiers to the transfers of material happening within the Multilateral System with MTA, involving communication by web services with at least three other information systems including (1) the Provider's database, (2) the Recipient's database, (3) the Treaty's Data Store. Prior to a material transfer, the PGRFA Provider will get an unique identifier for each accession to be transferred. On completion of the transfer, the Provider's database will submit a report to the Treaty's Data Store in compliance with SMTA article 5(e), through the Easy SMTA-pro mechanism developed by the Treaty Secretariat. The Recipient will have to keep the unique identifier in his own database for a resolution service to be able to dig and establish multiple

connections between the material originally distributed and the subsequent additions of information. It is to be noted that the material may continue to be transferred and, if it does not change, there will be no need to assign a new identifier to it. On the other hand, there is the need for a resolver system where the transfers of the same material to different recipients are recorded and the metadata is recorded. The central registry will not need to keep all the associated information, but a minimum set of parameters to identify the location of the entity and the mapping of the relationships. It is to be noted that the community of experts will have to discuss, which elements that for rice material will need to be recorded and which elements of the rice crop ontologies that will be relevant for this process.

Activity 2.1: Adjusting or upgrading the rice genetic resources data base management in participating organization

The first activity will be to examine, and upgrade as appropriate, the existing data management systems and expertise of the partners. Upgrading and capacity-building needs will be identified, through study visits to all partners to analyse their systems, followed by longer training visits by partners at IRRI headquarters in Los Banos, the Philippine. A formal specification of needs of each partner will be prepared in collaboration with the Treaty Secretariat.
Partners will then be invited and supported to upgrade their PGRFA management systems to meet these specifications.

Activity 2.2: Implementation of the software by participating countries

Output 3: The software will be disseminated in national and international forum, especially in the participating countries

Activity 3.1: Workshop

The workshop will be held on the third year. The purpose of the workshop is to get feedback from the users as well as from experts

Activity 3.2: Developing web portal

The web portal will,be developed as part of dissemination to national and international communities. The portal will also show up the master plan of services that will link genebank databases from parcticipating countries. The portal will function as etalase linked with the ITPGRFA secretariat, IRIS and GLIS.

2.4. Targeted PGRFA

All *ex situ* PGRFA of rice (*Oryza* spp) under the MLS in organizations with advanced database capability. This includes not only accessions conserved in *ex situ* genebank collections managed in accordance with international genebank standards, but also ad hoc dynamic working collections of genetic stocks, pre-breeding materials, and other bred and elite materials developed by researchers and breeders, typically not maintained in accordance with genebank standards, but which some sort of documentation system exists.

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[a]In international workshop on Digital Object Identifiers (DOI) for rice germplasm was held in Bogor, Indonesia, on September 1-3, 2015. At the workshop it was decided that the DOI will be adopted as permanent unique identifiers for this project. Elements for DOI adoption has also been identified the complete guidelines will be developed as the first activities for the project.

According to the latest statistics available, there are around 783,016 accessions of rice in ex situ holdings, 46,11% of these accessions are with Contracting Parties to the Treaty. Unfortunately, only 4.42 % of the mare made available by Contracting Parties. The genebanks of the CGIAR Centres, hold 16.69 % of the global ex situ holdings of rice, of which almost the totality are included in the Multilateral System. At global level the Multilateral System does make available 18.73% of the rice accessions actually available in the world holdings.

The project will generate metadata information about the accessions saved in the participating institutions and will make the material discoverable and to facilitate the aggregation of associated PGRFA information automated. It will generate support tools for the broader use of PGRFA community and will improve the way the associated information is reported during each transfer from the provider to the recipients. It will also benefit the provider, who will get in pace a mechanism to add valuable information to the accessions already distributed. In accordance with Resolution 2/2013, and in collaboration with the Treaty Secretariat, the information about these tools will be made publicly available in the context of the Global Information System on PGRFA foreseen in Article 17 of the International Treaty.

2.5. Direct and indirect beneficiaries

Genebanks will benefit directly from the adoption of better tools and methodologies for the documentation of PGRFA information related to rice accessions. Rice plant breeders and users of the multilateral system will benefit from a facilitated access to a global distributed wealth of associated information that will go beyond the passport data. Research institutions will get additional information on the availability of accessions that may help the decision-making process on regeneration and conservation, with a direct impact also on national plant breeding programs. The Treaty Community in general will benefit from improved mechanisms promoting the use of PGRFA included in Annex 1. Bioinformatics' teams in participating institutions will participate and the design of the plugin and will increase their capacity and their knowledge to align the way they operate with best practices adopted already in other domains.

2.6. Impact and impact pathways

2.6 1. Food security and poverty alleviation

The efficient and integrated implementation of this project will guarantee a transparent and accountable system for the identification and documentation of PGRFA. This in turn will enhance the operation of the Multilateral System of Access and Benefit-Sharing. It will put in place a mechanism that will directly support plant breeders, crop scientists and other interested stakeholders to access added-value information associated the individual accessions they are working on. It will reduce research time and will help to sum up effort at international level. It will also have a medium term impact on level of funding associated with the development of new varieties and with the conservation activities.

Breeders have to access the diverse genetic resources in order to improve productivity, sustainability and resilience of crop varieties and agricultural systems, which in turn will strengthen food security and alleviate poverty in rural areas. They will be able to get quicker access to existing characterization and evaluation information across different databases in an automated way.

2.6.2. Adaptation to climate change and environmental sustainability

As rice breeders access diverse genetic resources with clear genetic background, their chance of effectively and efficiently developing rice varieties tolerance adverse effects of climate change are also increased; hence it will enhance resilience and adaptation to climate change. The establishment of cutting edge technologies to the assignation of Permanent Unique Identifiers, will be also the first and necessary step to facilitate the application of other advancements in the information science to plant breeding and conservation, like the crop ontologies.

After the first phase of development and adoption of PUIs the institutions will be able to integrate these activities in their daily operations. The coordination of activities with the Treaty Secretariat will facilitate the sustainability of the central infrastructure, in conjunction with other services already in place. This approach will also facilitate the long-term maintenance of the infrastructure required at low cost as it could be shared by the PGRFA community.

2.6.3. Scientific impact

The project will trigger the improvement of rice information systems and will facilitate the appropriate and quality-controlled sharing of information of such data. The adoption of unique percent unique identifier will further empower genomic and phenomic research, functional gene discovery and improve of pre-breeding as well as rice breedingprograms.

2.6.4. Capacity development and empowerment

The participating countries will benefited by this project through increasing knowledge of their breeder, rice scientist and information technologies expert. The project will also improved management of gene bank accessions and rice genetic resources management as a whole. The Initiative will also establish partnerships with international institutions with capacity to deliver training in this domain as well as the provision of services adapted to the rice community. The strengthening of the capacity will also go beyond the genebanks manager, the PGRFA curators, the bioinformaticians, and the plant breeders. It will also strengthen the capacity of the involved organizations at corporate level as the benefits of the proposed technology will create links between datasets maintained bay different units and departments within the same organization and across the borders.

2.7. Relevance to national or regional priorities in its plans and programs for PGRFA

Conservation and sustainable use of plant genetic resources for food security and meeting the challenges of climate changes are the main priorities in Indonesia and many other partner countries. It is not only conservation and protection of PGRFA that become the main focus, but also how to use it sustainably for the benefit of the people, particularly in the era of climate change that affects food production.

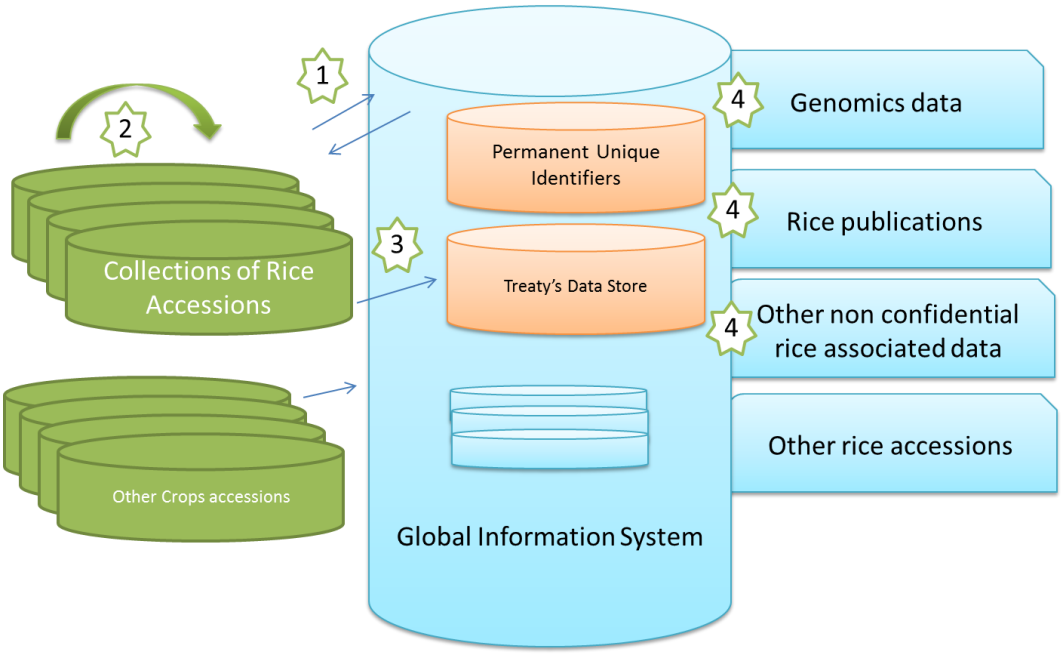
Rice as a staple crop is the highest priority crop for agricultural production and development in many countries in Asia, Africa and Latin America. Therefore its resources, which have been conserved in many gene banks and other ex-situ and in-situ collections, need to be better used and shared among breeders, researchers and other stakeholders in many countries. This project will support such optimal sustainable use.

National and international institutions already incorporate policies and strategies related to data management in their development agenda. The Second State of the World on PGRFA indicates on one side the growing importance that other countries are giving to the role of information management and on the other the gaps that still exists in the management of

PGRFA. In the international area, IRRI has consistently contributed to the advancement in the management of rice collections, and the Multilateral System brings since 2007 a new challenge related to information sharing at global level that has not yet been addressed sufficiently, despite the progress made with the previous phases of Easy-SMTA.

SECTION C: OPERATIONS

3.1. Methodology of project implementation



Problem 1: adapting PUIs standards

To develop standards that can be broadly accepted beyond the scope of this project, the initial phase will involve a broad consultation under the framework of the Global Information System and in support of DivSeek. Some of the major partners will be the Treaty Secretariat, the DivSeek Community, the Global Biodiversity Information Facility, and the Integrated Breeding Platform, among others. Indonesia will provide for the overall coordination and leadership of this phase of the project. The figure above illustrates some of the major steps in the process of 1 obtaining an permanent unique identifier, use of the identifiers with each transfer of material, reporting to the Treaty's Data Store in connection with the Global Information System architecture, and connection of rice accession level information with other associated relevant data.

Problem 2: upgrading partner systems

Partners for this project have been selected based on high existing capacity for data management, so that the project can focus mainly on developing inter-operability with minimal need for upgrading the component systems. Nevertheless, to ensure delivery of the final planned outputs, some upgrading and capacity will be essential and is built into the project work plan. IRRI will provide leadership and will be financially and technical supported for this component.

Problem 3: designing and developing APIs
IRRI and the Treaty Secretariat have previously collaborated in the development of Easy-SMTA and in designing and developing web services and APIs for communication between the Treaty's Data Store and IRRI's databases. They will take the lead jointly in defining the additional APIs needed for this project, and in developing the APIs once defined.

Problem 4: assigning PUIs to rice accessions - testing
Testing and rollout will be undertaken by Indonesia in collaboration with partners operating the Multilateral System, including the major national rice genebanks in some contracting parties that will be invited to participate and benefit from the projectsuch as such as Rwanda, Brasil, Japan and India.These information systems could also benefit from the adoption of the permanent unique identifier for rice accessions and they are recipients of material included in the MLS and their users may benefit from the access to a larger amount of information.

Problem 5: rollout
The overall project leader will ensure the coordinated rollout of the plug-in all locations during the testing phase, and will seek feedback from other partners for its improvement. It will also coordinate the development of internal guidelines.

3.2. Partnerships and collaboration arrangements

This project will involve the following partners:

1. Indonesian Agency for Agriculture Research and Development (IAARD) as the proponent and leading organization of this project. IAARD supervised several rearch centers and research institute, two of which will actively involve in this project, i.e., the Indonesian Center for Agricultural Biotechnology and Genetic Resources Research and Development (ICABIOGRAD) and Indonesian Center for Rice Research (ICRR). The ICABIOGRAD host the National Gene Bank of plant genetic resources and has programs in plant genomic research; while the ICRR has breeding programs in rice and will provide the breeders' rice data base. The IAARD will coordinate the implementation of the project.
2. The International Rice Research Institute which has experts, facilities and mandates in coordinating international rice research. IRRI will become the leading institution in developing the integrated data management system, conducting training and technical support. The IRRI has a long history of cooperation with the IAARD and its research centers.
3. The Secretariat of the Treaty will provide access to the technical experts used to develop Easy-SMTA, who will take a leading role in specifying the web services required by the system, and in developing the components of the web services that will run on the Treaty's Data Store.
4. Other contracting parties (Tanzania, Brasil, Philippines and India) will involve in the testing phase of the project

3.3. Project management team

1. Muhamad Sabran (IAARD/ICABIOGRAD)
2. Puji Lestari (ICABIOGRAD)
3. Hakim Kurniawan (ICABIOGRAD)
4. Nurul Hidayatun (ICABIOGRAD)

Partners for the design and testing phase

5. Ruaraidh Sackville Hamilton (IRRI)
6. Representative of of contracting parties invited in the testing phase (Tanzania, Philippines, Brasil, and India)
7. MLS operations officer of the International Treaty

3.4. Sustainability

If approved, this project would be recognized as a pilot project of the within Program of work of the Global Information System on PGRFA(GLIS) and possible associated with the Diversity Seek initiative. If it is successful then it might be extended to a larger system of PGRFA data communication through the GLIS, DivSeek and other similar initiatives. This initiative will involve many stakeholders including donors, experts, international organization and possible some private companies, and it is highly probable that the major finding will be also relevant for other Annex I crops.

To maximize sustainability within the rice community, the project will build as much as possible on the experience and the expertise accumulated during the development of existing information systems, including Easy-SMTA (https://mls.planttreaty.org/itt/), the International Rice Information System (http://iris.irri.org/) and the International Rice Informatics Consortium (http://iric.irri.org/), all of which are sustained through funding outside this project.

SECTION D: APPENDIXES

By signing this submission form for full proposal, the applicant confirms that all the above statements, including the attached Appendixes, are true to the best of his/her knowledge. Any deliberately untruthful response will lead to the automatic exclusion from the further screening and appraisal process, and may lead to the denial of awarded grants from the Benefit-sharing Fund.

Signature of contact person:

Date and location:

April 7, 2016
Jakarta, Indonesia

APPENDIX 1: INFORMATION ON THE APPLICANT

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Type of organization: ICABIOGRAD-IAARD

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APPENDIX 2: LOGICAL FRAMEWORK

Project title: Multi-country construction of a test platform for the development and allocation of globally unique identifiers for rice germplasm				
Intervention logic	**Indicators/targets**	**Sources and means of verification**		**Assumptions**
Impact	To contribute to the achievement of Millennium Development Goals 1 and 7 • To eradicate extreme poverty and hunger • To ensure environmental sustainability.			
Outcome	To improve adaptation to climate change and enhance the food security of resources poor farmers in selected developing countries by strengthening the sustainable management of PGRFA			
Output 1	A plug-in which is developed to facilitate the connection with a central metadata registry needed to assign the permanent unique identifiers to the PGRFA material	-1 method of unique identification of rice germplasm -5 gene banks will implement the unique	Draft of guide lines for DOI adoption	The gene banks has data management system in place and willing to participate

		identifier -1 program of unique identifier application has been developed and ready to be tested in participting countries		
Output 2	The existing genebank software supporting the management of information related to the transfer of material with the SMTA is updated, adding a function to automatically register and identify the accessions.	-5 gene banks management system is upgraded - 4-7 persons are trained -1 web service is established	The gene banks data management system	All stakeholders willing to participate
Output 3	The software disseminated in national and international forum, especially in the participating countries.	- 4 – 9 PGRFA institution countries well informed about the DOI - 10 – 15 National potensial stakehold er	- Workshop, Training, - Final Report - Web information	Stakeholders willing to participate

APPENDIX 3. Timetable

Activity	Year 1				Year 2				Year 3			
	1	2	3	4	1	2	3	4	1	2	3	4
Output 1: a plug-in is developed to facilitate the connection with a central metadata registry needed to assign the permanent unique identifiers to the PGRFA material												
Activity 1.1: Developing guideline for adoption on unique identifier	■											
Activity 2: Developing the software, testing and evaluation	■	■	■	■	■	■	■	■				
Output 2: Existing gene bank software supporting the management of information related to the transfer of material with the SMTA is updated, adding a function to automatically register and identify the accessions.												
Activity 1:Adjusting or upgrading the rice genetic resources data base management in participating country	■	■	■	■	■	■	■	■				
Activity 2: Implementation of the software by participating countries							■	■				
Output 3: The software disseminated in national and international forum, especially in the participating countries.												
Activity 1: Dissemination (Workshops, Trainings)							■	■	■	■	■	■
Activity 2: Rolling out the system on live public server											■	■
Developing Final Report												■

APPENDIX 4. Budget Allocation

Total Project Budget	
Software development (IRRI)	108233.4
Staff	70,200
Disseminations	65400
Travel	127,815
Training	8,000
Web development	3500
Workshop 2	35000
Equipment	22,859
Other	19,500
Intern meeting	7,200
Sub Total	467,707

1. Software Development

Category	Unit	Num of units	Unit cost	Total cost
Year 1				
Personnel				
Internationally Recruited Staff (Evolutionary Biologist)	person-month	1.2	8112.5	9,735
Nationally Recruited Staff (Senior Associate Scientist - Crop Breeding Information Management)	person-month	1.2	1491.7	1,790
Senior Programmer	person-month	2.4	10000	24,000
Project Accountant	person-month	1.2	533.3	640
Supplies and Services (Contract and OT)				
Information Technology Services	package	1	1863	1,863
Other Support Services	package	1	9220	9,220
Office Supplies	package	1	1000	1,000
Estimation cost fluctuation	package	1	4919	4,919
Sub-Total year 1				**53,167**
Year 2				
Personnel				
Internationally Recruited Staff (Evolutionary Biologist)	person-month	1.2	8355.8	10027

Nationally Recruited Staff (Senior Associate Scientist - Crop Breeding Information Management)	person-month	1.2	1566.7	1880
Senior Programmer	person-month	2.4	10500	25200
Project Accountant	person-month	1.2	560	672
Supplies and Services (Contract and OT)				
Information Technology Services	package	1	1863	1863
Other Support Services	package	1	9504	9504
Office Supplies	package	1	1000	1000
Estimation cost fluctuation	package	1	4920	4920
Sub-Total year 2				55,066
Sub Total Software Development				**108,233.4**

2. Project management costs				
Staff	**Unit**	**Quantity (no.of units)**	**Unit Cost USD**	**Total Cost USD**
Full time staff				
Project manager	person-month	30	400	12,000
Administrator	person-month	30	300	9,000
Technical Support	person-month	50	300	15,000
Account Clerk	person-month	30	300	9,000
Part time staff				
IT specialist	person - month	36	500	18000
Database Manager	person - month	12	300	3600
Web Manager	person - month	12	300	3600
Subtotal: Staff				**70,200**

3. Training

Visiting Scientist (IT) (2 person, 3 months)				
Category	**Unit**	**Num of units**	**Unit Cost**	**Total Cost**
Indonesia to IRRI Los Banos Travel	round-trip	2	2000	4000
Daily Subsistence Allowance (DSA) [a/]	Person x months	6	1500	9000

Training (Travel, allowance, accomodation): 15 days				
Category	**Unit**	**Num of units**	**Unit Cost**	**Total Cost**
Indonesia to IRRI Los Banos				
Travel	round-trip	2	2000	4000
Per diem	Person x days	15	60	900
Accomodation	packages	2	300	600
Tanzania to IRRI Los Banos				
Travel	round-trip	1	3500	3500
Per diem	Person x days	15	60	900
Accomodation	packages	1	300	300
Brasil to IRRI Los Banos				
Travel	round-trip	1	3500	3500
Per diem	Person x days	15	60	900
Accomodation	packages	1	300	300
India (New Delhi) to IRRI Los Banos				
Travel	round-trip	1	2500	2500
Per diem	Person x days	15	60	900
Accomodation	packages	1	300	300
PhilRice (Nueva Ecija) to IRRI Los Banos				
Travel	round-trip	1	200	200
Per Diem	Person x days	15	60	900
Accomodation	packages	1	300	300
National Dissemination (30 persons)	2x			
Perdiem (25 persons x 3 days x 2 times	person x days	150	30	4500
Accomodation (25 persons x 2 days x 2 times)	persons x days	100	50	5000
Travel (2 times)	round-trip	50	200	10000
Venue and meeting packages	package	2	1000	2000
Dissemination kit	set	60	25	1500
Sosialisation (in nat'l conference)				
Perdiem (4 persons x 4 days x 5 times)	person x days x times	80	40	3200
Accomodation (4 persons x 3 days x 5 times)	person x days x times	60	50	3000
Travel	persons x times	16	200	3200
Total Training Cost				**65400**

4. Travel Dissemnination, Coordination, Study Visit

International Travel Destination	Unit	Quantity	Unit Cost	Total Cost
Bogor (Indonesia) - Tanzania (East Central Africa)		1		
Duration (3persons x 6 days x 1 trip)	person-day	18		
Travel (3 persons)	round-trip	3	3,500	10,500
Daily Subsistence Allowance (DSA) [a/]	lumpsum	18	270	4860
Visa and insurance	person-trip	3	100	300
Subtotal: Travel 1				**15,660**
Bogor (Indonesia) - Brasil		1		
Duration (2 persons x 6 days x 1 trip)	person-day	12		
Travel (2 persons)	round-trip	2	3,500	7,000
Daily Subsistence Allowance (DSA) [a/]	lumpsum	12	340	4080
Visa and insurance	person-trip	2	100	200
Subtotal: Travel 3				**11,280**
Bogor (Indonesia) - New Delhi (India)		1		
Duration (3persons x 5 days x 1 trip)	person-day	15		
Travel (3 persons)	round-trip	3	2,000	6,000
Daily Subsistence Allowance (DSA) [a/]	lumpsum	15	265	3975
Visa and insurance	person-trip	3	100	300
Subtotal: Travel2				**10,275**
Bogor (Indonesia) - Philipines		1		
Duration (3persons x 5 days x 1 trip)	person-day	15		
Travel (3 persons)	round-trip	3	2,000	6,000
Daily Subsistence Allowance (DSA) [a/]	lumpsum	15	250	3750
Visa and insurance	person-trip	3	100	300
Subtotal: Travel 3				**10,050**
Bogor (Indonesia) - Roma		1		
Duration (2 persons x 5 days x 2 trip)	person-day	20		
Travel (2 persons)	round-trip	4	3,000	12,000
Daily Subsistence Allowance (DSA) [a/]	lumpsum	20	425	8500
Visa and insurance	person-trip	4	100	400
Subtotal: Travel 3				**20,900**
Bogor (Indonesia) - San Diego (USA)		1		
Duration (2 persons x 5 days x 1 trip)	person-day	10		
Travel (2 persons)	round-trip	2	3,000	6,000
Daily Subsistence Allowance (DSA) [a/]	lumpsum	10	425	4250
Visa and insurance	person-trip	2	100	200
Subtotal: Travel 3				**10,450**

Management (Local Travel)				
Bogor - Jakarta/ Sukamandi				
Per-diem (5 person x 5 times x 30 months)	person-day	600	50	30,000
Transportation (5 times x 30 months)	round-trip	240	80	19,200
Subtotal: Local travel for management				**49,200**
Subtotal: Travel				**127,815**

5. Local cost for Training and Workshops (Coordination, Gene Bank Visit, Dissemination)

Training and Workshops	**Unit**	**Quantity (no.of units)**	**Unit Cost USD**	**Total Cost USD**
Tanzania				
Participants (10 persons x 3 day x 1 visit)	person-day	30		
Local transport	package	1	600	600
Food (lunch and 2 times tea breaks)	person-day	30	30	900
Venue	day	3	100	300
Materials	per person	10	20	200
Sub total				**2,000**
Brasil				
Participants (10 persons x 3 day x 1 visit)	person-day	30		
Local transport	package	1	600	600
Food (lunch and 2 times tea breaks)	person-day	30	30	900
Venue	day	3	100	300
Materials	per person	10	20	200
Sub total				**2,000**
India				
Participants (10 persons x 3 day x 1 visit)	person-day	30		
Local transport	package	1	600	600
Food (lunch and 2 times tea breaks)	person-day	30	30	900
Venue	day	3	100	300
Materials	per person	10	20	200
Sub total				**2,000**
Philipinnes				
Participants (10 persons x 3 day x 1 visit)	person-day	30		
Local transport	package	1	600	600
Food (lunch and 2 times tea breaks)	person-day	30	30	900
Venue	day	3	100	300
Materials	per person	10	20	200
Sub total				**2,000**
Subtotal: Training and Workshops				**8,000**

6. Web portal

Items description	Unit	Qty (Num of unit)	Unit cost	total
Web domain	Packages	1	3500	3500
Total				**3500**

7. Workshop 2 (Bali)

Item description	Unit of measurement	Num of units	Unit cost	Total cost
Senior Technical Experts	package	1	4000	4000
Senior administrative staff	package	1	2000	2000
Travel	package	1	20000	20000
Accomodation	package	1	6000	6000
General operating system and maintenance expenses	package	1	3000	3000
Total Workshop 2				**35000**

8. Materials and/or Equipment

Item description	Unit	Quantity (no.of units)	Unit Cost USD	Total Cost USD
PC	each	2	2,250	4,500
Laptop computer	each	5	1,750	8,750
Printer	each	2	800	1,600
Projector	each	1	1009	1,009
Camera	each	1	1000	1,000
File cabinet	each	2	750	1,500
Stationary kit	each	3	750	2,250
Computer accecories	Package	3	750	2,250
Subtotal: Materials and/or Equipment				**22,859**

9. Others

Item description	Unit	Quantity (no.of units)	Unit Cost USD	Total Cost USD
Comunication costs	package	3	500	1,500
Coordination (meeting)	package	3	1500	4,500
Documentation	package	3	1000	3,000
Publication	package	3	1000	3,000
Printing	package	3	1000	3,000
Reporting	package	3	1500	4,500
Subtotal: Others				**19,500**

10. Internal meeting coordination

Item description -	Unit	Quantity (no.of units)	Unit Cost USD	Total Cost USD
Intern Meeting (IAARD; 15 persons)	meeting	9	500	4,500
Venue	meeting	9	100	900
Materials	package	90	20	1,800
				7,200

APPENDIX 5: DISBURSEMENT INFORMATION

Bank Name: BRI (Bank Rakyat Indonesia)
Bank address: Jl. Dewi Sartika No, 6, Bogor
Branch: Bogor
Country: Indonesia
Beneficiary: BB-BIOGEN
Account number: 0012-02-000032-30-1
Exact Bank Account Holder Name: RPL 023 PERTANIAN PS DPK
Account currency: US $
IBAN Code: -
SWIFT Code: BRINIDJA