CGIAR Excellence in Breeding Platform Plan of Work and Budget (POWB) 2019

(from planning for 2019 onwards)

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Platform Plan of Work and Budget (POWB)

 CGIAR Excellence in Breeding The International Maize and Wheat
Platform (EiB) Improvement Center (CIMMYT)

List of participating Centers and other key partners	Logo
AfricaRice	
Bayer	
Bioversity International	
International Center for Tropical Agriculture (CIAT)	
CIMMYT	
International Potato Center (CIP)	
Cornell University	
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	
Diversity Arrays Technology	
CORTEVA	
Global Crop Diversity Trust (GCDT)	
Food and Agriculture Organization of the United Nations (FAO)	
International Center for Agricultural Research in the Dry Areas (ICARDA)	

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Platform Plan of Work and Budget (POWB)

Institut National de la Recherche Agronomique (INRA)	
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	
International Institute of Tropical Agriculture (IITA)	
International Livestock Research Institute (ILRI)	
Integrated Breeding Platform (IBP)	
International Rice Research Institute (IRRI)	
James Hutton Institute	
John Innes Centre	
Nottingham University	
Oregon State University	
Queensland University	
Swedish University of Agricultural Sciences (SLU)	
Syngenta	
United States Department of Agriculture (USDA)	
Wageningen University	
World Agroforestry Centre (ICRAF)	
WorldFish	

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Narrative section

1. Adjustments/ Changes to your Theories of Change (ToC), <u>if relevant </u>(max. 500 words)

There was no change to the Theory of Change.

2. Plans and Expected Progress Towards Outcomes (max. 2000 words)

The CGIAR Excellence in Breeding Platform has been established to enable change within CGIAR breeding networks toward higher rates of genetic gain and scale of impact per dollar invested. The Crops to End Hunger Initiative has been established by the funders to achieve the same outcome, and EiB is developing specific measures to reflect the involvement of the Initiative.

As part of its leadership role, EiB must clearly present a bold vision for CGIAR breeding. In addition, EiB must define examples of how that vision can be achieved, enabling CGIAR breeding teams to develop and execute their own vision for breeding excellence, higher rates of genetic gain and impact. EiB's role is to ensure that this vision is documented in detail, that action plans are developed and used to measure progress, and provide the tools, services and technical advice needed to execute the vision. Many solutions will also be found within the breeding community, and EiB will play a role in organizing these networks. As a starting point, CGIAR breeding programs will need to measure the current state of improvement across the various components of the breeding program. The tools, methods and assistance provided by EiB will result from the actions described above, which will be the major focus for 2019

The expected highlights per module are as follows:

Module 1 - Breeding Program Excellence

In 2018, EiB introduced the continuous improvement philosophy. As part of that initiative EiB Module 1 introduced the Product Replacement Strategy in CGIAR centers seeking to modernize their product-oriented breeding programs. EiB Module 1 is beginning to distribute improvement plans to structure 2019 for a more comprehensive roll out of more disciplined and transparent approach to product design and management.

Module 2 - Breeding Scheme Optimization

The most important outcome for Module 2 in 2019 will be to develop the vision for CGIAR breeding schemes and outline a definition of a "Gold Standard" breeding scheme.

Once this is developed there will be significant communication approaches to disseminate this vision. It has proven exceedingly difficult to attract someone with strong skills in breeding pipeline development/augmentation, quantitative genetics, population genetics and biometrics.

Module 2 currently has no staff and needs to recruit two staff members, including one to lead the module. For EiB to actively provide advice to CGIAR breeding teams it will be necessary to first understand what the current CGIAR breeding schemes are. Examples of how to increase genetic

gains will need to be presented to enable CGIAR breeding teams to identify ways in which they aim to increase their rates of genetic gain. Key outputs for Module 2 in 2019 will be:

- Filling the two vacant Module 2 positions, including the module lead
- Gathering baseline data characterizing current CGIAR breeding schemes
- Providing a description of ways in which breeders can increase their rates of genetic gain
- Provide assistance to CGIAR breeding teams upon request to develop an action plan that will result in increased rates of genetic gain

Module 3 - Genotyping/Sequencing Tools and Services

In 2019, Module 3 will focus on the following activities:

- Development and refinement of Toolbox documentations – activity is postponed from 2018 to 2019.
- New framework testing service agreement to include low-mid-high-density genotyping along with other commercial services.
- Change of engagement strategy from large workshops to more intimate setting involving key stakeholders only – more cost effective with targeted outputs.
- Significant time will be allocated to help member programs in developing continuous improvement plans – in response to CGIAR SMB initiatives.

Module 4 - Phenotyping Tools and Services

Breeding programs will have access to a template to quantify current plot costs through the Toolbox, supporting the identification and prioritization of specific cost saving opportunities. Module 4 will continue to collaborate with Juniper Systems to assess the integration of additional sensors on the HarvestMaster platform for simultaneously measuring grain quality along with yield. In collaboration with other EiB modules, we also hope to scale up activities in the GxExM domain by leveraging benchmarking activities conducted during a workshop in 2018.

After the successful completion of current state assessments for multiple breeding programs during 2018, we will continue to collaborate with these centers and associated breeding programs to develop and implement their improvement plans during 2019. Additionally, and with the help of external consultants, we will broaden our scope to include similar activities across the entire CGIAR. This represents a significant change from the previously defined outcomes and milestones, but it is aligned with currently identified priorities.

Based upon positive feedback received at the 2018 Contributors' Meeting in Amsterdam, Module 4 will move forward with a new proposal to create a CGIAR Global Support Network. If the proposal is accepted and successfully implemented, then the Global Support Network will be a critical component for achieving sustainable process improvements during the integration of new technologies for modernizing breeding programs.

Module 5 - Bioinformatics and Data Management Tools and Services

A major transition in 2019 for Module 5 will be the governance of two projects previously managed as separate, independent breeding software development projects. This transition will occur in November 2019. In preparation for this, a proper governance structure will need to be implemented within Module 5 to ensure that projects are aligned to the results framework and deliverables of Module 5, that projects are delivering the requested functionality, and that best practices in software development are being followed. To support development and expanded implementation and adoption of systems, additional funding will be required. To secure additional funding a group will write a grant proposal to be submitted to the Bill & Melinda Gates Foundation (BMGF) in 2019. In addition, a consulting agreement will be established to gather requirements from breeding programs that have been prioritized for expanded deployment of key database systems.

The remaining deliverables in 2019 are aligned to the existing results framework and will continue to build on progress made in existing initiatives aimed at increasing capacity in breeding informatics and data analytics. Efforts aligned with the communities of practice will seek to increase collaboration across member breeding programs and institutions. Based on feedback improvements in the management and allocation of resources will be made to database/software integration efforts and the sabbatical program.

3. Financial Plan for the coming year, including use of W1/2 (max. 500 words)

The EiB W1/W2 budget for 2019 will be approximately USD 1,756,000.00 with estimated carry-over of USD 861,216.00. For W3 funding (BMGF) we will be re-budgeting the submitted five-year budget to adjust to CGIAR reporting periods. EiB funding for 2019 will focus primarily in assisting CGIAR Breeding programs in the process of creating and executing their Continuous Improvement Plans and development of breeding tools, services and practical advice in alignment with the EIB Results Based Management Framework.

Table 3: Planned Budget.

TABLES

Table 2A: Planned Milestones

The Sub-IDOs as presented in the CGIAR (W1/W2) proposal remain aligned with the 2022 Module Outcomes. No changes have been made to the 2022 Module Outcomes.

C1	C2	Column 3A	Column 4	Column 5	Column 6	7a	7b	7c	7d
Module	Mapped to Sub-IDO	2022 Module outcomes	Milestone	Indicate of the following	Means of verification	CGIAR Cross-Cutting Markers for the milestone			
						Gender	Youth	CapDev	CC
1	1. Increased capacity of partner organizations, as evidenced by rates of investment in agricultural research. 2. Enhanced individual capacity in partner research organizations through training and exchange	Creation of clear product profiles, a stage gate process "from breeding cross-to-farm", and appropriate breeding schemes commensurate with level of investment, best practices and tools available results in accelerated breeding cycles and rates of genetic gain per unit time that are 25% greater than current approaches.	(i) Best practices agreed and documented for market/value chain/gender analysis for the purpose of defining product profiles; (ii) Provisional product profiles are in place for all member programs.	Reworded/ rephrased from proposal	1. Co-support (50% or matching funds) 2 projects x 3-year study on economic traits assessment to create a use case to drive behavioral changes and instill selection index breeding activities. The partner for this project is AbacusBio Ltd. 2. Written strategy/plan incorporates best practices from Gender and Breeding Initiative into the EiB Product Profile Contract Process. Same applies to Bio-fortification targets. 3. Complete 2-3 high priority product profiles / market facing	1	1	1	N/A

					breeders + key NARS breeding programs					
					4. Complete crop-based breeding strategy (includes gender/biofortification strategy) and tool gaps					
					5. Toolbox: Product Replacement and Pre-Breeding (Discovery Tool) Strategy Tool.					
					6. Gender/Biofortification tools & GAP analysis tool.					
1				CGIAR breeding programs with BPAT assessments completed finalize improvement/ optimization plans for (a) current resource levels and (b) current resources plus a one-time grant for capital and training.	Reworded/ rephrased from proposal	Develop a plan and best practices agreed and documented for GxE analysis within TPE.	1	1	1	N/A
1				(i) Member breeding programs establish a format and process for implementing a stage gate system in their breeding program; (ii) Best practices discussed and developed for appropriate incentivization of breeding team members based on individual and breeding team performance relative to overall genetic gain and varietal replacement indicators and metrics. (Year 2): (i) Mentor member programs to	Identical to proposal	Year 1 (Continued from 2018): Cross-CGIAR release of the stage gate system. Year 2: Continuous improvement process implementation. Stage gates implemented across CGIARxNARES breeding network. (Africa Rice, CIAT, CIMMYT-Maize, CIMMYT-Wheat, CIP, ICARDA, ICRAF, ICRISAT, IRRI, and Worldfish).	1	1	2	N/A

			implement inter-disciplinary team-based stage gate advancement system. (ii) Mentor member programs to design and implement individual breeding team member KPIs to align with target breeding program performance metrics.						
2	1. Reduced production risk. 2. Enhanced capacity to deal with climate extremes. 3. Reduced pre- and post-harvest losses, including those caused by climate change 4. Enhanced genetic gains. 5. Increased availability of diverse nutrient-rich foods. 6. Reduced biological and chemical hazards in the food system.	Increased rates of genetic gain through use of best practices, optimization of breeding strategy and more effective use of resources (time, finances).	(i) Use cases of successful implementation of predictive tools providing value towards breeding for product profiles documented; (ii) Use cases of failed attempts of development of predictive tools documented; (iii) Develop and document guidelines for the development, validation and implementation of any predictive tool into the breeding process. Guidelines will include assessment of the repeatability, genetic correlation with the target trait and a cost-benefit analysis.	Identical to proposal	Development of a document providing guidelines for development, validation and implementation of any predictive tool into the breeding process. Guidelines will include assessment of the repeatability, genetic correlation with the target trait and a cost-benefit analysis.	N/A	N/A	1	N/A

	7. Increased genetic diversity of agricultural and associated landscapes. 8. Enhanced individual capacity in partner research organizations through training and exchange. 9. Increased capacity of partner organizations, as evidenced by rates of investment in agricultural research								
2			(i) Members document trait and core breeding pipelines in Toolbox; (ii) A framework of guidelines for integrating trait breeding with core breeding developed, documented and uploaded to the Toolbox.	Identical to proposal	A diagramatic breeding scheme for each breeding pipeline published on the Toolbox.	1	N/A	1	N/A
2			(i) Members document breeding strategies in the Toolbox; (ii) Discussion of alternative breeding schemes based on available tools, opportunities (e.g. partnerships, predictive tools) and logistical constraints	Identical to proposal	1. Workshops to present EiB vision of increased rates of genetic gains, ways increases can be achieved and to capture current breeding schemes. Assumes module lead is in place early 2019.	1	N/A	2	N/A

			(e.g. phytosanitary delays); (iii) Identification of common questions to be resolved through simulation or further cost-benefit analyses.		2. Project proposal for development of breeding scheme simulation				
3	1. Reduced production risk. 2. Enhanced capacity to deal with climate extremes. 3. Reduced pre- and post-harvest losses, including those caused by climate change 4. Enhanced genetic gains. 5. Increased availability of diverse nutrient-rich foods. 6. Reduced biological and chemical hazards in the food system. 7. Increased genetic diversity of agricultural and associated landscapes.	Efficient and effective application of genomic technology, including better targeted genotypic data in breeding supports larger, more cost-effective programs and is mainstreamed within AFS networks, in order to accelerate the rate of genetic gain delivered in farmers' fields.	(i) Comprehensive workshop on MAS/GS implementation conducted and planning for various crops applications; (ii) Genotyping application plans integrated into breeding team improvement plan documents; (iii) Support to member breeding programs implementing cost-benefit analyses of MAS and GS workflows.	Reworded/ rephrased from proposal	1. Routine interaction with EiB member breeding programs to gather information and provide feedback to conduct cost benefit analysis (as per EiB improvement plans). 2. Cost-benefit analysis for genotype supported breeding workflows in 10 species.	1	1	2	N/A

	8. Enhanced individual capacity in partner research organizations through training and exchange. 9. Increased capacity of partner organizations, as evidenced by rates of investment in agricultural research								
3			$2.00 SNP genotyped sample; $10 genome profile.	Identical to proposal	1. Vendor negotiation and meetings. 2. Establish new service contracts for low and mid density genotyping. 3. Center visits and meetings to secure commitments.	N/A	N/A	1	N/A
3			500K SNP genotyped samples; 75K genome profiles. (i) Obtain and aggregate AFS demand for supplies and services. Determine cross-AFS genotyping platform preferences, minimum genotyping quality criteria, maximum permissible	Reworded/ rephrased from proposal	1. Onboarding and training of new logistic managers to provide support for CGIAR and NARs users. 2. Routine interaction with EiB members to develop and recommend better sampling solutions and workflows- EBS.	1	1	2	N/A

			turnaround time for genotyping applications, minimum number of samples required (at defined unit costs), minimum number/volume of supplies required, minimum marker conversion rate, Number of markers for marker conversion, etc.; (ii) Use collated demand information to broker potential arrangements with service providers and solicit pricing feedback from AFS; (iii) Finalize brokering of supplies and services and obtain minimum order commitments from AFS; (iv) Obtain feedback from service providers and AFS clients and document issues, concerns and positive feedback collating to form a review for the Trait Discovery and Breeding Toolbox.		3. User community backstopping visits - Africa and Asia.				
4	1. Reduced production risk. 2. Enhanced capacity to deal with climate extremes. 3. Reduced pre- and post-harvest losses, including those caused by climate change	Lower-cost, better targeted phenotypic data supports larger, more cost-effective programs.	(i) Process engineering specialist hired; (ii) A completed diagnosis of the gaps, needs and best approaches to increase plot throughput/reduce costs through HT phenotyping, mechanization, automation; (iii) Identification of existing best practices and equipment in use by various programs; (iv) Community of practice for HTP established	Reworded/ rephrased from proposal	1. Mechanization and Automation Assessment completed for the following centers: ICRISAT, CIMMYT, CIP, CIAT, IITA, IRRI, AfricaRice, ICARDA. Support CG Centers and Programs to develop their Improvement Plans. Agreements with providers / Prefered solutions published on Toolbox. 2. Establishment of 2 Implementation and Support Networks	1	1	1	N/A

	4. Enhanced genetic gains. 5. Increased availability of diverse nutrient-rich foods. 6. Increased genetic diversity of agricultural and associated landscapes. 7. Enhanced individual capacity in partner research organizations through training and exchange. 8. Increased capacity of partner organizations, as evidenced by rates of investment in agricultural research Reduce pre- and post-harvest losses, including those caused by climate change							

	(CC) Technologies that reduce women`s labor and energy expenditure adopted								
4				(i) Volumes, metrics of cost per plot and heritabilities established as a benchmark; (ii) Members provided with equipment advice and breeding management systems for barcoding and to capture data electronically; (iii) identification of equipment needs, prioritized by abilities to increase plot throughput; Inventory of phenotyping capabilities for secondary traits, associated heritabilities, genetic correlations and costs.	Reworded/ rephrased from proposal	1. Cost template applied to EiB members and data analyzed 2. Mechanization and Automation GAP analysis completed for the following centers: ICRISAT, CIMMYT, CIP, CIAT, IITA, IRRI, AfricaRice, ICARDA. Support CG Centers and Programs to develop their Improvement Plans. Work plan for interactions with key collaborators (CORTEVA/ BAYER/ SYNGENTA) in alignment with Improvement Plan. Agreements with providers / Preferred solutions published on Toolbox.	1	1	1	N/A
4				(i) Identify candidates for laboratory services for physico-chemical composition and nutritional properties and assess costs and logistical issues; (ii) send test samples to prioritized laboratories; (iii) develop inventory of NIRS uses and join calibration efforts.	Reworded/ rephrased from proposal	1. Checklist to assess current situation (needs, access to service, bottleneck, volume of samples, traits targeted, etc.) 2. An action plan developed for Asia. Proposal developed to streamline quality analysis in the breeding programs - Proposal document and budget + link to related proposals. Regional workshop on Quality Analysis in East Africa region to assess current situation (needs, access to service,	1	1	2	N/A

				bottleneck, volume of samples, traits targeted, etc.)	
				3. Develop an action plan in the East Africa and WCA region. Data on must-have and good to have quality traits collected across the breeding teams of the CGIAR to assess the needs in terms of breeding for quality.	
				4. A CoP on NIRS analysis - List of service providers for different quality analysis.	
4			Support services from ARIs for experimental design and analysis of precision and high-throughput phenotype data.	Reworded/ rephrased from proposal	Checklist to assess readiness to engage into HTP – SOP for quality image generation – A plan and budget for image data acquisition + data-processing solution to cater for at least 4 CG crops. Document on the use (successful / failure) of secondary traits in the breeding process, to guide on when to use such secondary traits	

| 5 | 1. Reduced production risk.

2. Enhanced capacity to deal with climate extremes.

3. Reduced pre- and post-harvest losses, including those caused by climate change

4. Enhanced genetic gains.

5. Increased availability of diverse nutrient-rich foods.

6. Reduced biological and chemical hazards in the food system.

7. Increased genetic diversity of agricultural and associated landscapes.

8. Enhanced individual capacity in partner research organizations | Bioinformatics tools that support automation, data integration and decision making are fully integrated for use in AFS breeding networks | (i) Workflow implemented for the case studies identified in Year 1. (ii) Develop sustainable maintenance and life cycle plans for critical systems. (iii) Initiate development or acquisition of new database and tools to address key gaps. | Reworded/ rephrased from proposal | 1. Hackathons and joint developer meetings will take place where implementations of workflow support will be tested. 2. Deployment process for core components of breeding support systems will be documented. A road map to develop sustainable deployment planning will be developed. 3. A development plan will be created and POC implemented. | N/A | N/A | 1 | N/A |

	through training and exchange. 9. Increased capacity of partner organizations, as evidenced by rates of investment in agricultural research.								
5			(i) Existing databases and tools assessed and updated; (ii) Initiate development or acquisition of new database and tools to address key gaps; (iii) Implement strategic sustainability support.	Reworded/ rephrased from proposal	1. A technical working group will be formed to outline best practices in code development, identify key position that need to be filled to enable M5 to function effectively and a sustainable funding plan for system currently in use by CGIAR and NARS. The proposal will serve as the basis on a new funding proposal. 2. A new advisory group will be formed to review subgrants and track progress. And a document outlining the process for managing and award subgrants through Module 5.	N/A	N/A	2 N/A	1N/A
5			(i) Strategy to manage and integrate meta-data.	Reworded/ rephrased	Continue implementation of GUIDs for samples and extend based on	N/A	N/A	2 N/A	

1				from proposal	new selected use cases. Work with Big Data CoP.				1 N/A
Toolbox	1. Enhanced individual capacity in partner research organizations through training and exchange. 2. Increased capacity of partner organizations, as evidenced by rates	Originally part of Module 2's 2022 Outcome: Increased rates of genetic gain through use of best practices, optimization of breeding strategy and more effective use of resources (time, finances).	At least 15 best practices and tools developed / adapted / adopted by various Modules; incorporate new components, upgrade workflows, remove obsolete components in collaboration with members; engage students in developing such information. ii) Members document current state of breeding program. Tools from existing projects: Tools developed by Seeds of Discovery, GenomeHarvest, GS-RUSE and other projects submitted with documentation to the toolbox and, as applicable, integrated in Galaxy/Taverna.	Reworded/ rephrased from proposal	1. New and updated used and module leader recommended tools and resources added to the toolbox. 2. Develop interface and display a summary of breeding program statuses summarized from inputs across modules including improvement plans.	N/A	N/A	1	N/A
Toolbox	1. Enhanced individual capacity in partner research organizations through training and exchange. 2. Increased capacity of partner organizations, as evidenced by rates of investment in		CoPs document "missing" features in trait discovery, mobilization and precision breeding applications, including prioritization of needs across AFS and CoPs, develop use cases around missing features and work with the Bioinformatics Module to support the formation of technical user requirements for new bioinformatics and/or	Reworded/ rephrased from proposal	Develop spaces and functionality within the toolbox for CoP/network information and electronic resource sharing. Define operational rules and structure for forums, questions responses etc.	N/A	N/A	1	N/A

	agricultural research.			biometrics tools and approaches.					
Toolbox				CoPs provide initial user-based feedback to documented tools and practices using online review system.	Identical to proposal	1. Prepare short review of existing review functionalities in web-based platforms covering at least 5 sites with focus on relevance and ease of development, management and user input. 2. Develop Beta version of tool review functionality within the toolbox. 3. Release a V1 production review interface in the toolbox.			1
Toolbox				(i) Identification of, and links to relevant external e-modules and courses; (ii) Collection of member feedback to material provided; (iii) Use of materials by AFS training programs, BecA and other networks; iv) Enhanced provision of short training and documentation of end user tools and pipelines through webinars, video modules, and implementation manuals.	Reworded/ rephrased from proposal	1. Cross-module prioritized shortlist of e-learning modules/courses within and outside of the CGIAR which may be relevant to the EiB community. 2. Small teams review the e-learning content and provide recommendations to follow up or not for inclusion in the toolbox. 3. For high value content, contact relevant individuals and institutions to seek permission to link to/use the e-learning content identified. 4. For high value tools work with providers to prepare short video instructional information and manuals	2	2	1	N/A

Platform Plan of Work and Budget (POWB)

Table 2B: Planned Evaluations/Reviews, Impact Assessments and Learning Exercises

[Please complete the following table to share any impact assessments, adoption studies, evaluations, reviews or other learning exercises that are planned for the coming year, for example to provide evidence for reporting on Outcome-Impact Case Studies. Delete examples provided below and replace with your own. Please make sure that the title of study is self-explanatory. Spell out acronyms every time. (This information will be accessed by readers online who may not be able to see other rows of the table.)]

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Platform	Module (if not overall Platform)	Status (drop down menu: ongoing, new)	Planned studies/learning exercises in the coming year (examples only)	Geographic scope (specify country or region if relevant)	Who is commissioning this study
			Evaluation by Funder X	Sub Saharan Africa	Funder X
			Workshop to reflect on our Theory of Change for the Platform	Global	Platform management

Table 2C: Planned major new collaborations (CGIAR internal, or with non-CGIAR collaborators)

Name of Platform/CRP or non-CGIAR collaborator	Brief description of collaboration (give and take among CRPs/Platforms/non-CGIAR collaborator) and value added (e.g. scientific or efficiency benefits)
Intertek (Non-CGIAR)	Development of operational excellence strategy and outsourcing.
Gender and Breeding Initiative (CGIAR)	Development of gender-relevant product profiles via the integration of GBI research tools.
Demand-Led Breeding (Non-CGIAR)	Common product design and management principles into CGIARxNARES breeding networks.
AbacusBio (Non-CGIAR)	Economic trait valuation/selection index breeding.
Corteva Agriscience (Non-CGIAR)	Implementation of private sector best practices.
Roslin Institute	Development of a sophisticated breeding scheme simulation tool.
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT).	AVISA Project (ICRISAT, CIAT, IITA)- Development of genotyping strategy as part of continuous improvement plans.

International Center for Tropical Agriculture (CIAT) - AVISA Project	Development of genotyping strategy as part of continuous improvement plans.
International Institute of Tropical Agriculture (IITA) - AVISA Project	Development of genotyping strategy as part of continuous improvement plans.
AgriAlliance (rice)	Provide genotyping solutions as part of M3 volume aggregation strategy to rice community.
NextGen Cassava	Provide genotyping solutions as part of M3 volume aggregation strategy to rice community.
CGIAR Research Program on Roots, Tubers and Bananas.	Explore opportunities to better support the CGIAR Research Program on Roots, Tubers and Bananas community in genotyping needs.
Juniper Systems	EiB will continue working with Juniper Systems to explore opportunities for simultaneous measurement of additional qualitative traits during the automated measurement of grain weight, test weight, and seed moisture content. Automated measurement of qualitative traits during harvest would help reduce costs and facilitate more rapid decision making.
TBD	Drone-based imaging service provider (to be determined; several options are being explored)-Single source provider of cloud-based data processing and analytics of drone-acquired images. Aggregated demand should help drive down costs and simplify access to the technology.
TBD	Consultants (one or two)- We will utilize these individuals to increase our capacity to deliver assessments and improvement plans across all Centers.

Corteva Agriscience	EiB will provide support, where appropriate, to the ongoing collaboration between Corteva and the International Crops Research Institute for the Semi-Arid Tropics pearl millet program.
Bayer	EiB will provide support, where appropriate, to the ongoing collaboration between Bayer and the International institute for Tropical Agriculture cowpea program.

Platform Plan of Work and Budget (POWB)

Table 3: Planned Budget

	Planned budget (USD)				Comments on major changes
	W1/2	W3/bilateral	Center Own fund	Total	
Module 1	400,000.00	450,000.00	0.00	850,000.00	
Module 2	300,000.00	400,000.00	0.00	700,000.00	
Module 3	400,000.00	411,992.00	0.00	811,992.00	
Module 4	400,000.00	450,000.00	0.00	850,000.00	
Module 5	500,000.00	531,458.00	0.00	1,031,458.00	
Toolbox	217,216.00	300,000.00	0.00	517,216.00	
Platform Management & Support Cost	400,000.00	450,000.00	0.00	850,000.00	
Platform Total	2,617,216.00	2,993,450.00	0.00	5,610,666.00	