

# Cross-center activities

There are opportunities to reduce costs, increase access to services, and drive quality improvements with the adoption of cross-center approaches.

## **PO3:**

<b>PURPOSE</b>	<ol style="list-style-type: none"><li>1) Present projects that are currently underway</li><li>2) Set the stage for development of a strategic plan for future implementations</li></ol>
<b>OBJECTIVE</b>	During this session EiB will present one case of success and identified opportunities, some in early stage of implementation.
<b>OUTPUT / OUTCOME</b>	Each participant should understand the level of importance to have a more cross-center approach.

**Let's go to the first case.....**  
**A case of success...**



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# Genotyping services



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# Shared Genotyping Service (Past)

- Available only to the “privileged” programs
  - High buy-in costs (Equipment and Expertise)
  - Challenging access for most small breeding programs (SSA)
- Mostly in-house operation
  - Project funded facility
  - Issues with high cost of maintenance and staff training
  - Minimal standardization (output and protocol)
- Limited usage in breeding programs
  - Mostly R&D or discovery activities (GWAS etc.)
  - Limited throughput for breeding operation
  - Inadequate linkage of genotyping data to breeding decision making



# Shared Genotyping Service (Present)

## Fully- outsourced genotyping

- Ease of use (DNA extraction, genotyping, sample QC, bioinformatics...)
- Quick turn-around (10 to 15 business days)
- Improved access and adoption by breeding programs
  - ❖ Low density platform (HTPG)- operational for 3 years
    - ✓ ~ \$800K annual volume (2019)
    - ✓ Fully costed at \$2.00 per sample
  - ❖ Mid density platform – operational by Q4, 2019
    - ✓ \$600K per annum target
    - ✓ Starting at \$10 per sample with target to achieve \$7-8 in the future
- 30+ Countries (16 crops)



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# Shared Genotyping Service (Future)

- Aggregation strategy
  - Value added services (customized to user needs)
  - Centralized operations (Example: pre-breeding / trait introgression)
  - Better integration into breeding programs
- Support network
  - Sampling logistics
  - Data interpretation
  - Consultation (new business model)
- Integration with EBS
  - Ensure timely decision making (advancement meeting)
  - Automation



# Shared Genotyping Service (Expectations)

- ✓ Institutional support for shared genotyping services
  - Might need to revisit the business case for in house operations
  - Develop a transition plan
  - Identify operational vs discovery genotyping
  
- ✓ Work with us to better understand your crop specific needs
  - Important for sustainability
  - Ensure the spread of technology and support to all your partners
  
- ✓ Strengthening of business rules (management support)
  - Essential for future cost reduction
  - Good chain of custody on data (stewardship)
  - Investment in genotyping is an investment on data by centers





**There are some other opportunities...**



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**1) Digitization Support Network**

**2) Product Management Network**

**3) Biometrics Support Unit**



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# Background

From BPAT

AND

From EiB visits



“...the breeding pipeline involves many plant production, measurement, and processing steps. Optimizing these requires **high-quality engineering support for mechanization, digitization, and automation.**”

# What have we learned?

1. Many opportunities and requests
2. Lack of standardization
3. Isolated initiatives
4. Some support available from vendors, private sector partners, and other centers – but not coordinated
5. Poor strategy for troubleshooting, maintenance, and lifecycle management



# How to improve?



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Bulk purchasing – Project to be submitted

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Support Network – Project to be submitted



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# What is the Support Network?



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# Digitization Support Network Scope

Imagine if we had a person with a regional focus to support CG centers and National Programs.

He/She would be able to:

- Aggregate demand
- Facilitate distribution
- Drive implementation and training
- Provide support and maintenance
- Planning for future upgrades
- Support improvement plans



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# Digitization Support Network Benefits

By doing that:

- Breeding programs will have more access to digitization
- Potentially reducing cost by aggregating demand (equipment and consumables)
- Facilitating the contact between users and vendors
- Create a sustainable improvement
- CtEH initiative in first instance but business model needs to be developed for longer term



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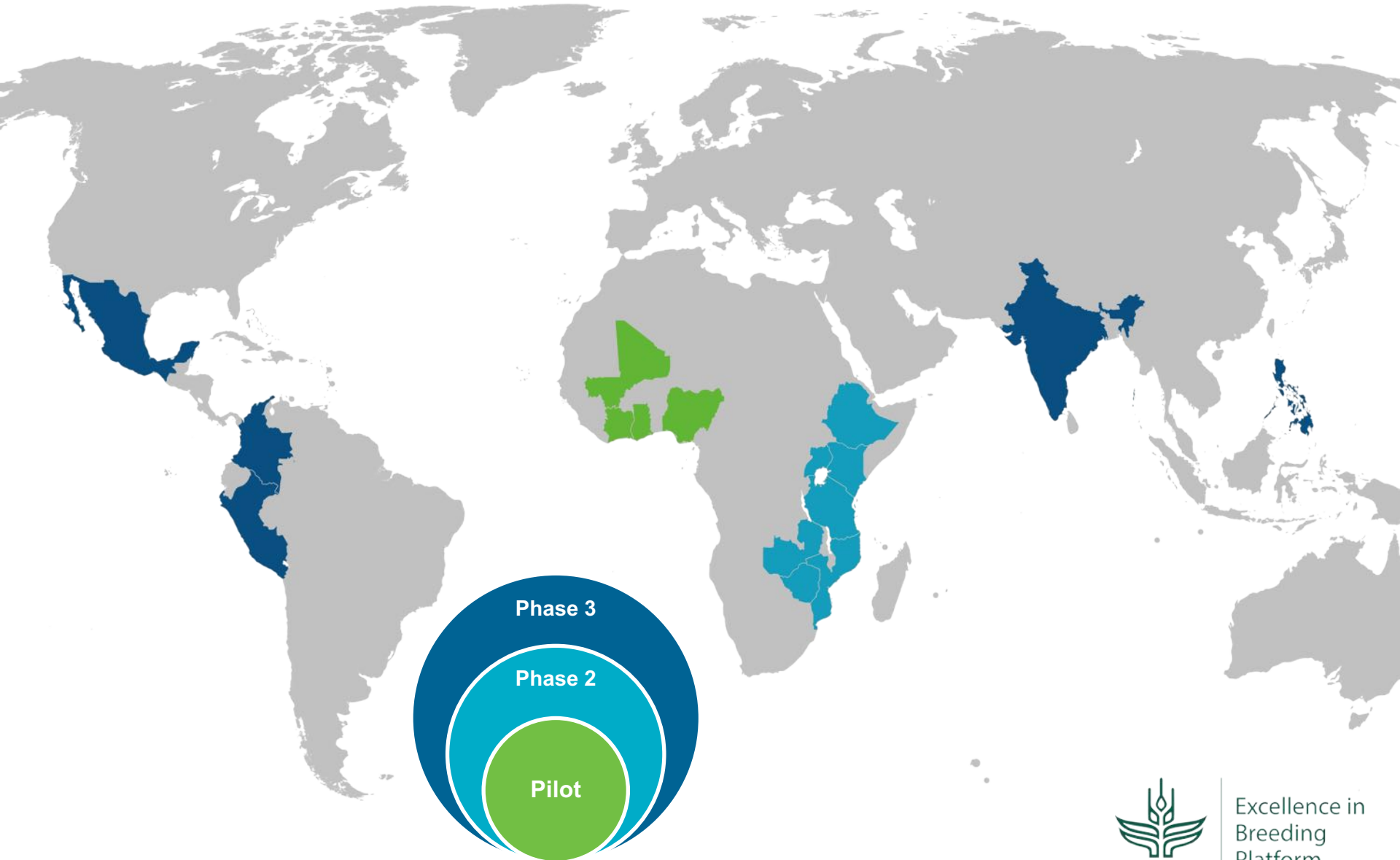
# Digitization Support Network

## Next steps

- EiB will submit a pilot project focused on limited region (Western Africa)
  - Validate the scope
  - Support the development of the business case for sustainability



# Support network proposal



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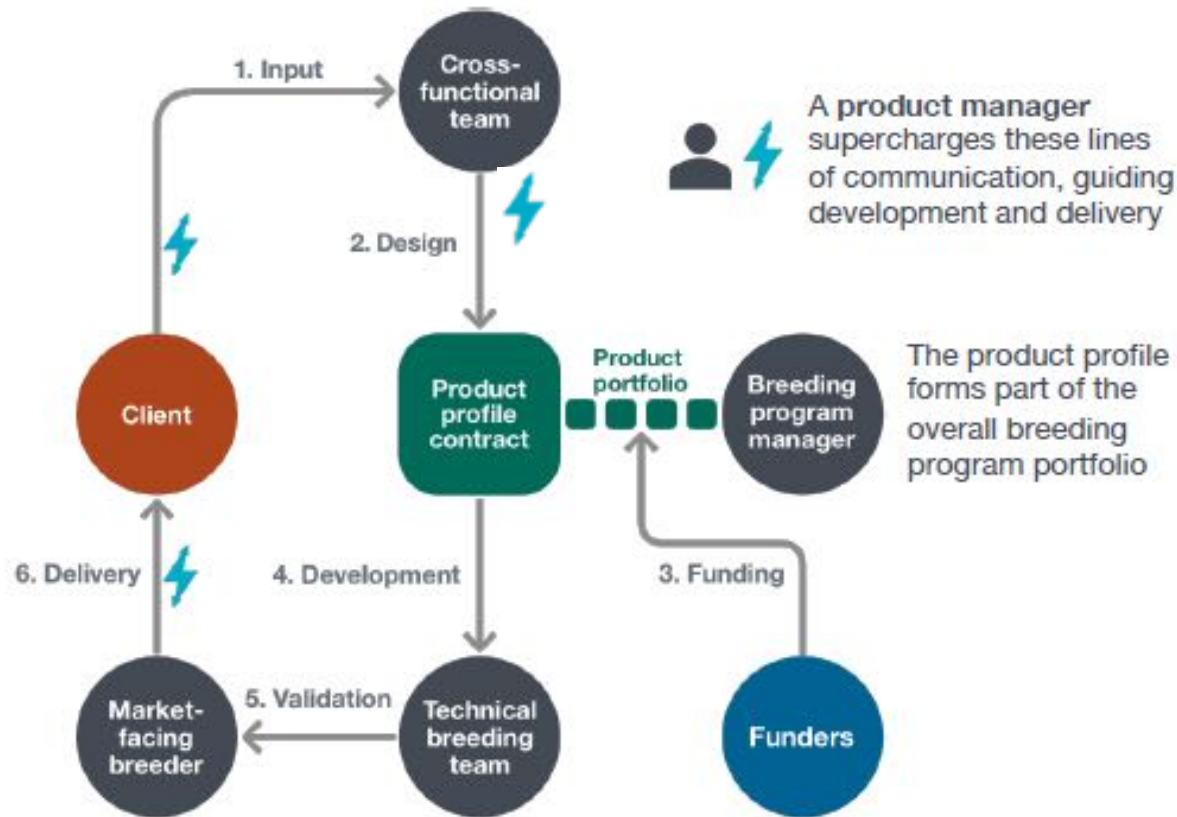
# Rationale

- Effective product management capacity and expertise is key to CGIAR modernization
- There is growing interest in product managers in the CGIAR – most centers are budgeting for these or requesting in improvement plans
- This is a critical opportunity & time for Module 1 to kickstart a CGIAR product management community to ensure sustainable and effective change



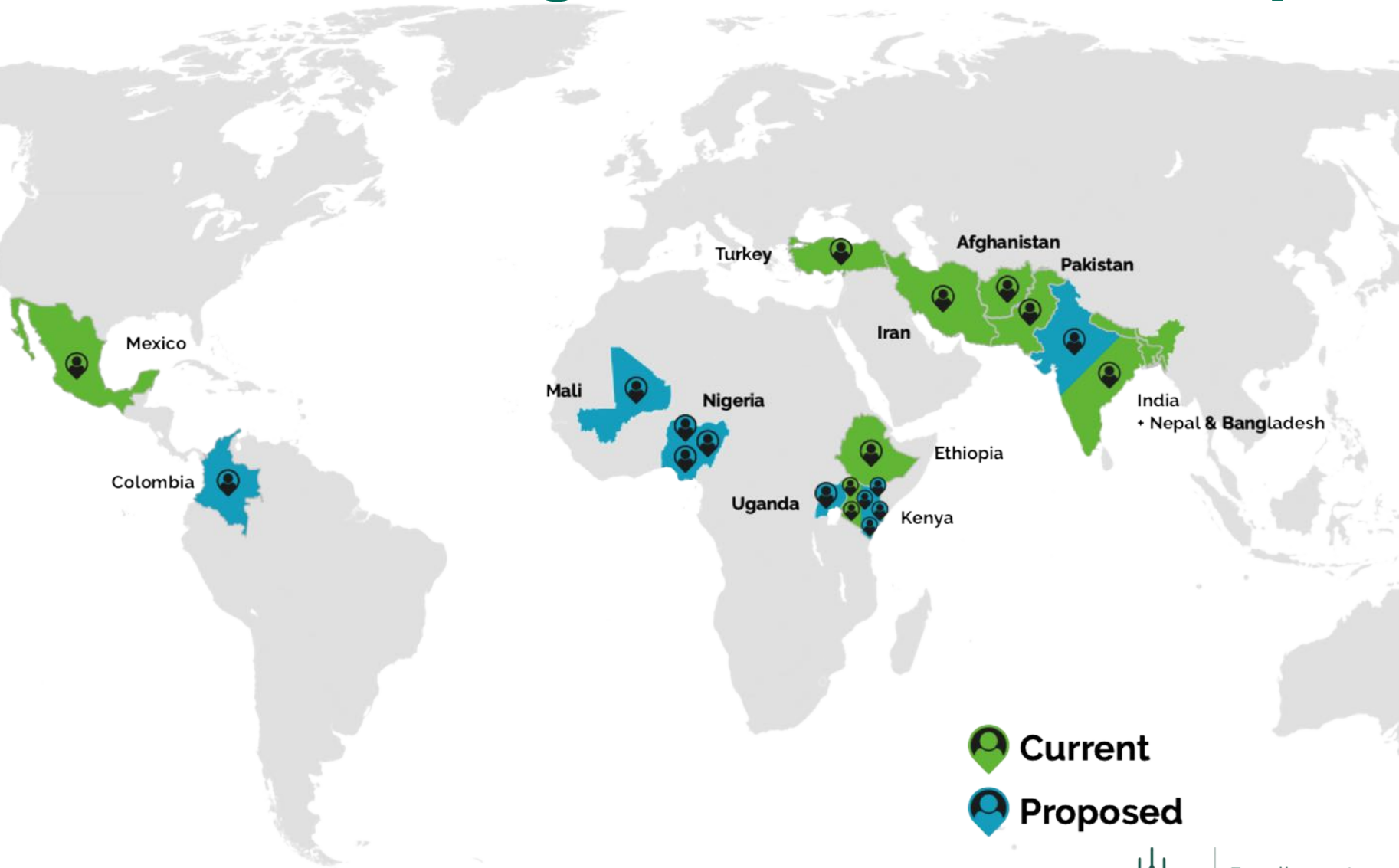
# Product Managers Supercharge the Market Connections

The product profile functions as an agreement between all stakeholders in a network to design and deliver market-focused products



\* Breeding teams and clients may include CGIAR, NARS, Private sector, NGOs, etc.

# Product Management Network Map



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# Proposal

- Module 1 will provide technical backstopping (advice, standard tools and consultancy) to CGIAR product managers,
- Funding will be given for recruitment for priority crops in Africa to create a critical mass for the community to function – this will be 2 years after which recruits should be creating own value
- The result will be a common approach to product management. Once the model is successful, future funding sources can be used for expansion
- Working on the Product Manager level, rather the breeders level, will provide greater opportunity to focus on the market needs



1) Digitization Support Network

2) Product Management Network

**3) Biometrics Support Unit**



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# Understanding the current and future state is critical to understand the gap

## CURRENT STATE

- Limited access to Biometrics support for basic decision-making activities (design generation, field/genomic analysis, decision-making and expert-interpretation)
- Centers with Biometrics capacity fall short in FTEs.
- Several centers have not implemented state of the art statistical analyses pipelines, and share expertise.

## FUTURE STATE

- An across-CGIAR Biometrics platform that supports the implementation of scaled, automated and cost-efficient state of the art Biometrics tools connected to EBS/B4R/OtherDatabases.
- Integrated CG-Biometrics unit will close the gap in Biometrics capacity.
- Integrated CG-Biometrics unit will connect all units and their developments for a faster development.



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# The current gap indicates the need of an integratory structure of the CGIAR capabilities

Center	FTE-IRS	FTE-NRS	FTE-IRSc	FTE-NRSc	Available	Required	#Crop	High demand
CIP	1.5	0	1	0	2.5	2	2	Sept-Nov, Mar-Jun
IITA	0	0	0	2	2	5	6	All-year
CIMMYT	4.7	3	1	1.3	10	15	2	Mar-May, Sept-Nov
IRRI	0	3	0	0	3	5	2	May-Jul, Dec-Feb
ICRISAT	1	6	0	0	7	7	6	May-Jul
CIAT	0	1	0	2	3	4	4	Mar, Jun-Jan
ICARDA	1	0	0	1	2	2	7	Jun-Jul, Oct-Jan
	8.2	13	2	6.3	29.5	40		

## 5M GAP ANALYSIS

- **Machines:** Opportunity to increase database adoption and better connect with IT teams
- **Man:** Opportunity to develop expertise on scaling and automating pipelines for efficiency
- **Measurement/Environment:** Standardized protocols to name traits, collect and curate raw data
- **Mission:** Opportunity to fill the mission of a Biometrics unit as a change driver (proactivity)
- **Management:** Opportunity to access Biometrics expertise and realize greater genetic gains at lower costs. Push for adoption of technologies in an organized fashion.

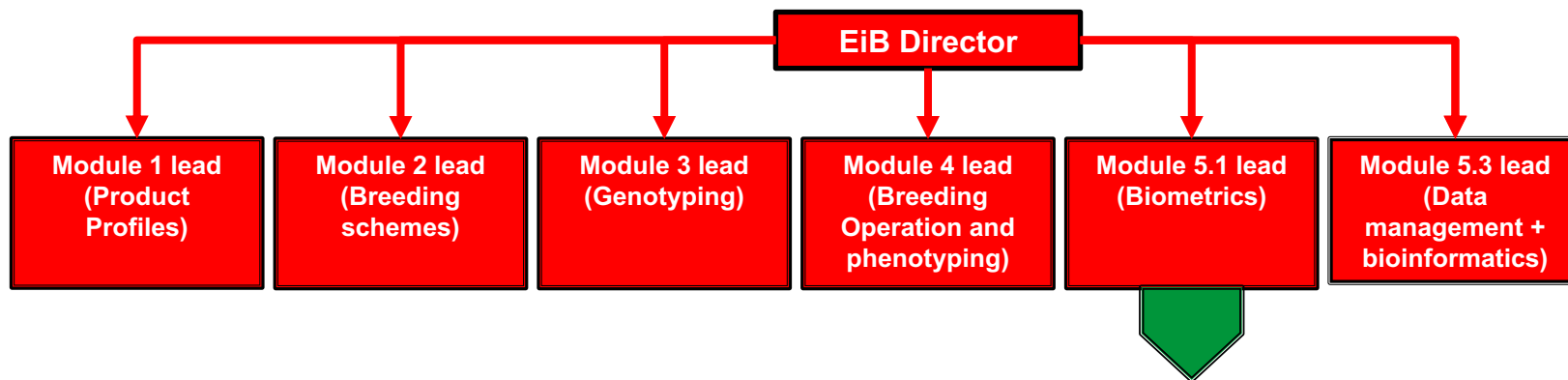


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# The proposed countermeasure to close the gap needs to be supported by the CGIAR as a whole

## PROPOSED COUNTERMEASURE

- Integration of the Across-CGIAR Biometrics unit
- Lead by a *project manager. Well designed and managed*
- Fed with state of the art methods by the *Deployment Team* (formed by QGs and Biometricians from CGIAR and non-CGIAR). *Well sourced and engineered*
- Maintained by the *Developing Team* (Tom Hagen's B4R-team). *Well manufactured*
- Supported by the *Deployment Team. Well supported*
- Compulsory implementation, by all centers, of new tools and approaches made available. *Adopted*



# What are other opportunities?



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# There are other opportunities too...

- Phenotyping service
- Quality analysis service
- Support Network – Mechanization (Maintenance)
- Support Network - Engineering
- Support Network - Agronomy
- Sharing machinery
- Service for planting / harvesting
- Sharing purchasing
- Disease pyramiding





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