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:**

| PURPOSE | 1) Present projects that are currently underway  
2) Set the stage for development of a strategic plan for future implementations |
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<tr>
<td>OBJECTIVE</td>
<td>During this session EiB will present one case of success and identified opportunities, some in early stage of implementation.</td>
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<tr>
<td>OUTPUT / OUTCOME</td>
<td>Each participant should understand the level of importance to have a more cross-center approach.</td>
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Let’s go to the first case……
A case of success…
Genotyping services
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-outourced 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)
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…
1) Digitization Support Network
2) Product Management Network
3) Biometrics Support Unit
1) Digitization Support Network

2) Product Management Network

3) Biometrics Support Unit
“…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?
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
What is the Support Network?
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
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
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

Phase 3

Phase 2

Pilot
1) Digitization Support Network

2) Product Management Network

3) Biometrics Support Unit
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.
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
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.
The current gap indicates the need of an integratory structure of the CGIAR capabilities

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<th>FTE-NRS</th>
<th>FTE-IRSc</th>
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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.
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?
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