PAG 33

AgBioData
Toward enhanced genomics, genetics, and breeding research outcomes through standardization of practices and protocols across agricultural databases

Ensuring the Sustainability of Agbiodata Database Resources & Integrating Phenomics and Phenotypes

Jodi Callwood, Bercu Celebioglu, Jennifer Clarke, Nicholas Gladman, Jinha Jung, Marcela Karey Tello-Ruiz, Jennifer Lachowiec, Dorrie Main, Annarita Marrano, John McNamara, Else H. Quezada Rodriguez,

Phenotyping data standardization and management

Address the need for standards, guidelines, and expertise in phenotypes/phenomics,
Identify and provide recommendations for:
(i) phenotypic data curated from the literature and
(ii) phenotypes submitted directly by the data generators (e.g., experimental data from a breeding trial).

Context, time waits for no one…

- 1940s/50s: AI work begun..data management.
- 1953/54. Birth of DNA and JPMc
  (DBP and B v. BOE)
- 1960s. path BC, enzymology, DNA/RNA techniques
- 1980s, 90s, PCR, RTPCA 1st ‘chips’

- 1970’s into 90’s. NRSP 2 (4) Genetics of
- Efficiency of Farm Animals
- NRC Nutrition , not integrated
- Genome Project(s)

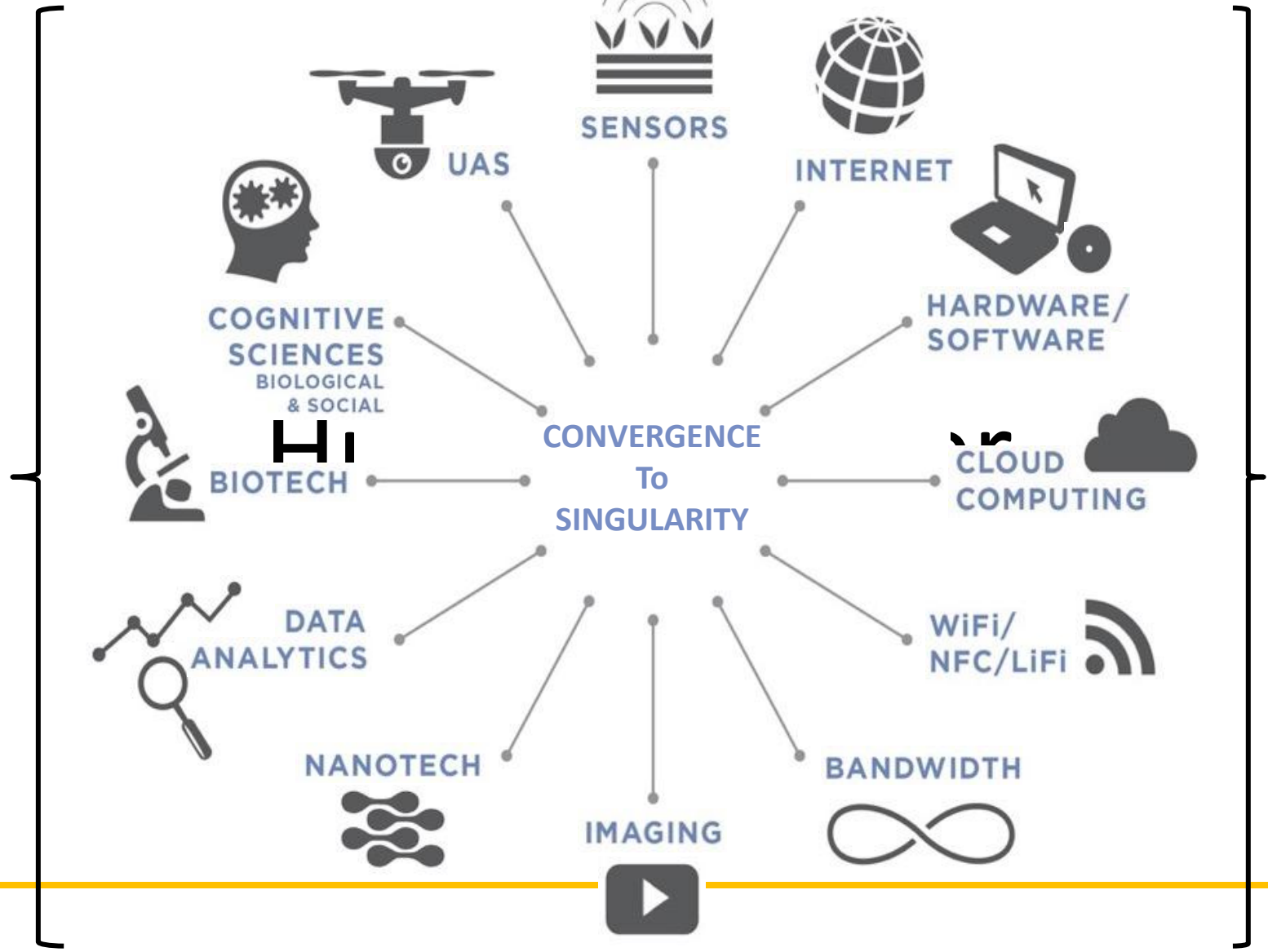
- 2000’s NRSP 9, Nutrition

- NRSP 8 Genomics
- NRSP 10 Genetics
- Massive explosion in data
- 2010’s Ag Bio Data
- Slow growth in NIFA
- OSTP Memos, Public Data
- 2022 (finally) AI
- NRI/NIFA budget reaches 1989 app.
- 2025: WTF?

https://nifa.usda.gov

Transformative Innovations For 21st Food & Agriculture Systems

Sonny Ramaswami



1. Why are we here?

WHY WE DO IT:
More resilient, efficient, sustained, profitable food production.

Farmers (everyone) deserve knowledge (data access)

Continue to provide need and demand more for phenotypic/phenomic data management and support.

Be involved: write, call, talk, discuss, LISTEN to what people want and need and give it to them.
Societies, Editorial Boards, Universities, Businesses, Consumer Groups, Reps,

2. What can we do?

What standards exist and what are needed?

Explore newer techniques (imagery, drones, fieldwork)

What management tools/objectives are key?

White Paper: The need for robust, FAIR phenomic databases supporting agricultural efficiency and resiliency, Science and Public Policy,
Callwood, J., Celebioglu, B., Gladman, N., Jung, J., Lachowiec, J., Quezada-Rodriguez, EH., McNamara, J., Clarke, J. (2025)
scaf039, https://doi.org/10.1093/scipol/scaf039

3. Who can we collaborate with?

Well, look around!

1:30 PM - 6:20 PM
US National Animal Genome Research Program (NRSP8)

4:00 PM - 6:10 PM
Data Science, AI, and ML for Agricultural and Life Sciences
***Abdelmajid Kassem**, Department of*

Collaboration and the Birth of the Agricultural Research Renaissance
***James F Gaffney**, Gaffney Ag R&D LLC, Renville, MN*

4. What will be the outcomes?

A line-item, sustained, funded program in USDA/NIFA/ARS, etc and /or interagency on agricultural databases.

AgBioData Tools where communities can discover tools without reinventing the wheels.

See our website for a list of databases and resources where communities can go for standardized data (and where they can upload their own data)

4. What will be the outcomes?

NAP 2019: Science Breakthroughs to Advance Food and Agricultural Research by 2030 .

NAP 2022, Enhancing Coordination and Collaboration Across the Land-Grant System

More coordination and support among agricultural, food, nutrition and environmental sciences.

A line-item, sustained, funded program in USDA/NIFA/ARS, etc and /or interagency on agricultural databases.