

NDAR

Adding Value to ASD Research

Mike Huerta – Director

Dan Hall – Manager

Matt McAuliffe – Technical Manager

Gretchen Navidi – Analyst

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How can a database add value to scientific research?

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*By supporting new **ways** of doing
research*

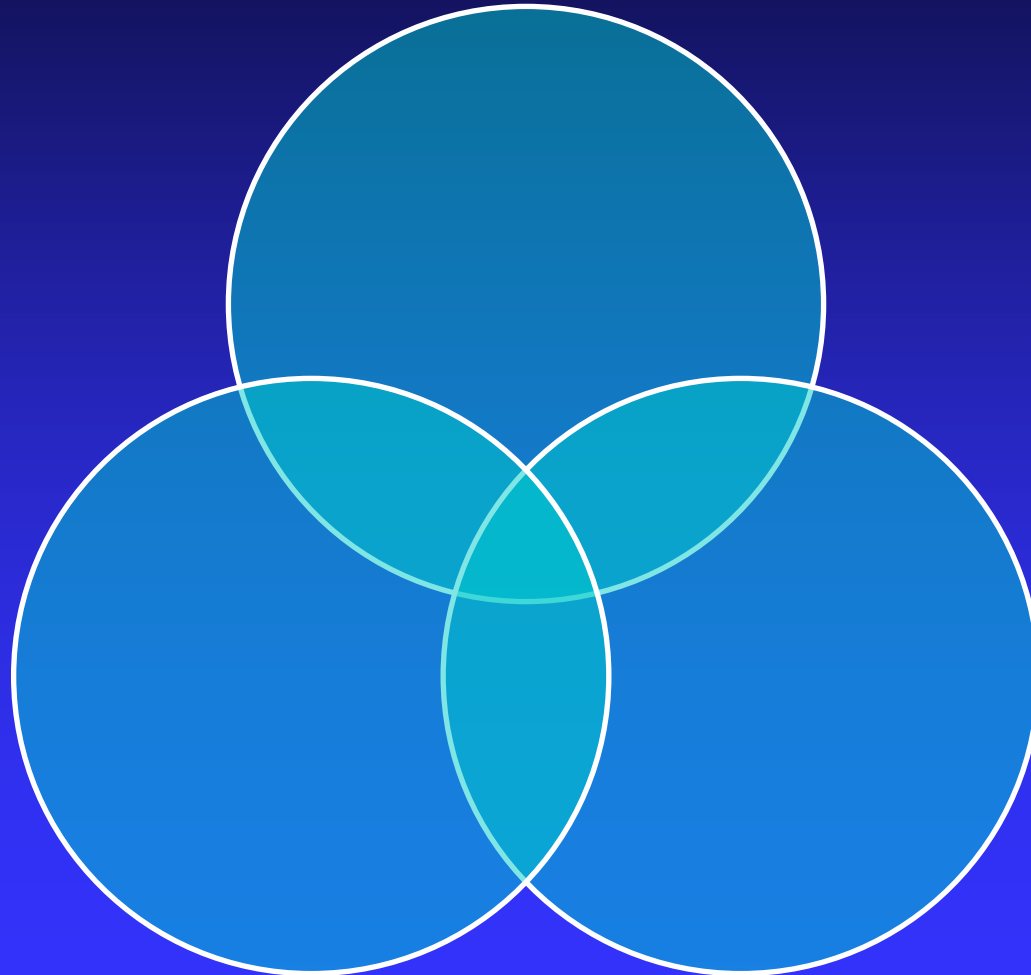
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21st Century Scientific Research

Three Interrelated Paradigms



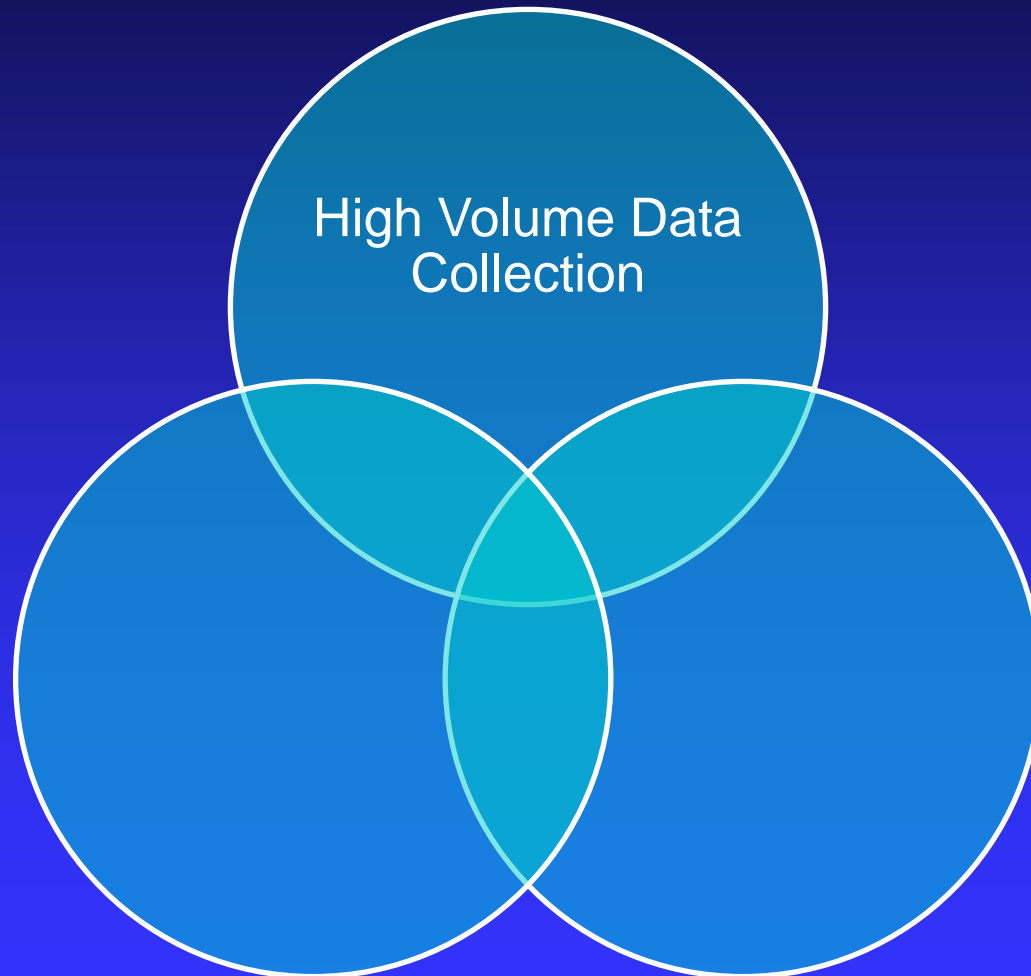
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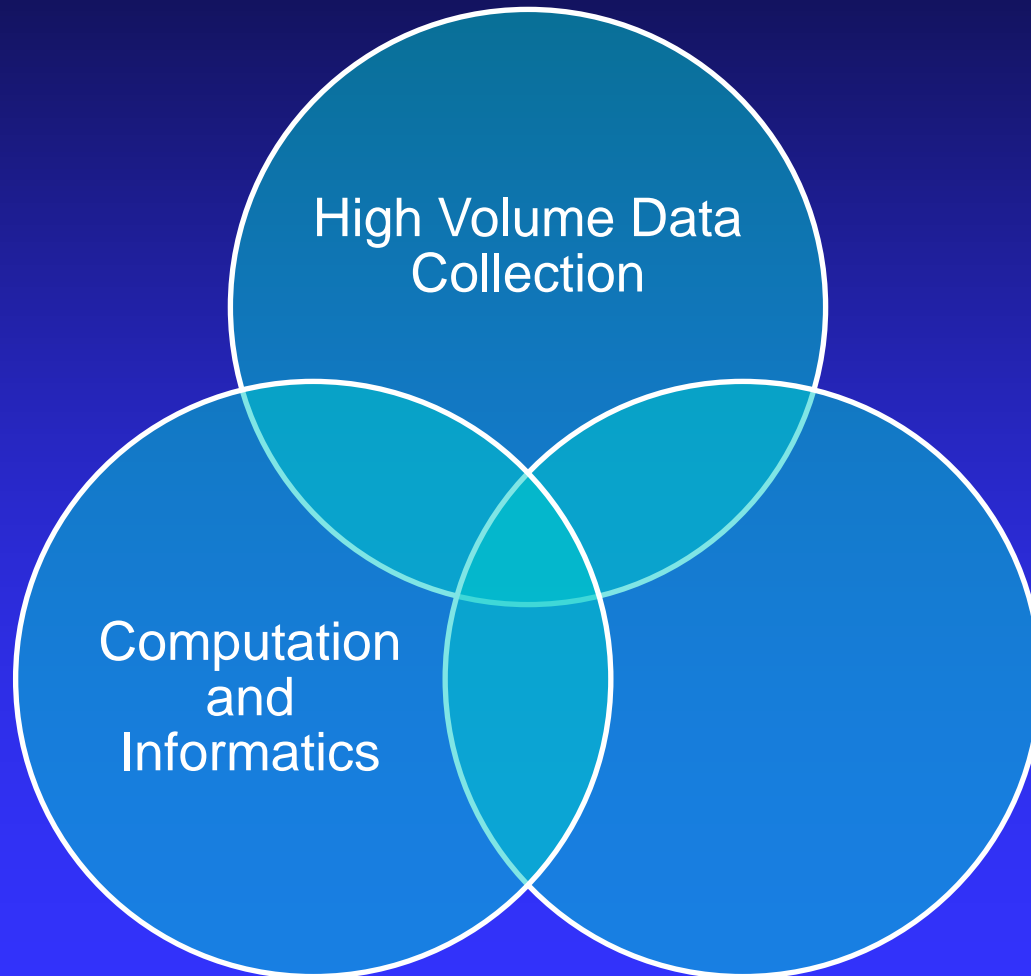
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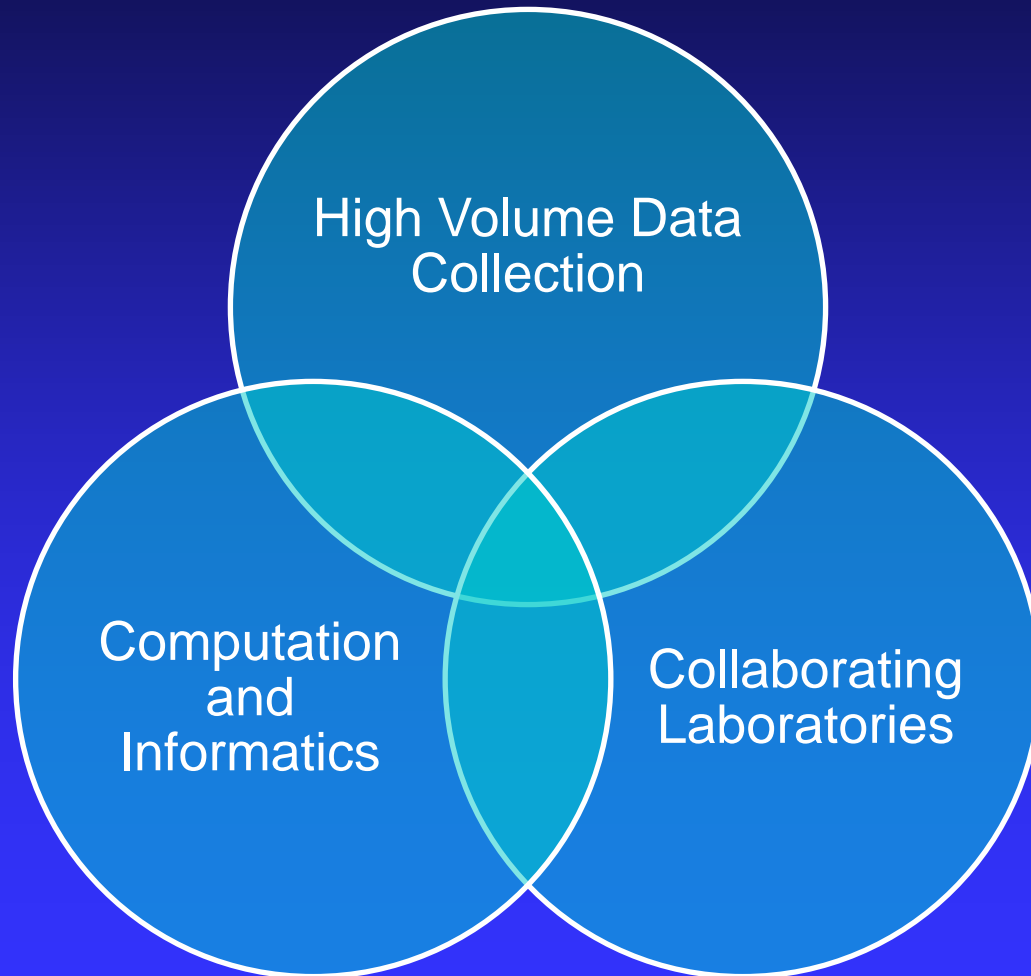
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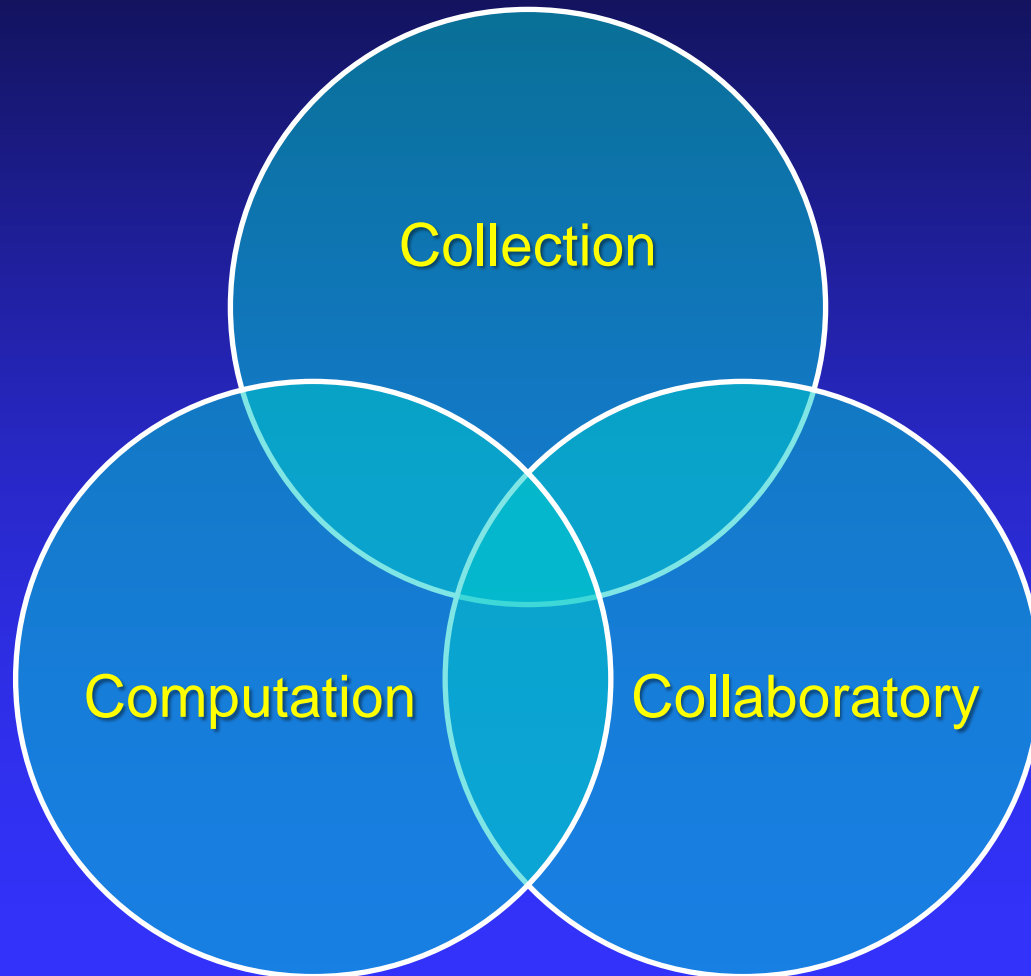
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21st Century Scientific Research

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Collection, Computation, & Collaboratories *Have Transformed These Fields*

- Astronomy
- Physics
- Biology
 - ◆ Genetics and genomics

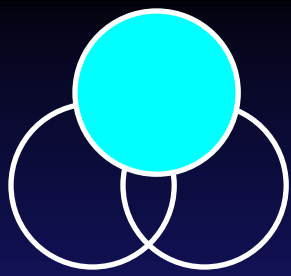


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*NDAR supports these paradigms,
and can help transform ASD research
across multiple data types & disciplines*





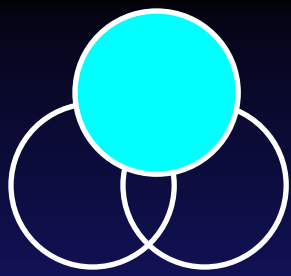
Collection

Types of Data in NDAR

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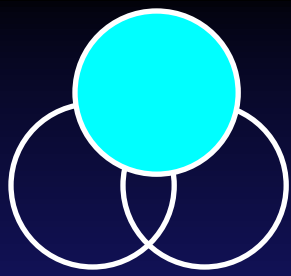


Collection

Types of Data in NDAR

- Genetic and genomic
- Phenotypic – including clinical assessment
- Imaging





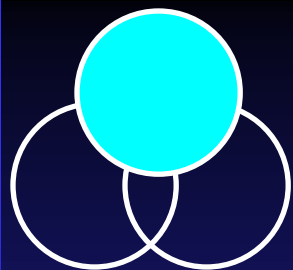
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Types of Data in NDAR

- Genetic and genomic
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- Information associated with these data
 - ◆ Details of research methodology
 - ◆ Data analytic tools
 - ◆ Publications, relationship to strategic plans, etc.





Collection

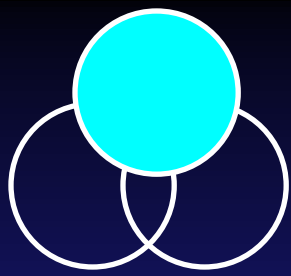
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Extensible to include other data types





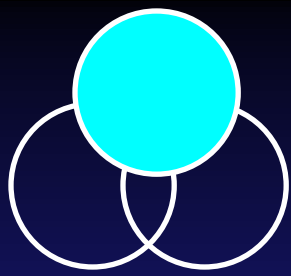
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Sources of Data for NDAR

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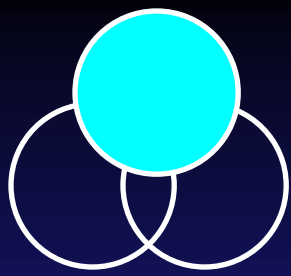


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Sources of Data for NDAR

- Required to submit and share data
 - ◆ NIH Autism Centers of Excellence (ACEs)
 - ◆ NIH ARRA-funded grants





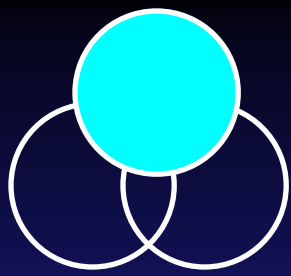
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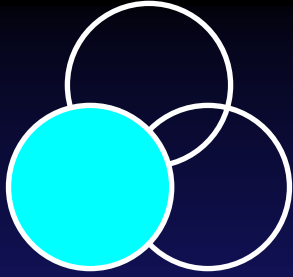
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- Confederated (deeply linked) data resources
 - ◆ NIH Pediatric MRI Data Repository
 - ◆ ASD data resources via ARRA initiative



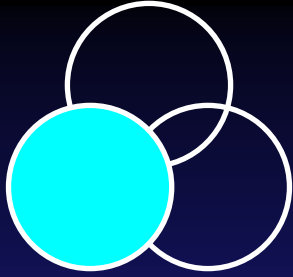


Computation

Tools and Capabilities in NDAR

- Data submission, access, sharing, quality assurance, and quality control procedures
- Data search and study capabilities
 - ◆ Hypothesis generation & testing
 - ◆ Corroboration & Validation (or not)
- Data dictionary – promotes community-based conventions and standards across labs



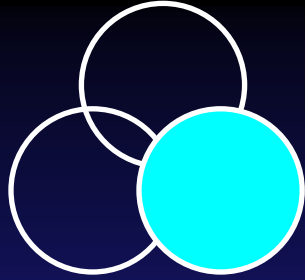


Computation

Tools and Capabilities in NDAR

- Collaborative research space prior to data sharing
- Confederation (deeply linking) with other ASD data resources
- Capabilities to move large files – supporting “cloud computing”





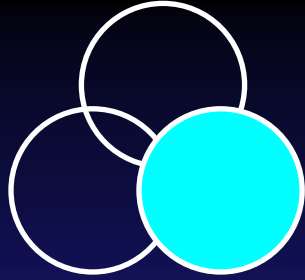
Collaboratories

Encouraged by NDAR

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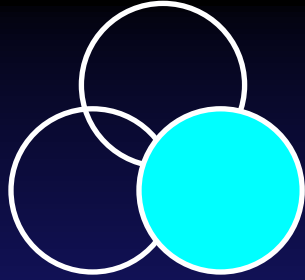


Collaboratories

Encouraged by NDAR

- ***Attract*** – NDAR offers data & tools
 - ◆ Residing in NDAR
 - ◆ Residing in resources linked with NDAR



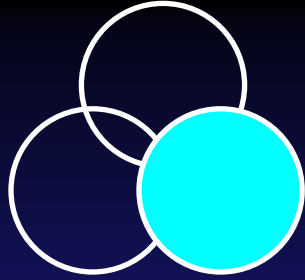


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- **Build** – NDAR facilitates development of community-based standards





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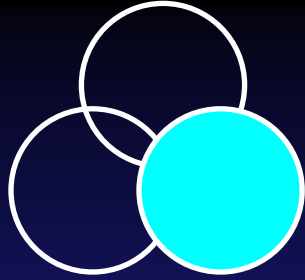
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- **Implement** – NDAR is a common platform

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- **Build** – NDAR facilitates development of community-based standards
- **Implement** – NDAR is a common platform
- **Grow** – Scientific & programmatic leverage with other ASD & informatics initiatives

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How NDAR Adds Value to ASD Research

- Provide new tools & resources to researchers

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How NDAR Adds Value to ASD Research

- Provide new tools & resources to researchers
- Share and compare data from multiple sites
 - ◆ Secondary analysis
 - ◆ Meta-analysis



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- Facilitate collaboration and collaboratories
 - ◆ Increase numbers of subjects in a project
 - ◆ Cross validation of results



How NDAR Adds Value to ASD Research

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- Share and compare data from multiple sites
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 - ◆ Meta-analysis
- Facilitate collaboration and collaboratories
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 - ◆ Cross validation of results
- Link with other ASD research resources
 - ◆ Builds on and adds value to other resources
 - ◆ From nodes to network
 - ◆ One-stop “shopping” data, tools, & information



How NDAR Adds Value to ASD Research

Aligned with Principles of the IACC Strategic Plan

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How NDAR Adds Value to ASD Research

Aligned with Principles of the IACC Strategic Plan

- Core value of the Strategic Plan

“We will value cross-disciplinary approaches, data sharing, teamwork, and partnerships”



How NDAR Adds Value to ASD Research

Aligned with Principles of the IACC Strategic Plan

- Core value of the Strategic Plan

“We will value cross-disciplinary approaches, data sharing, teamwork, and partnerships”

- Cross cutting themes of the Strategic Plan

- ◆ Data Sharing
- ◆ Resources



How NDAR Adds Value to ASD Research

Addressing Objectives of the IACC Strategic Plan

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How NDAR Adds Value to ASD Research

Addressing Objectives of the IACC Strategic Plan

- **Q1-01** Develop efficient diagnostic instrument
- **Q1-02** Validate & improve screening tools
- **Q2-01** Establish international network of biobanks
- **Q2-05** Large scale, multi-disciplinary collaborative project of biological, clinical & developmental profiles
- **Q3-02** Coordinate 20,000 subjects for GWAS studies
- **Q6-01** Link databases to track ASD research subjects
- **Q6-04** Assess linkage of admin./surveill. databases
- **Q6-06** Means to link administrative databases

