

**Special Event on Genomics Information**

**Genomic information: technological & institutional dimensions**

**Scoping study:**

**Implications of DSI/dematerialization for the Treaty**

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# Initial caveats and observations

- ❑ Results are only indicative; limited by design
- ❑ Significant uncertainty
  - How radical is the technological change
  - Can existing institutions absorb the technological change or will there need to be substantial revisions / new approaches
  - How strong are norms of openness
- ❑ Opportunity for:
  - broader discussions on DSI and the Treaty;
  - recognition of need for ongoing review of technological and institutional changes;
  - reflection on new ways of addressing fairness while promoting innovation

# Reminder on study framework

Implications of DSI/dematerialization for the Treaty  
– six ABS principles, three general and three specific to the Treaty

## □ Three general principles

- Identification logic
- Monitoring of use
- Value generation

## □ Three specific Treaty ABS features

- Pooling/standardization to facilitate access
- Decoupled Benefit sharing from individual providers
- Diversity and interdependence of benefits

# Identification logic

- ❑ Erosion over time due to proliferation of data/repositories, multiplication of users, varied importance of information about provenance; and other factors
- ❑ Decreased need to go back to the original material over time will make it increasingly difficult to identify the source of the gene sequence.
- ❑ Database owners, sequencing companies and others are not keeping or requesting information about the material source of the DSI.

# Monitoring of use

- ❑ Chain of transmission is often not transparent or easily documented
- ❑ Multiple innovation pathways
- ❑ Limited interest of database operators to facilitate monitoring
- ❑ Patents may not provide geographic and/or species origin information; or information may be hidden
- ❑ Trade secret protection is a viable alternative under certain conditions
- Overall, the ability to monitor appears to be eroding and, without some mechanism or incentive to build standards for exchange across multiple users and uses, it will probably continue to do so.

# Value generation

- ❑ Significant portion of the value of DSI is in its aggregation in accessible databases.
  - The greater the combination, integration and use, the greater the value.
- ❑ Articulation of specific monetary and non-monetary value is challenging
  - Multiple innovation trajectories, diffuse uses and combinations of sequences and parts makes it difficult to ascertain the value of a particular sequence within a new product or process.
- ❑ But, the potential for generating high-value products, and thus monetary and non-monetary benefits, through synthetic biology and other genomic technologies will probably grow.

# Pooling & standardization of DSI for access

- ❑ Difficult to establish an aggregated and standardized system at a desirable scale :
  - Multiplication of holders of DSI collections
  - Distributed in a number of media
  - Diversity of standards, norms and behaviours
- ❑ ...while, at the same time, strong opportunities and existing practices of pooling for access
  - Strong economic and science incentives for pooling; sharing to produce value; standardized registries of parts
  - Genomic data centers are using technological solutions such APIs that virtually link dataset
- ❑ Many actors developing mechanisms for pooling resources; potential partners interested in the Treaty's pooling model

# Decoupled monetary benefit sharing from providers

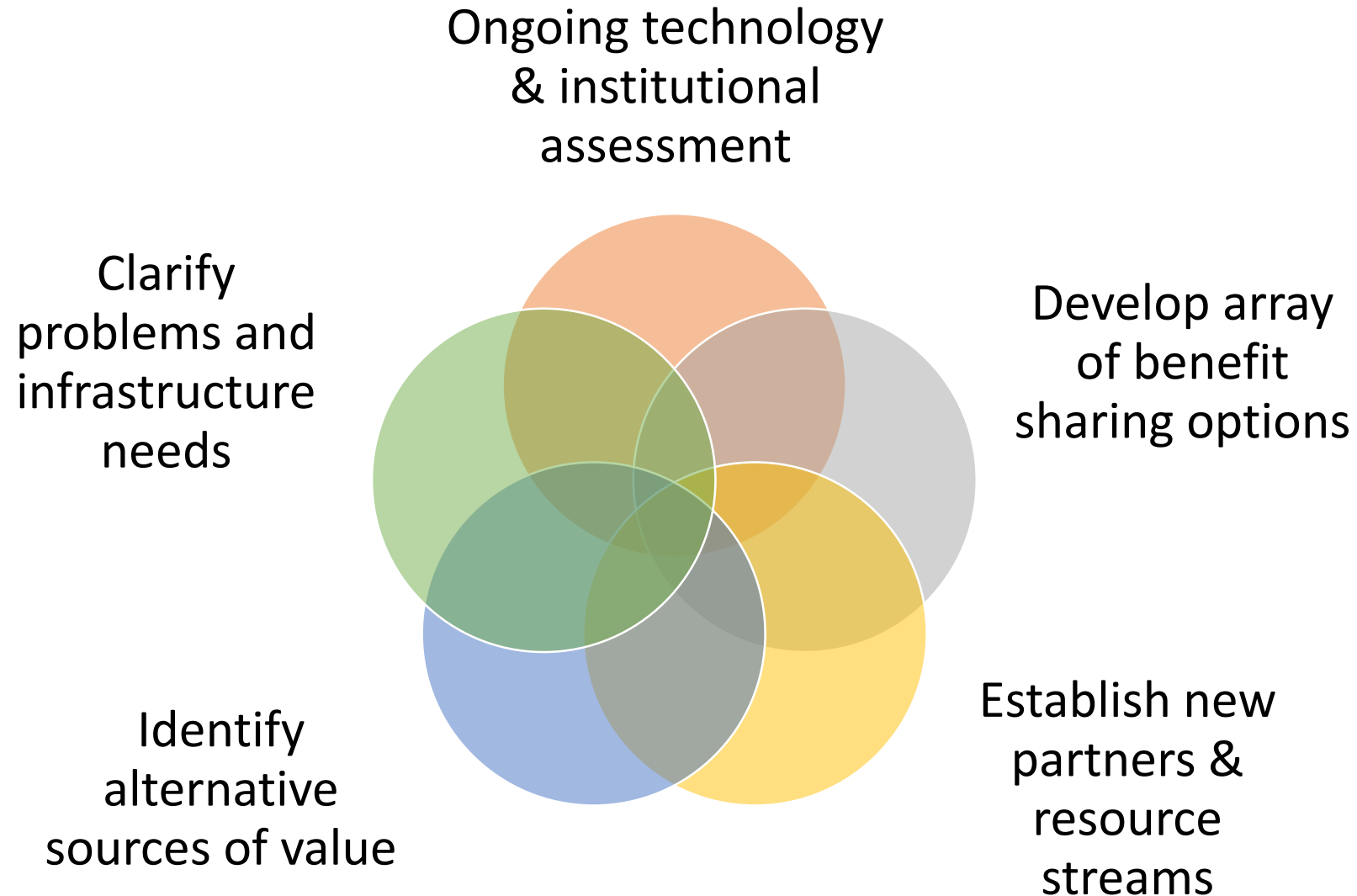
- ❑ Many synthetic biology products are developed with the contribution of sequences from multiple sources → average value of individual contributions often low
  - ❑ Benefits to be shared would be diluted among a wide range of stakeholders: multiplication of sources, pathways and producers of DSI and DSI-based innovation.
- Twin challenges:
- Joint value and dilution support a decoupled approach to monetary benefits
  - Because there are multiple sources of DSI and value is uncertain, willingness to pay 'fees' for access to the pool may be low, resulting in low monetary contribution at the point of access



# Diversity of benefits

- ❑ Dematerialization presents challenges for monetary benefit-sharing due to monitoring complexities
- ❑ The study identified a variety of non-monetary benefits, many of which are relevant to the Treaty.
- ❑ The synthetic biology research community has develop institutions aimed at better incentivizing and capturing collective benefits.
- ❑ Continues to be a lack of attention to different levels of equity and fairness of access and capacity development.
- ❑ Opportunities for the Treaty to engage the broader community in ways that address its values, particularly as related to non-monetary benefits.

# Taking advantage of a diversity of benefits



Thank you!

Questions?

## **Implications on Treaty's ABS framework**

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