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Single Day Event

How to protect individuals privacy in the future age of artificial intelligence (AI)

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Disclaimer

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Agenda

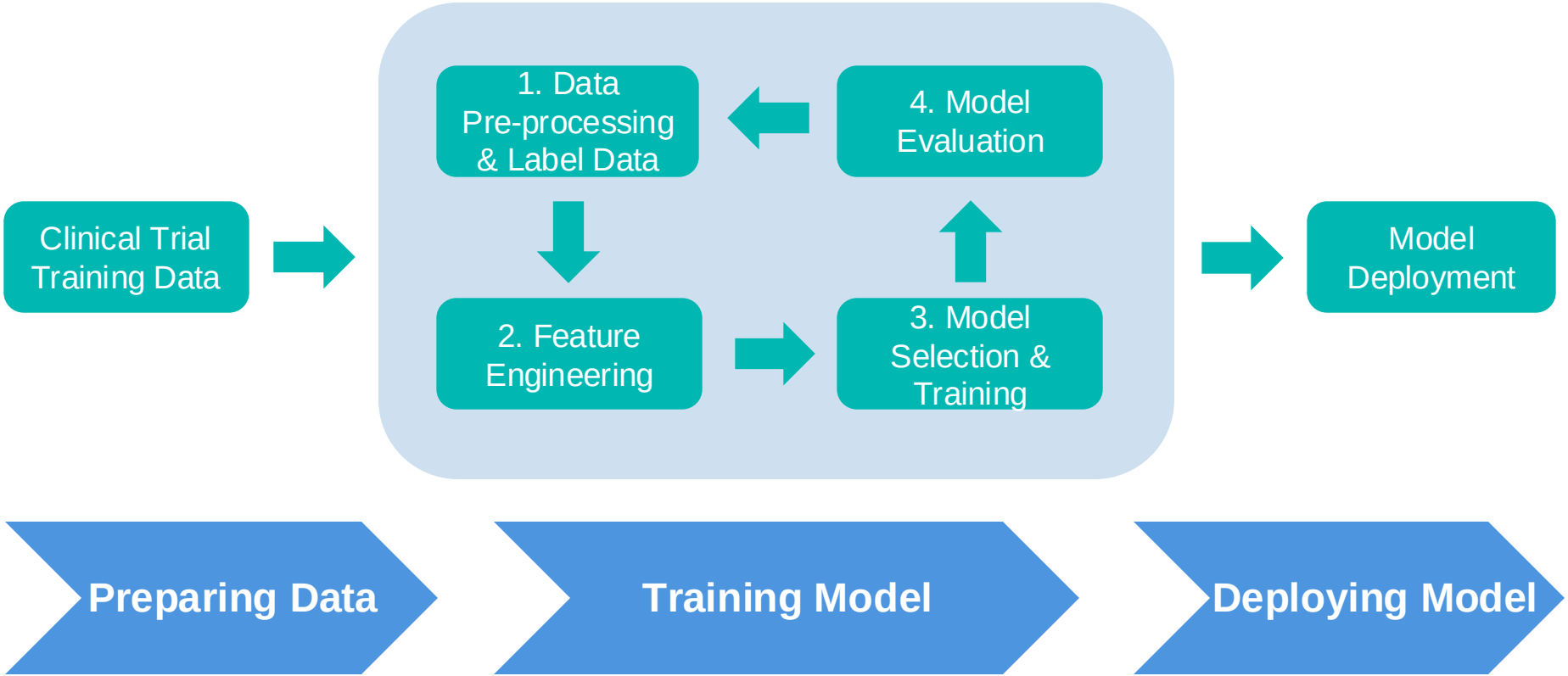
01 Why need *data anonymization*?

02 What is *data anonymization*?

03 How to process *data anonymization*?

04 Where is *data anonymization* going?

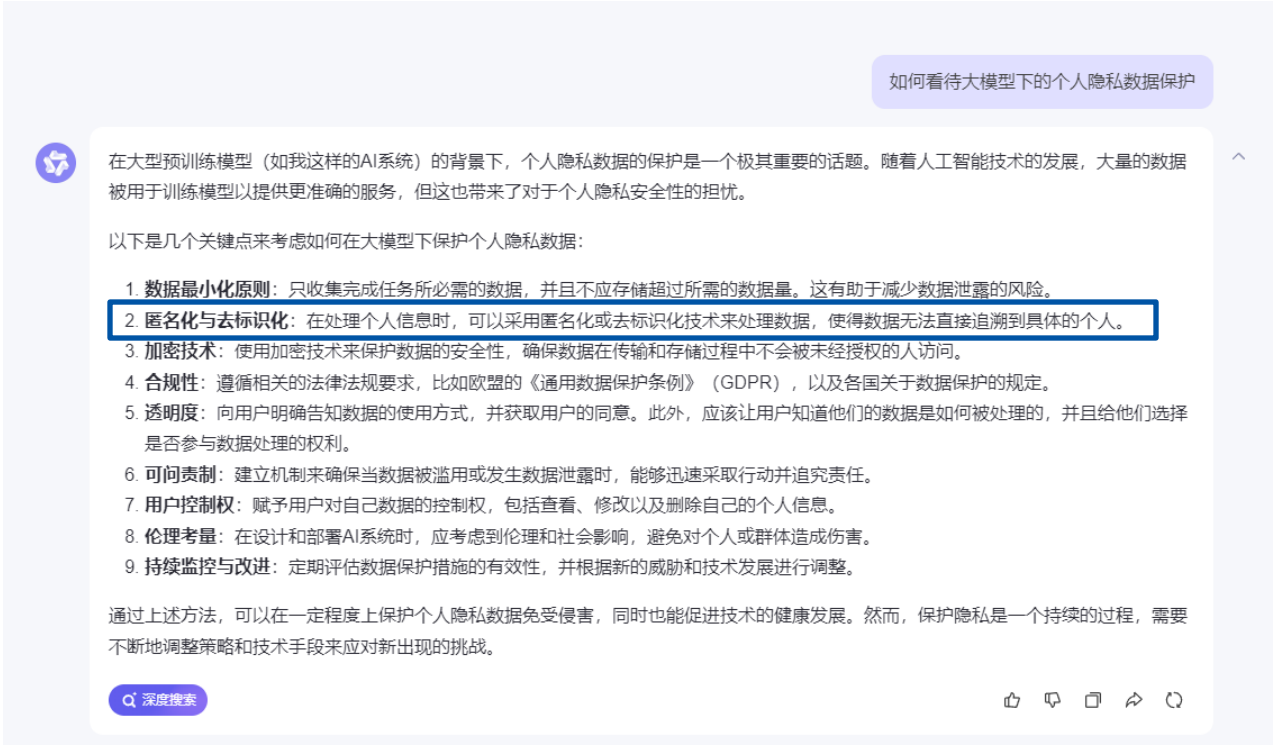
Why? – AI Process



Why? – AI's Opinion

To tongyi.ai:

- How to think about the protection of personal privacy data under the Big Model?



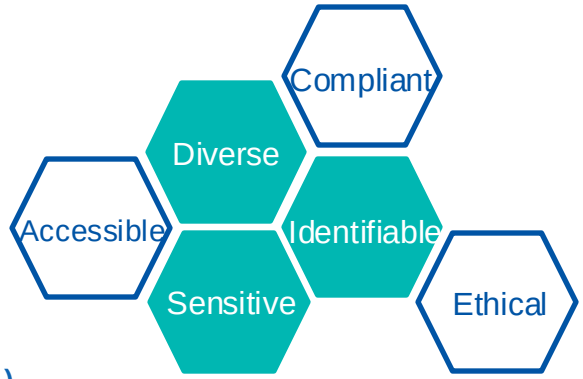
Why? – Clinical Trial Data

- Primary Use

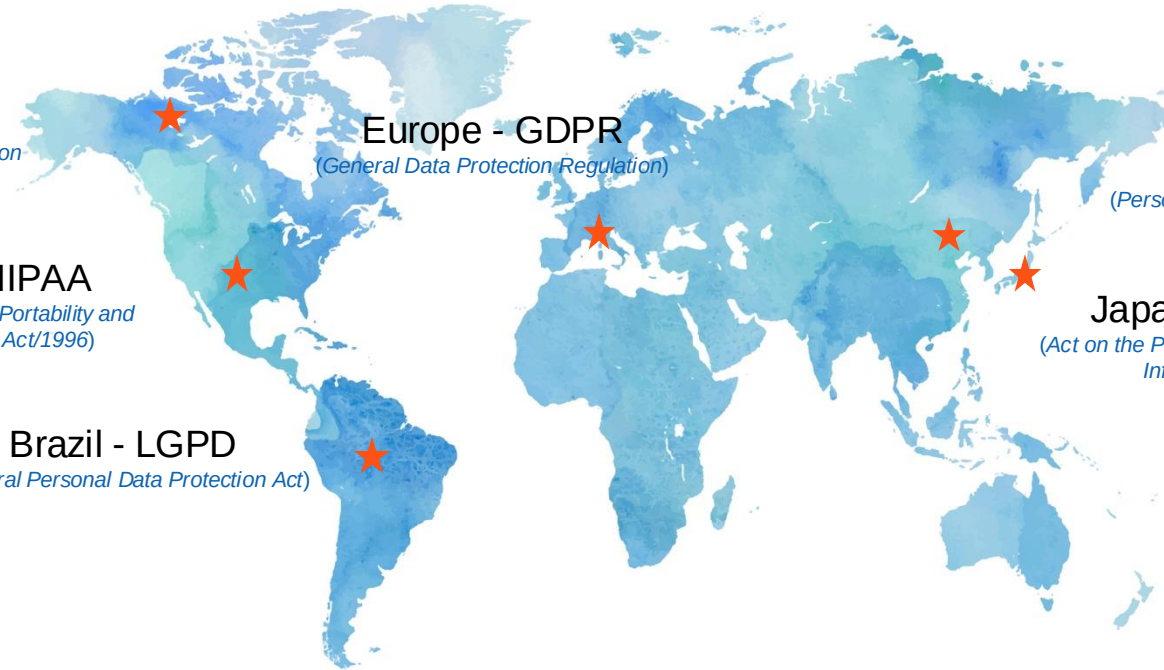
  Uses regardless of the time point with the intention to support the same project as agreed by project team needed.

- Secondary Use

  Uses and disclosures that are different from the purpose(s) for which the data were collected as described in a clinical trial protocol and informed consent form.



Why? - Regulation



Canada - PIPEDA
(*The Personal Information Protection and Electronic Documents Act*)

Europe - GDPR
(*General Data Protection Regulation*)

China - PIPL
(*Personal Information Protection Law*)

USA - HIPAA
(*Health Insurance Portability and Accountability Act/1996*)

Japan - APPI
(*Act on the Protection of Personal Information*)

Brazil - LGPD
(*General Personal Data Protection Act*)

What? - Concept

- Anonymization

  A process of turning data into a form that does not identify individuals and where identification is not likely to take place.

- Pseudonymization

  A process of both removing the association with a data subject and adding an association between a particular set of characteristics relating to the data subject and one or more pseudonyms.

What? - Concept

- Direct Identifier

  Data that can be used to uniquely identify an individual without additional information or cross-linking other information that is in the public domain.

- Quasi-identifier

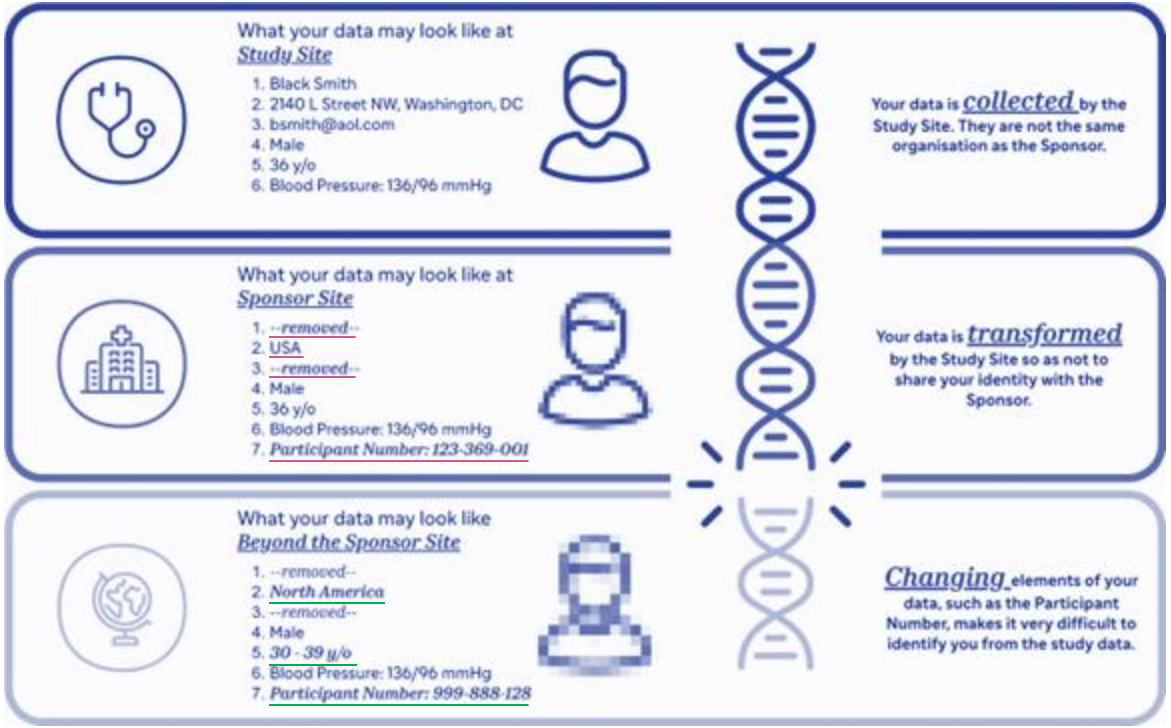
  Data that in connection with other information can be used to identify an individual with high probability.

HIPAA

18 Direct Identifiers

- Names
- Geographic subdivisions smaller than state
- All elements of dates except year
- Telephone numbers
- Fax numbers
- E-mail addresses
- Social Security numbers
- Medical record numbers
- Health plan beneficiary numbers
- Account numbers
- Certificate/license numbers
- Vehicle identifiers/serial numbers
- Device identifiers/serial numbers
- URLs
- IP addresses
- Biometric identifiers
- Full face photographic images
- Any other unique identifying number or code

What? - Process



Directly Identifiable data

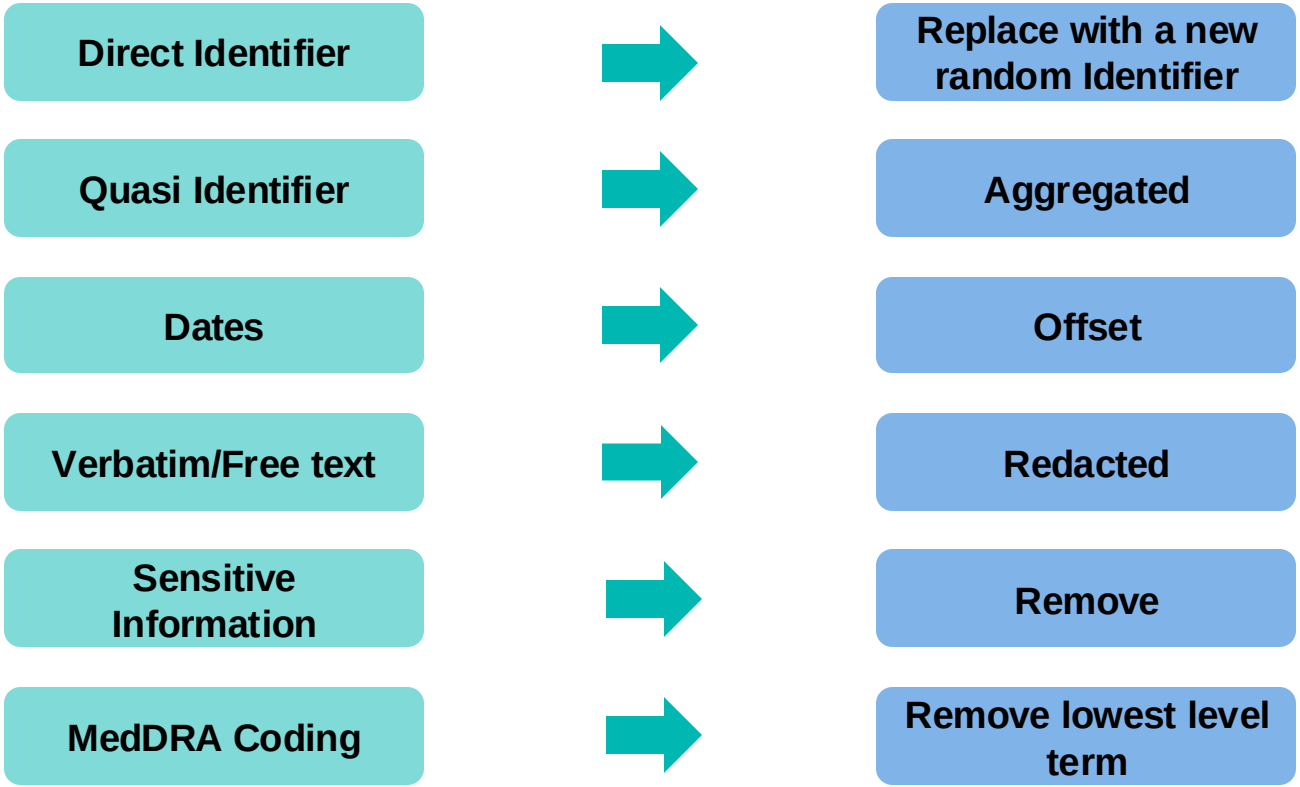
Pseudonymized data

Anonymized data

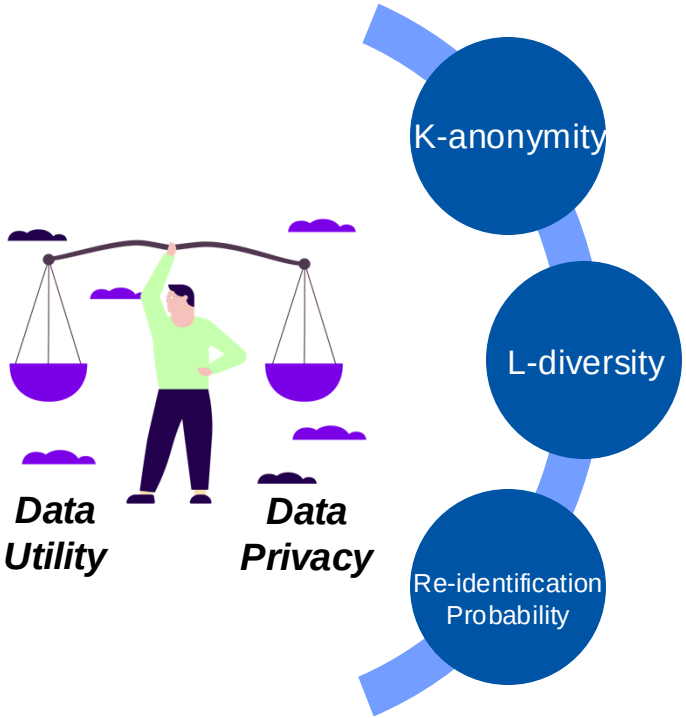
How? - Reference

PHUSE & Transcelerate

How? - Rule-based



How? - Quantitative Risk-based



There are at least *k* records within each equivalence class

Quasi-Identifiers: Age, Weight, Sex, Ethnic origin, Geographical location

Threshold: k=2 (except for up to 5% study population to keep unique)

Based on *k-anonymity* approach, ensure that records within each equivalence class have sufficient diversity

Domains: AE, CM, MH

Threshold: L- diversity < 3

The average risk of re-identification based on study population

$Pr(re-id) = \Pr(re-id|attempt) \times \Pr(attempt)$

Threshold: $Pr(re-id) < 0.09$

How? - Other Consideration

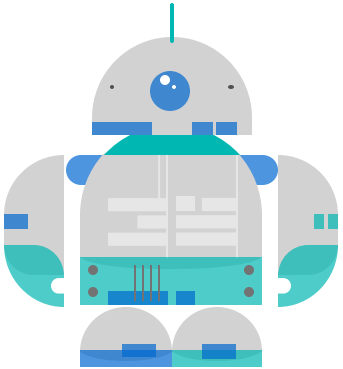
- Questionnaires
- Biomarker Data
- Rare Disease
- Small Sample Size Trial
- Trials With Dependencies
- Copyright License
- Pooling
- ….

Where to go?

AI Detect Potential Sensitive Information

Anonymization Report Leveraging Generative AI

Smart Automation



AI help QC

New Approach / Standard in Questionnaire, Biomarker

- THANK YOU -

Questions

The Global Healthcare Data Science Community

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