



RW01: Unlocking the potential of big data in clinical research



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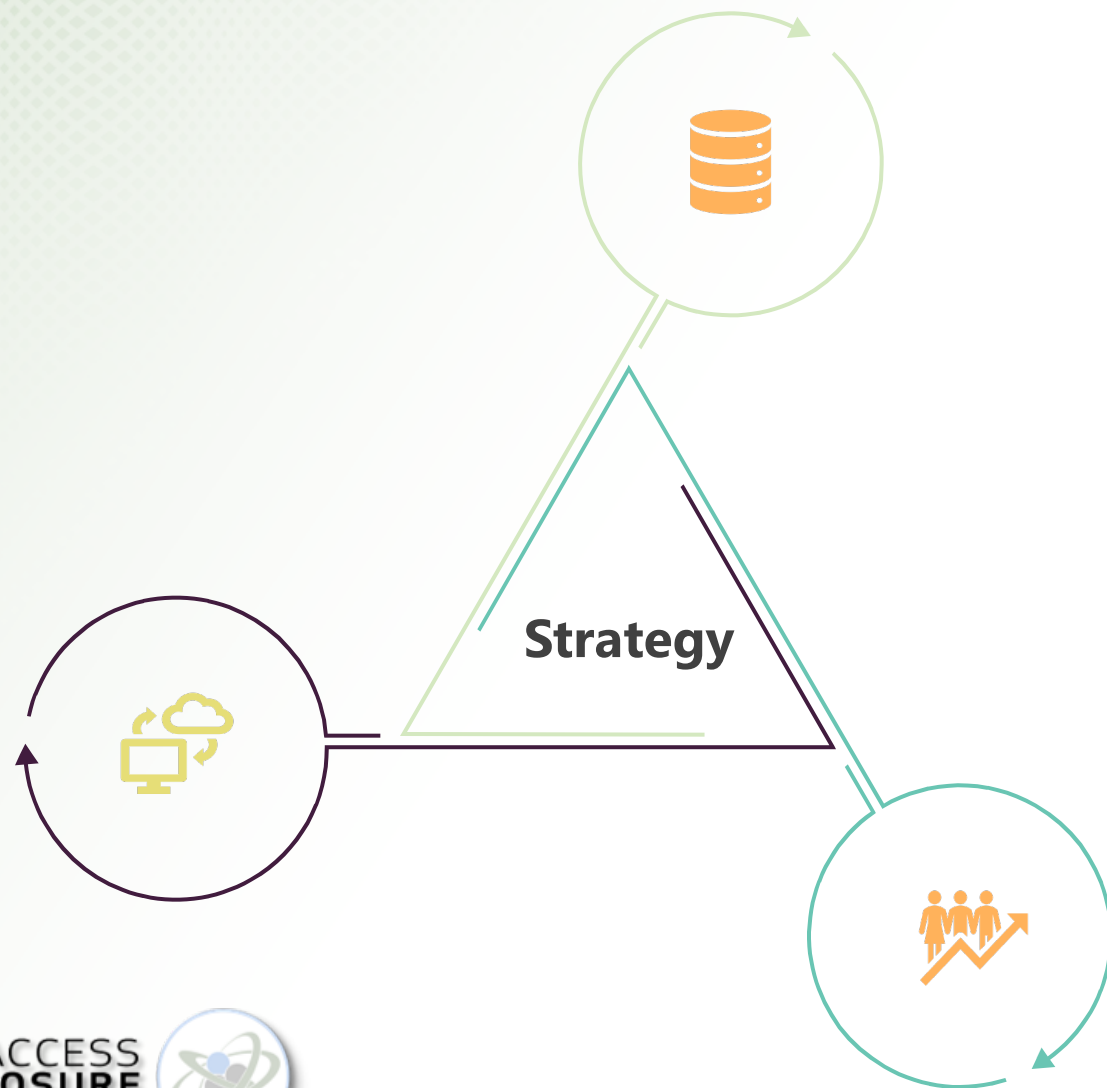
PUSHING BOUNDARIES



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Let's start



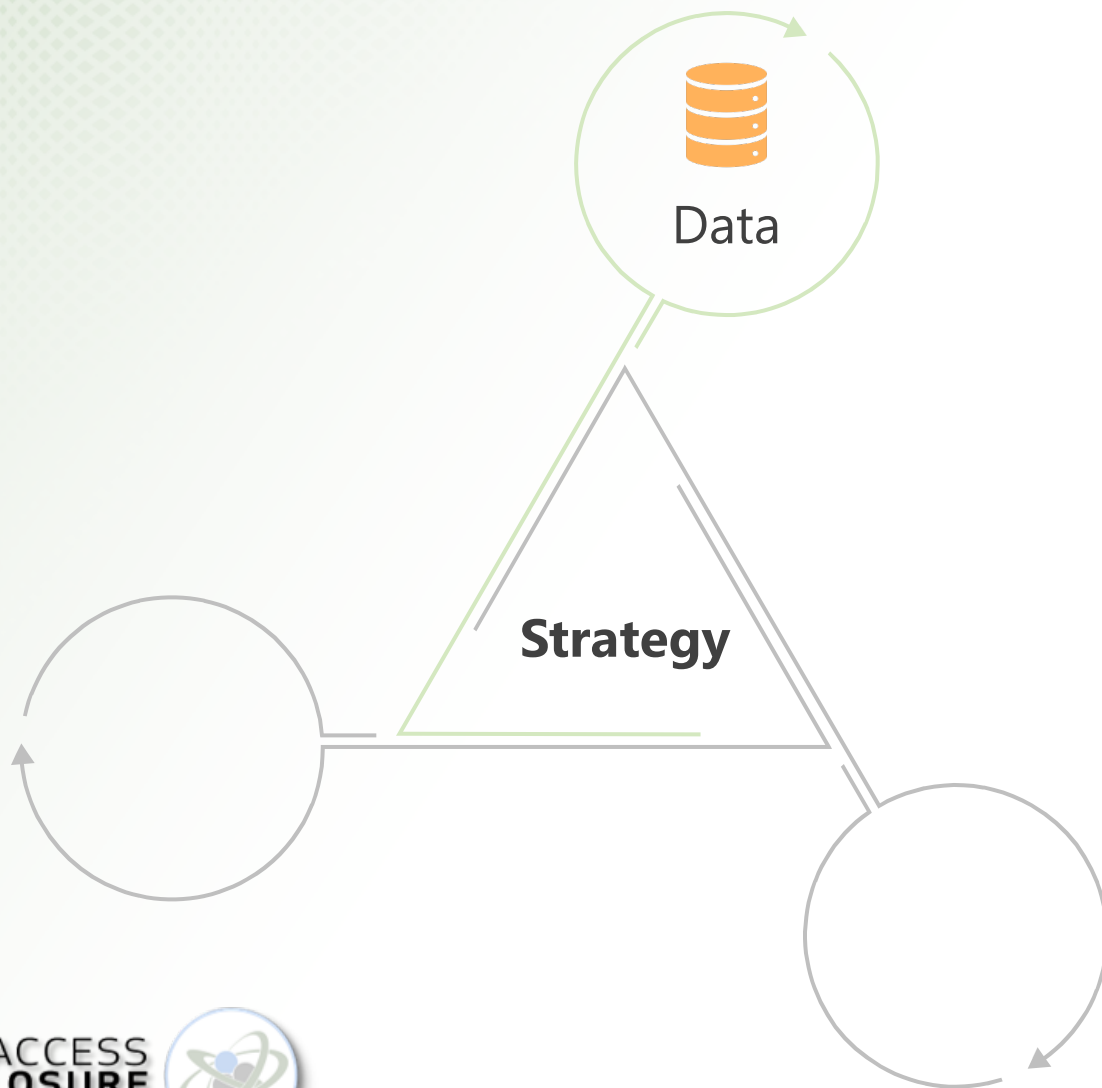
Data



Partners



Technologies



Data



- Structured or unstructured
- Patient reported outcomes
- Historical clinical trials
- EMR
- Sensors
- Claims
- Genomics



Partners

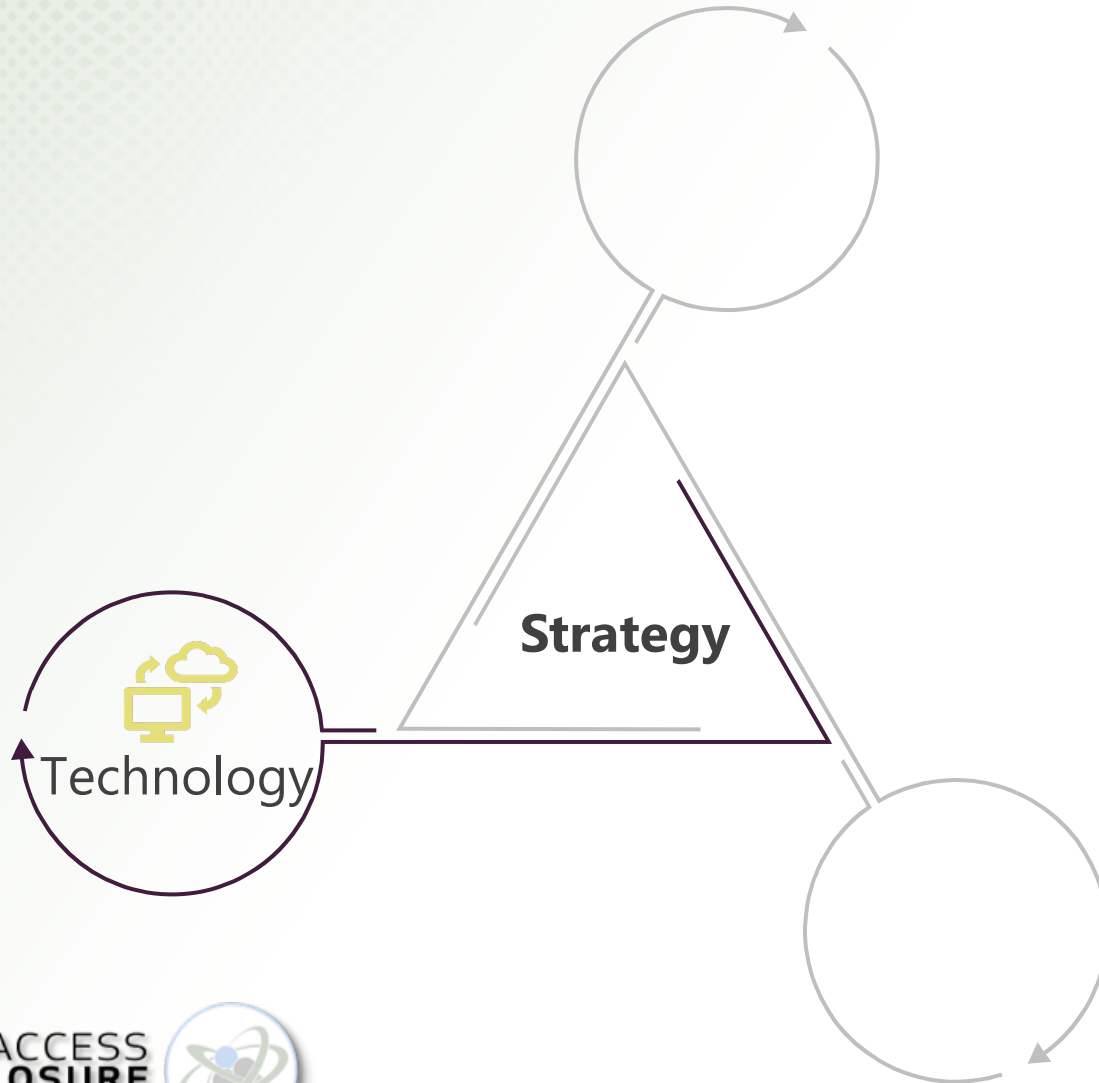


- AI enabled organisation
- Payer/providers
- Healthcare providers

Technology



- Deep learning
- Natural language processing
- Text classification
- Predictive modelling



Coupled Big data with AI

Big data

Claim data
EHR
Blood data
Genome
Protein
Wearables

× AI =

Improve

Risk assessment
Precise diagnosis
Tailored treatment
Prediction of reoccurrence
Workload
Efficient CT

Coupled Big data with AI



Medical image analysis



Workflow efficiency



Clinical decision support



Automated Data Migration



Patient recruitment and possibly retention



Wearables (Patient generated) data

Clinical Trials



Clinical Trial parameters

BIG DATA	TECHNOLOGY /ALGORITHM	KEY SUCCESS FACTORS	OBJECTIVE
Aggregate datasets Structured/Unstructured • Historical clinical trials • Drug database • EMR • Sensors data • Human genome • Claims data • Scientific publications • Billing data	• Machine Learning • NLP • Affinity analysis • Entity recognition • Text classification • Pathway analysis • Predictive Analytics • Cognitive computing	• Patient Selection • AE • Site Selection • Time reduction • Cost effective • Trial Design • Device efficacy • Data Quality • Risk monitoring	• Data driven decisions • Design viable clinical trial • Identify patients for potential recruitment • Patient eligibility based on I/E • Predict drop out patients • Site Selection • Better Patient Outcome • Medical Literature to support hypothesis
Inclusion of PRO from ACCESS to CLOSURE INTERVENTIONAL ONCOLOGY 	ePRO/Wearables	Patient Engagement	Observational studies with high quality evidence 

Imaging



CT scan



Database



Radiologist



Anomalies



CT scan



Database



Artificial
intelligence



Reporting

Imaging parameters

BIG DATA	TECHNOLOGY /ALGORITHM	KEY SUCCESS FACTORS	OBJECTIVE
• Text or Image • Data from Personal/family history • Unstructured datasets ○ Images ○ X-rays ○ Sonograms ○ Electrocardiograms ○ MRI ○ Mass spectrometry	• Deep Learning • Contextual Relevance • Correlate features on scan with genomic features of tumors • Transparent benchmarking • NLP	• Patient Engagement • Personalised treatment • Evidence based recommendations • Radiologist decision support • Virtual QA • Likelihood of treatment	• Accurately spots the signs of diseases in medical image • Detect abnormalities • Scheduling of scans • Prioritise critical cases • Expediate patient care • Lesion Detection • Lesion segmentation • Disease Classification

Case study

What we have?

- ◆ Study X (Observational) ~39000 Subjects
- ◆ Study A-C (Randomised) ~1000 Subjects

We can we do?

- ◆ Design Study
 - ◆ Feasibility of protocol design for patient recruitment
 - ◆ Assess site performance
 - ◆ Inclusion of literature data in collaboration with using NLP & literature management system
- ◆ Start-up activities
 - ◆ EHR and match patient with trials (it may incur extra cost and contracts)
 - ◆ Check Imaging data
 - ◆ Automatized Contracts and Agreements and/or less time
 - ◆ 'eConsent' considering Covid-19 situation

Summary



DATA



INFORMATION



KNOWLEDGE



EXPERTISE



THANK YOU