



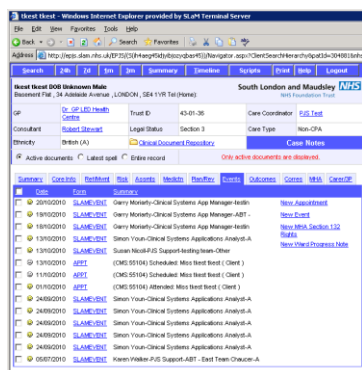
Working with unstructured text from mental healthcare

Rob Stewart
King's College London
United Kingdom

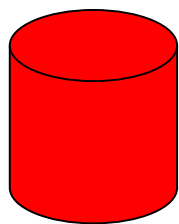


CRIS at the Maudsley – core functionality

S92 CLINICAL
M31 RECORDS
LB6 INTERACTIVE
5C0 SEARCH



EHR
Data Source

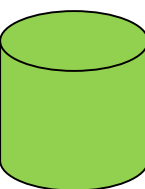
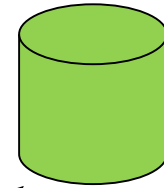


De-identification



Processing
pipeline

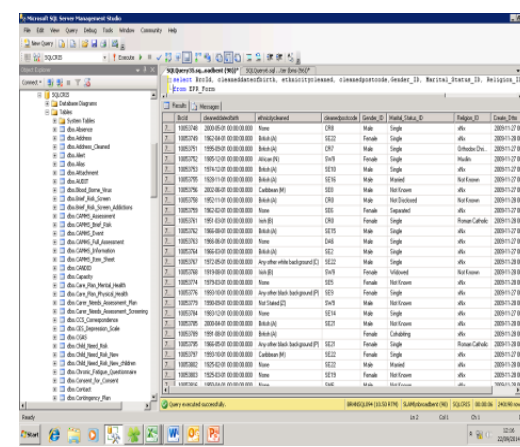
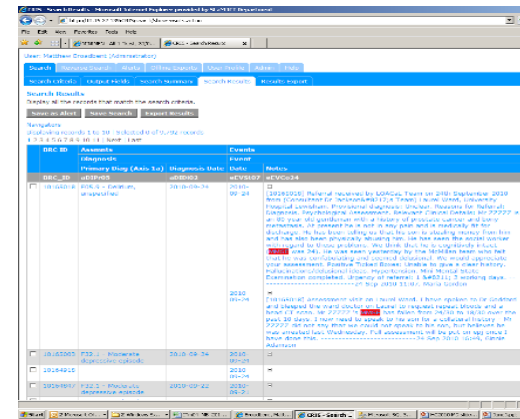
CRIS front end



CRIS SQL

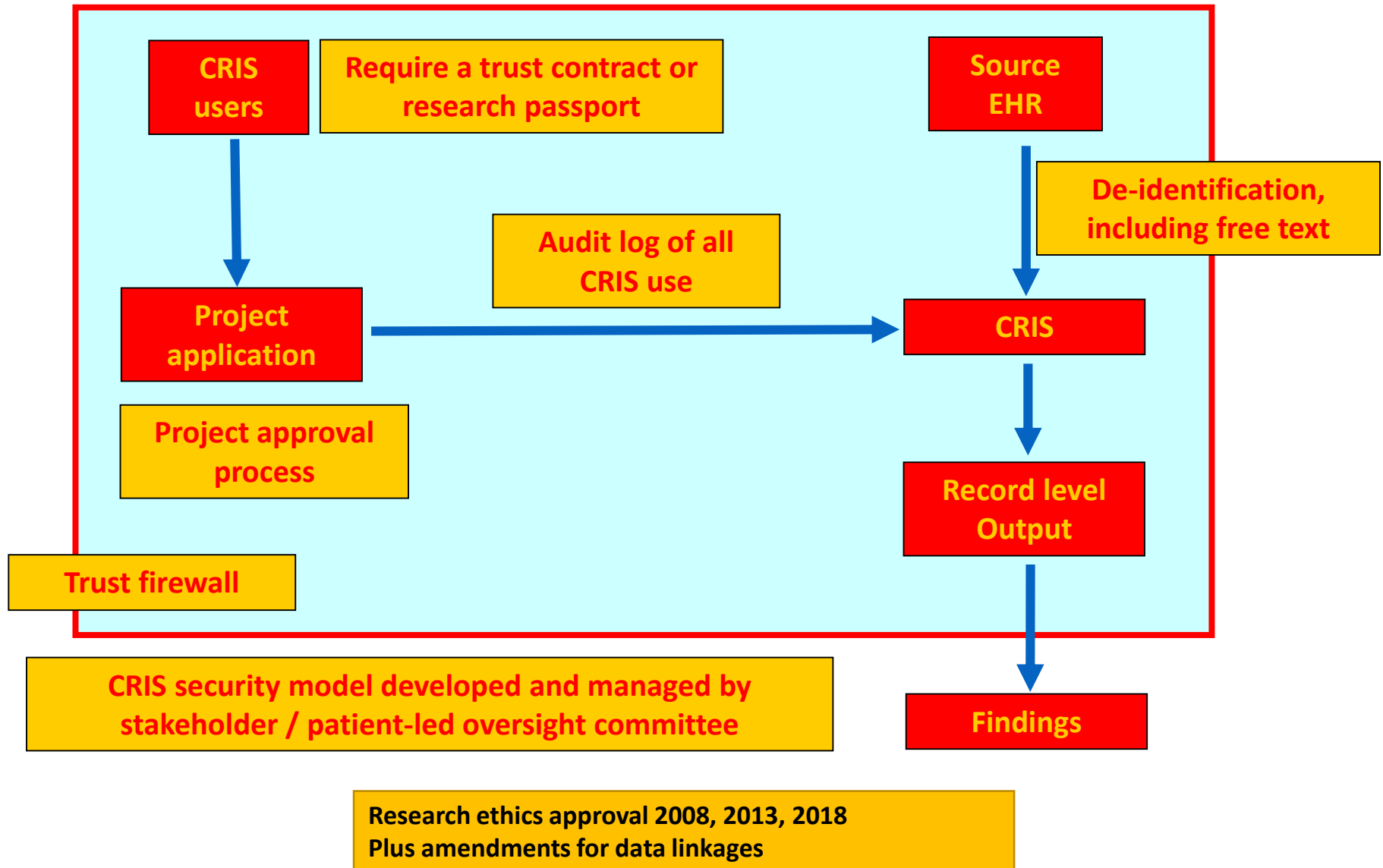
>500,000 cases
35,000 'active' cases
>30m documents

Set up in 2007-08 (NIHR funding)
Exported successfully to other UK Trusts
>250 research papers to date

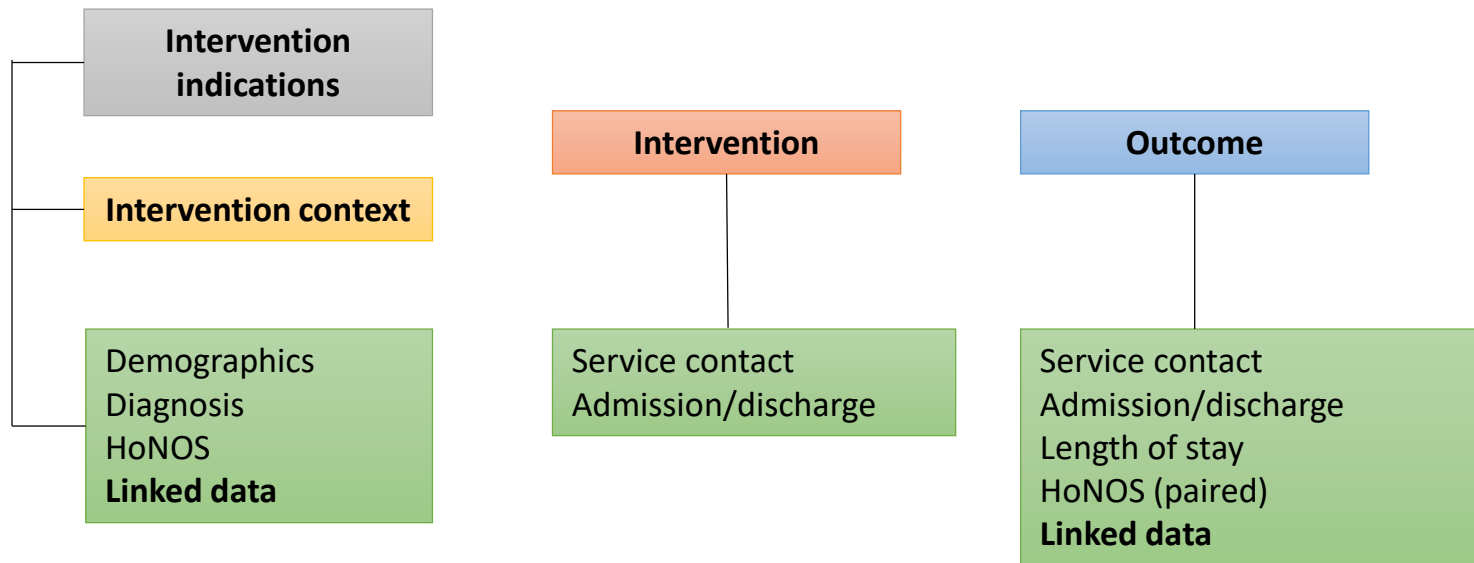


CRIS Security Model – service user led governance

S92CLINICALA86G
M31RECORDSM1B0
LB6INTERACTIVE
5C0SEARCHRS90M



The 'patient journey' from the mental health EHR



CRIS with text-mining



S92CLINICALA86G
M31RECORDSM180
LB6INTERACTIVE
5C0SEARCHRS90M

**Intervention
indications**

Intervention context

Intervention

Outcome

☑ = complete
✍ = in progress

Symptoms

Psychosis
 Positive ☑
 Negative ☑
 Disorganisation ☑
 Manic ☑
 Catatonic ☑
 Cognitive ✍
 Affective
 Depressive ☑
 Instability ☑
 Anxiety ☑
 Obsessive/compulsive ☑
 Behaviour
 Agitation/withdrawal ☑
 Other
 Insight ☑
 DLB symptoms ✍

Context

Cognitive function ☑
 Social care ☑
 Living alone ☑
 Diagnosis ☑
 Occupation ☑ ✍
 Education ☑ ✍
 Physical disorders ☑
 Investigations ☑ ✍
 Violence/abuse ☑ ✍
 Life stressors ✍
 Substances
 Smoking ☑
 Alcohol ✍
 Cannabis ☑
 Mephedrone ☑
 Amphetamine ☑
 Cocaine ☑
 Others ✍

Interventions

Pharmacotherapy ☑
 Polypharmacy ☑
 Adherence/compliance ☑
 Non-response, resistance ☑
 Psychotherapy
 CBT ☑ (receipt, offer, etc.)
 DBT ✍
 CAT ✍
 Family ☑

Outcomes

Adverse drug events
 Extrapyrimalal ☑
 Other ☑ ✍
 Symptom trajectories ☑ ✍
 Improvement
 Deterioration
 General mental health ☑ ✍
 Improvement
 Deterioration

- **NLP expertise**
- **Annotators and annotation oversight**
- **Clinical domain knowledge**
- **Post-processing algorithm design**
- **Algorithm optimisation for scaling up**
- **Service model for archiving and delivery**

Additional text-related work

- Qualitative analyses
 - Independent output review
- Manual measurement derivation
 - Extraction protocol configuration
- Synthetic text generation
- Exporting functionality
 - Mental health text analytics cloud (MH-TAC)