

# Procedure to integrate i2b2 and REDCap: a case study at ICSM

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Flash Poster Presentation – P12

# I2b2 Informatics for Integrating Biology and the Bedside

## Since 2010

Data sources:

- Hospital Information System (HIS)
- EHR
- Biobank

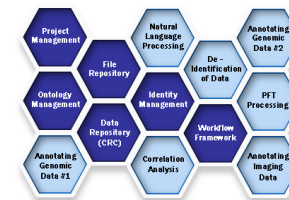
...

Fields of interest:

- Type 2 diabetes
- Cardiology
- Oncology
- Nephrology



integration



# REDCap Research Electronic Data Capture

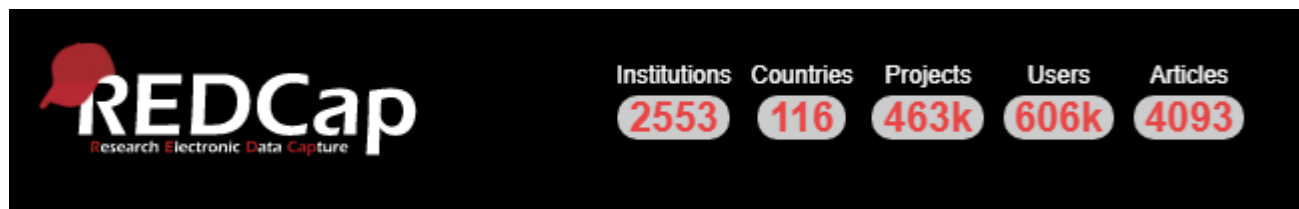
Since 2016, new dispositions for pathology registries by the Italian health ministry

## Main benefits:

- Important elements to organize clinical trials
- Help physicians to update standards for pathology management
- More focused attention and regular follow-ups

## ICSM multi-centers Projects:

- Heart failure
- Stroke
- Respiratory diseases
- Parkinson syndrome



# Basic assumption

## REDCap:

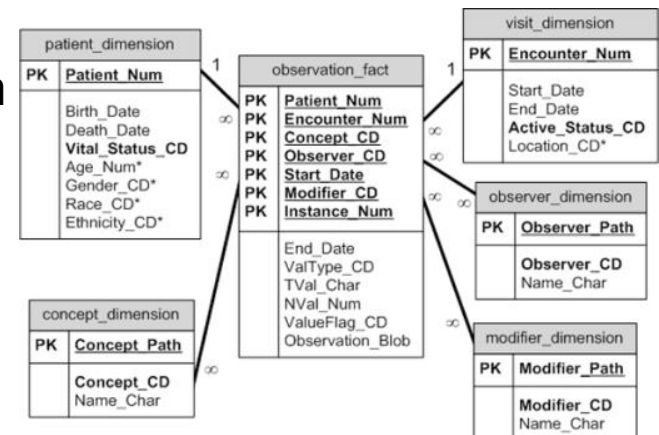
- Metadata table that defines all the study fields with data types
- Data grouped in events
- Entity Attribute Value (EAV) model

REDCAP_DATA		REDCAP_METADATA	
EVENT_ID		FORM_NAME	
FIELD_NAME		FIELD_NAME	
PROJECT_ID		PROJECT_ID	
RECORD		ELEMENT_TYPE	
VALUE		ELEMENT_VALIDATION_TYPE	

	Enrollment	Month 1	Month 2	Event	End of study
<b>Record ID</b>	Basic Demography Form	Visit Data	Visit Data	Adverse Events Page	Completion Data
2 (Bianchi,Lucia)	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
5 (Viola,Rita)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6 (Riva,Anna)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## i2b2:

- Concept dimension analogous to REDCap metadata
- Data grouped in encounters/visits
- Central observation fact table (EAV model)



➔ A REDCap event corresponds to an i2b2 visit



# Main differences

## REDCap:

- Data stored in studies, forms, events, fields
- Different types of fields: text, check-box, multiple choice
- Fields can be organized in tables and repeating fields collections

Editing existing RECORD ID 9-1

Event Name: **Visita 1**

RECORD ID 9-1

CODIFICA ATC	Nome Commerciale	Classe	Data inizio	Data fine	Dosaggio tot giornaliero
formoterol and be... R03AK08	foster	LABA-ICS	19-04-2017 Today D-M-Y		100/6
salbutamol R03AC02	ventolin	SABA	01-01-1997 Today D-M-Y		100
montelukast R03DC03	montelukast	ALTRO	19-04-2017 Today D-M-Y		10
methylprednisolone H02AB04	deltacortene	ALTRO	19-04-2017 Today D-M-Y	23-04-2017 Today D-M-Y	25
methylprednisolone H02AB04	deltacortene	ALTRO	24-04-2017 Today D-M-Y	28-04-2017 Today D-M-Y	12.5
methylprednisolone H02AB04	deltacortene	ALTRO	29-04-2017 Today D-M-Y	03-05-2017 Today D-M-Y	6.25

## i2b2:

- Data stored according to an ontology of terms
- Each i2b2 observation requires a start date

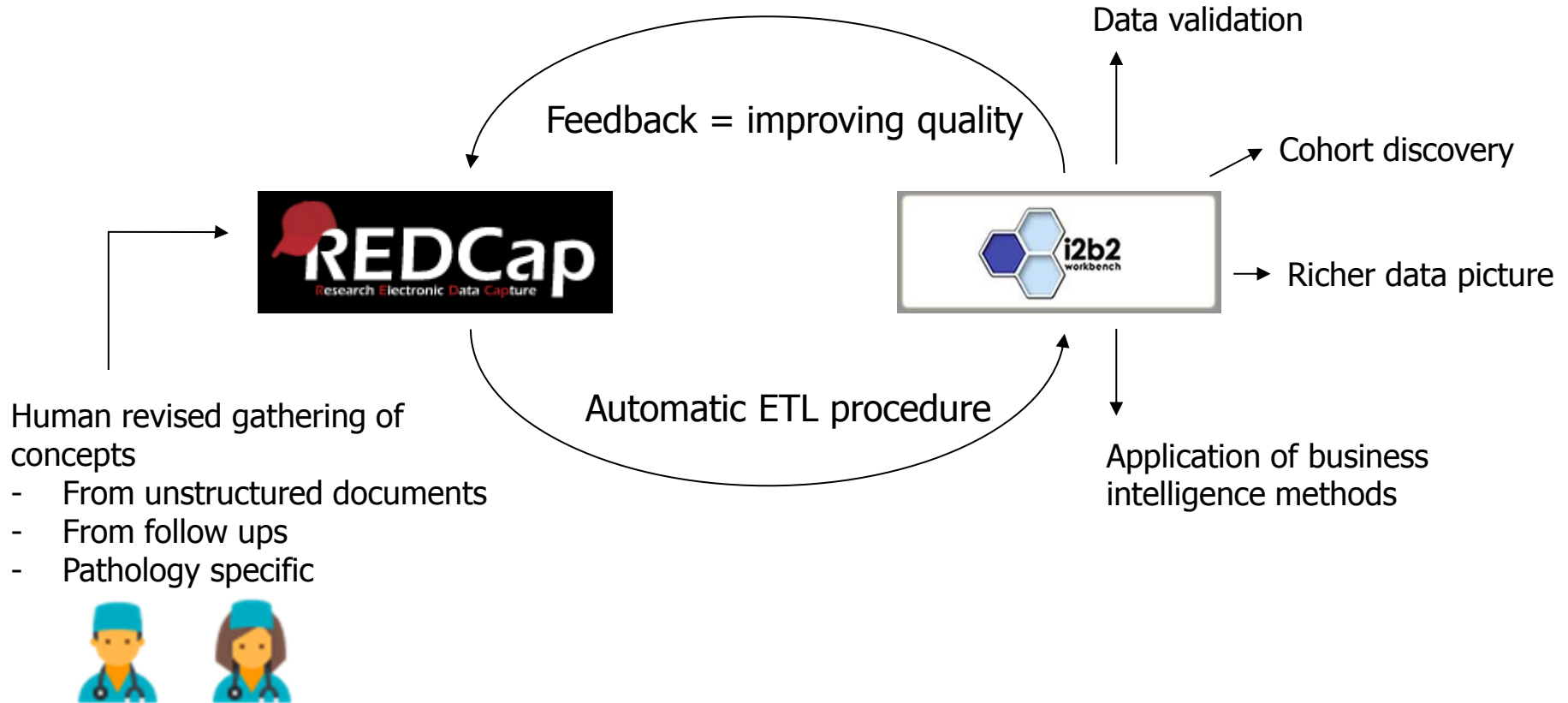
Navigate Terms Find Terms

- Clinical Trials
- Demographics
  - Age
  - Gender
  - Ethnicity
  - Marital Status
  - Race
  - Radial Distance
  - Vital Status
- Diagnoses
  - Primary Diagnosis
  - Secondary Diagnosis
  - Diseases And Injuries
  - Supplementary Classification Of External Causes Of Injur
  - Supplementary Classification Of Factors Influencing Healt
- Laboratory Tests
- Medications
- Procedures (ICD-9)
- Vital Signs

observation_fact	
PK	Patient_Num
PK	Encounter_Num
PK	Concept_CD
PK	Observer_CD
PK	Start_Date
PK	Modifier_CD
PK	Instance_Num
End_Date	
ValType_CD	
TVal_Char	
NVal_Num	
ValueFlag_CD	
Observation_Blob	



# REDCap-i2b2 integration



# Thanks

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