OpenCDC HACKATHON

open.cdc.gov

Open Data Universal Translator

Great Team (2^3) :

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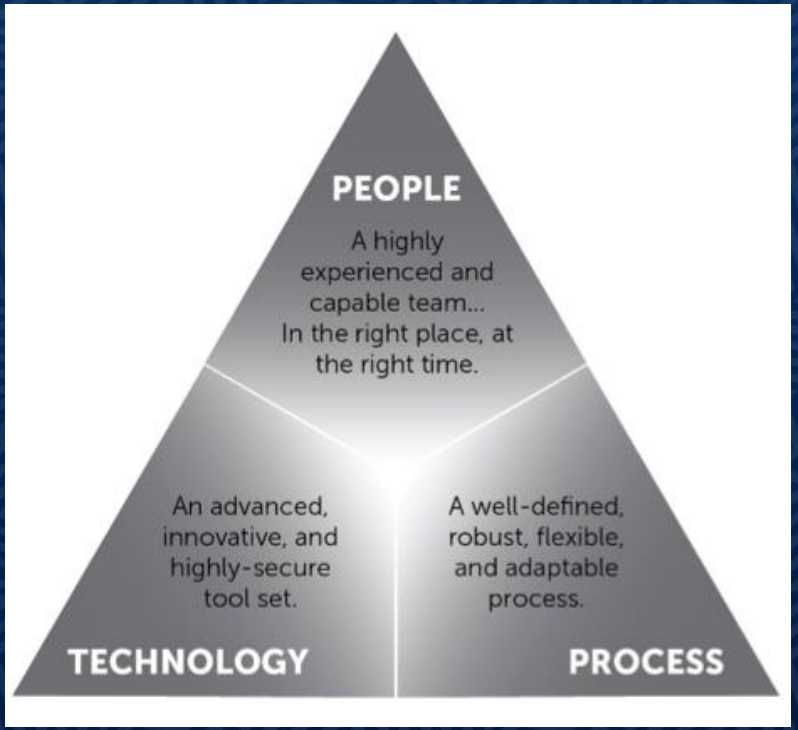
Impacting Public Health Emergencies via…

Technology: Emergency investigations…

Process: Emergency operations…

People: Cross-cutting/-functional teams…

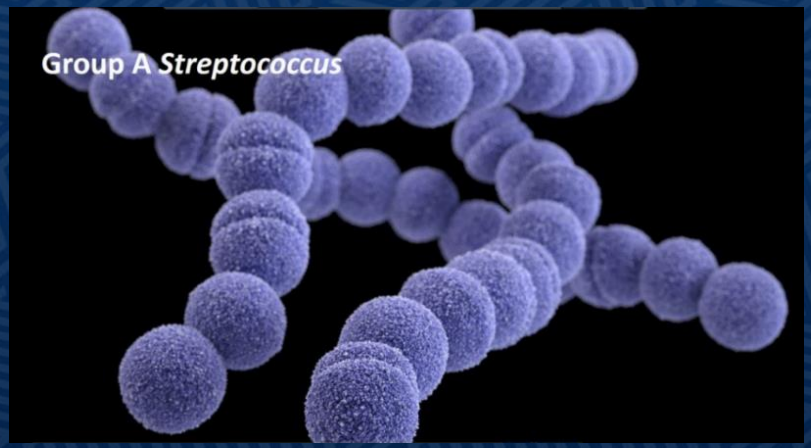


Impacting Public Health Emergencies via…
…Open Translatable Data and Instruments

Technology: Emergency investigations… facilitated by translatable data

Process: Emergency operations… streamlined by translatable instruments

People: Cross-cutting/-functional teams… empowered by open platforms

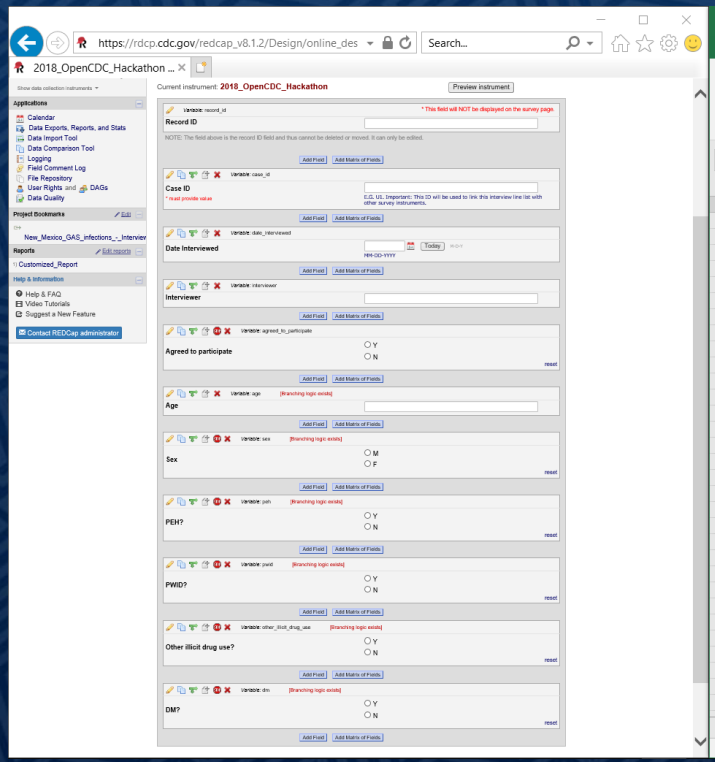


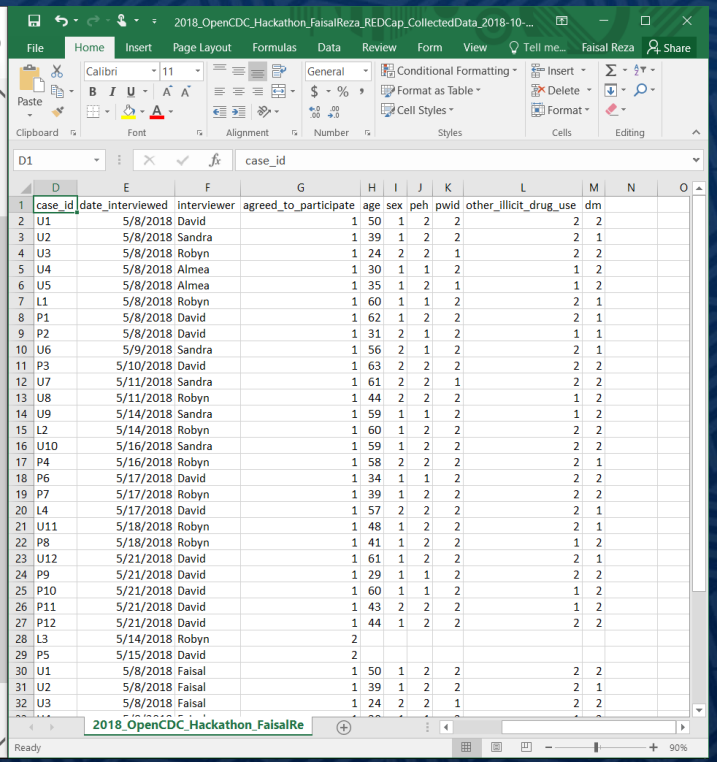
Our Hackathon Project Statement

We hack(ed) together an open data universal translator to…
…translate data-collection instruments,

…as well as collected data,

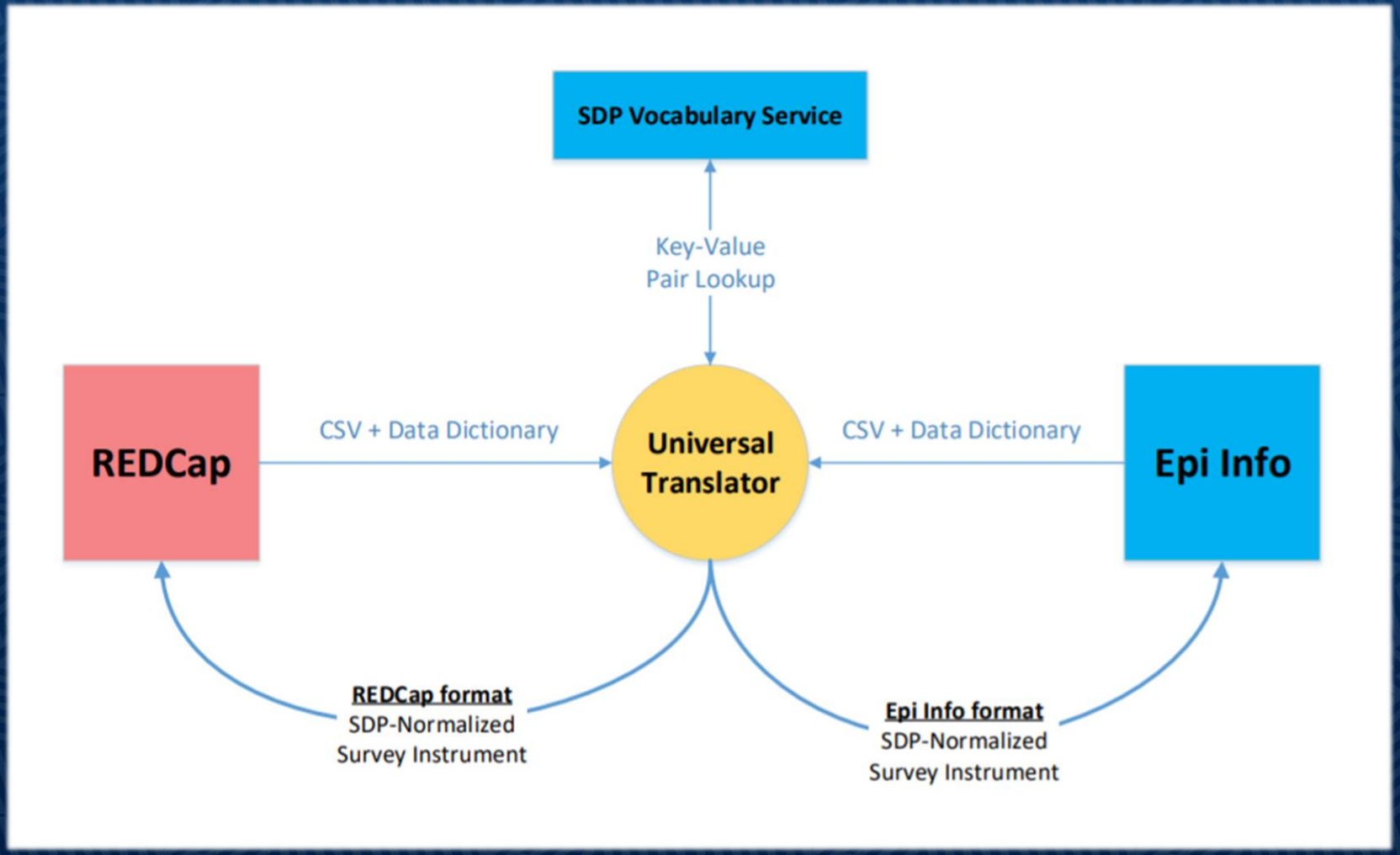
among public health emergency technologies (e.g. REDCap, Epi Info, Access).



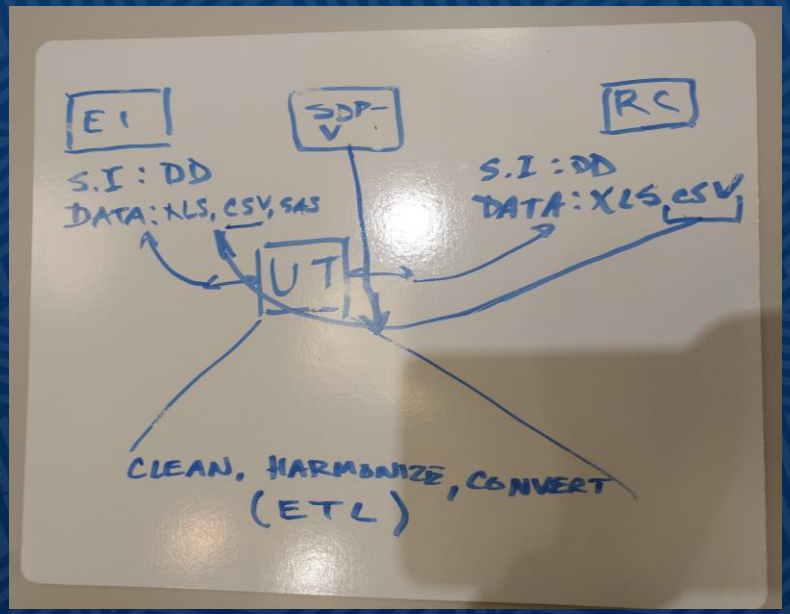


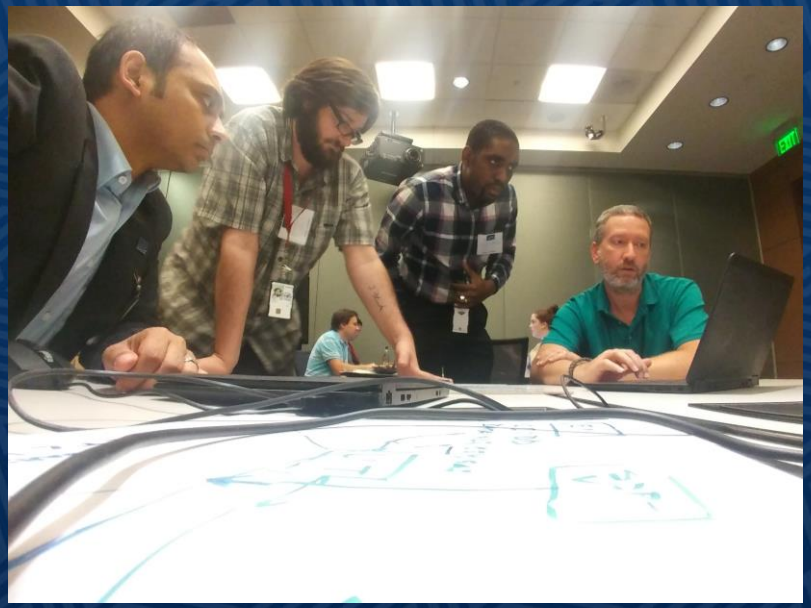
case_id	date_interviewed	interviewer	agreed_to_participate	age	sex	peh	pwid	other_illicit_drug_use	dm
U1	5/8/2018	David	1	50	1	2	2	2	2
U2	5/8/2018	Sandra	1	39	1	2	2	2	1
U3	5/8/2018	Robyn	1	24	2	2	1	2	2
U4	5/8/2018	Almea	1	30	1	1	2	1	2
U5	5/8/2018	Almea	1	35	1	2	1	1	2
L1	5/8/2018	Robyn	1	60	1	1	2	2	1
P1	5/8/2018	David	1	62	1	2	2	2	1
P2	5/8/2018	David	1	31	2	1	2	1	1
U6	5/9/2018	Sandra	1	56	2	1	2	2	1
P3	5/10/2018	David	1	63	2	2	2	2	2
U7	5/11/2018	Sandra	1	61	2	2	1	2	2
U8	5/11/2018	Robyn	1	44	2	2	2	1	2
U9	5/14/2018	Sandra	1	59	1	1	2	1	2
L2	5/14/2018	Robyn	1	60	1	2	2	2	2
U10	5/16/2018	Sandra	1	59	1	2	2	2	2
P4	5/16/2018	Robyn	1	58	2	2	2	2	1
P6	5/17/2018	David	1	34	1	1	2	2	2
P7	5/17/2018	Robyn	1	39	1	2	2	2	2
L4	5/17/2018	David	1	57	2	2	2	2	1
U11	5/18/2018	Robyn	1	48	1	2	2	2	1
P8	5/18/2018	Robyn	1	41	1	2	2	1	2
U12	5/21/2018	David	1	61	1	2	2	2	1
P9	5/21/2018	David	1	29	1	1	2	2	2
P10	5/21/2018	David	1	60	1	1	2	1	2
P11	5/21/2018	David	1	43	2	2	2	1	2
P12	5/21/2018	David	1	44	1	2	2	2	2
L3	5/14/2018	Robyn	2						
P5	5/15/2018	David	2						
U1	5/8/2018	Faisal	1	50	1	2	2	2	2
U2	5/8/2018	Faisal	1	39	1	2	2	2	1
U3	5/8/2018	Faisal	1	24	2	2	1	2	2

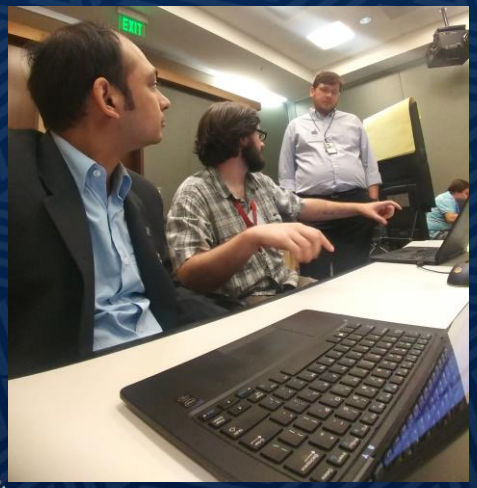
Hackathon Problem Formulation

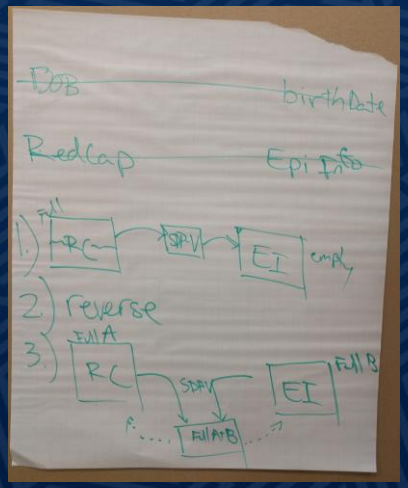


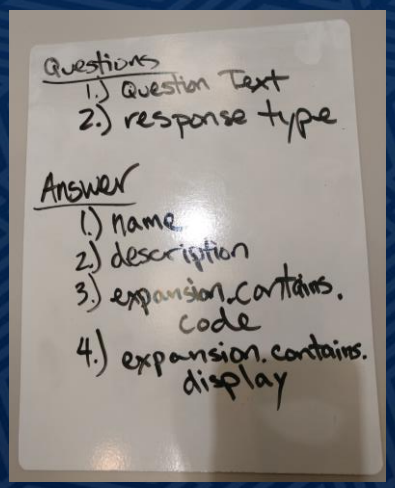
Hackathon Brainstorming

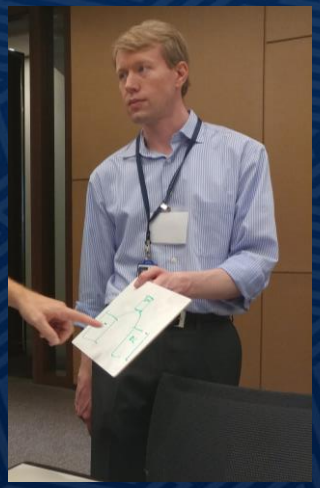




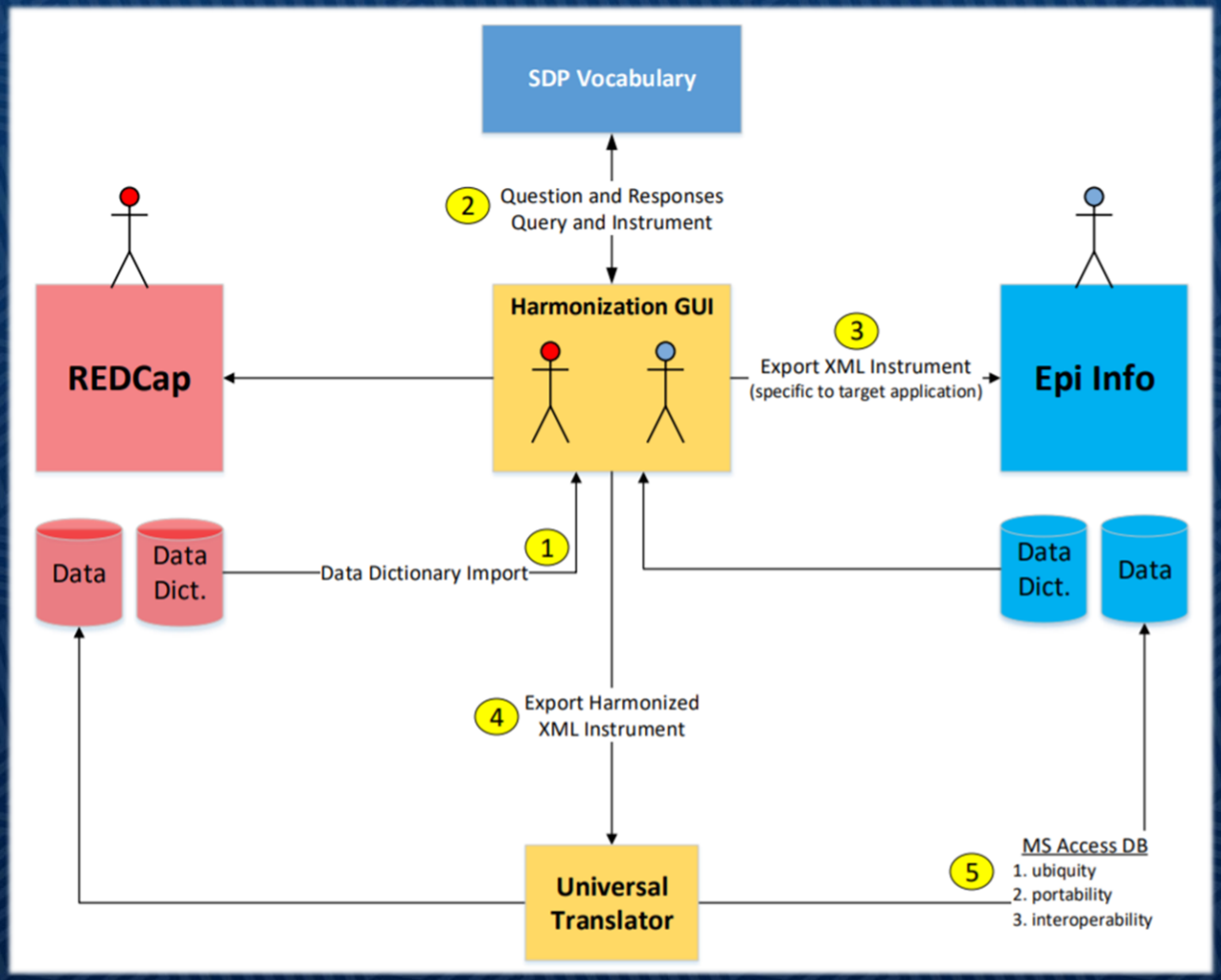




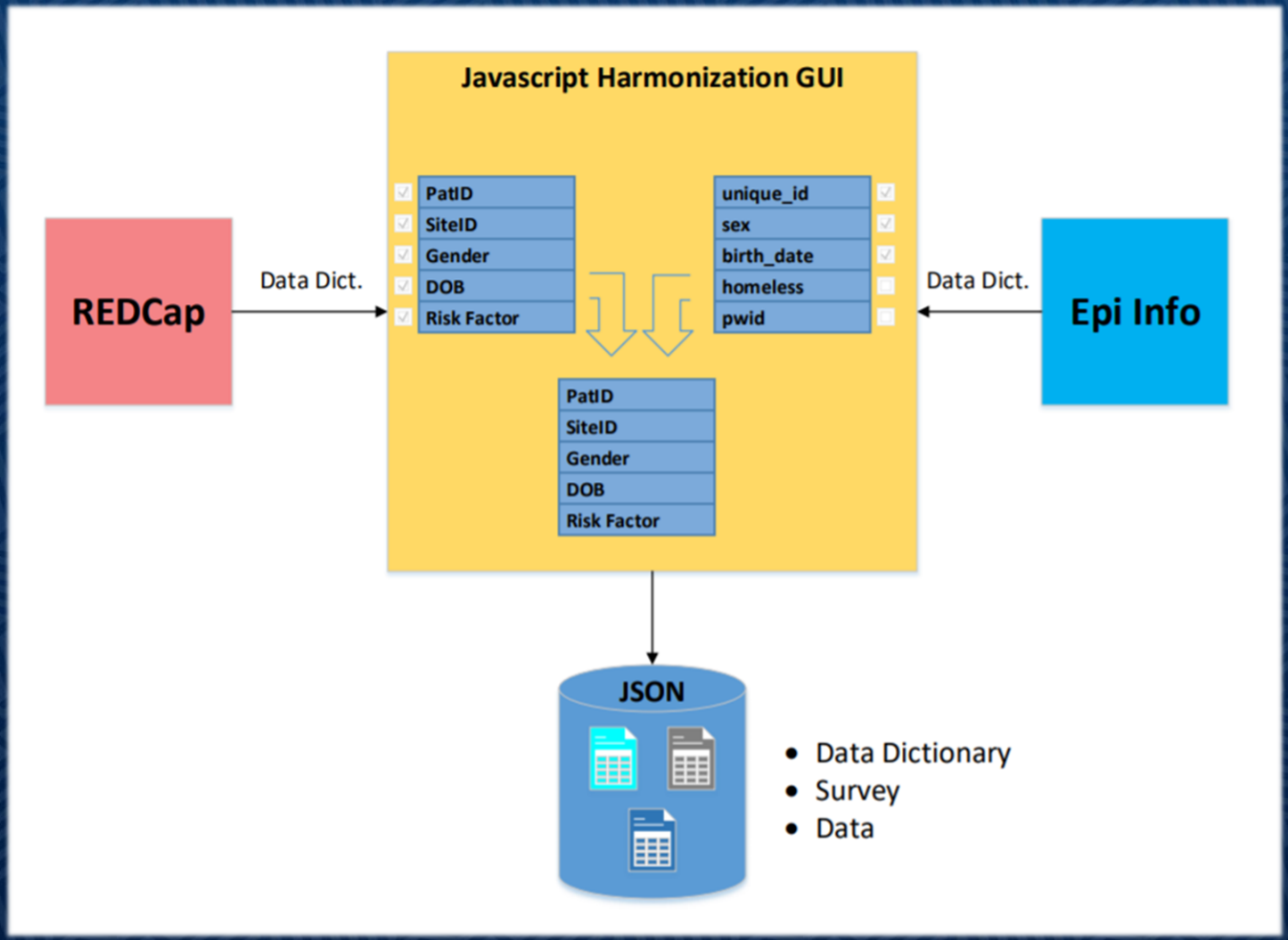




Hackathon Project Solution Conception



Hackathon Project Data Mapping to Harmonize Instrument

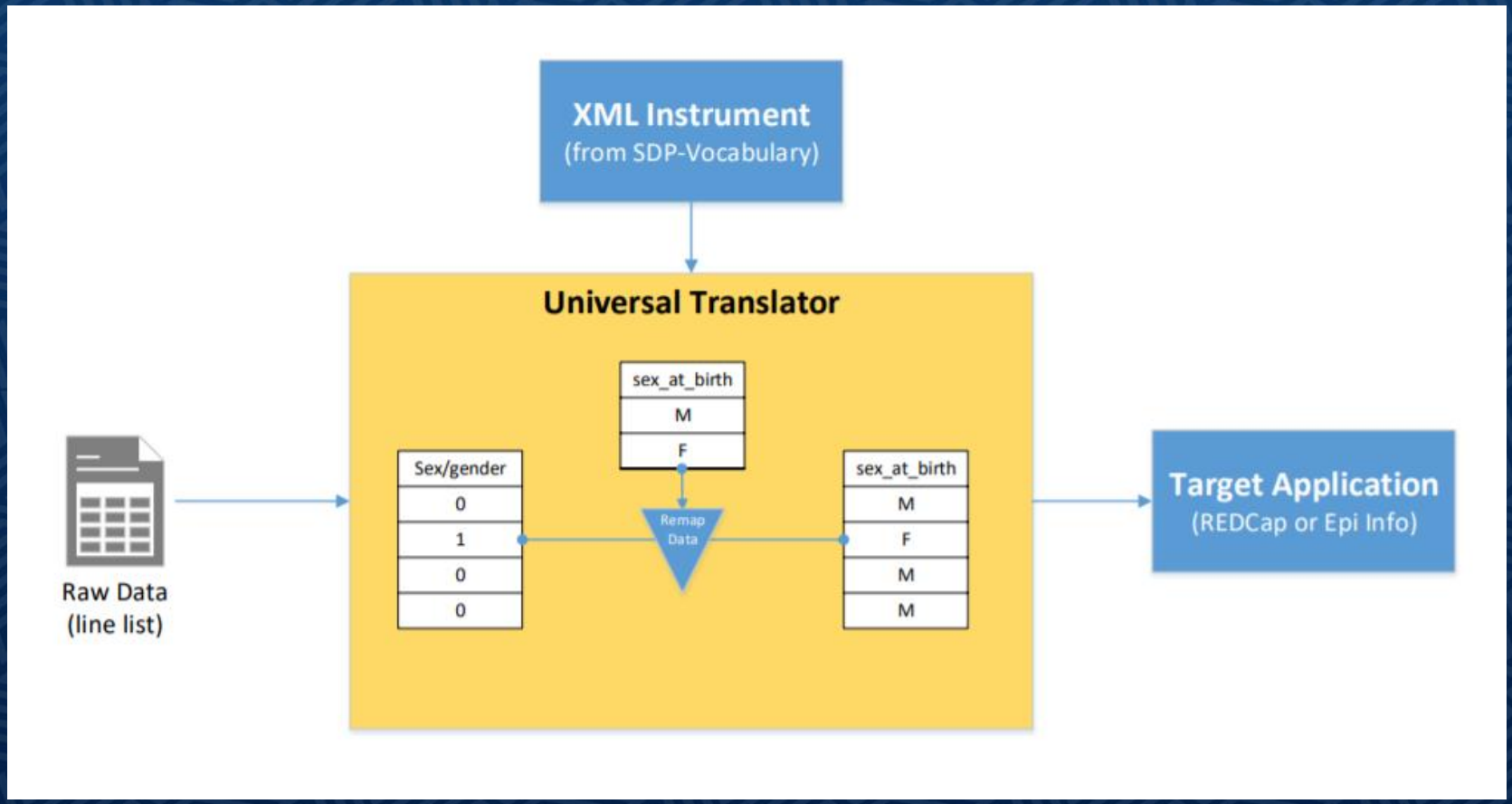


Querying SDP Vocabulary Service to Harmonize Instrument

sdp_vocab_service_query.py 1 KB

```python
import requests

## hardcoded column IDs from sample data set
epiInfoCols = ["recordID", "caseID", "interviewerID", "interviewDate", "participation?","age", "sex", "homeless", "p
redCapCols = ["record_id", "case_id", "interviewer_id", "date_interview", "agreed_to_participate", "age", "gender",

for redcapIndex in range(0, len(redCapCols)):
    redCapElement = redCapCols[redcapIndex]

    ## construct question query
    questionRequest = 'https://sdp-v.services.cdc.gov/api/questions?limit=200&search='
    userQuestionQuery = redCapElement
    questionQuery = questionRequest + userQuestionQuery

    ## submit query to SDP-vocabulary and structure as hierchical JSON
    questions = requests.get(questionQuery)
    questionJSON = questions.json()

    ## loop through responses to identify best match
    for index in range(0, len(questionJSON)):
        questionText = questionJSON[index]['questionText']
        responseType = questionJSON[index]['responseType']
```

Remapping of Raw Data to Match Harmonized Instrument



Hackathon Project Meets Criteria (with Bonus!)

Criteria	Allowable	Our Hackathon Project Examples	Our Progress
Uniqueness	10	Our project uniquely identified the existing technologies, and the existing needs.	10
Creativity	10	Our project creatively balanced people, process, and technology for an emergency.	7.5
Public Health impact factor	10	Our project prototype is ready for ongoing outbreak affecting PWID and PEH, and for and inter-/cross-agency data preparedness emergency activities.	10
Level of Effort for release/readiness	10	Our project component code are in varying levels of development.	2.5
Community need	10	Recent emergencies (GAS outbreak, State Department unexplained neurological events) demonstrated need to translate data-collecting instruments and collected data	10
Testability	10	Our project generated multiple prototypes for a variety of emergency use cases.	10
Design	10	We bootstrapped existing, but not interoperable, (REDCap import/export, Epi Info export, SDP-V import/export) with our universal translator code for interoperation.	5
Performance	10	We prototyped components of our designs to demonstrate feasibility and usefulness.	5
Team's use of open source technology	10	Our project generated functional, open source code, which interoperated with open technologies at CDC, such as Epi Info and SDP-V service, and "opened" closed-source technologies, such as REDCap and MS Access.	10
Utilized each team member effectively	10	As the smallest Hackathon team, we assumed multiple roles (Faisal = Designer & SME, Ellsworth = SME & Developer, Mayer = SME & Developer), as well as leaned on the #hackathon2018 Slack for communications and expert role players.	10
Above and beyond	Bonus!	As the smallest Hackathon team, leveraged multiple Hackathon technologies, e.g. Slack, git.cdc.gov, as well as coordinated with Epi Info, SDP-V, and REDCap CDC teams.	+ Bonus! + Bonus!
TOTAL	**100 + Bonus!**		**80 +2 x Bonus!**

Acknowledgements

2018 OpenCDC Hackathon XLR Team
- Erik Knudsen
- Russell Ingram
- Drewry Morris
- Jared Trotter
- Van Vongsamphanh

Other 2018 OpenCDC Hackathon Participants
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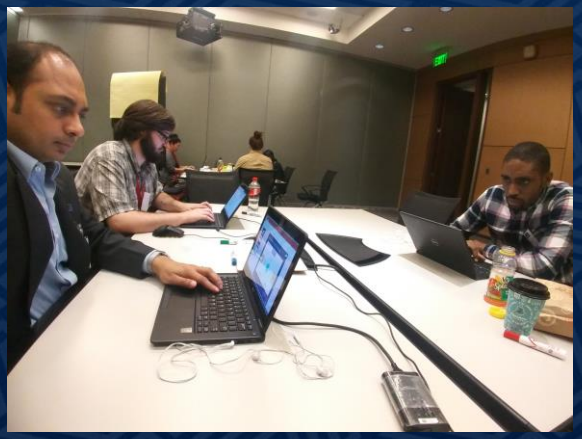
- Brian Lee
- Sergei Knaizev
- Eric-Jan Manders

CDC Data Preparedness
- Sam Groseclose
- Jason Thomas
- Macarena Garcia
- Chad Heilig



CDC Epi Info Team
- Sachin Agnihotri
- David Brown
- Mohammad (Asad) Islam
- Mohammed Lamtahri

CDC REDCap Team
- Meheret Endeshaw
- Artee Sharma

CDC Surveillance Data Platform Team
- Vishweshwar (Visu) Patlolla
- Tim Taylor

CDC Intra-/Inter-agency
- CSELS
- OID
- CGH
- OPHPR
- US Department of State
- New Mexico DOH