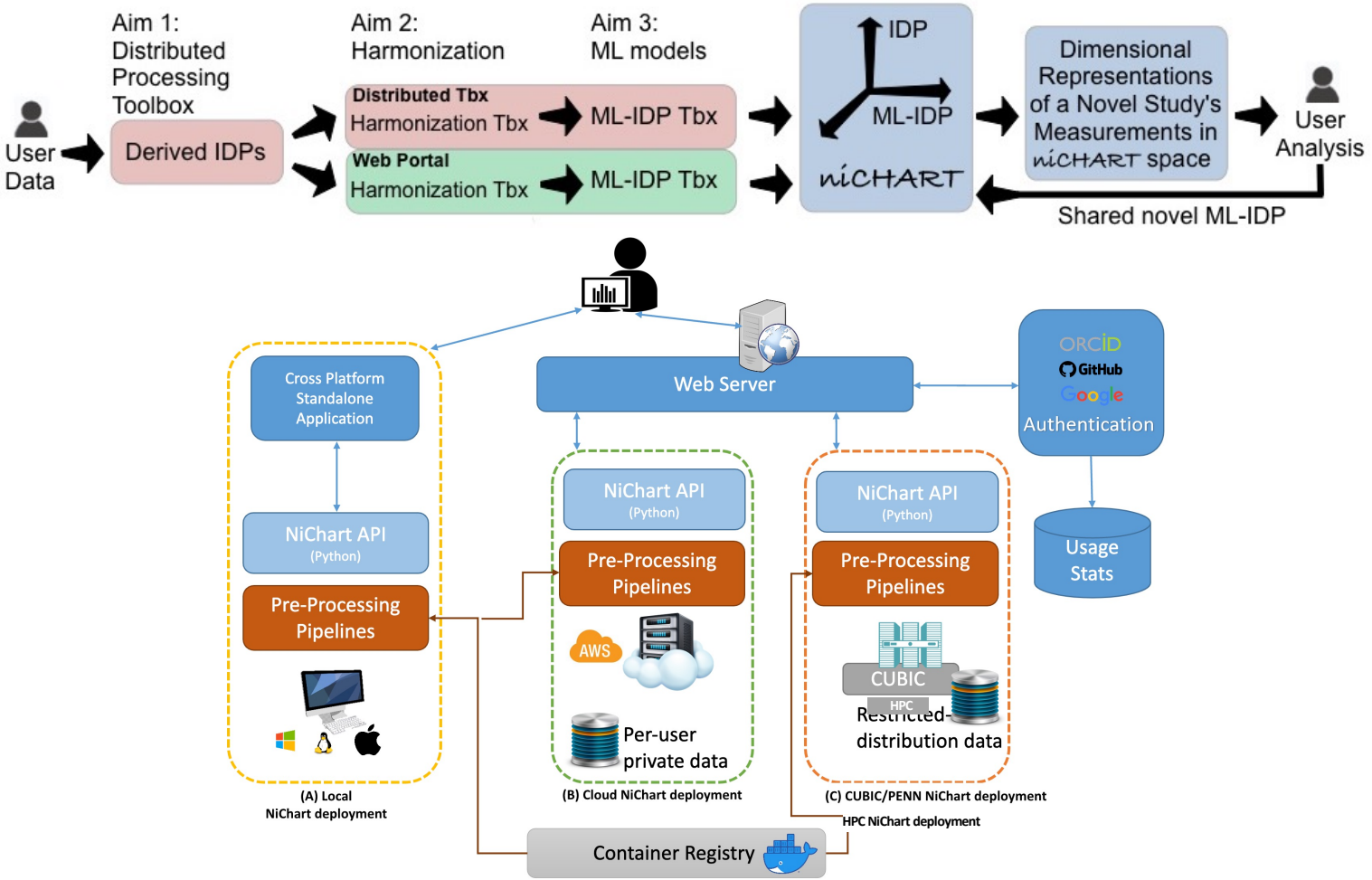

Fig 1a. Schematic of NiChart software suite. Modality-specific image processing toolboxes are used to calculate imaging derived phenotypes. After statistical data harmonization of derived values, models pre-trained on large reference datasets are applied to calculate machine learning based imaging phenotypes of various diseases and conditions, allowing to position the individual into the neuroimaging chart, a multi-dimensional quantitative coordinate system of brain health.

Fig 1b. The users can utilize the NiChart framework in a variety of ways, either through a local installation, through the publicly available web server, or through a private web server on their High Performance Cluster (HPC), if available.

	Clinical Emphasis							Years MRI	Age	Counts			FU	Racial Diversity			
Study	Ag	AD	CVD	Di	PH	RS	OTHR	1995-2020	20-100 years	PT	sMRI	fMRI	dMRI	0-20 years	Asian	African	MultiOther	NativeAm
ABIDE**										1257	1490	1490	0		TBD	TBD	TBD	TBD
ACCORD*										629	1414	0	TBD		0	67	0	0
ADNI*										2515	10853	4267	2959		39	105	20	4
AIBL										1264	1978	0	0		0	0	0	0
ANMerge*										453	~1350	0	0		0	0	0	0
BIOCARD										319	1152	0	0		3	4	1	0
BLSA										1174	3928	2233	164		55	239	17	4
CARDIA*										894	1379	1636	1658		0	372	0	0
CoorMD**										2858	3001	3001	0		TBD	TBD	TBD	TBD
EDIC*										490	490	460	490		TBD	TBD	TBD	TBD
HANDLS										263	263	0	263		0	63+	0	0
HCP*										1200	1200	1200	1200		TBD	TBD	TBD	TBD
LookAhead*										320	320	0	320		0	70	0	0
MESA*										1063	1063	1062	1062		158	267	0	0
OASIS										1094	2154	3621	2450		5	165	0	0
PENN										1314	1549	320	TBD		20	203	34	0
PHENOM**										2277	2288	0	0		TBD	TBD	TBD	TBD
SHIP*										3311	3311	0	0		0	0	0	0
SPRINT*										788	1336	~1330	~1330		7	241	9	0
UKBIOBANK*										40580	40991	~37000	~37000		594	256	383	0
WHIMS*										1305	1966	0	0		23	57	0	4
WRAP										325	735	0	0		2	6	11	3
Total										**65693**	**84211**	**57620**	**48896**		**906**	**2115**	**475**	**15**

Ag: aging; AD: Alzheimer's disease; CVD: cardio-vascular disease; Di: Diabetes; PH: psychosis/mental health, RS: race/socio-economics; OTHR: other; PT: number of participants; FU: MRI Follow-Up; *: multi-site; **: multi-study

Fig 2. Reference MRI dataset used for data harmonization and for training machine learning (ML) models

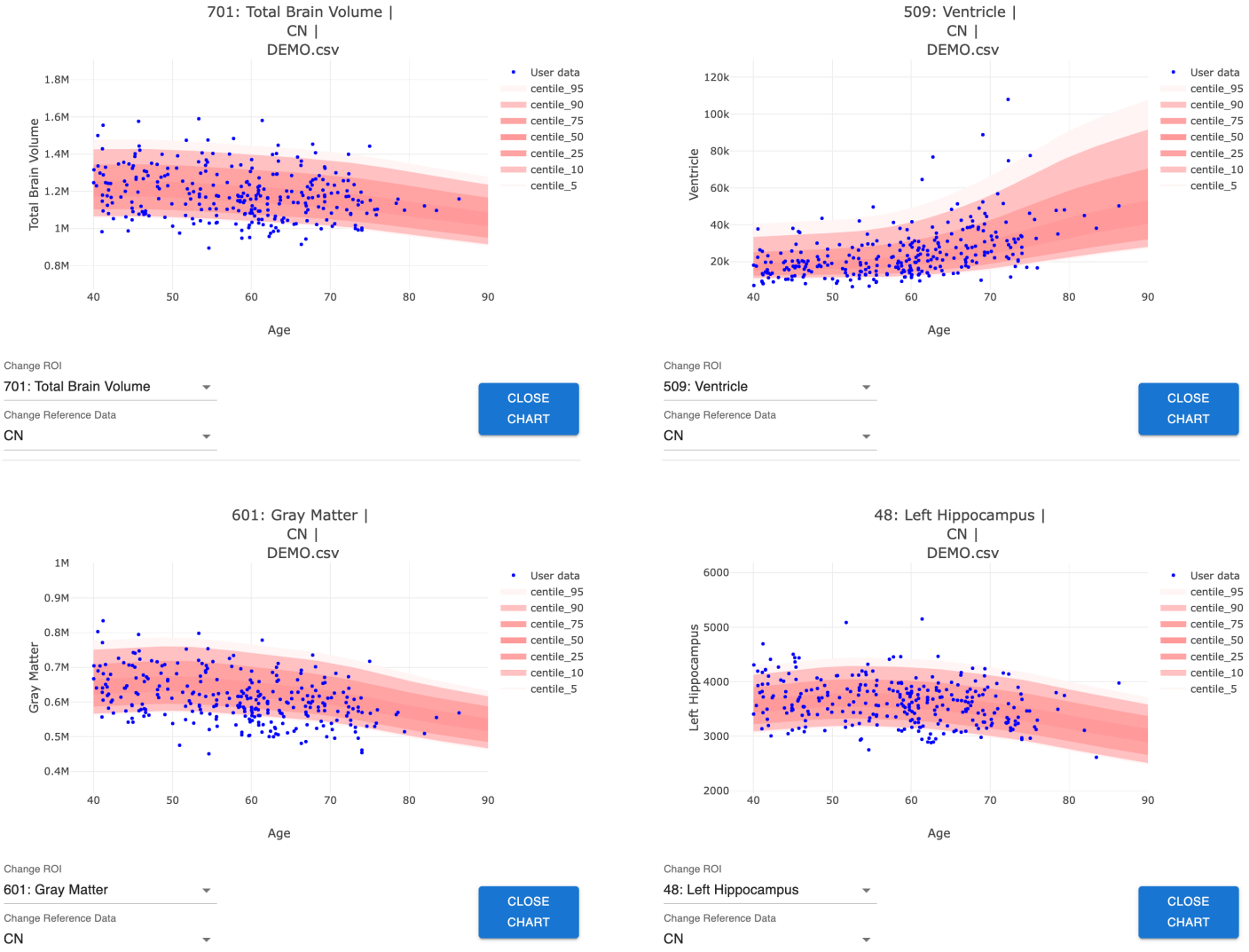

Fig 3. Age trends of selected imaging derived phenotypes after data harmonization (as viewed on the NiChart web portal, using a simulated dataset).

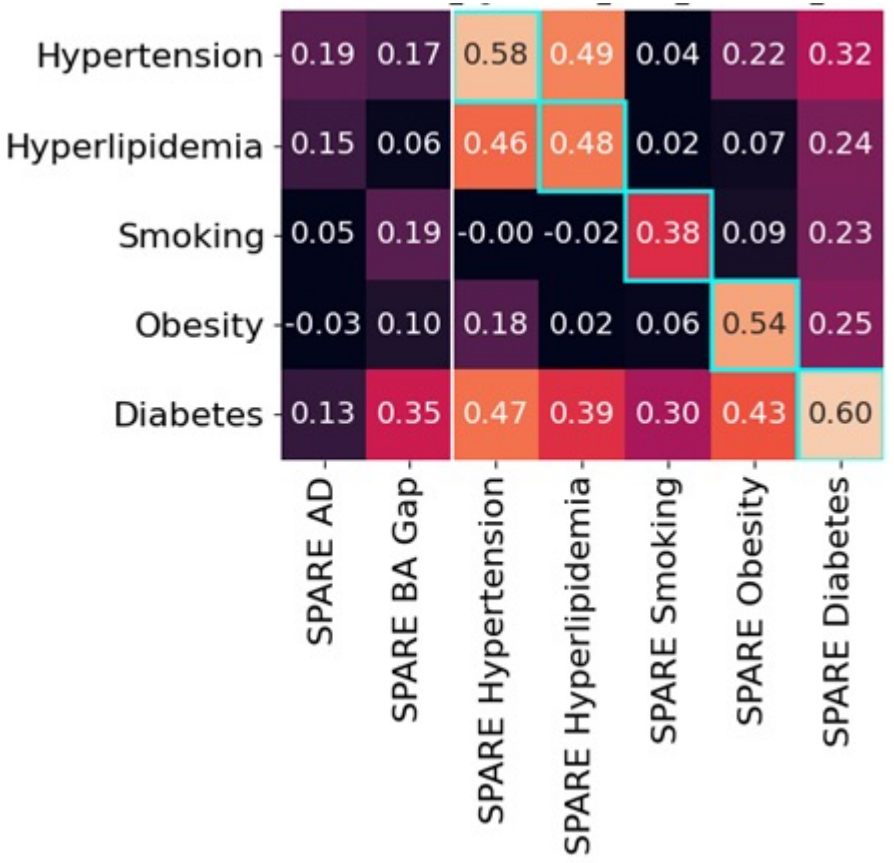

Fig 4. Panel of machine learning based imaging phenotypes (in this case SPARE scores) derived from the reference dataset. Correlations between SPARE scores for various diseases and conditions

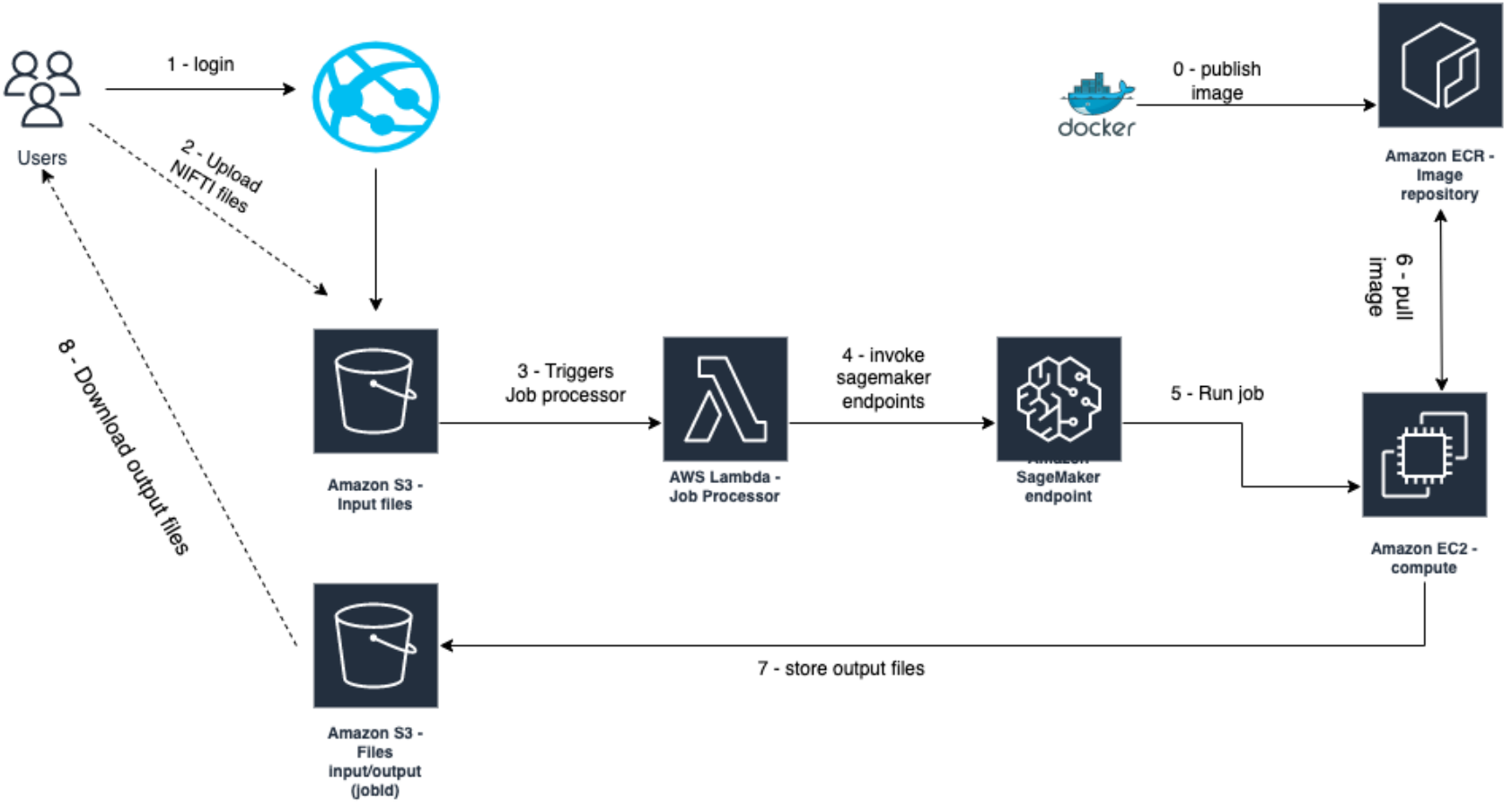

Fig 5. Architecture diagram of the web interface backend