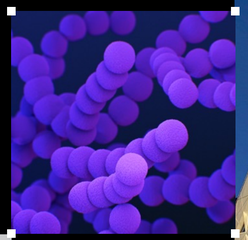
viedoc™



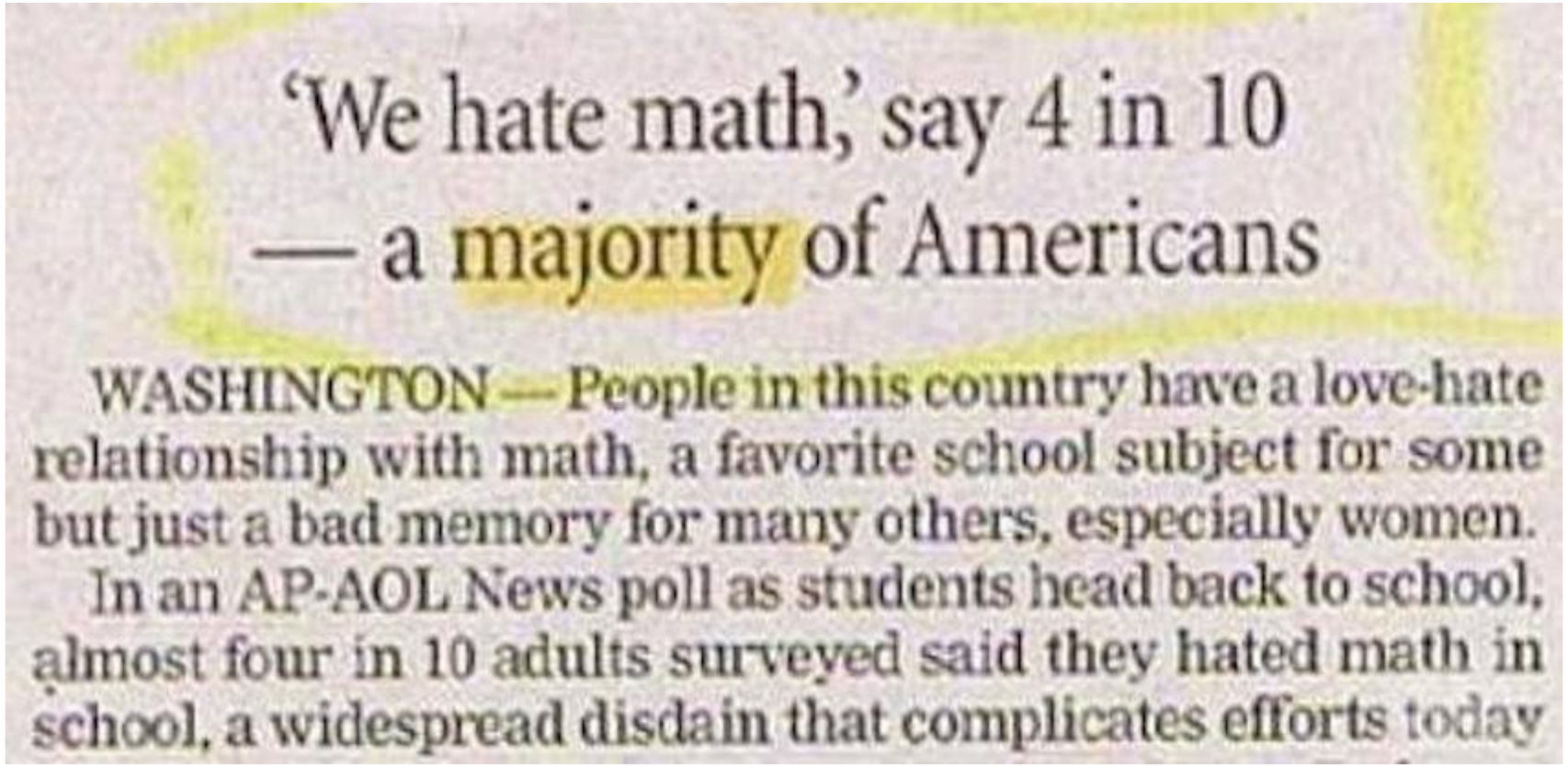
Requirements on eClinical systems in 5 years

An attempt to understand the eClinical landscape in 5-10 years from now

The development in clinical data management has never been greater than now. Many new technologies and processes have come forward the past 5 years. Many didn't get recognized until Covid-19 hit and changed the whole industry.

What has become obvious is that we are in a two-speed industry, where there is a gap between the companies who can afford the, in many cases, very expensive technologies and processes, and the small to mid- size companies in many cases don't have the means or competence to use these methods or technologies.

First some statistics



'We hate math,' say 4 in 10 — a majority of Americans

WASHINGTON — People in this country have a love-hate relationship with math, a favorite school subject for some but just a bad memory for many others, especially women.

In an AP-AOL News poll as students head back to school, almost four in 10 adults surveyed said they hated math in school, a widespread disdain that complicates efforts today

Study design characteristics and performance, phase III

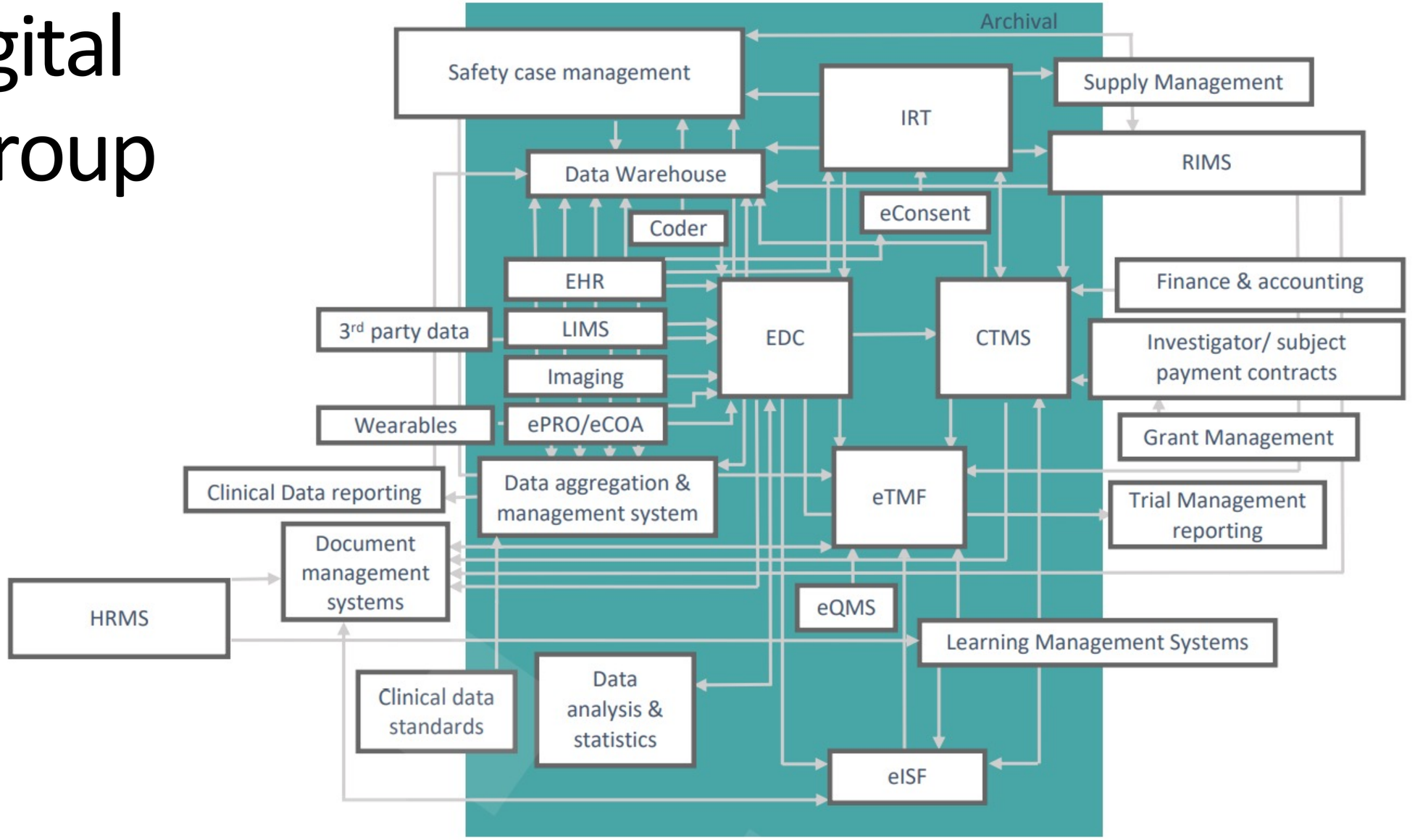
Design Characteristic	2010	2020	% change
• Total endpoints	13	22	+ 69 %
• Total eligibility criteria	34	30	- 12 %
• Total procedures	187	263	+ 41 %
• Procedures per visit	11	13	+ 18 %
• # countries	9	15	+ 67 %
• # sites	65	104	+ 60 %
• Total number of patients randomized	597	632	+ 6 %
• Total number of data points collected	929,203	3,560,201	+ 283 %

Tufts Center for the Study of Drug Development

ACDM eDigital Working Group

—

The Digital Ecosystem



Site-Centricity?

Brad Hightower LinkedIn post

The site is your most important partner

- Most studies need sites to run the studies – DCT methods are offered through the site.
- The success or failure of DCTs will be heavily influenced by site adoption.
- If new technology integrations make life difficult for the patient or interfere with the site/patient relationship, sites will avoid them – or simply not participate in the study.
- Not unusual with 10-20 different systems and logins… (eClinical Forum)
- You must clearly demonstrate the value of your DCT elements to the sites.
- Several studies show that 50% of investigators only ever participate in 1 trial (eClinical Forum).
- According to SCRS*
  - 40% of sites devote 5-15 hours/trial on tech training, monthly
  - 25% of sites devote more than 16 hours/trial on tech training, monthly

* Society of Clinical Research Sites

It needs to be one experience from start to end

One platform experience
- No internal integrations
- Use what you need
- API for external integrations

Do things once
- Set things up in one place
- Replicated throughout systems
- Analytics across systems

Single Sign On
- One username and password
- Access to all your studies
- One source

API Integrations

Real time reports, RBQM and Audit Trail Review

eConsent

RTSM

ePRO/eCOA
TeleVisits

EDC

Recruitment

eTMF

eISF

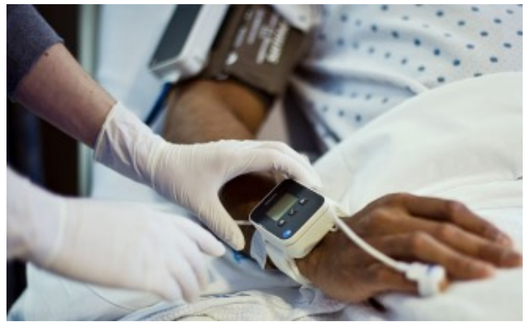
eISF

eISF

Home based data capture

Point of care diagnostics, (Glucose, cardiac and immunology markers)
Activity and sleep, scales,
vitals, medicine dispensing, ePRO, diary,
Respiratory support

Site based data capture

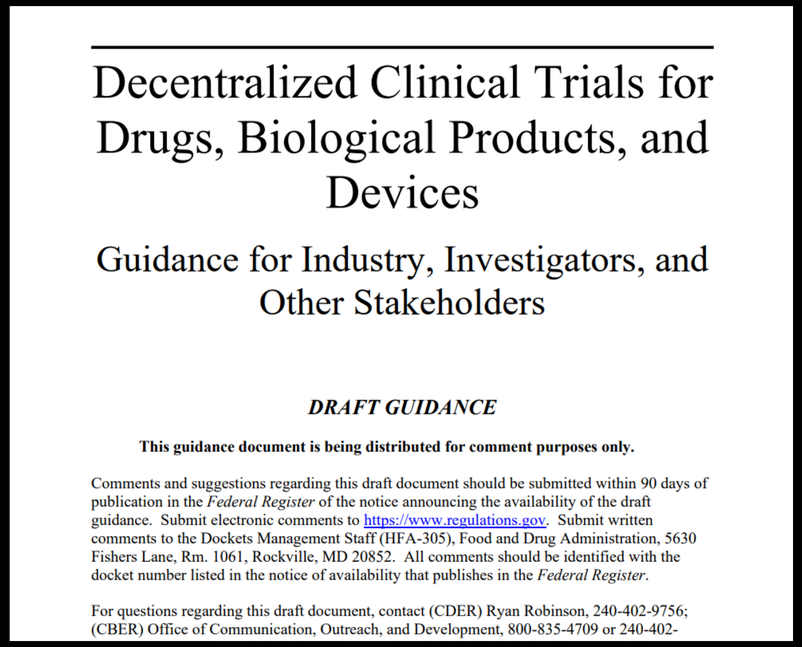


Vitals,
lab results,
Monitoring
Assessments

Additional data

Medical imaging
Digital Pathology
Genomics
Patient Monitoring in Critical Care
Ventilation

FDA DCT Draft Guidance: Some insights



Decentralized Clinical Trials for Drugs, Biological Products, and Devices

Guidance for Industry, Investigators, and Other Stakeholders

DRAFT GUIDANCE

This guidance document is being distributed for comment purposes only.

Comments and suggestions regarding this draft document should be submitted within 90 days of publication in the *Federal Register* of the notice announcing the availability of the draft guidance. Submit electronic comments to https://www.regulations.gov. Submit written comments to the Dockets Management Staff (HFA-305), Food and Drug Administration, 5630 Fishers Lane, Rm. 1061, Rockville, MD 20852. All comments should be identified with the docket number listed in the notice of availability that publishes in the *Federal Register*.

For questions regarding this draft document, contact (CDER) Ryan Robinson, 240-402-9756; (CBER) Office of Communication, Outreach, and Development, 800-835-4709 or 240-402-

- Overall requirements for DCTs are identical to those of traditional site-based trials => rigorous standards and scientific integrity in both
- Trials can be anywhere on the scale “traditional” through hybrid to fully decentralized
- Should strive for diversity and inclusion
- Have a plan to facilitate decentralization
- Must account for multiple sources of data collection in a DCT in the data management plan
- Training, Oversight, and Risk Assessment
- We need to ensure PI oversight of the data

Data Managers

- Data managers and scientists will be responsible for:
    * data flows
    * data curation
    * data cleaning for AI and ML technologies to be able to function well
    * data strategies and standardization
    * vendor strategies

    * upskill and hire new talent in e.g. clinical data science.

eClinical Systems

- We will not accept anything less than Single-Sign-On

- We will not accept building time of the full eClinical systems and integrations more than days from final protocol

- eClinical systems will be much more capable than today but will heavily rely on integrations

- EDC as we know it today is gone and replaced by a hub for all data and meta data flows

- Visualization is key to understand data

- Zero down time protocol changes

- More advanced study designs where patients goes in and out of clinical trials, one day in a study, next day in RWE study and third day out of clinical trials requires very flexible eClinical systems

- Be able to unify data for ingestion, review and analysis

Investigators/Sites

- Will not accept anything less than Single-Sign-On

- Seamless work with site conditions and requirements.

- Sites are responsible for the patients, wherever they are, whoever is inputting data (e.g. wearables, home care services). Systems will need to have reporting capabilities/warning systems for investigators to follow compliance and safety

- Investigators will be trained on and given access to data on how patients are compliant

- Sites will touch less data than now but are required to follow up more data.

- Patient and site centricity will mean unified experience and interfaces over devices and software's

Study definition stage

Regulatory understanding

* Understanding regulatory framework, based on TA and molecule/device properties
* Defining TPP, Target Product Profile
* Defining Clinical Development Plan, studies and endpoints
* Expediting NDA/IND application process

Protocol Generation

* Using generative AI language models to generate first version of clinical protocols using published literature, medical sources and internal documents

Automatic configurations

* Configuring systems based on protocol
* Setting up and testing integrations based on technical specifications
* Oversight of integrations while studies are running

Live Feasability

Live Feasability: Patient and Site selection

* Finding right sites
* Finding the right investigators
* Understanding epidemiology
* Matching patients to clinical trials
* Consenting procedures
* Integrating with CTMS for live updates

Physician database
* TA experience
* Clinical trial experience
* Network

Patient Recruitment software and services
* Campaigns
* Concierge services
* Patient eligibility
* eConsent

Country & site specifics databases
* Standard of Care
* Epidemiology
* Competing trials
* Benchmarked costs
* Timelines

CTMS

IRT

EDC

The patient

- Patient engagement – the technology must fit into patient's regular lives, and guide them through study activities
- Telemedicine simplifies contact between patient and site, to support patients in all aspects
- Consumer-grade experience – devices/processes must be user-friendly and realistic to use for the patient.
- Direct data capture/eSource, collecting data from source – eliminating SDV
- Pre-enrollment, patient connectivity, eConsent and DCT tools prepare patients for the upcoming trial
- Localization is very important, be culturally aware

☹ 😐 ☺

Where to find patients

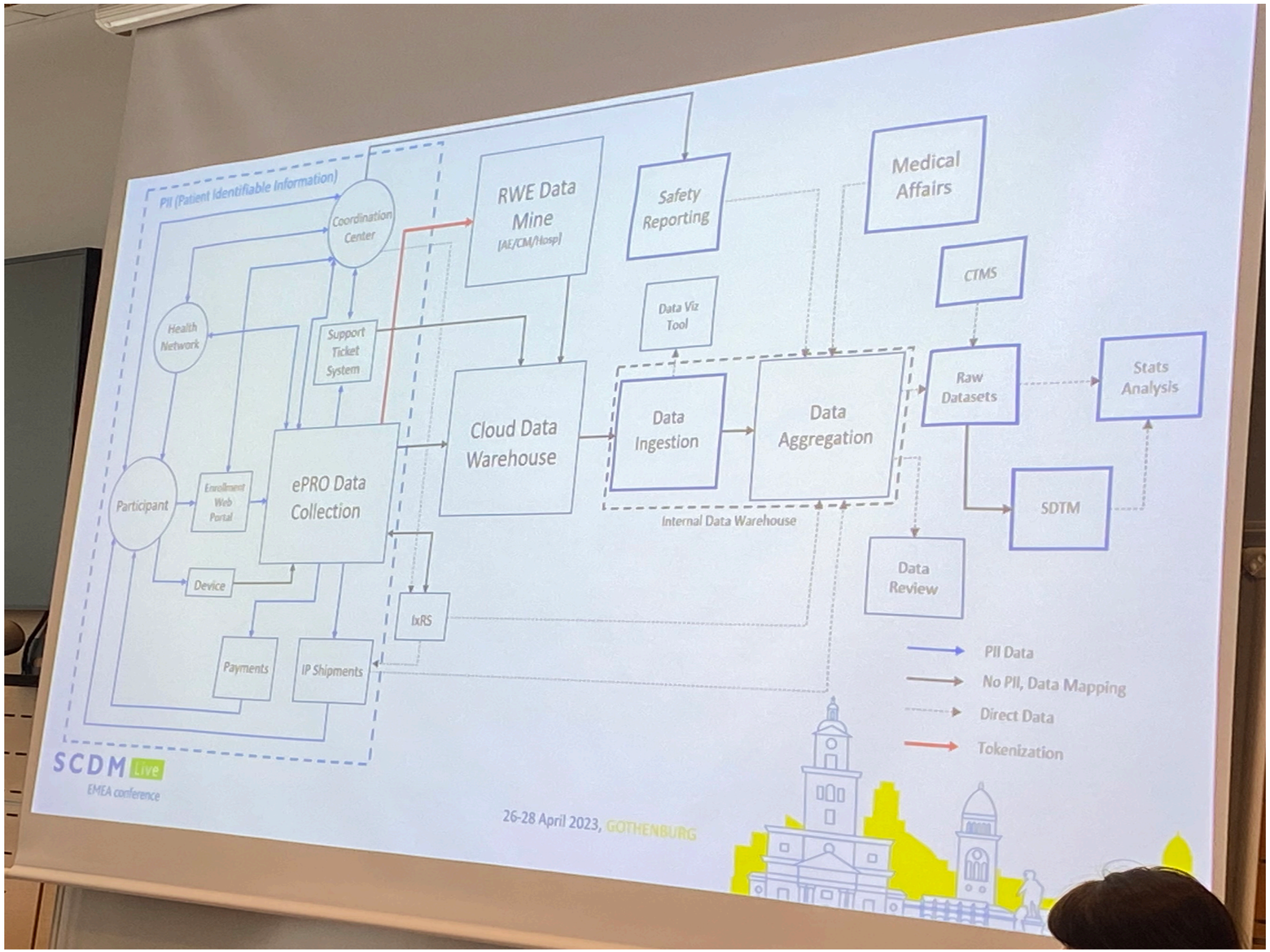
- Approximately 70 percent of potential patients live two+ hours from the nearest trial site – huge loss of potential patients
- Fewer than 5% of eligible patients are estimated to participate in clinical trials.
- *70% of clinical research is conducted at the same 5% of sites**
- *75 % of study participants live 30-60 minutes away from study sites*

https://www.appliedclinicaltrialsonline.com/view/how-clinical-trial-research-sites-can-gain-access-more-level-playing-field

New roles and processes in digital studies

Set up	Vendor oversight	Data oversight	Review and monitoring
- Increased set-up time - Many and some new vendor agreements - Setting up data flows and technology environments - Add tech roles to your study	- More vendors to manage - Combining many processes and technologies - Using eSource will reduce reconciliation	- Dataflow review plan - Transmission oversight, checking for errors - Integrity checks	- Remote monitoring - Compliance checks - Data integrity checks - Data review

A full digital trial is complex



Presented by Manny Vasquez at SCDM April 27, 2023

Understanding cyber threat

"The only system which is truly secure is one which is switched off, unplugged, locked in a titanium lined safe, buried in a concrete bunker, and is surrounded by nerve gas and very highly paid armed guards.
Even then, I wouldn't stake my life on it."

-- Gene Spafford, Director, Computer Operations, Audit, and Security Technology (COAST) Project, Purdue University

"Data Of More Than 200 Million X/Twitter Users Is Leaked"

"Cisco suffers Cyber attack"

"Uber's Internal Systems Compromised By An 18 Year Old"

" Millions of Americans had their sensitive medical and health information stolen after hackers exploited a zero-day vulnerability"

"Data Of 228 Million Deezer Users Stolen"

"Samsung Exposes Personal Information In Recent Data Breach"

Vendor Security

What should the sponsor be looking for from the vendor?

Security

- Geographical redundancy of data centers – both cloud and on premises
- Encryption of data in rest – Viedoc holds the encryption keys
- Encryption of data in transit
- Multifactor authentication – both internally and for our users
- Multiple daily backup and recovery routines
- Role and least privilege-based access
- Logging and traceability on all levels
- Disaster recovery regularly tested
- 365/24/7 external penetration service
- Data Privacy features is inbuilt in our products

Compliance

- ISO27001 Certificate
- CSA STAR Level 1 Attestation
- SOC2 Report
- GDPR, APPI, China PIPL compliance
- HIIPA, 21 FDA part 11 compliance
- ICH-GCP, GAMP5, CDISC compliance
- Other applicable international regulation
- Audit your critical supplliers!

Thank you

viedoc™