

# The Concept of FHIR

A Healthcare Data Standard  
Designed for the Future







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Interoperability  
InterSystems

**UK&I Summit  
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Birmingham, UK**



# Agenda

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## Agenda

- Why HL7® FHIR® was created
- Who is producing the FHIR specification
- How FHIR is being produced
- A conceptual understanding of FHIR
- The new interoperability and FHIR: The future

# Why did we need FHIR?

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## **Crossing the Quality Chasm**

A New Health System for the 21<sup>st</sup> Century

US Institute of Medicine, 2001

# Health Level 7 International (HL7)

ANSI Accredited SDO



- 100s of volunteers from across healthcare
- 40 working groups with elected chairs
- Affiliates in 40 countries including HL7 UK
- 5 day working meetings 3 x each year
- 100+ conference calls each week
- All HL7 standards are open source
- InterSystems Benefactor Member for 20+ years

# HL7 FHIR



FHIR is different ...

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- Modern software development approach
- All machine readable – All human readable
- All published versions + the Current Build downloadable
- Enter a change request on any page of FHIR
- The same people who brought you HL7 V2, V3, CDA & >300 other healthcare data standards
- All FHIR releases downloadable @ HL7.org as machine readable
- Tested in Connectathons

# The FHIR Community



FHIR is supported by a global community ...

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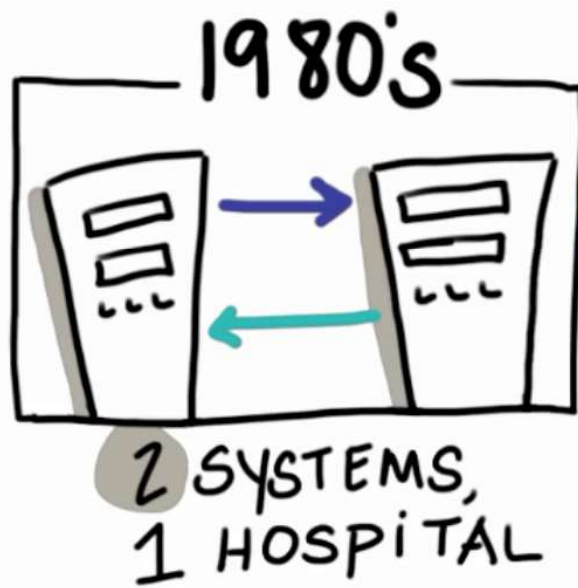
- FHIR is supported by collaborative open source community that extends beyond HL7 organization
- Members of FHIR community span all countries
- 25,000 part of Chat.FHIR.org – 100s of daily messages
- 20+ countries have national FHIR requirements
- Supporting FHIR Implementation Guide creation for national specifications
- Shared at Registry.FHIR.org

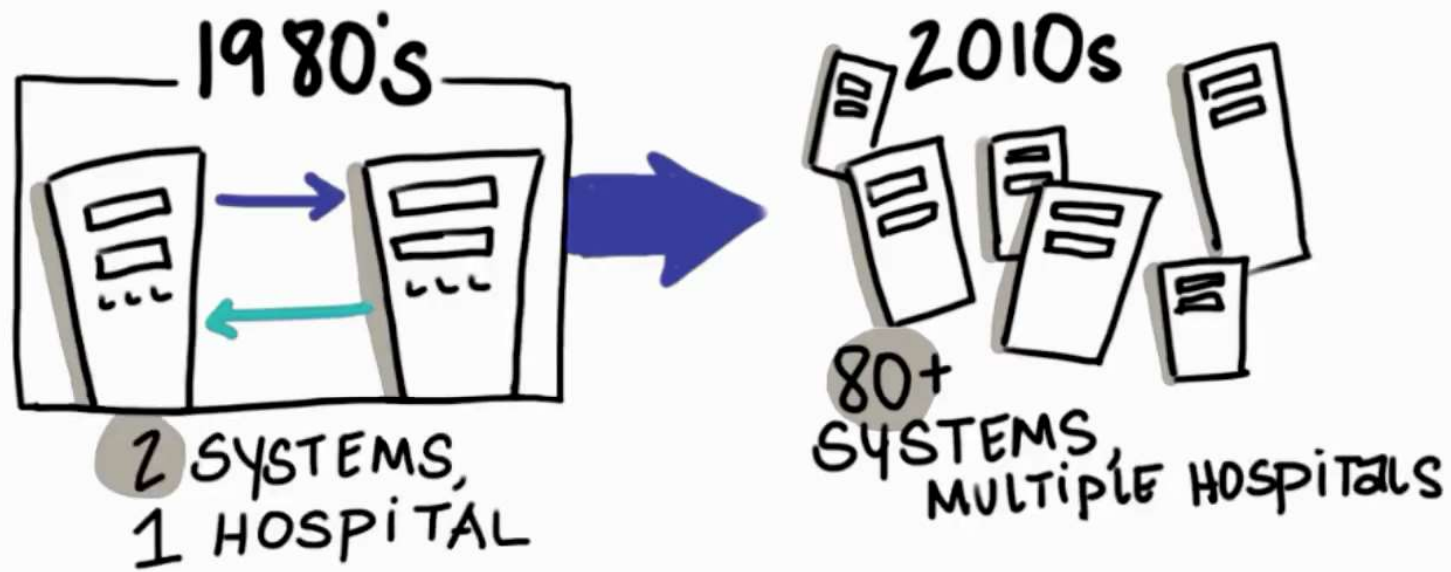


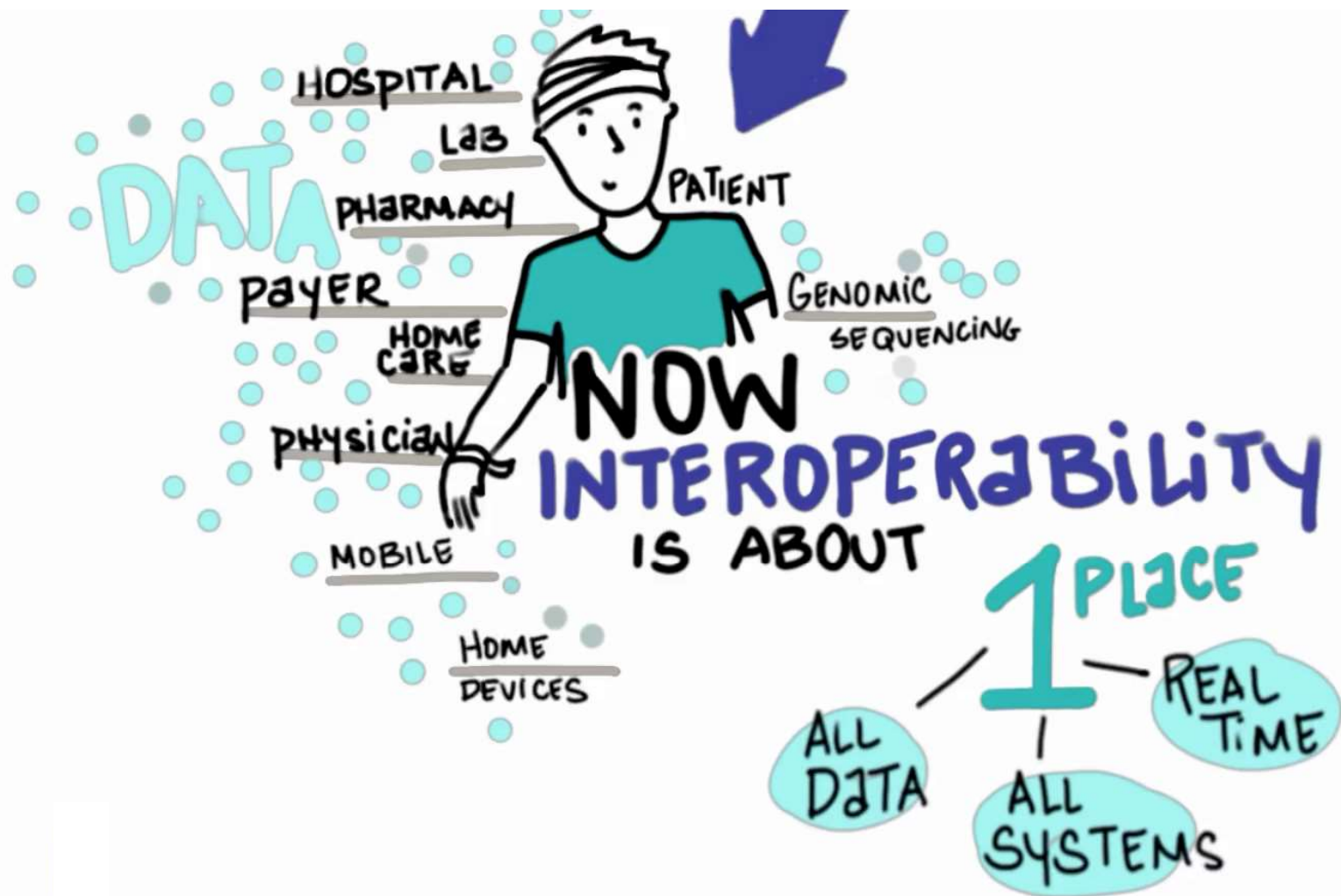
**next ... The Concept of FHIR**



1.





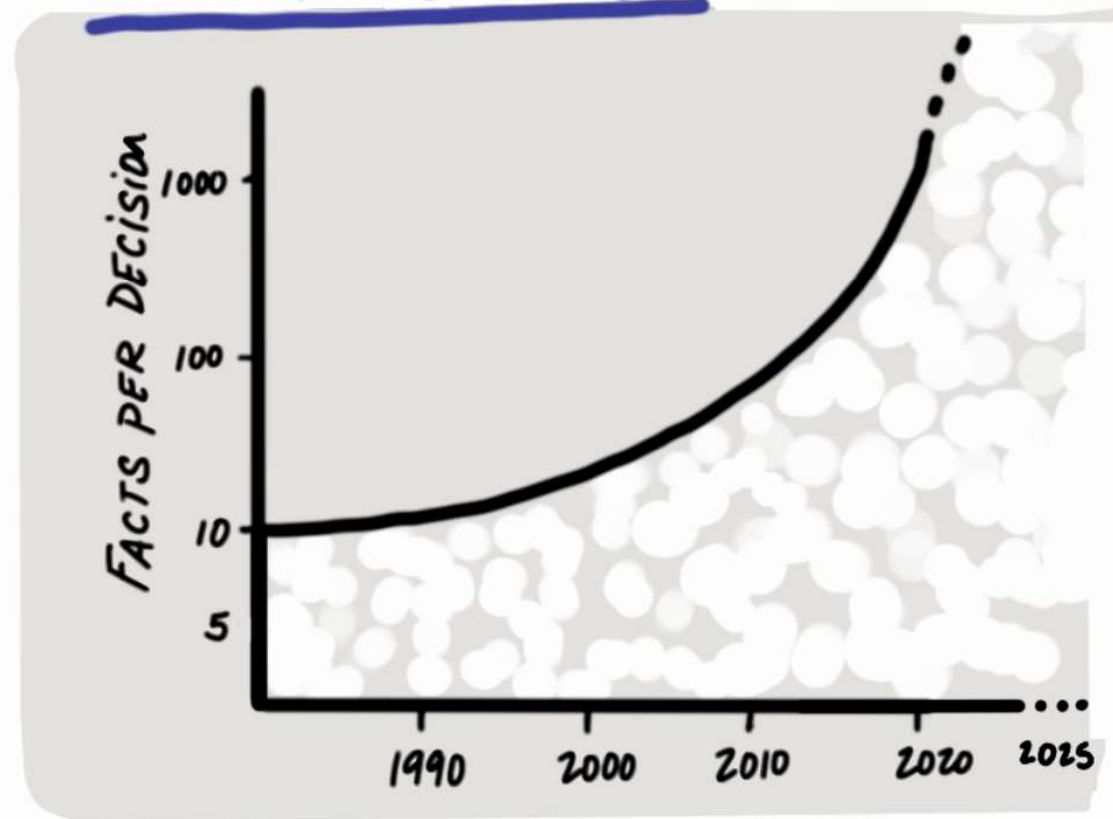


# MORE & MORE DATA!

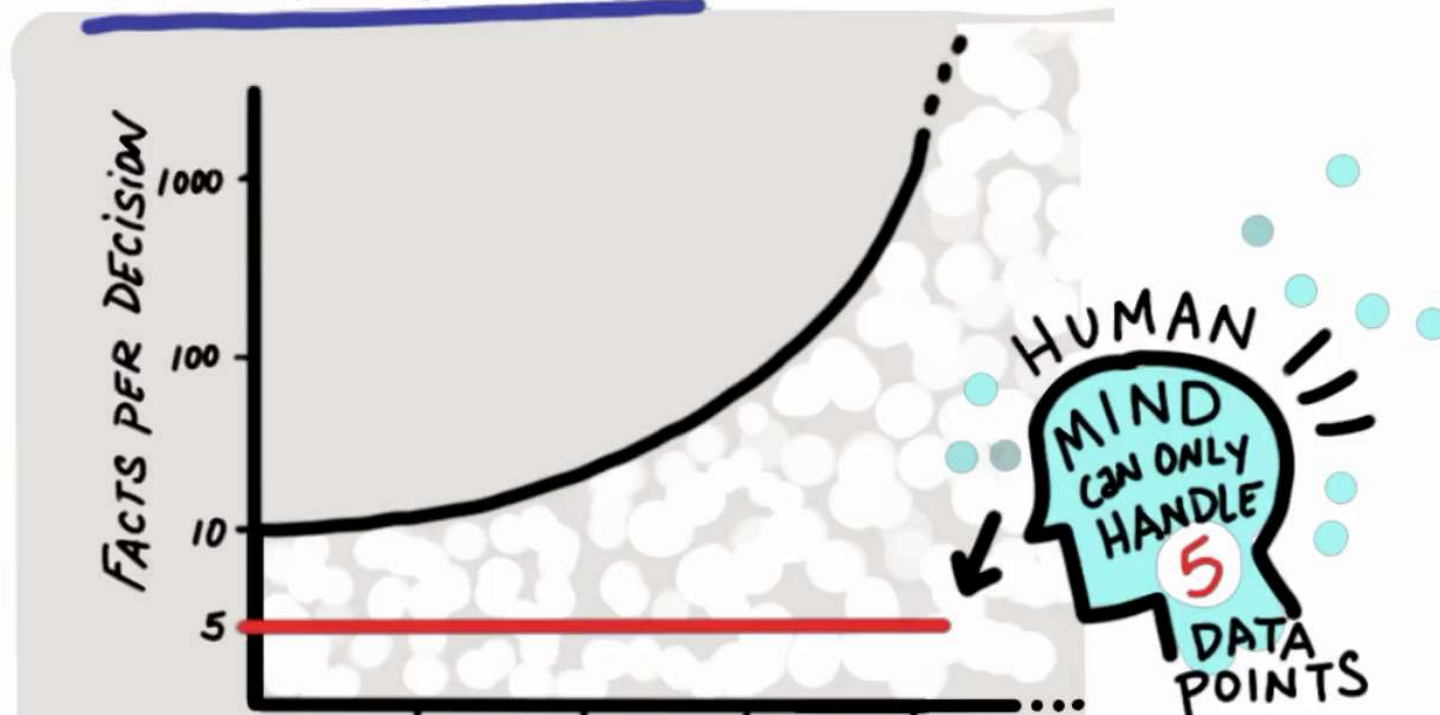
ALL  
DATA

ALL  
SYSTEMS

TIME



# MORE & MORE DATA!



2010s  
80+  
SYSTEMS,  
MULTIPLE HOSPITALS



PATIENT



HOSPITALS

MIX  
OF  
NARRATIVE  
&  
CODES

DATA  
TRANSPARENCY

OFFLINE  
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ONLINE

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RABILITY

1 PLACE

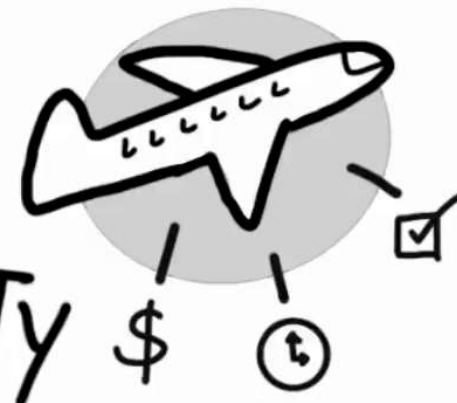
REAL  
TIME

ALL  
SYSTEMS



**F**AST  
**H**EALTHCARE  
**I**NTEROPERABILITY  
**R**ESOURCES

# REPRESENTATIONAL STATE API



F

AST

H

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INTEROPERABILITY

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ESOURCES

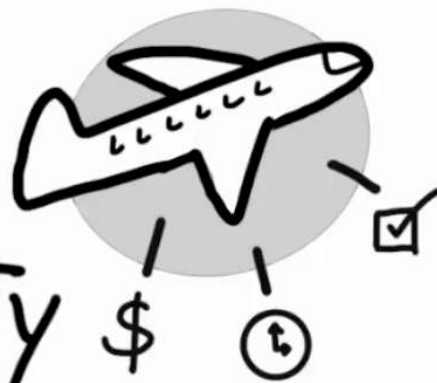
MIX  
OF  
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&  
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TRANSPARENCY

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↕  
ONLINE



**H**HEALTHCARE  
**I**INTEROPERABILITY  
**R**RESOURCES



BOTH:

TECHNOLOGY  
& THE  
AGREEMENT  
ON THE *meaning*  
OF THE DATA.



# RESOURCES

INTERNATIONAL

## API

How systems  
REQUEST &  
RECEIVE DATA





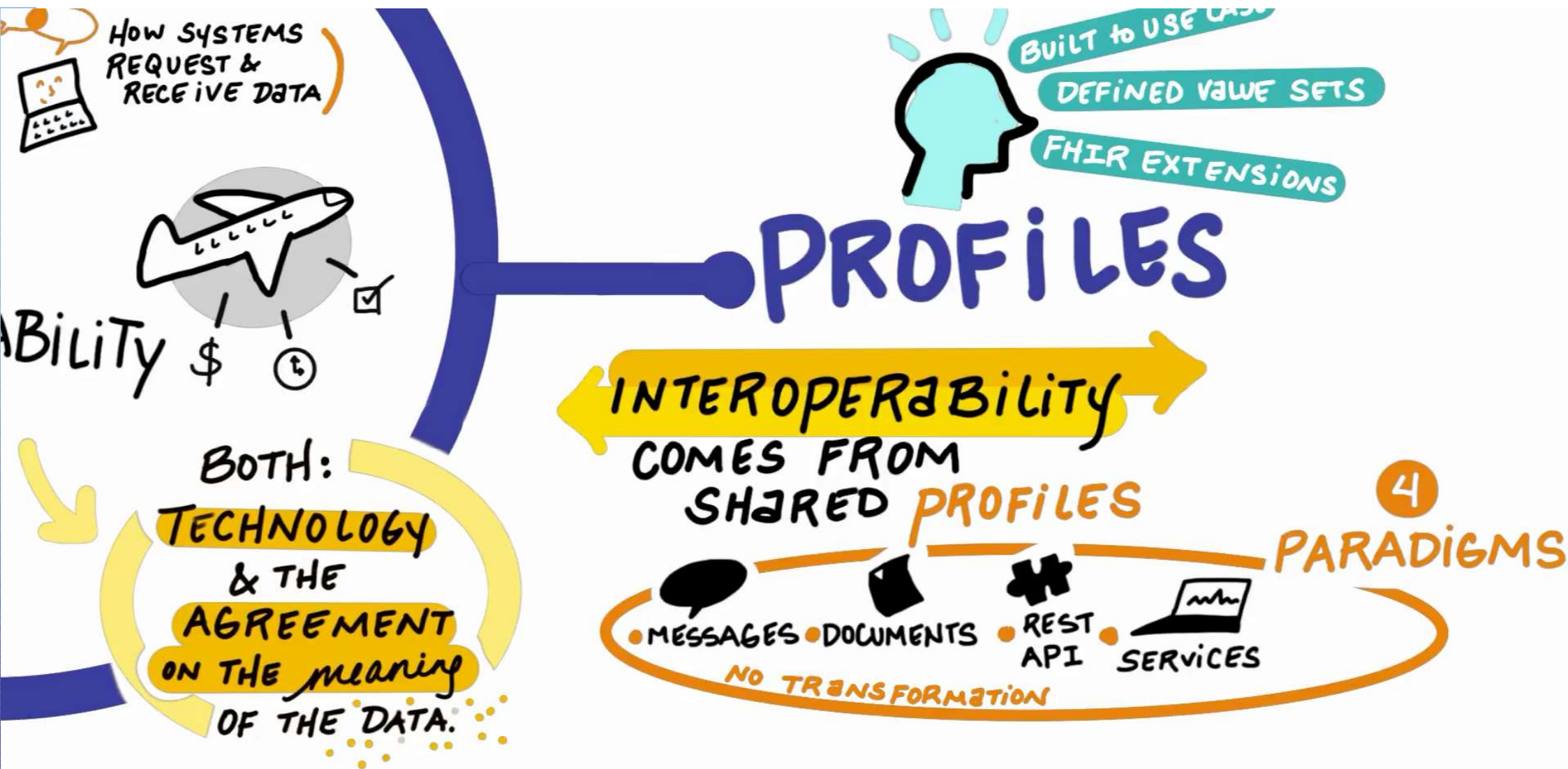
SYSTEMS  
TEST &  
LIVE DATA

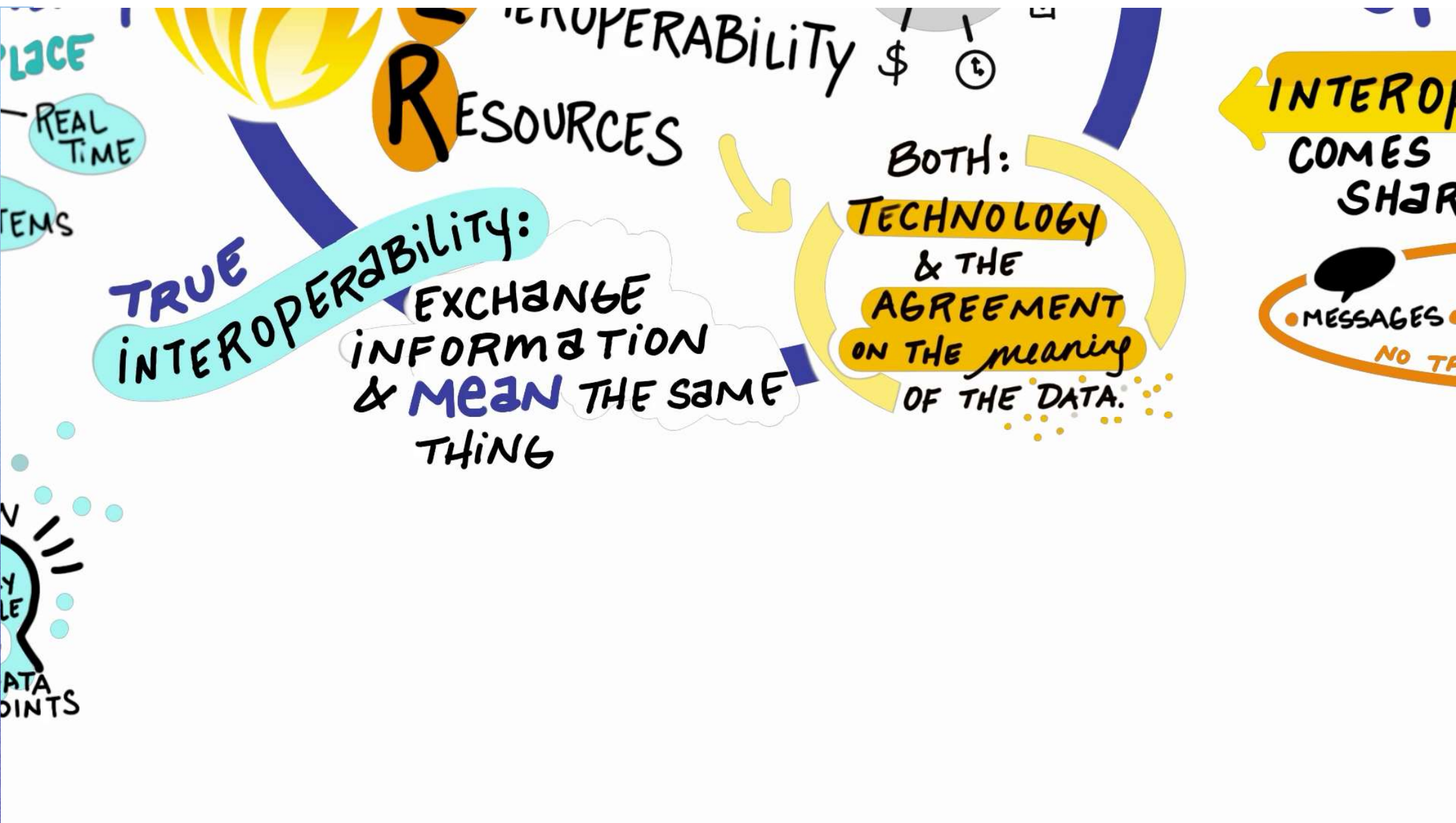


BOTH:  
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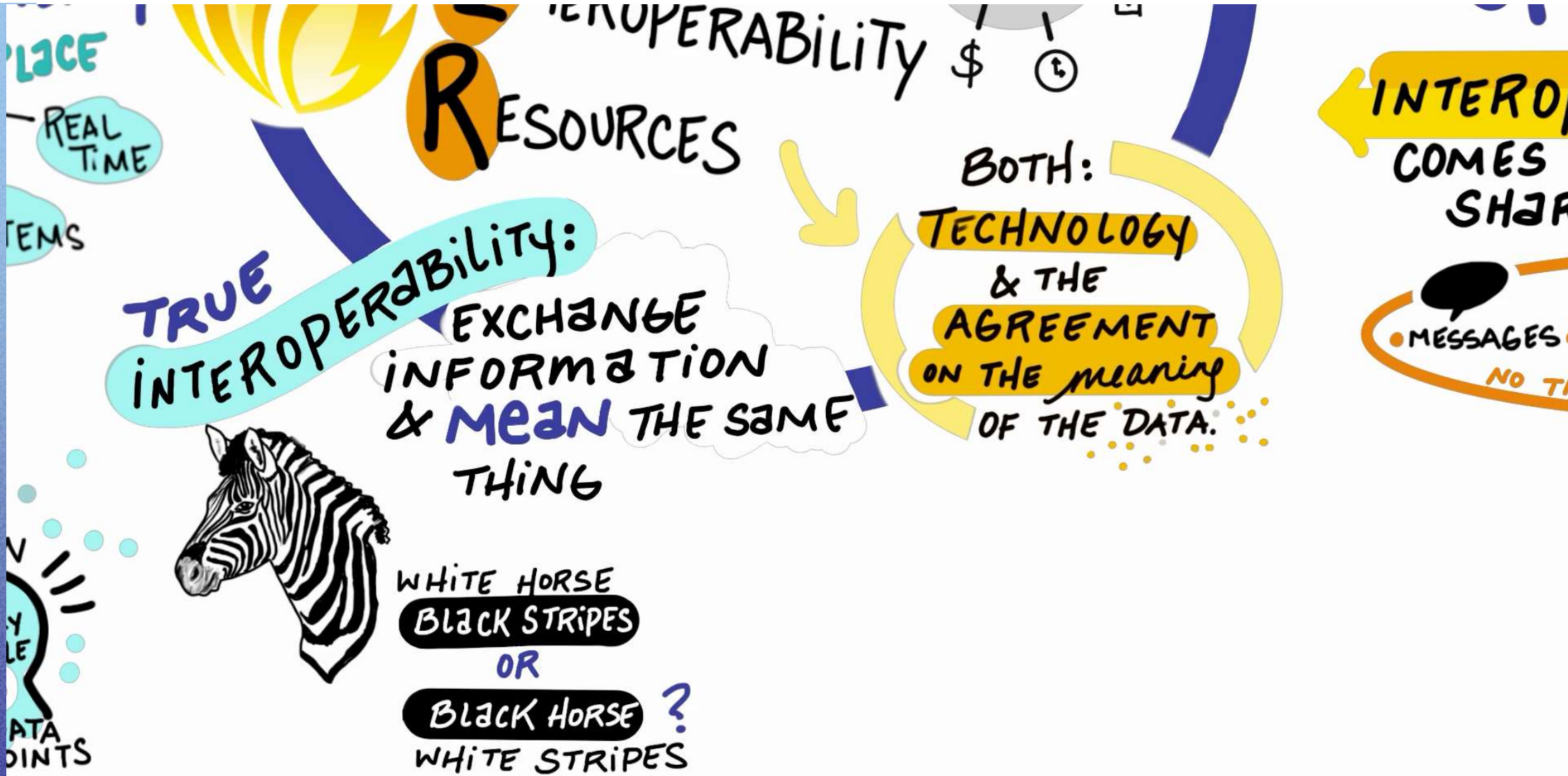


# PROFILES

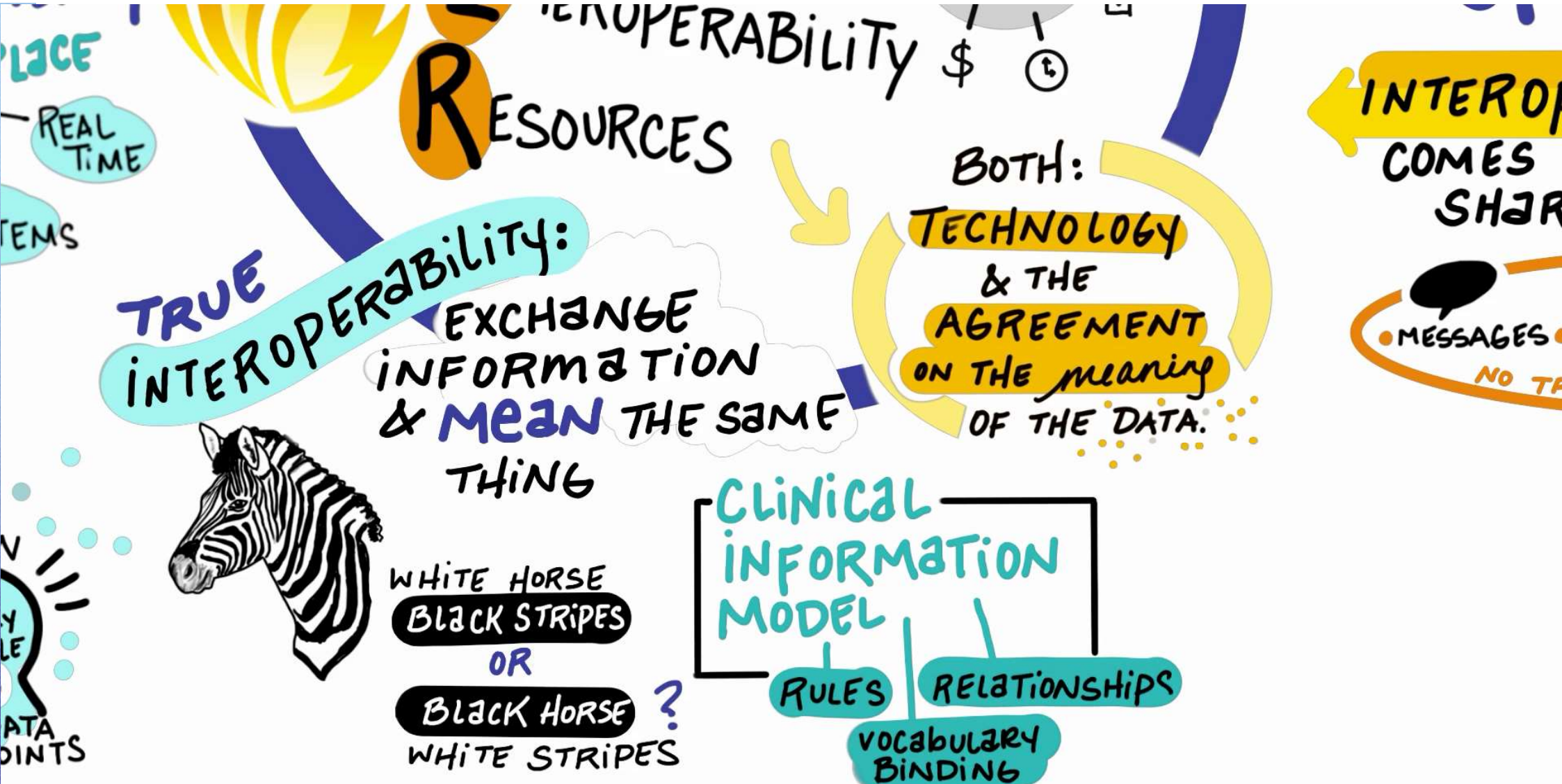












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SAME

BOTH:  
**TECHNOLOGY**  
& THE  
**AGREEMENT**  
ON THE *meaning*  
OF THE DATA.

**CLINICAL  
INFORMATION  
MODEL**

**RULES**

**RELATIONSHIPS**

**VOCABULARY  
BINDING**

**PROFILES**  
TELL US THE  
RELATIONSHIP  
OF **RESOURCES**

**INTEROPERABILITY**

COMES FROM  
SHARED **PROFILES**

④  
**PARADIGM**

• MESSAGES • DOCUMENTS • REST API • SERVICES  
*NO TRANSFORMATION*



ABILITY \$ ⌚

BOTH:

TECHNOLOGY  
& THE  
AGREEMENT  
ON THE MEANING  
OF THE DATA.

INTEROPERABILITY

COMES FROM  
SHARED PROFILES

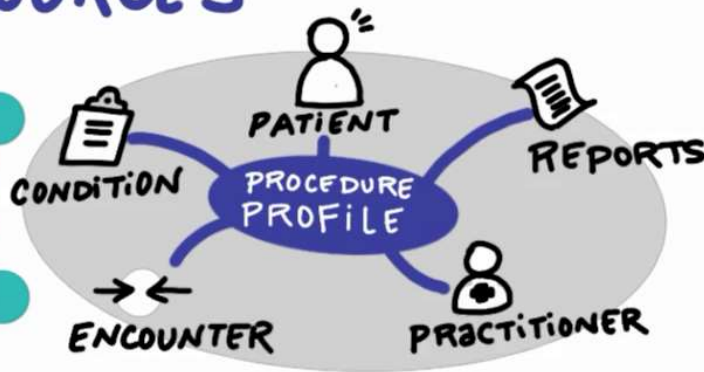
4 PARADIGMS

MESSAGES • DOCUMENTS • REST API • SERVICES  
NO TRANSFORMATION

CLINICAL  
INFORMATION  
MODEL

RULES | RELATIONSHIPS  
VOCABULARY  
BINDING

PROFILES  
TELL US THE  
RELATIONSHIP  
OF RESOURCES



PROFILES

INTEROPERABILITY

Hand-drawn diagram showing 'PROFILES' and 'INTEROPERABILITY' with arrows pointing towards each other. The word 'INTEROPERABILITY' is written inside a yellow double-headed arrow.

INTEROPERABILITY  
COMES FROM  
SHARED PROFILES

4

BOTH:  
TECHNOLOGY  
& THE  
AGREEMENT  
ON THE *meaning*  
OF THE DATA.

MESSAGES • DOCUMENTS • REST API • SERVICES

NO TRANSFORMATION

PROFILES  
(TELL US THE  
RELATIONSHIP  
OF RESOURCES)

# TERMINOLOGY

## BINDING

**CODES FROM CODE SYSTEMS**

## VALUE SETS



**FHIR  
TERMINOLOGY  
SERVER**

**PATIENT**

## PROCEDURE PROFILE

## REPORTS

## CONDITION

## RELATIONSHIPS

## VOCABULARY BINDING

ical —  
FORMATION  
DEL. 1

## RULES



# RESOURCES

ATIONAL

## API

How SYSTEMS  
REQUEST &  
RECEIVE DATA



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BOTH:

TECHNOLOGY  
& THE



BUILT to USE CASE

DEFINED VALUE SETS

FHIR EXTENSIONS

# PROFILES

EXTENSIONS:  
THE  
"20%"

- EXTEND  
AN EXISTING  
RESOURCE

INTEROPERABILITY

COMES FROM  
SHARED PROFILES

4

PARADIGMS



# RESOURCES



- Published to URL
- Machine Readable



BUILT to USE CASE

DEFINED VALUE SETS

FHIR EXTENSIONS

# PROFILES

EXTENSIONS:  
THE "10%"

ATIONAL  
API

How SYSTEMS  
REQUEST &  
RECEIVE DATA



# InterSystems on FHIR

**a commitment to be on the leading edge.**

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## **One FHIR stack**

All InterSystems products leverage our advanced FHIR stack

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## **Scalability**

Massively scalable horizontally and vertically on InterSystems IRIS DP

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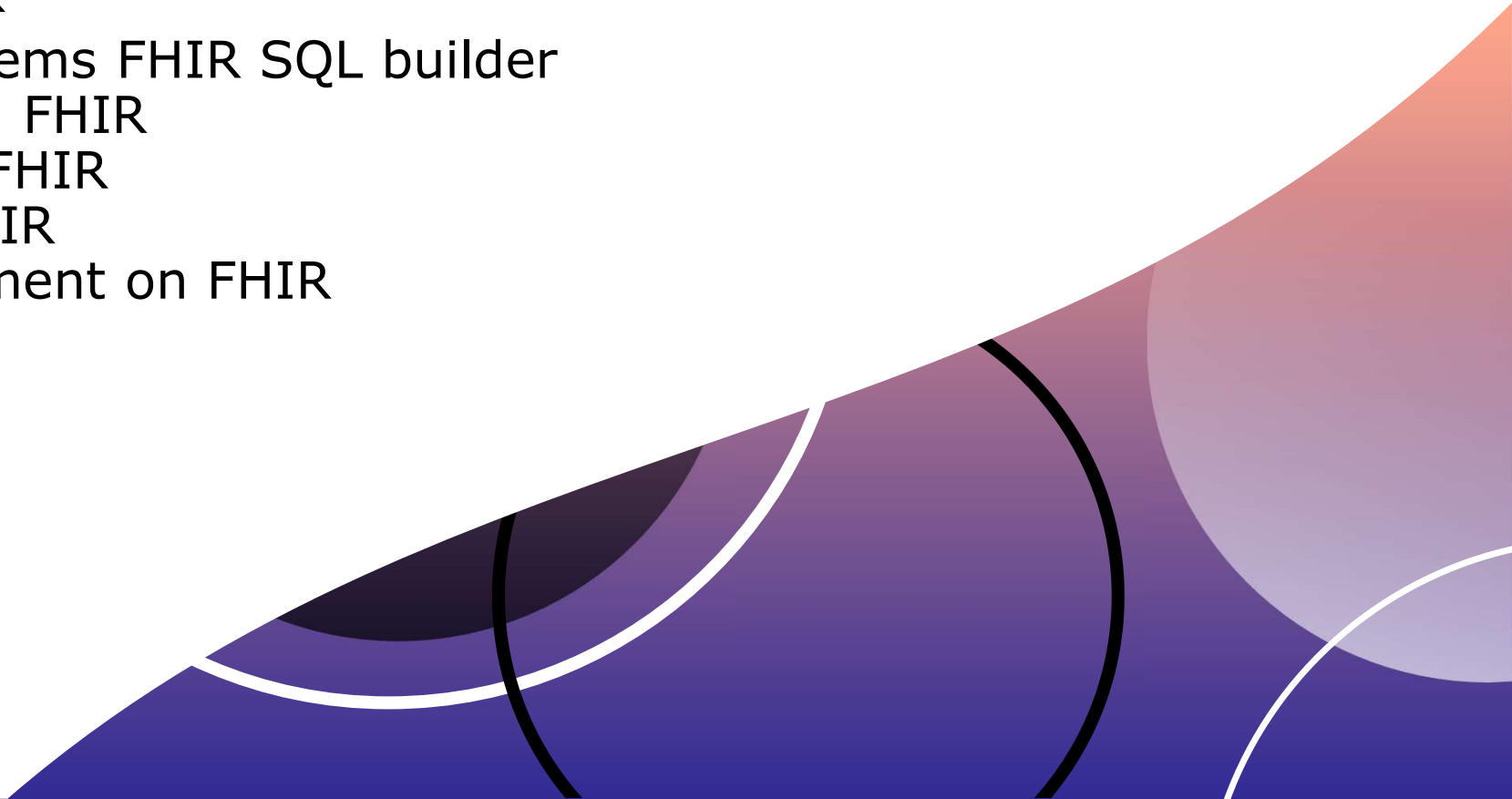
## **Hybrid interoperability**

From a multimodal data platform to transformation between standards formats

# What's next with FHIR ...

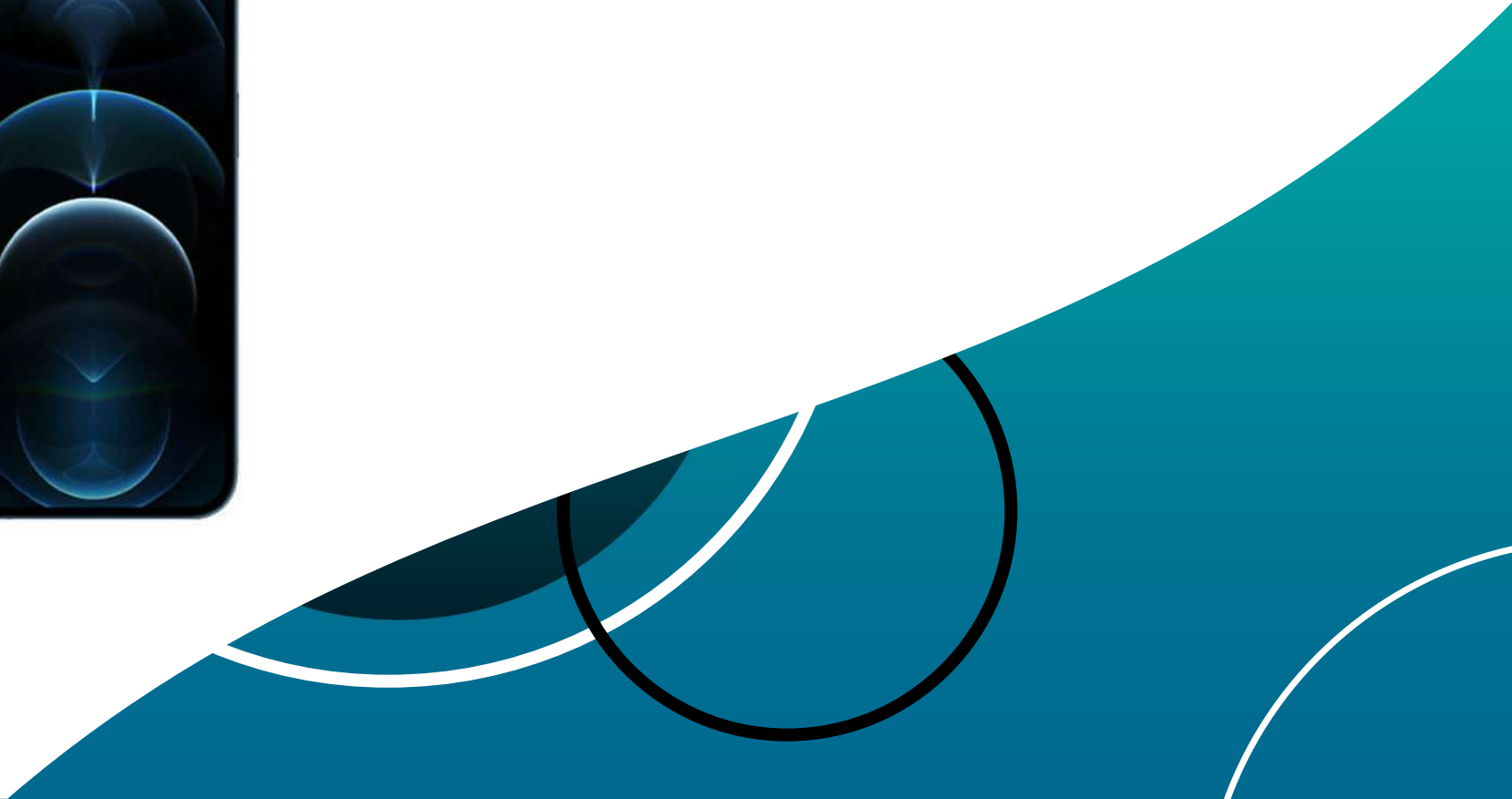


- analytics on FHIR
  - bulk FHIR
  - InterSystems FHIR SQL builder
- life science on FHIR
- genomics on FHIR
- devices on FHIR
- care management on FHIR





# Why wasn't the iPhone 14 released in 2007?



# Thank you