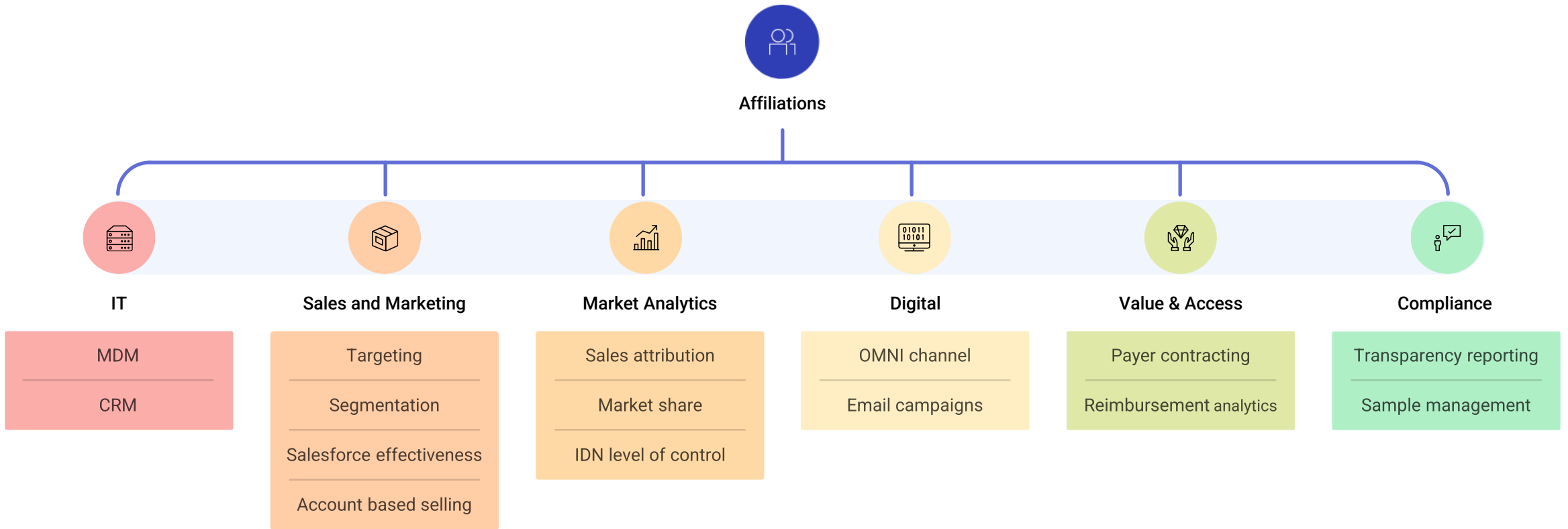# Provider affiliations using graph networks: A new approach to an old problem

13th April 2022

# Agenda

- **Importance of provider affiliations**

- Challenges with computing/maintaining provider affiliations

- Why graph networks?

- Using graph networks for superior provider affiliations

- Impact/benefits of the new approach

# Why are provider affiliations important?

**Affiliations**

**IT**
- MDM
- CRM

**Sales and Marketing**
- Targeting
- Segmentation
- Salesforce effectiveness
- Account based selling

**Market Analytics**
- Sales attribution
- Market share
- IDN level of control

**Digital**
- OMNI channel
- Email campaigns

**Value & Access**
- Payer contracting
- Reimbursement analytics

**Compliance**
- Transparency reporting
- Sample management

Affiliations are used across business units of life sciences and MedTech companies for a variety of use cases

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# Agenda

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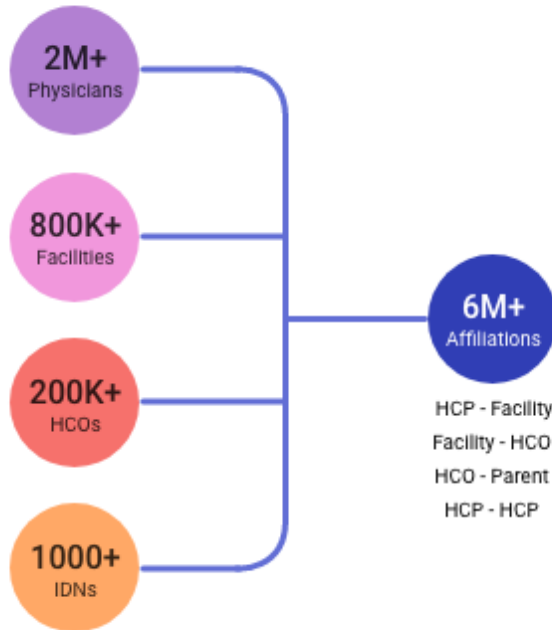
- Impact/benefits of the new approach

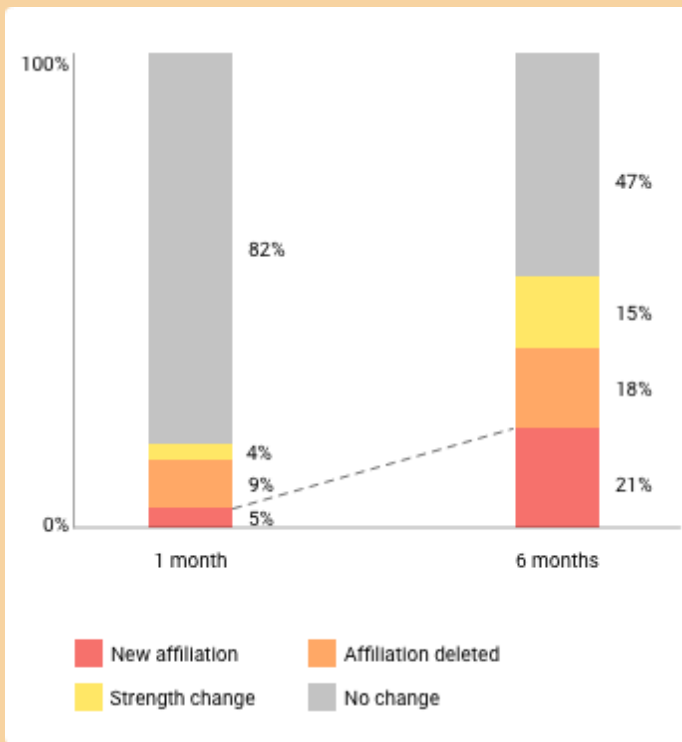# Why is provider affiliations a hard problem to get right?

## Scale is big

There are over 6M+ affiliation linkages and at such scale it is difficult to maintain the latest, accurate information relying on traditional manual approach
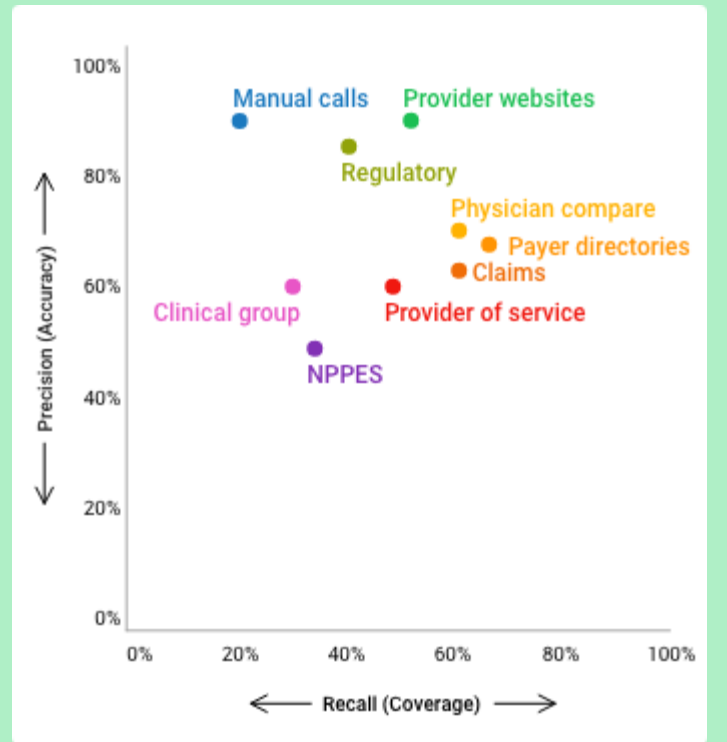


## Affiliations change frequently

Affiliations change frequently on a real time basis as HCPs change their employer, constant M&As, etc.



## No single source of truth

Various sources provide the linkage between HCPs, facilities and parents but each of them comes with a different challenge in terms of coverage or accuracy

# How do you overcome these challenges?

**Scale is big**

**Affiliations change frequently**

**No single source of truth**

**Automation**
Technology-driven automated approach for avoiding any manual effort

**Self-refreshing**
Affiliations should be refreshed on a periodic-basis, ideally whenever there is change in data

**Triangulation**
Not relying on any one source, but combining data from multiple sources to overcome biases and coverage gaps

**Graph**
Several million relationship data points stored and used for computation as and when they change using self-evolving graph algorithms

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# Why are graph networks the ideal solution for computing affiliations?
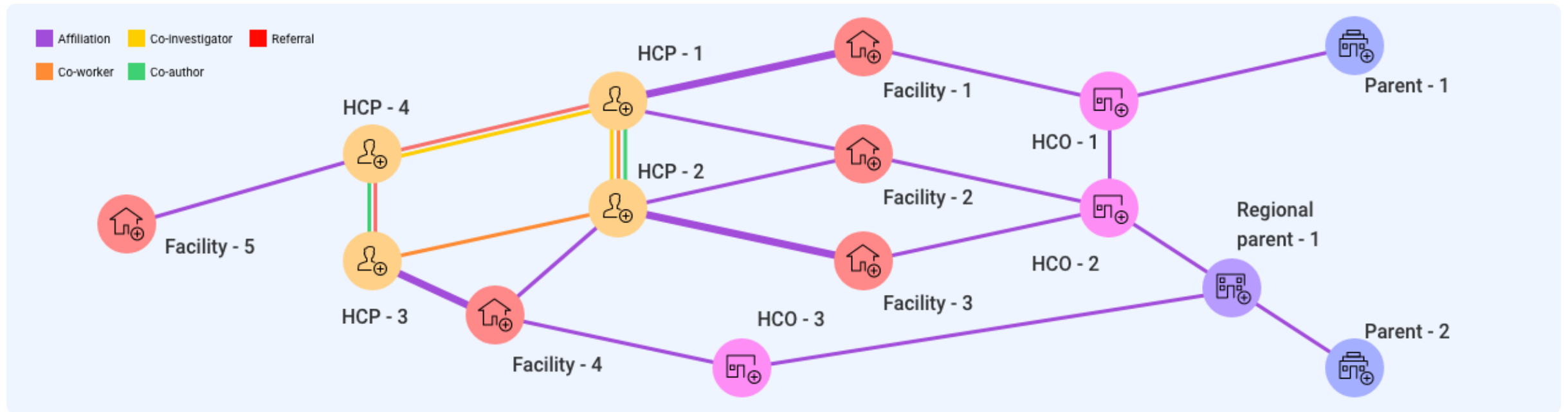
### It's all about relationships
Provider affiliations are all about traversing the path from HCPs – Facility – HCO – Regional parent – Parent

### Hierarchy matters
Health systems have complex organizational structures and capturing the hierarchy of Facility – HCO – Regional parent – Parent is critical

### Strength of relationship is important
It's not enough to capture a link or relative rank (primary, secondary) and a quantitative scoring indicating the strength of a link can unlock and improve accuracy of use cases
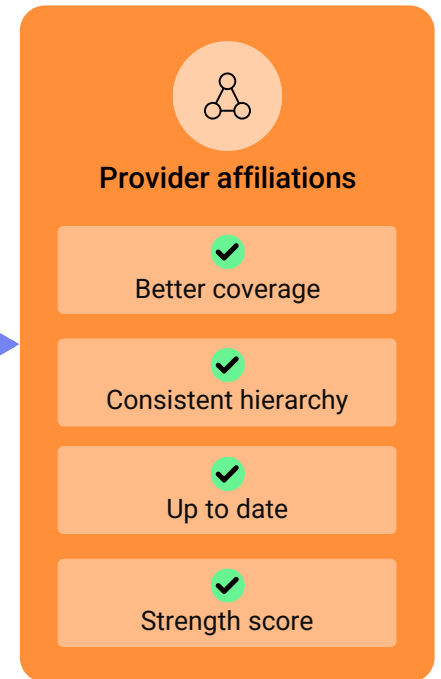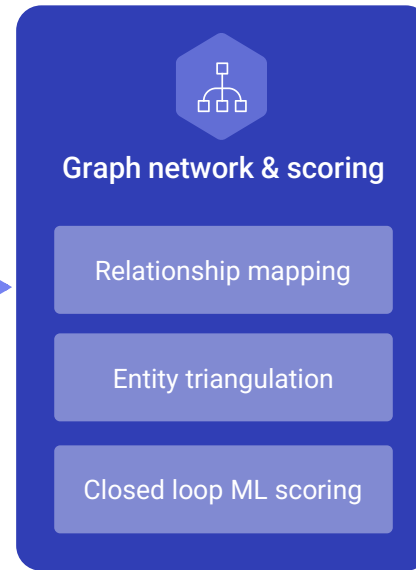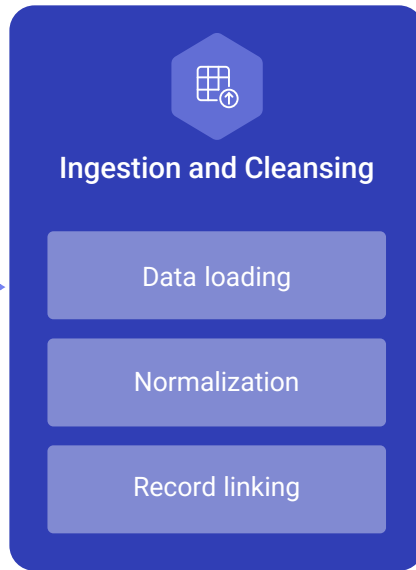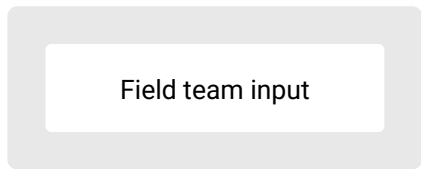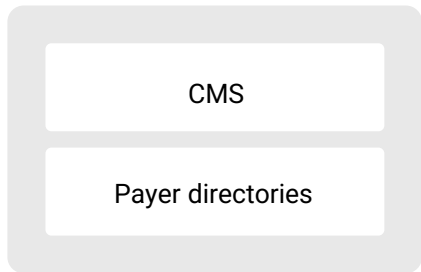
# Agenda

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# Architecture of an ideal affiliation engine

**Proprietary data**

- Medical & pharmacy claims
- Sales data

**Public data:**

- CMS
- Payer directories
- Field team input

## Ingestion and Cleansing

- Data loading
- Normalization
- Record linking

## Graph network & scoring

- Relationship mapping
- Entity triangulation
- Closed loop ML scoring

## Provider affiliations

- ✓ Better coverage
- ✓ Consistent hierarchy
- ✓ Up to date
- ✓ Strength score

# Making graphs accessible
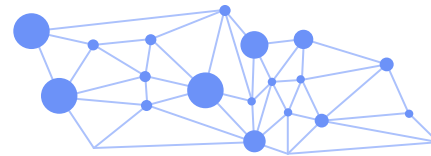
### Granular but messy
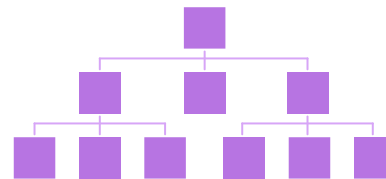Individual relationships with frequent updates. But Messy and inaccessible. But most granular data
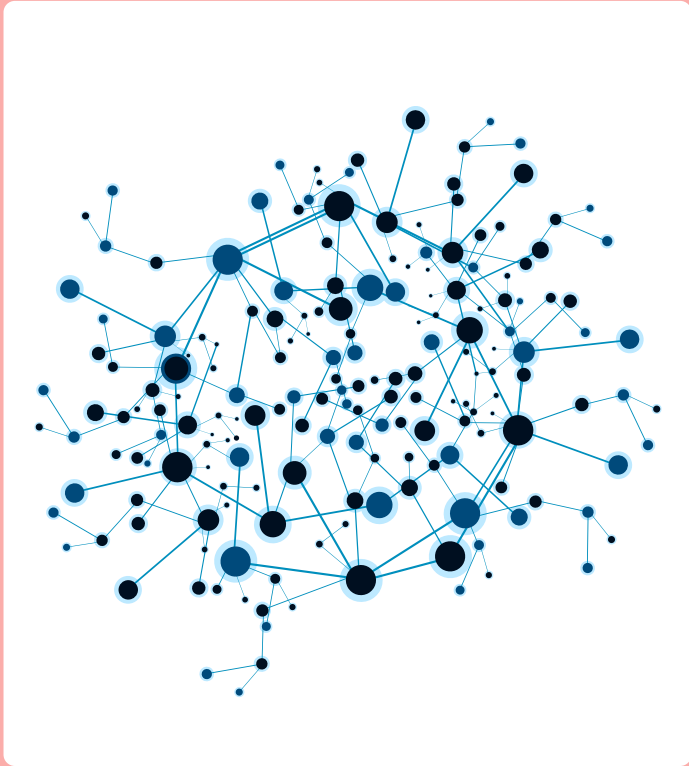
### Categorized yet inaccessible
Demarcated and categorized yet inaccessible to the common end user
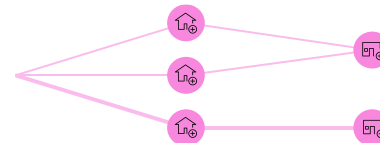
**HCP networks with influence**

**IDN Hierarchies**

**Affiliation score use-cases**

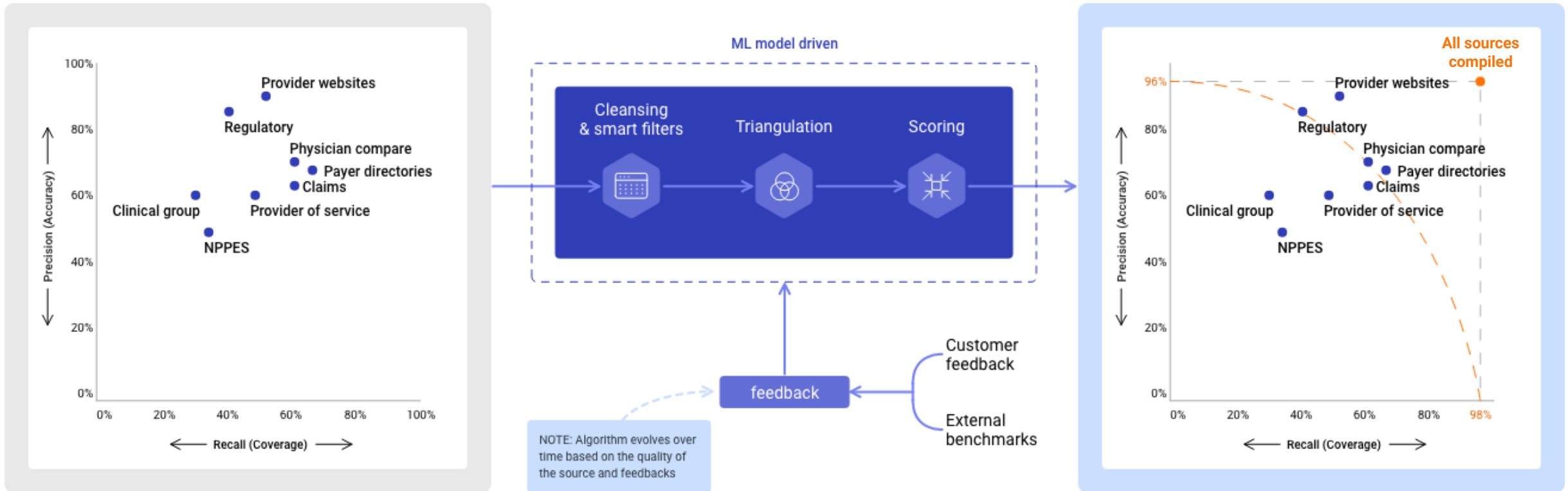### Simple and consumable
Relational table layouts which are highly accessible and readily consumable
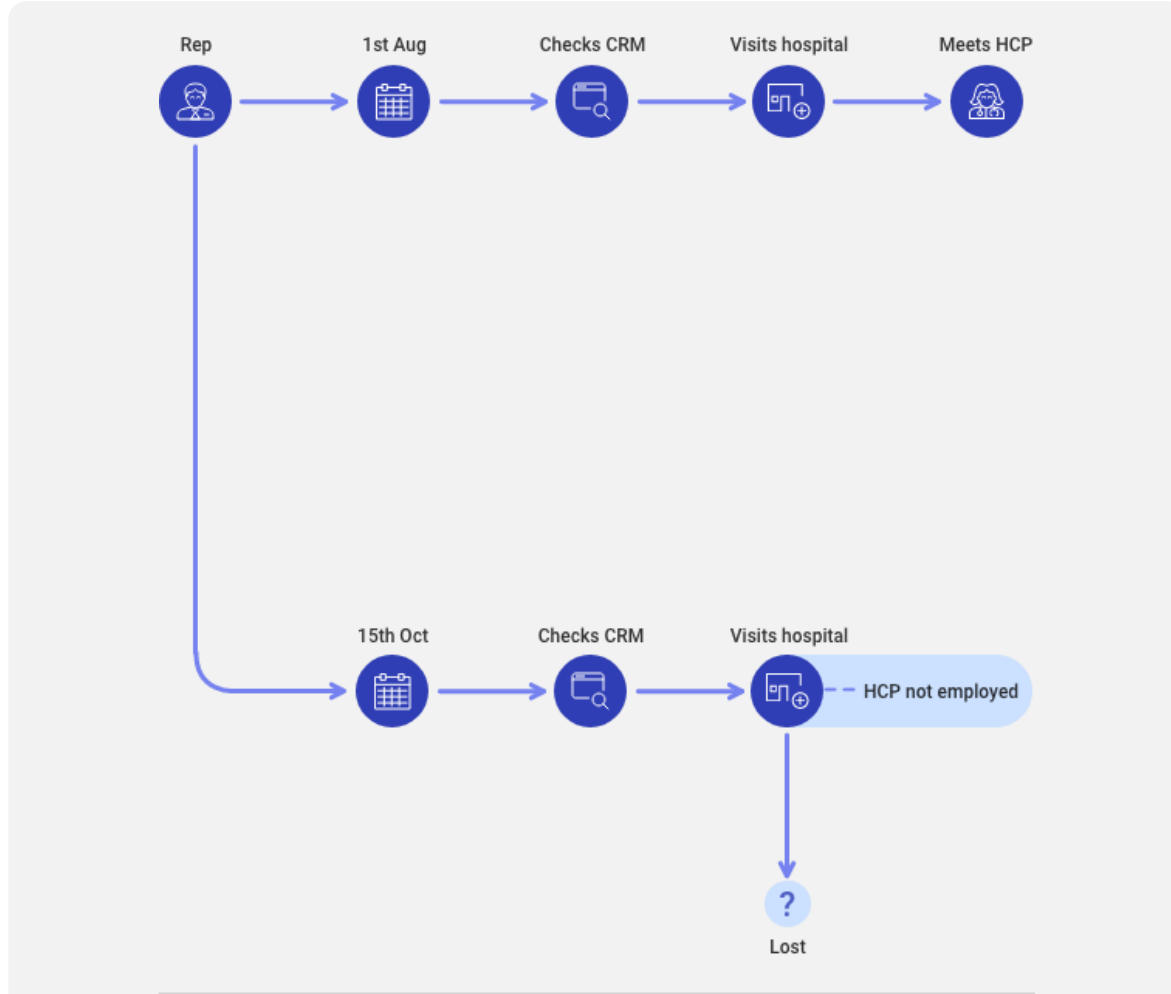
# Self learning scoring algorithms

# Agenda

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- **Impact/benefits of the new approach**

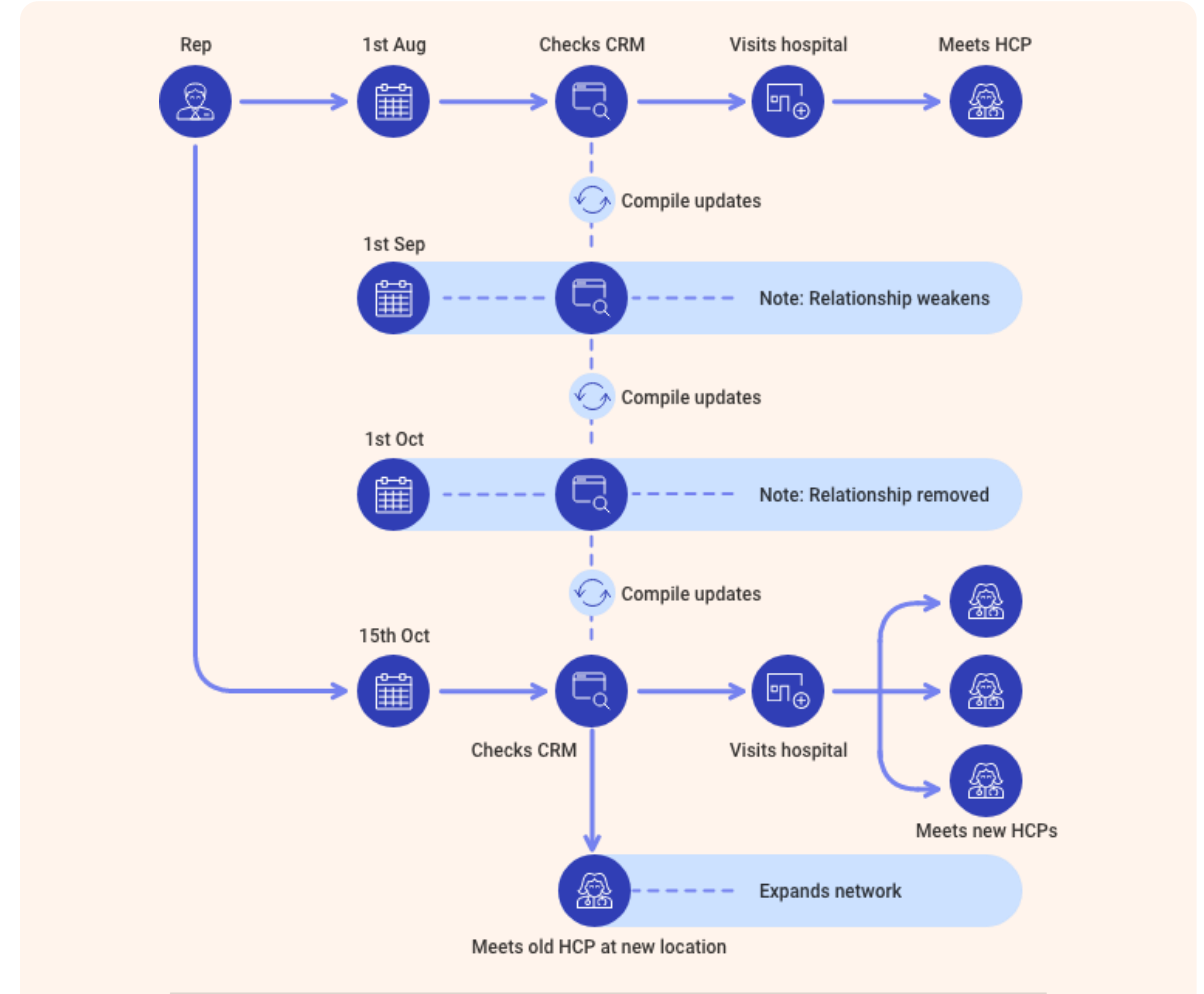# Improved sales force effectiveness driven by timely affiliation updates

**Before**



In case of HCP's affiliation change the CRM does not show the updated information and the rep has to raise a DCR request to get it
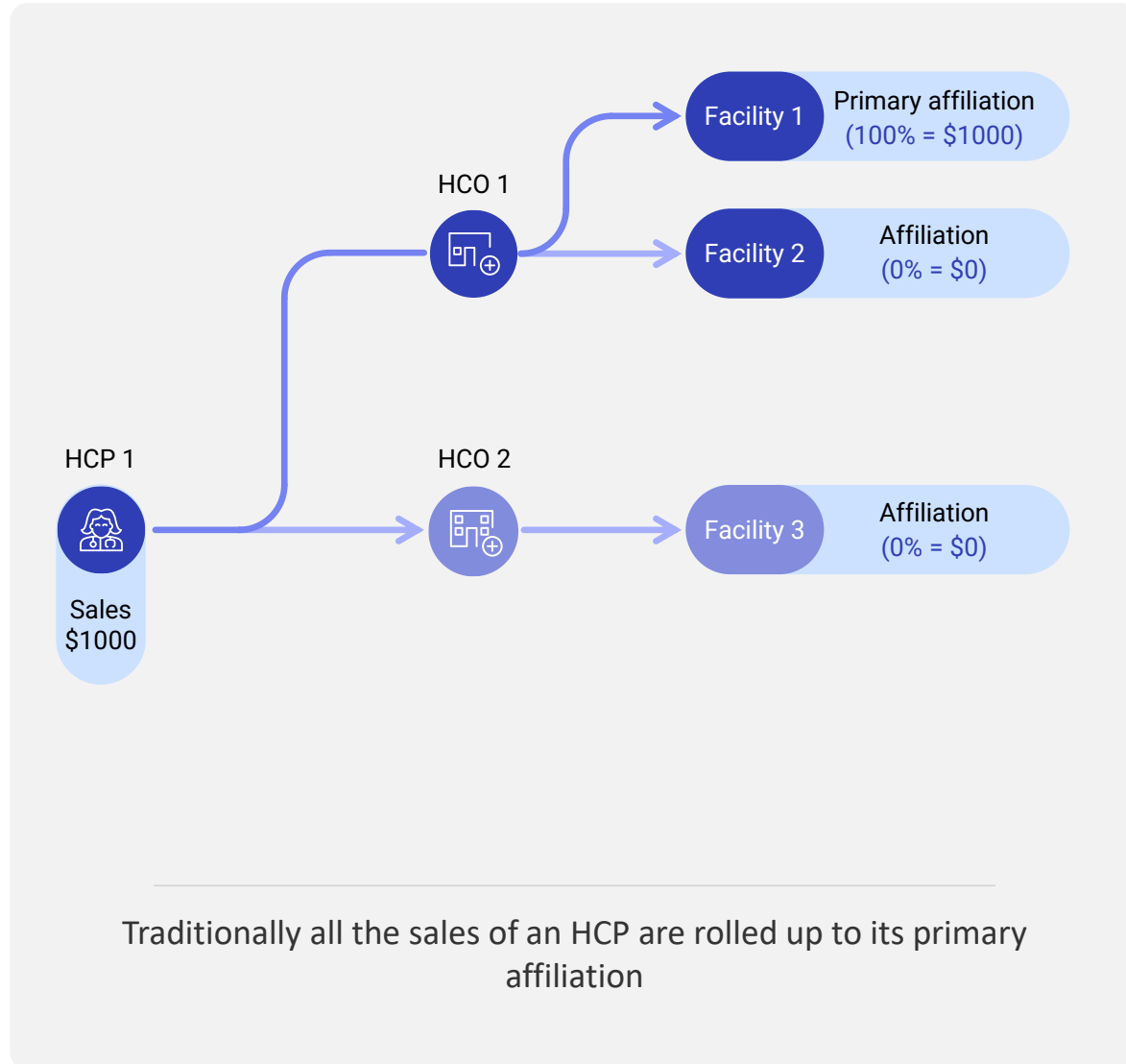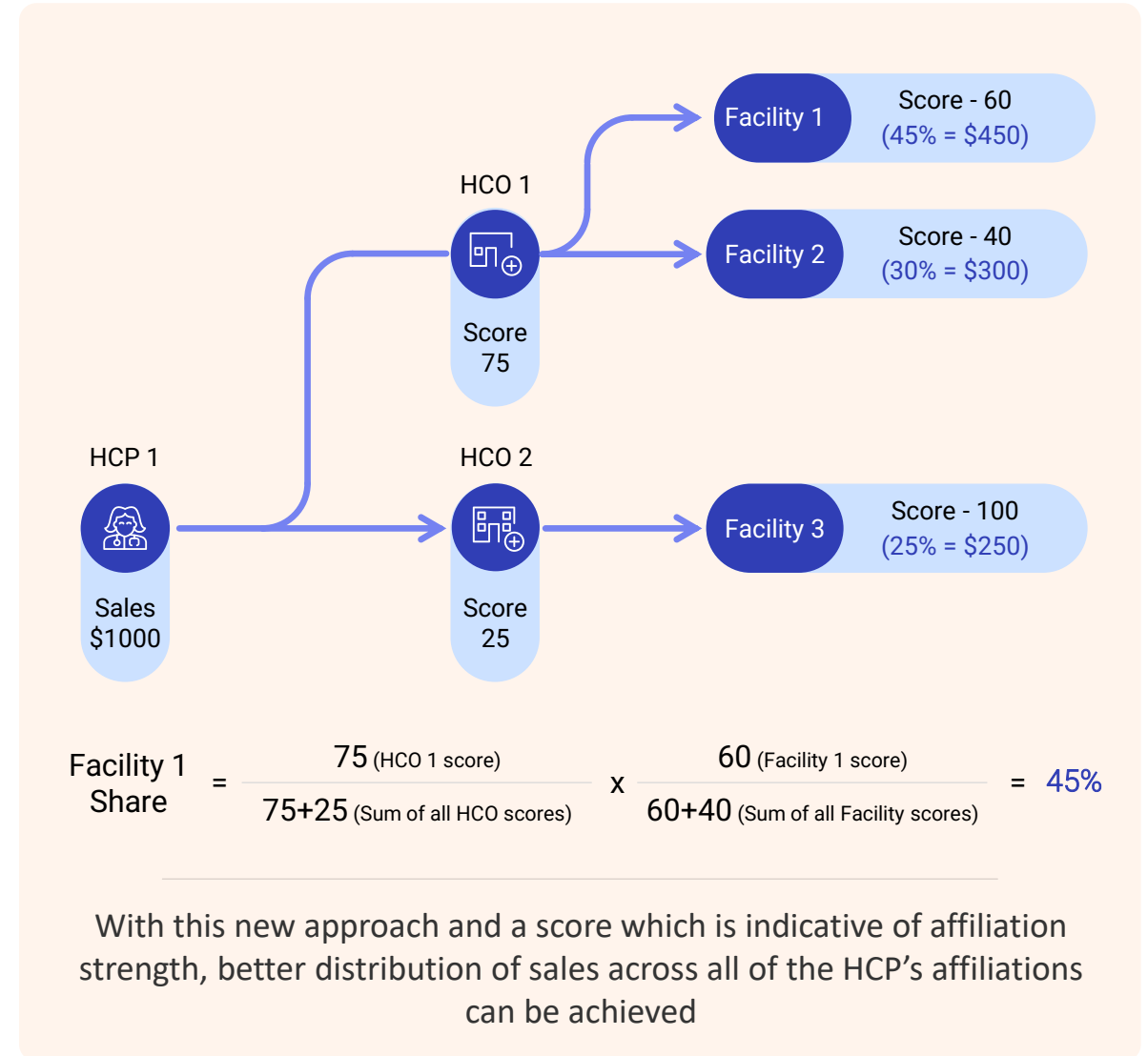
**After**



With the new approach the rep has the latest information on the HCP's affiliations and the strength along the network of similar HCPs handy

# Accurate sales attribution by leveraging the strength score

**Before**



HCP 1

Sales $1000

HCO 1

HCO 2

Facility 1 — Primary affiliation (100% = $1000)

Facility 2 — Affiliation (0% = $0)

Facility 3 — Affiliation (0% = $0)

Traditionally all the sales of an HCP are rolled up to its primary affiliation

**After**



HCP 1

Sales $1000

HCO 1 — Score 75

HCO 2 — Score 25

Facility 1 — Score - 60 (45% = $450)

Facility 2 — Score - 40 (30% = $300)

Facility 3 — Score - 100 (25% = $250)

$$\text{Facility 1 Share} = \frac{75 \text{ (HCO 1 score)}}{75+25 \text{ (Sum of all HCO scores)}} \times \frac{60 \text{ (Facility 1 score)}}{60+40 \text{ (Sum of all Facility scores)}} = 45\%$$

With this new approach and a score which is indicative of affiliation strength, better distribution of sales across all of the HCP's affiliations can be achieved

# Q&A

To be updated later

# Thank You!