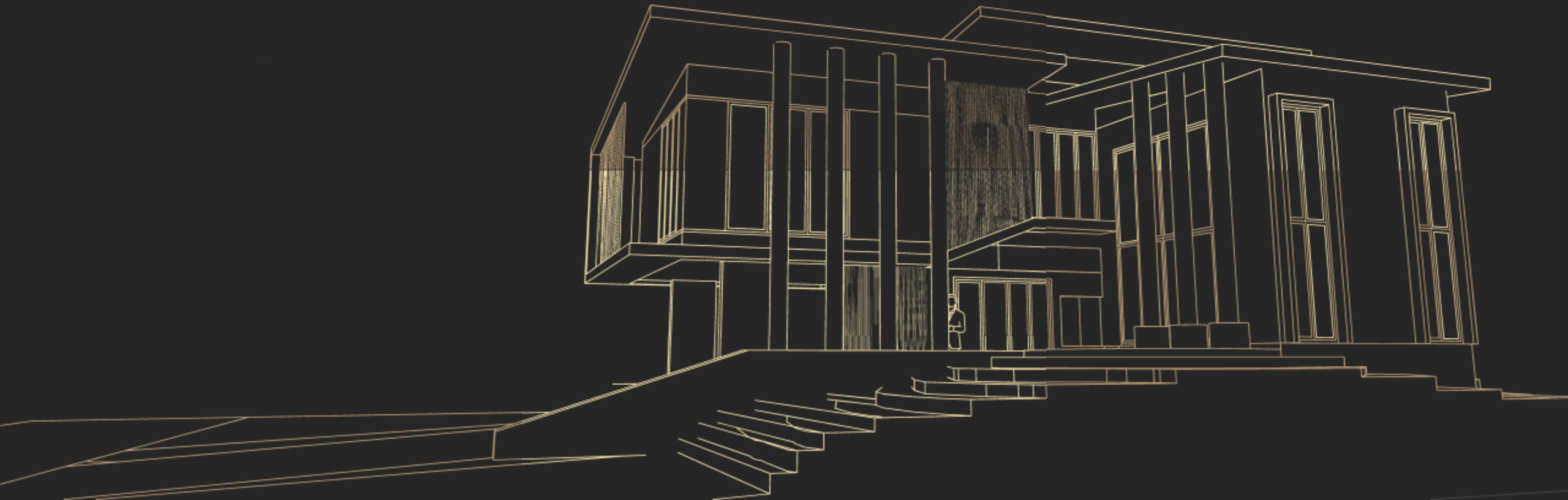


# Home Pricing Estimation

Reducing Asymmetric Information in  
the **Dutch** Real Estate Market

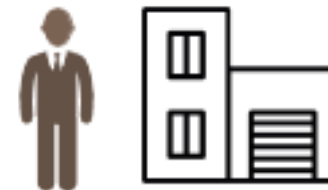


# The Selling Process

**Depency** on Real Estate Brokers

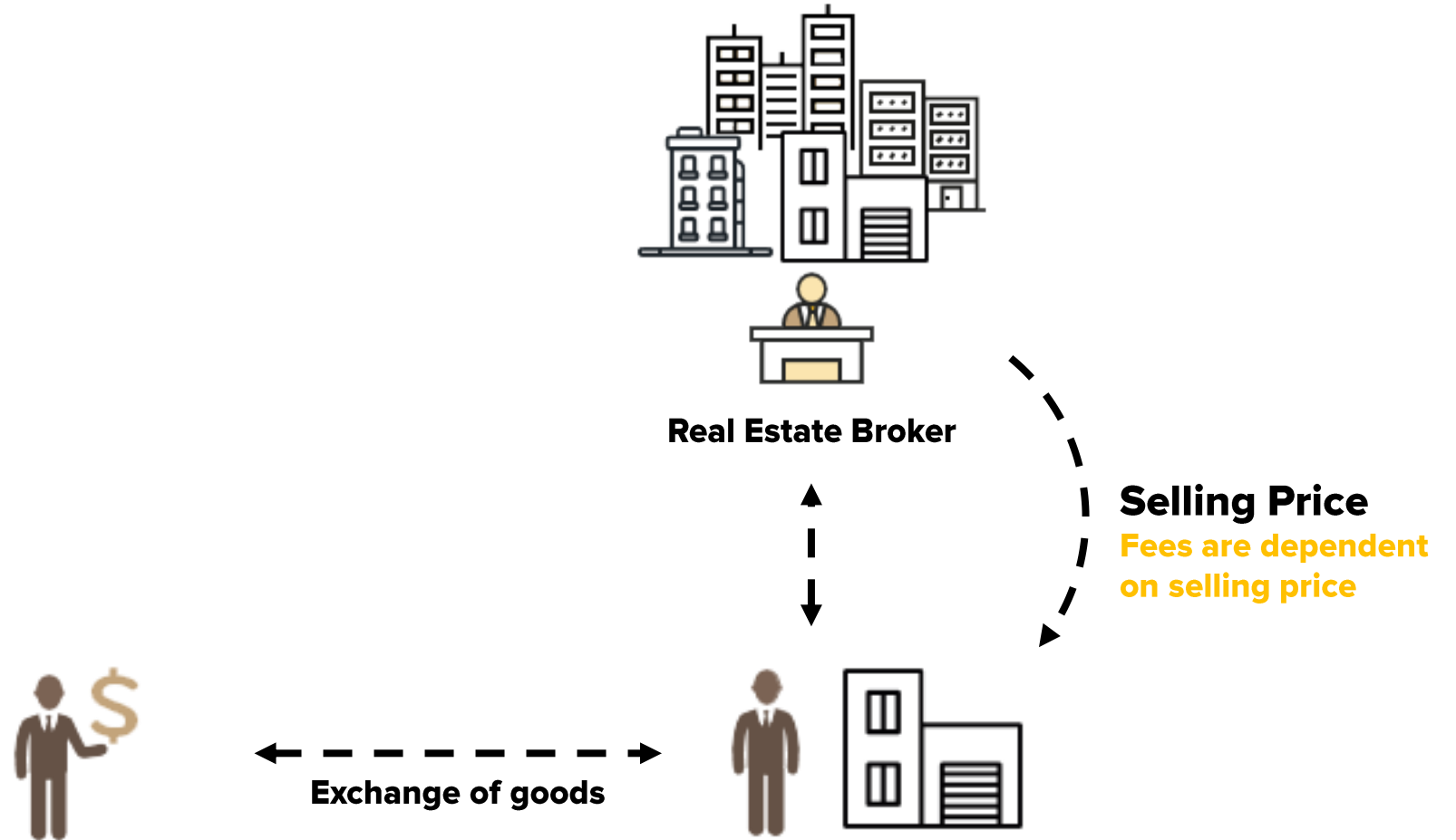


← - - - - - →  
Exchange of goods



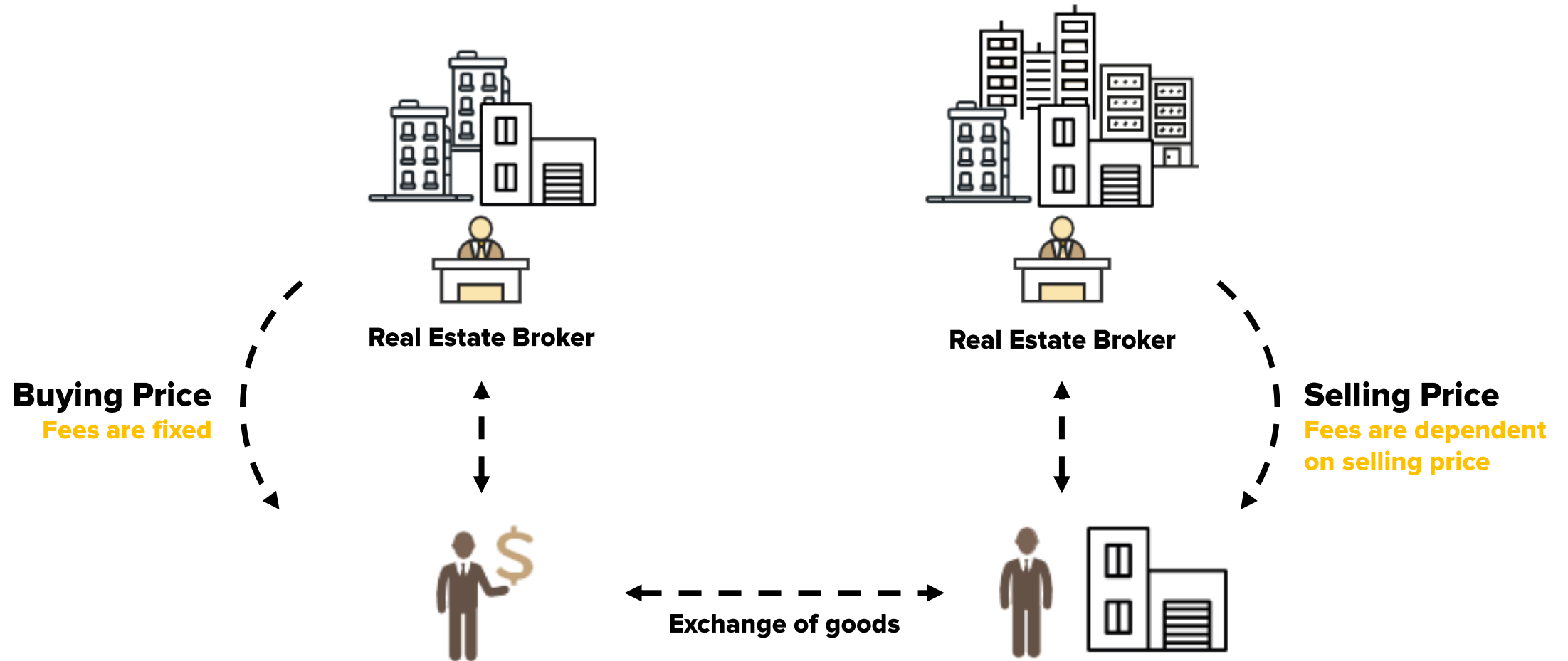
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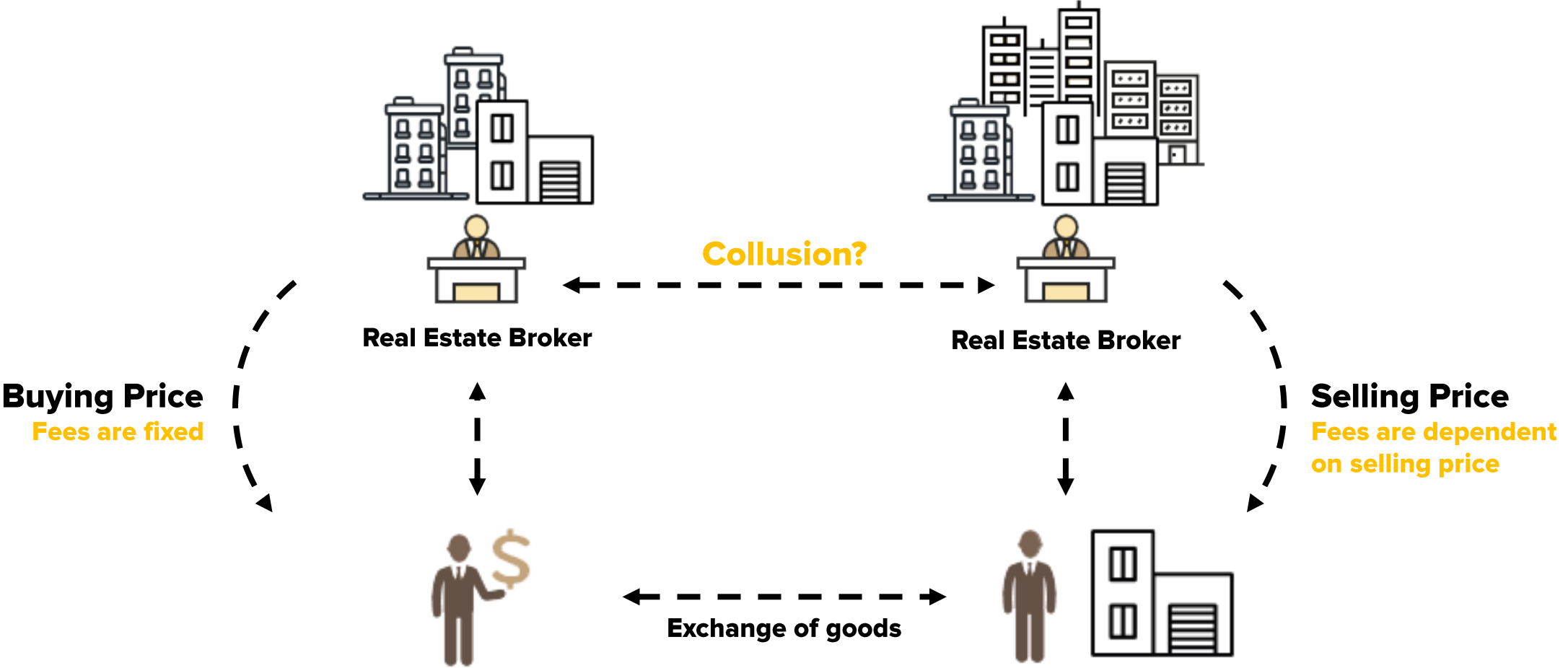
# The Selling Process

**Depency** on Real Estate Brokers



# The Selling Process

Dependency on Real Estate Brokers



# Improving the **Sellers'** position

Reducing the need for a broker



**Real Estate Broker**

€€€



**Expertise on  
housing pricing**



**Provides assistance  
with viewings**



**Connections with  
other brokers**



**Arranges sell  
contract**

# Improving the **Sellers'** position

Reducing the need for a broker

Source of asymmetric information

Real estate professionals have access to **industry databases** with much more complete and recent data <sup>(1)</sup>



**Create new dataset for sellers**



**Real Estate Broker**

€€€



**Expertise on  
housing pricing**



**Provides assistance  
with viewings**



**Connections with  
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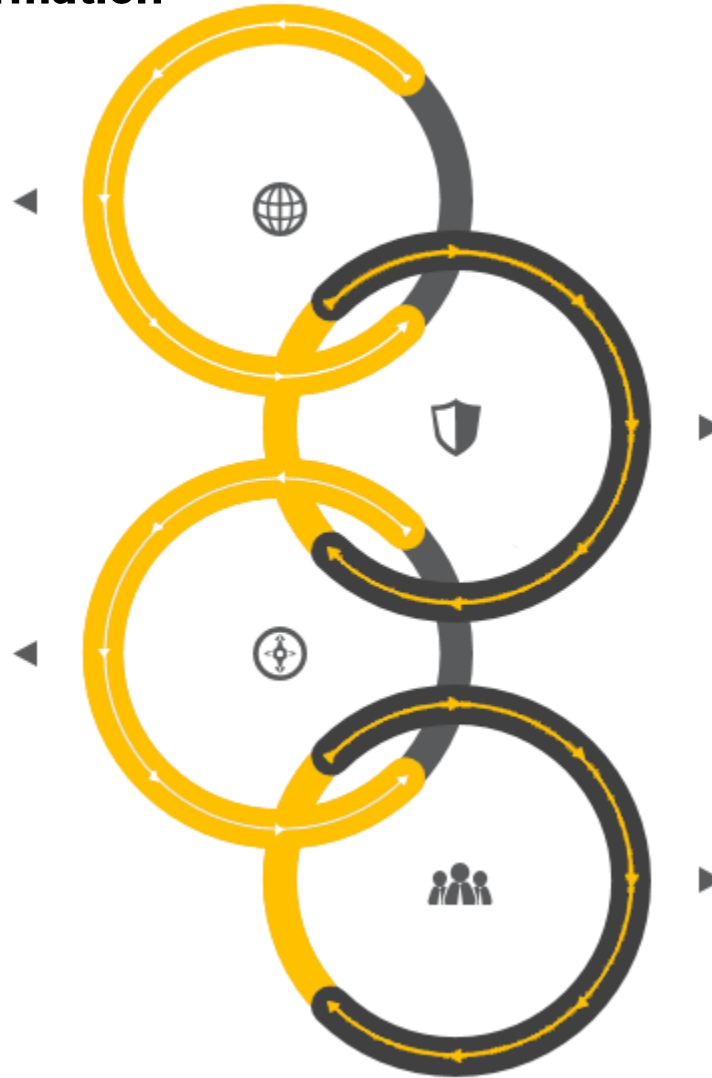


(1) <http://homeguides.sfgate.com/out-estimated-value-house-6876.html>

# Scraping Methodology

Giving sellers access to market information

**Scraping “Funda”**  
A Dutch Real Estate website that contains  
80% of the houses on the market (1)



(1) <https://www.emerce.nl/nieuws/concurrenten-funda-winnen-marktaandeel>

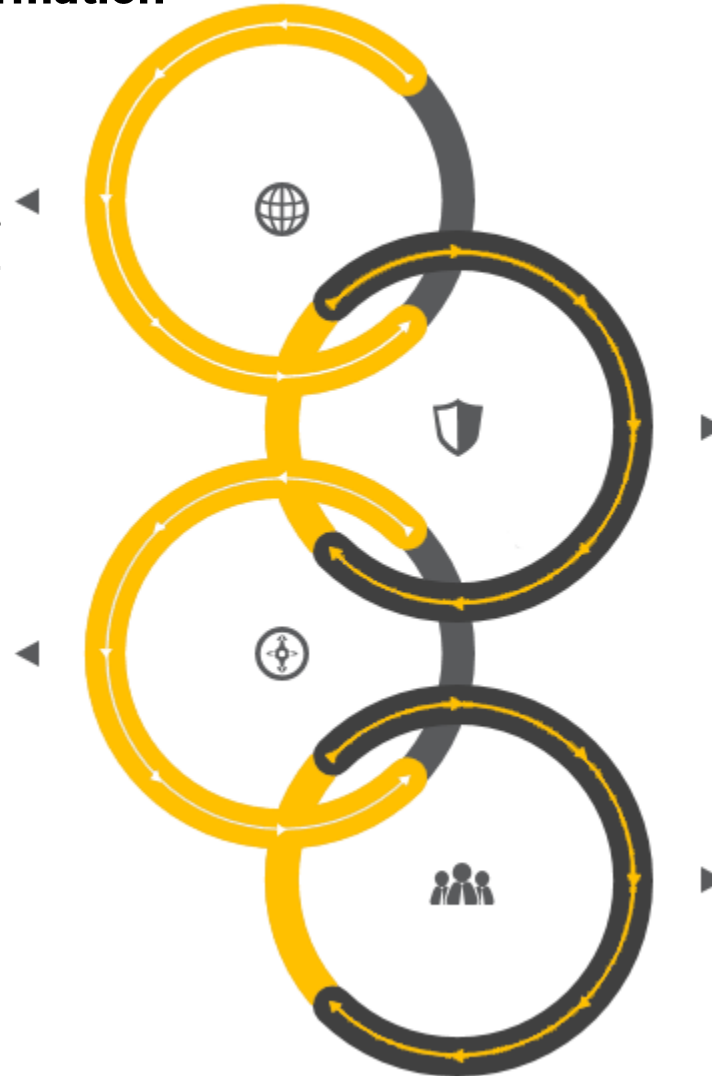


# Scraping Methodology

Giving sellers access to market information

## Scraping “Funda”

A Dutch Real Estate website that contains  
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## Beautifulsoup with I.P. Rotation

- Scraping a webpage in 0.8 sec
- Changing the I.P. address every 200 pages
- Using the TOR network with 7000 proxies
- Retrieved 72000 observations with 35 variables

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# Scraping Methodology

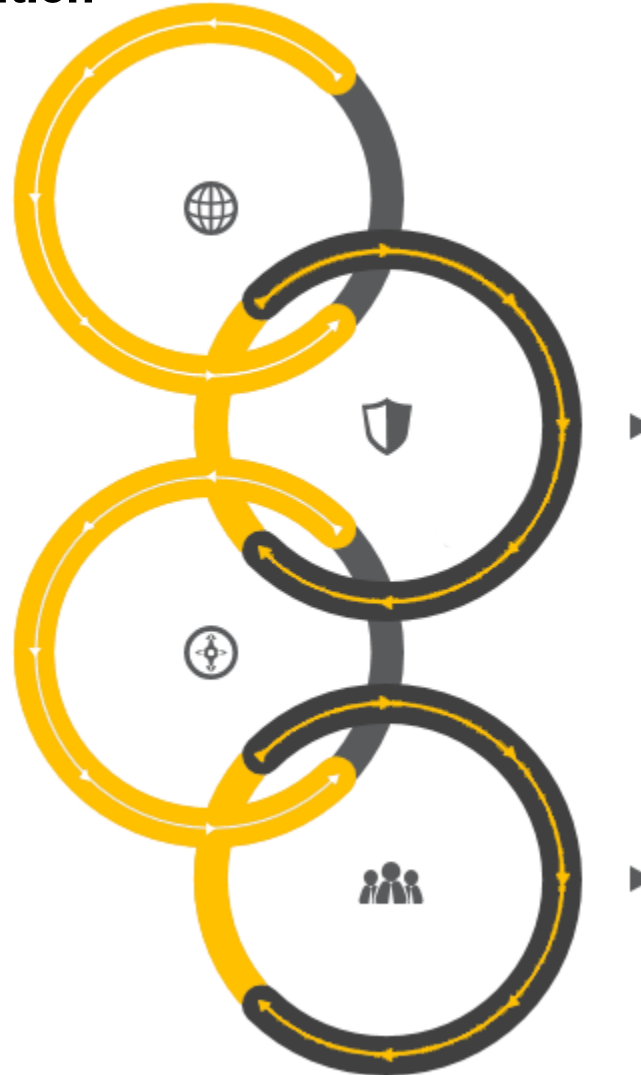
Giving sellers access to market information

## Scraping “Funda”

A Dutch Real Estate website that contains  
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## OLS Model to predict House Price

- 10 Variables
- $R^2$  of 0.87
- White’s Standard Errors to correct for Heteroskedastic residuals (Gauss Markov Assumptions)



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## Shiny Application

- Giving sellers access to the data
- Allowing them to estimate the selling price of their house.



(1) <https://www.emerce.nl/nieuws/concurrenten-funda-winnen-marktaandeel>

# Shiny Application

Allowing for **individual** house pricing

## House Details:

“Out of sample”

Type of house: Villa

Zipcode: 2905

Surrounding: Quiet road

Living area: 230 m<sup>2</sup>

Land area: 1007 m<sup>2</sup>

Garden type: Around the house

Number of floors: 2

Number of bathrooms: 2

Insulated: Yes

Parking options: Parking Garage

**Model Estimated Price: € 905,339**

**Actual Asking Price: € 895,000**

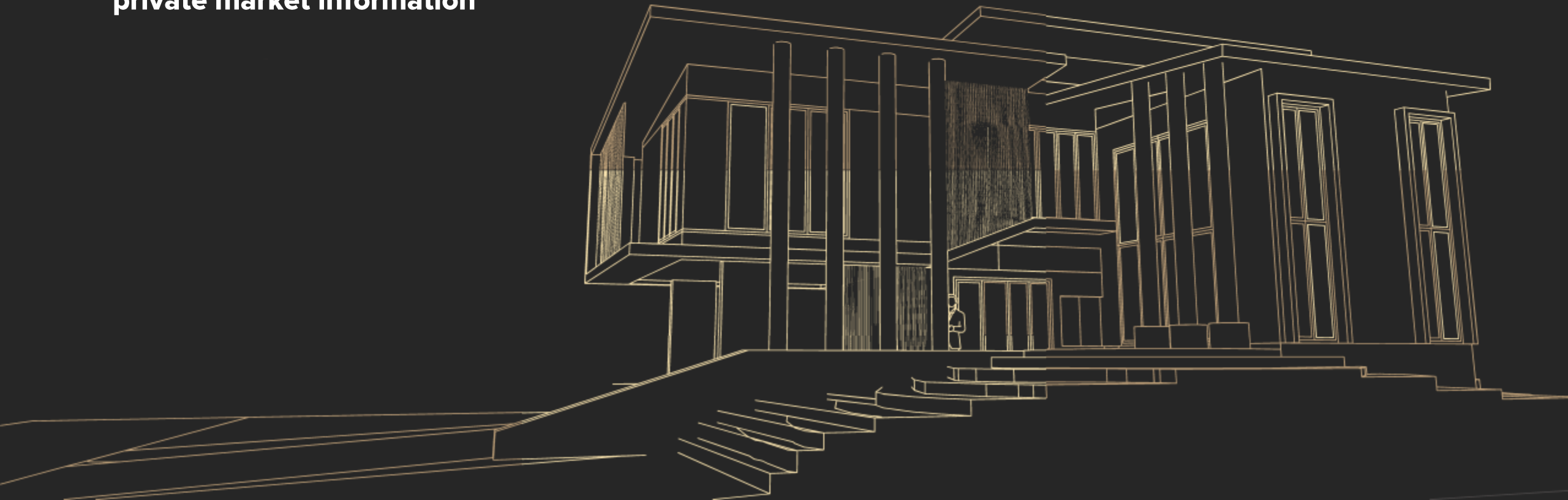




# Improving the **Seller's position**

## Some conclusions

- Giving sellers access to market information and reduces **asymmetric information**
- Reduces the need for real estate brokers and thereby **reduces the cost** when you sell your house
- Creates an **insentive** for real estate borkers to focus on service, instead of monopolizing their private market information



# Home Pricing Estimation

Reducing Asymmetric Information in  
the **Dutch** Real Estate Market

Thank you for your attention

Are there any questions?

