



kokchun giang

using **data**
modeling to align
business and
technical concepts

a company called ezcream is running an **e-commerce** selling ice creams and puts everything in orders table

order_id	customer_name	email	phone	product_name	product_price (SEK)	quantity	order_date	total_amount	payment_status
7001	Erik Svensson	erik.sv@gmail.com	0701234567	Lakritsdröm	35	20	2024-02-20	700	Paid
7001	Erik Svensson	erik.sv@gmail.com	0701234567	Blåbärsmagi	30	15	2024-02-20	700	Paid
7002	Johanna Karlsson	johanna.k@outlook.se	0729876543	Vaniljkaramell	28	25	2024-02-21	700	Pending
7003	Gustav Lindgren	gustav.lind@gmail.com	0765432198	Hallonfantasi	32	30	2024-02-22	960	Paid
7003	Gustav Lindgren	gustav.lind@gmail.com	0765432198	Chokladkaos	29	30	2024-02-22	960	Paid

can you spot any
issues with this
table?

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details appearing twice
- redundant data

need to change several rows
when e.g. email gets
updated

name and price
stored in all rows

increase price causes
all historical record to
display wrong price

difficult to query and
maintain

inventory stock not
tracked

difficult to manage
unpaid orders

we need **data modeling** in order to turn messy data into structured

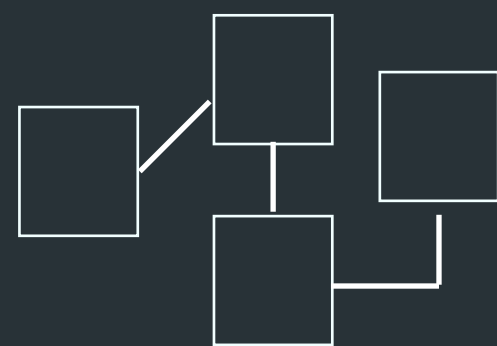
conceptual model

high-level, business view, focus on big picture



logical model

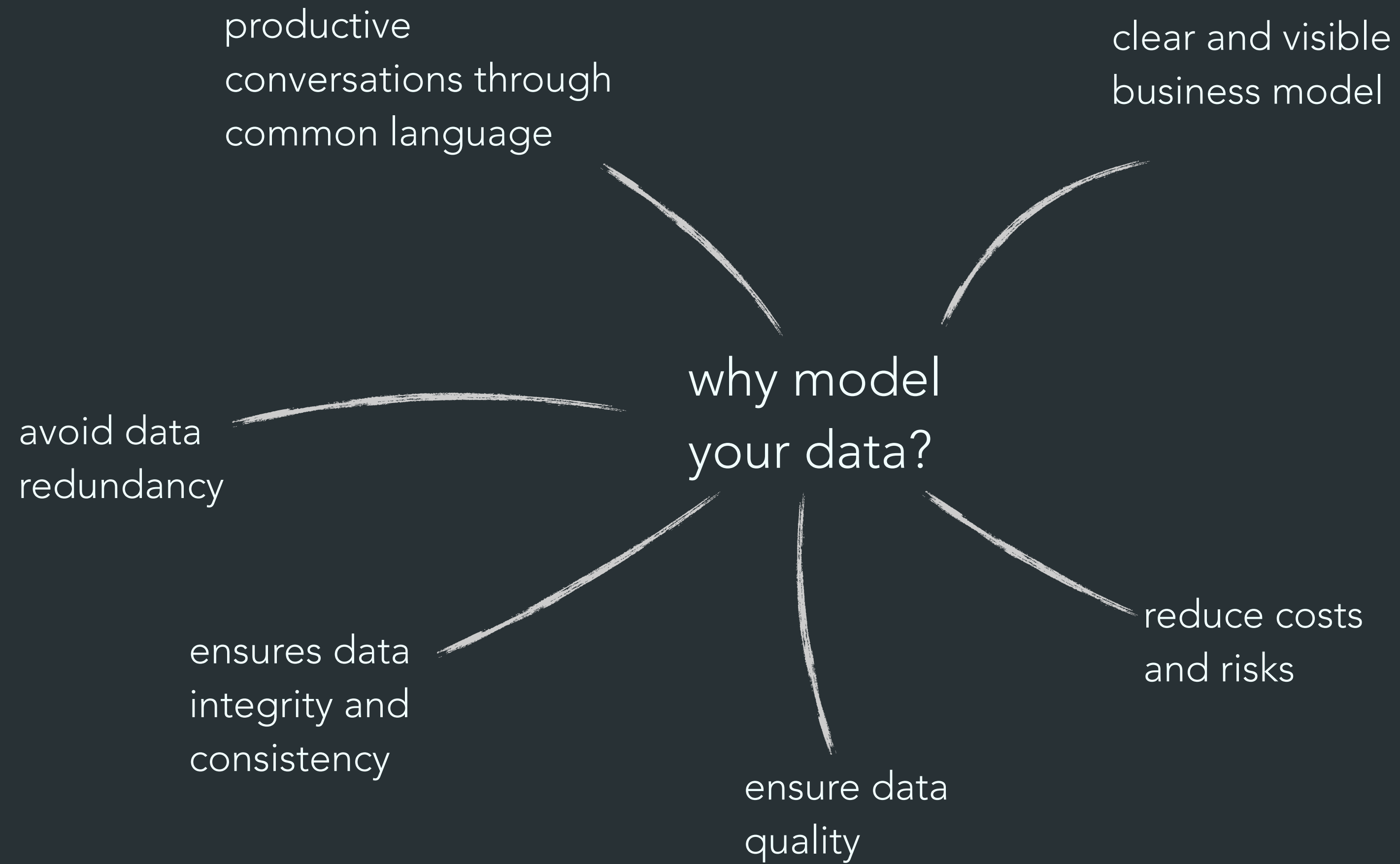
adds attributes, keys, normalization, no database-specific details



physical model

defines how data is stored in a specific database system, implementation-ready





so going back to ezcream a properly **modeled data** would give tables similar to

customers

customer_id	first_name	last_name	email	phone
1	Erik	Svensson	erik.sv@gmail.com	0701234567
2	Johanna	Karlsson	johanna.k@outlook.se	0729876543
3	Gustav	Lindgren	gustav.lind@gmail.com	0765432198

orders

order_id	customer_id	order_date	total_amount (SEK)	status
7001	1	2024-02-20	700	Paid
7002	2	2024-02-21	700	Pending
7003	3	2024-02-22	960	Paid

payments

payment_id	order_id	payment_date	amount (SEK)	payment_method	status
8001	7001	2024-02-20	700	Kreditkort	Paid
8002	7002	NULL	NULL	Swish	Pending
8003	7003	2024-02-22	960	Banköverföring	Paid

products

product_id	name	description	price (SEK)
101	Lakritsdröm	Salt lakritsglass	35
102	Blåbärsmagi	Krämig blåbärsglass	30
103	Vaniljkaramell	Klassisk vanilj med kola	28
104	Hallonfantasi	Frisk hallonglass	32
105	Chokladkaos	Rik chokladglass	29

order_items

order_item_id	order_id	product_id	quantity	subtotal (SEK)
9001	7001	101	20	700
9002	7001	102	15	450
9003	7002	103	25	700
9004	7003	104	30	960
9005	7003	105	30	870

don't worry about the details for now, we'll cover how to get to this stage