



Power BI Development Process

A Roadmap to Excellent Solutions



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Top Data Warehousing Voice





Process - from requirements to report



Why solutions fail



Patterns for common challenges



Implementing facts at different grain



Culture & Values

Common BI Terminology

Business Glossary

Requirements

Conceptual Data Model

Logical Data Model

Physical Data Model

Report Draft / Mockup

Data Model Implementation

Report Implementation

Rollout

Continuously Learning New Skills



Culture & Values

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Continuously Learning New Skills

- Commitment
- Efficient communication
- Collaboration
- Support
- Transparency
- Evolution of software
- Continuous learning
- **Love the outcome!**

What is a ...

- Process
- Event
- Measure
- Dimension
- Attribute
- Category
- Value
- Hierarchy
- Conformed dimension
- Shrunk dimension
- Junk dimension or business profile
- etc.

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Continuously Learning New Skills

- Business terms
- Performance indicators
- KPI
- In **natural language**, always
- With formula, if applicable
- Example:

*Customer acquisition rate
measures the % of new
customers acquired in a
given period.*

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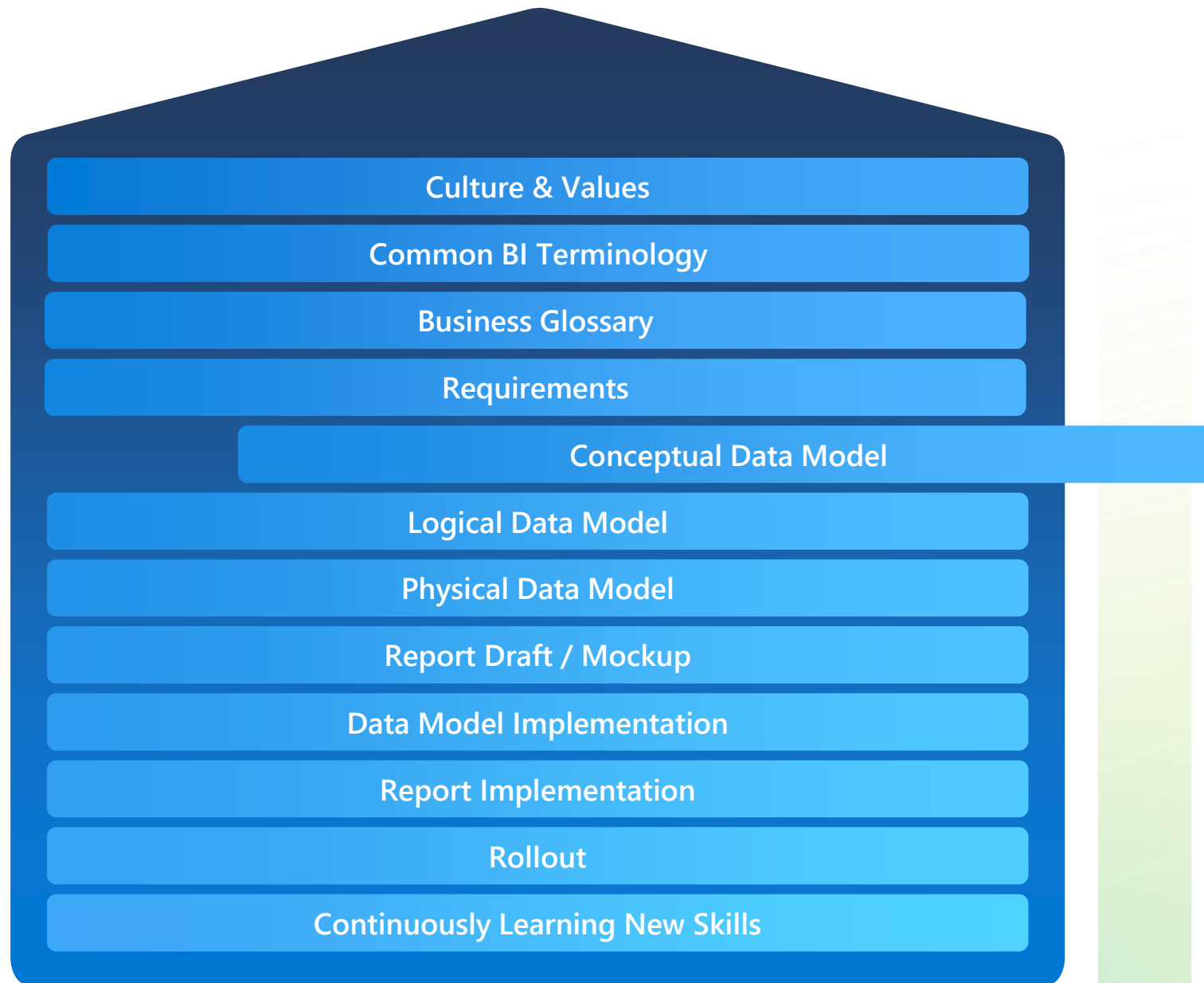
Rollout

Continuously Learning New Skills

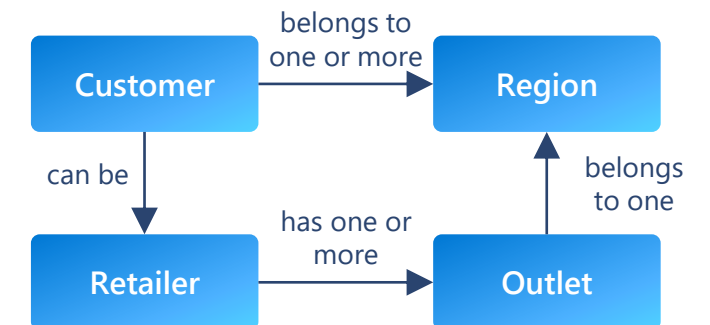
- Functional requirements / business requirements
- Non-functional requirements / technical requirements
- Use a template, e.g., KPI canvas
- Document
 - Task board, e.g., Jira
 - Word document
- Complete and clear wording

ROKS™ KPI Canvas

ROKS™ KPI Canvas		MADE TO MEASURE KPIs	
Designed by:	BERNIE SMITH	Designed for:	CHARLIE CHAOS
Date:	16TH MARCH 2020	Version:	11
KPI Name NUMBER OF ACCIDENTS	Definition or Formula If there's any calculation, how is the measure worked out? What is and is not included in the values used? IT'S A SIMPLE COUNT OF THE NUMBER OF LOGGED ACCIDENTS IN THE WEEK. IT WILL INCLUDE ANY ACCIDENTS RECORDED IN THE ACCIDENT LOG BOOK. THIS WILL POTENTIALLY INCLUDE STAFF, CUSTOMERS, DELIVERY, STAFF AND CONTRACTORS.	Targets What score do we want to achieve? (If we know at this stage) WE WILL NOT TARGET THIS AT ALL. WHILE WE WANT TO SEE THIS FIGURE AS LOW AS POSSIBLE, THIS MUST BE AS A RESULT OF A GENUINELY SAFE ENVIRONMENT. WE WILL NOT TARGET ANY SPECIFIC FIGURE SO AS TO MAKE SURE WE DON'T BETER STAFF FROM REPORTING ACCIDENTS.	Target Outcomes What will achieving the target deliver? SEE COMMENTS ON TARGETS (ABOVE)
Purpose Why should we measure this? WHERE THERE ARE ACCIDENTS WE WILL NORMALLY NEED TO RECORD THESE ACCIDENTS IN A LOG. THIS KPI IS SIMPLY THE TOTAL OF RECORDED ACCIDENTS IN THE PERIOD LOGGED AS 'LAST DAYS' TO GET SOME INDICATION OF SEVERITY. KEEPING A CLOSE EYE ON THIS FIGURE IS A USEFUL, IF LAGGING, INDICATOR.	Customers Who will use this KPI? THE WHOLE TEAM CHARLIE WILL MONITOR IT AND MAKE SURE EACH ACCIDENT IS INVESTIGATED PROPERLY, WITH PREVENTATIVE MEASURES PUT IN PLACE WHERE NEEDED.	Production Resources What resources are needed to produce the KPI and reports? ONCE A WEEK THE ACCIDENT BOOK NEEDS TO BE CHECKED AND THE KPI SPREADSHEET UPDATED. ESTIMATED TIME TO COMPLETE - 5 MINS.	Production Cost What is the cost of implementing and producing this KPI? 5 MINS OF TEAM LEADER'S TIME EACH WEEK, COST ~£2
Data Sources Where will this KPI data come from? THE SAFETY AND ACCIDENT LOG BOOK AND OUR KPI TRACKING SPREADSHEET.	Problems and Errors What are the known issues with KPI production & accuracy? PEOPLE MUST RECORD ACCIDENTS. SOMETIMES PEOPLE CAN BE RELUCTANT TO RECORD ACCIDENTS ESPECIALLY WHEN THEY WEREN'T FOLLOWING THE RULES. NEED TO BUILD A CULTURE OF IT'S GOOD TO RECORD ACCIDENTS, WHATEVER THE CAUSE. A POTENTIAL ENGAGEMENT ISSUE MAY OCCUR WHEN THERE ARE LONG PERIODS BETWEEN ACCIDENTS. THERE WILL BE MANY PERIODS WITH NOTHING TO REPORT. THIS A GREAT OUTCOME BUT NOT A VERY ENGAGING FAILURE TO REPORT. IT MIGHT BE BETTER TO FOCUS ON DAYS SINCE LAST ACCIDENT - JUST BE CAREFUL, THIS DOESN'T BECOME A DISINCENTIVE FOR PEOPLE TO REPORT ACCIDENTS.		



- High level perspective
- Ensures that business users will get what they need
- Easy to understand language
- Processes
- Entities
- How they correlate
- Enterprise **bus matrix** in dimensional modelling





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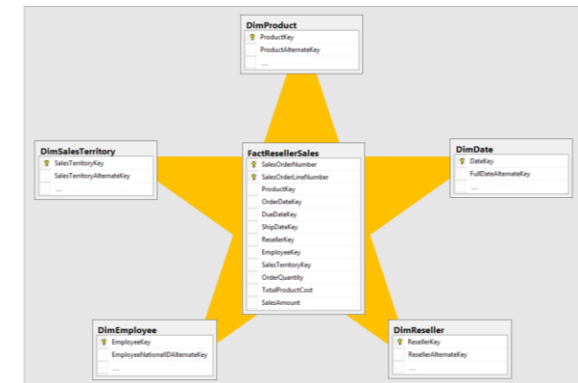
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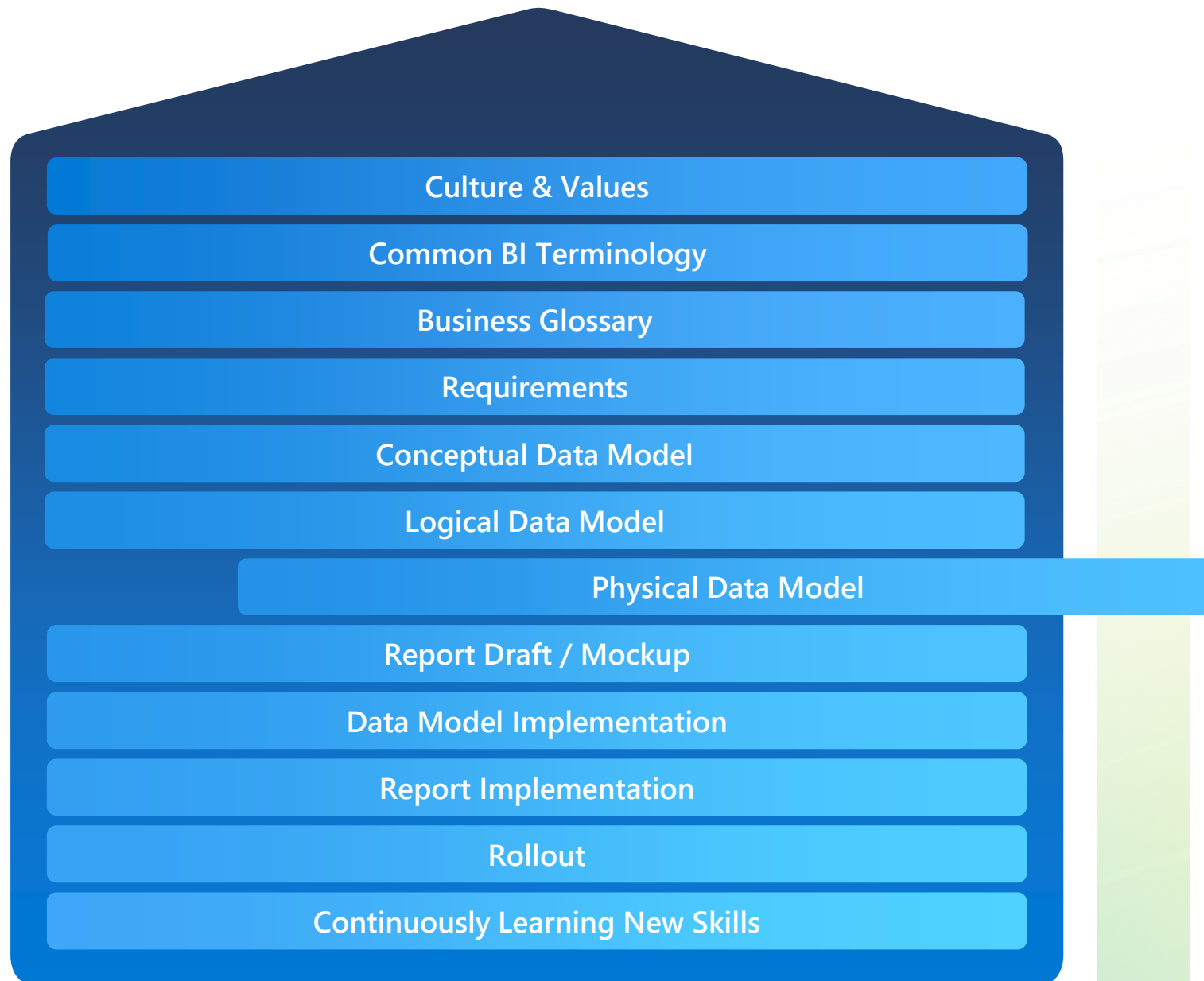
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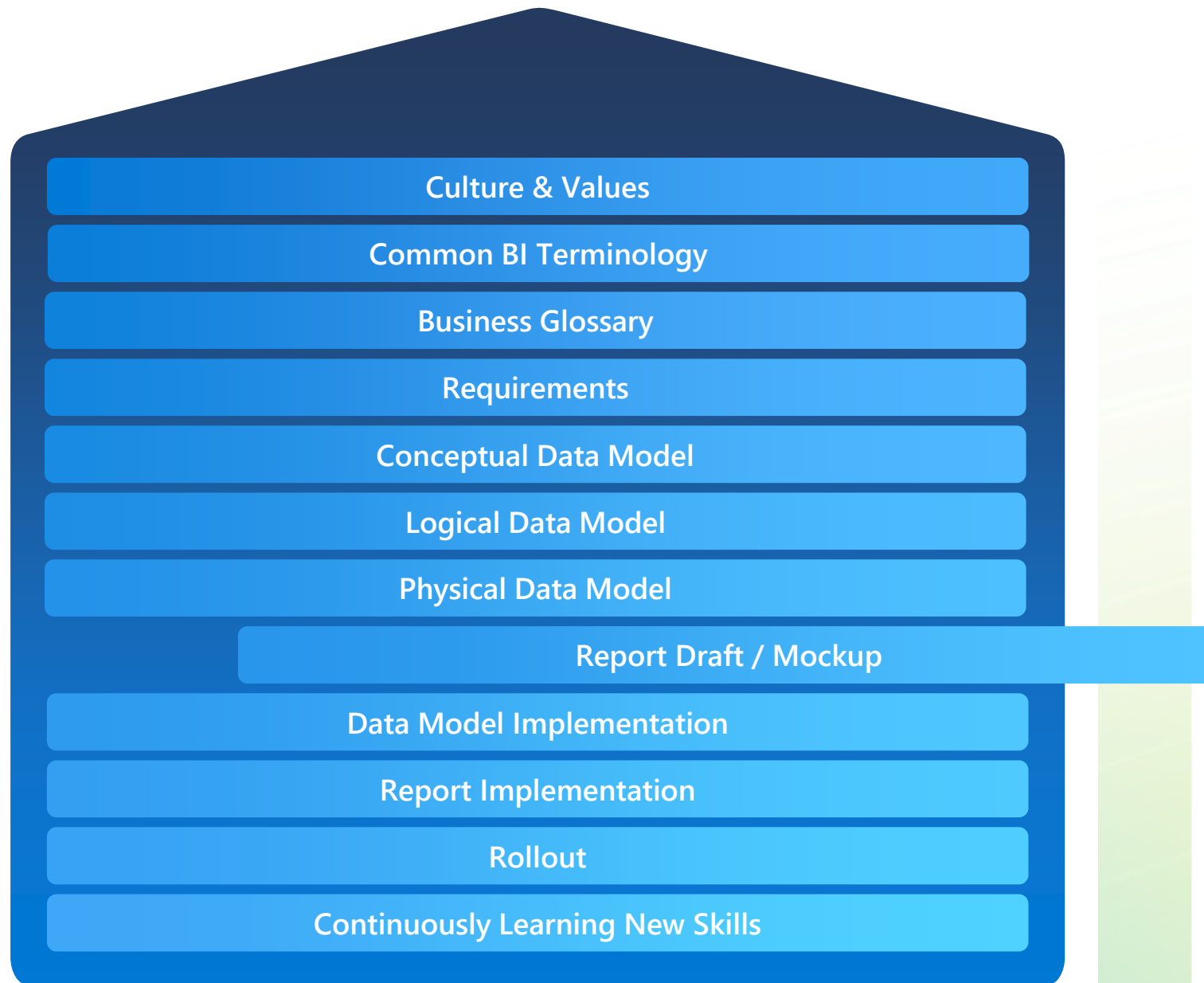
Continuously Learning New Skills

- Defines what data structures are needed, based on the requirements
- Blueprint for implementation
- **Star schema** for Power BI semantic models
- Relationships
- Cardinalities
- Hierarchies
- Candidate keys

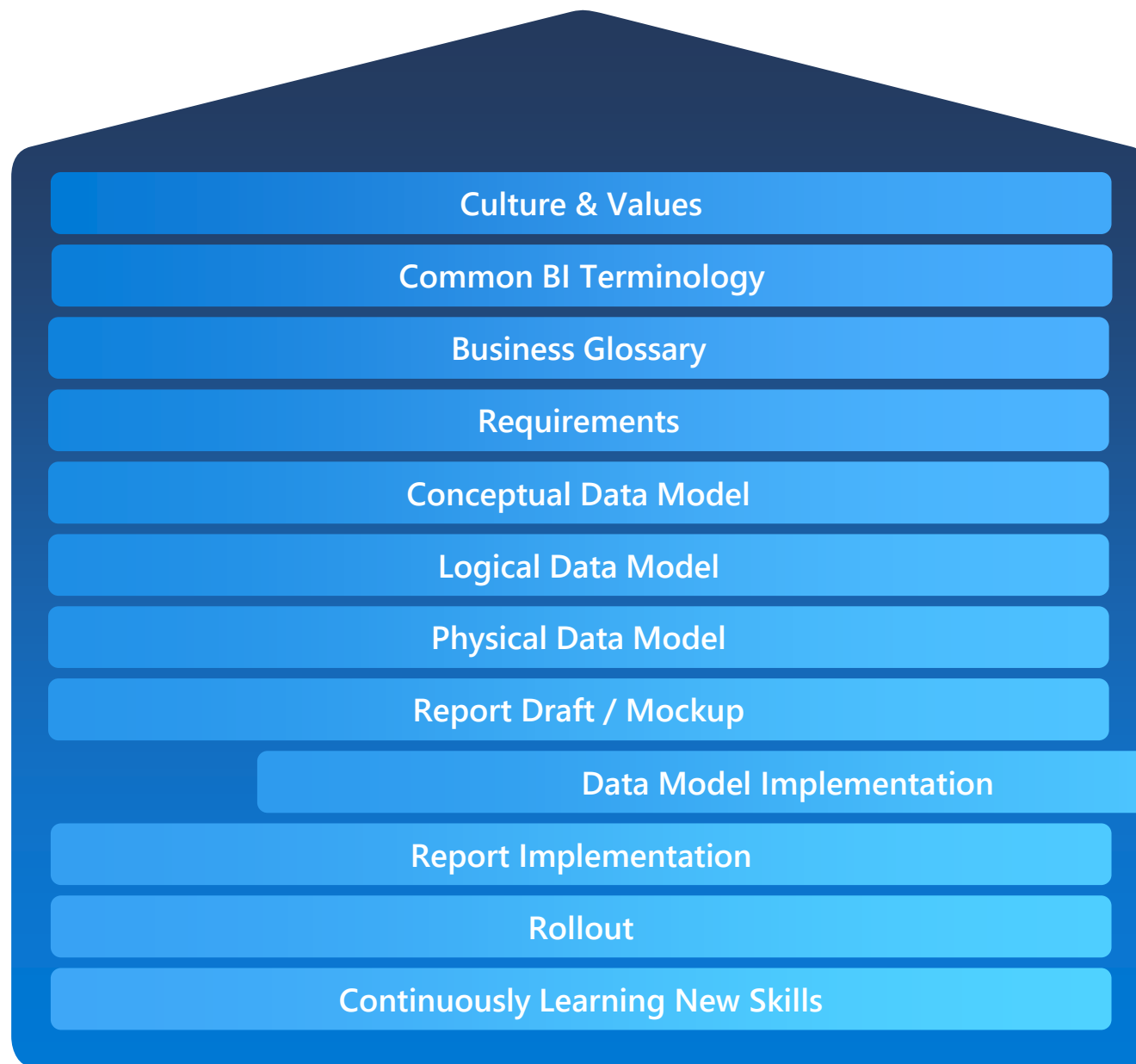




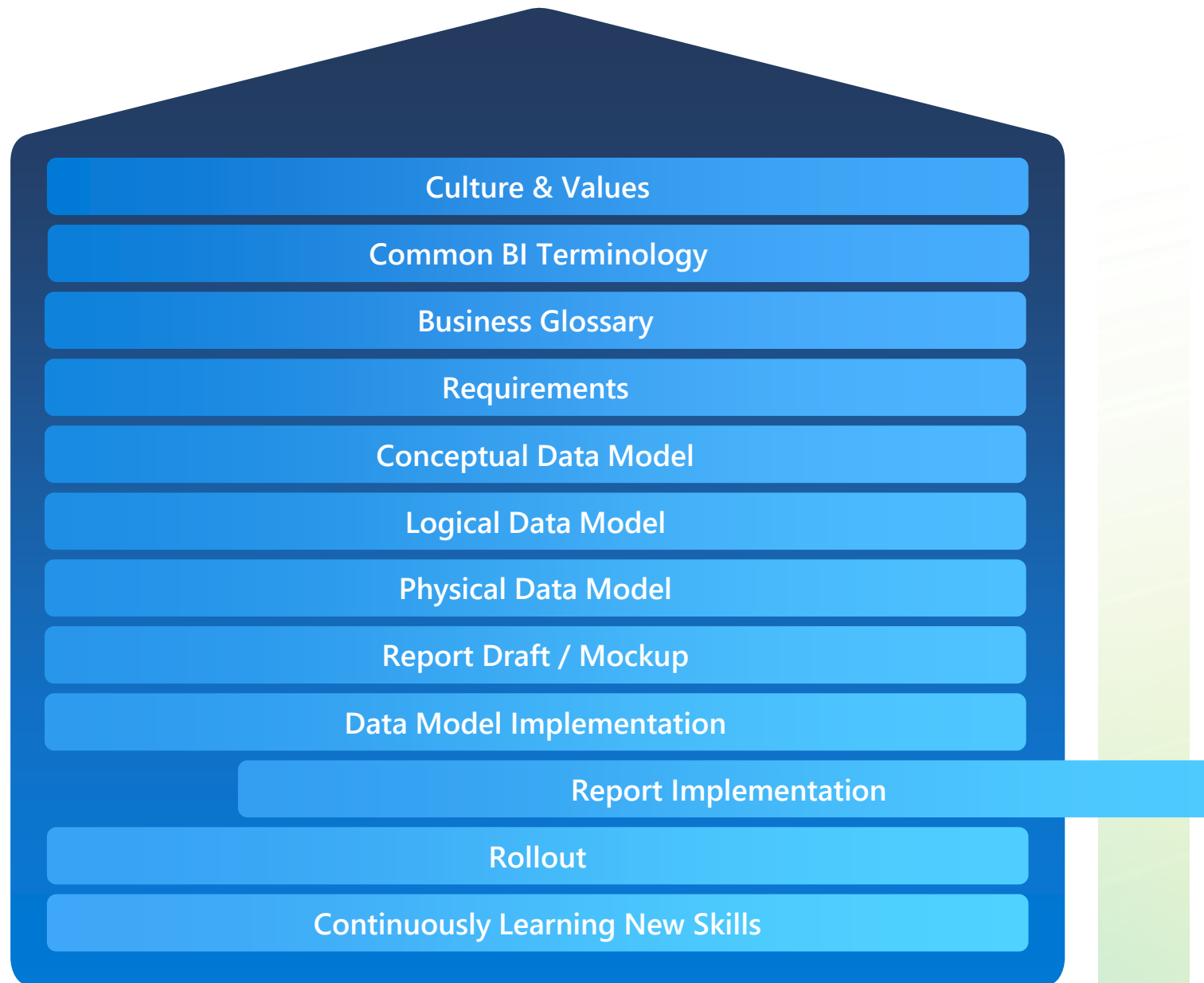
- Implementation specific adoptions to the data model
- Enrich data model with technical requirements
- Surrogate keys
- Historization / [slowly changing dimensions](#)
- Time intelligence support columns
- Aggregations & Allocations
- **If it can be solved in the data model, you don't need to solved it in DAX measures!**



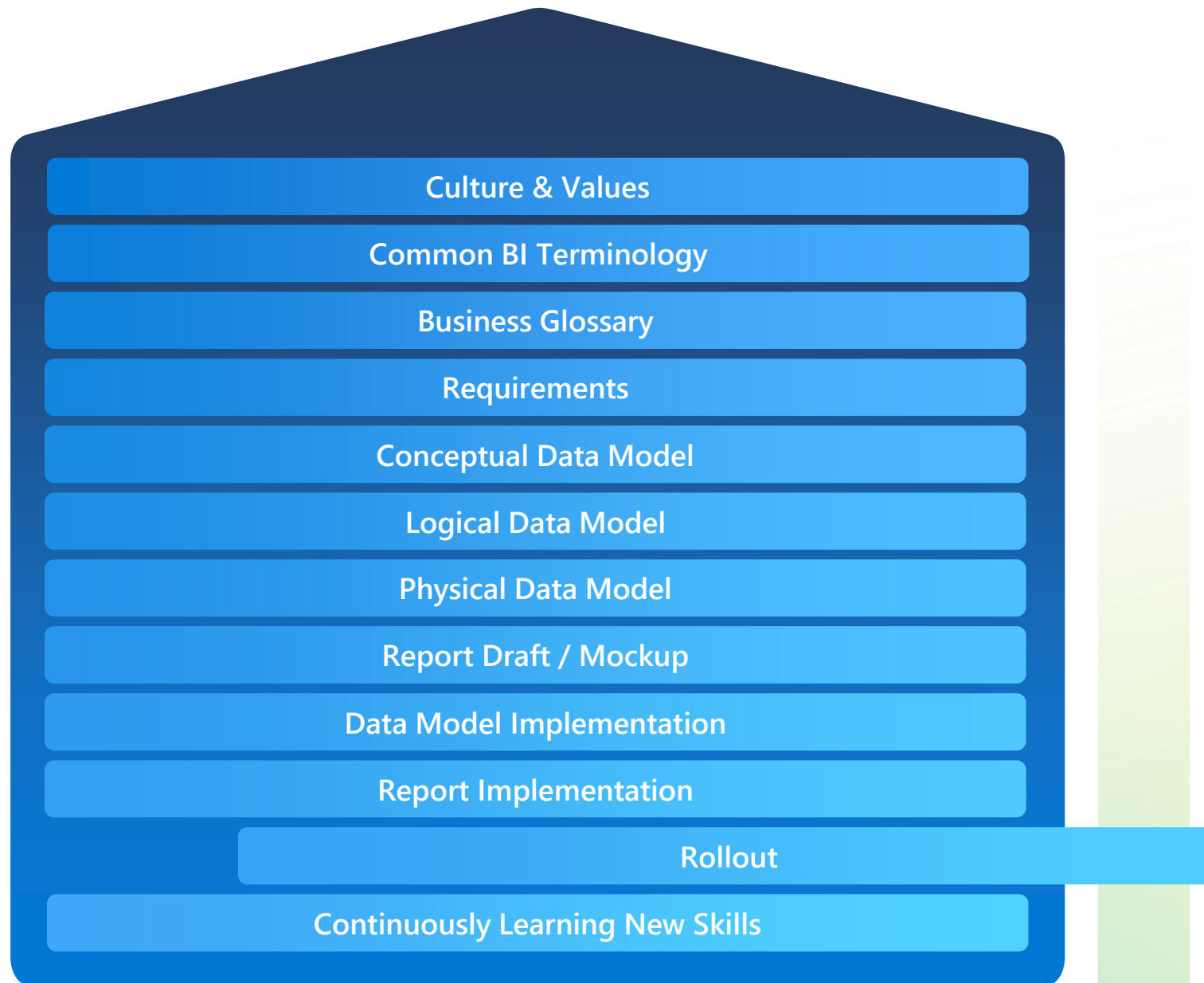
- Clarify usage workflows and interactions.
- Apply a report structure, e.g., from big picture overview to detailed analytics.
- Use design tool, e.g., [Figma](#)
- Use a template
- Use a common design language, e.g., [IBCS](#)
- Use visuals that match with the analytics goal
- Use consistent colors
- Pay attention to accessibility



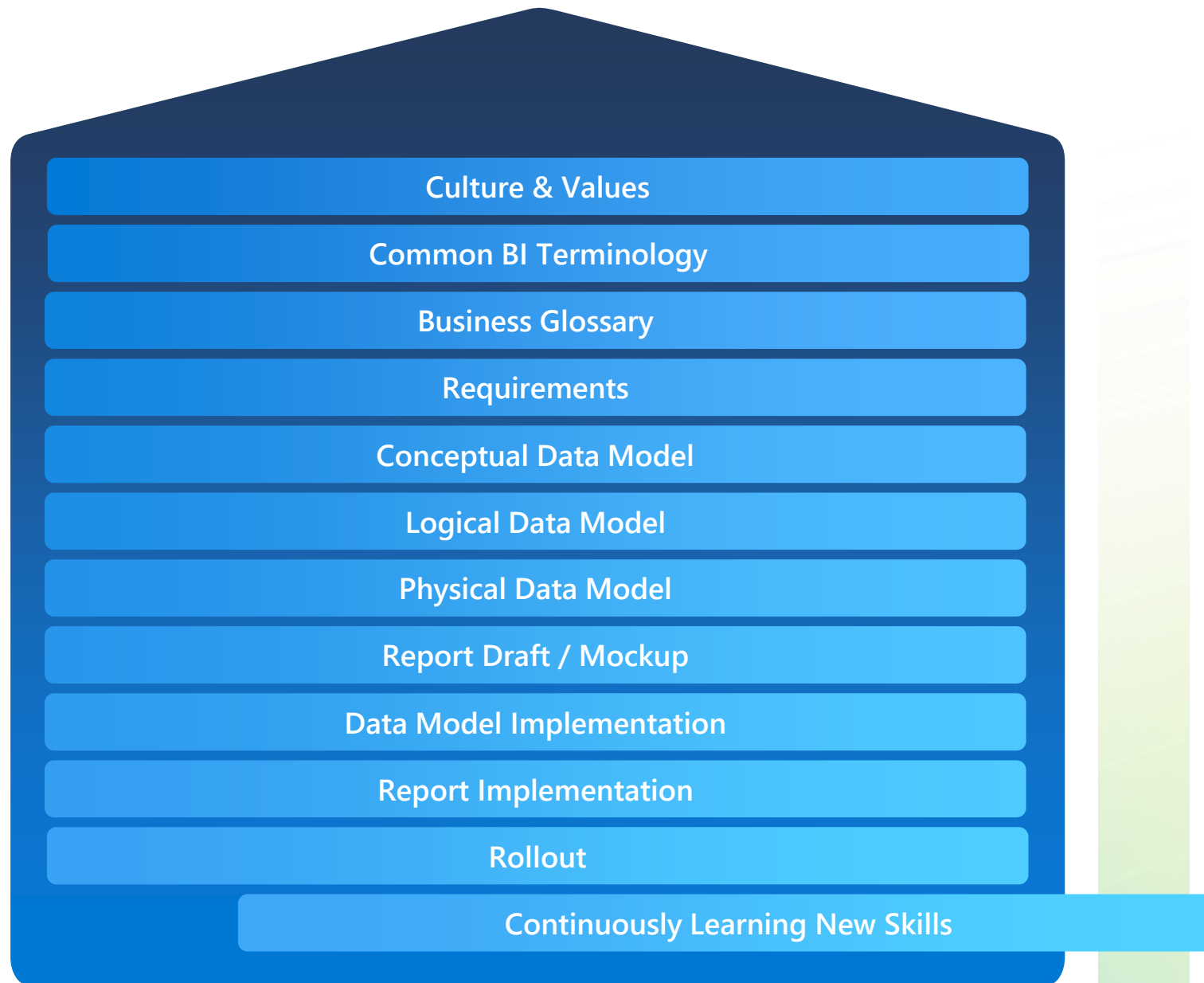
- **Stick to your logical and physical data models**
- **Transform data** as needed
- Follow Roche's Maxim: Implement things as upstream as reasonable
- Avoid redundant data
- Avoid unused or duplicate columns
- Avoid Snowflake data structure
- Avoid direct relationships between fact tables
- Avoid many-to-many relationships
- Avoid DAX tables and columns



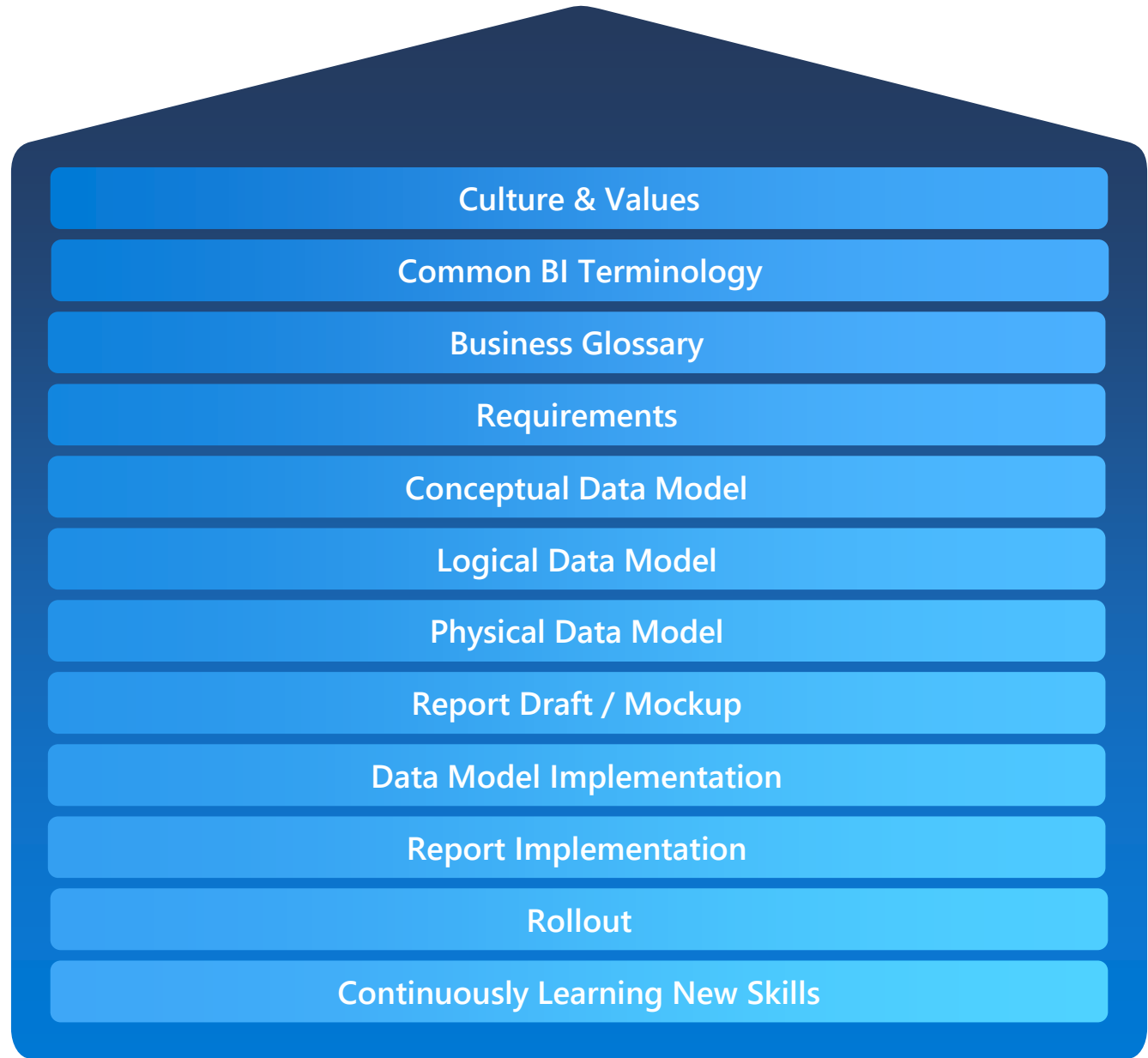
- Stick to Power BI standards as often as possible, e.g., use filter pane
- Implement for performance, e.g., reduce number of visuals or avoid scrollable one-page reports
- Implement for maintainability, e.g., chose calculation groups over bookmark navigation
- Avoid unwanted interactions, e.g., don't offer filter options that shouldn't be used, turn off cross-filtering that doesn't work anyway, etc.



- User acceptance test
- User training
- User documentation
- Usage Monitoring
- Monitoring for failure
- Hand over to support
- Provide contact for errors and changes



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Done in
Power BI



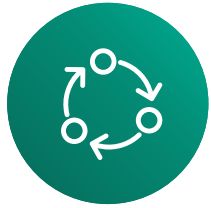
Why solutions fail



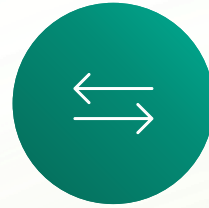
Why star schema &
how to query



Many-to-many relationships



Lack of transformation &
data cleansing



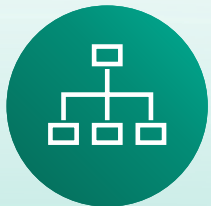
Bidirectional relationships



All facts are merged
into one fact table



Filters on fact tables



Hierarchies in separate tables



Fact tables at different grain



Fact tables at different grain



What is grain & why care?



Aggregation & allocation



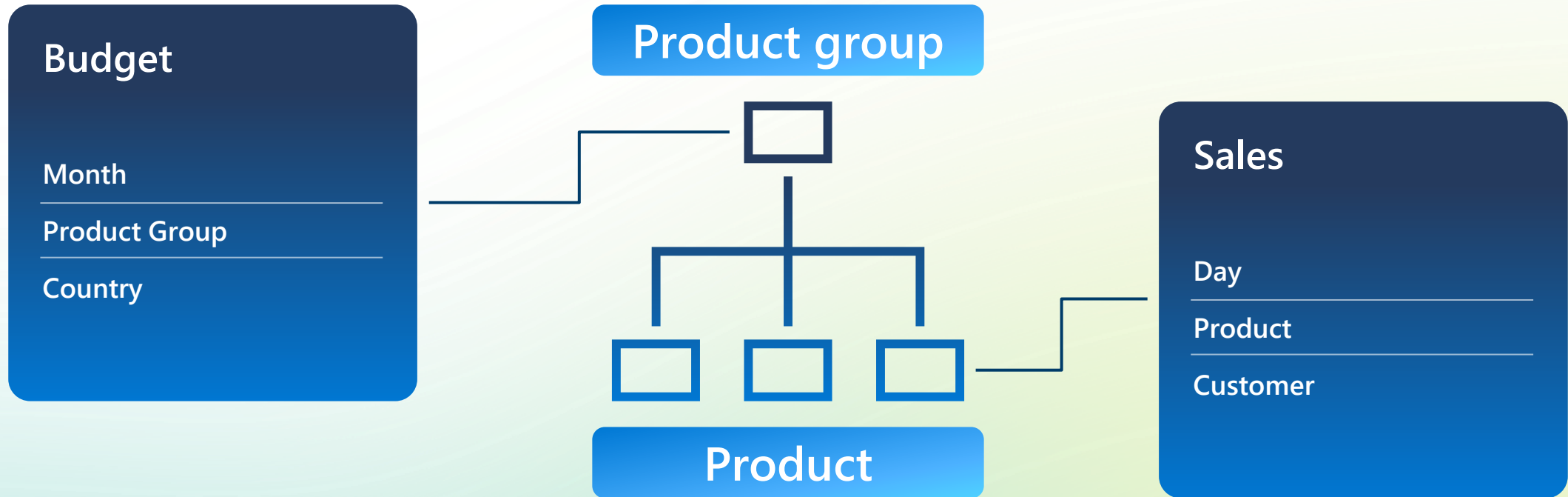
Shrunk dimensions



Implementation demo

What is Grain & Why Care?

“Grain” defines the level of detail of each fact table, e.g., product vs. product group, date vs. month.



Grain becomes relevant when comparing data that is available at different level.

Aggregation & Allocation

Aggregation = Summarize values by lower grain

Allocation = Distribute values to lower grain

Low grain = few large aggregates

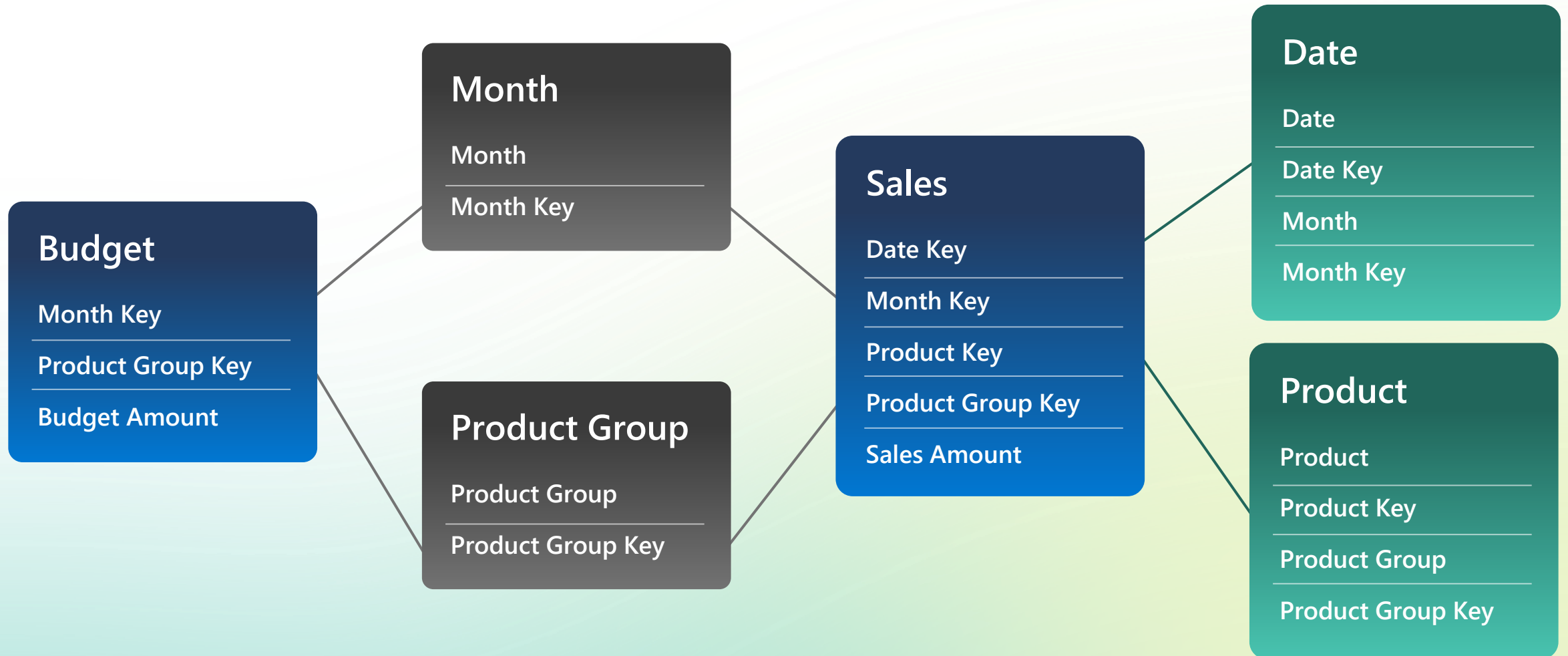


High grain = many small details

Allocation requires a definition of allocation rules.

Shrunken Dimensions

A shrunken dimension is a summarized dimension table at a lower grain.



Aggregation & Allocation – Implementation Options

Aggregate

Summarize by lower grain

Aggregate on data loading

PowerQuery group by

Fastest

Shrunk dimensions only

Aggregate in DAX measure

SUMX

Fast

Shrunk & full dimensions

Allocate

Distribute to higher grain

Allocate on data loading

PowerQuery custom code

Fast

Full dimensions only

Allocate in DAX measure

DAX custom code

Slowest

Shrunk & full dimensions



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