

# Temporal Fact Tables

## The Road Less Traveled

Martin Schoombbee



#131 | PHOENIX 2012

# About Me

---

- Senior BI Consultant at Insight
- MCITP – **BI Developer 2008**
- Blog – **[www.did-i-say-that.com](http://www.did-i-say-that.com)**
- Twitter – **@sqlmartin**
- SpeakerRate – **Martin Schoombee**

# Agenda

---

- What is it?
- Why would I need it?
- How do I do it?
- Will it work?

# What is it?

---

- Temporal: “...of or relating to time”
- Data Compression Technique
- Specific Implementation of a Fact Table

# Real-World Example

---

- Price Modeling Tool for Retailer
- Track Attributes of Products Over Time
  - Cost
  - Retail Price
  - Coupons (Buy 2, Get One Free)
  - Movement (Avg. Sales Over Time)
- Question
  - Attributes of a Product on Any Given Day?

---

# Type 2 Dimension?

# Type-2 Dimension Approach

---

- Products Priced by Store
  - Changes Grain of Dimension
  - 800K (P) \* 200 (S) = **160M Records**
- Type-2 Changes
  - 30% of Products on Sale per Week
  - 160M Records \* 30% = **48M Type-2 Changes per Week**
  - **2.5B** Type-2 Changes per Year

# Type-2 Dimension Approach

---

- Pro's
  - Dimensions Used for Attributes
- Con's
  - 2 Dimensions Combined
  - Changes Too Volatile
  - Fact-less Fact Table with Same Record Counts
  - Not Flexible



---

# Periodic Snapshot?

# Periodic Snapshot Approach

- Separate Dimensions

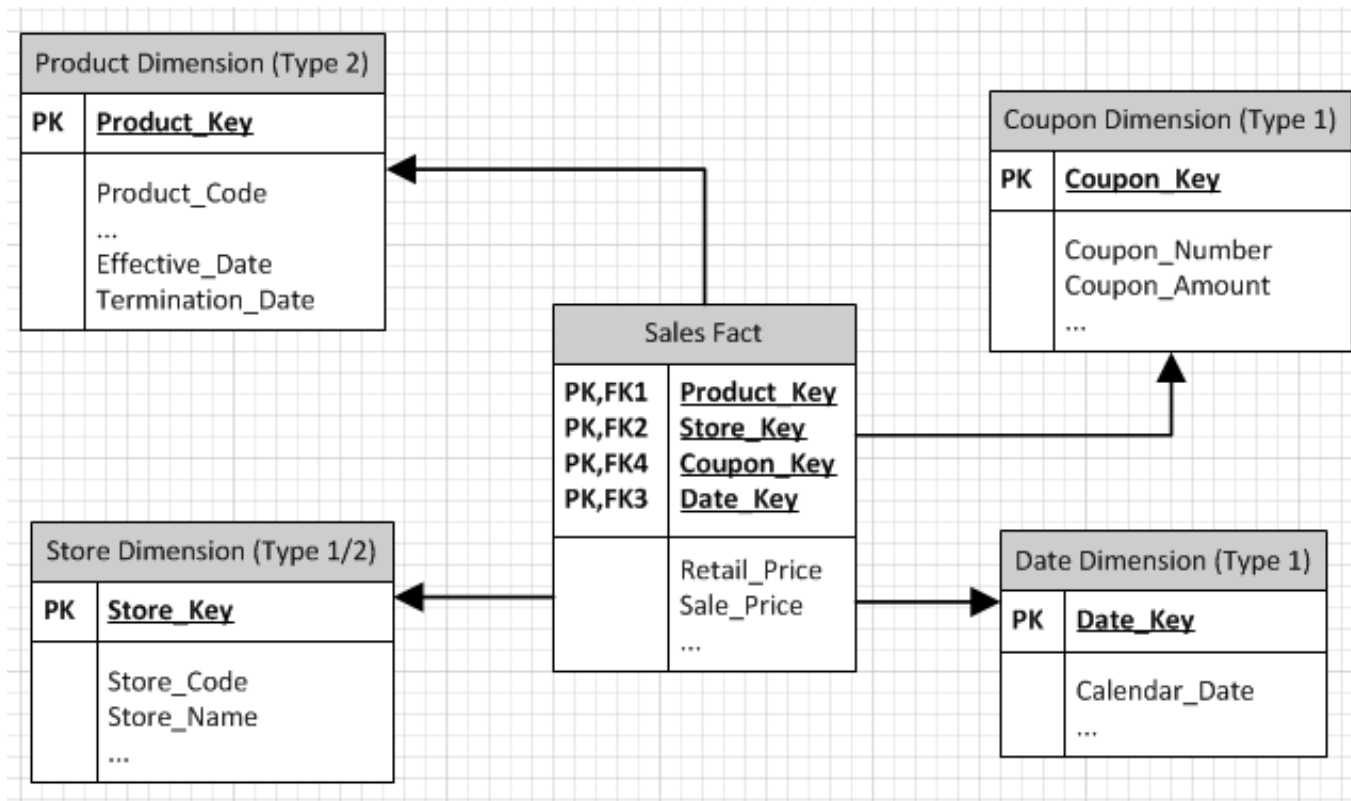
Product Dimension (Type 2)	
PK	<u>Product_Key</u>
	Product_Code ... Effective_Date Termination_Date

Store Dimension (Type 1/2)	
PK	<u>Store_Key</u>
	Store_Code Store_Name ...

Coupon Dimension (Type 1)	
PK	<u>Coupon_Key</u>
	Coupon_Number Coupon_Amount ...

# Periodic Snapshot Approach

- Typical Star Schema



# Periodic Snapshot Approach

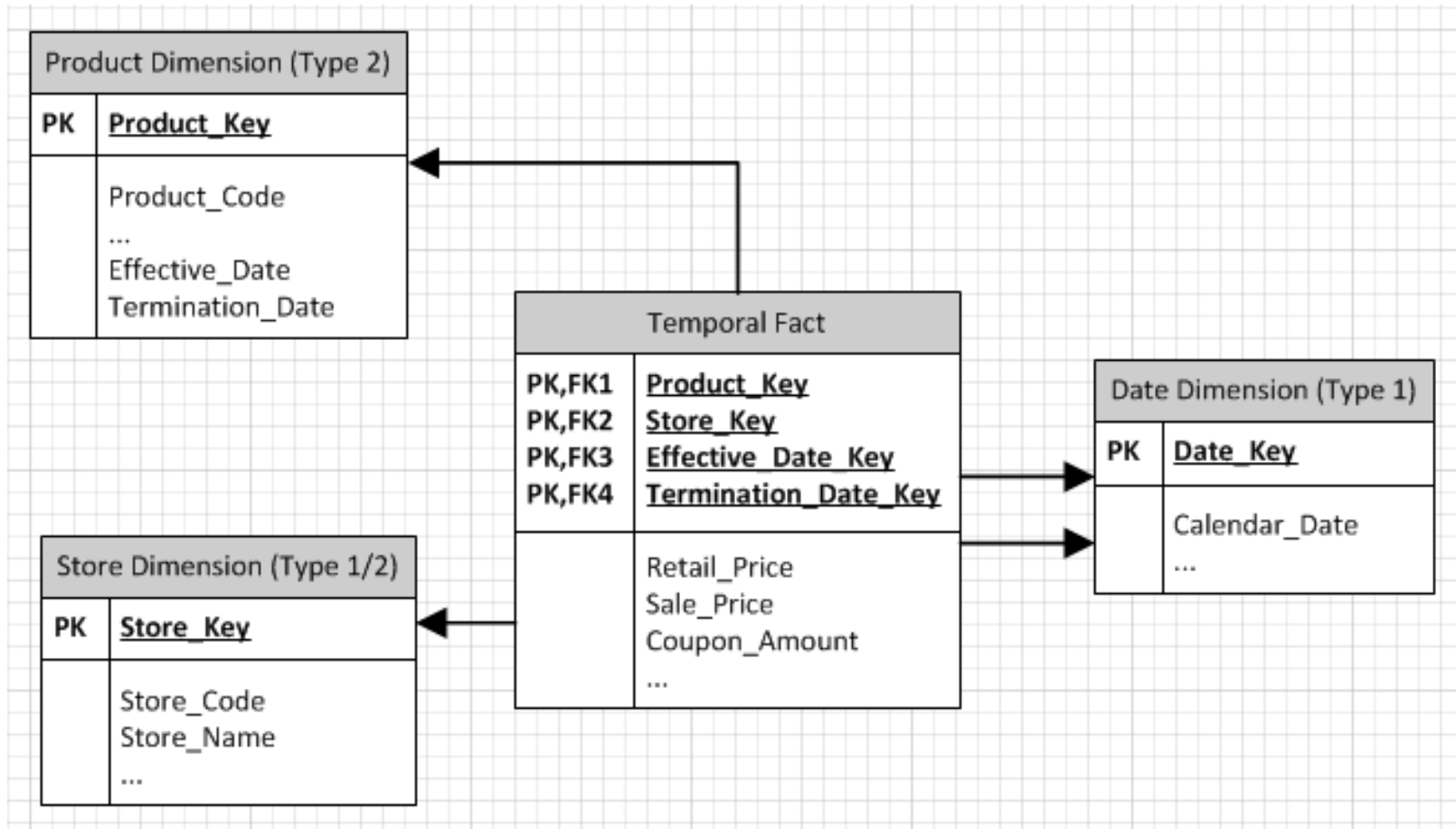
---

- Pro's
  - More Like a Typical Star Schema
  - Flexible
- Con's
  - Daily Snapshots Required
  - Changes Too Volatile
  - 16M Records \* 365 Days = **5.8B per Year**

---

# What Next?

# The Solution: Temporal Fact Table



# Traditional vs. Temporal Facts

---

- Traditional Facts
  - Transactions
  - Specific Point in Time
  - No Updates
- Temporal Facts
  - Properties of “Dimension” with Factual Attributes
  - Volatile Changes
  - Snapshots Not an Option

# Considerations

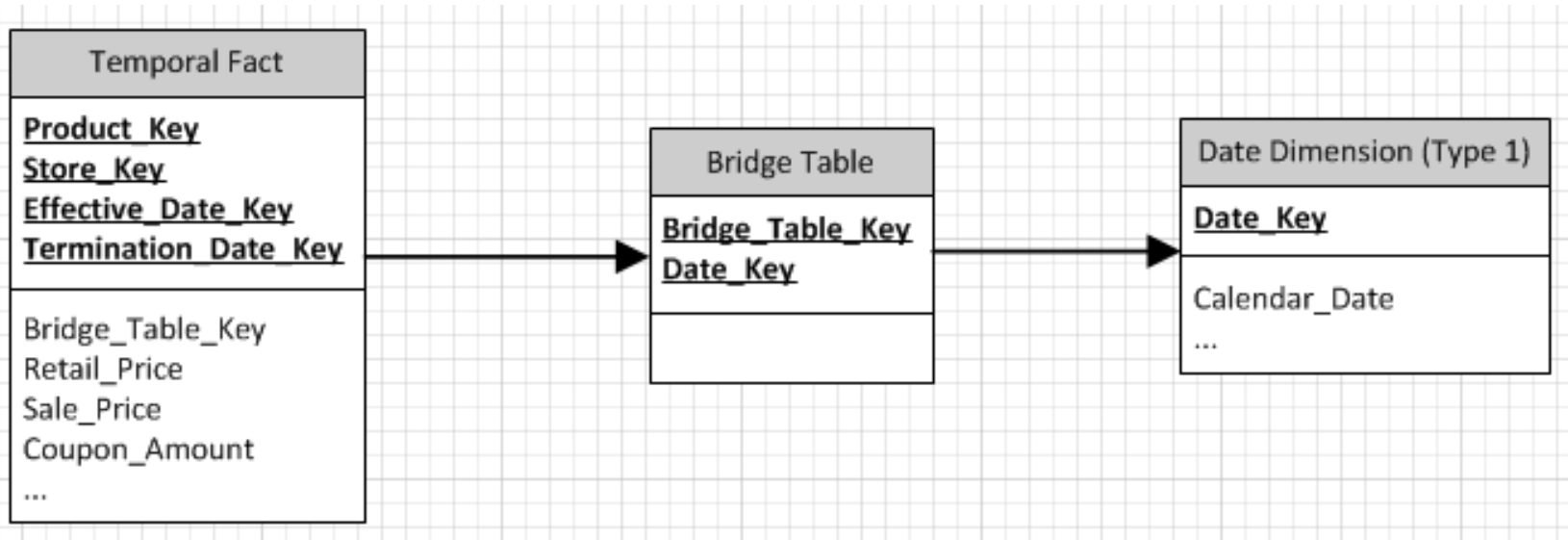
---

- Complex ETL Process
  - Parallel Processing
  - Use Stored Procedures
- Beware of Type-2 Dimension Changes
  - Sync with Temporal Fact Table
- Not a Replacement for Periodic Snapshots
  - Example: Stock-On-Hand



# Considerations

- Cubes Will Require Additional Work



---

# Will it Work?

# Real World Example

---

- Pricing Tool Recommendations
  - 6k Line Store Procedure
  - 1.3M Recommendations in 47min
  - History of 1 Product < 1s

# Martin Schoombee

---

- Senior BI Consultant at Insight
- MCITP – **BI Developer 2008**
- Blog – **[www.did-i-say-that.com](http://www.did-i-say-that.com)**
- Twitter – **@sqlmartin**
- SpeakerRate – **Martin Schoombee**