

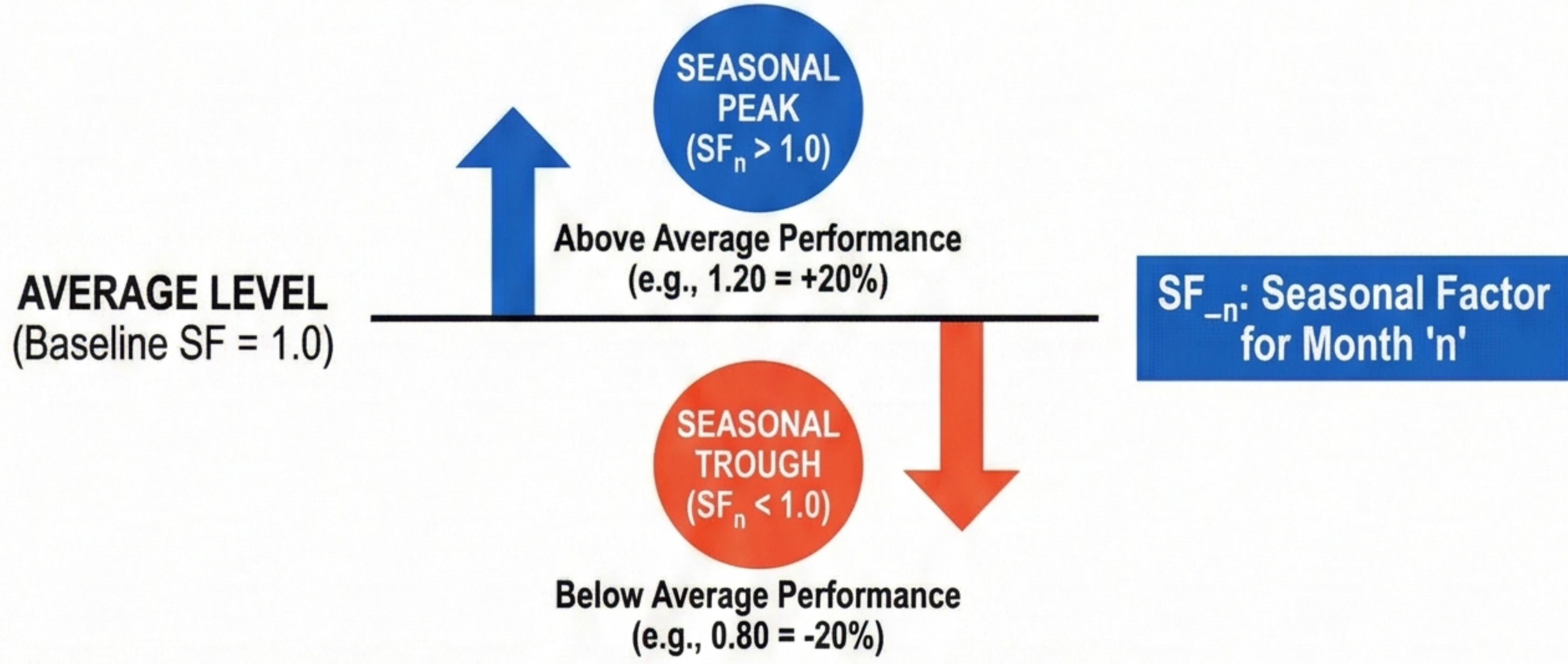
09 EN Predictive Statistics Seasonal Factors (Seasonality Index)	2
10 EN Predictive Statistics Deseasonaliza- n and Detrending for time series forecasting	3
11 EN Predictive Statistics Deseasonalizatio- n - Forecasting - Reseasonalization - Final forecast process	4
12 EN Predictive Statistics Detrending - Fore- casting - Retrending - Final forecast process	5

SEASONAL FACTORS (SEASONALITY INDEX)

Quantifying Recurring Deviations from an Average Level Within a Fixed Period

MODULE 1: CORE CONCEPT - THE DEVIATION FROM AVERAGE

THE DEVIATION: PEAKS & TROUGHS (SF_n vs. 1.0)



MODULE 2: THE FORMULA (MATHEMATICAL NOTATION)

THE CALCULATION FORMULA (TWO-YEAR AVERAGE EXAMPLE)

$$SF_n = \text{Avg} \left(\frac{\text{Last}_{\text{year Month}(n)}}{\text{Avg}(\text{Last}_{\text{year}})}, \frac{\text{Prev}_{\text{year Month}(n)}}{\text{Avg}(\text{Prev}_{\text{year}})} \right)$$

Calculates the average seasonal ratio for a specific month (n) across multiple years.

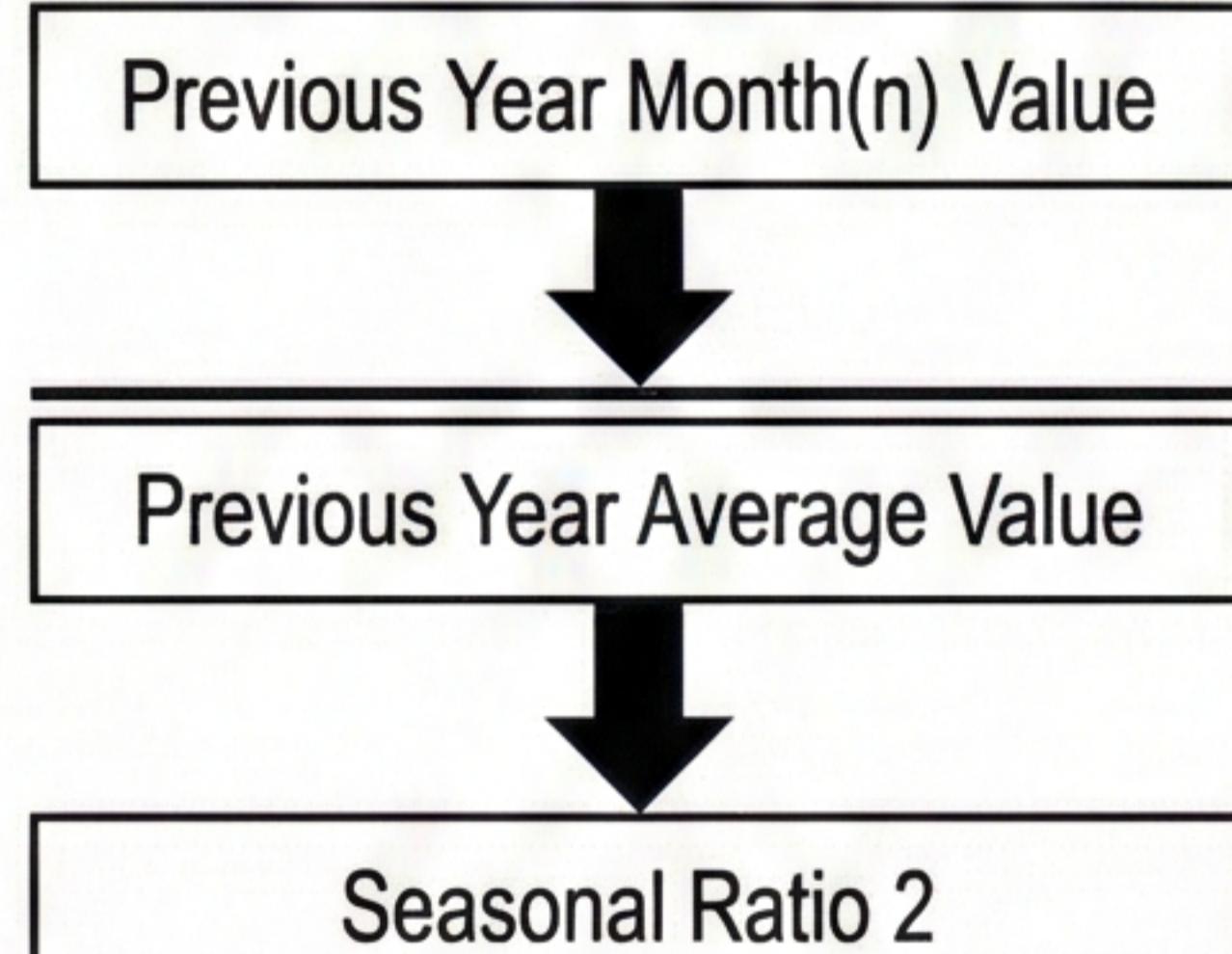
MODULE 3: FORMULA DECOMPOSITION (STEP-BY-STEP FLOW)

DECOMPOSING THE CALCULATION PROCESS

RATIO 1 (Last Year)



RATIO 2 (Previous Year)



AVERAGE of Ratios

SF_n (Seasonal Factor for Month n)

MODULE 4: MANAGEMENT APPLICATION (FORECASTING ADJUSTMENT)

APPLICATION: ADJUSTING FORECASTS FOR SEASONALITY

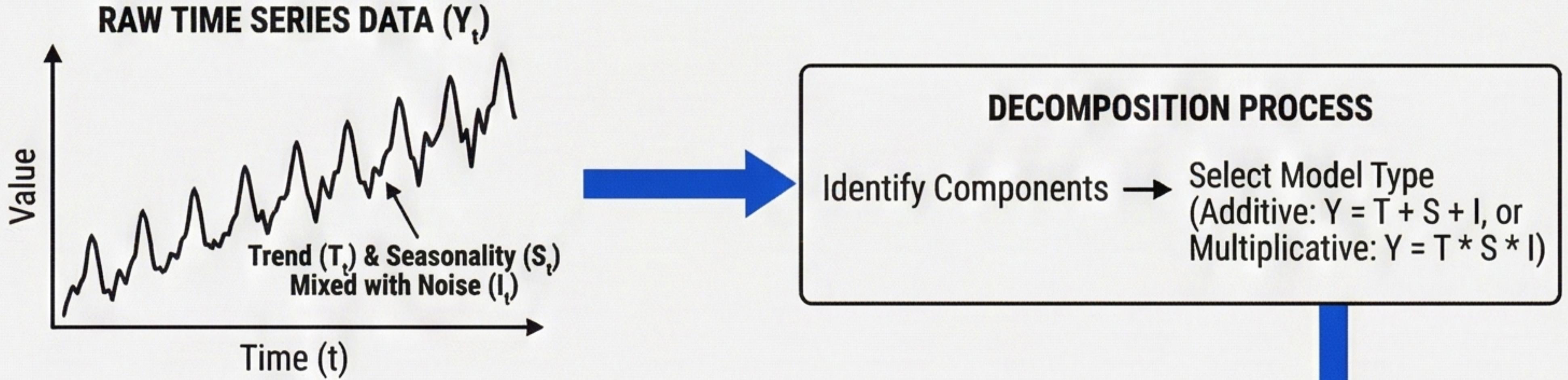


Example: If Base Forecast = 1000 units and SF_{Dec} = 1.20, then Final Forecast_{Dec} = 1000 * 1.20 = 1200 units.

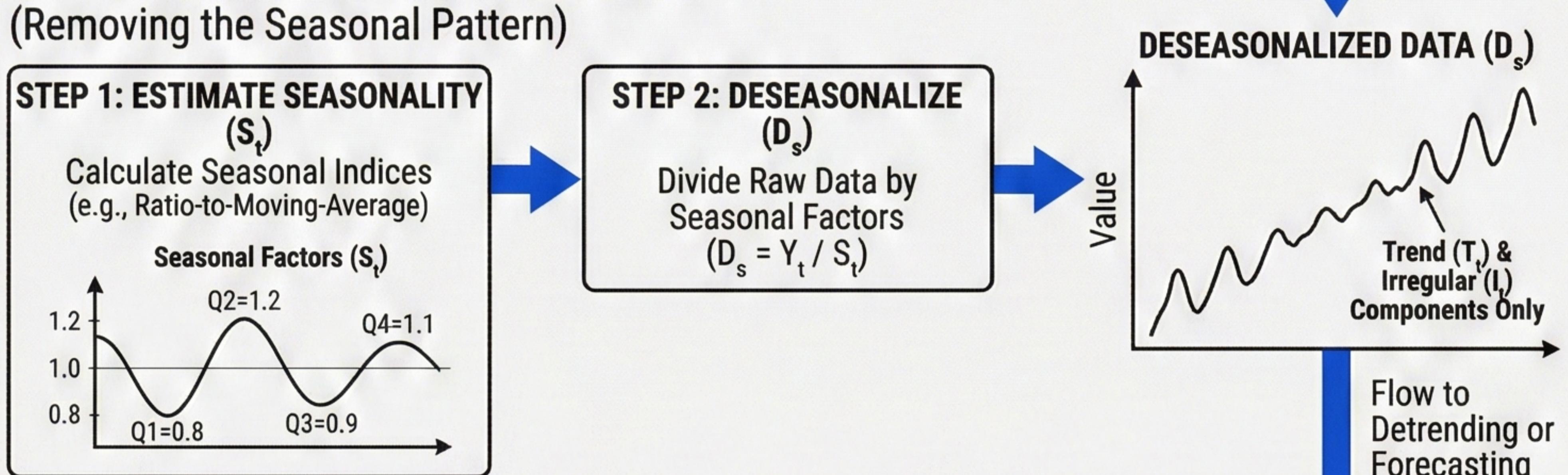
DESEASONALIZATION & DETRENDING FOR TIME SERIES FORECASTING

Isolating Underlying Patterns to Create a Stationary Base for Accurate Predictions

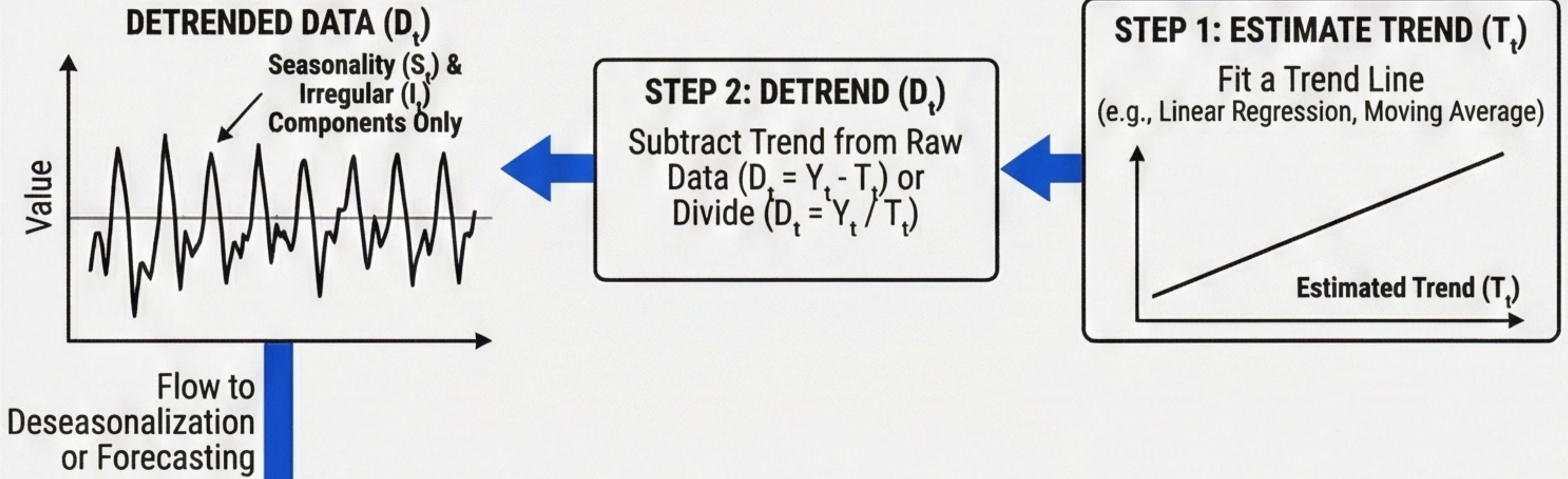
MODULE 1: THE PROBLEM & DECOMPOSITION (Raw Data to Components)



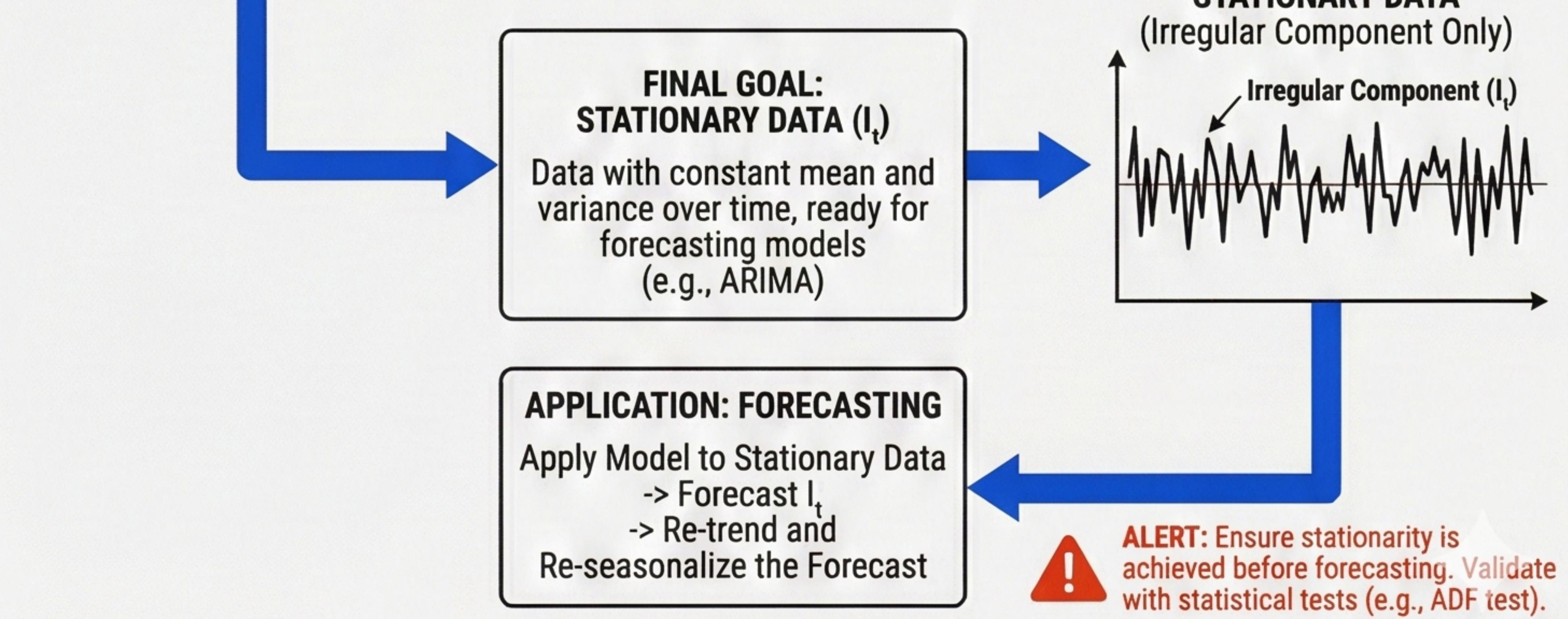
MODULE 2: PATH A - DESEASONALIZATION (Removing the Seasonal Pattern)



MODULE 3: PATH B - DETRENDING (Removing the Underlying Trend)



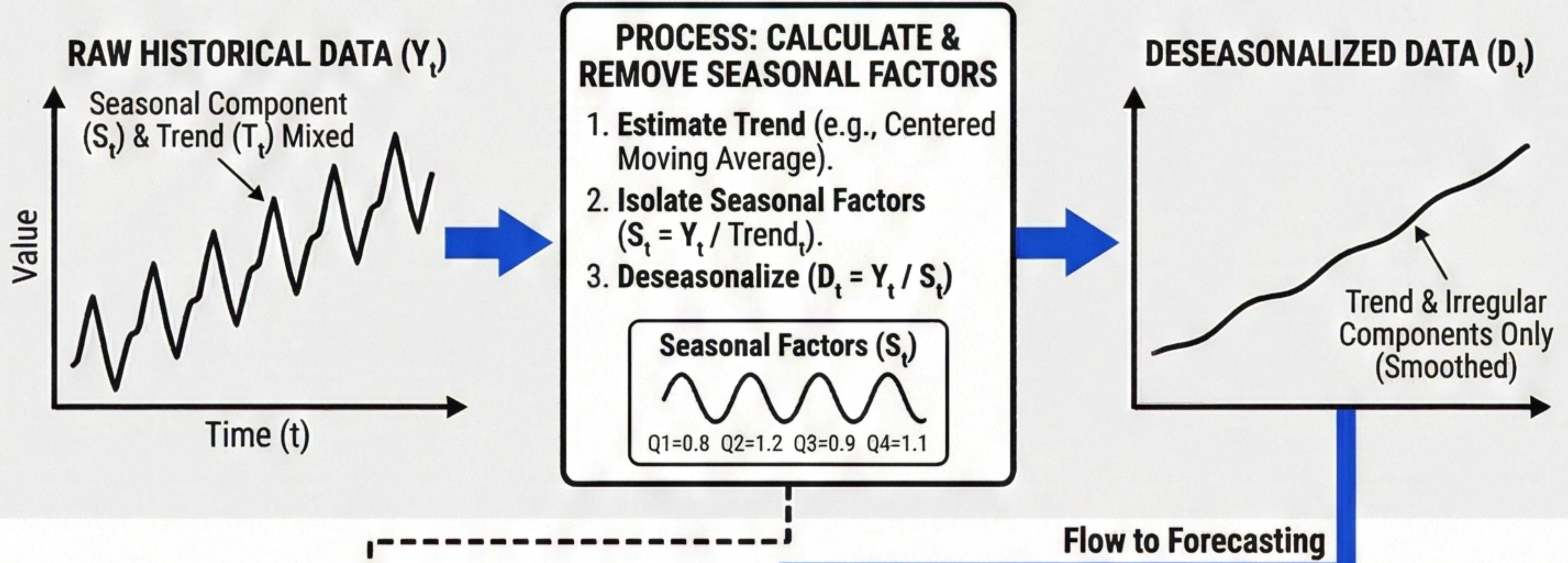
MODULE 4: THE GOAL & APPLICATION (Stationary Data for Forecasting)



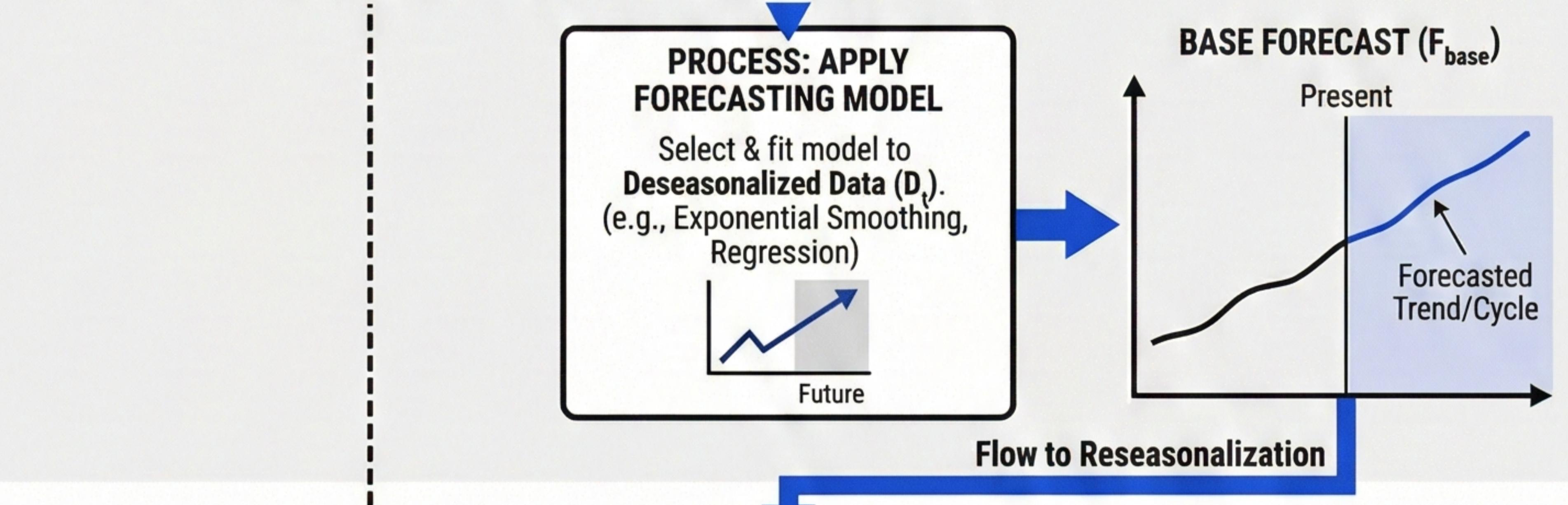
DESEASONALIZATION – FORECASTING – RESEASONALIZATION – FINAL FORECAST PROCESS

A Structured Approach for Time Series with Recurring Seasonal Patterns

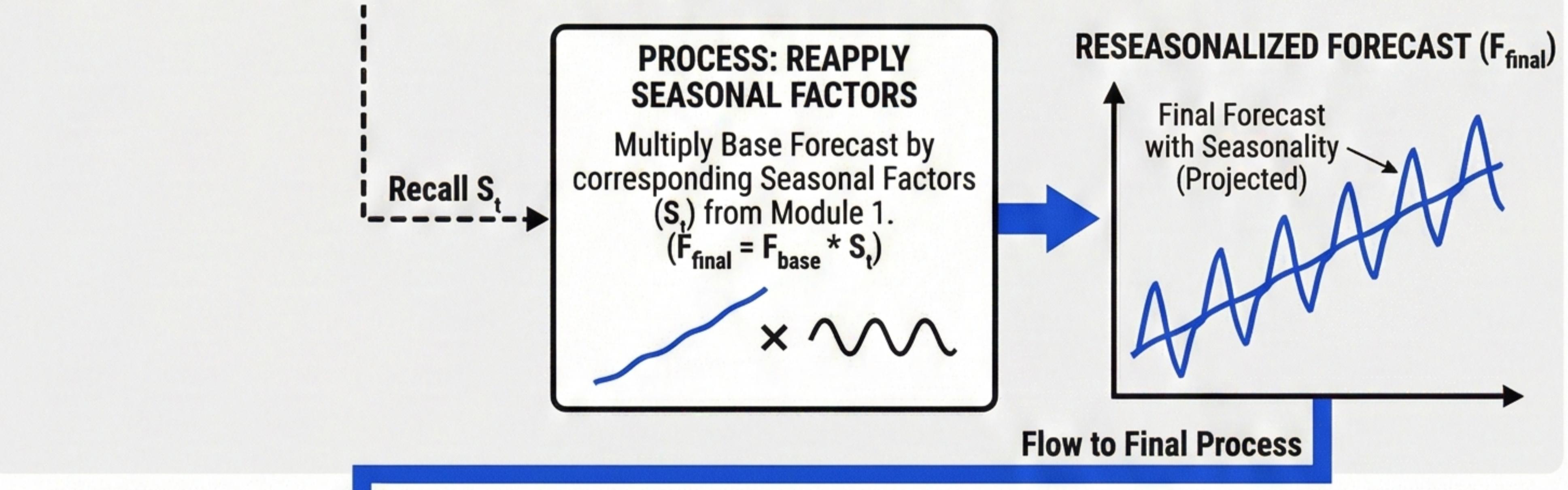
MODULE 1: DESEASONALIZATION (Isolating the Trend/Cycle)



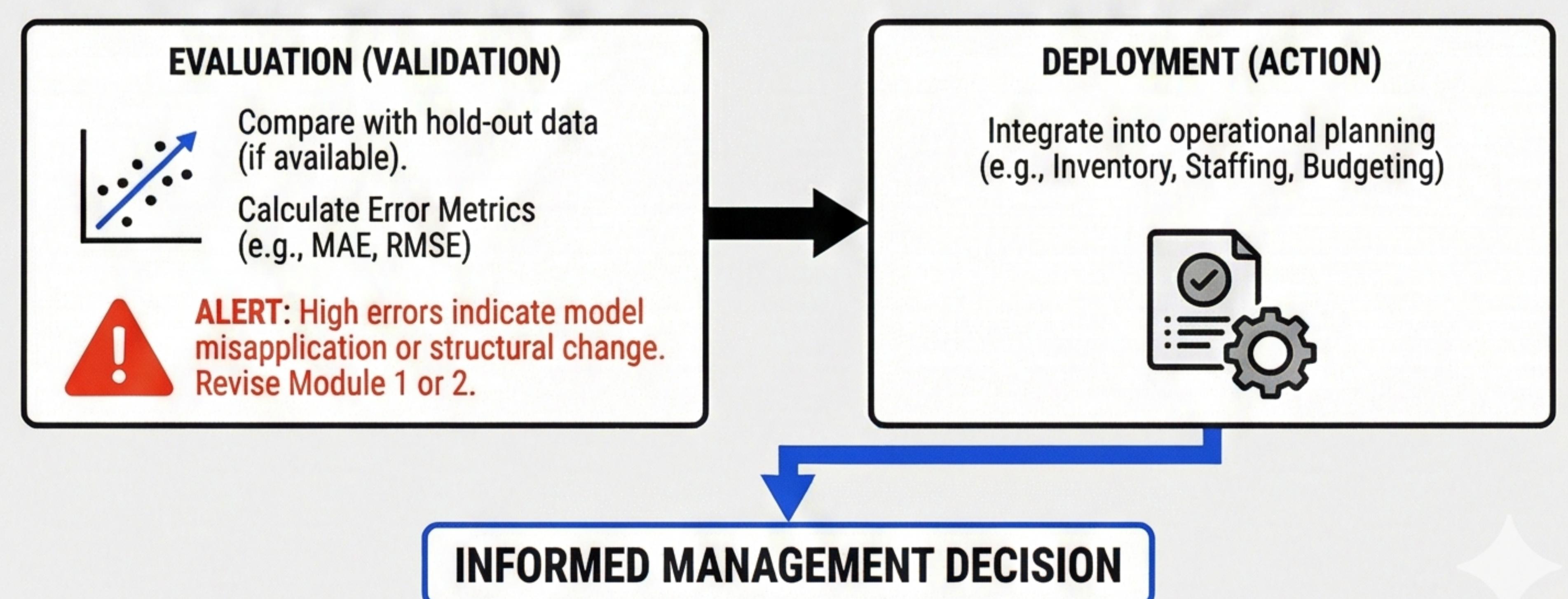
MODULE 2: FORECASTING (Projecting the Base)



MODULE 3: RESEASONALIZATION (Reintroducing the Pattern)



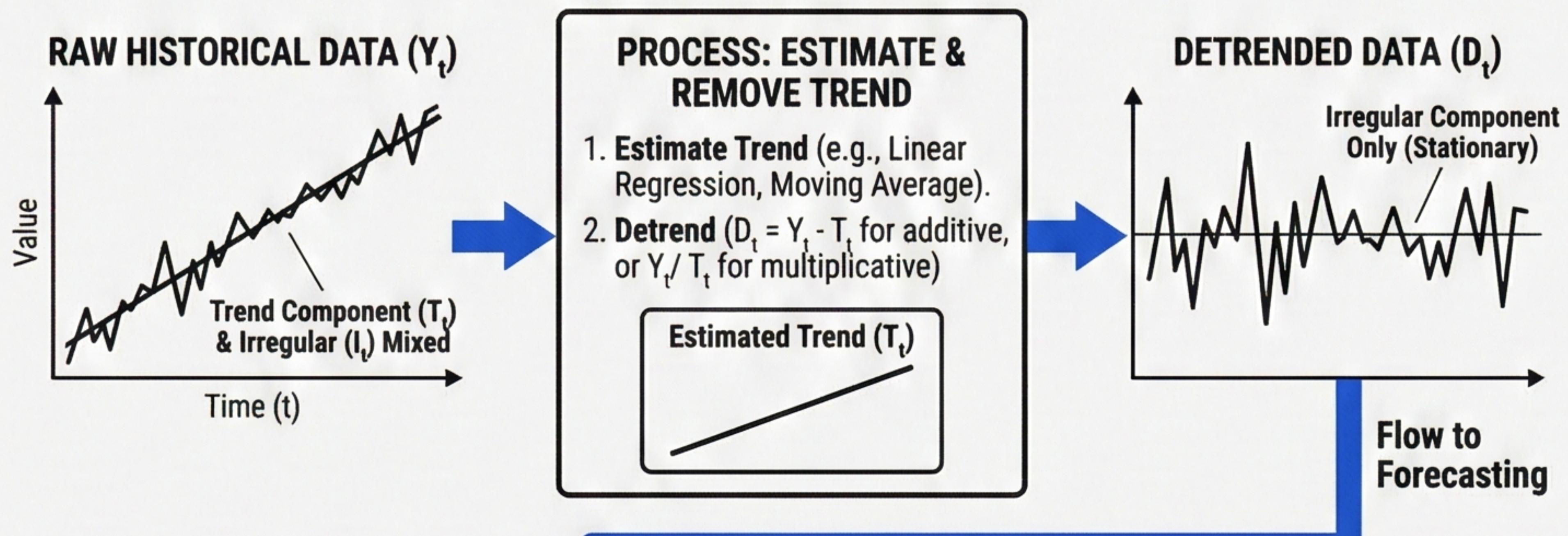
MODULE 4: FINAL FORECAST PROCESS (Evaluation & Deployment)



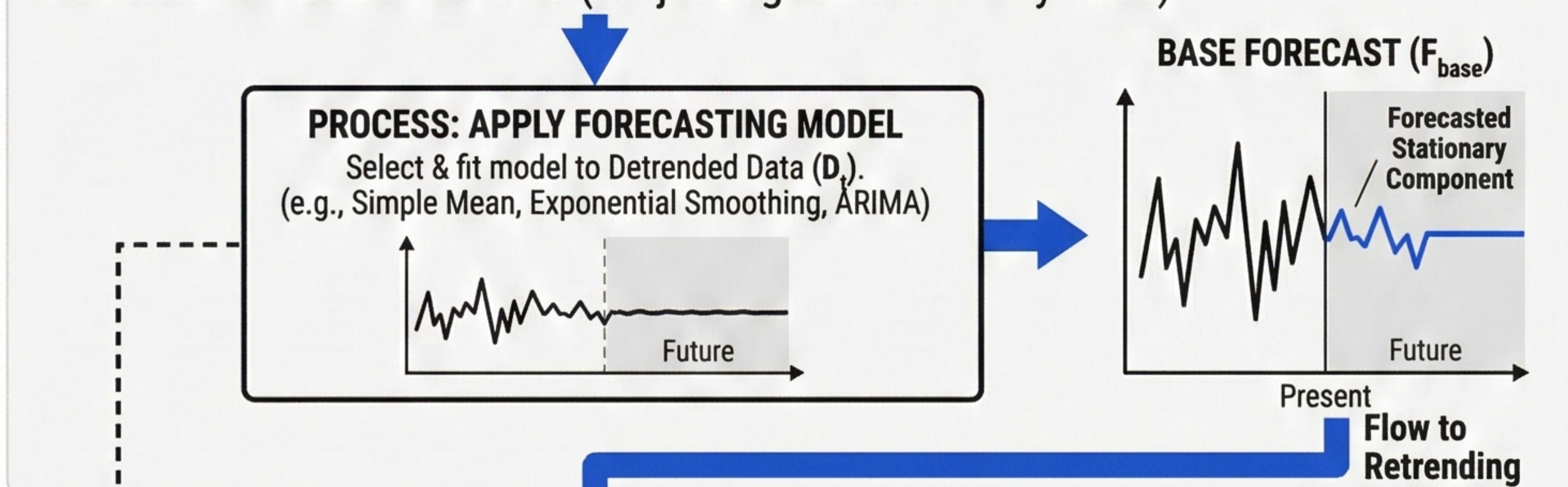
DETRENDING – FORECASTING – RETRENDING – FINAL FORECAST PROCESS

A Structured Approach for Time Series with a Clear Underlying Trend

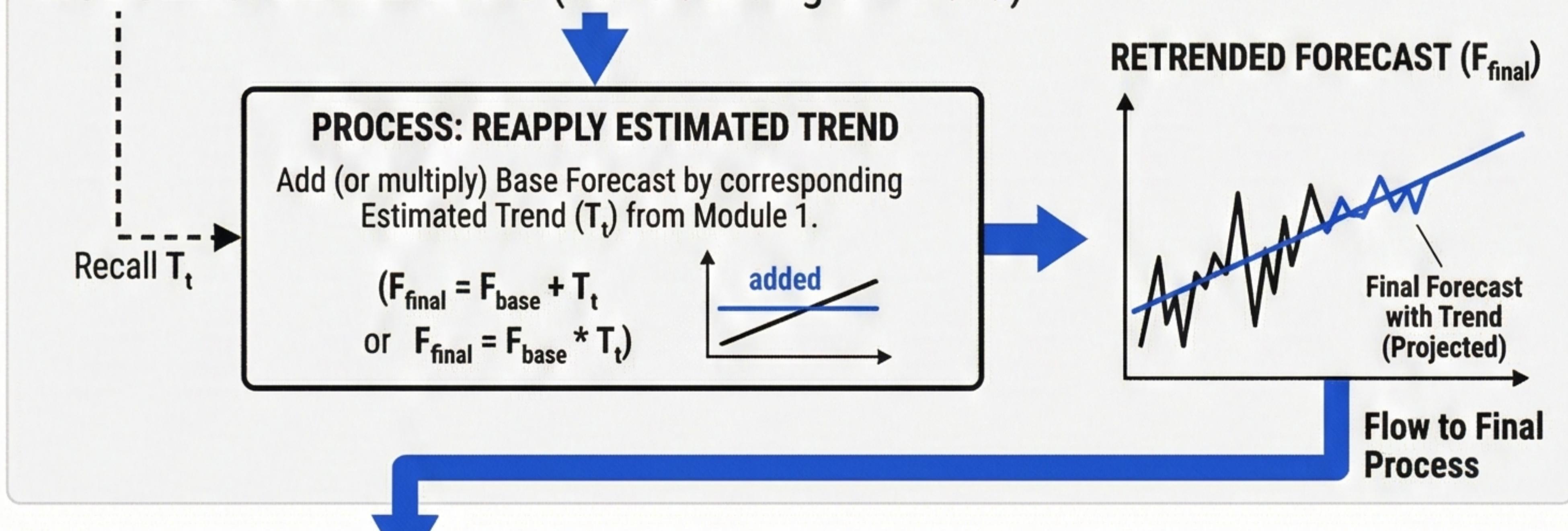
MODULE 1: DETRENDING (Isolating the Stationary Component)



MODULE 2: FORECASTING (Projecting the Stationary Base)



MODULE 3: RETRENDING (Reintroducing the Trend)



MODULE 4: FINAL FORECAST PROCESS (Evaluation & Deployment)

