

Achieve Forecast Accuracy by Managing Error

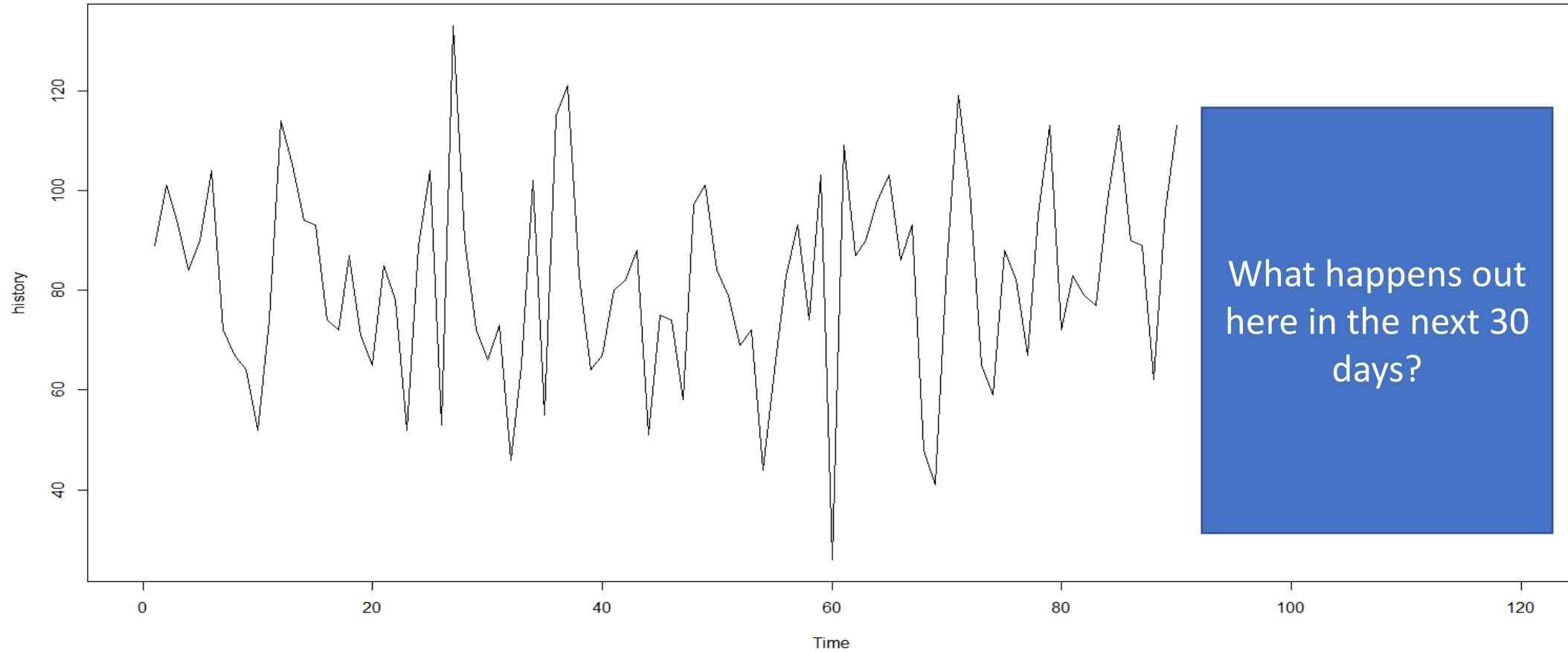
Dr. Tom Willemain PhD Co-Founder & Senior Vice President Smart Software, Inc.

Tutorial / Webinar





The Forecaster's Predicament





Forecast error can be consequential

- Consider one item of many
 - Product X costs \$100 to make and nets \$50 profit per unit.
 - Sales of Product X will turn out to be 1,000/month over next 12 months.
- What is the cost of forecast error?
 - If the forecast is 10% high, end the year with \$120,000 of excess inventory.
 - 100 extra/month x 12 months x \$100/unit
 - If the forecast is 10% low, miss out on \$60,000 of profit.
 - 100 too few/month x 12 months x \$50/unit

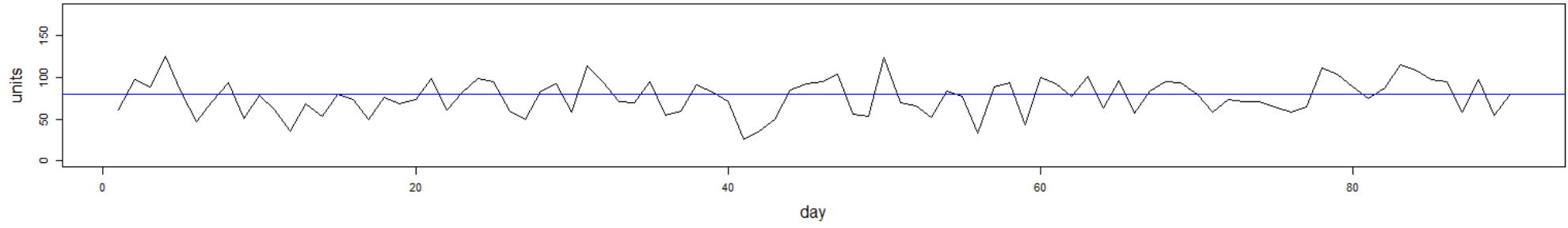
Three mistakes to avoid



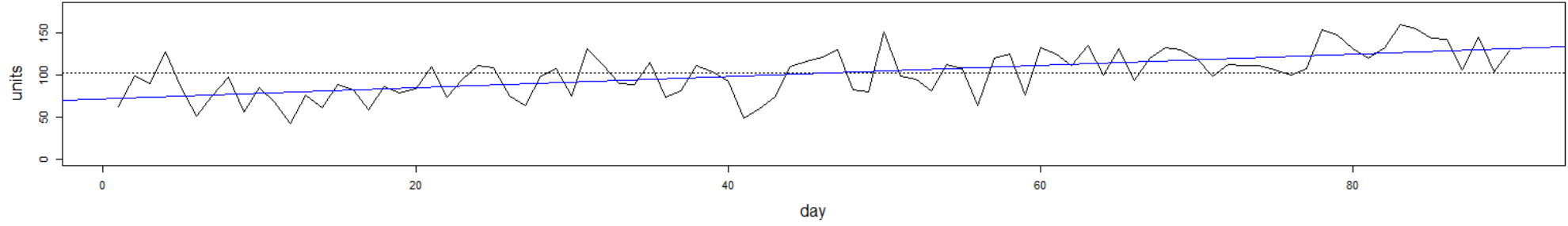
- 1. Ignoring error.**
 - Unprofessional, dereliction of duty.
 - Wishing will not make it so.
 - Treat accuracy assessment as data science, not a blame game.
- 2. Tolerating more error than necessary.**
 - Statistical forecasting methods can improve accuracy at scale.
 - Improving data inputs can help.
 - Collecting and analyzing forecast error metrics can identify weak spots.
- 3. Wasting time and money going too far trying to eliminate error.**
 - Some product/market combinations are inherently more difficult to forecast. After a point, let them be (but be alert for new specialized forecasting methods).
 - Sometimes steps meant to reduce error can backfire (e.g., adjustment).



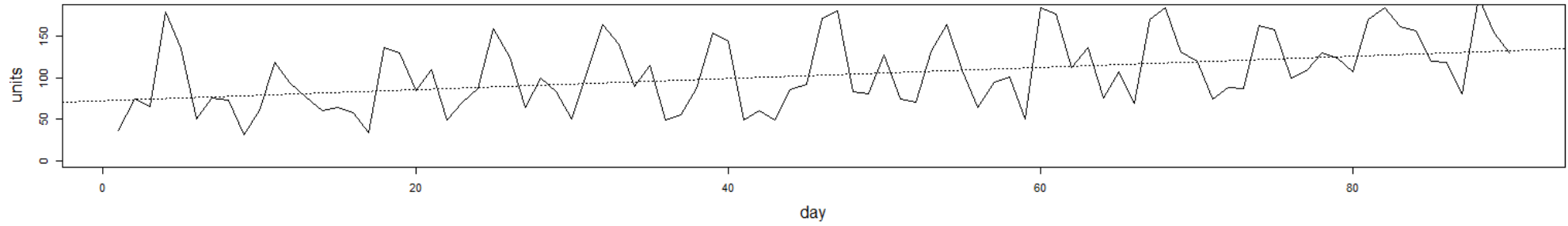
Level



Level & Trend



Level & Trend & Seasonality



Keep track of forecast error retrospectively



© Smart Software, Inc. - Confidential

Actual demand through September												
ITEM	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SKU1	42	54	34	71	68	54	62	34	62			
SKU2	43	59	65	42	57	60	51	40	52			
SKU3	40	51	32	54	52	69	36	60	45			
Forecasts for October-December made using data through September												
ITEM	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SKU1	42	54	34	71	68	54	62	34	62	53	53	53
SKU2	43	59	65	42	57	60	51	40	52	52	52	52
SKU3	40	51	32	54	52	69	36	60	45	49	49	49
Actual demand in October-December												
ITEM	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SKU1	42	54	34	71	68	54	62	34	62	51	48	45
SKU2	43	59	65	42	57	60	51	46	40	60	59	56
SKU3	40	51	32	54	52	69	36	60	45	30	38	41



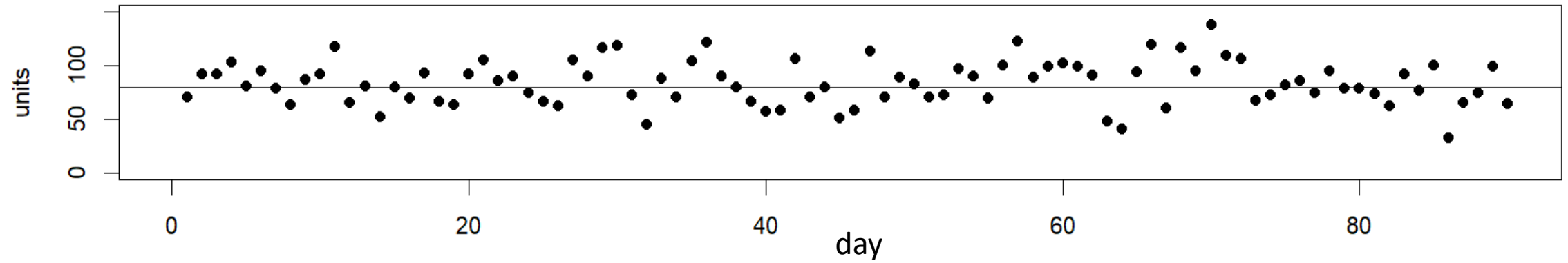
Item-Level Tabular View

© Smart Software, Inc. - Confidential

Forecast Parameters			Forecast	Forecast Metrics	Graphical View	Attributes	Forecast Vs Actual	Timeseries Comparison
<input type="checkbox"/> Product	Location	Group						
<input type="text"/>	<input type="text"/>	<input type="text"/>						
<input type="text"/> 020-1223	Chicago	FABP	263	252	-11	-4	11	4
<input type="text"/> 020-1223	Rockford	FABP	36	0	-36	-100	36	100
<input type="text"/> 030-2334	Chicago	HDW	207	174	-33	-16	33	16
<input type="text"/> 030-2334	Evanston	HDW	15	54	39	260	39	260
<input type="text"/> 040-3445	Chicago	DATA	65	76	11	17	11	17
<input type="text"/> 050-4556	Chicago	FABP	130	136	6	5	6	5
<input type="text"/> 060-5667	Chicago	HDW	14	47	33	236	33	236
<input type="text"/> 090-8990	Chicago	HDW	36	16	-20	-56	20	56
<input type="text"/> 090-9000	Chicago	HDW	1	0	-1	-100	1	100
<input type="text"/> 1032FW	Chicago	HDW	29	16	-13	-45	13	45



Harder to forecast



Easier to forecast

