

Measuring Uncertainty A Core Problem of TFM

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What are the Kinds of TFM Uncertainty?

- Predictions of Demand and Events that Affect Demand
- Predictions of Capacity and Events that Affect Capacity
- Control Action Selection, Timing and Interaction
- The Natural Chaos of **Distributed Asynchronous** Activities

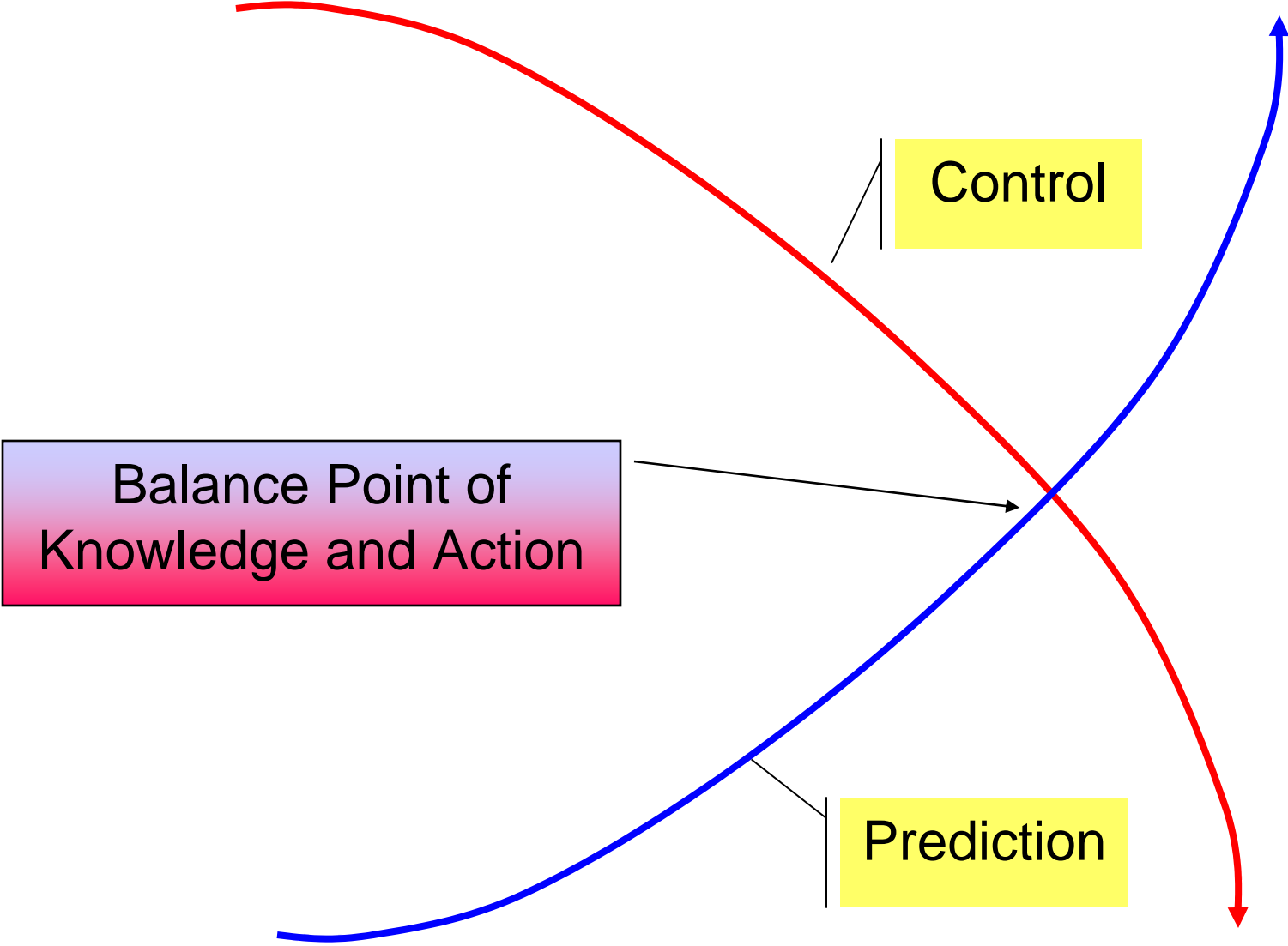
We Can Not Make Uncertain Data Go Away By...

- Collaborating It to Death
- Calling it “Intent” and Wishing Real Hard
- Claiming Bad Data is “Non-Compliant”
- Whipping Users and Service Providers Hard Enough Until They Tell the Truth
- We Really Need to **DEAL WITH IT.**

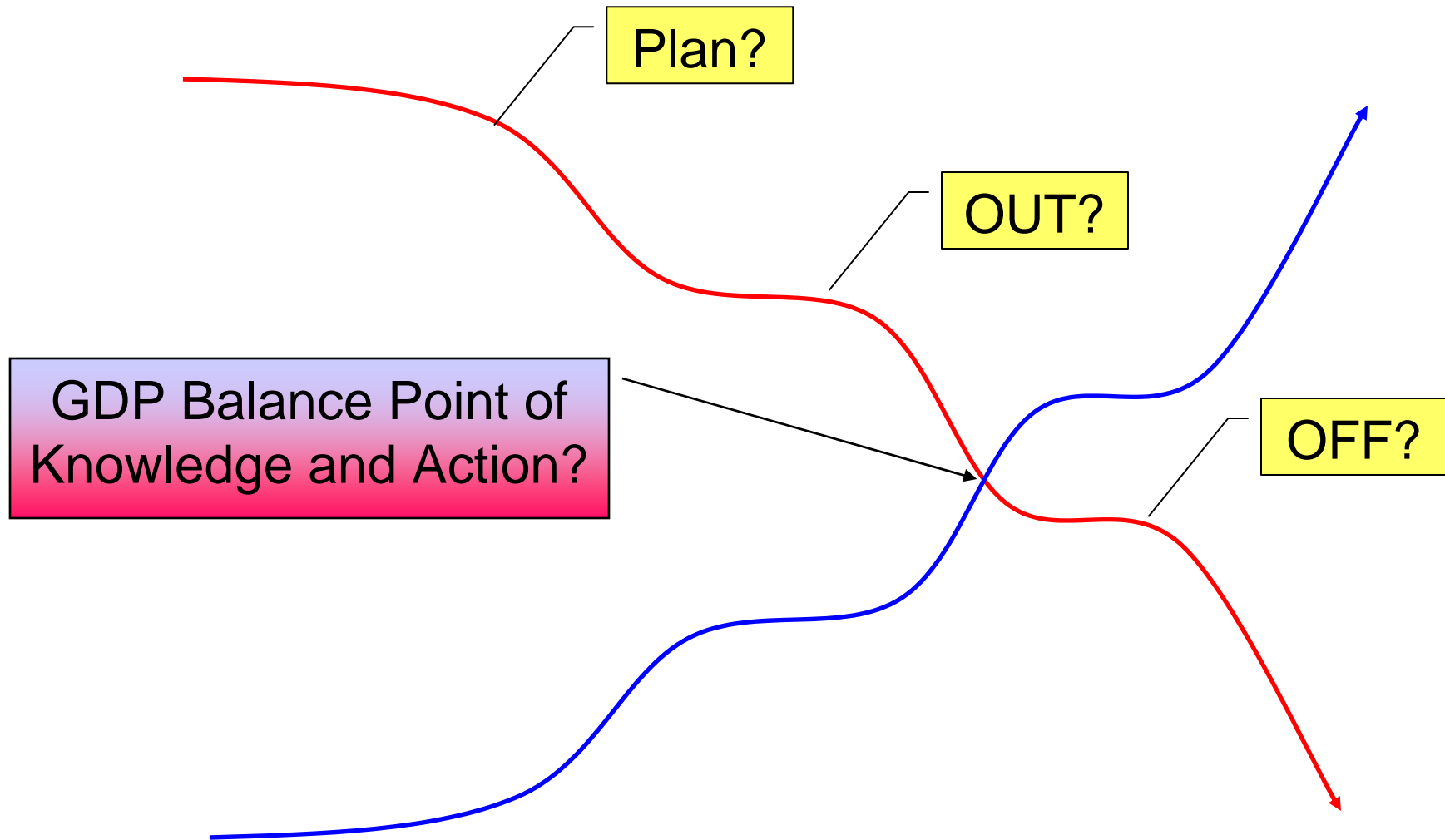
Why is NOT Dealing With Uncertainty Detrimental To Efficiency

- Pretending Uncertainty Does Not Exist
Sucks Capacity Out of the System
- Control Action May be Taken Earlier
Than is Appropriate
- Tactical Options are Locked out in
Favor of Strategic Restrictions

Predictability and Effective Control Curves



Event Based Predictability



How Might We Better Deal With Uncertainty?

- Develop control actions that are appropriate for the state of the underlying data
- Understand that there are limitations to strategic centralized decision making
- Look for more dynamic and adaptive controls, geared to an ever shifting data landscape.