TOMORROW'S SUPPLY CHAIN
IT WON'T BE YOUR FATHER'S SUPPLY CHAIN

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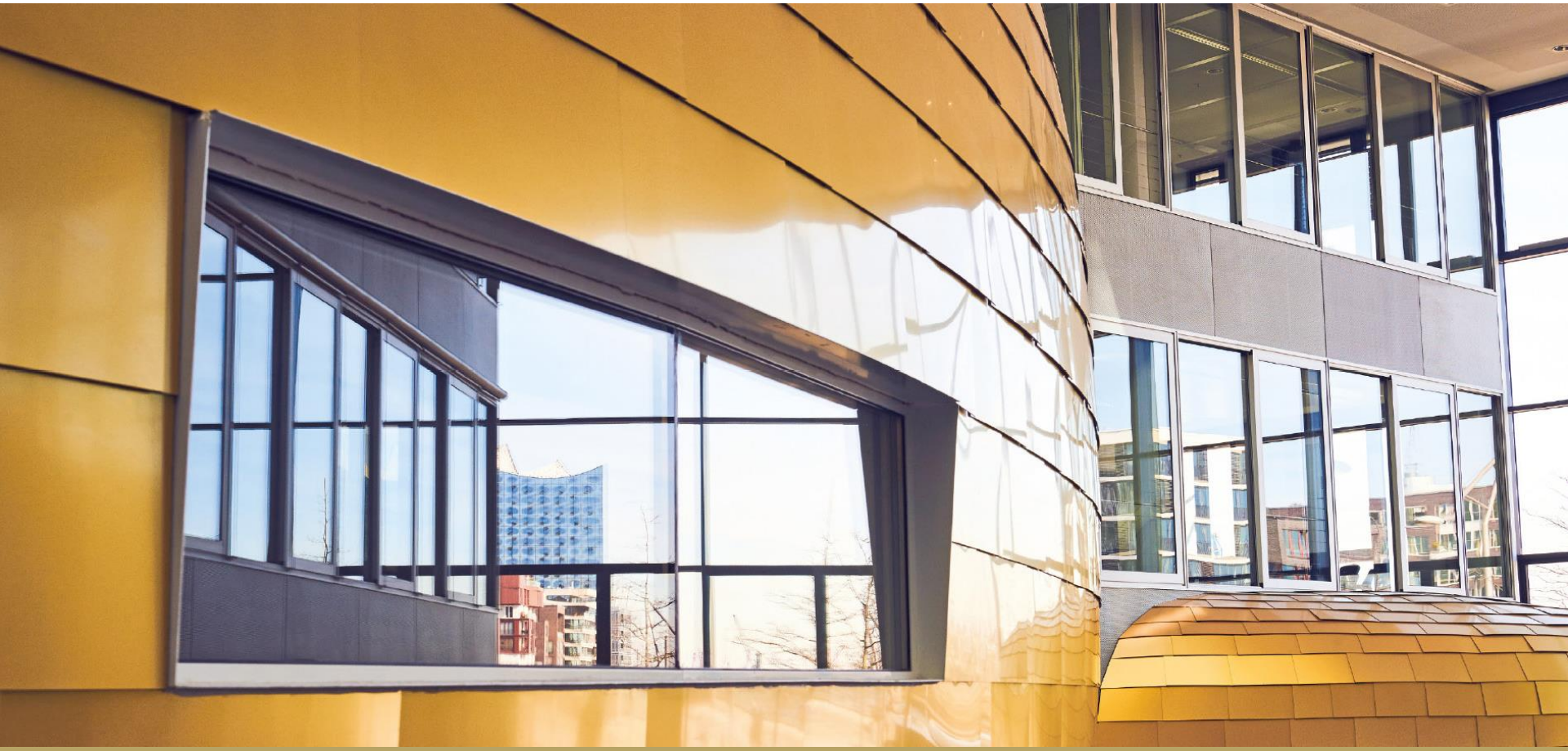


INTRODUCTIONS – PROF. DR. J. ROD FRANKLIN, P.E.

- American
- From practice, not the academy
  - Kuehne + Nagel
  - USCO Logistics
  - Viacore
  - ENTEX Information Services
  - Digital Equipment Corporation
  - Daily Instruments
  - Cameron Iron Works
  - General Motors Corporation
- Also consulting
  - Theodore Barry & Associates
  - Booz-Allen and Hamilton
  - Arthur Young
- Academically challenged ☺
  - Case Western Reserve University
  - Harvard Graduate School of Business
  - Stanford University
  - Purdue University

DO YOU THINK THE FUTURE WILL LOOK LIKE THE PAST?

THEN WHY ARE WE PLANNING FOR THE FUTURE BY LOOKING TO THE PAST?

WE NEED TO RECOGNIZE A FEW THINGS ABOUT OUR WORLD

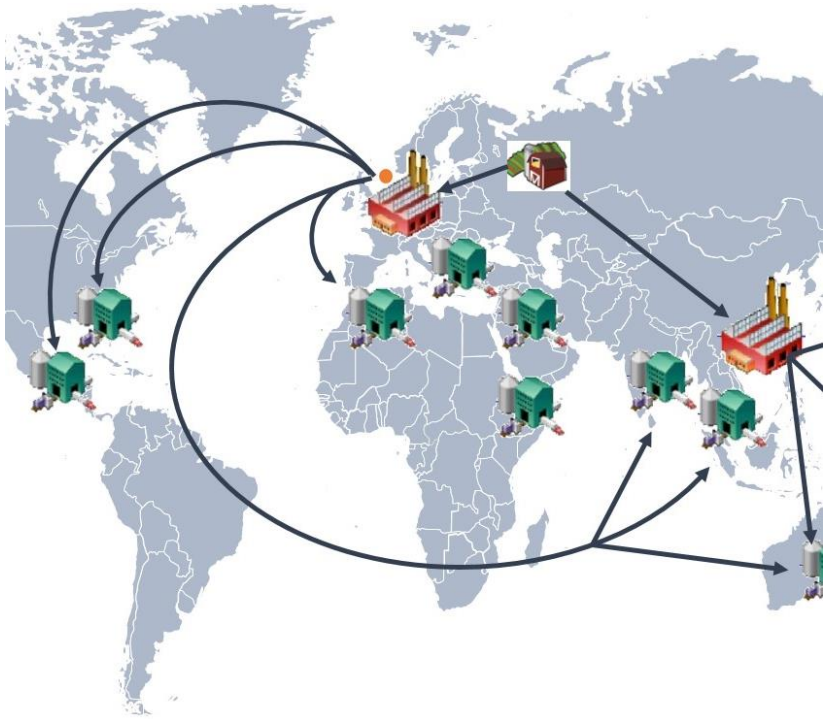
- Borders are no longer the strong protection that they were in the past
  - The environment does not respect borders
  - Viruses do not respect borders
  - Information does not respect borders
- Our pursuit of efficiency is counter productive and leads to fragile supply chains
- Political populism will continue to disrupt the free flow of goods
- Our companies operate in a global setting not an extended national setting

- Uncertainty is our way of life going forward

RESILIENCE MEANS THAT WE NEED TO PLAN FOR THE UNEXPECTED. . .

- Visibility – we need to be able to observe all our flows, inbound and outbound, so that we can act before critical breakages occur
- Collaboration – we need to move away from win/lose supplier negotiations to collaborative relationships to ensure capacity in troubled times
- Flexibility – we need to establish multi-geography sourcing strategies to minimize single region points of failure
- Control – we need to truly manage our supply chains, not simply “fire and forget”

. . .AND DESIGN OUR SUPPLY CHAINS IN A MORE ALIGNED AND COLLABORATIVE MANNER



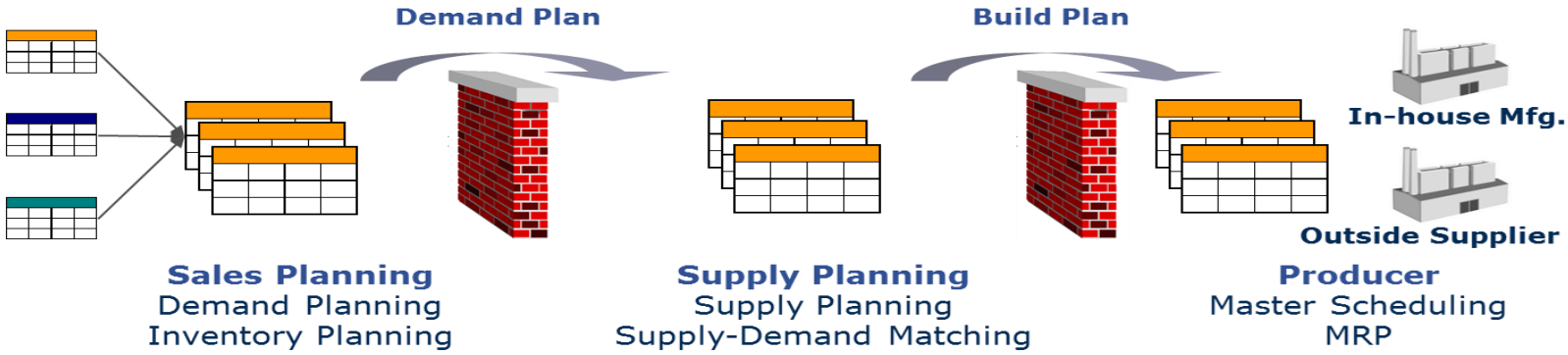
- Aligned operations
  - The entire value chain needs to be focused on servicing the ultimate customer. This requires transparency up and down the supply chain.
- Balanced operations
  - To avoid bullwhip like effects, supply chain operations at all parties in the supply chain need to be balanced based on demand and demand variability
- Coordinated operations
  - Management implies coordination. Supply chain flows need to be coordinated to ensure "right product, right location, right quality, right cost"
- Collaborative operations
  - @#*! Happens. Supply chain members need to work in a collaborative manner to ensure that when issues arise or greater efficiency is needed, then the supply chain can effectively respond

UNFORTUNATELY, MOST SUPPLY CHAINS ARE BUILT AROUND LINK-BY-LINK SELF INTEREST NOT AN END-TO-END VIEW

- Tedious & error prone manual processes
- Limited exchange of real data upstream to suppliers

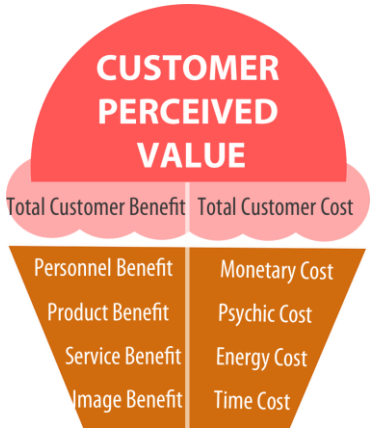
- Erratic customer delivery performance
- Missed revenues

- Unmanaged inventory and expedite costs
- Significant mis-match between actual and required

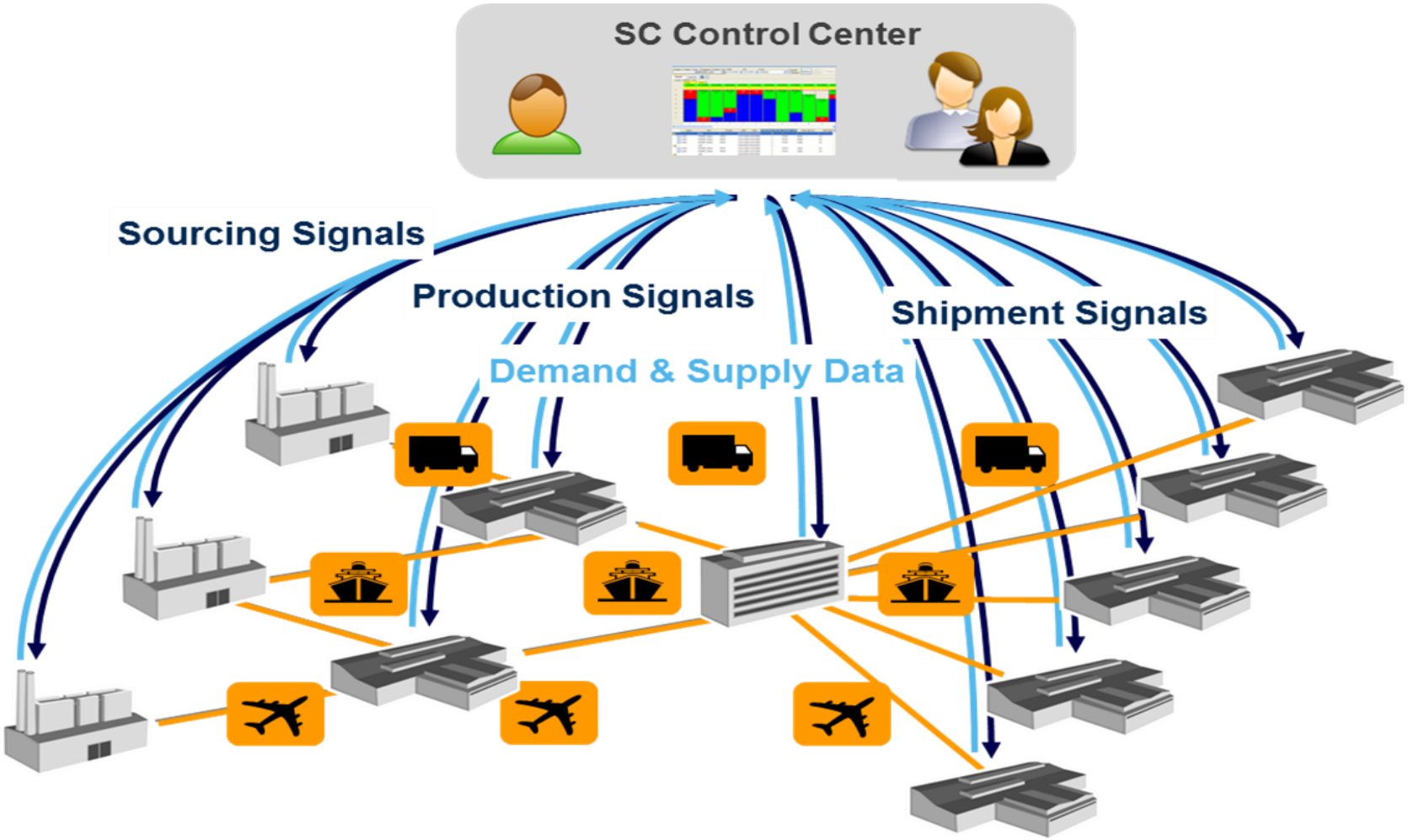


Poor fulfillment control = Missed revenues ⟷ **Poor supply utilization = Excess costs**

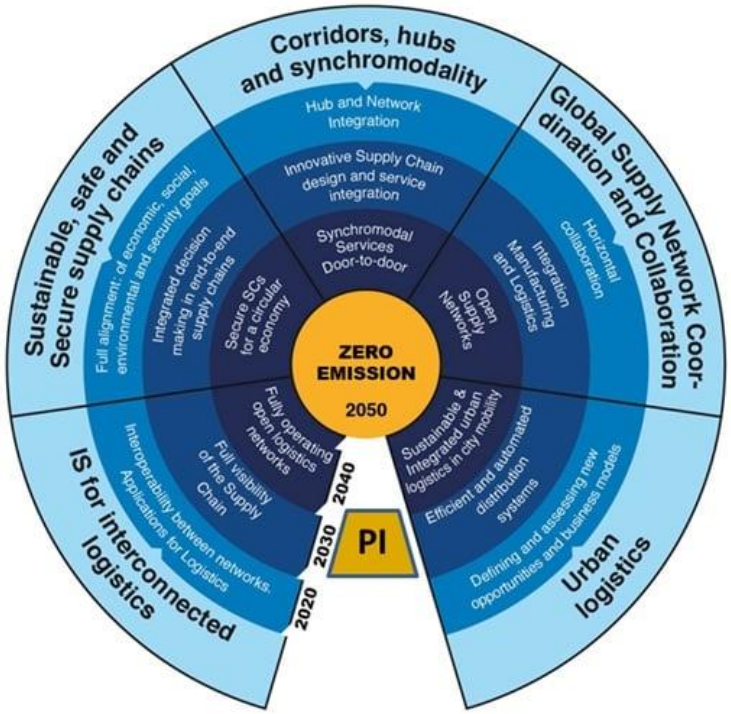
- Each component of the supply chain tries to optimize its operations ignoring the impact on up and down stream players
- Information is shared only as needed without any thought to end-to-end visibility
- Customer satisfaction is left up to the last partner in the chain



THE FUTURE WILL REQUIRE A BETTER APPROACH TO ENSURE RELIABILITY AND ONGOING VALUE GENERATION



REDUCED ENVIRONMENTAL IMPACTS ARISE BY LINKING THESE E2E NETWORKS IN A COLLABORATE MESH - A "PHYSICAL INTERNET"

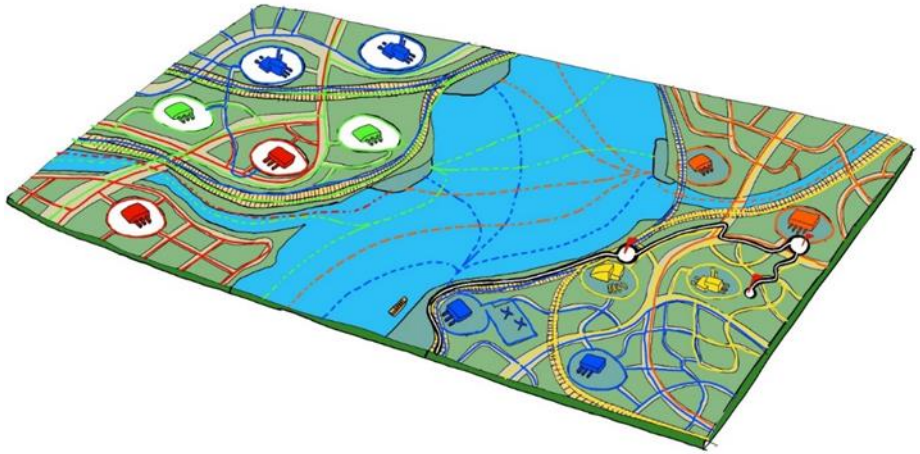


Source: ALICE-ETP

- Efficient operation of supply chains requires asset sharing to reduce empty running
- Last mile delivery of goods requires integrated distribution for outbound and return operations to eliminate neighborhood congestion
- Seamless goods flow from any source to any destination requires collaboration
- Zero emissions targets require higher efficiency and greater effectiveness in supply chain operations

THE SUPPLY CHAIN OF THE FUTURE NEEDS TO BE QUITE DIFFERENT FROM THE SUPPLY CHAIN OF THE PAST

- Multi-geography sourcing
- Collaborative partnerships
- Transparent
- Dynamic
- Operationally controlled
- Effectively managed
- Strategically integrated (a Physical Internet)



THANK YOU FOR YOUR TIME

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