



The Network-centric Enterprise



Center for Business Solutions

Sunder Kekre

Charles Buhman

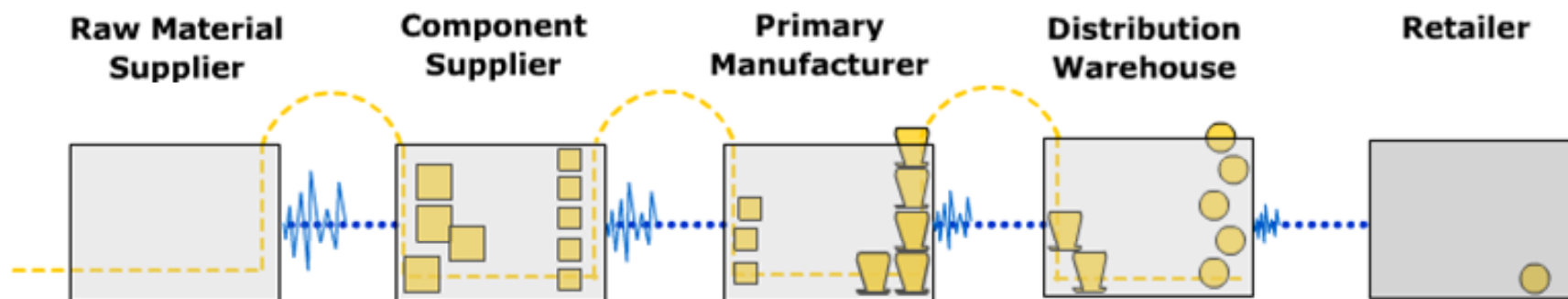


Our discussion today on network integration of demand & supply chains:

- What is a network-centric enterprise?
- Why is it needed?
- What are the management challenges?
- What are leading firms doing in response?

It is all about synchronizing flows --

- Information
- Money
- Materials



Orchestrating the Enterprise

How can we establish a network that produces great results?

Let's use a musical analogy

- Conductor
 - Network Master
- Musicians
 - Partners
- Arrangement
 - Business Intelligence



Without synchronization - Just noise
With synchronization - A melody

Who is Synchronizing?

LOCKHEED MARTIN
 We never forget who we're working for™
 www.lockheedmartin.com

MSA

CAT

accenture
 High performance. Delivered.

SAP

Microsoft Business Solutions

Kurt J. Lesker Company
 "...vacuum science is our business."

R/3 Core Business Processes

Sales & Distribution	Financial Accounting
Material Management	Controlling
Production Planning	Fixed Asset Management
Quality Management	Project System
Plant Maintenance	Workflow
Human Resources	Industry Solutions

Axapta

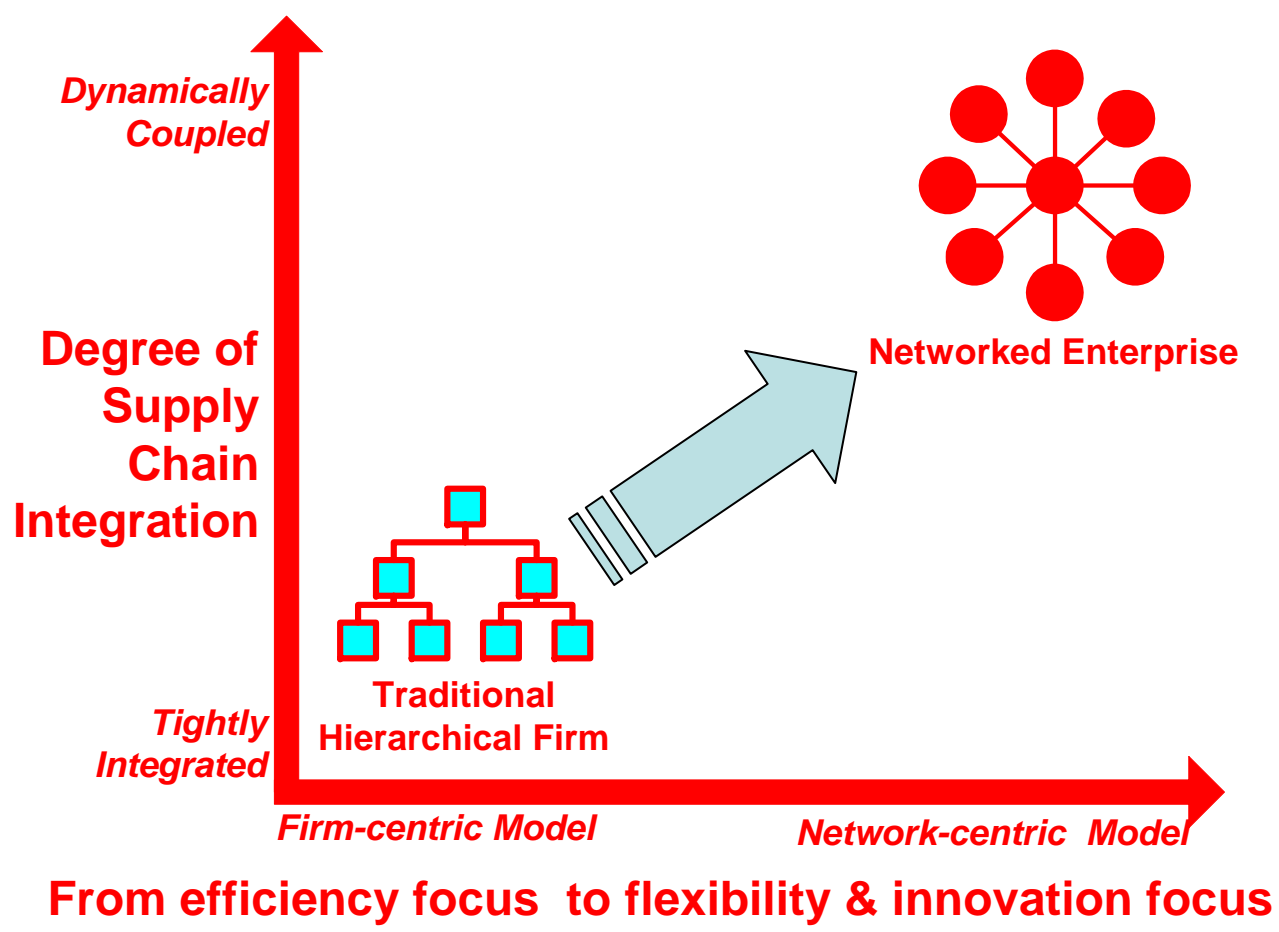
Technology



Emerging Network-centric Environment

- Globalization
 - *Constant migration of demand & supply chains*
- Dramatic Shift in Role of Value Chain Participants
 - *New players & new roles*
- Asset Leverage
 - *Flexible assets*
- Network Optimization versus Firm Optimization
- High Risk – High Reward

Emerging Business Model

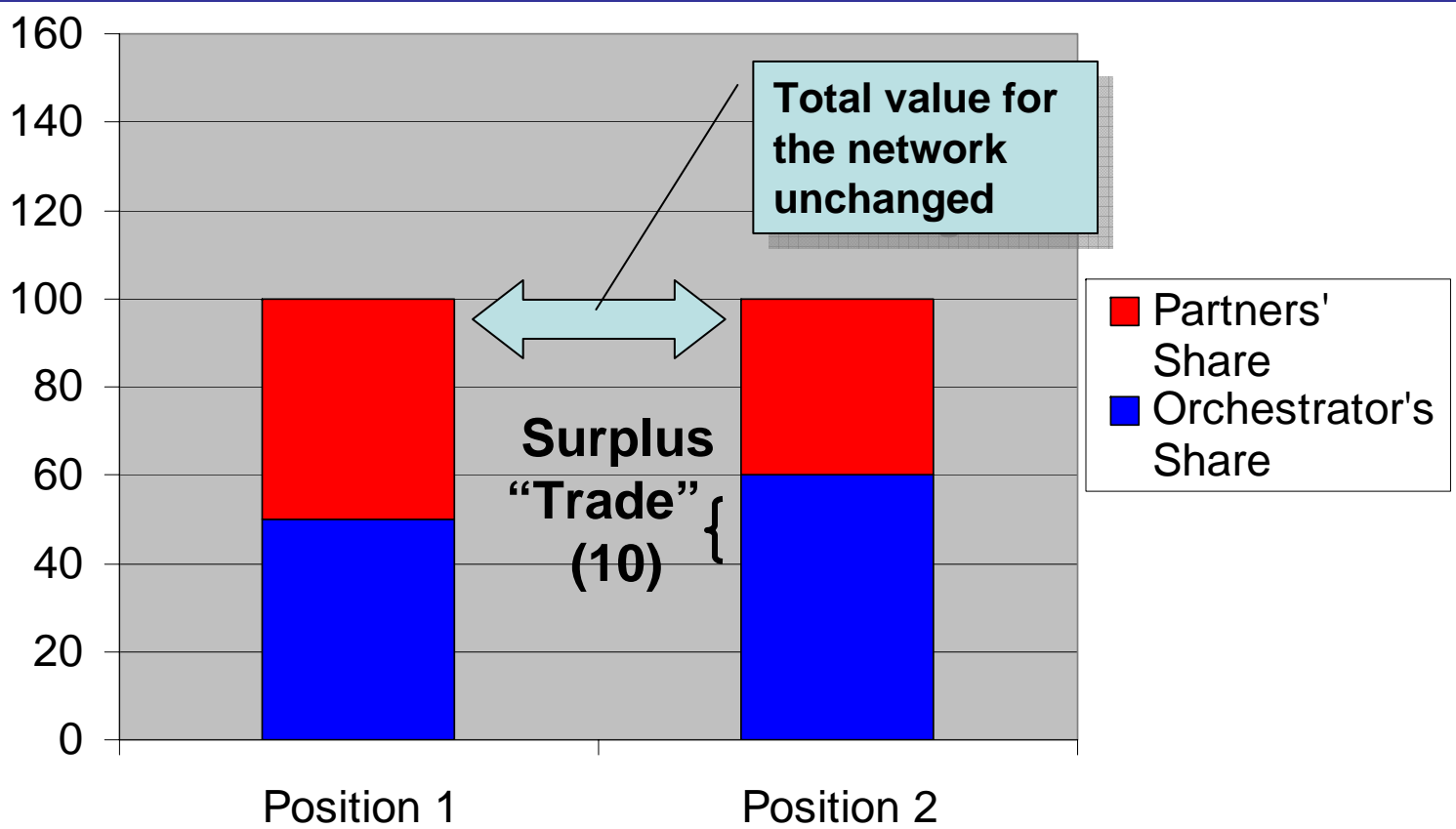


New Enterprise is a TEAM

Mantra is "Share to Gain"

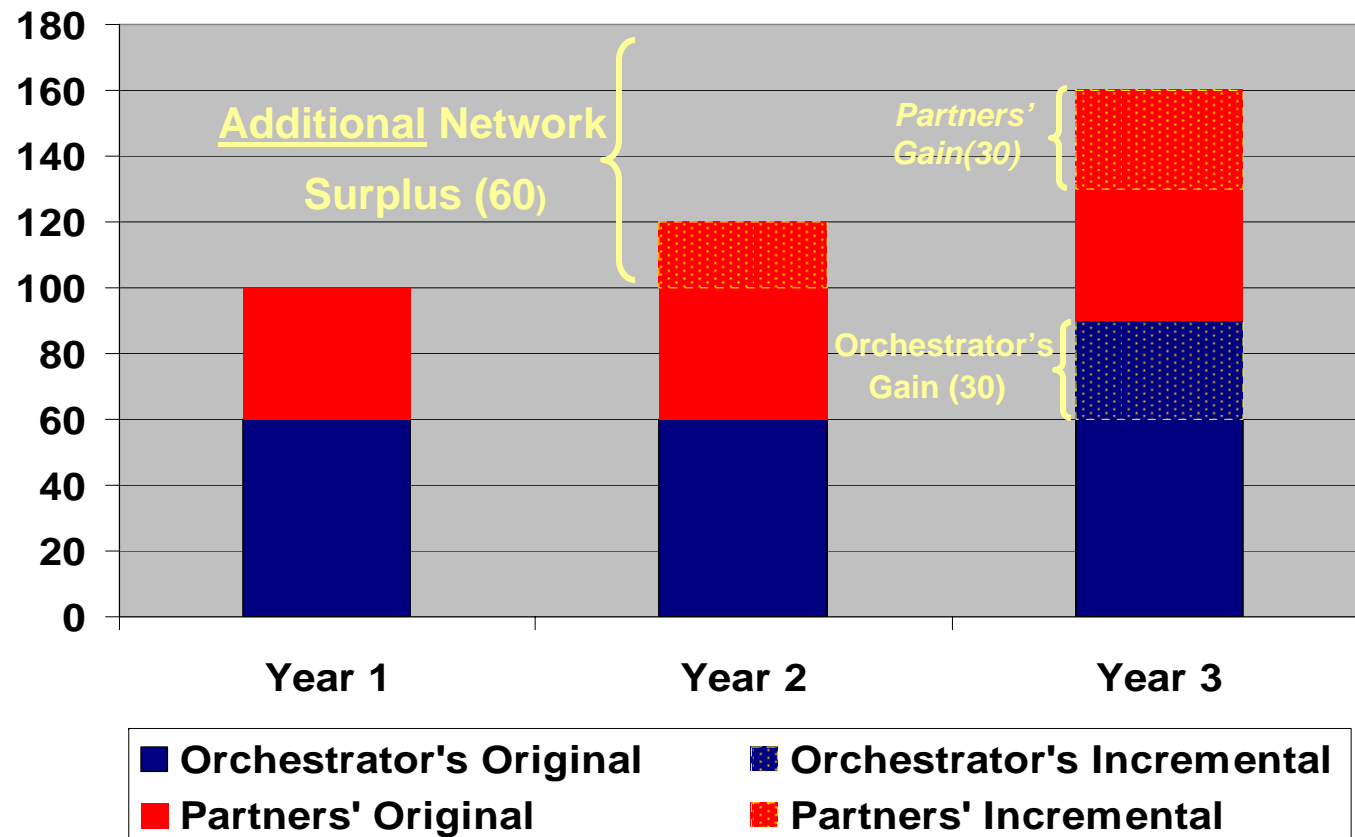
- An individual company, no matter how large, can't get the job done in isolation
 - *Need the resources of a variety of "niche" specialists, working together as networked partners*
 - *Must coordinate & synchronize*
- Competition is between networks not individual firms
 - *"Trust" has to be built among the participants*

Traditional Firm-Centric Approach



A "Zero Sum Game" Tradeoff

Networked Enterprise “Share to Gain” Approach



Creating Greater Network Surplus



Successful firms will need to have.....

New Rules

- Business Processes

New Roles

- Organization Structure

New Rewards

- Incentives Plan

New Competencies

- Training & Learning

Capabilities Required

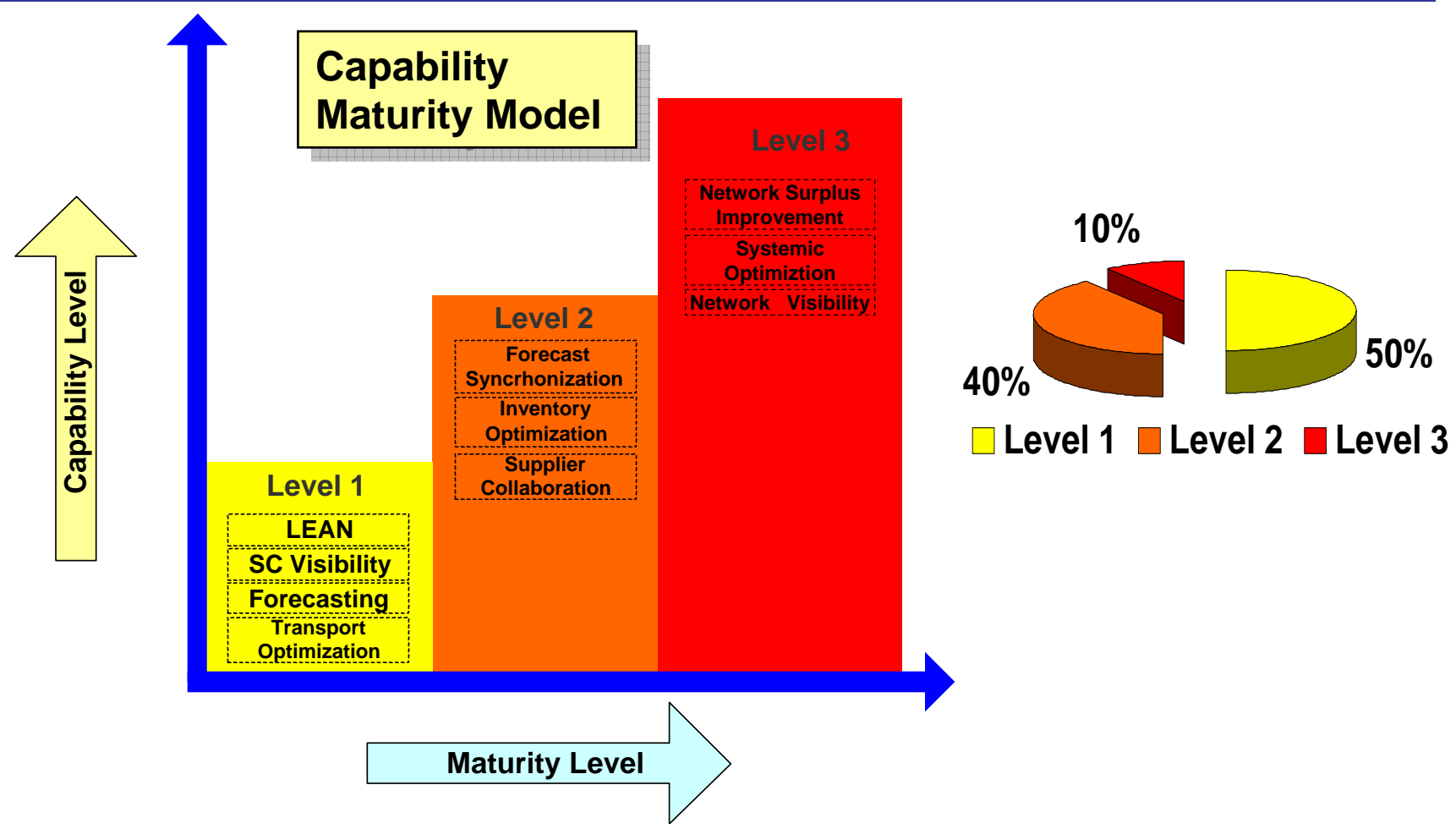
- *Increasing need for communication and collaboration*
- *Substantially greater visibility and span of control*
- *Ability to enable rapid change in response to environmental conditions*
- *Using the I/T environment as a neural network*



What are leading companies doing?

What can we learn from them to assist us in deploying successful solutions?

Migration to a Networked Enterprise





Lessons Learned from Leading Companies

- Productivity
- Collaboration
- Workflow Optimization
- Enterprise Information Access
- Knowledge Management Discipline
- Business Intelligence

Steps to Higher Maturity

Potential Benefits

1. Shorter time to market
2. Higher levels of quality
3. Reduced levels of inventory
4. Faster product cycles
5. More flexible operations
6. Shorter production runs
7. More skilled staff
8. More revenue enhancing projects

**LEAN
Innovation**



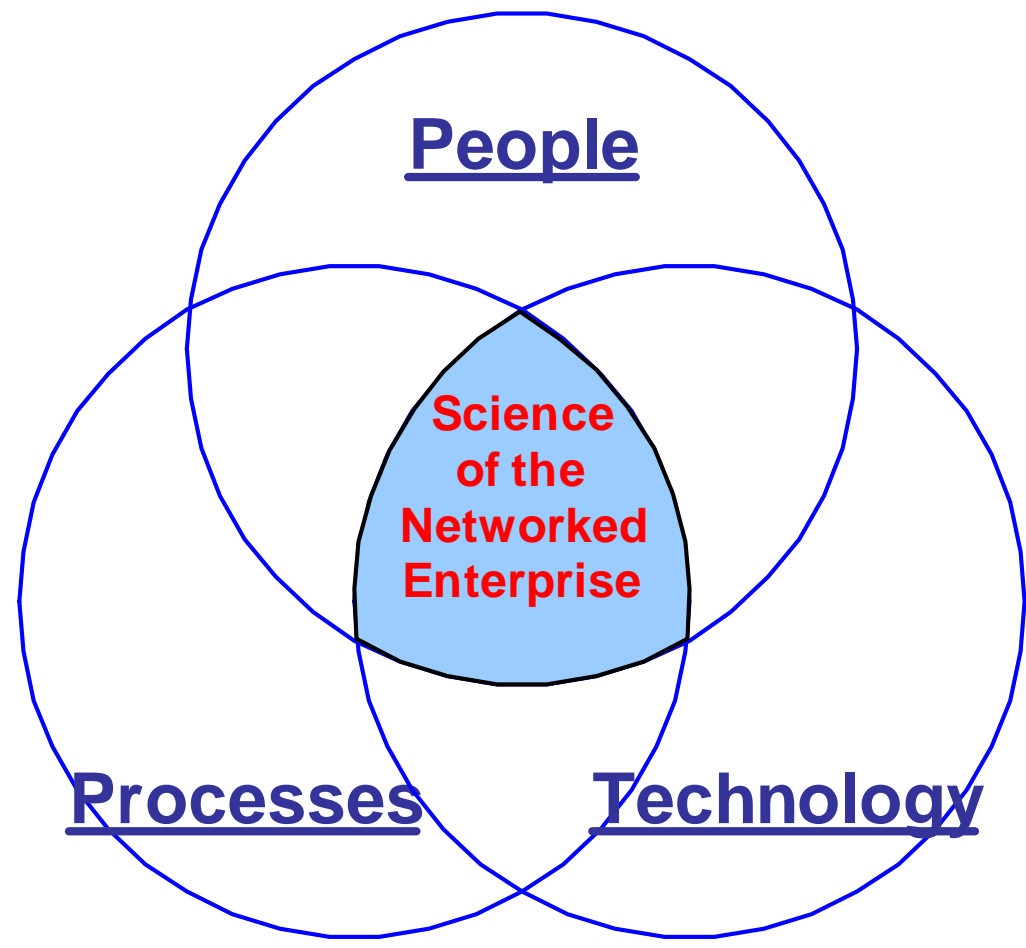
Requires New Management Skills

Fundamental changes in approaches to technology, human and social dynamics and business processes

Mastery at leveraging assets external to the “home firm”

Greater emphasis on “systemic optimization”

Three Dimensions





Technologies

**Enterprise systems – necessary
but not sufficient**

Network Architecture

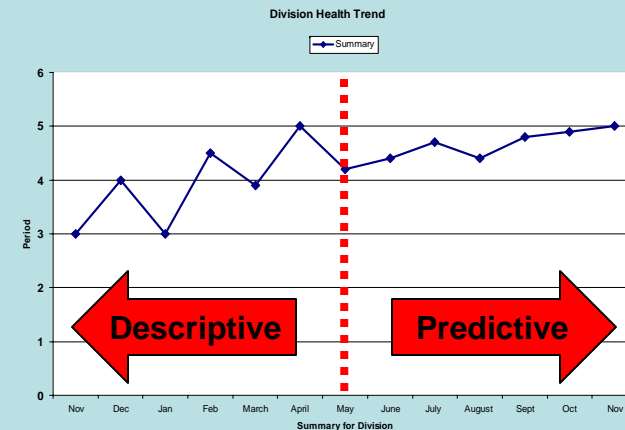
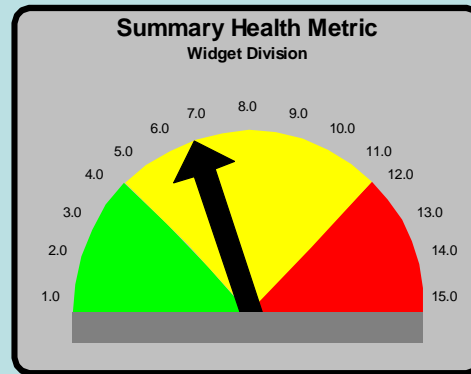
Cyber Infrastructure

Network Intelligence Systems

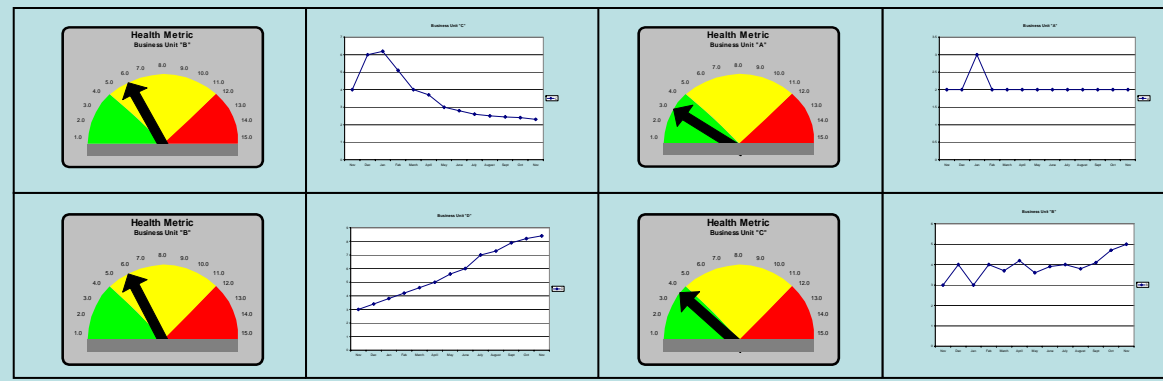
Network Optimization Methods

**Providing
Management with
True Situational
Awareness of All
Participants**

Network Health Summary



Partner Key Performance Indicators





People, Organization Design & Organization Behavior

Behavior of Business Networks

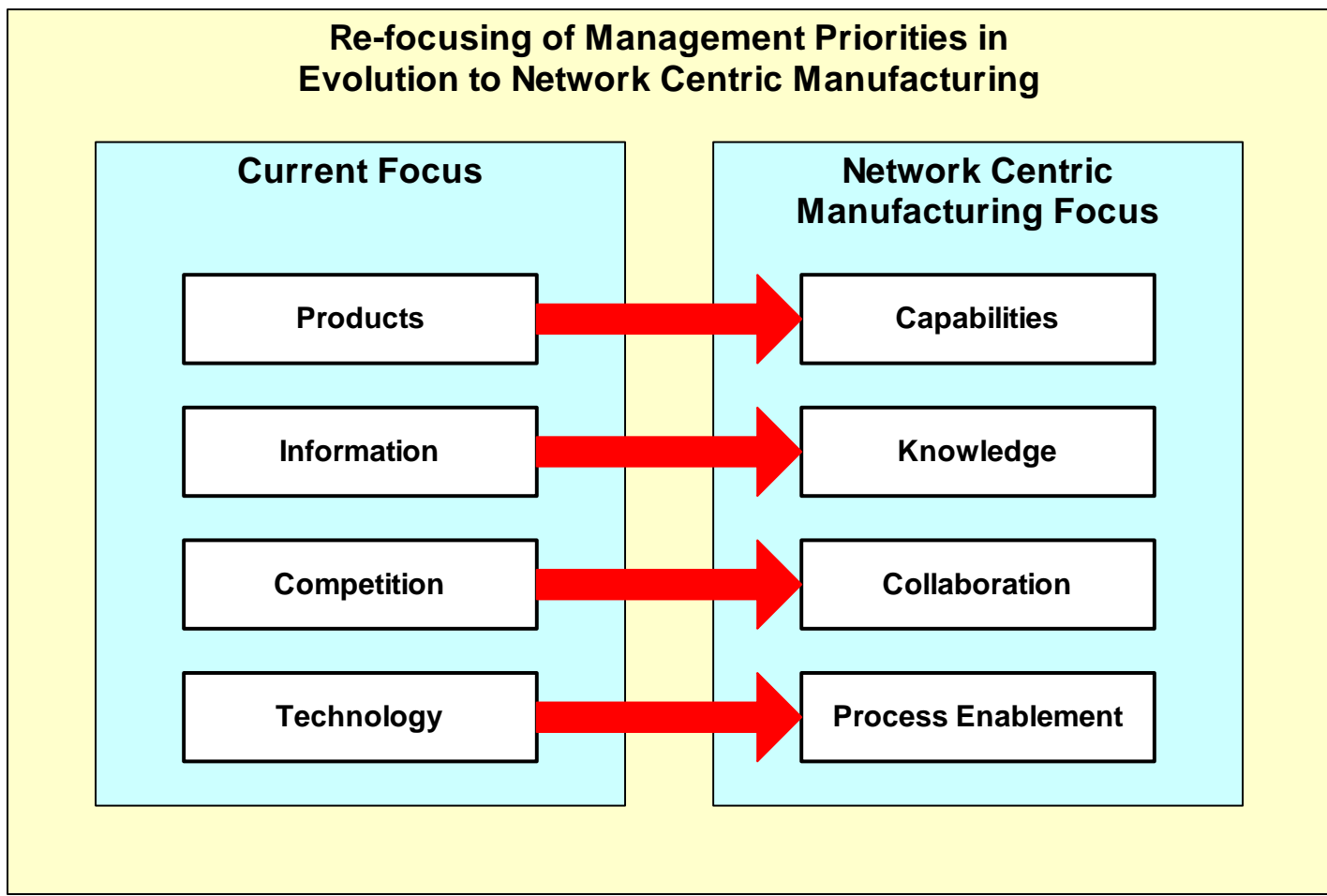
Role of the network “Keystone”

Optimizing network structure

Incentivizing network-friendly behavior

Equitable sharing of risks and rewards

Network-centric Manufacturing Example





Implications

For Industry

- Tighter coupling of all value drivers:
 - Sales
 - Design & Engineering
 - Production
 - Accounting
- Modeling risks, options & rewards
- Sensitivity to cultures & norms of all participants in the extended enterprise

For Carnegie Mellon

- Create the science of the networked enterprise
- Bring together skills from sociology, anthropology, law...
- Global partnerships between industry and academia

Center for Business Solutions



Contact Information

Sunder Kekre

- Bosch Professor of Manufacturing and Operations
- Director, Center for Business Solutions
- Tepper School of Business
- Carnegie Mellon University
- 412-268-3586

skekre@andrew.cmu.edu

Charles Buhman

- Director, TIDE Program
- Tepper School of Business
- Carnegie Mellon University
- Pittsburgh, PA 15213
- 412-268-5247

cbuhman@andrew.cmu.edu

Questions

