Chapter # 1

Smart Logistics/Supply Chain Management: Key component of Industry 4.0

Session Leaders

D. Scott Sink, Moderator

Jim Tompkins, Chairman and CEO, Tompkins International

David Poirier, President, The Poirier Group; Chairperson CISE; President Elect IISE

Benoit Montreuil, Professor and Coca-Cola Chair in Material Handling and Distribution, Georgia Tech
Agenda

12:00  Scott Tee-up
      Quick Overview of Purpose and Objectives of Industry 4.0 Webinar Series

12:10  Jim Tompkins—Smart Logistics: The Digital Imperative

12:30  Dave Poirier—Implications of “Industry 4.0 on Supply Chain Transformations—what would NG98 24 look like

      Benoit Montreuil—the Physical Internet: Transforming to smart, hyperconnected and sustainable logistics Systems

12:50  Scott—Preview of Coming Attractions

1:00 pm  Adjourn
Chapter #1’s Industry and Service Systems 4.0 Webinar Series

Webinar #1: Overview Industry 4.0  **11 Oct 2018** (Jack Feng, Paul Cohen)
- Overview the History and Evolution of NNMI and Industry 4.0
- Discuss ISE and Corporate/Plant Implications and Strategies
- Discuss ISE Mfg Systems Eng Research Implications

Webinar #2: Industry 4.0 Impact on Business Models (Thorsten Wuest)  **22 Jan 2019**

Webinar #3: Smart Logistics: Industry 4.0 and the End2End Supply Chain (Jim Tompkins, Tompkins Int’l; David Poirier, The Poirier Group; Benoit Montreuil, Ga Tech)  **6 Feb 2019**

Webinar #4: Smart Analytics (Scott Sink, ISE at OSU; Jared Frederici, The Poirier Group; and Matheus Scuta, Ford)  **26 Feb 2019**

Webinar #5: SCRUM/Sprint your way to Operational Excellence (Scott Sink and Joan Tafoya, Sandia National Labs)  **18 April 2019**

Webinar #6: Smart Grids (Elaine Johns, CEO Enervision)

Webinar #7: Smart Factory (TBD)
The “Industry Track”
Orlando May 18-21 2019

- We have built a mini-conference specifically designed for Young Professionals, Seasoned ISE Practitioners, Leaders and Managers of the ISE Function in Business and Industry.

- Four Focus Areas with 6 great presentations in each of the four areas:
  1. **Soft Skills Development**: improving your change leadership and management knowledge and skills
  2. **Career Development**: Trends and Emerging Opportunities in our Field
  3. Continuing to **broaden and deepen** your ISE Foundational Knowledge and Skills
  4. How to **create more Value** for your Organization and in doing so advance your career faster

- All Invited Speakers will ensure every session is outstanding.
- **Jim Tompkins** is our Industry Track Keynote Speaker—
  if you haven’t heard Jim speak you are in for a treat!!
- Balanced presentations across Industry Segments (Services, Healthcare, Manufacturing, Supply Chain and Logistics)
- Goal is to make it efficient and fun for you to do some Personal and Professional Development in 2019
We do know that Adoption Rates of “Technology” have dramatically gotten faster—but how does that translate in the world of industry.
The Industry 4.0 Ecosystem

- **Cyber Security**
  - Stronger protection for internet based manufacturing
  - Technology products with longer lifecycle

- **Cloud Computing**
  - Big Data
  - Sense to complexity
  - Creativity
  - Collaborative manufacturing

- **Advanced Manufacturing Systems**
  - Cyber Physical Systems (CPS)
  - Numerical command
    - Full automation
    - Totally interconnected systems
    - Machine to machine communication

- **Sensors**
  - Zero default / deviation
  - Reactivity
  - Traceability
  - Predictability

- **Logistics 4.0**
  - Fully integrated supply chain
  - Interconnected systems
  - Perfect coordination

- **3D Printing/Additive Manufacturing**
  - Scrap elimination
  - Mass customization
  - Rapid prototyping

- **Nanotechnology/Advanced Materials**
  - Smart value added products
  - Technical differentiation
  - Connectivity

- **Robot**
  - Real-time Autonomy Productivity
  - Full transparency on datereporting

- **Autonomous Vehicle**
  - Flow optimization
  - Increased security
  - Lower costs

- **Mass Customization**

- **Internet of Things**
  - Object tagging
  - Internet-object communication via low power radio
  - Real time data capture
  - Optimized stocks
  - Reduced wastes

- **Resources of the Future**
  - Clean and renewable energies everywhere
  - Energy Storage
  - Alternative raw materials

- **Cluster of Plants**
  - Plant of the Future A
  - Plant of the Future B
  - Cluster of Plants
Questions?

How We’ll Handle

Please write your question in the webinar question web form. We will address as many as we can at the end of the webinar and send and email with follow up’s to attendees for those not able to be responded to.
<table>
<thead>
<tr>
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Jim Tompkins – Chairman and CEO, Tompkins International and MonarchFx

- Dr. Tompkins is an international authority on supply chain strategy, focusing on implementation of end-to-end supply chains that are demand driven. As the founder and CEO of Tompkins International, he provides leadership for Tompkins globally.
- Dr. Tompkins is also the founder of MonarchFx, the innovative distributed logistics, automated, multi-client, flexible, scalable, inventory flow, not storage ecosystem that offers Retailers and Brands an alternative to Amazon logistics.
- His 40-plus years as CEO of a consulting/integration firm and his focus on helping companies achieve profitable growth give him an insider’s view into what makes great companies even better. As a high-level business and supply chain strategy advisor, his unique perspective prepares corporations and executives for the future.
- To share his knowledge and provide up-to-date information on supply chain and business trends, he developed his blog called “Creating Supply Chain Excellence.” Jim is also a thought leader, sharing insights on business strategy through his presentations and videos, including his most recent YouTube video: Don’t Feed the Bears: Creating Competitive Advantage with Innovation and Disruption.
- He has written or contributed to more than 30 books, written over 500 articles and has spoken at thousands of international engagements.
- Dr. Tompkins received the prestigious Frank and Lillian Gilbreth Industrial Engineering Award from the Institute of Industrial Engineers (IIE) on June 1, 2015. The award is an attribute that recognizes Dr. Tompkins through the contributions he has provided to the welfare of mankind in the field of industrial engineering. In addition, Jim has served as President of the Institute of Industrial Engineers, the Materials Management Society, and the College-Industry Council on Material Handling Education, and Purdue has named him a Distinguished Engineering Alum. He has also received more than 50 additional awards for his service to his profession.
- Jim received his Bachelor of Science in Industrial Engineering in 1969, his Master of Science in Industrial Engineering in 1970 and his Ph.D. in 1972, all from Purdue University.
Smart Logistics—The Digital Imperative

THE DIGITAL IMPERATIVE: Dealing with Uncertainty, Speed and Reinvention

Embrace the DIGITAL IMPERATIVE

Agricultural Era
Industrial Era
Digital Era

POSIBILITY
Uncertainty is Exciting

VITALITY

REINVENTION

INNOVATION

FOCUS

BUSINESS

Organization Success Requires

Environmental Intelligence
Investment

RESPONSE TO CHANGE

Continuous Innovation

ADAPTED FROM

Jim Tompkins

SCLF 2018

We must engage in the disruption cycle.

We are all disruptors!
Today’s Mission — To Answer the Questions:

1. What is the Digital Imperative?
2. What is the Disruption Cycle?
3. How grasping Uncertainty, Speed, and Reinvention will ease your Disruption Cycle Journey?
The Digital Imperative

1. We are engaging in a new era of business:
   - Agriculture
   - Industrial
   - Digital

2. Digital Technology is changing all businesses
   - New products
   - New services
   - New business models
The Digital Imperative

3. It is essential that all organizations vigorously pursue digitalization.

4. Today we have the opportunity to start anew, to build an entirely new world

5. Organizations that take control of the Disruption Cycle will surpass the organizations that pursue continuous improvement.
The Disruption Cycle IS:

**DISRUPTOR!**

- Innovation
- Entrepreneurship
- Too Risky! Too Different!

- **Boldness**
- **Disruption of the Status Quo**
- **Incubation**
- **Validation**
- **New Status Quo**
- **Profession Management**
- **New Innovation**

**ESTABLISHED FIRM**

- Risk Adverse
- Resistance to Change

- Courageous Leadership

**New Boldness**

**Profitable Growth and Value Creation**
Disruptive Innovation


2. A high stakes game, with high rewards.

3. Not a high risk game; in fact, the certainty of high risk is to NOT traverse the Disruption Cycle, but rather to be Risk Averse and to embrace resistance to change.

4. The process of changing the world an innovation, a disruption at a time.
How Grasping Uncertainty, Speed, & Reinvention Will Ease Your Disruption Cycle: UNCERTAINTY

“Uncertainty is a permanent part of the leadership landscape. It never goes away.”
—Andy Stanley

“Exploring the unknown requires tolerating uncertainty.”
—Brian Greene

“I used to be scared of uncertainty, now I get a high out of it.”
—Jenson Ackles

“Without the elements of uncertainty, the bringing off of even the greatest business triumph would be dull, routine, and eminently unsatisfying.”
—J. Paul Getty
How Grasping Uncertainty, Speed, & Reinvention Will Ease Your Disruption Cycle: SPEED

“If you’re not fast, your competition will be.”  
—Adam Fridman

“In a world where everything is moving so rapidly, simply being fast is not enough: you have to be faster than anyone and everyone.”  
—Jeff Leener

“We need to move from making a decision when you have 90% of the information to making a decision when you have 70% of the information.”  
—McKinsey & Company

“Make not just high-quality decisions, but high-velocity decisions.”  
—Jeff Bezos, Amazon Shareholders Letter, 2017
How Grasping Uncertainty, Speed, & Reinvention Will Ease Your Disruption Cycle: REINVENTION

“It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change.” —Charles Darwin

“Unless you are prepared to give up something you will never be able to truly change at all because you’ll be forever in the control of things you can’t give up.” —Andy Law

“An organization’s ability to learn, and translate that learning into action rapidly, is the ultimate competitive advantage.” —Jack Welch

“Whosoever desires constant success must change their conduct with the times.” —Niccolo Machiavelli
Where to Go From Here

1. Embrace the Digital Imperative and pursue the Disruption Cycle.

2. Build your Resilience, Vitality and Focus to enhance your ability to address the Uncertainty, Speed, and Reinvention of the Disruption Cycle.

3. Focus your Resources on Creating and Responding to:
   - Business Disruptions
   - Supply Chain Disruptions

4. Become a Disruptive Innovator.
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NG 98 in 2018

- Loblaws (Canada) first store opened in 1919
- George Weston Limited gained controlling interest in 1947
- Loblaws opens first “No Frills” store in 1978
- Dave Nichol’s Insider Report debuts positioning Loblaws for Private Label, President’s Choice
- 1991 LCL launched NG98 (food distribution divisions) in conjunction with continuing branding, positioning, product development and offering expansions to move towards Serving the Daily Needs of our Customers.
- Dave was the chief architect and engineer for the transformation that drove huge corporate performance improvement from an Op Ex side of things
NG98 plan in 91 was to drive improvement across all three strategy fronts:

**POSITIONING STRATEGY**

- Improve Positioning via..
  - Geographic Coverage / Offerings Provided / Served Segments / Branding/ Imaging, etc.

**VALUE EXCHANGE OPTIMIZATION**

- Managing the Exchange of Value With Stakeholders
  - Altering the Give/Get, Responding to unmet and unfulfilled needs, QFD, Innovation, Rebalancing Segment Investment

**OPERATIONAL EXCELLENCE**

- Improve Quality, Efficiency, Productivity, Innovation, Engagement, Quality of Work life, Sustainability
  - Apply principles and methods of ISE and ILSS
NG 98 in 91

- Warehouse Management System Upgrades
- Supply Chain Rationalization (right sizing)
- New Cross Dock Facility
- Warehouse Labor Standards
- Union and Employee Engagement and wage concessions (right costing)
- A 1990's version of Op Ex, Integrated LeanSigma deployment
  - Visible measurement systems
  - Performance Action Teams
  - Change Agents in every DC
  - Disciplined PDSA
  - Accountability

- Culture Transformation
The Webinar that Sreekanth did for us on the 15th of Jan is exactly what we did from 1991-1998

Culture Modeling Tools to Measure an Organization’s Lean Transformation Effectiveness

Lessons Learned from the IBM Path Forward to Lean Transformation Methodology

Sreekanth Ramakrishnan, Ph.D.
Advisory Engineer, Scientist, Lean Master, Lean Six Sigma Black Belt

© 2012 IBM Corporation
We knew this and created a strategy that addressed this reality.

Most of the critical challenges to successful change involve people, process-technology and leadership.

**Major Change Challenges**

<table>
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<tr>
<th>Challenge</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Changing mindsets and attitudes</td>
<td>50%</td>
</tr>
<tr>
<td>Corporate culture</td>
<td>49%</td>
</tr>
<tr>
<td>Complexity is underestimated</td>
<td>35%</td>
</tr>
<tr>
<td>Shortage of resources</td>
<td>33%</td>
</tr>
<tr>
<td>Lack of commitment of higher management</td>
<td>32%</td>
</tr>
<tr>
<td>Lack of change know how</td>
<td>20%</td>
</tr>
<tr>
<td>Lack of transparency</td>
<td>18%</td>
</tr>
<tr>
<td>Lack of motivation of involved employees</td>
<td>16%</td>
</tr>
<tr>
<td>Change of process</td>
<td>15%</td>
</tr>
<tr>
<td>Change of IT systems</td>
<td>12%</td>
</tr>
<tr>
<td>Technology barriers</td>
<td>8%</td>
</tr>
</tbody>
</table>

Source: Making Change Work: Study Continuing The Enterprise of The Future Conversation from the IBM Global CEO Study, 2008 (n=1,329)


© 2012 IBM Corporation
We also knew we needed an ‘integrated’, balanced strategy and approach.
And, we knew this would have hard, tangible benefits and our results were consistent with these findings.

Culture has a significant impact on an organization’s long-term economic performance:

Results from an 11 year study, contrasting cultures of more than 200 companies, shows organizations with Adaptive cultures consistently produced superior business results.*

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<thead>
<tr>
<th></th>
<th>Unadaptive Culture</th>
<th>Adaptive Culture</th>
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<tbody>
<tr>
<td>Revenues</td>
<td>166%</td>
<td>vs. 682%</td>
</tr>
<tr>
<td>Work Force</td>
<td>36%</td>
<td>vs. 282%</td>
</tr>
<tr>
<td>Stock Price</td>
<td>74%</td>
<td>vs. 901%</td>
</tr>
<tr>
<td>Net Income</td>
<td>1%</td>
<td>vs. 756%</td>
</tr>
</tbody>
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1. I believe that all the Solution Elements we included in our strategy in 1991 are salient today;
   - there are newer, better components, systems, etc. but the elements themselves same

2. A lot more Operational Analytics that would drive more rapid decisions/actions, adjustments;

3. Hyperconnectivity, a lot easier to communicate and coordinate and to know, real time, status of things;

4. Agile, Scrum, Springs, can drive improvement much faster, name of game;

5. Competitive skill at this has improved greatly, it’s big league (Kroger vs Amazon, Amazon vs the World, etc.);

6. Jim what would you add?
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Upcoming Webinars from Chapter #1

26 Feb (12-1 pm Eastern) SMART ANALYTICS
To Register for this Webinar, use this link: https://www.iise.org/details.aspx?id=48340

Jared Freeland, The Poier Group; Mateus Scuta, Global Manufacturing Analytics, Scientist, Ford; and, Vignesh Gundesha, Data Analyst at the James Cancer Hospital and Solove Research Institute will also be part of the Industry Practitioner Track in Orlando in May and this Webinar is also a sneak preview of their more detailed training session there. The Focus is on “Smart Analytics”. The use of the word “smart” implies a number of things that we’ll cover in the Webinar:

- Effective and efficient data capture that is based on more intelligent data models;
- Better designed and integrated Decision Support Systems, improved modeling of what it really takes to support, provoke timely and effective decisions that serve to drive rapid improvement in performance;
- Intelligent (machine learning) database management that improves data integrity and also completeness and ease of analytics;
- Blending of traditional ISE measurement principles and methods to augment, add to, enrich data availability. Often our problem is not Big Data, rather it’s poor data, too little data, not the right data or no data;
- And more...

This Webinar will be an overview of what we’ll cover in the expanded 60-minute development session in Orlando in May.

5 March (12-1 pm Eastern) BECOMING A CHANGE MASTER
To register for this Webinar, use this link: https://www.iise.org/details.aspx?id=48350

Bob Gold is one of the World’s leading behavioral technologists with more than 20 years of applied research and development in the growing field of digital to human persuasion and motivation. He joined Scott for a webinar on The Art and Science of Persuasion and also wrote an article for the ISE magazine back in 2017. Bob and Scott will again present practical guidance on how you can improve your Change Leadership and Management knowledge and skills and migrate to Change Master levels of competency and proficiency.

This Webinar is part of our Soft Skills Development Track of Offerings from IIESE, Chapter #1 and a number of our Societies and Divisions.

Bob and Scott will bring their unique points of view and experiences to bear on how ISEEs, in particular, can continue to develop their change leadership and management knowledge and skills. Becoming a Change Master isn’t something that just happens. Very few of us are “Naturals” at leading and causing change. It takes a conscious strategy and plan that we will outline for you.

This is a 60 minute version of an 80-minute development session that Dave Poier and Scott will do for IISIE in Orlando in May. That session will focus on Bodcamps’. Intensive 3-5 day sessions aimed at catalyzing a major mind-shift, step-function improvement in knowledge and skill relative to change mastering.
Upcoming Webinars

19 March (12-1 pm Eastern) SNEAK PREVIEW of THE INDUSTRY PRACTITIONER TRACK

Attend this Webinar, participate by asking questions, and earn a chance to get a $370 Discount on Registration to the ISE Annual Conference in Orlando in May!

Scott Sink, Kaz Takeda, Disney, and Jared Frederick, The Porter Group will give you a high level tour guide of the 25 Development Sessions we have assembled for Industry Practitioners, Young Professionals and Students in ISE. We will give you a behind the scenes view of how our invited Professionals will be sharing, giving you a great and more detailed view of the value you will get, personally and professionally, from the great program.

We’ll also share all the networking and fun wraparound things we’ve designed for you that augment the professional development opportunities.

So, don’t miss this sneak preview and opportunity to win a deep discount on Registration to the Premier ISE Event of the Year. The last two pages of our Monthly Memo provide an overview of what we’ll be covering in this Webinar. To Register go to this link: https://www.iise.org/details.aspx?id=48487

24 April (12-1 pm Eastern) BEST OF BEST INTEGRATED LEAN SIX SIGMA CERTIFICATION CAPSTONE PRESENTATIONS from ISE at OSU

This is our annual webinar that showcases the best in class ISE/ILSS Certification Capstone Projects. This version of ISE Capstone is a three-semester program that results in a Black Belt Certificate and then a Green Belt Certification to augment the BSISE. A unique program, exclusive to ISE at Ohio State.

You will have a chance to see three great process improvement projects in detail. We will have at least one from Healthcare, one from Manufacturing/Production, and then one in Service Systems to provide balance.

This is our most popular Webinar of the year, and many of our Members really value seeing what our young ISE’s are learning and how they are able to apply what they’ve learned to create value for organizations in the Greater Columbus Area.

Hear from 3 of our great young ISE’s as they overview their Green Belt Certification Capstone Projects.

We’ll select the best in class projects and ensure they span industries and types of problems focused on saving.

We’ll also make sure to add in a Design for Lean Six Sigma project (DICE) to show you how ISE’s go at those.

Our Members in Chapter #1 consistently tell us this is their favorite annual webinar.

To view previous years ILSS Capstone Project Webinars, please go to these links:
https://www.iise.org/Details.aspx?id=43925

18 April Agile/Scrum/Sprints for ISE’s (Joan Tafoya, Sandia National Labs & CISE and Scott Sink, ISE at OSU & CISE)

One of the things that the Council on Industrial and Systems Engineering focuses on is Continuous Learning and Development and continuous benchmarking.

Joan Tafoya and Scott Sink, both CISE members have joined forces to do some rapid learning (including experiential, reduction to practice learning) and put together a webinar that will overview how the Principles and Methods of Agile, Scrums, Sprints, etc. can be applied to product and process improvement. More on this new offering next month.
We have built a mini-conference specifically designed for Young Professionals, Seasoned ISE Practitioners, Leaders and Managers of the ISE Function in Business and Industry.

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Goal is to make it efficient and fun for you to do some Personal and Professional Development in 2019
The “Industry” Track for Orlando 2019

And, in addition to those 24 Practical, Pragmatic Presentations by hand-picked presenters on topics ranging from habits of highly effective Young Professionals to Smart Manufacturing and Physical Internet we’ll wrap around some Networking opportunities:

- the Annual CISE Leadership Mixer
- the Annual Industry Advisory Board Mixer
- Industry Track Kick-off and Capstone Plenary Sessions
- The Executive Roundtable
- Townhalls for IAB and Young Professionals
- Huge opportunity to build your network and mentor and get mentored
So, First things First, take some time out and invest in yourself

It Pays Off—I’ve attended 45 IISE Conferences and the Return on Investment has been 25+:1 !!!