



NSF I/UCRC since 2000



Dominant Innovation for Product and Service Design
Innovating the Invisibles


Jay Lee

Ohio Eminent Scholar and L.W. Scott Alter Chair Professor
 Univ. of Cincinnati
Jay.lee@uc.edu
 &
 Director
 NSF Industry/University Cooperative Research Center on
 Intelligent Maintenance Systems (IMS)
 Univ. of Cincinnati, Univ. of Michigan, Missouri Univ. of S&T
www.imscenter.net




www.dominantinnovation.com


Outline




- **Changing Business Models and Unmet Needs in Product Service Systems**
- **Tools for Dominant Product and Service Innovation Design**
- **Case Studies**
- **Transformational Infotronics Technologies and Examples**

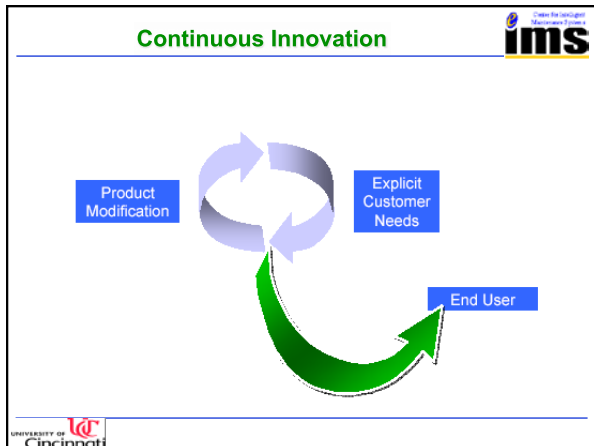


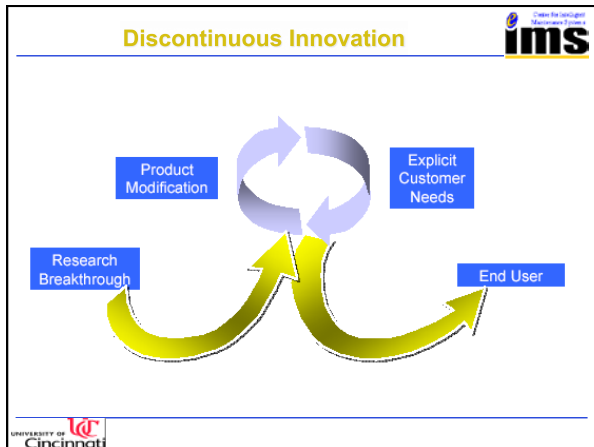
Outline

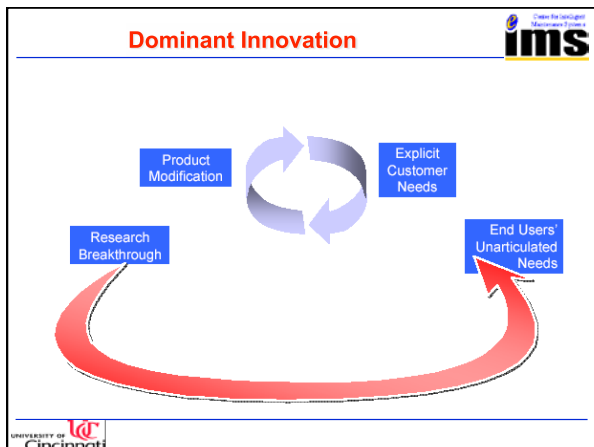



- **Changing Business Models and Unmet Needs in Product Service Systems**
- Tools for Dominant Product and Service Innovation Design
- Case Studies
- Transformational Infotronics Technologies and Examples

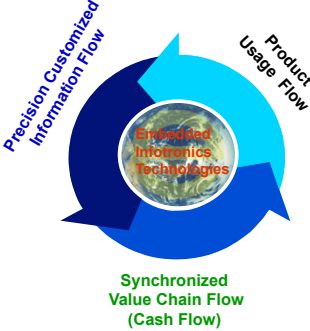











Unmet Needs in Smart Service Systems 










John Deere Agri Service System
 &
Precision Farming










Key Lesson Learned:
Discover the Unmet Needs (Gaps)





Create the Unmet
Management System


GE Aviation

 UNIVERSITY OF
Cincinnati



Create the Unmet
Management System

**Monsanto, DuPont, and Syngenta
Draught-Tolerant Seed**

 UNIVERSITY OF
Cincinnati


Create the Unmet
Management System

**Key Lesson Learned:
Create More Unmet Values for Customers**

 UNIVERSITY OF
Cincinnati

Center for Intelligent Management Systems
ims

GE Medical→
GE Healthcare Technologies (2004~)

UNIVERSITY OF
Cincinnati

Center for Intelligent Management Systems
ims

Cargill

Customized Crops, Grain for
Livestock Feed, and Food Services

UNIVERSITY OF
Cincinnati

Value Shift

Center for Intelligent Management Systems
ims

Visible	→	Invisibles
Physical Assets	→	Functional Assets
Product Service	→	Customer Services
Smart Hardware	→	Smart Software

UNIVERSITY OF
Cincinnati

Center for Intelligent Management Systems
ims

**Product Service Systems
&
Service Innovation**

UNIVERSITY OF
Cincinnati

Center for Intelligent Management Systems
ims

Service Innovation → Value Creation

**Products
New Features**

**Service
Value Creation**

UNIVERSITY OF
Cincinnati

Center for Intelligent Management Systems
ims

Product Valued-Added Service Delivery

- **Functional based: Value-added Features**
- **Time-based or Needs-based: On-Demand Service**
- **Usage-based: Leasing or pay-per-use, contract, etc.**
- **Evidence-based: paid from % of saving of customer's benefits.**


UNIVERSITY OF
Cincinnati

Jay Lee, Book on Innovating the Invisibles


Center for Intelligent Management Systems


**Our Society is
More Instrumented and Connected
Between People and Things**



UNIVERSITY OF Cincinnati


Center for Intelligent Management Systems

Changing New F4 Life

- 1. Facebook (Social Connection)**
- 2. Fast Action (On-Demand)**
- 3. Flexible Life Style (24 Hours Options)**
- 4. Feeling and Fraction (Instant Value)**



UNIVERSITY OF Cincinnati

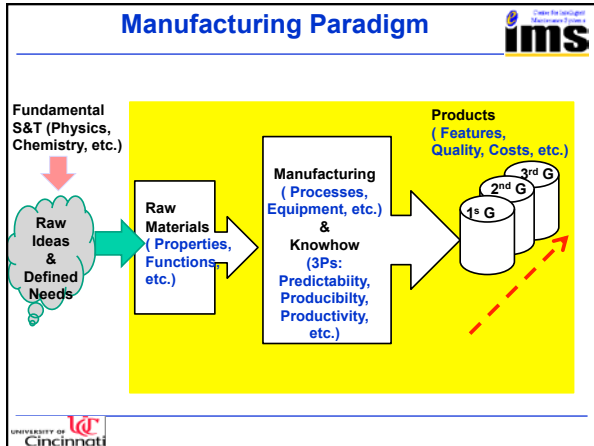

Center for Intelligent Management Systems

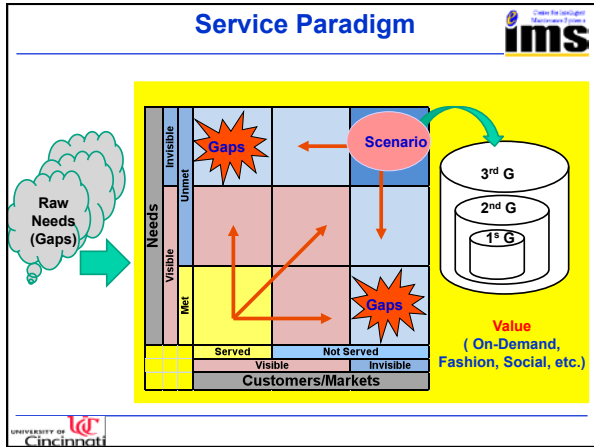
Key Attributes of Service Innovation

- Service is a **Customer-Intensive System**
- Service using a **System Instrumentation (Smart Agent)**
- Service through **Smart Operation Analytics**
- Service for **Knowledge Management Business**
- Service to **Avoid Potential Issues for Customers.**

J. Lee, Keynote Speech, NSF Symposium on Technology Management in the Service Sector Portland, OR, August 5, 2007 (Co-Sponsored by IBM Service Science)


UNIVERSITY OF Cincinnati





- ### Outline
- Changing Business Models and Unmet Needs in Product Service Systems
 - **Tools for Dominant Product and Service Innovation Design**
 - Case Studies
 - Transformational Infotronics Technologies and Examples
- ims**
Center for Intelligent Manufacturing Systems
- UNIVERSITY OF CINCINNATI

Key Service Design Issues

- Who are your customers?
- What do your customer REALLY want (invisible gaps)?

UNIVERSITY OF Cincinnati

Tools for Dominant Innovation

- Innovation Matrix
- Application Space Mapping
- Quality Function Deployment

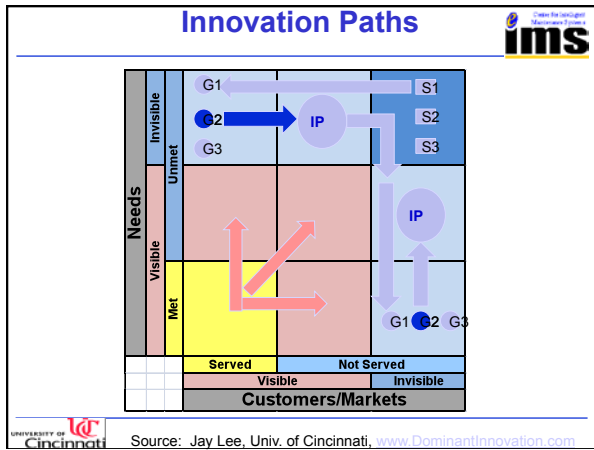
UNIVERSITY OF Cincinnati

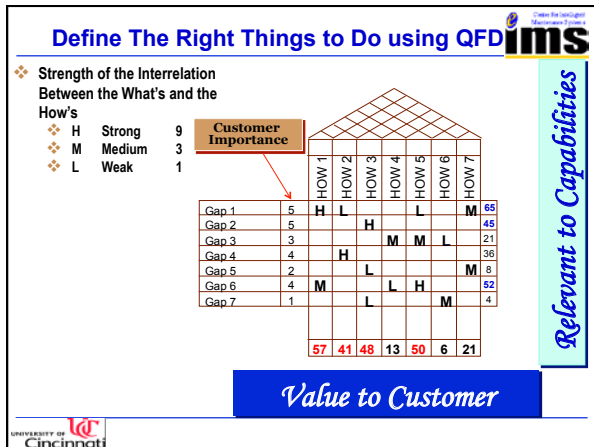
Innovation Matrix

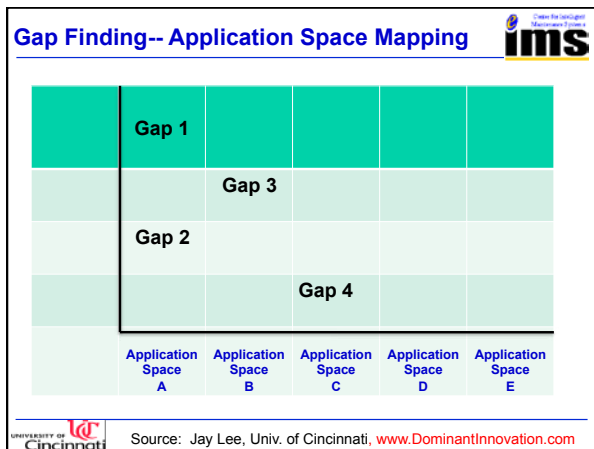
Needs	Invisible	Gaps	Scenario
	Unmet		
	Visible		
	Met	Gaps	
		Served	Not Served
		Visible	Invisible
		Customers/Markets	

UNIVERSITY OF Cincinnati

Source: Jay Lee, Univ. of Cincinnati, www.DominantInnovation.com







ims
Center for Intelligent Management Systems

**Lesson Learned Case Study –
Otis Elevator
1990s
Farmington, CT**

U
UNIVERSITY OF
Cincinnati

Gap Finding -- Application Space Mapping **ims**
Center for Intelligent Management Systems

	Gap 1				
	Gap 2				
		Gap 3			
			Gap 4		
	Customer Waiting Space	Riding Space	Security Space		

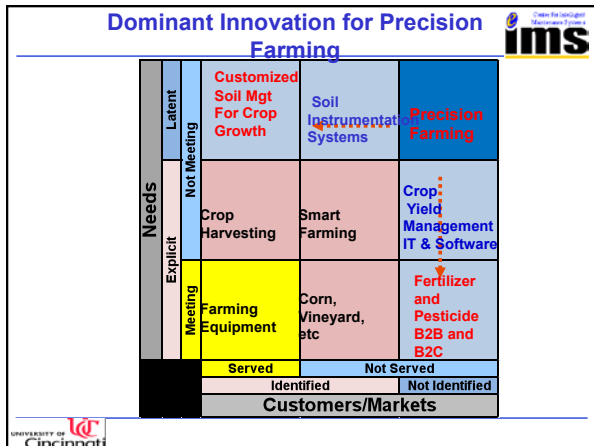
Source: Jay Lee, Univ. of Cincinnati, www.DominantInnovation.com

U
UNIVERSITY OF
Cincinnati

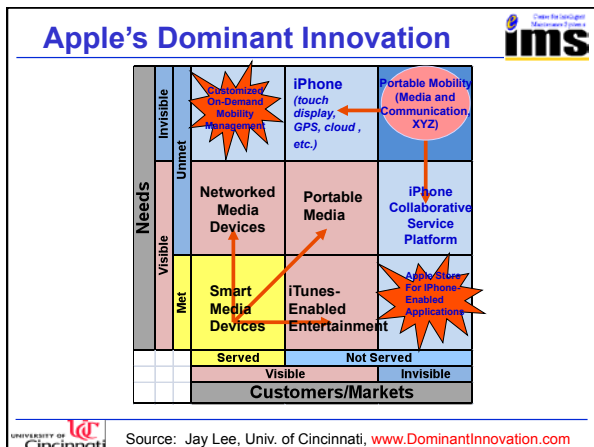
John Deere Precision Farming Systems **ims**
Center for Intelligent Management Systems


The diagram illustrates the John Deere Precision Farming Systems. It features a central box labeled 'Crop Yield Management' with a laptop icon. To the left, a tractor is shown with a satellite icon above it, connected by a signal line. Below the tractor is a radio tower icon. Arrows point from the 'Crop Yield Management' box to three other boxes: 'Fertilizer Manufacturer' (top), 'Pesticide Supplier' (right), and 'Yield Management' (bottom right). A small 'C' is visible near the tractor.

U
UNIVERSITY OF
Cincinnati










Nike Plus and Apple



Running Experiences





MEN'S


1. GroundZero17, 01:34:46
2. EIPito, 01:39:42
3. Andy16, 01:41:39
4. torazo, 01:42:52
5. rockhammer, 01:43:13
6. TheSun, 01:43:54
7. PsychoRunner, 01:44:02
8. Spenc101, 01:45:16
9. Matt Koerner, 01:48:16
10. slowsprinter, 01:48:42



Source: www.Nike.com




Nike's Dominant Innovation



Needs	Invisible	Running Informatics	Embedded Instrumentation	Running Experiences
	Ummet	Shoes for Health & Comfort	Smart And Customized Shoes	Running Analytics & Networks
	Visible	Shoes For Running Walking, Sports, Etc.	NIKE+ For XYZ	
	Met	Served	Not Served	
		Visible	Invisible	
		Customers/Markets		

Source: Jay Lee, Univ. of Cincinnati, www.DominantInnovation.com



Center for Intelligent Management Systems
ims

Nintendo Wii

Dominant Innovation Gaps

UNIVERSITY OF CINCINNATI
UC



Center for Intelligent Management Systems
ims

E-Book and Reading Experiences

UNIVERSITY OF CINCINNATI
UC

Center for Intelligent Management Systems
ims

Amazon Kindle 2 vs. Sony Reader

\$359

Carry your library in 10.2 ounces

Slim: Just over 1/3 of an inch, as thin as most magazines

Lightweight: At 10.2 ounces, lighter than a typical paperback

Wireless: 3G wireless lets you download books right from your Kindle, anytime, anywhere; no monthly fees, service plans, or hunting for Wi-Fi hotspots

Books in Under 60 Seconds: Get books delivered in less than 60 seconds; no PC required

Improved Display: Reads like real paper; now boasts 16 shades of gray for clear text and even crisper images

Longer Battery Life: 25% longer battery life; read for days without recharging

More Storage: Take your library with you; holds over 1,500 books

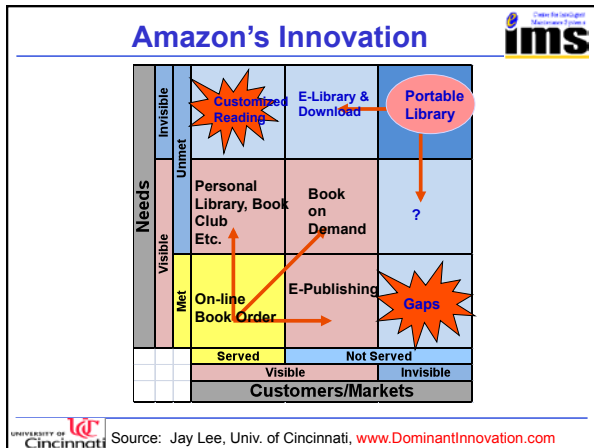
Faster Page Turns: 20% faster page turns

Read-to-Me: With the new text-to-speech feature, Kindle can read every newspaper, magazine, blog, and book out loud to you, unless the book is disabled by the rights holder

Large Selection: Over 240,000 books plus U.S. and international newspapers, magazines, and blogs available

UNIVERSITY OF CINCINNATI
UC

Source: www.amazon.com





Air Conditioning (A/C) vs. Air Quality Service


Center for Intelligent
Manufacturing Systems


**Wision Furniture
China**

 UNIVERSITY OF
Cincinnati


Center for Intelligent
Manufacturing Systems


**Case Study
a Brazilian Company**

 UNIVERSITY OF
Cincinnati


Center for Intelligent
Manufacturing Systems

Outline

- Changing Business Models and Unmet Needs in Product Service Systems
- Tools for Dominant Product and Service Innovation Design
- Case Studies
- **Transformational Infotronics Technologies and Examples**

 UNIVERSITY OF
Cincinnati

The IMS Consortium

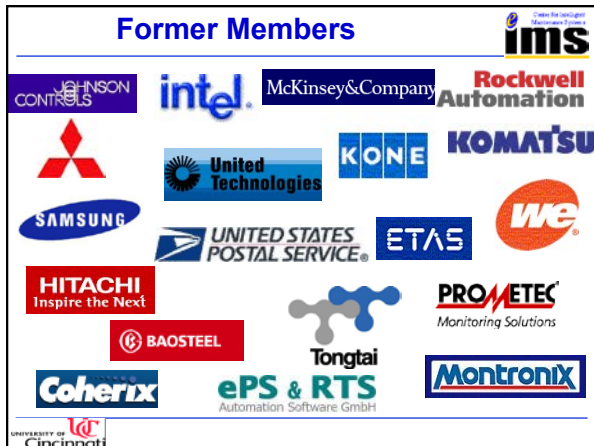
UNIVERSITY OF Cincinnati

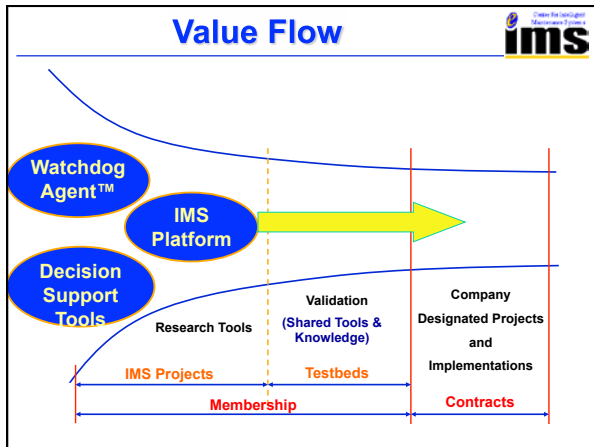
New Members in 2009

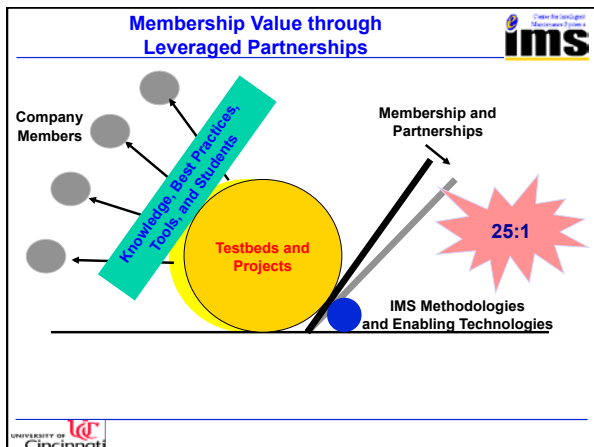
UNIVERSITY OF Cincinnati

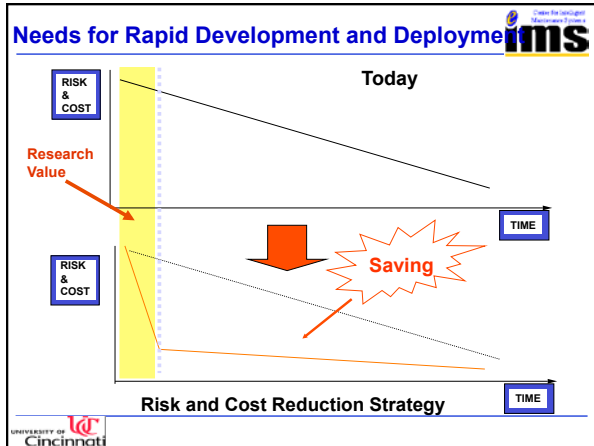
New Members in 2010

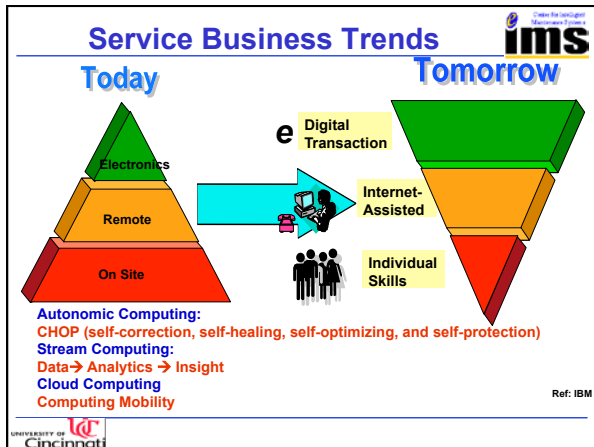
UNIVERSITY OF Cincinnati





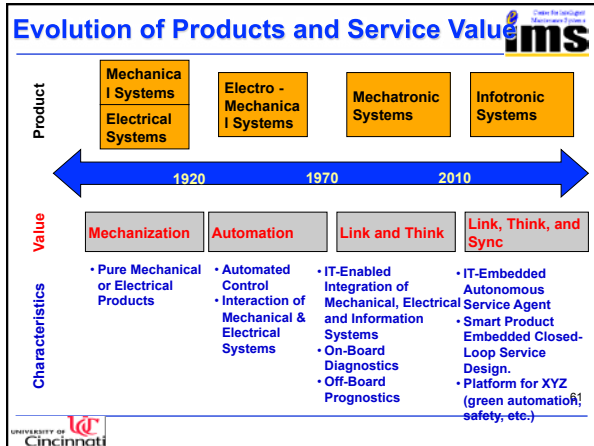


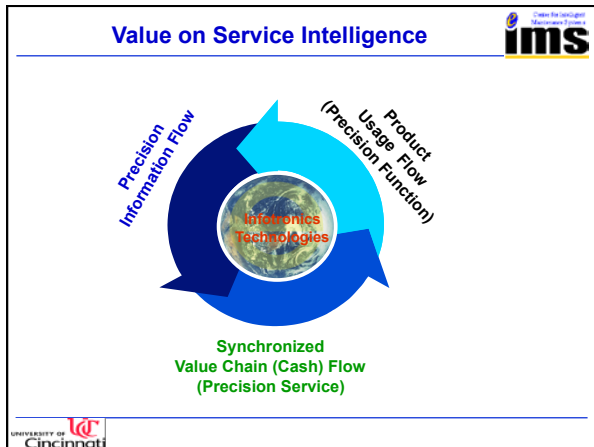


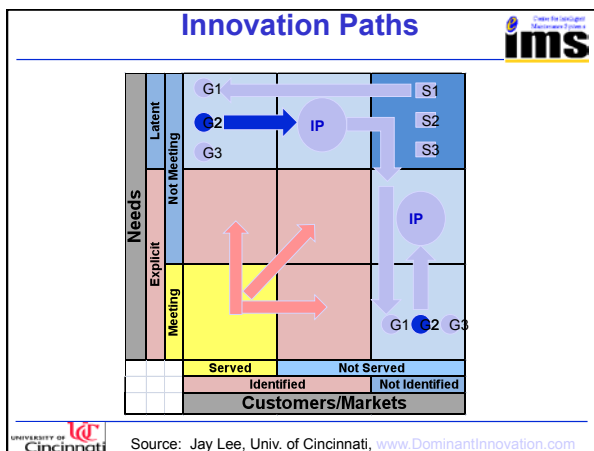


Conclusions



UNIVERSITY OF CINCINNATI








**Infotronics-Enabled
Digital Service Systems**





**Right information to the
Right people to do the
Right things at the
Right time**



New Book on Dominant Innovation Design

Innovating the Invisibles



Thank You !

For More Information
Please visit:
www.dominantinnovation.com
&
www.imscenter.net