

Innovation in the Digital Age

25 June 2015

Dr. Suna Polat, Director

Collaborative Innovation & Social Product Development

Tel: +1.734.668.9922

Email: s.polat@CIMdata.com

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Global Leaders in PLM Consulting
www.CIMdata.com

Suna Polat

Director, Collaborative Innovation and Social Product Development Practice

- Joined CIMdata in June 2014
- 24+ years of industry and R&D experience
 - Technology development
 - Product development
 - Innovation Management
 - Leading change and adoption
- Led strategic innovation and productivity capability implementations at P&G R&D
 - Modeling and simulation (M&S)
 - Connect & Develop (Open Innovation)
 - Knowledge Management
 - Social Technologies for Innovation
- Education: PhD in Chemical Engineering



Business Transformation through Innovation

A personal experience story

- Worked in P&G's diaper business between 1996 and 2007
- 1st assignment: Downstream process development
- 2nd assignment: Upstream process technology development
- 3rd assignment: Upstream material technology development
- 4th assignment: Connect & Develop (Open Innovation)
- 5th assignment: R&D Effectiveness

Business Transformation

From *Product* (Diaper) To *Job to Be Done* (Baby Care)

Disposable Diapers: High-Tech, Low Cost

Sample of consumer experience innovation vectors



Image credit: Pampers.com

Recognize Your Innovation Constraints

P&G Diaper Business: Manufacturing platform limited the product design space

Single mechanical shaft driven



Modular units; digital integration



\$1B

Leading Indicators

- Changes were expensive and time consuming
- Could not do meet business growth goals

Embrace Systemic Innovation

Start with consumers; understand fundamentals; focus on growth; be patient

1 Understand moms emotionally

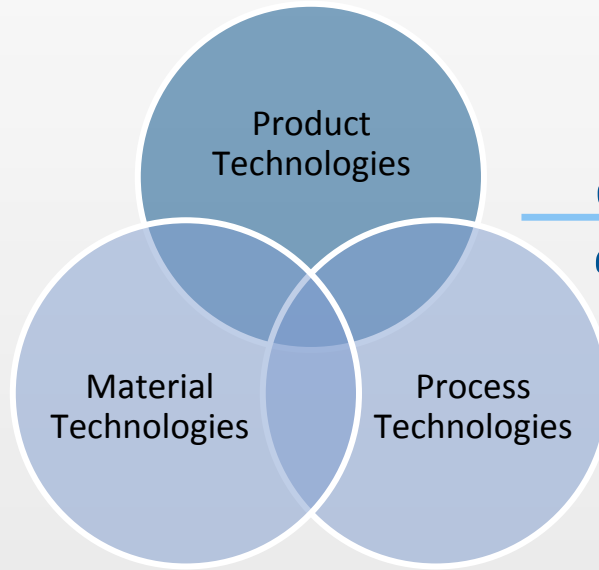


Pampers became a



in 2012

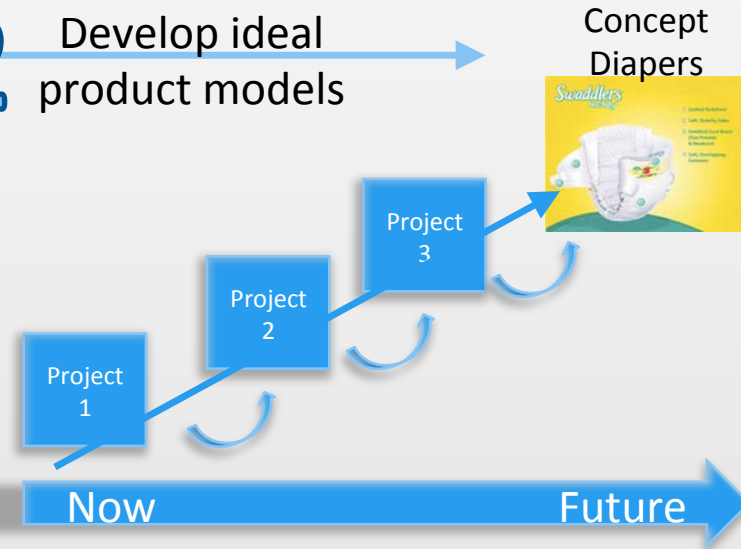
4 Define enabling technology platforms



3 Define family of products



2 Develop ideal product models



5 Plan projects and strategically manage portfolio of new ideas

Understand Innovation Speed Constraints

Innovate how you innovate to mitigate them

- Can we accelerate our learning cycles?
 - Modeling & Simulation
 - Rapid prototyping
- Can we find better ideas and ready solutions?
 - Connect & Develop
- Can we improve our innovation process management and decisions?
 - Front End Innovation

Collaboration: An On-going Challenge

Despite technology advancements and on-going experiments

Typical practices were:

- Capture insights, data and decisions in MS documents
- Save in personal computers and “functional” network drives
- Share/discuss in meetings, calls, emails (not searchable) for decisions

Welcome to the New Age of Innovation

Innovation with Smart Connected Products & Machines

Technology Drivers

Cloud

Sensors

Cameras

Mobile

Custom materials

Mfg, e.g., 3D printing

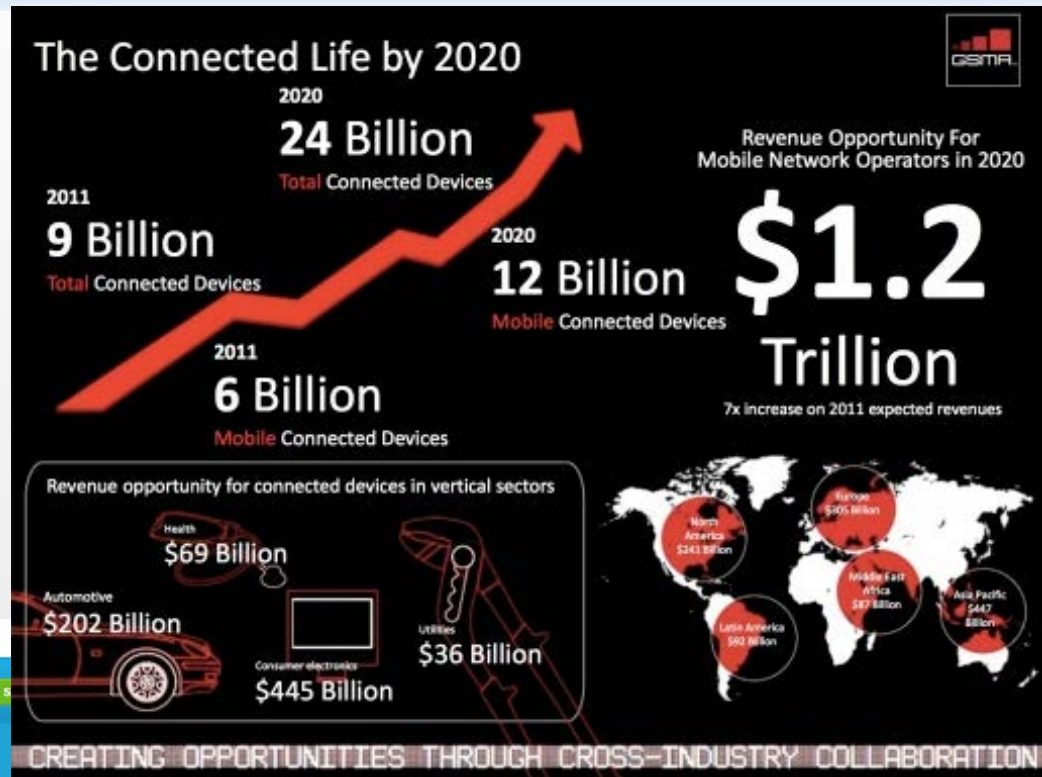


Image credit: <http://info.protecode.com/bid/53192/Open-Source-in-Mobile-Development-Part-1>

Challenges

Increased *complexity*

Need for high agility

Massive scalability

Consumer cost-sensitivity

AT&T IoT Services

M2X FEATURES SHOWCASE PRICING DEVELOP

Seamlessly connect your devices to The Internet of Things

AT&T M2X is a cloud-based fully managed time-series data storage service for network connected machine-to-machine (M2M) devices and the Industrial Internet of Things (IIoT). From trucks and turbines to vending machines and freight containers, M2X enables the devices that power your business to connect and share valuable data.

SIGN UP NOW



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Industrial Age versus Innovation Age

Pace of Innovation is increasing with increased connectivity

Industrial Age

- Businesses in charge
- Linear goals;
Annual planning cycles
- Hierarchical power
- Task management
- Product features

Information Age



Innovation Age

- Consumers in charge
- Gain brand loyalty;
Continuous learning
- Collaborative power
- Collaboration
- Jobs to be done

Challenge: How to balance
Scale and Agility
Efficiency and “More” innovation
Discipline and Empowerment

Collaboration in the New “Digital” Age of Innovation

Harnessing the Power of Your Employees

Internal collaboration

“A global company needs to collaborate globally. If you have the power of twenty divisions around the world and you’re not leveraging knowledge from those places, you are losing out”

John Mannisto
Engineering Director, Simulation-Based Design
Whirlpool Corporation

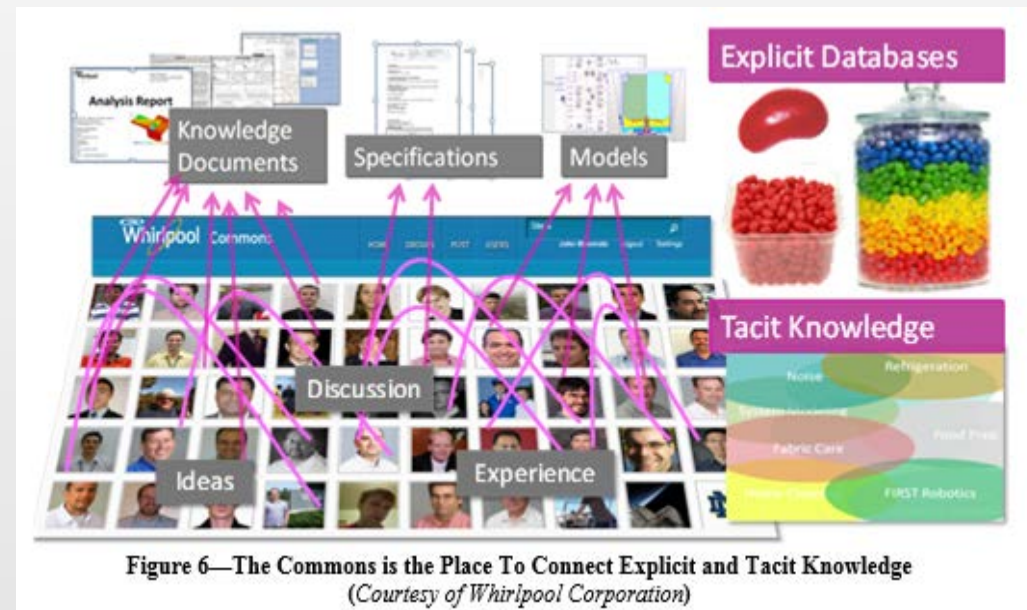


Advice from John Mannisto (Whirlpool Corp.)

Insights from Whirlpool's social collaboration experiments

“Get the kids involved: This is a new technology and new behavior. Get your kids involved, and learn from outside of the office—social media is outpacing corporate collaboration”

*“Demand better tools from your solutions providers, but don't use lack of appropriate tools as an excuse to not move forward. Own your journey; get involved—*pilot, play, produce.*”*



Crowdsourcing with Employees

AT&T example (1 of 3)

Members Can Solve a Specific Business Need...

How it Works: Challenges

- Challenge Issued
- Idea Shared
- Collaboration & Rating
- Challenge Review
- Pairwise Voting
- Social & Cash Winners

Challenge Info

Share & Rate Ideas
Jul 16 to Aug 5

Advisor Reviews
Aug 6 to Aug 7

Heads Up! Voting
Aug 8 to Aug 14

Learn more

Phase: Heads Up! Voting
Ends: 3 days

71 IDEAS	756 VOTES	330 COMMENTS	3975 VIEWS
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From The Challenger

Executives often provide additional details that may help you solve the challenge. Pay special attention to any must-have criteria for a winning solution. Good luck!

Challenge Hot Ones!

These challenge ideas are causing quite a stir in the TIP community. With so much voting, commenting and sharing going on, you might want to see what the buzz is about!

1	Sample Idea #1	93
2	Sample Idea #2	90
3	Sample Idea #3	78

Challenge Social Hub

Tap into the challenge social scene! Choose from 3 different activity feeds by clicking the icons below. To customize your view, click "Show Filters". Have fun exploring!

TIP MEMBER A replied to TIP MEMBER B on the idea: "Sample Idea #2"
25 minutes ago
"That's a good point. What if we changed the concept so that we could..." more
Reply · View Comment

(Courtesy of MindJet)

Crowdsourcing with Employees

AT&T example (2 of 3)

...Or Share an Idea Any Time Inspiration Strikes

The screenshot shows the AT&T TIP website interface. At the top, it says "BRETT HAVENS | My Inbox | Help | Sign-Out". Below that is the "tip the Innovation Pipeline" logo and a search bar. The navigation menu includes Home, TEDx Home, Learn, Share, Discover, Collaborate, Influence, Connect, and Celebrate. The "Share" section is highlighted, with the text: "Innovation at AT&T can be sparked by a single great idea, and it all begins with you. Whether your idea will earn money, save money, improve the customer experience or IT, choose the best category below and share it with the TIP community today!".

A central blue box with a lightbulb icon asks "I have an idea! Where do I share it?". Below this are five categories, each with a "Share Idea" button:

- START IT!** (Green): It's for a product, service or business new to AT&T!
- GROW IT!** (Green): It improves an existing AT&T product, service or business!
- COST SAVINGS** (Yellow): It saves money for the company!
- CUSTOMER EXPERIENCE** (Orange): It improves our customers' experience!
- INFORMATION TECHNOLOGY** (Red): It improves our internal technology and IT systems!

To the right, a flowchart titled "How it Works: Start It!" shows the following steps:

- Season Begins
- Idea Shared
- Collaboration & Rating
- Advisor Review
- Pairwise Voting
- Angel Pitch
- Funding (if selected)

11

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(Courtesy of MindJet)



Crowdsourcing with Employees

AT&T example (3 of 3)

Results

- Initiated in 2009: Live to 200K+ employees on day one
- By end 2013: 120K employees, 25K ideas
- By mid 2014: 130K employees, 31K ideas, \$44M seed money committed to projects

Internal Peer-to-Peer Collaboration

Communities of Practice (CoP) → Communities of Innovation

- Concept of CoP has been around long time and many companies have formal CoP's
- Members choose to participate by the nature of their interest and passion (opt in versus assigned)
- Members
 - help one another solve tough problems
 - tap collective experience and expertise
 - accelerate to knowledge and insights
- Social media and social collaboration technologies make awareness and participation easy
- Leadership encouragement and recognition is important

Harnessing the Power of External Crowd

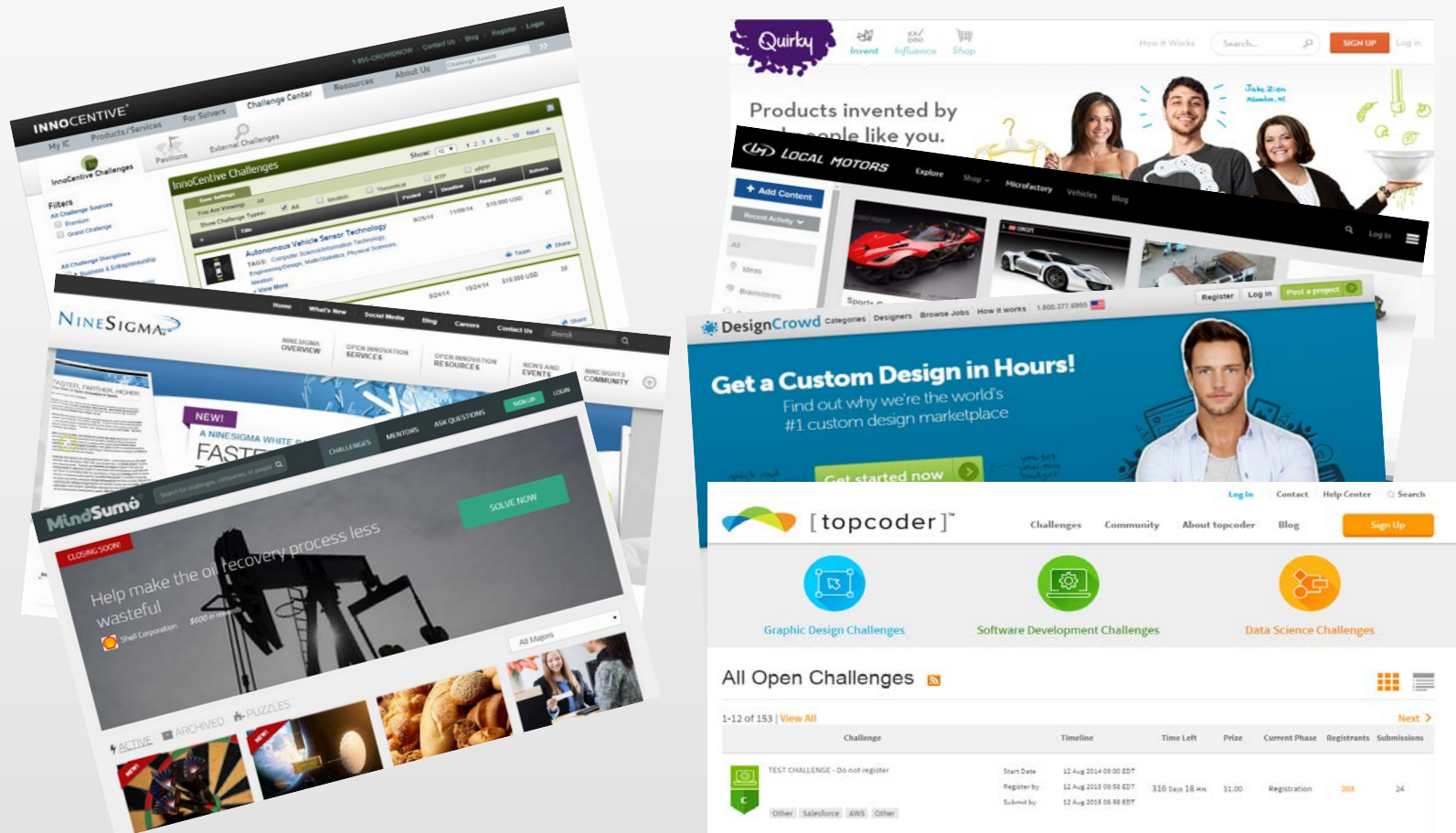
Open Innovation (1 of 2)

- Consumers
- Enthusiasts
- Partners / suppliers
- Entrepreneurs
- Academia
- Alumni
- Experts / Consultants
- Retirees / Students
- Equity firms
- Venture capitalist

Harnessing the Power of External Crowd

Open Innovation (2 of 2)

Example Open Innovation and Co-Creation Services



Collaboration with Consumers

Now engaged at every stage of innovation

Linear model where consumer interaction is more intense in earlier stages

Current model where consumers are engaged at every stage

BIG “consumer” data

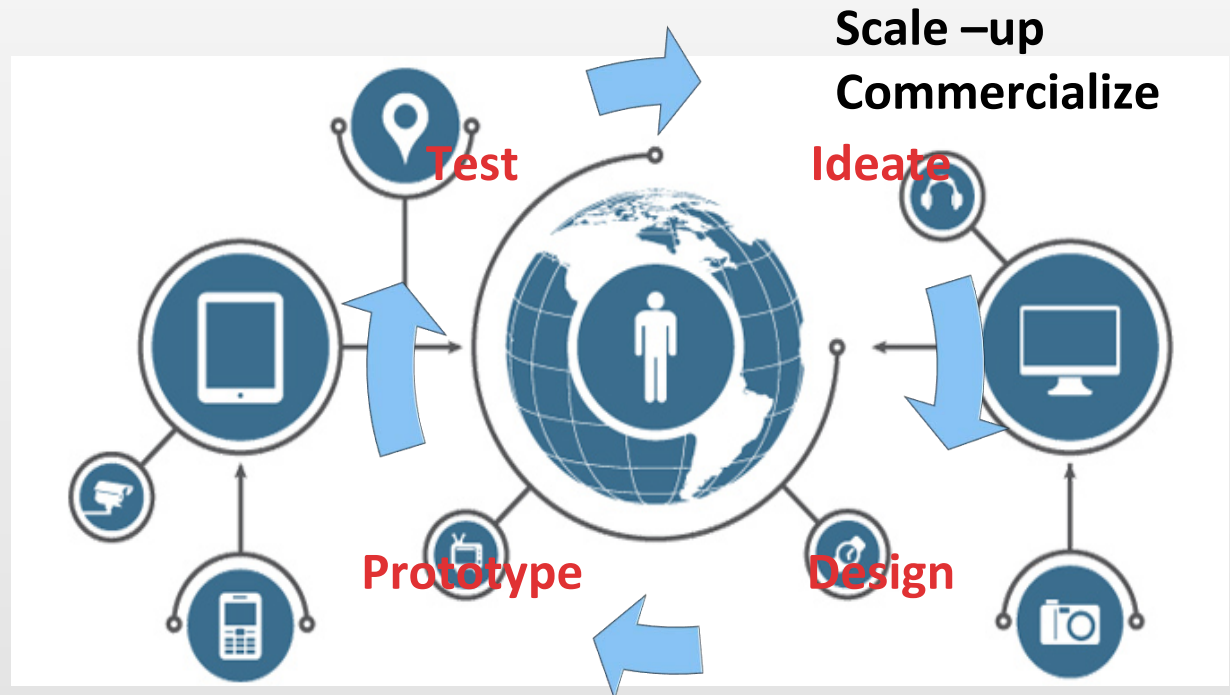
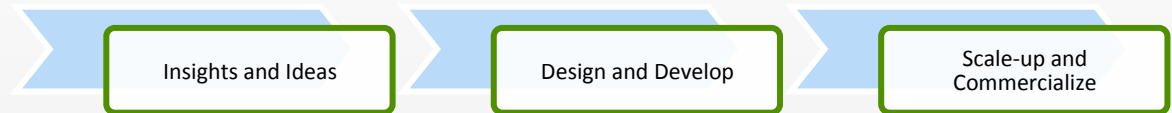


Image credit: <http://www.altitudeinc.com/smart-connected-products-need-good-design/>

External Crowdsourcing

Examples from the auto industry: Ideation as well as marketing!

Volkswagen Hover Concept Car was one of three based on more than 119,000 ideas submitted to the project website. The website received over 35.6 million views, nearly 13 million visitors



Image credit: <http://blogs.scientificamerican.com/observations/2012/06/21/imagination-a-little-movie-magic-a-volkswagen-hover-car-silently-navigating-city-streets-video/>

Fiat Mio Concept Car created based on more than 11,000 ideas submitted by 17,000 subscribers in more than 120 countries



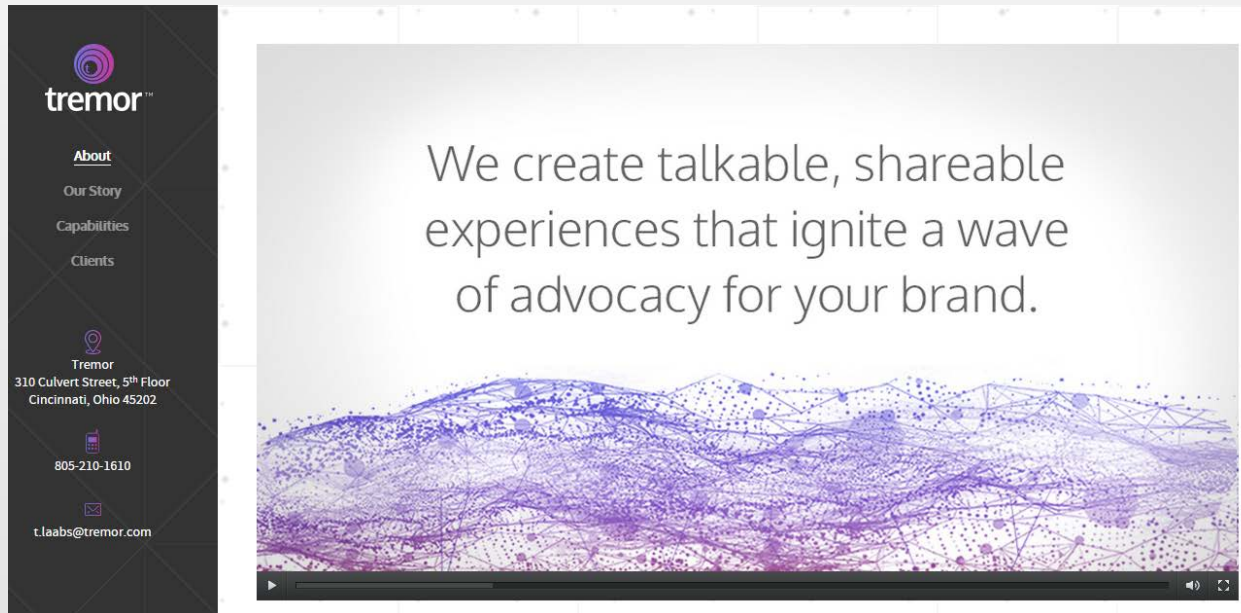
Image credit: <http://www.carblog.co.za/2010/10/28/fiat-mio-fcc-iii-concept-makes-the-driver-a-passenger/>



Consumer Communities Example

Tremor

- Initiated by P&G in 2002 for “word of mouth” marketing. Acquired by MKTG in 2014
- Vocalpoint community of 1+ million women and moms
- Vocalpoint community provides ideas and insights



Co-Creation

Example: GE Appliances – FirstBuild – a start up within a big company (1 of 2)

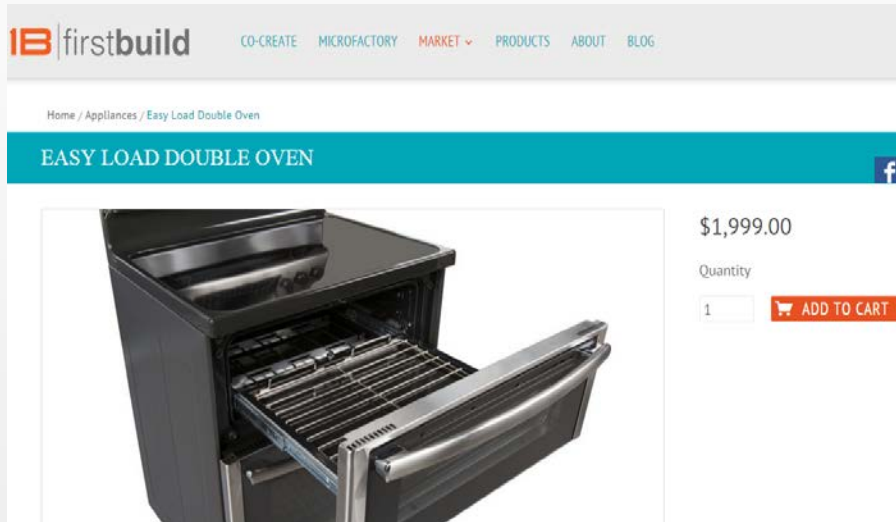
The screenshot shows the FirstBuild website interface. At the top, the navigation bar includes 'IB firstbuild' and links for 'CO-CREATE', 'MICROFACTORY', 'MARKET', 'ABOUT', and 'BLOG'. The main content area features a headline 'Co-create a new world of home appliances.' followed by a description of FirstBuild as an online and physical community. A 'GET STARTED' button is prominently displayed. Below this, two featured products are shown: 'Paragon Induction Cooktop' and 'Easy Load Oven Drawer', each with a 'Find out here' or 'Buy now' link. A large teal banner at the bottom is titled 'HOW IT WORKS' and details five stages: 'Ideate' (Submit Your), 'Evaluate' (Start Voting), 'Make' (FirstBuild provides the space, tools, and resources to build and prototype the appliances of your dreams.), 'Produce' (Rapid and advanced manufacturing techniques at the FirstBuild Microfactory can produce products quickly and on a small scale.), and 'Sell' (FirstBuild will then help sell and promote your great ideas online through a dedicated web store and on physical shelves, including ones at the Microfactory.).

Images: Court

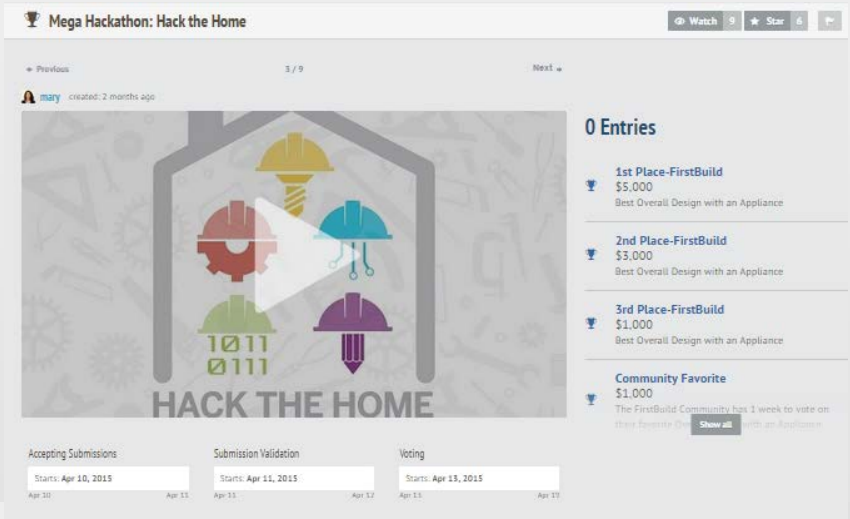
- 35000 ft. sq. microfactory at Belknap Campus, University of Louisville, KY.
- Partners: Local Motors, MakerBot, TechShop, Stratasys Ltd. and AllSeen Alliance

Co-Creation

Example: GE Appliances – FirstBuild – a start up within a big company (2 of 2)

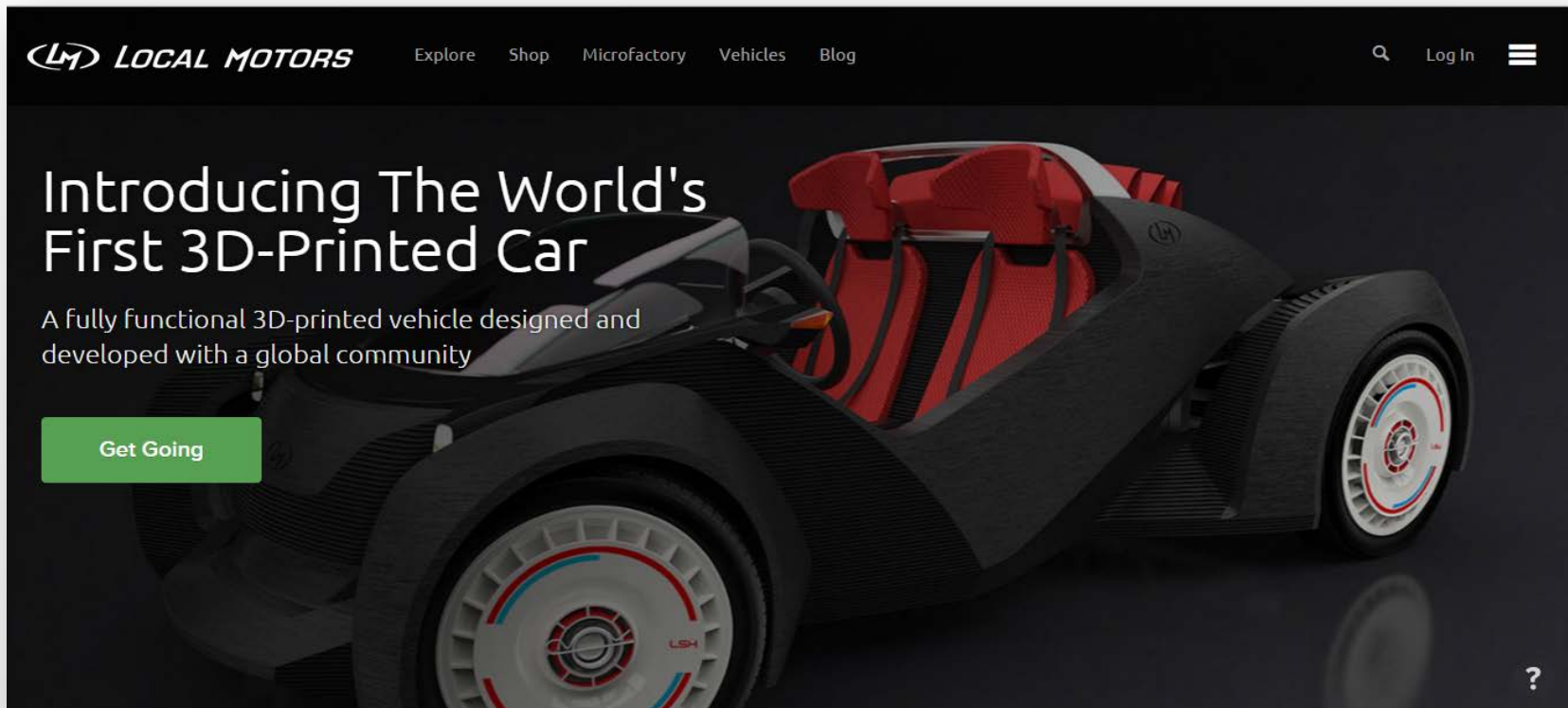


- Commercialized “Easy Load Oven” at 5x speed vs. typical idea to market timeline at GE Appliances
- Paragon Induction Cooktop came from a student at Stanford University
- Using Kickstarter to identify ideal pricing point for Paragon Cooktop



Co-Creation

Example: Is Local Motors reinventing car making?



- Designers, hobbyist and enthusiasts develop design concepts online
- Concepts can be turned into physical products at Local Motors' growing number of microfactories with state of the art manufacturing technologies

“The future has arrived — it’s just not evenly distributed yet.”

William Gibson

Many success stories ...
Many solutions and services...

Why so many enterprises are still struggling?



1. Culture and Mindset

- Aligning culture with a new strategy, especially in large organizations, is hard

“Culture eats strategy for breakfast”

Peter Drucker

“Culture change feels like trying to lift the chair your are sitting on”

A P&G HR Manager

Open Innovation Implementation

An example: GE



GE Open Innovation

Like 133 Tweet 137 +1 54 Pin it

GE understands solving the world's toughest problems through advanced manufacturing techniques and processes requires collaboration. By crowdsourcing innovation—both internally and externally—GE is improving customer value and driving advancements across industries. By sourcing and supporting innovative ideas, wherever they might come from, and applying GE's scale and expertise, GE's approach to open innovation is helping to address customer needs more efficiently and effectively.

Open Innovation Manifesto

We believe openness leads to inventiveness and usefulness.

We also believe that it's impossible for any organization to have all the best ideas, and we strive to collaborate with experts and entrepreneurs everywhere who share our passion to solve some of the world's most pressing issues.

We're initiating a fundamental shift in the way we do business - this is what we'll stand for in our open collaboration efforts and how we will operate.

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Visit GrabCAD to browse their open library of CAD projects, and join their community of engineers who are working to build great products faster.



Open Innovation Implementation

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We're initiating a fundamental shift in the way we do business - this is what we'll stand for in our open collaboration efforts and how we will operate.

- Customer focus, imagination, courage, expertise, inclusiveness, and clear thinking will always guide our collaborative effort.
- We will openly celebrate the efforts of lead solvers who have submitted winning solutions within our public collaborations.
- We'll collaborate with transparency – publishing evaluation criteria, rules, compensation and IP rights at the launch of our engagements.
- We believe ideas should be compensated - and compensation pools will always reflect level of impact, effort, commercialization risk and IP rights.
- We'll provide access to pools of IP to enable the Global Brain to create new and beneficial outcomes.
- We'll never stop experimenting, collaborating and learning – we'll get smarter as we go, and the Global Brain will evolve and grow with us.

To learn more about past quests, watch this [Google+ Hangout](#) and read the [press release](#) and the following articles from [GE Reports](#):



Open Innovation Implementation

Example: Ford (1 of 2)

Ford Initiates Open Innovation Approach to Finding Innovative Mobility Solutions; Launches Innovate Mobility Challenge Series

Jul-15-2014 4:30 AM ET



TJ McCue
Contributor

FOLLOW

Passionate about tech: 3D to Cloud to Gadgets
full bio →

Opinions expressed by Forbes Contributors are their own.



TECH 1/10/2013 @ 5:27PM | 3,750 views

Ford Motor Co Open Source

+ Comment Now + Follow Comments

Ford today announced the launch of its OpenXC vehicle application research platform. Open-source hardware and software toolkits are now available to anybody who's interested in building hardware and on the [C joint effort with BugLabs](#) (what

Ford Drives into the Future with Open Innovation

July 20, 2014 by IdeaConnection & filed under Innovation.



Every week there are new stories about companies launching open innovation and crowdsourcing initiatives. They hope they can successfully convert the awesome brainpower of the crowd into concrete innovations that propel them ahead in the marketplace.

One of the latest corporate giants to initiate an exciting new open innovation venture is the Ford Motor Company.

Open Innovation Implementation

Example: Ford (2 of 2)

Contrasting
message at
Ford's
website

Go Further

COMPANY VEHICLES INNOVATION CAREERS INVESTORS NEWS Quick Links

Ford New Ideas/Consumer Innovation Office

Ford receives thousands of ideas each year. In order to review these, we have a strict process that balances your interests and rights with those of Ford Motor Company. In return for your acceptance of the Idea Submission Rules and Terms & Conditions, Ford Motor Company offers a non-confidential, preliminary evaluation of your submission.

Is this the right place for your idea?

This site is available for you to submit certain nonconfidential ideas to Ford Motor Company. In order to be considered, submissions must relate to products, features or function. Ford does not accept the following types of submissions:

- Confidential information of any type

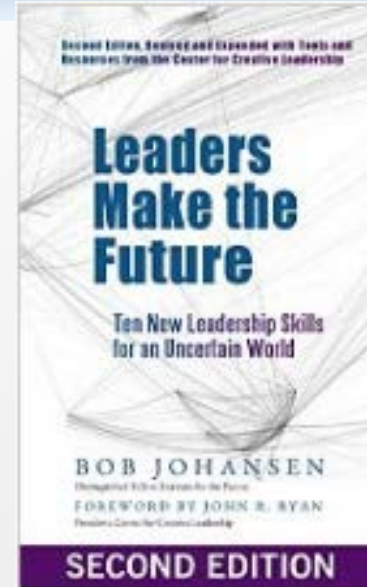
Ford and its suppliers invest billions of dollars each year and have thousands of employees around the world engaged in research and development of new ideas. If Ford has something development that is similar to a disclosure, this can cause confusion about the origin of the idea. That is why we avoid evaluating ideas that could create a conflict with our internal efforts. Determining who developed certain aspects of an idea can be a complex and time-consuming process involving hundreds of people. There is considerably less risk if we develop ideas from the people we employ. The vast majority of the ideas used by Ford Motor Company originate with our employees or suppliers.



Need New Age “Leadership”

Motivating and empowering employees

- Create a culture of *engagement and collaboration*
- Activate intrinsic motivation
- Connect people and ideas – spark “network” effects



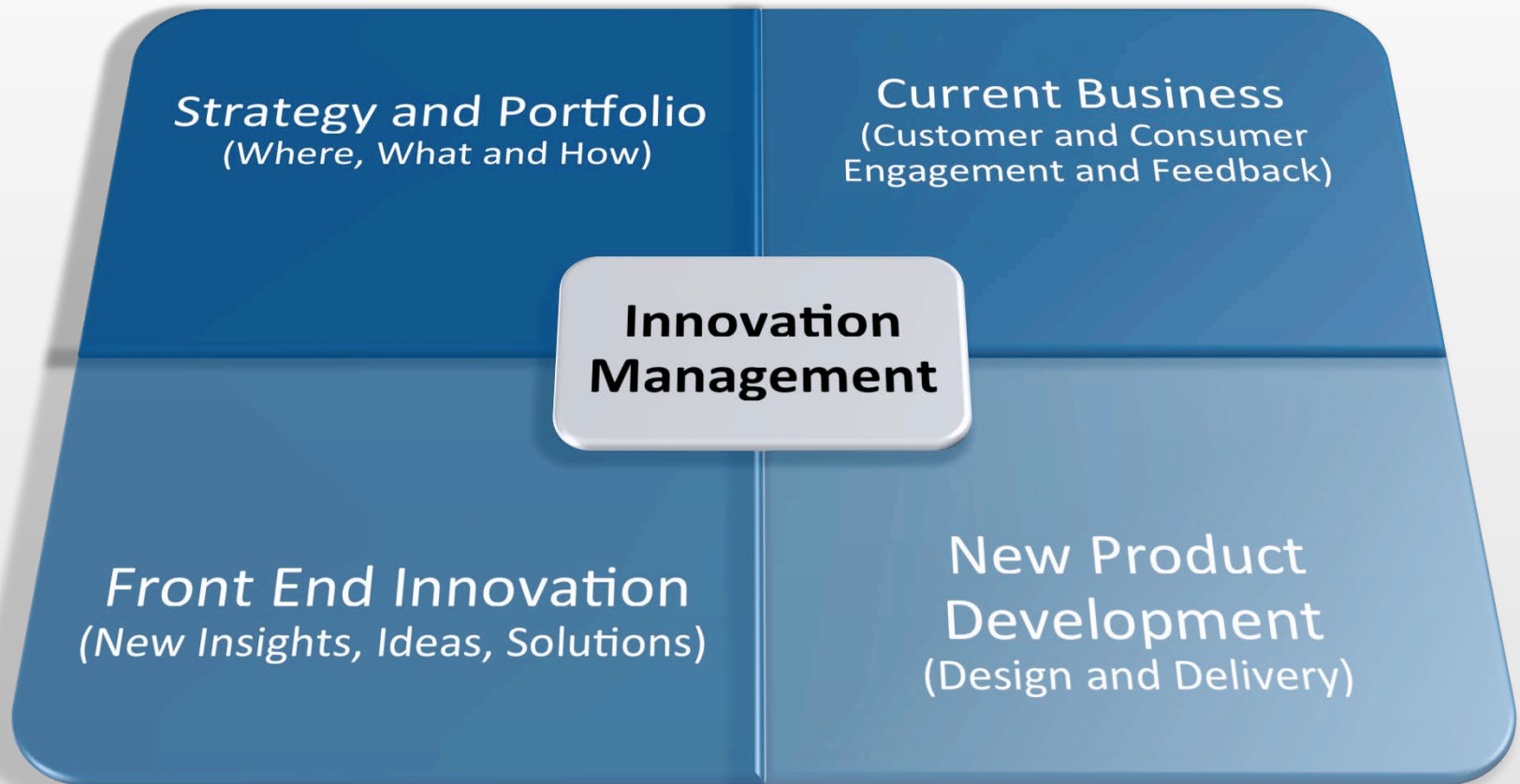
EXECUTIVE GUIDANCE FOR 2014

The Rise of the Network Leader

Reframing Leadership in the New Work Environment

2. Incoherent Management of Innovation

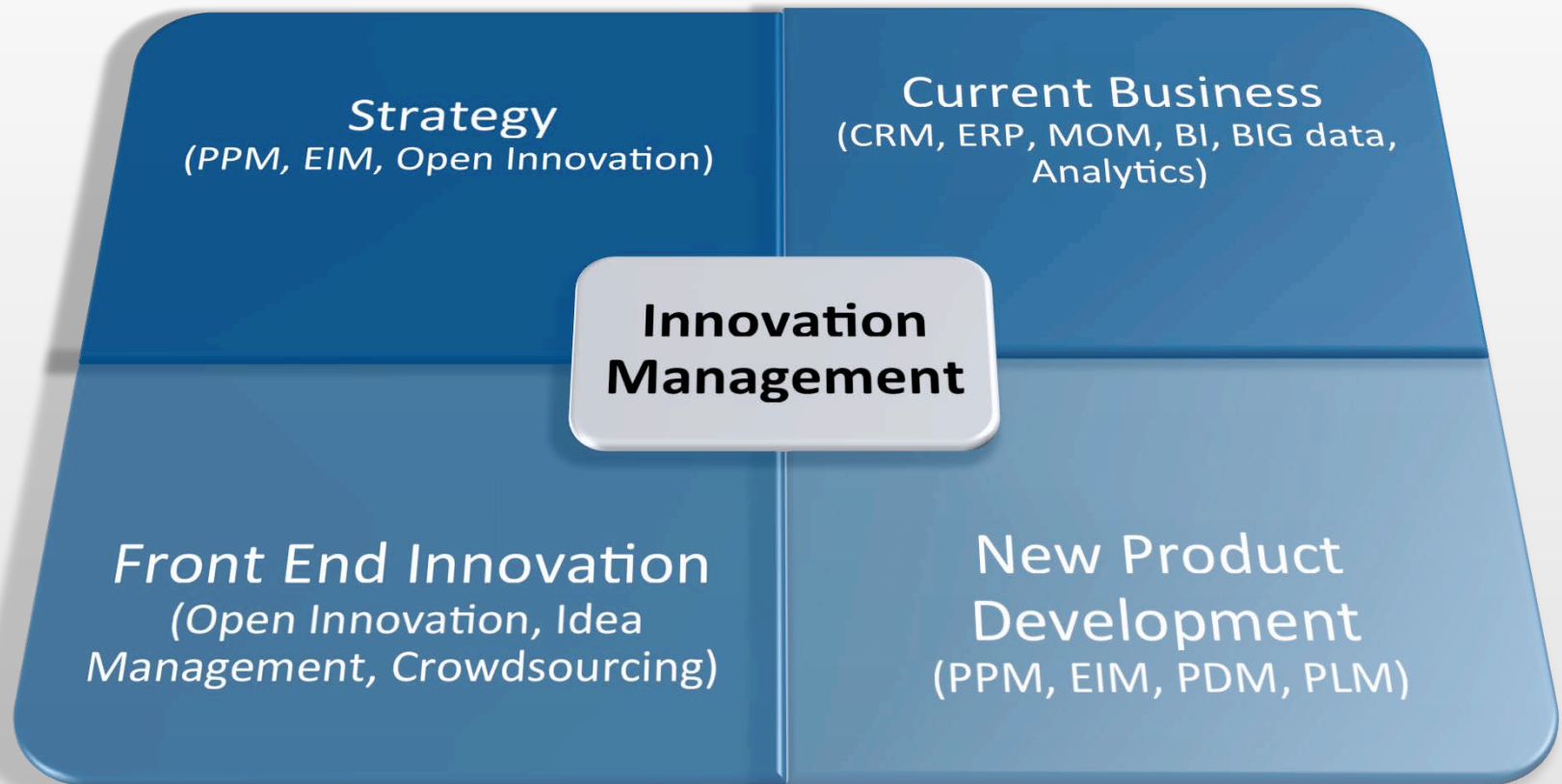
Multiple innovation spaces need to be connected and coordinated



3. Confusing Solutions Landscape

Overlapping approaches, solutions and terminology are confusing or conflicting

Clients may be hesitant to invest because they don't understand how solutions fit with their organization, culture and existing solutions



All areas are supported by a number of overlapping solutions



CIMdata Research Announcement

Invitation to participate to Chief Innovation Officers

Objective 1: Define an innovation system framework and terminology including benefits, challenges, strategies and solutions by interviewing Chief Innovation Officers and thought leader solution providers

Objective 2: Disseminate learning and outcomes in a white paper, webinars and workshop discussions

Timeline:

- Finalizing sponsors – June 2015
- Perform research and execution – July - Sep 2015
- Disseminate learning and outcomes – Oct, Nov 2015

CIMdata Workshop Announcement

Register online at CIMdata website

Title: **“Collaboration and Innovation in the Digital Age”**

Date / Location: Oct 7 and 8, 2015; Louisville, Kentucky

Format: Keynote speakers, panel discussions, co-creation

Example topics to be explored:

- How to balance openness and speed with security and protection of intellectual property (IP)?
- How to integrate the fuzzy front end with PLM?
- How to address cultural challenges in adopting new business models, such as co-creation, and digital technology solutions?

----- Will tour GE Appliances FirstBuild Microfactory -----

Conclusions

CI must be a critical element of PLM as an innovation platform

- Speed of innovation in “digital” new era with smart and connected products has become even more important.
- Companies need to embrace systemic innovation with strategic platforms, capabilities and solutions to achieve goals

Key challenges:

- *Aligning the culture to the new innovation strategies and approaches*
- *Connecting and coordinating innovation across multiple organizations, functions, spaces*
- *Understanding landscape of innovation solutions and services to make investment decisions*

For more information, contact

We look forward to hearing from you

Suna Polat

Director, Collaborative Innovation & Social Product Development

Tel: +1.734.668.9922

Email: s.polat@CIMdata.com

CIMdata

Strategic consulting for competitive advantage in global markets

World Headquarters

3909 Research Park Drive
Ann Arbor, MI 48108 USA
Tel: +1.734.668.9922
Fax: +1.734.668.1957

Main Office - Europe

Oogststraat 20
6004 CV Weert, NL
Tel: +31 (0) 495.533.666

Main Office - Asia-Pacific

Takegahana-Nishimachi 310-31
Matsudo, Chiba 271-0071 JAPAN
Tel: +81.47.361.5850
Fax: +81.47.362.0472

www.CIMdata.com

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