Trillions: Thriving in the Emerging Information Ecology

By Peter Lucas, Joe Ballay, Mickey McManus

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We are facing a future of unbounded complexity. Whether that complexity is harnessed to build a world that is safe, pleasant, humane and profitable, or whether it causes us to career off a cliff into an abyss of mind-numbing junk is an open question. The challenges and opportunities--technical, business, and human--that this technological sea change will bring are without precedent. Entire industries will be born and others will be laid to ruin as our society navigates this journey.

There are already many more computing devices in the world than there are people. In a few more years, their number will climb into the trillions. We put microprocessors into nearly every significant thing that we manufacture, and the cost of routine computing and storage is rapidly becoming negligible. We have literally permeated our world with computation. But more significant than mere numbers is the fact we are quickly figuring out how to make those processors communicate with each other, and with us. We are about to be faced, not with a trillion isolated devices, but with a *trillion-node network*: a network whose scale and complexity will dwarf that of today's Internet. And, unlike the Internet, this will be a network not of computation that we *use*, but of computation that we *live in*.

Written by the leaders of one of America's leading pervasive computing design firms, this book gives a no-holds-barred insiders' account of both the promise and the risks of the age of Trillions. It is also a cautionary tale of the head-in-the-sand attitude with which many of today's thought-leaders are at present approaching these issues. *Trillions* is a field guide to the future--designed to help businesses and their customers prepare to prosper, *in* the information.

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Editorial Review

Amazon.com Review

From the Authors: The Top Ten Business Take-Aways from *Trillions*

Peter Lucas

1. Pervasive computing is the next information technology paradigm. Connectivity is the seed of this change. Major high-tech players will disappear and new ones will be born overnight.

2. Your current business risk in information technology may be much higher than you think. The dominant IT technologies and practices--including cloud computing--are inadequate for the coming pervasive computing paradigm. They will not scale gracefully into a "trillion-node network."

Joe Ballay

3. We need to move beyond open source and move towards open component ecologies. Simple stable components--sometimes hardware, sometimes software--will be layered together and will create new forms of value that will compete in market driven feedback loops.

4. The good news is that trillions is a very big number. New revenue streams in the form of high-volume micro-transactions will become viable. New business models based on little bits of information collected over vast networks will rule the day.

5. Complexity is inevitable, but bad complexity will kill you. Consider how you can foster beautiful complexity in the form of hierarchy, modularity, redundancy, and generativity. Nature and evolution are the best teachers.

Mickey McManus

6. Design for Generativity and Emergence. Use architectural thinking as the foundation for your work. Then get in the practice of building dynamic simulations--even if made from sticky notes and disposable cameras at first--of your entire business ecology early and often.

7. Design is not a paint-job or product styling or user-interface "look and feel." Properly understood, design is the whole shooting match. If your organization isn't design literate you risk becoming a dinosaur lumbering among agile predators running around at your feet.

8. Make your products and services human literate. Human beings are vastly more complex, subtle, and important than machines. We've spent a half-century believing that people should become "computer literate." That's precisely backwards. Computing should become "human literate."

9. Computing needs to fade into the woodwork so that humans living their lives can come to the foreground. Think of ways you can use connectivity and computing to hide and tame complexity for your customers. They don't really want to think about computers, they want to think about doing their jobs and living their lives.

10. Explore ways that you can simulate and foster strange bedfellow relationships now. Consider what could happen if you harvested and shared all the information your current products could capture or "know." The value is inestimable.

Review

"This book provides a refreshing, insightful guide to how companies can prepare for future technology innovations and thrive in this emerging information age. Summing Up: Recommended. Business and computer science collections serving upper-division undergraduates and above; general readers." (*Choice*, 1 July 2013)

From the Inside Flap

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Users Review

From reader reviews:

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Kristen Wright:

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Georgia Cunningham:

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