

O'REILLY®

AI Value Creators

Beyond the Generative AI User Mindset



Rob Thomas,
Paul Zikopoulos
& Kate Soule

"A handbook for the AI Renaissance to help entrepreneurs and innovators drive AI value creation at the next level."

will.i.am, founder and CEO, FYI.AI

"Rob Thomas brings insight, common sense, and his long experience at IBM to bear on the greatest technological transformations of our lifetime. On the subject of AI, there are few people whose perspective I would value more."

Malcolm Gladwell, host of the *Revisionist History* podcast

"This handbook provides actionable insights to help you drive innovation and navigate the next wave of AI advancements, positioning your business for long-term success."

Jessica Sibley, CEO, TIME

AI Value Creators

We've arrived in a new era—GenAI and agentic AI are reshaping industries and decision-making processes across the board. As a result, understanding their potential and pitfalls has become crucial. But in order to stay ahead of the curve, you'll need to develop fresh perspectives on leveraging AI beyond mere technical know-how. Geared to business leaders and tech professionals alike, this book demystifies the strategic integration of AI into business practices, ensuring you're equipped not just to participate but to lead in this new landscape.

This insightful guide by industry leaders Rob Thomas, Paul Zikopoulos, and Kate Soule, with contributions from Rebecca Reyes, David Cox, and Linda Snow, goes beyond the basics, offering real-life success stories and learned lessons to provide a blueprint for meaningful AI engagement. Whether you're a novice or an expert, you'll come away with an enhanced understanding of all the things a modern AI strategy can do for your business.

- Recognize the transformative potential of AI in business and how to harness it
- Navigate the ethical and operational challenges posed by AI with confidence
- Understand the interplay between AI technology and business strategy through detailed use cases
- Implement actionable strategies to integrate AI into your organizational culture
- Step confidently into the role of an AI Value Creator, equipped to lead

Rob Thomas is SVP and CCO at IBM and leads its entire software business, including product management, design, and development.

Paul Zikopoulos is an IBM VP focused on skills and AI. He's also an award-winning writer and speaker who has discussed AI and big data with *60 Minutes* and NATO.

Kate Soule is an IBM research director who leads technical product management for Granite, IBM's family of large language models.

AI / DATA

ISBN: 978-1-098-16835-3



9 781098 168353

O'REILLY®

Praise for *AI Value Creators*

A handbook for the AI Renaissance to help entrepreneurs and innovators drive
AI value creation at the next level.

—*will.i.am, founder and CEO, FYLAI*

Rob Thomas brings insight, common sense, and his long experience at IBM to bear on
the greatest technological transformations of our lifetime. On the subject of AI, there are
few people whose perspective I would value more.

—*Malcolm Gladwell, host of the Revisionist History podcast*

With AI reshaping industries, this handbook provides actionable insights that can help
you drive innovation and navigate the next wave of AI advancements, positioning your
business for long-term success.

—*Jessica Sibley, CEO, TIME*

AI Value Creators

Beyond the Generative AI User Mindset

Rob Thomas, Paul Zikopoulos, and Kate Soule

O'REILLY®

AI Value Creators

by Rob Thomas, Paul Zikopoulos, and Kate Soule

Copyright © 2025 O'Reilly Media, Inc. All rights reserved.

Printed in the United States of America.

Published by O'Reilly Media, Inc., 1005 Gravenstein Highway North, Sebastopol, CA 95472.

O'Reilly books may be purchased for educational, business, or sales promotional use. Online editions are also available for most titles (<http://oreilly.com>). For more information, contact our corporate/institutional sales department: 800-998-9938 or corporate@oreilly.com.

Acquisitions Editor: David Michelson

Development Editor: Gary O'Brien

Production Editor: Kristen Brown

Copyeditors: Doug McNair and nSight, Inc.

Proofreader: Sonia Saruba

Indexer: Potomac Indexing, LLC

Interior Designer: David Futato

Cover Designer: Karen Montgomery

Illustrator: Kate Dullea

April 2025: First Edition

Revision History for the First Edition

2025-04-01: First Release

See <http://oreilly.com/catalog/errata.csp?isbn=9781098168346> for release details.

The O'Reilly logo is a registered trademark of O'Reilly Media, Inc. *AI Value Creators*, the cover image, and related trade dress are trademarks of O'Reilly Media, Inc.

The views expressed in this work are those of the authors and do not represent the publisher's views. While the publisher and the authors have used good faith efforts to ensure that the information and instructions contained in this work are accurate, the publisher and the authors disclaim all responsibility for errors or omissions, including without limitation responsibility for damages resulting from the use of or reliance on this work. Use of the information and instructions contained in this work is at your own risk. If any code samples or other technology this work contains or describes is subject to open source licenses or the intellectual property rights of others, it is your responsibility to ensure that your use thereof complies with such licenses and/or rights.

This work is part of a collaboration between O'Reilly and IBM. See our [statement of editorial independence](#).

978-1-098-16835-3

[LSI]

Table of Contents

Preface	xi
1. +AI to AI+: Generative AI and the “Netscape Moment”	1
What Is a “Netscape Moment”?	2
AI and the Magical Moment	3
But...AI Is <i>Not</i> Magic	5
Moving Your Business from +AI to AI+	6
Before You Do Anything, Change Your Mental Model from +AI to AI+	7
The AI Ladder, Rebooted for GenAI	8
Before You Start Your Journey, Classify the Budget and Identify How AI Is Going to Help	11
Dimension One: Spend Money to Save Money, or Spend Money to Make Money? How Will AI Help Your Business?	11
Dimension Two: Categorize How the AI Helps Your Business	12
Use an Acumen Curve to Visualize How AI Helps Your Business	13
Where to Start? Here’s Our Helpful Advice	16
Become a Shifty Business: Shift Left, and Then, You Can Shift Right!	17
Every Day, We Walk by Problems That Can Be Solved or Made Better with Technology	18
Tips for Harnessing Foundation Models and GenAI for Your Business	24
Tip 1: Act with Urgency	24
Tip 2: Be an AI Value Creator, Not Just an Occasional AI User	24
Tip 3: One Model Will Not Rule Them All, So Make a Bet on Community	25
Tip 4: Run Everywhere, Efficiently	26
Tip 5: Be Responsible Because Trust Is the Ultimate License to Operate	27
And with That, Let’s Focus on the AI Part	27

2. Oh, to Be an AI Value Creator.....	29
AI Through the Years: The AI “Time Lapse” Section	30
A Quick Bit on Foundation Models	31
Going a Little Deeper: The Evolution of Large Language Models and Comparing Supervised Learning with Self-Supervised Learning	37
AI Value Creation Should Be Your Destination	41
How Do You Consume AI: Be Ye a Value Creator or a Value User?	42
Planning Your AI Future: A Future with Many GenAI Models	45
It’s Time to Demystify and Apply AI	46
The Future of AI	53
Let’s Get into It	54
3. Equations for AI Persuasion.....	55
Some Things Are Timeless	56
Tension Has Always Existed with Technology—Always	57
No Calculators Needed! Our Three Persuasion Equations	57
Equation 1: How to Grow GDP	60
Equation 2: What Makes for AI Success?	61
Equation 3: Find Your Balance—Navigate the Paradox	66
One Last Piece of Advice: See AI as a Value Generator, <i>Not</i> a Cost Center	71
Wrapping Up	72
4. The Use Case Chapter.....	75
The Use Case Value Creation Curve	76
Going Horizontal Gets You the Most Vertical	78
Experimentation	78
Putting Your Data to Work	79
IT Automation	80
Code—The Language of Computers	83
Digital Labor and AI Assistants	90
Agents	93
The Business Lens: Use Cases—Horizontally Speaking	95
The Bonus (Horizontal) Use Case—Synthetic Data	95
A Smattering of Use Cases—Vertically Speaking	96
Agriculture	97
Accounting	98
Education	99
Healthcare	101
Insurance	102
Legal	104
Manufacturing and Production	106
Pharma	107

Endless Possibilities: More Industries Where GenAI Shines	109
The Building Blocks of AI	110
5. Live, Die, Buy, or Try—Much Will Be Decided by AI.....	113
LLMs—The Stuff People Forget to Tell You	114
The Knowledge Cut-Off Date	115
LLMs Can Be Masters of Making It Up as They Go	115
Footprints in the Carbon: The Climate Cost of Your AI BFF	117
Copyright and Lawsuits	117
What About Digital Essence?	119
Your Expanding Surface Area of Attack	120
Data Privacy	123
Steal Now, Crack Later	124
Good Actor Levers for All Things AI	125
Fairness—Playing Fair in the Age of AI	126
Bias Here, Bias There, Data Bias Is Everywhere	127
Robustness—Ensuring Artificial Intelligence Is Unbreakable Intelligence	129
Explainability—Explain the Almost Unexplainable	133
Lineage—Tracing the Trail: Let Good Data Prevail	140
Regulations—The Section That Wasn’t Supposed to Be	141
What to Regulate—Our Point of View	142
Managing the AI Lifecycle	143
Wrapping It Up	145
6. Skills That Thrill.....	147
Let the Skilling Begin	148
The Path to AI+ Requires Scaling Skills Across a Broad Spectrum of Roles	151
AI—Job Destroyer or Job Creator?	152
You’re Only Going to Get Checkmated if You Don’t Up Your Skills	152
Democratized Technology: The Job Creator	153
Levers of Clever: Unlocking a Skills Program That Lasts Forever	155
Lever 1: Start at the Beginning—Hire Employees Who Want to Know the “Why”	157
Lever 2: Recruit Digitally Minded Talent	159
Lever 3: Take Count—Inventory Your Skills	161
Lever 4: Plan for Everyone—A Plan Without Action Is a Speech	166
Lever 5: Embrace the Learning (and Forgetting) Curves	167
Lever 6: Combine Instruction + Imitation + Collaboration	169
Lever 7: Culture Matters—Be a Skills Verb, Not a Noun	173
Lever 8: Set the Organizational Tone for AI	174
Case Study: IBM’s Skills Challenge—the CEO Asked; We All Responded	175
The Final Word	178

7. Where This Technology Is Headed—One Model Will <i>Not</i> Rule Them All!.....	179
The Bigger the Better, Right? Perhaps at the Start, But That Was a Long Time Ago	180
The Rise of the Small Language Model	182
Data Curation Results in AI Salvation	183
Think About This When It Comes to Data Curation	190
Model Distillation—Using AI to Improve AI	190
Think About This When It Comes to Model Distillation	195
Where Are We Going Next? Small Language Models...Assemble!	197
Model Routing	197
Think About This When It Comes to Model Routing	202
Mixture of Experts (MoE) Architecture	203
Think About This When It Comes to MoEs	205
Agentic Systems	206
What’s Your Reaction to This Agent in Action?	208
A Little More on Agents	212
How Agents Are Built	213
Risks and Limitations of Agentic Systems	215
Three Tips to Get You Started: Our Agentic Best Practices	216
Think About This When It Comes to AI Agents	217
Wrapping It Up	218
8. Using Your Data as a Differentiator.....	219
Customizing Open Source for the Enterprise: A New Way of Looking at Enterprise Data	220
The Original Eras Tour: Looking Back a Few Decades on Data Representations	220
Stand Up and Represent!...Your Data	224
Step 1: It All Starts with Trust	224
Step 2: Representing your Enterprise Data within an LLM	228
Step 3: The Grand Finale: Deployment and Experimentation	238
The Future Is Open, Collaborative, and Customizable	239
9. Generative Computing—A New Style of Computing.....	241
The Building Blocks of Computing	243
Transformers—More Than Meets the AI	247
Not Back to the Future; Back to Computer Science	249
Doors Wide Open—Reimagining the Possible	251
How Models Are Built in Generative Computing	254
“Libraries” for Adding Capabilities to a Generative Computing System	255
The Quick Compare Summary—How You Use LLMs Today Versus Generative Computing	256

A Generative Computing Runtime—What Can We Program It to Do?	257
OpenAI’s Strawberry—A Berry Sweet Innovation	258
From Generative Computing to a Generative Computer—What Does All of This Mean for Hardware?	262
Experimenting with the Acceleration of AI at the IBM NorthPole	263
The Final Prompt: Wrapping It All Up	266
Index.....	267

Full version available

here: <https://www.ibm.com/account/reg/us-en/signup?formid=urx-53618>