

***The Business Case for a Common Language:  
Not “If,” but “What and When?”***

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# ***The Business Case for a Common Language: Not “If,” but “What and When?”***

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*Weinberg’s Second Law:* If builders built buildings the way programmers wrote programs, then the first woodpecker that came along would destroy civilization.<sup>1</sup>

## **1. Introduction**

### **Opportunity**

While most people don’t think about it very often, common language is essential to day-in, day-out commerce. Companies and others<sup>2</sup> employ standards to ensure that a meter is the same length world-wide, calendars ensure that everyone shows up for meetings at the same time, and everyone agrees what “payment in US dollars” means. It is trite, but no less important, to note that without some common language, commerce would be impossible.

At the same time, most language is imprecise, complicating work life in countless ways. Leaders struggle to answer basic questions like “how many customers do we have?” Managers find it tough to work across departmental silos, and technologists spend more time dealing with “systems that don’t talk” than they do implementing new technologies. Most of the added effort needed to accommodate the lack of common language has become so embedded in work life that people don’t even notice it.

Ironically, we write this report in the midst of a global pandemic. Good information is our best weapon in fighting coronavirus, but there are no common definitions of terms as basic as “death due to coronavirus.”<sup>3</sup> This hampers efforts to fight the pandemic in so many ways—epidemiological models must replace fact with “best guess,” politicians prevaricate to suit their agendas, and it is more difficult to plan recovery. Lives are lost and people suffer unnecessarily.

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- <sup>1</sup> Gerald Weinberg cited in: Murali Chemuturi (2010) *Mastering Software Quality Assurance: Best Practices, Tools and Technique for Software Developers*. p. ix
  - <sup>2</sup> The benefits of common language are NOT, of course, limited to private companies. They also extend between companies, to and between government agencies, and to entire industries. Here we will use the term “company” as shorthand for all potential beneficiaries. In the past, some have used the term “enterprise,” particularly in the context of “enterprise architecture,” and we will continue that practice. That said, our primary interest is private companies and government agencies.
  - <sup>3</sup> Thomas Davenport, A. Blanton Godfrey, and Thomas Redman, “To Fight Pandemics, We Need Better Data,” August 25, 2020, <https://sloanreview.mit.edu/article/to-fight-pandemics-we-need-better-data/>

In summary, common language simplifies the business, leading to numerous, incalculable, *long-term* benefits<sup>4</sup> to individuals, departments, and the entire company. Common language underpins not only communications among people, but also connections among departments, companies, and entire industries. It is essential for computer-to-computer interactions. Common language enables all of telecommunications, including all voice, data, and the internet. This alone is worth trillions of dollars per year. Common language helps companies prepare, in advance, for disruption; it enables people to work together across silos; and lowers costs—often dramatically. Common language is essential for companies that are trying to build their futures in data (e.g., treating data as assets or data-driven decision-making) or in technologies such as artificial intelligence and machine learning that depend on pulling large quantities of possibly disparate data together.

With just a few moments reflection, most people can identify several ways their work would improve with a common language. Yet few business leaders and strategists fully appreciate the range and extent of these benefits. If nothing else, we will close that gap in this report.

## Issues

Given the potential benefits, it is tempting to conclude that companies should employ larger and more comprehensive common languages. The problem is that developing and adopting a common language is so demanding. As we discussed in an earlier report<sup>5</sup> (herein referred to by the shorthand ADOPTCL), a real sense of urgency, committed leadership, a range of talent, and partnership across the company are essential. It appears to us that many large, company-wide common language efforts fail—lacking sufficient urgency, companies do not muster the required effort and perseverance.

So, what is the business case for common language? Ultimately, a business case must be evaluated on three factors: the costs, the benefits, and the probability of success. If a company lacks sufficient urgency, the probability of success is low. Companies should not pursue common language projects under these circumstances.

At the same time, focused common language efforts aimed at solving a near-term business problem succeed frequently. For example, developing a common language was key to resolving long-standing issues between operations and finance at the International Finance Company.

Unfortunately, the near-term business problems cited above rarely announce themselves as requiring a common language for resolution. Thus, when people complain, as they frequently do, that “our systems don’t talk,” they mis-diagnose the issue as computer-related, and assign the issue to their technical departments. But “systems are not talking” usually reflects the fact that “people are not talking”—a problem for which resolution *does* require a common language. Technologists, managers, and leaders must train themselves to properly

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<sup>4</sup> Note the emphasis on long-term. Well-conceived and executed common languages, and the data model that goes with them, have served some companies for twenty-five years or more.

<sup>5</sup> See David C. Hay, Thomas C. Redman, C. Lwanga Yonke, and John A. Zachman, “Developing and Adopting a Common Language: What’s Required From an Organizational Perspective,” February, 2020, distributed via the *Business Rules Journal*:  
<http://www.brcommunity.com/a2020/c039.html>

diagnose “lack of a common language” as a root cause, frame up the proper business issue, and determine whether the pain of living with the issue justifies the effort to solve it.

All of this seems complex and the rest of this paper aims to make sense of it all. The next section clarifies exactly what we mean by common language. The third presents five short case studies illustrating the benefits enjoyed by companies, industries, and industry groups that have succeeded with common language.

The fourth section delivers on our promise to explain the benefits of common language in full detail.

In the fifth section, we focus on the “What and When” aspects of our title. Business problems that require common language for their resolution arise frequently. Section five lists our top eleven, though we strongly suspect that our list is woefully incomplete. Thus the “what and when” is “develop needed common language to address business problems as they arise.”

In the sixth, we take up management responsibility. It is clear enough that senior management bears responsibility for common language, though it may delegate much of the work. This section expresses these ideas in using three guiding principles that better tie this article and our previous paper, ADOPTCL.

The final section is a summary.

## 2. What, exactly, is a “Common Language?”

As used here, common language refers to nouns, verbs, symbols, syntax, and signals with *shared, agreed-upon* meanings—that people use to communicate. Such meanings are often reflected in corporate and/or enterprise dictionaries, glossaries, and—critically for our purposes here—data models, including those physically implemented in databases and systems.

Common language also refers to codes and protocols that enable machines (especially computers) to communicate. Thus, Internet Protocol (IP) and Universal Product Code (UPC) (typically displayed as a barcode) are examples of common language.

Human language grows, divides, and changes with great rapidity, making it difficult to establish and maintain any commonality. In this respect common human language is fragile. Individuals and small groups should recognize this and take steps to establish commonality frequently. Comments such as, “Let’s make sure we’re not comparing apples to oranges” and “let’s make sure we are on the same page,” reflect such efforts.

Well-defined processes (such as presented in ADOPTCL) that culminate in well-written and agreed definitions extend a common language’s breadth and lifetime and lead to the longer-term benefits. Well-thought-out data models are more precise, making common language more robust and further extending lifetimes and benefits. So do computer codes and symbols.

But there are limits. As a general rule, the best a computer can do (currently anyway) is accurately reflect the current business language of its users. This is no mean feat. At the same time, humans can deal with a certain amount of ambiguity, while computers typically cannot.

### 3. Business benefits of Common Language illustrated

This section provides five “case studies” of successful development and implementation of common language. Four involve individual companies and one that cuts across industries. The range of benefits is enormous. First up is the International Finance Corporation.

#### Common language builds bridges between departments at the International Finance Corporation

The International Finance Corporation (a global development institution focused on the private sector in developing countries) started work on a common language in response to a desperate need to reconcile operational and financial data and lessen the acrimony that respective departments felt towards one another. The work began with a retreat in which 50 definitions were hammered out. Eventually the data dictionary expanded to include about 1,200 terms. Liz Davis and Jennifer Trotsko, who led the effort, also cited a simplified IT infrastructure and reduced financial and reputational risks as benefits. They noted that people enjoyed doing the work and that the process built bridges across the organization. People came to appreciate their colleagues. The common language helped simplify the business and led to opportunities to improve data quality. Finally, a deeper understanding of the business proved helpful in many ways.

Importantly, other companies, including Texaco Refining (before they were bought out by Chevron) and Parke-Davis also reported that the value in their common language efforts lay as much in the process of doing so as in the resulting language.

These companies did not attempt to drive their common languages into their data models or computer-to-computer protocols. In our next two examples, Universal Product Codes and the telecommunications industry, doing so was precisely the point.

#### Universal Product Codes save money

Everyone is familiar with barcodes—they see them in action every time they check out of a store.<sup>6</sup> Supporting the barcode are Universal Product Codes (UPC), a great example of common language. Universally defined and agreed numbers (codes) uniquely identify a product for sale. As used in retail, the code consists of 5 digits identifying the product’s manufacturer and 7 (in the U.S.) or 8 (elsewhere) digits identifying the product itself. This scheme supports technologies whereby the number is encoded into the familiar bar codes that can be read by an electronic scanner.

UPCs are now indispensable in retail. Most obviously, they make checkout faster, both speeding product identification and retrieval of the price. They improve logistics and inventory management, reducing both overstock and out-of-stock situations. Finally, better inventory management improves customer service. For example, one can now find a product they are looking for on-line, have it reserved, and then either pick it up at their convenience or have it delivered.

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<sup>6</sup> Much of this section is from a conversation with Kathy Wight, who spent many years working for Albertsons grocery store, as they entered the modern era, learning to use U.P.C. codes.

Barcodes and systems of UPCs have found many applications beyond retail, from keeping track of rail cars, shipping containers and other large pieces of equipment, and medications. All told, the economic benefits are enormous.

## Common language underpins all telecommunications

Without a common language facilitating the interconnection of network components, devices, computers, and websites, all modern telephony, including voice, data, and the internet would not be possible. We showed Pete Stuntebeck, formerly of the AT&T chief architects department, an early version of this paper and he remarked that, “had you substituted the word ‘infrastructure’ for ‘language’, the list of benefits could have been written by my department.” Stuntebeck noted that this had always been true and noted that IP (Internet Protocol) had simplified things. He also specifically called out faster innovation, working with vendors, and better communications between silos as important benefits. He was incredulous that companies would consider operating without an extensive common language.

In our final two cases, the organizations involved used their common languages as springboards to comprehensive enterprise architecture (EA) initiatives.

### State governments<sup>7</sup>

State Government Departments in two US States developed a common language (which they know as their “enterprise universe of discourse”) as part of comprehensive enterprise architecture efforts. As a result of these comprehensive efforts, these agencies improved data quality; reduced data redundancy, application development costs, and time; and increased the reuse of data and application logic. They also saved tens of millions of dollars, while simultaneously improving customer service and on-time payments to beneficiaries, reducing customers’ costs, improving fraud detection, and reducing overpayment of claims.

Motorola, Pacific Power and Light, Elizabethtown Gas, and the Wisconsin Education Association Trust employed the same approach and enjoyed similar benefits, specific to their requirements and circumstances.

### A common language has served Aera Energy for two decades

Aera Energy LLC, a California-based oil and gas company developed a common language, documented it in a data dictionary and an enterprise data model, and used this to design and build databases that meet enterprise needs, not just local or functional ones; are application-independent; are shared by many applications; and are flexible and scalable. The common language and the enterprise systems also accelerated the implementation of standard processes across the company.

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<sup>7</sup> This discussion is courtesy of Doug Erickson, the Enterprise Architecture Company (ENTARCO). Doug’s book, *Erickson Enterprise Architecture Methodology*, which elaborates the methodology used is to be published in late 2020.

The work began in 1999 and Aera has updated the language and model as needed since. Aera continues to enjoy sustained benefits from its investment in common language. These include:

### Increased staff productivity

1. One of Aera's goals was to enable engineers and geoscientists to spend more time on technical analysis and decision-making, and less on data management. Aera estimates that it has doubled the productivity of most of these critical people.
2. Related training requirements have decreased, as staff transferring from one business unit to another do not have to learn new terminology, new systems and new work processes.

### Improved data quality, decision quality and analysis

3. Having standard definitions and work processes has made it easier to improve data quality across the enterprise. In particular, Aera's teams are eliminating poor data quality as a source of decision-risk, freeing up time to focus on the technical and economic uncertainties inherent to the oil business.

### Organizational agility in M&A integration and compliance

4. By enforcing one common language, enterprise systems and standard processes, Aera has been able to very rapidly integrate acquired assets and monetize the synergies anticipated.
5. Complying with regulatory requirements is also easier. In a recent example, Aera estimates its common language infrastructure helped reduce by 80% the time, effort, and cost it would have taken to comply with a new regulation.

### Reduced IT costs and IT development time through the re-use of data assets.

6. New system development projects look first to reuse existing data assets rather than develop new ones. This helps reduce data modeling and database development time and cost. Reusing database structures also reduces application and data transfer programs development time and cost. Finally, Aera uses its data model to evaluate, configure and integrate purchased systems, assuring integration with its other systems.

## 4. Summary benefits conferred by a Common Language

Building on the cases of the previous section, we now summarize these benefits as they accrue to different people inside a company. We do so because we find that it is not enough that a proposed project benefits a company overall—it must also benefit those involved in completing it. That said, a well-defined common language may outlive entire generations of managers and technologists, so the company, as a long-term business entity, is an essential beneficiary.

### To the company, as an ongoing, long-term business entity

The process of developing a common language leads one to a deep understanding of the company—its constituent "parts," how they work (or don't work) together, how the

company relates to suppliers, customers, regulators, etc., which is essential for accommodating change—especially disruptive change. This confers the following benefits:

1. **Sets a winning foundation for a data-driven future:** This point is especially important today, as slowly, but inexorably, data are winding their way into every nook and cranny of every company and government agency, every department therein, and every job.

Many are exploring what it means to “manage data as professionally as you do other assets.” Cultures that value data, data-driven decision-making, the uses of artificial intelligence, and so forth, will succeed, while others will find themselves left behind. While it is impossible to know which ideas will prove most successful and how they will land, it is clear that a new paradigm, which we call data-centrism, is emerging. It is also clear that it will be difficult, if not impossible, to pursue data-centrism without common language.

2. **Prepares the organization for enterprise architecture (EA):** Enterprise architecture is a powerful strategic framework to help companies more formally and powerfully “design” themselves, fully embracing people (e.g., organization), process, physical plant, data, technology, and applications. Done well, EA further extends the benefits discussed here. Importantly, common language is a necessary pre-cursor.
3. **Makes it easier to evaluate business opportunities:** With a common language, it is easier to evaluate potential business activities such as entering a new market or merging with another company, to plan such activities, and successfully to execute them.
4. **Improves capacity to thrive through business disruptions:** All companies are at risk that their businesses might be disrupted by a global pandemic, financial meltdown, new technology, a nimble competitor, or simply a lower-cost provider. Deep understanding of the business makes it possible to see such situations before they become threats. Conversely, this deep knowledge may make it possible for a company to be the disrupter.
5. **Makes it easier to implement change:** Deep understanding of a business makes it possible to change or extend it, re-engineer processes, make improvements, and introduce new technologies more readily. Said differently, you have to understand the “as is” in order to implement the “to be” without causing unintended consequences.
6. **Provides an end-to-end perspective:** As people work together to develop a common language, they come to appreciate one another, and one another’s work. Thus, common language helps build bridges between various departments, helping them work more effectively together. Any pair or more of business units may uncover previously unknown opportunities. Moreover, the process helps build tight relationships between the IT community and the rest of the business.

## To a company’s most senior management

7. **Simplifies connections between department and enables enterprise-wide alignment:** A common language clarifies the connections between departments, making it easier to coordinate work and deliver value to customers. A common language embodies commitment to run the company as one team, not simply a collection of loosely related business units.
8. **Reduces complexity:** A common language simplifies the business, pushing back against complexity and making it easier to manage day-in and day-out.

9. **Promotes delegation of decision-making:** A common language makes it easier to delegate decision-making and push it downward.<sup>8</sup>

## To business managers

10. Simplifies transactions and reduces their risk. In particular:
- A common language reduces the costs associated with misinterpretation of terms and conditions. Such costs include legal fees, risk, and liability.
  - A common language reduces entropy (friction, noise) and the associated non-value-added costs on the connections between people and organizations in everyday business. Conversely, the lack of a common language leads to added reconciliation, re-formatting, middleware, and other efforts required to compensate for discrepancies between parts of the enterprise.
  - A common language makes sharing data possible. (Note: in and of itself, a common language does not resolve the political issues that stymie data sharing, but the process of creating the common language helps break down the barriers which are the source of many of these political issues).
  - This also makes it easier to work across business units (which may have become information “silos”). This reduces risk, making it easier to respond to threats that require coordinated action. Similarly, it makes it easier to pursue opportunities, including innovation, that require coordinated action.
  - This also makes it easier to pull data together and so (for example) reduce the preparation work needed for data analytics, training machine learning algorithms, etc.
11. **Enables data quality:** A common language promotes many aspects of data quality.
12. **Integrates specialists and their contributions:** A common language makes it easier to integrate specialized contributions from individuals or departments into an end-to-end process, product, or service.

## To information technology staffs

For the past generations, many information technology (IT) departments have focused on “packaged solutions,” each coming with its own data model and, implicitly, its own language. One benefit is that these solutions have enabled implementers to bring systems and applications on-line more quickly.

Unfortunately doing so also increased “technical debt.” This means that it takes longer and longer to connect new systems and applications with old ones. Today, this “get the code to run” mantra is collapsing under its own weight.

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<sup>8</sup> Mike Walsh, “The Key to Building a Successful Remote Organization? Data.” <https://hbr.org/2020/05/the-key-to-building-a-successful-remote-organization-data>, May 18, 2020.

The alternative is “go slow to go fast,” by doing the up-front work to establish a common language and capturing it in a company-wide data model. This approach yields the following benefits:

13. **Promotes re-use:** A common language saves money by enabling and promoting re-use.
14. Simplifies systems design. Simpler designs are:
  - Easier to build,
  - Easier to operate and maintain,
  - Easier to change, and
  - More stable—less likely to need change in the first place.
15. **Promotes more effective application architecture:** A common language makes it possible to separate data from application, define data from a company perspective, and makes it easier to accommodate business changes more easily, speedily, cheaply and successfully.
16. **Reduces rework:** Use of the common language eliminates “after-the-fact” reconciliation of name, format and meaning discontinuities with interfaces, middleware, data warehouses, analysts with Excel spreadsheets on PC’s, etc.
17. **Reduces data and applications redundancy:** A common language makes it possible to reduce data and application redundancy and the associated problems.
18. **Speeds implementation:** A common language makes it possible to implement new systems and applications more quickly through reuse of data and application components. Furthermore, an enterprise data model makes it possible to evaluate whether a vendor’s data model aligns with your needs.

## 5. Some signs that your company needs a common language

As discussed in the introduction, a common language may help resolve many important business problems. Unfortunately, most do not bear the label, “You can solve me with common language.” So, this section provides a (far from comprehensive) list. If you or your company finds itself with any of the following, you may require development of a common language.

### Digital transformation

A lack of common language is anathema to efforts to more fully automate business operations.

### Language discrepancies between departments and/or business functions

Such discrepancies make it more difficult or expensive to complete work between departments such as

- Drilling and Production in an oil company.
- Marketing and Sales in a retail company.
- Clinical and Business in a hospital.

More generally, if Department A's work feeds Department B, look for added work performed by B to put A's output into a form it (B) can use. IT may be performing this work on B's behalf.

One layer deeper, people may not talk because a siloed organization structure makes it difficult to do so or because people simply don't like or trust one another. Common language can help bridge across silos, and the process of developing one can build trust through resolving miscommunications and erroneous assumptions.

## People complain that “our systems don't talk”

“Systems not talking” generally reflects “people not talking” or at least not using words having the same meaning.

## Two departments are in conflict...

...over some important topic, such as how to allocate expenses and customer profitability in performance management reports and any commitments to customers, vendors or the government. Common language can provide the basis for resolving such conflicts.

## A critical issue demands it

Regulatory demands require the company to combine reports from two or more departments, in turn requiring a common language. Common language helps overcome other regulatory hurdles as well. Finally, there are many reasons that companies must combine reports and/or data from various departments.

## A revamp of major IT systems

Whenever large changes are undertaken in the structure of major systems the first step must be to understand the language used in connecting them to other systems. A logical or “essential” data model<sup>9</sup> incorporating a proposed common language is a necessary starting point to this effort.

## A merger or acquisition

Either planning or realizing the anticipated synergies requires establishment of a common language for intersecting departments.

## The need to partner with other companies to deliver for customers

By definition, no partnership can be established without partners first clarifying what they are talking about. In particular, what products or services are involved, under what terms?

## Serious interest in artificial intelligence, big data, data science, over the long term

All of these require bringing large amounts of data together. Common language makes this possible.

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<sup>9</sup> One of us (David Hay) has coined the term “essential data model” because it captures the essential features of an enterprise.

## A proprietary data strategy

Proprietary data offer the opportunity to create and sustain competitive advantage and a common language will be needed to pull all relevant data together.

## Capital investment optimization

A common language makes it easier to create and maintain the historical, real-time, and predicted inventory data needed to optimize capital investment.

# 6. Guiding principles for senior leaders

As businesses innovate, grow, pursue new opportunities, and respond to threats, they become more complex. And, as we've already noted, business language grows and changes in response. Indeed, specialized functions may develop their own specialized languages. This is normal and healthy.

But left unchecked, a vicious cycle develops: people talk less, silos grow taller, IT systems lock in inconsistent terminology, and the problems noted in the previous sections crop up more frequently. Unless management pushes back, common language—and its previously attendant benefits—will decay. The difficulties in establishing and maintaining common language, as described in our previous article, ADOPTCL, exacerbate these problems.

So how should a company deal with the totality of opportunities and issues described here? What should it do? And who should do it? While we have no easy answers, we propose the following guiding principles:

**Principle 1:** The ways that business units and departments interact is part of a company's management system for which senior management bears full responsibility. Since language is part and parcel of such interactions, senior management is ultimately responsible for common language.

**Principle 2:** Senior management may delegate some of its responsibilities to a “role” to be carried out by an appropriate executive, such as the chief data officer, chief information officer, the head of strategy, etc. These delegated responsibilities include:

**2a:** Educating all managers (especially senior managers) on the importance of common language, the issues noted in the previous section, and their roles in establishing and maintaining common language.

**2b:** Defining and managing a process such that creators of all new language fully document definitions for all terms in a data dictionary, once these terms become essential to their work. And they must develop a data model, connecting the terms, once the new terminology is implemented in computer systems. This is simply good practice.

**2c:** Monitoring the need to establish a more complete common language, in part by looking for problems such as those noted in Section 5.

**2d:** If a more complete common language is needed, “raising the alert,” to senior management.

**Principle 3:** If more complete common language is needed, senior management must authorize its delegate to pull together the organizational components called for in our previous article, ADOPTCL, and follow the process outlined there to develop and establish the needed common language.

**Principle 4:** After the delegates gain some experience, they should develop and present an unbiased case for a comprehensive common language to senior management.

## 7. Final remarks

The business case for common language presents a real conundrum. Done well, a company-wide common language yields stunning benefits, and for a very long time. Case studies involving Aera Energy, the telecommunications industry, US State government agencies, universal product codes, and the International Finance Company attest to these benefits. Finally, we expect such benefits to grow as data assumes ever-increasing roles in companies and the global economy.

We'd love to see every company suddenly “switch on” to common language, do the work needed to develop an extensive common language, and put it to work. At the same time, we are mindful of the challenges in assembling the needed organizational components, as outlined in our previous article, ADOPTCL.

Fortunately, there is a more modest way forward. Most companies are loaded with problems that stem from the lack of common language. For example, when two departments are fighting, the root cause is often that they aren't speaking the same language. Such problems are solvable, and they yield enormous benefits!

Thus, we urge companies to put someone in charge, learn to spot business problems that would benefit from a common language, and resolve them one at a time, gaining experience as they go. It is their best hope to see near-term benefits, in turn making it easier to take on tougher challenges and, in time commit to a fully comprehensive common language.

While our crystal balls are no better than anyone else's, we believe that those who more aggressively address common language will be rewarded compared to those who do not.

Fundamental change takes time. Some forty years ago, the futurist Alvin Toffler called the Information Age the “third major wave of humanity,”<sup>10</sup> and some twenty years ago, the great management consultant Peter Drucker, observed “**the focus is on the 'I' in IT rather than the 'T'**”<sup>11</sup> To many, progress may seem slow. It is also relentless—there is no denying the growing criticality of data to business success. Without common language, the data is isolated, fragmented, and poorly used. Common language helps unlock its full potential!

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<sup>10</sup> Alvin Toffler, *The Third Wave*, Bantam, 1984.

<sup>11</sup> Peter Drucker, “The Next Information Revolution,” *Forbes ASAP* August 24, 1998.