

Data and Analytics Skills for Your Career Security

*Keeping it simple. . .
only the skills you're likely to use*



Richard G. Lamb

Say “data-driven” to management and they cringe. They envision a complex, high-tech, deep-capital initiative and every horror that goes with it. This is a gross misperception that has been propagated by purveyors and media as they speak of grand and glorious initiatives, e.g., IoT. The reality is opposite to the perception.

**Excerpt: 2.2.2. Critical Mass
and Grass Root**



Look Inside the book at <https://analytics4strategy.com/book-look-inside>

Book is available from Amazon.com

Paperback, 508 pages, 300 figures and outputs, 7.5 x 1.15 x 9.25 inches, 2.37 pounds

2.2.2. Critical Mass and Grass Root

Say “data-driven” to management and they cringe. They envision a complex, high-tech, deep-capital initiative and every horror that goes with it. However, this is a gross misperception. It has been propagated by purveyors and media as they speak of grand and glorious initiatives.

The reality is opposite to the perception. Almost every imaginable insight deliverable to an operation can be built and managed at the grassroots. This is because the “critical-mass” to becoming data-driven is not high-tech or new-tech. It is the exercise of modern-day knowledge, skills and software. The book is written to explain the critical-mass of data-driven asset management rather than stories of the grand and glorious.

Critical-mass is defined as the threshold knowledge, skills and software that must be in place for an operation to be fully, effectively and efficiently data-driven.

Critical mass has two qualifying characteristics. First, should they happen, the threshold knowledge and skills will travel to up-teched and up-scaled strategies. Second, up-teching from critical-mass will not practicably increase the power of the insight that is extracted from the operation’s data.

What is critical mass for data-driven operations is such that the most subordinate processes can be reengineered as a grass root initiative. This is because critical-mass rests upon a triad of software which is already normal to our work and organizations or which we have free rights to them. Figure 2-2 shows the triad to almost any given insight deliverable.

The data to all insight deliverables are readily accessible from the operating systems and Excel files that have captured them. When located, they are extracted from their sources and joined together in a super table with MS Access.

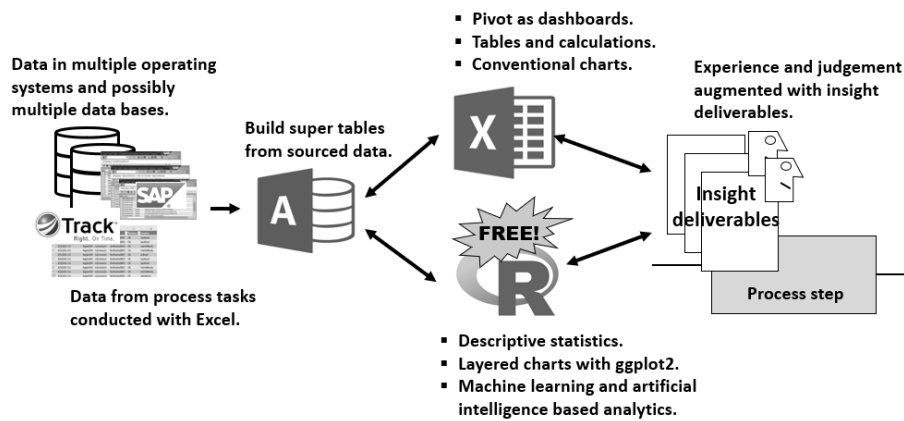


Figure 2-2: The critical mass triad of software to data-driven operations.

Then we will go down one of two paths for each insight deliverable. One is the path to Excel to build dashboards. Alternately, we may go down the path to subject the data to analytics using the free, open-system software known as “R.” By whichever path, there is an insight deliverable at the end of the trail.

This is good place to make a point with respect to grass-root and critical mass. Remember the expression, “Systems talking to each other?” There has been a great deal of progress over the decades toward the vision. However, we are still far from the prerequisite degree of systems integration needed for unconstrained data-driven asset management.

However, in Figure 2-2 we can see that there is de facto systems integration. The constraints to data-drivenness no longer exist.

This because systems “talk to each other” through their data bases. Reaching for data from any available source and building super tables constitutes pseudo systems integration for data-driven asset management. In line with the principle of grassroots, the integration is achieved with easily learned skills rather than big capital.

Of course, there are commercial alternatives for each software of the triad. However, we must be sure that the difference is more than just “prettier.” An organization may opt for a commercial alternative for strategic reasons. However, short of some strategic rationale, everything a commercial offering can do can be done by the triad.

The ramifications and distinction for critical-mass-supported insight deliverables are clear if we compare the software triad to the industrial internet-of-things (IIoT) for condition-based maintenance (CBM). Recall that CBM is depicted in Figure 1-4 as, *inspect items at regular intervals to find potential failures*.

The grassroots triad of Figure 2-2 entails no infrastructure beyond what is natural to any organization. In contrast, IIoT-supported CBM, as shown in Figure 2-3, requires infrastructure in addition to a firm’s existing infrastructure.

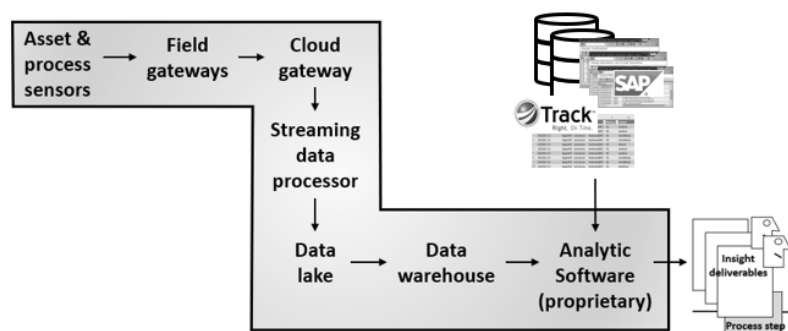


Figure 2-3: Insight deliverables built upon IIoT infrastructure.

New sensors are placed on the process or asset to continually monitor asset and process characteristics. The data of the sensors flow through new gateway infrastructure. Thence, there is additional new infrastructure to deal with the massive streaming, disparate data from the sensors and transforming them to workable structured form. Finally, there are new proprietary analytic software to conduct the analytics of the envisioned insight. Data may also be extracted from the firm’s operating systems and pulled into the analytics.

This is a good place to accentuate a point, In the domain of asset management, CBM is the only type of insight that may require a system akin to Figure 2-3. Therefore, it is

extremely important that we do not allow CBM to be mistaken by management as the essence, definition and overarching purpose of data-driven asset management.

In turn, it is also important that we do not allow IIoT-supported CBM to be mistaken as on-condition maintenance. CBM is one of four alternatives for an on-condition maintenance task to a failure mode—CBM, product quality, primary effects and inspection. The choices are made on worth with respect to safety, environment, operational capability and collateral damage.

Taken a step farther, IIoT-supported CBM is a choice to automate some or all aspects of a CBM solution. Consequently, the issue is the relative worth of IIoT-supported CBM in contrast with conducting CBM tasks with the many less grand and glorious offerings to achieve the same end.

Moubray's experience is that CBM is feasible for 20 percent of failure modes and worth doing for less than half of them. The four categories of on-condition maintenance are suitable for 25 to 35 percent of failures modes.¹

Because IIoT-supported CBM entails the extreme shown in Figure 2-3, it will rarely be a large-scale choice. It may be a worthwhile for a percent or so of cases. Consequently, it is important to not be distracted from the fact that almost 100 percent of insight deliverables to asset management can be done with the triad. For them, the worth is huge, and the cost is almost nothing other than the enterprise's commitment to learn new skills with standing software.

¹ Moubray, John. Reliability-Centered Maintenance. Second edition. Industrial Press. 1997. Page 155

Data and Analytics Skills for Your Career Security

Keeping it simple, only the skills you're likely to need

Richard G. Lamb

For those of us who are role holders in enterprise functioning, the personal purpose of acquiring practical working skills in data and analytics is to be able to better do what we already do and find new ways to do better yet. It follows that if you are a role holder who brings and incorporates data and analytics methods in your thoughts and tasks, your career outlook will be more secure and exciting. The book is written to be your gateway to the skills and to be the templates with which you will install the methods in your operational roles.

We all know that the field of data and analytics is huge and intimidating. It is a long slog to becoming comfortable. During the author's own long slog until arriving at the book, something exciting bubbled to the surface. There is a big difference between what we need to know and everything there is to know. We need to know what is possible as insight for decisions and functioning, we need to know how to get to the insight and, finally, we need to be able to interpret the insight. Just as the book does, we can leave the rest to the data scientists.

About the Author: In 2003, Richard Lamb, while struggling to get at the history captured in the databases of operational systems, found the skills to extract datasets of related history and join them in a super table of variables to make possible what was being envisioned for operational effectiveness. In 2014, Richard realized that, with statistical analytics and free enabling powerful pc-level software, an enterprise could ask and answer questions of operational effectiveness that are otherwise not possible. His activism to bring the epiphanies into the careers of role holders in the mainstream of operations has arrived at this book to explain data and analytics through the demonstration of methods.

Richard is a Registered Professional Engineer and Certified Public Accountant. He has previously authored two books: Availability Engineering and Management for Manufacturing Plant Performance, and Maintenance Reinvented for Business Performance. He has a BSCE, BBA and MBA from the University of Houston and a graduate-level Applied Statistics Certificate from the Texas A&M University.

<https://analytics4strategy.com/data-and-code>

Analytics4Strategy

ISBN 978-1-7343947-0-2



90000>



9 781734 394702