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The Art of the Performance Dashboard

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You can use all the quantitative data you can get, but you still have to distrust it and use your own intelligence and judgment.
- Alvin Toffler

1. Introduction

There is an appetite in Departments and Agencies of the Government of Canada for "performance dashboards": instruments that display a summary of key information about an organization's performance. The demand comes from a general feeling that a dashboard is "something we ought to have" and that the management of programs and policies will be more efficient and effective once a dashboard is operating.

Amid the enthusiasm for dashboards it is easy to forget that a tool – any tool – is useless in and of itself. It requires intelligent human input in terms of both design and utilization. To imagine that a dashboard has inherent power to solve management problems amounts to blind faith – suitable for adherents to a cult but not practitioners of public management.

A consequence of this blind faith is that organizations have developed dashboards without articulating a clear view of the management value they expect a dashboard to deliver, and *how* they expect that value will be delivered. This translates into "dashboards" that are in fact nothing of the sort. Instead, they are bloated inventories of data – lists of numbers expressed in absolute terms and percentages, accompanied by red, green or yellow "traffic lights" that symbolize how close the numbers come to hitting often arbitrary benchmarks. Much effort is also invested in making these data inventories look pretty – a tendency that is good for graphic design consultants but rarely produces meaningful results for organizations.

It need not be so. The idea behind dashboards is sound, even if the execution is often flawed. The purpose of this paper is therefore to capture what is (or could be) valuable about dashboards. It argues that an organization's dashboard should respond to the information needs of executive decision-makers, and that developing a clear picture of those needs requires clear thinking about an organization's social or economic purpose. With these ideas in mind, the paper aims to describe an approach to dashboards that will have a better chance of making a positive difference to public management than an approach driven by blind faith in the instrument itself.

I begin by assuming the use of the word "dashboard" is not accidental. I assume that the metaphor is to be taken seriously because we want to emulate the key features of an automobile instrument panel. The rest of my analysis proceeds from this assumption.

2. Key Features of an Automobile Dashboard

Three features of an automobile dashboard are relevant to this discussion. An automobile dashboard:

- is easy to use;
- simplifies reality; and
- provides information about the car's performance that is relevant to the decision-making needs of the driver (the "executive").

a) Ease of Use

The driver has to keep his eyes on the road and give full attention to the task of driving. A good dashboard, therefore, is one that transfers the necessary amount of information to the driver while requiring him to expend minimal effort on receiving and understanding the information. A quick glance – without even moving the head – should be all that's required of the driver for him to get what he needs from dashboard. Using the dashboard should be virtually effortless and should not pull the driver away from the task at hand, which is driving the car.

b) Simplification of Reality

A typical automobile dashboard tells the driver how fast the car is moving, how much gas is in the tank, how hot the engine is, how far he has driven, and possibly a few other facts (RPM, oil pressure, warnings of key component failures, etc.). This is a vast simplification of the car's operating reality.

An automobile has tens of thousands of parts, but the dashboard does not provide information on the status of every one of them. It simplifies the reality of a complicated machine and distils it down to a few facts. The need for simplification is obvious: an attempt to display information about *everything* going on in the car would be ludicrous. There wouldn't be enough room on the dashboard for so much data, and even if there was, the driver would become so

overwhelmed with information that the risk of confusion, distraction and, ultimately, an accident, would rise significantly.

c) Performance Information Relevant to the Driver's Decision-making Needs

If only a handful of measures are selected for the dashboard out of hundreds, or thousands, of possible ones, then what is the basis for selection? The answer is found in the types of decisions a driver has to make. A driver is to an automobile as an executive is to an organization, in the sense that the driver has the responsibility for making important decisions that keep the entire "enterprise" moving forward (quite literally, in the case of a car!). The information provided by the dashboard is geared to meeting the driver's particular decision-making needs. This may seem obvious, but it is worth pausing on this point to consider it further.

The driver is not the only person who needs information on the state of the automobile. Consider the mechanic who services the engine. The dashboard is not built for him. The driver makes high-level decisions related to guiding and operating the car; the mechanic makes detailed decisions related to servicing the car. Each set of decisions has very different information requirements. The dashboard displays information that is immediately relevant to decisions the driver must make about how fast to go, whether to stop to fill the tank with gasoline. etc. On the other hand, detailed mechanical information about pistons, rings, seals, spark plugs, belt, hoses, transmission, etc. have no immediate relevance to decisions faced by the driver, even if they are highly relevant to decisions the mechanic is expected to make. information about the inner workings of the car does not belong on the dashboard. The same information that the mechanic regards as critical would be seen as *useless* by the driver.

3. Applying the Dashboard Concept to an Organization

The three dashboard principles – ease of use, simplification of reality and relevance to executive decision-making – apply as much to organizations as to automobiles. I am not going to focus on ease of use because this is mainly related to the design of the dashboard's user interface, an area where I do not have expertise. I will concentrate on the other two areas: simplification of reality and relevance to decision-making.

It turns out that simplification of reality and relevance to decision-making are tightly linked. A dashboard will *only* be relevant to the needs of decision-makers *if* it provides a highly simplified picture of reality (because giving decision-makers too much information can be as bad as giving them no information at all). And, to make the relationship even more intricate, it is also true

that the relevance of the dashboard to decision-makers will depend upon the *way in which* the dashboard's designers have simplified reality. In other words, it will depend upon the choices they make about what information is to be included in the dashboard and what is to be left out.

Consider a hypothetical case: an imaginary municipal department – call it the Streets and Sidewalks Department in the city of Metricburg – that is responsible for everything to do with the upkeep of streets and sidewalks. The Department's activities include cleaning, removal of litter, resurfacing and repairs to pavement, and street lighting.[1] A possible dashboard for the Department is presented in Table 1.

Table 1

Metricburg Streets and Sidewalks Dept. – Performance Dashboard, Q1-2010					
Street Maintenance Unit					
Measure	***Result***	***Target***	***Differential***	***Trend***	***Rating***
1. KM of street repaved	500	490	+2%	no change	
2. KM of street patched	650	650	0	down	
3. KM of sidewalk replaced	250	350	-29%	no change	
Street Cleaning Unit					
Measure	***Result***	***Target***	***Differential***	***Trend***	***Rating***
4. KM of street cleaned by sweeping machine	800	750	+7%	no change	
5. KG of litter collected	1000	1100	- 9%	up	
Street Lighting Unit					
Measure	***Result***	***Target***	***Differential***	***Trend***	***Rating***
6. Functioning street lights/All Lights	75%	90%	- 17%	no change	
7. No. of lighting units repaired	78	65	+ 20%	up	

The first thing to note is that the dashboard does indeed simplify reality. There's no risk here of overwhelming anyone with information; all of the Department's work has been boiled down to

[1] In this paper I use only hypothetical examples, but the principles they demonstrate are drawn from actual cases encountered in my own experience of working with Canadian federal government departments on performance measurement and reporting.

seven performance measures. But has the simplification been done in a way that meets the needs of executive decision makers – the "drivers" who lead the organization rather than the "mechanics" who are paid to absorb themselves in operational detail?

One way to answer this question is to imagine that you are the Head of the Metricburg Streets and Sidewalks Department and you have been called on short notice into a meeting with your boss, the Director of Public Works, and his boss, the City Manager (the chief executive of the municipal government). The City Manager must make a presentation to a committee of City Council on key program spending decisions to be taken in preparation for the next three-year planning period. Your task, described in an e-mail received the day before from your boss, is to provide a 10-minute briefing to the City Manager on "the priorities in Streets and Sidewalks from a results perspective. Specifically, what are the most urgent issues in terms of our performance in generating results for citizens? Be sure that your briefing gives the City Manager a clear picture of operational and financial *decisions* that will have to be made related to your programs (e.g. changes in levels of service delivery, changes in funding, etc.). "

This is precisely the type of executive briefing that a dashboard should, in principle, be able to support. It should provide a quick overview of the performance of an organization in a way that would interest executives whose job it is to make decisions to ensure that the organization is fulfilling its mandate.

Unfortunately for the Head of the Streets and Sidewalks Department, the Metricburg dashboard does not provide him with a basis for briefing the City Manager on results. Nor does it help him paint a picture of key decisions to be taken to ensure that funding will be allocated in ways that will ensure that expected results continue to be delivered to the people of Metricburg.

An analysis of just one of the measures in the dashboard – "kilometers of street repaved" – shows us why this is so. This dashboard tells us (i) that the Streets and Sidewalks Dept. produced 500 kilometers of repaved roadway in the first quarter of the year; (ii) that this output slightly exceeded the target for the quarter and that (iii) the amount of new road produced was the same as in the first quarter of the previous year. The green color in the "Rating" column is supposed to be a signal to executives that they need not give this measure any further thought because the result – 500 kilometers – met or exceeded the target.

What is much more significant, though, is what the measure does not tell us. The green rating provides a false sense of comfort because the simple fact that 500 kilometers of road were paved, and that this exceeded the target of 490, is virtually meaningless. The City Manager

might well ask: to what extent has resurfacing 500 kilometers of road met the needs of citizens? how significant is it that the target of 490 kilometers was exceeded? (what was the basis for choosing that target in the first place?); etc. This measure – and the same could be said of every other measure in the table – leaves the City Manager no better informed than he was before his briefing by the Head of Streets and Sidewalks about whether the citizens of Metricburg are well served. It gives him no basis for deciding whether or not any major actions need to be taken regarding road maintenance.

A reasonable (if somewhat short-tempered) response by the City Manager to a briefing based on the contents of the dashboard would be, "So what do you expect me to *do* with this information?" In short, although the Metricburg dashboard contains plenty of facts, it is useless as an aid to executive decision-making.

4. How Dashboards Fail

The Metricburg example is drawn from a wide variety of similar cases that I have encountered when working on performance measurement in scores of public organizations. The Metricburg dashboard illustrates two kinds of shortcomings that are all too common in world of public sector performance dashboards:

- an emphasis on data, as opposed to information; and
- no clear link to a larger story about results.

a) "Data" vs. "Information"

Up to this point I have been using the term "information" loosely, but when thinking about how to make dashboards useful for decision-makers, it's important to recognize the distinction between "information" and "data". The Metricburg dashboard is rich in data rather than information. In a well designed dashboard, the opposite will be the case.

Data are the simple unadorned facts from which information is derived – the raw material out of which information is created. Information is a *value-added product* that results from analysis, interpretation and combination of data in ways that are meaningful to a decision-maker. Data are to Information as flour is to a loaf of bread: a kilo of flour is useless to a hungry person; he wants bread.

When the Head of Streets and Sidewalks tells the City Manager that his Department paved 500 kilometers of road during the first quarter, and that they beat their target by two percent he is providing data. By contrast, an information-rich report would sound something like:

Overall, the quality of our road surfaces at the beginning of the first quarter rated as slightly below average on the International Roughness Index (IRI). We started to address this in the first quarter by resurfacing 500 km of the lowest-quality road surfaces in the highest-traffic areas of the city (which was in line with our target for the quarter of 490 km). We've identified another 600 km in high priority areas to be resurfaced in order to bring our IRI rating up to slightly above average by the end of the third quarter.

The information-rich report takes the same data (500 km of pavement; a 490km target) and then builds context and analysis around them in a way that is meaningful for the decision-maker. The most important differences between the data-rich report and the information-rich report are that the latter:

- tells the City Manager something about results that matter to citizens;

- gives the City Manager a basis for making decisions – continue with the current approach to road resurfacing; slow it down; speed it up; etc. – or for asking additional questions that will lead to a decision.

The dashboard alone cannot of course provide all of the nuance and context suggested by italicized paragraph, above. No automated performance reporting tool can replace the richness and intelligence of a conversation between people. But the dashboard, by supplementing data with even a small dose of results-related context (e.g. the IRI score in the preceding example), and by presenting data in a way that makes clear the link with results, will do a much better job of facilitating a conversation about performance that is meaningful to decision-makers. (The question of designing a dashboard that presents data in a results-oriented manner is addressed below.)

b) Link to a Larger Story about Results

The Metricburg dashboard provides evidence of how *busy* people at the Streets and Sidewalks Department have been. It lists products, or *outputs* -- kilometers of paved or patched road, kilometers of repaired sidewalk, kilometers of cleaned streets, etc. – that have been provided to the city by the Department. This is fine as far as it goes, but it doesn't go far enough.

What's missing is a thread that connects the outputs to results, or outcomes, that matter to citizens, as well as mattering to the City Manager in preparation for his presentation to City Council. So for example, it's one thing tell the City Manager that 1,000 kilograms of litter were collected in the first quarter (Measure No. 5 in the dashboard); it's another thing entirely to tell him about, say, how clean the streets are, or the public's perception of how clean they are.

Remember that the key question for the executive decision-maker, when presented with a performance report, will always be "so what should I do about this?". The decision-maker has no way of knowing what to do with the fact that 1,000 kilograms of litter were collected in the first quarter; but if you tell him that the city's streets rate a score of 85, or perhaps 25, out of 100, on a standard scale of street cleanliness, that *does* suggest a decision: continue more or less with business as usual in the case of an 85; do something significant to improve things in the case of a 25.

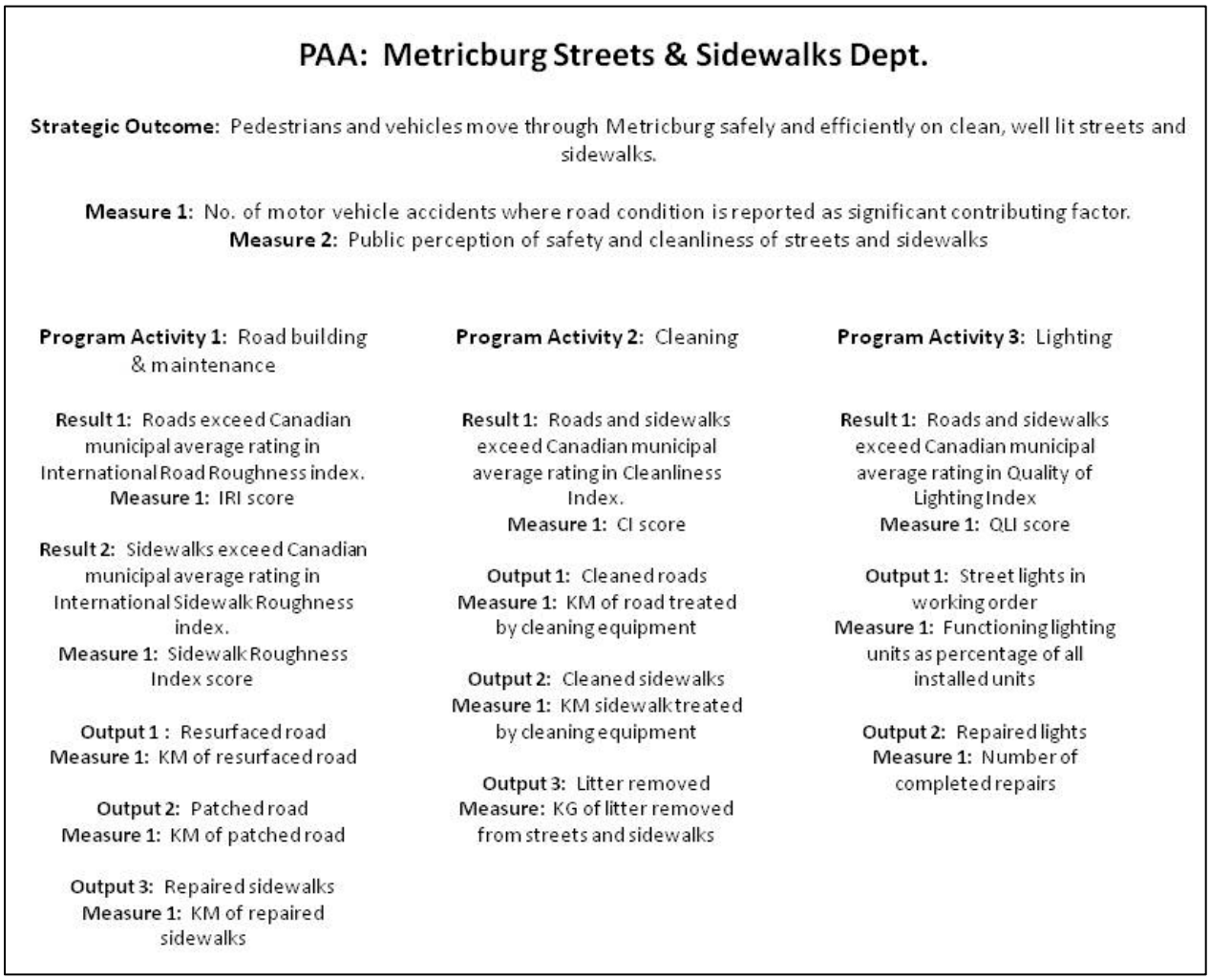
The question of *how busy* people are in the Streets and Sidewalks Department is not what Metricburg's executive decision-makers are paid to worry about. (Making sure that people are busy would normally be an issue for first-line managers.) Executives focus (or should focus) their attention on *results,* i.e. on how good a job the city is doing of making a difference to the lives of citizens. That's why they would (or should) value information about street cleanliness over information about volume of litter collected. The former is relevant to the kinds of decisions they are responsible for making; the latter is not.

A prerequisite for connecting a dashboard to a larger story about results is that the organization have a shared view, clearly expressed, *about what its results story is*. This should never be taken for granted. It is not uncommon for individuals working in the same organization to have different perceptions of the results they are supposed to be achieving. Indeed, it is not unusual to find organizations where many people don't give much thought at all to results, but rather focus their attention on the things that keep them busy every day – activities and outputs.

To an increasing degree however, Departments and Agencies in the Government of Canada are being compelled to ensure that their work is founded on a shared and well articulated story about results. Virtually all Canadian government organizations use logic models to illustrate the linkages between their activities, outputs and outcomes. And all Departments and Agencies are required by the *Policy on Management, Resources and Results Structures* to develop a Program Activity Architecture (PAA) that describes all of their programs, identifies the results associated with each of them, and defines performance indicators related to each of the results. The PAA is meant to be the standard frame of reference for describing the social/economic purpose of a Department or Agency and each of its programs. It is the basis for reporting to Parliament on

the organization's performance. A dashboard should therefore be fully integrated with the PAA. A hypothetical PAA for the Metricburg Streets and Roads Department is shown in Figure 1.

Figure 1



5. An Alternative Approach to Dashboards in the Government of Canada

The rest of this paper relates specifically to norms and policies of performance reporting that are unique to the Government of Canada. Readers for whom this is not relevant may nevertheless find some points of interest in the discussion that follows.

The strategic interest of executive decision-makers in the Government of Canada does not lie in the operational details of their Department's or Agency's programs. It lies instead in performance information related to the social/economic results that their organization intends

to achieve. These intended results, or outcomes, are communicated annually to Parliament in a Report on Plans and Priorities that is organized along the lines of the PAA. To be of immediate relevance to decision-makers, a dashboard should therefore provide them with intelligence on the extent to which intended outcomes identified in the PAA and in Parliamentary reports are being achieved (or, to put it another way, are at risk of not being achieved).

The Metricburg dashboard is obviously not organized in this way. An executive decision-maker who wanted to establish quickly whether or not the city was on track to meet its result commitments would have a hard time doing so on the basis of the data presented there***. I emphasize, again that the Metricburg dashboard, though fictitious, depicts deficiencies I have seen in many dashboards in the Government of Canada in terms of the type of data presented and the way in which data are presented.***

The dashboard would be more useful to an executive if it were tailored to answering questions of the form, "How good is the performance of the Streets and Sidewalks Department related to *[insert here a phrase that reflects a results statement or a strategic outcome statement from the PAA]*?

This framework would allow the user, with just a few mouse clicks (if we think about an electronic, web-based version of the dashboard) to get information relevant to the question "So what do we do now?".

For example, the top layer of the (electronic) dashboard would relate to the highest level of the PAA (the Strategic Outcome of the Streets and Sidewalks Department), and might convey to the user the type of information shown in Table 2.

Table 2

Issue	Rating	Basis for Rating	Related Issues
How good is the Department's performance related to safe and efficient movement on clean and well-lit streets and sidewalks?	Very Good Satisfactory Fair Poor	% of motor-vehicle accidents where road condition is significant factor = 12	Many of the accidents linked to road conditions occurred in the same spot. We are investigating.
How good is the Department's performance related to safe and efficient movement on clean and well-lit streets and sidewalks?	Very Good Satisfactory Fair Poor	% of public that perceives streets & sidewalks to be safe and clean = 60	Recent high-profile criminal incidents affected this score.

The presentation in Table 2 focuses on outcomes rather than activities, and so does a better job of directing executives' attention to areas where action may be required. At a glance, it suggests to an executive that the overall situation with respect to the state of Metricburg's roads and sidewalks is relatively healthy. It also tells him that there appears to be a divergence between the actual state of the roads and sidewalks, on the one hand, and the public's perception of it, on the other hand. A short note in the Related Issues column provides a possible explanation for this anomaly. The executive may conclude, as a result of looking at the dashboard, that the city needs to reassure the public that, despite the recent high-profile incidents that have captured the population's attention, the streets and sidewalks remain safe and there is no cause for concern.

Compare this type of presentation with the existing Metricburg dashboard. Data on kilometers of streets paved, numbers of streetlights repaired, etc. don't naturally lead the executive to an understanding of decisions to be made and actions to be taken. Instead, they leave him asking "so what?" – a typical response to a performance report that is data-rich but information-poor.

The style of presentation in Table 2 would be replicated throughout the dashboard. The next layer of the dashboard (Table 3) would focus on Program Activities, and would refer to the result statements that are linked with them in the PAA.

Table 3

Issue	Rating	Basis for Rating	Related Issues
How good is the Department's performance in relation to the quality of Metricburg's streets?	(Very Good) Satisfactory Fair Poor	IRI rating is significantly higher than Canadian municipal average.	High average score masks serious problems in a few districts.
How good is the Department's performance in relation to the quality of Metricburg's sidewalks?	Very Good Satisfactory Fair (Poor)	Sidewalk Roughness rating is significantly lower than Canadian municipal average.	Council prioritized roads over sidewalks in the last 3-year budget cycle. This led to significant deferred maintenance.

There are three primary differences between the proposed approach to the dashboard and the original approach:

- The proposed dashboard is organized around performance related to results identified in the PAA, rather than performance related to activities or outputs.

- The proposed dashboard is oriented to having the user sift through the least amount of information necessary to get to the point of being able to draw conclusions (or at least preliminary conclusions) about actions required to address issues of concern.

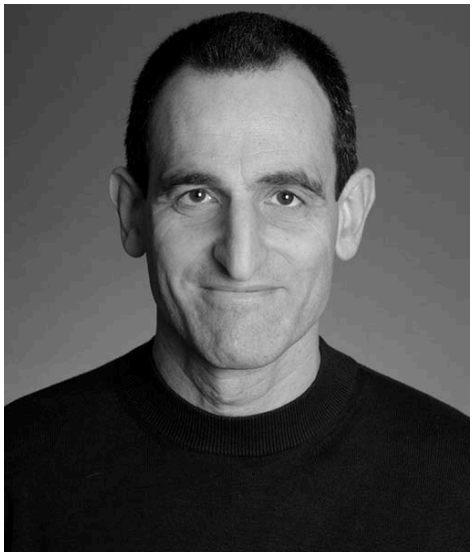
- The proposed dashboard incorporates a degree of context and analysis in the "Related Issues" column that helps executive decision makers understand the implications of information for decision-making.

6. Conclusion

The special nature of executives' information needs has implications for both the content of a dashboard and the way in which that content should be presented. The content must be results-oriented; in other words, it should give the user an overview of the organization's contribution to intended social or economic results. And the content should be presented in a way that reflects the organization's accountability for results. In the context of Departments and Agencies in the Government of Canada, this means organizing a dashboard's content around the strategic outcomes and results statements found in the PAA.

Too many so-called "dashboards" are little more than lists of data about activities and outputs. But the value that executives add to an organization does not come from analysis of data. Executives rely (or should be able to rely) on others in the organization to gather and analyze data, and to present them with information whose connection to results is clear and robust. A dashboard is one way of delivering this kind of information to executives. The less time that executives have to spend worrying over data, the more time they can devote to doing what they are paid for, which is to make strategic decisions directly related to helping the organization fulfill its intended social and economic results. Good dashboards put executives in a position to do this.

About the Author



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