



## **SOEN 6611 – Software Measurement**

### **PROJECT STEP 1**

**Objective:** Identify SMART (Specific, Measurable, Achievable, Realistic, and Timely) measurement goals and derive the corresponding questions

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**Summary of step 1:** State the relevant business goals. Identify stakeholders and their measurement needs. Write a summary of the expected benefits from the use of the measurement results, which should be a summary of the reasons for the measurement-related efforts. Define the measurement goals and the questions to achieve the corresponding measurement goal.

### 1.1 Business Goals

Acquiring a large dataset of organizations may capture their information and collect big data analytics to uncover endless opportunities. To use a large dataset with the necessary quality to enhance the organization's decision-making process.

Business Goal Label	Business goal summary and description
BG1	<p><b>Goal:</b> Increase the <b>volume</b> of the relevant data.</p> <p><b>Description:</b> The size of the dataset is referred to as the volume of the dataset. More the volume of the dataset sourced, it can be used in machine learning algorithms whose positive results can lead to more precise decision-making for the organization.</p>
BG2	<p><b>Goal:</b> Accelerate the <b>velocity</b> of big data generation and its processing.</p> <p><b>Description:</b> The amount of time elapsed in generating or collecting big data for processing and using it in various Machine learning algorithms with optimized speed.</p>
BG3	<p><b>Goal:</b> Enhance the <b>veracity</b> of Big Data.</p> <p><b>Description:</b> Veracity defines the state of big data. It could be in a consistent, clear, or connected state. This helps in filtering the data and processing just necessary data to improve the performance and efficiency of big data.</p>
BG4	<p><b>Goal:</b> Increasingly use the wide <b>variety</b> of data that is being stored and still needs to be processed and analyzed.</p> <p><b>Description:</b> The variety of data that can be stored in the large</p>

	dataset can be used to make better decision-making for an institution.
BG5	<p><b>Goal:</b> Increase the correctness or accuracy, i.e., <b>validity</b> of data used to extract results in the form of information.</p> <p><b>Description:</b> The big data in the large dataset should be valid for analysis with comparison to other datasets.</p>
BG6	<p><b>Goal:</b> Continuously monitor <b>vincularity</b> of Big Data.</p> <p><b>Description:</b> By carefully studying and selecting which datasets can enhance the Vincularity of the Big Data, which ultimately adds to the overall throughput of ML algorithms, one intends to boost the connection or relation between data.</p>

## 1.2 Stakeholders & their measurement needs

### 1.2.1 Identify stakeholders

Stakeholder	Description
Product Manager	A person who identifies the custom needs and the major business objectives that a product will satisfy and is responsible for managing the software, product, code, or machine learning algorithm.
Developers	A person responsible for researching, designing, implementing, and managing software programs, machine learning algorithms, products, or code.
Data Scientist	A person who uses the information to comprehend, explain, and aid in the decision-making of businesses.
Tester/ QA	A person responsible for managing the quality of the product and checking that the system meets requirements. Also, check for bugs in the functionality.
Sales and Marketing Team	A group of people responsible for promoting the product and trying to increase sales by attracting people towards the product.
End-Users	People who use the product or the algorithm.

### 1.2.2 Identify the stakeholders' measurement needs

Stakeholder	Measurement Need
Product Manager	<ul style="list-style-type: none"><li>- Product manager's main responsibility is to plan and manage the product in such a way that it reaches the accepted outcome level in the stipulated amount of time.</li><li>- Also, responsible for managing the workforce and timely allocate resources.</li><li>- With measurement results, product manager can take necessary decisions by analyzing the quality of six big data quality V's.</li></ul>
Developers	<ul style="list-style-type: none"><li>- With measurement results, for ML or Product, they select</li></ul>

	<p>an appropriate algorithm and implement it with the appropriate programming language.</p> <ul style="list-style-type: none"> <li>- Make a plan for the individual work effort.</li> </ul>
Data Scientist	<ul style="list-style-type: none"> <li>- Results of measurement can help data scientists to keep track of the company data.</li> <li>- Helps in decision-making by analyzing the data.</li> <li>- Helps to find prerequisites for the successful execution of algorithm and enables them to do performance evaluation by observing the statistical values obtained from the execution records of the algorithms.</li> </ul>
Tester/ QA	<ul style="list-style-type: none"> <li>- Check the functionalities of the implemented code and give timely feedback to make sure that the project is heading in the right direction.</li> <li>- Find out errors, perform testing and manage the test environment.</li> </ul>
Sales and Marketing Team	<ul style="list-style-type: none"> <li>- They are responsible for the promotional campaigns to attract as many users as possible.</li> <li>- Uses the measurement statistical data to make strategic decisions to cover a greater number of users.</li> </ul>
End-User	<ul style="list-style-type: none"> <li>- Users, who going to use the implemented software/application with ease.</li> </ul>

### 1.3 Measurement goals

Derive the measurement goals from the above 6 measurement needs (Hint: 6 V's measurement goal)

Write a summary of the expected benefits from the use of the measurement results for the selected stakeholders, which should be a summary of the reasons for the measurement-related efforts.

Measurement Goal Label	Description	Corresponding business goal (write its label)
MG1	<p>Volume is the amount of data in a dataset available. The large amount of data is created by real-time entities, such as Facebook posts.</p> <p>The volume of big data should increase over different time frames.</p>	Volume
MG2	<p>Data changes frequently in today's world but the processing of the big data should not be compromised and must comply to the organization's existing infrastructure. These changes in the volume of data across time frames or at different points in the pipeline are referred to as velocity.</p> <p>Increasing the velocity in terms of big data generation and processing in consecutive time frames.</p>	Velocity
MG3	<p>Veracity refers to the consistency of the data throughout multiple time periods.</p> <p>The veracity of big data at various stages (different time frames) of the pipeline should increase.</p>	Veracity
MG4	Big data can be in more one than one	Variety

	<p>format in a dataset at different time frames. The diversity in various data formats in multiple datasets allow us to select and categorize the data of the same interest, this will incur an easier acquisition of data and maintains the quality.</p> <p>Increasing the variety of big data collection across different time intervals.</p>	
MG5	<p>The data to be selected from the dataset must be credible and be related to the requirements which can help in improving the quality rather than selecting any unrelated and unnecessary data or datasets.</p> <p>The validity of big data over discrete time intervals should increase.</p>	Validity
MG6	<p>Analytics can be applied to big data that include records of a similar nature and allow for comparison. Data records with more connections and traceability links provide better suggestions than those with no connections and cannot be compared.</p> <p>The big data vincularity across different time intervals should increase with increasing time frames.</p>	Vincularity



## 1.4 Questions

For each of the above measurement goals, derive questions that the stakeholder in the selected above role might have to ask, and whose questions would be answered by the measurement results.

We have used the GQM (Goal-Question-Metrics) framework to derive the question corresponding to each measurement goal. The Questions with respect to each stakeholder are listed below:

Question Label	Description	Corresponding measurement goal label
Q1	What will be the volume of big data at different time frames?	MG1
Q2	What will be the velocity of big data at each time interval?	MG2
Q3	What is the veracity of big data at different time frames?	MG3
Q4	What variety of data available in the dataset at different time intervals?	MG4
Q5	What is validity of the big data at each time frame?	MG5
Q6	What is the vincularity of big data at different time intervals?	MG6