# IST 654 – INFORMATION SYSTEMS ANALYSIS

PIECES & VALUE STREAMING

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GROUP 6

MEETING – 5 PM TO 7 PM, TUESDAY, BIRD LIBRARY

## CONTEXT

Employers want employees to be healthy and happy, and if they're healthy and happy they'll be more productive. Wellness initiatives are now adopted by many employers. This not only reduces health costs for employers but because employees like it and improved engagement in daily work activities. Some of the common wellness events conducted include:

1) Fitbit challenge - even offered payroll deduction so employees could pay just a few bucks per month to pay for the device
2) Race Entry – In this challenge, employers support employees to take part in races and engaged employees are paid $50 per race
3) Wellness Pantry – Fridge and pantry in company's kitchen are stacked up with healthy food options and employees can pay whole sale price for the same
4) Gym Membership – Reimbursements are provided for gym memberships
5) Biggest Loser Contest – Challenge based on who loses the most weight
6) "Project Zero" Contest – To not gain any holiday weight. Weights are calculated during the beginning of holiday and at the end. Employees who don't gain any weight are given prizes
7) Corporate Challenges – Playing sports

The above are some of the wellness initiatives taken by employers to keep their employees. As a Health Self-Care & Consulting Group our internal department has decided to provide wellness initiatives as part of added benefits to our clients. The group will be conducting various wellness initiative activities, conducted by us or through third party groups. It is highly necessary to show the results of these initiatives to clients by getting various metric data which are dependent on specific wellness activity.

However, we currently do not have a stabilized IT system which enable our internal wellness initiative to track the engagement of participants in these events.

Hence, we the IT department have decided to come up with a generalized IT solution, where all the data of each events will be stored in the system. These data will be inserted into the system at the time of events. Group can fetch these data anytime later for marketing or sales purposes. This IT solution will be a WEB Portal where Wellness Initiative department could easily create forms for each event and corresponding metrics. Web Portal will have login for each volunteer who could login and fill data into the form for respective event.

## PIECES Framework

PERFORMANCE

| **Throughput** | **Problems** | **Solutions** |
|---|---|---|
| | Manual work involved for volunteers to write data captured from attendees during the event into an excel sheet. One single resource involved could take a longer time. | The new system will have a web portal where volunteers could directly fill in the metric data obtained from attendees into the system. This will require less time for one resource to enter as compared to time taken by one resource in current system. |
| | Manual work of entering data in excel sheet requires more volunteers for the work. | The new system will require only a few volunteers to operate the system and insert the data in web portal as it will take same time as employees currently take. |
| **Response Time** | Maintaining excel sheet with event corresponding metrics, manually entering data into excel sheet by volunteers and for each event consumes significant amount of time. | System will have web portal where they have to click on “Add New” to add a new record which will display a ready form with appropriate metrics for a specific event. |
| | After each event, collecting all excel sheets, analyzing and further processing of data for each event manually consumes a lot of time. | After entering data into system, no human resource is required to further process the data as the system will have the capability to process the data automatically and produce the analyzed report on the same. |

INFORMATION

| **Output** | Missing data due to human error at the time of capturing data from attendees. | Web Portal capture values based on pre-defined conditions such as mandatory values in metrics, hence eradicating the probability of missing data. |
|---|---|---|
| | Information captured may not be in a useful format. For example: Date format may be captured in different formats by different volunteers. | Web Portal will capture values based on pre-defined conditions such as a specific format for example: Date format. |
| | Captured information may not be accurate. Some decimal points may be missed which can lead to wrong analysis. | Web portal will have pre-defined pop-up messages across all input fields such as decimal points, hence helping in capturing accurate data. |
| | Necessary metrics may not be captured for that particular event. | Web portal will have pre-defined set of metric values to be captured for each event as input fields. |
| **Input** | Data not available in the excel sheet. | Web portal will have input fields for metrics mandatory at the time of input. |

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|---|---|---|
| | Data may not accurately captured and contains errors by volunteers. | Web portal will have input fields for metrics mandatory at the time of output. |
| | Volunteers may capture unwanted data which will increase data storage. | Web portal will have pre-defined set of input fields corresponding to metrics for that event. |
| **Stored Data** | Volunteers at the event will capture data in different excel sheets making it difficult to make one final data sheet. | Data entered by multiple volunteers goes into a single normalized database, hence reducing total time taken for combining data from excel sheets. |
| | Data is not secure from accident or vandalism. | System will have backup of database, hence reducing the probability of losing data |
| | Current system does not capture data in a well-defined format. | System will have a normalized database to store the data in a well-defined format and also this will enable generating formatted reports |
| | Data is not flexible. | System stores the data in a well-defined format for each metric, hence data analyzing for new information is easy. |
| | Since all data is stored in excel sheet, it may not be accessible all the time. | New system will have a centralized database and this data can be accessed over net by any wellness initiative department using the web portal. System will have connectivity to database, hence making it easy for data access 24*7. |

ECONOMICS

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| **Costs** | Currently, tracking costs are very difficult as everything is managed in excel sheet. | System will enable tracking costs as it will have initiative related details and metrics obtained in each initiative which will help track costs |
| | Too many volunteers and systems are involved to collect data and hence costs are too high | Implementing new system will significantly reduce human resources and systems required, hence reducing the costs for each wellness initiative. |
| **Profits** | Current system's huge costs are preventing the organization from exploring new markets. | New system will significantly reduce the costs and can use them instead to explore new markets and increase their provider network list as well as client base. |
| | Current system is not able to reach clients and customers with necessary marketing. | New system will have the feature of sending campaigns about wellness initiatives to customers based on their email id obtained during events. |

CONTROL

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| **Too little security or control** | Excel sheets can used by anyone to get data and modify them for unethical purposes. | New system data is stored directly into database and this data can be accessed by wellness department by login to their respective web portal. |
| | Redundantly stored is inconsistent in different excel files. | New system will have a one centralized normalized database to store information in a non-redundant manner |
| | Format differences in data in different excel sheet can lead to processing errors. | Database in future system will have all data in an identical format and makes processing and analyzing data easier. |
| | Decision- making errors are occur due to unformatted data | Future system will store data in a proper and necessary format which can be used by analysts to make correct decisions |

EFFICIENCY

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|---|---|---|
| **People, Machine or Computers waste time** | Many volunteers are required for event conducting and data capturing. | New system will require few volunteers for data capturing and can be performed in the same time as existing system. |
| | Many computer systems are required for accessing excel sheets and entering data. | New system will require few computer systems as everything will be done through web portal. Volunteers can also use their mobiles to access the web portal and capture data. |
| | Time taken by existing system is high due to lot of excel sheets which are to be combined at the end to make one final sheet and this can involve human errors. | New system will take time only at the time of capturing. Since, it contains a centralized database and with automation processing will be done by the system and this significantly reduces time. |
| **People, machines, or computers waste materials and suppliers** | Effort required for tasks is excessive | System will significantly reduce manual intervention from human resources, hence reducing effort required for tasks |

SERVICES

| | |
|---|---|
| **Existing system is not easy to learn and requires training to human resources.** | New system will have easy to use UI for both volunteers and wellness departments. This will enable wellness department to easily create events with corresponding metrics and volunteers to easily get data from attendees and enter into the system. |

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|---|---|
| **Current system is not easy to use** | New system will be developed with good UI experience such as dropdowns for events and metrics which will help users create events quickly |
| **System is awkward to use** | New system will be tested thoroughly for use by wellness department and volunteers. This will remove all the bugs in the system. |
| **System is inflexible to new or exceptional situations** | New system's web portal is developed to create any events with any number of metrics for each event. For ease, there will also be pre-defined metrics for each event. |
| **System is incompatible with other systems** | New system stores all data in a common database. This database can be used by other applications for further processing. |
| **System is not coordinated with other systems** | Other systems cannot write into the database updated by this system, hence reducing co-ordination issues. |

## ECONOMICS

Efficiency Comparison

| Tasks | Time Taken (hours) | Future System Time Taken (hours) |
|---|---|---|
| Wellness Activity Creation | 3 | 1 |
| Wellness Activity Metrics Decision | 3 | 1 |
| Wellness Activity Data Collection | 4 | 3 |
| Wellness Activity Data Processing | 8 | 1 |

Efficiency Comparison:

1) **Wellness Activity Creation** – Department earlier used to take 3 hours as it involved detailed planning on which event and what will be the metrics for each of the activity. New system will have UI where one single resource could easily select the event from a drop down menu and it will display corresponding pre-defined metrics.
2) **Wellness Activity metrics Decision** - Department earlier used to take 3 hours as it involved understanding which metrics to be used for each event. The new system will have pre-defined metrics for each event.
3) **Wellness Activity Data Collection** – Earlier human resources were involved in collecting data from participants during the event manually in an excel sheet. New system requires only a single resource to enter the details in to the system.
4) **Wellness Activity Data Processing** – Current system requires manual intervention to process and analyze data from an excel sheet. New system will have all the data from event in the database and this could easily fetch data, process and produce results in an automated manner.

Cost Efficiency Analysis

| Tasks | Current Cost (Dollars) | Future System Cost (Dollars) |
|---|---|---|
| Wellness Activity Creation | 200 | 50 |
| Wellness Activity Event Human Resources | 500 | 200 |
| Wellness Activity Data Management | 200 | 50 |

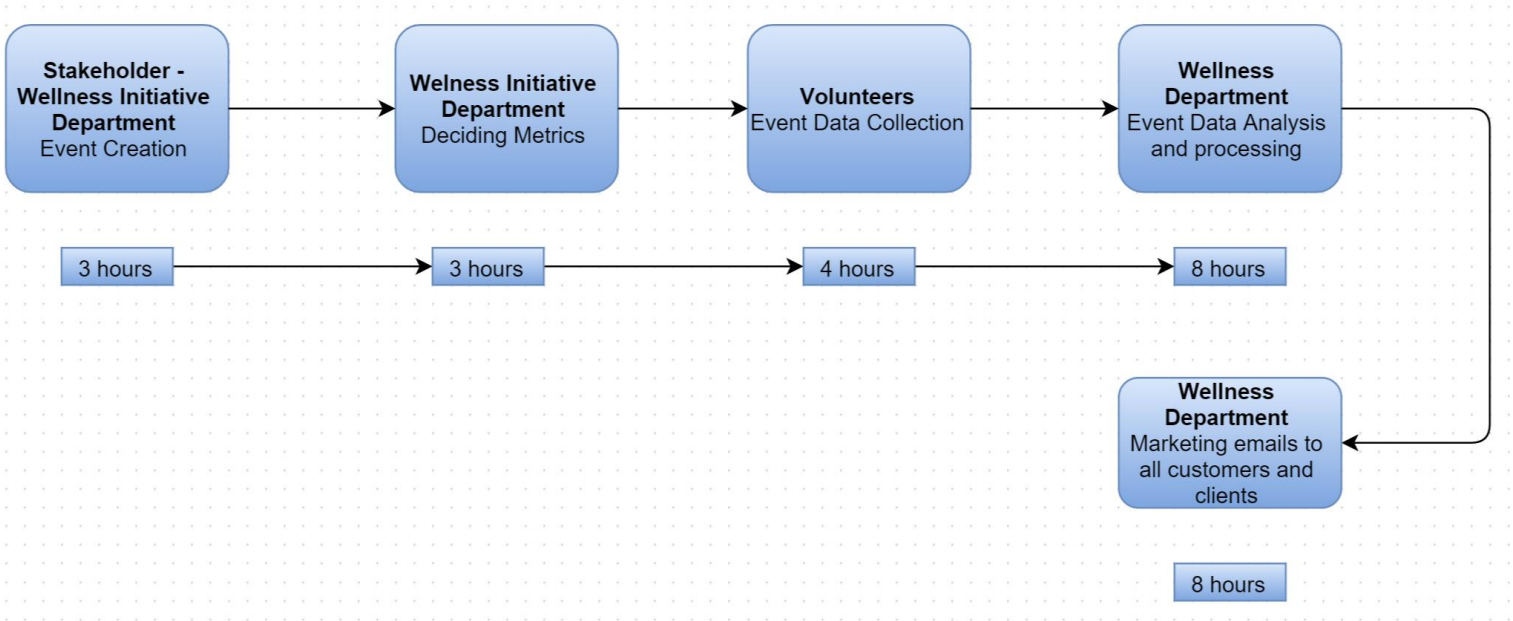
| | | |
|---|---|---|
| Wellness Activity Event Resources | 300 | 300 |
| Wellness Activity Data Processing and Analyzing | 500 | 100 |

Cost Efficiency Analysis

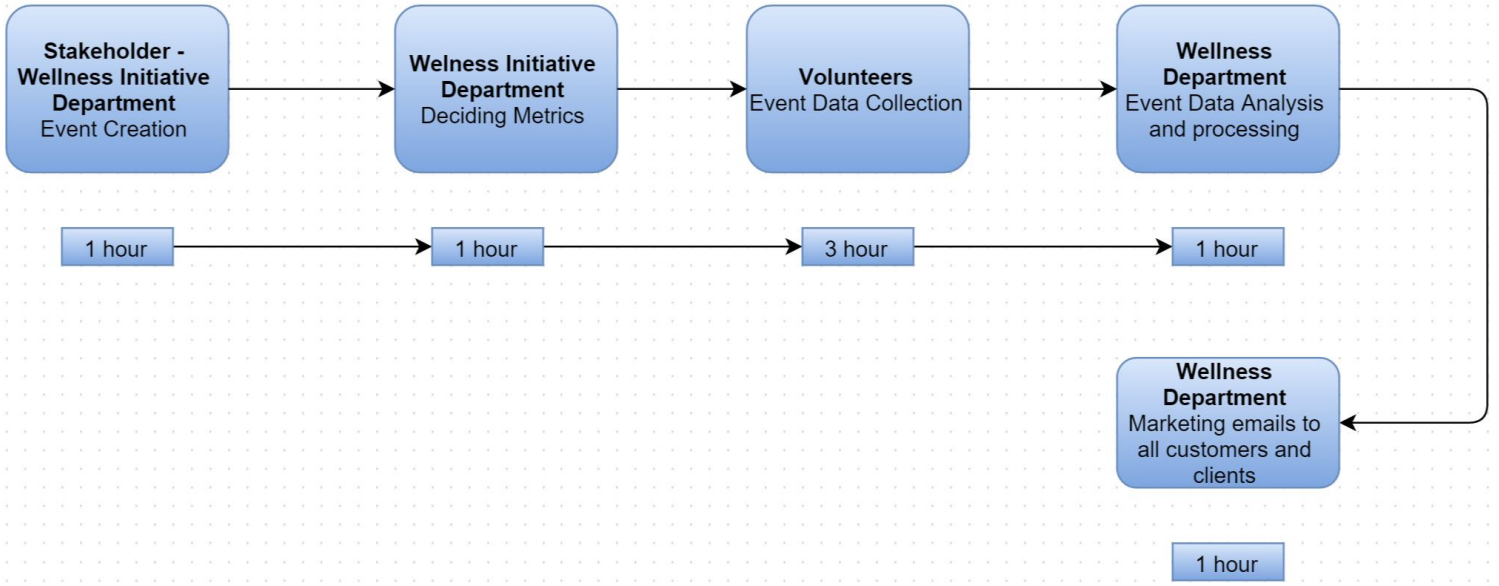
1) **Wellness Activity Creation** – Department currently requires more human resources to plan and create an event. New system will require just one human resource to crate event.
2) **Wellness Activity Event Human Resources** – During the event, many human resources had to be involved to collect data from participants. New system requires only one human resource to collect and enter data into system.
3) **Wellness Activity Data Management** – After the event, all the data collected manually has to be analyzed, organized and processed. This will requires more time from human resources, hence more cost. New system requires human intervention in data analysis and processing as all data are entered into system directly.
4) **Wellness Activity Event Resources** – All other resources used for event apart from human resource are not going to change in current and new system.
5) **Wellness Activity Data Processing and Analyzing** – Data analysis and processing required manual data processing for each event. New system requires one time infrastructure for storing data and automated to analyze and process data.

## VALUE STREAM MAP

Current System



New System




## GENERAL PERFORMANCE METRICS

| Performance Metric | Formula for Performance Metrics | Current System | New System |
|---|---|---|---|
| Efficiency (Throughput) | No. of events / Effort (hours) | 0.3 events/hour | 1 event/hour |
| Efficiency (Time) | Time Taken for each event | 480 mins | 60 mins |
| Process Cost | Total cost/No. of events | $1700/event | $700/event |
| HR | Total taken for each event/Time served by each volunteer | 8 | 1 |
| Customer Satisfaction | No. of events/No. of months | 10 events/month (Less wellness among employees) | 30 events/month (More wellness among employees) |

* Each volunteer can work only for 60 mins