GOVERNMENT PROCESS ANALYSIS
What is process analysis

A step-by-step breakdown of the phases of a process, used to convey the inputs, outputs, and operations that take place during each phase.

It can be used to improve understanding of how the process operates, and to determine potential targets for process improvement through removing waste and increasing efficiency.
Identifying root causes

- Once current processes have been documented along with the data (relevant CTPs) it is useful to identify the root causes of problems and non-value adding activities in processes.

- Identifying the root cause of process dysfunction enables you to ensure that the process redesign solves the root cause, rather than simply addressing a symptom of a problem that will occur again.

- It also allow you to determine how many processes are affected by a single root cause. The more process problems a root cause creates, the higher priority it is for being addresses quickly and effectively.
Indicators of poor process

- Too much movement
- Too much re-entry and or copying
- Standard formats not easily available
- Process too much disintegrated
- Process needs many manual inputs requiring references from other documents
- Customers need to provide same information and or data multiple times
- Activities, information, data that does not serve any purpose and can be eliminated
- Activities, information, data, documents that can be integrated
- Activities, process can be simplified
- Activities, process, information, data that can be automated
- Process where 3 major benefits of Information Technology viz. Independence from PLACE, TIME & PERSON can be utilized.
- The process is ‘MULTIPLE WINDOW’
A cause-effect diagram

IT IS A STRUCTURED APPROACH TO EXHAUSTIVELY DETERMINE PERCEIVED SOURCES (CAUSES) OF A PROBLEM (EFFECT)

❖ Why use it?
   ▪ To help the team organize and graphically display all the knowledge it has about the problem

❖ What does it do?
   ▪ It helps unearth all possible causes for the problem at hand by capturing views of all members
   ▪ It creates a consensus around the problem and builds support for resulting solutions
   ▪ It focuses the team on causes rather than symptoms
   ▪ Organizing data serves as a guide for discussion and inspires more ideas
Ishikawa diagrams (also called fishbone diagrams or cause-and-effect diagrams) are diagrams that show the causes of a certain event.

They were first proposed in the 1960s, by Kaoru Ishikawa who pioneered quality management processes in the Kawasaki shipyards, and in the process became one of the founding fathers of modern management. They are considered one of the seven basic tools of quality control.
The 5 Whys is a question-asking method used to explore the cause / effect relationships underlying a particular problem

- Used to come up with the root causes for the problem at hand
- Continue asking Why till you get to a root cause (need not necessarily be at the 5\textsuperscript{th} Why...)
- Continue with the 5 whys process till all the possible root causes are covered
The following example demonstrates the basic process of 5 Whys:

My car will not start. (the effect)

- **Why?** - The battery is dead. (first why)
- **Why?** - The alternator is not functioning. (second why)
- **Why?** - The alternator belt has broken. (third why)
- **Why?** - The alternator belt was well beyond its useful service life and has never been replaced. (fourth why)
- **Why?** - I have not been maintaining my car according to the recommended service schedule. (fifth why, a root cause)
- **Why?** - Replacement parts are not available because of the extreme age of my vehicle. (sixth why, optional footnote)
How to draw a fish-bone diagram? (1 of 2)

- Take the problem as the end effect
- Take a large sheet of paper and write the effect in the right hand middle in a block
- Draw the center bone / line
- Begin by using the 5-Why methodology & build the bones of the diagram
- Lines should flow towards the “effect” and touch with the arrow heads
- Start from right with a main “Why” category bone and add sub-categories bones to the main line
- At every level ask Why this is caused / What causes this?
- Keep asking this question and build the fishbone until the causes are specific enough to verify – Be sure to work from the level of symptom to cause
- General thumb rule is to ask “Why” five times to reach to a verifiable cause
How to draw a fish-bone diagram? (2 of 2)

- For every cause that is not a sub-category to the earlier “Why” and is a distinct family/category of cause, add a new bone to the diagram
- Build the major categories/families (bones) towards the left
- Brainstorm to collect all the possible causes that the team knows
- Build the diagram by linking the brainstormed causes under appropriate categories
- Refine categories where necessary
- It is a good practice to bring-in more and more people to look at the Fishbone diagram to add to the cause
- Circle the causes that seem most probable
- Some of these causes can be taken up for measurement & verification
Cause & effect diagram for “CSK’s defeat in IPL-6 final cricket match”

Identify all possible causes....

- Planning
- Sleep
- Study of opponent
- Judgment of situation
- Composure
- Meal
- Carefulness
- Form
- Team work
- Fighting spirit
- Motion
- Rest
- Exercise

Affinitize causes into categories...

- Rest
- Sleep
- Meal
- Planning
- Study of opponent
- Judgment of situation
- Carefulness
- Composure
- Fighting spirit
- Team work
- Motion
- Exercise
- Form

- Health
- Strategy
- Spirit
- Technique
Cause & Effect diagram for “Indian cricket team’s defeat”

Health
- Rest
- Amusement
- Sleep
- Time
- Depth
- Nutrition
- Calories
- Meal
- Quantity
- Carefulness
- Concentration
- Patience
- Fighting spirit
- Pride
- Devotion
- Calmness
- Composure
- Confidence

Strategy
- Planning
- Theory
- Rules
- Common Sense
- Experience in matches
- Observation
- Judgement of situation
- Information
- Study of Opponent
- Analysis
- Power
- Motion
- Speed
- Cooperation
- Function
- Model
- Advice
- Teamwork
- Schedule
- Repetition
- Form
- Quality
- Exercise

Technique
- Rest
- Amusement
- Sleep
- Time
- Depth
- Nutrition
- Calories
- Meal
- Quantity
- Carefulness
- Concentration
- Patience
- Fighting spirit
- Pride
- Devotion
- Calmness
- Composure
- Confidence

Defeat in cricket match
Cause and Effect Diagram for Errors in Valuation

Knowledge
- Qalification
- Subject
- Medium
- Marks
- Student
- objectives

Concentration
- Movements
- Politicians
- Disturbance
- Chatting
- Cell Phone

Deviations
- Venue
- Seating

Organization
- Teachers
- Efficiency
- Seniority
- Facility
- Venue

Strategy
- Data
- Registration
- Updating
- Automation
- Admin
- Rules

Errors in valuation
USAGE OF THE FISHBONE DIAGRAM

- Causes are derived from brainstorming sessions. Each cause or reason for imperfection is a source of variation.
- Causes are grouped into major categories to identify these sources of variation. These groups are then be labeled as categories of the fishbone.
- The 8 Ps (typical categories used in service industry, which is applicable also to government service delivery):
  - Product / Service: Actual product / service delivered
  - Pricing: Price of the product
  - Place: Place of service delivery
  - Promotion: promotion and publicity
  - People: Anyone involved in the process
  - Process: processes involved in delivering the service
  - Physical Evidence: Material cues on service quality (e.g. paper on which ticket printed)
  - Productivity & Quality
Do all the process activities add value?

NO

& THIS IS WHY PROCESS ANALYSIS IS CARRIED OUT

What constitutes process analysis?

- Measuring process efficiency – VA/ NVA activities
- Identifying process complexity – Data Entry Points (DEPs) / Hand off Points (HOPs) etc.
- Hands On Time (HOT) vs. Turn Around Time (TAT) analysis
An activity is classified as Customer Value Added activity (CVA) if:

- The activity adds a form or feature to the end-product or service, and
- The customer is willing to pay for it
- The task enables a competitive advantage (reduce price, faster delivery, fewer defects)
- e.g.: printing of passport, issue of food grains under PDS etc
An activity is classified as Business Value Added (BVA) if:

- The customer may not want to pay for it but are required for some reason
- The task required by law or regulation
- The task reduces financial risk?
- The process breaks-down if the task were removed
- e.g.: quality testing, attestation / authorization of copies of documents etc
An activity that provides the process with no competitive advantage and which can be discarded without influencing the final outcome

- It includes any of the following activities – rework, multiple signatures, counting, handling, checking, inspecting, transporting, down-time, delaying, storing

<table>
<thead>
<tr>
<th>Transport/Handling</th>
<th>T</th>
<th>Moving people, information and/or things from one location to another</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redundancy/</td>
<td>R</td>
<td>Rework; unnecessary or duplicate performance of a task</td>
</tr>
<tr>
<td>Dipation/</td>
<td>I</td>
<td>Ensuring a task was performed correctly / Checking / Reviewing</td>
</tr>
<tr>
<td>Preparation</td>
<td>P</td>
<td>Getting ready to perform a task / Prepare to do work</td>
</tr>
</tbody>
</table>
Process Activities Can Be Classified Into VA / NVA For The Purpose Of Reduction Of NVAs

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Notation</th>
<th>Usage</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VA Activity</td>
<td>Changes the state of the product</td>
<td>Sanction of loan, Dispatch of passport</td>
</tr>
<tr>
<td></td>
<td>Inspect</td>
<td>Checking</td>
<td>Scrutiny of file against checklist</td>
</tr>
<tr>
<td></td>
<td>Transport</td>
<td>File movement from desk to desk (within or across departments)</td>
<td>File sent from Verification team to Data Entry team</td>
</tr>
<tr>
<td></td>
<td>Storage</td>
<td>Data entry in Excel or System, writing on paper</td>
<td>Data Entry of file into system</td>
</tr>
<tr>
<td></td>
<td>Delay</td>
<td>File waiting for processing, or user waiting for file</td>
<td>Files piled up on desk / wait for file to come from verification</td>
</tr>
<tr>
<td></td>
<td>Decision</td>
<td>Yes / No decision</td>
<td>Allow deviation / is file complete as per checklist</td>
</tr>
</tbody>
</table>

Note: Not every process is Value Added; Not all NVAs can be eliminated
Identifying Non-Value Add activities
Railways – Ticket booking at counter

Customer goes to Railway Ticket booking counter → Collection and filling of application form by customer → Waiting in queue by customer to submit form → Submission of filled application form to clerk at booking counter

Booking and printing of ticket on government stationary by clerk → Clerk receiving payment from customer → Checking availability of ticket by clerk → Confirmation of ticket details from customer by clerk

Customer plans alternate ticket

Average time taken to book a ticket: 2 to 3 hours

Existing
Railways Ticket booking – Non-Value Added activities

Value-added activities

<table>
<thead>
<tr>
<th>Time (mins)</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Cust fills application form</td>
</tr>
<tr>
<td>2</td>
<td>Cust submits application form</td>
</tr>
<tr>
<td>2</td>
<td>Clerk confirms details in form</td>
</tr>
<tr>
<td>5</td>
<td>Customer plans alternate ticket</td>
</tr>
<tr>
<td>2</td>
<td>Customer makes payment</td>
</tr>
<tr>
<td>2</td>
<td>Clerk books and prints ticket</td>
</tr>
</tbody>
</table>

Non Value-added activities

- T — Transport / Handling
- P — Preparation
- I — Inspection

Average time taken to book a ticket: 120 minutes
Introduction To The Concept Of ‘WASTE’

- Not all non-value added activities may be eliminated. Some NVA are "incidental" which need to be part of the process even though it does not add any value.
- Wastes are those activities which are non-value adds and non-incidental
- CAN YOU GIVE AN EXAMPLE
- Waste elimination is a critical feature of any LEAN organization

<table>
<thead>
<tr>
<th>Necessary</th>
<th>Value add</th>
<th>No value add</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Keep “Value Add”</td>
<td>Reduce “Incidental”</td>
</tr>
<tr>
<td>Unnecessary</td>
<td>Eliminate “Non value add”</td>
<td></td>
</tr>
</tbody>
</table>
The Seven Wastes

- Let us understand the characteristics of waste.
- Seven deadly wastes
  - Motion
  - Waiting
  - Over Production
  - Unnecessary Processing
  - Defects
  - Inventory
  - Transportation
- All seven wastes add time & cost to the value stream.
Each of the 7 deadly wastes which add time and cost to an organization need to be addressed… (1 of 2)

<table>
<thead>
<tr>
<th>LEAN Waste Category</th>
<th>Definition</th>
<th>Examples</th>
<th>TAT</th>
<th>Through-put</th>
<th>Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waiting</td>
<td>Inability to move to the next processing step</td>
<td>Customers waiting in a queue at a branch or awaiting response in a call center, files waiting for sanction by a credit manager</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motion</td>
<td>Unnecessary movement of men during the course of the work</td>
<td>Movement to multiple workstations to collect documents like fax received to confirm a treasury deal, printout of customer query form at a branch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td>Unnecessary movement of materials between processes</td>
<td>A physical movement of a loan sanction file to teams working across floors of a building or multiple locations of the bank</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unnecessary Processing</td>
<td>Inappropriate production and delivery of service vs. customer specified requirement</td>
<td>Multiple layers of approval and review in a loan sanction process, multiple data entry points to capture the same information</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Impact of Waste on key business metrics: 
- **TAT**: Typically shows an increase due to waiting and unnecessary motion.
- **Through-put**: May remain constant or decrease due to increased TAT andwaiting.
- **Errors**: Can increase due to increased TAT and waiting which lead to more human errors.
Each of the 7 deadly wastes which add time and cost to an organization need to be addressed...(2 of 2)

<table>
<thead>
<tr>
<th>LEAN Waste Category</th>
<th>Definition</th>
<th>Examples</th>
<th>TAT</th>
<th>Through-put</th>
<th>Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defects</td>
<td>Producing &amp; delivering wrong or defective parts - An output which does not meet customer requirements is a defect</td>
<td>Wrong data entry, Incorrect transfer of funds, credit card statements with incorrect transactions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overproduction</td>
<td>Producing more than customer demand</td>
<td>Staffing for managing peak loads at a branch or a call center</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory</td>
<td>Inventory is a cost of unstable processes. It is a buffer maintained since trust on stability of downstream processes is low</td>
<td>High Work-In-Progress at various workstations in loan processing; low ratio of applications forms received to forms printed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Verbs which are likely to have no business value

- Copying
- Collating
- Counting
- Preparing
- Searching
- Accumulating
- Revising
- Editing
- Checking
- Approving
- Storing
- Filing
- Retrieving
- Moving
- Inspecting
- Rework
Process Complexity Analysis (1 Of 2)

- **Number of data entry points**
  - Shows the number of times data is being captured
  - Identifies areas where duplication of work is taking place

- **Number of hand-off points**
  - Shows how many hands the file passes through for processing
  - Indicates areas where handoffs can be eliminated for speedier processing through elimination of unnecessary activities & waiting time

- **Number of systems used**
  - Shows the number of systems and excel sheets / registers where data is entered
  - Allows us to identify areas where duplicate data entry is taking place and helps eliminate un-necessary work
Facilitates identification of those elements in the process that can be eliminated

Process Complexity Analysis documents the following:
- Number of data entry points (DEP)
- Number of hand-off points (HOP)
- Number of systems used

More number of DEPs, HOPs and systems indicate a complex process
## Template for capturing Process Complexity

<table>
<thead>
<tr>
<th>Process Complexity Parameter</th>
<th>As Is Process Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Activities</td>
<td></td>
</tr>
<tr>
<td>Number of Data Entry Points (DEPs)</td>
<td></td>
</tr>
<tr>
<td>Number of Handoffs Points (HOPs)</td>
<td></td>
</tr>
<tr>
<td>Number of Systems</td>
<td></td>
</tr>
</tbody>
</table>
HOT & TAT

❖ **HANDS ON TIME (HOT)**
  - The time during which material or information is actually handled or action is taken on them in a process for changing its shape or form

❖ **Turn Around Time (TAT)**
  - The total time taken for material or information to move across in a process from the start point to the end point

❖ TAT = HOT + Queue time + Changeover time (if any) + Transportation Time

❖ **Time other than HOT can be focused upon for improvement**
Example – HOT/ TAT

**HANDS ON TIME** = 5 + 15 + 10 = 30 minutes

**Turn around time** = 1 day & 35 minutes
Definition of key metrics

- The key metrics (CTQs & CTPs) of the process acts as indicators of how the process has improved post GPR
- From the data collected on the CTQs and CTPs, the baseline metrics can be obtained
- Post roll-out of GPR, these metrics can be tracked for continuous improvement using Process Quality Information Systems (PQIS)
Metrics are key indicators to the quality of the process output

<table>
<thead>
<tr>
<th>Category</th>
<th>Metrics definition</th>
</tr>
</thead>
</table>
| Business metrics          | • No of passports issued  
                           | • Growth in passport issuance                                        |
| Effectiveness metrics     | • TAT for passport issuance                                          
                           | • Number and type of citizen grievances                              |
| Efficiency metrics        | • Percentage of passports issued with errors                         
                           | • Real time tracking of forms                                         |
Metric: Turn Around Time of Cheque Collection

<table>
<thead>
<tr>
<th>Definition:</th>
<th>Slicing Required</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time elapsed from cheque hand over by client to time of clear balance availability known to the Investment Mgmt team.</td>
<td>• Channel Wise</td>
<td>• New Application Tracker ePMS</td>
</tr>
<tr>
<td></td>
<td>• Zone Wise</td>
<td>• CMS</td>
</tr>
<tr>
<td></td>
<td>• RM Wise</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Client segment wise</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit of Measure</th>
<th>Input data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual number of days elapsed reported for the week and rolling month</td>
<td>• New Application Tracker ePMS</td>
</tr>
<tr>
<td></td>
<td>• CMS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reporting Frequency</th>
<th>Formats / Systems involved in the process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly</td>
<td>• New Application Tracker ePMS</td>
</tr>
<tr>
<td></td>
<td>• CMS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output</th>
<th>Norm for To Be:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Histogram of number of days on time dimension</td>
<td>3 days</td>
</tr>
<tr>
<td>• Weekly rolling, highlighting Target, defects, DPMO &amp; Sigma</td>
<td></td>
</tr>
<tr>
<td>• Showing consolidated histogram on weekly basis</td>
<td></td>
</tr>
<tr>
<td>• Separate histograms as per each slice for the month, with the inference</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Milestones for which data required</th>
<th>IT Requirements:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• As per milestone sheet</td>
<td>Consolidate from the CMS partner and New Application Tracker ePMS</td>
</tr>
</tbody>
</table>

**Metric Accountability:** Zonal Heads  
**Output Owner:** Ops. Manager
<table>
<thead>
<tr>
<th>Metric:</th>
<th>Slicing Required</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit of Measure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reporting Frequency</td>
<td>Milestones for which data required</td>
<td>Formats / Systems involved in the process</td>
</tr>
<tr>
<td>Output</td>
<td>Norm for To Be:</td>
<td>IT Requirements:</td>
</tr>
</tbody>
</table>

**Metric Accountability:**

**Output Owner:**
Define future state (to-be definition)

- To define how the identified business functions and services shall be performed going forward
- To define the **new** business processes
- To define IT solutions and services for automation of **new** business processes
- To define **people change management**, capacity building and communication requirements for project implementation
Define future state (to-be definition)

To-be definition is performed along the following dimensions:

TO-BE DEFINITION
Define future state (to-be definition)

**KEY OUTPUTS/DELIVERABLES**

**To-be Processes**
- To-be business processes
  - New process KPIs/metrics
  - Changes to the legal and policy environment

**To-be IT Environment**
- Functional Architecture and Requirements specifications
- Enterprise Architecture covering Application, data, network, security, data center architecture
- Data digitization and migration strategy
- SLAs

**To-be People Environment**
- Institutional structures needed for project implementation
- Training and Capacity building plan
- Change Management Plan
- Communications Management Plan
END