Cátedra Nissan

-PROTHIUS-

Modelos de Organización en Obra y Empresa: Metodología para la selección y gestión de proyectos. Fase V.

Rubén Rami

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Departamento de Organización de Empresas

Universidad Politécnica de Cataluña

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Edita:

Cátedra Nissan
www.nissanchair.com
director@nissanchair.com

Fase 4. Ejecución

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Objetivo sesión

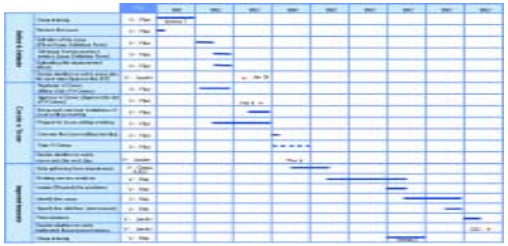
- Definir objetivo y expectativas de la fase 5: Ejecución
- Conocer herramientas más usuales en la fase 5
- Práctica con las herramientas

Fase 5: Ejecución e Implementación del Proyecto

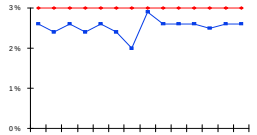
Objetivo	Transferir e integrar las soluciones acordadas a la organización Definir un plan de seguimiento para garantizar la implementación

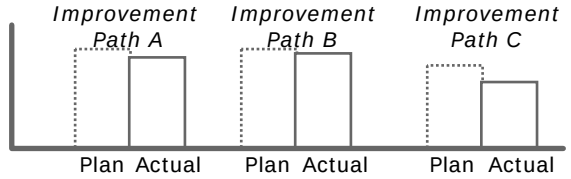
Expectativas de esta fase:

- Seguir el plan de despliegue/implementación



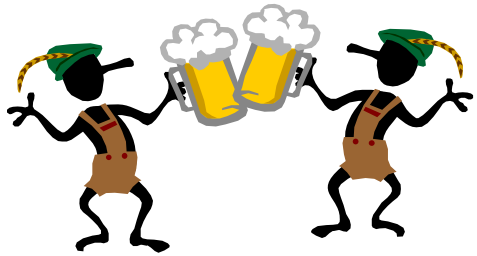
- Monitorizar el impacto de las acciones





- Impacto económico

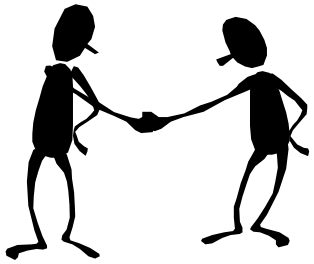
- Celebrar el exito



Transferir la solución a un departamento para completar la implementación

Puntos a recordar cuando se transfiera el proyecto al departamento correspondiente

- Asegurar que la línea de mando entiende los objetivos del Proyecto y esta comprometida con el mismo tanto en amplitud como en tiempo
- Es muy importante comunicar claramente la propuesta de implementación a los gerentes afectados para conseguir su aprobación.
- Comunicar los “outputs” obtenidos en cada fase, para facilitar que todos los aspectos relativos a la gestión de la implementación, sistema de seguimiento, desarrollo son entendido por todos.

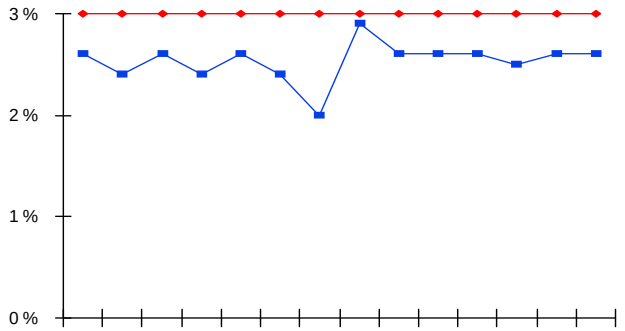


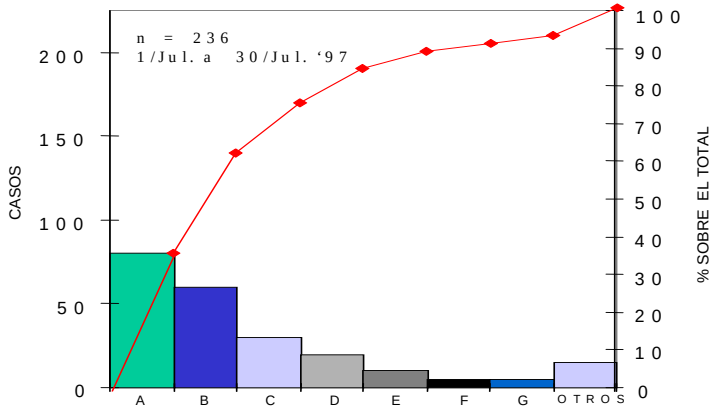
- Crear toda la información colateral necesaria (Ej. Manuales u hojas de instrucciones) con el fin de comunicar claramente las direcciones de “como” implementar las soluciones.
- Sesiones de formación necesarias.
- Asegurar que toda esta información es lo suficientemente detallada y precisa, y está correctamente orientada a las personas/organizaciones clave en la ejecución o implementación.
- Validar el impacto económico estimado, así como los estudios de rentabilidad necesarios

Revisión y actualización del plan de monitorización

Elementos esenciales de un sistema de monitorización

- Valores objetivo (especificaciones) / Valores de control (real).
- Herramienta de monitorización (gráficos, cuadros, etc) entendibles.
- Persona responsable que entienda las necesidades y capaz de interpretar los resultados.
- Intervalo de seguimiento claramente identificado
- Método de reporte y línea de reporte, así como responsables en caso de puntos fuera de control.



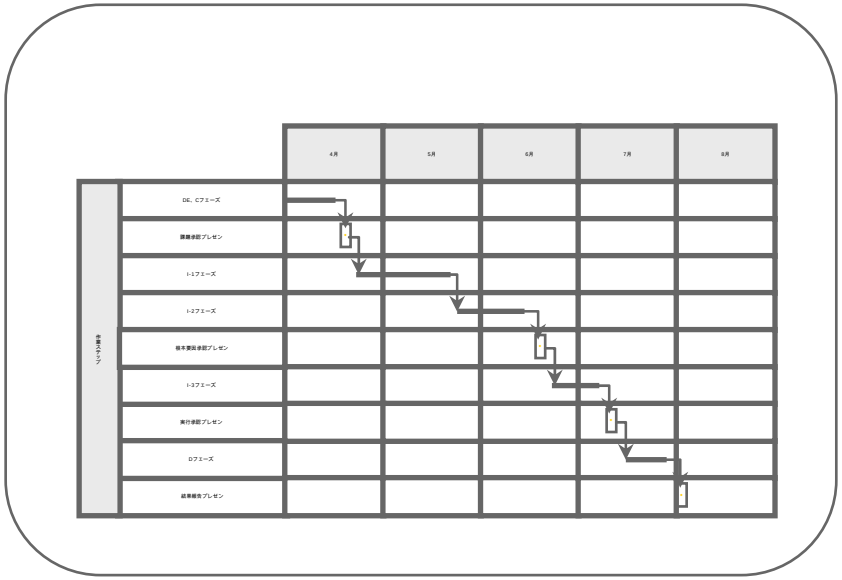


En función de los resultados del "Trial", puede ser necesario actualizar el sistema de monitorización.

Revisar y actualizar el plan de implementación

Elementos esenciales para el seguimiento de la implementación :

- Añadir en las actividades la correspondiente revisión de análisis de riesgo.
- Actualizar las actividades y/o acciones adicionales resultantes de la ejecución del “Trial”.
- Actualizar cualquier tema nuevo que aparezca, como fruto de la gestión del proyecto por parte del departamento que lo implemente, o durante los acuerdos para transferir la responsabilidad.



Establecer el seguimiento de las actividades dentro de la rutina diaria de gestión de la organización

Revisar Impacto financiero

Puntos Clave :

- Una vez definidas las acciones a realizar es conveniente revisar los métricos financieros.
- Es importante involucrar en este proceso a la correspondientes personas del departamento de finanzas, que evaluaran el impacto desde el punto de vista estrictamente económico
- Entender los factores que puedan interferir en el plan inicial y decidir las acciones correctoras

Tener en cuenta que cambios estructurales, incluso fuera del ámbito del proyecto, en las condiciones financieras pueden hacer modificar seriamente las decisiones sobre la viabilidad de los mismos.

Fase 5. Herramientas

WORK PLAN

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Developing a Work Plan

• Description

-A Work Plan is a document that lays out the sequence of activities that are needed to complete a project including key milestones, periodic reviews, and report-outs to management. The work plan should also reflect activity durations, and any interdependencies, critical paths, and key resource requirements that exist.

• When to use a Work Plan

- A Work Plan should be used on all projects once the initial feasibility is addressed. The work plan sets the time-to-completion expectations for the project and provides a tool for managing the project on an on-going basis

• Limitations of a Work Plan

- The work plan will need to be revisited on a periodic basis once the project begins. Any changes to the work plan need to be clearly stated and communicated to the Project Sponsors and leads.

- A poorly designed work plan can set unrealistic expectations within the organization that can be difficult to re-set once the project is underway

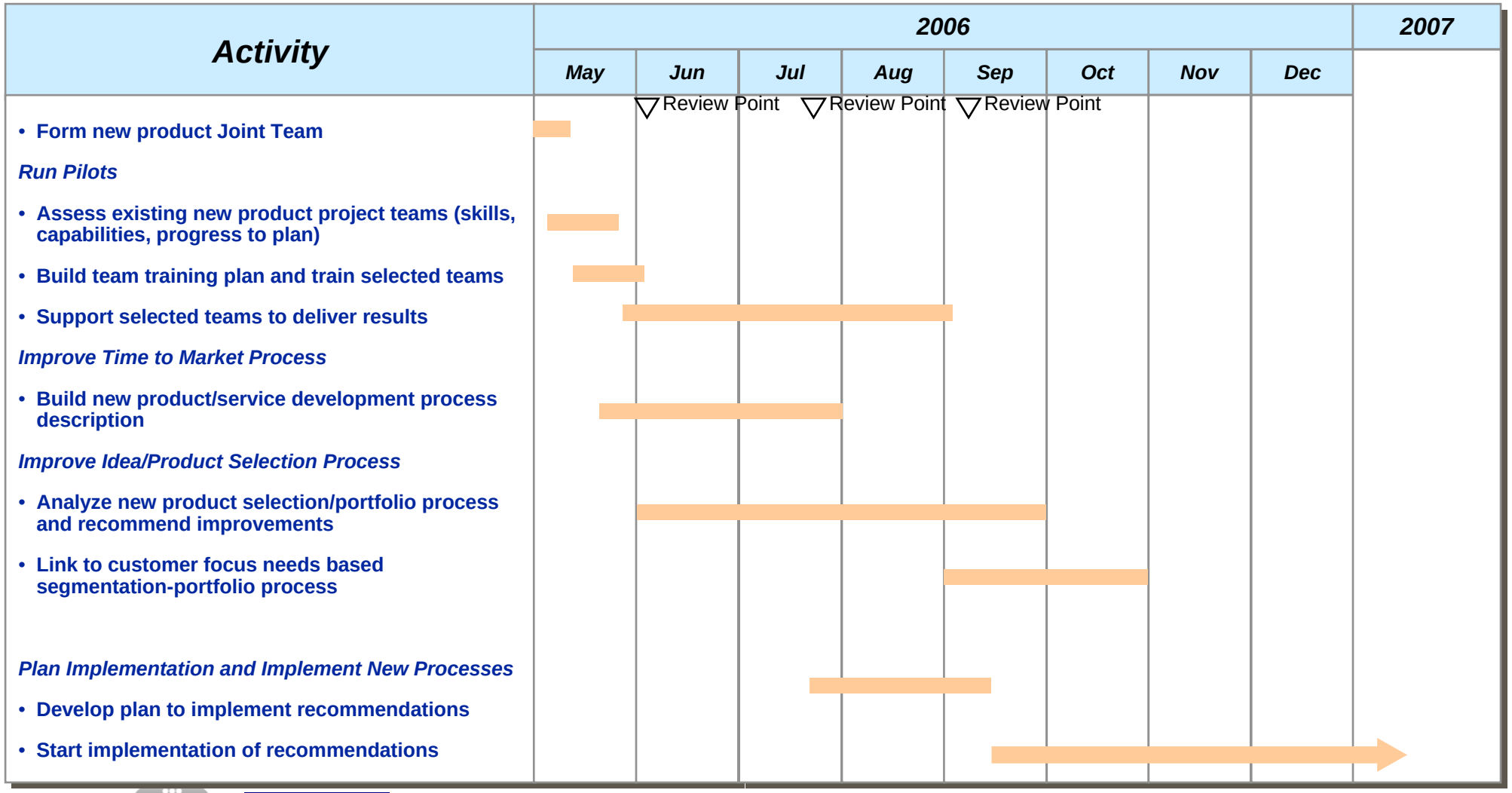
High Level Work Plan Guidelines

- **Any work plans created during the DEFINE phase should be high-level. The V-Crew team will be involved in developing more detailed work plans**
- **High-level work plans should focus on the initial, early activities that will need to be completed during the first stages of the project; It would also outline the main steps of the DECIDE process.**
- **Focus on activities such as data-collection, team formation and on-boarding, process re-design, and pilot completion rather than those activities that will comprise the full-scale roll-out and implementation**
- **Make sure to schedule an adequate number of reviews early on with the V-Leader and other stake holders.**
- **Be realistic with resource and timing estimates. It can be very difficult to undo unrealistic expectations and still make the project look successful.**

As you develop a work plan, identify clearly : What has to be done, When it has to be done, Who is going to do it

Evenso there are advanced software for tracking work plans, using a simple Excel spreadsheet is often enough…

Sample Project Plan: New Product or Service Development



Fase 5. Herramientas

CONTROL CHART

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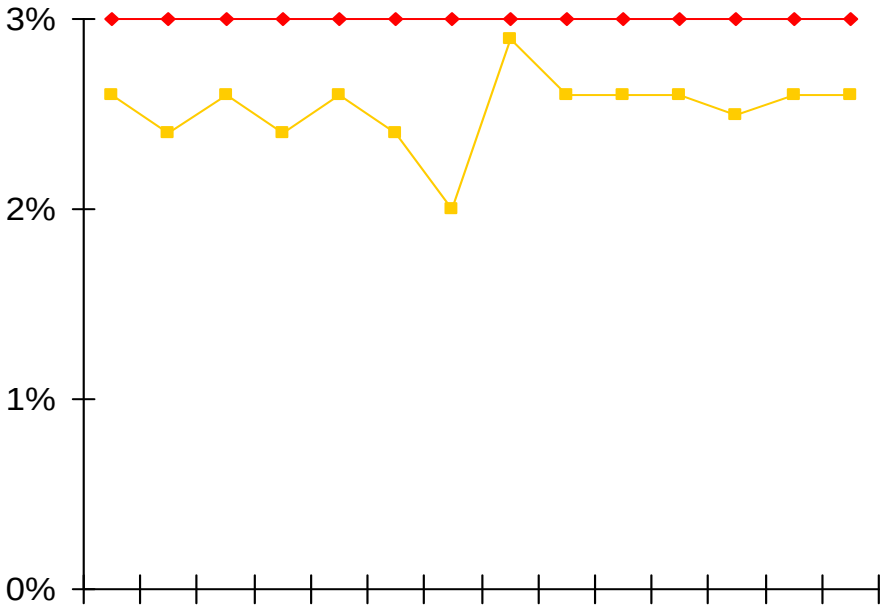
Departament
d'Organització
d'Empreses

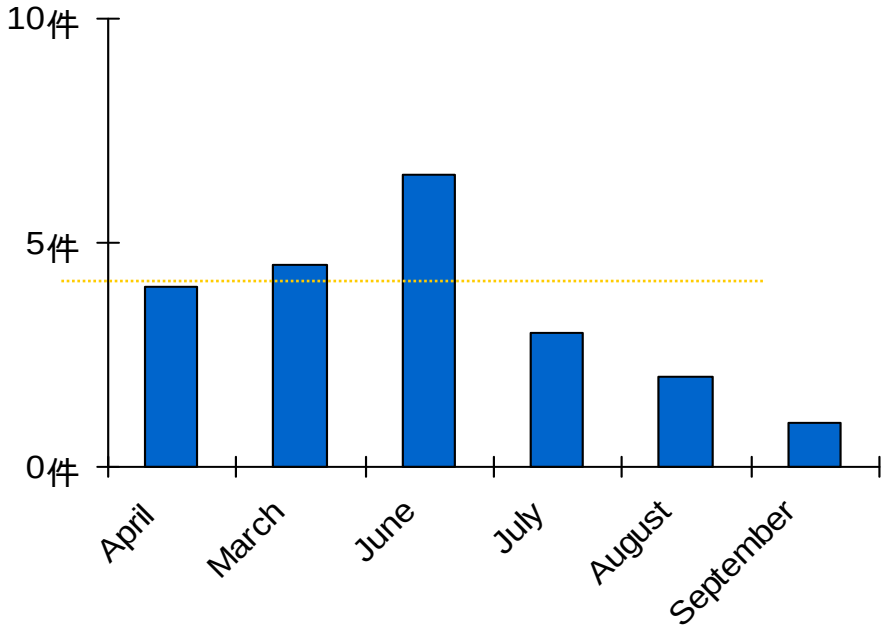
A system to monitor effects from the means

Set up items and metrics for monitoring

Example 1: Fraction defective 3% or lower (Daily)



Example 2: Errors in the billing process
5 cases or fewer (Monthly)



Monitor the figures for variance from the target for control

Control Chart

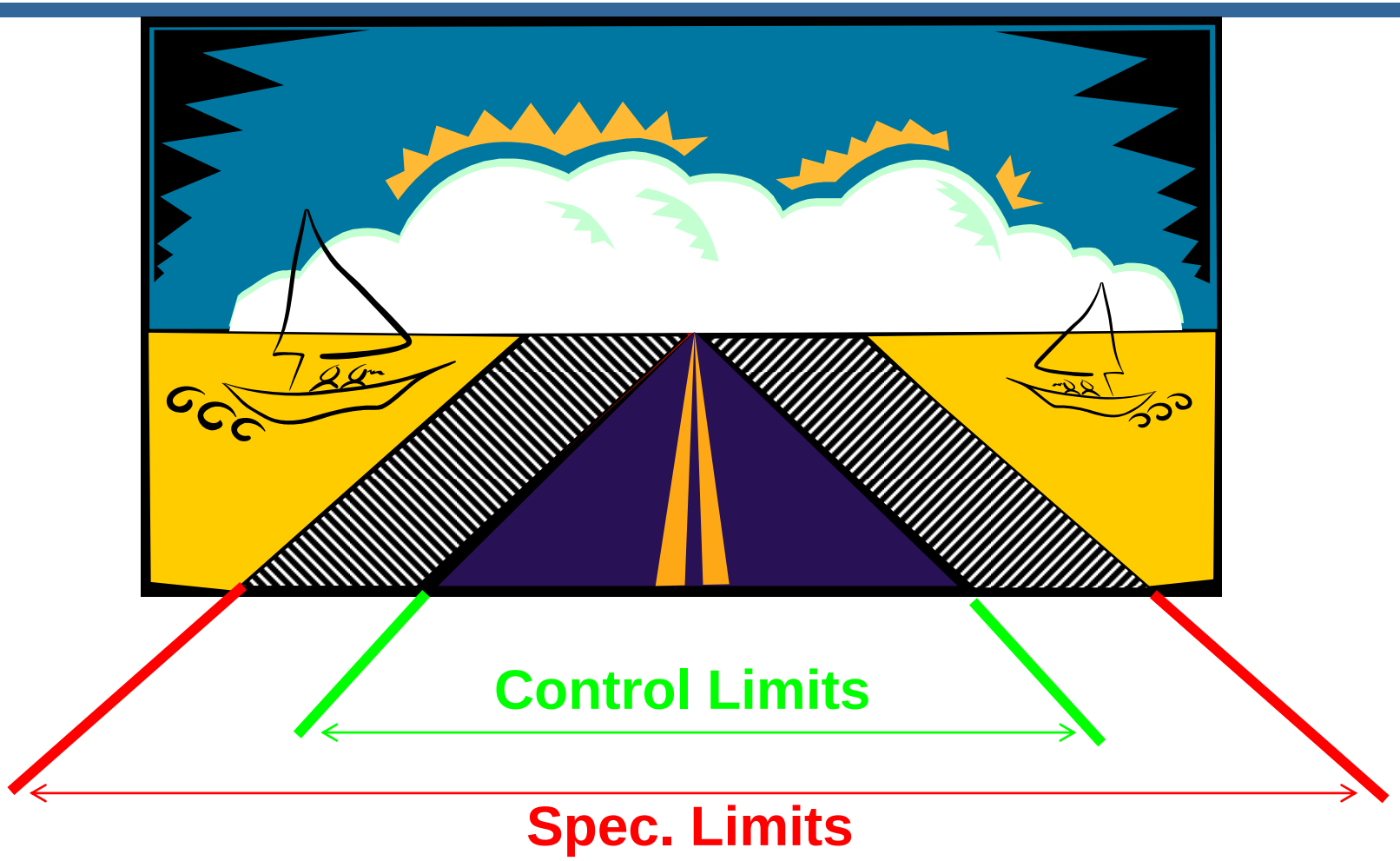
What does it do?

- **Control chart can be used to statistically estimate whether the process is stable or not**
- **Control chart can also be used to keep the process in stable state**

When do you use it?

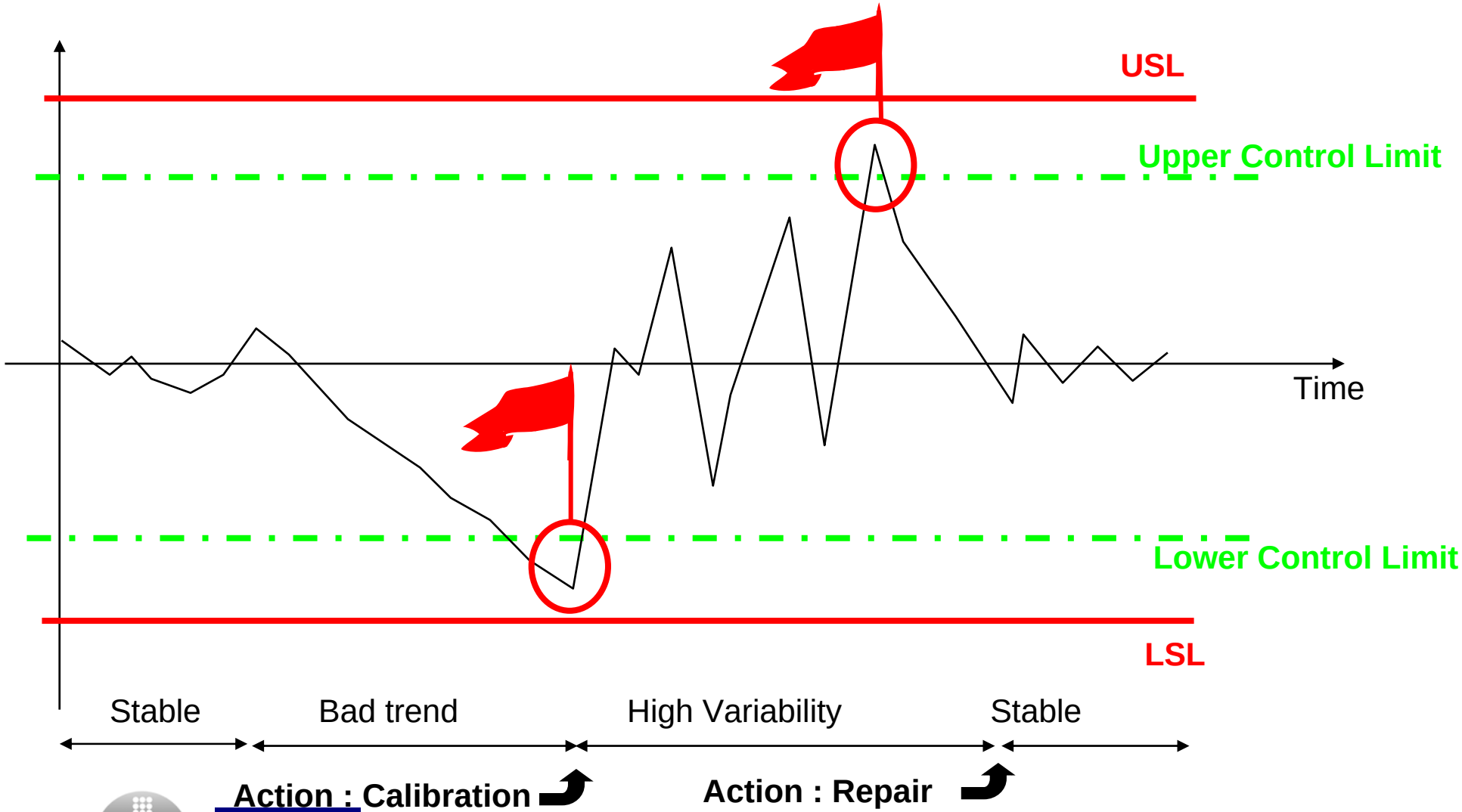
- **Use control chart when trying to find out:**
  - **(1) The types and frequencies of problems in the as-is analysis stage**
  - **(2) The effects of improvements**
  - **(3) Existence of abnormality in the process after the reform**

Control Chart : The concept

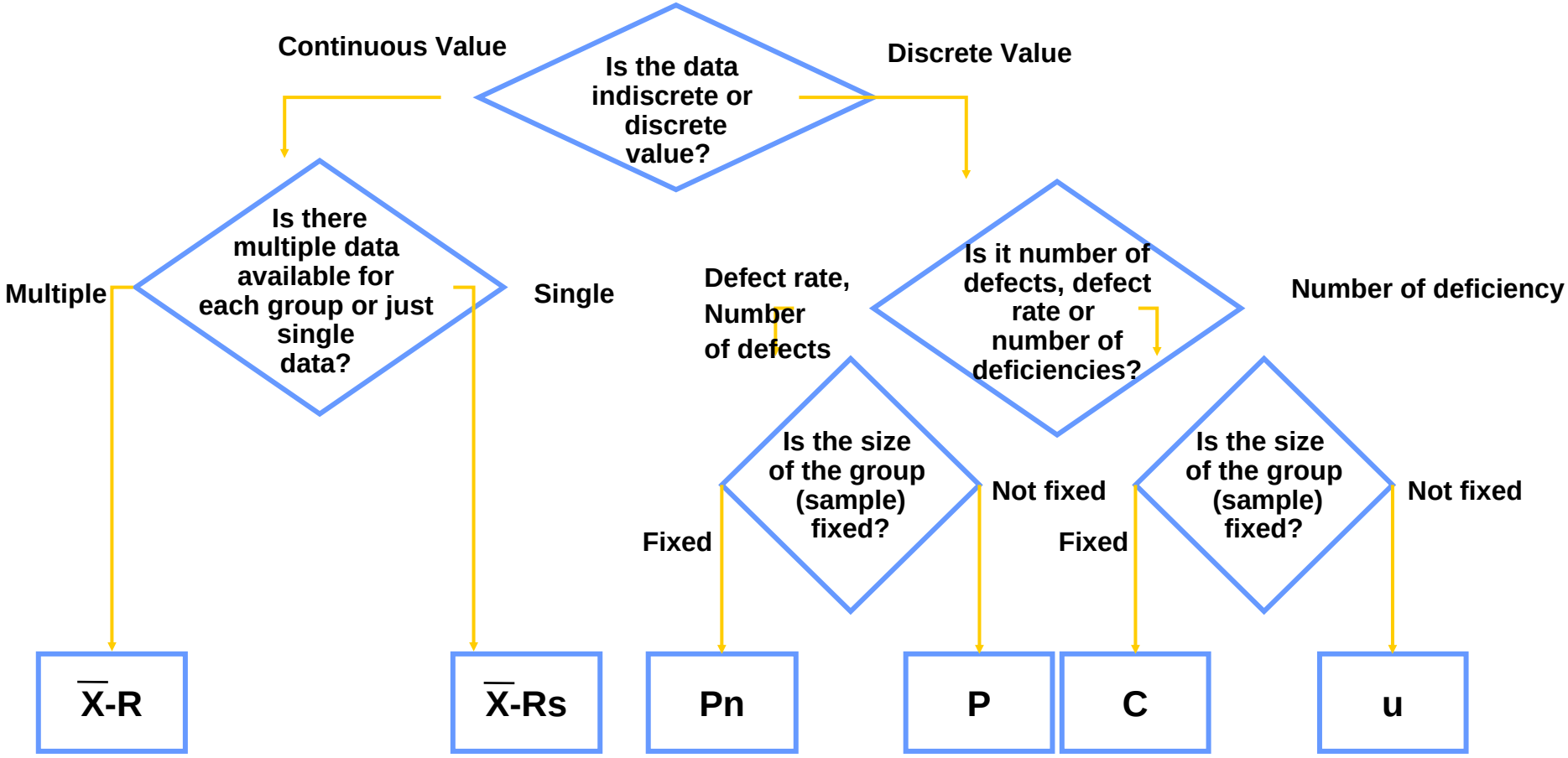


Control Chart = Alert and "Raise the Flag" before producing defects

Control Chart : The concept



Steps for Process Control Using a Control Chart



Steps for Process Control Using a Control Chart

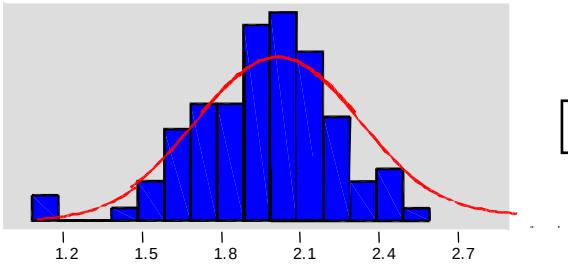
Steps	Points to Keep in Mind
<u>Step 1:</u> Choose the characteristic to control (what is the characteristic important for my customer?)	**Choose:** • **a characteristic that best describes the situation of the process** • **a characteristic with the next process in mind. Also, think of one which will meet the product quality in demand such as quality characteristic, control property and control item.** • **materials at the root cause of issues or characteristics of unfinished products as well. Do not limit it to the quality characteristic of the final product** • **Choose characteristics that are easy to measure and easy to correct. If difficult, choose another correlating characteristic** • **Also consider output, weight, number of man-hour, number of cases, etc.**

<u>Examples:</u> - Voltage output of a power transformer
- Light intensity of a bulb
- Number of cars sold per day
- Number of rejected parts per hour

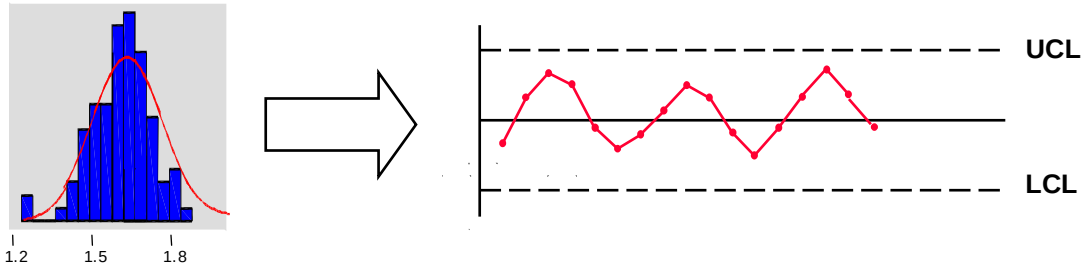
Steps for Process Control Using a Control Chart

Steps	Points to Keep in Mind
Step 2: Decide type of control chart to adopt	• **Choose a control chart following the steps described in previous page**
Step 3: Gather data	• **Collect around 100 data (depend of the process)**
Step4: Look at the processing capability	• **Investigate, using histogram and the process capability index to see whether process capability is sufficient or not** • **If the process capability is insufficient, improve the process until satisfactory level is reached**

Step 3 : Gather data



Step 4 : Validate Capability, Define Control Limits UCL and LC

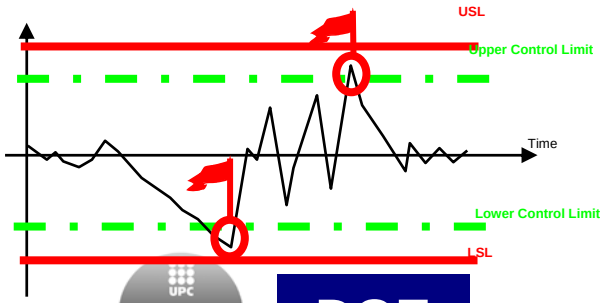


P(m,s)

UCL = m+3s **LCL** = m-3s

Steps for Process Control Using a Control Chart

Steps	Points to Keep in Mind
Step 5: Prepare control chart and control the process	• Establish a guideline to judge abnormality for each process taking into consideration its particular variance • Guideline for abnormality judgment is provided on the next page for reference • If the process shows abnormality, stabilize the process by investigating and eliminating the cause
Step 6: Revising the control line	Normally revision of control chart is carried out in following cases: (1)When there is alteration in the four factors of manufacturing (man, material, machine, method) (2)When the control chart indicates a change in process (3)When there are too many abnormalities (4)After a certain period has passed since establishing the control line, even if there has been no change in the process



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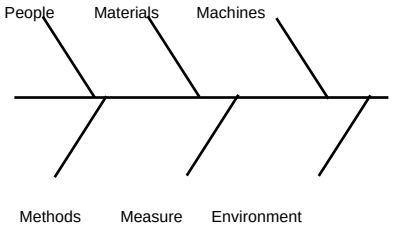

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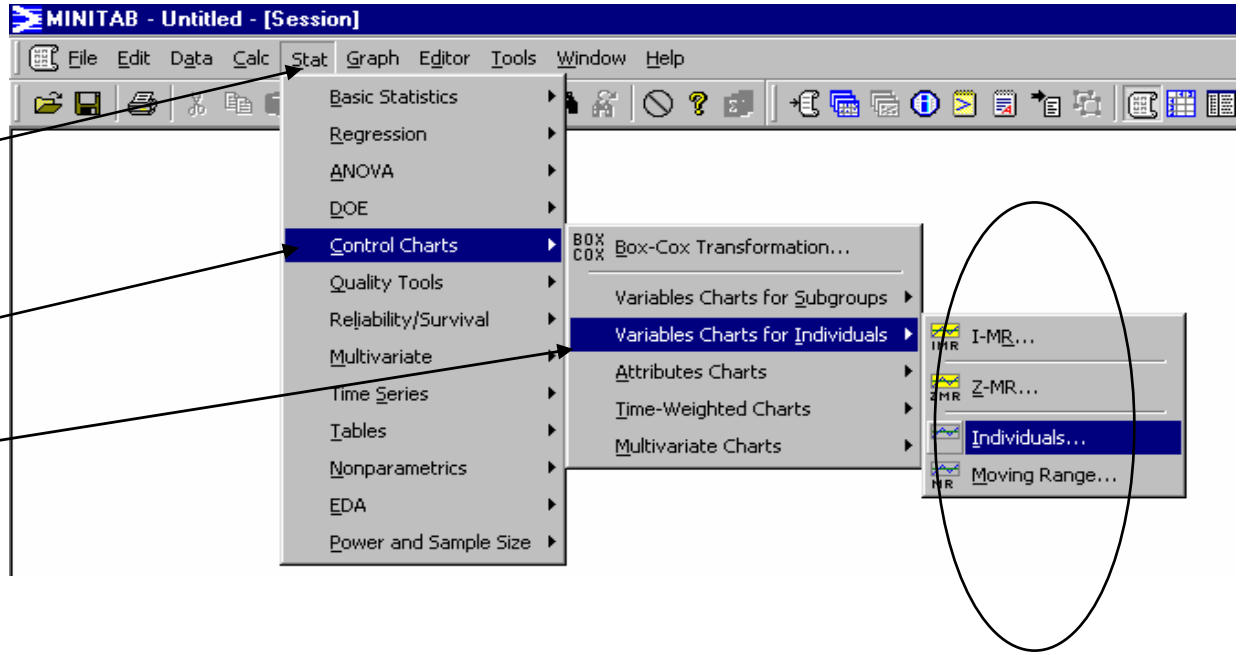
Maintenance
Standard Operating Procedures
Training
Expertise capitalization
Etc…

Control Chart with Minitab

Application exercice with MINITAB

1. **Stat**
2. **Control Charts**
3. **Select one type of chart**



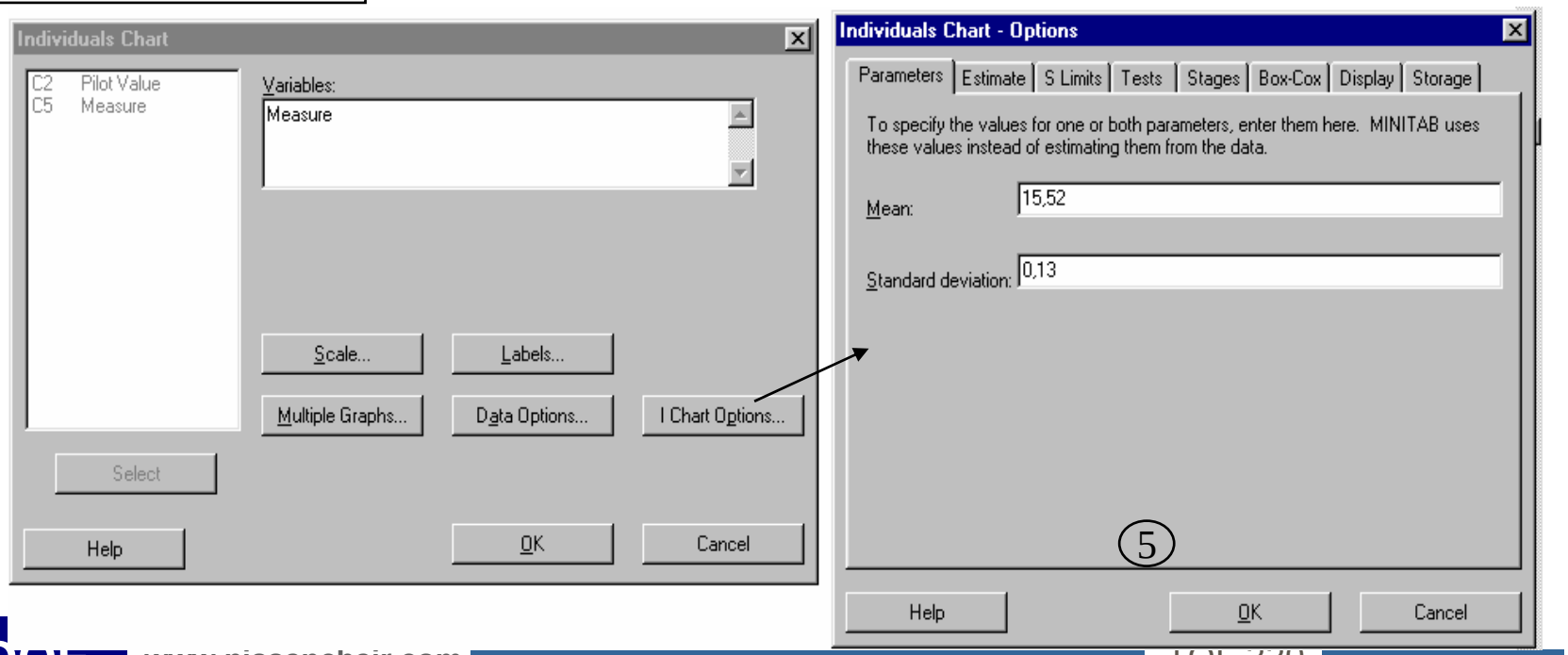
File : Control Chart 2.xls Tab : Individuals

1- Individuals

During the pilot phase, one measurement (size of a part) is collected per day. Those data are used to estimate the mean and sigma of the process. The following month, more date are gathered and an Individuals Control Chart is plotted.

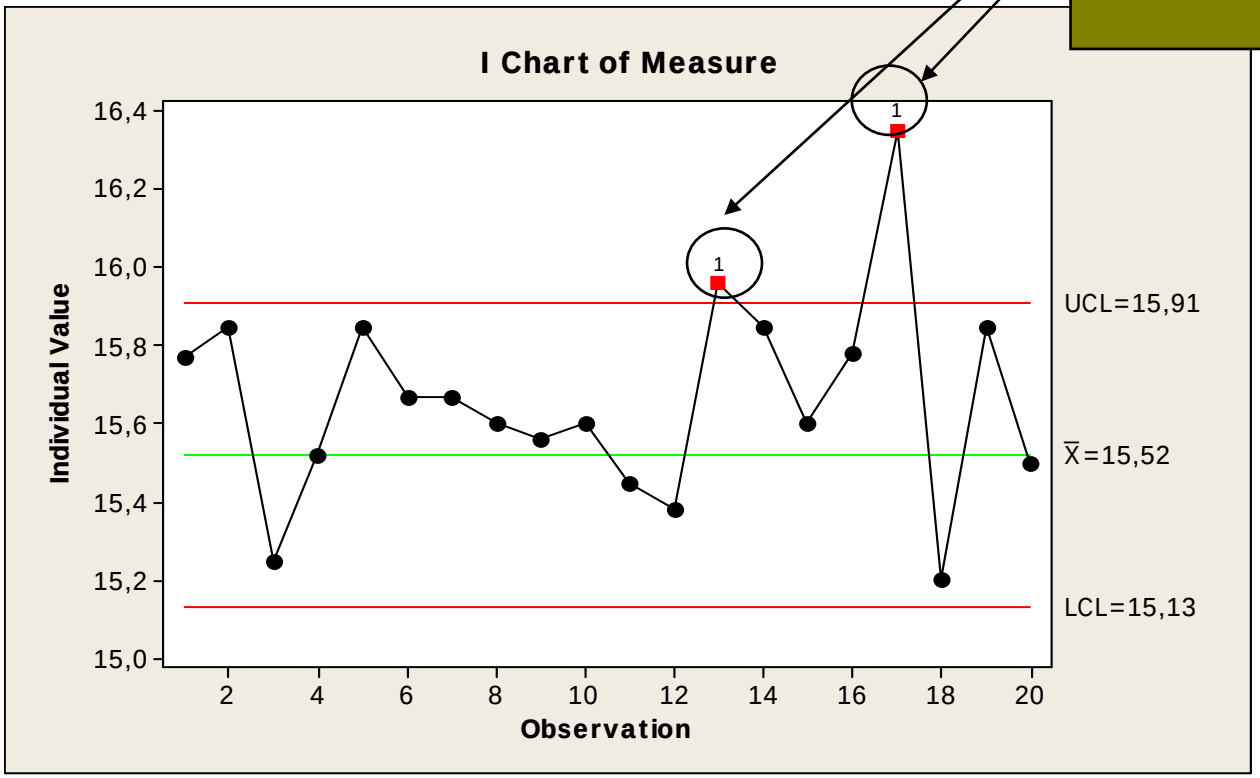
Variable	N	Mean	StDev
Pilot Value	20	15,52	0,13

CL = 15,28
UCL = 15,52 + 3*0,13 = 15,91
LCL = 15,52 – 3*0,13 = 15,13



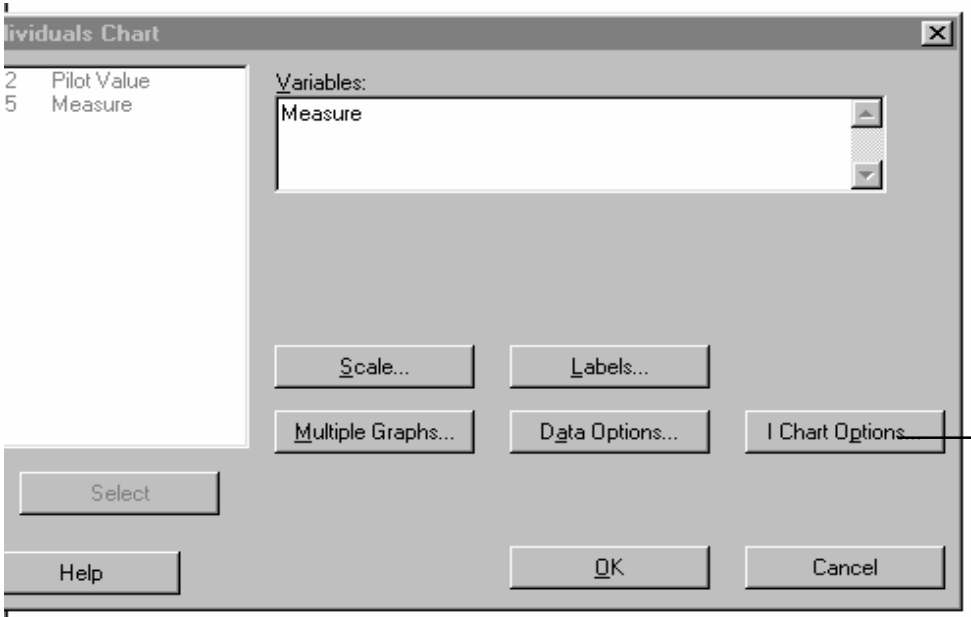
1- Individuals (cont.)

Those atypical points are highlighted automatically , following some specific tests performed by Minitab…



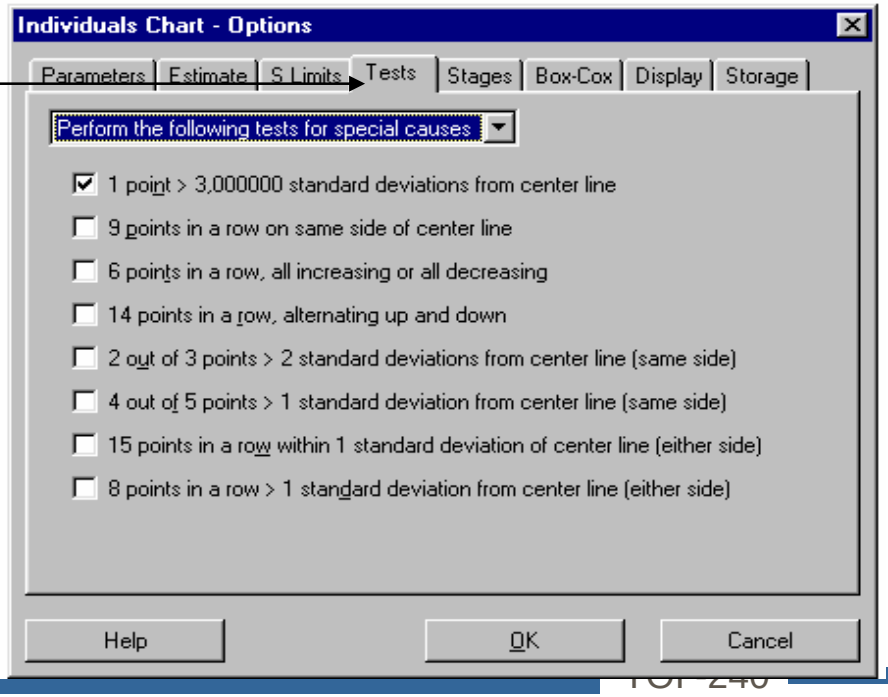
Test : How does-it work ?

1- Individuals (cont.)



Each of the tests for special causes, shown below, detects a specific pattern in the data plotted on the chart. The occurrence of a pattern suggests a special cause for the variation, one that should be investigated.

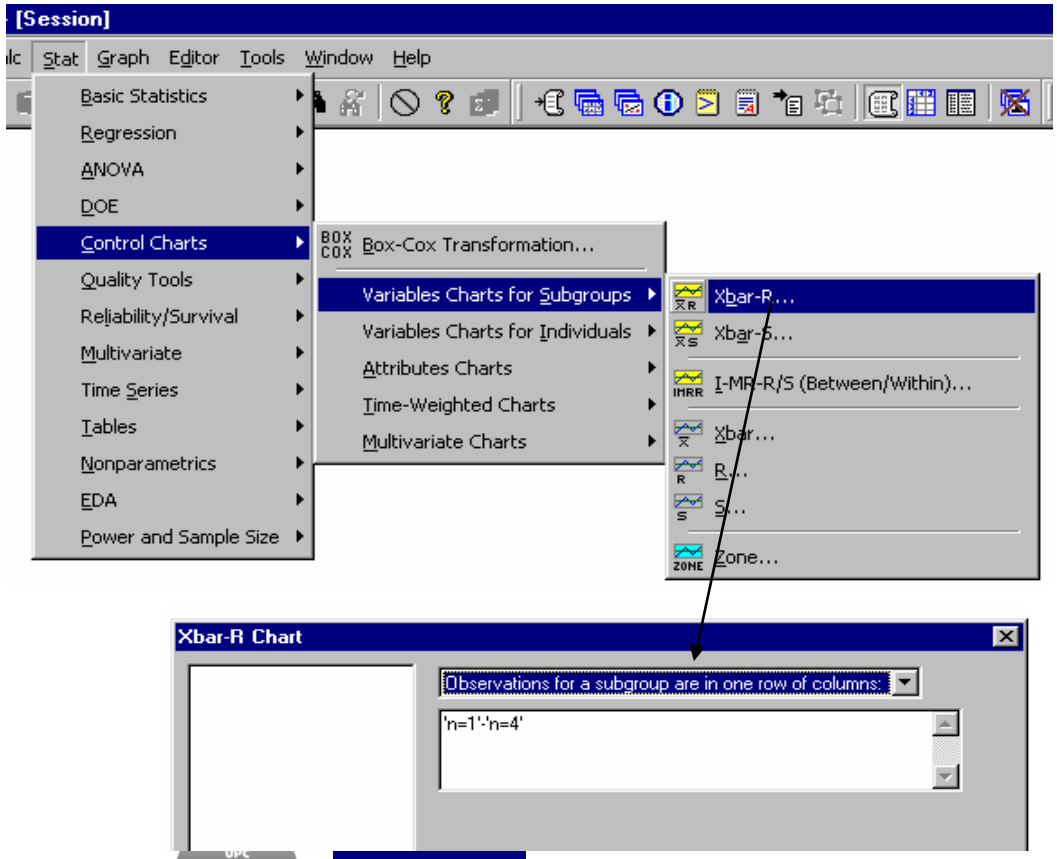
When a point fails a test, it is marked with the test number on the chart. If a point fails more than one test, the number of the first test in your list is the number printed on the chart.

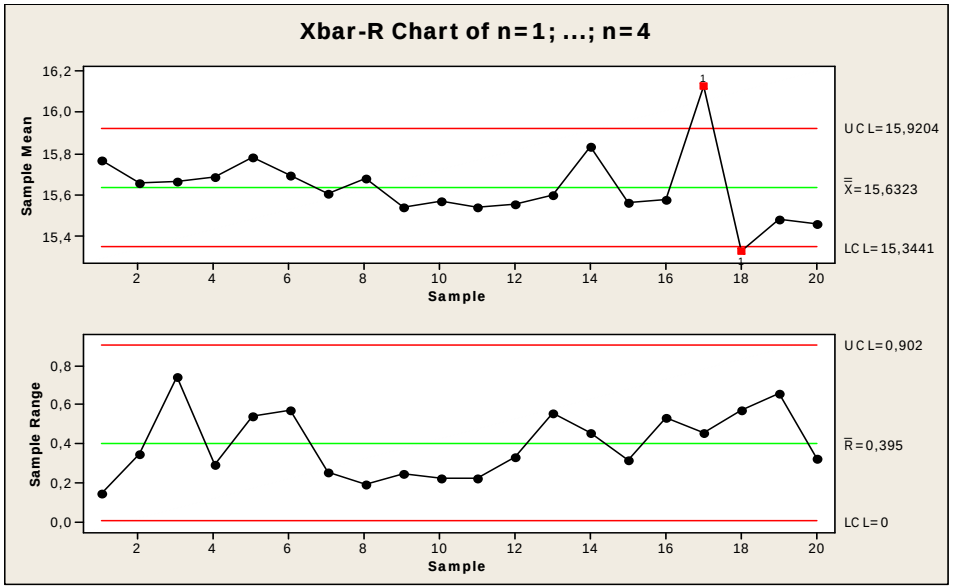


Tests for Judging Abnormalities Using Control Chart

2- Xbar-R control chart

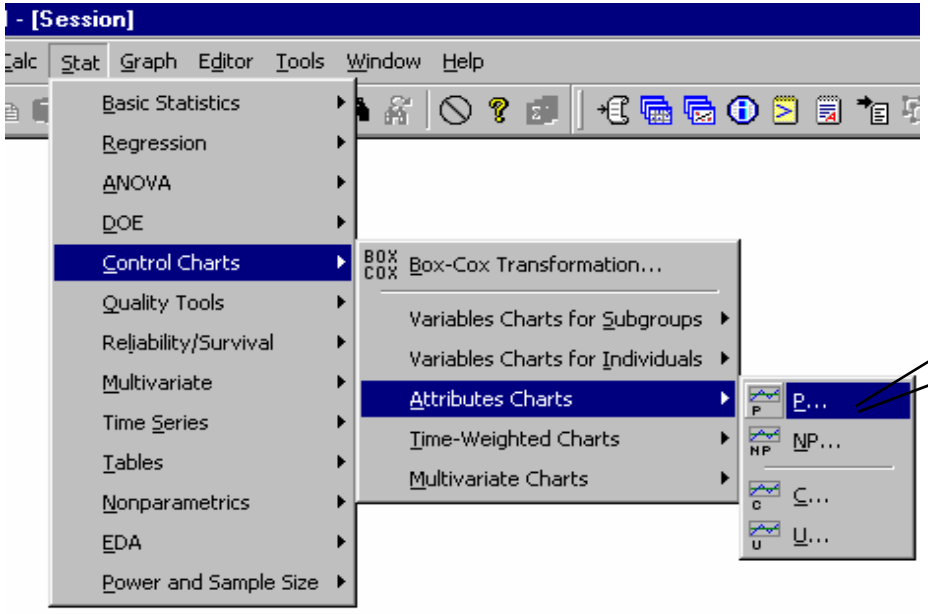
In this example, we are getting 4 measures per day. We are interested in the average value (Xbar) per day, but also the range (R) per day.

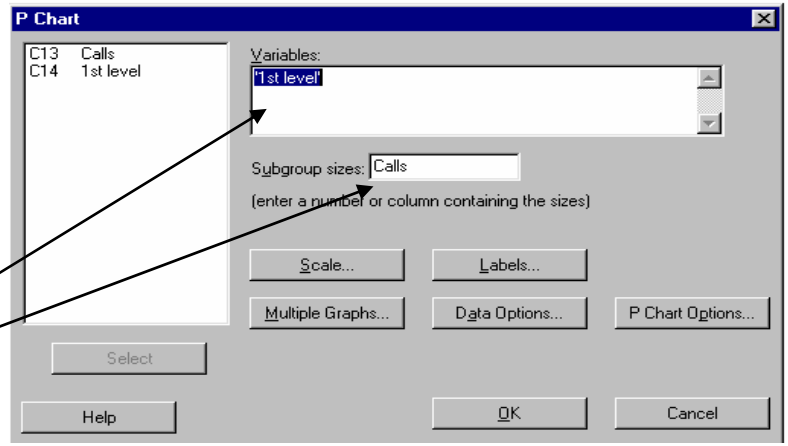


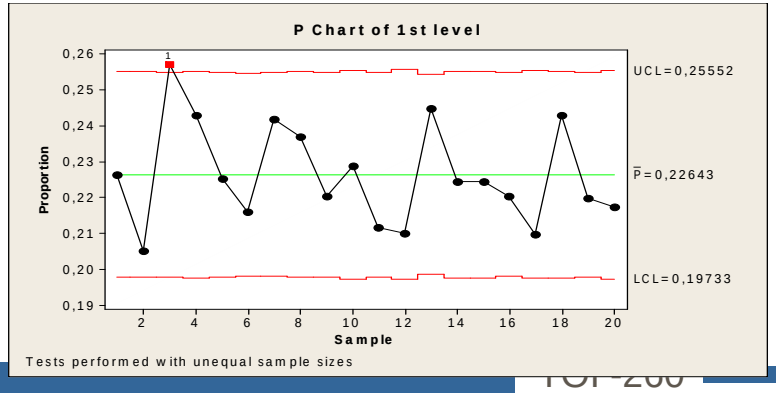


3- P-Control chart (for binomial law)

We are collecting the number of calls received by a Call Center. The number of calls closed within the first contact are also registred and we want to monitor the proportion (P-chart) of those calls.



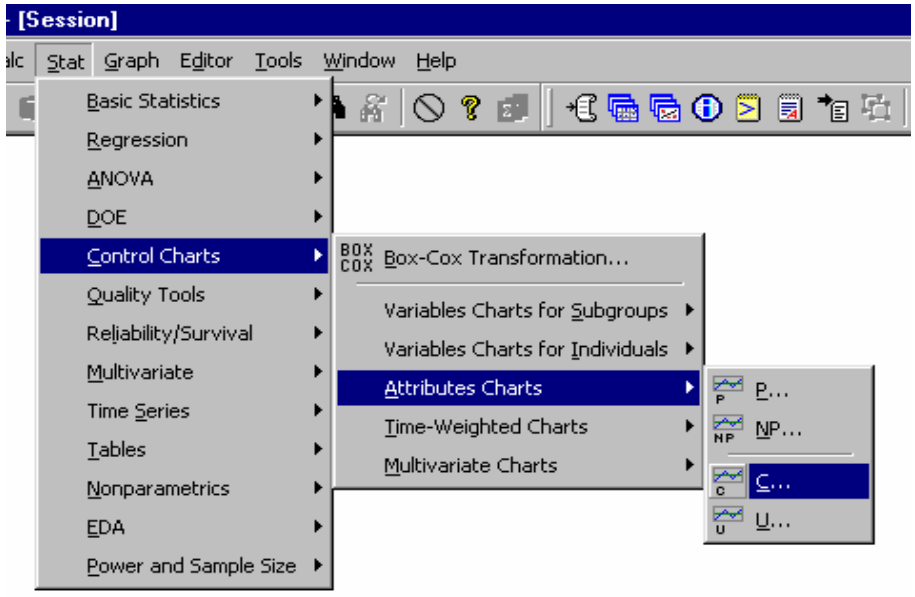


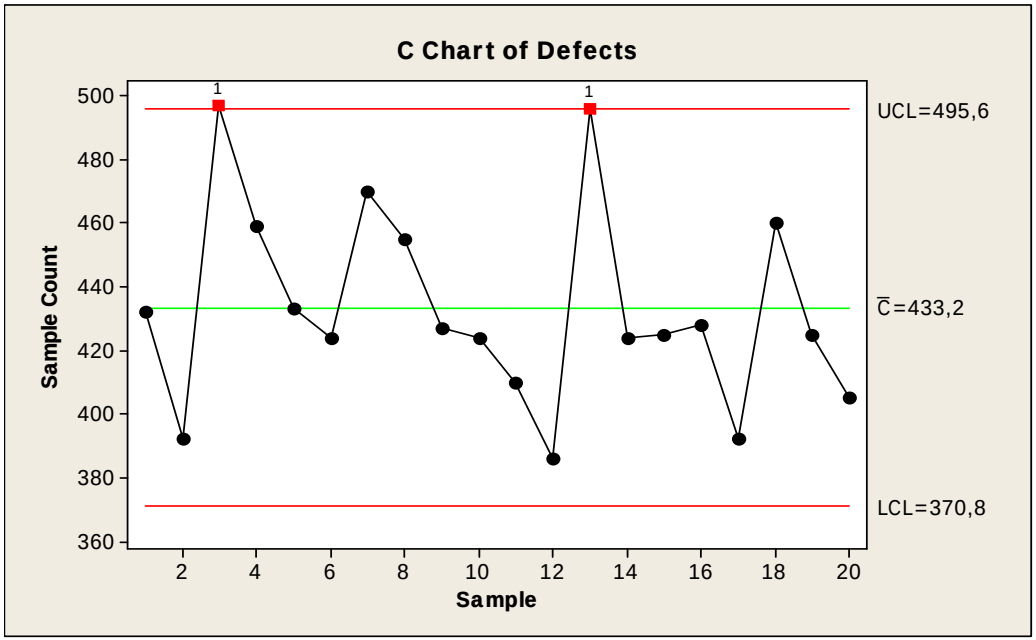


Note : when the sample size is constant, we can use a np chart

4- C-Control chart (for Poisson law)

We are collecting the number of defects within a printed circuit board. Considering there are 1000 solder joints within one board, we gathered the number of defective solder join within 100 boards.



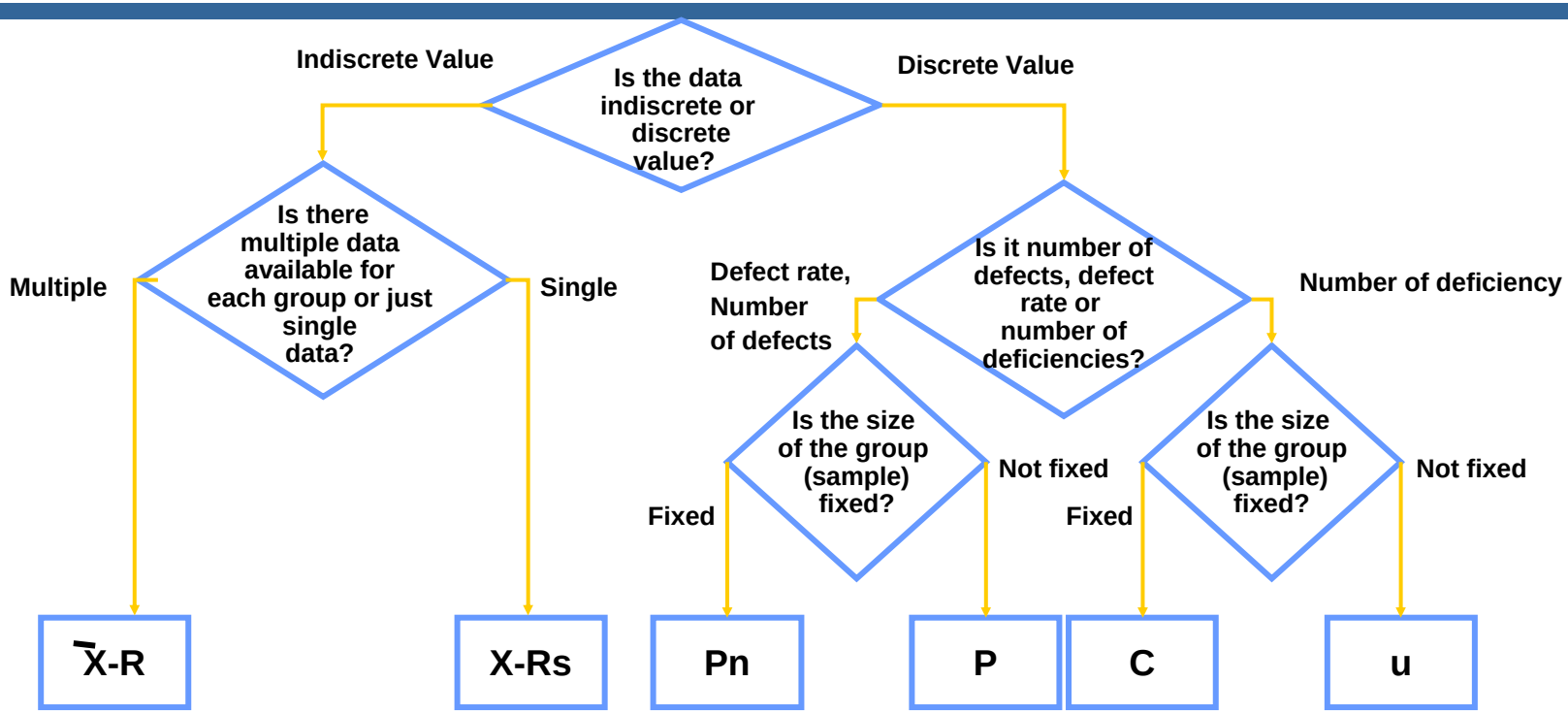


Remark : when the sample size is not constant, we will use a u chart

Control Charts Summary

Types of Control Charts			Application	Tips
Control Chart by Indiscrete Value	The Mean Value and Range ($\bar{x}$-R control chart)	Mean Value ($\bar{x}$ control chart)	Often used when the length, weight, strength and time of quality is controlled by a sequence of values (measurement value). This delivers the most information.	$\bar{X}$ control chart controls activities mainly as the mean value between groups. The R control chart controls the variance between groups. Each group should be given 4 to 5 n's.
		Range (R control chart)		
	Value of each Data (x control chart)		Used for measurements derived from data with extremely long intervals. Also applied when the x-R control chart is gong to take too much time for grouping.	When used together with Rs control chart, it is known as x-Rs control chart.
	Transference Range (Rs control chart)			
Control Chart by Discrete Value	Number of Defects (pn control chart)		Used when the number of tests is fixed and the quality is controlled by the number of defects.	For the number of defects and number of second rate products, set the n value so that pn tops 5.
	Defect Rate (p control chart)		Used when the quality is controlled by the defect rate	Can be applied to both the rate of operation and attendance. Set the value n so pn will top 5.
	Number of Defects (c control chart)		Used when the quality is controlled by the number of defects. (size of a group, n, is fixed)	Number of defects stands for damages in cloth and iron plate, mistakes in document transfers
	Number of Defects per Unit (u control chart)		Used when the quality is controlled by the number of defects. (the unit number of groups and n may differ)	Define the unit size by square measure and length. This will be the unit value "n".

Steps for Process Control Using a Control Chart

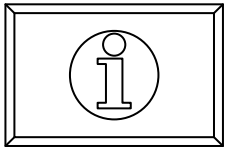


Keep **I**t **S**tatistically **S**imple !

1- Make sure you monitor the right measurement
2- Use the appropriate Control Chart and don't abuse of alarms
3- Have a corrective action plan.

Ejercicio

- **Desafío para ingenieros**



La clave del éxito es:

CRITERIO CLARO Y SEGUIR ESTRICTAMENTE LAS FASES DEL PROYECTO

Tiempo: XX min (ejercicio) + 50 min (todas las presentaciones)

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Punto Final

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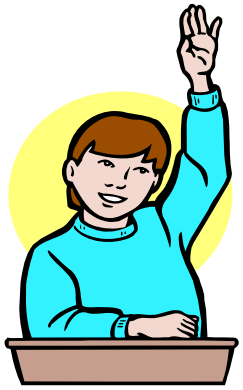
Mis Expectativas



Implicación en la formación

Aptitudes y Actitudes profesionales

Disponer de unas herramientas útiles

Disfrutado con la formación

Gracias

y

Mucha Suerte

ruben.rami@nmisa.es