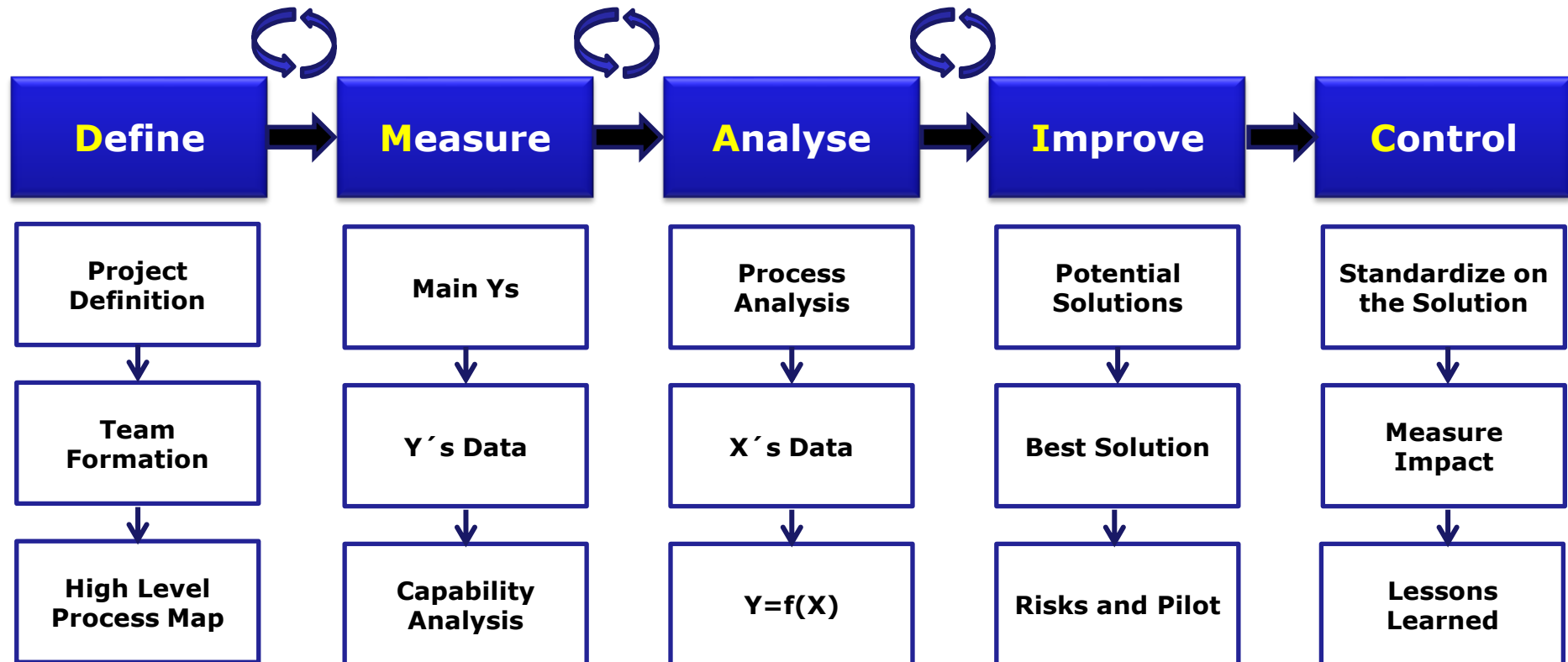


## DMAIC- CONTROL

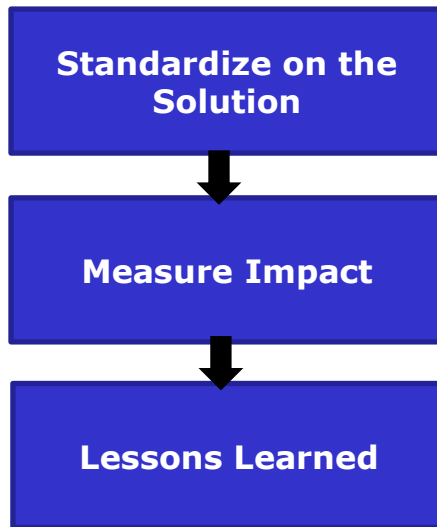
Standardize on the Solution/ Measure Impact / Lessons Learned

Green Belt's Training | Jun 2021

# Roadmap Six Sigma – DMAIC for improving products and processes



# CONTROL



Try Answering:

How will the process be measured after the implementation of the improvements?

How can solutions generate organizational learning?

Did the project achieve its objectives?

Make sure the project is complete.

There should be clear confirmation of project results. The main control must be related to the X's variables.

# Control: Main Deliverable

## Fundamental Requirements:

1. Suggested control mechanism (CEP, FMEA, Inspection, ...).  
Control focus on X or Y?
2. Compute the Gains
3. Project Closure and Lessons Learned

$$Y = f(X) + Z$$

# Standardize on the Solution

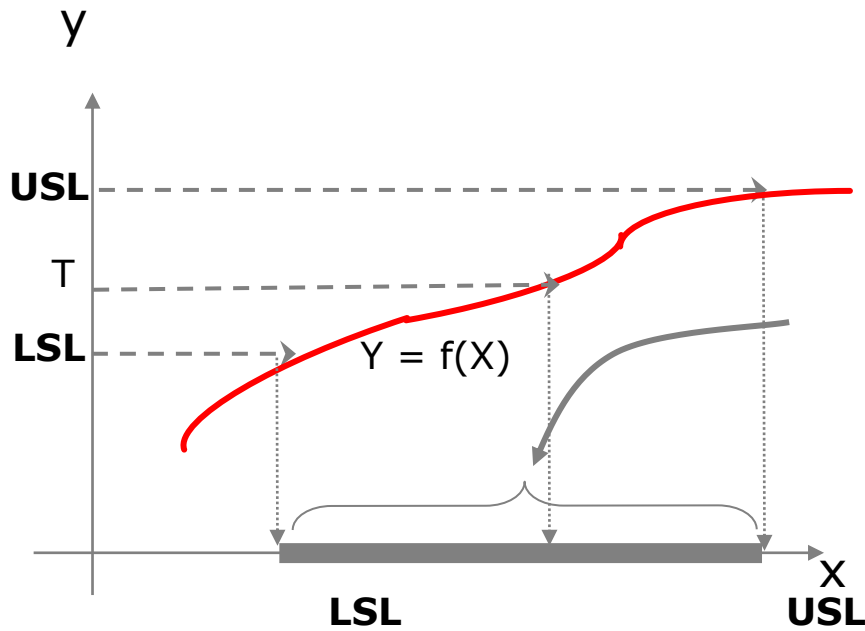


Objective of Control: To monitor and to correct

# Control

- ***A control system can incorporate:***
  - ***Error-Proofing Mechanisms (Poka Yoke)***
    - ***Statistical Process Control (SPC)***
      - ***Data collection plans***
        - ***Checklists***
    - ***Standardization (ISO, BPF, QS ...)***
      - ***Inpections***

# Control in X

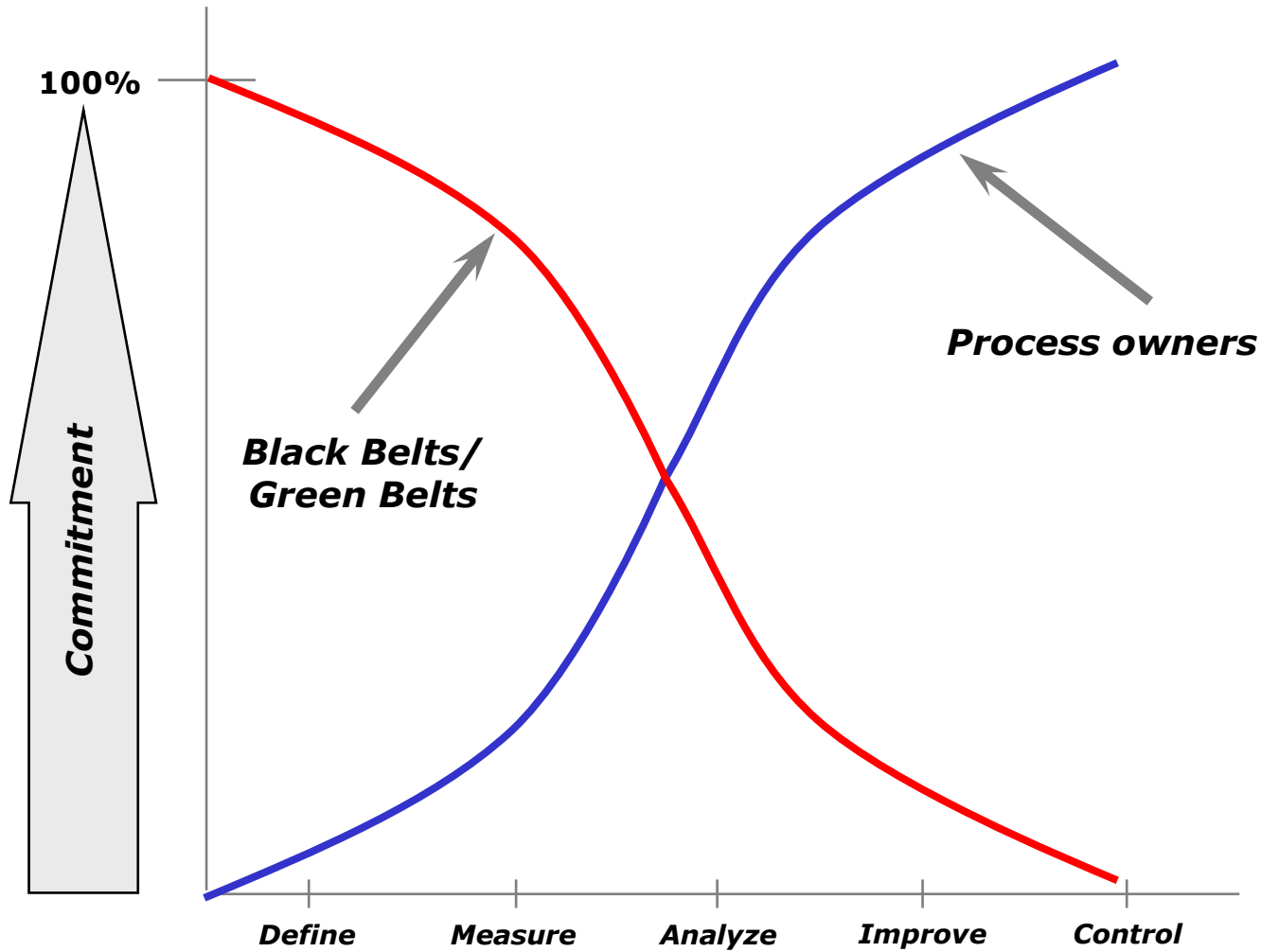


Focus in Y is just inspection

$$Y=f(X)$$

The focus should be preferable in **X**

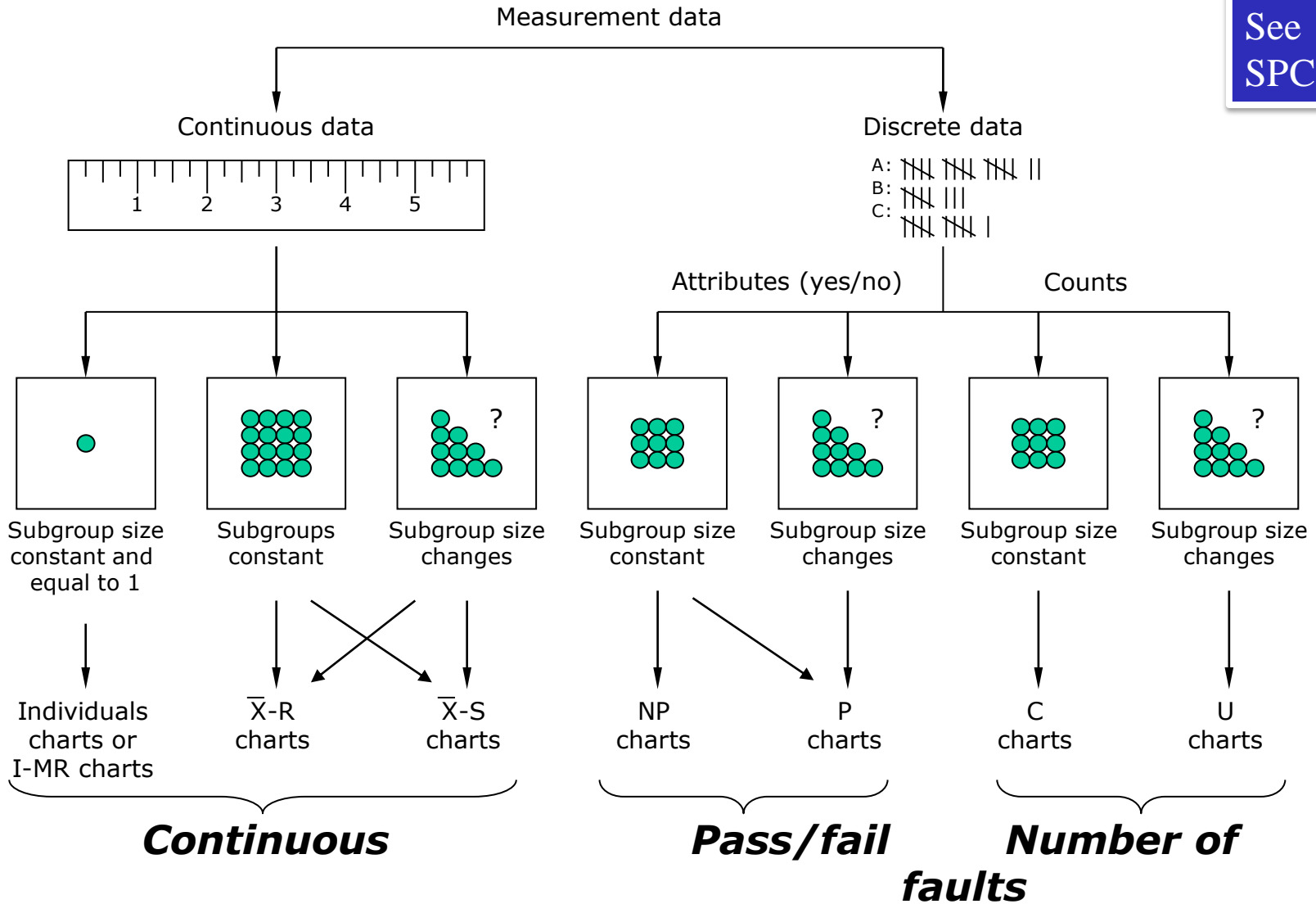
# Commitment





# SPC - Control Chart types

See  
SPC.ppt



# Poka-Yoke - Error-Proofing Mechanism

## **In the project:**

Parts that are not reversible. (American plug)

Guide pins, stops: to ensure alignment / setup.

Visual verification after assembly.

## **In manufacturing:**

Avoid manual tasks-automation

Using Bar Codes

Use of bi-manual control on presses.

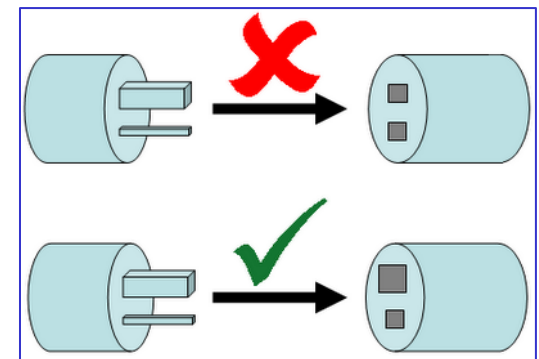
## **In business processes:**

Check digit in CPF / Current account number

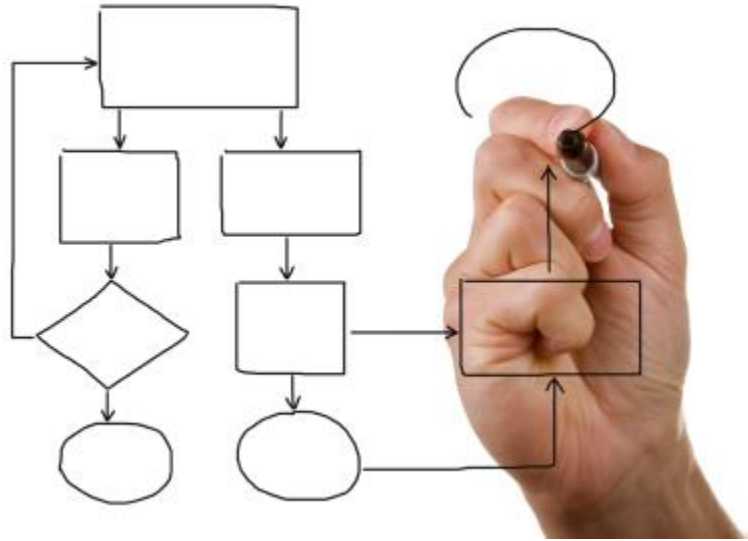
Standardized forms and / or checklists

Self-check IR declaration (only sends if there is no error)

See  
PY.ppt



# Standardization



Create Simple Procedures for your solutions, without bureaucratizing and without inflexibilizar creativity.

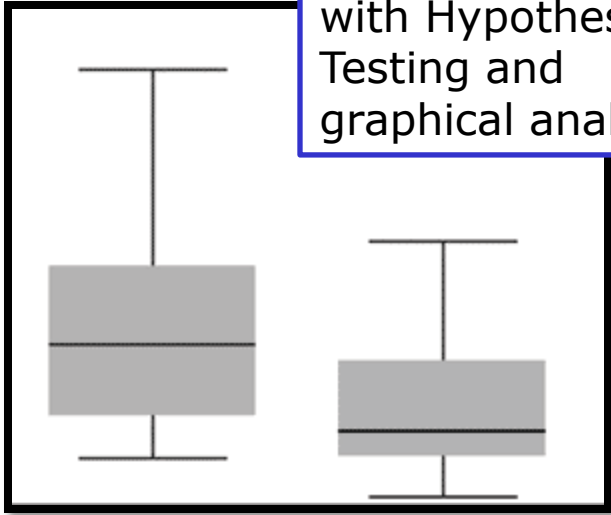
# Measure the Impact



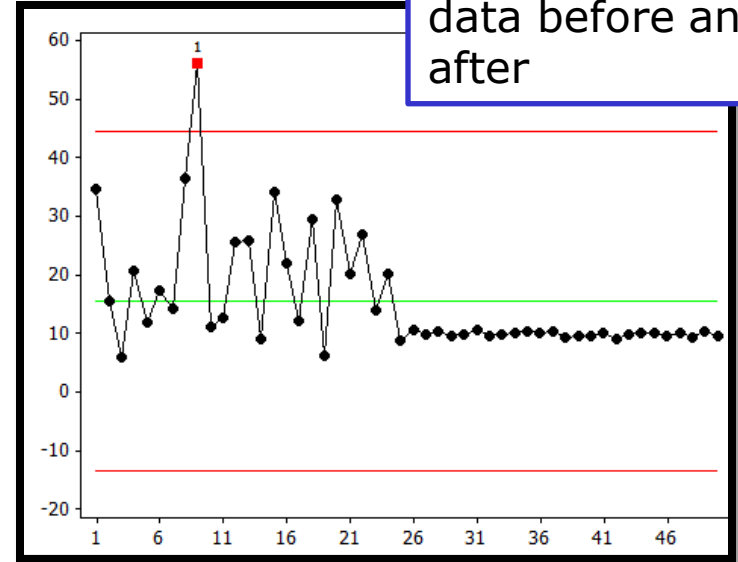
Use the most diverse tools to quantify the improvements you have made. Be realistic and consult your organization's financial auditors to justify the savings.

# Close the Project

Confirm all gains with Hypothesis Testing and graphical analysis



Display process data before and after



Display a cost sheet. List all savings



# Lessons Learned



- What was learned about the project in general?
- What was learned about project management?
- What was learned about communication?
- What was learned about budgeting?
- What was learned about procurement?
- What was learned about working with sponsors?
- What was learned about working with customers?
- What was learned about what went well?
- What was learned about what did not go well?
- What was learned about what needs to change?
- How will/was this incorporated into the project?

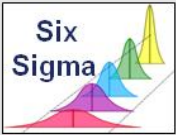
# Controlled Documentation

**"Energy for entropy"**

**"A well documented 6  
Sigma Project is an  
Excellent Quality  
Planning!"**



# Template



**Use the Six  
Sigma Template  
to present your  
project**

**XXXXXXXXXX XXXXXXXX  
XXXXXXXXXX XXXXXXXX**

**Green Belt: XXXXXXXXXXXX  
Cliente(s): XXXXXXXX  
Status do Projeto: X % realizado  
Data: XXXXXXXX**