



5. juni 2012

# Resilience Engineering

Is it possible in the care pathway?

Mrs J. Hounsgaard

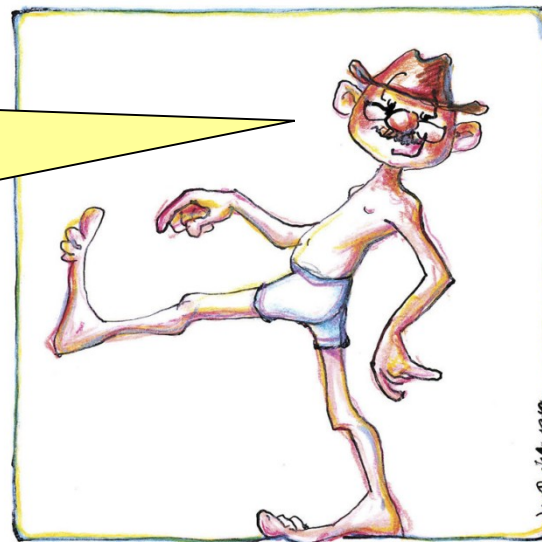
Center for Kvalitet



# Topic

The design of resilient - and not only reliable - processes in the care pathway, by using the principles of ETTO and the Process Approach.

The care pathway  
of patients with suspected  
hip fracture



# Reliable versus resilient

- **Reliable** <sup>1)</sup>:  
"The system works the way you designed it!"
- **Resilient** <sup>2)</sup>:  
"The ability of a system to keep, or **recover quickly** to, a **stable state**, allowing it to continue operations during and after a major mishap or in the presence of continuous significant stresses."

1) Source: Faculty visit IHI, "Patientsikkert Sygehus", Kolding Sygehus, 17. november 2011; Frank Federico, "How to design reliable Processes in Healthcare

2) Source: Hollnagel E., Woods D.D., Leveson N.: Resilience Engineering; 2006; ISBN-13: 978-0-7546-4904-5, page 275

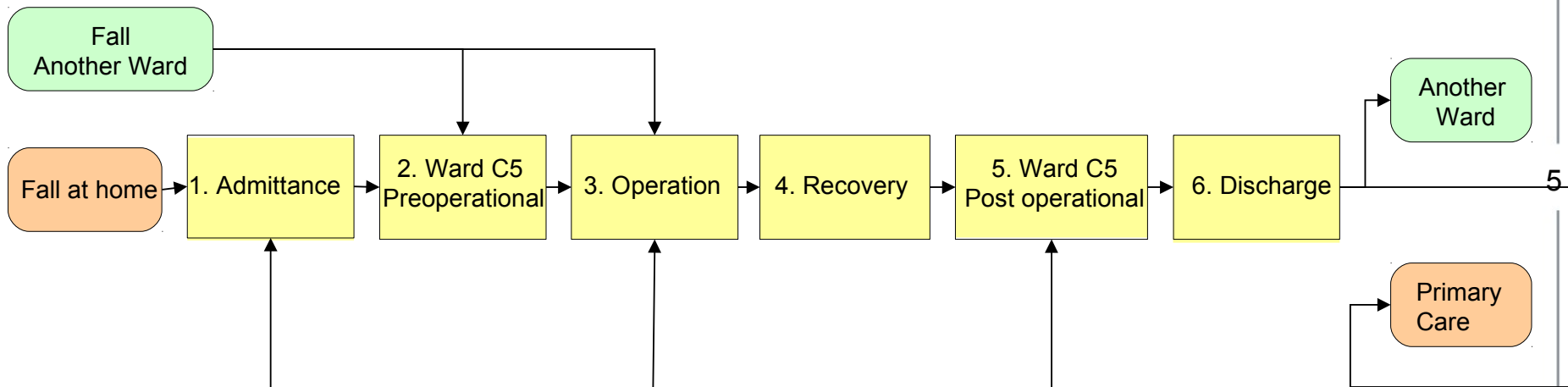
# Reliable versus resilient

- **Resilient** <sup>3)</sup>:

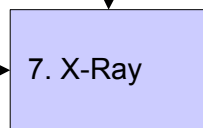
”The intrinsic ability of an organisation to adjust its functioning prior to, during, or following changes or disturbances, so that it can sustain required operations under both expected and unexpected conditions.”

# Care pathway: Suspected hip fracture

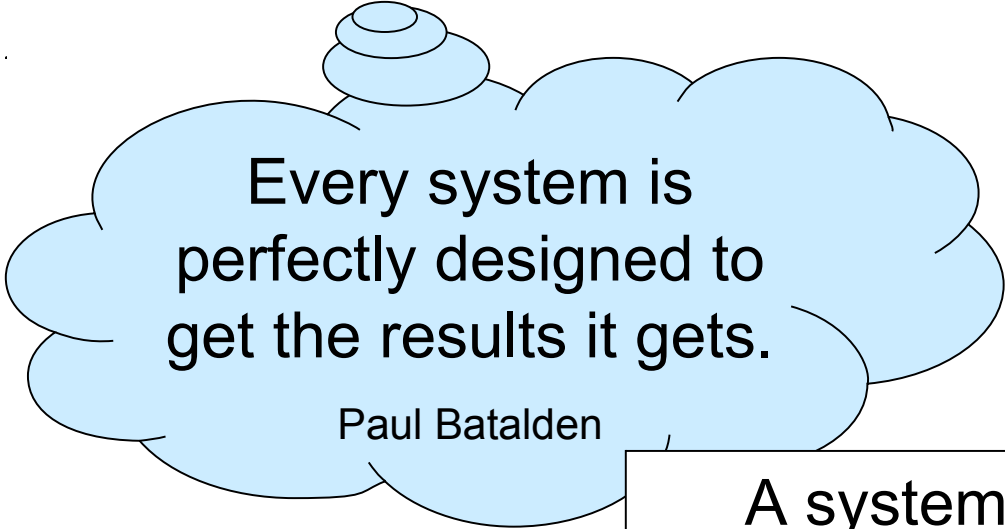
## Core Processes



## Support Processes



# Systemic thinking



Every system is perfectly designed to get the results it gets.

Paul Batalden

A system consists of processes.  
To understand the system,  
we need to understand every process  
and its **interrelations** and **interactions**  
with the other processes in the system.

Source: Nelson E.C., Batalden P. B. ,  
Godfrey M. M.: Quality by design 2007; ISBN  
978-0-7879-7898-3, page 205

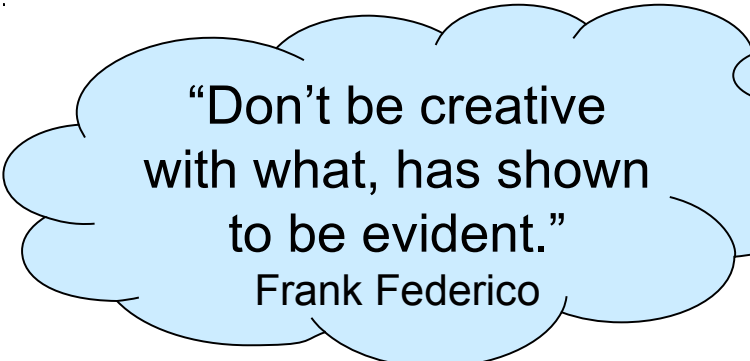


*"If you can't describe  
what you are doing  
as processes,  
you don't know,  
what you are doing."*

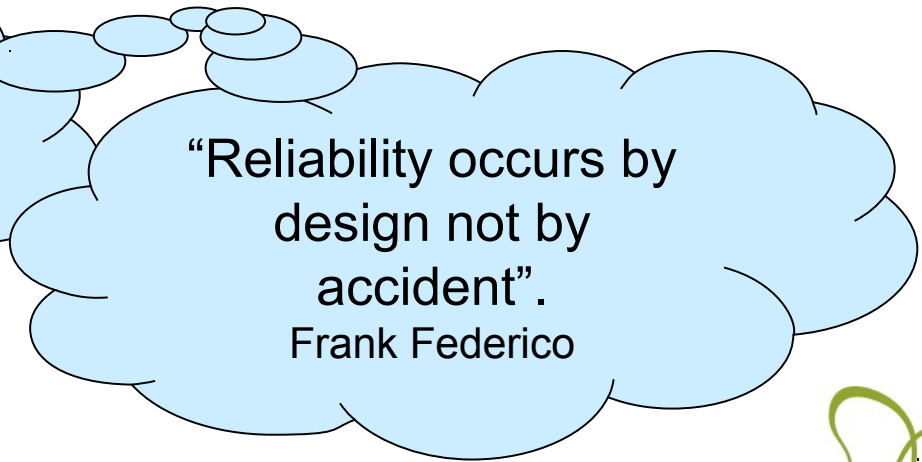
W. Edwards Deming (1900 – 1993)

# Process Approach

- To design reliable processes to achieve intended output/defined goals.
- Segmentation of processes into activities allows the perfection of the design.
- For each activity you must define: Who does what, when, where, and with what = “Work-as-imagined”

A light blue thought bubble with a black outline, containing text. It is connected to another thought bubble on the right by a series of smaller circles.

“Don’t be creative  
with what, has shown  
to be evident.”  
Frank Federico

A light blue thought bubble with a black outline, containing text. It is connected to another thought bubble on the left by a series of smaller circles.

“Reliability occurs by  
design not by  
accident”.  
Frank Federico

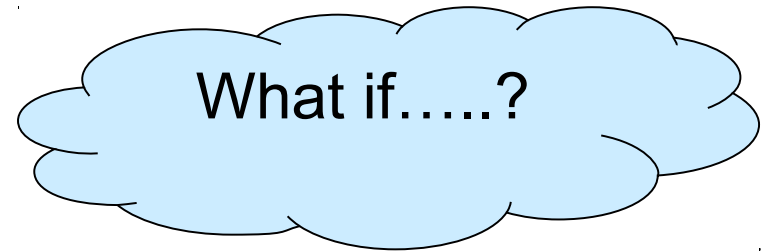
Source: ISO 9000 Introduction and Support  
Package: Guidance on the Concept and use  
of the Process Approach for management  
systems, Document: ISO/TC 176/SC 2/N 544  
R3

31-05-2012



*Legislation  
Vision, Mission and Values  
Policies, Strategies and Goals  
Plans  
Procedures and Instructions  
Forms (paper/electronic)  
Responsibilities and Authorities  
Process Data  
Budget*

## Controls

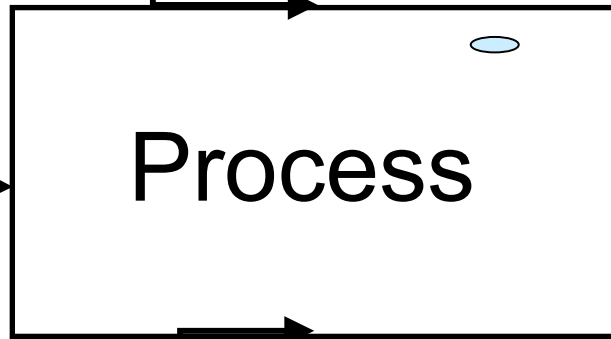


*Treated patient  
Product/Service  
Information and Data  
Registrations*

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## Input

*Patient  
Information and Data*



## Output

## Resources

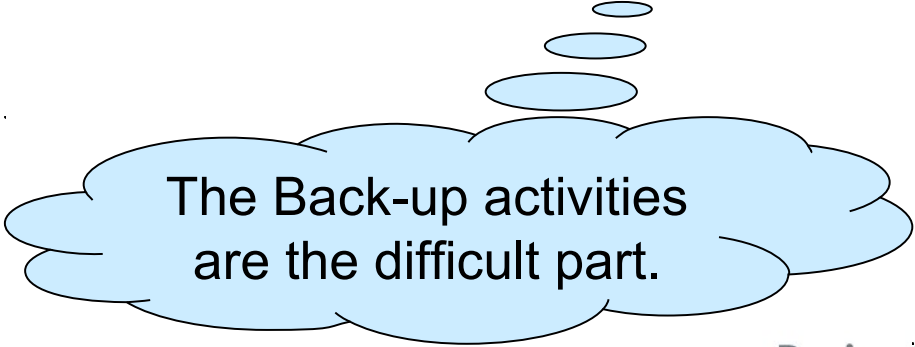
*Competent staff  
Buildings and Equipment  
Materials and Tools  
Energy, Water and Gases  
Master Data  
Money*



# How to ensure reliability?

Source: Faculty visit IHI, "Patientsikkert Sygehus", Kolding Sygehus, 17. november 2011; Frank Federico, "How to design reliable Processes in Healthcare"

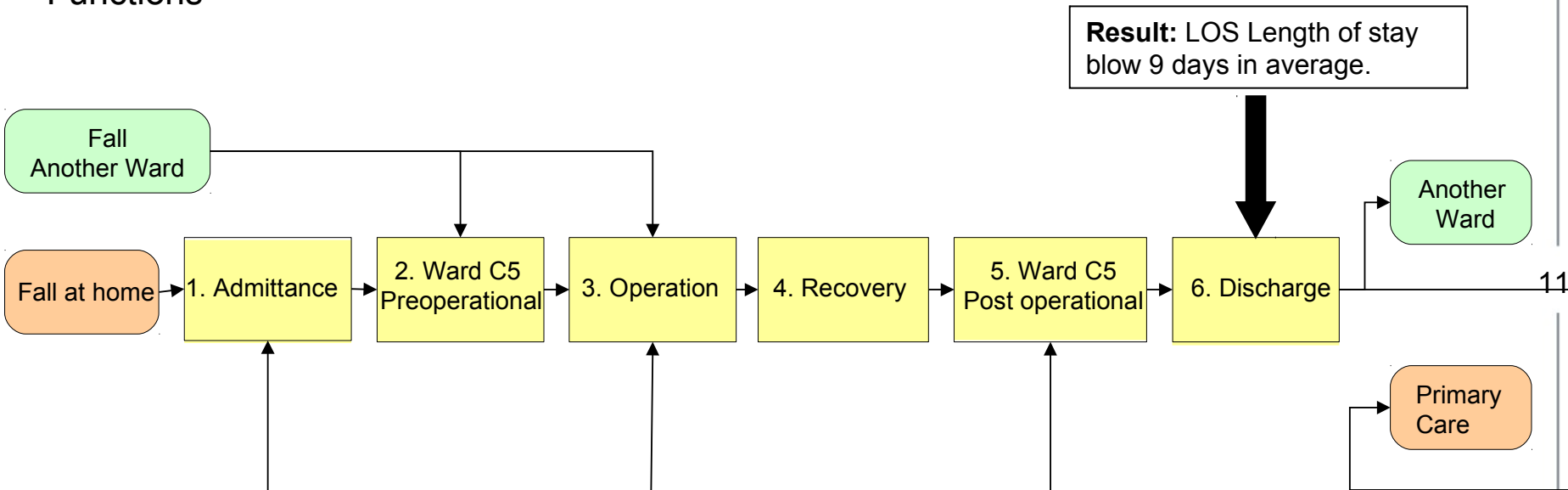
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The Back-up activities  
are the difficult part.

# Care pathway: Suspected hip fracture

## Foreground Functions



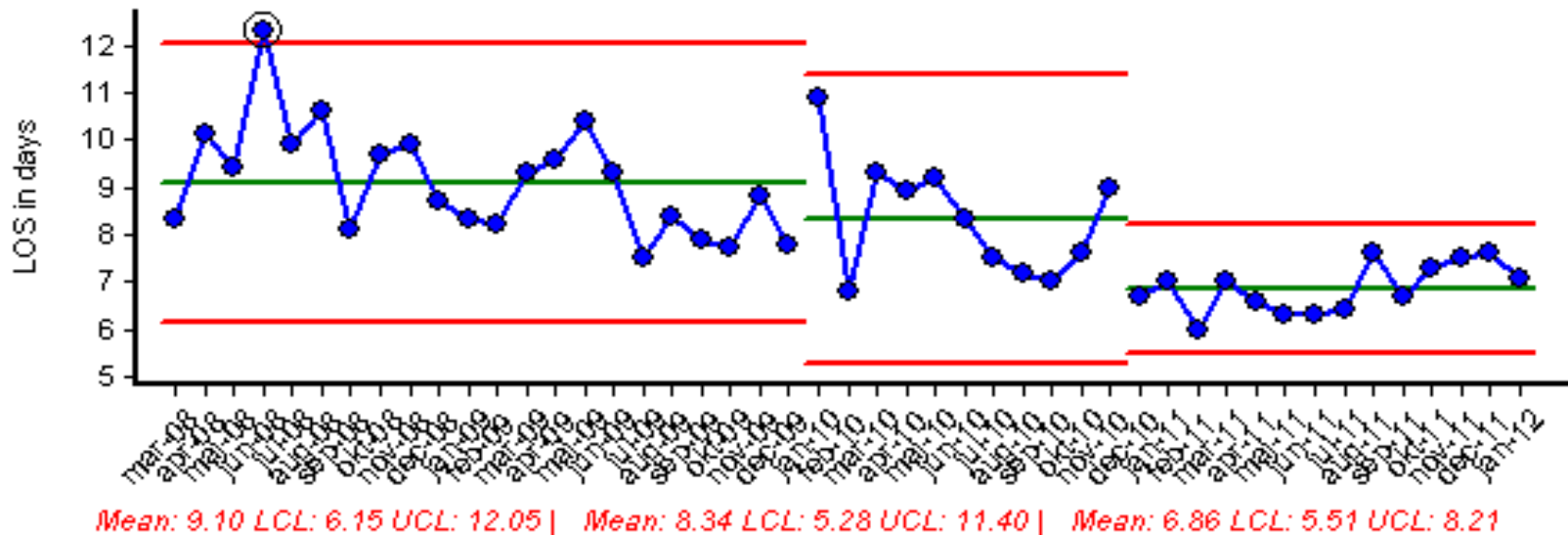
## Background Functions

# Care pathway: Suspected hip fracture

N=47

Average of LOS (IChart). Patient discharged per month.

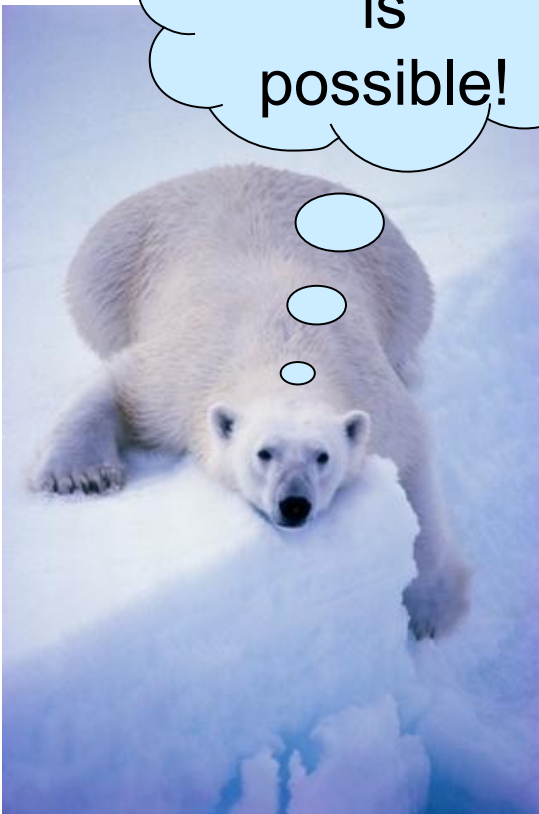
Break at January 2010 and december 2010.



EpiData Analysis Graph

Is the reliable process also a resilient process?

# Discussion: From reliable to resilient?



I believe it  
is  
possible!

- ? How will the critical processes in the care pathway react:
  - to a major mishap or other disturbances
  - in the presence of continuous significant stresses.
- ? Are the staff able to **keep** or **recover quickly** to, a **stable state**.
- ? What is the difference between “Work-as-imagined” and “Work-as-done”.

# Thank you for listening!



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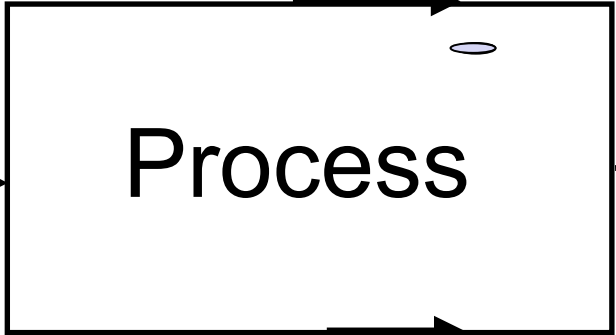
*Legislation  
Vision, Mission and Values  
Policies, Strategies and Goals  
Plans, Procedures and Instructions  
Forms (paper/electronic)  
Responsibilities and Authorities  
Process Data  
Budget*

Precondition  
Time

**Controls**

*Treated patient  
Product/Service  
Information and Data  
Registrations*

**Input**



**Process**

**Output**



**Resources**

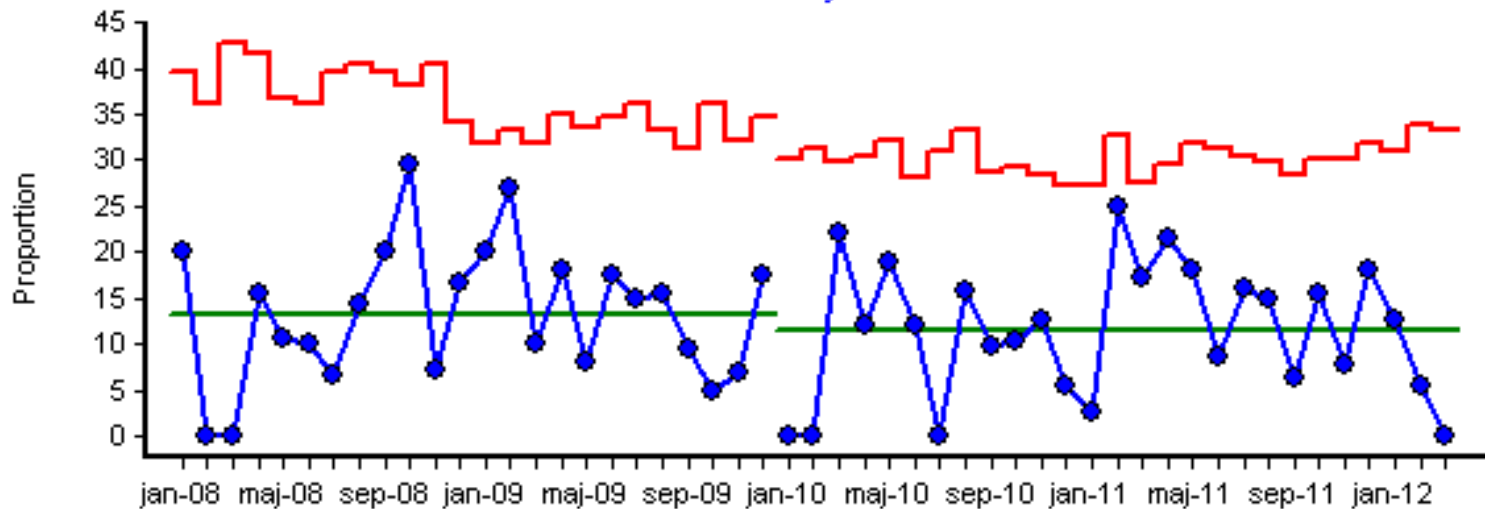
*Competent staff  
Buildings and Equipment  
Materials and Tools  
Energy, Water and Gases  
Master Data  
Money*



# Eksempel: Hoftenære frakturer

30-days mortality (P-chart). Patients died within 30 days/patient discharged.

Break at January 2010.



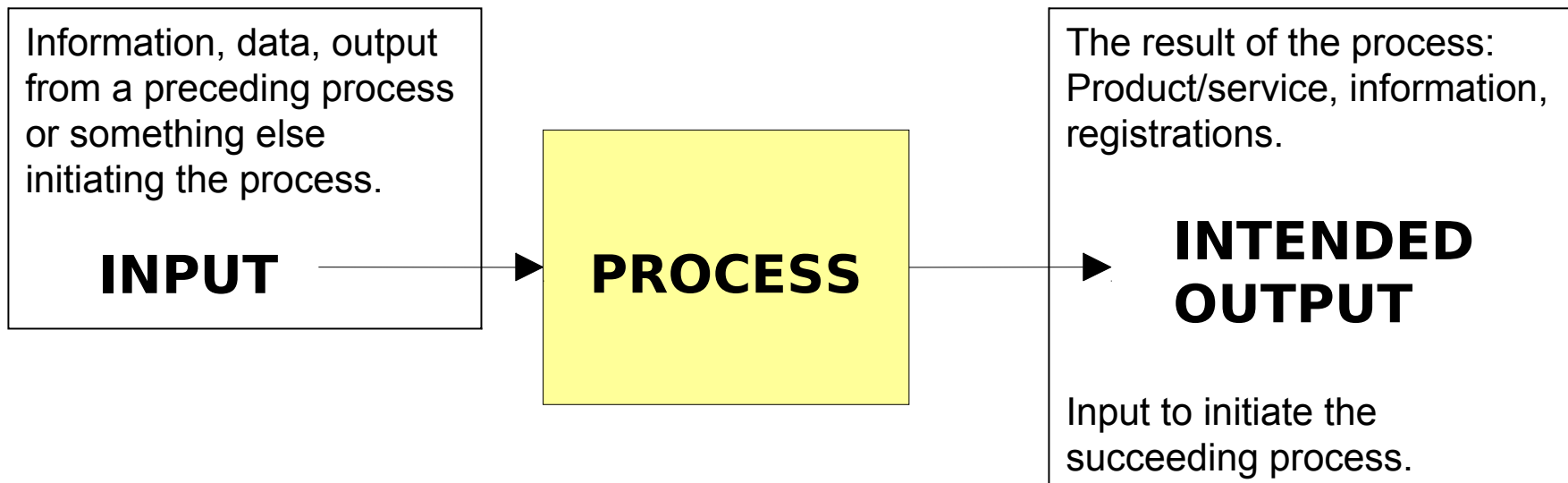
Mean: 13.32 | Mean: 11.43

EpiData Analysis Graph



# What is a process?

A set of interrelated or interacting activities, which transforms inputs into outputs and creating value at the same time.

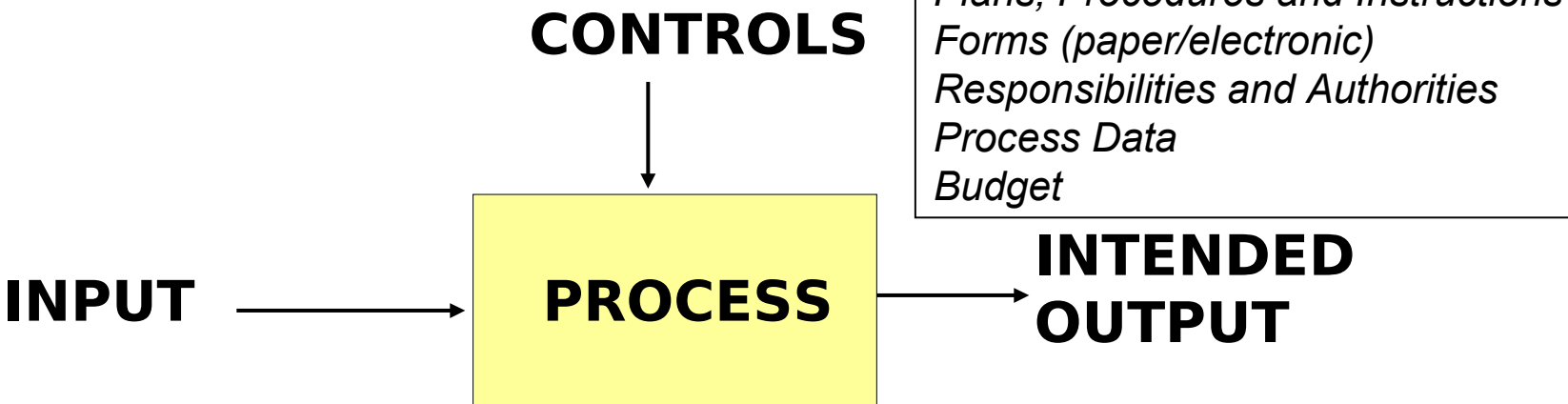


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Source: ISO 9000 Introduction and Support Package: Guidance on the Concept and use of the Process Approach for management systems, Document: ISO/TC 176/SC 2/N 544 R3

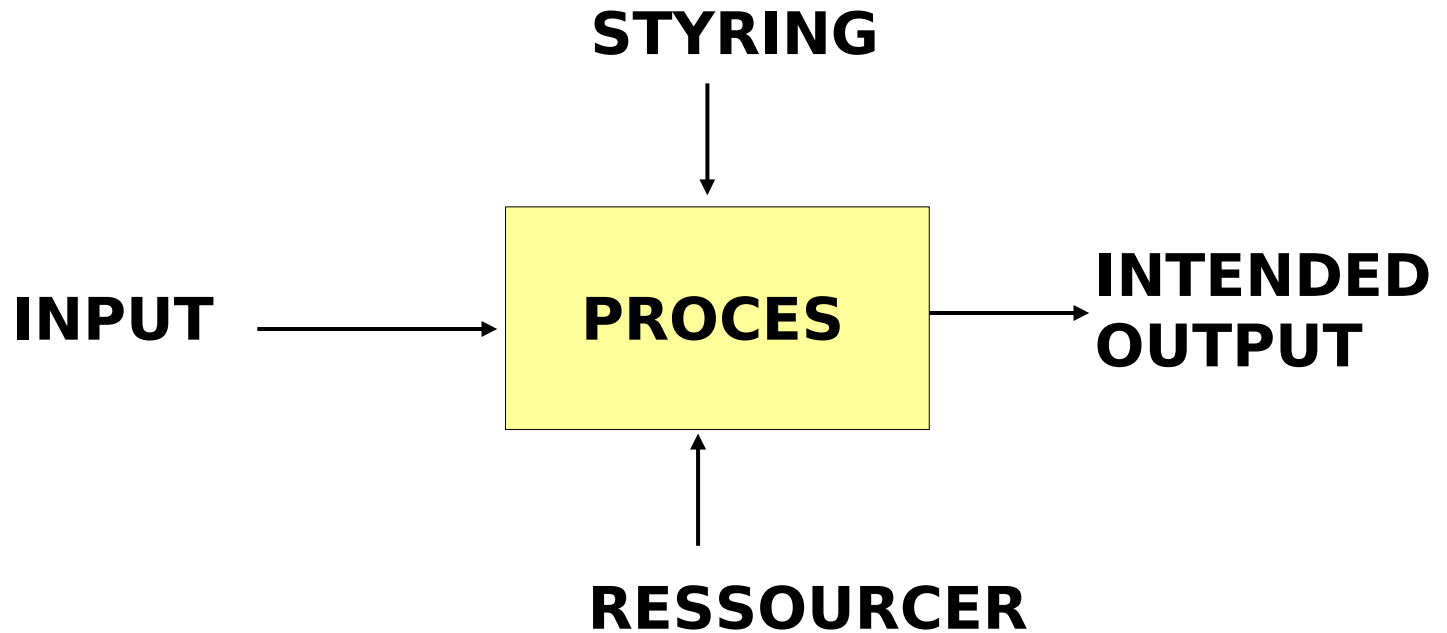
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# What is controls?



Source: ISO 9000 Introduction and Support Package: Guidance on the Concept and use of the Process Approach for management systems, Document: ISO/TC 176/SC 2/N 544 R3

# What is Resources?



**Resources provided to complete the process as intended:**

*Competent staff*  
*Buildings, Equipment and Components*  
*Materials and Master Data*  
*Money*



Source: ISO 9000 Introduction and Support Package: Guidance on the Concept and use of the Process Approach for management systems, Document: ISO/TC 176/SC 2/N 544 R3

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Region Syddanmark