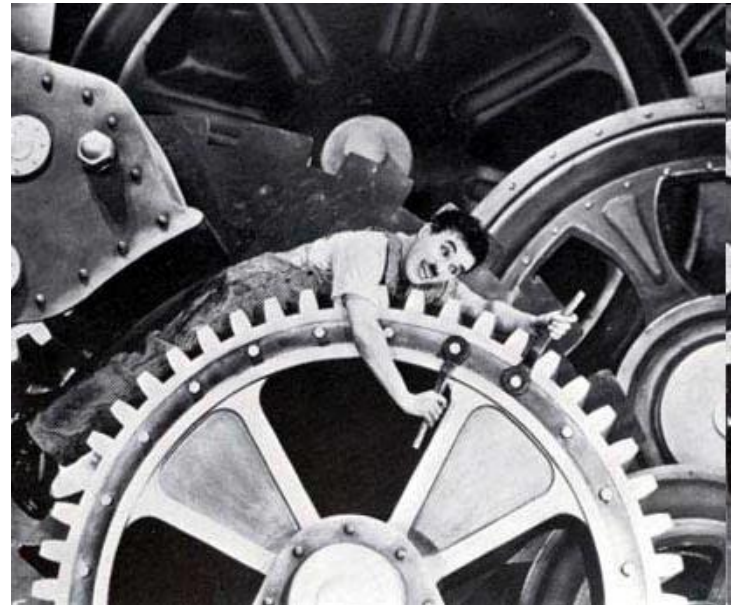




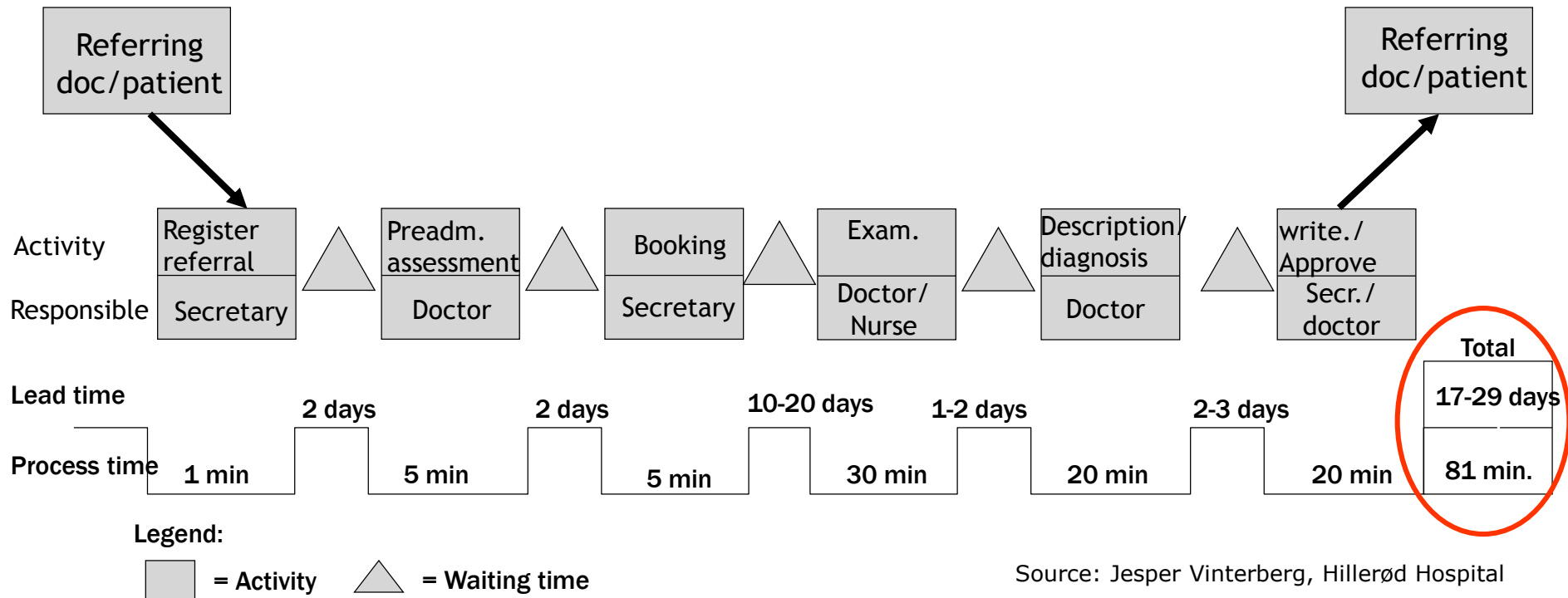
# Work environment

- Differentiate between
  - Physical
  - Psychosocial
- Physical work environment
  - Smoke, noise and dirt
  - Mechanical exposure
  - Getting worn down
- Psychosocial work environment
  - Social relations
  - Mental wellbeing
  - How employees thrive at work
  - Stress



# Basic tool: Value stream mapping

Example



Source: Jesper Vinterberg, Hillerød Hospital



PROCESSEN  
INDTÆGTE

PROCESSEN

AKTIVITETER

UNDERTAGELSE

ANTAL  
LØST

SPILD

IDEER & LØSNINGER

MODTÆGELSE AF  
FRANSMÅK

Et ugentligt møde  
med patienter GS

Papir, heve  
og kopier af  
dokumentation

Navn, titel  
og adresse

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

VISITATION

STØTTE TIL LÆGERE I  
DE ERHVERVSLIGE ÅR

Diagnose  
med  
oplysninger  
om sygdom

PE  
OPRETTELSE I GS

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

INDKALDELSE

Planlægning af  
møder  
med patienter  
og læger

Tidspunkt  
for møder  
med patienter  
og læger

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

MØDTAGELSE AF  
PATIENT I AMB.

Medarbejdere  
i ambulatoriet  
skal være  
oplyst

Dr. Rasmussen  
skal være  
oplyst

PE  
OPRETTELSE I GS

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

UNDERSØGELSE  
& HÅNDLING

Opfølgning  
på undersøgelser  
og handlinger

Journal til  
undersøgelse

PE  
OPRETTELSE I GS

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

PATIENT-  
ADMINISTRATION

Journal til  
undersøgelse

PE  
OPRETTELSE I GS

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

NYT BESØG  
(KONTROL/BEHANDLING)

Journal til  
undersøgelse

PE  
OPRETTELSE I GS

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

ABSOLUT  
MØDE

Journal til  
undersøgelse

PE  
OPRETTELSE I GS

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

HÅNDLER TELEFON-  
KONTAKT I HENHENDELSE  
Medarbejdere  
skal være  
oplyst

PE  
OPRETTELSE I GS  
For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

For at sikre  
at alle er  
oplyst

24/01/2011

# Future state Gynecology ward

Henvi sning, visitation og indkaldelse	Undersøgelse og behandling	Patient-administration	Afslut patient
Alle henvisninger modtages elektronisk inkl. billedmateriale. Henvi sning visiteres hver morgen. 1 læge   5 min.	Ankomstregistrering med sygesikringskort. Pt. Indtaster højde, vægt, anamnese i OPUS på PC venteværelse. Evt hjælp fra lægesekr. 1 patient /1 lægesekr.   5 min	Journal skrives og registrering foretages samme dag eller indenfor 24 timer. Sekretær   5-20 min	Tastning af diverse skemaer (DUGA-base etc. Indenfor URO) 1Sgpl./l.sekr.   30m/sk.
Patient modtages på henvi sning, brev til patient om at ringe 1 sekretær.   5 min	Patient kaldes til stue via nummervi sning. 1 sygeplejerske   5 sek.	Henvi sning til andre funktioner Sekretær   5 min	
Patient ringer selv og booker tid. Alle forventede undersøgelser bookes. 1 sekretær   5 min	Anamneseoptagelse pba. patientens indberetning. Tilrettes direkte på skærm. (1. patient på dagen: Samtidig klargøring til GU, prøvetagning + instrumenter.) 1 læge + (1 sgpl).: 10 min	Journal til læge når svar er kommet Sekretær   2 min	
Patienter mailer evt. spørgsmål og får elektronisk svar 1 sygeplejerske   5 min	Assistere patient med tøj og lejr ing. 1 sygeplejerske   3-5 min	Signering af svar elektronisk – lægge recept på EPM-server+ ringe, skrive til pt. Og journalnotat 1 læge   15 min	<b>17 Activities</b>
SMS til patient med reminder om tid. (Evt. automatisk) 1 sekretær.   5 min	GU + UL og prøvetagning. Information til patienten – plan for videre forløb. Booking af resterende tider. 1 læge+1 sgpl   15 min	Løbende tastning af div. skemaer (DCBG etc.) 1 sekretær   3 min/ skema	
	Diktering og klargøring til GU, prøvetagning + instrumenter mv (næste patient).. 1 læge + 1 sgpl.   10 min		
Procestid: ca. 25 min Gennemløbstid: 2,5 dage	Procestid: 46 min Gennemløbstid 1 dag (eksklusiv ventetid)	Procestid: 20 - 35 Min Gennemløbstid: 1-10 dag (afhænger af ventetid på svar)	Procestid: 30 Min Gennemløbstid: 0 dage



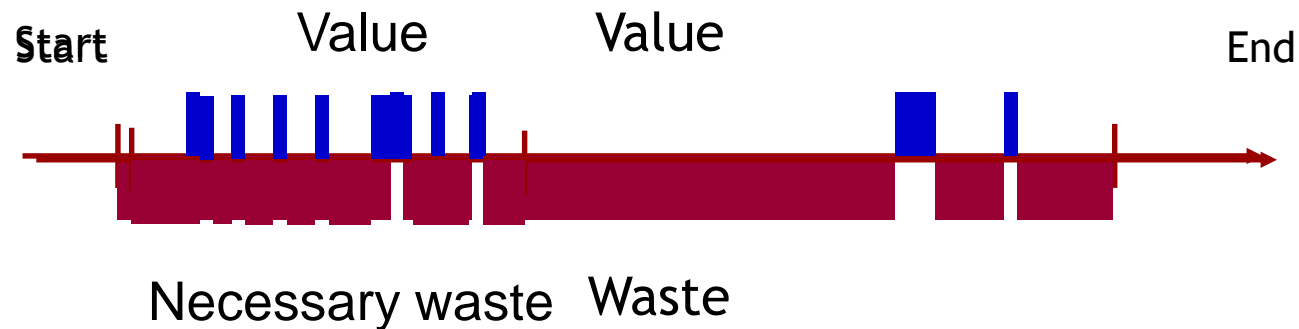
# The purpose and effect of Lean

Remove waste

Reduce lead time

Same work in less time

Lean and rationalization in general create work intensification



# Psycho social work environment factors

- The six golden nuggets (job factors):
  - Influence
  - Social support
  - Recognition
  - Meaning
  - Predictability
  - Demands
- The three diamonds – social capital (workplace)
  - Trust
  - Justice
  - Cooperation



# Lean and the six golden nuggets

- Influence is reduced
  - All tasks are described in detail and standardized.
  - Experts and managers decide.
- Social support
  - Managers make the standards and become controllers leading to less vertical support.
- Recognition
  - Largely a managerial feature but may be reduced as influence is reduced.



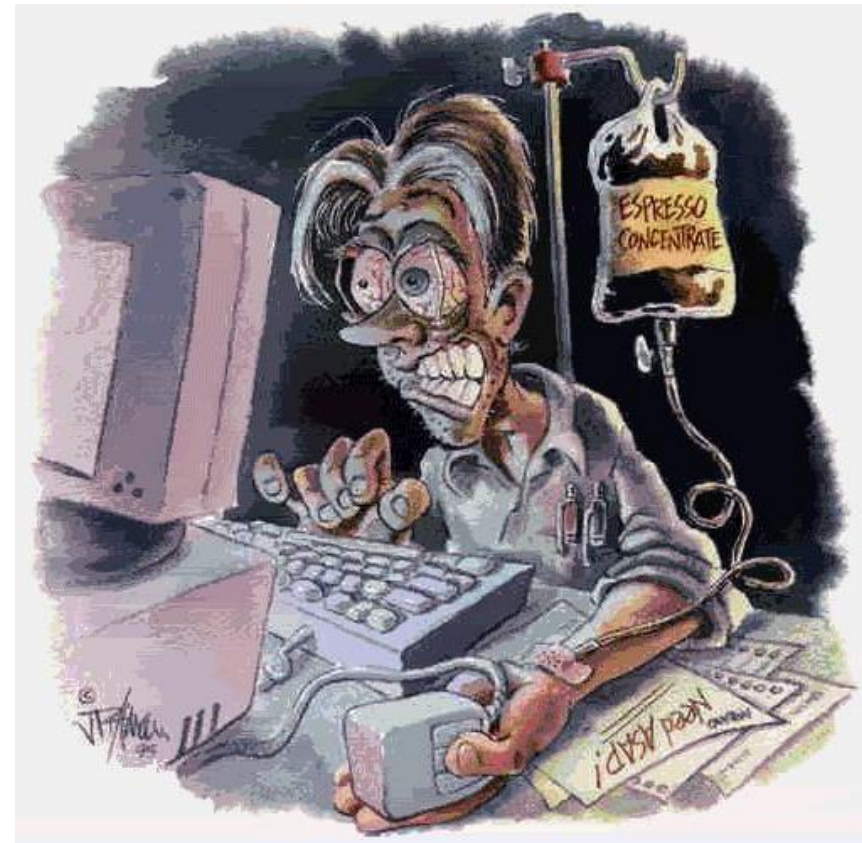
# Lean and the six golden nuggets

- Meaning
  - Standards, lower variation and repetitive work leads to less meaning
  - More focus on productivity, less on craftsmanship
  - De-skilling
- Predictability
  - Standards and reduced variation gives much higher predictability -> too much predictability leads to a monotonous mental state
- Demands
  - Higher quantitative demands – work intensification
  - Lower cognitive demands



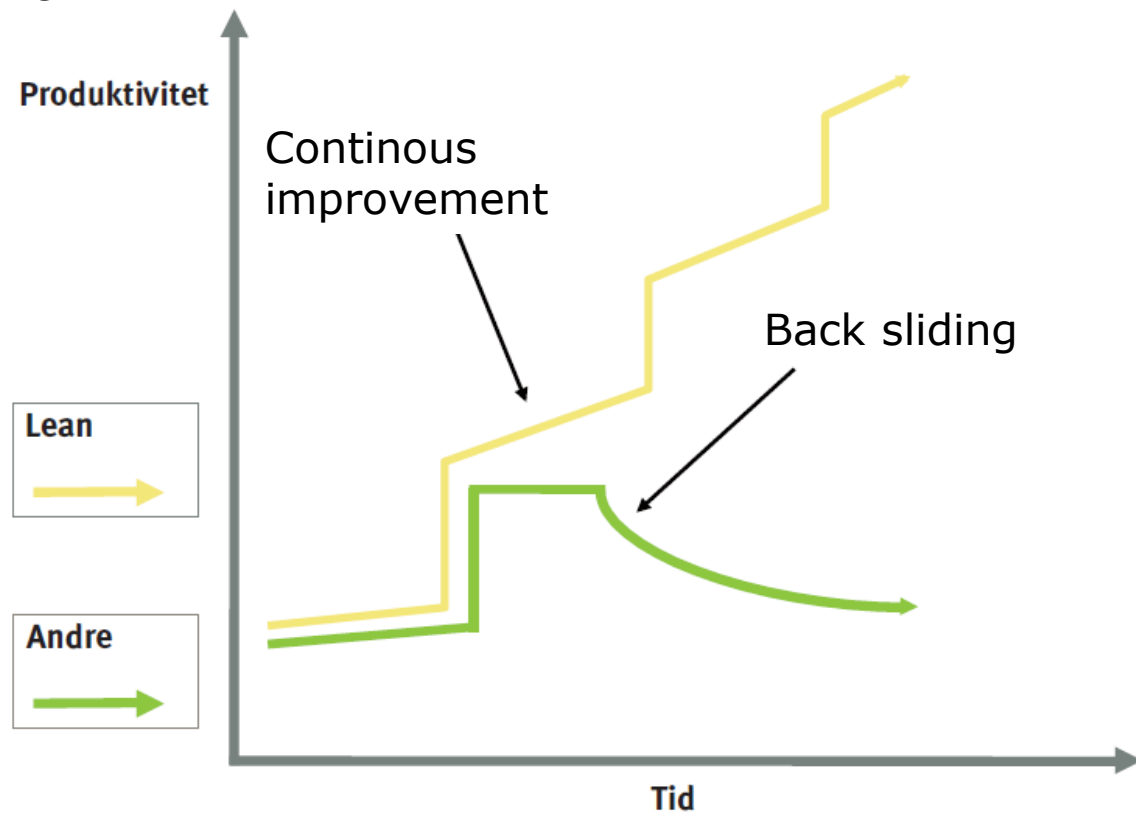
## Lean and stress

- To types
  - Change induced stress
  - Work induced stress
- Change induced stress
  - Lean takes time
  - Tension between lean and production
  - Frustration and stress reactions



# Lean introduces a series of changes

- Lean do make rapid improvements
- The long run is important
- Continous improvement "Kaizen"





Perfection

Pull

Flow og VSM

Value adding processes

Value for the customer

# Change induced stress can be avoided <sup>(almost)</sup>

## Stress Reduction Kit



### Directions:

1. Place kit on FIRM surface.
2. Follow directions in circle of kit.
3. Repeat step 2 as necessary, or until unconscious.
4. If unconscious, cease stress reduction activity.

# Change induced stress can be avoided <sup>(almost)</sup>

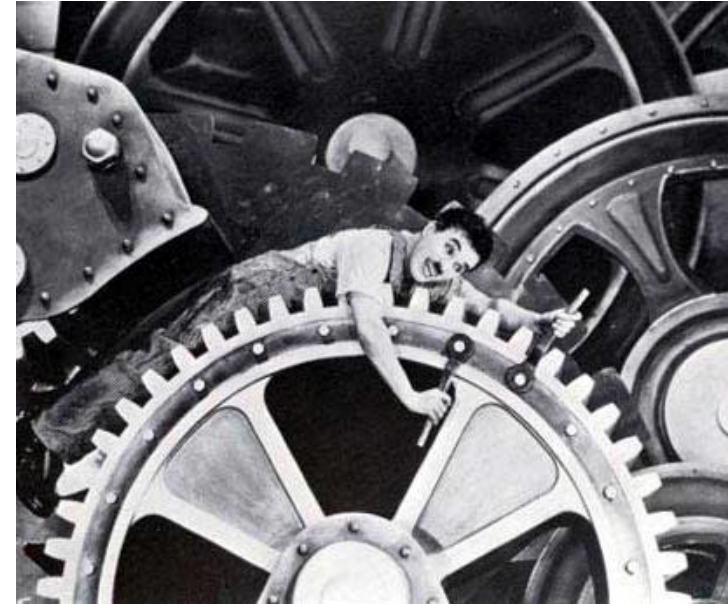
- Talk about the change process
- Let the frustration out
- Reflection seminar
  - Gather all project members
  - Its NOT a project meeting
  - Discuss good and bad in the project
  - All types of emotions are legitimate





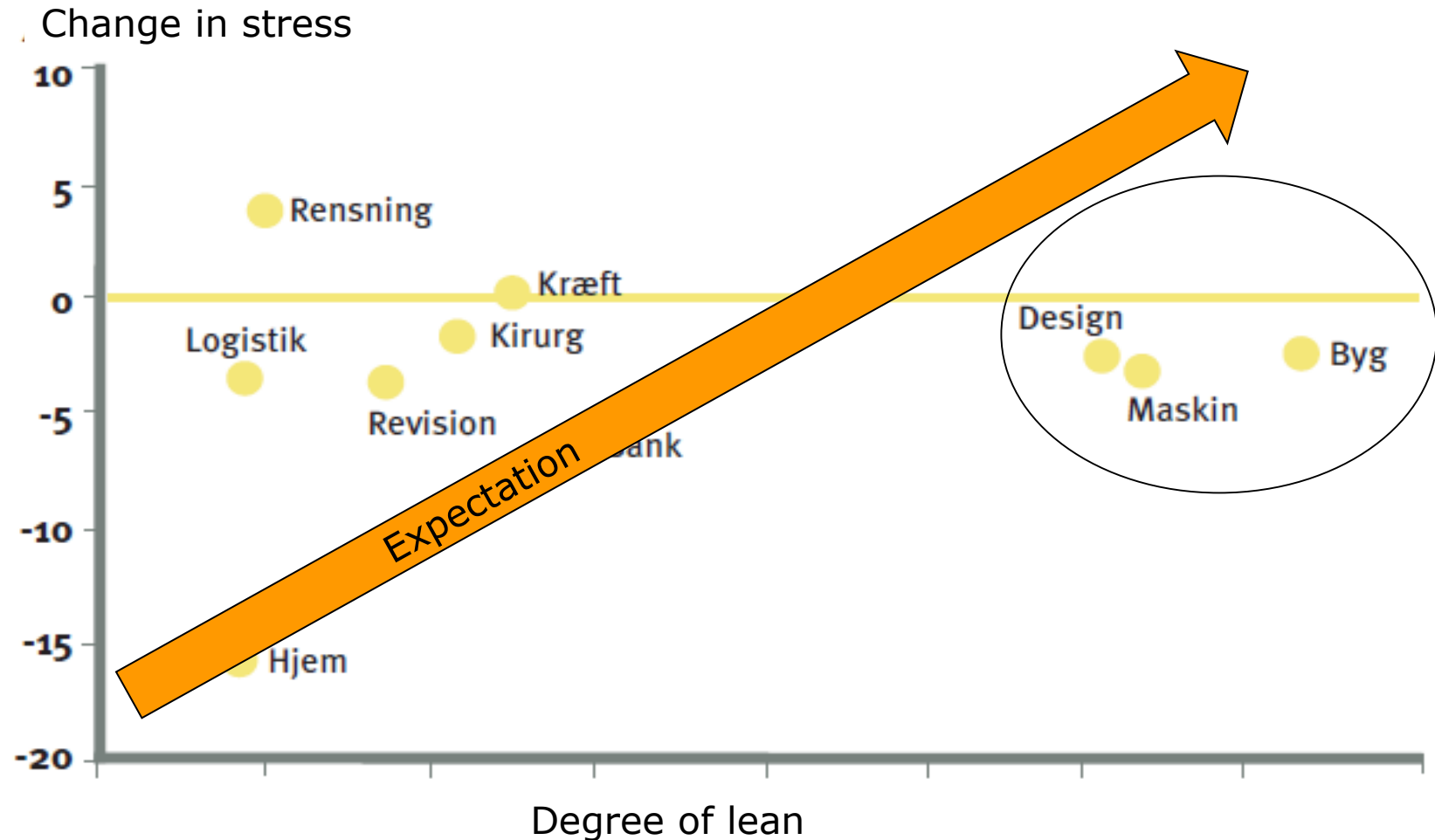
# Work stress

- Lean can lead to
  - Higher pace
  - Systematic removal of resources
  - Long workdays
  - Shortening of cycle times
- In short: Work intensification

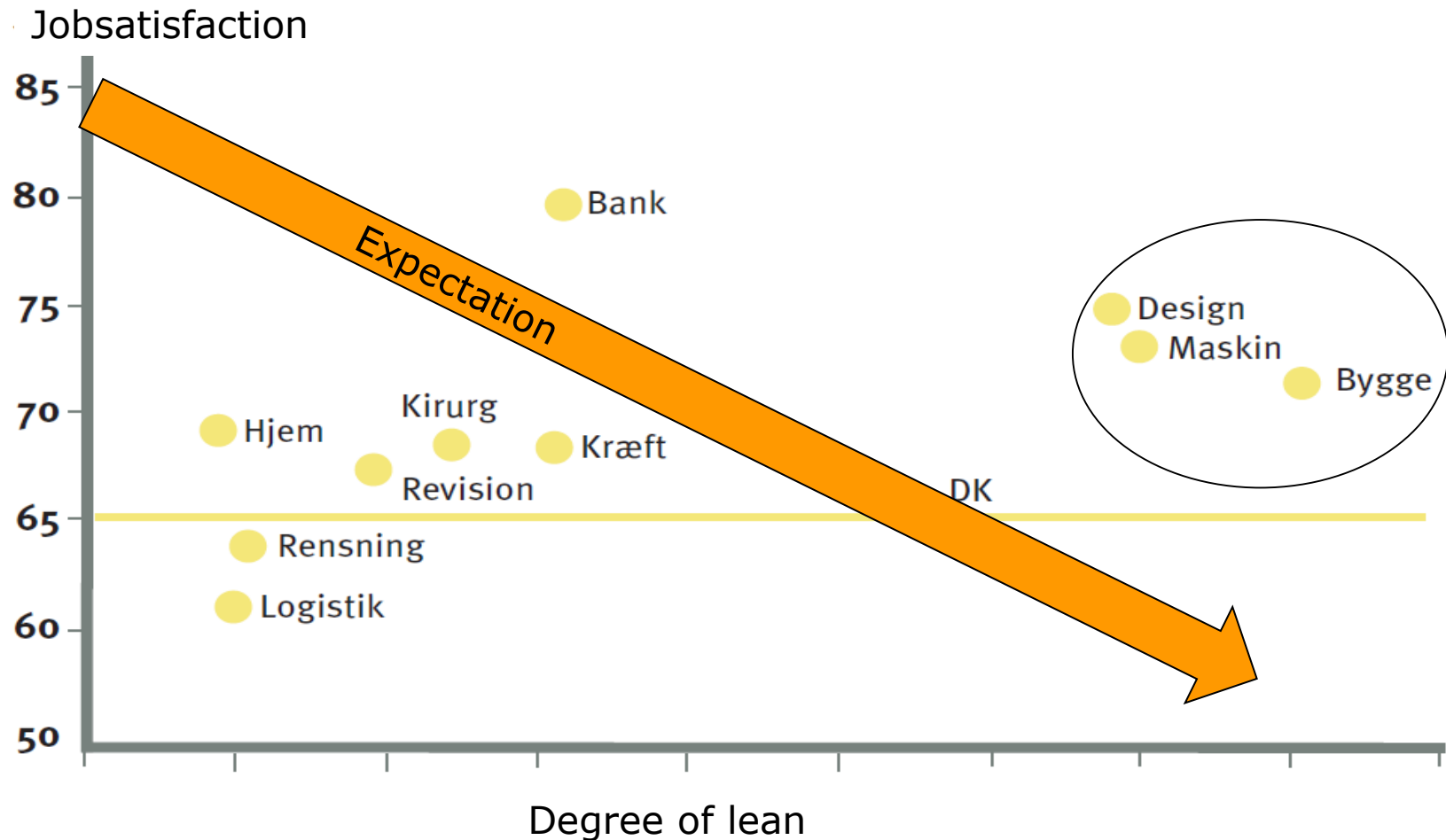


# Study of 10 implementations of lean

## Lean and stress



# Lean and jobsatisfaction



# Overall change in work environment

Positiv	Banken Designafdelingen Logistikvirksomheden Hjemmeplejen
Uændret	Kræftafdelingen Byggemateriefabrikken Maskinfabrikken Rensningsanlægget Kirurgisk afdeling
Negativ	Revisionsinstituttet

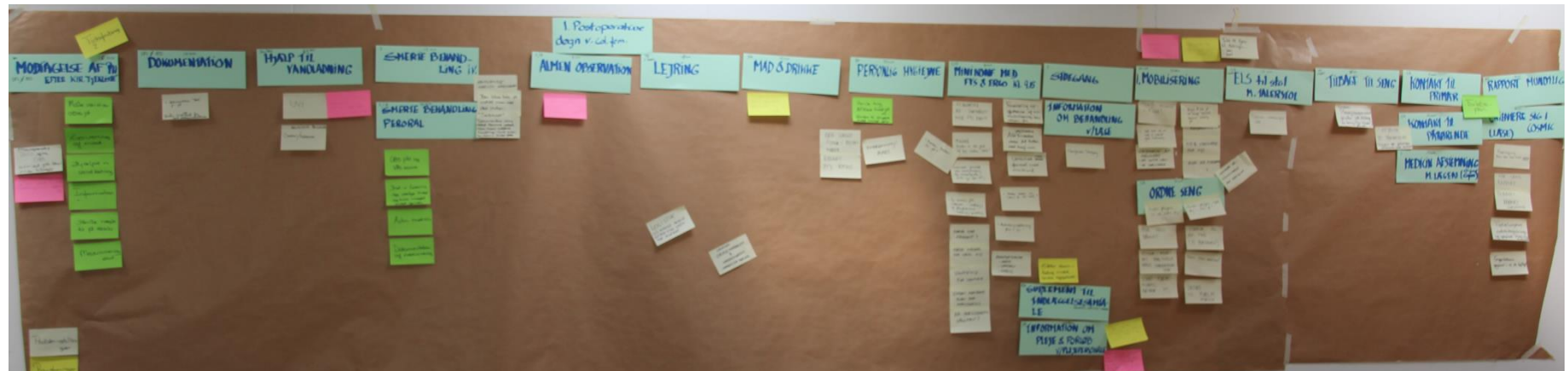
# Ergonomists have failed

- Ergonomists are like police: They arrive after the fact
- The work system has been constructed or improved and now problems emerge – enter the ergonomist
- But, the walls are built and new procedures in place
- Ergonomic interventions are a band aid
- Still, ergonomists possess important knowledge that could prevent ergonomic problems
- So, can we include ergonomics and ergonomists as part of lean and VSM?

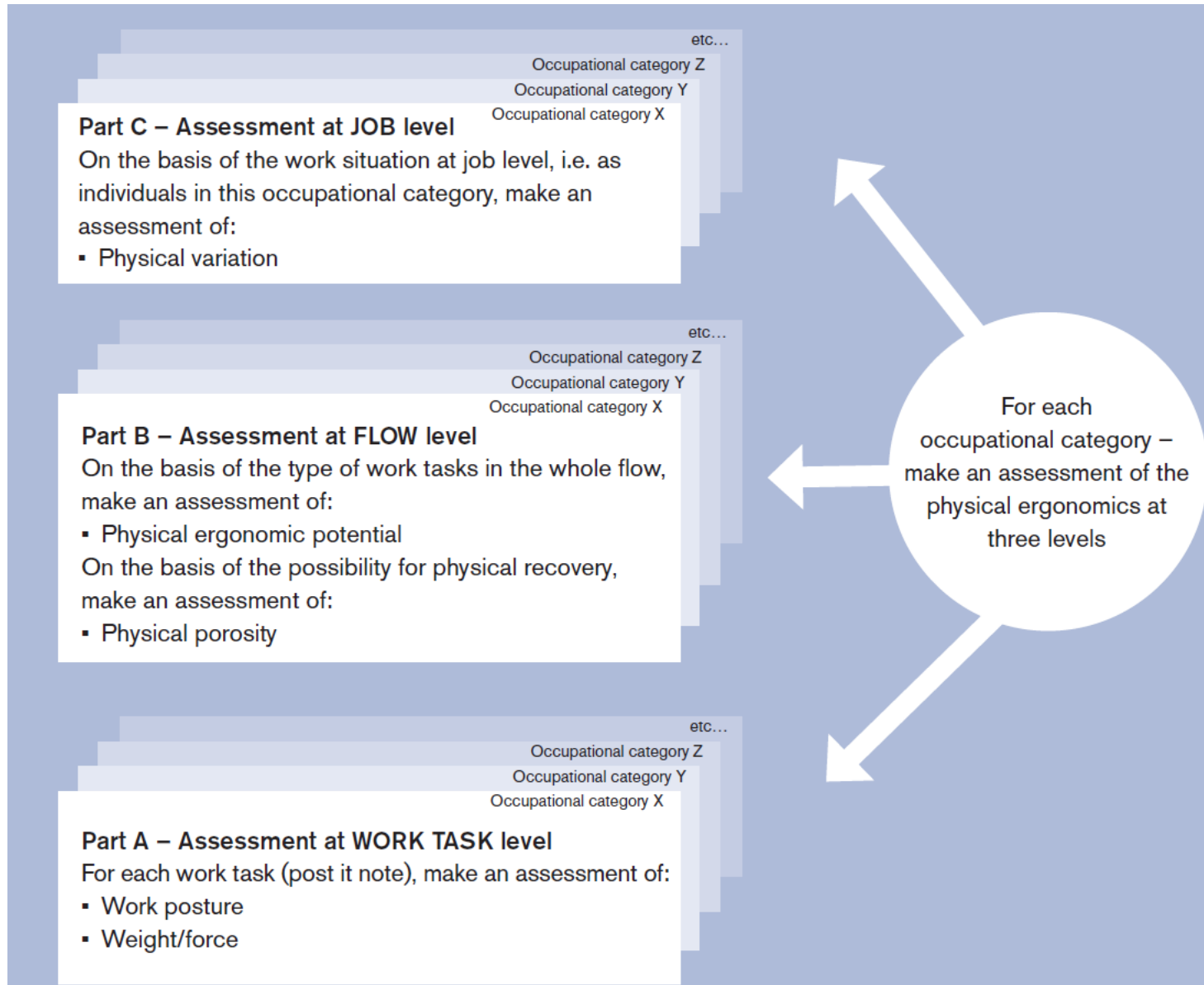


# Ergonomic Value Stream Mapping

- Regular value stream mapping with ergonomic complement
- 24hrs post surgery for hip fracture patients








# Weight/force

*Assess and give a score for each work task with respect to weight/force (WF)*

Description	Score
Using force or handling burdens over 25 kg (forearm's length), or over 15 kg (3/4 arm length). Poor hand grip or grippability. Vertical movement over 25 cm. Carrying farther than 2 m.	10 9 8 7
Bent or twisted work posture, hands partially outside forearm's length (sitting) or outside 3/4 arm length (standing) with a possibility for relieving the load, some possibility to adapt the work posture to the individual and work task.	6 5 4
Using force or handling burdens less than 7 kg (forearm's length), 3 kg (3/4 arm length). Normal hand grip or grippability. Vertical movement over 25 cm. Carrying less than 2 m.	3
The work has very low demands for using force or handling burdens. Hand grip and grippability are individually adapted. No vertical movement or transport by carrying.	2 1

# Control

<p>There is always very <b>little possibility</b> to influence:</p> <ul style="list-style-type: none"> <li>- When and in what way the work task will be done</li> <li>- What work operations are included</li> <li>- The sequence of work operations</li> <li>- The time to be spent on the work task</li> <li>- The patient flow</li> </ul>	10
	9
	8
	7
	6
	5
	4
	3
	2
	1

# Simple chart to facilitate analysis and dialog

		ErgoVSM I																
Nummer:			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Faggruppe:																		
Tidsestimater	Tid (Minutter)																	
Belatningsergonomi i aktivitet	AS-Arbejdsstillinger	12																
	VK-Vægt/kraft	13																
	BP-BelastErgoPot trin 1	14																
Belatningsergonomi i hele værdistrømmen	FP-Fysisk porøsitet	17																
Arbejdsindhold i aktivitet	K1-Krav	26																
	K2-Kontrol	27																
	K3-Kommunikation	28																
Arbejdsindhold i hele værdistrømmen	MP-Mental porøsitet	32																



# Problems identified in the ward

- Poor collaboration in the ward
- Poor collaboration with therapists
- No common understanding of how to deal with this patient group
- Therapists and nurses had different perspectives on mobilization
- Little use of support equipment
- Did not use correct technique for mobilizing patients














# Changes in the ward

- Implementing changes
  - Ward manager was part of the group
  - Changes were agreed in the group and implemented next morning
- Changes
  - Coordinating meeting each morning (which patients need 2 nurses)
  - Pictures of how to mobilize patients
  - New adjustable mattresses
  - New equipment for mobilizing patients
- Results
  - **Patients mobilized more frequently and earlier**
  - **Average length of stay 5 -> 4,5 days**
  - More use of equipment
  - No injuries since project start

# Results

	%	Better	Same	Worse
<b>Psychosocial work environment</b>		35,29	17,65	47,06
<b>Physical work environment</b>		40,00	40,00	20,00
<b>Efficiency</b>		60,00	33,33	6,67
<b>Quality of care</b>		66,67	33,33	0,00

# Results

		<b>Before</b>	<b>After</b>
Tempo		62	68
Often on knees		42,70	16,70
Twisted back		19,20	5,60
Back severely bend		45,90	16,70
Sudden unexpected exposure		33,40	16,70

# Yes – ergonomics can be included

- Ergonomic scoring works well with lean
- Participants discover ergonomic problems
- But, the focus on ergonomics only lasts as long as the ErgoVSM event
- Lean improvements is carried over into daily work
  - Ergonomics mainly new equipment
- Participants expect lean and improvements in their work
  - Work smarter
  - Less and better organized tasks
  - Time for care
- Ergonomic issues seen as “natural part of the job”

## But, its difficult to integrate ergonomists

- An ergonomist was assigned to the project
  - Analyze work environment issues
- However...
  - Ergonomists are trained to perceive work very different from lean agents and engineers
- Lean coach and engineer
  - Identify process – sequence of activities with defined start and end
  - Divide the process into manageable pieces (activities)
  - Size of activity must be meaningful for staff and possible to rearrange
- Ergonomists
  - Analyze a work situation
  - Divide into activities based on ergonomics
  - Subdivide activities into movements

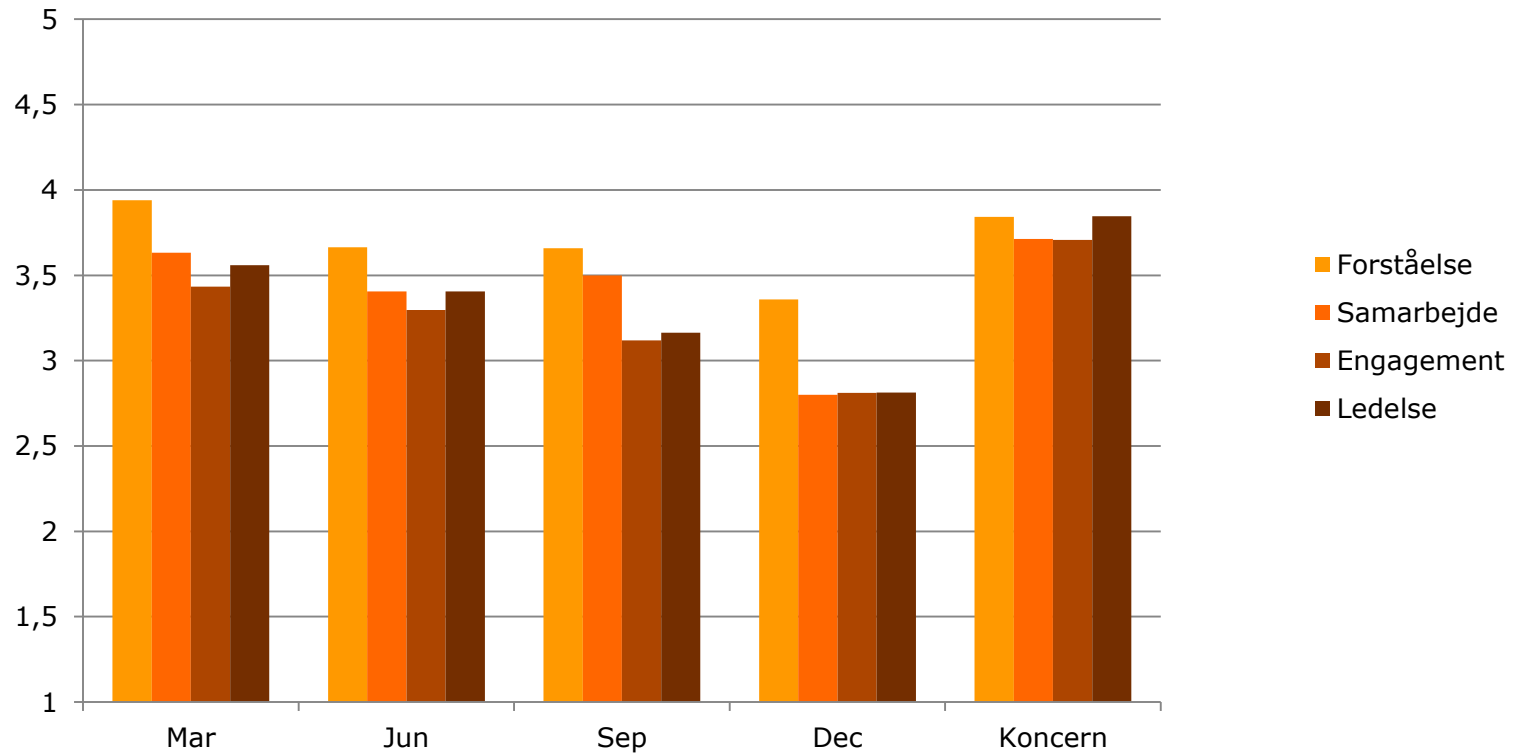
# New performance management system led to poor psychosocial work environment

- A bank branch office with 13 FTE
- Manager and assistant manager was same type
  - Technically skilled but socially less so
- Mixed age group
- Organization
  - Individual KPI's
  - Individual work and bonus
  - Flexibility – work late and weekends
  - Focus on sales and output

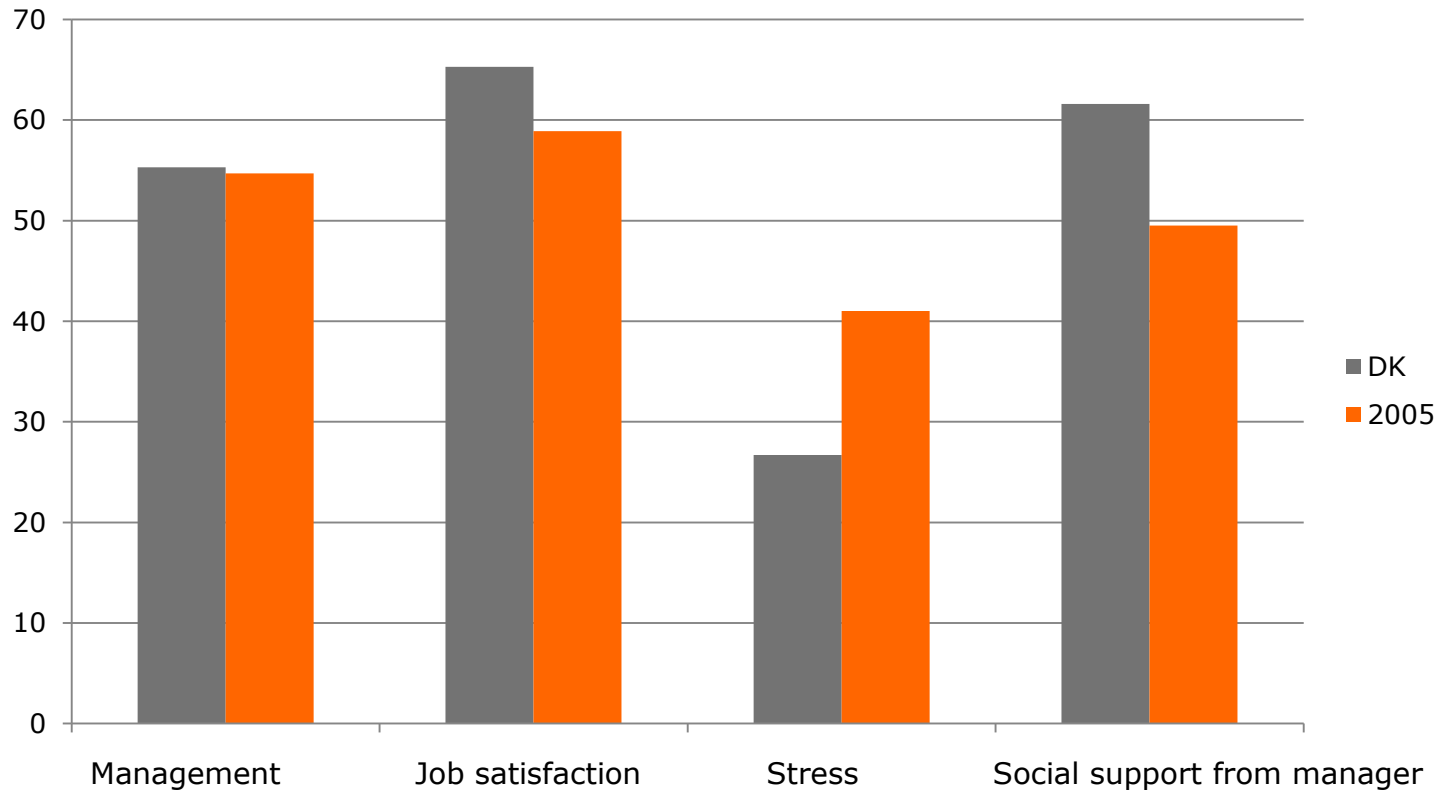


# Case: the bank

2005



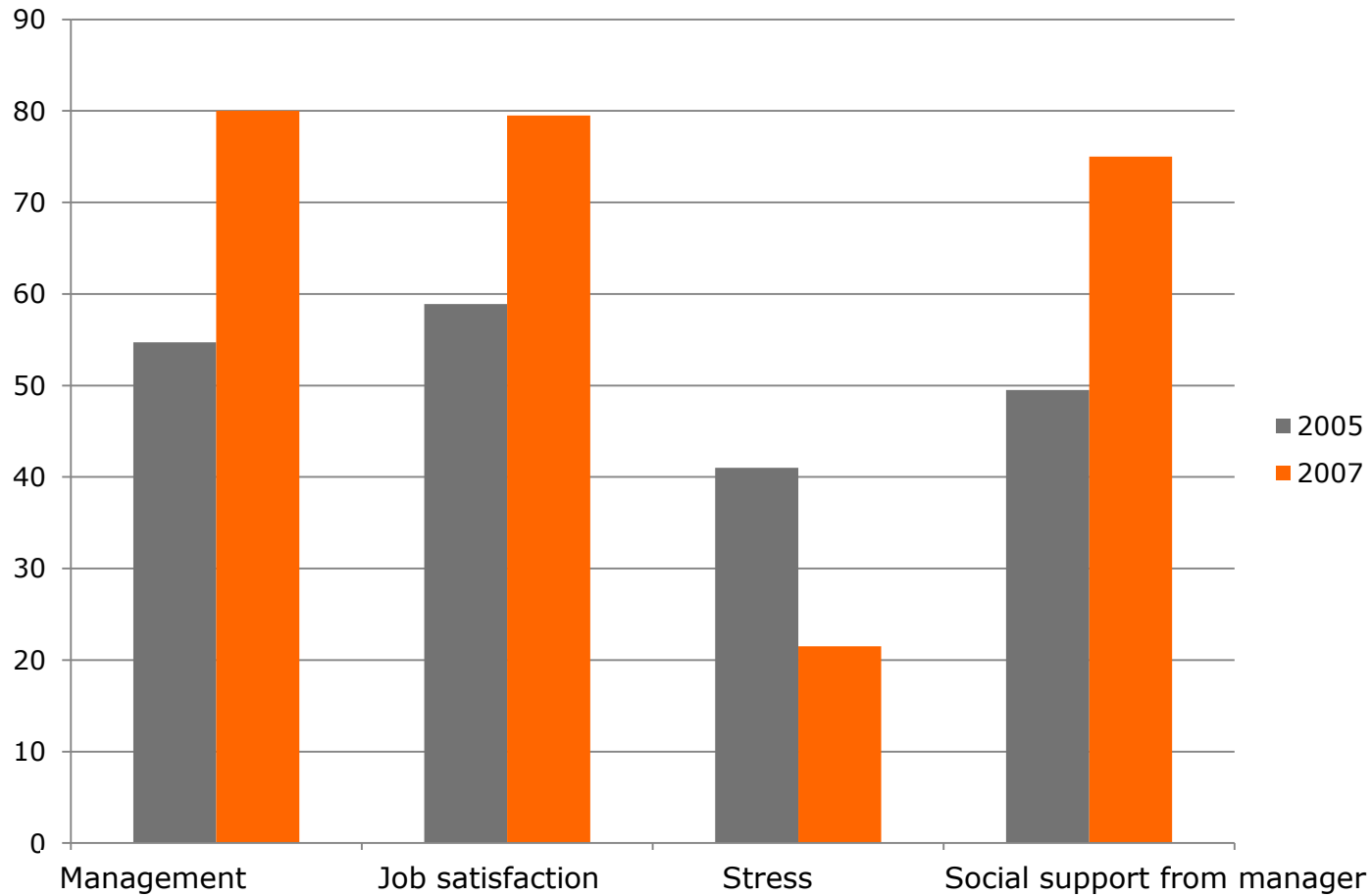
# Case: the bank



## Case: the bank

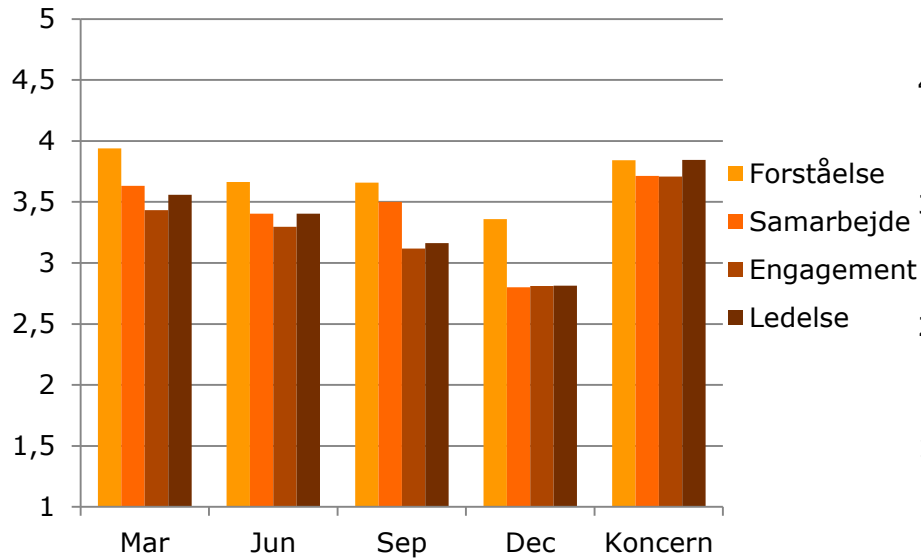
- Manager realizes that somethin has to be done
- Assistant manager is replaced with care focused person
- Teambuilding weekend
- Work is reorganized
  - Teamwork
  - Overtime only when everybody is there
  - Games and humor to support work and recognize effort

# Case: the bank

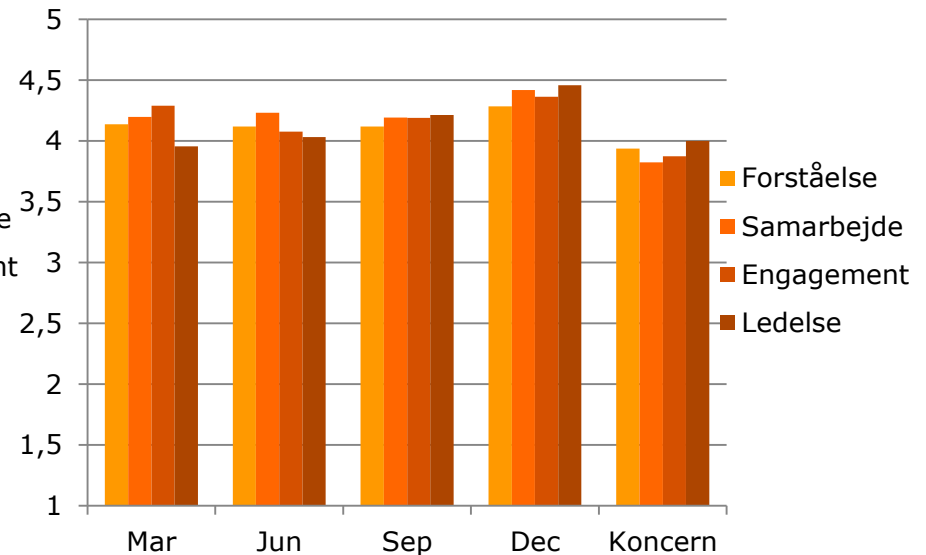


# Case: the bank

2005



2007

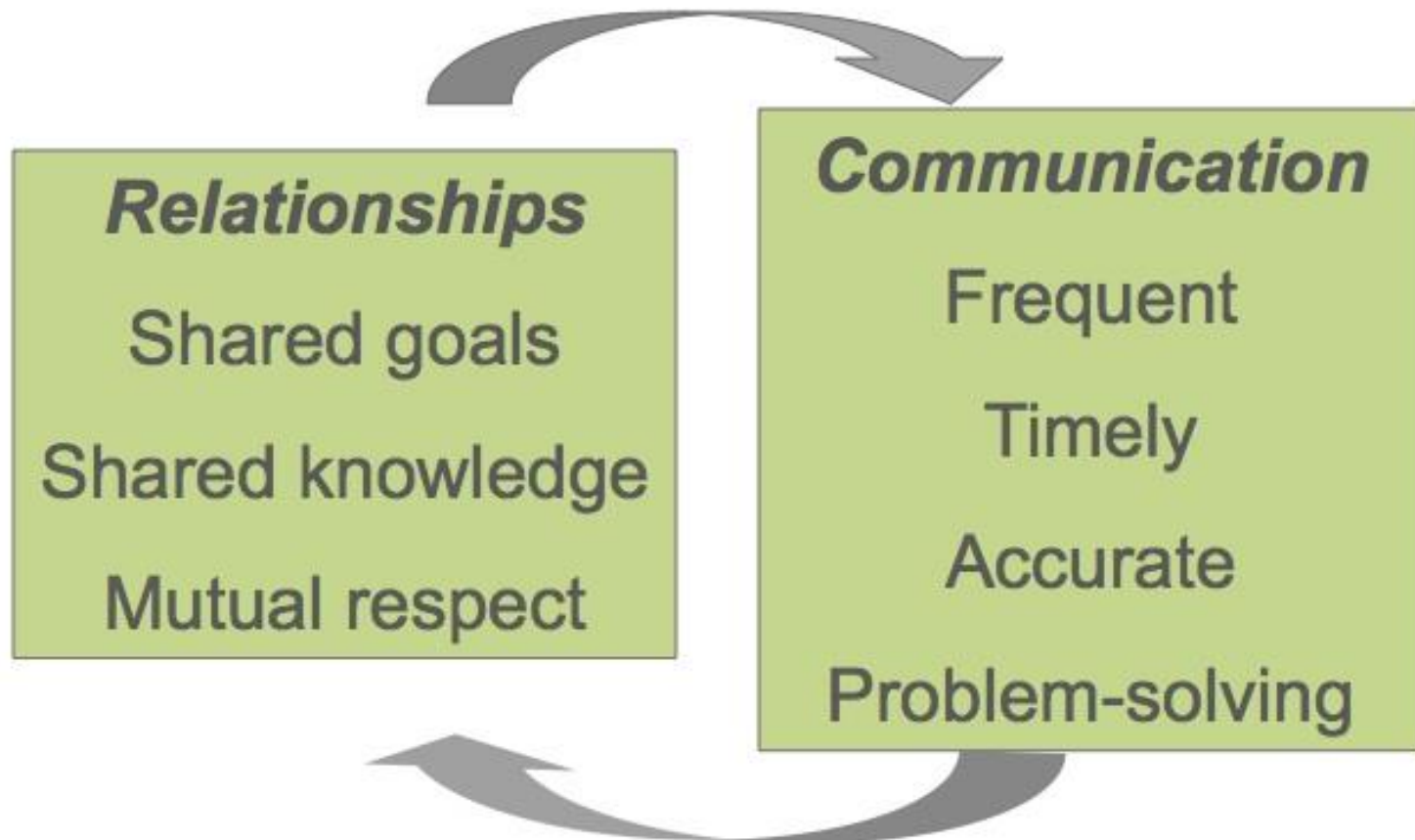


- Same performance with good psychosocial work environment

# Lean and VSM as a method for improving psychosocial work environment

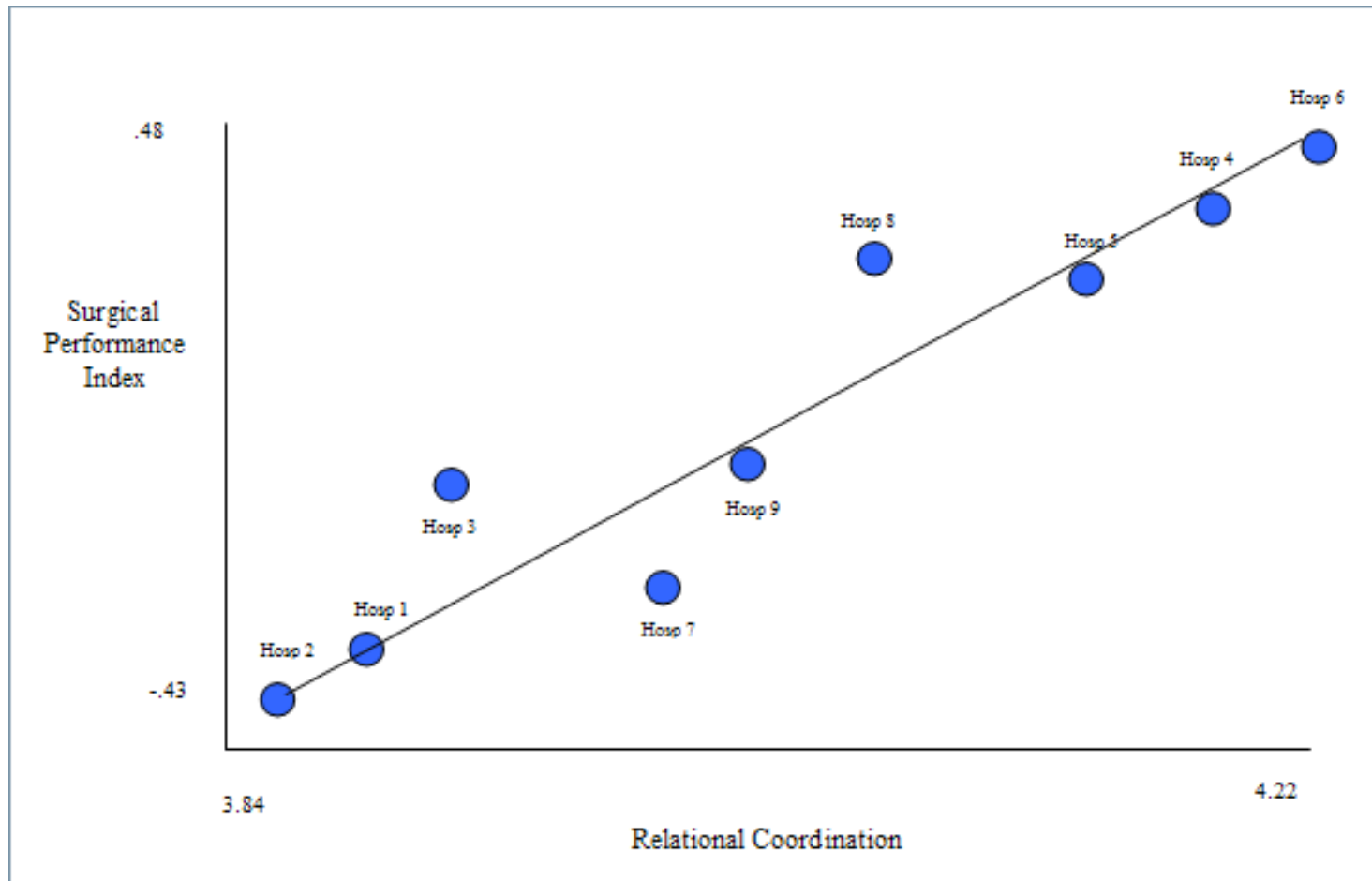
- Lean may have negative effects on psychosocial work environment, but..
- It may also be used as a tool for improving it!
- HR consultants work on relations and neglect work processes
- Work processes define relations
- When processes change, relations change
- VSM is an excellent tool to discuss work relations in a process
  - Professional expectations
  - Personal conduct

# Relational coordination



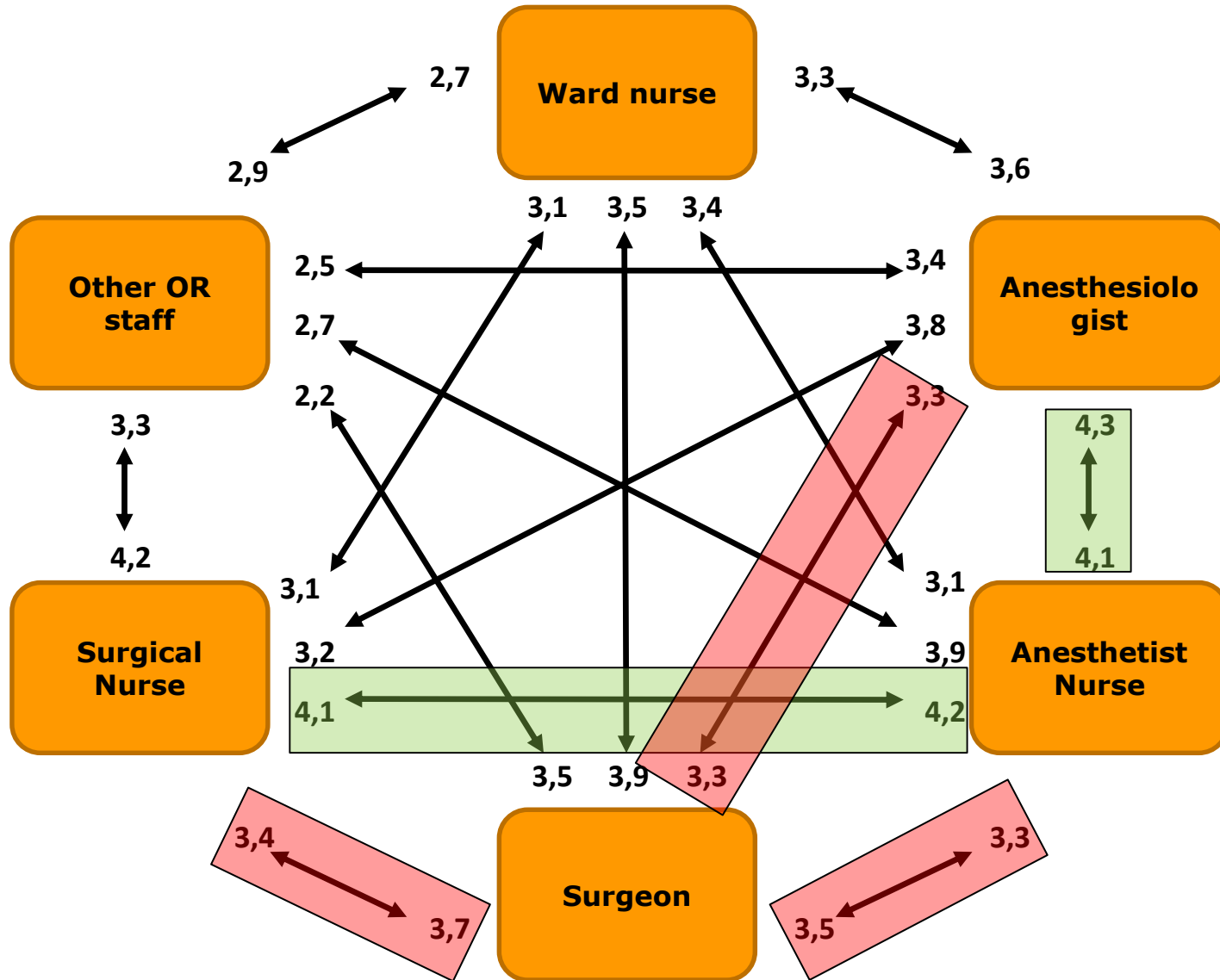
- Measured with a simple 7 item questionnaire
  - Focus on a specific process “Prep patients for surgery”

# Relational coordination



Gittell, J. H. (2009). *High Performance Healthcare: Using the Power of Relationships to*

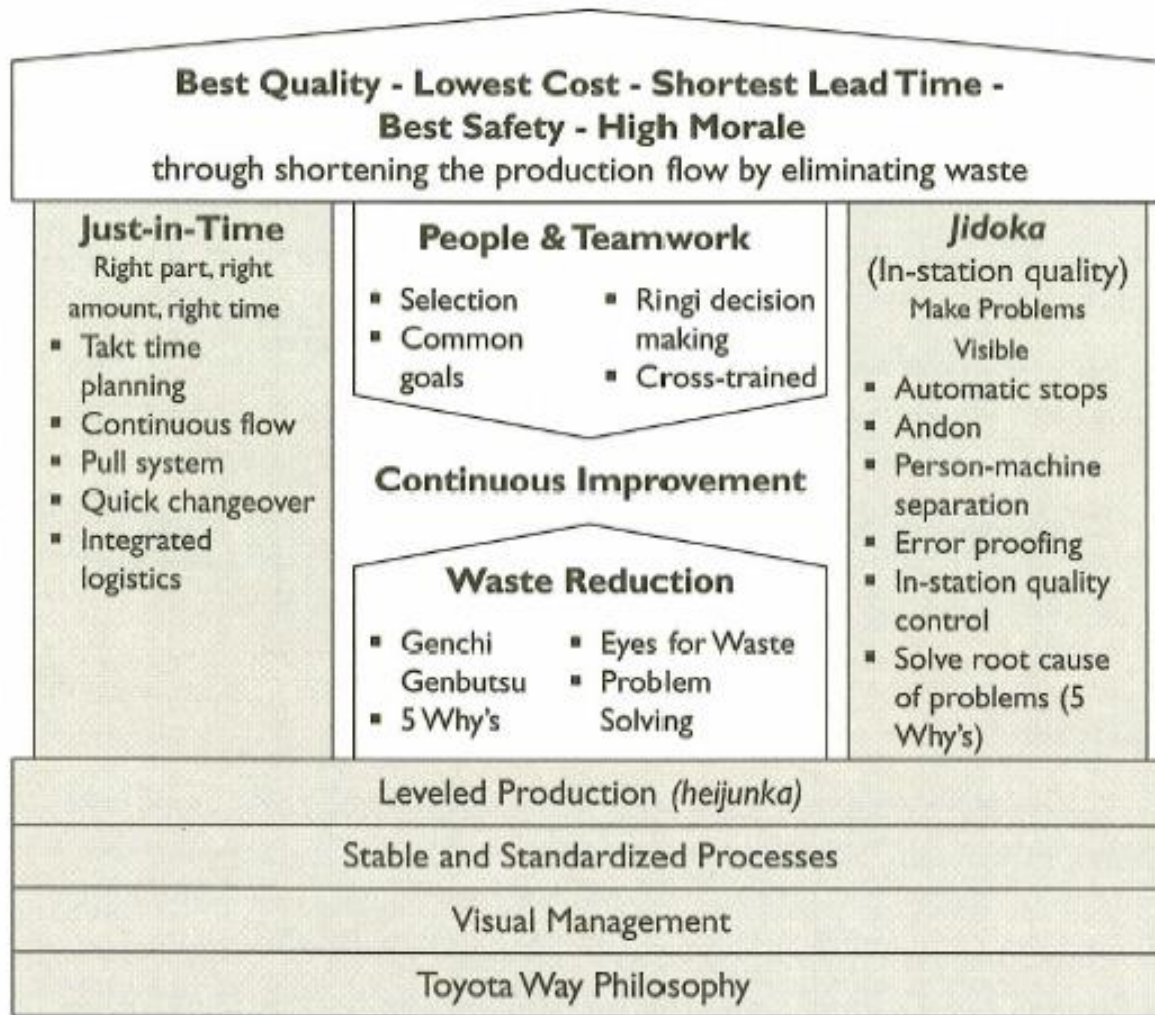




# Lean, VSM and relational coordination – A good match

- VSM and relational coordination both focus on a process
- Uncover different aspects of a process
  - Sequence of activities
  - Relations between roles (pilot, gate manager, surgeon, nurse, anesthesiologist)
- Useful approach to facilitate differences
  - Not individuals but roles
  - Focuses on a specific process and not work in general

# Lean is a system – if you can't create a stable foundation, don't use lean

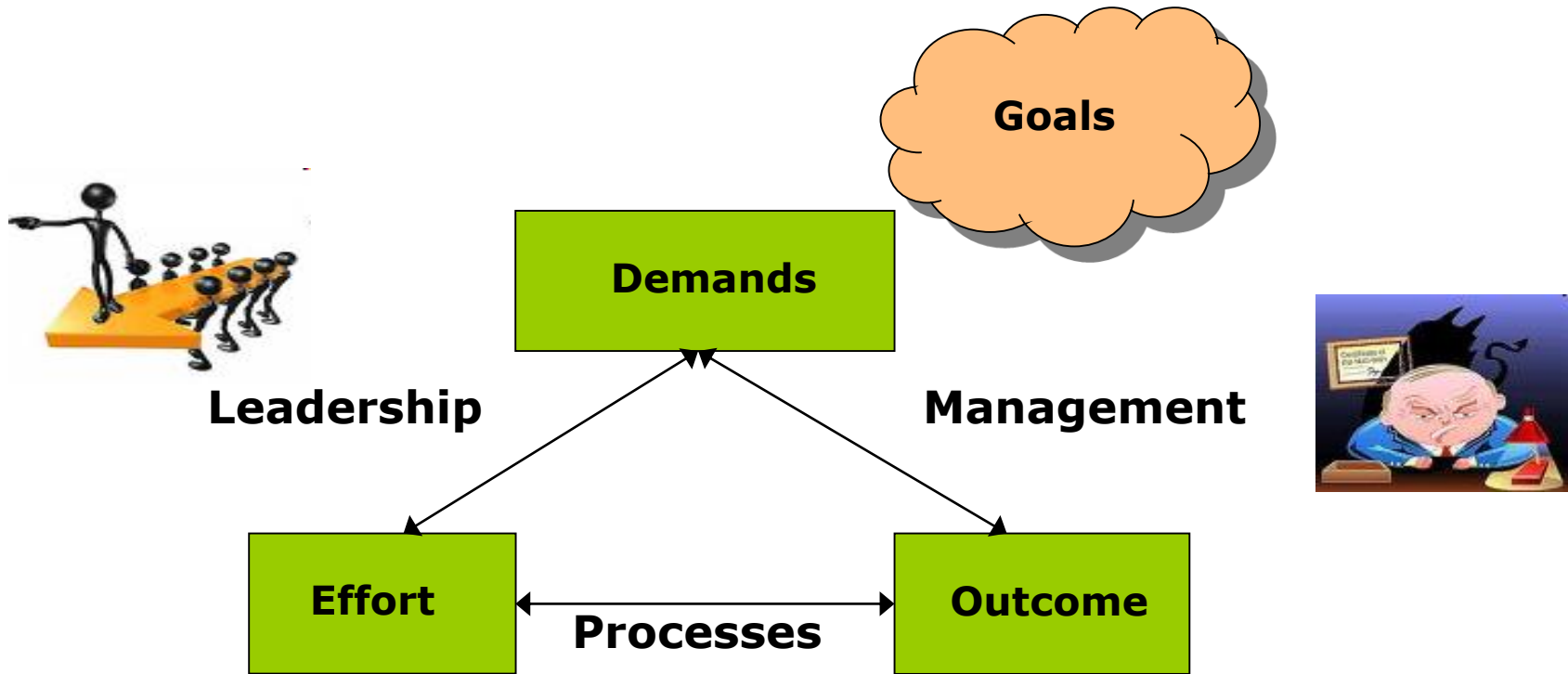


# Structurally induced problems

- Tight planning and utilization in surgery
  - Utilization is the top priority
  - “cant have empty operating rooms”
  - “Best for society”
  - Plan for average capacity
- Behavior
  - Managing surgeon makes sure all slots are booked
- Then reality hits - - - oh, how to handle acute patients
  - Poor treatment quality
  - Frustration and conflicts
- Fundamental problem of public health care planning
  - Simple averages does not work!

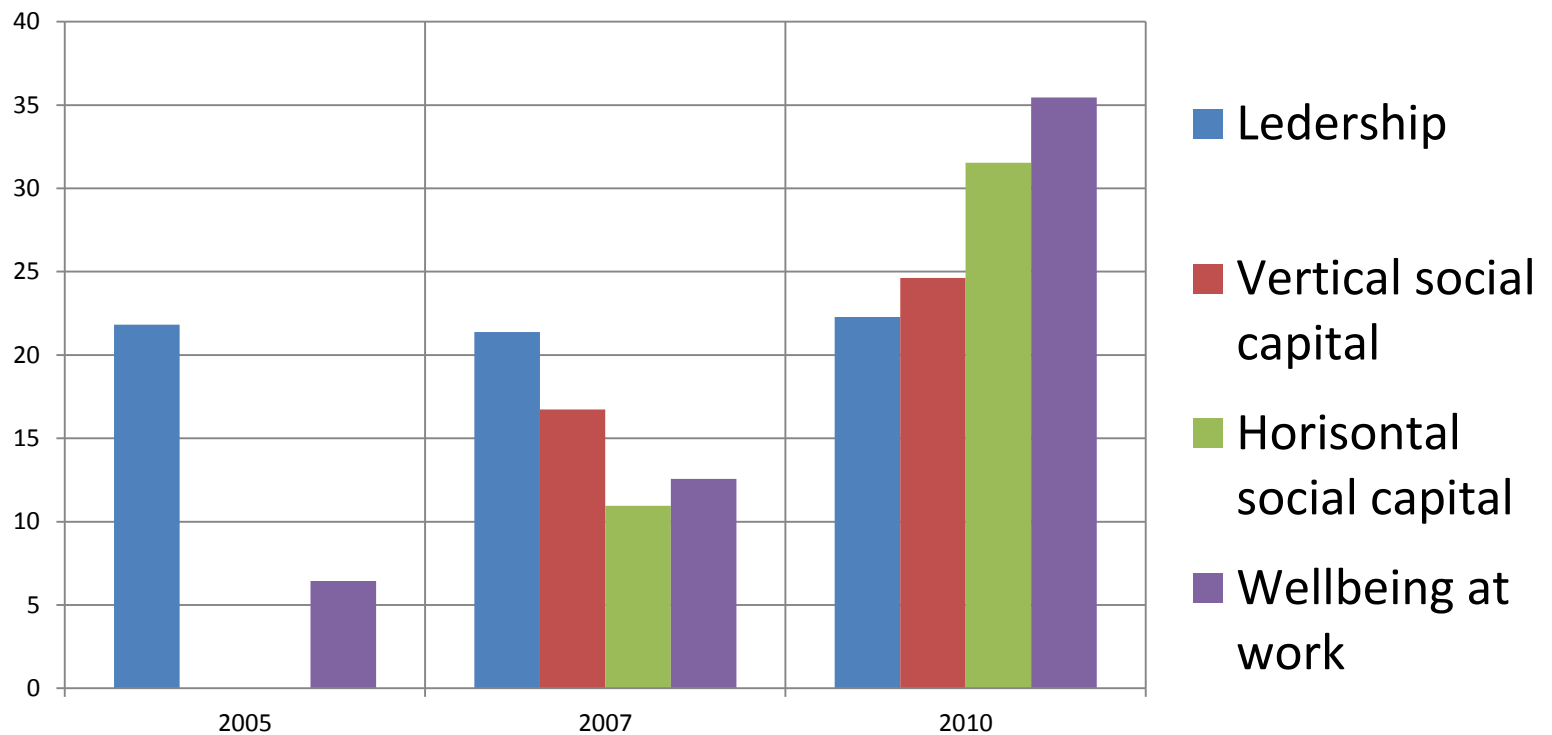


# Lean requires leadership but may induce management



# Performance management can remove positive effects of psychosocial work environment

Increase in productivity if respondents change one category



# Conclusion

- Lean and rationalization cause work intensification
- Positive effects of lean
  - Gain control of the processes
  - Who does what and why, Remove daily frustrations
  - Improved layout
  - No one wants to go back to the old days
- Negative effects of lean
  - Change is hard!
  - Many develop change induced stress
  - Too much focus on tools and too little on employees



# Conclusion

- Lean creates an opportunity to develop work an work environment
  - Focus is however on improving efficiency
  - Work environment may also be improved
- ErgoVSM may easily be included in VSM
- Performance does not need to be stressful
- Relational coordination is useful to uncover relations between roles
- Beware of structural determinants such as performance measures
- Lean requires leadership