



Activity-based Flexible Offices

- design processes and outcomes

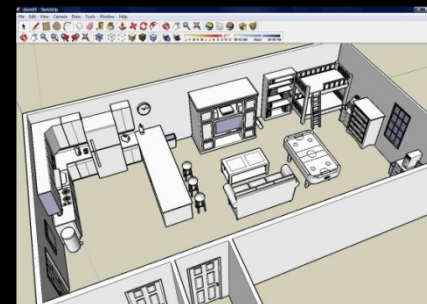


Linda Rolfö

Höstmöte 2018-11-14



Planning
new
FACILITIES





Ett nytt 2-årigt Masterprogram i “Technology, Work and Health”

Avdelningen för ergonomi

KTH i Flemingsberg





Programinnehåll

Buller, vibrationer, belysning, strålning, klimat, ventilation, kemiska hälsorisker, säkerhet, belastningsergonomi, kognitiv ergonomi, arbetsorganisation, förändringsarbete, MTO, arbetsmiljöekonomi, planering, projektering produktutformning, patientsäkerhet, examensarbete

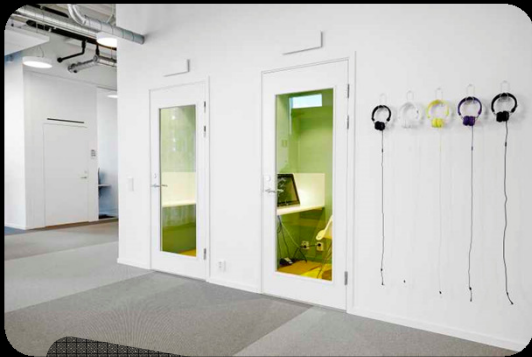
Ansökan före 15 Januari 2019

Mer information: Googla på: KTH master ergonomi
<https://www.kth.se/sv/mth/ergonomi/ergonomi-1.741860>

Programansvarig: Mikael Forsman miforsm@kth.se



Activity-based Flexible Office (A-FO)



Flexi-desking



Non-territorial office

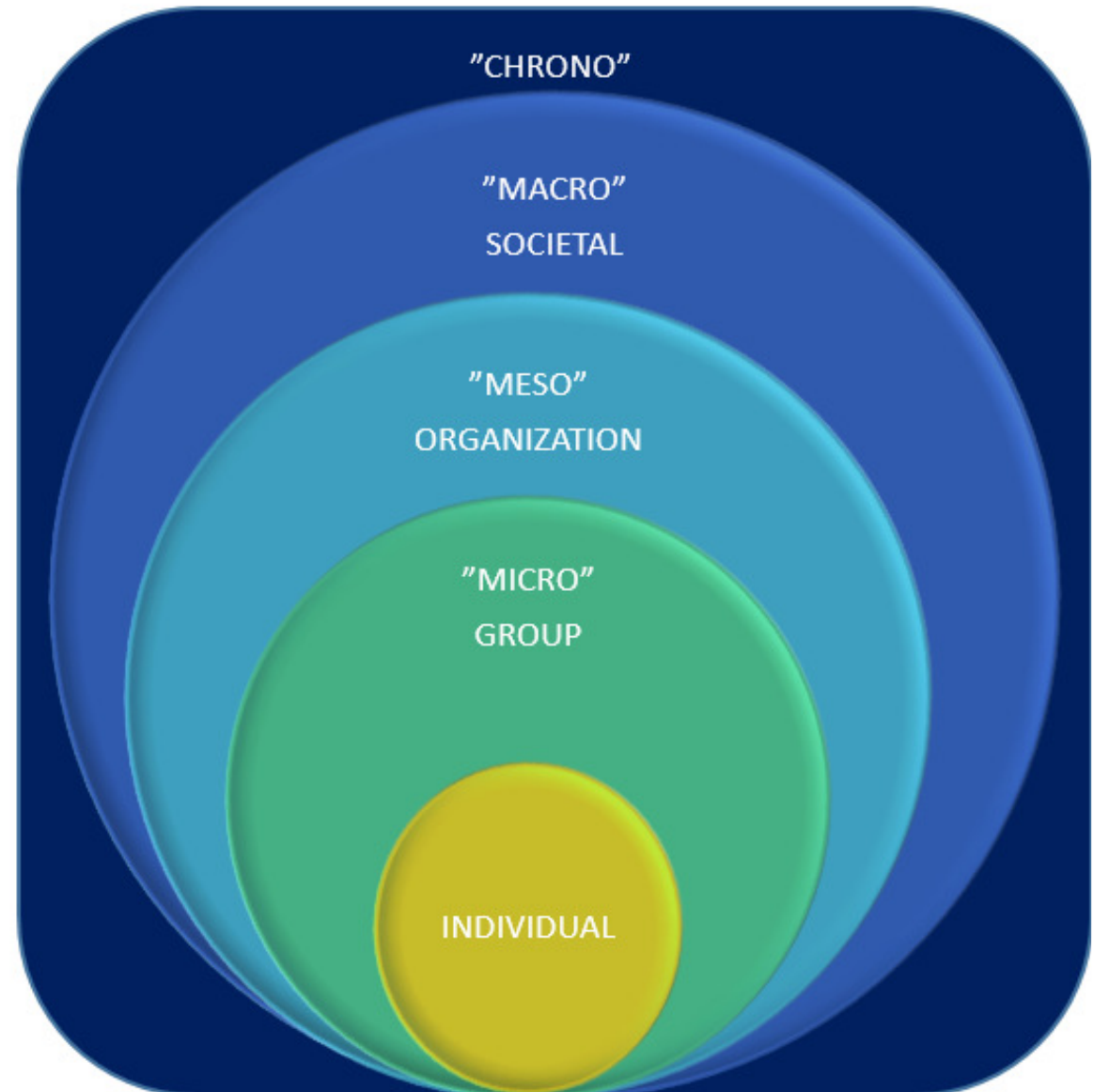


Flexible office

Activity-based office

Hot-desking

Objectives





Aim

Explore and investigate **perceptions** of workspace and work conditions, and work environment satisfaction and perceived performance in A-FOs, including **changes** following relocation from open-plan based offices.



Results

	Study I (C1)	Study II (C2) n=28
Aesthetics	↑ p<0.001, n=34	↑ p<0.001
Outdoor view	↑ p<0.001, n=34	↑ p<0.001
Air quality	↑ p=0.002, n=34	↑ p<0.001
Noise	↑ 2/3 questions p=0.03-0.039, n=34 NS 1/3 questions, n=34	1/1 question NS
Possibility to privacy	NS, n=34	↑ <0.001
Communication parameters	NS 4/5 questions, n=66 ↓ 1/5 question p=0.014, n=66	↑ 5/5 questions p= 0.01-0.035
Satisfied with physical work environment	88% (sign. from neutral), n=66	↑ From Pre 54% to Post 93 %
Preference for the A-FO	↑ Pre 16%, Post 47%, n=66	↑ From Pre 68% to Post 82%
Perceived performance	NS 2/2 questions	↑ 4/4 questions p= 0.004-0.042



Preference for the A-FO

Proportion
of
employees

0.13	0.14	0.17	0.38	0.47	0.54	0.58	0.67	0.78	0.92
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n=695, response rate 0.75



Aims

Explore/Investigate/Identify

- Design and implementation process factors
- Workspace factors
- Rules and policies
- Organizational preconditions



Aims

Explore/Investigate/Identify

- Design and implementation process factors
- Workspace factors
- Rules and policies
- Organizational preconditions

Results

Design and implementation processes

	C1	C2	C3	C5
Involvement before deciding on the office type	No	Yes	Yes	No
Needs and Activity analysis	No	Yes	Yes	Yes
Employees participation in decision on policies	No	Yes	Yes	No
Clear communication of policies	N/A	Yes	Yes	N/A
Years of planning	0,75	2,5	1,5	0,5



Results

Design and implementation processes

- Meaningful objectives
- Financial and time resources
- In-depth work analysis
- Employee participation and empowerment
 - Inclusion of org. and social change



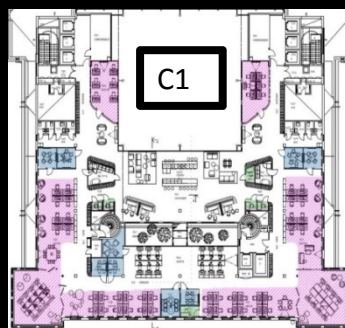
Aims

Explore/Investigate/Identify

- Design and implementation process factors
- **Workspace factors**
- Rules and policies
- Organizational preconditions



Results Workspace



Acoustics

Amount of background noise

Noise level (vent., printer, speech)

Speech level

C1

C2

C3

C4

N/A

Results

Workspace

Workspace ratios	C1	C2	C3	C4
Desk-sharing ratio	0.68	0.72	0.9	0.61
Small meeting room ratio (per employee)	0.09	0.08	0.13	0.04
Back-up room ratio	0.06	0.06	0.13	0.06
Open-plan surface area (per employee)	5.1 m ²	3.5 m ²	7.5 m ²	3.5 m ²
Open-plan surface area (per workstation)	7.5 m ²	4.8 m ²	8.3 m ²	5.7 m ²
Maximum no. of workstations in open-plan areas	28	24	16	45

Space configuration

Distance to colleague
Workstation separation
Possibility of privacy
Outdoor view

C1

C2

C3

C4





Aims

Explore/Investigate/Identify

- Design and implementation process factors
- Workspace factors
- Rules and policies
- Organizational preconditions

The background of the slide is a dark grey grid filled with numerous small, semi-transparent traffic signs. These signs include various warning signs (triangles with red borders), prohibition signs (circles with red borders and diagonal lines), and directional signs (rectangles with blue or white backgrounds). The signs are arranged in a repeating pattern across the entire slide.

Results

Rules and policies

Desk-sharing policies

1. To remove belongings
2. Restrictions on using the same workstation in open areas in consecutive days
3. Restrictions on using workstations in scarce zones in consecutive days

The background of the slide is a dense, repeating pattern of various traffic signs. These include triangular warning signs (e.g., curves, pedestrians, animals), circular prohibition signs (e.g., no entry, no parking, no motor vehicles), and rectangular signs (e.g., priority, direction). The signs are rendered in a dark, semi-transparent style, allowing the text to be legible.

Results

Rules and policies

Speech policies

4. To interact with colleagues in different zones
5. To speak on the phone in different zones



Aims

Explore/Investigate/Identify

- Design and implementation process factors
- Workspace factors
- Rules and policies
- Organizational preconditions



Results

Organizational preconditions

Associations with preference for the Activity-based Flexible Office

Factors	Categories	n	Correlation coefficient
Concentration	A-FO / Other office types	473	0.156
Speaking on the phone	A-FO / Other office types	485	0.133
Writing/Generating texts	A-FO / Other office types	631	0.088
Innovation	A-FO / Other office types	631	0.124
Learning and searching for information	A-FO / Other office types	631	0.092



Results

Organizational preconditions

Predictors of preference for the Activity-based Flexible Office

Factors	Categories	n	Correlation coefficient
Office type before relocation	Cell office / Open-plan office	588	0.21



Discussion

Explore/Investigate/Identify

- Design and implementation process factors
- Workspace factors
- Rules and policies
- Organizational preconditions



Discussion

A-FO definition

Desk-sharing policies

High

Flexible office /
Hot-desking

Activity-based flexible
office

Low

Open-plan office

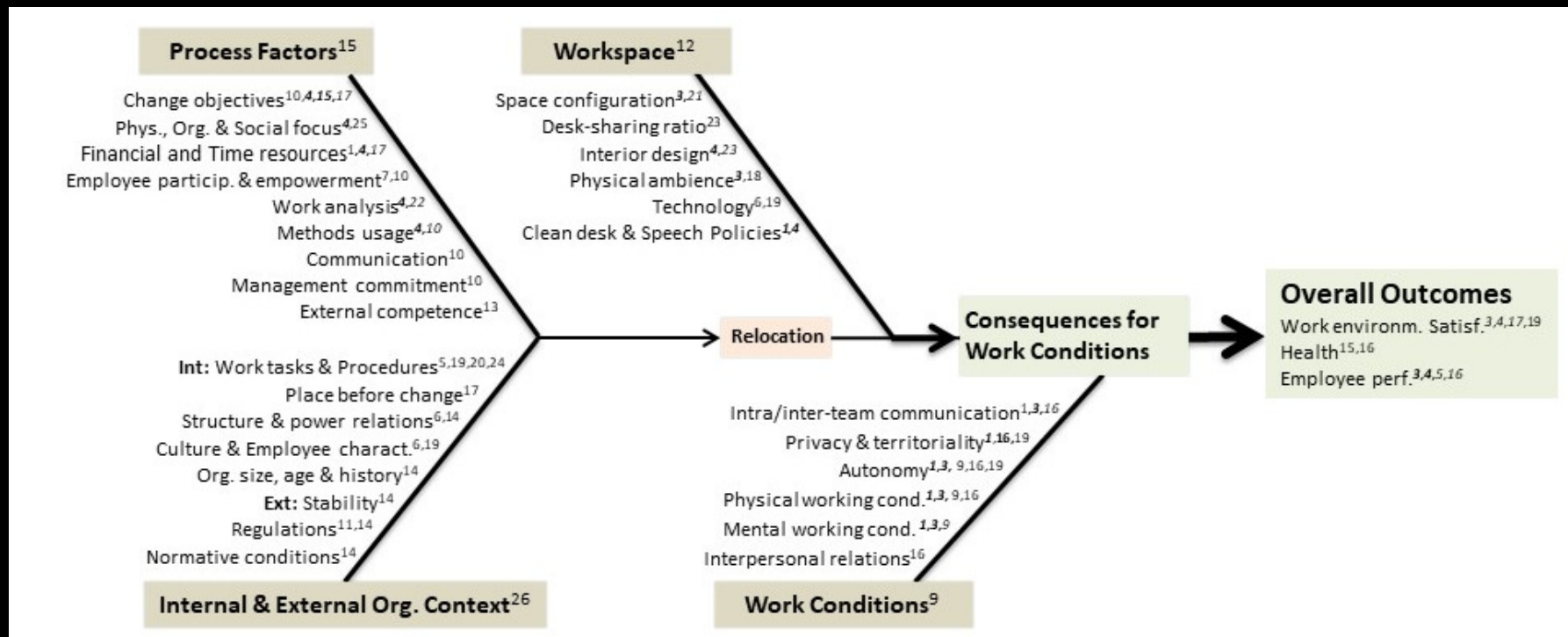
Combi-office (or an
over-crowded open-
plan office)

Low

High

Workspace diversity (enabled by plan
layout and speech policies)

Conclusion





Contact

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Disputation:

14th of december

KTH Flemingsberg



Overall outcomes

Environmental satisfaction

Environmental satisfaction

Preference for A-FO

C1 *C2* *C3* *C4*



Perceived performance

Individual productivity

Intra-team productivity

Office being optimally designed for work tasks





Ratios

Parameters	C1	C2	C3	C4
Employee-to-workstation ratio	0.9	0.72	0.68	0.61
Small meeting room ratio (per employee)	0.13	0.08	0.09	0.04
Back-up room ratio	0.13	0.06	0.06	0.06
Open-plan surface area (per employee)	7.5 m ²	3.5 m ²	5.07 m ²	3.5 m ²
Open-plan surface area (per workstation)	13.6 m ²	7.3 m ²	7.5 m ²	6.8 m ²
Maximum no. of workstations in open-plan areas	16	24	28	45
Mean percentage of time spent at office	81 %	64 %	92 %	84 %





Work condition moderators

Work conditions	Case 3	Case 2	Case 1	Case 4	Reported factors regarding consequences of desk-sharing rules
Autonomy					Opportunity to choose different workstations
					Difficulties in finding available workstations
					Limited opportunities for personalization
					Social pressure for changing/choosing specific workstations
Physical resources					Decreased sedentary time
					Complications with adjusting workstations
					Inconvenient transporting/setting up of belongings
Mental resources					Decluttered workspaces
					Increased planning and setup time
					Limited access to printed documents
Intra-team resources					Increased access to team members and management
					Facilitated spontaneous interactions
					Facilitated collaborations and side-by-side work
					Difficulties in finding and gathering colleagues
					Increased risk of isolation from team members
					Missing out on social activities
					Risk of feeling alone and unnoticed
					Difficulties in grasping colleague's well-being
Inter-team resources					Increased inter-team interactions
					Increased understanding of inter-team colleagues
					Decreased hierarchies
					Lack of familiarity with the social surrounding



Work condition moderators

Work conditions	Case 3	Case 2	Case 1	Case 4	Reported factors regarding consequences of speech rules
Autonomy					Opportunity to choose between strictly quiet, semi-quiet and interactive zones
Mental resources					Shielding oneself from interruptions by colleagues in quiet zones
					Avoiding distractions from others' phone conversations in quiet zones
					Exposure to too many conversations in interactive zones
Inter- and intra-team resources					Quick exchanges of information in interactive zones
					Overhearing conversations in interactive zones
					Missing out on important information in quiet or semi-quiet zones
					Limitations on initiating conversations in quiet or semi-quiet zones

Results

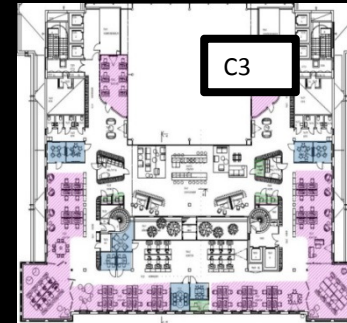
Aim 3: Workspace



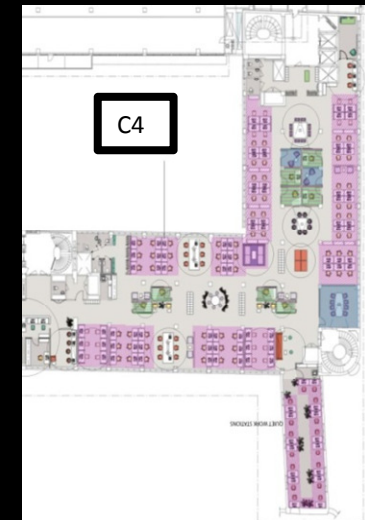
C1



C2



C3



C4

Privacy

Acoustic privacy

Visual privacy (not being obs.)

Visual distr. from bypassers

Visual distr. from people closeby

C1

C2

C3

C4



N/A

N/A



Overall outcomes

Environmental satisfaction

Environmental satisfaction

Preference for A-FO

C1

C2

C3

C4



Perceived performance

Individual productivity

Intra-team productivity

Office being optimally designed for work tasks





Summary

Spacious ratios
Zoning

Sat. with space configuration

Spacious ratios
Zoning, (Well separated)
No corridors

Sat. with privacy
Mental working conditions

Short distance between zones

Sat. with communication
Sat. with interpersonal relations
High intra-team productivity



Preference for the A-FO

Proportion of employees	0.13	0.14	0.17	0.38	0.47	0.54	0.58	0.67	0.78	0.92
Org. type	Public	Public	Public	Municipality	Private	Public	Private	Non-prof	Private	Private
"Company size at office"	226	144	98	152?	100	46	160	49	50	65
Respondents	148	85	57	152	66	35	24	36	46	40
Females/Males	67/81	25/60	23/34	50/102	32/34	24/11	16/6	28/8	6/40	23/17
Response rate	66 %	64 %	60 %	85 %	84 %	76 %	73%	90 %	92 %	58 %

n=695, response rate 0.75



Preference for the A-FO

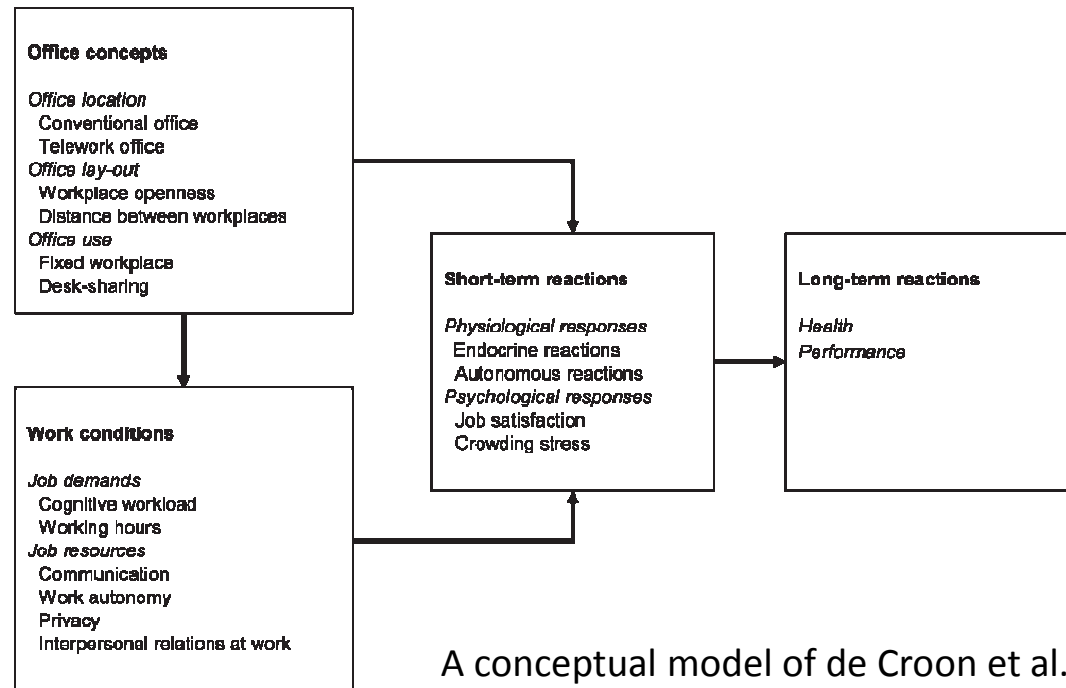
Cases	C5	C6	C9	C7	C3	C8	C4	C1	C2	C10
Proportion of employees	0.13	0.14	0.17	0.38	0.47	0.54	0.58	0.67	0.78	0.92

n=695, response rate 0.75



Background

Office factors



A conceptual model of de Croon et al., 2005).



Delimitations

Activity-based Flex office (A-FO)

Planning process

Office layout

Policies



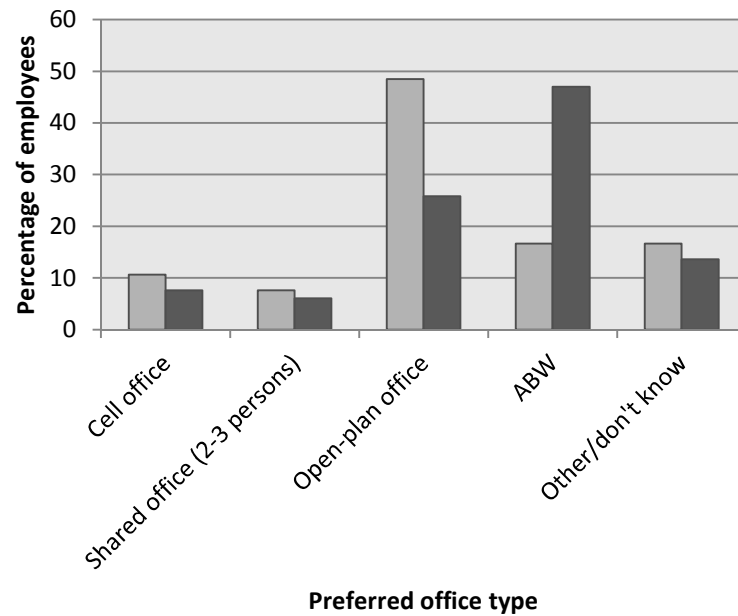
	Case 1 (C1)	Case 2 (C2)	Case 3 (C3)	Case 4 (C4)
Type of company	Knowledge and training provider	IT service and support providers	Insurance company	Science park
Total employees	40	49	79 + approx. 20 consultants	13 + approx. 30 external stakeholders
Number of interviewees	24	43	26	12
Gender Female/Male	20/4	5/38	10/16	7/5
Age, mean (min-max)	50 (37-65)	38 (23-61)	43 (31-60)	47 (27-65)



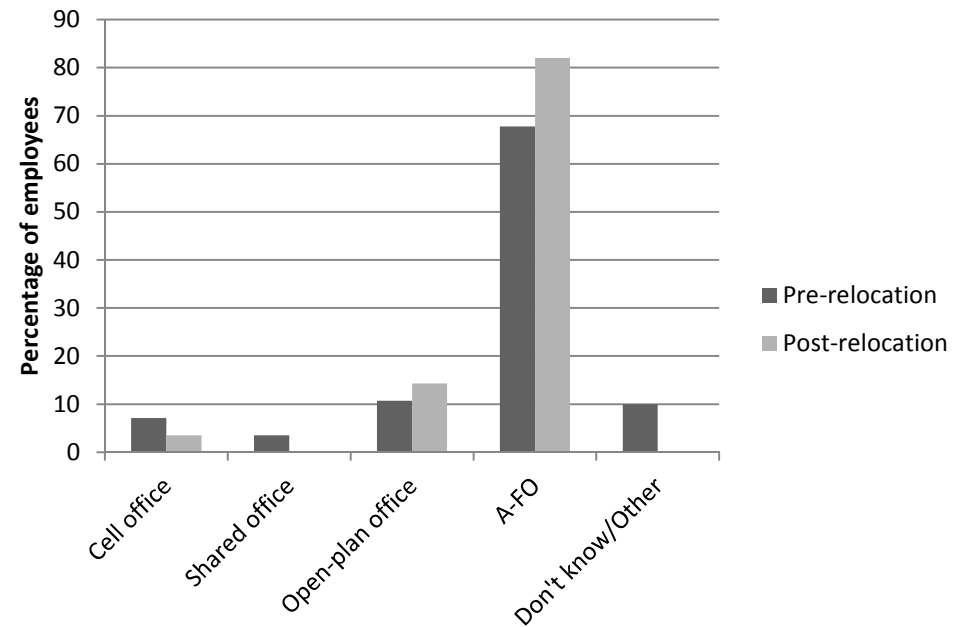
C5:



Case 1



Case 2



Planning process

	C1	C2	C3	C4
Involvement before deciding on the office type	Yes	Yes	No	No
Needs and Activity analysis	Yes	Yes	No	Yes
Employees participation in decision on policies	Yes	Yes	No	No
Clear communication of policies	Yes	Yes	N/A	N/A
Years of planning	1,5	2,5	0,75	0,5

Planning process

"Nothing was left to chance. As a company, they took the process very seriously" (I-402)



Results

Aim 3: Workspace

Environmental satisfaction

Environmental satisfaction

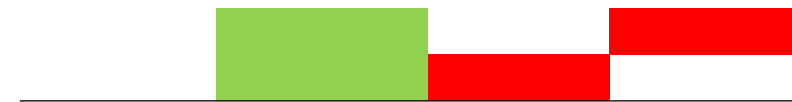
Preference for A-FO

C1

C2

C3

C4



Perceived performance

Individual productivity

Intra-team productivity

Office being optimally designed for work tasks



BETTER CASE

WORSE CASE

Interior design



Interior design

Functionality of furniture

Storage opportunities

Aesthetics

Access to equipment

Personalization (flowers etc.)

Adjustability of furnishings

C1

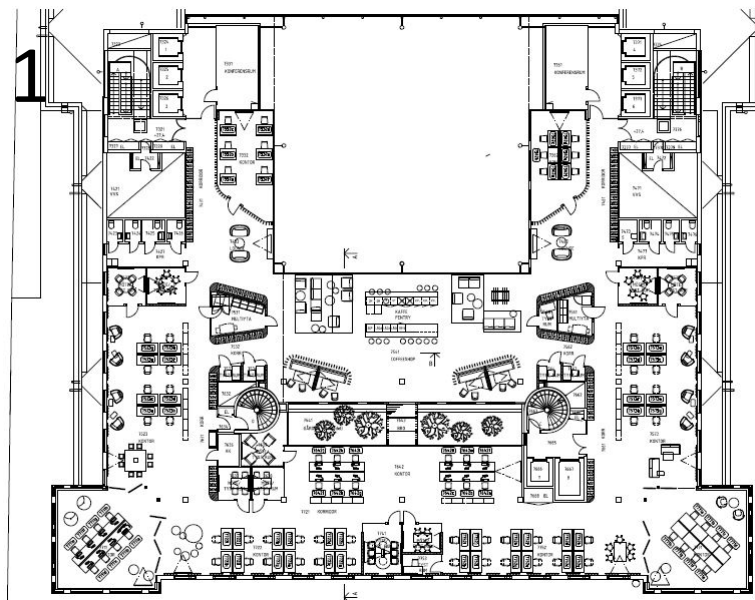
C2

C3

C4



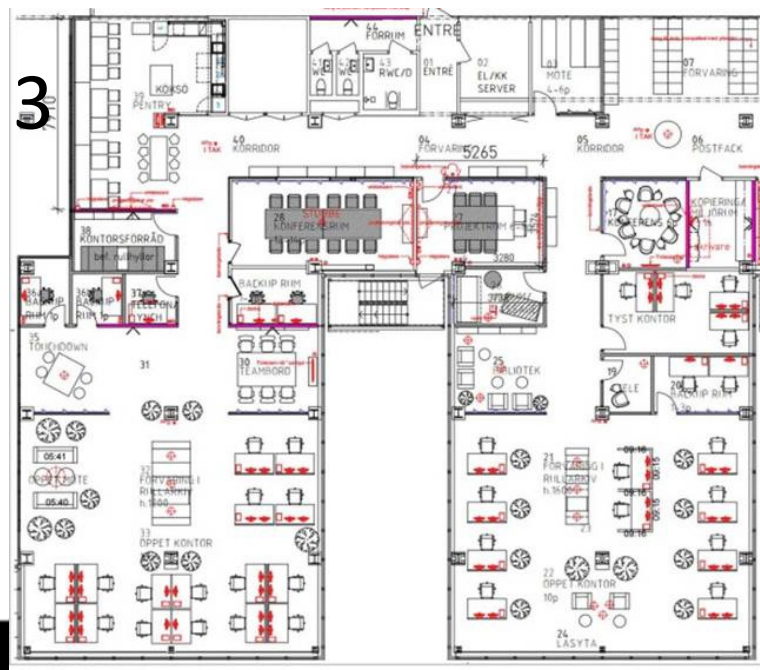
Flex 1



Flex 2



Flex 3



Flex 4





Process suggestions

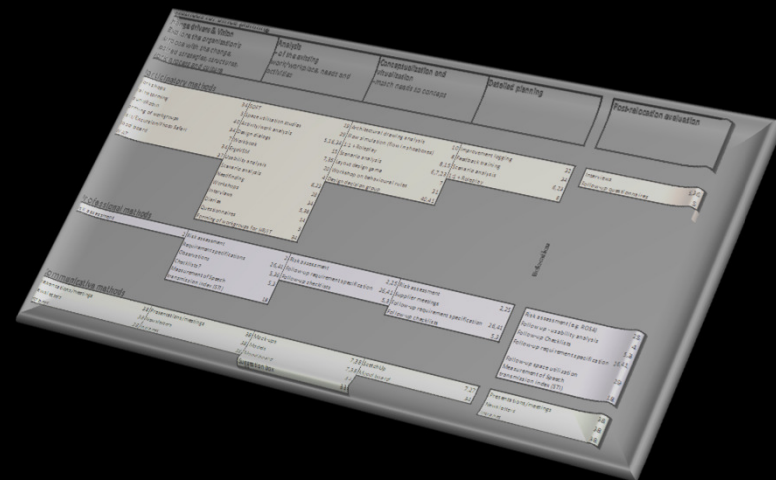
- Flex offices +
 - Physical work environment
 - Aesthetics
 - Acoustic work environment
- Floor plans with separate acoustic zones
- Dimensioning
- Policies
- Implementation process
- Flexkontor \neq decreased cohesion



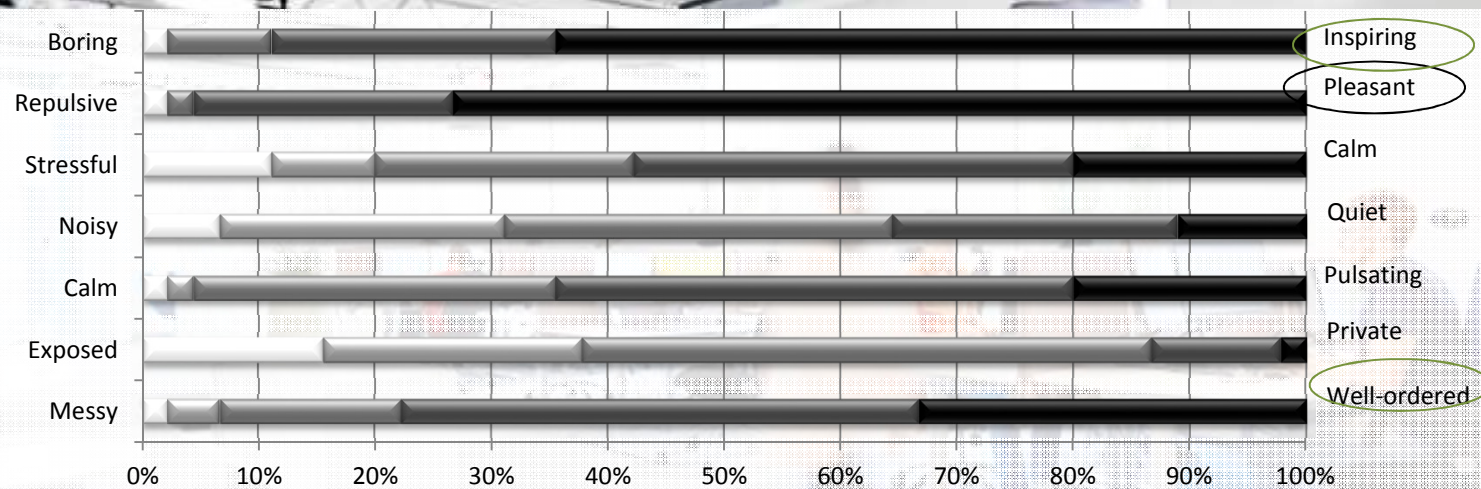
Evaluation of framework

“The methods framework made me think about how to conduct my work” (Q1-8)

“A mental fundamental structure” (Q2-1)



Performance and distraction



Aim 3: Designing the organizational and social environment



Autumn 2013		Spring 2014		Autumn 2014		Spring 2015		Jun Relocation planned	Sep Relocation executed	Autumn 2015		Spring 2016		
Work analysis	R	Questionnaire 1	R	Questionnaire 2	R	Questionnaire 3	R			Questionnaire 4	R	Questionnaire 5	R	
Beehives														
Focus groups				Rules workshop		Feedback lecture						Individual interviews		R
Diaries														
Questionnaire				Groundbreaking ceremony		Interior design group						Observations		
Feedback on flowchart		Deciding office concept												R
Reference site visit				Kickoff and workshop										