

Human aspects of digital transformation

How to get it right

What we do

Experience

- AspenTechnology – Support, R&D, business consulting
- STS Associates – R&D process improvements
- ARC Advisory Group – VP of consulting and digital transformation council
- Kyoyu-sha – individual and collective change

Domains

- Management and leadership
- Teamwork
- Individual and organisational change
- Human-centred design (processes, solutions)

Interventions

- Training
- Coaching
- Workshops
- Projects

Content

When things go well

- Axens, L'Oreal and Merck
- What companies do that succeed

It's not always that rosy

- What happens when transformation fails

The science

- Positive and negative states
- Science-based sustainable change

Creating fertile ground

Successful sustainable change

- Leaders
- Coaching
- Intentional change process
- Human-centred design
- Influencing identity groups

Repair and rebound

- Conflict - repair cycle

Take aways

References

What companies do that
succeed digital transformation

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Chance of success depends on human-centricity



Organisations that put humans at the centre of their transformation journey are

2.6 times more likely to be successful than those that do not

(73% chance of success versus only 28%).

Source: Oxford University and EY, 2022

What companies do that succeed

- Strategic direction
- Consultation. Then design, develop, implement, and improve WITH the workforce
- Apply key change competencies

Axens

Global multi-cultural implementation of industrial analytics for operational support

- Factory 4.0 initiative is one pillar of group-wide digital transformation process

Scope

- OT connectivity, data reliability, real-time sharing world-wide
- Analytics package enabling data-driven analysis and decision making



Axens

Human success factors

- Federate with a shared vision of sustainability, resource consumption and CO₂ footprint.
- Sites are accountable for usage and results
- Adapt to cultural differences and ways of thinking across the globe
- Teams define configuration and usage. Data implications.
- Training in how to use the tool's output (methodology)
- Principle: implement using a "neural network model": connect and collaborate

Results

- Involvement leads to acceptance, interest and initiatives to using the system.
- Sharing of data, processes, practices, learning across boundaries unlocks intelligence and creativity
- Data transparency leads to increased trust
- Unexpected results emerge,
 - Maintenance teams developed vibration monitoring solution

Axens 3 Pillars of Sustainable Development

**Health and Safety
Environmental Impacts
Teams, The First Wealth of Axens**



Merck KGaA

Company

- 350-year old, 120 production sites, 320k products, 100M patients
- Activities: life science, health care and electronics

Selected "symptom" related to digital transformation

- Helping people with emotional response to change



"Embracing a new work process is uncomfortable at the start, even when accepted".

Manu -> SmartFacturing vision

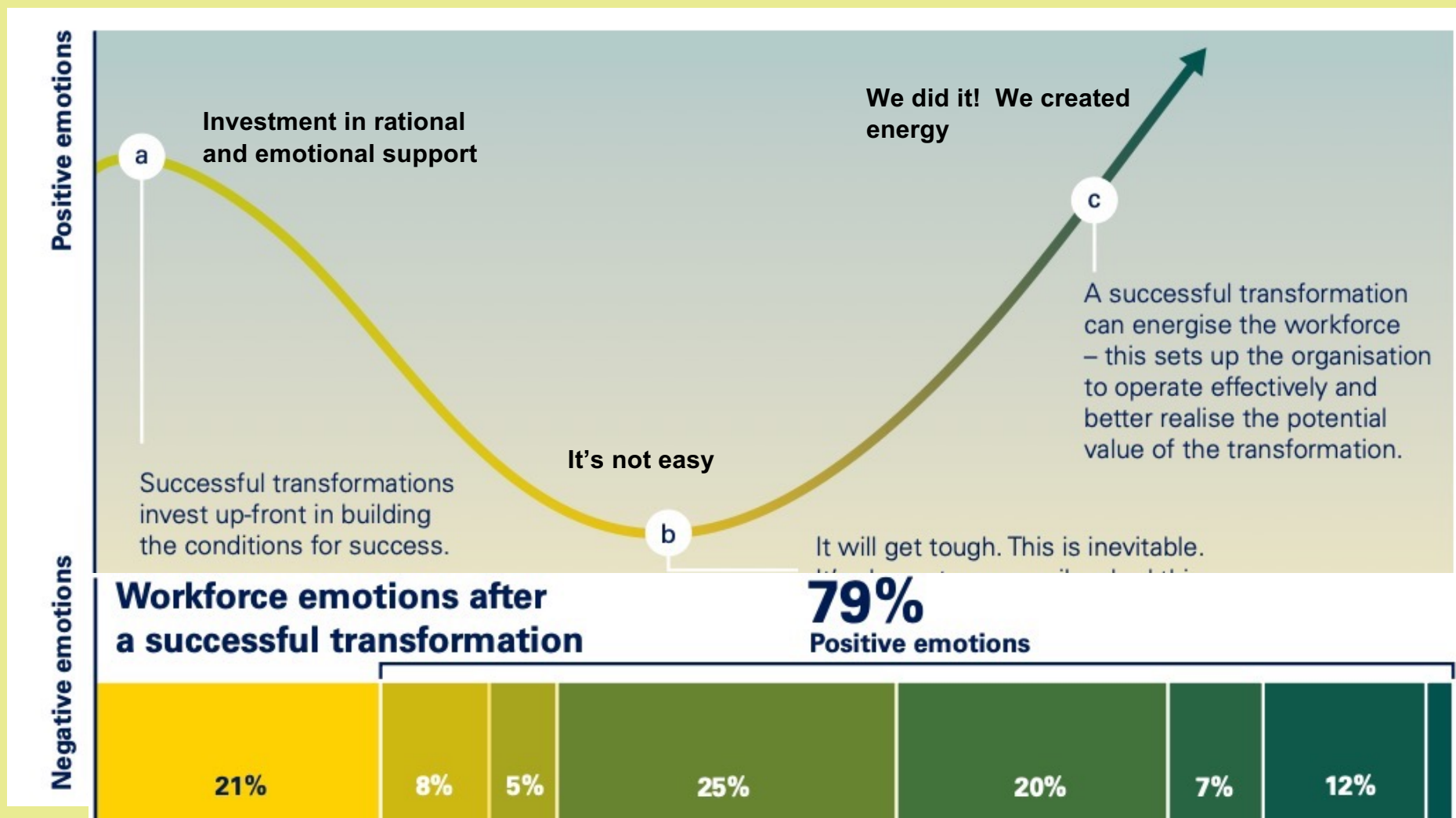
- Decision intelligence dynamically reconfiguring process and products
 - Adapting to any type of fluctuation
- Reducing product development time by 50%

Published outcomes

- Increased flexibility WITH efficiency using modular production (>300 production modules)
- Energy cost reductions

Source: Michelangelo Canzoneri (2025)

Emotional journey's are key: succesful transformations embrace them



Source: - Oxford University and EY, 2022

It's not always that rosy

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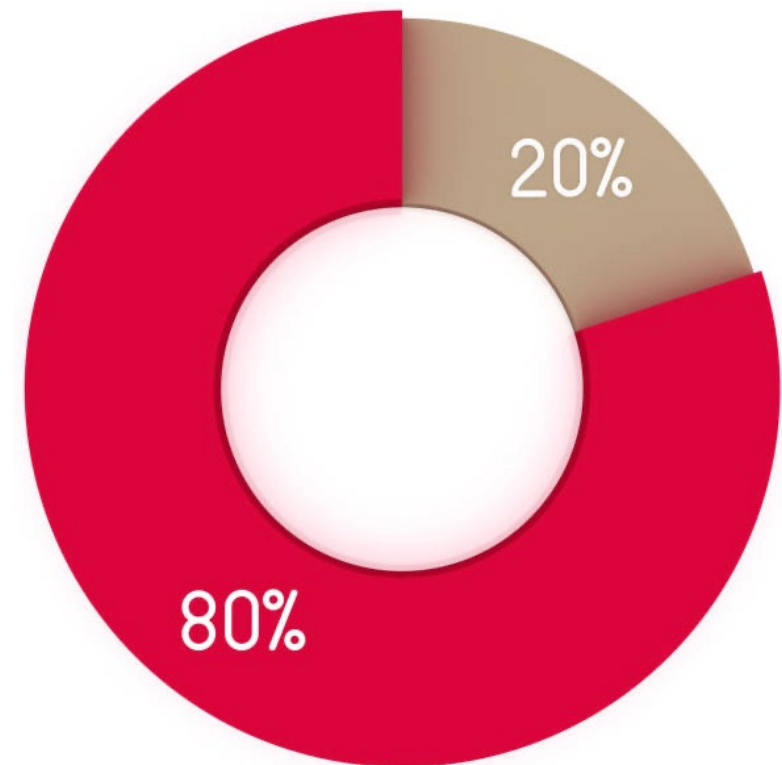
A human perspective on digital transformation and other change

Consistent results from many studies since a decade:

Digital transformation rarely succeeds (20-30%)

- Changes are not fully realised
- Benefits are partially realised
- Implementing technology is not sufficient
- Top-down is largely ineffective.
- Management support is inadequate

100% of the cost, 20% of the results



Transformations come on top of a difficult situations

Absenteeism, turnover and inefficiencies result in a

- global, average loss of 9% of revenue

Symptoms:

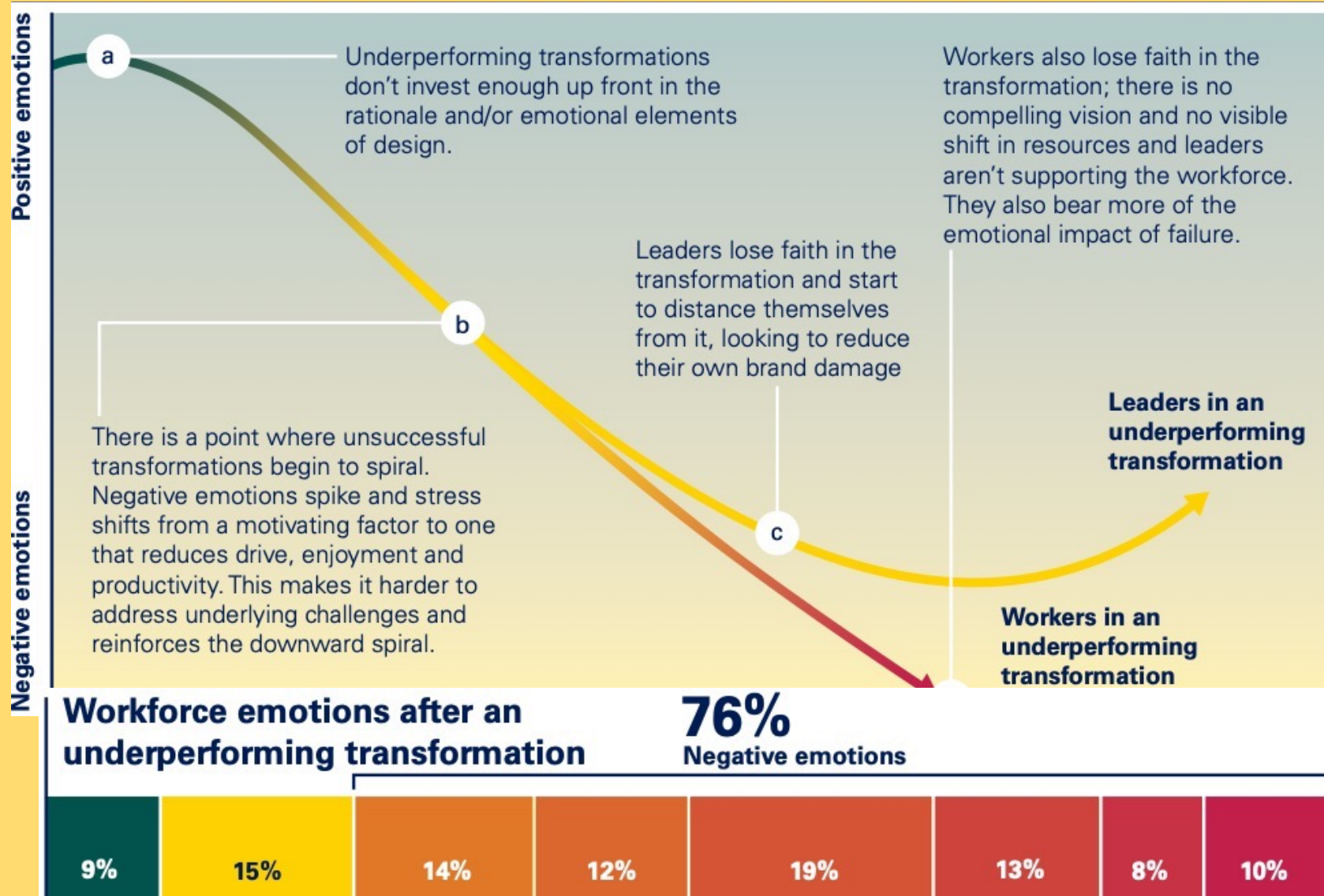
- Poor (team) performance
- Absenteeism, presenteeism, high turnover
- Average loss of 3% of revenue is health-related
- Difficulty attracting talent
- Poor levels of engagement (around 30%)



Signs of burnout

Image: www.aps-software.com

Emotional journeys: failing transformations lose control and spiral



The science of change

1. Moment-to-moment change
2. Individual transformation
3. Organisational transformation

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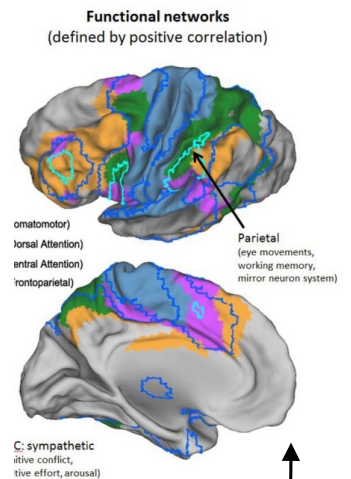
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Imagine the following two situations

When someone tells you what you should do

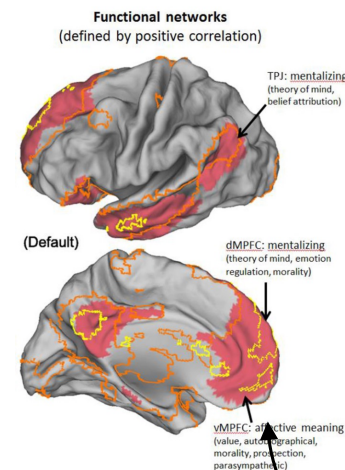
- Most of us would feel pressured
- The nervous system's defenses kick in

Rejection anxiety
Narrow focus on stressor
Prevention focus, advocacy
Stress, energy-depleting



When someone offers you options?

- We feel cared about, interested
- Emotions are positive



Affiliative interest
Widens perspective
Promotion focus
Renewal, energising

The brain networks flip and inhibit each other

- At our best: empathic network is "on"
- Under stress: the analytic network is "on"

Online

Logical
"adult" brain

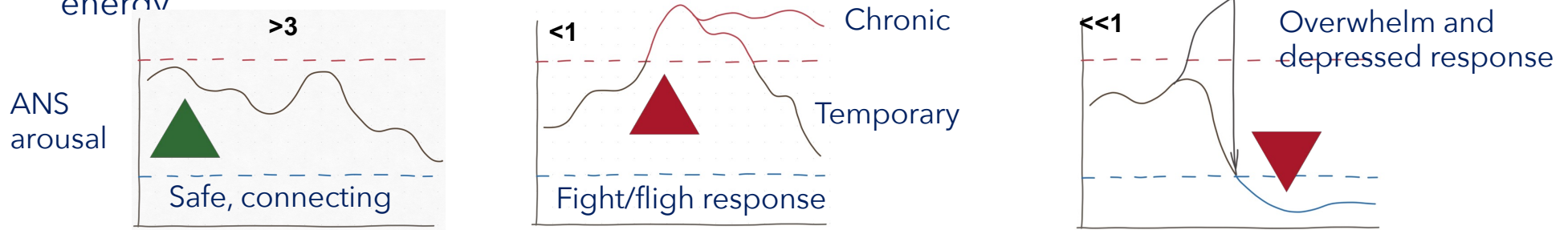
Offline

1. Positive versus negative states

	Positive	Negative
Nervous syst.	Safe, (Co-)regulation	Flight, fight, please, freeze
Emotions	Positive	Negative
Brain	Empathic network (DMN)	Analytical network (TPN)

The first to notice is the nervous system

- At our best: we relate, co-regulate. learn and innovate.
- Under stress: we drop into defensive states. Logical brain offline. High energy, depleting energy

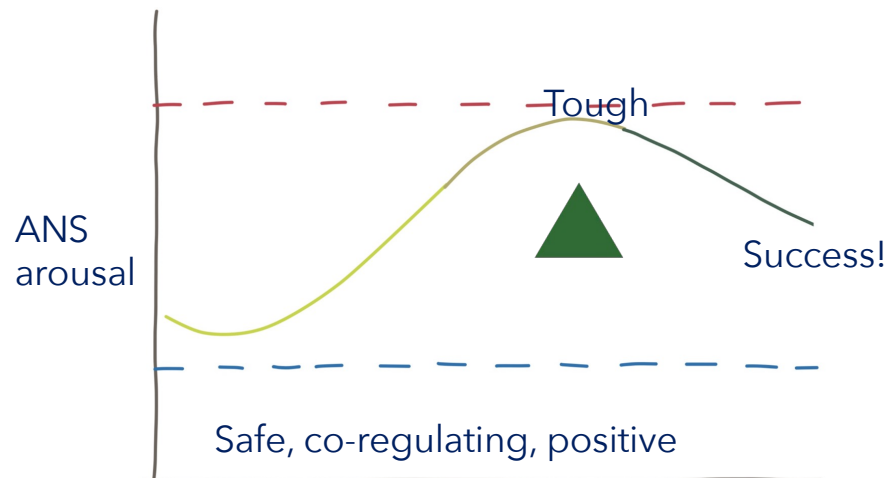
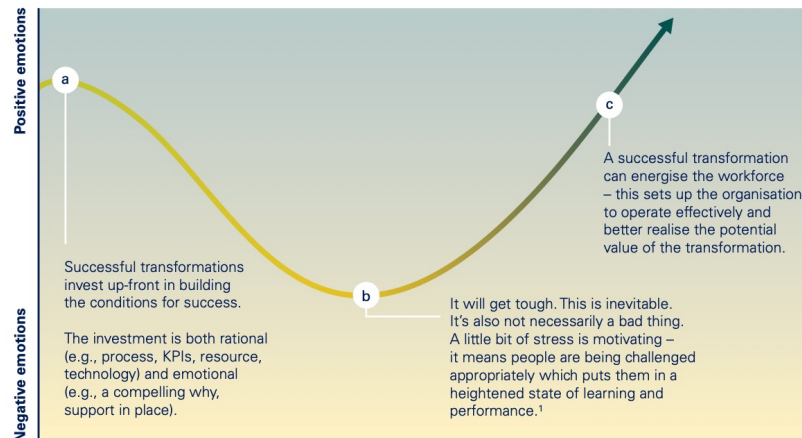


To feel good and be effective

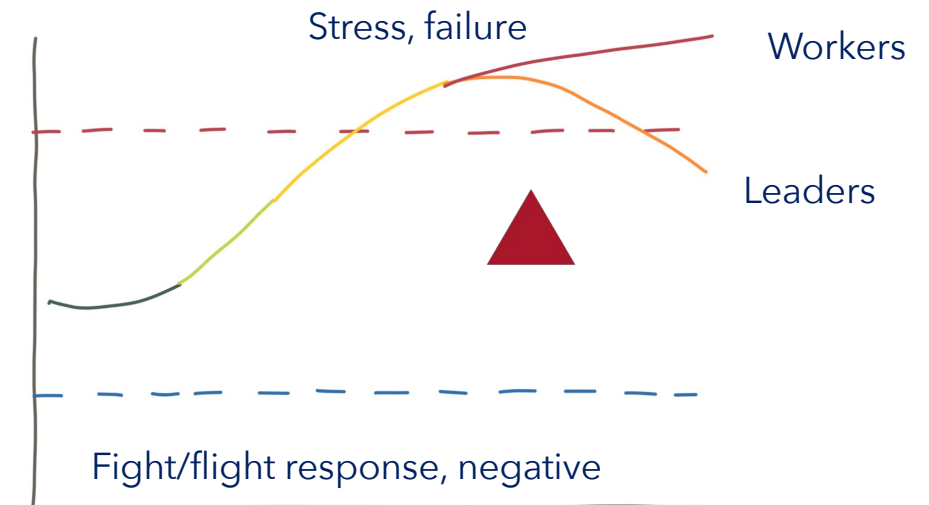
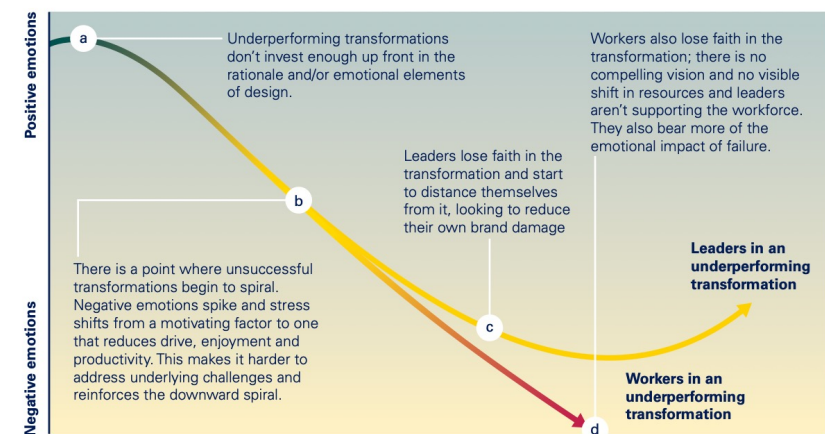
- The ratio of positive and negative affect must be higher than 3:1 to thrive.
- Positive emotions broaden awareness and build resources for effective functioning

1. Compare with emotional journeys

Successful transformation



Failing transformation



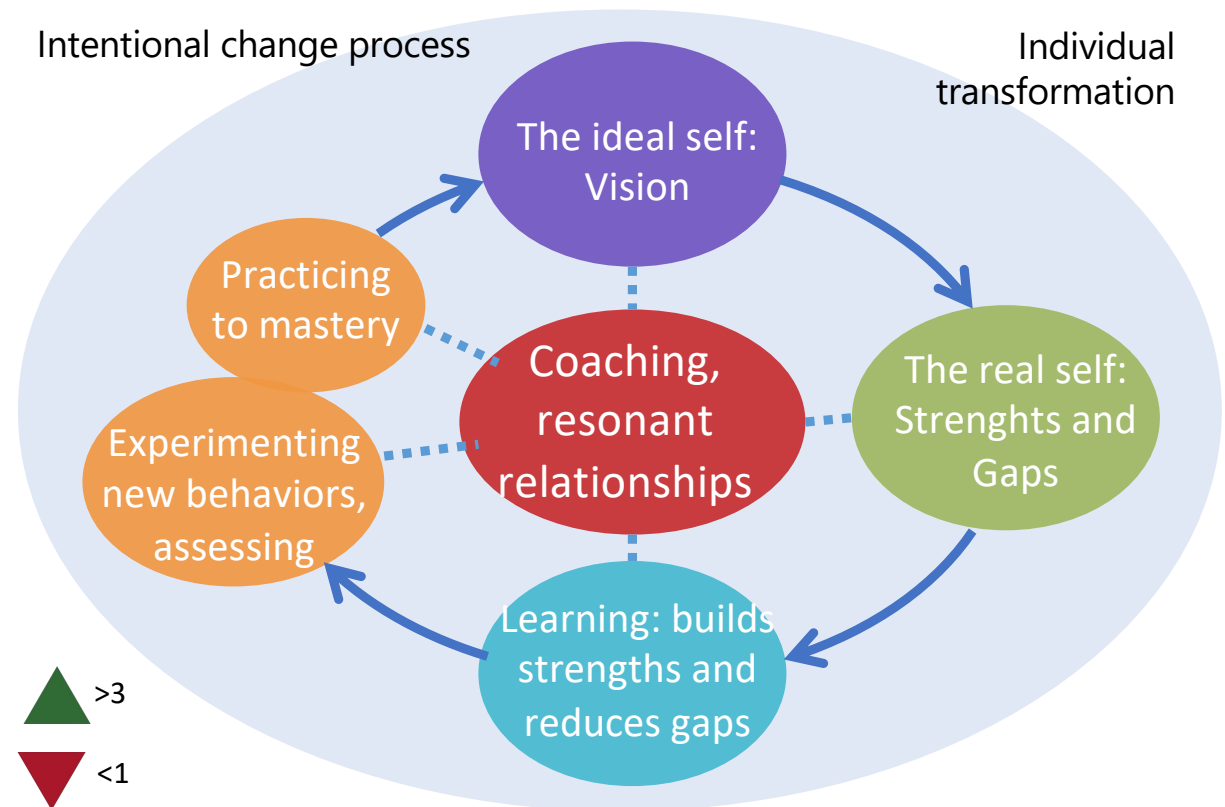
2. Intentional change process

Science-based coaching

Validated sustainable results

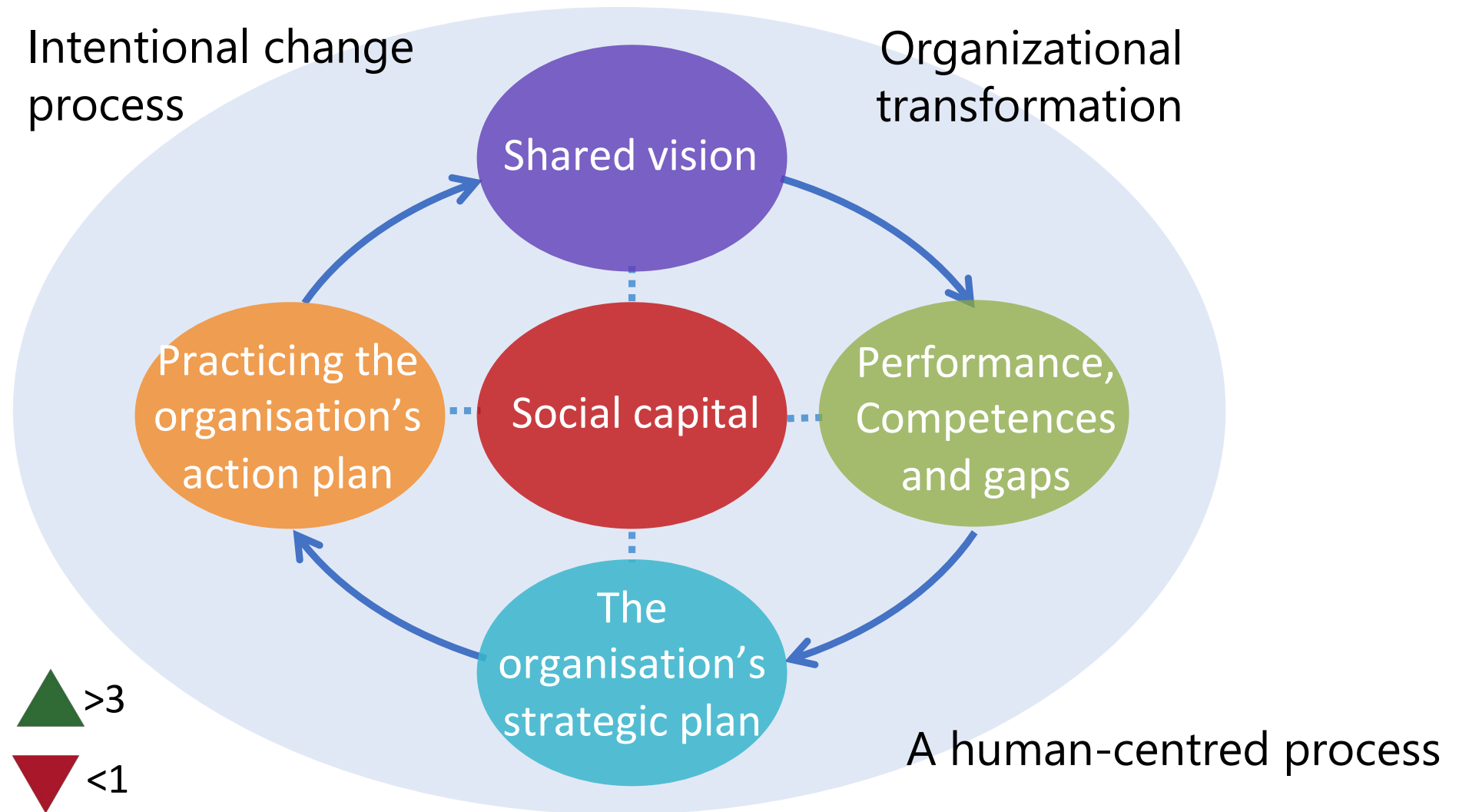
Essential features

- Self-motivated based on a vision
- Assess strengths and development
- Learning plan
- Experimenting and practicing
- Coaching and support
- Maintain positive states
- Self-discovery instead of top-down



Details follow in the next section

3. Organisational equivalent



Creating fertile ground

A global approach to health,
productivity and transformation

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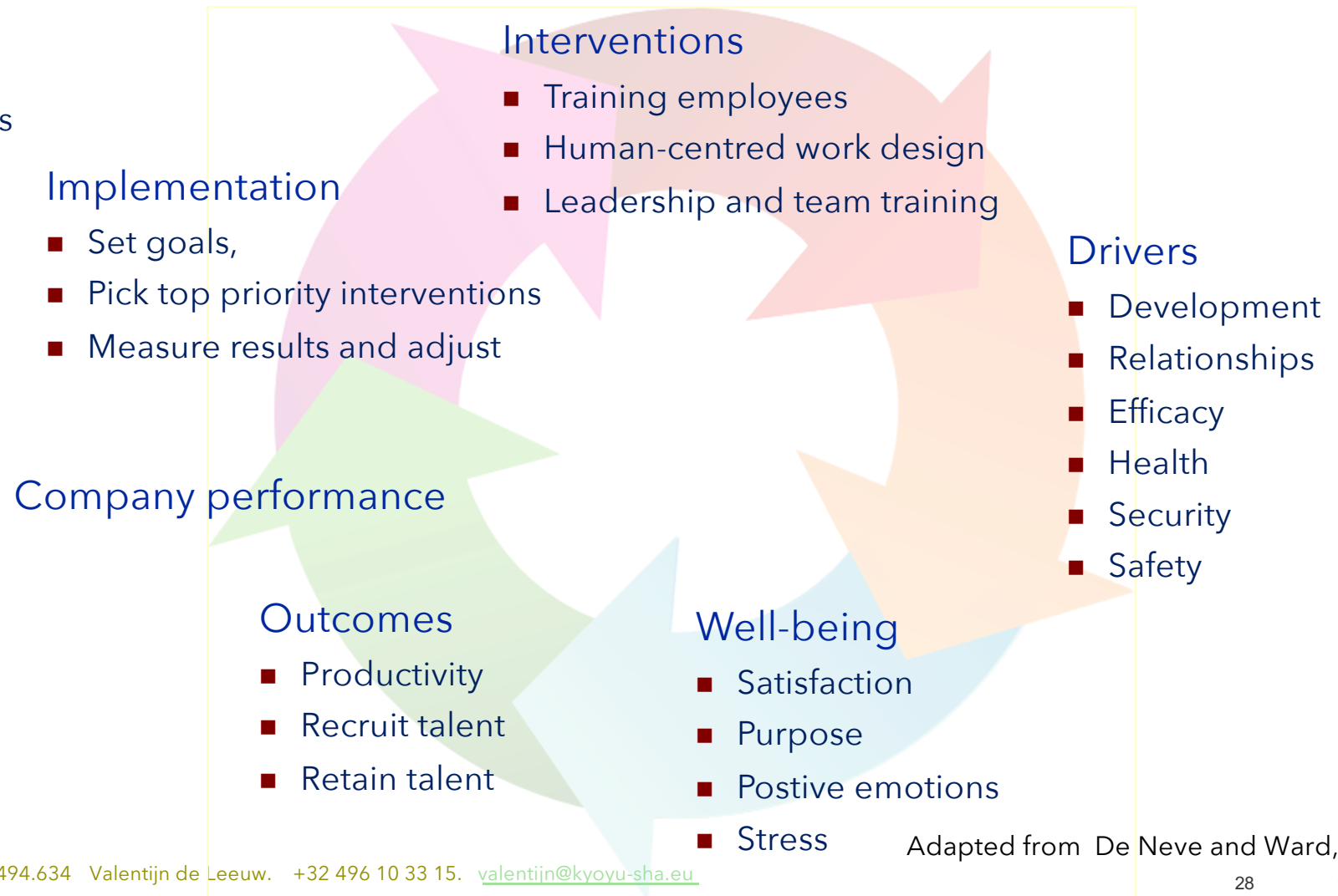
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Build health and resources

Interventions that are positive for well-being, are also favourable for

- Health
- Productivity
- Transformations



First time right!

Implementing desired, sustainable change

1. leadership
2. coaching individuals and teams
3. intentional change in organisations
4. human-centred design
5. influencing identity groups

1. Michelangelo Canzoneri, Merck KGaA on Leadership and Change

Leadership is a requirement. Training is necessary as much as coaching

- Some people prefer to work with people (born leaders)
- Other people prefer to work with things (taught leaders)
- Under stress taught leaders default back to old patterns
- Therefore, leaders need continual leadership coaching

Leading is not about telling what to do but to ask questions

- So that people understand for themselves
 - and develop intrinsic motivation
- This is coaching leadership style



Generations

- Older generations are self-motivated. Their children have suffered from absent parents
- The young generations are less self-motivated
 - Need to explain big picture, purpose and rationale.
 - They need regular encouragement

Source; Michelangelo Canzoneri (2025), unreviewed personal communication

1. Michelangelo Canzoneri, Merck KGaA on Leadership and Change

When change is not accepted

- Despite leadership skills, dialogue, coaching, open-mindedness and respect
- The leader needs to be
 - Motivated (EI skill)
 - Resilient to frustration and setbacks. (EI skill)
 - Creative and persevering (EI skill)
 - Empowered to implement creative alternatives

A corporate leadership, coaching and mindfulness program

- Is favourable, if not required
 - To build agile and high-performing organisations



Source; Michelangelo Canzoneri (2025), unreviewed personal communication

Leadership skills

- Leadership promotes well-being
- Creating a coaching culture is not a large effort

Correlated with superior business results

Correlated with stock market performance

2. How to follow-up: leaders as coaches

For best results, leaders should be coaches

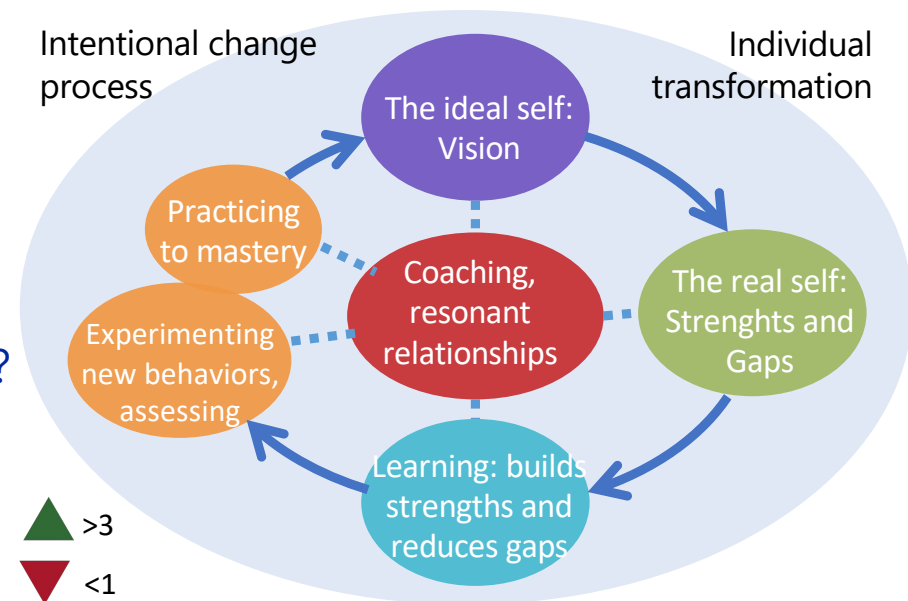
- Day-to-day activities
- Coaching for behaviour change

Science-based coaching

- Coaching "sticks" because the coachee is actively involved
- Coaching with compassion, not for compliance

If not coaching for compliance, how to reach goals?

- Using pre-defined goals is ineffective
- Coaching helps focusing the coachee's attention to his and organisational needs behind the goals
- Coaching goal is reaching a solution satisfying all needs



2. Coaching team excellence

Top performing teams operate a safe environment

- Safety enables teams to share information
- Sharing information is the basis of performance

Teams need to coaching to develop trust and safety

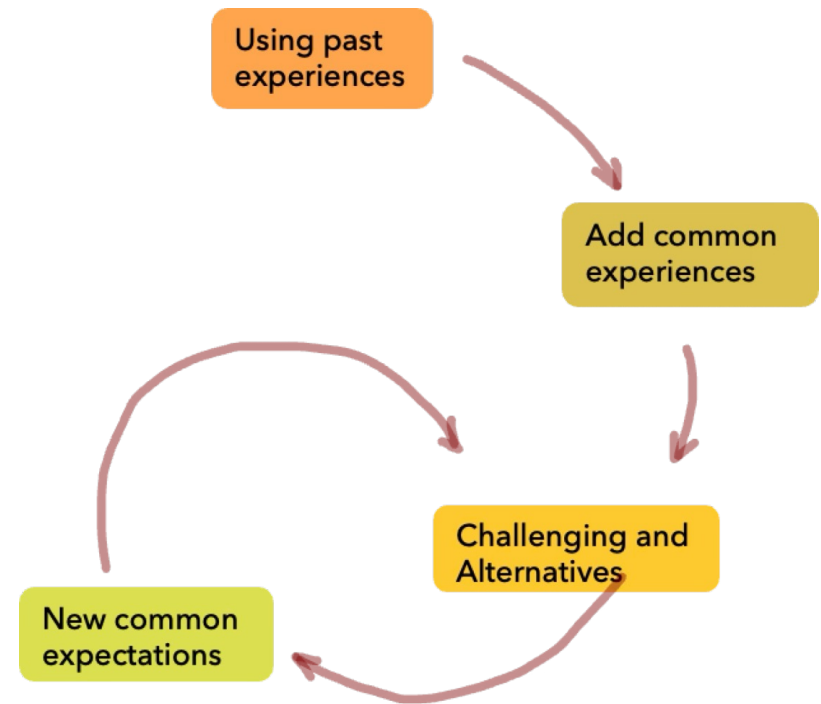
- Developing norms and identity
- Agreed-upon team behaviours, roles and responsibilities
- Maintain norms

Top 3 group emotional intelligence norms:

- Understand team members
- Demonstrating caring
- Addressing unacceptable behaviour

What does not work:

- Great individual skills and personalities
- Clearly defined goals



3. Engaging the organisation

Co-creation of a common vision

- What works, what can we build on
- Where can we innovate and improve
- What is our purpose

Building a strengths and learning plan

Experimentation and practice

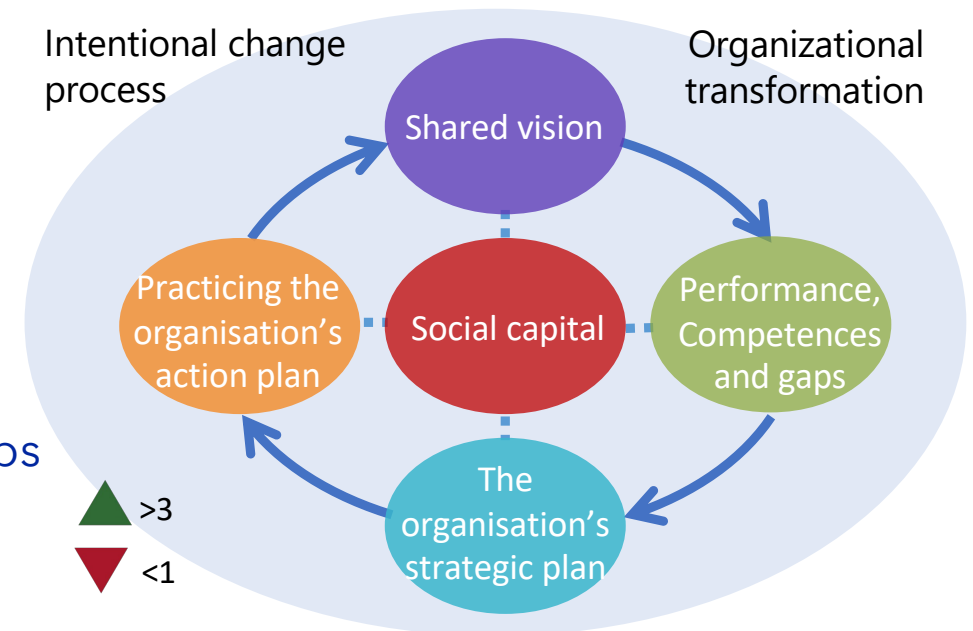
Incorporate feedback from resonant relationships

- From the organisation as a whole
- From clients, patients, users, consumers, ...



Apply human-centred design here (see below)

- For new business processes, products, solutions, etc.



4. Human-centred design

Engaging process

- What do users want and need, like and dislike
- Not validating preconceived hypotheses, but learning from experimental iterations
- Simple and cheap: simple prototypes, or role-plays

Profiles and Personas

- Consider roles, use cases and circumstances
- Solution must meet all the requirements

Requires interpersonal competencies

- Emotional and social intelligence



Image: <https://dschool.stanford.edu/executive-education/dbootcamp>

5. Influencing social identity groups (SIGs)

Groups from which people draw part of their identities

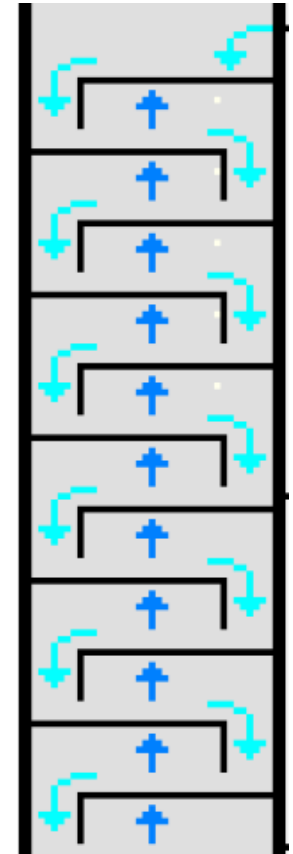
- IChemE member
- Working group member

SIGs

- Belonging
- Multileveled
- Transmit emotions and information
 - Can promote positive and negative states

Influencing ethically

- Favour discussions
- Information flowing into their organisations



https://upload.wikimedia.org/wikipedia/commons/1/13/Continuous_Binary_Fractional_Distillation.PNG

Repair and rebound:

Getting back on track

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Conflict, harmony and trust

The myth (or the lie)

- Everything is all right
- Except a few unwilling trouble makers

Reality

- Disharmony and conflict are normal. They happen all the time
- Trustful relationships are based on repeated cycles of
 - Harmony - Disturbance or Conflict - Repair - Return to harmony

Source: Ed Tronick cited by Terry Real, 2025.

In the context of digital transformation

- Discomfort requires support
- Conflicts can be solved, and repaired, which requires
 - Conflict resolution
 - Authenticity, humility and open-mindedness
 - The five core competences for change
- Trust will be the result, that will re-enable change

Resistance and conflict

Unwillingness to be influenced due to one or more of the factors below:

- Organisational and/or individual

Misunderstanding

- Wrong interpretation leads to rejection of the message understood.
- Solution: clarify, clear up the misunderstanding

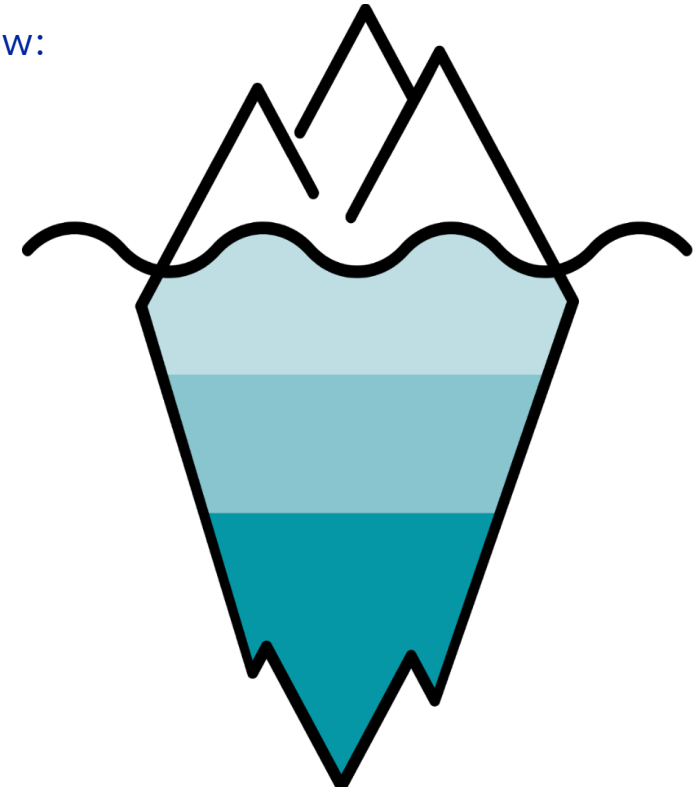
Dislike

- Conscious dislike
 - Conflict resolution: discuss, brainstorm and find a win win.
 - Influencing: what is in it for me, what are costs, risks and rewards.
- Subconscious dislike: clashing beliefs or internal conflict
 - Resolve the clash with implicit beliefs / norms / culture

Lack of trust

- Lack of consistent, reliable, authentic behaviour
- Solution: Use emotional intelligence, and work on the relationship.

Use resonant leadership and coach behaviour



Take aways

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An integrated approach to human-centred digital transformation (1/2)

Digital transformation can be successful

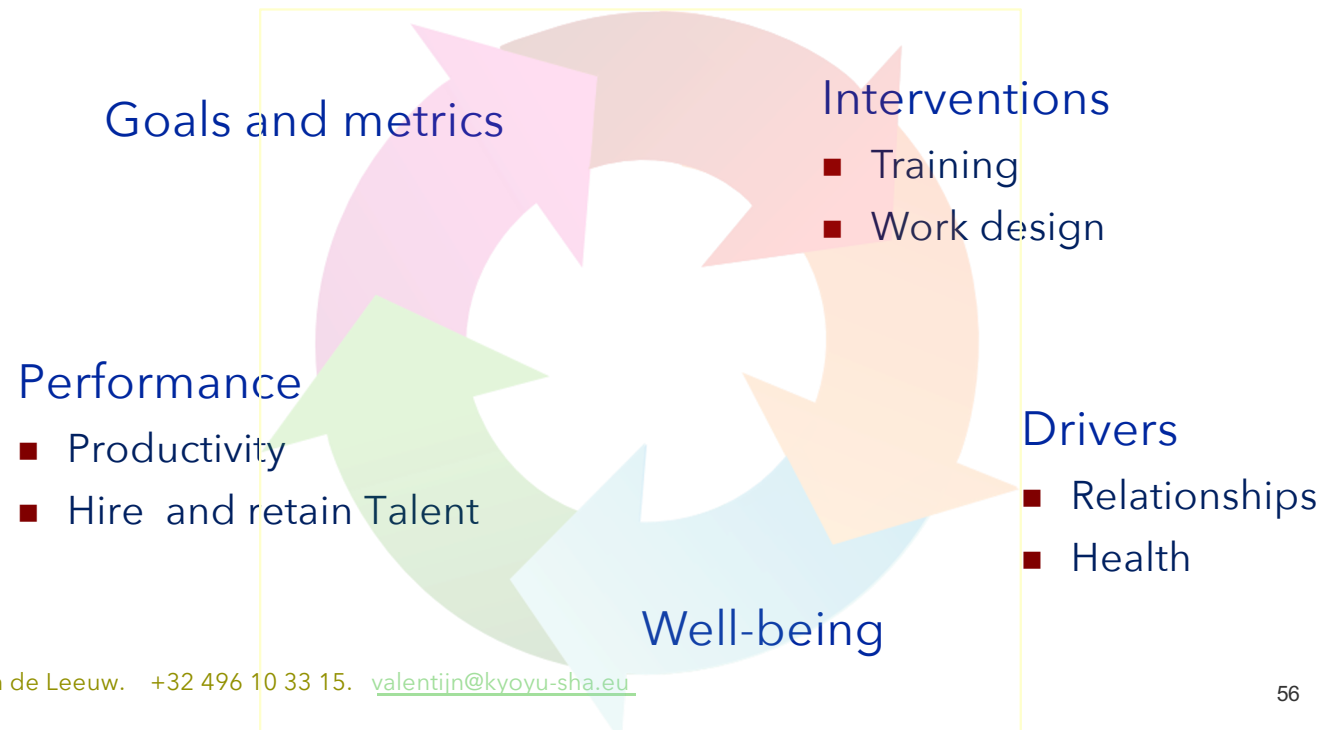
- Strategic goals
- Design, implementation and improvement with the workforce

Positive states are required for learning and innovation

- Brain + nervous system + emotions

Practices

- Preventative: well-being



An integrated approach to human-centred digital transformation (2/2)

Practices (continued)

Engage with the workforce and identity groups

- Discuss, design and implement change with people
 - Address concerns,
 - Demonstrate humility, open mind, added value
- Develop leadership competences and coaching culture
 - Build ownership, commitment and engagement
- Coach teams to perform based on safety and trust
- Human-centred design with intentional change process
 - build solutions that fit organisation's and users' needs
- Identity groups spread values, vision and goals

Repair and rebound



Image: Ivory Tower by Eva Stauss,
https://www.nicepng.com/ourpic/u2q8u2a9y3o0y3o0_eva-strauss-ivory-tower-ivory-tower-png/

A final word about AI

Using ML or AI to achieve specific goals

- Effective and appropriate for humans

A first brain study shows

- Writing an essay, coming up with a concept from scratch
- Mindless application of AI reduces the capacity to learn
- Results are less owned, less deep and varied

Coaching needed

- When people develop a strategy for a task
 - and use AI as a tool to execute parts of it
- Their results are far better and the brain capacity suffers less



Source: Kosmyna et al., 2025.

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