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“Når planen blir problemet”

Shared Space for Organizations: Enablers for Innovative Projects

Chapter 24 in the Cambridge Handbook of Organizational Project Management

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Quote from a successful project manager working in an uncertain context (ASML)

"I only make detailed project plans for the short term

Because I don't know yet what will happen on the long term"

"Long term is anything that happens 48 hours from now"

Developing machines that cost over 100 million euro without detailed plans? What's going on?

Unk-Unks in Project Management

Known knowns
«There are things we know we know»

We know what to do, we know how and we know when

Known Unknowns
«There are things we know we don't know»

We know what we don't know, we recognize the problem
(e.g. we know what to do, but we don't know how much time it will take)

Unknown Unknowns
«There are things we don't know we don't know»

We don't know what we don't know, we don't recognize the problem
(e.g. we don't even know what to do, let alone how long it will take us)

Project planning and unknown unknowns

Possible outcomes of the project

Known knowns
WBS
Gantt charts
CPM
Network planning

Known Unknowns
WBS
Gantt charts
PERT-CPM
Network planning

Unknown Unknowns
?
?
?

In lack of anything better, tools designed for “predictable” projects are forced on projects with high levels of uncertainty

What do we usually do in traffic when things get complex and unpredictable?

Unintended consequences of too many rules, demarcations, and signs

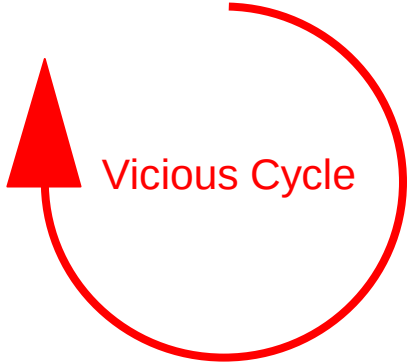
Self-fulfilling prophecy: If you treat people like idiots, they will tend to fulfill your expectations

- reduced thinking & creativity
- a-social behavior (non-communication)
- mistakes due to mixed signals or overload of signals

(Un-)Intended effects of street regulations

- Intended effect: reduction of accidents caused by an increase of motorized traffic

- Unintended effects:
  - regulations do not stimulate non-motorized traffic (the streets are not a pleasant place to be)
  - This increases motorized traffic even further
  - and consequently, increasing the perceived need for even more regulations



Decision trap:
it seems to be good at first,
but backfires later

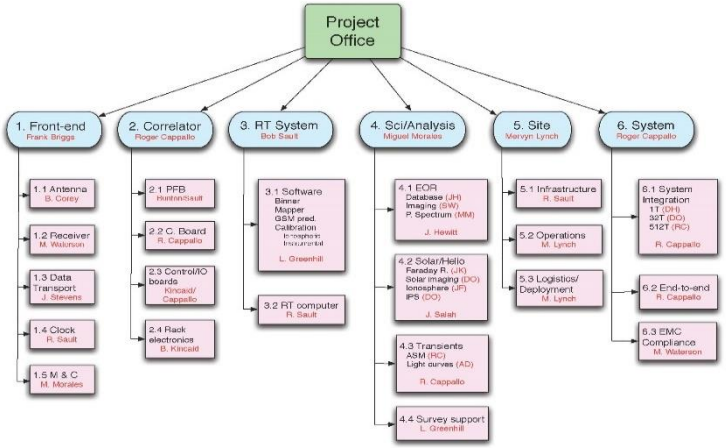
From urban planning to project planning, too many rules, demarcations, and signs

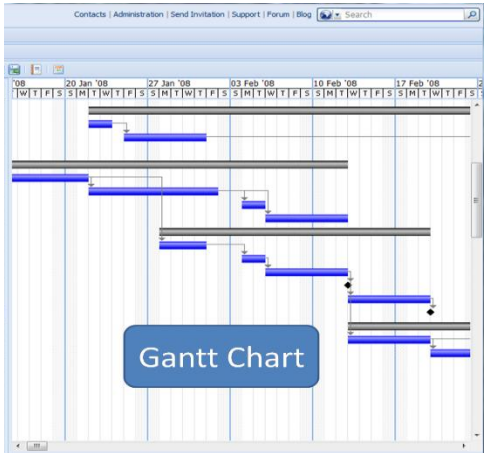
lead to:

- reduced thinking & creativity
- a-social behavior (non-communication)
- mistakes due to mixed signals or overload of signals

Test Plan

Test #	Test	Owner	Test Description
1	Battery Voltage	Felix	Charge battery for operation, charge on smart charger to safest full charge and record voltage present, record and publish for subsystem demo requirement.
2	USB Passthrough	Felix	Test USB Passthrough for functionality, ensure operation. Record and publish results for subsystem demo requirement.
3	Fuel-Gauge	Felix	Ensure fuel-gauge works as stated, not faulty. Check measurements with voltmeter for consistency. Record and publish res subsystem demo requirement.
4	Water Sensor	Felix	Wire up sensor and ensure performance as expected (expose to water). Record and publish results for subsystem demo requirement.
5	Tail-Motion (Complete)	Felix/All	Test complete 3 section model. Continual refinement until team is happy. Present to KLK and Rick Lux and next available m everyone is satisfied move on. If not, continue tweaking motion until everyone is happy. Test will also serve to verify functi pump, solenoids, relay shield, and arduino. Record and publish results for subsystem demo requirement.
6	Battery Capacity	Felix	Run tail section in kiddie pool on a fully charged battery. Ensure sufficient run time before fuel-gauge indicates charge nece Record and publish results for subsystem demo requirement.
7	Initial Buoyancy	Zak/John	After the box and tail sections have been mated, completely submerge model in water and observe buoyancy characteristi Modify amount of air in "floaties" to account for pitch and roll until a level, neutrally buoyant status is achieved. If unable t produce desired characteristics, modify placement of interior components or add weights as necessary until neutrally buoy balanced (roll and pitch). Record and publish results for subsystem demo requirement (video)
8	Waterproof Box	Seaver	After box has been constructed, and any leak paths induced (passthroughs, etc.), take completed box (empty) and submerg for 1 minute (pool or tow tank). After the test has been conducted, remove box from water and check for any leak paths. If box, locate source, modify, and rerun test until successful completion. Record and publish results for subsystem demo requ
9	Skin Structural Integrity	Seaver	After spandex material has been purchased, construct an approx. 6" square sample to check for structural characteristics b constructing entire skin model. Dip material in liquified polymer material and hang to dry until set. Strain composite materi evaluate dynamic characteristics. Ensure that material is able to strain (to some degree) without separation of layers, note approximate degree of safe strain if failure occurs to use in constructing the full skin model to size appropriately. Record ar results for subsystem demo requirement. (Max strain tested without failure).
10	Final Buoyancy	Zak/John	After complete model has been assembled, ensure that skin hasn't thrown off buoyancy characteristics. Readjust air in "flo and move components if necesarry to regain proper alignment charactestics while submerged.
11	Forward Motion	All	Take completed fish in water, ensure that motion from lab tests produces forward propulsion as expected. Document trial
12	Turn Radius	Felix/All	Perform C-turn and slow turn sequences in open water (pool). Ensure KLK can be present to okay motion. If KLK is unsatisfi continue refining program and repeat until satisfied.
13	Fully Integrated System	Felix/All	Test complete fish in water (pool), tweak until everyone is satisfied by consensus. Invite KLK and Rick to view demonstratio performing swimming protocol including straight line motion, pauses, C-turn, and slow turn. Take consensus to see if every satisfied. If not, refine programming and repeat
14	Aesthetics	All	Get minimum of 10 fill out on a scale of 1-10 how "fishy" it looks (1=that's not a fish, 10=looks real), and provide feedback to make it better. Have KLK do the same. Conduct "Test" at Imagine RIT booth.





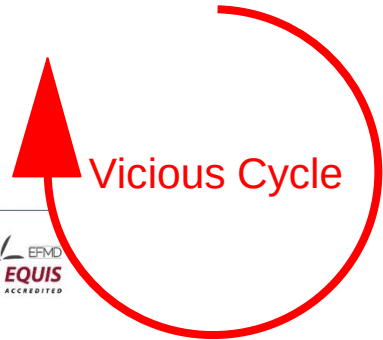
Drawing the analogy

- Motorized traffic →
- Non-motorized traffic (pedestrians, cyclists) →
- Accidents →

- exploitation projects = using existing knowledge
- exploration projects = developing new knowledge
- “success trap in product development” = ever-increasing efforts devoted to exploitation projects, neglecting exploration

Self-reinforcing process

- PM tools we have favor projects with predictable outcomes → exploitation
- Because these projects are successful, they get more funding, more resources, more attention
- Sometimes these projects even get their own departments or business units (segregation/demarcation)
- This works well on the short term, but organizations need new ideas, new knowledge to survive on the long term as well → success trap
- Therefore it is called a “trap”, because it discourages exploration



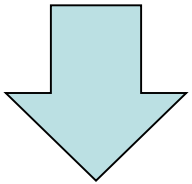
Can we prevent this trap (accident)?

Shared space

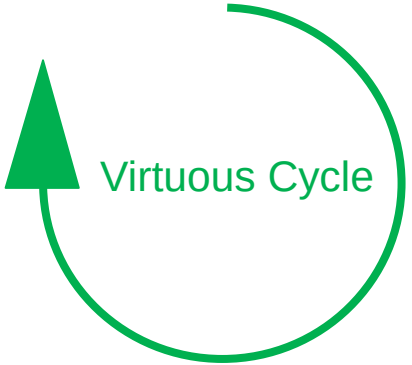
- Dutch traffic engineer Hans Monderman introduced this concept in 1982
- His aim was to reduce accidents and congestion and to increase the flow of traffic
- Shared space promotes a sense of vigilance and responsibility by reducing demarcations and physical distinction between the streets and pedestrian areas
- In the absence of rules, and the predictability and certainty that traffic demarcations used to provide, street users need to rely on other signals
- Communication and eye contact become the norm, while the average speed of traffic is reduced

Counterintuitive effects of removing street regulations

- Instead of focusing on preventing accidents
- Focus shifts to encouraging non-motorized traffic and reduction of speed of motorized traffic



- Less accidents
- Slower average speed, but more throughput
- Increase of non-motorized traffic



How to prevent “accidents” in project organizations?

- “Accident”: investing too much in exploitation projects and killing exploration projects because they don’t fit the existing tools and reporting rules
- More structure? More rules? More demarcations between people?
- Or less/no structure? (like the shared space in traffic)

How to break down the learning silos?

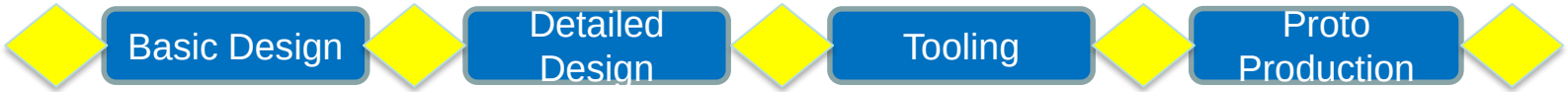
We need structures or tools that boost creativity, flexibility, communication, knowledge sharing, learning, room for trial and error, room to make mistakes

Enablers for sharing space in projects:

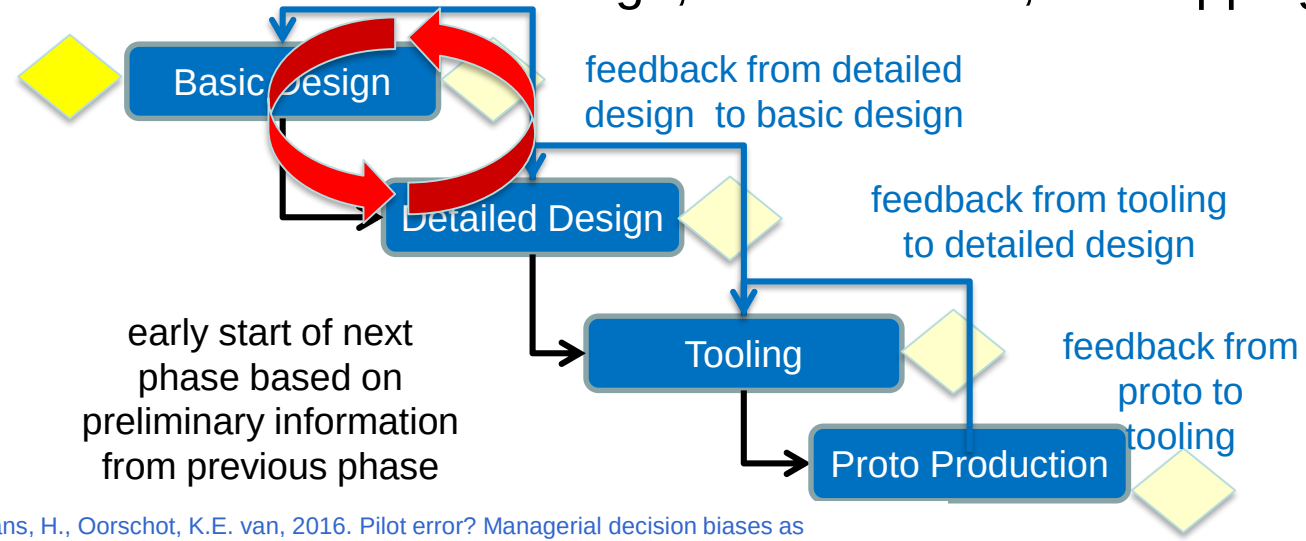
- within the project
- within the organization
- within the project network (multiple organizations)

A clash of approaches?

Sequential Design, structured Stage-Gate approach (Cooper 2008)



Concurrent Design, less structure, overlapping of phases



Risk of iterations, more costs

Faster learning, earlier finish

Akkermans, H., Oorschot, K.E. van, 2016. Pilot error? Managerial decision biases as explanation for disruptions in aircraft development. *Project Management Journal,* 47(2): 79-102.

More and different milestones

- Milestones are commonly used to plan meetings, arrangements, celebrations, etc.
- So, milestones help communication between project stakeholders
- Often, milestones are event-oriented, for example:
  - Milestone 2 is reached when the design is finished
  - Milestone 4 is reached when the foundation for the new building is ready
- But, in projects with high levels of uncertainty, how do you know which event can or will happen? And when?
- **Time-oriented milestones** are better:
  - Milestone 2 is on January 20
  - Regardless of what has been done or what is finished, the team will have the opportunity to meet on that day and everyone knows that this is going to happen (Gersick, 1994)

Agile development

- An agile method focuses on adapting to change through highly iterative development and test cycles (Conboy, 2009; Dingsøyr, Dyba, & Moe, 2010)

- Product requirements are discussed and prioritized with customers and placed in the backlog for the next iterative cycle (Dingsøyr, Dyba, & Moe, 2010; Fowler & Highsmith, 2001)

- Note that this agile method also has time-oriented milestones: the team knows beforehand that it will meet with the customer after every cycle/iteration, but the team doesn't know yet what will be delivered in each cycle

Sharing space in organizations

- Co-location *(if full-time co-location is impossible, part-time co-location is still better than separation)*
- Aligning executives and board members: sharing a long-term vision instead of short-term focus on profits
- Big picture thinking: goal alignment between departments, remove conflicting goals

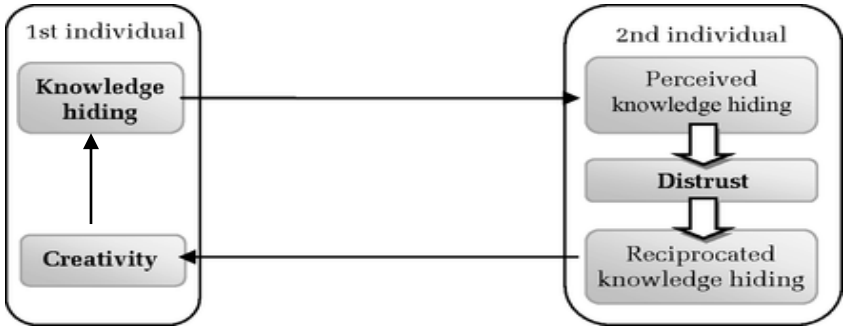
- Walrave, B., Oorschot, K.E. van, Romme, A.G.L. 2011. Getting trapped in the suppression of exploration: A simulation model. *Journal of Management Studies,* 48(8): 1727-1751
- Oorschot, K.E. van, Sengupta, K., Akkermans, H., Wassenhove, L. van. 2010. Get Fat Fast: Surviving Stage-Gate in NPD. *Journal of Product Innovation Management*, 27(6): 828-839.

Sharing space in project networks

Get rid of knowledge protection rules and regulations

- knowledge hiding/protection will reduce trust between the collaborating organizations, which reduces creativity of these organizations (Černe, Nerstad, Dysvik, & Škerlavaj, 2014):

Reciprocal Distrust Loop Illustrating the Knowledge Hiding-Creativity Relationship



- Oorschot, K.E. van, Solli-Sæther, H., Karlsen, J.T. 2018. The knowledge protection paradox: Imitation and innovation through knowledge sharing in global supply chains. *International Journal of Technology Management,* 78(4): 310-342.

Back to ASML (the company with cowboys)

- Boosting creativity by always aiming as high as possible (but keeping some slack by not telling the customer exactly how high you aim)
- Sharing space by having a fixed pool of engineers for each project (no knowledge leakage, no waste of time)

Sharing space in projects

- Always protecting engineers, also in downturns (no knowledge leakage)

Sharing space in organizations

- Local sourcing (short lines of communication)

Sharing space in networks

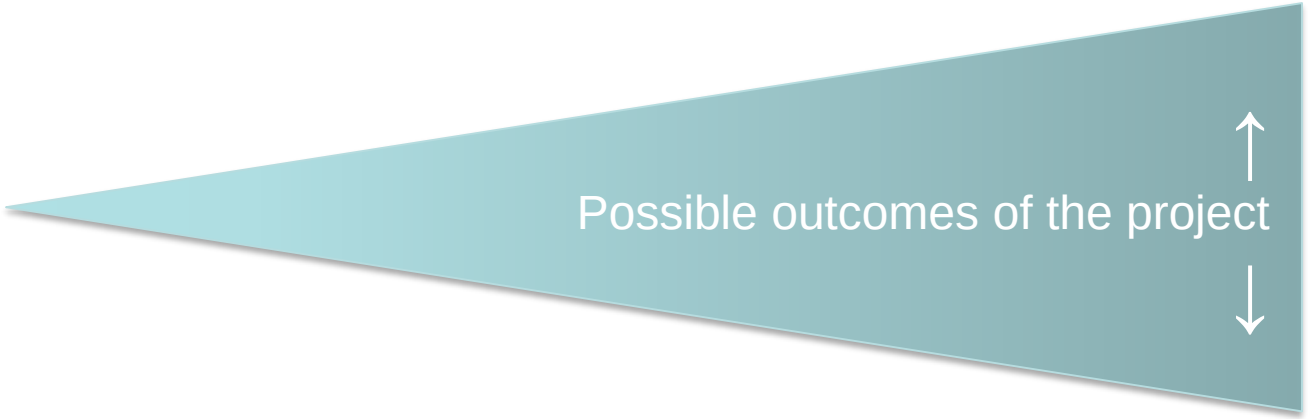
Without rules?

Different rules

- **If you look closely, there are traffic "rules" in India**
  - Use horn
  - Eye contact
  - Give and take
  - Drive slowly, but keep moving
  - Communication
  - Learning
  - Iteration
  - Progress

These rules do not **limit** our ability to think.
Instead, they **enable** us to see through the complexity, to deal quickly with unexpected events

Project planning and unknown unknowns



Known knowns
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Known Unknowns
WBS
Gantt charts
PERT-CPM
Network planning

Unknown Unknowns
Break-down of silo's
Multiple iterations
Trial and error
Time-oriented milestones
Flexibility
Communication
Knowledge sharing

Conclusions

- The best project plan may be no plan at all, or at least a less detailed plan
- The concept of shared space in traffic has shown that removing street regulations leads to a different kinds of “rules”: more eye contact between motorized and non-motorized traffic, and as a result: more safety and an increased flow of traffic
- Let this example be an inspiration for project organizations!

Thank you for your attention!

Go your own road – Erik Johansson