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The business school that thinks and lives in the future

# Encouraging help speeds up product development projects

By *Fabian Sting*

**Ensuring new product development projects stay on track is challenging at the best of times. Part of the problem can lie with how project team members behave and communicate. However, a novel approach that triggers help for problems is successfully overcoming such behavioural difficulties and encouraging greater team cooperation.**

Every business school student learns about lean management and lean manufacturing, the process optimisation methodology that has sucked billions of dollars of waste out of all kinds of complex systems.

Applied well, Lean can move mountains. From factories to hospitals, many organisations run better and cheaper thanks to Lean. It has one serious limitation, however: it is meant to streamline repetitive processes and reduce deviations that veer away from a clear standard – and these days, the most challenging work involves neither. We spend our careers executing one-off projects that are never quite the same thing twice.

The end result is often a colossal, seemingly unavoidable amount of wasted time and energy. At extremes, it can lead to a disaster, like Microsoft's Vista software, which the company estimated would take two years to complete, but actually took five, or Airbus's development of the A380 super jumbo, where French and German engineers developed incompatible wirings that led to severe production and delivery delays.

Of course, innovation entails some goose chasing, but a surprising amount of the waste appears to stem from the guarded way teams often communicate: you ask your report how long they

will need to complete an assignment. They say three days, though secretly thinking it will take two – and then in the end the person either makes the work fit the time or gives you a nasty surprise when a week has rolled by and red-faced, they tell you there's a problem. Worse, they may meet their deadline by papering over the flaw and sending it down the line, where it will be uncovered after it has become much more expensive to correct.

But how do you change this "padding" behaviour? After all, from the employee's point of view, not telling your boss what you truly believe may be perfectly rational: speaking frankly may lead to various punishments – less interesting assignments, loss of face with your peers, maybe even a lost job.

## Red cards

A German company appears to have found a solution: engineers at Roto Frank, a manufacturer of windows and solar systems headquartered in Leinfelden-Echterdingen, Germany, have learned how to get out of this bind with just a little red square of card.

Christoph H. Loch, director of the Judge Business School at the University of Cambridge, and Dirk Stempfhuber, head of engineering at Roto Frank Bauelemente GmbH, in Bad

Mergentheim, Germany, and I recently completed a study of the red card system developed by Dirk and his colleagues in the New Product Development (NPD) department of Roto's Roof and Solar Technology division.

When Roto began to work out this system in 2009, NPD had 25 development engineers, who at any given time were working on 21 projects with seven more in the pipeline. His group designs (rather high-tech) roof window systems. Calling these systems windows is almost a misnomer: these complex pieces of machinery have roughly 200 parts, about the same number as a dishwasher.

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At an internal workshop, Stempfhuber was asked if they visualised their workflow – a key tenet of Lean. At first, he said yes, remembering a big control chart in one of their meeting rooms, but then he realised that his engineers did not actually keep it up to date. Often, project managers went directly to the engineers to find out what was really going on.

To make the process more visual, he decided to give each engineer a smaller chart he could put up near his desk, on which he would write what he intended to do each day of the week, along with a green card if everything was on schedule and a red card if a critical task was on the verge of being late.

The choice of red as the warning card colour was unfortunate – in football, a red card thrown by the referee signals that a player is expelled from the game – and Stempfhuber realized his engineers needed some reassurance, particularly as German engineers tend to take a lot of pride in their problem-solving ability.

To encourage participation (and so the use of red cards), he promised that anyone who raised a red card would not be criticised and would receive help from a supervisor within 30 minutes. If a solution couldn't be found immediately, the management would pull together "a red card team" of engineers knowledgeable about areas related to the given problem and together they would work out a solution.

### A little help from their friends

Feeling more secure, his engineers adopted the system. Between 2009

and 2012, the number of late changes fell from 6 to 3, the cost of those late changes fell from €60,000 to €27,000, and the number of milestone delays on important projects dropped from 30 to 11. In sum, the system improved project performance drastically.

Our interviews with NPD engineers suggest that Roto's process encouraged them to view the red cards as a support mechanism, not a punishment. Without fear of blame, they were more inclined to call on their colleagues for help rather than to procrastinate or pass latent problems on to a colleague. As help was exchanged in multiple directions, mutual understanding among project engineers increased. They also felt good about being invited to participate on a red card team, and even began to use it as something that they could point out to their boss when they had a review.

In 2011, another division of the company, Roto Fittings, adopted the red card system. Zeiss, the optical and optical electronics manufacturer, followed suit in 2012, and there may be more to come: Siemens Healthcare, Volkswagen AG, and the French building materials manufacturer Saint-Gobain have all visited Roto to study how the red card system works.

*"The prospect of help motivates project employees to signal problems early and to plan more tightly."*

Now, we're trying (in collaboration with Pascale Crama and Yaozhong Wu\*) to find out more about whether this system can work elsewhere, by developing a game theoretic model explaining how the system reaps the benefits of help to manage uncertainty while discouraging free riders from taking advantage of their colleagues' support. In doing so we aim to find out whether it can work in other contexts, such as in project environments with different risk and cost characteristics. ■

\* Sting, Fabian J., Crama, Pascale, and Yaozhong Wu (2013), *How (and When) to Encourage Cooperation Across Projects?* Working Paper, Erasmus University Rotterdam

**This article draws its inspiration from the research feature *Accelerating projects by encouraging help*, written by Fabian J. Sting, Christoph H. Loch and Dirk Stempfhuber and published in *MIT Sloan Management Review*, Spring 2015. <http://sloanreview.mit.edu/article/accelerating-projects-by-encouraging-help/>**

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