Mission to Mars: An Agile Release Planning Game

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Abstract

Mission to Mars is an educational board game illustrating the planning process in iterative software development; it brings together concepts such as: iteration (sprint), backlog, story cards and story-points, velocity (productivity), impact of defects, technical debt, and risks. The game is a low-cost, Monopoly-style board game, played in groups of 2 to 4 students, where some factors such as uncertainty in estimation, actual velocity, and occurrence of defects are simulated by a throw of dice. Hard constraints and dependencies between stories are added to stimulate discussion on the strategy to pursue and how to mitigate risks. The game has been played in various contexts, academic and industrial, in several countries around the world with several hundred players, and it available to the software engineering community under a Creative Commons (by-nc-sa) license.

1. Learning objectives

This game illustrates the concept of iterations, of tactical planning, of velocity (productivity), of backlog and priorities, of uncertainties in estimation, and the cost of defects and technical debt. It is a board game, where some elements of uncertainty in estimations, productivity and defects are introduced by a throw of dice and a lookup table. It is intended as a complement in an agile project management course, a software project management course, or a software engineering course.

2. Playing the game

During take-off from Mars, your spaceship had a problem and crashed on the living base. You must rapidly rebuild enough of the base to survive until rescue comes from earth. The team has to analyze the backlog of tasks, look at priorities and dependencies, and start devising a suitable sequence of development, placing story cards onto the board. The first iteration is the hardest, to understand the sequence of events, the defects, and how to keep track of the score. After that it is a race to the finish, running through the seven remaining iterations, adjusting the strategy in the face of events. Part of the value of the game is in the debriefing: what have you learned, how many points did your deliver, what was your average velocity, why? What would you do differently if you had to play again? The game can be played in about an hour; the debriefing will depend somewhat on the audience and its size.

3. Material, availability, cost, variants

The game material consists of a “scrum board” (format A2), 48 stories cards (=the backlog) and defect tokens, a score sheet, a players’ instruction sheet. It’s complemented by a facilitator’s guide and a PowerPoint introduction. (You have to supply 2 dice, though.) This material is available under a Creative Commons license (by-nc-sa). Boards, cards and dice being reusable, the cost per student is well below USD 0.50. Eduardo Meira Peres created a variant where the theme is the reconstruction of a lost alphabet for a ancient civilization. A kanban-style extension of the game is also available.