CEREBRA
BRAINY SOLUTIONS

SCRUM simulation with LEGO®

Airport building with Agile principles

CEREBRA
BRAINY SOLUTIONS

Info

- Original idea by: Alex Krivitsky (original 2009, current version 2.0 from 2011, distributed under CC Attribution 3.0)
- Trainer is an owner of a tropical island. He wants to build up an airport with different facilities. The trainer needs to describe the island, clima and characteristics in detail to drag the team into the game ☺
- Airport simulation developed by Thorsten Oliver Kalnin's SCRUM with LEGO simulation workshop

CEREBRA
BRAINY SOLUTIONS

Scrum game info

- Timing
  - May vary ☺
- Group sizes
  - 2-4 teams of 4-6 people
- Material
  - LEGO, stickers, flipchart / whiteboard, markers, planning poker cards
- Roles
  - Customer – trainer
  - SCM – trainer (or from the team if experienced enough)
  - PO – only one to talk to the Customer
  - (resource manager – only one allowed to bring LEGO bricks – only can take as much as fits in one hand…)

CEREBRA
BRAINY SOLUTIONS

Rules

- Teams must have one Product Owner (+ one Scrum Master if they have anyone experienced enough, if not SM is the trainer), others are developers
  - It may be a good idea to pick someone „from the other side of barricade“, someone with no experience in such position. It may provide valuable insights.
- Only one developer may go and pick up the LEGO bricks
  - Team instructs the supply guy what to find and bring
  - He can only take so much that he can hold in one hand (*can not build but can stack*)
- PO is the only one to communicate with the customer!
- SM oversights the team, tracks the time, assures nobody works overtime, assures that the teams develop by the priorities, keeps the tracking boards

CEREBRA
BRAINY SOLUTIONS

Scrum game info – Pre-Game

- Organizing Teams
  - Striving to demonstrate self-organization in action I usually ask the team to self-organize in groups of 4-6 people and allocate working space. This is a good warm-up activity since it might require moving tables around and cleaning them up.
  - Will take 10 minutes.

Scrum game info – Pre-Game

- **Project Chartering**
  - Will take 15 minutes.
  - As a trainer who is playing the Customer need to communicate the following messages:
    1. All teams will be building a single product – they are not competing, rather they work for the same vendor.
    2. The product is an airport with certain features.
    3. The main building elements are LEGOs, though any other material can be used in addition.
    4. I am the main decision maker of the product – it is my airport.
    5. I will be involved in the development process by being available to answer questions and provide feedback.
    6. State the priorities as a Customer (security and safety first)
- **Product Owner VS Class trainer**
  - Changing hats – explain Scrum rules to the team I explicitly state whether I am currently a Customer or a trainer so that people are not confused.
  - Playing a newbie – let the team sell you Scrum ☺

Requirements

- Requirements are divided into 2 groups:
  buildings and 
  machinery. 
- Teams must select buildings or machinery and develop only in their field of expertise.
- Requirements are also divided by themes / departments. Teams may develop products from different themes (e.g. vehicles for fire dept. and emergency unit)
- Requirement are not prioritised! => *team's POs should ask customer about value stream*
- Requirements are not 100% specific => *team's POs should often communicate with the customer*

Scrum game info – Backlog

- Building the Backlog
  - **Present visions** + high-level requirement cards. Requirements are by no means final and complete. Teams (POs) must communicate with the customer.
  - Let the **teams break down requirements** to tasks / stories, build up their own backlog – use sticky notes, papers,…
  - **Estimate (?) – or not estimate**
  - (!) **Priorities** – team's PO must communicate with the customer!
  - **State that 3 sprints will be realised** and the Product must be done.
  - Give the team time to **prep. the backlog** – 10 mins

Scrum game info – Game

- Sprint planning
  - 5 minutes ☺ (1st SP may not be timeframed)
  - Every team plans for itself
  - Keep track – plan openly on whiteboard / flipchart / papers on desks etc. – **log what was planned** (Sprint goal) + what is the estimated velocity (Forecast) + **track results** after sprint ends
- Sprinting
  - 5 minutes (short period timing necessary to keep teams stressed)
  - http://Online-stopwatch.com ;-)
  - SCM / trainer must keep eye on the processes (resource managers etc.)

CEREBRA
BRAINY SOLUTIONS

Observe!

- Communication:
  - Managers, dictators, yellers
  - Not talking to customer
  - Not talking to each other in team
  - Not talking to each other among teams
- Prcess: broken process
  - Ommission of collecting requirements
  - Not estimating
  - Not grooming the backlog

CEREBRA
BRAINY SOLUTIONS

Ideas / Keep in mind

- Open backlogs presenting vision of the product x Lists of task
- Product development x Micromanagement
- Teams collaborating x Competing
- Continuous improvement x One-blow win
- Requirements analysis by POs
- Cooperation among teams => buildings and machinery must be in alignment and compatible with each other
- Keep time frames!

CEREBRA
BRAINY SOLUTIONS

Reviews and Retrospectives

- **Reviewing**
  - 10 minutes
  - Product demo with the Customer + non-/acceptance
  - Check whether the sprint Goal was achieved
  - Check planned VS achieved velocity
  - 1st Sprint – nothing will be probably done ☺ => more Sprints will be needed – project is in delay ☺
- **Retrospective**
  - A few minutes – 5 mins
  - Team discusses how to do better next time, what were the impediments etc.
  - Scrum master may advice teams to keep an eye on surplus LEGOs as they may represent substantial costs.

CEREBRA
BRAINY SOLUTIONS

Scrum game – Postmortem ☺

- **Retrospective – post-mortem analysis**
  - What did students observe?
  - How did it feel being on a Scrum team?
  - How did the short iterations go?
  - How accurate were the estimations (provided the Release Burndown is there)
  - What would we have done differently from the beginning, if we had another chance to play the game?
  - What was the job of the Product Owner?
  - How did it feel after the first sprint when almost all items required re-work?
  - What did the Scrum Masters do?
  - How will your strategy change, if you know the Product Owner is unavailable during sprints?
  - How did inter-team communication go? Were there any dependencies? How were they resolved?
  - What did students learn?
  - Where can they immediately apply gained knowledge?

CEREBRA
BRAINY SOLUTIONS

Helipad

Requirements:

- Helipad for landing of a passenger helicopter
- Navigation and foglights

Acceptance criteria:

- *Must work day and night*
- *Must work in case of power outage*
- *Must secure the heli in case of hurricane*

CEREBRA
BRAINY SOLUTIONS

Landing strip

Requirements:

- Airstrip for landing and taking off of a passenger aircrafts
- ILS system + radar
- Reinforced surface
- Mobile passenger stairs

Acceptance criteria:

- *Must not hold water in pouring rain*
- *Must be available 24/7*
- *Mobile stairs must accomodate disabled*

CEREBRA
BRAINY SOLUTIONS

Fire department

Requirements:

- Accomodates 6 firemen
- Dormitory + Ready room
- Large reservoir for extinguishing foam

Acceptance criteria:

- *Keeps the crew ready and comfortable*
- *Radio communication with control tower*

CEREBRA
BRAINY SOLUTIONS

Fire truck

Requirements:

- Offroadability
- Lights and horn

Acceptance criteria:

- *Must be red*
- *Truck must be agile and quick*
- *Truck must hold enough water to quench burning aircraft*

CEREBRA
BRAINY SOLUTIONS

Passenger Helicopter

Requirements:

- Accomodates 4 people
- Operational speed >300km/h
- Range > 500km

Acceptance criteria:

- *Painted in company colours*
- *Strong built (harsh winds)*
- *Ability to land on water*

Cargo helicopter

Requirements:

- Spatious cargo bay
- Easily accessible cargo bay
- Lifting capacity >1,5 tons

Acceptance criteria:

- *Must hold standard cargo container*

CEREBRA
BRAINY SOLUTIONS

Passenger aircraft

Requirements:

- Range >3000km
- Operational speed >900km/h
- Fuel economy

Acceptance criteria:

- *STOL (or VTOL)*

CEREBRA
BRAINY SOLUTIONS

Fuel station

Requirements:

- Provides services for both aircrafts and vehicles
- Separate storage for aviation and vehicle fuels

Acceptance criteria:

- *Exceptional safety standards*
- *Built to withstand earthquakes*

CEREBRA
BRAINY SOLUTIONS

Fuel tanker

Requirements:

- Safe
- Easily serviceable

Acceptance criteria:

- *Carries enough fuel to refill an aircraft at once*

CEREBRA
BRAINY SOLUTIONS

Ambulance car

Requirements:

- Offroadable
- Quick
- Lights and horn

Acceptance criteria:

- *Accomodates driver, medic and one patient*
- *Easily recognisable, bright colours*

CEREBRA
BRAINY SOLUTIONS

Emergency Unit

Requirements:

- Dormitory + Emergency room + Morgue

Acceptance criteria:

- *Air conditioned*
- *Parking lot accomodates at least one ambulance car*

CEREBRA
BRAINY SOLUTIONS

Control tower

Requirements:

- Operation room must have clear overview over the whole airport
- Radio & telecommunications infrastructure for data exchange with aircrafts, airport vehicles and facilies.
- Long range (satellite) communication facilities

Acceptance criteria:

- *Built to withstand hurricane and earthquakes*
- *Air conditioned*
- *Hi-tech*

Requirements:

Acceptance criteria:

http://nathanhoad.deviantart.com/

scRUM@cerebra.cz

CEREBRA s.r.o.

www.cerebra.cz

Pickova 1486/2, Praha - Zbraslav 156 00

IČO: 27538702