Interaction at its best: 'Coalition of the Willing' Game

Johan de Heer

Thales Research & Technology, University of Twente, Westhorst Building 22 – WH226,
Drienerlolaan 5, 7522 NB, Enschede, The Netherlands
johan.deheer@nl.thalesgroup.com

Abstract. The focus of this paper is on a game based learning solution for training 21st century skills in the context of the comprehensive approach. The game is contrasted with its simulation variant, and both serve different meta-goals. We explain some of the game rules and core mechanics to explore the effects of multi-stakeholder cooperation during a humanitarian crisis scenario.

Keywords: Game based learning · Comprehensive approach · 21st Century Leadership Skills · Human behavior modelling

1 Introduction

A triple helix consortium won MODs Dutch Innovation Game in 2009. The consortium consisted of an industrial partner Thales Netherlands, University of Twente, two knowledge institutes (1) Netherlands Organisation for Applied Scientific Research TNO and (2) Netherlands Aerospace Centre NLR, and an end-user, namely Civil-Military Cooperation Centre of Excellence. The CIMIC Centre of Excellence (CCOE) validated the resulting serious game (GO4IT – Figure 1), and implemented the game in their NATO CIMIC Field Worker and NATO CIMIC Staff Worker Courses ever since (Figure 2). These NATO accredited courses are designed to train CIMIC Field and Staff Workers in parallel enabling the participants, Officers and Non Commissioned Officers NCOs, who are or will be appointed as CIMIC Staff Workers, to conduct CIMIC activities across the full spectrum of military engagement in a modern operational environment.

Fig. 1. GO4IT.

Fig. 2. Playing the game during a NATO CIMIC Staff Worker Course.

The emphasis of two earlier papers [1, 2] regarding this serious game was on the underlying domain model, and the examination of its learning effects. The game uses amongst others the mechanics of 'targets', 'assessments' and 'interventions' to reach effects on several Key Performance Indicators. In the simulation version of the game, the aim for the player is to learn the domain model. During game play the trainer asks the players to indicate and rationalize the intended effects of the mechanics. A simulation tool (Figure 2) visualizes the pre-defined effects for the game mechanics and is used as feedback to the trainees. The domain model has the following model parameters: safety, displaced persons, living conditions, agriculture, healthcare, economic development, education, governance, rule of law, political support, and the hearts & minds of the local population. Experts estimations were done by TNO based on literature, operational expertise and lessons learned. In general, it was concluded that during training sessions, knowledge levels were improving with respect to understanding the dynamics and complexity of several versions of the domain model.

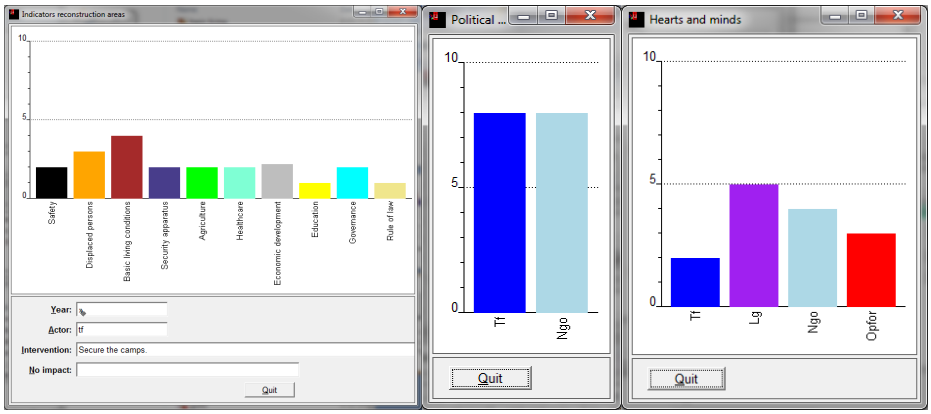

Fig. 3. Simulation tool TNO

Thales and University of Twente transformed the domain model into a dynamic game model (Figure 2). Several domain model parameters were clustered and integrated into four high level game model parameters: human development (HD), government and rule of law (G), living conditions (LC), safety & security (S).

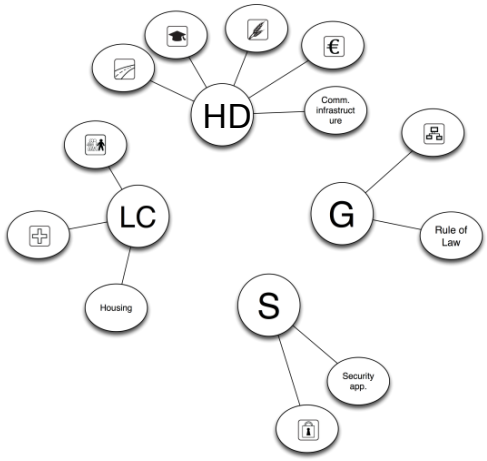

Fig. 4. Domain and Game model

In contrast to the simulation version of the game, the game mechanics openly indicate the effects they may sort. The meta-goal of the game version is not on learning the domain model per se but more on understanding the dynamics of comprehensive approach in terms of collaboration between the various role players. So let's move to the game and focus on its core mechanics for bringing cooperation awareness.

2 Coalition of the willing game

The location is in sub-Sahara Africa. The conflict is characterized by an eruption of violence after a bomb-attack on the alternative government, militias are on the loose. The present situation: humanitarian crisis; displaced persons, no functioning camps; no functioning government, agriculture nor economy; violence against population, recruitment of child soldiers. The effect indicator board in the middle of the play area represents the current situation in terms of human development (HD), government and rule of law (G), living conditions (LC), safety & security (S). The tokens are placed on the starting positions of effect indicators mentioned in the scenario.

The game knows four roles (2 or 3 players per role): TF = Task Force; Blue; OPFOR = OPposing FORces; Local opponent (depending on scenario), Red; NGO = all NGOs together; Green; LG = Local Government; Yellow.

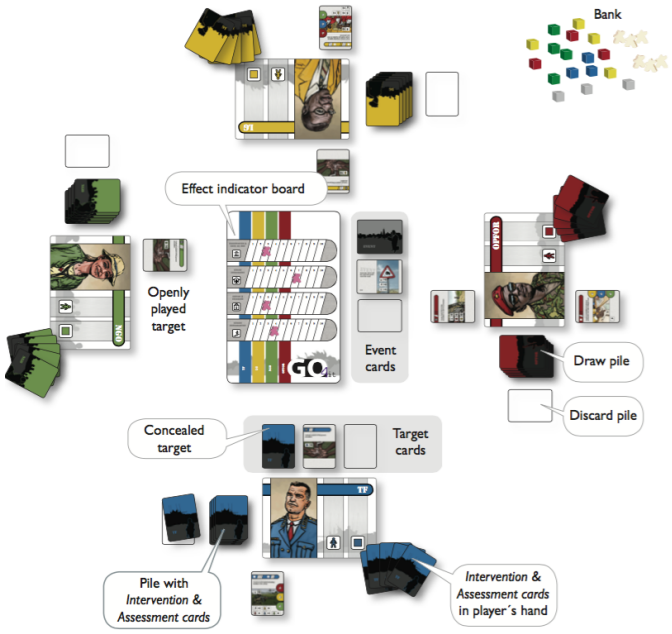

Fig. 5. Coalition of the willing game.

Each player role has a deck of cards, including target, assessment and intervention cards (Figure 5). During the *planning phase* players are asked to choose their *targets* they wish to play. They can make this choice on their own, or coordinate with other players. The choice should depend on the current situation indicated by the effect indicator board. The players are then asked to choose a set of *intervention* and *assessments* cards to reach their *targets*. Most cards will only become effective if their conditions are met. The players must anticipate this and make their choices accordingly. After a few initial rounds, the players are once again asked to choose their targets and pick out their assessment and intervention cards. Targets have different levels of complexity. If the players choose more targets they also will have a broader choice of interventions to play. This also means that achieving targets will require better planning and will make the game more challenging. Target cards may be played open (face up) or concealed (face down), making them unknown for other players.

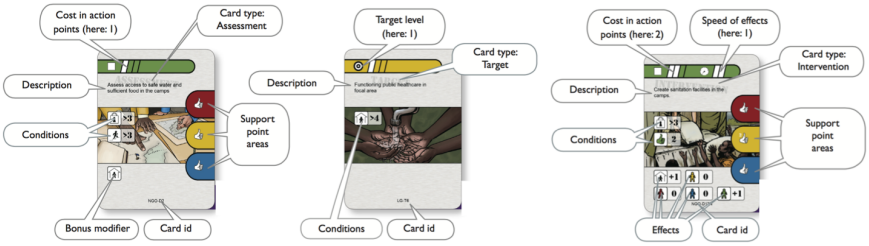

Fig. 6. Target, assessment and intervention cards.

The game consists of several phases.

Phase 1

- Each player receives 5 action points from the bank (as long as the supply lasts) and places them on the ***action point area*** located on the player's board (see Figure 4).

Phase 2

- Now it is the first player's turn. The trainer randomly selects the player by drawing a colored player token from a bag. A turn consists of the following steps:
  - ***Slow effects.*** All effects of the played cards with ***speed*** of 1, played the previous round, have effect now, as long as the ***conditions*** on the card are met by the values on the indicator board. Required action points to play this card are returned to the bank.
  - ***Discard assessments.*** The assessments played in the previous round are discarded now and placed on the ***discard pile***. Also, all action points spent on these assessments are returned to the bank.
  - ***Play.*** The player may spend action points to play a card from his hand. The cost is indicated on each card. The player puts an equal amount of action points on the card when it's played. It is allowed to play cards that do not meet their conditions at the moment they are played. Only when the effect has to take place the conditions have to be met or their action points are lost.
  - ***Support.*** The other players may now support the played cards by placing their own action points on the support area of the played card. The amount of the support points must be equal to the cost of the card. Each player may support a card only once. For each supporting player, the effect of the support is denoted near the "thumb up" icon. This amount can vary per card and role. The effects of the intervention card are strengthened by this amount. The supporting player may freely distribute this amount over any effects of the intervention card. Supporting assessments allows the player to benefit from its effect when playing their own cards in their turn. See Figure 6 for an example.

- The player may choose to repeat the Play and Support steps given that there are enough action points available.
- ***Fast effects.*** All effects of played intervention cards with speed of 2 have effect now. All action points and influence points are removed from these cards and put in the bank.
- ***Discard***. The player may discard any cards he chooses from his hand. The player then picks cards from the draw pile to fill his hand up to 5 cards.
- ***End of turn***. The next player's turn begins with step 1.

Example:
A card gives +1 Living conditions, and +1 LG-Influence.

2 Players support this card:TF and NGO. NGO chooses to strengthen Living Conditions by 2 and TF the TF-influence by 1 and Living Conditions by 1.

The end effect is +1+2+1 = +4 Living Conditions and +1 Influence for LG and +1 Influence for TF.

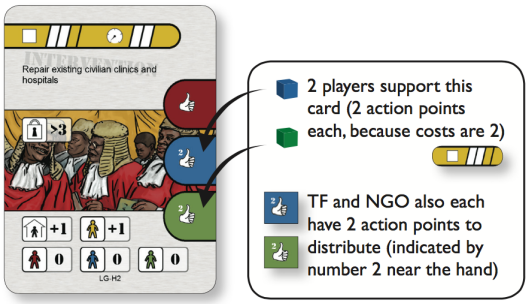

Fig. 7. Cooperation.

After all players had their turn, the game continues as follows:

Phase 3

- All players get one victory point for each target card that meets all conditions at this moment. The victory points are placed on the target card and remain there till the end of the game. Concealed targets are revealed permanently once they receive a victory point.

Phase 4

- Draw 1 event card from the ***event deck*** and execute the effects denoted on the card.

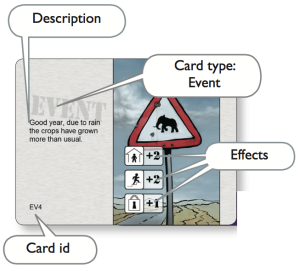

Fig. 8. Events.

Phase 5

- All played intervention and assessment cards without action or influence points on them are discarded and placed on their respective discard piles. Target cards always remain on the table. All player tokens are placed back in the bag. The next round starts with step 1 of phase 3. The game can be continued for as many rounds as long as there are any victory points left. It is also possible to agree on a certain maximum number of rounds to be played before starting the game.

When the game is finished, victory points may be counted. In addition to already collected victory points for valid tar- gets, players receive 1 victory point for each 2 influence points collected (rounded down). The player with most victory points wins the game.

3 21st Century Leadership skills

NLR focused on the development of competencies that were identified and discussed with CCOE, and integrated in the game. The main objective is getting students acquainted with the "comprehensive approach" in a playful manner; emphasizing the need for cooperation. Therefore, one of the essential competencies of the comprehensive approach is to identify key players and to cooperate with them. Cooperation, coordination and communication are therefore important aspects of the game. When cooperation is properly performed, it can lead to a more rapid realization of victory points. The following cooperation competency dimensions are included:

- **Liaise**. Liaising is one of the main competencies for 'comprehensive approach professionals'. In order to be able to liaise, a CIMIC worker has to mediate, network, manage expectations, negotiate and to manage 'key players'. The goals of liaising are to make sure that information channels are open and that relationships are built.
- **Identify key players.** The identification of 'key players' is a competency that is needed for managing 'key players' which in turn is needed for liaising. Key players also play an important role in gather information. Before one can influence people who are important in a community one has to find out who these people are, what their goals are and how they are connected to other people.
- **Coordinate**. Another main competency for the 'comprehensive approach professional' is organizing projects. Coordination is required to be able to organize and in order to coordinate, one has plans, has to execute plans, and to monitor progress.
- **Plan**. Planning is required to be able to coordinate. A proper planning of a project does not only contain a timeline and the overall goal of the project, but also a thorough discussion who executes projects and why. In order to be able to plan, one has to set goals and to prioritize these goals.
- **Set goals.** A project plan contains goals that are SMART (specific, measurable, attainable, relevant and time-bound). Setting SMART goals makes it possible to monitor progress in a project.

- **Prioritize**. The goals of a plan are prioritized. Some goals must be achieved, while others are less important.
- **Assess**. The third main competency is assessing. Assessment is required to get a general understanding of what is going on in the area. The end goal of making assessments is to report the gathered information to management. Assessments are required for organizing and the information for assessment are for a large part gathered from 'key players'.

Note that The game has a specific manual for instructors dealing with the brief, gameplay and debriefing.

4 Future plans

Current efforts to further develop this game will go three ways; (1) extensions of the board game, (2) development of a hybrid game, and (3) trainer decision support tools. The updated board game version rebranded to the 'coalition of the willing game' will regularly publish expansions for the (renewed) base game. Expansions include, new game scenario's, game rules, other playing roles, additional card decks, et cetera. Another development is focused on combing the board game with digital technologies, including smart phones, multi-touch-multi-user hardware. See Figure 7 for an artist impression of this hybrid game.

Fig. 9. Artist impression on a possible future development.

Decision support for trainers will focus on monitoring and analyzing how users (players, trainees) tell their story during game play, i.e. human behavior modelling. This will shed light on the players' dynamic decision making [3] behaviors. These behaviors can be logged, monitored (even predicted) and analyzed post-game for trainee, instructor and organizational feedback purposes [4]. In particular, we will be looking at actions, tactics and strategies [5, 6] employed by players. The latter is important, since player strategies are suggested as predictors regarding transferability from in game to out of game leadership behaviors [7].

References

1. Hulst, van der A.H., Christoph, N., May, A. & Aldershoff, F. (2012). GCAM: A modeling approach to the Comprehensive Approach. Proceedings of the NATO Modelling Simulation and Gaming workshop, Stockholm.
2. Hulst, van der A.H., Homberg, van der M., & Boonekamp, R.C. (2014). Field-testing a Comprehensive Approach simulation model. Proceedings of the 11th International ISCRAM Conference – University Park, Pennsylvania, USA, May 2014 , S.R. Hiltz, M.S. Pfaff, L. Plotnick, and P.C. Shih, eds.
3. De Heer, J. (2015). How do Architects think? A game based microworld for elucidating dynamic decision-making (2016). P133-142. © Springer International Publishing Switzerland 2016 133 G. Auvray et al. (eds.), Complex Systems Design & Management, DOI 10.1007/978-3-319-26109-6_10
4. De Heer, J., Porskamp, P. (2017). Human Behavior Analytics from Microworlds: the Cyber Security Game. 8th International Conference on Applied Human Factors and Ergonomics – Human Factors and Simulation. 17-21 July, Los Angeles, California, USA.
5. Bakkes, S.C.J., Spronck, P.H.M., and van Lankveld, G. (2012): Player behavioural modelling for video games. *Entertainment Computing*, 71-79.
6. Ross, A.M., Fitzgerald, M.E., and Rhodes, D.H. (2014): Game-Based Learning for System Engineering Concepts, 1-11. Conference on Systems Engineering Research (CSER) 2014.
7. Kaser, T., Hallinen, N.R., Schwartz, D.L. (2017): Modeling strategies to predict student performance with a learning environment and beyond. LAK '17 Proceedings of the Seventh International Learning Analytics & Knowledge Conference, 31-40. ISBN: 978-1-503-4870-6.