International Journal of Business, Human and Social Sciences
ISSN: 2517-9411
Vol:8, No:7, 2014

Leadership´s Controlling via Complexity Investigation in Crisis Scenarios

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Abstract**—**In this paper will be discussed two coin´s sides of crisis scenarios dynamics. On the one's side is negative role of subsidiary scenario branches in its compactness weakening by means unduly chaotic atomizing, having many interactive feedbacks cases, increasing a value of a complexity here. This negative role reflects the complexity of use cases, weakening leader compliancy, which brings something as a ´readiness for controlling capabilities provision´. Leader´s dissatisfaction has zero compliancy, but factual it is a ´crossbar´ (interface in fact) between planning and executing use cases. On the other side of this coin, an advantage of rich scenarios embranchment is possible to see in a support of response awareness, readiness, preparedness, adaptability, creativity and flexibility. Here rich scenarios embranchment contributes to the steadiness and resistance of scenario mission actors. These all will be presented in live power-points ´Blazons´, modelled via DYVELOP (Dynamic Vector Logistics of Processes) on the Conference.

Keywords**—**Leadership, Controlling, Complexity, DYVELOP, Scenarios.

I. Introduction

THIS paper discuss crisis scenarios which can to have just one straight-lined flow of projected situation. If the scenario is defined, composed or designed in this straight-lined flow form, then it has given good compactness from its user´s sight and it is enough compliant to its producer or stakeholder [5], [6], [15]. This scenario can have been titled the Principal (primary) Scenario – PS in Fig. 1. The fair scenarios should not be branching out unduly in their flowcharts and blazons. However, if any situational, circumstances or crisis activity and/or event development make necessary the branching out of certain scenario flow-chart, then it must be expressed by a scenario Complexityχ. The Complexity represents and includes combination of scenario´s compactness & compliancy [1], [12], [17]. If an occurrence of many other definite branches is discovering besides one Principal scenario, then the several Subsidiary (secondary) Scenarios - SSs can complete necessary information about its use case *⟨⟨Forming scenariouse Case⟩⟩* - see blazon at Fig. 1. The SSs are some ´plans B´, offering variable ways of events or situation flow. Brief scenarios, formed on not very detailed strategic level; they may have a form of the pure topics or the ⟨⟨librettos⟩⟩ (libretto includes very brief narrative of the actions, situations and events) and/or the intentions [11], [12], [18]. The ***Controlling*** is generalized capability to have control over situational policy. Main regulation and ***controlling actor*** performs ***leadership, command and decision making*** [4], [13]**.**

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II. Scenarios Complexity

A necessity to elaborate subsidiary scenarios branches can be an evidence of the mistakes and undesirable interruptions, degrading scenario compactness & compliancy, which issues to its complexityχ value (gamma value).However, this ´coin´ has two sides. On the one’s side is negative role of subsidiary scenario (SS) branches in compactness weakening by means of whole scenario unduly atomizing. But a great number of subsidiary branches, having many interactive feedbacks cases (***i***) to principal branch, they increase a value of complexity in χ (1), which is expressed by fraction sum term here [2]-[4], [10], [14].

$$\chi = \frac{n \times \sum_{j=1}^{n+e} i_j}{(n+e)} + M \tag{1}$$

$$\chi = \frac{n \times (i_1 + i_2 + i_3 + i_4 + i_5 + i_{16})}{(n+e)} + M \tag{2}$$

TABLE I
Legend for Scenarios

Symbol	Role
j	*branch marking, defined in preventive scenario*
n	*a number of interactive branches (cases), defined in preventive scenario (n > 2)*
i	*a number of formed interactive feedbacks cases of ´j´ branch with other scenarios branches*
e	*the count of un-projected entity, having duties in real scenario*
M	*relative value of producer & stakeholder compliancy = ´money provision´; producer & stakeholder dissatisfaction has zero compliancy and the most compliancy is undefined, M ⟨0; ∞)*
χ	*(gamma) it is complexity measure for scenario compactness plus compliancy*

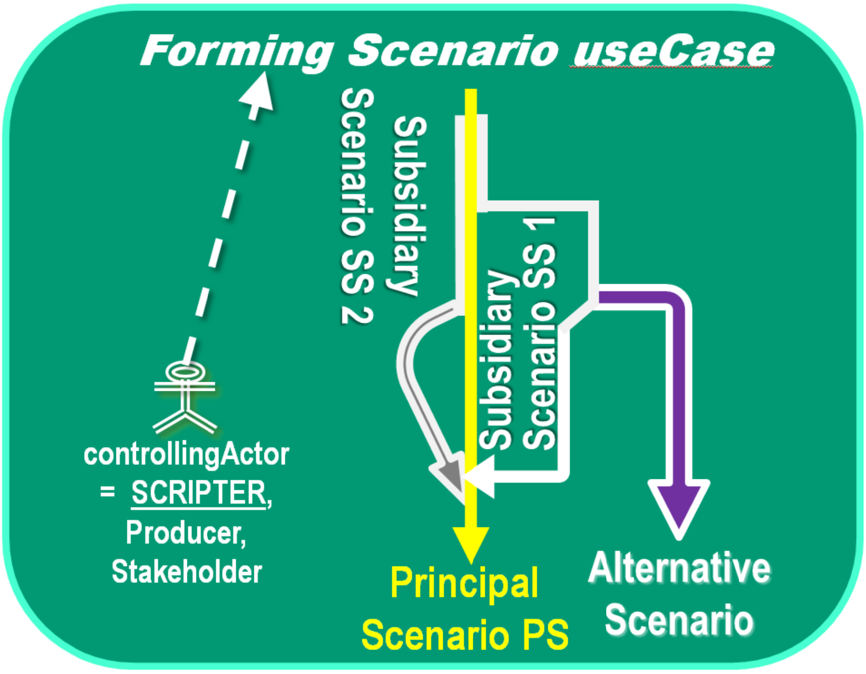

Fig. 1 Forming scenario controlling leader

However, especially, negative role of alternative scenarios (ASs) consists in the weakening of the complexity on use case ⟨⟨*Executing scenario Scene*⟩⟩. The *M* is relative value of producer & stakeholder *Compliancy* in the both use cases the ⟨⟨*Designing scenario*⟩⟩ and the ⟨⟨*Executing scenario Scene*⟩⟩ in Fig. 2. It means something as a ´readiness for money provision´ from the producers and stakeholders. Here producer & stakeholder´s dissatisfaction has zero compliancy and the most compliancy is undefined [7], [14].

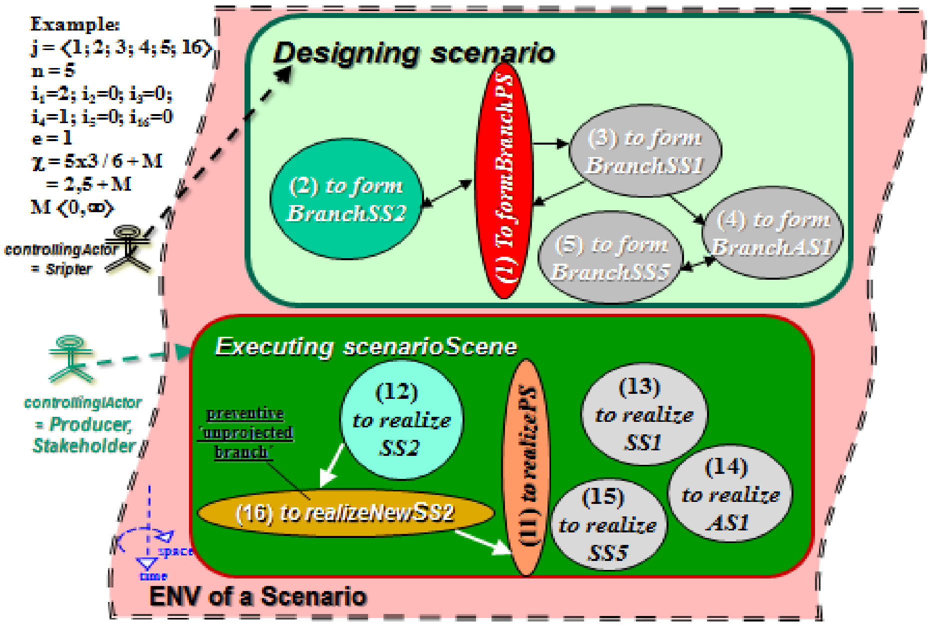

Fig. 2 Various controlling-leadership actors

International Journal of Business, Human and Social Sciences
ISSN: 2517-9411
Vol:8, No:7, 2014

The $\underline{M}$ as the relative value is fully dependent on the stakeholder´s sights, but factual $\underline{M}$ is a ´crossbar´ (interface in fact) between planning and executing use cases – see Fig. 3.

However, on the other side of above ´coin´, an advantage of rich scenarios embranchment is possible to see in a support of response awareness, readiness, preparedness, adaptability and flexibility, if it is occurred in training scripts and the use cases, during the education and drill of crisis management i.e. in *training crisis scenarios*. Here rich scenarios embranchment contributes to the steadiness and resistance of mission actors on blazonry Fig. 2 ⟨⟨*Executing scenario Scene*⟩⟩.

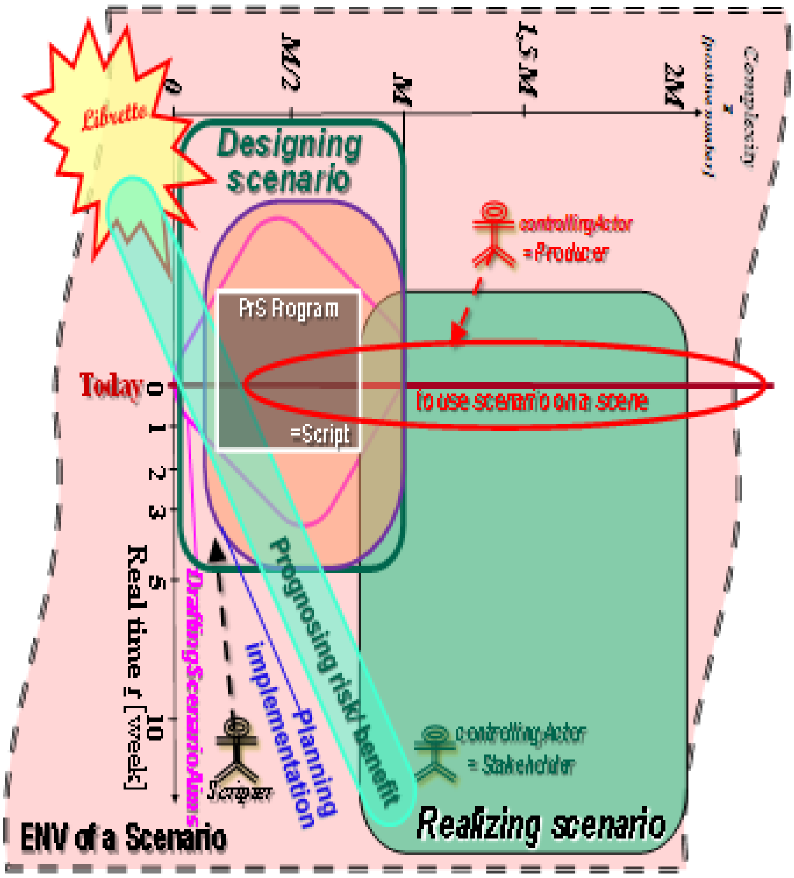

Fig. 3 Others controlling-leadership actors on a scene

The use case ⟨⟨*Executing scenario Scene*⟩⟩ is dependent at real time and ⟨⟨*Producer, Stakeholder*⟩⟩, including new use case ⟨⟨*Realizing scenario*⟩⟩ and new activity case ⟨⟨*to use scenario on a scene*⟩⟩ on the Fig.3. The both cases have significantly greater complexity (χ much more than $\underline{M}$) in comparison with other scenario´s instruments on dominant environment ⟨⟨ENV of a Scenario⟩⟩, sharing the both Figs. 2 & 3. It defines common scenario scene (theatre) at different parameters. On the Fig. 2 the use case ⟨⟨*Executing scenario Scene*⟩⟩ play similar role as use case ⟨⟨*Realizing scenario*⟩⟩ on the Fig.3. But on last named blazon this use case role is expressed by the mathematical dependence on the χ. Here the use case ⟨⟨*Realizing scenario*⟩⟩ has negative (NOT) relationship (one shared interface) with a process system ⟨⟨PrS Program = Script⟩⟩. These two entities negative relationship has not a reflection in their ´dramatic enemy´, but it just reflects absolutely different their unfolding of χ values and different real time duration (time interval). It signifies that primary programmed (projected) PrS ⟨⟨Script⟩⟩ secondary produces a possibility of scenario's realization (performance) [8], [9], [14].

The script has role of controlling parameter into scenery arena creation by ⟨⟨*planning implementation*⟩⟩, having χ value maximally the $\underline{M}$ as well as a ⟨⟨*Drafting scenario aims*⟩⟩ use case. The altogethers are latent operational representatives of use case ⟨⟨*Designing scenario*⟩⟩ (see Fig.2). A scenario's ⟨⟨Libretto⟩⟩ has zero complexity, but it has a role of scenario initiator in early past and it is a source for the ⟨⟨*Prognosing risk / benefit*⟩⟩, having controlling parameter sense of risk assessment [3]. It must operate continually to the far future, executing risk management role for long time interval, framed by the domain ⟨⟨ENV of a Scenario⟩⟩. The ⟨⟨Libretto⟩⟩ contains very brief, narrative and short description of the scenario and it represent controlling parameter also.

III. Crisis Scenarios

The task is here for leadership to identify critical, crisis, problem, conflict, collision and/or battle area, interface or point on any scenery. Typical for these critical areas or interfaces is that through themselves the *critical functions* are running or passing on relevant critical scenery, scene, arena, situation or event [13], [16].

The interface represents outer contour (boundary) of an icon, blazonry expressing relative role or relationship on process scene, symbolizing displayed information change or transformation. Critical functions of any scene are constituted from embedded critical environments and process entities on the use cases. The interface of negation entities is just a one line, shared by the both or more entities. The entity´s negations (NOT functions, relations or Boole operations) have always character of the collision, conflict, problem, crisis and/or battle. So that it can be declared that such a negated interface is possible titled ´critical´. Here a crisis leadership initiates various use cases with the *critical interfaces* [14].

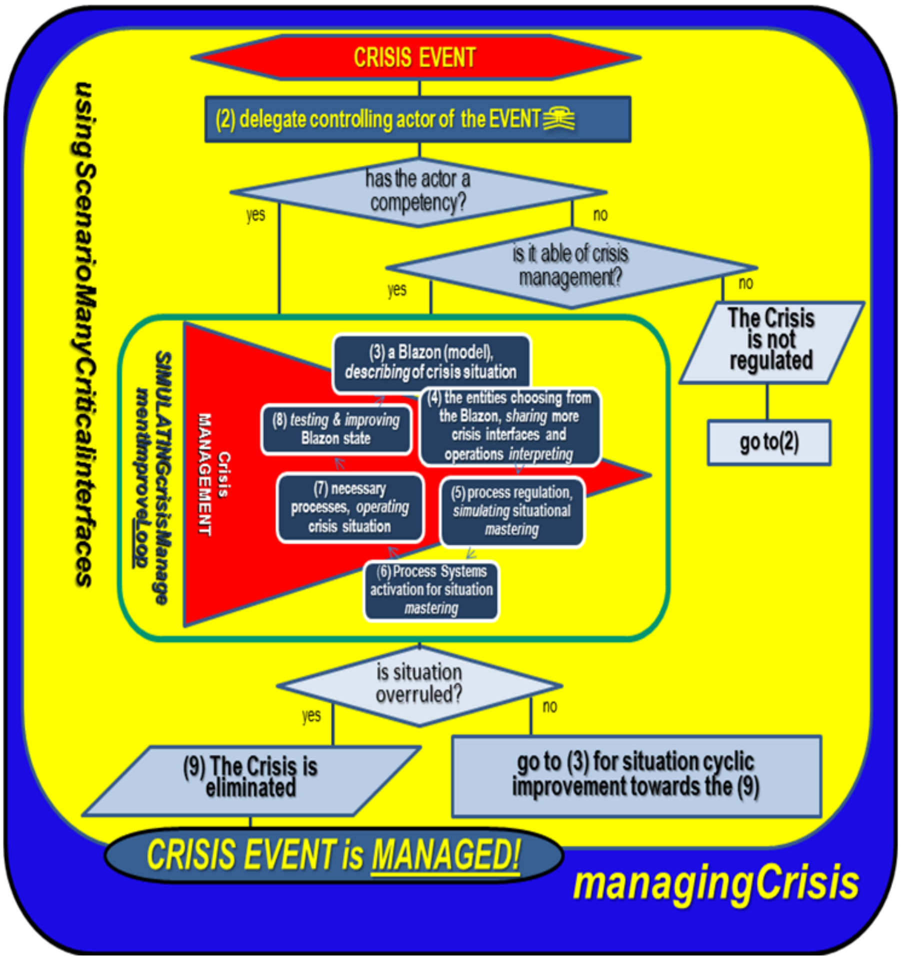

Fig. 4 Algorithmic scenario of crisis management operation [14]

Fig. 4 is blazonry model of an algorithmic scenario of the leadership processes by means of crisis management in crisis event operation with many critical interfaces, simulating state metamorphosis from incoming PrS ⟨⟨CRISIS EVENT⟩⟩ to terminal activity case *⟨⟨CRISIS EVENT IS MANAGED!⟩⟩*. This scenario has a Simulator*⟨⟨SIMULATING crisis Management Improve Loop⟩⟩*, inherently managed by PrS ⟨⟨Crisis MANAGEMENT⟩⟩ (the triangle). In this simulator core is cycling loop with six use cases = consequent steps. These steps are: ⟨⟨(3) a Blazon (model), *describing* of crisis situation⇒(4) the entities choosing from the Blazon, *sharing* more crisis interfaces and operations *interpreting*⇒(5) process regulation, *simulating* situational *mastering*⇒(6) Process Systems activation for situation *mastering*⇒(7) necessary processes, *operating* crisis situation⇒(8) *testing & improving* Blazon state⟩⟩.

IV. Conclusion

The importance of this paper consists in innovative process approach, using method DYVELOP, representing qualitative research paradigm, implementing BS 25999-2 and up-to-date global ISO 22300 family standards. Beside it are here issued our solution of significant international R&D project: *Comparative Assessment of Security Centred Training Curricula for First Responders on Disaster Management in the EU*, EC Framework Program 7, Acronym CAST, 2009-12. It all gives a support for crisis leadership and management for better response, awareness, readiness, preparedness, adaptability, creativity and flexibility. For better comprehension of presented theme is necessary to give live power-points pictures on the Conference.

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