

# Claim-Payment Failures Of Japan's Insurance Companies And Designing Better Payment Architecture: Finding A Standard Solution To Socio-Critical Systems By Applying the System Engineering Vee Model Approach (First Report)

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**Abstract.** Sociology, political science, economics and international relations traditionally deal with social systems. However, they have not proposed a solution to fix problems when they fail. This paper identifies the scope of social systems in which we can find a solution to cure such failures through three tests; the externality test, mission-criticality test and controllability test. We name these a *socio-critical system* (SCS). Architecture Vee Model can be applied as the standard method to fix failures in an SCS.

Massive claim-payment failures were found in Japan's private insurance companies and they became big social issues in 2005-2008. Japan's financial services supervision authorities identified failures to the full extent and issued successive administrative actions against most insurance companies to encourage them to improve their governance and overall solicitation-to-payment systems. This FSA's action, even though it was not necessarily aware of such methodology, proved to be positive in applying Architecture Vee Model to solve failures in those claim-payment systems, which are typically categorized in SCS.

## Introduction

**The Problem.** Between 2005-2008, most Japanese life insurance companies were found to have failed to pay proper insurance claims to policyholders. Such failures are judged as a clear violation of the insurance business law of Japan and show serious deficiencies of internal control and governance in insurance companies. The financial authorities of Japan implemented full scale inspections and took administrative action in those cases.

These included a) a company's intentional and unlawful refusal to pay claims to a policyholder (*Hutekisetu-Hubarai*), b) a company's payment leakage with claim-payment system failure and/or wrong check flows (*Shiharai-More*), and c) a company's negligence to invite its policyholder to apply for another benefit-payment request although such policyholder could have been simultaneously paid if he/she had done so (*Seikyu-Annai-More*).

According to FSA's successive findings, such non-payments or payment leakages reached 1.86 million cases amounting to JPY 144.3 billion (roughly \$ 1.4 billion). This problem became a big social issue in Japan. Based on evidence collected through a series of mandatory reporting orders,

these serious failures in the claims payment system stemmed from deficiencies of internal control and governance. The FSA issued 11 business suspension orders and 54 business improvement orders to fix those system failures. The insurance companies concerned duly submitted business improvement plans required by these administrative orders and committed to improve their entire system and business flow from solicitation of insurance products to payment of claims

The flow from solicitation, preserving customer information, to claim-payment in an insurance company is deemed one of the critical social systems which should never be allowed to fail. However, there is no standard methodology to fix problems if such a system failure occurs.

This paper will develop a standard methodology to solve the failure of social systems by using a social engineering tool. And we will verify by that methodology whether FSA's action to no claim-payment and payment-leakages cases was appropriate to solve the problems.

## Previous Studies about the Social System

**Sociology.** Sociology dealt with the concept of social systems as a main object of study. [Durkheim 1895] called incidents which happened in society "social events" (*fait social*), and regarded them as an object for systematic study. This approach developed into studies of social systems through the 1930s. Studies on social systems were divided into two approaches: a) cybernetic approach, and b) functionalism approach.

On a) cybernetic approach, [Cannon 1932] invented the concept of homeostasis, which described feedback mechanisms inside the human body. [Ashby 1956] applied the theory of homeostasis to the theory of cybernetics. The cybernetics theory sees social systems as transforming inputs to outputs by negative feedback as in the human body.

On b) functionalism approach, [Homans 1950] proposed a dichotomy of social systems to divide them into external and internal systems. In his theory, the external system is designed by the external environment, and the internal system reacts to the external system, which defines interrelations of social systems. [Parsons 1951 and 1967] categorized social systems through an axis of inter-outer and purpose-instrumental to four domains; adaption, goal attainment, integration and latency. These sub-systems in his theory output currency, political power, influence and loyalty respectively and react with each other to maintain autonomy of society. Currency and market, bureaucracy, generalized law structure and elected leaders with democratic organizations represent the common structure of modern social systems to correspond to the four respective sub-systems in his theory. Lehmann further developed Parson's functionalism approach to find social system's function to reduce complexity (*komplextatsgefalle*) and emphasized the role of communication media.

**Political Science.** [Easton 1967] brought the concept of social systems to political science. In his theory a political system inputs demand and supports policy input and output. And political system is controlled by feedback from the external environment. [Deutsch 1986] introduced the cybernetics theory to develop Easton's work. [Almond 1970] categorized political systems to a) input subject to synthesize and politicize interests and b) output subject to make, apply and judge rules.

**Economics.** [Iio 1972] was one of the early works to bring cybernetics theory into economics. [Boulding 1968] relied on general system theory to outreach from economics to political science and ethics. [Kumon 1978] described public and private entities in social systems as playing three

kinds of social games; a) power game, b) wealth game and c) knowledge game. [Imai 1992] considers entrepreneurial competition in capitalism to network four subsystems; a) national security system, b) production system, c) financial system and d) knowledge system.

**International Relations.** International relations follow methodologies of sociology to define social systems. The cybernetic approach corresponds to realism. Functionalism corresponds to liberalism.

On realism, [Morgenthau 1962] saw the nation-state as the principal actor in the international system. In his theory the stationary state of the system is maintained by a balance of power among nation states. On the other hand, [Koehane 1984] and [Rosecrance 1986], standing on the side of liberalism, emphasized the function of international inter-dependence and regional integration to stabilize the international system.

To counter the liberal argument, some realist thoughts came back as neo-realism. [Gilpin 1987] proposed a hegemony-stability theory in which the hegemony of one super-power stabilizes the international system because only such a super-power can provide international public goods. [Strange 1986 and 1994] asserted that the international economy can not get rid of structural and authoritative power, which underlies international politics. [Wallerstein 1974, 1980 and 1989] described periodical power-shifts among three regions of development in the world; a) core, b) semi-periphery, and c) periphery as the major drivers for evolution of the modern world-system.

## Extracting a Socio-Critical System

**Constraints of previous studies of social systems.** When we closely examine theories of social systems in previous studies, they cannot be subjected to a social engineering approach as they are. Sociology categorizes social systems into various sub-systems, but as yet no methodology has been set to operate and control those systems. Political science *a priori* applies the term “social system” to the political process, and does not verify the rationale why every political action deserves to be treated as input and output of a social system. For economics, a social system can be properly subject to study only if we extend the scope of study beyond the economics as [Boulding 1968] initially titled it in his book. International relations in principle laid the foundation of its analysis on nation-states. It rarely conceptualizes an entity beyond states as a basic subject for study.

**Three criteria to extract a socio-critical system.** Therefore, it is necessary to extract a group of social systems among various social systems defined by early studies by applying these three tests if we want to enable social systems to be subject of system engineering.

- **Externality Test.** This test is to judge whether the failure of a social system adversely impacts society on a large scale and whether its improvement equally and commonly benefits the society.
- **Mission Criticality Test.** This test is to judge whether a social system is required to uninterruptedly work without any breakdowns.
- **Controllability Test.** This test is to judge whether a social system is operative or controllable to enable improvement efforts for its function from outside of that system.

A social system which has externality, mission criticality and controllability is defined as one in which a failure of such system may bring adverse effect to society and therefore needs to be solved immediately by external controls. We name here this category of social systems as Socio-Critical

System (SCS) (see Chart 1). The scope of SCS coincides with the traditional domain of public policy because of its public character. SCS treats three systems in public policy theory as one group; a) the system of state sphere, b) the system of market sphere and c) the system of the sphere [Giddens 1998] calls “the Third Way”

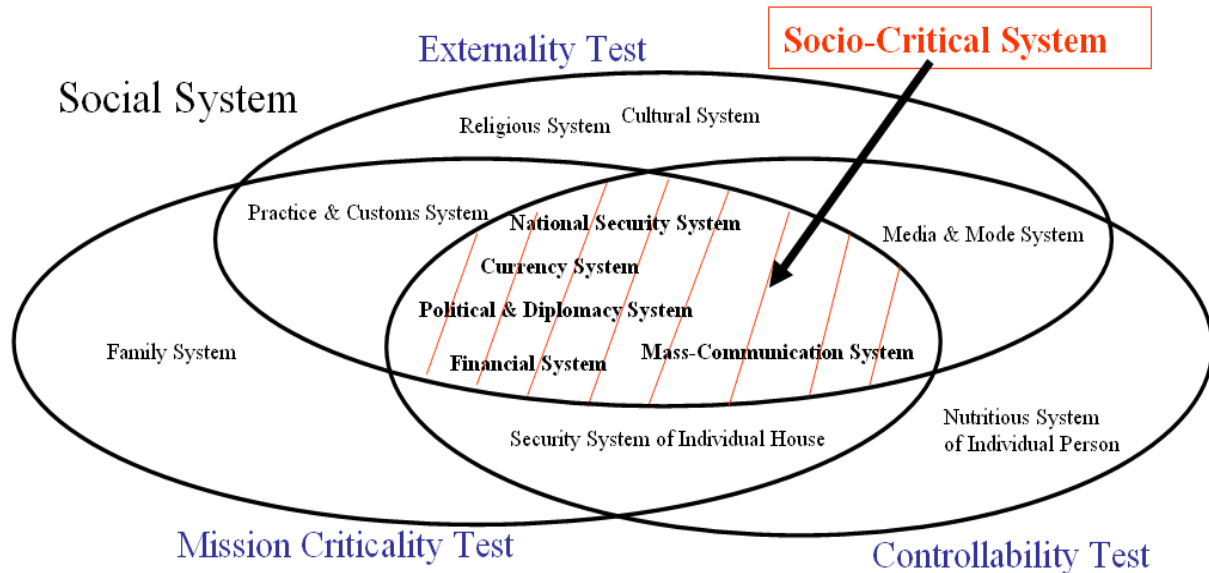


Figure 1. Extracting Socio-Critical System from Social System.

## Applying Architecture Vee Model to SCS

**Vee model applied to SCS.** A national security system, mass communication system, international currency system and other large-scale and complex social systems typically represent SCS by passing the three tests of externality, mission critically and controllability.

[Forsberg et al. 2005] suggests that architecture Vee model is the most efficient tool to develop a large-scale and complex system. When we apply the Vee model to solve a failure of SCS, six stages in the process are the benchmarks for system improvement; a) recognizing a failure, b) identifying where and what kind of failures, c) grasping the total system structure and analyzing the system requirement, d) modelling and proposing a solution, e) verifying or validating a solution and f) implementing or revoking a solution (see Chart 2) .

- **Recognizing a failure.** At this stage a problem is opaquely sensed in an SCS. Some may feel frustrated with the system, and this can be the start of all that follows.
- **Identifying where and what kind of failures.** At this stage a large search is conducted to identify the gravity and scope of system failures. It can be called the “Hint Stage”.
- **Grasping the total system structure and Analyzing the system requirement.** At this stage, the focus in on visualizing system failures and structural deficiencies. The requirement is to re-structure the SCS.
- **Modelling and Proposing a solution.** At this stage, a modelling or proposal is made to renew

the system for improvement. It can be called the “Connecting” or “Plumbing” Stage.

- **Verifying or Validating a solution.** At this stage, instead of verifying or validating process of traditional system engineering, a model or proposal is presented to a third-party. SCS which is actually at work in society can hardly be experimented with for verification or validation. Therefore, policy recommendations, a public comments procedure, town meetings, interviews in the street are often used instead of traditional ways to verify and validate.

- **Implementing or revoking a solution.** This stage is to actually implement a solution. If that solution does not satisfy the previous stages, the SCS improvement process comes back to the first stage.

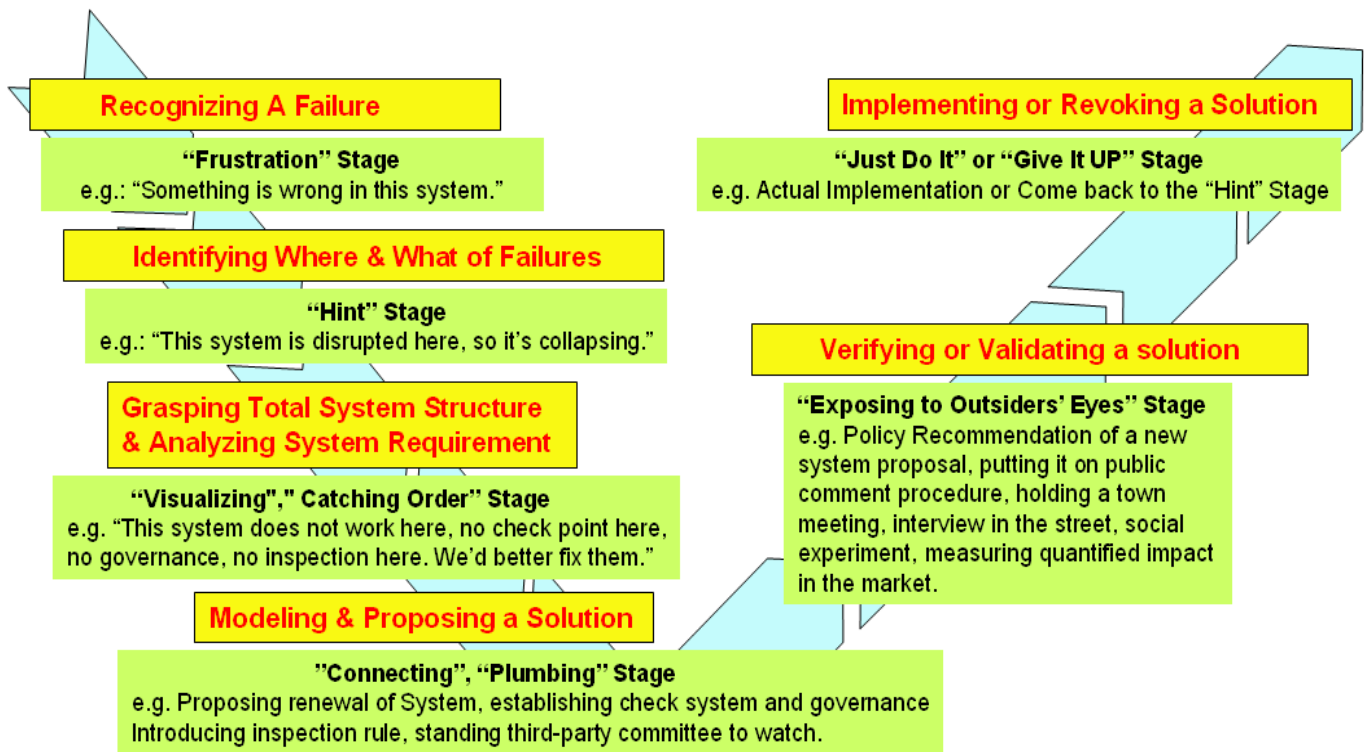


Figure 2. Applying Architecture Vee Model to a Socio-Critical System: 6 Stages.

## Applying Vee Model to Claim-Payment System Failures

**Claim-Payment System as SCS.** The claim-payment system of insurance company does not solely means the narrow system just for paying claims to policyholders. For an insurance company, the solicitation of insurance products with a proper explanation of the contract, maintenance of the contract and appropriate revision of customer information, and a mechanism to examine a customer’s request to pay claims are all important stages in the payment-claims system overall, which is the basic function of an insurance company. Therefore, the claim-payment system of an insurance company contains rather a long chain of business flows from policy-contract, maintenance and revision of contract information, to final claim-payment.

A claim-payment system is judged as a typical SCS. The modern market-economy largely relies on insurance coverage. The modern insurance system works on the law of large numbers, where a large number of policyholders equally consist of the same payment group. Thus this system has externality. If system failures result in non-payment to policy-holders, there will be a mass loss of confidence in the insurance system itself and that will trigger major social unrest as we observed in Japan from 2005 to 2008. Also if an accident happens to a policyholder, the claim and benefit should be paid without any disruptions. Thus the system requires mission-criticality. Moreover, a modern insurance company operates a claim-payment system with visible and computed business flow. It means the system has controllability. We judge that a claim-payment system is an SCS where the Vee model be applied to solve failures.

**Fact-finding of cases and administrative responses: a pattern.** Table 1, which summarized [FSA 2005 a-e, 2006 b-e, 2007 a and b, 2008 b and c], shows the development of no claim-payments and payment leakages cases in Japan’s insurance companies and FSA’s administrative responses to them from 2005 to 2008.

Table 1: Development of No Claim-Payment and Payment Leakage Cases Of Japan’s Insurance Companies and Administrative Response to them.

Life Insurance Company	General Insurance Company	Solicitation
<p>[2005]</p> <p>Feb.25: BSO to Meiji-Yasuda Life.</p> <p>July 26: RO to all companies about no claim-payment cases.</p> <p>Oct.2: Result announced on the above RO and BSO to Meiji-Yasuda Life</p>	<p>Sep. 30: RO to all companies on payment-leakage cases of collateral benefit of automotive insurance.</p> <p>Nov. 25: BIO to 26 companies on the above cases.</p>	
<p>[2006]</p> <p>June 2: AD on Payment Control System is revised.</p> <p>July 26: BIO to Nippon Life.</p>	<p>May 25: BSO to Sompo-Japan.</p> <p>June 2: AD on Payment Control System is revised.</p> <p>June 21: BSO to Mitsui-Sumitomo Fire &amp; Marine.</p> <p>July 14: RO to all companies on Third Sector Product.</p> <p>Aug.11: Order to re-examine collateral benefit cases to 26 companies.</p>	<p>Feb.28: AD is revised to introduce contract-summary, alert-information sheet.</p>

	Nov.17: RO on the dates to complete surveys to 26 companies on collateral benefit cases	
[2007] Feb.1: RO to all companies on claim-payment status.  Dec.7: all companies completed surveys on the above cases.	Mar. 14: BSO to 6 companies and BIO to 10 companies on Third Sector Product.	Feb.22: AD is revised to introduce customer-needs confirmation letter system.  July 5: AD is revised to enhance comparative advertisement.
[2008] July 3: BIO to 10 companies and official request to Life Insurance Association of Japan as well as all companies on the above cases		

Legend: BSO: Business Suspension Order, BIO: Business Improvement Order, RO: Reporting Order. AD: FSA’s Administrative Guideline for Insurance Companies.

The table also show that there is some common pattern in these cases. Namely, once some non payment or payment leakage cases emerged, the FSA issued a reporting order to insurance companies seeking feedback on all similar cases. This action was intended to grasp the gravity and scope of such failures. After hearings and a scrutiny of mandatory reports submitted by the insurance companies concerned, the FSA issued public announcements of the survey results and an administrative correction order (business suspension orders and/or business improvement orders) to make insurance companies improve their internal control, governance and function of their claim-payment systems. The insurance companies which received administrative orders duly submitted their business improvement plans to the FSA as their commitment to solving their deficiencies.

**FSA unintentionally applied Vee model to solve system failures.** The above pattern of action by the FSA exactly corresponds to the standard application of the Vee model to SCS on the six stages set out above. Nonetheless, there is no explicit evidence to show that the FSA consciously applied the Vee model to solve these system failures.

**Stage 1: Recognizing a Failure.** Inspection result of insurance companies and media coverage of non-payments or payment leakages were utilized to recognize failures emerging in the claim-payment system.

**Stage 2: Identifying Where and What kind of Failures.** Mandatory reporting orders were

issued for insurance companies to report to the FSA all detailed information on categories, figures, possible causes, the extent of governance and checking systems including engagement of top management.

**Stage 3: Grasping the Total System Structure and Analyzing the System Requirement.** The FSA's intensive hearing sessions with insurance companies followed the insurance companies' submission of reports. Successive dialogues between the FSA and respective insurance companies could be described as coordinated and cooperative work to create a re-structuring model.

**Stage 4: Modelling and Proposing a Solution.** The FSA issued administrative orders. These orders were not an intended verdict; rather the goal was to make the insurance companies fix their failures of internal control and claim-payment systems. The content of the orders was focused on the recovery of governance, introduction of multi-layer check system and *ex post* inspection of claim-payments, intensive coordination of the solicitation section and payment section in the same company, so proposing rather concrete solutions to fix system failures.

**Stage 5: Verifying or Validating a Solution.** The insurance companies concerned submitted their business improvement plans as ordered and solved system failures. These plans were periodically re-submitted as ordered by the FSA to monitor the speed and status of improvement. According to the Public Poll on Financial Services Users' Satisfaction conducted by the FSA both in 2006 and in 2007 [FSA 2006a and 2007c], those who felt dissatisfaction with services offered by insurance companies drastically decreased from 34.8% in the 2006 poll to 21.6% in the 2007 poll, although the satisfaction rate also somewhat decreased from 19.1% to 13.4%.

**Stage 6: Implementing or Revoking a Solution.** [FSA 2007d and 2008a] are evidence that the FSA encouraged insurance companies to promote self-sustaining efforts to improve their claim-payment systems. An insurance company is expected to implement plan-do-see-action cycle which is similar to six stages in SCS-applied Vee model.

## Conclusions

A group of social systems is eligible to be the subject of social system-engineering. That group is extracted by three tests; externality, mission criticality and controllability. Social systems which have passed these three tests are named *Socio-Critical System* (SCS). By its complexity and large scale an SCS is dealt with by the architecture Vee model when it fails and needs to be fixed.

The claim-payment system of insurance companies meets the criteria of SCS and thus is subject to the application of the Vee model. Massive non-payment and payment leakages cases emerged in Japan's insurance companies and these became a big social issue in 2005-2008.

The FSA unconsciously applied the Vee model to solve these cases through the observed pattern of administrative actions. These FSA's actions resulted in the improvement of governance and internal control of the claim-payment systems of Japan's insurance companies. Financial services users' satisfaction recovered through this period. This is a positive proof that the Vee model is effective to solve failures in SCS.



## Acknowledgements

The Author was inspired by discussions and exchanges of insights with colleagues of the newly established SDM Graduate School of the Keio University, where he works. He is also grateful to two anonymous reviewers who reviewed this paper and found it interesting with warm comments.

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