# Web Functions Creating New Value

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## Abstract

Chain management contributed to effective modern decision making like Operations research, Logistics, SCM, and so on. Gradually, the value chain relation was spun off into web value relation in the information age. Processor power of computer generates retroactive function, retrieval function, matching function and link function. Memory power generates jumbo storage function. Four functions of processor are similar to each other. Memory retention function is heavily growing. The combination of processor power and memory power made information age for about these 40 years and will contribute by making another new web value in the future.

## **Keywords**

web value, retroactive value, retrieval value, matching value, link value, storage value,

#### Introduction

There happened terrorism on 2001 September. After the terrorism, the U.S. Customs started Container Security Initiative (CSI) from 2002 January for homeland security. This initiative is to mail compliance e-documents from foreign exporters to the U.S. Customs. The CSI was enforced by the 24 hours manifest rule from 2002 December. This was named advanced Automated Manifest Systems (AMS), to check security of container cargoes from overseas. Exporters have to send electronic manifest before 24 hours advance cargoes are laden aboard the vessel at a foreign port.



Furthermore the next year, the C-TPAT was introduced from 2003 April. The CSI is a downstream check from exporters side and the C-TPAT is a upstream check from importers side. These security double check system of the Department of the U.S. Homeland security was succeeded into Automated Commercial Environment (ACE) beginning release-2 from 2002 ending release-8 2007. The ACE is an e-customs trial of one of the e-governments.

## 1. Suggestions of the CSI and the C-TPAT

Both of the CSI and the C-TPAT have important suggestions. E-documents of the CSI meant paperless documents delivery between exporters and the U.S. Customs. They can send documents without leading or lagging time. This is partly one type of electronic commerce of international trade. They send paper documents in the international trade for title documents and registry among exporters, transporters, warehousing companies, banks, agents etc. Papers are generally made original, duplicates, triplicates during the deals, and abandoned after the settlements. Generally, the original documents are left for documentary evidence. During the deal, main problem is the cross-border time consuming matter of paper documents in the age of information. Documents are left behind for 10 days or two weeks from the real dealing time. Some high speed liners arrive the destination port during the lag time. To secure the safety check of cargoes from terrorists the lag time cannot be allowed.

The C-TPAT is a way of security check by use of the demand chain. The demand chain finalist importer or manufacturer is to certify the advance partner's safety and retroact the chain one by one to the exporters. They connect both terminals by safe partners demand chain. Trust worthy partners relationship generates the security check of the C-TPAT. This chain is confirmed by the e-documents retroactive function.

The CSI and the C-TPAT were enabled by e-documents relation. If they were paper based documents, the CSI and the C-TPAT are not applicable. Also a retrieval function is needed to search safe or risk containers in the wholly collective import manifest. They have to distinguish safe containers or risk containers from a vast file of storage. They have to keep e-documents for outstanding or future security check. These functions are provided by the web and the functions create new web values. The reliable deal partner is the base of this chain. The retroactive value is wider extended in the age of information. They are called traceability or tracking value. So far as international trade concerned, an electronic certificate of origin is issued to certify the genuine manufacturer for simultaneous confirmation. The IC Tug is a new confirmation device with memory to state products past records. Those records are manufacturer, job site records, process and shipment date, arrival date, display date, expiry date and so on. Consumers can retroact products data by reading IC Tug at the stores terminals for their assurance.

Analysis of retroactive function

• search subject  $\rightarrow$  • search partner  $\rightarrow$  • upstream  $\rightarrow$  • origin or issuing date

## 2. Retroactive Value

The retroactive value was confirmed by the C-TPAT.

### Figure-2

## Four search functions

	100	a search func		062201		
	what		volume		sequence	
function	keyword	relation	quantity	sum	date	time series
retroact	subject	partner			origin	older
		continuity			-	next,former
retrieval	subject	and,or				
	object	nearly equal				
matching	subject	counterpart	how much	accord,fix	simultaneous	maturity
	object		how many		fix	term
link	subject	relative	citations	greater	originator	
		similarity	linkages		principal	

four search functions of processor

# **3. Retrieval Value**

The biggest deference between paper documents and electronic documents is the retrieval power of processors. You cannot search one evidencing paper from stacks room easily. On the other hand you can search specified key word from jumbo storage memory devices by using processor retrieval function. The search engine business was successful from the beginning of the Internet world like Alta Vista, Infoseek, Lycos, Yahoo, Google etc. Web users enjoyed to search things through the daily changing homepages. There are two types of search engine of directory type and robot engine type. At the beginning the directory type was cultivated after the traditional database theory. A robot type was cultivated and robot searches day and night constantly. Gradually combination of directory and robot type are applied.

The Google found a new type of searching system by applying citations or linkages. The engine made value adding page rank system by link numbers or citations. This retrieval value made link value additionally. We use retrieval functions to look over homepages by page ranking of keywords.

Analysis of retrieval function

- search subject or object, search exactly the same
- search and/or
- search nearly equal

## 4. Matching Value

The auction business was very popular in the Internet business from the beginning. The system is to search and match the counterparts of buyers and sellers on the pages. There are many types of matching business, stock exchange market, commodity market, foreign exchange market, auction market and so on. They made in the U.S.A new market of Electronic communication network (ECN). They make deals through the ECN on the web after the closing time of the traditional stock exchange market. They added another investors to stock market by deleting mediation charges. In the foreign exchange market, they have to make money matching like forward rate contract. The matching items are amount, delivery time, contract rate. These matching or fixing jobs are good for processor matching function. So the foreign exchange broking jobs are greatly shifted to e-trade.

Analysis of matching function

• search subject or object $\rightarrow$ • search counterpart $\rightarrow$ • search volume matching $\rightarrow$ • accord finding $\rightarrow$ • term matching• maturity fixing

## 5. Link Value

The search engine Google found a new dimension of retrieval, link value. Larry Page and Sergey Brin found a page rank system. Before, searchers often made junk results by their traditional simple keyword retrieval system. Google retrieval system is targeted to compare the importance of retrieved pages against keyword by the automated judge theory based on mutually linked or voted page relation. And Google made simple portal site by deleting wasteful banner advertisement by making automatic dynamic abstract making, and by quick access to the right page by use of mathematical matrix theory. Search engine displays pages by the navigator necessity order. They can arrive at demanding pages by the Google engine robot. The idea of anchor text or other tools are used for search engine optimization.

Value is estimated by linked pages or voted pages and cited numbers. For example, the linked page has more value than voter page against some keyword. Many linked page has more value than less linked page. Too many meaningless linkages are judged without meaning page and not counted. Finally total highly estimated page comes first, and the second one by one from the top by this page rank system. Many linked and qualified pages are highly appreciated. By these standards Google engine acquired another marketing tool.

Those emerging tool is called search engine marketing (SEM) or search engine optimization (SEO). Navigators can arrive at their demanding pages more quickly. The page rank system is applied into internet advertisement by analyzing navigator's keywords searching or access routing. Internet advertisement contrives to hit the first page for the navigators by the use of an anchor text or others. These new advertisement style is called SEM or SEO for further sales promotion to increase net sales. These are gained through the detailed analysis of web visitor tracking or tracing.

## Analysis of link function

• search subject or object $\rightarrow$ • relation or similarity $\rightarrow$ • citation voting or linkage $\rightarrow$ • volume comparison $\rightarrow$ • ranking of high score of originator or principal

# 6. Storage Value

We live in the network with PC world. Also we have now portable high volume of external memory devices like CD-R, CD-RW, MO (Magnetic optical disk) or other external memory devices with the convenient use of the USB. We cannot bring paper documents of thousands of pages. On the other hand, we can bring or carry the same data by storage memory devices easily. We set over ten volumes of encyclopedia in the bookshelf. The same information is packed into only one optical disc. The retrieval functions easily to search or access words in the disc. This is very convenient for our academic or business purpose. We can arrange easily letters, sentences, tapes, pictures, music, speeches in the network with PC world to promote new business opportunities.

The U.S.A. Customs receives all e-documents daily from overseas. They have to keep those data for retrieval use to a security check. Those jumbo data storage world is a coming new wave in the information age. New storage system has to be standardized. Jumbo storage functions as business value driver named the web storage value. Data centers are filled with end-user applications and relevant data, those data are carried by portable storage devices easily. This storage value requires new system management or new data center approach to keep security management or to support compliance information management or records retention.

Storage industry is now at the time of dawn. Storage retention accelerates the business efficiency and also brings some new troubles. Sometimes or very often we have to keep private matters away from public use like private name list. Recently, after the application of jumbo memory, many information leakage troubles occurred. How to protect private data security from the public is an emerging indispensable matters.

As an another breakthrough of next-generation non-volatile memory devices are the topic of new advances. Next generation key demands of memory devices are compactness, low-priced, low-voltage, non-volatility, high density, fast read/write and long life. Ferroelectric RAM or FRAM, Magnetic RAM or MRAM, Phase change RAM or PRAM are competing to be a top runner.

Analysis of storage value function

• jumbo memory retention • standardization security management

• new generation of

memory devices

# 7. Comments

Smart valley inc. (SVI) was established in 1993. That was the dawn of the network with PC world. Since then, many projects were introduced by the SVI for the future network world. The www is one of the principal innovations to attract many people into the network with PC world. The www was world-widely accepted network as shown in the figure-3.

This figure shows the Internet usage increased over 8 hundred million all over the world only from 1993 to 2005. The penetration to population of the world is 12.70% and increasing as of 2005 February, furthermore the usage and penetration will increase in the future. The web value making activity will contribute all the more in the future and new web value functions will be added. The function of serial number of processor should be used for another business driver. Or another value ranking system might be introduced. Figure-2 may suggest another idea for processor sophisticated function. The processor four functions and storage function will keep growing.

Finally, four functions will be extended as follows, 1. Retroact function will be extended to storage retention, because of the requirement of sequence records tracing into storage retention. Archival documents retention for record keeping has to be applied.

2. Retrieve function will be extended for more searching power against globally proliferating web. Search engine is a simple but fundamental function of processor.

3. Matching function will be extended for more searching power and provide more substantial custodian or storage retention.

4. Link function will be extended in the more globally proliferating web. In addition to the page rank system, new value making or ranking system may be introduced.

5. Storage function is a newly emerging function and storage industry will be in business. New rule making for storage or security check will be required. New device technology may have another breakthrough.

Figure-3	World internet usage and	nonulation
riguie-5	worth internet usage and	population

World Regions	Population	Population	Internet Usage,	Usage Growth	Penetration	World
·····	( 2005 Est.)	% of World	Latest Data	2000-2005	(% Population )	Users %
<u>Africa</u>	900,465,411	14.00%	12,937,100	186.60%	1.40%	1.60%
Asia	3,612,363,165	56.30%	266,742,420	133.40%	7.40%	32.60%
Europe	730,991,138	11.40%	230,923,361	124.00%	31.60%	28.30%
Middle East	259,499,772	4.00%	17,325,900	227.80%	6.70%	2.10%
North America	328,387,059	5.10%	218,400,380	102.00%	66.50%	26.70%
<u>Latin</u> America/Caribbean	546,917,192	8.50%	55,279,770	205.90%	10.10%	6.80%
Oceania / Australia	33,443,448	0.50%	15,838,216	107.90%	47.40%	1.90%
WORLD TOTAL	6,412,067,185	100.00%	817,447,147	126.40%	12.70%	100.00%

NOTES: (1) Internet Usage and Population Statistics were updated on February 3, 2005. (2) For detailed regional data, click on each World Region. (3) Demographic (population) numbers are based on data contained in the web site gazetteer.de. (4) Internet u

### http://www.internetworldstats.com/stats.htm

To sum up, we have to remember these convenient functions are wholly based on e-documents, and not paper-based documents. Five factors function under the circumstance of e-documents. At the same time the processor's 4 functions and 1 storage function are not independent. They are all depending to each other. For example if the retrieval power were increased, another 4 powers are enforced.

#### Figure-4 future extension of five functions

IT function	extension
retroact	storage, custodian
retrieve	prolifirating web
match	proliferating web, custodian, storage
link	prolifirating web, ranking
storage	storage management, security management

Paperless light speed policy was presented by the CALS project of the U.S.A. from 1985. The

electronic commerce was started from manufacturing company and distributors and retailers. B to B or B to

C were newly named in the internet business world. E-commerce is expanding globally under the proliferating web network. New trial is shown by the ACE for cross-border e-government after the terrorism. If the cargoes were to be exported, the cargoes are imported by the counterpart country. In the age of global network and information, we have to cooperate to each other countries for the creation of new network with PC world by the use of e-documents. The combination of processor and memory of computer opened information age these 40 years. The new combination of processor and jumbo memory retention will contribute to cultivate coming another half a century.

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