Summary of the questionnaire regarding the future of UTC made by CRL

1. Introduction

Communications Research Laboratory (CRL) made a questionnaire regarding the future of UTC at the end of 2001 to the main organizations or companies, or the time and frequency users in Japan. The questionnaire is attached to this report (the original one is described in Japanese).

This questionnaire was distributed to the following fields;

(G1)	Electric power companies/Gas companies	2(1)
(G2)	Bank/Stock Companies/Insurance Companies	2(2)
(G3)	e-Commerce and Time Stamping Authority Companies	2
(G4)	Air/Shipping/Railway Companies	16(6)
(G5)	Satellite Control Organizations	6
(G6)	Organizations of monitoring the weather/Earthquake/Earth Rotation/Ephemeris	6
(G7)	Broadcasting/Telecommunication Companies	5(1)
(G8)	Electric Measuring Instruments Manufacturers	25(3)
(G9)	Clock and watch Manufacturers	1(1)

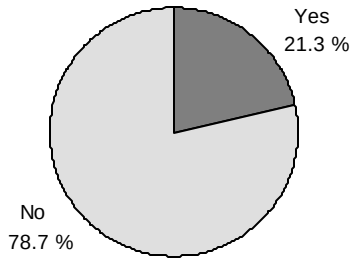
The figure in the parenthesis shows the number of societies.

CRL directly distributed 65 questionnaires, and 35 answers were obtained from the directly distributed organizations or companies. In addition to these answers, 45 answers were obtained from secondary distribution, namely several societies distributed this questionnaire to their related companies or organizations. Finally we got 80 answers for this questionnaire.

2. Results

Q1. Is there any inconvenience for the method of the present UTC determination system?

Yes	17	(21.3%)
No	63	(78.7%)



Q1.1

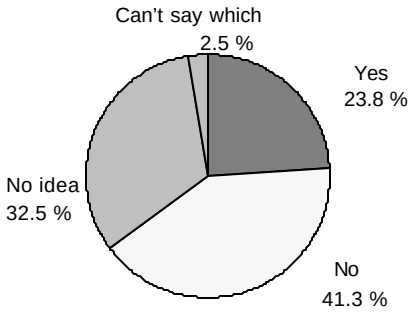
(A) Difficulty with the time inconsistency (4) (G6:2, G7:1, G8:1)
(B) Unable to set automatically owing to the irregular periods (3) (G7:1, G8:2)
(C) Upon change in the origin, there is a fear of shifting in the time and secondary. (2) (G6:2)
(D) Possible for operation mistakes to be made along with cost and time for verification of investigation when implemented. (8) (G5:1, G6:1, G7:4, G8:2)
(E) Forced to install the function of setting leap seconds into the system (3) (G7:1, G8:2)
(F) Difficulty in dealing with ' 60 seconds ' (2) (G6:1, G8:1)
(G) Unable to carry out necessary operations during adjustment (1) (G5:1)

* Many opinions from satellite control, broadcasting agencies telecommunications, measuring instruments fields were given.

Most of their reasons are; inconvenience in the irregular time, uncertain periods for implementation, inconvenience and risks for mistakes during adjusting the operation.

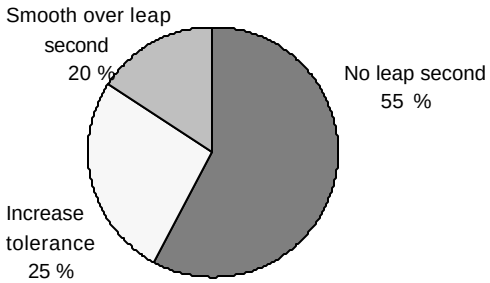
Q2. Do you think it is better to change the determination method of UTC?

Yes	19	(23.8%)
No	33	(41.3%)
No idea	26	(32.5%)
Can't say which	2	(2.5%)



Q2-1 If "yes" for Q2, which one do you prefer for the solution?

1. No leap second	11	(G6:4, G7:2, G8:5)
1.1 UTC without no leap second	4	(G6:3, G8:1)
1.2 Use TAI	2	(G8:2)
2. Increase tolerance for |UTC- UT1|	5	(G6:1, G7:1, G8:2, G9:1)
3. Smooth over leap second	3	(G7:1, G8:2)
4. Redefine the second	0	
5. Another idea	0	



* “No leap second” is the majority among the opinion of “better to change”.
* There are four persons who disagree with “smooth over leap second”.
* There is no person with “redefine the second”.

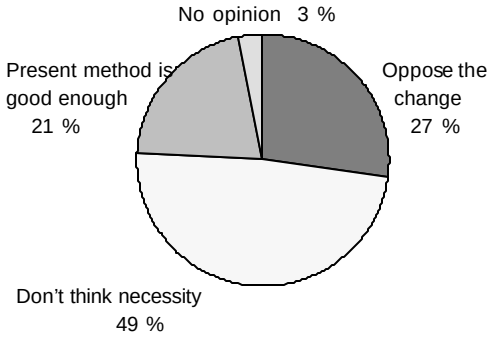
Q2-2 Better not to change it

(A) Possible for it to cause confusion along with cost and time when the present situation is changed. 9 (G5:2, G6:2, G7:4, G8:1)

(B) Don’t think it necessary to be changed because there is no problem with the present situation. 16 (G4:1, G7:9, G8:5, G9:1)

(C) Present method is good enough. 7 (G4:1; G6:2, G7:3, G9:1)

* The reasons for half of those who replied are ‘the change is not necessary, and there might be some confusion along with cost and time caused by the change and so forth.’
* The reasons of the supporters are ‘Adjusting periods are clear, and the present situation would be better compared with the disadvantage caused by changing the method, and the sun does not cross the meridian at noon, and so forth.’



ANNEX

Questionnaire regarding the future of UTC

Q1. Is there any inconvenience for the present UTC determination method?
Yes or No

Q1-1 If “yes” for Q1, what is the specified reason?

Q2. Do you think it is better to change the determination method of <> UTC?
Yes, No, or No idea

Q2-1 If “yes” for Q2, which one do you prefer for the solution?

1. No leap second
   1.1 UTC without leap second
   1.2 Use TAI
2. Increase tolerance for |UTC – UT1|
3. Smooth over leap second step
4. Redefine the second
5. Another idea

Q2-2 If “ no” for Q2, why ?

Q3. Do you have any idea regarding determination or operation of UTC?