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OLD AGREEMENT

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Agreement Between

Massachusetts Institute of Technology

and

The General Electric Company

Covering Development and Use of the GE 645/MULTICS Computer System

Note: (1) Signed by GE
(2) Copy has been
to ...

This Agreement is effective as of the First day of January, 1967 between the General Electric Company, a New York Corporation having an office and place of business at the Special Information Products Department, Court Street, Syracuse, New York (hereinafter referred to as General Electric) and the Massachusetts Institute of Technology, an educational institution organized and existing under the laws of the Commonwealth of Massachusetts with a principal office at Cambridge, Massachusetts (hereinafter referred to as MIT).

Witnesseth that:

WHEREAS the parties are presently bound by the terms of MIT Purchase Order Number SR95360, dated May 13, 1965, and Supplemental Agreements thereto, Equipment Use Agreement, an addendum CK-89 thereto, all relating to the rental of computer hardware for a large-scale, multiple-access GE 645 data processing system, and are also bound by the Agreement relating to patents dated November 5, 1965.

WHEREAS General Electric is engaged in the development and manufacture of the hardware for said system and has already made deliveries of certain pieces of hardware in conformance with said Purchase Order, and

WHEREAS General Electric wishes to develop software for the operation of said system, and MIT, currently engaged in a major program of computer research sponsored by the Federal Government, wishes to advance the state of the art through experimentation with an advanced computer system in an operating environment, and

WHEREAS the parties desire to pursue their mutual objectives by collaborating on an experimental project to develop said software, known as MULTICS, and

WHEREAS the aforementioned Purchase Order and Use Agreement do not recognize the developmental nature of the effort engaged in and do not satisfactorily define the rights and obligations of the parties in connection with this effort, which statement is not intended to include said agreement relating to patents, and

WHEREAS the parties desire to enter into a revised agreement which will define their rights and obligations in the use of the hardware in connection with overall MULTICS Development Program.

NOW THEREFORE in consideration of the premises and other good and valuable consideration the parties agree as follows:

Article 1 - Supersession

All previous agreements between the parties with the exception of (1) published monthly rental prices and (2) the existing Agreement concerning patents dated November 5, 1965 relating to the GE635/645 Hardware and MULTICS Development whether written or oral, express or implied, including but not limited to MIT Purchase Order Number SR95360, Supplemental Agreements thereto and Equipment Use Agreement CK-89 and addendum are hereby superseded in their entirety by this Agreement.

Article 2 - Statement of Work

During the period of performance of this Agreement, General Electric shall:

- Item 1. Continue the operation of the GE635 computer system previously installed until power down is mutually effected.

- Item 2. Bring the GE 645 computer system up to turnover status and deliver the remaining items of the GE 645 configuration listed in Exhibit I. General Electric shall certify in writing to MIT that the equipment is installed and ready for use.
- Item 3. Provide a minimum of seven (7) professional system programmers on site to participate in the development of the MULTICS software and to assist in applying this software towards attainment of an operating GE 645/MULTICS system.
- Item 4. Provide a nominal level of one (1) application engineer on site to assist in applying standard GE 600-line software, including modifications and maintenance thereto for the GE 645 system.
- Item 5. Provide informal documentation of the MULTICS work results suitable for internal distribution to and utilization by system programmers on the MULTICS Development project.
- Item 6. Develop and provide the following language systems for the GE 645, it being understood that Items 3 and 6 of Article 3 notwithstanding, General Electric will continue, for a reasonable period following release of these systems, to assist in applying them towards attainment of an operating GE MULTICS system:
- (a) FL/I Assembler
 - (b) EPL/I Compiler
 - (c) FORTRAN IV Compiler
- Item 7. Perform all necessary adjustments and repairs to keep the GE 645

equipment in good working order if provided access to the equipment for the purpose of providing maintenance service.

- Item 8(a) Provide standby on-site maintenance coverage for two consecutive principal operating shifts of eight (8) consecutive working hours each, five (5) consecutive days per week (Monday through Friday). The principal operating shifts will be designated by MIT and may be changed by giving thirty (30) days written notice to General Electric.
- (b) Provide on-call remedial maintenance at times other than the scheduled principal operating shifts at MIT's request, such requests to consist of approved GE Form CF126's. No charge will be made for remedial maintenance commenced during a scheduled principal operating shift and extending into third shift or week-end time.

Item 9. Provide on-site management of the above effort to ensure effective integration on all General Electric Activities with the overall GE 645/MULTICS Development project. Such integration shall include documentation and monitoring of firm specifications, task descriptions, schedules and milestones for the project, as jointly established and approved by General Electric, MIT, and BTL.

Article 3 - Period of Performance

1. (a) The period of performance for this Agreement shall commence 1 January 1967 and terminate with the mutually declared completion of Phase IV (Prototype MULTICS) of the MULTICS Development project or 31 December 1967, whichever occurs earlier. Completion of Phase IV is defined as the point in time at which the overall GE

645/MULTICS System "goes public" i.e., is first made available to general users within the MIT community, on a trial basis, with the expectation that some nominal level of bugs and difficulties will continue to exist as the system undergoes a continuing shakedown and evolution.

(b) In the event that the above completion event is not achieved by 31 December 1967, the period of performance for this Agreement may be extended by mutual agreement of the parties. Any such extended final completion date shall be no later than 1 April 1968, irrespective of the then current status of the MULTICS development, and this Agreement shall be superseded effective said date in accordance with the provisions of Article 5, Paragraph 1.

2. Specific delivery or period of performance of the items specified in Article 2 above shall be as follows:

Item 1. 1 January 1967 through 28 February 1967

Item 2. Turnover of currently installed equipment per Exhibit I on 1 March 1967, with subsequent items and corresponding ready-for-use dates per Exhibit I.

Item 3. 1 January 1967 to completion⁽¹⁾

Item 4. 1 January 1967 to completion⁽¹⁾

Item 5. 1 January 1967 to completion⁽¹⁾

Item 6. (a) Release by 31 December (b) Release by 31 December 1967
(c) Release by 31 December 1967

Item 7. 1 January 1967 to completion⁽¹⁾

Item 8. 1 January 1967 to completion⁽¹⁾ with scheduled second shift coverage commencing 1 March 1967

Item 9. 1 January 1967 to completion⁽¹⁾

(1) "Completion" of the MULTICS Development project is defined in Article 3.1(a) sentence 2 above.

Article 4 - Payment

1. Full rental, per Exhibit II, for the previously installed GE 635 system for the period 1 January 1967 through 28 February 1967 less 20% educational discount is due and payable as of the date of execution of this Agreement.
2. General Electric shall invoice MIT for payment of the total of the following items, in monthly amounts March through completion:
 - (a) Full rental for the GE 645 system components, at their respective monthly rental figures as itemized in Exhibit I commencing with their respective ready-for-use dates.
 - (b) Extra maintenance charges for scheduled second shift, 5 days per week, standby maintenance at 5 percent of the total monthly rental represented by (a) above.
 - (c) On-call maintenance charges for non-principal operating shift work performed at MIT's request per Article 2, Item 8(b), such charges to be at the rate of \$28 per man hour with a minimum charge per call of two hours.
3. The total monthly equipment rental represented by 2(a) above shall be reduced by the standard 20 percent educational discount. The resultant total rental shall be discounted by an additional 20 percent applied to the GE 645 system as consideration for the developmental and experimental usage of this system, including miscellaneous system downtime resulting from hardware/software development debugging, trouble shooting and modifications as may be required from time to time, during this period.

4. (a) The rentals due for the GE 635, Item 1, shall be settled by application of funds accumulated by General Electric as credits to the MIT Project MAC account as of January 1, 1967.
- (b) Invoices for the net monthly charges resulting from 2, and 3, above shall be submitted to MIT the first of each month, March through December 1967, and shall be due the 20th of the month submitted. Each such invoice shall include a credit of \$59,000⁽¹⁾ which sum is one-tenth of the credits remaining against the MIT Project MAC account of \$590,000⁽¹⁾ after settlement of the GE 635 rental by General Electric, as of 1 March 1967.

5. Should equipment be added to the configuration listed in Exhibit I, the total monthly payment by MIT will be increased by the normal rental, adjusted downward as in Article 4-3 above, and extra maintenance charges during the performance of this Agreement. Any final adjustment for such increases will be made in the invoice for December 1967. Charges for equipments added or removed on or before the 15th of the month will begin as of the first of that month; charges for equipment added or removed after the 15th of any month will begin as of the first of the following month.

6. The estimated value of this Agreement in terms of 1967 net payment to General Electric, based on Exhibit I and omitting any effect of future changes covered under Article 2 - 8 and 4 - 5 above, is \$283,761 as detailed in Exhibit IIA.

(1) Figures are approximate, to be adjusted in final billing.

7. Should the period of performance of this Agreement extend beyond 31 December 1967, as provided for under Article 3, Paragraph 1(b), monthly rental charges for each such month shall be based on the Federal Supply Schedule of General Electric prices in effect as of 1 January 1968. The estimated net monthly charge after the appropriate discounts will be \$ 106,737 as detailed in Exhibit IIB.
8. Against the above charge for any extended period of this Agreement, (three months maximum), General Electric will apply a monthly credit of \$20,000 per month, consistent with the overall terms and intent of this Agreement relative to the collaborative nature of the MULTICS development effort.

Article 5 - Additional Provisions

1. It is understood and agreed that at the completion of this Agreement the parties shall, subject to the approval of the Contracting Officer cognizant of the Project MAC research contract, enter into a use agreement at the full rental prices of the then current General Electric Authorized Federal Supply Schedule Price List covering the installed equipment configuration, less the standard 20 percent educational discount, for a minimum rental period of twelve (12) months. The terms and conditions shall be based on the then current standard General Electric use agreement and such amendments and modifications thereto as may be mutually agreed upon by the parties, and shall be definitized on or before 1 December 1967. The equipment configuration to be incorporated in said agreement shall be specified in writing by MIT on or before 1 November 1967.
2. It is understood and agreed that MIT will not request removal of

any installed GE 645 equipment, except for (1) replacement or (2) failure to perform to specification during the duration of the development period covered by this Agreement.

3. It is understood that General Electric wishes to exercise approval rights, to the extent consistent with the mutual objectives of the parties, over all MULTICS specifications, task descriptions, manpower plans, schedules and milestones, and all revisions thereto, as established by MIT for the MULTICS Development effort under the general guidance and policy direction of GE/MIT/BTL trinity, such approval to be delegated to and exercised by the on-site General Electric Manager who shall also function as the General Electric representative on the GE/MIT/BTL triumvirate. It is also understood that MIT must remain free to determine the manner in which it can most effectively pursue its objectives in advancing the state-of-the-art and fulfilling the obligations resulting from sponsorship by the Federal government. If any specific question cannot be resolved by the unanimous agreement of the triumvirate it will be referred to the trinity for resolution. If it cannot then be resolved in a manner which in the view of the parties is consistent with the basic objectives of each, then either party may by 30 days written notice terminate its participation under this agreement.

Article 6 - General Terms and Conditions

The following terms and conditions apply:

1. Changes or Attachments - Changes or attachments to the equipment

described herein may be made at User expense upon written approval of General Electric.

2. Transportation - All transportation, rigging and drayage charges upon equipment both from and to the General Electric plants, are to be paid by the User. Necessary packing cases for the return of the equipment and a representative to supervise the packing will be furnished by General Electric without charge. Return transportation charges shall in no case be greater than the cost to return the equipment to Phoenix, Arizona.
3. Delivery - General Electric shall not be liable for delays in delivery or failure to manufacture or deliver (1) due to causes beyond its reasonable control, or (2) to Acts of God, acts of the User, acts of civil or military authority, priorities, fires, strikes, floods, epidemics, war, riots, delays in transportation or car shortages, or (3) inability due to causes beyond its reasonable control to obtain necessary labor, materials, or manufacturing facilities, or (4) delays in engineering or manufacturing occurring notwithstanding due diligence on the part of General Electric, nor for delays occurring by reason of changes, or unavailability of facilities, information or material to be furnished by User. In the event of any such delay, the date of delivery under Article 3-2 shall be extended for a period equal to the time lost by reason of the delay.
4. General Electric shall defend any suit or proceeding brought against the User so far as based on a claim that the equipment or any part thereof as furnished under this contract constitutes an infringement

of any patent of the United States, if notified promptly in writing and given authority, information and assistance (at General Electric's expense) for the defense of same, and General Electric shall pay all damages and costs awarded therein against the User. In case the equipment or any part thereof, as furnished under this Agreement, is in such suit held to constitute infringement and the use of said equipment or part is enjoined, General Electric shall, at its expense, and at its option, either procure for the User the right to continue using said equipment or part; or replace same with non-infringing equipment or part or modify it so it becomes non-infringing or remove said equipment or part. The foregoing states the entire liability of General Electric for patent infringement resulting from or arising out of the User of the equipment or any part thereof, furnished under this Agreement. The provisions of this paragraph shall not apply to any equipment or part thereof, manufactured to User's design or specifications. As to such equipment, or any part thereof, General Electric assumes no liability whatsoever for patent infringement.

5. Limitation of Liability - In no event shall General Electric be liable for special or consequential damages. General Electric's liability on any other claim for loss or liability, including negligence, arising out of or connected with this agreement (including but not limited to, loss or liability arising from breach of contract) shall in no case exceed one (1)

year's total basic monthly charges for the system except as provided in the existing Agreement relating to Patents dated November 5, 1965 and attached hereunto as Attachment A.

6. Title - It is agreed that the equipment, tools, fixtures, spare parts, and/or test equipment provided by General Electric in performance of its agreement shall at all times be and remain personal property of the General Electric Company. The title to all said equipment covered hereby shall be and remain with the General Electric Company, subject only to the User's possession and use during the term hereof. Upon termination of this agreement in respect to any piece of equipment covered, the same shall be promptly returned to the General Electric Company at such address as may be designated by General Electric. Tags bearing the legend "Property of General Electric Company" affixed to the equipment may neither be relocated or removed without the express written permission of General Electric Company.
7. Default - If the User be adjudicated a bankrupt, or there is filed against it a petition under the Bankruptcy laws, or if any insolvency proceeding is initiated by or against the User, or if the equipment or any part thereof is encumbered, pledged, or attached; seized or taken under any judicial process, General Electric or its assignee may at any time terminate this Agreement and enter the premises where the equipment may be located, either with or without process of law, and remove all said equipment, using such force as may be necessary so to do, without prejudice to any other rights or remedies of General Electric or its assignee.

- 8. Responsibilities of MIT - MIT shall provide adequate storage space for spare parts and adequate working space, including heat, light, ventilation, electric current and outlets, work benches, etc., for the use of General Electric's maintenance personnel. These facilities shall be within a reasonable distance of the equipment to be serviced and shall be provided at no charge to General Electric.
- 9. This Agreement and any amendment attached hereto signed by both parties shall be governed by the laws of the State of New York and constitute the entire agreement and understanding between the User and General Electric concerning the subject matter hereof, and any representation, promise, modification or amendment shall not be binding upon either party unless in writing and signed on behalf of each by a duly authorized representative.
- 10. Construction and Performance - The construction and performance of this contract shall be governed by the laws of the State of New York. In witness whereof, the parties hereto have duly executed this Agreement.

OK [Signature]

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

BY [Signature]

TITLE Comptroller

DATE Nov 6, 1967

GENERAL ELECTRIC COMPANY

BY [Signature]

TITLE Computer & Data Systems Sales Manager

DATE 22 September 1967

EXHIBIT II
MIT/GE AGREEMENT

A. Estimate of 1967 Net Payment to General Electric Company

GE645 SYSTEM

Gross Rental per Exhibit I	\$ 1,266,320
Less: Educational Allowance (20%)	<u>253,264</u>
Educational Rental	\$ 1,013,056
Less: Development Use Allowance (20%)	<u>202,611</u>
Net Rental	810,445
Plus: Extra Shift Maintenance on GE645 at 5% of Gross Rental	<u>63,316</u>
Total 1967 Estimated Charges	\$ 873,761
Less: Credits to MIT Account at 3/1/67	<u>590,000*</u>
Net 1967 Payment for GE645	<u>\$ 283,761</u>

B. Estimate of Monthly Payment for Extension Into CY1968

Gross Monthly Rental at 1/1/68	\$ 154,690
Less: Educational Allowance (20%)	<u>30,938</u>
Educational Rental of GE645	\$ 123,752
Less: Developmental Use Allowance (20%)	<u>24,750</u>
Net Rental	\$ 99,002
Plus: Extra Shift Maintenance on GE645 at 5% of Gross Rental	<u>7,735</u>
Total Estimate of Monthly Payment for Extension Into CY1968	<u>\$ 106,737</u>

*Approximate, to be adjusted in final billing.

EXHIBIT I

MIT Project MAC

CE545 Configuration & Projected Rental

MOD NO.	DESCRIPTION	MO. RENT PER UNIT	QTY	MO. RENTAL TOTAL	RENTAL PERIOD (1)	NO. (1) MOS.	TOTAL RENTAL (1)
CO-8030	Console	400	2	\$ 800	3/1-12/31	10	\$ 8,000
PSC-200	Peripheral Switch Console	165	1	165	3/1-12/31	10	1,650
OFT-510	Switch Units	40	15	600	3/1-12/31	10	6,000
DSC-200	Disc Controller	1,525	1	1,535	3/1-12/31	10	15,350
DSU-204	Disc Files	1,170	2	2,340	3/1-12/31	10	23,400
OFT-203	Add'l Discs-12	625	2	1,250	3/1-12/31	10	12,500
CSE-023	System Clock	1,175	2	2,350	3/1-12/31	10	23,500
MDU-200	1X106 Word Drum	3,300	1	3,300	4/1-12/31	9	29,700
DSC-12F	2X8 Disc Controller	3,360	1	3,360	11/1-12/31	2	6,720
DSU-10F	100X106 Char. File	4,100	2	8,200	11/1-12/31	2	16,400
MSC-388	Mass Stor. (Race) Controller	800	1	800	9/1-12/31	4	3,200
MSU-388	Mass Stor. (Race) File	2,900	1	2,900	9/1-12/31	4	11,600
HFC-600	H.S. Channel (Race)	650	2	1,300	9/1-12/31	4	5,200
DDA-600	DSC-12F Adapter	680	2	1,360	11/1-12/31	2	2,720

Total Month Rental as of 12/31/67

\$ 145,655 *

Total 1967 Rental (1)

\$ 1,265,320

(1) Estimated

*Note: This excludes 10 -MTH311 which expired 5/31/67.

EXHIBIT I

MIT - PROJECT MAC

GEC45 CONFIGURATION & PROJECTED RENTAL

MOD NO.	DESCRIPTION	MO. RENT PER UNIT	QTY	MO. RENTAL TOTAL	RENTAL PERIOD(1)	NO. MOS.(1)	TOTAL RENTAL (1)
CP-8031	G45 Processor	\$ 14,000	2	\$ 28,000	3/1-12/31	10	\$ 280,000
CPP-600	Port Pairs	250	4	1,000	3/1-12/31	10	10,000
MM-8030	32K Memory w/Controller	6,500	4	26,000	3/1-12/31	10	260,000
AMM-600	32K Additional Memory	4,300	4	17,200	4/1-12/31	9	154,800
OPT-802	Memory Ports	80	12	960	3/1-12/31	10	9,600
OPT-815	Exec. Interrup. Cells	100	4	400	3/1-12/31	10	4,000
DC-8031	GIOC	5,400	2	10,800	3/1-12/31	10	108,000
MIP-600	GIOC Port Pairs	250	2	500	3/1-12/31	10	5,000
SCP-600	Status Channels	35	8	280	3/1-12/31	10	2,800
PIP-600	Priority Channel	60	4	240	3/1-12/31	10	2,400
TTA-600	TTY Adapter	400	6	2,400	7/1-12/31	6	14,400
TTC-600	TTY Channel Group	120	12	1,440	7/1-12/31	6	8,640
TTL-600	TTY Extension Group	60	12	720	7/1-12/31	6	4,320
CAA-600	ASYN Char. Adapter	185	2	370	3/1-12/31	10	3,700
CAC-600	ASYN Char. Channel	80	6	480	3/1-12/31	10	4,800
CSA-600	SYN Char. Adapter	185	2	370	3/1-12/31	10	3,700
CSC-600	SYN Char. Channel	80	6	480	3/1-12/31	10	4,800
DGA-600	Dialing Adapter	125	2	250	7/1-12/31	6	1,500
DGC-600	Dialing Channel	30	16	480	3/1-12/31	6	2,880
CAB-600	OPT. Adapter CAB	950	2	1,900	3/1-12/31	10	19,000
EMU-302	4x10 ⁶ Word Drum (Prototype)	8,000	1	8,000	6/1-12/31	7	56,000
APP-302	Drum Port Pairs	250	1	250	10/1-12/31	7	1,750
EMC-302	Drum Controller	NC	1	-0-	10/1-12/31	-	-0-
MCU-302	Drum Cooling Unit	NC	1	-0-	10/1-12/31	-	-0-
MFC-404	2X16 Mt. Controller	1,485	1	1,485	3/1-12/31	10	14,850
MTH-301	7CH Tape Handler (60KC)	615	8	4,920	6/1-12/31	7	34,440
MTH-311	7CH Tape Handler (120KC)	810	10	8,100	3/1-5/31	3	24,300
MG-8031	62.5 KVA MG Set	304	1	304	3/1-12/31	10	3,040
OPT-825	PAR Sequencer	16	1	16	3/1-12/31	10	160
CRZ-200	900CPM Reader	650	2	1,300	3/1-12/31	10	13,000
CPZ-200	300CPM Punch	825	2	1,650	3/1-12/31	10	16,500
PRT-202	Ext. Char. Printer	1,600	2	3,200	3/1-12/31	10	32,000