Fredkin
Licklider
Daley
Saxton
Donovan

224/7820
9.6016

12/31/68

1. Fredkin designed that it's ~~impossible~~ possible to move users from Multics/645 to Multics/X. (Control problem in recording)

2. Fredkin feels committee of M.I.T. people needed. e.g., Kuhn
Weisner
etc.

to produce M.I.T. view of what is wanted.

3. (67) has a future? (Fredkin + Donovan)

4. Need to figure out how to convince our supporters.

[illegible] 5-point summary } ½ hour intro.
30 point view of [illegible]

Line of keeping track of whether it is happening or desired.

[illegible] aspects.

Theme of Research management.

30 [illegible] = 1 p.w.

4000
2400
800
960
8160/30 x [illegible]

30 x 175 x 70

24
x 8 3
192 hrs.
5

28 day month
20 8 = 160 1 25
160 2 15
160 3 5

100 x 1750 = 175,000

330 [illegible] hrs.

12.30

~~1750~~ 8160/100,000

1/12/68

Best plan

Comparison

BTL plans effect: Where do their users go?

MIT Machine not available before 2nd Quarter.

Moulde is one issue of remaining BTL users.

Service Bureau – who runs it?

Ability to change with development.

Price

User tolerance

# of Services which Must be Available

Distance forces increasing their cost + difficulty of local community

Follow on?

1. Letter of intent to cover 1st 3 of 12 mos.

2. Decouple from pricing plan: goes on in parallel

3.

645 A system should GIOC A be upgraded to B (or patched)

Could A system become service system? If GE wants to run B system.

Extra Drum memory added.

12	64K memory	12
12.4	drum	12.4
28K X 6 mo =	~~$762K~~	$24.5
		6
		$157.0
		32
		$125.

[ARPA Network can absorb part of Multics as a carry-on, MAC can underwrite

Internal budget to permit other ARPA users experimentation with Multics

Incremental to previous plan

and to GE proposal underfunding

17
4
68

Ideal situation:

"Ideal" Scenario for Computer Systems Research Group, + Multics 12/27/67

(under presumption that support is available for "Move as fast as possible" Objectives

a. Multics widely available ASAP
b. Multics used at M.I.T. ASAP
c. Maximum learning benefit from Multics experience
d. Stay alive for continued [illegible] computer operations organizations.)

1. Programming group pushes forward to produce a reasonable file system and other changes to bring performance up to "3 or 6 CTSS users" mean.
2. GE becomes enthusiastic, announces a 645 product and 6xs follow-on which is an architecturally downward compatible descendant of 645.
3. Planning of specs for follow-on hardware done by GE + MIT
4. Hardware design / development / production cycle for new 6xs.
5. Prototype 6xs hardware delivered at M.I.T.
6. MAC / M.I.T. users begin to use Multics 645 heavily (Summer Study?)
7. " " " " heavily
8. Programming group continues development of measuring tools
9. Programming group designs + creates modifications to hardcore supervisor necessary to run with 6xs hardware.
10. Checkout on new hardware
11. Programming group returns in size to 1/2 current; student participation increases
12. 6xs hardware installed (2 mo overlap with 645)
13. MAC / M.I.T. community switches to 6xs system.

13 Programming group reduces size to ~1/3 current, student participation increases further

14. CSR group continues to explore evolution of Multics by continuing to modify the operating system in use at MIT by the user community. Successor to GXS is planned. | This stage is done in small steps.

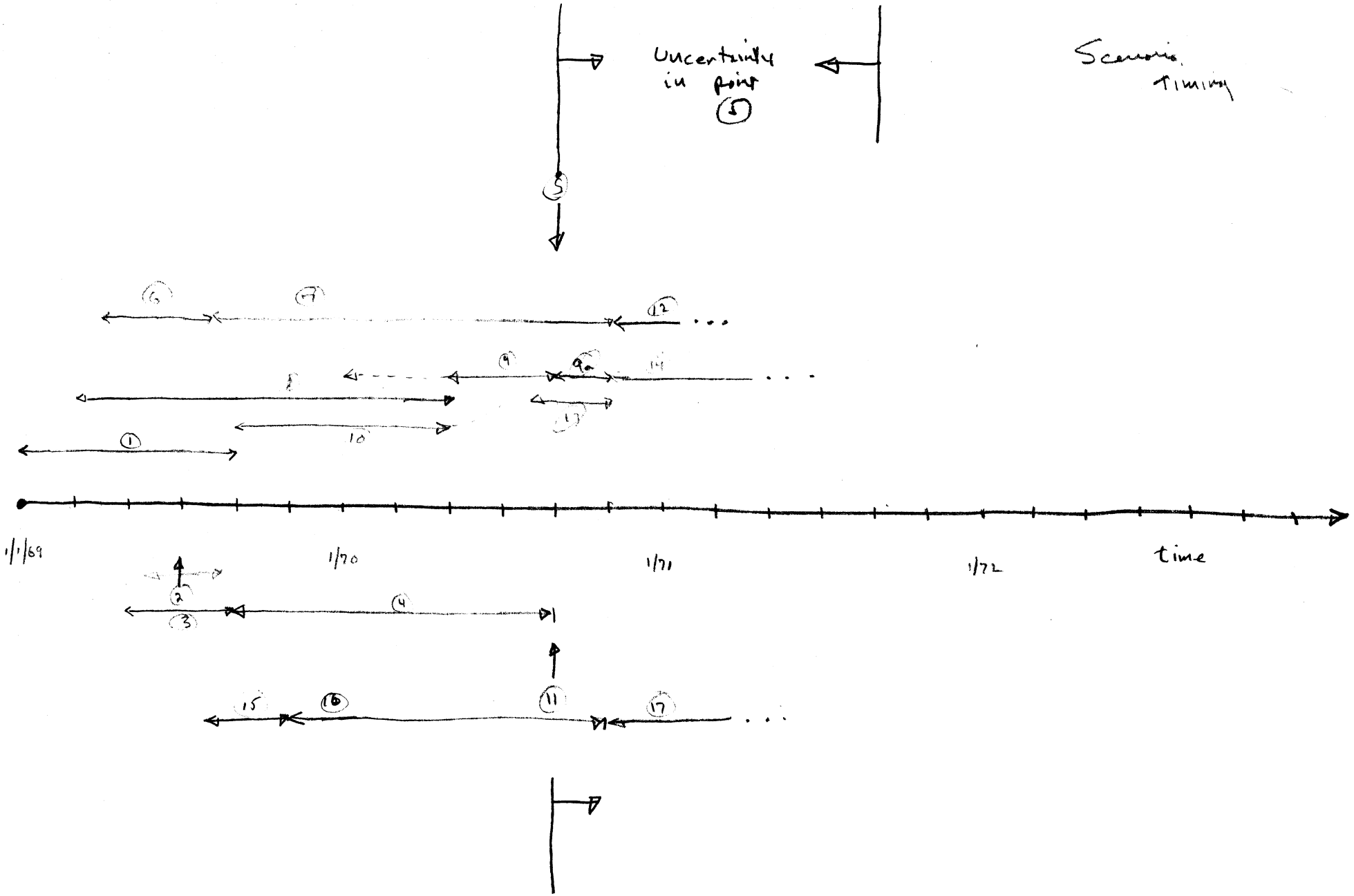
15. GE picks up documentation, system generation/maintenance tool.

16. GE picks up GAT software and begins to "productize" it.

17 GE begins deliveries of GXS's to industry with Multics on it.

18.

(Special, not product)


Uncertainty in point (5)
Scenario Timing
1/1/69
1/70
1/71
1/72
time

Ideas not yet incorporated

1. There is confusion on goals — is Multics doing what was expected.

2. Short notice to GE,

~~2. All courses leaving GE equipment is certain to take much longer. (At least, GE/BTL software teams are lost, etc.)~~

3. 645 ~~econom~~ economics.
c/w CTSS, PDP-10.

4. Multics features are being implemented in order, but basic system allows all to be added.

5. What means "Code Compatibility?

CAM proposal Questions 1/5/68

1. Why is MAC supporting CAM (budget / CTSS support, etc.)

2. Implications in that MAC continues to use CTSS (user types ^H)

3. MAC will produce a POP-10 + POP-8 satellite
will provide service "in effect of no CTSS"

4. What % of MAC budget is unknowingly CAM.

5. Does all of MAC know that POP-10 is proposed to replace CTSS?
and become prime facility of MAC.

6. How will POP-10 TTYs be brought up to CTSS abilities?

7. Could Multics be made less intense than POP-10?

Mtg 12/26/68 4:30 PM

224-7341, 9-6016

w/ Papert
Minsky
Fredkin
Daley
Licklider
Jones
Sutherland
Saltzer

1. Review of ARPA panel findings
inc.: statement that 645 must become cheaper
even if GE hangs on.
(Fredkin questions)

2. Report on Multics developments
Steve Lukasik Dir: Rechtin
1. Rechtin wants PDP-10 for 1 yr more. (1st talk w Roberts)
2. 2nd talk w Roberts a. Rechtin wants a management plan by
2nd week in Jan
b. Can not follow present plan.
c. All MAC staff in tied together.

3. Fredkin opinion: M.I.T. should not get involved in a code conversion/new machine effort - leave this kind of stuff to SDC. Any new hardware must run 645 code. (E.G., a 2x price PDP-10 with 645 instructions.)

Roberts: (1st day): "Decision is out of M.I.T.'s hands - It must be a PDP-10s"

Confused with issue of "Must improve the hardware".

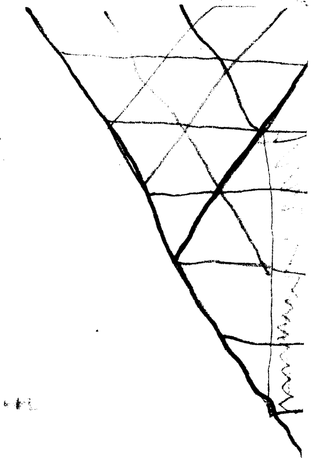
4. Roberts, Evans, Lampson had a long meeting -
Evans: [illegible] follow-on
Lampson: Code compatible machine is impossible.

5. Committee fact sheet — ? X

6. Jerome proposes a summer study board on Multics

7. Evans says he "knows" that GE has decided definitely No on 645 follow-up.

8. Lick: keep matters quiet.
Weissman (or Lick) will discuss recent developments with GE & BTL.



[illegible]: MAC's major project should be instantaneous interaction
(Multics is too slow)

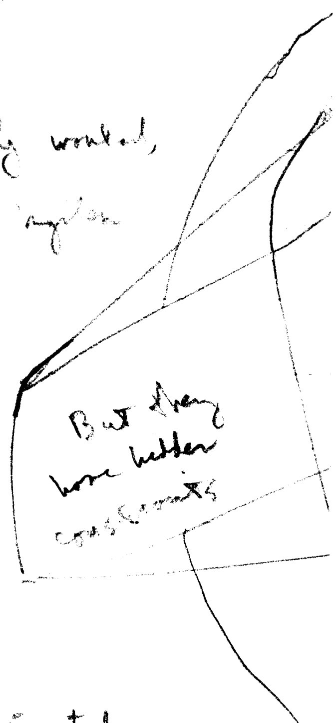
MAC should not be involved in Time-sharing system research ←

Lick: a. Should think through all ideas to see where they lead.
b. Should not be too ready to call Multics a success, or
ARPA can lose [illegible].

Fredkin: M.I.T. has been too lax in planning for success. ←

Lick: List objectives of Multics to decide which ones were really wanted,
so that can see how to put a simpler, faster PDP-10 system
together.

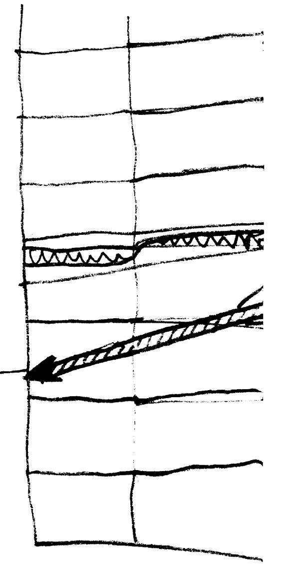
Tom: make a list of attractive-looking scenarios.



6^{30}

Lick does not believe that it is possible to purchase a 645 today.

Proposal to have GE take Multics and do everything itself



w/ Contrib. (plan) 12/27
330pm

1. What is the fundamental difference between today and 1 year ago? Aren't the total funds the same?

Practical consequences of short notice to GE are severe.

2. Switching business ≡ starting over
   a. Lose GE/BTL help.
   b. Design disruption
   c. sidestep is not research.
   ⇒ New start implies that Melting is no longer
   d. ~~from~~ Certain to take longer.
   e. Not win to pursue with MAC.
   f. Failure probability is high.

3. What does the division of MAC want? Vote of MAC faculty? CTSS support?

4. How start
   a. Tapa-off funding ε ARPA
   b. top-up ε GE
   c. Possible dissociation ε MAC?

5. GE: 1. When announce
   When delivered
   ~~when~~ where price + specs.

   2. Increased support (Inter-staff)

   3. Contingency of separate Melting budget if GE supplies.

Underwriting responsibility of 645 - who covers it? MAC?

IPSC might do it?

Most MAC picks up day costs of running the system.

Add plan to move marketing responsibility to IPSC.

1/2/69

1. Taylor is incredulous that Multics is so much of MAC.

2. Licke: AKBA thinking - closed system solutions is parallel of looking for new hardware.
Don't think 645 lasts as long as summer.

3. Factor of 7 in CPU price between 645 and PDP-10 ? (Fredkin)
doesn't mean factor of 7 in total system.