

Meeting on IDP.

Nov 22, '58

K.N. Kaeli      Campbell  
Blaauw  
Kalszay

Personal opinions:

Pete Spantz was manager of IDP at start.  
Historical. G. Hawkins committee formed March '58.

to look at IDP (1) what is needed for company to get into  
(2) " do we have on shelf to get going.  
~~(3)~~

Can't answer (1) precisely. need to know mkt wise.

don't know what IDP really is.

- make some guesses: <sup>studied</sup> SABRE, ANC, Boeing, SAC, Military

big diff between military & commercial - willingness to spend money,

IDP will have to come by evolution - hard to convert over  
from batch to IPP

- economic advantages are not well known.

- (Pete Spantz took over later Data Communications  
traded with G. Hawkins

Most studied: Communication systems - mod-demod equipment

e.g. AT&T digital

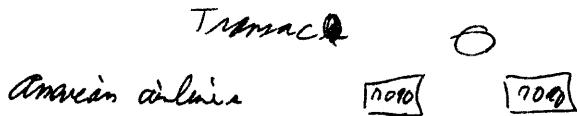
(IBM & AT&T both wanted to control.

- what functions of computer are needed? Study,  
Nutter - Comm. Terminal - multiplexing area (data gathering)  
Kaeli - computer area  
Wong - new IDP computer design

Kaeli Studied:

305, proposed 310 (as originally proposed), 650 Ramec, 705, 7020  
by San Jose X10  
STRETCH. (not the 7090) <sup>(because not a commercial processor - not checked etc.)</sup>

- in contrast to SABRE - -



concentrated on in-line processing - a multitude of several transactions

"Rosen-Hart study" approach

- multiprogramming, cuing, interrupt, priority control, relative addressing.  
results: 305, 650 R, 310 proposed San Jose. could handle on limited amt.

because 1. internal speed, 2. size of working memory, 3. single data channel (one direction at a time) — hard to achieve integrated processing, as "in-line" however,  
~~305~~ had inquiry facility. (close & readout put in data)

705, 7020, STRETCH

control problems encountered 1. cueing.  
2. multiprogramming,  
3. relative addressing.  
4. interrupt.

cueing: - as freq. of Transactions increases - must pile up requests -

(1) modem to smooth average no. at computer.

- at input area - multiplex references to file records,

(2) multiple file refs

- one transaction may call in a hundred records
- rather than design for worst case - share an area between programs, not  $a+b+c$  but  $a+e$  common

(3) working areas & use cue,

- if one has integrated a large no. of programs,  
one no. of progs. = 24 per customer. (Daily, weekly, monthly)  
one no. of math steps  $\approx \frac{1000}{1750}$  inter (not data)

(Arrow-Hart: 60 M characters, 100 diff. programs.)

(4) so cueing of programs is necessary also.

12 M characters  
for Metabolism  
Prof. air force

~~Partial~~ ~~black~~ imbalance between I/O & computing

Multi-programming is one ~~of~~ solution.

facilitating multi-prog (1) interrupt procedure - under control of option of prog.

store status: STO IC, states of trigger, accumulator,

(harder on 205 - 15 accumulators.)

(2) record control ad. - scattered read/write - reset address,

(3) memory protection.

as of  
June

cost: terminal equipment is most expensive

SABRE cost of Terminal  $2 \times$  cost of system, <sup>rest</sup> serializing-mod, demod.

keyboards: Typewriter, small key board 1, 2, 3, 4, date, etc'

flite card reader.

message by message transmission? buffers

(4) Relative addressing. — to avoid

(5) interrupt control — automatic

— (preferred system)

or — trigger to be tested

### (6) priorities

#### Priority Control:

— some progs. are urgent — some can be delayed

— transaction

— load fluctuation

— cyclic — predictable. (I am owing to end checks)

— unpredictable,

#### Probs: (1) Simultaneous Record Reference (Conflict)

e.g. 2 channels to same Disk

— one could deny other references to same record during a read-write cycle.

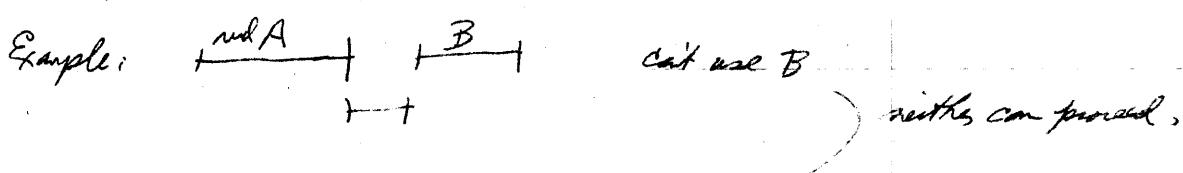
— by programming. — may be over protective,

(1) only one channel per file

(2) keep waiting list

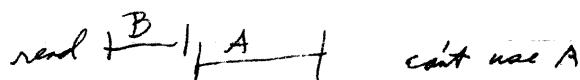
#### (2) Dead-lock Situation:

Example:



can't use B

) neither can proceed.



can't use A

complicated program to unravel,

must restore A to original state &

conclusion:

- a large scale computer is probably not best way — (degree of complexity of whole set)
- a family of 310's is probably better, (3)
  - duplication - reliability
  - simpler programming

F-60 good idea -

Terminal end - look like a tape unit - using DSO or Exchange

- 705 BCD code preferred.

Memory : 305      215 drum  
                  10K core  
705      80K  
9070     99.900 words

Ref:  
W. Wittenberg, Mohonni  
• Amer. Advis.

need to "stream line" business -- Tradition  
e.g. paying by cash - to nearest \$1,

Boeing job -- data gathering,  
3 phases      (1) card to card  
                  (2) card to tape  
                  (3) card to computer  
200 readers,

- fitting computer to present mode of operation
- must convert to "computer philosophy"

ref: IDP  
Bill Morgan

Philco: NADT ~ \$6<sup>00</sup> ea.

(4 stages 17 msec.  
but with loops 11 msec.)