

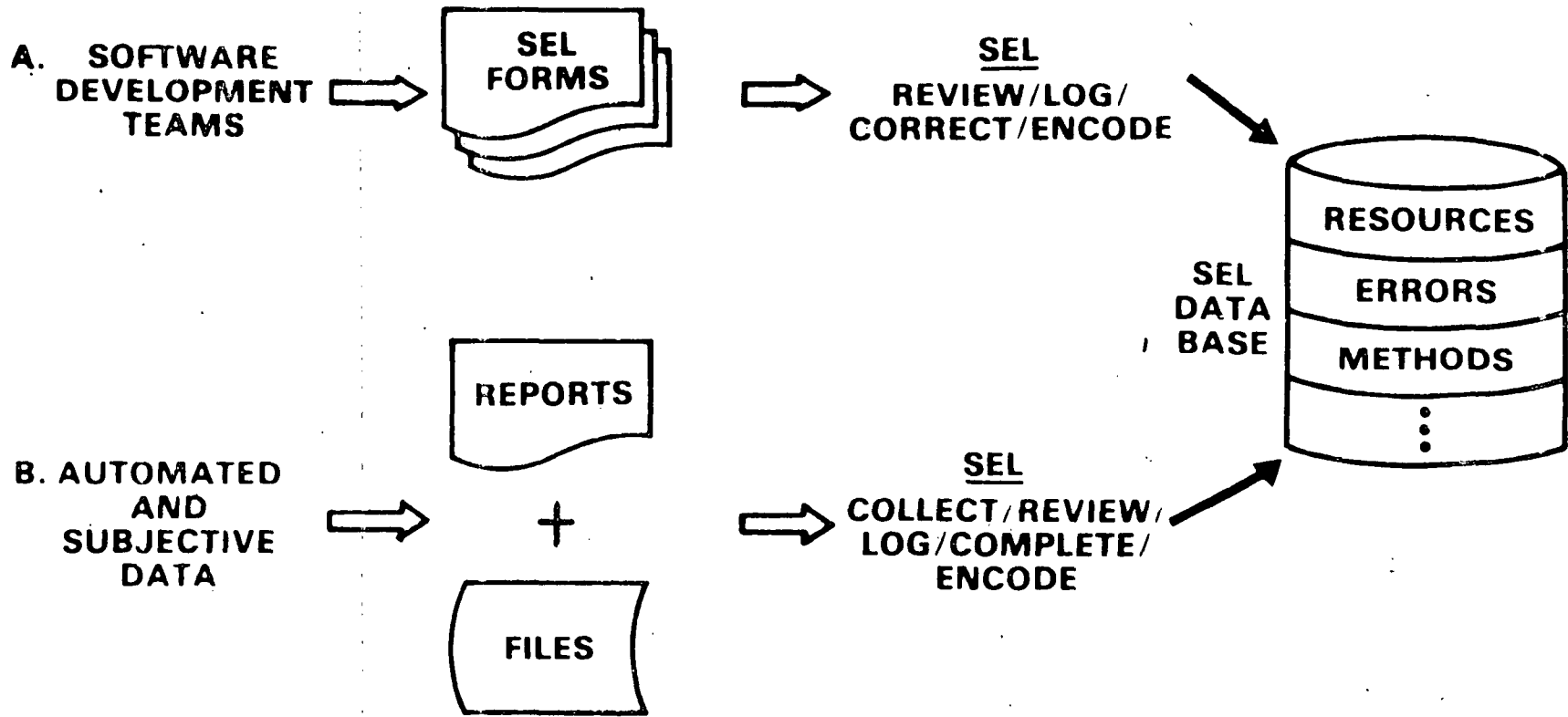
B

SOFTWARE ENGINEERING LABORATORY—
THE DATA COLLECTION PROCESS

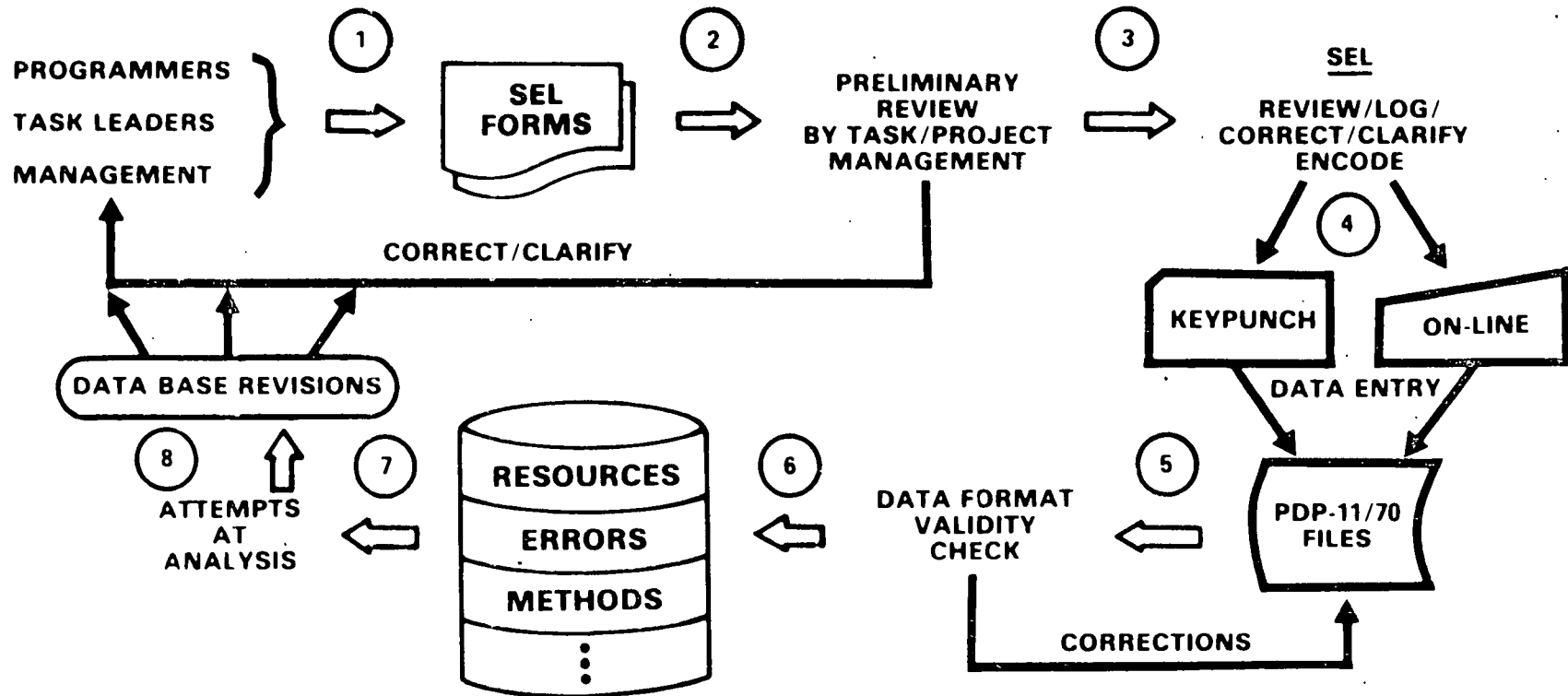
Victor E. Church
CSC

Investigation into the software development activity involves an elaborate process of data collection, review, and preparation for analysis. The overall data flow is described briefly, noting the variety of data sources, the major points of review and data correction, and the macro structure of the resulting data base. Much of the data collection requires the active participation of programmers and software managers involved in the tasks being monitored. Practical considerations of overhead costs, impact on monitored tasks, and programming team reactions and expectations are discussed.

SEL DATA COLLECTION



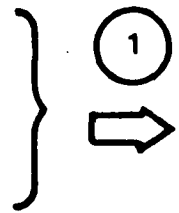
A - TEAM-SUPPLIED DATA



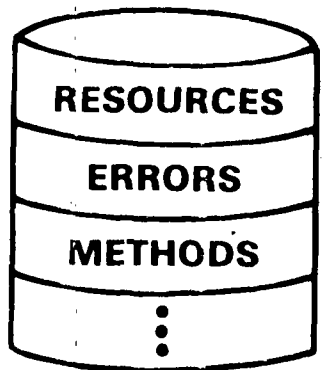
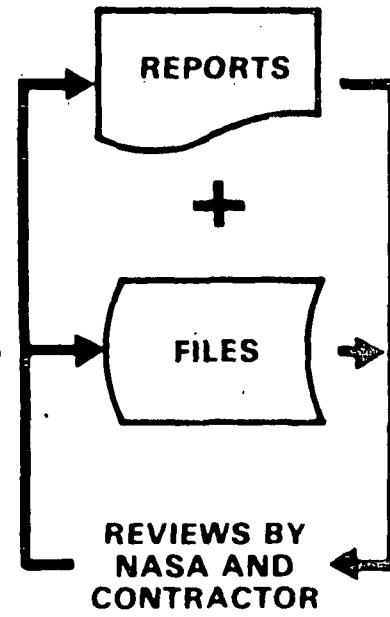
B – AUTOMATED AND SUBJECTIVE DATA

SOURCES

- PANVALET LIBRARY
- HARDWARE ACCOUNTING
- SOURCE ANALYZER
- MANAGEMENT (RETROSPECTIVE)



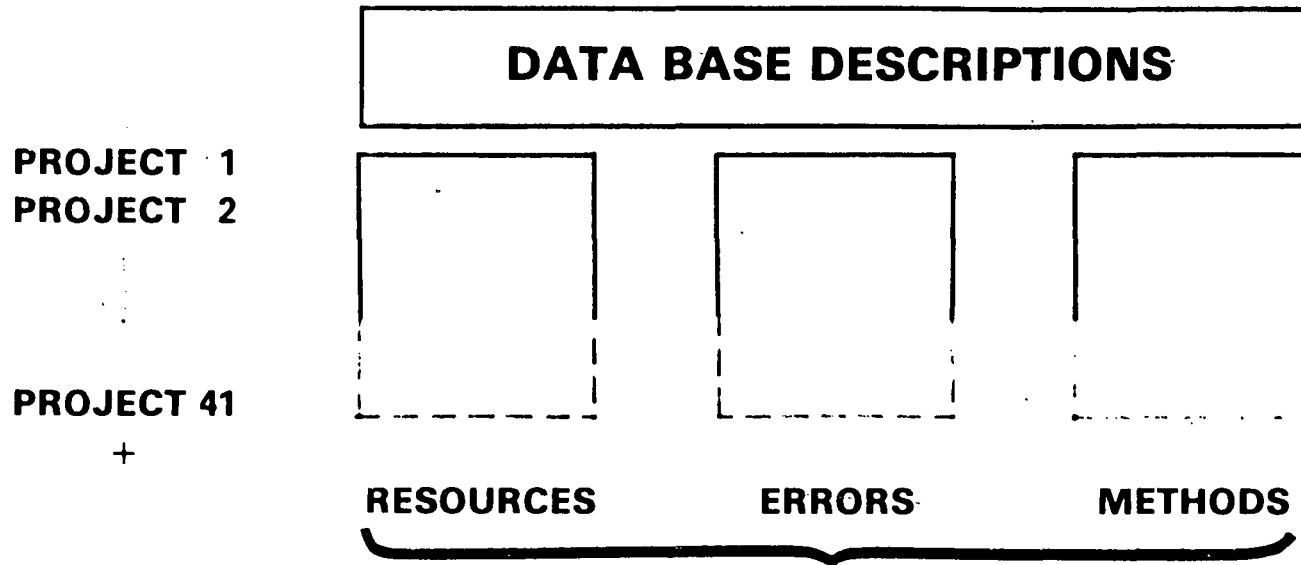
SEL
COLLECT/CREATE/
REVIEW



DATA
ENTRY



DATA BASE ORGANIZATION



ACCESSED BY PROJECT/BY CATEGORY

VIA

- **CUSTOMIZED REPORTING PROGRAMS**
- **DATATRIEVE INTERACTIVE INQUIRY SYSTEM**
- **FORTTRAN-CALLABLE USER INTERFACE**

SEL DATA COLLECTION PROCESS – PROBLEMS AND CONSIDERATIONS

- **COST TO MONITORED TASKS – 10% OVERHEAD**
- **“HAWTHORNE EFFECT” – NO IMPACT**
- **PROGRAMMER REACTIONS/CONCERNS:**
 - UTILIZATION OF DATA IS NOT VISIBLE OR OBVIOUS TO PROGRAMMERS
 - NO FEEDBACK AVAILABLE TO GUIDE SELF-IMPROVEMENT
 - VALUE OF DATA NOT DEMONSTRATED – CONSIDERED “BUSY WORK”
 - IMPRESSION EXISTS THAT DATA COLLECTION IS BASED ON “WHAT CAN WE MEASURE?” RATHER THAN “WHAT DO WE WANT TO KNOW?”
- **PROBLEMS WITH COLLECTED DATA**
 - DIFFERENT PROJECTS PRODUCE VARYING LEVEL, CONSISTENCY OF DATA
 - Q/A PROCESS (DURING DATA COLLECTION) HAS TOO LOW A PRIORITY
 - TIMELINESS OF DATA COLLECTION COULD BE IMPROVED

CHU-11-79

DIRECTIONS—

- **PROVIDE PERIODIC (MONTHLY, QUARTERLY) REPORTS TO SOFTWARE DEVELOPMENT TEAMS ON ANALYSES OF GENERAL INTEREST, AND OF SPECIFIC INTEREST TO INDIVIDUAL TEAMS AND PROGRAMMERS**
- **PROVIDE IMPROVED Q/A, ESPECIALLY AT THE TIME AND PLACE OF DATA COLLECTION**
- **DEVELOP AUTOMATED PROCEDURES FOR THE COLLECTION OF AS MUCH DATA AS POSSIBLE; SHIFT THE OVERHEAD FROM PROGRAMMING STAFF TO HARDWARE**
- **PROVIDE TRAINING IN MPP AND DISCUSSIONS/IMPLEMENTATIONS OF THE FINDING OF THE SEL. DEMONSTRATE THE RELEVANCE AND APPLICABILITY OF SEL RESEARCH**