

TABLE 1
World Computer Census
As of December, 1966

Location	Number of Digital Computer Systems Installed
North America	
United States	28,500
Canada	1,000
Mexico	200
Central America	150
South America	400
Western Europe	
Austria	175
Belgium	300
Denmark	175
Finland	90
France	1,550
Great Britain	1,700
Greece	85
Ireland	65
Italy	1,150
Netherlands	410
Norway	150
Portugal	50
Spain	70
Sweden	350
Switzerland	380
West Germany	2,750
Eastern Europe and Siberia	
U. S. S. R.	1,000
Elsewhere	300
Asia	
Japan	2,100
India	140
Hong Kong	50
Elsewhere	270
Africa	
South Africa	175
Elsewhere	200
Oceania	
Australia	450
New Zealand	50
Elsewhere	20
TOTAL	44,455

The Computer Industry's Cycles

To fully understand the significance and implications of the System/360, let's take a brief look at the historical background of the computer industry. In early 1964 the "second generation" computer cycle was coming to an end and signs indicating the start of the "third generation" appeared in a few, unrelated computer systems. According to the cycle theory of the computer industry, significant economic and technological transitions occur in the industry approximately every five years, resulting in the appearance of a "new generation" of computer systems, and the beginning of a new cycle.

This theory has a certain amount of historical justification since such a turning point appeared previously in the industry in 1959-1960. This was when the transition from the "first generation" systems to the "second generation" systems occurred. According to this theory, new product development in the computer industry is regulated by the fact that over 75% of computers are leased rather than purchased. It takes approximately 60 months or five years before the manufacturer recovers his costs for research and development, manufacturing, sales, service, and interest, and attains a satisfactory profit.

The Reason for the Cycles

The major reason why this fact creates a stable, regular pattern in the computer industry is that one manufacturer, IBM, controls 70-75% of the computer market, and has 80% of its equipment on a rental basis. Technical differences between generations of computers, although present, have represented more of an evolution than a revolution.

The First Generation

Broadly, the computers of the first generation were built with vacuum tubes operating at slow speeds and had limited memory capacity (2-4 thousand words) consisting of magnetic drums and slow cores. The computer lines of different manufacturers were isolated, unrelated machines and were applied primarily to scientific applications.

The Second Generation

The second generation of systems (1959-1964) saw the introduction of solid-state components on a large scale, increasing the speed of the computers to the microsecond range and extending memory capacities to 32 thousand words. The computers of various manufacturers tended to be separated between business and scientific machines. This period saw a rapid increase in business data processing, accounting and payroll applications, due primarily to the moderate cost and widespread popularity of the IBM 1401 system. Costs of computer systems came steadily down and were brought within the reach of medium-size business establishments. The size of the market increased rapidly. By the end of 1963, just prior to the announcement of the IBM System/360, the cumulative value of American-made computers installed in the world market reached close to \$5 billion. This market was shared by various manufacturers as shown in Table 2.

The status of the EDP industry toward the end of the second generation computer industry cycle was as follows. During the ten year period 1954-1964 IBM rose from a second position in the industry behind UNIVAC in 1954 to a position of overwhelming dominance. IBM managed to steadily increase its share of the market during the entire 1954-1964 period. UNIVAC's lead in the early '50's, although supported by technical skills second to none at that time, was quickly overtaken by IBM's superior marketing