

Goodwill Impairment

We test goodwill for impairment annually on May 1 at the reporting unit level, primarily using a discounted cash flow methodology with a peer-based, risk-adjusted weighted average cost of capital. We believe use of a discounted cash flow approach is the most reliable indicator of the fair values of the businesses.

No instances of impairment were identified in our May 1, 2018, May 1, 2017, or May 1, 2016 tests.

NOTE 11 — INTANGIBLE ASSETS

The components of intangible assets, all of which are finite-lived, were as follows:

(In millions)	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
June 30,			2018			2017
Technology-based	\$ 7,220	\$ (5,018)	\$ 2,202	\$ 7,765	\$ (4,318)	\$ 3,447
Customer-related	4,031	(1,205)	2,826	4,045	(692)	3,353
Marketing-related	4,006	(1,071)	2,935	4,016	(829)	3,187
Contract-based	679	(589)	90	841	(722)	119
Total	<u>\$ 15,936</u>	<u>\$ (7,883)</u>	<u>\$ 8,053</u>	<u>\$ 16,667</u>	<u>\$ (6,561)</u>	<u>\$ 10,106</u>

No material impairments of intangible assets were identified during fiscal year 2018 or 2017.

During fiscal year 2016, we recorded impairment charges of \$480 million related to intangible assets in the Devices reporting unit within our More Personal Computing segment. In the fourth quarter of fiscal year 2016, we tested these intangible assets for recoverability due to changes in facts and circumstances associated with the shift in strategic direction and reduced profitability expectations for our Phone business. Based on the results of our testing, we determined that the carrying value of the intangible assets was not recoverable, and an impairment charge was recorded to the extent that estimated fair value exceeded carrying value. We primarily used the income approach to determine the fair value of the intangible assets and determine the amount of impairment.

These intangible assets impairment charges were included in impairment and restructuring expenses in our consolidated income statement and reflected in Corporate and Other in our table of operating income (loss) by segment in Note 21 – Segment Information and Geographic Data.

We estimate that we have no significant residual value related to our intangible assets.

The components of intangible assets acquired during the periods presented were as follows:

(In millions)	Amount	Weighted Average Life	Amount	Weighted Average Life
Year Ended June 30,	2018		2017	
Technology-based	\$ 178	4 years	\$ 2,265	2 years
Marketing-related	14	5 years	2,148	19 years
Contract-based	14	4 years	63	6 years
Customer-related	13	5 years	3,607	7 years
Total	<u>\$ 219</u>	<u>5 years</u>	<u>\$ 8,083</u>	9 years

Intangible assets amortization expense was \$2.2 billion, \$1.7 billion, and \$978 million for fiscal years 2018, 2017, and 2016, respectively. Amortization of capitalized software was \$54 million, \$55 million, and \$69 million for fiscal years 2018, 2017, and 2016, respectively.