

2016 Purchase Price Allocation Study

SEPTEMBER 2017

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Our connected network of offices provides each client with a local touch point as well as access to the entire firm's global resources and relationships.

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HOULIHAN LOKEY

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Transaction Opinions	Transaction Advisory Services	Portfolio Valuation & Advisory Services	Real Estate Valuation & Advisory Services	Financial Consulting
<p>Fairness Opinions</p> <ul style="list-style-type: none"> ▪ Public Company ▪ Special Committee ▪ Roll-Up/Aggregate ▪ Indenture ▪ Equity Allocation <p>Solvency Opinions</p> <ul style="list-style-type: none"> ▪ Leveraged Transactions ▪ Corporate Spin-Offs ▪ Dividend Recapitalizations ▪ Retrospective Solvency Analyses <p>Valuation Opinions</p> <ul style="list-style-type: none"> ▪ Distressed Valuation Opinions ▪ Estate & Gift Tax Valuation Opinions ▪ ERISA & ESOP Opinions ▪ Corporate Planning 	<p>Due Diligence Services</p> <ul style="list-style-type: none"> ▪ Buyer Services ▪ Seller Services ▪ Lender Services <p>Tax & Financial Reporting Valuation</p> <ul style="list-style-type: none"> ▪ Purchase Price Allocation ▪ Impairment of Goodwill & Other Assets ▪ Tangible Asset Valuation ▪ Tax Valuation ▪ Equity-Based Compensation ▪ Fresh-Start Accounting 	<p>Fair Value Reporting</p> <ul style="list-style-type: none"> ▪ Illiquid Securities ▪ Leveraged Loans ▪ PIPE Investments ▪ Real Estate Investments <p>Derivatives Valuation & Risk Management</p> <ul style="list-style-type: none"> ▪ Structured Products ▪ Complex Derivative Instruments 	<p>Valuations & Opinions</p> <ul style="list-style-type: none"> ▪ Fairness Opinions ▪ Solvency Opinions ▪ Corporate Planning ▪ Expert Witness <p>Tax & Financial Reporting</p> <ul style="list-style-type: none"> ▪ Portfolio Valuations ▪ Purchase Price Allocations ▪ Tax Valuations 	<p>Dispute Resolution & Financial Expert Opinions</p> <ul style="list-style-type: none"> ▪ Case Assessment ▪ Financial Modeling ▪ Damage Theory Formulation ▪ Settlement Assistance ▪ Expert Witness Testimony <p>INSOURCE Corporate Development Services™</p> <ul style="list-style-type: none"> ▪ Strategic Alternatives Analysis ▪ Liquidity Issues ▪ Unique Valuation Issues

Financial Reporting Update: Measurement of Goodwill Impairment

The Financial Accounting Standards Board (FASB) recently issued ASU 2017-04,⁽¹⁾ which simplifies the goodwill impairment testing process by eliminating the Step 2 portion of the existing guidance.

Background

- Under the existing guidance, a Step 2 test is performed if a reporting unit fails a Step 1 test.
 - The Step 2 test is similar to the requirements of a purchase price allocation for a business combination, because the fair value of all assets and liabilities of the reporting unit needs to be determined as of the testing date.
- Under the new guidance, companies will measure impairment by determining the amount by which a reporting unit's carrying value exceeds its fair value (note, however, that impairment cannot exceed the carrying amount of goodwill allocated to that reporting unit).
- Nearly all other goodwill impairment guidance remains unchanged. For example, companies can still elect to perform a qualitative assessment (Step 0) to determine whether a Step 1 test is necessary.

Observations

- The new guidance not only simplifies financial reporting but also diminishes the differences between U.S. GAAP and IFRS, as IFRS also has a single-step process for calculating goodwill impairment.
- Under the former standard, failing Step 1 might not result in any goodwill impairment. Under the new guidance, however, failing Step 1 will always result in a goodwill impairment. Therefore, it is likely there will be more impairment charges, all other things being equal, under the new standard than under the old.
- With respect to the amount of the impairment charge under the new standard as compared to the old, this will depend on specific factors (for example, whether reporting units have unrecognized or appreciated assets and whether the fair value of the reporting unit's long-lived assets is below their book value).

Important Dates

- This accounting update is effective for annual or interim goodwill impairment tests for U.S. Securities and Exchange Commission (SEC) filers, beginning after December 15, 2019. For public entities that are not SEC filers, the guidance is effective beginning after December 15, 2020. For all other entities, the guidance is effective beginning after December 15, 2021. Early adoption is permitted for annual or interim goodwill impairment tests performed on testing dates after January 1, 2017.

1. FASB Accounting Standards Update No. 2017-04, Simplifying the Test for Goodwill Impairment

Executive Summary

Introduction

Final results indicate that the U.S. economy expanded during the fourth quarter of 2016, as GDP, the value of all goods and services in the U.S., increased at an annualized rate of 2.1%. This follows an annualized increase in GDP of 3.5% recorded in the third quarter of 2016. The increase in real GDP growth in the fourth quarter reflected increases in personal consumption expenditures and gross private domestic investment.¹

Houlihan Lokey completed its 16th annual Purchase Price Allocation Study (“2016 Study”) by reviewing public filings for 1,300 completed transactions in 2016 and summarizing the results for certain transactions. The 2016 Study provides statistics, other annual data, and a comparison to certain 2015 results (“2015 Study”) and 2014 results (“2014 Study”).

For more information regarding our 2016 Study, please contact your Houlihan Lokey representative or one of the following individuals:



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¹. Bureau of Economic Analysis, March 30, 2017, p. 6.

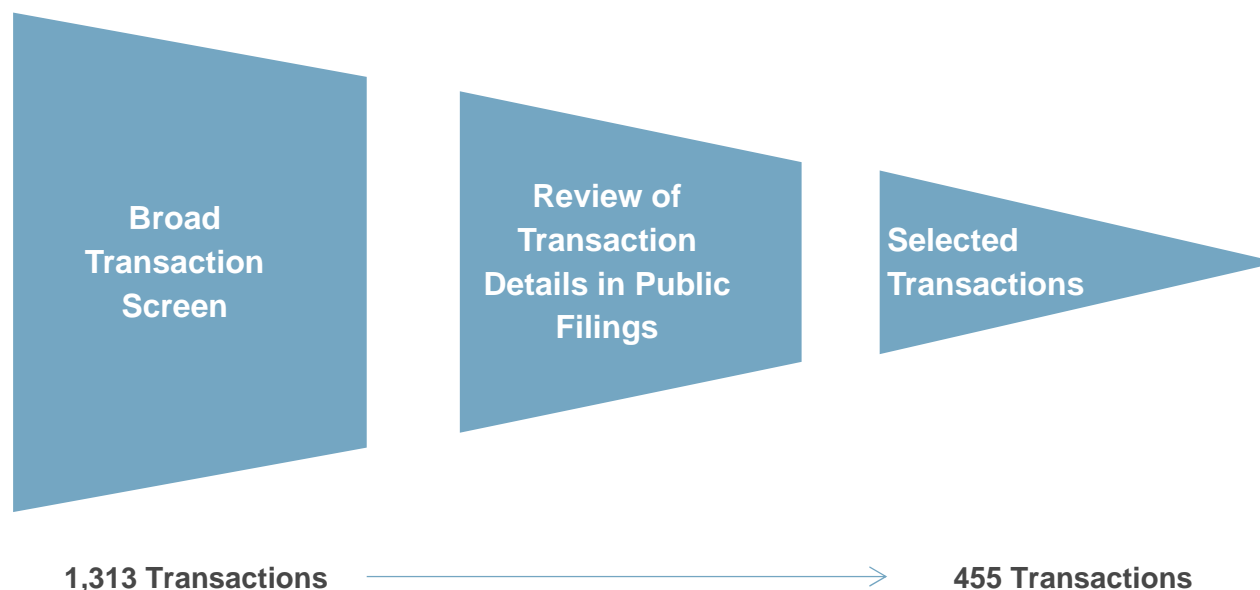
Screening Criteria and Methodology

The universe of transactions initially considered in the 2016 Study was obtained from S&P Capital IQ using the following search criteria:

- Transaction closed in 2016
- Acquirer was a U.S. publicly traded company
- Ownership percentage sought by acquirer was 50% or greater
- Base equity purchase price was disclosed

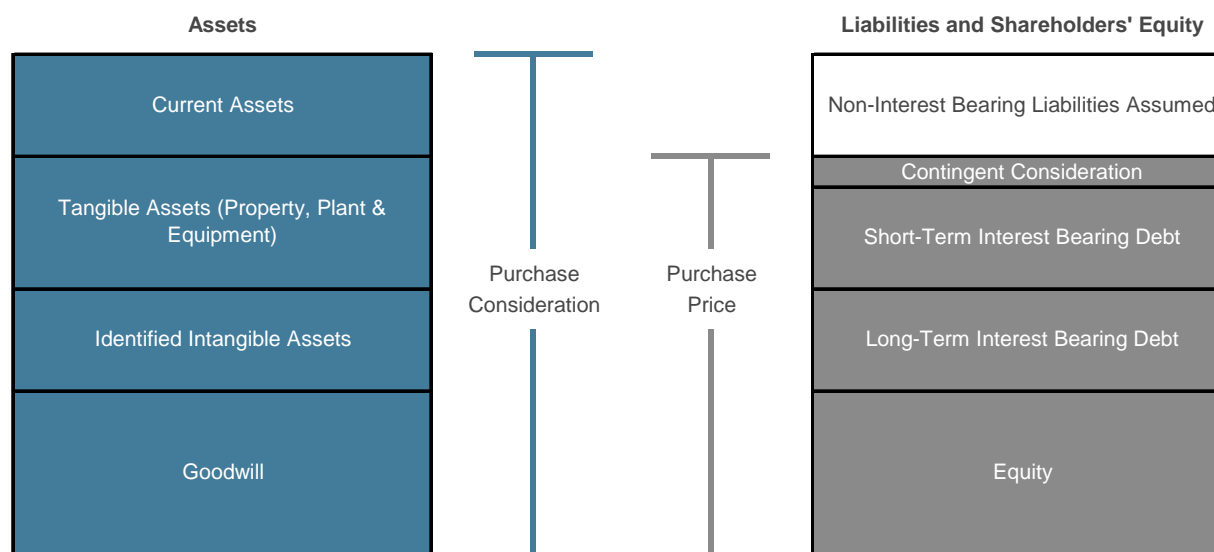
The initial sample consisted of 1,313 transactions. We reviewed public filings for each company in the initial sample with the objective of finding detailed disclosures regarding purchase consideration (PC), identifiable intangible asset fair values, and goodwill. Sufficient disclosures were provided for 455 transactions, which represented approximately 35% of the initial sample.

These 455 transactions formed the basis of the 2016 Study.



Screening Criteria and Methodology (cont.)

The primary objective of the 2016 Study was to review the amount of PC allocated to tangible assets, identifiable intangible assets, and goodwill. In addition, the 2016 Study marks the fifth year contingent consideration (CC) recorded by acquirers, a component of PC per GAAP, has been analyzed. PC is defined as the sum of the purchase price paid and liabilities assumed in connection with a business combination. PC is equivalent to the fair value of the total assets of the target.



For the 2016 Study, identifiable intangible assets were classified into five categories:

- Developed technology (including patents)
- In-process research and development (IPR&D)
- Customer-related assets (including backlog, customer contracts, and customer relationships)
- Trademarks and trade names (including domain names)
- Other (including non-compete agreements, licenses, contracts, and core deposits, among others)

Screening Criteria and Methodology (cont.)

In addition to summarizing the allocation data according to intangible asset classes, we also conducted studies based on industry, deal size (as defined by PC), and lifing characteristics.

- With respect to industry, we classified the 2016 transactions into nine categories:
 - Aerospace, Defense & Government (ADG)
 - Consumer, Food & Retail (CFR)
 - Energy
 - Financial Institutions
 - Healthcare
 - Industrials
 - Infrastructure Services & Materials (ISM)
 - Technology
 - Telecom
- With respect to deal size, we stratified the allocation results across seven categories (PC, \$ in millions):
 - > \$5,000
 - \$1,000–\$5,000
 - \$500–\$1,000
 - \$250–\$500
 - \$100–\$250
 - \$50–\$100
 - < \$50
- With respect to lifing characteristics, we classified the summarized data for intangibles as either definite- or indefinite-lived assets.
- It should be noted that the indefinite-lived assets exclude IPR&D, which must be recorded as such per ASC 805. IPR&D was considered as definite-lived assets in the 2016 Study.
 - Per ASC 805, IPR&D is not amortized, as it is not yet ready for use. It is tested annually for impairment (or when there are indicators of impairment) until the asset is either abandoned or put to use in the operations as a product, at which time the acquirer estimates the useful life of the asset.

Allocation of Intangible Assets vs. Goodwill

Summary Allocation Percentages 2016 Study

\$ in millions

	Count	Purchase Consideration		Intangible Assets, % of PC				Goodwill, % of PC			
		Median	Mean	Low	High	Median	Mean	Low	High	Median	Mean
All Industries	455	\$131	\$1,423	0%	173%	33%	35%	0%	96%	36%	36%
Aerospace, Defense & Government	26	244	863	15%	94%	29%	34%	1%	66%	37%	37%
Consumer, Food & Retail	74	98	838	2%	96%	36%	37%	1%	92%	35%	36%
Energy	8	269	3,180	14%	100%	30%	38%	8%	63%	34%	36%
Financial Institutions	65	561	2,346	0%	49%	1%	7%	0%	73%	5%	12%
Healthcare	91	57	1,787	4%	100%	50%	50%	0%	96%	37%	37%
Industrials	48	110	1,322	2%	83%	33%	34%	1%	73%	45%	43%
Infrastructure Services & Materials	20	146	449	1%	63%	28%	27%	6%	54%	28%	30%
Technology	116	60	1,177	8%	173%	35%	37%	5%	86%	50%	48%
Telecom	7	495	1,918	8%	77%	48%	42%	16%	39%	22%	25%

- In 2016, the median EV/EBITDA transaction multiple was 12.2x, and the median allocation of PC to goodwill was 36.5%.
- In 2015, the median EV/EBITDA transaction multiple was 12.5x, and the median allocation of PC to goodwill was 38.3%.

* Purchase consideration represents the equivalent to total assets, including equity, debt, and non-interest-bearing liabilities assumed, as applicable.

** Includes transactions done by U.S.-listed public company acquirers completed in 2016.

Contingent Consideration

- Per ASC 805, CC is classified as an asset, liability, or equity and measured at fair value on the acquisition date.¹ CC is included in PC.
- Approximately 19% of the transactions in the 2016 Study had CC in the purchase price, down from 21% of transactions in the 2015 Study.
- CC represented 14% and 19% of PC when measured on the median and mean, respectively. This decreased from 2015, where CC represented 17% and 21% of PC when measured on the median and mean, respectively.

Summary of Contingent Consideration 2016 Study

\$ in millions

	Count			CC		PC		CC, % of PC			
	CC	All	%	Median	Mean	Median	Mean	Low	High	Median	Mean
All Industries	86	455	19%	\$5	\$31	\$38	\$827	0%	71%	14%	19%
Aerospace, Defense & Government	3	26	12%	3	5	184	155	1%	9%	4%	5%
Consumer, Food & Retail	15	74	20%	5	6	45	272	0%	70%	15%	20%
Energy	2	8	25%	9	9	168	168	4%	9%	7%	7%
Financial Institutions	5	65	8%	16	35	493	466	3%	46%	9%	16%
Healthcare	31	91	34%	13	59	73	1,951	0%	71%	12%	18%
Industrials	8	48	17%	4	39	36	343	2%	33%	12%	15%
Infrastructure Services & Materials	3	20	15%	2	2	8	7	20%	36%	28%	28%
Technology	18	116	16%	3	10	29	36	3%	66%	21%	26%
Telecom	1	7	14%	1	1	2	2	45%	45%	45%	45%

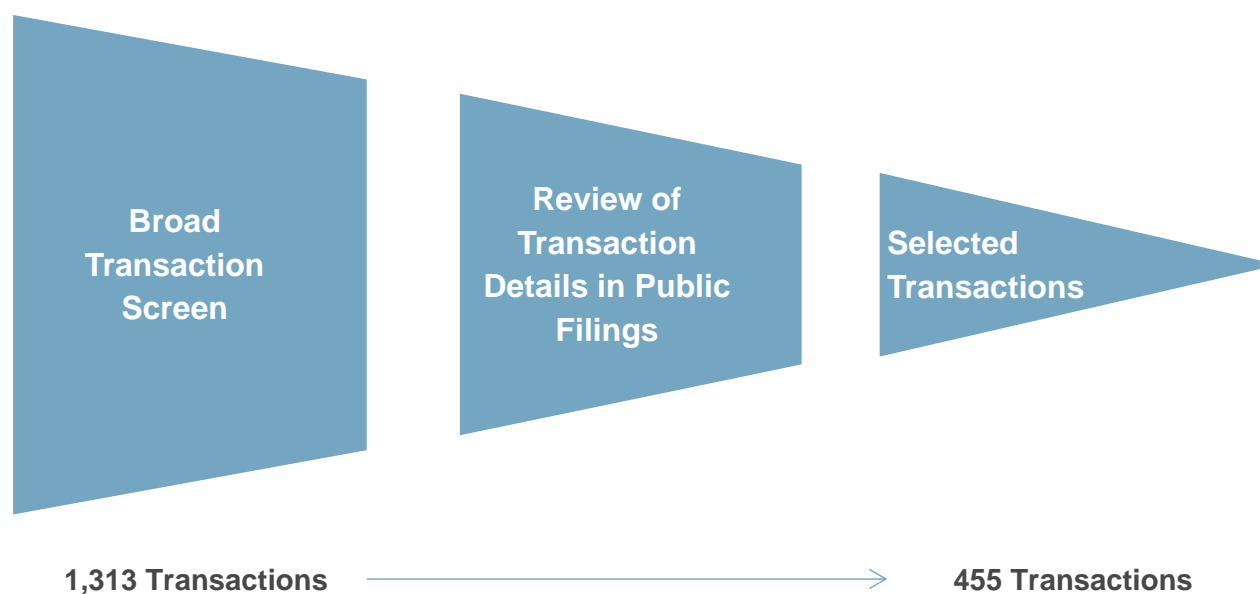
- Transaction-related contingent compensation and retention bonuses are not included in PC. These employee compensation expense items are generally accounted for under ASC 718.
- Over the past few years, we have observed increased scrutiny from auditors when reviewing the valuation of CC. Specifically, as CC terms have become more complex, auditors have shifted from accepting scenario-based valuation methodologies to preferring simulation-based valuation methodologies (i.e., Monte Carlo simulations).

1. Thereafter, CC classified as an asset or liability is remeasured to fair value each reporting period, with changes recorded in earnings. CC classified as equity is not remeasured.

2016 Observations and Results

Transaction Volume

- The number of transactions with sufficient disclosures for analysis decreased 19% year over year, from 563 in 2015 to 455 in 2016.
- Our initial screening generated a population of 1,313 transactions. Of these deals, 858 transactions were not considered for the following two reasons:
 - Financial statements did not present intangible asset values and/or PC information in a clear, reconcilable format for our purposes.
 - The general asset and liability segmentation was insufficient for us to determine the nature of the intangible assets acquired.
- The number of initial transactions decreased 14% year over year, from 1,525 in 2015 to 1,313 in 2016.
- The number of transactions with sufficient disclosures decreased to 35% in 2016 from 37% in 2015.



Industry Results

- Eight of the nine industries experienced year-over-year declines in the number of transactions available for the 2016 Study relative to the 2015 Study.
 - ADG recorded the only percentage increase in transaction count, up by 44% or eight transactions, from 2015, while energy had the largest percentage decrease, down 56% or 10 transactions, from the previous year.
- When measured across all industries, the median percentage of PC allocated to identifiable intangible assets increased slightly, from 31% in 2015 to 33% in 2016. Similar to the overall results, six out of nine of the industries showed only a small change (i.e., 5% or less) in the median amount of PC allocated to identifiable intangible assets compared to 2015.
 - Telecom and energy recorded the largest percentage increases of 11% and 9%, respectively, for PC allocated to identifiable intangible assets.
 - Technology and ADG recorded the largest percentage decreases out of all industries at 1% and 4%, respectively, for PC allocated to identifiable intangible assets.
- The median percentage of PC allocated to goodwill decreased slightly to 36% in 2016 from 38% in 2015.
 - The percentage of PC allocated to goodwill increased when measured on a weighted-average basis to 48% in 2016 from 40% in 2015.
 - No single industry was a driver in the overall increase to goodwill allocation. Industrials and energy represented the highest percentage increases in goodwill allocation at 9% and 7%, respectively, year over year.

Industry Results (cont.)

Summary Allocation Percentages by Industry 2016 Study

\$ in millions

	Count	Purchase Consideration		Intangible Assets, % of PC				Goodwill, % of PC			
		Median	Mean	Low	High	Median	Mean	Low	High	Median	Mean
All Industries	455	\$131	\$1,423	0%	173%	33%	35%	0%	96%	36%	36%
Aerospace, Defense & Government	26	244	863	15%	94%	29%	34%	1%	66%	37%	37%
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Financial Institutions	65	561	2,346	0%	49%	1%	7%	0%	73%	5%	12%
Healthcare	91	57	1,787	4%	100%	50%	50%	0%	96%	37%	37%
Industrials	48	110	1,322	2%	83%	33%	34%	1%	73%	45%	43%
Infrastructure Services & Materials	20	146	449	1%	63%	28%	27%	6%	54%	28%	30%
Technology	116	60	1,177	8%	173%	35%	37%	5%	86%	50%	48%
Telecom	7	495	1,918	8%	77%	48%	42%	16%	39%	22%	25%

* Purchase consideration represents the equivalent to total assets, including equity, debt, and non-interest-bearing liabilities assumed, as applicable.

** Includes transactions done by U.S.-listed public company acquirers completed in 2016.

Industry Results (cont.)

Summary Allocation Percentages by Industry 2016 vs. 2015

\$ in millions

	Count			Median Results								
				Purchase Consideration			Intangible Assets, % of PC			Goodwill, % of PC		
	2016	2015	% Chg.	2016	2015	% Chg.	2016	2015	BPS Chg.	2016	2015	BPS Chg.
All Industries	455	563	-19%	\$131	\$83	57%	33%	31%	2%	36%	38%	-2%
Aerospace, Defense & Government	26	18	44%	244	177	38%	29%	33%	-4%	37%	43%	-6%
Consumer, Food & Retail	74	80	-8%	98	74	32%	36%	32%	4%	35%	38%	-3%
Energy	8	18	-56%	269	243	11%	30%	21%	9%	34%	27%	7%
Financial Institutions	65	86	-24%	561	315	78%	1%	1%	0%	5%	6%	-1%
Healthcare	91	112	-19%	57	87	-34%	50%	42%	8%	37%	41%	-4%
Industrials	48	67	-28%	110	31	255%	33%	32%	1%	45%	36%	9%
Infrastructure Services & Materials	20	29	-31%	146	236	-38%	28%	26%	2%	28%	32%	-4%
Technology	116	145	-20%	60	37	61%	35%	36%	-1%	50%	52%	-2%
Telecom	7	8	-13%	495	89	456%	48%	37%	11%	22%	47%	-25%

Transaction Size

- Approximately 62% of the transactions in the 2016 Study had PC below \$250 million, which is a decrease when compared with the 65% of 2015.
- Larger transactions generally recorded lower allocations to intangible assets and higher allocations to goodwill in 2016.
 - For transactions with PC below \$250 million, intangible assets and goodwill each averaged 37% of PC. In 2015, the corresponding percentages of allocation to intangible assets and goodwill were 34% and 37%, respectively.
 - For transactions with PC above \$250 million, intangible assets and goodwill averaged 27% and 32% of PC, respectively. In 2015, the corresponding percentages of allocation to intangible assets and goodwill were 29% and 32%, respectively.
- From 2015 to 2016, the average transaction size increased from \$1,269 million to \$1,423 million, and the median transaction size increased from \$83 million to \$131 million.

Transaction Size (cont.)

Summary Allocation Percentages by Size 2016 Study

\$ in millions

	Count	Median Results										Mean Tangible
		PC		Intangible Assets, % of PC				Goodwill, % of PC				
		Median	Mean	Low	High	Median	Mean	Low	High	Median	Mean	
All Transactions	455	\$131	\$1,423	0%	173%	33%	35%	0%	96%	36%	36%	29%
PC > \$5,000	22	\$15,038	\$20,622	1%	73%	27%	28%	4%	69%	39%	38%	35%
\$1,000 < PC < \$5,000	54	2,007	2,322	0%	91%	29%	28%	2%	81%	34%	31%	41%
\$500 < PC < \$1,000	40	718	713	0%	100%	17%	22%	0%	85%	13%	26%	52%
\$250 < PC < \$500	58	357	360	0%	99%	29%	31%	0%	75%	35%	32%	37%
\$100 < PC < \$250	74	165	173	0%	96%	30%	30%	0%	86%	37%	34%	36%
\$50 < PC < \$100	42	74	72	2%	100%	32%	35%	0%	73%	40%	40%	25%
PC < \$50	165	15	19	1%	173%	42%	45%	0%	96%	37%	38%	17%
Less than \$250	62%					35%	37%			38%	37%	
More than \$250	38%					26%	27%			30%	32%	

1. A large subset of transactions of this size in the 2016 Study represented transactions with a large fixed asset or other asset component.

Transaction Size (cont.)

Summary Allocation Percentages by Size 2016 vs. 2015

\$ in millions

	Count			Median Goodwill, % of PC		
	2016	2015	% Chg.	2016	2015	% Chg.
All Transactions	455	563	-19%	36%	38%	-4%
PC > \$5,000	22	28	-21%	39%	35%	11%
\$1,000 < PC < \$5,000	54	64	-16%	34%	32%	6%
\$500 < PC < \$1,000	40	51	-22%	13% ⁽¹⁾	27%	-51%
\$250 < PC < \$500	58	54	7%	35%	38%	-8%
\$100 < PC < \$250	74	80	-8%	37%	36%	4%
\$50 < PC < \$100	42	49	-14%	40%	41%	-2%
PC < \$50	165	237	-30%	37%	42%	-12%

1. A large subset of transactions of this size in the 2016 Study represented transactions with a large fixed asset or other asset component.

Indefinite-Lived Intangible Assets

- Indefinite-lived intangible assets accounted for approximately 13% of the total intangible asset value in 2016, as compared to 5% in 2015.
- Trademarks and trade names were the most common intangible assets to be considered indefinite lived.
 - In 2016, the number of transactions in the sample that ascribed PC to trademarks and trade names decreased slightly to 49%, as compared to 50% in 2015.
 - Acquirers considered the purchased trademarks and trade names to be indefinite-lived assets as frequently in 2016 as in the prior year (23% in both years).
- Other intangible assets classified as indefinite lived included (but are not limited to) license agreements, franchise licenses, artistic-related assets, and content/databases.
- Overall, we have observed increased auditor scrutiny on the treatment of an asset as a definite asset vs. an indefinite asset.

Trademark and Trade Name Lifting Classification 2014 – 2016

<u>Trademarks and Trade Names</u>	<u>2016</u>		<u>2015</u>		<u>2014</u>	
	<u>Count</u>	<u>% of Total</u>	<u>Count</u>	<u>% of Total</u>	<u>Count</u>	<u>% of Total</u>
All Indefinite-Lived	52	23%	65	23%	46	19%
All Definite-Lived	178	77%	216	77%	195	81%
Mix of Definite- and Indefinite-Lived	0	0%	0	0%	0	0%
Total	230	100%	281	100%	241	100%

Indefinite-Lived Intangible Assets (cont.)

- The following are noteworthy transactions with the largest portions of indefinite-lived intangible assets:

Top 10 Transactions by Dollar Allocation to Indefinite-Lived Assets 2016

\$ in millions

Date	Acquirer	Target	Purchase Consideration	Total \$ Amount of Indefinite-Lived Assets	Total % Allocated to Indefinite-Lived Assets	Total % Allocated to Intangible Assets	Primary Indefinite-Lived Asset
10/11/2016	Molson Coors Brewing Company	MillerCoors LLC	\$18,128	\$7,640	42%	54%	Trademark & Trade Name
9/23/2016	Marriott International, Inc.	Starwood Hotels & Resorts Worldwide Inc.	\$17,533	\$6,452	37%	45%	Trademark & Trade Name
1/14/2016	Chubb Limited	The Chubb Corporation	\$44,547	\$2,860	6%	17%	Trademark & Trade Name
9/2/2016	Johnson Controls International plc	Tyco International plc	\$28,369	\$2,110	7%	22%	Trademark & Trade Name
2/29/2016	DENTSPLY SIRONA Inc.	Sirona Dental Systems Inc.	\$7,457	\$905	12%	33%	Trademark & Trade Name
4/1/2016	Monster Beverage Corporation	American Fruits and Flavors, LLC	\$688	\$570	83%	87%	Developed Technology*
11/1/2016	KION GROUP AG (XTRA:KGX)	Dematic Group S.à r.l.	\$4,780	\$383	8%	38%	Trademark & Trade Name
12/1/2016	G-III Apparel Group, Ltd.	Donna Karan International Inc.	\$737	\$370	50%	56%	Trademark & Trade Name
12/27/2016	Roper Technologies, Inc.	Deltek, Inc.	\$3,382	\$207	6%	29%	Trademark & Trade Name
2/8/2016	Prestige Brands Holdings, Inc.	DenTek Oral Care, Inc.	\$322	\$180	56%	64%	Trademark & Trade Name

* Represents the company's flavor formula patents.

Frequently Identified Intangible Assets

- Developed technology, trademarks and trade names, IPR&D, and customer-related assets were the most commonly identified intangible assets. Other intangible assets typically included, among others, non-compete agreements, licenses, permits, and other contracts or agreements.
- Developed technology and IPR&D recorded increases in the frequency of identification from 2015 to 2016.
- With respect to the amount of PC allocated to each of these categories from 2015 to 2016, customer-related assets and trademarks and trade names remained constant, while developed technology and IPR&D decreased.

Frequently Identified Intangible Assets 2014 – 2016

	Count, % of Sample			Median % of PC		
	2016	2015	2014	2016	2015	2014
Developed Technology	49%	44%	40%	11%	12%	9%
<i>Change</i>	5%	5%	-9%	-1%	3%	-5%
IPR&D	12%	10%	7%	6%	15%	6%
<i>Change</i>	2%	2%	-3%	-9%	9%	-8%
Customer-Related Assets	69%	69%	59%	18%	18%	14%
<i>Change</i>	0%	11%	-3%	0%	4%	4%
Trademarks and Trade Names	49%	50%	45%	4%	4%	4%
<i>Change</i>	-1%	5%	-3%	0%	0%	1%

Aerospace, Defense & Government

- In the 2016 Study, 26 transactions were observed that allocated PC to intangible assets or goodwill within the ADG industry, up from 18 transactions in the 2015 Study.
- Within the ADG industry, customer-related assets were allocated the highest percentage of PC to any identifiable intangible asset, with 24% and 26% of PC being allocated to this asset on a median and mean basis, respectively.
- The second-highest percentage of PC allocated to any identifiable intangible asset in the ADG industry was developed technology, with 5% and 7% of PC allocated to these assets on a median and mean basis, respectively.

Summary of PC Allocated to Intangible Assets (ADG) 2016 Study

	Count		PC		% of PC			
	Number	%	Median	Mean	Low	High	Median	Mean
Developed Technology	14	54%	289	949	0%	26%	5%	7%
IPR&D	4	15%	3,205	2,732	1%	4%	3%	3%
Trademarks and Trade Names	16	62%	195	433	1%	11%	4%	5%
Customer-Related Assets	26	100%	244	863	5%	85%	24%	26%
Other Identifiable Intangible Assets	12	46%	223	506	0%	15%	1%	3%
Goodwill	26	100%	244	863	1%	66%	37%	37%

- Notable transaction activity in this industry included the following:

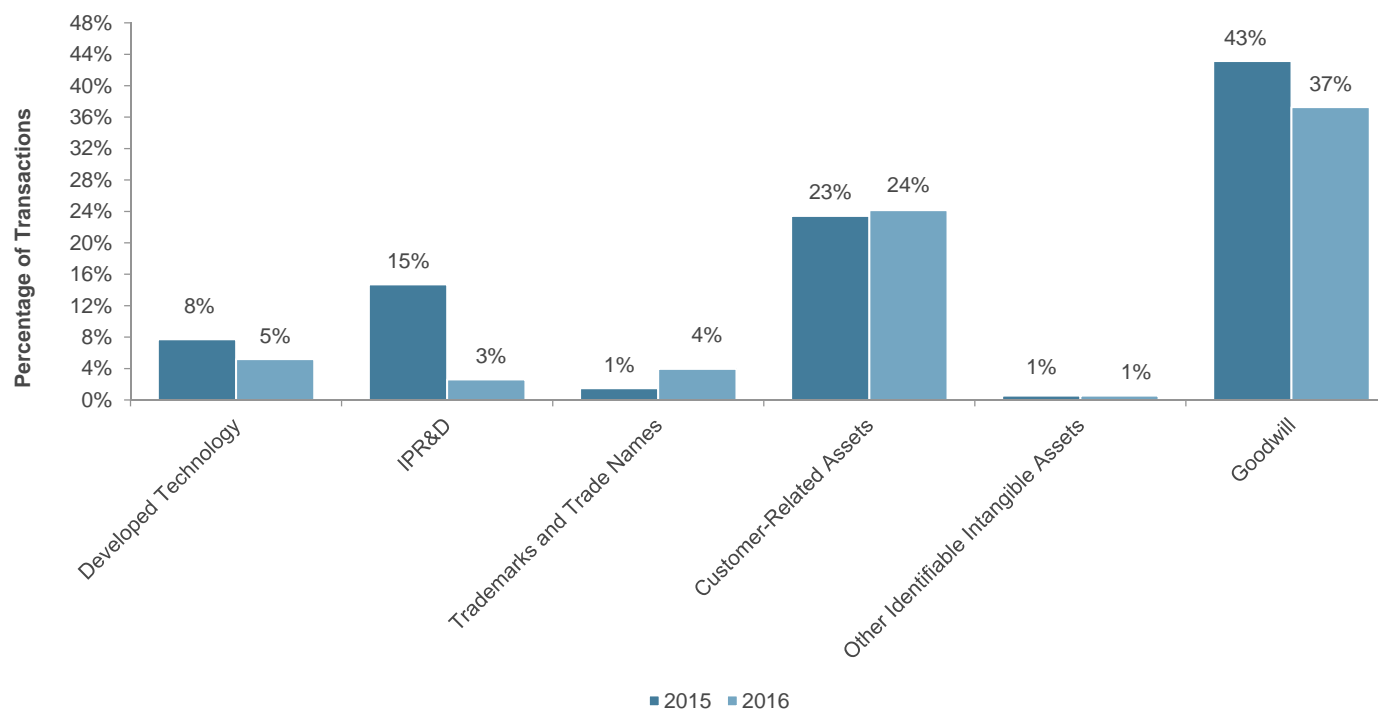
\$ in millions

Date	Acquirer	Target	PC	Total % Allocated to Intangible Assets
4/4/2016	Microchip Technology Incorporated (NasdaqGS:MCHP)	Atmel Corporation	\$4,181	45%
7/1/2016	KBR, Inc.	Wyle, Inc.	\$793	18%
8/16/2016	Leidos Holdings, Inc. (NYSE:LDOS)	Lockheed Martin Information Systems & Global Solutions, Inc.,	\$6,263	26%
9/16/2016	ON Semiconductor Corporation (NasdaqGS:ON)	Fairchild Semiconductor International Inc.	\$3,028	18%
12/27/2016	Roper Technologies, Inc. (NYSE:ROP)	Deltek, Inc.	\$3,382	29%

Aerospace, Defense & Government (cont.)

- As illustrated below, PC allocations to IPR&D and goodwill both changed by 5% or more from the 2015 Study to the 2016 Study.
- In the 2016 Study, goodwill continued to receive the highest allocation among any intangible asset, with 37% of PC within the ADG industry being allocated to goodwill on a median basis, down from 43% in the 2015 Study.

Distribution of PC Allocated to Intangible Assets and Goodwill
2016 Study vs. 2015 Study



Consumer, Food & Retail

- In the 2016 Study, 74 transactions were observed that allocated PC to intangible assets or goodwill within the CFR industry, down from 80 transactions in the 2015 Study.
- Given the importance of brand recognition in the CFR industry, trademarks and trade names were allocated the highest percentage of PC to any identifiable intangible asset, with 16% and 23% of PC being allocated to this asset on a median and mean basis, respectively.
- The second-highest percentage of PC allocated to any identifiable intangible asset in the CFR industry was customer-related assets, with 14% and 17% of PC allocated to these assets on a median and mean basis, respectively.

Summary of PC Allocated to Intangible Assets (CFR) 2016 Study

	Count		PC		% of PC			
	Number	%	Median	Mean	Low	High	Median	Mean
Developed Technology	19	26%	171	548	0%	83%	6%	12%
Trademarks and Trade Names	50	68%	130	1,188	0%	96%	16%	23%
Customer-Related Assets	49	66%	121	460	0%	71%	14%	17%
Other Identifiable Intangible Assets	41	55%	89	1,158	0%	72%	5%	14%
Goodwill	71	96%	100	871	1%	92%	35%	36%

- Notable transaction activity in this industry included the following:

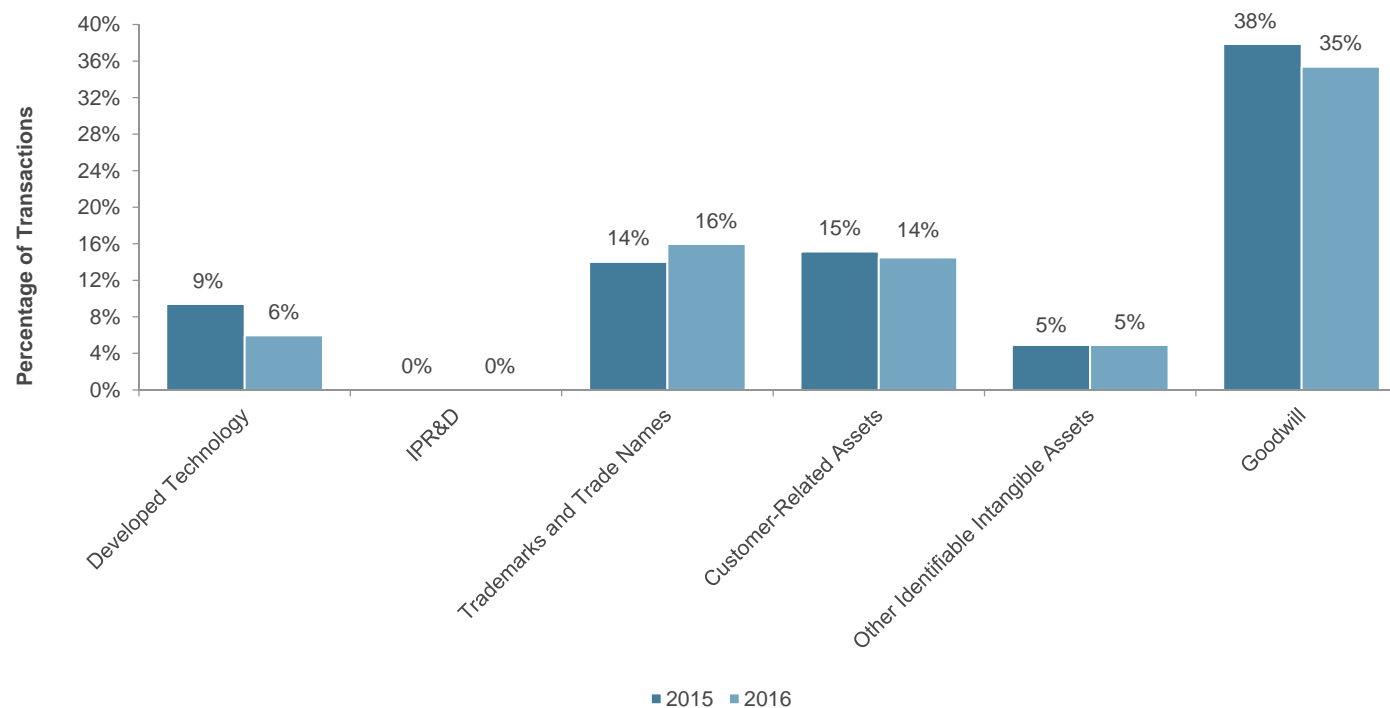
\$ in millions

Date	Acquirer	Target	PC	Total % Allocated to Intangible Assets
2/1/2016	Treehouse Foods, Inc. (NYSE:THS)	TreeHouse Private Brands, Inc.	\$3,239	18%
4/1/2016	Stryker Corporation (NYSE:SYK)	Sage Products LLC	\$2,951	41%
9/23/2016	Marriott International, Inc. (NasdaqGS:MAR)	Starwood Hotels & Resorts Worldwide Inc.	\$17,533	45%
10/11/2016	Molson Coors Brewing Company (NYSE:TAP)	MillerCoors LLC	\$18,128	54%
11/4/2016	Hostess Brands, Inc. (NasdaqCM:TWNK)	Hostess Brands, LLC	\$2,854	68%

Consumer, Food & Retail (cont.)

- As illustrated below, there have not been material changes (+/- 5% or more) in the allocation percentage to any particular intangible asset from the 2015 Study to the 2016 Study.
- In the 2016 Study, goodwill continued to receive the highest allocation among any intangible asset, with 35% of PC within the CFR industry being allocated to goodwill on a median basis, down from 38% in the 2015 Study.

Distribution of PC Allocated to Intangible Assets and Goodwill
2016 Study vs. 2015 Study



Energy

- In the 2016 Study, eight transactions were observed that allocated PC to intangible assets or goodwill within the energy industry, down from 18 transactions in the 2015 Study.
- Within the energy industry, other identifiable intangible assets were allocated the highest percentage of PC to any identifiable intangible asset, with 47% of PC being allocated to this asset on a median and mean basis. However, it should be noted that there was only a single transaction that allocated PC to other identifiable intangible assets.
- The highest percentage of PC allocated to any identifiable intangible asset with more than one observable transaction was customer-related assets, with 18% and 22% of PC allocated to these assets on a median and mean basis, respectively.

Summary of PC Allocated to Intangible Assets (Energy) 2016 Study

	Count		PC		% of PC			
	Number	%	Median	Mean	Low	High	Median	Mean
Developed Technology	4	50%	295	5,805	2%	9%	5%	6%
IPR&D	1	13%	253	253	23%	23%	23%	23%
Trademarks and Trade Names	7	88%	253	3,361	1%	30%	6%	9%
Customer-Related Assets	7	88%	284	3,626	8%	70%	18%	22%
Other Identifiable Intangible Assets	1	13%	52	52	47%	47%	47%	47%
Goodwill	7	88%	284	3,634	8%	63%	34%	36%

- Notable transaction activity in this industry included the following:

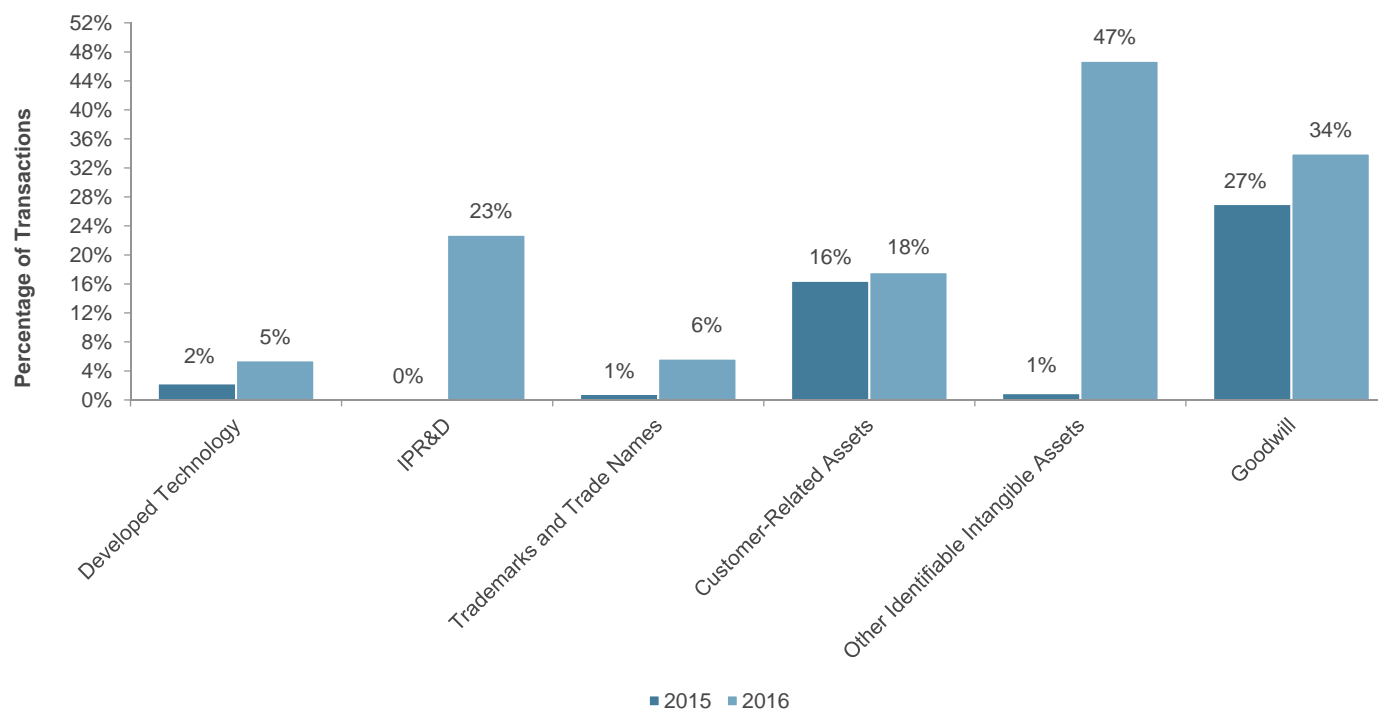
\$ in millions

Date	Acquirer	Target	PC	Total % Allocated to Intangible Assets
4/1/2016	Schlumberger Limited (NYSE:SLB)	Cameron International Corporation	\$22,481	24%
8/22/2016	U.S. Silica Holdings, Inc. (NYSE:SLCA)	Sandbox Enterprises, LLC	\$253	47%
10/13/2016	CIRCOR International, Inc. (NYSE:CIR)	Critical Flow Solutions Inc.	\$284	36%
11/1/2016	Frank's International N.V. (NYSE:FI)	Blackhawk Group Holdings, Inc.	\$306	14%
12/1/2016	Calpine Corporation (NYSE:CPN)	Noble Americas Energy Solutions LLC	\$1,912	19%

Energy (cont.)

- As illustrated below, PC allocations to IPR&D, trademarks and trade names, other identifiable intangible assets, and goodwill all changed by 5% or more from the 2015 Study to the 2016 Study.
- Of the intangible assets with data from more than one observable transaction, goodwill had the largest allocation of PC, with 34% of PC allocated to goodwill in the 2016 Study, up from 27% in the 2015 Study.

Distribution of PC Allocated to Intangible Assets and Goodwill
2016 Study vs. 2015 Study



Financial Institutions

- In the 2016 Study, 65 transactions were observed that allocated PC to intangible assets or goodwill within the financial institutions industry, down from 86 transactions in the 2015 Study.
- Within the financial institutions industry, customer-related assets were allocated the highest percentage of PC to any identifiable intangible asset included in the 2016 Study, with 17% and 18% of PC being allocated to this asset on a median and mean basis, respectively.
- However, it should be noted that 92% of transactions within the financial institutions industry had PC allocated to other identifiable intangible assets. These other assets typically included core deposit intangibles for depository institutions and various types of licenses for all types of companies within the financial institutions industry.
- The financial institutions industry had the lowest level of PC allocated to identifiable intangible assets of any industry within the 2016 Study, with only 7% of PC allocated to identifiable intangible assets. Typically, companies within the financial institutions industry carry significant balances of various investment securities on their balance sheets, which skews the allocation of PC to intangible assets relative to other industries.
- The second-highest percentage of PC allocated to any identifiable intangible asset in the financial institutions industry was developed technology, with 5% and 6% of PC allocated to these assets on a median and mean basis, respectively.

Summary of PC Allocated to Intangible Assets (Financial Institutions) 2016 Study

	Count		PC		% of PC			
	Number	%	Median	Mean	Low	High	Median	Mean
Developed Technology	6	9%	642	7,989	0%	15%	5%	6%
Trademarks and Trade Names	9	14%	533	5,503	0%	7%	3%	3%
Customer-Related Assets	15	23%	493	1,481	1%	46%	17%	18%
Other Identifiable Intangible Assets	60	92%	555	2,325	0%	21%	1%	2%
Goodwill	63	97%	592	2,412	0%	73%	5%	12%

Financial Institutions (cont.)

- Notable transaction activity in this industry included the following:

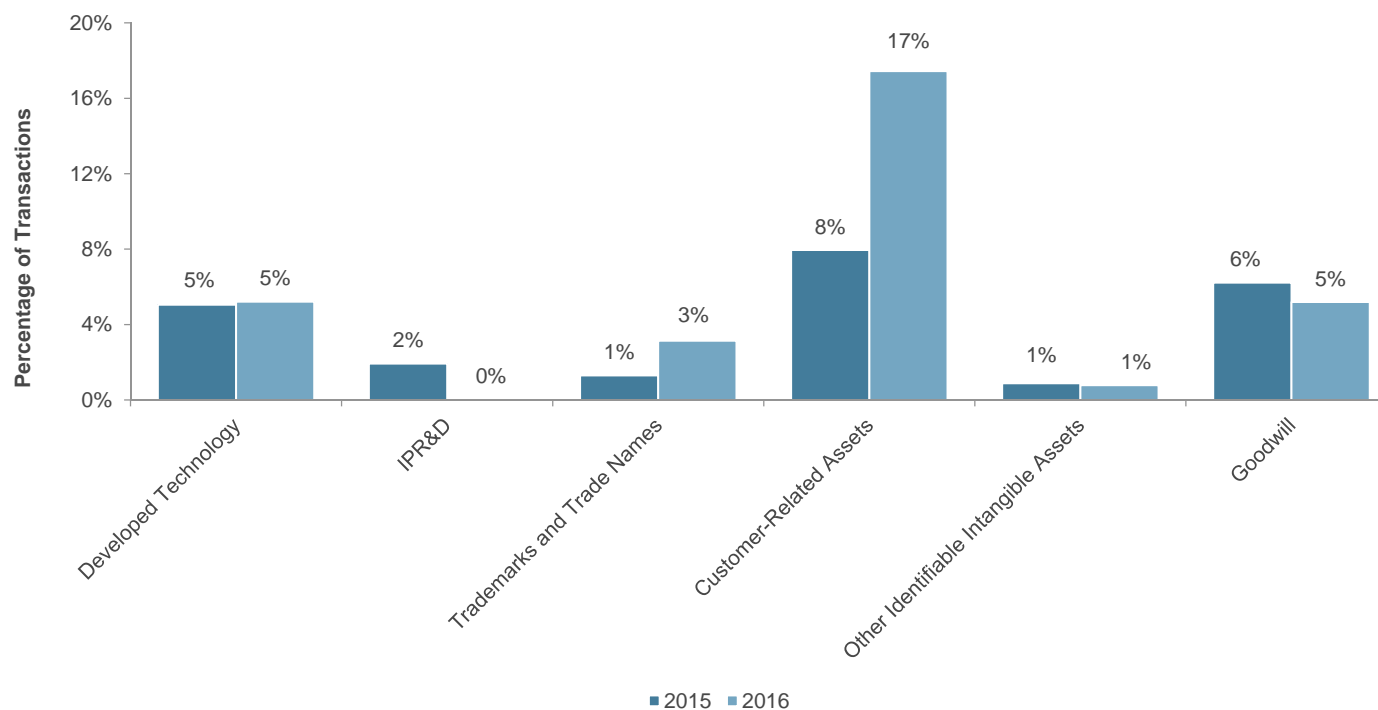
\$ in millions

Date	Acquirer	Target	PC	Total % Allocated to Intangible Assets
1/14/2016	Chubb Limited (NYSE:CB)	The Chubb Corporation	\$44,547	17%
4/1/2016	BB&T Corporation (NYSE:BBT)	National Penn Bancshares Inc.	\$10,067	1%
7/29/2016	Hope Bancorp, Inc. (NasdaqGS:HOPE)	Wilshire Bancorp Inc.	\$4,987	0%
7/29/2016	KeyCorp (NYSE:KEY)	First Niagara Financial Group Inc.	\$37,020	1%
8/31/2016	Chemical Financial Corporation (NasdaqGS:CHFC)	Talmer Bancorp, Inc.	\$7,713	1%

Financial Institutions (cont.)

- As illustrated below, customer-related assets were the only intangible assets that experienced a material change (+/- 5% or more) in the allocation of PC from the 2015 Study to the 2016 Study, with PC allocation increasing from 8% in the 2015 Study to 17% in the 2016 Study.
- In the 2016 Study, goodwill was allocated 5% of PC on a median basis, down from 6% in the 2015 Study.

Distribution of PC Allocated to Intangible Assets and Goodwill
2016 Study vs. 2015 Study



Healthcare

- In the 2016 Study, 91 transactions were observed that allocated PC to intangible assets or goodwill within the healthcare industry, down from 112 transactions in the 2015 Study.
- Within the healthcare industry, IPR&D was allocated the highest percentage of PC to any identifiable intangible asset, with 35% and 40% of PC being allocated to this asset on a median and mean basis, respectively.
- The healthcare industry had the second highest level of PC allocated to identifiable intangible assets out of any industry within the 2016 Study, with 44% of PC allocated to identifiable intangible assets.
- The second-highest percentage of PC allocated to any identifiable intangible asset in the healthcare industry was developed technology, with 20% and 32% of PC allocated to these assets on a median and mean basis, respectively.

Summary of PC Allocated to Intangible Assets (Healthcare) 2016 Study

	Count		PC		% of PC			
	Number	%	Median	Mean	Low	High	Median	Mean
Developed Technology	53	58%	78	1,455	1%	99%	20%	32%
IPR&D	24	26%	415	5,599	0%	100%	35%	40%
Trademarks and Trade Names	40	44%	58	1,183	0%	56%	4%	6%
Customer-Related Assets	52	57%	41	934	1%	89%	19%	23%
Other Identifiable Intangible Assets	34	37%	33	3,502	0%	100%	6%	6%
Goodwill	84	92%	58	1,922	0%	96%	37%	37%

- Notable transaction activity in this industry included the following:

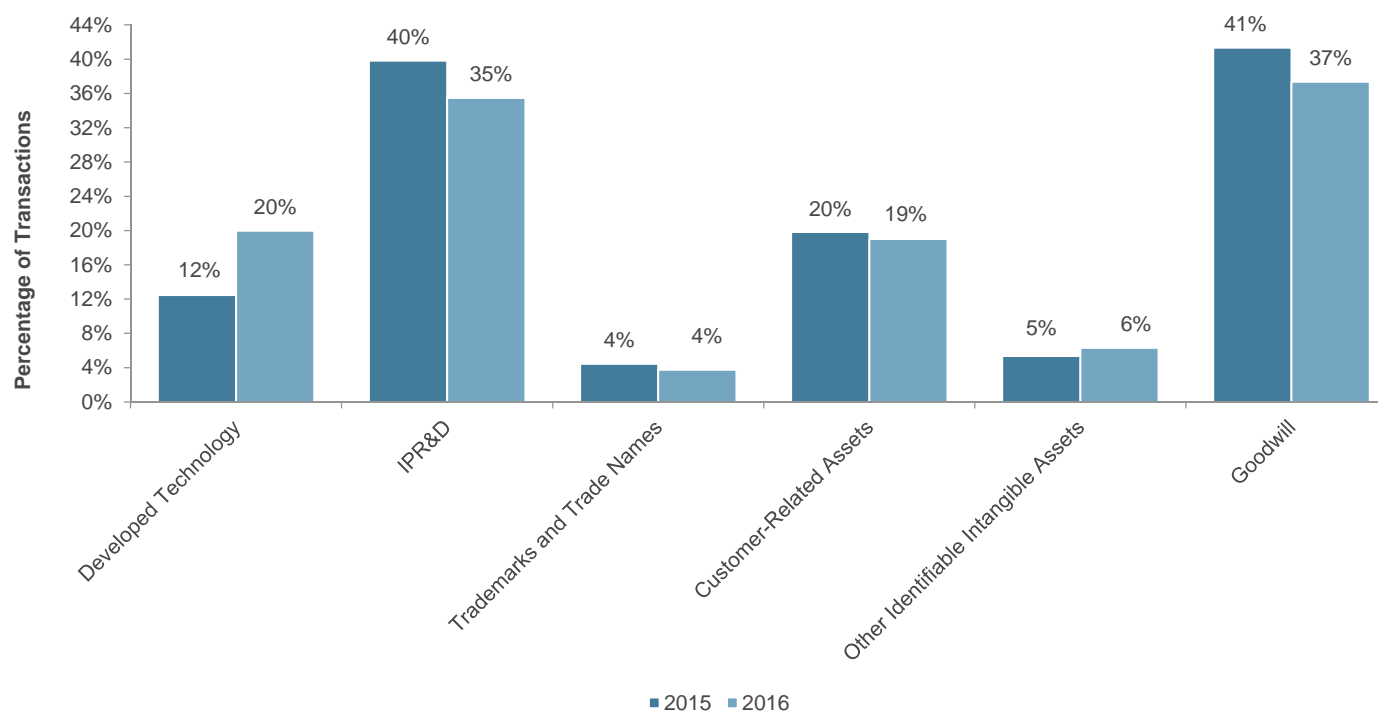
\$ in millions

Date	Acquirer	Target	PC	Total % Allocated to Intangible Assets
3/24/2016	Centene Corporation (NYSE:CNC)	Health Net, Inc.	\$11,077	14%
6/1/2016	AbbVie Inc. (NYSE:ABBV)	Stemcentrx, Inc.	\$8,397	73%
6/3/2016	Shire plc (LSE:SHP)	Baxalta Incorporated	\$45,604	46%
8/2/2016	Teva Pharmaceutical Industries Limited (NYSE:TEVA)	Allergan plc, Global Generic Pharmaceuticals Business	\$48,497	42%
10/3/2016	Quintiles IMS Holdings, Inc. (NYSE:Q)	IMS Health Holdings, Inc.	\$19,855	32%

Healthcare (cont.)

- As illustrated below, PC allocation to developed technology was the only asset to change by more than 5% from the 2015 Study to the 2016 Study within the Healthcare industry. Specifically, PC allocation to developed technology increased from 12% of PC in the 2015 Study to 20% of PC in the 2016 Study.
- In the 2016 Study, goodwill received the second-highest allocation of PC among any intangible asset, with 37% of PC within the financial institutions industry being allocated to goodwill on a median basis, which is down from 41% in the 2015 Study.

Distribution of PC Allocated to Intangible Assets and Goodwill
2016 Study vs. 2015 Study



Industrials

- In the 2016 Study, 48 transactions were observed that allocated PC to intangible assets or goodwill within the industrials industry, down from 67 transactions in the 2015 Study.
- Within the industrials industry, customer-related assets were allocated the highest percentage of PC to any identifiable intangible asset, with 20% and 22% of PC being allocated to this asset on a median and mean basis, respectively.
- The second-highest percentage of PC allocated to any identifiable intangible asset in the industrials industry was developed technology, with 5% and 10% of PC allocated to these assets on a median and mean basis, respectively.

Summary of PC Allocated to Intangible Assets (Industrials) 2016 Study

	Count		PC		% of PC			
	Number	%	Median	Mean	Low	High	Median	Mean
Developed Technology	22	46%	277	2,256	0%	49%	5%	10%
IPR&D	2	4%	20,456	20,456	0%	0%	0%	0%
Trademarks and Trade Names	28	58%	142	1,850	0%	43%	4%	6%
Customer-Related Assets	41	85%	126	1,389	1%	56%	20%	22%
Other Identifiable Intangible Assets	24	50%	79	2,389	0%	75%	2%	13%
Goodwill	46	96%	123	1,378	1%	73%	45%	43%

- Notable transaction activity in this industry included the following:

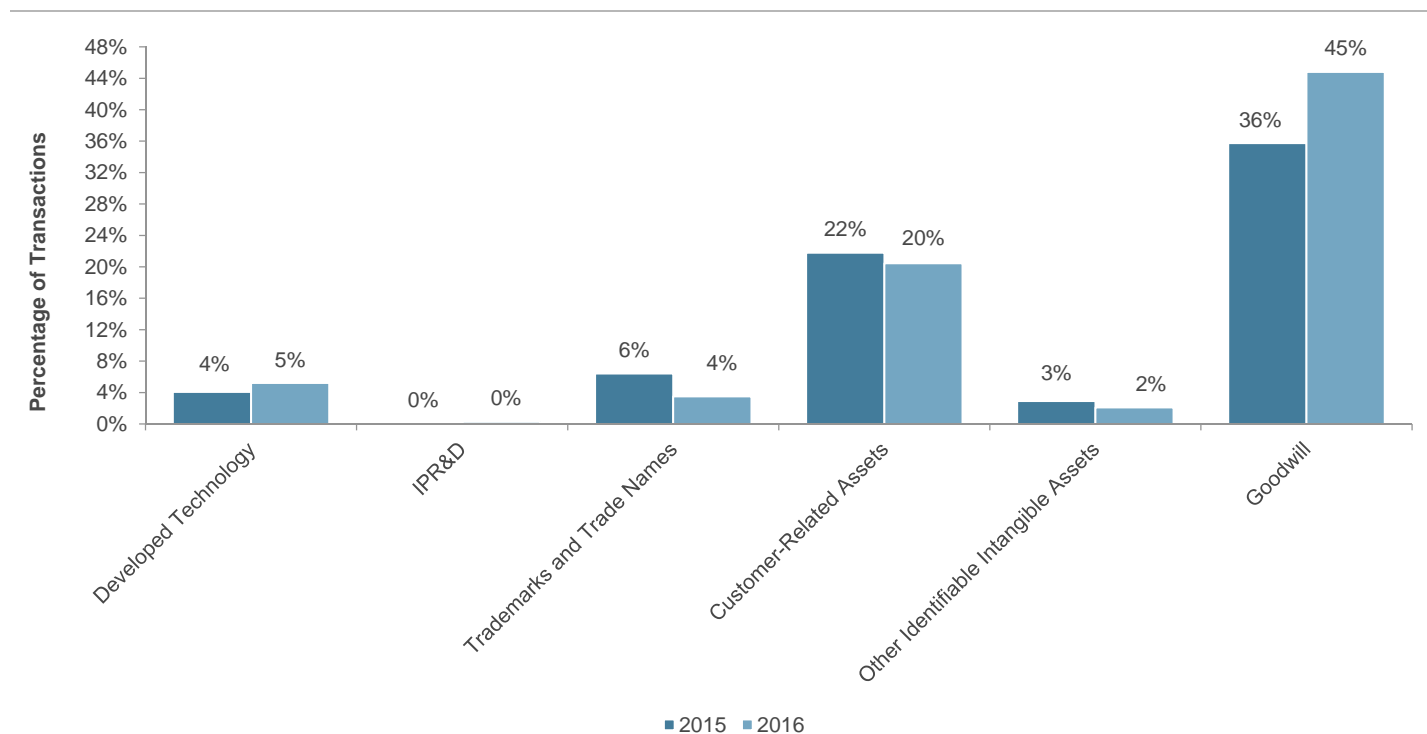
\$ in millions

Date	Acquirer	Target	PC	Total % Allocated to Intangible Assets
1/4/2016	Willis Towers Watson Public Limited (NasdaqGS:WLTW)	Towers Watson & Co.	\$12,543	32%
1/22/2016	DSV A/S (CPSE:DSV)	UTi Worldwide Inc.	\$2,410	2%
8/31/2016	Melrose Industries PLC (LSE:MRO)	Nortek Inc.	\$3,905	29%
9/2/2016	Johnson Controls International plc (NYSE:JCI)	Tyco International plc	\$28,369	22%
12/14/2016	Alaska Air Group, Inc. (NYSE:ALK)	Virgin America Inc.	\$3,426	4%

Industrials (cont.)

- As illustrated below, PC allocation to goodwill was the only asset to change by more than 5% from the 2015 Study to the 2016 Study within the industrials industry. Specifically, PC allocation to goodwill increased from 36% of PC in the 2015 Study to 45% of PC in the 2016 Study.
- In the 2016 Study, goodwill received the highest allocation of PC among any intangible asset.
- Customer-related assets received the second-highest allocation of PC among intangible assets, with 20% of PC being allocated to this asset on a median basis, down from 22% in the 2015 Study.

Distribution of PC Allocated to Intangible Assets and Goodwill
2016 Study vs. 2015 Study



Infrastructure Services & Materials

- In the 2016 Study, 20 transactions were observed that allocated PC to intangible assets or goodwill within the infrastructure services & materials industry, down from 29 transactions in the 2015 Study.
- Within the infrastructure services & materials industry, customer-related assets were allocated the highest percentage of PC to any identifiable intangible asset, with 13% and 17% of PC being allocated to this asset on a median and mean basis, respectively.
- The second-highest percentage of PC allocated to any identifiable intangible asset in the infrastructure services & materials industry (on an average basis) was trademarks and trade names, with 4% and 7% of PC allocated to these assets on a median and mean basis, respectively.

Summary of PC Allocated to Intangible Assets (ISM) 2016 Study

	Count		PC		% of PC			
	Number	%	Median	Mean	Low	High	Median	Mean
Developed Technology	7	35%	215	985	1%	14%	5%	6%
Trademarks and Trade Names	12	60%	146	639	0%	27%	4%	7%
Customer-Related Assets	18	90%	146	483	1%	57%	13%	17%
Other Identifiable Intangible Assets	9	45%	175	803	0%	42%	1%	11%
Goodwill	20	100%	146	449	6%	54%	28%	30%

- Notable transaction activity in this industry included the following:

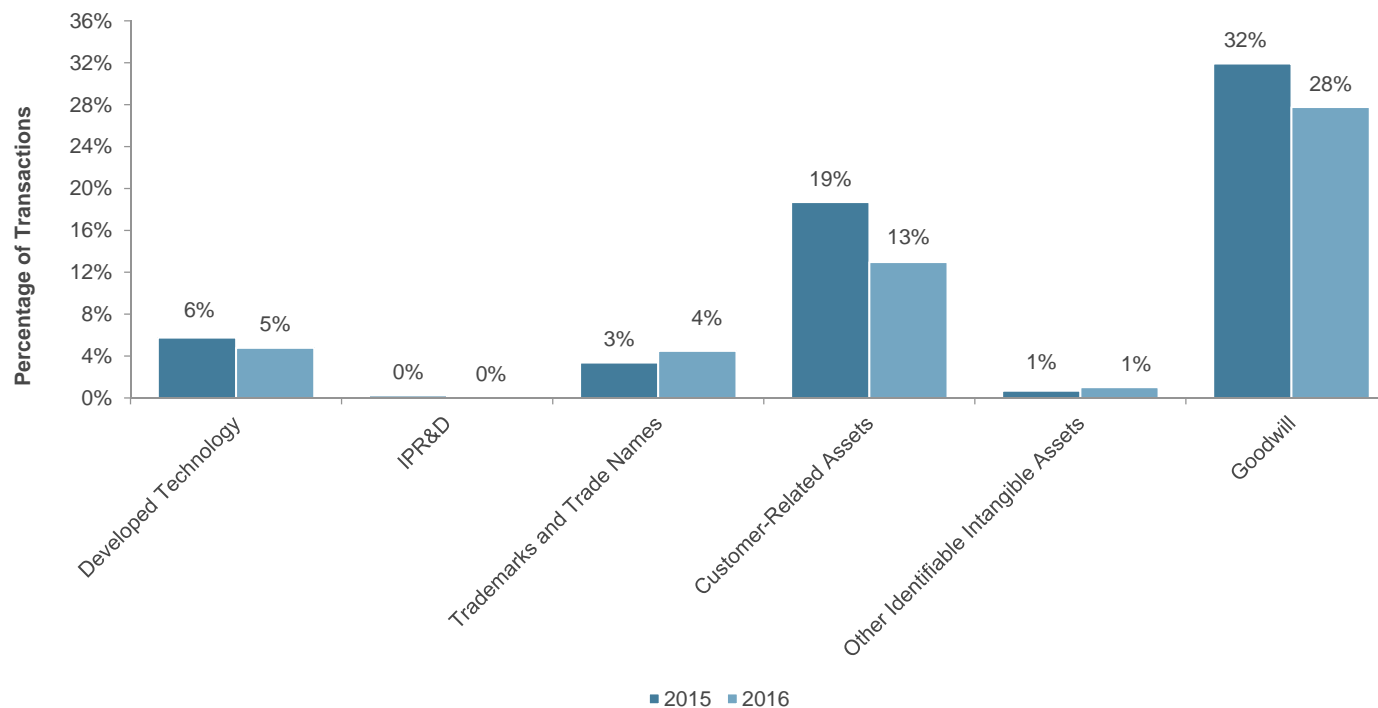
\$ in millions

Date	Acquirer	Target	PC	Total % Allocated to Intangible Assets
1/31/2016	Platform Specialty Products Corporation (NYSE:PAH)	OMG Electronic Chemicals (M) Sdn Bhd and Electronic Chemi	\$420	29%
7/1/2016	Energizer Holdings, Inc. (NYSE:ENR)	American Covers, LLC	\$417	38%
8/22/2016	Gränges AB (publ) (OM:GRNG)	Noranda Aluminum Holding Corporation, Aluminium Rolling Bus	\$353	7%
8/31/2016	Westlake Chemical Corporation (NYSE:WLK)	Axiall Corporation	\$5,757	12%
11/1/2016	Nucor Corporation (NYSE:NUE)	Independence Tube Corporation	\$470	28%

Infrastructure Services & Materials (cont.)

- As illustrated below, PC allocation to customer-related assets was the only asset to change by more than 5% from the 2015 Study to the 2016 Study within the infrastructure services & materials industry. Specifically, PC allocation to customer-related assets decreased from 19% of PC in the 2015 Study to 13% of PC in the 2016 Study.
- In the 2016 Study, goodwill received the highest allocation of PC among any intangible asset within the infrastructure services & materials industry, with 28% of PC being allocated to goodwill, down from 32% in the 2015 Study.

Distribution of PC Allocated to Intangible Assets and Goodwill
2016 Study vs. 2015 Study



Technology

- In the 2016 Study, 116 transactions were observed that allocated PC to intangible assets or goodwill within the technology industry, down from 145 transactions in the 2015 Study.
- Within the technology industry, customer-related assets were allocated the highest percentage of PC to any identifiable intangible asset, with 17% and 19% of PC being allocated to this asset on a median and mean basis, respectively.
- The second-highest percentage of PC allocated to any identifiable intangible asset in the technology industry was developed technology, with 14% and 16% of PC allocated to these assets on a median and mean basis, respectively.

Summary of PC Allocated to Intangible Assets (Technology) 2016 Study

	Count		PC		% of PC			
	Number	%	Median	Mean	Low	High	Median	Mean
Developed Technology	95	82%	75	1,423	0%	80%	14%	16%
IPR&D	21	18%	881	3,453	0%	67%	4%	14%
Trademarks and Trade Names	59	51%	122	2,058	0%	21%	3%	4%
Customer-Related Assets	99	85%	70	1,333	0%	173%	17%	19%
Other Identifiable Intangible Assets	49	42%	74	1,633	0%	60%	1%	7%
Goodwill	116	100%	60	1,177	5%	86%	50%	48%

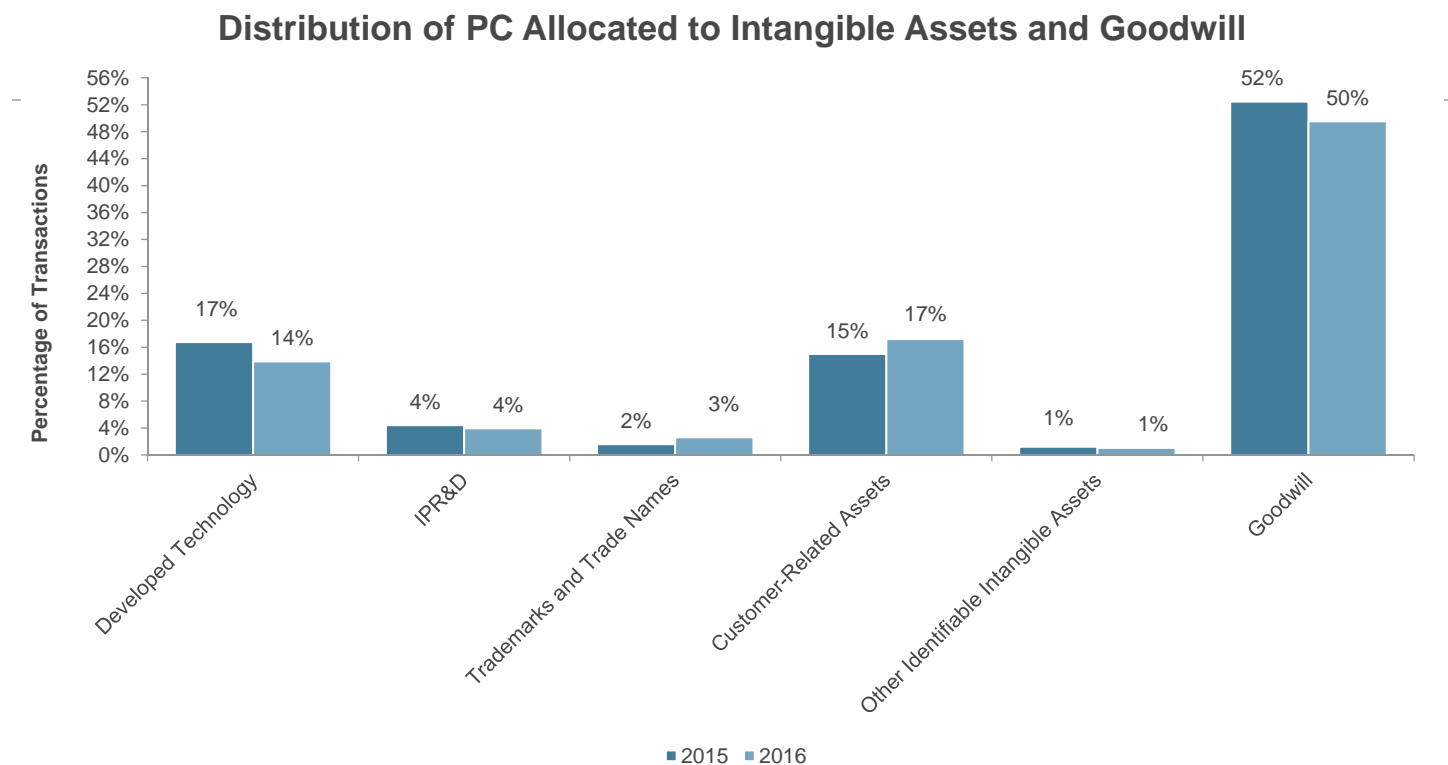
- Notable transaction activity in this industry included the following:

\$ in millions

Date	Acquirer	Target	PC	Total % Allocated to Intangible Assets
2/1/2016	Broadcom Limited (NasdaqGS:AVGO)	Broadcom Corporation	\$49,339	31%
4/22/2016	Global Payments Inc. (NYSE:GPN)	Heartland Payment Systems, Inc.	\$5,447	30%
8/1/2016	Symantec Corporation (NasdaqGS:SYMC)	Blue Coat, Inc.	\$5,947	27%
9/19/2016	Thermo Fisher Scientific Inc. (NYSE:TMO)	FEI Company	\$4,929	41%
12/8/2016	Microsoft Corporation (NasdaqGS:MSFT)	LinkedIn Corporation	\$30,380	26%

Technology (cont.)

- As illustrated below, there have not been any material changes (+/- 5% or more) in the allocation percentage to any particular intangible asset from the 2015 Study to the 2016 Study. The largest change in PC allocation to intangible assets was observed with developed technology, which decreased from 17% in the 2015 Study to 14% in the 2016 Study, on a median basis.
- In the 2016 Study, goodwill received the highest allocation of PC among any intangible asset within the technology industry, with 50% of PC being allocated to this asset, down from 52% in the 2015 Study.
- Customer-related assets received the second-highest allocation of PC among intangible assets, with 17% of PC being allocated to this asset on a median basis, up from 15% in the 2015 Study.



Telecom

- In the 2016 Study, seven transactions were observed that allocated PC to intangible assets or goodwill within the telecom industry, down from eight transactions in the 2015 Study.
- Within the telecom industry, IPR&D was allocated the highest percentage of PC to any identifiable intangible asset, with 25% of PC being allocated to this asset on a median and mean basis. However, it should be noted that there was only a single transaction that allocated PC to IPR&D.
- The second-highest percentage of PC allocated to any identifiable intangible asset in the telecom industry was customer-related assets, with 19% and 29% of PC allocated to these assets on a median and mean basis, respectively.

Summary of PC Allocated to Intangible Assets (Telecom) 2016 Study

	Count		PC		% of PC			
	Number	%	Median	Mean	Low	High	Median	Mean
Developed Technology	2	29%	389	389	3%	22%	12%	12%
IPR&D	1	14%	88	88	25%	25%	25%	25%
Trademarks and Trade Names	3	43%	495	401	0%	1%	0%	1%
Customer-Related Assets	7	100%	495	1,918	3%	1%	19%	29%
Other Identifiable Intangible Assets	3	43%	690	553	1%	24%	13%	13%
Goodwill	7	100%	495	1,918	16%	39%	22%	25%

- Notable transaction activity in this industry included the following:

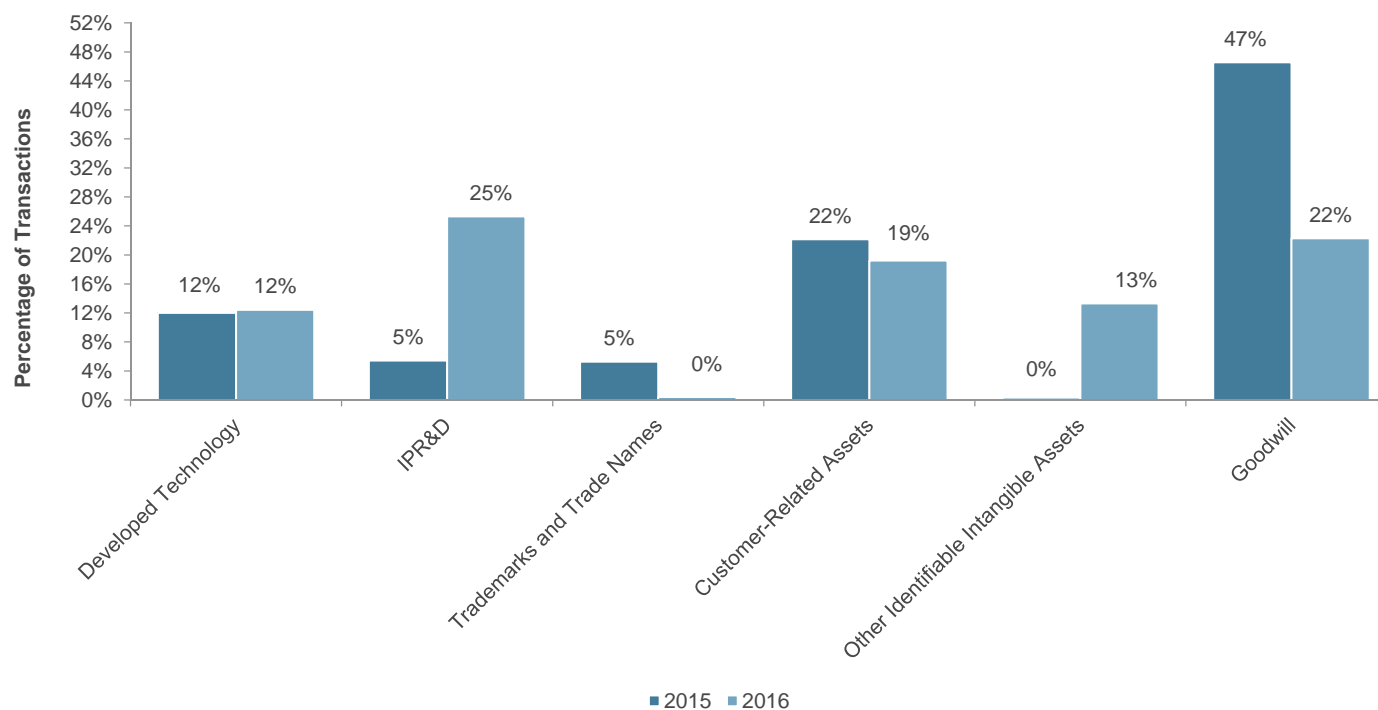
\$ in millions

Date	Acquirer	Target	PC	Total % Allocated to Intangible Assets
4/1/2016	Frontier Communications Corporation (NasdaqGS:FTR)	Verizon Florida LLC, GTE Southwest Inc. & Verizon CA Inc.	\$11,256	19%
5/2/2016	Uniti Group Inc. (NasdaqGS:UNIT)	PEG Bandwidth, LLC	\$495	8%
5/6/2016	Shenandoah Telecommunications Company	NTELOS Holdings Corp.	\$880	48%
7/1/2016	MaxLinear, Inc. (NYSE:MXL)	Broadcom Corporation, Wireless Backhaul Business	\$88	64%
7/27/2016	Global Eagle Entertainment Inc. (NasdaqCM:ENT)	Emerging Markets Communications LLC	\$690	20%

Telecom (cont.)

- As illustrated below, there have been material changes (+/- 5% or more) in the allocation percentage of IPR&D, trademarks and trade names, other identifiable intangible assets, and goodwill from the 2015 Study to the 2016 Study. The largest change in PC allocation to intangible assets was observed with goodwill, which decreased from 47% in the 2015 Study to 22% in the 2016 Study, on a median basis.
- In the 2016 Study, IPR&D received the highest allocation of PC among any intangible asset within the telecom industry, with 25% of PC being allocated to this asset, up from 5% in the 2015 Study.

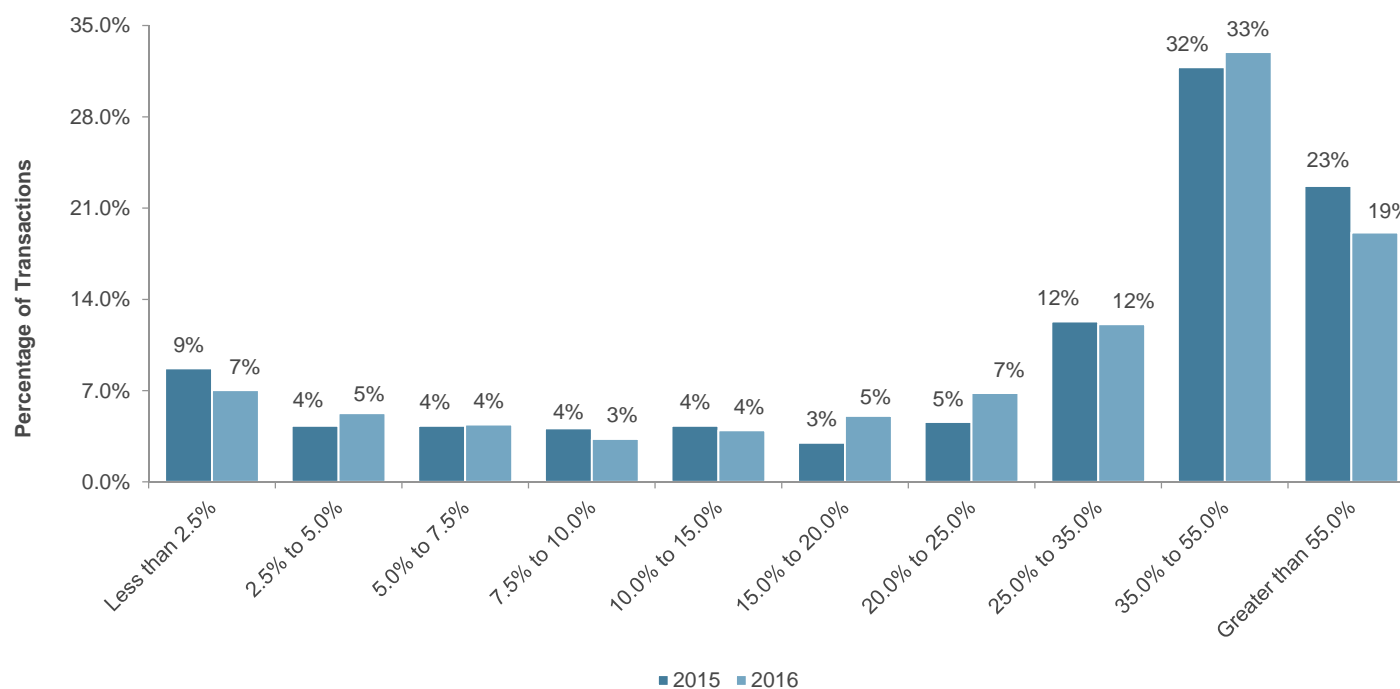
Distribution of PC Allocated to Intangible Assets and Goodwill
2016 Study vs. 2015 Study



Goodwill

- In the 2016 Study, 440 transactions (97%) allocated PC to goodwill. As in previous years, transactions with negative goodwill (i.e., bargain purchases) were excluded. Based on our search criteria, there were 14 bargain purchases in 2016, up from five in 2015.
- The median and mean allocations of PC to goodwill were 36% in 2016.
- As illustrated below, 292 deals (64%) allocated 25% or more of PC to goodwill.

Distribution of PC Allocated to Goodwill
2016 Study



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