Executive Briefing 2019:

Selective IT Best Practices

PRESENTED TO:

March 2019

(Public Utility Company)

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Presented By: Glenn M. Miller

Glenn M. Miller

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Huntington Technology Finance

Mr. Miller has over 40 years of experience in the technology industry. His background includes research, university teaching, consulting, and executive management, as well as extensive experience in assessing and planning IT directions with clients.

Glenn leads the Research and Strategy Services function for Huntington Technology Finance, and brings the unique perspective of an executive who has served in both CFO and CIO roles in client organizations, and has held executive positions in the IT outsourcing industry. Before joining Huntington Technology Finance, Glenn owned his own consulting company and has held executive level IT and finance positions at such organizations as GATX Technology, Accelero Solutions, Entex Information Services, JWP, and Businessland.

Glenn travels extensively, briefing executives on trends and issues in IT management, technology, and finance. He is also well published and has conducted presentations to major audiences worldwide.

Glenn received an M.S. and B.S. in Computer Science from Mississippi State University; and his CDP from DPMA in 1985.

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- **Industry-specific IT Benchmarks and Trends**
  - IT spend as % of Revenue
  - Labor spend: Personnel and Outsourcing
  - Equipment spend: Total and Per User

- **Service/Support and TCO metrics:**
  - Support calls: cost by type, cost by asset age
  - Total Cost of Ownership (TCO) models: elements and adjustment by industry sector
  - Improvement initiatives and cost recovery issues ("Where's my check?!")

- **Refresh cycles**: Trends, Factors, Financing
  - Current patterns/trends
  - Financial factors: CAPEX, OPEX, FASB, TCO, Cash Flow
  - Non-financial factors: Rate of change, Risk of change, PR, Usage, Regulation, InfoSec

- **Other Best practices:**
  - Flexibility and Nimbleness – Technology footprint, operational expenses, asset costs
  - Asset Management data – Intake, ITAM, ITSM
  - Process variants, Exception tracking and analysis
  - Leveraging the vendor eco-system

A Few “Sub-Optimal” Cases…

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- **An Asset listing that looks like this…**

	Row Labels	Count of Serial Number	Average of ComputerAge
	Surface	28	2
	5040 i5	22	2
	7040 i5 - reuse	18	2
?	5040 i5 - reuse	1	2
?	Small Laptop	10	2
	M700 guess	217	2
	PAC's Machines - OOS	316	2
?	M700x	8833	3
?	IBM	6	3
	Laptop	4071	3
	3020	4	4
	9020 i5 - reuse	22	4
	7020 i5 - reuse	348	4
?	All in One - 23	3733	4
	Research Required	18	4
	7010	3793	5
	3010	2	5
	Laptop-cart	378	5
	9010	107	5
	390 i3's - reuse	32	6
	390 i3's	226	6
	M700x	39	6
	Specialized Device - OOS	39	6
	790	3115	6
	780 - dispose	2688	7
	980 - dispose	26	7
	Wyse	3140	8
	960 - dispose	1	8
	Dispose	6	8
?	160 Dou - dispose	192	8
	AMD - dispose	4	10
	(blank)		
	Grand Total	31435	5

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- **Tier 2 Call Logs with entries like this…**

Summary	Time to Resolve	
PC not booting	1.9	minutes
Computer - Cannot shut down computer	1.5	minutes
Need warp drive removed from PC	1.0	minutes
PC frozen at repair screen.	59	Seconds
Up date BIOS	45	Seconds
Laptop will not power on - user on call of networking services	43	Seconds
Clients PC is not on the <company> domain and no share-drives are populating.	42	Seconds
PC displays bit locker drive encryption error message	36	Seconds
Dispose old equipment	32	Seconds
Install Xerox printer on to 3 PC	25	Seconds
Install remote Avaya app for telcom PC	17	Seconds
Replace 15 inch monitor with 20 inch monitor	16	Seconds
move data from hard drive to her computer	11	Seconds
replace 19 inch monitor for secretary	9	Seconds
install 2 monitors with <employee name>	8	Seconds
install 2 wired keyboards and 2 mice in classroom	7	Seconds
adobe is not opening up the PDF file	0	Seconds
Desktop - Getting an security risk error while try to download Google chrome	0	Seconds
Keyboard replacement	0	Seconds
PC -Old Asset 324070 replaced with New 340353	0	Seconds
setup the new monitor	0	Seconds
pc is not turning on	0	Seconds
keyboard is not working	0	Seconds
setup the laptop with the printers and programs	0	Seconds
Deployed vendor mate PC	0	Seconds
pc is not connecting to the wifi booting up with a error	0	Seconds
Desktop -Internet connection issue	0	Seconds
label printer is not working on 3 pc's	0	Seconds
pdf forms are not opening on pc	0	Seconds
PC - Replace keyboard	0	Seconds
pc is running very slow when opening programs	0	Seconds
Two Computers - Unable to log in	0	Seconds
needs the Skype updated on 2 pc's	0	Seconds
replace 19 inch monitor	0	Seconds
Update LWS record to mimic new location.	0	Seconds
install the new printer on the laptop	0	Seconds

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- **A Repair parts policy like this ….**

"We scavenge a lot of parts from old equipment. These are hard drives, memory, power supplies, etc. … cannibalize parts from dead systems … The replacement equipment is the killer, those are all the old machines taking up time and parts. We either take the time to pull them out of the old computers or we order 200 power supplies, for example, at a cost of $18,000."

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- **Majority Practice** is the minimum goal – it is a 'survival trait', and departures from those must be justified and defended.

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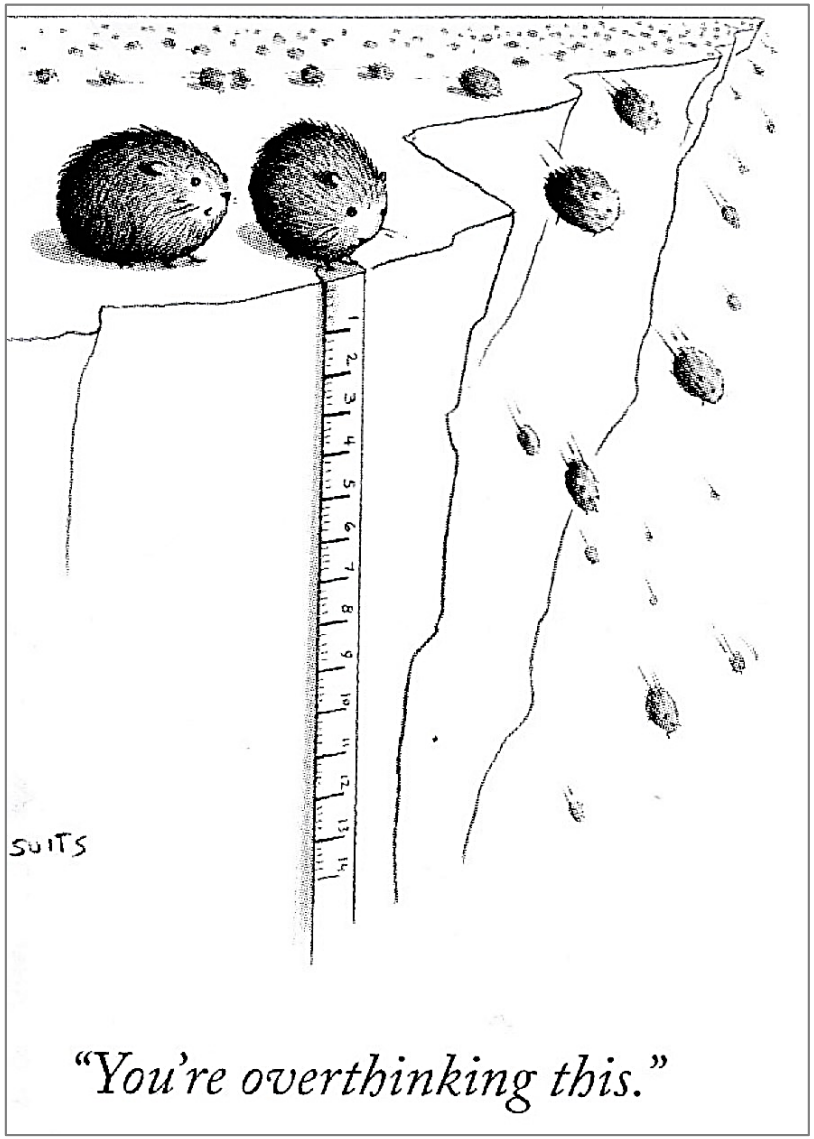
- **<u>Majority</u> Practice** is the minimum goal – it is a 'survival trait', and departures from those must be justified and defended. But they should not be blindly followed either!



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- **Majority Practice** is the minimum goal – it is a 'survival trait' , and departures from those must be justified and defended.
- **Best Practice** is the target – it confers operational advantage in some form, but must be monitored to insure that it works in your specific situation
- **"Better"** is a euphemism for **"different",** and **"different"** is a euphemism for **"disruptive change"!**

Industry-Specific IT Benchmarks and Trends

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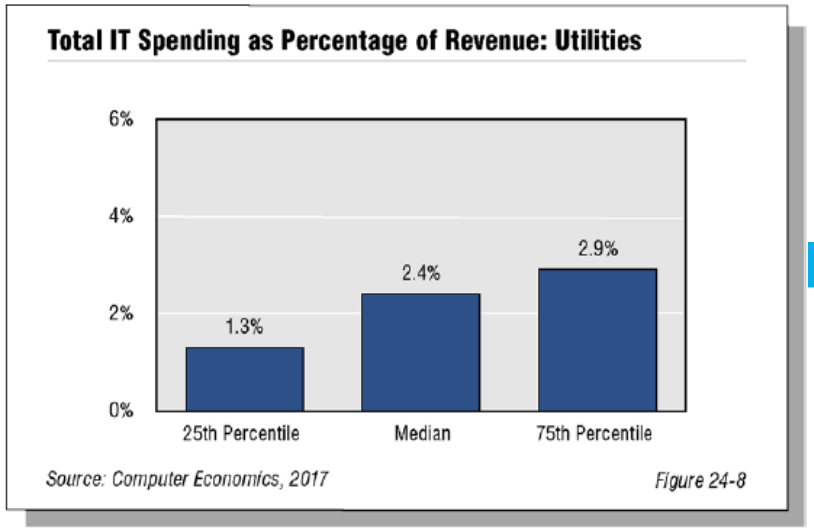
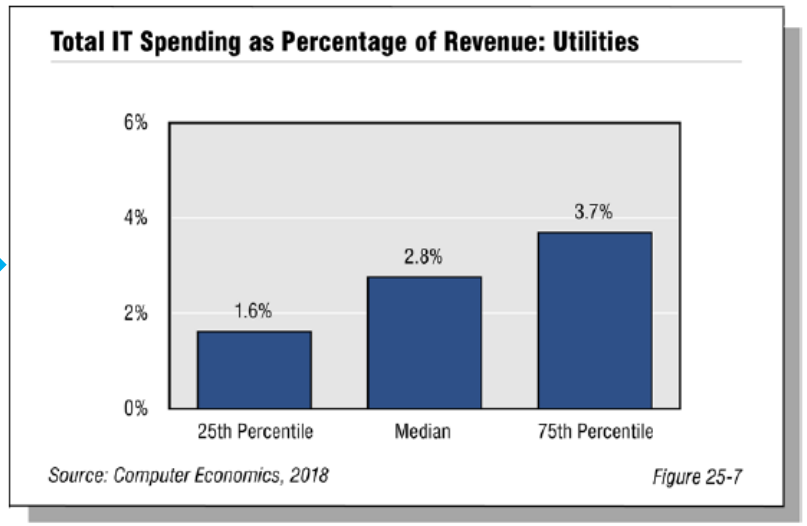
- **Industry-specific IT Benchmarks and Trends**
  - IT spend as % of Revenue





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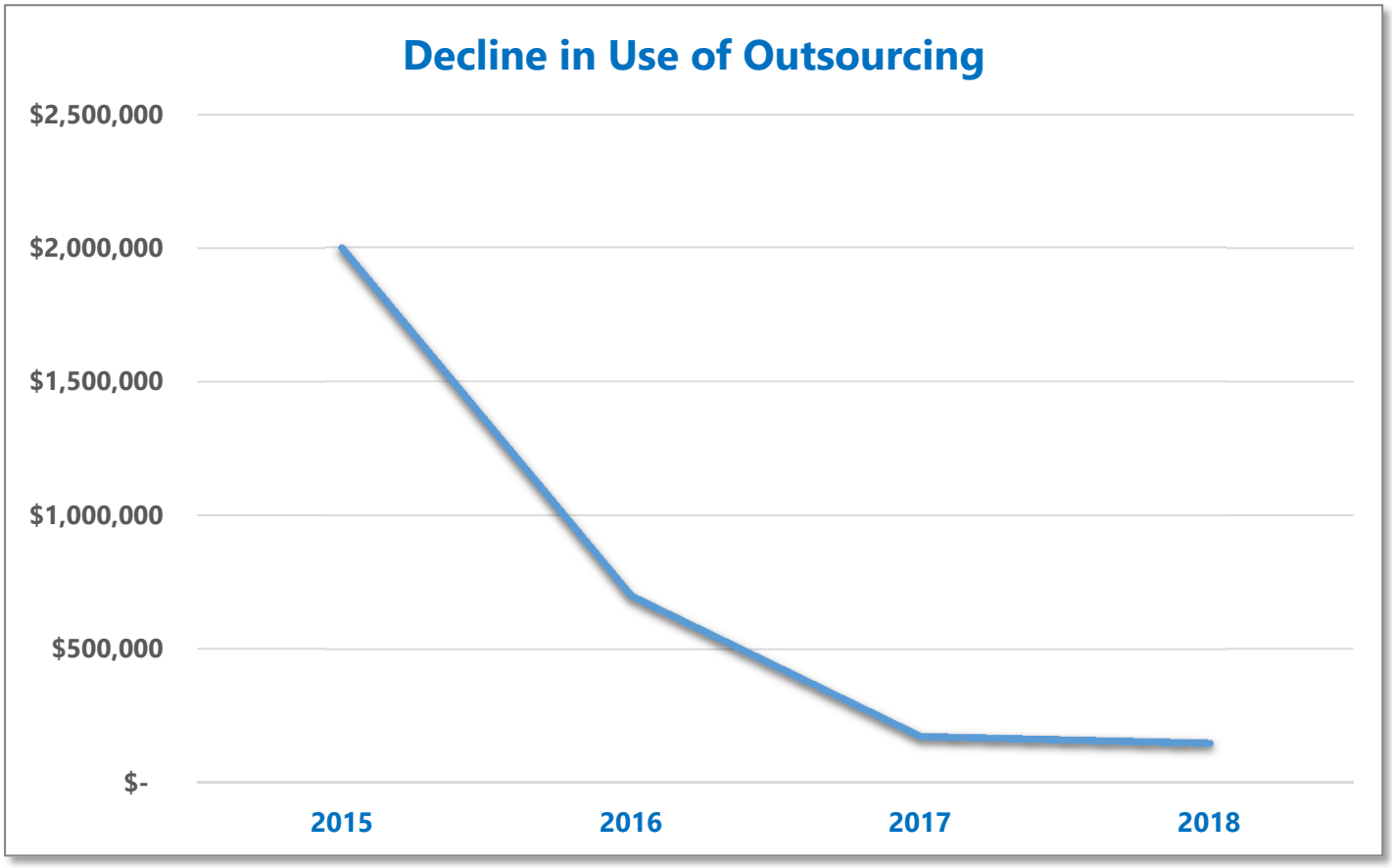
  - Labor spend: **Outsourcing** & Personnel



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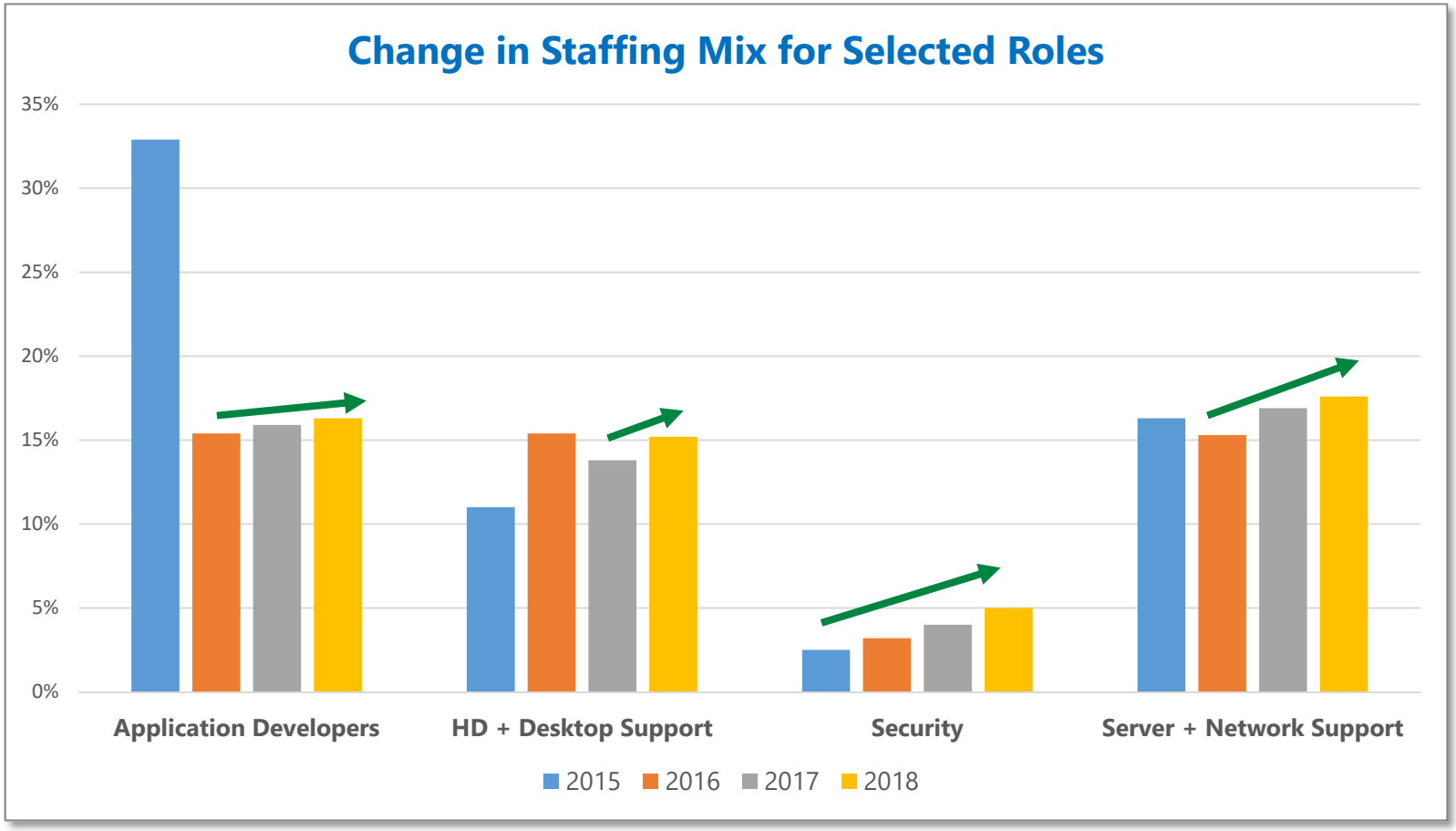

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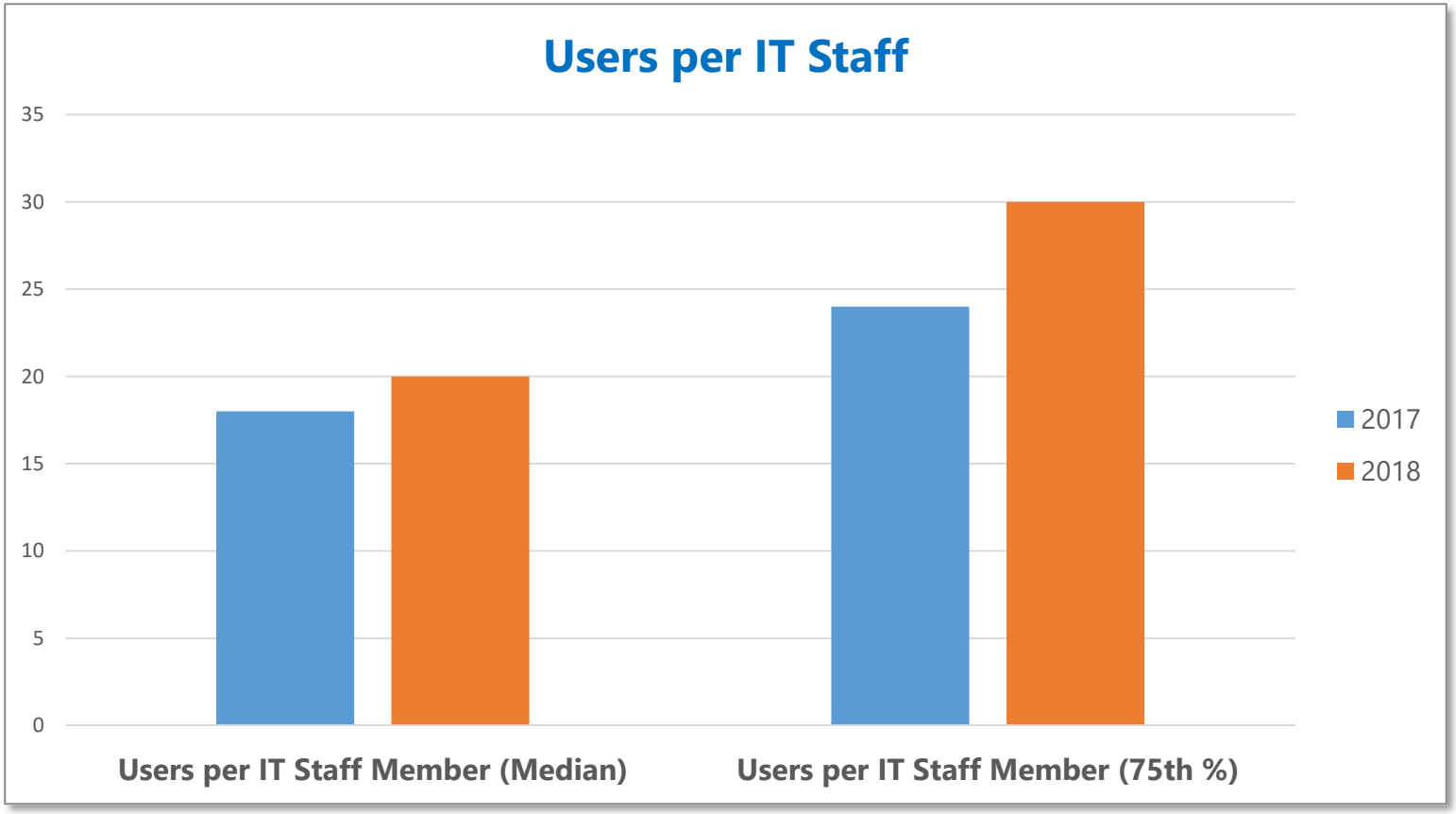

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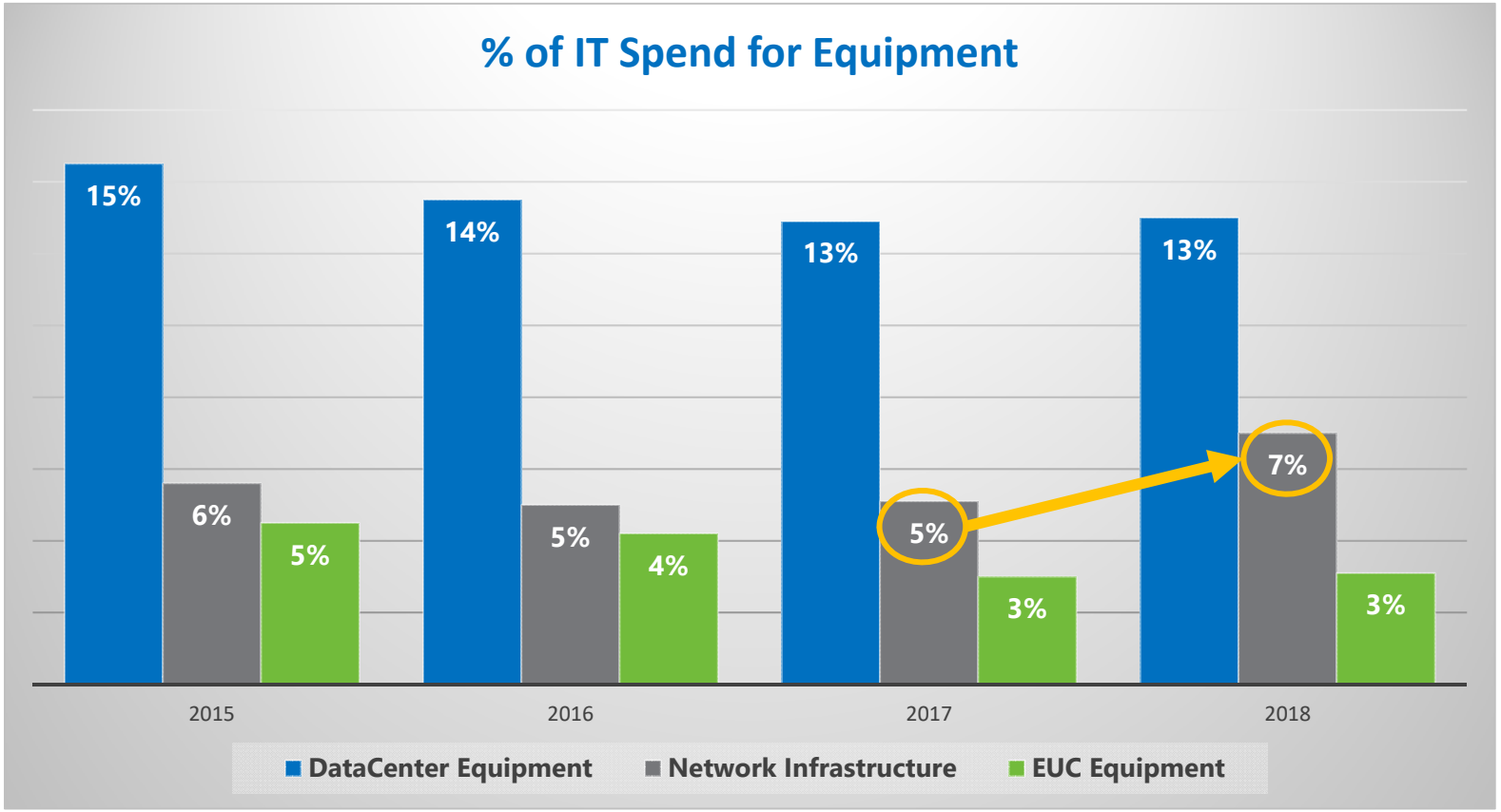

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Estimate 1: IT Equipment

IT spend as % of Revenue (Low figure)	1.6%	
IT spend as % of Revenue (High figure)	3.7%	
Estimated IT spend	$ 135,534,250	Avergage, applied to Your Revenue
Industry spend ratios, by category, applied to your estimated IT spend$		
% of IT spend$ used for Data Center assets	13.0%	**Servers, storage arrays**
Extended$:	$ 17,619,453	
% of IT spend$ used for Network Equipment	7.0%	**Network switches, routers, other equipment**
Extended$:	$ 9,487,398	
% of IT spend$ used for EUC Equipment	3.1%	**End-user devices / equipment**
Extended$:	$ 4,201,562	
Total Short-lived Assets:	**$ 31,308,412**	

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Estimate 2: EUC spend

Median Utilities IT spend as % of Revenue:		2.8%
Operating Revenue ($):	$	5,114,500,000
Total IT spend ($):	$	143,206,000
% of IT spend used in End-User Computing Operations:		9%
EUC annual spend -- support + equipment $:	$	12,888,540
*** Annual PC/desktop equipment spend (median)**	**$**	**4,609,590**
*** EUC annual spend on TOTAL SUPPORT only:**	**$**	**8,278,950**

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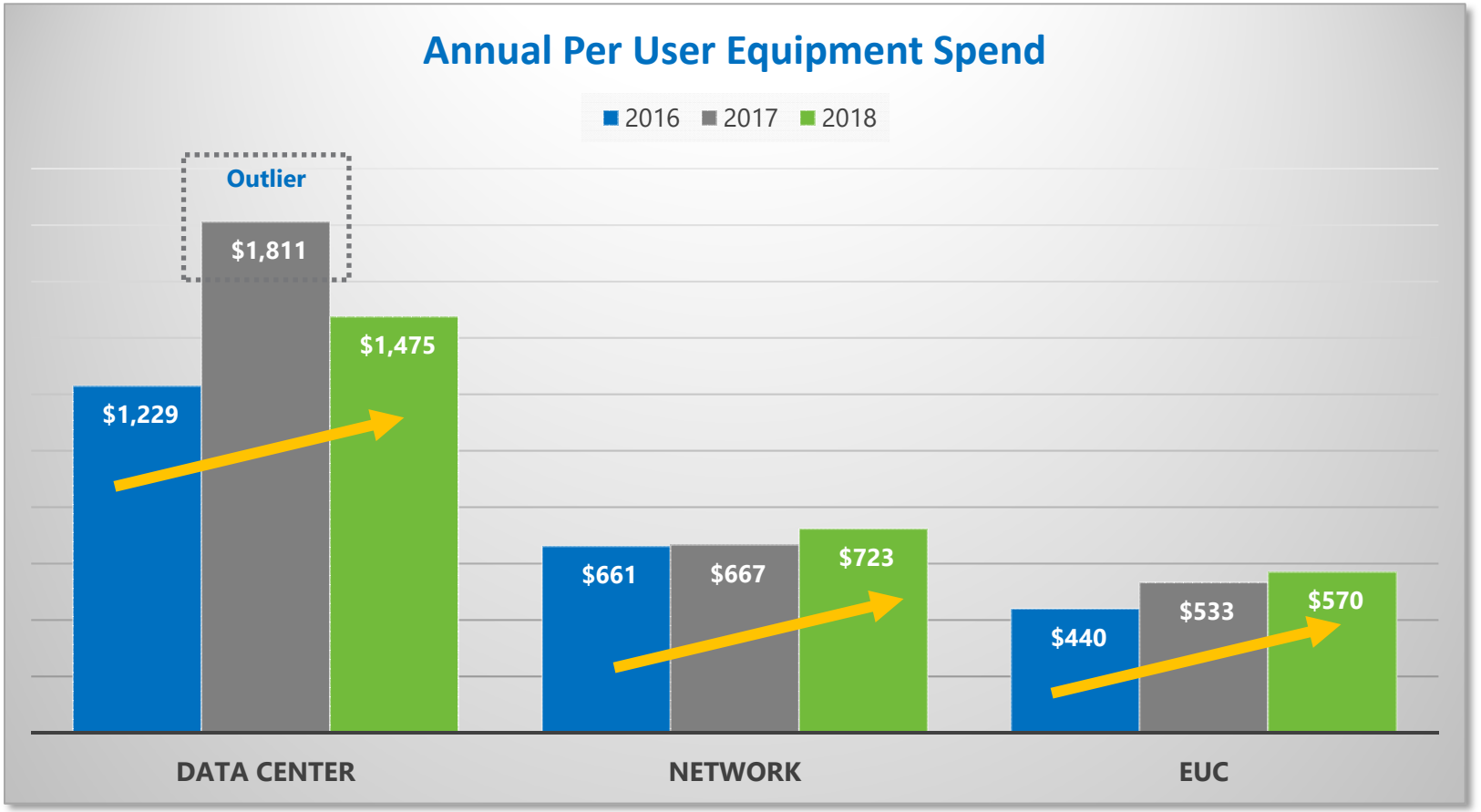

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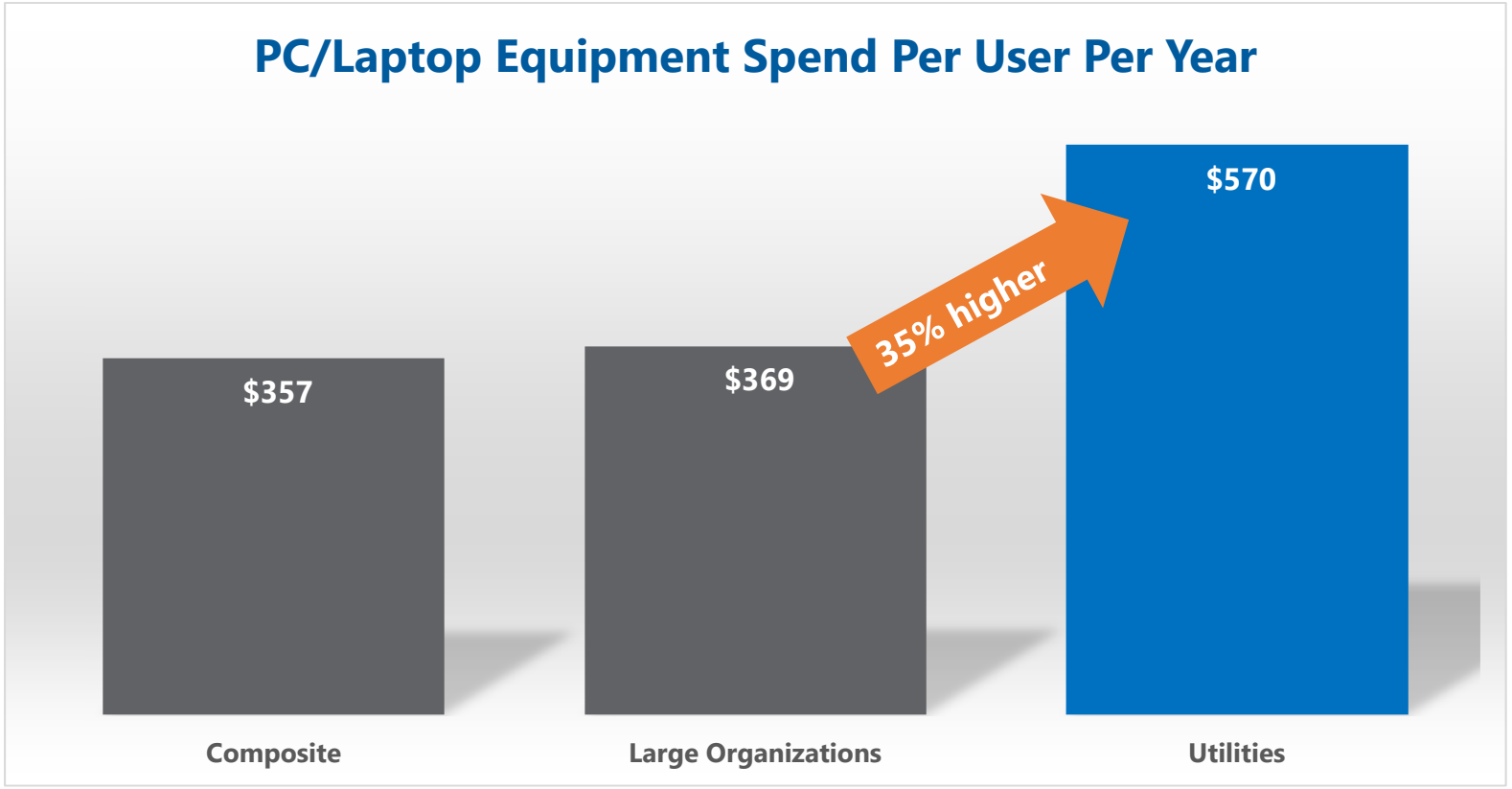

Service/Support & TCO Metrics

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- **Service/Support and TCO metrics:**
  - Support calls: cost by type, cost by asset age

Metric Type	Service Desk Cost Metrics	North American Statistics		
		Average	Min	Max
Cost	Cost per Ticket	$15.56	$2.93	$49.69
	Cost per Minute of Handle Time	$1.60	$0.76	$2.50

Metric Type	Desktop Support KPIs	North American Statistics		
		Average	Min	Max
Cost	Cost per Ticket	$109.15	$21.06	$258.60
	Cost per Incident	$73.62	$22.82	$181.45
	Cost per Service Request	$173.49	$18.51	$404.04

[Source: *The Helpdesk Institute (HDI)*, "Metric of the Month: Desktop Support Cost per Ticket" Jeffrey Rumburg, October 18/2017.]

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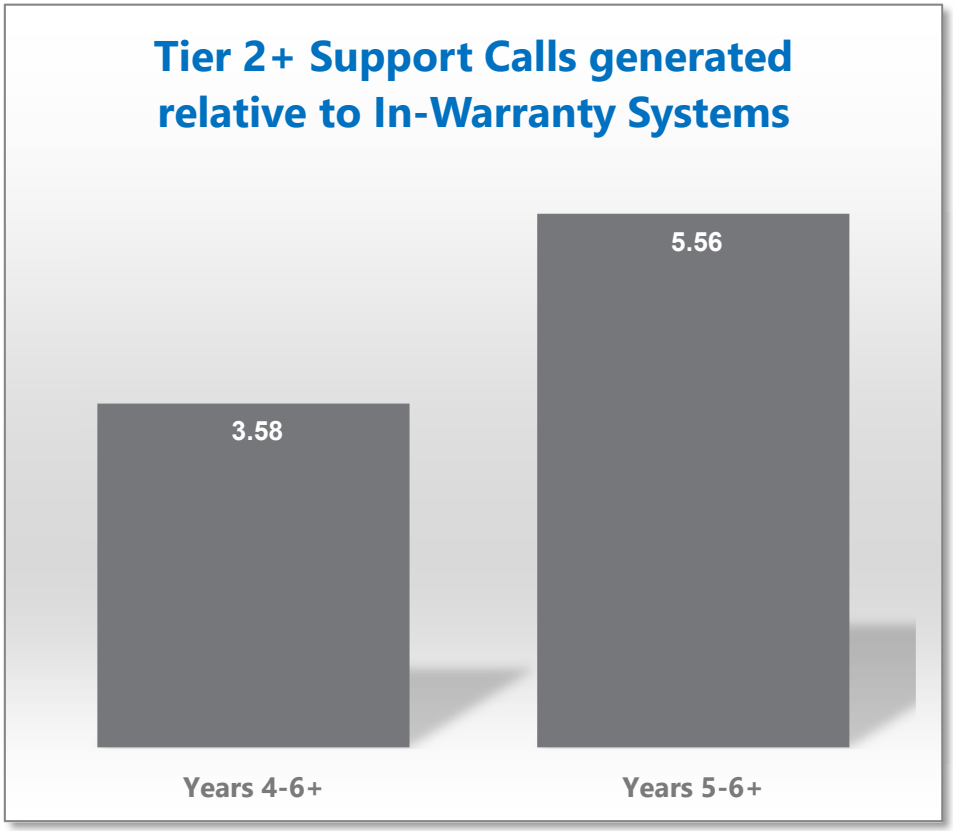

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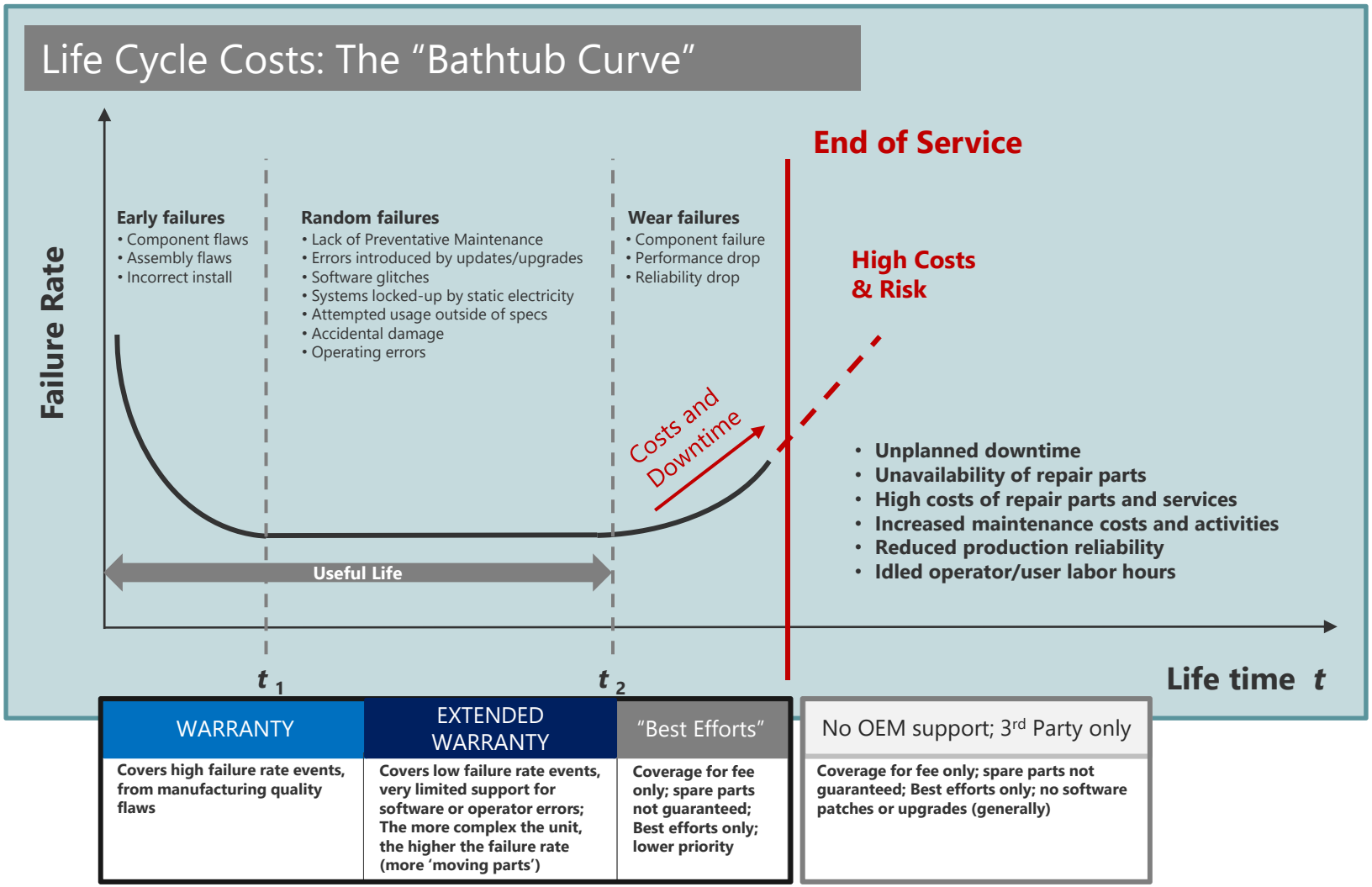
  - Total Cost of Ownership (TCO) models: elements and adjustment by industry sector

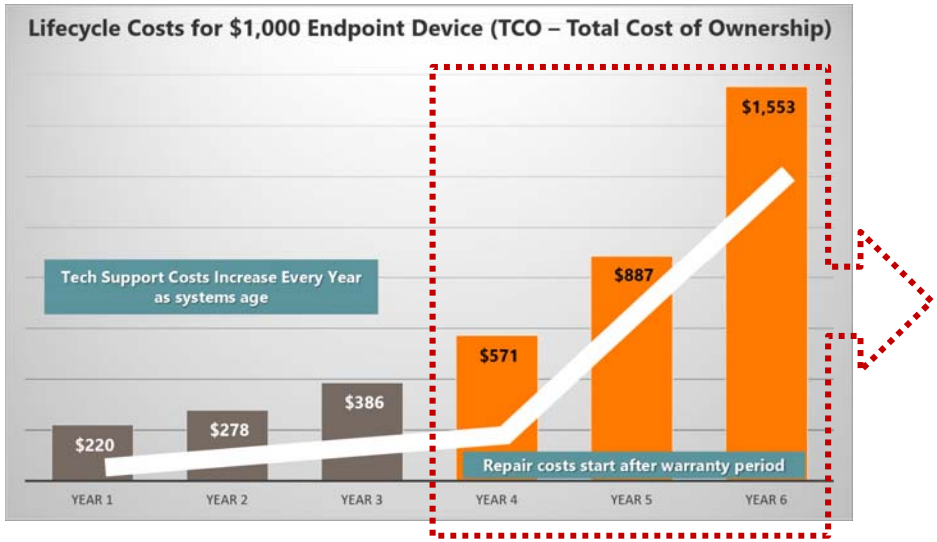
1. **The Bathtub Curve**
2. **Endpoint TCO curve (International Data Corp)**
3. **IDC's Composite Model**
4. **IDC curve mapped to your industry and revenue**
5. **Historical Trend in TCO support costs for In-Warranty and Out-of-Warranty units**

TCO fundamentals: The "Bathtub curve"



These Costs are Operating Expenses on your Statement of Operations

Technical support, Repair services, Upgrade Services, Logistics and Administration



These TCO costs are being absorbed <u>somewhere</u> in the organization (not always in IT), and typically show up as:

- Invoices for replacement parts
- Post-warranty repair services or labor
- Extra contract labor in the support team
- Support resources consumed by aged systems
- Upgrades to older systems to keep them in-step with current applications
- Extra infrastructure resources needed for remediation of malware, network, and shared storage problems
- Extra developer resources for application incompatibilities
- Manual labor required for software asset management and audit compliance

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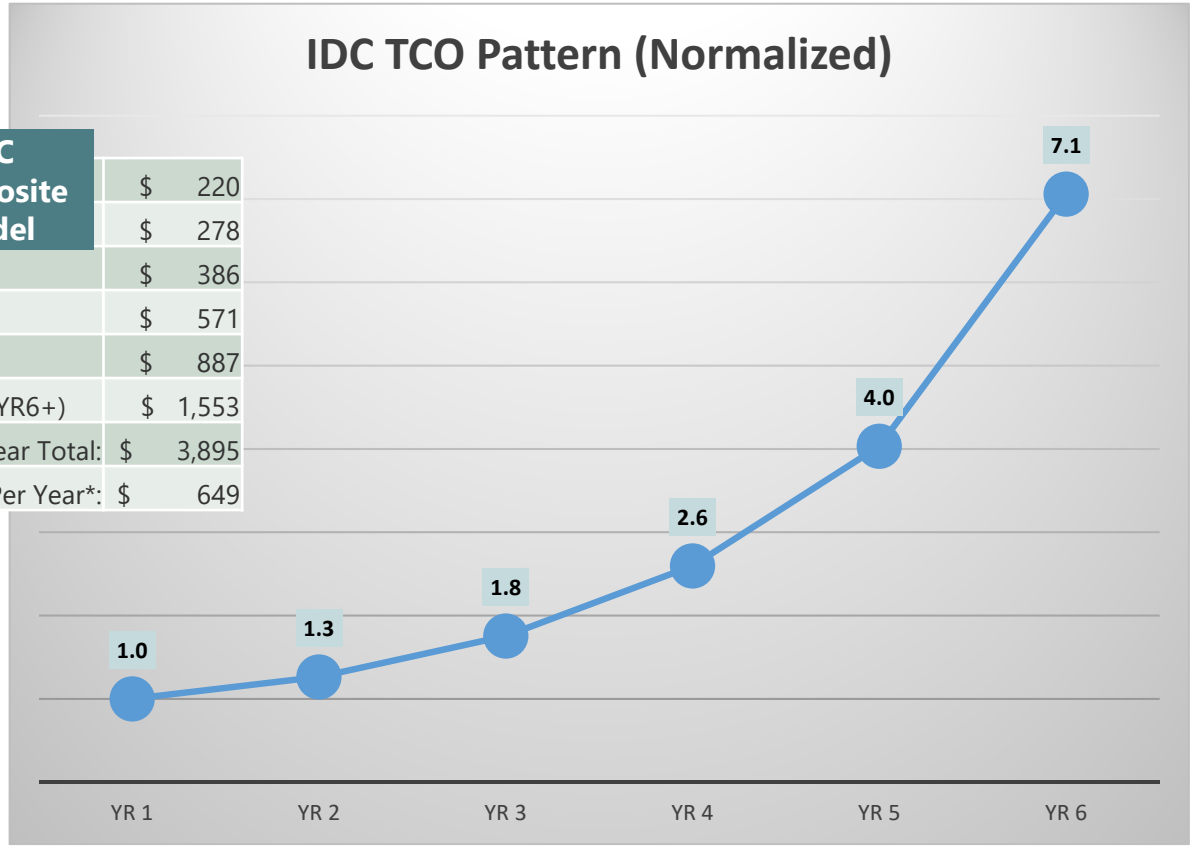
IDC Composite Model	
In first year of life (YR1)	$ 220
In second year of life (YR2)	$ 278
In third year of life (YR3)	$ 386
In first year out of warranty (YR4)	$ 571
In second year out of warranty (YR5)	$ 887
In 3rd and later years out of warranty (YR6+)	$ 1,553
6 Year Total:	$ 3,895
Per User / Per Year*:	$ 649



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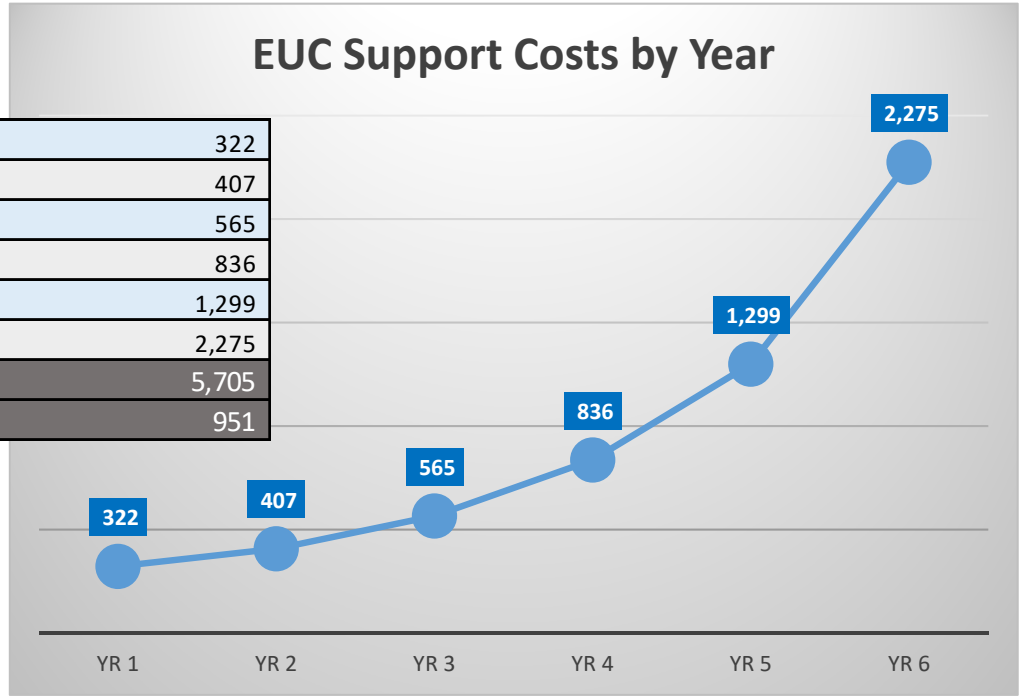
EUC annual spend -- support + equipment $:	$	12,888,540
* Annual PC/desktop equipment spend (median)	$	4,609,590
* EUC annual spend on TOTAL SUPPORT only:	$	8,278,950
Per User Per Year	$	950.84

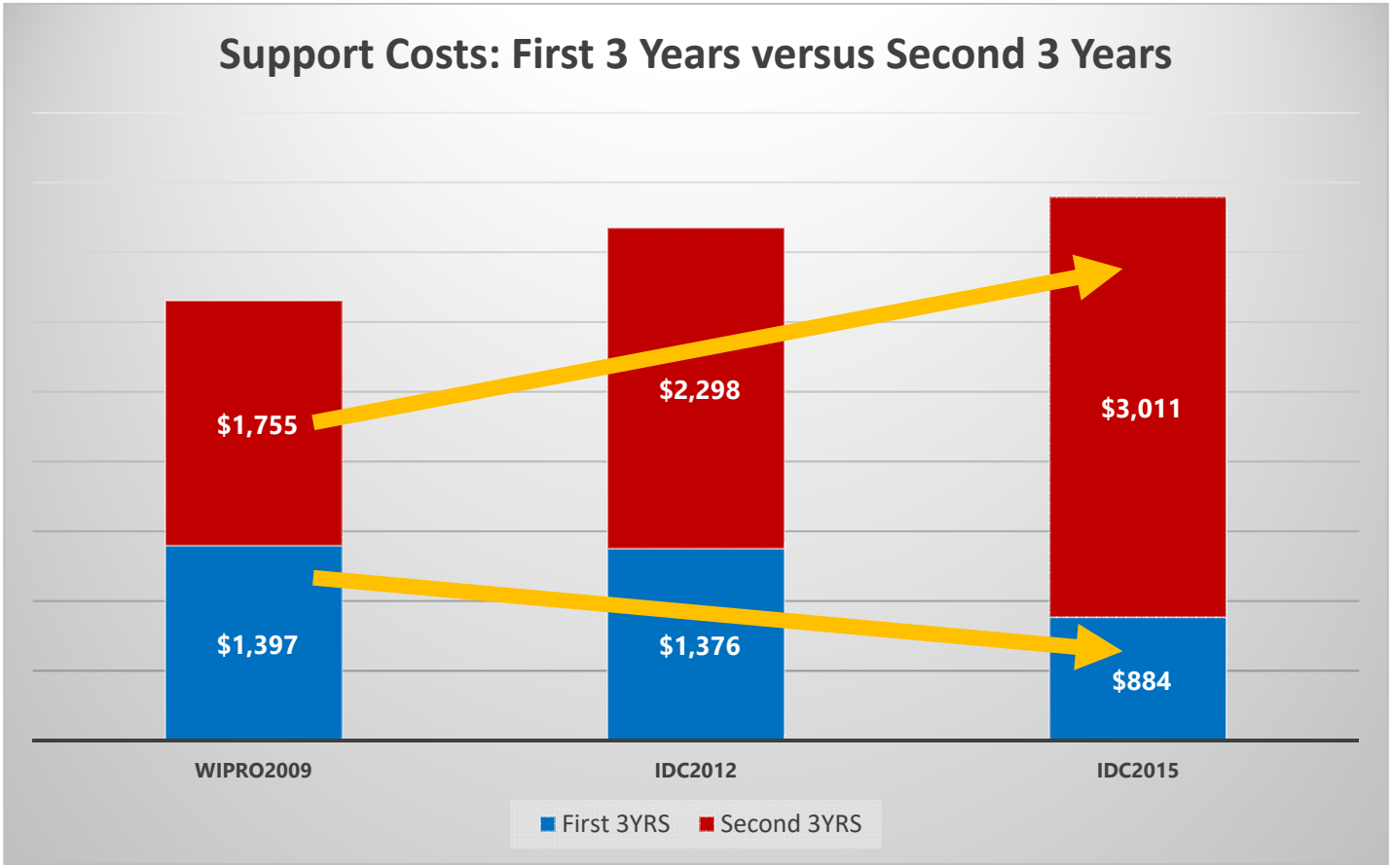
Applied to your situation		
In first year of life (YR1)	$	322
In second year of life (YR2)	$	407
In third year of life (YR3)	$	565
In first year out of warranty (YR4)	$	836
In second year out of warranty (YR5)	$	1,299
In 3rd and later years out of warranty (YR6+)	$	2,275
6 Year Total:	$	5,705
Per User / Per Year:	$	951

Note: These SUPPORT COST numbers are 46% higher than the IDC composite, but fit well with the 35% higher spend on EQUIPMENT.



Obsolescence costs are getting worse for Endpoints

TCO studies suggest that support for in-warranty endpoints has gotten **LESS** expensive in recent years, while support for out-of-warranty endpoints has gotten **MORE** so.



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  - Improvement initiatives and cost recovery issues ("Where's my check?!")

TCO Elements	Harvest Issues
Invoices for Outside Services	Instantly avoided / reduced as demand drops
Invoices for Repair Parts	Instantly avoided / reduced as Out-of-Warranty units are removed from fleet
Labor/Payroll for Inside Support / Services	Only become reclaimable once backlog is reduced to reasonable levels
Invoices for Contract / Temp Labor	Reducible once workload is consolidated into discreet FTE's
Downtime / Disruption	Can only be quantified by audit trails in the logs and by surveys of the business units

Refresh Cycles:
Trends, Factors, Financing

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- **Refresh cycles**: Trends, Factors, Financing
  - Current patterns/trends

End-User Computing Metrics: All Sectors

Metric	25th Percentile	Median	75th Percentile
Consolidated End-User Technology Spending per User	$224	$462	$1,038
PC/End-User Devices Spending per User	$173	$357	$764
PCs/End-User Devices as Percentage of IT Spending	2.4%	4.8%	7.3%
PC Refresh Rate in Years	3	4	5

End-User Computing Metrics: Midsize Organizations

Metric	25th Percentile	Median	75th Percentile
Consolidated End-User Technology Spending per User	$158	$352	$866
PC/End-User Devices Spending per User	$143	$326	$707
PCs/End-User Devices as Percentage of IT Spending	2.5%	4.7%	6.5%
PC Refresh Rate in Years	4.0	4.0	5.0

End-User Computing Metrics: Large Organizations

Metric	25th Percentile	Median	75th Percentile
Consolidated End-User Technology Spending per User	$221	$440	$1,120
PC/End-User Devices Spending per User	$185	$369	$918
PCs/End-User Devices as Percentage of IT Spending	2.1%	4.1%	6.4%
PC Refresh Rate in Years	3.5	4.0	5.0

End-User Computing Metrics: Small Organizations

Metric	25th Percentile	Median	75th Percentile
Consolidated End-User Technology Spending per User	$320	$544	$935
PC/End-User Devices Spending per User	$200	$369	$613
PCs/End-User Devices as Percentage of IT Spending	2.7%	5.4%	9.1%
PC Refresh Rate in Years	3.0	4.0	4.5

Note Well: These are REFRESH points, and not OWNERSHIP points. At the end of the 4th year, these units are DISPOSED OF, instead of being kept in service.

This is not about FINANCING term, but OPTIMAL USEFUL LIFE.

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- **Refresh cycles**: Trends, Factors, Financing
  - Current patterns/trends

INDUSTRY DATA

- Industry studies over the past 15 years have documented again and again that the best time to refresh an **endpoint asset** is before it turns 4 years old.
- There were no major TCO studies of endpoints done in the 2016-2018 timeframe.
- Consumer reports gave statistics for laptop failure rates by the end of the 2nd year of ownership for HP, Dell, and Lenovo, for 2015 and winter 2017. The average failure rate INCREASED from 14% to 21% of units, which is an increase of 47.4%. This would strongly suggest that equipment is NOT getting more reliable

DATE	GROUP	FOCUS	SOFT COSTS	RECOMMENDED REFRESH
Sep 2003	Giga	Standardization; costs and risks	No	3 years
Jan 2004	Intel	Very hard costs	No	3 years
Mid 2004	AT Kearny/Intel	Costs to provide outsourcing	Yes	3 year, forklift
Nov 2004	Forrester	Survey data	No	3 years
Late 2004	Wipro	Standardization	No	2-3 years
Dec 2005	Robert Francis Group	Very hard costs, plus NPV	No	3 years
Dec 2007	Gartner	Technology substrate	Yes	2-5 years (varies)
Mar 2009	Gartner	Better management	Yes	4-5 years (via exception)
Mar 2009	Gartner	Laptop repair costs	No	3 years (laptops)
May 2009	Intel	Notebook support costs	No	3-3.5 years (notebooks)
May 2009	Wipro	Age of units in installed base	No	3 years
Nov 2009	Square Trade	Consumer laptop repair rates	No	3 years; not stated
Mar 2010	Experture	Hard costs only; includes leasing	No	36-38 months
Jan 2011	Microsoft	PC vs. VDI	Yes	No more than 4 years
Early 2011	Intel/Grant Thornton	Productivity	Yes	2 years (laptops)
May 2012	IDC	XP/ WIN 7 support	Yes	3-3.2 years
Mar 2013	Gartner	Annual averages	Yes	No more than 4 years
Aug 2013	Gartner	Notebook TCO (adjustments)	Yes	3 years
Jan 2014	Intel	Productivity	Yes	Less than 3 years
Aug 2014	J. Gold Associates	User productivity vs. tech costs	Yes	2 years
Jan 2015	IDC	IT support costs	No	3 years
Mar 2015	Principled Technologies	Productivity	Yes	Less than 5 years
Sept 2015	Gartner	Use case-based lifespans	Yes	2-3+

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- **Refresh cycles**: Trends, Factors, Financing
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Industry Data

- Industry studies have shown that the best time to refresh a traditional **server** is before it is at the 3.2 year mark (IDC).
- There were no major TCO studies of refresh for servers done in the 2016-2018 timeframe. The main TCO articles were competitive ones: e.g. VMware versus Azure.

Where the Costs Are

The main cost-problem with aging servers is the excessive support costs required to keep them running at the reliability and performance levels required in enterprise settings. "On average, extending server hardware replacements from three years to five years will double the cost of IT staff labor." [IDC]

DATE	GROUP	FOCUS	REFRESH (Years)
2003 Oct	IDC	x86 vs. mainframe	3
2005 Apr	Alinean	Windows vs. Unix	3
2007 Apr	IDC	Business justification	3
2009	Gartner	Practitioner survey	3-4
2009 Apr	Intel	Capital constraints	4
2010	Tech Target	SMB	4
2010	Ravello Analytics	Virtualization, capacity	1
2010 Mar	Principled Technologies	Dell vs. Sun	3
2010 Jun	Computerworld	Practitioner reports	2-3
2010 Jul	IDC	Installed base	1-4
2010 Aug	Principled Technologies	Dell vs. HP	3
2010 Sep	IDC	Length of usage + leasing	3
2012 Aug	IDC	IT staff labor (TCO)	3.2
2012 Oct	IDC	IBM Power systems	2
2013 Mar	Alinean	Linux z/x86	3
2013 May	Intel	Software savings	4
2014 Feb	IDC	Reliability	3
2015 Jan	IDC	Length of usage + leasing	3

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Industry Data

- Most of the data we have on speed of network refresh comes from practitioners and network probes.
- **Network equipment** 'churn' is largely due to the massive growth in bandwidth needs. In the Viavi survey, According to respondents, more than half predicted that their bandwidth usage could double by the end of 2018.
- The most frequent reasons given for refreshing this infrastructure equipment before its operating death were the need for application high availability, functionality, high-levels of vendor support, and to keep IT operational costs low.

Where the Costs Are

The main costs are in equipment replacement (as gear is outgrown faster than it can be upgraded) and the skilled labor required for re-design and migration of the network infrastructure.

Since there are very few network devices which can literally double their processing power and throughput (even with upgrades), many devices will need refreshing in the 2018-2019 time frame.

DATE	GROUP	FOCUS	REFRESH (Years)
2005	Network World	Practitioner survey	3 - 5
2012 Jan	Forrester	Cisco access switches	4 - 5
2012 Aug	Gartner	Depreciation versus Physical life	4.3 – 5.0
2013	Forrester	Practitioner survey	3 - 5
2015 Oct	Enterprise Systems Group (ESG)	Rapid growth in need for capacity	4.5
2016 May	Viavi Solutions	Practitioner survey; Growth in bandwidth needs	50% faster
2016 June	Gartner	Reliability requirements	4.2 – 5.3
2016 Nov	Dimension Data	Electronic polling of installed devices	3 - 4
2017	Viavi Solutions	Practitioner survey	50 - 100% faster

Executive Briefing 2019: Selective IT Best Practices

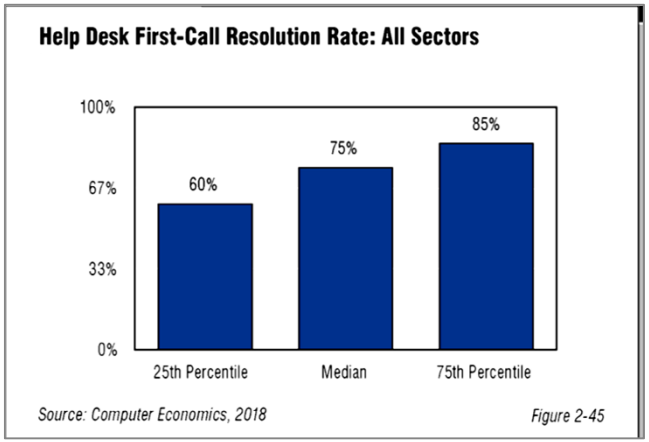
- **Refresh cycles**: Trends, Factors, Financing
  - Current patterns/trends

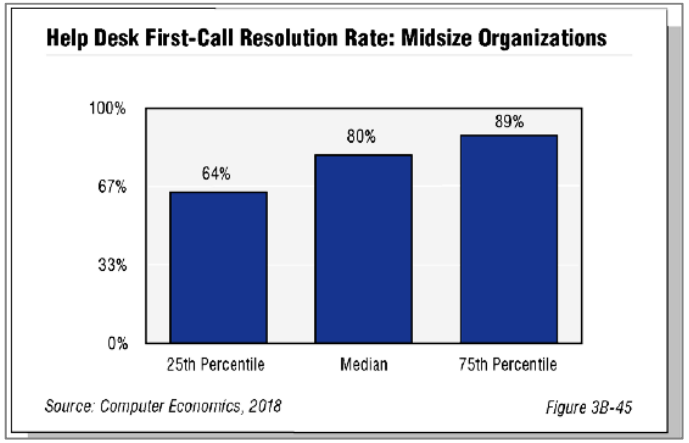
Asset Class	Current Lifespan	Rationale for Lifespan
PCs and laptops	2-3 years	Operation costs / TCO
Network equipment	3-5 years	New features Vendor support
Intel-based servers	3-4 years	Availability needs Consolidation opportunities Skilled labor costs Price-performance gains
Enterprise storage	3-4 years	Subsequent maintenance fees Use-case fragmentation

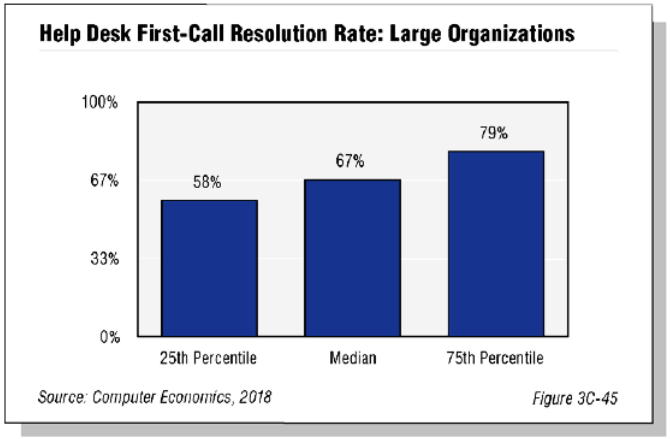
Obsolescence Costs Force Shorter Refreshes

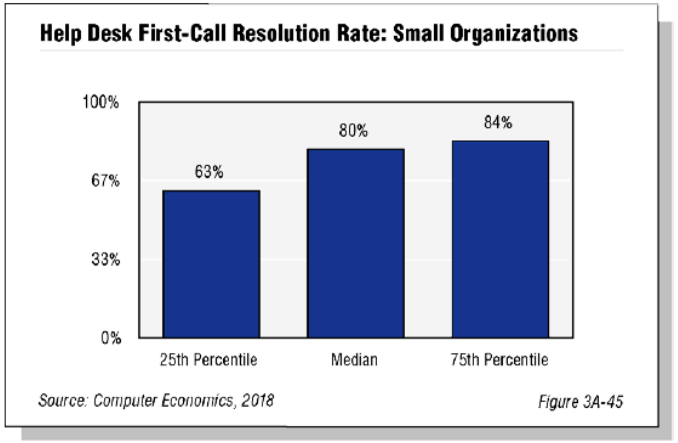
As a result of keeping endpoints more current, organizations enjoy First Call Resolution Rates in the 67% - 80% range (at the median)

computer economics
IT SPENDING & STAFFING BENCHMARKS









A Low First Call Resolution Rate is Expensive

EXAMPLE

As a result of keeping endpoints more current, other firms enjoy First Call Resolution Rates in the 67% - 80% range (median)

computer economics
IT SPENDING & STAFFING BENCHMARKS

- Your current FCR rate is **35%** - which means 65% of all incoming calls get transferred into support resources costing OVER FIVE TIMES AS MUCH.
- This is typically due to older equipment requiring much more diagnostic, remediation, and recovery time/labor/parts.
- Getting the FCR rate up to 70%, would reduce the number of transferred calls by almost 90,000 calls per year, or by a workload with equivalent internal costs of around $6.3M.
- This $6.3M is another measure of the cost of obsolescence.

Yearly Transferred Calls:	179,720
Transferrs eliminated by FCR rate at 70%:	89,860
Per call cost (transferred calls):	$ 70.43
Savings/Cost Avoidance:	**$ 6,328,442**

Executive Briefing 2019: Selective IT Best Practices

- **Refresh cycles**: Trends, Factors, Financing
  - Current patterns/trends
  - Financial factors: CAPEX (Cash), CAPEX (leases), OPEX (leases), OPEX (rent), FASB, TCO

This topic should not matter much to you – but you should understand it to protect yourself!

Funding Technology Investments should be aligned TOTALLY with the operational requirements and constraints.

IT should NOT specify anything about the type or vehicle of financing (e.g. nothing about cash, leases, loans).

> **"Finance, we need 500 of these exact units for 3 years. We need the flexibility to keep them for ONLY one more year, and the flexibility to turn them in early with the least downside. We do NOT want to be stuck with these units after the 3 (or 4) years, and we don't want to have to go fight the capital budgeting committee for this each year of the 3-4 years. YOU figure out how to pay for it—I just want this equipment with these specs and this flexibility."**

Finance can mix and match vehicles, and Huntington can create adaptive structures to give both IT and Finance what they want.

IT just needs to verify with the OEM/VAR and with the financing group (Huntington) that Finance indeed DID make the requested arrangement.

Executive Briefing 2019: Selective IT Best Practices

OPTIONAL

- **Optional slides are available, if you want to understand more about where the main f**inancial tools fit: CAPEX (Cash), CAPEX (leases), OPEX (leases), OPEX (rent)

Using CAPEX (Cash) for Technology Investments:

- CAPEX = CASH, borrowed from money-lenders as Loans (Long Term Debt) or 'borrowed' from Shareholders (profits earned but kept back from Retained Earnings).
- CAPEX has to be 'vigorously' fought for – not suitable for frequent equipment refreshes
- CAPEX is 'unreliable' – Even when promised, it can (and often IS) taken away or reduced at the last minute.
- CAPEX is politically VERY visible – extra approvals, justifications, reviews, etc.
- CAPEX is a 'perishable' – once you get it, you have to spend it all before the time is up.
- CAPEX is sometimes simply un-avoidable – external forces/market perceptions (e.g. BCBS)
- CAPEX is not very forgiving – budget overruns cannot be fixed easily and 'poor planners' are not trusted with money as easily as the last time.
- CAPEX is almost always pays full invoice price, up front.
- CAPEX reduces cash balances which can affect ratios and ratings.
- CAPEX diverts CASH from more strategic and/or higher ROI investments.
- CAPEX typically does not include money for lifecycle costs (e.g. out-of-warranty repairs, ITAD)

Using OPEX (leases) for Technology Investments:

- OPEX (leases) look like rentals, but they have enough obligations and legal privileges in them to show up on the Balance sheet as an Asset and a Liability
- OPEX (leases) do NOT show up in Long-Term Debt (like Finance Leases and Loans) and do not typically affect ratings.
- OPEX (leases) are still called "Operating Leases" to show that they are NOT for financing a purchase, but to allow us to use somebody else's equipment in the business operations.
- OPEX (leases) do NOT generate Interest Expense and Amortization expense (like a home mortgage), but generate RENTAL EXPENSE in the Profit & Loss statement.
- OPEX (leases) conserve cash by deferring payments (while still getting the gear in place)
- OPEX (leases) can be very flexible, with add-ons, extensions, item substitutions, and staggered payments common features.
- OPEX (leases) MUST cost less than the invoice price of the equipment (FASB standard).
- OPEX (leases) can free up CASH for more strategic and/or higher ROI investments.
- OPEX (leases) can include money for lifecycle costs (e.g. out-of-warranty repairs, ITAD), service contracts, and other 'soft costs'.
- OPEX (leases) are much easier to get than CAPEX, and can be funded on-the-fly from elsewhere.
- OPEX (leases) are the main tool clients use to finance short-term assets – due to refresh.

Using CAPEX (leases) for Technology Investments:

- CAPEX (leases) look like loans except instead of getting money, you get equipment.
- CAPEX (leases) show up in Long-Term Debt (like loans) and affects ratings.
- CAPEX (leases) were called "Capital Leases" but are now called "Finance Leases" to indicate that it is a form of financing (not rental). I.e. Buying on Time.
- CAPEX (leases) generate Interest Expense and Amortization expense (like a home mortgage).
- CAPEX (leases) conserve cash by deferring payments (while still getting the gear in place)
- CAPEX (leases) can be fairly flexible, with add-ons, extensions, item substitutions, and staggered payments common features.
- CAPEX (leases) can cost slightly less or slightly more than the invoice price of the equipment..
- CAPEX (leases) can free up (temporarily) CASH for more strategic and/or higher ROI investments.
- CAPEX (leases) can include money for lifecycle costs (e.g. out-of-warranty repairs, ITAD), service contracts, and other 'soft costs'.

Using OPEX (rent) for Technology Investments:

- OPEX (rent) look like rentals, but cannot be for longer than 1 year – or you have to call and record it as a lease.
- OPEX (rent) can work for very short transitional windows (e.g. 6 month project set up/take down).
- OPEX (rent) not often used for IT gear, since the migration tasks for IT gear is often significant.
- OPEX (rent) was greatly curtailed by the 2016 FASB standards update.

Executive Briefing 2019: Selective IT Best Practices

- **Refresh cycles**: Trends, Factors, Financing
  - Current patterns/trends
  - Financial factors: CAPEX (Cash), CAPEX (leases), OPEX (leases) , OPEX (rent) , **FASB**, TCO

New FASB leasing rules for Technology Investments (ASC 842):

- All equipment contracts longer than 12 months require some entries on the Balance Sheet.
- All leases are NOT equal – some are for purchase, some for rental.
- Equipment leases that were previously 'embedded' (i.e. 'hidden'!) in service contracts now have to be declared as leases – no hiding a lease in an 'on premise consumption model'!

- FASB DID NOT take away the rate-setting utility of leases!

> "Regulated utilities will be pleased that the FASB carried forward the guidance that allows the **timing of lease expense recognition to be consistent with the effects of rate-making**. Specifically, ASC 980-842-45-1 through 45-4 state…" For **rate-making purposes**, a lease may be treated as an operating lease even though the lease would be classified as a finance lease under those criteria. In effect, the amount of the **lease payment is included in allowable costs** as **rental** expense in the period it covers." and "Thus, amortization of the right-of-use assets shall be modified so that the total of interest on the lease liability and amortization of the right-of-use asset shall equal the lease expense that was allowed for rate-making purposes." [Deloitte, "*Power and Utilities, Accounting, Financial Reporting, and Tax Research Guide*", July 2018.]

Executive Briefing 2019: Selective IT Best Practices

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TCO issues:

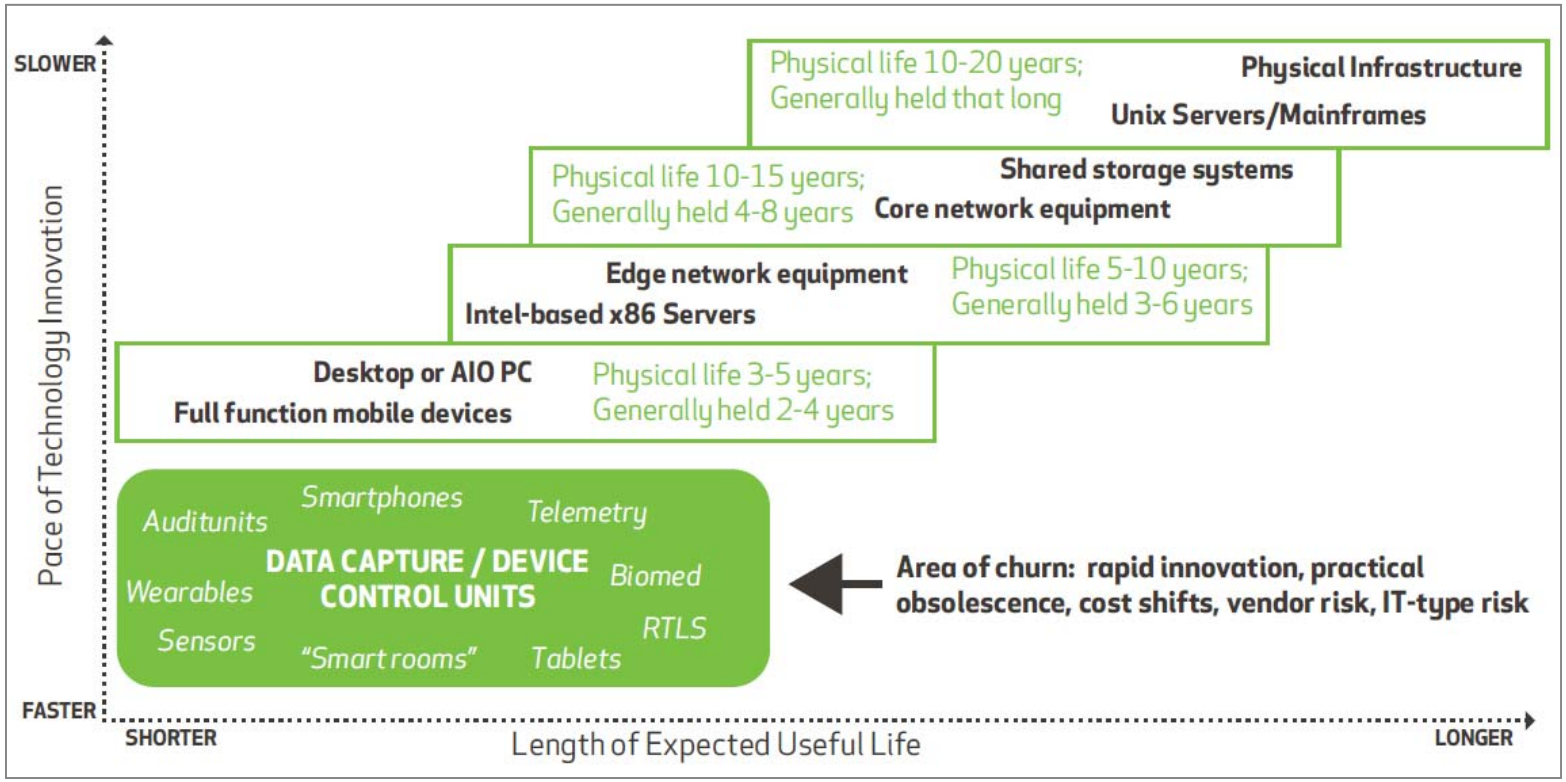
- Too easy to be 'penny-wise and pound-foolish' – the less expensive the asset (all things being equal), the greater the lifecycle costs (e.g., repairs, management effort, performance, resiliency, compatibility with future software releases).

- Just because something 'is paid for', doesn't mean it should be kept in service. Time is an enemy here. It may look like a 'good deal' or a 'bargain', but it might easily be counter-productive to keep trying to make it do the work of more current systems.

Economics is not the only factor – UTILITY counts too!

Executive Briefing 2019: Selective IT Best Practices

- **Refresh cycles**: Trends, Factors, Financing
  - Current patterns/trends
  - Financial factors: CAPEX, OPEX, FASB, TCO, Cash Flow
  - Non-financial factors: **Rate of change, Risk of change**, PR, Usage, Regulation, InfoSec



Executive Briefing 2019: Selective IT Best Practices

- **Refresh cycles**: Trends, Factors, Financing
  - Current patterns/trends
  - Financial factors: CAPEX, OPEX, FASB, TCO, Cash Flow
  - Non-financial factors: Rate of change, Risk of change, **PR, Usage, Regulation, InfoSec**

- **PR** – How do your customers, suppliers, owners, and employees infer from the technology?
- **Usage** – Refresh (and financing) can vary be usage level – Billing clerks versus Marketing and Investor Relations. But always remember the bathtub curve– plan your exit strategy!
- **Regulation** – are there limits on expensing write-downs (impairments) or on depreciation speed? (E.g. HIPAA on useful life).
- **InfoSec** – keep your attack surface changing!

"Attacks that come through the browser are age-independent (they escalate SOME as equipment gets older, but not enough to warrant replacement), but **the new sub-OS attacks (e.g., attacking the BIOS, device drivers, firmware, and UEFI)** are on the rise. These are a small slice of the threat-scape today (but researchers know that they have not found all of these cases yet), but are growing rapidly according to researchers. These attacks **are very age-dependent, because BIOS versions are frozen in older equipment and are well-documented**… i.e. it is easy to find them, and with a simple download slipping through the browser, the endpoint is compromised. These might not even be fixable, since they operate below the operating system.

This problem will grow and become more powerful and the **only way to outrun it** will be to constantly refresh gear, keeping the endpoint a moving target.

With most industries fraught with data security risks already, this threat vector risk is one that **increases with the simple passage of time** and, as such, assets over the standard 3-year lifespan are a considerable liability."

Other Best practices

Selective IT Best Practices: Other Best practices

- **Flexibility & Nimbleness – Technology footprint, asset costs, operational expenses.**

  - **Technology footprint** – Work with finance to build an escape plan – with loss containment on the old gear, and unexpected new acquisition costs for the new gear.

  - **Asset costs** – Track price/performance (or price/feature) gains – and move to more-for-the-same units or the-same-for-less-money units. Keep the competitive pressures on the OEMs (and make sure they do NOT control the footprint via their own leasing arms!).

  - **Operational expenses** – build flexibility into the logistics part of refresh --whether leased or not--– see sample scenario models on next pages.

Selective IT Best Practices: Other Best practices

- **Flexibility & Nimbleness – Technology footprint, operational expenses, asset costs**

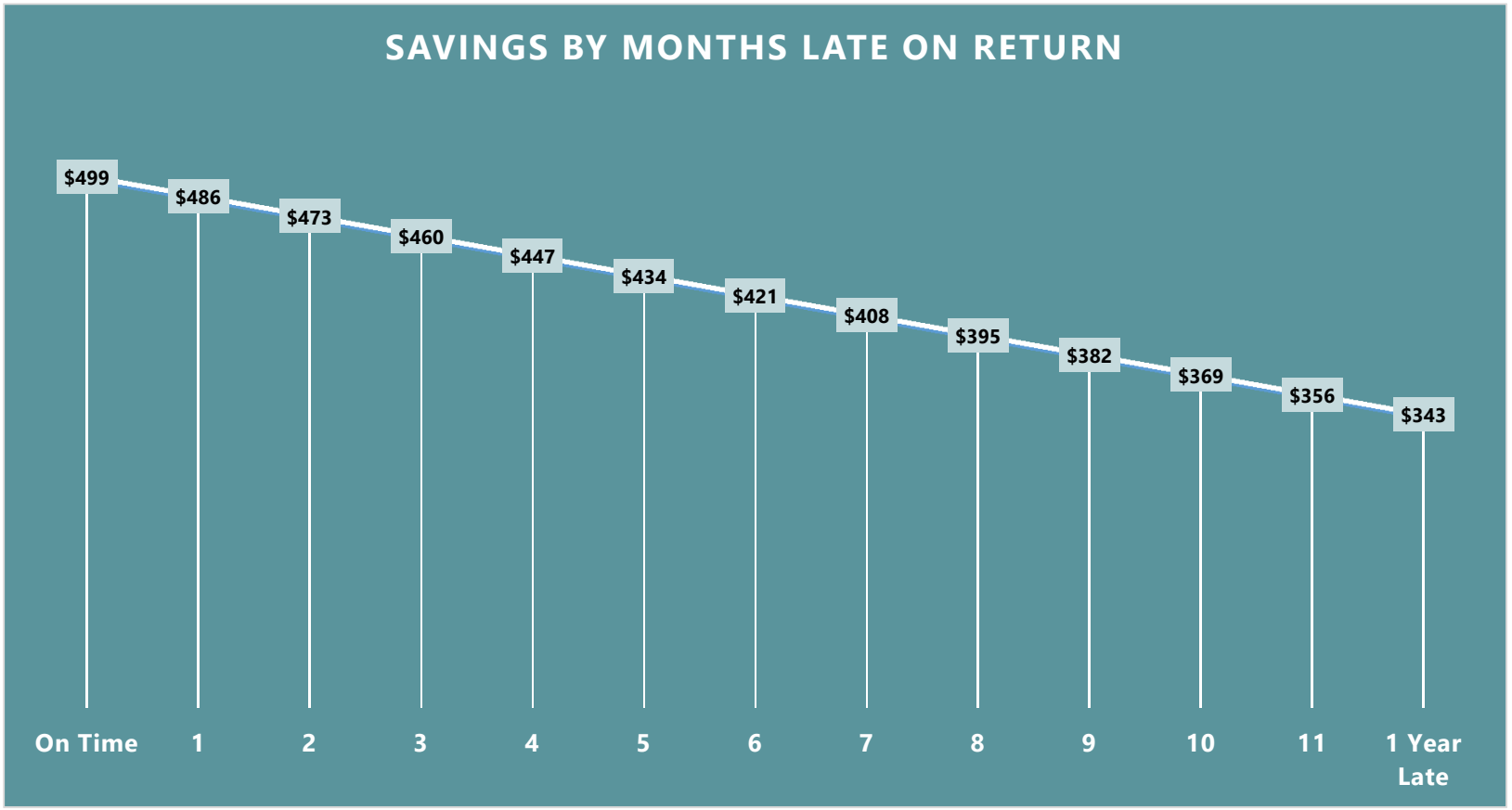
Current 5 years versus Refresh at 3 years (Target) and 4 years (Fallback)

	Purchase		Target 3 YR		FallBack 4 YR	
Start of Year 1:	$1,200	$0	Initial Cash Spend	$0	Initial Cash Spend	
Start of Year 1:	$200	$200	Migration Expense (new unit)	$200	Migration Expense (new unit)	
Year 1 Helpdesk/Support costs	$322	$322	Helpdesk/Support costs	$322	Internal Helpdesk labor	
		$381	Payments to HTF	$381	Payments to HTF	
Year 2 Helpdesk/Support costs	$407	$407	Helpdesk/Support costs	$407	Internal Helpdesk labor	
		$381	Payments to HTF	$381	Payments to HTF	
Year 3 Helpdesk/Support costs	$565	$565	Helpdesk/Support costs	$565	Internal Helpdesk labor	
		$381	Payments to HTF	$381	Payments to HTF	
Start of Year 4		$250	Migration Expense (new unit)			
Year 4 Helpdesk/Support costs	$836	$322	Year 1 Support costs	$836	Year 4 Support costs	
		$381	Payments to HTF	$109	Payments to HTF (EoT)	
Start of Year 5				$250	Migration Expense (new unit)	
Year 5 Helpdesk/Support costs	$1,299	$407	Year 2 Support costs	$322	Year 1 Support costs	
Data wipe (labor or fee)	$50	$381	Payments to HTF	$381	Payments to HTF	
	$4,880	$4,381		$4,537		

Savings	3 YR target	$499	4 YR Fallback	$343

Selective IT Best Practices: Other Best practices

- **Flexibility & Nimbleness – Technology footprint, operational expenses, asset costs**



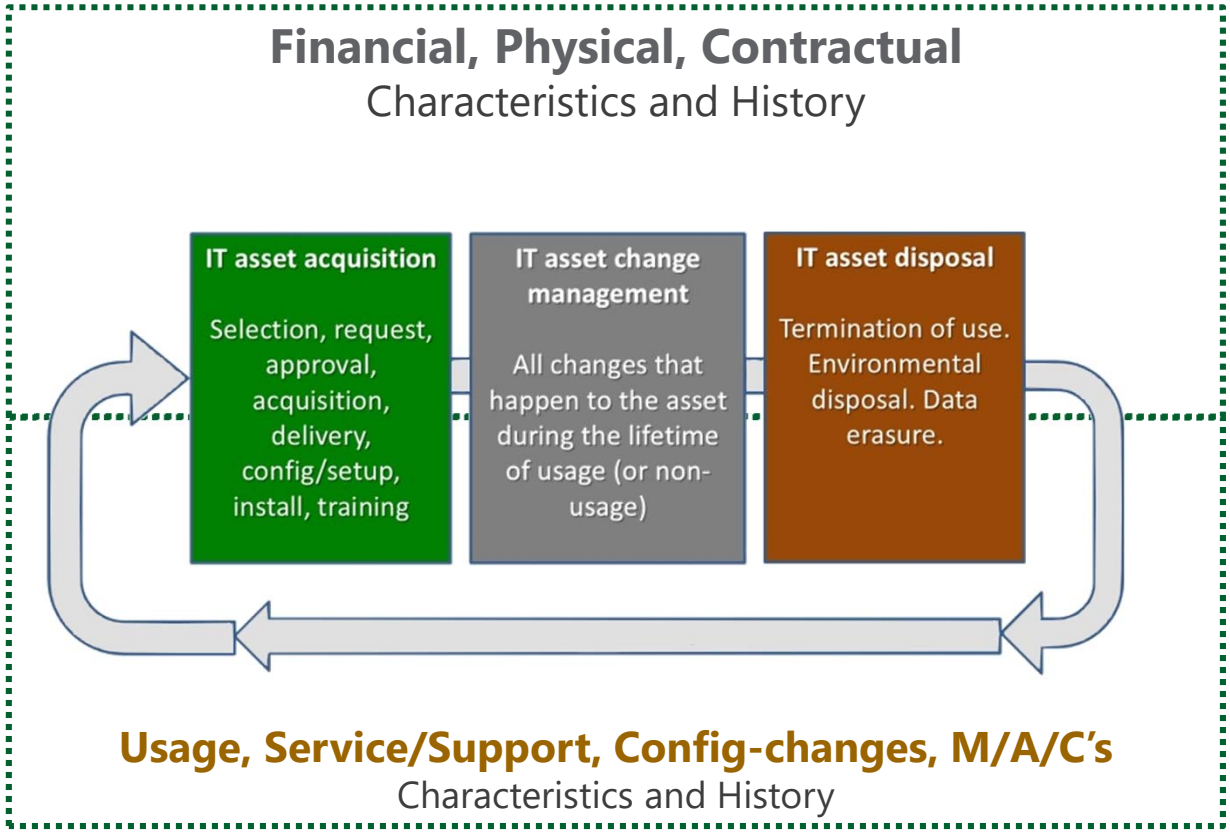
Selective IT Best Practices: Best practices in context

- **Asset Management data – Intake, ITAM, ITSM, SAM**

1. Quick snapshot – the What and Why (SAM)
2. Majority Practice and Challenges
3. Best Practices and Issues

Every Asset has two Profiles: Business & Technical

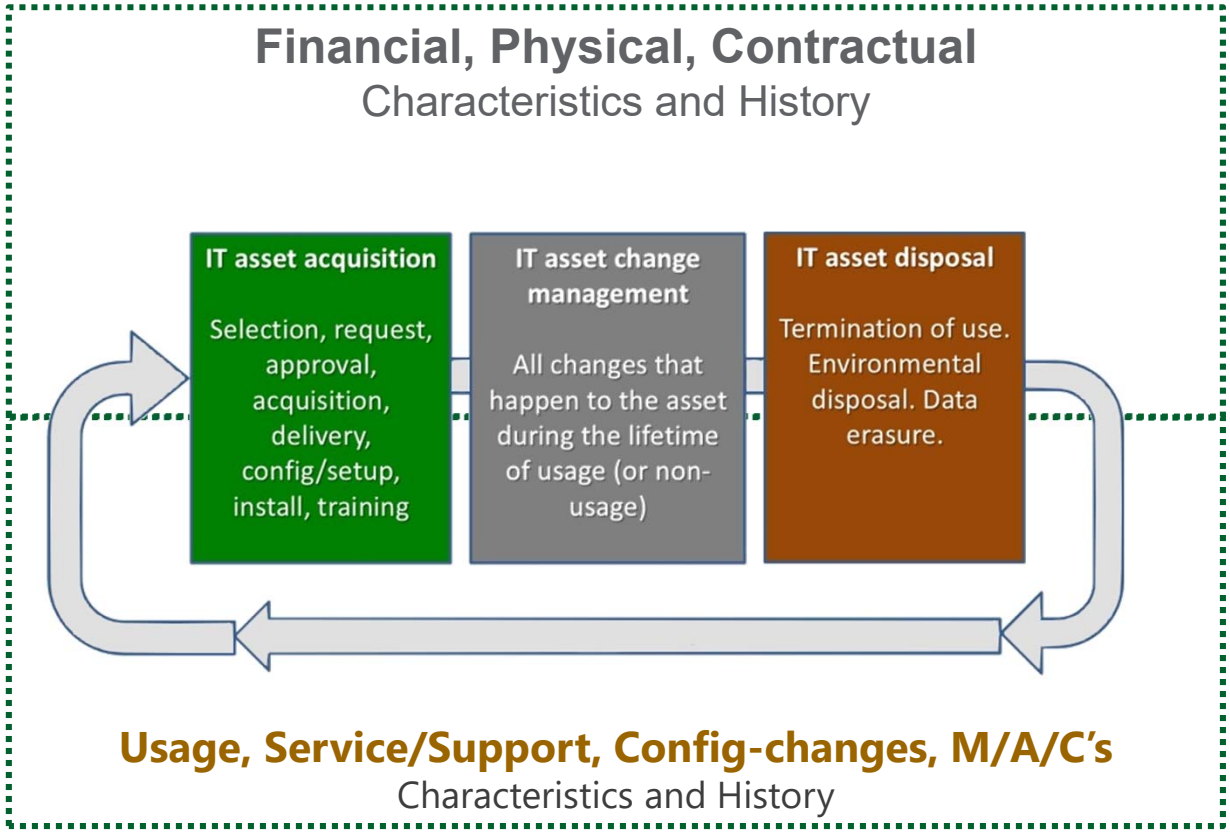
- **Business Data**: Facilitates Business Decisions



- Cost
- Book value
- S/W licenses
- Contracts
- Compliance
- Refresh timing
- Change in value
- Serial #
- Owner
- Chargeback
- Physical Location

Every Asset has two Profiles: Business & Technical

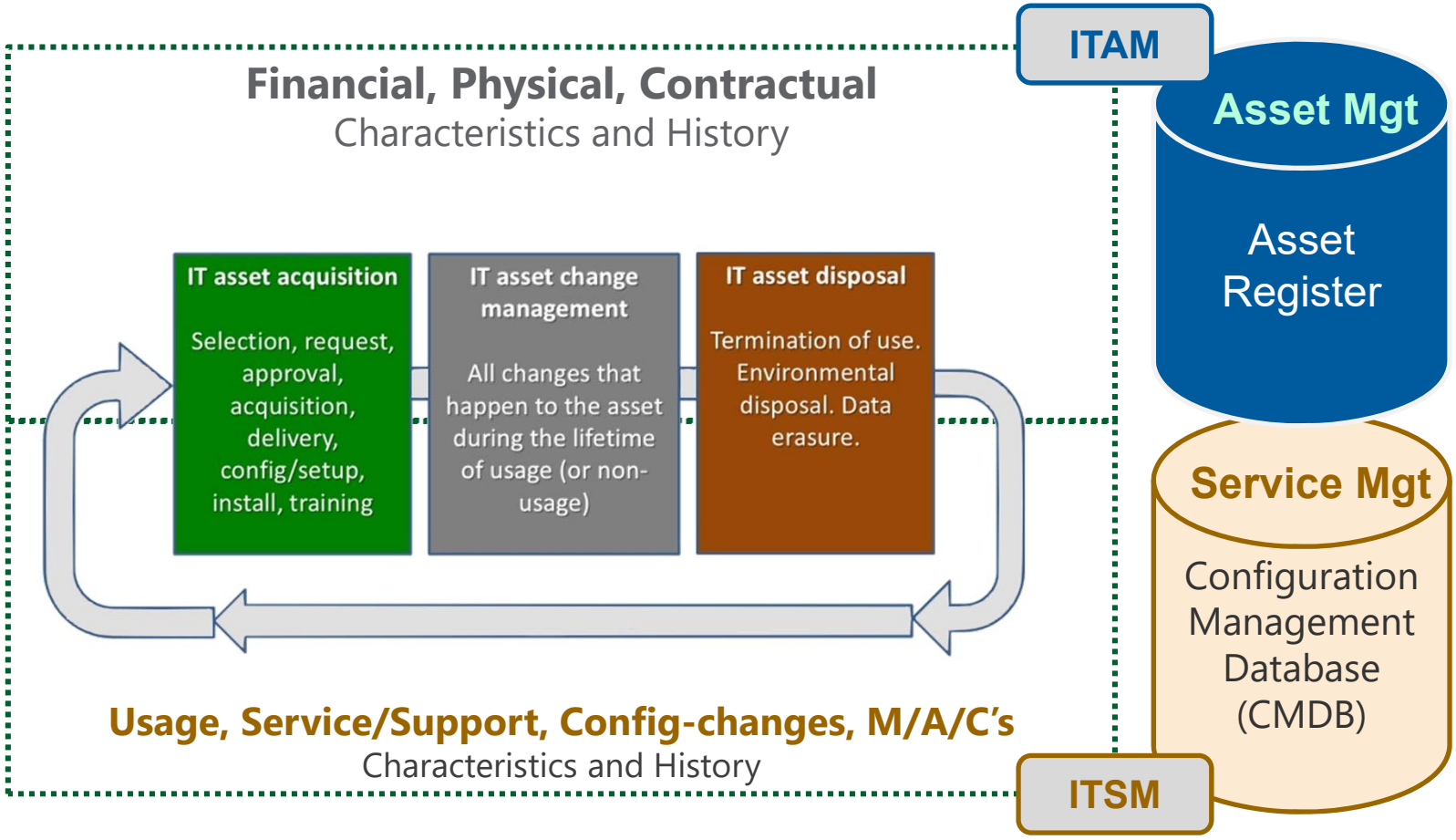
- **Technical Data**: Facilitates Service/End-of-Service Decisions



- Configuration
- Upgrade history
- Service History
- Utilization
- Software
- Dependencies
- Network location
- Security profiles
- Authentication

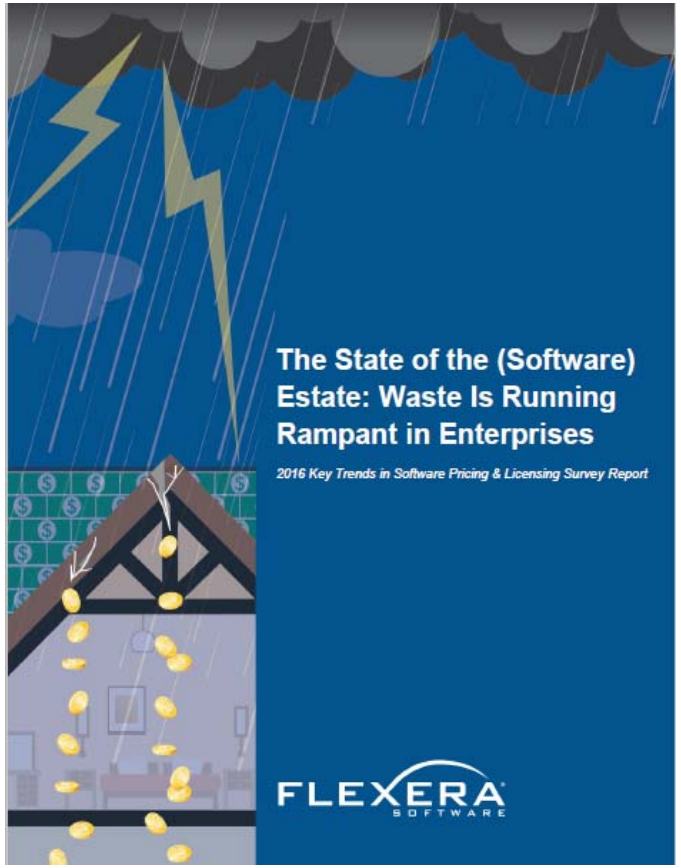
Every Asset has two Profiles: Business & Technical

- **Profile Data exists in two logically separate repositories, supports two separate functions**



Selective IT Best Practices: Other Best practices

- **Special Case: SAM (Software Asset Management)**

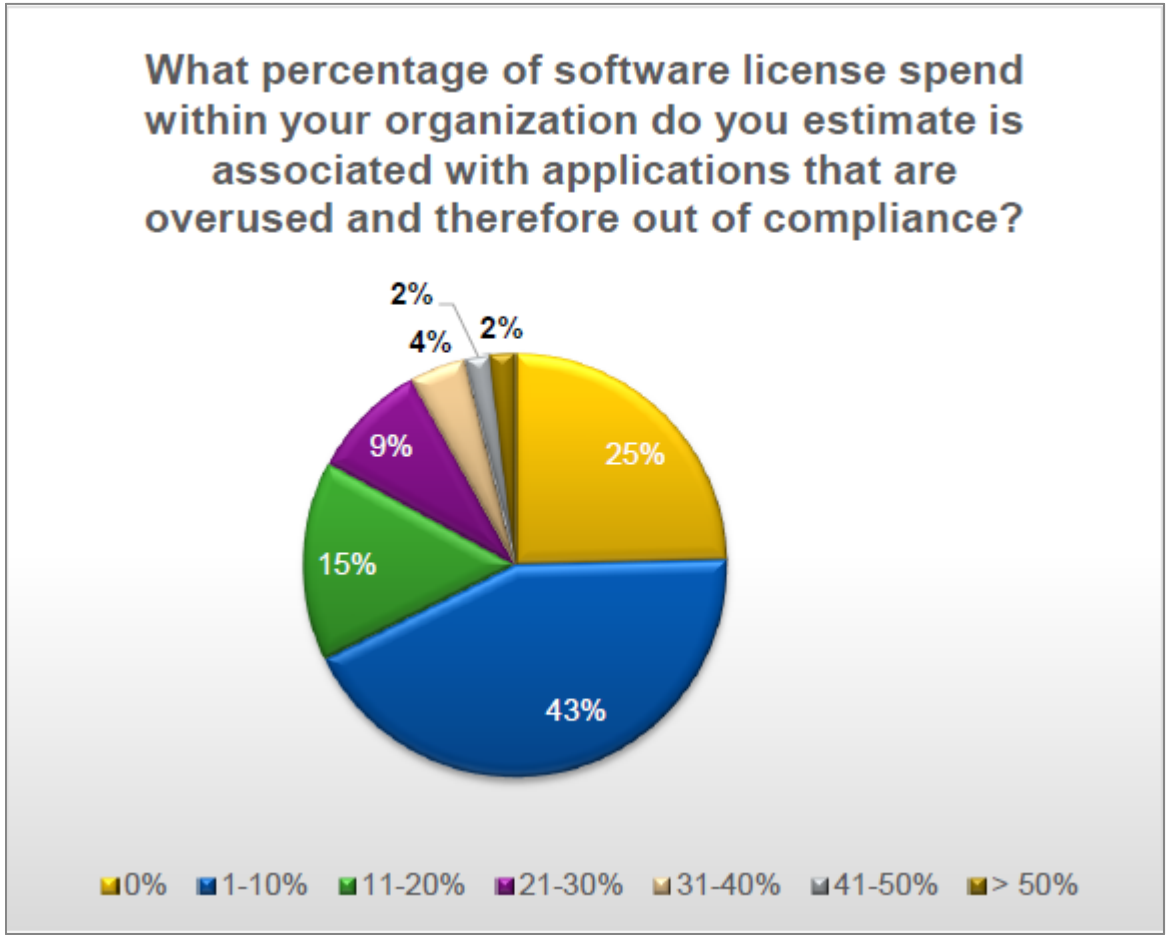


"What percentage of software license spend within your organization do you estimate is associated with applications that are underused (shelfware) and therefore over-licensed? (i.e. applications that are not fully deployed)."

Over 10% of our spend is wasted – 61%
Over 20% of our spend is wasted – 29%
Over 30% of our spend is wasted – 11%

Selective IT Best Practices: Other Best practices

- **Special Case: SAM (Software Asset Management)**

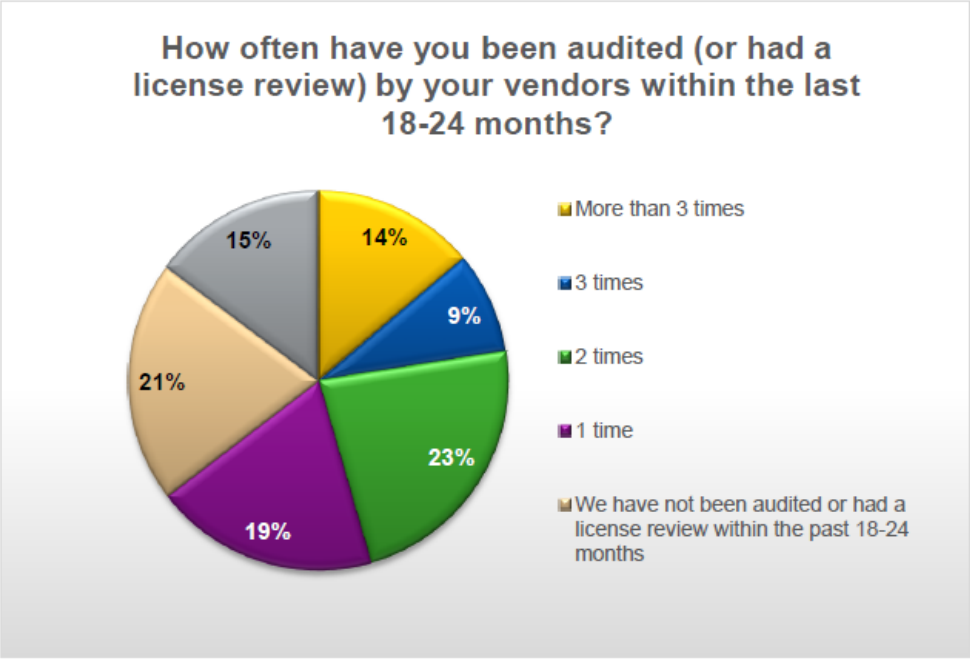


Selective IT Best Practices: Other Best practices

- **Special Case: SAM (Software Asset Management)**

The Frequency of Software License Compliance Audits Is Increasing

Most organizations face significant risk as a result of software license noncompliance. This is because software vendors are regularly auditing their customers or performing license reviews – during which they can uncover incidents of software license noncompliance. Indeed, 64 percent of enterprises (up from 63 percent last year) faced a software audit within the past year. 46 percent (up from 38 percent last year) were audited more than once. And 23 percent (up from 19 percent last year) were audited three times or more.

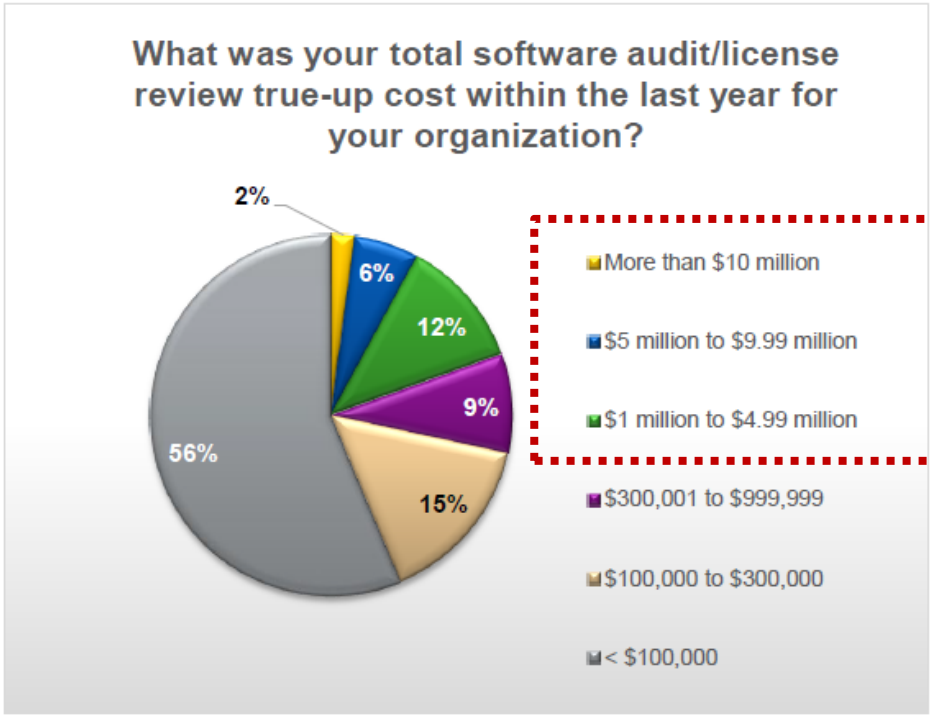


Selective IT Best Practices: Other Best practices

- **Special Case: SAM (Software Asset Management)**

Six- and Seven- Figure True-Up Costs Are Also the Rise

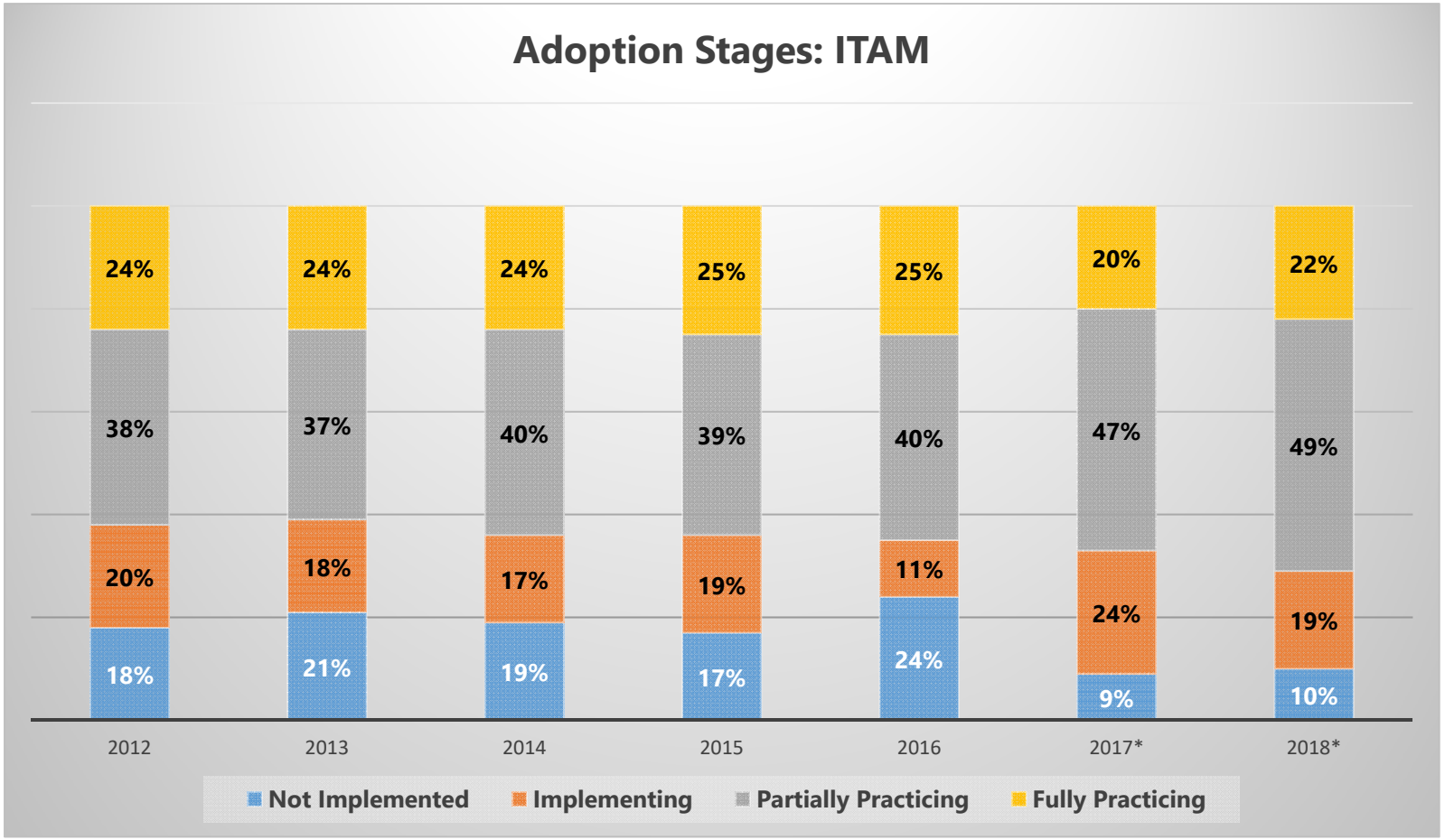
Not only are the frequency of software license audits on the rise – but the amount enterprises are paying to their vendors to "true-up" – compensate them for incidents of software license non-compliance – is also on the rise. For example 44 percent of respondents this year (compared to only 25 percent last year) report that their true-up cost paid to vendors was $100,000 or more. 20 percent of enterprises (up from only nine percent last year) report that their true-up costs were $1,000,000 or more.



20%

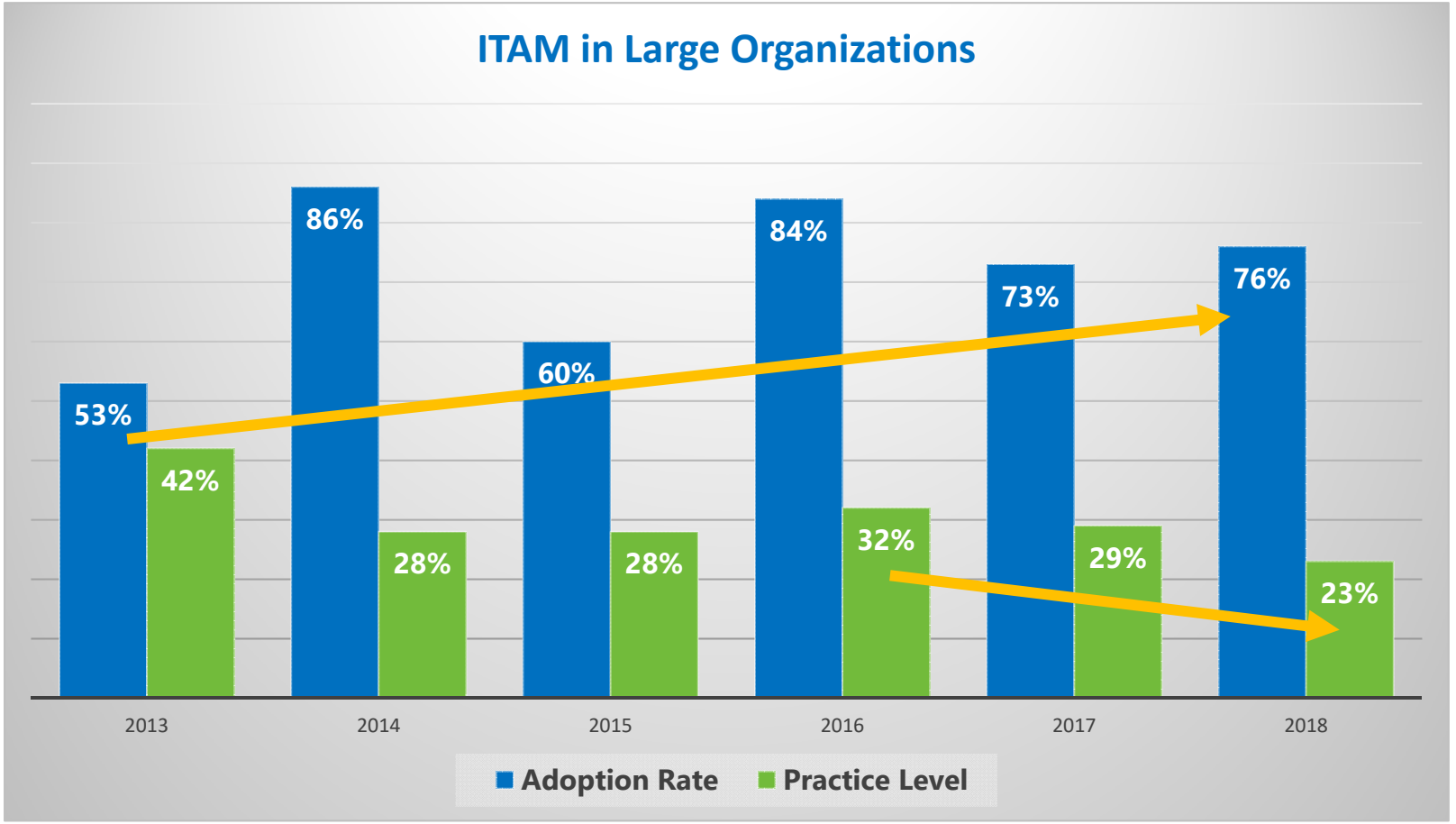
Selective IT Best Practices: Other Best practices

- Asset Management data – Intake, ITAM, ITSM, SAM



Selective IT Best Practices: Other Best practices

- **Asset Management data – Intake, ITAM, ITSM, SAM**



ITAM Challenges: Data, then Tools, then Enforcement

- **Asset Management data – Intake, ITAM, ITSM, SAM**

- Ever getting started!!!!
- And then **re-starting** a couple of times…
- Maintaining executive support until you get some visible wins
- Finding the data, scattered all over the organization, in different databases
- Data normalization, reconciliation and integrity
- Keeping up with new data while trying to analyze the above data!
- Keeping the asset data quality high – from outside partners

Selective IT Best Practices: Other Best practices

- **Asset Management data – Intake, ITAM, ITSM, SAM**
- Best Practices and Issues:

1. Centralized intake processes: either procurement or multi-vendor financing
2. Financial asset database de-coupled from internal systems of record
3. Internal audit (with incentives— *a la* retail store inventory)
4. Discovery tools – especially for SAM
5. Highest level of security for DB – example of Mellon Bank versus hackers
6. Use with vendors for future planning ("what will be the successor to X/?")

Selective IT Best Practices: Other Best practices

- Process variants, Exception tracking and analysis

  - You must track every request that comes in and that does NOT get fulfilled! ("what did you come in to the store today to buy?")

  - Centralization – with 'incentives' – is the only way to keep the intake data CLEAN and CURRENT (Centralization can take a 'franchise form' though)

Selective IT Best Practices: Other Best practices

- Leveraging the vendor eco-system

1. Unbundle!
2. Volume data from ITAM
3. Street info from Huntington
4. Get future roadmaps based on ITAM data!
5. Lock pricing in in times of turbulence (e.g. tariffs?)

What We Covered TODAY:

Executive Briefing 2019: Selective IT Best Practices

- **Industry-specific IT Benchmarks and Trends**
  - IT spend as % of Revenue
  - Labor spend: Personnel and Outsourcing
  - Equipment spend: Total and Per User

- **Service/Support and TCO metrics:**
  - Support calls: cost by type, cost by asset age
  - Total Cost of Ownership (TCO) models: elements and adjustment by industry sector
  - Improvement initiatives and cost recovery issues ("Where's my check?!")

- **Refresh cycles**: Trends, Factors, Financing
  - Current patterns/trends
  - Financial factors: CAPEX, OPEX, FASB, TCO, Cash Flow
  - Non-financial factors: Rate of change, Risk of change, PR, Usage, Regulation, InfoSec

- **Other Best practices:**
  - Flexibility and Nimbleness – Technology footprint, operational expenses, asset costs
  - Asset Management data – Intake, ITAM, ITSM
  - Process variants, Exception tracking and analysis
  - Leveraging the vendor eco-system