Licensing Executives Society
(USA and Canada), Inc.

LES High Tech Sector Royalty Rate & Deal Terms Survey 2017

March 29, 2018

Today's Presentation Objectives

- Introduce & Recognize the 2017 HTS Survey Team of Volunteers
  - Explain the Survey Methodology
  - Overview of the Key Findings
- Review of the Non-Financial Deal Terms
- Review of the Royalty and Financial Terms

Experienced Team of Volunteers

Core Team

- Lewis Stark, CPA, CFE, Partner, Royalty Audit & Contract Compliance, Prager Metis CPAs, LLC
- Robert F. Held, CLP, 2018-19 LES President-elect & Chair-elect Nominee; President, Held Intellectual Property, LLC
- Jack Lu, PhD, CFA, Partner and Chief Economist, IP Market Advisory Partners (IPMAP)
- Dr. Joseph J. Daniele, CLP, Chief Operating Officer, Acorn Technologies, Inc.

Data Analyst

Manta Zhang, Applied Economics Consulting Group, Inc.

Advisors

- Vault Consulting
  - Ian Santo-Domingo

Goal & Methodology

Goal

"The High-Tech Sector Royalty Rate Survey provides recent deal data crowd-sourced primarily from the LES membership that deal makers can use for benchmarking and to inform their license negotiation.."

- Stefan Tamme (USA & Canada) High Technology Sector Chair

Methodology

- Focus on deals completed for the period 2014 through 2017
- Core LES Survey Team assembled from the HTS membership to provide industry context
- Survey questions developed by the Core LES Survey Team
- Conducted by independent research firm, Vault Consulting to ensure confidentiality
  - ONLY Vault was privy to the respondents' submittals received July thru September 2017
  - No company names can be associated with the data

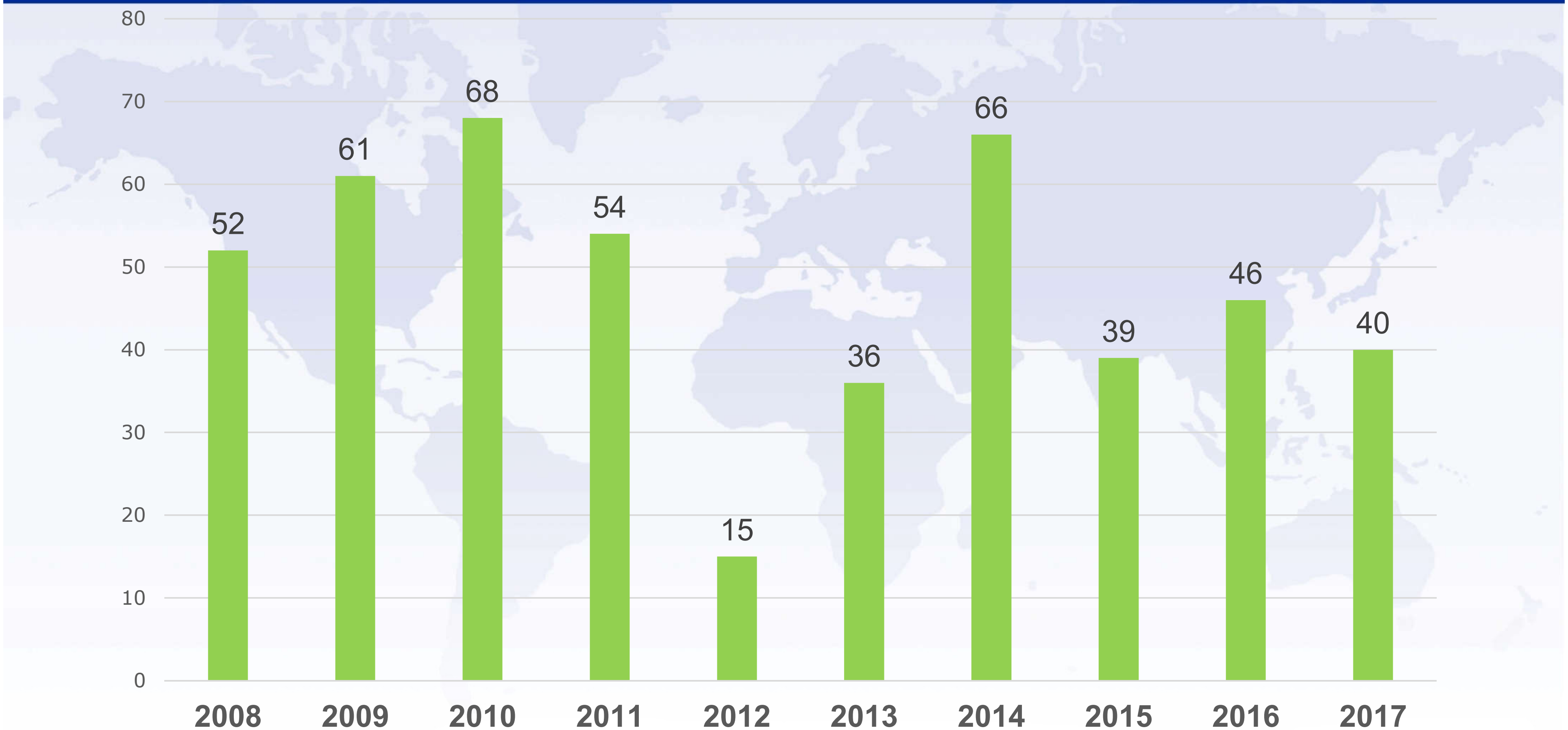
Survey Highlights

- Survey launched July 28, 2017 and closed September 30, 2017. Open for 64 days.
  - Surveys were sent out to 2,469 LES members (44 companies responded) and 17,431 non-members (26 companies responded); 155 complete deals were submitted by 70 companies for an overall LES member response rate of 6.3%.
- In comparison, in 2014 1855 surveys were sent out; 94 complete deals were submitted by 53 companies for an overall 5% response rate. Open for 60 days.
- New this year is the addition of data on whether more or fewer issues around IP were coming before company Boards of Directors.

Thank you all for your participation!

Number of Deals per Year from 2008 to 2017

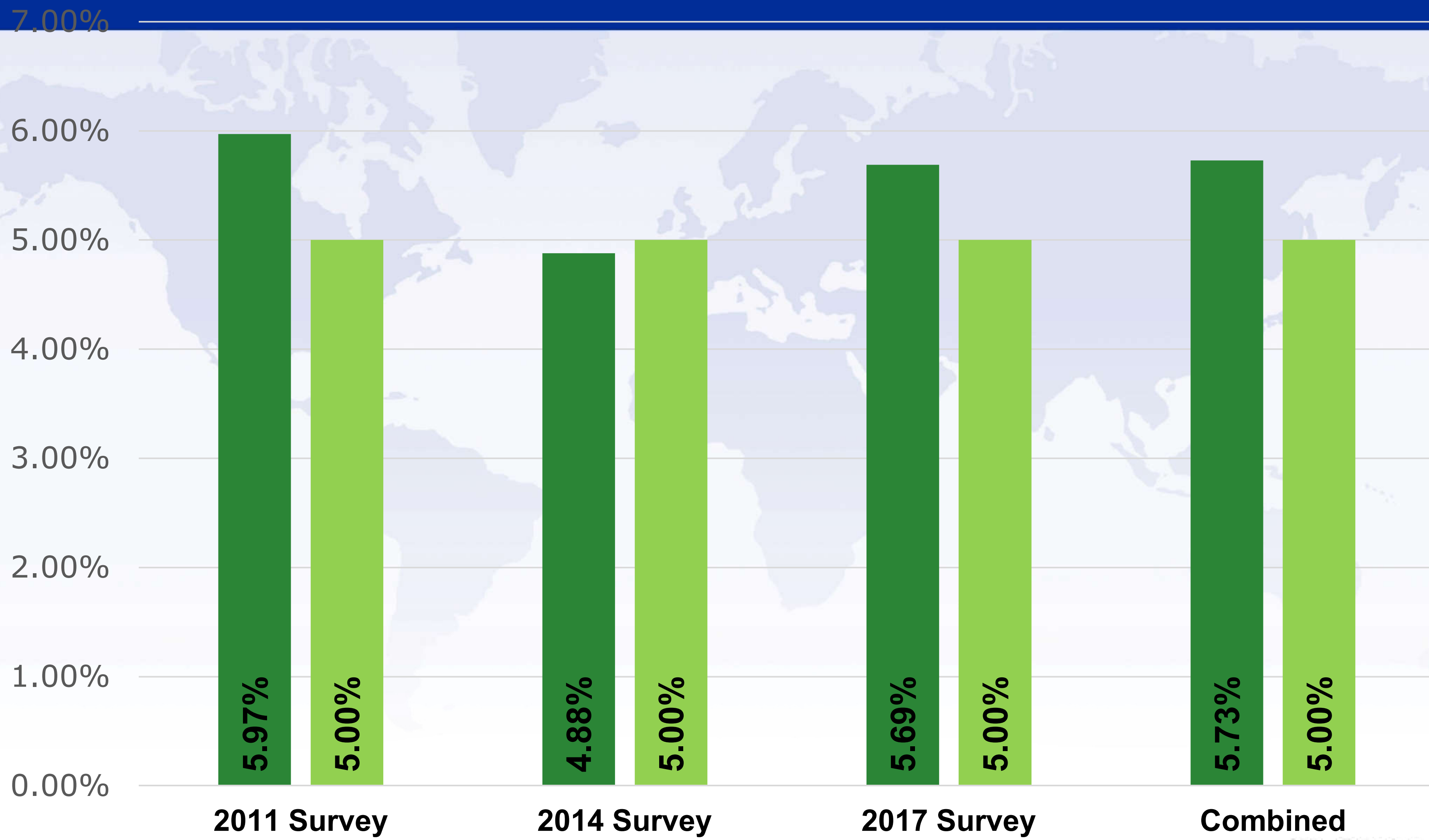
Based on 2011, 2014 and 2017 surveys



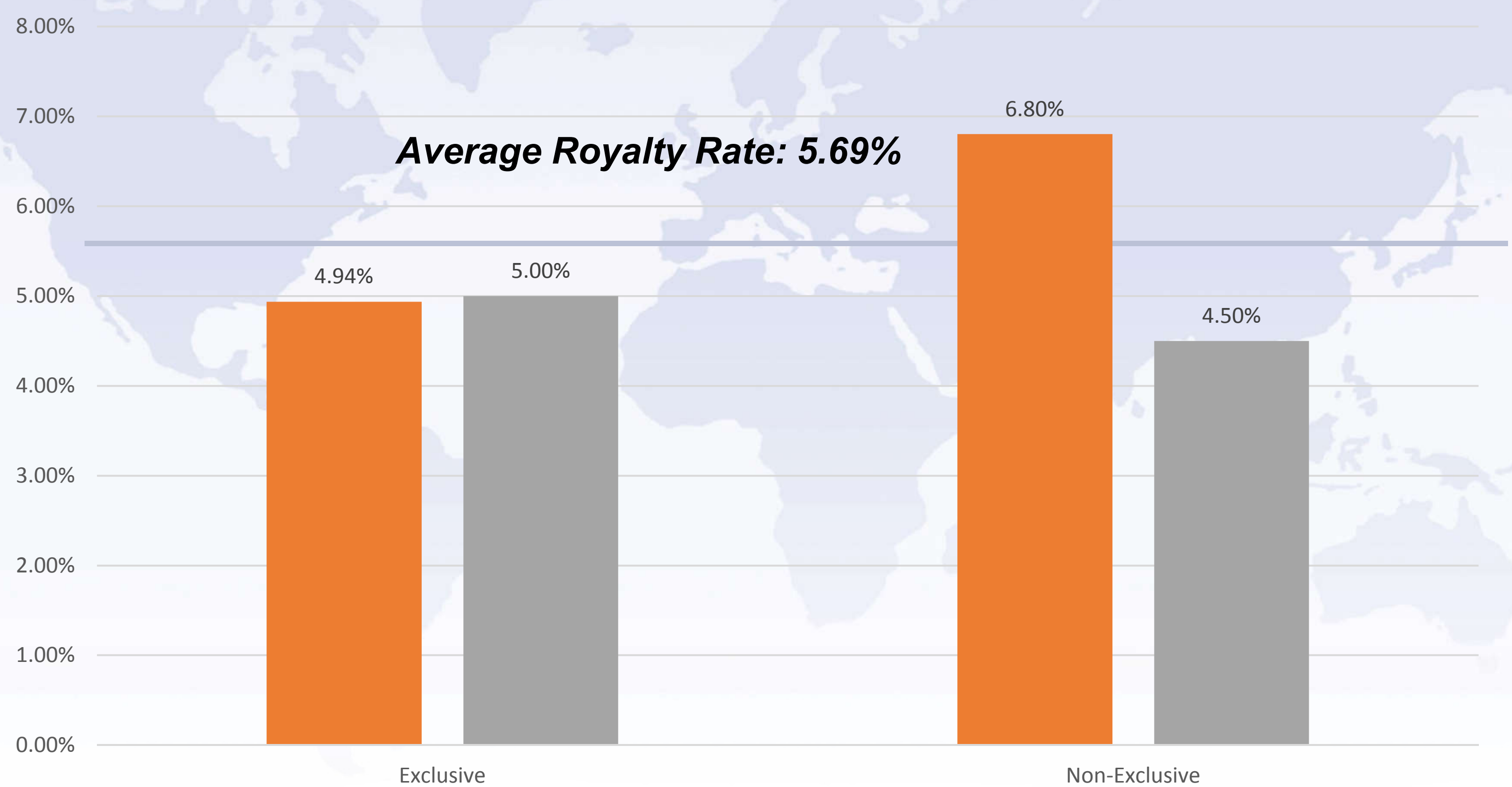
Deals by Payment or Royalty Type

Payment Method	Count	Percentage
Percentage Rate	**82**	**52.90%**
Flat Rate	*65*	*41.94%*
Tiered Rate	*17*	*10.97%*
Unit Rate	**8**	**5.16%**
Flat Rate	*6*	*3.87%*
Tiered Rate	*2*	*1.29%*
Patent Sale	**3**	**1.94%**
Lump Sum	**38**	**24.52%**
Milestone Payment	**4**	**2.58%**
No Royalty Payment	**17**	**10.97%**
Other percentage rate	**3**	**1.94%**
Total	**155**	**100.00%**

Average and Median Royalty Rates:
2011, 2014 and 2017 Surveys

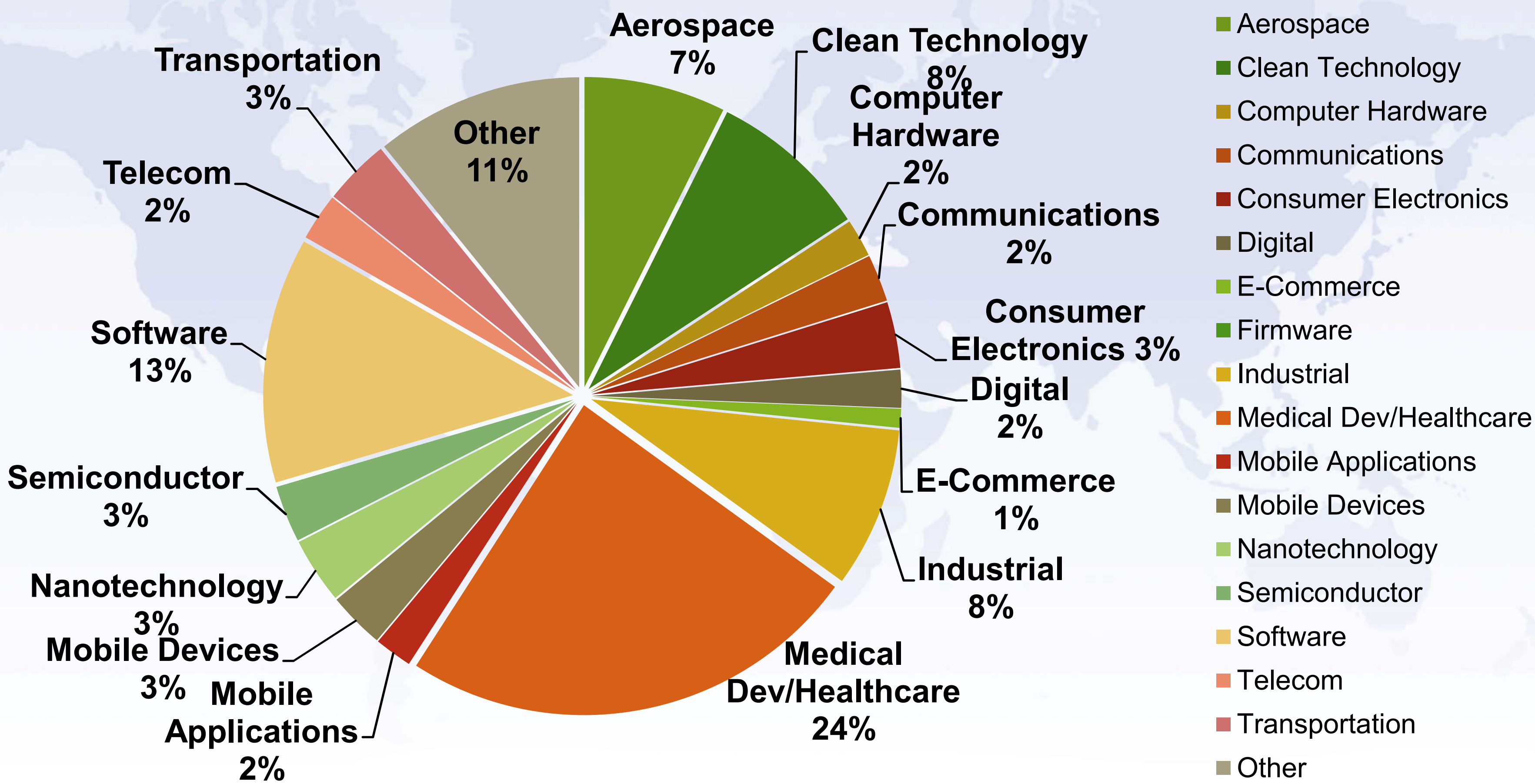


Average and Median Royalty Rates –
Exclusive v. Non-Exclusive Deals: 2017 Survey



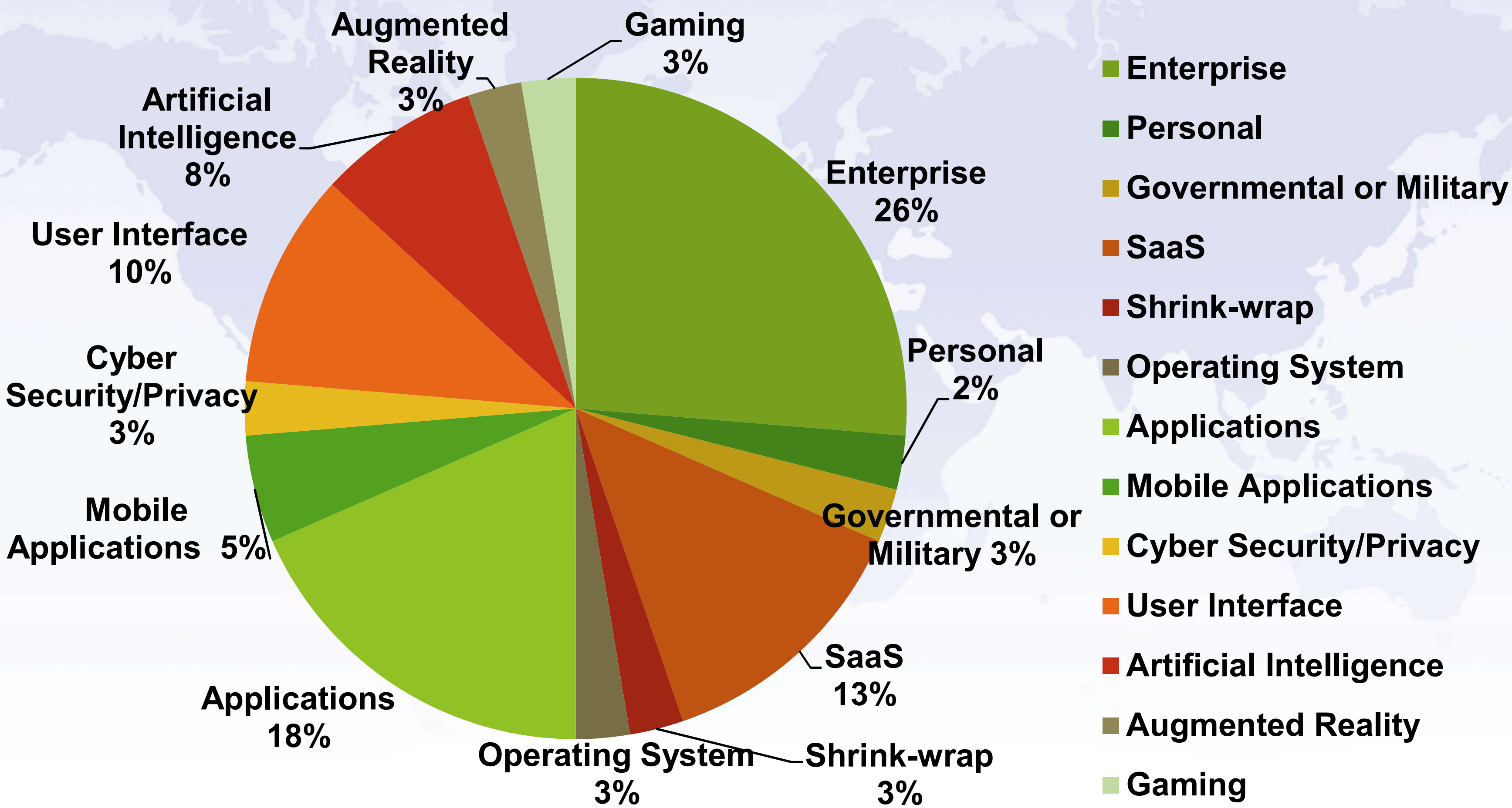
Part 1:
Preliminary
Non-Financial Analysis

Survey Results Cover A Wide Range of Technologies



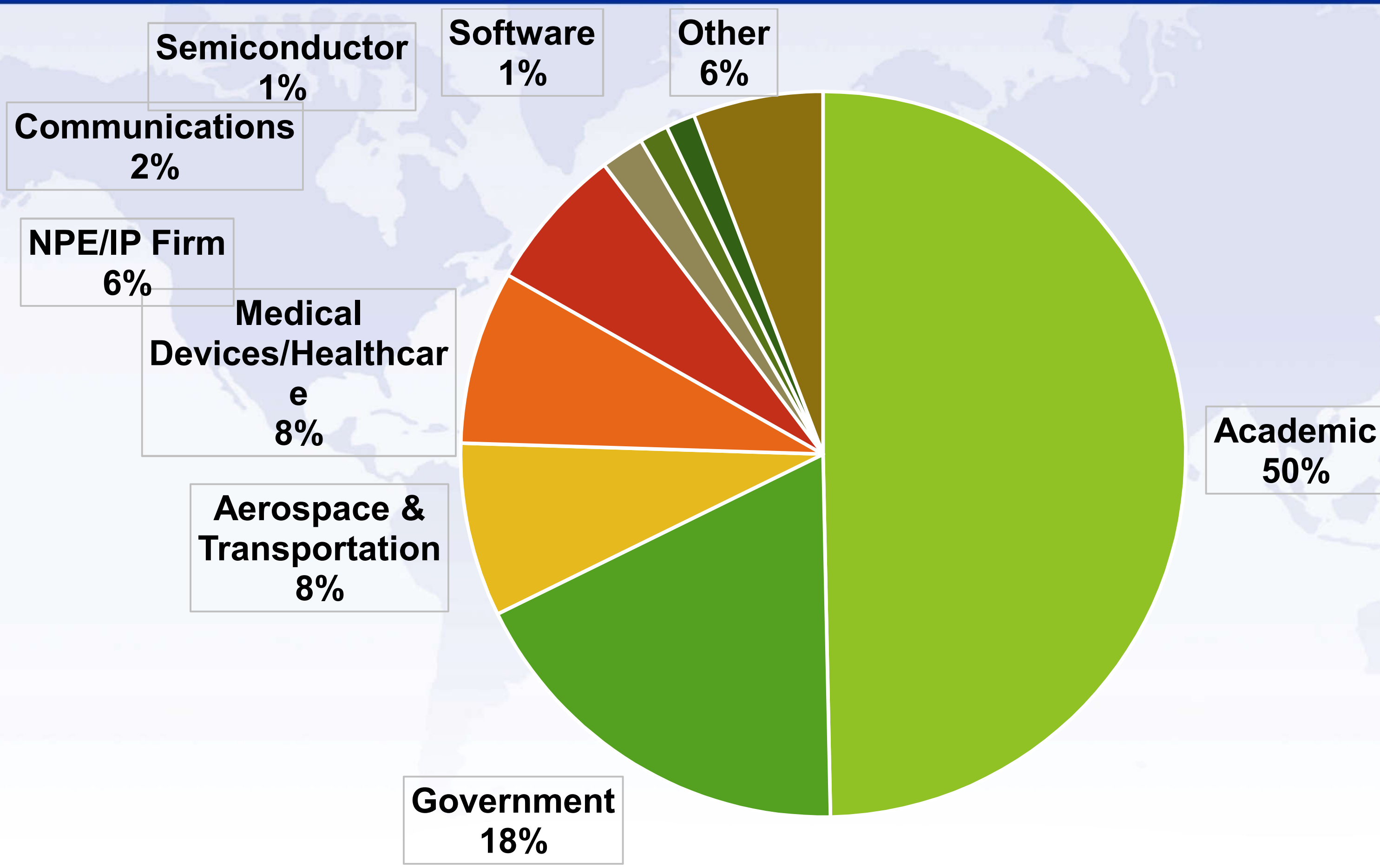
See complete report for technology that makes-up "other"

Survey Deal Results Cover A Wide Range of Technologies – New Software Subcategories



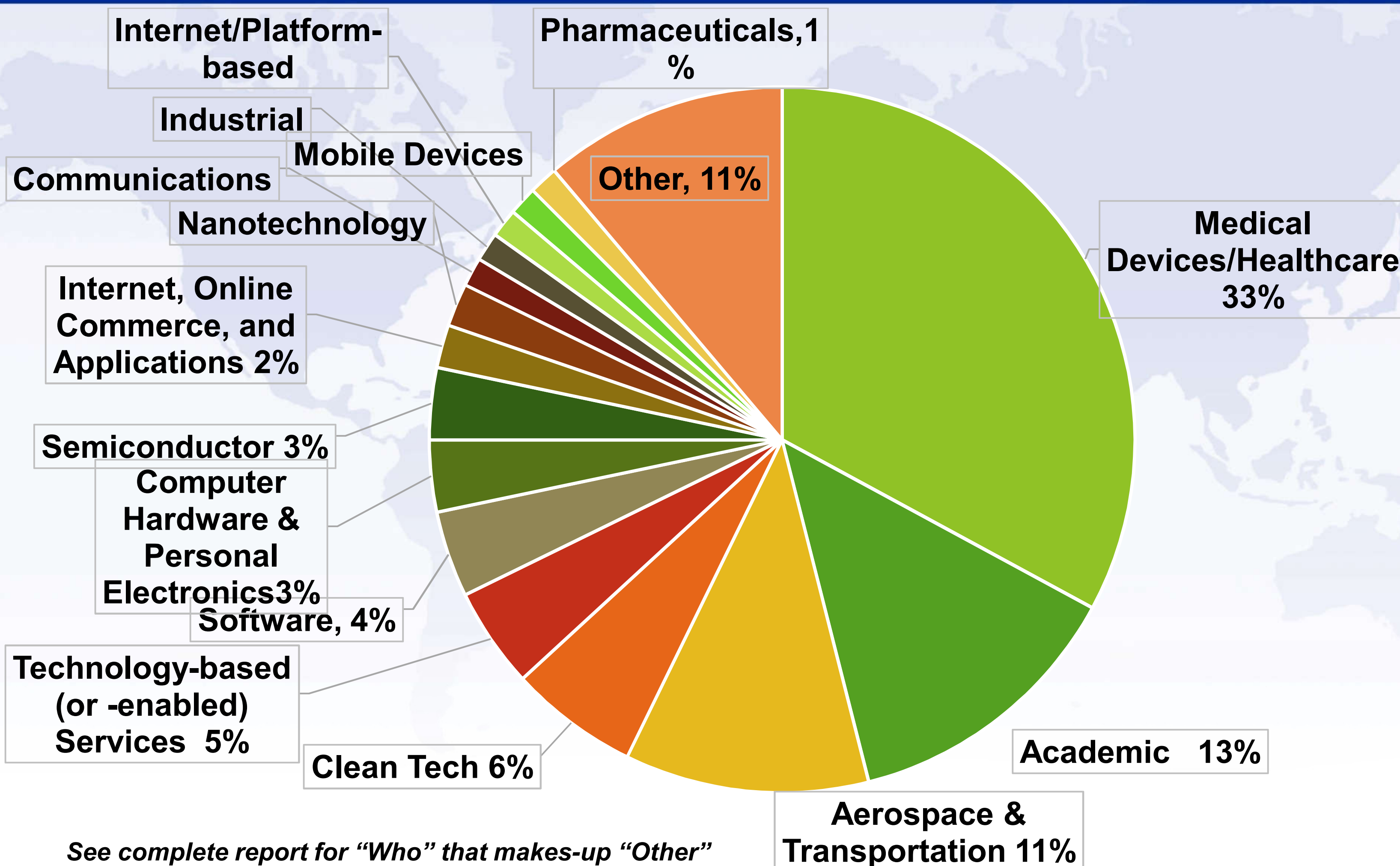
See complete report for technology that makes-up "other"

Licensor Profile by Organization Type/Business



See complete report for "Who" that makes-up "Other"

Licensee Profile by Org/Business Type



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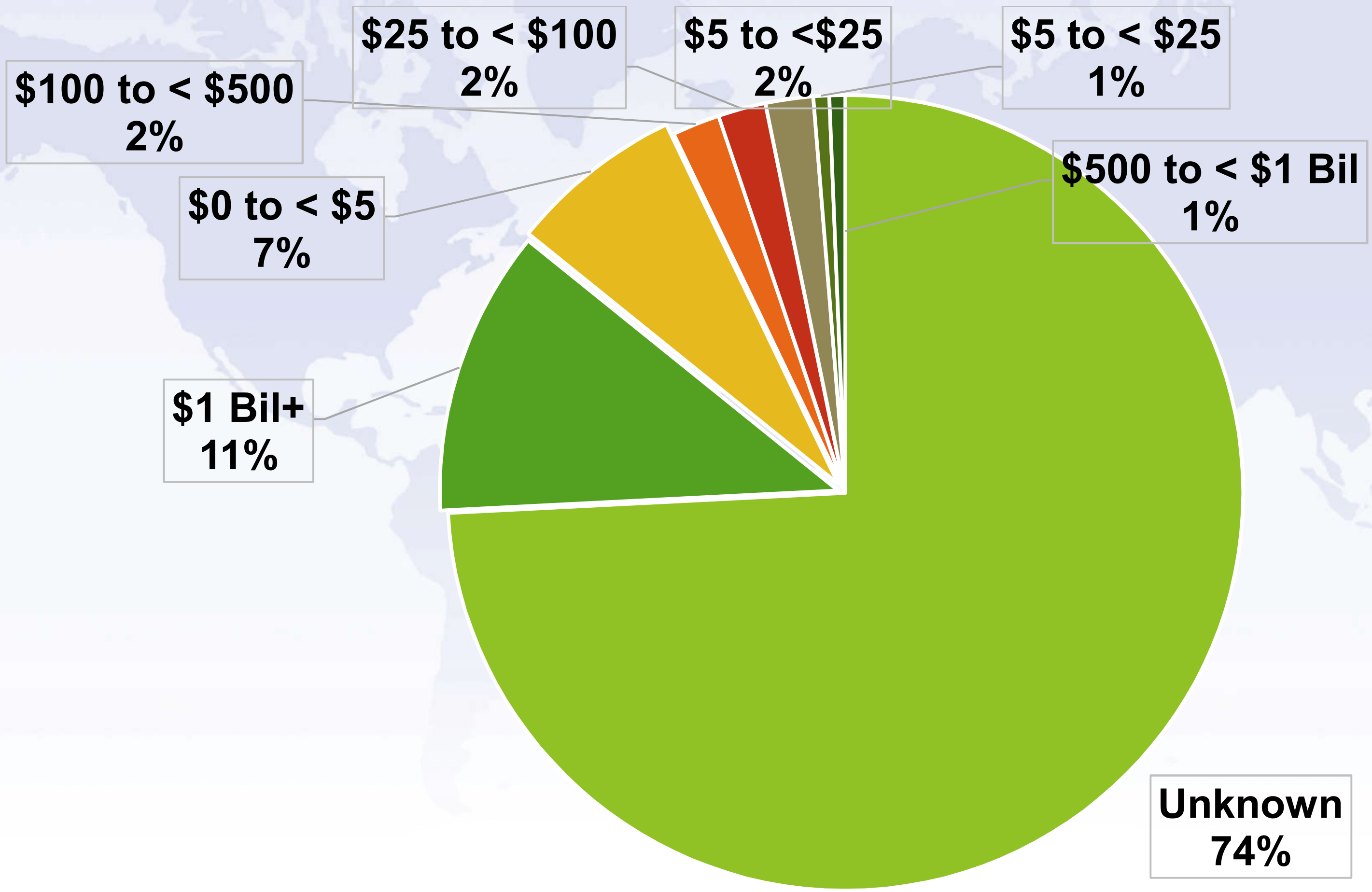
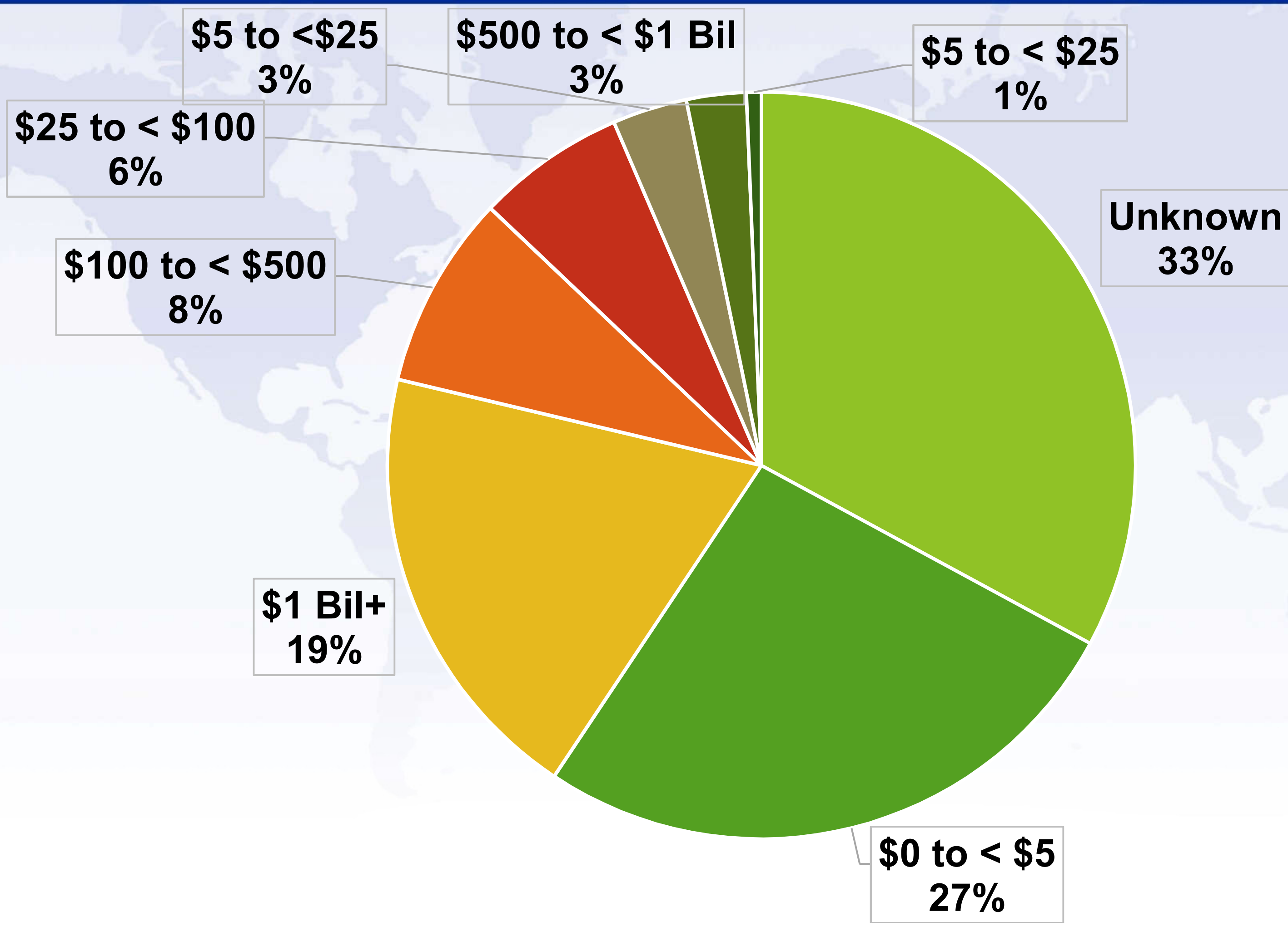
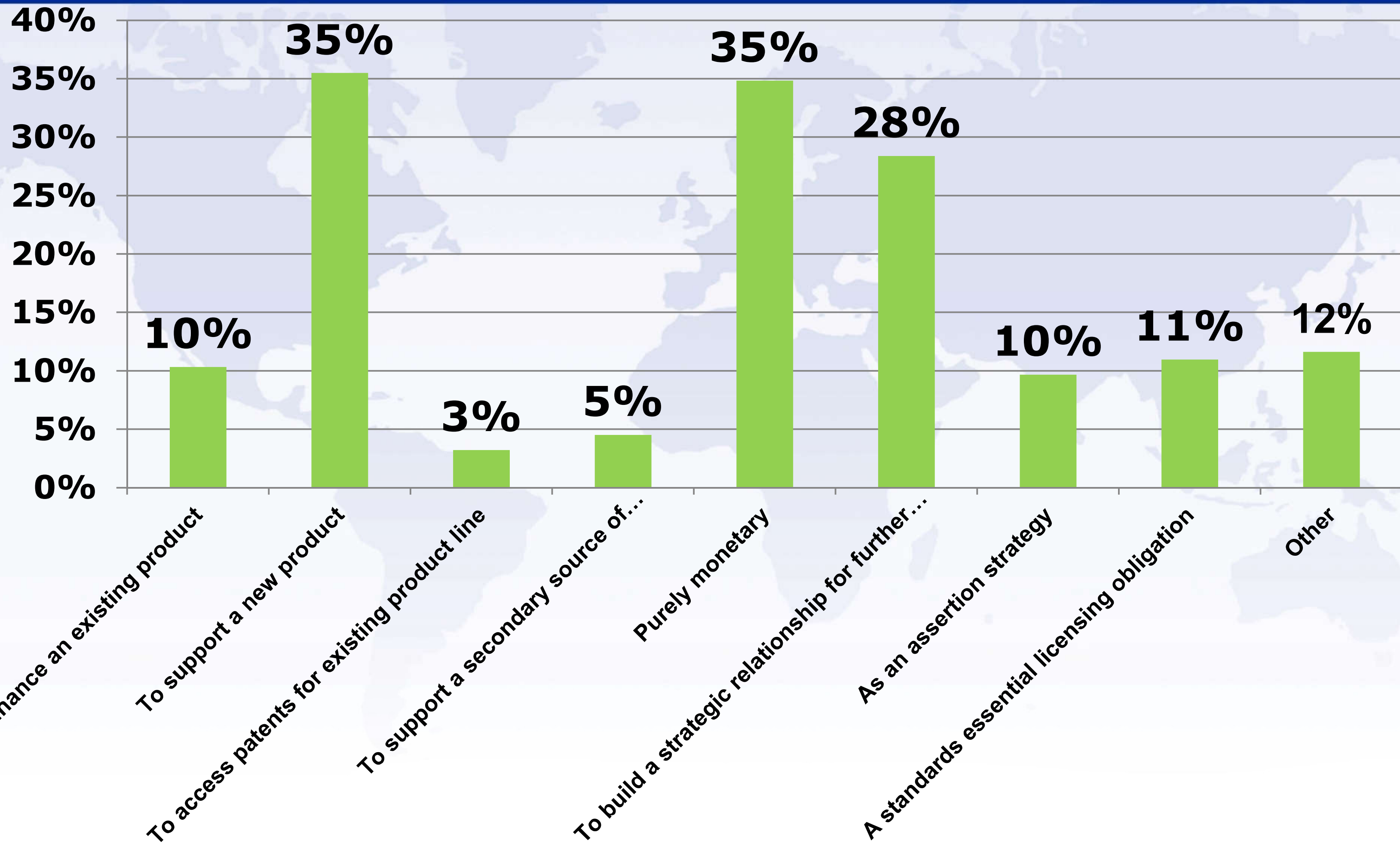
Licensor Size Profile: 2016 Annual $ Sales



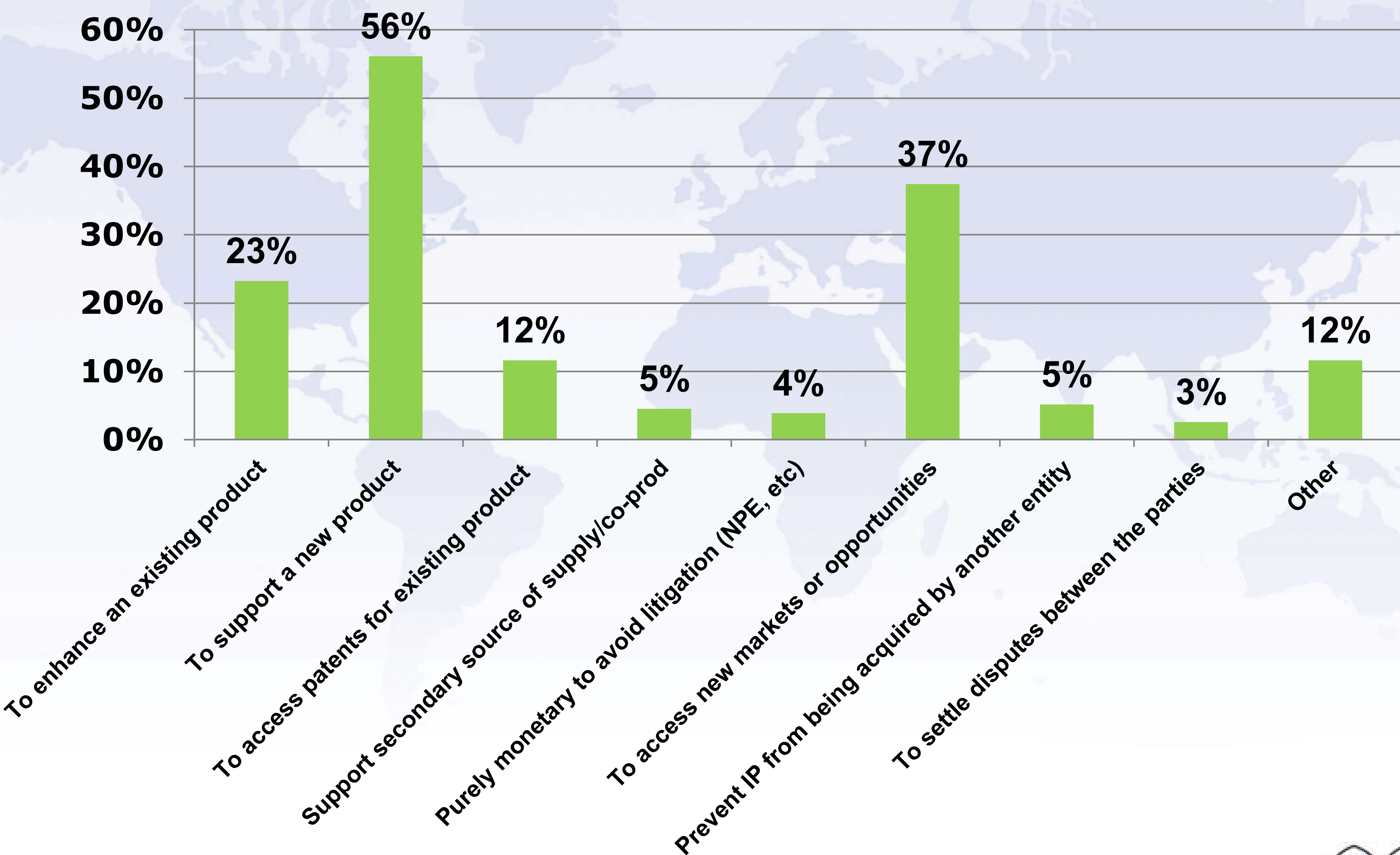
Licensee Size Profile: 2016 Annual $ Sales



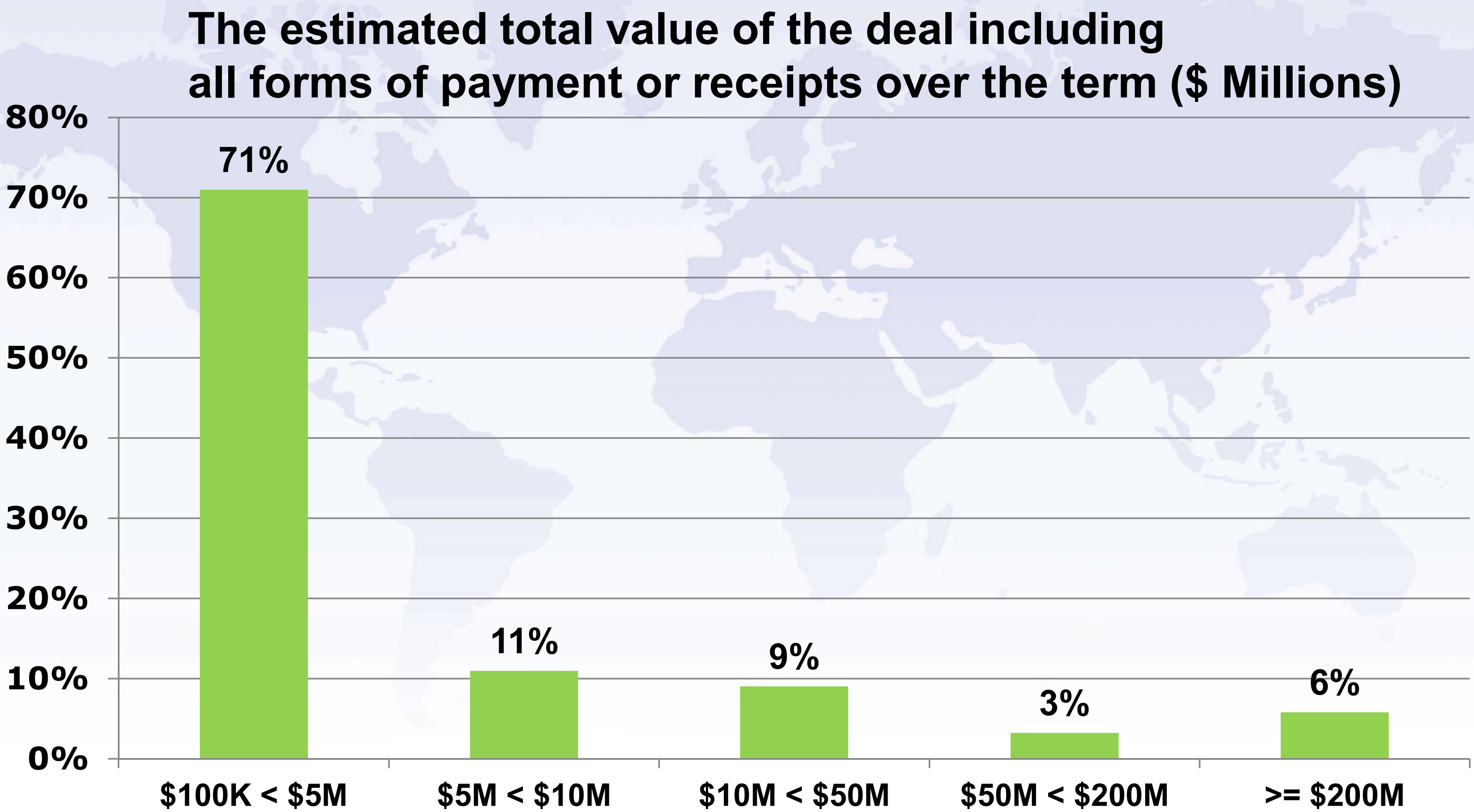
The Principle Rationale for Licensor/Seller Entering this Deal?



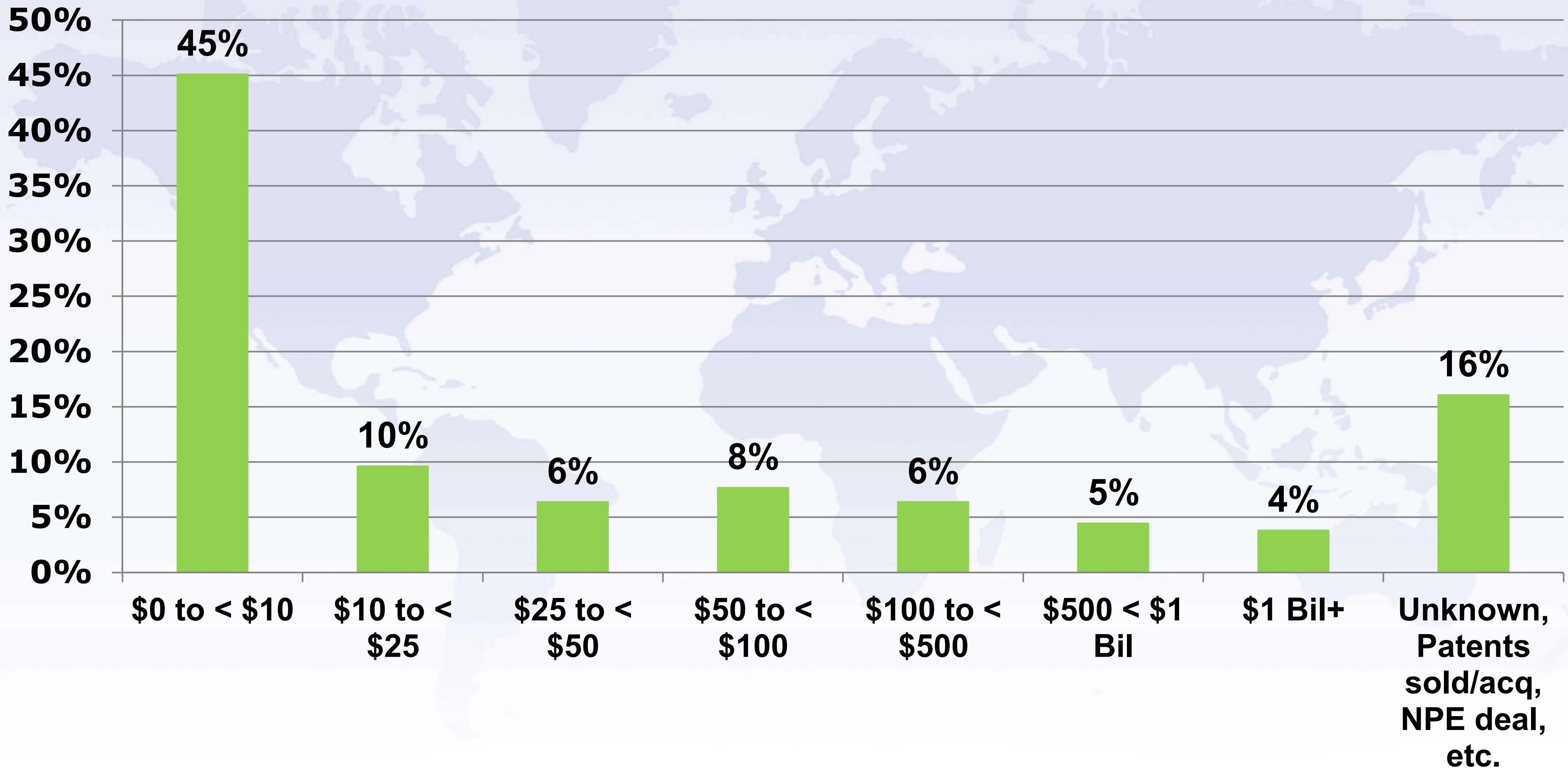
The Principle Rationale of the Licensee/Buyer Entering Deal?



Licensors'/Sellers' Estimated Total Value of the Deal



Licensees'/Buyers' Estimated Total Annual Sales for the Licensed Product/Technology (US Millions)

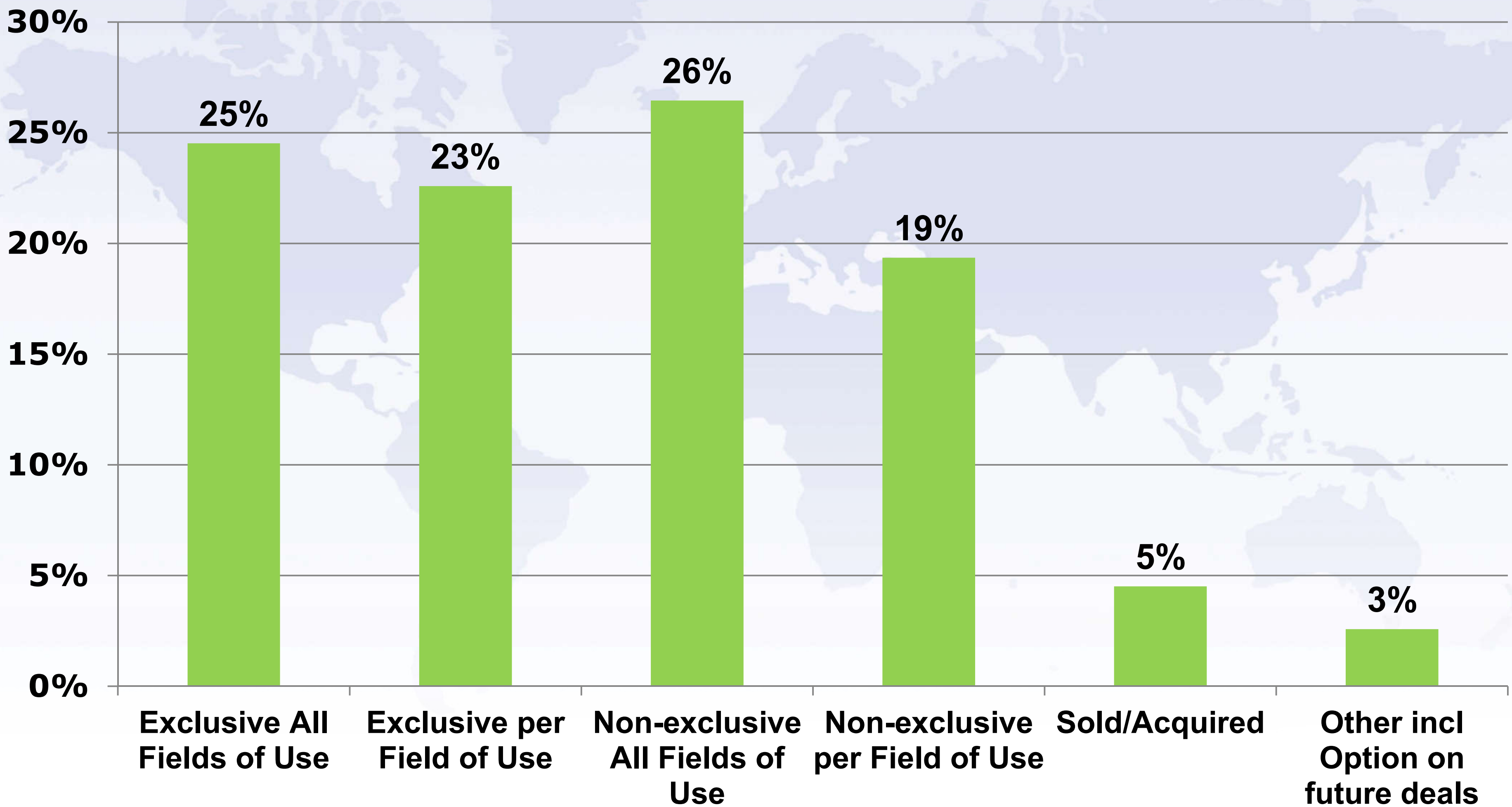


See complete report for "Who" that makes-up "Unknown or Other"

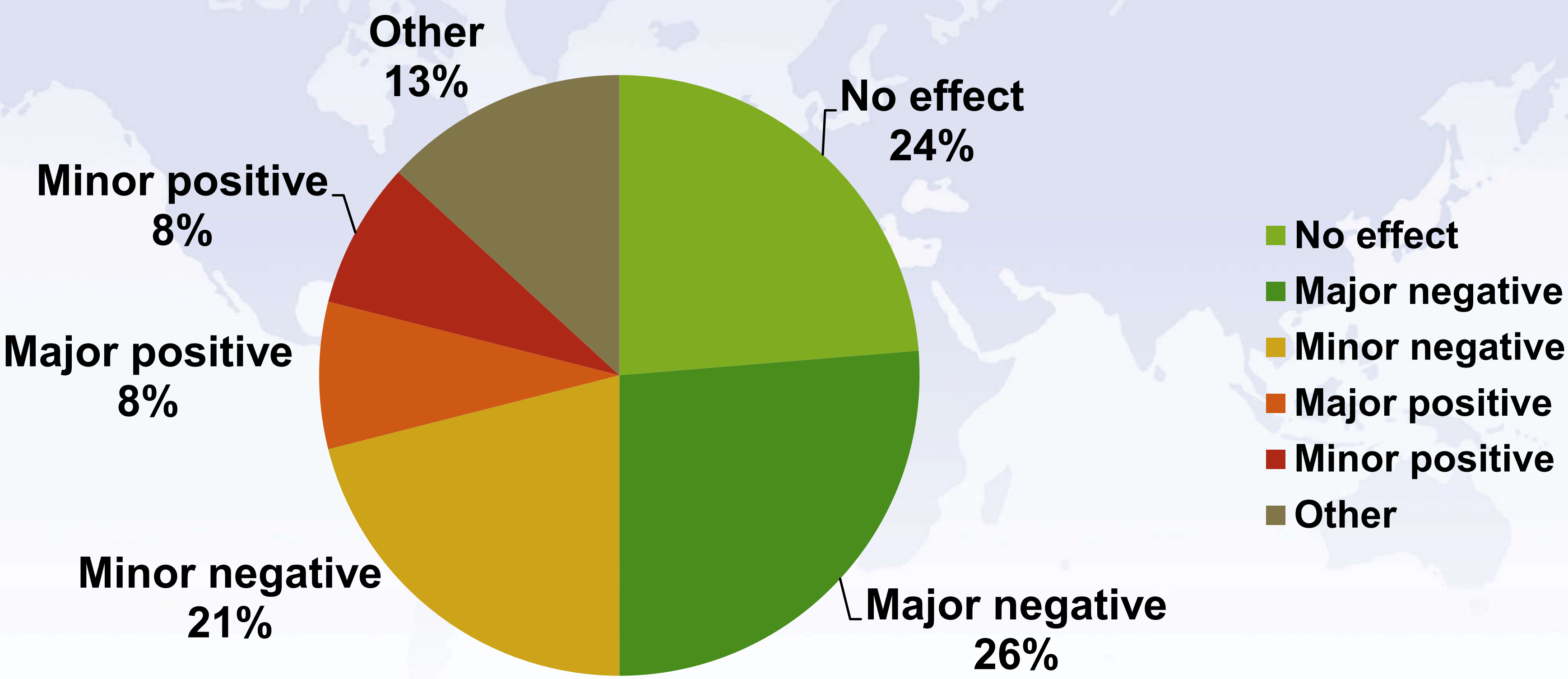
Survey Highlights – Some Key Deal Statistics

- The deals included both large and small company deals roughly equally
- 88% of respondents were licensors, with 35%of them entering the deal for monetary gain in addition to 28% for a strategic relationship, 10% were for an assertion strategy, 11% for SEP licensing
- Multiple IP assets were licensed in the majority of the deals reported
  - 61% of them included patents
  - 34% had know-how and trade secret components
  - 36% also licensed software, copyrights or trademarks
- 63% of reported deal territories were WW, 12% N. Amer. only
- 48% of the 155 deals were exclusive, and 45% non-exclusive
- NPE’s were roughly 6% of the respondents

2017 Survey:
Exclusive vs. Non-exclusive Deals



Optional Question, (38) Respondents - Does the PTAB have an effect on the relative value of US patents?



See complete report for "Who" that makes-up "Other"

Survey Highlights – Some Key Deal Statistics

Technology Breakdown

- **About 36% of licensed technology was either already in production or fully developed, 52% was in R&D or prototype**
- **32% of the reported deals included independent rights to improve the licensed technology, 22% included grantbacks,13% included collaborative development of IP, and 3% included co-production**

Survey Highlights – Key Deal Statistics

Other Terms of Note:

- **6% included co-marketing rights or the right to opt-in**
- **34% expire after last patent expires, 15% after a set time period or expiry of the agreement, and 20% expire after "other", i.e., completion of litigation etc.**
- **88% of respondents were sellers, 10% buyers, 2% both (cross-licenses)**
- **Compared to 2014, more of the respondents were industry- based, and more were start-ups, Government, Academic institutions and NPE's were fewer.**

Preliminary Financial Analysis

Jack Lu, PhD, CFA
Intellectual Property Market Advisory Partners (IPMAP)

Deals by Payment or Royalty Type

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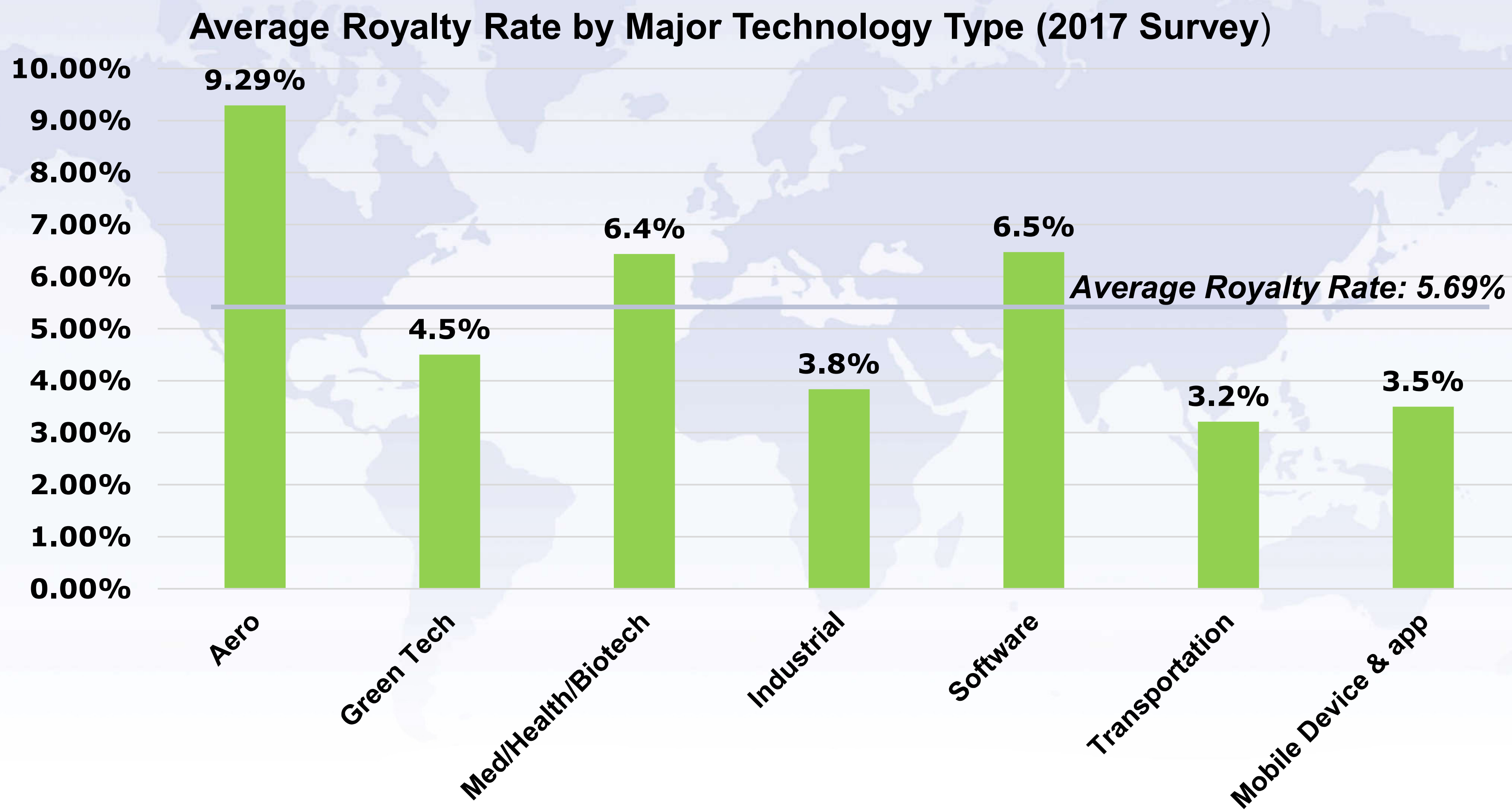
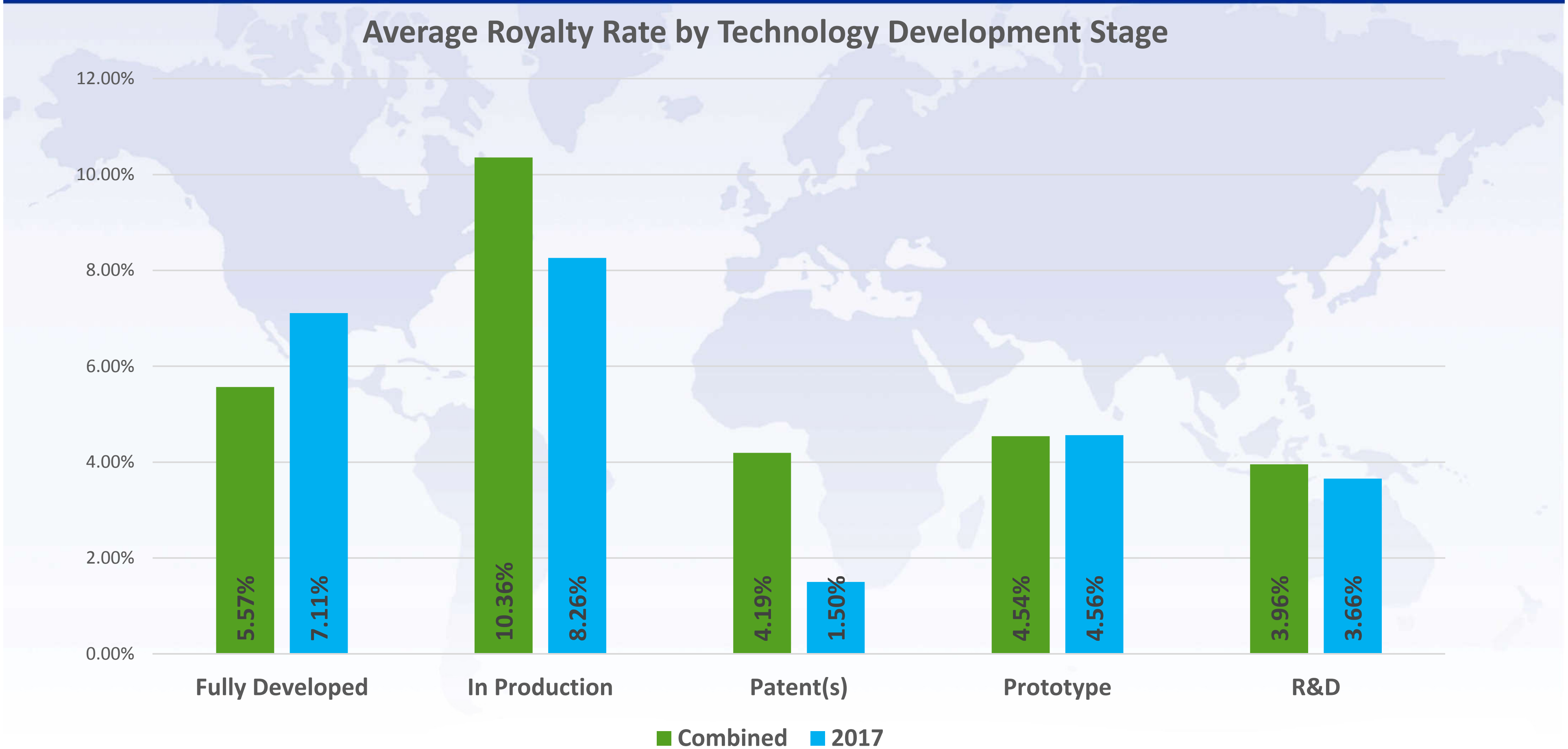
Royalty Rates Reported in 2017 Survey: Descriptive Statistics

# of Complete Deals	**65**
Min	**0.31%**
Max	**50%**
Average	**6.29%**
Average excl. outliers	**5.69%**
Mean	**5%**

Average Royalty Rate by Technology Type 2017 Survey



Technology Development Stage and Royalty Rate



Average and Median Royalty Rates by Licensor Organization

2017 Survey Samples			
Type	Count	Mean	Median
Academic	32	5.80%	5.00%
Government	14	3.68%	2.75%
Aerospace & Transportation	5	10.20%	5.00%
NPE/IP Firm	4	7.88%	3.00%
Medical Devices/Healthcar	2	3.50%	3.50%
All Others	7	4.62%	
Total	64		

Combined Samples		
Type	Count	Mean
Academic	102	4.93%
Government	40	3.37%
Aerospace & Transportation	36	11.00%
Communications	6	4.83%
NPE/IP Firm	6	6.67%
Start-up/New Venture	4	4.75%
Technology-based (or -enabl	4	6.50%
Semiconductor	3	3.37%
Biotech	2	6.00%
Medical Devices/Healthcare	2	3.50%
All Others	9	4.48%
Total	214	

Average and Median Royalty Rates by Licensee Organization

2017 Survey Samples

Type	Count	Mean	Median
Medical Devices/Healthcare	22	6.91%	5.00%
Indus, Equip. & Mfg	7	4.21%	
IT and related	7	3.05%	
Technology-based (or - enabled) Services	6	4.50%	4.00%
Aerospace & Transportatic	5	10.20%	5.00%
Clean Tech	5	4.20%	2.50%
Software	4	5.88%	5.75%
Nanotechnology	3	3.50%	4.50%
Academic	2	6.50%	6.50%
Others	3	3.33%	3.00%
Total	64		

Combined Sample

Type	Count	Mean	Median
Bio/Med/Pharm	39	5.73%	
Aerospace & Transportation	31	10.89%	12.50%
Start-up/New Venture	26	4.17%	4.25%
Indus, Equip. & Mfg	24	4.96%	
Cleantech Energy and Environmental	18	3.56%	
Imaging and other tech based tech	17	4.85%	
Computer Hardware & Personal Electronics	11	3.89%	
Software	10	8.75%	
Semiconductor	8	4.69%	
Nanotechnology	5	3.70%	
Academic	4	5.13%	
Communications	4	4.75%	
Internet & e-commerce related	4	4.00%	
NPE/IP Firm	3	2.70%	
Government	2	5.00%	
All others	8	3.25%	
Total	214		

Types of IP Licensed and Royalty Rates

1. By Number of IP Types Licensed		
Type	**Count**	**Mean**
One Type of IP Only	21	5.43%
Patent Only	12	3.48%
US	11	3.52%
Foreign	1	3.00%
Know-how/Trade Secret	2	3.38%
Software	3	4.33%
Industrial Designs	1	5.50%
Other	3	15.67%
Multiple IP	44	6.70%
Patents plus any other IP	35	4.89%
Patents plus know-how	16	6.05%
Patents plus software	5	6.66%
Patents plus drawings	4	4.88%
Patents plus industrial designs	2	4.50%
Know-how plus drawings or designs	9	13.26%
2. By Type of IP Licensed(Standalone or with Other IP)		
Type	**Count**	**Mean**
Patents/Applications	47	4.53%
Know-how/Trade Secret	25	8.46%
Trademark(s)	7	10.97%
Copyright(s)	4	5.08%
Software	12	5.97%
Firmware	2	4.95%
Drawings	9	13.26%
Industrial Designs	5	4.87%
Customer/Consumer data	4	5.63%
Other	7	8.88%

Summary of Lump Sum Payment Deals

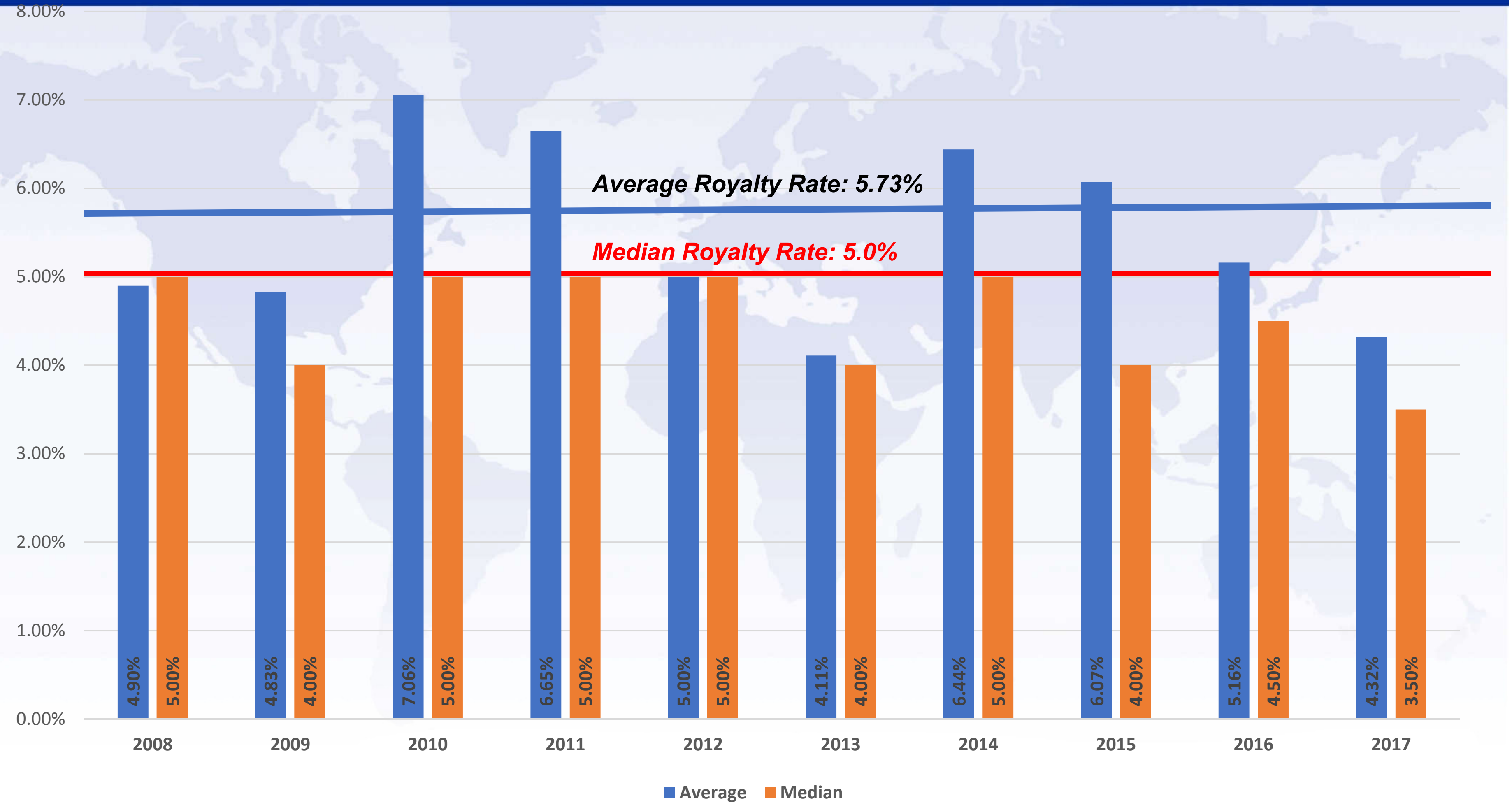
Survey	# of Deals	# of Patents	Payment	Average Payment Deal	Median Payment Per Deal
2011	43	N/A	$2.5K to $80 million	$3 million	$516K
2014	24	1 to 10K	$240K to $95 million	$9.8 million	$3 million
2017	38	1 to 100	$100 to $9 million	$1.35 million	$165K

Summary of Patent Sales & Transfers

Survey	# of Deals	# of Patents	# of Patent App	Payment	Average Price/Patent	Median Price/Patent
2014	12	1 to 114	1 to 35	$400K to $20 million	$358K	$375K
2017	3	2 to 17 assets		$100K to $3 million	*$175K**	*$64K**

** Sample size is too small and statistics may not be meaningful.*

Three Surveys, A Decade Journey:
What have we witnessed in licensing market?



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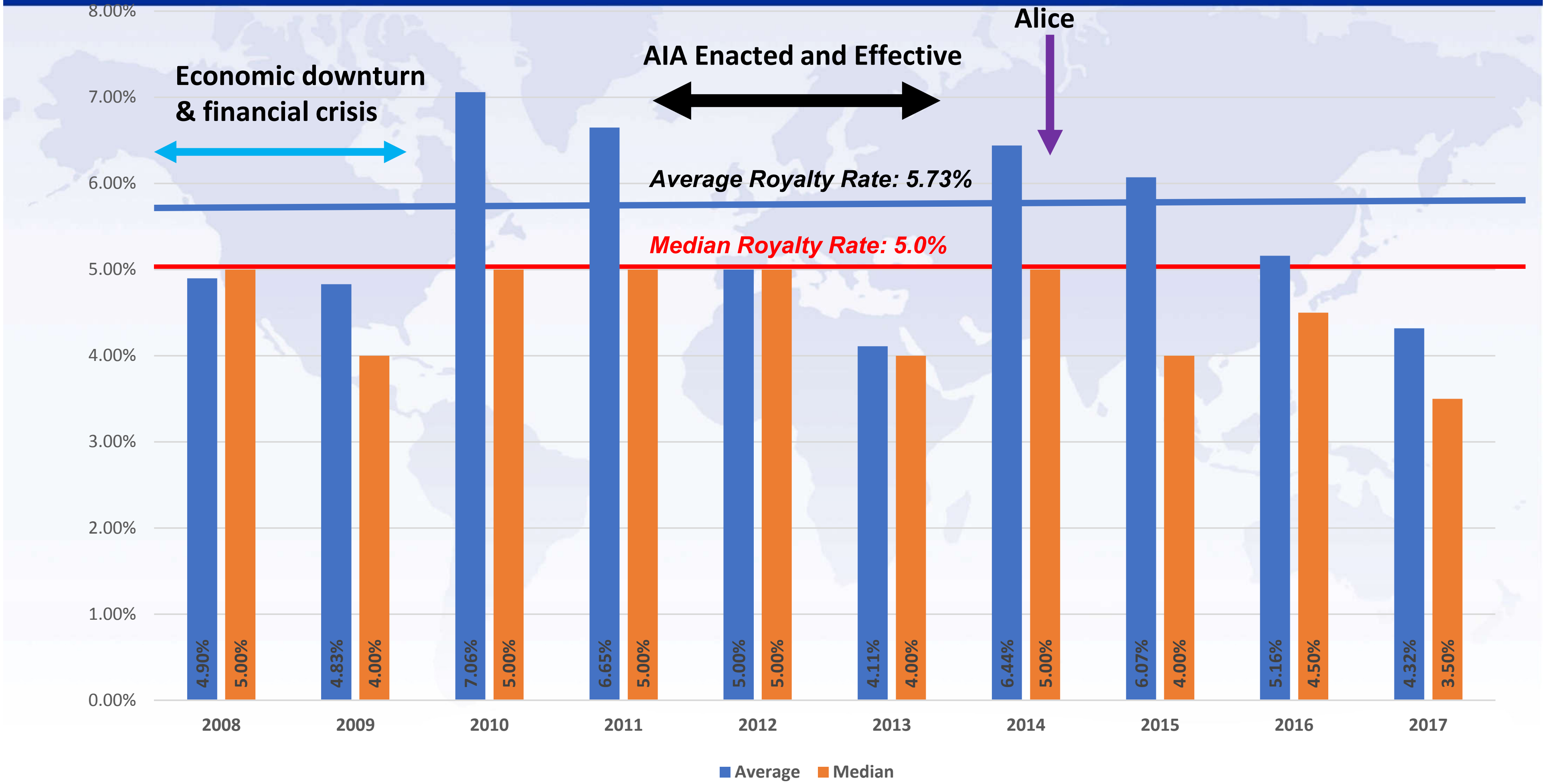

Econometric Analysis

	[1]		[2]		[3]		[4]		[5]		[6]		[7]	
R^2	0.320		0.317		0.319		0.319		0.311		0.314		0.315	
	Coef.	*p-value*	Coef.	*p-value*	Coef.	*p-value*	Coef.	*p-value*	Coef.	*p-value*	Coef.	*p-value*	Coef.	*p-value*
Intercept	3.37%	0.002	3.15%	0.000	2.94%	0.000	3.09%	0.001	3.24%	0.000	2.93%	0.000	2.67%	0.007
Aerospace	4.36%	0.000	4.52%	0.000	4.65%	0.000	4.55%	0.000	5.06%	0.000	5.35%	0.000	5.46%	0.000
Software	2.13%	0.045	2.24%	0.034	2.16%	0.042	2.17%	0.042	2.09%	0.048	2.03%	0.056	2.03%	0.057
Knowhow/drawing/Design	1.88%	0.058	1.75%	0.068	1.76%	0.067	1.74%	0.072	0.99%	0.257	0.87%	0.323	0.98%	0.283
Fully developed & in production	3.25%	0.000	3.19%	0.000	3.26%	0.000	3.19%	0.000	3.08%	0.000	3.11%	0.000	3.22%	0.000
Exclusive	1.81%	0.088	1.61%	0.066	1.79%	0.050	1.94%	0.063	1.19%	0.150	1.48%	0.091	1.34%	0.151
Governmental licensor	-4.47%	0.003	-4.07%	0.001	-4.03%	0.002	-4.23%	0.004	-3.77%	0.003	-3.69%	0.004	-3.40%	0.016
Academic licensor	-0.55%	0.672					-0.36%	0.771					0.55%	0.635
Variables Impacted by Survey-Specific Factors														
Specific factors in 2014/17 Survey	-0.90%	0.523												
Medical tech/Healthcare/Biotech in 2017 Survey	2.42%	0.048	2.49%	0.036	2.34%	0.053	2.32%	0.055	2.07%	0.078	1.89%	0.112	1.96%	0.102
Exclusive in 2014 /17 Survey	-3.40%	0.032	-3.06%	0.007	-3.56%	0.008	-3.75%	0.012						
Governmental licensor in 2014/17 Survey	4.79%	0.027	3.61%	0.038	4.00%	0.029	4.11%	0.028	4.49%	0.058	4.71%	0.048	4.66%	0.051
Academic licensor in 2014/17 Survey	1.61%	0.343			0.80%	0.479	1.07%	0.466			1.60%	0.322	1.20%	0.509
Exclusive w governmental licensor in 2014/17 Survey									-4.23%	0.097	-4.52%	0.079	-4.42%	0.087
Exclusive w academic licensor in 2014/17 Survey									-2.10%	0.059	-3.56%	0.054	-3.40%	0.072

Major Conclusions from Econometric Analysis (i)

The purposes of econometric analysis:

- **To decompose royalty rates reported in the surveys and identify the factors that determine the royalty rate pricing (*what are the common factors contributing to royalty rate pricing?).***
- **To detect any potential changes over the past 10 years in royalty rates.**
- **To assess the impact of major events such as AIA/IPR and the *Alice* case.**
- **The table above reports 7 sets of econometric analysis with coefficients for more than a dozen factors that affected the royalty rate pricing.**

Conclusions

Technology premium: technologies with royalty premium in licensing market:

- **Aerospace: ~ 5%**
- **Software: ~ 2.1%**

IP premium: The characteristics of IP with royalty premium in licensing market:

- **Fully developed and In-production: ~3.2%**
- **IP portfolio including trade secrets, know-how, drawings, & industrial design: ~ 1.5%**

Major Conclusions from Econometric Analysis (ii)

Exclusivity: Exclusive licenses have an average royalty premium of ~ 1.5%
Governmental-licensor discount:
Governmental licensors were willing to take a royalty discount of ~ 4.0%
The structural/fundamental changes detected by the econometric analysis

- **Exclusive licenses reported in 2014 and 2017 surveys had an average of ~ 3.4% discount.**
- **The reason: This is caused mainly by the exclusive licenses entered by academic and governmental licensors for their underdeveloped technologies that required licensees to take risks and invest resources into further development.**
  Discount in royalty rate with governmental licensors in 2014/17 survey: ~ 4.3%
  Discount in royalty rate with academic licensors in 2014/17 survey: ~ 3%
- **Governmental licensors are SMART: For well-developed technologies, governmental licensors opt for non-exclusive licenses and actually charged a premium of slightly above 4% after 2011. *Maybe: sovereign status in IPR??***
- **Similar effect was not found with academic licensors, but academic licensors, overall, charged fair market royalty rates to their licensees except for the exclusive licenses after 2011.**
- **Health-/med-/bio-tech had a premium of ~ 2.2%. Possible reasons: *such techs fared better than other patents in IPRs??***

Summary and Close

Bob Held, CLP

Held Intellectual Property, LLC

Survey Highlights Key Deal Statistics

- **A comprehensive Survey Report with all of the findings and related analysis will be made available in the next few months**
- **An article in LES Insights will be published**
- **The report will be available for sale to non LES members**

- Questions?

Licensing Executives Society (USA and Canada), Inc.

www.lesusacanada.org