
Protocol Representation Model in the Real World

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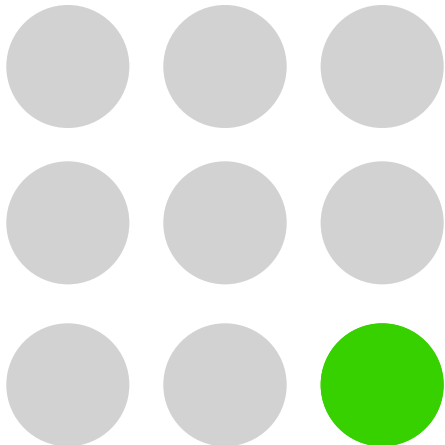


Optimizing Clinical Trials:
Concept to Conclusion™

Agenda

- Introduction
- Challenges
- Opportunities
- Application

Brief Intro - The Theory Behind PRM!



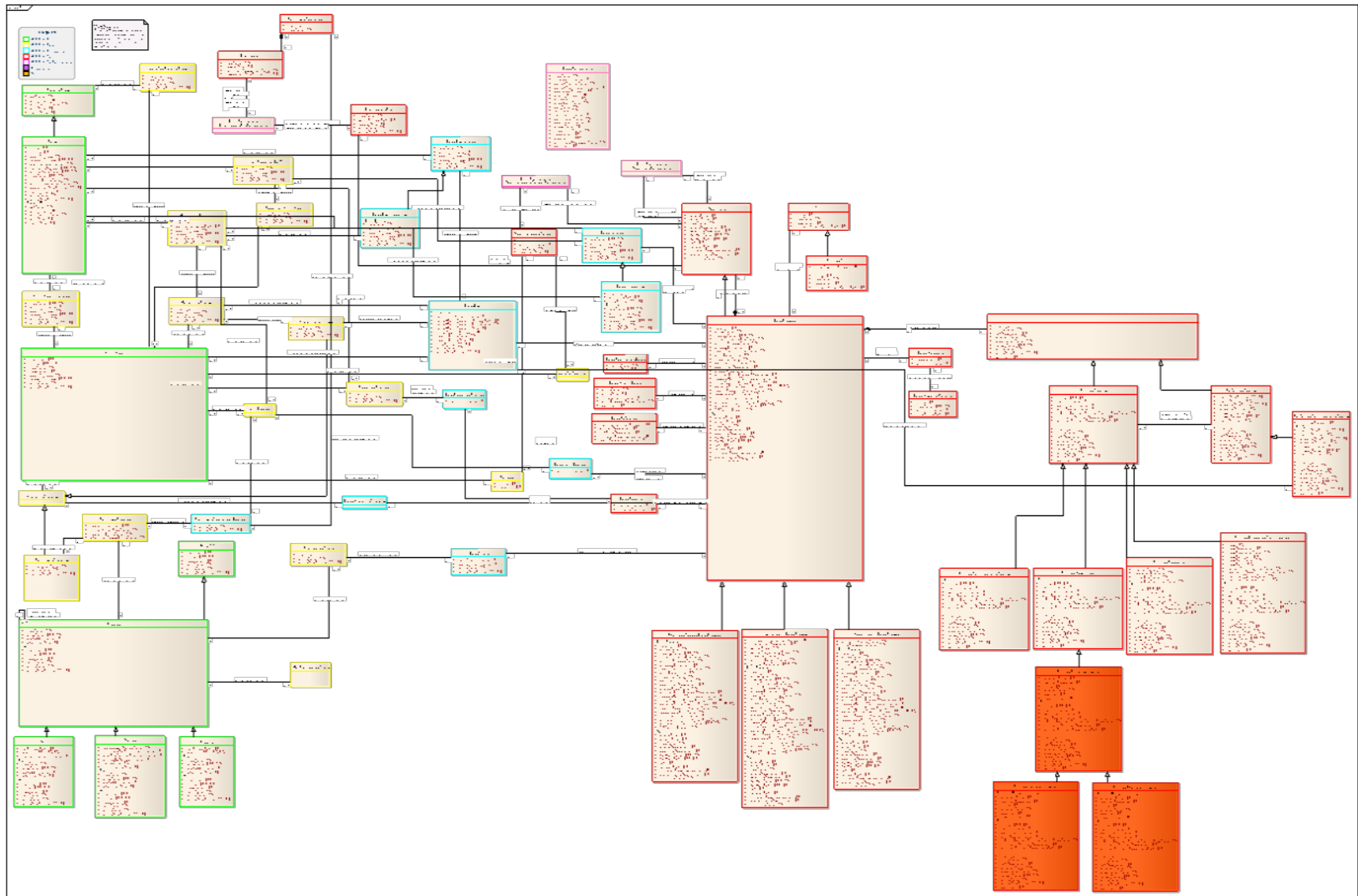
The PRM and BRIDG Relationship

- PRM is a domain analysis model
- PRM is a collection of BRIDG Classes
- Protocol Representation Sub Domain View + Additional Classes

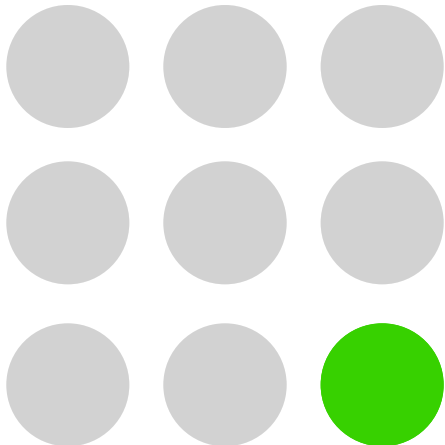
Why Use BRIDG?

- Protocol ID = Protocol ID = Protocol ID
- Whatever the implementation, we can be assured that “Protocol ID” is semantically the same across the entire study lifecycle
- BRIDG ensures it is technically the same as well

But People Think it's Not That Simple



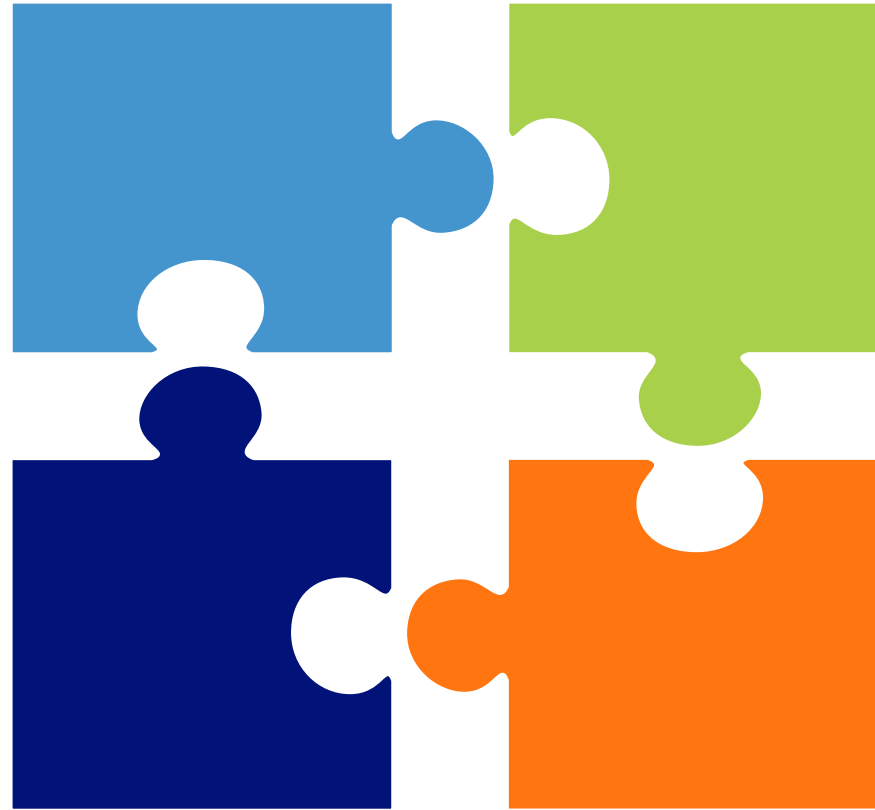
Challenges – A Reality Check!



PRM is a Scary-Sounding Acronym



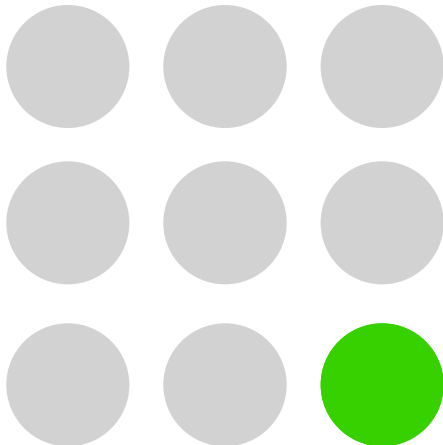
Analysis Model vs. Implementation



Document-Centric Thinking Abounds

“My protocol standards
will be different than
yours so how can there
be an ‘industry
standard’?”

Opportunities for PRM



There is More Complexity and Data



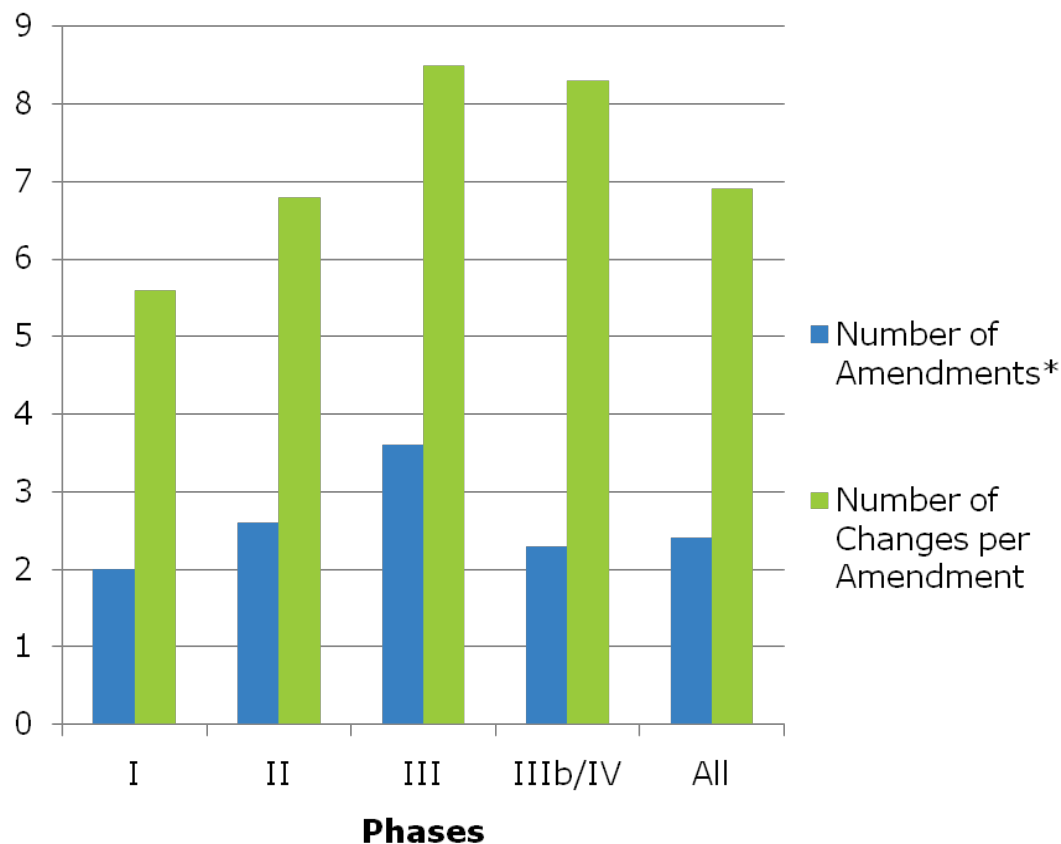
- Studies are increasingly longer and more complex¹
 - 49% higher procedure frequency
 - 74% longer studies
 - 270% longer CRFs
 - 6.5% more unique procedures
- 15-30% of data not used in NDA²
- 24% of procedures are non-core³
 - Contributing 18% of per patient procedure budget

¹ Tufts Center for the Study of Drug Development: Assessing the impact of protocol design changes on clinical trial performance,

² Tufts Center for Drug Development: Assessing the down stream impact of protocol design complexity

³ Tufts Center for Drug Development: 2012 Protocol Study

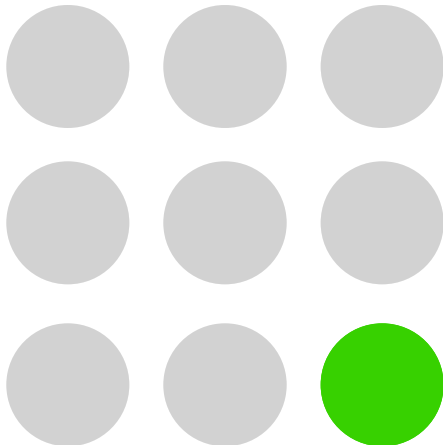
Which is Driving Up Protocol Amendments



*Analysis of those protocols with at least one amendment
Note: All values are means

- 69% of all protocols have at least one amendment
- 46% of all amendments occur BEFORE first patient first dose
- 34% are considered "somewhat" or "completely" avoidable
- Adds 61-days and cost \$450,000+ to implement each amendment

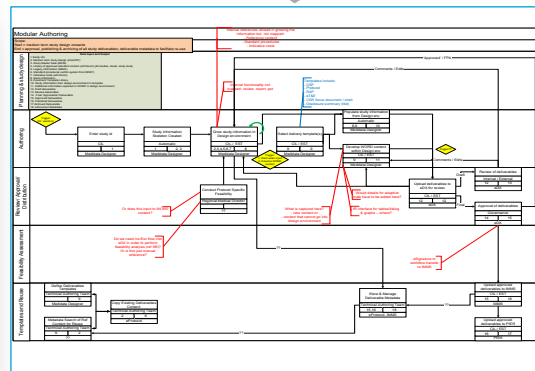
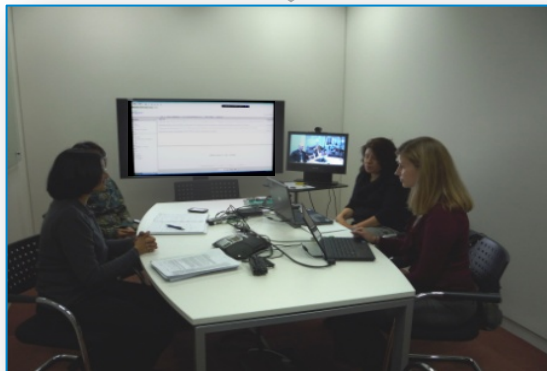
Application of PRM



A New Approach to Study Design

Strategy/Goal

- Shift from CDM to information management
- Increased quality, consistency of clinical info
- Align objectives, endpoints and procedures
- Line of sight from strategy to plan to study design
- Parallel development of Protocol, RAP, eCRF, CSR
- Leverage industry benchmarks

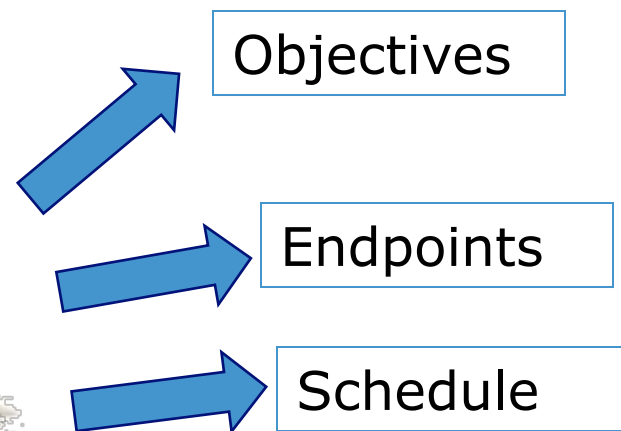
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Results

- Simplified protocols
- Reduced number of procedures and CPP
- Reduced effort on downstream systems
- Minimized cleaning and analysis of excess data
- Avoid amendments/rework
- Reductions in cycle times
- Minimized duplicate entry

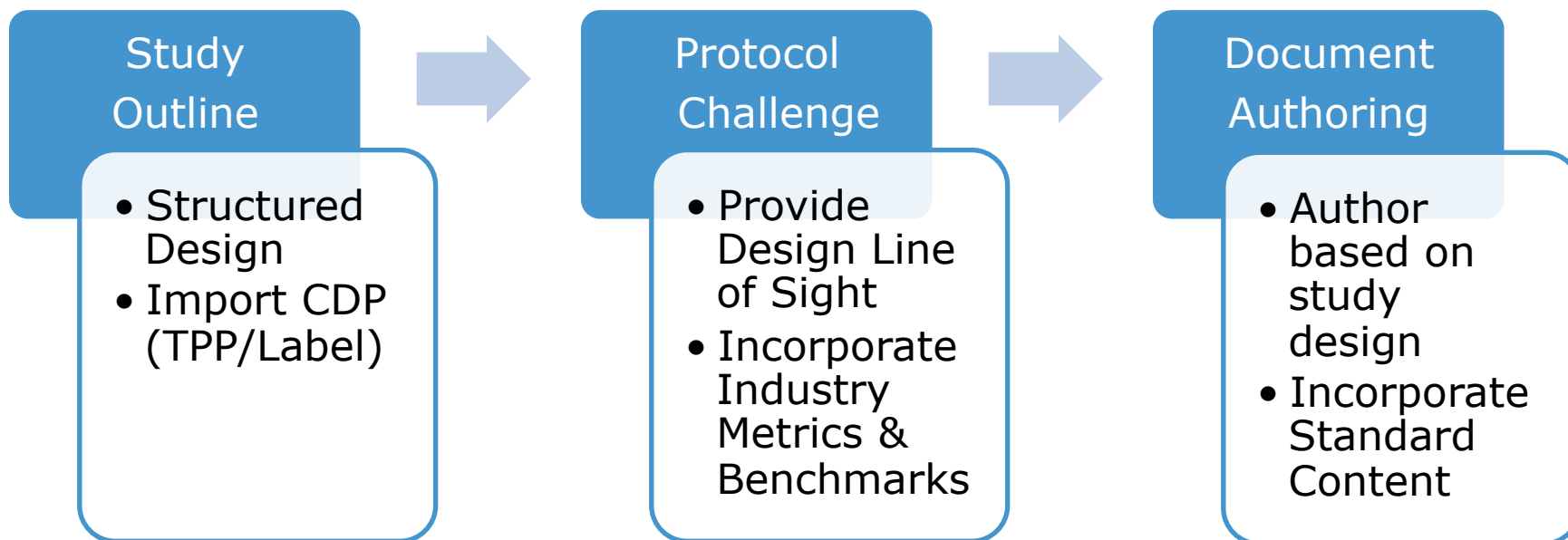
What We Mean by Structured Design

80%
protocol
standard,
design is
buried as
unstructured
text

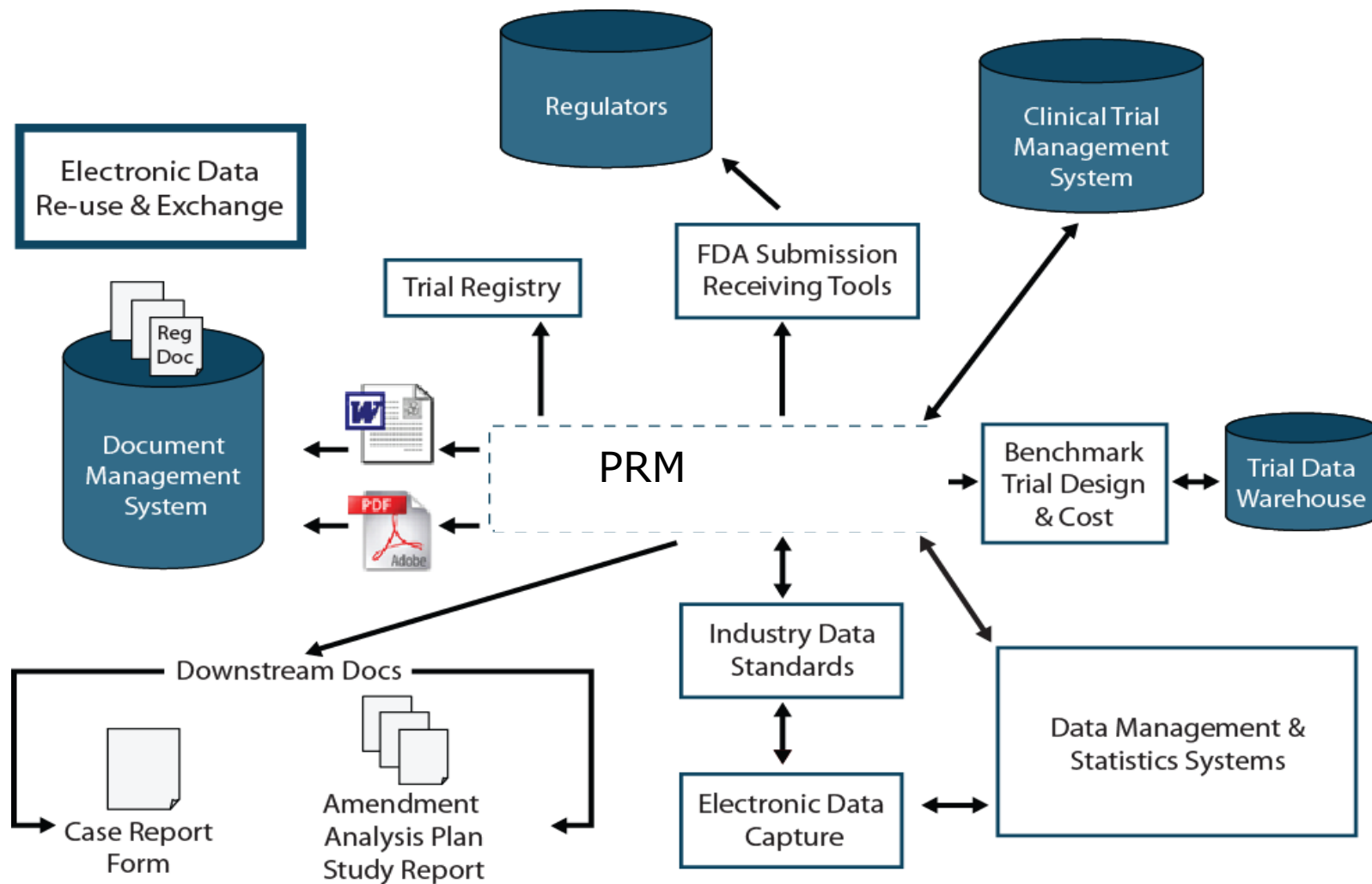


Structured Design Streamlines

Simplifies and Expedites Facilitative Review and Design Challenge



And Facilitates Reuse



Which Can Enable Better Analysis

"Within Study"	Re-Use Instances	% Re-Use		
Study 1		As-Is	Transformed	Total
Stats plan	13	1.5%	1.6%	3.1%
CSR Introduction & Methodology sections	37	4%	39%	43%
CSR Synopsis	22	17%	82%	99%
CTR Summary	22	1%	91%	92%
Ct.gov	-----	1%	99%	100%
CSR Study Results in text tables ²	-----	0%	100%	100%
"Within Study"	Re-Use Instances	% Re-Use		
Study 2		As-Is	Transformed	Total
CSR Introduction & Methodology sections	41	2%	66%	67%
CSR Synopsis	13	5%	93%	98%
CTR Summary	16	19%	76%	95%
"Across Program"	Re-Use Instances	% Re-Use		
Study x to Study y		As-Is	Transformed	Total
Protocol to Protocol	73	23% ³	24%	47% ³
Stats plan to stats plan	29	3%	27%	30%

And Comparisons Across Designs

Clinical Study Analysis (ANTI-INFECTIVE)					
Sponsor vs Industry Median (indications, phase and year)					
Complexity - Study Work Effort	Sponsor	80.57			224% higher
	Industry	36.05			
Total Procedures	Sponsor	254.27			217% higher
	Industry	117.25			
Unique Procedures	Sponsor	31.69			149% higher
	Industry	21.27			
Total Study Visits	Sponsor	10.94			128% higher
	Industry	8.58			
Patients per site	Sponsor	15.40			160% higher
	Industry	9.63			
Cost Per Patient	Sponsor	\$13,810			171% higher
	Industry	\$8,083			
Benefit Per Study (Potential)					
Sponsor spend compared to Industry	Avg/study	\$69,205	Avg of individual study details		

Analysis includes 32 sponsor studies

Some Real-Life PRM Benefits

Prior to data-centric process improvements

- Avg. Protocol Amendments: **1.94**
- Sites w/zero enrollment: **14%**
- Median recruitment cycle: **68 weeks**



After data-centric process improvements

- Avg. Protocol Amendments: **1.54**
- Sites w/zero enrollment: **10%**
- Median recruitment cycle: **38 weeks**

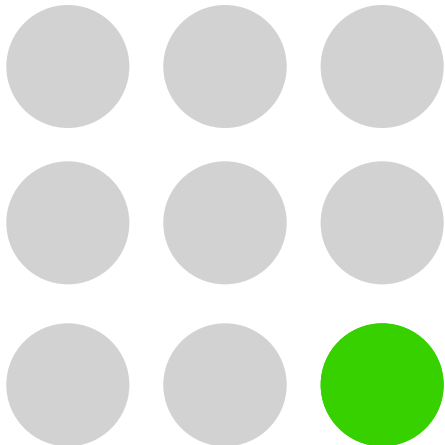


- Handoffs in review process: **312**
- Authoring & Review Cycle Time: **268 Days**
- Authoring & Review Effort: **57.5 Days**
- Process value added time: **48.7%**

- Handoffs in review process: **78**
- Authoring & Review Cycle Time: **99 Days**
- Authoring & Review Effort: **39.5 Days**
- Process value added time: **84%**

*24 studies across phases II – IV

Summary



PRM Can Drastically Influence Study Design

- Significant process change involved in adoption
- Real business value can be demonstrated
- Opportunities
 - Influence trial cost and complexity
 - Drive reuse and efficiency
 - Interface with other standards
- Analytics and business intelligence

Learn More

- CDISC.org
- Forthcoming PRM Toolkit Wizard
- November 1 webinar with Jeff Abolafia, Rho
- MDSOL.com

Questions

Thank you!

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