Smart Infrastructure: The Road to COP28

International Digital Ecosystem Architecture (IDEA)

Increasing interoperability and data sharing between all players in the financial system

K. Dixon Wright
President
SRC Digital Insurance Services
Dixon@srcdis.com

DIGITAL360SUMMIT

Smart Infrastructure: The Road to COP28

International Digital Ecosystem Architecture (IDEA)

Overview
Smart Terminology
Digital Ecosystem – Historical Foundations
Digital Ecosystem – Future Foundation
The How - Hierarchy of Data
The How - Data Elements and Data Sets
Digital Ecosystem
Summary

Smart Infrastructure: The Road to COP28

International Digital Ecosystem Architecture (IDEA)

Overview

Smart Terminology

Digital Ecosystem – Historical Foundations

Digital Ecosystem – Future Foundation

The How - Hierarchy of Data

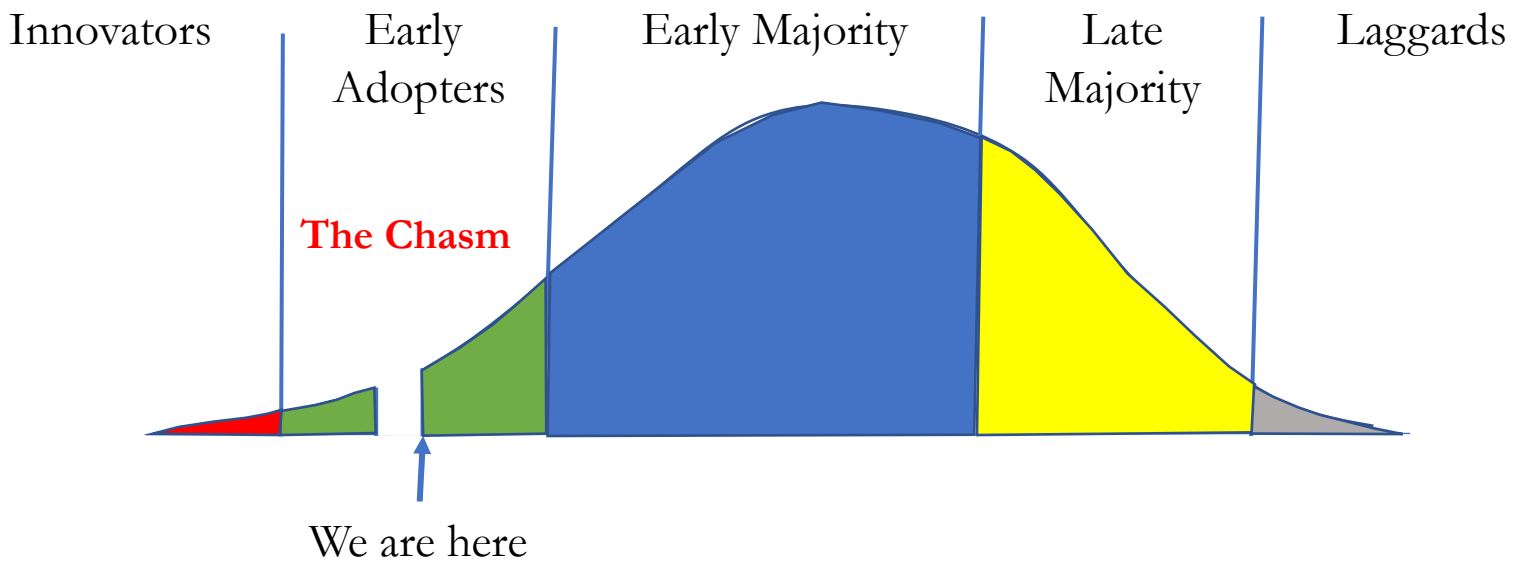
The How - Data Elements and Data Sets

Digital Ecosystem

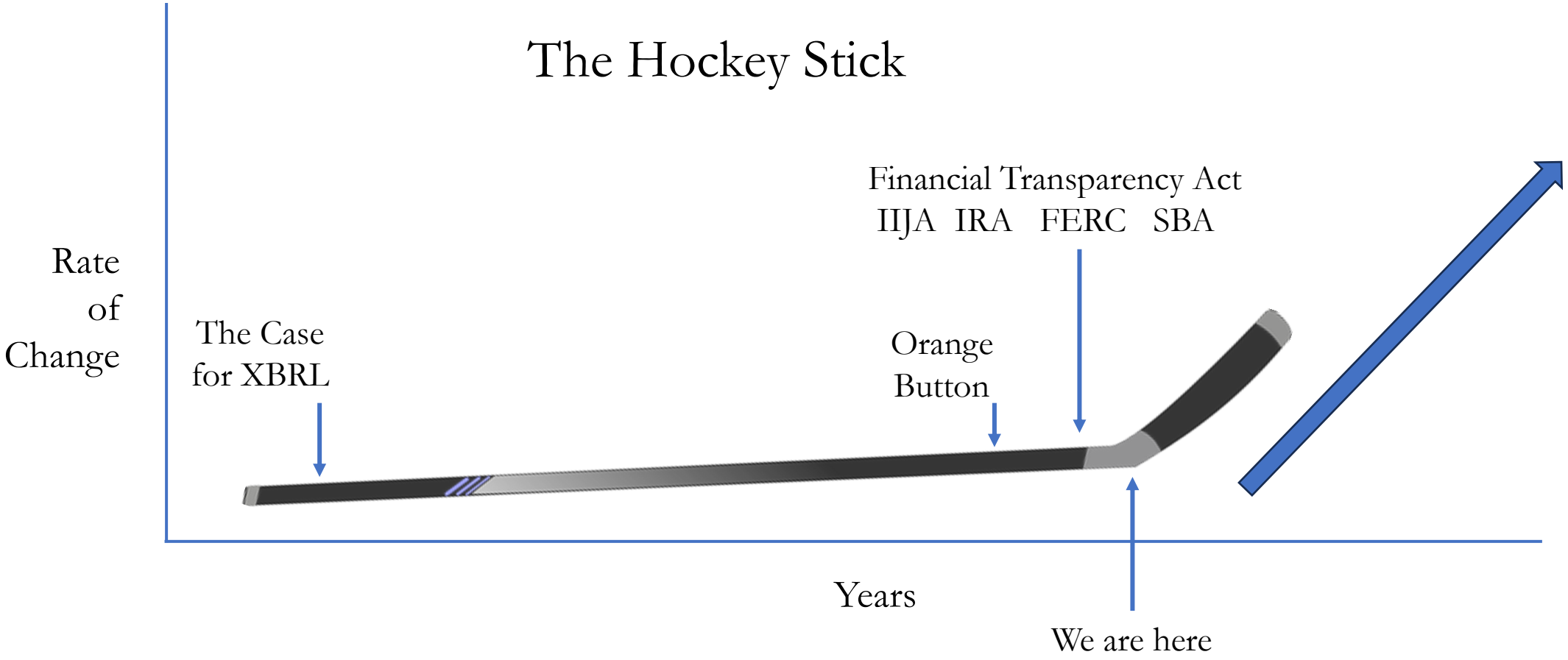
Summary

Where is the Digital Ecosystem ?

Technology Adoption Lifecycle



Where is the Digital Ecosystem ?



Smart Infrastructure: The Road to COP28

International Digital Ecosystem Architecture (IDEA)

Overview
Smart Terminology
Digital Ecosystem – Historical Foundations
Digital Ecosystem – Future Foundation
The How - Hierarchy of Data
The How - Data Elements and Data Sets
Digital Ecosystem
Summary

What Do We Mean By Smart?

Todays Dumb Reality

Fragmented data from multiple sources in the ecosystem that lacks data consistency.

Data has limited value outside the silo

Tomorrows Smart Objective

Consistent data that allows aggregation, administration and analytics of data across industry segments, public or private, domestic or international.

Data is very valuable outside any silo

Smart Meter

An individual digital meter that tracks and distributes energy consumption and provides a data report to stakeholders

Smart Grid

A digital electrical distribution structure that integrates data for energy supply and demand management.

Smart Contract

A digital contract that integrates construction activity data to execution of contract obligations, like progress payments at predetermined benchmarks.

Smart Project

A project where all the contractors and stakeholders are aligned with a digital ecosystem the covers every contract for the entire project.

Smart Infrastructure

A digital distribution structure that integrates data for building and operating all types of infrastructure, from general construction of roads and buildings to agriculture.

Smart Cities

A digital distribution structure that integrates data for all types of physical assets in a community to streamline operations, align public and private data, increase efficiency and improve the quality of life.

Smart Meter

An individual digital meter that tracks and distributes energy consumption and provides a data report to stakeholders

Requires consistent data elements by all participating shareholders

Smart Grid

A digital electrical distribution structure that integrates data for energy supply and demand management.

Requires consistent data elements by all participating shareholders

Smart Contract

A digital contract that integrates construction activity data to execution of contract obligations, like progress payments at predetermined benchmarks.

Requires consistent data elements by all participating shareholders

Smart Project

A project where all the contractors and stakeholders are aligned with a digital ecosystem the covers every contract for the entire project.

Requires consistent data elements by all participating shareholders

Smart Infrastructure

A digital distribution structure that integrates data for building and operating all types of infrastructure, from general construction of roads and buildings to agriculture.

Requires consistent data elements by all participating shareholders

Smart Cities

A digital distribution structure that integrates data for all types of physical assets in a community to streamline operations, align public and private data, increase efficiency and improve the quality of life.

Requires consistent data elements by all participating shareholders

Digital Ecosystems utilize consistent data elements ***to enable the Smart in Smart***

Smart Infrastructure: The Road to COP28

International Digital Ecosystem Architecture (IDEA)

Overview
Smart Terminology
Digital Ecosystem – Historical Foundations
Digital Ecosystem – Future Foundation
The How - Hierarchy of Data
The How - Data Elements and Data Sets
Digital Ecosystem
Summary

AGENDA
THURSDAY
OCTOBER 26, 2000

4th Annual Construction Financial Management Conference
Sponsored by AGC and CFMA
October 26–27, 2000 ♣ Las Vegas, Nevada

7:00–8:00 am: Continental Breakfast

7:45 am: Welcoming Remarks
William Palmer, Conference Coordinator
Ernst & Young, LLP
San Francisco, CA

1 — 8:00–8:50 am: General Session #1
The Dynamics of Construction Dispute Avoidance and Resolution (SK)
Robert S. Peckar, Esq., Sr. Partner
Peckar & Abramson, River Ridge, NJ
Avoiding disputes and solving the unavoidable disputes goes to the heart of the financial bottom line • Learn about methods that work • Understand how to apply those methods in your firm for your clients

8:50–9:00 am: Break

9:00–10:15am: Concurrent Sessions (Select One)

2 — Construction Risk Management Defined for the CFO or Controller (M)
Robert Heuer, Senior Vice President
Willis, Southfield, MI
Patrick Monea, Vice President/CFO
Granger Construction, Lansing, MI
Review the various elements of strategic company construction risk management • Learn effective in-house handling of an insurance and surety program • Identify which factors enhance value with both internal and external "partners" • Understand how effective risk management can be a competitive edge

3 — Federal Tax Update (T)
Neil Wiley, Tax Partner
Moss Adams LLP, San Francisco, CA
John Armour,
Brockman Armour and Co., Denver, CO
Review of federal tax law changes and recent tax court decisions • Update on IRS audit activity and proposed regulations • Tax planning strategies

4 — Recognizing and Responding to Harassment Issues (M)
Lisa Heller, Partner
Robins, Kaplan, Miller & Ciresi
What is harassment • Who should be trained in recognizing & responding • How to perform investigation • Creating a policy that protects your company

5 — Job Cost Accounting (A)
John Metz, Partner,
Sikich, Gardner & Co., LLP – Aurora, IL
Basics of job costing • Various components of costs • Methodologies of costing • Reporting: What should the system give you? • How to use the system to your company's benefit

10:15–10:30 am: Break

10:30–11:45 am: Concurrent Sessions

6 — Project Risk Management and Management of the Insurance Program (M)
Robert Heuer and Patrick Monea
Learn, in detail, the considerations necessary to mitigate risk from a project viewpoint • Recognize how to manage your "insurance year" • Review a sample "life cycle" approach for your insurance year with detailed timelines, plotting specific actions

7 — Federal Tax Update (repeat of Session #3)

8 — Recognizing and Responding to Harassment Issues (repeat of Session #4)

9 — Job Cost Accounting (repeat of Session #5)

11:45 –12:45 pm: Lunch

10 — 12:50–1:40 pm: General Session #2
Outlook for the Economy and Capital Markets (SK)
James E. Landau, President
Berkeley Capital Management
San Francisco, CA
Where is the economy headed? • The outlook for interest rates • How healthy is the consumer? • The implications for stocks

1:45–3:00 pm: Concurrent Sessions (Select One)

11 — Transfer of Ownership (SK)
Gene Harder, CPA
Pam DeCounter, MA
Moss Adams LLP – Spokane, WA
Understand your options • Review personal and emotional considerations • Identify business strategies to maximize value • Consider real life examples of what does and doesn't work

12 — Technology Impact on Surety (SK)
K. Dixon Wright, President
North Coast Surety Insurance Services
Novato, CA
How is the surety industry responding to the internet • How will contractors communicate with their surety • How will the surety integrate with other ASPs • Status of automated delivery of surety bonds, and electronic bonds with digital signatures

13 — Profitable Growth Strategies (SK)
Lanny Harer, Managing Director
FMI Corporation – Raleigh, NC
Why grow? – A case for and against growth • Four fundamental growth strategies • Planning to create greater value • Avoiding the classic mistakes

14 — eBusiness – The Net Effect (SK)
Paul S. Thomas, Partner
Crowe Chizek – Indianapolis, IN
Emerging new business models affecting the construction industry • Supply chain evolution – Marketplaces and portals • Collaboration of the internet – Getting close to customers and subcontractors • Internet impact on HR benefits, recruiting and retention

3:15 – 4:30 pm: Concurrent Sessions (Select One)

15 — Transfer of Ownership (repeat of Session #11)

16 — Technology and Surety (repeat of Session #12)

17 — Profitable Growth Strategies (repeat of Session #13)

18 — eBusiness – The Net Effect (repeat of Session #14)

19 — 4:35 – 5:50 pm: General Session #3
New Approaches to Improving Construction Productivity (A, M)
Dr. Jim Adrian, President
Adrian International – Peoria, IL
Benefits of defect cost codes • Controls for the vital versus useful many • Measuring production risk for improvement • New technology for improved productivity information

6:30 – 8:00 pm: Reception

Note that sessions are designated for CPE credit in one of the following fields: Accounting (A), Consulting (C), Management (M), Personal Development (PD), Specialized Knowledge (SK), or Tax (T). CPE field designations are listed in parentheses next to each session's title.

Link

October 26, 2000
Technology Impact on Surety

K. Dixon Wright, President
North Coast Surety Insurance Services
Novato, CA

- How is the surety industry responding to the internet
- How will contractors communicate with their surety
- How will the surety integrate with other ASPs
- Status of automated delivery of surety bonds, and electronic bonds with digital signatures

THE ROAD TO BETTER BUSINESS INFORMATION: MAKING A CASE FOR XBRL

A Conversation With Nasdaq, Microsoft and PricewaterhouseCoopers

2002

by Al Berkeley, Vice Chairman of Thought Leadership at Nasdaq, with John Connors, Se
Vice President, Chief Financial Officer of Microsoft, and Mike Willis, Partner at
PricewaterhouseCoopers

[Link to Document](#)

Table of Contents

Introduction 1
The Investor's Situation 2
Getting to a More Efficient Market: A Conversation With Al Berkeley 4
An Adoption Case Study: A Conversation With John Connors 6
Enabling a Better-Managed Company: A Conversation With Mike Willis 9
Appendix A: XBRL Resources 11
Appendix B: Author Biographies 12
Alfred R. Berkeley, III 12
John Connors 12
Mike Willis, CPA 13

D360S HOME AGENDA SPEAKERS SPONSORS ABOUT US

Alfred Berkeley
US Economic Forum Board

1:15 - 1:30 PM KEYNOTE A

TUESDAY SEPTEMBER 26
Sustainability
Alfred Berkeley | US Economic Forum Board

6:15 - 7:15 PM

TUESDAY SEPTEMBER 26
Hall of Fame 2023
We will be inducting Alfred Berkeley into the Hall of Fame in 2023. Berkerley has more than 30 years' experience in finance, start-ups and technology.

Active Engagement with DOE FOA Collaboration Opportunities

2014

CONTROL NUMBER: 1167-1552

CSUC / XBRL-CET / SGIP PAP25 - University Interoperability Research Facility
Buildings University Innovators And Leaders Development DE – FOA – 0001167

Topic Area Number : DE-FOA-0001167
Project Title : **University Interoperability Research Facility**.
- Big Energy and Small Business
- Examining the Potential of Interoperability for building the Nation's Energy Infrastructure and Energy Efficient Buildings by "knitting together' various data standards.

Lead Organization : California State University Chico
Supported by XBRL-CET and SGIP PAP25
Organization Type : Consortium
Principal Investigator : Surety Resource Connection, Inc.
Team Members and Key Participants : XBRL US, SGIP, PwC, Intuit, GALLINA, Solar Nexus (IEP XML) Abbreviation Guide

Anticipated Project Budget

Component	DOE	Consortium	Total
SGIP PAP25 and XBRL-CET alignment with BEDES	$200,000	$50,000	$250,000
IEP XML Alignment with BEDES, XBRL and SGIP	$200,000	$50,000	$250,000
agcXML Alignment with BEDES, XBRL and SGIP	$200,000	$50,000	$250,000
NASBP/SFAA alignment with BEDES, XBRL SGIP	$200,000	$50,000	$250,000
Manufacturing with BAPVC, BEDES, XBRL, SGIP	$200,000	$50,000	$250,000
	$1,000,000	$250,000	$1,250,000

Abstract

DOE funded Smart Grid Interoperability Panel, Energy Star, G… Exchange Specification, NASEO and IEP XML with the … "knitting together" data standards for interoperability. Potenti… construction/financial services collaborate, supported by a ***university based sustainable Interoperability R&D Facility***, which is the premise of this DOE-FOA response by CSUC and XBRL-CET/SGIP-PAP25.

SGIP-Priority Action Plan 25 , is a collaboration with XBRL US to extend the public FASB USGAAP taxonomy to include energy specific data fields, particularly for building the nation's energy infrastructure, streamlining the interconnection process and enabling DATA Act compliance for energy related projects that have federal funding.

Data standardization enables interoperability across disparate systems and will enable better quality data, data analytics, mandated reporting compliance, investment analysis, significant cost savings and improved access to capital and financial services for all stakeholders, including small business.

This CSUC/XBRL-CET/SGIP-PAP25 will explore how current DOE efforts like BEDES can "knit together" the BEDES Dictionary, IEPXML, NASEO data matrix and the proposed XBRL-CET Data sets to align with the objectives of the DOE to promote more efficiency in energy development, help small business, and create a financially sustainable university based Interoperability R&D Facility.

Page 1 of 4

Section 40101(d) Formula Grant Program of the Bipartisan Infrastructure Law
Preventing Outages and Enhancing the Resilience of the Electric Grid

DATA Act 2.0

…plement - Engage

…he foundation for data interoperability and t…
…ds. From that Act came XBRL, a reliable, se…
…E Orange Button data interoperability initiati…
…nce (AI), smart contracts and blockchain fo…

…duced S.4295 - the Financial Data Transparen…
… requirement to *"harmonize and reduce the p…*
…nd accountability, and for other purposes".

…on for a reliable and trusted digital ecosystem…
…5 will establish a modern digital ecosystem wi…
…ther purpose" is to accelerate the construction…
…nd surety for all stakeholders.

…lers is required for "Preventing Outages and E…

SRC Digital Insurance Se…
Novato, California 94949…
415-717-1092

September 25, 2022

Patricia Hoffman
Grid Deployment Office
U.S. Department of Energy
1000 Independence Avenue
SW, Washington, DC 20585

RE: FOA Number DE-FOA-0002736
Non-traditional grant request
Formula Grants to States and Indian Tribes for Prev…
Resilience of the Electric Grid

Ms. Hoffman

Accelerating Large Scale Distributed Energy and Storage for Clean Energy, Reliability and Resiliency
Department of Energy Loan Programs Office - Title 17 Innovative Energy Loan Guarantee Program
Orange Button Collaboration Group – May 28, 2021
Page 1 of 5

Executive Summary

The existing On Bill Repayment structure can leverage the efficiency of the DOE Orange Button enab… …agement capa… …housands …

PG&… …stem and $75… …ns with a who…

Und… …ent loan wou… …and each cont… …both the cons… …rovide a platf…

The … …xpanded DOE… …products and … …lending. Ince… …fessional risk … …struction risk…

Onc… …onstrated priv… …ive rates given the surety guarantees and successful track record demonstrated by the DOE loan program.

U.S. Department of Energy (DOE)
Energy Efficiency and Renewable Energy Office (EERE)

Request for Information on the cost and value of acquiring, accessing, and sharing solar photovoltaic (PV) system performance data.

SETO seeks responses from all interested stakeholders in industry.

Cost Benefit of Data Interoperability and the Value of Performance Data

K. Dixon Wright
President
SRC Digital Insurance Services
www.SRC-Digital-Insurance-Services.com
Dixon@SRC-Digital-Insurance-Services.com
415-717-1092

November 18, 2022

2023

Concept Papers Due: December 16, 2022
DOE Response to Concept Papers: January 27, 2023
Full Applications Due: March 17, 2023

Department of Energy (DOE)
Grid Deployment Office (GDO)
Office of Clean Energy Demonstrations (OCED)

BIL – Grid Resilience and Innovation Partnerships (GRIP)

Funding Opportunity Announcement (FOA) Number: DE-FOA-0002740

Group Concept Paper – Surety Resource Connection
Enhancing Interoperability and Data Architecture of Systems

Funding Opportunity Announcement
Smart Grid Priority Investment Areas:
Topic Area #2: Enhancing interoperability and data architecture of systems
1. Smart Grid Grants Fact Sheet
2. Outline for Concept Paper
3. Criteria for Award

…Grid Grants - SRC Concept Paper - FOA Submission - Cover Page
…Grid Grants - SRC Concept Paper - FOA Submission - Project Technology Description
…Grid Grants - SRC Concept Paper - FOA Submission - Community Benefits Plan
…Grid Grants - SRC Concept Paper - FOA Submission - Addendum A

Prior Submissions to DOE

1. June 1, 2022
   Response to DOE Request for Information
   Preventing Outages and Enhancing the Resilience of the Electric Grid
2. September 25, 2022
   Response to DOE FOA DE-FOA-0002736
   Non-traditional grant request
   Formula Grants to States and Indian Tribes for Preventing Outages and Enhancing the Resilience of the Electric Grid
3. November 18, 2022
   Response to DOE Request for Information
   Cost and value of acquiring, accessing, and sharing solar photovoltaic system performance data.
   Addendum - Proposal for Model Digital Ecosystem for Community Resiliency
   On November 18th we submitted our response to the DOE RFI regarding performance data, and on the 18th the DOE issued a new funding opportunity, Smart Grid Grants, that ties directly to our request for funding.

2014 DATA Act

Public Law 113–101
113th Congress

An Act

May 9, 2014
[S. 994]

To expand the Federal Funding Accountability and Transparency Act of 2006 to increase accountability and transparency in Federal spending, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Digital Accountability and Transparency Act of 2014.
31 USC 6101 note.

SECTION 1. SHORT TITLE.

This Act may be cited as the "Digital Accountability and Transparency Act of 2014" or the "DATA Act".

SEC. 2. PURPOSES.

The purposes of this Act are to—

(1) expand the Federal Funding Accountability and Transparency Act of 2006 (31 U.S.C. 6101 note) by disclosing direct Federal agency expenditures and linking Federal contract, loan, and grant spending information to programs of Federal agencies to enable taxpayers and policy makers to track Federal spending more effectively;

(2) establish Government-wide data standards for financial data and provide consistent, reliable, and searchable Government-wide spending data that is displayed accurately for taxpayers and policy makers on USASpending.gov (or a successor system that displays the data);

(3) simplify reporting for entities receiving Federal funds by streamlining reporting requirements and reducing compliance costs while improving transparency;

(4) improve the quality of data submitted to USASpending.gov by holding Federal agencies accountable for the completeness and accuracy of the data submitted; and

(5) apply approaches developed by the Recovery Accountability and Transparency Board to spending across the Federal Government.

The Blue Button represents a national movement that enables consumers to have easy access to their own health information in a format that they can use.

The Blue Button logo signifies that a consumer can download a single electronic file that contains their available health data.

Website

The Green Button provides utility customers with easy and secure access to their energy usage information in a consumer-friendly and computer-friendly format.

Customers are able to securely download their own detailed energy usage with a simple click of a literal "Green Button" on electric utilities' websites.

Website

Orange Button targets a reduction in soft costs by streamlining the collection, security, management, exchange, and monetizing of solar datasets across the value chain of solar.

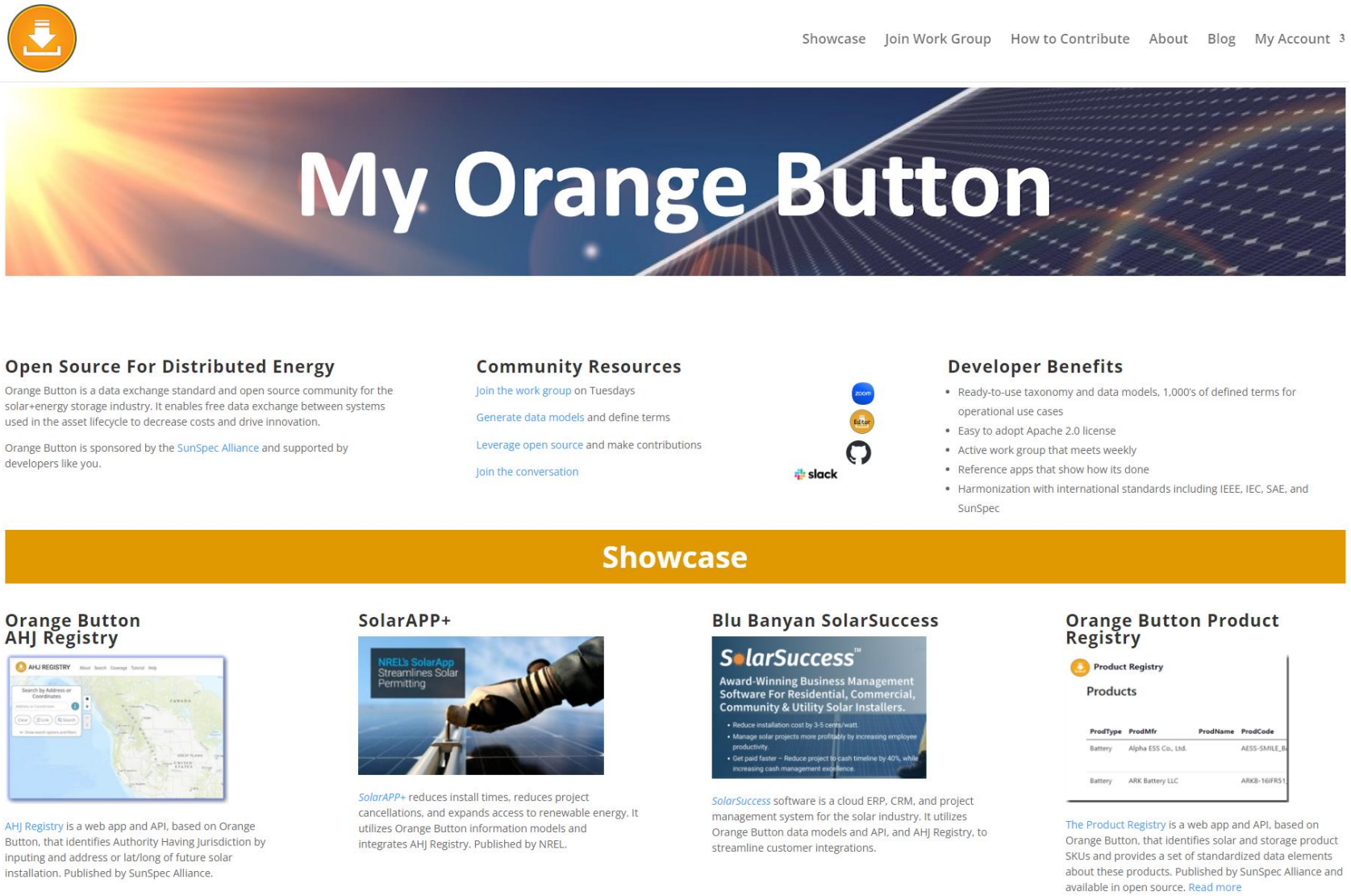
Creating an industry-driven standardized data landscape will facilitate the growth and expansion of distributed solar.

Website

The Orange Button Initiative started as a public/private partnership funded by the U.S. Department of Energy, the SunSpec Alliance and more than 350 companies that contributed to its development.

Orange Button leverages the idea that solar companies will share data with each other to reduce friction and achieve operational efficiency.

The SunSpec Alliance is the original the developer of the technology and the licensee of the Orange Button trademark.



U.S. Small Business Administration

SUBJECT: Option for Prior Approval Sureties to Submit the "Work in Process" Information Required by SBA Form 994F through eXtensible Business Reporting Language (XBRL)

SBA Procedural Notice

TO: All SBA Employees and SBA Prior Approval Surety Partners
SUBJECT: Option for Prior Approval Sureties to Submit the "Work in Process" Information Required by SBA Form 994F through eXtensible Business Reporting Language (XBRL)

CONTROL NO.: 5000-834330

EFFECTIVE: June 29, 2022

The purpose of this Notice is to inform Prior Approval Surety Companies and their Surety Agents participating in SBA's Surety Bond Guarantee (SBG) Program (referred to collectively hereafter as Surety Partners) and SBA employees that, effective immediately, Surety Partners and small business concerns will have the option to submit the information required by SBA Form 994F, "Schedule of Work in Process", through eXtensible Business Reporting Language (XBRL) (referred to as XBRL WIP reports). Under the current process, small business concerns provide the "Work in Process" (WIP) information to Surety Partners, and then Surety Partners must manually enter individual WIP information into CAFS. With XBRL WIP reports, Surety Partners will have the option to send a batch transmittal of the WIP information to CAFS electronically. SBA is issuing this Notice to provide Surety Partners with procedures to properly submit XBRL WIP reports through the Capital Access Financial System (CAFS).

What is XBRL?
XBRL is an open technology standard that enables business and financial data electronic communication. XBRL-formatted documents create computer-readable data and enable greater efficiency, improved accuracy, reliability, and cost savings to those who supply and use financial and business data.

The XBRL WIP report is an alternative to manual CAFS entry of SBA Form 994F information. All the information contained in the XBRL WIP report is identical to the information contained in the current SBA Form 994F; the only difference between the two forms is the formatting. The XBRL WIP report functions as a computer-readable spreadsheet specifically designed to be translated by CAFS. By using the XBRL WIP report, a Surety Partner will not need to manually enter the information into CAFS.

How are XBRL WIP reports submitted?
To submit the required WIP information through XBRL, a Surety Partner will need to perform the following sequence of steps:

SBA Form 1353.3 (4-93) MS Word Edition; previous editions obsolete
Must be accompanied by SBA Form 58

Federal Recycling Program Printed on Recycled Paper

Capital Access Financial System

ATTN. BORROWERS: MySBA Loan Portal is now live!

Visit https://lending.sba.gov and login with your current CAFS user ID and password.

Make payments to SBA and monitor loan details using the new MySBA Loan portal.

Borrowers will use the new portal instead of the CAFS portal below.

Welcome to the Capital Access Financial System (CAFS).

CAFS ACCOUNT LOGIN

Not Enrolled?
Forgot Password Phrase?
Forgot Username?

User ID

Password Phrase

Show Password Phrase

Show/Hide Terms and Conditions

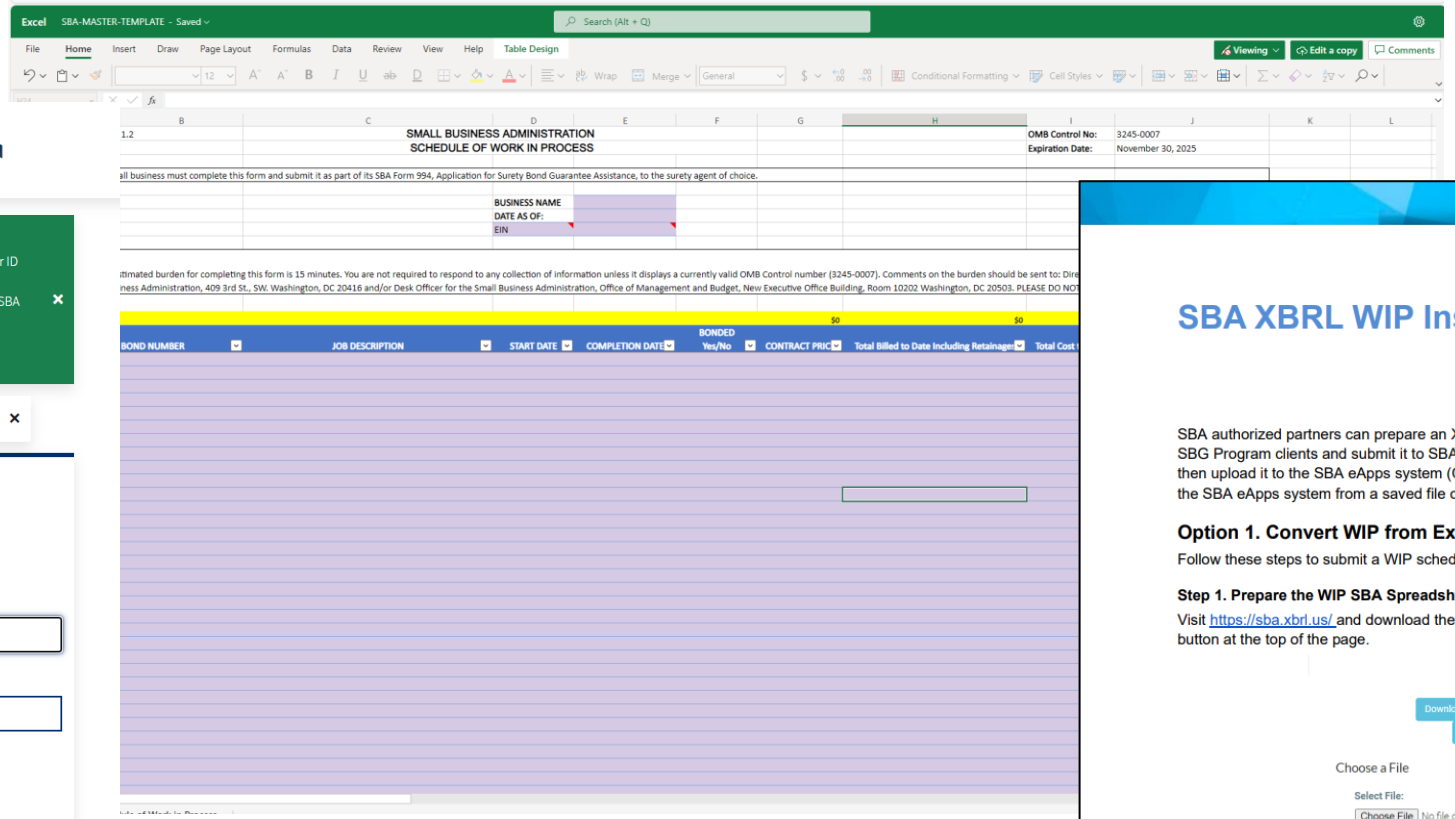
Disclaimer

This is a U.S. Small Business Administration federal government computer system that is for official use only. This system is subject to monitoring and anyone using this system expressly consents to such monitoring. Individuals found performing unauthorized activities may be subject to disciplinary action including criminal prosecution.

*I have read and agreed to the terms above.

Login

Regulations.gov SBA.gov WhiteHouse.gov



U.S. Small Business Administration

SBA XBRL WIP Instructions

xBRL US

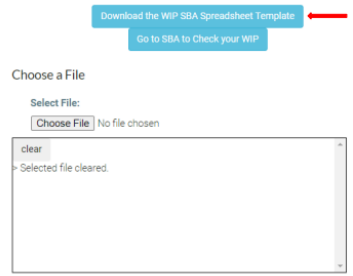
SBA authorized partners can prepare an XBRL-formatted Work-in-Process (WIP) report for SBG Program clients and submit it to SBA. Users can convert a WIP report into XBRL format, then upload it to the SBA eApps system (Option 1) or upload an existing XBRL formatted WIP to the SBA eApps system from a saved file on their computer (Option 2).

Option 1. Convert WIP from Excel to XBRL & Submit to SBA

Follow these steps to submit a WIP schedule to SBA when starting with a WIP in Excel format.

Step 1. Prepare the WIP SBA Spreadsheet Template

Visit https://sba.xbrl.us/ and download the ***WIP SBA Spreadsheet Template*** using the blue button at the top of the page.



Create a new WIP Schedule

Prepare a new WIP SBA Spreadsheet Template for any client following these steps. If updating a previously submitted WIP SBA Spreadsheet, see the section below on *Updating a previously submitted WIP*.)

- Enter or cut & paste information from an Excel WIP schedule into the WIP SBA Spreadsheet Template. Complete columns B - J as highlighted in the figure below.
  - All fields are mandatory except *Bond Number* and *Total Billed to Date Including Retainages*.

Link

Federal Energy Regulatory Commission

DRAFT

XBRL FORMS REFRESH
FERC FORMS TAXONOMY GUIDE 2020
v0.1 RELEASE

Office of the Executive Director
Chief Information Officer
December 2019

Federal Energy Regulatory Commission

EFORMS FILING MANUAL
General Information
DRAFT RELEASE 0.2.2

Office of the Executive Director
Chief Information Officer
April 2022

2023 Financial Transparency Act

Public Law 117–263
117th Congress

An Act

To authorize appropriations for fiscal year 2023 for military activities of the Department of Defense, for military construction, and for defense activities of the Department of Energy, to prescribe military personnel strengths for such fiscal year, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

(a) IN GENERAL.—This Act may be cited as the "James M. Inhofe National Defense Authorization Act for Fiscal Year 2023".

(b) REFERENCES.—Any reference in this or any other Act to the "National Defense Authorization Act for Fiscal Year 2023" shall be deemed to be a reference to the "James M. Inhofe National Defense Authorization Act for Fiscal Year 2023".

TITLE LVIII--FINANCIAL DATA TRANSPARENCY

Sec. 5801. Short title.

Subtitle A--Data Standards for Covered Agencies; Department of the Treasury Rulemaking

Sec. 5811. Data standards.
Sec. 5812. Open data publication by the Department of the Treasury.

Data Standards.--

1) Common identifiers; quality.--The data standards established in the final rules promulgated under subsection (b)(2) shall—

A) include common identifiers for collections of information reported to covered agencies or collected on behalf of the Council, which shall include a common nonproprietary legal entity identifier that is available under an open license for all entities required to report to covered agencies; and

(B) to the extent practicable--

(i) render data fully searchable and machine-readable.
(ii) enable high quality data through schemas, with accompanying metadata documented in machine-readable taxonomy or ontology models, which clearly define the semantic meaning of the data, as defined by the underlying regulatory information collection requirements;
(iii) ensure that a data element or data asset that exists to satisfy an underlying regulatory information collection requirement be consistently identified as such in associated machine-readable metadata;
(iv) be nonproprietary or made available under an open license;
(v) incorporate standards developed and maintained by voluntary consensus standards bodies; and
(vi) use, be consistent with, and implement applicable accounting and reporting principles.

Infrastructure Investment and Jobs Act (IIJA)

Public Law 117–58
117th Congress

An Act

To authorize funds for Federal-aid highways, highway safety programs, and transit programs, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the "Infrastructure Investment and Jobs Act".

"(5) ACCELERATED IMPLEMENTATION AND DEPLOYMENT OF ADVANCED DIGITAL CONSTRUCTION MANAGEMENT SYSTEMS.—

"(A) IN GENERAL.—The Secretary shall establish and implement a program under the technology and innovation deployment program established under paragraph (1) to promote, implement, deploy, demonstrate, showcase, support, and document the application of advanced digital construction management systems, practices, performance, and benefits.

"(B) GOALS.—The goals of the accelerated implementation and deployment of advanced digital construction management systems program established under subparagraph (A) shall include—

"(i) accelerated State adoption of advanced digital construction management systems applied throughout the construction lifecycle (including through the design and engineering, construction, and operations phases) that—

"(I) maximize interoperability with other systems, products, tools, or applications;

"(II) boost productivity;

"(III) manage complexity;

"(IV) reduce project delays and cost overruns; and

"(V) enhance safety and quality;

"(ii) more timely and productive information-sharing among stakeholders through reduced reliance on paper to manage construction processes and deliverables such as blueprints, design drawings,

Caltrans

Major Construction Payment & Information

Payments

Detail estimate information is available for those issued after February 1,1999 while voucher payment data is available for those issued after July 1, 2000. For detail estimate and voucher inquiries prior to the above dates please contact the Resident Engineer or the District Construction office.

The Held a
legal, liens,

Payment

Est.	En							
1								
2								
3								
4								
5								
6	Detail	Voucher	P/P	Warrant	10/07/08	0.00	191,309.00	
7	Detail	Voucher	P/P	Warrant	11/05/08	0.00	290,424.50	
8	Detail	Voucher	P/P	Warrant	12/09/08	0.00	432,158.52	
9	Detail	Voucher	P/P	Warrant	01/06/09	0.00	228,604.01	
10	Detail	Voucher	P/P	Warrant	02/05/09	0.00	410,165.78	
11	Detail	Voucher	P/P	Warrant	03/10/09	0.00	179,635.50	
12	Detail	Voucher	P/P	Warrant	04/08/09	0.00	227,972.45	
13	Detail	Voucher	P/P	Warrant	05/06/09	0.00	137,701.80	
14	Detail	Voucher	P/P	Warrant	06/08/09	0.00	109,625.89	
15	Detail	Voucher	P/P	Warrant	06/30/09	0.00	66,303.93	
16	Detail	Voucher	P/P	Warrant	08/07/09	0.00	145,381.54	
17	Detail	Voucher	A/A	Warrant	09/10/09	0.00	195,020.02	
18	Detail	Voucher	FIN	Warrant	01/27/10	0.00	54,713.17	
						Total:	$0.00	$3,317,628.56

California LEGISLATIVE INFORMATION

AB-1223 Construction contract payments: Internet Web site posting. (2017-2018)

"(5) ACCELERATED IMPLEMENTATION AND DEPLOYMENT OF ADVANCED DIGITAL CONSTRUCTION MANAGEMENT SYSTEMS.—

16 LEAD COMPLIANCE PLAN	LS	3,075.0000	3,075.00			1.000	3,075.00	
17 ASPHALT CONCRETE (TYPE A, 1/2" MAXIMUM GRADING)	TON	500.0000	7,000.00			26.000	13,000.00	
18 FURNISH SINGLE SHEET ALUMINUM SIGN (0.063"-UNFRAMED)	SQFT	17.1500	11,662.00	80.000	1,372.00	680.000	11,662.00	
19 INSTAL METHOD								
20 MINOR								
5) CURB R								
21 CURB R								
5)								
22 THERMOPLASTIC PAVEMENT MARKING	SQFT	5.0000	31,750.00			7,470.000	37,350.00	

PROGRAM CAS145 PAGE 2
DATE 01/06/10 STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION 04-162514
TIME 01:30 PM ESTIMATE NO. 18
BID OPENING 10/31/07 PROJECT RECORD - ESTIMATE WORK PERFORMED THROUGH 08/11/09
R.E. NAME: DUAN, FRANK DATE OF THIS ESTIMATE 01/06/10

ITEM NO.	ITEM DESCRIPTION	UNIT	CONTRACT PRICES	ORIGINAL AUTH. AMT	THIS ESTIMATE QUANTITY	THIS ESTIMATE $ AMOUNT	TOTAL ESTIMATE QUANTITY	TOTAL ESTIMATE $ AMOUNT
23 MAINTAINING EXISTING TRAFFIC MANAGEMENT	LS	54,000.0000	54,000.00			1.000	54,000.00	
						1.000	297,000.00	
						1.000	225,000.00	
						1.000	144,000.00	
						1.000	147,000.00	
						1.000	150,000.00	
						1.000	148,000.00	
						1.000	149,000.00	
						1.000	145,000.00	
						1.000	160,000.00	
						1.000	225,000.00	

PAGE 3
04-162514
ESTIMATE NO. 18
WORK PERFORMED THROUGH 08/11/09
DATE OF THIS ESTIMATE 01/06/10

ITEM NO.	ITEM DESCRIPTION	UNIT	CONTRACT PRICES	ORIGINAL AUTH. AMT	THIS ESTIMATE QUANTITY	THIS ESTIMATE $ AMOUNT	TOTAL ESTIMATE QUANTITY	TOTAL ESTIMATE $ AMOUNT
	SUBTOTAL CONTRACT ITEMS WITHOUT MOBILIZATION					11,887.00		2,765,486.00
	ADJUSTMENT OF COMPENSATION					0.00		67,217.85
	EXTRA WORK					37,826.17		207,924.71
	SUBTOTAL AMOUNT EARNED WITHOUT MOBILIZATION					49,713.17		3,040,628.56
34 MOBILIZATION		LS	277,000.0000	277,000.00			1.000	277,000.00
	ORIGINAL CONTRACT AMOUNT			3,034,812.00				
	TOTAL WORK COMPLETED					49,713.17		3,317,628.56
	MATERIALS ON HAND ON SITE							0.00
	MATERIALS ON HAND ELSEWHERE							0.00
	DEDUCTIONS					5,000.00		0.00
	TOTAL					54,713.17		3,317,628.56

ITEMS FOR WHICH CONTRACT PRICE EXCEEDS MAXIMUM VALUE

	MAXIMUM VALUE	CONTRACT PRICE	OVERBID AMOUNT
016 LEAD COMPLIANCE PLAN	3,000.00	3,075.00	75.00

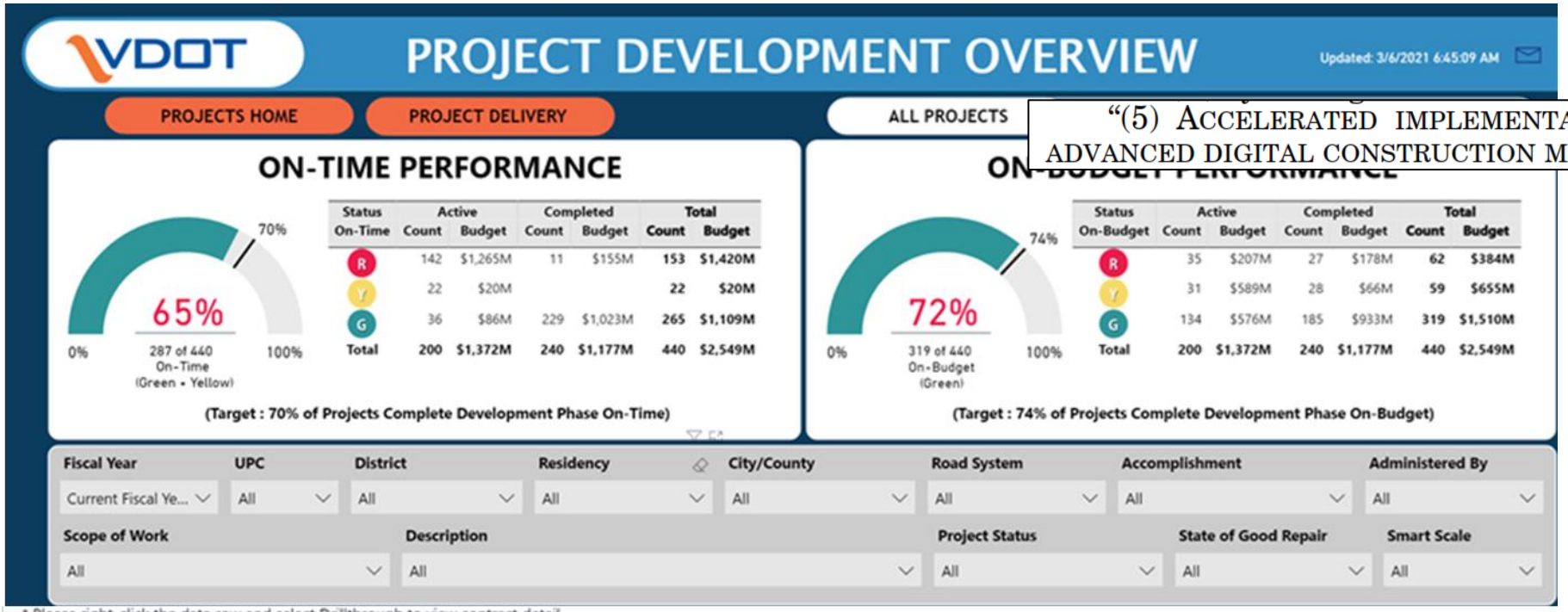
DATE CONTR APPROVED	CONTRACT DAYS	DATE WORK STARTED	BEGIN CONSTR	JOB COMPLETED ON	WORKING DAYS	WEATHER NON-WORKING DAYS	C.C.O. DAYS	OTHER DAYS	PERCENT COMPLETED	PERCENT TIME ELAPSED
01/23/08	250	02/07/08	02/07/08	08/11/09	311	65	65	0	100%	100%

DUAN, FRANK
RESIDENT ENGINEER

PROGRAM CAS145
DATE 01/06/10

Project Data For Analytics

"(5) ACCELERATED IMPLEMENTATION AND DEPLOYMENT OF ADVANCED DIGITAL CONSTRUCTION MANAGEMENT SYSTEMS.—

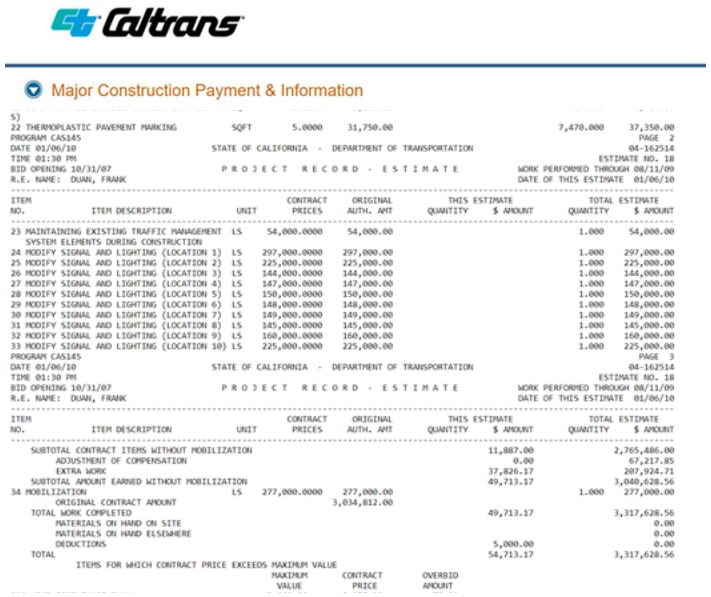


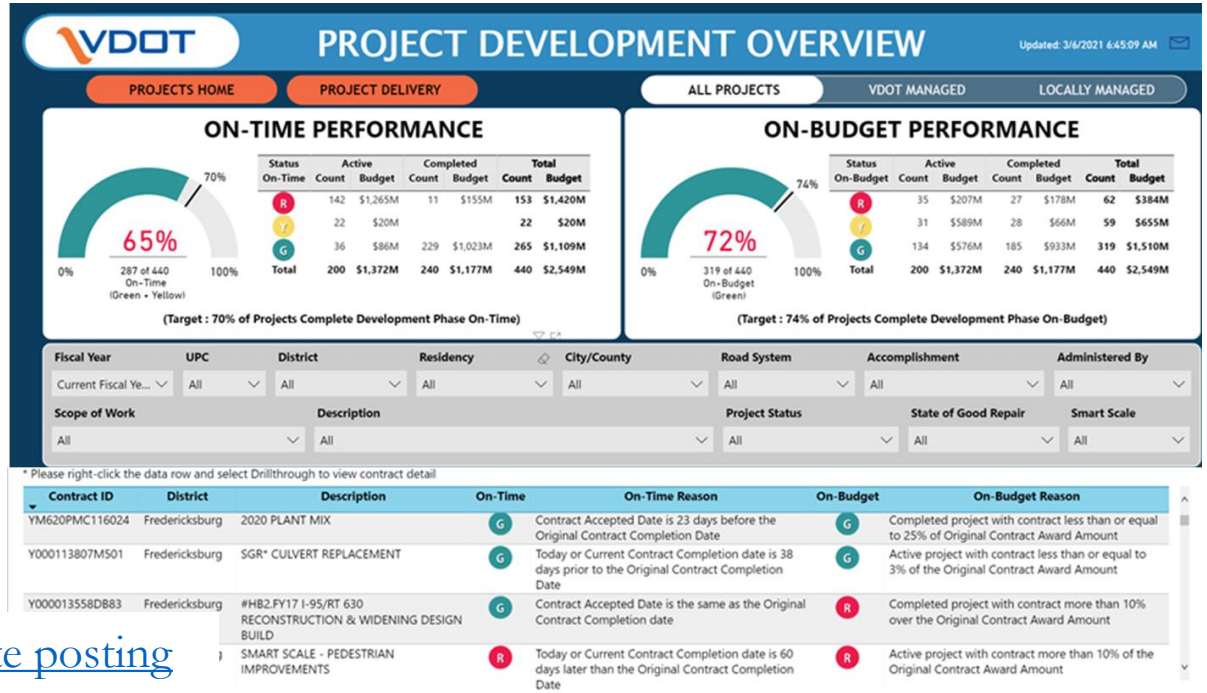
* Please right-click the data row and select Drillthrough to view contract detail

Contract ID	District	Description	On-Time	On-Time Reason	On-Budget	On-Budget Reason
YM620PMC116024	Fredericksburg	2020 PLANT MIX	G	Contract Accepted Date is 23 days before the Original Contract Completion Date	G	Completed project with contract less than or equal to 25% of Original Contract Award Amount
Y000113807M501	Fredericksburg	SGR* CULVERT REPLACEMENT	G	Today or Current Contract Completion date is 38 days prior to the Original Contract Completion Date	G	Active project with contract less than or equal to 3% of the Original Contract Award Amount
Y000013558DB83	Fredericksburg	#HB2.FY17 I-95/RT 630 RECONSTRUCTION & WIDENING DESIGN BUILD	G	Contract Accepted Date is the same as the Original Contract Completion date	R	Completed project with contract more than 10% over the Original Contract Award Amount
Y0000109468M01	Fredericksburg	SMART SCALE - PEDESTRIAN IMPROVEMENTS	R	Today or Current Contract Completion date is 60 days later than the Original Contract Completion Date	R	Active project with contract more than 10% of the Original Contract Award Amount

Project Data For Analytics

"(5) ACCELERATED IMPLEMENTATION AND DEPLOYMENT OF ADVANCED DIGITAL CONSTRUCTION MANAGEMENT SYSTEMS.—





[AB-1223 Construction contract payments: Internet Web site posting]

Caltrans - [Monthly Progress Payments]

VDOT - [Digital Dashboard Project Monitoring]

Smart Infrastructure: The Road to COP28

International Digital Ecosystem Architecture (IDEA)

Overview
Smart Terminology
Digital Ecosystem – Historical Foundations
Digital Ecosystem – Future Foundation
The How - Hierarchy of Data
The How - Data Elements and Data Sets
Digital Ecosystem
Summary

Unless we act now, the 2030 Agenda will become an epitaph for a world that might have been.

António Guterres
Secretary-General, United Nations

[UN Sustainable Development Goals]

The Americas Business Dialogue (ABD) is one of the most important private-sector initiatives in the Western Hemisphere.

It represents companies and business organizations from all sectors of the economy and all countries in the Americas.

[Inter-Americas Development Bank]
[Americas Business Dialogue]

UNITE. ACT. DELIVER.

We are at a halfway point. It has been 7 years since Paris, with 7 years to go to 2030.

We must respond to the facts. We need to reduce emissions by 43% by 2030 and course correct on adaptation, finance, and loss and damage.

We will deliver a transformational COP of action.

A COP for all.

[COP28 UAE]

UN Sustainable Development Goals

2 - End hunger, achieve food security and improved nutrition and promote sustainable agriculture

7 - Affordable and Clean Energy

- Reduce the administrative costs of permitting and construction
- Increase risk management capabilities to reduce exposure to lenders for better terms.

9 - Industry, Innovation and Infrastructure

- Accelerate the implementation of digital construction management systems, public and private.
- Model utilizes open standards so software developers have no constraints, trademarks or exclusivity to implement data exchange.

11 - Sustainable Cities and Communities

- Model Digital Ecosystem can be easily replicated without changing software platforms.
- SoalrApp is ready to be implemented to help reduce administrative costs and speed up timelines for permitting solar projects

12 - Responsible Consumption and Production

- The demand for energy will put pressure on generation and meeting demand will be a challenge. Enabling the production of clean energy to be more efficient so clean energy can be price competitive to fossil fuels will drive responsible consumption and production.

13 - Climate Action

- Accelerating the construction of all clean energy infrastructure projects that connect to the smart grid is direct climate action.

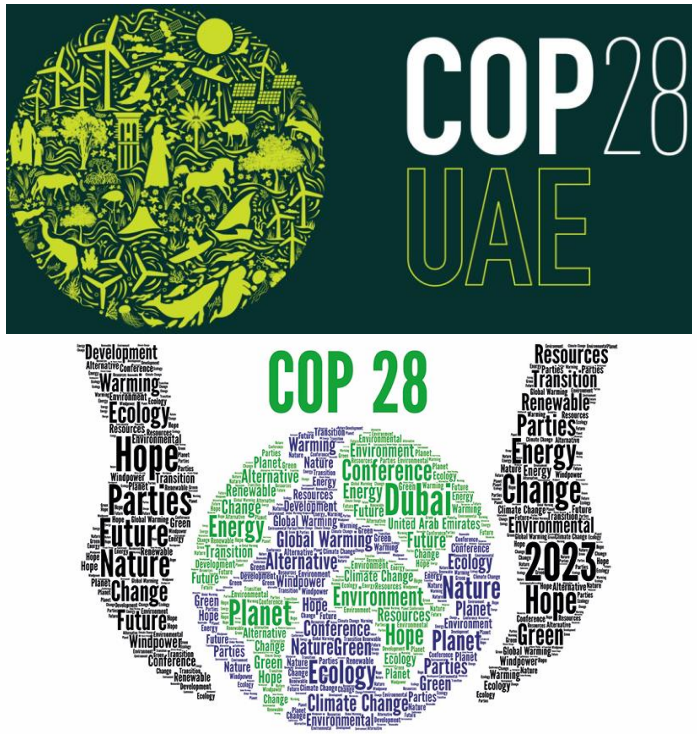
17 - Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

- Expansion of the internationally recognized XBRL Taxonomy for infrastructure related data elements will promote and enable global partnerships.
- Engagement with the California-China Climate Institute and XBRL for China financial markets

Inter-Americas Development Bank
Americas Business Dialogue
IX Summit of the Americas

Policy Recommendations
Building a sustainable, resilient, and equitable future

Recommendation 14
Increase interoperability and data sharing between all players in the financial system.



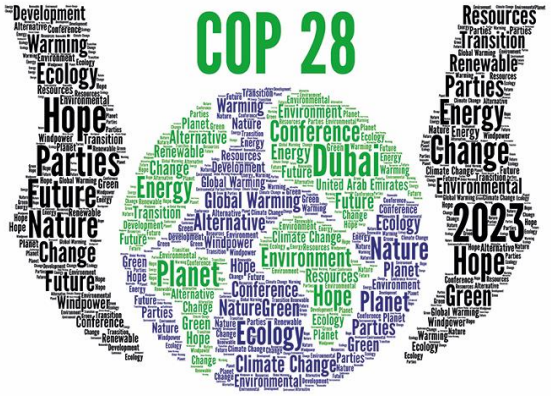
Time is running out and the stakes for the planet are high.

While the historic Paris Agreement united governments around what the world must do to meet the climate challenge, ***COP28 will focus on the 'how'***

The potential is there, but the landscape is fragmented and this is simply slowing us down. What is missing is a holistic, ***unifying ecosystem*** that brings all the key players together and brings everything under one umbrella.

Dr. Sultan Al Jaber
UAE Minister of Industry and Advanced Technology
COP28 President-Designate
May 10, 2023

The Road to COP28



COP28 will focus on the 'how'

unifying ecosystem

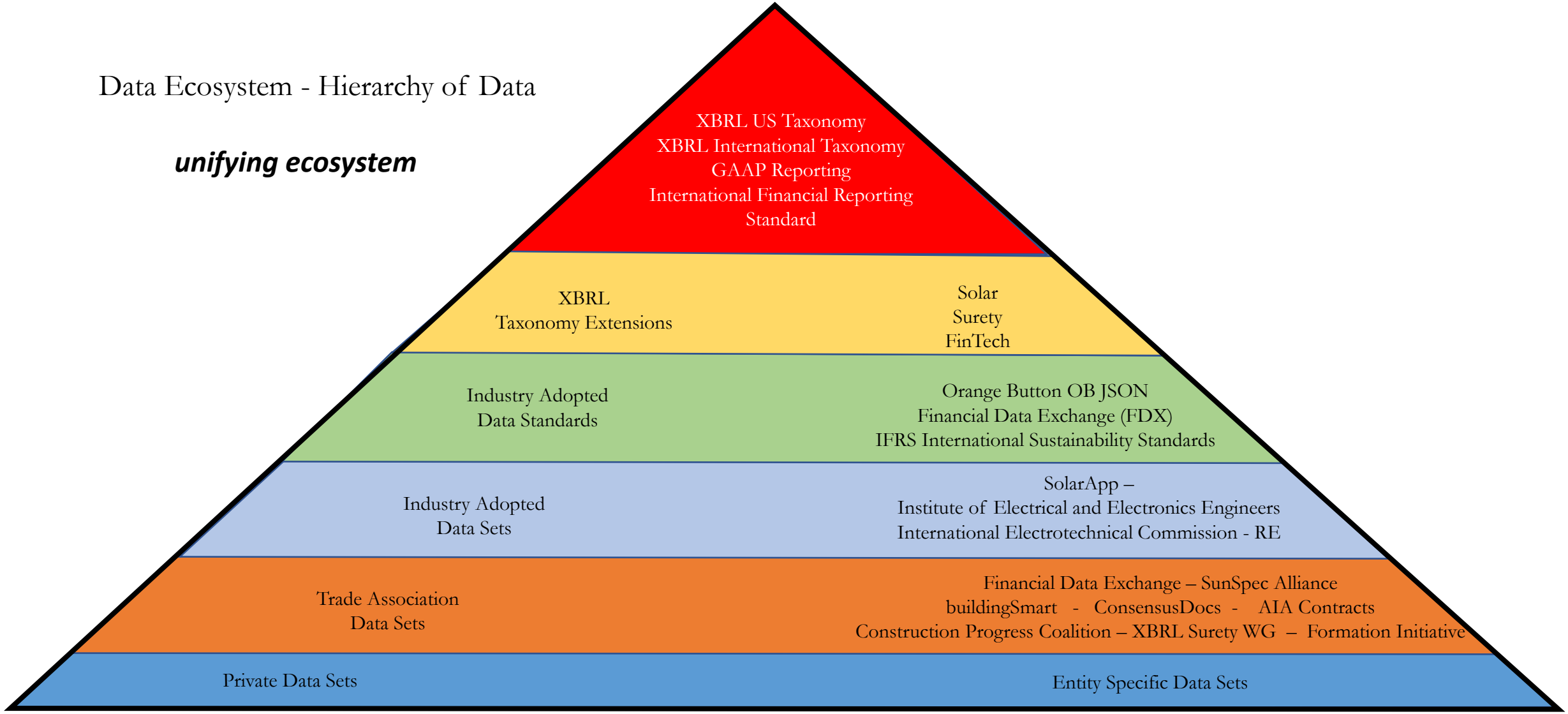
Smart Infrastructure: The Road to COP28

International Digital Ecosystem Architecture (IDEA)

Overview
Smart Terminology
Digital Ecosystem – Historical Foundations
Digital Ecosystem – Future Foundation
The How - Hierarchy of Data
The How - Data Elements and Data Sets
Digital Ecosystem
Summary

Data Ecosystem - Hierarchy of Data

unifying ecosystem



Source of Data Standard

Examples of Data Sets

Data Ecosystem - Hierarchy of Data

XBRL eXtensible Business Reporting Language

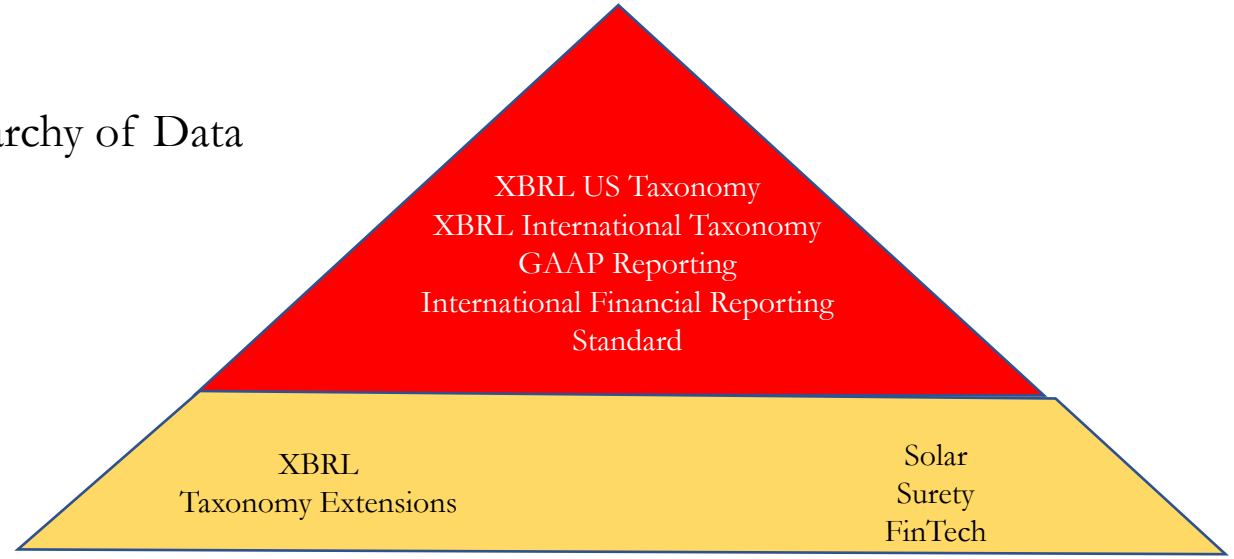
IFRS International Financial Reporting Standards

Top is XBRL and IFRS

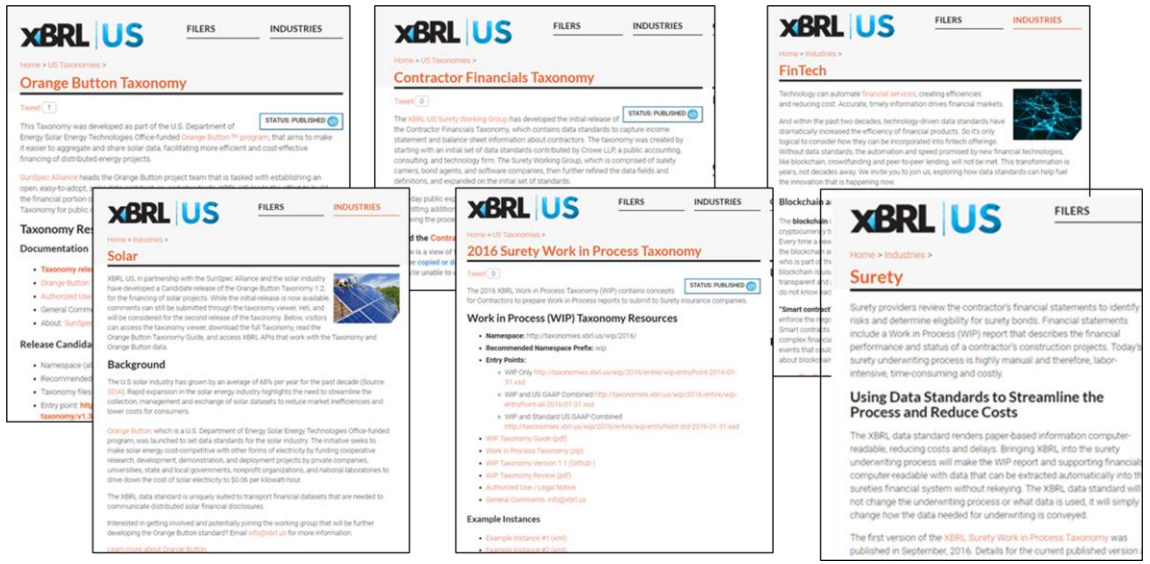
2023 GAAP Financial Reporting

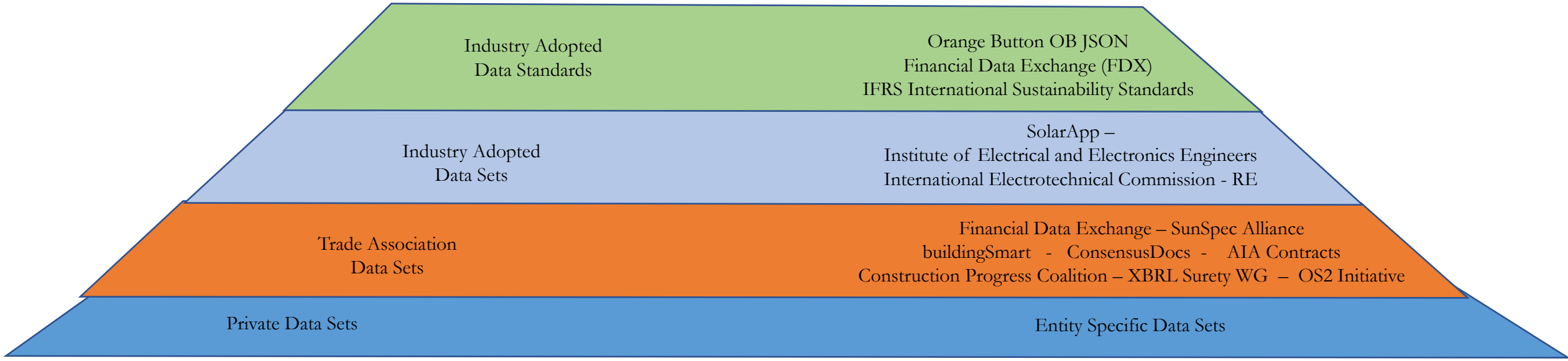
International Financial Reporting Standards (IFRS)

Data Ecosystem - Hierarchy of Data

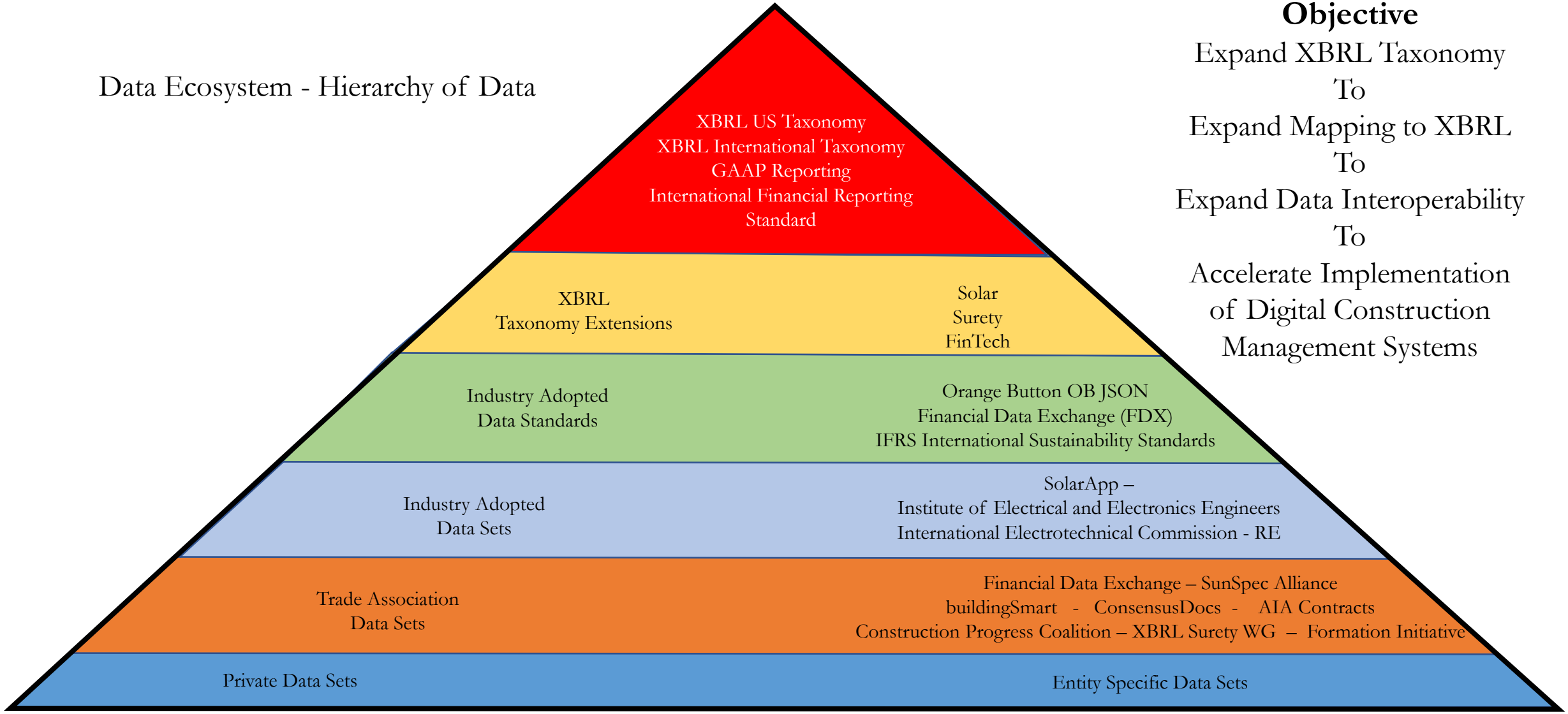


Formal XBRL extensions




Industry Adopted
Data Standards
Orange Button OB JSON
Financial Data Exchange (FDX)
IFRS International Sustainability Standards
Industry Adopted
Data Sets
SolarApp –
Institute of Electrical and Electronics Engineers
International Electrotechnical Commission - RE
Trade Association
Data Sets
Financial Data Exchange – SunSpec Alliance
buildingSmart - ConsensusDocs - AIA Contracts
Construction Progress Coalition – XBRL Surety WG – OS2 Initiative
Private Data Sets
Entity Specific Data Sets

Data Ecosystem - Hierarchy of Data



Objective

Expand XBRL Taxonomy
To
Expand Mapping to XBRL
To
Expand Data Interoperability
To
Accelerate Implementation
of Digital Construction
Management Systems

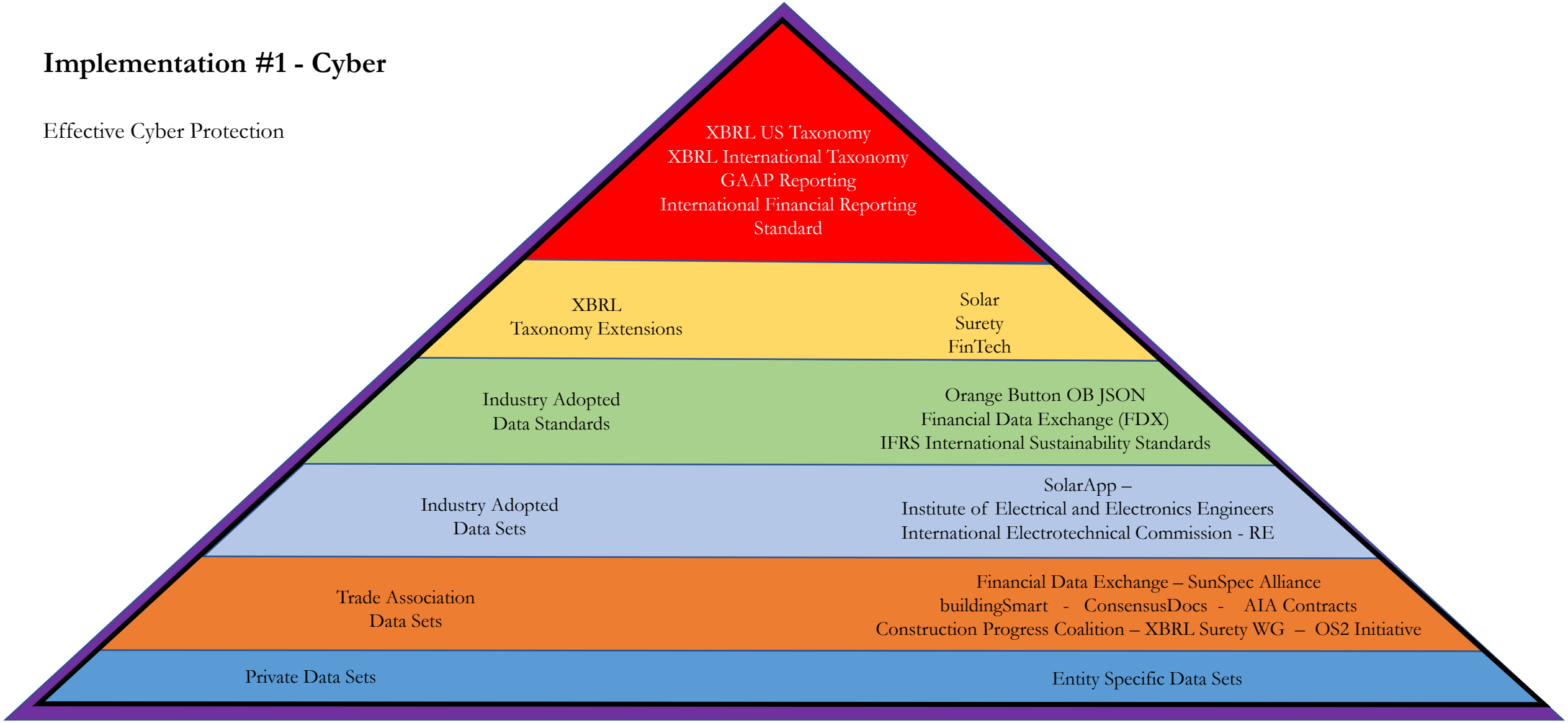
Source of Data Standard

Mapping
Data Sets

Examples of Data Sets

Implementation #1 - Cyber

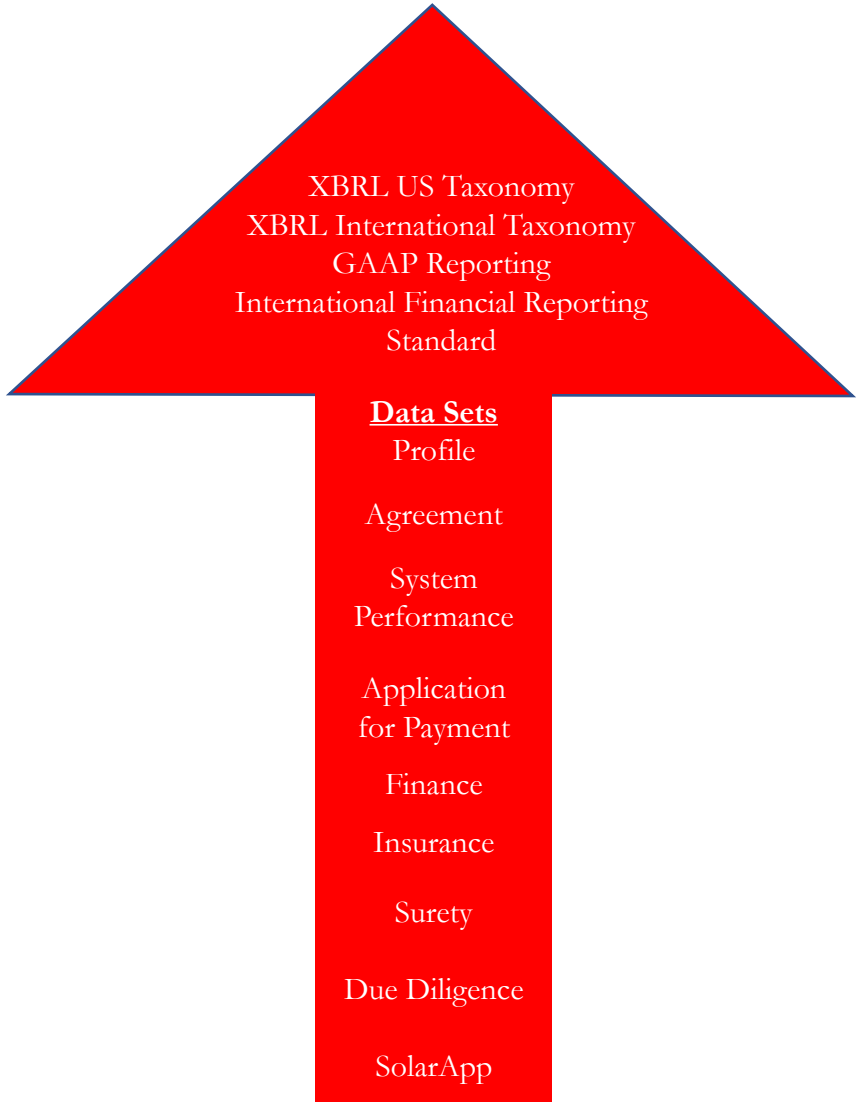
Effective Cyber Protection



Implementation #2 – Codify

Expand the XBRL taxonomy, FDX and JSON to incorporate Orange Button utilized data sets recorded and validated on blockchain

[Link to Data Sets]



Data Sets
Profile

Agreement

System Performance

Application for Payment

Finance

Insurance

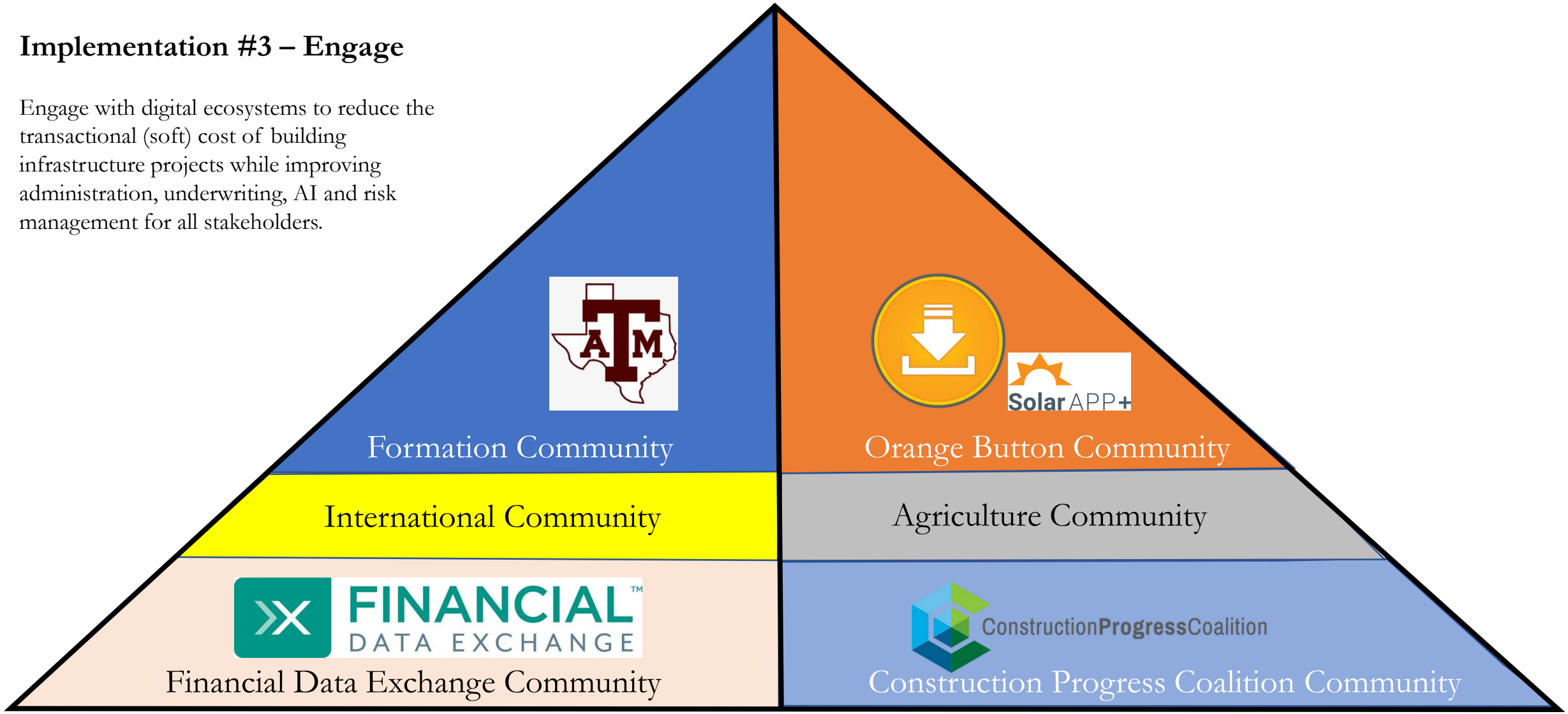
Surety

Due Diligence

SolarApp

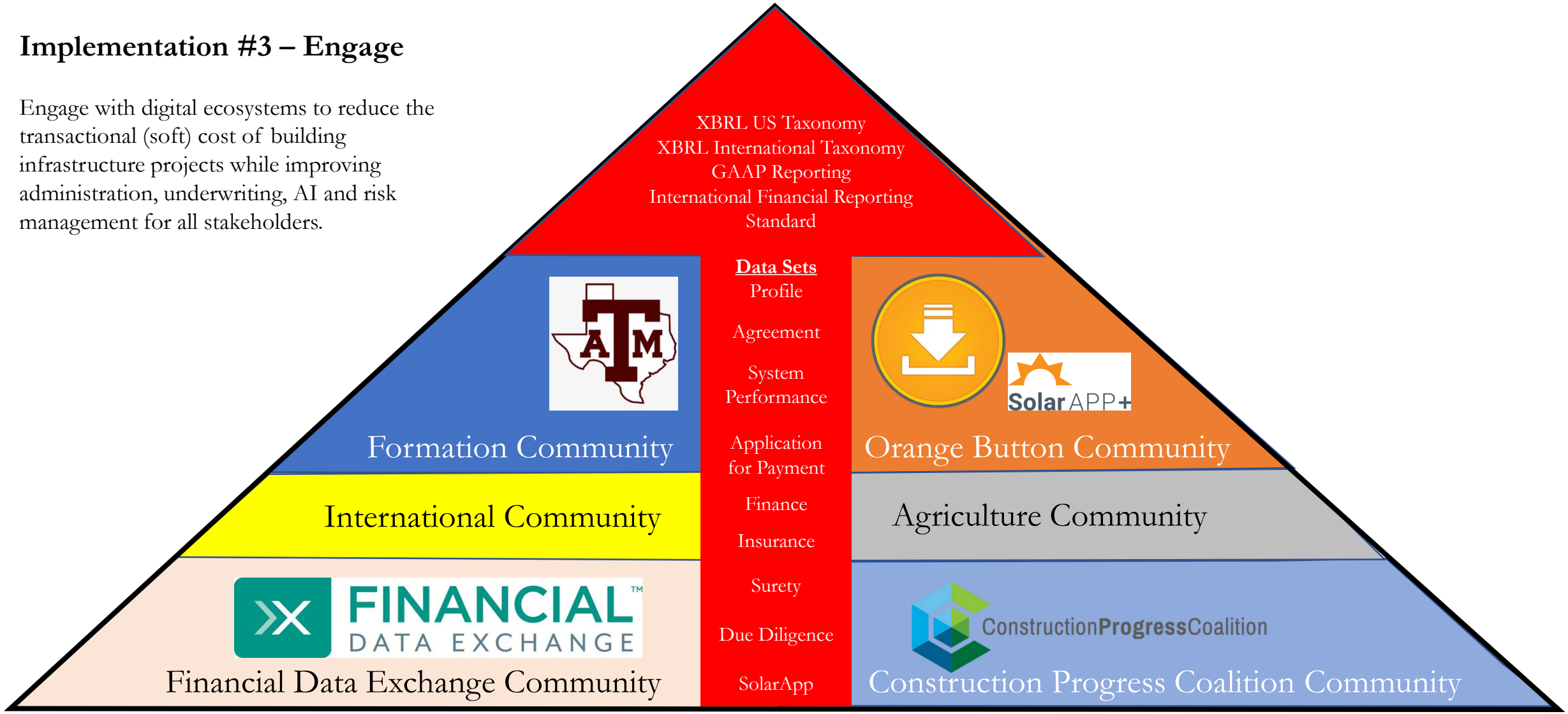
Implementation #3 – Engage

Engage with digital ecosystems to reduce the transactional (soft) cost of building infrastructure projects while improving administration, underwriting, AI and risk management for all stakeholders.



Implementation #3 – Engage

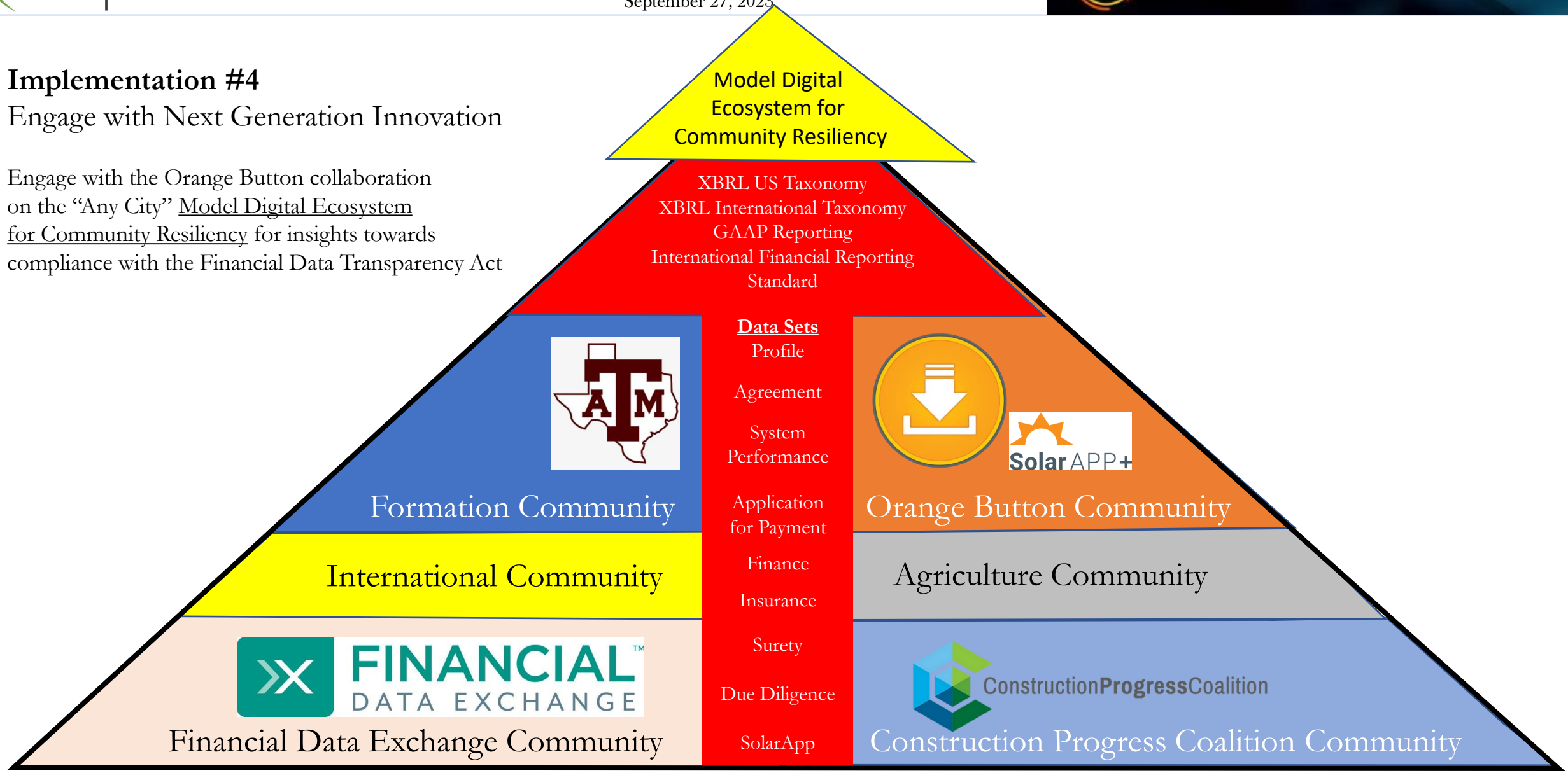
Engage with digital ecosystems to reduce the transactional (soft) cost of building infrastructure projects while improving administration, underwriting, AI and risk management for all stakeholders.



Implementation #4

Engage with Next Generation Innovation

Engage with the Orange Button collaboration on the "Any City" Model Digital Ecosystem for Community Resiliency for insights towards compliance with the Financial Data Transparency Act



Smart Infrastructure: The Road to COP28

International Digital Ecosystem Architecture (IDEA)

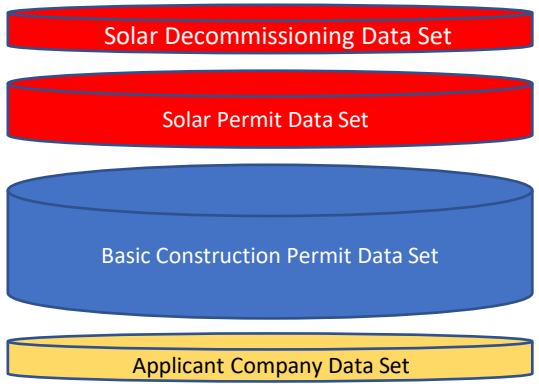
Overview
Smart Terminology
Digital Ecosystem – Historical Foundations
Digital Ecosystem – Future Foundation
The How - Hierarchy of Data
The How - Data Elements and Data Sets
Digital Ecosystem
Summary

Construction projects are made up of a series of data elements that are exchanged between stakeholders

Data Stack

- Machine Readable data standard
- No data elements are repeated
- The combination of data sets is flexible and subject to need
- Each induvial system can elect minimum requirements for data sets.

Project Inception
Permit Process



Data elements for decommissioning

Data elements specific for solar systems

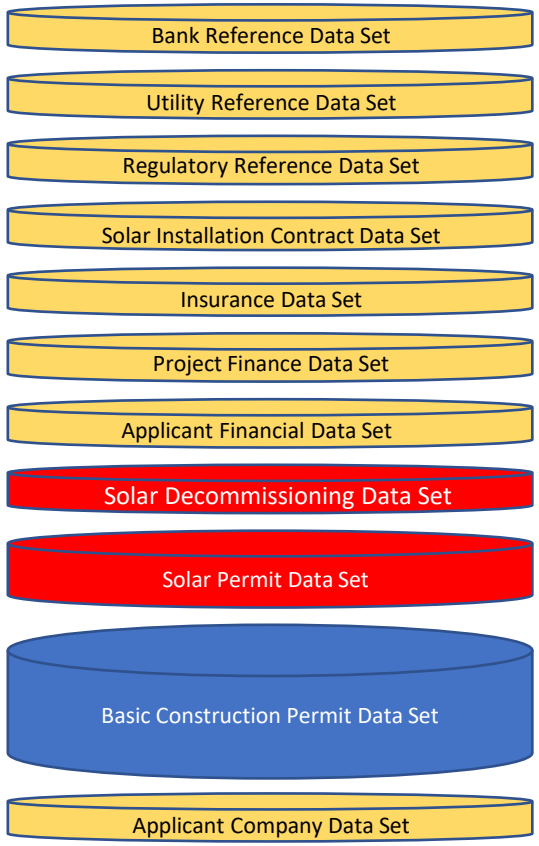
Basic Construction Permit Data Set
The basic data elements for all construction permits

Data elements for applicant company profile

Construction projects are made up of a series of data elements that are exchanged between stakeholders

As the project data gets administered by stakeholders in the ecosystem the Data Stack expands

Project Underwriting



Data elements for verification of standing with bank

Data elements for verification of standing with utility

Data elements for verification of license and regulatory compliance

Data elements for solar installation contract

Data elements for insurance products and services issued

Data elements for bank financial products and services issued

Data elements for financial underwriting

Data elements for decommissioning

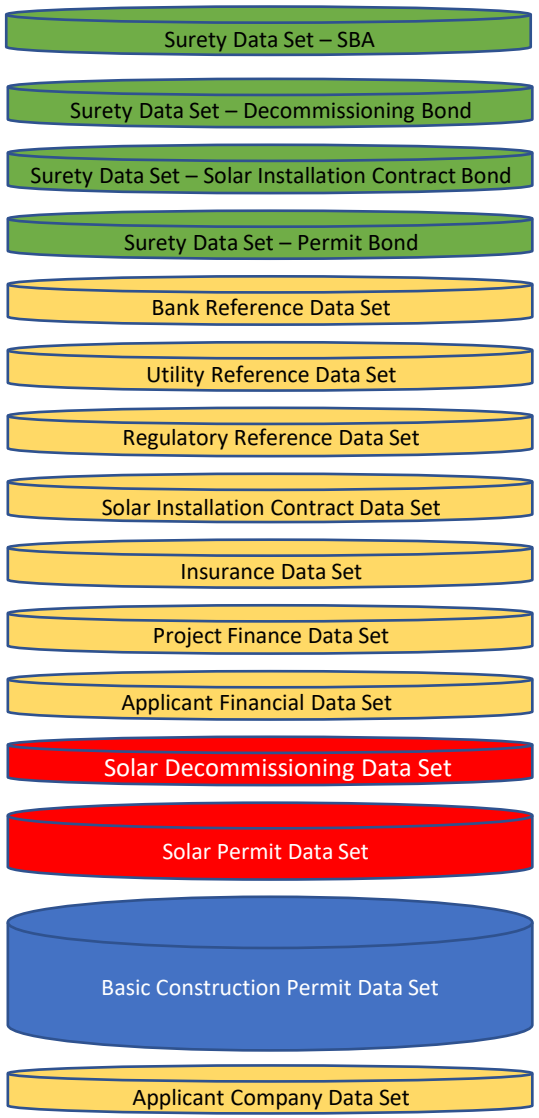
Data elements specific for solar systems

Basic Construction Permit Data Set
The basic data elements for all construction permits

Data elements for applicant company profile

Project Construction

As the project data gets administered by stakeholders in the ecosystem the Data Stack expands



Data elements for SBA

Data elements for surety performance and payment bond on solar installer

Data elements for surety decommissioning bond

Data elements for surety permit bond

Data elements for verification of standing with bank

Data elements for verification of standing with utility

Data elements for verification of license and regulatory compliance

Data elements for solar installation contract

Data elements for insurance products and services issued

Data elements for bank financial products and services issued

Data elements for financial underwriting

Data elements for decommissioning

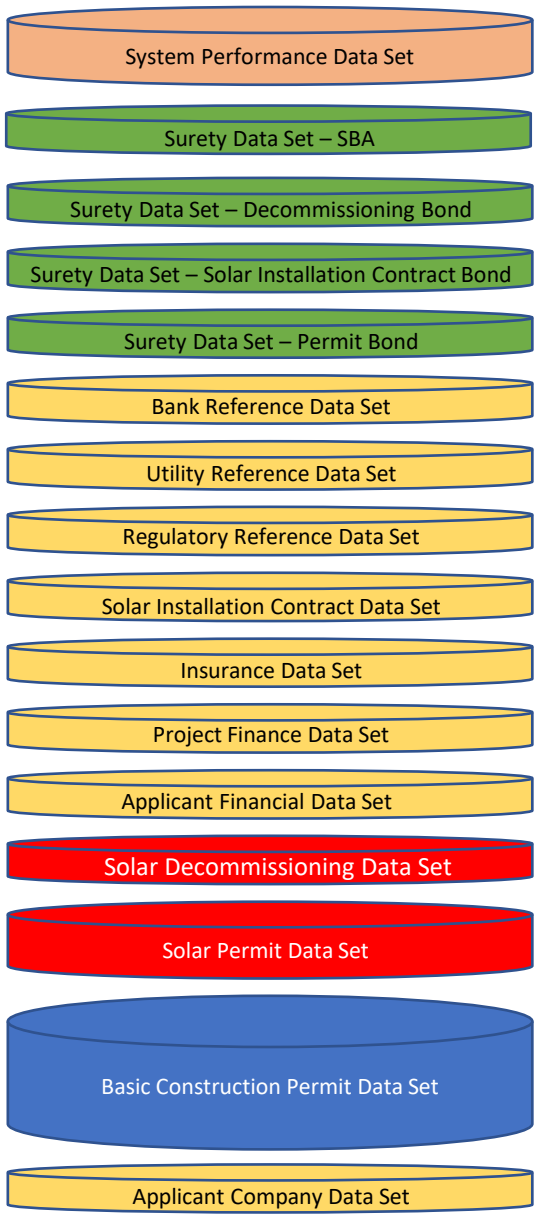
Data elements specific for solar systems

Basic Construction Permit Data Set
The basic data elements for all construction permits

Data elements for applicant company profile

Solar Project Operational

As the project data gets administered by stakeholders in the ecosystem the Data Stack expands



The data elements for solar system performance for monitoring and measuring to enable risk management and predictive analytics

Data elements for SBA

Data elements for surety performance and payment bond on solar installer

Data elements for surety decommissioning bond

Data elements for surety permit bond

Data elements for verification of standing with bank

Data elements for verification of standing with utility

Data elements for verification of license and regulatory compliance

Data elements for solar installation contract

Data elements for insurance products and services issued

Data elements for bank financial products and services issued

Data elements for financial underwriting

Data elements for decommissioning

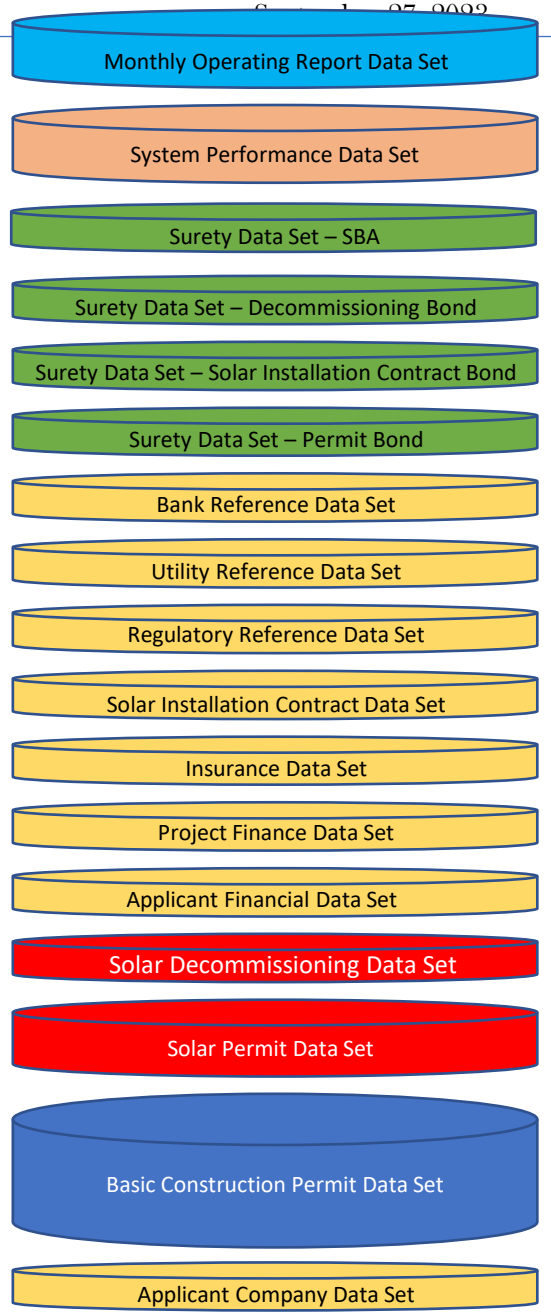
Data elements specific for solar systems

Basic Construction Permit Data Set
The basic data elements for all construction permits

Data elements for applicant company profile

Ongoing operations utilizing legacy data elements

As the project data gets administered by stakeholders in the ecosystem the Data Stack expands



Data elements for standard monthly operating report

The data elements for solar system performance for monitoring and measuring to enable risk management and predictive analytics

Data elements for SBA

Data elements for surety performance and payment bond on solar installer

Data elements for surety decommissioning bond

Data elements for surety permit bond

Data elements for verification of standing with bank

Data elements for verification of standing with utility

Data elements for verification of license and regulatory compliance

Data elements for solar installation contract

Data elements for insurance products and services issued

Data elements for bank financial products and services issued

Data elements for financial underwriting

Data elements for decommissioning

Data elements specific for solar systems

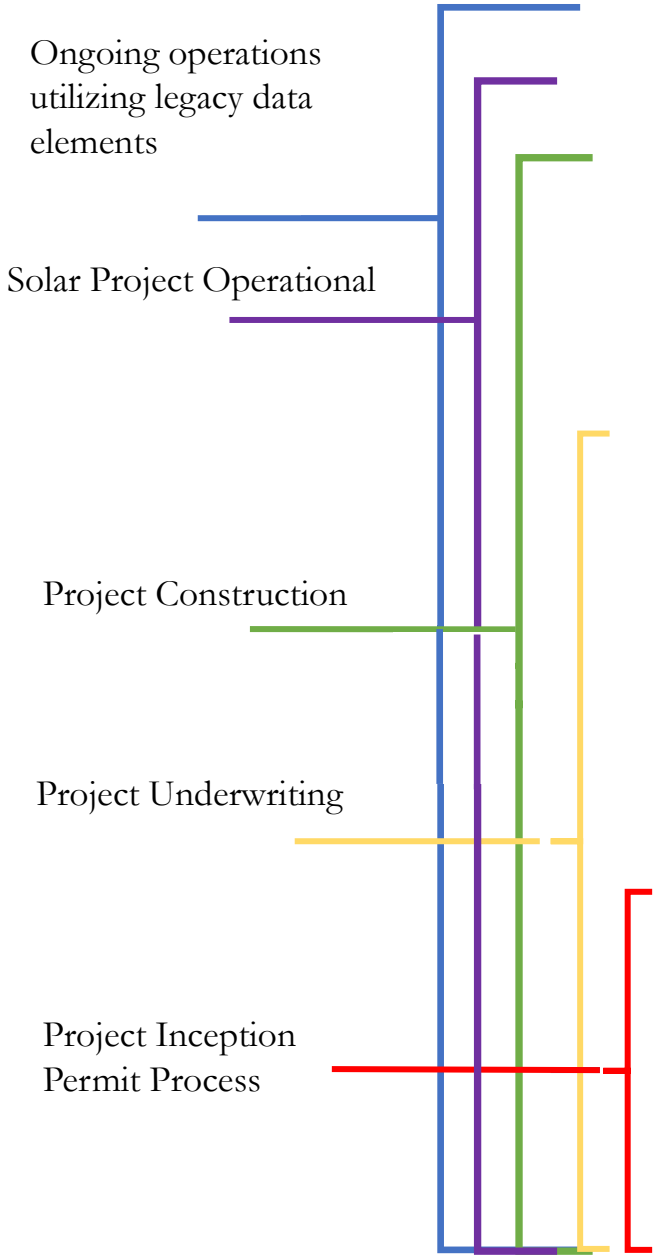
Basic Construction Permit Data Set
The basic data elements for all construction permits

Data elements for applicant company profile

SRC DIGITAL INSURANCE SERVICES

Smart Infrastructure: The Road to COP28
International Digital Ecosystem Architecture (IDEA)

DIGITAL360SUMMIT



Monthly Operating Report Data Set	Data elements for standard monthly operating report
System Performance Data Set	The data elements for solar system performance for monitoring and measuring to enable risk management and predictive analytics
Surety Data Set – SBA	Data elements for SBA
Surety Data Set – Decommissioning Bond	Data elements for surety performance and payment bond on solar installer
Surety Data Set – Solar Installation Contract Bond	Data elements for surety decommissioning bond
Surety Data Set – Permit Bond	Data elements for surety permit bond
Bank Reference Data Set	Data elements for verification of standing with bank
Utility Reference Data Set	Data elements for verification of standing with utility
Regulatory Reference Data Set	Data elements for verification of license and regulatory compliance
Solar Installation Contract Data Set	Data elements for solar installation contract
Insurance Data Set	Data elements for insurance products and services issued
Project Finance Data Set	Data elements for bank financial products and services issued
Applicant Financial Data Set	Data elements for financial underwriting
Solar Decommissioning Data Set	Data elements for decommissioning
Solar Permit Data Set	Data elements specific for solar systems
Basic Construction Permit Data Set	Basic Construction Permit Data Set The basic data elements for all construction permits
Applicant Company Data Set	Data elements for applicant company profile

Ongoing operations utilizing legacy data elements

Solar Project Operational

Project Construction

Project Underwriting

Project Inception
Permit Process

- Monthly Operating Report Data Set
- System Performance Data Set
- Surety Data Set – SBA
- Surety Data Set – Decommissioning Bond
- Surety Data Set – Solar Installation Contract Bond
- Surety Data Set – Permit Bond
- Bank Reference Data Set
- Utility Reference Data Set
- Regulatory Reference Data Set
- Solar Installation Contract Data Set
- Insurance Data Set
- Project Finance Data Set
- Applicant Financial Data Set
- Basic Construction Permit Data Set
- Applicant Company Data Set

The Orange Button Data Interoperability is focused on Solar Energy to enable Data Driven Decisions

Data Taxonomies are focused on Data Interoperability for all types of energy to enable Data Driven Decisions

The data stack applies to all energy types, regardless of what the type of energy, with appropriate data sets for each

- River Turbines Data Set
- Compressed Natural Gas (CNG) Data Set
- Liquefied Natural gas (LNG) Data Set
- Wave Energy Data Set
- Wind Energy Data Set
- Biomass Energy Data Set
- Solid Oxide Fuel Cell Energy Data Set
- Hydroelectric Energy Data Set
- Geothermal Energy Data Set

Digital Surety Bond Data Set

Digital Surety Bond Data Set

ConsensusDocs - 706 – Subcontract Performance Bond
OB-XBRL Data Elements for Digital Surety Bond

Agreement Universally Unique Identifier (UUID)	
Agreement Universally Unique Identifier	
Agreement Universally Unique Identifier Registrar or Issuer	
Agreement Universally Unique Identifier Registrar URL	
Bond Document Type and F	
Bond Type	
Surety Bond Form and Versio	
Surety Bond Orange Button D	
Agreement Data Elements	
Agreement Type	
Agreement Description	
Agreement Number	
Agreement Amount	
Agreement Date (dd/mm/yyyy	
Agreement Data Access	
Project URL	
Project Webcam Access	
Project	
Legal J	
Bond	
Bond A	
Perfor	
Payment Bond Amount	
Combined P&P Bond Amount	
Annual Surety Premium	
Bond Effective Date	
Bond Amount Not To Exceed	
Bond Effective Date	
Bid Bond Data Elements	
Bid Bond Percentage Amount	
Bid Bond Fixed Amount	
Bid Date	
Bid Invitation Number	
Agency To Which Bids Are To	
Surety Program Elements	
Surety Program Single Projec	

Surety Program Total Capacity	
Federal Surety Program Elements	
Federal Annual Performance Bond End Date	
Federal Agency Representing the Government	
Performance Bond other than Contract - Option Date	
Performance Bond	
Principal Data El	
Principal	
Principal Address	
Principal City	
Principal State	
Principal Zip Code	
Principal County	
Obligee	
Obligee Address	
Obligee City	
Obligee State	
Obligee Zip Code	
Obligee County	
Obligee Email	
Obligee Legal Enti	
Obligee SAMS ID	
Obligee CMMC Nu	
Subcontract / Su	
Project Owner Na	
GC-Owner Contra	
GC-Owner Project	
Surety Data Elem	
Surety Company 1	
Surety Company 1	
Surety Company 1	

Surety Company 1 State	
Surety Company 1 Zip Code	
Surety Company 1 Cou	
Surety Company 1 NAI	
Surety Company 1 Nam	
Surety Company 1 Title	
Surety Company 1 SAM	
Surety Company 1 Lega	
Principal Surety Broker	
Principal Surety Broker	
Principal Surety Broker	
Principal Surety Broker	
Principal Surety Broker	
Principal Surety Broker	
Principal Surety Broker	
Principal Surety Broker	
Principal Surety Broker	
Electronic Surety Prov	
Name of Electronic Sure	
Electronic Surety Provid	
Electronic Surety Provid	
Electronic Surety Provid	
Electronic Surety Provid	
Clarification Data Elen	
Clarification 1	
Clarification 2	
Clarification 3	
Clarification 4	
Clarification 5	
Additional XBRL Data	
Paste from XBRL Taxor	

Paste from XBRL Taxonomy
Paste from XBRL Taxonomy
Paste from XBRL Taxonomy
Design Professional Name
Percentage bond amount increase is limited to
Days surety investigation shall be completed
Dual Obligee (Optional)
Dual Obligee Email (Optional)
Dual Obligee Legal Entity Identifier (Optional)
Dual Obligee SAMS ID number (Optional)
Co-Surety Company 2 (Optional)
Co-Surety Company 2 NAIC Code (Optional)
Co-Surety Company 2 Legal Entity Identifier (Optional)
Co-Surety Company 2 SAMS ID number (Optional)
Co-Surety Company 2 Surety Email (Optional)
Co-Surety Company 2 Bond Number (Optional)
Co-Surety Company 3 (Optional)
Co-Surety Company 3 NAIC Code (Optional)
Co-Surety Company 3 Legal Entity Identifier (Optional)
Co-Surety Company 3 SAMS ID number (Optional)
Co-Surety Company 3 Surety Email (Optional)
Co-Surety Company 3 Bond Number
Co-Surety Company 1 Limit of Liability (Optional)
Co-Surety Company 2 Limit of Liability (Optional)
Co-Surety Company 3 Limit of Liability (Optional)
SBA Form 990 Data Elements
Co-Surety Name + Percentage
Principal Street Address
Principal Contractor City
Principal Contractor State
Principal Contractor Zip Code
Principal Contractor County

Contract (Volume Of Work)
Project Start Date
Obligee City
Oblige State
Oblige Zip Code
Obligee County
Bid Spread Low
Bid Spread 2nd Low
Contractor Fee Amount
Surety Fee Amount
Contract Amount Changes (Increase/D
Revised Contract Amount
Changed Payment Bond Amount
Changed Performance Bond Amount
Changed Contractor Fee Amount
Changed Premium and Rate Charged by Surety
Changed Surety Fee Amount
Signature of Surety's Attorney-in-fact
Surety's Attorney Agency Name
SBA Guaranteed Rate of Loss
Consideration Rate of Surety Premium Base
SBA Signature
SBA Title
SBA Signed Date
SBG Number

ConsensusDocs - 706 – Subcontract Performance B

Constructor, as Obligee, ("Constructor") has entered int
("Owner") dated GC-Owner Contract Date for GC-Own
Constructor may also be referenced as the Contractor
Subcontract Documents.

Constructor and Subcontractor, as Principal, ("Subcont
Subcontract Agreement ("Subcontract") dated Agreeme
the work in connection with the Project consisting gene
("Subcontract Work"). The Subcontract is incorporated
Performance Bond ("Bond"). Surety represents that its
conduct surety business and has obtained a certificate
jurisdiction of the project.

By virtue of this Performance Bond ("Bond"), Subcontractor as Principal and Surety Company 1 ("Surety"), are bound to Constructor as Obligee in the maximum amount of

Bond Amount dollars ("Bond Sum"). Subc
heirs, executors, administrators, successo
provided in this Bond.

1. GENERAL CONDITIONS If Subcontrac
furnished for use in the performance of th
Subcontract, Surety's obligations under th
obligations remain in full force and effect.
to be notified of any such change, alterati
in the Subcontract. Constructor may not ir
Constructor has performed its obligations
demand on this Bond, and upon election b
Subcontractor pursuant to §3, Constructo
Constructor to Subcontractor pursuant to
Constructor to Subcontractor ("Subcontra
of the Subcontract Work.

3. SURETY OBLIGATIONS If Constructor has declared Subcontractor in default, and has provided written notice of such default to Surety at the address set forth in §6, Surety shall, after receiving notice, immediately commence an independent investigation of the default. Such investigation shall be completed within Days surety inve me shall be t default, (b) C ctor for caus

(ii) Enter into a takeove ke Subcontract Work completion;

(iii) Arrange for the com bcontractor acceptable to Construc yment bonds equivalent to those for t rety. Surety shall make available as the S unds to pay the cost of completion of the Su ance up to the Bond Sum; or

(iv) Waive its right to co urse Constructor the amount of its reasonabl complete the Subcontract Work less

SELF HELP After Constructor has provided Surety with written notice of default, and during Surety's investigation and any subsequent period before the commencement of work under §3 0–0, Constructor shall have the right, but not the obligation, to perform, correct, and supplement Subcontractor's work to the extent necessary to mitigate damages caused by the default. In such event, Constructor may deduct the reasonable costs incurred from the Subcontract Balance

DISPUTE RESOLUTION Any dispute pursuant to this Bond shall be instituted in any court of competent jurisdiction in the Project location and commenced within two years after termination of Subcontractor or Substantial Completion of the Subcontract Work, whichever occurs first. If this provision is prohibited by law, the minimum period of limitation available to sureties in the jurisdiction shall apply.

6. NOTICE to Surety regarding termination or a declaration of default shall be to the following address Surety Company 1 Email, unless such address is changed in writing. Otherwise, notice is effective upon transmission by any effective means, including U.S. postal service and overnight delivery service.

This Bond is entered into as of Bond Effective Date.

SURETY: Surety Company 1
NAME: Surety company 1 – Name of person executing bond TITLE: Surety Company 1 – Title of person executing bond

TITLE: Principal – Title of person

Surety Data Set – Solar Installation Contract Bond

Surety Bond Data Set
Same and Generic for Every Surety Bond

Surety Bond Text
Different and Specific for Each Surety Bond

ConsensusDocs®

AIA Contract Documents

GSA

Digital Surety Bond Data Set

ConsensusDocs - 706 – Subcontract Performance Bond
OB-XBRL Data Elements for Digital Surety Bond

Agreement Universally Unique Identifier (UUID)
Agreement Universally Unique Identifier
Agreement Universally Unique Identifier Registrar or Issu
Agreement Universally Unique Identifier Registrar URL
Bond Document Type and Form Data Elements
Bond Type
Surety Bond Form and Version Number
Surety Bond Orange Button Data Set
Agreement Data Elements
Agreement Type
Agreement Description
Agreement Number
Agreement Amount
Agreement Date (dd/mm/yyyy)
Agreement Data Access
Project URL
Project Webcam Access
Project Geo Location
Legal Jurisdiction
Bond Data Elements
Bond Amount (Use for all other than Performance and P
Performance Bond Amount
Payment Bond Amount
Combined P&P Bond Amount
Annual Surety Premium
Bond Effective Date
Bond Amount Not To Exceed
Bond Effective Date
Bid Bond Data Elements
Bid Bond Percentage Amount
Bid Bond Fixed Amount
Bid Date
Bid Invitation Number
Agency To Which Bids Are To Be Submitted
Surety Program Elements
Surety Program Single Project Capacity

Contract (Volume Of Work)	
Project Start Date	
Project Completion Date	
Obligee Address	
Obligee Street Address	
Obligee City	
Oblige State	
Oblige Zip Code	
Obligee County	
Bid Spread Low	
Bid Spread 2nd Low	
Contractor Fee Amount	
Surety Fee Amount	
Contract Amount Changes (Increase/Decrease)	
Revised Contract Amount	
Changed Payment Bond Amount	
Changed Performance Bond Amount	
Changed Contractor Fee Amount	
Changed Premium and Rate Charged by Surety	
Changed Surety Fee Amount	
Signature of Surety's Attorney-in-fact	
Surety's Attorney Agency Name	
SBA Guaranteed Rate of Loss	
Consideration Rate of Surety Premium Base	
SBA Signature	
SBA Title	
SBA Signed Date	
SBG Number	

ConsensusDocs - 706 – Subcontract Performance Bond

Constructor, as Obligee, ("Constructor") has entered into a contract with Project Owner, ("Owner") dated GC-Owner Contract Date for GC-Owner Project Name ("Project"). Constructor may also be referenced as the Contractor or General Contractor in the Subcontract Documents.

Constructor and Subcontractor, as Principal, ("Subcontractor") have entered into a Subcontract Agreement ("Subcontract") dated Agreement Date for certain portions of the work in connection with the Project consisting generally of: Agreement Description ("Subcontract Work"). The Subcontract is incorporated by reference into this Performance Bond ("Bond"). Surety represents that its company is lawfully authorized to conduct surety business and has obtained a certificate of authority as an insurer in the jurisdiction of the project.

By virtue of this Performance Bond ("Bond"), Subcontractor as Principal and Surety Company 1 ("Surety"), are bound to Constructor as Obligee in the maximum amount of

Surety Bond Text
Different and Specific for Each Surety Bond

ConsensusDocs®

ConsensusDocs® 706
SUBCONTRACT PERFORMANCE BOND

Constructor, [ ], ("Constructor") has entered into a contract with Owner, [ ], ("Owner") dated [ ] for [ ] ("Project"). Constructor may also be referenced as the Contractor or General Contractor in the Subcontract Documents.

Constructor and Subcontractor, [ ], ("Subcontractor") have entered into a Subcontract Agreement ("Subcontract") dated [ ] for certain portions of the work in connection with the Project consisting generally of: [ ] ("Subcontract Work"). The Subcontract is incorporated by reference into this Performance Bond ("Bond"). Surety represents that its company is lawfully authorized to conduct surety business and has obtained a certificate of authority as an insurer in the jurisdiction of the project.

By virtue of this Performance Bond ("Bond"), Subcontractor as Principal and [ ] as Surety ("Surety"), are bound to Constructor as Obligee in the maximum amount of [ ] dollars ($[ ]) ("Bond Sum"). Subcontractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided in this Bond.

Digital Surety Bond Data Set

ConsensusDocs - 706 – Subcontract Performance Bond
OB-XBRL Data Elements for Digital Surety Bond

Agreement Universally Unique Identifier (UUID)
Agreement Universally Unique Identifier
Agreement Universally Unique Identifier Registrar or Issu
Agreement Universally Unique Identifier Registrar URL
Bond Document Type and Form Data Elements
Bond Type
Surety Bond Form and Version Number
Surety Bond Orange Button Data Set
Agreement Data Elements
Agreement Type
Agreement Description
Agreement Number
Agreement Amount
Agreement Date (dd/mm/yyyy)
Agreement Data Access
Project URL
Project Webcam Access
Project Geo Location
Legal Jurisdiction
Bond Data Elements
Bond Amount (Use for all other than Performance and P
Performance Bond Amount
Payment Bond Amount
Combined P&P Bond Amount
Annual Surety Premium
Bond Effective Date
Bond Amount Not To Exceed
Bond Effective Date
Bid Bond Data Elements
Bid Bond Percentage Amount
Bid Bond Fixed Amount
Bid Date
Bid Invitation Number
Agency To Which Bids Are To Be Submitted
Surety Program Elements
Surety Program Single Project Capacity

Contract (Volume Of Work)	
Project Start Date	
Project Completion Date	
Obligee Address	
Obligee Street Address	
Obligee City	
Oblige State	
Oblige Zip Code	
Obligee County	
Bid Spread Low	
Bid Spread 2nd Low	
Contractor Fee Amount	
Surety Fee Amount	
Contract Amount Changes (Increase/Decrease)	
Revised Contract Amount	
Changed Payment Bond Amount	
Changed Performance Bond Amount	
Changed Contractor Fee Amount	
Changed Premium and Rate Charged by Surety	
Changed Surety Fee Amount	
Signature of Surety's Attorney-in-fact	
Surety's Attorney Agency Name	
SBA Guaranteed Rate of Loss	
Consideration Rate of Surety Premium Base	
SBA Signature	
SBA Title	
SBA Signed Date	
SBG Number	

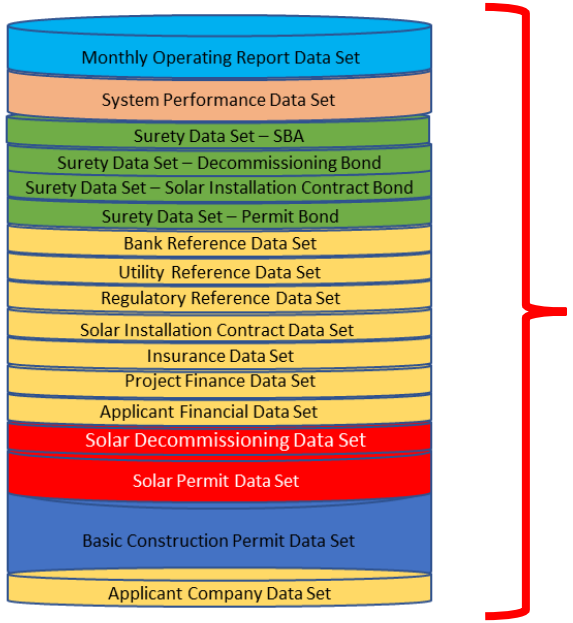
ConsensusDocs - 706 – Subcontract Performance Bond

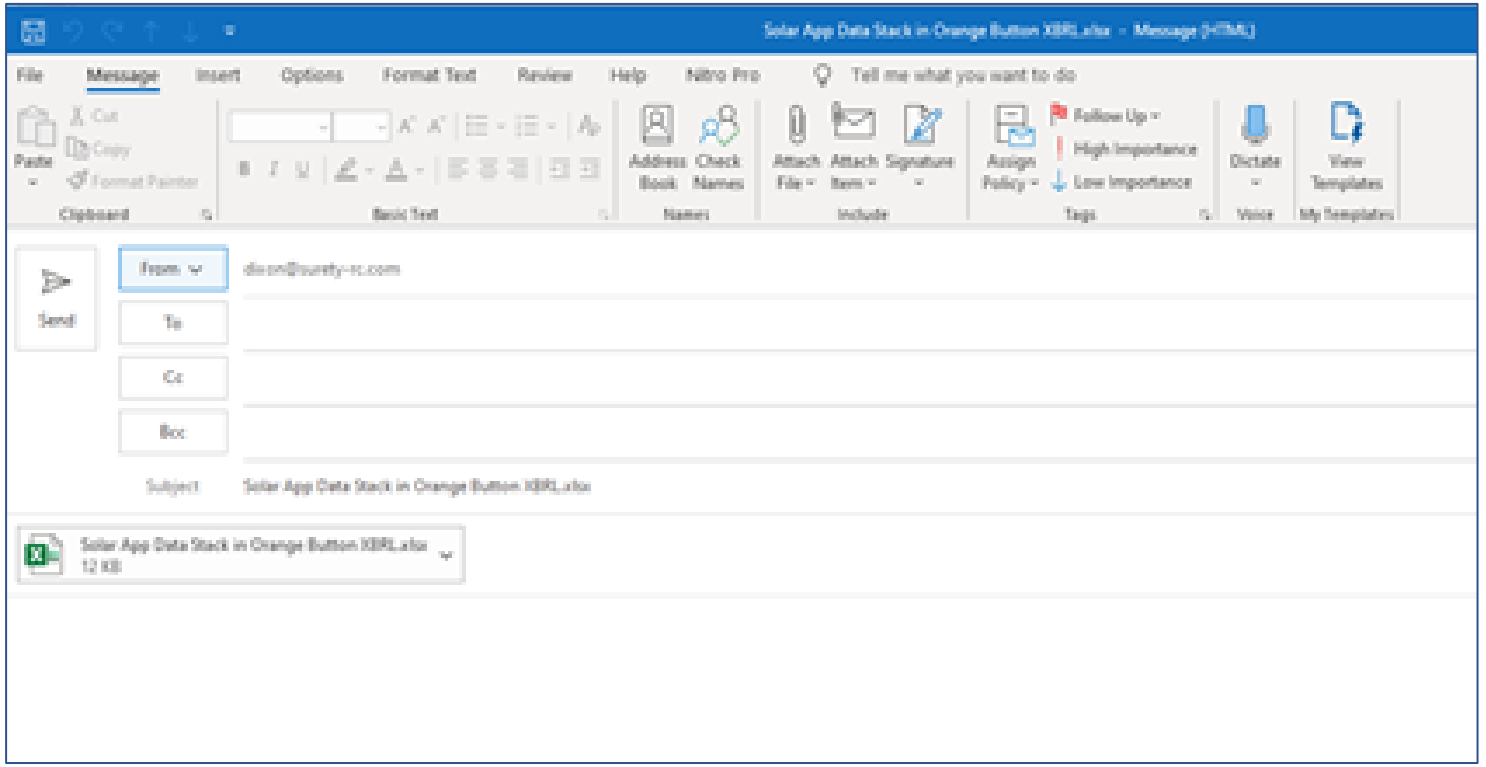
Constructor, as Obligee, ("Constructor") has entered into a contract with Project Owner, ("Owner") dated GC-Owner Contract Date for GC-Owner Project Name ("Project"). Constructor may also be referenced as the Contractor or General Contractor in the Subcontract Documents.

Constructor and Subcontractor, as Principal, ("Subcontractor") have entered into a Subcontract Agreement ("Subcontract") dated Agreement Date for certain portions of the work in connection with the Project consisting generally of: Agreement Description ("Subcontract Work"). The Subcontract is incorporated by reference into this Performance Bond ("Bond"). Surety represents that its company is lawfully authorized to conduct surety business and has obtained a certificate of authority as an insurer in the jurisdiction of the project.

By virtue of this Performance Bond ("Bond"), Subcontractor as Principal and Surety Company 1 ("Surety"), are bound to Constructor as Obligee in the maximum amount of

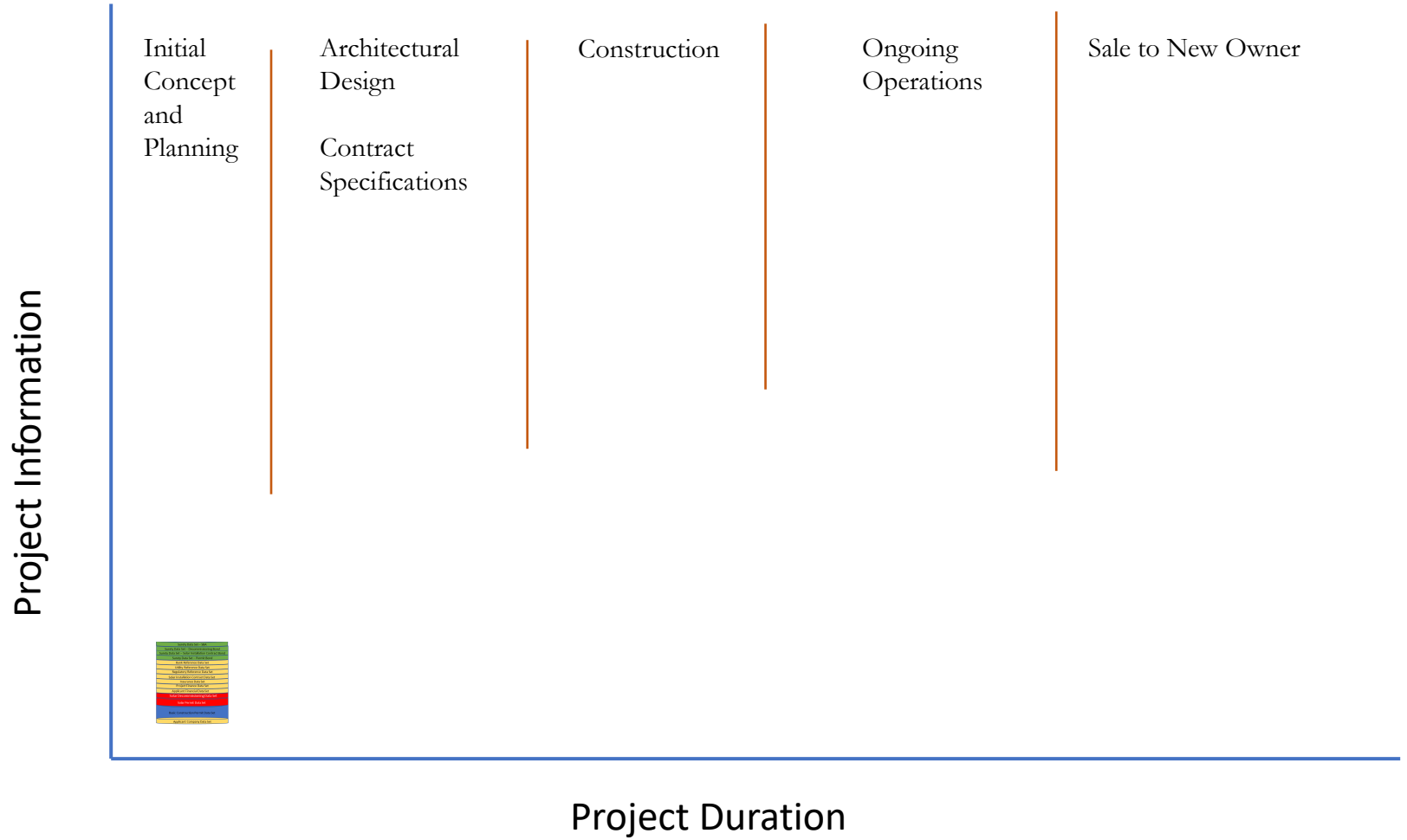
Surety Data Set – Solar Installation Contract Bond





XBRL Taxonomy can provide Data Interoperability enabled by simple email

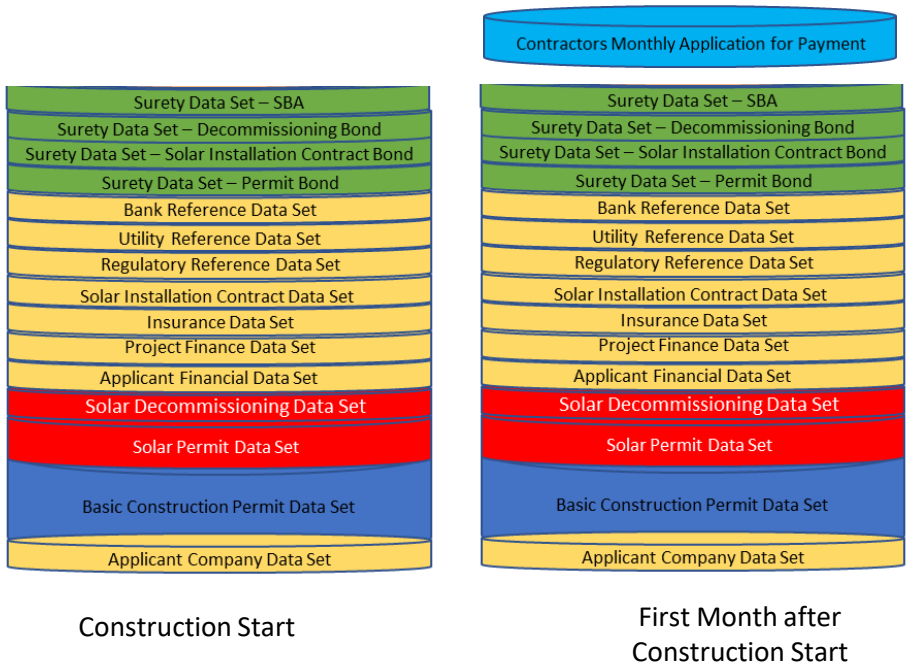
Project Lifecycle Data Generated



Contractors Monthly Application for Payment enables monitoring of the construction progress and risk factors from the start of construction to completion.

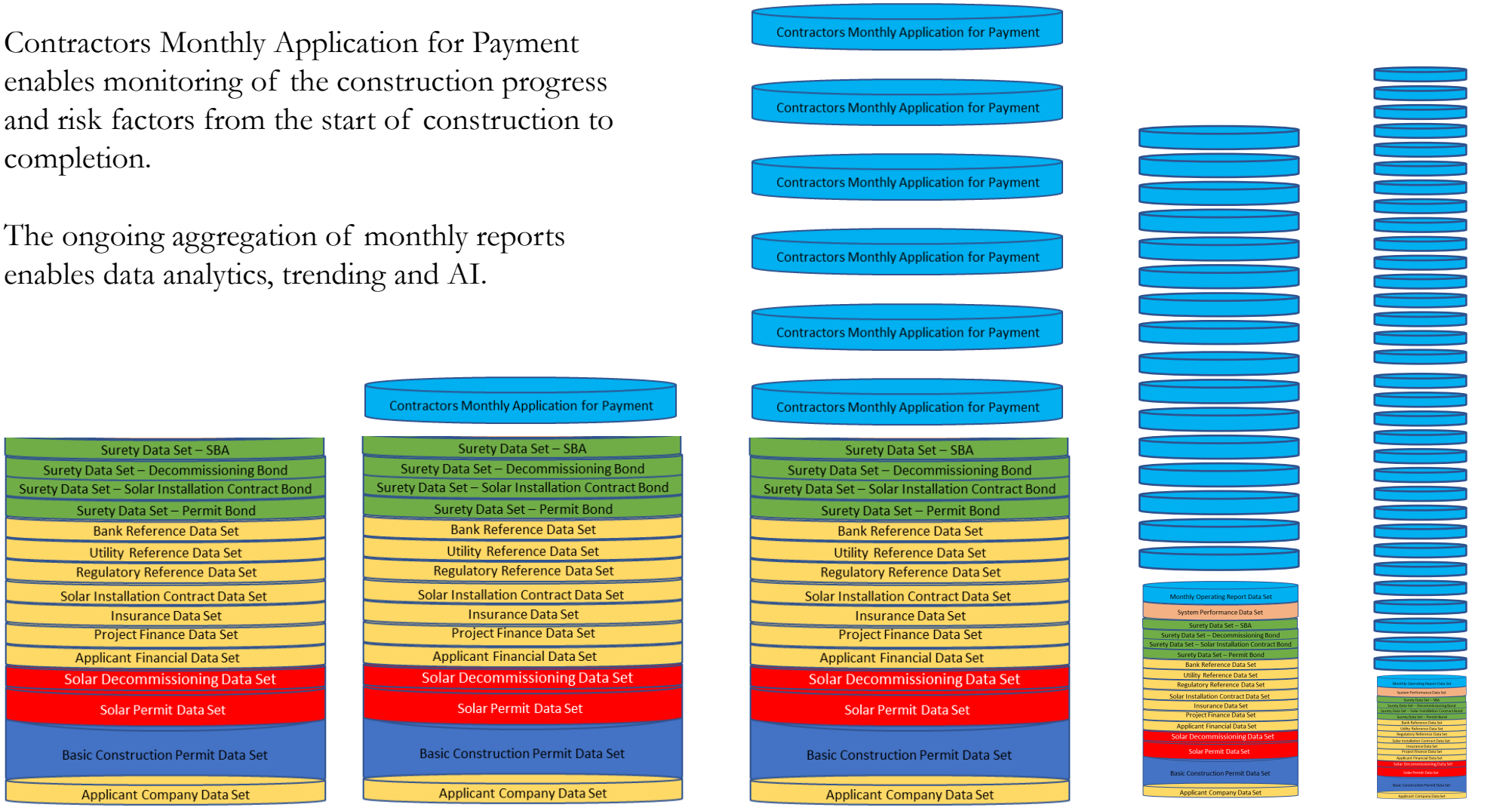
The ongoing aggregation of monthly reports enables data analytics, trending and AI.

Construction



Contractors Monthly Application for Payment enables monitoring of the construction progress and risk factors from the start of construction to completion.

The ongoing aggregation of monthly reports enables data analytics, trending and AI.



Construction Start

First Month after Construction Start

Six Months after Construction Start

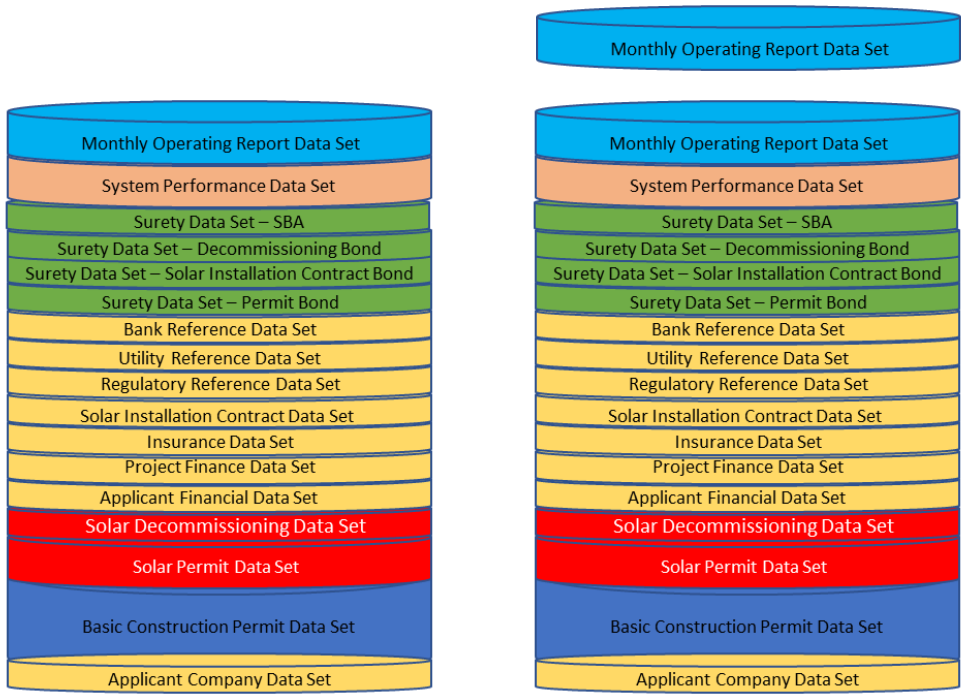
One Year After Construction Start

However Long the Project Takes to Build

Monthly Operating Report enables monitoring of risk factors from the end of construction for the lifespan of the asset.

The ongoing aggregation of monthly reports enables data analytics, trending and AI.

Ongoing Operations

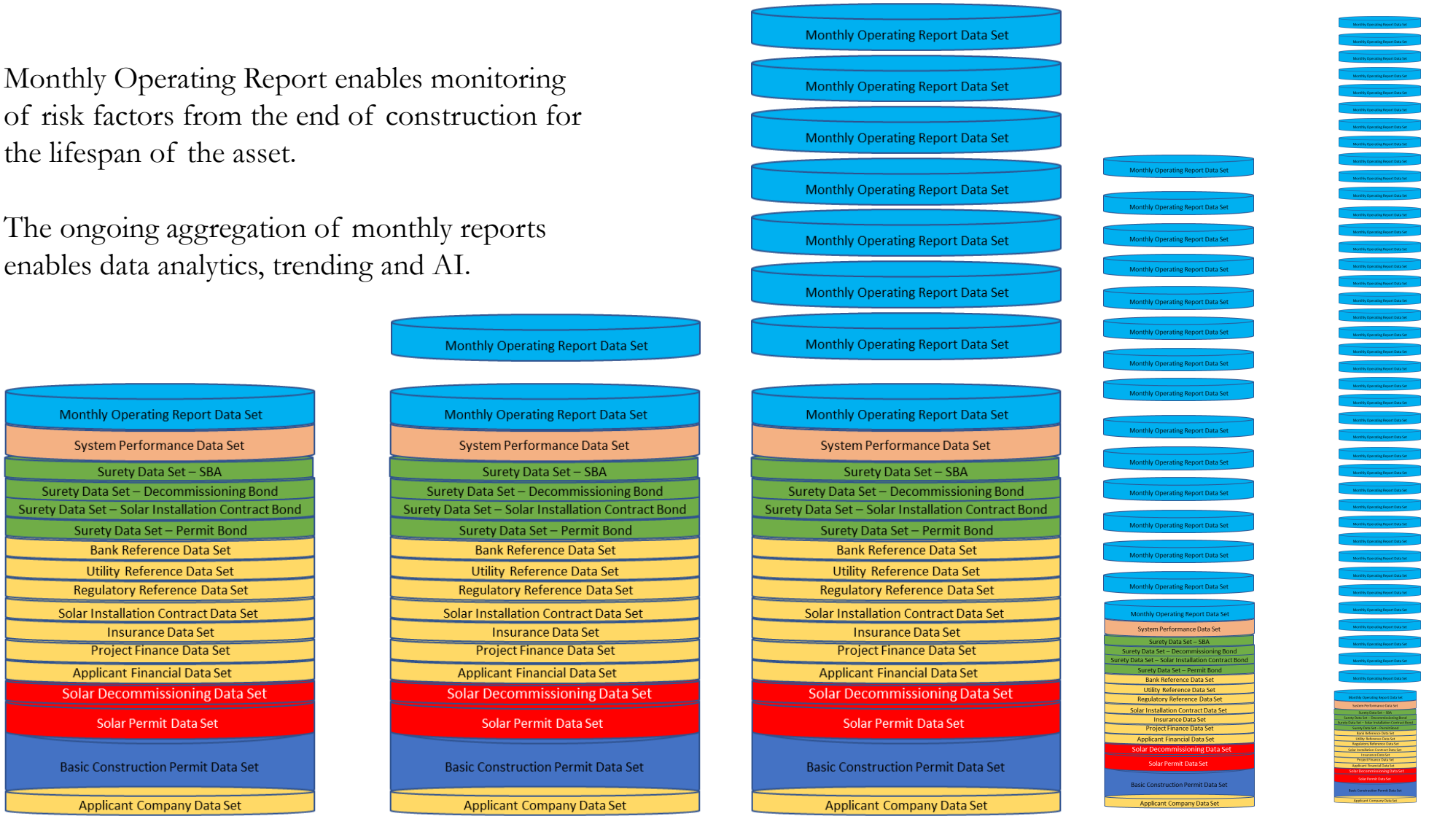


Commercial Operation Date (COD)

First Month after Commercial Operation Date (COD)

Monthly Operating Report enables monitoring of risk factors from the end of construction for the lifespan of the asset.

The ongoing aggregation of monthly reports enables data analytics, trending and AI.



Commercial Operation Date (COD)

First Month after Commercial Operation Date (COD)

Six Months after Commercial Operation Date (COD)

One Year After (COD)

Multiple Years After (COD)

Examples of Data Sets

ORANGE BUTTON INITIATIVE

Examples of Data Sets

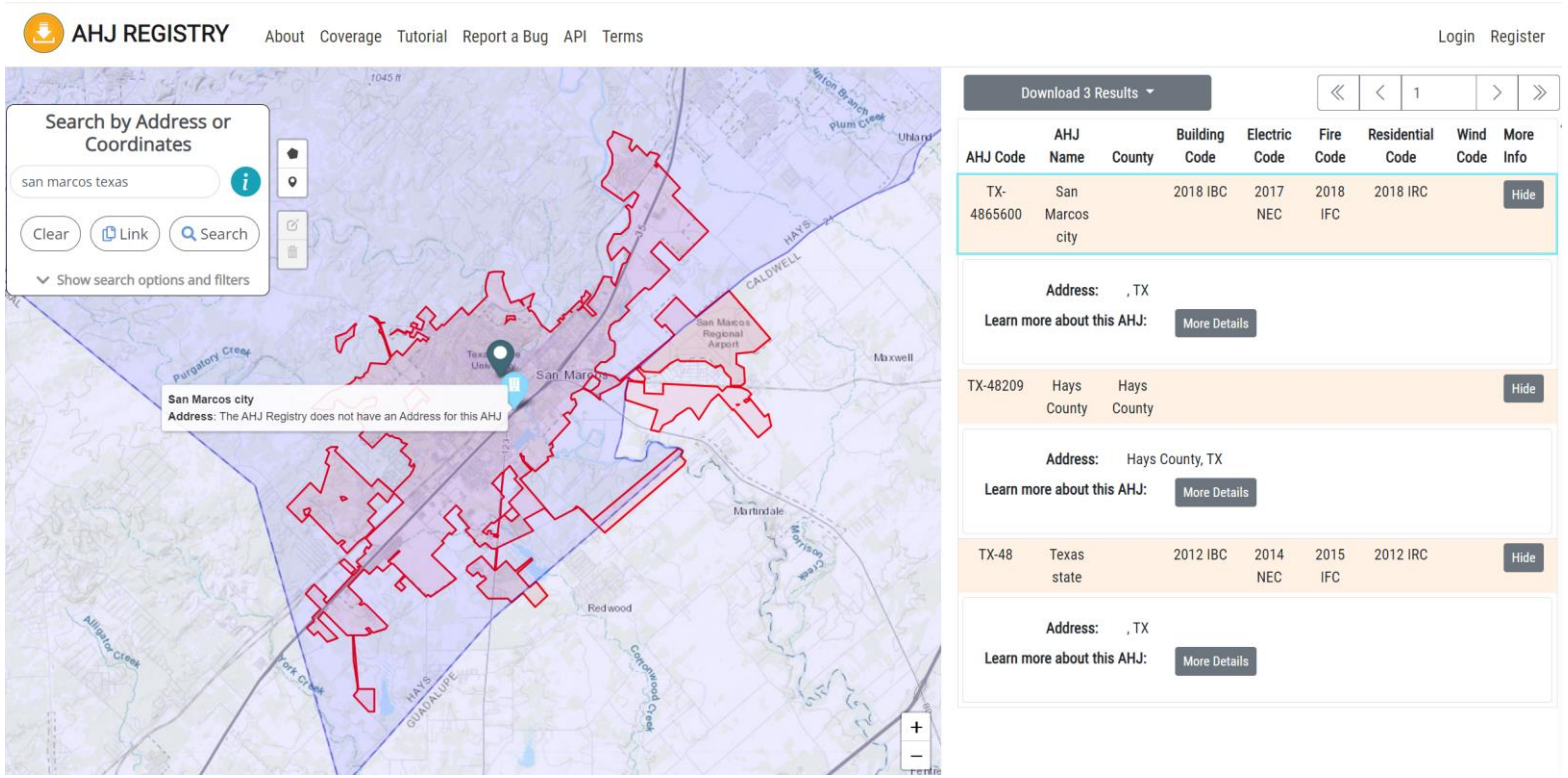
ORANGE BUTTON INITIATIVE

Orange Button AHJ Registry

AHJ Registry is a web app and API, based on Orange Button, that identifies Authority Having Jurisdiction by inputing and address or lat/long of future solar installation. Published by SunSpec Alliance.

Orange Button AHJ Registry

Data Sets for the Authority Having Jurisdiction



Examples of Data Sets

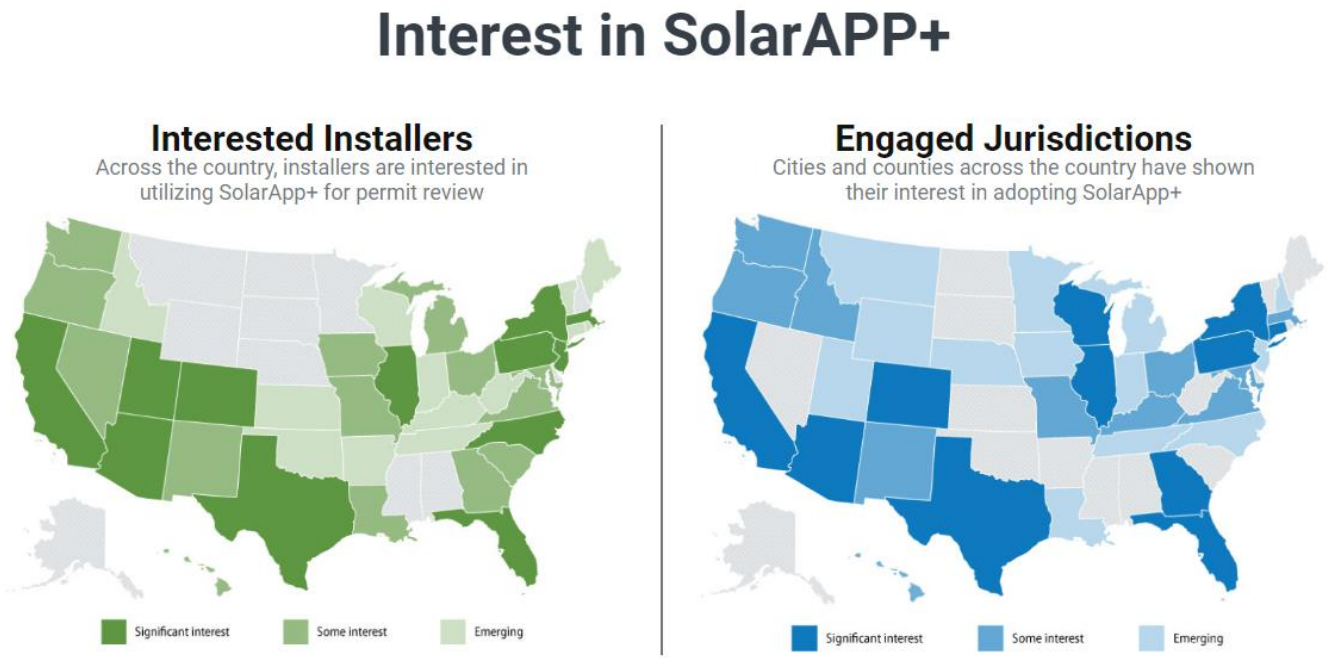
ORANGE BUTTON INITIATIVE

SolarAPP+

SolarAPP+ reduces install times, reduces project cancellations, and expands access to renewable energy. It utilizes Orange Button information models and integrates AHJ Registry. Published by NREL.

[SolarApp](#)

Data Set for the Solar Construction Permit



ORANGE BUTTON INITIATIVE

SolarAPP+

SolarAPP+ reduces install times, reduces project cancellations, and expands access to renewable energy. It utilizes Orange Button information models and integrates AHJ Registry. Published by NREL.

SolarApp

Data Set for the Solar Construction Permit

Permit Data
Owner
Contractor
Location
Project details
Cost

Authority Having Jurisdiction
AHJ

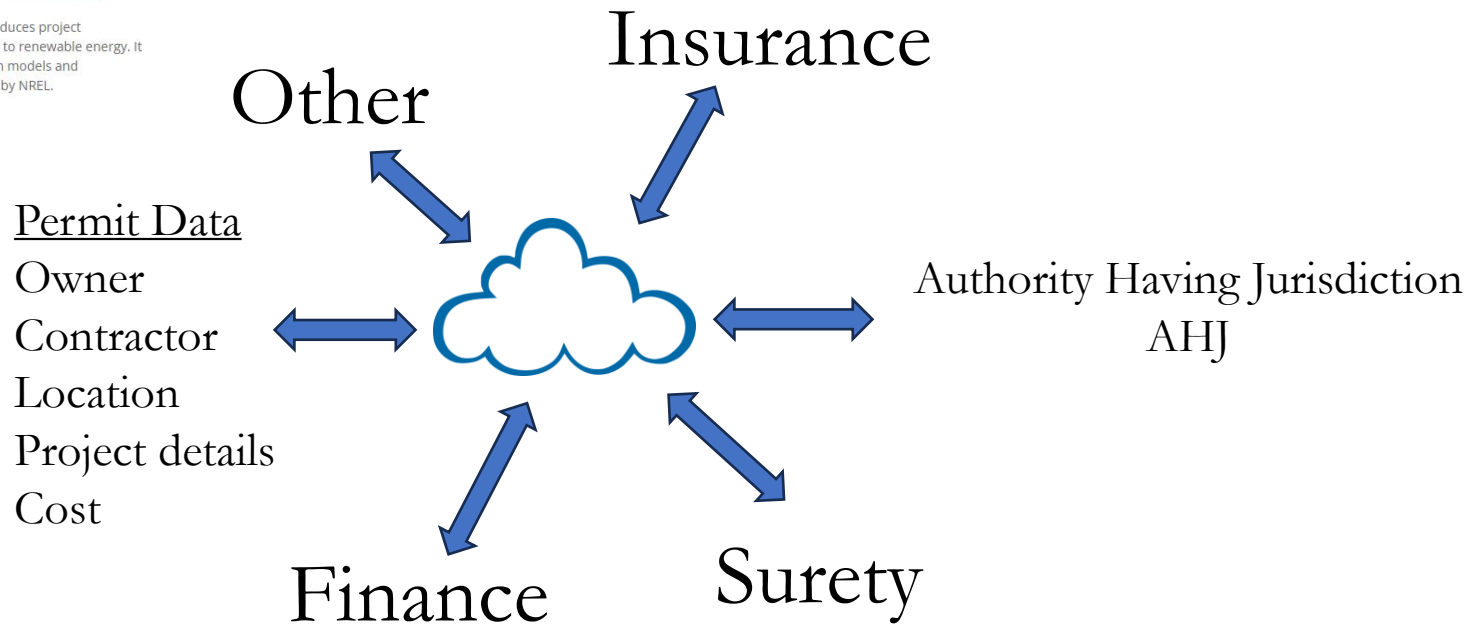
ORANGE BUTTON INITIATIVE

SolarAPP+

SolarAPP+ reduces install times, reduces project cancellations, and expands access to renewable energy. It utilizes Orange Button information models and integrates AHJ Registry. Published by NREL.

SolarApp

Data Set for the Solar Construction Permit



Examples of Data Sets

ORANGE BUTTON INITIATIVE

Product Registry

Data Sets for the Products
That Go Into A
Solar Construction Project

Products

ProdType	ProdMfr	ProdName	ProdCode	Details
Module	Advance Power		ADVP-API_P290	View Details
Module	Advance Power		ADVP-API_P295	View Details
Module	Advance Power		ADVP-API_P300	View Details
Module	Advance Power		ADVP-API_P305	View Details
Module	Advance Power		ADVP-API_P310	View Details
Module	Advance Power		ADVP-API_P315	View Details
Module	Advance Power		ADVP-API_P320	View Details
Module	Advance Power		ADVP-API_P325	View Details
Module	Advance Power		ADVP-API_M330	View Details
Module	Advance Power		ADVP-API_P330	View Details
Module	Advance Power		ADVP-API_M335	View Details
Module	Advance Power		ADVP-API_P335	View Details
Module	Advance Power		ADVP-API_M340	View Details
Module	Advance Power		ADVP-API_M345	View Details
Module	Advance Power		ADVP-API_M350	View Details
Module	Advance Power		ADVP-API_M355	View Details
Module	Advance Power		ADVP-API_M360	View Details
Module	Advance Power		ADVP-API_M365	View Details
Module	Advance Power		ADVP-API_M370	View Details

Examples of Data Sets

AIA Contracts - Surety Related

A310™-2010	Bid Bond
A312™-2010	Performance Bond and Payment Bond
A313™-2020	Warranty Bond
G707™-1994	Consent of Surety to Final Payment
G707A™-1994	Consent of Surety to Final Reduction in or Partial Release of Retainage
G901GA™-2022	Georgia Waiver and Release of Lien and Payment Bond Rights Upon Interim Payment
G903GA™-2022	Georgia Waiver and Release of Lien and Payment Bond Rights Upon Final Payment
G905FL™-2022	Florida Waiver of Right to Claim Against Payment Bond (Progress Payment)
G906FL™-2022	Florida Waiver of Right to Claim Against Payment Bond (Final Payment)

ConsensusDocs

ConsensusDocs – Surety Related

260	General Contractor Performance Bond
261	General Contractor Payment Bond
262	General Contractor Bid Bond
263	General Contractor Warranty Bond
470	Performance Bond (Surety is Liable for Design Costs of Work)
471	Design-Build Performance Bond (Surety Not Liable for Design Services)
472	Payment Bond (Surety Liable for Design Costs of Work)
473	Payment Bond (Surety is Not Liable for Design Services)
760	Subcontractor Bid or Proposal Bond
706	Subcontractor Performance Bond
707	Subcontractor Payment Bond

Federal Forms – Surety Related

24 Federal Bid Bond
25 Federal Performance Bond
25A Federal Payment Bond
28 Federal Affidavit of Individual Surety
34 Federal Annual Bid Bond
35 Federal Annual Performance Bond
273 Federal Reinsurance Agreement for a Bonds Statute Performance Bond
274 Federal Reinsurance Agreement for a Bonds Statute Payment Bond
1414 Federal Consent of Surety
1415 Federal Consent of Surety and Increase of Penalty
1416 Federal Payment Bond for Other than Construction Contracts
1418 Federal Performance Bond for Other than Construction Contracts

Examples of Data Elements

Legal Entity Identifier (LEI)

The Legal Entity Identifier (LEI) is a 20-character, alpha-numeric code based on the ISO 17442 standard developed by the International Organization for Standardization (ISO).

System for Award Management (SAM)

Entities doing business with the federal government use the Unique Entity ID created in SAM.

The Integrated Award Environment (IAE) manages several systems including SAM.gov, FPDS, eSRS, FSRS, CPARS and FAPIIS.

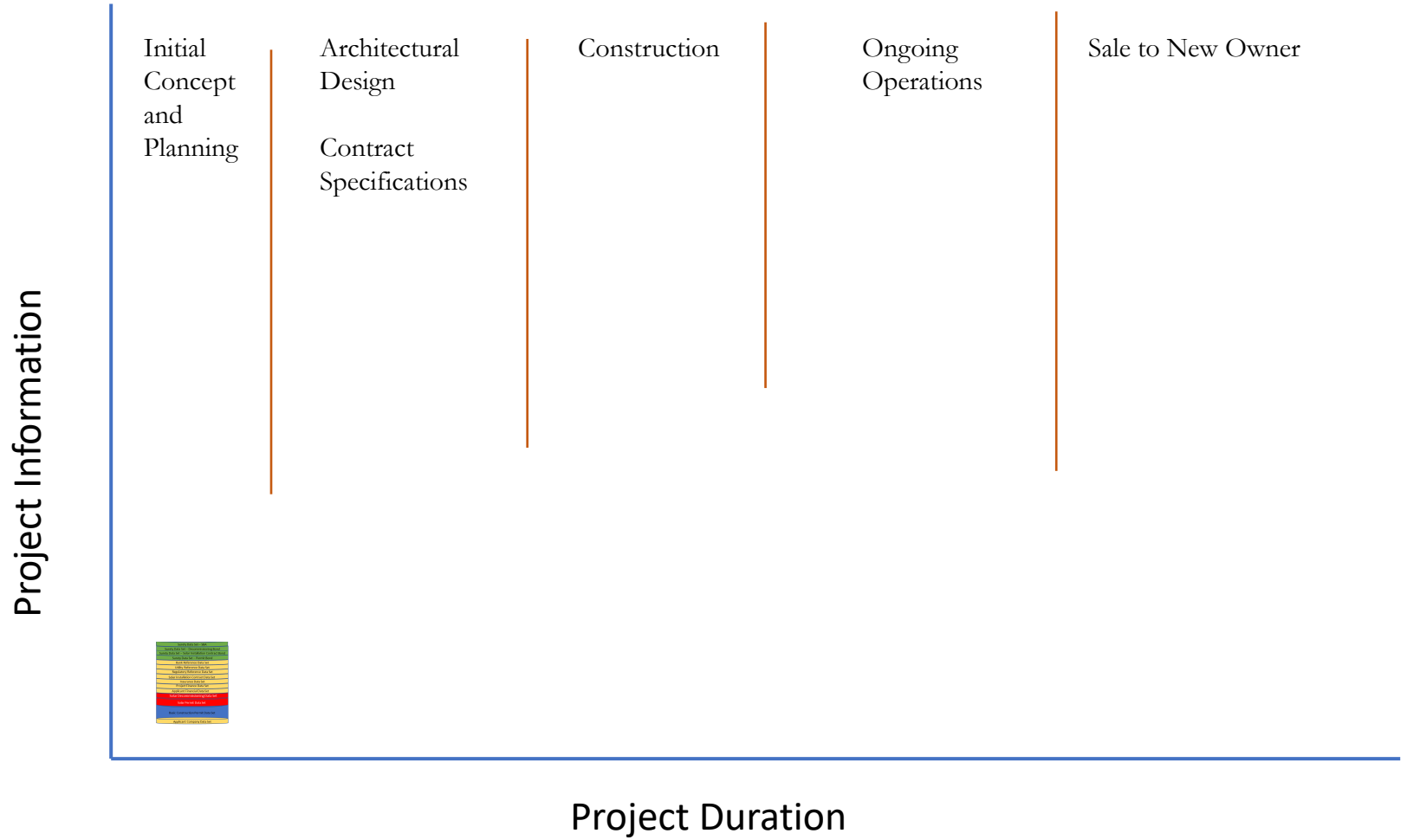
Cybersecurity Maturity Model Certification (CMMC)

The Cybersecurity Maturity Model Certification (CMMC) program is aligned to DoD's information security requirements for Defense Industrial Base partners.

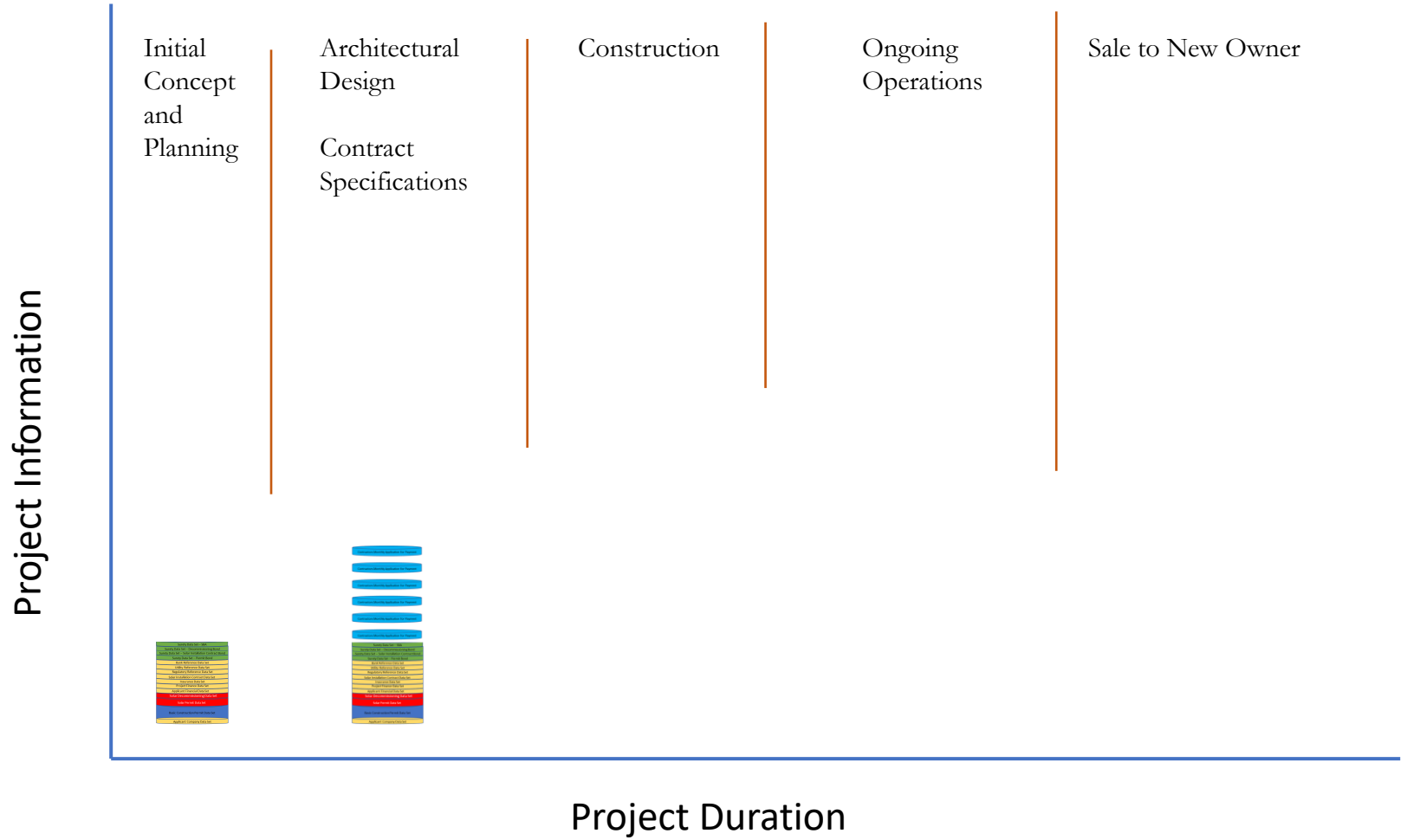
Examples of Data Elements

Principal Data Elements
Principal
Principal Address
Principal City
Principal State
Principal Zip Code
Principal County
Principal Name of person executing bond
Principal Title of person executing bond
Principal Email
Principal Legal Entity Identifier
Principal SAMS ID Number
Principal CMMC Number
Obligee Data Elements
Obligee
Obligee Address
Obligee City
Obligee State
Obligee Zip Code
Obligee County
Obligee Email
Obligee Legal Entity Identifier
Obligee SAMS ID Number
Obligee CMMC Number

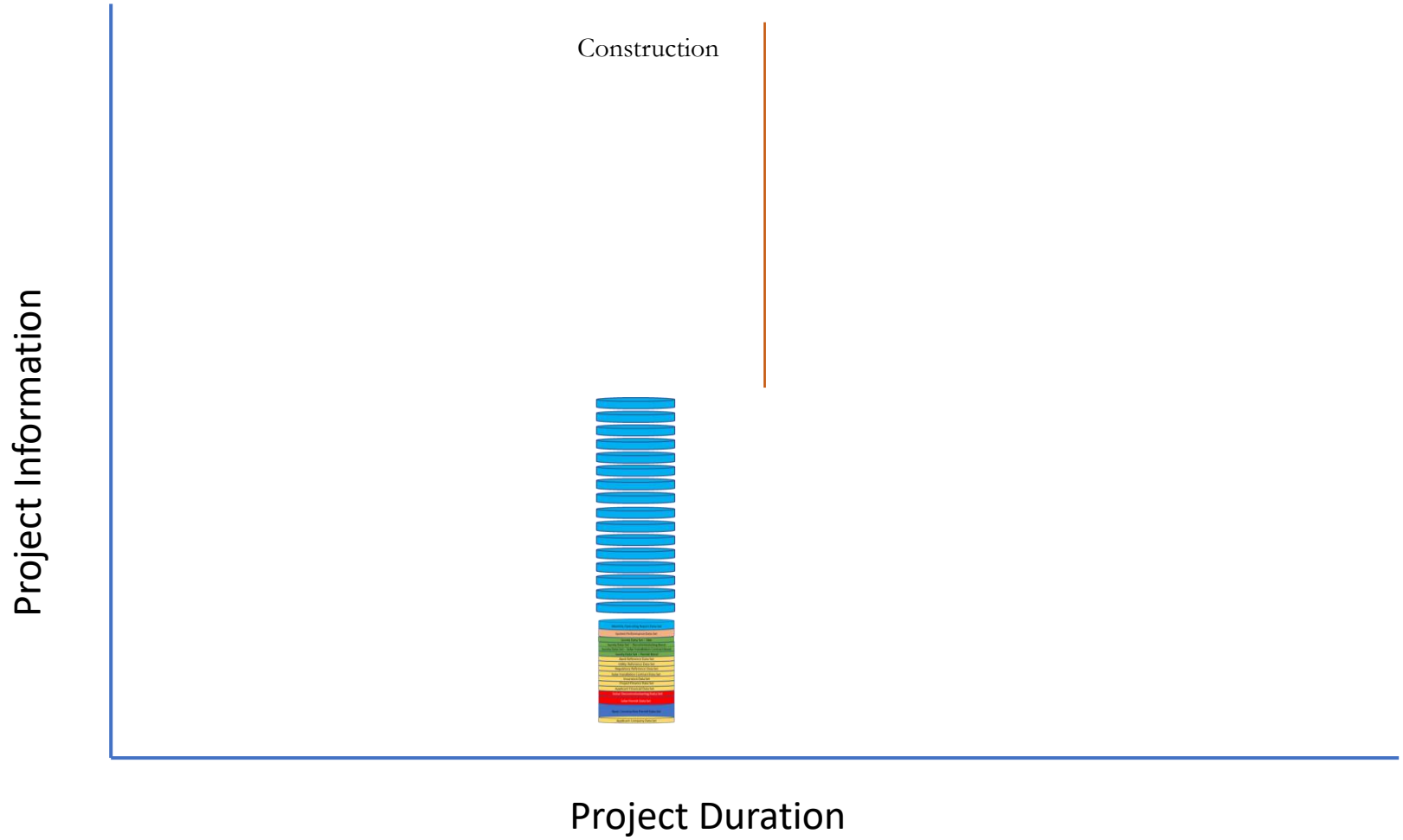
Project Lifecycle Data Generated



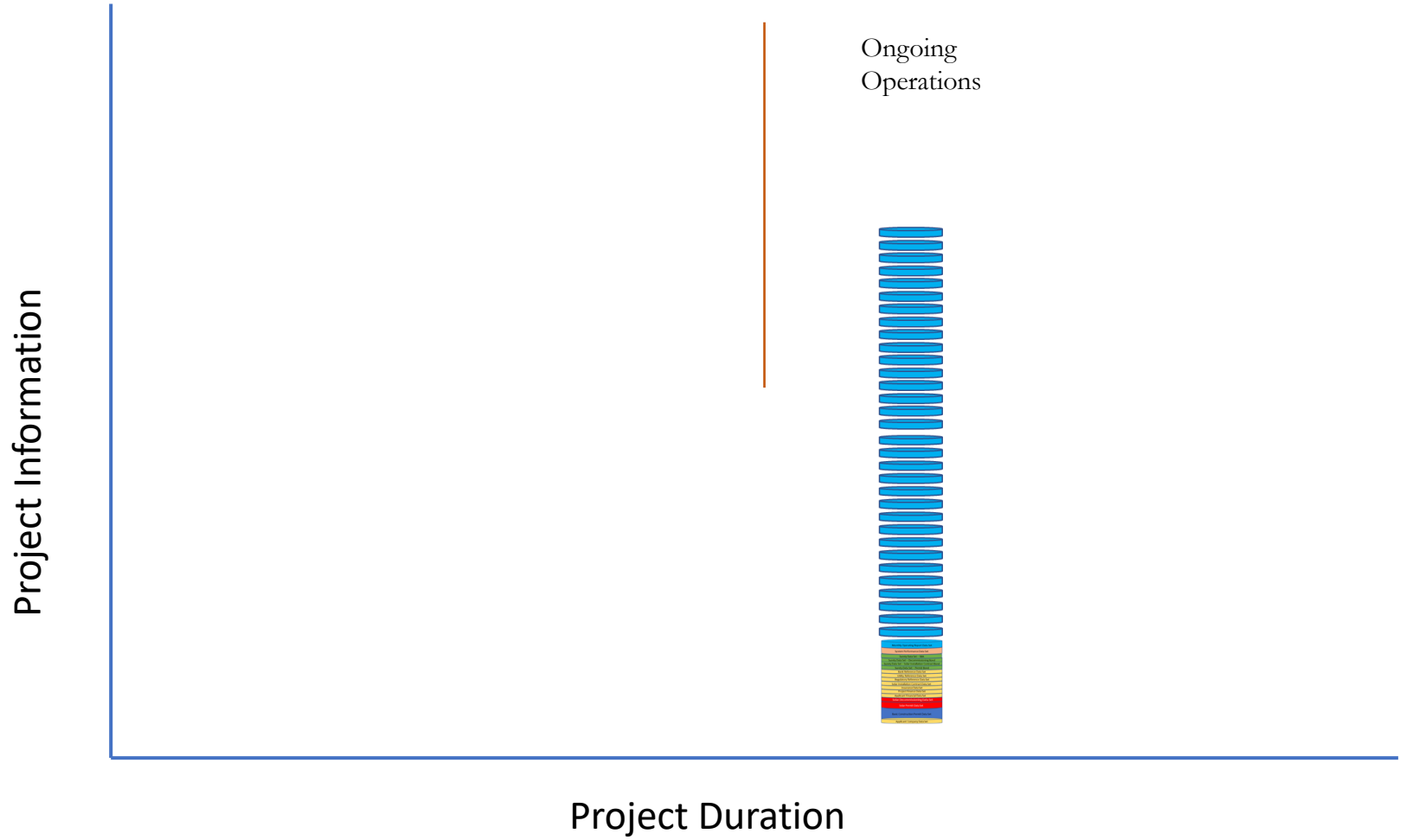
Project Lifecycle Data Generated



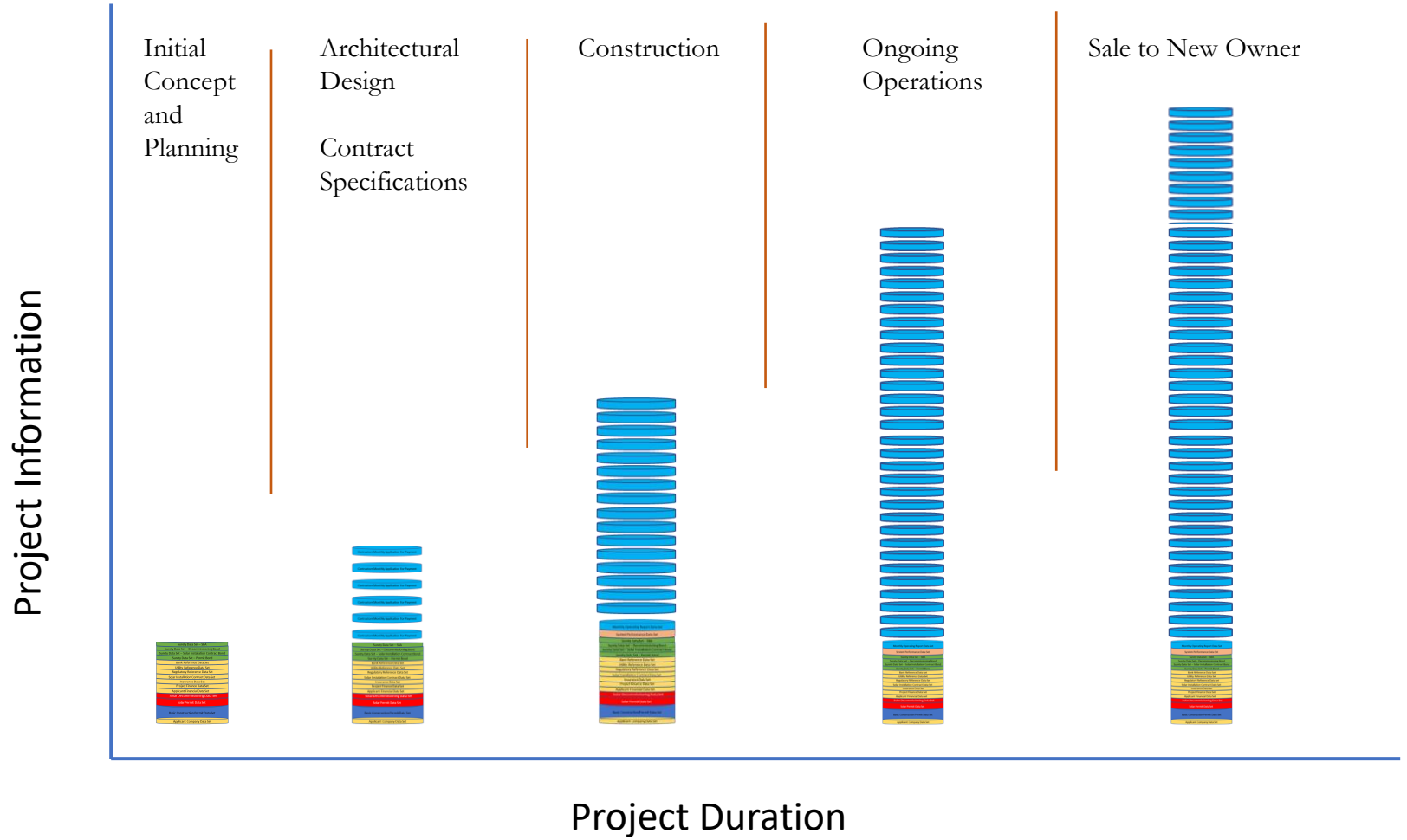
Project Risk – Construction Phase



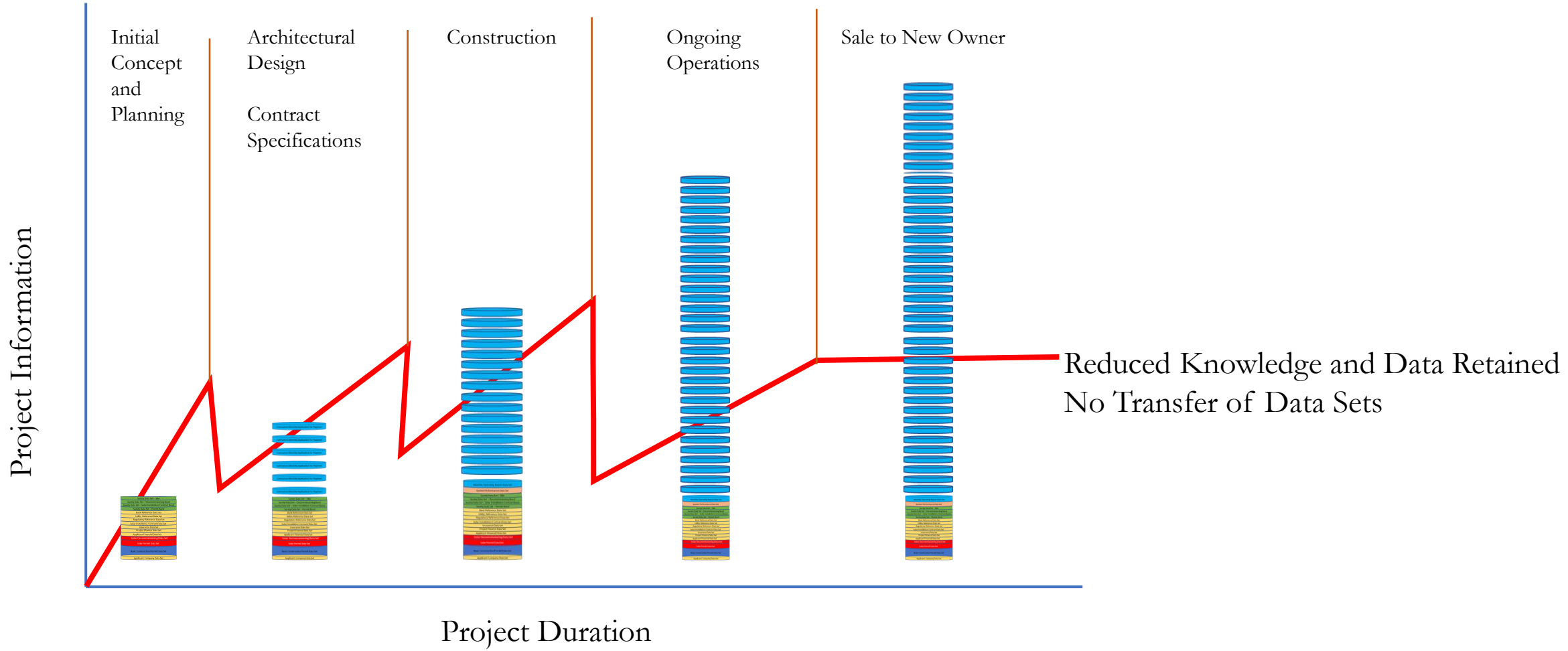
Project Risk – Ongoing Operations



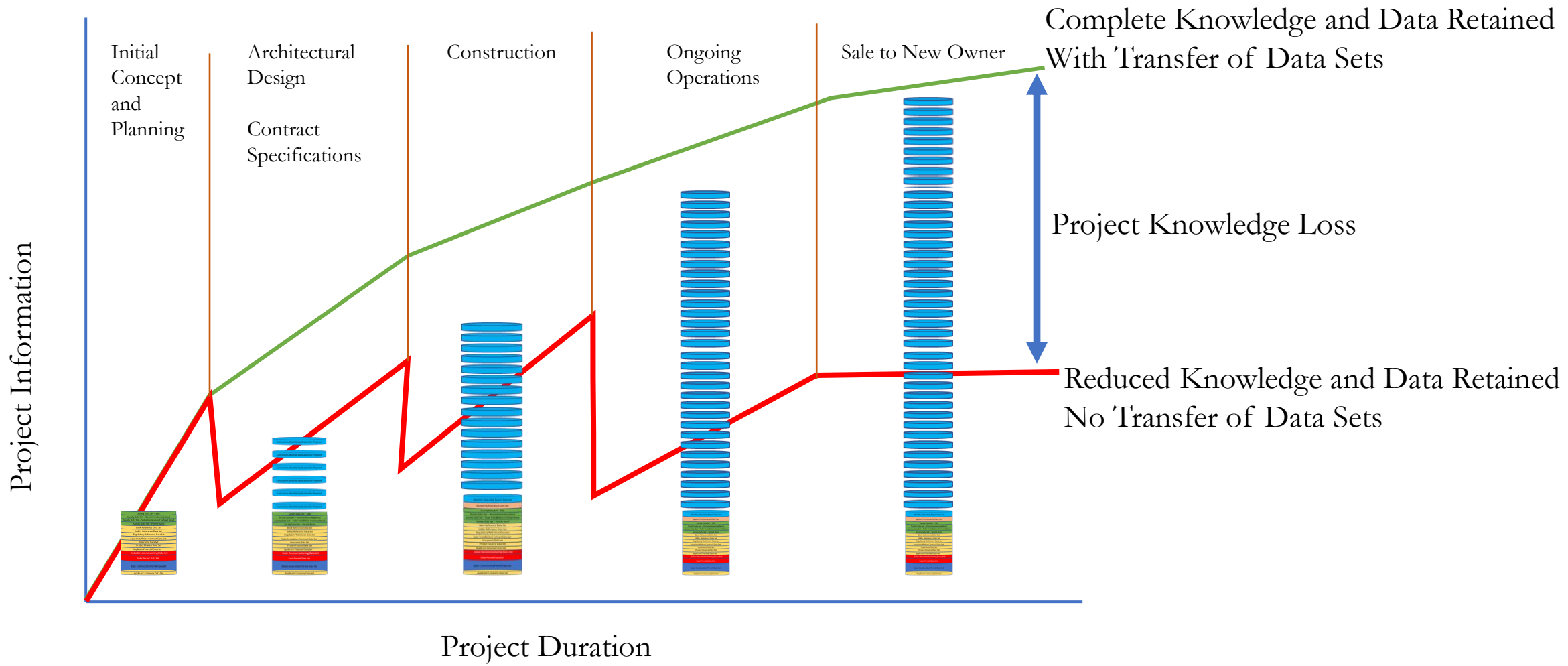
Project Lifecycle Data Generated



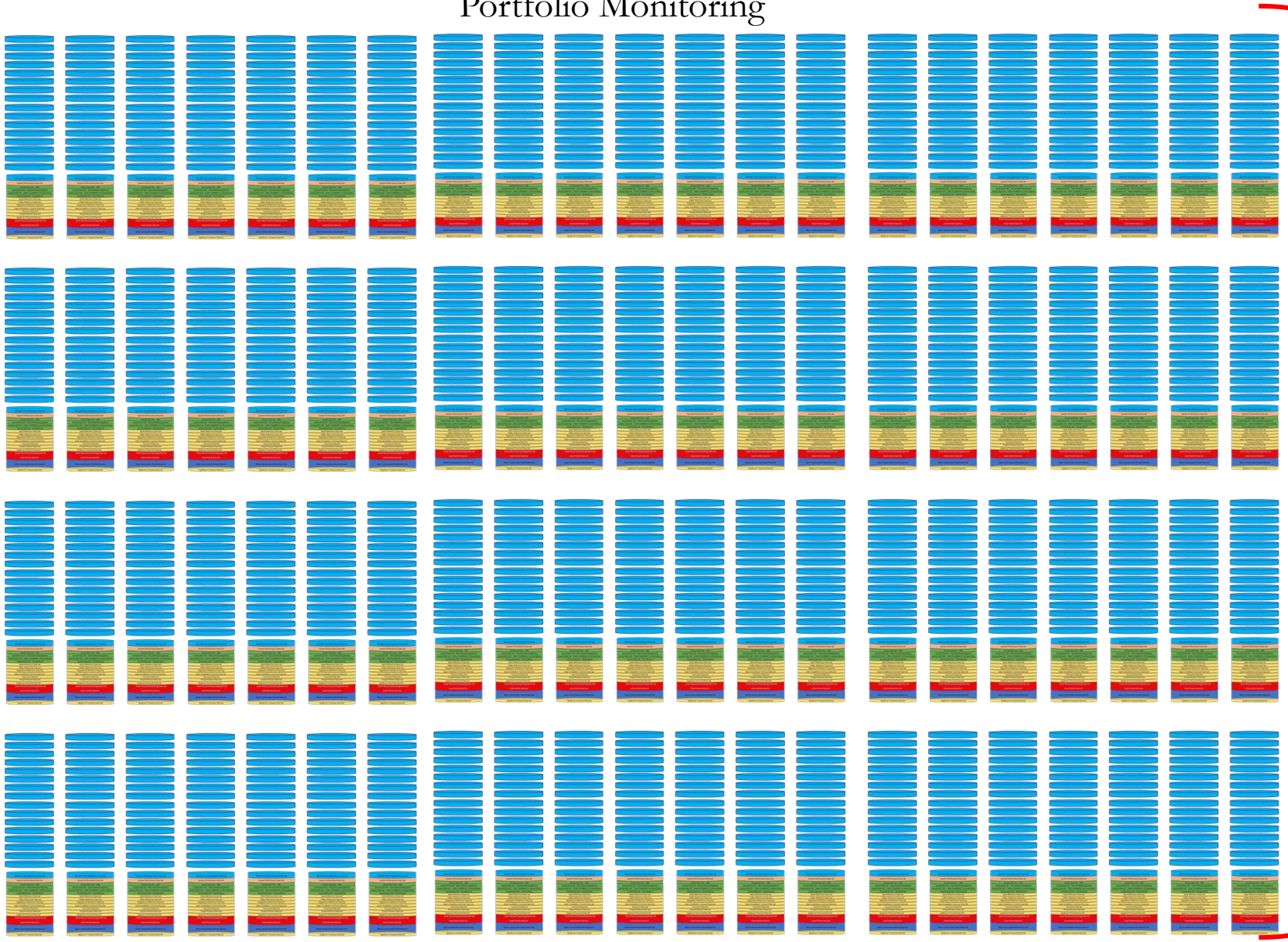
Project Knowledge and Data Retained or Lost During Transitions



Project Knowledge and Data Retained or Lost During Transitions



Portfolio Monitoring



Tomorrows Objective

Consistent data that allows aggregation and analytics of data across industry segments, public or private, domestic or international

Smart Infrastructure: The Road to COP28

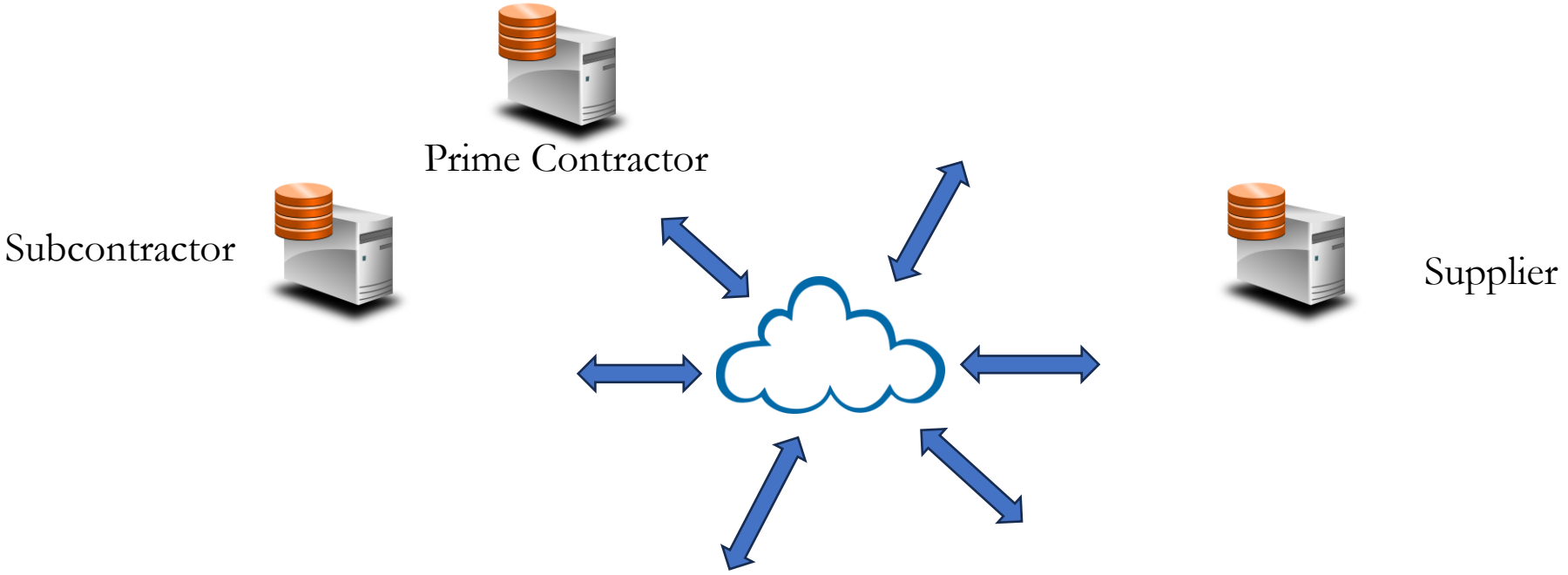
International Digital Ecosystem Architecture (IDEA)

Overview
Smart Terminology
Digital Ecosystem – Historical Foundations
Digital Ecosystem – Future Foundation
The How - Hierarchy of Data
The How - Data Elements and Data Sets
Digital Ecosystem
Summary

Prefabricated Solar Systems at Various City Facilities (CI 5562)
City of Thousand Oaks California

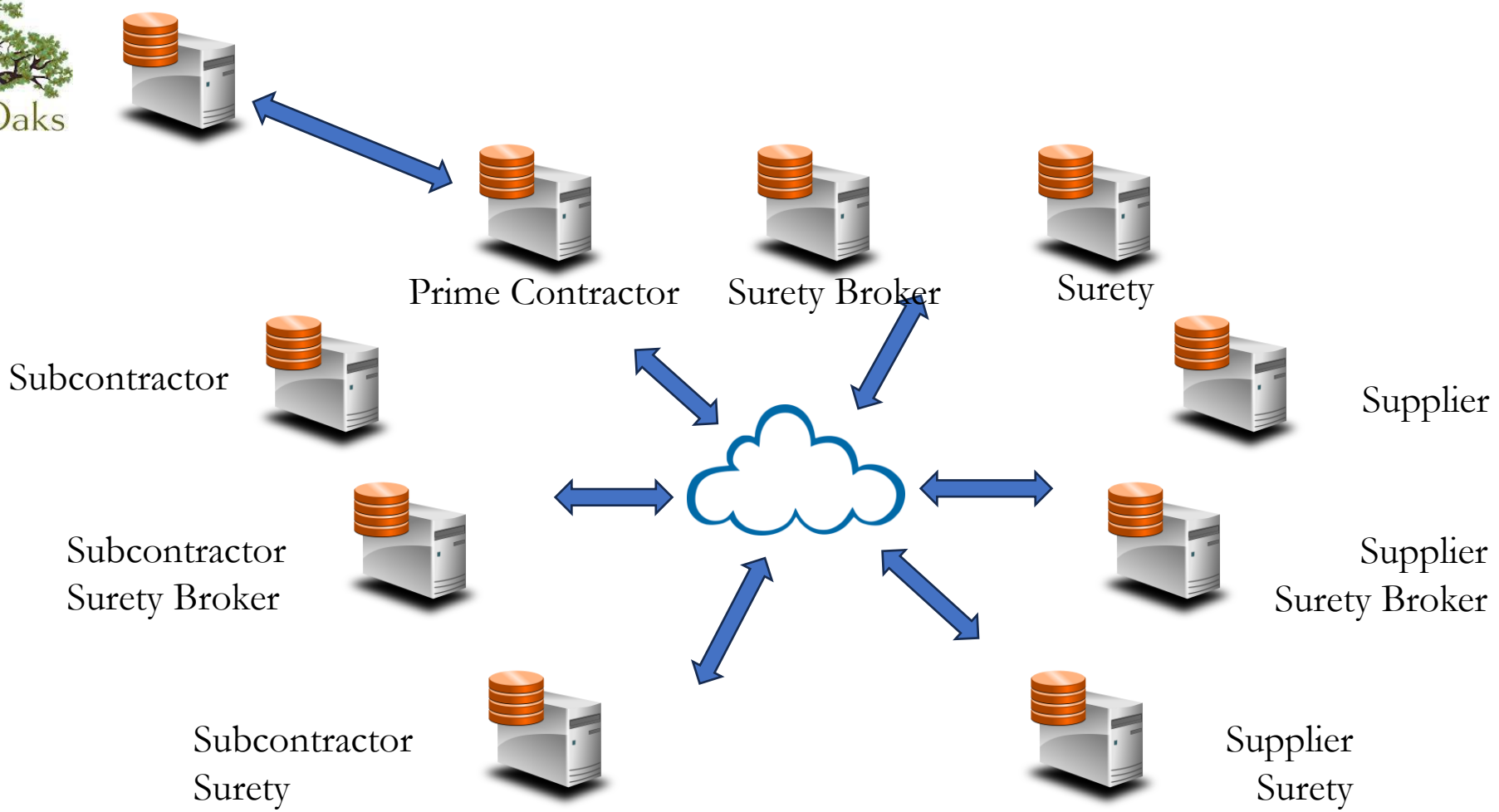
Collaboration Pilot for Digital Ecosystems

Accelerating the Implementation of Digital Construction Management Systems

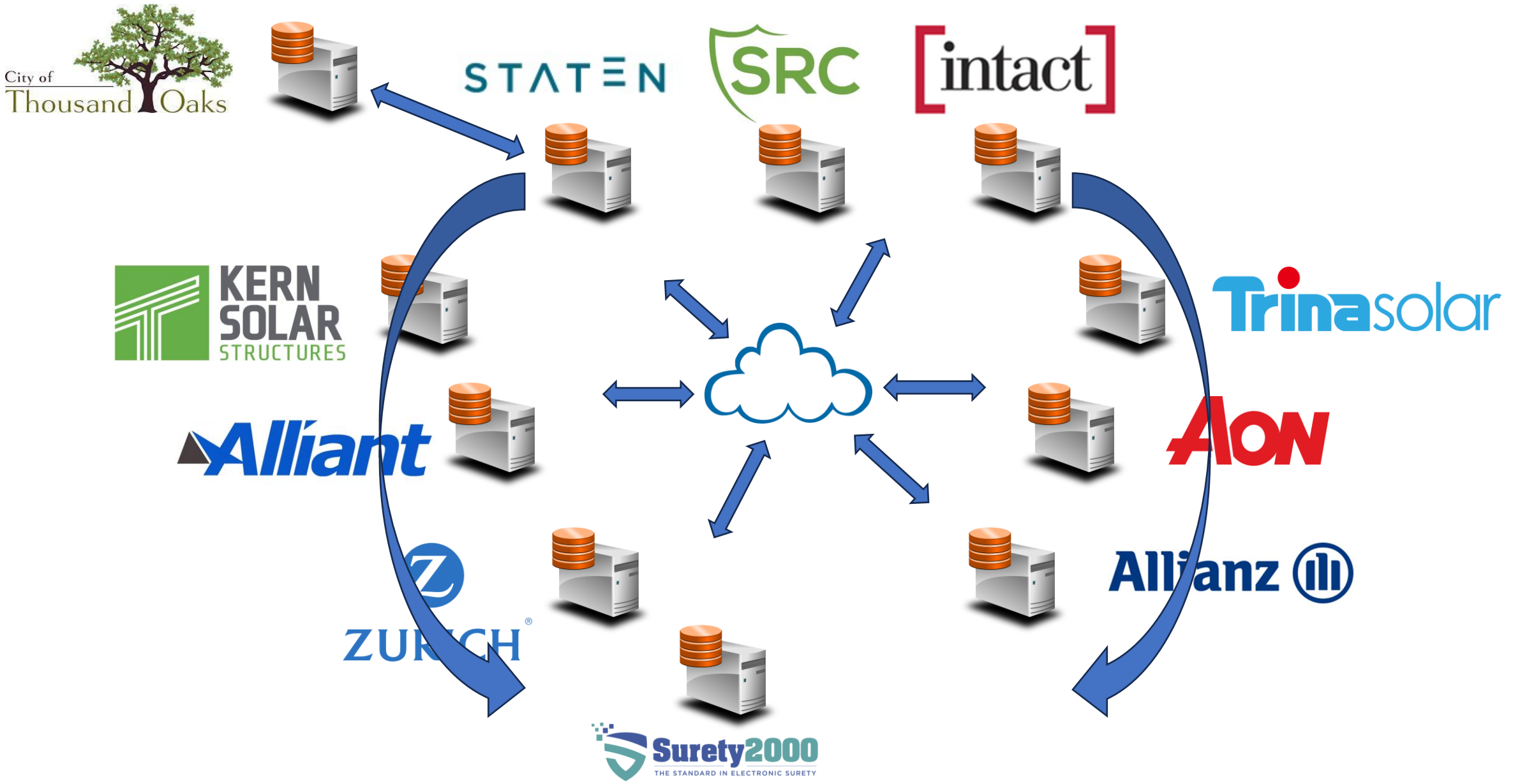


One Prime Contractor
One Subcontractor
One Supplier

City of Thousand Oaks



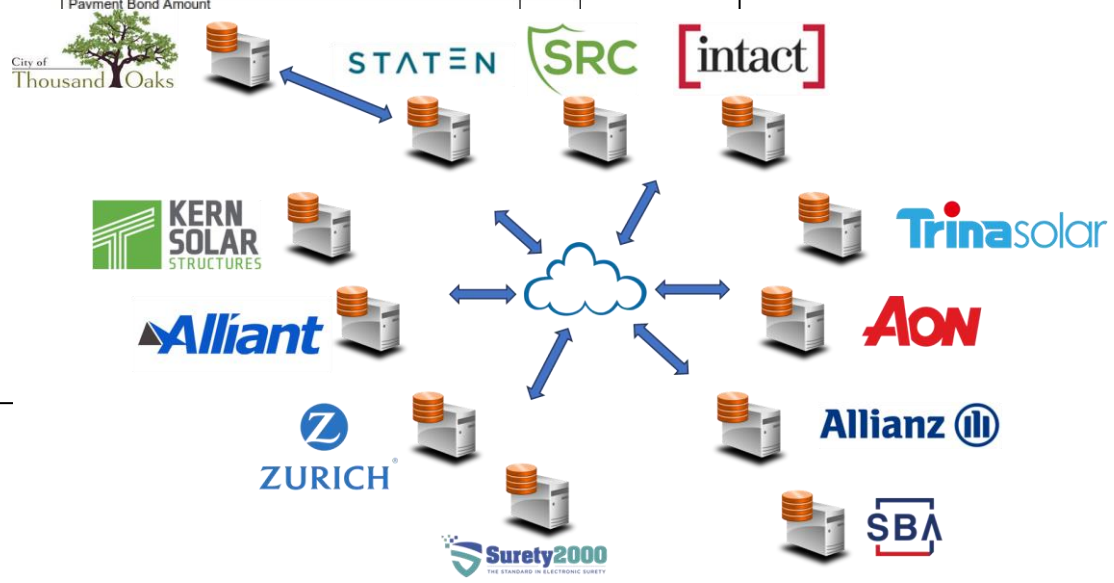
Prime Contractor Surety Broker and Surety Company
Subcontractor Surety Broker and Surety Company
Supplier Surety Broker and Surety Company


City of Thousand Oaks
STATEN
SRC
[intact]
KERN SOLAR STRUCTURES
Trinasolar
Alliant
AON
ZURICH
Allianz
Surety2000
THE STANDARD IN ELECTRONIC SURETY

Digital Surety Bond

ConsensusDocs - 706 – Subcontract Performance Bond
OB-XBRL Data Elements for Digital Surety Bond

Agreement Universally Unique Identifier (UUID)	
Agreement Universally Unique Identifier	
Agreement Universally Unique Identifier Registrar or Issuer	
Agreement Universally Unique Identifier Registrar URL	
Bond Document Type and Form Data Elements	
Bond Type	
Surety Bond Form and Version Number	
Surety Bond Orange Button Data Set	
Agreement Data Elements	
Agreement Type	
Agreement Description	
Agreement Number	
Agreement Amount	
Agreement Date (dd/mm/yyyy)	
Agreement Data Access	
Project URL	
Project Webcam Access	
Project Geo Location	
Legal Jurisdiction	
Bond Data Elements	
Bond Amount (Use for all other than Performance and Payment)	
Performance Bond Amount	
Payment Bond Amount	



Surety Data Set – Permit Bond

Validate and Retrieve Surety Bond Data Set

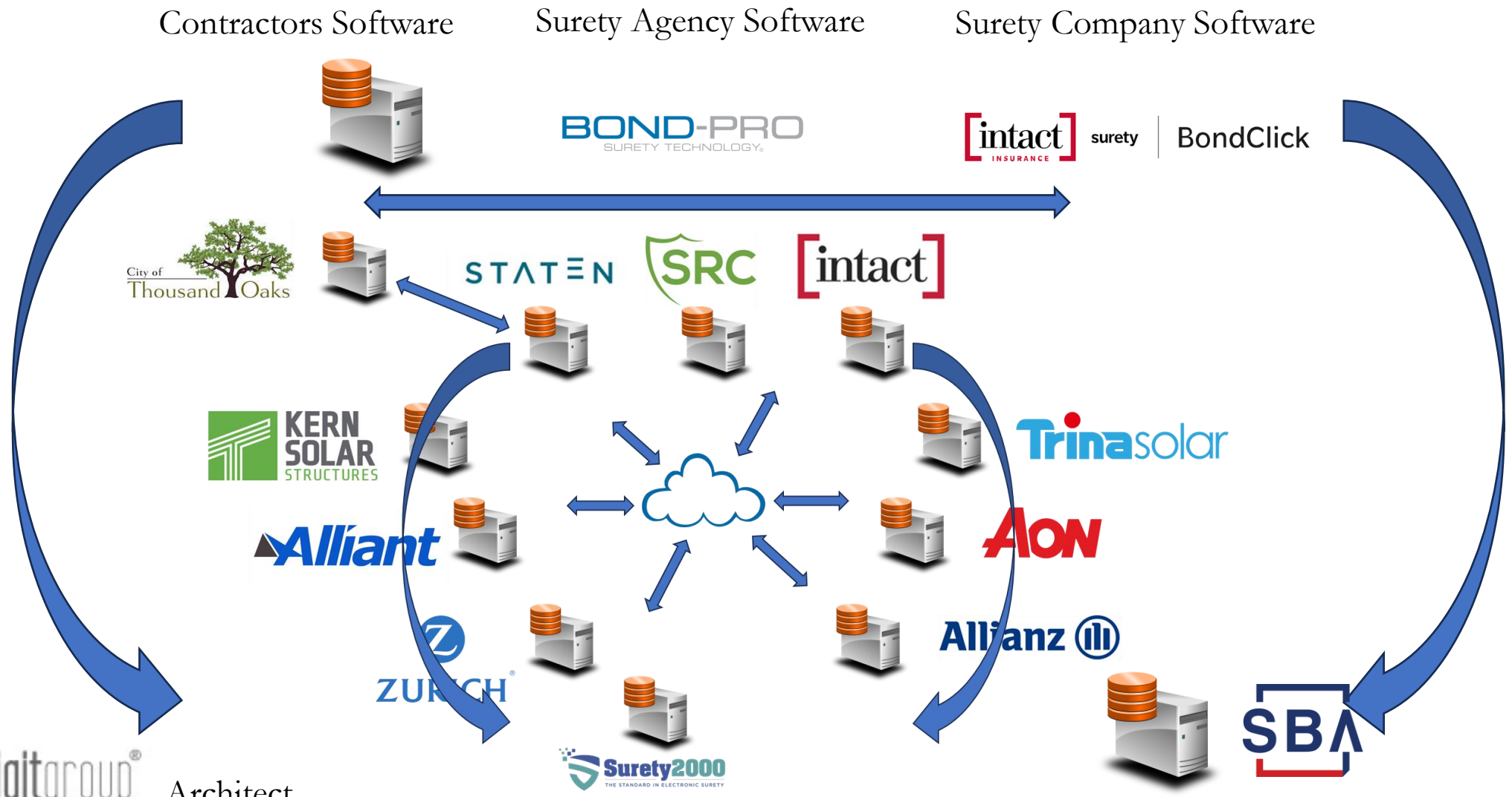
Enter Bond Validation Number (BVN)

XBRL Excel PDF

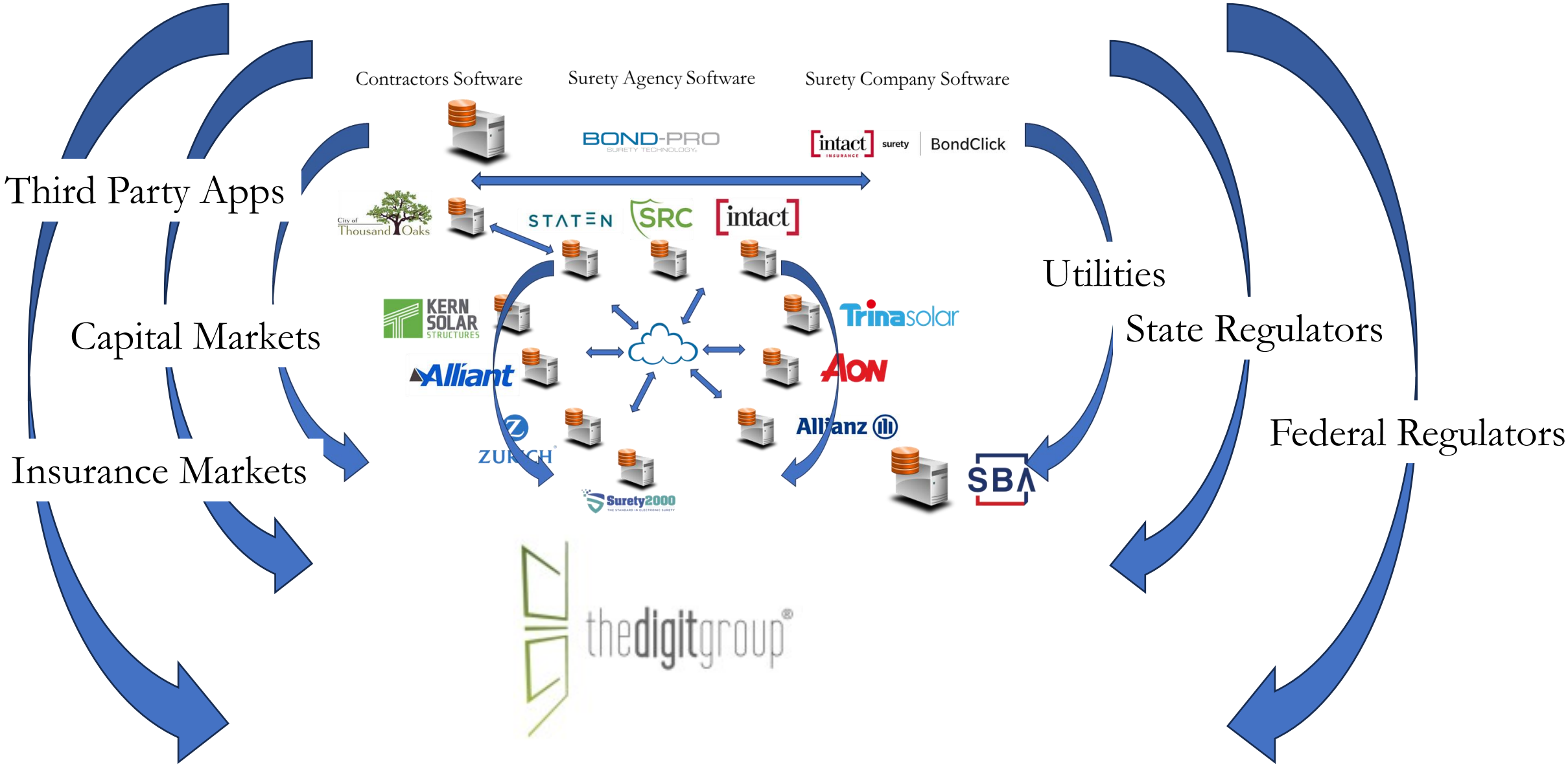
Retrieve Project Status

Enter Bond Validation Number (BVN)

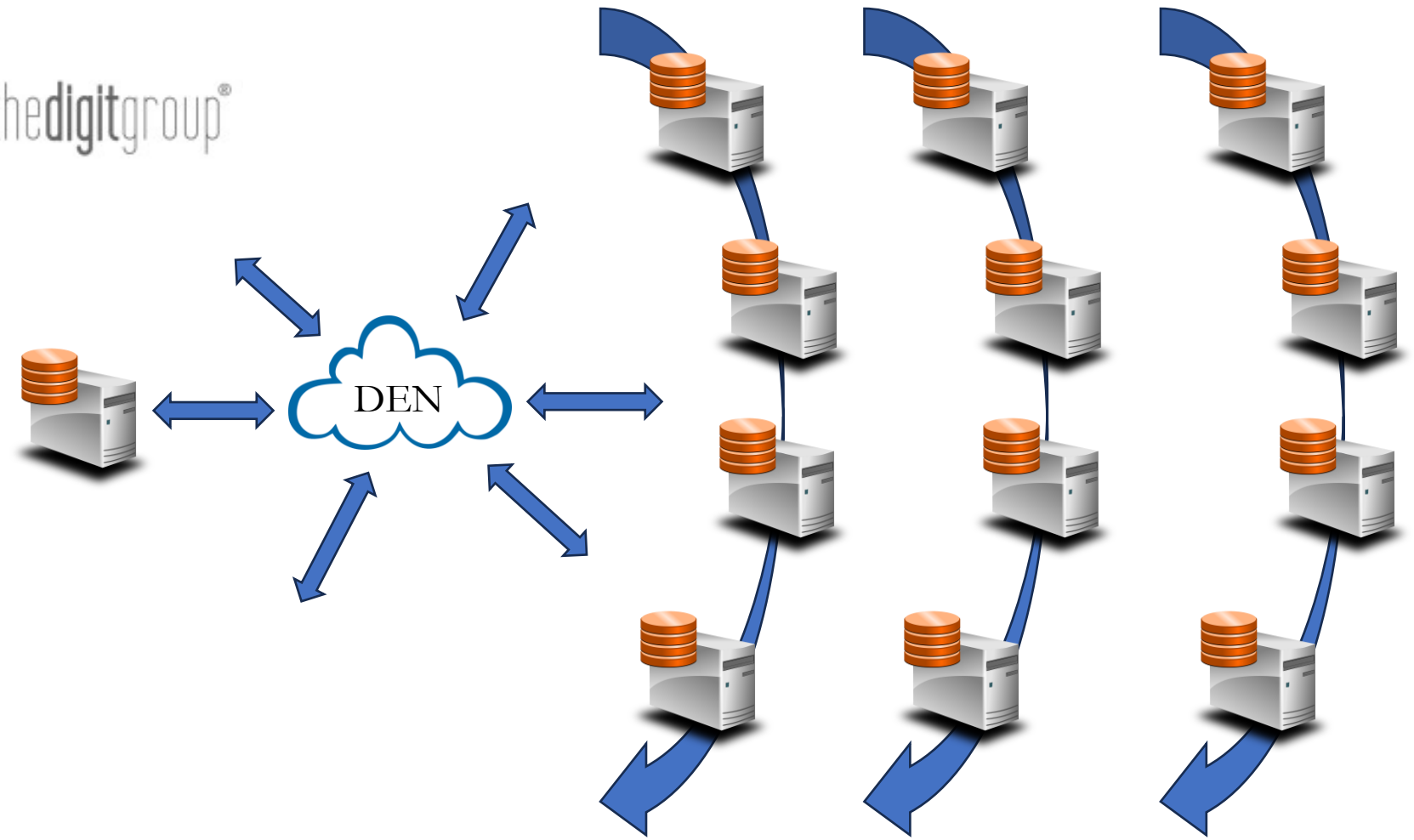
XBRL Excel PDF



Expanded Digital Ecosystem


Contractors Software
Surety Agency Software
Surety Company Software
BOND-PRO
intact surety
BondClick
City of Thousand Oaks
STATEN
SRC
intact
KERN SOLAR STRUCTURES
Trinasolar
Alliant
AON
ZURICH
Allianz
Surety2000
SBA
thedigitgroup
Third Party Apps
Capital Markets
Insurance Markets
Utilities
State Regulators
Federal Regulators
Further Extended Digital Relationships

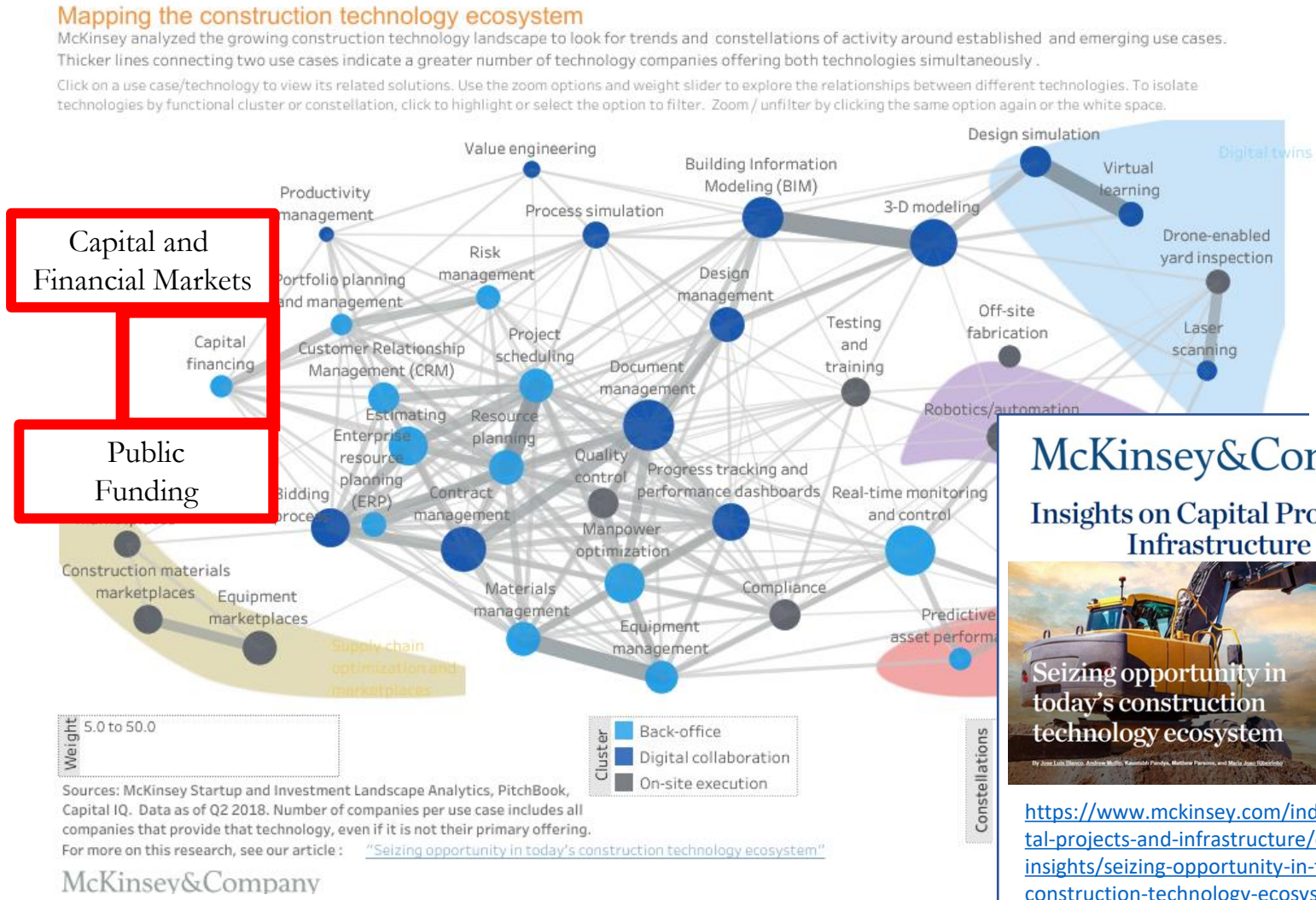
Formation of a Digital Ecosystem Network (DEN)



Digital Ecosystems utilize consistent data elements to enable the Smart in Smart

Capital Markets
Specific project cash funding sources, like banks, VC's, green bond funds, hedge funds, etc.

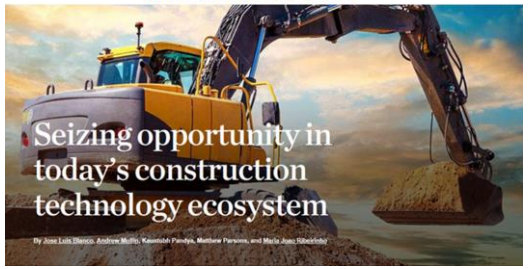
Financial Markets
Credit providers, insurance companies, surety markets and trade credit. Not project specific but utilized on projects as financial products and services.



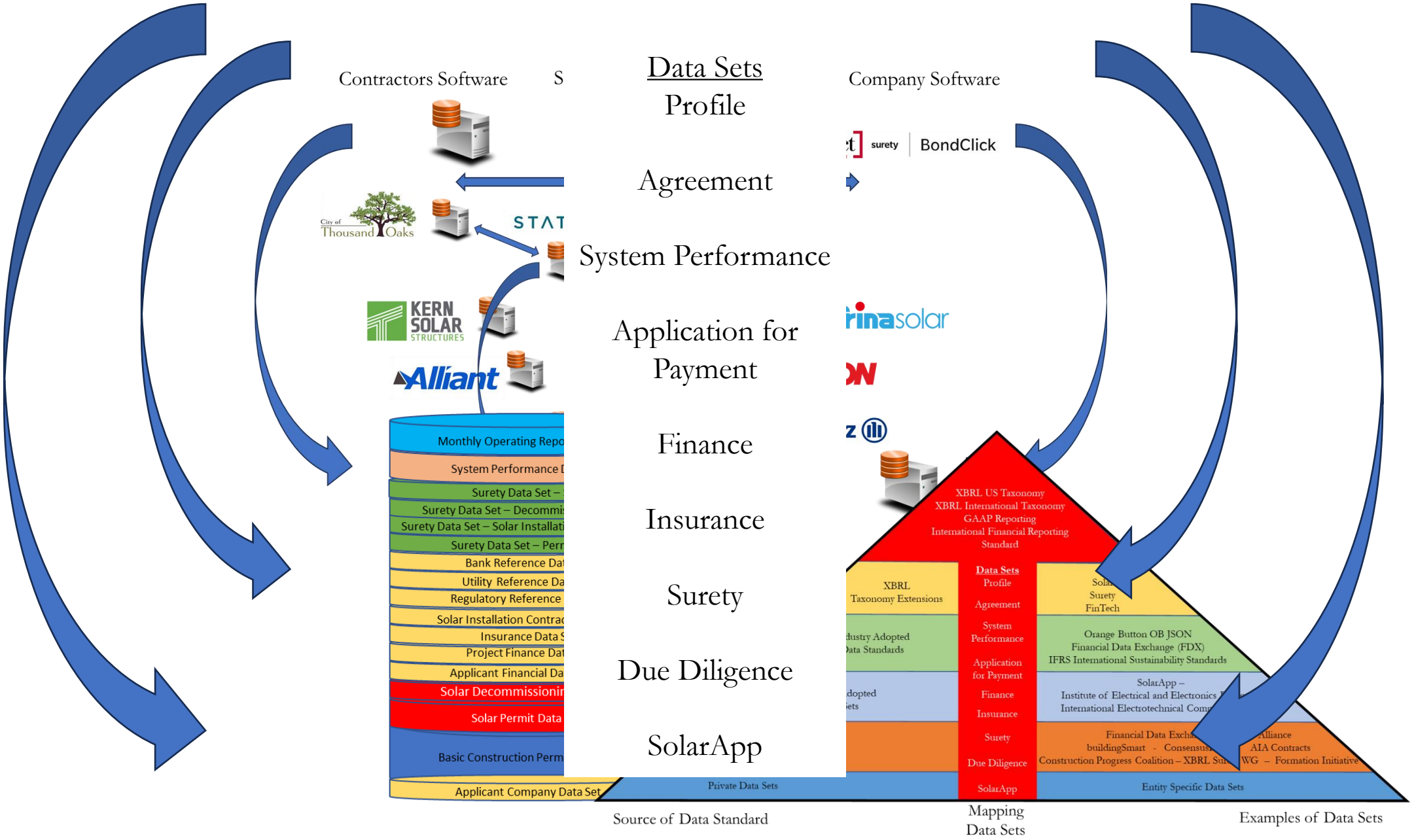
2018

McKinsey&Company

Insights on Capital Projects & Infrastructure



https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/seizing-opportunity-in-todays-construction-technology-ecosystem

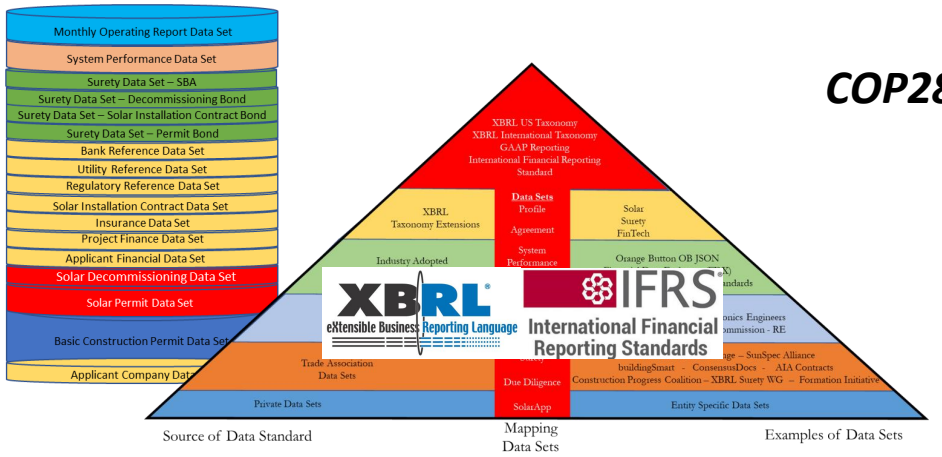

Contractors Software
S
Company Software
Data Sets
Profile
Agreement
System Performance
Application for Payment
Finance
Insurance
Surety
Due Diligence
SolarApp
surety
BondClick
City of Thousand Oaks
KERN SOLAR STRUCTURES
Alliant
rinasolar
Monthly Operating Repo
System Performance
Surety Data Set –
Surety Data Set – Decommi
Surety Data Set – Solar Installati
Surety Data Set – Perr
Bank Reference Da
Utility Reference Da
Regulatory Reference
Solar Installation Contrac
Insurance Data S
Project Finance Da
Applicant Financial Da
Solar Decommissionir
Solar Permit Data
Basic Construction Perm
Applicant Company Data Set
XBRL US Taxonomy
XBRL International Taxonomy
GAAP Reporting
International Financial Reporting Standard
XBRL Taxonomy Extensions
Data Sets
Profile
Agreement
System Performance
Application for Payment
Finance
Insurance
Surety
Due Diligence
SolarApp
Orange Button OB JSON
Financial Data Exchange (FDX)
IFRS International Sustainability Standards
AIA Contracts
Private Data Sets
Entity Specific Data Sets
Source of Data Standard
Mapping Data Sets
Examples of Data Sets

Smart Infrastructure: The Road to COP28

International Digital Ecosystem Architecture (IDEA)

- Overview
- Smart Terminology
- Digital Ecosystem – Historical Foundations
- Digital Ecosystem – Future Foundation
- The How - Hierarchy of Data
- The How - Data Elements and Data Sets
- Digital Ecosystem
- **Summary**

The Road to COP28



COP28 will focus on the 'how'

unifying ecosystem

The How:
The International Digital Ecosystem Architecture (IDEA)
Industry Adopted Data Sets