

The API Sprint

Presenters:

Gray Taylor, Conexus

David Ezell, Conexus

Agenda

- Housekeeping
- Presenters
- About Conexus
- The “API Sprint”
- Q & A

Housekeeping

This webinar is being recorded and will be made available in approximately 7 days.

- YouTube (youtube.com/conexxusonline)
- Website Link (conexxus.org)

Slide Deck

- Survey Link – Presentation provided at end

Participants

- Ask questions via webinar interface
- Please, no vendor specific questions
- Our webinars may be used toward PCI continuing education credits. Please contact arussell@conexxus.org for questions regarding a certificate of webinar attendance.

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Presenters

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About Conexxus

- We are an independent, non-profit, member driven technology organization
- We set standards...
 - Data exchange
 - Security
 - Mobile commerce
- We provide vision
 - Identify emerging tech/trends
- We advocate for our industry
 - Technology is policy



2020 Conexxus Webinar Schedule

Month/Date	Webinar Title	Speaker	Company
January 23, 2020	How to elevate your business through digital transformation	Dean Marier	Cybera
February 27, 2020	Progress in the “API Sprint”	Gray Taylor David Ezell	Conexxus
March 18, 2020	Data Security Beyond PCI: Securing the Enterprise	Ed Adams Mark Carl Chad Kobayashi Sam Pfanstiel	Security Innovation ControlScan Maverik ControlScan
April 2, 2020	Presentation by GS1	Liz Sertl	GS1
April 2020	Ransomware protection and how a managed security service provider can help oil & gas retailers from being the next target	Ajith Edakandi	Hughes Network
May 2020	POS Managed Service Program	TBD	Joint MNSP’s
June 2020	Penetration Testing	Geoff Vaughan	Security Innovation

Conexxus: Data Security Committee
Meeting Date: January 16, 2020

2020 Conexus Webinar Schedule

Month/Date	Webinar Title	Speaker	Company
July 2020	PCI DSS 4.0	Troy Leach	PCI SSC
August 2020	Vulnerability & Patch Management—Retail Operations	TBD	POS Vendors
September 2020	TBD	Scott Cheek	SageNet

2020 Conexus Annual Conference

April 26 – April 30, 2020

Loews Ventana Canyon
Tucson, AZ

More about Sponsorship Opportunities & Registration:
www.Conexus.org



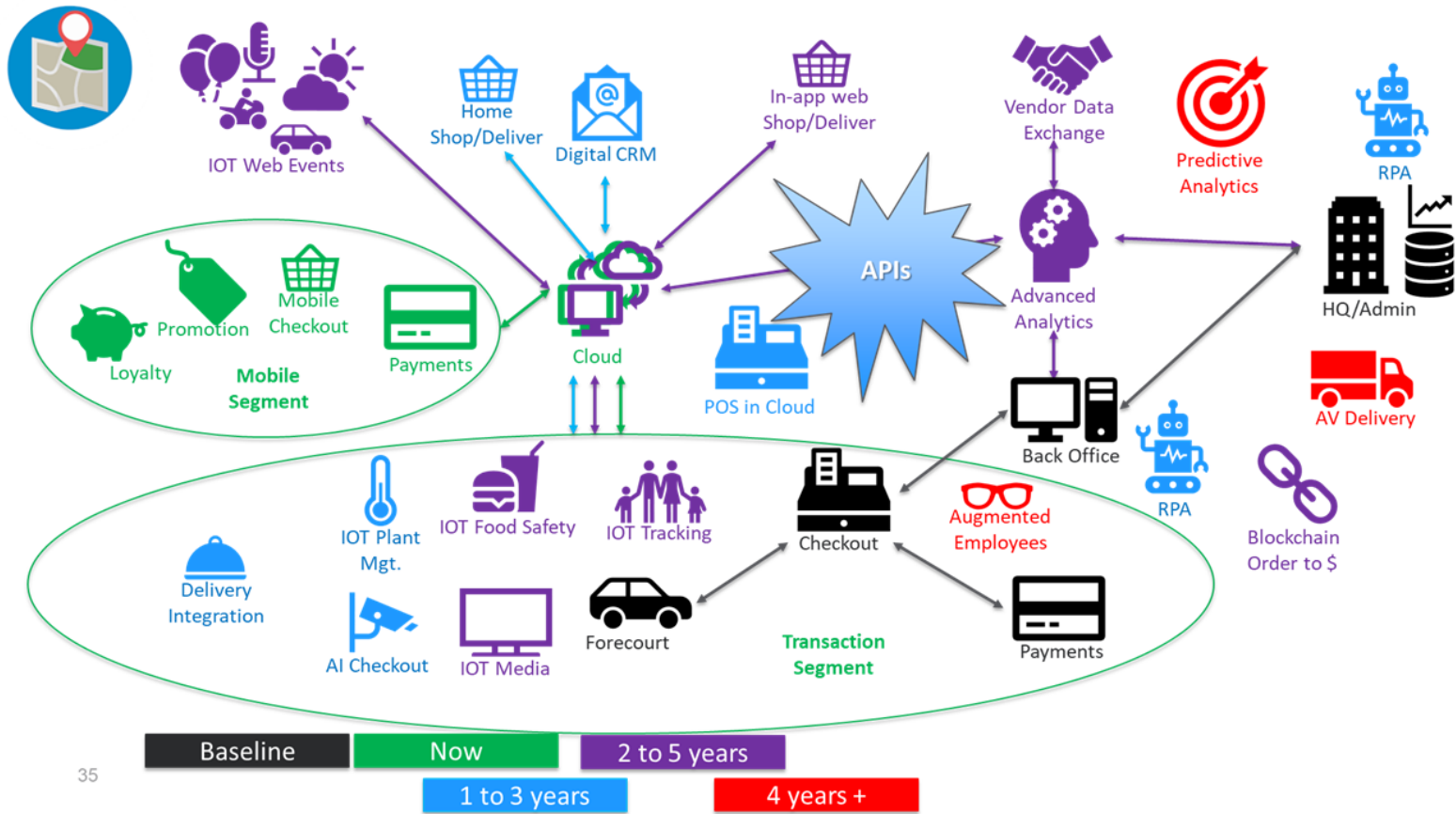
Conexus thanks our 2019 Annual Diamond Sponsors!



Cybera®

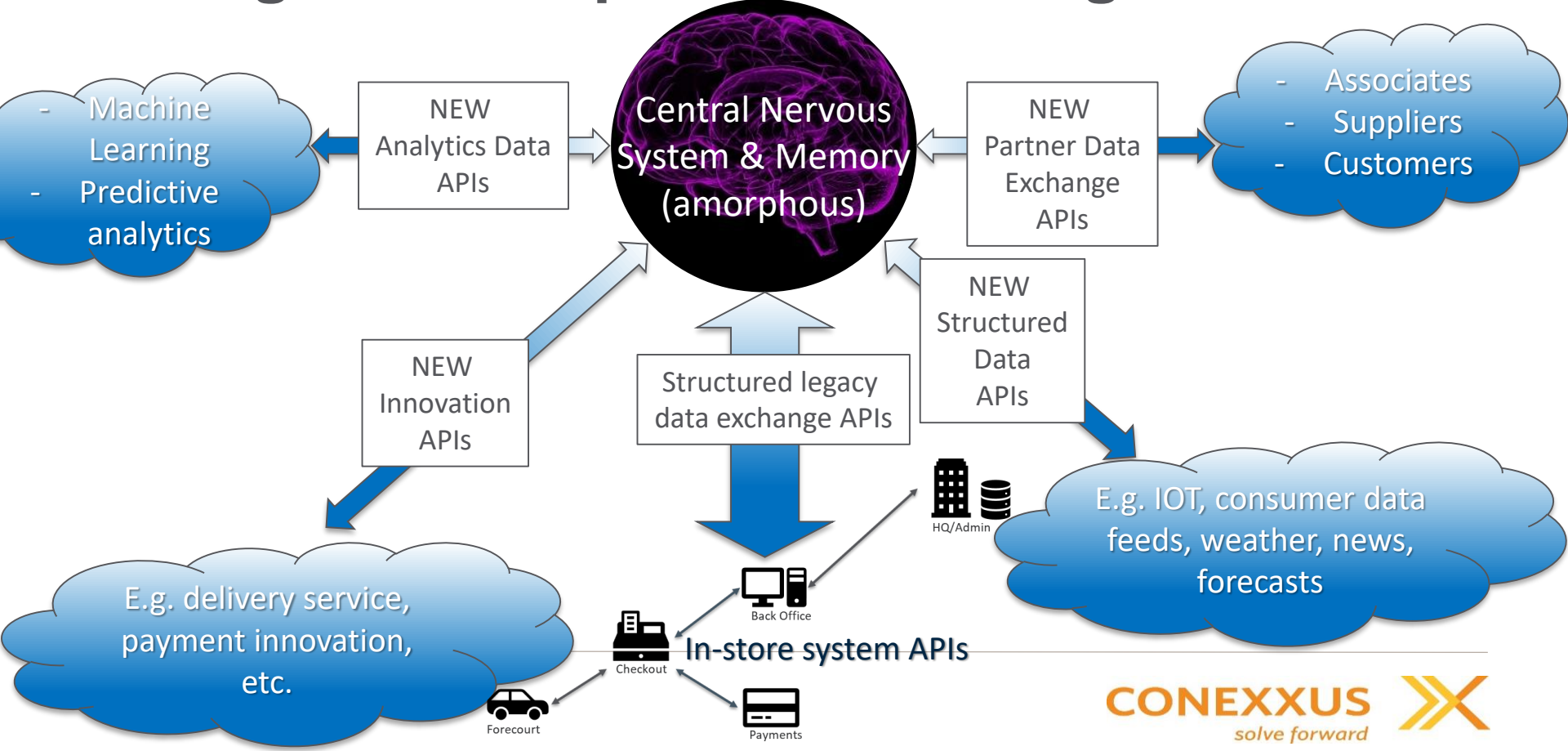
Stuzo





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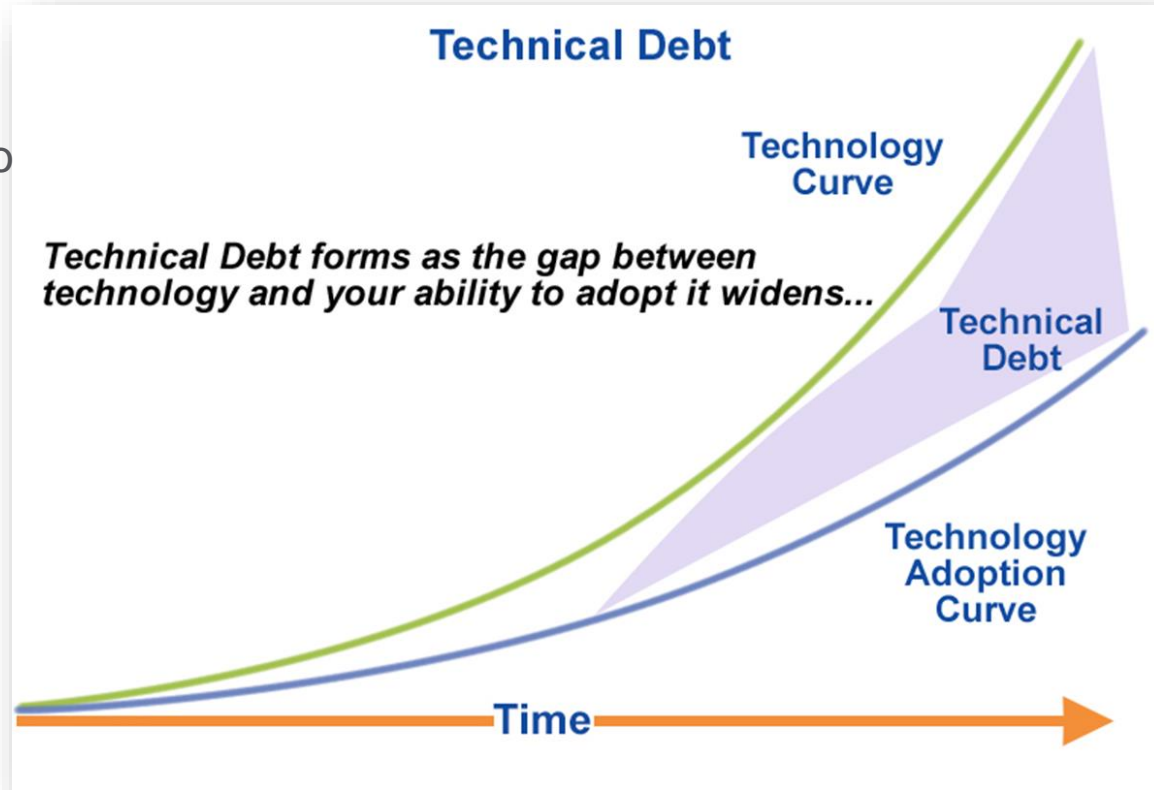
Rewiring the Enterprise = Reducing Tech Debt



Technical Debt

It is the unrealized cost required to take a tech stack from where it is, to where it should be:

- Not measured on balance sheet, but some hints are on P&L through maintenance and upgrade OpEx
- Causes:
 - Failure to use Standards & APIs
 - Failure to take “platform” approach
 - Failure of “future-back” analysis
 - Feature enhancements forced by competitor (e.g. cashierless store)
 - The true cost of digital transformation
- We all have it....



NACS/Conexxus Investment in the Future

- 2019, NACS invested \$200,000 to fund Conexxus development of API strategy
 - Save time and NRE of digital transformation
- 2020, NACS has committed \$1M to fund the API "Factory" model
 - Achieve strategic efficiencies through standardized APIs
 - Plan driven by retailer prioritization
 - Greatly enhance our competitive position
 - Foster innovation "test and learn" cycles
- We believe this initiative will save the industry millions...
- YOU need to engage to help us invest wisely

API Sprint: Goals

- Continue to Expand the Industry Data Dictionary
- Leverage existing Conexus Standards
- Develop technology and management talent
- Develop and deploy an architecture that
 - Leverages existing Conexus Standards
 - Minimizes retailer technical debt in new APIs

The API Sprint

- Conexus API “Factory” Initiative
 - Collaborative Environment using GitLab
 - “Table-stakes” architecture description
 - RBR Approved Conexus API work
 - Potential Conexus API work
- Process for APIs
- Staffing for “32” table stakes APIs, certified and in repositories



Open Retailing: A collaboration between IFSF and Conexxus

February, 2020 Press Release

Conexxus and International Forecourt Standards Forum Announce Standardized API Initiative,
Creation of Public Repository for Industry Review and Comment



API Design Guidelines

Introduction

Conexxus and IFSF have worked with retailer and supplier (developer) members to assemble a set of documents to describe how to create an API for consideration as an industry standard. While there are many languages, formats, and tools available to create APIs, Conexxus and IFSF are focussing on those that are most standardized, and most likely to be useful in a variety of the environments in Convenience Retail computing.

Rationale for Selections

Specifically, the participants have singled out the following tools and standards as having the broadest scope:

- Open API Specification 3.0 - formerly "Swagger," this API definition format has become the de facto standard for APIs.
- JSON-Schema 0.7 - as standards organizations, we require a way to define and compose message content. JSON-Schema is the emerging standard in JSON family of tools, and is compatible with OAS 3.0.
- HTML5 - Capabilities in HTML are ubiquitous, and are included in almost all server and client side development environments.

API Data Dictionary

Welcome to the **API Data Dictionary** ("Dictionary"), jointly owned by the IFSF (www.ifsf.org) and Conexus (www.conexus.org), and shared in order to assist in the use of our international standards.

This version is a DRAFT and is for discussion only. It is improper to attempt to use the definitions herein in live applications or to cite this version other than as a work in progress.

This Dictionary is created specifically for use in petroleum and convenience retail. The definitions in the Dictionary have been in wide use for almost two decades.

Ultimately, the dictionary will contain the following directories:

- schemas: this directory contains the business domain items (elements, types, objects).
- traits: contains definitions useful across the set of all APIs, but outside the business domain.
- utilities: contains definitions useful for messaging, but outside the business domain.
- examples: contains example files conforming to various definitions.

API Data Dictionary: Status

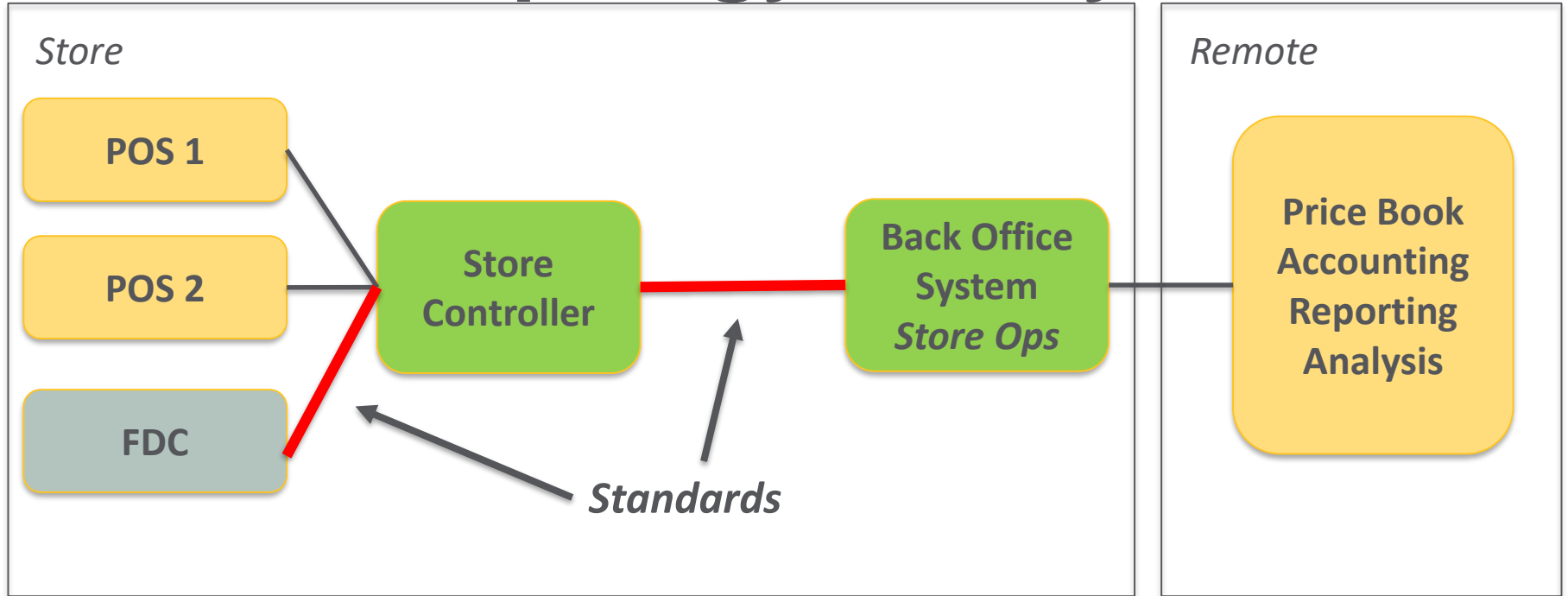
- DRAFT dictionary – completed 21 February, 2020
- Contributions
 - IFSF – data definitions from FDC
 - Conexxus – data definitions from POS/BO
- Process
 - TAC approves overall structure (approved)
 - FDC approves IFSF contribution
 - POS/BO approves Conexxus contribution

API Sprint Architecture Motivation

- IR4.0 data processing focuses on raw data...
 - Lower cost – little or no tech debt, especially if **standard**
 - More accurate – original sources are more reliable
 - More informative – lots of information, not just values
- ... But merchants often don't have direct control
 - Acquiring the data often requires customization.
 - Paying more for your data is like paying a loan with another loan.

To compete in the “disruptive ecosystem,” merchants need fast/frictionless access to their own standardized data.

C-Store Topology: Today



C-Store Topology: Future

POS 1-N

BYOD

Line Buster

Fueling Point POS

Unattended POS

?

Price Book
Accounting
Reporting
Analysis

Supply Chain

AI Promotions

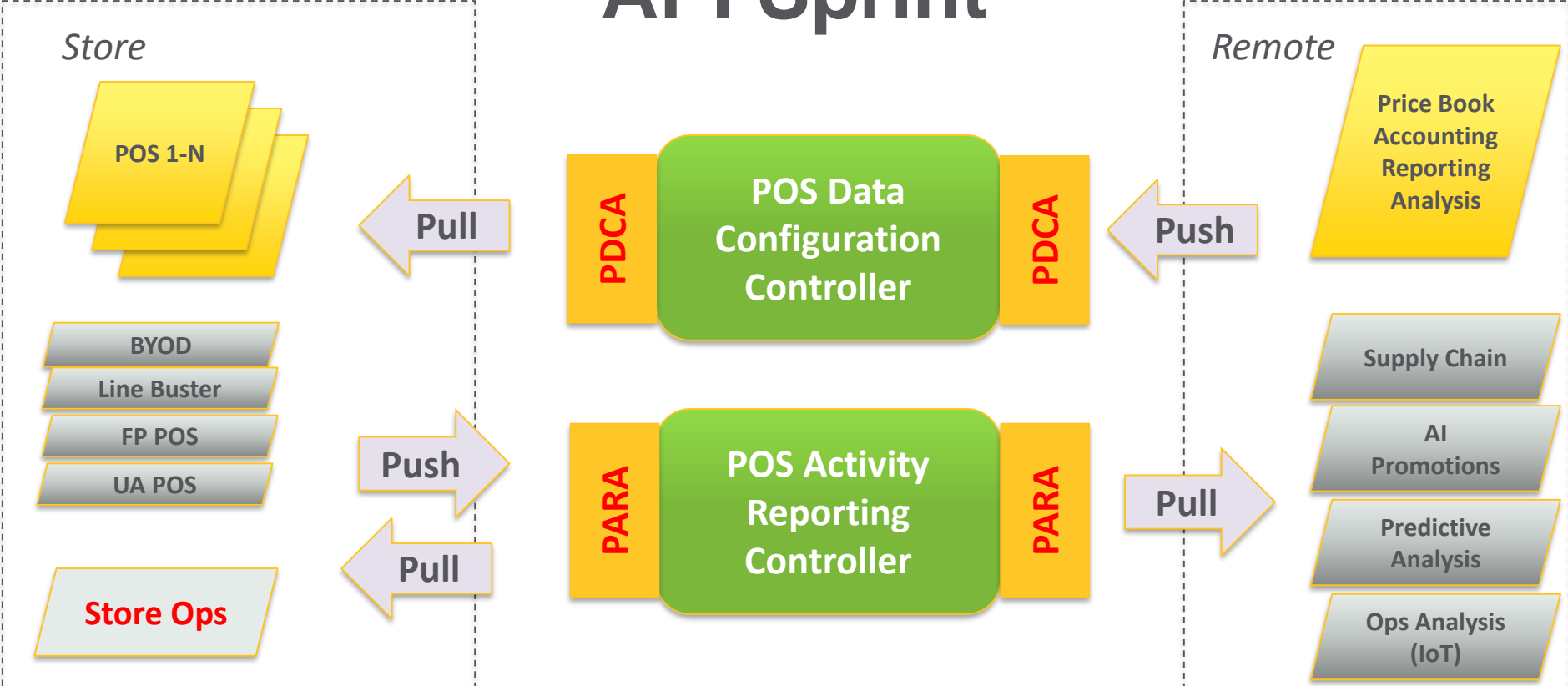
Predictive Analysis

Ops Analysis (IoT)

C-Store Topology: Solution

All problems in computer science can be solved by another level of indirection, except for the problem of too many layers of indirection.
-- Edsger Dijkstra

API Sprint



Where are these *controllers*?

- Might be in store (small server)
 - Very close to existing architecture
 - “Always on,” at least as good as today
- In the cloud, managed by:
 - Existing supplier (e.g., POS supplier, Back Office supplier)
 - Third party (it’s a new line of business)
 - Or... the merchant

API Sprint Result

- *Suppliers control software*
- *Suppliers use and contribute data*


- *Retailers control data*

RBR Approved API Development

API Group	API Count
POS Activity Reporting (PARA)	7
POS Data Configuration (PDCA)	5
Cloud POS Calculator (CPCA)	2
Forecourt Device Controller	9
Digital Offers	4
Carwash Controller	2

RBR Approved API Development

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Journal Activity Reporting	2
Business Interval	
Transaction Event	
Period Activity Reporting	5
Summary	
Merchandise Code (Department)	
Fuel	
Tax	
Tender	

RBR Approved API Development

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Site Data Management	1
Merchandising Data Management	1
Fuel Data Management	1
Tax Data Management	1
Workforce Data Management	1

Potential API Development

Loyalty

Mobile Payments

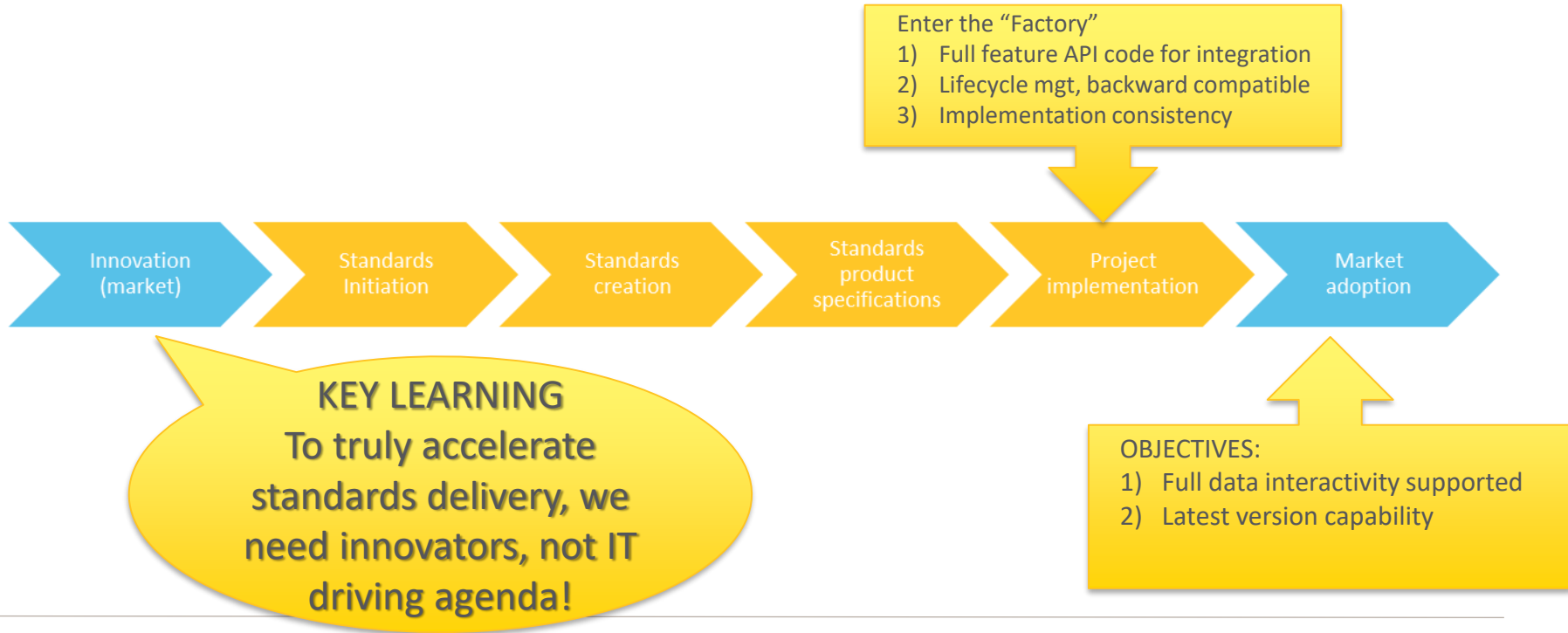
Gift Card FEP

Supply Chain

Fuel Dispenser POS

Process

Standards process... tomorrow



API Functional Process Flow

Design,
Specification,
Funding,
Oversight &
Voice of
Customer

-Conexus
-IFSF

Program Management

Manage priority, resources & operation
Select/Enlist API contributor
Manage repository
Manage defined product lifecycle cycle
Key Liaison to Conexus/IFSF
(Long-term position)

Project Management / Development

Manage individual API projects
Manage contributors
Manage contractors and other "factory" developers
Work with Committees to define work product
(Could be contributors from retail members?)
(At least one long-term SME for consistency)

Documentation

Convert specification to developer documentation
API acceptance criteria (from QA)
(Expanded standard document formats to be used by committees)

Quality Assurance

Acceptance criteria – defined by SQA
DevOps testing tools
Acceptance testing tools
(Should ultimately be automated function - tools)

Support

Level 3 developer support
Bug base management
Platform improvement feedback
(Long-term position)

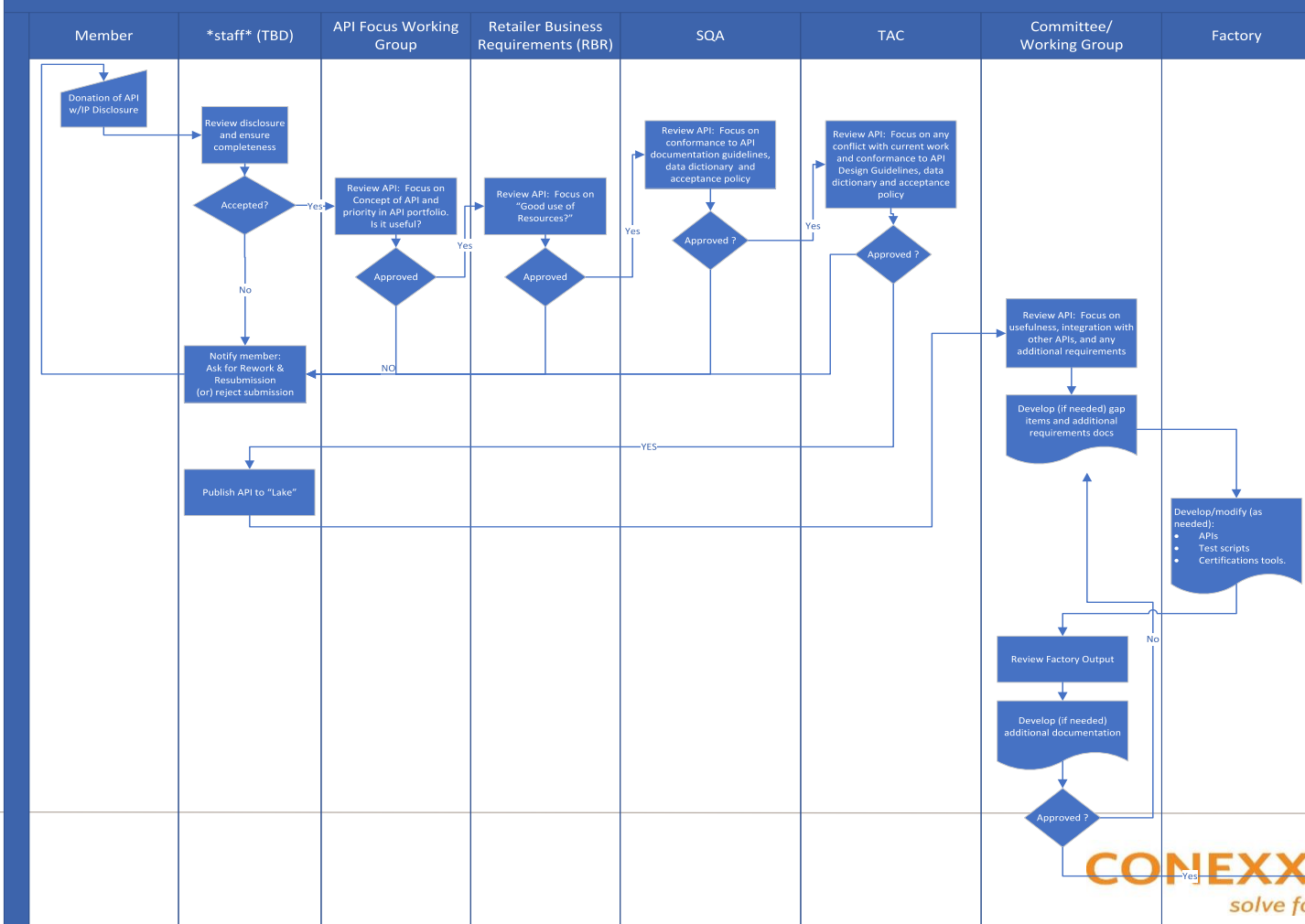
API
Repository

Owned and
managed by:

-Conexus
-IFSF

API contributor/developer (vendor, retailer, contractor)

Donated APIs



Staffing

API Development: Managed Roles

- Advisory Architect
- API Definer
- API Writer
 - Application Definition (OAS 3.0) writer
 - JSON Examples writer
 - Documentation writer
 - Tutorial developer/writer
- Testbed/Certification Engine developer
- Test case developer

Relevant Workstreams for APIs

- Maintain core documentation (4 documents)
- Research (protocols, security, other technologies)
- Data Dictionary submission coordination
- Create APIs

API Creation Workstream breakdown

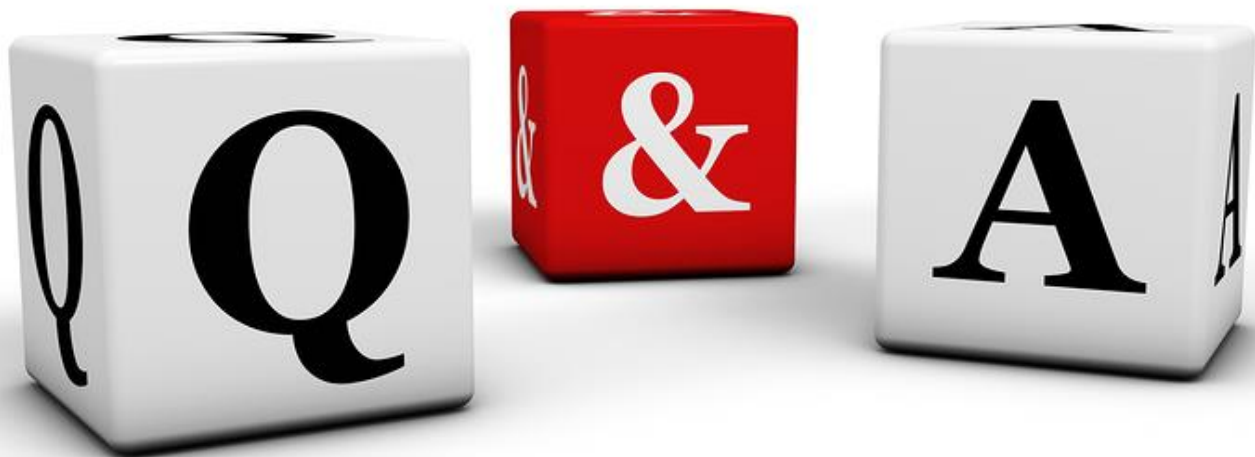
- Business Requirements Document (API specific)
- API Resource Identification Document
- API definition
 - OAS root document (YAML)
 - API specific definitions (YAML), Data Dictionary submissions
 - JSON examples
 - Threat model and document
- Test case development
 - Focus on positive and negative cases, extensibility points (if any), “invariants”
- API interop testbed development
- Certification engine development (use the test cases)
- Security review
- Documentation
 - Observer documentation (concrete -> abstract)
 - Developer documentation (implementation guide)
- Tutorial development

API Development: Resources

- Existing Resources
 - Conexus Staff
 - Committee / Work Group Members
- Proposed New Resources
 - API Initiatives Coordinator (boarding - Q1)
 - API Initiatives Professional Project Manager (boarding – Q2)
 - Contractors (boarding – Q2)
 - Factory Developers (boarding – Q3)

	A	B	C	D	E	F
1	API Group	Q120	Q220	Q320	Q420	Q121
2	POS Activity Reporting (PARA)					
3	Phase 1					
4	Phase 2					
5	POS Data Configuration (PDCA)					
6	Phase 1					
7	Phase 2					
8	Phase 3					
9	Cloud POS Calculator (CPCA)					
10	Forecourt Device Controller **					
11	Digital Offers					
12	Carwash Controller					
13	Loyalty					
14	Mobile Payments					
15	Gift Card FEP					
16	Supply Chain					
17	Fuel Dispenser POS					
18						
19	** Joint IFSF/Conexus					
20	Not started					
21	In development					
22	Delivered					

API Burndown



- Website: www.conexxus.org
- Email: info@conexxus.org
- LinkedIn Profile: [Conexxus.org](https://www.linkedin.com/company/conexxus.org)
- Follow us on Twitter: [@Conexxusonline](https://twitter.com/Conexxusonline)

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