

AVEVA PI WORLD

Leveraging AVEVA PI Cloud Connect

Chevron Alen Offshore Facility

Nigeria/Mid-Africa Business Unit (NMA), Chevron's Middle East,
Africa, South America Exploration & Production Company

Angela Taylor, Application Engineer

AVEVA



Equatorial Guinea:

Alen Platform + Bioko Gas Hub

Operations Background



&



AVEVA

Bioko Island Gas Hub

Focusing on the Next Stage of Business

- Noble Energy EG has been in EG for over 20 years, starting with the Alba Field
 - Alba field is a large gas condensate that is produced to Bioko Island for processing
- Alen Platform Design is Unique:
 - One of the few platforms in the world that separates the condensate and the gas onsite
 - Condensate goes to the Aseng FPSO
 - Dry gas is reinjected for later use
- With declining production of developed natural gas and liquids from the Marathon Oil-operated Alba Field, more supply is needed.
- The vision for the Gas Mega Hub will be to process and liquefy gas from various proximate fields in EG and neighboring countries



Alen Gas Monetization Project



Source: Noble Energy EG Ltd.

The Opportunity: As a part of Noble's Alen Offshore Facility, Noble Energy EG LTD, in Equatorial Guinea, Alen Field Gas Monetization project, a formal plan for shared information between the Noble Alen Field and the Marathon Alba Gas plant needed to be established that both companies could rely upon and met both companies' security measures.

Note: Alen Offshore Facility, Noble Energy EG LTD, a subsidiary of Noble Energy, Inc, is now Nigeria/Mid-Africa Business Unit (NMA), Chevron's Middle East, Africa, South America Exploration & Production Company.

Challenge:

Safety in Sharing

- The Operating personnel from both groups agreed that sharing operating information would provide the safest and operationally beneficial arrangements.
- The information needed to be timely (close to if not real time) and provided in a form that can be used as an input into each other's monitoring systems.
- A PDF of a generated report or excel, even if received hourly would not provide the information needed.
- There needed to be a list of data points / tags that would be shared between the two companies to monitor pipeline shutdowns, pressures, temperatures, flowrates, nominations, notes and similar information.
- These inputs would not directly cause any actions on Alen or at Alba but will provide alerts and notifications to operations that actions should be considered.





FPSO =
Floating
Production
Storage &
Offloading

AVEVA

Considerations:

3 options were presented to Leadership

1. Use a third-party company to exchange data, with each company burdened with additional expense.
2. Each company to create a business-to-business environment with a VPN IPsec tunnel to be created as the “bridge” between companies, with each company maintaining their infrastructure.
3. Leverage both company’s AF experience and utilize AVEVA’s PI Cloud Connect Service.



PI Cloud Connect

A Secure + Performant Way to Exchange Data

Security

- PI Cloud Connect utilizes four (4) layers of security:
 - **Infrastructure Level:** Data transfer is secured by SSL over HTTP (HTTPS) and through port 443 only
 - **Account Level:** Each company's account is fully isolated
 - **Sign-In Level:** Users authenticate at the PI Cloud Connect portal using a Microsoft account
 - **User Level:** Publishers control which users (not accounts) have subscription access



Scalability + Performance

- Maximum data transfer throughput is up to 10k events/sec for 100K PI Tags per node
- High flexibility around size / scope of a publication data set
- No limits on the number of PI Connect nodes per account

Ease of Deployment

- Customer (account) specific set up kit for the PI Connect nodes
- Initial connection to Azure is always outbound

Selection

AVEVA PI Cloud Connect, software as a Service (SaaS) solution was chosen.



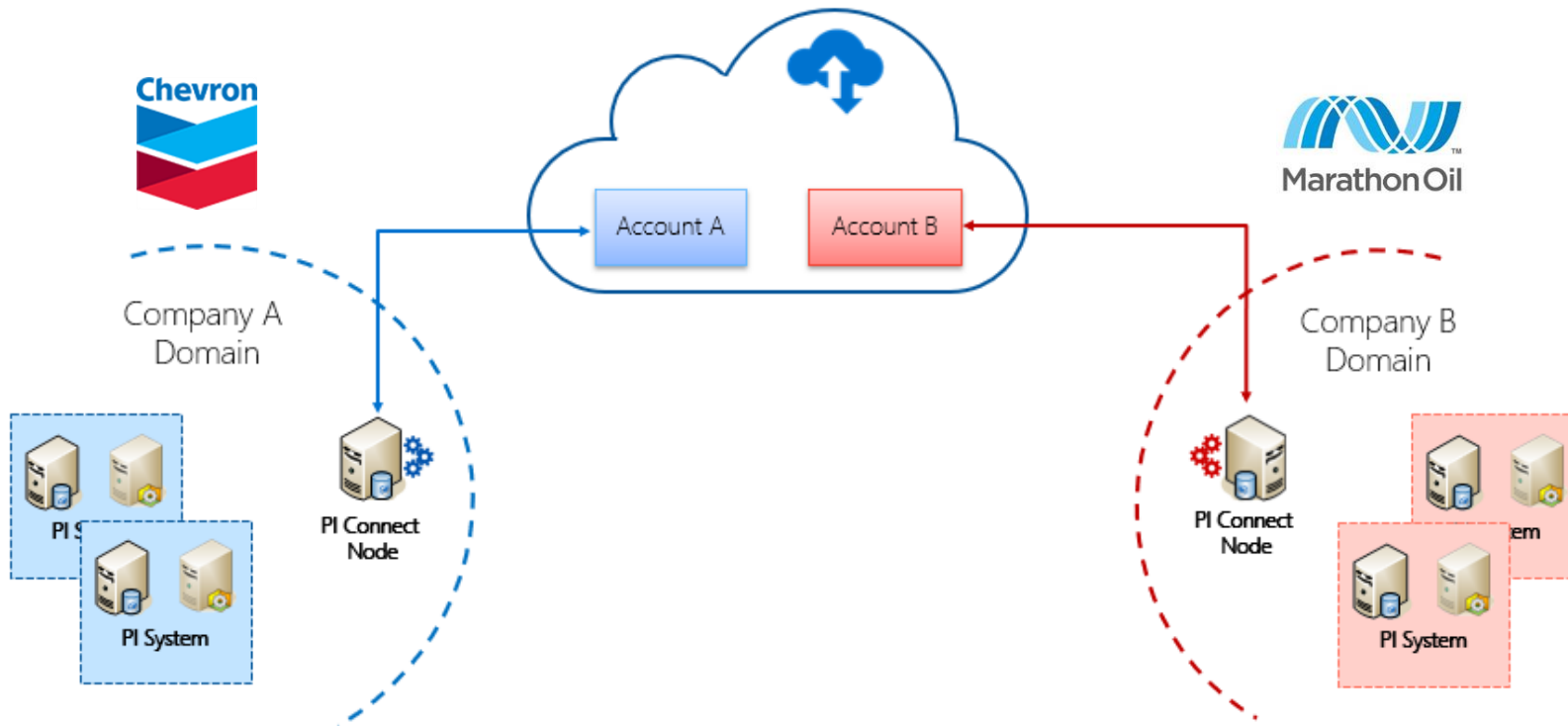
Why? PI Cloud Connect makes it easy to share data between PI Systems, both inside and outside the enterprise with a scalable and reliable solution based on Microsoft Azure with a minimal on-premises footprint.



The seamless and simultaneous transfer of time-series data between PI AF Structures was proven during the proof-of-concept phase and met our “close to if not real time” requirements.

PI Cloud Connect Model Section

Connecting Operational Teams Together



PI Cloud Connect Implementation

Modeling Key Processes in Asset Framework

- Work began with each company implementing their own infrastructure and agreements with AVEVA, then decisioning of which points to share, agreed AF Structures for both Publishing and Subscribing. Data exchange began in December.
- PI Asset Framework enables you to create notifications for pressures, temperatures and valve changes and send alerts to operators and engineering staff; even build an escalation acknowledgement.
- Event Frames capture and classify key events. This allowed us to track and identify any repetition, allowing you to proactively understand and possibly eliminate such events.
- PI Asset Analytics logic allow managing by exception and complement our preventative maintenance schedules.
- PI clients (PI Vision / PI Datalink) provide visibility into meter imbalances for revenue and accounting.
- The PI System provides the ability to signal pipe through put and maximize production.



Benefits and Value

Working Together as One Team

- Faster Alen + Alba Plant Operator Collaboration + Response
- Safety Monitoring (Overpressure)
 - Critical for gas hub to safely manage multiple supplier headers
- Maximize Plant Throughput and Profit
 - Previously much gas was reinjected into the well, now more is sent directly for processing into methanol and LNG
- Asset Reliability (Corrosion Avoidance)
 - Monitor Gas/Liquids content + components
- Check-Meter Control Visibility + Reconciliation
- Avoid a third-party having direct access to our IT system





THANK YOU

Other languages and words visible include: DZIĘKUJĘ CI, NGIYABONGA, TEŞEKKÜR EDERİM, DANKIE, SPASIBO, GRAZIE, MATUR NUWUN, ХВАЛА ВАМ, MULȚUMESC, PAKMET CIZGE, 고맙습니다, GRAZIE, شكرًا, HVALA, FAAFETAI, ESKERRIK ASKO, HVALA, TEŞEKKÜR EDERİM, OBRIGADO, MERCI, DI OU MÈSI, ĎAKUJEM, UA TSAUG RAU KOJ, TI БЛАГОДАРАМ, СИПОС, WAZVIITA, CẢM ƠN BẠN, PAXMAT САГА, GRAZZI, PAKKA PÉR, MAHALO IĀ 'OE, TAKK SKALDU HA, EΥΧΑΡΙΣΤΩ, GRATIAS TIBI, DANK JE, AČIŮ, SALAMAT, MAHADSANID, TI БЛАГОДАРАМ, GO RAIBH MAITH AGAT, БЛАГОДАРЯ, KÖSZÖNÖM, DANKON, TANK, TAPADH LEAT, KEA LEBONA, MISAOTRA ANAO, БАЯРЛАЛАА, TAPADH LEIBH, 謝謝, FALEMINDERIT, SIPAS JI WERE, TERIMA KASIH, TI БЛАГОДАРАМ, СИПОС.

This presentation may include predictions, estimates, intentions, beliefs and other statements that are or may be construed as being forward-looking. While these forward-looking statements represent our current judgment on what the future holds, they are subject to risks and uncertainties that could result in actual outcomes differing materially from those projected in these statements. No statement contained herein constitutes a commitment by AVEVA to perform any particular action or to deliver any particular product or product features. Readers are cautioned not to place undue reliance on these forward-looking statements, which reflect our opinions only as of the date of this presentation.

The Company shall not be obliged to disclose any revision to these forward-looking statements to reflect events or circumstances occurring after the date on which they are made or to reflect the occurrence of future events.

 [linkedin.com/company/aveva](https://www.linkedin.com/company/aveva)

 [@avevagroup](https://twitter.com/avevagroup)

ABOUT AVEVA

AVEVA, a global leader in industrial software, drives digital transformation for industrial organizations managing complex operational processes. Through Performance Intelligence, AVEVA connects the power of information and artificial intelligence (AI) with human insight, to enable faster and more precise decision making, helping industries to boost operational delivery and sustainability. Our cloud-enabled data platform, combined with software that spans design, engineering and operations, asset performance, monitoring and control solutions delivers proven business value and outcomes to over 20,000 customers worldwide, supported by the largest industrial software ecosystem, including 5,500 partners and 5,700 certified developers. AVEVA is headquartered in Cambridge, UK, with over 6,000 employees at 90 locations in more than 40 countries. For more details visit: www.aveva.com



OPERATIONAL FACTS:
Equatorial Guinea & Cameroon

Net Acreage (YE 2019) **316,000**

Sales volumes (YE 2019) **44 MBoe/d**
(all in EG)

Total Proved Reserves (YE 2019) **132 MMboe**







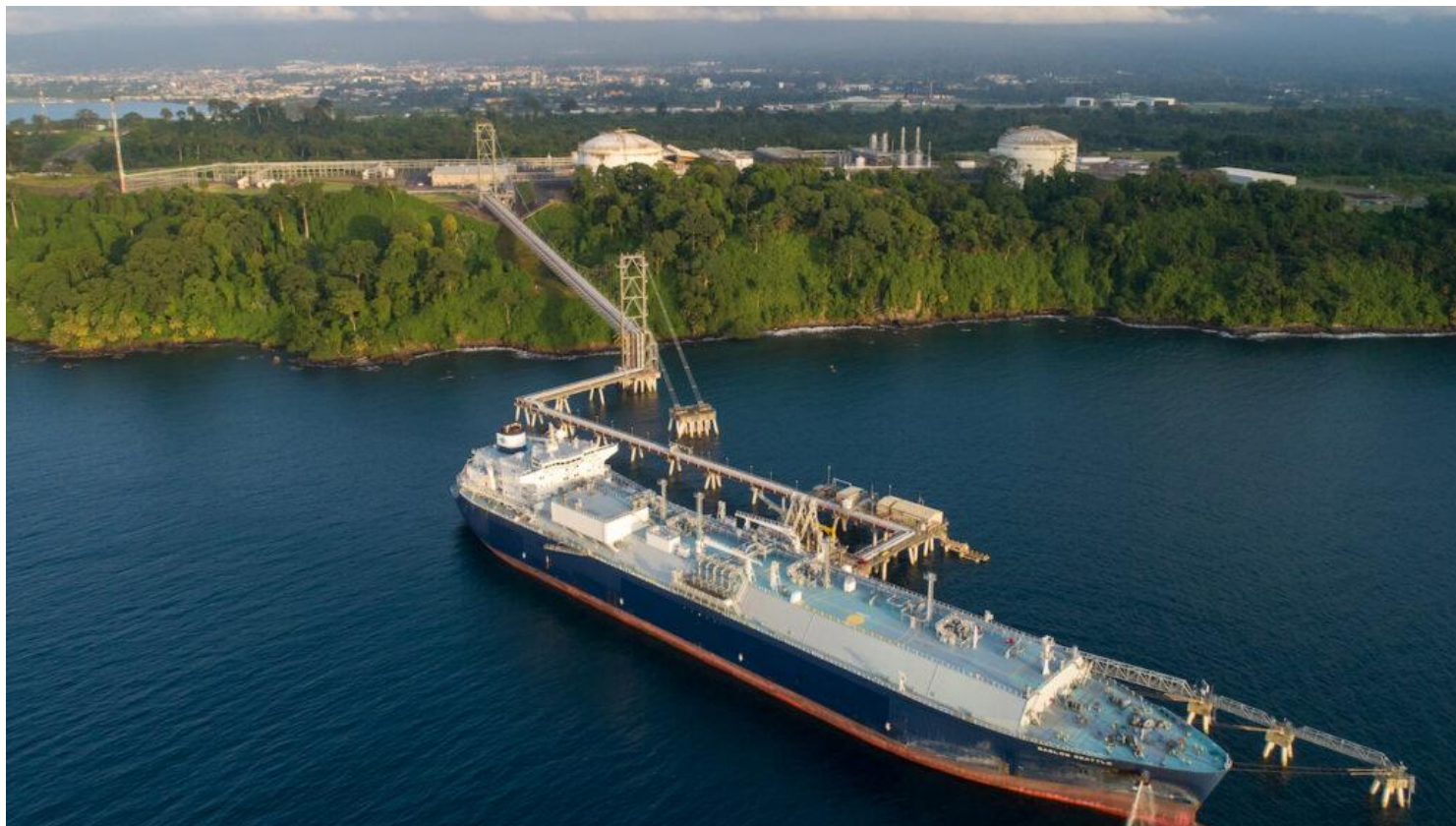




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PI Cloud Connect

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PI Cloud Connect

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PI Cloud Connect

Considerations:

Three (3) options were presented to Leadership. The first, use a third-party company to exchange data, with each company burdened with additional expense. The second, each company to create a business-to-business environment with a VPN IPsec tunnel to be created as the “bridge” between companies, with each company maintaining their infrastructure. The third, leverage both company’s AF experience and utilize OSIsoft’s PI Cloud Connect Service.

Selection:

PI Cloud Connect, an OSIsoft Software as a Service (SaaS) solution was chosen. Why?, As stated on their website, makes it easy to share data between PI Systems, both inside and outside the enterprise with a scalable and reliable solution based on Microsoft Azure with a minimal on-prem footprint.

The seamless and simultaneous transfer of time-series data between PI AF Structures was proven during the proof-of-concept phase and met our “close to if not real time” requirements.



PI Cloud Connect

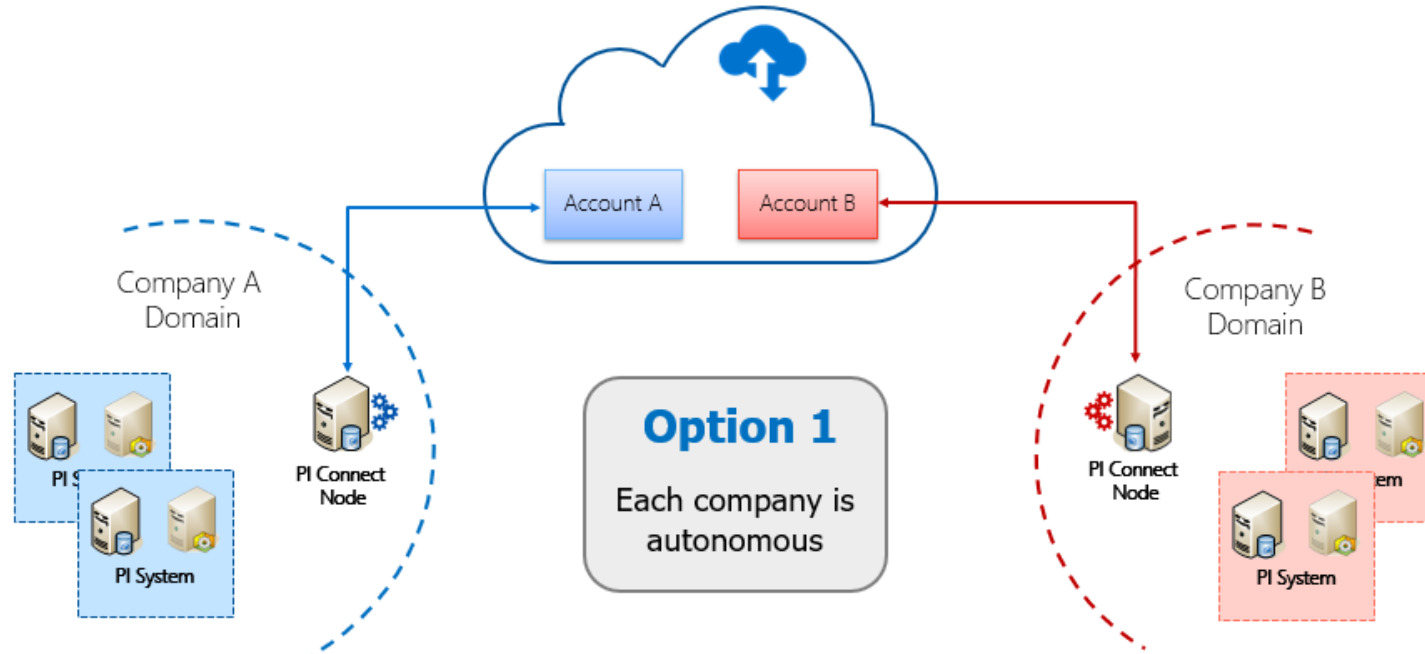
OSIsoft Cloud Services (OCS) is a database platform as a service (dbPaaS) designed for storing, retrieving, and analyzing real-time operations data. With OCS, people in and out of your organization have flexible and secure access operations data. OCS can collect operations data from within a primary control network to the edge of the industrial network. Use OCS to add context to time-based operations data, to enable process engineers and systems operators to make decisions and take corrective or preemptive actions. From data collection to data access to data delivery, OCS provides flexibility and control with its REST API.

OSIsoft Cloud Services

Data sharing drives operations data science, application integration, and real-time collaboration. With OCS, the sky (well, cloud) is the limit.



PI Cloud Connect Model Section



PI Cloud Connect Customer Portal

<https://www.picloudservices.com/Login>

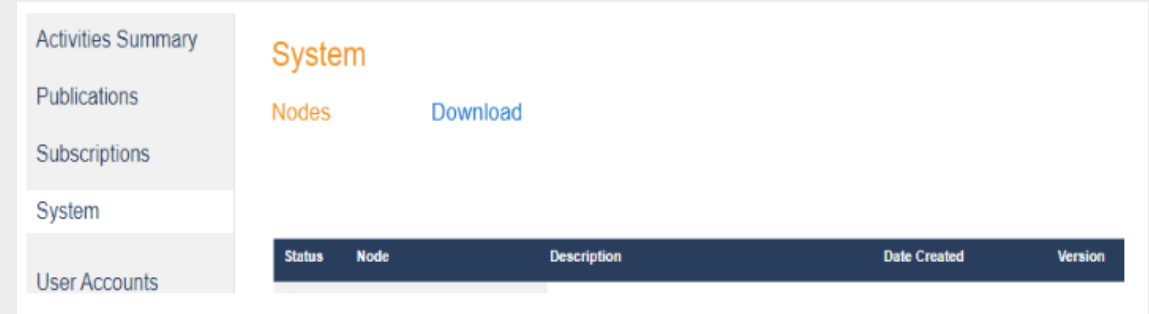
Recommended items to create/decide before beginning set-up:

- a) Complete your activation.
- b) Company alias: to define your company's publication to others (Example: 123Energy).
- c) An Azure AD or Microsoft Account (AAD, MSA) (to be used when authenticating to an OSIsoft Cloud Tenant) for "User Account". (Example: User@outlook.com)
- d) Service Account
- e) Email address(s) for Subscribers of your Publication

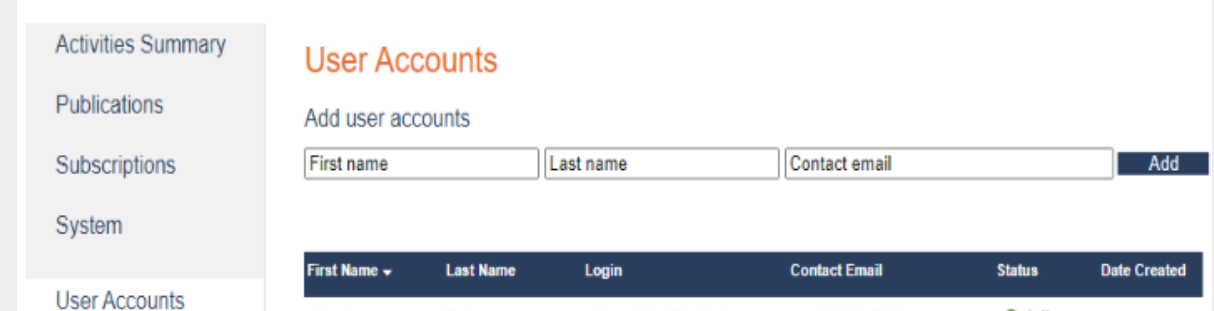
The screenshot displays the PI Cloud Connect Customer Portal interface. At the top, a dark blue header bar contains the 'PI Cloud Connect' logo on the left and the user information 'Laurent Outlook | Petrolux (petrolux) | Sign out' on the right. Below the header, a light gray sidebar on the left lists navigation options: 'Activities Summary' (highlighted), 'Publications', 'Subscriptions', 'System', 'User Accounts', 'Bulletins', and 'Feedback'. The main content area, titled 'Activities Summary' in orange, features four colored cards: a blue 'Publications' card showing '1 running', a blue 'Subscriptions' card showing '2 running', an orange 'User Accounts' card showing '4 total', and a green 'System' card showing '1 total'. Each card includes a brief description of its function. At the bottom of the interface, a dark blue footer bar contains 'Cookie Consent' and a 'Help' link with a question mark icon.

System Accounts and User Accounts

- System is the Node or PI Interface Server
- User Account is your User@outlook.com account.
 - Users have the permissions to manage the portal.



The screenshot shows the 'System' page of a web portal. On the left is a sidebar menu with options: Activities Summary, Publications, Subscriptions, System (highlighted), and User Accounts. The main content area has the title 'System' in orange, with links for 'Nodes' and 'Download'. Below this is a table with the following headers: Status, Node, Description, Date Created, and Version.



The screenshot shows the 'User Accounts' page of a web portal. On the left is a sidebar menu with options: Activities Summary, Publications, Subscriptions, System, and User Accounts (highlighted). The main content area has the title 'User Accounts' in orange, followed by the text 'Add user accounts'. Below this is a form with three input fields: 'First name', 'Last name', and 'Contact email', followed by an 'Add' button. At the bottom is a table with the following headers: First Name (with a dropdown arrow), Last Name, Login, Contact Email, Status, and Date Created.



Create a Publication

Once you have defined the AF Structure with Elements, Attributes and the configuration items to share, you are ready to create a Publication.

Remember, the entirety of the AF structure will be published.

Recommendation:

Use a Separate AF Server for Publishing and Subscribing or at the very least Create a separate database for this purpose.

Activities Summary

Publications

Publications

+ Create Publication

• Define your Source

Create Publication

Data Source

Publication Scope

Publishing Options

Publication Name

Choose the source for the data in your publication

Namespace

Node ▾

Node User Account

PI AF Server Name_Publication (DB Name)

PI Interface Server

Service Account



Create a Publication


- Select your AF Elements

- Once AF Elements are selected, your next option is to start the Publication.
 - Start 0 Minutes of history, this point forward.
 - If you want to allow data from a point back in time, you can define it here.

Specify a start time for your data. Value for any selected units must be between 0-30

0 Minutes of history

Summary

 **PI Cloud Connect**

Laurent Outlook | *Petrolux (petrolux)* | [Sign out](#)

Create Publication

Data SourcePublication ScopePublishing OptionsPublication Name

Select the type of the AF assets you wish to publish:

Browse your AF asset hierarchy to select the AF element that you want to publish

Data Archive

- ▲ Pump Station
 - Pump01
 - Pump02
 - Pump03
 - Pump04
 - Pump05
 - Pump06

Summary

Node:
CALVIN7910

Data source:
CALVIN7910.Pumps CBM Demo

AF element to publish:
Not specified

✕

←

→


Cookie Consent

[? Help](#)



Create a Publication

- Last, Invite your Subscriber(s)

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Publication Details: **OSIsoft Pumps Demo**

Created By Petrolux


Description

Publication Type Element Publication

Date Created 26 Nov 19





Node  CALVIN7910

Data Source \\CALVIN7910\Pumps CBM Demo\Pump Station



Status  Sending [Stop Publishing](#)

Data Delay No Delay

Subscribers (2/2)
[Invite Subscribers](#)

Invitation	Configured	Account	Status ▾	Receiving Progress
 jparker@geocgi.com	Yes	Geospatial Consulting Group Intl	 Stopped	40% <div></div>
 lgarrigues@outlook.com	Yes	Petrolux	 Started	100% <div></div>

Page 1 of 1 View 1 - 2 of 2


 

[Cookie Consent](#) [? Help](#)



Create a Publication

- Publication is complete





 **PI Cloud Connect**


Laurent Outlook | *Petrolux (petrolux)* | [Sign out](#)

[Activities Summary](#)
[Publications](#)
[Subscriptions](#)
[System](#)
[User Accounts](#)
[Bulletins](#)
[Feedback](#)

Publications

[+ Create Publication](#)

 [Stop Publishing](#)  [View Details/Manage Subscribers](#)  [Subscribe](#)  [Delete](#)

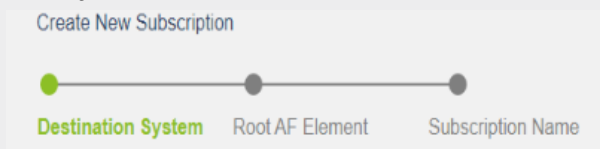
Status ▴	Publication Name	Created By	Date Created
 Sending	OSIsoft Pumps Demo	Petrolux	26 Nov 19

[Cookie Consent](#) [? Help](#)



Create a Subscription

- To Subscribe to a Publication, you choose Publications.
- Click on the Publication you want to subscribe to, then click Subscribe.
- Choose the AF Server and Database.
(Create this before Subscribing)
- You can Pre-fix the tags that will be created on your PI Archive.



Choose the destination system for the data in your subscription

Namespace	Node	Node User Account
PI AF Server Name / Database	PI Interface	Service Account

PI Cloud Connect

Laurent Outlook | Petrolux (petrolux) | Sign out

Activities Summary

Publications

Subscriptions

System

User Accounts

Bulletins

Feedback

Publications + Create Publication

Stop Publishing View Details/Manage Subscribers Subscribe Delete


Status	Publication Name	Created By	Date Created
✓ Sending	OSisoft Pumps Demo	Petrolux	26 Nov 19

Cookie Consent Help



Create a Subscription

- Subscription is complete.

 **PI Cloud Connect**

Activities Summary

Publications

Subscriptions

System

User Accounts

Bulletins

Feedback

Laurent Outlook | *Petrolux (petrolux)* | [Sign out](#)

Subscriptions

Status ▾	Subscription Name	Source Publication	Date Created	Receiving Progress
✓ Receiving	Self Subscribe to Pumps CBM Demo	✓ OSisoft Pumps Demo	4 Feb 20	100%
✓ Receiving	SLTC Energy test	✓ SLTC Energy - OAK	17 Jun 21	99%

Cookie Consent

[? Help](#)



References

- <https://docs.osisoft.com>
- [OSIsoft Cloud Services](#)
- [Onboarding \(osisoft.com\)](#)
- [Playbook – PI Cloud Connect \(osisoft.com\)](#)



Questions





AVEVA PI World

DIGITAL

AVEVA PI World 2021 is the premier online experience for AVEVA & OSIsoft customers, partners, developers, and innovators using data and analytics to transform our world.

Take your skills and experience to the next level with expanded learning, exclusive speaker opportunities, and recognition of your expertise!

Submit your story idea using [Call for Papers](#)

Share your story!

Benefits of speaking

- Recognition of your expertise as a leader and the success of your team and organization
- Showcase your knowledge with peers in your industry and beyond
- Promote your organization's success and be recognized as a leader
- Exclusive speaker opportunities (including special events with industry experts)
- Build your speaking skills with expert training and close support from our events team
- Plus, a gift of our appreciation!



Where does your story fit?

How have AVEVA products and/or the PI System improved your company, workforce, products, and community?



Industry: Focus on implementation and specific use cases in your industry



Analytics: Share your work in AI, data science, and industrial analytics projects



Engineering & Operations – Demonstrate how you’ve utilized data across enterprise and employed the AVEVA portfolio & PI System alongside other technology.



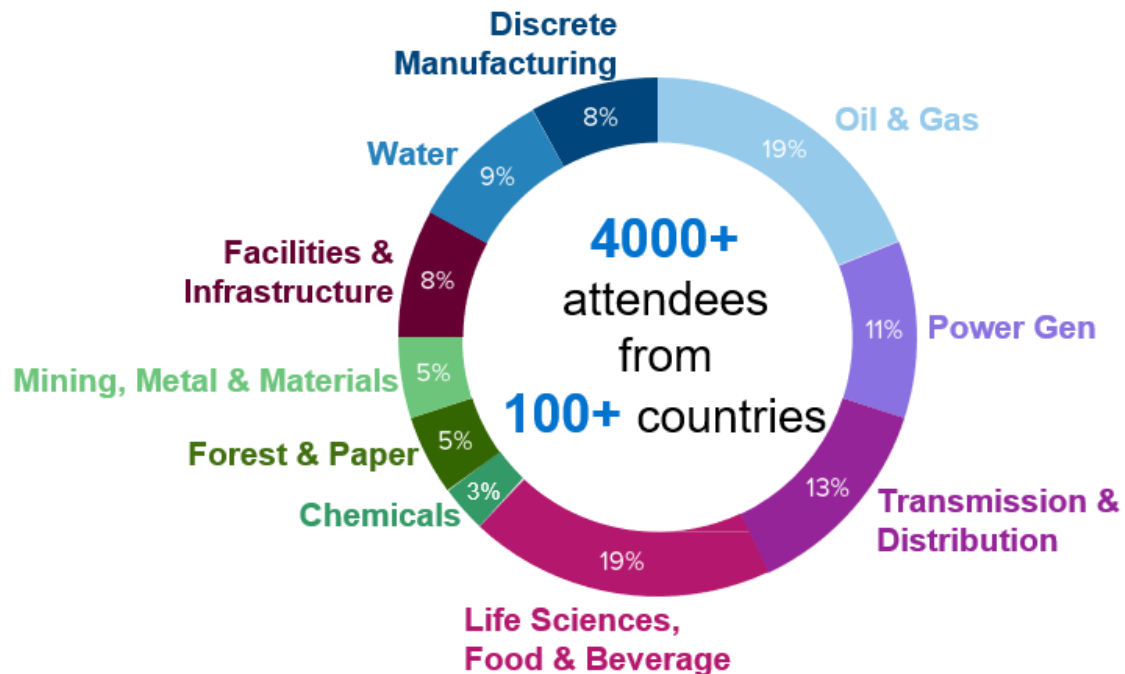
Development – Breakdown silos in operation and teams. Show innovative use of technologies, Digital Twin, Cloud, or integration of IoT in your business.



Product – Showcase use of products within or across our portfolio

AVEVA PI World 2021 combines PI World & AVEVA World Conference

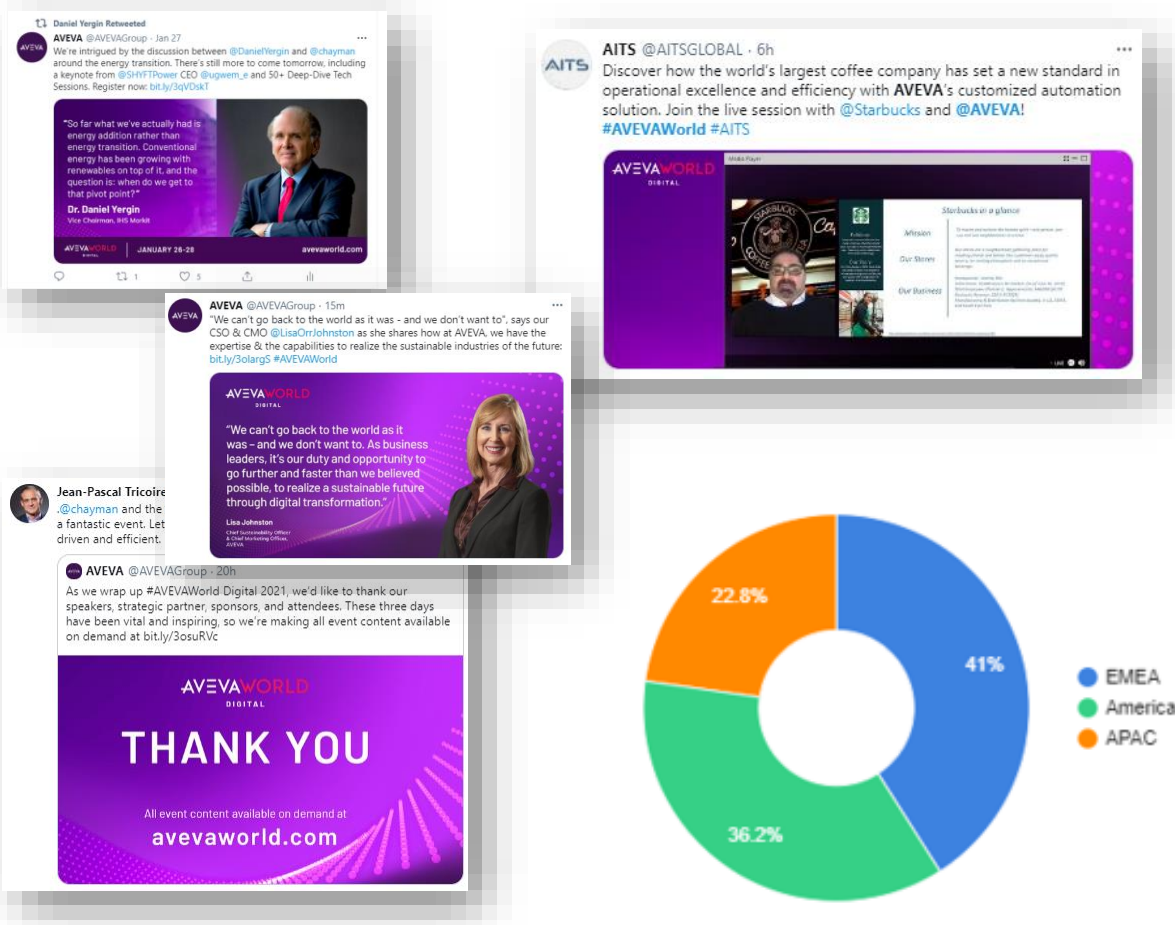
PI World Online 2020 drew over 4,200 engaged participants worldwide



- **1,300 companies** from a diverse set of industries
- Engaged participants watched an average of **87 minutes** of content
- Participants included: customers, developers, executives, innovators and more!

AVEVA PI World 2021 combines PI World & AVEVA World Conference audiences

AVEVA World 3 Digital drew 3,850 attendees



- Over **7,200 registrants**
- Viewership totaled a combined **10,250 hours**; average viewer watched more than **85 minutes** of content
- **7.7 million social media impressions**
- Global audience including partners, customers, prospects, and analysts
- Over **2300 visits** to expo booths

“Encourage your users to attend PI World; they will find a tool you did not know they needed. That is the way to get adoption.”

Chairperson, Life Sciences User Group

“Identify new ways to use the system and meet peers in the industry as well as face to face contact with staff. Excellent conference!”

Director, Power & Utilities agency

“Great opportunity to get your questions answered, take advantage of learning labs, and make new friends all in one setting.”

DCS Administrator, Chemicals producer

A banner for the AVEVA API World Digital event. The background is a solid purple color with a subtle pattern of white, concentric, wavy lines on the left side. On the right side, there is a photograph of a woman with dark hair tied back, wearing a white lace-trimmed blouse and dark trousers, standing behind a podium and smiling. The text is centered in the upper half of the banner.

AVEVA API World

DIGITAL

OCTOBER 19-21, 2021

Share your story

Visit Call for Papers

<https://piworldcfp-us2021.hubb.me>