

Xerox Corporation, Industrial Internet of Things (IIoT)

Project Management and Marketing Communications

I was brought aboard Xerox's small Innovation Marketing team to support the launch of Novity, a predictive maintenance solution for the industrial manufacturing sector from Xerox PARC. The Novity venture had been in stealth mode for two years and launched on March 9, 2022.

I developed, coordinated, and executed communications and project frameworks to meet deadlines and adjust to shifting priorities, including:

- Managing the launch calendar and deliverables checklist
- Developing content workflow processes
- Driving the editorial calendar
- Researching conference and webinar opportunities
- Writing website copy, whitepapers, and top-of-funnel content distributed through Xerox-owned social channels
- Creating a digital asset management system on SharePoint

Novity Launch: LinkedIn Branding Checklist for Novity Employees

1. Update your profile with a Novity banner (see slides 8-11)
2. Update your company name to say "Novity"
3. Write two to three sentences in the "Experience" section about your role at Novity, and use your "About" section to tell colleagues and prospects more about yourself
4. Ensure you have a clear, professional, recent profile photo
5. Follow the Novity LinkedIn Company Page



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1. Update your profile with a Novity banner

Banner options:

- Look through the banner options in [slides 8-11](#)
- Copy and save your favorite banner to your desktop, then upload using the instructions immediately below

Instructions:

- Click the **Me** icon at the top of your LinkedIn homepage
- Click **View Profile**
- Click the **Camera** icon on the upper right corner of your introduction section
- Click **Upload Photo** to select one of the provided banners, and click **Open**
- Click **Apply**
- Click **Save**

Example:



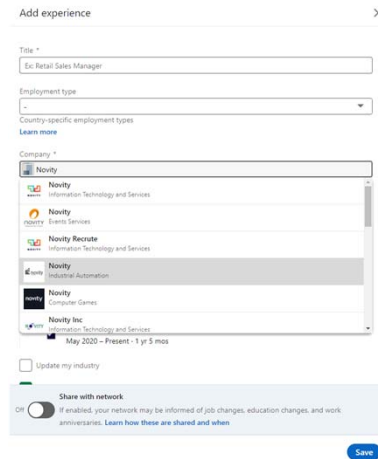
2

2. Change your company name to Novity

Instructions:

- Click the **Me** icon at the top of your LinkedIn homepage
- Click **View Profile**
- Scroll down to the **Experience** section and click the **Edit** icon next to the company name you're going to update
- Type the Novity company name and select it from the dropdown list that appears as you type. (Be sure to select the correct Novity company under "Industrial Automation")
- Click **Save**

Example:



The screenshot shows the 'Add experience' form in LinkedIn. The 'Company' field is active, and a dropdown menu is open, displaying several Novity-related options. The option 'Novity Industrial Automation' is highlighted. Below the dropdown, there is a 'Save' button and a 'Show with network' toggle.

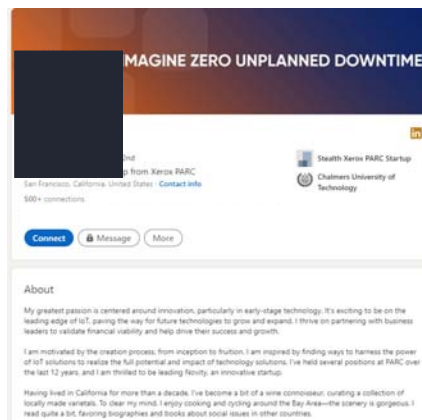
3

3. Include 2-3 sentences about your role

Instructions:

- Even if it's just a brief couple of sentences on your current role, you should include Novity. This is where you can express the Novity mission, as well as your role, skills, motivations, etc.
- You can also pull pieces from the "About" section on the Novity LinkedIn page: <https://www.linkedin.com/company/novity-pdm/about/>
- Click the **Me** icon at the top of your LinkedIn homepage
- Click **View Profile**
- Scroll down to the **About** section (and/or **job** section) and click the **Edit** icon. (See the example at the right)
- In the **Edit about** pop-up, fill out your information in the **Summary** field
- Click **Save**

Example:



The screenshot shows a LinkedIn profile's 'About' section. The profile name is 'MAGINE ZERO UNPLANNED DOWNTIME'. The 'About' section contains the following text: 'My greatest passion is centered around innovation, particularly in early-stage technology. It's exciting to be on the leading edge of IoT, paving the way for future technologies to grow and expand. I thrive on partnering with business leaders to validate financial viability and help drive their success and growth. I am motivated by the creation process from inception to fruition. I am inspired by finding ways to harness the power of IoT solutions to realize the full potential and impact of technology solutions. I've held several positions at PARC over the last 12 years, and I am thrilled to be leading Novity, an innovative startup. Having lived in California for more than a decade, I've become a bit of a wine connoisseur, curating a collection of locally made varietals. To clear my mind, I enjoy cooking and cycling around the Bay Area—the scenery is gorgeous. I read quite a bit, favoring biographies and books about social issues in other countries.'

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4. Ensure your profile photo is professional

Instructions:

- Click the **Me** icon at the top of your LinkedIn homepage
- Click **View Profile**
- Click on the **Camera** icon in your introduction section

(Note: If you've already added a profile photo, you won't see the camera icon)
- From the **Add Photo** pop-up window, click **Upload Photo** to select an image from your computer
- Follow the prompts to upload the photo
- You can make edits to your photo in the Edit Photo pop-up if needed
- Click **Save Photo**

Example:



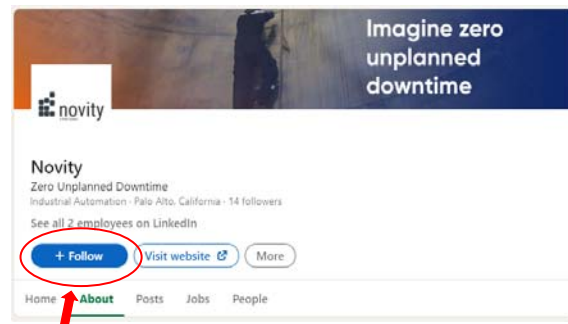
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5. 'Follow' the Novity LinkedIn page

Instructions

- Ensure you're logged into your own LinkedIn account
- Go to the Novity LinkedIn Company Page: <https://www.linkedin.com/company/novity-pdm/about/>
- Click **+ Follow**
- Please also follow the four members of the Novity leadership team:
 - Link to [Markus](#)
 - Link to [Vats](#)
 - Link to [Nilesh](#)
 - Link to [Serdar](#)

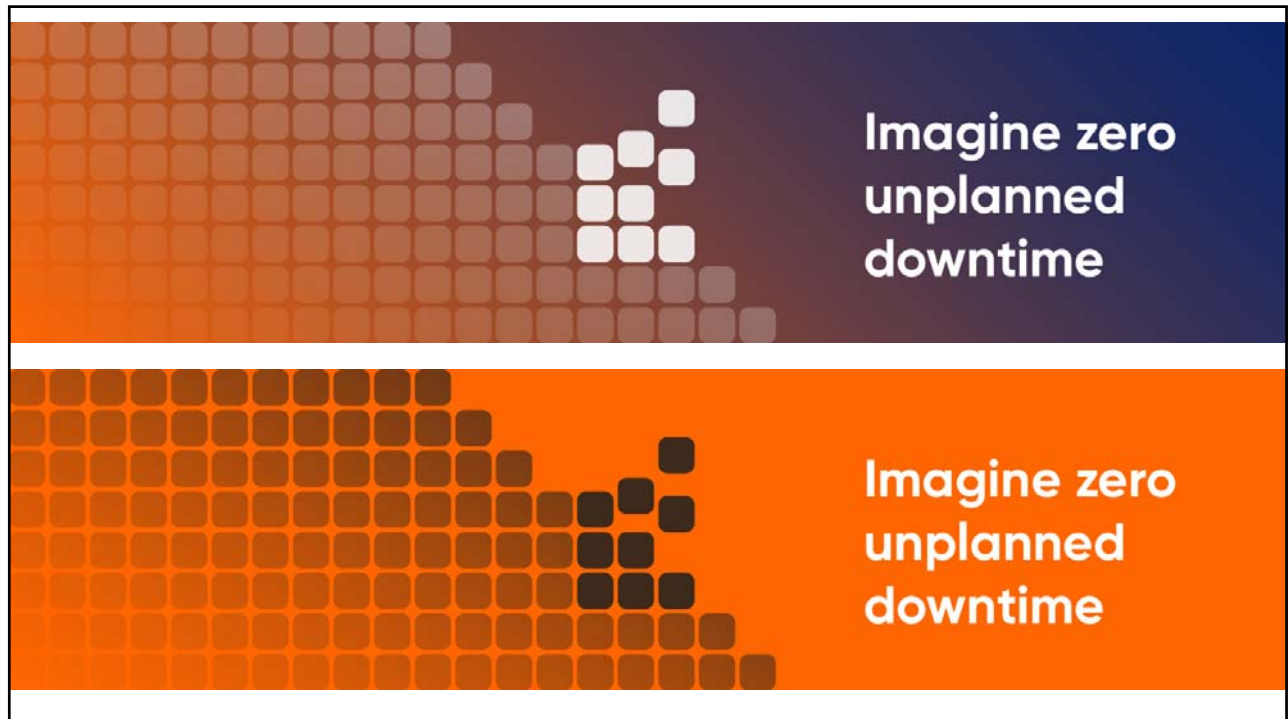
Example:



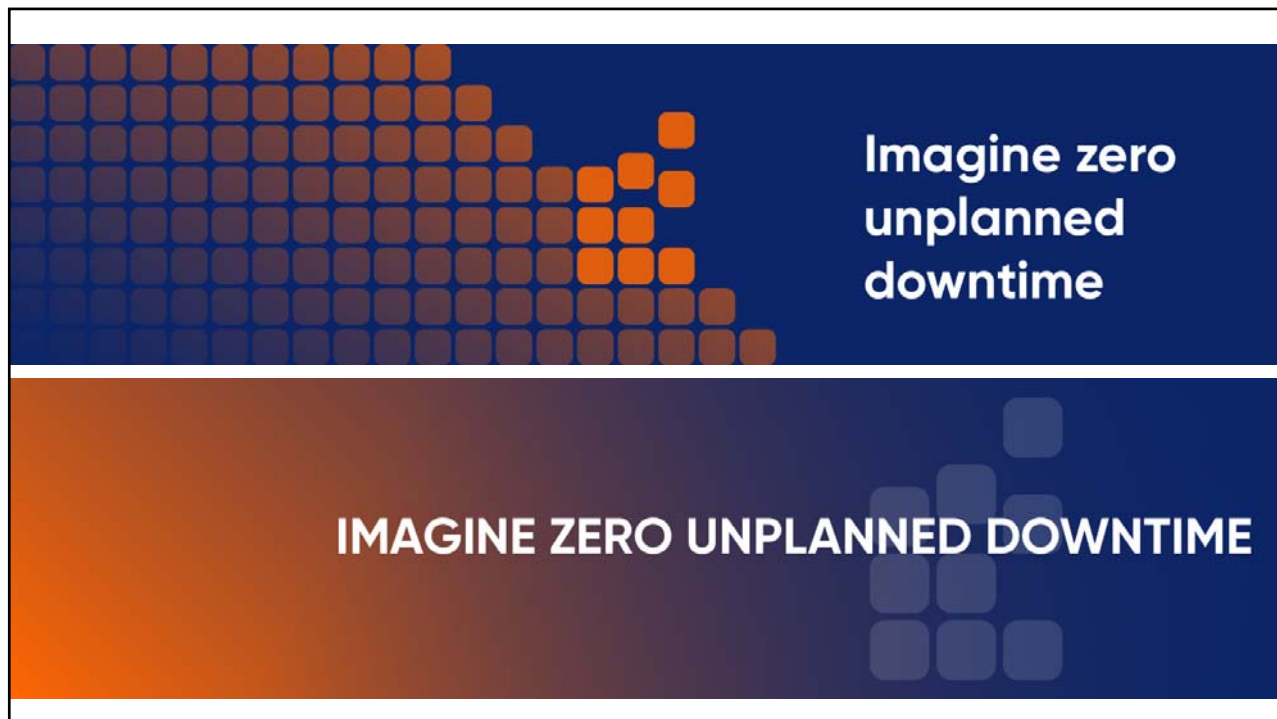
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LinkedIn Banners

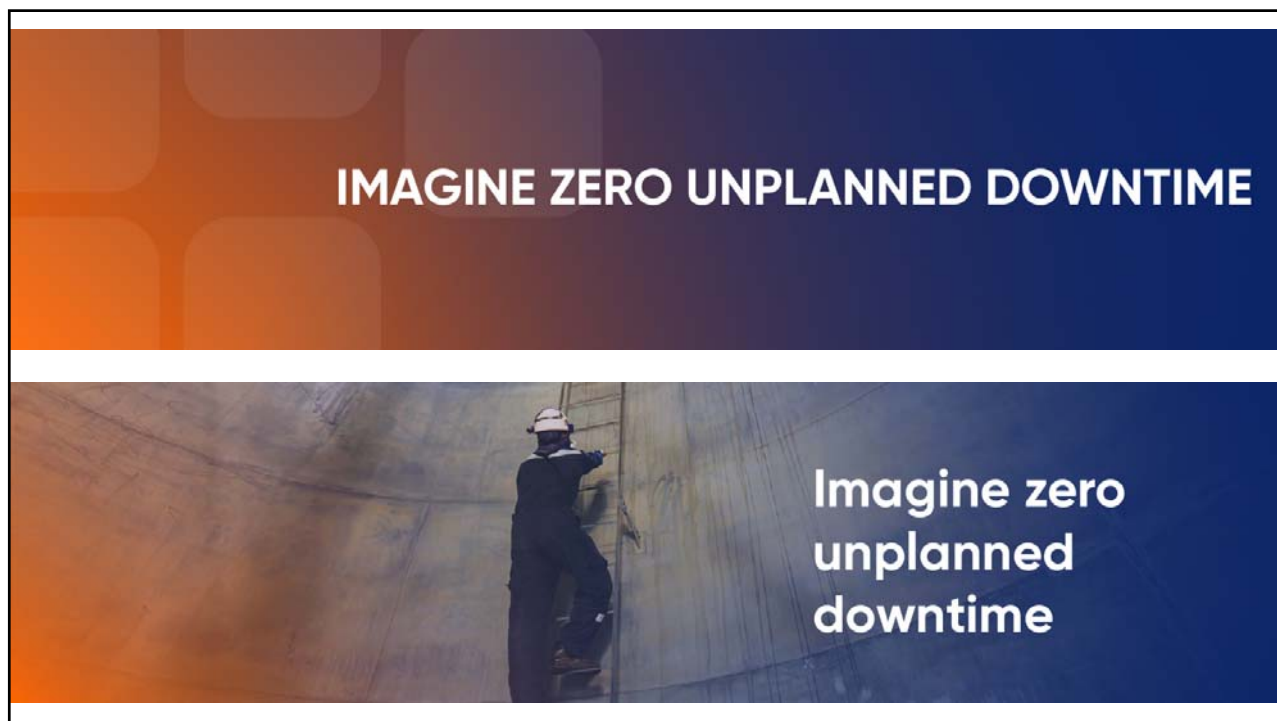
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9



10



**Imagine zero
unplanned
downtime**



Novity TruPrognostics™
Engine – a path to Zero
Unplanned Downtime



WHAT ARE IoT AND PDM?

The Internet of Things (IoT) has transformed life as we know it. Through connected networks of sensors, software, and other technologies, everything from our homes to our cities has become “smarter” because they can transmit and receive information as well as act on it. The power of IoT is rapidly making its way into industrial enterprises and providing greater capacity to the chemical and oil and gas sectors. Through Predictive Maintenance (PdM) solutions, previously inanimate objects that teams of engineers and plant operators had to continuously check can now provide the information needed to make assessments and plan maintenance accordingly.

With unplanned downtime costing industrial manufacturers an estimated \$50 billion annually, according to Deloitte, the field of PdM is poised to catapult the sector into the ever-promised era of Industry 4.0. The convergence of multiple technologies such as real-time analytics, big data, machine learning, commodity sensors, and embedded systems is leading to less downtime, more productivity, and higher profitability.

A recent survey by Novity found that while interest in PdM is growing, the majority of process industry companies are still very behind. In fact, three-quarters of respondents said they had no IoT or predictive maintenance in place, and are still using antiquated maintenance practices such as visual inspections which rely heavily on an inspector’s expertise or instrument readouts. However, many forward-looking companies are looking to deploy advanced analytics to become more efficient in asset utilization, with almost 50% of organizations planning to increase their adoption of PdM in the next 2-3 years.

Uptime improvement is [the #1 driver for adopting predictive maintenance initiatives](#). Better prognostics accuracy reduces the frequency and duration of unplanned downtime events, leading to increased profitability and mitigating environmental and safety risks.

ASSET MONITORING

Condition Based Monitoring (CBM) is the most common type of asset monitoring method used in the industrial world. It is a type of maintenance practice that uses sensors to measure the status of an asset over time while it is in operation. Manufacturers can use this data to establish trends and make maintenance recommendations.

Another commonly used method for managing asset health is Reliability Centered Maintenance. RCM comprises a set of best practices that establish safe minimum equipment upkeep levels in the context of specific operations. However, both methods fall short, with RCM only recommending maintenance actions on a preset schedule and CBM recommending maintenance based on asset health status and historical trends. Neither method is able to predict failures or estimate remaining useful life in the context of specific operations.

PdM does everything that RCM and CBM do, but also calculates a health index and predicts the expected life under different load conditions. Utilizing advanced machine learning and prognostics, PdM can deliver major breakthroughs for process industries such as oil and gas, and chemicals.

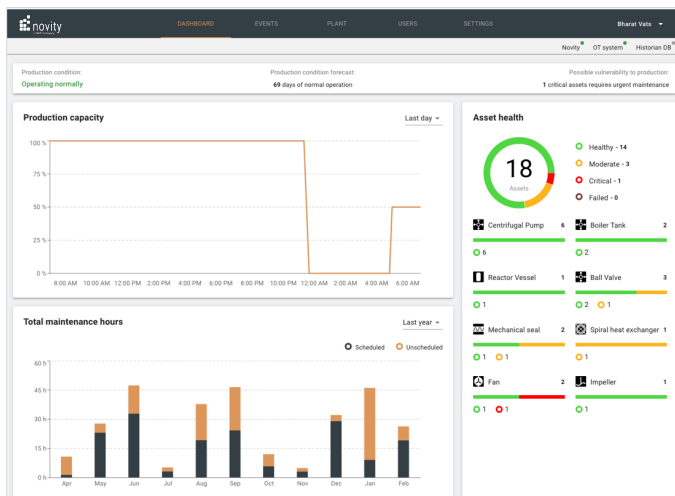
- Keep plant operative and maximize revenue
- Know equipment failure in advance through higher prediction accuracy
- Improve production and product quality (improved OEE)
- Reduce unplanned downtime
- Improve plant safety and minimize risks – employees and plant assets
- Reduce inventory (standby assets and their spare parts)
- Integration of IT Systems (servers, protocols, history) and OT Systems (SCADA, DCS, PLC)



WELCOME TO ZERO UNPLANNED DOWNTIME – COURTESY OF NOVITY

With four industrial chemical plants in operation across the United States, Xerox has felt the pain of unplanned downtime firsthand. We've taken this experience and our research expertise from our Palo Alto Research Center (PARC) in AI, sensors, and manufacturing to develop a solution that provides exceptionally accurate predictive maintenance to the market. Novity TruPrognostics delivers on this vision with a combination of machine learning and physics-based models of equipment. By using our library of pre-built models, Novity is making predictive maintenance accessible even to those who lack the massive amount of historical data required by traditional solutions.

The Novity Dashboard



ASSET CLASSES

Across a diverse group of industries, the critical components of plant operations fall into a common set of electrical, mechanical, and electromechanical types. These include pumps, valves, fans, reactors, vessels, heat exchangers, filters, and homogenizers, typically in addition to a small number of highly custom pieces of equipment.



During operations, these assets are subjected to high pressures, large temperature variations, mechanical stresses, and corrosive environments that limit their useful life.



Novity's TruPrognostics engine is focused on these asset classes and using advanced algorithms to lead detection of potential failures such as corrosion, fouling, leaks, and other common equipment issues.

ASSET CLASSES	FAILURE MODES	IMPACT
Reactors	Leaks, explosions, fouling	Safety hazards; process interruption; cleanup; product quality impact
Pumps	Bearing failures, blade failures, leaks, cavitation	Safety hazards; process interruption; cleanup
Fans	Bearing failures, blade failures	Process interruption
Valves	Sticking, leaks, cavitation	Process interruption
Heat exchangers	Fouling	Process interruption; product quality impact
Filters	Clogging	Process interruption; product quality impact
Pressure seals	Leaks	Process interruption; product quality impact
Compressors	Bearing faults, valve faults, mechanical problems	Process interruption; product quality impact

ADVANCING PREDICTIVE MAINTENANCE

The PdM solutions of today have made great strides in helping plant operators plan for equipment maintenance. However, they are still not where they need to be. At best, existing solutions only give a few days' lead time to act on their predictions. Yet PdM failure predictions of one or two weeks in advance are not adequate for most chemical plants. To extend the time horizon on failure predictions, Novity has developed a hybrid approach, which is a major advancement for the field.

Novity TruPrognostics is a predictive maintenance solution developed by the world-class PdM scientists at PARC. Our unique hybrid approach blends physics-based models with advanced sensors and delivers

industry-leading prediction accuracy (often 90% + more than three months ahead of failure), even under circumstances where minimal failure data is available. Our always-on, real-time decision support tool informs users exactly when a piece of critical equipment will fail, saving potentially millions in lost production.

TruPrognostics leverages:

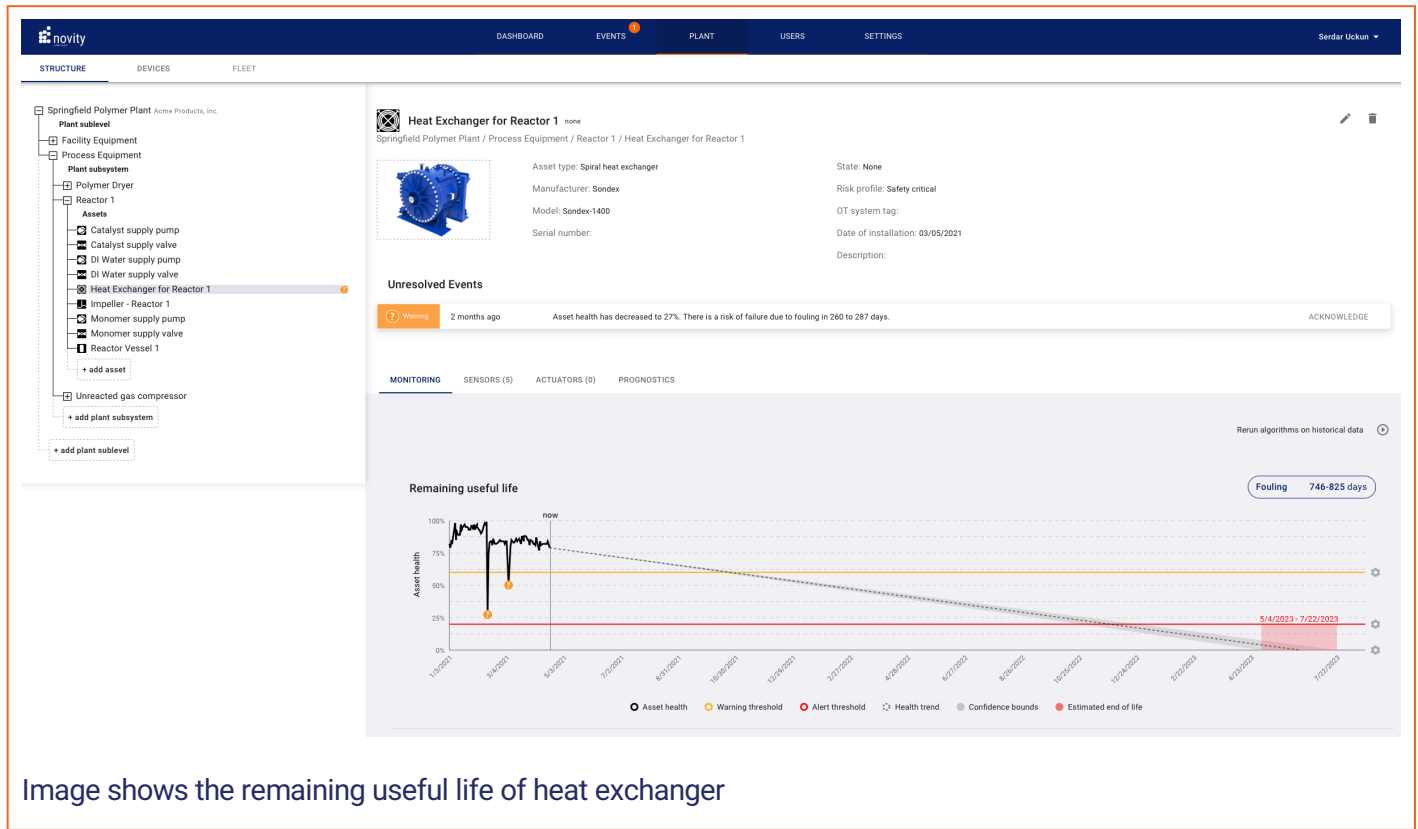
- Physics-based models that target specific fault mechanisms to calculate hidden damage parameters
- Deployment of advanced sensors to allow observation of very early signs of damage that are not identifiable using analysis with ordinary process control sensors



Novity TruPrognostics – a path to Zero Unplanned Downtime

A PDM SOLUTION THAT DELIVERS RESULTS

With these advances, Novity's TruPrognostics engine can predict critical asset failures months in advance, providing operators ample time to procure spares and schedule downtime to minimize the impact on production.



The screenshot displays the Novity TruPrognostics software interface. On the left is a navigation tree for 'Springfield Polymer Plant'. The main panel shows details for 'Heat Exchanger for Reactor 1', including its asset type (Spiral heat exchanger), manufacturer (Sondex), model (Sondex-1400), and date of installation (03/05/2021). Below this, an 'Unresolved Events' section shows an alert from 2 months ago: 'Asset health has decreased to 27%. There is a risk of failure due to fouling in 260 to 287 days.' The bottom section features a 'Remaining useful life' graph. The graph plots 'Asset health' (0% to 100%) against time from 1/1/2021 to 7/20/2023. A yellow dot at 27% health is labeled 'now'. A red vertical line indicates the 'Estimated end of life' at 7/22/2023. A legend at the bottom identifies the graph elements: Asset health, Warning threshold, Alert threshold, Health trend, Confidence bounds, and Estimated end of life.

Image shows the remaining useful life of heat exchanger



Our growing library of pre-developed models captures the most common failure modes and operational attributes of critical production asset classes, enabling accurate prognostics very soon after the deployment.

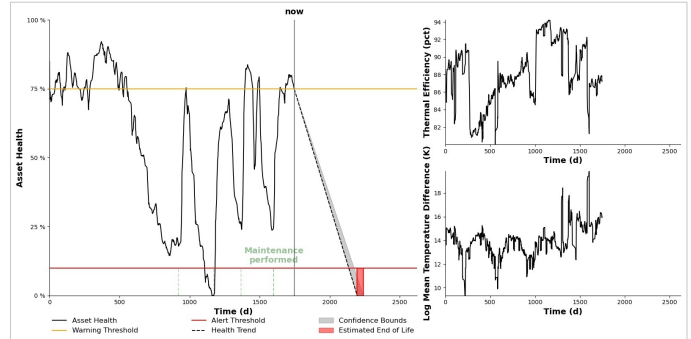
Novity TruPrognostics – a path to Zero Unplanned Downtime

A XEROX CASE STUDY: HEAT EXCHANGER FOULING

As a global leader in workplace technology, toner is a critical component of Xerox's business. One of the key pieces of equipment used in the production of toner is the spiral heat exchanger, which is often subject to fouling. A major challenge is that fouling is not directly observable in a sealed heat exchanger system; instead, only becoming apparent through observation of long-term trends in process parameters and end-product specifications. While cleaning cycles generally help reduce fouling, finding the right cleaning regimen for each cleaning cycle might require several trial-and-error runs.

To address the heat exchanger fouling problem, Novity scientists devised a physics-based model to estimate the fundamental properties of the heat exchanger using external observations such as slurry temperature and flow rates. When historical data is analyzed, the estimated internal process parameters, the progression of fouling, as well as the impact and relative strength of cleaning cycle regimens are immediately apparent to operators. With our TruPrognostics engine, Novity helps plant operators determine an ideal cleaning regimen for spiral heat exchangers while keeping product quality at the forefront.

In the chart below, each dot represents an estimated thermal resistance for a heat exchanger, which is calculated for each product batch. As the chart shows, the fouling metric increases with the number of batches and allows extrapolation to an upper threshold where the process no longer meets quality criteria.



Thanks to TruPrognostics, the calculated fouling level can be predicted far in advance, and plant managers can schedule cleaning at a time of their convenience. By giving plant managers the ability to see into the future, Novity optimizes inefficient processes, eliminates excess and unnecessary downtime, and ultimately delivers better bottom line business metrics.

BETTER PROGNOSTICS ACCURACY LEADS TO LESS DOWNTIME, MORE PRODUCTIVITY, AND PROFITABILITY.

Ready for Zero Unplanned Downtime? Head over to Novity and connect with us. <https://novity.us/Sales@novity.parc.com>



Predictive Maintenance for Midstream Oil & Gas

How predictive maintenance solutions can transform midstream oil & gas operations and eliminate unplanned downtime



Novity

3333 Coyote Hill Road
Palo Alto, CA 94304

www.novity.us

Leveraging the Industrial Internet of Things

The midstream oil and gas sector is poised to benefit tremendously from proven, modern, transformative technologies – sensors, instrumentation, physics-based models, artificial intelligence, and machine learning – that enable predictive maintenance.

Predictive maintenance, or PdM, is critical in industries that rely on physical assets operating without interruption, the failure of which results in diminished revenue and reduced productivity, while – most crucially – affecting health, safety, and the environment. Midstream fits this bill precisely, from the reactive, corrosive, flammable, and/or toxic chemicals involved to the potentially catastrophic implications of a pipeline leak or an overturned tanker.

Under PdM, the rate of equipment failure declines. The potential of catastrophic failure decreases. Operation and maintenance costs plummet and productivity increases. Assets stay operational for longer extended periods, no longer subject to arbitrary maintenance schedules that don't reflect the actual condition of equipment. Unplanned downtime becomes the rare exception – not the norm.

Through Industrial Internet of Things (IIoT) innovation, forward-thinking midstream industry leaders will be able to take operational efficiency to its peak. This includes delivering safer, smoother, and more productive operations – from processing natural gas to transporting crude oil through a pipeline, tanker, or truck to storage while it awaits distribution or trade.

When predictive maintenance is embraced, transformation occurs. It requires:

- Using existing sensors and/or instrumenting assets with sensors
- Capturing a constant stream of data on asset conditions
- Analyzing that data in real time
- Providing insights and real-time alerting
- Optimized recommendations for planned maintenance

The pages that follow offer a closer look at the current state of PdM, how midstream leaders can harness predictive maintenance, the way it works, and its benefits.



Taking a Closer Look at Predictive Maintenance

Like many well-established industries, the midstream oil and gas sector hasn't yet fully adopted predictive maintenance. Many midstream companies rely on condition-based maintenance (CBM), a technological ancestor to PdM. However, this does not provide the advance warning necessary to carefully orchestrate shutdowns and mitigate cost.

In a recent study coordinated by Novity, 41% of plant managers still rely on this reactive condition-based approach to maintenance, which enables diagnostics ("This part is failing") but not proactive planning ("This part has an estimated 180 hours of remaining life."). This represents a missed opportunity to create a sustainable and easily implemented maintenance schedule that minimizes interruption to operations. And for those repairs or replacements that necessitate interruptions, PdM makes it possible to reduce their impact with longer lead times for planning.

In midstream, another challenge is data. In its traditional form, PdM requires relatively large data sets to make accurate predictions of asset health. But midstream companies typically don't have the kind of rich data that extends back decades at their fingertips. For those that do have some historical data, it's just a matter of refocusing on asset health (versus process control) – or integrating the data in new ways to achieve more useful insights.



Finally, many PdM solutions typically predict failures with no more than a few days of lead time. This may be perfectly fine for some assets – for instance, smaller parts like fans and valves. However, for elements that require months of planning and preparation or whose failure would pose substantial risk, like a major pipeline repair or pressure seal replacement, this short lead time will not work. Part availability can also be an issue – many are typically not stocked and require a special order, subject to the unpredictability of the supply chain.

What's the incentive for midstream oil and gas leaders to overhaul their maintenance operations with PdM in mind? In a word, efficiency. According to one study¹, less than 25% of oil and gas operators are using proactive maintenance strategies – but those that do save \$36M in unplanned downtime costs as opposed to those embracing reactive maintenance. Other [statistics are equally compelling](#):

- 1% unplanned downtime can cost an oil and gas company over \$5M annually.
- The average offshore oil and gas company experiences almost a month of unplanned downtime annually, with costs ranging from \$38M to \$88M.
- The U.S. Department of Energy is bullish on the benefits of IIoT, saying "solutions for equipment maintenance helps oil and gas companies increase production output by 25%, achieve a 30% reduction in maintenance costs, and a 45% reduction in equipment downtime."

¹ "Prognostics and Health Management in the Oil and Gas Industry – a Step Change," Moir, K., Niculita, O., and Milligan, W. PHM Society European Conference, 4. 2018.

3 Reasons Why the Time is Now for Predictive Maintenance



#1 Make use of what you have

Predictive maintenance takes assets you've already invested in, makes them 'smart', and puts them to work for you. Sensors transmit health information, physics-based models, and machine learning algorithms do the heavy lifting of analysis and prediction, while an intuitive software interface makes understanding what to do next easier. Simply use these data-powered insights to create and implement a comprehensive maintenance plan.

#2 Lead, don't follow

Predictive maintenance is the future de facto standard for maintenance in industries reliant on manufacturing and processing. McKinsey's report on the Internet of Things² puts annual cost savings due to predictive maintenance between 10% and 40%, with a yearly economic impact of up to \$600B across sectors. Plus, a [recent survey](#) showed that one in five companies have started deploying advanced solutions while nearly half are developing implementation plans.

As sensors get better and cheaper and algorithms get increasingly sophisticated, it's just a matter of time before PdM becomes table stakes for companies focused on improving uptime, supporting environmental health and safety, and reducing costs. Why not be among those to lead the way?

#3 Eliminate your most common challenges

At best, unplanned downtime is a costly hassle that sends productivity down the drain. At worst, it's the consequence of an incident that severely impacts human lives and environmental health and safety while eroding the public's trust in your brand, inviting regulatory scrutiny, and causing long-term reputational damage.

² "The Internet of Things: Mapping the value beyond the hype." McKinsey Global Institute, 2015.

The Novity Difference

[Novity](#) takes a different approach to predictive maintenance, marrying physics-based equipment modeling with machine learning to achieve a more than 90% accuracy rate, well above the standard industry range of 50-75%.

Novity is powered by our TruPrognostics™ engine, which is designed to transform PdM and offers three key advantages:

- **Predict near-term threats to industrial production.**
What merits your immediate, most urgent attention?
- **Understand the health status of all your monitored assets – all the time.** From valves to compressors and electric motors, from pipelines to tankers, you'll know precisely how every asset, large and small, is functioning.
- **Plan operational maintenance on your timetable.**
The path to eliminating unplanned downtime starts with accurate forecasting and subsequent intelligent maintenance schedule.



Overcoming Barriers to Deploying Predictive Maintenance in Midstream Operations

Leveraging a foundation of discovery to understand your operations at a new level

Analysis and predictions aren't possible without a clear, comprehensive understanding of precisely what midstream operations entail, down to the most fine-grained detail. Whether it's a gas-oil separation unit and disposal wells, waste removal equipment and storage tanks, or valves, compressors and pumps, every safety- or mission-critical asset must be identified. We can help you build upon your existing foundation with an initial discovery effort to confirm what's known, while identifying opportunities that offer a more expansive understanding of your assets.

Evaluating key foundational elements as a crucial first step

We closely review:

- Potential failure risks and consequences for production
- Maintenance and failure histories for each critical asset
- Existing maintenance processes
- Redundancies
- Failure modes that cause the ultimate equipment failure
- Installed sensors to see which failure modes are presently observable – and which require additional sensors

This investigatory effort results in a situational evaluation and deployment plan that is the bedrock for a Novity predictive maintenance plan, ultimately driving midstream companies much closer to zero unplanned downtime.

No need for massive historical data sets

Most PdM solutions leverage machine learning in a way that necessitates massive data sets, gleaned from identical assets, to build predictive models.

While we use advanced machine learning, Novity leverages physics-based models of essential assets that enable accurate prediction of asset health without requiring substantial amounts of data. We also instrument critical assets with new, more sophisticated sensors. By using three disparate but related technical approaches, we're able to increase prediction accuracy and give customers the data-backed insights needed for reliable operation.

Advance warning in months, not weeks

The typical PdM approach gives failure predictions in short, fast-approaching increments – approximately one to two weeks before failure occurs. However, complicated repairs or part replacements can sometimes take months to plan and source.

External events, like a global pandemic or natural disasters, can add an unwelcome, [additional layer of complexity](#), with tangled supply chains impeding parts delivery. Thus, it's more important than ever before to maximize advance warning – before critical parts failure occurs.

Novity makes it possible to plan maintenance, procure parts, and schedule downtime on an extended timeframe through:

- Physics-based models that can quantify asset damage using specific fault mechanisms
- Advanced sensors that pinpoint early signs of damage that would otherwise be undiscoverable through standard process control sensors

Definitive data security

If midstream clients want to protect their intellectual property data from competitors, Novity can enable it. Built on a leading-edge web services architecture, our solution makes it simple to protect and scale as new assets come online for monitoring and as more end users access the system. This ensures information is constantly updated – and security is assured as the system is tested regularly against all known cyber threats.

Next Steps

Novity – a company born out of PARC, the innovation arm of Xerox – brings a team with 130 years of experience and a powerful history of developing model-based reasoning and artificial intelligence that captures the subtleties of real-world environments. An extensive library of pre-built, physics-based models ensures a fast ramp-up for those companies that are starting fresh from a data perspective, without legacy data to draw from. And we bring a unique perspective, with a parent company that – like midstream companies – has extensive logistical experience moving physical assets around the world and repairing them in the field.


It’s experience that, combined with our depth of innovation, gives us a uniquely supportive lens to truly partner with mainstream industry leaders as you leverage deeper asset management to enter a new era of predictability, cost savings, and consistent productivity.


To start your journey to zero unplanned downtime, contact us at: info@novity.us





Contact Us

 **Address:** 3333 Coyote Hill Road,
Palo Alto, CA 94304

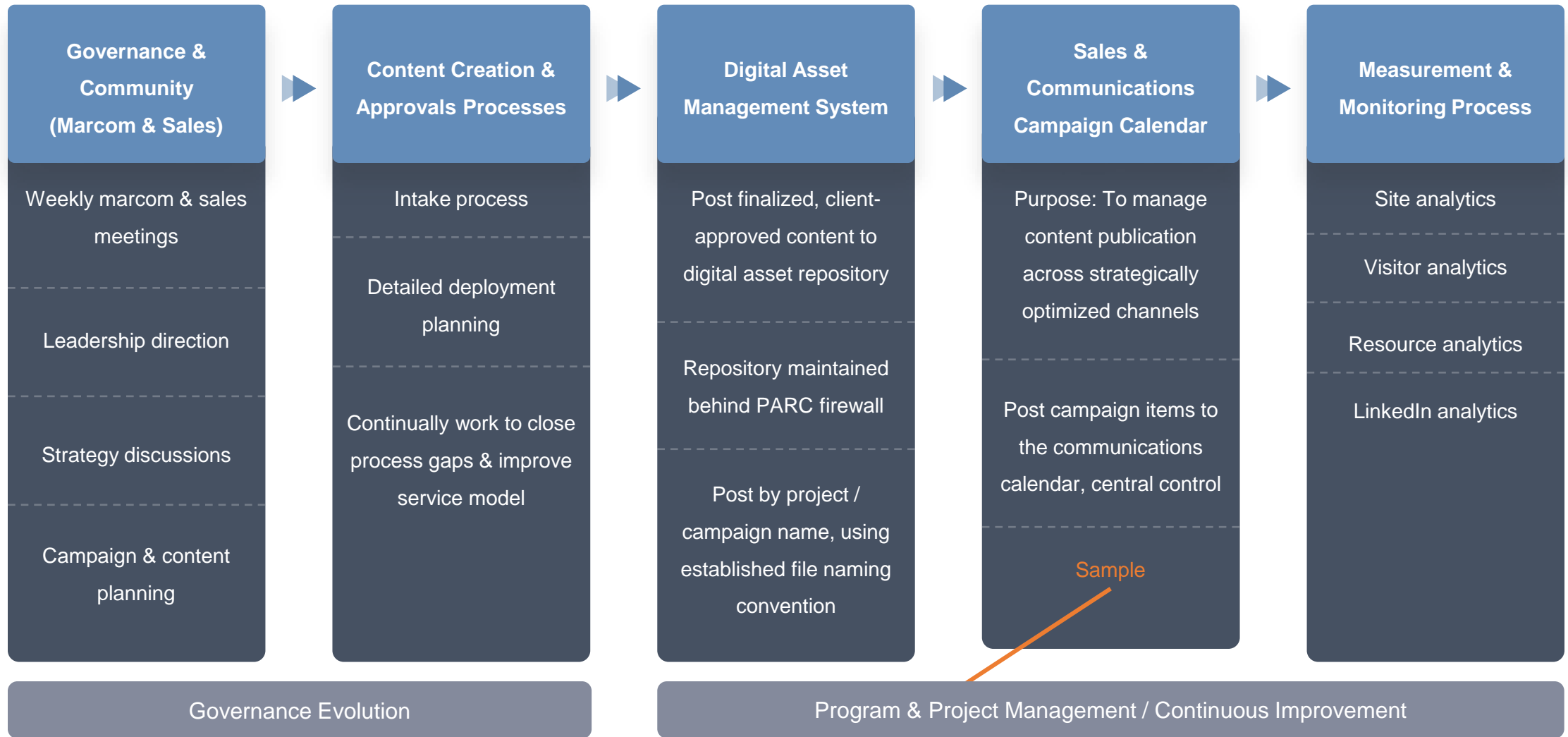
 **Telephone:** 650.812.4000

 **Website:** novity.us

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A Xerox Company



Novity Content Workflow: Execution Framework

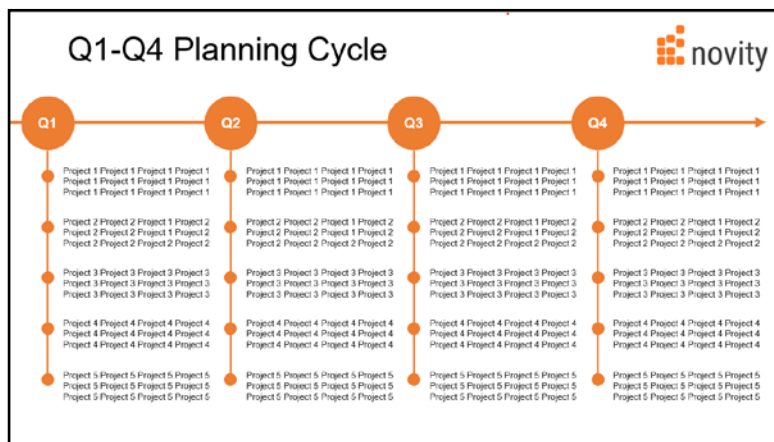


Sample

Date of Communication	Stakeholders	Delivery Methods (Channels)	Content Owner, Sender	Message / Topic	Responsibility for Creating Content	Responsibility for Approving Content	Channel Owner	Notes / Frequency / Status / Next Steps
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Strategic Alignment: Overview of Novity Planning & Tracking Tools

Macro View Q1-Q4 Planning Cycle



Mockup (PowerPoint)

Intermediate View Innovation Area Project Tracker

Innovation Marketing Project Tracker (2022)

Innovation Area	Key Deliverables (Audience)	Marketing & Communication Categories	Legal	Delivery	Action	Next	Event Link

Approved, but Not in Use (Excel)

Micro View Content Priorities

Topic	Where in Plans	Publish Date	Status	Team	Priority	Notes	Owner	Review
Using Novity - the path to Zero Impression Distance	Top	Done	Done - needs to be put on blog / and imagery	Blog	Tech	Easy	A general on F&B	Shira Stark
The Case for Novity	Top	190	Author'd by Markus - Blog - more customer centric	Blog			Markus has written needs to be posted when we have launch date	Shira Stark
Reason for Novity	Top	190	Author'd by Markus - Internal - more marketing oriented	Internal Post			Markus has written needs to be posted within milestone milestones - break and fix conditions	Shira Stark
What is predictive maintenance?	Top	190	Sent to team for feedback	Blog	Bio	Easy		Shira Stark
Novity Launch Video	Top	190	Done, waiting for launch date to release with James V.	Video				Shira Stark
PM and OPE, how do you measure success?	Top	190	plan to draft in 2022	Blog	Bio	Med	Possible Penny Fein discovered in Battalion in Q2	Shira Stark
Why Tech Progression is an Opportunity and Challenge	Top	190	Plan to draft in 2022	Infographic	Video		More tech differentiation - PM may not be able to do this	Shira Stark
Why Data Progression is an Opportunity and Challenge	Top	190	Plan to draft in 2022	Infographic	Video			Shira Stark
Subbing the old (deal problem / when does it break approach)	Middle	Done	Agreement, needs to put on website - Blog 19	Blog	Tech	Med		George Louton
Compliance / Full	Middle	Done	Done - user verifiable	White paper				Geoff
White paper - Predictive Maintenance for Chemical Plants	Middle	190	Draft Done - Waiting for Markus & Vira Fein'd White paper	White paper			Needs to be Design'd - Staff's X	Geoff
White paper - Predictive Maintenance for Oil and Gas - Upstream	Middle	190	Draft Done - Waiting for Markus & Vira Fein'd White paper	White paper			Needs to be Design'd - Staff's X	Geoff
White paper - Predictive Maintenance for Oil and Gas - Midstream/Downstream	Middle	190	Review - break edit's, make changes - need to team for final review/approval - incorporate images and need to finalize	Blog	Tech	Med		Shira Stark
PM and OPE, how do you measure success?	Middle	190	In progress - sent to Vira for final edit's, need data story	Blog Post	Tech	Easy	Geoff?	Analyst / Brian
The data problem of AI: IIOT Integration and Infrastructure	Middle	190	Use Penny as example and write from that. Primary manufacturing is things like screens, needs to be specific about need for sensors ahead of 2022 focus on this vertical	White paper				Shira Stark
White Paper - Tripartite Manufacturing	Middle	Q3 2022		White paper				Geoff
White Paper - Predictive Maintenance and Strategic AI/ML for Oil & Gas	Middle	Q3 2022	4% who also 15 min O&A. Need partner to bring Webinars	Marketing				Shira Stark
Case Study - Precision	Middle	190	Given security holden's legit etc, we need needs review by Novity user stakeholder	White paper	Tech	Med	Describe risk of using AI in real time, great, very interesting. Accuracy/operation cost about our relation. P&IC. R&D might help	Markus, Geoff

In Use (Excel)