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# **INSURANCE AND FINANCE SESSION MOM**

Meeting Date	08.10.2024	Time	09:15-13:00
Meeting Called By	EUSPA	Location	Digital
Minutes Taken By	Jeroen Vriends, EY Rik Neirynck, EY	Next Meeting Date	N/A
Attendees & speakers	Justyna Redelkiewicz (EUSPA) Bernardo Brum (EUSPA) Rik Neirynck (EY) Jeroen Vriends (EY) Kat Hickey (NovaSpace) Krystyna Zakova (CGI IT)		
	User Community Representatives (UCRs) Mirka Vahtera, ICEYE Lukas Sundermann, Swiss Re Mila Luleva, Rabobank Alvaro Prida, AXA Climate Laura Moreno, Earthpulse Nataliya Tkachenko, Lloyds Banking Group Katerina Spanikova, Raiffeisenbank Guillermo Polo, Mapfre Re  Complete list of attendees is in Annex 1.		
Distribution (in addition to attendees)	UCP Plenary, EUSPA, Public		

Agenda Items	Presenter
Welcome and introduction to the Insurance and Finance session	Justyna Redelkiewicz, EUSPA
2. Updates and status of services and demonstrators	Bernardo Brum
3. Roundtable: event footprint use cases; User requirements validation, identification of adoption barriers and research gaps	Panel discussion moderated by Kat Hicky User requirement validation by Rik Neirynck
4. Roundtable: ESG for finance use cases; User requirements validation, identification of adoption barriers and research gaps	Panel discussion moderated by Krystyna Zakova User requirement validation by Rik Neirynck
5. Questions, conclusions and closing remarks	Bernardo Brum & Rik Neirynck



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### **Summary**

The Insurance and Finance panel of the User Consultation Platform (UCP) 2024 took place on 8<sup>th</sup> October 2024 as an online event.

The panel gathered a total of 50 participants coming from industry, infrastructure managers, research, public organisations as well as from European Institutions, covering the whole spectrum of the market segment.

Presentations of the EU Space components most relevant to the Insurance and Finance segment were given and concrete usages of Earth Observation (EO) were also introduced through a series of panel discussions. These panel discussions enabled to initiate interesting interactions with the audience and to discuss main user needs and requirements relevant for the Insurance and Finance segment.

The main outcomes for **Insurance** were the following:

- EO data should be pragmatic, where the focus should be on practical feasibility and the
  essential needs of users rather than pursuing the highest possible resolution in all
  dimensions.
- There is a growing interest in risk modelling through EO, as insurance companies are looking to develop probability models for proactive policy offerings.
- Challenges in integrating EO data with client services were addressed, particularly the **technological limitations** in assessing **post-event hail damage**.
- Insurance companies are moving towards using parametric data to enable faster claim settlements. However, they face challenges with the inconsistent quality of historical data and the rapid changes in sensor technology, which affects the development of reliable models.

#### For Finance:

 The ESG Reporting discussion on EO data showed the importance for navigating financial transitions and ensuring ESG compliance, underscoring the need for a standardized framework.

The session concluded with the validation of user needs and requirements for EO data in the Insurance and Finance segment, highlighting the importance of practical application and integration into existing workflows.

#### 1 MINUTES OF MEETING

# Agenda Item 1 - Welcome and introduction to the Insurance and Finance session. Justyna Redelkiewicz / EUSPA

Justyna Redelkiewicz, Consumer, Environment and Entrepreneurship Manager at EUSPA, welcomed all participants to the User Consultation Platform (UCP) session. In her opening remarks, she provided a comprehensive overview of the UCP's objectives, its overarching mission and the specific goals set



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for the day's agenda. She emphasized the UCP's vital role as a facilitator, designed to enhance engagement with the user community and ensure their needs are met.

Once wrapped up, Justyna Redelkiewicz directed the session's attention to the in-scope technologies and related user requirements, related to Earth Observation (EO) through the Copernicus program, which EUSPA anticipates will experience the most significant growth. She also touched upon the relevance of Positioning, Navigation and Timing (PNT) services and Secure Satellite Communications (Secure SATCOM) technologies, noting their emerging importance in the Insurance and Finance industries.

The slides of this agenda item can be found as Attachment 1 in section 4.

## Agenda Item 2 – Updates and status of services and demonstrators. Bernardo Brum / EUSPA

This section is moderated by Bernardo Brum from EUSPA. In his opening statements he discusses the wide application of Earth Observation (EO) within the Finance and Insurance sector and how the services and products derived from EO are increasingly being utilized by organizations in the industry. The application in-scope for this session are categorized in three primary areas: event footprint, index production and risk modelling.

Event Footprint services are crucial for insurance companies as they provide immediate impact analysis following catastrophic events, allowing them to assess the status of affected areas before and after such events. This capability is invaluable for rapid response and informed decision-making.

Index Production is associated with parametric insurance, which is designed to cover the probability of specific events occurring. This type of insurance triggers pay-outs when predefined thresholds are exceeded, thereby streamlining the claims process by reducing the need for on-site visits and enabling the analysis of past trends.

Risk Modelling involves the creation of probability models to estimate the likelihood of loss. Insurance companies implement these models to offer proactive policies to their clients, utilizing both historical and current EO data to predict future events or identify trends.

In the Finance sector, EO data plays a pivotal role in several areas:

- 1. Commodity Trading: EO data informs investors about shipping movements to key locations, crop health, yield rates, and raw material extraction, aiding in the prediction of supply and demand and the development of investment strategies.
- 2. Risk Assessments: EO data provides historical records of natural events, which are essential for forecasting and assessing the potential financial impact on goods and raw materials.
- 3. ESG-Based Investment: Sustainable investing that considers environmental impact relies on EO data to evaluate factors such as deforestation, water, and air quality, which are integrated into investment strategies.

The growth perspective for the Insurance and Finance sectors based on EO data and services is promising, with an expected increase from 15% of the market in 2021 to 20% by 2031. Notably, the



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area of Index Production is projected to experience the most significant growth, potentially reaching a total value of 1 billion EUR by the end of 2031.

EUSPA is actively working to facilitate market uptake by supporting the creation of innovative solutions through education, project feasibility studies, funding, and mentorship. Initiatives such as Cassini, Horizon Europe, and Copernicus Demonstrators are examples of EUSPA's commitment to fostering innovation in this space.

Bernardo Brum presented several commercial pilot projects within the Insurance and Finance domains, showcasing the practical applications of EO data:

- 1. Earthpulse! Insurance Risk Modelling
- 2. GMV ESG-based Investments
- 3. ICEYE Flood Impact Assessment & Risk Modelling

For a detailed review of the topics discussed, participants are referred to Attachment 2 in Section 4, which contains the slides from this agenda item.

The slides of this agenda item can be found as Attachment 2 in section 4.

### Panel Discussion – Moderated by Kat Hickey

1. Flood Risk & damage assessment

# **Service Providers:**

Mirka Vahtera from ICEYE opened the session with an introduction to her background and the company's expertise in satellite-based Earth Observation (EO) data, emphasizing their advanced flood mapping capabilities. She addressed prevalent misconceptions about EO-data, asserting that it is more accessible and user-friendly than commonly believed, requiring minimal investment to extract value. Vahtera also corrected the insurance industry's outdated perception of EO-data availability, noting the current immediacy of data access and the enhanced granularity that now provides unprecedented accuracy.

Further discussing ICEYE's strategy, Vahtera explained their ecosystem approach, which involves collaboration with various vendors to offer a full-scale solution to insurance companies. This approach integrates different datasets and methodologies to deliver comprehensive insights, rather than relying on a single source of truth.

Laura Moreno, CEO of Earthpulse, contributed to the conversation by detailing her company's role in data analytics, focusing on natural disasters such as floods and fires. Earthpulse caters to insurance and finance sectors, enabling them to leverage satellite data for enhanced analytics. She highlighted the growing awareness among service providers about the capabilities of EO-data and stressed the importance of understanding how to integrate this data with existing services to maximize its utility.



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Both speakers noted the challenges in integrating EO-data with client data and service offerings, which often require specialized knowledge. They acknowledged the sophistication of current models for predicting climate disasters from an academic perspective and the need for practical application in service offerings.

The meeting concluded with a consensus on the need to bridge the gap between theoretical models and practical applications, ensuring that the advancements in EO-data technology translate into tangible benefits for end-users.

#### **End Users:**

Lukas Sundermann, tasked with delivering customized risk products to the public sector, focuses on parametric data for entities such as municipalities, with New York City being a notable client for whom they develop flood data delivery solutions. The insurance industry's shift toward parametric data is driven by the need for swift payouts with minimal adjustments. The availability of data enables this approach to be applied broadly, but challenges arise due to inconsistent historical data quality, which hampers the development of robust models. The rapid evolution of sensor technology exacerbates this issue, leading to a scarcity of comparable historical data and variations in output quality.

EO-data is increasingly sought after for its potential to enable quicker responses and greater accuracy. Insurance companies, however, maintain fallback solutions for EO-analysis to ensure consistency in data provision and results, even if the primary data source encounters issues.

Alvaro Prida from AXA Climate quantifies flood risks using models developed by commercial partners or AXA's internal team. He designs parametric solutions for flood risk and provides consulting services to clients worldwide, focusing on creating future flood/climate scenarios and conducting cost/benefit analyses to prepare clients for future challenges. A significant hurdle he faces is the lack of historical loss data, which is essential for crafting precise models. Additionally, the resolution of existing data, particularly flood depths, is often insufficient, affecting loss accuracy. The infrequent revisit rates of EO technology, which may miss critical moments like flood peaks, pose another challenge that could be addressed through improved modelling or more frequent satellite monitoring.

Guillermo Polo, working for Mapfre Re a global insurance company in the EIS and climate change sector, emphasizes the importance of matching exposure data with actual events, such as floods, to analyze potential impacts on specific locations. He notes the necessity of cross-checking multiple services to accurately assess results, as multiple analyses of the same events must produce consistent outcomes.

#### Hail risk & damage assessment

Mirka Vahtera highlighted that observing standing water from floods has become more feasible with current technology, but post-event property damage assessment remains a challenge, as the technology for detailed analysis is not yet available / mature. Despite this, she is optimistic about the rapid technological advancements and believes that certain use cases, such as agriculture, can benefit from the current capabilities. By leveraging what is learned from these applications, she anticipates improvements in service offerings across various user cases.



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Laura Moreno pointed out the difficulties in detecting hail damage with existing EO technology, especially when assessing post-event damage to cars, a service in high demand. The resolution of current EO data makes it challenging to accurately assess damage to small objects like cars or specific features such as rooftops. However, she is confident that as technology adoption increases and use cases expand, the service offerings for hail damage assessment will mature.

Lukas Sundermann mentioned that phenomena like hail and strong storms are transient and difficult to forecast and observe. Nonetheless, there is a growing demand for services that can provide insights into such events. The US has seen the implementation of the first parametric service for cars and structures with large glass rooftops vulnerable to hail damage. Building hail models is also complex due to the need to consider specific hail grain sizes, which adds to the challenge of providing accurate and reliable services.

Agenda Item 3 – Roundtable: event footprint use cases; User requirements validation, identification of adoption barriers and research gaps. Rik Neirynck – EY

## **Event Footprint - Flood Damage**

The presented user needs and requirements in the deck are confirmed by the participants, no "no" responses or feedback from the panel.

## Damage assessment of agricultural crops insured against damaged by natural events

The presented user needs and requirement in the deck are confirmed by the participants.

Laura emphasized the importance of historical data when insuring against specific types of damage. For accurate inspection and damage assessment, high-resolution data is essential. She noted that while monitoring may not necessitate high-resolution data, the requirements for damage assessment are significantly more stringent due to the need for detailed analysis.

Lukas Sundermann discussed the efficiency of using Earth Observation (EO) data to evaluate soil values in the context of droughts. He pointed out that consistent information over several years is crucial to determine the occurrence of a drought. In parametric insurance schemes, soil moisture is a key type of EO data that must be considered to meet user needs and requirements, highlighting the importance of long-term data consistency for accurate assessment and insurance purposes.

## Other Challenges identified by the panel for the event footprint:

Dr. Ivan Tankoyeu: major challenge is the adoption of AI and the role that it may play in the future.

#### Main Gaps in the Technology:

No additional inputs from the audience and thus the main gaps are validated.

# What are the recommended actions for EUSPA to accelerate the uptake of EO technologies for event footprint?

Laura: More insurance firms are adopting EO-data. The data requirements differ per service offering / use case and tables per case may be beneficial to have a closer KPI oversight per case.



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## Index Production (Parametric insurance) - Hail

User needs and requirements have been confirmed and validated by the panel without further comments.

## Main challenges and adoption barriers

No further comments from the group, validated by the panel. No further comments.

## Main gaps requiring more R&D for parametric insurance

**Laura:** The main gap is not technology but more so the understanding and application of the actual data. The technology is excellent, but the challenge is what we can do with the data.

The slides of this agenda item can be found as Attachment 3 in section 4.

#### \*SESSION BREAK\*

Agenda Item 4 – Roundtable: ESG for finance use cases; User requirements validation, identification of adoption barriers and research gaps - Kristyna Zokava

Nataliya Tkachenko (Lloyds Banking Group), with over a decade of experience in Earth Observation (EO), brought her expertise to the table, discussing the role of EO in the banking sector's adaptation to climate change and natural ecosystem shifts. She underscored the importance of EO technologies in navigating financial transitions and in combating deceptive practices like greenwashing. Traditionally, EO data has been underutilized in banking, but as Environmental, Social, and Governance (ESG) criteria become more prevalent, the industry is beginning to recognize its value. Ms. Tkachenko pointed out the infancy of EO data application in banking, especially concerning client privacy and data processing efficiency.

She also noted that EO data, is a crucial supplementary source that banks are exploring for actionable insights to enhance sustainable practices. The challenge lies in the verification and validation of EO data to ensure its reliability for decision-making.

**Katerina Spanikova** from Raiffeisenbank outlined her role in monitoring the corporate portfolio for ESG compliance and providing advisory services within the bank. She discussed the growing impact of ESG on risk assessment and client lifecycle management, emphasizing the need for thorough ESG-focused analyses of clients and assets. Despite the opportunities ESG integration presents, challenges such as data acquisition costs and the need for quality data remain. Ms. Spanikova called for prioritizing these investments and highlighted the communication gap between banks and authorities on ESG standards, advocating for better national coordination.

**Mila Luleva** from Rabobank shared insights into the bank's use of spatial data to meet sustainability and ESG compliance goals, particularly in the agricultural sector. She noted the increasing reliance on EO data for its time-saving benefits over traditional data collection methods. Ethical considerations and transparency in client data usage are paramount, and Rabobank primarily uses Copernicus data, considering data granularity for accurate reporting.



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**Ms. Luleva** emphasized the need for an EU-approved framework to standardize data processing and enhance trust in EO data within the traditionally slow-to-adapt banking industry. She also mentioned the rise of nature-based reporting, which is pushing banks toward EO data usage, though the practice is not yet widespread. Lastly, she stressed the importance of an EU framework to establish a consistent reporting baseline, ensuring fair EO data integration across the banking sector.

## ESG Reporting, User requirements - Rik Neirynck, EY

Mr. Neirynck presented the user requirements compiled through desk and field research and discussed the same with the panel participants, noting no adjustments need to be made to the requirements as presented in the slide deck and these minutes.

# ESG reporting: environmental standards monitoring for farming, User requirements – Rik Neirynck, EY

During a panel discussion on farming and ESG, Peter Navratil shared insights on the utility of spatial resolution in Earth Observation (EO) data. He noted that while high spatial resolution is technologically impressive, it might not be essential for country-level assessments, as such detail is often superfluous for broad geographical analyses.

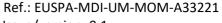
Mr. Navratil then turned the conversation to spectral resolution, highlighting its significance for specific applications, and expressed his interest in the temporal resolution for tracking carbon emissions, which are currently monitored daily. He pointed out that, despite the value of daily updates, they might not be necessary for all users, especially considering the costs involved.

He stressed the need for a balanced discussion on user requirements, focusing on what is practically feasible and essential for answering particular questions, rather than pursuing the highest possible resolution in all dimensions of EO data. Mr. Navratil called for a pragmatic approach that aligns with the real needs of users. The panel validated the requirements outlined by Mr. Neirynck, affirming the importance of practicality in EO data application for ESG in agriculture.

## Closing remarks by Rik Neirynck - EY

Summarized the session and casted to the participants. Summary accurate and no further comments from the audience.

### **SESSION END**



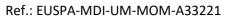


# User Needs and Requirements – Synthesis of discussion outcomes

The requirements compiled in the draft Report on User Needs and Requirements (RUR) circulated prior to the UCP were reviewed with the participants. The discussions raised the **need to refine some of the requirements and/or to add new ones**. Therefore, requirements which were reviewed and did not deserve any comment or change from the audience are not depicted in the next tables.

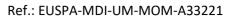
## Requirements relevant to EO

Application/	Parameter	Requirement
Operational Scenario		
Damage assessment of insured real	User Needs	Size of Area of interest :
estate after large-scale flood		- 25km2 to > 500 km2
events		Frequency of Information: - Quarterly update of the baseline situation
		- Ad hog trigger: Once the natural disaster occurs, information needs to be captured.
		Type of service:
Damage assessment of insured real estate after large-scale flood events	EO Data requirements	Spatial Resolution: - <5 meter  Temporal Resolution: - Daily  Type of EO data: - Optical and SAR imagery



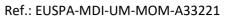


Damage assessment of agricultural crops insured against damaged by natural events	End user service needs	Size of area of interest: - >100km  Frequency of information: - Periodically: A seasonal, updated view of the baseline situation may be required periodically - Ad-hoc trigger: Once the natural disaster occurs, information needs to be captured and made available as soon as possible  Type of service: - One-off event: singular occurrence with specific time and impact  Other requirements: - Use of historical data through time series analysis
Damage assessment of agricultural crops insured against damaged by natural events	EO Data requirements	Spatial resolution - 0,5m  Temporal resolution - Daily  Type of EO data - Optical, SAR, meteorological data  Other requirements - /
Hail event assessment for parametric insurance	End user service needs	Size of area of interest:  - 1km2  Frequency of information:  - Continuous: to detect hailstorms  - Ad-hoc trigger: once a hailstorm is confirmed, EO images of affected areas are used  Type of service  - One-off event: singular occurrence with specific time and impact





		- Regular monitoring: track changes and developments periodically
Hail event assessment for parametric insurance	EO Data requirements	Spatial Resolution: - 1-5 km  Temporal resolution: - 15 min  Type of EO data: - optical SAR  Other requirements: - /
Monitoring of EUDR compliance, and risks of EUDR non-compliance	End Users Service Needs	Size of area of interest:  - 300 – 600 km2  Frequency of Information:  - Annual updates: disclosures and regulations are published together with the annual financial year reporting  Type of service:  - Continuous monitoring  Other requirements:  - Historical data through time series analysis
Monitoring of EUDR compliance, and risks of EUDR non-compliance	EO Data Requirements	Spatial resolution: - 10 meter for forest baselines - 3-5 meter for validation purposes  Temporal resolution - Yearly  Type of EO data - Optical and SAR





		Other requirements - /	
Environmental standards monitoring for farming practices	End Users service Needs	Size of area of interest: - Country level	
		Frequency of information: - Seasonal updates	
		Type of service - Continuous monitoring	
		Other requirements: - /	
Environmental standards monitoring for farming practices	EO Data Requirements	Spatial Resolution - Carbon emissions: 100m	
		- Change in land use: 10m	
		- Biodiversity changes: 3m	
		- Soil quality (degradation) : <1m	
		- Water status: <3m	
		Temporal resolution - Carbon emissions: daily	
		- Change in land use: daily	
		- Biodiversity changes: weekly	
		- Solid quality (degradation): weekly	



- Water status : weekly
Spectral resolution: - Multispectral: visible to thermal, infrared
- Hyperspectral
Type of EO data - Optical data, SAR and hyperspectral
Other requirements - /



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#### 2 CONCLUSIONS

The session on Insurance and Finance, provided valuable insights into the current and potential applications of Earth Observation (EO) data within the sectors. The discussions highlighted the critical role of EO in event footprint services, index production, and risk modelling for insurance, as well as in commodity trading, risk assessments, and ESG-based investment for finance. The expected market growth and EUSPA's commitment to fostering innovation through various initiatives were also underscored.

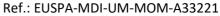
Service providers emphasized the accessibility of EO data and the need for practical integration into service offerings. They addressed common misconceptions about the complexity and immediacy of EO data, advocating for an ecosystem approach to provide comprehensive solutions.

End users discussed the challenges of limited historical data, the need for high-resolution data for accurate loss assessment, and the importance of cross-checking multiple services for consistent results in event analysis.

In the realm of ESG and banking, end users shared their insights with integrating EO data into banking practices. They stressed the importance of data quality, transparency, and the need for a standardized framework to support data processing and usage. The emergence of nature-based reporting and the slow adoption of new technologies in the traditional banking industry were also noted.

The user requirements for ESG reporting and environmental standards monitoring for farming, with the panel confirming the relevance of the presented requirements. Justin Barrow emphasized the importance of mitigating data manipulation risks in EO for land use monitoring, stressing the need for ecosystem collaboration and stringent validation to ensure ESG data accuracy and maintain trust in reporting.

The session concluded with closing remarks, summarizing the key points and affirming the accuracy of the session's content. The discussions and presentations throughout the session provided a comprehensive understanding of the current state and future directions of EO data application in the Insurance and Finance sectors, as well as the associated challenges and opportunities for ESG reporting in banking.





### OTHER NOTES & INFORMATION

With the contribution of:







'earthpulse!







## 4 ANNEXES & ATTACHMENTS

Attachment 1: Welcome and introduction, EUSPA

Attachment 2: Updates and status of services and demonstrators, EUSPA

Attachment 3: User Needs and Requirements, EY



# 5 ANNEX 1: LIST OF ATTENDEES

#	Name	Organization
1	Adrián Fdez.	Mapfre Re
2	Alessandro Grasso	Space Agency
3	Alvaro Prida	AXA Climate
4	Aravind	Terrawatch
5	Bernardo Brum	EUSPA
6	Carmen Martin	Ineco
7	Chris	GreenTriangle
8	Daire Boyle	Evenflow
9	Dr. Ivan Tankoyeu	Flypix
10	Fredo Aalders	Royal Aware
11	Freek Holvoet	KULeuven
12	Guillermo Polo	Mapfre Re
13	Jan Brozek	RB
14	Jeroen Vriends	EY
15	Jose Cañizares	BBVA
16	Judith	EarthPulse
17	Juraj Rosa	Habitable
18	Justin Barrow	Burges Salmon LLP
19	Kat Hickey	Novaspace
20	Katerina Spanikova	RB
21	Kenneth Bahr	NOSA
22	Kristyna Zakova	CGI
23	Krzysztof Kanawka	Bluedotsolutions
24	Giovanni Lucchi	EUSPA
25	Laura	Earthpulse
26	Laurens Perdok	Freelancer
27	Louis Hart Davis	Stratolia
28	Lucia Garcia	Geosat
29	Luis Cuervo Spottorno	EC Europa
30	Lukas Sundermann	Swiss RE
31	Matthias Schreitl	FFG
32	Mattias Sundholm	EC Europa
33	Mila Luleva	Rabobank
34	Mirka Vahtera	ICEYE
35	Monica Pesce	EY
36	Narayan Dhital	DLR-GFR
37	Nataliya Tkachenko	Freelancer
38	Veronika Palmaiova	EUSPA
39	Paula Manjón	OESIA



40	Peter Navratil	GAF
41	Justyna Redelkiewicz Musial	EUSPA
42	Rasmus Borgstrøm	DHI group
43	Rik Neirynck	EY
44	Rita F. Patarra	Expolab
45	Roberto Capua	Sogei
46	Vero Soule-Revel	Freelancer
47	Samuel Fonseca	Grupotecopy
48	Theo Come	GAF
49	Guillermo Polo	Mapfre Re
50	Leopoldo Luongo	Also Consulting



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