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Information and Communications Technologies

IARIA

NGAPI and NGMonitor: Bridging NovaGenesis and the Current Internet

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Agenda

- **Introduction**
- **Related Work**
- **System arctecture**
- **NGAPI**
- **NGMonitor**
- **Results**
- **Conclusion**

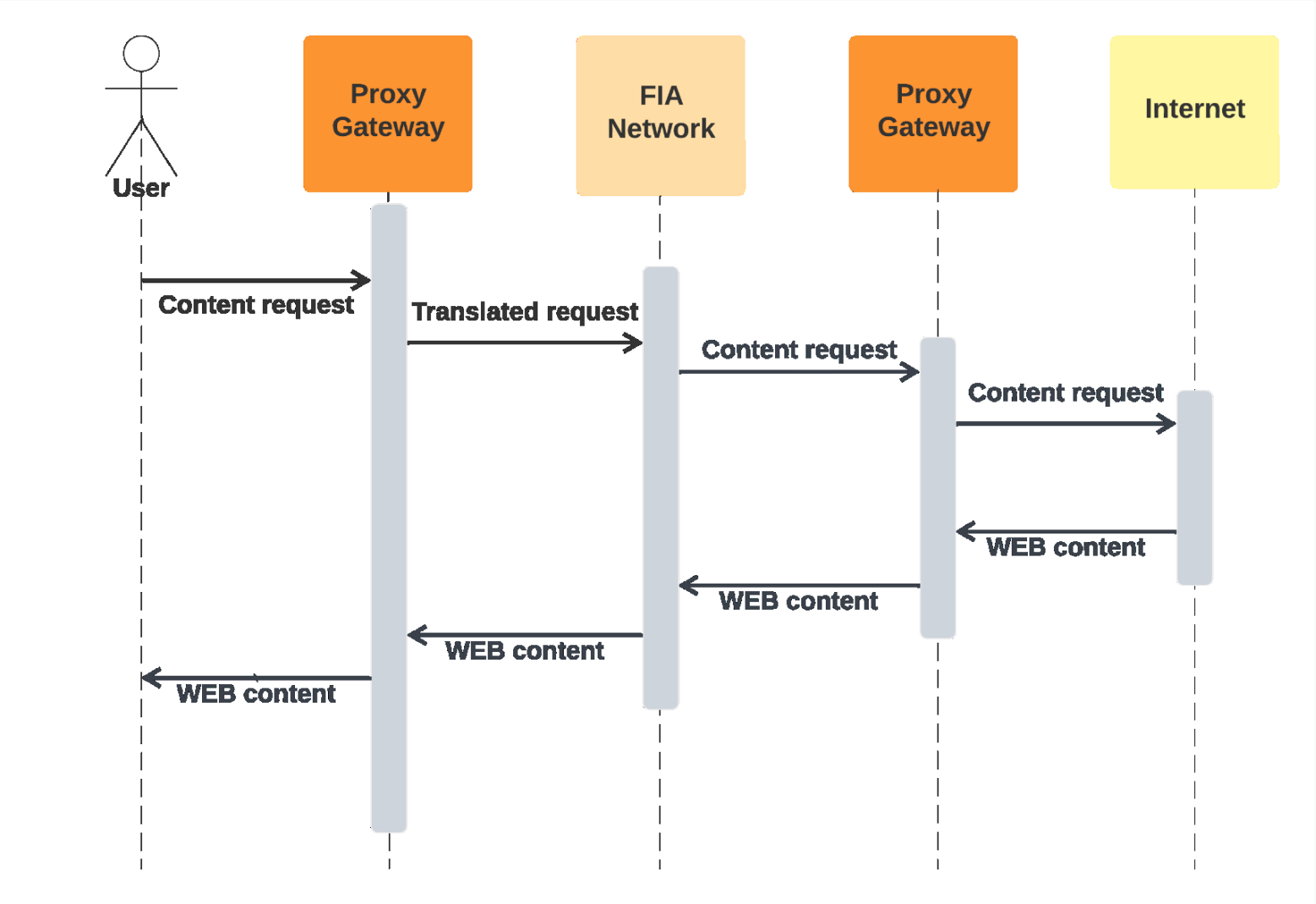
Introduction

- Internet presents na exponential expansion
- Future Internet Architectures (FIAs)
  - Content-Centricity: Prioritizing information access.
  - Enhanced Scalability & Security: Designed for modern demands.
  - Data-Driven Networking: Enabling intelligent network management.
  - Examples: XIA, RINA, NDN, MobilityFirst and NovaGenesis
- Interoperability
  - Backward compatibility
    - Need to Coexist
    - Essential for FIA Adoption
  - Insitght from existing generative AIs

Related Work

- Interoperability Strategiy
  - Tunneling Approaches

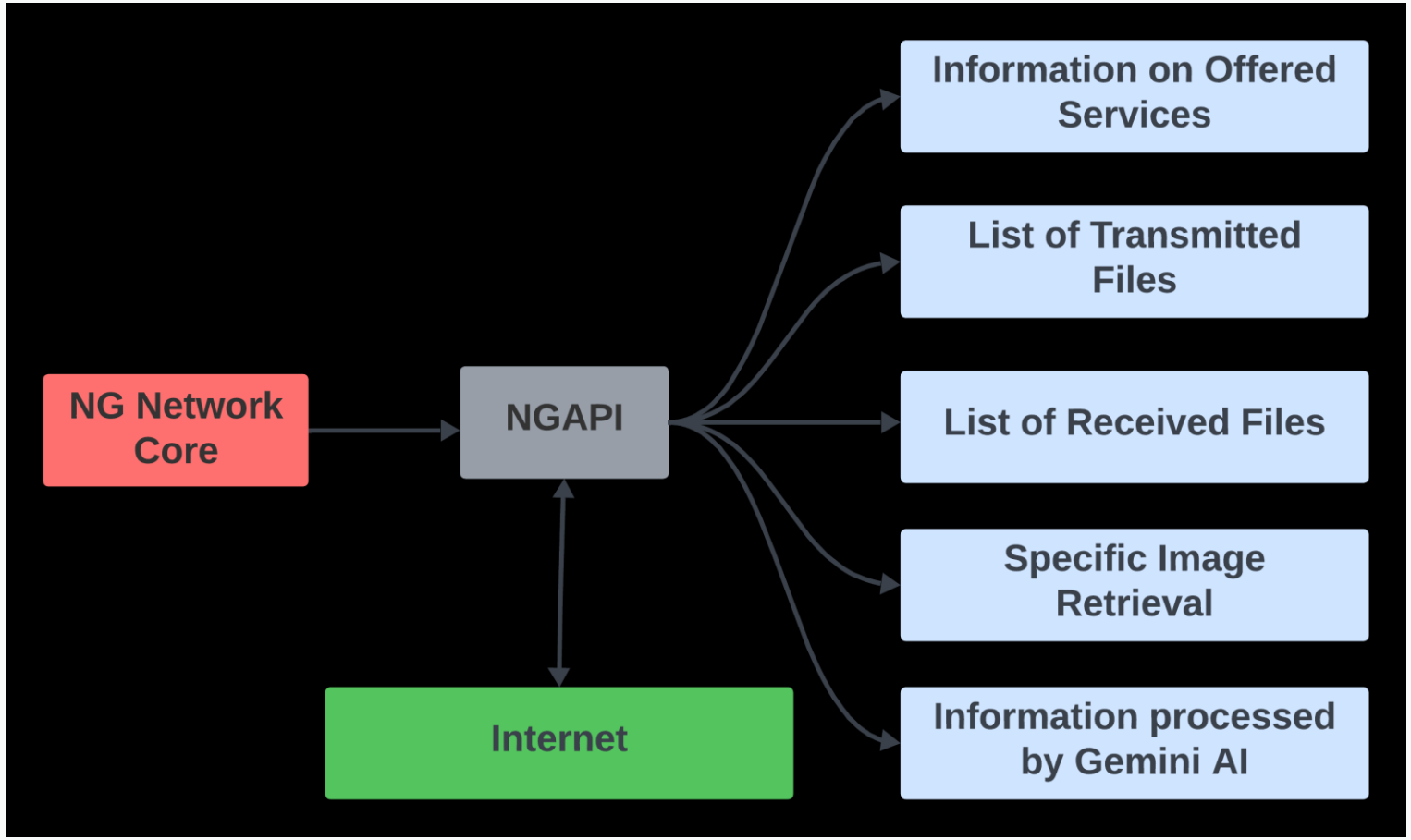
NDN	Content-oriented interoperability framework for current and future Internet architecture (**COIN**)
RINA	PerformanceEnhancing Proxy for Deploying Network Architectures (**PEP-DNA**)


User
Proxy Gateway
FIA Network
Proxy Gateway
Internet
Content request
Translated request
Content request
Content request
WEB content
WEB content
WEB content
WEB content

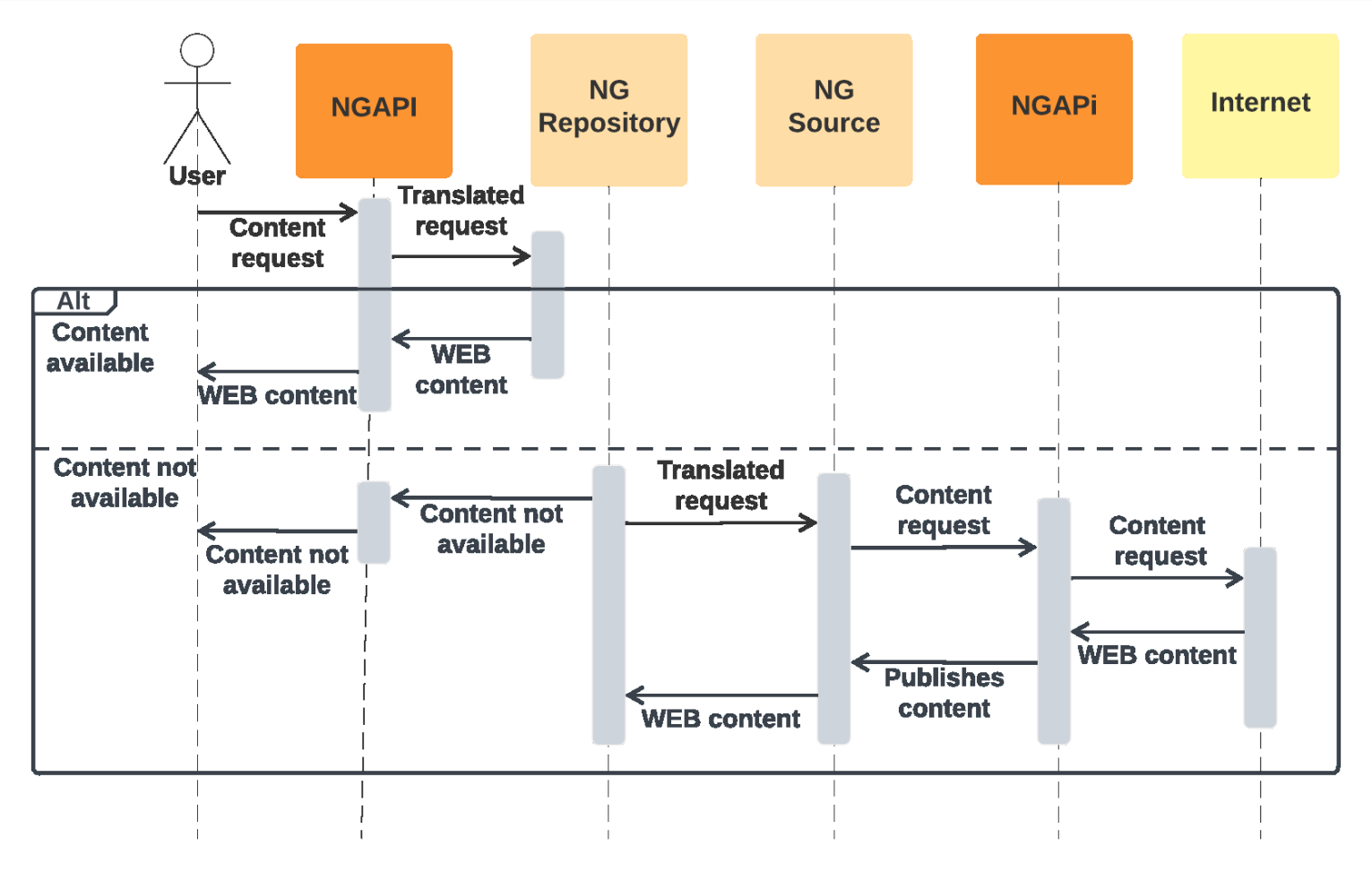
System architecture

- Modular approach
  - NovaGenesis core
    - Name Resolution
    - Content Distribution
    - Service Discovery
  - NGAPI
    - RESTful APIs to expose NovaGenesis data.
    - Interoperability
      - Facilitates communication with the internet and external applications.
  - NGMonitor
    - Real-Time Insights
    - Insights Enhanced using AI
    - User-friendly interface

NGAPI: Enabling Interoperability in NovaGenesis

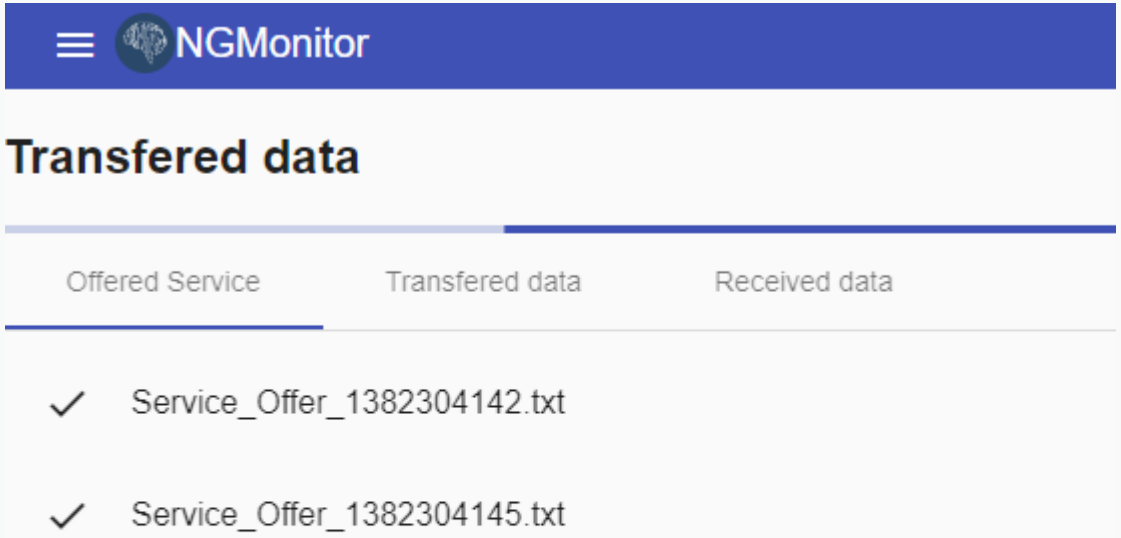


NGAPI: Enabling Interoperability in NovaGenesis



NGMonitor:

- Web-based dashboard
  - Insignts from NovaGenesis network
    - Visualization of the Service Offer:
    - Data Flow Monitoring
    - Image Visualization
  - Hierarchical Visualization powered by AI



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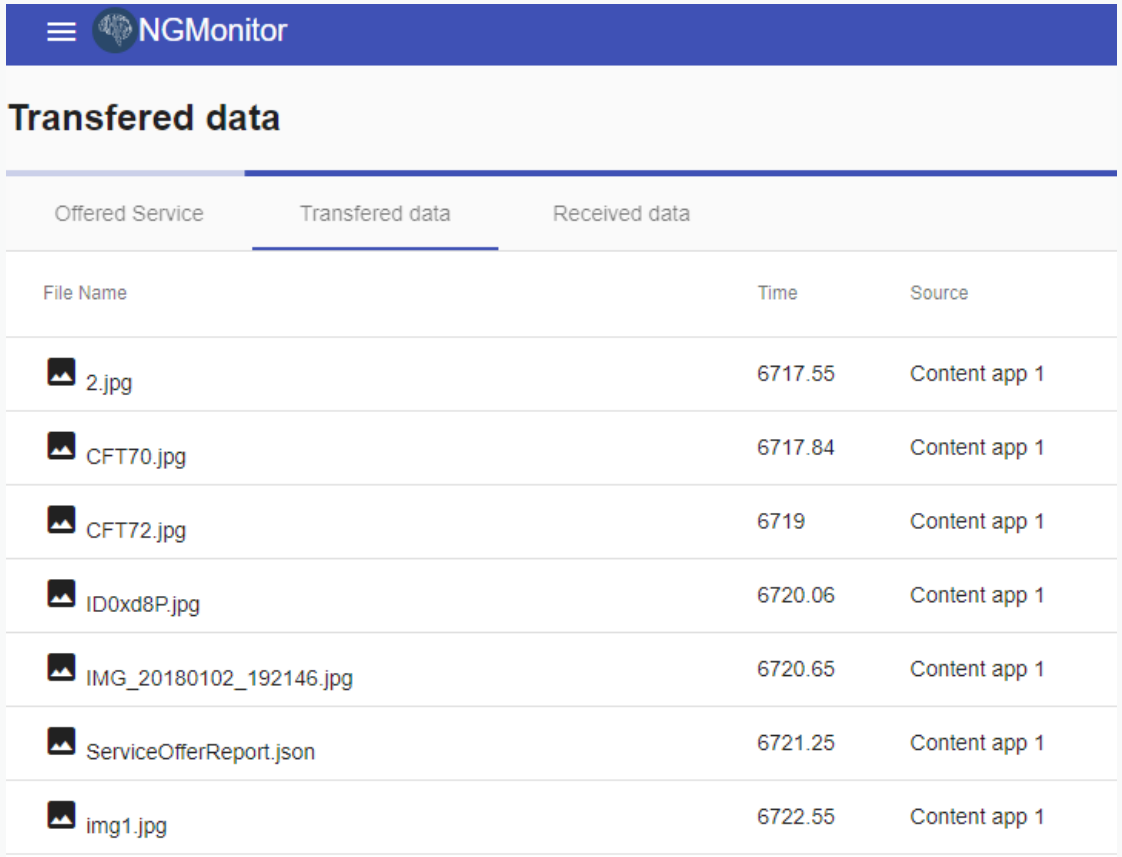

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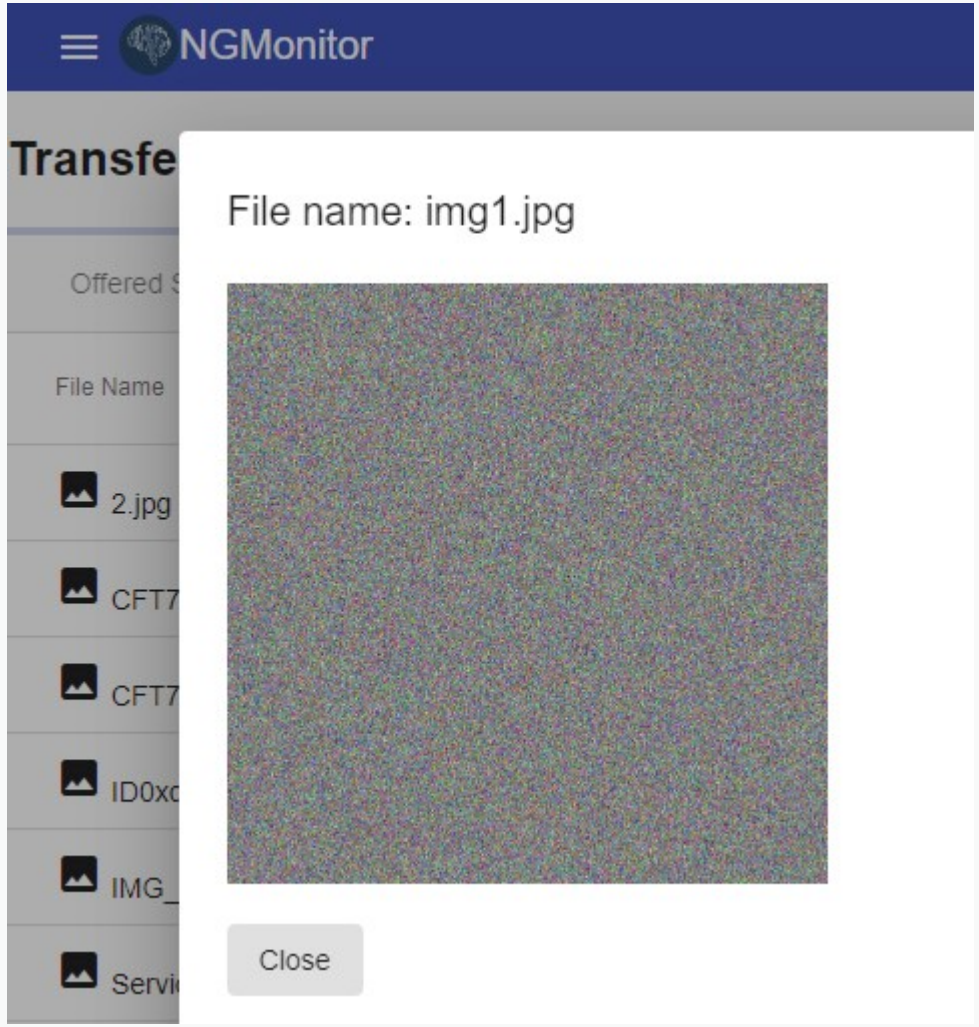

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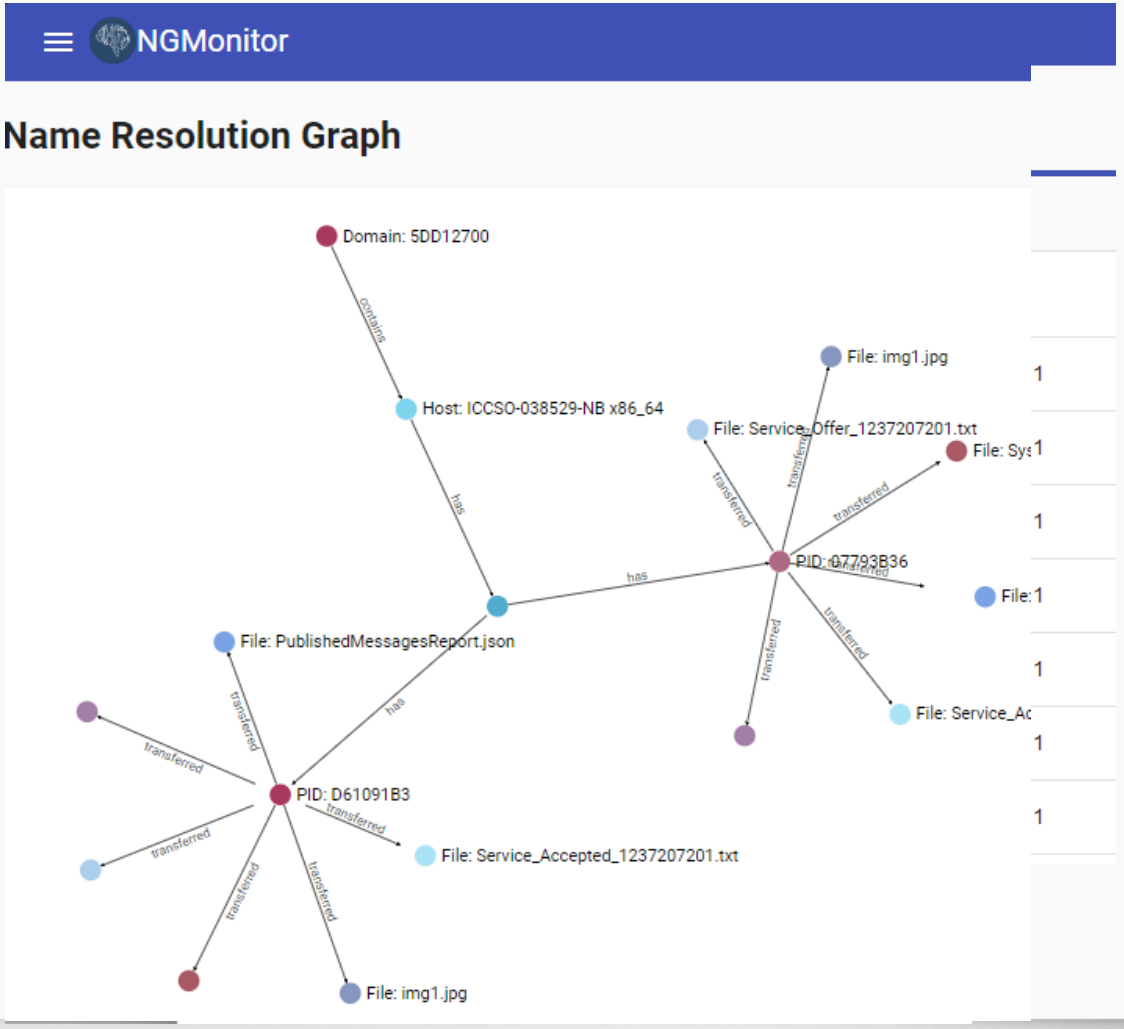
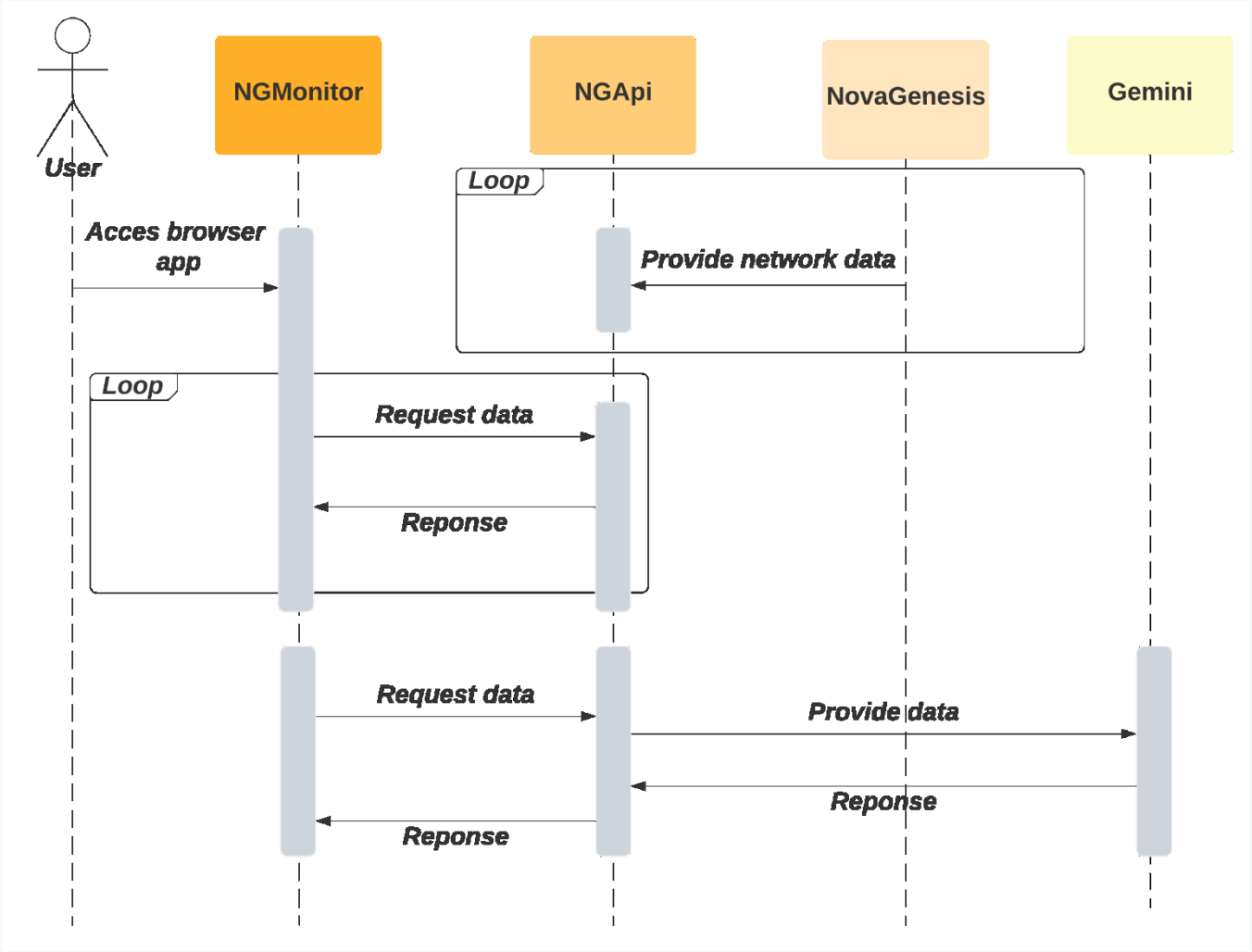
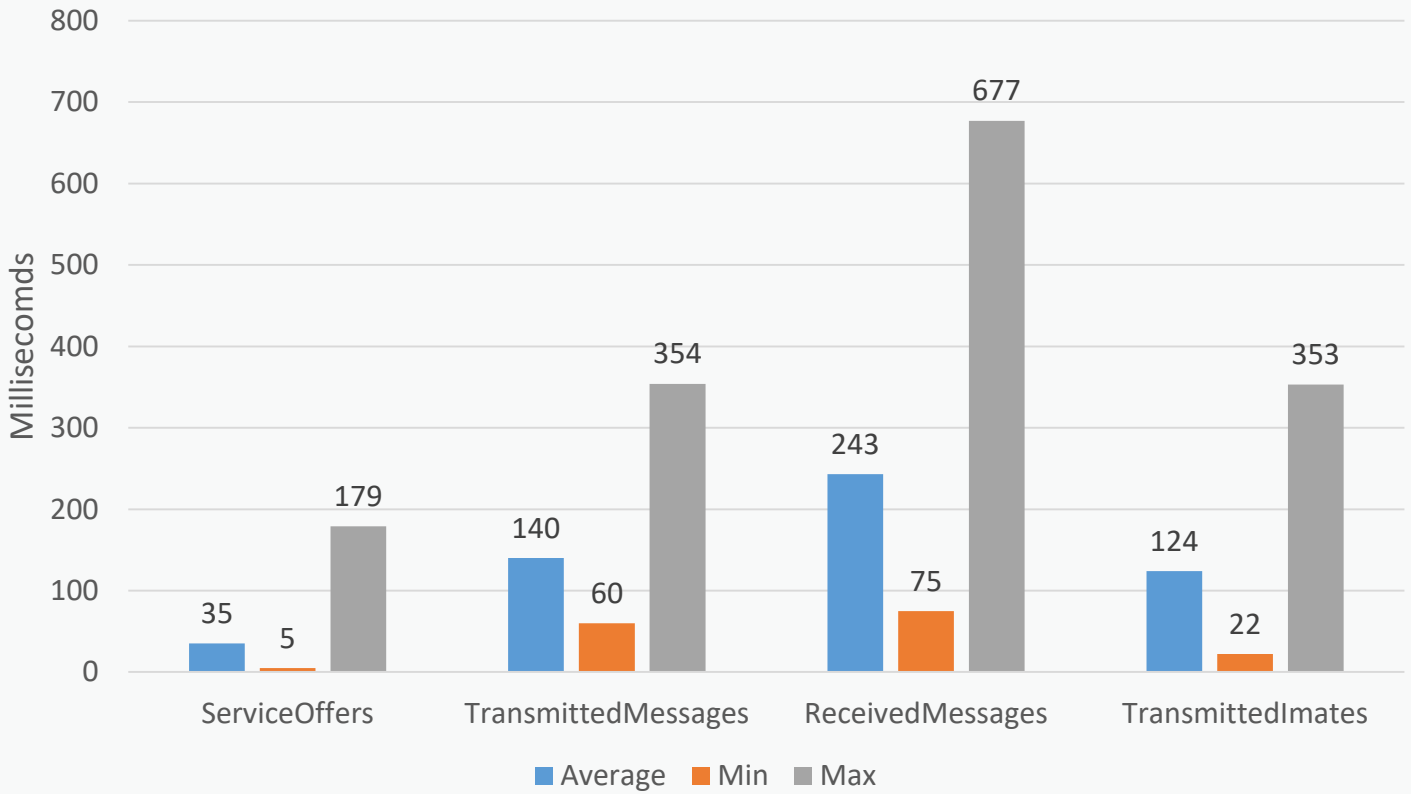



User
NGMonitor
NGApi
NovaGenesis
Gemini
Loop
Provide network data
Acces browser app
Loop
Request data
Reponse
Request data
Provide data
Reponse
Reponse

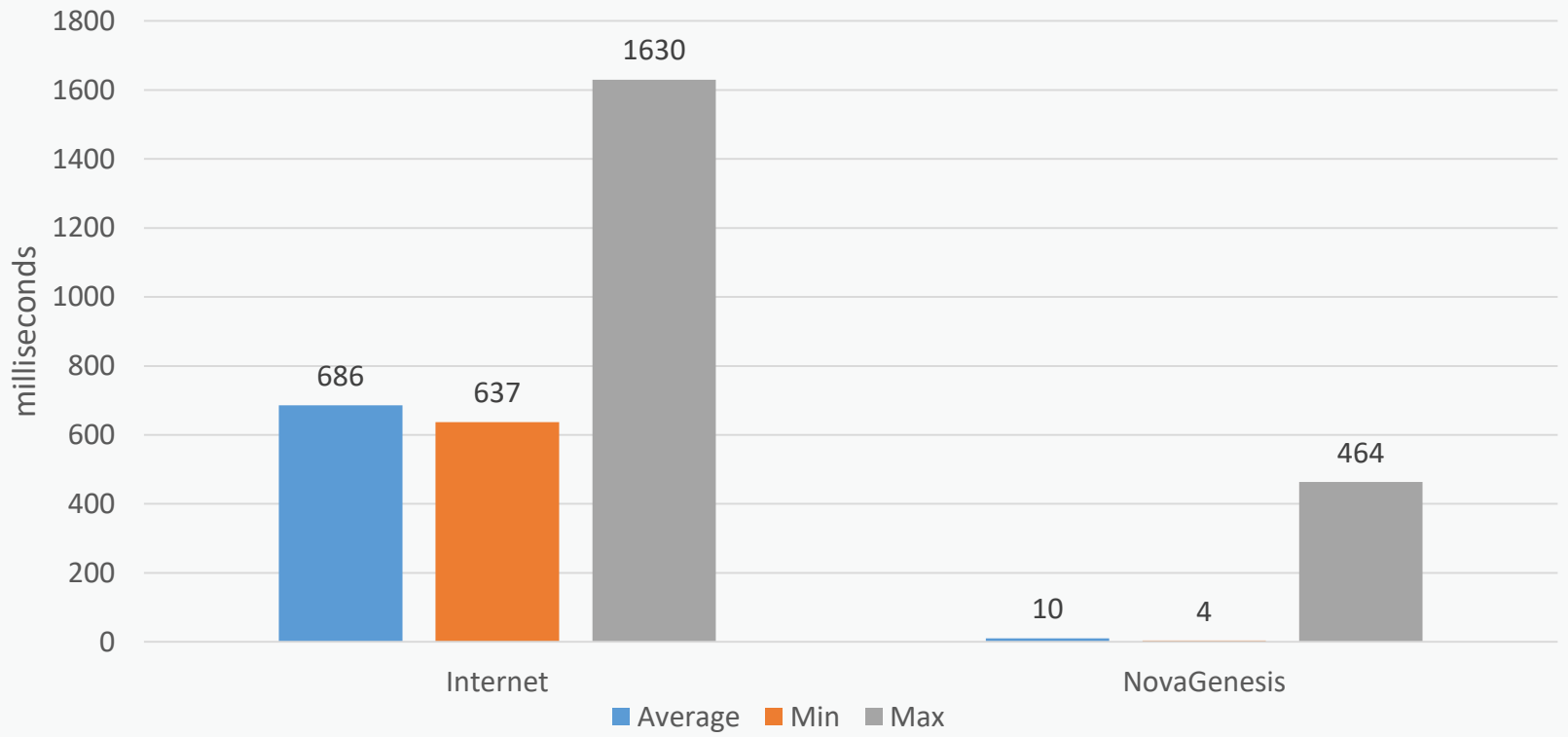
Results

- Comsuption of NG Related data



Results

- Comparison between Internet API and NovaGenesis NGAPI



Conclusion

- Addressing the Interoperability Challenge
- NGAPI and NGMonitor as Bridging Tools:
  - Pioneering tools for interoperability and analysis within NovaGenesis.
  - Addresses the gap between FIAs and the existing internet.
- Synthesis of Key Attributes:
  - Interoperability, Real-time visualization, and AI-driven Analysis.
- Benefits for Users:
  - Enables TCP/IP based applications over NovaGenesis.
  - Real-time network insights for administrators, developers and researchers.
  - AI-powered identification of network resources.
- Smooth Transition to FIAs:
  - Provides a way to move towards more interconnected and versatile ecosystems.
  - Emphasizing the importance of coexistence between IP based and future technologies.

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