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Introducing Frogans: A New Medium on Top of the Internet

PRESENTED BY: Alexis Tamas, co-inventor of the Frogans technology, OP3FT
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The Web is not the Internet

- The Internet: the global network for interconnecting devices of any kind
- The World Wide Web lives on top of the Internet
- The Web is a medium for publishing content on the Internet
The Web is not the only medium on top of the Internet

- E-mail
- Instant Messaging
- FTP
The Web is not the only medium on top of the Internet

- Internet designed as an open system

- A new medium can potentially come out of the blue at any time (Leonard Kleinrock)
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Frogans as a new medium for publishing content

• Exists alongside the Web

• Used to publish Frogans sites

• Complementary to the Web, not intended to replace it
Frogans as a new medium for publishing content

- Designed as new generic software layer
Frogans as a new medium for publishing content

• Design philosophy: “Think Users First”
  – typical end users have limited technical knowledge and their time is precious
  – end users should not be dominated by the technology
  – end-user interests should take center stage

• New kind of communication between end users and content publishers, suggesting:
  – visual communication over text
  – focused content over long pages
  – natural interaction over complex user interfaces

• Should provide a fundamentally different end-user experience compared to the Web

• Perceived as invisible, universal, safe, and protective of privacy
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Released in the form of an open standard

- Not a proprietary technology, not a product
- Defined by technical specifications with reference implementations
- Available to all free of charge
- License to use is perpetual
- Provides a stable environment for building projects on top the medium
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Coordinated by a non-profit SDO: the OP3FT

- A non-profit organization (*fonds de dotation*)
- Founded in France in 2012 to hold all the rights to the Frogans technology in perpetuity
- Standards Developing Organization
- Purpose: to hold, promote, protect and ensure the progress of Frogans technology, in the form of an open standard for the Internet, available to all, free of charge
- Coordinating authority, ensures cohesion of all technical components and policies
- Financial model provides financial resources to ensure independence from special interests and major players
- Team of 30 people
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  - Continuity across devices
  - Low bandwidth requirements

• Protecting the interests of end users

• Sustainability and stability

• How you can get involved (R&E community)
First step: get Frogans Player

• Frogans Player: secure software for navigating Frogans sites

• Available free of charge: https://get.frogans
  - no personal data collected

• Runs on multiple devices:
  - desktop (Windows, Mac, Linux)
  - smartphones and tablets (iOS and Android)

• Does not play Web sites

• Web browsers cannot play Frogans sites
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Access via Frogans addresses

• Frogans addresses: new identifiers to access Frogans sites
• Built around the asterisk (like E-mail addresses are built around the @ sign)
• Short and simple pattern: Network-name*Site-name
  - Public Frogans networks: frogans*mySite
  - Dedicated Frogans networks: myBrand*mySite
Access via Frogans addresses

• International identifiers

**Network-name** *Site-name**

Nombre-de-red * Nombre-de-sitio

Название-сети * Название-сайта

اسم-شبكة * اسم-موقع

네트워크-네임 * 사이트-네임

Number of languages available for registering Frogans addresses

Nom-de-réseau * Nom-de-site

ネットワーク名 * サイト名

šم-رشتاتش * شم-أاتر
Access via Frogans addresses

• 10 Linguistic Categories:
  - LC-Latin  LC-Chinese  LC-Japanese  LC-Korean  LC-Arabic
  - LC-Cyrillic  LC-Hebrew  LC-Devanagari  LC-Thai  LC-Greek

• Written left-to-right or right-to-left

• Defined by two technical specifications:
  - International Frogans Address Pattern (IFAP)
  - Frogans Address Composition Rules (FACR)

• Registered in the Frogans Core Registry (FCR)
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On-screen presence of Frogans sites

• Demonstration of Frogans Player on desktop
  – Limited size
  – Frogans sites float directly on the screen
  – Browser has disappeared
  – Frogans sites independent from one another
  – Visual format, can take any shape
  – Natural interaction: grab, move, resize
  – Navigation buttons blended into the content
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• Protecting the interests of end users

• Sustainability and stability

• How you can get involved (R&E community)
Complementing Web sites

• Does not replace the Web but lives alongside it

• No client-side scripting mechanisms on Frogans sites

• Small but complementary: Frogans sites stay on the screen

• Bidirectional links to move freely between Frogans sites and Web sites (including ‘leaptofrogans’ URI scheme submitted to the IETF for IANA registration)
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• How you can get involved (R&E community)
Continuity across devices

- Demonstration of Frogans Player on iPhone
- Frogans sites are identical on all devices, down to the pixel level
- Can remain with end user all day long across different devices (home, car, train, office)
- Future devices: Frogans sites on TV, Virtual Reality devices, smart watches...
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• Protecting the interests of end users

• Sustainability and stability

• How you can get involved (R&E community)
Low bandwidth requirements

- Frogans slides are lightweight:
  - Each FSDL document limited to 64 KB
  - Entire Frogans slide, including all resources, limited to 256 KB
- As a result, Frogans slides load quickly even over slow connections, e.g.
  - urban locations that are not covered efficiently by a wireless mobile network
  - urban locations where the network infrastructure is congested during peak hours
  - rural regions, as well as parts of the world, where high-bandwidth network connections have not been deployed
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Architecture overview

Drawn by Vint Cerf
Architecture overview

- End-user device (client)
  - Frogans Player

- Server hosting a Frogans site
  - Frogans Core Registry (FCR)
    - Multi-Stakeholder Interface
    - FCR database

- Internet

- FNSL document
  - Domain name
  - Technical parameters for the connection (including security level)

- FSDL-Request document
- FSDL document

- IP, DNS, TCP, TLS, HTTP
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A new security model

• Security issues with the Web
  - typical end users are in an environment that creates permanent, indirect pressure on them
    • browsing Web sites can be dangerous, regardless of any precautions taken
    • problems can arise when browsing any Web site
    • if typical end users try to take the bull by the horns in order to mitigate such security risks, they have almost no chance to succeed
    • when typical end users are browsing Web sites and are interrupted unexpectedly by a security notification from their Web browser, they are never sure whether they are making the right decision

• With Frogans sites, end users don't have to take care of security matters
A new security model

• Key properties of the new Frogans security model (1/5)
  – Frogans addresses (identifiers) are secure by design
    • Short and simple, no confusing technical information
    • Resolved on the Internet
      - through global system bootstrapped from dedicated TLD
      - using digital signatures to ensure authentication, data integrity, authenticated denial of existence
    • Never redirect
A new security model

• Key properties of the new Frogans security model (2/5)
  
  − Connections to Frogans site servers are operated in a purely deterministic manner
    
    • Technical parameters of the connection to a given Frogans site server are known prior to establishing the connection
    
    • The predetermined security level of the connection applies for the entire content of the Frogans site
    
    • If the connection relies on a public key certificate received from the Frogans site server, then a hash of this certificate is known prior to establishing the connection
    
    • The method for considering whether an established connection is secure, as regards privacy and reliability, is predictable (UCSR path)
A new security model

• Key properties of the new Frogans security model (3/5)

  – The nature of the files conveying the content of Frogans sites is innocuous
    • FSDL documents, used as foundation of Frogans slides: text files in XML format containing simple descriptors
    • Auxiliary files, used to enrich content of Frogans slides: based on simple, well-tested formats, such as PNG, JPEG, and GIF
    • Only FSDL documents and auxiliary files are accepted from servers
    • FSDL documents and auxiliary files cannot be modified dynamically on devices
A new security model

- Key properties of the new Frogans security model (4/5)
  - Protective measures are applied systematically when treating files received from Frogans site servers
    - FSDL documents are decoded, parsed and validated following strict processing rules
    - Auxiliary files are decoded using software embedded in Frogans Player
    - FSDL documents and auxiliary files are kept in RAM, never written to the local storage on end-user device
    - No means for end users to bypass protective measures
    - Strict parsing of files received from server
A new security model

• Key properties of the new Frogans security model (5/5)
  – Frogans Player software protected against malware
    • No add-on module system
    • Always downloaded from a single location: https://get.frogans/
    • For versions of Frogans Player created by independent developers: source code reviewed and recompiled by the OP3FT
A new security model

• Precautionary principle:
  – Implementations required to be conservative in what they do and also in what they accept from others

• Security policy rules: means for efficiently resolving any vulnerabilities appearing in design or implementation of technical specifications
A new security model

• Vigilance required:
  – End users need to remain vigilant
    • as regards the security of the device they are using
    • whenever they obtain or give sensitive information via a Frogans site
    • Frogans site publishers need to remain vigilant as regards the security of their servers

• With Frogans as a medium, end users can explore online content with confidence
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Privacy protection

- Privacy issues with the Web: invasive tracking mechanisms (1/4)
  - First-party cookies used to keep track of previous visits
  - Third party cookies used to track end users across Web sites with content managed by third parties
  - Other mechanisms:
    - Flash cookies
    - HTML5 cookies
    - Web browser fingerprinting
Privacy protection

• Privacy issues with the Web: invasive tracking mechanisms (2/4)
  - End users in unfavorable position concerning invasive tracking mechanisms:
    • End users must accept them (not an option)
  - If end users try to find out what information is collected:
    • Web publishers: provide long, confusing Web pages describing tracking mechanisms
    • Web browsers: information is hard to access (or even impossible on smartphones)
Privacy protection

• Privacy issues with the Web: invasive tracking mechanisms (3/4)
  – If end users try to get rid of invasive tracking mechanisms:
    • if they delete all cookies: new cookies will be sent
    • If they block cookies: their browsing experience will be overly limited
    • if they try to block cookies selectively: far too complicated and time-consuming
    • Web browser extensions: incompatible with some Web sites
    • settings like "Do Not Track": effective only if applied voluntarily by publisher
    • if end users manage to get rid of certain invasive tracking mechanisms: they become even easier to track because very few users do so
Privacy protection

- Privacy issues with the Web: invasive tracking mechanisms (4/4)
  - Invasive tracking mechanisms unlikely to disappear anytime soon
    - would require amputating the technical features end users rely on, or blocking Web sites from using them
    - even if some countries enact laws or regulations giving end users control, others may reject those mechanisms
  - All these problems arise because features are designed by Web browser makers, with no standardization or vetting process
Privacy protection

- With Frogans as a medium, privacy is given precedence
- End users are put on equal footing with Frogans site publishers
- Frogans as a medium protects privacy at multiple levels:
  - isolates end users from third parties
  - makes Frogans site publishers accountable to end users
  - prevents leaking of information
  - precludes invasive tracking
  - sandboxes information between publishers
Privacy protection

- Certain levels for which Frogans as a medium cannot protect privacy of end users
  - if end users voluntarily give information to Frogans site publisher and this information is stolen (e.g. due to lax security by the publisher)
  - Internet Protocol requires that IP address of device be provided to publisher
  - network surveillance: Frogans as a medium uses same telecommunications infrastructure and protocols as other generic software layers
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Permanent objectives of the Frogans project

- Balancing relations between Frogans site publishers and end users
- Assuring that the Frogans technology remains both secure and simple
- Elaborating specifications, implementations and policies as a coherent whole
- Fostering employment, innovation and economic development
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Legal environment for stakeholders

- Frogans Technology User Policy
- Frogans Technology Development Contributor Policy
- UDRP-F: FORUM and ADNDRC
- OP3FT Trademark Usage Policy
- OP3FT Privacy Policy
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Financing the OP3FT

- The Frogans Core Registry (FCR) is operated by the FCR Operator (STG Interactive)
- The FCR Operator carries out its business by delegation from the OP3FT, through an exclusive, worldwide license to operate the FCR
- Under the FCR delegation agreement, the FCR Operator pays royalties to the OP3FT:
  - 15% of registry revenues
  - Minimum of €1.8 M per year
- Resources are used by the OP3FT to finance its activities
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Developing an international presence

• Frogans as a medium has reached the point where it is sufficiently mature for being progressively introduced to the general public by the OP3FT

• The OP3FT must ensure that the promotion and future development of the Frogans technology meet the needs of Internet users in all countries

• The OP3FT plans to develop an international presence around the globe

• The OP3FT is currently setting up OP3FT 中国 in China and looking to establish a local presence in the US in the upcoming months
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  – Launching independent research projects and initiatives
Contributing to the development of Frogans as a medium

• The OP3FT manages working groups:
  – improvements to technology conducted methodically, from start to finish
  – all development decisions in line with founding principles of the Frogans technology.

• The OP3FT welcomes feedback and contributions from individuals and organizations

• The OP3FT wants to establish fruitful links with R&E communities all over the world

• The OP3FT will run public-consultation procedures before adopting new policies or technical specifications
Contributing to the development of Frogans as a medium

- Possible types of contributions:
  - development of a technical specification (drafting, review...)
  - development of a software library (design, programming, wrapper, testing...)
  - development of Frogans Player (runtime engine, GUI, maintenance, testing...)

- Upcoming topics:
  - next version of FSDL (Frogans Slide Description Language)
  - next version of FNSL (Frogans Network System Language)
  - new secure networks for UCSR (Uniform Content-Server Request)
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Launching independent research projects and initiatives

- Frogans as a medium opens up a new space for research and innovation on the Internet
- Wide-open fields on top of Frogans:
  - Content and services delivered via Frogans sites (all kinds)
  - Services around Frogans sites (indexing, advertising, payment, etc.)
  - Tools for creating Frogans sites (offline or Web-based authoring tools)
  - Addressing and hosting services (registration, watch services, hosting, etc.)
- Related research:
  - AI (e.g. dialogue involving short, frequent exchanges with users)
  - Blockchain (e.g. using Frogans sites to serve blockchain transactions)
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- Q&A
Thank you for your attention.

For further information: op3ft.org, frogans.org, alexis.tamas@op3ft.org

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