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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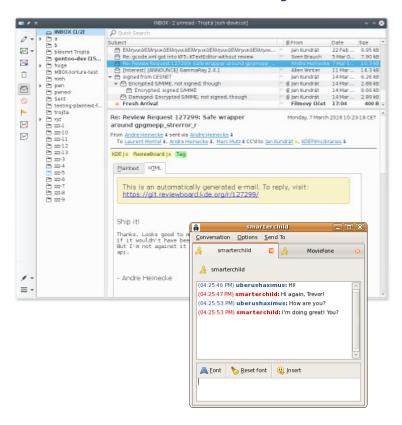
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- Sustainability and stability

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The Web is not the Internet

Let's Share What We Know

World Wide Web

- 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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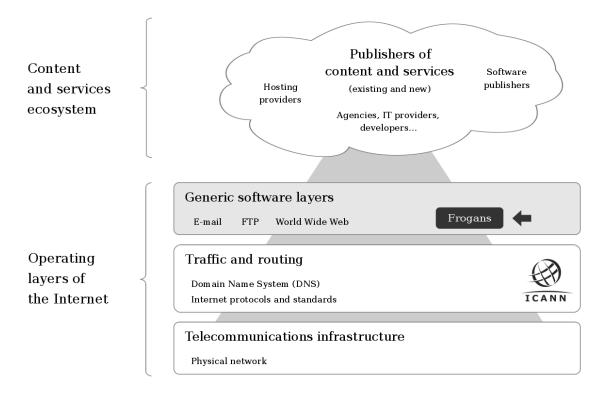
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Frogans as a new medium for publishing content

- 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

Content and services ecosystem

Publishers of content and services
(existing and new)

Hosting providers

Software publishers

Agencies, IT providers, developers...

Operating layers of the Internet

Generic software layers

E-mail   FTP   World Wide Web

Frogans

Traffic and routing

Domain Name System (DNS)
Internet protocols and standards

ICANN

Telecommunications infrastructure

Physical network

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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  - 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

网络名 ✳ 网站名

Название-сети ✳ Название-сайта

ネットワーク名 ✳ サイト名

170+

Number of languages
available for registering
Frogans addresses

اسم‒شبكة ✳ اسم‒موقع

שם-רשת✳ שם-אתר

네트워크-네임 ✳사이트-네임

Nom-de-réseau ✳ Nom-de-site

नेटवर्क-नाम ✳ साइट-नाम

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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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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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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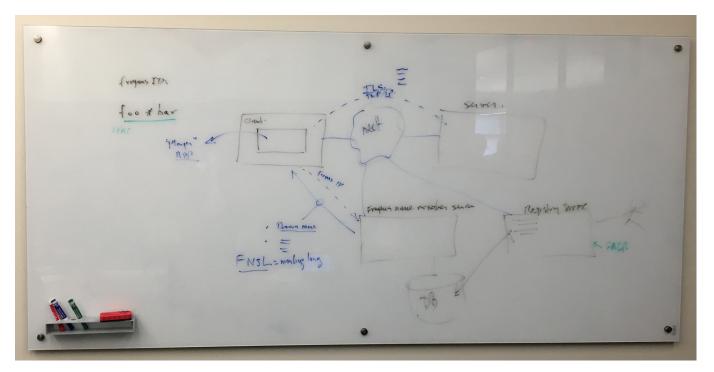- How you can get involved (R&E community)

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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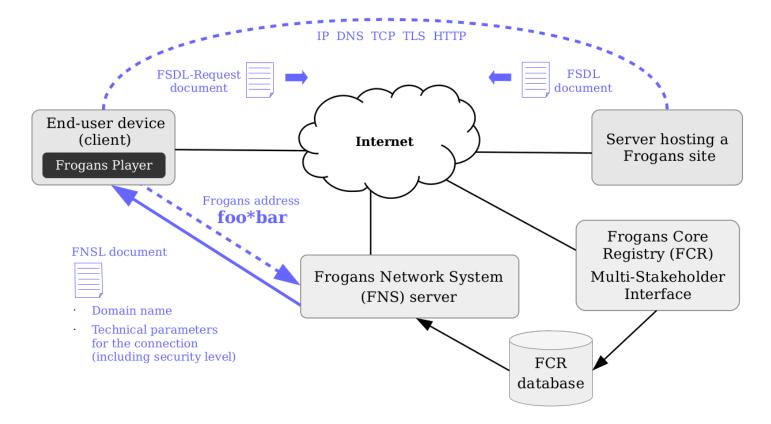
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    – Architecture overview

    – A new security model

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- How you can get involved (R&E community)

Architecture overview

Drawn by Vint Cerf

Architecture overview

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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

    - Legal environment for stakeholders

    - Financing the OP3FT

    - Developing an international presence

- How you can get involved (R&E community)

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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- How you can get involved (R&E community)

  - Contributing to the development of Frogans as a medium

  - 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)

Introducing Frogans: A New Medium on Top of the Internet

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 you attention.

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

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