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THE INFORMATION TRUST EXCHANGE

Trust, identity, personalization,
content and user sharing for the news industry

Information Trust Exchange Framework:
Service Features and Design Specifications

(DRAFT, v3.0 11-05-15 BD)

This WORKING document assembles a series of service goals – and resulting design requirements -- for an ITE network. Care has been taken to be broad in scope, whch leads to some overlapping aspirations. This document should be takes as advisory resource by ITE task groups as they develop Functional Specifications within their scope. It may also be used by enterprises considering operating services under contract to the ITE governing authority, or considering prototyping of ITE-compliant services. Organizations undertaking one or more proof-of-concept demonstrations or prototyping should refer to the "Request for Proposals: Information Trust Exchange Services."

■ *Bill Densmore and Roger Gafke*

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http://newshare.com/newyork/READING-consumer-user-case.pdf

WHAT THE ITE DOES

The Information Trust Exchange establishes and maintains voluntary standards for sharing user information and commerce across TCP-IP networks such as the Internet.

Without encroaching on individual franchises, the Information Trust Exchange (ITE) serves as an information-industry collaborative connecting news enterprises and news consumers. It defines and governs a layer of network protocols for sharing user authentication, profile sharing, copyright payments and billing. Similar to the bank / credit-card system, the network is

overseen by a non-governmental authority on behalf of private -- and competing -- parties. The ITE makes rules for the competitive exchange of both content and users' identity information.

A consumer user should be able to have one account, one ID and one bill with which to acquire a wide variety of content from multiple, otherwise independent sources. A content provider should be able to establish and vary pricing for discrete information objects in real time based on the the user's identity, relationships and use. A service provider should be able to make money by purchasing content at lower wholesale prices and reselling it at higher retailer prices to its users, managing the spread as a business exercise. An advertiser should be able to precisely reach relevant consumers with a personal message, and should be able to reward the user's service provider – and even the user directly – for the privilege of delivering the message.

A. THREE-ELEMENT CORE STRUCTURE

The ITE service has three top-level components:

1. GOVERNING AUTHORITY – A non-stock, public-benefit, member organization which licenses operators of the ITEA Network and develops and maintains ITE rules and standards. It licenses affiliate members to provide services for the operation of the Exchange.

2. ITA PROTOCOLS / RULES-- A set of technical protocols and business rules which govern the transfer of specific information across the public TCP/IP network (Internet) among and between (a) diverse point-of-service (POS) devices, such as laptops, smartphones and tablets and (b) network members, including content providers (CP) and end-user service providers (USP).

3. ITE NETWORK -- A special-purpose network that securely transfers information among and between network members, including content providers, end-user service providers, network operators and network service providers. Operating commercially by contractors to the ITE Governing Authority.

For details about the ITEGA, see the discussion draft: "Information Trust Exchange Governing Association Business Goals, Role and Structure."

The ITEGA's work will enable and establish the playing field for services generally transfer specific information across the public TCP/IP network (Internet) among and between (a) diverse point-of-service (POS) devices, such as laptops, smartphones and tablets and (b) Exchange members, including content providers (CP) and end-user service providers (USP). The services more particularly may:

1. Establish rules about user identity
2. Share user authorizations
3. Allow assembly and sharing of user profiles (when authorized by the user)
4. Steward personally-identifiable information
5. Exchange copyright payments
6. Bill end users
7. Provide end users control over their digital identity with respect to accessing, sharing and purchasing news and information content, and other uses.

8. Establish and enforce a disciplinary process to ensure members and affiliates operate within ITE rules.

- SILOS -- The rules must also allow and support participating affiliates or publishers to continue to operate within their corporate silos. The ITE protocols must be additive to these businesses.

- COOKIES -- At least initially, the rules must permit publishers to insert their own cookies or do other things to identify users, unless or until the Information Trust Exchange prohibits such behavior as a condition of membership, and provides a business-supporting alternative.

SYSTEM DESIGN OBJECTIVES

USER NEEDS TO BE MET

- Improves discovery, access to trustworthy, relevant information
- Create, manage, share, value "persona"
- Privacy rights understood, respected
- Higher-quality advertising

BUSINESS REQUIREMENTS TO BE MET

- Improves user advertising experience (load times, targeting, etc.)
- Facilitate better ad monetization
- Organizes, makes transparent, marketplace for user data exchange
- Helps drive emergence of standards for use data ownership / sharing
- Reduces need/potential for regulatory interventions
- Alternative to proprietary platforms

SYSTEM FEATURES

CORE FEATURES

- Single-sign-on facility
- Data exchange for user-identity information
- Exchange for advertising and content value ($$$ or other)
- Ensures market competition on price, service, terms

OTHER POSSIBLE FEATURES

1. User-created and updated profiles of preferences, interests and demographics
2. Ability to match dynamically-specified buyer interests with customized seller offerings
3. Ability to selectively share your interests with colleagues, family or friends
4. Discovery service focused on quality, trusted content, uniformly tagged/identified
5. Allows content owners (publishers) to track and control access to their work
6. Allows each content owner to price their own content for varied uses
7. Allows sale of content on a per-click or subscription basis
8. Allows user to be rewarded for viewing sponsored content
9. Does pre-empt or interfere with each publisher's own "silo" payment strategy
10. Allows content access to be variable depending upon user attributes
11. Allows publisher to apply price to digital content
12. Allows publisher to vary price depending upon use or user or time
13. Allows publisher to allow access based upon variable subscription rights
14. Exchange does not play any role in setting pricing or commercial service offerings, just transferring data about them. *(i.e., "managing the marketplace")*

PROPOSED SERVICE REQUIREMENTS

1. No permanent, central names/identity database
2. Goal of compatibility with existing user data management systems
3. User has priority control over adding, removing, changing personal attributes
4. Supports plurality of both service and content providers
5. Variable trust/security levels consistent with financial value at stake
6. Capable of welcoming/cross-authenticating users from existing academic, commerce, government networks
7. Must facilitate sharing/aggregation of user attributes, *where permissioned by user*, for real-time ad serving (in principle no different than accessing other content; the ad server is a "content provider" who must be a member of the ITE).
8. Must enable periodic aggregation and settlement of access and payment records
9. Exchange does not play any role in setting pricing or commercial service offerings, just transferring data about them. *(i.e., "managing the marketplace")*

MINIMUM ATTRIBUTES EXCHANGE

EITHER / Dynamic (temporary) caching at auth service of user attributes, such as:

- First name saluation (if permissioned)
- Zip code (if permissioned)
- "Home base" unique identifier
- Subscription identifier(s)
- Credit auth. for single-item purchase (decrementable by auth service)

OR / Access key to user attributes stored at service provider
-- Similar attributes as above

Provision(s) for real-time sharing –- for customization/personalization of services –- of user profiles, preferences, permissions among system and content providers (including advertisers) who are certified ITE system members.

Logging by "central shared service" of user events/activities within network including specific attributes necessary for off-line aggregation and distribution of payments/charges. *(Design goal: This happens without PII, just a alphaneumeric user ID that is opaque to all parts of the system except the user's identity service provider ("home base.")*

B. OPERATING COMPONENTS

1. Enrollment/registration processes that screen (and protect) users
2. Creation of secure credential with user-set privacy levels
3. Single sign-on capability for participating sites
4. User-created and updatable profiles of preferences, interests and demographics
5. Certification of trusted providers and participants
6. Ability to match dynamically-specified buyer interests with customized seller offerings
7. Transparent payment capability with user-specified ways to pay
8. User-defined rewards that can be collected among user-specified provider participants
9. Visa-like payment engine/network/capability to slice-and-dice payments, establish and enforce rules, handle problems, service customers, provide reports, administer licenses/IP, etc.

C. STRATEGIC ASSUMPTIONS:

1. STANDARDS -- While the number and independence of original news producers is an important element of a diverse press, the lack of collaboration on digital-media standards for sharing users and content value is impairing support for journalism. Collaboration on network sharing protocols and business rules is therefore essential to sustain competitive, independent journalism.

2. PRICING -- The value of news objects vary widely based upon their timeliness, topic, type (long, short, investigative, narrative, spot, trade, MST) and application. News objects (stories, video, multimedia) increasingly are disengaged from publisher packages by aggregation and "atomization." Therefore, royalty-owning publishers need a way to assign and transfer value (pricing) of individual objects across a sharing network. A royalty-pool model fails because it removes value assignment from the original publisher. Consequently, a system must respect the pricing set by originating publishers (at wholesale), while allow the free assignment of pricing at the consumer (retail) level. Content objects must be available for sale on a bundled, subscription or *a la carte* basis.

3. PRESERVE SILOS -- Nothing will restrict or inhibit a participating affiliate or publisher from continuing to operate within their own or other's user-management or value-exchange sharing services. A good analogy might be to a department or big-box store that accepts Visa or Mastercard, but also continues to offer its own store revolving credit card.

4. PRIVACY – To gain marketer/advertiser participation, the Information Trust Exchange must support mechanisms for aggregating and sharing demographic, interest and preference data about individual users upon transparent terms acceptable to the individual. This calculus inherently raises issues of personal privacy for end users.

5. REMOTE USER SERVICE – Publishers using the ITE system will be willing to sell information resources to anonymized incoming casual or "drive-by" users (a la "newsstand customers") at a reasonable price they establish, without knowing the identity or detailed information about these "guest" users.

6. PROFILE DATA SHARING – ITE service providers who establish accounts and manage the persona and privacy of their users will be willing to share some demographic and interest information about their users to third-party publishers as a condition of those publishers being willing to provide services to those users.

D. CORE SERVICES

1. Every click across the network that involves an exchange of value (a payment for an article or a reward for viewing or doing something) is logged to an authentication and logging service, which is seen by the system participants as a "central shared service" although in network practice it may be distributed and hierarchical as with DNS.

2. The logging service knows the user only by a unique alphanumeric identifier supplied by the user's "home base" at the start of that particular session. As a matter of policy, the logging service shall not sell or provide clickstream data to ANYONE and provides it only to the user's home service provider for their purposes (and for audit purposes to the publishing content provider if requested). The identifier -- to anyone other than the home base itself -- reveals nothing more than the identity of the user's home base.

3. There may be a plurality of home-base account managers in the service (as there are thousands of home bases in Shiboleth/Internet2), providing end users a high degree of choice regarding business terms, especially as to identity and privacy.

4. At settlement time, the settlement service bundles all the clicks -- sorted by home-base of the users on the one hand and by the vending publisher on the other hand -- and determines an aggregate debit or credit to charge the home base and an aggregated credit or debit to charge the publishers (note that a "publisher" could be a brand which is paying for a user to view a commercial message). This all is done periodically -- daily, weekly, monthly -- probably weekly in prototype -- across the bank ACH network.

5. The home base gets these bundled log reports and is free to sort them or use them as they wish (subject to their terms of service with the end user as to usage and privacy protection or not); in some cases there may be a discrete charge or payment to the end user for a particular access; in the vast majority of cases, one supposes, the home base will use the click-stream reports for demographic, marketing and business-model analysis but the end user will merely be paying a monthly subscription for some class of service.

6. The publisher (or information service provider), also gets bundled log reports of total usage so they can audit their payment or receipts, and the only sorting they are capable of doing is by the source of the end-user (i.e., their service-provider ID). Conceivably they might have methods to associate these anonymized usage reports to specific users, but the ITE would be in the business of making business rules governing this practice and the rules would be enforceable by anything up to the ultimate sanction -- cutting the offending information service provider off the system.

The provision for non-regulatory sanctions is one of the reasons why the governance and ownership of the service is so critical. The cutoff decision has to be the result of well-documented interchange rules (consider Visa as a model in this regard), and the entity making the decision has to have no competitive business interest one way or the other but rather ony an interest in the fair administration of the service and due regard for evolving identity and privacy rights of end users. Hence, the need for a non-governmental and non-investor-owned entity with a mission to efficiently oversee and operate a service and not profit from it. Profit is for the publishers and service providers who use the service.

E. _ OPERATIONAL FEATURES:

1. PRIVACY BY DESIGN – ITE services are designed to enable the public user to control when and how personally identifiable information (PII) is used or shared, to withdraw such information and "port" it; and to understand and engage in fair business negotiation over the value of the user's data – both PII and aggregated. Information about end-user identities are known only to the end-user's service provider. The Exchange system and other members only know users by a standardized unique alphaneumeric identifier.

2. PROFILE SHARING – – Create mechanisms for aggregating and sharing demographic, interest and preference data about individual users upon transparent terms acceptable to the individual. Allow ITE service providers who establish accounts and manage the persona and privacy of their users to share with user permission some demographic and interest information about that user to third-parties with the ITE service. This creates the opportunity for an entity or entities that would help consumers manage their personas across a variety of information services – some paid and some that pay, or reward (e.g. rewards programs).

3. DYNAMIC PROFILING – Give publishers (who offer their content across the ITE) real-time personal, demographic, preference or interest attributes of a user/reader at the time the user

makes an online/mobile request for information (and with the user's explicit permission), so the publisher can respond with useful, customized messages or services.

8. ADVERTISERS -- Enable an advertiser to precisely reach relevant consumers with a personal message, and reward the user's service provider – and even the user directly when the user is prepared to be uniquely identified – for the privilege of delivering the message.

    - Sanction online advertising exchanges to work in milliseconds with demand-side and sell-side platforms to match willing advertisers with willing publishers and aggregators to deliver "impressions" to interested consumers. Prices range dramatically, as do the content and form of the advertisements.

    - Enable the delivery of precisely-targeted advertising and other commercial content relevant to a reader's expressly shared demographic profile, social networking connections, ad content preferences and browsing history

4. MICROACCOUNTING -- Sanction and govern a clearing-house settlement process for payments and credits among publishers and user-account managers for two-way value exchange. Publishers should not be required to participate in operations that "pool" royalties. Rather, a feature of the service should be census-type (vs. polling, pooling or sampling) logging and aggregation of billable content requests, with clearing-house settlement of payments and credits among publishers and user-account managers for such things as content access or ad views.

5. ONE BILL/ACCOUNT –The service will enable a user/reader to have one bill/one account/single sign-on access to information from (virtually) anywhere, by subscription or by click/action.

6. SERVICE NEGOTIATION -- Support a real-time query and reply to confirm desire of the end user to acquire the resource based upon its cost, value or other attributes including their preference information when making an information request.

    - Enable multiple ways to create personalization of content preferences including a mixing and matching between inferred and expressed referencing.

    - Create a means to deliver contextually-relevant content recommendations to Exchange members.

4. DYNAMIC PRICING – Enable a content provider to establish and vary pricing in real time, within the law, for discrete information objects in real time based upon the user's identity, location, relationships and/or intended or actual use. *This is the reciprocal of dynamic real-time advertising selling.*

5. WHOLESALE-RETAIL PRICING – Enable a service provider to make money by purchasing content at lower wholesale prices and reselling it at higher retailer prices to its users, managing the spread as a business exercise and monetization strategy.

6. LOGGING ACTIVITY – Clicks across the Exchange that involves an exchange of value (a payment for an article or a reward for viewing or doing something) is logged to an authorization and logging service, which is seen by the system participants as a "central shared service" although in Exchange practice it may be distributed and hierarchal as with domain name service (DNS). The activity is aggregated – only -- to the user's home-base service provider for billing and analysis – contingent upon explicit permission of the user.

7. LOGGING REPORTS -- At settlement time, the settlement service bundles all the clicks -- sorted by home-base of the users on the one hand and by the vending publisher on the other hand -- and

determines an aggregate debit or credit to charge the home base and an aggregated credit or debit to charge the publishers (note that a "publisher" could be a brand which is paying for a user to view a commercial message). This all is done periodically -- daily, weekly, monthly -- probably weekly in prototype -- across the bank ACH Exchange with log reports sent to the home bases and publishers.

8. CONTENT ACCESS -- Give publishers assurance that the person is authorized to view the resource requested and that, if money is involved, the money is going to be handled and publishers will get or give what the person expects.

9. CONTENT PACKAGING – Facilitate custom assembly by the end user of information services from a variety of topical and geographic-oriented sources into personalized subscription packages.

10. CONTENT REPOSITORY -- Sanction one or more external or outsourced “cloud” services for storing and indexing news content uploaded by publishing members who prefer not to host their own content.

9. FREEMIUM vs. FREE –Allow the public user to chose among a range of options from (1) no advertising and no disclosure or use of their tracked activity in a subscription-based approach to (2) receipt of highly customized commercial messages and the wide, background marketing of their information preferences in a rewards-based program approach.

10. SUBSCRIPTION OR PER-CLICK – In order to satisfy the requirements of a plurality of publishers and service providers, the service should offer end users both sale or receipt of digital items within a pre-paid subscription package -- as well as being able to dynamically query the user if they want to purchase a particular resource on a one-time, one-item basis. The goal: Enable a plurality of subscription packages with pricing -- as in a free market for digital information -- set by the service provider who holds the end-user's account, and also set by the publisher who wants pricing control over their content.
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11. REMOTE USER SERVICE – Enable publishers to sell information resources to anonymized incoming casual or “drive-by” users (a la “newsstand customers”) at a reasonable price they establish, without knowing the identity or detailed information about these “guest” users, or having to establish a one-off relationship with them.

12. SANCTIONS -- Create sanctions and sanctions process for violation of the rules/protocols of the ITE by its member/clients. Those applying the sanctions must have no competitive business interest in the process/outcome -- thus the need for a non-governmental and non-investor-owned entity with a mission to efficiently oversee and operate a service and not profit from it. Profit is for the publishers and service providers who use the service.

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F. TECH DESIGN REQUIREMENTS

BEDROCK FEATURES:

i. Single-signon facility
ii. Data exchange for user-identity information

iii. Payment exchange for advertising and content value
iv. Ensures market competition on price, service, terms

A fully operational set of services governed by the ITE would offer or aspire to many of the following attributes:

1. A set of technical protocols and business rules govern the transfer of specific information across the public TCP/IP network (Internet) among and between (a) diverse point-of-service (POS) devices, such as laptops, smartphones and tablets and (b) network members, including content providers (CP) and end-user service providers (USP).

2. A special-purpose network is provided that securely transfers information among and between network members, including content providers, end-user service providers, network operators and network service providers.

3. Standardized transfer of a unique, non-repudiable user identifier, assigned by a USP, in real time, when a user makes an HTTP request to a CP across a TCP/IP public network, for a unique resource.

4. A shared-resource authentication service, which may or may not be operated in conjunction with or indepent of the logging service, facilitates single-sign-on to ITE-member services. The authentication service accepts user-identity and preference information in a standard format and passes it to publishers and service providers authorized to receive it.

5. Every click across the network that involves an exchange of value (a payment for an article or a reward for viewing or doing something) is logged to an authentication and logging service, which is seen by the system participants as a "central shared service" although in network practice it may be distributed and hierarchal as with DNS.

6. The logging and settlement service ensures reliable payment or other exchange for advertising and content value. It also facilitates market competition on price, service and terms.

7. Each user service provider gets clickstream data about that user which it can use subject to TOS with the end user auditable and enforceable by the ITE as a condition of system membership.

8. Publishers (content providers) do NOT get identifiable information about any user (at least not from this system); they just get assurance that the person is authorized to view the resource requested and that, if money is involved, the money is going to be handled and they will get or give what they expect.

9. This does not stop publishers from setting their own cookies or doing other things to identify users, unless or until the Information Trust Exchange prohibits such behavior as a condition of membership.

10. The logging service knows the user only by a unique alphanumeric identifier supplied by the user's "home base" at the start of that particular session. As a matter of policy, it the logging service shall not sell or provide clickstream data to ANYONE and provides it only to the user's home service provider for their purposes (and for audit purposes to the publishing content provider if requested). The identifier -- to anyone other than the home base itself. -- reveals nothing more than the identity of the user's home base to anyone else in the system other than the user's home base account manager.

11. Supports a real-time query and reply to confirm desire of the end user to acquire the resource based upon its cost, value or other attributes.

12. Real-time authentication back to their USP of a user's credentials and rights upon making a resource request of a CP and prior to serving the request, whether the request is to the CP's servers or to the Network Content Repository.

13. Logging of services provided by unique user, resource provided, and any negotiated and confirmed value of the event. The event could involve serving news content, or sponsored content ("advertising") with the value exchange recorded in either direction.

14. A provision (internal or outsourced) for storing and indexing news content uploaded by members in a Network Content Repository.

15. The ITEA network services may include programs that store and index news content, distribute messages about the content to the members, control access to the content, allow for news search, account for each individual access, account for the due-from and due-to payments cycle and act as the intermediary to an all-new internet payments system.

16. Access identifiers, subscription numbers, financial transaction numbers, member addresses and identifiers are all new and have no equivalent in today's internet environment, rendering any sort of tracking by unauthorized spy programs impossible.

F. TECHNICAL SPECIFICATIONS

We now propose the Information Trust Exchange Architecture (ITEA). It draws significantly upon the proposals of both Buzz Wurzer and Bill Anderson[1] in 2012 and 2013. In some ways, it is conceptually similar to Clickshare Authentication and Logging Service, described in two United States patents.[2] It begins with a set of value propositions continues with functional specifications, and ends with build-out steps.

The ITEA should facilitate:

- Technical protocols for sharing users, content and payments
- Control for users over their demographic, financial and personal data
- Other features proposed at "Blueprinting the Information Valet Economy." *)*

A. THE ITEA ARCHITECTURE – BENEFITS

Buzz Wurzer's bullet-point summary of features and benefits may be found here:
http://newshare.com/wiki/index.php/Rji-pivot-project-new-network-approach
The architecture involves four parties: The (1) End User, the (2) End User Service Provider (USP), the (3) Content Provider (CP) and the (4) network operators collectively operating authentication, logging, and settlement services.

[1] -- Buzz Wurzer is a retired Hearst Corp. executive; Bill Anderson is a retired Seattle SeaFirst bank CTO.

[2] -- http://tinyurl.com/2wtlpu / http://tinyurl.com/2ukwj4 / http://tinyurl.com/csc-patent-2013 / http://tinyurl.com/csc-patent-news / http://newshare.com/disclosure

1) Key benefits of the ITEA architecture:

- Scalability via a plurality of providers
- Choice of services, yet universal access for users
- A free-market for value exchange
- A middleware connection between POS and legacy financial services and advertising networks.

2) Key benefit of ITEA middleware

- User-centric, privacy-enabling service
- Allows independent silos to connect when desired

3) Key benefit of exchange (or association)

- Establishes protocols and rules for network
- Ensures price and service competition
- Avois government control of network
- Avoids private-investor control of network

4) Unique selling proposition

- Makes money sharing users, content, advertising
- Enables incremental growth of ASCAP model

5) Benefits to users

- One account, one-ID, one-bill
- Privacy-protected purchasing
- Control over “persona,” ability to seek offers
- Choice of service providers

6) Benefits to media companies

- Keep control of (but share) user bases
- Deeper relationship with users
- Ability to aggregate users, content

7) Benefits to advertisers

- Standardized, non-proprietary “persona” management
- Ability to simply target users
- Ability to respond to “offers” from users
- Audience measurements by identified user

B. FUNCTIONAL SPECIFICATIONS

Technically, ITEA might consist of two general components:

- ITEA PROTOCOLS -- A set of technical protocols and business rules which govern the transfer of specific information across the public TCP/IP network (Internet) among and between (a) diverse point-of-service (POS) devices, such as laptops, smartphones and tablets and (b) network members, including content providers (CP) and end-user service providers (USP).

- ITEA NETWORK -- A special-purpose network that securely transfers information among and between network members, including content providers, end-user service providers, network operators and network service providers.

Here are key requirements of the protocol and the network:

C. PROTOCOL REQUIREMENTS

The ITEA protocol must support:

- Standardized transfer of a unique, non-repudiable user identifier, assigned by a USP, in real time, when a user makes an HTTP request to a CP across a TCP/IP public network, for a unique resource.

- Standardized transfer of a set of end-user attributes, along with the above request, sufficient to permit decisions to authorize or deny access to resources based on a variety of parameters, such as a subscription, ability or willingness to pay, age, membership or the like.

- Real-time query and reply to confirm desire of the end user to acquire the resource based upon its cost, value or other attributes.

The ITEA network should support:

- Real-time authentication back to their USP of a user's credentials and rights upon making a resource request of a CP and prior to serving the request, whether the request is to the CP's servers or to any Network Content Repository (see below).

- Logging of services provided by unique user, resource provided, and any negotiated and confirmed value of the event. The event could involve serving news content, or sponsored content ("advertising") with the value exchange recorded in either direction.

In summary: The end user becomes a subscriber to an individual exchange member's news service and from then on the consumer can access any content in the exchange's repository or on the servers of other exchange-member content providers.

- A provision (internal or outsourced) for storing and indexing news content uploaded by members in any Network Content Repository.

- The ITEA network services includes programs that:

a) Store and index news content
b) Distribute messages about the content to the members
c) Control access to the content, allowing for news search, accounting for each individual access, accounting for the due-from and due-to payments cycle and act as the intermediary to an all-new internet payments system.

Information about end-user identities are known only to the end-user's service provider (USP). The network system only knows users by a standardized unique alphaneumeric identifier.

In summary: The end user becomes a subscriber to an individual exchange member's news service and from then on the consumer can access any content in the exchange's repository or on the servers of other exchange-member content providers.

The ITEA infrastructure takes care of all the accounting needed to get the payment from or credit to the consumer's home-base service provider to the appropriate content provider (publisher or advertiser) through a process of periodic aggregation and settlement of transactions. the original content owner (or the payment from the advertiser to the end-user's service.

Building a user "persona" and content attributes

The network protocols and business rules specify attributes and three areas:

A. User identity and profile attributes
B. Tagging of digital content for pricing and royalty management
C. Tracking and settlement of value exchange (payments, credits)

SPECIFIC ATTRIBUTES

A. User identity and profile attributes

The ITEA facilities the transfer of the following identifiers for each request made by a user for resources across the network:

Network-level attributes (accompany all requests)

1. UserID – A globally unique attribute which includes the user's home-base host ID. This is the minimum attribute necessary to log access records for payment or credit and is analogous to a credit-card number.

2. One or more customer-group codes to identify user assignment to specific groups for publisher- or service-provider proprietary purposes.

3. A service-class to define eligibility of the user for specific levels of pricing, content or services

4. The content server ID of the publisher supplying content and optionally requesting a royalty payment ("PubMbrID")

Preference-level attributes (accompany and constraint all requests)

5. Other flags regarding preferences for: (a) privacy (b) parental control (c) advertising viewing preference (d) do-not-track

Identity attributes (optionally shared with request)

6. Identity attributes available for sharing (or not) depending upon privacy preference (above), include user-supplied nickname, email, fullname, date of birth, genderl, postal code, country, language and timezone

Business attributes (optionally supplied with end-user permission)

7. A vending publisher may request other business attributes of the person and the person's home base may or may not supply the attributes based upon the user's expressed privacy preferences. The attributes may be stored and supplied in formats developed by Schema.org (http://schema.org/Person)

EduPerson attributes (optionally supplied with end-user permission)

8. A vending publisher may request other Internet2 "eduPerson" attributes of the person and the person's home base may or may not supply the attributes based upon the user's expressed privacy preferences. The attributes may be stored and supplied in formats developed by Internet2:

   http://www.internet2.edu/media/medialibrary/2013/09/04/internet2-mace-dir-eduperson-201203.html

Interest identities and topics

9. A vending publisher/marketer may request from the user's home-base service provider attributes related to any topical "interests" and "identities" stored in the form of key words or phrases depending upon the user's privacy preference.

B. Digital content tags for pricing or royalty management

The ITEA also will provide a schema for vending publishers to XML-tag royalty- or price-identified content which will be recognized and respected by user service providers, and logged as necessary for financial settlement. **Thus content can reside anywhere on the network and the rights owner will be paid for use.** Among basic content attributes are:

1. The creation date/time in YYYYMMDDHHMMSS format.
2. An expiration date supplied by the original content producer in the same format.
3. The PubMbrID of the creator or publisher entitled to royalty or payment.
4. A optional Digital Object Identifier (http://doi.org)

C. **Tracking/settlement of value exchange**

Finally, the ITEA provides a schema enabling the negotiation and computation of value exchange. The table invoked will depend upon whether the resource is chargeable content, or sponsored content (including advertising).

5. A variable table of royalty payments (or a key to a master royalty-payment schedule) used to compute the charge to the user's service provider upon the digital vending of the resource depending upon use, service class and other custom factors.

6. A variable table of credits paid to user's service provider upon the end user's viewing of a digital resource, depending on level of use or interaction.

7. A retail "Markup Ratio" in use by the User Service Provider which is provided to the content-serving publisher in real-time so that if the end-user is to be shown the object's price before purchase, the price show will be "retail" not "wholesale." *(See Appendix A)*

APPENDIX A

PRICING – WHOLESALE-RETAIL

A frequent question posted by interviewees involves pricing. If news organizations are going to share users, and share content, who is going to be in control of pricing? *(See Exhibit O)* The answer: No one person or entity. Some examples:

- Airlines benefit from a common air-traffic control system and they share airports. They fly similar aircraft made by the same companies. But they compete on pricing, many routes, and most aspects of service.
- Thousands of companies float their stock on major exchanges. The price of their stock is subject to near absolute competition for investors' dollars. Yet they also use common bidding, trading and settlement systems.
- Online advertising exchanges work in milliseconds with demand-side and sell-side platforms to match willing advertisers with willing publishers and aggregators to deliver "impressions" to interested consumers. Prices range dramatically, as do the content and form of the advertisements.

As the profit from the system is designed to go to the operators and affiliates rather than the ITE, we believe operators could feasibly finance their technology and infra-structure investment and pay network fees to the exchange. Thus our premise is that infrastructure and other startup costs born by the ITE manager will be less than $2 million. "The thing is if you get this up and going one could actually turn to venture capital firms to expand the market once the idea is well put together," says Robert Picard, of the Reuters Institute. "That is not an impossible idea. The infrastructure that goes behind it could be completely commercial. It could be newspaper and news organizations or media investors."

When you click on that article as a *New York Times* user, the exchange should record a payment to *Le Figaro* of five cents and record a charge to *The New York Times* of five cents. But whether you as a consumer ever pay anything other than that extra $1 -- ought to be up to *The New York Times*.

But what if you added to the mix the idea of wholesale-retail pricing, just like in the real world? If General Electric Co. makes a toaster oven and sells it to Wal-Mart Stores Inc., Wal-Mart then decides how to price the toaster. Think of the Internet market for information as like a Wal-Mart store. The retailer – your preferred publisher or service provider – is responsible for billing you and paying for what you buy from his or her store. Then, they go pay the originating publisher – the wholesaler – for the items you purchased -- to make up your personalized information bundle. And imagine, as with the advertising exchanges, that this happens instantly. The originating publisher, if it knows something about you, might vary the offer (price and terms). Your home-based publisher, the retailer, might chose to give you some of the items as part of a package, and ask you to pay for other pieces a la carte. Unlike Wal-Mart, the inventory of a digital information retail

store doesn't need to be shipped or stored in bricks-and-mortar fashion. It can be sought, priced, sold and consumed in milliseconds.

All that's needed to make such a system work is a standardized method – a set of protocols – for exchanging information about users and logging -- to a common place -- the cost of what is purchased. A useful feature might be the ability to aggregate many small purchases that are charged periodically – making efficient use of financial-transaction networks like the bank Automated Clearing House (ACH) networks and avoiding relatively steeper credit-card interchange fees.

Imagine this scenario: *The New York Times* might send you an email and say for an extra $1 a month, you get 10-15 clicks per month from a set of French language publications. It's just $1 a month and you'll have that Francophile bonus. What would happen when you click to an article at *Le Figaro*? They would have some price they had set on that article – maybe it is five cents (converted from Euros). When you click on that article as a *New York Times* user, the exchange should record a payment to *Le Figaro* of five cents and record a charge to *The New York Times* of five cents. But whether you as a consumer ever pay anything other than that extra $1 -- ought to be up to *The New York Times*.

If you have a system where the parties on a business-to-business basis agree to pay the cost of people surfing within the system, then all it becomes is a strategic business exercise how much *The New York Times* should charge you per month. *The Times* might do this for awhile and find they are losing money by just charging you $1 a month, so they might come back to you and raise the package to $2 a month. Or maybe it has a cap on it of 30 clicks per month -- then you have to pay more.

One can't presume to guess how all those things will work out. What we need to create is a system that enables all of that and then allows the free market to operate as it does so well –- which is to have pricing and packages find their equilibrium. What is described is a free market for digital information – a economic libertarian's delight! But don't we need to start by enabling those kinds of capabilities?

Apple is not going to play in a new ITE ecosystem if that ecosystem requires the company to shut down the iTunes store or alter how it operates. Ditto with Amazon and with Facebook Credits and Connect. The ITE protocols have to be additive to these business – a way for them to expand from their three-party services into a true, four-party trust network.