9 – The Professional Licensing Component

Question 9 *Who decides whether a facility is habitable, that is, that it conforms to building codes?*
Answer 9 The Professional Licensing Component
As with physical real estate, our bounded online spaces need qualified architects, contractors, property management people, and building inspectors to ensure that they serve our purposes. The Professional Licensing Component provides a system of certification of their professional credentials and of the results of their work, as well as of the work of attestation professionals and others.

Going from What and How to Whom
We've gone into a fair amount of detail on architecture, construction, building inspection and property management with very little about architects, contractors, building inspectors, and property managers. Who exactly is going to do all this work? What financial incentive will draw them to one of these new professions?

The first part of this chapter is for those involved with the architecture, construction, building inspection, and property management professions as they apply to non-physical real estate. In other words it is for people who work with software. Its message will be of particular interest for those who work on their own on open source software products.

If you work independently with open source software, then perhaps you share this guy's concern:

Or, as InfoWorld asked in setting the agenda for the 2009 Open Source Business Conference,

> "How do we evolve open-source business models to ensure vendors get paid without resorting to the same lock-in tactics that the proprietary world has used?"

It's a difficult issue. Open source software provides obvious benefits to those who use it, but what does it offer the independent developer or other member of an open source community?

We've hinted at the answer, which, like so much else in the Quiet Enjoyment Infrastructure, is quite old. It's both familiar and obvious.

But this new solution requires some stepping back and seeing things in a new context.

So let's step back.

As software professionals, we're building either routing and switching and traffic management facilities, or we're building facilities that will be used by specific groups of people for their specific purposes inside bounded spaces. Indeed, isn't the value provided by much of today's software similar to the value provided by an office building or other InDoor space? Aren't we building sets of bounded and designated spaces in which people can work on and share files with ease and confidence?

Q: What do we build after the highway is built?
A: We build that which highways bring us to, that is, buildings.

If you're working on the highway system known as the Internet, then thanks for providing the rest of us with a really great outdoor public transport system. Please skip ahead to the chapter about the Public Roadways Component.

If on the other hand you're developing that which highways bring people to, that is, buildings, then we have a revenue model for you.

How do real estate professionals ensure that they get paid for their services? After all, real estate professionals don't "resort to the same lock-in tactics that the proprietary software world has used."

Rather, real estate professionals use different lock-in methods to ensure that they get paid for their expertise and their hard work.

The proprietary software world uses FUDILI-style lock-in tactics to ensure that they get paid: Fear, Uncertaintly, Doubt, Inauthenticity, Lock-In. Real estate professionals, on the other hand, use different lock-in. Architects, engineers, and construction professionals use the openness and authenticity of the **occupancy permit.**

The owner of a new building must ensure that the structure passes a set of inspec-

tions before it can be granted an occupancy permit, and the architect and contractors must also sign off on it. As a designer and builder of online real estate, doesn't that have a certain appeal to you? The paper used for plans of physical buildings is virtually as free as the open source bits used in online buildings. But if you actually want to use that which is built with the plans, you must pay the maker of the plans and the contractor who built from them.

It's not just a standard. It's the law.

How do we build the open source business model using the principles of physical real estate?

When you walk into a building, you have a level of assurance that it will not fall down on you. You have confidence in its construction materials. But good materials alone do not make a good building.

Would You Expect a Pile of Construction Materials to Assemble Itself into a Building?

In 2001 two eminent cryptographers offered 10 reasons why the construction material called PKI had failed to live up to its promise. In the first edition of this book we effectively paraphrased their analysis; an updated version appears in this edition's chapter entitled *Does This Fix the Problem?*

PKI has not solved our Internet problems for precisely the same reason that concrete and steel had not been effectively deployed to make 15-story buildings 30 years after their invention. Very simply, construction materials do not assemble themselves into buildings. Professionally licensed architects, contractors, building codes, building permits, occupancy permits, and an understanding of how buildings work are all essential to the making of useful and secure buildings.

What has this got to do with you, the open source software developer? If you're looking for a way to get better rewarded from your open source efforts, the answer will interest you.

Professional Licenses Provide Non-Manipulative Income Leverage

There is of course at least one big difference between asserting a professional license in the physical world and asserting an equivalent license in the online world: there are no face-to-face meetings with the professional who signs the paperwork. And online "paperwork" is not on tangible paper but rather on bits.

So a professional license must be bound to a measurably reliable identity, as represented in an X.509 identity credential.

In the "People" part of QEI — the Authenticity Infrastructure — we learned what is involved in establishing a measurably reliable identity; about how the six components of the Authenticity Infrastructure, applied together, result in identity credentials of measurable reliability. We learned about the first professional licensed, the Attestation Officer, who performs Digital Birth Certificate enrollments, which result in identity

credentials with an Enrollment Quality score of seven or higher.

That higher-quality enrollment will be one of eight components of an identity credential that will be bound to the next types of professional license, the Architect's, Contractor's, Structural Engineer's, and Building Inspector's Professional Licenses. In addition to the Enrollment Quality score of seven or higher, the total Identity Quality score of a candidate for the professional licenses of buildings professionals must be 42 or higher.

A good Identity Quality score is just the starting point. Even more important are demonstration of competence and evidence of personal integrity.

To learn more about the benefits of a professional license and about what's involved in getting one, go to the Professional Licensing Office at osmio.ch.

OK but…

Having secure InDoor buildings is a good idea, but who is going to occupy them? And more importantly, who is going to pay for them? Who is going to put themselves under the jurisdiction of the City of Osmio?

Can doing things the right way trump FUDILI? Can the audience education process be done right? The answer is the same as the answer to the question, "Can Apache beat Microsoft in the Web server business?" Apache did it right, and it soundly trounced Microsoft in the Web server business.

We can do the same with QEI and its InDoor approach to facilities.

For starters, we are dealing with a need that is intensely felt by the real decision makers in organizations, that is, the CEOs. CEOs need to be in control of everything that affects the success of their organization, and that includes information technology. CEOs are well aware that promises made to their CTOs and CIOs about information technology in general and security solutions in particular have not been met. The cloud revolution provides CEOs with a real catalyst for taking ownership of the one part of the enterprise that has been kept out of their control.

You, the open source software professional, can help the CEO get there by showing that online facilities can be as understandable and manageable as physical facilities. Together we can show that the starting point for this revolutionary change is with identity. Not identity management but identity. The CEO must be able to know who is touching the lifeblood of the company, that is, its intellectual property, its plans, its customer files, its order flow.

It's not as though we must educate them on the problems of working outdoors. They know all about malware, botnets, intrusions, and online theft and fraud.

Measurably reliable identities accessing resources kept in InDoor spaces will provide CEOs with what they need to know about who has access to what.

Your Competition Opens the Door for You

Existing "solutions" from IT vendors, on the other hand, do not provide what the CEO needs. Let's look at one such solution, "application whitelisting," to show the inherent advantage you'll bring.

In whitelisting, a list of "good" sources and executables is made available to clients so that only "good" software is allowed to run on their machines. The "whitelisting" "solution" illustrates the problem that you and I can solve with sources and executables that are digitally signed by individual licensed professional code auditors, aka professionally licensed building inspectors.

Whitelisting and the Building Inspector's License

Companies such as Lumension, Faronics, Veracode, Bit9, CoreTrace, McAfee, and SignaCert offer application whitelisting services. CoreTrace's explanation of whitelisting[80] is representative of the whole group:

> IT professionals are tasked with maintaining the integrity, performance and availability of servers, desktops and laptops. Historically, it was nearly impossible for these professionals to keep pace with the rapid proliferation of new applications–especially on Internet-connected systems utilized by end users.
>
> The CoreTrace Reputation Service is a cloud-based service that helps IT and security professionals solve this problem by rapidly identifying, evaluating and classifying applications across all endpoints. By connecting CoreTrace Bouncer to a rich, validated database of billions of known good and known bad applications, the CoreTrace Reputation Service enables Bouncer administrators to immediately:

Sounds good, but then, exactly where does one find "a rich, validated database of billions of known good and known bad applications?" How exactly does one validate them? And what about the vast number of applications that put their vendors' agendas above the customer's interests? Are they "good" or "bad?"

This story[81] from Dark Reading sums up the flaw in whitelisting:

> Careful with That Third-Party Web Widget
>
> Small- and midsized businesses use a lot of third-party Web applications: It saves them money and allows them to embed expertise that they might not otherwise have. But it can also open up their business and their customers to attack.

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80 http://www.coretrace.com/products-2/coretrace-reputation-service.

81 "Careful With That Third Party Web Widget," by Robert Lemos, DarkReading, Aug. 25, 2010. URL:http://www.darkreading.com/story/showArticle.jhtml?articleID=227001110.

> The recent Network Solutions incident shows how this practice can go very wrong: Ten days ago, the Internet domain provider learned that a Web-services widget that it had placed on at least 120,000 parked Web pages was infecting visitors with malware. The firm reportedly downloaded the widget, known as the Small Business Success Index, on third-party online directory WidgetBox.
>
> As more businesses continue to use third-party code in their websites and import content from other sites, the security of their visitors increasingly relies on others.
>
> "Over the past five years, Web 2.0 has taken the world by storm," says Neil Daswani, chief technology officer of Web scanning firm Dasient. "As a website administrator, your security is actually dependent on a bunch of third parties, so you should make sure to monitor all your code and widgets."
>
> Network Solutions is not the only Internet company to inadvertently host malicious code on its website. A year ago, The New York Times infected an unknown number of visitors with a rogue program after fraudsters posed as a legitimate advertiser and submitted a virus-laden ad to the news service. Other websites — such as Snapple.com, BusinessWeek and Fox News — have had to deal with similar problems, Daswani notes.

"As a website administrator…" of a "small and midsized business…" "your security is actually dependent on a bunch of third parties, so you should make sure to monitor all your code and widgets."

That is, monitor the code and widgets that the large, specialized Web tools provider Network Solutions let slip by, right? The sort of code and widgets that the resources of The New York Times, Snapple, BusinessWeek, and Fox News were insufficient to catch. Just have your small business hire some knowledgeable code auditors, such as the ones that Network Solutions couldn't afford.

Then the article gets to the heart of the issue:

> Solving this issue is not easy. There is no standard or accepted way to certify that code is safe and secure, says Andy Chou, chief scientist for code scanning firm Coverity. "In other industries, there are certifications for certain quality measurements of the products," Chou says. "There are lots of ways in other industries to show the consumer what they are getting. In software, there is nothing like that — the users have to test it themselves."…

Solving the issue may never be easy, but it becomes quite tractable when you add QEI's novel notion of personal professional accountability. Novel to IT people, that is. The rest of the world has been relying upon personal professional accountability for centuries.

Network World notes[82] that application whitelisting is not a substitute for antivirus software.

> Whitelisting on its own not a substitute for antivirus software
>
> Whitelisting technology that prevents unauthorized software from running on corporate servers and PCs is a way to prevent malware attacks but managing the package keeps the Burton Group, a division of Gartner, from recommending it as a substitute for traditional antivirus software.
>
> Whitelisting rather should be used as a "complementary" security defense because traditional antivirus software based on "blacklisting" to block and eradicate known malware can't keep up these days, because attack software has become "so prolific," according to the Burton Group's "Application Control and Whitelisting for Endpoints" report published today.
>
> That's mainly because real-world whitelisting deployment "remains challenged by ever-changing user demands, platform complexity, and software complexity," says Burton analyst Dan Blum in the report...

Antivirus software "can't keep up these days…" So add something else called whitelisting that also doesn't work?

And then what? Pray?

Incongruously, the tone of these articles is anything but prayerful. White papers and articles may bemoan the evolving and intensifying security challenges, but at the same time the voice is one of confidence. By keeping current with the latest bloodletting techniques the IT departments say they can drain the latest bad humors that infest the corpus informaticus.

Do they believe it? Perhaps, perhaps not. But there is consensus on one item: As long as the threats are not resolved, budgets for security people and security widgets are safe.

Market to the CEO

Some departmental decision makers in IT may be willing to consider starting over with a new approach, but they'll be a minority. Trying to find them is not the best approach for gaining traction.

We are much better off approaching the one person who is responsible for everything in the organization and who is growing increasingly aware of the dangerous ineffectiveness of infosec bloodletting. That person is the chief executive officer.

Now, who is in a position to go knocking on the CEO's door? It should be evident that this chapter's message is directed toward the independent open source software

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82 "Whitelisting on Its Own Not a Substitute for Antivirus Software," by Ellen Messmer, Network World, March 11, 2011, http://www.networkworld.com/news/2011/031111-whitelisting-malware.html.

professional. Large enterprises do have open source professionals on staff of course, but we can't ask them to jump the chain of command and call the CEO with the In-Doors message. And anyway, the new source of income offered by professional licensing will be less relevant to those on salary.

Software Licensing: The Economics of Air

Software licensing is a dying business. The value of code as an intellectual property asset changes like the asset value of a truckload of ripe fruit. At software companies, license fee revenue from new customers as a portion of total license fees steadily declines. Source code, like air, is essential to life but its fluidity and ubiquity make it of little economic value.

Services revenue has come to replace license revenue. IBM, DEC, hundreds of "high tech" (whatever that means) companies started decades ago down the path from technology to services. They got their start with distinctive technology, but quickly learned that their long-term sustainability was in consulting and integration services.

If however you are Microsoft, you can appear to be so enamored of the process that put $80 billion onto your balance sheet that you convince yourself that you can milk that cow forever. Is Microsoft a victim of hubris, failing to see that it must make the transition from licensing software to providing systems integration services?

Probably not. When you have the kind of balance sheet and ongoing earnings that Microsoft has, then you can continue to sell licenses to breathe until the market wakes up to the fact that there is no need to pay anyone for a license to breathe. When that happens, Microsoft will simply peel off a few big ones to purchase services companies, just as it purchased Great Plains and so many others. It's a viable strategy.

Microsoft's viable strategy for itself amounts to a fat pitch for every unattached software developer in the world. If ever a company put its customers on notice that the game plan is to milk them until they can escape, banking the profits until then, and only after the escape acquiring its way into a service business model, Microsoft's "Licensing 6.0" is it. This is the Fat Pitch for anyone who has a viable alternative to a Microsoft product.

Governments are beginning to realize that they have an alternative. As local, state, national, and international governments start the move to open source software, Bruce Perens, Linux guru and author of the Open Source Definition, has this to say:

> Should governments be using a format that is unique to a particular vendor to talk to its citizens? The government should not be saying you can only drive up to a government office in a particular brand of car. In the same sense the government should not be saying you can only talk to your government if you have Microsoft Windows software on your computer.

The logic advocating for the move of government and business to open source is abundant, and the move is taking place, though very slowly. The lack of a good business model for open source is all that prevents a massive and rapid transformation. Let's fix that.

Open Source Economics: Another Empty Set
The open source community has been facing the question of its economics for years. Some organizations have taken the form of volunteer associations, where it is assumed that members either have day jobs or find their own sources of revenue by providing services. Others have adopted a service model, with paid support of open source products providing the revenue stream.

Following the famous razor blade analogy, some software vendors give away the razor (software) in order to make money on the blades (support.) But often that doesn't work when applied to open source. The sad fact is that if your users don't want to pay for the license, they're not likely to pay for support either.

Some view open-source software development as an activity done not to make money, but for the simple benefit of mankind. That can work if you have a trust fund or live with your parents.

If license revenue is dead, and support revenue terminally ill, where does that leave the future of the software industry?

The Value You'll Provide with InDoor Spaces
Perhaps there is no future for "the software industry."

There is plenty of future for software, but only in the sense that there is plenty of future for elevators, sheetrock, and lighting fixtures, when aggregated with the services of architects, contractors and property managers who make those disparate things into the commercial real estate industry.

When customers buy office space, what exactly do they get? It's not exactly a products and it's not exactly a service. Rather, they buy a legal commitment to provide a space of a certain size and quality, supported by certain specific amenities, provided to a specific level of reliability and freedom from intrusion.

The tenant buys a commitment from the landlord to provide quiet space in which the tenant's personnel can get work done in pursuit of the organization's agenda.

When you rent an office, the standard lease lists the limits to the landlord's right to enter the premises, and the things the landlord will do to maintain the security of the premises. You buy Quiet Enjoyment.

"Quiet Enjoyment" is a legal term. In commercial facilities it's the ability to pursue an agenda in a rented office space in a building where the infrastructure works.

That is what all management wants. The IT department may want the newest version of powerful software with copious new features, but management wants Quiet Enjoyment.

Management does not care where the facilities are hosted, as long as things are secure. Management has no need to maintain rooms full of servers, staff that know how to run them, and a recurring budget to cover it all. If Quiet Enjoyment can be found in cloud-based facilities, so much the better.

InDoor Facilities Encourage What Top Management Seeks

What exactly does software do these days?

Software helps us inform and communicate with each other. But software in use is typically much less often about collaboration.

Part of it has to do with the manager's ancient lament, "How do I get my people to share information?" With physical offices, people can be visibly meeting with each other, chatting about less significant details of a project and keeping the really valuable information close to their vest, to be used only if an occasion arises where they can use it to buttress their position as Important Underappreciated Hero. Information is power. Sharing information is like sharing power, to be done with utmost caution.

Indoor offices, by contrast, consist of shared information.

The use of the term "security" in this context tells all. "Security" sometimes refers to securing information and communication from the adversary or the intruder. But it can also mean the securing of information from those who legitimately need it but in receiving it will also receive power and opportunity. Can't let that happen! Better call out the S word. It always works. You can derail any collaboration initiative with the S word.

By showing top management that InDoor facilities have security built into the online structure in the same manner that it's built into the company's physical facilities, security is less likely to be invoked as a red herring whose real purpose is to discourage the sharing of information that imparts power to its holder.

I've been in the collaboration business since 1982; providing collaboration spaces to subscribers and advertisers of magazines is what built Delphi.

Open Source resembles in some ways an avocational community rather than a corporate one, a community where there is both leadership and information sharing. After all, isn't that what Eric Raymond's brilliant essay, *The Cathedral and the Bazaar,* is about? Linux works because Linus Torvalds is a highly qualified team leader, and his contributors are volunteers and therefore willing to share information.

Would Linux development move faster if its contributors got paid? Common sense says it should. Even if the personal motivation of volunteers can't be increased with a paycheck, the amount of time available to the effort surely would be.

But if they were paid, then they wouldn't be volunteers. If they weren't volunteers, they would resist sharing information. And the reason Linux and Apache and Sendmail kick butt on the server is that they share information in a way Microsoft employees never will.

The organization of the future delivers the best of both: The zeal and willingness to communicate significant information of a team of volunteers, and the focus and administrative completeness of a traditional organization.

You are entitled to a revenue stream for the value you provide. That's easy to say. But what is the mechanism for developing that revenue stream in an open source environment?

The Good News about Getting Paid

The open source community as it is currently constituted has a problem with its response to Microsoft. While Microsoft's corporate customers were already upset with their vendor for a great variety of reasons, and while Licensing 6.0 did indeed add to the discontent by bullying them into paying more for something that is declining in value, *customers are uncomfortable with a product that costs nothing.*

Oh my, the problem is that (can you believe this?) our customer considers our price to be too low. This is one problem for which I think I can conceive of a solution.

Let's Learn from My Pricing Mistake

Open source developers: Perhaps some of your users feel guilty about using the fruit of your labor without paying you. How guilty? Well, just under the guilt threshold that would cause them to reach for the checkbook.

More significantly, there are a lot of people in business settings who like everything there is about open source software, but are concerned about relying upon suppliers whose financial viability appears to be uncertain. That last point is not sufficiently visible to open source people.

Let me cite my own experience. In the early '80s I got some people at the international operations department of a large multinational oil company to consider the Delphi online services platform to run what would have been called an intranet if the word had existed. They liked the information I provided, our capabilities, and our online demonstration. They invited me to their offices to discuss pricing, terms, and conditions.

The meeting went very well, until they asked the price of the initial implementation. My answer: $5,000.

Silence. Coldness. Decision makers looking at watches.

I might have recovered with, "Did I say $5,000? Silly me, that's the monthly base service charge; the implementation fee is $500,000."

Probably the first thing that went through their minds was that I was unrealistic about my own business. How many such presentations and visits could I make if each one yielded only $5,000? Second, I am sure it occurred to them that just fielding all the input from their users would cost us more than $5,000. They didn't want to be dealing with architects who had insufficient funds to support their needs.

Third, we had the potential of making their IT people look bad. They all had probably done a little mental arithmetic concerning how much their department would charge the company if it had undertaken such an effort internally — probably 100 times our price. We were a just a big embarrassment asking to happen.

The trip back to Boston gave me time to reflect on the not-so-obvious reasons a higher price helps business. The customer has reason to be concerned about relying upon something for which the vendor does not get paid.

The open-source industry cannot charge money for the licenses to the intellectual property it represents. Isn't that a bit like the situation of an architect or contractor or property manager, who also can't charge for the use of the concept of a roof truss or for the algorithms by which the pitch and loading of the truss is calculated?

But architects and contractors do make respectable incomes. The key is the occupancy permit.

An open source desktop can provide real office facilities. Revenue will come from services: the design, construction, and maintenance of facilities.

Getting Paid for Your Hard Work

If you are involved with the development of open source software or other software, then the future needs you.

The building professions used to have their equivalent of proprietary code. The square-and-compass symbolism of the Masonic orders allegedly dates back thousands of years to the days when the mystical arts of geometry and trigonometry enabled their practitioners to design and build bigger and better buildings.

Mathematics, like the ability to write source code, is now commonly accessible. Knowledge of the Pythagorean Theorem no longer gets you a fancy fee or a seat at Pharaoh's table.

But certified knowledge of the application of building design principles does indeed get you rewarded. The legacy of the ancient masons is more than a bunch of pointy tourist attractions in Egypt. That legacy is the guilds and professions that set the methods, standards, and procedures for the design and construction of buildings everywhere. Municipalities around the world rely upon the international communities of architects, structural and civil engineers, construction and property maintenance professionals for their building codes. The tens of thousands of architectural, engineering, contracting, and property management firms around the world act in many ways like commercial offshoots of very close-knit guilds and associations.

If you are in the practice of making useful things happen with software, either by coding or by installing, configuring, applying or maintaining software, visit your new Guild of Online Architects, Contractors and Property Management Professionals at squarebyte.org.

Is the Occupancy Permit Compatible with Open Source?

The idea of professional licensing and occupancy permitting does not violate the principles of open source software. Anyone who wants access to the source code can have it, just as anyone can have a copy of a set of plans for a physical building.

However, just as you may not use an open source program such as Gimp to create an IBM logo and then claim to be IBM, your open source software will not execute in an InDoor space without an occupancy permit.

The Osmio Buildings Department doesn't care which open source license applies to the code, whether it's GPL, Apache, LGPL, BSD, MIT, whatever. The Osmio Buildings Department also doesn't care whether code that is identical to code that is used in an InDoor space is also used in an outdoor setting. In fact that is desirable, as there's nothing like many installations and many users to confirm the effectiveness of a piece of software.

However, the facility provided by the software cannot be considered InDoors if it does not meet InDoor requirements. It must have an occupancy permit or it will not execute, and if it is part of a facility, the facility must have an occupancy permit also.

Real Estate in Community

What makes space productive? Obviously more than a certain number of square feet or square meters of floor space is required. Quiet Enjoyment includes not only the facilities bounded by the walls of the office itself, but common-area facilities such as the building's foyer, elevators, rest rooms, roadways, hallways, parking lots, and lighting — as well as the ongoing maintenance of those items.

Beyond common area facilities owned by the landlord, an office tenant needs the services of a municipality that provides the services of fire, police, highway, and health departments. Leases may or may not make explicit mention of the pro rata amount of property taxes, but they are always specific about what happens when those taxes go up: naturally, the rent goes up. All those things are part of Quiet Enjoyment. The tenant pays the landlord for them, and the landlord pays the municipality for its part of community facilities.

In precisely the same manner, the Professional Licensing Component specifies the payment of fees for all parts of Quiet Enjoyment, including the "public" parts. Whether the facility is owned by the company using it, or the company pays rent to an owner such as the publication serving its industry, the occupancy permit ensures that both real estate professionals and those providing public infrastructure services (such as the Public Authority Component and the Identity Reliability Component) are paid for their part in ensuring that code-compliant structures are secure and manageable.

Tenants and property owners that meet established standards as nonprofits tend to be exempt from property taxes, and should be given a break on their software infrastructure as well. It's up to the community to make such accommodations.

Why Business Will Make This Happen

Howard Smith, chief technology officer at Computer Sciences Corporation, observed[83] about the new field of business process languages such as BPML, "This is something

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83 "A New Way Of Collaborating," by David M. Ewalt, *InformationWeek*, Nov. 25, 2002.

weird and different, it's not Web services, it's not the reinvention of workflow, it's not process-management workflow, it's new. It unifies those things. It's like taking the best of every other paradigm and building a nice new model."

In the same article: "What's going on now is a paradigm shift in the way we design applications," says Tom Siebel, chairman and CEO of Siebel Systems. "In other words, what we're going to deliver isn't screens of reports; it's actually descriptions of business processes in a language that the industry leaders believe are the standard for the representation of a business process... This is basically the next generation of computing languages. It's a very exciting idea."

The reality will be even more exciting than the version in those accounts. When the people designing the new business process languages really confront the security exposures that they open, they will realize that these new processes must take place where business processes have always taken place — in buildings.

For adventurous software people who aren't afraid of really big paradigm shifts and inflection points, this is great news for two reasons.

First, if dealing with security has been optional in the past, it is getting less optional daily. Now, with the very essence of the processes by which business is done being moved to software, any residual notion of optionality of security is completely blown away. The spaces in which these things take place must be secure.

Second, this big shift will not be done for free. It will be done for businesses that have money to spend on essential assets.

If you are involved in developing, deploying, or maintaining software, your job description will evolve into something like that of an architect, construction contractor, or property manager. And note that companies typically pay those folks good money.

The Professional Licensing Component delivers what the enterprise had in mind when it paid for a software license — that is, it gets the assurance that the provider of the platform will be economically viable. But it delivers much more than that. The Professional Licensing Component delivers an assurance that the premises are not designed with strange dead-end corridors and cul-de-sac elevators that will force everyone to stay in the building.

The Professional Licensing Component provides developers with a reliable means to make a good living while practicing the craft you love. We think you'll find this new view of the online medium at least as interesting as the openness of the Internet.

Licenses in Practice

In QEI, all digital signatures are made by individual human beings. The individual may be an officer signing on behalf of an organization, but the signature itself is made by the individual and the accountable party is the individual — in this case an individual licensed professional.

In The Authenticity Economy there is no such thing as for example software code that is signed by "Microsoft" or "Apple." Rather, an individual code signing officer signs the code, perhaps on behalf of Microsoft or Apple. The signer should be either an officer of the corporation or an officer of the public, i.e. a building inspector. If in addition to being signed by or on behalf of the company releasing the software, the software is to be part of an InDoor space, a building inspector must also sign its occupancy permit.

In order to maintain the chain of accountability, code must be signed even after minor changes are made. At first that may seem cumbersome, but signatures are quickly made. Anytime added as a consequence of someone assuming personal responsibility is time that needed to be added.

Every InDoor facility must carry a valid occupancy permit signed by the building inspector, who in turn must obtain signature releases from all licensed professionals involved in its design and construction: an architect and contractor, and in the case of large or complex data structures, a structural engineer.

Join the Guild

My friend Perry Leopold, the owner of the PAN online service for the music industry, once remarked that the broadcast media industry failed to understand the essential nature of the online services business: "This is farming, not hunting."

As some software companies doggedly hang on to the licensing revenue model, targeting customers to become their victims of manipulative FUDILI processes, they fail to understand that the essential nature of software and its deployment has changed. The hunt is over. The value added is now in services.

So hang up the orange cap and put on the overalls. Help us build a guild.

As with physical real estate professional organizations, the guild will maintain close ties with those who are responsible for both the development of building codes and those who are responsible for community governance, to ensure the essential principle that makes the system viable: to help ensure that occupancy permits are issued only after the professionals have been paid.

We've identified the following professional licenses involved in the permitting of InDoor facilities:

- Architect
- Structural Engineer
- Contractor
- Building Inspector (public code auditor)

The details must be filled in by licensing-board members and practitioners working together. Go to osmio.ch to see how that's coming.

Not Just Real Estate

Not all professional licenses issued by the City of Osmio are concerned with InDoor real estate. Most procedures specified in the Enrollment and Identity Reliability components require the involvement of an Attestation Officer, professionally licensed according to the standards of the Professional Licensing Component. Then there are professional licenses for individuals whose expertise and responsibility is in outdoor facilities, i.e. the Internet. These include city planners who take responsibility for implementing online communities on behalf of audience aggregators, public facilities inspectors who take responsibility for the integrity of Web site code, addressing professionals who take responsibility for the integrity of their part of the DNS infrastructure, and what we hope will be a professional licensing system to be added to the already well organized efforts of the groups that run the Internet's core services.

For purposes of getting QEI working in practice, the license that's needed first is the Attestation Officer professional license.

Professional Licensing Standards for Attestation Officers

Two essential legal elements of the public office of notary add significance to their role of the notary: criminal liability and the right to administer an oath, placing the person being enrolled under penalty of perjury for statements made in the oath and accompanying affidavit — for example, an identity credential enrollment affidavit.

A major function of the Public Authority Component is to set the framework for the qualification of Attestation Officers. Attestation Officers are responsible for what in traditional PKI terms would be called "registration authority" functions, the process of receiving evidence of a subject's (individual's) claim of identity, judging its reliability, and, when warranted, submitting a Certificate Signing Request to the City of Osmio Vital Records Department. The CSR may or may not include the evidence, depending upon the type of enrollment.

By definition, all notarial procedures are performed in a face-to-face setting, and by Osmio's standards all Attestation Officers are holders of a notarial office or other public office that empowers them to administer oaths. However, not all enrollments are notarial.

In chapters 19 and 20 we detailed the different forms and quality codes of the various enrollment procedures. Recall that enrollments are of three types:
- Basic, a simple email validation process;
- ReliableID, performed remotely;
- Digital Birth Certificate, performed face-to-face with an oath and affidavit.

Within ReliableID and Digital Birth Certificate, procedures calling for differing levels of rigor and different technology are available, depending upon the needs of both subject and subject's relying parties. And so our Attestation Officers must be able to perform a number of different procedures.

The City of Osmio Professional Licensing Board must therefore qualify individuals who have held public office (such as notaries or justices of the peace) for a requisite amount of time and who meet other standards, and commission them as Attestation Officers for the Vital Records Department.

The Professional Licensing Board also is responsible for qualifying and commissioning other professionals, including architects, contractors, building inspectors, highway officials, and city planners.

What Do We Need in an Attestation Officer?

The Attestation Officer will need 10 distinct attributes. (The first two are those noted above, easily obtained in the U.S. and many other common law countries by being commissioned as a notary public.) The 10 are:

1. Criminal liability for malfeasance as a public official.
2. Authority to administer an oath that places the affiant under penalty of perjury in such a manner that the act cannot be subsequently repudiated.
3. Established background of service with integrity in an attestation profession.
4. Ability to visually verify identity credentials (driver's license or passport).
5. Ability to operate authentication and enrollment equipment.
6. Ability to perform the corroboration interview.
7. Ability to say "no" when required.
8. Ability to use the Certificate Signing Request system.
9. Willingness and sufficient insurability to assume liability.
10. Sufficient management sense to run an independent professional practice.

Let's look at the additional qualifications one by one.

Established background of service with integrity in an attestation profession

In the Latin law countries we find an ideal benchmark for this qualification. The benchmark is an office called the Latin or civil notary.

To begin with, Latin or civil notaries are lawyers. But they are extensively trained in a kind of practice of law that is unfamiliar to most Americans — a practice where it is assumed that the public interest is served by ensuring that contracts are made in such a way that the likelihood of subsequent dispute and litigation between the parties is reduced. Civil notaries have experience, and they have passed stringent tests — and unlike many regular notaries they are thoroughly aware of the consequences of not doing their authentication job with utmost rigor. They have a lot at stake and very importantly, they know it.

Even though a Latin or civil notary is a lawyer, he or she is not an advocate. Rather, a Latin or civil notary represents the public in dealings between private parties. They tend to raise the standards not only of document attestation but of the documents themselves. In Latin jurisdictions, for example, if the parties to an agreement expect it to be enforce-

able — that is, if they ever expect to have the services of the courts to settle a dispute — the agreement itself must be drawn up by the neutral representative not of the parties but of the public. That is, it must be drawn up by the non-adversarial lawyer, a Latin notary.

One can rely upon notarial due diligence performed by Latin notary members of chapters of that association. But the number of professionals included in that category in the United States and other common law jurisdictions is miniscule. So in most of the United States, and the rest of the non-Latin-law world for that matter, we must build a whole new designation, inspired by the standards of the UINL and of its member organizations, particularly in common law jurisdictions.

The Source of Standards for Attestation Professionals

The principles of the Latin or civil notary profession constitute the starting point for our Public Authority Component. The standards for the new profession which we are instigating are based upon those of the Latin notary profession, which has been in the business of verifying identities not just for centuries but for millennia.

Since there are no Latin or civil notaries in most of the common law world, however, we must use the standards of that office as inspiration for the standards to be applied in the common law world.

Note that this is only the standards-setting part of the job. The actual qualification, training, commissioning, and supervision of the practitioners needs to be separate from the setting of standards. The latter is a matter of invoking public and NGO authority, while the former is a set of operating concerns.

So the question is, where do we find people who meet the third qualification of "Established background of service with integrity in an attestation profession" in places where the handy Latin notary designation either does not exist or is so new that it includes virtually nobody? Furthermore, how do we formalize the process of deriving the standards in such a way that they serve as added authority?

Most of what a Latin notary does, of course, is far beyond the scope of enrollment work. Our enrollment professionals do not need to understand law any more than a regular notary does, for example, and they certainly are not expected to practice it (unless they also happen to be lawyers).

The Osmio Professional Licensing Board concerns itself with most of the items on the list of qualifications of an attestation professional. In doing so, it goes country by country to evaluate the various attestation professions to see which designation in which jurisdiction can serve as a starting point.

A candidate does not have to be a notary in order to apply; however, such qualification must be obtained before the candidate is certified. Some specialized training also will be required. For example, while any notary ought to be able to do a fairly good job of checking ID documents, our enrollment professionals must be trained to perform that work at the highest level.

The third qualification will require the most work, because the attestation professions vary widely from country to country. What is the difference, for example, between a "certified paralegal" in the U.S. and a "clerk" in the U.K.? Every such designation in every jurisdiction must be evaluated.

Following is an outline of suggested Osmio Professional Licensing Board standards for Enrollment Officers in North America. The candidate for an Attestation Officer license must have:

Prior Professional Certification

1. Certification for Canada & US except Louisiana and Québec
- Current Notary Public commission
    » In a jurisdiction with clear definition of legal consequences and penalties of malfeasance in office, or
    » In other jurisdictions, personal assets put into escrow to supplement bond
- OR Current appointment as diplomatic officer authorized to administer oaths
- PLUS one of the following additional credentials:
    » PACE Certified Paralegal with RP designation, two years' continuous service in one law firm, no board actions
    » Signing Agent with two years' experience AND 200 (e.g. mortgage closings) with no registered complaints or other contested acts
    » Attorney in good standing with no bar association actions or regulatory agency disciplinary actions
    » Registered Court Reporter with Registered Merit Reporter (RMR) or Registered Diplomate Reporter (RDR) certification
    » CPA in good standing with no CPA board actions or regulatory agency disciplinary actions

Civil notary appointment (FL and AL)
    » Current or retired diplomatic official (consul or above)
    » Five continuous years' satisfactory service as INS employee; magistrate or clerk-magistrate; police office; administrator in Motor Vehicle Department, Birth/Death Records Department, Registry of Deeds PLUS passage of background check and Identity Verification Competency Examination
- Current Notary Public commission with at least two years' active practice and no board or regulatory agency actions or attorney in good standing with no bar association actions or regulatory agency disciplinary actions, plus sponsorship by an authentication services organization

The last item, sponsorship by an authentication services organization, means that the candidate must be presented as a candidate for certification by an organization that actually provides authentication services, either directly or through licensees. It is an-

ticipated that the candidate will be a prospective employee or licensee of that organization. Before sponsoring someone, the authentication services organization will want to ensure that the candidate has all the qualities mentioned in our list, starting with one of those listed above and including

1. Ability to perform a visual check of identification credentials (driver's license or passport). They must not only have good eyesight, but also the kind of visual discernment that for instance an immigration officer must have.

2. Ability to perform the corroboration interview. Questions about details of the candidate's neighborhood, previous residences, previous employment, etc. will be presented on the screen along with multiple choice answers, both from a PII corroboration service. This will trip up an impostor with the best of fake ID — unless he or she has thoroughly studied the background of the victim. The ability to discern when someone is acting is difficult to measure objectively, but an informal assessment of that ability is part of the process.

3. Ability to operate authentication and enrollment equipment. Basic familiarity with computers is all that is required here.

4. Ability to say "no" when required. If a frail, elderly woman requests notarization of a document granting her son-in-law a blanket power of attorney, and this occurs in the presence of a large young man with a menacing aura who is glaring at her, the notary should ask questions before proceeding. More to the point, the notary must be prepared to decline to notarize if the answers are not satisfactory. Too often, however, the notary is too embarrassed or perhaps even intimidated by the situation to follow procedure. Our attestation professionals need to be able to look candidates in the eye and tell them that they are not convinced of their identity and therefore cannot proceed.

5. Ability to manage a registration authority system. In the Enrollment Component, the registration authority is truly the critical arm of the certification authority. If the subject chooses to have his or her foundational PEN escrowed, the Attestation Officer must have facilities and procedures in place to keep the files in a bank safe deposit box, properly labeled, properly accounted for, and must be able to respond in a timely fashion when the subject requests access to the escrowed files. That means making arrangements with other Attestation Officers for coverage while they're out of town, incapacitated, etc.

6. Willingness and sufficient insurability to assume liability. Insurance companies are a wonderful resource when these sorts of qualifications are to be evaluated. The meaningful part of a bond or E&O insurance policy is not so much the claims provisions of the policy as the fact that an insurance company has sufficient confidence in the Attestation Officer to risk its money.

7. Sufficient management sense to run an independent professional practice. The attestation professional will have plenty of support from the licensing organiza-

tion. But he or she must still get to appointments on time, with equipment in good working order, and with the right type and quantity of blank smart cards, USB tokens, MicroSD chips, disks, etc.

In the language of traditional PKI, the Attestation Officer is both registration authority and registration authority operator. While there is a reliable backup system to take over in the case of incapacity of an Attestation Officer, the process of managing the records on a day to day basis must be strictly by the book.

The Highest Level of the Profession

In ancient Rome the tabellio, who you'll recall occupied a high office of authentication of documents, was absolutely necessary for the conduct of personal and commercial affairs. He or she (yes, apparently there were women among them) supplied the trust and the authority that made transactions and titles and commitments real. Consider a case of two illiterate people from different places desiring to enter into a transaction. How would they do it besides trusting that the tabelliones in both locations were faithfully recording their wishes in the documents, reading and interpreting them to the respective parties with utter truthfulness?

In the Digital Age, like in Roman times, there is again a very strong need for a notarial official with powers and skills beyond those of the normal notary public.

We have revived the term tabellio to describe our response to this need. Tabelio™ (one L) is the name given to a new standard, nothing less than a new professional class of Attestation Officers. Besides being highly qualified as an Attestation Offices, the Tabelio Officer will be qualified to operate the VIVOS® enrollment workstation, which will capture the video with voice of the subject reciting the enrollment oath, fingerprint and iris biometrics, GPS location, time and date, and other data about the enrollment session. The Tabelio Officer is also trained in evaluating claims to the higher IDQA component scores, for instance, the quality of a three-factor identity credential, and determining and recording those scores.

Other Professional Licenses

Public Accommodations Inspector Professional License

It seems incredible that drive-by malware is prevalent on the outdoor Web, automatically installing itself in the computers and phones and tablets of innocent people who just happen to visit a legitimate but infected site.

The Public Accommodations Inspector examines a Web site or other outdoor facility, digitally signs the code that runs it, and makes the signature available via an icon on the site for visitors to check out the signature and license of the inspector. An additional click will verify the signatures on the site files and, importantly, verify signed information related to the installation and hosting information, so that a signature that's copied

along with site files and pasted onto the hacker's server will not verify.

This license is analogous to a health department inspection certificate in a restaurant.

The City Planner Certifies Our City Planner Professional License

In the upcoming Community Component chapter we will introduce the Village® community platform, a complete social media system for audience aggregators. Anyone may launch a Village® community, although success in social media requires considerable audience resources. If you're involved in a professional or avocational association, or if you're affiliated with a special interest magazine, newsletter or blog, take a look at the possibilities of launching a Village® based community.

The Village® communities will be built and operated in accordance with QEI principles, administered by its regional capital, the City of Osmio. It will be certified for launch by the holder of a City Planner Professional License.

Addressing Engineer Professional License

While InDoor spaces know nothing about DNS, the Internet's domain name system, DNS is critical to the operation of the World Wide Web. Every domain, every Web site, depends upon the effective operation of the network of name servers that drive DNS. Those name servers are owned and operated by, well, anyone.

DNSSEC is a technical infrastructure whose introduction has somewhat reduced the vulnerability of the DNS network to tampering, but adoption of DNSSEC is quite voluntary. The whole thing is dependent upon widespread concern for the commons.

We believe that every operator of a nameserver should carry an Addressing Engineer Professional License, and should digitally sign everything they do.

But then we are dealing with very outdoor issues here — it's certainly not for us to direct how things are done in managing the highway. We hope that those who are involved in DNS will give this idea a fair hearing.

Roadway Engineer Professional License

If the domain name system is outside the purview of QEI and the City of Osmio, the work of the IETF and related organizations certainly are. And so the Roadway Engineer Professional License is presented here as a humble suggestion: wouldn't it be a good idea for those who have their hands on the fundamental architecture of the Internet carry a formal professional license?

The City of Osmio Professional Licensing Department stands ready to help if called upon.

Next Steps
What's Required?
The requirements for qualification for any of the professional licenses include
- A Digital Birth Certificate™ identity credential with Identity Quality score of

> » 32 for Public Accommodations Inspector Professional License
> » 32 for City Planner's Professional License
> » 36 for Architect's Professional License
> » 36 for Contractor's Professional License
> » 38 for Building Inspector's Professional License
> » 38 for Addressing Engineer's Professional License
> » 40 for Attestation Officer Professional License
> » 52 for Roadway Engineer's Professional License

- A suitable background, as determined by standards set by the appropriate commissions and standards boards
- Evidence of an established record of integrity
- A passing grade on the appropriate licensing examination
- Payment of fees as specified by the Professional Licensing Commission

The various professional licenses in Osmio are valid for different periods, as set by the responsible commissions.

Applying for a License

To learn the current state of readiness of the Professional Licensing Component of QEI, please go to the Professional Licensing Department at osmio.ch.

To see the current state of development of

The Professional Licensing Component
…and to learn how your

experience in software development, code auditing or professional licensing
might be put to use in its development, please go to the Professional Licensing Component Development Office at osmio.ch