

**Alliance for Building Regulatory Reform
in the Digital Age**
A Public/Private Partnership

ATTACHMENT B TO ALLIANCE REPORT
Creating a State-of-the-Art Interoperable Building Regulatory System

Follow-up Action from the Summit on Streamlining the Building Regulatory Process Through Interoperability:

DEVELOPMENT BY JURISDICTIONS OF A LISTING OF HIGH PRIORITY USE CASES - USER FUNCTIONALITY PRIORITIES - The most important elements that jurisdictions want included in software/hardware that are used in the building regulatory process.

A. PURPOSE OF THIS ATTACHMENT

The software industry attendees at the Summit on Streamlining the Nation's Building Regulatory Process Through Interoperability requested that the nation's software and hardware industry be provided by state and local governments participating in the Alliance with a listing of high priority complete functional use cases. The purpose of that document would be to enable the industry to ascertain steps they need to take to establish interoperable products and services. This document provides that input to industry and is provided as a point of discussion for further cooperative work between industry and government to achieve interoperability in the nation's building regulatory processes.

B. BACKGROUND ACTIONS TO DEVELOP THE HIGH PRIORITY USE CASES

In the late fall and winter of 2003-2004 the Alliance began to undertake the above recommendation through a four step process:

1. The first was the assembly of an Expanded Core Work Group and the holding of a series of meetings and conference calls to develop a listing of the requested high priority use cases focusing on the most important building regulatory processes to state and local governments. (The Alliance for the Summit identified nine such processes designated P-1 through P-9, see page 7 for the list of those processes.)

2. The second step was for that document then to be provided to the software and hardware industry representatives at the Summit for their review and comment on that draft document.
3. The third step was the incorporation into the draft of comments received from the hardware/software attendees.
4. The fourth step was the circulation of the revised listing of high priority use cases and support materials to those software and hardware firms that were unable to attend the Summit for their feedback.

The end product of this effort was then designed to become the work basis for additional joint actions by the information technology, construction and building regulatory community towards achieving interoperability in the hardware and software that would be made available to state and local governments.

This report including the High Priority Use Cases and Use Case Descriptions and Use Case Template represents the final work product developed under the first three steps of the above process. Following review and input by the IT community, this document then will be used to guide the Alliance in taking the next steps towards interoperability.

C. DEVELOPMENT OF THE HIGH PRIORITY USE CASES

In early October 2003, the Alliance expanded its Core Work Group from 12 to 18 jurisdictions. Among the members of the Expanded Core Work Group are building officials and IT staff from the following jurisdictions: New York City, NY; Los Angeles, CA; Ventura County, CA; San Jose, CA; Santa Clara, CA; Sunnyvale, CA; Bellevue, WA; Fairfax County, VA; Norfolk, VA; Indianapolis, IN; Columbus, OH; Mecklenburg County, NC; states of California, New Jersey, New York, Oregon and Virginia and the National Association of State Chief Information Officers, NASCIO.

In a series of meetings and conference calls commencing in October, 2003 and concluding in February, 2004, participating state and local jurisdictions, Alliance reviewed existing state and local uses of information technology in their building regulatory processes focusing largely in the plans submittal and tracking processes. The Expanded Core Work Group and consultants to the project also looked at government procurement requirements, common use elements and data exchange needs among other building regulatory processes and generated the attached document for review and comment by the representatives from the Information Technology Community who attended the New York City Summit.

The remainder of this document describes the High Priority Use Case items that were identified by the Alliance's Expanded Core Work Group, and the Case Descriptions and Use Case Template. Provided to the Alliance by NIST, the Template provides the

complete definitions of the high priority functional use cases, the context in which the functional use case applies and the corresponding data exchange needs.

D. CATEGORIES DEVELOPED BY THE EXPANDED CORE WORK GROUP

In their work, the Expanded Core Work Group in the fall and early winter of 2003-2004, reviewed the nine Alliance Building Regulatory Processes and concurred with the approach that the building permit processing and tracking regulatory process should be the focus of moving towards interoperability in the building regulatory system. More jurisdictions use software for on-line permit issuance and tracking than any other regulatory function. Secondly interoperability within the permit processing function would automatically require interoperable data to be shared with several other building regulatory processes including: licensing, plans review, inspection, complaint tracking and enforcement.

In focusing on the building permit issuance and tracking regulatory process, the Expanded Core Work Group identified the following five categories classifying the most important elements, including interoperability and integration data exchange points, as their user functionality priorities: Interoperability, Integration, Price Performance, Use Interface, and Software Function. Within each of these five categories the Alliance Expanded Core Work Group gave each identified item a priority weighting ranging from 5 (highest priority) down to 1 (lowest priority).

The definitions for each of these five categories of high priority needs are:

Interoperability - Data that must be exchanged in lifecycle of the permitting system.

Integration - Data that must be exchanged with other systems outside of the permitting process.

Price and Performance - Key elements to jurisdictions in determining which hardware/software to use.

User Interface - Key elements in determining functionality of hardware and software to the jurisdiction.

Software Function - Other important functions that the software provided to the jurisdiction must be able to accommodate/interface within the jurisdiction.

SUMMARY LIST

Listed below is the Expanded Core Work Group's listing of User Functionality Priorities as developed in a series of meetings and conference calls between 10/21/2003 and 2/20/04.

USER FUNCTIONALITY PRIORITIES

Priority Ratings = 5 (High) – 3 (Medium) – 1 (Low)

Interoperability (among similar regulatory software functions)

Address compatibility	5
Identifying numbers (APN, BIN, Occupancy)	5
Permit tracking systems (other permits)	5
Assessor information	5
Inspection information	5
Zoning information	5

Integration (with other systems)

Emergency response (first responder, critical contact, FEMA response)	5
GIS (2-way interface)	5
Document Management (plans, paper permit, calc/specs, reports, viewing)	4.5
Integration with other agencies	4
On-site services (inspection, plan review)	3

Price/Performance

Affordability	5
Reliability	5
Scalability	5
Reduce regulatory overlap	3

User Interface

Web-enabled interface	5
Robust, flexible reporting (standard, user, customer)	5
Robust viewer (multiple formats)	5
Electronic submission	5
Electronic Forms	5
Matching electronic to paper	4

Software Function

Fee estimation	5
Payment for services	5
Electronic payments	5

E-commerce (services)	5
Full financial and billing	5
Inspection history	5
Workflow (routing of plans)	4
Scheduling (calendar)	4
Wireless connectivity	4
Searchable information and data	4
Red lining	4
Electronic signatures	3
digital signatures	3
Time and cost tracking	3
Automated inspection scheduling/dispatch	3
Inspector routing	3
E-commerce (information)	3
Integration CRM & call centers	3
Human resources, staffing, equipment management	3
Interpretations	3
Equipment certification	3
Electronic (re-check, back check, extranet)	3
Cost estimation	2
Demographics	2
Property characteristics for development (size, use, value)	2
Third party/deputy inspections	2
Peer reviews	2
Automated plan check	1

E. USE CASE DESCRIPTIONS AND USE CASE TEMPLATE

To provide the hardware and software community with meaningful information concerning the Use Cases, the Alliance’s Expanded Core Work Group completed and provides below detailed Use Case Descriptions and a Completed Use Case Template for each of the ten highest priority use cases that were identified in the Interoperability and Integration Categories.

The template includes information on the name of the use case, its category, priority, purpose, description, actors (including which of the nine Alliance building regulatory processes are involved), data content, transactions, applications, performance goals, preconditions when the use begins and ends, and other useful information including: exceptions, post conditions, references and open issues.

The detailed Use Case Template below is designed to provide the hardware and software industry with a point of departure for consideration of actions that need to be taken either individually or collectively to make such data interoperable in the building regulatory process. As noted in the opening of this paper, this material is being provided to the software community for their review and comment in preparation to follow up working sessions with the Alliance.

Use Case Descriptions & Use Case Template

Summary Descriptions of High Priority Use Cases Identified by the Alliance Expanded Core Work Group:

Interoperability (among related regulatory software functions)

Address Information	5
Unique Identifying numbers (APN, BIN, Occupancy)	5
Permit and plan tracking	5
Zoning Information	5
Ownership/assessor information	5
Inspection information	5

Integration (with external software systems)

GIS (2-way interface)	5
Document Management (plans, paper permit, calc/specs, reports, viewing)	4.5
Integration with other agencies	4
Emergency response (first responder, critical contact, FEMA response)	4

Alliance Building Regulatory System Processes P-1 through P-9

P-1 Licensing	P-6 Maintenance & Reports
P-2 Permitting	P-7 Complaint
P-3 Plan Review	P-8 Enforcement
P-4 Inspection	P-9 Equipment Registration and
P-5 Materials & Equipment	Use Permitting

USE CASE TEMPLATE

The following use case template is a descriptive summary table adapted from the NIST Use Case Template, dated November 28, 2003, as adopted and used by FIATECH AEX, ASHRAE GPC20 and IAI-aecXML efforts. The text in italics below was the adapted modifications required for this current effort. This template provides explanation for the use cases that follow.

Name	Name of Use Case, which should be related to the result, purpose or the event of the Use Case
Category	<i>The user functionality priority category</i>
Priority	<i>The user-designated priority, ranging from 5-High to 1-Low</i>
Purpose	The main purpose of the Use Case and what the participants expect of the transaction.
Description	A paragraph(s) describing the goal(s) and the scenario(s) illustrated by this Use Case. This should include the type of transaction, description of the business processes and context, stage(s) of a capital facilities project during which the Use Case occurs and any relevant information on the disciplines or market segments to which the Use Case applies.
Actors	Who or what participates in the Use Case. That includes what individuals, organizations, job functions, software applications, software functions or machines collaborate in the Use Case. <i>Also what Building Regulatory Process (BRP) systems need to share/receive this data. BRP systems include: P-1 Licensing, P-2 Permitting, P-3 Plan Review, P-4 Inspection, P-5 Materials & Maintenance, P-6 Maintenance & Reports, P-7 Complaint, P-8 Enforcement, P-9 Equipment Registration & Use Permitting.</i>
Data Content	What data are in scope of this Use Case. What information is exchanged in the transactions that implement the Use Case.
Transactions	What are the exchanges that take place in the use of the data.
Applications	What computer applications are likely to produce the data of this Use Case or receive and use the exchanged data of this Use Case.
Performance Goals	What relevant performance goals are required for the proper performance of the Use Case. This could be dependant on each actor and application defined.
Preconditions	What conditions are expected to exist prior to the start of the Use Case.
Begins When	What starts or triggers the performance of this Use Case.
Ends When	When is the Use Case finished.
Exceptions	What exceptional outcomes are there besides the normal one expected for a successful performance of the Use Case.
Post Conditions	What is the state of "the system" after the Use Case has been completed
References	If this Use Case references other works or documents, or other Use Cases the references to these sources are placed here.
Open Issues	Any unresolved issues and the sources of the issues should be noted here.

The Alliance Expanded Core Work Group listing of high priority use cases generated in the fall of 2003 has been refined in December-February and placed into the following use case template for presentation, review and comment by the nation's hardware and software community that support the Building Regulatory Process. Ten specific use cases are currently documented for review and comment.

CASE #1

Name	1 – Address Information
Category	Interoperability
Priority	5 – High
Purpose	Allow multiple software systems to exchange standard information related to location addresses through appropriate data queries.
Description	<p>Most jurisdictions do not have a uniform method/standard for listing an address. These include addresses for the building or site where work is to be performed, the owner of a building, the contractor's address etc. Because it has been entered multiple times in different systems, addresses which are the same may appear to be different, e.g., in one case street names are abbreviated, in another they are spelled out. Indeed in some cases a location may have multiple address ranges. Software must accommodate this lack of uniformity in addresses or define a standard methodology for capturing addresses (drop down lists for address suffixes, etc.). The software must recognize mailing address metadata that define the type of address being referenced (contractor, owner, responsible party, etc.) The addressing schema for construction property must capture multiple address ranges and AKAs.</p> <p>Multiple software systems associated with the construction permitting process need to create and use physical address information associated with construction sites, owner, contractors, etc. in consistent way. Some systems will provide user entry for this information, while other systems will query this information for identification and system cross-correlation and will obtain the appropriate relevant stored data automatically through queries.</p>
Actors	<p><u>People</u>: Owners, Contractors, Permitting organizations/jurisdictions</p> <p><u>BRP Systems</u>: P-1 Licensing, P-2 Permitting, P-3 Plan Review, P-4 Inspection, P-6 Maintenance & Reports, P-7 Complaint, P-8 Enforcement</p> <p><u>Other Actors</u>: Deed recording data entry system (entered) Permit application, review, and approval system (entered, used) License verification system (entered, used) Zoning review/approval system (entered, used) Site preparation review/approval system (used) Tax assessment system (entered, used)</p>
Data Content	<p><u>Address Information</u>:</p> <p>Postal mailing address (owner, contractor, etc.) Physical location mailing address (for job site) Various forms of additional physical location legal address descriptions for job site, e.g., borough/township, block/section, lot, etc.</p>

Transactions	<p>Create address information through user entry into one of the interoperable systems. Query / use address information in any other interoperable system</p> <p><u>Examples:</u> Create site location/building owner address information in the Deed Recording System. Use owner address information from the Deed Recording system for data entry into the construction permit application system. Query contractor address in License verification system and use information for entry into the Permit application system. Permit application system query Deed Recording system for owner application based on physical address. Zoning application uses physical address to query zoning requirements</p>
Applications	<p><u>Examples:</u> Deed recording data entry system (entered) Permit review/approval system (entered, used) License verification system (entered, used) Zoning review/approval system (used – tied to permit review and approval system) Site preparation review/approval system (used – tied to permit review system)</p>
Performance Goals	<p>Address information is correctly migrated from one building regulatory system to another upon request, without requiring user re-entry of information. Location information should be retrieved and correctly used within several seconds, commensurate with normal interactive software application performance.</p>
Preconditions	<p>For data entry, no preconditions. For address query/verification/data exchange scenario from one system to another, then both systems (the one doing the query, and the one responding to the query) must already contain the mailing address in their respective databases.</p>
Begins When	<p>Address/location information is created in an interoperable software system that supports address information data exchange.</p>
Ends When	<p>Location information is successfully transferred from the data source application to the requesting data query application.</p>
Exceptions	<p>User intervention may be required to select/edit/correct address information if any two systems have similar, but not exactly matching address information. Some indication of which address is correct is needed if more than one address meets the query successfully</p>
Post Conditions	<p>Address information is correctly stored in the ‘requesting/receiving’ application.</p>
References	
Open Issues	<p>A common information model such as XML representation is needed for location/address information. This effort should be coordinated with other industry efforts that are developing information models for addresses.</p> <p>Address matching algorithms are needed for software systems to identify ‘close, but not exact’ matches</p>

CASE #2

Name	2 – Unique Identification Numbers
Category	Interoperability
Priority	5 – High
Purpose	Allow multiple software systems to exchange standard unique identification numbers associated with building regulatory process and which are associated with a particular physical location, parcels of land, buildings or other structures, through appropriate data queries. This may include a number of related permit numbers that pertain to mechanical, electrical, plumbing, boilers, vessels, elevators, etc.)
Description	Every building or structure, on a parcel of land, in a section of a jurisdiction where construction work is being done has one or more unique identification numbers assigned to it. Generally these numbers relate to the larger area the parcel is in down to even just the section (by its occupancy classification) within a building that is undergoing construction, renovation etc. Often this includes a complete list of related permit numbers associated with subcontractors, e.g., for mechanical, electrical, plumbing, boilers, vessels, elevators, etc. for a given physical location. This may, however also include diverse identification numbers assigned by different regulatory departments in the jurisdiction such as: Taxation, zoning, water district. The concept here is that the software must be able to capture all of these identifying numbers, associated with a particular physical location, to enable interoperable sharing of information between various software systems jurisdictions and municipalities.
Actors	<p><u>People</u>: Owners, Contractors, Permitting organizations/jurisdictions</p> <p><u>BRP Systems</u>: P-1, P-2, P-3, P-4, P-5, P-6, P-7, P-8 & P-9</p> <p><u>Other Systems</u>: Deed recording data entry system Various permit applications, review, and approval system (entered, used) License verification system (entered, used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used)</p>
Data Content	<p>Assessor Parcel Number (APN) Building Identification Numbers (BIN) Structure Identification Number (SIN) Occupant Identification Number (OIN) Contractor License Number Related permit numbers (e.g., mechanical, electrical, plumbing, elevators, boilers, pressure vessels, etc.) There are likely to be other unique identification numbers for tax, zoning, etc. and other regulatory software systems that are directly associated with the physical location/address of a building/structure/occupant</p>

Transactions	<p>Create unique identification information through user entry into one of the interoperable systems. Query / use unique identification number information in any other interoperable system</p> <p><u>Examples:</u> Create License Number in Contractor Licensing System. Use Contractor License Number to retrieve information the Licensing system for contractor data entry into the construction permit application system.</p>
Applications	<p><u>Systems:</u> Contractor License System (entered) Various permit applications, review, and approval system (entered, used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used)</p>
Performance Goals	<p>Location and unique identification number information should be retrieved and correctly used within several seconds, commensurate with normal interactive software application performance.</p>
Preconditions	<p>For data entry, no preconditions. For unique identifying number query/verification/data exchange scenario from one system to another, then both systems (the one doing the query, and the one responding to the query) must already contain the unique identifying numbers in their respective databases.</p>
Begins When	<p>Unique identification number information is created in an interoperable software system that supports unique identification number data exchange.</p>
Ends When	<p>Unique identification number information is successfully transferred from the source application to the user query application.</p>
Exceptions	<p>Must handle cases where no unique identification number information is available, or if two or more unique identification numbers have been assigned to a particular location.</p>
Post Conditions	<p>Unique information number information and any related information from the query is correctly stored in the 'requesting/receiving' application.</p>
References	
Open Issues	<p>Further elaboration of the need for/use of unique identification numbers in the work process needs to be defined. This use case needs common industry information model (e.g. XML).</p>

CASE #3

Name	3 – Permit and Plan Tracking
Category	Interoperability
Priority	5 – High
Purpose	Allow multiple software systems to exchange standard unique identification numbers and plan and permit status designations associated with building regulatory process and which are associated with a particular physical location, parcels of land, buildings or other structures, through appropriate data queries. This may include a number of related permit numbers that pertain to mechanical, electrical, plumbing, boilers, vessels, elevators, etc.)
Description	Every building or structure, on a parcel of land, in a section of a jurisdiction where construction work is being done has one or more plans, permits and unique identification numbers assigned to it. These identification numbers allow people and systems to understand the current status of the construction plan and permit status at any particular time. Generally these numbers relate to the larger area the parcel is in down to even just the section (by its occupancy classification) within a building that is undergoing construction, renovation etc. Often this includes a complete list of related permit numbers associated with subcontractors, e.g., for mechanical, electrical, plumbing, boilers, vessels, elevators, etc. for a given physical location. This may, however also include diverse identification numbers assigned by different regulatory departments in the jurisdiction such as: Taxation, zoning, water district. The concept here is that the software must be able to capture all of these identifying numbers, associated with a particular physical location, to enable interoperable sharing of information between various software systems jurisdictions and municipalities for the purpose of keeping track of construction plans and permit status.
Actors	<p><u>People</u>: Owners, Contractors, Permitting organizations/jurisdictions</p> <p><u>BRP Systems</u>: P-1, P-2, P-3, P-4, P-7 & P-8</p> <p><u>Other Systems</u>: Deed recording data entry system Various permit applications, review, and approval system (entered, used) License verification system (entered, used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used)</p>
Data Content	<p>Assessor Parcel Number (APN) Building Identification Numbers (BIN) Structure Identification Number (SIN) Occupant Identification Number (OIN) Contractor License Number Related permit numbers (e.g., mechanical, electrical, plumbing, elevators, boilers, pressure vessels, etc.) There are likely to be other unique identification numbers for tax, zoning, etc. and other regulatory software systems that are directly associated with the physical location/address of a building/structure/occupant Current permit status; Current construction plan status</p>

Transactions	<p>Create unique plan and permit identification and status information through user entry into one of the interoperable systems. Query / use unique plan and permit identification number and status information in any other interoperable system</p> <p><u>Examples:</u> Query permitting system using a permit number to understand current permit status</p>
Applications	<p><u>Systems:</u> Various permit applications, review, and approval system (entered, used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used)</p>
Performance Goals	<p>Location and unique plan and permit identification number information and current status should be retrieved and correctly used within several seconds, commensurate with normal interactive software application performance.</p>
Preconditions	<p>For data entry, no preconditions. For address query/verification/data exchange scenario from one system to another, then both systems (the one doing the query, and the one responding to the query) must already contain the mailing address in their respective databases.</p>
Begins When	<p>Permit, plan or unique identification number information is created in an interoperable software system that supports unique identification number data exchange.</p>
Ends When	<p>Permit, plan or unique identification number information is successfully transferred from the source application to the user query application.</p>
Exceptions	<p>Must handle cases where no permit, plan or unique identification number information is available, or if two or more unique identification numbers have been assigned to a particular location.</p>
Post Conditions	<p>Unique information number information and any related query information is correctly stored in the 'requesting/receiving' application.</p>
References	
Open Issues	<p>Further elaboration of the details of plan and permit status tracking and relevant queries in the overall work process needs to be defined. This use case needs common industry information model (e.g. XML).</p>

CASE #4

Name	4 – Zoning Information
Category	Interoperability
Priority	5 – High
Purpose	Allow multiple software systems to exchange standard information related to zoning status of a particular address through appropriate data queries.
Description	<p>Most jurisdictions do not have a uniform method/standard for describing geographic zones and associating these with location addresses for zoning purposes.</p> <p>Multiple software systems associated with the construction permitting process need to create and use physical address and zoning information associated with construction sites, owner, contractors, etc. in consistent way. Some systems will provide user entry for this information, while other systems will query this information for identification and system cross-correlation and will obtain the appropriate relevant stored data automatically through queries.</p>
Actors	<p><u>People</u>: Owners, Contractors, Permitting organizations/jurisdictions</p> <p><u>BRP Systems</u>: P-2, P-3, P-4, P-7 & P-8</p> <p><u>Other Systems</u>: Deed recording data entry system (entered) Permit application, review, and approval system (entered, used) License verification system (entered, used) Zoning review/approval system (entered, used) Site preparation review/approval system (used) Tax assessment system (entered, used)</p>
Data Content	<p><u>Address Information</u>:</p> <p>Postal mailing address (owner, contractor, etc.) Physical location mailing address (for job site) Various forms of additional physical location legal address descriptions for job site, e.g., borough/township, block/section, lot, etc. Zoning designation(s) for the physical location address</p>
Transactions	<p>Create address information through user entry into one of the interoperable systems. Query / use address information in any other interoperable system</p> <p><u>Examples</u>:</p> <p>Create site location/building owner address information in the Deed Recording System.</p> <p>Use owner address information from the Deed Recording system for data entry into the construction permit application system.</p> <p>Query contractor address in License verification system and use information for entry into the Permit application system.</p> <p>Permit application system query Deed Recording system for owner application based on physical address.</p> <p>Zoning application uses physical address to query zoning requirements</p>

Applications	<p><u>Examples:</u> Deed recording data entry system (entered) Permit review/approval system (entered, used) License verification system (entered, used) Zoning review/approval system (used – tied to permit review and approval system) Site preparation review/approval system (used – tied to permit review system)</p>
Performance Goals	<p>Zoning location information is correctly migrated from one system to another upon request, without requiring user re-entry of information. Location information should be retrieved and correctly used within several seconds, commensurate with normal interactive software application performance.</p>
Preconditions	<p>For data entry, no preconditions. For address query/verification/data exchange scenario from one system to another, then both systems (the one doing the query, and the one responding to the query) must already contain the mailing address in their respective databases.</p>
Begins When	<p>Zoning/Address/location information is created in an interoperable software system that supports address information data exchange.</p>
Ends When	<p>Zoning Location information is successfully transferred from the data source application to the requesting data query application.</p>
Exceptions	<p>User intervention may be required to select/edit/correct address information if any two systems have similar, but not exactly matching address information. Some indication of which address is correct is needed if more than one address meets the query successfully</p>
Post Conditions	<p>Zoning information is correctly stored in the ‘requesting/receiving’ application.</p>
References	
Open Issues	<p>Further definition of zoning related interoperability queries is needed. This use case needs common industry information model (e.g. XML). This effort should be coordinated with any other industry efforts.</p>

CASE #5

Name	5 – Ownership/Assessor Information
Category	Interoperability
Priority	5 – High
Purpose	Allow multiple software systems to exchange owner contact information (name, contact address, email, telephone, etc.) for the owner of the parcel of land upon which a building is being constructed or renovated.
Description	It is critical to the permit process to have accurate information about the owner of building or a parcel of land. This data needs to be transferred across all relevant software products related to this work - plan submittals, inspections, consumer complaints, etc. This information generally comes from a jurisdiction's Assessors Office – hence the term Assessor Information and the need for interoperability of data with that office.
Actors	<p><u>People</u>: Owners, Permitting organizations</p> <p><u>BRP Systems</u>: P-2, P-3, P-4, P-5, P-7 & P-8</p> <p><u>Other Systems</u>: Deed recording data entry system (entered, used) Various permit applications, review, and approval system (entered, used) Plan review/approval system (used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used)</p>
Data Content	Owner contact information, name, mailing address, email address, telephone numbers, tax identification number(s), etc.
Transactions	<p>Create owner contact information through user entry into one of the interoperable systems. Query / use owner contact information in any other interoperable system</p> <p><u>Examples</u>: Create Owner information in Deed Recording data entry system. Use Owner information as data entry into the construction permit application system.</p>
Applications	<p><u>Systems</u>: Deed recording data entry system (entered, used) Various permit applications, review, and approval system (entered, used) Plan review/approval system (used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used)</p>
Performance Goals	Owner contact information should be retrieved and correctly used within several seconds, commensurate with normal interactive software application performance.

Preconditions	For data entry, no preconditions. For address query/verification/data exchange scenario from one system to another, then both systems (the one doing the query, and the one responding to the query) must already contain the mailing address in their respective databases.
Begins When	Owner contact information is created in an interoperable software system that supports owner contact information data exchange.
Ends When	Owner contact information is successfully transferred from the source application to the user query application.
Exceptions	Must handle cases where owner contact information is different in two or more existing systems.
Post Conditions	Owner contact information is correctly stored in the 'requesting/receiving' application.
References	
Open Issues	This use case needs common industry information model (e.g. XML).

CASE #6

Name	6 – Inspection Information
Category	Interoperability
Priority	5 – High
Purpose	Allow multiple software systems to exchange inspection information (requestor, time and date of request.) for the owner of the parcel of land upon which a building is being constructed or renovated.
Description	To do their job, on site inspectors must have access to the above relevant information. The information on who called for the inspection, when, when the inspection was/is scheduled for and history of previous inspections on that construction site. This information must be interoperable not only between the field system and the office, but between different office systems. This includes paper systems, voice activated response systems, web-site electronic systems.
Actors	<p><u>People</u>: Inspectors, Permitting organizations/jurisdictions</p> <p><u>BRP Systems</u>: P-2, P-3, P-4, P-5, P-6, P-7 & P-8</p> <p><u>Other Systems</u>: Various permit applications, review, and approval system (entered, used) Inspection scheduling system (used, updated) Inspection histories system (entered, used)</p>
Data Content	Inspection information – name /organization who requested inspection, time and date of request, scheduled time/date, a list of previous inspections with pertinent summary information about those inspections. Inspection results from various types of inspections.
Transactions	<p>Create inspection information through user entry into one of the interoperable systems. Query / use inspection information in any other interoperable system</p> <p><u>Examples</u>:</p> <p>Create Inspection request in Inspection Scheduling system (entered) Obtain inspection history from Inspection history system (used) Retrieve/Enter inspection results into inspection history system (entered, used) Use inspection status information in the construction permit application system.</p>
Applications	<p><u>Systems</u>:</p> <p>Various permit applications, review, and approval system (entered, used) Inspection scheduling system (used, updated) Inspection histories system (entered, used)</p>
Performance Goals	Inspection information should be retrieved and correctly used within several seconds, commensurate with normal interactive software application performance.

Preconditions	For data entry, no preconditions. For inspection data query/verification/data exchange scenario from one system to another, then both systems (the one doing the query, and the one responding to the query) must already contain the inspection request number and the permit numbers in their respective databases.
Begins When	Inspection information is created in an interoperable software system that supports inspection information data exchange.
Ends When	Inspection information is successfully transferred from the source application to the user query application.
Exceptions	Must handle cases where inspection information is different in two or more existing systems.
Post Conditions	Inspection information is correctly stored in the 'requesting/receiving' application.
References	
Open Issues	Further definition of the need for queries about inspection status from other interoperable systems is needed. This use case needs common industry information model (e.g. XML).

CASE #7

Name	7 – GIS 2-Way Interface Integration
Category	Integration
Priority	5 – High
Purpose	Allow GIS systems to integrate with multiple software systems associated with the permitting work process to exchange permitting related information (addresses, unique identifying numbers, permit numbers, owner information, inspection information) and information contained in GIS databases. Thus a geographic user interface can be used in conjunction with the permitting information systems.
Description	Jurisdiction Geographic Information Systems contain a layering of information relevant to a particular property site including such items as fire, sewer/water districts, property tax data, zoning, etc. The building permit issuing and tracking and other construction inspection software need to be linked both as an input to these systems and to draw information out of the GIS system for working with permitting work processes (two-way integration).
Actors	<p><u>People</u>: Owners, Contractors, Permitting organizations, Other government organizations</p> <p><u>BRP Systems</u>: P-2, P-3, P-4, P-5, P-6, P-7, P-8 & P-9</p> <p><u>Other Systems</u>: Geographic information system (entered, used) Deed recording data entry system (entered, used) Various permit applications, review, and approval system (entered, used) Plan review/approval system (used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used) Inspection scheduling system (used, updated) Inspection histories system (entered, used)</p>
Data Content	Geographic information (streets, blocks, buildings, addresses, utility line routings, etc.) Address information Zoning information Owner information Unique identifying numbers Permit numbers Permit information Inspection information

Transactions	<p>Create geographical context information through user entry into one of the interoperable systems. Query / use geographical information in any other interoperable system</p> <p><u>Examples:</u> Retrieve Permit status by geographic navigation (point/click) Enter inspection result by geographic navigation Find building identification number by geographic navigation Obtain inspection history by geographic navigation</p>
Applications	<p><u>Systems:</u> Geographic information system (entered, used) Deed recording data entry system (entered, used) Various permit applications, review, and approval system (entered, used) Plan review/approval system (used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used) Inspection scheduling system (used, updated) Inspection histories system (entered, used)</p>
Performance Goals	Information should be retrieved and correctly used within several seconds, commensurate with normal interactive software application performance.
Preconditions	For data entry, no preconditions. For data query/verification/data exchange scenario from one system to another, then both systems (the one doing the query, and the one responding to the query) must already contain the address or unique identifying numbers in their respective databases.
Begins When	Information is created in an interoperable software system that supports geographic information system interfaces
Ends When	Information is successfully transferred from the source application by the GIS to the user query application.
Exceptions	
Post Conditions	Information is correctly stored in the 'requesting/receiving' application.
References	
Open Issues	This use case needs common industry information model that is now being worked on within GIS industry.

CASE #8

Name	8 – Document Management (Plans, paper, permits, calcs, specs, etc.)
Category	Integration
Priority	4.5 – Medium High
Purpose	Allow Document Management Systems to provide access to all relevant stored documents associated with permits, including scanned paper permit forms, plan submissions, calculations and specifications, reports on the construction project, property descriptive data, site surveys, inspection reports, etc.
Description	Document Management Systems indexing and searching information needs to automatically include key interoperable search criteria information, including permit numbers, unique identifying numbers, addresses, etc., so that all relevant documents associated with a permit can be readily located on demand. Integration of Document Management Systems with GIS systems provide a further degree of integration that will enhance ease of use of document management systems.
Actors	<p><u>People</u>: Owners, Contractors, Permitting organizations, Other government organizations</p> <p><u>BRP Systems</u>: P-1, P-2, P-3, P-4, P-5, P-6, P-7, P-8 & P-9</p> <p><u>Other Systems</u>: Geographic information system (entered, used) Deed recording data entry system (entered, used) Various permit applications, review, and approval system (entered, used) Plan review/approval system (used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used) Inspection scheduling system (used, updated) Inspection histories system (entered, used)</p>
Data Content	Geographic information (streets, blocks, buildings, addresses, utility line routings, etc.) Address information Zoning information Owner information Unique identifying numbers Permit numbers Permit information Inspection information Document index and other descriptive metadata about documents

Transactions	<p>Create document context information through user entry into one of the interoperable systems. Query / use document information in any other interoperable system</p> <p><u>Examples:</u> Retrieve Permit documents by geographic navigation (point/click), display appropriate documents (scanned or otherwise) Use building identification number to bring up associated CAD floor plans Obtain submitted construction plan documents from physical address</p>
Applications	<p><u>Systems:</u> Document management system (entered, used) Geographic information system (used) Deed recording data entry system (used) Various permit applications, review, and approval system (used) Plan review/approval system (used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used) Inspection scheduling system (used, updated) Inspection histories system (entered, used)</p>
Performance Goals	<p>Information should be retrieved and correctly used within several seconds, commensurate with normal interactive software application performance.</p>
Preconditions	<p>For data entry, no preconditions. For data query/verification/data exchange scenario from one system to another, then both systems (the one doing the query, and the one responding to the query) must already contain the address or unique identifying numbers in their respective databases.</p>
Begins When	<p>Information is created in an interoperable software system that supports document management system interfaces</p>
Ends When	<p>Document is successfully transferred from the document management system to the user query application.</p>
Exceptions	
Post Conditions	<p>Document is correctly retrieved from the document management system to the 'requesting/receiving' application.</p>
References	
Open Issues	<p>This use case needs common industry information model.</p>

CASE #9

Name	9 – Integration with other Agencies
Category	Integration
Priority	4 – Medium High
Purpose	Data must integrate with other agency software systems such as fire, environmental, transportation, emergency response systems.
Description	The building where construction is being done or site upon which a building is being built does not exist in isolation. The building or site appears in the databases of other agencies (e.g. fire, police, EMS, transportation and environmental protection) within the jurisdiction and data needs to be shared among these agencies.
Actors	<p><u>People</u>: Permitting organizations, Other government organizations (Fire, Police, EMS, Transportation, Environmental Protection)</p> <p><u>BRP Systems</u>: P-1, P-2, P-3, P-4, P-5, P-6, P-7, P-8 & P-9</p> <p><u>Other Systems</u>: Geographic information system (entered, used) Emergency Response system(s) (entered, used) Transportation systems (entered, used) Environmental Protection Systems (entered, used) Deed recording data entry system (entered, used) Various permit applications, review, and approval system (entered, used) Plan review/approval system (used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used) Inspection scheduling system (used, updated) Inspection histories system (entered, used)</p>
Data Content	<p>Includes information that agencies want from permitting systems, and what permitting systems want from other agencies.</p> <p><u>Examples</u>: Geographic information (streets, blocks, buildings, addresses, utility line routings, etc.) Address information Zoning information Owner information Unique identifying numbers Permit numbers Permit information Inspection information Document index information</p>
Transactions	<p>Query / use document information in any other interoperable system</p> <p><u>Examples</u>: Fire system retrieve building and occupancy information on file in building permit applications.</p>

Applications	<u>Systems:</u> Document management system (used) Geographic information system (used) Emergency Response system(s) (entered, used) Transportation systems (entered, used) Environmental Protection Systems (entered, used) Deed recording data entry system (used) Various permit applications, review, and approval system (used) Plan review/approval system (used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used) Inspection scheduling system (used, updated) Inspection histories system (entered, used)
Performance Goals	Information should be retrieved and correctly used within several seconds, commensurate with normal interactive software application performance.
Preconditions	For data query/verification/data exchange scenario from one system to another, then both systems (the one doing the query, and the one responding to the query) must already contain the address or unique identifying numbers in their respective databases.
Begins When	Information is created in an interoperable software system that supports interagency information exchange interfaces
Ends When	Information is successfully transferred from one agency information system to another user query agency application.
Exceptions	
Post Conditions	Information is correctly retrieved from one information system to the 'requesting/receiving' application.
References	
Open Issues	Define the data interface requirements more carefully across various agencies. This use case needs common industry information model (e.g. XML).

CASE #10

Name	10 – Emergency Response
Category	Integration
Priority	4 – Medium High
Purpose	Provide data to Emergency response personnel (first responders) relevant to assuring life safety of responders and effectiveness of response. Includes location information, type of construction, building plans, storage of hazardous materials, building access.
Description	First responders are at greater risk when they come to the site of an emergency or disaster if they do not have accurate information regarding conditions of that site, nature of construction, building plans, hazardous materials stored on site, building access, etc. This high priority use case would assure the ability of a jurisdiction to link that data to EMS/First Responder databases.
Actors	<p><u>People</u>: Permitting organizations, Other government organizations (Fire, Police, EMS, Transportation, Environmental Protection)</p> <p><u>BRP Systems</u>: P-1, P-2, P-3, P-4, P-5, P-6, P-7 & P-8</p> <p><u>Other Systems</u>: Geographic information system (entered, used) Emergency Response system(s) (entered, used) Deed recording data entry system (entered, used) Various permit applications, review, and approval system (entered, used) Plan review/approval system (used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used) Inspection scheduling system (used, updated) Inspection histories system (entered, used)</p>
Data Content	<p>Geographic information (streets, blocks, buildings, addresses, utility line routings, etc.)</p> <p>Address information</p> <p>Zoning information</p> <p>Owner information</p> <p>Unique identifying numbers</p> <p>Permit numbers</p> <p>Permit information</p> <p>Inspection information</p> <p>Document index information (building plans, MSDS sheets, etc)</p>
Transactions	<p>Query / use document information in any other interoperable system</p> <p><u>Examples</u>: Fire system retrieve building and occupancy information and hazardous material information on file in building permit applications.</p>

Applications	<p><u>Systems:</u> Document management system (entered, used) Geographic information system (used) Emergency Response system(s) (entered, used) Deed recording data entry system (used) Various permit applications, review, and approval system (used) Plan review/approval system (used) Zoning review/approval system (used) Site preparation review/approval system (used) Tax assessment system (entered, used) Inspection scheduling system (used, updated) Inspection histories system (entered, used)</p>
Performance Goals	Information should be retrieved and correctly used within several seconds, commensurate with normal interactive software application performance.
Preconditions	For data query/verification/data exchange scenario from one system to another, then both systems (the one doing the query, and the one responding to the query) must already contain the address or unique identifying numbers in their respective databases.
Begins When	Information is created in an interoperable software system that supports emergency responder system interfaces
Ends When	Document is successfully transferred from one information system to the emergency responder query application.
Exceptions	
Post Conditions	Information is correctly retrieved from one agency information system to the 'requesting/receiving' emergency responder application.
References	
Open Issues	<p>This scenario needs further elaboration, e.g., What do first responder agencies want from permitting and plan review systems? How is this substantially different from the previous use case? Define the data interface requirements more carefully across various agencies to support emergency response agencies. This use case needs common industry information model (e.g. XML).</p>

F. NEXT STEPS

As noted in the Alliance's report to the software industry that transmits this document, the Alliance seeks your input to help us ascertain:

1. The usefulness of the detailed use case information to your firm to produce interoperable software.
2. The usefulness of the detailed use cases in identifying a starting point for the industry and the Alliance to consider in the development of relevant XML schema for these building regulatory processes.
3. Is your firm able to share with the Alliance input on your data requirements for the permitting or other building regulatory processes?

Input received by March 29 will be reviewed by the Alliance Technology Task Force meeting on March 30 and incorporated into a final work product for this portion of this initiative.

For more information, please contact Alliance Secretariat, Robert Wible, at 703 481-2035 or rwible@ncsbcs.org.