GUIDING BUILDING

DEPARTMENTS IN ADOPTING AND USING TECHNOLOGIES

A Report by
CALBO
Innovative Practices Committee
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Why this topic was selected for the presentation?

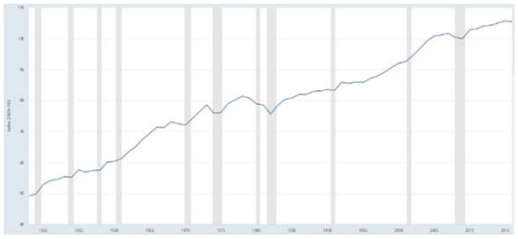
Importance of Technology In Building Department operations

- **Productivity**
- **Demystify the Ten (10) technologies**
- **Meeting expectations**
- **Streamlining thru. coordinated technologies**

Productivity and Technology

By Paul Krugman:

"Productivity is not everything, but in the long run, it is almost everything."



Importance of Productivity

- **Direct impact on budgets and financial aspects.**
- **Customers are served faster and better.**
- **Staff feels a sense of service, accomplishment and purpose.**
- **A building department will thrive and the overall quality and performance of work produced will improve.**

The role of the building official is to remove obstacles to productivity such as reducing bureaucracy and organizational drag.

First Data Set

	Population	Permits	Staff	Online Permitting	Electronic Plan Check	Online Inspections
Mean	92,735.71	4,238.51	15.30	0.49	0.42	0.35
Standard Error	16,898.61	651.82	2.45	0.08	0.08	0.07
Median	69,395.00	3,200.00	11.00			
Mode	#N/A	3,200.00	9.00			
Std. Deviation	104,170.04	4,070.59	16.08	0.51	0.50	0.48
Kurtosis	9.45	6.06	7.37	(2.10)	(1.98)	(1.65)
Skewness	2.93	2.22	2.50	0.05	0.34	0.66
Range	495,121.00	20,043.00	79.00	1.00	1.00	1.00
Minimum	113.00	457.00	2.00			
Maximum	495,234.00	20,500.00	81.00	1.00	1.00	1.00
Sum	3,523,957.00	165,302.00	658.00	21.00	18.00	15.00
Count	38.00	39.00	43.00	43.00	43.00	43.00

Second Data set

	Population	Permits	Staff	PCStaff	InspStaff	Consult	SysYear
Mean	103,044.71	4,681.18	17.24	4.71	7.24	0.30	2005.25
Standard Error	31,532.34	874.68	4.03	1.27	1.64	0.07	2.02
Median	68,085.50	3,500.00	11.00	3.50	6.00	0.20	2003.00
Mode	#N/A	3,200.00	9.00	1.00	1.00	0.10	1999.00
Std. Deviation	117,983.22	3,606.38	16.61	5.23	6.76	0.27	8.10
Kurtosis	7.81	1.05	6.74	10.09	6.48	(1.00)	(1.40)
Skewness	2.61	1.23	2.39	2.93	2.21	0.63	0.18
Range	466,239.00	12,608.00	69.00	22.00	28.00	0.80	25.00
Minimum	3,891.00	457.00	2.00	1.00	1.00		1992.00
Maximum	470,130.00	13,065.00	71.00	23.00	29.00	0.80	2017.00
Sum	1,442,626.00	79,580.00	293.00	80.00	123.00	5.06	32,084.00
Count	14.00	17.00	17.00	17.00	17.00	17.00	16.00

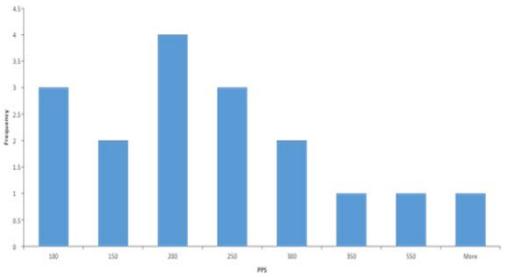
Measure of Productivity

$$Productivity = \frac{Output}{Input} = \frac{Permits\ Processed}{Building\ Staff}$$

$$PPS = \frac{Permits\ Processed}{Building\ Staff} \times (1 - \%\ of\ consultant\ work)$$

PPS: Permits Per Staff Member

Permit per Staff (PPS) Histogram



Permit per Staff (PPS) Statistics

- Average jurisdiction processes 235 permits per staff member per year
- Median is 185.
- Standard deviation is 191.

The value of the standard deviation indicates that there is a high degree of variations among jurisdictions in terms of staffing.

The permit processing operation and complexity varies by jurisdiction. The PPS does not capture nor take into account the inner workings of a department, which can be a source of the variation in the data.

Inspector to Plan Checker Ratio

Inspector to Plan Checker Ratio	
Mean	1.907852
Standard Error	0.412503
Median	1.6
Mode	1
Standard Deviation	1.700792
Sample Variance	2.892694
Kurtosis	11.44944
Skewness	3.164165
Range	7.5
Minimum	0.5
Maximum	8
Sum	32.43349
Count	17

Link Productivity & Technology

SUMMARY OUTPUT			
Regression Statistics			
Multiple R	0.673158612		
R Square	0.453142517		
Adjusted R Square	0.326944636		
Standard Error	156.7454433		
Observations	17		
ANOVA			
	df	SS	MS
Regression	3	264663.3798	88221.1266
Residual	13	319398.7421	24569.13401
Total	16	584062.1219	
	Coefficients	Standard Error	t Stat
Intercept	433.7930004	86.06064059	5.040550447
Online Permitting	-240.0608672	85.7143187	-2.800709039
Electronic Plan Check	-40.36563839	83.60626686	-0.482806372
Online Inspections	-35.6917523	83.07089572	-0.429654116

WHY AGENCIES STRUGGLE WITH THEIR TECHNOLOGIES

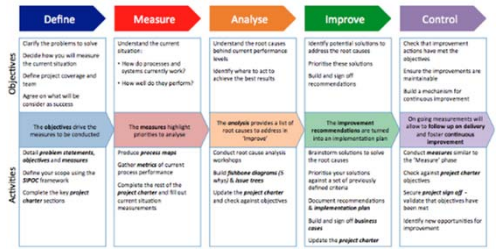
- Jurisdictions have difficulty finding the technology/ies that effectively matches their needs.
- Jurisdictions not utilizing the technology/ies in an optimized way/fullest capabilitiy.
- New technology may require additional staff to operate and maintain.
- Staff turnover and having to learn the usage of the technology again by new staff.
- Jurisdiction may need to staff up and bring different skill sets upon technology implementation
- Additional information and data will be needed to increase the robustness of the technology.

Summary

Technology does not seem to have a positive impact on productivity.

Future analysis will rely on a larger data set which can possibly change the results of the analysis on technology and refine other measures

Six Sigma Approach



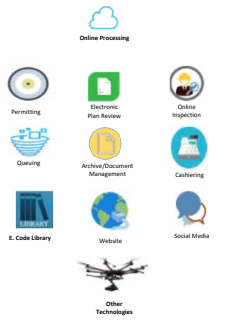
The role of the building official is to remove obstacles to productivity such as reducing bureaucracy and organizational drag.

"Unfortunately, they're very good at what they do."

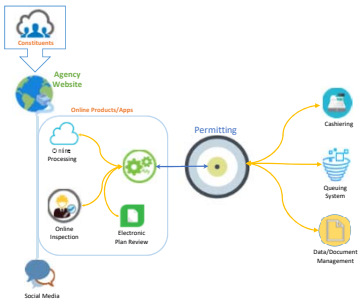
Demystify Ten (10) Technologies

TECHNOLOGIES NECESSARY FOR BUILDING & SAFETY OPERATIONS

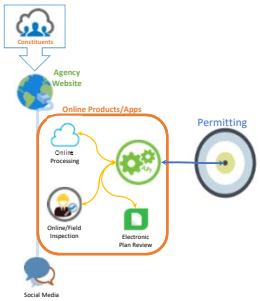
1. **Permitting/On-line processing**
2. **Queueing**
3. **Electronic plan review**
4. **Mobile/On-line inspection**
5. **Archive/Data management**
6. **Cashiering/Financial**
7. **Electronic Code Library**
8. **Website**
9. **Social media**
10. **Other technologies**
    1. **Drones**
    2. **Robotics**
    3. **Cloud**
    4. **SaaS**
    5. **…**



CORE COMPONENTS
Technology Checklist



CORE COMPONENTS
Bang for Your Buck Checklist

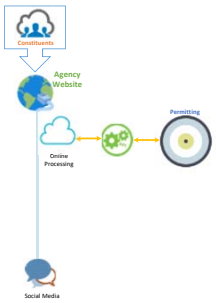


Software suites that provide *bi-directional (API) connectivity* to:
1. Customer Portals
2. Web-based Plan Review
3. Inspection applications, ***etc.***
provide the *most benefit* to agency and constituents.

=30-50% gain in Efficiency
Reduction in costs up to 50%

BANG FOR YOUR BUCK CHECKLIST

Online Processing-Customer Portals Checklist



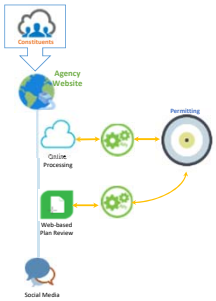
1. Online Permit Applications
2. Takes Payments online
3. Scheduling
4. Upload/Download files

Results:

- ✔ Reduce walk-in traffic by *90%*
- ✔ Save time and money for constituents/Applicants
- ✔ Streamlines Document Retention.

BANG FOR YOUR BUCK CHECKLIST

Electronic Plan Review Checklist



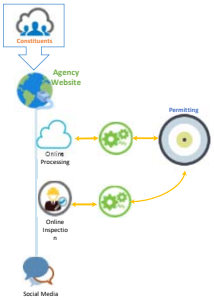
1. Plan Review with real time collaboration
2. Plan Review should be easy to learn
3. Manages document versions
4. Manages comments
5. Supports paper plan reviews

Results:

- ✔ Streamlines Document Retention.
- ✔ Save Time and money for your constituents.

BANG FOR YOUR BUCK CHECKLIST

Field Inspections Checklist



1. Mobile Devices (iOS/Android)
2. Easy to use
3. Access to Plan Review documents
4. WiFi w Offline Sync
5. Scheduling

Permitting Systems /Online Processing

Permitting System Overview

- Hosting Options
- Windows vs Web applications
- Costs and Benefits
- Technology Fees
- Best Practices

Hosting Options

On-Premise vs. Off-Premise – Items to Consider

- Data loading speed
- Disasters
- Hardware and IT support
- Shared Environment

Windows vs. Web Applications

- Loading speed
- Installation
- OS Compatibility
- Updates

Costs & Benefits

- NPV spreadsheet
- Execution time
- Number of steps
- Number of clicks

Keeping Database Clean

Important for Reporting and Searching

Use drop down lists.

Check entries from time to time.

Create a policy or clear standards to users.

Extracting Data

- Understanding of the database
- Tools needed:
  - Report writer
  - Report viewer
- What to ask for to access your database.

Online Permitting

The Way to Go

- Time Saving to jurisdiction and the public.
- Convenience
- Look for more than just web forms.
- Online search and status updates
- Make online requests and submittals.
- Overall better customer service.

Queueing System

What is a Queueing System?

A system of tracking customers and Managing Customer Service

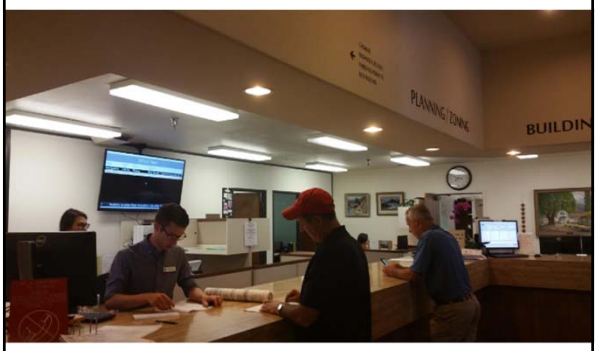
- Tracking number of applicants waiting queue
- Tracking applicants wait time
- Tracking applicant flow between various services
- SMS messaging of applicants
- Reports on customer service levels
- Customer feedback/satisfaction survey
- A system of tracking customers and managing Customer Service

Benefits of a Queuing System

- Benefits to Customers
- Benefits to Employees
- Benefits to Managers

Sample Systems – City of Anaheim

Sample Systems – City of Laguna Beach



Servers vs. Wait Time

Table 1 - Data

Number of permit technicians issuing permits	1
Average rate of customers arriving	3 per hour
Average rate of issuing a permit	4 per hour

Table 2 - Analysis Results

Process Type: M/M/1		
Mean time between customers arriving	20.00 Minutes	
Mean time of issuing a permit per permit technician	15.00 Minutes	
Traffic intensity	0.75	rho
Average utilization rate of a permit technician	75 %	U
Average number of customers waiting in line	2.25 customer	Lq
Average number of customers in system	3.00 customer	L
Average time waiting in line	45.00 Minutes	Wq
Average time in system	60.00 Minutes	W

Table 1 - Data

Number of permit technicians issuing permits	2
Average rate of customers arriving	3 per hour
Average rate of issuing a permit per permit technician	4 per hour

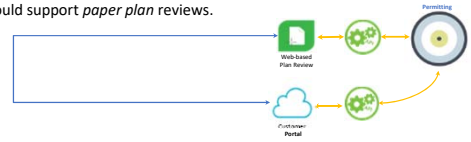
Table 2 - Analysis Results

Process Type: M/M/s		
Mean time between customers arriving	20.00 Minutes	
Mean time of issuing a permit per permit technician	15.00 Minutes	
Traffic intensity	0.38	rho
Average utilization rate of a permit technician	38 %	U
Average number of customers waiting in line	0.12 customer	Lq
Average number of customers in system	0.87 customer	L
Average time waiting in line	2.45 Minutes	Wq
Average time in system	17.45 Minutes	W
Probability of no customers in system	45 %	Po
Probability that all permit technicians are busy	20 %	
Percentage of customers who wait in queue	20 %	
Probability that at least one permit technician is idle	80 %	
Percentage of customers who do not wait in queue	80 %	

Electronic Plan Review System

ELECTRONIC PLAN REVIEW
Best Practices – Key Functionality

1. Provides API connectivity to the Permitting system.
   - Optionally, integrates to a Customer Portal
2. Review with real time collaboration.
3. Provides configurable workflows tools.
4. Plan review tool should be easy to learn.
5. Manages document/plans versions.
6. Securely manages comments.
7. Should support *paper plan* reviews.



ELECTRONIC PLAN REVIEW
Best Practices – Integrated or Stand Alone

Integrated to a Permitting is recommended when:
- Higher volume plan reviews, per year.
- API connectivity is available.
- The Permitting System can manage document versioning and
  Optionally, manage plan review assignments.

Stand alone works when:
- It's a short-term solution or
- Low volume plan reviews, per year
- Permit System is outdated.
- A Customer Portal is available.

ELECTRONIC PLAN REVIEW
Best Practices – Technology

Web-based products typically:
- Require *no workstation software* installation/maintenance.
- Accessible anywhere – even when you're on vacation!
- Less work for your IT Dept.
- Should be fully supported on the most popular browsers.

2018	Chrome	Edge/IE	Firefox	Safari
January	77.2 %	4.1 %	12.4 %	3.2 %

2017	Chrome	IE/Edge	Firefox	Safari
December	77.0 %	3.9 %	12.4 %	3.3 %
November	76.8 %	4.3 %	12.5 %	3.3 %
October	76.1 %	4.1 %	12.1 %	3.3 %

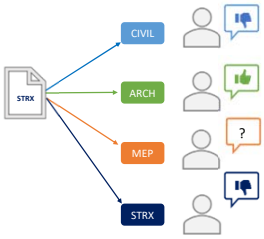
ELECTRONIC PLAN REVIEW
How Integration Works

The Permit System connects via API calls to the Plan Review application

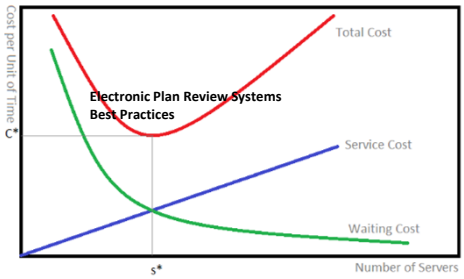
Permit System ***sends***	Plan Review ***returns***
Project Information	Updated Assignment 'Status'
Plans (Versioned)	'Reviewed' Plans
Review 'Assignments'	Comments/Correction Letters
to Plan Review	*to Permit system*

ELECTRONIC PLAN REVIEW
Best Practices – Preparing Documents

File Format: The recommended format is **PDF**, *not* CAD (dwg).
Assembling PDF's: Plans should be provided in 'logical sets' (by discipline), for easy distribution.



Minimizing Costs



Mobile/On-line Inspection

Mobile Inspections

Getting the most out of going paperless in the field

Mobile Inspections

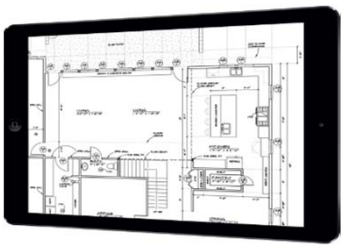
Getting the most out of going paperless in the field

The original "Eye-Pad".

Mobile Inspections

Benefits of going paperless in the field

1. Access to electronic plans.
2. Pictures. Pictures. Pictures.
3. Emailing correction notices to contractors.



Mobile Inspections

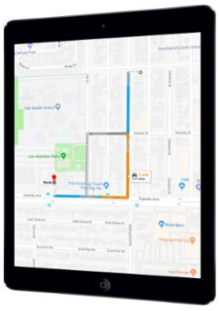
Benefits of going paperless in the field

4. Access to previous correction notices.
5. Instant scheduling of next inspections.
6. Text message alerts to contractors.

Mobile Inspections

Benefits of going paperless in the field

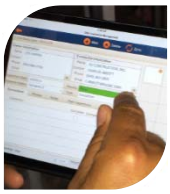
7. Driving directions
8. GPS coordinates.
9. QA/QC of inspectors.

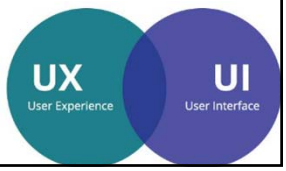


Mobile Inspections

What to look for in a mobile app

1. User Interface (UI) & User Experience
2. Sync or wifi system access.
3. iOS / Windows / Android.
4. Native app or web application.
5. Design standards.
6. Get a demo of the app





Mobile Inspections

Apps for an Inspectors Mobile Device

Simpson Strong-Tie Literature Library app

UL Hazardous Location app

Apple Compass app

Leviton 2 Go app

Wire Gauge Charts app

Google Translate app

Archive/Database Management System

What is Database

A structured set of data held in a computer

A database management system handles the storage, retrieval, and updating of data in a computer system.

Relations are often used to extract or update data. Programmatically this is done using SQL (Structured Query Language)

Off-The-Shelfor Customizable DataBase

Customizable Database Applications

- Caspio.com
- KnackHQ.com
- TrackSoftInc.com
- TrackVia.com

Application Programming Interface (API)

- A set of functions that allows access to the database without the application itself.
- Returns data in a commonly structured format
- Example: permitting system checking if a contractor has a business license

Example API

This XML file does not appear to have any style information associated with it. The document tree is shown below.

<Records Count="17" MediaPath="https://files.adaptatrack.com/getfjile.aspx?id=3510&dId=1548010019&key
MainTableName="Inspections">
<Record IdValues="InspectionsID=5044444">
<Col TableName="" Id="0" Name="Row" Cap="Row" Val="3" RawVal="3" Type="" LinkId="0" Show=
<Col TableName="Inspections" Id="337" Name="Inspection_Type" Cap="Inspection Type" Val="Buildin
Show="1"/>
<Col TableName="Inspections" Id="338" Name="Inspection" Cap="Inspection" Val="Footings / Ufer Gro
LinkId="0" Show="1"/>
<Col TableName="Inspections" Id="556" Name="Requested_On" Cap="Requested On" Val="12/17/201
Type="DateTime" LinkId="0" Show="1"/>
<Col TableName="Inspections" Id="557" Name="Requested_For" Cap="Requested For" Val="12/17/201
Show="1"/>
<Col TableName="Inspections" Id="339" Name="Inspection_Date" Cap="Inspection Date" Val="3/10/20
Type="DateTime" LinkId="0" Show="1"/>
<Col TableName="Inspections" Id="345" Name="Status" Cap="Status" Val="Pass" RawVal="Pass" Type
<Col TableName="Inspections" Id="341" Name="Inspector" Cap="Inspector" Val="Issam" RawVal="Issa

Archives

Going paperless

- Scanning/digitizing Documents
- Less storage space
- Ease of Public Access

Archives

- Consolidate all forms or applications in a common format
- Remove and repair files
- Verify identifying APN's and addresses
- Cleaning and grouping
- Indexing - Standardize file and document naming
- Scanning
- Repackaging for long term storage
- Boxes are banded and sent to storage

Cashiering

Cashiering Systems *Best Practices*

- Simplify fee computations & collections
- Tests new fees as before going live
- process payments electronically
- Centralize cashiering to avoid mistakes and reconciling

Future Trends

- Integration of various systems with each other across multiple platforms.
- Off premise/cloud based system (Software as a Service) VS. On premise/owned systems.
- Portals that make records & services available to public.
- GIS based systems.
- APPS – Make applications mobile friendly.

E-Codes Library

E-LIBRARIES OF CODES & STANDARDS

- Providing building officials & construction industry access to codes via internet/cloud in various formats pdf, hardcopy or other electronic formats
- Access & format varies by service provider, some provide note fields
- Some provided by Standards Development Organizations (SDOs) only cover their own codes and/or standards
- A few provide nearly every construction industry related codes and standards
- One available with instant interlinks to relevant sections of all codes & standards in library through secure connection to every type of electronic device – computers, ruggedized laptops, tablets, droids.

HOW ARE BUILDING DEPARTMENTS USING?

Narrow use:

- Replacing or supplementing hard copy of a few codes & standards
- Remote access in field for a few codes and standards

Expansive uses:

- Complete electronic library of virtually all current codes & standards & older editions
- Plan review staff can operate remotely
- Inspection personnel use
- On-line dialogue between architects and building department using same service on plan reviews & inspections

SUGGESTIONS 0N ELECTRONIC CODE LIBRARIES

- Which service covers your specific codes & standards needs?
- Which provides maximum flexibility in terms of use on multiple devices, anywhere, anytime? Note fields? Expandable as needs change?
- How complete is the library? e.g. Does it include state & local codes and referenced standards?
- How long has this company has been in this field?
- Are other jurisdictions using? If so how are they using? Would they renew?
- Make sure you are doing an apples to apples comparison - a number copy promotional language of other services but do not provide the same service or coverage. Pricing varies.

Web Site

Web Site Best Practices

- Web site is the gateway to all technologies used by government.
  - Different agency/ Department websites shall have a consistent format.
  - Main services shall have a link to the web site, i.e. “Permit System”, “Electronic Plancheck”, “Archives”, & “Financial System”. Web sites are judged by users & catered to users.
  - Easy to read, digest & used by users – use bullet points.
  - Proper use of fonts, colors & pictures.
  - Three click rule to get to information.
  - “F” pattern rule in reading.
  - Mobile friendly (responsive website).

Social Media

Social Media

What does a Building Official need to know

Use of various medias - Facebook, Twitter, Yelp

- During disasters
- New regulations

Information on media can be detrimental!

- Yelp Example

Other Technologies

OTHER TECHNOLOGIES

Technologies being used in industry which building departments can adopt:

- Drones
- Virtual and Augmented Reality
- Collaborative VR, Lidar (Light Detection and Ranging),
- Robotics & combinations of new technologies
- Microgrids
- AI-Artificial Intelligence
- Exoskeletons

DRONES

- Rapid post disaster damage assessments
- Rapid overviews of construction progress in remote locations
- Spot inspections on tall structures
- Pipeline inspections

ROBOTICS/LIDAR & AUGMENTED REALITY

- Robotics - Inspections of difficult to access spaces
- LIDAR - Checking underground structures prior to excavation
- Augmented Reality – Training of specialty inspectors
- Comprehensive job site monitoring for safety with wearable sensors

TECHNOLOGIES USED IN CONSTRUCTION INDUSTRY IMPACTING SOON

Artificial Intelligence & Sensors in buildings

Virtual Reality for training

Exoskeletons

Meeting Expectations

TECHNOLOGY IN THE (BRAVE) NEW WORLD

1. It's complicated.
2. It's expensive.
3. It's painful.
4. It doesn't work as advertised.
5. Now we're stuck with it.

Cloud Computing

EXAMPLES OF CLOUD-BASED SAAS

- Outlook.com & Gmail
- Office 365, Google Docs
- Box & Dropbox
- Salesforce
- WebEx, GoToMeeting, and Zoom video conferencing

CLOUD & SAAS

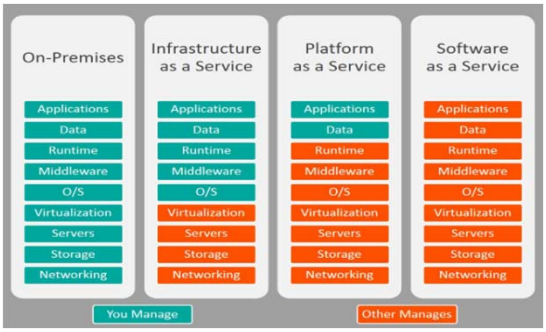
Cloud is web hosting, supercharged. The biggest players are Amazon (AWS), Google (Cloud), and Microsoft (Azure) and most vendors build their software on one of them.

Software as a Service (SaaS) is a pricing model where you pay for access (subscription) to the software, hosted and managed by a vendor.

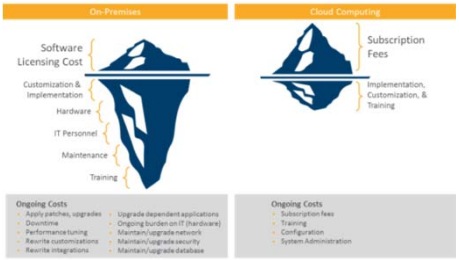
Often times, we interchange SaaS and Cloud. A Cloud-hosted product is often called SaaS and a SaaS product is often hosted on the Cloud.

Most vendors are moving to the cloud (and moving their pricing models to subscription).

ON-PREMISE & SAAS



Another way of looking at it



BIGGEST BENEFITS TO THE CLOUD

Performance	Scalability	Availability & Connectivity
• Powerful servers crunching your data.	• Add more users, easily increase server capacity.	• From any Internet-connected device, anytime.

WHEN TO UPGRADE ?
The Creep of Inefficiency

Bite the bullet:
- Choose products with API connectivity
- Choose products that support Mobile Devices when appropriate
- Become an advocate for change!

More than 90% of consumers said they would consider taking their business elsewhere rather than work with a company that uses outdated technology.

Source: Microsoft survey 2013.

RESULTS OF SURVEYS CONDUCTED IN CA.

There are no two Building & Safety operations that operate the same.

A mandate from the agency's higher leadership can resolve a lot of uncertainty and hesitation across various departments on utilization of technology.

A successful implementation of technology requires both:
- An active leadership of management
- Buy-in from staff who will be using the technology.

Less than a 33% feel their system's integration is/was a smooth transition.

RESULTS OF SURVEYS CONDUCTED IN CA.

- 50% of agencies surveyed - do not have an **on-line permit system** and public can not apply for any kind of permit on-line. Implementation of a **robust portal** (web service application) is critical in providing on-line services and electronic plan submittal.
- 66% of agencies surveyed - have implemented an **Electronic Plancheck** system. To avoid double entries permitting system and electronic plancheck systems shall be on the same platform or communicate with each other.
- 50% of the agencies surveyed - are utilizing **Mobile Inspection and Inspection On-Line Services** to some extent but laptop/tough book connectivity to their permit systems are problematic.
- Almost all agencies surveyed have an **electronic archive system** and a website.

RESULTS OF SURVEYS CONDUCTED IN CA.

- Various technologies used at Building & Safety are **not coordinated or integrated** with each other. Data is not shared and creates extra data entry and mistakes.
- Technologies are not based **on common platforms/protocols** and do not link well.
- There is a need for **Best Management Practices and standardization** of the ten (10) technologies.

Myths About Software Applications

- The more expensive a software application, the better the application.
- Software user fees need to be high in order to maintain support and service.
- Since the current system worked for others in the past, it will work for you in the future.
- You need to use different specialized applications to do different tasks.
- The system is built around the end user
- If the application is too simple or easy, it's probably not worth having

Streamlining thru.
Coordinated Technologies

Regardless of our size, location, we are all in the same

We all wrestle with technology

- **Agency Issues:** competing priorities, diverse systems in sister agencies, funding, jurisdiction CIO
- **Management Issues:** systems & software changes can be political; dedicating sufficient time/staff to map your processes, prepare, adopt, test, implement
- **Staffing Issues:** resistance to change, "33/33/33 rule," skill sets, B.O.'s own comfort with I.T.

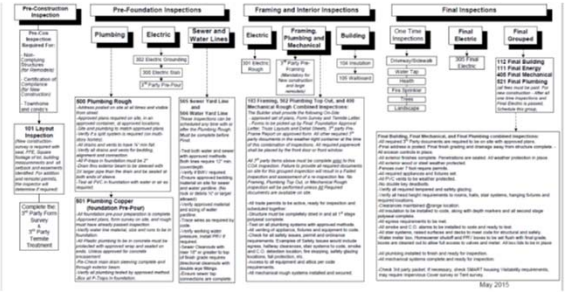
We all are in the same boat

- **Software Vendors:** One size doesn't fit all, lack of knowledge of your specific system/needs; many systems not capable of grouping of assignments; they bid the "A" team but give you the "D" team – new hires, industry consolidation.
- **Software Consultants:** Can be helpful but must have wide experience/knowledge of available systems; may have preferred systems that don't fit your needs; tend to seek payment upfront rather than based on performance.

Guide on "how to evaluate, select, and bring in right technologies"

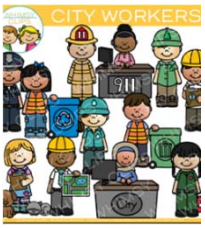
- **Understanding of your operations workflow**
  - Clearly define your processes and workflows
- **Actively participate in assessment, evaluation, and implementation of technologies in the department.**
- **Build relationship with IT, by delivering your promise on time develop trust with IT.**
- **Need for more innovation in Public Government. Focus on cloud, mobile services and Artificial intelligence.**

Fully developing a plan of how you do business, what steps are included, who does those steps and how, will set you on a path to getting software which helps you get your work done regardless of the platform or type of solution you choose.



Points to Ponder

- Not all uses of technology will reduce labor cost or save labor time. So don't sell your governing body on these points. A good example is you may opt to put a little more information in to your permit system but in so doing you have now provided the information that is frequently asked by real estate agents and now they can access it them selves and directly without your staff doing the work now providing better service than before.
- Scanning in and retaining not only plot plans but construction plans can use time but allows you to offer superior service in the future when questions come up in regards to projects original size and configuration, this also may help other divisions within your agency in the future, Police Department, Fire Department, and Code enforcement to name a few.



Selecting & Managing Technology Vendors

Talk to existing customers (by reference and back channel. Ask about if the software:
- Loads in seconds (Performance)
- Has remained fast over time (Scalability)
- Is always accessible and online (Availability)

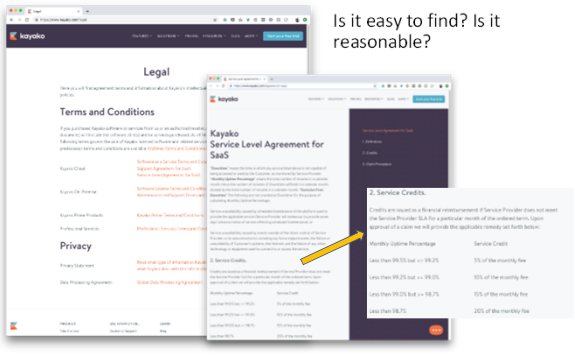
Ask the vendor for **two** product roadmaps; a short-term and a long-term. Do you like what you see?

Who is the last customer that switched away from their service? Why?

Who is their most recent customer that was deployed? (And go talk to that Customer directly).

How is support managed? Is there a ZenDesk portal or online forum? Is there a phone number to call and when is that phone staffed? What is the expected response time (SLA) for support to reply?

SERVICE LEVEL AGREEMENTS (SLA)

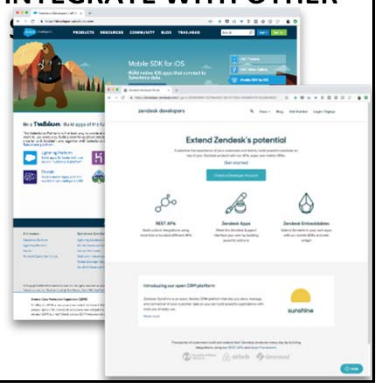


Is it easy to find? Is it reasonable?

IS IT EASY TO INTEGRATE WITH OTHER

An inherent benefit to Cloud applications is that they are more accessible and (should) come with an API to increase flexibility and extensibility.

It should be easy to have data flow between applications.



- If you fail to fully plan what you need and how to get there you will be at the mercy of a salesman that has the latest and greatest software on earth, and it does everything you need.
- If you don't know what you need how do they know?

CONCLUSIONS

- Innovative Practices and Technology must always be used together to get the greatest efficiencies and to provide the best service.

- Keep in mind that old antiquated practices can defeat the best technology available.

NEXT STEPS

- Consider in your own state/ICC chapter establishing an Innovative Practices Committee to:
- Survey members to establish their use of I.T., their needs, identify best practices
- Release helpful articles in newsletter sharing information and best practices
- Design and offer training to help jurisdictions successfully prepare for, identify, solicit adopt & implement these technologies
- ICC Journal carry articles from states/chapters

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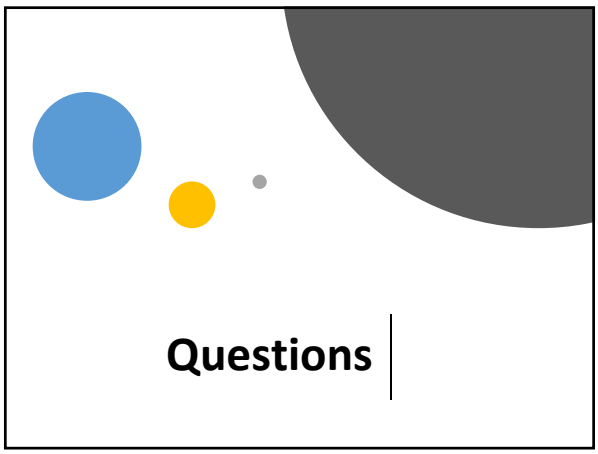

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