

Smarter, Safer, Resilient Cities in a Post-Pandemic World



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ILCMA 2021 CONFERENCE





Learning Objectives

- In a post-pandemic world, understand why teleworking and the demand for improved telecommunications, 5G and broadband is skyrocketing.
- The Future of Urban Technology: Discover how technology is changing the playing field for physical infrastructure. Autonomous vehicles, Internet of Things (IoT) and more are coming. Are you prepared for the changes?
- Understand your need to: Operate "virtually EVERYTHING VIRTUALLY in the "NEW ABNORMAL" Create stable, future-proofed, resilient, critical intelligent infrastructure and smarter, more resilient cities





Today's Session



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DO YOU REMEMBER THE FUTURE?



THE *FUTURE* ISN'T WHAT

CAUTION:

USED TO BE!



How Fast Are New Technologies Being Adopted?

Telephone:100 MM users = 75 YearsPokemon GO:100 MM users ~ 30 days $\frac{1}{2}$ BILLION < 8 Months</td>



Pokemon Go app on an iPhone, Tokyo, Japan, July 22, 2016. Toru Hanal | Reuters





New: Mega Cities - Auckland Suburbs Growing Cities are FORMING & CONSOLIDA Jurupa Valley & Centennial **Operating – Contract Service Models** Municipal Web-based Services Grow NEXT STEP: AG Virtually





POST Pandemic Cities...

Commuting REVERSING Housing Booms REVERSING Single Family Houses % **JOBS Telecommuting & Suburbs** CAV's – Game Changers **Physical Infrastructure** Road Widening Needed (?) **Telecommunications Needed!**







Jurupa Valley, CA Congestion Problems & Multi-Modal Transportation...







Outsourcing, Contracting, Privatizing

- Sooo Popular: Calif Contract Cities <u>Association</u>
- Often P2's, P3's or P4's
- Seldom: "Winner take all's"
- "Staff Augmentation"
- Now: Virtualizing Services: Disrupter

JURUPA VALLEY - Services Include

- Staff Augmentation
- Entitlement Review
- CIP Management
- Traffic Engineering

- Design / Project Management
- Permit Processing
- Program Management
- Public Works O & M

- NPDES Compliance
- Const Management
- Inspection

Grant Funding





City of Centennial, Colorado







P2's, P3's, P4's and Contracts in Centennial

- Sales Tax Collection **Development Plan Review** Licensing La Key Visioning Element • La Key Visioning Element • Contract for City services at all levels unless 2008 Reverted to City Staff Buill there is a provable advantage to doing otherwise Apin
- Anim ... The Future of Cities (?)
- ALL FUBLIC WORKS





PRE-Pandemic Disrupters – Say <u>GOODBYE</u> to:

- Fortress Malls?
- Road Widening Projects?
- Privately Owned Vehicles?
- Car Ownership Car Dealers?
- Parking Garages, Lots, Runoff?
- Mass Transit (Yes, \$1B Light Rails)?
- Gasoline Stations?
- Traffic Signals (Really!)
- Gas Tax (Electrification Full Adoption: 2040)?
- Three-car garages who needs to own 3 cars?
- Congestion Up AND down profound changes









Say <u>Hello</u> To:

Electric Cars & Car parts





- Self driving BUSSES: Large, Dense City Centers(100,000/hr)
- Sensors: "V2V," "V2I," "V2X"
- 5G Telecom
- Streetlight transmitters x 300' Spacing
- Roads without Traffic Signals
- <u>Fiber</u>: Utility meters & Fiber to the premises (FTTP)
- Fiber as the Sensor Itself







What's Driving the Change?

- Pandemic
- **#1: People as** <u>Sensors</u> (WAZE)
- <u>Uberization & Urbanization</u>
- Willingness to share data
- Explosion of data 43% ANNUAL increase in demand
- 10 Gig Telecom Ubiquitous 5G
- "Cross sector dynamics"
- This is ONLY the <u>FIRST</u> INNING!









Autonomous – Self-Driving – Driverless







COGs 2040 Plans?





mart Roads

Smart Is Not Simple









Smart City Strategies Are Still Evolving



- Pilot projects still prevalent, Plenty of Failures Toronto / Google
- Projects are often driven by a single department/goal
- Most common applications are still emerging
- Chasing "shiny things," P.I.I. & "quick hits" vs technology base







A New Approach to Smart City Thinking



* Graphic Adopted from McKinsey Institute Original Research



Kudos to Rochelle – Building their Technology Base!





i.a

Action

What Are Smart Cities Doing?

Sensors

- Traffic Signals
- Street Lights Dimmable/Flashing (Wrong Way)
- License Plate Readers
- Abnormal vehicle congestion (events)
- 5G/Small Cell Transmitter Revenues Gov't: <u>limited</u> \$250 x 4,000 = \$1MM / year Workaround: <u>P3</u>
- <u>Utilities- Fiber as a Sensor</u>
- Control Systems SCADA AMR / AMI
- Events/Parking/Unusually large crowds
- Public Safety
- Transit

Dashboards 🛛



Streetlights...

- Lighting at the Next Level
 - o "Smart" Streetlights
 - o Digital Signage
 - Sensors & Counters
 - Events / Wayfinding
 - 5G Cellular Enabled Small Cells
 - Invaluable "Backbone"



But...

<u>Prohibited</u> by most power companies <u>Public</u> revenues limited to \$<u>270/year</u> by FCC <u>Workarounds</u>:

<u>Municipalize</u> your lights (condemnation?) Private Sector Ownership: "<u>Unlimited</u>" Revenue (?)

* Graphic by IntelliStreets, Inc.



Street Light Municipalization AKA, "Community Choice Aggregation"

- LED's reduce **power** expenses by 50%+
 But <u>power</u> often < 20% of <u>total</u> expenses
 - Cities now **municipalizing** lighting
 - Paying separately for energy
 - Up-front capital and conversion costs
 - R.O.I.s ~ 5-10 years
 - Streetlights...
 From Cost to Revenue Source (~\$270/light/year)

MILLIONS in cost savings possible – Re-purposing street lights: Conduit Most Valuable Traffic signals, utilities and public <u>broadband</u>

ARPA\$?





5G: Small Cells -300 FEET AND ~300 PER SQ MILE?!



- Joe Jensen, Director, Americas FTTH Market Development, Corning





Managing Small Cell Aesthetics & RF

(More on RF Later)



Traffic Signal Pole

HRGreen. RF Review Proposed: Microwave Transmitting 700 Watts Are you doing ALL YOU Can?





Illustrative Graphic showing approximate zero degree azimuth beam (solid red) and right-of-way line, 2 feet from base (dashed red)





Centennial Initiates Fiber Friendly Program

City of Centennial IGA Conduit and Fiber







Centennial Fiber Optic Map – 4 years later







Centennial Today..."Gigabit City" – Traffic Signal Fiber





How Centennial did it...

Pro-Fiber Policies

- Public-Private/Partnerships
- Joint- Build
- Piggyback
- Dig-once policies
- Reduced open trenching
- Co-locations
- Incentives, fee reductions, individual agreements
- US DOT/CDOT grants

Results:

- ✓ Fewer street cutting permits
- ✓ Reduced potholes
- ✓ Sharing of infrastructure "P3's"
- Private Sector Investment very robust
- ✓ Incumbents continue to improve service
- ✓ MINIMAL CITY COST









New Tactic: "Speculative Conduit"

Cities & Incumbents installing multiple conduits in public rights-of-way as revenue source





What Should YOUR City Be Doing?

- Identify & MAP fiber-related assets:
- Buy Your Streetlights & Conduit
- Lease your underutilized capacity
- Upgrade public policy items
- Develop fiber friendly policies
- SMALL CELLS:
 - NIER Reviews: 100%
 - Set Aesthetic Standards
- Create strategic plan/vision



"If I had an hour to solve a problem, I'd spend **55 minutes thinking about the problem** and **5 minutes thinking about solutions.**"

ARPA\$?

- Albert Einstein





Virtual City Hall: Contactless Counter Services













Southern California Association of Governments (SCAG)

- Founded in 1965, SCAG is an association of local governments and agencies.
- Under federal law, SCAG is designated as a Metropolitan Planning Organization.
- SCAG is a Regional Transportation Planning Agency and a Council of Governments.
- SCAG region encompasses six counties
- 191 cities
- 38,000 square miles.
- The agency develops:
- Long-range regional transportation plans
- Regional transportation improvement programs
- Regional housing needs allocations
- A portion of the South Coast Air Quality management plans







Future Communities Pilot Program Goals

- 1) Creating citizen-centric online services
- 2) Reducing vehicles miles traveled (VMT) and
- 3) Improving air quality impacts
- 4) Creating a business-friendly service requiring less visits to fewer departments
- 5) Improving compliancy and transparency of operations
- 6) Improving clarity of the project entitlement process
- 7) Delivering consistently good customer service
- 8) Improving efficiency of inspection operations through route optimization
- 9) Providing record access in real-time to the public, 24/7



Online permitting and licensing software to reduce trips to City Hall.





- Located in the geographical center of the Los Angeles/Orange County metro center.
- 2) Served by five major freeways
- 3) Population ~ 50,000 residents.
- 4) The Community Development Department includes:
 - 1) Advance Planning,
 - 2) Current Planning,
 - 3) GIS
 - 4) Building and Safety Divisions









Virtualization Project Overview

- Upgrade or replace City's existing legacy software systems for planning, permitting, code enforcement and business license services
- Review / revise business processes new software capabilities & functionality
- Configure and implement **new software** systems based on revised processes
- Implement mobile inspection applications for permitting, planning, and code enforcement
- Implement an online customer portal for business licensing, permitting, planning, and code enforcement
- **Training** staff to utilize the capabilities and functionality of the new systems





How Do You VIRTUALIZE an ENTIRE CITY?

- Workflow Development
- Business Continuity Plan
- System Configuration
- Data Analysis
- Mapping
- GIS Integration
- S.O.P.s

- Software Configuration
- Data Extraction & Migration
- Data Integration
- Mobile Device Deployment
- SaaS Environment Configuration
- Staff Training
- Change Management





Benefits of VCH – Contactless Counter Services

New Paradigm for the Pandemic and Beyond:

- Anything your agency offers at a public counter must be available remotely.
- What services were your <u>customers</u> wishing you would could have delivered remotely?
- Which services should <u>you</u> continue to deliver remotely post Pandemic?
- Policy Questions:
- Contactless?
- Seniors / Prefer Traditional Contact?







Benefits of VCH – Contactless Counter Services

- 24/7 operation
- Faster more predictable turn around times
- Leverage Staff Resources
- Greater accountability and transparency
- Improved data management and security







Benefits of VCH – Contactless Counter Services



Meeting your citizens' expectations

- Online **permitting** for most permit types w/instructions
- Digital plan submittal
- Online payments
- Customer account portal

Exceeding your customer's expectations

- Online searchable plan & permit archive
- Customer chat feature?





Centralized Software System

What to look for and what to avoid!

- One-stop-shop
- Cross-Departmental Accessibility
- Online Capabilities
- Offers Increased Transparency
- Electronic processing
- Real-time access







What You Want...

- Geo-centric system
- Automation & Simplicity
- Easy integration with other systems
- Don't customize
- Customer Needs vs. Wants
- Avoid a piece-meal approach
- SINGLE ENTRY!







Workflow Optimization

What is it and why is it important?







Before You Virtualize

- Improve and optimize
- Business processes
- Workflows
- Map processes to identify bottlenecks
- Determine if improvements can be made prior to implementation



 Gauge system capabilities and align with newly developed and/or desired business processes





Leverage System Capabilities

- Take full advantage of system functionality
- Capture relevant and necessary data
- Ensure staff is prepared and well-trained







Integration Levels

How integrated are your virtual services?







Integration Levels

Software system is fully integrated at 90% or better

- **Greater Accessibility**
- Simplified processing
- Permit staff has time to Q/C
- Real-time results







Change Management – Employee Acceptance Crucial!

- Project management and change management are complementary disciplines
- Both increase the likelihood of project success
- Our core approach: Integrate project management and change management
- Unified approach on technical and the people side of change

Prosci ADKAR® Model





Experiential Design "XD"

- Extra Attention on "Moments of Engagement"
- Design all services, journeys and interactions based on citizens' "Touchpoints"
- Enhancing, Coordinating and simplifying citizens'
 "experience" such as:
- Centralized, or "Smart" "Dashboards"
- Web pages
- Smart Phones
- Kiosks / Info Centers
- Variable Message Signs
- Chat Boxes



PARKING LOTS

← Wolf & Tiger Lot OPEN

↑ East Picnic Lot ← West Picnic Lot ← Palm Lot







Leadership's Role

- Project Champion
- Project Manager and Project Administrator Selection
- Change Management
- Goal Setting Reporting and Metric Development
- Project schedule







The Virtual City Hall: Contactless Counter & Project Delivery Services

Timothy R. Jonasson, PE Assistant Practice Leader Government Services

HRGreen.



Q10 Please indentify your top three priorities for service during a pandemic.





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Thank You and Questions??















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