Getting ready for infrastructure change

NASACT Webinar

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January 25, 2017
Welcome & Opening Remarks

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NASACT WEBINAR
Getting Ready for Infrastructure Change
Jan 25 | 2:00 p.m. Eastern
## Today’s agenda

Key areas for discussion that will review how state financial managers can select/prioritize projects, improve transparency, and leverage innovations

<table>
<thead>
<tr>
<th>Topic</th>
<th>Presenter/Time</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome</td>
<td>Kinney Poynter, Christina Dorfhuber</td>
<td>Introductions</td>
</tr>
<tr>
<td>Infrastructure outlook</td>
<td>Avi Schwartz</td>
<td>Public sector infrastructure and why it is important now</td>
</tr>
<tr>
<td>Funding and financing</td>
<td>Jim Ziglar</td>
<td>Means and methods for funding and financing infrastructure projects</td>
</tr>
<tr>
<td>Selecting and prioritizing projects</td>
<td>Jim Ziglar</td>
<td>Strategies for selecting/prioritizing the right projects</td>
</tr>
<tr>
<td>Improving &amp; increasing transparency</td>
<td>Steve Dahl</td>
<td>Controls, analytics, and enhanced grants management to improve and increase transparency</td>
</tr>
<tr>
<td>Grants Management</td>
<td>Steve Dahl</td>
<td>About federal grants, and best practices for management</td>
</tr>
<tr>
<td>Leveraging technology</td>
<td>Avi Schwartz</td>
<td>Innovations that can drive financial visibility into construction projects</td>
</tr>
<tr>
<td>Action plan</td>
<td>Avi Schwartz</td>
<td>Rethinking strategy</td>
</tr>
<tr>
<td>Questions</td>
<td>Kinney Poynter</td>
<td></td>
</tr>
</tbody>
</table>
Infrastructure outlook
Over $1 trillion spent on US construction annually
Between $275B and $300B is spent on public sector infrastructure.
In the U.S., the delivery of infrastructure is the responsibility of local, state, and federal governments.

The Federal government has a significant role in providing funding, but represents only 25% of the spend in any given year for highway and transit, its area of greatest involvement.

All Levels of Government Fund Highways and Transit
Average annual own-source spending by level of government, 2008-12

- Federal: 25% ($54 billion)
- State: 40% ($84 billion)
- Local: 35% ($75 billion)

Source: Pew’s analysis of U.S. Census Bureau’s Annual Survey of State and Local Government Finances, 2008-12; U.S. Office of Management and Budget, Public Budget Database

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There are hundreds of procurement agencies, operating under a variety of legal and regulatory frameworks.
We don’t spend enough on public infrastructure

The American Society of Civil Engineers estimates that the U.S. will need to spend $3.1 trillion by 2020 to meet the country’s infrastructure needs.

*American Society of Civil Engineers, *Failure to Act*, 2013

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**America’s infrastructure G.P.A.**

- D+
- 3.1

**Infrastructure spending gap ($trillions)**

- Electricity: $107 billion
- Water: $84.4 billion
- Airports: $39 billion
- Waterways & Ports: $16 billion
- Transit: $90 billion
- Highway: $756 billion

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*Projected spending gap through 2020*
President Trump has proposed an “America’s Infrastructure First” plan to spur investments up to $1 trillion in US transportation, water, power, telecommunications, and security infrastructure over the next 10 years.

President Trump has identified “Transportation and Infrastructure” as one of his 12 Policy Priorities. His plan would leverage $167 billion in federal funds.

Cash repatriation could drive corporate capital investment.

Previous ARRA stimulus projects had significant challenges with transparency and accountability. Less than a third of funds went to infrastructure.

Source: P. Navarro & W. Ross “Trump versus Clinton on Infrastructure”  
Note 1: Please see Appendix II for a graphic representation of the tax neutrality
Infrastructure challenges

<table>
<thead>
<tr>
<th>Challenges</th>
<th>A Path Forward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure projects stall because of funding issues</td>
<td>Funding and Financing</td>
</tr>
<tr>
<td></td>
<td>Selecting and Prioritizing Projects</td>
</tr>
<tr>
<td>Government’s reputation for project delivery is not good</td>
<td>Improving and increasing transparency</td>
</tr>
<tr>
<td>The relationship between government, the public and the built environment is changing</td>
<td>Leveraging Technology</td>
</tr>
</tbody>
</table>
Funding and financing
Funding/Financing

As public funds become more scarce, the funding/financing dynamic is becoming more critical, with governments seeking innovative financing solutions.

• Funding is the revenue and capital that pay for the creation and ongoing maintenance of an asset or service

• Financing is the structure and related financing instruments that are used to leverage or securitize the funding revenues

$ Sources:

<table>
<thead>
<tr>
<th>Financing</th>
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<tbody>
<tr>
<td><strong>Traditional</strong></td>
</tr>
<tr>
<td>• Revenue bonds</td>
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<tr>
<td>• Federal loans</td>
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<td>• Infrastructure banks</td>
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<tr>
<td><strong>Innovative</strong></td>
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<tr>
<td>• Project finance loans</td>
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<td>• Taxable bonds</td>
</tr>
<tr>
<td>• PABs</td>
</tr>
<tr>
<td>• Mezzanine, sub debt</td>
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<tr>
<td>• Investor Equity</td>
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</tbody>
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Leveraged with

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<thead>
<tr>
<th>$ Uses:</th>
</tr>
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<tbody>
<tr>
<td>Construction Costs</td>
</tr>
<tr>
<td>O&amp;M Costs</td>
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</table>

- Tolls/Fees/Rents
- Other operating revenues
- New Taxes (Sales, payroll, etc.)
- State and local resources
- Federal funds

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Review of Federal funding programs for transportation systems

**Capital Investment Grants**
- Competitive grant
- State and public agencies
  - **New Starts:** new projects over $300 million
  - **Small Starts:** new projects between $100 and $300 million
  - **Core:** Improvements to existing systems
  - **Interrelated:** combination of above projects

**State of Good Repair Grants**
- Formula grant
- State and public agencies
- Capital assistance to maintain, rehabilitate and replace capital assets

**Transportation Investment Generating Economic Recovery (TIGER)**
- Competitive process
- State and public agencies
- Based on economic impacts and environment conservation

**Passenger Rail Investment and Improvement (PRIIA)**
- Authorized by Congress, designed to match local subsidies
- State and public agencies
- Capital assistance for the US rail system

**Buses and Bus Facilities Grants**
- Competitive allocation process
- State and public agencies
- Replace, rehabilitate, purchase buses and bus-related facilities

**Urbanized Area Formula Grants**
- Formula grant
- State and public agencies
- Develop and finance capital projects in urban transit
States do a lot of pay-go funding of projects, but also lean heavily on borrowing in the municipal bond market. Both are backed by diverse revenue streams.

Select sources of revenue used to support transportation (funding):
- Tolls/Fares/User Fees
- Gas Tax
- Sales Tax
- Payroll Tax
- Mortgage Recording Taxes (NY MTA)
- Federal Grants
- Grants/General Fund transfers (income & property tax)

Securitized through (financing):
- General Obligation bonds
- Revenue Bonds
- “Value Capture” bonds (e.g. TIF, Assessment Districts, Mello-Roos, Community Development Districts)
- Grant Anticipation notes
- Bank loans
- Project Finance bonds
- Private equity (in PPPs)

Source: Securities Data Corporation. Transportation new money issues and combined refunding/refinancing new money
Participants in the public infrastructure markets

Under the U.S. System, there are different roles for the Federal, State and Local Governments and the private sector. Innovations in these roles are driving PPP procurements.

<table>
<thead>
<tr>
<th></th>
<th>Project Sponsor/Owner</th>
<th>Project Developer</th>
<th>Debt Provider</th>
<th>Equity Provider</th>
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<tbody>
<tr>
<td>Federal Govt.</td>
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<tr>
<td>State Govt.</td>
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<td>Private Developer</td>
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<tr>
<td>Private Capital Markets</td>
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- State and Local governments carry the lion’s share of the responsibility for delivering, funding and financing infrastructure
  - With an accelerated infrastructure agenda focused on engaging the private sector, they are likely to face challenges in project identification, risk allocation, PPP structuring, and transaction execution

- The Federal Government has historically participated in funding infrastructure (grants), but more recently has increased its focus on financing (loans, loan guarantees)
  - Developing decision and prioritization criteria and accelerating loan and grant processing will be crucial to meet President Trump’s agenda
Designing the structure
Allocating roles, risks and rewards across these parties can maximize value creation and open up new financing options.

Desired partnership structure

- Determine desired “owner” of each project component
  - Who can and should do what?
    - Capabilities
    - Financial
    - Risk Transfer

- Define project needs and priorities
  - What Do I Want to Do?
  - What are my Objectives?
    - Speed
    - Efficiency
    - Degree of Certainty
    - Innovation

- Analyze public authority
  - What Am I Allowed to Do?
    - Legal Framework
    - Political realities

Design Build Finance Operate Maintain Own

Project Components
Key innovative financing market trends

- Sustained low interest rates have reduced return expectations in “traditional” markets
- Investors are seeking risks for which they can be compensated
- “Social Impact” and “Green” Investors are seeking assets/businesses with underlying social benefits
- Some are willing to take returns that vary with measurable social results
- Some highly structured financings (intended to reduce risk) have led to some unintended challenges and bankruptcies due to unintended consequences.

- Continuing growth in innovative procurement mechanisms like Design-Build, DBFM, DBFOM which enable risk (and return) sharing beyond purely financial mechanisms
- Greater equity involvement in public infrastructure projects
- Financial transactions will become increasingly intertwined with the entire procurement process
- Benefits of pursuing innovative procurement will need to be clearly communicated to all stakeholders, with transparent measurement methodologies
Selecting and prioritizing projects
Prior to construction, the Government needs to address challenges across the investment decision lifecycle, improving the project selection and prioritization process.

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Solutions should follow a standardized methodology and enable users to obtain proven and repeatable results. Initiatives should be tailored to the specific needs of the organization allowing customization of the solution set to address specific needs.
Portfolio optimization improves trade off analysis and provides additional information to help “make the case” for projects.

Trade off analysis is difficult for all decision makers at the Portfolio and Project level. Visualization improves the ability to standardize the investment decision process, and perform trade off analysis leading to improved resource allocation.

Strategic Vision Provides the Ability to Compare and Measure Potential Appropriation Requests

Representative Illustration Enables the Visualization of the Impact of Like-Projects

High Level Overviews Provide Leadership the Ability to Quickly Sort and Analyze Appropriation Requests

Descriptive Metrics Enable Prioritization and Greater Understanding of Organizational Projections and Impacts
In order to conduct meaningful trade-off discussions at the project level, you need to be able to group and compare the value of the selected projects based on financial and strategic benefits to the organization.
Improving and increasing transparency
Integrated Performance Management (IPM)

The framework for IPM contains three primary components:

- Organization Alignment and Accountability
- Reporting & Performance Measurement
- Strategic Planning
- Business Planning
- Budgeting
- Forecasting
- Analysis
- Performance Measurement
- Reward Results
- Monitor Individual Results

Constituent Value

Transparency
Integrated Performance Management (IPM) (cont.)

Strategic Planning
- Development of vision
- Determining strategic objectives, desired results (i.e. performance measurement targets)
- Identifying strategic initiatives
- Establishing multi-year, high-level financial and operational targets

Business Planning
- Translation of strategy into annual business unit action plans (projects and initiatives)
- Identification of business unit performance measurement targets
- Development of annual operational and capital spending envelopes

Budgeting & Forecasting
- Identification and prioritization of capital projects to develop capital budget
- Translation of business plans and capital budget into operating budgets (based on defined business model)
- Frequent review and updates to budget
Integrated Performance Management (IPM) (cont.)

**Analysis**
- Analysis of performance measurement gaps
- Ad hoc financial analysis
- Analysis of operational progress against planned initiatives
- Determination of corrective actions

**Performance Measurement**
- Reporting and monitoring of key, balanced performance measures that reflect desired results of strategic plan
- Communication of results of corporate and functional scorecards throughout the organization

**Budgeting & Forecasting**
- Financial variance reporting and monitoring
- Close, consolidation and financial statement reporting
- Operational reporting and monitoring (i.e. status of key business plan initiatives)
Recognize and Respond to Results
- recognize individual/team performance and contributions to achieving established objectives
- Respond to results and determine how results will influence the strategic planning process

Monitor Individual Results
- Business plans and key metrics are linked to individual performance plans
- Evaluation of individual performance based on individual performance plans
- Accountability for individual performance
Perspectives on performance reporting

A similar set of State priorities can generate different points of view from different stakeholders

Key concerns:
- Standard & Quality of Life
- Financial Security
- Quality of Interaction with Government

Key concerns:
- Effectiveness of dollars spent on Statewide programs
- Promoting collaboration to reduce redundancy and waste

Key concerns:
- High-Level Outcomes
- Perceived Success/Failure of State programs
- National Standing

Key concerns:
- Standard & Quality of Life
- Financial Security
- Quality of Interaction with Government

The Governor

Budget Office

Citizen

Health

Safety

Economy

Accountable Government

Education
Performance and transparency reporting—Results Washington

Several states and municipalities have developed performance measurement systems and accompanying online platforms to increase transparency.

- Data-drive performance management and continuous improvement system
- 5 priority areas identified built with specific measures to help state reach its objectives

Source: http://www.results.wa.gov/
Several states and municipalities have developed performance measurement systems and accompanying online platforms to increase transparency.

- StateStat adapted from Baltimore’s success to monitor and ensure progress on 16 strategic policy goals.
- StateStat has become a leading statewide performance program that drives measurable results.

Source: gopi.Maryland.gov
Performance and transparency reporting—OKStateStat

Oklahoma has the potential to become a leading state in performance reporting and transparency.

- Nascent efforts to publish key performance data on website
- Our development of strategy maps and indicators will allow for a robust leading edge, performance management system.

Source: [http://www.ok.gov/okstatestat/](http://www.ok.gov/okstatestat/)
Grants Management
Many of our state and local clients are grant recipients. The Grant Management Lifecycle graphic below outlines the key administrative processes and activities associated with managing a grant after award.

<table>
<thead>
<tr>
<th>Grantee Grants Management Life Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Award</strong></td>
</tr>
<tr>
<td>1</td>
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<tr>
<td>Establish Funding Governance &amp; Oversight</td>
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<tr>
<td>1A. Define Governance Structure</td>
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<tr>
<td>1B. Understand Grant Program Requirements</td>
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<tr>
<td>1C. Update / Establish Policies &amp; Procedures</td>
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<tr>
<td>1D. Define Program Management &amp; Staffing Needs</td>
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<tr>
<td>2A. Determine Level of Funding Needed</td>
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<td>2B. Evaluate Impact of Funding on Organization</td>
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<td>2C. Apply for Grant Funding</td>
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<td>2D. Execute Formal Agreements</td>
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<tr>
<td>2E. Provide Training on Grant Requirements</td>
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Proper Fiscal Management

In addition to regulations, a number of important back office activities are required to support proper fiscal management of a grant.

Before winning an award, it is important for applicants to be thoughtful about developing a budget. A successful budget will have very specific budget categories that dictate how much can be spent and what it can be spent on. A budget will help the grantee determine if they are over or under budget and whether they are spending it on the right things.

It is important for grantees to track what they are spending money on for tracking and reporting purposes, as well as for receiving reimbursements. If the grantee is billing on an as-occurred basis, they will share receipts with the grantor on a recurring basis for reimbursement.

Encumbrances are a mechanism to set-aside funds for future purchases. It helps to prevent budget overspend and sets asides funds for anticipated liabilities.

Many grantees use technology (e.g., ERP Systems) to assist with tracking and billing for costs.

This includes the need to bill and recognize revenue for as-incurred expenses. Grantees receive, deposit, and apply cash and generate accounting entries and expense entries in project costing.
New Federal Government Requirements Impact Agencies

In December 2013, the Federal Office of Management and Budget (OMB) enacted new Federal grants management regulations to streamline and simplify grant-making processes. These changes simplify processes but put more scrutiny on States to be good stewards of funding.

OMB finalized the “Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards” to create one consolidated set of guidance for Federal agencies administering grants in the code of Federal regulations.

### Changes in the “Uniform Administrative Requirements” Policy

- Streamlines Duplicative Guidance
- Requires review of merit/ risk prior to award
- Strengthens internal controls w/ added admin flexibility
- Clarifies guidance on sub-recipient monitoring
- Simplifies reporting requirements while focusing on internal controls
- Focuses audit resources on high risk ($750k) projects
- Requires greater accountability and results monitoring post-audit
- Sets consistent indirect cost rates to set a level playing field
- Allows for rule exceptions to support innovative program development with a focus on results

### Implications for States

Required to provide annual performance metrics to OMB.

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Source: Federal Register, “Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards”

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The Current State of Grants Management

The Federal government has pushed a transformation in Grants Management practices in the past several years.

### Current Trends

- **Increased focus on proving outcomes through performance data**
- **Increased requests for information reporting and record keeping in both grant applications and maintenance**
- **Increased focus on transparency of funds so that each dollar can be followed and accounted for**
- **Increased requirements for program, financial and risk controls**
- **Increased focus on fraud, waste and abuse**

### Top Challenges Facing Grantees

- **Measuring grant performance**
  - A lack of appropriate performance measures and accurate data can limit the ability to effectively measure grant program performance. This can impede the ability of grantees to meet grant requirements, and limit ability to show impact for future grants.

- **Need for greater collaboration**
  - Grant Management is often managed at the individual agency or department level, which can create redundancy and poor visibility across an organization, while preventing the grantee from developing a comprehensive grant strategy.

- **Weak financial visibility and controls**
  - New grant requirements have strict rules around how funds are separated, tracked and used. Grantees need robust financial management systems, as well developed procedures and policies to meet grantors’ financial requirements.

- **Internal control weakness**
  - When internal controls in grants management and oversight are weak, grantees face challenges in achieving program goals and assuring the proper and effective use of grant funds. Effective controls can help support successful grant applications.

- **Lack of management or oversight capacity**
  - Capacity reflects the organizational, financial, and human capital resources available for the implementation of grant programs. A lack of capacity can adversely impact an agency’s or recipient’s ability to manage and implement grant programs effectively.

Source: GAO, “An Overview of Selected Funding Levels and Selected Challenges,” GAO-12-1016: Published Sept. 2012. Copyright © 2017 Deloitte Development LLC. All rights reserved.
Leading Practices for Grant Management

All of these regulations can seem daunting to Grantees. There are a number of tips that can help our clients to be successful.

1. Be a Good Steward of Funds: Keep your financial house in order by analyzing financial systems, recording time spent on activities, and only using funds for intended purposes.

2. Be Audit Ready: Every entity receiving over $750k in funds will be audited and should be set-up for success. Know the federal regulations and any funder-specific requirements.

3. Establish and Continuously Update Policies: You have to walk the walk to establish good standards, and make them relevant to one’s own agency. Refine and update policies/procedures to keep pace.

4. Demonstrate Good Practices: Serve as a positive example and steward within the organization about how to stay in line with grant requirements, model positive behavior to inspire others to do so too.

5. Educate and Communicate: Bring the full organization along so they are aware of requirements and policies; setting all stakeholders up for success.

6. Mind your P’s and Q’s: Be prepped for the intricacies of reporting, by knowing requirements, tracking, and establishing systems that support reporting.

7. Invest in the Right Systems: Given the importance of accurately tracking data, it’s critical to have the right technical infrastructure and project management approaches to facilitate and streamline reporting processes.

8. Establish a Strong Governance Structure: Having the right people and oversight in place will support effective grant management in the long-run.
Leveraging technology
Technology advances in industries linked to Capital Projects—such as the public sector—are encouraging construction companies to increase their awareness of “what’s possible” with digital and analytics tools and solutions and to invest accordingly.

- Legacy systems are struggling to cope with disparate data and increased complexity of project information.
- Decision making can be slow and reliant on “gut feel” in the absence of trusted sources of project statistics.
- Capital project owners are demanding increasing levels of visibility and transparency of project performance.
- Drones in construction allow for views and details of the project that were not able to be seen previously.
- Wearables such as glasses and safety vests collect valuable project data such as safety metrics and construction progress.
- 3D printing has tremendously boosted productivity and improved safety for workers.
Analytics
Analysis of big data sources in construction

What is it?
- Big data is large data sets that can be analyzed visually to identify trends and patterns
- Construction projects gather large amounts of data, throughout the life cycle of a project, that can be used to visually communicate the status of a project, and help to identify potential issues
- Using analytics in construction will minimize data calls, aggregate data, visualize project health, enhance transparency, digitize and automatically generate reports

How is it used?
- Analytics allows an entity to review key metrics at all levels (program, portfolio, project, etc.) to visually understand performance, and identify potential issues or areas for improvement.
- Deloitte Case Study—Deloitte was engaged to develop a pilot dashboard for selected projects. The team analyzed key information to develop a meaningful program view, extracted key performance metrics to monitor project status, and standardized reporting and metrics collection to enhance control and performance.
Project management dashboard
Provides an interactive view of 7 key metrics, utilizing red, yellow green status, ‘hover over’ details and drill down capability
Drones

Drones in construction

What is it?
• A drone is a type of unmanned aerial vehicle (UAV) that uses a remote control to navigate
• Drones can come with camera’s installed which allows users to take videos and photographs from locations that would be unreachable by humans without assistance
• Drones are being used across all phases of a capital project life cycle, to improve efficiency, promote safety, and improve product quality

How is it used?
• Planning & Pre-contract—Drones are used to conduct site investigations, develop topographic maps, and inspect existing structures.
• Construction—Drones are used to conduct layouts and surveys, perform safety inspections, and take daily progress photos or videos.
• Network rail has a framework agreement with four companies to use drones for infrastructure inspections and land surveys. This will reduce the risk to workforce that often have to work at height or in close proximity to the railway to carry out inspections.
Wearables
Accessories for construction monitoring

What is it?
• Construction accessories such as smart hats, shoes, glasses, and helmets that carry embedded actuators, sensors, and other technology
• Wearables enable key information to be monitored helping to prevent incidents and enable tracking in emergencies.
• Shipments of smart wearables are estimated to grow to 135 million in 2018.¹

How is it used?
• Wearables can be used in many components of the construction phase to monitor employee vitals, identify employee location during evacuation, check contamination exposure.
• Deloitte Case Study—Deloitte is collaborating with construction industry to trial wearable wrist bands that help contractors monitor access and vital health metrics of work force on site.
• Daqri has worked with Hyperloop Transportation to create a Smart Helmet that gives on-demand support to remote workers allowing tasks to be completed quickly, correctly and safely.

3D Printing
Printing construction structures

What is it?

• 3D printing uses computer generated 3D images, mechanical printers, and raw materials to fabricate functioning items such as buildings, building parts, structures made of various materials
• 3D printing can drastically improve the speed of construction, it has the potential to develop the framework for a 2,500 SF single family home in approximately 20 hours

How is it used?

• 3D printing can be used to create components of a structure using various materials or actual structures like buildings or residences.
• In Shanghai WinSun have constructed houses and an apartment building using 3D printed materials in 30% of the time compared to traditional methods.
• Skanska and Loughborough University are currently developing the first commercial concrete printing robot.

A city is smart when investments in (i) human and social capital, (ii) traditional infrastructure and (iii) disruptive technologies fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance.¹

### GOALS

| Economic Growth | Quality of life, a good city to live in | Ecological footprint, sustainability “planet” |

### CHALLENGES

| Controlled transition of labor market due to automation | Winning the war on talent between metropolitan areas | Social cohesion, inclusiveness, solidarity | Secure digital environment, privacy | Resilience |

1. Deloitte’s definition of a Smart City was developed through detailed research as part of developing the Smart Cities POV by our Amsterdam GovLab fellows. GovLab is an internal think tank within Deloitte that develops whitepapers for leading-edge topics.
Action plan
Ask these questions as you continue to plan and manage your infrastructure projects.

What ways can your new projects be funded?

Are you selecting the best value projects?

Do you know the projects in your portfolio?

Are you receiving the project information you need?

Do you have access to construction analytics data?
Questions and Answers

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NASACT WEBINAR
Getting Ready for Infrastructure Change
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