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Committees on Contracts and Technology
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Good morning Chairpersons Mealy and Cabrera and members of the City Council Committees on Contracts and Technology. I'm Cas Holloway, Deputy Mayor for Operations, and I'm joined today by Carole Post, Commissioner of the Department of Information Technology and Telecommunications Commissioner Carole Post and Marla Simpson, Director of the Mayor's Office of Contract Services.

Thank you for the opportunity to testify today about the role that IT plays in the delivery of services to 8.4 million New Yorkers, and the nearly 50 million people who visit New York City every year. Cutting-edge IT projects are a hallmark of the Bloomberg Administration, and have fundamentally changed the way we do business every day. Today, information technology is an essential element of virtually every service the City provides: public safety; public health and cleanliness; basic communications through NYC.gov and 311; human services; infrastructure development; and in Mayor Bloomberg's effort to make New York City government the most accessible, transparent, and responsive in the country.

From the beginning, the Bloomberg administration has invested in information technology to better serve New Yorkers, and as a general matter, these investments have been successful. A paradigmatic example is 311, which has fundamentally changed the way New Yorkers interact with City government. Announced by Mayor Bloomberg in 2002 and launched in 2003, the 311 Customer Service Center is one of the Administration's most successful and enduring IT accomplishments:

- 311 has received more than 130 million calls since it launched and now receives an average of more than 60,000 calls per day. Approximately 20 percent of all calls result in the creation of a service request, which is routed to the city agency responsible for its resolution. 311Online, a digital counterpart to the call center, went live in 2009 and receives an additional 6,000 site visits daily. And 311 continues to evolve to meet New Yorkers' evolving needs.

- Earlier this year, the 311 Service Request Map launched to provide the public access to location-specific complaints across 15 major categories, including air and water quality, construction, noise, quality of life, snow, streets and sidewalks, transit and parking, and more. The tool shows all open and recently-closed service requests throughout the City, and a user can drill down to a specific address, intersection, community board, City Council district, or zip code.

- Earlier this month, results from the recent 311 Customer Satisfaction Survey showed that satisfaction with 311 improved 3 points from 2008—on par with the highest-performing private sector call centers, and well above other government center benchmarks.

- In addition to providing a single point of access for New Yorkers, 311 increases the accountability of city agencies. The volume of 311 calls is a metric that flashes in the bullpen every day—and the Mayor asks about it all the time.

- We also use 311 data for critical agency operations. Just this weekend, while coordinating agency operations in response to the most significant October snowfall we've had in 140 years, we tracked 311 calls every four hours to maintain awareness of potential trouble spots. Heat and hot water complaints spiked early, then tree complaints, as heavy wet snow caused hundreds of trees and tree limbs to come down. This data helped us to shape public alerts, particularly to tell people to stay out of parks during and immediately after the storm.

As an IT project, 311 also has to be considered a success. It was launched within a year of being announced and has become the way that most New Yorkers experience City government—taking 131 million calls since March 2003. The first phase of the project built the 311 call-taking system, and helped us to design and execute the transition from agency-based call taking to a centralized system.

The first 311 phase was budgeted at $40 million and included the foundational technology that 311 runs on, including voice communication (telephony) systems, telecom switches, and the Siebel analytics tool that forms the basis for much of the performance management capabilities we use today. The actual cost of the first phase of 311 was $108 million, which significantly exceeded the initial $40 million estimate. This was not due to mismanagement, but because we underestimated the total number and complexity of calls that City agencies received. As we built the system, we also took advantage of opportunities to improve business practices within City agencies; for example, we created an appointment scheduler for DOB which allows 311 to schedule plan examinations for the public, eliminating the need for an expediter.

In addition to 311, other notable IT investment successes include:

- **Wireless Water Meter Reading (AMR)**. AMR has revolutionized customer service at DEP for the 835,000 New Yorkers who pay the water bills. The $89 million IT component of this massive infrastructure project has increased during implementation by only 8%, and the City went live with an online tool 14 months ago that gives DEP customers real-time insight into their water usage. The project required the installation of an AMR device at 835,000 properties, and installation is more than 90% complete. In addition, DEP has incrementally added functionality—including leak detection and paperless billing—that provides better service to New Yorkers and reduces DEP's operating costs.

- **The Citywide Performance Reporting Program (CPR)**. CPR was initiated to develop a robust set of analytical tools to help measure and manage performance across all City agencies. At the core of CPR is a common data warehouse that collects information from more than 25 sources and is used by all city agencies for performance management analysis. Data drawn from CPR serves many purposes in City government including providing a public window on City government performance and supporting the Federal Stimulus Tracker, the Street Conditions Observation Unite (SCOUT), and numbers other programs. The Mayor's Office of Operations provides public access to CPR data through a dedicated website that provides instant access to

more than 500 critical performance indicators encompassing every City agency, including monthly updates and automatic trend evaluation by agency, and within specific program areas. The creation of the CPR, budgeted at $22 million, and is expected to be completed on-time and within budget.

- **New York City Wireless Network (NYCWiN).** One of the most important IT projects of the Bloomberg Administration, NYCWiN is the most aggressive commitment by any municipality in the United States to provide a next-generation public safety infrastructure, and has eliminated many of the challenges of data sharing in an ultra-urban environment. Completed in 2009, NYCWiN provides secure mission-critical video, voice and data communications—through portable, mobile and fixed-location technologies—to the City's first responders and essential personnel. Nearly 400 sites provide ubiquitous coverage to more than 300 square miles spanning all five boroughs. Today, NYCWiN powers more than 300 applications that span 29 City agencies on nearly 750,000 devices. The City budgeted $375M to build NYCWiN and Northrop Grumman was chosen after a competitive procurement process in which the City essentially piloted different technologies for free. The network was delivered on time and on budget, and we expect that it will be an essential part of the City's secure network infrastructure for many years to come as the number of applications it carries for public safety and other services continues to increase.

- **Citywide Radio Network (CRN)**. CRN provides expanded coverage and capabilities to FDNY and EMS, as well as critical City services for the Departments of Corrections, Transportation, Sanitation, Parks and Recreation, Health and Hospitals Corporation Security, the NYC Sheriff, and the Office of Emergency Management. The design employs state-of-the-art Simulcast technologies to significantly enhance radio coverage, and the CRN provides more than 95% on-street portable coverage, and unprecedented coverage in the waterways surrounding the City. CRN was delivered on time, and optimization), construction of a primary back-up site, a link to the City's 800-MHz network, acceptance test plans, training programs, subscriber migration plans and dual connectivity capabilities. The project also included the purchase of 6,691 radios. The consolidated citywide radio services afforded by this network have also led to cost avoidance as agencies have decommissioned their old systems and circuits, as well as site leases and maintenance contracts when possible within its $64 million budget.

- **HHS-Connect**. In his 2008 State of the City address, Mayor Bloomberg announced the creation of HHS-Connect to better serve residents and City workers through Access NYC and Worker Connect. The project was budgeted at $96 million, and Worker Connect and Access NYC have gone live. Worker Connect helps case workers determine the most appropriate course of action for their clients, and Access NYC is an online benefits screening tool and Client Portal that provides New Yorkers with direct access to critical human services, including School Meals Enrollment, Medicaid Renewals, Senior Citizens Rent Increase Exemption, and Disability Rent Increase Exemption. Access NYC has had more than 1.6 million site visits; more than 360,000

New Yorkers have screened for benefits; 33,935 pre-populated applications have been created; and more than 100,000 online applications have been submitted. HHS-Connect continues to grow and works in close partnership with participating agencies to build customized enterprise case management systems that streamline and modernize operations. While we estimate that the final product could cost as much as $124 million, we have added functionality to the scope that will dramatically improve the customer experience.

- **Automated Procurement Tracking.** Automated Procurement Tracking (APT) is a paperless procurement workflow system that has transformed the formerly paper-based and labor intensive NYC procurement process into a fully automated, electronic workflow. APT automates 17 procurement workflows and contract management actions—from creation though registration—and links 40 contracting agencies and six oversight agencies through one system. Many of the electronic forms utilize electronic signature/approval technology. Approximately 2,500 users in 40 mayoral agencies and oversights use APT to manage all procurements valued at more than $100,000, and as of October, there are 11,281 procurements in the system. The APT system also interfaces with the City's Financial Management System (FMS) to link registered procurement data as well as vendor and commodity data. APT is an important step towards increasing transparency of the city's procurement process.

  The project's initial scope was budgeted for the basic APT functionality, which went live in March of 2010. Since that time, several enhancements have been designed and came online since to expand functionality and improve the user experience. One example is the bulk processing enhancement, which was designed on a fixed price deliverable basis, and was rolled out in early 2011; it now allows users to more efficiently process and approve groups of procurements. Other software upgrades allow us to reduce the amount of custom code, which also reduces the cost of ongoing system maintenance. These upgrades, including testing, have increased the project's cost. We plan to complete the remainder of the functional enhancements by the end of 2012, and are working to ensure a smooth cutover to the DoITT staff who will support the system going forward.

These are just a few highlights of some of the large IT projects that have produced great results for New Yorkers, and there are many more in the pipeline.

Project Management Challenges

But if the story of 311 and the other successful projects I've described was a proxy for the management of every IT project, we probably wouldn't be having this hearing today. From my perspective—and I am not in any way trying to speak for the Council—this hearing is motivated at least in part by the perception that IT projects, and particularly large projects that cut across multiple agencies, are not being sufficiently well managed to ensure that New Yorkers are getting the value they expect and deserve. The projects that gave rise to this perception, and that have brought to light some clear

opportunities for improvements in the management of IT projects are CityTime and the New York City Automated Personnel System, also known as NYCAPS.

CityTime

CityTime is a large and complex automated timekeeping system currently used by 67 agencies and more than 160,000 City employees. As you know, the development and delivery of CityTime is the subject of ongoing investigations by the City's Department of Investigation ("DOI") and the U.S. Attorney's Office for the Southern District of New York. Several consultants who worked on the project, including the project manager from the lead contractor, Science Applications International Corporation ("SAIC"), have been indicted for engaging in an elaborate scheme of fraud and deception to rip off the City. The contract with SAIC terminated on June 30, 2011, and the City does not have any other SAIC contracts.

As you likely know, the Mayor has demanded that SAIC reimburse the City for the $600 million it paid out, as well as for the cost of the investigation and remediation. We are confident that the City will eventually receive fair and just restitution in connection with this project.

Because of the ongoing criminal investigation into CityTime, my comments will be limited to an update on the system's current status. In December 2010, the Financial Information Services Agency ("FISA")—which is jointly managed by the Mayor and the Comptroller—assumed responsibility for the implementation of CityTime, and the system is now maintained by a combination of city employees and independent IT professionals. To date, 163,388 City employees at 67 agencies use the system, which works as intended: it ensures that time and leave are recorded accurately and that the City is complying with Fair Labor Standards Acts requirements. As of July 1, 2011, FISA is responsible for the day-to-day management, maintenance, and operation of CityTime; that responsibility previously resided with the Office of Payroll Administration, which is also jointly by the Mayor and Comptroller. Since FISA assumed responsibility for CityTime, the number of consultants working on the project has been reduced from 154 to 81, with an annual savings of approximately $18 million. There are 62 City employees working full-time on the project as well. Over the next several months, FISA will continue to make functional improvements to CityTime and deploy it in other government offices, including the City Council, the Public Advocate, and the Borough Presidents.

I presided over the completion of the rollout as Commissioner of the Department of Environmental Protection when we completed a 32-month rollout for nearly 6,000 employees in more than 100 work locations, some more than 125 miles from the City. DEP field teams, wastewater treatment staff, and DEP police operate 24/7 and the hand scanners allow supervisors to verify actual employee arrival and departure times across many different schedules. CityTime eliminated an enormous amount of paper from attendance sheets and leave and overtime requests, as well as clerical errors associated with manual payroll calculations.

Putting aside the fraud that was committed, and for which the City expects to be fully compensated, CityTime has taken well over a decade to implement, and the cost of the system far exceeded the $63 million estimate. A project assessment commissioned by FISA is currently under way, and the preliminary findings suggest that the project was plagued by problems common to large-scale government IT investments. As an initial matter, the assessment concludes that the current CityTime product has successfully put the attendance and time-keeping records for 160,000 employees across 67 mayoral agencies and 127 collective bargaining units. At the outset of the time covered by the assessment—approximately 2003—a commercial, off-the-shelf product (COTS) that could meet the

City's needs was not available, so the decision to build a stand-alone system was sound. (Note that the first CityTime contract was signed in 1998.)

This problem is not unique to New York City. In his 25-Point Plan to reform Federal IT management issued last December, former US CIO Vivek Kundra points out that the multi-year development time frame of many federal IT projects and the siloed approach that led to an explosion of federal data centers from 430 to nearly 3,000 within 12 years help to explain why so many large-scale IT projects run over budget and take much longer to complete than anticipated. In government IT, weak governance can be a particular problem when agencies are not required—or a project manager is not have authority—empowered—to limit scope creep and establish business process consistency across affected agencies. This is not a comprehensive assessment of CityTime, but provides some insight into the management challenges that the project faced.

NYCAPS

NYCAPS is a single, integrated human resources and health benefits system for City employees. Like CityTime, it automates formerly paper-intensive transactions and increases employees' access to and control of their own information. It also provides agencies with tools to analyze employee data and to exchange data as necessary, and it includes an automated interface with the Payment Management System. More than 358,000 city employees in all 80 agencies and 57 community boards use NYCAPS and have produced more than 775,000 employee records since it launched, which are accessed in more than 4 million transactions per year. Documentation for the early stages of a single, automated benefit management system dates back to at least 1999, when the project was housed at the Department of Citywide Administrative Services. It is important to note that in 1999 the Board of Education was not under mayoral control and was therefore not included in the planning of a unified system.

In 2004, FISA assumed responsibility for a contract with Accenture for $22.3 million. The project was governed by an Executive Steering Committee and Working Group Committee, with the advice of a Quality Assurance vendor. At the time NYCAPS transitioned to FISA, Accenture presented a scope of work valued at $100 million including the full cost of a build for some items, and an analysis of others. The Accenture contract ended last March, at a total cost of $211.8 million. This is significantly above the value of the proposed work presented in 2004, and includes a substantial amount of work not included in the initial scope, including:

- Integration of the Department of Education administration and teacher populations of approximately 105,000 users;

- Automation of the Planned Action Report (PAR) process, which facilitates the approval/disapproval process for staffing;

- An update of the HR system Peoplesoft

- A self-service portal for employee information;

- E-Benefits, which provides self-service functionality for Health Benefits;

- Training Administration;

- Autostep process, which automates the salary step plan for uniform employees;

- E-hire, a digital hiring workflow project; and

- Performance management for employee evaluations.

Additional expenses associated with the build out of NYCAPS beyond the contract with Accenture—at DCAS and at FISA—and the ITCS resources include business analysis services to integrate it with DOE's timekeeping and payroll system and quality assurance services through DoITT. FISA is currently in the final transition from independent consultant resources to city employees for ongoing NYCAPS operations and maintenance; so far, 15 of 26 consultant positions have been converted to full-time city employee positions. As with CityTime, the scope of the NYCAPS project appears to have changed significantly over time, which contributed to significant cost increases and delays in delivering a working product.

Making Changes in IT Project Management

As CityTime and NYCAPS demonstrate, that perception that City IT projects are not sufficiently well managed is partly true—these particular projects have far exceeded their initial budgets and schedules. But the majority of significant IT projects undertaken by the Bloomberg Administration have come in at or under budget.

To prepare for this hearing, we gathered data on significant IT projects that have been completed or are under way throughout the city. Excluding CityTime and NYCAPS—which I've addressed separately— of the 29 IT projects that started with a budget of $25 million or more since FY 2003, 55% were or are on budget, 6 (21%) are projected to be under budget, 2 (7%) were over budget by 10% or less, and 6 (21%) were more than 10% over budget.

This data suggests that while there may be management problems in individual cases, it is not categorical—that is, large IT projects undertaken by the City of New York are not uniformly over budget. But we have come to the conclusion that we can certainly improve the management of large IT projects, from the way we develop the rationale for an investment, to project design and implementation.

And we believe there is a role for the Council in this effort. While the Administration thinks that the draft bill proposed by Councilmember James is overly broad in what it requires, we are committed to work with you on a bill that would require reporting on the progress of IT projects that exceed certain thresholds that can be defined in terms of a project's initial budget, timeline, or other indicators. Assuming we can come to terms on mutually agreeable legislation, the fact is that the majority of improvements to be made in this area to ensure accountability, and that projects are delivered on time and on budget, have to do with management at the project level.

From one perspective, the successful management of an information technology project is just like any other capital investment. It requires: the development of a rationale (or business case) for the investment; assembling a project team—with City agency resources, or a combination of City

employees and technologists or other IT expertise; and ruthless attention to the scope, schedule, and budget of the project as it moves from requirements gathering, to design, development, and delivery to the City as a finished product. In this connection, contract terms with a systems integrator or other service/technology provider are as important as the agency team managing the project on the ground. And we are looking at improvements we can make in both areas.

These kinds of improvements apply to capital projects across the board—<u>whether bricks and mortar or fiber and code</u>.

- At DEP—which has a $14 billion construction program—I reorganized the capital division to focus exclusively on project delivery by hewing closely to the scope, schedule and budget that had been promised. Change orders that exceeded a low threshold required my personal sign-off, and we instituted the development of a rigorous business case for every capital project.

- If a project could not be justified in terms of advancing DEP's core strategic priorities, it did not move forward. For example, I was presented with an $8 million contract for the design of a new testing laboratory upstate. A rule of thumb in these projects is that design generally costs 10% of construction, so the resulting lab could have been $80 million. I asked whether the testing we needed to do could be consolidated in an existing state-of-the-art lab DEP has upstate, and said that until a plan was put together justifying the need for building a new lab from scratch, the design RFP would be put on hold. This morning I confirmed that they are still holding.

- At the same time, we developed new standard operating procedures to deal with errors and omissions by contractors—to ensure that the burden was on them to correct, and pay for their own mistakes. We also sought to induce more companies to bid on our work with better contract provisions regarding compensation for delays caused by the City, and expediting the resolution of scope disputes during construction that—left unresolved—could grind work to a halt.

But IT projects—and particularly the execution of large-scale IT projects in the government sector—present unique challenges, even with a capable project team, clear project goals, and appropriate oversight. These challenges are not unique to New York City. I've mentioned some of those problems earlier, and we are in the midst of a thorough review that I initiated of the way the City manages large, complicated IT projects—particularly those that impact more than one agency. I should note that this review builds on an assessment that DoITT Commissioner Carole Post conducted last year, and that resulted in the creation of a Vendor Management Office at DoITT that will play an important role in IT project management going forward.

One of the results of that assessment was Executive Order 140, which established a new framework for IT policies and investments. EO 140 has three key objectives: (i) consolidation of IT infrastructure across data centers, (ii) the establishment of policies and standards for certain IT functions that have citywide implications such as network and desktop security, basic architectural standards, mapping and GIS, and mobile technology; and (iii) the development of governance bodies to manage the City's IT investments, including a Technology Governance Board comprised of the CIO of each City agency to make recommendations about policies and standards, and a Strategic Governance Board comprised of representatives of each Deputy Mayor's office, plus the Mayor's Office of Operations, the Mayor's Office of Contract Services and the Office of Management and Budget.

While the steps I'm committing to undertake today are not exhaustive, they are a continuation of our efforts, evidenced by governance and management changes like EO 140 and DoITT's new Vendor Management Office, to give New Yorkers confidence that the IT investments we make will deliver real value at a fair price—and through a management structure that incorporates best practices from project conception to delivery.

1. **Investigate off–the-shelf solutions first**. The first step in improving the City's IT contracting practices begins before our agencies even talk to the contractor, when they are developing the requirements for a new software solution. Until recently, City agencies turned first—or in short order—to developing an expensive, stand-alone solution when a Commercial Off-the-Shelf (COTS) product could meet an agency's business needs at far less time and expense. A recent example of success in this area is the NYC Development Hub that the Department of Buildings launched with Mayor Bloomberg a few weeks ago. The Hub is a state-of-the-art plan review center that will accelerate the approval process for construction projects throughout the City and speed up job creation. Licensed architects and engineers can submit digital construction plans to the Department of Buildings at the Development Hub and resolve any issues with City officials in a virtual environment – without ever meeting in person. DOB was able to develop and launch the Hub in only three months, primarily because it relies on simple, commercially available applications and technology. Plans are reviewed as PDFs; and the Department is leveraging GO TO MEETING (a web application) to conduct the virtual Plan Examination Reviews directly with architects and engineers. But to recognize and accept the potential value of a COTS solution, agencies must do more than scour the market place. Business owners and IT managers and staff have to be willing to look at existing agency business rules to determine whether simple changes make a COTS solution feasible. Rather than rejecting commercially available products because they don't accommodate all existing agency practices, we'll ask agencies to thoroughly investigate COTS solutions, and the changes that would be required to adopt them.

   This does not mean the end of specialized software development, or that a stand-alone application can't be developed effectively to get the job done. For example, another IT innovation the Mayor announced this month is a program to reduce the impact of construction on city roads by better coordinating utility and private construction company work. The online program – called the Street Works Manual – is the City's most far-reaching effort to improve coordination among utility companies, contractors and agencies to minimize the number of times streets are dug up, reducing congestion and extending the life of resurfacing projects. The Department of Transportation has already enhanced its permit and inspection procedures and now can issue 90 percent of all permits electronically, with most permits issued within just one or two days of an application. In Fiscals Year 2011, the department issued nearly 265,000 permits for work in city streets by utilities, construction companies and contractors. This new functionality was developed largely in-house, and on-top of DOT's existing data infrastructure, MOSAICS.

2. **Develop IT Contract Negotiating Expertise**. The City will change the way it negotiates significant IT contracts through the development of protocols that will include, but not be limited to the following elements:

- Modular Contracting—In the words of a recent federal report: "Programs designed to deliver initial functionality after several years of planning are inevitably doomed." Recognizing this, City agencies negotiating IT contracts already strive toward what's known as "modular" contracting. This practice aims to ensure that the contract provides a deliverable at the end of each new phase, allowing for adjustments as necessary before the next phase begins. Future releases are planned over shorter time horizons (ideally no greater than six months), and functionality is prioritized to fit within these shorter release cycles. This ensures that the most critical functionality is completed first, and that projects do not go off course before corrective action can be taken. Going forward, however, we will aim to do even more, requiring a firm "go/no go" decision made on future phases based on the progress made within the completed phases. Ensuring that useable functionality is delivered early in the development cycle allows decisions on future work to be firmly grounded on the promise of additional functionality, because the City has the ability to walk away with a useable asset.

- Preference for Fixed Price Contracts over T&M Contracts—In recent years, the City has made progress to shift, whenever feasible, toward fixed-priced contracts for IT projects, as opposed to a time and material (T&M) contracts. Under a fixed-price contract, the City pays a fixed price to receive certain deliverables within a set time-frame. Under a T&M contract, the City pays the vendor based on how much time the vendor's employees expend, and the cost of any materials. A fixed-price contract depends on the City establishing early well-defined requirements and a firm scope. If these are established, however, this type of contract limits the City's risk and gives the vendor a built-in incentive to control costs. The City will soon issue guidance to guidance to agencies aimed at maximizing the use of fixed-price contracts, drawn from its recent progress in this area. Where a T&M contract must be utilized, the City will impose additional controls—including requiring agency contracting officers to prepare a determination and findings why no other alternative is available, and to establish that the programmatic objective has been structured to maximize the use of the fixed-price contracts on future procurements.

- Standard Clauses. Because the majority of IT contracts are drafted by individual agencies, key terms and conditions can vary among agencies, even when contracting with the same vendor. As a result, the City may often not secure the same level of value in each of its contracts, and may face delays as the contract undergoes review by the various oversight agencies. To address these challenges, DoITT, MOCS and Law will develop a set of standard contract clauses and terms and conditions for IT contracts. When an agency has made a business decision to seek such a provision, it can simply plug that language into the contract. Standard language will include intellectual property provisions, "favorite nation" pricing to allow all agencies to pay the same rate for the vendor's services, provisions addressing City ownership and depreciation of hardware and licenses, and volume discounts.

- Contract Negotiation team—In many instances, significant IT projects are negotiated between agency staff and the vendor, without the presence of agencies like OMB and MOCS. Experience has shown that having these oversight entities involved in the negotiating process—at the bargaining table, alongside the agency—helps get the City a better deal. Going forward, this best practice will be mandatory for all significant IT contracts greater than $5 million. By bringing the collective experience from different disciplines within the

City during the negotiation process, the City can maximize value and can ensure that the services negotiated align with technology standards and industry best practices. As part of this effort, DoITT will develop guidelines for common IT contracting issues to assist City agencies. These will aim to help agencies follow some of the requirements noted above, and will also provide guidance on better managing the use of subcontractors, leveraging City investments, and managing consultant logistics.

To be sure, adopting these practices does not mean the end of large, multi-year IT projects in the City. Some functions—like a new 911 system—simply require longer to develop, and a modular approach, or the use of a COTS solution may not be feasible. This was the case with the ECTP program—which will soon deliver a state-of-the art 911 system—but in these cases, we must have project controls in place that are flexible enough to allow for the incorporation of technological advances, but rigorous enough to prevent a project scope from being completely undefined.

3. **Consider Value Engineering Current Significant IT Projects**. We will assess all IT projects over $10 million to determine whether they should be value engineered for scope and cost reductions. We will establish guidelines for mandatory value engineering going forward, such as when estimated spending is projected to exceed a fixed percentage of the initial budget. Among the key questions that the Value Engineering review can help answer include the merits of COTS solutions vs. customization, the potential to alter agency business rules or operational approaches to match available COTS resources, and the potential to achieve projects' central goals within existing budget constraints by modifying or scaling back scopes of work "in flight." We will also examine change order governance—if change orders amount to more than 10-15% of initial project budget we will establish a process to figure out what and whether value engineering needs to be applied.

4. **Evaluate the nature and scope of Project Management/Quality Assurance engagements**. PM/QA vendors play a vital role in seeing that an IT project delivers the promised results. Typical current practice, however, is that an IT project's quality assurance function is generally paired with its project management function, and both functions report to the agency sponsoring the IT project. This creates a potential conflict in the sponsoring agency's project manager, who is invested in the success of the project. It also places vendors in the position of reporting project risks, while simultaneously needing to maintain good relations with the agency sponsor. To address this, we will consider whether the PM/QA vendor should report to an entity, or business unit independent from the one managing the project. As part of this effort, we will better define s the precise role that a PM/QA vendor performs on an IT project.

5. **Develop and Implement Best Practices for IT Project Management Across City Agencies**. As I noted earlier, delivering real value in IT projects, as with any significant infrastructure investment, requires strong project management—both the SOPs governing IT projects and the personnel managing internal and/or external IT professionals to deliver a product. As part of our review we are looking at the way IT projects are managed across the board, from the definition of business needs by business owners, to the development of a project team and contract vehicles to execute it. In addition to modular contracting, we're looking at basic project-management

SOPs to maintain a project's scope, and deliver it on time and on budget. Governance is critically important here, as any IT solution that cuts across more than one business unit, City agency, or unit of City government must satisfy multiple business owners, and absorb input from multiple agency and IT heads. We have to strike the right balance between the flexibility needed to account for technological change as a project develops, and knowing when to freeze a scope and future enhancements to a future roll-outs.

6. **Revisit E.O. 140 and the need for additional IT investment governance/accountability measures**. As part of this effort, we'll revisit E.O. 140 to determine whether we need to develop or re-invigorate a City Hall-led governance structure for significant IT projects that will address questions of business rules, IT infrastructure decisions, and application requirements across agencies.

These are initial steps that we will take to better manage IT investments by the City of New York, and I look forward to returning in a few months to report on the progress of these and any other additional measures we think appropriate. Thank you for the opportunity to testify and I'll be happy to take any questions.