ICT Futures

TIGER TEAM RECOMMENDATIONS SUMMARY

AUGUST 4, 2021

Introduction

In Spring 2021, New Mexico State University (NMSU) offered a voluntary retirement plan for faculty and staff. As a result, Information and Communication Technologies (ICT) leadership and several key technical staff retired effective June 30, 2021. In response to announced ICT retirements, Vice Chancellor Ruth Johnston created the ICT Futures Tiger Teams, a strategic initiative designed to identify the potential ways ICT might evolve considering the emergence of new leadership, the demands on technology as the University continues its own evolution, and the persistence of accelerated change in higher education technology.

Vice Chancellor Johnston charged team members with evaluating ICT structure and operations to provide recommendations on possible solutions to modernize technology services to better serve NMSU. As part of the effort, three seasoned Chief Information Officers provided an external assessment of the ICT organization.

Structurally, a Strategic Support Team served to facilitate the process providing project management support. VC Johnston formed additional tiger teams to solicit important stakeholder input. The teams also took up additional objectives and cast a wider net to review opportunities considering the May 2021 ICT External CIOs Consultants' Report. Each tiger team produced a report with recommendations related to their designated topic area for consideration by Ruth Johnston and Chris Kielt, Interim Assistant Vice President / Chief Information Officer.

ICT Futures Process

The ICT Futures Initiative began in March 2021. ICT Futures, which was comprised of 45 employees, met regularly to coordinate, and leverage progress. Nine tiger teams comprised of 60 employees supported the Core Team. Tiger teams included:

- Organizational Structure and Work Environment
- Getting to the Cloud/Physical Security
- ICT Strategic Planning
- ICT Operations
- Systems Integration and Needs
- Risk Management, Privacy, and Security
- Institutional Data
- User Experience
- Budget, Finance, Business Model

Each tiger team was comprised of staff and managers/directors from across ICT and other and related departments. Participants included employees from across the NMSU system. Teams took on the emotional and professional weight of navigating change and aimed for consensus (but not always the case).

SWOT (Strengths, Weaknesses, Opportunities, Threats) Analysis

The strategic support team coordinated a comprehensive SWOT analysis for ICT by soliciting input from

ICT stakeholders and community members from across the NMSU system over 17 meetings. A total of 945 responses were subsequently coded into seven categories:

1. Cyber/data security
2. Services
3. Workforce
4. Funding / Budget
5. Organizational structure
6. Infrastructure
7. Governance

Frequency counts were used to determine major strengths, weaknesses, opportunities, and threats for each category. (Figure 1)

Top 3 Categories by Frequency Counts	
Strengths	Workforce (44%), Services (28%), Infrastructure (13%)
Weaknesses	Governance (20%), Infrastructure (19%), Organizational Structure (15%) & Funding (14%)
Opportunities	Infrastructure (27%), Governance (24%), Workforce (20%)
Threats	Workforce (25%), Governance (19%), Infrastructure (16%) & Funding (15%)

Figure 1. Overview of top categories identified by frequency counts

Key Themes

Recommendation reports were collected from seven tiger teams. Four major themes among the reports: (1) process improvement, (2) organizational structure, (3) enhanced financial support and (4) governance. In addition, sub-themes included suggestions for communication and customer service, work environment, employee recruitment and retention, and professional development and training.

Process Improvement

Key elements of process improvement were noted across several tiger team discussions, specifically identifying the need to embed a culture of documentation in all NMSU ICT practices. This is especially important due to the increasing number of integrations between and among disparate systems from multiple vendors across different platforms that demands a high degree of knowledge and coordination to be performed successfully without incident or interruption.

Knowledge sharing is vital to the sustainability of systems operation and the maintenance. Documented methods are needed to achieve smooth operations and is essential to the health of a strong technology environment. In addition, a culture which values documentation would enhance support for new staff across the system, ease staff transitions and strengthen systems viability. Strong documentation will also strengthen data security as well as enhance service and platform transitions as the university continues to learn about new capabilities and evaluate systems to replace including vendor solutions and cloud-based applications. As part of this process, it will be important that the University recognize the importance of ICT partnerships with functional area staff who complement technical materials with an essential understanding of business processes in our current environment.

Revamping systems and processes will allow us to take advantage of the opportunity to better integrate and standardize the university systems' enterprise technology landscape. A focused initiative to revitalize and review business processes will be a critical first step in process improvement systemwide.

- **Recommendation:** Create a nimble business process redesign committee capable of applying lean thinking methods to identify and implement best practices to streamline processes, improve decision making and provide support for system redesigns and improvements. This committee would also champion a culture of documentation and conduct business process analyses to assist ICT and its functional partners in reviewing and improving administrative and technical processes.

- **Next Steps:** Develop membership for administrative and business process redesign committee. This committee will identify and prioritize the vital areas of interest and begin the process of developing appropriate tools as a step to developing common standard operating procedures across essential administrative functions.

Customer Service & Communication

The post-pandemic world of work necessitates we reflect on and retain the vital lessons-learned and accelerated practices developed during COVID to maintain the overall higher satisfaction with customer service. It is important to continue to complement, not replace, face-to-face service, by continuing to invest in and modernize new models of user-solutions-focused assistance and interaction. In part, this can be achieved in ICT through bolstering the capabilities of the current NMSU Help Desk, expanding the IT knowledge base, and better aligning the service catalog with actionable outcomes. One key area that needs to be addressed to accelerate and maintain a culture of customer service is enhanced communication.

Communication was identified as a major gap area in many tiger team discussions and was noted as pain point/weakness throughout the SWOT analysis. There has been a struggle with internal communications between ICT teams and inconsistent levels of effective communication outside of the organization. It will be critical to develop a communications plan to communicate changes within the ICT organization and significantly enhance ICT outreach and communication to the greater NMSU system. Ideally, the communication function would result in a systemwide plan that would include reporting and compliance requirements in addition to service notices to support a culture of documentation and streamlined workflow.

- **Recommendation:** Identify a dedicated ICT communication resource designated as a member of the ICT leadership team who is charged with developing and executing a strategic communication plan. The plan should incorporate current technology project initiatives and their associated communication requirements, as well as identify methods of outreach over the coming 12-18 months designed to inform campus of technology related activities relevant to the work of students, faculty and staff. The plan should be supplemented with internal ICT communication activities such as internal ICT newsletters, events and supplementary activity that would tie internal and external communication efforts together in a coherent whole.

- **Next Steps:** Identify a dedicated staff member to take on the ICT Communication role. This position will lead the effort to improve outreach and engagement for external stakeholders and audiences, as well as internal ICT staff. The position will also identify contemporary methods and tools for improving ICT's communication with the system to strengthen outreach on IT compliance issues, technology notices, system outages, and service escalation processes. The position will work closely with other relevant partners like Human Resource Services to develop communications that focus on change management related to work environments, organizational impact, and process expectations.

Organizational Structure

Organizational structure is a powerful driver of performance — efficiency, effectiveness, agility, quality, creativity, innovation, customer satisfaction, and competitiveness. It's also a key contributing element of staff competence, job satisfaction, motivation, commitment, happiness, and loyalty. Organizational structure was a topic of discussion in several tiger teams. Due to this overlap in conversation, the Organizational Structure and Work Environment team determined that the ICT structure is better addressed as a collective body among the Tiger Teams. Redesigning an IT organization can be highly disruptive, emotional, and politically charged. However, it is evident that a change is required in order to establish an effective and efficient organizational structure that can be sustained over time. The following recommendations encompass ideas for the future structure of ICT including reporting line changes, position reallocation and staffing suggestions.

Reporting Line Changes, Position Reallocation and Staffing Suggestions

Risk and Information Security: NMSU must manage risks, respond to system incidents, disrupt growing threats, and encourage external entities to adopt the policies and procedures necessary to create an open, interoperable, secure, and reliable Internet.

- **Recommendations:**
    - The information security department is understaffed and taxed to address cyber threats. The team must be rightsized to be able to better plan for, identify and respond to cyber threats and attacks.
    - Create dual reporting line for Chief Information Security Officer (CISO) to the Regents Audit and Risk Committee (RARC).
    - Create reporting lines between community college IT Directors and the CIO.
    - Create I&G funding to facilitate the addition of essential positions. Some candidate areas for additional staff include but are not limited to network engineering, project management, IT architecture, Office 365 support, communication.

- **Next Steps:** Advocate for additional ICT staffing and operations investment from NMSU system.

Project Management: Project management is a core capability of every successful technology operation. Project successes depend on available and capable project management. At NMSU, in addition to those who are project managers by title, PM tasks are part of many positions in day-to-day operations. Yet many managers and employees are not trained on basic PM skills. Project Management– whether in the form of an official PM office or ad-hoc PM professionals within the unit, are essential yet highly under-resourced need for ICT.

- **Recommendation:** At the NMSU system level, PMs are needed within the IT units at all four community college campuses specifically for evaluating and improving processes. Establish a future-focused projects office that strives to be "ahead of the curve."

- **Next Steps**: Identify current trained PMs within the system to connect stakeholders, organize those with PM responsibilities and create a community of practice focused on developing PM skills and abilities.

Institutional Data: The Office of Institutional Analysis (OIA) is the official reporting entity for the NMSU - Las Cruces campus and the NMSU system. The vital nature of a modernized data-driven campus requires an Office of Institutional Analysis that functions as the "powerhouse of the cell"—the command central for responding to external and internal requests. OIA is expected to be a center for data literacy and outreach across the university system. Under the current structure, OIA is ineffectively housed five levels below the Chancellor in ICT. This undesirable reporting line may result in delays, mismatched responses to requests and inefficiencies such as a duplication of effort.

- **Recommendation:** Relocate the OIA office to report directly to executive leadership. The system will benefit from top-level leadership direction and access to obtain vital, accurate, timely information for systemwide decision-making and statewide reporting.

- **New Positions:** Increase number of staff (FTEs) in OIA to reflect peer organization numbers. Immediate staffing needs would include the addition of a database reporter and a programmer/analyst or institutional researcher.

- **Next Steps**: Establish and fill a senior level position overseeing OIA. The position must have a deep understanding of IA and its role in university functioning. The position will prioritize OIA work, ensure the support of system initiatives and work with data stewards and ICT technical staff like the Analytics & Decision Support unit to ensure data is available, accessible, and accurate. The position will be accountable for streamlining processes, prioritizing work, approving data requests, coordinating data work to produce reliable and verified information used in reporting and presentations.

IT Operations: The current organizational structure of ICT work units is siloed into smaller groups of expertise which may hinder and complicate performance. The team recommends examining the development of hybrid operating models in the form of teams for specific services that are led by service owners or business relationship managers. The expected outcome would be to provide agility around service offerings and to better communicate and address needs and requests.

This structure is service-focused and allows for the deployment of people with appropriate skillsets needed to get work done efficiently.

It was also recommended that the concept of business relationship management should be a distinct function and professional track dedicated to customers outside of the IT operations work unit. This allows for IT operations staff to focus on their professional expertise and offer available solutions to their constituents. Aligning staff capabilities to services may provide an opportunity to redistribute existing resources and allocate human capital to new work units, potentially creating a more balanced way to align FTEs to understaffed work areas.

- **Recommendation:** Create an IT Operations Work Unit with sub-departments for Customer Service & Support Operations, Application Development Operations, Infrastructure Operations, and Enterprise Managed Service Operations. These customer centric teams would focus on:

    - Common ERP services for business operations
    - Business services that are dedicated to particular NMSU system units
    - Core functionally supporting technology services to research and academic units
    - ICT's commoditized services, e.g., Office 365, authentication, hosting, etc.

    The recommendation includes the development of clear lines of responsibility, perhaps using assignment matrices like RACI to guide the reorganization process and ensure a clear set of duties for each work unit and role can guide organizational effectiveness.

- **Next Steps**: Perform an ICT staff skill assessment to identify potential FTEs that may be leveraged to fill new position needs or service roles. This effort would include identifying skills and capabilities important to new initiatives like business process redesign, project management, communication, re-platforming or adoption of new services.

Work Environment

It is critical to create a work environment conducive to creativity, trust, professional development, and appreciation that fosters a sound knowledge base. In addition, it's important to create a structure that's right for the organization, not one that simply fits with the current staff's skills and knowledge. A shift in organizational structure and action on process improvement recommendations will increase opportunities for IT-led innovation, introduce opportunities to grow the IT organization, increase career growth opportunities, and help with capacity planning and constraints within the IT organization. It is imperative to address opportunities strategically and swiftly, including but not limited to market salary alignment, position design, clearly defined enterprise and decentralized positions, career path and succession plan design and implementation.

- **Recommendation:** Invest in IT staff. Design a comprehensive training and development program for ICT employees, inclusive of development in the areas of leadership, employee engagement, and customer experience. Produce a workforce development plan for ICT staff to develop technical and soft skills necessary for a modern IT organization.

- **Next Steps**: A primary focus of new leadership should be to work with ICT staff to develop a plan to address retention within the organization. Complete staff salary assessment for ICT positions to inform workforce development plans and execute succession plans.

Sourcing distribution

The ICT organization must embrace off-the shelf solutions to fulfill stakeholder needs. For too long ICT has looked to internally developed solutions to meet user needs with the well-intentioned belief that it is a better approach that saves the institution money and ensures control over various functional processes. Higher education IT organizations in general have moved to a "buy versus build" strategy. The strategy recognizes that vendor supplied solutions while appearing more expensive at first review, are ultimately more effective and efficient since vendors have a need to keep their products current and

capable in order to remain viable in the marketplace. Locally developed solutions often suffer from deferred maintenance, loss of key skill sets and local knowledge due to staff turnover and challenges in maintaining the security of home-grown systems.

Security and risk were identified as key capabilities for adopting vendor supplied solutions as the need for a third-party review of cybersecurity is essential to maintain product viability. Management and hosting of our enterprise application systems were identified as a co-sourcing opportunity.

- **Recommendation:** Catalog all ICT applications and identify vendor versus locally developed applications and services.
    - Include the underlying technology used in the application or service, and create a plan, where appropriate, to ensure the entities are viable based on a vendor's marketplace presence and profile (for purchased solutions).
    - For locally developed solutions, include a support and replacement strategy to ensure NMSU developed applications can continue to deliver needed functionality as the technology tools landscape and staffing supporting the work continues to change.
    - Inform decisions to adopt vendor developed solutions, cloud application acquisitions and migrations and other technology shaped decision processes associated with new or replacement IT systems and services.

- **Next Steps**: See above.

Enhanced Financial Support

The ICT budget model is complex, multi-threaded and not well understood by campus stakeholders. The budget model also falls short in provisioning for mandatory contractually required cost increases related to the maintenance of critical systems. As a result, ICT is driven to compensate for the short fall in financial support by diverting salary dollars to pay for system maintenance. The result creates reduction in ICT capability and project support across the NMSU system. To illustrate this complexity, the total cost of ICT operations (not including equipment replacement) in FY20 was $19M that is comprised of 12 funds, each one also being further split into 18 different types of funding. To simplify this complexity and address budget gaps, an allocation of funding should tie budgets to priorities and planning decisions, rather than units in ICT.

Funding Mechanisms & Capital Spending

To determine baseline gaps in funding, the Budget, Finance and Business Model Tiger Team reviewed the financial landscape across three dimensions: sources, mechanisms, and services. It is important to understand where ICT funding comes from, what technical methods exist to move funds to ICT and what services are provided by resources including internal staff and contracts. To address the need to simplify funding, there are three major changes recommended to funding mechanisms based off principles that combine sources and outline baseline activity for services, staffing, and equipment refresh.

- **Recommendations:**
    - Fund the cost of Enterprise Applications and widely used software packages off-the-top, allocating I&G funds to this before other allocations occur.

- Expand the Communications Rate to a Technology Support Rate that includes more than the services covered by Comm Rate. These additional services would include the Enterprise Software bundle, help desk and user support for standard applications on hardware that meets University specifications, depreciation of network equipment, and other services as determined by the IT governance process.
- Reduce costs recovered directly. Eliminate recovery of costs through secondary rates wherever possible and build an allowance for those costs into the Technology Support fee and Research Administration. Establish a procedure to include the Technology Support Fee in grant proposal budgets.
- Provide funding to eliminate backlog in network equipment maintenance and develop a plan for allocation of ERR budget that reflects both an ongoing refresh cycle and requests for new projects and new capacity.

Addressing Baseline Funding Gaps

A consistent concern, supported by peer benchmarking analysis, noted throughout tiger team discussions and SWOT analyses, that ICT is underfunded. In the pursuit of funding, various IT departments have developed different methods to recover costs and fund services. This creates a variety of challenges including uneven levels of service, unsustainable technology adoption and uneven IT user experiences across campus. The following reference points were used to determine the funding gaps related to current service delivery:

- **Distribution of vacancy dollars.** The distribution of salary and benefits savings related to vacant positions in FY20 amounts to roughly $1M or an estimated 15 FTE.
- **FTE gaps for current services.** Utilizing previous estimates from the Transforming NMSU Into a 21st Century University Team 3 project, it was estimated that an additional 9 FTE was needed to maintain a current level of service.
- **HelioCampus benchmarking:** Data indicates that NMSU is underfunded by $60 - $65 per employee and student FTE, which translates into a funding gap of $1M to $1.4M.

It is recommended that the baseline funding gap should be addressed before any expansion or enhancement of services is explored. It is imperative that staffing levels are brought up at least the minimum level required to support the services that ICT currently delivers. **The current funding gap is 5-7% above current spending levels.**

It should be noted that equipment replacement costs are not included in the funding gap analysis and capital spending needs to be addressed separately. In addition, an assessment of IT investments outside of the ICT organization would be beneficial as there are several services that are funded by discrete units such as the community colleges, ACES college, and research-focused departments.

- **Recommendation:** Increase ICT operating funding by $1-$1.5M over time.

- **Next Steps:** Assess the implications for budgets and funding recommendations and conduct a review of HelioCampus and other comparative information in more depth to refine estimates of staffing gaps. Based on these assessments, develop a 5-year business plan for ICT that proposes how to transition changes in funding mechanisms and how to build up required resources.

Budget Allocation Requests

The Risk Management, Privacy, and Security Tiger Team was one of the few teams that provided a budget allocation recommendation. Information security programs are typically funded based on a percentage of the total Information Technology budget, at around 10-12% in commercial settings, and at a lower percentage in higher education. Information Security is currently funded at 4% of the total ICT budget – with the FY20 allocation of $778K. Of the total information security budget, 93% was used for staff compensation (87% for professional staff, 6% for student employees). The Risk Management, Privacy, and Security Tiger Team recommends a substantial increase of the current allocation.

- **Recommendation:** Fund an increase in Information Security expenditures to approach a 6-8% allocation of the total ICT budget. Utilize increased budget to increment/acquire systemwide Cyber information security staff, tools and/or services to better protect NMSU.

- **Next Steps:** Identify allocations needed for other key areas within ICT to determine feasibility of increase Information Security budget.

Governance

Several tiger teams reported that the existing IT governance framework and process was flawed and a major weakness for the system. It was also identified as a significant opportunity during the SWOT analysis. It is essential that NMSU develop, adopt, and exercise an effective IT Governance framework that aligns with ICT's strategy and be enforced as a mechanism to drive prioritization, resource allocation, and policy development.

- **Recommendations:**
    - Create an effective strategic IT governance framework to include the "right" people, timeline, and budget. This would include implementing risk management, privacy & security programs, and policies across the NMSU system. Adopt a "buy versus build" strategy to include a cloud-first principle.
    - Develop and publish IT Operations business and efficiency KPIs to track success, identify opportunities for improvement and demonstrate how IT can support NMSU and improve its ability to meet strategic targets.
    - Adopt organizational design principles to help guide governance and reorganization efforts, leveraging vision and mission statements to help communicate aspirations (See Appendix).
- **Next Steps:** Establish an IT Governance council membership and process with NMSU system stakeholders and ICT expertise. Determine baseline business KPIs including the percentage of resources dedicated to key capabilities and percentage of resources dedicated to strategic priorities and initiatives.

Strategy Map

A revised mission, vision, and values statement were created to guide the development of the ICT strategy map. The map offers a blueprint which highlights key areas of focus on who ICT serves,

improving internal business practices, building organizational capacity, and securing resources (Figure 2). The recommendations presented throughout this report are aligned with the 5 strategic priorities established in the strategy map:

- Maximize enterprise solutions, including vendor provided systems and services to include cloud-based services
- Improve business processes, manage projects, and measure efficiency and effectiveness
- Optimize IT Organizational Structure
- Identify needed funding sources, reallocate those funds to ICT and thereby create the opportunity for a sustainable IT service model
- Develop an effective IT Governance Model, including strategy, prioritization, and funding

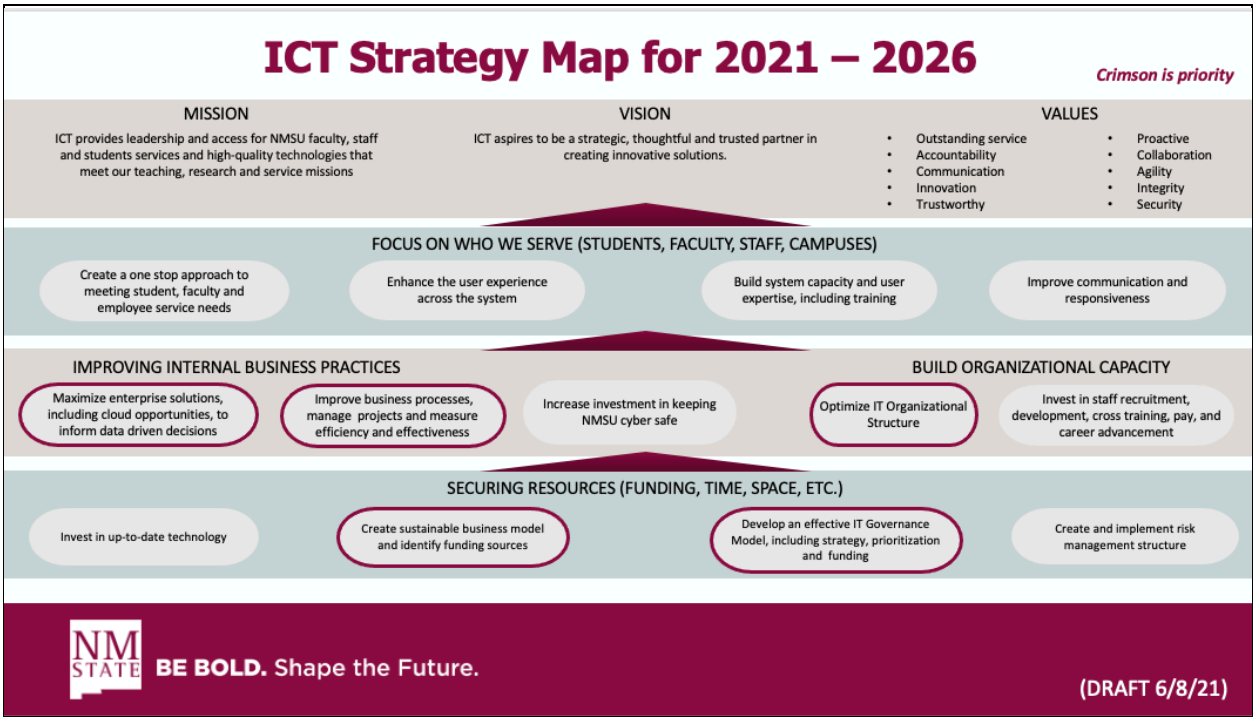

Figure 2. Strategy Map

Appendix

Organizational Design Principles (Recommendations from IT Operations Tiger Team)

The primary goal for the recommended design principles is to articulate how IT will support strategic priorities and decision making to guide IT governance. The following recommended design principles leverage the vision and mission statement from the IT strategy map to help communication IT's aspirations:

- Focus on Who We Serve
    - **Customer centric:** The new structure should be directly aligned with customer needs – we will have dedicated roles around relationship management, requirements, and strategic road mapping for NMSU system units
    - **Innovation:** Research and innovation are critical – we will build an innovation team into our structure in order to help us meet our digital agenda
- Improving Internal Business Practices
    - **Cloud services:** We will move toward a cloud-first strategy, hosted vs. on-premises infrastructure solutions, retrain our data center team in cloud best practices, and build roles around effective vendor management, cloud provisioning, and architecture
    - **Managed security & data:** We will manage security enterprise-wide and implement compliance and security governance policies in a risk-based program. We support the creation of a specialized data office to provide data initiatives with the focus they need to enable our strategy
- Build Organizational Capacity
    - **Resourcing:** We will separate our project and maintenance activities to ensure each are given the dedicated support they need for success and to reduce the firefighting mentality
    - **Reduction of Duplication:** We will reduce role and application duplication through centralized management of assets and clearly differentiated roles that allow individuals to focus within key capability areas
- Securing Resources
    - **Decision Making:** We will centralize decision making around the prioritization of projects to ensure that the initiatives driving the most value for the organization as a whole are executed