STRATEGY REVIEW

Information Technology

March 2020

Slides 3-8 Presentation (6 slides)

Slides 9-100+ Appendix

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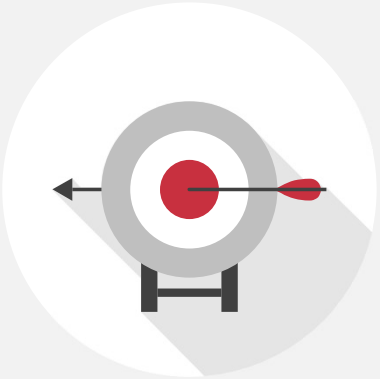
STRATEGIC REVIEW

High-level

6 slides give the high-level strategic overview for North Dakota IT



Deep Data

100+ slides of further detail, insight, and analysis to be used in a “choose your own adventure” format

Brainstorming

Conversation across the team to discuss options, possibilities, and opportunities

NDIT OVERVIEW

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Market Opportunity:
All Government entities nationwide (with leg changes)

Total Budget: $331,046,891
OpEx: $162,116,758
ProjEx: $168,930,133

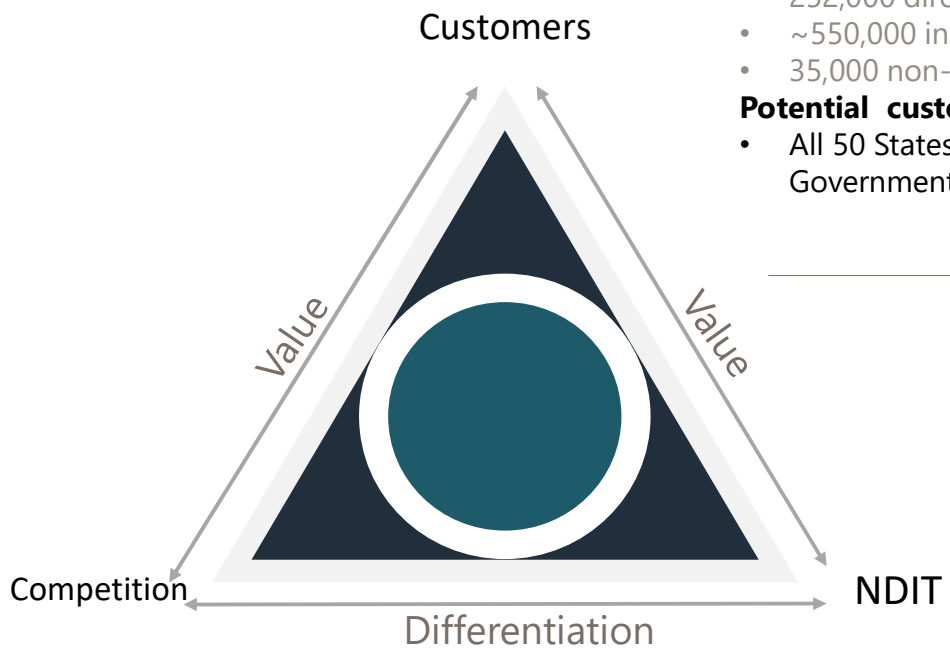
Customers Today:
460 government entities
252,000 direct ND citizens
~550,000 indirect ND citizens
35,000 non-ND citizens
Non-ND actor interactions

Unified Shared Service
402 FTEs
(Unification details in appendix)

Significant IT Accomplishments in past year

- Whole of Government Cyber Launch – SB2110
- K20W
- Agile conversion
- Enterprise Service Management Launch
- Business Process Improvement Launch
- "Amazon Experience" architecture framework
- Unification – Phase 1
- Many more internal and customer projects….

NDIT STRATEGIC TRIANGLE



Customers:
- 460 government entities
- 252,000 direct ND citizens
- ~550,000 indirect ND citizens
- 35,000 non-ND citizens

Potential customers
- All 50 States & Local Government Entities

Competition**
- Private sector IT companies
- Specialized and commodity
- **Assumes NDIT monopoly status is released

NDIT
- Comprehensive operational IT processes
- Business empowerment
- Security management

Differentiation

Competition Specialized
- Systems designed and dedicated to precision functions
- High customer control

Competition Commodity
- Lower cost to develop and maintain
- Faster adoption of the technology curve

NDIT
- Enterprise Integration
- Dedicated to Customer Success
- Key Customer Management
- Solution oriented with no profit motive
- Consistency across the Enterprise

CRITICAL INPUTS

$1.09B

Calculated software tech debt for replacement of current environments (528 apps identified)

45%

Percent of Government work that can be automated

56%

Percent Information Technology is under funded vs. average state and local government IT funding

2.2M+

Number of cyber security jobs open world-wide by 2022

52%

Percentage of Internet traffic accessed through mobile devices

17-31%

Percent ND IT salaries are under the national average

92%

Percent of Knowledge debt within the current NDIT team

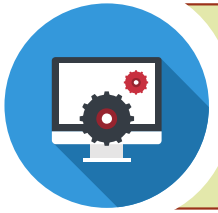
37

Number of agencies identified in 2018 across ND with IT staff

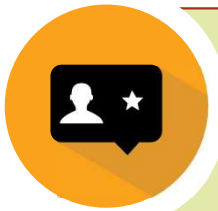
Negative Indicator

Positive Indicator

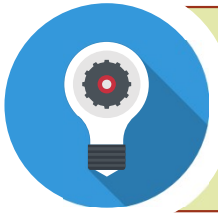
STRATEGIC OVERVIEW



Automate 20% of
all work in Government



Decrease FTE requirement by 20%
for normal work volume
and reallocating salaries and
education to staff



Build new architectures that
secures data and allows for the
comprehensive transformation
of ND's tech debt

Move towards alternate funding
and operating models that
will make NDIT independent
of state funding

Reinvent people, processes
and experiences to deliver
world class outcomes

Unify all IT services to the extent
possible across all Governments
in ND (all 7 branches)

STRATEGY MATRIX

Goal 1: Deploy a world class Government experience

Goal 2: Secure all government held data in North Dakota

Goal 3: Deliver the most efficient government services in America

PURPOSE	**Empower People, Improve Lives, Inspire Success**
VISION	**How might we provide world class technology & Services?**
MISSION	**Efficiently empower with trusted information**

IT Divisions:	Apps, Insights, & Data	Customer Success	Finance	People	Reinvention	Security	Technology
4 PROCESS	Create a frictionless Citizen-State experience that is enhanced with AI	Align enabling tech with state/agency needs	Design faster time to value methods of procurement with state Central Services	Market NDIT through recruitment to attract people via "heart" and culture	Prototype minimally viable products	Automate day to day security work	Promote and develop a comprehensive "connected anywhere" statewide broadband environment
3 CUSTOMER	Create Grand Data open data platform Deploy Grand Insights Innovation Platform	Empower agencies to deliver superior services with continuously increasing value	Demonstrate the value of IT without a doubt to stakeholders	Make Employees available from anywhere on anything	Build friendly, consistent, and intuitive digital experience for constituents	Insulate ND from future threats	Provide a world class experience delivering and supporting all technology
2 FINANCE	Design to Automate 20% of all North Dakota government processes	Create bundled pricing options and flexible/scalable staffing delivery	Manage finances so costs per unit of service can be continually decreased	Decrease comprehensive number of staff by 20% and reallocate dollars to salaries	Convene, publish, and promote best practices nationally	Increase accuracy and velocity of security response	Meet the need of the customer before they have the need
1 PEOPLE	Right-size staff thru platform sunsets, app modernization, operational efficiency and sourcing strategies	Educate and enable the business and business integrators with technology	Work to make creative sourcing options available	Empower IT Unification Recruit the best talent and cultural fit without exception	Catalyze process improvements and change in internal culture	Empower ND as the national leader in K-20W cybersecurity education	Reeducate staff continuously while leveraging additional sourcing options

STRATEGY SUMMARY

- $640M per biennium saving in Salary & Benefits (plus pensions) due to automation and process redesign
- Vastly different experience for the citizen interacting with government
- Vastly different experience for government workers
- No more monolithic, non-integrated, multi-hundred million-dollar systems
- Secure, trustable environments

CHOOSE YOUR ADVENTURE

Building the Strategy

- Team NDIT Data
- Data, Market & Customer Analysis
- Vision Breakout
- Market Considerations
- Cyber Survey Dashboard

Strategy Details

- Goals / Strategies / OKRs Details
- Roadmaps
- Unification
- Reinvention
- Challenges
- What are OKRs?

Thinking Differently

- North Dakota "The App"
- .....there is no spoon....

NORTH Dakota

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Appendix

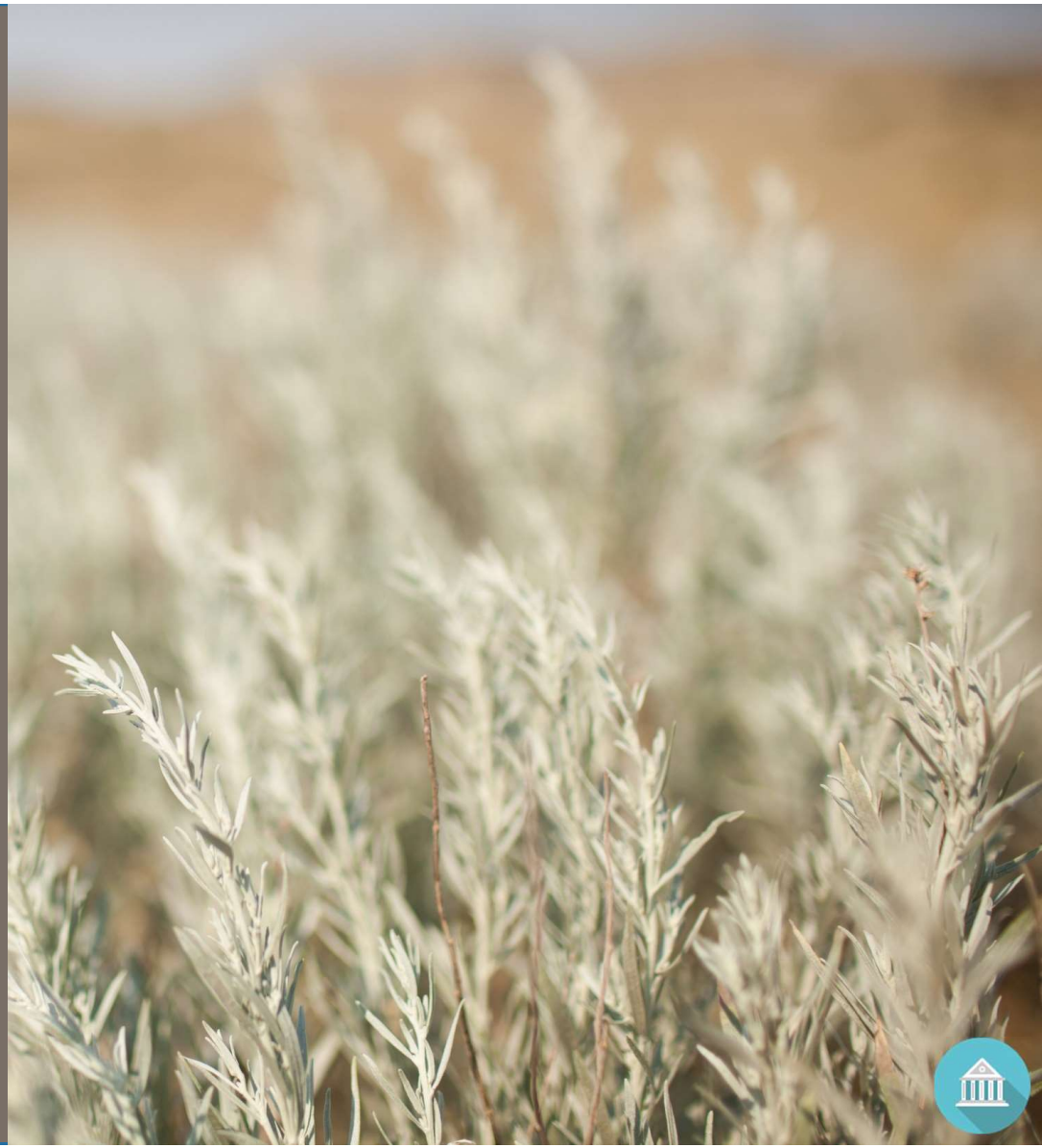
Information Technology

Materials Overview

	Strategy Discussion
Purpose & Vision	Why does IT exist and what are our goals?
Strategic Approach	Enabling vision, goals, and building our strategy
Inputs & Analysis	Trends, Considerations, and People, Process, and Technology debt across the state of ND, Risks
Vision & OKRs	Vision and Objectives & Key Results
Where we need Help	Governor's support, other Shared Services, Legislation

	Appendix Information
The Past	2017 and previous situation for IT in ND
IT Disciplines	45 areas of expertise necessary to properly run an enterprise technology organization
Org Information	Org Chart, budgets, general team info
Market Considerations	Considerations from the Government market space
Inputs & Analysis	Additional inputs & analysis from national, local, and technical trends

Team NDIT



HISTORICAL CONTEXT – 2017 AND BEFORE

- “Stay out of the paper, and do it cheaply”
- Lots of good people with good hearts, but not necessarily good experience
- “99.9% satisfaction” – fake metrics
- “Cloud Never”
- Perceived as a money pit, not strategic enablement
- Immature in all processes (1.1 → 1.5 on a 5-point scale)
- No process improvement methodologies
- No vision that improving operations improves outcomes
- PDFs, Long-code, and Run work, oh my!

CXO TEAM - ENABLING VISION & GOALS

Dorman Bazzell
Apps, Insights, & Data

Applications & Insights Transformation

Jeff Hensel:
Customer Success

Key Customer Management

Greg Hoffman
Finance

Accounting & Procurement

Shelly Miller
People

Human Resources

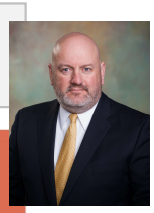
Open:
Reinvention

Better Government

Kevin Ford
Security

Whole of Government Security

Duane Schell
Technology



Service Management

NDIT Unified Service
402 FTE

NDIT Extended Service
75.5 FTE

NDIT Contractors & Vendors**
~707 Resources

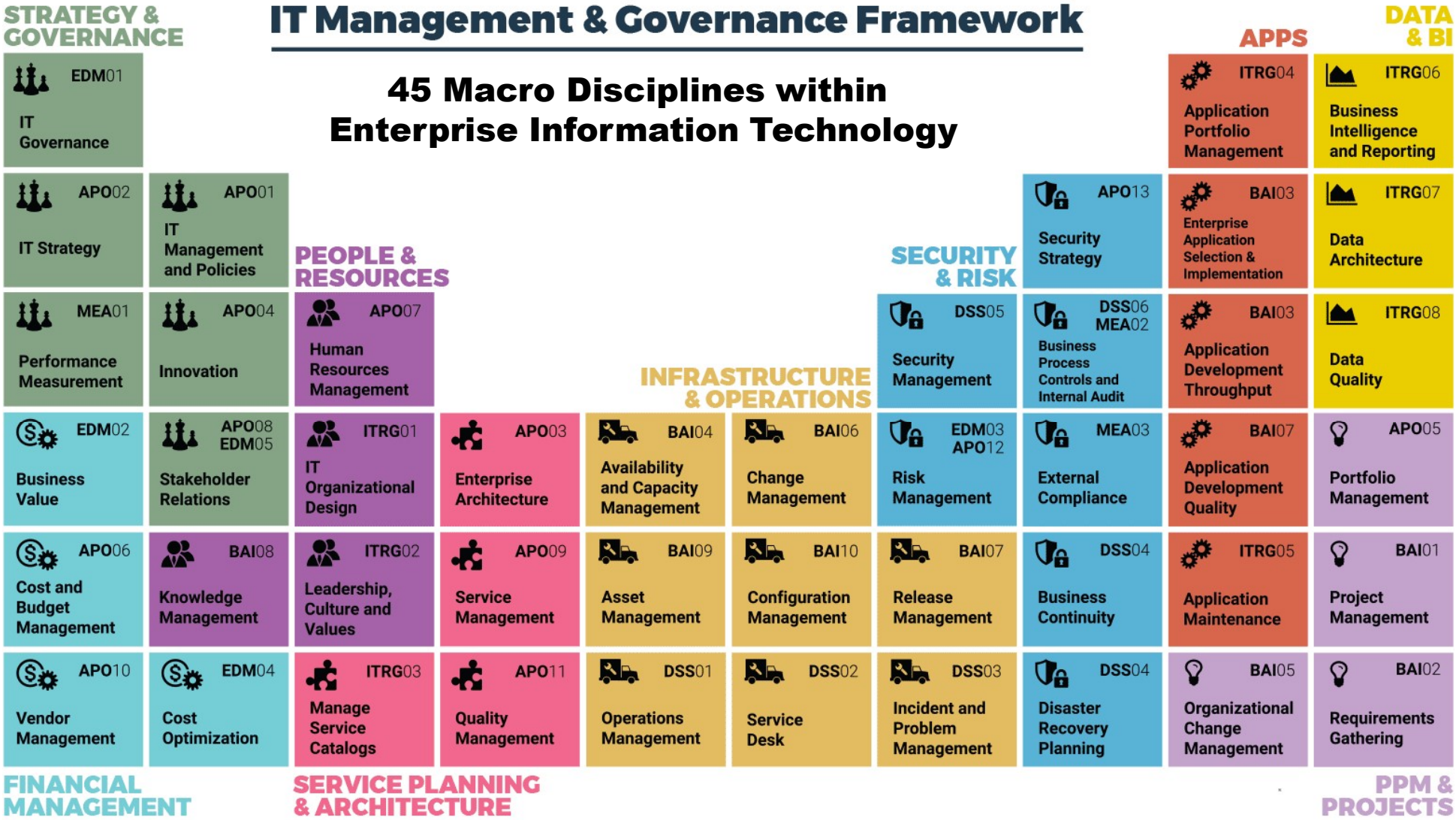
~1,184.5 Combined Resources

Interesting Team Stats

- 50% of CXO team moved to North Dakota
- Shared Service Staff reside in 9 states
- Currently occupying 17 different locations in Bismarck
- Every government entity in ND receives services (over 400 orgs) from NDIT
- Over 252,000 citizens depend on NDIT services daily

IT Management & Governance Framework

45 Macro Disciplines within Enterprise Information Technology

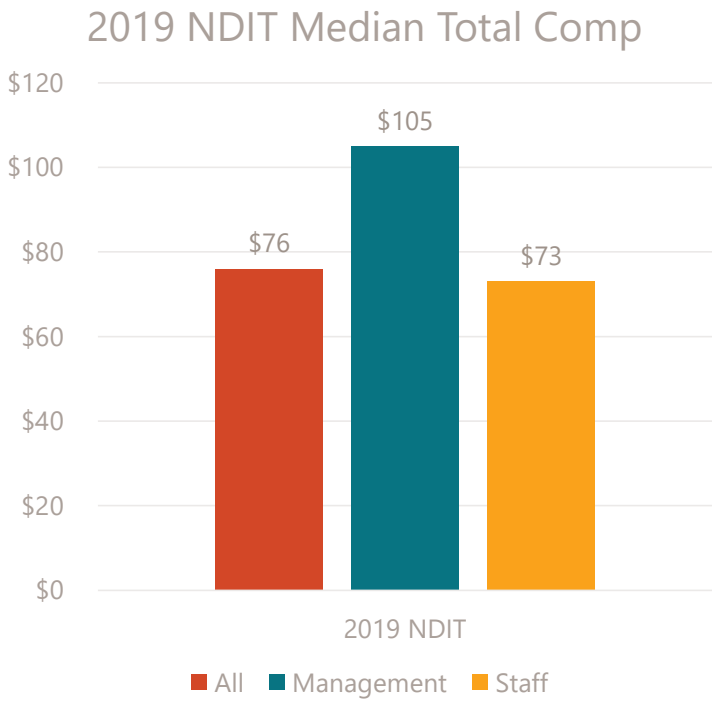


TEAM NDIT- PEOPLE – LEADERSHIP EVERYWHERE

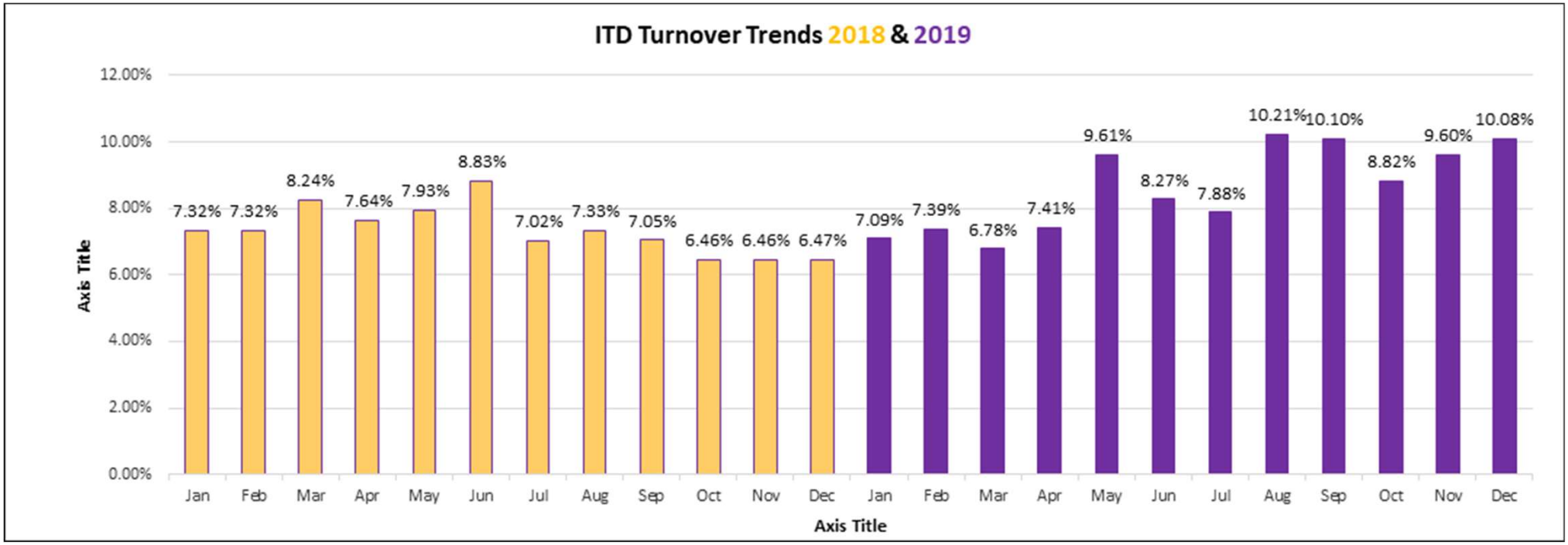
- 365 IT FTE have attended **Leadership Everywhere** courses
  - The following have attended full series

- Kari Sauer (Everyone)
- Anthony Aukland (Everyone)
- Jonathan Arbach (Everyone)
- Zach Warshak (Everyone)
- Duane Schell (Everyone & Managers)
- Robin Yale (Everyone)
- Matthew Phelps (Everyone)
- Rosi Kloberdanz (Everyone & Managers)
- Justin S. Anderson (Everyone)
- Jane Hovda (Everyone)
- Jayden Grinsteinner (Everyone)
- Nadine Heck (Everyone & Managers)
- Gary Kok (Everyone)
- Zina Remboldt (Everyone)
- Robin Vesey (Managers)
- Joshua Jenkins (Managers)
- Karl Altenburg (Managers)
- Treva Beard (Managers)
- Monique Durgin (Managers)
- Robert Baumann (Managers)
- Pamela Anderson (Managers)
- Kristen Blessum (Managers)
- Narasimhan Kandooru (Everyone)
- Hannah Wolf (Everyone)
- Jo Marie Sellner (Everyone)
- William Laber (Managers)
- Craig Felchle (Managers)
- Timothy Hagen (Managers)
- Lyle Ripplinger (Managers)
- Kory Hellman (Managers)
- Brandi Fagerland (Managers)
- Della Thorsness (Managers)
- John Sheldon (Managers)
- Chad Gumeringer (Managers)
- Kay Vogel (Managers)
- Dean Glatt (Managers)
- Jeremy Lunde (Managers)
- John Gieser (Managers)

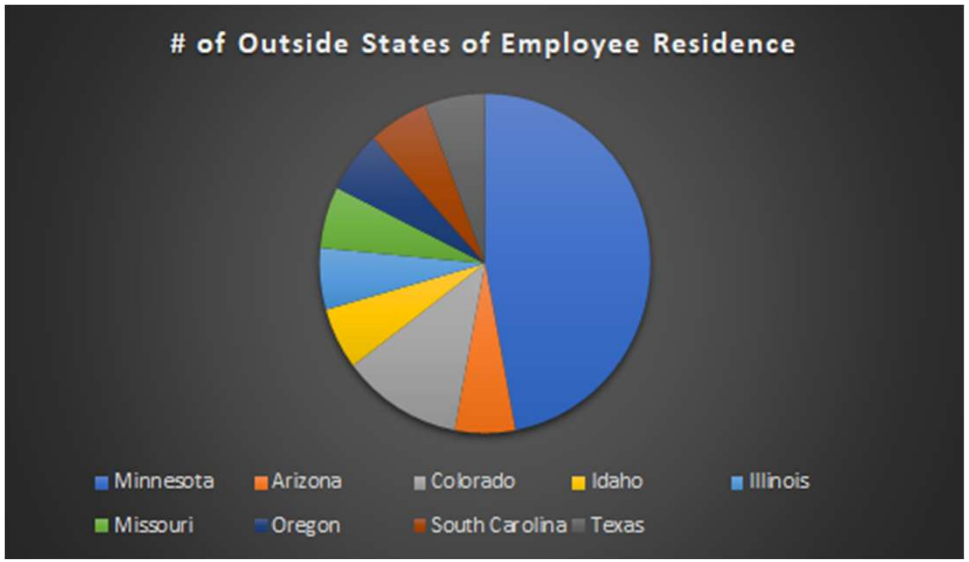
TEAM NDIT- PEOPLE - SALARIES

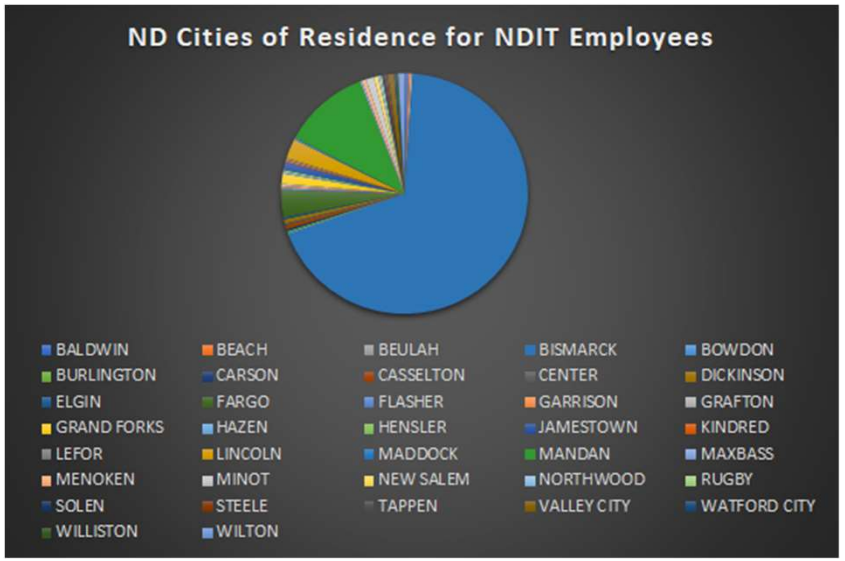


TEAM NDIT- PEOPLE - ATTRITION



TEAM NDIT- PEOPLE - LOCATIONS





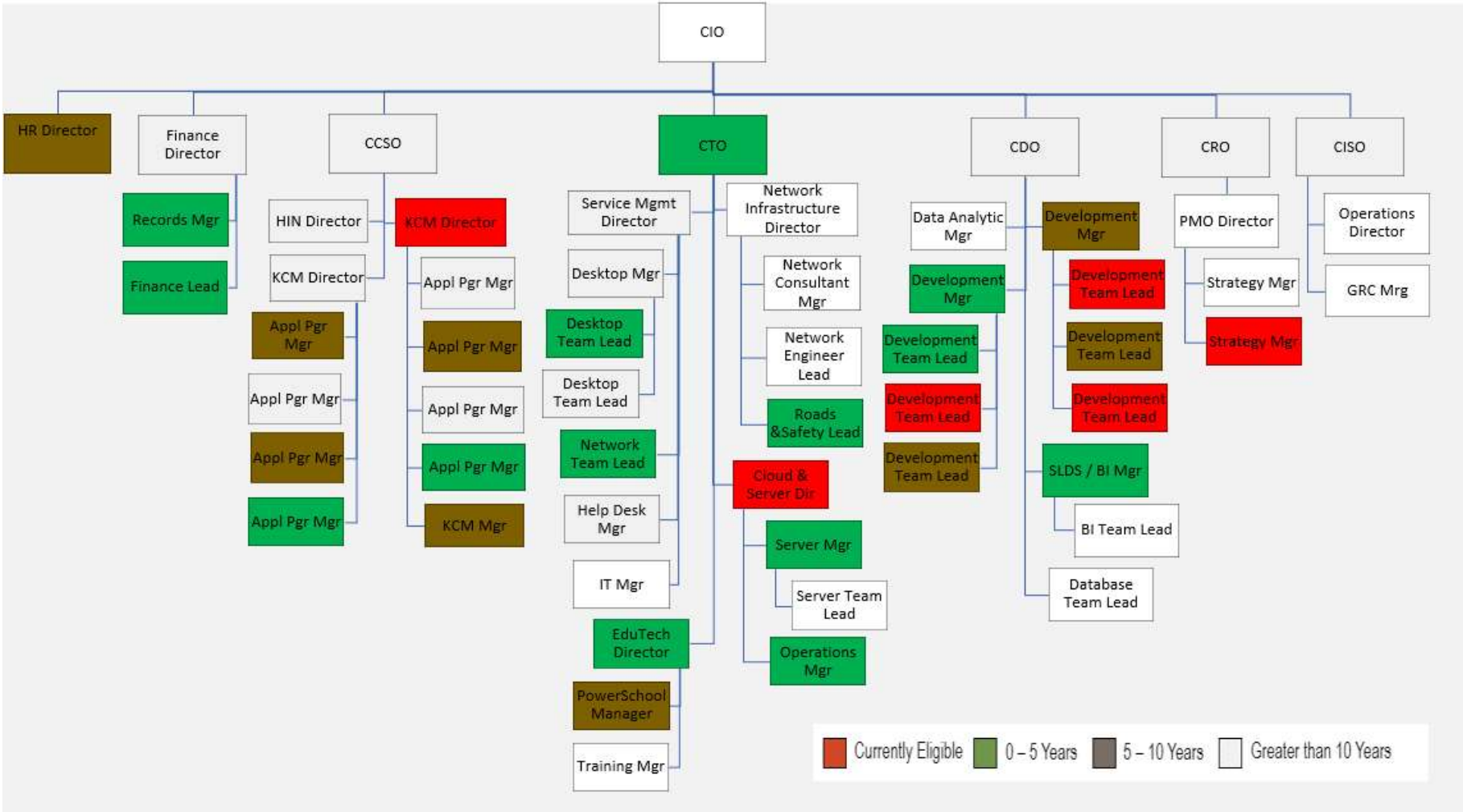
TEAM NDIT- PEOPLE - RETIREMENTS

Years to Rule of 85 & 90 Eligibility	Total Employees			Management*			Non-management		
	Management to FTE Ratio: 0.171								
	# of FTEs	% of Total FTEs	Cumulative %	# of FTEs	% of Total FTEs	Cumulative %	# of FTEs	% of Total FTEs	Cumulative %
Currently Eligible	26	7.03%	7.03%	5	1.35%	1.35%	21	5.68%	5.68%
0-3 years	23	6.22%	13.24%	5	1.35%	2.70%	18	4.86%	10.54%
3.1-5 years	27	7.30%	20.54%	8	2.16%	4.86%	19	5.14%	15.68%
5.1-10 years	71	19.19%	39.73%	11	2.97%	7.84%	60	16.22%	31.89%
10.1-15 years	69	18.65%	58.38%	11	2.97%	10.81%	58	15.68%	47.57%
15.1-20 years	59	15.95%	74.32%	7	1.89%	12.70%	52	14.05%	61.62%
20.1-25 years	56	15.14%	89.46%	5	1.35%	14.05%	51	13.78%	75.41%
25+ years	39	10.54%	100.00%	2	0.54%	14.59%	37	10.00%	85.41%
Total	**370**	**100.00%**		**54**	**14.59%**		**316**	**85.41%**	

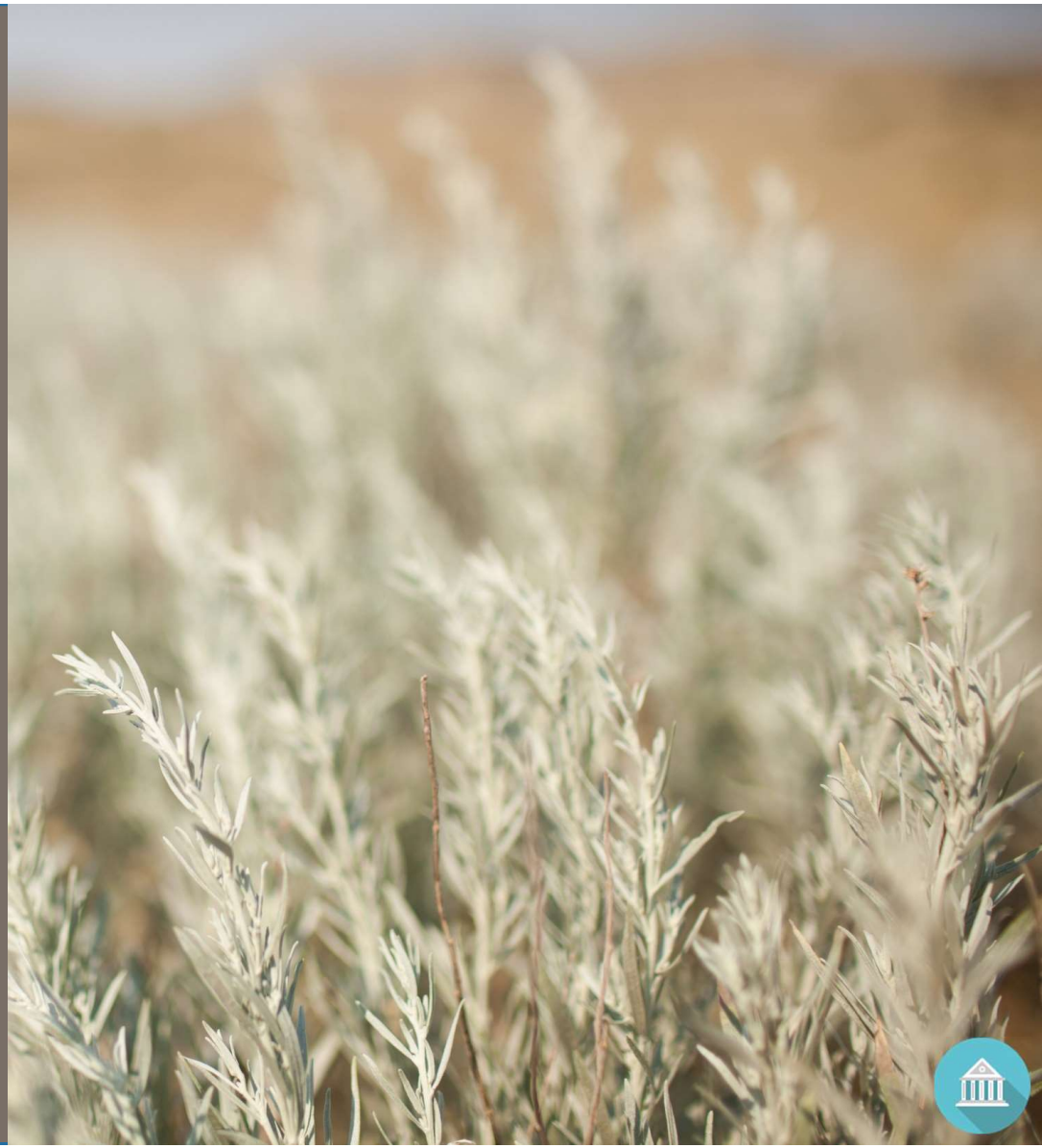
*Management includes all people managers

*As of 2/25/2020

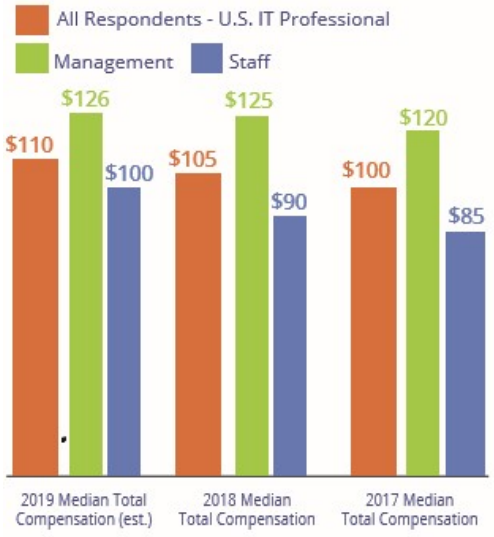
TEAM NDIT – RULE OF 85 & 90 – LEADERSHIP



Inputs & Analysis



INPUTS & ANALYSIS – NATIONAL*



Brookings, 2017

545 Occupations

90% Of American Jobs

0% Don't require digital skills

45 bn

New devices over next 5 years

INTERNET OF EVERYTHING

By 2023, 30 %

Of world news and video content will be authenticated on a blockchain to counter "deep fake" technologies

IT Unemployment

0% in Cyber

1.9% in other Tech Disciplines

63 % Increase year over year

Robotic Process Automation

Fastest growing market in enterprise software

52 %

Of Global Internet traffic on mobile

81% of adults own a smartphone including 53% of over 65 adults and 71% with annual income under $30K

Enterprises using Big Data to improve decision-making **84%**

Cloud is the default standard for the industry, and often the only option

45 % **Of Government work can be automated**

US Office of Personnel Management

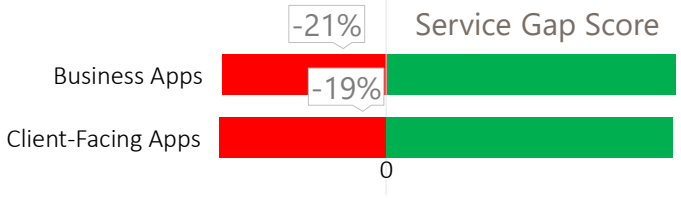
22-42 % **Drop of efficiency in government since 1980**

International Monetary Fund

*Additional materials in appendix

INPUTS & ANALYSIS – ND*

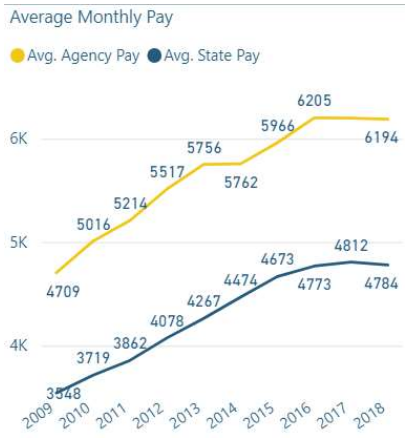
528 Legacy Apps Identified in the cabinet

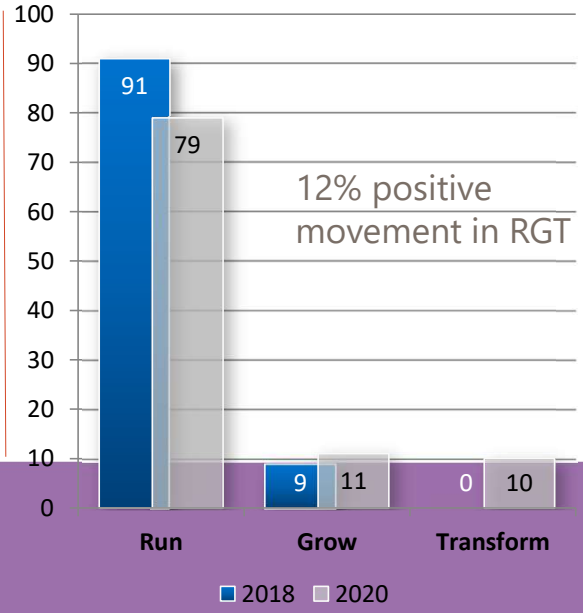


~250 Legacy Apps across the rest of state of ND

Within the state, NDIT is considered a "have" agency with regard for salaries

NDIT salaries range from 17% to 31% under the national average





Hunger for Internet of Things platforms and universal Internet access are extremely high

1,000,000,000 IoT Devices

NDIT Spend as % of OpEx **2.1%**

National State & Local IT Spend average as % of OpEx **4.7%**

$0 **2019 and previous dollars dedicated to Research & Development in North Dakota Information Technology for grow and transform**

Leading the nation in approach to cyber – multiple states want to join us

*Additional materials in appendix

INPUTS & ANALYSIS – PEOPLE

Learning & Growth

Knowledge Debt

IT industry model that measures the knowledge and skills gaps for the target architecture and technology

IT Staff have a half-life of 18 months

The IT industry changes faster than any other industry. Additionally, there are currently **45 different macro disciplines and hundreds of micro disciplines** within the IT field. A "half-life" of 18 months means that half of the knowledge an IT person has is no longer relevant 18 months from now.

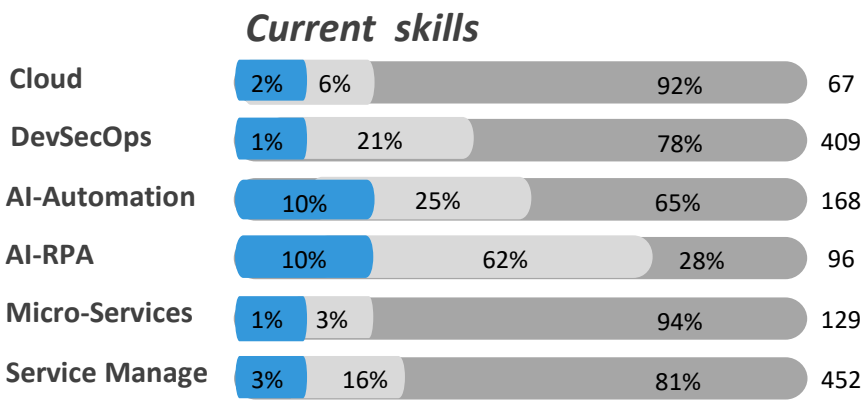
IT Shared Service

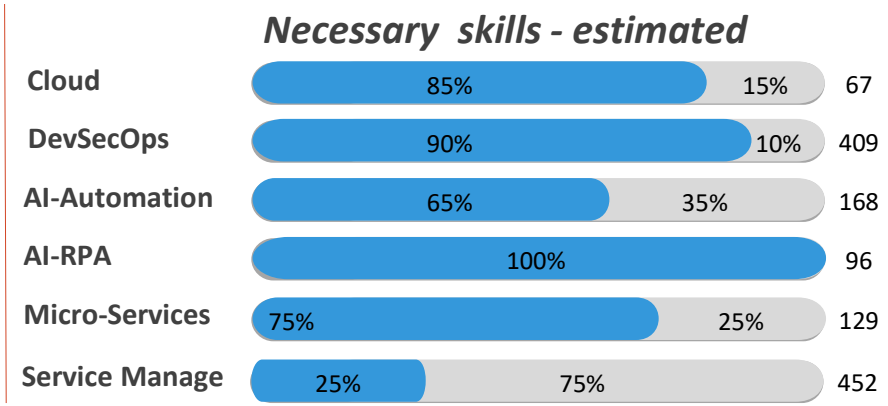
452 FTE

Knowledge Debt: 92%

Industry Benchmark: N/A

Government Benchmark: N/A





Mitigations Reviewed in Strategies

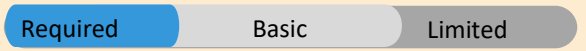
- People, Data, Technology, Reinvention

Business Process Improvement

While a major IT process, this knowledge needs to be spread through the entirety of government

Key

- Required: Skills necessary for the work
- Basic: Emerging level skills to understand concepts
- Limited: Little to no knowledge on the subject



INPUTS & ANALYSIS – PROCESS

Process redesign is essential to reinventing government

Processes assessed across State of ND frequently reflect 1980s business models

553 People have completed one or more Process Improvement classes across the state since May 2019

Class Attendance 913

The business process foundation and journey board classes will be available online after the March 26th 2020 session at no cost to the students

	IT Process – Sample of state of ND	Score					NOTES
		1	2	3	4	5	
IT operations	Cyber Operations	1.2		3.7			Target Q1 2021
	Service Management	1.1		3.1			Target Q4 2020
	Software Development	1.5		3.1			Target Q2 2021
	Project & Portfolio Management	1.5		3.2			Target Q1 2021
	BLACK = Baseline			GREEN = Target			

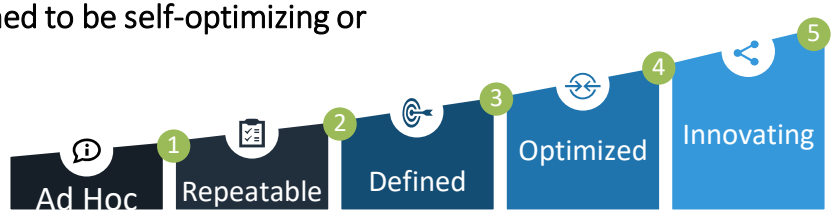
WHY DOES PROCESS MATTER?

Moving the IT Team from a 1.5 to a 3.x maturity will do the same work with 53-77 fewer FTEs

Very few of the processes at the state of North Dakota have been designed to be self-optimizing or continually improving

Improvement is critical

Few of the observed processes are:
- **Documented**
- **Measured**
- **Benchmarked**
- **Aligned to strategy**
- **Aligned across agencies**
- **Aligned to Governor's pillars**



INPUTS & ANALYSIS – TECH DEBT

Defintion: Technical debt describes the consequences of technology development actions that prioritize client constraints over technical and design considerations.

Currently tech debt is manually collected and analyzed in NDIT

Primary tech Debt Platforms in ND

10+ year old platforms widely used in ND that can not be retrofitted to targeted micro-services, cloud, or security architectures:

- Unisys Mainframe
- IBM Mainframe
- Java (PC based)
- ADABAS
- On-prem IIS
- FileNet
- Oracle
- AS400
- Lotus Notes
- Websphere
- SQL 2008
- RPG
- Connx
- Cognos
- RS6000

10-year or younger platforms widely used in ND that can not be retrofitted to targeted micro-services, cloud, or security architectures:

- Crystal Reports
- TomCat
- Tivoli
- ~112 systems hosted by agencies outside of NDIT

$1.09B+

Calculated software tech debt for replacement of current out of date environments (528 apps identified)

< 2% Mobility

Percentage of ND apps designed for mobile usage, native or non-native

< 16% Cloud

Percentage of ND apps using cloud hosting or storage

< 1% Micro-Services

Percentage of apps reusing code with micro-services

90.5% Human Services

Percentage of Systems falling to tech debt status

Tech debt example – DHS SPACES Eligibility

8 Years

8 years of dev so far, and still releasing fixes

No Mobile

110 IT TEAM MEMBERS

5,200 **Change Requests**

Long Code, No Cloud

$186 M CapEx

Tech Debt platforms can be major cyber risks – for example Java has THOUSANDS of documented vulnerabilities

INPUTS & ANALYSIS – SYSTEMIC RISKS

Top Cyber Risks (C):

1. Unmanaged Environments connected throughout state of ND (cities, schools, etc.)
2. Defense structure is "strategic," thus reactionary and voluntary
3. Huge variation in systems and credentials

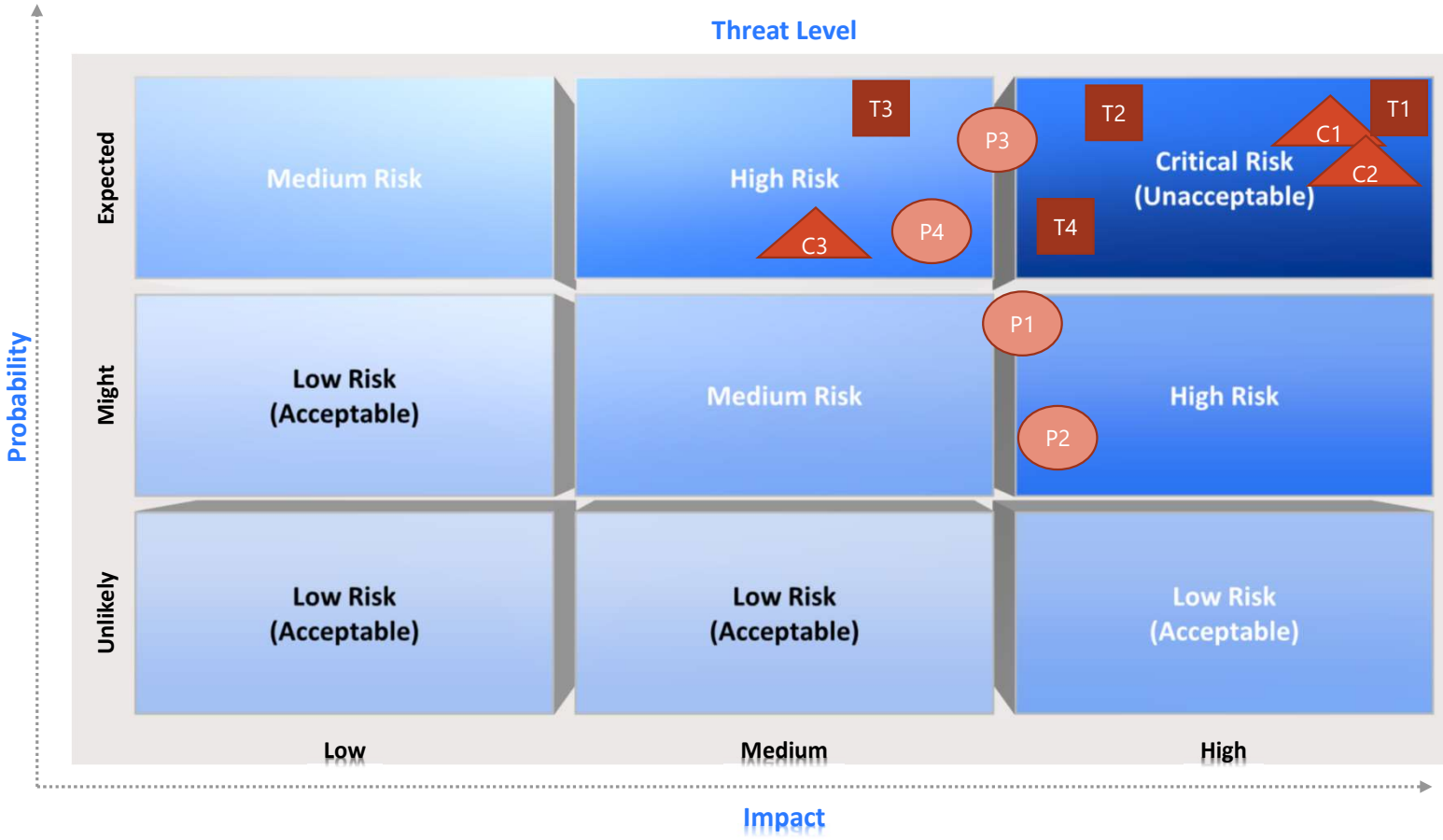
Top People Risks (P):

1. Appropriate talent for work
2. Salaries 40%+ below competitors
3. Continuous Learning
4. Retention beyond "heart/mission"

Top Technology Risks (T):

1. Massive legacy technical base
2. Immature Architecture and Enterprise standards combined with weak enforcement
3. Run activities still dominate the workload
4. Legacy Technology Management Process

Technology will upset the fundamental characteristics of Government



INPUTS & ANALYSIS – TECHNICAL RISKS

Top Cyber Risks (C):

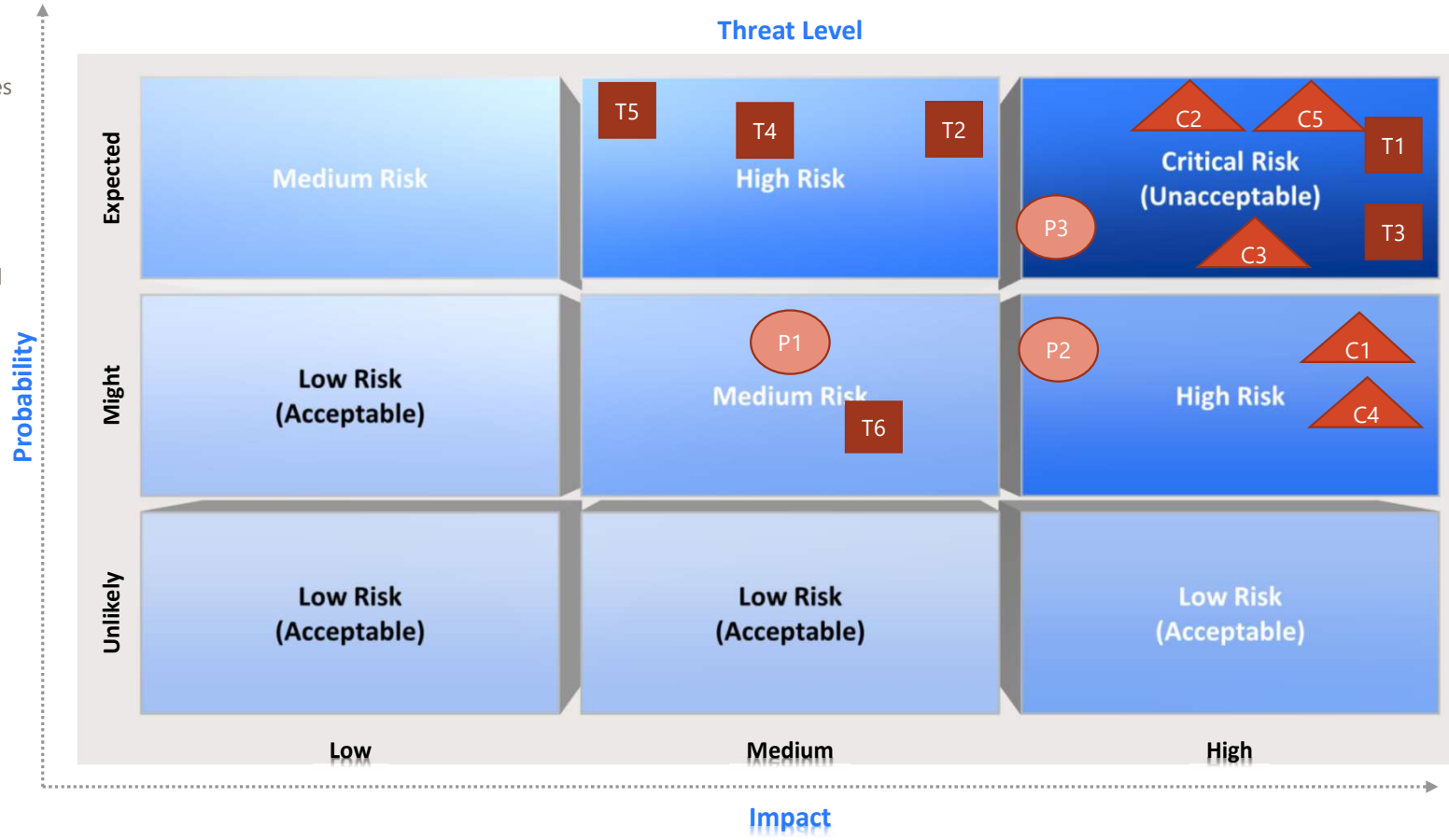
1. Identity is managed under multiple stores – some unified, some not
2. Identity is predominantly single factor
3. Crown Jewel data stores are not universally identified or understood
4. Data stores are not classified by data sensitivity
5. Protection technologies are not adopted universally

Top Technology Risks (T):

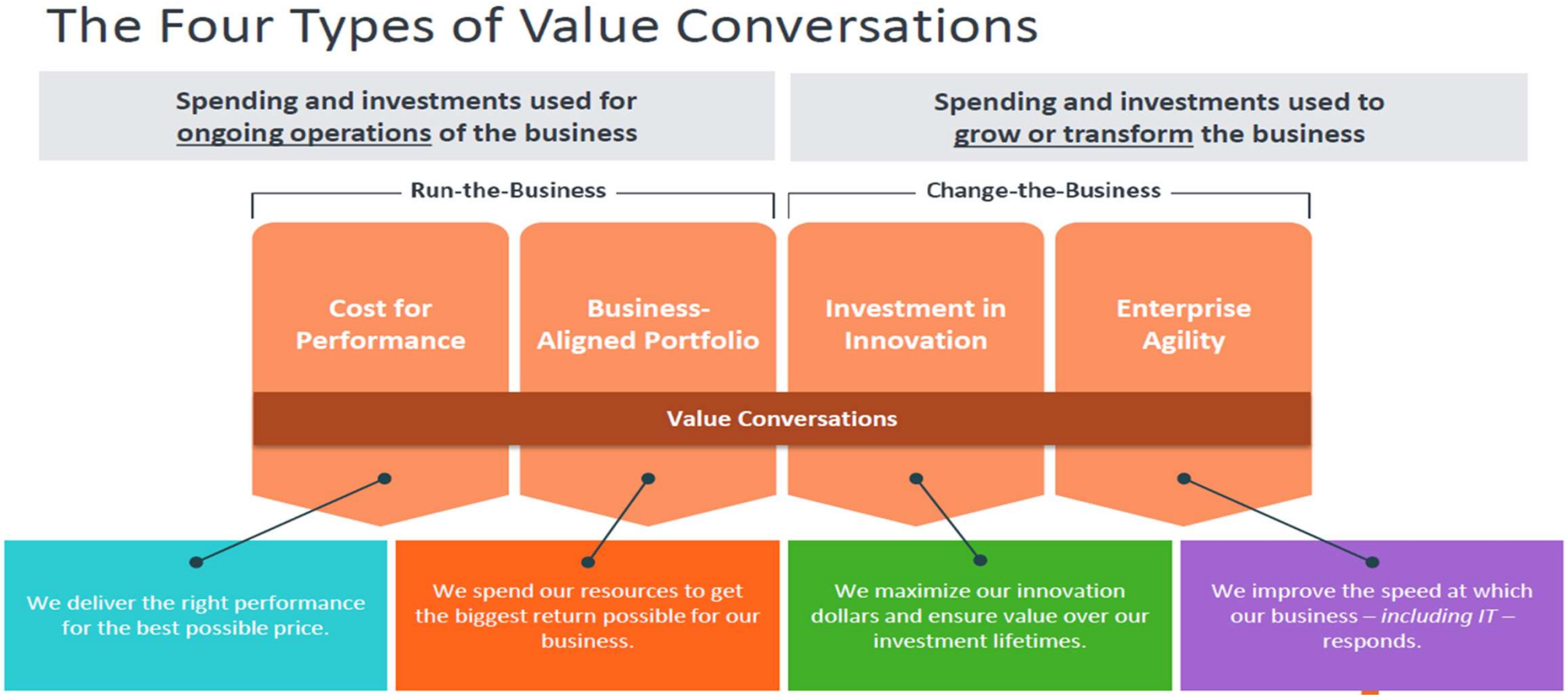
1. Java is everywhere and is inherently insecure
2. Unisys mainframe environment
3. All other mainframe environments
4. Unsupported technologies
5. Shadow IT
6. Aggressive network segmentation not fully deployed

Top People Risks (P):

1. Resistance to re-skilling
2. Impending retirements in 1-3 years
3. Aging apps limited/no sunset/transition plan

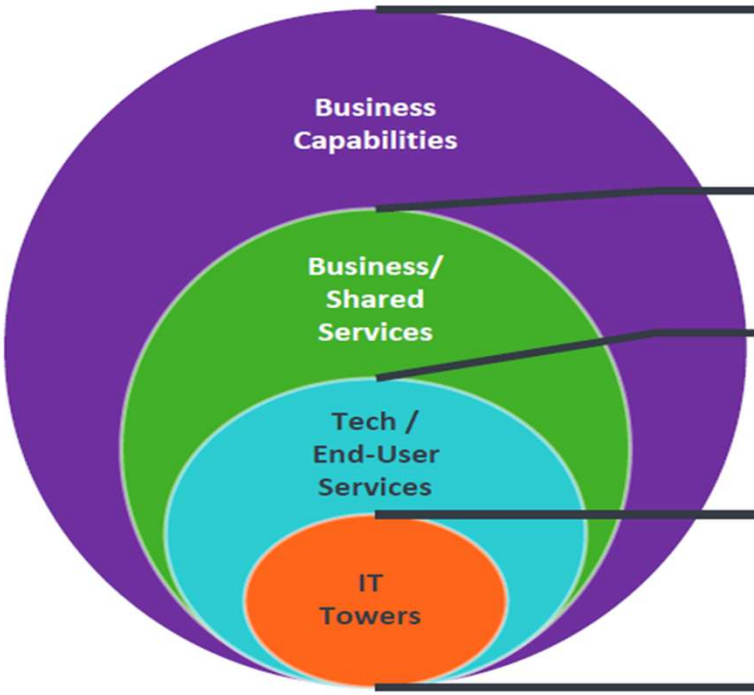


INPUTS & ANALYSIS – VALUE DISCUSSION



INPUTS & ANALYSIS – VALUE CHAIN

What does IT do for the business?



Employing people, processes, data and services to drive a business outcome.

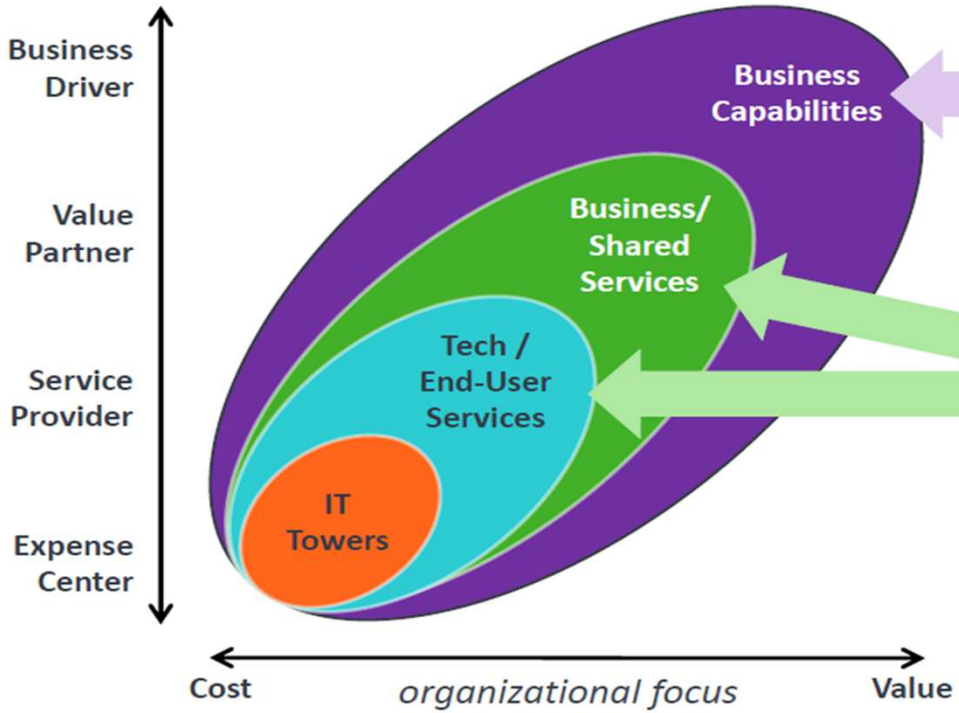
Partnering business and technology owners to improve business processes through automation or by exploiting information.

Delivering, supporting and maintaining infrastructure and workplace productivity tools.

Procuring technologies, data, facilities, utilities and people to deliver services and capabilities.

INPUTS & ANALYSIS – BUSINESS VALUE

Services Are Core to Business Value



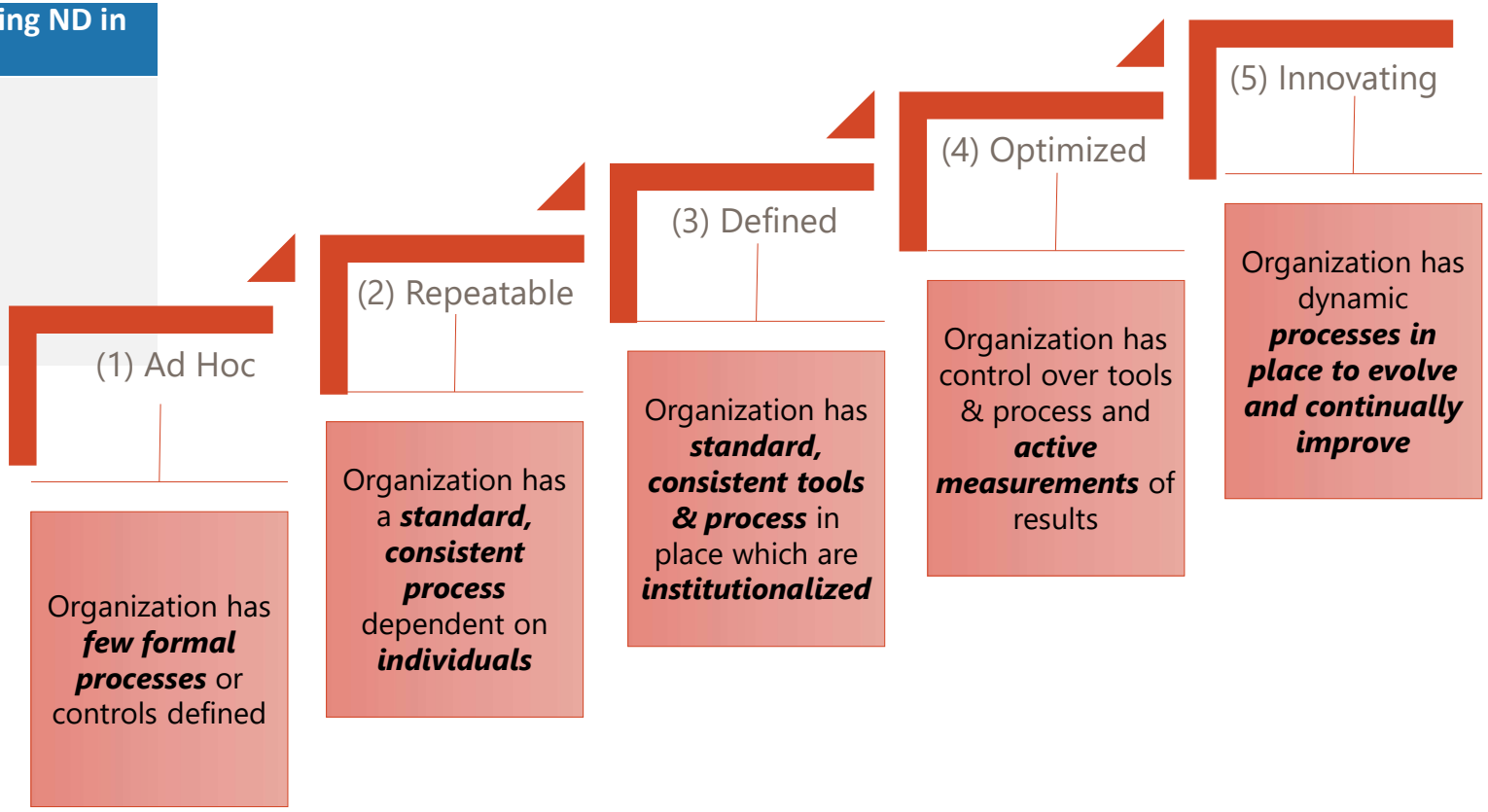
- Services support business capabilities, which drive revenue, enable growth, serve customers and enable the business to compete.

- Business partners judge value by the services (catalog [current] *and* pipeline [in development]) they receive.

INPUTS & ANALYSIS - PROCESS

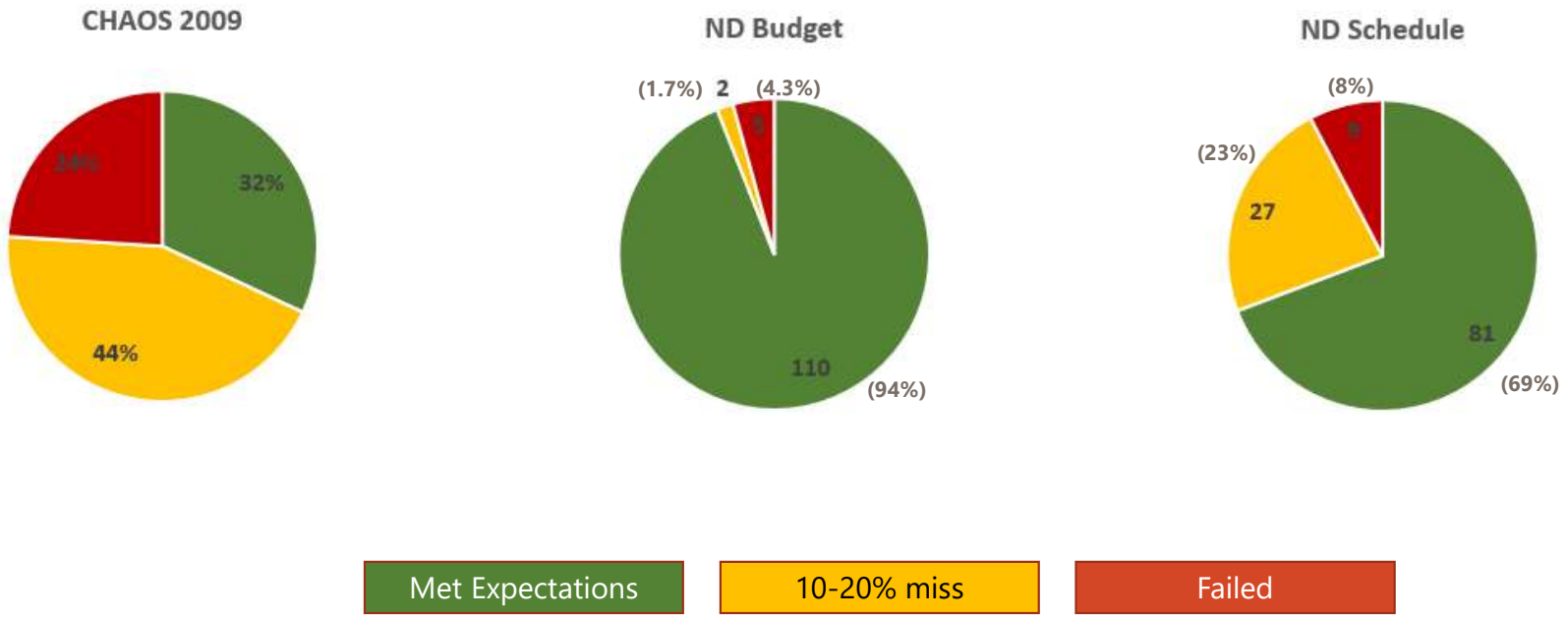
Organizations aiding ND in process redesign

- Three Bridges
- Major Oaks
- Re-engine
- Nexus
- Aeritae

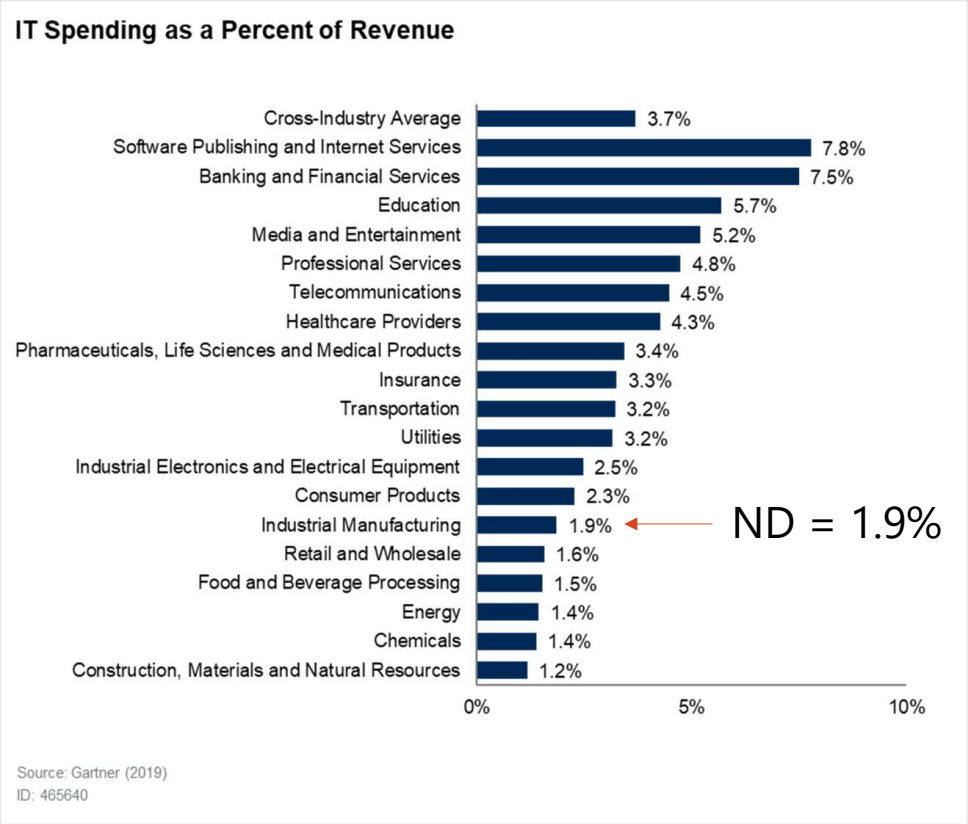


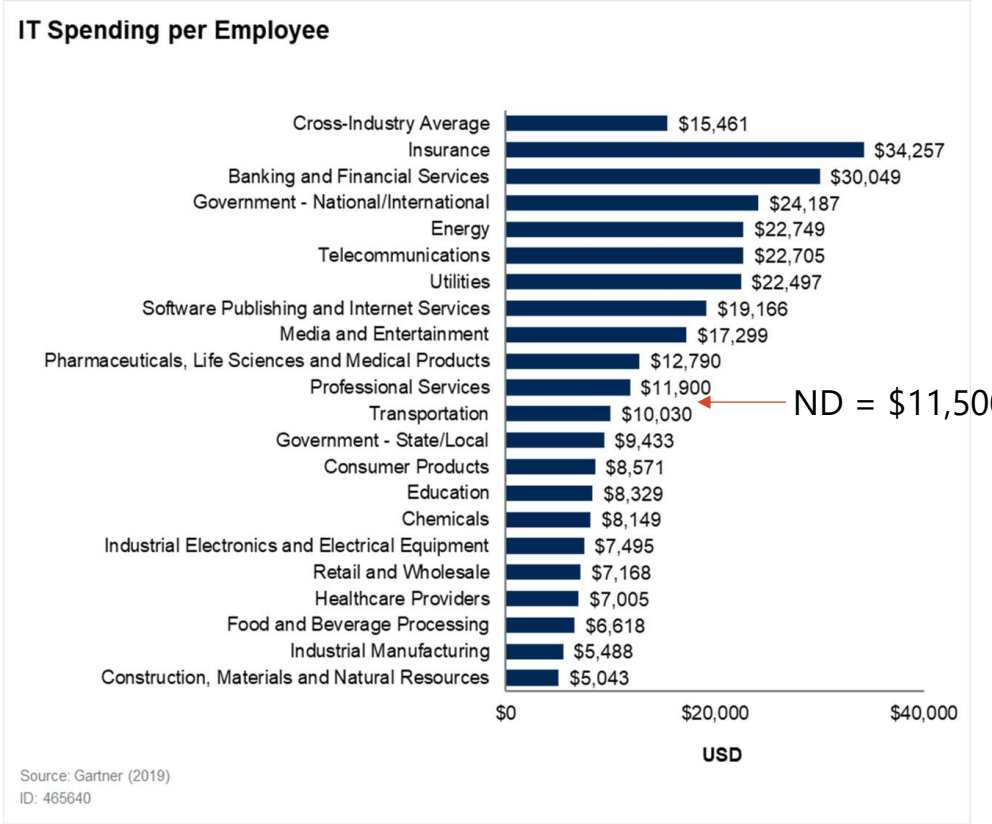
SUCCESS RATE OF ND LARGE IT PROJECTS

ND Projects Span July 2005 through October 2019



INPUTS & ANALYSIS - INDUSTRY





*includes projects with no direct benefit to the business

INPUTS & ANALYSIS - TECHNICAL DEBT

- Government has highest sector average for technical debt (Accenture)
  - $1.5m per application
  - Up to 5x greater than the 11 other industries examined
- North Dakota
  - Specialty software average age: 16 years (DHS)
  - Commodity software is now highly mitigated through Office365 contracts, however:
    - Only 86% of executive branch
    - Numerous other commodity software systems exist (Adobe, etc.)
  - 90.5% of applications in Human Services are legacy apps

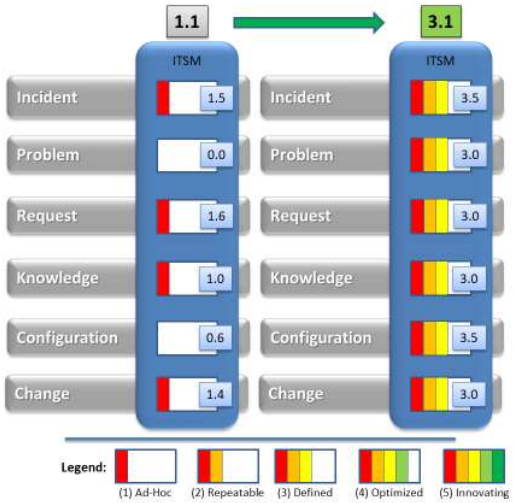
In addition to People & Process, technology debt includes:

- Architecture Debt
- Build Debt
- Code (software dev) Debt
- Defect Debt
- Design Debt
- Documentation Debt
- Infrastructure Debt
- Requirement Debt
- Service Debt
- Test Automation Debt
- Test Debt

FOUNDATIONAL PROCESS DEBT – BASELINE SPRING 2018

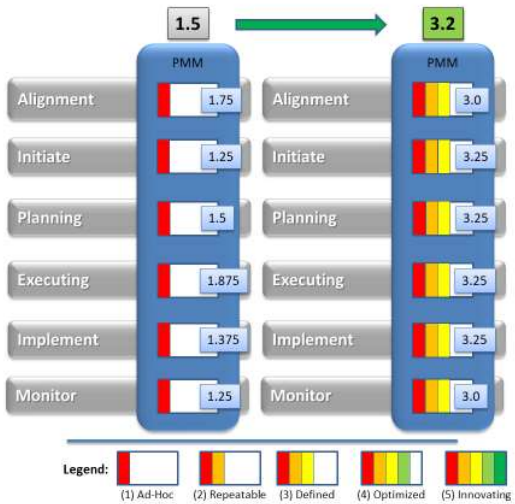
Service Management Goals

- Comprehensive redesign of service processes
- Complete rethinking of self-service and automated services
- Integration to other service delivery centers (development, security, etc.)



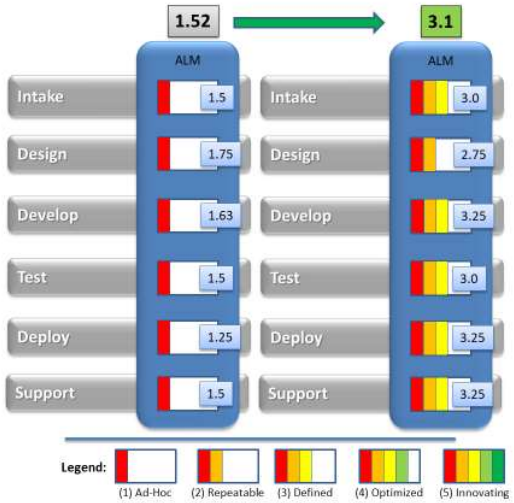
Project Management Goals

- Create comprehensive portfolio views of IT projects across state government
- Implement Resource Management across all IT resources



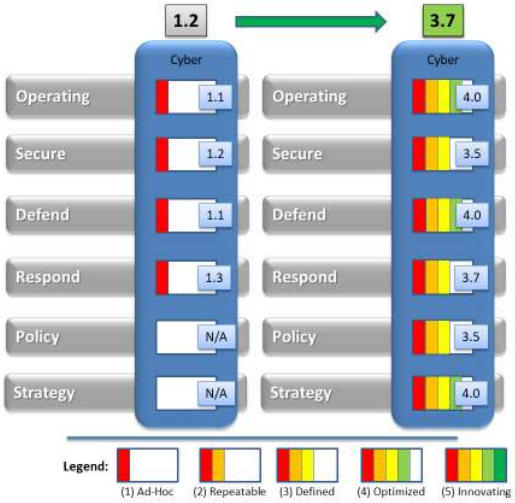
Software Development Goals

- Move to low/no-code development platforms
- Significant decrease in development time (time to live)
- Mobile always available in any new development



Cyber Security Goals

- Every Student, Cyber Educated, Kindergarten through PHD
- Whole of Government Defense across all 7 branches of Government (SB2110)
- Adopt an active defense mindset – defend from the front of the pack



Strategic Initiative Alignment

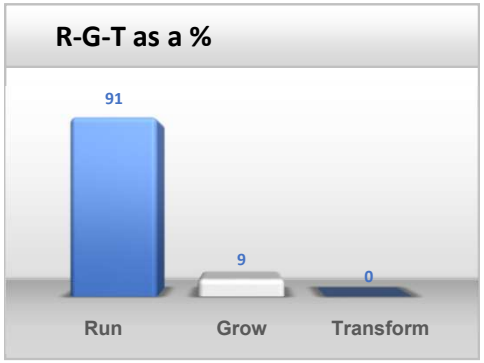
Key Programs and Services						
IT Unification	Reinventing Government			Core Agency Services		
Internal Security Assessment	Reinventing Government			Core Agency Services		
Operational Assessments	Reinventing Government			Core Agency Services		
K-20W Cyber Education Initiative	Transforming Education					
Build Data Management Culture	Reinventing Government	Behavioral Health and Addiction	Tribal Engagement	Transforming Education	Main Street	Core Agency Services
Unified Data Platform	Reinventing Government	Behavioral Health and Addiction	Tribal Engagement	Transforming Education	Main Street	Core Agency Services
Citizen Experience	Reinventing Government	Behavioral Health and Addiction	Tribal Engagement	Main Street		
MSI Dashboards	Main Street					
DOCR EHR	Behavioral Health and Addiction					
Cloud First	Reinventing Government			Core Agency Services		
Mobile First	Reinventing Government			Core Agency Services		
Identity & Persona	Reinventing Government			Core Agency Services		
One Cyber Security	Reinventing Government			Core Agency Services		
Workforce Plan	Core Agency Services					
Transport (Data/WAN)	Reinventing Government	Behavioral Health and Addiction	Tribal Engagement	Transforming Education	Main Street	Core Agency Services
IT Service Management	Reinventing Government			Core Agency Services		
Bimodal Development	Reinventing Government					
Portfolio Management	Reinventing Government			Core Agency Services		
Apprenticeship Partnership	Transforming Education					
FirstNet & SIRN	Core Agency Services					

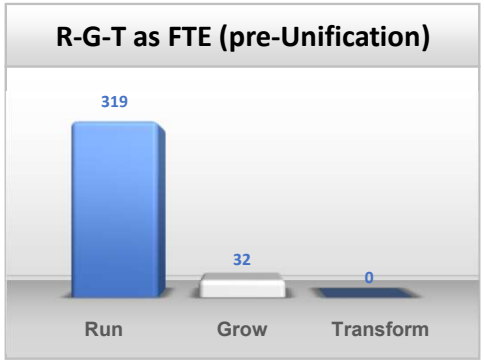
Project Dashboard 1

Project Dashboard 2

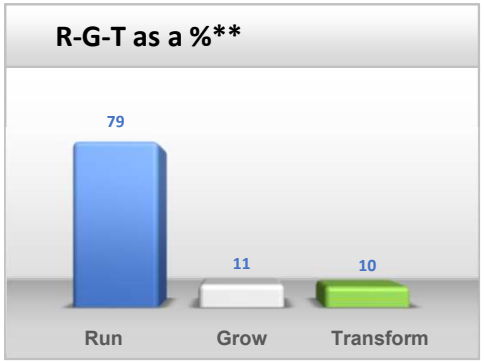
Run Grow Transform Opportunity – Updated Dec 2019

Baseline December 2017

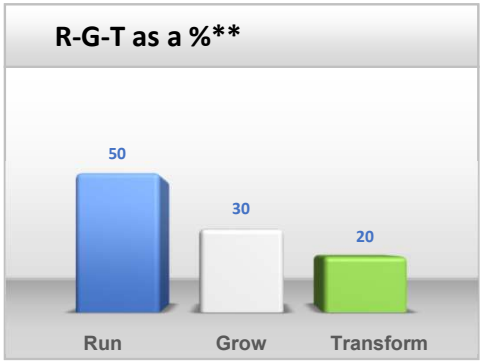


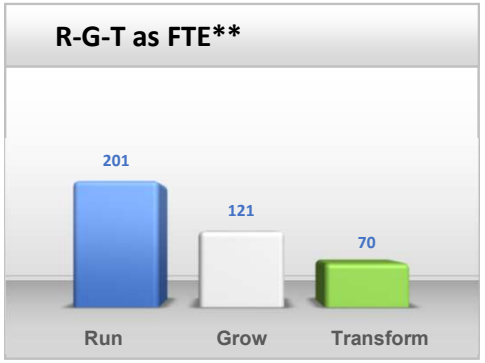


December 2019



World Class





*Baseline FTE numbers under non-unified environment in Dec 2017 (351 FTE)

**Normalized to % of new shared service (402 FTE)

Data – Customer Service Current – ND IT Satisfaction Scorecard – Baseline July 2018

Overall Metrics

Overall Satisfaction and Value are key indicators of the overall impression of the IT department. These metrics let the IT leader determine at a glance if they are meeting the needs of the business.

Satisfaction	
This Year	Last Year
56%	--

Value	
This Year	Last Year
49%	--

IT Support Breakdown

The IT Support Breakdown charts are indicators of the percent of stakeholders that fall into three important categories. Promoters are loyal enthusiast of IT. Neutral stakeholders are satisfied but unenthusiastic about IT. Detractors are unhappy stakeholders who can damage your reputation.

Net IT Support Score: Satisfaction	IT Support Breakdown
	-39%

Net IT Support Score: Value	IT Support Breakdown
	-67%

 Detractors (scored 1-6)

 Neutral (scored 7)

 Supporters (scored 8-10)

IT Support Breakdown = Supporters - Detractors

IT Relationship Satisfaction

Relationships are a key driver in stakeholder management. It is important that the business feels IT understands their needs and is getting enough communication.

Relationship	Satisfaction	Last Year
Needs Satisfaction with IT's understanding of your needs.	62%	--
Execution Satisfaction with the way IT executes your requests and meets your needs.	58%	--
Communication Satisfaction with IT communication.	60%	--

Business Satisfaction and Importance for Core Services

The core services of IT are important when determining what IT should focus on. The most important services with the lowest satisfaction offer the largest area of improvement for IT to drive business value.

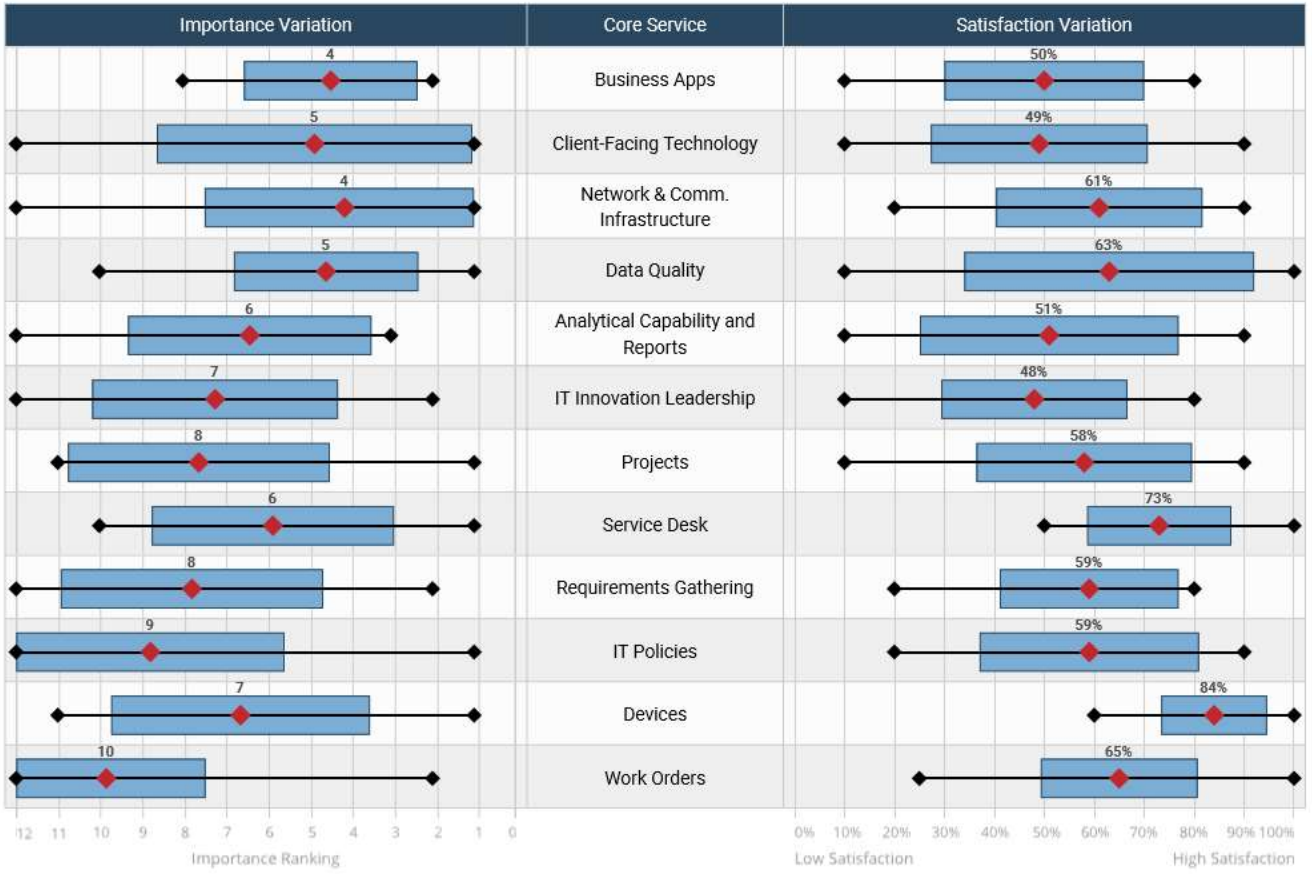
Core Service	Satisfaction	Importance Ranking	Last Year
Devices Satisfaction with desktops, laptops, mobile devices etc.	84%	7th	--
Service Desk Satisfaction with responsiveness and effectiveness of service desk	73%	5th	--
Work Orders Satisfaction with small requests and bug fixes	65%	12th	--
Data Quality Satisfaction with providing reliable and accurate data	63%	3rd	--
Network & Comm. Infrastructure Satisfaction with reliability of comm. Systems and networks	61%	1st	--
IT Policies Satisfaction with policy design and enforcement around security, governance, etc...	59%	11th	--
Requirements Gathering Satisfaction with BA's ability to understand and support the business	59%	10th	--
Projects Satisfaction with large department or corporate projects	58%	9th	--
Analytical Capability and Reports Satisfaction with effective standard reports, custom reports capability, and the ability to generate business insights	51%	6th	--
Business Apps Satisfaction with applications and functionality	50%	2nd	--
Client-Facing Technology Satisfaction with user experience and effectiveness	49%	4th	--
IT Innovation Leadership Satisfaction with providing opportunities for innovation and innovation leadership to improve the business	48%	8th	--

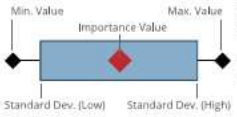
Full Report (~60 pages completed) is available

Data – Customer Service Current – ND IT Satisfaction Scorecard – Baseline July 2018

Service Gap Score

The chart below shows a comparison of satisfaction vs. Importance for all core services. Red bars with a negative score indicate an underserved core service. Green bars with a positive score highlight core services that are potentially over-provisioned.





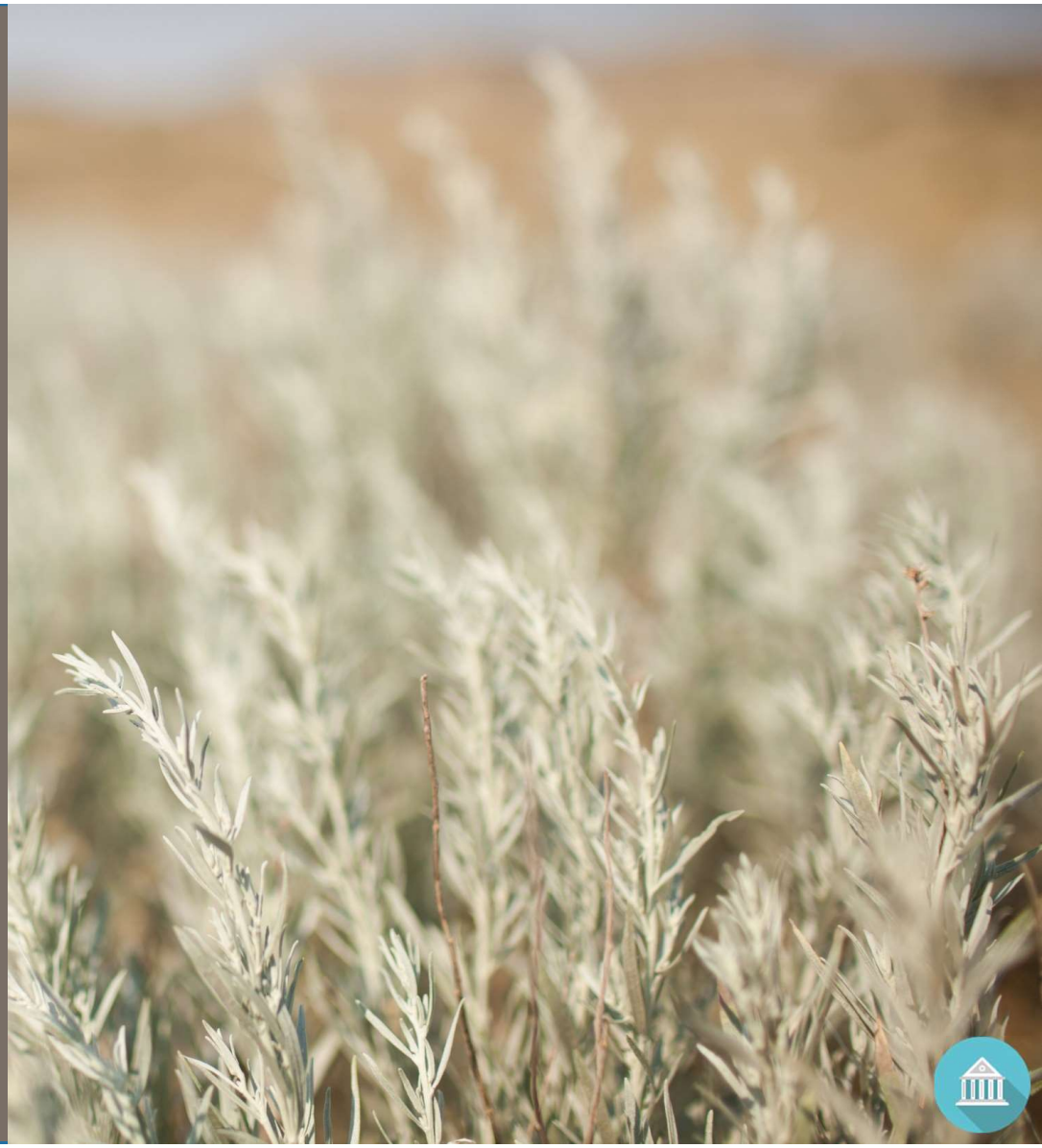
Importance Variation by Core Tool
Focusing on core services have a high degree of consensus around a high importance score will have a broad impact across the organization.

Satisfaction Variation by Core Tool
Outlying satisfaction scores can artificially inflate or defalte the average satisfaction score. When this occurs, take a closer look at specific departments that are pulling the score down to isolate the pain point.

INPUTS & ANALYSIS – TOMORROW+

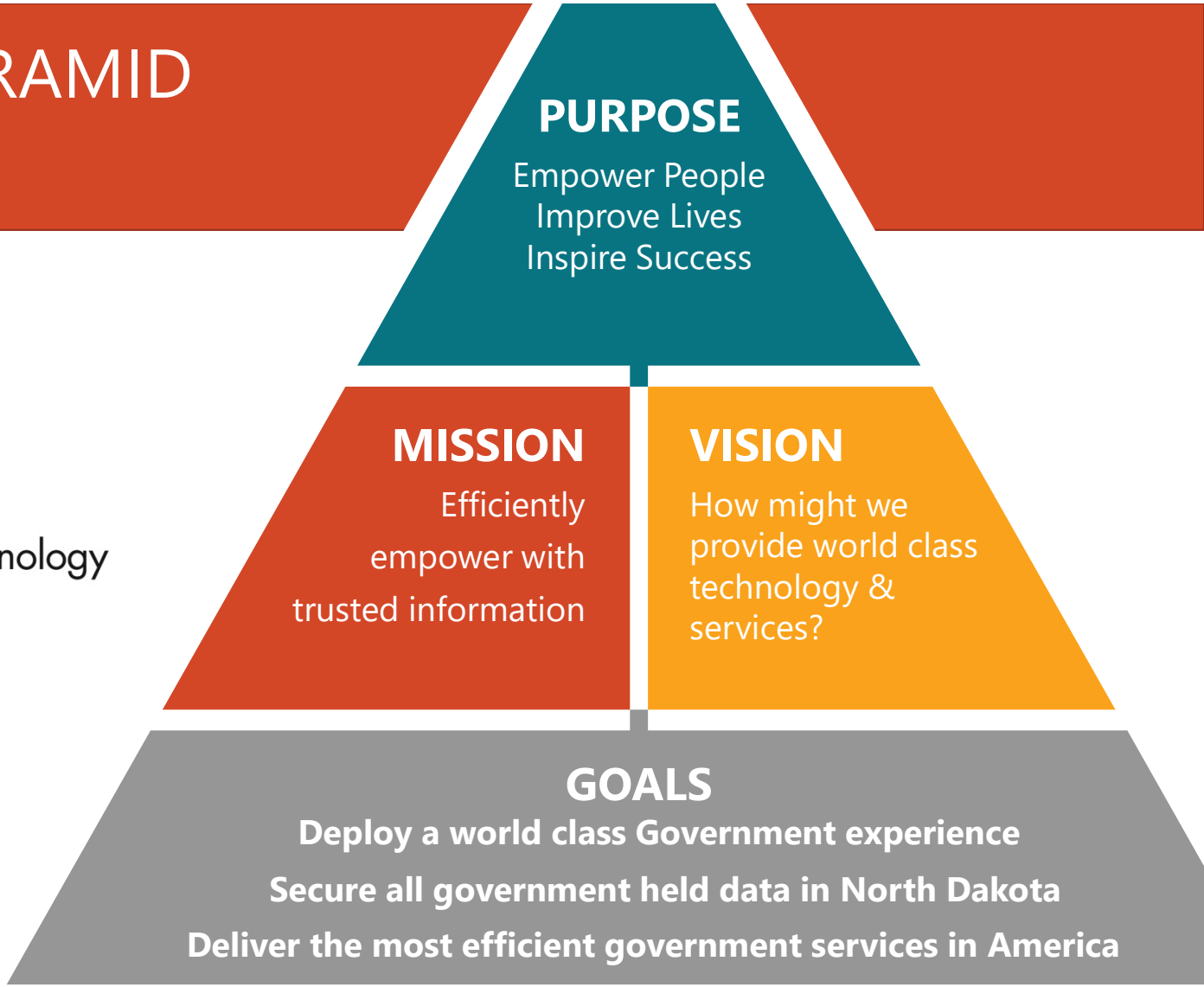
- By 2022, 70% of enterprises will be experimenting with immersive technologies for consumer and enterprise use, and 25% will have deployed them to production.
- By 2022, 35% of large businesses in the training and simulation industry will evaluate and adopt immersive solutions, up from less than 1% in 2019.
- By 2021, at least one-third of enterprises will have deployed a multi-experience development platform to support mobile, web, conversational and augmented reality development.
- By 2024 75% of large enterprises will be using at least four low-code development tools for both IT application development and citizen development initiatives.
- By 2022, at least 40% of new application development projects will have artificial intelligence co-developers on the team.
- By 2021, automation of data science tasks will enable citizen data scientists to produce a higher volume of advanced analysis than specialized data scientists.
- By 2025, a scarcity of data scientists will no longer hinder the adoption of data science and machine learning in organizations.
- By 2022, 30% of organizations using AI for decision making will contend with shadow AI as the biggest risk to effective and ethical decisions.
- Through 2023, 30% of IT organizations will extend BYOD policies with “bring your own enhancement” (BYOE) to address augmented humans in the workforce.
- By 2020, we expect that companies that are digitally trustworthy will generate 20% more online profit than those that aren’t.
- By 2020, we expect that 4% of network-based mobile communications service providers (CSPs) globally will launch the 5G network commercially.
- By 2024, most cloud service platforms will provide at least some services that execute at the point of need.
- By 2023, blockchain will be scalable technically, and will support trusted private transactions with the necessary data confidentiality.
- Through 2022, over 75% of data governance initiatives will not adequately consider AI’s potential security risks and their implications, resulting in quantifiable financial loss.
- Through 2022, 30% of all AI cyberattacks will leverage training-data poisoning, AI model theft or adversarial samples to attack AI-powered systems.

Vision Breakout



NDIT GUIDING PYRAMID

NORTH Dakota | Information Technology
Be Legendary.™



CREATING THE NDIT OVERVIEW - APPROACH

NORTH Dakota | Information Technology
Be Legendary.™

- Dedicate time to work on strategy
- Understand Purpose, Mission Vision Values, Goals
- Align to Governor's Pillars
- Question ourselves
- Consider our market space
- Understand resources and constraints
- Create Objectives and Key Results, Strategic Compasses
- Design logistics and execution
- Review, rinse, repeat, continuously improve

CREATING THE NDIT STRATEGY APPROACH

NORTH Dakota | Information Technology
Be Legendary.™

Align and dedicate time
Dedicated time to Vision & Strategy for organization leaders
First Wednesday of every month 4-8-hour sessions

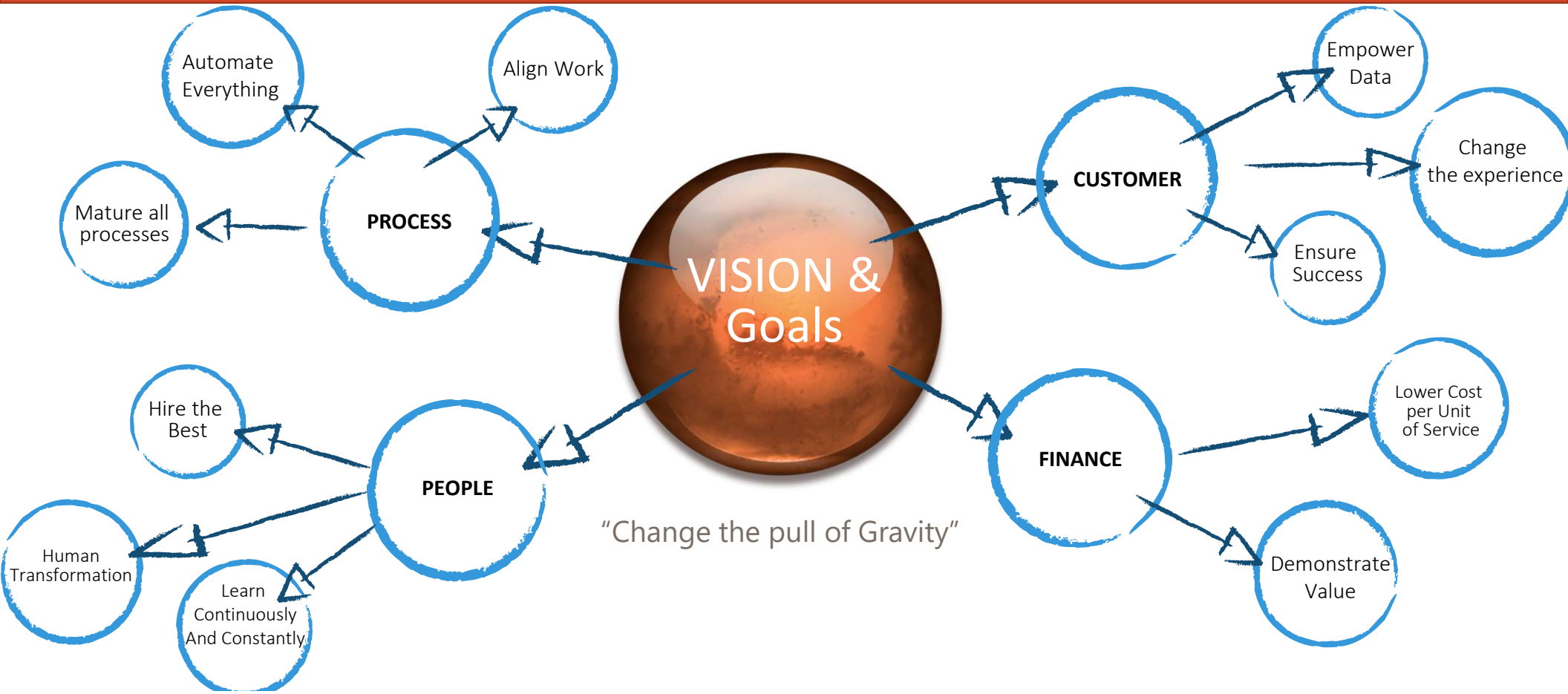
Question ourselves:

- Where is value flowing?
- Are we prepared to move money to the strategy?
- Are we ready to comprehensively reinvent ourselves?
- Are we aiming high enough?
- Will the state of ND take change seriously?
- Are we ready for the leadership challenge?

Market Considerations (*expanded in appendix*)

- Government is a very different market space than for-profit and must be approached as such
- North Dakota specific considerations
  - Political / Legal
  - Strategic
- National & Local Technology trends
- National & Local Workforce trends

STRATEGIES – WHAT DO WE NEED TO DO?



WHAT DO OUR VISION & GOALS LOOK LIKE?
(WHY DOES GRANDMA CARE?)

If Grandma works for the state

- Attaining our goals means:
  - Majority of commodity, redundant, repeating, mundane, boring work is gone – personal growth and more meaningful work
  - Little to no data entry work
  - Projects get done in weeks instead of decades
  - Data is accessible and meaningful

If Grandma is a resident of the state, but doesn't work as a state employee

- Attaining our goals means:
  - Citizens have 24/7/365 access to the vast majority of services
  - No standing in line for commodity government services
  - Single point of access to government services
  - Secure, worry-free, elegant, intuitive systems

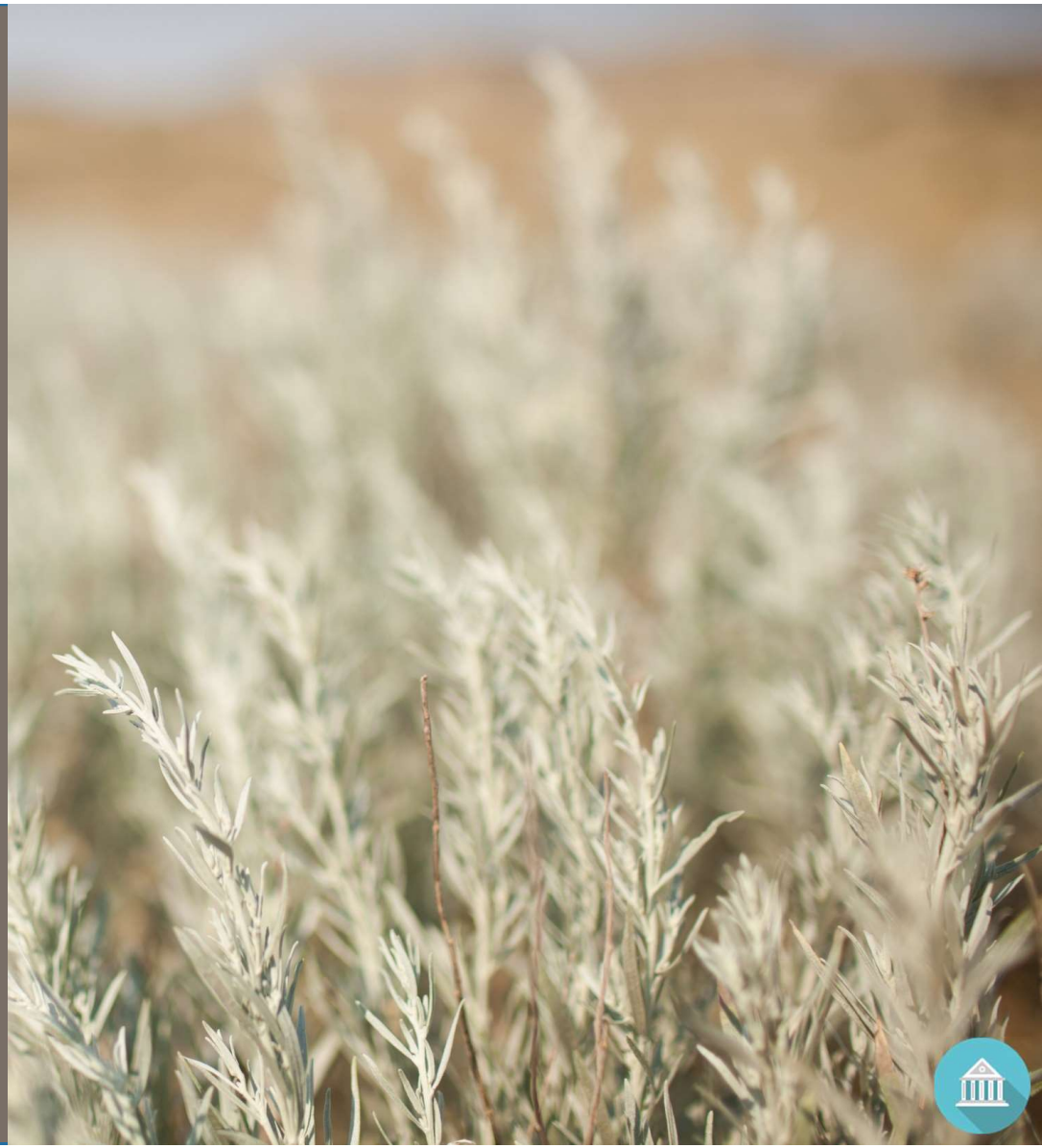
If Grandma lives in another state, but wants to move back

- Attaining our goals means:
  - Data is resident and does not need to be reentered across the board
  - Finding services is easy
  - Transferring services is easy
  - Starting a new company is easy

For all Grandmas

- The cost of state government comes down by a <u>minimum</u> of $640M per biennium – lower taxes
- Response time of government cut by years to add new services or grow existing services
- Working with the state of ND is similar to services from any other organization – timely, easy to use, flows across the organizations

Market Considerations



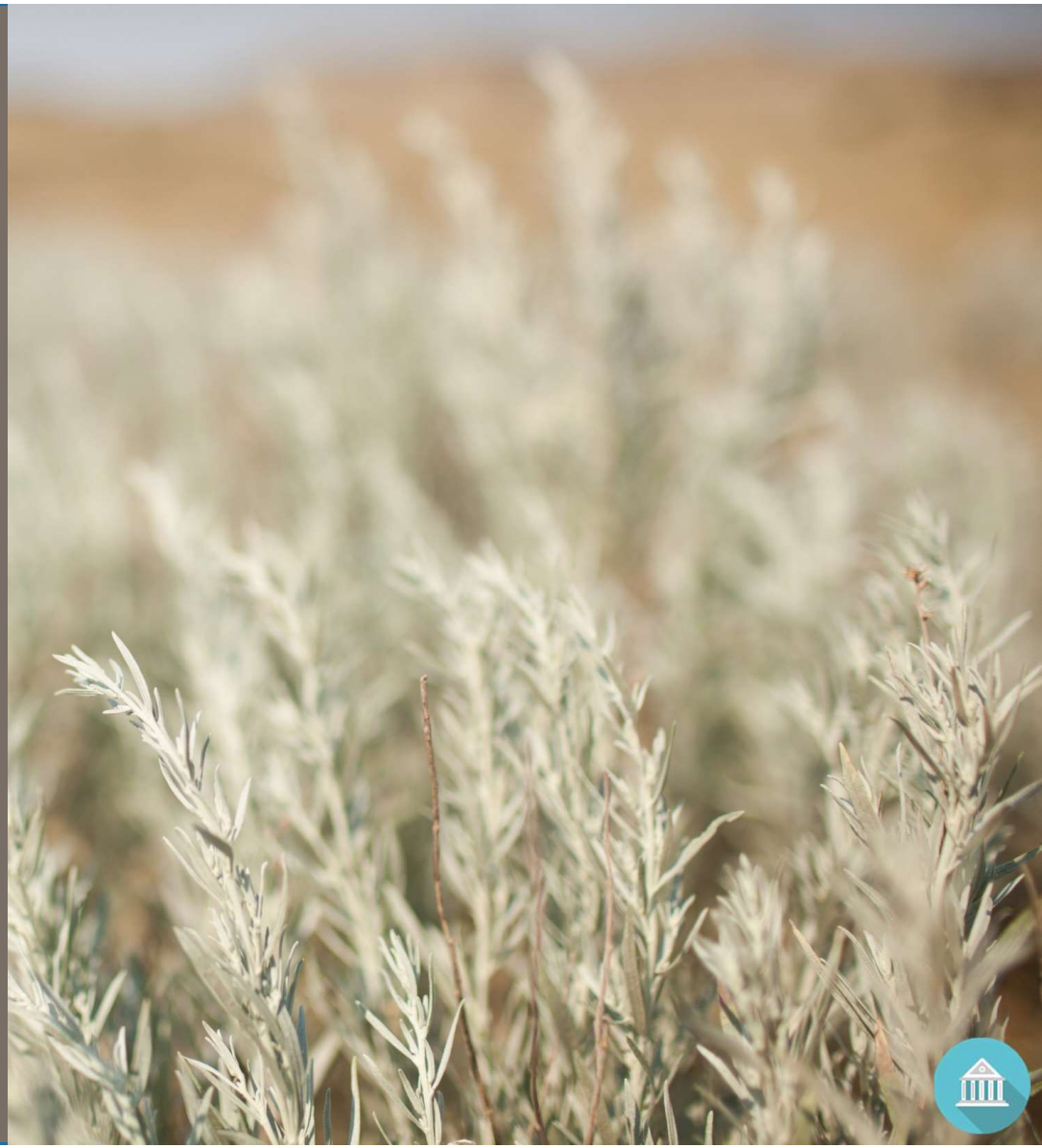
MARKET CONSIDERATIONS

- Competitive and free market forces are very impactful to Government, but those forces are perceived by insiders to be non-issues (or don't exist). This often encourages decision makers to act if the market were socialized
- Government is built to be a service maximizer, not a profit maximizer – making value chains more nebulous
- Risk and Incentive do not work the same in Government as in the private sector – risk rarely has a return for the risk taker and incentives are minimal in comparison to effort
- While Government is the only sector with near universal market penetration, it has a low proportion of intentional citizen (customer) feedback
- "Customer of the customer" focus is highly challenging as the perceptions of value do not align
- Government is funding incentivized, not revenue incentivized, so run operations are prized while grow and transform are typically enabled by push (State/Fed regulation)
- Technology is generally viewed in Government as a cost center, not a strategic maximizer

MARKET CONSIDERATIONS CONT…

- Universal (socialized) compensation packages do little to incentivize, reward, or motivate the workforce
- The perception of an unmanageable workforce is rampant throughout the market. Workers can act as if they are unionized even if they are not. Workers can use HR against managers and use open records law to actively fight against change
- Information is seen as a distributable commodity and not a strategic asset to be leveraged to advance the service to citizens
- Government funding is typically centered around exact solutions for predetermined costs multiple years (3 for ND) in advance
- Public opinion increasingly pressures capitalism to reorient itself and put people (employees) over profits. Conversely, progress over people (public servants) is increasingly accepted/expected in government. Consider the widening gap between:
  - Should Walmart employees be given a raise?
  - Should state employees be given a raise?
- Success within the agency operations is often not dependent on the projects being deployed, so IT is often left to manage the projects and business responsibilities of the agency

Goals, Strategies, Objectives and Key Results Breakout



“Strategy is for amateurs

Logistics is For Professionals”

General Omar Bradley

VISION & GOALS

VISION

How might we provide world class technology & services?

GOALS

Deploy a world class Government experience

Secure all government held data in North Dakota

Deliver the most efficient government services in America

APPLICATIONS, INSIGHTS & DATA

Goals

Enable the Digital Citizen across all application, analytic, data platforms to deliver a frictionless Citizen-State experience

Create the **Grand Data** open data platform generated from all state, and other open data sources

Deploy the **Grand Insights** Innovation Platform to drive an entrepreneurial culture that leverages the Grand Data open data platform

Infuse analytics, AI, location, and automation into ND platforms to give the state of ND a competitive advantage while vastly decreasing the operational costs of government

Automate 20% of all North Dakota government processes

"Mars"

Objectives

Create private and inter-agency partnerships for data sharing

Process automation training and delivery including RPA, low/no code (Dynamics), and Cognitive Services

Design Grand Data open data strategy

Design the Grand Insights capability (data science, AI, BI, Geospatial)

Re-badge a percentage of run work so state resources can focus on grow & transform

Near term goal

Key Results

Signed Enterprise data sharing MOU – all data that can be shared, should be shared

All development teams skilled and using DevSecOps/agile/Dynamics/RPA methods across all development

Deployed Grand Data open data platform

Deployed Grand Insights platform

DevSecOps is the delivery model across all development to eliminate technical debt accrual from all new deployments

2020+ Results

Strategies

Finalize data sharing agreement with AG/Gov

Train 60 IT/60 agency people on Robotic Process Automation (phase 2)

Complete the agile/DevSecOps transformation

Deploy Dynamics across all cabinet agencies and BND

Deploy at least 1 RPA or Cognitive Service bot across all cabinet agencies and BND

Begin Digital Citizen design and deployment

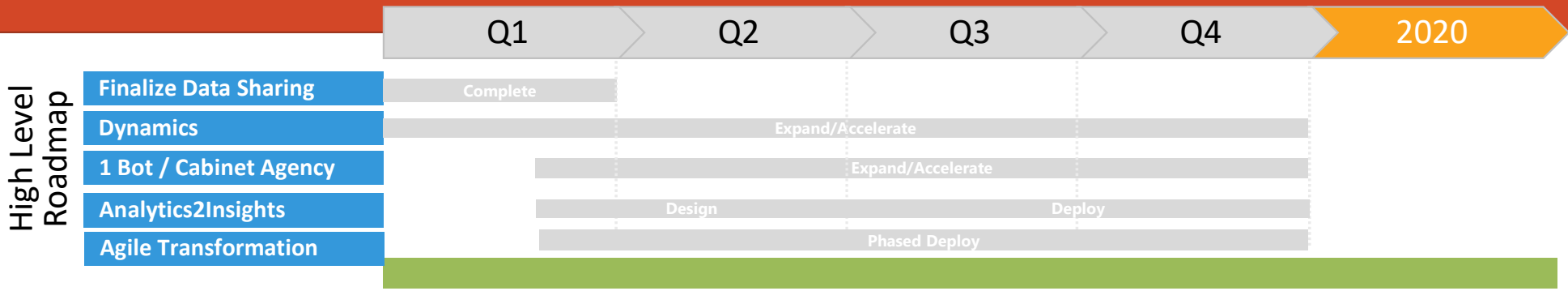
Engage Code for America to facilitate Open Data

Develop Grand Insights platform

How

Focus Areas

APPLICATIONS, INSIGHTS & DATA



Outcomes

Increased Value

- Lower Costs to process work
- Quality decisions/predictions based on quality data

Impact to Citizens

- Increased transparency to state activities
- Increased access to services to interact with, change state outcomes for themselves

Key Measures

Utilization

- % of data available via open data sets
- % of cabinet agencies deploying bots
- % of cabinet agencies leveraging dynamics
- % of employees trained / using PowerBI
- % of cabinet agencies using data science capabilities
- % utilization of geospatial technologies

Challenges

Technology

- PowerBI in the Gov tenant
- Signed enterprise data sharing MOU
- Availability of trained staff to deploy bots/Dynamics vs RUN
- Innovation challenges due to procurement rules
- Remediating tech debt
- Remediating skill debt

Legislative

Resources

- Marketing to legislators
- Funds to develop new unified architecture
- Funding for automation

Statute changes

- Ex … Tax Dept, identifying fewer than 5 businesses law
- Unlimited liabilities clause in MSA

Where we need help

Governor's Help Necessary

- Finalize / signed data sharing agreement (Cabinet minimum)
- Each agency bring forward 10 processes for automation consideration

CUSTOMER SUCCESS

Goals

Empower agencies to deliver superior services with continuously increasing value

"Mars"

Objectives

Recruit a Chief Customer Success Officer

Determine customer needs and measurements that determine if those needs are being met

Develop a "Voice of the Customer" program

Create innovative methods to improve customer outputs

Near term goal

Key Results

Increase in technology value to the customer agency / citizen

Improved customer outputs in both quality and throughput

Onboarding of 4 directors of Key Customer Management

2020+ Results

Strategies

Launch a nationwide search and hire a Chief Customer Success Officer

Build on the Information Technology Infrastructure Library standard of Business Relationship Management and Key Customer Management to create a Customer Success Model

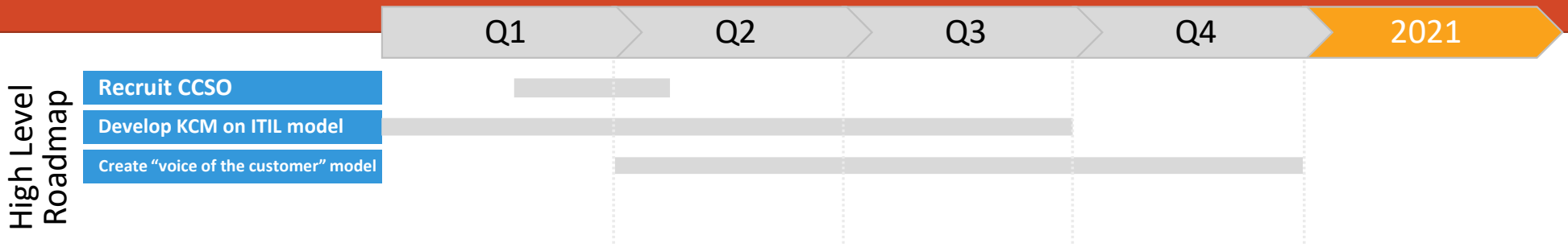
Take part in multiple "gown up" events in order to learn the customer business

Build customer dashboards reflecting needs, value, operations, and projects

How

Focus Areas

CUSTOMER SUCCESS



Outcomes

Increased Value

- Vast increase in technology value to the customer
- Increase in customer capabilities and their deliver to citizens

Impact to Citizens

- Directly impacts the ability of IT customers to deliver services to citizens

Key Measures

Success Factors

- % of satisfaction score
- % of value score
- % of innovation leadership score
- % of citizen-facing technology score
- Service Gap score optimized towards 0

Challenges

Short Term

- Recruitment of CCSO
- Acceptance of success officers and key customer managers in the executive teams of agencies
- Charging methodology in IT do not easily adapt to CCSO/KCM models

Legislative

Resources

- More…..

Statute changes

- TBD

Where we need help

Governor's Help Necessary

- None at this time
- Ask for the cabinet's patience

FINANCE

Goals

Demonstrate the value of IT without a doubt to stakeholders

Manage our finances so that costs per unit of service can be minimized

"Mars"

Objectives

Spend within 1% of budget appropriations within IT operations

Transparently demonstrate value across business units and apps

Manage to 60 days cash on hand
Reimagine the Procurement process in order to expedite technology acquisition

Near term goal

Key Results

Visible and real time value reporting

Shorten the procurement process to an average 30 days

Reduce manual workload in accounts payable by 150 hours per month

Reduce the number of rates by 15%

2020+ Results

Strategies

Review legislation and procurement code to determine how to increase flexibility without introducing excessive risk

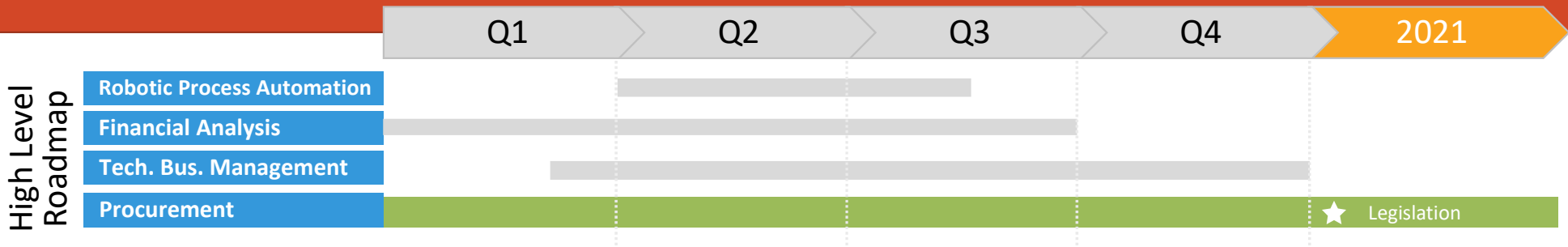
Implement robotic process automation (RPA) in accounts payable

Utilize Technology Business Management (TBM) principles to show financially, the value of IT

How

Focus Areas

FINANCE



Outcomes

Increased Value

- Lower Costs to process work
- More throughput of work with same staff

Impact to Citizens

- Reduced IT costs translate into lower costs for citizen services

Key Measures

Financial

- Days Cash on Hand
- Days to Complete RFPs
- Cost per Unit of Service
- Value = Quality times Throughput divided by operating expense

Challenges

Agency IT Spend

- Perception is that IT costs are going up. Reality is agencies woefully underspend on IT
- Volume costs go up due to demand, but cost per unit is going down
- Agencies need to increase the utilization of technology across all facets of their business

Legislative

Resources

- Shifting resources to analyze financial data based on TBM methodology. May require additional FTE

Statute changes

- Changes to NDCC for procurement will require Attorney General Office and State Procurement buy in

Where we need help

Governor's Help Necessary

- Cabinet and Executive Branch level support of increasing the IT volume spend in relation to increasing consumption of services

PEOPLE

Goals

Recruit the best talent and cultural fit without exception

Empower IT Unification

Marketing NDIT through recruitment to attract people via "heart" and culture

Empower employees to work from anywhere on anything while embracing our cultural values

Decrease comprehensive number of staff by 20% and reallocate dollars to salaries

"Mars"

Objectives

Attract talent that wants to change the world. Employees feel welcomed and are integrated quicker

Move completely paperless for the employee lifecycle while increasing efficiency

Create culture where constant learning and failure is acceptable/rewarded

Make continuing education a requirement of the job

Create environment where telecommuting is priority and has no experiential difference from on premises

Eliminate C-players and vastly reduce B-players

Near term goal

Key Results

All employee data documented and stored digitally while decreasing process time 20%

Continuous performance management environment established

Curate 15% more adaptable, innovative, driven environment

Work is accomplished anywhere; 20% less office space is needed

Outstanding recruitment & onboarding experience

2020+ Results

Strategies

Implement key training for all employees. Continual evaluation of staff fitness through performance management

Use Dynamics, BPI & RPA for automation & improved process flow

Evolve recruitment & onboarding based on culture

Increase telecommuting; create collaborations spaces rather than assigned cubicles

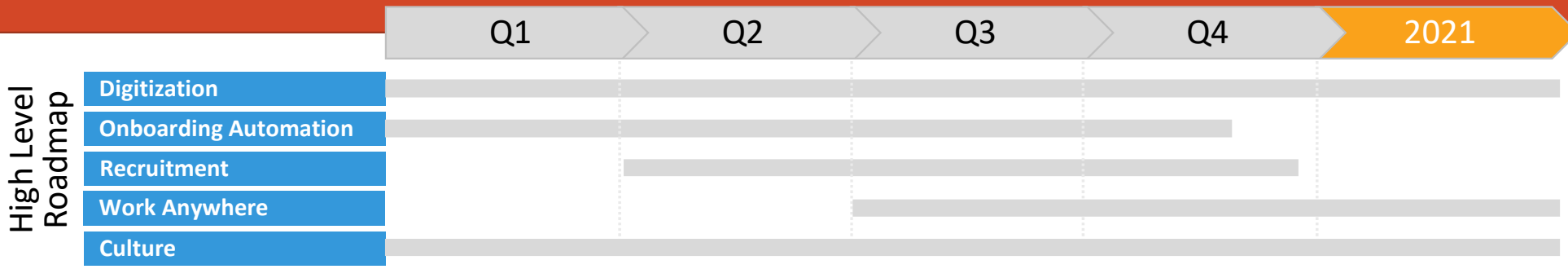
Leverage IT embedded education teams to help train

How

Focus Areas

PEOPLE

High Level Roadmap



Outcomes

Increased Value

- Decreased time & costs to process work;
- Increased quality of staff capability
- Decreased operational costs

Impact to Citizens

- Reduced costs translates to lower costs for citizens and improved services
- Higher quality of staff shortens development and delivery times

Key Measures

Operations

- % of time saved through process efficiencies & automation
- % of staff working outside of NDIT collaboration facilities
- % of staff trained on Colors, SF, LE & EQ
- % of staff identified through manager & HR collaborations as high performing
- % of paper-based HR documents digitized
- % of staff falling to "B or C player" status

Challenges

Resources

- Available time & resources across organization
- State IT compensation
- Implementation of RPA
- Perception & ability to manage a remote workforce

Legislative

Resources

- HR Unification
- IT Unification
- Compensation

Statute changes

- Appropriation authority for compensation increases
- Declassification of IT staff to allow for salary reallocation

Where we need help

Governor's Help Necessary

- Champion for HR unification
- Executive Branch support for declassification and increasing IT salaries WHILE KEEPING THE SALARY BUDGET THE SAME

REINVENTION

Goals

Workforce Culture: Be the catalyst for accelerating process improvements and change in internal culture by championing better government efforts and building strategic partnerships across the organization

Digital Service: Build a friendly, consistent, and intuitive digital experience for constituents

Experimentation: Rapidly prototype MVPs with a minimal risk to taxpayer dollars

Leadership: A Center for Government Reinvention to convene, publish, and promote best practices nationally and internationally

"Mars"

Objectives

Build innovation labs and makerspace environments that promote creativity, non-traditional approaches and collaboration

Design digital experiences around the needs of our constituents that are reliable, highly useful, attractive, inviting and streamlined

Create a mechanism to accept private dollars for the purpose of catalyzing and accelerating internal innovation

Create an avenue to share success stories for efforts that are hard to quantify

Establish the Reinvention Fellowship Program

Near term goal

Key Results

Creation of a functional mechanism to accept private, philanthropic funding for innovation initiatives

Onboard 30 new agencies (increasing from 50 to 80 websites in 2020). Increase mobile-accessibility of the websites from 40% to 80% on our online platforms using a suite of enterprise digital service tools

Host 3 government makerspace events and the Government Reinvention Summit in 2020

20% of State employees attend business process improvement training

2020+ Results

Strategies

Evangelize better government through communities of practice, space to convene, and build a network of co-innovators

Establish a consistent branding experience, improve digital design, navigation, and content , ensuring an online visual identity for ND

Champion digital equity though connectivity with constituents through mobile channels.

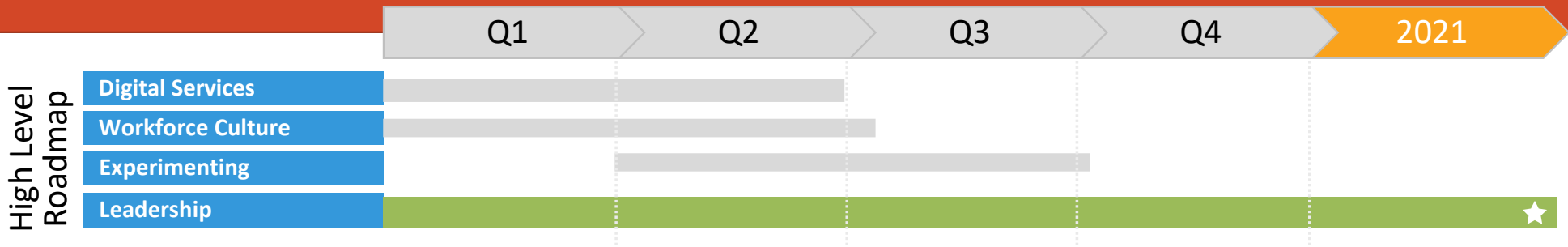
Engage Leadership Everywhere to facilitate organization-wide learning and training

Partner with the Governor's Office to kickoff Government Reinvention Summit

How

Focus Areas

REINVENTION



Outcomes

Increased Value

Establish Digital Services Team to support agencies and evangelize user-center design

Established R+D Labs and employee makerspaces to promote experimentation and creativity

Impact to Citizens

A unified, online digital presence that Helpful, Intuitive, Friendly and Consistent

More effective government

Key Measures

2020 Results

- 50% of public facing systems on the enterprise standard platform and 80% of the websites will be mobile accessible
- 20% of state employees trained in business process improvement
- 60% of the Reinvention Cross-Agency projects worked on by Cohort 1 of the Reinvention League and 3 Makerspace events.
- Host the first Government Reinvention Summit in the U.S. with at least 10% participation from Out-of-State.

Challenges

Intrapreneurship

Claiming an identity around innovation, that closely allies with NDIT… but is separate

Coordinating all the disparate initiatives and activities happening relative to reinvention

Establishing and forming the Center for Government Reinvention

Ability to accept private, philanthropic funding for innovation initiatives

Legislative

Resources

Unifying digital services efforts

Establishing and forming the Center for Government Reinvention

Statute changes

Where we need help

Governor's Help Necessary

Move reinvention to a dedicated Cabinet post, reporting to the Governor's COO

Create a mechanism to accept private funding and strategic partnerships to be catalysts for change

Assistance for Government Reinvention Summit later this year.

SECURITY

Goals

Present
Increase accuracy and velocity of security response

- Faster risk ID, protection, and response
- Automate day to day security work
- More bodies on big problems
- Become the national leader in K-12 cybersecurity education

Future
Insulate ND from future threats

"Mars"

Objectives

Improve Accuracy of Security – Preparations and responses are oriented on the largest threats we have in the environment

Increase Velocity of Response – Security uses state of the art processes and automation to promote risk identification, protection, response, and recovery

Increase Education: Expand the K-20 cyber education initiative

Multi-State SOC: Build capabilities for real-time swarming of day-to-day security operations

Increase Reliability: Increase reliability of NDIT information systems and services by reducing cyber risks

Near term goal

Key Results

Reduction of Work – The total hours of unplanned work associated with security events are reduced 10% year over year

Surge Support: Increased Capability to Bring in Outside Resources for Surge Support

Cyber Risk if Understood in Budgeting: Cyber and privacy risk is presented and understood in a manner similar to financial risks

2020+ Results

Strategies

Greater Focus on Threat Intel – Make sure we are focused on the current threat ecosystem

Agile Process – Replace old processes with agile methodologies to improve throughput of work

Quantified Cyber Risk: Risk register communicates cyber risk in $

Automation: Build Orchestration and Automation Capabilities into Security Operations

How

Focus Areas

SECURITY

High Level Roadmap

Outcomes

Increased Value

- Increased reliability of information systems
- Increased uptime for critical services

Impact to Citizens

- Increased safety when engaging with government
- Availability and integrity of critical services

Key Measures

Operations

- # of hours spend on Respond and Recovery Operations
- # of potential cyber attacks prevented
- Cyber attack mean-time-to-discover
- Cyber incident mean-time-to-resolve

Challenges

Unification

- Unification creates an FTE gap as many agencies have no or limited security for their risk.
- Diverse governance and compliance requirements.
- Pushback and tech debt associated with enrolling and reconfiguring unified systems

Legislative

Resources

- Additional FTE and resources for cybersecurity to accommodate whole of state approach
- Funds and FTE to develop new unified architecture

Statute changes

- Grant Operational Authority for all agencies, counties, cities, and k-12 to NDIT for cybersecurity
- Clarify NDIT's role in securing Critical Infrastructure
- Allow cybersecurity outreach to tribes.

Where we need help

Governor's Help Necessary

- Champion increased funding and FTE for cybersecurity
- Help us achieve unification for all public entities in North Dakota
- NDIT Shall be notified as soon as a cyber incident is identified (exec order?)

TECHNOLOGY

Goals

Provide architectures, platforms and services that meet the need of the customer before they have the need

Provide a world class experience delivering and supporting all technology

Promote and develop a comprehensive "connected anywhere" statewide broadband environment

"Mars"

Objectives

Provide a service management program with a maturity level of 3.1

Provide an enterprise architecture program that anticipates and enables business objectives

Provide cloud technologies services that will empower people

Provide an IoT platform that will enable a sensor driven government

Wired and wireless connectivity for every inch of ND

Near term goal

Key Results

Reduce cost per unit of service by 15% biennium over biennium

Improve customer satisfaction by 10%

Automate 20% of commodity, redundant processes

Provide 40% of all requests through self service

80% of all new business objectives can be solved within EA framework

Fiber to every structure and primary wireless coverage for 95% of state

2020+ Results

Strategies

Ensure all processes providing alignment to ITIL incorporate agile and DevSecOps capabilities

Deploy EA program providing for real principles, policies and standards

Training for depth and breath of cloud technologies

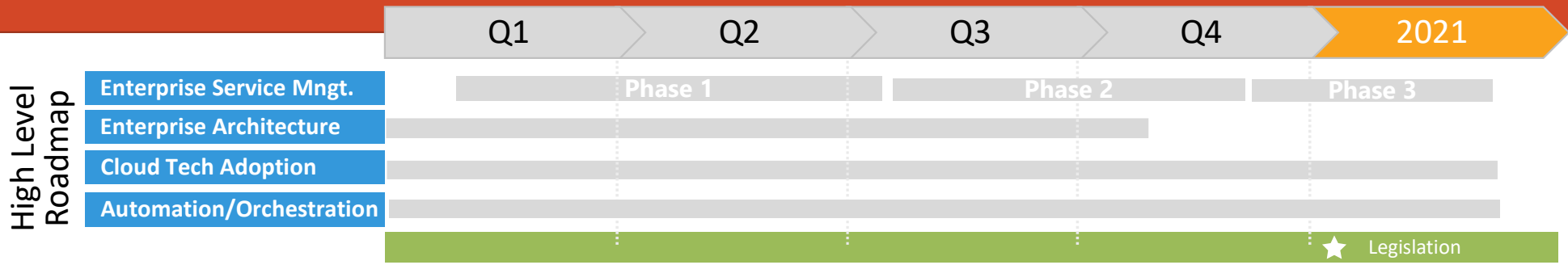
Provide an automation strategy and platforms

Deploy Infrastructure as code

How

Focus Areas

TECHNOLOGY



Outcomes

Increased Value

- Lower Costs to process work
- More throughput of work with same staff

Impact to Citizens

- Reduced IT costs translate into lower costs for citizen services

Key Measures

Operations

- Customer satisfaction
- Meet or exceed SLA's
- 80% of all business requirements fulfilled with existing architectural strategy
- ITSM maturity
- Cost per unit of services
- Requests completed per month

Challenges

Operations

- Unification
- Technical debt
- Agencies need to increase the utilization of technology across all facets of their business

Legislative

Resources

- Resources to support elimination of technical debt

Statute changes

- Review and support of policy changes that would support broadband deployments
- Procurement

Where we need help

Governor's Help Necessary

- Support efforts for technology modernization and removal of technical debt
- Unification

2021 SESSION - DRAFT

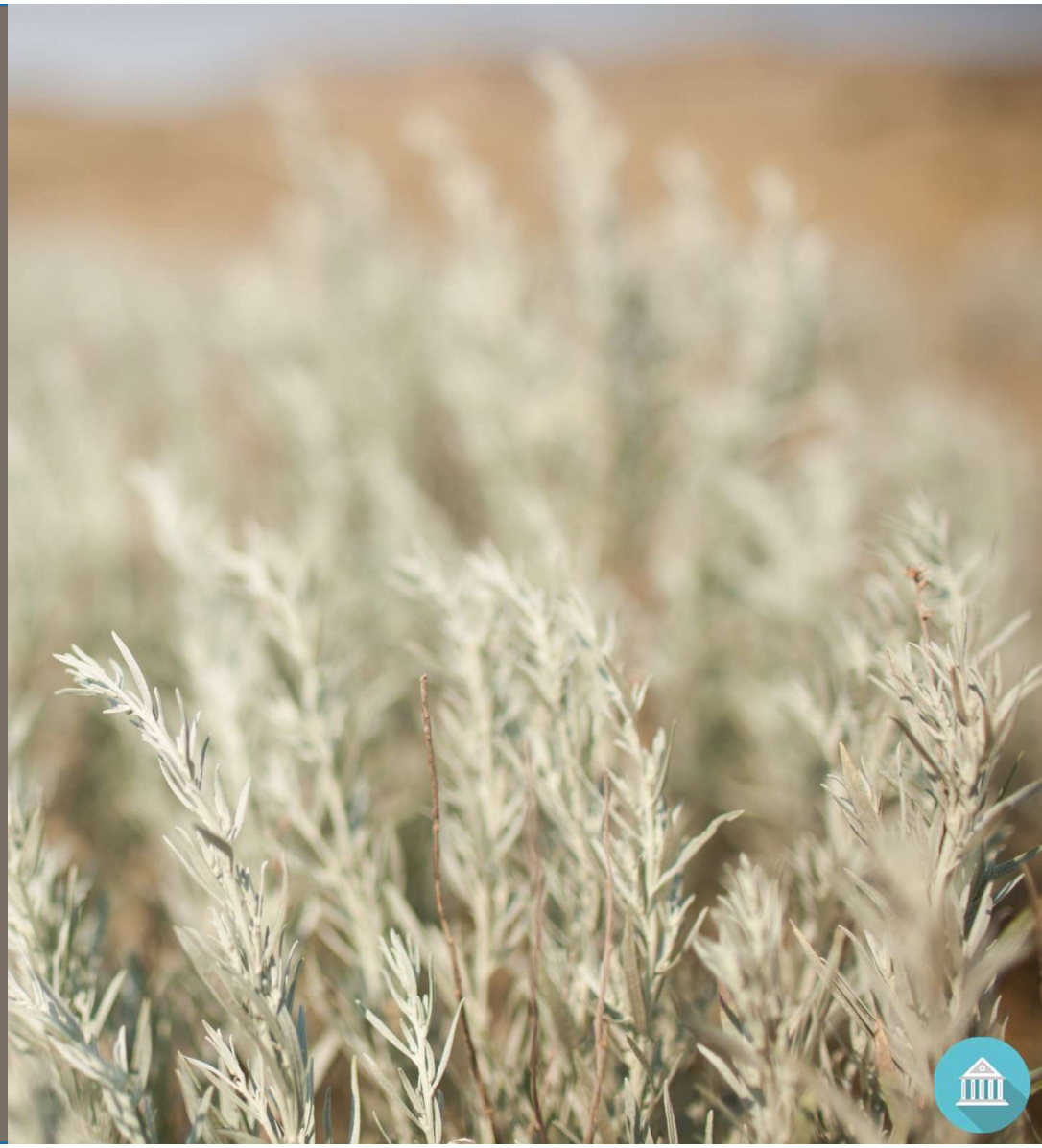
Legislation

- Unification – next phase
- Procurement
  - Limit of liability changes
  - Legal jurisdiction
  - Indemnification
- Authorities
  - Enabling ability to help tribes, political subs, multi-state SOC
  - Cyber security operational management
  - Cyber incident reporting
  - Clarity between SLIC and NDIT authorities
  - Accept dollars from outside sources for the purposes of reinvention
  - Compensation & Benefit flexibility
  - Limit shadow IT

Budget DRAFT in CONSIDERATION –
Horizontal messaging is key

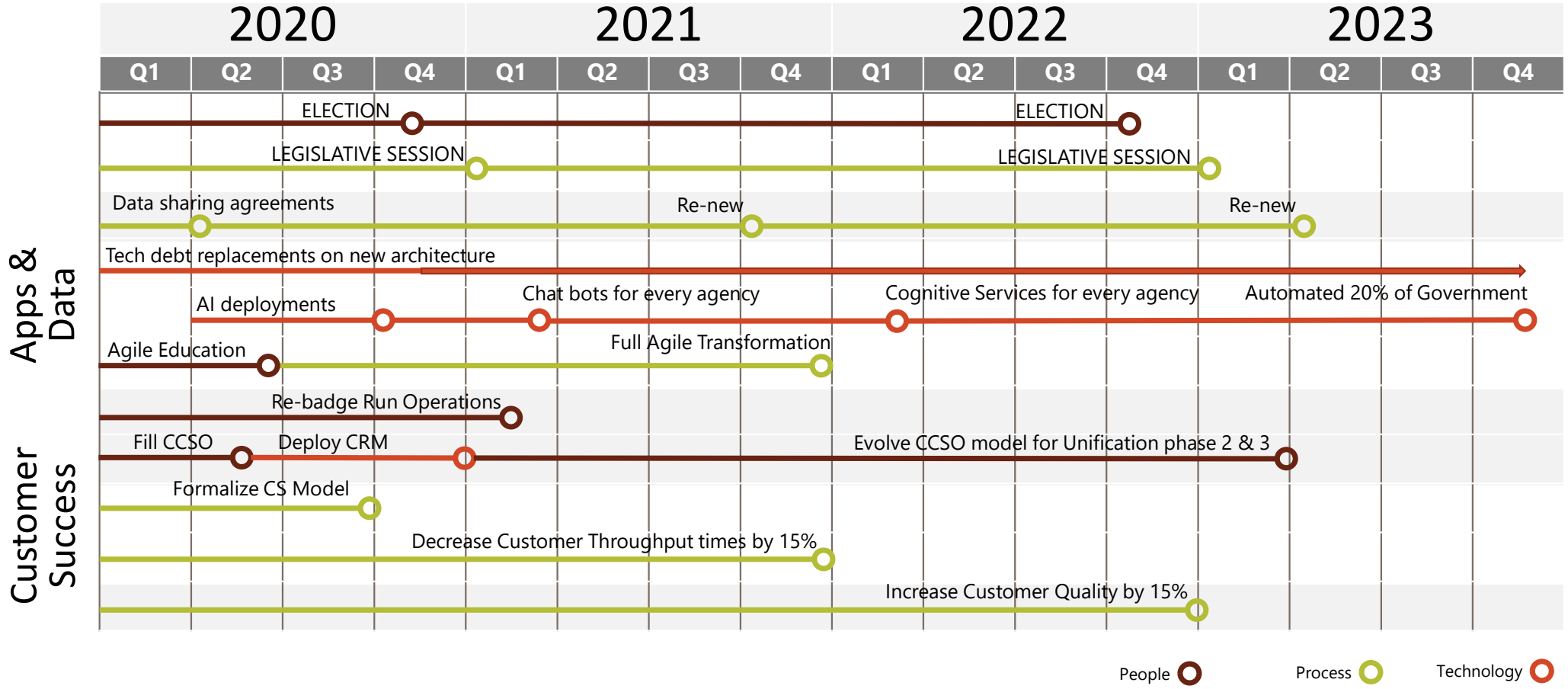
- "Trust fund" for IT Investment – earnings towards tech debt projects
  - $250-$400M+
- Reinvention - Process and Ops Maturity across all agencies
  - $35M
- Automation of 20% of Government – Phase 1
  - $65M
- Cyber – Strategic & Operational Expansion
  - FTE & Dollars
- Tech debt replacement architecture (to be scoped)
- Additional global projects (to be funded or scoped)
  - Business Gateway
  - Knowledge Management (comprehensive Information Management)
  - Citizen Relationship Management
  - ~15+ more…..

Roadmaps



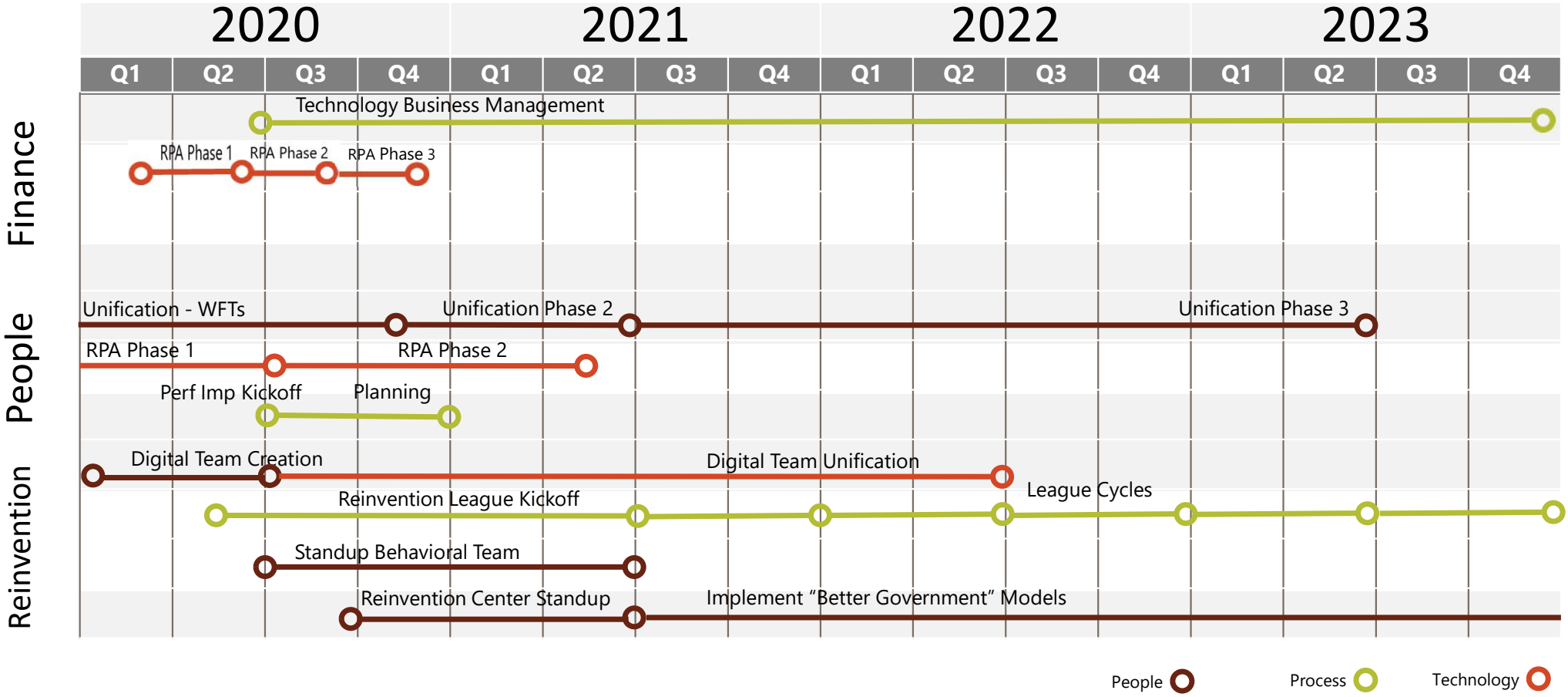
Evaluate Quarterly

3-YEAR HIGH LEVEL ROADMAP



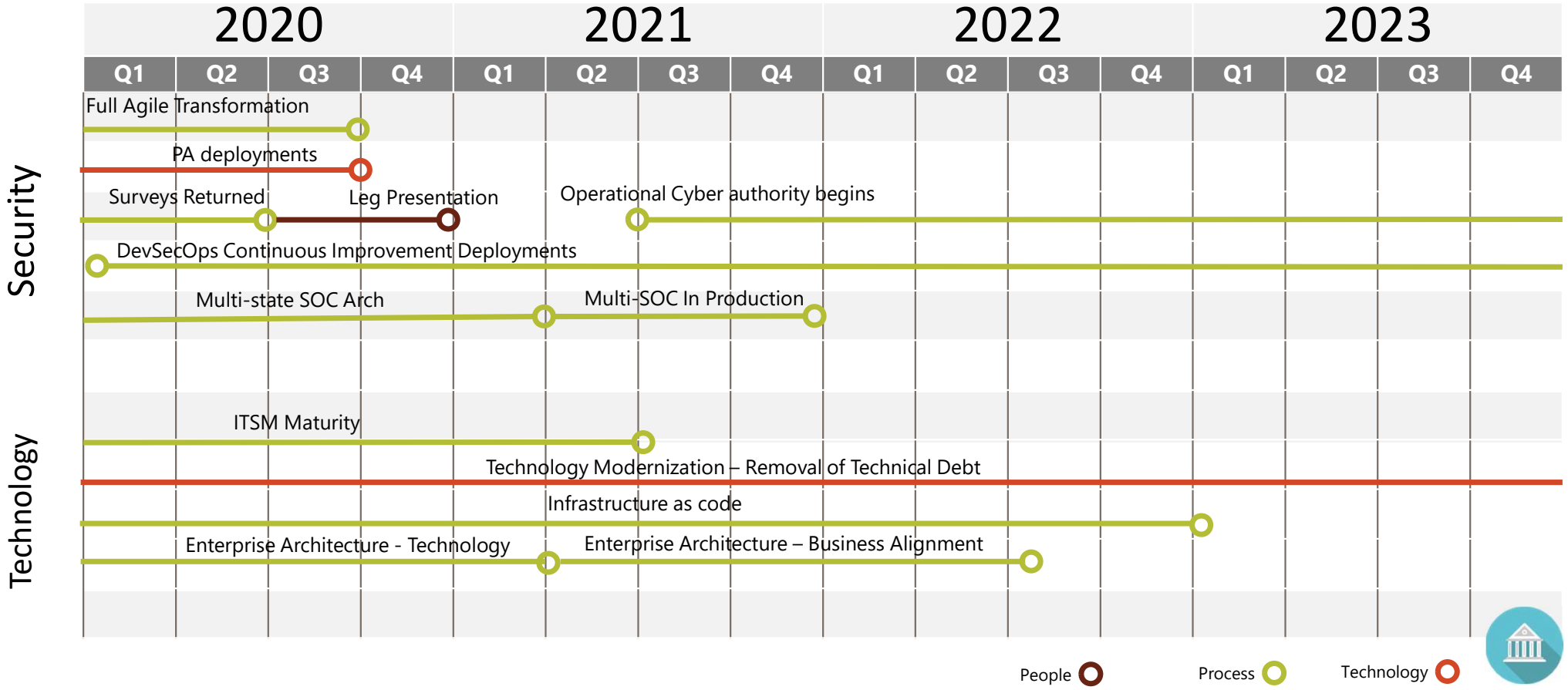
Evaluate Quarterly

3-YEAR HIGH LEVEL ROADMAP

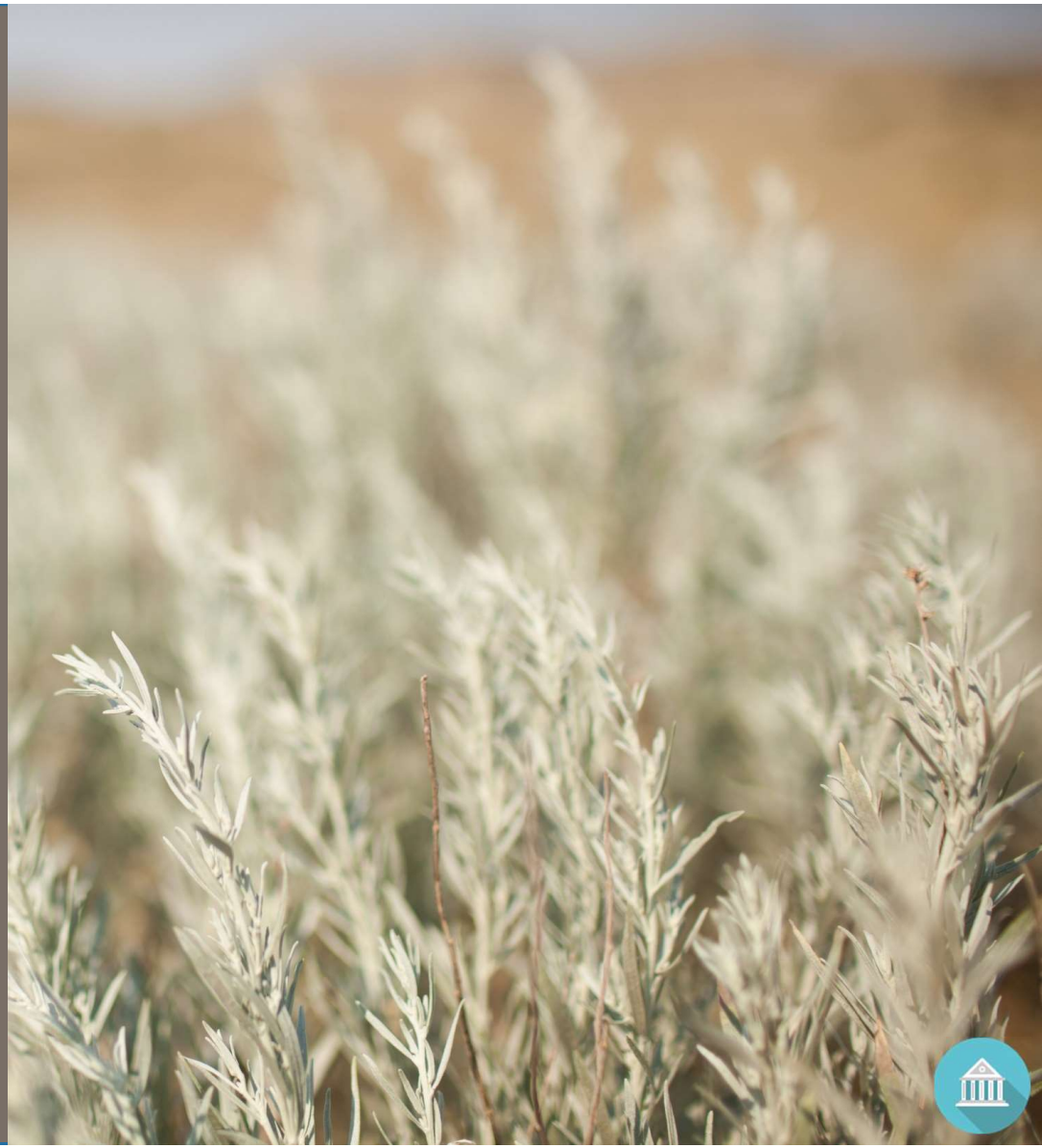


Evaluate Quarterly

3-YEAR HIGH LEVEL ROADMAP



Unification



UNIFICATION – FOUNDATIONAL

Technology staff Resources across Executive Branch

Shared Service	Fully Managed by Shared Service (cabinet)	Matrix Agencies	Engaged in Unification Study	~FTE	No engagement to date	~FTE
Transportation	Governor's Office	Workforce Safety & Insurance	Historical Society	3	Attorney General	17
Trust Lands (partial)	Indian Affairs	OMB	Trust Lands	1	Housing Finance	3
Human Services	Securities	Health	Industrial Commision	5	Career & Tech Ed	5
Emergency Services	Financial Institutions	Environmental Quality	Insurance Commision	1	School for the Blind	1
Parks & Rec	Labor	Highway Patrol	Public Employee Retirement System	2	School for the Deaf	1
Information Technology Dept		Job Service	Public Instruction	5	State Library	1
		Commerce	Public Service Commission	3	Tax Commissioner	8
		Game and Fish	Secretary of State	1		
		BND*	Retirement & Investment Office	2		
		Corrections	Water Commission	2		
Total: 402 FTE	Total: 0 FTE	Total: 75.5 FTE	Total: 25 FTE		Total: 36 FTE	

37 Agencies

45 Disciplines

Approximately: 538.5 Technology FTE

UNIFICATION – MEASURING SUCCESS

Mission Alignment

Costs Management

Risks Containment

- Efficiency
  - Processes
  - Tools
  - Contracts
  - FTE
  - Cost / Unit of Service
  - Volume purchasing
- Empowerment
  - Enabled
  - Accessibility
  - Integration
  - Data
  - Security

Are we providing a better outcome and better value?

UNIFICATION – EARLY WINS (Q1)

- Context
  - Planned benefits were projected with fully Unified over 4 years – we are 4 months in with a smaller scope

Efficiency

- ~$200,000 avoided for agencies using HP laptops/PCs
- DOT patching servers eliminated
- 0.4 FTE gained in DHS by consolidating purchasing processes
- Reduction in DHS device wait time from order to receive of ~5 weeks
- Consolidated Cyber training for DOCR
- Identified that 48.7% help desk calls can be eliminated for DOT

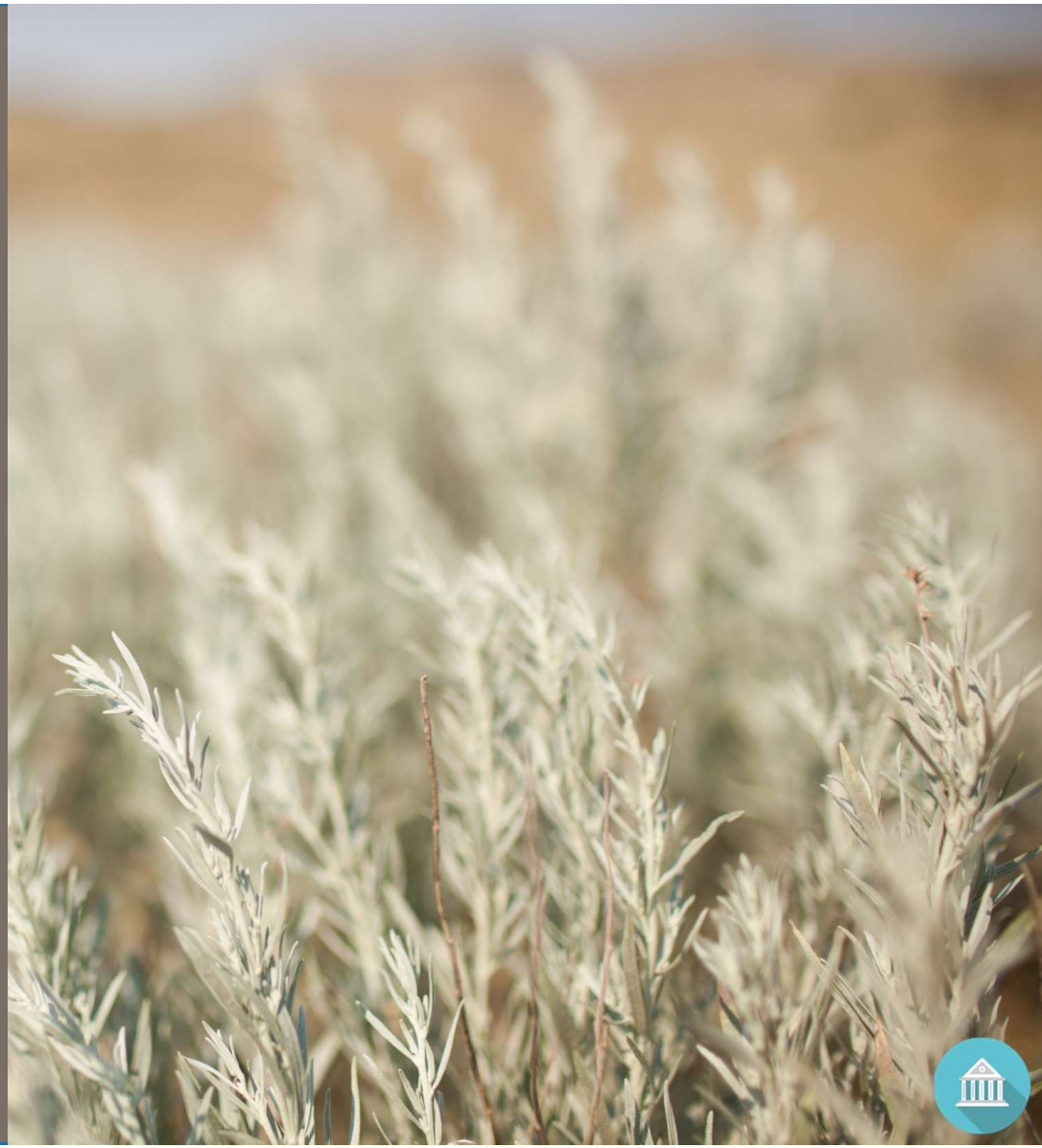
Empowerment

- All agencies in scope using new tools for collaboration, enhanced email mailboxes, document sharing
- Dept of Financial Institutions complaint processing moved from 3 days to real-time and loan application moved from 5 days to real-time
- Trust Lands able to process 610 claims in August compared to 368 in ALL of 2018

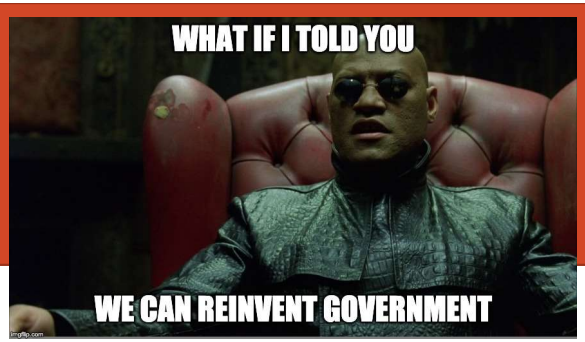
UNIFICATION – PROJECTS, SAMPLE

- In progress
  - Enterprise Service Management
  - Agile
  - Business Process Improvement
  - Application Rationalization
  - Productivity
  - Dynamics (limited CRM)
- Potentials / Expansions
  - Business / Citizen Gateway
  - Knowledge Management
  - Risk Management
  - Citizen Relationship Management
  - Call center / support consolidation and/or elimination

Reinvention



REINVENTION - EXAMPLE WIN



- Newly unified DOT organization is going through a replacement of the driver's license software
- Unified service process mandates business process improvement up front

563 Pain Points

Process Improvement opportunities identified within driver license. We will be able to eliminate redundancies, paper, scanners, printers, and significantly reduce unnecessary time in the process

First 7 items reviewed are projected to save 12 hours per week

PDF File

Tactics
0-2 years

Statewide Digital Team

- Values: Helpful, Intuitive, Friendly, Consistent
- Hire key team members (e.g., chief digital strategist; content strategist)
- Migrate all agencies onto Drupal platform

Behavioral Science Team

- Optimize citizen and staff decision-making
- Nudges, pledges, form redesign

Better Government Team

- Organizational strategy consultants
- Skunk Works / Tiger Team

0-3 years

Reinvention League

- 6-month, 20% time in-house development program
- Learn non-traditional strategies
  - E.g., challenges, hack-a-thons, public/private partnerships, crowdsourcing, rapid prototyping, user-observations
- Create a network of co-innovators and "intrapreneurs"
- Establish and reinforce agency R+D Labs

0-4 years

Enable External Reinvention

- Create a mechanism for partnerships
  - Accessing foundation resources; fundraising
  - Force multiplier and catalyst for change
- Low barrier to entry
  - Easy to work with us
  - Reinvention Fellowship Program
- Targeted new media sources
  - AmericanInno → North Dakota Inno
  - Cover, promote, and connect state's innovation ecosystem

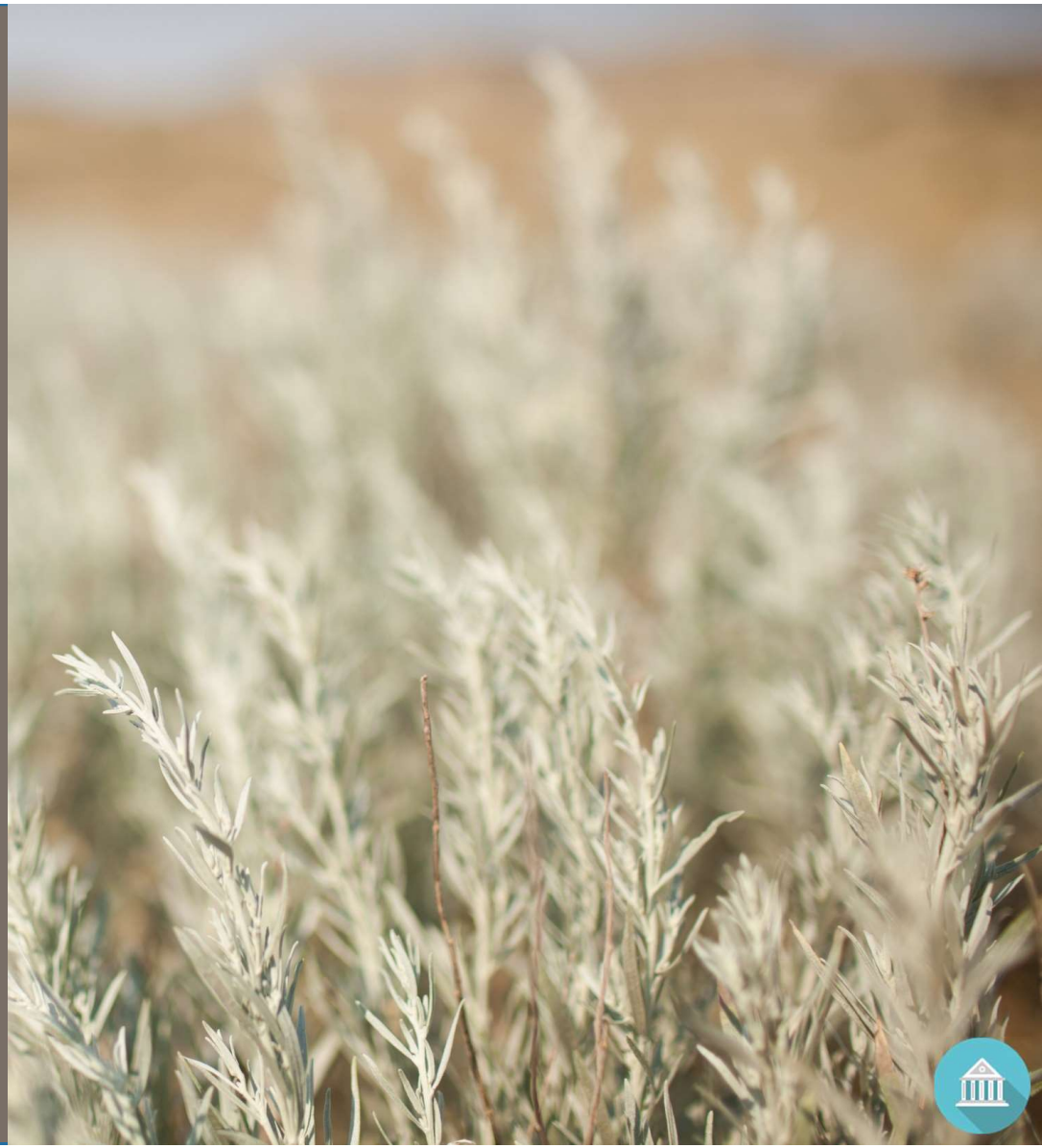

VISION:
CREATE A LOCATION WHERE STATE GOVERNMENT CAN ASSEMBLE TO REINVENT, ITERATE, FAIL, LEARN, AND PROTOTYPE NEW WAYS TO EMPOWER PEOPLE, IMPROVE LIVES, AND INSPIRE SUCCESS

CENTER FOR REINVENTION

We believe that innovation is for everyone.

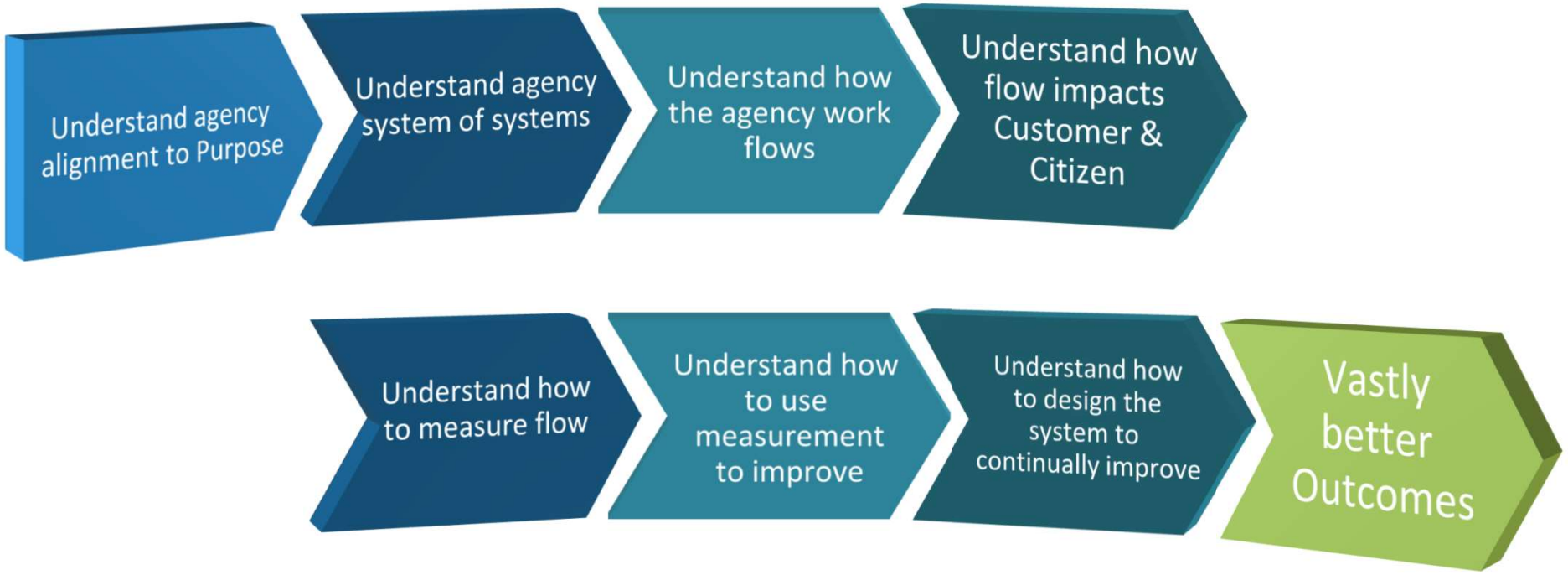
- We also believe in fostering a strong, supportive, and accessible creative community in North Dakota,
- breaking down our siloes in government,
- creating modern makerspaces to meet cross-functional team needs,
- intentional design and a space to promote openness,
- a place where people can gather, exchange knowledge, and form a community of innovators, and
- the power of convening diverse partners to solve our toughest problems.

Challenges



WE MUST TRANSFORM ND

- For technology to enable the business, the business must understand itself
  - Not just NDIT, but the ND agencies need, ultimately, to think & act differently



IT GOALS REQUIRE ORG TRANSFORMATION

- ND is transforming, but we need to “change where gravity pulls us”

Leadership Everywhere
Change the culture and the mindset

Strategic Planning
Alignment is critical to efficiently moving towards goals

Business Process Improvement
Give the tools to improve

Risk & Compliance Management
Agencies need help on both

Unified Shared Services
One way to do things is vastly more efficient than multiple ways

Shared Service Opportunities

- Human Resources / People
- Information Management
- Communications
- Risk Management
- Marketing
- Facilities
- Finance
- Procurement
- Print
- Any commodity service area seen across multiple agencies

Shared Service:
Manage Risk
Contain Cost
Increase Expertise

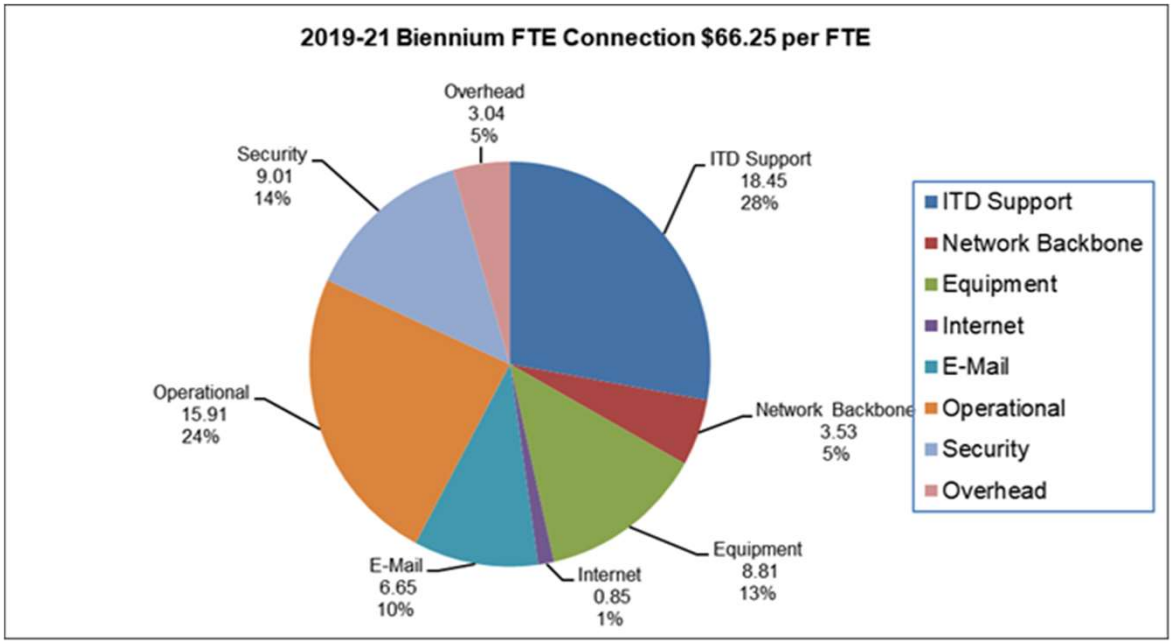
We can still make great progress during the transition

FINANCE CHALLENGES

Special funding model

Customer & Legislature understanding of IT spend

- Highly underfunded
- Don’t understand ROI
- Don’t understand C/US * Volume



CYBER CHALLENGES

Indicators of Compromise

- NDIT Sees traffic associated with ransomware
- No visibility or reporting
  - Either PSD's are missing it, or
  - They are not reporting it

Example: Trickbot IoC on ND Network

[REN-ISAC] ** Notification ** TrickBot # 9QI2

S soc@ren-isac.net
To -Grp-IT IP Abuse
Cc soc@ren-isac.net

We removed extra line breaks from this message.

xml_11582188605.txt
2 KB

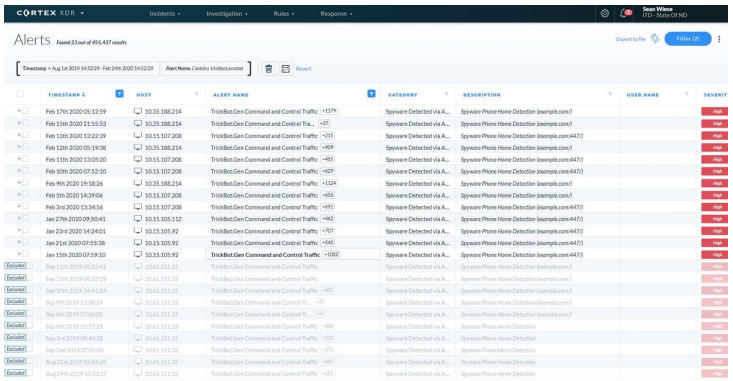
***** CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe. *****

Greetings,

The following host(s) have been identified as likely compromised with the TrickBot banking trojan.

Inc #	description	address	timestamp in UTC	prtcl	s-prt	d-prt
1JIYW	TrickBot	165.234.101.59	2020-02-19T14:32:54Z	tcp	42145	447
1JIMC	TrickBot	165.234.101.38	2020-02-18T22:53:38Z	tcp	39813	447

key: s-prt = source port; prtcl = protocol; dest-addr = destination address; d-prt = destination port



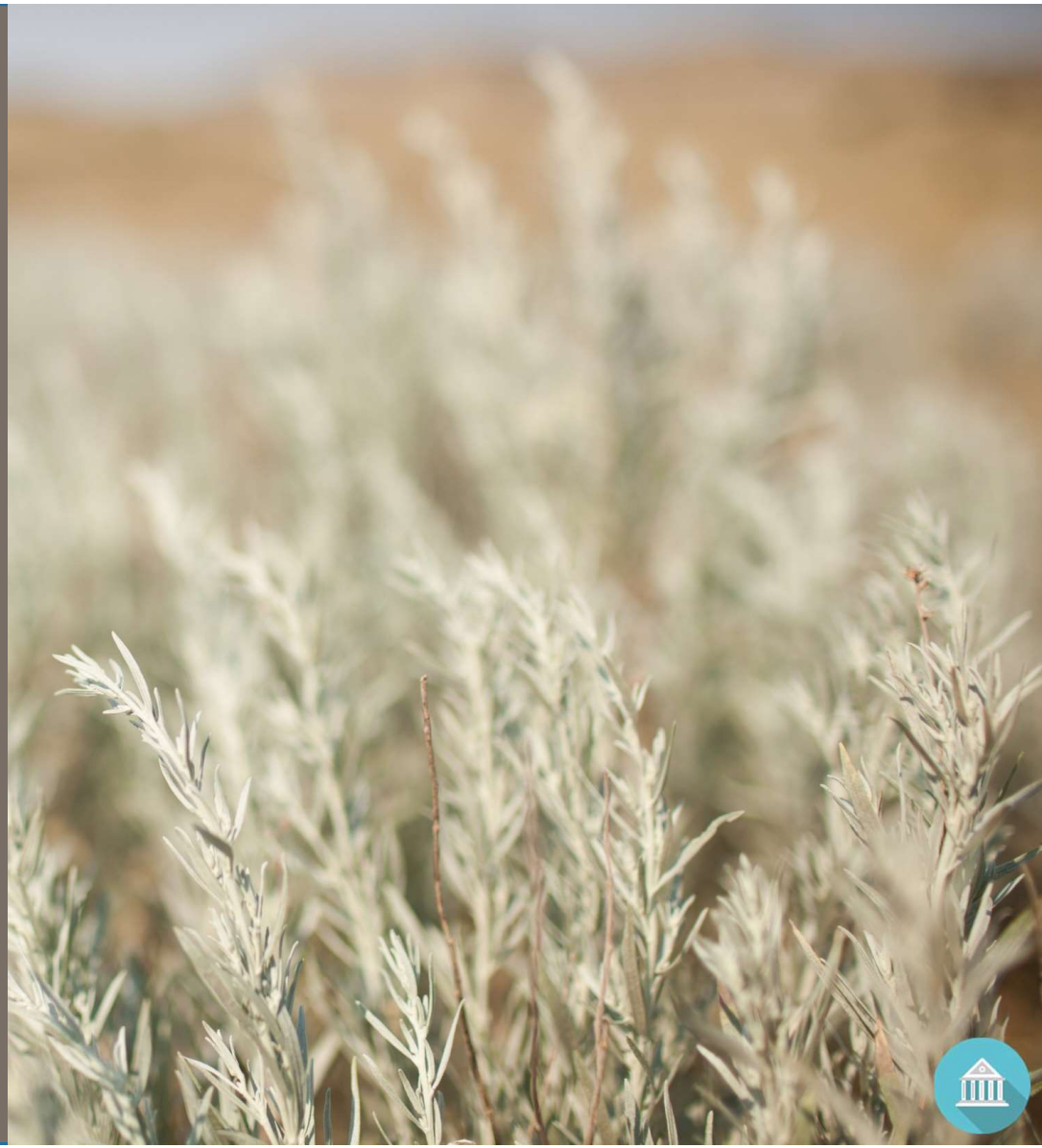
PROCUREMENT OPPORTUNITIES

- Ruthless standardization – enforcement of 54-59-09
- Enterprise Standardization requirements
  - All IT purchases vetted centrally
- RFP across the 45 types (extended vendor pool)
- Innovation RFPs
  - Through the process, but at $0 costs
- Pre-Master Services Agreement
  - Automatic agreement to pre-determined contract language
- Cyber waiver
- Challenge RFP & Problem/solution-based RFP
- Performance based contracts
- Agile based RFP/SOW

OTHER CHALLENGES AND ISSUES

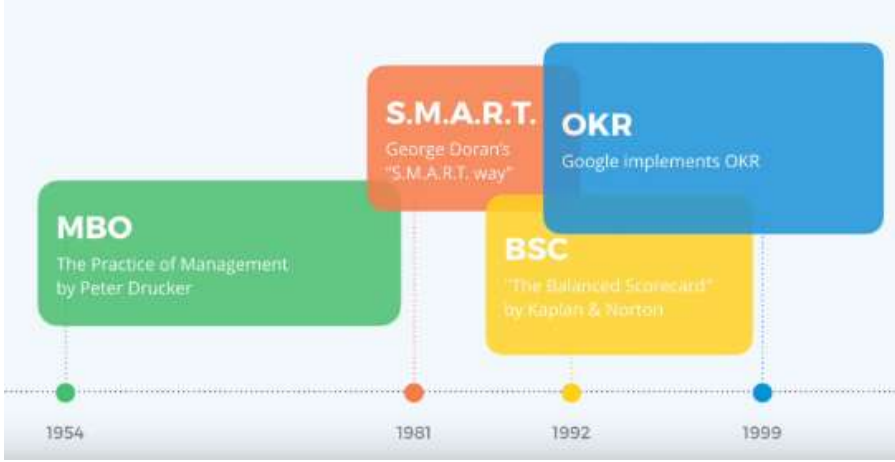
- State of ND has a low operational maturity
  - Little operationally meaningful measurement
  - Rarely knows what work units are and how they flow
  - Little programmatic understanding of quality and throughput
- "United Nations of ND"
  - Organizations are not incented or compelled to work together
  - Structure allows for non-standards and non-compliance
  - Lack of purpose, vision, mission definition across organizations
  - Limited sense of "enterprise" – mostly agency mindset
- Work perception disconnect between IT management and staff
  - Ex: Staff were going 15 miles per hour… now they are going 45 – and very stressed because they are going 300% faster – but expectations are 85 miles per hour
- IT Resources are spread across every agency's projects
  - Resources for strategic initiatives are "out of hide" and rarely dedicated
- Mindset & Culture
  - High fixed mindset
  - Majority is "from Missouri" (only trust what they can see)
    - Limited ability to make "Leaps of Imagination"
  - High occurrences of limited partnership and strategic thought

What are OKRs?



OKRS – OBJECTIVES AND KEY RESULTS

- Method to manage goals & priorities
  - Defines what is important
  - Drives alignment of Strategy, Logistics, Operations and Delivery
  - Very simple structure, very complex thought process



- Evolution of business practices to drive outcomes

WHAT OKRS ARE DESIGNED TO DO

Empower

	ACTION
1	Provide autonomy to managers and staff to get work done without cumbersome governance
2	Provide a voice for managers and staff in the strategic and logistical initiatives
3	Engage all levels of the organization in performance outcomes

Clarify

	ACTION
1	Ensure everyone sees a clear path to success
2	Demonstrate work efforts transparently
3	Instill focus across all work efforts

Drive

	ACTION
1	Maximize goals and outcomes for results and value
2	Engage in data-driven conversation towards mission, vision, and outcome
3	Maximize alignment across all teams

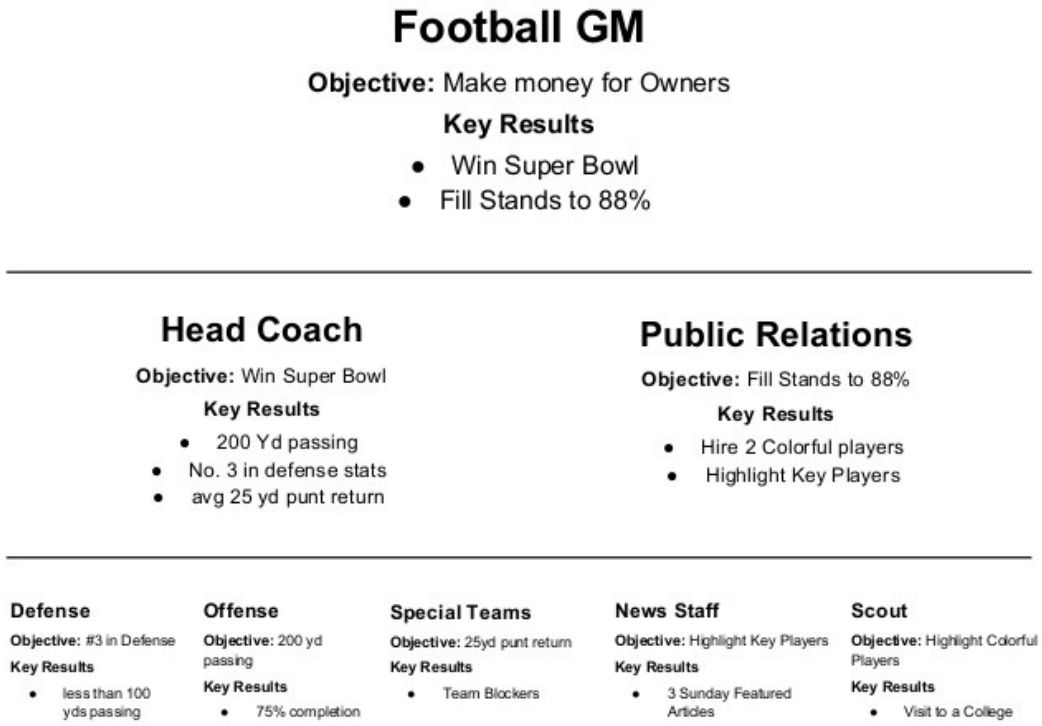
OKRs are complimentary to KPIs, not replacements for them

OKR TEMPLATE

WHAT ARE THE ALIGNMENTS AND ATTRIBUTES OF AN OKR?

WHAT IS AN EXAMPLE OF AN OKR THROUGH THE ORG?

An OKR stacks through the organization from the vision and strategy through all areas of operations

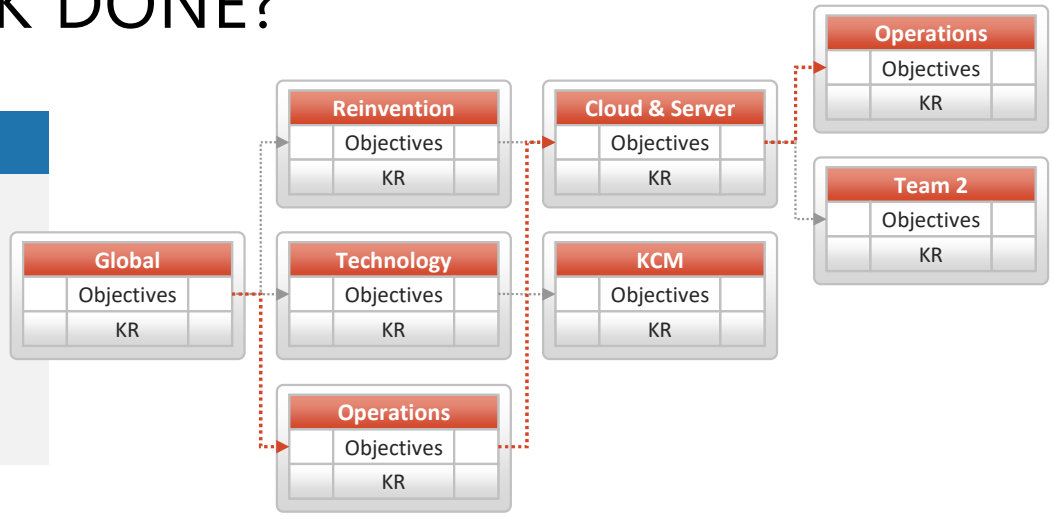


HOW DOES NDIT GET WORK DONE?

- Purpose
- Vision
- Global Objectives
- Strategy
- **OKRs**
- Improvement & Learning
- Culture

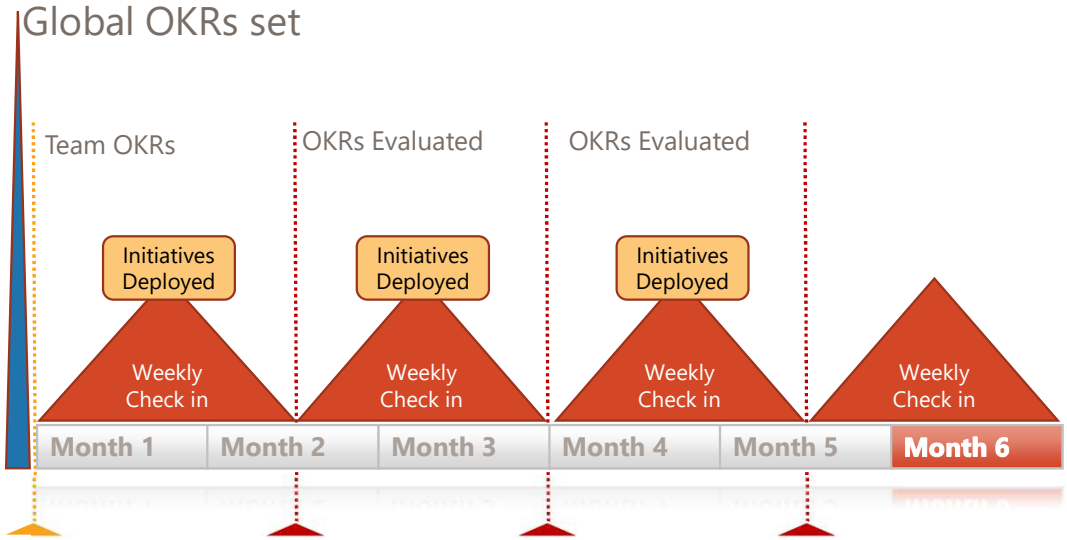
OKRs - implementation

- **Objectives aligned from Global to Staff**
- **KRs designed for each team or individual**



OKRs - monitored

- **OKRs will be reviewed on a defined schedule (Quarterly, Monthly, Weekly, etc.) to ensure global objectives are moving forward**



CDO OKRS

Objective 1:
Deploy a world class Government experience

Objective 3:
Deliver the most efficient government services in America

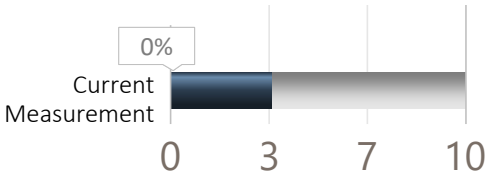
CDO G-KRs for this period

G-O1-KR2
- 97% of online services accessible from a single, mobile capable, web portal

G-03-KR1
- 20% of all work in government automated

G-O3-KR2
- Decrease the cost per unit of service of IT by 15% in biennium over biennium actuals

G-O3-KR4
- Educate 100% of staff on LE, BPI, and OKR by April 2020



Objectives – 11/2019	
	G-O1 -KR2
	G-O3-KR1
	G-O3-KR2
	G-O3-KR4

CDO Objectives – 11/2019			
G-O1 -KR2			Owners
1	CDO-O1	Create Inventory of online Services	E-Team
	CDO-O2	Document current available architecture	→ CTO

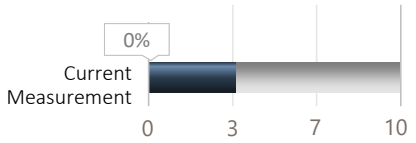
CDO Objectives – 11/2019			
G-O3 –KR1			Owners
KR	CDO-O1	Automate 25 processes	
	CDO-O2	Train 60 customers + 60 IT staff on UI Path	

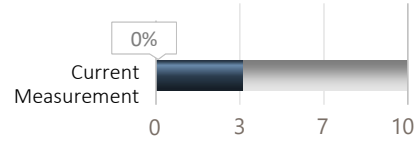
CDO Objectives – 11/2019			
G-O3 –KR2			Owners
KR	CDO-O1	Train & Operate in Agile across all CDO staff	
	CDO-O2	Evaluate run services for alternate sourcing	
	CDO-O2	Deploy 15 low/no-code applications	

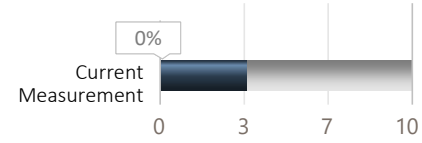
CDO Objectives – 11/2019			
G-O3 –KR4			Owners
KR	CDO-O1	Enroll, track, and manage all staff for LE & BPI education	
	CDO-O2	Place any staff w/o LE & BPI education by 1 March 2020 on a PIP	

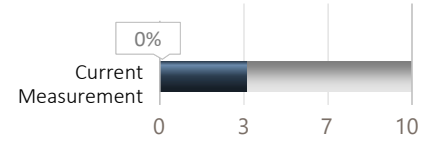
18 Nov

Schedule: Weekly check-in | 6 Week OKR review



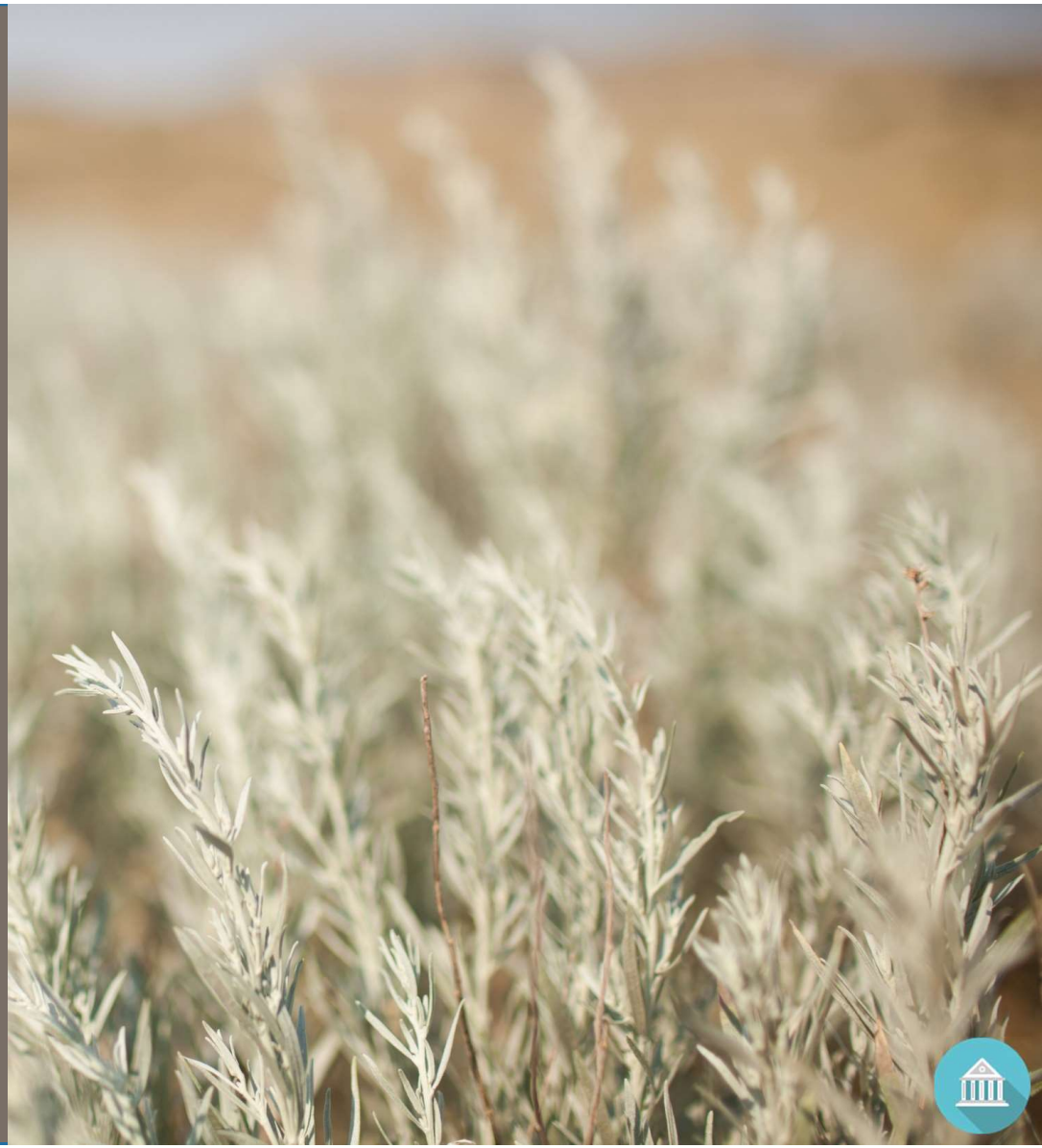






CDO Core Projects:
- Agile
- Automation

North Dakota
“The App”



OVERVIEW

All branches of government consolidated environment built for:

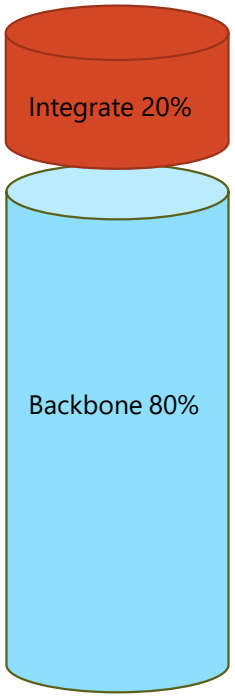
- ✓ Rapid prototyping,
- ✓ Faster deployment,
- ✓ Greater Affordability,
- ✓ Highly Intuitive Use,
- ✓ Stronger Security, and
- ✓ Valuable insights into what users want from government.

APPLICATION LAYER

HOW'S IT BUILT?

Backbone Technologies 80%

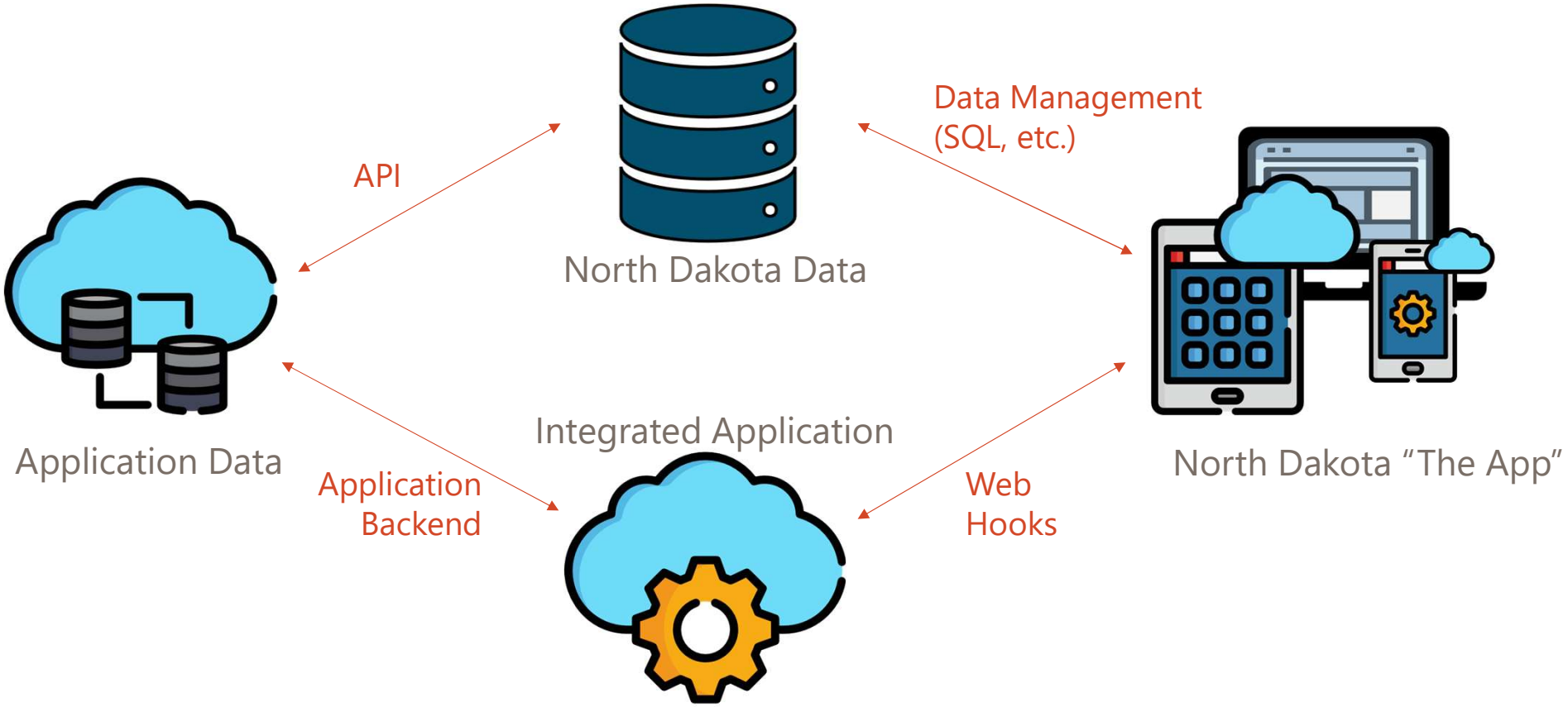
- Don't boil the ocean!
  - Software as a Service
  - Transfer tech debt and maintenance to providers
- Integrations
  - API
  - Webhooks
- Managed third party risk
  - Small pool of fully vetted vendors
  - Best practices for cloud



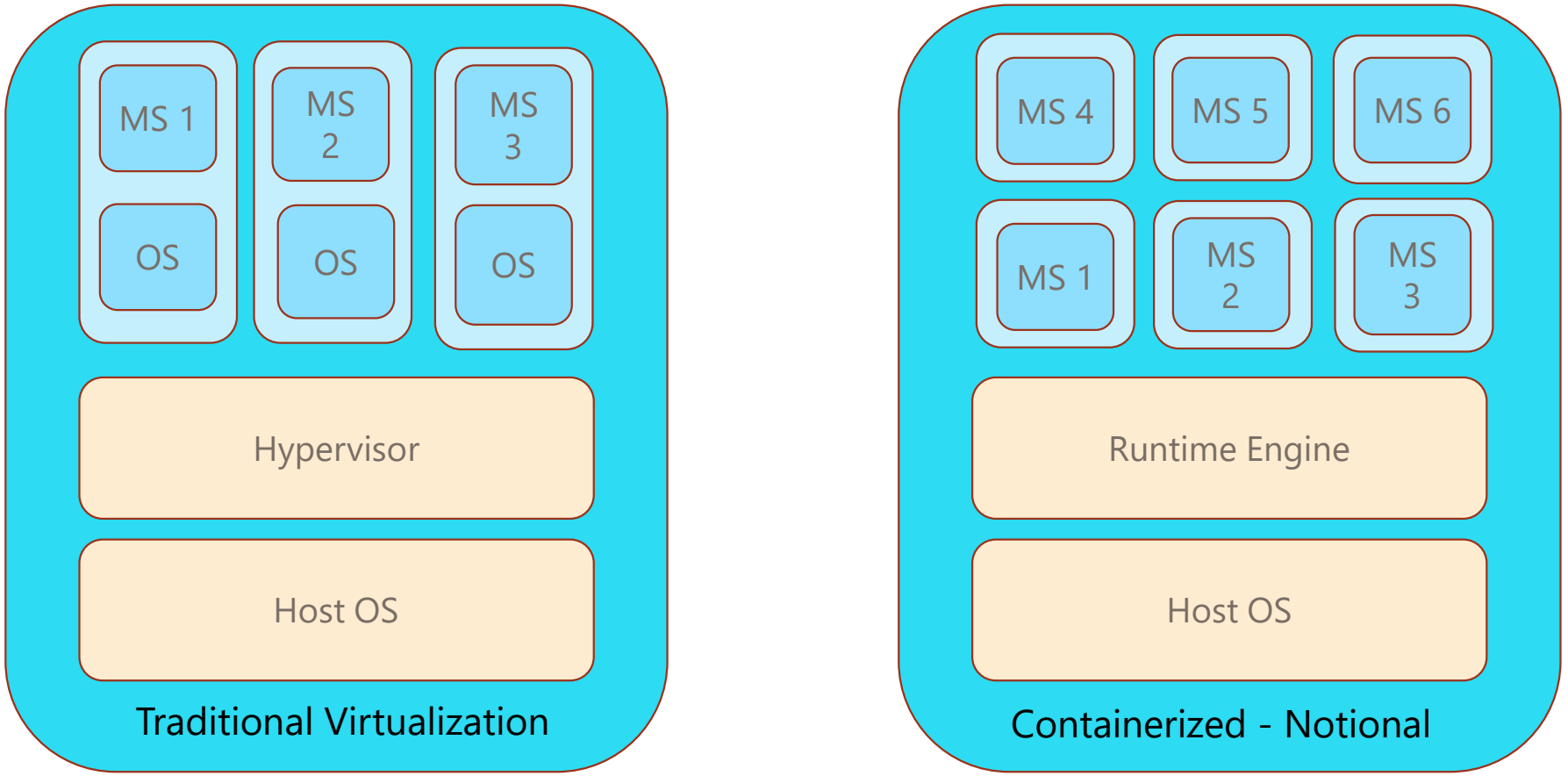
UX/UI Technologies 20%

- Cost Savings
  - Hosted in Cloud
  - Pay for what's used
  - Auto-bid on lowest cost hosting
- Light Weight
  - Containerized
- Cheaper and Dynamic Hosting and Compute
  - Infrastructure as Code
- Rapid prototyping
  - No Code/Low Code Development

BACKBONE TECH INTEGRATION – 80%



UX/UI INTEGRATIONS - CONTAINERIZATION



UX/UI INTEGRATIONS – IMMUTABLE INFRASTRUCTURE

“I CAN RUN ANYWHERE”

Infrastructure Script

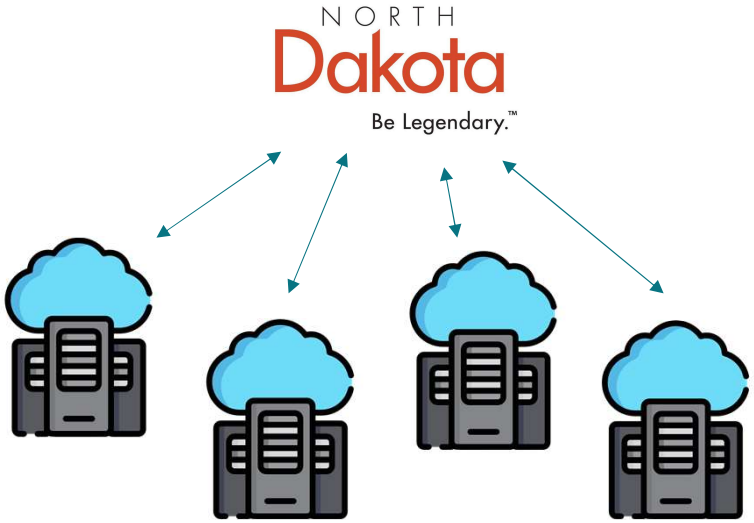
Or

“I’LL RUN HERE ”

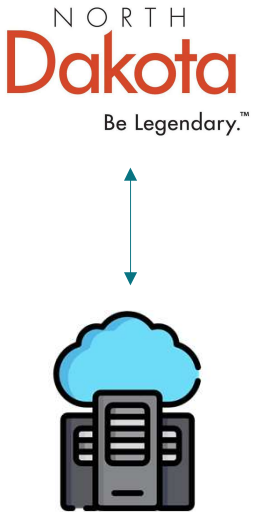
Infrastructure Script

UX/UI INTEGRATIONS – AUTO SCALING

1:00 PM



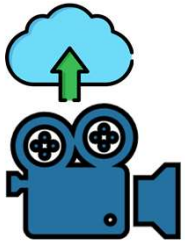
1:00 AM



USER BEHAVIOR MONITORING

User Playback

- Record anonymized browser sessions
- Capture anonymized screen video for select sites



User Feedback

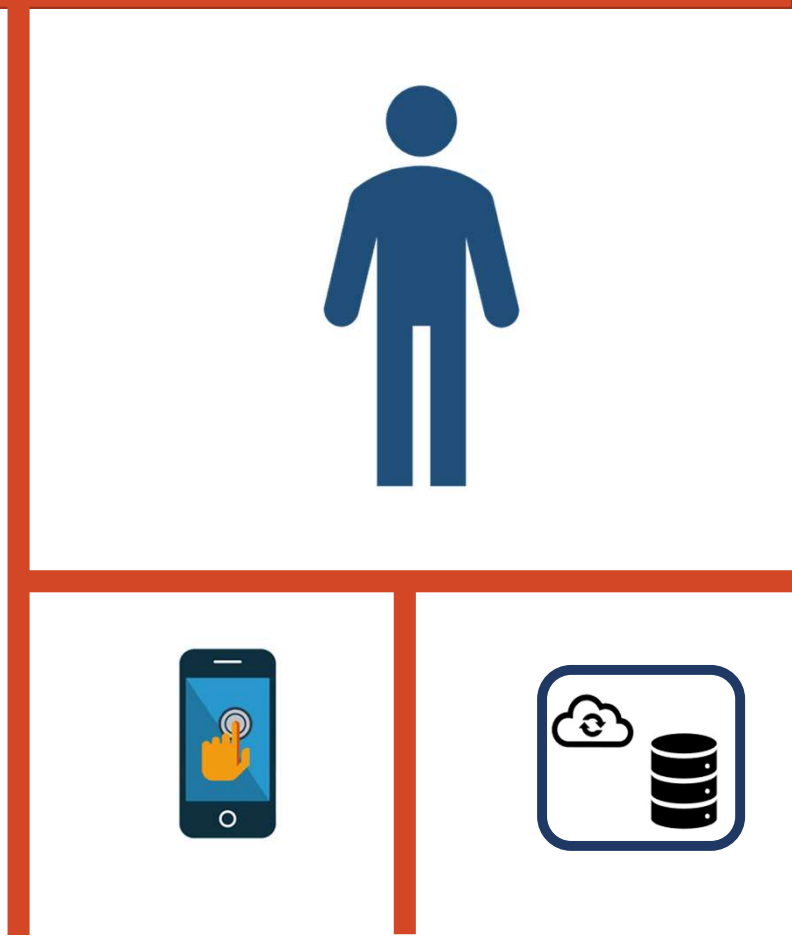
- User Survey
- Real Time Error Reporting

DATA LAYER

CITIZEN DATA SERVICE

The app's data functionality will empower citizens through:

- ✓ Citizen controlled access
- ✓ Seamless data integration
- ✓ Citizen activated services

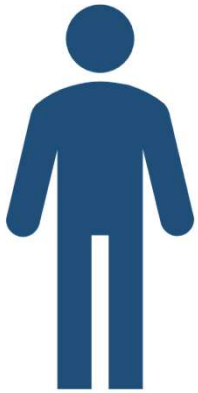


CITIZEN AS A PLATFORM

Citizen controlled tiered data types

- Personal data
- Open data
- Preferences

Preserve data privacy!



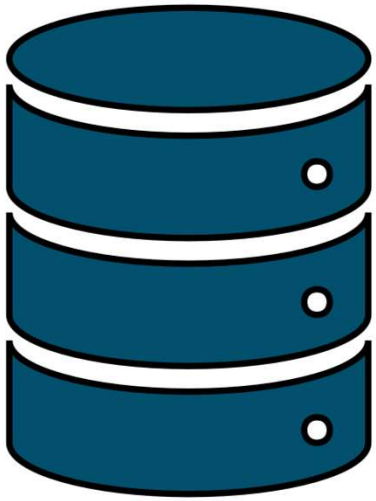
1	None	Password	Name, Phone #, Email
2	Remote	Password + MFA	SSN#, Address
3	In Person	Password + MFA	Health Records, Tax ID, Credit Card

DATA AS A PLATFORM

Unified Data Access Across all of ND Apps

- Allows for centralized data architecture and database access management
- Much faster deployment and response
- One record shared by all agencies
- Improves Privacy

DATA SECURITY



Unified Data Base Across all of ND Apps

- Allows for centralized database access management
- Much faster deployment and response
- One record shared by all agencies
- Improves Privacy

Field Level Encryption

Name	Phone	Email	SSN#	Address	Health	Tax ID	CC#
Kevin	555-3...	kbf@...	123-4...	1542 b...	Spleen...	1547...	352...
Duane	555-6...	dua@...	987-6...	2700 d...	Heart ...	8953...	985...
Dorman	555-9...	dor@...	135-7...	1274 e...	Toe...	7465...	546...

Minimum Access Control

Moderate Access Control

Maximum Access Control

APPLICATION AS A SERVICE

Users must grant application permission to:

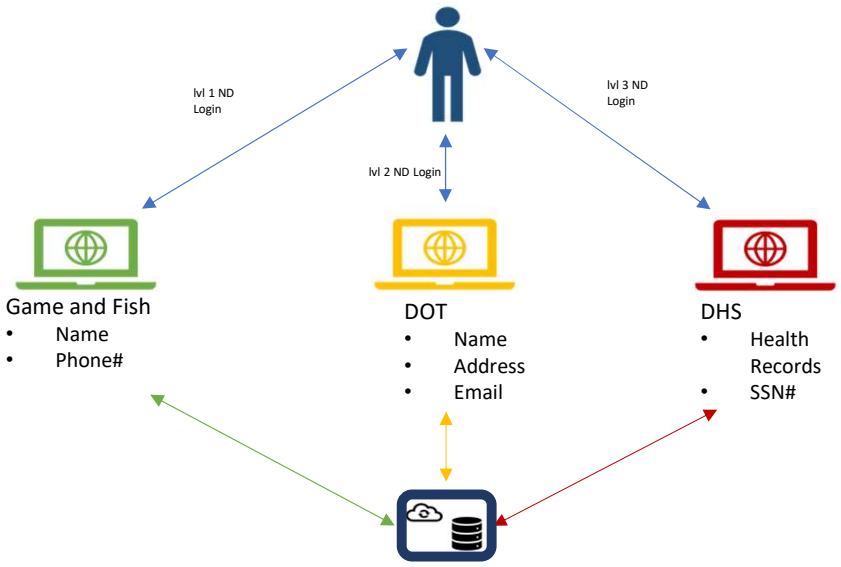
- Access their data, and
- To write to certain fields.

ND ACCESS (Login) serves as token of permission.

ND

ACCESS

ND ACCESS associates user tiered account access to services



…there is no spoon…

…THERE IS NO SPOON

Some brainstorming….

- Spinoff entire IT dept as a 501c3
  - Release IT from the rules of government while keeping the cost captivity in place – could now serve ALL government
- Become self funding
  - State of ND helps to develop high effective systems for Gov, from Gov – and we keep a % of the Intellectual Property
- Complete re-organization of government services
  - Example: Merge Operations, OMB and IT into the “mega-shared services” provider
  - All workforce together, all outdoor together, etc.
  - Operational leaders that agencies report to – a Senior VP team to coordinate agencies like a business
- Mandatory process reviews across all agencies
  - Pre-project, and on a rotating schedule
  - All processes designed to be self improving
- E-Prairie Dog / Stagenet 2.0
  - Digital services, broadband, technology uplift across the state – universal accessibility
  - IP address for every ¼ square inch