

Digital Government Authority

OSS Adoption Strategy

November 2021

Kingdom of Saudi Arabia | Riyadh

OSS adoption strategy development sources, research, & participation

The strategy formulation is based on a comprehensive set of sources

<p>Interviews</p>	<p>10 Interviews with key stakeholders with DGA, MCIT, CITC, and KACST</p>	<p>Subject Matter Experts</p>	<p>5 leading experts across several OSS areas including cyber security, architecture, communities, ecosystem, and others from Estonia, India, Tunisia, Poland, and UK</p>
<p>Workshops</p>	<p>2 workshops for strategy and OSS technology & catalogue across many organizations including MCIT Technology, MCIT Human Capital, DGA Strategy, DGA Technology, DGA Standards, DGA Digital Transformation, KACST, NCA, MOI, Misk, Monsha'at, KFUPM, Sattam University, KKU, and CITC</p>	<p>EY Methodologies</p>	<p>5 Methodologies for OSS technical and strategy development frameworks and baseline of government commercial software landscape</p>
<p>Benchmarks</p>	<p>7 countries with leading OSS adoption practices including Australia, Brazil, Estonia, India, Singapore, South Korea, and UK</p>	<p>Leading Market Research Organizations</p>	<p>15 market research reports by leading research organizations including Gartner, IDC, BMI and Technnavio, and several others</p>
<p>Interviews with Vendors</p>	<p>8 interviews with Amazon AWS, Google, IBM, MongoDB, Oracle, Red Hat, SAP, and Suse</p>	<p>DGA & MCIT Publications</p>	<p>10 publications and documents related to OSS guidelines, national enterprise architecture, e-government, digital services and others</p>
		<p>National Strategies & Stakeholders</p>	<p>12 ministries and authorities strategies and roles have been taken into consideration as part of strategy formulation and alignment</p>

Key highlights across the sections

1

OSS Adoption as a National Strategic Initiative

- DGA's main objectives are to develop the **digital economy, develop e-government, and ensuring responsiveness** of government entities to stakeholder feedback
- DGA's strategy is focused on 13 pillars, but the main three for this project are **digitally capable ecosystem, sustainable investments to realize value, and develop the digital economy**
- OSS adoption strategy is strategic initiative driven from DGA's strategic objectives and initiatives and is aligned with several government ministries and authorities

2

The Global OSS Movement & Practices Among Leading Countries

- Companies choose OSS for its **low cost**, to avoid **vendor lock-in, freedom to innovate, and accessibility to the source code**
- Global companies around the globe (e.g. Microsoft) are moving towards OSS
- Leading governments and countries around the globe have been adopting OSS for a variety of reasons mainly to avoid vendor lock-in, achieve lower costs, & raise market competitiveness
- Leading government have adopted different styles when adopting OSS

3

KSA Drivers for Developing OSS Adoption Strategy

- **Global technology trends** (e.g. shift to cloud) are influencing KSA to **push for the OSS** adoption strategy
- Key drivers for developing the **OSS adoption strategy** are moving **IT landscape** to an **efficient one**, shift **IT spend** towards **sustainable investments**, enable agile smart government transformation, establish **technology sovereignty**, creating **new technology companies** and investing in **local companies** to increase **job opportunities**

4

OSS Adoption Strategy & Roadmap

- OSS adoption strategy is focused on **three themes**
- **Creating future technology leadership**: includes the overall vision, leadership and objectives of the OSS adoption strategy
- **Transforming IT spend & technology landscape**: revolves around the business case, OSS governance and adoption framework
- **Building NewTech "Blue Ocean" ecosystem**: mainly about developing a new ecosystem that consists of communities, talent network, NewTech companies and accelerators/incubators
- **OSS adoption roadmap** is defined with **initiatives** across the themes

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1



OSS Adoption as a National Strategic Initiative

Our strategy is based on our understanding of the national vision's overarching objectives



Pillars



Goals



Objectives



A Vibrant Society

- Serve 30 Million Umrah visitors
- Increase household spending on cultural and entertainment to 6%
- Increase the average life expectancy from 74 to 80 years

A Thriving Economy

- Lower unemployment rate from 11.6% to 7%
- Increase PIFs assets to over SAR 7 Trillion
- Increase the private sector contribution to 65% of GDP
- Raise the share of non-oil exports in non-oil GDP to 50%

An Ambition Nation

- Raise our ranking n UN eGDI from 36 to a top 5 nation
- Rally 1million volunteers per year



1. Strengthen Islamic & national identify

2. Offer a fulfilling & healthy life

3. Grow & diversify the economy

4. Increase employment

5. Enhance government effectiveness

6. Enable social responsibility

Related to MCIT

NTP_Vision 2030's objectives



Source: KSA-1

Strategic National Pillars

3. Grow & Diversify the Economy

- 3.1 Grow contribution of the Private sector to the economy
- 3.2 Maximize value captured from energy sector
- 3.3 Unlock potential of non-oil sectors**
- 3.4 Grow PIF assets and role as a growth engine
- 3.5 Position KSA as the global logistics hub
- 3.6 Further integrate Saudi economy regionally and globally
- 3.7 Grow non-oil exports

5. Enhance Government Effectiveness

- 5.1 Balance public budget
- 5.2 Improve performance of government apparatus**
- 5.3 Engage effectively with citizens**
- 5.4 Protect vital resources of the nation

Strategic National Objectives

3.3

- 3.3.1 Grow and capture maximum value of mining sector
- 3.3.2 Develop the digital economy** ✓
- 3.3.3 Localize promising manufacturing industries
- 3.3.4 Localize military industry
- 3.3.5 Enable the development of retail sector
- 3.3.6 Enable the development of tourism sector
- 3.3.7 Increase localization of non-oil sectors

5.2

- 5.2.1 Design leaner gov structure
- 5.2.2. Enhance performance of government
- 5.2.3. Improve productivity of government employees
- 5.2.4 Develop the e-Government**
- 5.2.5 Improve quality of services

5.3

- 5.3.1 Enhance transparency across government
- 5.3.2 Strengthen communication channels with citizens & business community
- 5.3.3 Ensure responsiveness of government entities to stakeholder feedback**

ADAA Monitoring

DGA has outlined key priorities & objectives towards building a digital economy with leading e-government transformation

Develop the Digital Economy



Increase internet speed & penetration



Improve industrial productivity



Increase digital awareness



Attract digital investment and startups



Promote innovation through R&D



Increase services sector % of GDP



Qualify Saudi human capital

Develop e-Government



Adoption of unified platforms



Raise usage of government digital services



Enhance integration of government digital services



Raise government IT spending efficiency



Ensure implementation of e-Government standards

Stakeholder Engagement



Accelerate government entities response to stakeholders



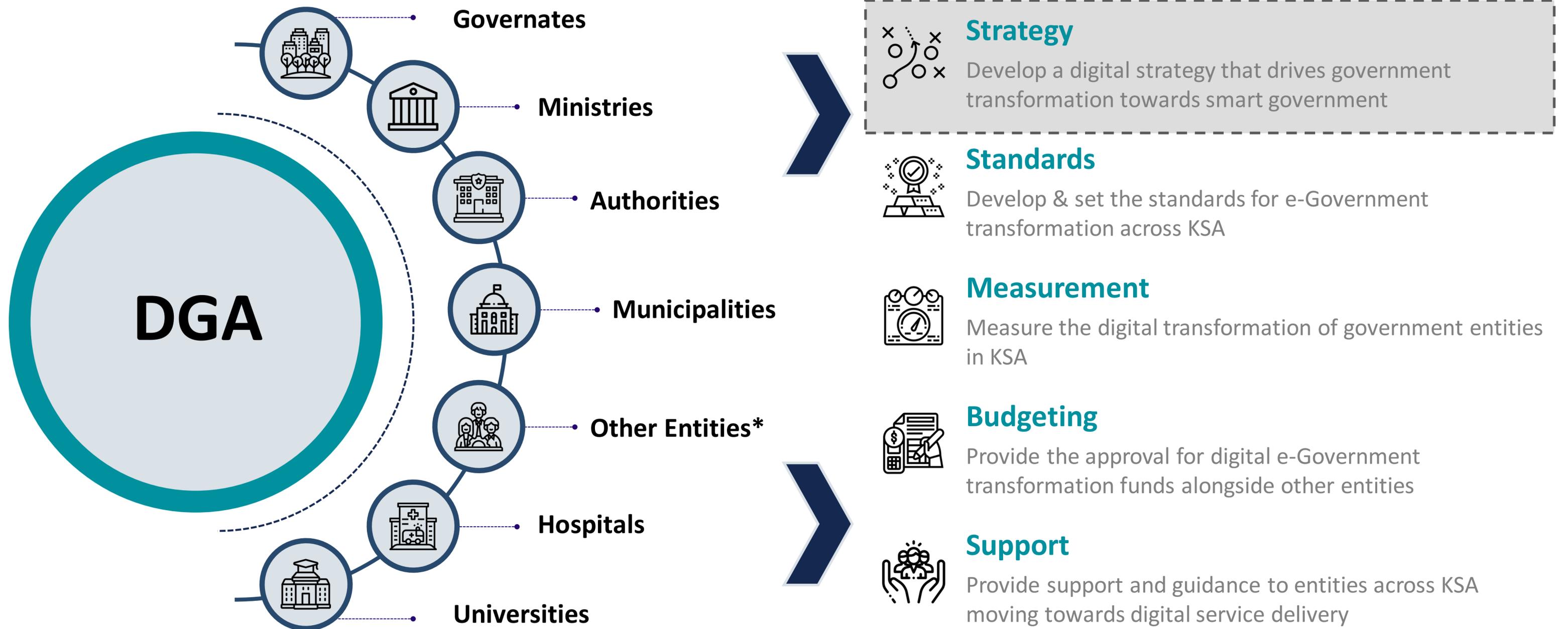
Raise stakeholders satisfaction with government responses



Enhance stakeholders participation in the development of government policies, decisions, and services

DGA plays a key role in enabling digital transformation across KSA government

DGA is enabling e-Government transformation across KSA government entities



DGA has identified OSS adoption in addition to other initiatives as a key to creating sustainable investments & building digital ecosystem



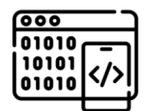
Open Source Software

The OSS Strategy aims to shift government software, IT services and hardware from commercial vendors to open source alternatives



Cloud

Aims to define and stimulate public sector migration from traditional IT solutions to cloud-based models



Bank of Codes

Aims to provide a centrally operated and governed repository for source code software, documentation, web pages, and other works



Digital Marketplace

A digital platform that aims to connect government entities that are looking to procure services with accredited ICT service providers



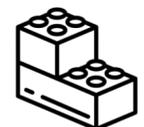
Shared Services

Providing digital government services to citizens, companies, government and non-governmental entities, as well as digitizing internal government operations



National Framework

The National Framework aims to standardize technical specifications and prices for vendor products and services



Bunia

Bunia aims to enter & store data related to the infrastructure which includes systems, applications, services, etc.



National Enterprise Architecture

NEA Framework supports the identification of re-usable components and services, and facilitates a basis for IT investment optimization

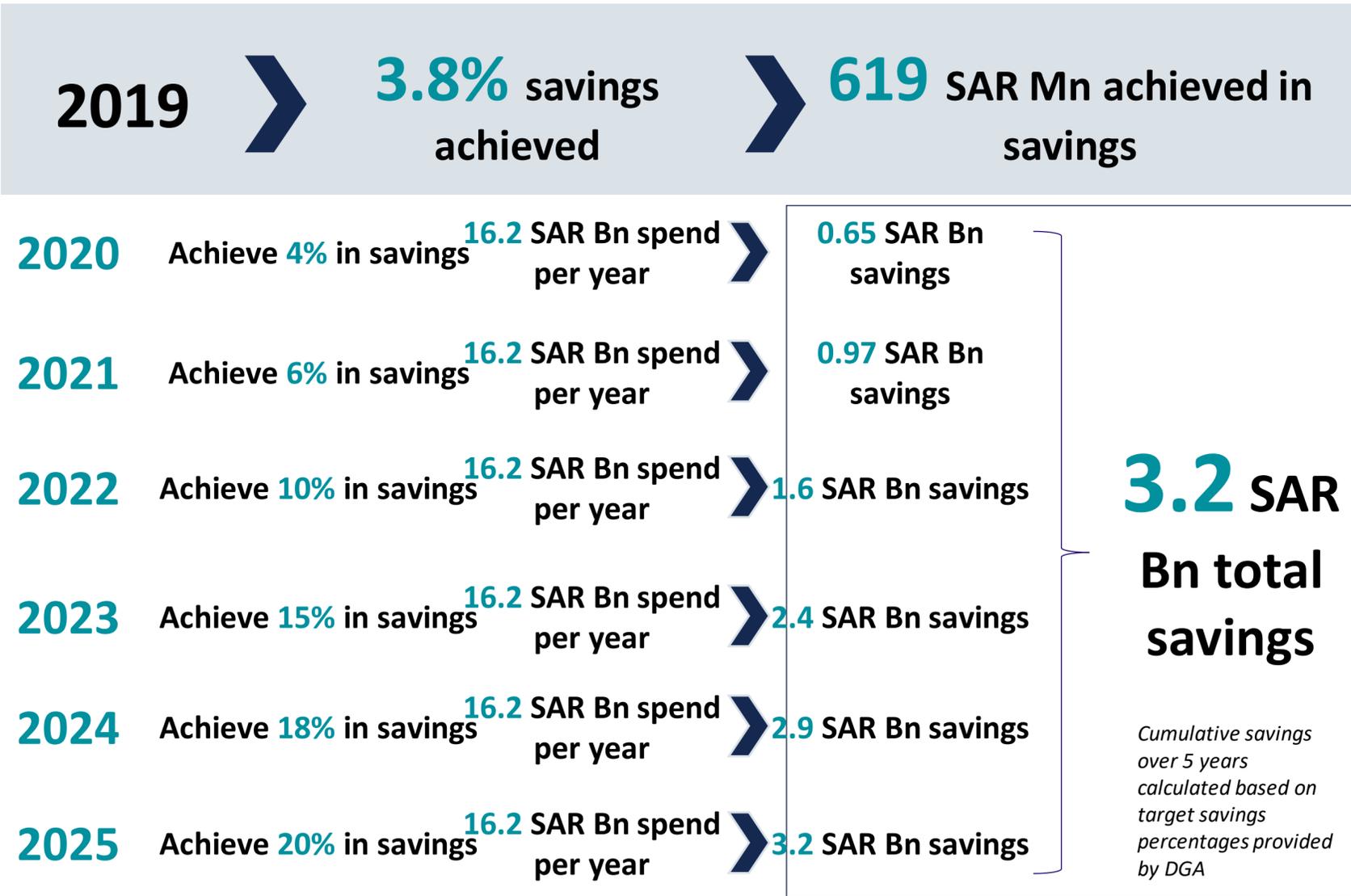
ADAA has set the metrics required to measure DGA's performance against Vision 2030 objectives

DGA is measured against its ability to produce IT savings

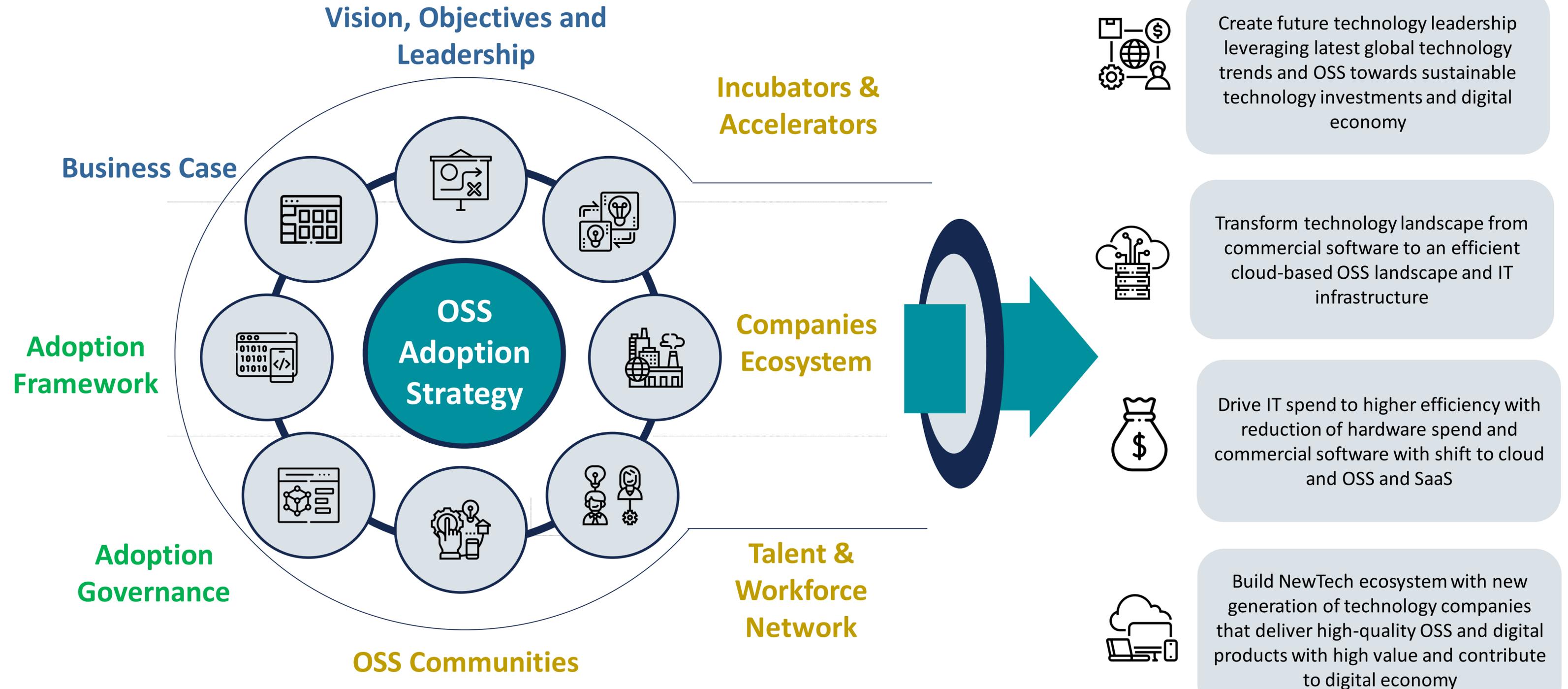
Objectives and KPI Descriptions

Objective Name	E-government Development
Objective Description	Providing government services electronically to citizens, companies, and NGOs, as well as digitizing internal government operations
KPI	The percentage of savings resulting from digital government initiatives
KPI Description	KPI measures the percentage of financial savings at the e-government level from common products & services and IT investments (including open source)

KPI Scores and Targets



The OSS adoption strategy aims to address key underlying government challenges related to IT spend & landscape and ecosystem underdevelopment



KSA OSS early efforts by KACST, CITC, & MCIT (Technology Development) are key input to OSS adoption strategy

There are 13 registered with Masdar that work in OSS projects across KSA. Companies are a mixture of government and private companies where they build their OSS solutions deliver them to public and private companies

Some OSS projects have already been implemented across government entities, mainly related to desktop operating systems and content management system. Also, other OSS projects involve ERP and other solutions

National OSS study conducted by CITC identified over 180 OSS products that can be implemented across areas including infrastructure, Network Services, desktop applications amongst others



Today, KSA is estimated to have over 60 OSS professionals and a community of KSA OSS professionals. They are conducting research and implementing small scale projects across universities and government entities
(Provided by MCIT)

Universities were first to adopt OSS solutions. KACST and KFUPM have been leading adoption of OSS among KSA universities where they have been cultivating OSS talent and pioneering OSS projects. Moreover, some OSS vendors, such as Red Hat, are providing training and learning academies in partnership across several Saudi universities

MCIT Human Capital Development programs & initiatives are key enablers to OSS adoption strategy

MCIT Human Capital Development has several key programs focused on digital, technology and future skills development



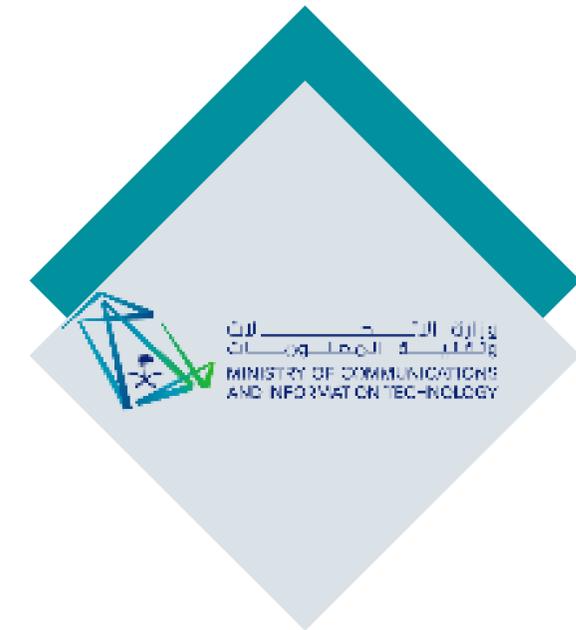
Saudi Digital Academy

Aims to be a pioneering academy in developing national digital capabilities and in building the next generation of leaders from developers, innovators, entrepreneurs in advanced modern technologies. Through training and bootcamps, academic curriculum, counseling, skills assessments amongst other methods



Think Tech

MCIT initiative that aims to spread digital awareness and develop a stimulating digital environment through building a young, creative and integrated generation with the skills to support and drive technological developments in KSA



Future Skills

MCIT initiative that aims to raise awareness and digital content, bridging the gap between digital talent and market supply and demand and aligning the education system with the digital age. Currently, they have established collaboration with 27 KSA universities to build digital talent

Development of OSS adoption strategy needs to align with key KSA government stakeholders

01



National Cybersecurity Authority

The National Cybersecurity Authority has regulatory and operational responsibilities to improve KSA cybersecurity posture in order to safeguard its vital interests, national security, critical infrastructures, high-priority sectors, and government services

02



Ministry of Finance

The Ministry of Finance is responsible for developing nationwide financial policies and government expenditures. The ministry plays a central role in granting and approving IT budgeting and spend across government entities



EXPRO

EXPRO aims to reduce government procurement cost by centralizing the policies and supporting government entities to achieve spending efficiency



Local Content & Government Procurement Authority

The Local Content & Government Procurement Authority is responsible for developing policies and regulations maximize local content and improve strategic procurement as well as measure and report their impact

03

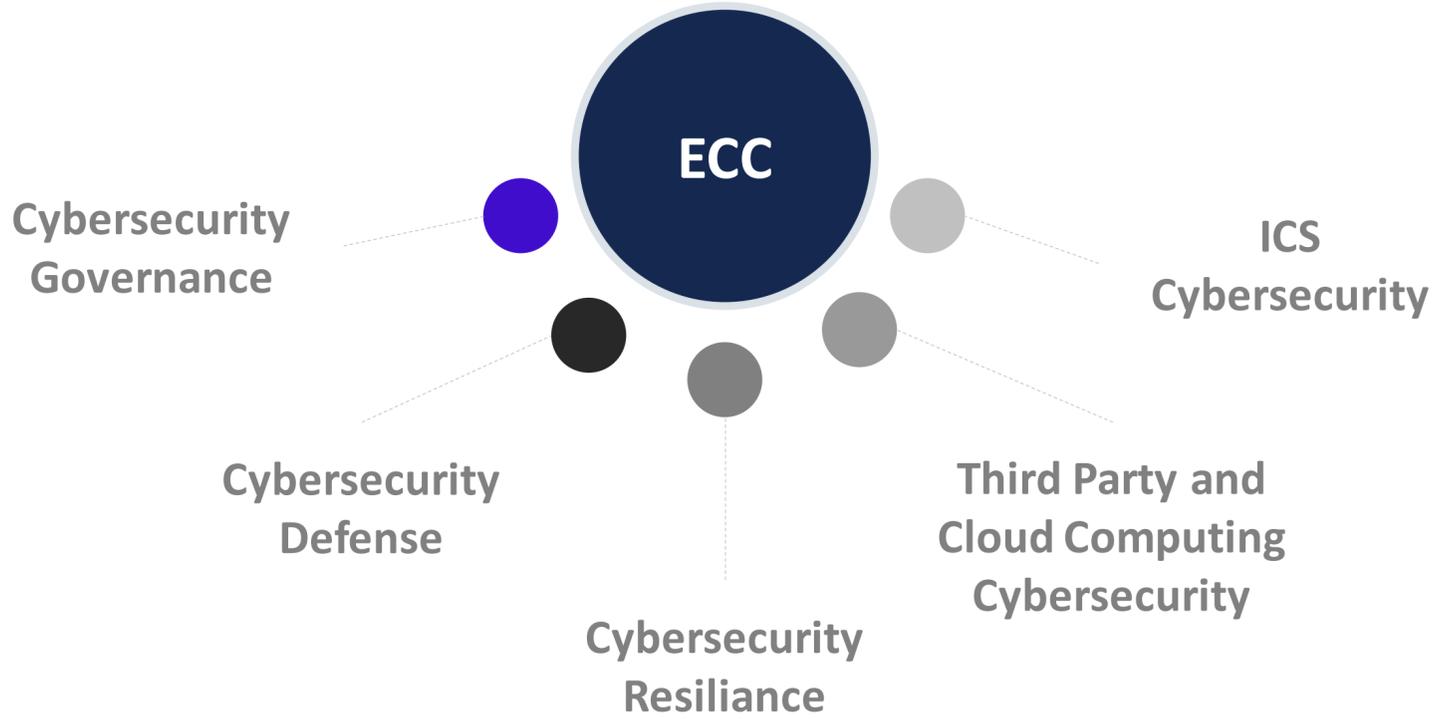
04

OSS adoption strategy needs to be aligned with relevant policies & practices from National Cybersecurity Authority (NCA)

KSA government established NCA to enhance cyber security landscape

National Cybersecurity Authority

With the rise of Vision 2030, KSA has established NCA to mandate and fulfill the strategic & regulatory cybersecurity needs in the country. They developed Essential Cybersecurity Controls (ECC) with five key domains:



OSS Adoption & Cyber Security Alignment

The Open Source Software adoption strategy will need consider key policies and practices from NCA covering:



NCA's cybersecurity policy will govern and determine **minimum acceptable security standards for any open source software**



NCA helps battle any security breaches in **government entities** that use any software including open source software



NCA provides ecosystem of cyber security providers that could **test open source software for security**



OSS adoption strategy needs to be aligned with relevant policies & practices from Ministry of Finance

Ministry of Finance is spearheading nation's effort to digitize transactions across budgeting, tendering, and procurement process

Ministry of Finance

In line with Vision 2030, MoF's role is to develop effective financial policies and manage financial resources to achieve economic growth and to increase spending efficiency, this is achieved through 5 main pillars:

1

Developing sustainable financial systems

2

Improving quality of financial accounts and promoting transparency

3

Allocating and managing financial resources effectively

4

Promoting KSA position regionally and internationally

5

Optimal utilization of state assets and innovative financing

OSS Adoption & MoF Alignment

The OSS adoption strategy needs to align and benefit from policies and regulations related to **IT budgeting, IT procurement, and IT spending**:



IT Budgeting and Contract Management: MoF budgeting needs to support specific aspects of IT budgeting including OSS to support its adoption among government



Tendering: The IT procurement process for government entities needs to support the OSS adoption as the part of the RFP and technology selection and evaluation to enable OSS adoption



IT Spend Reporting: The reporting of IT spend by government entities needs to provide needed details across different **IT spend categories** to enable **accurate tracking** and reporting of IT spend

OSS adoption strategy needs to be aligned with relevant policies & practices from Center of Spend Efficiency

KSA established CSE to ensure spend efficiency across public sector

EXPRO

Support government entities to achieve spend efficiency



Establish a successful and pioneering model in spending efficiency and financial sustainability



Develop policies and legislation to enable spending efficiency across the public sector



OSS Adoption & Spending Efficiency Alignment

The OSS adoption strategy needs to align with the Center of Spending Efficiency on several OSS and IT related policies and regulations:



Policies and regulations that promote **efficient IT spend** across technology spend including software, hardware, and IT services



Policies and regulations that **endorse the adoption of open source software** as a viable and preferred option versus commercial software



Policies and regulations that in put in place accurate and efficient reporting of **IT spend** across technology areas

OSS adoption strategy needs to be aligned with relevant policies & practices from Local Content & Government Procurement Authority

KSA has established the Local Content & Government Procurement Authority to ensure local players get a fair shot at government tenders, and to drive local economy

Local Content & Government Procurement Authority

OSS Adoption and Local Content Alignment

Encouraging the private sector to contribute to developing local content



Sets local content requirements and targets for Government procurement, and follows-up on their performance

Drafts policies and strategies for developing local content and enhancing government procurement

The OSS adoption strategy needs to align with the Local Content & Government Procurement Authority on several OSS and IT related policies and regulations:



Policies, regulations, and guidelines that promote technology and **OSS products and services** from KSA companies



Policies, regulations, and guidelines for technology and OSS adoption in relation to the expected contribution of KSA companies to IT market



Policies, regulations, and guidelines that encourage **creation of KSA technology and OSS companies and ecosystem**

Development of OSS adoption strategy needs to align with other key KSA government stakeholders



Established in 2016, the objectives of Monshaat are to organize, support, develop and sponsor SMEs sector in accordance, to increase the productivity of these enterprises and increase their contribution to KSA GDP from 20% to 35% by 2030



Through a network of dynamic business centers across KSA, MISA partners with local and international businesses of all scales and sizes—from startups to blue chip multinationals—to help make investing in KSA



Saudi Authority for Intellectual Property aims to organize, support, sponsor, protect and promote intellectual property in KSA in accordance with global best practices



KACST is a scientific government institution that supports and enhances scientific applied research. It coordinates the activities of government institutions and scientific research centers, It also identifies national priorities and policies in technology and science



NIC provides government-community cloud, IT solutions and IT services to the KSA government entities across various parts of KSA through its branches in the Kingdom's regions, making it one of the largest IT centers in the Middle East



SDAIA's core mandate is to drive and own the national data and AI agenda to help achieve Vision 2030. SDAIA – and its sub-entities NDMO, NIC, and NCAI – will deliver on the promise to create a data-driven and AI-supported government and economy

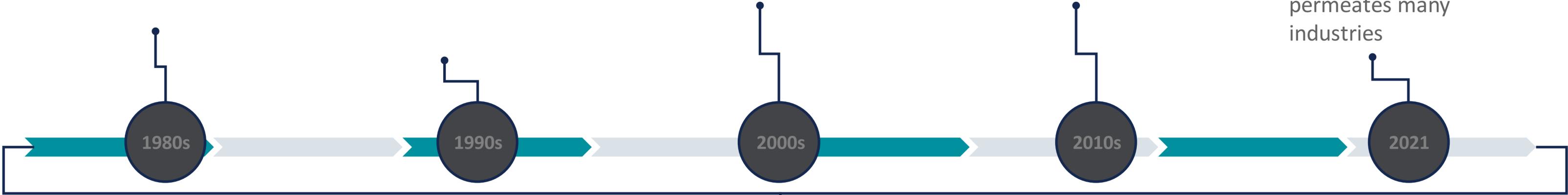
2



OSS Adoption as a
National Strategic
Initiative

OSS movement started 40 years ago and continues to shape the IT landscape globally

- Rise & dominance of commercial software
- Early development of the GNU Project
- Open Source Initiative (OSI) is created
- Linux, Python, OpenOffice and Apache are released
- Mozilla Firefox is released to the public
- Google releases the first OSS smartphone, Android
- OSS is embraced by large tech companies and powered by new tools & platforms
- Innovation & collaboration make OSS mandatory
- OSS is developed by many firms and permeates many industries



The Open Source Criteria

<p>Free Redistribution</p> <p>License does not restrict any party from redistributing the software</p>	<p>Source Code</p> <p>Program must include source code</p>	<p>Derived Works</p> <p>License must allow modifications and derived works</p>	<p>Author Code Integrity</p> <p>Allows the distribution of "patch files" with the source code</p>	<p>Discrimination</p> <p>License must not discriminate against any person</p>
<p>Field of Endeavors</p> <p>License must not restrict anyone from using the program</p>	<p>License Distribution</p> <p>Rights of the program apply to all to whom the program is redistributed to</p>	<p>Unspecific Licenses</p> <p>Parties to whom the program is redistributed must have the same rights as owner</p>	<p>Program Restrictions</p> <p>License must not place restrictions on other software</p>	<p>Tech Neutral</p> <p>License must not be predicated on any individual technology</p>

Many global organizations have realized significant benefits due to OSS adoption

IT professionals have highlighted the following key benefits to adopting OSS

84%*

Low cost
with no
vendor lock-in

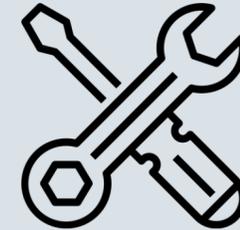


\$35,000+ average savings
per project

6+ months average **reduction**
in project life timeline

67%

Freedom to
customize
code



Ability to **access** the **source code**
for any software

Opportunity to **upstream**
customization

55%

Rate of
innovation



Availability of a **large pool of**
technologies and resources for
prototyping

Minimal time and **cost** when
trying new ideas

Globally, OSS is reshaping technology landscape and influencing commercial software vendors and shifting the market towards OSS, cloud, & SaaS

32+ USD Billion global OSS market size and expected to grow at CAGR of 24%

24+ Million developers in 20+ countries contributed to 67+ million GitHub project repositories

90% Of IT organizations worldwide use OSS in mission-critical workloads

78% Of all companies are running OSS in some way, shape or form



IBM has committed 3,500+ professionals to Apache Spark-related projects

Microsoft joined the Open Source Initiative and Cloud Foundry Foundation

CTNK, an AI framework developed by Microsoft was open sourced in 2016

Global open source software ecosystem consists of many players across different software categories & areas

Application Development Software						
Development Tools		Development Languages				
Application Deployment Software						
Application Server Software Platform	Deployment Centric Application PaaS	Relational Database Mgmt. Systems	Nonrelational Database Mgmt. Systems	Message Oriented Middleware		
Function Service	Stream Analytics	AI Software	Data Collection	IoT Services	API Mgmt.	Content Analytics
System Infrastructure Software						
Operating Systems	Virtual Machine Software	Container Infrastructure	Cloud System Software	Storage Controller	SDN Software	Service Mesh Software

Systems and Service Mgmt. Software
IT Operations Mgmt.
Provisioning
Monitoring
Orchestration
Service Discovery

OSS is playing critical role in creating competitive technology & security for many organizations & countries

OSS is helping organizations and countries create technology and security advantage for organizations

OSS Advantage for Security



In the Open Source world, more developers and engineers will **examine the source code** therefore testing and debugging code, will more likely solve the problem and ensure it is addressed.



Open source **does not pose any significant barriers to security**, but rather **reinforces** sound security practices.



Automated remediation of security- and IP-related risks that minimizes the opportunity for risks to escalate and acquire broader ramifications.

OSS Advantage for Technology



Open Source continues to gain visibility among companies, whereby they are encouraging developers to participate in the digital space, with the aim of being the first to drive ever-increasing innovation in the technology field



Open source technologies drive innovation because the decentralized quality of code contributions means that developers from a range of organizations, industry verticals, and geographies can contribute and participate



Advanced technologies like Artificial Intelligence, Machine Learning, and Robotics development process can be expedited by leveraging the benefits of open source technology



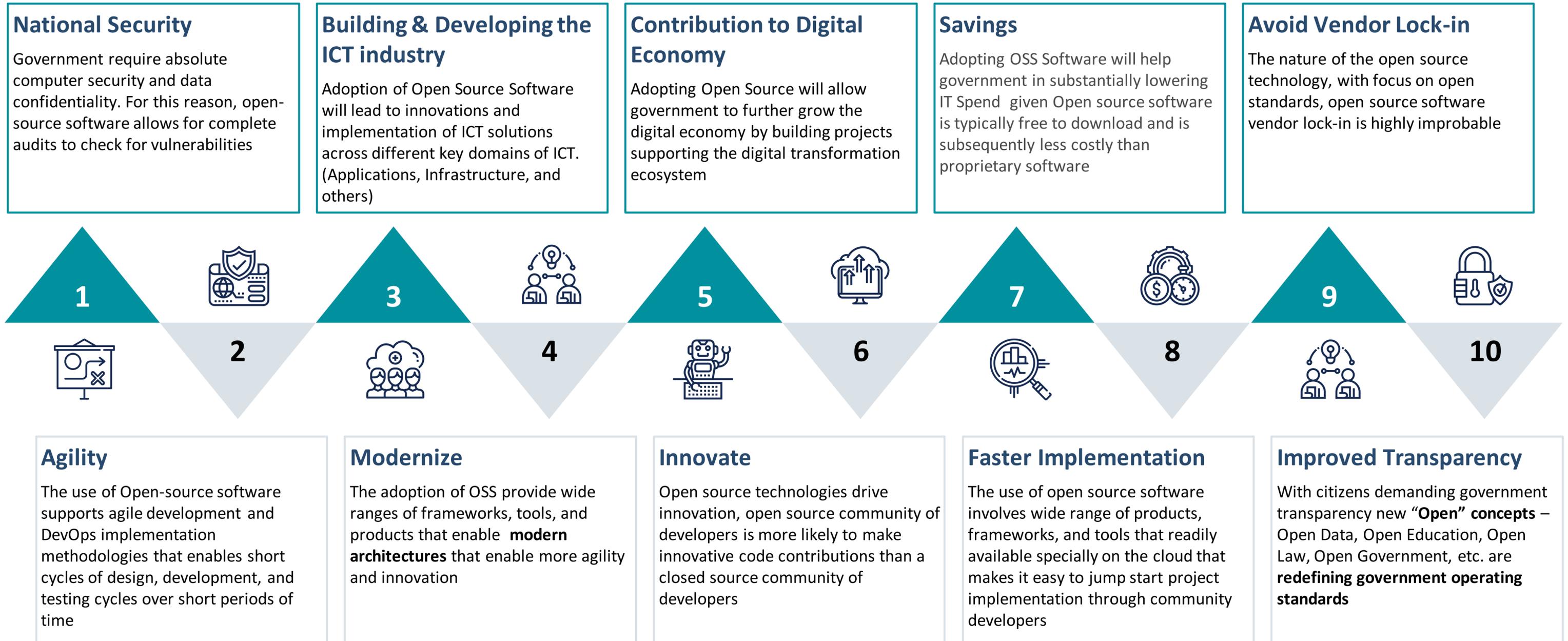
Digital and technological transformation is being fueled by open source technology, mainly due to the reduced the cost of developing new digital platforms that are needed to drive the transformation



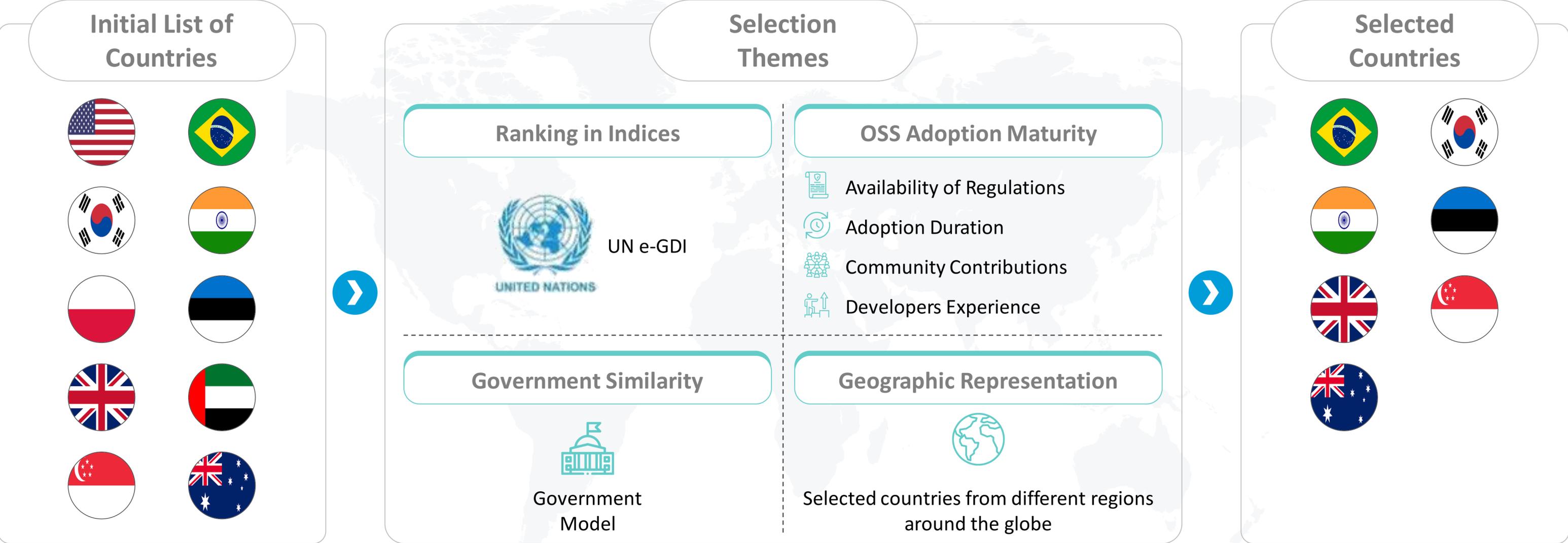
OSS Adoption Practices Among Leading Countries

Leading governments around the world have adopted OSS for several reasons

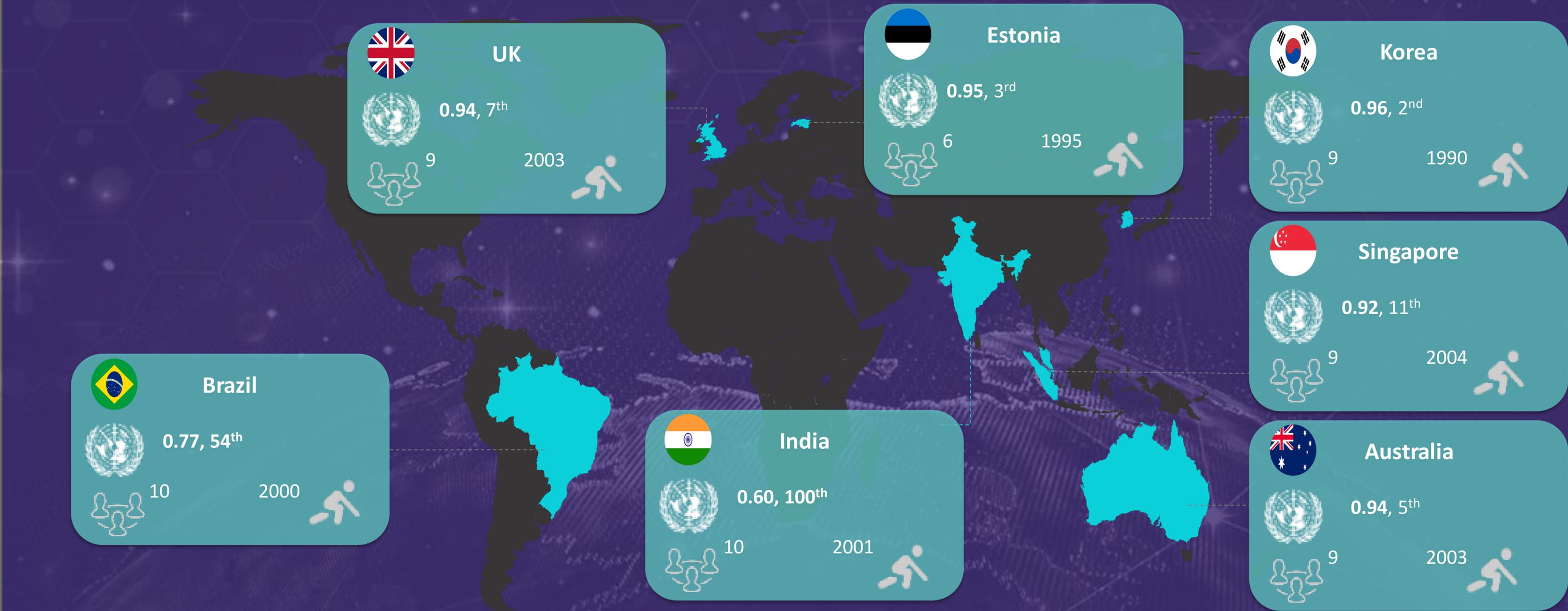
Drivers for open source software adoption by leading governments



We have benchmarked leading countries that have adopted OSS



OSS adoption metrics showcases benchmarked countries' OSS position



UN e-GDI
2020



Number of OSS
Communities



Beginning of OSS
Adoption

Leading governments have achieved higher IT spend efficiency & built IT ecosystem through OSS adoption

Key Drivers



Driving efficient IT spend in government

Integrating OSS within national policies & digital transformation strategies to promote use of OSS solutions



Building & developing ICT industry

Focus enhancing SME's competitive through creation of new companies, developing local talent & engaging OSS communities



Increasing contribution to digital economy

Directing government IT spend on local OSS / digital companies that result in job creation that contribute to digital economies

Benchmarks Examples

\$38

Million in annual savings from shifting government content management system to open source (2016)



100

New software development **companies established** & developed (2013-2017)

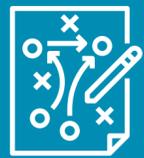


156

Thousand **jobs created** between 2017 and 2020 as part of the expansion of the digital economy



Global comparison for OSS adoption & demand creation



Strategy

Drive collaboration with the ecosystem & continuous tech innovation to achieve IT spend efficiency



Stimulate economic growth using ICT with OSS & increase IT spend efficiency



Policy

OSS policy is mandated for all government entities



OSS adoption is encouraged & preferred across Singaporean government



Adoption Model

All digital RFPs projects include mandatory clause for considering OSS as a preferred option



Prefer OSS over commercial software in IT procurements & contracts are awarded on a value-for-money basis



Global comparison for OSS adoption & supply buildup

IT Market

Commercial vendors market share experienced a decline due to the shift to cloud & OSS 

Built strong local IT market with TOTVS having large market share 

Ecosystem

IT ecosystem is completely comprised of local companies 

IT ecosystem comprises mostly local IT companies with some presence of international vendors 

Jobs

156 thousand jobs created between 2017 and 2020 as part of digital transformation 

More than 14 thousand ICT jobs created in the first half of 2020 

Benchmark North Star: Overview of Korea's approach to OSS adoption



Republic of Korea: Key Statistics (2020)

- Population: 52 Mn
- GDP: \$1.7 Tn
- ICT market: \$74 Bn



Strategy: A citizen-centric intelligent information society

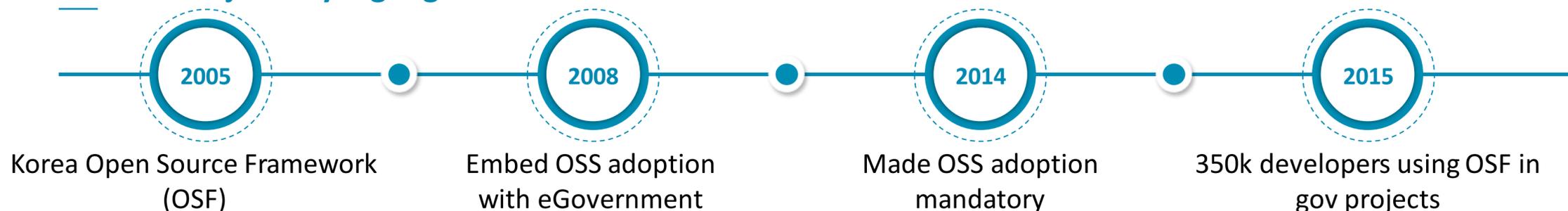
- Adopt OSS emerging technologies to increase ICT competitiveness
- Concentrate human work towards creative & high value ICT jobs
- Increase Korean economic impact by developing local IT ecosystem



Policy: eGovernment Standards Framework

- Mandate OSS adoption
- Enhance SMEs competitiveness
- Reduce dependency on commercial vendors

Recent OSS journey highlights



OSS Adoption Impact



\$58

Million annually saved from shifting desktops to **UNIX** in 2020

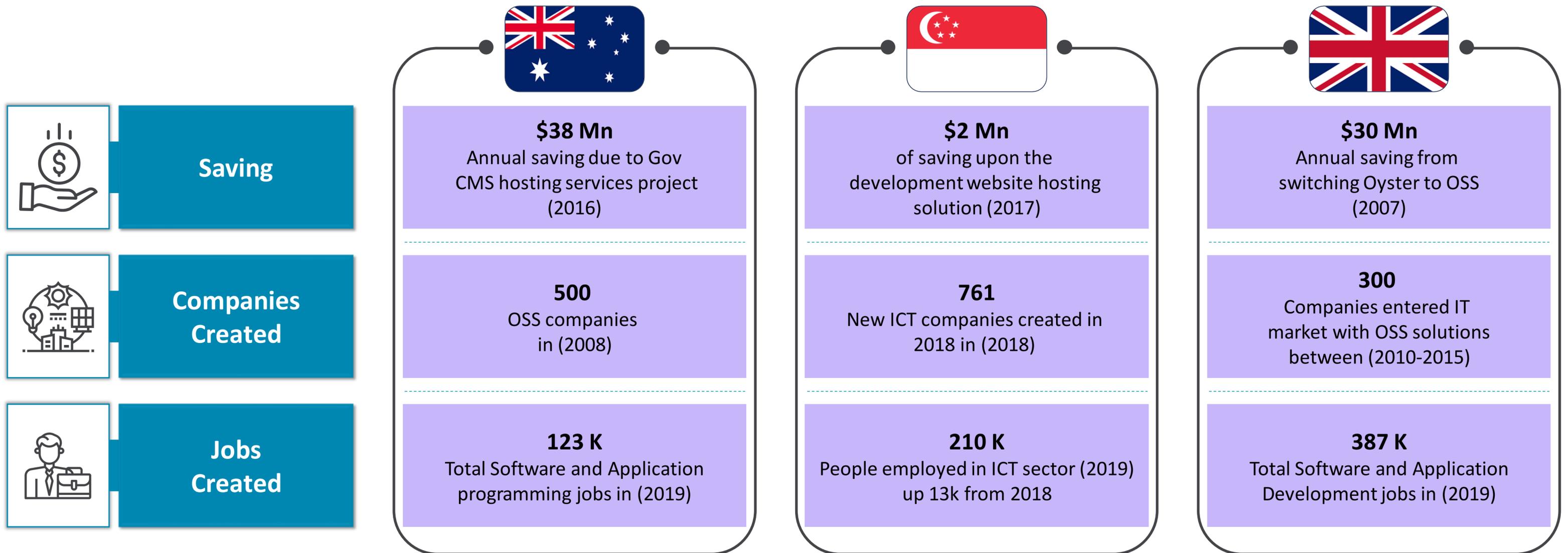
\$1.3

Billion is the budget for 450 **OSS** public sector **projects** in 2014

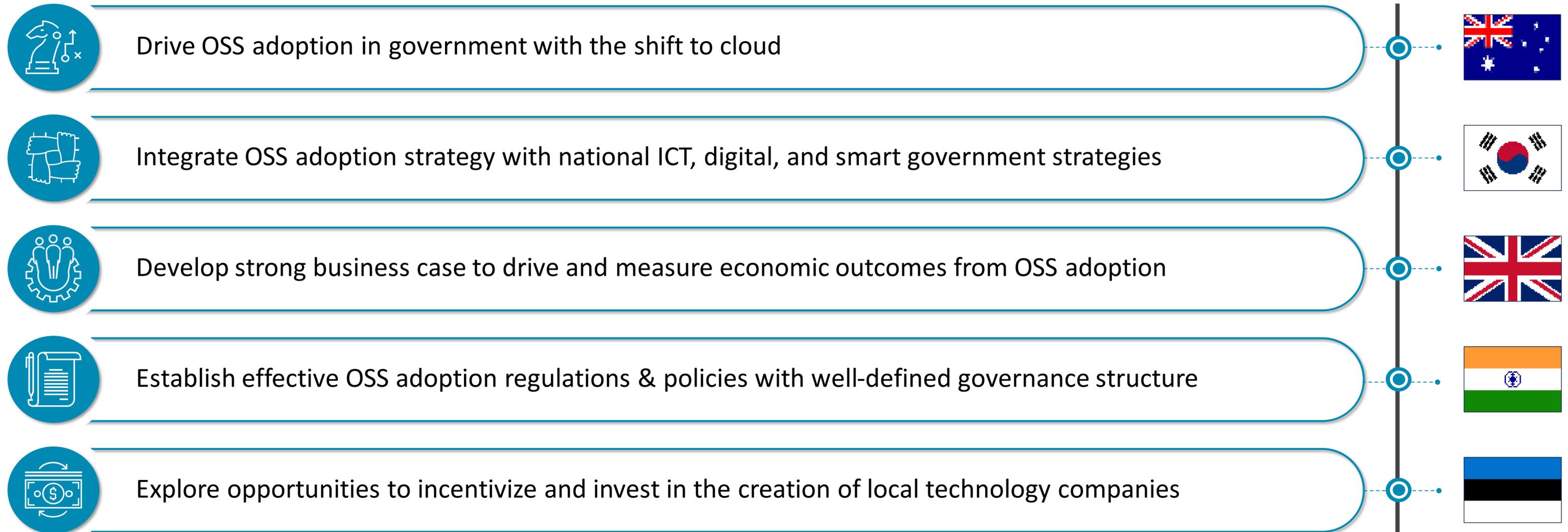
60%

of government **IT projects** are awarded to local **SMEs** in 2014

Benchmark impact of open source software adoption



Lessons learned from leading OSS adopters



3



KSA Drivers for
Developing OSS
Adoption Strategy

KSA IT market size & forecast

KSA IT market size varies depending on market research source.



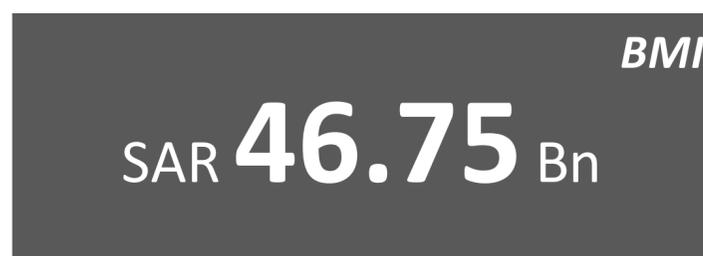
GAR-1



IDC-2



TEC-3



SAU-4



KSA IT market size 2019-2024 (SAR Billion)

Gar-1



Key Drivers

Digital transformation across government & sectors.

Market Shift to cloud and software as a service and new entrants.

Emerging technologies: Artificial Intelligence (AI), blockchain, Internet of Things (IoT), Virtual Reality (VR) and augmented reality (AR).

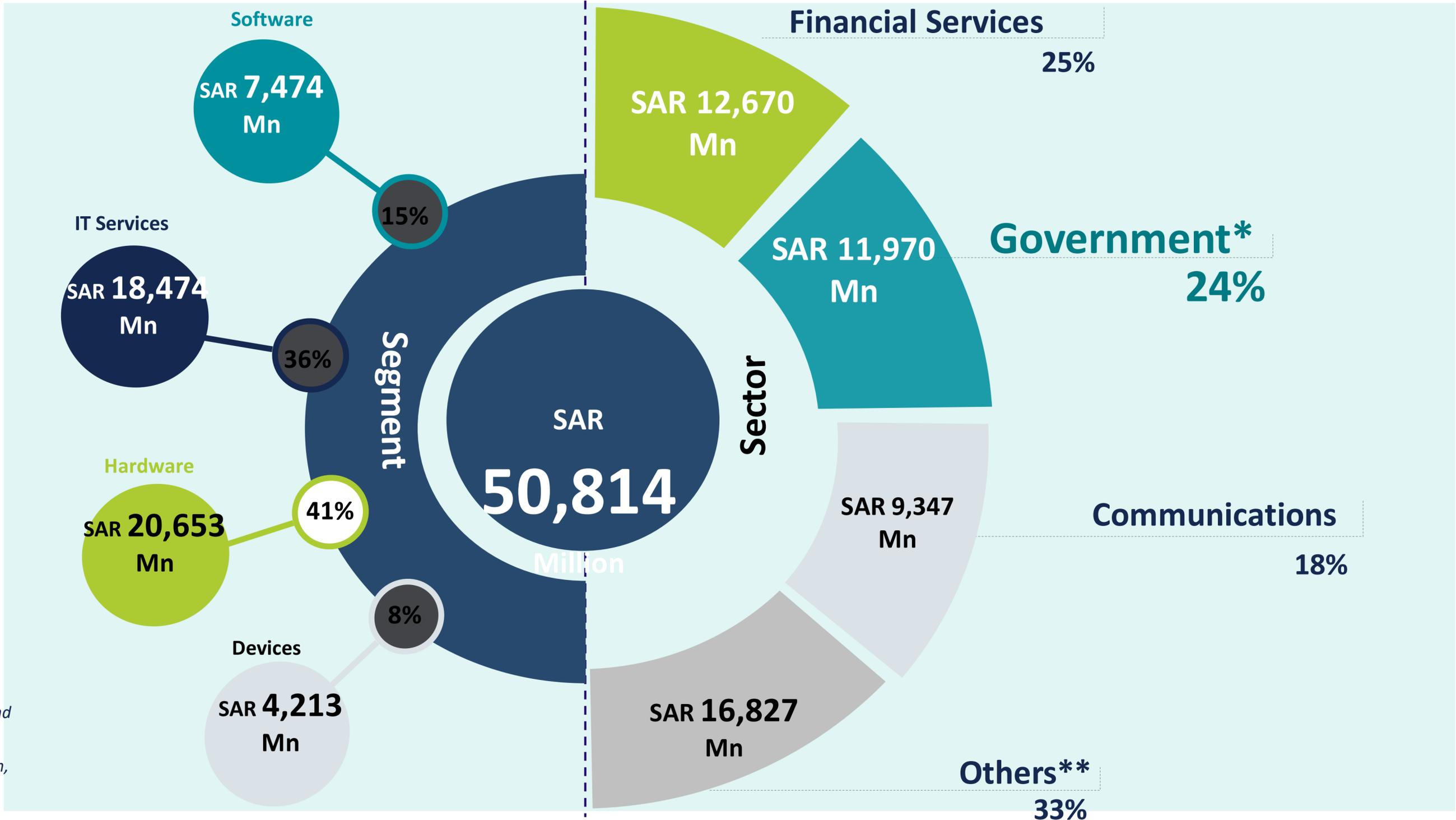
According to Gartner, KSA IT market is estimated to grow at a CAGR of 2.89% (2018-2024)



KSA IT market size across segments & sectors in 2019 (Gartner)

KSA government IT size represents around 24% of total KSA IT market spend totaling SAR 11,970 Mn in 2019.

KSA government IT size is one of the fastest growing sectors and is expected to grow at a 3.2% CAGR (2018-2024) due to high investments in various digital transformation initiatives.



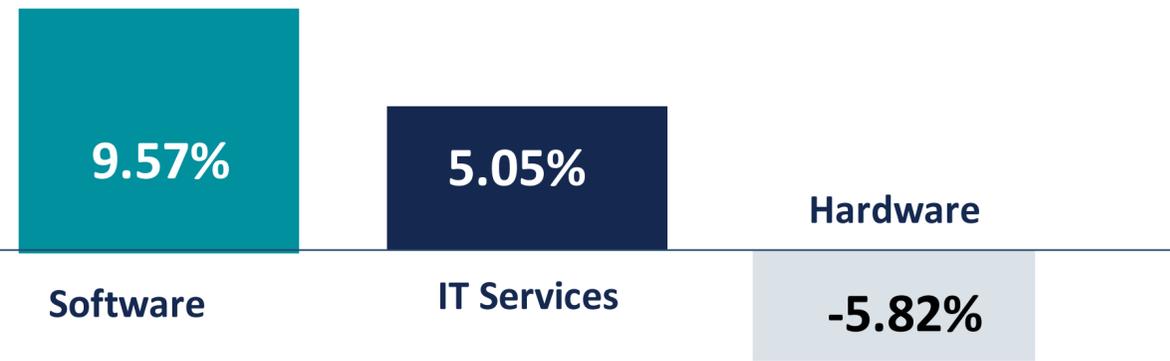
*Government includes Government, Healthcare and Education

**Other include Retails, Wholesale, Transportation, Utilities, Resource and Manufacturing.

KSA software & IT services are expected to grow to be largest segment within IT market (Gartner)

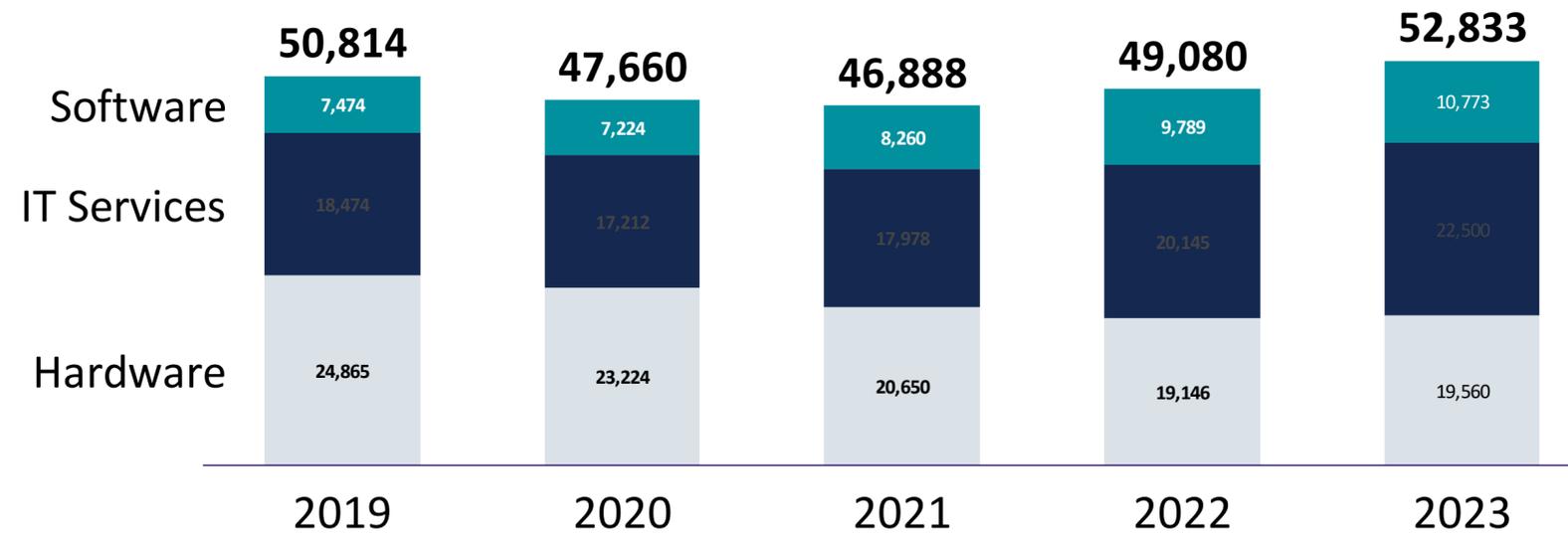
Software & IT services market segment are expected to represent 61% of total IT market

2019-2023 CAGR by Segment



Source: Gartner – Forecast - Enterprise IT Spending by Vertical Industry Market, Worldwide, 2018-2024, 1Q20 Update

IT Spend Forecast by Segment (SAR Mn)



Source: Gartner – Forecast - Enterprise IT Spending by Vertical Industry Market, Worldwide, 2018-2024, 1Q20 Update

Software is expected to drive IT market growth between 2018 and 2024, at a **9.57% CAGR**

Hardware will be a slow growing segment during 2019 and 2023 at **-5.82% CAGR**. By 2023, Its market share is expected to decrease by **11.9%**

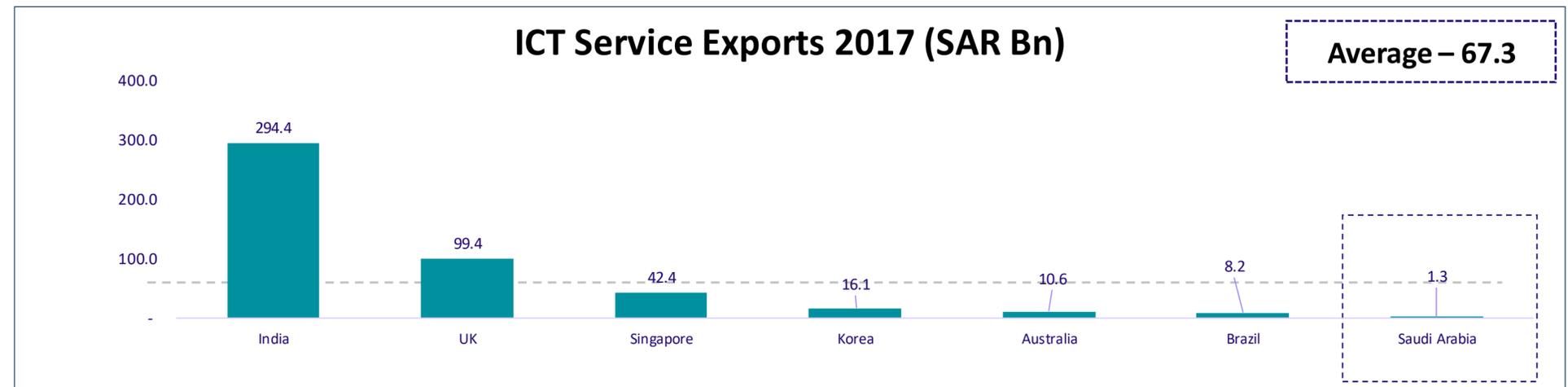
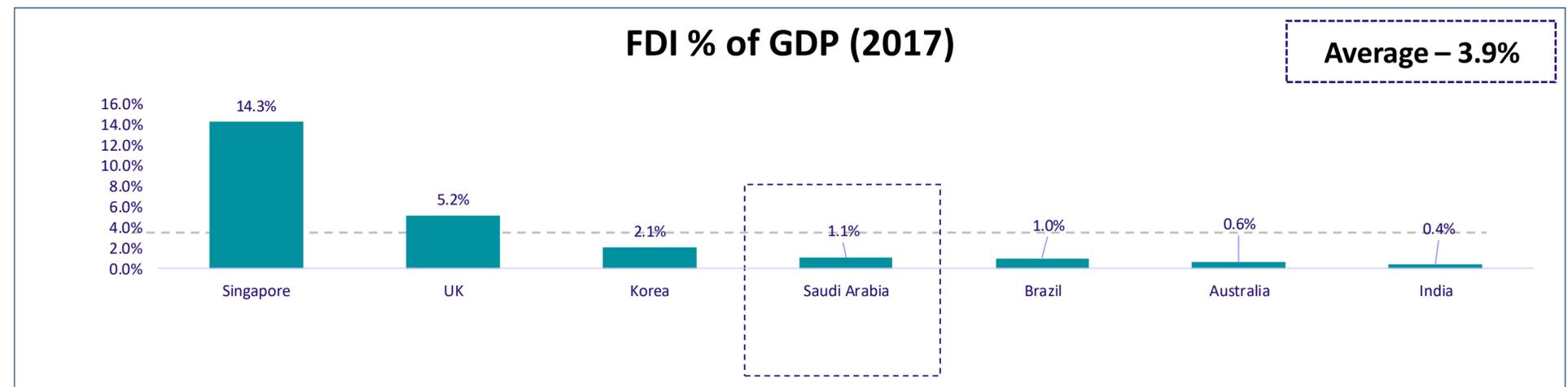
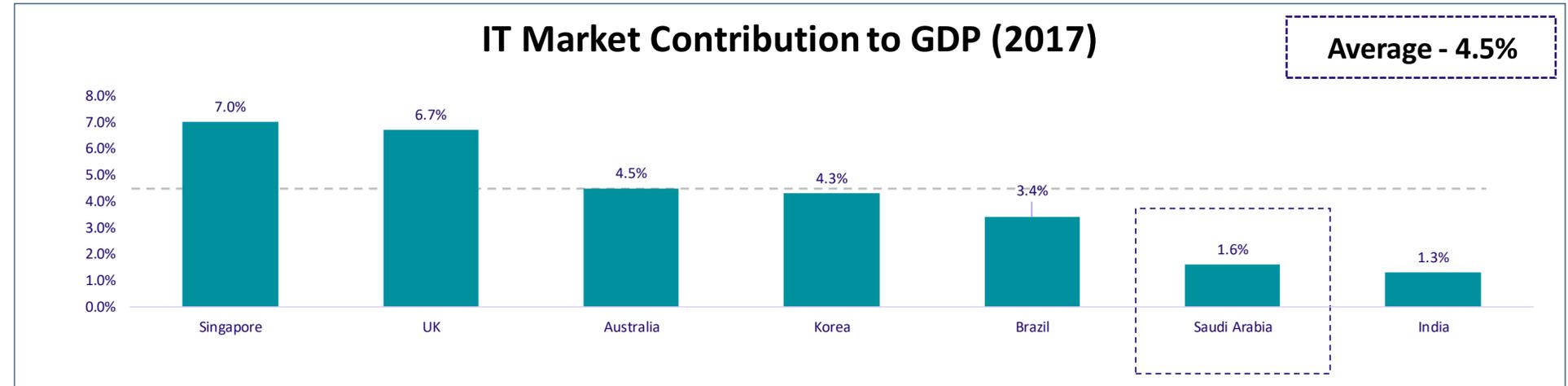
By 2023, IT services are expected to dominate the overall IT market at a market share of **42.6%**

KSA IT market contribution to GDP and % FDI in comparison with other benchmarked countries

Leading benchmarked countries have **higher** contribution of IT market to GDP than KSA

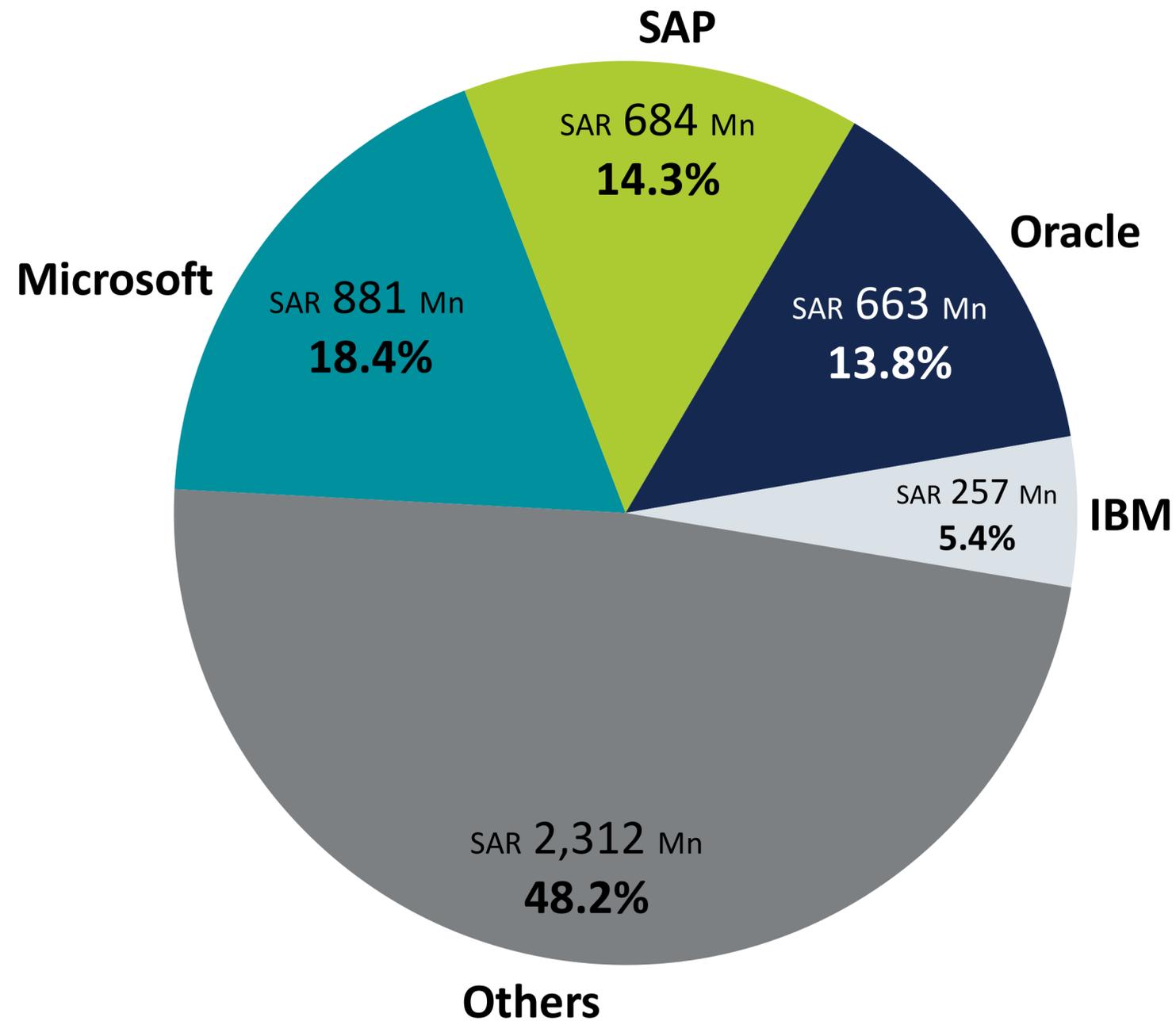
KSA FDI contribution to GDP is **lower** than average of leading benchmarked countries

KSA ICT exports of ICT services is **lower** than average of leading benchmarked countries



KSA commercial software market share among leading vendors (Gartner)

Four commercial software vendors have 51.82% of KSA software market share out of 169 software vendors (2019)

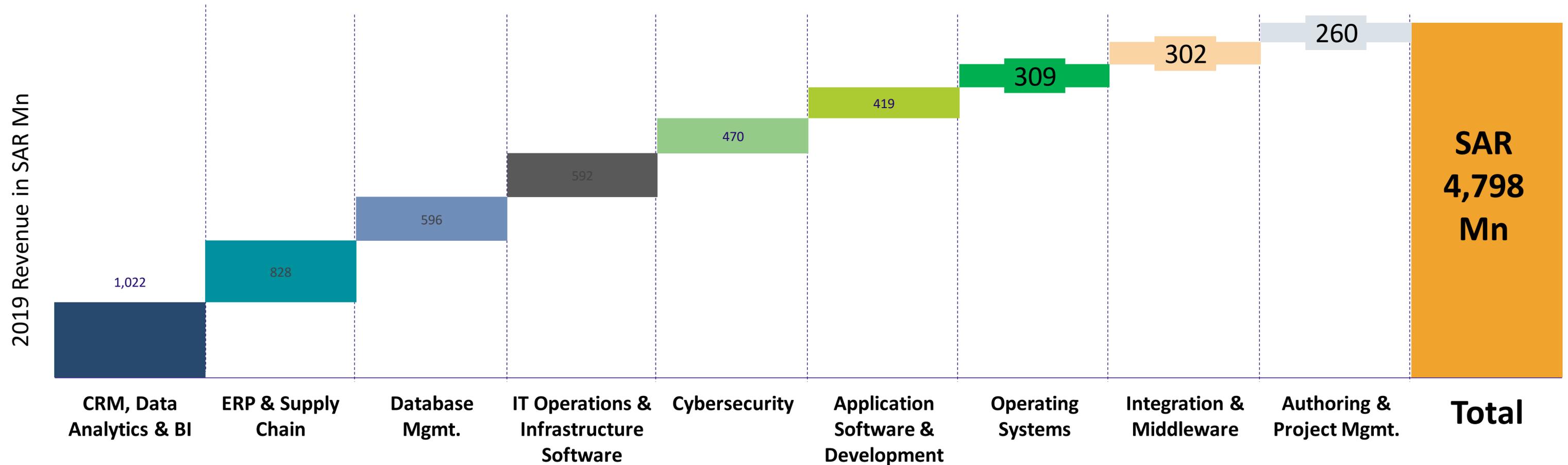


Highlights

- Total commercial software market size is SAR **4,798 Mn** by vendors revenue
- There are **4** key players in KSA software market representing **51.82%** of total market share. While other **165** commercial software vendors make up the other **48.18%** market share
- Total revenues generated by the **4** key players is SAR **2,485 Mn**

KSA commercial software market across key 9 categories (Gartner)

KSA software market revenue by vendors revenues per software category (2019)



Commercial software vendor revenues in 2018 were SAR **4,277 Mn**



Vendors commercial software revenues grew at rate of **12%**



Commercial software vendor revenues in 2019 were SAR **4,798 Mn**

Context of KSA government from technology & IT spend

KSA Smart Government

DGA's e-Government strategy focuses on developing a world-class Smart Government that is capable of:

- Delivering exceptional services to its citizens
- Transforming the technology landscape
- Achieving better IT investment RoI

Government Technology Stack

Customer Experience



Integration & BPM



Applications



Operating Systems & Databases

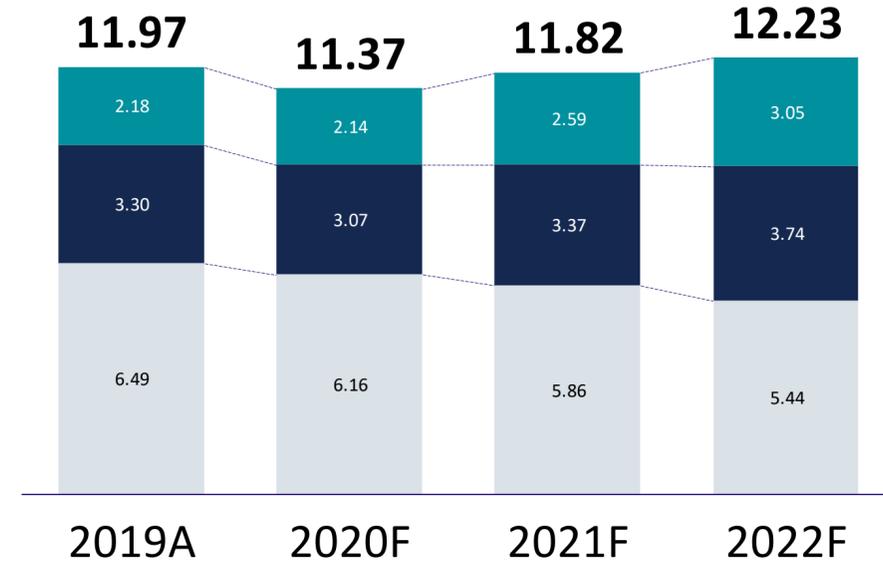


Hardware & ICT Infrastructure



- Software
- IT Services
- Hardware

Government IT Spend (SAR Bn)



Government Software Landscape

- Total government commercial software market size is SAR 2,140 Mn by vendors revenue in 2020



- Four software vendors represent 51.8% of KSA software market share
- Four software vendors represent majority of government technology stack

Analysis of KSA government IT spend in comparison to leading governments reveal key insights & opportunities for KSA to shift its IT spend

Today, KSA government IT spend is based on importing commercial software and hardware technologies from international companies representing about 80% of IT market size. In addition, four commercial software vendors have about 51.8% of the market.

Compared to benchmarked countries, KSA government IT spend is characterized by high spend on hardware, and low spend on IT services.

KSA's IT contribution of 1.6% of contribution to GDP based on world bank data (2017) figures to is lower than benchmarked countries further revealing the challenges of associated with the underdevelopment of ecosystem and lack of IT companies that can add value to KSA digital economy.

1

Total government IT spend of **SAR 11.97 Bn** covering software, IT services, and hardware in 2020

2

80% of KSA government IT spend goes to international companies. Four commercial software vendors (IBM, Microsoft, Oracle, & SAP) represent **51.8%** of overall software spend

3

High hardware spend of **SAR 6.49 Bn** representing **54%** of KSA government IT spend, about double the average hardware spend percentage of **27%** by leading benchmarked governments

Software spend of **SAR 2.18 Bn** representing **18%** of KSA IT spend is within the same average software spend percentage of **17%** by leading benchmarked governments

5

Low IT services spend of **SAR 3.3 Bn** representing **28%** of KSA government IT spend, about half of the average IT services spend percentage of **56%** by leading benchmarked governments

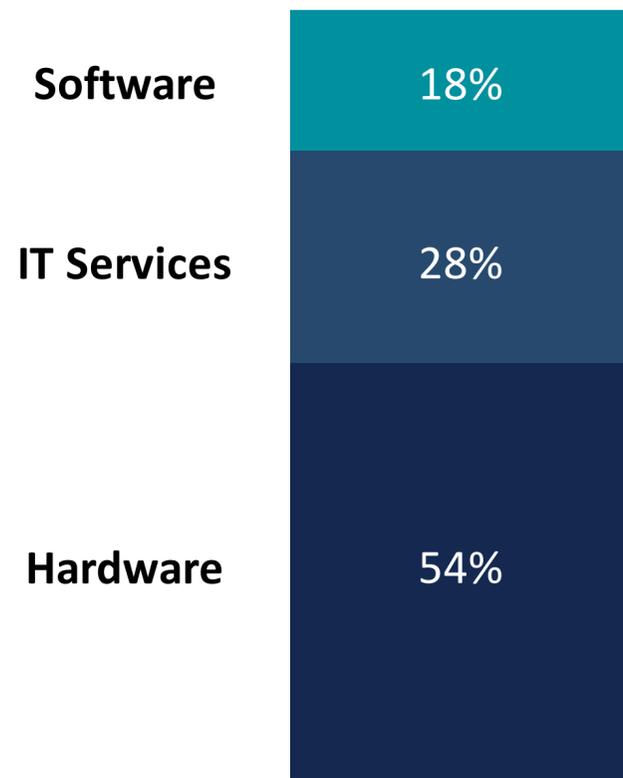
KSA government IT spend comparison with IT spend from other benchmarked countries

Software spend of **18% is in line** with benchmark average

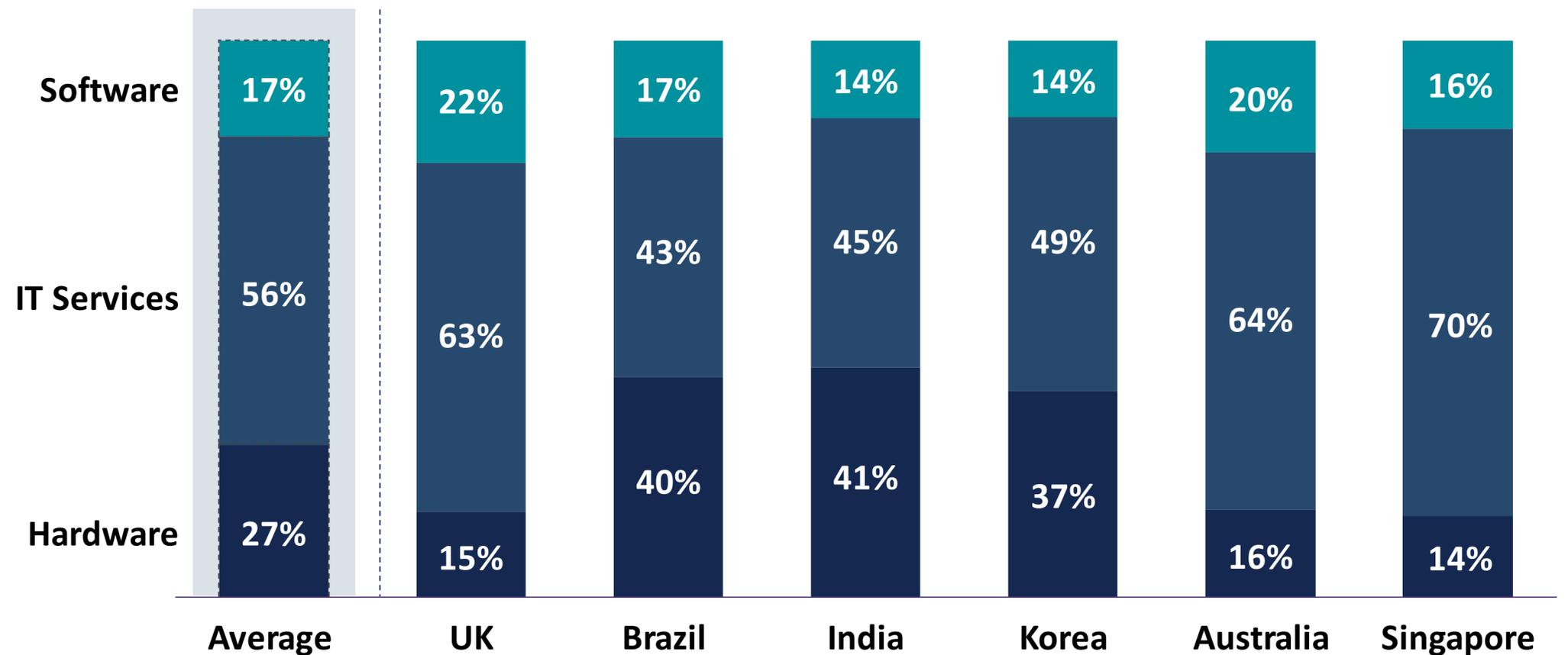
IT services spend of **28% is below** benchmark average

Hardware spend of **54% is above** benchmark average

KSA IT Spend Segments % (2020)



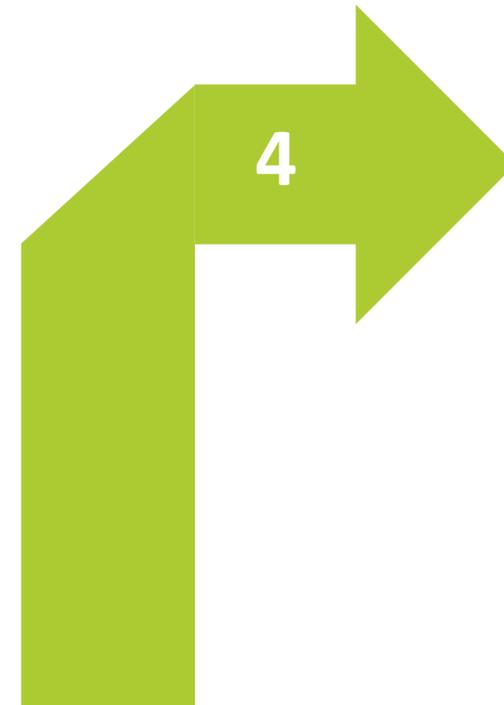
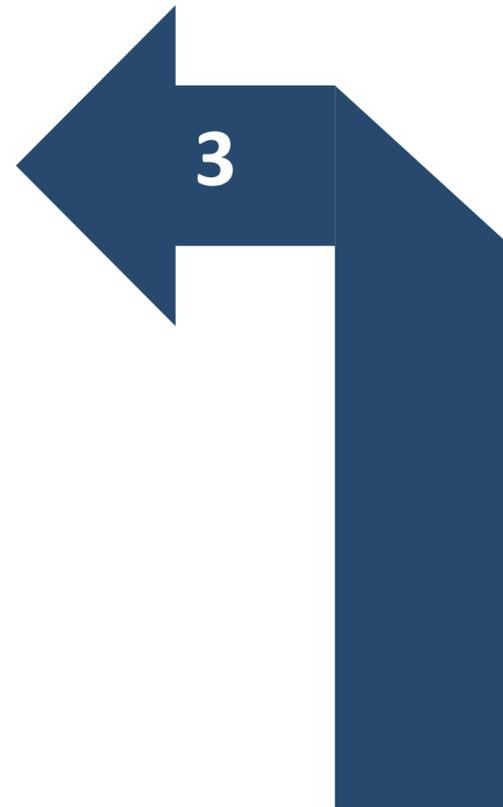
Benchmarked Countries IT Spend Segments % (2020)



KSA IT ecosystem at a glance

KSA IT market have evolved around international software and hardware vendors selling and implementing their technology products to the market.

With increased demand of technology and solution complexity, KSA IT market has grown more reliant on international system integrators delivering integrated solutions specially to government.



Local IT companies and IT service providers have emerged to represent the international vendors in the KSA market as well as sell and implement their the products and technologies to KSA organizations.

As local IT companies have focused on selling international vendors' products and technologies, their focus have become on on sales, IT support and operations.

The global technology landscape is changing & impacting the way organizations & government adopt technologies including OSS

Adoption of OSS

Organizations worldwide are adopting OSS to eliminate software licensing costs, and reduce overall technology costs

Shift to cloud

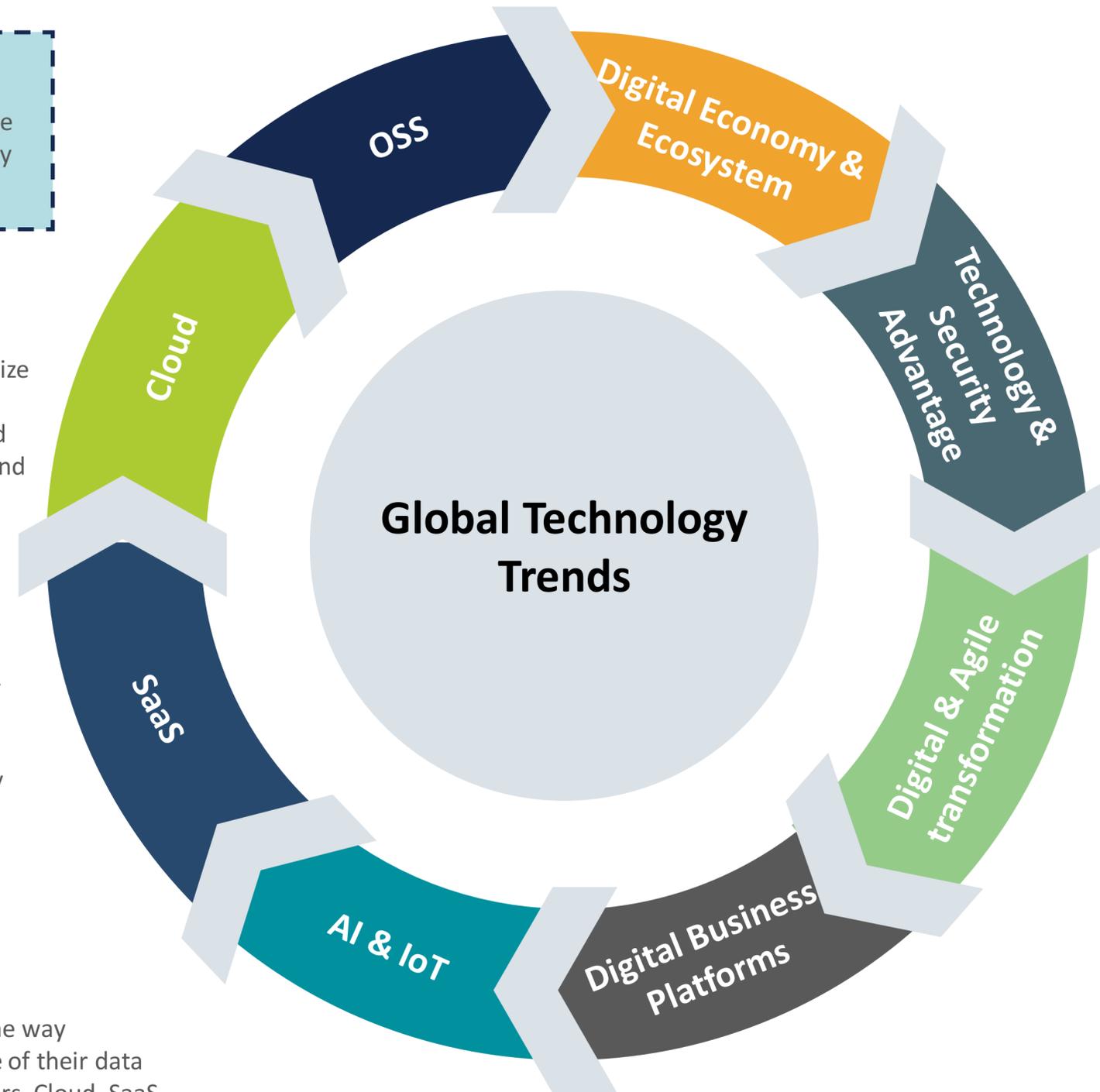
Cloud computing enabled by open source software is providing an opportunity for organizations to modernize software, data, and IT environment driven to gain efficient IT operations, reduced IT costs, and enhanced IT security. The shift to cloud include public, private, and hybrid cloud.

SaaS

The rapid diffusion of cloud computing with Software-As-A-Service (SaaS) is changing the way commercial software is developed, distributed, and implemented. This is having profound implications for the IT industry and software vendors and the way they deliver their software.

AI & IoT

New technologies including AI and IoT are changing the way organizations build their systems taking full advantage of their data and creating new value and services for their customers. Cloud, SaaS, and OSS are fueling adoption new technologies as they make them easily usable.



Emergence of digital business platforms

With cloud computing, SaaS, and OSS, organizations are developing digital business platforms that provide combined business and technology capabilities to provide business services to customers or other organizations in embedding their business models.

Technology & security as competitive advantage

With the rapid disruption of technology and security industry, the focus is increasingly on the creation of digital assets using OSS agile tools with no dependence on vendors. From government viewpoint, this creates a competitive advantage both from economic and national security perspectives.

Digital & agile transformation

With technology disruption across several industries, organization are undertaking digital and agile transformation to enable them to change their businesses with customers being at the center. Cloud, SaaS, and OSS are at the heat of digital innovation and customers experience.

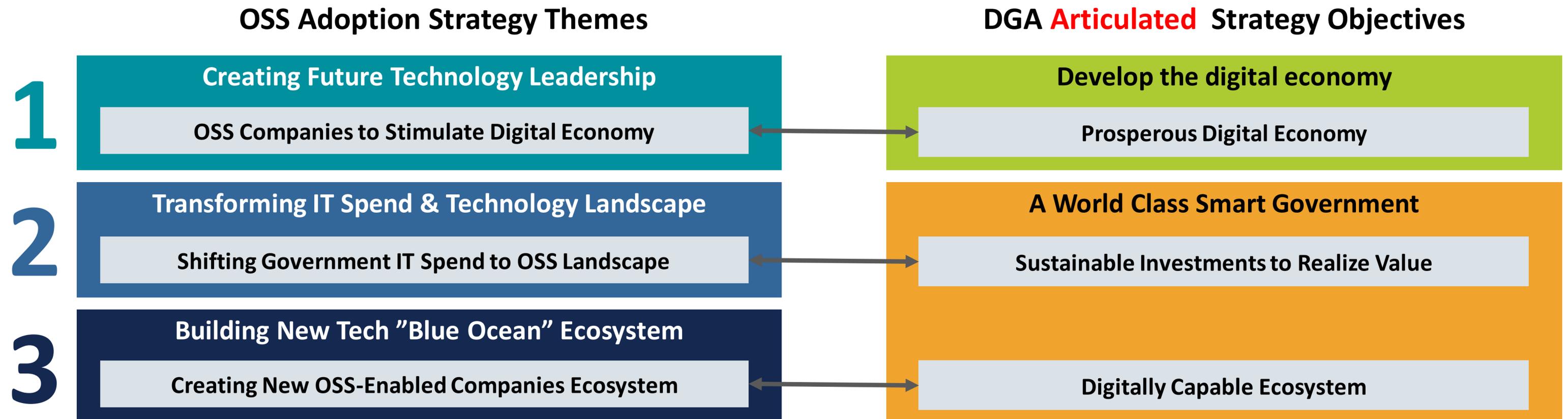
Digital economy & ecosystem

Governments are taking full advantage of digitization to realize benefits with digital technologies, drive innovation, and fuel jobs and economic growth. The digital economy also permeates all aspects of society, influencing the way people interact and contributing to society.

Business case for OSS adoption is centered around driving & measuring key outcomes for future technology leadership, IT spend, & NewTech Ecosystem

Given the analysis of “inefficient government IT spend,” the context of the “underdeveloped IT ecosystem,” and the limited contribution to KSA digital economy and GDP, KSA should not consider adoption of OSS as a purely cost-saving effort (such as avoiding commercial software licenses or as an attempt to reduce commercial software spend only). While the adoption of open source software instead of commercial software licenses can result in potential savings, this approach of OSS adoption has shown limited value according to benchmarked governments, where cost savings were limited in many cases due to increased IT services costs and OSS vendor support. More importantly, the savings-driven approach of OSS adoption is not in line with the recent OSS and technology trends that focus on shift to cloud, driving innovation, and enabling digital ecosystem, which are collectively important for KSA.

With this view, the business case for OSS adoption, in line with the strategy and DGA’s strategic objectives, is centered around the following:



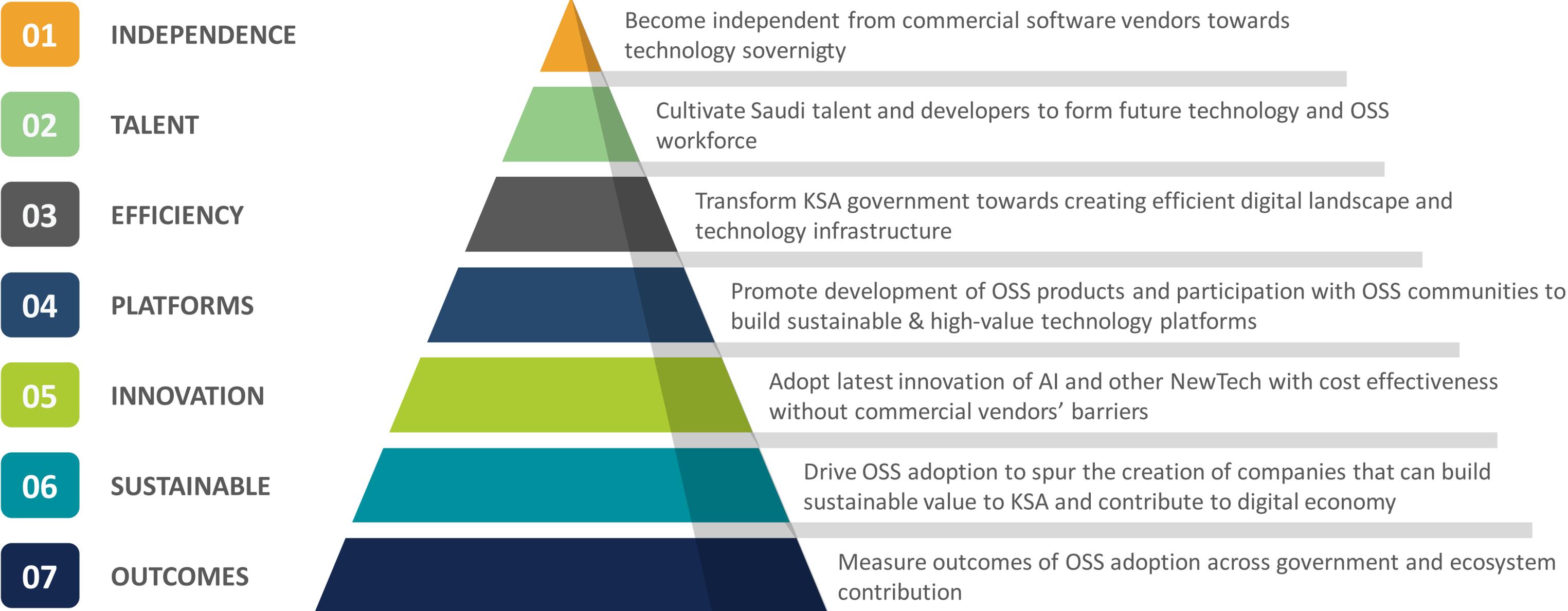
4



OSS Adoption Strategy

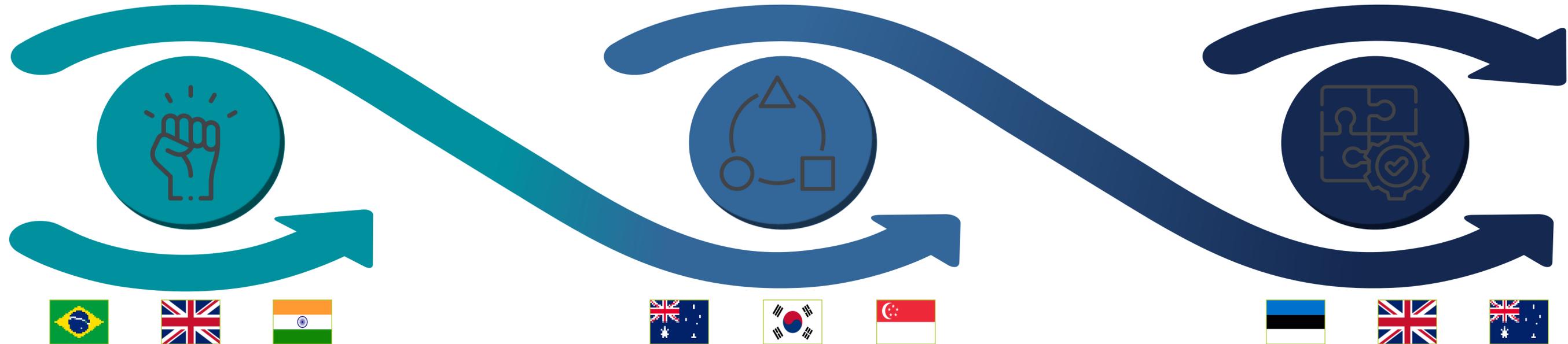
OSS adoption strategy – vision and objectives

Vision: Create an efficient digital landscape for KSA government & drive the buildup of sustainable new tech ecosystem that contributes to digital economy



OSS adoption strategy is all about creating new vision & leadership with themes for sustainable technology Investment and NewTech ecosystem

KSA OSS adoption is not about choosing free software vs commercial software; but it is about transforming KSA government towards efficient technology landscape and building new ecosystem



CREATING FUTURE TECHNOLOGY LEADERSHIP

Establishing technology vision and leadership is critical for open source software adoption strategy as such technology presents new paradigm for implementing software technologies based on technology talents, developers, and communities. With the emerging technology trends and changes in digital industry, KSA can use OSS adoption to drive future technology vision and leadership centered around new tech ecosystem of new generation of OSS companies that will contribute to digital economy

TRANSFORMING IT SPEND & TECHNOLOGY LANDSCAPE

Transforming technology landscape of KSA government from commercial software towards an efficient OSS digital landscape and technology infrastructure is a crucial step to achieve OSS adoption. Government IT spend efficiency depends on building efficient digital landscape and technology infrastructure. Additionally, such transformation of digital landscape needs to be aligned with shift to cloud and leverage new emerging technologies including AI and IoT towards smart government transformation

BUILDING NEW TECH "BLUE OCEAN" ECOSYSTEM

Adoption of open source software requires OSS talent and workforce, active involvement with OSS communities and companies with OSS expertise and talent. Consequently, KSA needs new tech OSS ecosystem comprised of the above capabilities that will create and deliver digital products and services with higher value. We refer to this new tech ecosystem is referred to as "Blue Ocean" ecosystem to be designed and built on the premise of "new value creation framework" followed by global successful organizations

OSS adoption strategy is comprised of three themes designed to enable broader technology transformation & building NewTech ecosystem

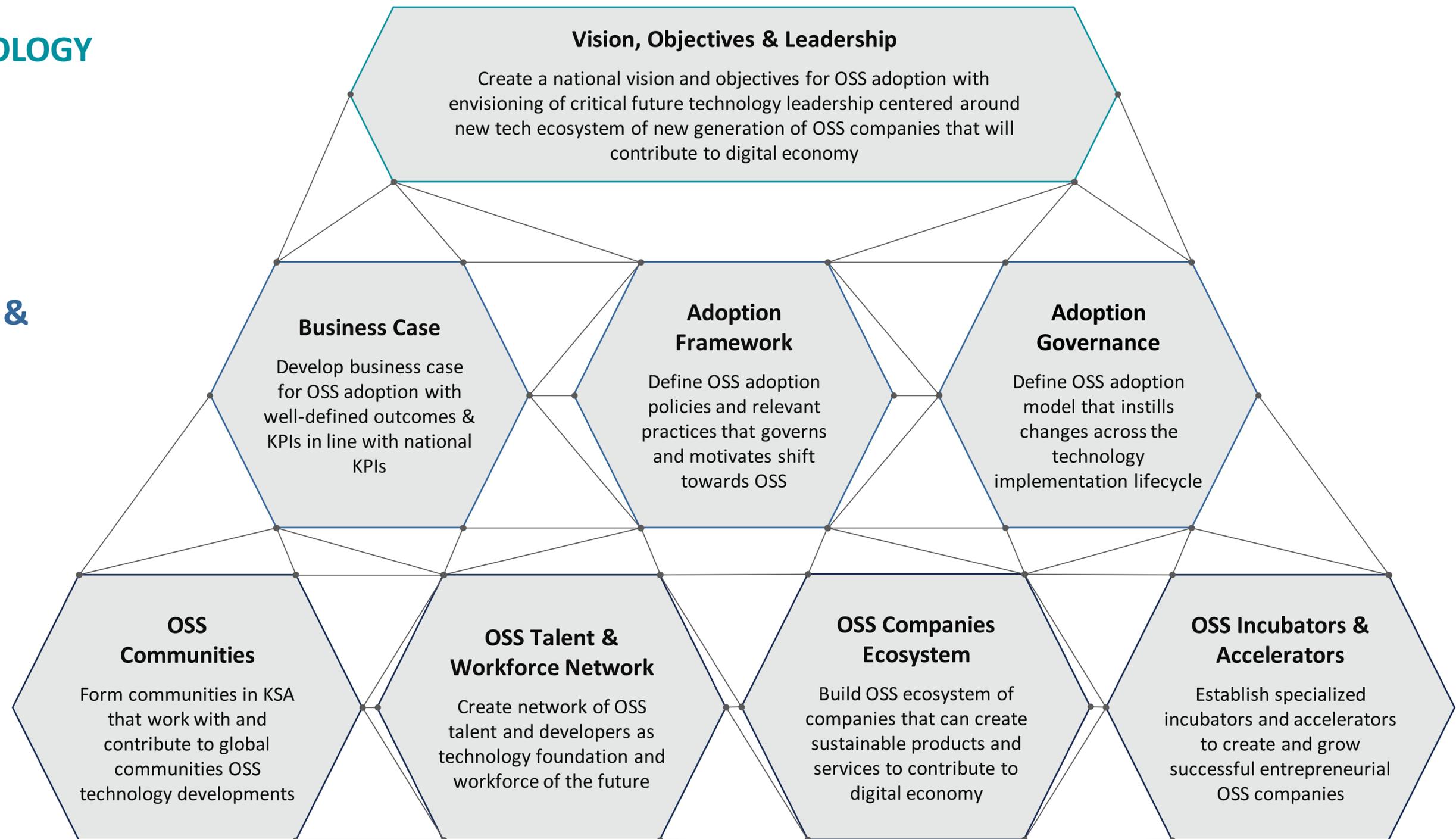
CREATING FUTURE TECHNOLOGY LEADERSHIP



TRANSFORMING IT SPEND & TECHNOLOGY LANDSCAPE



BUILDING NEW TECH "BLUE OCEAN" ECOSYSTEM



OSS adoption strategy at glance

Vision	Objectives	Themes	Areas	2022 Initiatives 2026		
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Create an efficient digital landscape for KSA government & drive the buildup of sustainable new tech ecosystem that contributes to digital economy</p>	<p>Independence</p> <p>Talent</p>	<p>Creating Technology Future Leadership</p>	<p>Government OSS & IT Services Demand</p>	<p>Establish Integrated Technology Investment & Digital Economy Program</p>	<p>Activate Integrated Technology Investment & Digital Economy Program</p>	<p>Scale Integrated Technology Investment & Digital Economy Program</p>
			<p>Market OSS & IT Services Supply</p>			
			<p>Digital Economy Contribution</p>			
	<p>Efficiency</p> <p>Platforms</p>	<p>Transforming IT Spend & Technology Landscape</p>	<p>Business Case</p>	<p>Establish Center for OSS Adoption Program</p>	<p>Activate Center for OSS Adoption Program</p>	<p>Scale Center for OSS Adoption Program</p>
			<p>Adoption Framework</p>			
			<p>Adoption Governance</p>			
	<p>Innovation</p> <p>Sustainable</p> <p>Outcomes</p>	<p>Building NewTech “Blue Ocean” Ecosystem</p>	<p>OSS Communities</p>	<p>Establish NewTech Ecosystem Program</p>	<p>Activate NewTech Ecosystem Program</p>	<p>Scale NewTech Ecosystem Program</p>
			<p>Talent & Workforce Network</p>			
			<p>OSS Companies Ecosystem</p>			
			<p>OSS Incubators & Accelerators</p>			

TRANSFORMING IT SPEND & TECHNOLOGY LANDSCAPE

Business Case

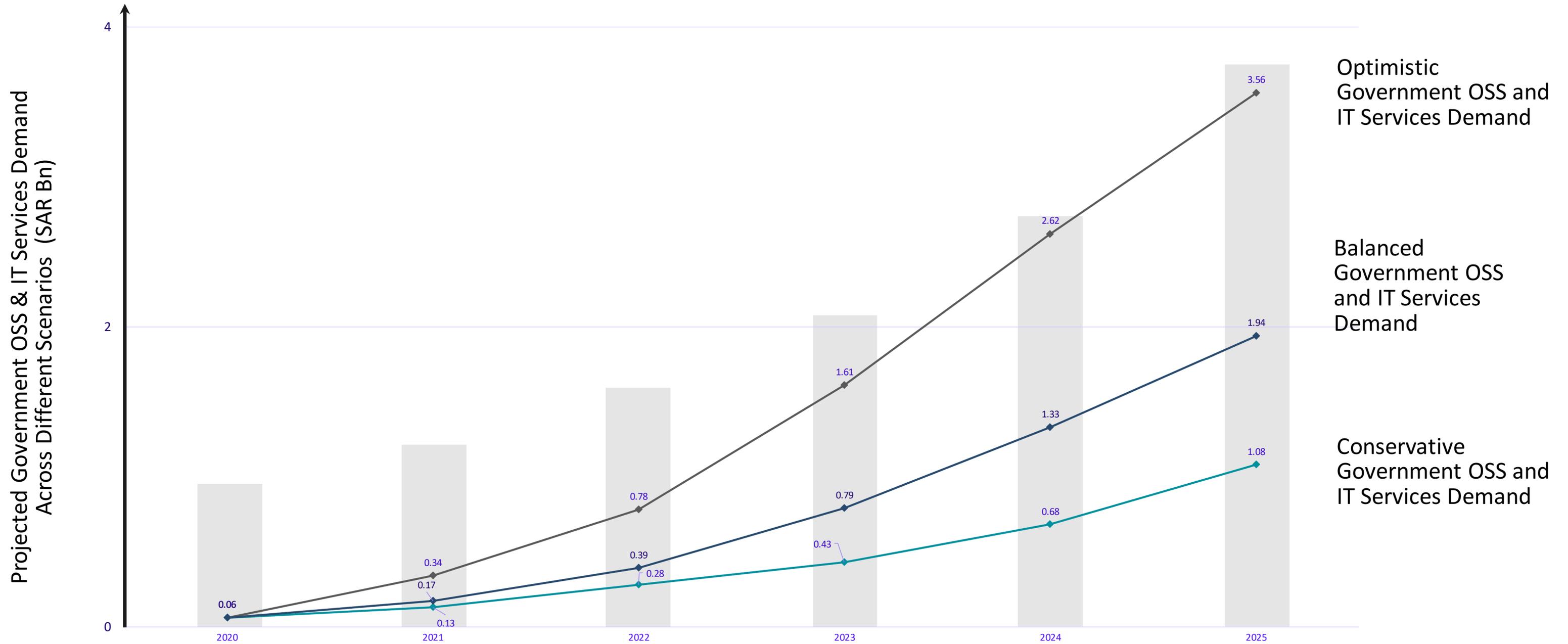


Business case for OSS adoption comprised of three business cases & modeled across three scenarios (conservative, balanced, & optimistic)

Three business cases were developed for the OSS adoption strategy that cut across the three strategy themes. The business cases were modeled across three scenarios driven by the projected government OSS and IT services demand in 2026. This section focuses on the conservative case. However, the balanced & optimistic cases are provided in appendix B.

OSS Adoption Business Cases			Business case scenarios based on projected OSS and IT services demand by 2026
1. Creating Future Technology Leadership Focus on creating future technology leadership through increasing government demand and market supply for OSS & IT services, with focus on contribution to the digital economy	2. Transforming IT Spend & Technology Landscape Transforming government IT spend across software, hardware and IT services with shift towards OSS, cloud and high value IT services	3. Building New Tech "Blue Ocean" Ecosystem Building a NewTech ecosystem through creation of companies and jobs that support demand for OSS and IT services	Conservative SAR 1.08 Bn
			Balanced SAR 1.94 Bn
			Optimistic SAR 3.56 Bn

Business case scenarios are driven by projected government demand for OSS & IT services for 2022-2026 (conservative, balanced, & optimistic)



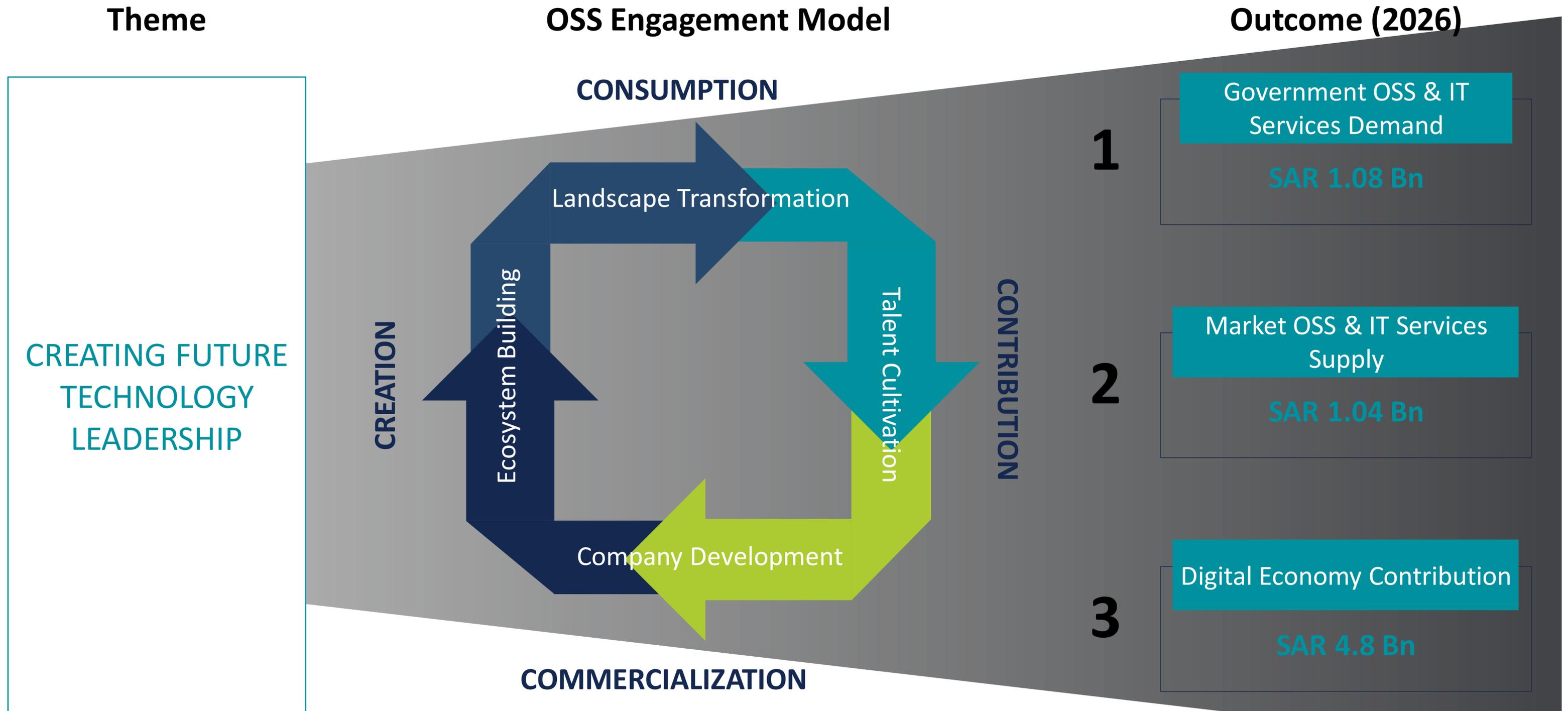
Creating Future Technology Leadership outcomes (2022-2026) – highlights across three scenarios

The future technology landscape business case is modeled across the aforementioned scenarios with focus on the conservative scenario. The table below represents the highlights across the three scenarios.

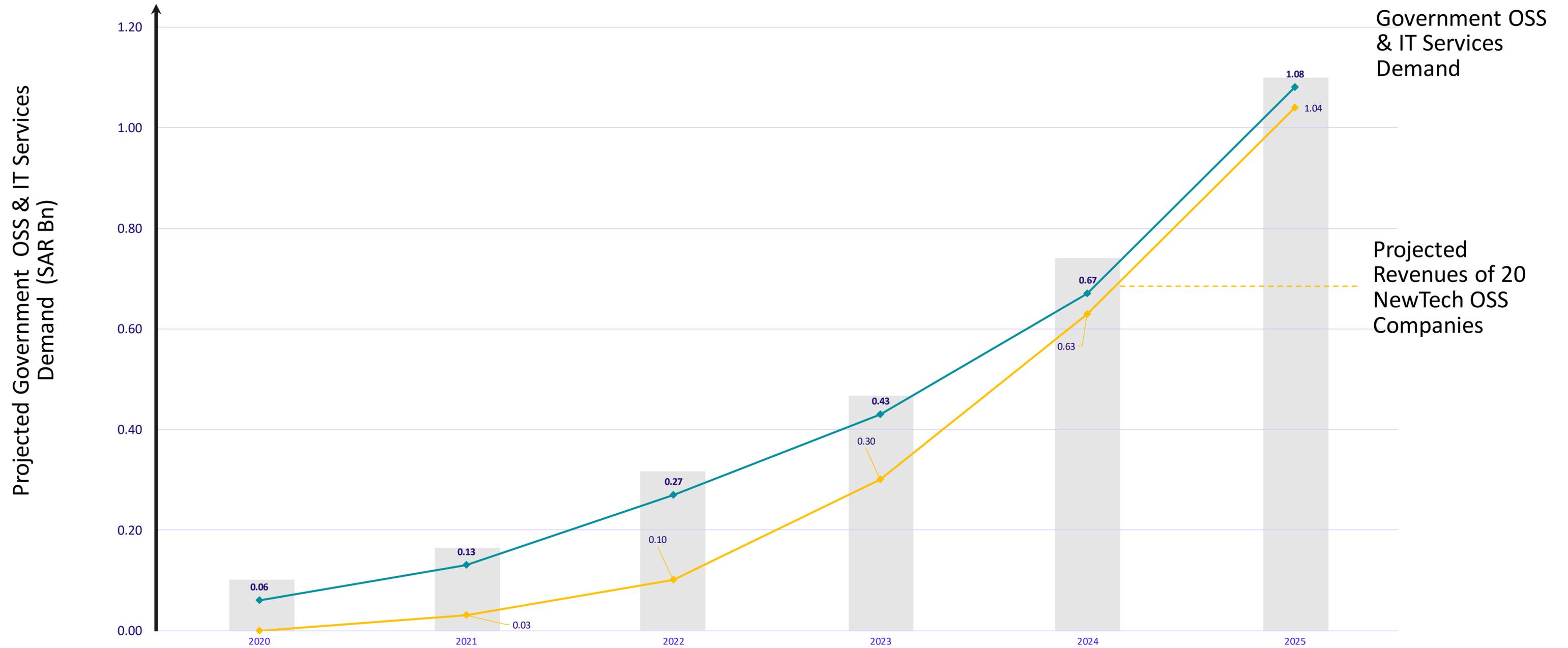
Business Case Scenario	Outcome (2026)		
	Government OSS & IT Services Demand	Market OSS & IT Services Supply	Digital Economy Contribution
Conservative	SAR 1.08 Bn	SAR 1.04 Bn	SAR 4.8 Bn
Balanced	SAR 1.94 Bn	SAR 1.94 Bn	SAR 7.9 Mn
Optimistic	SAR 3.56 Bn	SAR 3.68 Bn	SAR 15.7 Bn

Refer to appendix B for more details on balanced and optimistic business cases

Conservative business case: Creating Future Technology Leadership – Outcomes (2022 – 2026)



Conservative business case: Demand projections for OSS & IT services for 2022-2026



Transforming IT Spend & Technology Landscape outcomes (2022-2026) – highlights across three scenarios

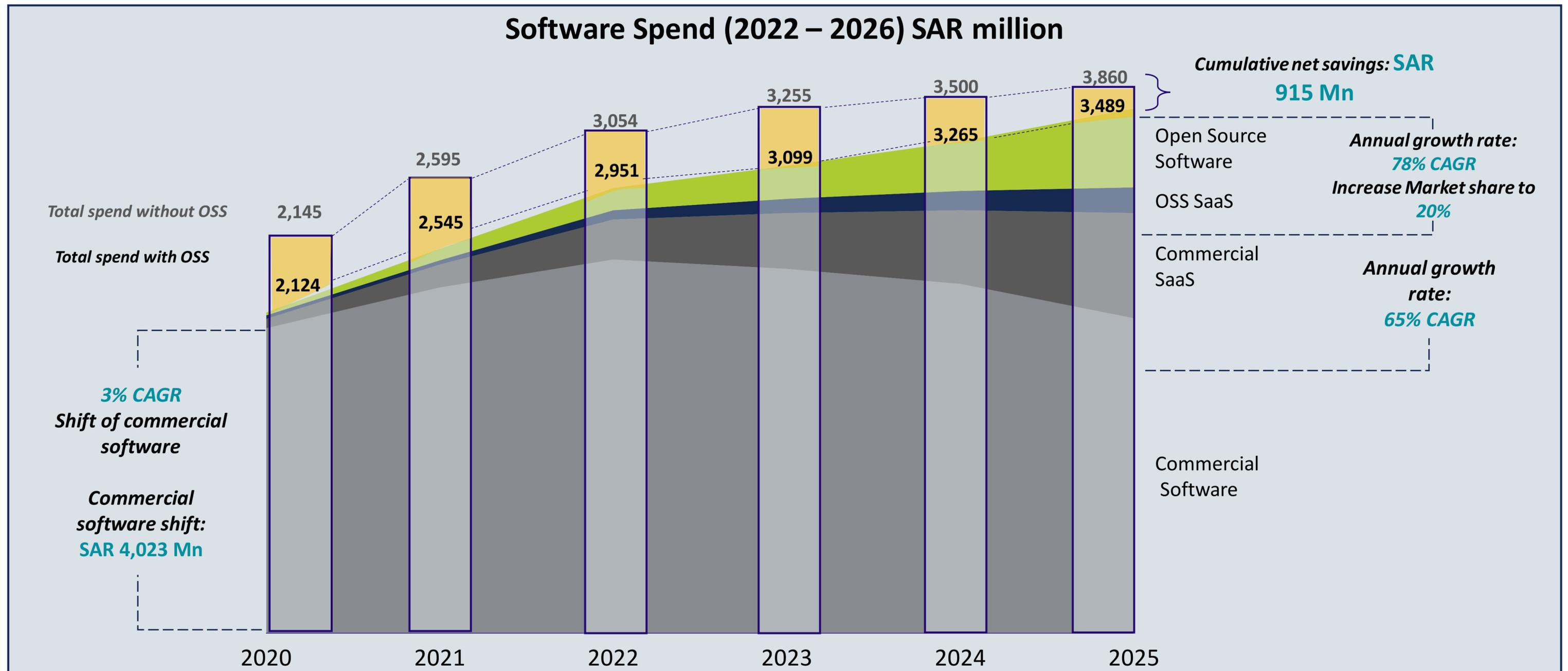
Transforming IT Spend & Technology Landscape business case is modeled across the aforementioned scenarios with focus on the conservative scenario. The table below represents the highlights across the three scenarios.

Business Case Scenario	Outcome (2026)		
	Move to OSS	Shift to Cloud	Change IT Services
Conservative	SAR 915 Mn Net Savings	SAR 1,671 Mn Net Savings	SAR 264 Mn Shift in IT Staff Spend
Balanced	SAR 1,593 Mn Net Savings	SAR 3,342 Mn Net Savings	SAR 571 Mn Shift in IT Staff Spend
Optimistic	SAR 2,917 Mn Net Savings	SAR 4,178 Mn Net Savings	SAR 844 Mn Shift in IT Staff Spend

Refer to appendix B for more details on balanced and optimistic business cases

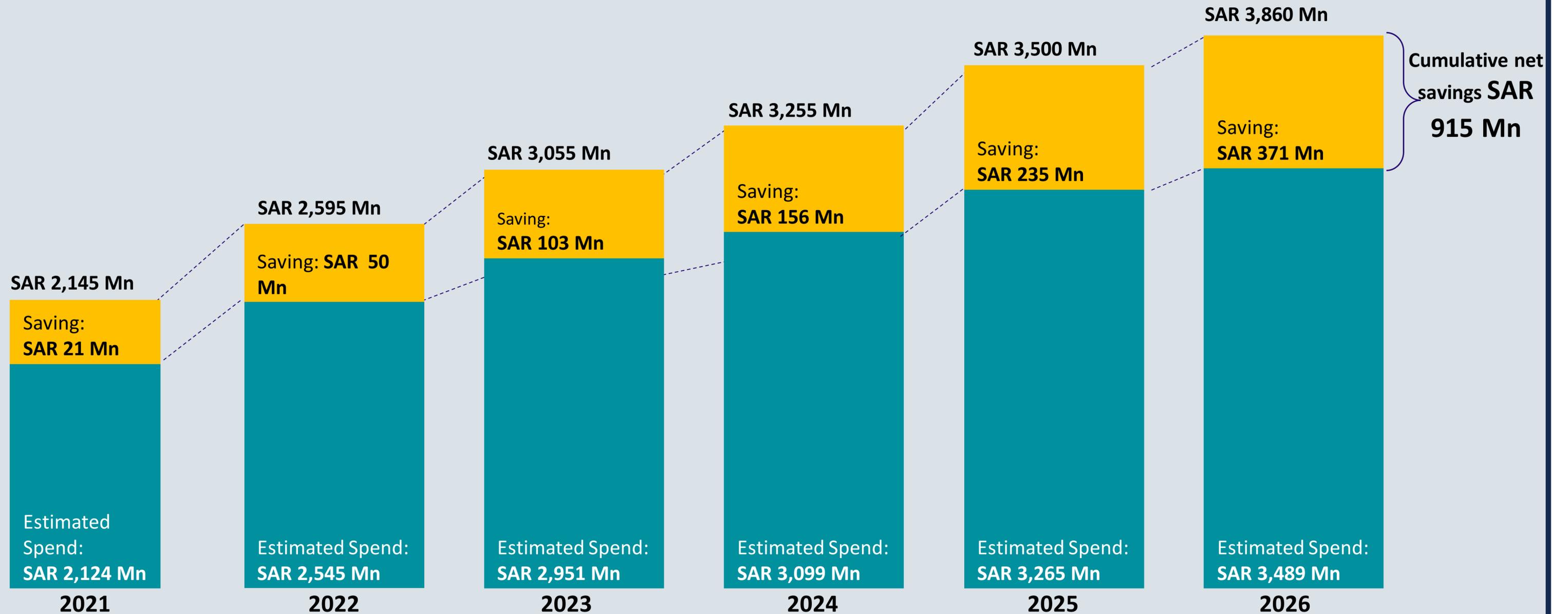
Conservative business case: Transforming IT Spend & Technology Landscape – software spend

Move software spend to OSS, OSS SaaS, and commercial SaaS



Conservative business case: Transforming IT Spend & Technology Landscape – software spend saving (2022 – 2026)

Annual net saving as a result of moving from commercial software to open source (2022-2026)



Conservative business case: Transforming IT Spend & Technology Landscape – software spend saving across DGA software classification (2022 – 2026)

The following table represents the annual savings as a result of shifting from commercial software towards OSS & OSS SaaS across the following software classification (2022-2026)

	2021	2022	2023	2024	2025	2026	Cumulative Net Savings
Software savings (SAR Mn)	21	50	103	156	235	371	915
Customization & Development	0.12	0.28	0.57	0.87	1.31	2.07	5
End-user office Software	0.37	0.89	1.83	2.78	4.19	6.60	16
Middleware	5.86	14.18	29.21	44.48	66.96	105.49	260
System Software	6.11	14.79	30.47	46.39	69.84	110.03	272
Enterprise Systems	8.14	19.70	40.57	61.78	93.00	146.52	362

* Total savings are rounded to the nearest million

Conservative business case: Transforming IT Spend & Technology Landscape – software spend KPIs (2022 – 2026)

Increase Efficiency of Government Software Spend



Target

0.91
Bn SAR

Total net savings of software due to OSS over 5 years



Target

20%

Market spend share of open source software and OSS SaaS spend in 2026



Target

4.0
Bn SAR

Total shift of commercial software spend over 5 years



Target

78%
CAGR

Annual growth of open source software adoption over 5 years



Target

65%
CAGR

Annual growth of commercial SaaS shift over years



Target

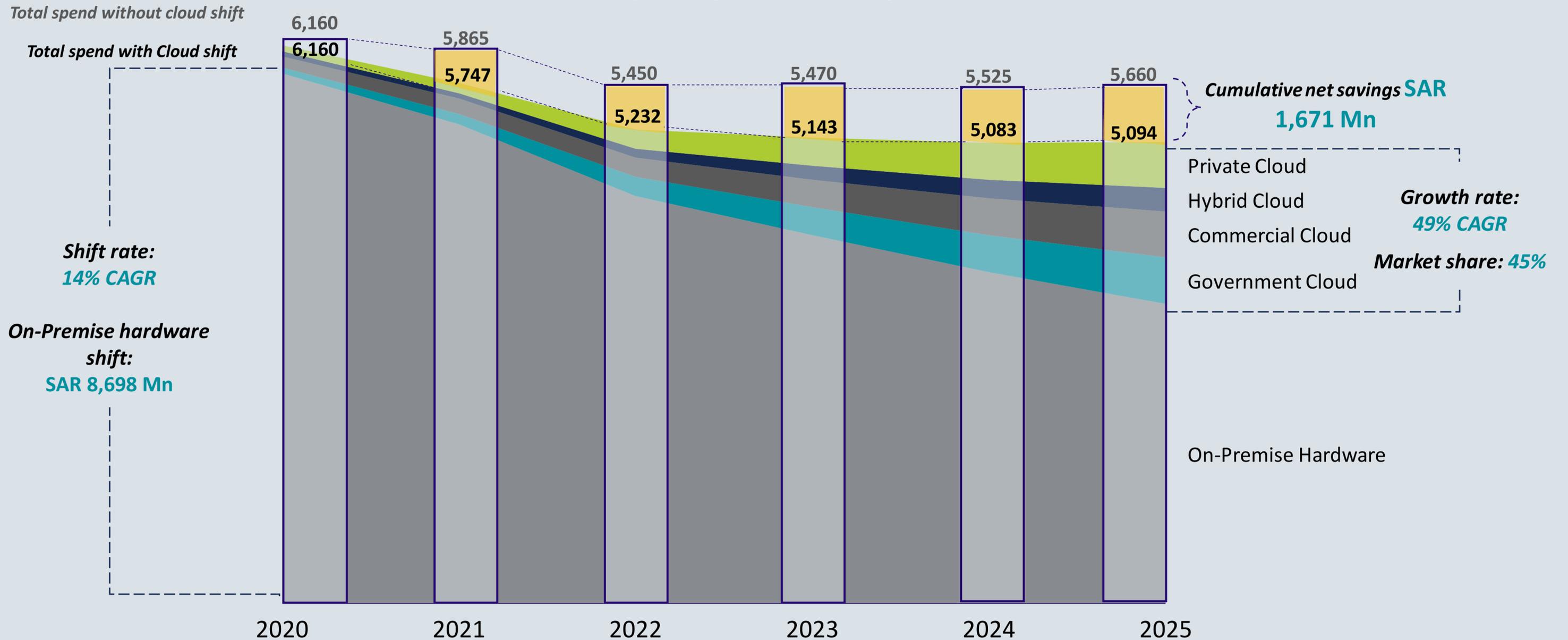
3%
CAGR

Annual shift of commercial software over 5 years

Conservative Business case: Transforming IT Spend & Technology Landscape – hardware spend

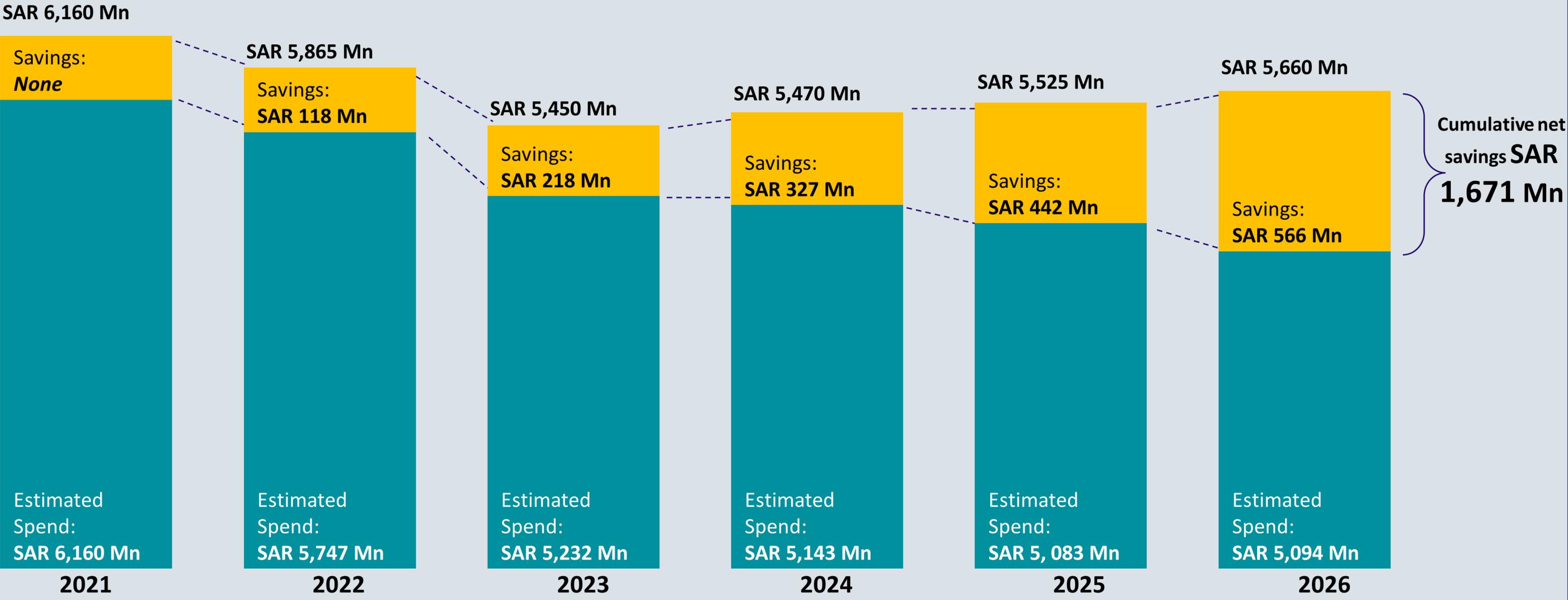
Shift hardware spend from on-premise to cloud

Hardware Spend (2022 – 2026) SAR million



Conservative Business case: Transforming IT Spend & Technology Landscape – hardware spend saving (2022 – 2026)

Annual net saving as a result of moving from commercial software to open source software along with shifting from on-premise to cloud (2022-2026)



Conservative Business case: Transforming IT Spend & Technology Landscape – KPIs (2022 – 2026)

Increase Efficiency of Government Hardware Spend



Target

1.67
Bn SAR

Total net saving of hardware spend due to OSS enabled cloud shift over 5 years



Target

45%

Market spend share of cloud spend (Private, Hybrid, Commercial & Government cloud) by 2026



Target

8.70
Bn SAR

Total shift of on-premise hardware spend over 5 years



Target

14%
CAGR

Annual shift of on-premise hardware spend over 5 years



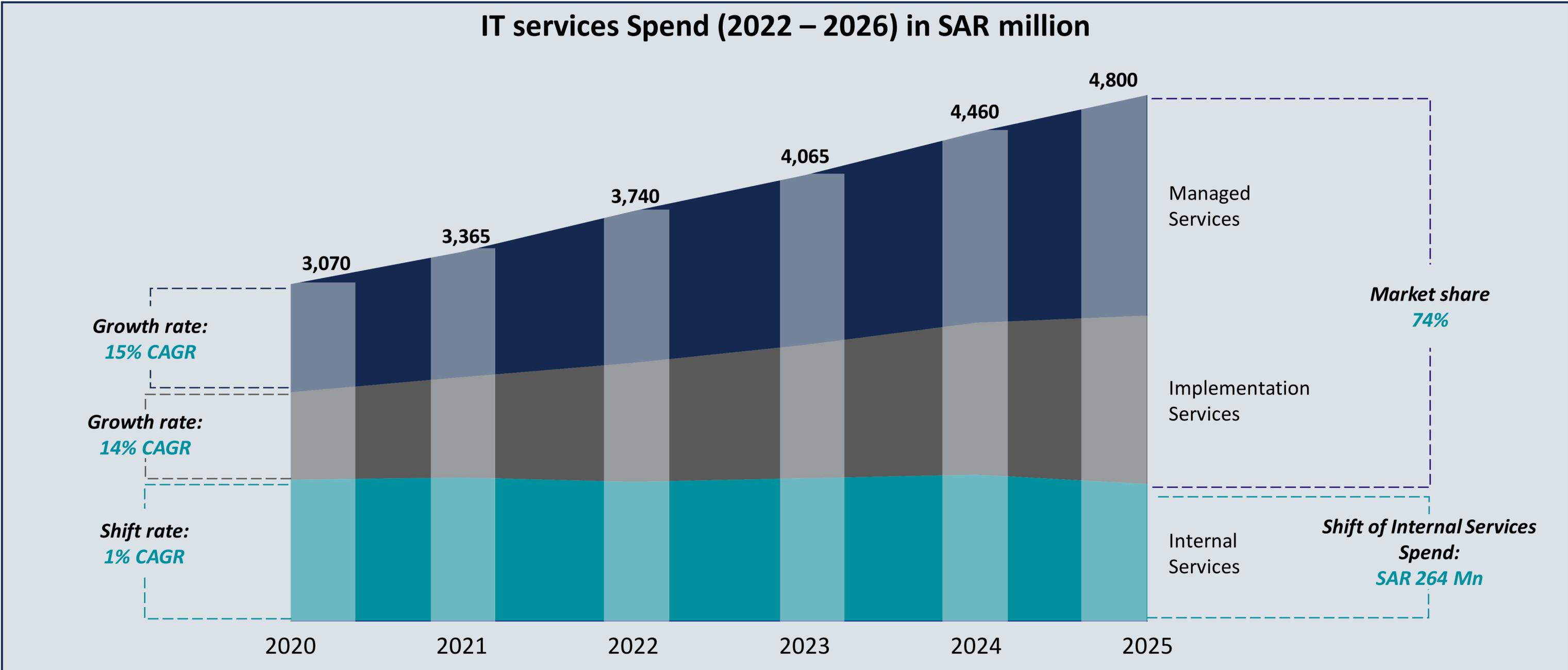
Target

49%
CAGR

Annual growth of cloud adoption with OSS over 5 years

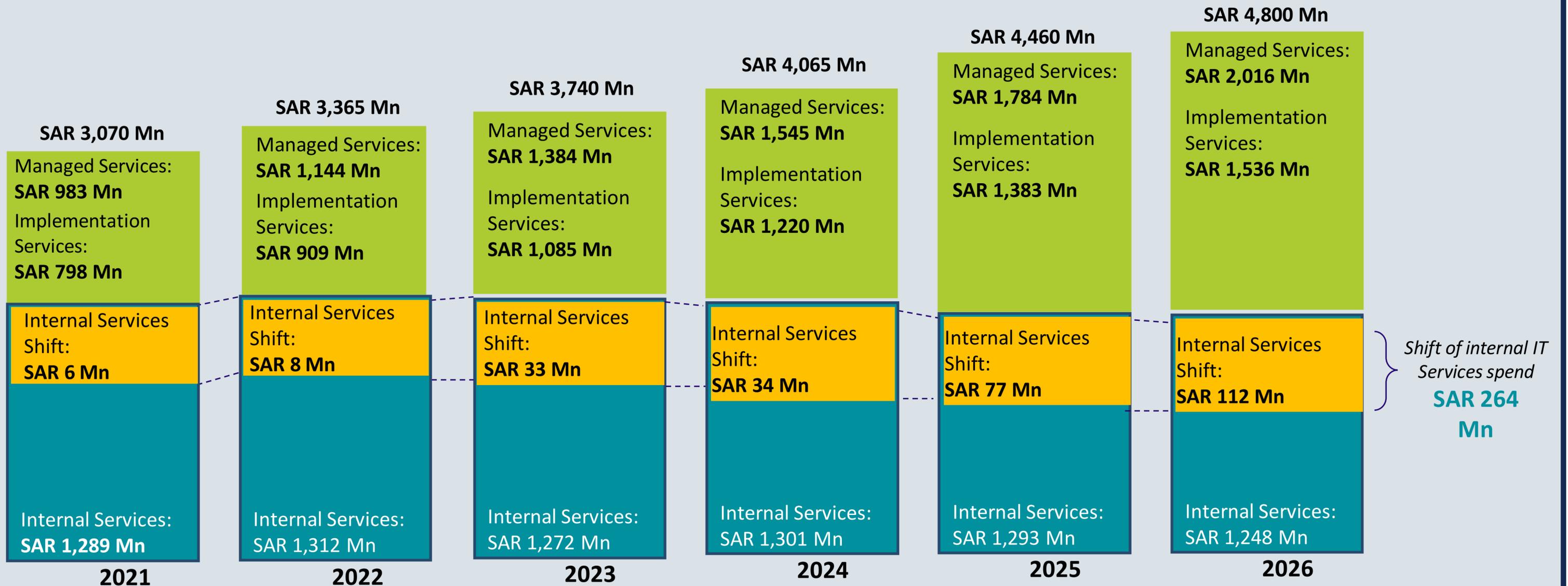
Conservative Business case: Transforming IT Spend & Technology Landscape – IT services spend

Shift from internal IT services towards implementation and managed IT services



Business case: Transforming IT Spend & Technology Landscape – IT services saving (2022 – 2026)

Annual shift in internal services spend and allocating it to managed and implementation services (2022-2026)



Conservative business case: Transforming IT Spend & Technology Landscape – KPIs (2022 – 2026)

Increase Efficiency of Government IT Services Spend

Target

264

Mn SAR

Total shift of spend on internal IT services over 5 years

Target

74%

Market share of managed and IT implementation services based on government spend in 2026

Target

1%

CAGR

Annual shift of internal IT services over 5 years

Target

15%

CAGR

Annual growth of managed & IT implementation services over 5 years

Building NewTech "Blue Ocean" Ecosystem outcomes (2022-2026) -highlights across three scenarios

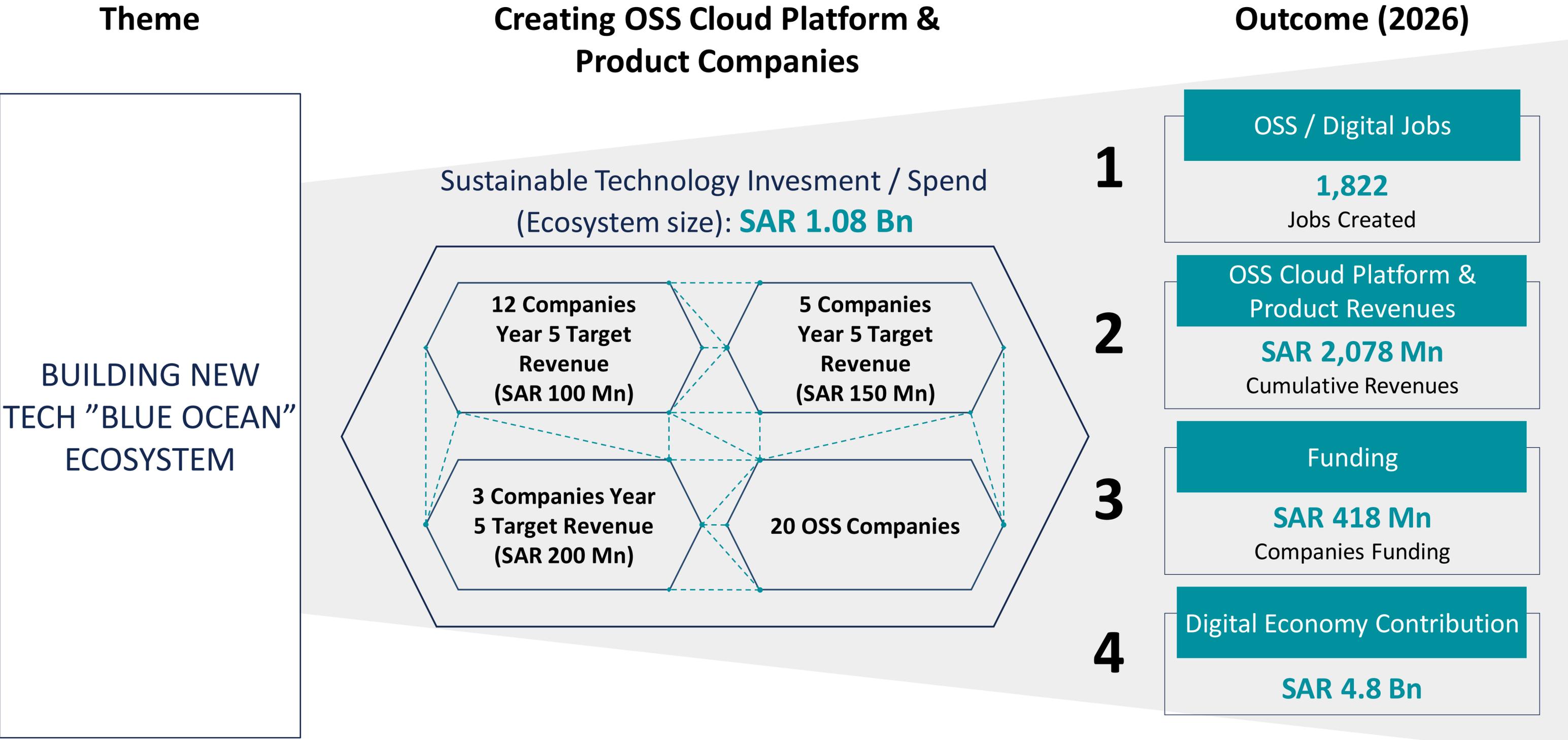
Building NewTech "Blue Ocean" Ecosystem business case is modeled across the aforementioned scenarios with focus on the conservative scenario. The table below represents the highlights across the three scenarios.

Outcome (2026)

Business Case Scenario	Companies Created	OSS / Digital Jobs	OSS Cloud Platform & Product Revenues	Funding	Digital Economy Contribution
Conservative	20 Companies Created	1,822 Jobs Created	SAR 2.1 Bn Cumulative Revenues	SAR 346 Mn Companies Funding	SAR 4.8 Bn
Balanced	33 Companies Created	3,203 Jobs Created	SAR 3.8 Bn Cumulative Revenues	SAR 677 Mn Companies Funding	SAR 7.9 Bn
Optimistic	68 Companies Created	6,207 Jobs Created	SAR 7.2 Bn Cumulative Revenues	SAR 1.32 Bn Companies Funding	SAR 15.7 Bn

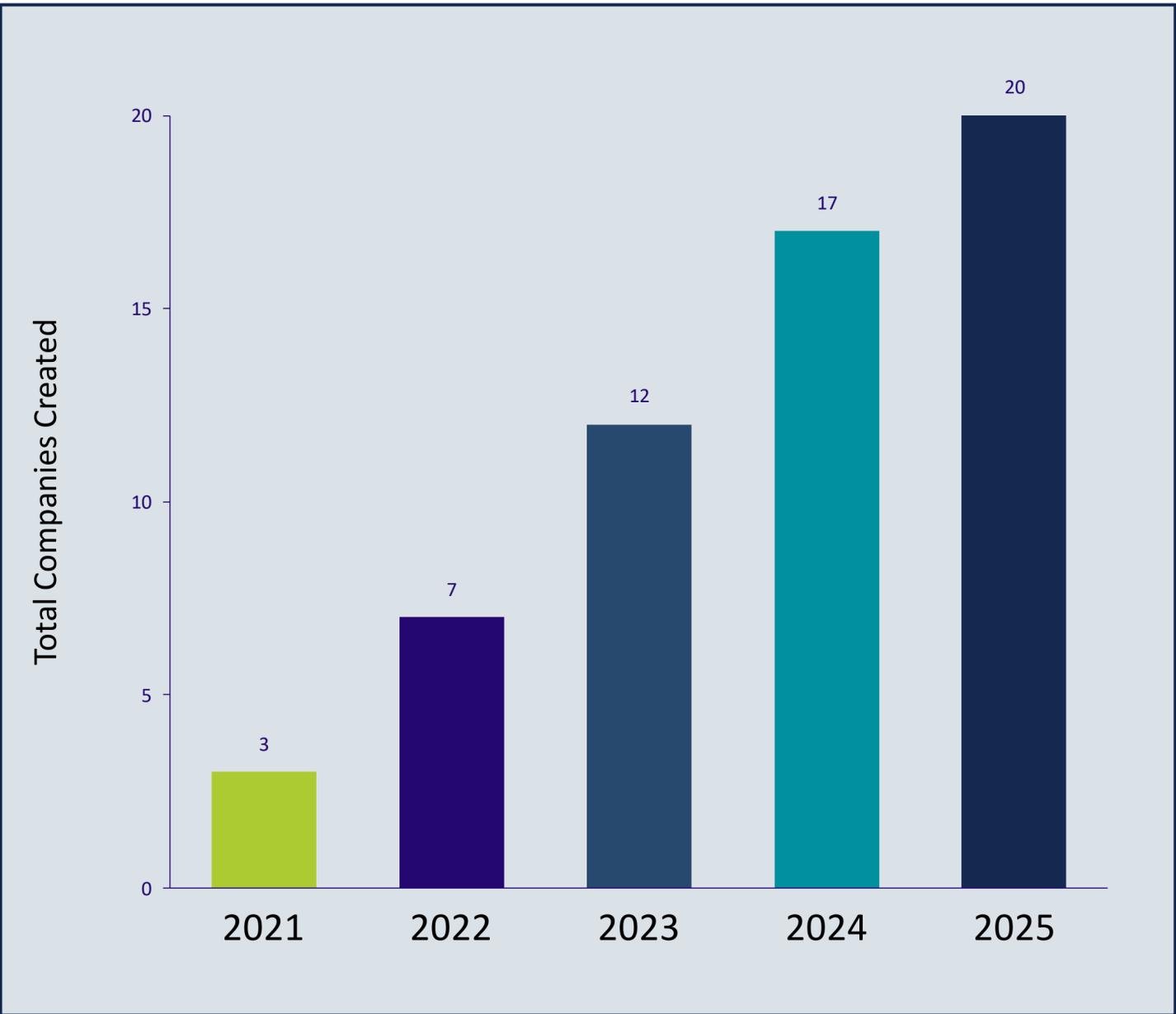
Refer to appendix B for more details on balanced and optimistic business cases

Conservative business case: Building NewTech "Blue Ocean" Ecosystem – Outcomes (2022 – 2026)

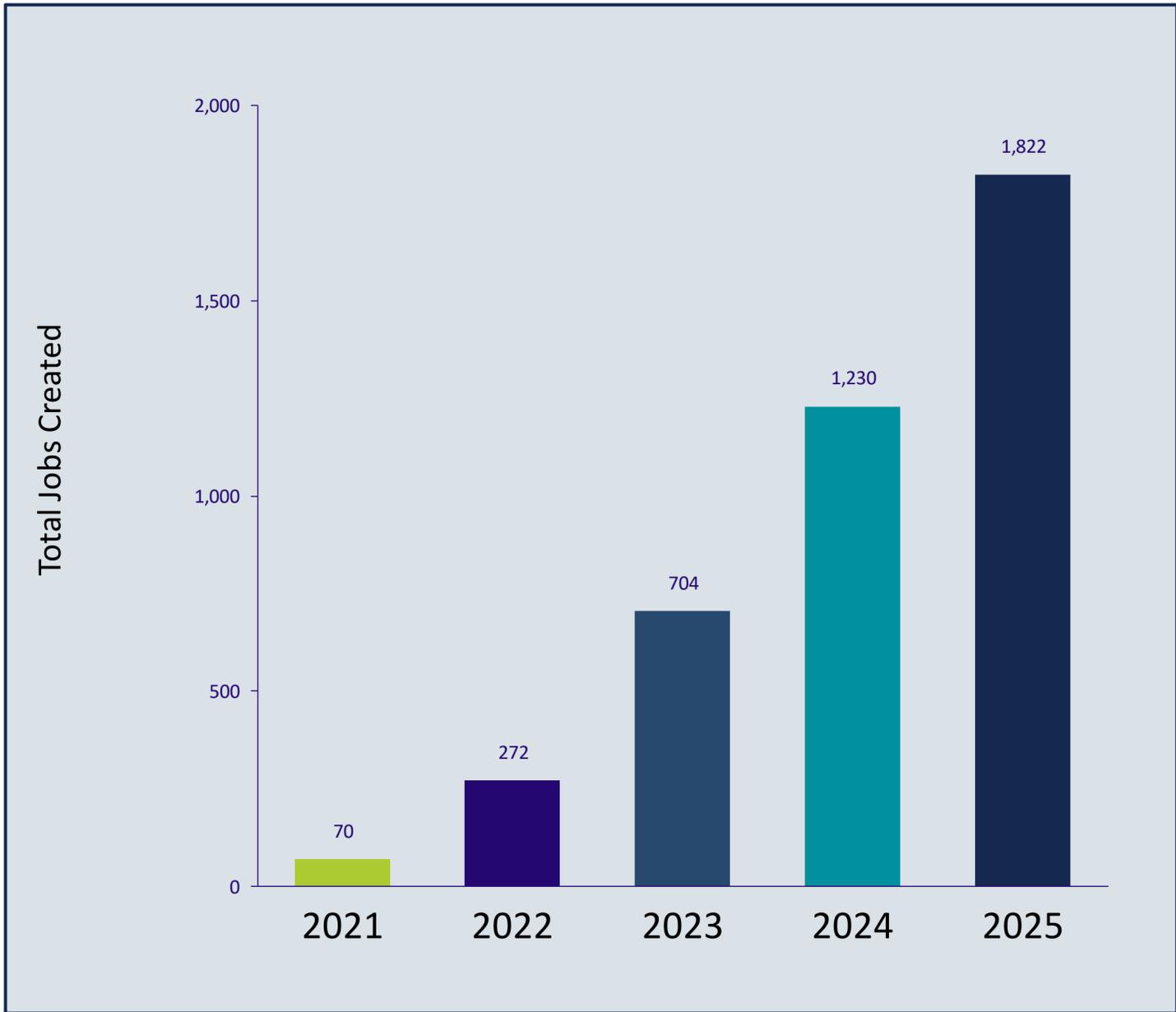


Conservative business case: Building NewTech “Blue Ocean” Ecosystem – NewTech ecosystem involves building 20 companies with 1,822 jobs

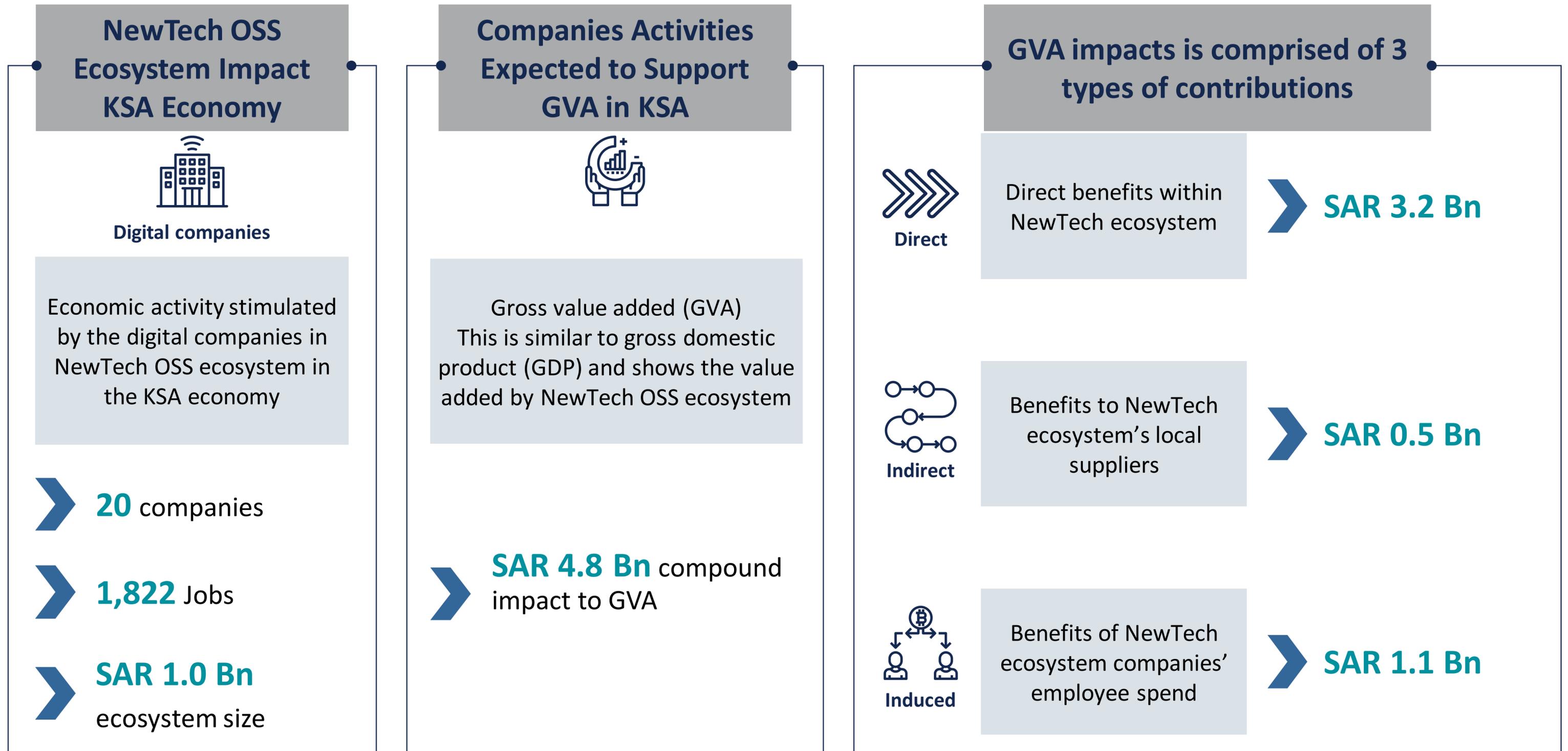
Projected Growth of OSS Cloud Platform & Product Companies



Projected Growth in OSS / Digital Jobs

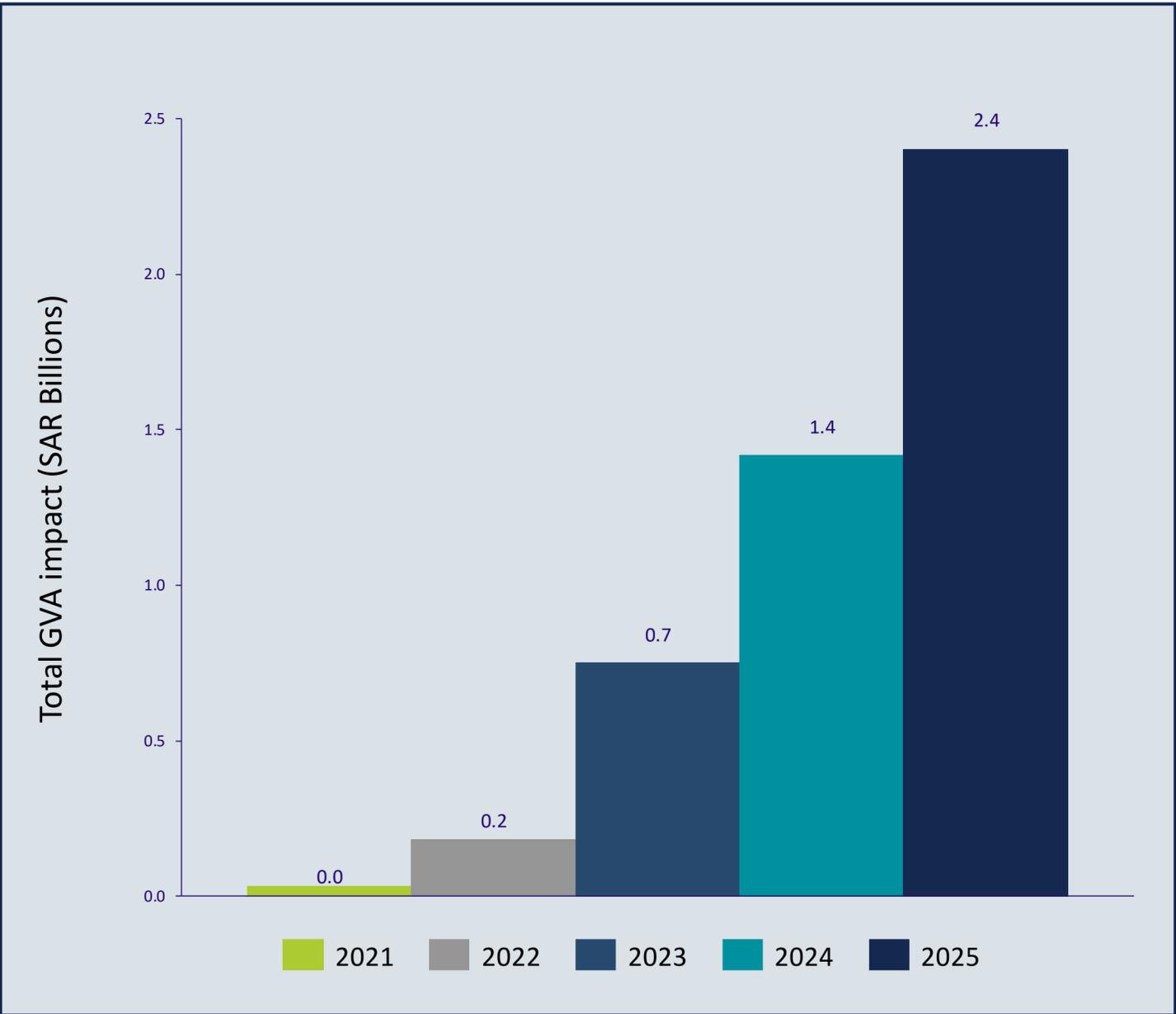


Conservative business case: Building NewTech “Blue Ocean” Ecosystem – NewTech companies contribute to KSA digital economy through GVA

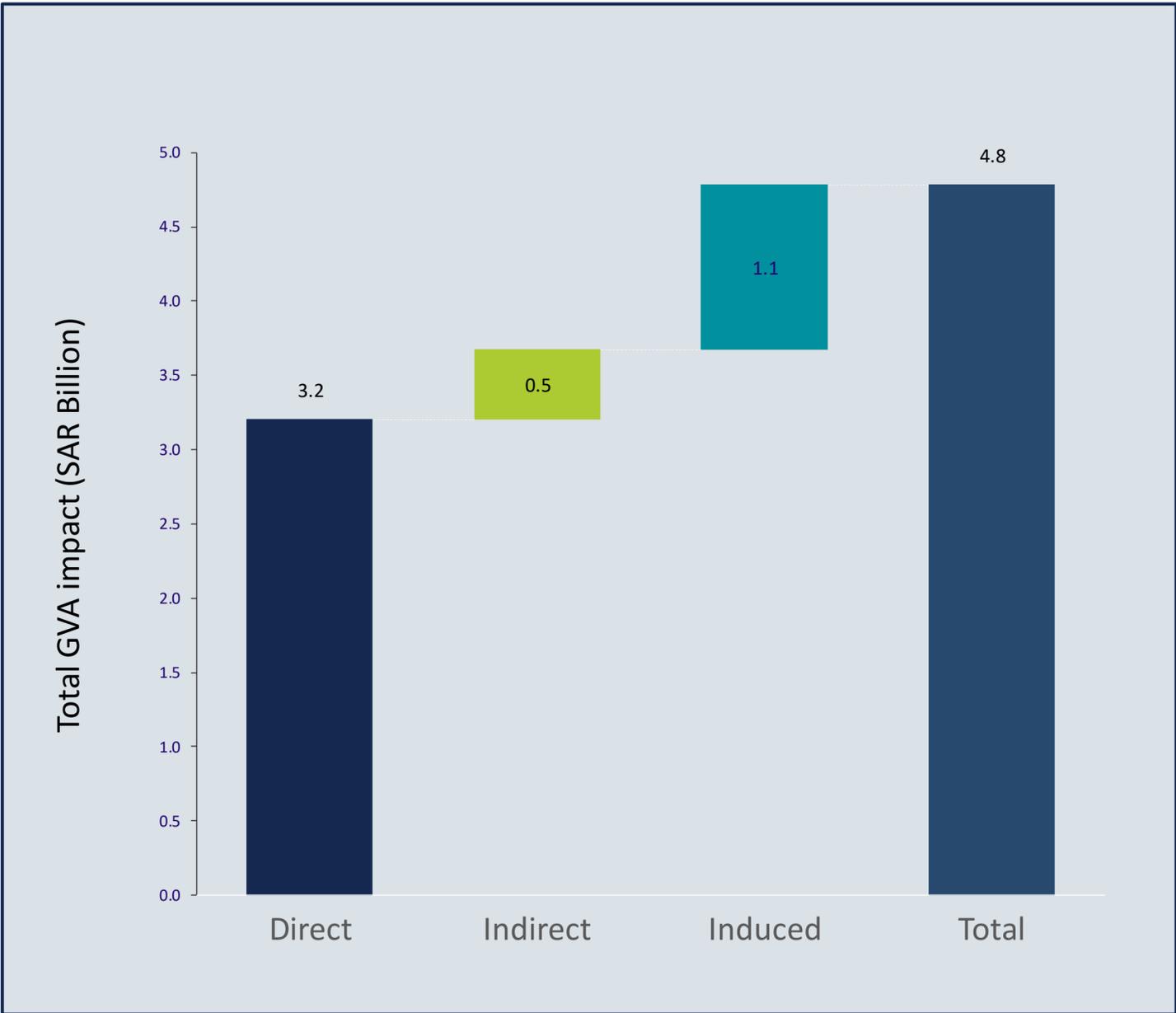


Conservative business case: Building NewTech “Blue Ocean” Ecosystem – annual GVA contribution & cumulative impact

Annual GVA impact on the KSA economy 2022-2026



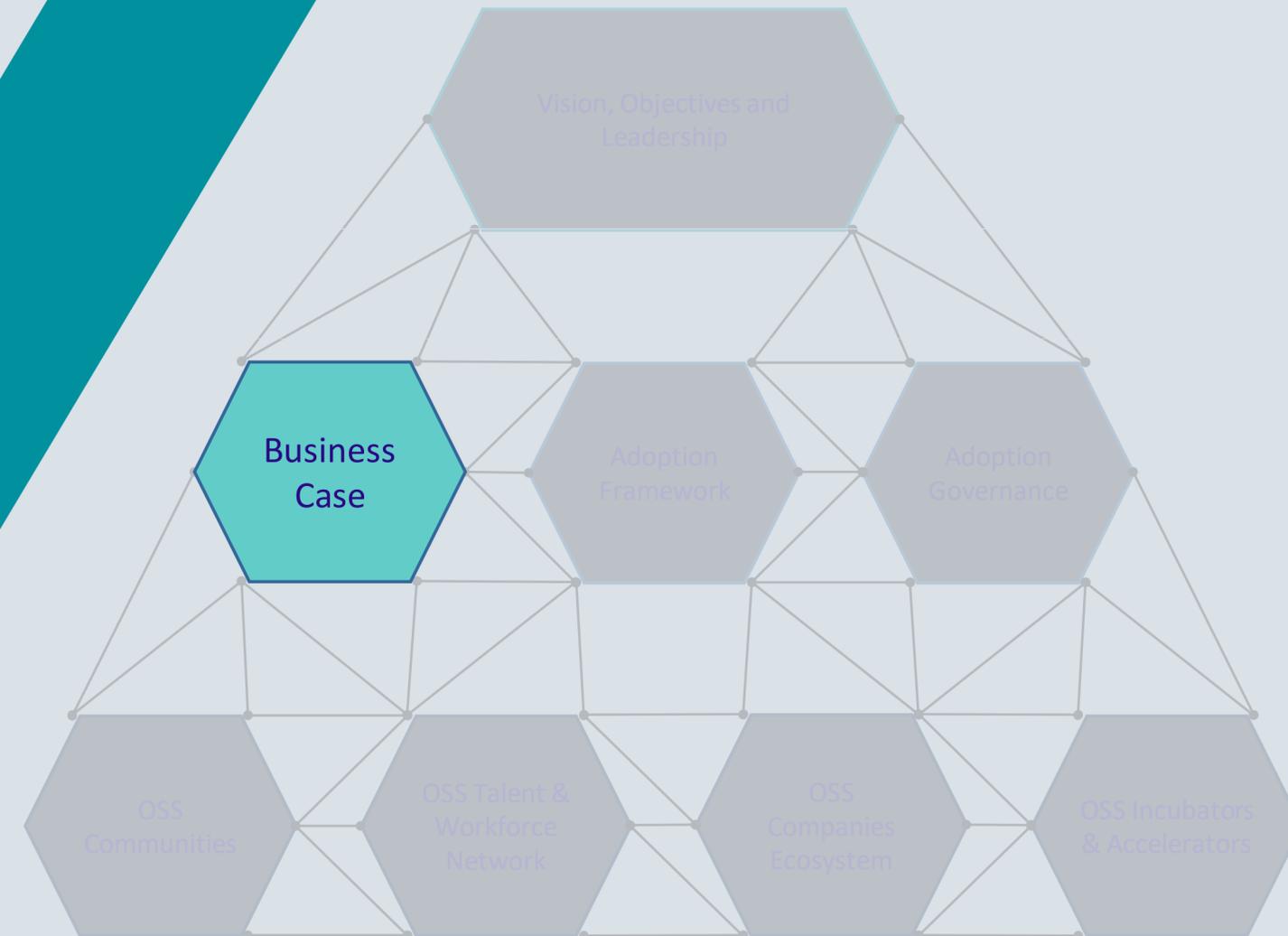
Cumulative GVA impact on the KSA economy 2022-2026



Note: Totals may not sum due to rounding.

STRATEGY

RECAP



Our strategy focuses on creating technology leadership while driving efficient digital landscape with efficient IT spend & developed ecosystem

1

Creating Future Technology Leadership

Creating demand of OSS by government, supply of OSS from the ecosystem, and driving contribution to KSA's digital economy

2

Transforming IT Spend and Technology Landscape

Transforming IT spend of government towards efficient IT spend through the adoption of OSS, Cloud, and Emerging Technology

3

Building NewTech "Blue Ocean" Ecosystem

Building a robust technology and digital ecosystem that has the right talent, companies, and communities to provide KSA government with the required support & solutions



Vision

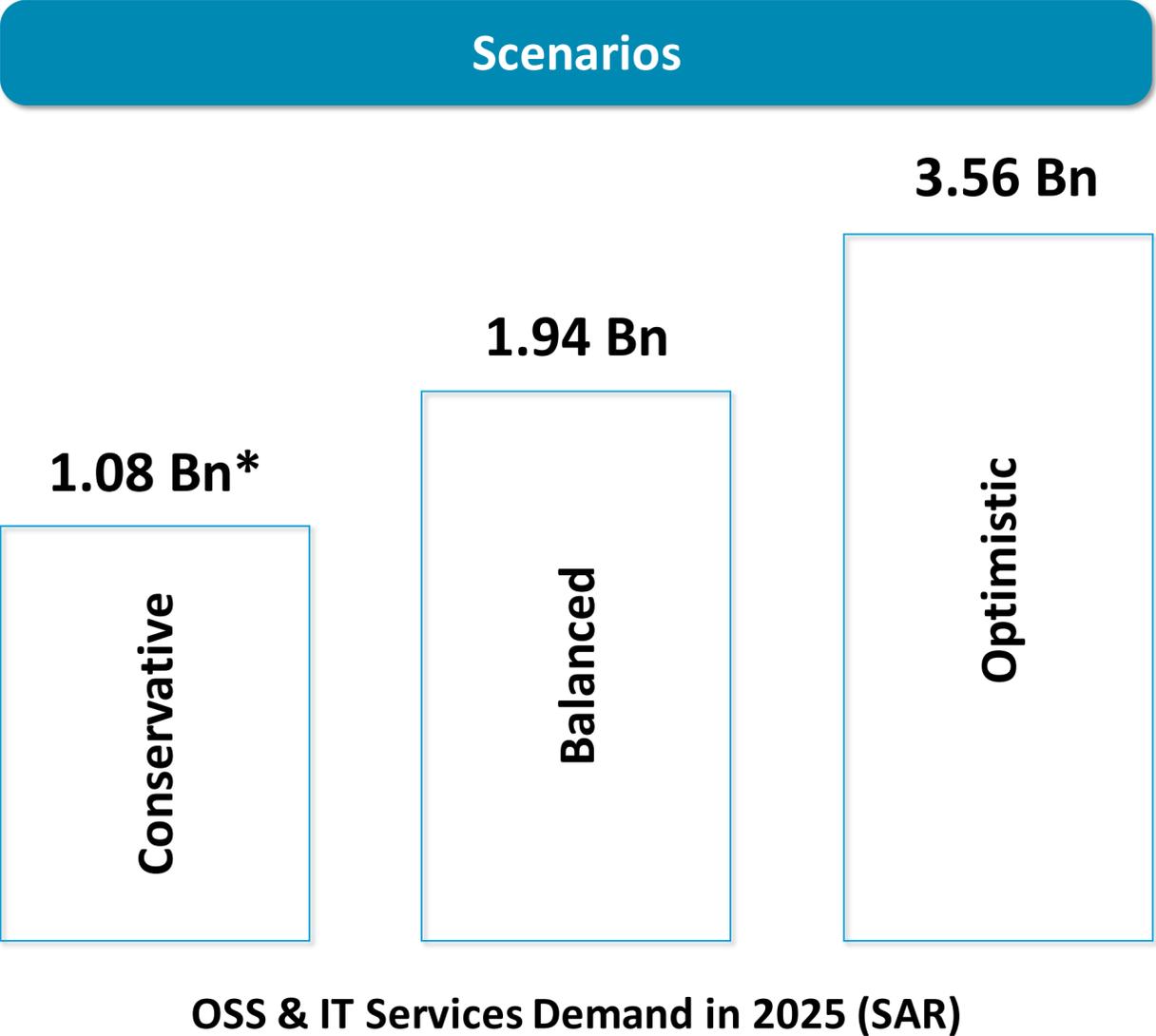
Create an efficient digital landscape for KSA government & drive the build-up of sustainable NewTech ecosystem that contributes to digital economy



Objectives

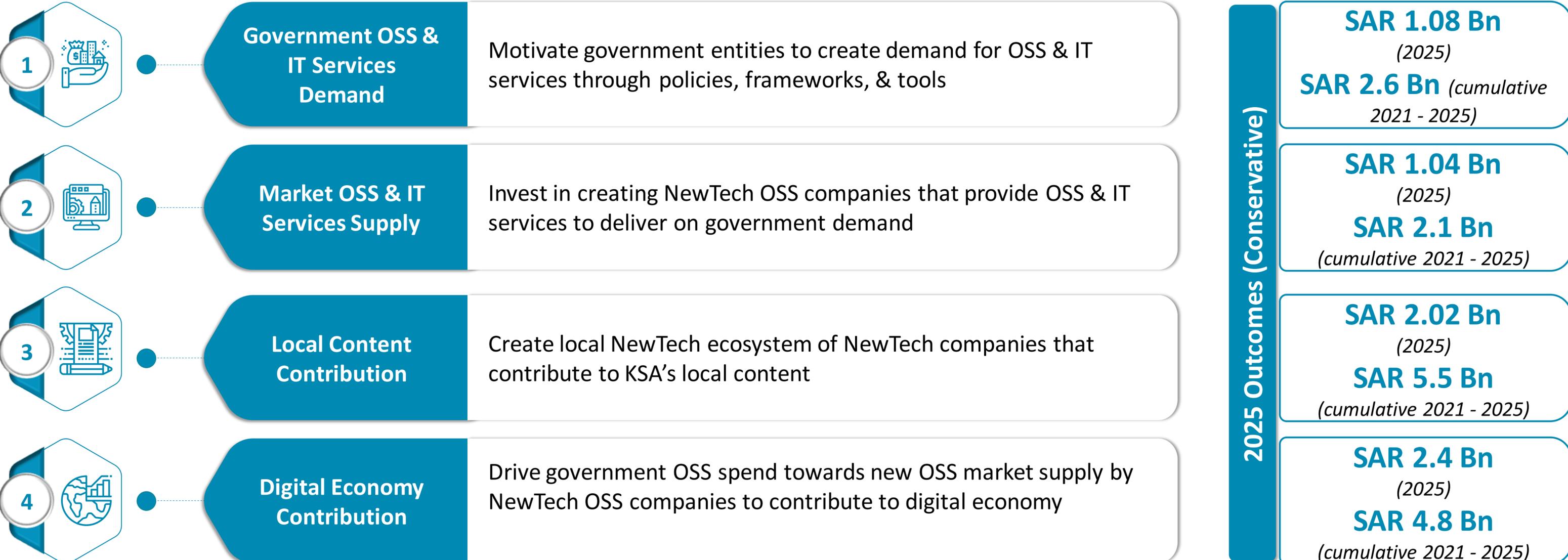
- Independence
- Talent
- Efficiency
- Platforms
- Innovation
- Sustainable
- Outcomes

OSS adoption business case is comprised of three business cases across three scenarios



*Conservative equals 12%; Balanced equals 22%; Optimistic equals 41%

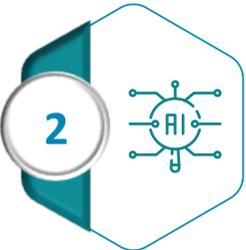
Creating Future Technology Leadership with OSS adoption needs to drive strategic outcomes around technology investments, platforms, & economy



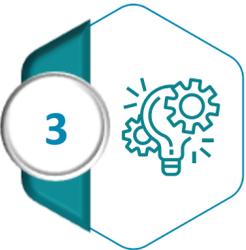
Transforming IT Spend & Technology Landscape with shift towards OSS, cloud and high value IT services



Hardware - Shift to Cloud
Reduce hardware spend by driving shift to cloud with OSS towards more efficient IT infrastructure (2021-2025)



Software - Move to OSS
Reduce software spend by moving to OSS & SaaS towards higher efficient IT spend (2021-2025)

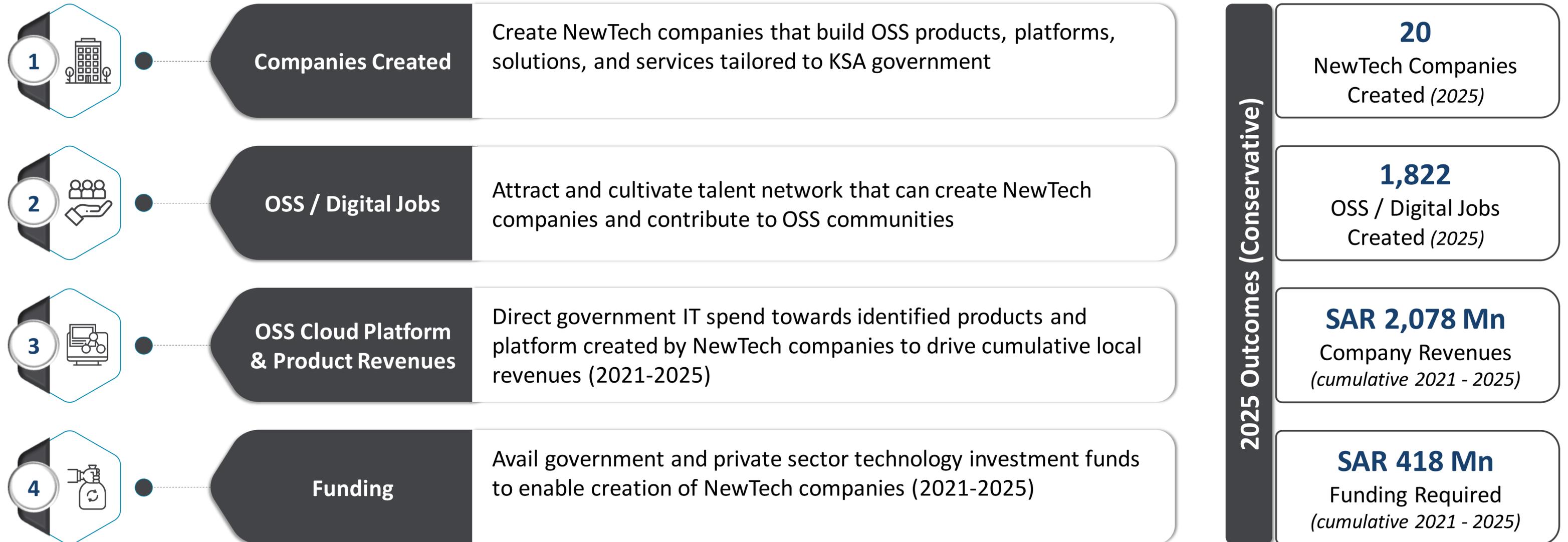


IT Services- Change towards managed and implementation
Change IT services away from IT contractors and towards managed and implementation services (2021-2025)

2025 Outcomes (Conservative)

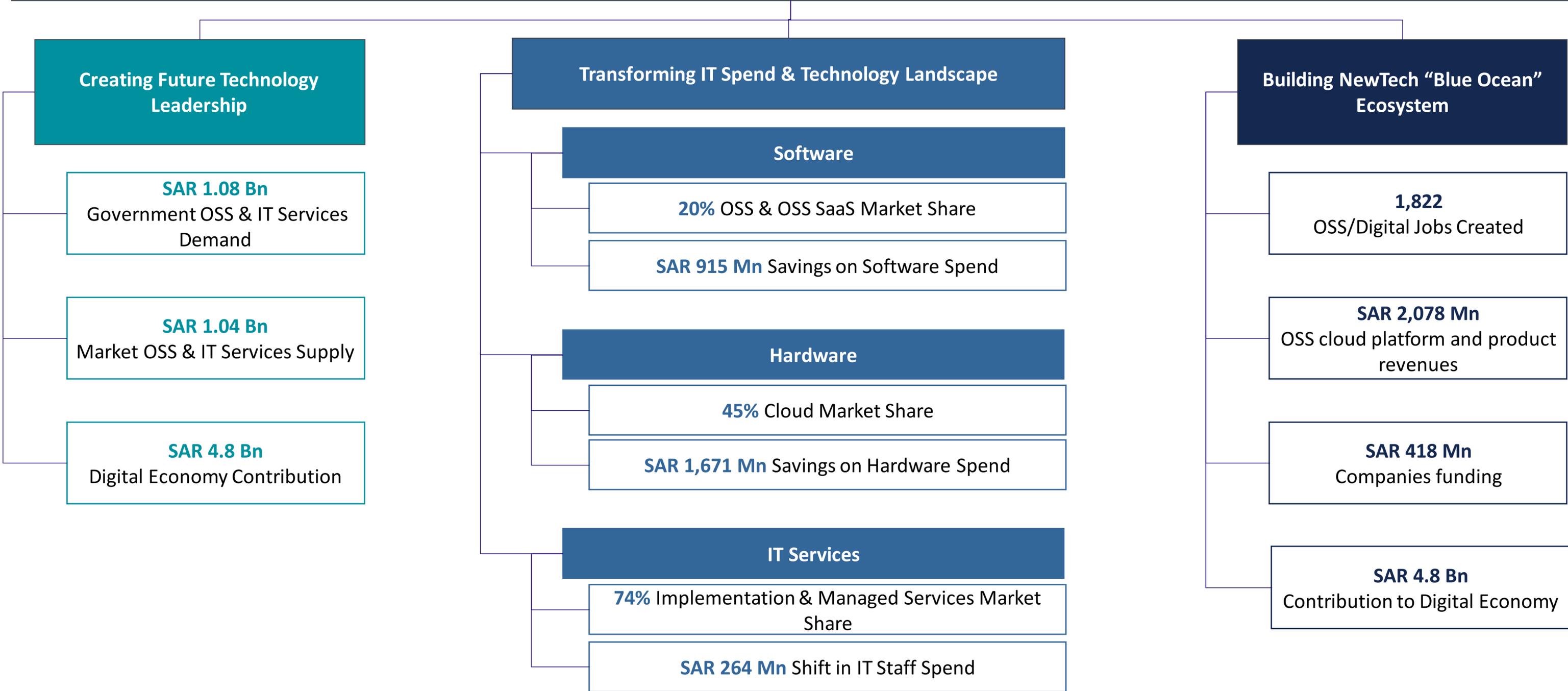
- SAR 1,671 Mn**
Net Saving
(cumulative 2021-2025)
- SAR 915 Mn**
Net Saving
(cumulative 2021 - 2025)
- SAR 264 Mn**
Spend Change *(cumulative 2021 - 2025)*

Create NewTech companies and jobs that support demand for OSS and IT services



Strategic KPI tree for OSS business case 2026

Business Case KPIs by 2026



1



OSS Adoption Strategy Roadmap

Table of Contents: OSS Adoption Roadmap, Initiatives, Programs & Projects

1

OSS Adoption Strategy Roadmap

2

Initiative 1: Integrated Technology Investment & Digital Economy

3

Initiative 2: Center for OSS Adoption

4

Initiative 3: NewTech Ecosystem

5

Change Management

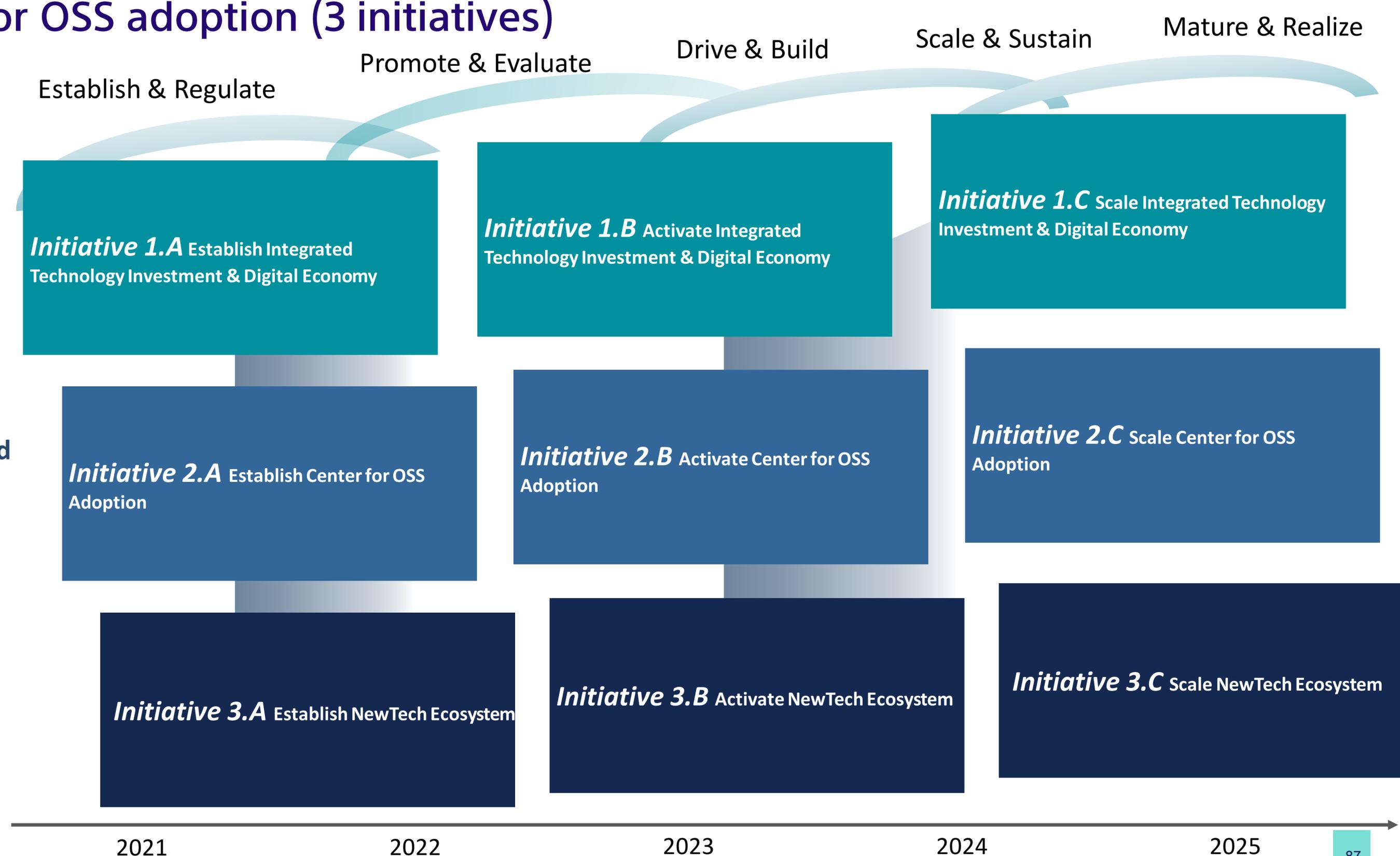
Roadmap for OSS adoption (3 initiatives)

Strategy Theme / Objective

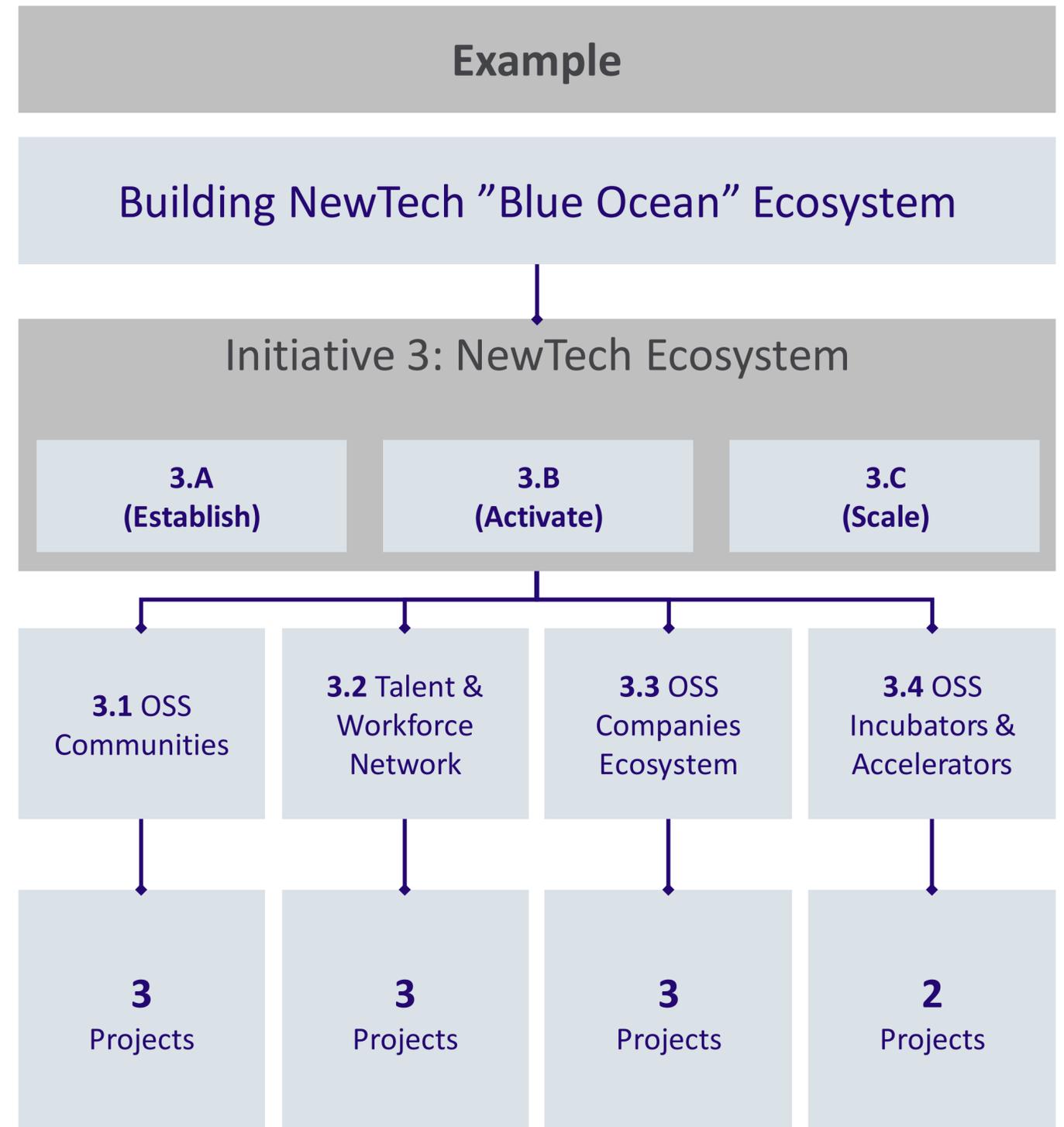
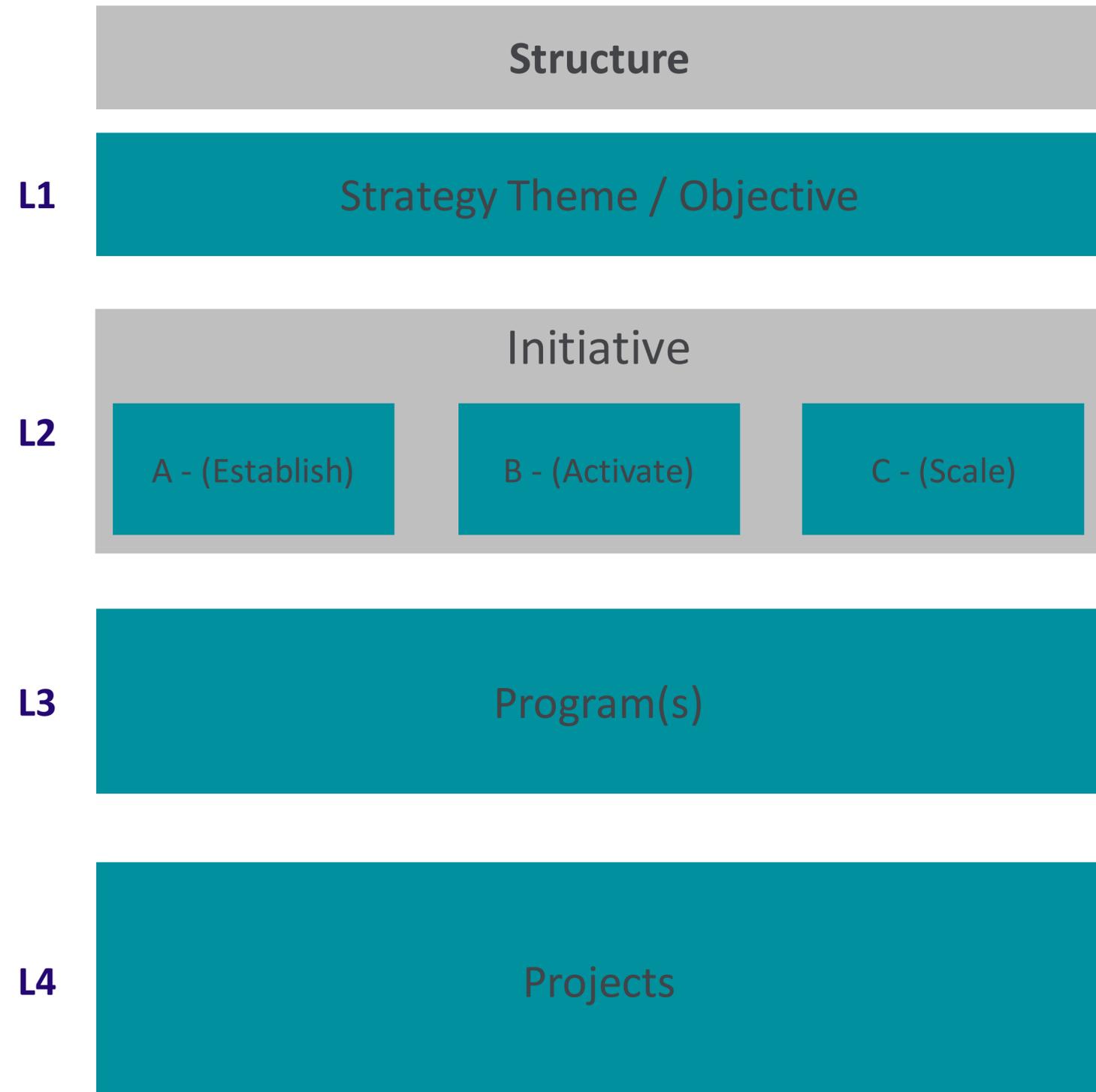
Creating Future Technology Leadership

Transforming IT Spend & Technology Landscape

Building NewTech "Blue Ocean" Ecosystem



Structure of Initiatives, Programs, & Projects



Roadmap for open source software adoption (3 initiatives & 10 programs)

Mature & Realize

Scale & Sustain

Drive & Build

Promote & Evaluate

Establish & Regulate

Strategy Theme / Objective

Creating Future Technology Leadership

Initiative 1.A Establish Integrated Technology Investment & Digital Economy

- Sustainable Investment Model
- Digital Economy Framework
- FDI Development Program

Initiative 1.B Activate Integrated Technology Investment & Digital Economy

- Sustainable Investment Model
- Digital Economy Framework
- FDI Development Program

Initiative 1.C Scale Integrated Technology Investment & Digital Economy

- Sustainable Investment Model
- Digital Economy Framework
- FDI Development Program

Transforming IT Spend & Technology Landscape

Initiative 2.A Establish Center for OSS Adoption

- IT Spend Efficiency & NewTech Business Cases
- OSS Adoption Policy, Framework, & Enablers
- OSS Adoption Governance

Initiative 2.B Activate Center for OSS Adoption

- IT Spend Efficiency & NewTech Business Cases
- OSS Adoption Policy, Framework, & Enablers
- OSS Adoption Governance

Initiative 2.C Scale Center for OSS Adoption

- IT Spend Efficiency & NewTech Business Cases
- OSS Adoption Policy, Framework, & Enablers
- OSS Adoption Governance

Building NewTech "Blue Ocean" Ecosystem

Initiative 3.A Establish NewTech Ecosystem

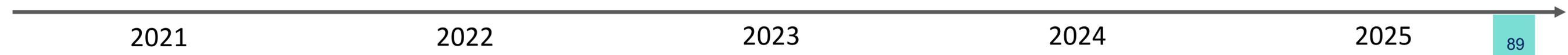
- OSS Communities
- Talent & Workforce Network
- OSS Companies Ecosystem
- OSS Incubators & Accelerators

Initiative 3.B Activate NewTech Ecosystem

- Build OSS Communities
- Launch Talent & Workforce Network
- Build OSS Companies Ecosystem
- Oversee OSS Incubators & Accelerators

Initiative 3.C Scale NewTech Ecosystem

- Handover OSS Communities
- Handover Talent & Workforce Network
- Handover OSS Companies Ecosystem
- Handover OSS Incubators & Accelerators



Initiatives, Programs & Projects overview

Themes	Initiative	No. of Programs	No. of Projects
Creating Technology Future Leadership	Initiative 1.A Establish Integrated Technology Investment & Digital Economy	3	3
	Initiative 1.B Activate Integrated Technology Investment & Digital Economy		
	Initiative 1.C Scale Integrated Technology Investment & Digital Economy		
Transforming IT Spend & Technology Landscape	Initiative 2.A Establish Center for OSS Adoption	3	13
	Initiative 2.B Activate Center for OSS Adoption		
	Initiative 2.C Scale Center for OSS Adoption		
Building NewTech “Blue Ocean” Ecosystem	Initiative 3.A Establish NewTech Ecosystem	4	11
	Initiative 3.B Activate NewTech Ecosystem		
	Initiative 3.C Scale NewTech Ecosystem		

OSS adoption initiatives, programs, & projects

OSS Adoption Strategy Initiatives

1. Integrated Technology Investment & Digital Economy (Initiative)	2. Center for OSS Adoption (Initiative)			3. NewTech Ecosystem (Initiative)			
	2.1 Business Case	2.2 Adoption Framework	2.3 Adoption Governance	3.1 OSS Communities	3.2 Talent & Workforce Network	3.3 OSS Companies Ecosystem	3.4 OSS Incubators & Accelerators
1.1 Develop sustainable technology investment model and framework for government IT spend	2.1.1 Develop integrated business cases for government IT spend efficiency and technology transformation	2.2.1 Develop OSS Adoption policy and regulations	2.3.1 Develop and establish mandate, operating model and governance of Center for OSS Adoption	3.1.1 Develop OSS communities model, charter, communications, tools, KPIs, and governance covering different types of communities	3.2.1 Develop integrated OSS education, training, and development hubs programs targeting different groups and different levels	3.3.1 Develop OSS product commercialization and company creation strategy	3.4.1 Develop & establish incubators accelerators program of OSS companies
1.2 Develop Digital Economy Framework for contribution of OSS adoption to digital economy		2.2.2 Develop OSS Tech Code of Practice					
		2.2.3 Develop OSS Adoption Enablers (Licensing, Support, & Others)	2.3.3 Develop national plan for OSS adoption across government entities based on technology stack, readiness, and other factors				
1.3 Develop technology and digital FDI investment program and roadmap	2.1.2 Develop detailed and integrated business case for NewTech Ecosystem development	2.2.4 Develop OSS adoption maturity and measurement framework		2.3.4 Develop business, digital and OSS platforms strategy for government sectors	3.1.2 Establish activation program for OSS communities for kick-starting OSS communities and develop network of communities	3.2.2 Develop OSS career education program focused on attracting, guiding, and developing new generation of OSS developers linked to job creation	3.3.2 Develop and establish global-KSA OSS company innovation activation program
		2.2.5 Design and Implement OSS Bank of Code					
		2.2.6 Design and implement OSS Marketplace	2.3.4 Develop business, digital and OSS platforms strategy for government sectors	3.1.3 Establish promotional campaign that promote KSA OSS communities across global communities sites (Git Hub, Stack overflow, and others) to drive contribution			
2.2.7 Develop smart government architecture & OSS cloud transformation plan							

OSS Projects Priority for Creating Demand (Group 1)

Initiative	Program	Project
Initiative 2: Center for OSS Adoption	Adoption Framework	2.2.1 Develop OSS Adoption policy and regulations
Initiative 2: Center for OSS Adoption	Adoption Framework	2.2.2 Develop OSS Tech Code of Practice
Initiative 2: Center for OSS Adoption	Adoption Framework	2.2.3 Develop OSS Adoption Enablers (Licensing, Support, & Others)
Initiative 2: Center for OSS Adoption	Adoption Framework	2.2.4 Develop OSS adoption maturity and measurement framework
Initiative 2: Center for OSS Adoption	Adoption Framework	2.2.5 Design and Implement OSS Bank of Code
Initiative 2: Center for OSS Adoption	Adoption Governance	2.3.1 Develop and establish mandate, operating model and governance of Center for OSS Adoption
Initiative 2: Center for OSS Adoption	Adoption Governance	2.3.2 Launch OSS adoption transition program for piloting OSS across selected government entities and qualified OSS companies
Initiative 2: Center for OSS Adoption	Business Case	2.1.1 Develop integrated business cases for government IT spend efficiency and technology transformation

OSS Projects Priority for Building Supply (Group 2)

Initiative	Program	Project
Initiative 3: NewTech Ecosystem	Talent & Workforce Network	3.2.1 Develop integrated OSS education, training, and development hubs programs targeting different groups and different levels
Initiative 3: NewTech Ecosystem	Talent & Workforce Network	3.2.2 Develop OSS career education program focused on attracting, guiding, and developing new generation of OSS developers linked to job creation
Initiative 3: NewTech Ecosystem	Talent & Workforce Network	3.2.3 Establish R&D and entrepreneurship development program focused on OSS development and competition to increase OSS product
Initiative 3: NewTech Ecosystem	OSS Companies Ecosystem	3.3.1 Develop OSS product commercialization and company creation strategy
Initiative 3: NewTech Ecosystem	OSS Companies Ecosystem	3.3.2 Develop and establish global-KSA OSS company innovation activation program
Initiative 3: NewTech Ecosystem	OSS Companies Ecosystem	3.3.3 Develop OSS joint ventures and corporate investment strategy
Initiative 2: Center for OSS Adoption	Business Case	2.1.2 Develop detailed and integrated business case for NewTech Ecosystem development
Initiative 1: Integrated Technology Investment & Digital Economy	Framework Document	1.2 Develop Digital Economy Framework for contribution of OSS adoption to digital economy
Initiative 1: Integrated Technology Investment & Digital Economy	Roadmap & KPIs Document	1.3 Develop technology & digital FDI investment program and roadmap

OSS Projects Priority for Enabling OSS Transformation (Group 3)

Initiative	Program	Project
Initiative 2: Center for OSS Adoption	Adoption Framework	2.2.6 Design and implement OSS Marketplace
Initiative 2: Center for OSS Adoption	Adoption Framework	2.2.7 Develop smart government architecture & OSS cloud transformation plan
Initiative 2: Center for OSS Adoption	Adoption Governance	2.3.3 Develop national plan for OSS adoption across government entities based on technology stack, readiness, and other factors
Initiative 2: Center for OSS Adoption	Adoption Governance	2.3.4 Develop business, digital and OSS platforms strategy for government sectors
Initiative 3: NewTech Ecosystem	OSS Communities	3.1.1 Develop OSS communities model, charter, communications, tools, KPIs, and governance covering different types of communities
Initiative 3: NewTech Ecosystem	OSS Communities	3.1.2 Establish activation program for OSS communities for kick-starting OSS communities and develop network of communities
Initiative 3: NewTech Ecosystem	OSS Communities	3.1.3 Establish promotional campaign that promote KSA OSS communities across global communities sites (Git Hub, Stack overflow, and others) to drive contribution
Initiative 3: NewTech Ecosystem	OSS Incubators & Accelerators	3.4.1 Develop & establish incubators accelerators program of OSS companies
Initiative 3: NewTech Ecosystem	OSS Incubators & Accelerators	3.4.2 Develop and establish virtual KSA-global OSS incubators and accelerators programs

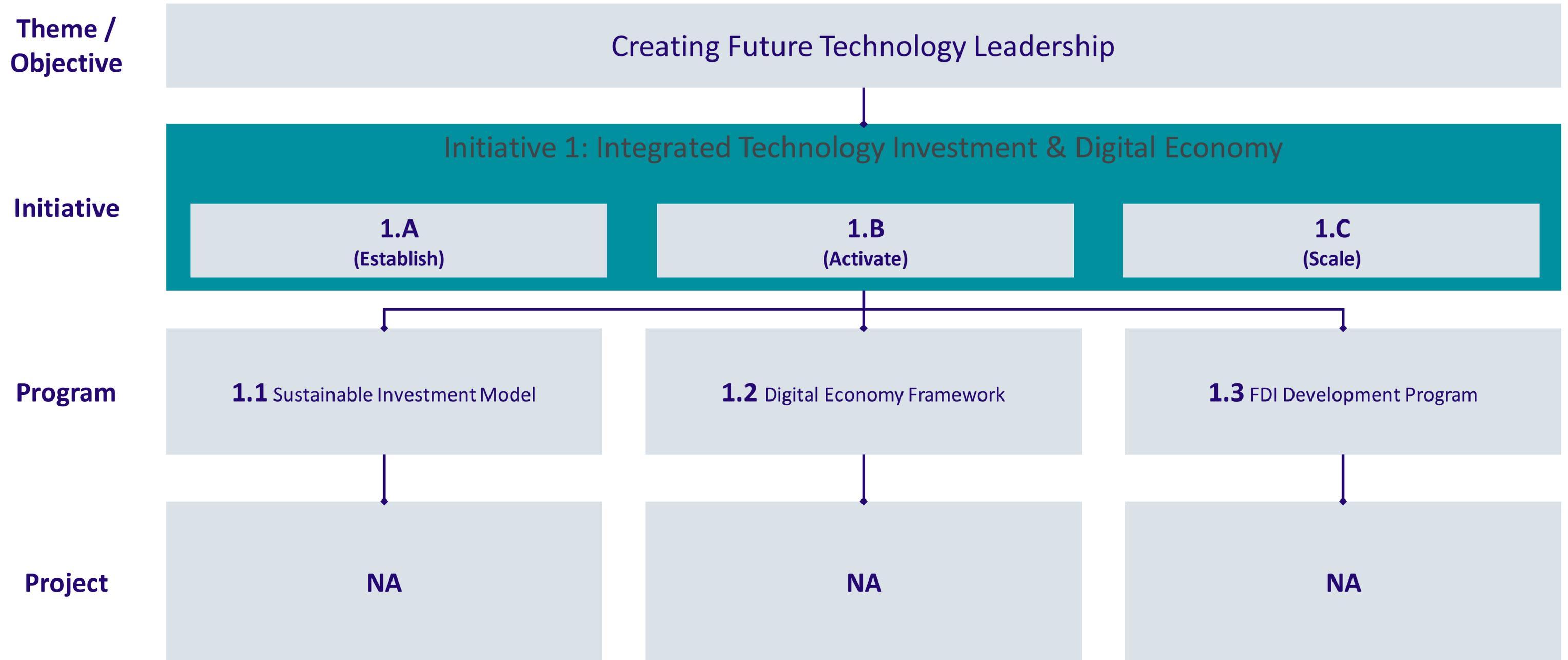
2



Initiative 1: Integrated Technology Investment & Digital Economy

Creating Future Technology
Leadership

Initiative 1: Integrated Technology Investment & Digital Economy



Timeline for Initiative 1: Integrated Technology Investment & Digital Economy

Initiative	2022				2023				2024				2025				2026			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1. Integrated Technology Investment & Digital Economy	Establish				Activate				Scale											
Program / Project																				
1.1 Develop sustainable technology investment model	External Support		In Progress		DGA Responsibility															
1.2 Develop digital economy framework	External Support				DGA Responsibility				DGA Responsibility				DGA Responsibility				DGA Responsibility			
1.3 Develop technology and digital FDI investment program	External Support				DGA Responsibility				DGA Responsibility				DGA Responsibility				DGA Responsibility			

Project Card: 1.1 Develop sustainable technology investment model and framework for government IT spend

Description	This project involves establishing understanding of current IT spend and technology investment models in KSA government and developing framework that will drive KSA government towards sustainable investments and IT spend efficiency.
Objective	The objective of project is to develop framework to be used for technology and digital investments of OSS and IT spend by KSA government.
Impact	This expected impact is to put in place OSS technology investment and IT spend sustainability framework to maximize value from government technology spend and investments.
Activity	<ol style="list-style-type: none"> 1. Review KSA IT market spend and ecosystem including key technology players 2. Baseline current IT spend across government entities for software, hardware, and IT services 3. Baseline and analyze current investment models and frameworks and identify potential areas and gaps that are causing IT spend inefficiencies (across hardware, software, and IT services) 4. Benchmark KSA IT spending and investment model with other leading countries and capture key learnings and outcomes 5. Envision and define new sustainable IT investment at national level for the future in line with OSS, cloud, and global technology trends linked to standardized IT portfolio investment model at government entity level to drive IT investment and spend alignment 6. Define detailed model and framework of IT spend leveraging OSS, cloud, and emerging technologies to create sustainable IT demand by government entities linked to IT budgeting and procurement in line with OSS adoption policy
Dependency	<ul style="list-style-type: none"> • OSS Adoption policy and regulations

Timeline	Start: Q4 2021 Duration: 6 months
Status	started
KPI	Government demand for OSS & IT Services (SAR Mn)
Owner	Prime: DGA (I&P) Support: MOF
Budget	Current DGA Projects (PTOM)
Risk	<ol style="list-style-type: none"> 1. Readiness of government entities to change towards sustainable IT investment model
Mitigation	<ol style="list-style-type: none"> 1. DGA's role to engage government entities and mandate sustainable and new IT investment and spend model

Project Card: 1.2 Develop Digital Economy Framework for contribution of OSS adoption to digital economy

Description	This project involves development of digital economy framework that can track government technology investment and IT spend to contribution of digital economy.	Timeline	Start: Q2 2022 Duration: 6 months
Objective	The objective of this project is to develop digital economy framework that can provide model for turning sustainable government IT investments into contribution to KSA GDP and digital economy.	Status	Not started
Impact	The expected impact is the direct tracking and monitoring of KSA government IT spend and contribution of that spend to KSA digital economy.	KPI	Contribution to GVA (SAR Mn)
Activity	<ol style="list-style-type: none"> 1. Understand and analyze current economic impact of digital transformation of KSA economy and GDP 2. Analyze current information available to tracking contribution of technology across different sectors to digital economy 3. Develop economic impact assessment framework for digital government transformation 4. Explore and define ways to track and collect data and information on IT spend and investments 5. Define digital economy model and framework and data requirements and inputs 6. Develop methodology that tracks technology investments in digital initiatives to contribution digital economy 7. Develop a financial that estimates and digital investments to digital economy 	Owner	Prime: PIF MEP, MISA
Dependency	<ul style="list-style-type: none"> • OSS Adoption policy and regulations 	Budget	SR 1,320,000
		Risk	<ol style="list-style-type: none"> 1. Current practice of IT investments
		Mitigation	<ol style="list-style-type: none"> 1. Create focus on technology investment contribution to digital economy

Project Card: 1.3 Develop technology & digital FDI investment program and roadmap

Description	This project involves establishing program and roadmap that explores relevant foreign markets and investors that are interested in KSA technology and digital sector to bring new investments.	Timeline	Start: Q4 2021 Duration: 6 months
Objective	The objective of this project is develop program and roadmap that will help KSA target and attract foreign investment in KSA IT ecosystem.	Status	Not started
Impact	The expected impact of this initiative to bring foreign investments in KSA digital and OSS ecosystem and stimulate KSA digital economy.	KPI	Foreign direct investment received for NewTech ecosystem (SAR Mn)
Activity	<ol style="list-style-type: none"> 1. Define the future value proposition required for KSA to realize its ambition, conducting a gap analysis vs. current state 2. Evaluate and prioritize the technology and digital sub-sectors 3. Develop business cases for the prioritized business opportunities 4. Develop a target list of potential investors and assess their strategies and plans 5. Conduct benchmarking of offering, key incentives and enabling environment of select countries 6. Develop the investment promotion and outreach strategy, including phasing, channels, tactical positioning etc. 7. Facilitate and conduct initial exploratory meetings through forums, seminars, etc. 8. Facilitate and secure commitments and deals with various public and private entities 	Owner	Prim: DGA (I&P) MISA
Dependency	<ul style="list-style-type: none"> • OSS Adoption policy and regulations 	Budget	DGA PTOM Project
		Risk	<ol style="list-style-type: none"> 1. Unwillingness of foreign markets to invest in KSA technology sector
		Mitigation	<ol style="list-style-type: none"> 1. Incentivize foreign markets to invest in KSA (e.g. tax reduction)

Initiatives KPIs: Integrated Technology Investment & Digital Economy Initiative

*These KPIs need to be reviewed regularly & updated if necessary

Initiative

Initiative 1: Integrated Technology Investment & Digital Economy

	Program	KPI(s)	Targets*					Total
			2022	2023	2024	2025	2026	
1.1	Develop sustainable technology investment model and framework for government IT spend	Government demand for OSS & IT Services (SAR Mn)	132	275	433	679	1,081	2,600
1.2	Develop digital economy framework for contribution of OSS adoption to digital economy	Contribution to Gross Value Add (GVA) (SAR Mn)	32	181	749	1,417	2,403	4,782
1.3	Develop technology and digital FDI investment program and roadmap	Foreign direct investment received for NewTech ecosystem (SAR Mn)	TBD	TBD	TBD	TBD	TBD	TBD

3



Initiative 2: Center for OSS Adoption

Transforming IT Spend &
Technology Landscape

Initiative 2: Center for OSS Adoption

Theme /
Objective

Transforming IT Spend & Technology Landscape

Initiative

Initiative 2: Center for OSS Adoption

2.A
(Establish)

2.B
(Activate)

2.C
(Scale)

Program

2.1 Business Case

2.2 Adoption Framework

2.3 Adoption Governance

Project

2
Projects

7
Projects

4
Projects



3.1

Business Case

Timeline for Initiative 2: Center for OSS Adoption

External Support In Progress DGA Responsibility

Program	2021				2022				2023				2024				2025			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.1 Business Case	Establish				Activate				Scale											
Project																				
2.1.1 Develop integrated business cases for government IT spend efficiency and technology transformation					External Support				DGA Responsibility				DGA Responsibility				DGA Responsibility			
2.1.2 Develop detailed and integrated business case for NewTech Ecosystem development	External Support		DGA Responsibility																	

Project Card: 2.1.1 Develop integrated business cases for government IT spend efficiency and technology transformation

Description	The project involves developing detailed business case and financial model that will provide the needed KPIs, variables, and other indicators to track OSS savings realized from OSS adoption across government entities.	Timeline	Start: Q4 2021 Duration: 6 months
Objective	The objective of this project is develop detailed business case for increasing IT spend efficiency with OSS.	Status	started
Impact	The expected impact is to enable KSA government and entities to track OSS adoption savings, benefits, and KPIs.	KPI	Realized savings from software, hardware, and IT services (SAR Mn)
Activity	<ol style="list-style-type: none"> 1. Baseline software licenses and software vendors across different software categories and solutions and applications for KSA government entities 2. Baseline costs of software licenses solutions and annual maintenance and support across government entities. 3. Baseline and categorize IT services related to implementation of solutions and applications. 4. Define suitable cloud model for OSS products and OSS solution implementation 5. Develop OSS adoption targets across different software categories over 5 years as part of government entities OSS adoption 6. Develop financial model for estimating cost of OSS implementation across software and IT services 7. Develop business case for estimating the savings from implementing OSS to replace commercial software licenses 8. Develop OSS adoption saving calculator to be used for different types implementation projects 9. Define benefits and KPIs for tracking OSS adoption across government entities 	Owner	Prim: DGA (I&P) Expro
Dependency	<ul style="list-style-type: none"> • Adoption Framework 	Budget	DGA PTOM Project
		Risk	<ol style="list-style-type: none"> 1. Available of software licenses information and related costs
		Mitigation	<ol style="list-style-type: none"> 1. DGA to provide the needed support to incentivize government entities to provide requested information

Project Card: 2.1.2 Develop detailed and integrated business case for NewTech Ecosystem development

Description	This project involves development of detailed business case that will support the creation of NewTech ecosystem and different types of OSS ecosystem that can attract investments and create sustainable investments and funding.	Timeline	Start: Q4 2021 Duration: 6 months
Objective	The objective of this project is to develop strategy and investment plan that will enable creation of NewTech ecosystem.	Status	started
Impact	The expected impact is creation and investments of OSS companies that can stimulate KSA economy and deliver on KSA government needs.	KPI	No. of digital jobs and companies created Contribution to GVA (SAR Mn)
Activity	<ol style="list-style-type: none"> 1. Analyze and define KSA IT market opportunity for KSA government OSS adoption including expected growth over 5 years 2. Analyze KSA IT ecosystem of vendors and technology providers as well as global OSS ecosystem and vendors that can contribute to building OSS ecosystem and companies in KSA 3. Conduct economic study on full potential and impact of OSS adoption by government entities on KSA local content development, company creation opportunities and jobs creation. 4. Develop OSS market size and growth model including projected software and IT services as well as related cloud market opportunity and growth over 5 years 5. Create business case for creation of NewTech ecosystem of OSS companies that will address market needs and project growth 6. Develop economic and financial model for NewTech ecosystem including potential investment opportunities, jobs created, revenues, funding, and contribution to economy 	Owner	Prim: DGA (I&P)
Dependency	<ul style="list-style-type: none"> • NewTech Ecosystem Program 	Budget	A project in DGA
		Risk	<ol style="list-style-type: none"> 1. Availability of funding for NewTech ecosystem
		Mitigation	<ol style="list-style-type: none"> 1. Create compelling business case that attracts investments and funding

Initiatives KPIs: Center for OSS Adoption

*These KPIs need to be reviewed regularly & updated if necessary

Initiative

Initiative 2: Center for OSS Adoption

Program

2.1 Business Case

Targets*

Project	KPI(s)	Targets*					Total
		2022	2023	2024	2025	2026	
2.1.1 Develop integrated business cases for government IT spend efficiency and technology transformation	Software Net Savings (SAR Mn)	50	103	156	235	371	915
	Hardware Net Saving (SAR Mn)	118	218	327	442	566	1,671
	IT Services Shift (SAR Mn)	8	33	34	77	112	264
2.1.2 Develop detailed and integrated business case for NewTech Ecosystem development	No. of OSS jobs created	70	202	432	526	592	1,822
	No. of OSS companies created	3	4	5	5	3	20
	Contribution to GVA (SAR Mn)	32	181	749	1,417	2,403	4,782

Initiatives KPIs: Software Net Saving

Note (*): Represents DGA Software Classification

Software net saving SAR **915** Mn (2021 – 2025)

	2022	2023	2024	2025	2026
Software Net Saving SAR Mn	50	103	156	235	371
Enterprise Systems*	20	41	62	93	147
System Software*	15	30	46	70	110
Middleware*	14	29	44	67	105
End-user office Software*	0.7	2	3	4	7
Customization & Development*	0.3	1	1	1	2



3.2

Adoption Framework

Timeline for Initiative 2: Center for OSS Adoption

External Support In Progress DGA Responsibility

Program	2022				2023				2024				2025				2026			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.2 Adoption Framework	Establish				Activate				Scale											
Project																				
2.2.1 Develop OSS Adoption policy and regulations																				
2.2.2 Develop OSS Tech Code of Practice																				
2.2.3 Develop OSS Adoption Enablers																				
2.2.4 Develop OSS adoption maturity framework																				
2.2.5 Design and Implement OSS Bank of Code																				
2.2.6 Design and implement OSS Marketplace																				
2.2.7 Develop smart government architecture																				

Project Card: 2.2.1 Develop OSS Adoption policy and regulations

Description	This project involves developing regulations and policies to drive OSS adoption including IT budgeting framework, IT procurement framework, and IT spend measurement framework that are key to OSS adoption among government entities.	Timeline	Start: Q4 2022 Duration: 6 months
Objective	The objective of this project is to develop needed regulations and policies covering IT budgeting, IT procurement, and IT spend to motivate OSS adoption among government entities.	Status	Not Started
Impact	The expected impact is on IT budgeting, IT procurement, and IT spend measurement policies and processes enabling IT spend planning with OSS adoption.	KPI	No. of KSA government that adopt open source adoption policy
Activity	<ol style="list-style-type: none"> 1. Engage key KSA government stakeholders on OSS regulations to explore different OSS adoption policy models and options 2. Develop IT budgeting framework that will be used by government entities to include OSS adoption and allow new categories of IT spend and budgeting including cloud, SaaS, and others 3. Develop IT procurement framework that will incentivize government entities to adopt OSS in line with OSS adoption policy 4. Develop IT spend measurement framework that will track and report on OSS adoption as well as provide mechanism for accurate reporting on IT spend across software, hardware, and IT services including new categories of IT spend including cloud, SaaS, and others 	Owner	Prim: DGA Support: NCA
Dependency	<ul style="list-style-type: none"> • N/A 	Budget	SR 3,300,000
		Risk	<ol style="list-style-type: none"> 1. Slow adoption of OSS across government entities
		Mitigation	<ol style="list-style-type: none"> 1. Incentivize or mandate OSS adoption across KSA government

Project Card: 2.2.2 Develop OSS Tech Code of Practice

Description	This project involves developing reference architecture for open source, and other key technical practices that will enable adoption of OSS scenarios.
Objective	The objective of this project is develop comprehensive OSS adoption technical practices.
Impact	The expected impact is to facilitate OSS adoption from technical perspective and enable CIOs of government entities to use OSS standards and practices agile OSS adoption.
Activity	<ol style="list-style-type: none"> 1. Review OSS catalogue and OSS methodologies and standards developed for OSS adoption 2. Review national enterprise architecture and implications for OSS adoption 3. Develop reference Architecture for Open Source in alignment with national enterprise architecture 4. Explore and define needs and requirements for moving from commercial software to OSS by government entities by defining technical OSS adoption strategies and models including: <ul style="list-style-type: none"> • Re-Platforming with OSS • Re-Architecting with OSS • COARSE (Container Architecture Sandbox Enabler) PaaS • AGIP (Api Gateway Integration Platform)
Dependency	<ul style="list-style-type: none"> • Smart government architecture & OSS cloud transformation

Timeline	Start: Q4 2022 Duration: 6 months
Status	Not Started
KPI	No. of KSA government that adopt tech code of practice
Owner	Prime: DGA-Legislation Support: NCA
Budget	2,640,000
Risk	<ol style="list-style-type: none"> 1. Readiness of government entities for OSS adoption
Mitigation	<ol style="list-style-type: none"> 1. Strong and focused on change management

Project Card: 2.2.3 Develop OSS adoption enablers (licensing, support, & others)

Description	This project involves key enablers for facilitating consistent and successful adoption of OSS including licensing model, support model, OSS implementation lifecycle / oversight, and OSS quality and security test guidelines.	Timeline	Start: Q4 2022 Duration: 6 months
Objective	The objective of this project is to develop OSS adoption enablers to support government entities procure OSS products supported by licensing and support models and others.	Status	Not Started
Impact	The expected impact is consistent adoption of OSS using marketplace and enable collaboration and sharing of OSS projects and solution among government entities	KPI	No. of KSA government that adopt OSS adoption enablers
Activity	<ol style="list-style-type: none"> 1. Review and baseline current technology implementation lifecycle and governance of IT projects across government entities covering software licensing and support, hardware acquisition and support, IT implementation services, IT operational support, and others 2. Benchmark leading practices for successful models for implementation and adoption of OSS across countries with focus on licensing, support, implementation oversight, and others 3. Benchmark leading practices for evaluation and OSS products from technical and security perspectives 4. Develop OSS licensing and support guides that will enable DGA and guide government entities to evaluate OSS products 5. Develop governance and oversight models for OSS Implementation Support 6. Develop technical recommendations and guides for OSS Quality and Security Testing to enable DGA to evaluate OSS products both from technical and security perspectives 7. Recommend and define model for DGA to carryout OSS Quality and Security Testing at scale 	Owner	Prim: NCA Support: DGA
Dependency	<ul style="list-style-type: none"> • OSS Adoption policy and regulations 	Budget	3,300,000
		Risk	<ol style="list-style-type: none"> 1. Level of awareness and readiness government entities for accepting different OSS licensing and support models
		Mitigation	<ol style="list-style-type: none"> 1. DGA to provide the needed support to government entities

Project Card: 2.2.4 Develop OSS adoption maturity and measurement framework

Description	This project involves developing a framework and methodology to assess the level of OSS adoption as well as measure the maturity of OSS adoption among government entities using OSS maturity index across different adoption stages.
Objective	The objective of this project is to develop a framework and index to measure the level of OSS adoption and maturity across government entities.
Impact	The expected impact is to track and monitor progress of OSS adoption across government entities using standardized framework and OSS adoption maturity index.
Activity	<ol style="list-style-type: none"> 1. Engage government entities to establish and baseline the level of OSS adoption across OSS products 2. Categorize / group KSA government entities in terms of their size, importance, and readiness to adopt OSS 3. Develop criteria and objectives for prioritizing and driving OSS adoption across different groups of government entities 4. Define enablers and accelerators including cloud and others for government entities to enable their OSS adoption 5. Define OSS adoption maturity model across OSS adoption stages that will determine the level of OSS adoption 6. Align OSS adoption model with other frameworks used by DGA and government entities 7. Develop measurement framework and index for OSS adoption to be used by government entities and DGA to report on their OSS adoption
Dependency	<ul style="list-style-type: none"> • OSS Adoption policy and regulations

Timeline	Start: Q4 2022 Duration: 6 months
Status	Not started
KPI	OSS adoption maturity index based on OSS vs Commercial software
Owner	DGA – legislation (Qiyas)
Budget	1,980,000
Risk	<ol style="list-style-type: none"> 1. Adoption of OSS across government entities 2. Effective measurement of OSS adoption
Mitigation	<ol style="list-style-type: none"> 1. Incentivize or mandate OSS adoption across KSA government 2. Continuously update variables used to measure OSS adoption

Project Card: 2.2.5 Design and Implement OSS Bank of Code

Description	This project involves designing and implementing bank of code platform for providing repository of OSS code for projects and solutions developed by government entities as well as facilitate sharing of OSS code developed by OSS communities.	Timeline	Start: Q3 2021 Duration: 24 months
Objective	The objective of this project is develop to design and implement OSS bank of code platform to be used by government entities for collaboration and sharing of OSS projects and solutions.	Status	Started
Impact	The expected impact is sharing of OSS projects and solutions and reused of OSS code developed by government entities and OSS communities.	KPI	No. of entities enrolled in bank of code No. of OSS projects & solutions on bank of code
Activity	<ol style="list-style-type: none"> 1. Engage DGA and key government entities to define and gather requirements for Bank of Code and how it can support and further enable government entities in their OSS adoption 2. Define functional requirements for Bank of code 3. Develop Bank of Code architecture including key modules and functionalities 4. Review related technology projects and solutions like Github and other solutions 5. Define technical requirements for Bank of Code 6. Define OSS products that will be provided by Bank of Code 7. Develop RFP 8. Provide support for evaluation and selection of implementer of OSS marketplace 9. Provide QA on implementation of OSS marketplace 	Owner	Promo:DGA Support:NCA, SDAIA
Dependency	<ul style="list-style-type: none"> • N/A 	Budget	SAR 5 Mn
		Risk	<ol style="list-style-type: none"> 1. Availability of OSS products on bank of code 2. Low registration in bank of code
		Mitigation	<ol style="list-style-type: none"> 1. Incentive entities to use bank of code 2. Publish comprehensive OSS catalogue products on Bank of Code

Project Card: 2.2.6 Design and implement OSS Marketplace

Description	This project involves designing and implementing OSS marketplace that will provide and publish endorsed OSS products and make it easier for government entities and OSS developers access OSS products with the licensing and support models.	Timeline	Start: Q3 2021 Duration: 12 months
Objective	The objective of this project is to provide access and facilitate distribution of latest released of OSS products endorsed to make it easy for government entities to access these products.	Status	Started
Impact	The expected impact is to provide endorsed OSS products among government, to track and measure level of adoption, and enable consistent licensing and support.	KPI	No. of entities using OSS marketplace No. of OSS products & solutions on marketplace
Activity	<ol style="list-style-type: none"> 1. Engage DGA and key government entities to define and gather requirements for OSS marketplace and how it can support and further enable government entities in their OSS adoption 2. Define functional requirements for OSS marketplace 3. Develop OSS marketplace architecture including key modules and functionalities 4. Review related technology projects and solutions like Bank of Code and others to define points of integration as well as external points of integration 5. Define technical requirements for OSS marketplace 6. Define OSS licensing and support models that need to be provided by OSS marketplace 7. Define OSS products that will be provided by OSS marketplace 8. Develop RFP 9. Provide support for evaluation and selection of implementer of OSS marketplace 10. Provide QA on implementation of OSS marketplace 11. Sign NFA for OSS services and solutions 	Owner	Prim: MoF Support: DGA, Expro
Dependency	<ul style="list-style-type: none"> • Bank of Code • OSS Adoption Enablers 	Budget	Moved to MOF
		Risk	<ol style="list-style-type: none"> 1. Availability of government cloud 2. Low enrolment in OSS marketplace 3. Availability of OSS products on OSS marketplace
		Mitigation	<ol style="list-style-type: none"> 1. Utilize private cloud in the interim 2. Incentive entities to use marketplace 3. Provide manuals & guidelines on OSS products available on OSS marketplace

Project Card: 2.2.7 Develop smart government architecture & OSS cloud transformation plan

Description	This project aims to overhaul the government’s digital architecture and help transform it into smart architecture using OSS cloud and software.	Timeline	Start: Q4 2022 Duration: 6 months
Objective	The objective of this project is to develop a national plan that will help government transform its legacy architecture.	Status	Not started
Impact	The introduction of efficient microarchitecture, DevOps and cloud-based architecture that will accelerate OSS adoption and increase spend efficiency.	KPI	No. of entities that adopt the smart government architecture and OSS cloud transformation plan
Activity	<ol style="list-style-type: none"> 1. Review and baseline KSA national government technology landscape including national platforms like GSB, and others. 2. Engage selected government entities to baseline their technology stack across commercial vendors as well as architectures 3. Baseline current architecture across selected government entities in three categories, large, medium, and small 4. Establish understanding of national cloud and related cloud initiatives 5. Align with KSA smart government strategy, outcomes, and expectations as well as other related initiatives like national EA 6. Develop smart government architecture including technology stack based on OSS and cloud 7. Formulate smart technology transformation plan based on smart government architecture, OSS, and cloud 8. Develop implementation plan and roadmap 	Owner	Prim: SDAIA Support: DGA Excellence
Dependency	<ul style="list-style-type: none"> • Cloud strategy and Cloud First Policy 	Budget	SR 1,980,000
		Risk	<ol style="list-style-type: none"> 1. Availability of technical stack information by government entities
		Mitigation	<ol style="list-style-type: none"> 1. DGA’s support to obtain needed information from government entities

Initiatives KPIs: Center for OSS Adoption Initiative

2. Center for OSS Adoption Initiative

Initiative

* These KPIs need to be reviewed regularly & updated if necessary

Program

2.2 Adoption Framework

Targets*

Project	KPI(s)	Targets*					Total	
		2021	2022	2023	2024	2025		
2.2.1	Develop OSS Adoption policy and regulations	No. of entities that adopt OSS adoption policy	40	64	96	50	0	250
2.2.2	Develop OSS Tech Code of Practice	No. of entities that adopt tech code of practice	40	64	96	50	0	250
2.2.3	Develop OSS Adoption Enablers	No. of entities that adopt OSS adoption enablers	20	45	80	65	40	250
2.2.4	Develop OSS adoption maturity framework	OSS adoption maturity index	10	30	100	75	35	250
2.2.5	Design and Implement OSS Bank of Code	No. of entities contributing to bank of code	40	64	96	50	0	250
2.2.6	Design and implement OSS Marketplace	No. of entities using OSS marketplace	40	64	96	50	0	250
2.2.7	Develop smart gov architecture & transformation plan	No. of entities developing smart architecture & plan	20	45	80	65	40	250

Initiatives KPIs: No. of Entities per Adoption Stage

* These KPIs need to be reviewed regularly & updated if necessary

No. of Entities per Adoption Stage*	2021	2022	2023	2024	2025
Awareness	250	0	0	0	0
Knowledge	250	0	0	0	0
Evaluation (Pilots)	50	80	120	0	0
Success & Commitment	40	64	96	50	0
Limited Adoption	10	40	80	70	50
Broad Adoption	5	20	40	60	90
Mature Adoption	0	5	15	30	60



3.3

Adoption
Governance

Timeline for Initiative 2: Center for OSS Adoption

External Support In Progress DGA Responsibility

Program	2022				2023				2024				2025				2026			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.3 Adoption Governance	Establish				Activate				Scale											
Project																				
2.3.1 Develop operating model and governance of Center for OSS Adoption	External Support								DGA Responsibility				DGA Responsibility				DGA Responsibility			
2.3.2 Launch OSS adoption transition program for piloting OSS					External Support				DGA Responsibility				DGA Responsibility				DGA Responsibility			
2.3.3 Develop national plan for OSS adoption					External Support				DGA Responsibility				DGA Responsibility				DGA Responsibility			
2.3.4 Develop business, digital and OSS platforms strategy for government sectors					External Support				DGA Responsibility				DGA Responsibility				DGA Responsibility			

Project Card: 2.3.1 Develop and establish mandate, operating model and governance of Center for OSS Adoption

Description	This project involves developing mandate, operating model, and organization structure as well as capabilities needed to setup the Center OSS Adoption and coordinating to drive and deliver needed capabilities to KSA government stakeholders.	Timeline	Start: Q1 2022 Duration: 24 months
Objective	The objective of this project is to establish the Center for OSS Adoption to drive and enable OSS adoption across government entities.	Status	Not started
Impact	The expected impact is to enable government entities to adopt OSS successfully.	KPI	No. of government entities that enroll in the Center of OSS adoption
Activity	<ol style="list-style-type: none"> 1. Engage government entities to baseline OSS capabilities and experiences 2. Define target OSS capabilities and scale and size of capabilities buildup required over 5 years 3. Explore different models for center of OSS adoption and the way it can support and drive OSS adoption 4. Develop operating model for center of OSS adoption 5. Develop organization structure including functional structure and positional structure 6. Define the overall governance structure and model of the center under DGA including the engagement model with government entities to ensure the effectiveness 7. Develop the needed methodologies and processes that will support the center of OSS adoption 8. Define the needed tools and technologies that enable the delivery of center of OSS adoption 9. Develop plan for setting up and launch of the center of OSS adoption 10. Provide outsourced capabilities to operate the center for 1 to 2 years and transition it to DGA. 	Owner	Prim: KACST Support: DGA- Innovation
Dependency	<ul style="list-style-type: none"> • OSS Catalogue • OSS Methodologies and Standards 	Budget	21,120,000
		Risk	<ol style="list-style-type: none"> 1. Recruiting needed OSS capabilities to operate Center for OSS adoption 2. Low participation of government entities
		Mitigation	<ol style="list-style-type: none"> 1. Explore different models to build / outsource capabilities 2. Incentivize government entities to participate and seek support in center for OSS adoption

Project Card: 2.3.2 Launch OSS adoption transition program for piloting OSS across selected government entities

Description	This project involves the planning, prioritization, and support of OSS high-impact pilots by government entities and prepare them to commit to OSS adoption towards developing full-fledge OSS adoption architecture, roadmap, and implementation.	Timeline	Start: Q4 2022 Duration: 12 months
Objective	The objective of this project is to work with selected government entities to implement OSS pilots as part of awareness and readiness and develop commitment towards OSS adoption.	Status	Not started
Impact	The expected outcome is increased OSS knowledge and commitments by government entities to start OSS projects.	KPI	No. of entities with successful OSS pilots No. of successful pilots
Activity	<ol style="list-style-type: none"> 1. Setup OSS transition program that will engage government entities to implement and deliver OSS pilots in line with OSS adoption stages 2. Engage government entities in terms of their level of awareness, readiness, and commitment for OSS adoption 3. Define different types of pilots that can be undertaken by government entities and criteria for selection 4. Develop OSS pilot engagement model as well as a plan to engage government based on readiness and other factors 5. Provide OSS capabilities and teams to work with government to support them to define and implement their pilots 6. Define a criteria for tracking and reporting OSS adoption pilots 	Owner	Prim: KACST Support: NCA,DGA
Dependency	<ul style="list-style-type: none"> • OSS Catalogue • OSS Methodologies and Standards 	Budget	10,560,000
		Risk	<ol style="list-style-type: none"> 1. Readiness of government entities to OSS adoption 2. Available OSS capabilities and companies that support OSS pilots at scale
		Mitigation	<ol style="list-style-type: none"> 1. Provide proactive support to government entities 2. Build and avail OSS capabilities

Project Card: 2.3.3 Develop national plan for OSS adoption across government entities based on technology stack, readiness, and other factors

Description	<p>This project involves the development of integrated national plan across key national initiatives and government entities that have national role to drive OSS adoption based on their readiness, capabilities, technology stack and IT spend initiatives.</p>	Timeline	<p>Start: Q4 2022 Duration: 9 months</p>
Objective	<p>The objective of this project is develop national plan to drive OSS adoption as part of digital transformation and key national digital initiatives.</p>	Status	<p>Not started</p>
Impact	<p>The expected impact is to embed and govern OSS adoption as part of national digital, ICT, and smart government plan.</p>	KPI	<p>No. of national ICT and digital transformation projects with OSS adoption</p>
Activity	<ol style="list-style-type: none"> 1. Engage DGA and key government stakeholders involved in national ICT and digital transformation initiatives 2. Identify key national ICT and digital transformation initiatives that can benefit and should consider OSS 3. Plan and prioritize national digital and ICT initiatives and evaluate the potential impact and value OSS can bring to them based on well defined criteria 4. Benchmark of global national ICT and digital transformation programs and practices that have benefited from OSS adoption 5. Work with national ICT / digital transformation initiatives leaders in evaluating OSS adoption as part of these initiatives design and implementations 6. Explore OSS architecture for the identified ICT and digital transformation projects and identify the technical and other capabilities needed including potential tech vendors and implementation models 7. Develop an enablement and support plan for these initiatives 	Owner	<p>Prim: KACST Support: DGA</p>
Dependency	<ul style="list-style-type: none"> • Center for OSS adoption • OSS Catalogue 	Budget	<p>SR 6,930,000</p>
		Risk	<ol style="list-style-type: none"> 1. Readiness of government entities to OSS adoption 2. Available OSS capabilities and companies to support digital transformation
		Mitigation	<ol style="list-style-type: none"> 1. Provide proactive support to government entities 2. Build and avail OSS capabilities for digital transformation

Project Card: 2.3.4 Develop business, digital and OSS platforms strategy for government sectors

Description	This project involves the identification, design, and planning of digital platforms that adopt OSS technologies and architecture with focus on shared capabilities by government entities like sectors and other areas of common interest.	Timeline	Start: Q4 2022 Duration: 6 months
Objective	The objective of this project is to support DGA and government entities in the identification and planning of digital platforms with focus on cloud.	Status	Not started
Impact	The expected impact is creation of cloud digital platforms that can be more efficient and economical across different government sectors.	KPI	Number of OSS / digital platforms
Activity	<ol style="list-style-type: none"> 1. Engage DGA and key government stakeholders involved in shared areas of interests of sectors to understand their plans for digital platforms 2. Analyze, plan and prioritize digital platform opportunities based on well defined criteria to consider OSS 3. Benchmark of digital sector and other platforms that have benefited from OSS adoption 4. Work relevant government entities and digital platform leaders in evaluating OSS adoption as part of these initiatives design and implementations 5. Explore OSS architecture for the identified digital platforms and identify the technical and other capabilities needed including potential tech vendors and implementation models 6. Develop a plan to support the design and implementation of digital platforms for OSS 	Owner	Prim: DGA-Excellence Support: SDAIA
Dependency	<ul style="list-style-type: none"> • Government cloud strategy • National plan for OSS adoption 	Budget	SR 5,280,000
		Risk	<ol style="list-style-type: none"> 1. Readiness of government entities to OSS adoption for certain platforms 2. Available OSS capabilities and companies to support digital platforms
		Mitigation	<ol style="list-style-type: none"> 1. Provide proactive support to government entities on digital platforms 2. Build and avail OSS capabilities for digital platforms

Initiatives KPIs: Center for OSS Adoption

Initiative

2. Center for OSS Adoption Initiative

*These KPIs need to be reviewed regularly & updated if necessary

Program

2.3 Adoption Governance

Targets*

	Project	KPI(s)	Targets*					Total
			2022	2023	2024	2025	2026	
2.3.1	Develop Center for OSS Adoption mandate, operating model & governance	No. of entities supported by Center for OSS Adoption	40	64	96	50	0	250
2.3.2	Launch OSS adoption transition program for piloting	No. of entities with successful OSS pilots	50	80	120	0	0	250
2.3.3	Develop national plan for OSS adoption across government entities	No. of OSS projects	TBD	TBD	TBD	TBD	TBD	TBD
2.3.4	Develop business, digital and OSS platforms strategy for government sectors	No. of digital / OSS platforms	TBD	TBD	TBD	TBD	TBD	TBD

4

Initiative 3: NewTech Ecosystem

Building NewTech “Blue Ocean”
Ecosystem

Initiative 3: NewTech Ecosystem

Theme / Objective

Building NewTech "Blue Ocean" Ecosystem

Initiative

Initiative 3: NewTech Ecosystem

3.A
(Establish)

3.B
(Activate)

3.C
(Scale)

Program

3.1 OSS
Communities

3.2 Talent & Workforce Network

3.3 OSS Companies
Ecosystem

3.4 OSS Incubators & Accelerators

Project

3
Projects

3
Projects

3
Projects

2
Projects



4.1 OSS Communities

Timeline for Initiative 3: NewTech Ecosystem

External Support In Progress DGA Responsibility

Program	2022				2023				2024				2025				2026			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
3.1 OSS Communities	Establish				Activate				Scale											
Project																				
3.1.1 Develop OSS communities model, charter, communications, tools, KPIs, and governance					[Solid Bar]															
3.1.2 Establish activation program for OSS communities					[Solid Bar]				[Solid Bar]				[Dashed Bar]				[Dashed Bar]			
3.1.3 Establish promotional campaign that promote KSA OSS communities					[Solid Bar]				[Dashed Bar]				[Dashed Bar]				[Dashed Bar]			

Project Card: 3.1.1 Develop OSS communities model, charter, communications, tools, KPIs, and governance

Description	This project involves development charter and model to establish and manage of different types of OSS KSA and regional OSS communities that attract OSS developers and collaborate with global communities.
Objective	The objective of this project is to create a model and setup for establishing OSS communities in KSA that will collaborate with global and regional OSS communities.
Impact	The expected impact is establish productive OSS communities and strong participation from OSS developers driving the needed collaboration to contribute to OSS adoption.
Activity	<ol style="list-style-type: none"> 1. Review and baseline OSS communities in KSA and middle east region including their roles, models, and their levels of contribution to KSA IT market / sector and broader IT ecosystem 2. Conduct benchmarking on global OSS communities, focus areas, models, charters, and participation with focus on key value and contribution to OSS adoption 3. Develop overall model for creating OSS communities across KSA including different types of communities covering different sectors, technologies, government, and others that will contribute to development of OSS ecosystem and overall IT market 4. Define management and governance model of OSS communities in concert with DGA, MCIT, and other key governing OSS ecosystem in KSA 5. Develop standardized OSS community charter, operating model, capabilities, skillsets, membership, bylaws, and other aspects related to establishing and management OSS communities successfully 6. Define OSS communities KPIs and tools / platforms that are needed for communities to operate successfully
Dependency	<ul style="list-style-type: none"> • N/A

Timeline	Start: Q4 2022 Duration: 6 months
Status	Not started
KPI	Number of OSS communities created
Owner	Prim: MHRSD Support: BRMG, MCIT
Budget	SR 3,300,000
Risk	<ol style="list-style-type: none"> 1. Availability of local talent to run KSA OSS communities 2. Low participation of local communities towards government solutions
Mitigation	<ol style="list-style-type: none"> 1. Develop training programs to develop local OSS talent 2. Incentivize local communities to develop OSS products for KSA government

Project Card: 3.1.2 Establish activation program for OSS communities for kick-starting OSS communities and develop network of communities

Description	This project involves establishing a program that activates OSS communities and develop network of well-managed communities to galvanize and attract OSS developers to contribute to OSS products globally and create commercialization opportunities.	Timeline	Start: Q1 2023 Duration: 24 months
Objective	The objective of this project is to establish and manage OSS communities that contribute to building NewTech “Blue Ocean” ecosystem and KSA IT sector.	Status	Not started
Impact	The expected outcome is contribution to global OSS communities and commercialization of OSS products that serve needs of KSA government sectors and digital opportunities.	KPI	Number of communities contributing to NewTech ecosystem projects
Activity	<ol style="list-style-type: none"> 1. In line with the number of communities model and number of communities, develop program for establishing and activating OSS communities 2. Establish broad engagement model for OSS communities across universities, tech companies, academies, and others 3. Develop management procedures and communication protocols for operating and managing OSS communities 4. Put in place the necessary communications and engagement with OSS developers and others to attract them and participate in OSS communities 5. Mobilize an experience core team to manage and jump start OSS communities 6. Manage and operate communities 7. Develop OSS communities knowledge transfer and transition plan to MCIT 8. Execute on OSS communities knowledge transfer and transition plan to MCIT 	Owner	Prim: MHRSD Support: MCIT, BRMG
Dependency	<ul style="list-style-type: none"> • Develop OSS communities model, charter, communications, tools, KPIs, and governance 	Budget	SR 6,600,000
		Risk	<ol style="list-style-type: none"> 1. Availability of local talent to run KSA OSS communities 2. Low participation of local communities towards products commercialization
		Mitigation	<ol style="list-style-type: none"> 1. Incentivize local communities to contribute towards NewTech ecosystem 2. Support local communities by using their OSS products / solutions

Project Card: 3.1.3 Establish promotional campaign that promote KSA OSS communities across global communities sites to drive contribution

Description	This project involves driving promotional campaign KSA OSS communities and their contributions across global OSS communities sites (GitHub, stack overflow, and others) to raise KSA OSS standing and profile globally.	Timeline	Start: Q3 2023 Duration: 6 months
Objective	The objective of this project is to promote OSS communities to work with other global OSS communities as well as promoting them on common OSS platforms.	Status	Not started
Impact	The expected impact is to increase participation of OSS contribution of OSS developer and KSA OSS communities to global communities and improve their relative standing.	KPI	Number of contributions to global projects (e.g. Git Hub)
Activity	<ol style="list-style-type: none"> 1. Consider OSS communities and their roles to be established taken into account their focus area and coverage 2. Develop marketing and promotion strategy for OSS communities tailored and focused on different communities with focused on the expected outcomes and models to be achieved by the communities 3. Review and align OSS communities work and efforts with global OSS platforms and hubs and put in place proactive campaign to attract and promote KSA OSS talent to OSS communities and global communities 4. Develop tailored communications plan for each OSS community focused on global involvement as well as local 	Owner	Prim: PIF Support: SDAIA
Dependency	<ul style="list-style-type: none"> • Develop OSS communities model, charter, communications, tools, KPIs, and governance • Establish activation program for OSS communities for kick-starting OSS communities and develop network of communities 	Budget	SR 3,300,000
		Risk	<ol style="list-style-type: none"> 1. Low outreach of promotional campaign 2. Inability to contribute globally
		Mitigation	<ol style="list-style-type: none"> 1. Run multiple promotional campaigns to ensure largest audience 2. Constantly develop & enhance local communities to meet global standards

Initiatives KPIs: NewTech Ecosystem Initiative

Initiative

Initiative 3: NewTech Ecosystem

*These KPIs need to be reviewed regularly & updated if necessary

Program

3.1 OSS Communities

Targets*

Project

KPI(s)

2022

2023

2024

2025

2026

Total

3.1.1

Develop OSS communities model, charter, communications, tools, KPIs, and governance

No. of OSS communities created

2

6

8

3.1.2

Activate program for OSS communities to kick-start communities & develop network of communities

No. of contributions to NewTech ecosystem projects

-

3

5

7

10

25

3.1.3

Establish promotional campaign for KSA OSS communities

No. of contributions to global projects (e.g. Git Hub)

TBD

TBD

TBD

TBD

TBD

TBD



4.2

Talent & Workforce Network

Timeline for Initiative 3: NewTech Ecosystem

Program	2022				2023				2024				2025				2026			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
3.2 Talent & Workforce Network	Establish				Activate				Scale											
Project																				
3.2.1 Develop integrated OSS education, training, and development hubs programs					External Support				In Progress				DGA Responsibility							
3.2.2 Develop OSS career education program					External Support				In Progress				DGA Responsibility							
3.2.3 Establish R&D and entrepreneurship development program					External Support				In Progress				DGA Responsibility							

Project Card: 3.2.1 Develop integrated OSS education, training, and development hubs programs targeting different groups and different levels

Description	This project involves development OSS education, training, and development hubs program targeting different groups and levels from universities and collages to IT professionals and developers across companies and government entities.	Timeline	Start: Q1 2023 Duration: 6 months
Objective	This project involves developing integrated talent development program focused on cultivation of KSA OSS talent and different types of OSS trainings and education.	Status	Not started
Impact	The expected impact is increased OSS talent and developers that will become part of OSS workforce and talent network to enable NewTech ecosystem	KPI	Number of people that enroll in OSS education hub programs
Activity	<ol style="list-style-type: none"> 1. Review human development and technology development initiatives in KSA that can play role to advance role of OSS adoption from training and education 2. Map current KSA relevant technology training and educational programs including their relevance to OSS 3. Identify key and leading institutions involved in tech and OSS training 4. Conduct benchmarks on global OSS educational and training programs including certifications and identify relevant OSS programs that can contribute to KSA 5. Engage selected KSA collages and academies on their level of interest when it comes to OSS development, training and education 6. Develop an integrated program covering education, training, academies, skills development, talent development in addition to requirements to deliver on such program 7. Engage education and training partners to align on plans for execution and deliver of such program 	Owner	Prime: MCIT Support: MHRSD,
Dependency	<ul style="list-style-type: none"> • N/A 	Budget	SR 3,960,000
		Risk	<ol style="list-style-type: none"> 1. Low registration and participation in OSS training and education
		Mitigation	<ol style="list-style-type: none"> 1. Incentivize locals to enroll in educational hub programs (e.g. using certifications and other tools)

Project Card: 3.2.2 Develop OSS career education program focused on attracting, guiding, & developing OSS developers linked to job creation

Description	This project involves the creation of OSS career education program focused on attracting, guiding, and developing new generation of OSS developers linked to job creation opportunities to be created by the NewTech ecosystem and OSS companies.	Timeline	Start: Q1 2023 Duration: 6 months
Objective	The objective of this project to introduce OSS education as potential career to attract and build new generation of OSS developers for OSS companies.	Status	Not started
Impact	The expected impact is to increase number of technology and OSS developers that can join OSS companies as well as work with government entities.	KPI	No of people enrolled in career education programs No of OSS Jobs Created
Activity	<ol style="list-style-type: none"> 1. Review human development and technology development initiatives in KSA that are related to education and career development 2. Engage Ministry of Human Resources and Social Development, Ministry of Education, and selected universities to explore the importance of developing tech and OSS career and education programs 3. Conduct benchmarks on global OSS educational curriculum and programs delivered by university 4. Review and conduct global benchmark on coding practices, programs, and competition at different educational levels 5. Develop target profiles for OSS talent and developers required for KSA and NewTech ecosystem that will fuel the creation of developers in IT sector development 6. Develop OSS career development programs with well-defined KPIs that attract and develop OSS talent through OSS educational programs 7. Align OSS career development program with NewTech ecosystem skills, talent needs, and growth 8. Engage organization to lead and provider OSS career education 	Owner	Prime: HRSD Support: MCIT
Dependency	<ul style="list-style-type: none"> • Develop integrated OSS education, training, and development hubs programs targeting different groups and different levels 	Budget	SR 4,620,000
		Risk	<ol style="list-style-type: none"> 1. Low registration and participation in OSS career education
		Mitigation	<ol style="list-style-type: none"> 1. Incentivize locals to enroll in educational hub programs (e.g. using certifications and other tools)

Project Card: 3.2.3 Establish R&D and entrepreneurship development program focused on OSS development to increase OSS product opportunities

Description	This project involves developing program focused on tech entrepreneurship and OSS development that can create generation of entrepreneurs who can establish, manage, and grow OSS companies.	Timeline	Start: Q1 2023 Duration: 6 months
Objective	The objective of this initiative is to develop generation of tech entrepreneurs that can establish OSS companies with focus on innovative OSS products and services.	Status	Not started
Impact	The expected outcome is increased technology and OSS entrepreneurs as well as creation of OSS companies that can be part of NewTech OSS ecosystem.	KPI	No. of products & solutions developed through entrepreneurship and R&D program
Activity	<ol style="list-style-type: none"> 1. Review current KSA entrepreneurship tech startups and educational programs 2. Conduct benchmarks of leading global entrepreneurship training programs that leverage OSS 3. Align with NewTech ecosystem for OSS and IT sector including OSS products and commercialization opportunities 4. Understand the challenges facing the availability of qualified technology entrepreneurs and their development 5. Develop entrepreneur profiles for NewTech ecosystem and OSS development 6. Engage global and KSA entrepreneurship education program and conduct gap analysis in terms of what is available and what is required 7. Design tailored entrepreneurship education and training program 8. Engage and select organizations to run and deliver entrepreneurship education and training programs 	Owner	Prime: KAUST MCIT, MHRSD
Dependency	<ul style="list-style-type: none"> • Develop OSS career education program focused on attracting, guiding, & developing OSS developers linked to job creation 	Budget	SR 5,280,000
		Risk	<ol style="list-style-type: none"> 1. Low availability of qualified and talented entrepreneurs
		Mitigation	<ol style="list-style-type: none"> 1. Incentivize talented technologist to explore and train on entrepreneurship

Initiatives KPIs: NewTech Ecosystem

Initiative

Initiative 3: NewTech Ecosystem

*These KPIs are defined based on number of expected OSS jobs to be created

Program

3.2 Talent & Workforce Network

	Project	KPI(s)	Targets*					Total
			2022	2023	2024	2025	2026	
3.2.1	Develop integrated OSS education, training, and development hubs	No. of people enrolled in OSS education hub programs	140	404	864	1052	1184	3,644
3.2.2	Develop OSS career education program focused on developing new generation of OSS developers	No. of people enrolled in OSS career education programs	140	404	864	1052	1184	3,644
		No of OSS Jobs Created	70	202	432	526	592	1822
3.2.3	Establish R&D and entrepreneurship development program	No. of products & solutions developed through R&D program	25	100	125	150	200	600



4.3 OSS Companies Ecosystem

Timeline for Initiative 3: NewTech Ecosystem

External Support In Progress DGA Responsibility

Program	2022				2023				2024				2025				2025			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
3.3 OSS Companies Ecosystem	Establish				Activate				Scale											
Project																				
3.3.1 Develop OSS product commercialization																				
3.3.2 Develop global-KSA OSS company innovation program																				
3.3.3 Develop OSS joint ventures & corporate strategy																				

Project Card: 3.3.1 Develop OSS product commercialization and company creation strategy

Description	<p>This project involves analysis of OSS products and communities landscape including OSS products and commercialization opportunities that are relevant to KSA IT and government IT market needs to define OSS product commercialization strategy.</p>	Timeline	<p>Start: Q1 2023 Duration: 12 months</p>
Objective	<p>The objective of this project is to identify opportunities for commercialization of OSS products that can provide the basis for creating commercially-viable OSS product companies.</p>	Status	<p>Not started</p>
Impact	<p>The expected impact is to increase the OSS products that can be commercialized and be launch in NewTech ecosystem to serve KSA government needs and broader KSA IT market.</p>	KPI	<p>No. of OSS companies created No. of OSS commercialized products</p>
Activity	<ol style="list-style-type: none"> 1. Review current KSA government IT needs and digital transformation requirements focused on adoption OSS 2. Explore opportunities for commercialization of existing OSS products that are being developed by communities 3. Explore other opportunities for development of new OSS products that address new requirements 4. Develop OSS products commercialization and new OSS product development strategy focused on the company creation opportunity 5. Develop OSS / NewTech company model including standardized company legal and ownership structure 6. Develop OSS NewTech company organization structure 7. Develop OSS NewTech company business plan 8. Develop OSS NewTech company financial model including funding requirements 	Owner	<p>Prime: PIF Support: Mshroat, MCIT</p>
Dependency	<ul style="list-style-type: none"> • Develop business, digital and OSS platforms strategy for government sectors • OSS Catalogue 	Budget	<p>SR 10,560,000</p>
		Risk	<ol style="list-style-type: none"> 1. Ability of NewTech companies to provide OSS solutions / products to government
		Mitigation	<ol style="list-style-type: none"> 1. Provide proactive support and incubation to enable and fund the creation of OSS companies for NewTech

Project Card: 3.3.2 Develop and establish global KSA OSS company innovation activation program

Description	This project involves exploring and attracting emerging technology OSS companies that are offering innovative OSS products and services that can add value to setup in KSA NewTech ecosystem and foster innovation and collaboration.	Timeline	Start: Q1 2023 Duration: 12 months
Objective	The objective of this project is to identify new and emerging global technology OSS companies, attract them, and explore opportunities for them to setup in KSA NewTech ecosystem.	Status	Not started
Impact	The expected outcome is increased participation of emerging OSS tech companies to participate in KSA NewTech ecosystem and bring innovative OSS products and technologies.	KPI	No of global OSS companies setting up in KSA
Activity	<ol style="list-style-type: none"> 1. Conduct scan of global emerging digital and technology startups / companies that are addressing key digital transformation needs for KSA 2. Explore and map global tech and digital investments flow for these companies as part of qualifying them 3. Evaluate and analyze the digital products and platforms for the companies and their relevance to NewTech ecosystem 4. Develop strategy and program to engage these companies and promote KSA NewTech ecosystem and related KSA government tech spend related to their products and services 5. Evaluate the current regulatory environment in KSA and propose incentive structure to attract global tech startups and establish in KSA 6. Explore different models for digital and technology collaboration with global technology hubs and communities 	Owner	Prime: MISA Support: DGA-I&P, PIF
Dependency	<ul style="list-style-type: none"> • Develop OSS product commercialization and company creation strategy 	Budget	SR 7,920,000
		Risk	<ol style="list-style-type: none"> 1. Reluctance of global OSS technology companies to enter KSA market
		Mitigation	<ol style="list-style-type: none"> 1. Incentivize global OSS companies to setup office in KSA through investments and other vehicles

Project Card: 3.3.3 Develop OSS joint ventures and corporate investment strategy

Description	This project involves development of joint venture and investment strategy to create a model and engage global tech players to play key role in co-creating and co-investing in OSS companies that can be competitiveness to NewTech ecosystem	Timeline	Start: Q1 2023 Duration: 12 months
Objective	The objective of this project to explore joint ventures opportunities with global tech players to establish OSS companies that can add value to NewTech ecosystem	Status	Not started
Impact	The expected outcome is to bring and increase global tech participation in the creation of OSS companies that can bring competitiveness and value to NewTech ecosystem	KPI	No. of OSS joint ventures
Activity	<ol style="list-style-type: none"> 1. Review current KSA government IT needs and digital transformation requirements focused on adoption OSS 2. Evaluate the current regulatory environment in KSA and propose incentive structure to attract global tech companies to invest in establishing tech companies 3. Explore opportunities with global technology vendors that have presence in KSA and contribute to NewTech ecosystem through investment and creation of joint ventures 4. Develop strategy and program that can explore technology synergies such technology localization, delivery, and operation to engage global tech companies and promote KSA NewTech ecosystem and related KSA government tech spend for creation of joint ventures 5. Explore different models for digital and technology collaboration with global technology hubs and communities in KSA 	Owner	Prime: PIF Support: DGA-I&G, MISA
Dependency	<ul style="list-style-type: none"> • Develop OSS product commercialization and company creation strategy 	Budget	SR 9240,000
		Risk	<ol style="list-style-type: none"> 1. Reluctance of global OSS technology companies to participate in NewTech ecosystem
		Mitigation	<ol style="list-style-type: none"> 1. Incentivize global OSS companies to invest in KSA NewTech ecosystem

Initiatives KPIs: NewTech Ecosystem

Initiative

Initiative 3: NewTech Ecosystem

*These KPIs need to be reviewed regularly & updated if necessary

Program

3.3 OSS Companies Ecosystem

	Project	KPI(s)	Targets*					Total
			2022	2023	2024	2025	2026	
3.3.1	Develop OSS product commercialization & company creation strategy	No. of OSS companies created	3	4	5	5	3	20
3.3.2	Develop and establish global-KSA OSS company innovation activation program	No of global OSS companies setting up in KSA	-	2	4	6	8	20
3.3.3	Develop OSS joint ventures and corporate investment strategy	No. of OSS joint ventures	-	2	4	6	8	20



4.4

OSS Incubators & Accelerators

Timeline for Initiative 3: NewTech Ecosystem

External Support In Progress DGA Responsibility

Program	2022				2023				2024				2025				2026			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
3.4 OSS Incubators & Accelerators	Establish				Activate				Scale											
Project																				
3.4.1 Develop & establish incubators accelerators for OSS companies					DGA Responsibility				External Support				External Support							
3.4.2 Develop and establish virtual KSA-global OSS incubators and accelerators					DGA Responsibility				External Support				External Support							

Project Card: 3.4.1 Develop & establish incubators accelerators program of OSS companies

Description	<p>This project involves setting up specialized OSS incubators and accelerators that will bring entrepreneurs and developers with OSS products and services ideas and provide needed support to create their OSS companies that are relevant to market</p>	Timeline	<p>Start: Q1 2023 Duration: 12 months</p>
Objective	<p>The objective of this project is create OSS incubators and accelerators that will incubate OSS products and services ideas and opportunities for them to become OSS companies</p>	Status	<p>Not started</p>
Impact	<p>The expected outcome is to increase the number of OSS companies and their readiness to launch in NewTech ecosystem through systematic incubation and acceleration</p>	KPI	<p>No. of OSS companies incubated or accelerated</p>
Activity	<ol style="list-style-type: none"> 1. Review current KSA incubators and accelerators landscape for tech startups 2. Evaluate the extent existing KSA incubators and accelerators focus on KSA government needs in terms of platforms, digital services, and digital transformation 3. Review current tech startup landscape in KSA and evaluate to what extent these startups support OSS and NewTech ecosystem 4. Develop specialized incubators and accelerators models and setups that attract / cultivate OSS talent and entrepreneurs to found and start OSS companies that address government needs 5. Develop the financial and funding models for the incubators and accelerators 6. Develop the governance and operating model as well as KPIs for incubators including board of advisors and entire support ecosystem for NewTech OSS companies and entrepreneurs 7. Provide capabilities to setup and operate the incubators and accelerators with a model to transition to MCIT 	Owner	<p>Prime: KACST Support: Monshaat,, MCIT</p>
Dependency	<ul style="list-style-type: none"> • Develop OSS product commercialization and company creation strategy 	Budget	<p>SR 7,920,000</p>
		Risk	<ol style="list-style-type: none"> 1. Fewer than expected OSS companies and tech entrepreneurs to join accelerators and incubators
		Mitigation	<ol style="list-style-type: none"> 1. Create incentive scheme to encourage entrepreneurship and participation in incubators and accelerators

Project Card: 3.4.2 Develop and establish virtual KSA-global OSS incubators and accelerators programs

Description	This project involves setting up virtual KSA-global OSS incubators and accelerators program to foster collaboration between local incubators and accelerators and international ones, to increase opportunities for OSS products companies in KSA.
Objective	The objective of this project is to provide scalable incubation and acceleration with support of virtual global incubators and accelerators focused on OSS and company creation.
Impact	The expected outcome is increased number of accelerators and incubators that can support increased number of OSS companies looking to setup in NewTech ecosystem.
Activity	<ol style="list-style-type: none"> 1. Explore global virtual incubators and accelerators program that can focus and contribute to creation of OSS companies 2. Evaluate different incubators and accelerators programs and their suitability for NewTech OSS companies 3. Engage virtual incubators and accelerators to define customized / tailored NewTech incubator / accelerator program 4. Define model and process for selecting NewTech entrepreneurs and companies 5. Define KPIs to track participation and performance of NewTech companies and entrepreneurs 6. Provide capabilities support for NewTech companies
Dependency	<ul style="list-style-type: none"> • Develop OSS product commercialization and company creation strategy

Timeline	Start: Q1 2023 Duration: 6 months
Status	Not started
KPI	No. of OSS companies virtually incubated or accelerated
Owner	Prime: KACST Support:, MCIT, Monshaat
Budget	SR 4,620,000
Risk	<ol style="list-style-type: none"> 1. Fewer than expected OSS companies and tech entrepreneurs to join accelerators and incubators
Mitigation	<ol style="list-style-type: none"> 1. Create incentive scheme to encourage entrepreneurship and participation in incubators and accelerators

Initiatives KPIs: NewTech Ecosystem

Initiative

Initiative 3: NewTech Ecosystem

*These KPIs need to be reviewed regularly & updated if necessary

Program

3.4 OSS Incubators & Accelerators

Targets*

	Project	KPI(s)	Targets*					Total
			2022	2023	2024	2025	2026	
3.4.1	Develop & establish incubators accelerators program of OSS companies	No. of OSS companies incubated or accelerated	6	8	10	10	6	40
3.4.2	Develop and establish virtual KSA-global OSS incubators and accelerators programs	No. of OSS companies virtually incubated or accelerated	6	8	10	10	6	40

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