Industry Reference Architecture

Business Capability Maps, Value Streams, and Strategy Maps for Upstream Oil & Gas

Leading organizations require a unified and validated view of business capabilities that aligns initiatives, investments, and strategy in order to compete in their industry.

In the age of disruption,
IT must end misalignment.

An industry reference architecture helps accelerate your strategy design process and enhances IT's ability to align people, process, and technology with key business priorities.

This research is designed for:

✓ CIOs, heads of EA, or chief architects who need to improve their organization's understanding of business capabilities and how IT can support them.

✓ Organizations that want to sharpen their focus by using architecture to better inform their IT governance, stakeholder management, and IT strategy capabilities.

This research will help you:

✓ Leverage a validated set of models and maps for your industry.

✓ Learn how to incorporate your reference architecture across your core IT areas.

✓ Learn how to analyze how well business capabilities are supported by people, process, and technology.

✓ Accelerate the development of your enterprise architecture, IT strategy, application portfolio, and data architecture capabilities.

01 Build your organization's capability map using Info-Tech's *Industry Reference Architecture.*

02 Use business capabilities to define your organization's strategic focus.

03 Assess your organization's key capabilities to determine your planning priorities.

04 Adopt a capability-based approach to strategic planning.

GLOSSARY OF KEY CONCEPTS

Industry Value Chain

A high-level analysis of how the industry creates value for the consumer as an overall end-to-end process.

Business Capability Map

A visual representation of the organization's key capabilities. This model forms the basis of strategic planning discussions.

Industry Value Streams

The specific set of activities an industry player undertakes to create and capture value for and from the end consumer.

Strategic Objectives

A set of standard strategic objectives that most industry players will feature in their corporate plans.

Industry Strategy Map

A visualization of the alignment between the organization's strategic direction and its key capabilities.

Capability Assessments

Based on people, process, and technology, a heat-mapping effort that analyzes the strength of each key capability.
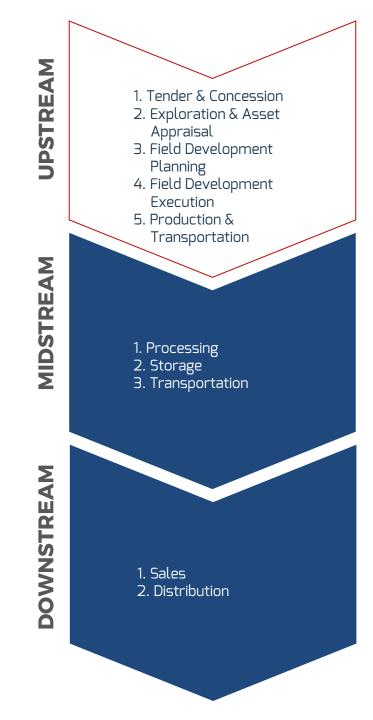
Industry Overview: Upstream Oil & Gas

Organizations in this industry operate and develop oil and gas field properties.

Activities in this industry include the exploration and production of crude petroleum; the mining and extraction of oil from oil shale and oil sands; the exploration and production of natural gas; sulfur recovery from natural gas; and the recovery of hydrocarbon liquids.

Companies may operate oil and gas wells on their own account or for others on a contract or fee basis.

In addition to large upfront investments and high operational costs, exploration and production projects usually have long lead times. Therefore, strong partnerships and innovative finance structures are necessary to perform well in varying market conditions.

Although high costs and risks of exploration are inherent to this industry, exploring for oil and gas deposits can be extremely profitable. The primary driver of profit is the underlying market oil price.

Source: CBS Maritime & The World Bank Group

UPSTREAM

1. Tender & Concession
2. Exploration & Asset Appraisal
3. Field Development Planning
4. Field Development Execution
5. Production & Transportation

MIDSTREAM

1. Processing
2. Storage
3. Transportation

DOWNSTREAM

1. Sales
2. Distribution

Figure above: Value Chain for the Oil & Gas Industry

Build your organization's capability map using Info-Tech's Industry Reference Architecture.

A. ### DEFINE THE ORGANIZATION'S VALUE STREAMS

Review the value streams and come to a consensus as to how your organization creates and captures value.

B. ### DEVELOP A BUSINESS CAPABILITY MAP

Involve your key business stakeholders to validate a set of business capabilities in order to unify the organization's perspective.

Review the following business capability map and value streams and customize them to fit your organization.

Navigation:

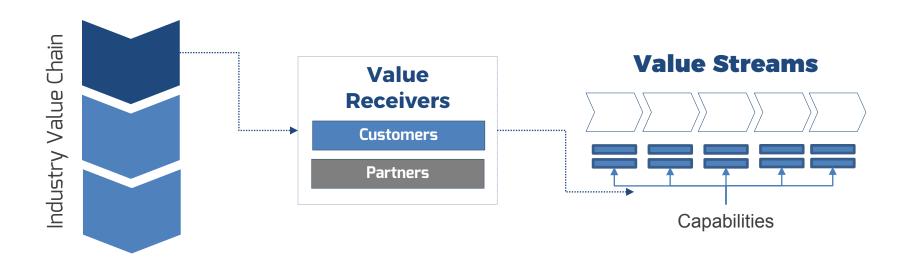| Context Slides: **Read** |
|:---:|
| Visual Slides: **Customize** |
| Instruction Slides: **Follow** |

Define the Organization's Value Streams

Value streams connect business goals to the organization's value realization activities. They enable an organization to create and capture value in the market place by engaging in a set of interconnected activities. Those activities are dependent on the specific industry segment an organization operates within. Value streams can extend beyond the organization into the supporting ecosystem, whereas business processes are contained within and the organization has complete control over them.

There are two types of value streams: core value streams and support value streams. Core value streams are mostly externally facing: they deliver value to either an external or internal customer and they tie to the customer perspective of the strategy map. Support value streams are internally facing and provide the foundational support for an organization to operate.

An effective method for ensuring all value streams have been considered is to understand that there can be different end-value receivers. Info-Tech recommends identifying and organizing the value streams with customers and partners as end-value receivers.

Industry Value Chain

Value Receivers

Customers

Partners

Value Streams

Capabilities

Step 1-A: **Visual**

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VALUE STREAM DESCRIPTIONS FOR UPSTREAM OIL & GAS

- Upstream oil and gas companies need to obtain rights from the government before they can start extracting resources from a specific geographic location.
- Tenders and concessions are used to secure exploration and production rights, however, the specific process varies by country.

- If the oil field is considered commercially viable after exploratory drilling, a more detailed survey of the oil field occurs and the information is used to plan the facilities and a drilling program.
- Field development planning also involves capacity modeling and well prognosis.

- The production stage involves extracting the oil and gas trapped underground through various drilling techniques.
- The extracted oil and gas is stored at the drilling sites and eventually transported to refineries.
- Maintaining the drilling equipment, wells, storage tanks, and pipelines is an important activity.

Value Streams

Tender & Concession → **Exploration & Asset Appraisal** → **Field Development Planning** → **Field Development Execution** → **Production & Transportation**

- Exploration involves searching for crude oil and natural gas deposits beneath the Earth's surface using a variety of geographic and geophysical analysis techniques.
- Asset appraisal includes performing exploratory drilling to determine the commercial viability of the oil field before it is fully developed for production.

- Field development execution begins with creating a design for the facilities and wells in the oil field.
- Typically, wells are only constructed in areas with a promising well prognosis.
- The facilities and infrastructure also need to be constructed before production can begin.

DEFINE THE ORGANIZATION'S VALUE STREAMS

01 IDENTIFY AND ASSEMBLE KEY STAKEHOLDERS

Build an accurate depiction of the business.
It is important to make sure the right stakeholders participate in this exercise. The exercise of identifying capabilities for an organization is very introspective and requires deep analysis.

Consider:
- Who are the decision makers and key influencers?
- Who will impact the business architecture work? Who has a vested interest in the success or failure of the practice?
- Who has the skills and competencies necessary to help you be successful?

Avoid:
- *Don't focus on the organizational structure and hierarchy.* Often stakeholder groups don't fit the traditional structure.
- *Don't ignore subject-matter experts on either the business or IT side.* You will need to consider both.

02 DETERMINE HOW THE ORGANIZATION CREATES VALUE

The first step of delivering value is defining how it will happen.
Use the organization's industry segment to start a discussion on how value is created for customers. Working back from the moment value is realized by the customer, consider the sequential steps required to deliver value in your industry segment.

Consider:
- Who are your customers?
- What tasks are your customers looking to accomplish?
- How does your organization's set of products and services help them accomplish that?
- What are the benefits the organization delivers to them?

Avoid:
- *Don't boil the ocean.* Focus on your industry segment and how you deliver value to your partners and customers specifically.

03 DEFINE AND VALIDATE THE ORGANIZATION'S VALUE STREAMS

Unify the organization's perspective on how it creates value.
Write a short description of the value stream that includes a statement about the value provided and a clear start and end for the value stream. Validate the accuracy of the descriptions with your key stakeholders.

Consider:
- How does the organization deliver those benefits?
- How does the customer receive the benefits?
- What is the scope of your value stream? What will trigger the stream to start and what will the final value be?
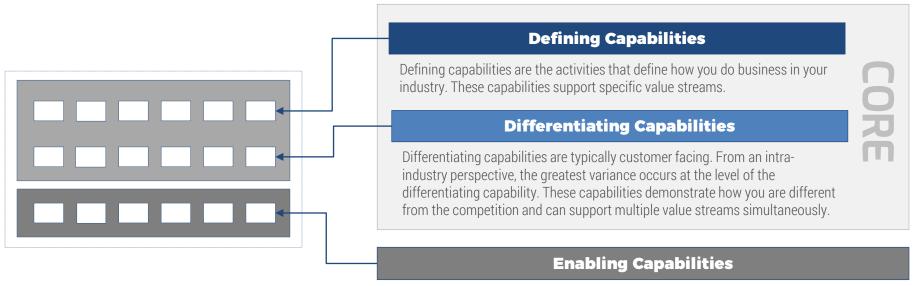
Avoid:
- *Don't start with a blank page.* Use Info-Tech's value stream definitions on the previous slide as a starting point and customize from there.

Develop a Business Capability Map

Business architecture consists of a set of techniques to create multiple views of an organization; the primary view is known as a business capability map. A business capability defines **what** a business does to enable value creation, rather than **how.** Business capabilities are business terms defined using descriptive nouns such as "Marketing" or "Research and Development." They represent stable business functions, are unique and independent of each other, and typically will have a defined business outcome.

A business capability map provides details that help the business architecture practitioner direct attention to a specific area of the business for further assessment. A business capability mapping process should begin at the highest level view of an organization, the level 0, which presents the entire business on a page. *Please see the next slide for a business capability map designed for the upstream oil & gas industry.*

An effective method of organizing business capabilities is to split them into logical groupings or categories. At the highest level, capabilities are either "core" (customer-facing functions) or "enabling" (supporting functions). As a best practice, Info-Tech recommends dividing business capabilities into the following categories:

CORE

Defining Capabilities

Defining capabilities are the activities that define how you do business in your industry. These capabilities support specific value streams.

Differentiating Capabilities

Differentiating capabilities are typically customer facing. From an intra-industry perspective, the greatest variance occurs at the level of the differentiating capability. These capabilities demonstrate how you are different from the competition and can support multiple value streams simultaneously.

Enabling Capabilities

Enabling capabilities support the creation of strategic plans and facilitate business decision making as well as the functioning of the business (e.g. IT, Finance, HR).

Step 1-B: **Visual**

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BUSINESS CAPABILITY MAP FOR UPSTREAM OIL & GAS

	Tender & Concession	Exploration & Asset Appraisal	Field Development Planning	Field Development Execution	Production & Transportation
Defining	Opportunity Assessment	Geological & Geographic Analysis	Capacity Modeling	Facility Design	Operational Surveillance
	Venture Finance Management	Exploratory Drilling	Facility Planning	Facility Construction	Production Operations
	Contract Negotiation	Land Management	Drilling Program	Well Design	Operational Maintenance
		Asset Evaluation	Well Prognosis	Well Construction	Production Accounting
		Reservoir Surveillance		Program/Project Management	Storage Management
					Pipeline & Capacity Management
Differentiating	Market & Economic Analysis	Supply Chain Management	Business Analytics	Compliance Management	Account Management
	Partner Management	Quality Assurance	Change Management	Enterprise Data Management	Reservoir Management
		Knowledge Management	Reserve Reporting	Collaboration & Innovation	Workflow & Process Management
Enabling	Corporate Governance	Strategic Planning	Portfolio Management	Risk Management	Enterprise Architecture
	HR	Legal	Corporate Finance	IT	Procurement Support

DEVELOP A BUSINESS CAPABILITY MAP

01 DETERMINE WHICH BUSINESS CAPABILITIES SUPPORT VALUE STREAMS

Deconstruct value streams into their component capabilities.
Analyze the value streams to identify and describe the organization's capabilities that support them. This stage requires a good understanding of the business and will be a critical foundation for the business capability map.

Consider:
- What is the objective of your value stream? This can highlight which capabilities support which value streams.
- What are the activities that make up the business?
- Segmenting your value stream into individual stages will give you a better understanding of the steps involved in creating value.

Avoid:
- *Don't do this alone.* Make sure the right stakeholders participate. The exercise of identifying capabilities for an organization is very introspective and requires deep analysis. It is challenging to develop a common language that everyone will understand and be able to apply. Don't waste your efforts building an inaccurate depiction of the business.

02 ACCELERATE THE PROCESS WITH AN INDUSTRY REFERENCE ARCHITECTURE

It's never a good idea to start with a blank page.
The business capability map on the previous slide can be used as an accelerator. Assemble the relevant stakeholders – business unit leads and product/service owners – and modify the business capability map to suit your organization's context.

Consider:
- What are the activities that make up your business?
- Can these activities be tied to outcomes? If not, they might not apply to your organization.
- Are there any capabilities on the map that don't fit the organization? Deselect them if yes.

Avoid:
- *Don't repeat capabilities.* Capabilities are typically mutually exclusive activities.
- *Don't include temporary initiatives.* Capabilities should be stable over time. The people, processes, and technologies that support capabilities will change continuously.

03 VALIDATE THE BUSINESS CAPABILITY MAP

Crowdsource the capability map validation.
Validate the capability map with the executive team (those who were not included) and other key stakeholders. Use validation of your business capability map as an excuse to start a conversation regarding the organization's overall strategy.

Consider:
- Are there any sensitive areas of the organization that may take this effort the wrong way? Engage them to get their input as early as possible to ensure they don't feel left out or alienated.

Avoid:
- *Don't delay validating the maps with top-level executives.* Without their support, your architecture practice won't be taken seriously.
- *Don't leave anyone out on the assumption that they won't be interested.* This process will foster alignment between organizational silos.

Use capabilities to **define** your organization's strategic focus.

A. DEFINE THE ORGANIZATION'S KEY CAPABILITIES

Determine which capabilities should be prioritized based on their strategic value to your organization.

B. DEVELOP A STRATEGY MAP

Insert your organization's corporate strategic objectives (or adopt the ones provided) and map them to your value streams and capabilities to communicate how objectives are realized.

Refine, revisit, or reset the mandate for IT by catalyzing a dialogue on what matters most to the organization.
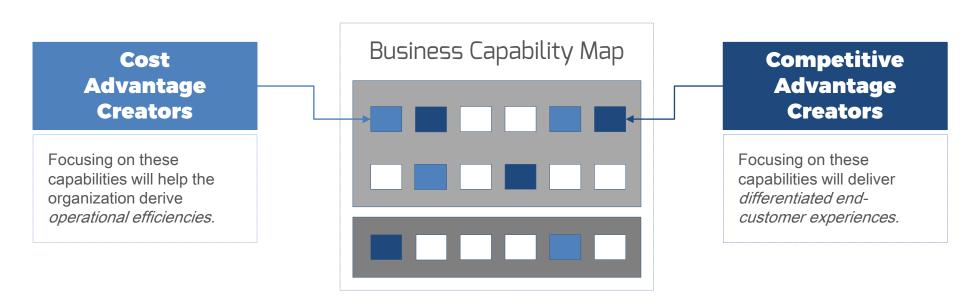
Define the Organization's Key Capabilities

A discussion about the key or most critical capabilities is an excellent opportunity for IT leaders to review, refresh, and even reset expectations from the business as to what value IT should be providing to the organization. There is often misalignment as to whether, or to what extent, IT should be making strategic investments to help the business enhance its capabilities through technology. Some IT leaders believe they should be transforming the organization while their CEO wants them to focus on operational efficiencies.

Depending on the mandate from the business, an IT leader may focus on developing a *cost advantage* for the organization by directing technology efforts to capabilities that deliver efficiency gains. This is often the case for many IT leaders for whom the primary role for IT is to enable the business to deliver its products/services to the end consumer at the lowest cost possible. These capabilities are known as Cost Advantage Creators.

Organizations can develop a competitive advantage over their industry counterparts by creating a differentiated experience for the organization's customers. Increasingly, this is facilitated and made possible through technology. IT can direct investment on capabilities that will improve their organization's competitive position in its market by delivering unique or enhanced experiences for the organization's end customers. IT can focus on developing a competitive advantage by directing efforts on capabilities that are end-customer facing. These are known as the organization's Competitive Advantage Creators.

Cost Advantage Creators

Focusing on these capabilities will help the organization derive *operational efficiencies*.

Business Capability Map

Competitive Advantage Creators

Focusing on these capabilities will deliver *differentiated end-customer experiences*.

Case Study for Upstream Oil & Gas

Shell divests to centralize operations in fewer, off-shore wells.

BACKGROUND

- Shell has had a presence in more than 70 different countries globally.

- The company recently acquired BG Group for US$52 billion.

- An extended period of low oil and gas prices lasting over two years has constrained spending and put the whole industry under pressure.

- There is still uncertainty in terms of how long the downturn will last and whether the prices will go down even further.

- The new government in Brazil is more welcoming to foreign oilfield operations than the previous one.

TACTICS

- In mid-2016, Shell's CEO, Ben van Beurden, delivered a mid-term strategy to reduce overall geographic footprint, opting instead to drill deeper and focus on deep-water exploration and petrochemical production.

- Shell is divesting US$30 billion dollars worth of assets to execute on the strategy.

- The strategy will have a geographic focus on the Gulf of Mexico and offshore Brazil.

IMPACT

To enable this strategy, Shell should focus on the following capabilities:

Competitive Advantage Creators

- ✔ Opportunity Assessment
- ✔ Asset Evaluation
- ✔ Partner Management
- ✔ Supply Chain Management
- ✔ Asset Management
- ✔ Workflow and Process Management

Cost Advantage Creators

- ✔ Contract Negotiation
- ✔ Exploratory Drilling
- ✔ Land Management
- ✔ Facility Planning
- ✔ Drilling Program
- ✔ Facility Design
- ✔ Well Design
- ✔ Production Operations
- ✔ Operational Maintenance
- ✔ Pipeline & Capacity Management
- ✔ Knowledge Management

Source: OilPrice.com

* See next slide for a visual representation of these capabilities.

ILLUSTRATIVE EXAMPLE: DEFINING KEY CAPABILITIES FOR SHELL'S STRATEGY (CASE STUDY)

Legend:
- Cost Advantage Creators
- Competitive Advantage Creators

	Tender & Concession	Exploration & Asset Appraisal	Field Development Planning	Field Development Execution	Production & Transportation
Defining	Opportunity Assessment	Geological & Geographic Analysis	Capacity Modeling	Facility Design	Operational Surveillance
	Venture Finance Management	Exploratory Drilling	Facility Planning	Facility Construction	Production Operations
	Contract Negotiation	Land Management	Drilling Program	Well Design	Operational Maintenance
		Asset Evaluation	Well Prognosis	Well Construction	Production Accounting
		Reservoir Surveillance		Program/Project Management	Storage Management
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Differentiating	Market & Economic Analysis	Supply Chain Management	Business Analytics	Compliance Management	Account Management
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		Knowledge Management	Reserve Reporting	Collaboration & Innovation	Workflow & Process Management
Enabling	Corporate Governance	Strategic Planning	Change Management	Risk Management	Enterprise Architecture
	HR	Legal	Corporate Finance	IT	Procurement Support

DEFINE THE ORGANIZATION'S KEY CAPABILITIES

01 DETERMINE COST ADVANTAGE CREATORS

Focus on capabilities that drive a cost advantage for your organization.
If your organization has a cost advantage over competitors, the capabilities that enable it should be identified and prioritized. Highlight these capabilities and prioritize the programs that support them.

Consider:
- What is the source of your cost advantage? IT should support the capabilities that drive the cost advantage.
- Is the industry you operate in sensitive to prices?

Avoid:
- *Don't focus on capabilities that create an unsustainable cost advantage.* Take a long-term perspective and allocate your resources wisely.

02 DETERMINE COMPETITIVE ADVANTAGE CREATORS

Prioritize capabilities that give your organization an edge over rivals.
If your organization does not have a cost advantage over competitors, determine if it can deliver differentiated end-customer experiences. Once you have identified the competitive advantages, understand which capabilities enable them. These capabilities are critical to the success of the organization and should be highly supported.

Consider:
- Are there any products or services your organization provides that customers consider superior to competitive offerings?
- Which capabilities enable the competitive advantage?
- How easy is it for competitors to neutralize your competitive advantage? Focus on the capabilities that are difficult to replicate by competitors to create a more sustainable advantage.

Avoid:
- *Don't determine the competitive advantages alone.* Incorporate various perspectives from throughout the organization to truly understand how the organization competes in the marketplace.

03 DEFINE KEY FUTURE-STATE CAPABILITIES

Know where you want to go, and chart a course to get there.
In addition to the current cost and competitive advantage creators, the organization may have the intention to enhance new capabilities. Discuss and select the capabilities that will help drive the attainment of future goals.

Consider:
- Are your competitors doing anything to give them a competitive advantage? Can your organization easily replicate the capabilities needed to neutralize that advantage?
- How is the external environment (political, economic, social, or technological) likely going to change in the future? How might these changes impact your current key capabilities?

Avoid:
- *Don't blindly copy your competitors' strategies.* It is important to understand that each organization is unique; before focusing on key capabilities that might neutralize your competitors' advantages, ensure they fit well with your overall strategy.

Develop a Strategy Map

Articulating a clear strategy that not only aligns IT with business objectives, but also enables IT to adapt to changing business needs, is the most important activity a CIO can do for the IT department and organization. A strategy map is a tool to help narrow the focus onto what matters most. With ever-changing resources, business strategies, and external environments, the strategy map can ensure IT is consistently providing value through the enhanced prioritization of IT programs.

Strategy mapping is a technique that helps the executive suite communicate the business strategy to other levels of the organization by visually representing the organizational strategic objectives and mapping each of them to value streams, business capabilities, and ultimately, to specific IT programs. There are four layers to a strategy map: *strategic objectives, value streams, business capabilities, and IT programs.*

- Strategic objectives are the outcomes that the organization is looking to achieve.
- Value streams enable an organization to create and capture value in the market through interconnected activities that support strategic objectives.
- Business capabilities define what a business does to enable value creation in value streams, rather than how.
- IT programs are actionable descriptions of how the IT department will enable one or multiple business capabilities in its target state.

To maximize value, each IT program should be prioritized according to the strategic objective it enables. Business capabilities also help sequence IT programs.
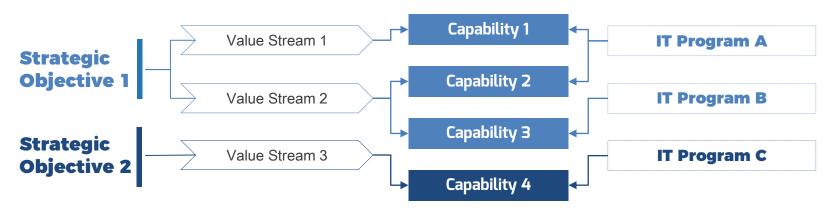

Figure above: Strategy Map

ILLUSTRATIVE EXAMPLE: STRATEGIC OBJECTIVES FOR UPSTREAM OIL & GAS

01 **Make disciplined investments**

"Our overall strategy is to invest in projects that generate long-term value and achieve returns well above our cost of capital while maintaining a conservative balance sheet."

– Shell

02 **Deliver operational excellence**

"We recognize that strong business strategies only work with superior execution, so we work to increase production and efficiency while preserving product quality excellence."

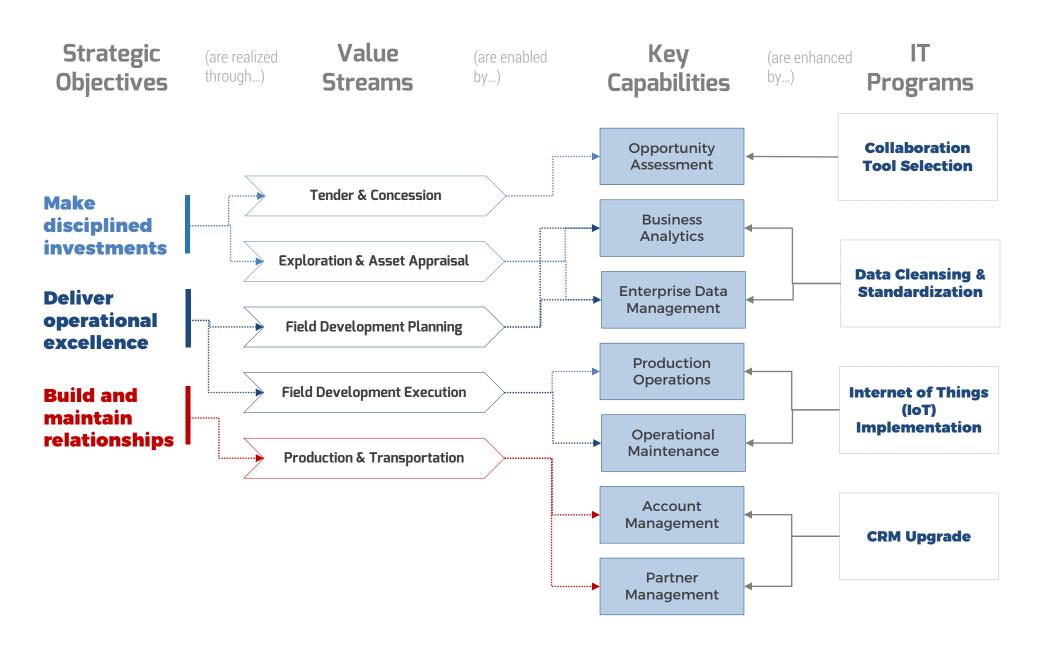– ExxonMobil

03 **Build and maintain relationships**

"We work to develop and maintain strong relationships – with governments, partners, civil society, and others – to enhance our operations in more than 70 countries across the globe."

– BP

Step 2-B: **Visual**

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ILLUSTRATIVE EXAMPLE: STRATEGY MAP FOR UPSTREAM OIL & GAS

Strategic Objectives	*(are realized through...)*	Value Streams	*(are enabled by...)*	Key Capabilities	*(are enhanced by...)*	IT Programs

Make disciplined investments

Deliver operational excellence

Build and maintain relationships

Tender & Concession

Exploration & Asset Appraisal

Field Development Planning

Field Development Execution

Production & Transportation

Opportunity Assessment

Business Analytics

Enterprise Data Management

Production Operations

Operational Maintenance

Account Management

Partner Management

Collaboration Tool Selection

Data Cleansing & Standardization

Internet of Things (IoT) Implementation

CRM Upgrade

DEVELOP A STRATEGY MAP

01 IDENTIFY THE STRATEGIC OBJECTIVES FOR THE BUSINESS

Knowing the key strategic objectives for the business will drive business-IT alignment.
It is important to make sure the right strategic objectives of the organization have been identified and are well understood. Engage the right stakeholders to help identify and document the key strategic objectives for the business.

Consider:
- Who are the decision makers and key influencers?
- Who will impact the strategic objectives for the business?
- Are there external forces that will impact the current strategic objectives?

Avoid:
- *Don't simply go with the existing documented strategic objectives for the business.* Ensure they are up to date and interview the decision makers to get the most updated objectives if needed.

02 MAP THE STRATEGIC OBJECTIVES TO THE IT PROGRAMS THAT SUPPORT THEM

Communicate the business strategy to other levels of the organization visually.
Starting with strategic objectives, map the value streams that will ultimately drive them. Next, link the key capabilities that enable each value stream. Finally, map the IT programs supporting those capabilities. This process will help you prioritize IT programs that deliver the most value to the organization.

Consider:
- Focus on the value streams that truly drive the strategic objectives.
- Are there any capabilities that are not tied to outcomes?
- Are all strategic objectives supported with IT programs?

Avoid:
- *Don't be too granular.* The audience for a strategy is interested in a higher-level understanding of what IT is doing. As such, keep things at the program level as opposed to the individual projects that programs are composed of.

03 VALIDATE THE STRATEGY MAP AND PROGRAM PRIORITIZATION

Crowdsource the strategy map validation.
Validate the strategy map in layers. Start with IT and confirm which IT programs enable particular capabilities. Next, work with the business departments to validate the capabilities that support the value streams. Finally, validate the strategic objectives of the organization with the C-suite and communicate the value streams that support them.

Consider:
- Are all strategic objectives equally important? If not, get a prioritized list of strategic objectives.
- Do any of the programs have critical dependencies that influence sequencing?
- If there are strategic objectives that do not have any IT programs mapped to them, consider adding new programs. Conversely, reconsider upcoming programs that do not have a connection to strategic objectives.

Avoid:
- *Don't delay validating the strategic maps with top-level executives.* A proactive approach will save you time in terms of rework and maximize alignment.
- *Don't leave anyone out on the assumption that they won't be interested.* It is easy to miss key stakeholders – be careful and organized.

Assess your organization's key capabilities to determine your planning priorities.

A. ORGANIZATIONAL ANALYSIS

The better aligned an organization is from a structural, role, process, and capability perspective, the more effective it will be.

B. BUSINESS PROCESS REVIEW

Use process analysis and assessment to drive collaboration and integration.

C. TECHNOLOGY OPPORTUNITY IDENTIFICATION

New technologies create opportunities for business agility and help develop resilience to changing market conditions.

The organization's capabilities are supported by people, process, and technology. Use these factors as the basis for your assessment.

Navigation:

Context Slides: **Read**

Visual Slides: **Customize**

Instruction Slides: **Follow**

Organizational Analysis

The better aligned an organization is from a structural, role, process, and capability perspective, the more effective it will be.

For optimal results, the structure of the organization should match its strategy. All too often, however, organizations will grow to meet the needs of the day and not by strategic design. As such, it can be advantageous to perform an analysis to determine whether key capabilities are supported by multiple business units and partners or if they are potentially unsupported in some cases, leaving important gaps in the organization's strategy and value offerings.

An organization is able to increase efficiency and productivity when compatible, comparable activities are grouped together. By contrasting business units with key capabilities, an organization can uncover specific areas where business units have overlapping, conflicting, or complementing focuses.

This insight can inform decision making pertaining to the centralization of processes, services, and human resources, as well help pinpoint the key areas, from IT's perspective, that should be emphasized in order to better enable business decision making.

For instance, in situations where many business units share accountabilities or responsibilities to deliver key capabilities, IT may need to focus on collaboration, knowledge sharing, and dissemination in order to ensure that best practices become the norm (highlighted in green, horizontal across capabilities).

Conversely, when a key capability is not supported by enough business units (or any), that capability should potentially be given priority (unless it has been outsourced) and will likely need more investment from a change management perspective (highlighted in red, vertical across business units).

Supporting Business Units	Key Capabilities			
	Key Capability A	Key Capability B	Key Capability C	Key Capability D
Business Unit 1		A	R	
Business Unit 2				R
Business Unit 3		A	R	R
Business Unit 4		A	R	R
Business Unit 5			A	A

Figure above: Contrasting Key Capabilities with Business Unit Responsibilities and Accountabilities

ILLUSTRATIVE EXAMPLE: BUSINESS UNIT ACCOUNTABILITY AND RESPONSIBILITY TO KEY CAPABILITIES

Supporting Business Units	Opportunity Assessment	Operational Maintenance	Asset Evaluation	Collaboration & Innovation	Market & Economic Analysis	Enterprise Data Management	Partner Management	Account Management
Finance	R		R					
Marketing & Growth	R						A/R	R
IT		R		A/R		A		
HR		R						
International Operations		A/R		R	R	R		
Domestic Operations		A/R		R	R	R		
Supply Chain		R				R		
Security						R	R	
Engineering		A		R				

Legend: A = Accountable for the delivery of the capability   R = Responsible for the delivery of the capability

ASSESS YOUR ORGANIZATION'S KEY CAPABILITIES TO DETERMINE YOUR PLANNING PRIORITIES

01 IDENTIFY KEY BUSINESS UNITS

Analyze your organizational structure to optimize resources.
Understanding how the organization is structured can help optimize the allocation of resources based on the key capabilities they support. Start with making an exhaustive, mutually exclusive list of all business units within the organization.

Consider:
- Is the documented organizational structure up to date and accurate? Validate the information you have gathered with other employees to capture any additional business units.

Avoid:
- *Don't re-invent the wheel.* The formal organizational structure/chart and P&L statements are great sources of information and can be used as a starting point.

02 MAP BUSINESS UNITS TO KEY CAPABILITIES

Understand which business units support capabilities.
Review the list of key capabilities and document the business units that are accountable or responsible for them. Accountable, in this case, refers to the units mandated to manage the performance of a capability. Responsible refers to the mandate to support a capability.

Consider:
- Does the current organizational structure match the strategic goals and priorities of the organization?
- Are there any key capabilities with only one business unit both responsible and accountable? Consider facilitating an enhanced reporting structure for them.

Avoid:
- *Don't leave important gaps in the organization's strategy and value offerings.* Ensure that all key capabilities have at least one business unit responsible for them and one business unit accountable for them.

03 IDENTIFY PLANNING PRIORITIES TO SUPPORT EFFECTIVE ORGANIZATIONAL DESIGN

Pinpoint key business areas for the organization's decision makers.
Perform both a horizontal analysis to determine where there are shared accountabilities and responsibilities for key capabilities. Perform a vertical analysis to determine which key capabilities are unsupported by business units in order to inform effective organizational design.

Consider:
- Are there any key capabilities where business units have overlapping, conflicting, or complementing focuses?
- Does the IT department effectively enable all the supporting business units?
- Are there some business units that are responsible and accountable for too many key capabilities? If possible, spread the accountabilities and responsibilities to multiple business units to harness their unique perspectives.

Avoid:
- *Don't overcomplicate it!* Having too many business units responsible and accountable for the same key capability is not effective. If it is absolutely necessary, ensure that collaboration and knowledge sharing applications support these key capabilities as effectively as possible.

Business Process Review

Use process analysis and assessment to drive collaboration and integration.

Organizations undergoing growth, either organically or through M&A, tend to develop in a piecemeal and short-sighted fashion in an attempt to preserve their view of agility. *This can lead to the following pains:*

- Duplicated or conflicting business activities.
- Processes that create bottlenecks by involving too many business units.
- Manual re-keying of data into multiple systems.
- Inefficient process for producing standard reports.

These organizations are driven by the desire to effectively manage existing business processes while recognizing the need for a faster ability to share data, information, and insight across multiple systems and business units to support increasing demands for more rapid response.

A primary goal of a strategy is to provide a framework that enables the current business environment to function as seamlessly as possible, allowing for flexibility when processes need to evolve.

Through effective strategy design, IT can provide integration across business units by performing an analysis of how well the organizational capabilities are supported by processes. Specifically, IT should analyze and assess processes on the basis of **adherence, enforcement,** and **overlap** and on the presence of **effective monitoring measures.**

Assess how well processes support capabilities

LEVEL 1: No documented process exists.

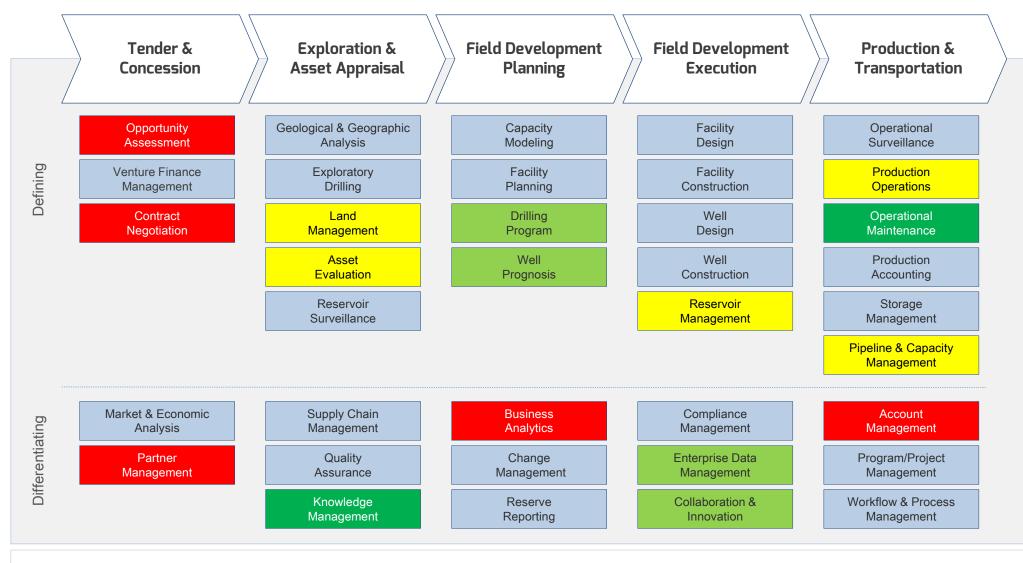**LEVEL 2:** Processes have been documented, but have not been effectively communicated and may be in conflict.

LEVEL 3: *LEVEL 2 +* processes are explicitly defined and have been formally communicated. There is minimal overlap between processes.

LEVEL 4: *LEVEL 3 +* processes are enforced and regularly monitored for deviations. Users typically adhere to the process.

Figure above: Process Assessment Legend

Step 3-B: **Visual**

To edit and customize this visual, please download our template.

ILLUSTRATIVE EXAMPLE: BUSINESS PROCESS SUPPORT OF KEY CAPABILITIES

Tender & Concession	Exploration & Asset Appraisal	Field Development Planning	Field Development Execution	Production & Transportation

Defining

Tender & Concession	Exploration & Asset Appraisal	Field Development Planning	Field Development Execution	Production & Transportation
Opportunity Assessment	Geological & Geographic Analysis	Capacity Modeling	Facility Design	Operational Surveillance
Venture Finance Management	Exploratory Drilling	Facility Planning	Facility Construction	Production Operations
Contract Negotiation	Land Management	Drilling Program	Well Design	Operational Maintenance
	Asset Evaluation	Well Prognosis	Well Construction	Production Accounting
	Reservoir Surveillance		Reservoir Management	Storage Management
				Pipeline & Capacity Management

Differentiating

Tender & Concession	Exploration & Asset Appraisal	Field Development Planning	Field Development Execution	Production & Transportation
Market & Economic Analysis	Supply Chain Management	Business Analytics	Compliance Management	Account Management
Partner Management	Quality Assurance	Change Management	Enterprise Data Management	Program/Project Management
	Knowledge Management	Reserve Reporting	Collaboration & Innovation	Workflow & Process Management

Legend:

LEVEL 1: No documented process exists.

LEVEL 2: Processes have been documented.

LEVEL 3: *LEVEL 2 +* processes have been formally communicated and there is minimal overlap between processes.

LEVEL 4: *LEVEL 3 +* processes are enforced and regularly monitored for deviations. Users typically adhere to the process.
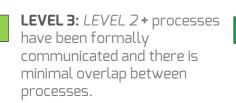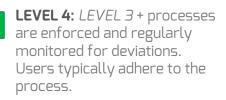
ASSESS YOUR ORGANIZATION'S KEY CAPABILITIES TO DETERMINE YOUR PLANNING PRIORITIES

01 ASSESS HOW WELL PROCESSES SUPPORT CAPABILITIES

Standardization breeds efficiency.
Begin by assessing whether each key capability has a documented processes supporting it. Then evaluate whether the documented processes have been communicated and the extent to which there is process overlap.

Consider:
- What processes are documented?
- Have the documented processes been communicated to the business users?
- Are some of the processes redundant? Has that been done on purpose or can you optimize them?
- Are there key capabilities that lack processes all together?

Avoid:
- *Don't waste time.* Only evaluate processes that are documented and communicated, and then evaluate them for exclusivity.
- *Don't do this in a vacuum.* Validate that you have captured all existing processes by speaking to other employees.

02 EVALUATE USER ADOPTION OF PROCESSES FOR KEY CAPABILITIES

Having processes is one thing, but are they being adhered to?
The next level of analysis involves assessing whether defined processes are being adhered to. Confirm if the organization enforces adherence and that regular monitoring for deviations is occurring.

Consider:
- Is there regular monitoring for deviations from the defined process? Is this recorded and acted upon?
- Are there certain groups of users that are not following the processes in place? Why?

Avoid:
- *Don't think the lack of process adherence is simply the employees' fault.* In some cases the processes might not be well designed or out dated, thus warranting the need for refinement.

03 PRIORITIZE PROCESS REFINEMENT FOR KEY CAPABILITIES SCORING LEVEL 2 OR BELOW

Use process to drive collaboration and integration.
Key capabilities should be well supported by processes. If there are any capabilities that scored Level 2 or below, prioritize delivering effective process support, improving user adoption, and establishing effective process governance.

Consider:
- Is business process management in your mandated area of influence, responsibility, or accountability? If not, consider who you may need to recruit for support from the business side to drive refinements.
- Communicate any new processes or changes to existing ones through a variety of mediums. Make it easy for the users/employees to reference them if needed.

Avoid:
- *Don't create redundant processes.* Ensure there is minimal overlap with existing processes if you are creating a new one.
- *Don't forget to think about user adoption and governance when creating new processes.* This might be more challenging, but will ultimately ensure long-term success.

Technology Opportunity Assessment

New technologies can create opportunities for business agility and help develop resilience to changing market conditions.

Business agility is essential to stay competitive. However, the application portfolio of many organizations cannot sufficiently support the flexibility and efficiency the business needs because of legacy challenges.

Organizations experience application sprawl over time caused by many factors that can end up costing more for licenses, operational resources, and maintenance.

Organizations are looking for ways to modernize their applications, but want to develop options without introducing additional risks. Adopting a capability-based approach to assessing applications will enable the IT department to identify opportunities to:

- Automate tasks through the strategic selection and implementation of applications.
- Integrate applications that have cross-capability implications.
- Rationalize the application portfolio.
- Eliminate redundant or legacy applications that don't deliver enough value.

The market availability for software applications dedicated to supporting a specific capability (or set of capabilities) can serve as an indicator of the presence of legacy challenges. Where there is a lack of application availability, it may be a signal that many industry players have had to develop their own.

Availability of software applications that support each capability

LEVEL 1: Capability is typically unsupported by applications. The likelihood of legacy applications supporting these capabilities is high.

LEVEL 2: Capability is somewhat supported by applications. There is typically a mix of legacy and purchased applications supporting these capabilities.
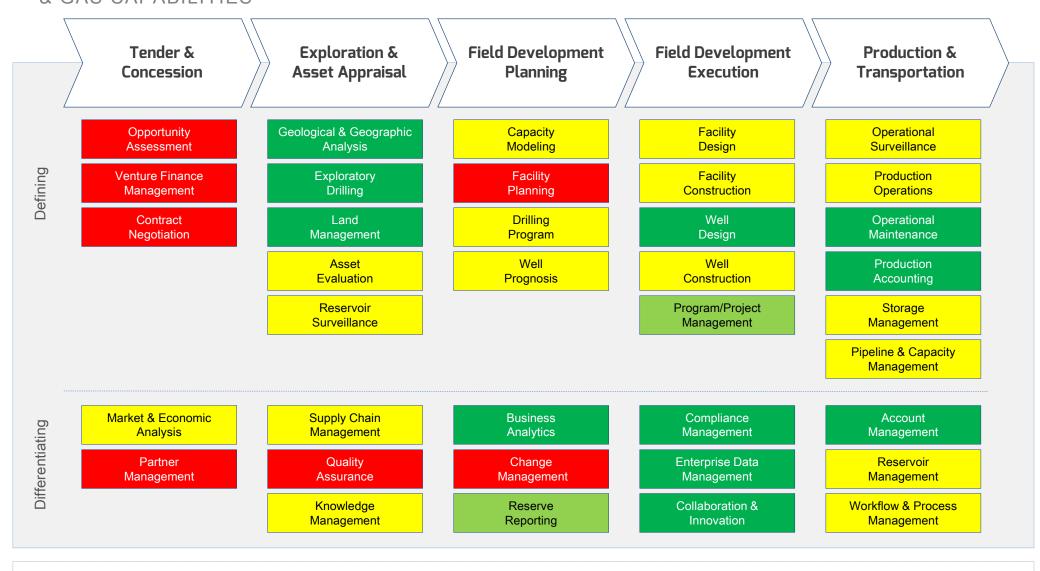
LEVEL 3: Capability is moderately supported by applications. Organizations do not have to build their own applications; however, there aren't many solutions to choose from.

LEVEL 4: Capability is well supported by applications. Organizations can choose from a variety of solutions that will meet or exceed their needs.

Figure above: Technology Opportunity Assessment Legend

Step 3-C: **Visual**

To edit and customize this visual,
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RESEARCHED EXAMPLE: AVAILABILITY OF SOFTWARE OFFERINGS FOR UPSTREAM OIL & GAS CAPABILITIES

	Tender & Concession	Exploration & Asset Appraisal	Field Development Planning	Field Development Execution	Production & Transportation
Defining	Opportunity Assessment	Geological & Geographic Analysis	Capacity Modeling	Facility Design	Operational Surveillance
	Venture Finance Management	Exploratory Drilling	Facility Planning	Facility Construction	Production Operations
	Contract Negotiation	Land Management	Drilling Program	Well Design	Operational Maintenance
		Asset Evaluation	Well Prognosis	Well Construction	Production Accounting
		Reservoir Surveillance		Program/Project Management	Storage Management
					Pipeline & Capacity Management
Differentiating	Market & Economic Analysis	Supply Chain Management	Business Analytics	Compliance Management	Account Management
	Partner Management	Quality Assurance	Change Management	Enterprise Data Management	Reservoir Management
		Knowledge Management	Reserve Reporting	Collaboration & Innovation	Workflow & Process Management

Legend:

LEVEL 1: Capability is typically unsupported by applications. The likelihood of legacy applications supporting these capabilities is high.

LEVEL 2: Capability is somewhat supported by applications. There is typically a mix of legacy and purchased applications supporting these capabilities.

LEVEL 3: Capability is moderately supported by applications. Organizations do not have to build their own applications; however, there aren't many solutions to choose from.

LEVEL 4: Capability is well supported by applications. Organizations can choose from a variety of solutions that will meet or exceed their needs.

ASSESS YOUR ORGANIZATION'S KEY CAPABILITIES TO DETERMINE YOUR PLANNING PRIORITIES

01 ASSESS HOW WELL CAPABILITIES ARE SUPPORTED BY APPLICATIONS

Determine how well key capabilities are supported by applications.
Perform an application rationalization exercise on the key capabilities to determine how well they are being supported by applications. Applications should be assessed on the basis of flexibility, ease of use, and integration.

Consider:
- How flexible are the applications?
- How well do the applications integrate?
- How easy are the applications to learn and use?
- Are there overlap, un-planned redundancy, or data quality issues?

Avoid:
- *Don't perform a complete overhaul.* Consider continuity in delivering business services before you rip and replace everything.
- *Don't forget about shadow IT.* Ask around to get an accurate understanding of what applications are being used to support business capabilities.

02 UNCOVER OPPORTUNITIES FOR APPLICATIONS TO CREATE VALUE

Make sure the business is leveraging applications wherever it should.
Unsupported key capabilities are areas in which IT can deliver high value for the business. The key capabilities that score Level 1 or 2 in the technology assessment are the ones that require the most attention.

Consider:
- Prioritize which unsupported key capabilities to focus on based on their importance.

Avoid:
- *Don't focus on unsupported key capabilities that will require too much investment.*
- *Don't build an application just because you can.* Research existing solutions before deciding to build in-house.

03 COMPARE RESULTS WITH INDUSTRY RESEARCH TO DETERMINE A PLAN OF ACTION

Compare your results with Info-Tech's industry technology assessment.
Compare your organization's technology assessment with the industry-specific technology assessment provided. If the capability is well supported in the industry but unsupported in your organization, purchasing applications is a viable option. Leverage **SoftwareReviews** to make an informed decision about any purchases.

Consider:
- What are the future needs of the business?
- What are the compliance requirements?
- How much vendor support will you require?
- Do you have already have the underpinning infrastructure required to run the applications or will an investment need to be made?
- How well will the new application integrate with existing applications?

Avoid:
- *Don't forget that every organization is unique.* Develop a strong understanding of how the key capability needs to be supported, who the users will be, and if the application will integrate well with existing solutions before you make a purchase.
- *Buying isn't always better than building.* If you discover through software reviews that the existing solutions will not meet your needs, revisit the option to build an in-house solution.

Adopt a capability-based approach to strategic planning.

A. **CONSOLIDATE AND PRIORITIZE CAPABILITY GAPS**

Direct strategic investment based on organizational priorities, value to effort, and the mandate from the business.

B. **BUILD A ROADMAP TO ADDRESS KEY CAPABILITY GAPS**

One of the primary drivers of value for a strategy is the provision of intelligent program sequencing according to the capability gaps they address.

C. **MAKE STRATEGY DESIGN A CIRCULAR PROCESS**

Use the outputs of a strategy and their impacts on capabilities as inputs into subsequent strategy design processes.

It is time for IT to end misalignment between business priorities and technology investment.

Navigation:

| Context Slides: **Read** |
| Visual Slides: **Customize** |
| Instruction Slides: **Follow** |

Consolidate and Prioritize Capability Gaps

Direct strategic IT investments based on the collective output of the capability assessments.

When combined with a solid understanding of business priorities and IT's mandate, a capability assessment can be the driving force that informs a unified perspective on the sequencing of an organization's strategic IT initiatives.

Assessments based on how well it is supported by people (via organizational analysis), process (via process review), and technology (via application, infrastructure, data, and security improvements) will inform the overall health of a capability, or in other words, the size of a capability gap. This information, when contrasted with the concept of difficulty to value, forms an enhanced decision-making framework that can be used to determine initiative sequencing on a strategic roadmap.

If a capability has a large gap (is poorly supported by people, process, and/or technology), it should be considered as high difficulty, or effort, to address. When the capability is well aligned with business priorities and the IT mandate, the capability gap should be considered as high value to address.

See the figure on the right; IT leaders should focus their efforts on the top-left quadrant (high value, low difficulty). In the top-right quadrant (high value and high difficulty), IT should seek business support to drive the initiative. Capability gaps on the right side of the quadrant overall are good candidates for capability outsourcing.
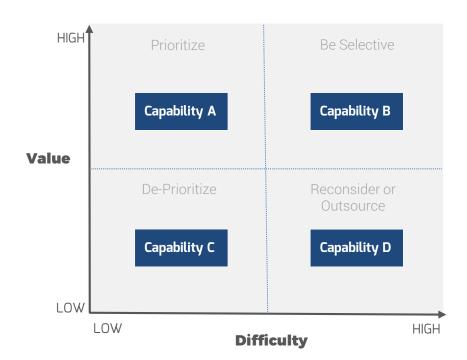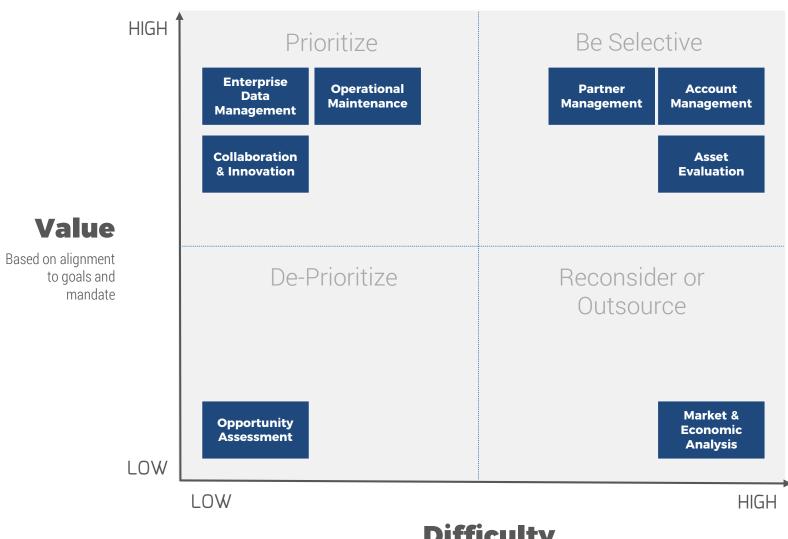

Figure above: Value-to-Difficulty Analysis

Step 4-A: **Visual**

To edit and customize this visual, please download our template.

ILLUSTRATIVE EXAMPLE: VALUE-TO-DIFFICULTY ANALYSIS FOR BUSINESS CAPABILITIES

ADOPT A CAPABILITY-BASED APPROACH TO STRATEGIC PLANNING

01 SYNTHESIZE YOUR ASSESSMENTS AND PLOT THEM ON A DIFFICULTY-TO-VALUE MATRIX

Elevate your focus from the IT level to the organization level.
Gather and synthesize the priorities from the people, process, and technology assessments to develop a consolidated view of IT's planning responsibilities.

Consider:
- How big is the difference between current needs and the assessment of the factors that support each capability?
- Are there any groups of capabilities that have low scores from the assessments? Consider a root-cause analysis to determine what could be impacting multiple capabilities.

Avoid:
- *Don't forget about healthy capabilities.* Enhance the green (low-gap) capabilities once you have resolved the issues with the red and yellow (large-gap) key capabilities.

02 PRIORITIZE KEY CAPABILITY GAPS BASED ON MANDATE, ALIGNMENT, AND EFFORT

Focus on addressing your quick-wins first.
Use your mandate from the organization to inform which capabilities to focus on first. Key capabilities that are easy for you to enhance and provide high value to the organization should be prioritized.

Consider:
- If a capability has people and process challenges associated with it already, a technology solution alone may not suffice.
- Prioritize the enhancement of key capabilities with significant gaps that are in your mandated responsibilities.
- Will the future needs of the business change which capabilities are most important?

Avoid:
- *Don't overstep your mandate.* In some organizations, IT is expected to have influence over business processes, but that is not always the case. Equally, HR concerns may be perceived as outside the mandate of IT. As such, IT should focus first on the key capabilities that have clear technology gaps to avoid mandate friction.

Build a Roadmap to Address Key Capability Gaps

The primary value driver of a strategy is the provision of an intelligent sequencing of programs according to the capability gaps they address.

The desired or target state that a strategy will seek to deliver will depend on the strategic goals and objectives of an organization and the health of the capabilities that most closely support them. The gaps between the current state and the desired state will determine what the transition initiatives must achieve from an outcome perspective. These gaps indicate how close or how far IT currently is from achieving the desired state for each capability. This will help the project team identify critical risks and early-value creators and bring them to the forefront of their project timelines.

The list of initiatives will be the main output of the IT strategy. Good transition initiatives need to be well thought out before the executive team signs off on the IT strategy. As such, thoroughly evaluating a set of options will ensure that the most appropriate programs/initiatives are selected. These programs/initiatives are not likely to be implemented simultaneously, given resource restrictions and dependencies. As such, in order to maximize the value of the IT strategic plan for the business, each initiative must be prioritized according to the benefit it will provide.
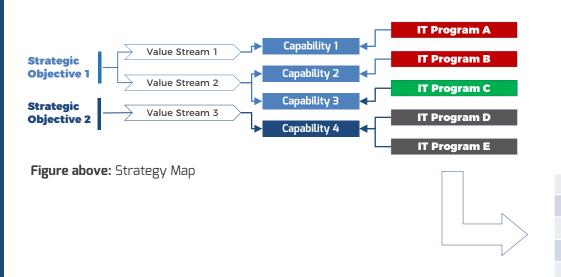
Figure below: IT Roadmap

Figure above: Strategy Map

	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
IT Program A	■	■	■									
IT Program B			■	■								
IT Program C					■	■	■	■				
IT Program D									■	■	■	
IT Program E										■	■	■

RESEARCHED EXAMPLE: IT STRATEGY ROADMAP

IT Strategy Roadmap

	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Internet of Things (IoT) Implementation	■	■	■	■								
Data Cleansing & Standardization					■	■	■	■	■			
CRM Upgrade									■	■		
Collaboration Tool Selection											■	■

ADOPT A CAPABILITY-BASED APPROACH TO STRATEGIC PLANNING

01 DEFINE IT PROGRAMS TO ADDRESS GAPS IN KEY CAPABILITIES

Develop solutions to fill gaps in key capabilities.
Examine the gaps in key capabilities and determine what IT programs will address them. Understand what gaps are critical to fix based on IT's mandate. Stay focused on the value-to-effort ratio for the remaining programs.

Consider:
- What are the key capabilities you are mandated to focus on?
- What are the high-value and low-effort key capability gaps you identified earlier?
- Given these assessments and strategic discussions, are there any IT programs that should be cancelled?

Avoid:
- *Don't try to address all gaps in the key capabilities at once.* Remember to focus on the enhancements that will provide high value yet require low effort to achieve improvement.

02 SEQUENCE IT PROGRAMS IN BUSINESS-PRIORITY ORDER

Prioritize the IT programs based on business priority.
Develop a roadmap of enhancements to address gaps in key capabilities. Ensure the key capabilities you are mandated to focus on are prioritized first. Remember to factor in resource availability and existing dependencies when developing the roadmap.

Consider:
- What resources are going to be needed to execute on the roadmap?
- What are the dependencies of these key capabilities and existing IT programs? Make sure critical dependencies between IT programs inform sequencing appropriately.
- Are there any current IT programs that should be put on pause until the critical capability gaps are filled?

Avoid:
- *Don't put too much on your plate.* Consider what you can actually achieve given your current budgetary and staffing constraints.
- *Don't be short-sighted.* It is a good exercise to estimate what additional resources you might need to enhance all gaps in case the business is willing to support you.

Make Strategy Design a Circular Process

Use the outputs of a strategy – the initiatives and programs – and their impacts on capabilities as inputs into subsequent strategy design processes.

Principles like **Lean**, **Agile**, and **Human-Centrism** have proliferated and are now integral forces influencing how business is done. Most would agree that these concepts have shaped the way products and services are designed and delivered for the better.

The underlying connection between these concepts is that, in order to deliver products and services in a way that sustains a business, waste can no longer be tolerated in our new resource-constrained environment. This reality is shaping the way inputs and outputs are viewed in the context of processes; wherever possible, a process' output should be converted back into an input into the same or an alternate process. This limits waste and promotes business model sustainability.

In terms of strategy design as a process, the outputs are the sequenced set of programs and initiatives that an IT department will undertake in order to address the prioritized capability gaps that support organizational goals. The benefits of these initiatives can (and must) be measured in relation to the capabilities they have impacted, and thus, become the inputs into the process of designing the next process.
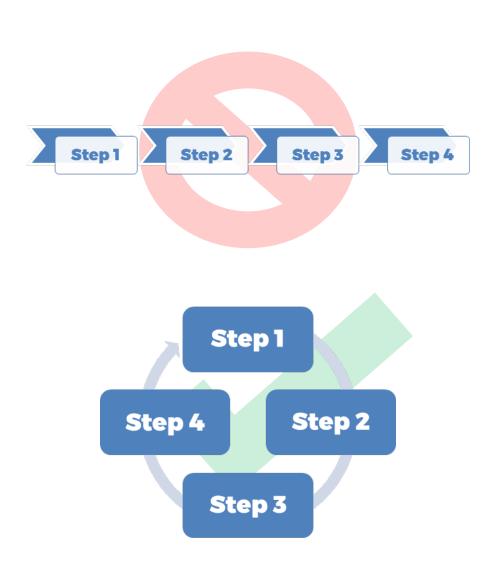
Figure above: Linear vs. Circular Processes

ILLUSTRATIVE EXAMPLE: THE CIRCULAR STRATEGIC PLANNING PROCESS

ADOPT A CAPABILITY-BASED APPROACH TO STRATEGIC PLANNING

01 BUILD YOUR ORGANIZATION'S CAPABILITY MAP USING REFERENCE ARCHITECTURE

Review Info-Tech's reference architecture and customize it to fit your organization.
Continually refine your business capability maps to ensure they stay accurate.

Consider:
- How does your organization create and capture value?
- What new capabilities has the organization added since the last strategic planning period?

Avoid:
- *Don't do this alone.* Continuously involve key business stakeholders to validate the business capability map.

02 USE CAPABILITIES TO DEFINE YOUR ORGANIZATION'S STRATEGIC FOCUS

Refine, revisit, or reset the mandate for IT by catalyzing a dialogue on what matters most to the organization.
Explore how the mandate has changed over time.

Consider:
- How has the business strategy changed?
- Which capabilities does the business want to develop into cost or competitive advantage creators?

Avoid:
- *Don't focus on unsupported key capabilities that will require too much investment.*
- *Don't have a short-term outlook.* Developing key capabilities takes time and will require investments into people, processes, and technology. Think about what key capabilities the business will need to succeed in the long term.

03 DETERMINE YOUR PLANNING PRIORITIES BY ASSESSING YOUR KEY CAPABILITIES

Use people, process, and technology as the basis for your assessment.
Update your assessments based on the impacts previous programs have had on key capabilities.

Consider:
- What are the future needs of the business?
- Were the previous IT programs effective in enhancing the organization's key capabilities? Why or why not?

Avoid:
- *Don't forget that every organization is unique.* Develop a strong understanding of what key capabilities need to be supported, who the users will be, and which processes and technologies enable them.

04 ADOPT A CAPABILITY-BASED APPROACH TO STRATEGIC PLANNING

It is time for IT to end misalignment between business priorities and technology investment.
Use business capabilities to orient strategic planning discussions and to inform IT investment.

Consider:
- The output of each strategy, the sequential IT programs, should serve as the input into the next IT strategy design process.
- Based on the demonstrably improved strategic acumen this approach delivers, new opportunities, such as digital strategy leadership, will likely emerge.

Avoid:
- *Don't create too many views of your organization.* Instead, focus on unifying the perspective in one business capability map.

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