

Application of Systems Engineering to the Affordable Care Act and Other Lawmaking Practices

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Digital Age

- Machines support humans with all aspects of daily living and work activities.
- Today's systems include Artificial Intelligence, Machine Learning, and Software Apps.

These systems also aide society with legislative-driven compliance and governance activities.

Law + Systems

Traditional lawmaking practices rarely (if at all) considers how to design quality systems that will support legislative-driven compliance and governance activities.

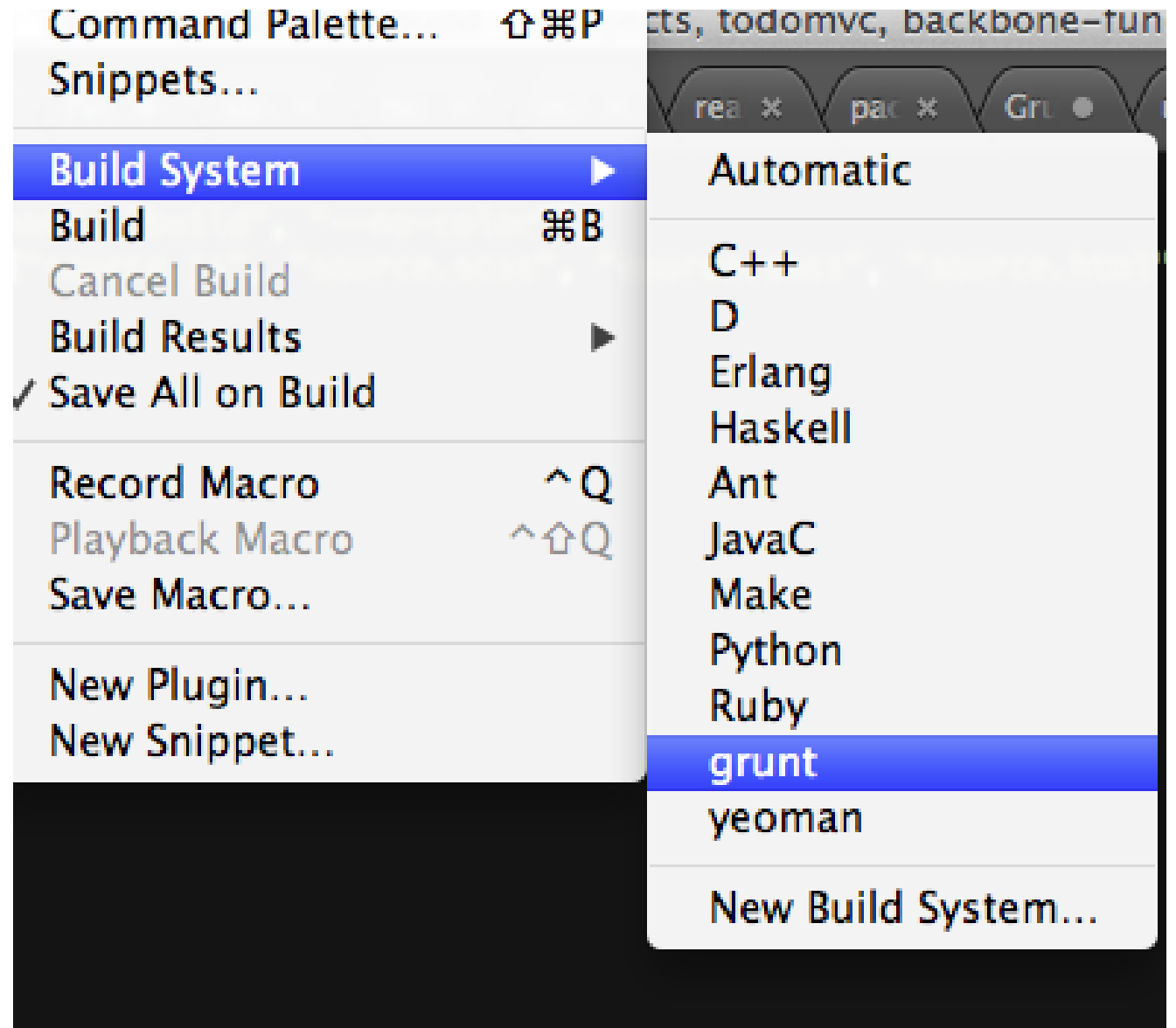


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H.R. 3031: TSP Modernization Act of 2017

Overview

[Summary](#)

[Details](#)

[Text](#)

About the bill

Source: Republican Policy Commi

H.R. 3031 modernizes the Thrift Savings Plan by providing users with additional options to manage th invested funds, including the ability to make multiple post-separation partial withdrawals and to make multiple service age-based withdrawals once the participant has reached the age of 59 ½.

The Thrift Savings Plan (TSP) is a retirement savings and investment plan for Federal employees and memb of the uniformed services, including the Ready Reserve. It was established by Congress in the Fede Employees' Retirement System Act of 1986 and d

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Sponsor and status



Elijah Cummings

Sponsor. Representative for Maryland's 7th congressional district. Democrat.



[Read Text »](#)

Last Updated: Nov 8, 2017

Length: 2 pages

Introduced: **Jun 23, 2017**

115th Congress, 2017–2019

The bill states high level capabilities that are expected with this modernization effort, but there is **no timeline** for implementing the changes, nor does it provide **use cases** describing how users can interact with the system to perform these **functions**.



Affordable Care Act

- Signed into law on March 23, 2010.
- Provisions represent the U.S. healthcare system's most significant regulatory overhaul and expansion of coverage since the passage of Medicare and Medicaid in 1965.



The Challenges

Understanding and Decomposing the Legislation

- ACA is a total of 906 pages, divided into 10 Titles
- What does it all mean?
- Who is impacted?
- How will responsible entities be assessed for compliance?



Management and Governance

- How will organizations and responsible entities respond to the new provisions?
- What organizational structures are in place to support its implementation?



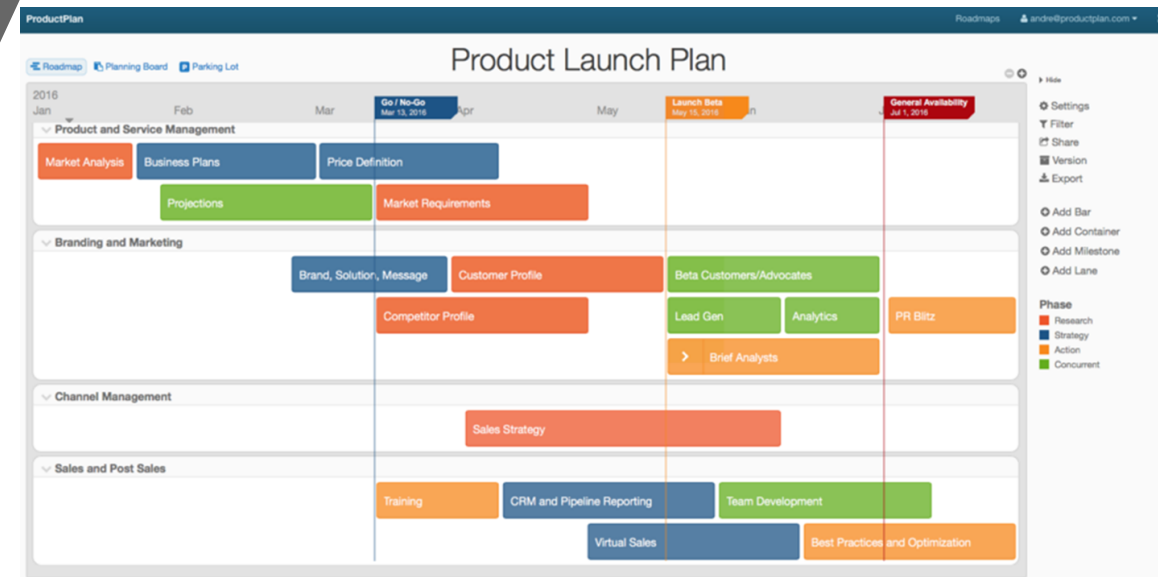
Image Source: <http://agahgroup.com/wp-content/uploads/2016/05/corporate-governance.jpg>



Silo Mentality

What is the Release Plan?

With Legislative-driven programs, release planning is a major challenge because some laws require organizations to comply by a specific date, and there is no room to adjust schedules if any upstream activities are delayed.



What is the Test Plan?

Testing is necessary to state confidently to stakeholders, decision makers and users “the system meets your needs and is operationally effective.”

How will the systems be tested?

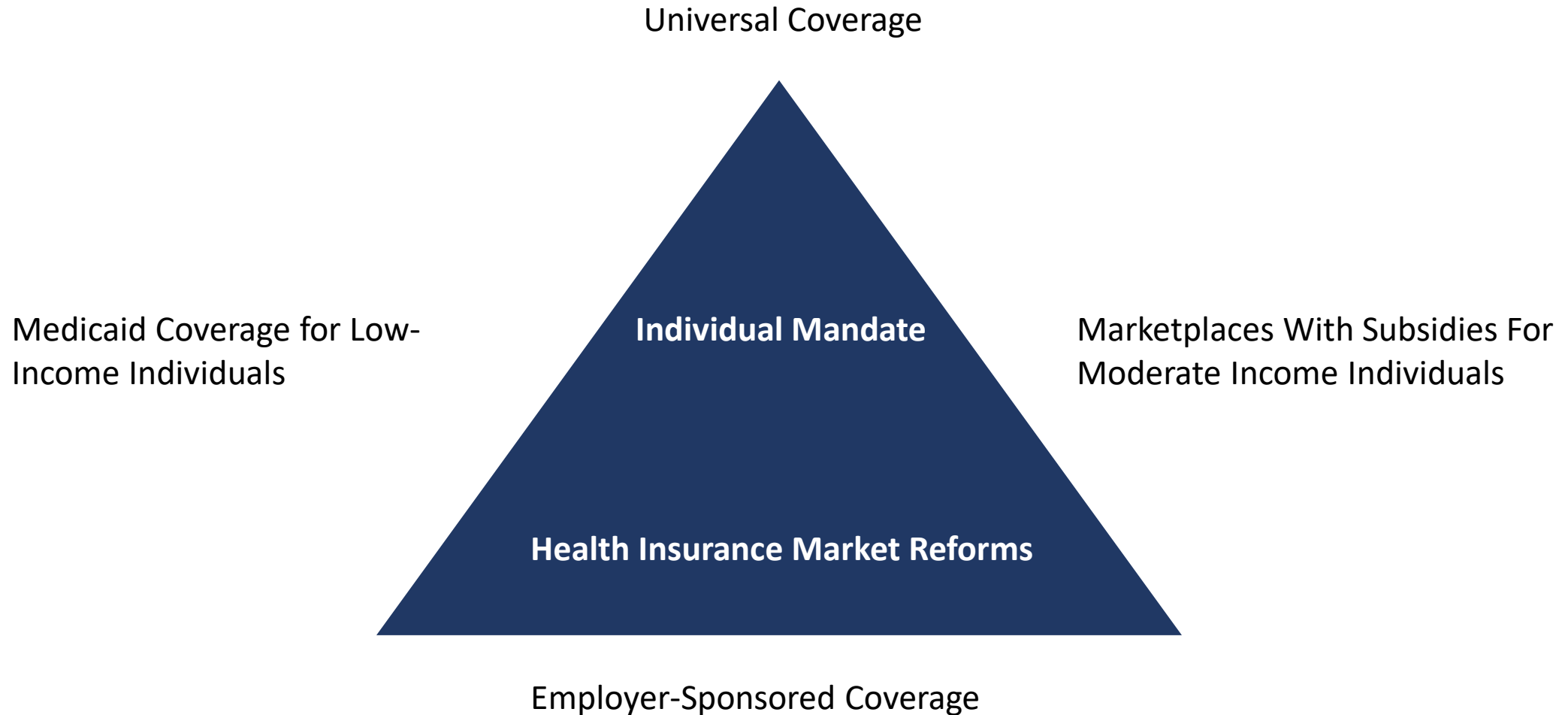


Solutions



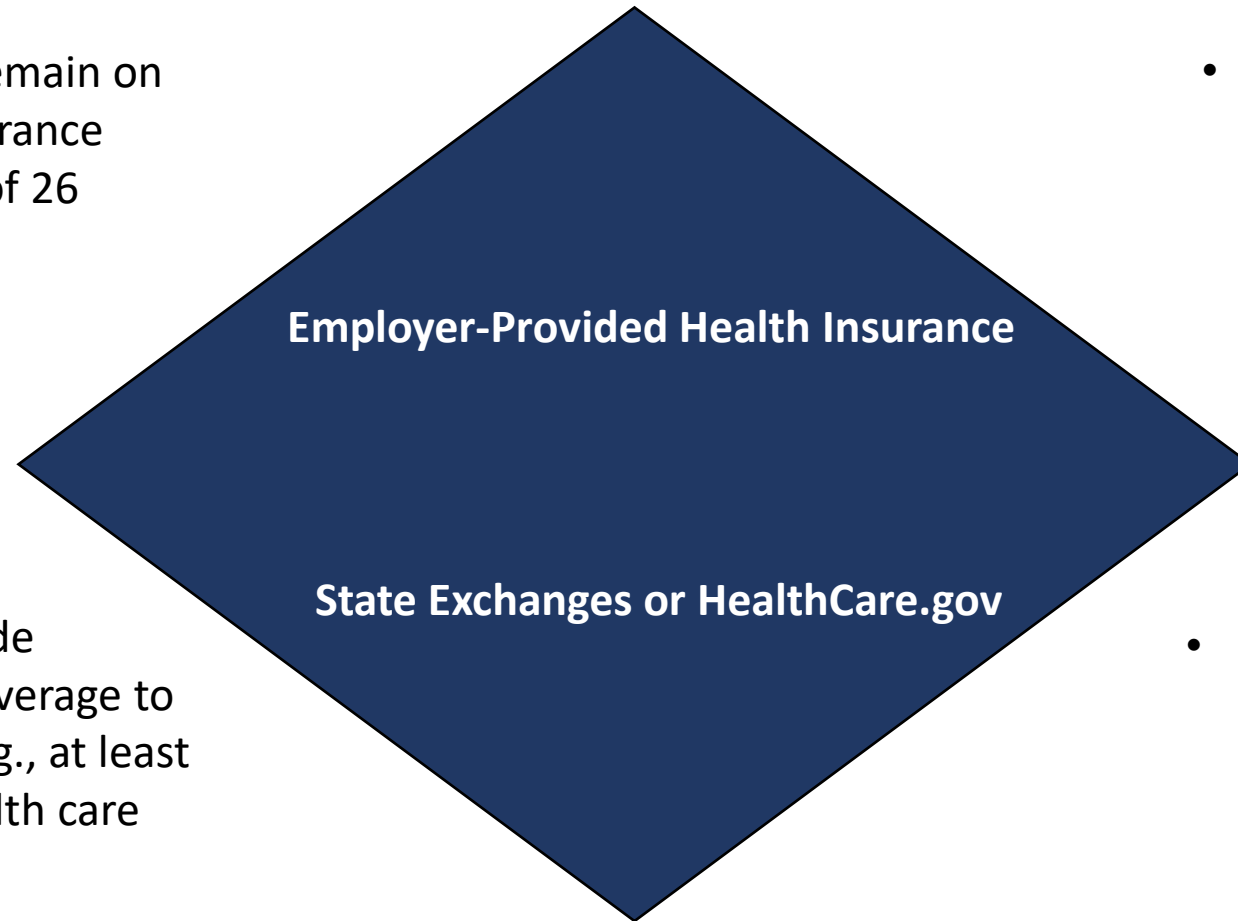
Understanding and Decomposing the Legislation

ACA Coverage Elements



ACA Coverage Overview

- Young people can remain on parents' health insurance plans until the age of 26

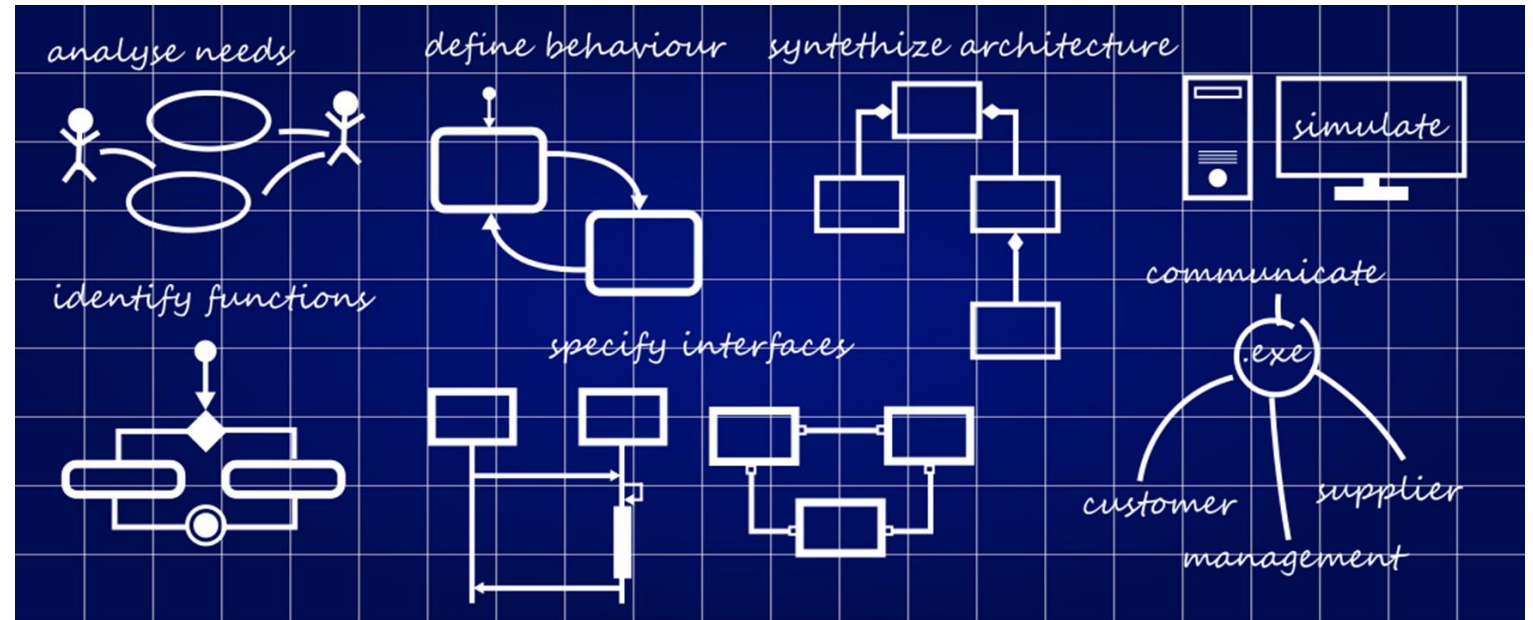


- Businesses to provide minimum health coverage to their employees (e.g., at least 60% of average health care costs in the area)

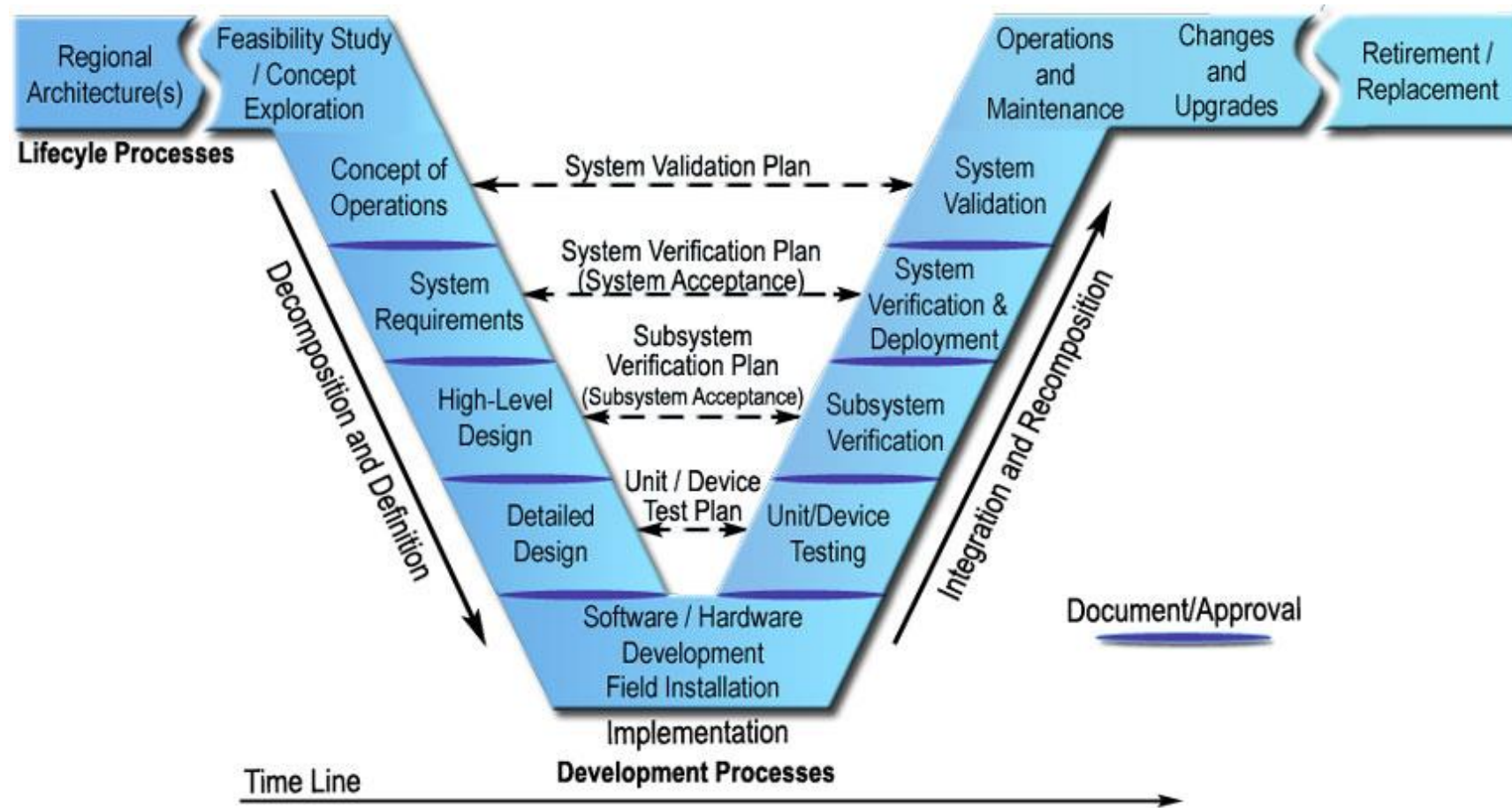
- Health Insurance Companies need to provide more comprehensive coverage (e.g., preventive care, hospitalization, maternity and newborn care, ER care, etc.)

- Insurance companies can no longer charge women more because of their gender and must now include preventive services (e.g., mammograms, birth control, and STD screenings)

Leveraging Model Based Systems Engineering



Where to start?

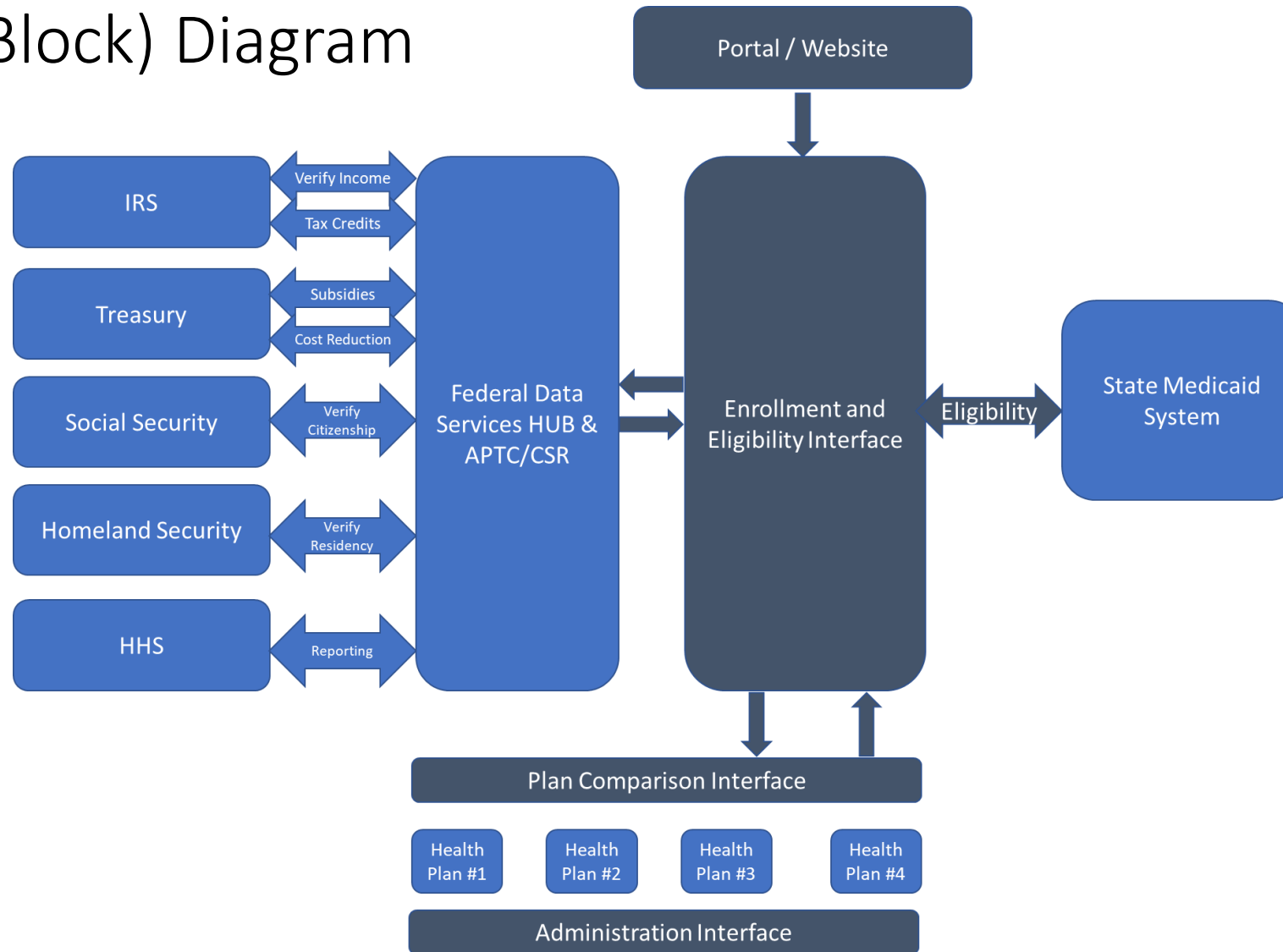


Context (Block) Diagram

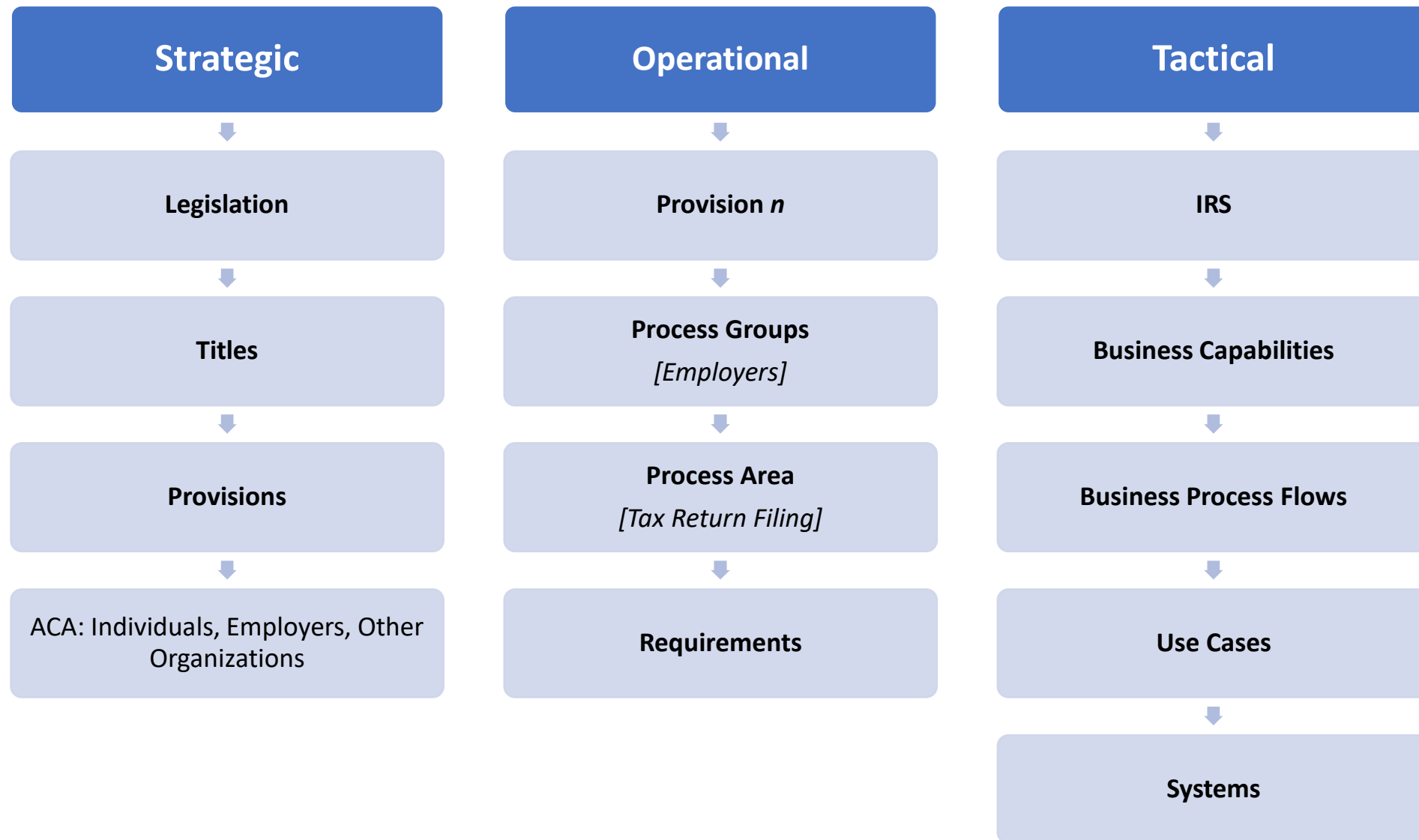
Legend

Federal

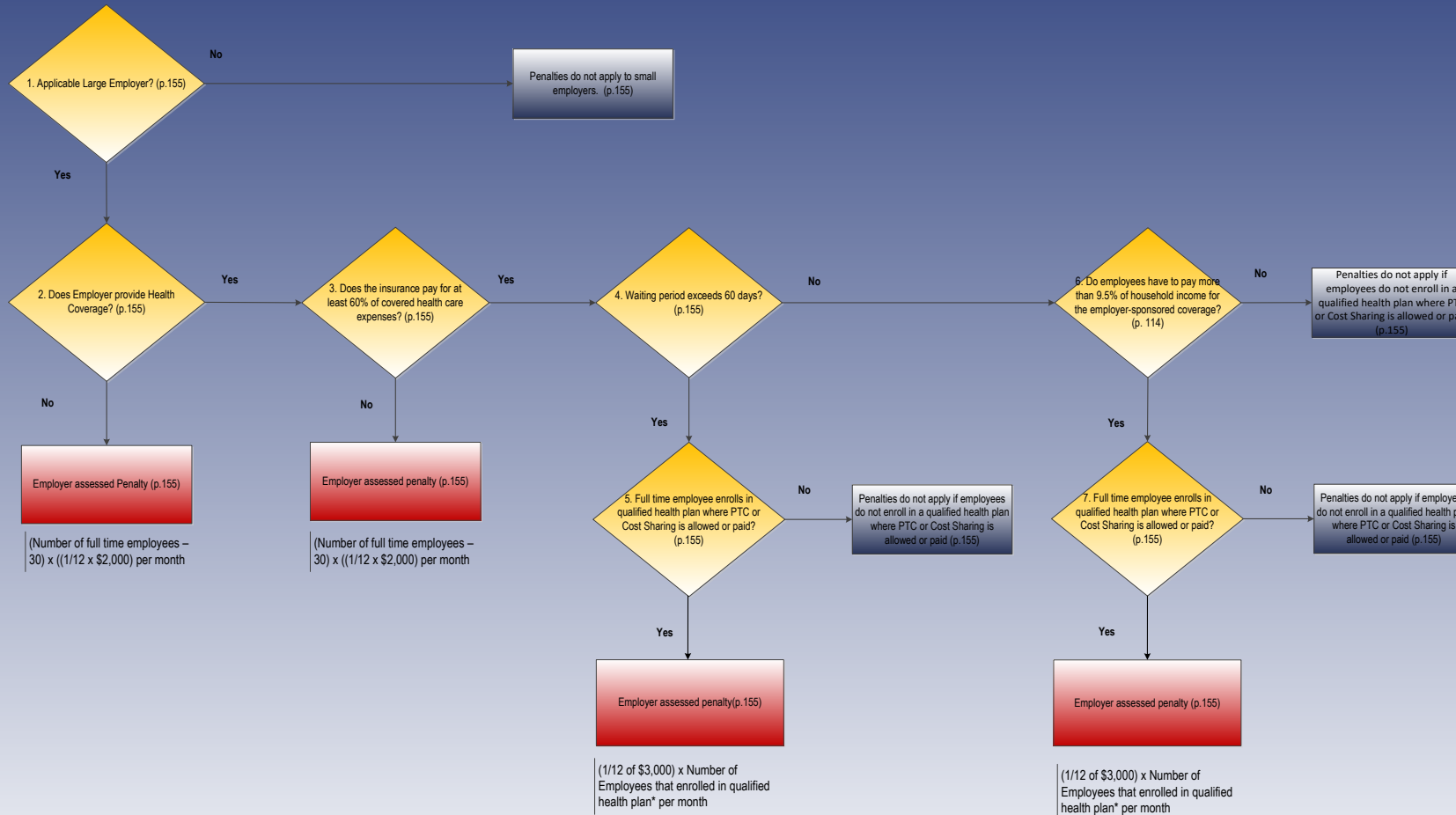
Tech Vendor



Deconstructing Legislation in the Context of Systems Engineering



ACA Legislation Decomposition: Employer Responsibilities



Definitions:

APPLICABLE LARGE EMPLOYER. —

IN GENERAL. —The term ‘applicable large employer’ means, with respect to a calendar year, an employer who employed an average of at least 50 full-time employees on business days during the preceding calendar Year (p.156).

EXEMPTION FOR CERTAIN EMPLOYERS. —

“(i) IN GENERAL. —An employer shall not be considered to employ more than 50 full-time employees if—
 “(I) the employer’s workforce exceeds 50 fulltime employees for 120 days or fewer during the calendar year, and
 “(II) the employees in excess of 50 employed during such 120-day period were seasonal workers.
 “(ii) DEFINITION OF SEASONAL WORKERS. —The term ‘seasonal worker’ means a worker who performs labor or services on a seasonal basis as defined by the Secretary of Labor, including workers covered by section 500.20(s)(1) of title 29, Code of Federal Regulations and retail workers employed exclusively during holiday seasons (p.156).

FULL-TIME EQUIVALENTS TREATED AS FULL-TIME EMPLOYEES. —As added by section 1003(c) of HCERA.

Solely for purposes of determining whether an employer is an applicable large employer under this paragraph, an employer shall, in addition to the number of full-time employees for any month otherwise determined, include for such month a number of full-time employees determined by dividing the aggregate number of hours of service of employees who are not full-time employees for the month by 120 (p.157).

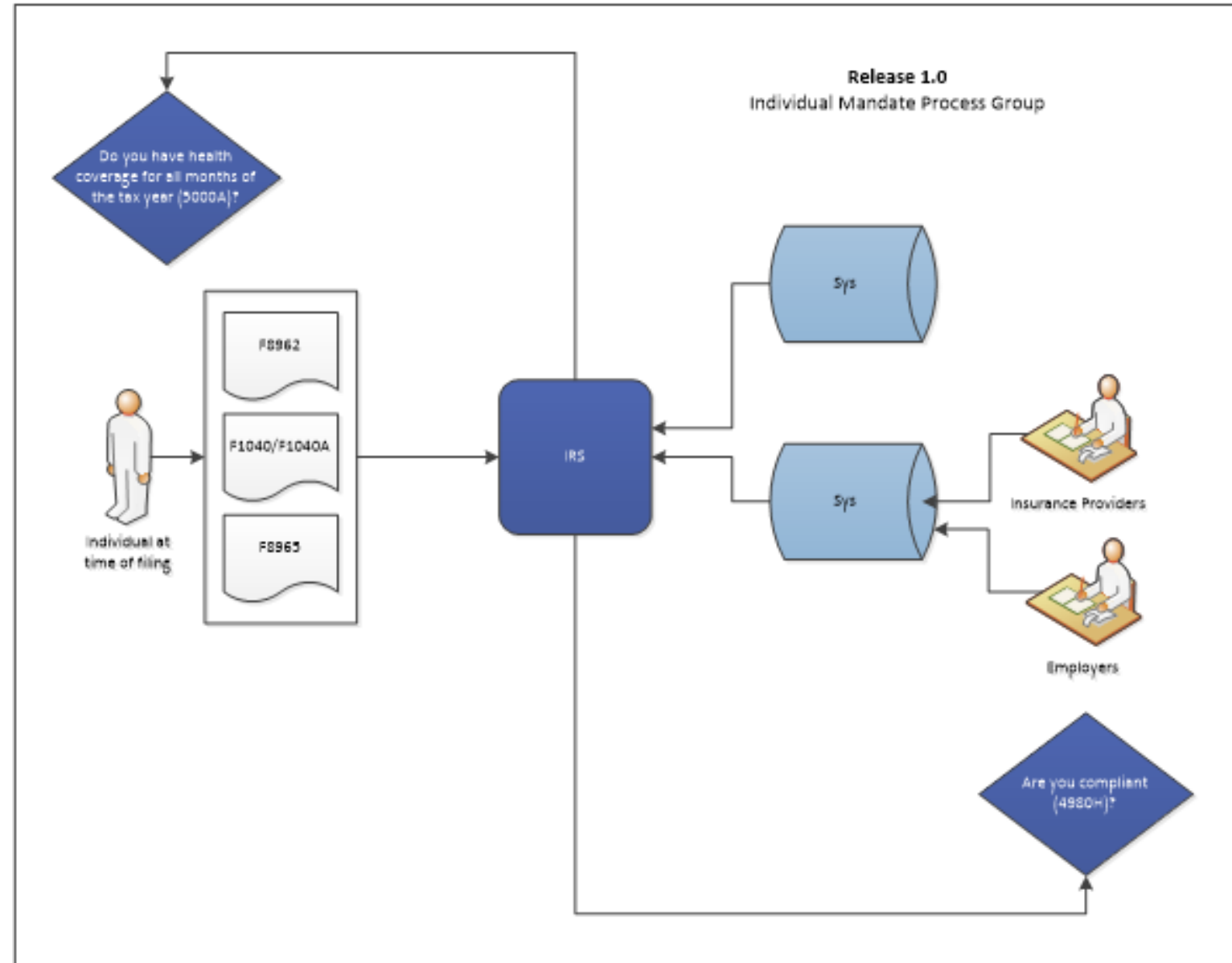
Calculation to determine employer size = (# full time employees) + ((aggregate # hours worked by non-full time employees) / 120)

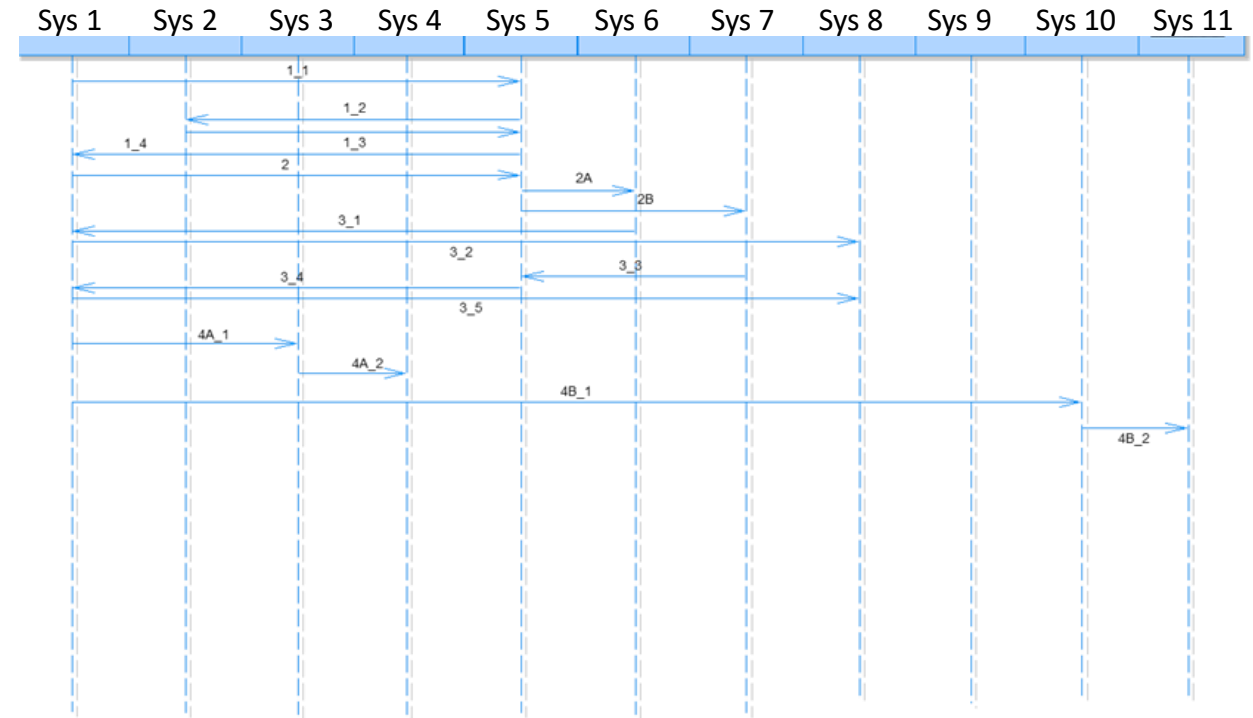
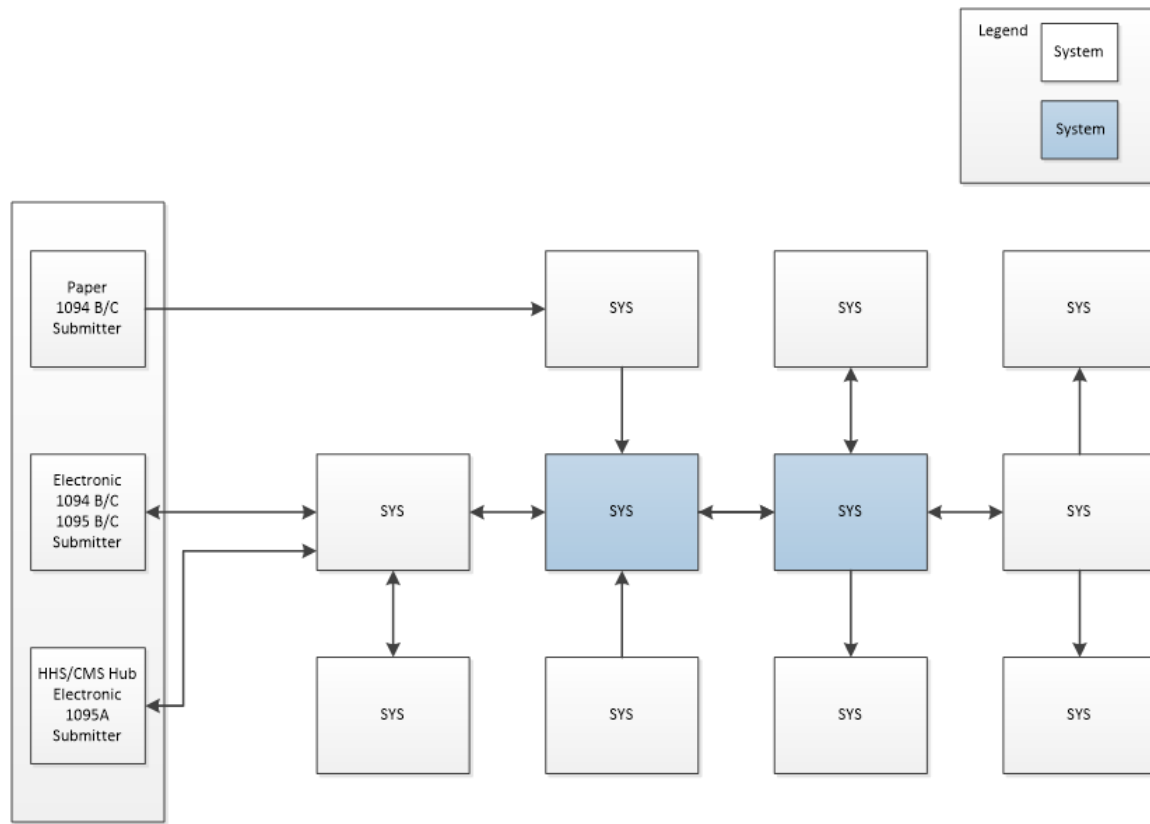
Employer plan’s share of the total allowed costs of benefits provided under the plan is at least 60 percent of such costs (p.154)

*Denotes assessable payment limitation

Calculation of assessable payment limitation = (Number of full time employees – 30) x ((1/12 x \$2,000) per month (p.155)

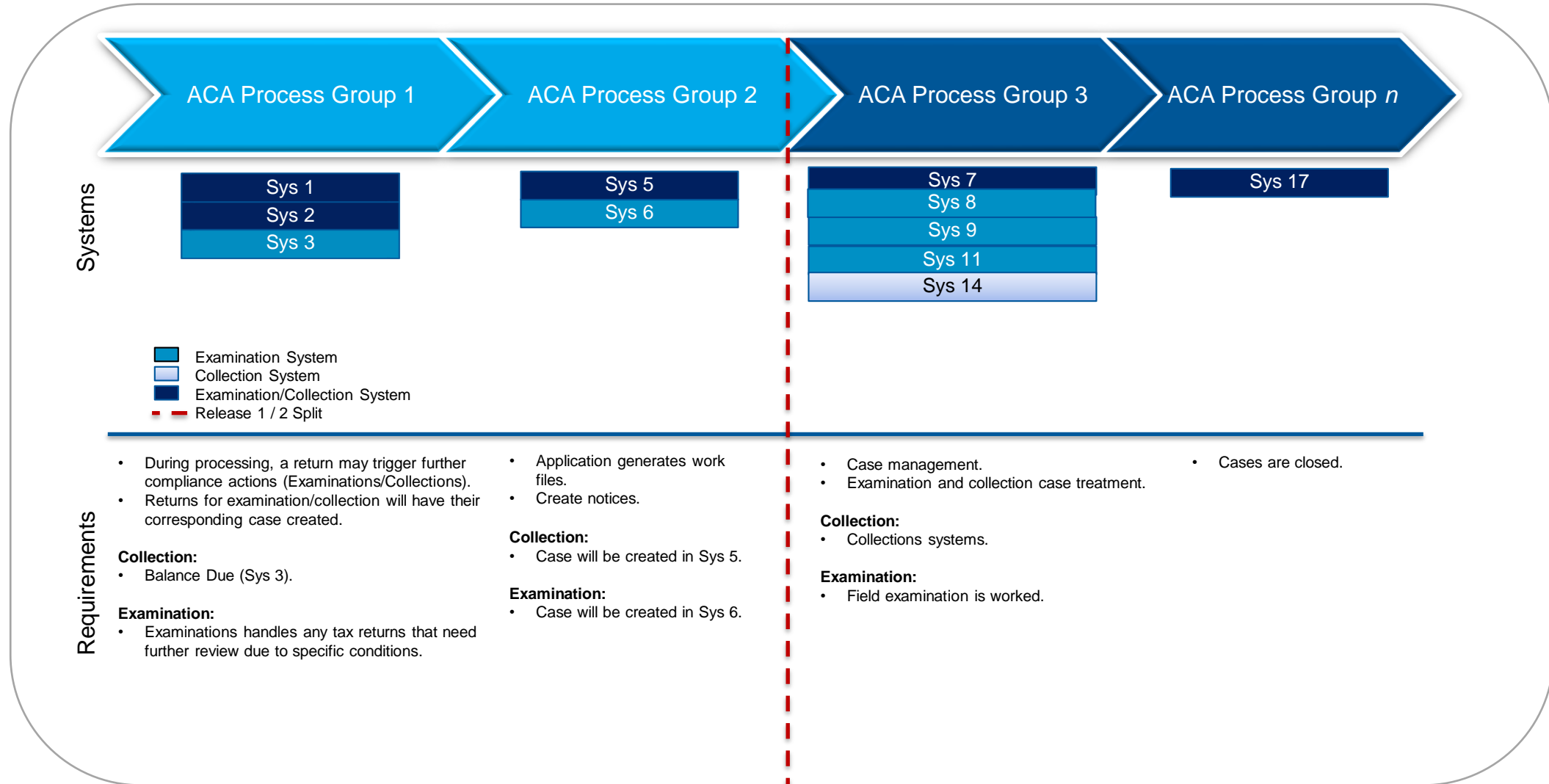
Use Case





MBSE Diagrams

Leveraging MBSE to Design, Build and Test





Silo Mentality -> Collaboration

Management and Governance

- M&G structure should be in place for effective collaboration, execution, and monitoring activities to effectively occur.
- Meetings and workshops should be scheduled with key stakeholders and team members regularly.
- CAB or CCB would also be helpful to manage changes to the systems.
- Other: Agile, Kanban, Scrum

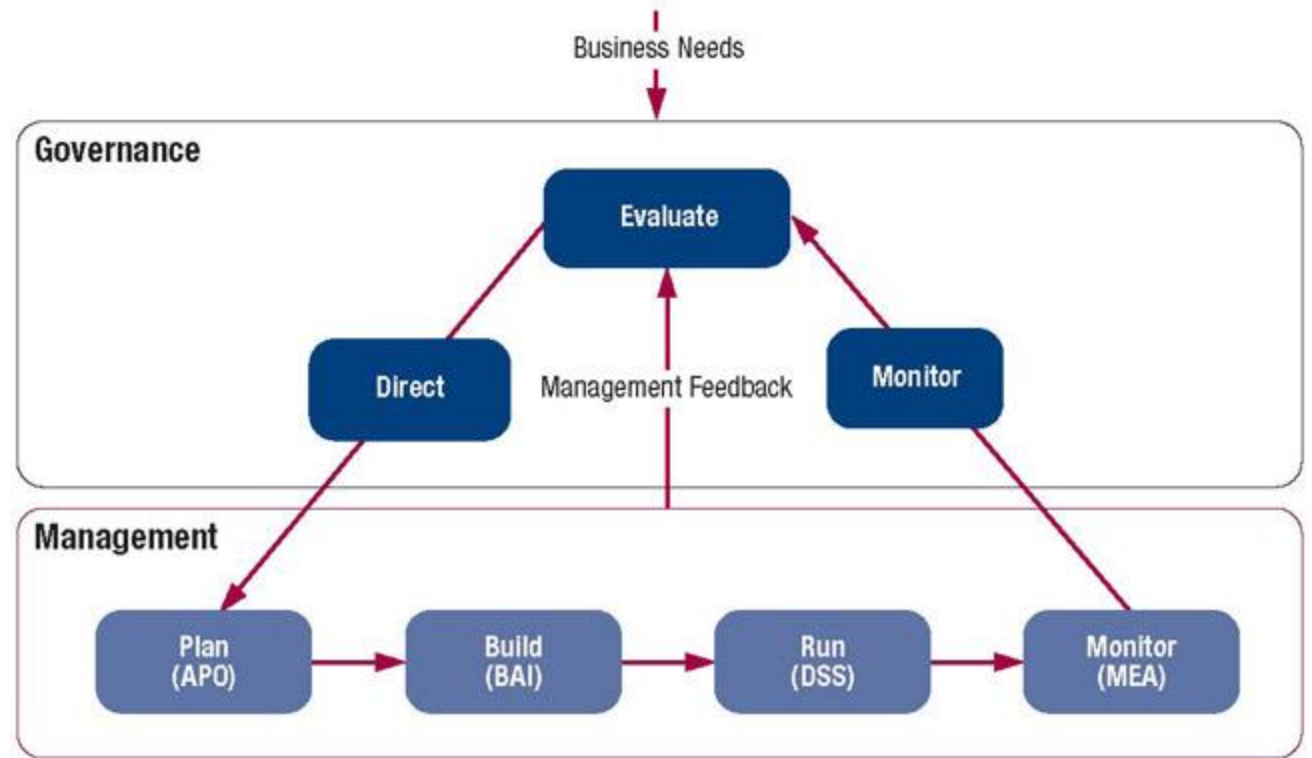


Image Source: <http://www.isaca.org/COBIT/focus/PublishingImages/CF-30-March-2015-2.jpg>

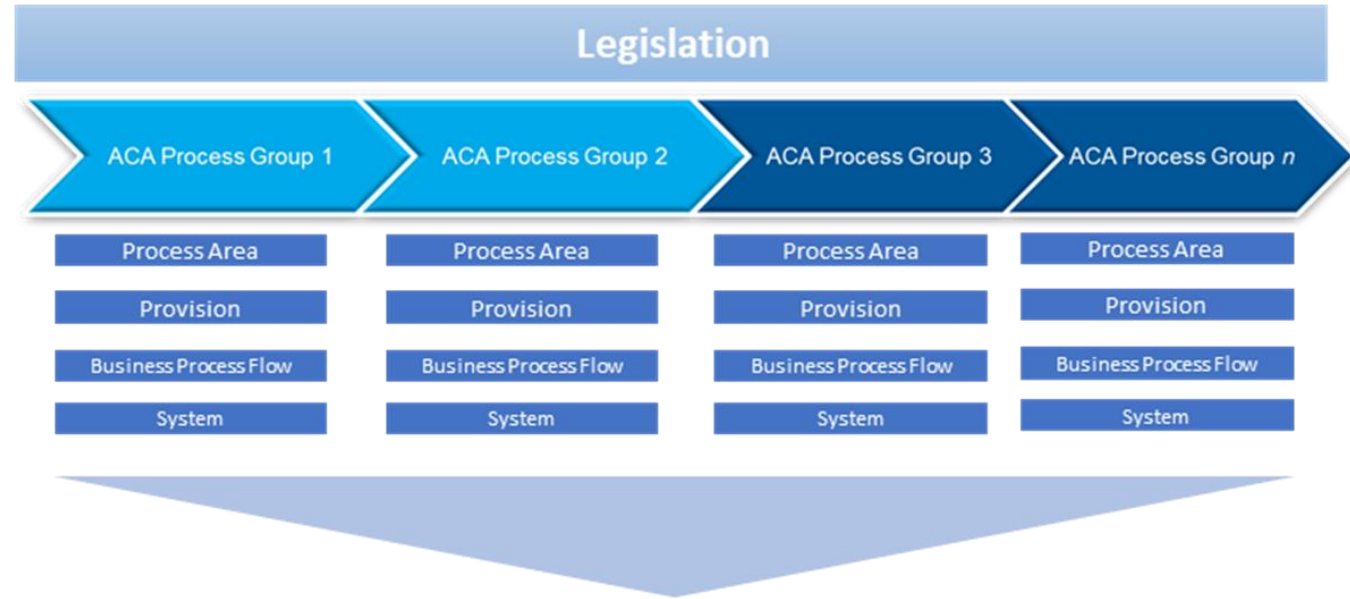
Release Planning

- Release planning is a major challenge because some laws require organizations to comply by a specific date, and there is no room to adjust schedules if any upstream activities are delayed.
- To mitigate the risks of schedule slippage, create a Release Strategy and Release Plan for the overarching Program as well as the individual Projects.
- Program and Project Managers should be familiar with when their deployment windows are, when they should expect to deploy their changes to the architecture, how long the system is expected to be down, and dependencies between all project teams and their deliverables.



Image Source: <https://qph.ec.quoracdn.net/main-qimg-83e0ce175fb38566f93b9e7ceea584f6>

Release Planning



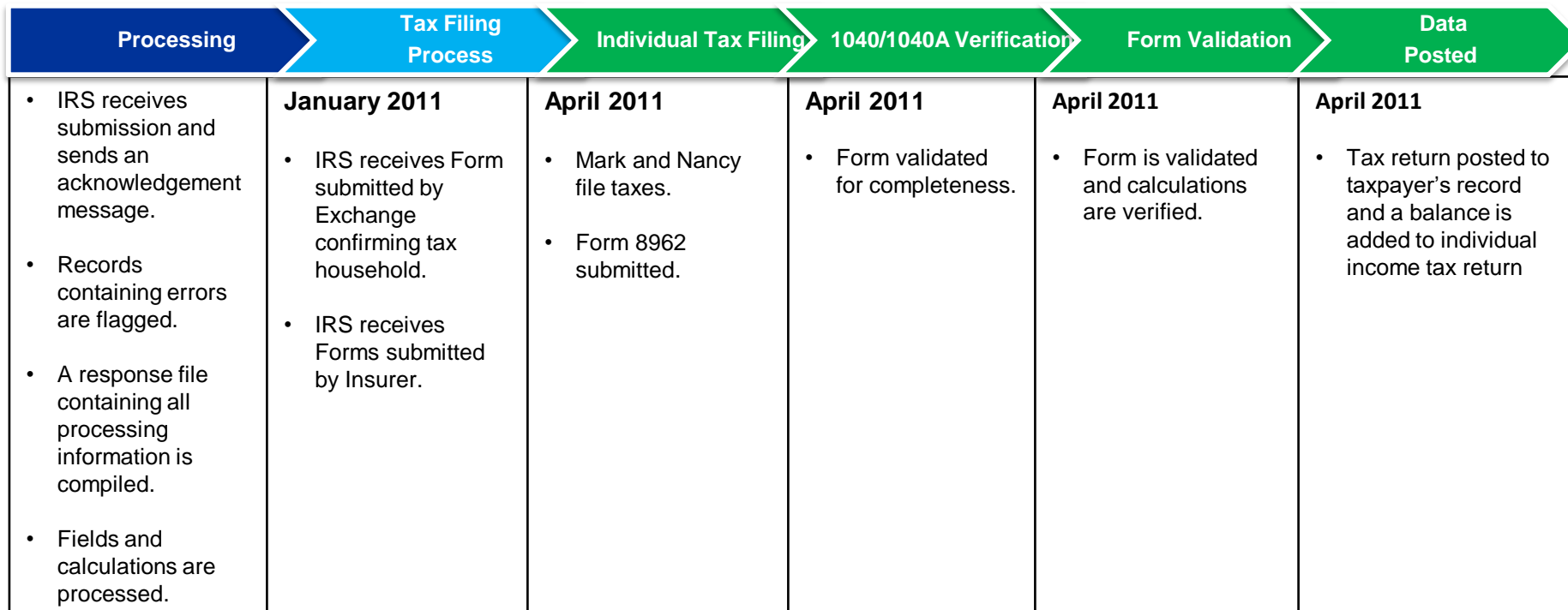
Release Schedule				
Enrollment	Exchange Data	Insurer Fees	Return Filing	Compliance
Business Requirements	Business Requirements	Business Requirements	Business Requirements	Business Requirements
Solution Architecture	Solution Architecture	Solution Architecture	Solution Architecture	Solution Architecture
Testing	Testing	Testing	Testing	Testing
Organizational Readiness	Organizational Readiness	Organizational Readiness	Organizational Readiness	Organizational Readiness



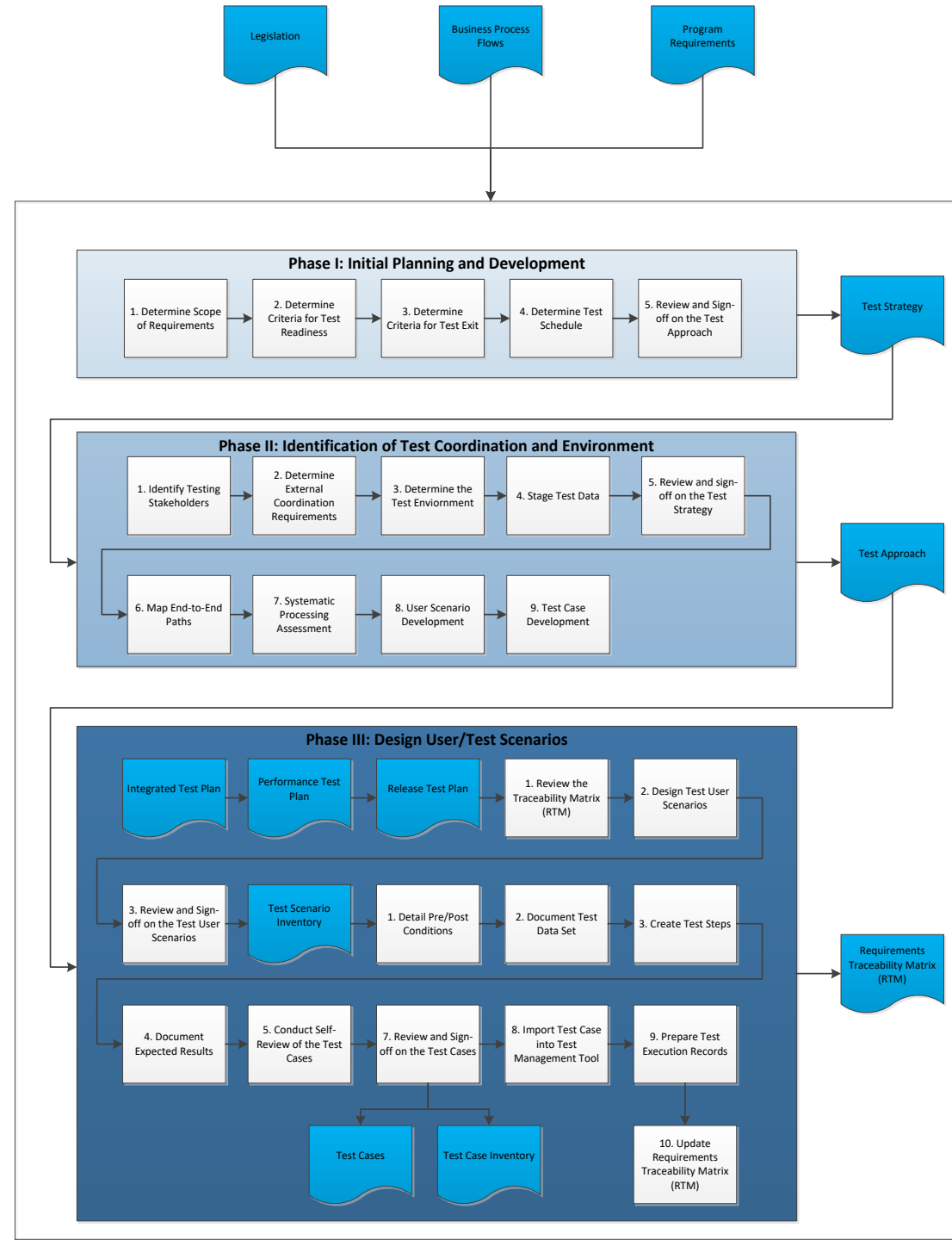
Test Planning

Model Based Systems Engineering: Designing Test Scenarios

In January 2010, Mark, who is a single adult employed by a small employer, in MD, has two nieces who move in to attend grade school and Mark adds them to his household (tax return exemptions) but they remain on their parents' policy. In March 2010, Mark marries Jeanette (unemployed) and adds her to his existing policy. She dies the next month and he updates his policy on the MD Exchange to remove Jeanette from his policy and adds his new wife, Nancy. In January 2011, the MD Exchange provides Mark and Nancy with a copy of the 1095A so that they can fill out the Form 8962. The IRS processes their return and verifies they correctly calculated the PTC balance due they are reporting.

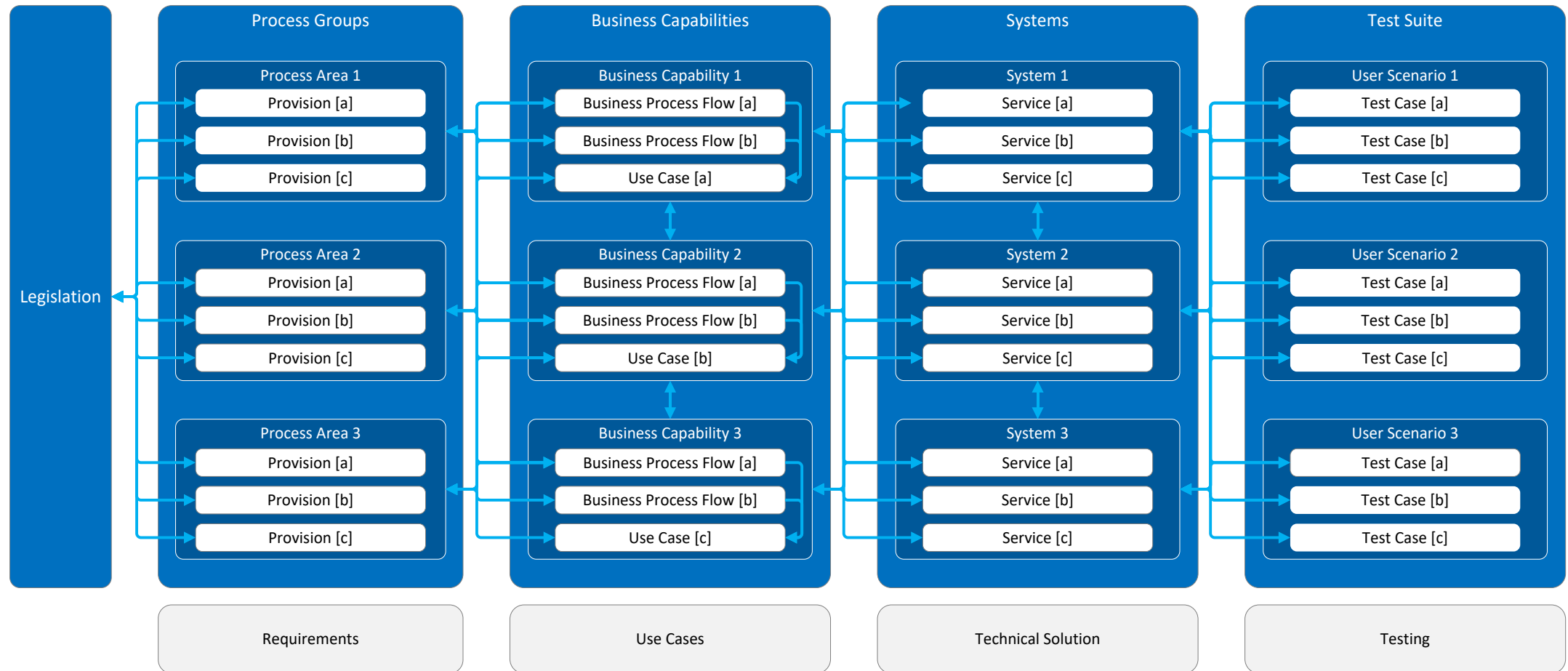


Test Planning Phases and Activities



Framework for Validating Systems in the Context of Law

Framework for Validating Systems in the Context of Law



A close-up photograph of a computer keyboard. The central focus is a large, rectangular blue key with the words "Thank You" printed in a bold, white, sans-serif font. The key is slightly raised and has a subtle gradient. Surrounding it are several standard white keys with black markings: a key with a closing curly brace and a closing square bracket to the upper left, a key with a forward slash and underscore to the upper right, and a key with a double quote and a comma to the lower left. The lighting is soft, creating gentle shadows and highlights on the keys' surfaces.

Thank You