

Viable System and Examples of Use System Description

Abstract

The Viable System is the system-of-interest for this System Description. The Viable System Model provides a system pattern that can be used to understand, design and structure various types of Viable Systems. The System Description provides the lens to understand the viable system and various management models provide examples of how the Viable System Model can be applied.

The following management examples are included using the Viable System Model:

- [Porter Value Chain](#)
- [Management System for ISO 9001:2015](#)
- [Programme Organization.](#)
- [Team](#)

These management examples have their own underlying management models and processes that are inherently able to establish Viable Systems if they are implemented effectively. This document explores the relationships between the viable system model and these management examples.

[PDF: System Description: Viable System, Version 0.4, 15-August-2022](#)

[PDF: System Description: Integrated Management System, Version 0.17, 10-October-2023](#)

See System: [Viable System](#)

Author and Version

Bruce McNaughton, Version 0.4, 15-August-2022

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Revision History

- V0.4 15-August-2022 Update to current SD layout and include concepts of capability sets.
- V0.3 17-December-2018 Identify each of the 5 systems as a social system.
- V0.2 26-October-2017 Add mapping to the Adaptive Control System model.
- V0.1 25-October-2017 first release with updated diagrams.
- V0.0 24-October-2017 Initial Draft

Abstract System: Viable System

View: System Name and Class

Name: Viable System

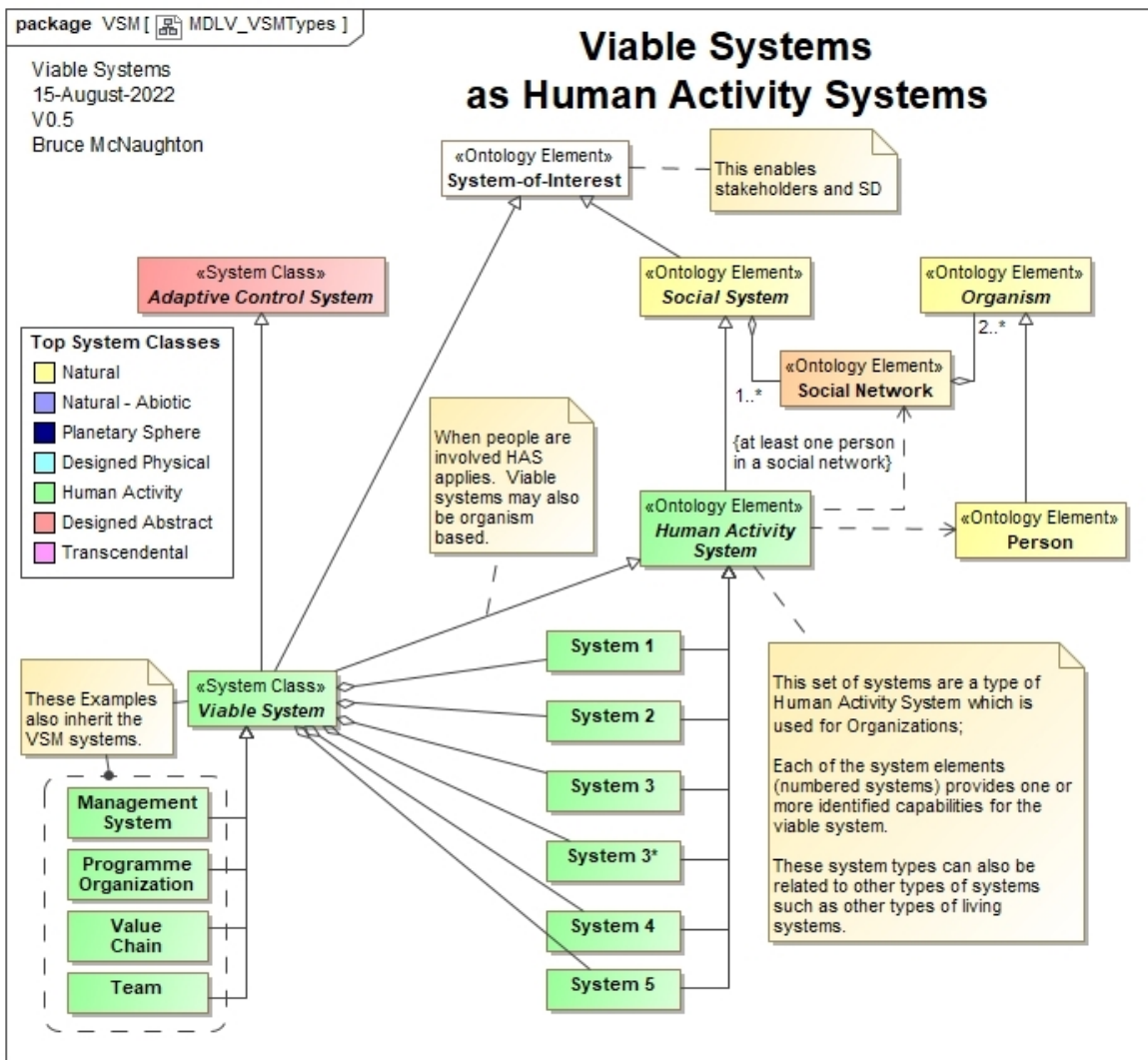
Based on: [System \(Abstract\)](#) using [Adaptive Control System](#) pattern

Abstract System: This system has been identified as an abstract system that cannot be implemented directly. The abstract system establishes a shared pattern of characteristics that any system can use to describe its unique characteristics when referenced in the 'based on' list above. These references are described using a generalization association in UML.

Viable: means 'able to maintain a separate existence', The Oxford English Dictionary

An organization as a viable system is able to sustain it's own existence, grow and adapt in response to changes in the environment.

The following diagram provides classifications for the various systems in the viable system model for a human activity system (organization).



The viable system based upon the Viable System Model is a pattern that identifies a set of systems that represent a set of capabilities that are expected to be realized in a human activity system. This set of capabilities can be mapped on to any existing organization or help shape the capabilities of new organizations. This pattern can also be mapped to other types of living systems or designed systems.

Three references are available to understand the viable system:

- [Diagnosing the System for Organizations, Stafford Beer](#)
- [Fractal Organizations, Patrick Hoverstadt](#)
- [Viable Systems Model, Wikipedia](#)

The Viable System Model provides a way to look at the essential capabilities needed for an organization to be viable in the longer term.

The following examples of using the Viable System Model are:

- [Porter Value Chain](#)
- [Management System for ISO 9001:2015](#)
- [Programme Organization.](#)
- [Team](#)

The Viable System also fits nicely with the Russell Ackoff [definition for a purposeful system](#):

An entity is purposeful if it can select both means and ends in two or more environments.

[PDF: System Description: Viable System, Version 0.4, 15-August-2022](#)

[View: System Purpose](#)

The purpose of a viable system as a system-of-interest is its reason for being. The purpose also relates to the functions and capabilities provided by the viable system (e.g. what the system does). The purpose is unique to each type of viable system seen as a system-of-interest.

[View: System Properties](#)

Systemic Measurable Variables

The emergent properties created or used through the interaction of the elements. This includes both desired and undesired.

- Performance variables and their associated measurements
- High customer satisfaction and continued use
- Positive and motivating culture within the organisation
- Positive contribution to society and the economy
- Achieve the purpose of the Viable System
- Achieve performance objectives and targets

Systemic Capabilities or Functions

The capabilities or functions are produced through the work in system 1.

- Delivery of products and services
- Easily adapt to changes in the environment
- Development of suppliers capabilities to enable the organisation to meet its objectives.

System States

The various defined states that the Viable System can be in.

- Architectural states
- Transformational States
- Operational States

The way the organisation senses and responds to any of the emergent properties leading to undesired properties can determine the long term sustainability of the organisation.

[View: System Stakeholders and Concerns](#)

Managers

- Will this organisation achieve its objectives and purpose?
- Is the organisation sustainable for the long term?
- Are our customers satisfied?

Team members

- Are the managers ensuring the long term viability of this organization?
- Will I be able to achieve my full potential in this organization?

[View: System Environment \(Context\)](#)

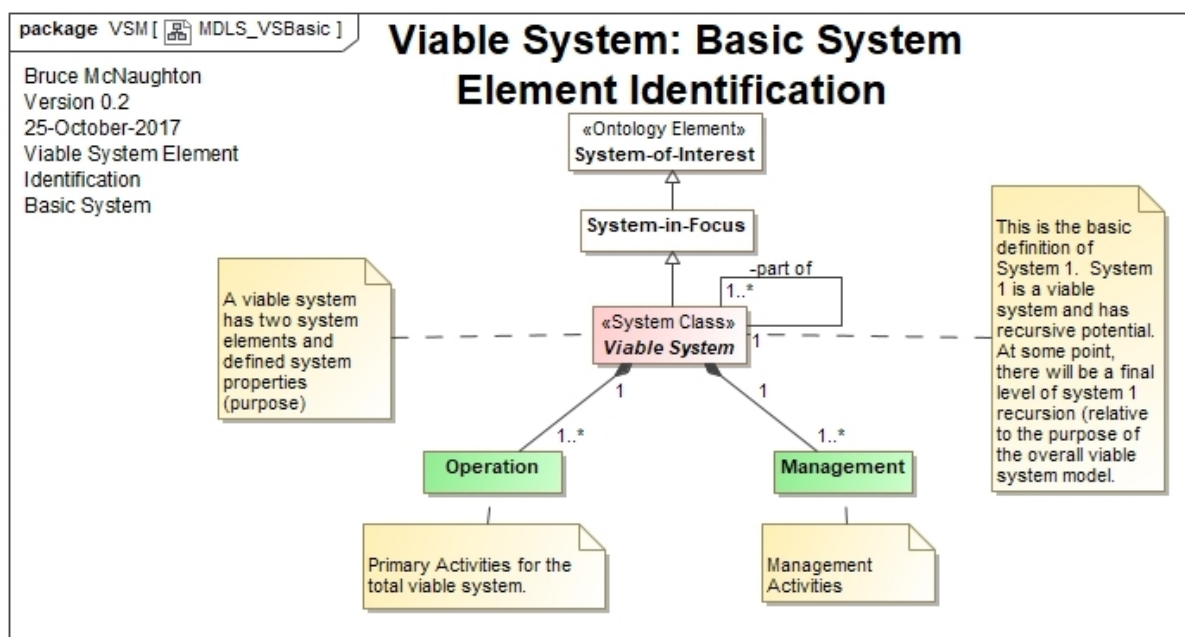
The environment and the potential impacts on the Viable System.

this section includes

- The operational interface with the environment related to the current products and services (variety)
- The future environment looking at the longer term sustainability of the organisation

View: System Structure (Pattern of Organization)

System Element: Identification

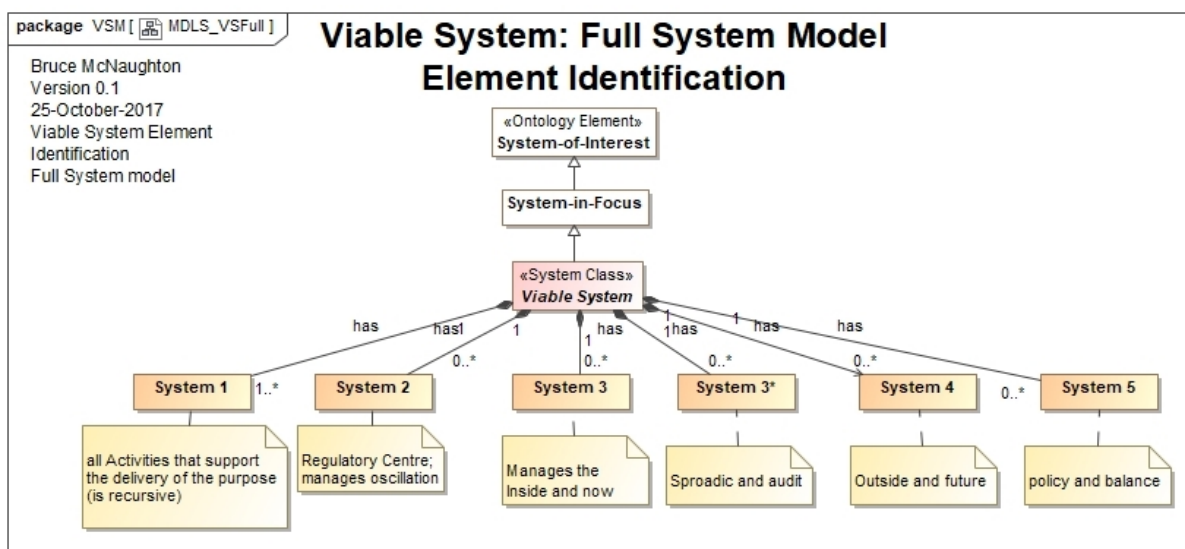


Each recursion then implements the full model where the full set of system elements are shown:

Full list of system elements and which are actually candidates for recursion.

There is a need to be very clear about the system-in-focus and the identification of those that deliver the organization's purpose.

The full model system elements are shown below:



System Element: Relationships

The relationships are shown in the top level viable system (operations and management) and then shown in the full Viable System Model. See [Viable Systems Model, Wikipedia](#)

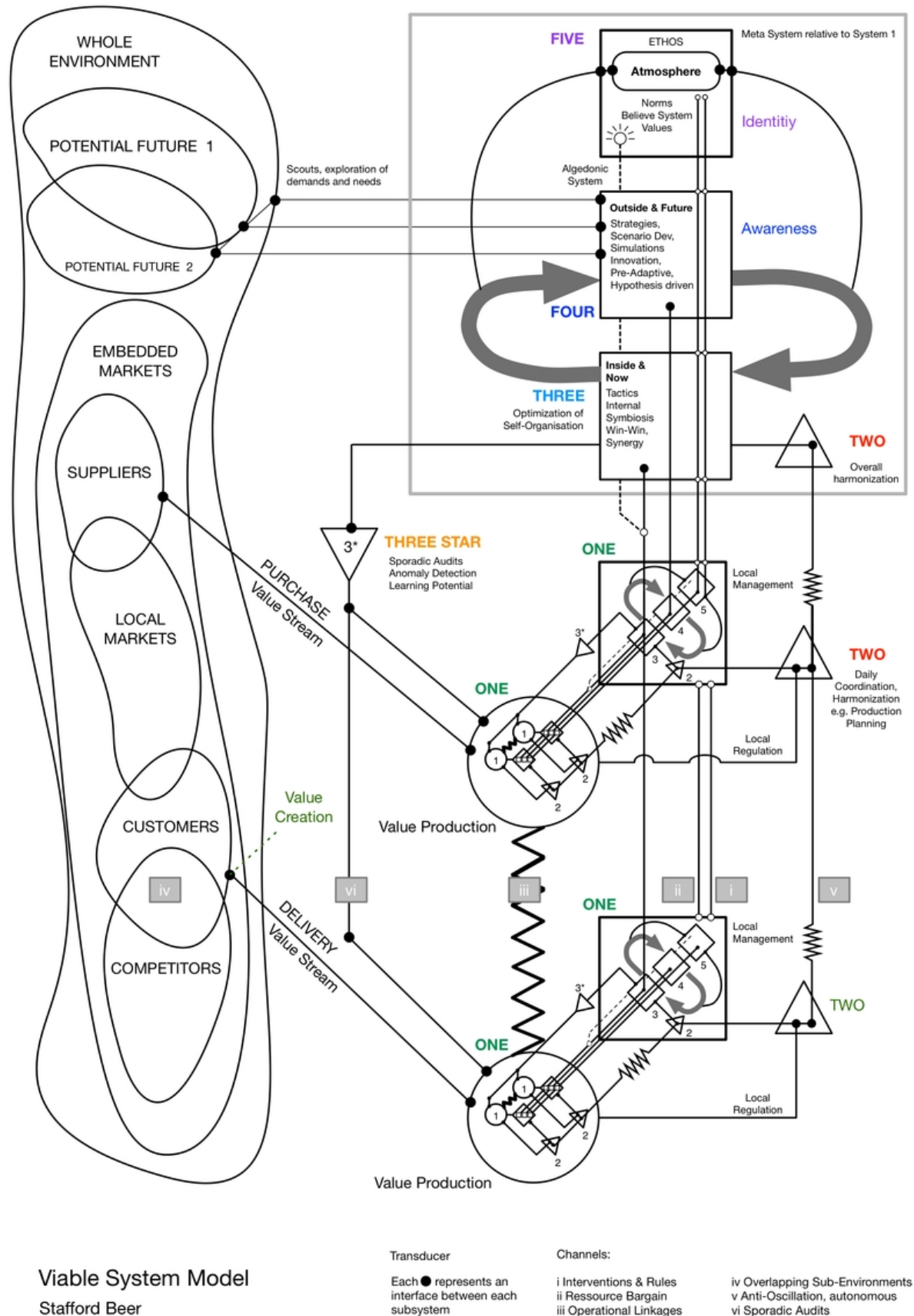


Image from Wikipedia article. Link referenced above.

See the following PDF for examples of viable systems.

[PDF: System Description: Viable System, Version 0.4, 15-August-2022](#)

[View: System Behavior \(Structural Changes\)](#)

Configuration / Scenario:

Describes any configuration / scenario attributes for a specific system-of-interest. This may not be appropriate for all system descriptions (e.g. patterns or abstract systems).

Cyclical (Repeating / Regular) Processes

Typically the repeating / regular processes relate to the set of processes supporting the capabilities of the viable system. These processes form part of the management system established and implemented within a viable system.

Regular / repeating processes also include the audits and assessments conducted on a regular basis to test the effectiveness of the system. Minor corrective actions can be taken to improve performance.

See the Integrated Management System PDF for a list of the standards that can be used to establish capabilities..

[PDF: System Description: Integrated Management System, Version 0.17, 10-October-2023](#)

Development Life Cycle Processes

The Viable Systems are created through the management practices in the viable system using the [organizing activity of the manager](#). The management practices provide the ability to create the various systems and the overall structure of the resulting viable system.

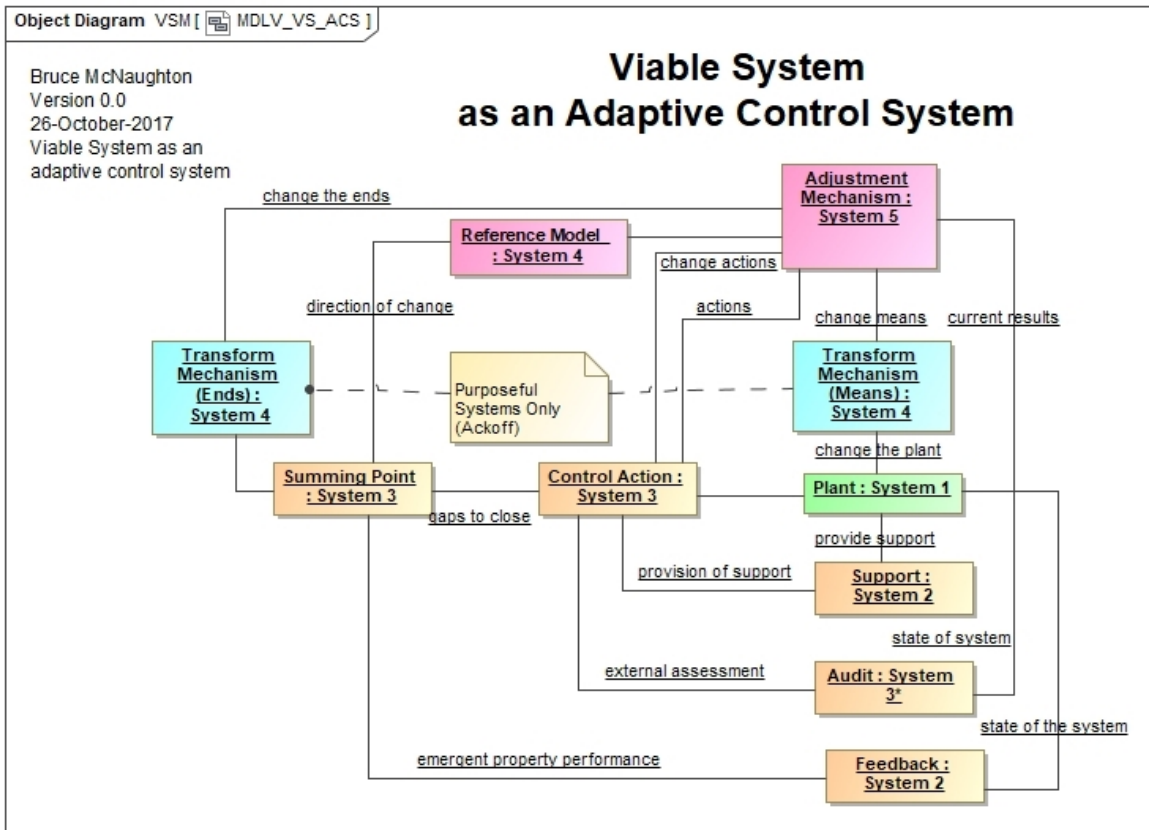
Creating this viable system or management system uses a set of management capabilities and associated processes. See the examples for the types of capabilities that are generally used and included.

The various models such as the VSM or the Management System requirements identify the capabilities that should be identified and designed through a viable system life cycle (typical life cycle is provided by ISO 15288:2015).. This system if established and implemented successfully will yield the following.

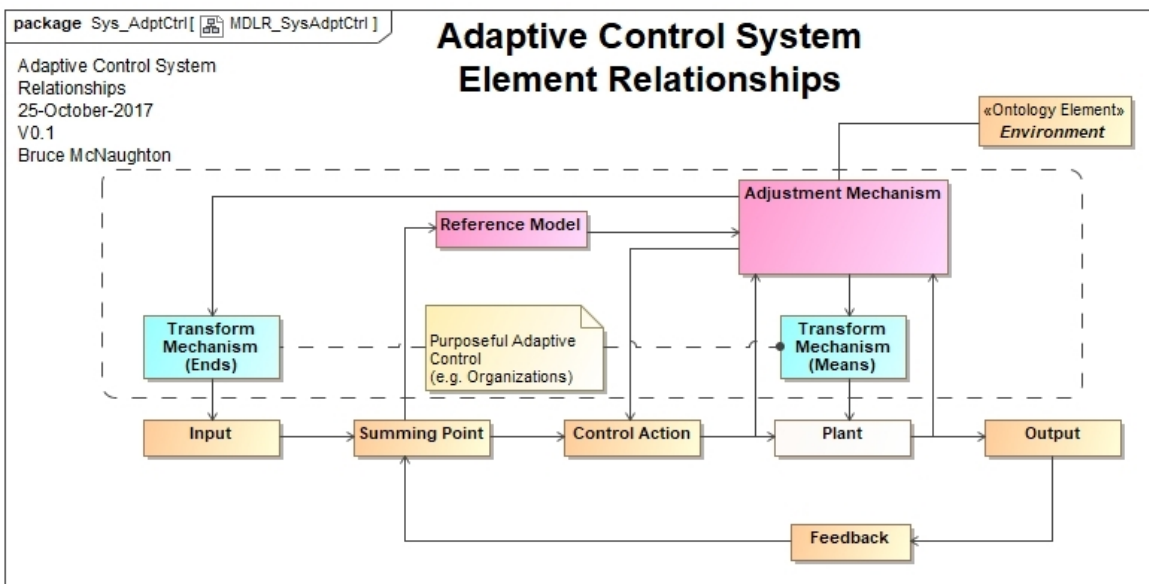
- Improved organizational maturity and culture
- Improved performance
- Improved ability to adapt and improve as a response to changes in the environment
- (NOTE: these are all viable system emergent properties).

Viable System as an Adaptive Control System

The following model shows the various systems within the Viable System Model [as an Adaptive Control System](#).

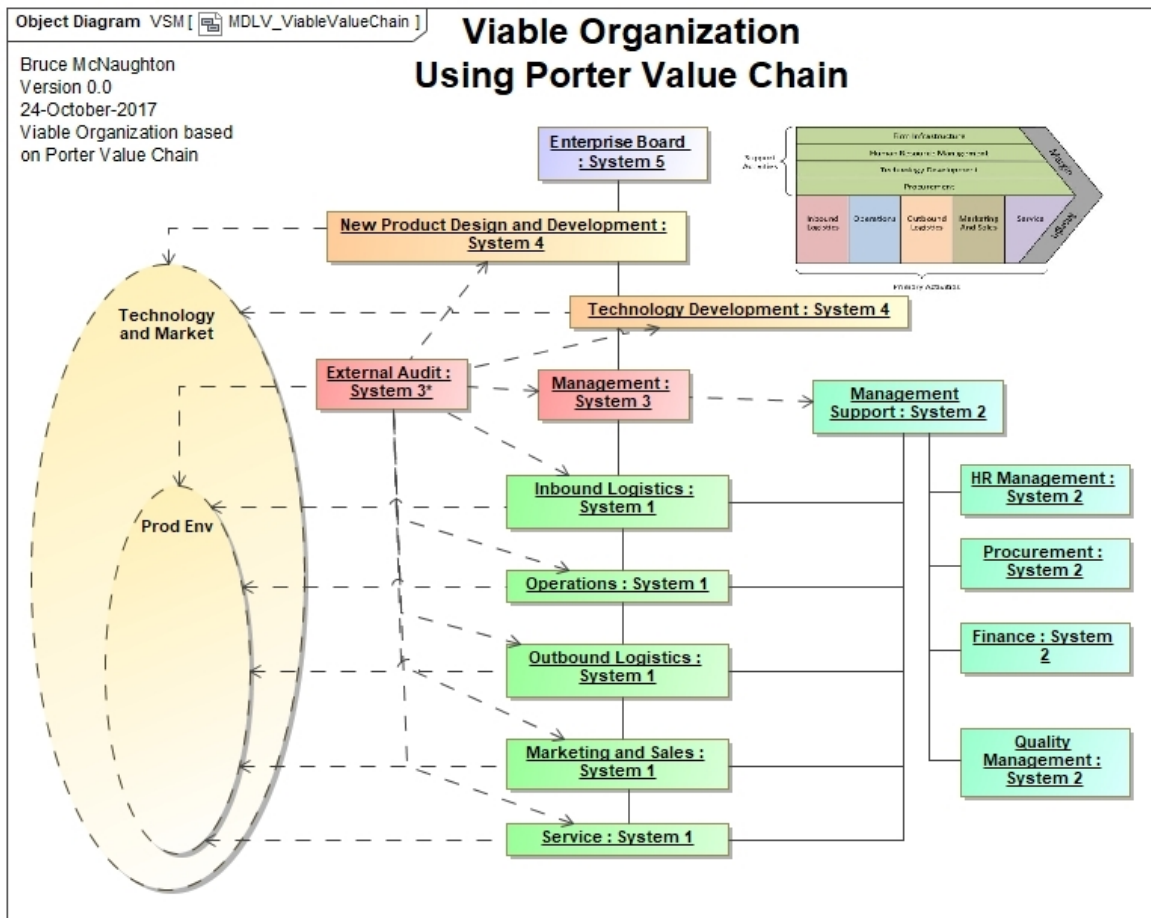


This model is derived from the Adaptive Control System model found in the System Description for the Adaptive Control System. [See Adaptive Control System](#)



Viable Value Chain

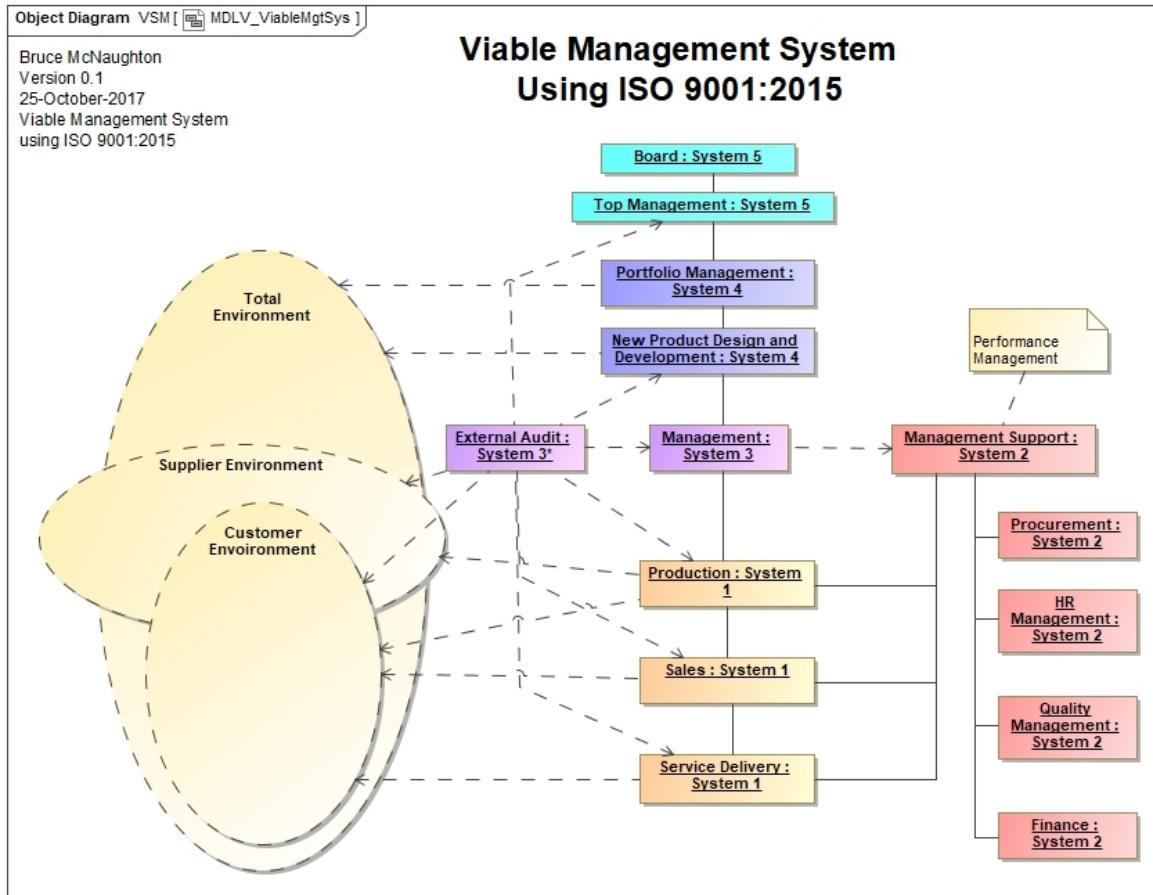
This model explores the Porter Value Chain as an approach to model an organization.



Viable Management System

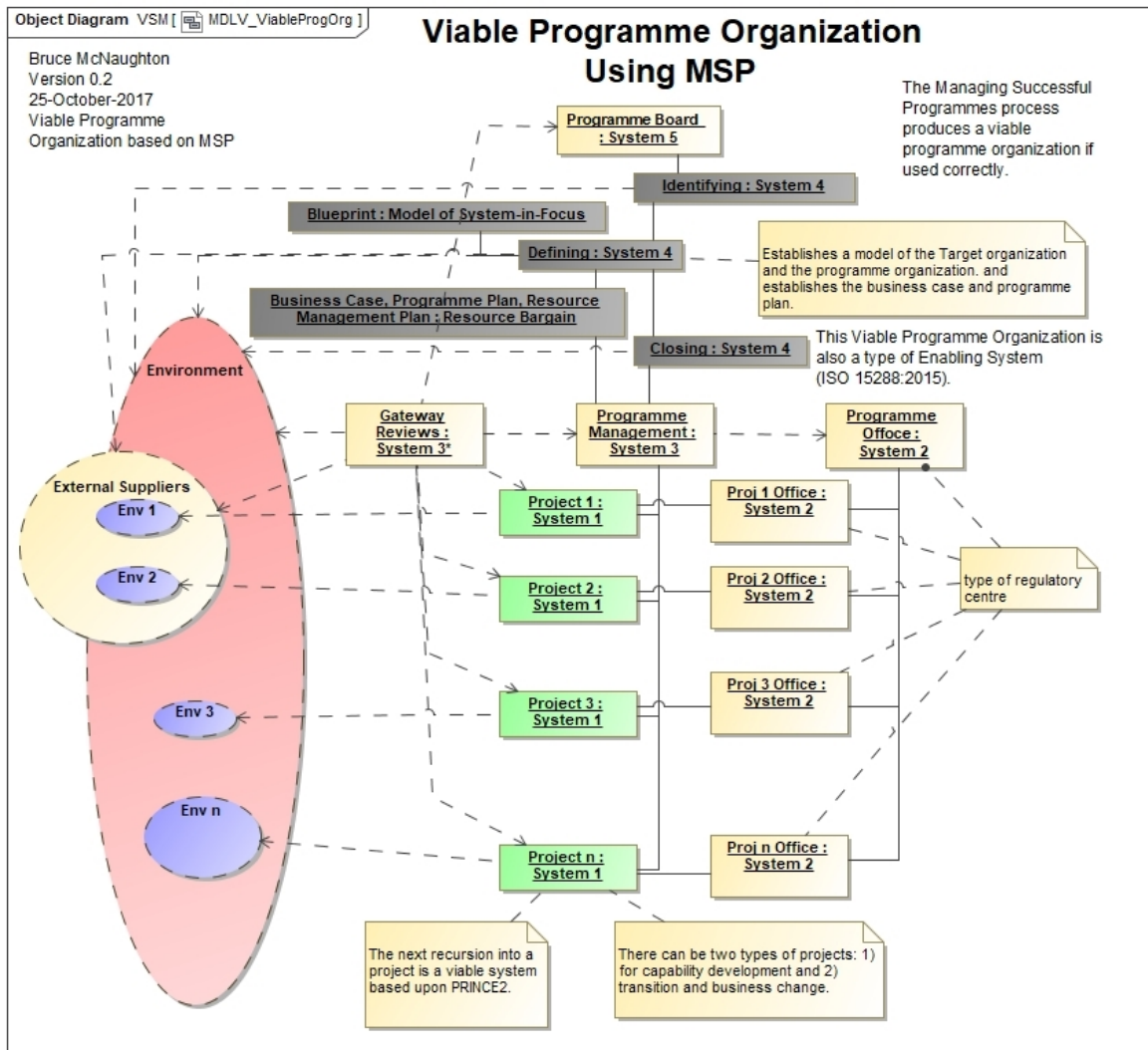
This model explores the Management System concept from ISO 9001:2015 as an approach to model an organization.

[PDF: System Description: Integrated Management System, Version 0.17, 10-October-2023](#)



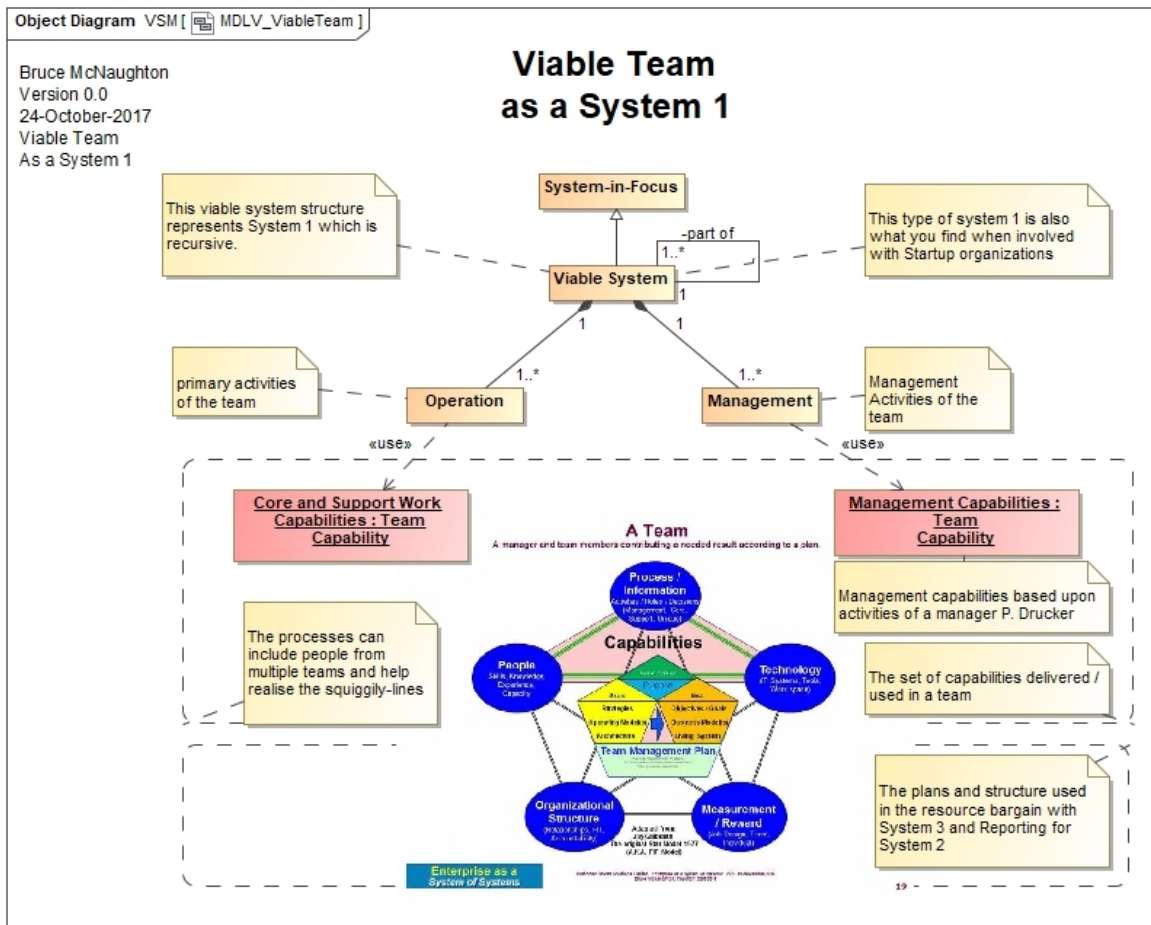
Viable Programme Organization

The programme management capability creates a programme organization. The Viable Systems Model has been used to show the structure of a Viable Programme Organization using Managing Successful Programmes:



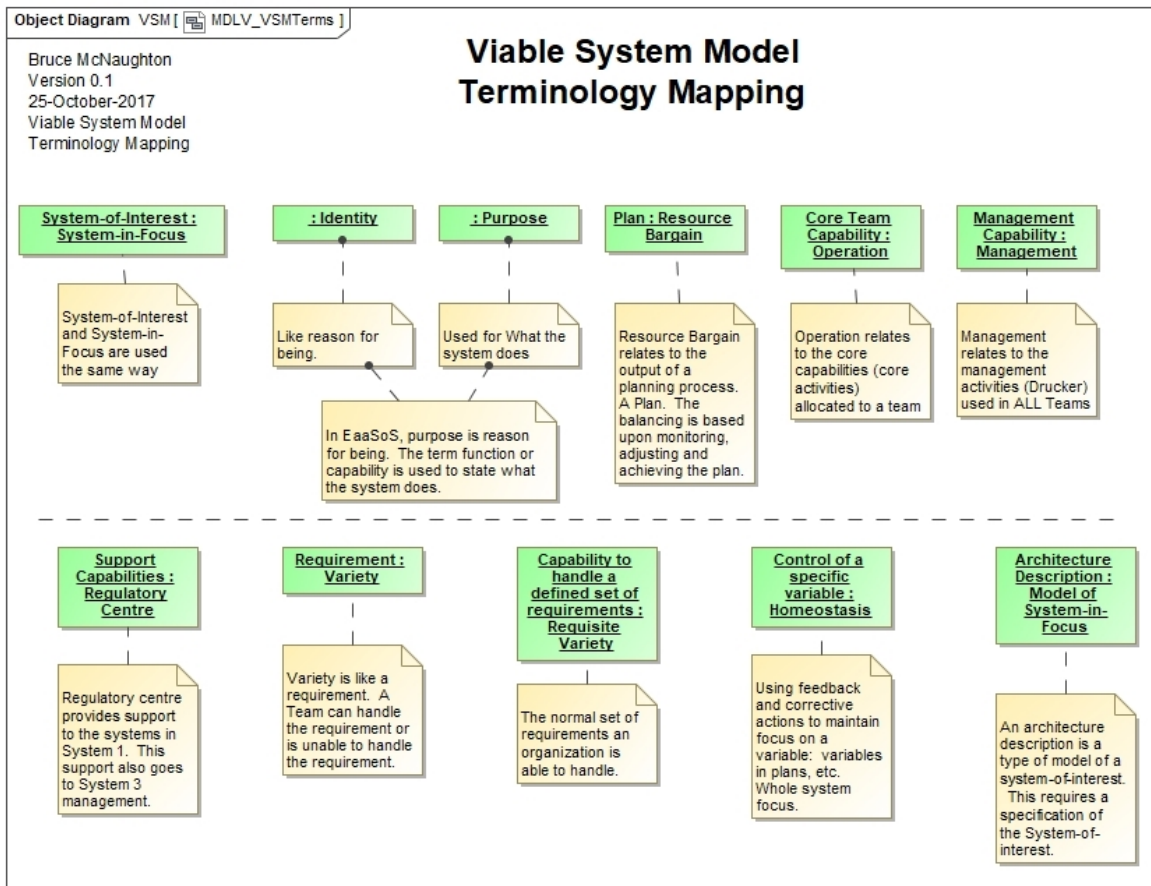
Viable Team using the Team Model

The Team Model is aligned to the basic definition of a Viable System.



Viable System Terminology

This section provides translation for the Viable System Model terminologies



Viable System: References

Diagnosing the System for Organizations, Stafford Beer

[Diagnosing the System for Organizations](#)

Easy way to learn the Viable System Model (VSM)

The Fractal Organization, Patrick Hoverstadt

[The Fractal Organization: Creating Sustainable Organizations with the Viable System Model](#)

VSM is used as a reference model

Re-Creating the Corporation, Russell Ackoff

[Re-Creating the Corporation: A Design of Organizations for the 21st Century](#)

[Definition of a System and 5 Conditions](#); Multi-Dimensional Organization Design; Interactive Planning; and more.

[System of System Concepts](#)

Organization Design, Jay Galbraith

[Organization Design](#)

This book contains the original STAR Model which included Technology.

Management: Tasks, Responsibilities and Practices, Peter Drucker

[Management: Tasks, Responsibilities, Practices \(Drucker series\)](#)

This book introduces the activities of a manager: Planning, Organizing, Resourcing, Integrating, Measuring and Developing People.

Peter Drucker has written many books on management. This is an abridged version (about 200 pages shorter than most) and includes a glossary. I find this book very readable.

Competitive Advantage, Michael E. Porter

[Competitive Advantage](#)

Two key concepts are included in this book:

- [Value System](#) Examples on Page 34, 35
 - [Value Chain](#)
-

Organizational Culture and Leadership, Edgar H. Schein

[Organizational Culture and Leadership \(The Jossey-Bass Business & Management Series\)](#)

A good model of culture that supports the social system model. This includes macro and micro cultures.

Edition 5 also includes the [cultural dimensions theory](#) from [Geert Hofstede](#)

Managing Successful Programmes, MSP.

[Managing Successful Programmes \(MSP\).](#)

A programme management process used worldwide maintained by the UK Government.

Suitable for any types of programmes.
