Developing Systemic Leaders

Goals

- In this tutorial you will be exposed to:
  - A new language of leadership combining information processing preferences with leadership preferences within the "Battle Rhythm" context
  - A mechanism to develop yourself and others using this leadership language
  - Examples that focus on leadership within systems engineering and development

Agenda

- Session 1
  - Block A – Systemic Leadership Theory (SLT)
  - Block B – Systemic Leadership Profile (SLP) Components
- Break
- Session 2
  - Block C – Applying the SLP to develop leaders
  - Block D – Interactive SLP Exercise

Leadership Theory

SESSION 1 – BLOCK A

Leadership – A ***BAQBOE***

(BAQBOE – Bold Anecdotal Quote Based On Experiences)

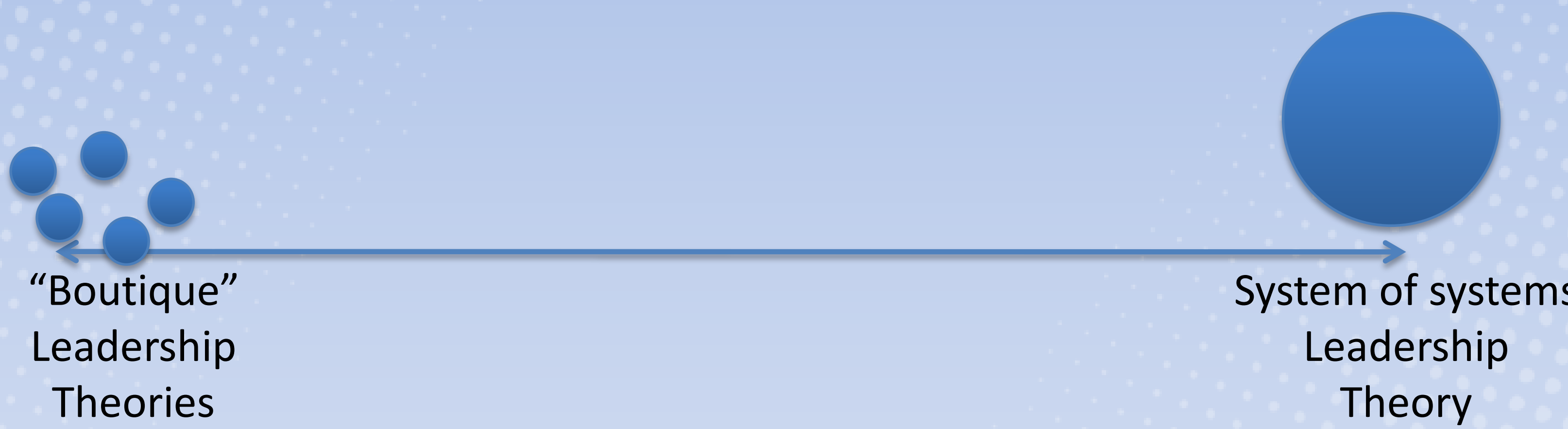
" Based on what you can read, study or observe about Leadership you would be hard pressed to conclude that the word Leadership actually addresses something that happens in real life"

Frank Sisti

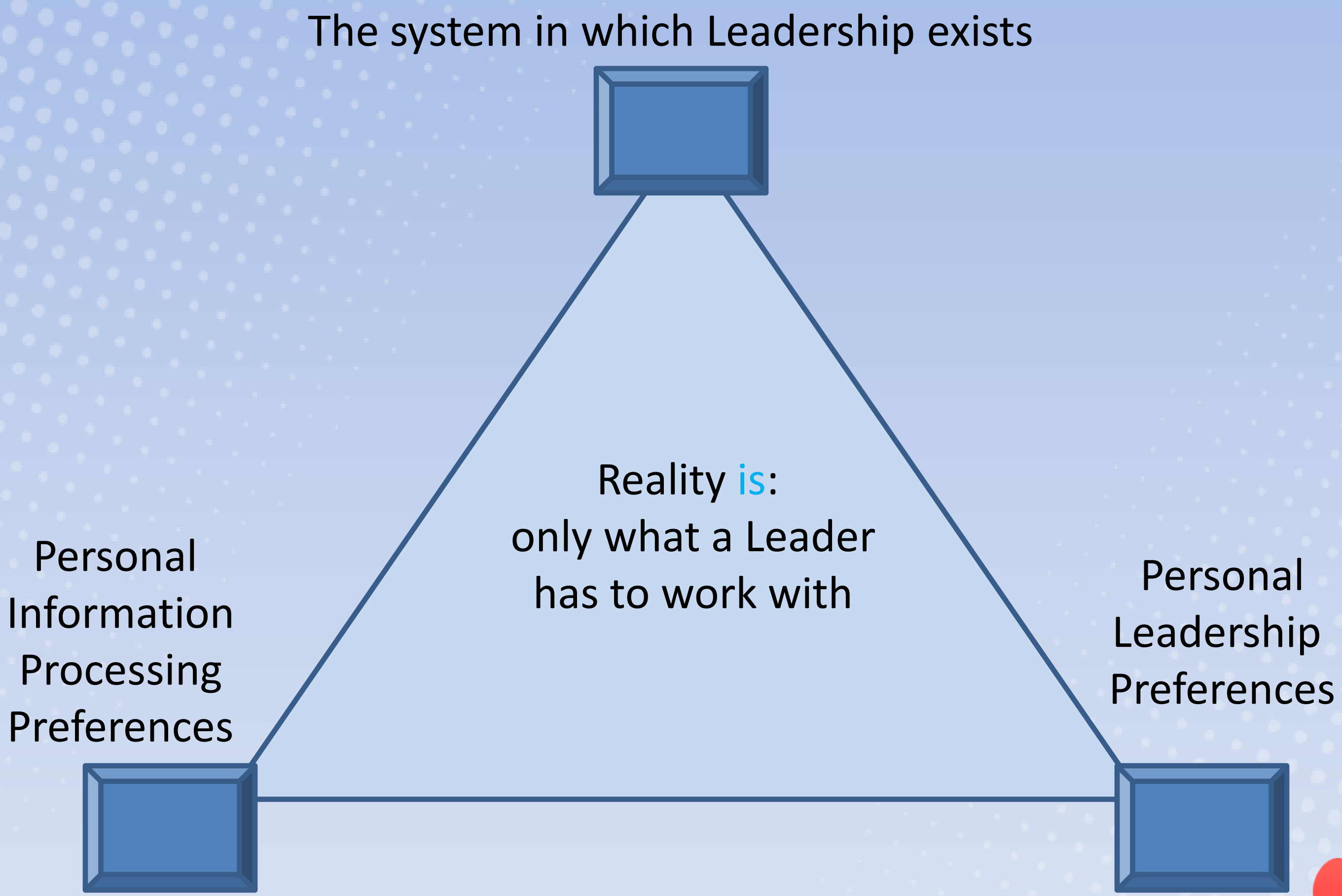
A Little Historical Perspective on Leadership Theory

- The Great Man (or Trait) Theory
- The Situational Theory
- The Contingency Theory
- The Exchange (or Transactional) Theory
- The Transformational Leadership Theory

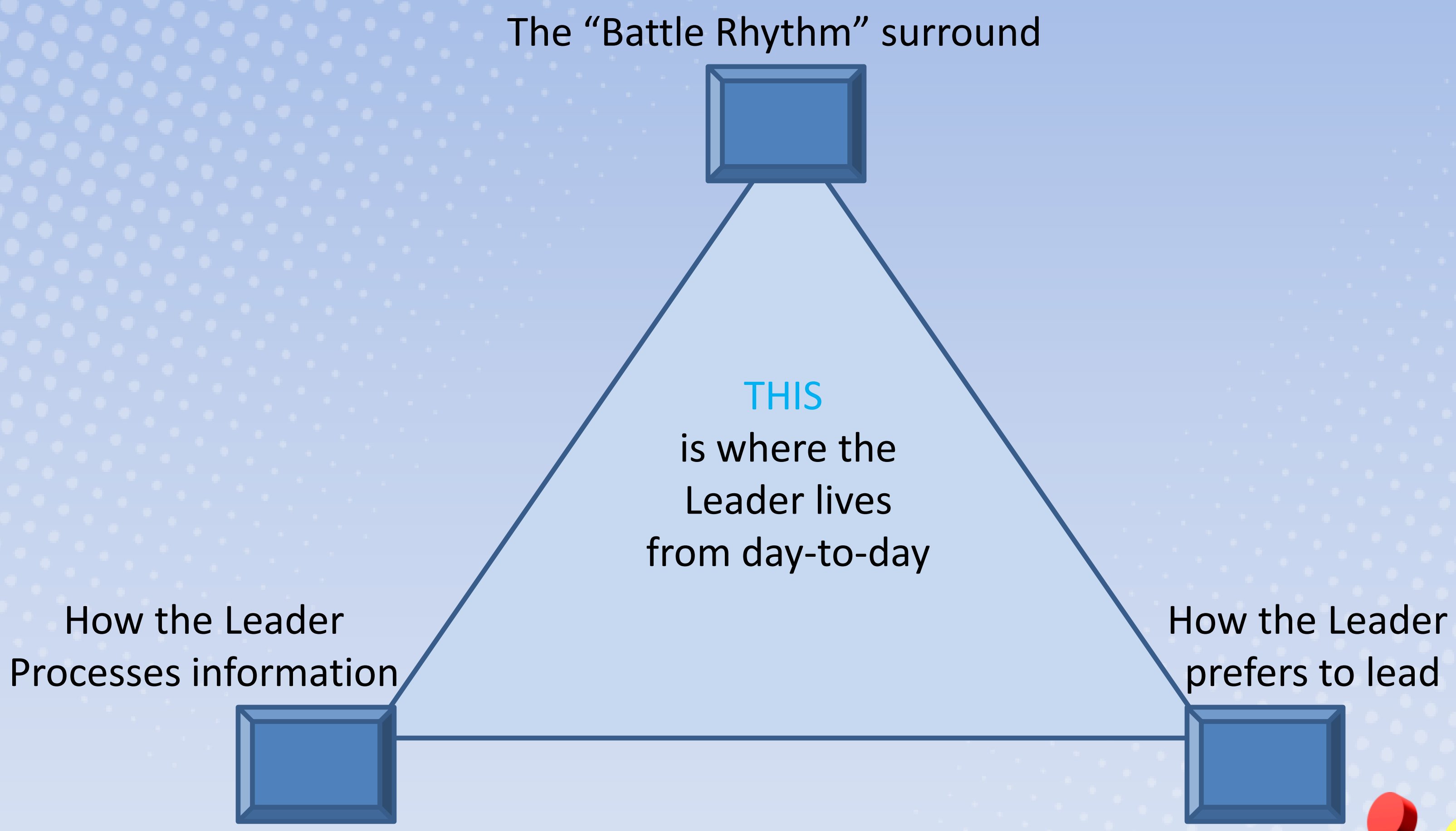
The Leadership Theory Spectrum



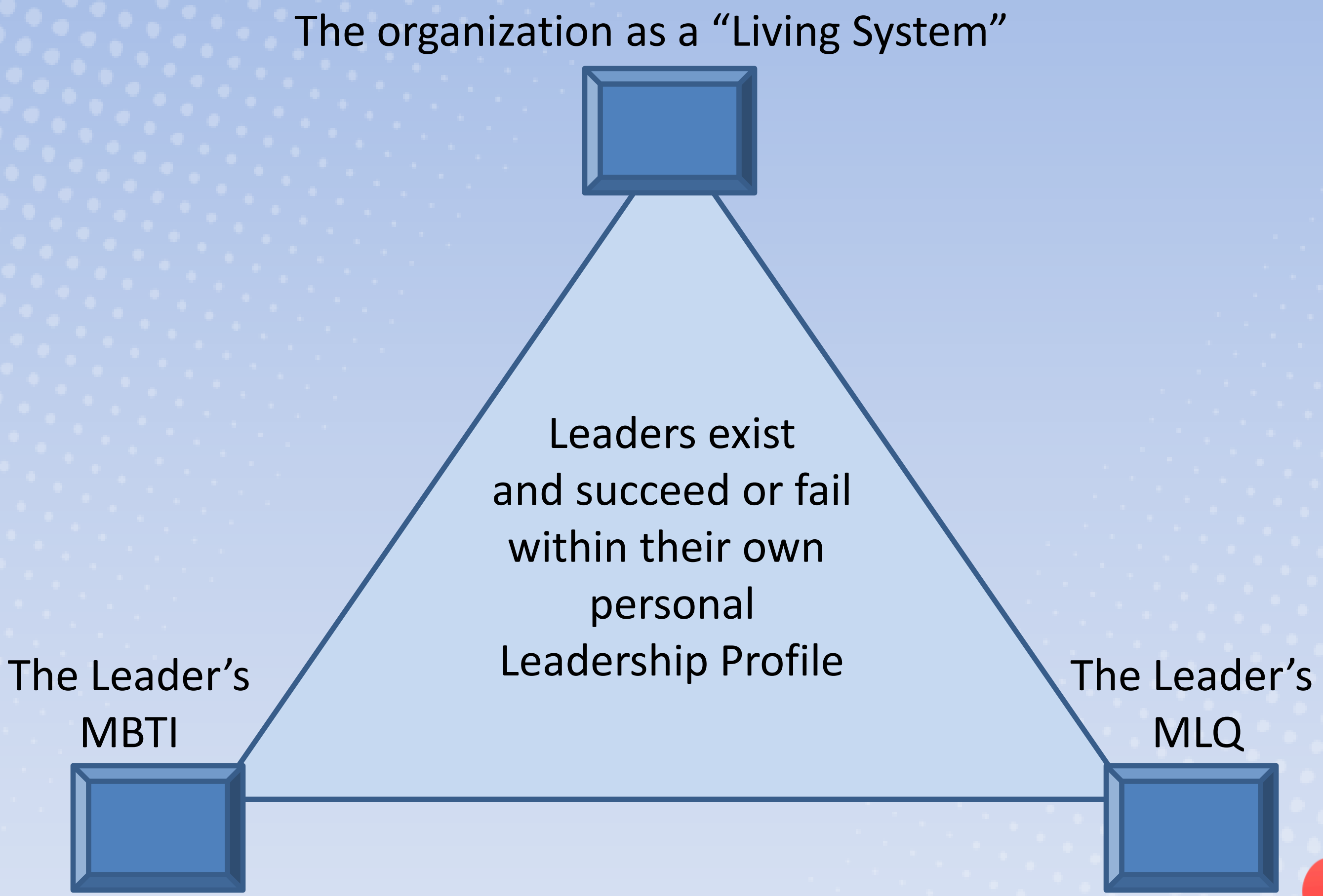
Systemic Leadership Construct



Systemic Leadership Theory



Systemic Leadership Profile (SLP)



SLP Components

SESSION 1 – BLOCK B

Processing Information – The MBTI

- The Myers – Briggs Type Indicator (MBTI)
  - I. B. Myers & K. Briggs authored the MBTI
  - "Operationalizes" C.G. Jung's *Psychological Types* Theory
  - Used in WW II to "type" pilots & submariners
  - Ancillary focus on leadership preferences
  - Today is applied from teenagers on up
  - Over 10 million records in the professional MBTI database
  - Form G is a 125 question instrument

Preferences for Processing Information

Four MBTI Dichotomies

Where do we get our energy?

Extraversion	Introversion

How do we take in information?

Sensing	Intuition

How do we make decisions?

Thinking	Feeling

How do we organize our world?

Judging	Perceiving

Adapted from Kroeger & Thuesen

Frank's MBTI is ENTP

ISTJ	ISFJ	INFJ	INTJ
ISTP	ISFP	INFP	INTP
ESTP	ESFP	ENFP	ENTP
ESTJ	ESFJ	ENFJ	ENTJ

Adapted from Kroeger & Thuesen

Type Indicators

Adapted from Kroeger & Thuesen 1992

ENTP & Leadership

- "Progress Is the Product"

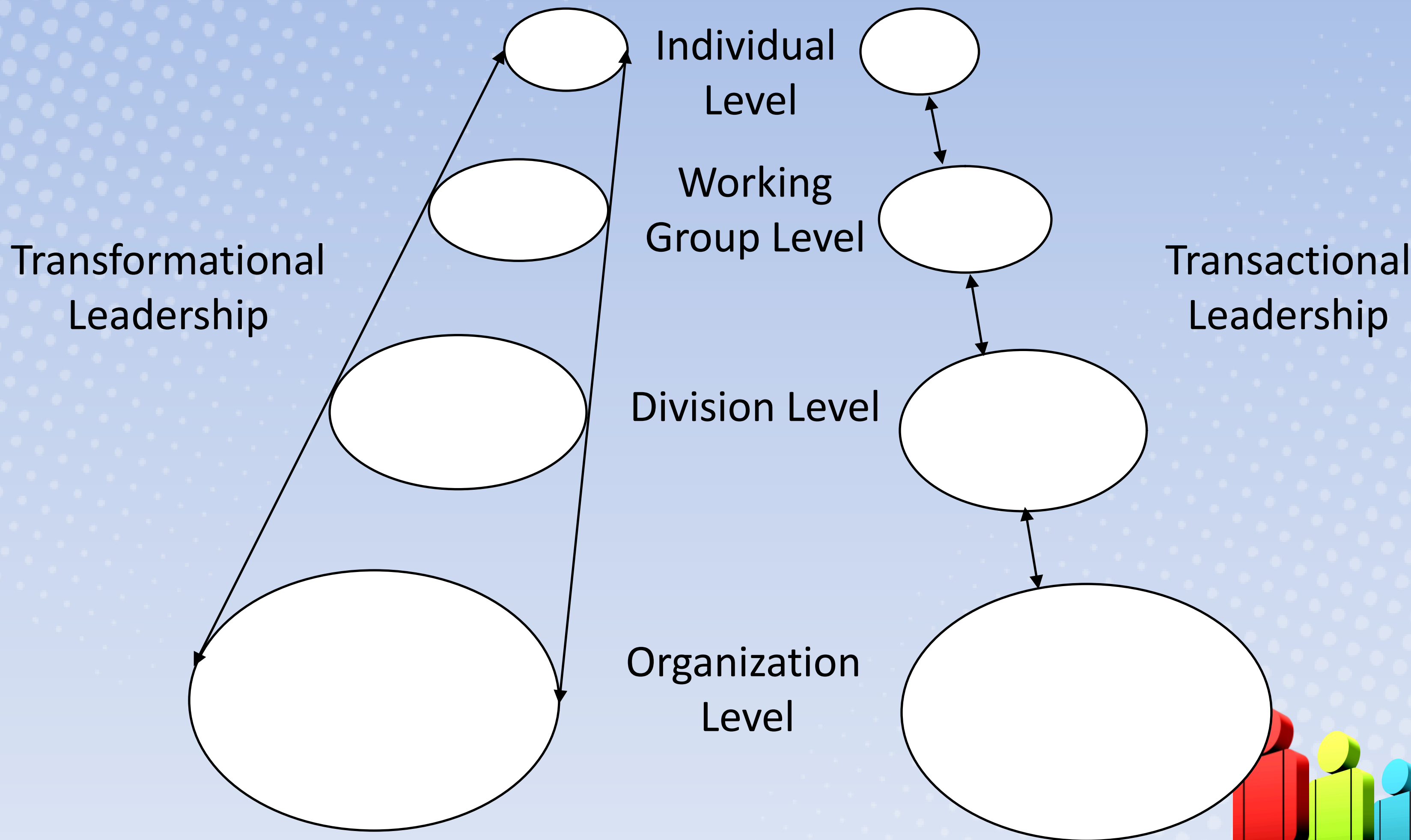
"For the ENTP the public world is an exciting one (Extraversion). If things aren't exciting, the ENTP will want to go out there and make it so, because the external world is full of endless possibilities, random abstractions, and theoretical connections (iNtuition). These perceptions are filtered through objective, impersonal decisions (Thinking), none of which are terribly binding because each day brings new options, open-endedness, and spontaneity (Perception)."

Kroeger, O. with Thuesen, J. M. 1992. *Type talk at work: How the 16 personality types determine your success on the job, p. 363,* NYC, NY, The Tilden Press.

Preferred Leadership Style - MLQ

- The Multifactor Leadership Questionnaire (MLQ)
  - B. Bass & B. Avolio authored the MLQ during the 1980s
  - "Operationalizes" J. McGregor's Transactional/Transformational Leadership Theory
  - Rigorously designed to identify a leader's behavior preferences
  - Today is considered the industry standard instrument to differentiate between transactional and transformational leadership behaviors
  - Translated into more than 20 different languages and found reliable
  - MLQ Version 5 is a 45 question instrument

Transformational & Transactional Leadership Behavior Differences - 1



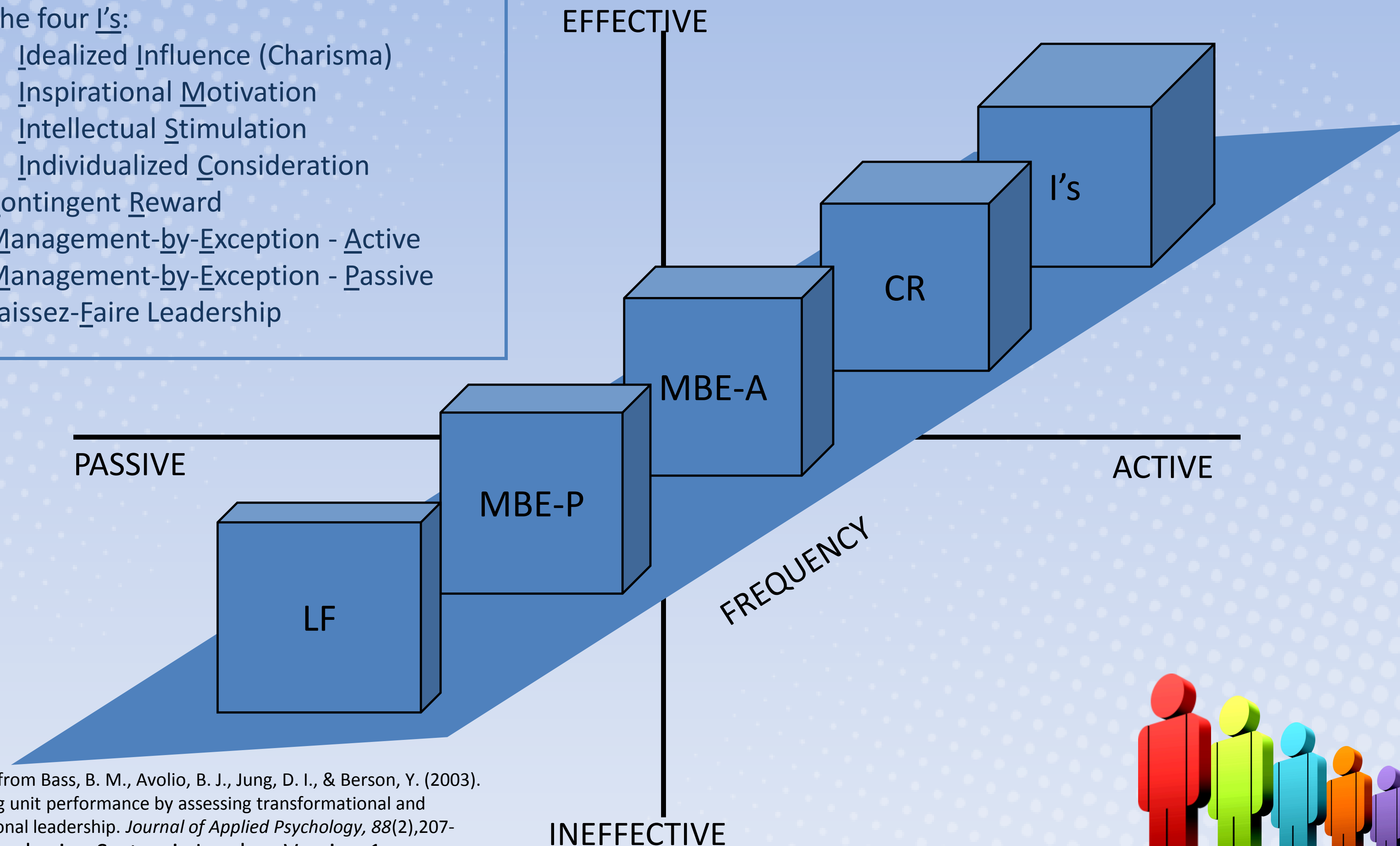
Transformational & Transactional Leadership Behavior Differences - 2

- Transformational
  - Builds subordinate capabilities & potential through experiences
  - Builds understanding, morale, & trust
  - Encourages multi-linear capability focusing on maintaining or reducing schedules
  - Fundamentally net-centric aware
  - Enables perception of value to overall mission success and effectiveness
  - Provides capacity for transfer of knowledge
  - Requires trust
  - Requires appropriate training
- Transactional
  - Maintains subordinate levels & grows individual experience
  - Focuses on "wait for direction" work ethic
  - Encourages linear actions focusing on extending planned schedules
  - Fosters point-to-point solutions
  - Limits perception of value to overall mission success and effectiveness
  - Provides individual with narrow experience profile
  - Does not encourage trust
  - Does not require much training to maintain competency

Preferred Leadership Behavior

The four I's:
- Idealized Influence (Charisma)
- Inspirational Motivation
- Intellectual Stimulation
- Individualized Consideration

Contingent Reward
Management-by-Exception - Active
Management-by-Exception - Passive
Laissez-Faire Leadership

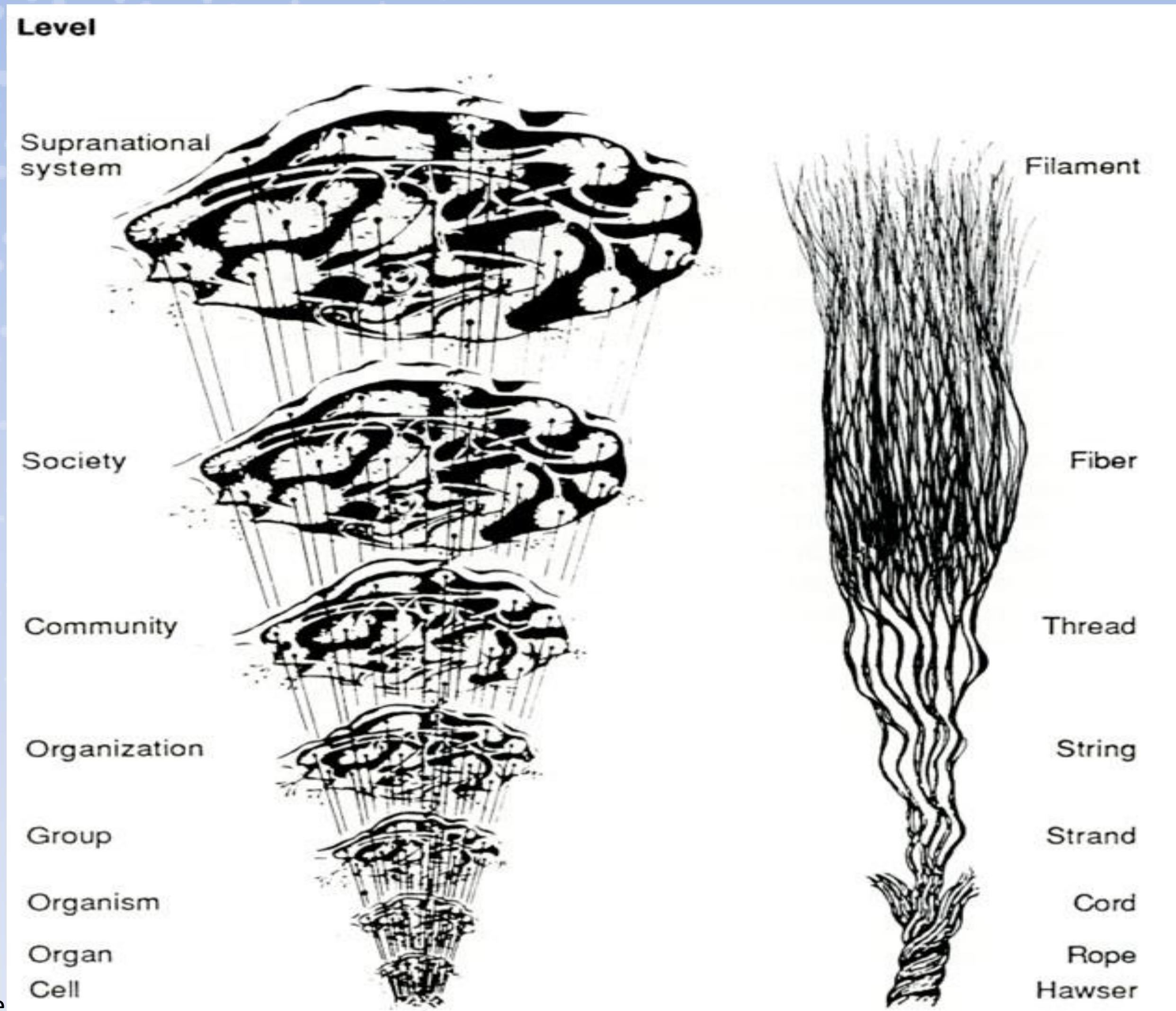


Adapted from Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology, 88*(2),207-218.

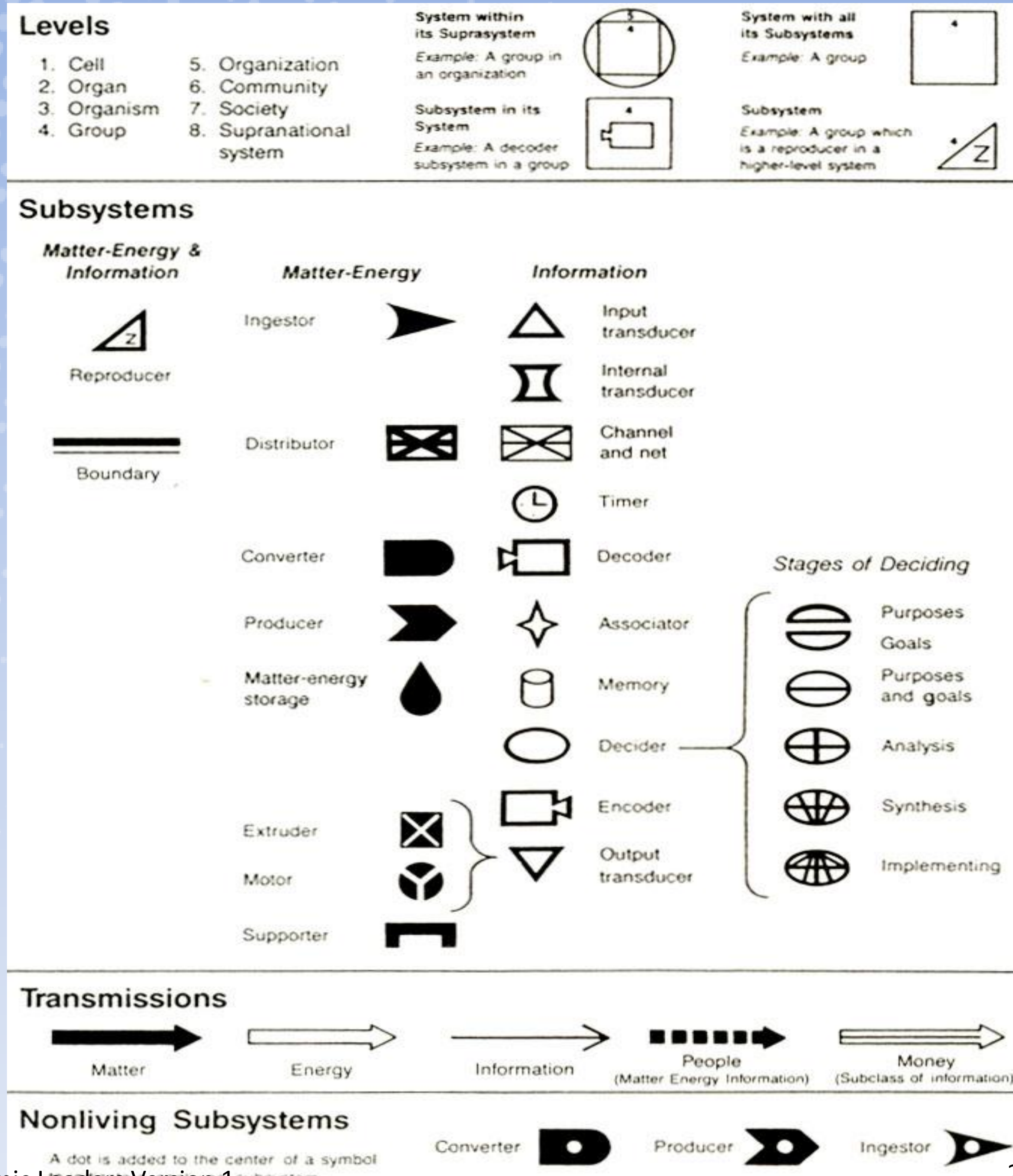
A “Battle Rhythm” is a Living System

- The Living System Theory (LST)
  - J. G. Miller authored the LST in 1978
  - The “Battle Rhythm” component in the Systemic Leadership construct “Operationalizes” Miller’s LST
  - Living Systems focus is broader than an organization’s documented process environment
  - There are 20 functions identified in a living system
  - The LST is translated into more than 11 different languages

The LST Eight-level Model



Adapted from Miller 1978



Adapted from Miller 1987

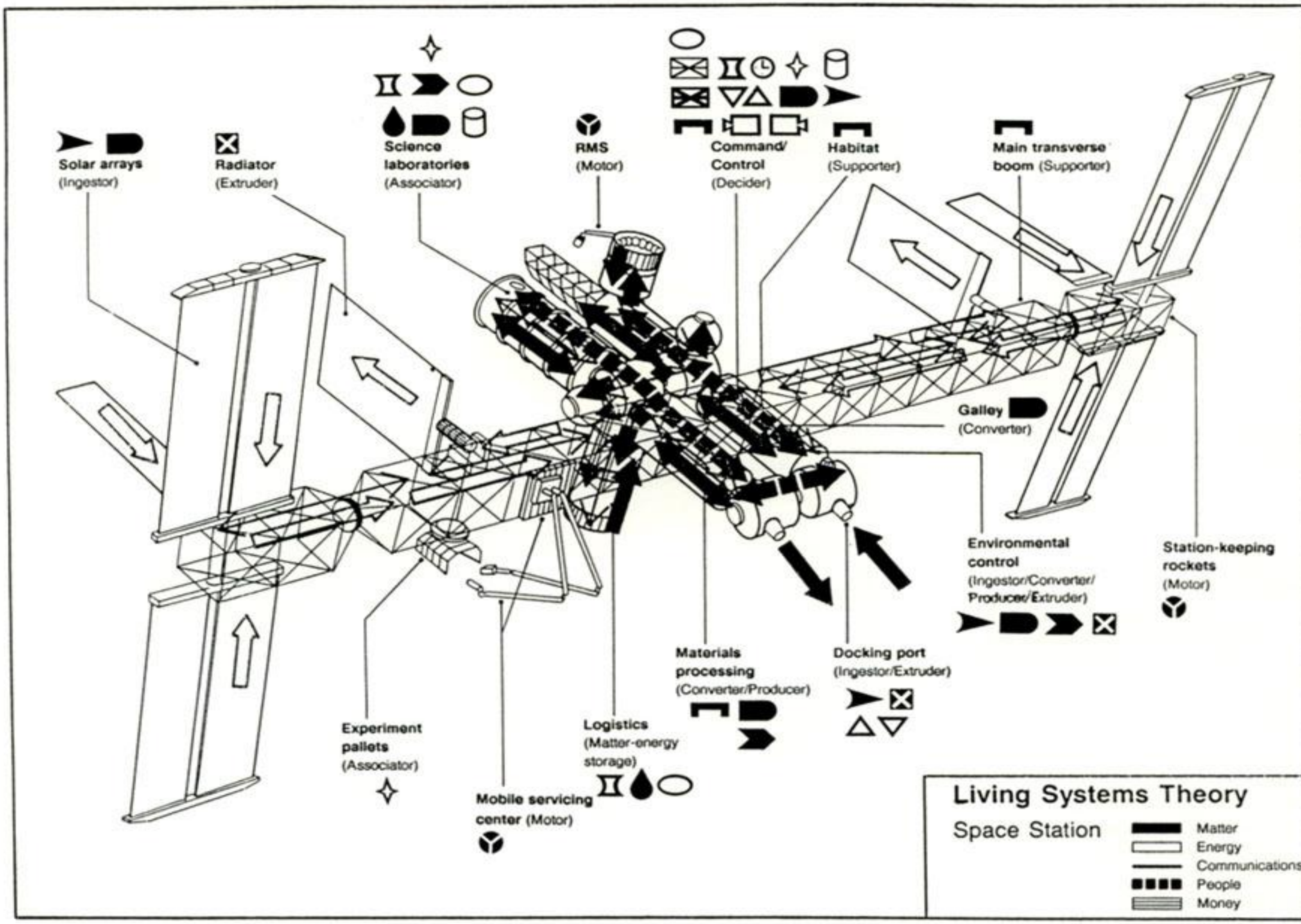
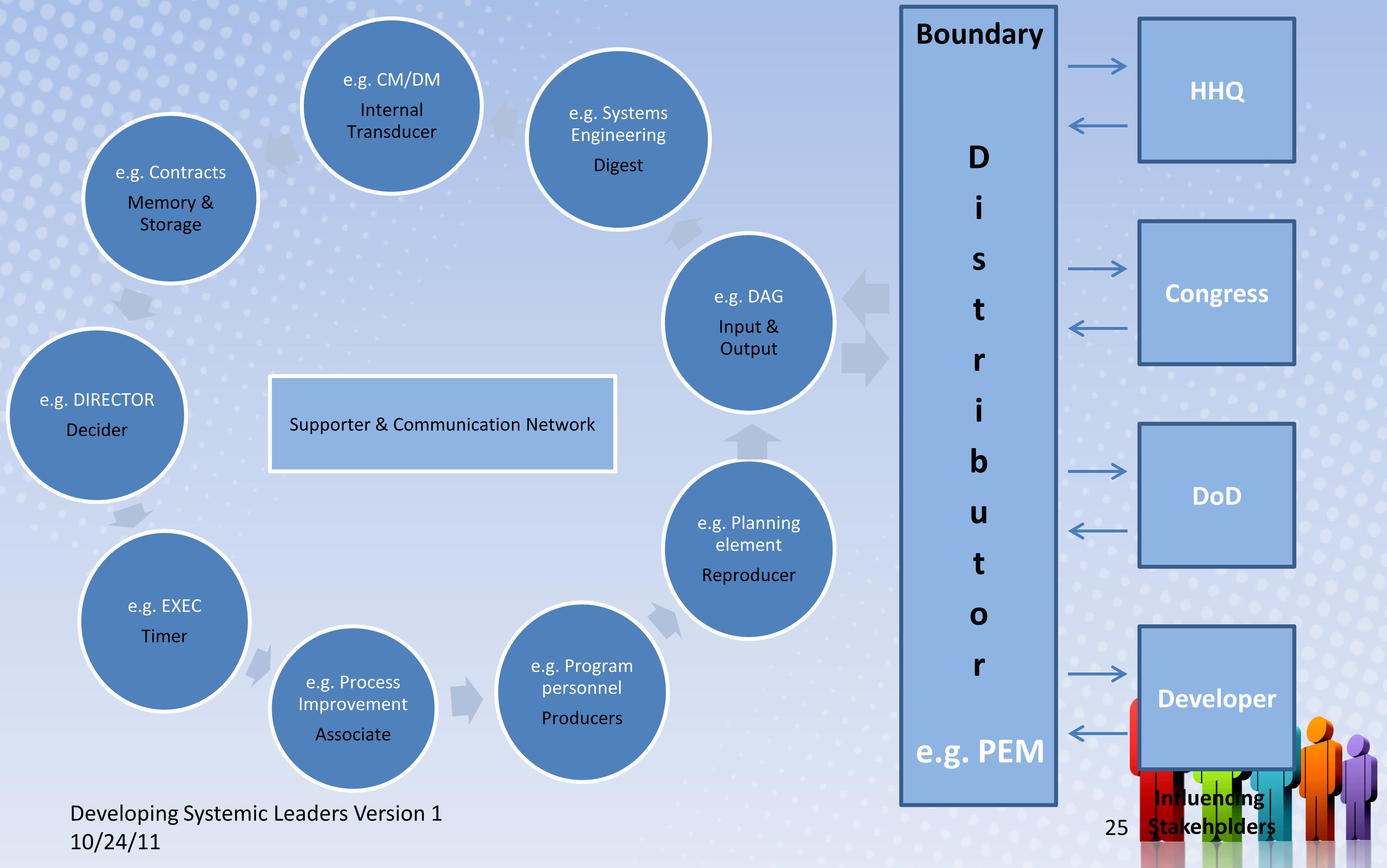


Figure 3

The Five Flows in the Subsystems of the Space Station

Adapted from Miller 1987

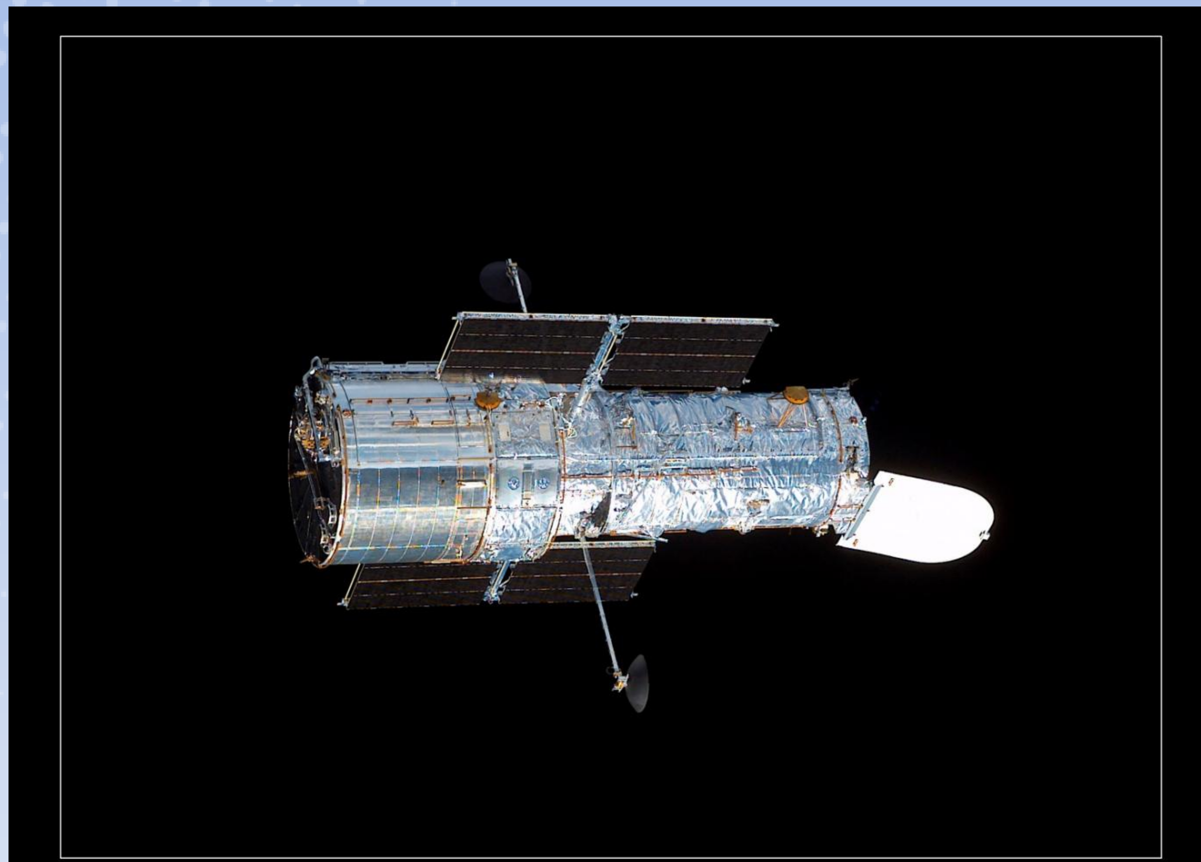
Notional Program Office "Battle Rhythm" Diagram



Case Studies

- The use of case studies allows us to identify "battle rhythm" components
- In most acquisitions "past performance" is an important selection factor

Hubble Space Telescope – an AFIT Systems Engineering Case Study



Hubble Restored: The Telescope's Latest Look

Image Credit: NASA, 2002

(Photo/NASA, 2002)

Friedman Sage Matrix

A FRAMEWORK OF KEY SYSTEMS & SOFTWARE ENGINEERING CONCEPTS

CONCEPT AREAS | **RESPONSIBILITY DOMAIN**

CONCEPT AREAS	1 - Contractor	2 - Shared	3 - Government
A. Requirements Definition and Management			
B. Systems Architecture Development			
C. System, Subsystem Design			
D. Validation and Verification			
E. Risk Management			
F. Systems Integration & Interfaces			
G. Life Cycle Support			
H. Deployment and Post Deployment			
I. System and Program Management			

Six of the nine concept areas represent phases in the systems engineering life cycle:

*Requirements Definition and Management
*Systems Architecture Development
*Systems, Subsystem Design
*Systems Integration and Design
*Validation and Verification
*System Deployment and Post Deployment

Three of the nine concept areas represent necessary process and systems management support

*Life Cycle Support
*Risk Management
*System and Program Management

Adapted from Friedman & Sage, 2004. *Case studies of systems engineering and Management in systems acquisition.* Systems Engineering, Vol.7, No.1, pages 84 - 96.

Completed Friedman Sage Matrix for Hubble Space Telescope - 1

A FRAMEWORK OF KEY SYSTEMS & SOFTWARE ENGINEERING CONCEPTS

CONCEPT AREAS	RESPONSIBILITY DOMAIN		
	1 - Contractor	**2 - Shared**	**3 - Government**
A. Requirements Definition and Management	Contractors involved the scientific user community in system requirement studies for sizing the telescope, defining the instrument suite, and determining concept of operation.	Contractors and NASA centers worked collaboratively, if not competitively, on requirements definition and analysis.	Government was responsible for finding the right mechanisms to bring science users into the requirements process.
B. Systems Architecting and Conceptual Design	Multiple competing contractors were funded over several years for phased concept and architecture development approaches to the mission.	Concepts and architectures were iterated and reviewed jointly; scientific community customers participated; early example of systems-systems approach.	Multiple NASA centers participated with in-house studies and concept exploration program management. Phased approach was mandated by NASA.
C. System and Subsystem Detailed Design and Implementation	Contractor (LMSC) responsible for overall system design, telescope assembly, support system module and subsystem/ instrument functional interface definition; P-E for optical system and guidance sensors; STScI for most instruments.	Considerable data exchange and sharing; convening of review and oversight groups; and joint program reviews.	ESA responsible for solar arrays; Goddard for some instruments.
D. Systems and Interface Integration	LMSC responsible overall; P-E responsible for optical system with LMSC oversight. Jointly monitored but largely contractor dominated in execution.	Extensive joint integration planning, documentation and configuration management by all participants, including users.	Marshall Center responsible overall for NASA. Goddard led for instrument package integration oversight.
E. Validation and Verification	Total system vacuum thermal test (LMSC) and rigorous optical system V&V (P-E) a contract requirement; (primary mirror test failure led to system failure).	Contractor team and government team shared responsibility for V&V result review, approval and/or rework.	NASA responsible for final review and approval. Direction for V&V acceleration only partially successful; Challenger delay used to advantage.
F. Deployment and Post Deployment (post launch)	Deployment supported by contractor team (system/subsystem functionality, operations support, problem analysis, etc.).	Joint oversight of all operations, especially early on and through the primary mirror failure root cause analysis.	Goddard responsible for mission control; two operations support facilities established (STOCC and STScI).

Mattice, J.J., *Hubble Space Telescope Systems Engineering Case Study.* Air Force Center for Systems Engineering, Air Force Institute of Technology, Wright-Patterson Air Force Base, OH, March, 2005.

Completed Friedman Sage Matrix for HST - 2

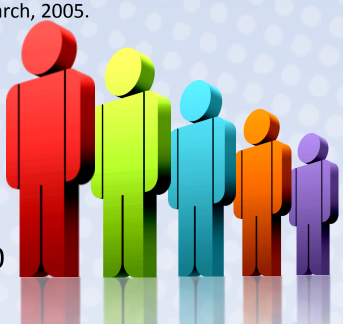
A FRAMEWORK OF KEY SYSTEMS & SOFTWARE ENGINEERING CONCEPTS

CONCEPT AREAS	RESPONSIBILITY DOMAIN: 1 - Contractor	2 - Shared	3 - Government
G. Life Cycle Support	Program designed for life cycle support (on-orbit servicing); ORU equipment integral to all contractors SE and PM activities. Accelerated disposal mission requirements and program development initiated in February 2004.	ORU functional design and performance jointly defined. Program office, contractor, and user communications and interfaces were good; payoff evident in coping with unplanned need to correct primary optics on orbit (mirror failure).	Experienced astronauts represented the mission astronauts to validate service mission details. Flight operations manuals and EVA annexes well prepared in advance.
H. Risk Assessment and Management	Contractor integral to all phases of program risk assessment and mitigation; evident from requirements through development and test; primary risk management OPR.	Generally, joint involvement in risk management, assessment and mitigation activities; usually worked well; major benefits from Challenger delay; suffered early on for lack of adequate SE manpower because of cost concerns.	NASA clearly in an oversight role; heavy dependence on contractor risk management and judgment; used special review groups to work problems and provide independent inputs.
I. System and Program Management	LMSC, P-E associate contractors with LMSC responsible for overall SE and integration; elected as the best approach for optimum NASA control and leverage.	Contractor and NASA elements organized under a project CONOPS (OTA, SSM, Maintenance and Refurbishment components); shared responsibility for management, problem solving and cost-schedule-performance monitoring.	Marshall lead with Goddard essentially an associate for the mission operations and scientific payload management; separate parallel center offices for SE, program planning and program control functions.

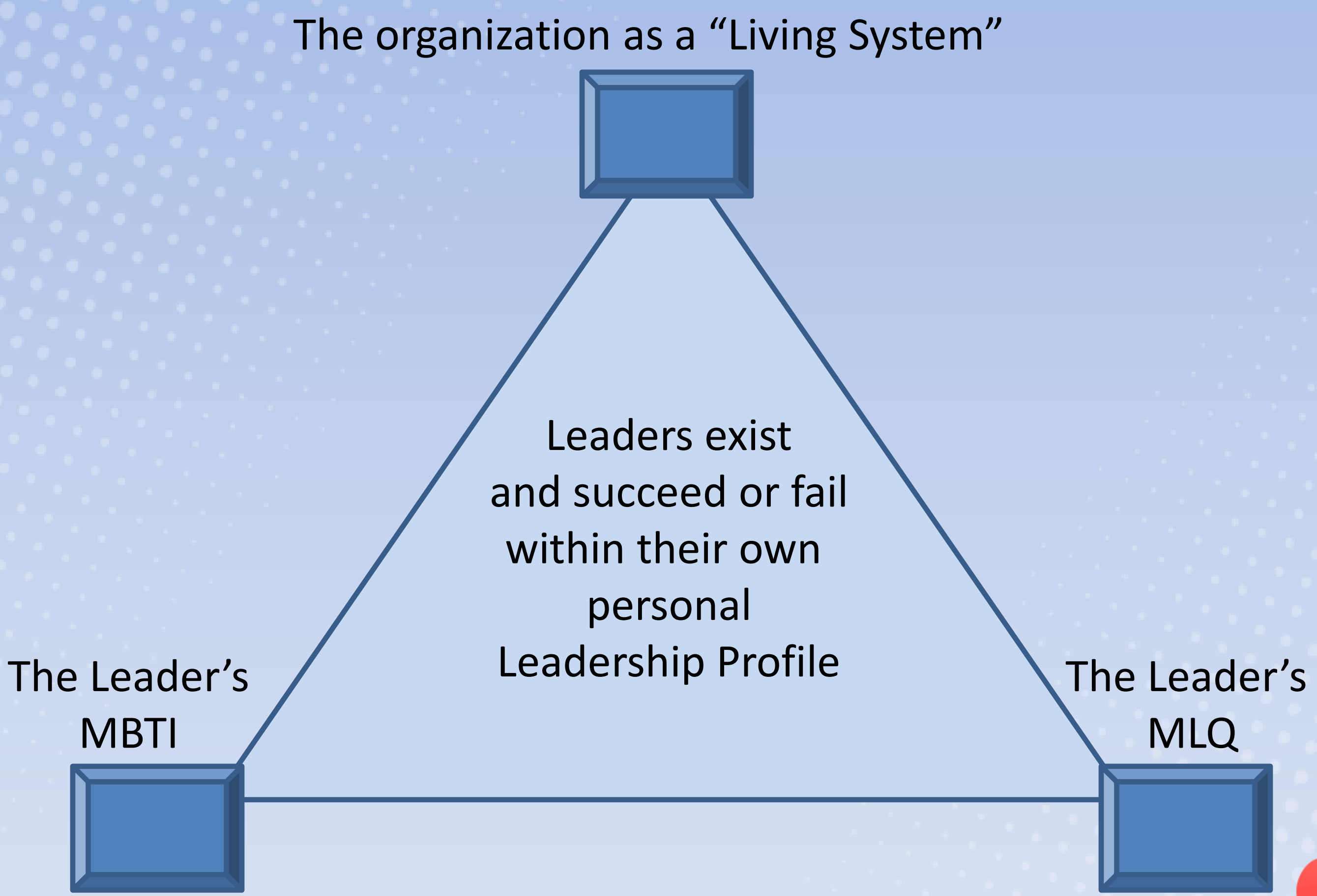
Six of the nine concept areas represent phases in the systems engineering life cycle:
- *Requirements Definition and Management
- *Systems Architecture Development
- *Systems, Subsystem Design
- *Systems Integration and Design
- *Validation and Verification
- *System Deployment and Post Deployment

Three of the nine concept areas represent necessary process and systems management support
- *Life Cycle Support
- *Risk Management
- *System and Program Management

Mattice, J.J., *Hubble Space Telescope Systems Engineering Case Study.* Air Force Center for Systems Engineering, Air Force Institute of Technology, Wright-Patterson Air Force Base, OH, March, 2005.



Systemic Leadership Profile



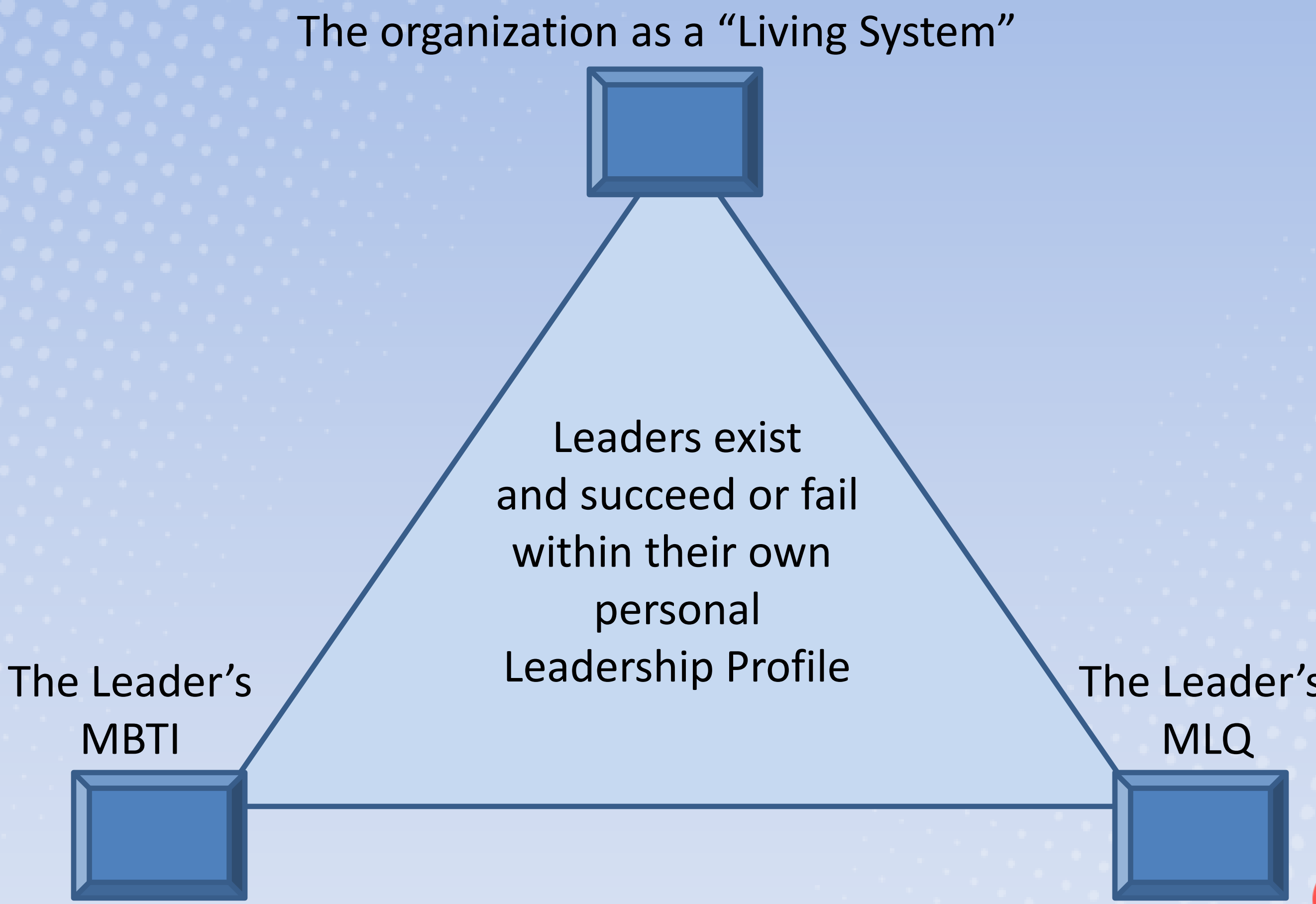
Session 1 - Review

- Introduced to a new Leadership theory
  - Two personal components of the Leader
  - The impact of “Battle Rhythm” on Leaders and Leadership
  - The use of case studies to assist in crafting own Systemic Leadership reality (AFIT Case Studies discussed on the Systemic Leadership Wiki)

Using the Systemic Leadership Profile (SLP) to develop leadership

SESSION 2 – BLOCK C

Systemic Leadership Profile



SLP Workbook

- MBTI Description and Assessment
- MLQ Description and Assessment
- Living Systems Description, Example and Template
- Systemic Leadership Matrix

Using the SLP

- Fill out the MBTI and MLQ from assessments
- DeWitt’s MBTI is INTP
- DeWitt’s MLQ indicates a preference for Intellectual Motivation (Transformational)

Using the SLP – 2

- Using the SPO graphic
- Describe Living System context
- Space Radar Joint Program Office (JPO)
  - (-) Program Element Monitor (PEM) (boundaries)
  - (-) Multiple Directors (decider)
  - (+) Process Improvement (associate)

Using the SLP – 3

- Fill out matrix with key events/functions
  - Channel & Net: System Definition ERB
  - MBTI Preference: xSTJ
  - MLB Preference: Transactional Active
  - Leadership Risk: Natural tendencies (INTP and Intellectual Motivation) have me address issues too broadly for this group; tendency to "academic" or "milk and motherhood" holistic perspectives
  - Mitigation: Develop and vet Software Acquisition Management Plan with program SE staff to capture big motivators in program
  - Residual Risk: ERB representative was still too low in rank & limited resources for software

Using the Systemic Leadership Profile (SLP) to develop leadership

SESSION 2 – BLOCK D

SLP Exercise

- Team A – Government Program Office
- Team B- Development Contractor

Resources: MBTI & Leadership

- Type Talk (Kroeger & Thuesen, 1988)
- Type Talk at Work (Kroeger & Thuesen, 1992)

Resources: MLQ & Leadership

- Leadership (Burns, 1978)
- Transforming Leadership (Burns, 2003)
- Transformational Leadership: Industrial, Military, and Educational Impact (Bass, 1998)

Resources: Battle Rhythm & Leadership

- Living Systems (Miller, 1978)
- Systemic Leadership Wiki provides discussions about case studies in their systemic contexts (Sisti & Latimer, 2011)
- Case Studies (highlight the "battle rhythm") (AFIT Center for Systems Engineering)

Systemic Leadership Resources

- Wiki: http://systemicleader.wikispaces.com/
- Blog: http://www.systemic-leadership.blogspot.com/
- Twitter: http://twitter.com/systemicleader
- LinkedIn: http://www.linkedin.com/groups?gid=1884022/

SLT Tutorial - Review

- Introduced Systemic Leadership Theory (SLT) including the three components; Information Processing, Leadership Preference & "Battle Rhythm"
- Introduced the Systemic Leadership Profile (SLP) as a mechanism to identify development opportunities in a real context

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Contact Information

- Frank Sisti:
  - Chief, Software Engineer
    Principal Engineer/Scientist
    MILSATCOM
    Francis.J.Sisti@aero.org
    (O) 1-310-336-1502

- Captain DeWitt Latimer:
  - Deputy Enterprise Systems Engineer – Special Communications
    dewitt.t.latimer@gmail.com
    (O) 1-703-877-7149