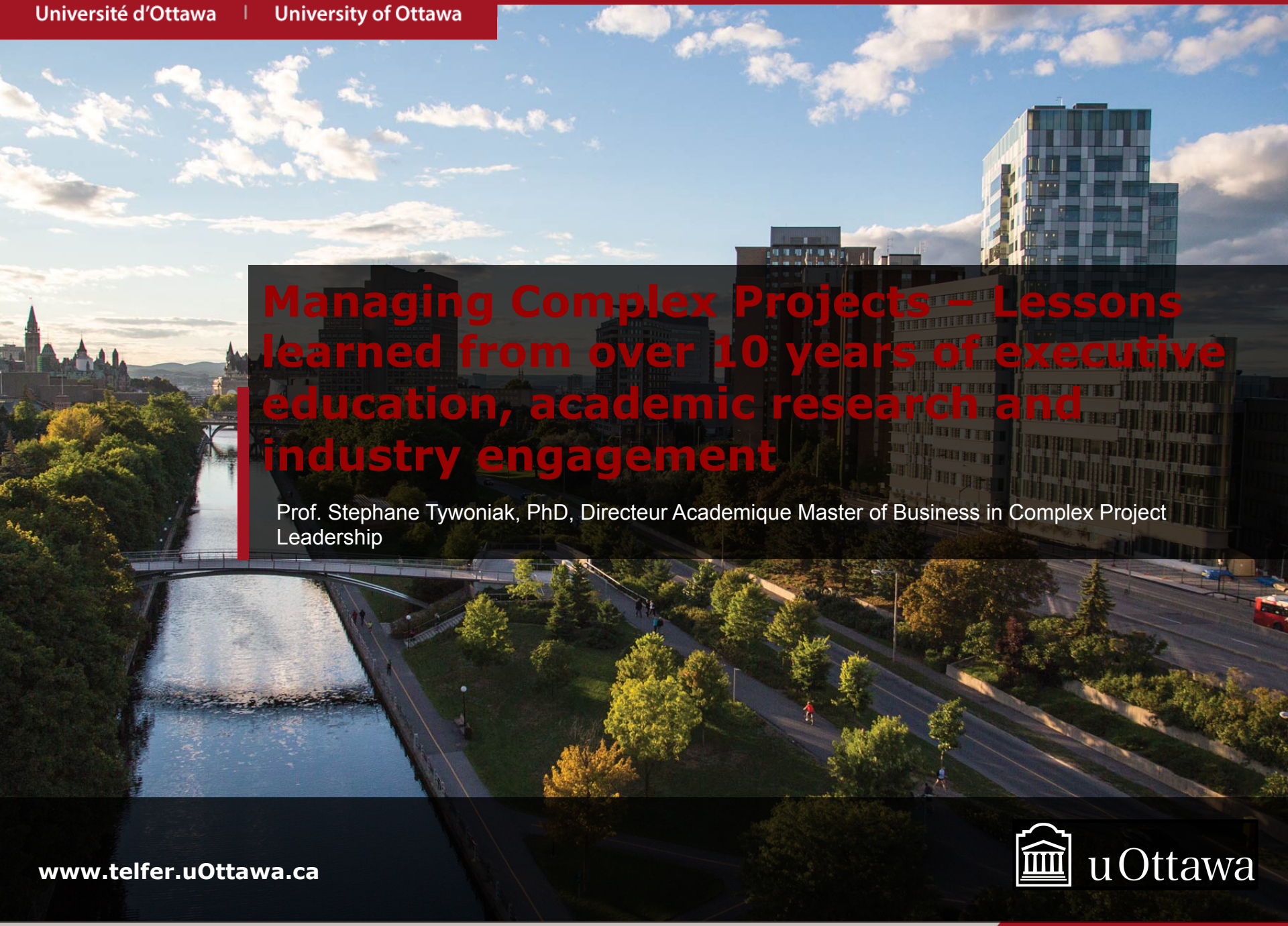


Managing Complex Projects – Lessons learned from over 10 years of executive education, academic research and industry engagement

Prof. Stephane Tywoniak, PhD, Directeur Academique Master of Business in Complex Project Leadership

What is a project?

'A project is a temporary endeavor undertaken to create a unique product, service, or result'

Key attributes:

– ***Temporary***, with definite start and stop dates

– ***Unique*** product, service or result

– ***Progressive*** elaboration

Different from '*operations*'

Project Management Institute. (2013). *A Guide to the Project Management Body of Knowledge (5th ed.)*

Why projects matter

- About 1/3 of world GDP is through projects: according to the World Bank, capital formation was 24% of global GDP in 2015
- Projects are the method of choice for strategy implementation: «strategic initiatives»

So what's the problem?

- Projects fail to deliver to stakeholders expectations, beyond the iron triangle of "cost, schedule, and specifications"
- Multiple studies suggest that the majority of projects are "challenged" or "failing"
- That's not good enough!

Causes of project failure

- The critical views:
  - Conspiracy of optimism (ICCPM)
  - Strategic misrepresentation (Flyvbjerg)
  - Lack of strategic alignment (Shenhar)
  - Failure to appreciate context (Sanderson)
  - Reductionism (Jackson)

- The iron law of project failure: "Over time, over budget, over and over again" (Flyvbjerg, 2011)

- But where is the solution???

Causes of project failure

- The complexity view:
  - Traditional PM approaches are predicated upon foresight…
  - … but the experience of practitioners reveals the limitations of planning assumptions
  - All projects will experience some unanticipated evolutions:
    - "unknown unknowns"
    - emergence of new political, social, cultural expectations and dynamics
    - social, managerial and technological innovations

Projects/programs as wicked problems

- "The kinds of problems that planners deal with -societal problems- are inherently different from the problems that scientists and perhaps some classes of engineers deal with. Planning problems are inherently wicked." (Rittel and Webber, 1973)

Wicked problems…

1) …have no definitive formulation
2) …have no stopping rule
3) …have no true-or-false, but good-or-bad solutions
4) …have no 'testable' solutions
5) …have costly-to-reverse solutions
6) …do not have a knowable set of solutions
7) …are essentially unique
8) …can be considered as symptoms of other wicked problems
9) …can be described in multiple ways, depending on one's preferred 'solution'
10) …solvers have no right to be wrong

Adapted from Rittel and Webber, 1973

Complex projects as wicked problems

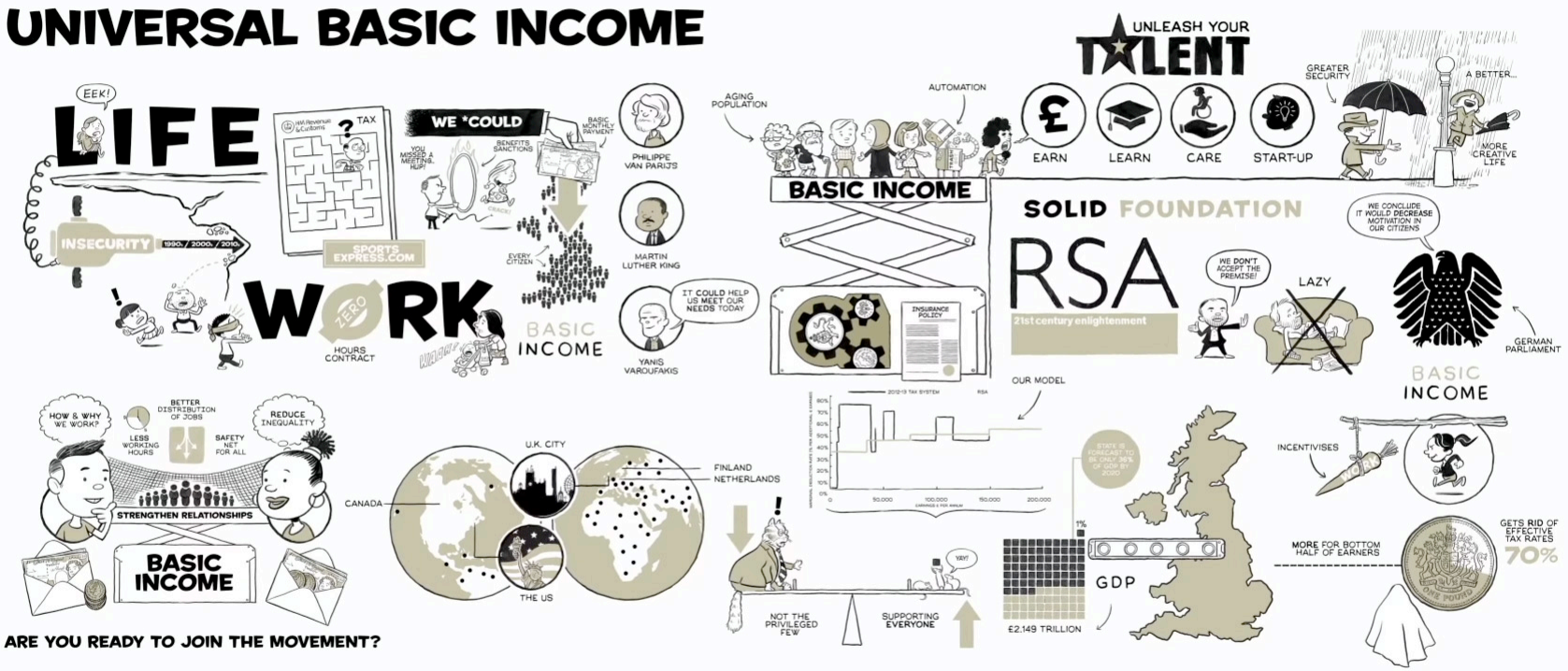
Complex projects often involve:

- Intricate contracting mechanisms, often public-private
- Delivery through global supply chains
- Multiple stakeholders (the buyer is often not the end-user)
- Multiple objectives: delivery of capability *and* nation-building (jobs, infrastructure, etc.)
- Radical business transformation
- Long lead times: stakeholders, issues, objectives evolve
- Media scrutiny

Truly Complex Projects

- Adaptive system of systems;
- High uncertainty in scope definition;
- Distributed: organisationally, geographically, jurisdictionally;
- Ongoing environmental and internal turbulence;
- Examples:
  - Heathrow T5 (UK)
  - Bombardier C Series (Canada)
  - Universal Basic Income (Ontario)
  - Passport programme modernization initiative (Canada)
  - Centre Block renovation – Canadian Parliament


CS100
BOMBARDIER
CS300
BOMBARDIER


UNIVERSAL BASIC INCOME
EEK!
LIFE
INSECURITY
1990s / 2000s / 2010s
TAX
SPORTS EXPRESS.COM
WE *COULD
BENEFITS SANCTIONS
BASIC MONTHLY PAYMENT
EVERY CITIZEN
WORK
ZERO HOURS CONTRACT
BASIC INCOME
PHILIPPE VAN PARIJS
MARTIN LUTHER KING
YANIS VAROUFAKIS
IT COULD HELP US MEET OUR NEEDS TODAY
AGING POPULATION
AUTOMATION
BASIC INCOME
UNLEASH YOUR TALENT
EARN
LEARN
CARE
START-UP
GREATER SECURITY
A BETTER...
MORE CREATIVE LIFE
SOLID FOUNDATION
RSA
21st century enlightenment
WE DON'T ACCEPT THE PREMISE!
LAZY
WE CONCLUDE IT WOULD DECREASE MOTIVATION IN OUR CITIZENS
GERMAN PARLIAMENT
BASIC INCOME
HOW & WHY WE WORK?
BETTER DISTRIBUTION OF JOBS
LESS WORKING HOURS
SAFETY NET FOR ALL
REDUCE INEQUALITY
STRENGTHEN RELATIONSHIPS
BASIC INCOME
ARE YOU READY TO JOIN THE MOVEMENT?
CANADA
U.K. CITY
THE US
FINLAND
NETHERLANDS
OUR MODEL
NOT THE PRIVILEGED FEW
SUPPORTING EVERYONE
GDP
£2.149 TRILLION
INCENTIVISES
MORE FOR BOTTOM HALF OF EARNERS
GETS RID OF EFFECTIVE TAX RATES
70%


PASSPORT CANADA
UPDATE
4667
Expirati
CANADACANADACANADACANADACANADACANADACANADACANADACANADA

Complex systems

- **'Complex' systems exhibit characteristics that set them apart from 'simple' systems**:
  - They are non-linear (butterfly effect)
  - They are recursively symmetric (fractal)
  - They are sensitive to initial conditions (attractors)
  - They are replete with feedback loops (adaptive)
- **Complex natural systems differ from complex social systems**:
  - purposive v. purposeful
  - mindlessness v. mindfullness
  - adaptation v. self-construction
- **Orders of complexity:**
  - 'simple' (word / rule)
  - 'first-order' (sentence / single loop)
  - 'second-order' (grammar & lexicon / double loop)

Sources: Holbrook (2003), Tsoukas & Hatch (2001), Tywoniak (2007)

Example of complex environment: Defence procurement

- **Multiple stakeholders with divergent goals**
  - Cabinet, DND, Treasury Board, PSPC, ISED, etc.
  - Defence, Industry, Primes & Subcontractors...
- **Multi-layered systems & unpredictable behaviours**
  - Government: political / civil service / military
  - Primes & subcontractors
  - Foreign parents and local subsidiaries
- **Long-range planning in uncertain environment**
  - Long decision making lead times, compressed execution timelines
  - 'Pop-ups' - short term reaction required to respond to crises
- **Complex relationships:**
  - Public accountability & process v. commercial imperatives
  - Contracting & customer relationships
  - Governance and public scrutiny
- **Complex Technology**
  - Integration of cutting-edge technologies, hardware and software
  - High-tech innovation and high risk projects

Complex Tools for Complex Projects?

- Complex projects are ambiguous: their goals cannot be all precisely defined and change over time
- Complex projects are emergent: they cannot be precisely planned using traditional, linear techniques
- Complex projects are interactively distributed: they cannot be fully decomposed into elements with clearly defined boundaries

- **Complex projects defy the "iron triangle" of traditional project management: cost, schedule, specifications**
- **And yet, we continue to try!**

From Project Management to Complex Project Leadership

PM	CPL
Assumption of foresight	Assumption of emergence
Deterministic planning	Adaptive planning
Top-down hierarchy	Lateral influence
Reductionist	Holistic

Transition to CPL requires a radical change of mindset

But CPL is not exclusive

- Traditional tools and techniques from PM, engineering, procurement and supply chain management are still required…
- … they must be used in a more holistic, reflective and strategic manner
- CPL is not "either/or": it is "both/and"

- Navigating complexity requires to be holistic and reductionist at the same time

First and Second-Order Complexity

- **First-Order Complexity**: is conceived as *a property of the world experienced by practitioners*, which can then be **categorized, measured, and possibly managed** (Baccarini, 1996; Geraldi, Maylor, & Williams, 2011; Jaafari, 2003),
- **Second-Order Complexity**: is conceived as *a way of thinking about the world* (Checkland, 2000; Chia, 2011; Cooke-Davies, et al., 2008).

Second-Order Complexity

- "One way of viewing organizations as complex systems is to explore complex ways of thinking about organizations-as-complex-systems, [...] this view [...] we call *second order complexity*" (Tsoukas & Hatch, 2001: 980, emphasis added).
- Shifts our attention from a perception of a world that is, to a perception of a world that is *becoming* (Tsoukas & Chia, 2002)

Second-Order Learning

- "If the only change that can be contemplated takes place in the context of an existing mental model, then you are limited to bringing about first-order learning. If, however, the mental model itself can be changed, and purposes radically altered, then second-order change is possible" (Jackson, 2003: 10).

CPM Competency Standard

9 Views:

View 1 – Systems Thinking and Integration
View 2 – Strategy and Project Management
View 3 – Business Planning, Lifecycle Management, Reporting and Performance Measurement
View 4 – Change and Journey
View 5 – Innovation, Creativity and Working Smarter
View 6 – Organisational Architecture
View 7 – Leadership and Communication
View 8 – Culture and Being Human
View 9 – Probity and Governance

5 Special Attributes:

1. Wisdom
2. Action and outcome oriented
3. Creates and leads innovative teams
4. Focused and courageous
5. Ability to influence.

iccpm.com

How do you (re-)learn for CPL?

- Compliance with CPM standard
- Innovative approaches
- Experiential, applied, reflective experiences
- Fit and stretch

Introductory level: Telfer CCPL

- Systems thinking
- Business acumen
- Project initiation
- Costing
- Negotiation

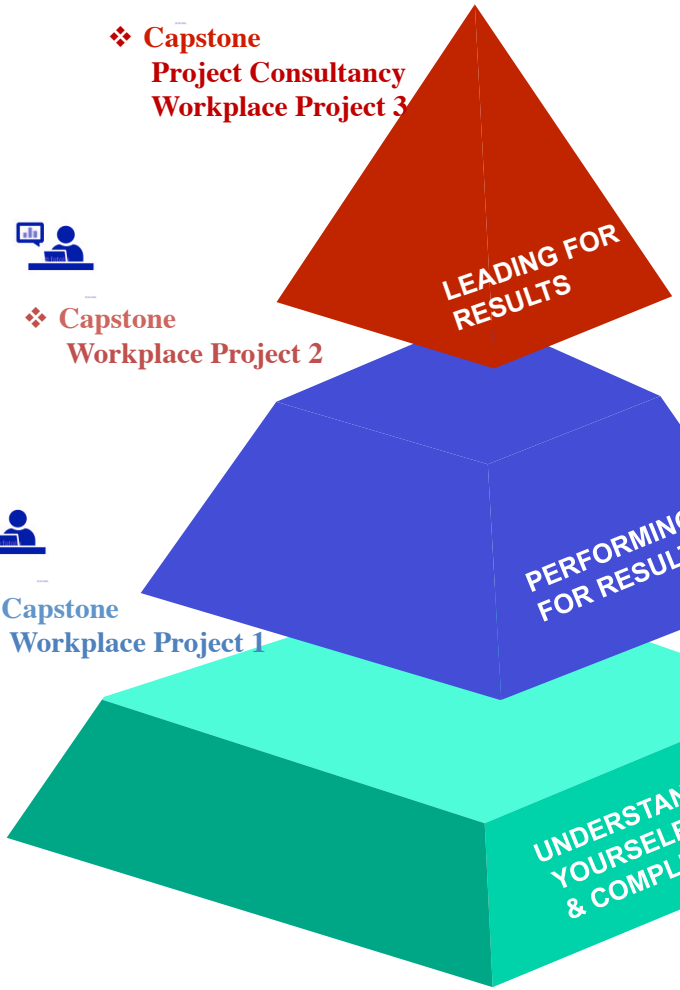
- 20 days of training

- 2 or 3 cohorts of 30-40 per year

Advanced level: Telfer MBCPL

- Masters program
- Majority employer sponsored
- Government and industry
- Part-time, 24 courses over 3 years
- Blended learning: face-to-face, online, distance

Master of Business in Complex Project Leadership



- Managing Contracts and Suppliers
- Implementation of Complex Projects
- Stakeholder Engagement and Crisis Management
- Leadership for Results
- Lectures in Project, Program and Portfolio Management (Seminar)
- Workplace Project #3 - Complex Project Consultancy
- International Study Tour

- Acquisition Strategies
- Laws, Regulations, Intellectual Property and Contracts
- Strategically Managing Risk
- Business Planning and Cases
- Negotiation Strategies
- Managing for Innovation and Complexity
- Financial Analysis and Decision Making
- Workplace Project #2 - Management, Governance, Performance

- Systems Thinking
- Self-Realisation and Personal Development
- Strategic Management of Complex Projects and Programs
- Organisational Behaviour of project teams and their Systems
- Planning and Communicating change Effectively
- Problem Solving in Complex Environments
- Workplace Project #1 - Human Factors in Complex Project Leadership

EXECUTIVE COACHING

- Enhancing candidate personal development through executive coaching
- Professionally facilitated peer coaching sessions to help individuals improve targeted areas such as management skills, leadership, self-awareness, and job performance
- Geared towards a holistic approach to long term personal ***and*** professional growth.

EXPANDING HORIZONS

- Challenging behaviours and perceptions
- Utilizing innovative and creative arts techniques as approaches to complex situations
- Development of leadership competencies through simulation and insightful self-awareness

Why systems thinking?

- **Complex problems/projects require:**
  - holistic approaches (unintended consequences)
  - sophisticated thinking (second-order complex)
  - pluralist methodologies (no quick fixes, one size does not fit all)
  - multiple perspectives (stakeholder management)
  - integrative skills (technical, political, social ...)

Systems thinking

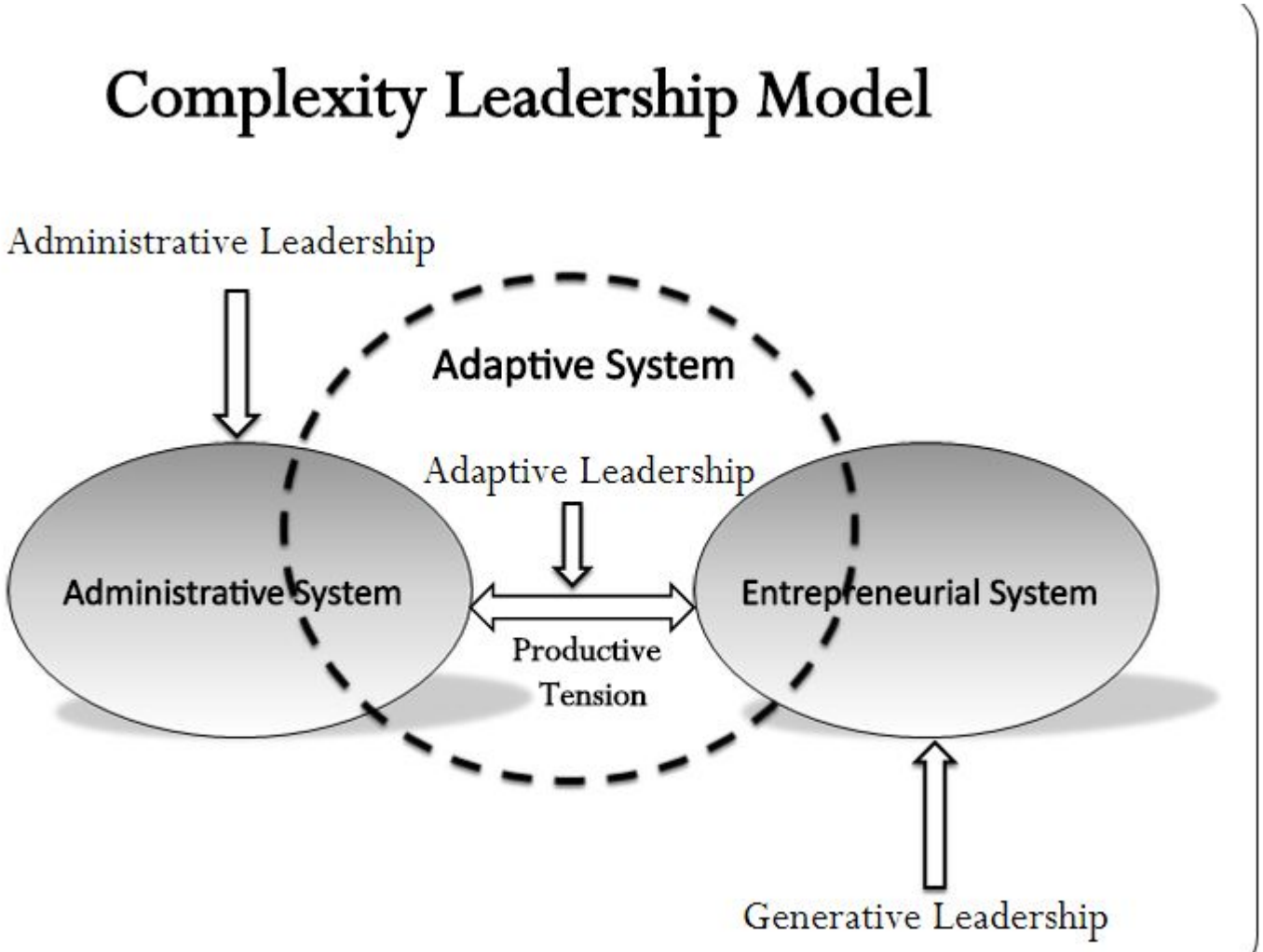
- **In order to cope with complexity, we must think in systems**
- Hard systems: organizational cybernetics (Beer), systems-of-systems engineering (Keating), systems dynamics (Senge)
- AND
- Soft systems: soft systems methodology (Checkland), emancipatory systems thinking (Churchman, Ulrich)

- **The aim is to become comfortable with the discomfort of contemplating simultaneously multiple (sometimes conflicting) world views**

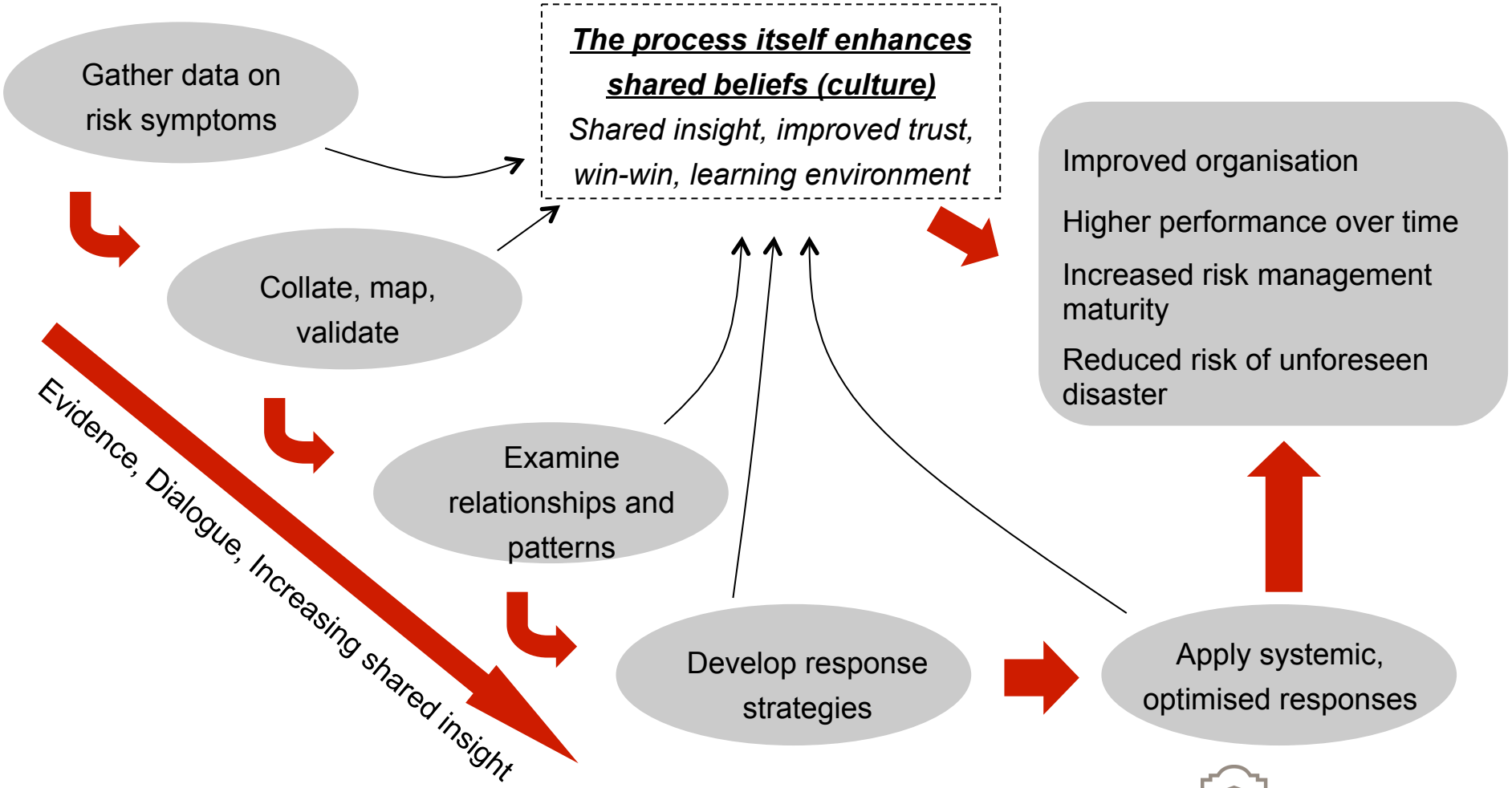
Complexity Mapping Tool
Remington & Pollack Framework

	Low Complexity	Medium Complexity	High Complexity
Structural (#interdependencies)			
Technical (impact of unresolved technical and design issues)			
Directional (ambiguity/lack of agreement on goals)			
Temporal (expected time delays at key project stages)			

Complexity Leadership Theory (CLT)



Systemic Risk Analysis



12 years of engaged scholarship in CPL

- Executive education
- Consulting, coaching, mentoring
- Academic research
- Australia, Canada, France, UK, USA

- What have I learned?

The institutionalisation of CP

- First academic paper on project complexity: 1997
- First Master program on CP: 2007 (Australia)
- Now:
  - CPL education programs (or equivalent) in: Australia, Canada, UK, Europe, USA
  - Organizational Project Management (OPM) research groups and centres in multiple universities (Australia, Canada, Europe, China)
  - OPM is recognized by leading international scientific societies (IRNOP Conference, Concept Symposium, EURAM SIG)
  - Specialist and Big 4 consulting firms interested in CP products and services

Le XXIe siècle sera celui de la complexité