



Defence Research and  
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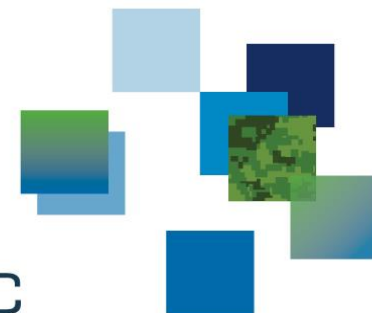
Recherche et développement  
pour la défense Canada

# Modelling Defence Enterprise Value: Showing how the institution makes Defence possible

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35<sup>th</sup> International Symposium on Military Operational Research

19 July 2018, London University - Royal Holloway, Egham, UK



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# Outline

- Motivation: Show Defence impact of strategic decisions
- A value-based program structure for Canada's Defence
  - Canadian Experience with the 2014 Program Alignment Architecture
- Networked Value Model (NVM): implied by the 2014 PAA
  - A versatile, holistic and clear strategic Lens on Defence
- NVM development
- How to implement a Networked Value Model for Defence
- Questions
- A notional NVM-based valuation of an institutional investment

# Motivation: Show Defence-impact of strategic decisions

Recent work within our team:

- Designed a value-based program structure for National Defence
  - Promulgated in 2014 as official structure for performance reporting
- Applying **portfolio optimization** to Defence major capital investments
  - Numerical value model of “very modest fidelity”
    - ➔ A more holistic model based on the impact on Defence
  - Visual Investment Plan Optimization and Revision (VIPOR) software
    - ➔ A more robust, versatile VIPOR for any resource allocation problem

# Value-based program structure for CA National Defence

## “Program Alignment Architecture” (PAA)

### Strategic Objective 1

- Defence Operations & Services Improve Stability & Security, & Promote Canadian Interests & Values

(Each Sub-Program  
is broken out into  
Sub-Sub-Programs)

**1.0 Defence  
Combat &  
Support  
Operations**

1.1 Domestic &  
Continental  
Defence Operations

1.2 International  
Combat  
Operations

1.3 Ongoing  
Centralized  
Operations &  
Operational  
Enablement

**2.0 Defence  
Services &  
Contributions  
to  
Government**

2.1 Disaster Relief  
& Humanitarian  
Operations

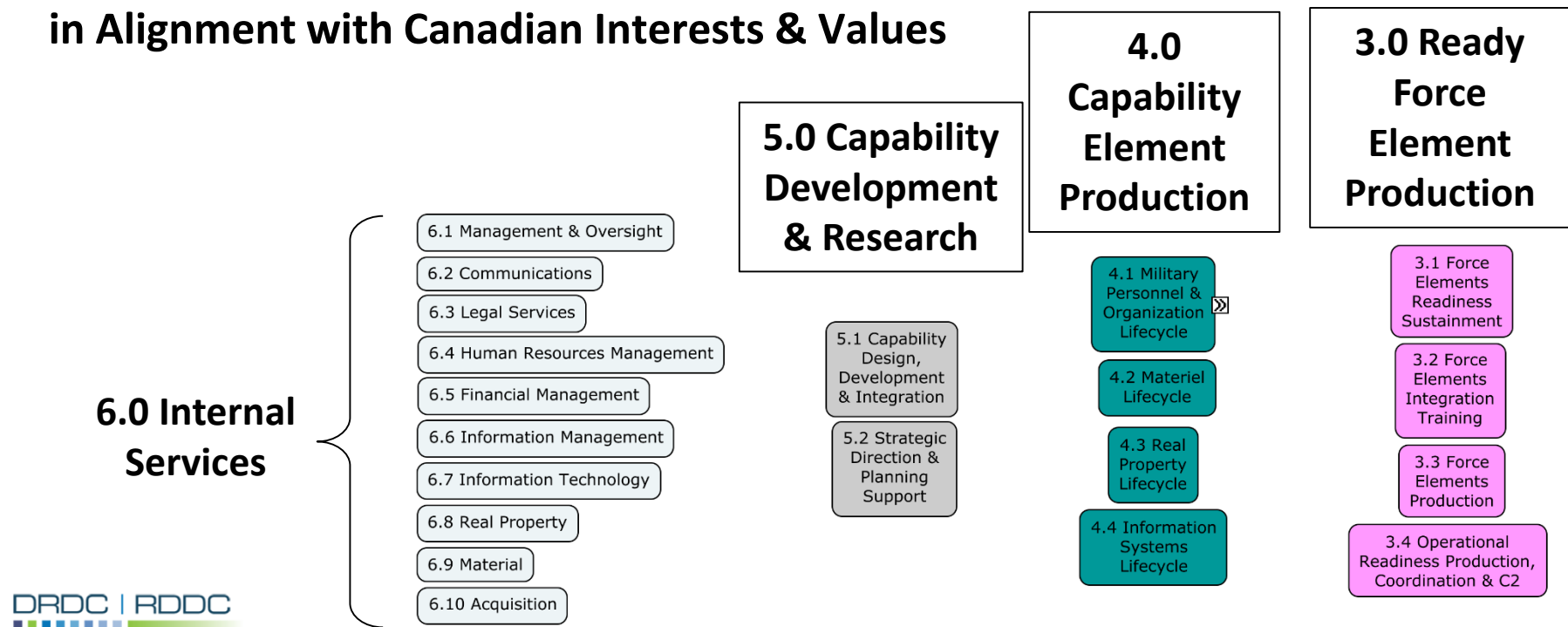
2.2 Defence Services  
for Canadian Safety  
& Security

2.3 Military Heritage  
& Outreach

# Value-based program structure for CA National Defence

## PAA Strategic Objective 2:

- Defence Remains Continually Prepared  
to Deliver National Defence & Defence Services  
in Alignment with Canadian Interests & Values



# Value-based program structure – Cdn Experience

2014 PAA Reception: **Military disliked it**

- Conditioned by 2 previous PAAs (badly done, not useful)
- Mention of specific military services only in sub-sub-programs
  - Squinted to see themselves, felt marginalized, disrespected
- 2014 PAA not strongly sold within Defence
  - Military resisted using the same approach for the “Departmental Results Framework” drafted in 2017.

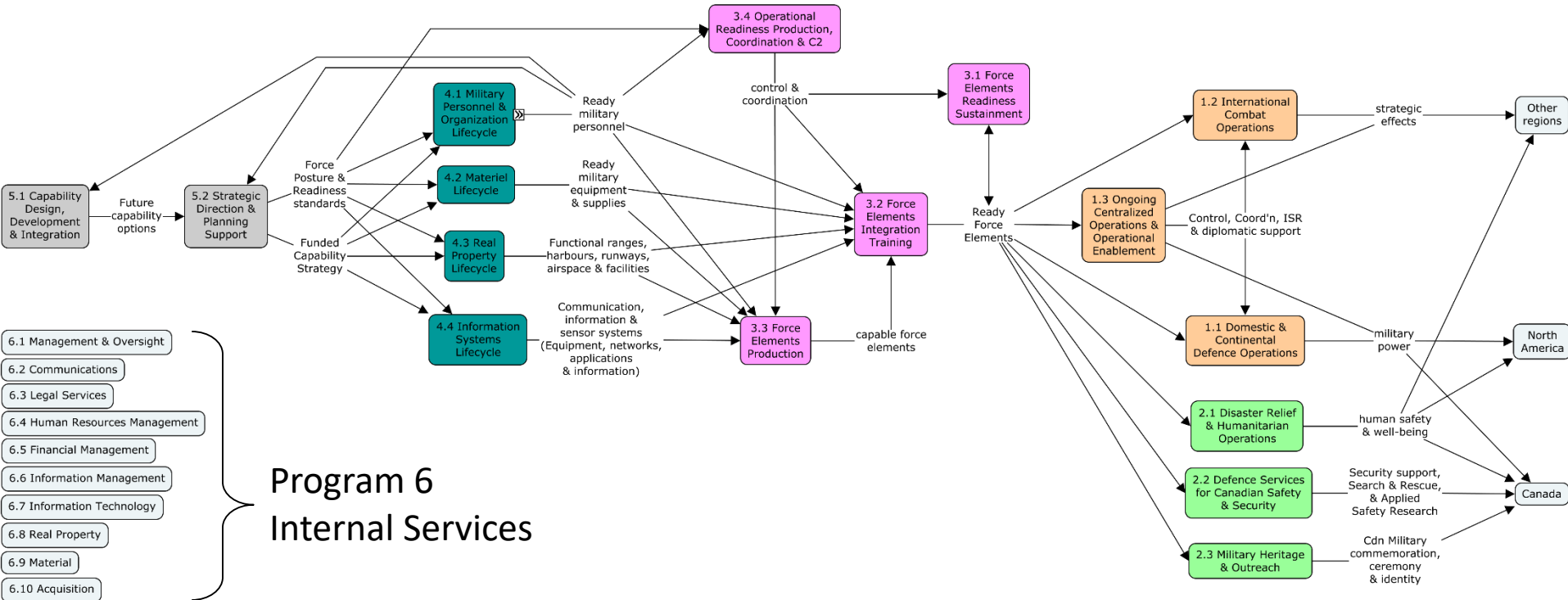
PAA Impact:

- Some have “caught the vision”, support the approach
- The PAA strongly influenced the 2018 “Departmental Results Framework”

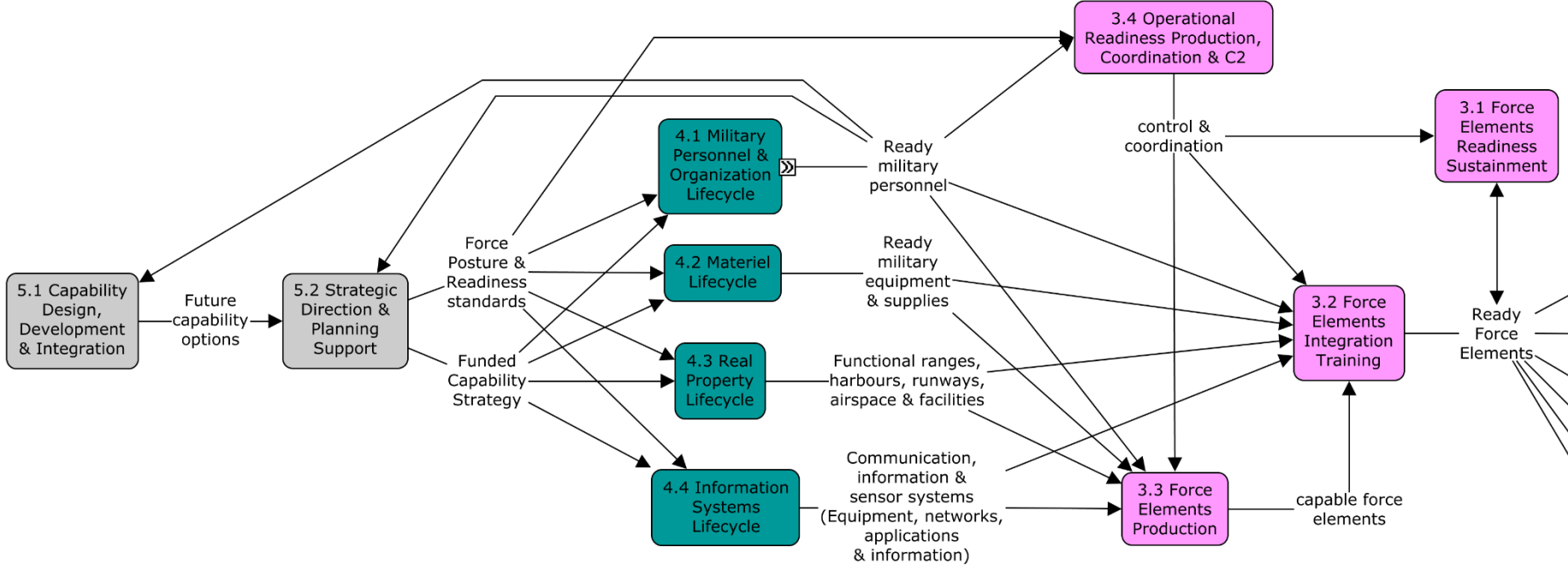
# Networked Value Model (2014 PAA extended)

- ID valued outcomes
  - ID Defence outputs
  - ID capital (value carriers)
- } PAA

- ID Program element outputs
  - Link value outputs to consumer
  - Drill down to Life Cycle Processes
- } NVM

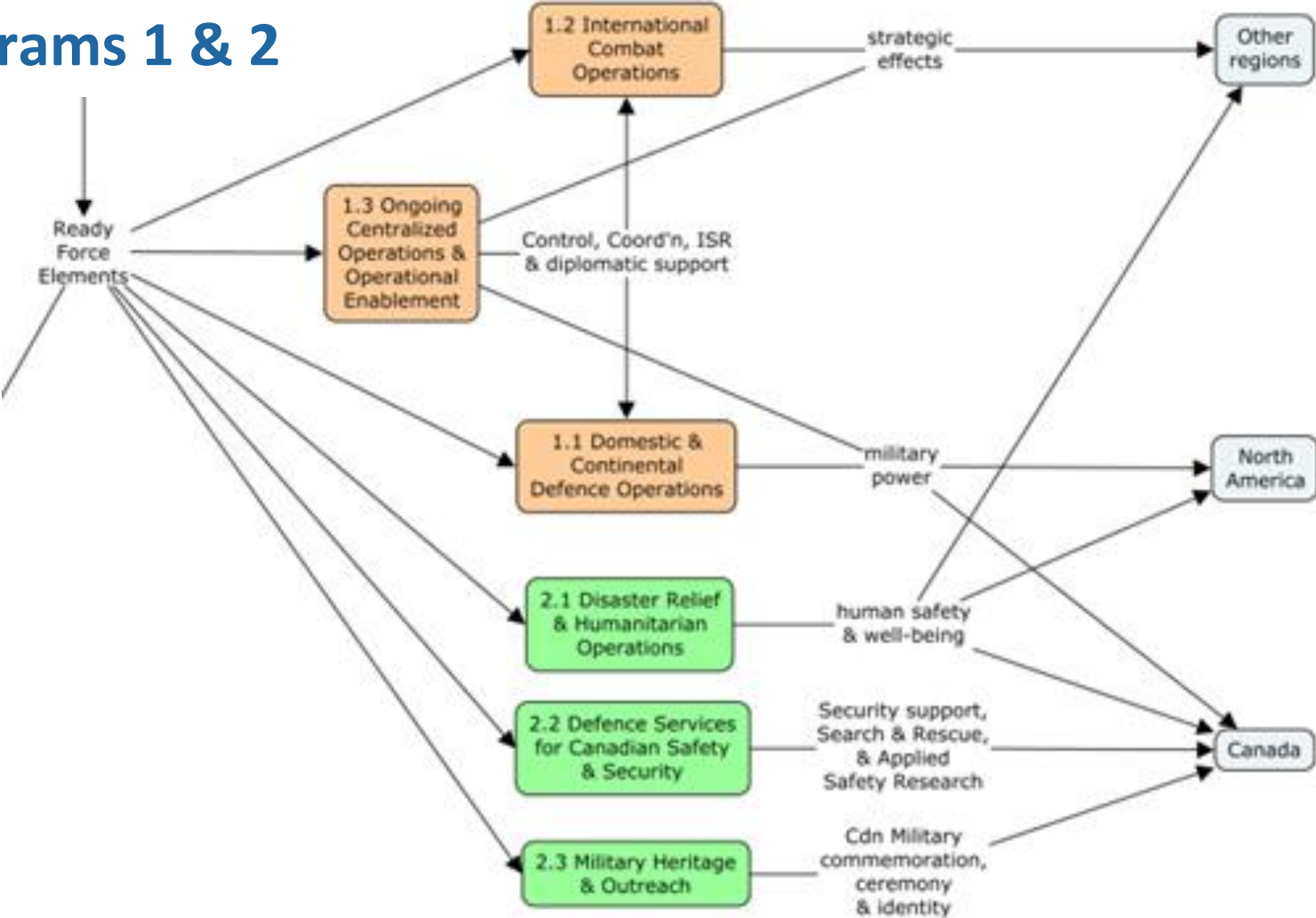


# NVM: Programs 3, 4 & 5

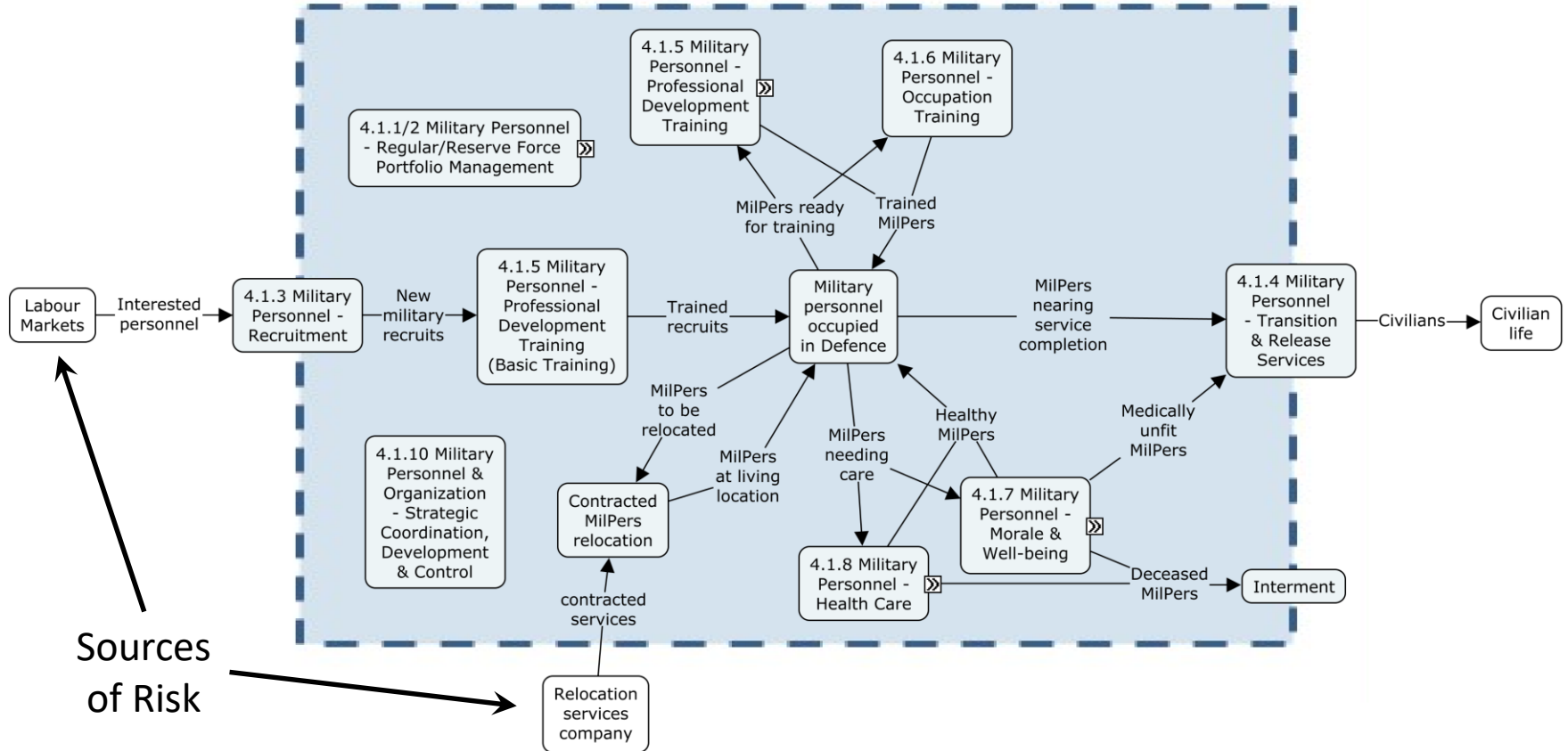




# NVM: Programs 1 & 2



# NVM: 4.1 Drill down



# NVM attributes

## Strategic

- Naturally frames discussions of:
  - Performance & Risk (through stoplight indications of metric values)
    - And their consequence propagation
  - Capital investment impact on Performance & Risk metrics

## Transparent

- Spans everything Defence has to do at warranted level of detail
  - It is “the anatomy of Defence”, how tooth and tail connect
  - Stable, as true 100 years ago as now

## Accessible

- Clear to any audience, especially those holding the purse,
- Powerful communication tool to win the confidence of
  - Central agency, Government & Public

# NVM Attributes: Orthogonality

## Versatile

- What the model **omits**, it can **illuminate**:
  - Specific services or organizations,
  - Specific capabilities or groups of capabilities,
  - Specific Defence locations or regions,
  - Specific military occupations or occupational groups, and
  - Specific platforms or weapon systems.
- The NVM has a story to tell about each of them

# NVM Development

Principals of NVM development:

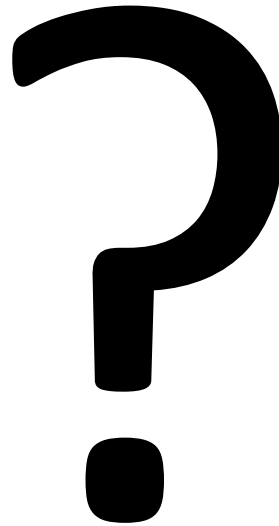
1. ID each “form of capital” that delivers required outputs (“**producing capital**”)
  - “Output” is more than just military operations (e.g. advice to government).  
Include all producing capital.
2. ID the component forms of capital that must be combined to create each type of producing capital. (“**component capital**”)
3. ID the **required attributes** of effective capital of each type
4. ID the **program elements furnishing** these attributes.
5. ID other applicable life cycle processes from a generic model, particularly including everything **sourced from “outside** the Defence enterprise.”
6. ID the **value-relevant states** through which each type of capital sometimes pass.
7. Develop a diagram showing how earlier forms of **capital transform** into later forms.
8. Develop “Phase Transition Diagrams” for the **life cycle** of each form of capital.

# How to implement a Networked Value Model for Defence

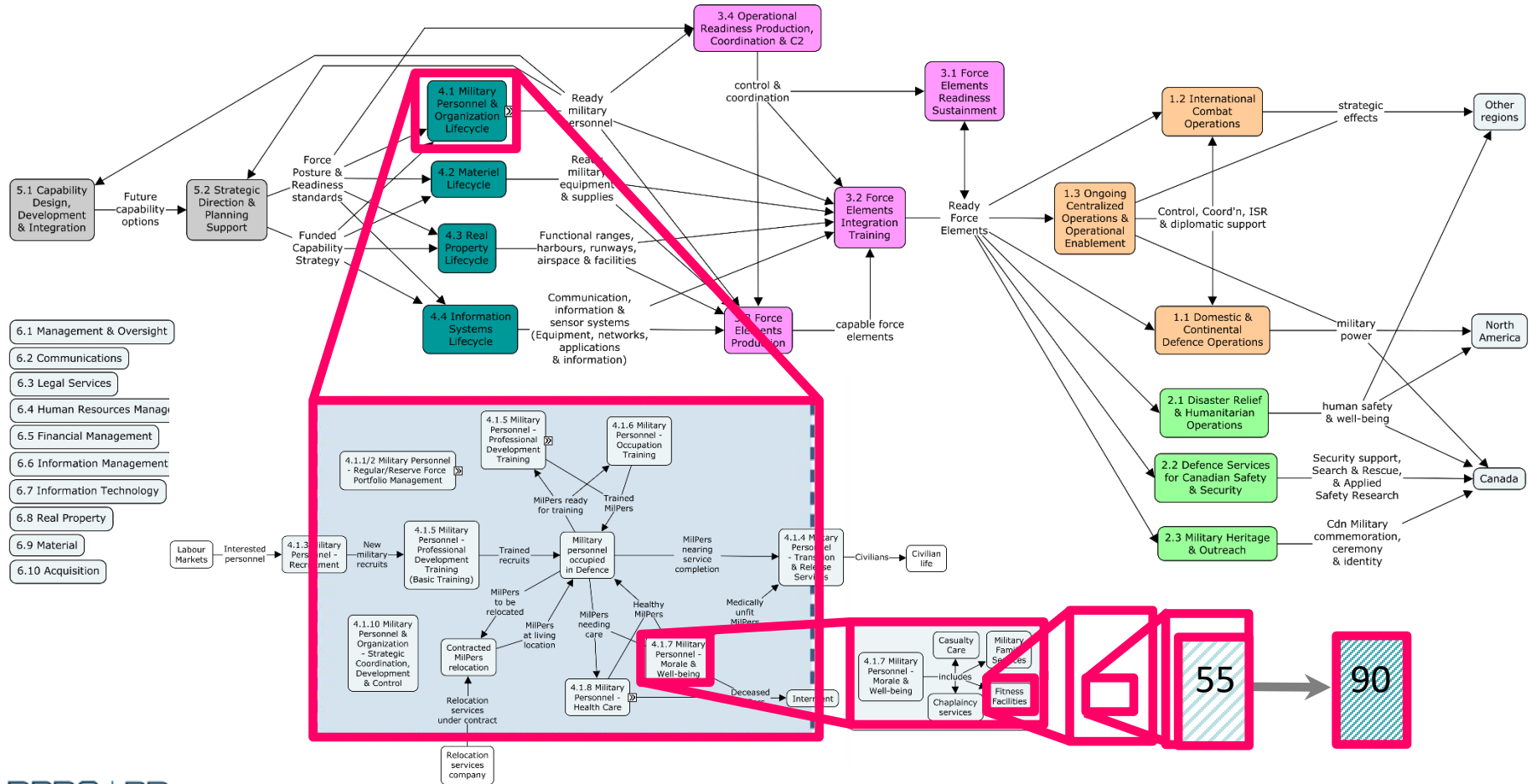
Factors:

- The power of a NVM is in adherence to principle in construction and use.
- What is “promulgated for formal MoD use” must be made practical, degrading the quality of analysis it can support.
- ➔ Build it as a strategic decision analysis tool, not for MoD-wide use.
- Assess how well the current program structure maps to it
- Identify program structure changes needed in order to map well to the NVM
- Situate these changes in quadrants defined by
  - “MoD disruption: Low  $\leftrightarrow$  High vs
  - “NVM fidelity enhancement: Low  $\leftrightarrow$  High
- Negotiate adoption of the Low disruption/High fidelity enhancement options

# Questions



# Numerical Value Modelling - example







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