



# How to Operationalize C2 Agility

Eva Jensen

# Agility

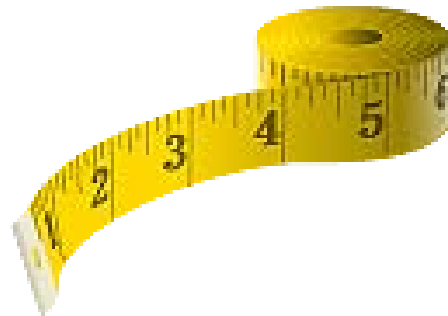
The ability to successfully cope with changes in current circumstances

# Components of Agility (Alberts)

- Responsiveness
- Versatility
- Flexibility
- Resilience
- Innovativeness
- Adaptability

# Operationalization

- A method to give concepts definitions
- Concepts are defined by the operations used to measure them



# I Will Discuss

- What kinds of measurements that are required to assess C2 agility
- Principles to follow in the search for suitable measures
- But I will not present clear operational definitions of the agility components
- That will require more work

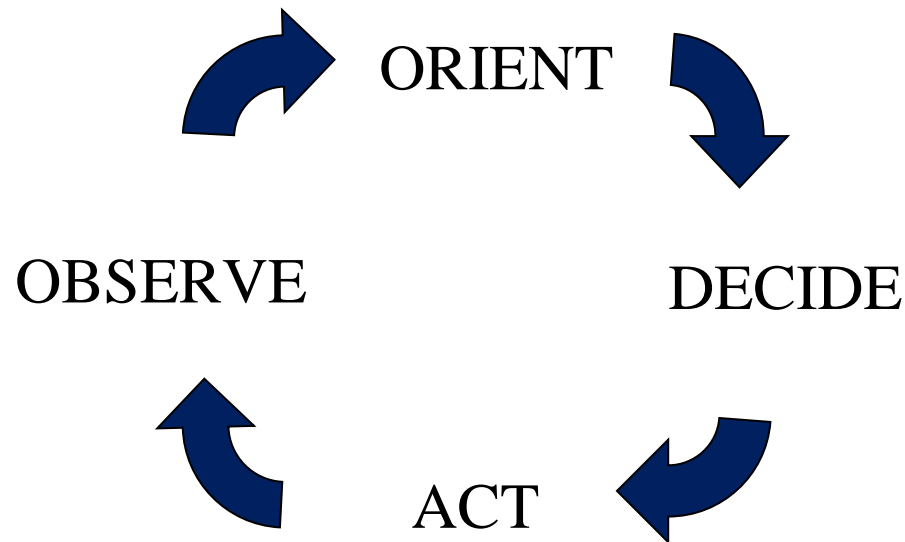
# What is Command and Control (C2)?

Why and when is C2 needed?

What purpose does it serve?

# The OODA loop (Boyd)

Coping with changing circumstances



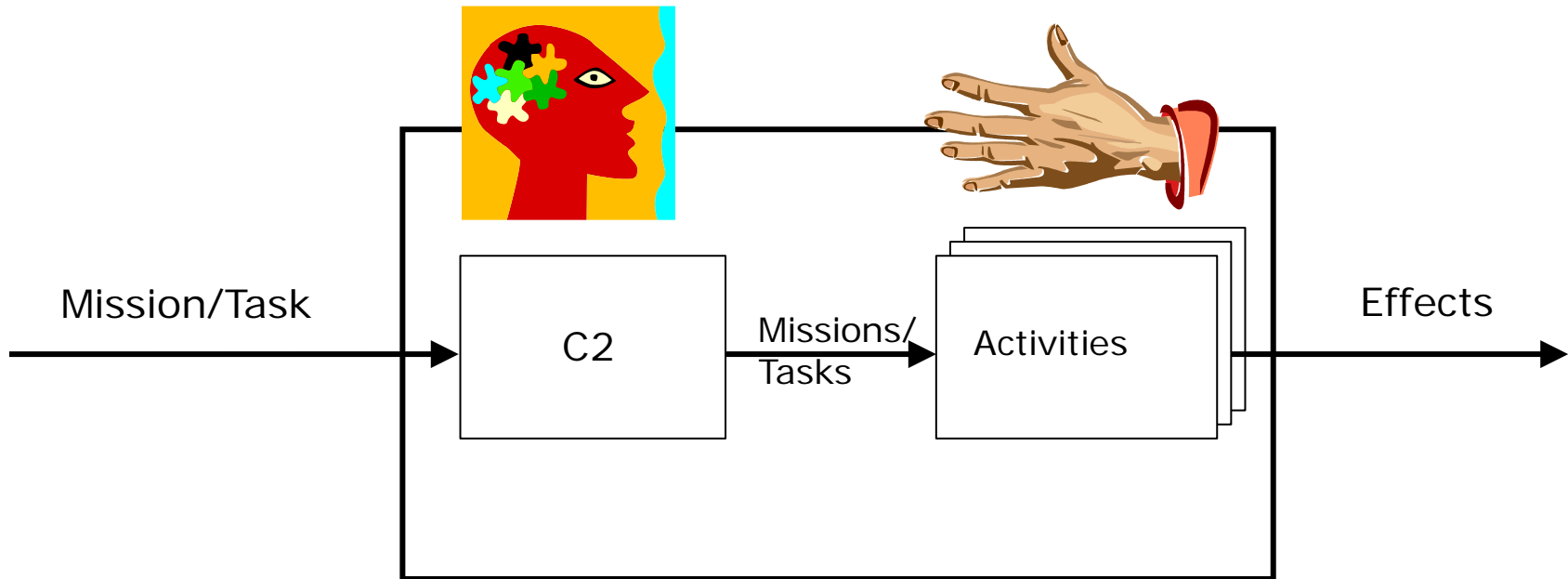
# The Need for C2

C2 is required when **the actions of several units need to be coordinated** to successfully cope with the change in circumstances

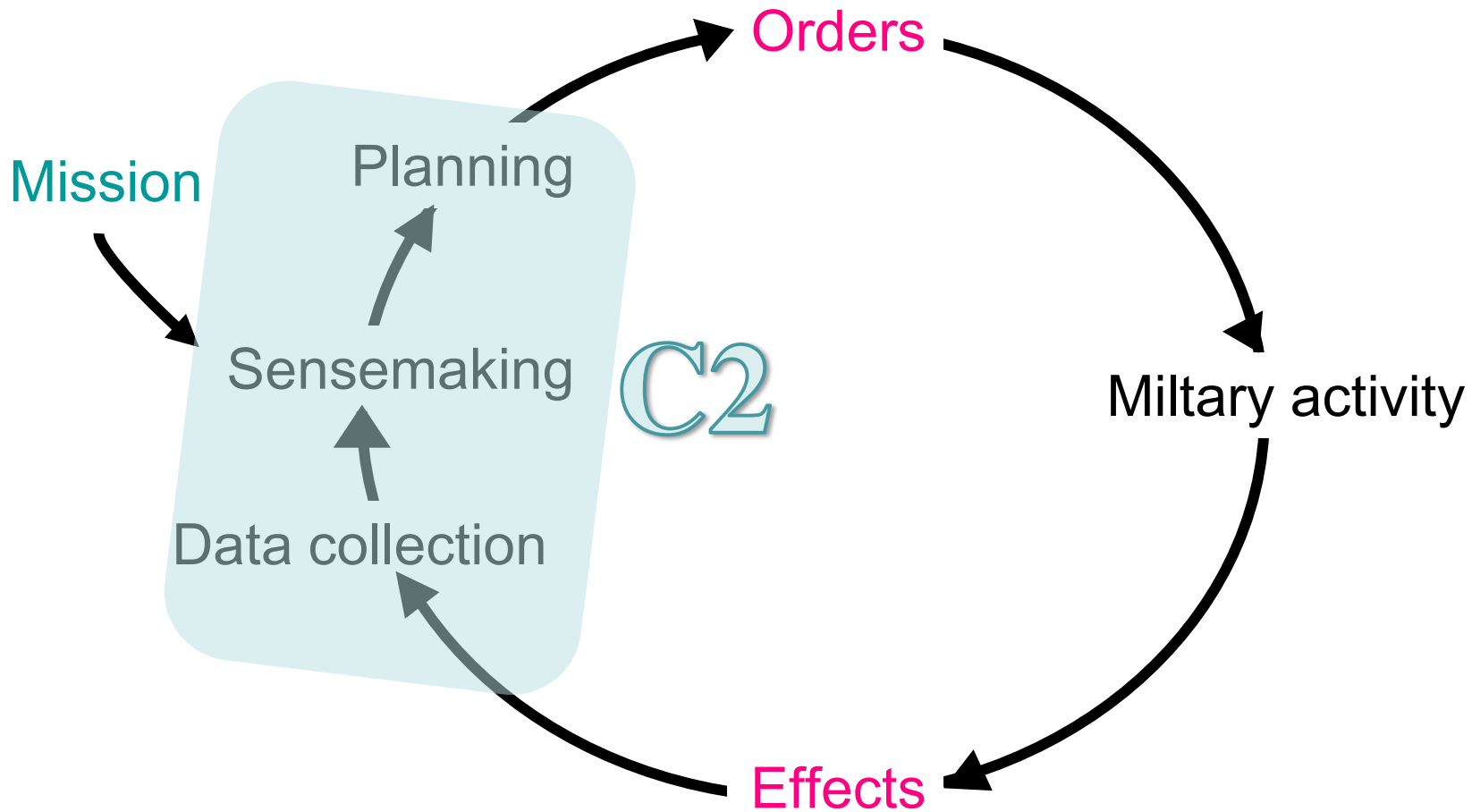
The **purpose** of C2 is to achieve **focus and convergence** (Alberts & Hayes) or **direction and coordination** (Brehmer)



# C2 & Force



# Brehmer's model of C2



# The Functions Required for C2

- **Sensemaking:** Sorts out what needs to be done
  - (Orient)
- **Planning:** Sorts out how to do this with the available resources, and allocates tasks to the subordinate units (expressed in orders)
  - (Decide)
- **Data collection:** Acquires the data required
  - (Observe)

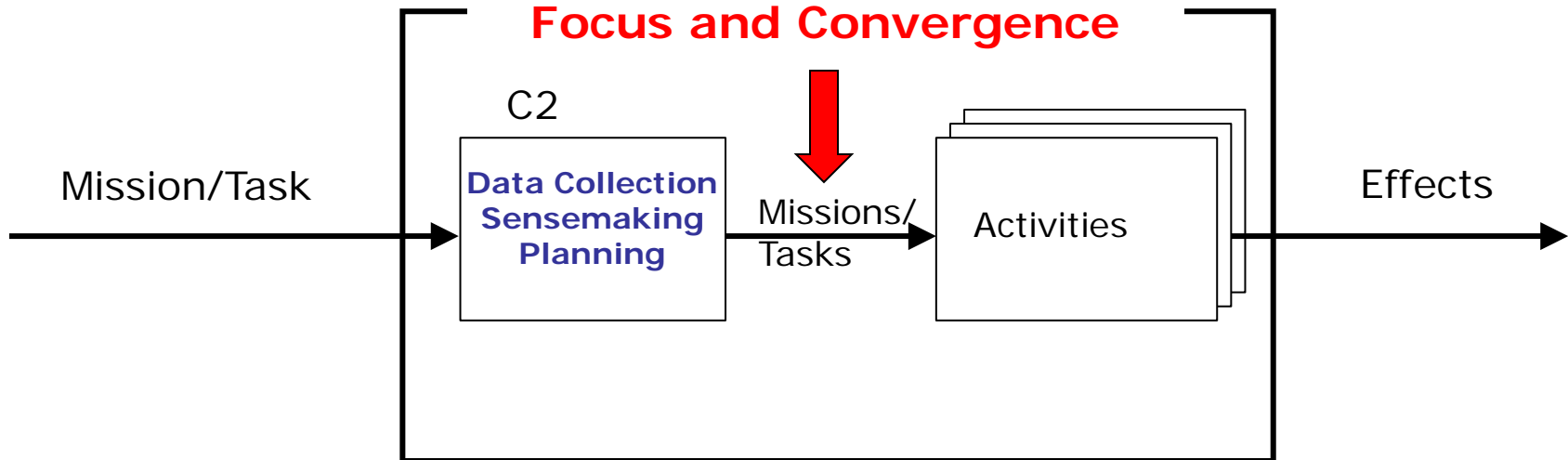
# The Study of Artifacts

Brehmer	Rasmussen	This paper
Purpose (Why?)	Goals and constraints	Demands
Function (What?)	Priorities, Flow of values and products	Products
	General functions	Functions
Form (How?)	Work and equipment processes	Processes
	Material resources and configuration	Objects

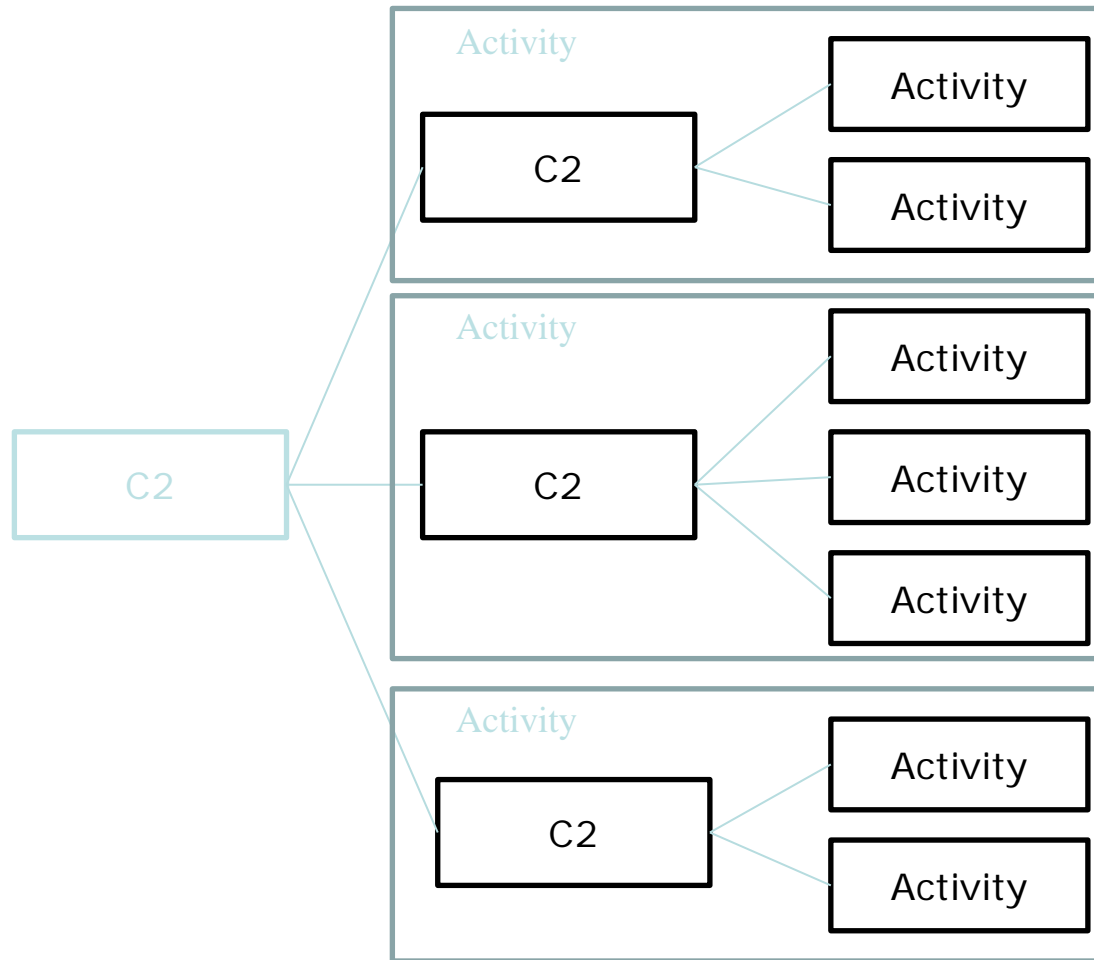
# Purpose and Functions of C2

Purpose (Goal)  
↓  
Functions

**Direction and Coordination  
Focus and Convergence**



# C2 Hierarchy



# The Demands on C2

In a specific situation there will be

- a mission or **task** to be achieved (a goal)
- by a specified **force** (a constraint)
- in some **context** (another constraint)
- within a limited amount of **time** (a third constraint)
- perhaps together with **other actors** (a possible fourth constraints)

The demands determine the requisite agility.



# Requisite C2 Agility

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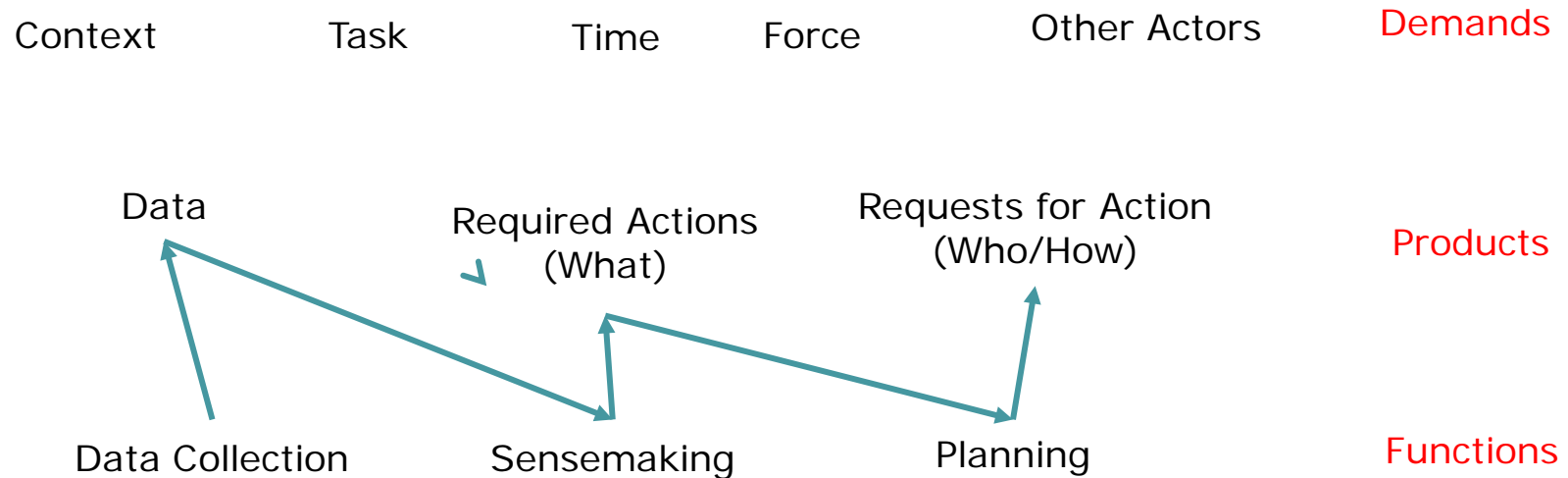
# The Study of Artifacts

## Requirements

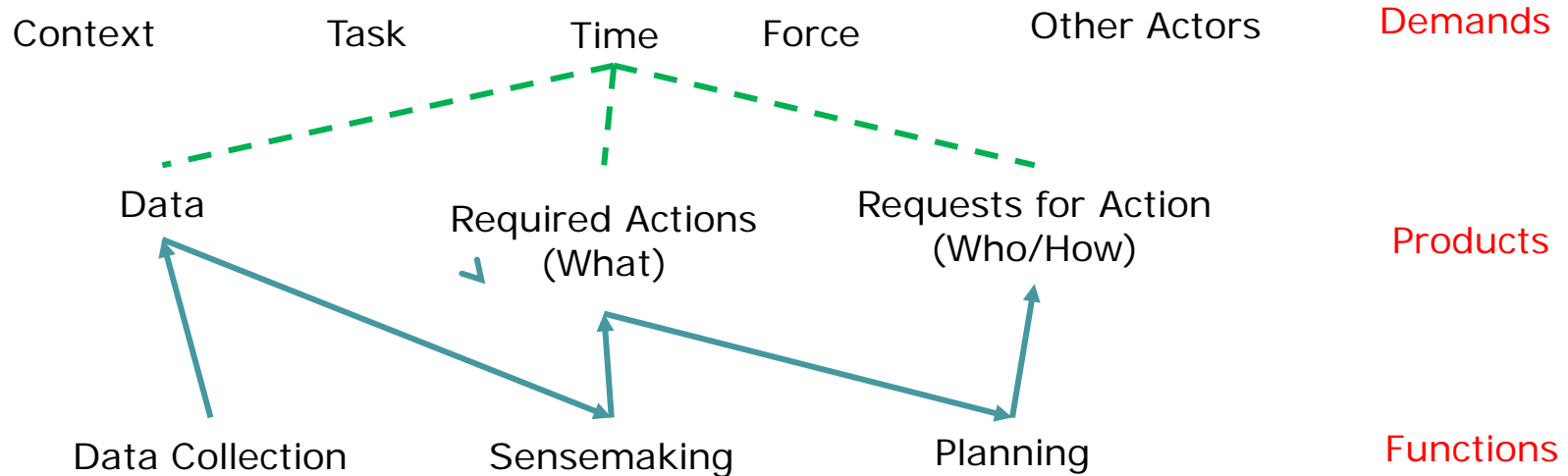
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# Demands and Products of the Functions

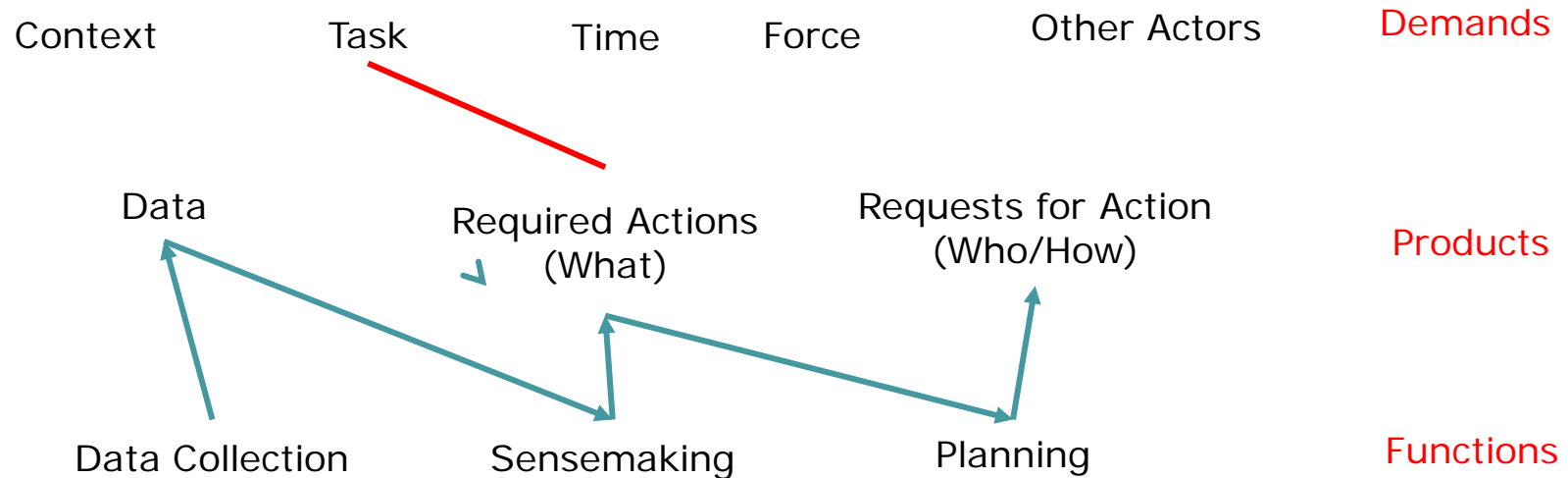


# Responsiveness



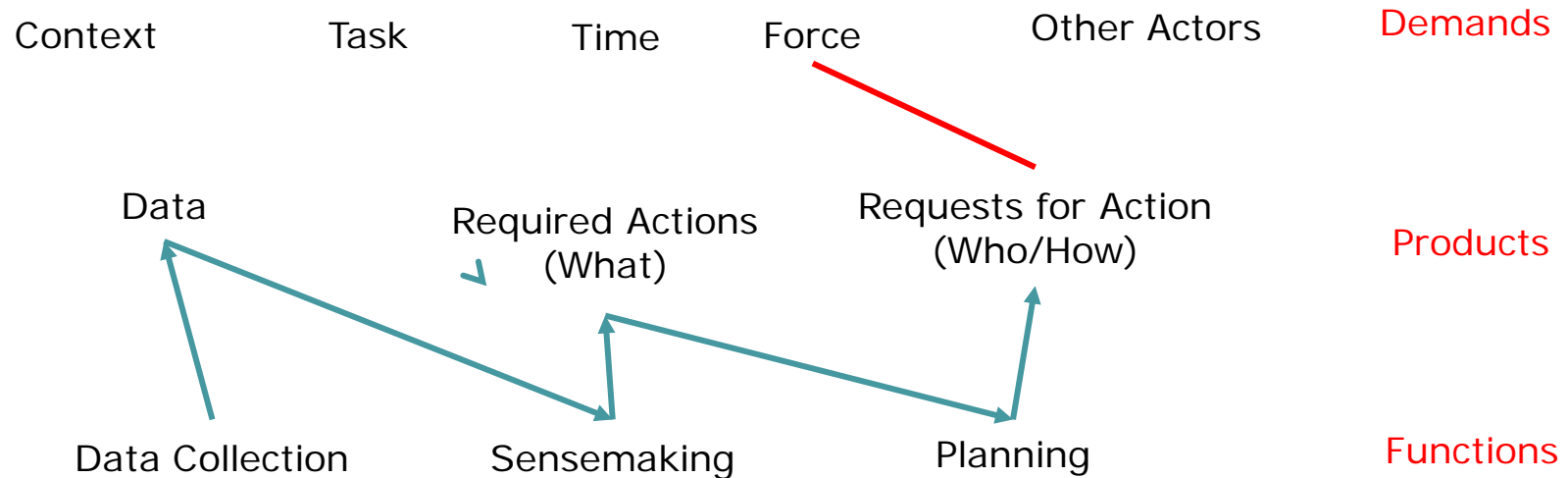
**Responsiveness** is the ability to meet the demands of time

# Versatility



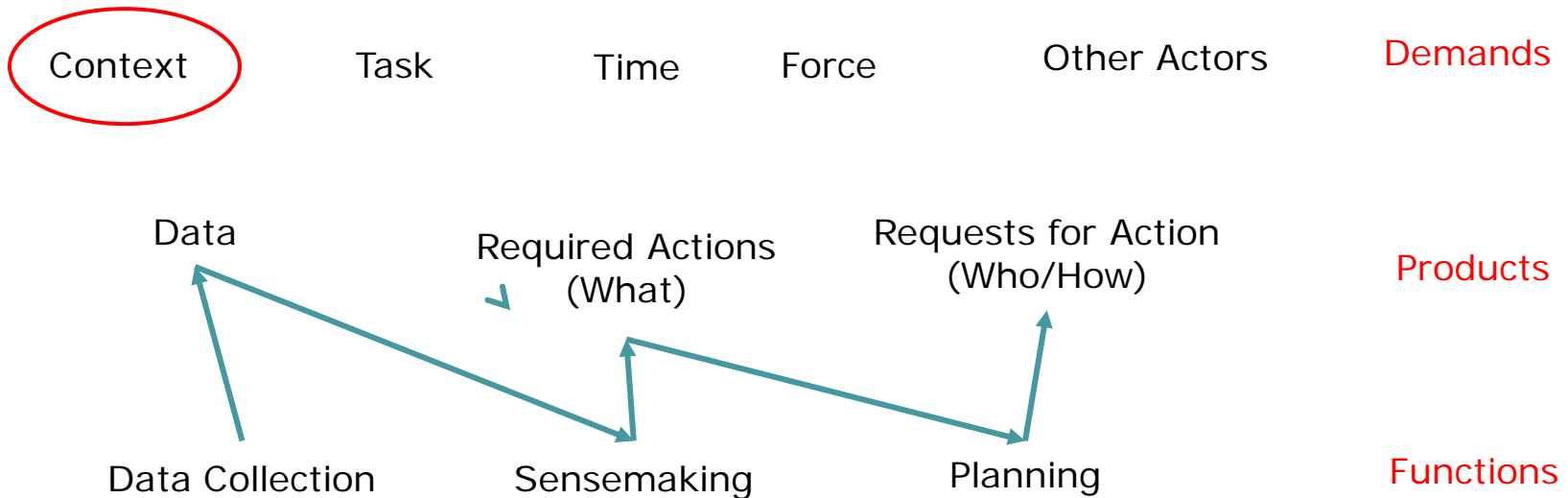
**Versatility** is the ability to deal with significant changes in the nature of the mission or task

# Flexibility



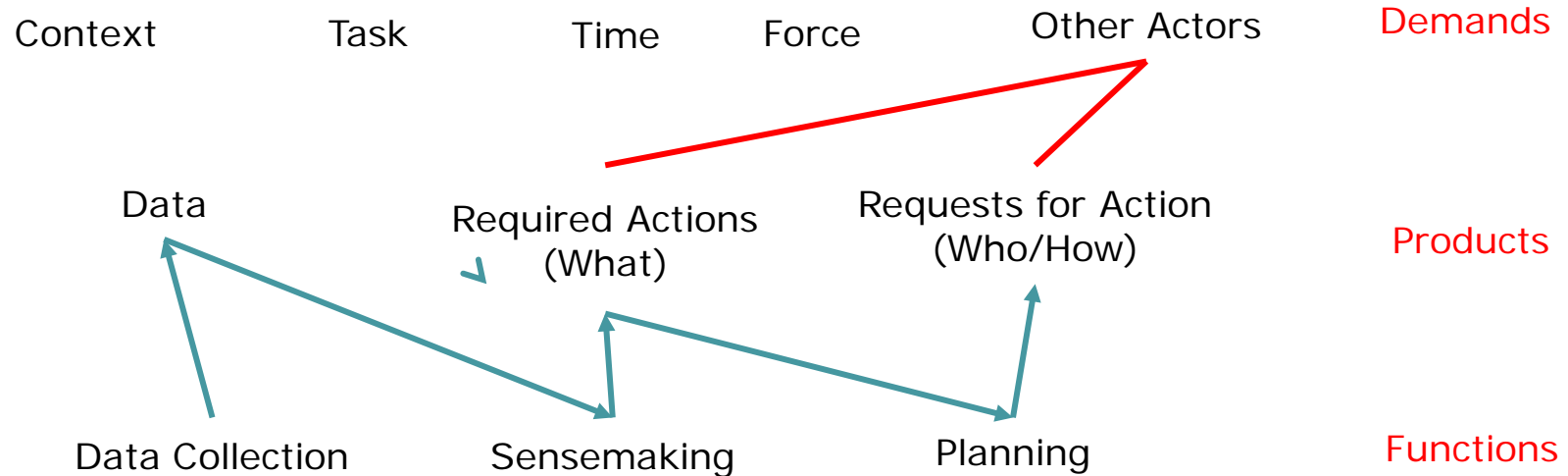
**Flexibility** is the ability to adapt the response to the situation if necessary

# Resilience



**Resilience** is the ability to withstand threats of destruction, interruption, or degradation

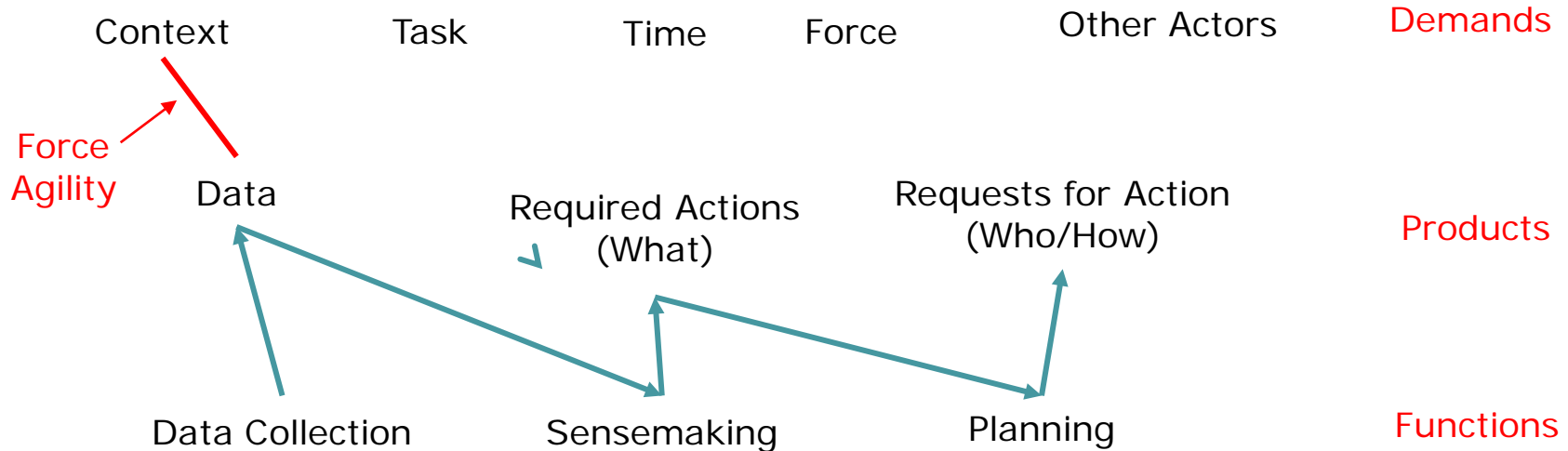
# Coordination (Added)



**Coordination** of the own activities with the activities of other actors may be required

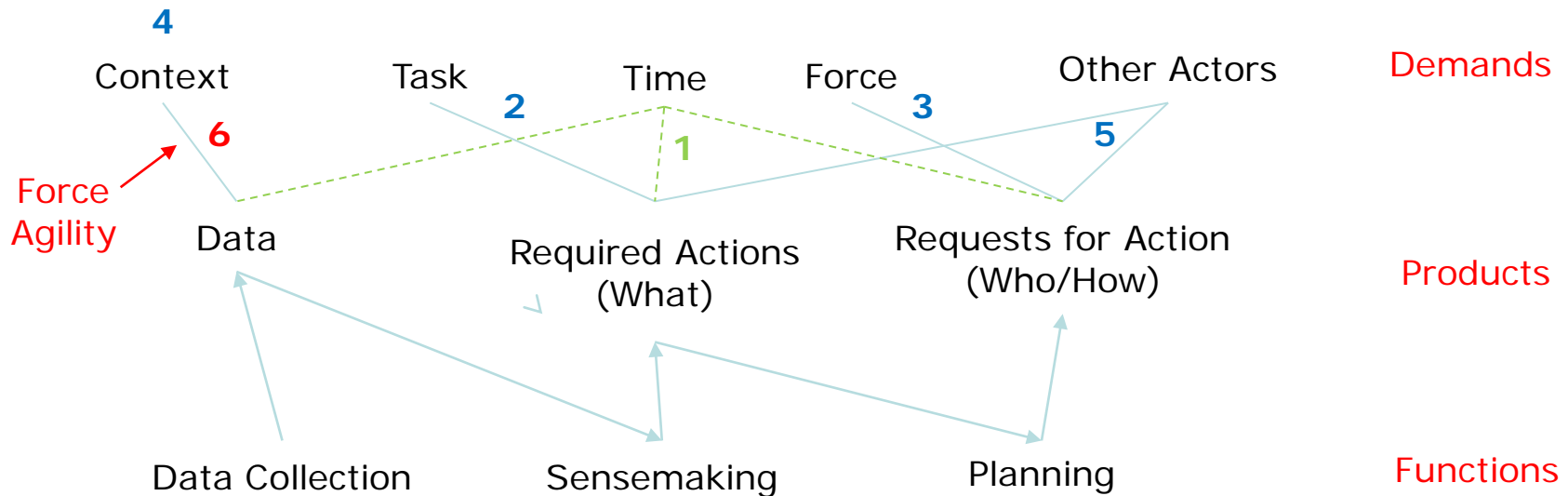


# Information (Added)



**Information** about the context with relevance for the force's agility is required

# Requisite C2 Agility



- |                   |                 |
|-------------------|-----------------|
| 1. Responsiveness | 4. Resilience   |
| 2. Versatility    | 5. Coordination |
| 3. Flexibility    | 6. Information  |

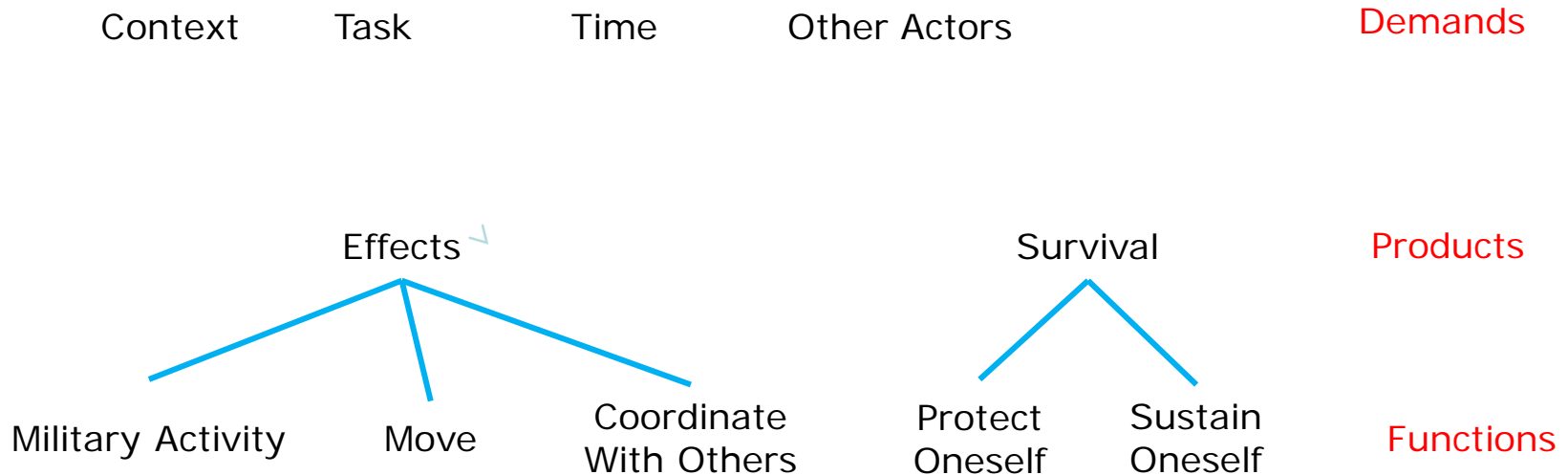
# Innovativeness & Adaptability

## Excluded

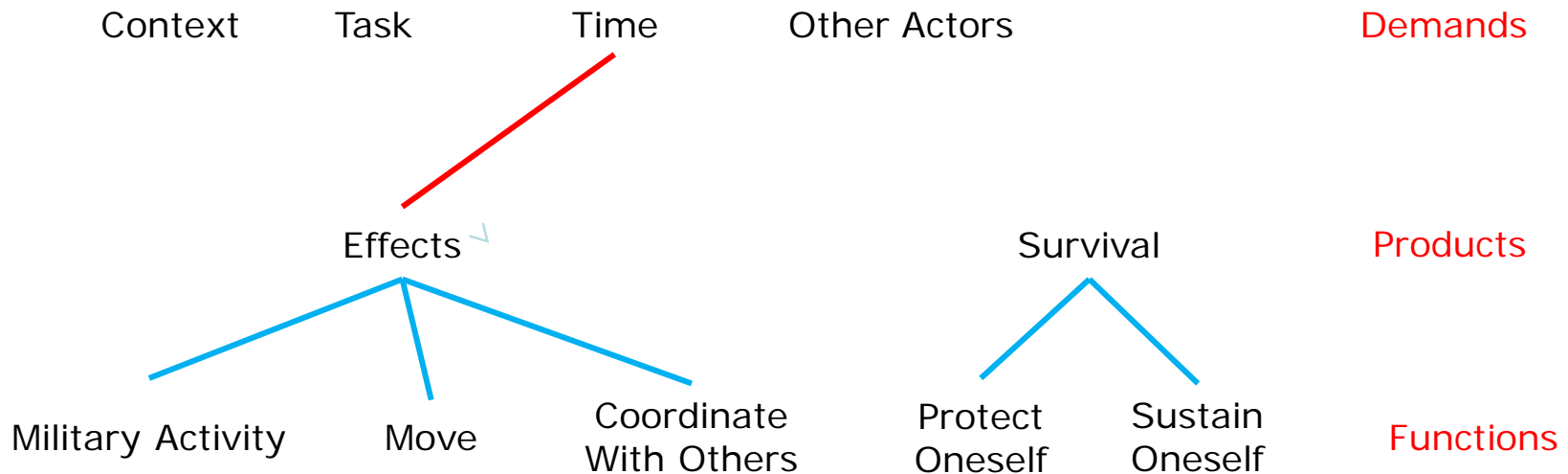
- **Innovativeness** is the ability to invent a course of action in a situation where there is no known adequate response
- **Adaptability** is the ability to perform tasks for which the established organization and processes are unfeasible.
- Covered by the demands for **versatility** and **flexibility**

# Requisite Force Agility

# Demands and Products of the Functions

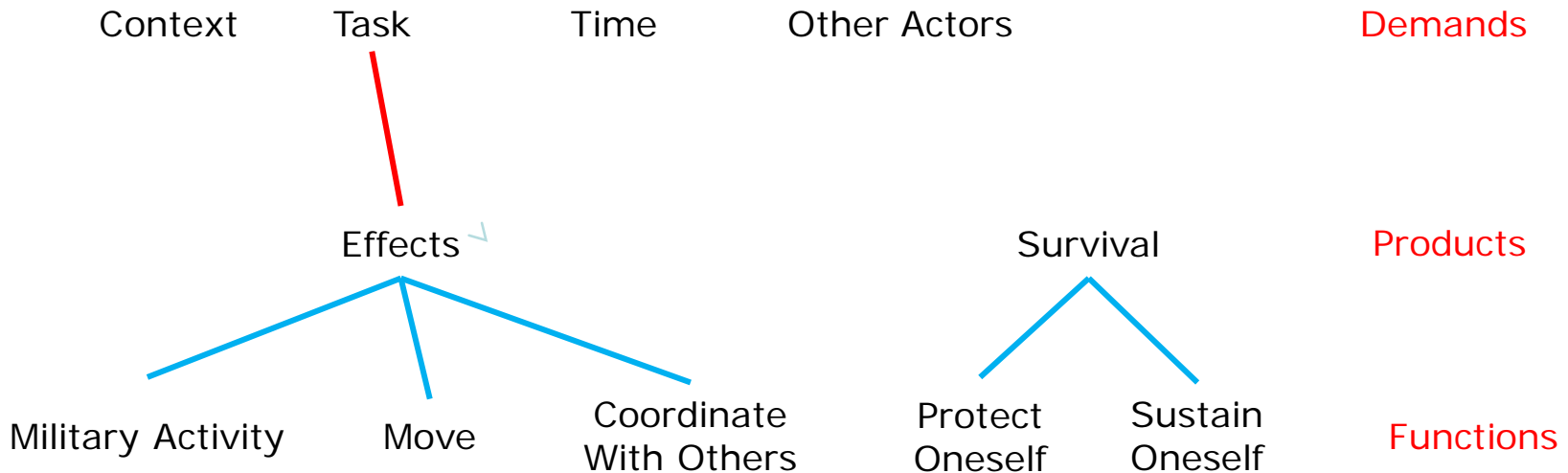


# Responsiveness



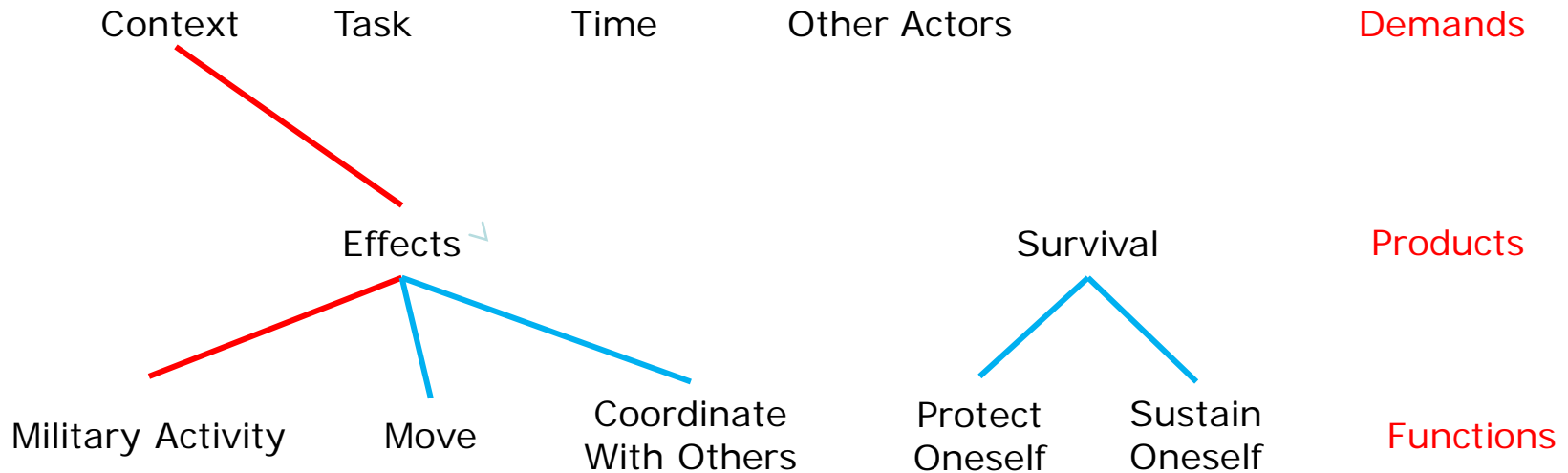
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# Versatility



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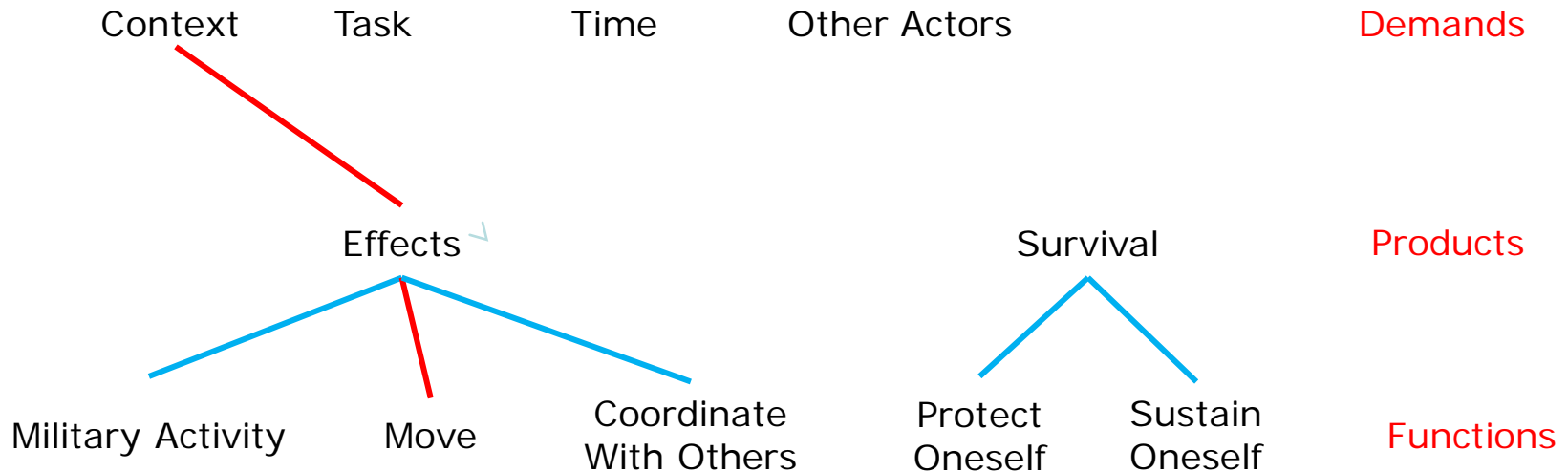
# Flexibility



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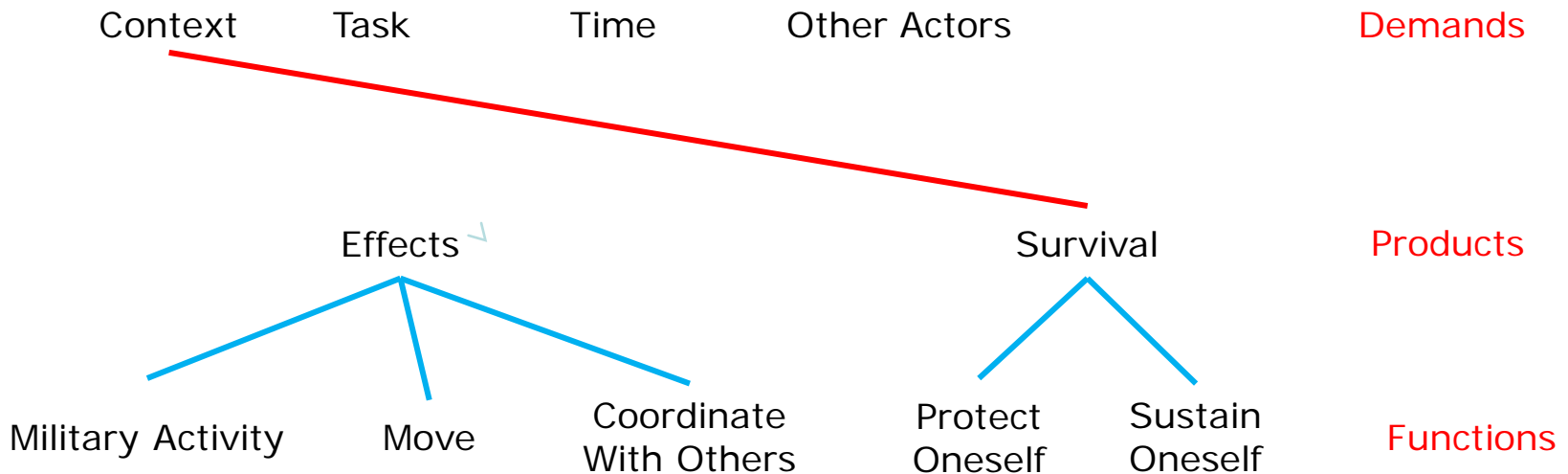


# Mobility (Added)



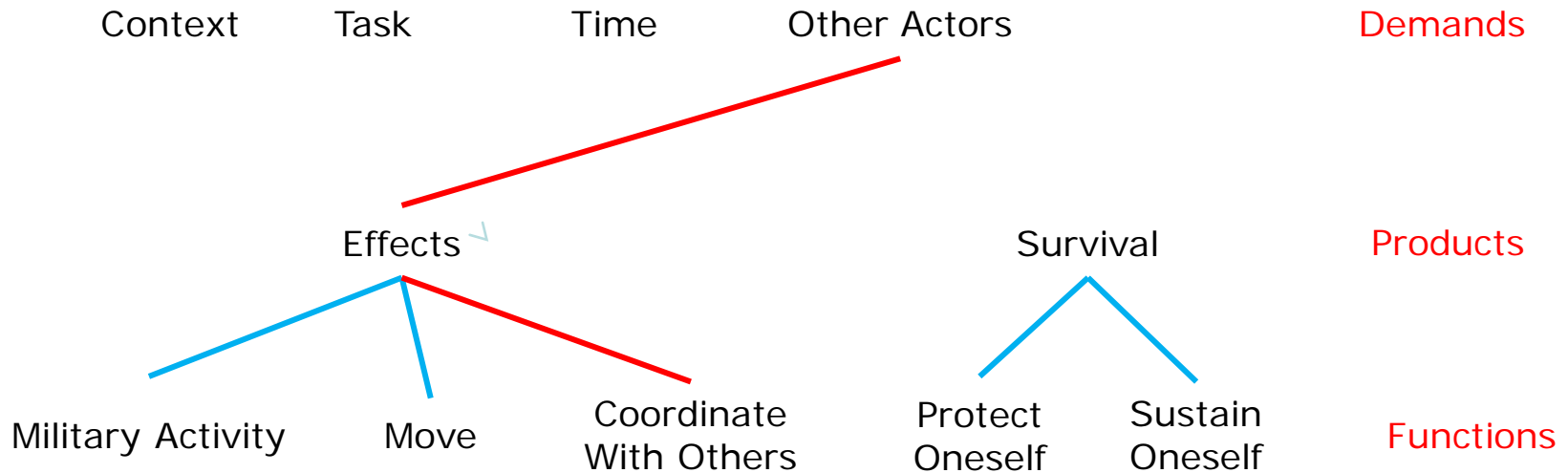
**Mobility** is the ability to move to the proper location fast enough

# Resilience



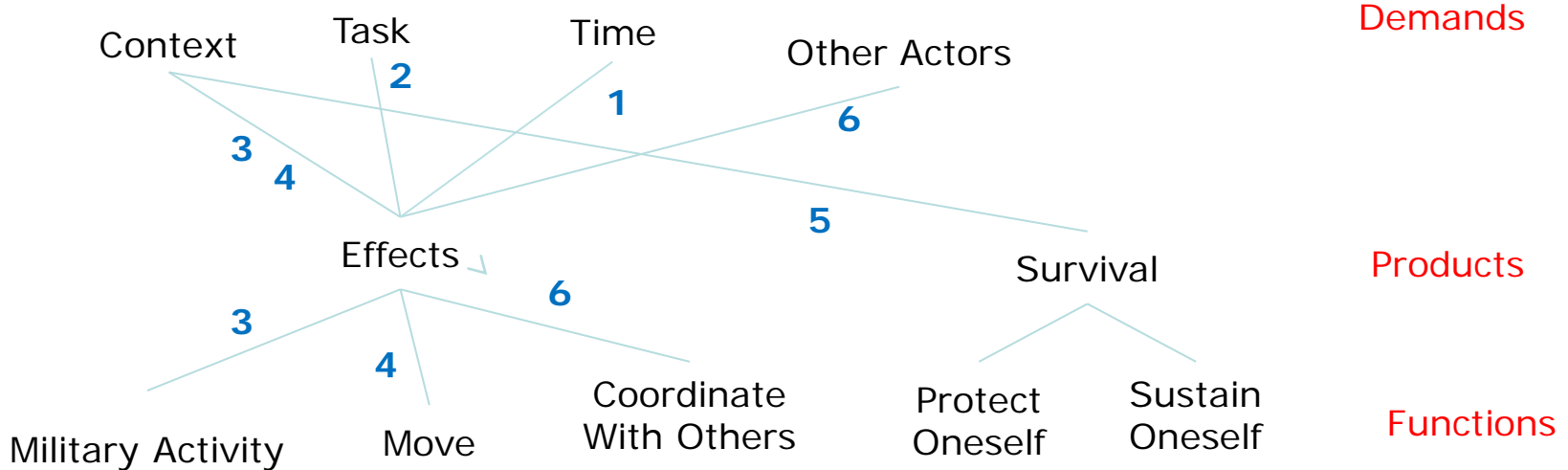
**Resilience** is the ability to withstand threats of destruction, interruption, or degradation

# Coordination



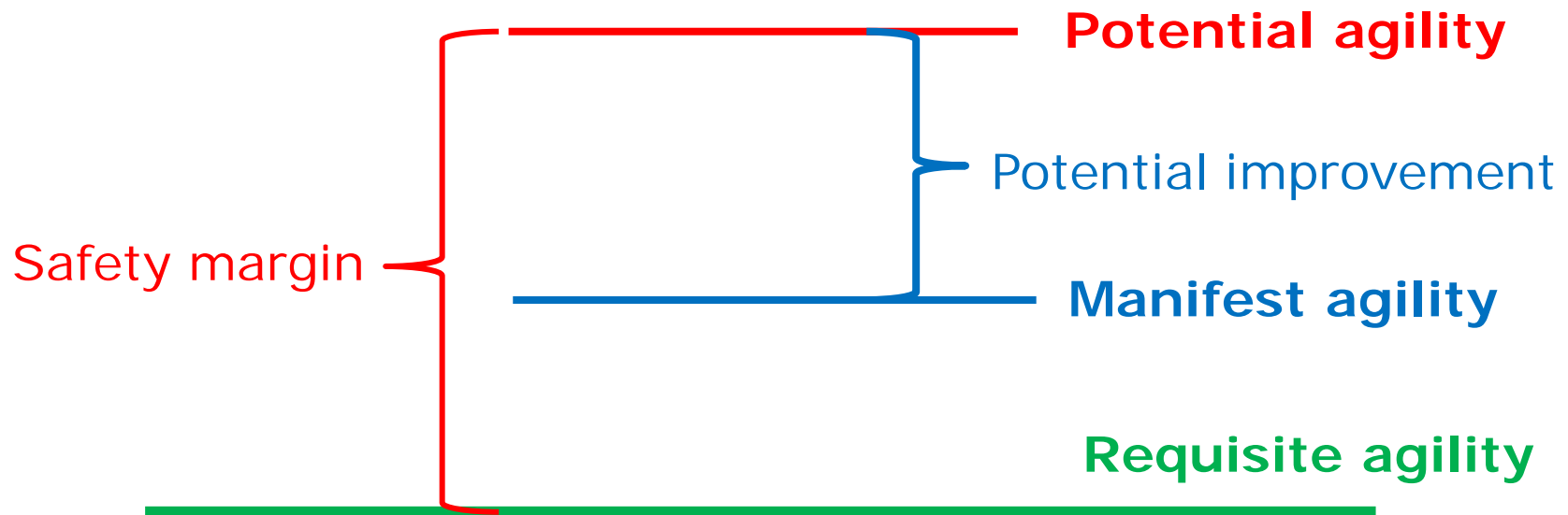
**Coordination** of the own activities with the activities of other actors may be required

# Requisite Force Agility



- |                   |                 |
|-------------------|-----------------|
| 1. Responsiveness | 4. Mobility     |
| 2. Versatility    | 5. Resilience   |
| 3. Flexibility    | 6. Coordination |

# Requisite, Potential and Manifest Agility



# Potential C2 Agility


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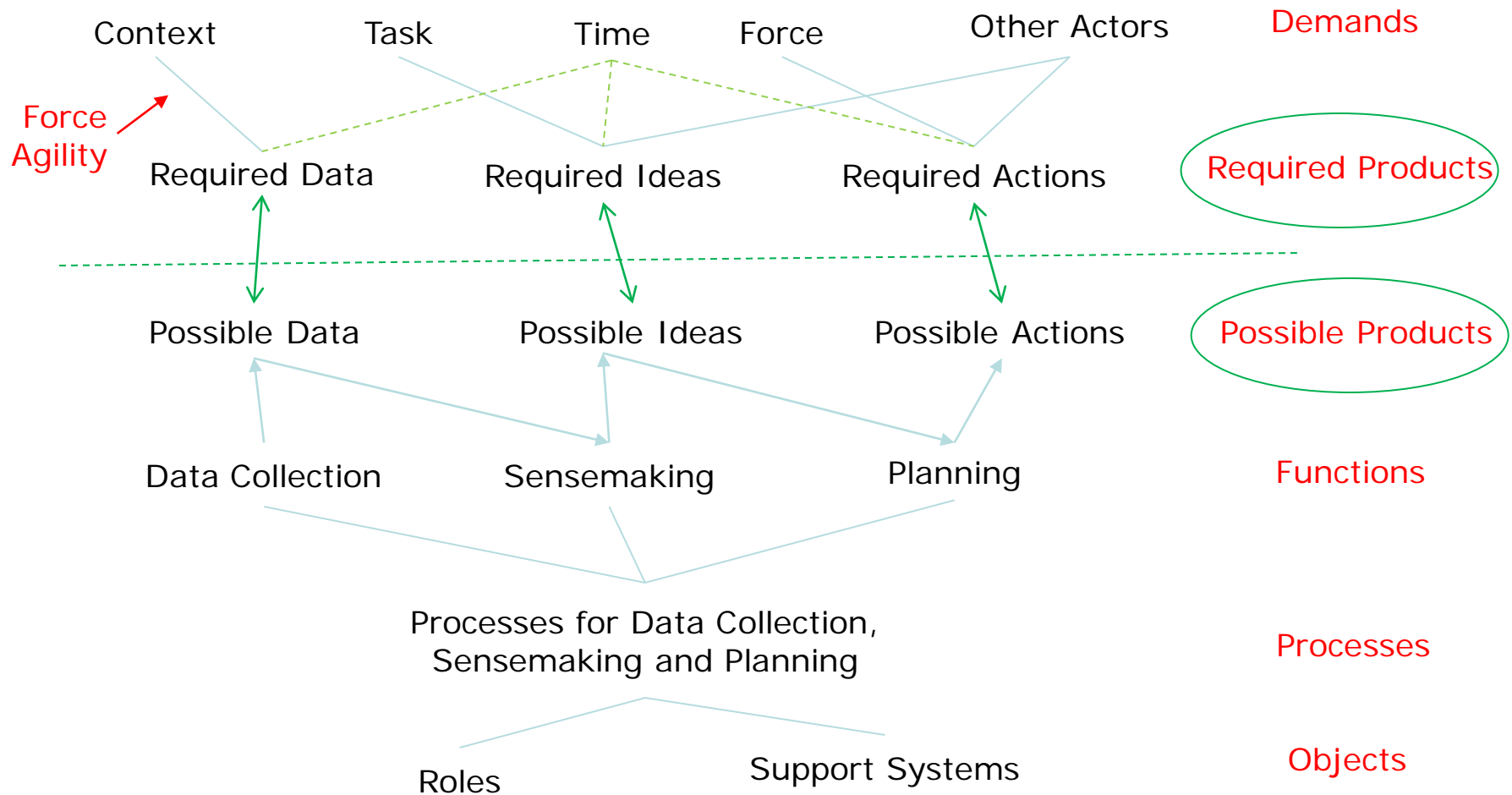


# The Study of Artifacts

## Potential Performance

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# Potential To Meet Requirements?





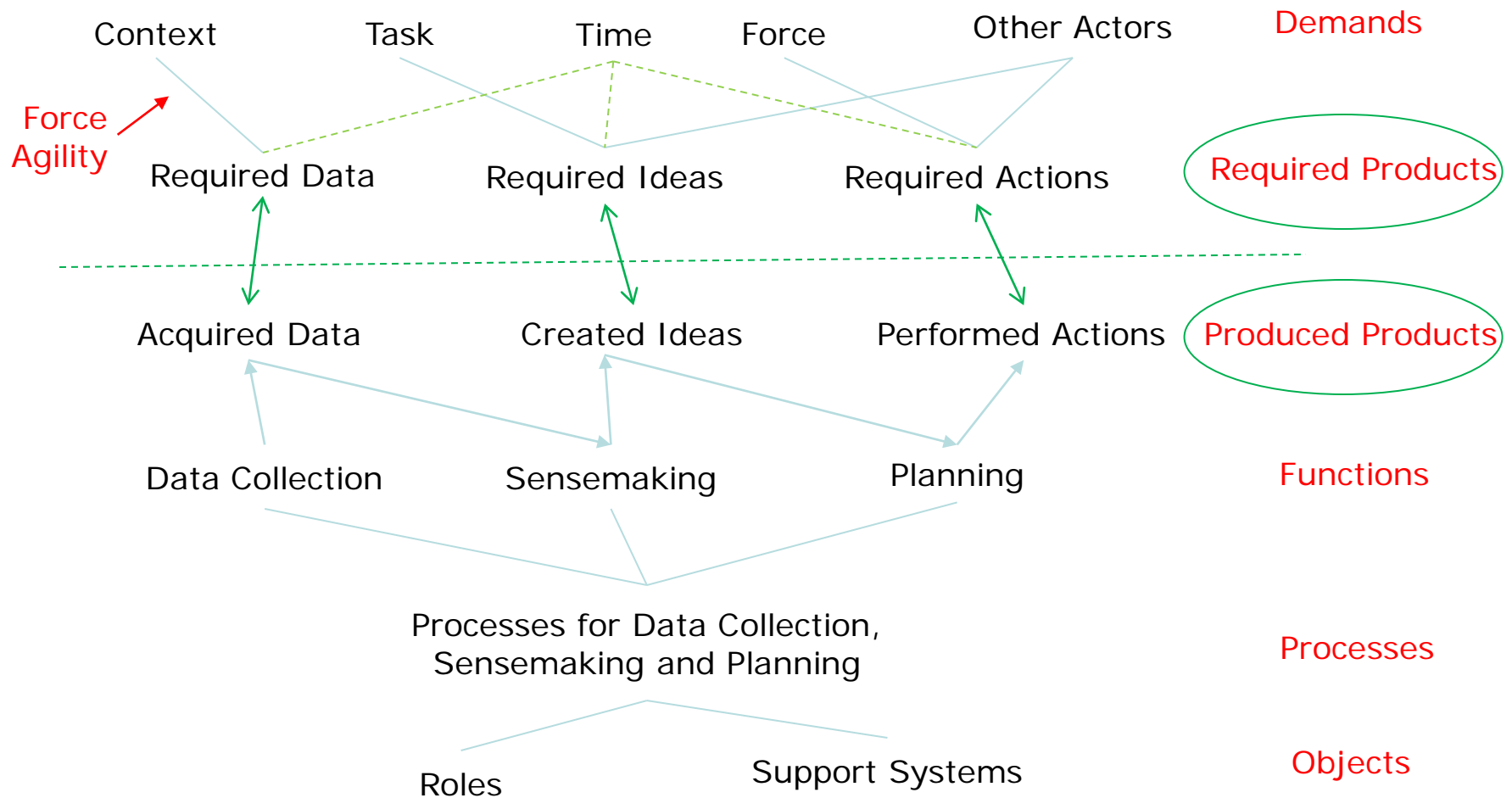
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# Performance Meets Requirements?



# Conclusions

- Performance measures (operational definitions) related to actual circumstances (demands)
- Separate analyses of C2 Agility and Force Agility
- A slightly different set of components
  
- The C2 functions (and the Force functions) need to be broken down into sub-functions
- The search for more detailed measures ought to follow the principles outlined here.

# Thank you!

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