

# Planning for System Innovation in Product Development Teams of Manufacturing Companies:

## Criteria Development for a Scenario Method



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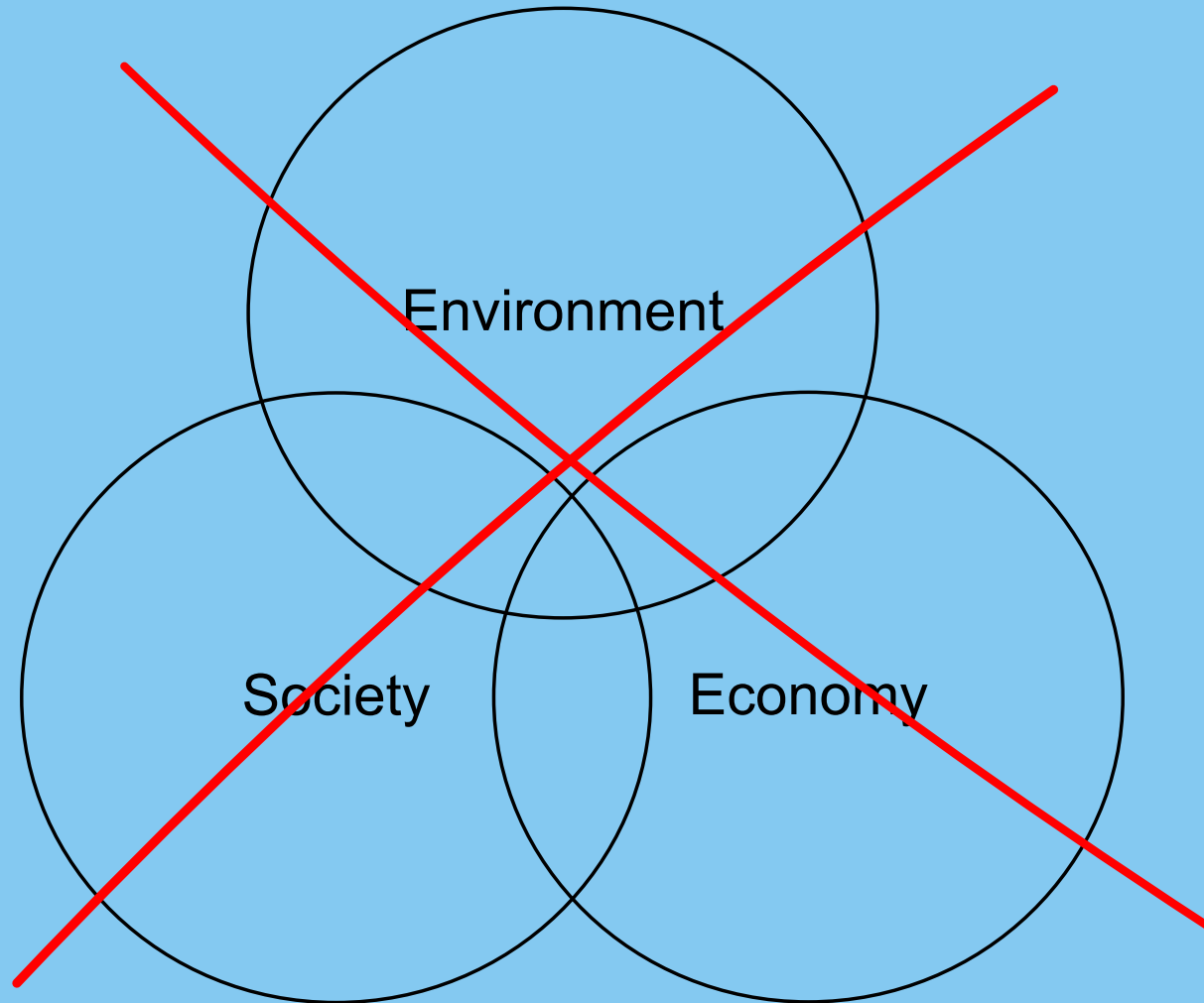
The University of Auckland  
International Centre for Sustainability Engineering and Research

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# INTRODUCTION

- Results of a PhD research aim of which is:  
“to develop a scenario method for product development teams to plan for system innovation for sustainability”;
- Abundance of work on governance of system innovation in policy development field but lack of work on how industry/PDT fits into the picture;
- Personal interest in sustainable design and futures studies.

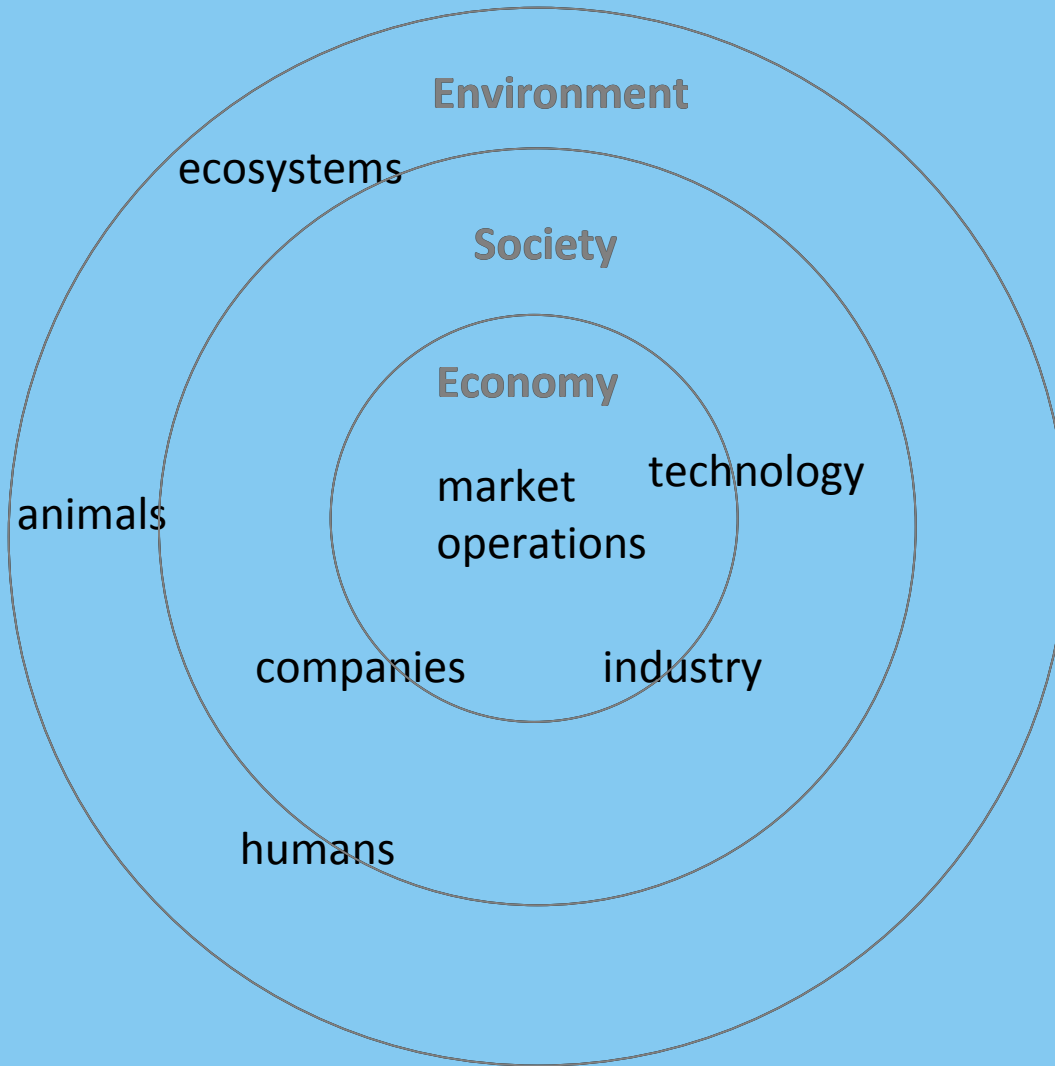
# Foundation # 1: Strong Sustainability



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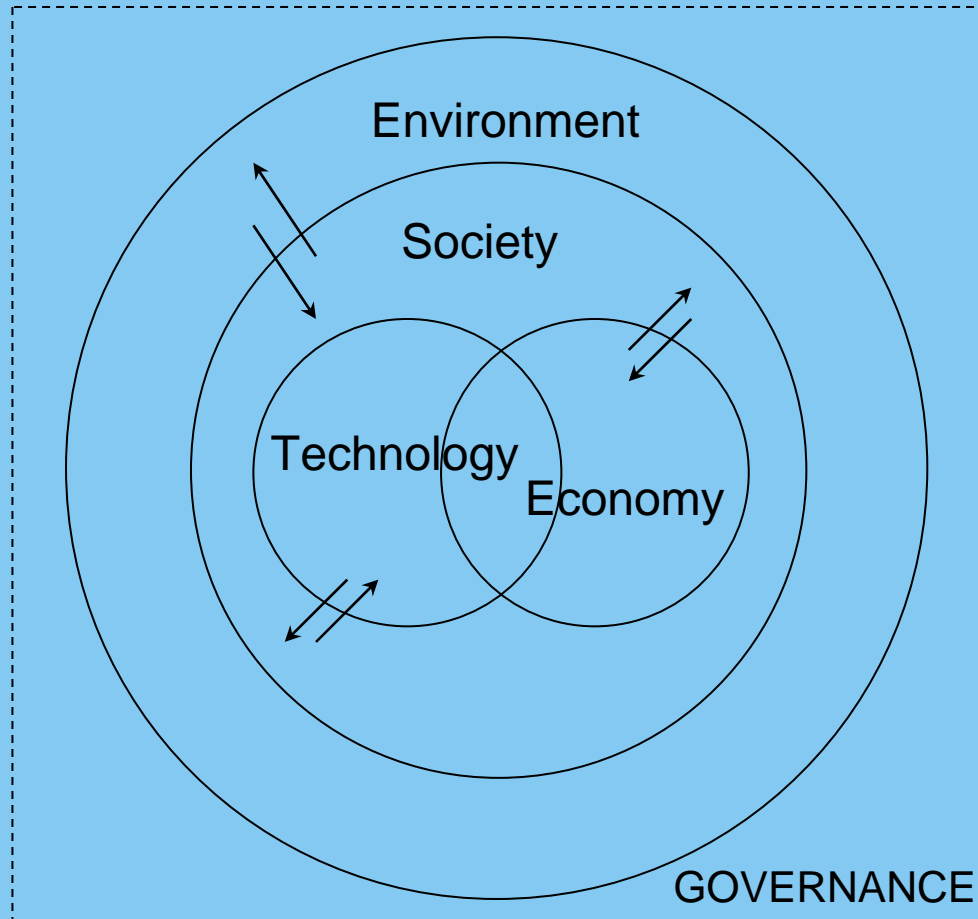


# Foundation # 2: Co-evolution



COMPLEX  
ADAPTIVE  
SYSTEMS

# Foundation # 2: Co-evolution



“Successful action depends on a combination of advances in scientific understanding, appropriate political programmes, social reforms and other institutional changes, as well as on the scale and direction of new investment. Organisational and social innovations would always have to accompany any technical innovations and some would have to come first” (Freeman, 1992)

# Foundation # 3: Radical Change

Compliance;

Energy efficiency;

Waste reduction;

Recycling;

**IMPROVEMENT**

Cleaner production;  
Design for X;

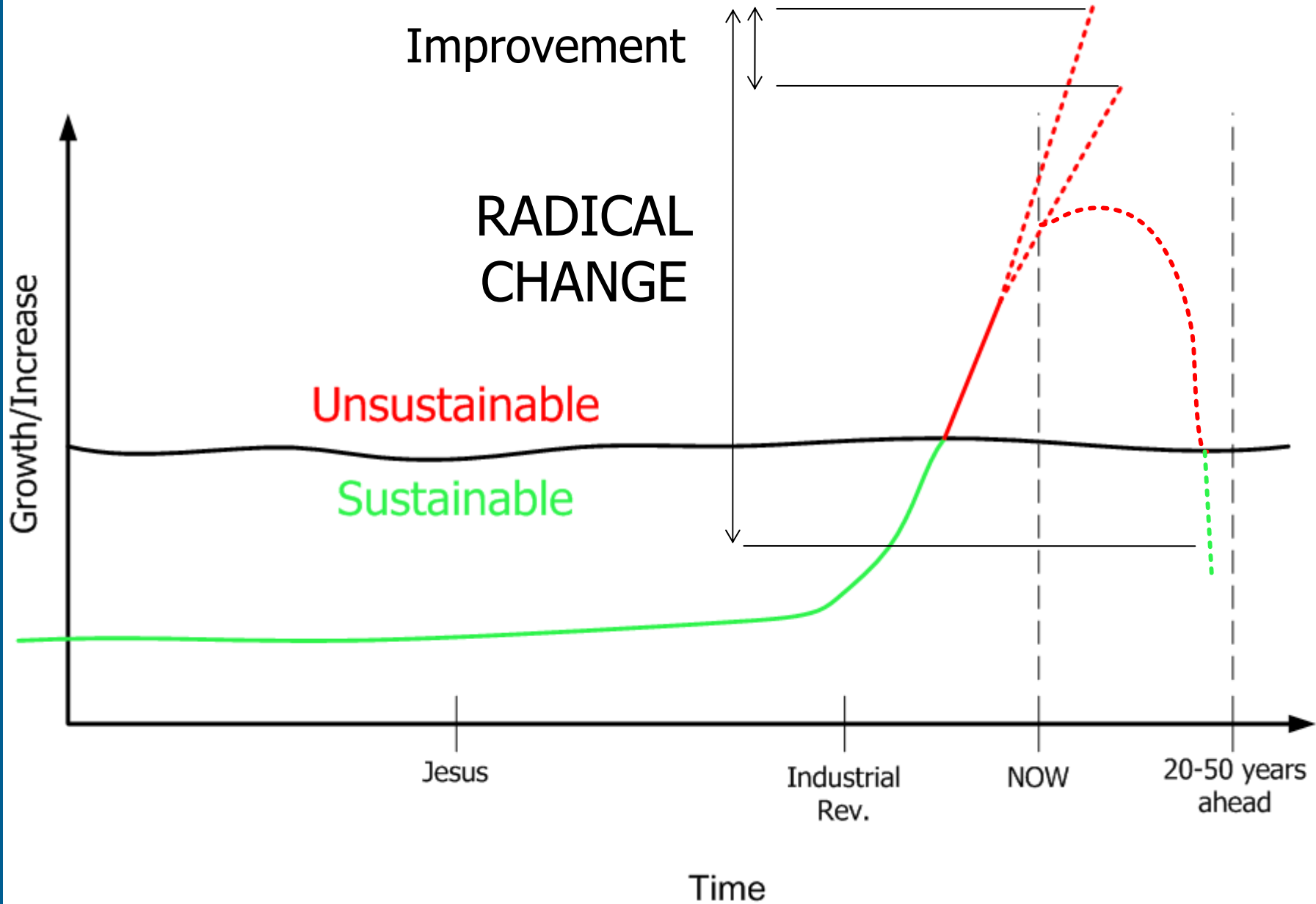
Risk assessment;

Life-cycle assessment;

Technology forecast/watch/assessment;

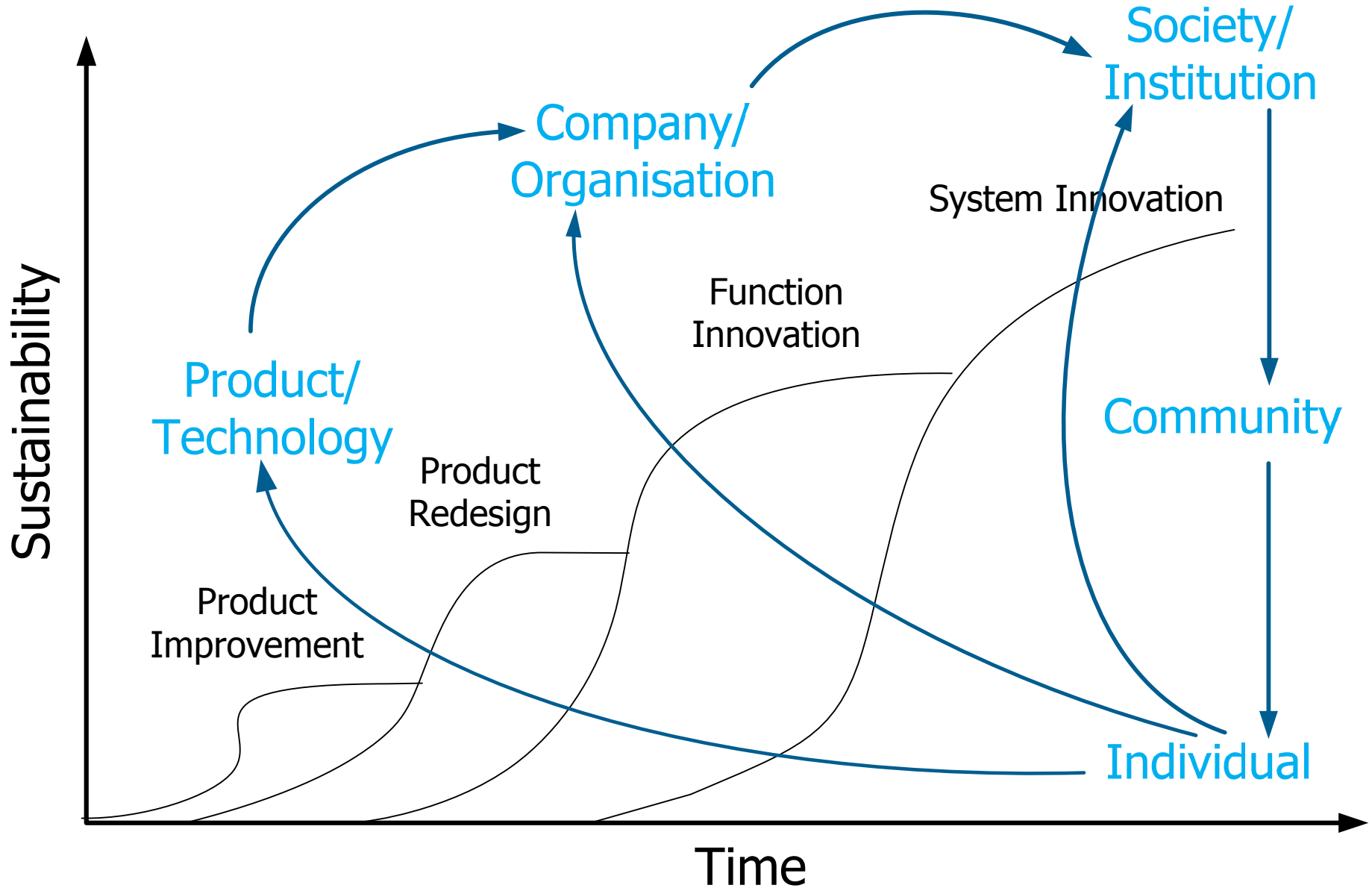
Etc.

# Foundation # 3: Radical Change

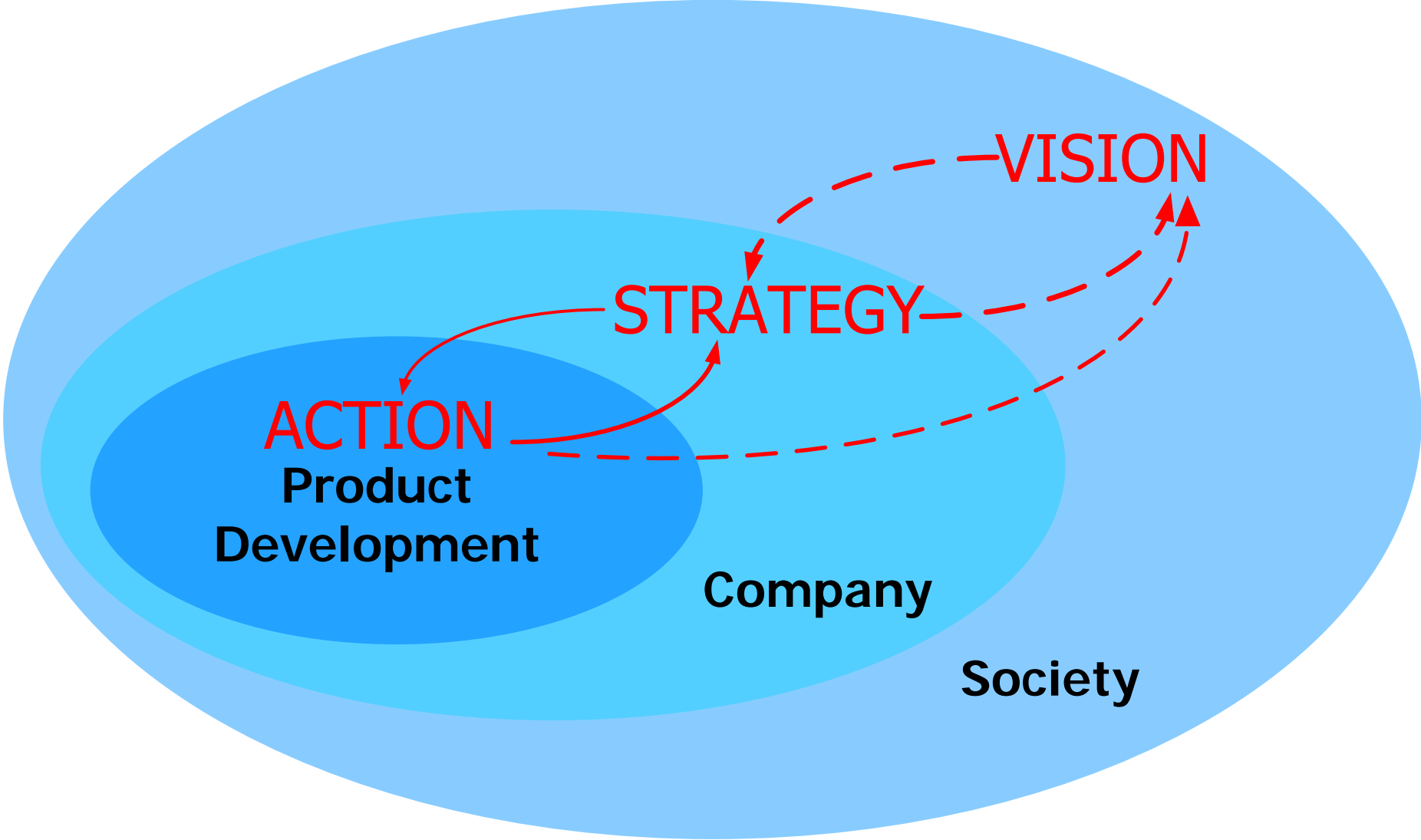




# System Innovation for Sustainability



# The Model



**Operational**                      **Strategic**                      **Visionary** →  
**Short**    **Long**

# Structural Requirements

The scenario method needs to:

```
graph TD; A[The scenario method needs to:] --> B[Be systemic]; A --> C[Be layered]; A --> D[Have double-flow];
```

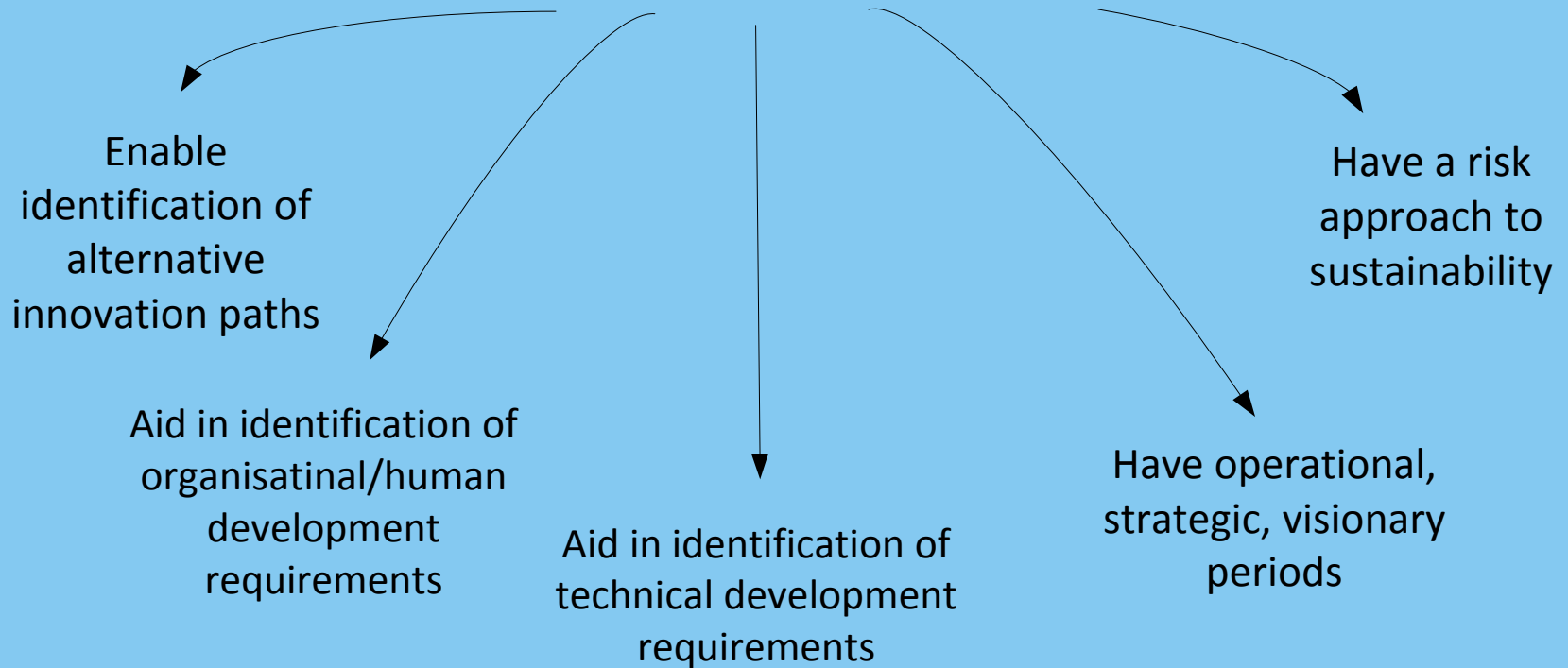
Be  
systemic

Be  
layered

Have  
double-flow

# Content Requirements

The scenario method should:



# Conclusions: Criteria

A scenario to plan for system innovation should:

- **link shorter planning periods** applicable to companies (operational and strategic) **to the long-term planning period** (visionary) in order to enable companies to address long-term societal visions in their strategies and effectively implement these strategies in product development;
- aid companies in identifying not only **technology development requirements** but also **organisational/human development requirements** and should facilitate integration of all business functions in line with the company strategy;

# Conclusions: Criteria

- aid companies in developing an **integrated business strategy** aligned with societal level sustainability visions and day-to-day business activities;
- **have a double-flow** approach in order to **link present and future** in a realistic way and enable identification of **alternative innovation paths** which are **possible** from a technological point of view, **acceptable** from a social/cultural point of view and **desirable** from a sustainability point of view;
- should have a **layered risk approach** to sustainability in order to incorporate societal-level sustainability vision into companies' organisational and product development strategy.

Thank You!