Core-Edge Thinking: Background & Methodology

Core-Edge Working Group Semi-Annual Workshop
May 13, 2005

Core-Edge Working Group
MIT Communications Futures Program

History & Future of Core-Edge

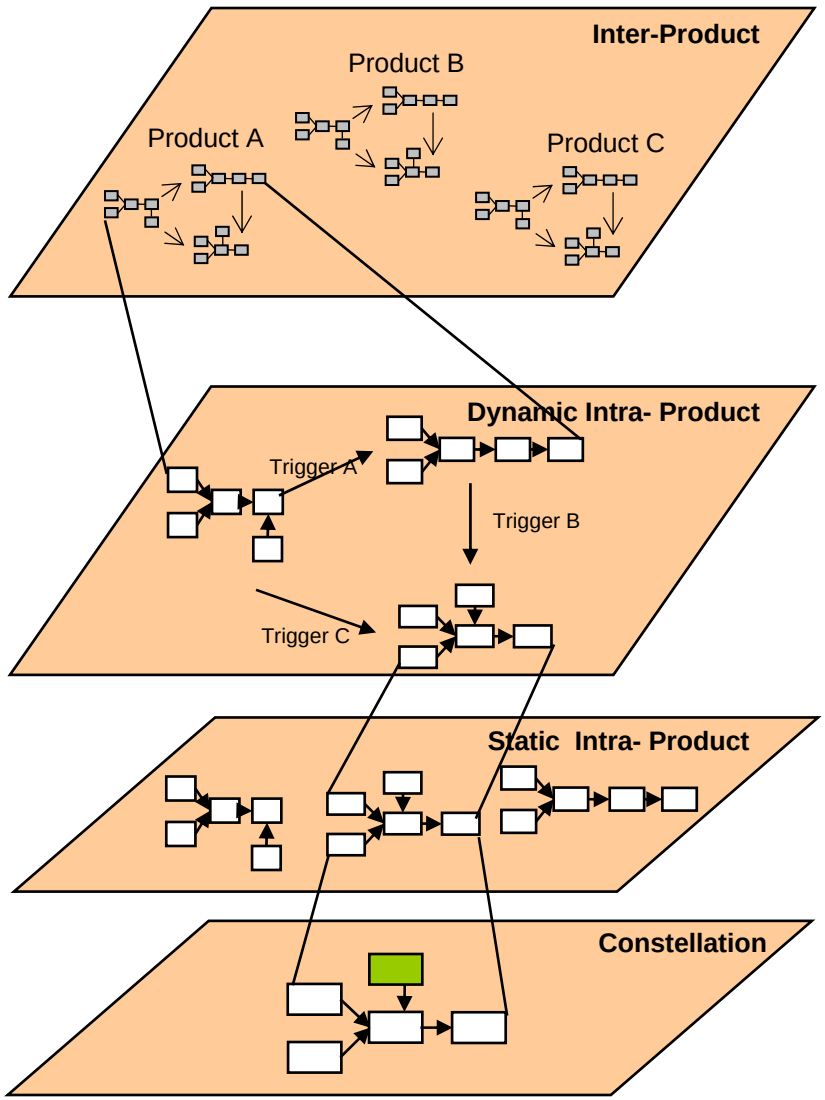
The Core-Edge Charter

1. Create a useful taxonomy for the core-edge spectrum of the communications network (broadly construed)
2. Understand more deeply the business models and economics of playing in different places along the core-edge
3. Develop models of the dynamics (technology, business, policy) of how network functions and applications move along the core-edge spectrum
4. Integrate models of core-edge dynamics onto a broader thrust for road mapping the communications value chain

BUT:

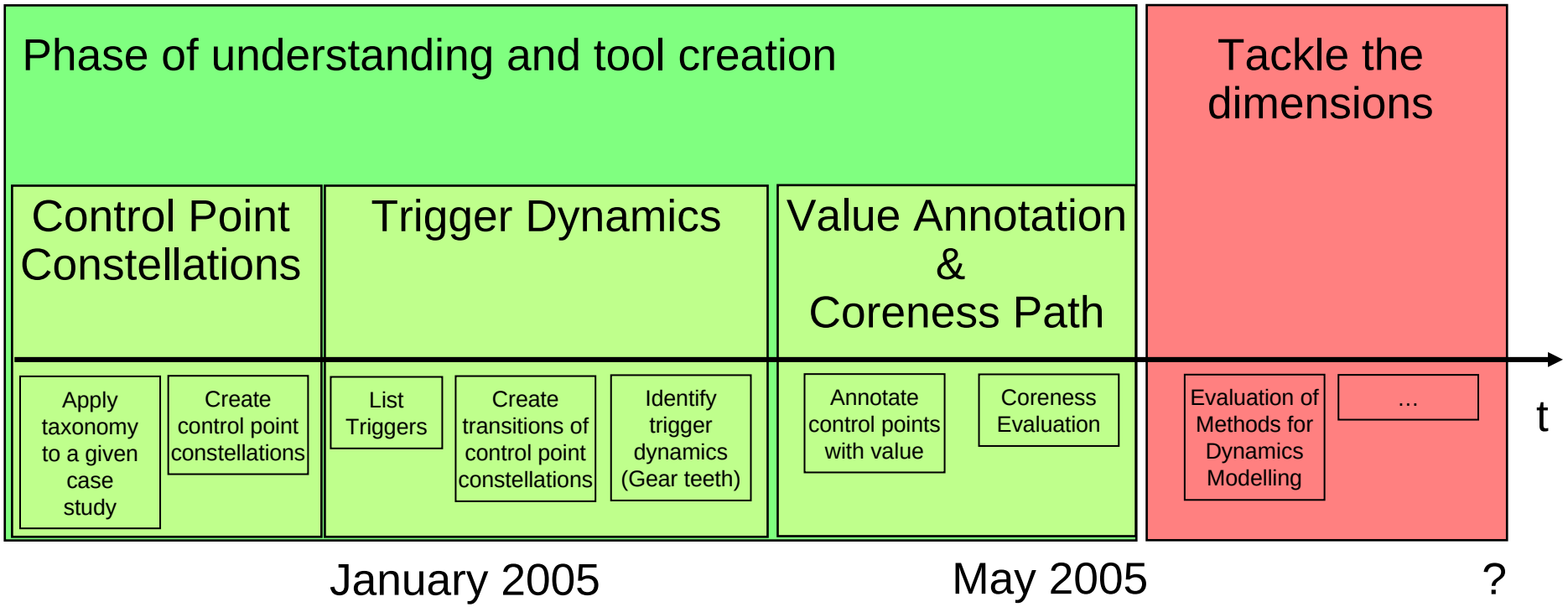
- What is the scope of questions we're asking?
- What have we done so far?
- Where are we going?

The Tiered Scope of CEWG



	Value Dimension:	**Strategy Dimension:**	**CFP Dimension:**
	Related to inter-product value chain	Devise strategies that cross products, e.g., VOIP subsidizing to capture value in SIP services	
	e.g., would the particular business model be sustainable over time?	Devise strategies for particular products, e.g., how to position in presence of particular trigger(s)	Feed core-edge dynamics into Internet Architecture, Viral Communication, PrivSec & Broadband across all these tiers but also vice versa Use CE methodology within other working groups
	e.g., would the particular business model be competitive against existing ones?	Devise strategies for certain control points	
	e.g., what value can be captured with a particular control point?		
Charter items:	**1&2**	**3&4**	**3&4**

Past, Present and Future of Our Methodology



- We will explain the green phase in the following!

*: naming of the concept done in later slide

Methodology

Goal of the Methodology

Create a framework (or a toolkit) that

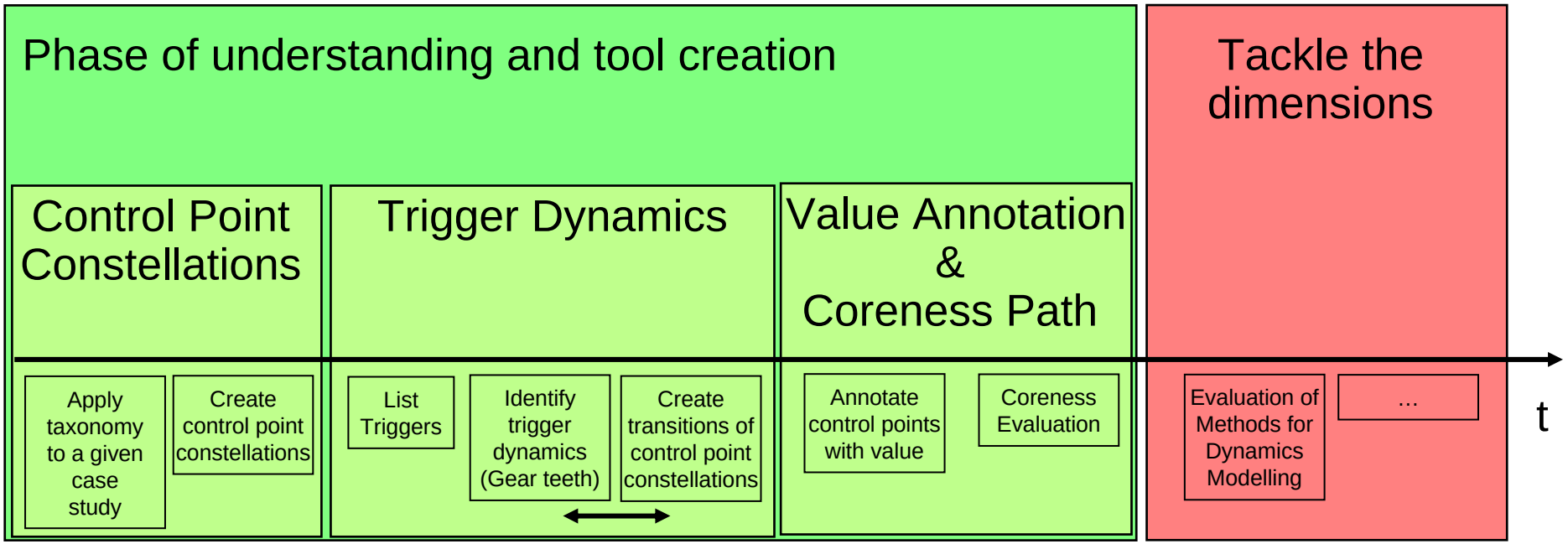
- identifies players in the value chain
- identifies value creation within the value chain
- illustrates transitions from one business model to another (change in value chain)

Ultimately: predict tomorrow's value chains

Note:

- Methodology constitutes a framework, the case studies implement the actual tools
- Differences in representation may exist among the case studies
- Different narratives might be chosen within each case study

Steps in Our Methodology



*: naming of the concept done in later slide

Taxonomy & Control Point Constellations

OBJECTIVE

1. Enumerate possible control points for a given service

2. Enumerate varying business models

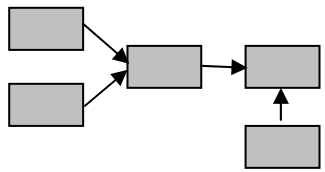
METHOD

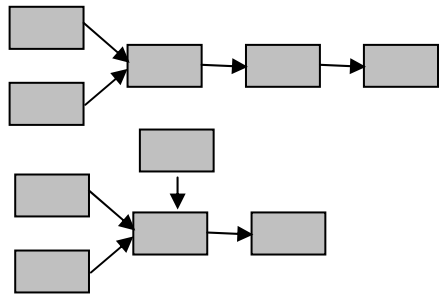
Apply taxonomy to a given case study

Create control point constellations

OUTCOME

	Offering A	Offering B	Offering C
Service transactions	…	…	…
Control points	…	…	…
Delivery infrastructure	…	…	…
Service infrastructure	…	…	…
Management infrastructure	…	…	…
…	…	…	…





Step 1: Enumerate Control Points

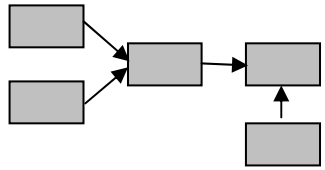
Use taxonomy as a tool

	Offering A	Offering B	Offering C
Service transactions	…	…	…
Control points	…	…	…
Delivery infrastructure	…	…	…
Service infrastructure	…	…	…
Management infrastructure	…	…	…
…	…	…	…

- Decompose different service offerings based on elements in taxonomy
  - Functionality dimension is important
- Identify control points in delivery, service, and management infrastructure
  - A point at which management can be applied by the various players in a value chain
- Consider aspects of centralized vs. distributed

Step 2: Enumerate Varying Business Models

Create constellations of control points within each product offering



Rationale:

- Control points influence business model design, i.e.,
  - Business models are built around control point constellations
  - Control point ownership equals access to profit streams
- Control points can be rooted in
  - Regulation
  - Technology
  - Business
- Control point constellations reflect value networks when annotating control points with value (step 6)

NOTE: constellations are not always sequential like in typical value “chains” → value networks

Trigger Dynamics

OBJECTIVE | **METHOD** | **OUTCOME**

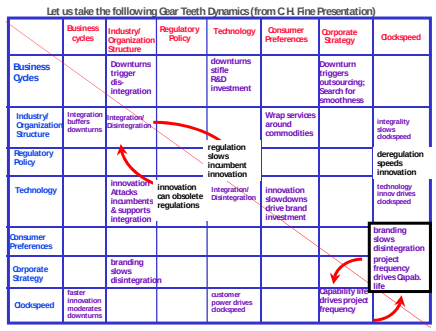
3. Identify triggers causing change of business

List triggers

Technological	Regulatory	Social	Business
…	…	…	…
…	…	…	…

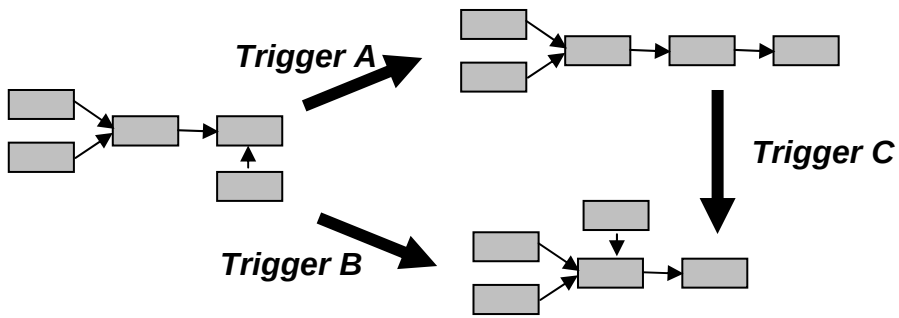
4. Identify Trigger Dynamics

Apply gear teeth model



5. Capture cause-and-effect of triggers

Create transitions of control point constellations

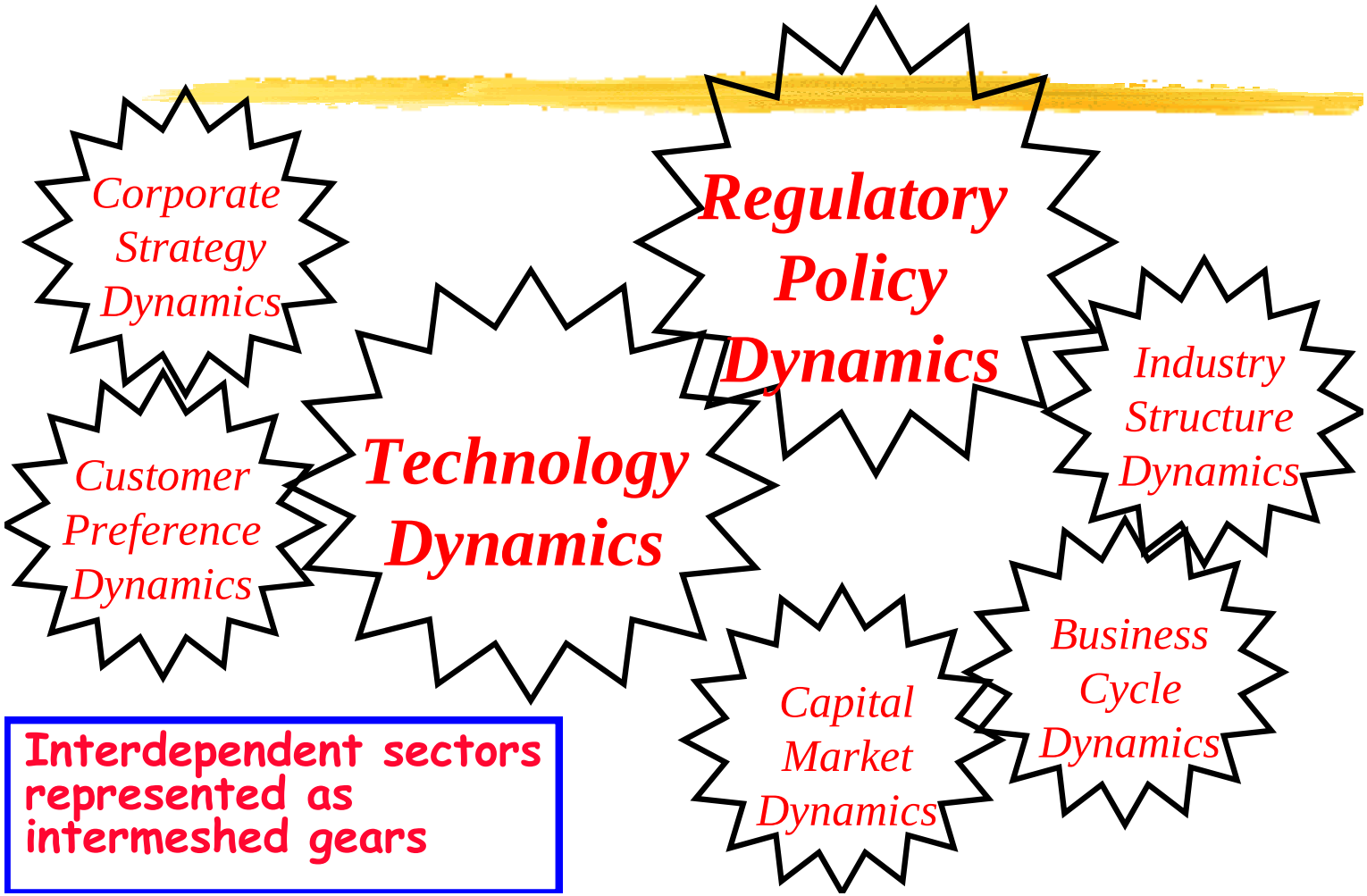


Step 3: Identify Triggers Causing Change

- **Triggers** are defined as anything that causes a transition from one constellation to another
  → effectively, it changes the business model
- Triggers can be created through
  - **Regulation**: A certain constellation become “legit” or “illegit”
  - **Technology**
    - **Availability**: Constellations become technically possible
    - **Maturity**: A certain technology is not only available but also mature beyond a certain critical mass
  - **Social Acceptance**: Constellations becomes socially (non-) acceptable
  - **Business***:* Business aspects make constellations viable or obsolete, such as price of offering or industry restructuring
- Innovation enables constellation to overcome market barriers
  - Might require complementary infrastructures to be developed

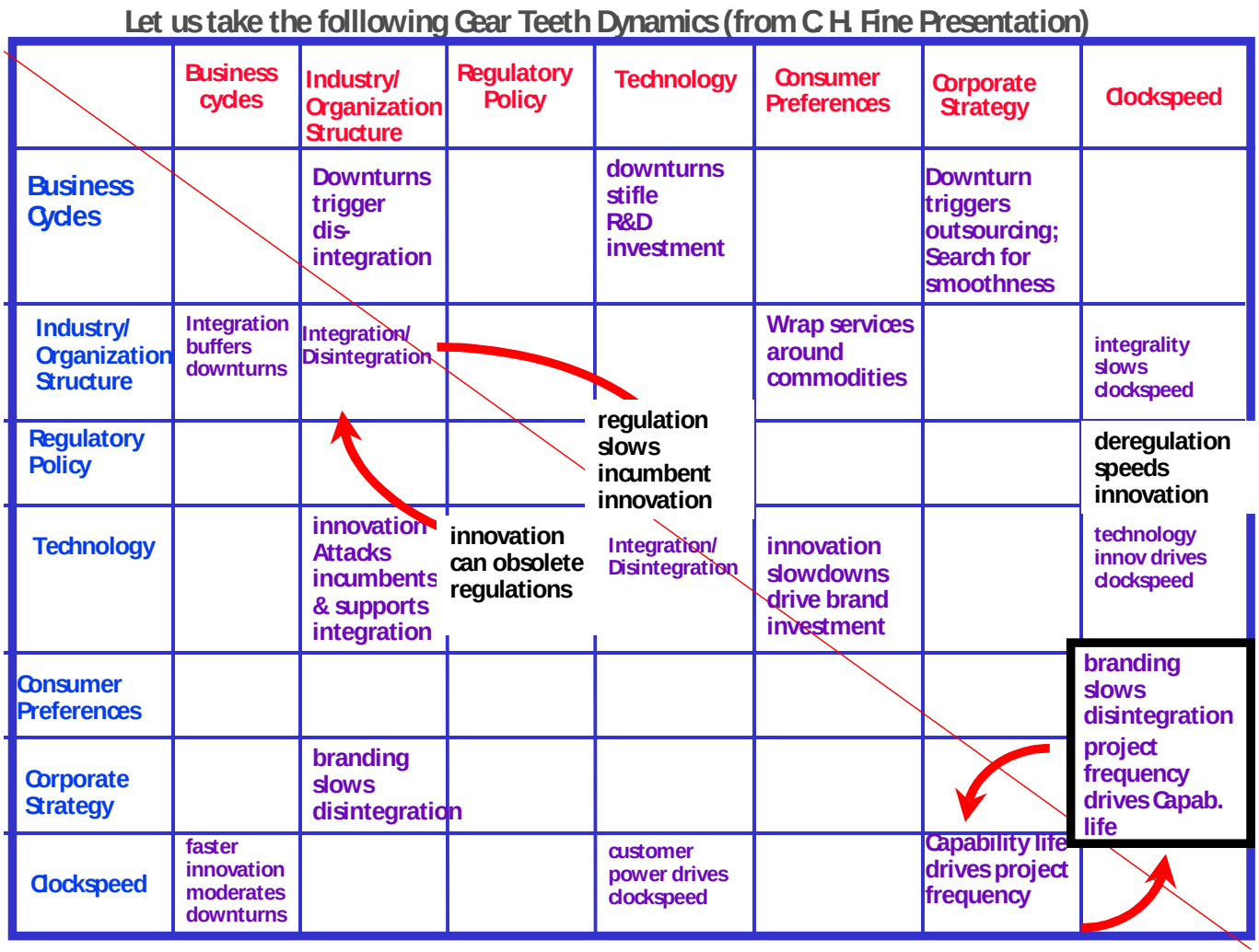
Step 4: Identify Trigger Dynamics

Triggers cause dynamics in different dimensions
→ inter-locking gear teeth



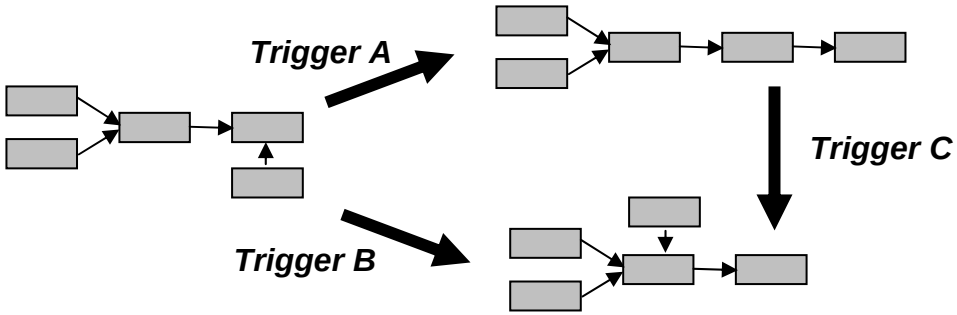
Step 4: Identify Trigger Dynamics (con't)

Systematically list dynamics caused by applying certain triggers



Step 5: Capture Cause and Effect of Trigger

Create transitions of control point constellations caused by triggers



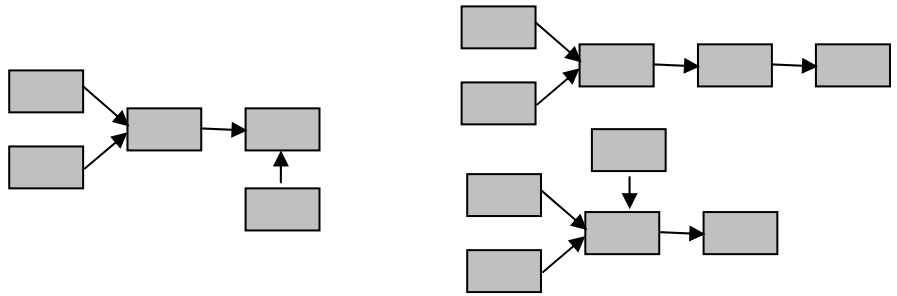
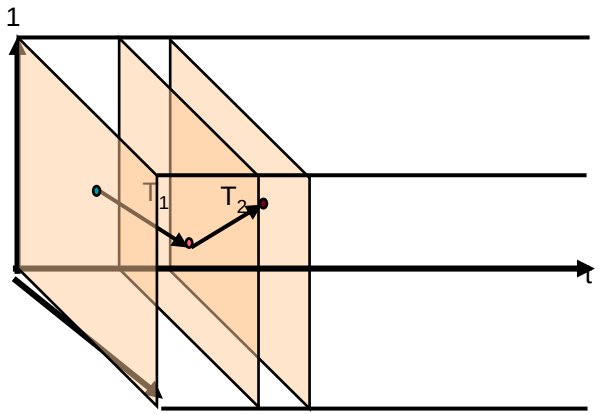
Rationale:

- Initially targets the dynamic intra-product scope, i.e., how one trigger transforms one business model into another
- **BUT**: triggers can also cause transitions of control point constellations in other products → inter-product scope!

Still to be done:

- The quest for the right visualization of such transitions
  - Case studies will help
- Prediction of possible business models rather than existing ones

Value Annotation & Coreness Path

OBJECTIVE	METHOD	OUTCOME
6. Annotate Control Points with Value	Create value networks	
7. Coreness Evaluation	Create Coreness Path	

Step 6: Annotate Control Points with Value

Intra-Product Value Annotation:

Value of a control point *i* within a certain control point constellation

v_i = *(margin per transaction* s_i * *share of the demand* d_i*)*

Margin:

The margin (i.e., revenue minus costs) captured by the transaction implemented through this control point

Share of the demand:

Share of the overall demand that this particular control point captures, this share depending on the interchangeability of the control point

NOTE: Value as defined above depends on interchangeability (margin) and demand!

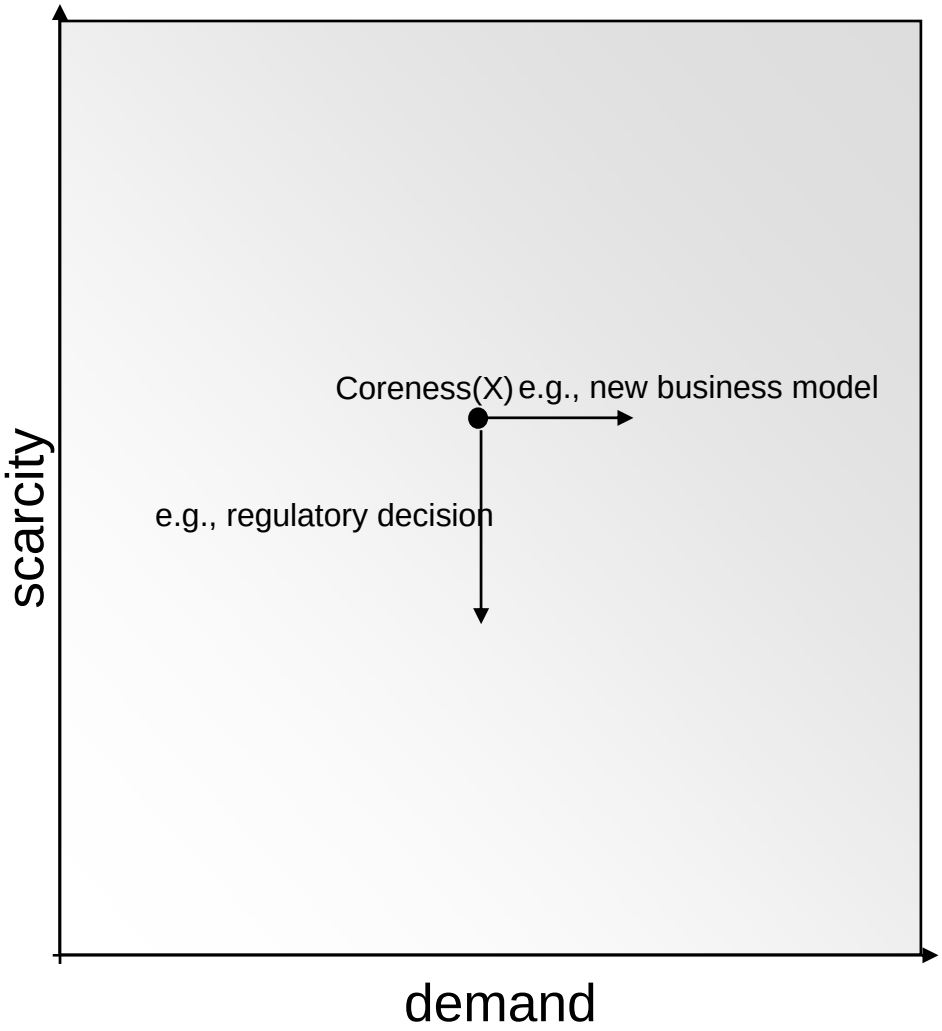
Inter-Product Value Annotation:

In order to address questions in the inter-product tier of the CEWG, v_i is extended by $\mathbf{v_{ii}}$, defined as the value of the control point for the owner of the control point outside the particular product. This extension captures cases, e.g., where the value of the control point serves the increase of the share of demand in other services, e.g., when subsidizing services, giving free phones etc.

Step 7: Coreness Evaluation: How *Coreness* Came About

- Discussion sparked from the observation that *scarcity & demand* characterized traditional core services
- Core services (as we used to know them) create scarcity (in offering) and generate demand (from user's side) to control value creation
  - But today, scarcity is not necessarily imposed by core functions only → core is not appropriate term → coreness
- Having the choice to replace a particular service transaction within a value chain with an alternative offering was deemed critical
- Scarcity implied ownership of critical control points
- Demand related to value creation

Step 7: Coreness Evaluation: Our First Try



- *Coreness* of a service is defined as a function of *scarcity* and *demand*
- Scarcity is related to the degree of interchangeability of service transactions within the sequence of transactions necessary to fulfill a given service
- Demand is related to the relevance of the service within the communication value chain, i.e., its value
- Scarcity and demand can be created through
  - Underlying technology
  - Business models
  - Regulatory constraints
- Dynamics in the scarcity-demand plane seem to fit value chain dynamic

Step 7: Coreness Evaluation: Idea for Extending this Concept

Four parameters are important when looking at control points

- *Interchangeability*: how easily can other players provide this control point? Measure: (potential) other players?
- *Demand*: what is the demand that can potentially be captured by owning a particular control point or by the entire constellation? Measure: sales, subscribers,…
- *Value*: what is the value that this control point or entire constellation can capture? As noted, it depends somehow on interchangeability and demand!
- *Time*: three parameters above change over time, caused by applying triggers

- Current coreness plane only captures interchangeability and demand

  → Does not reflect the value of a control point or a potential entire constellation
- Current coreness moves within plane when applying triggers

  → Does not properly reflect time

Hence: We need more than that → Coreness Path

Note:

- The lack of interchangeability equals the scarcity dimension of old coreness model
- Will replace (lack of) *interchangeability* parameter with *scarcity* when used with business audience

Step 7: Coreness Evaluation: Interchangeability & Demand on Constellation Level

- Interchangeability of a single control point seems measurable through (potential or projected) players owning this control point
- However, some control points are less important than others but could still be highly interchangeable

Questions:

- How to measure interchangeability at the constellation level?
- What is the demand?

Proposal:

- Determine interchangeability I of the control point constellation through

  $I = \sum (\text{margin per transaction } s_k * I_k)$ *or*

  $I = \max(\text{margin per transaction } s_k * I_k)$ *or*

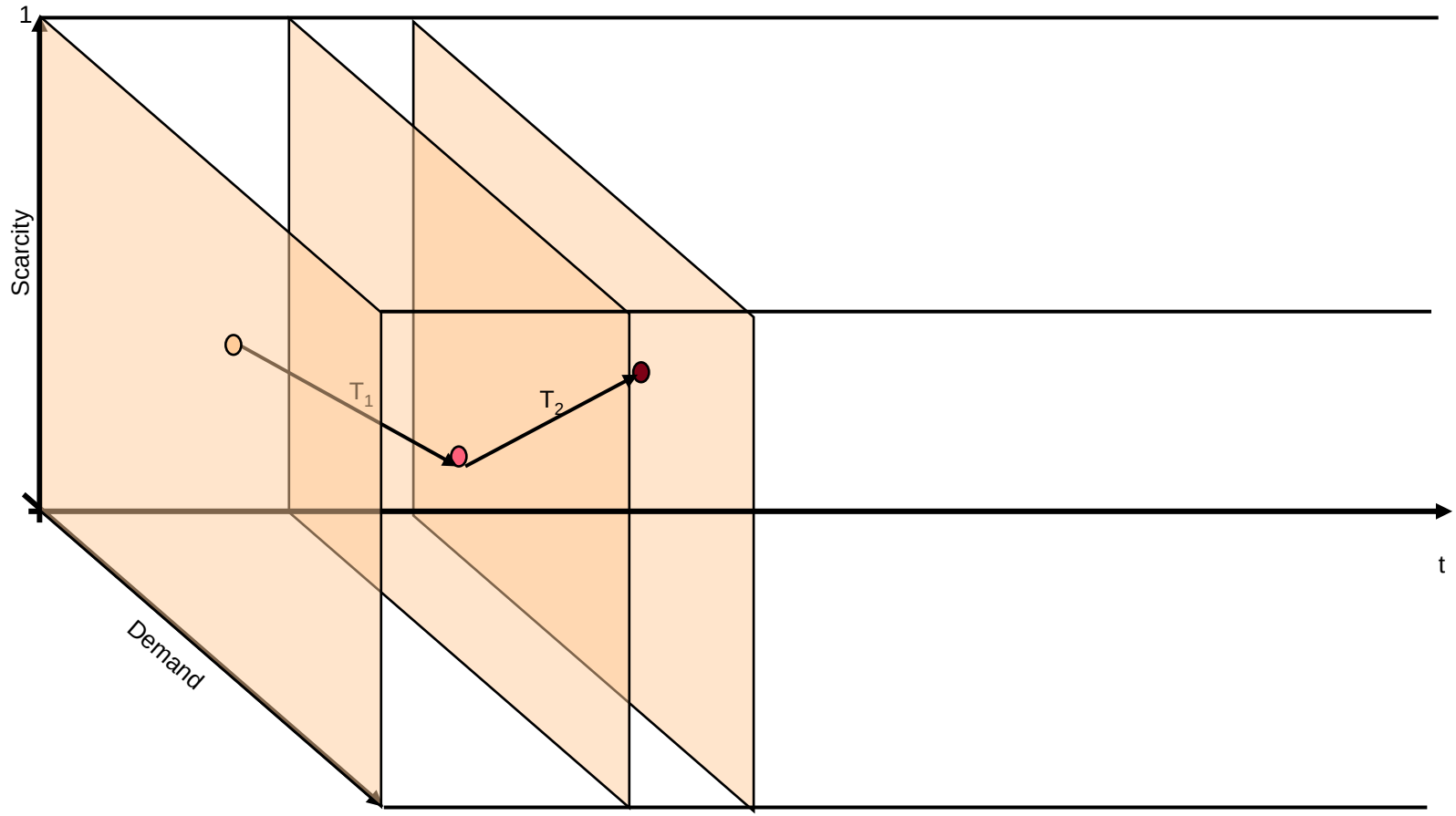
  $I = \max(I_k)$

  with k over all control points and I_k interchangeability of control point k

  Note: proper measure needs to be investigated in the case studies

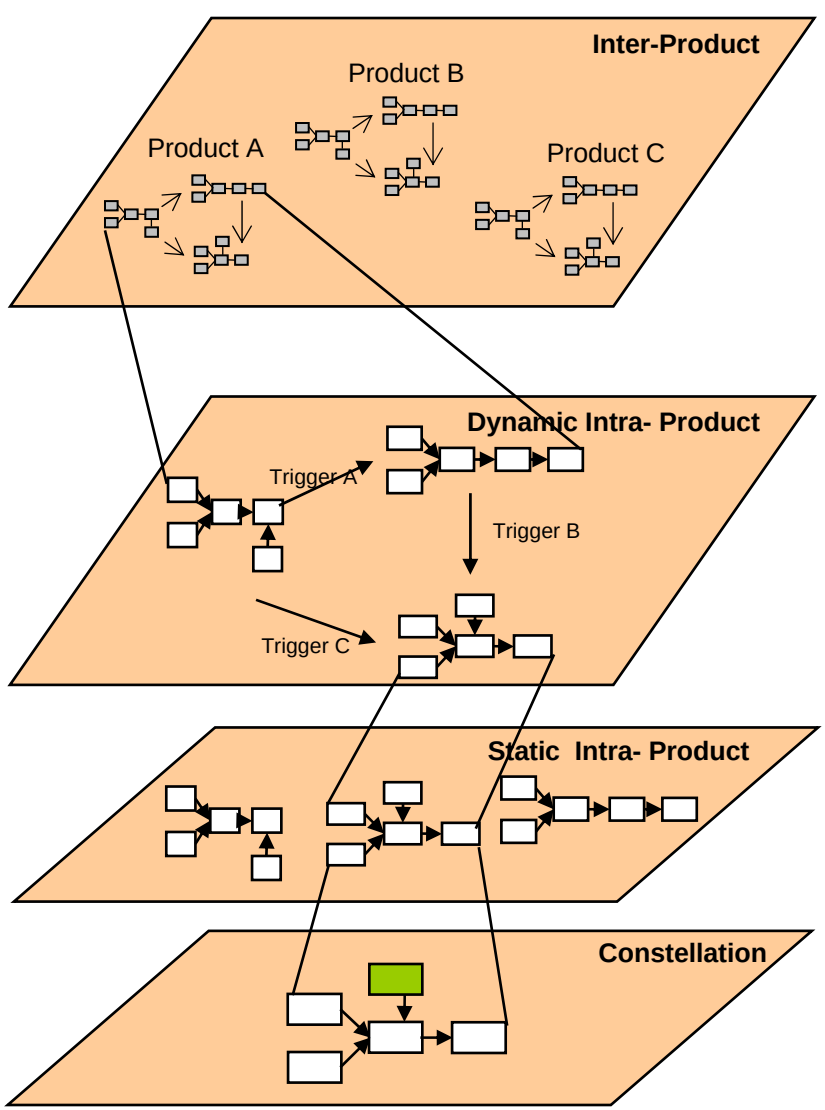
- Use share of demand captured by the control point constellation as value for demand

Step 7: Coreness Evaluation: Create Coreness Path



- Encompasses all four parameters of importance
- Allows for defining *regions*, i.e., places where one would like to steer towards
  - Used later in the strategy part
- Concept independent from the particular method used for simulating the four parameters (could be SD or other techniques)

Relation of the Steps to the Tier Model



Step 1

Step 2

Step 3

Step 4

Step 5

Step 6

Step 7

Next Steps

Next Steps

Evolve the case studies & refine methodology

- Apply methodology and refine findings
- Close-out case studies
  - Candidates?
- New case studies
  - Candidates
- Refine methodology
  - Study methods such as system dynamics

Proposal for next all-day workshop: **Hands-on workshop**

- Shorter presentation of methodology findings
- Apply methodology toolkit on example case studies
  - Help evaluating and refining methodology
  - Candidates for case studies?
- Interest?