



Are Foresight and Mathematics Ready for Each Other?

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Outline



- Describing Foresight
- Enhanced Scenarios Method (ESM)
- Quest for improvement
- High level tools for ESM
- Detailed ESM tools
- Wall template for backcasting
- Sample Graph of Event Space for one Scenario
- Motivating Question
- Sample Graph of Event Space for N Scenarios
- Normative Scenario Objectives
- Further Questions

Describing Foresight



- Methods to study Far Futures
 - Complement other methods in **future studies**
 - Improvement over SII or committee decisions
 - No single prevalent method
 - Many "foresight tools"
- Increasing interest since 1970s
 - National foresight programs
 - Particularly for S&T
 - Some **corporate** examples
 - Mainly sociology, govt. policy and business administration **schools**
- Circumstantial evidence of major benefits



Enhanced Scenarios Method (ESM)

Topic Selection
and Assessment

Exploratory
Foresight

Normative
Foresight

Organizational
Planning

- Far-future Scenarios
- Backcast pathways to alternate futures
- Exec. "flight simulation"
- Reports



Quest for improvement

- Foresight Methods are: -
 - subjective **and**
 - qualitative
- HR consumptive (~1000 pd for national foresight study)
- Some resistance now encountered
- What to do?



High Level ESM Tools

- Technical expert panels
- Scenario planning
- Web conferencing
- Convergence literature review
- Topic scoping
- R&D thematic identification



Detailed ESM Tools

- Study Management Team
 - Expert/participant identification checklist
 - Topic identification, refinement & scope constraint grids
- Workshops (~100 participants each) x 5
 - Stimulus Scenarios (~10)
 - Change-driver, assumption & "wildcard" template (STEEPV)
 - Global impact template (standards, access, technological capability, economic wellbeing)
 - Response & initiative template (effects Vs govt. policy levers, private sector activity, individual initiatives)
 - Backcasting template
 - Long-term action plan template (Law, R&D support, access, industrial support, social support, other)



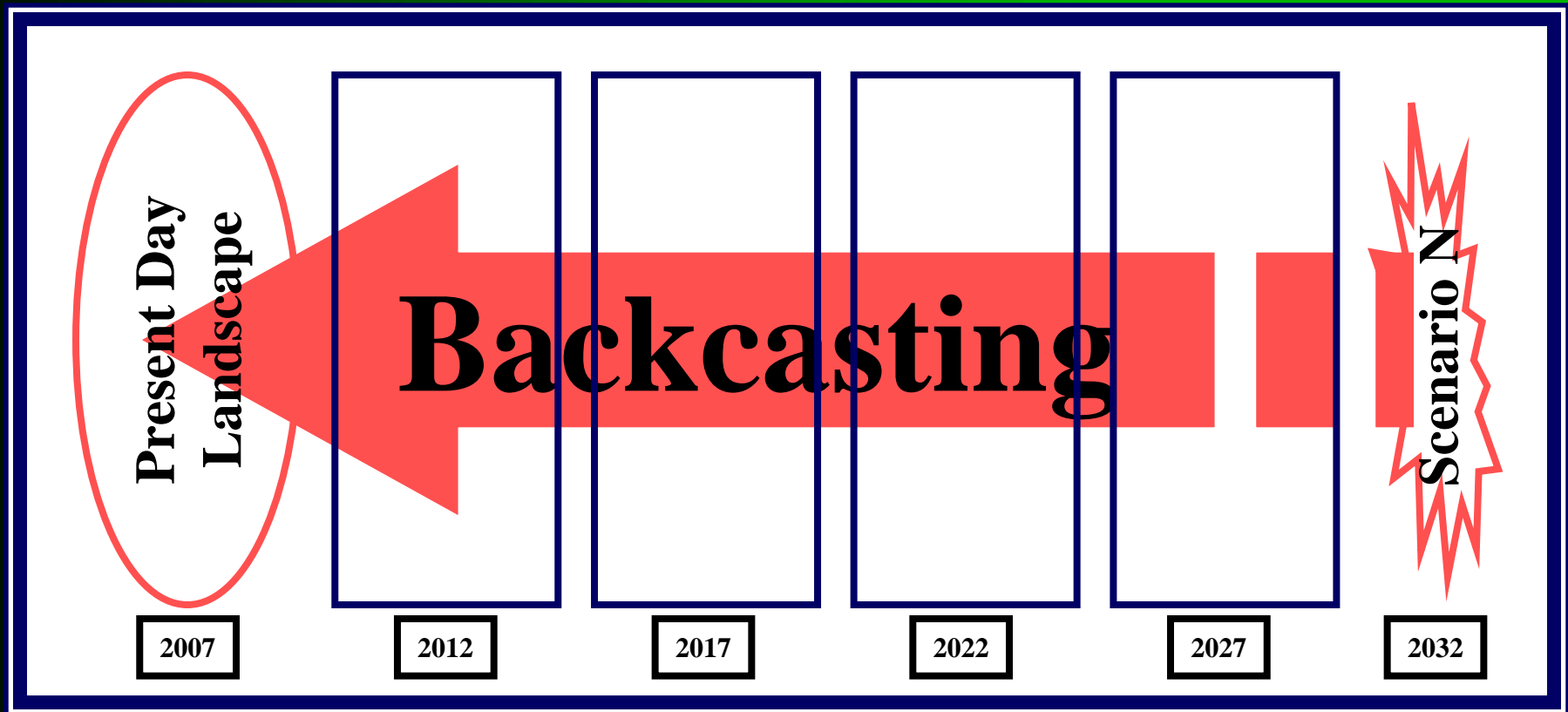
Backcasting



- Paul Raskin Circa 1995
- Ray Bouchard – studies, 2003, 2004 (Canada)
- Appeal
 - Complements other methods in Futures Studies
 - Alternatives less rigorous? (SII, committees)
- Objections
 - Qualitative
 - Subjective
- Can Mathematics introduce an effective degree of rigor?



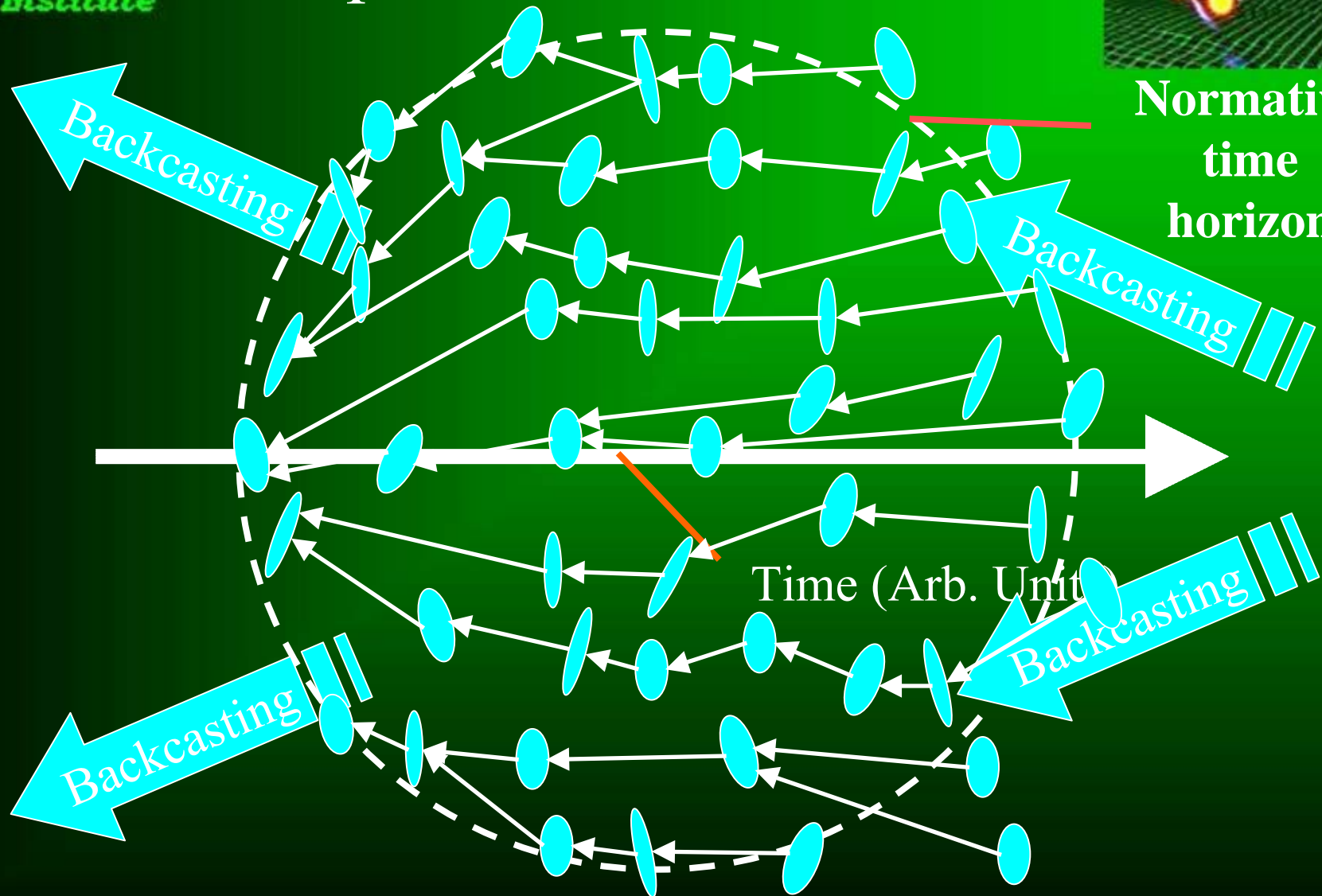
Wall Template for Backcasting



Sample Graph of Event Space for one Scenario



Normative
time
horizon



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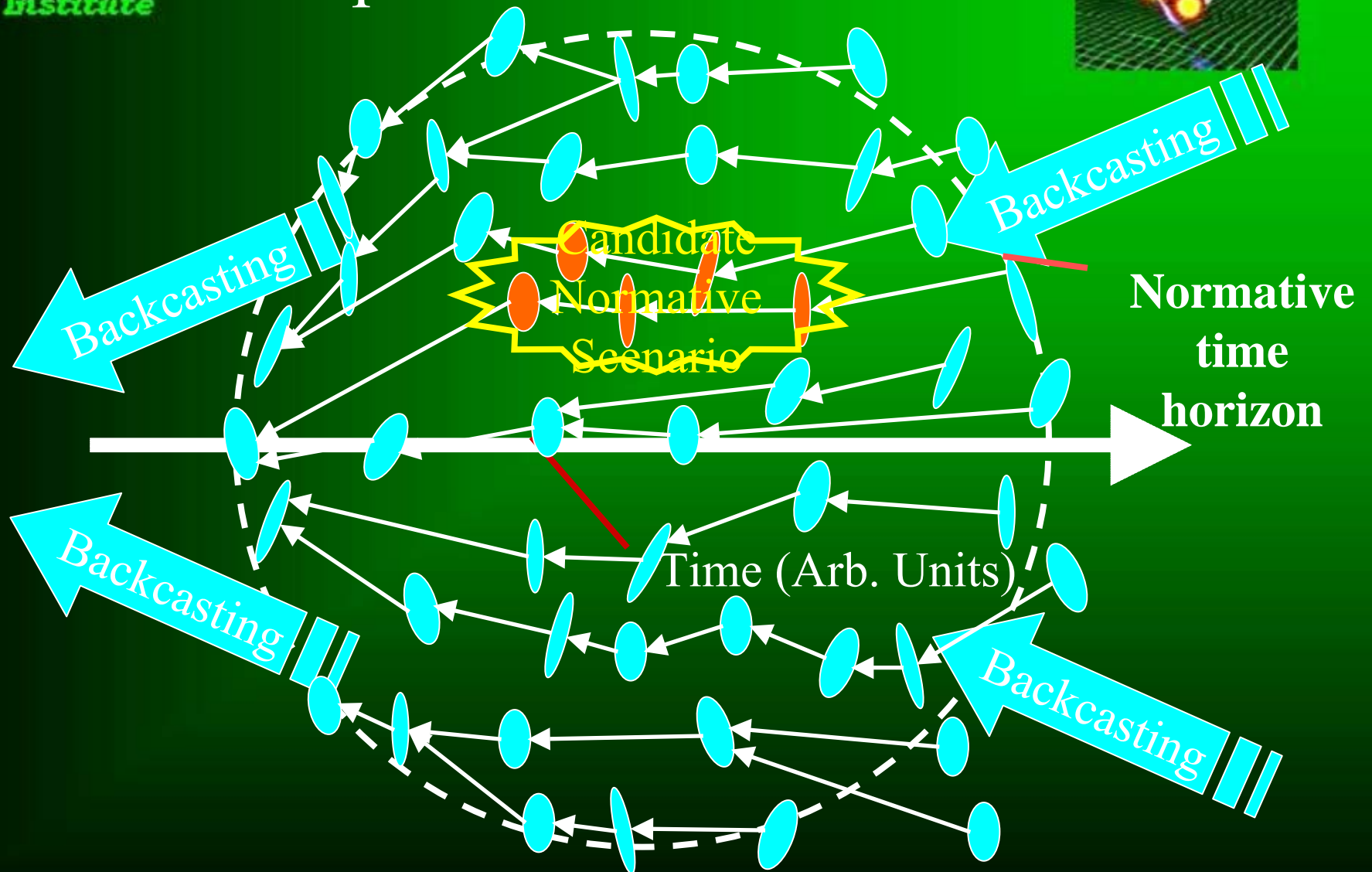
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Motivating Question

- Can this method be used to revise an organization's **strategic investment plan**?
 - Satisfy stakeholders, especially the client
 - Robust out to strategic planning horizon

Sample Graph of Event Space for N Scenarios





Normative Scenario Objectives

- Identify a Normative Scenario
 - Keeps client and most stakeholders on-board
 - Budget risk – acceptable
 - Schedule risk – acceptable
 - Quality risk – acceptable



Further Questions

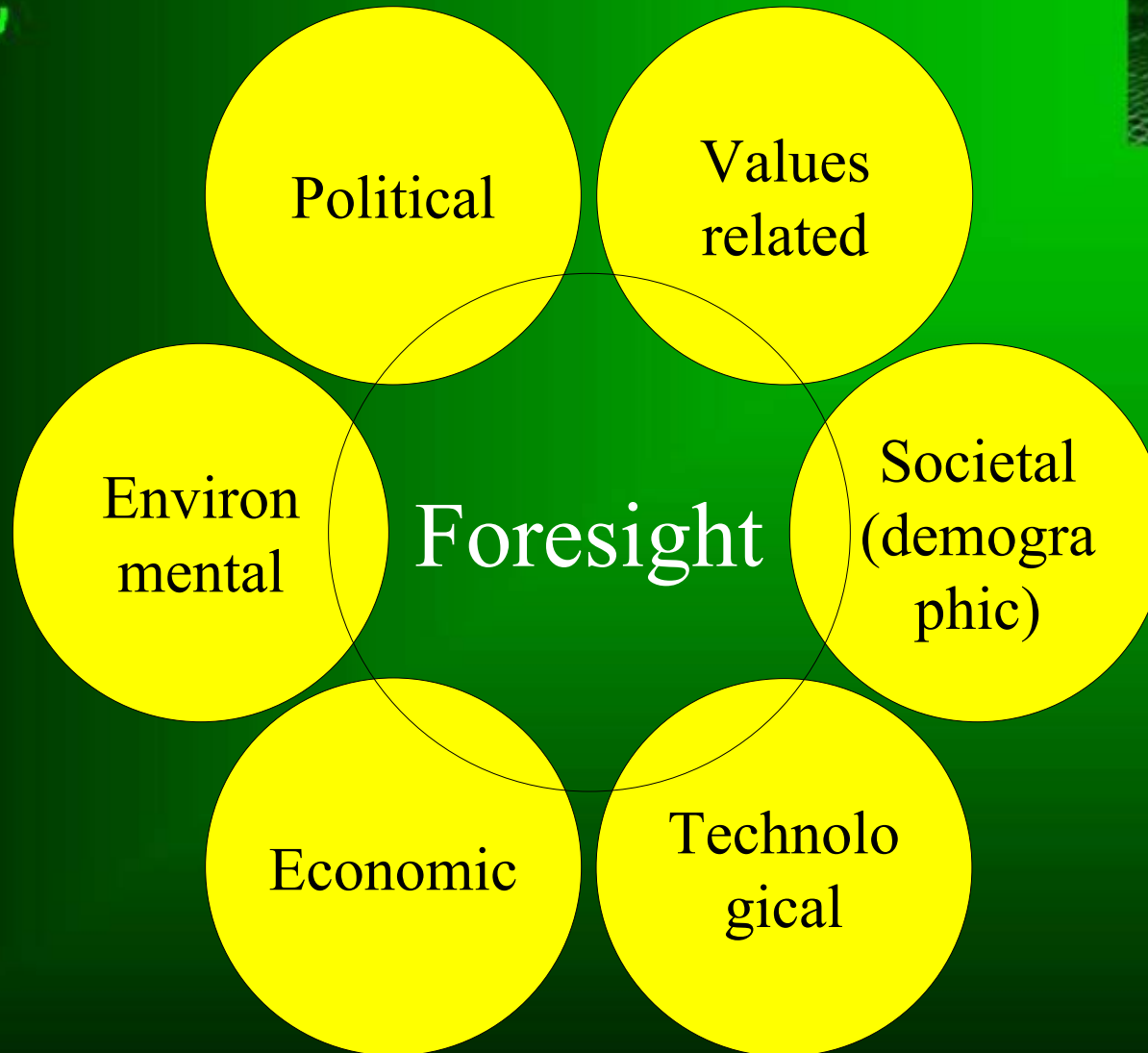
- Augmentation of Method to introduce: -
 - Ranking of event risks – (quantitative, qualitative?)
 - "Normativity Index" (Utopian (1) -> Distopian (-1))
 - Effective validation criteria
 - Other
- Manageability w.i. Context of a scenarios workshops
 - ~100 participants; 2 days (x 5)



Backup Slides

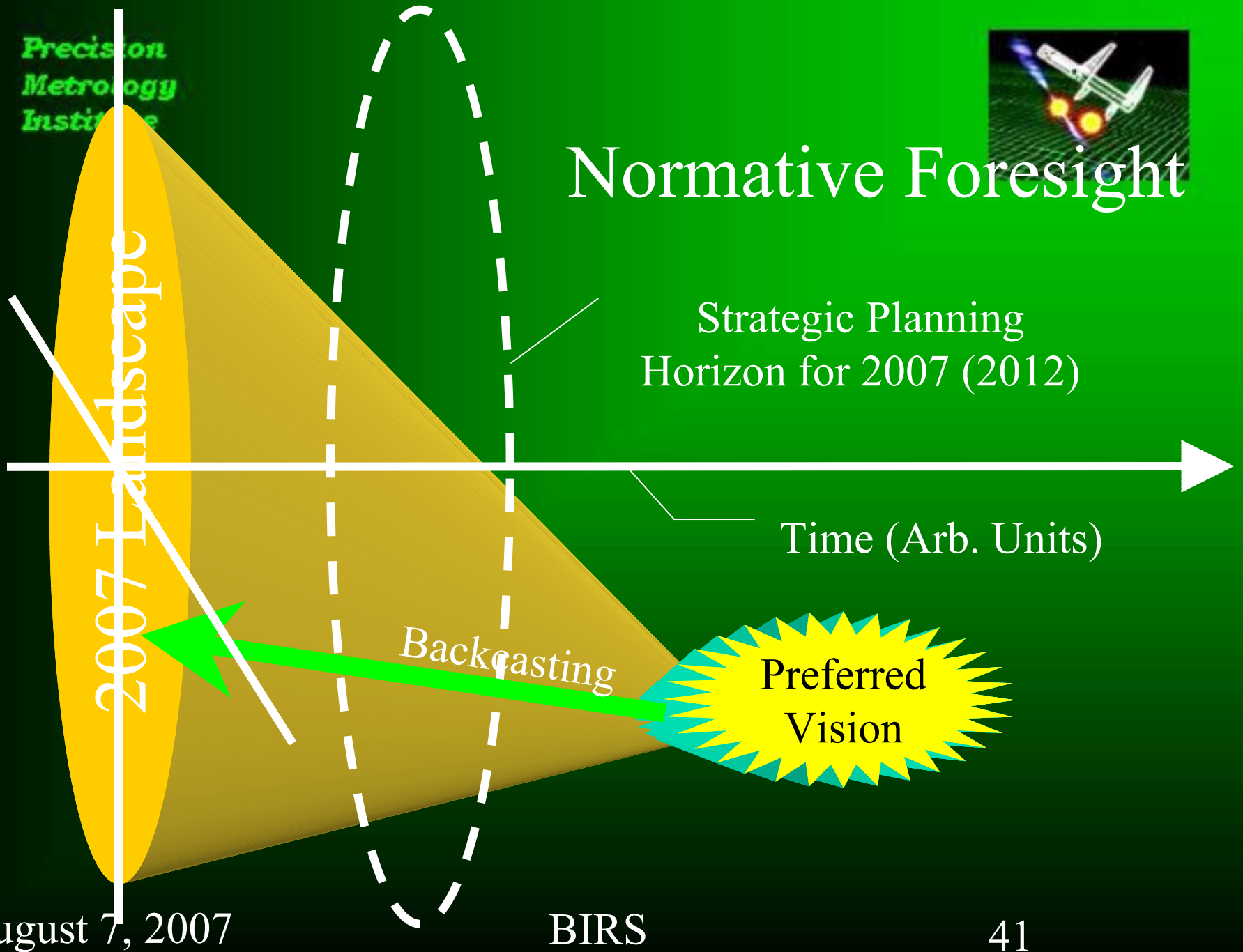
Foresight & STEEPV

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Normative Foresight



Precision
Metric
Inst

Strategic Planning
Horizon for 2007 (20012)



2007 Landscape

X

Backcasting

Initial
Scenario

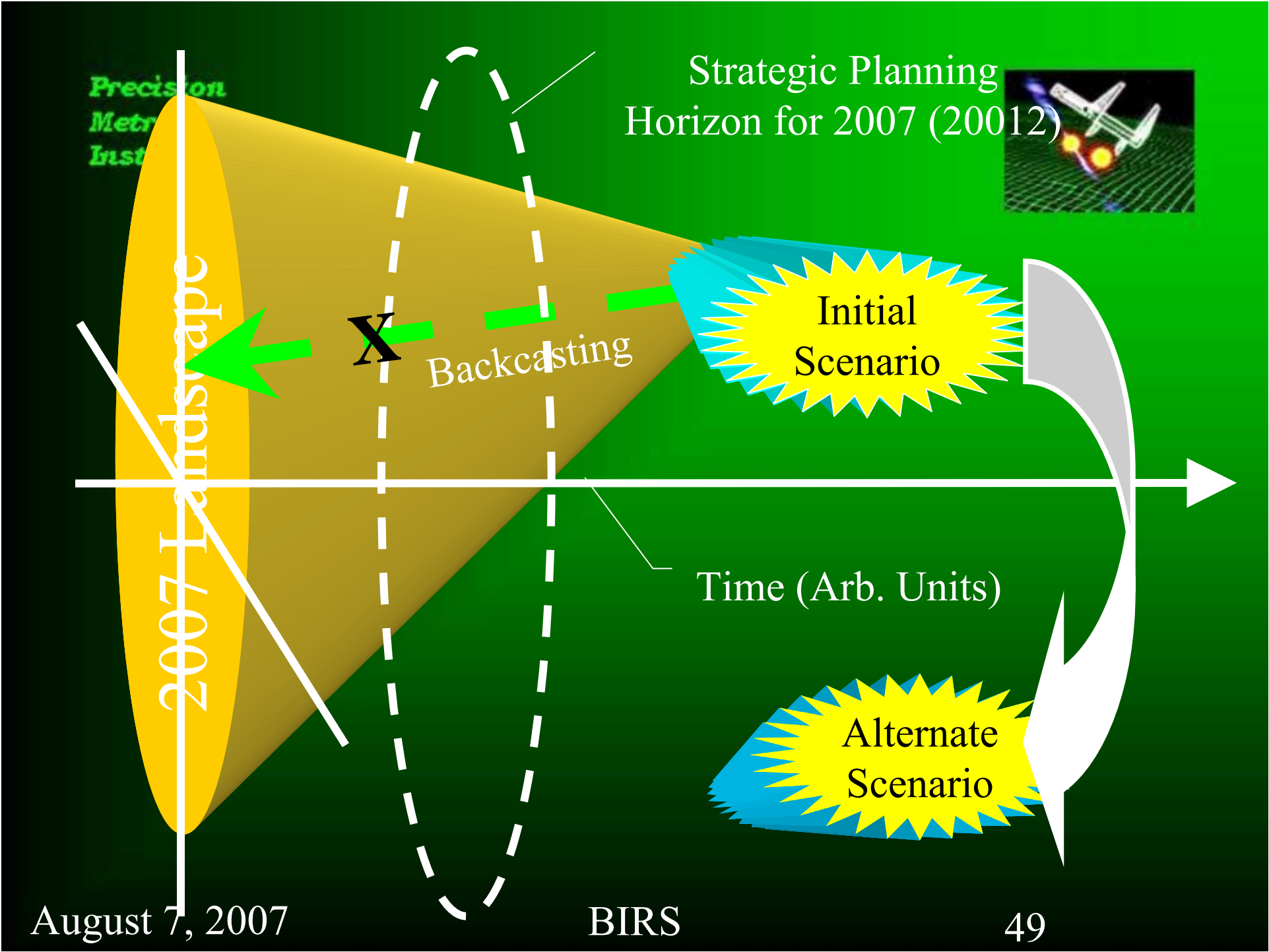
Time (Arb. Units)

Alternate
Scenario

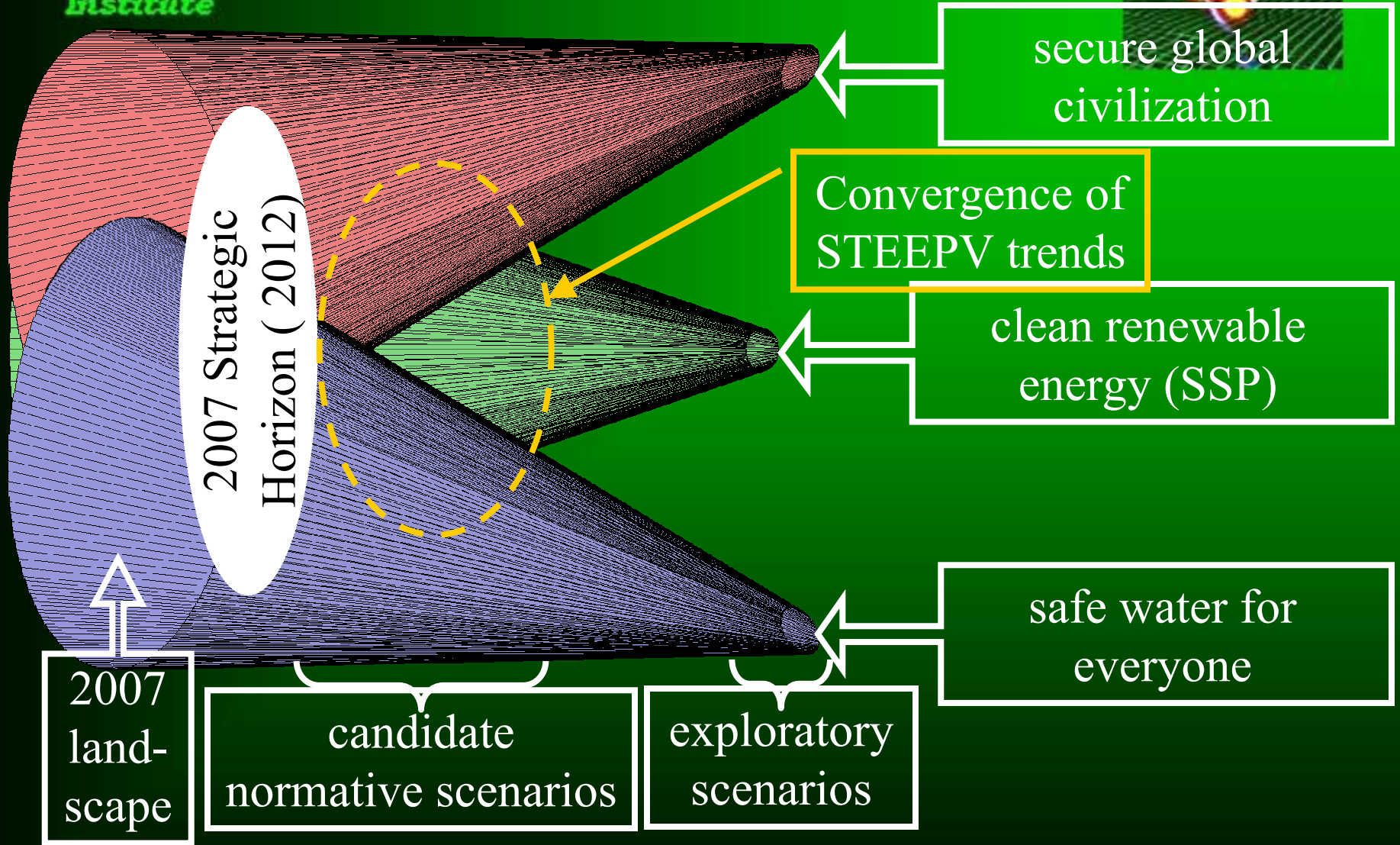
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Consensus Building - Utopian Scenarios



Dystopian Scenarios



divergent society

Convergence of STEEPV trends

insecure regions

decreasing life-span

2007 Strategic Horizon (2012)

Precision
Metallurgy

2007 landscape

candidate normative scenarios

exploratory scenarios

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