

# **Knowledge-Based Strategy Development: An integrated approach**

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# Outline



- Background issues
- Our approach
  - Argumentation Graph
  - Decision making frameworks
  - Scoring mechanisms
  - Knowledge elicitation
  - User modeling
- Summary and Conclusions

# Strategy development



- A **core** organizational process
- A **rational** DECISION MAKING process carried out by a group of managers
- A seek for competitive advantage

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*“The **cognitive** process of shaping a position, opinion or judgment in order to resolve a **problem**, attain a **goal** or seize an **opportunity**”*

# Strategy development support



Applies to:

- The strategy development process
- The people who decide
- The Strategy *per se*

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Is driven by the trends:

- The knowledge era
- Information & Telecommunication Technology

# Strategy development process



- Identification of basic goals. What do we want?
- Consideration of alternative courses of action. What can we do about it?
- Allocation of resources necessary for carrying out these goals. How can we do that?

# Strategists



A group of managers with:

- Common goals
- Diverse disciplines, different domains of expertise
- Different objectives or criteria

During decision making they:

- Propose, argue, support, defeat, claim, agree...

They need:

- Communication & coordination
- Common terms of reference

# Strategic plans



## They should have:

- Clarity
- Consistency
- Flexibility
- Applicability
- ....
- Success

## What helps:

- Existing knowledge exploitation
- New knowledge acquisition/ Innovation

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## What's missing:

- Knowledge sharing

# Rule A-Ω



*“The quality of a formulated  
strategy depends on the quality of  
the knowledge used”  
(Andrews, 71)*

# Our goals



- Exploitation of organizational knowledge resources
- Deliverance of the right knowledge at the right people at the right time
- Decision making support
- Facilitation of communication and recommendation of solutions

# Our approach



## An integrated Argumentation Platform

- Web based
- Knowledge driven
- Ontology based

That:

- Augments teamwork
- Exploits organizational knowledge
- Supports collaborative decision making

# Knowledge into practice



We use existing knowledge:

- For the discourse structure
  - For the discourse evaluation
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We acquire knowledge:

- From the strategy development process
- From the strategists' behavior during discourses
- From the developed strategy

# The discourse structure



- Decision making frameworks
    - *Well known and broadly used theories*
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- Resource-based view of the firm
- Strengths-Weaknesses-Opportunities-Threats
- Porter's 5 forces

*The KAD ontology model describes these frameworks!*

*(Evangelou, et al., 2005)*

# The discourse evaluation



- Scoring Mechanisms

- *Well known and broadly used MCDA models & techniques*

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- Analytical Hierarchy Process (AHP)
- Outranking Relations
- Simple Multi-Attribute Rating Technique (SMART)

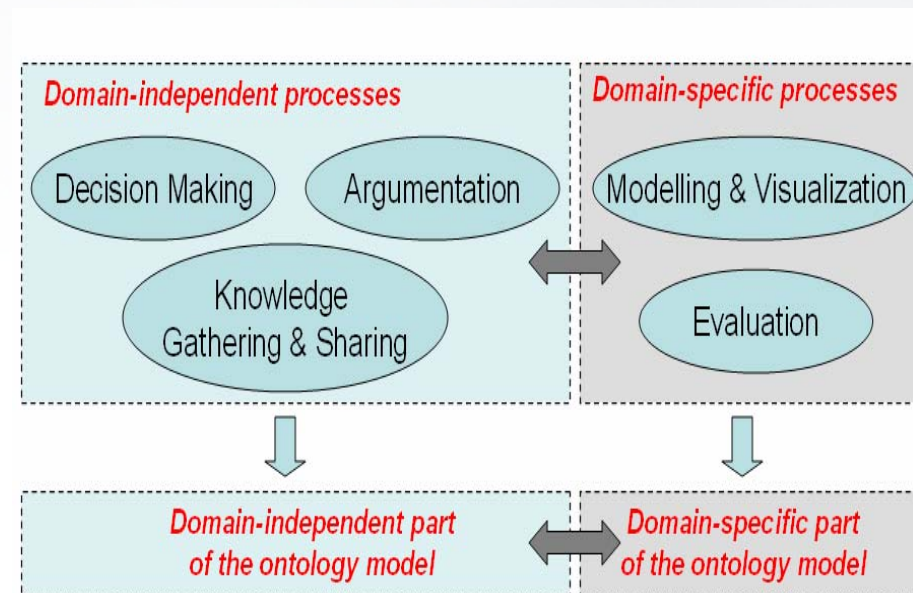
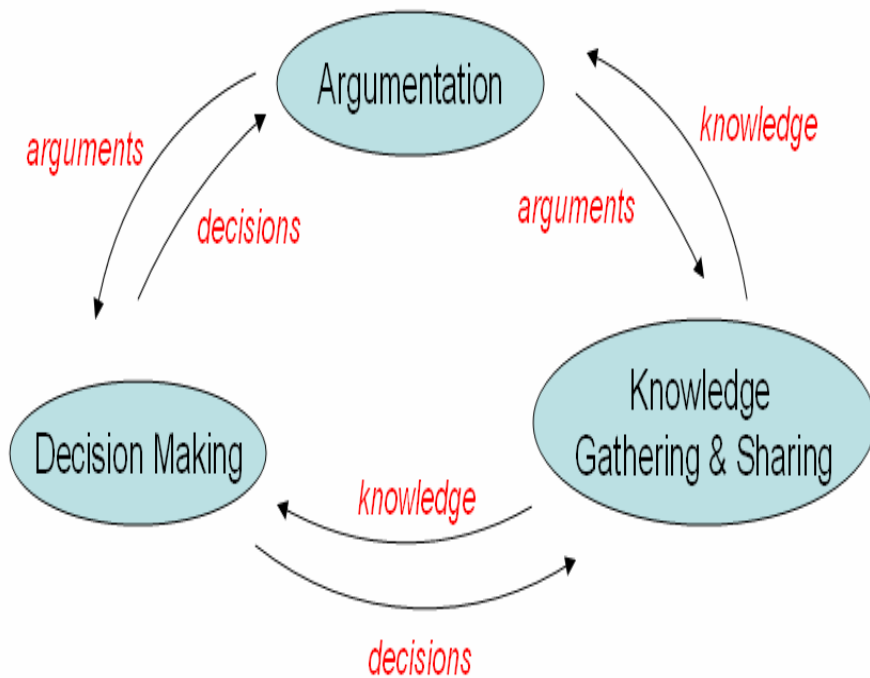
*The KAD ontology model describes these mechanisms !!*

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# The KAD ontology model



- Knowledge-Decision loop exploitation
- Integration of knowledge management, decision-making and argumentation concepts



# A New Plant Location Problem



- The problem/knowledge domain: manufacturing
- The goal: increase capacity
- Alternative solutions: Athens, Thessaloniki and Patras
- Set of criteria: cost, quality, flexibility, speed and dependability

# The Argumentation Graph



Issue: New Plant Location - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Links

Discourse Edit View Insert My Profile Log Out search

## Issue: New Plant Location

**Discourse Summary** ▲

Participants: 4  
Alternatives: 3  
Criteria: 5  
Supports: 12  
Framework: RBV  
Scoring Mechanism: AHP

**Current Decision** ▼

Ending: 22/4/2005

- Goal [Go04]: Increase Capacity
- Alternative [AI01]: Athens
  - ✓ [SuAc01] Transport raw materials from local suppliers
  - ✓ [SuAc02] Transport goods to our nearby distribution center
  - ✗ [SuAc03] Limited capacity of existing distribution center
  - ✓ [SuAc04] Transfer personnel know-how
  - ✓ [SuAc05] Purchase raw materials from local suppliers
- Alternative [AI02]: Thessaloniki
  - ✓ [SuRe01] Growing customer base
  - ✗ [SuRe02] Non available well-trained personnel
  - ✗ [SuRe03] Non available subcontractors
- Alternative [AI03]: Patras

ASP.NET application

•Structure: XML

Schema

•Appearance: XSI T

# Knowledge elicitation



- Discourse items → interrelated pieces of knowledge
- Creator, definition and placement
  - specific semantic value
- Metadata
  - frequency, interrelations
- Chronicle

# User Modeling



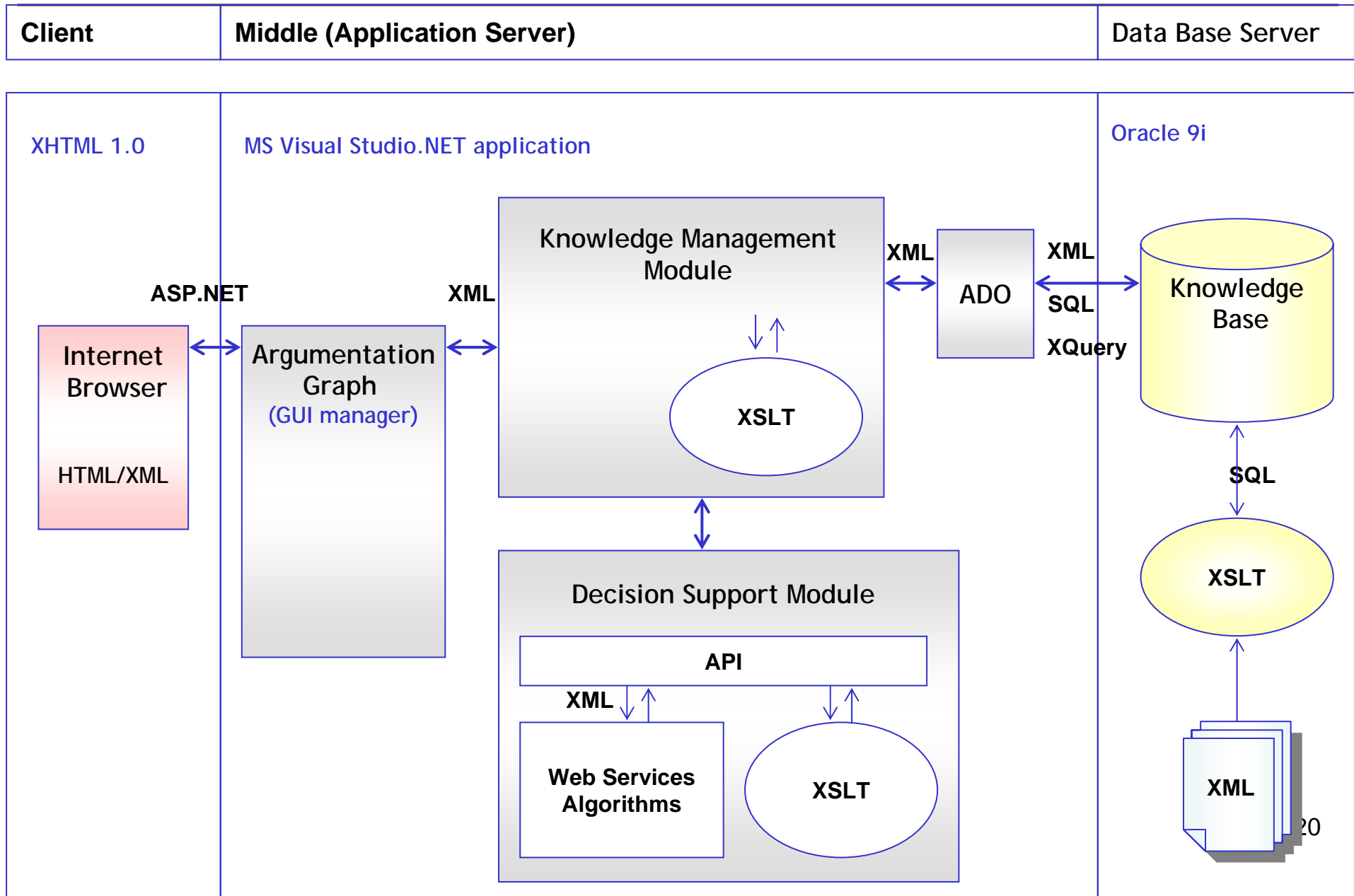
- All users are different
  - intelligence, knowledge, training, experience, personality, and cognitive styles
- Five different roles
  - discussion coordinator, decision maker, domain expert, knowledge manager, and external entity
- Users' profiles → behavior pattern (mental model)

# System's features



- Web-based
- Distributed & asynchronous collaboration
- Ontology-based Knowledge Base
- Domain specific Argumentation Graph
- User friendly interfaces
- Supporting extensive queries and analyses

# Architecture



# Summary

## Integration of

- Knowledge Management
- Decision Support
- Argumentation

## Exploitation of

- Web technologies
- .NET and XML technologies
- Ontology model



# Conclusions



## Our approach

- Provides the necessary means to develop knowledge based strategy plans
- Achieves a common understanding of the problem under consideration
- Establishes an efficient knowledge gathering and sharing environment
- It can be further exploited so as to represent diverse organizational settings