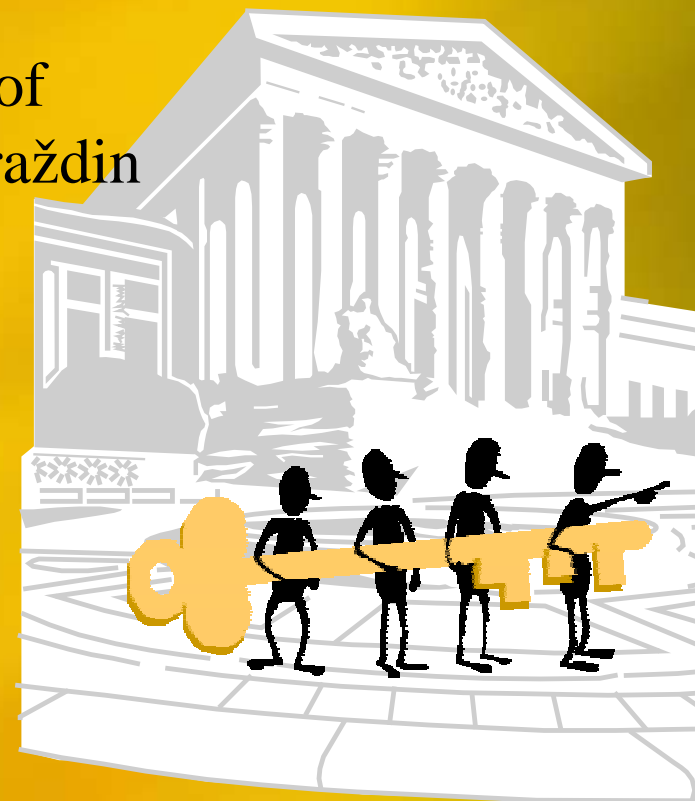# Model of An Intelligent Web-based Multimedia Mass-group Decision Support System

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Presentation Content

- Introduction to Forum Virtualis project

- Mintzberg's decision making model

- Disadvantages of groupware software and clasical group work

- Forum Virtualis objectives

- FV system requirements

- FV system intelligence

- FV architecture skeleton following elaboration of several key features

- Discussion organization and methodology

- Discussion diagram

- An example of discussion organization in FV

- Conclusion

Forum Virtualis Project

Motivated by uniterupted function of Varazdin City Hall in the same building since 1523.

Part of Official City Hall Web site offering a new subsidiary way of local community governing.

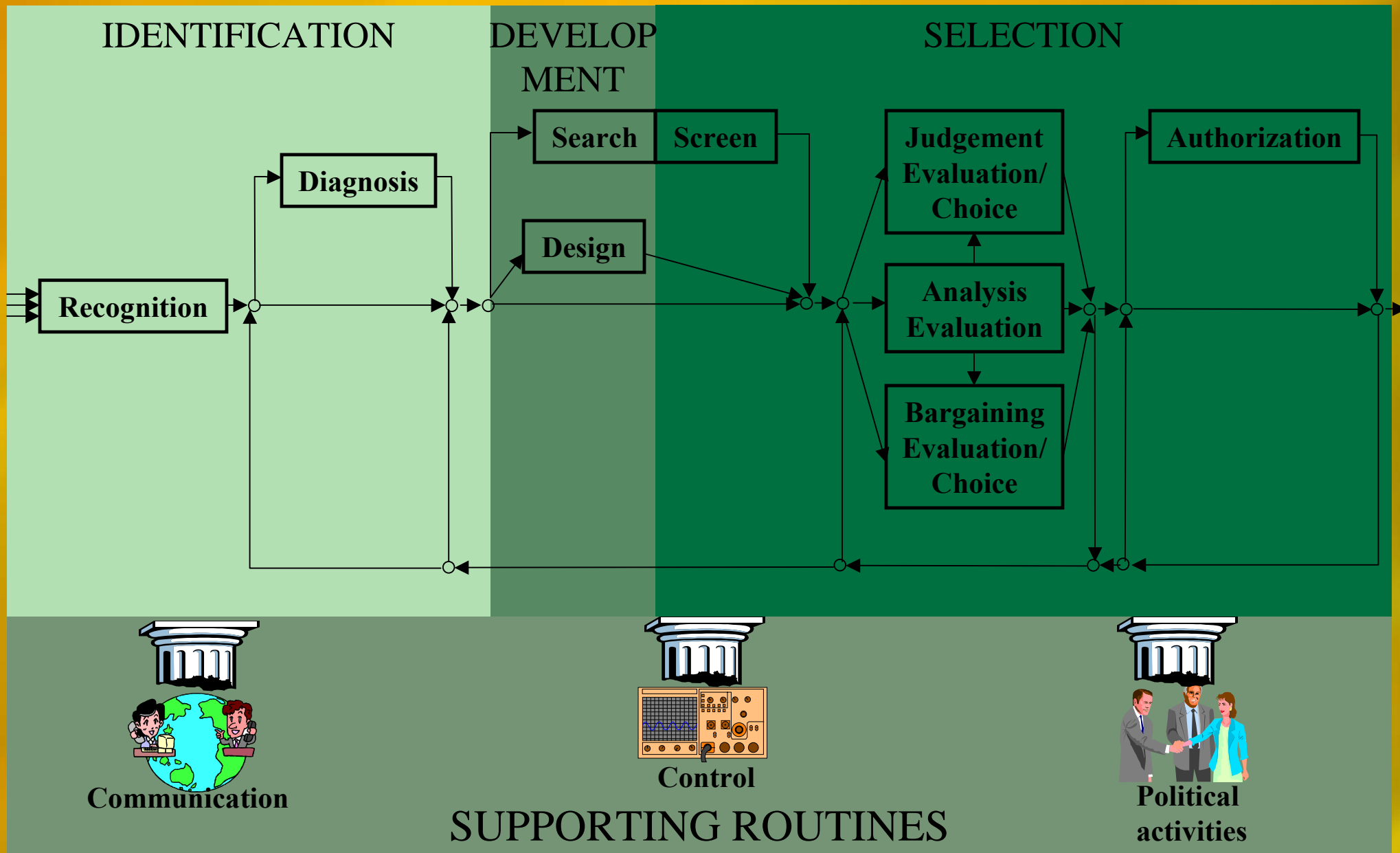*www.varazdin.hr*

Forum Virtualis Project

Acknowledgements

Mintzberg's decision making model

IDENTIFICATION

DEVELOP MENT

SELECTION

| Diagnosis |

| Search | Screen |

| Design |

| Recognition |

| Judgement Evaluation/ Choice |

| Analysis Evaluation |

| Bargaining Evaluation/ Choice |

| Authorization |

Communication

Control

Political activities

SUPPORTING ROUTINES

Disadvantages of Groupware Software and Clasical Group Work

GDSS - Intranet and LAN-based mainly, expensive, too formal, too complex and unwieldy, no multimedia.

Video conferences - Technollogy based focus to the communication function.

Forums - Simple text based information exchange and idea generation, with no direct influence to process convergation and structure.

Discussion grups, chat - Information exchange without any commitment to solve the problem and apply the solution.
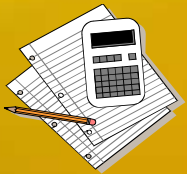
Disadvantages of Groupware Software and Clasical Group Work

Survey - Attitudes collection only, no formal results inclusion to the decision making process.

Multiple Choice - Modelling of well-structured simple linear problems only.

Information organizer - Common well-structred information sources collection, suitable for higly formal organization only.

Parliament decision making - Old fashioned, expensive, slow, too formal, mainly disconnected from the real-time information sources and from people able to solve the problems.

Forum Virtualis Project

Forum Virtualis project is focused on obtaining an Internet technology-based system that enhance ordinal forum system with (among others) following features:

1. Structure and discipline to support all phases of decision making process,
2. Management of decision making process,
3. Inclusion of hypermedia (XML documents),
4. Upgradabilty with new tools.

Existing technologies related to the purpose of the system have been often used as examples for modeling implementations of the features.

Existing technologies or solutions will be used for implementation of some features: reports (XML documents), analysis tools, unified messaging systems.

Forum Virtualis Project

Main requirements:

- Content access and content kind
- User management
- Knowledge management
- Participation in discussion and discussion management
- Supporting FV functions
- Integration requirements

Forum Virtualis Project

FV Intelligence

Wizards

IF *There exists clear public demand for problem solution* *THEN* *Start decision making process.*

IF *The problem becomes meningles* *OR* *The probelm becomes irrelevant* *OR* *There are no activities in the problem solution* *AND* *The probem is not solved* *THEN* *Mark the problem solving process «STOPED» AND put it to the archiv.*

IF *There exists clear demand for problem solution* *AND* *Similar process is interrupted* *THEN* *Get the «STOPED» process from archive AND start it.*

Forum Virtualis Project

Insight and contribution to the decision making procesess tasks

Model selection wizards

Model	Insight	Contribution	Example
A	Public	Public	Like ordinar forum where **all** citizens can see the comments and write their contribution.
B	Public	Limitted	Group of experts are solving some problems while the citizens can see the process without abillity of public contribution; it is exclusively reserved for experts.
C	Limitted	Limitted	Group of experts is solving problem without public included in the process; confidential problem.
D	Limitted	Public	Delphi-like metod, citizens can contribute to the proces, but they cannot see it; solving the problem of corruption in the local community – citizens are discusing cases, while the group of experts are able to see the comments.

Forum Virtualis Project

Architecture Skeleton

Page templates

FV Components

FV Database
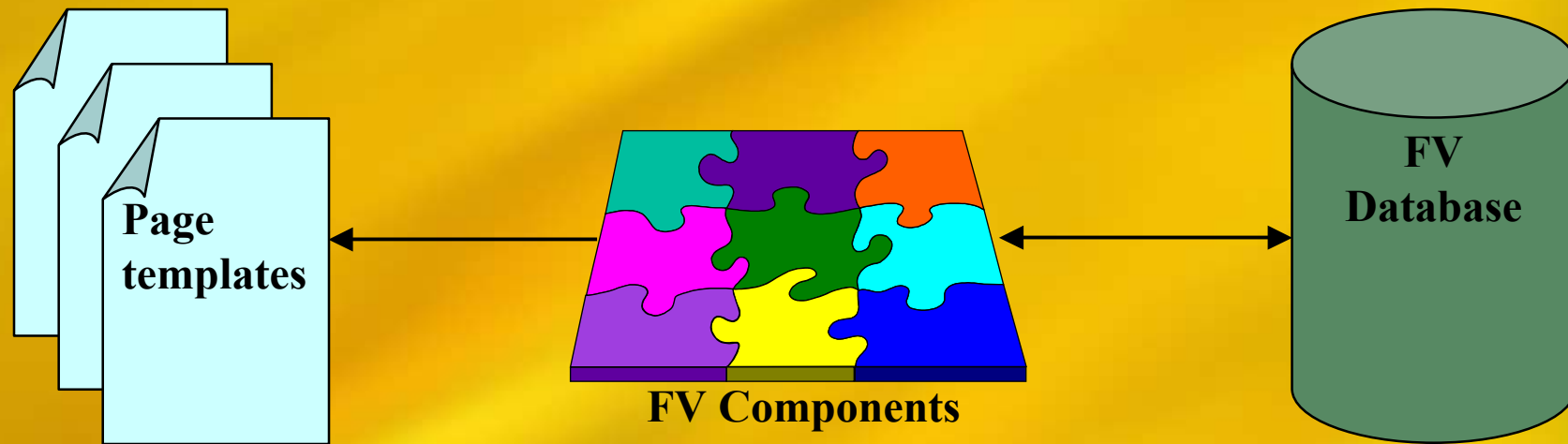
Forum Virtualis Project

Web page generation process (UML Sequence Diagram)

: Browser	A Page Generator : FV Component	A Page Part Generator : FV Component	: Database

request a page

update data
{if necessary by the request}

get page template

retrieve some data for page generation

change parameter references with their values

get HTML for the page part (parameters)
{if any calls necessary}

retrieve some data for HTML generation

*

send page
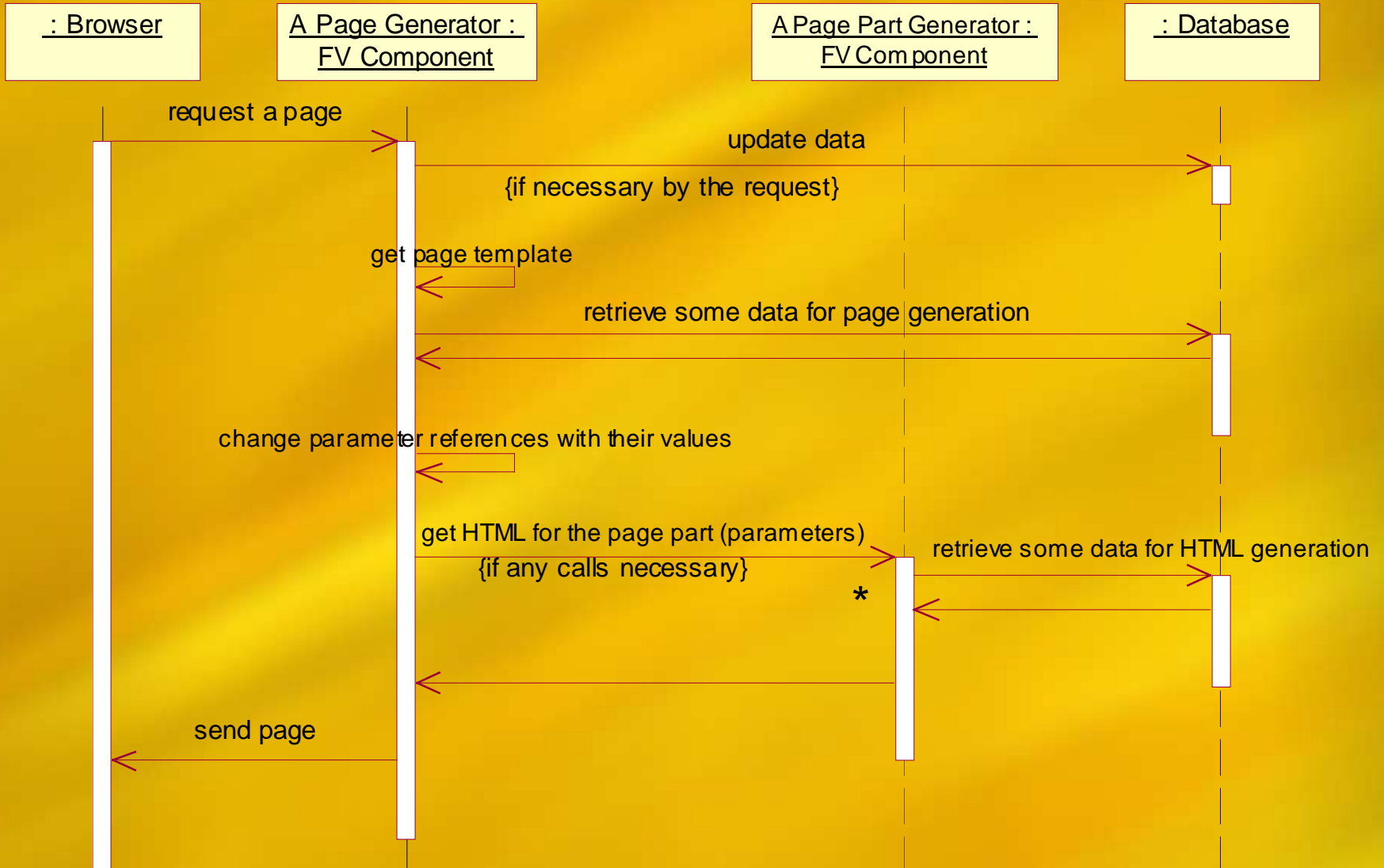
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Access rights

- organized around *user groups*. FV system recognizes folowing default user groups:

- *basic users* - registered users with basic status
- *moderators* - registered users with moderator status
- *editors* - registered users with editor status
- *administrators* - registered users which are administrators
- *registered* - all registered users
- *all* - all users, including unregistered

Forum Virtualis Project

- UI design aspect of FV
  - selection of styles (cascading style sheets)
  - management of all (parameterized) texts that are automatically generated by FV system

- Message broadcasting and events notification

- Open architecture for extensions of functionality of FV web site

- Help system

Forum Virtualis Project

Discussion organization and methodology

A discussion methodology for a particular kind of discussion consists of a model of discussion process and (expressed or formalized) knowledge how to use that model, where *kind* of discussion is like: decision process, voting, problem solving, negotiation etc.

Problems of supporting many discussion models:
- Each model has its own set of phases and rules for phase tranzitions and other rules.
- need for different data models as well
- a huge task for:
  - overall database scheme development
  - search engine applicability,
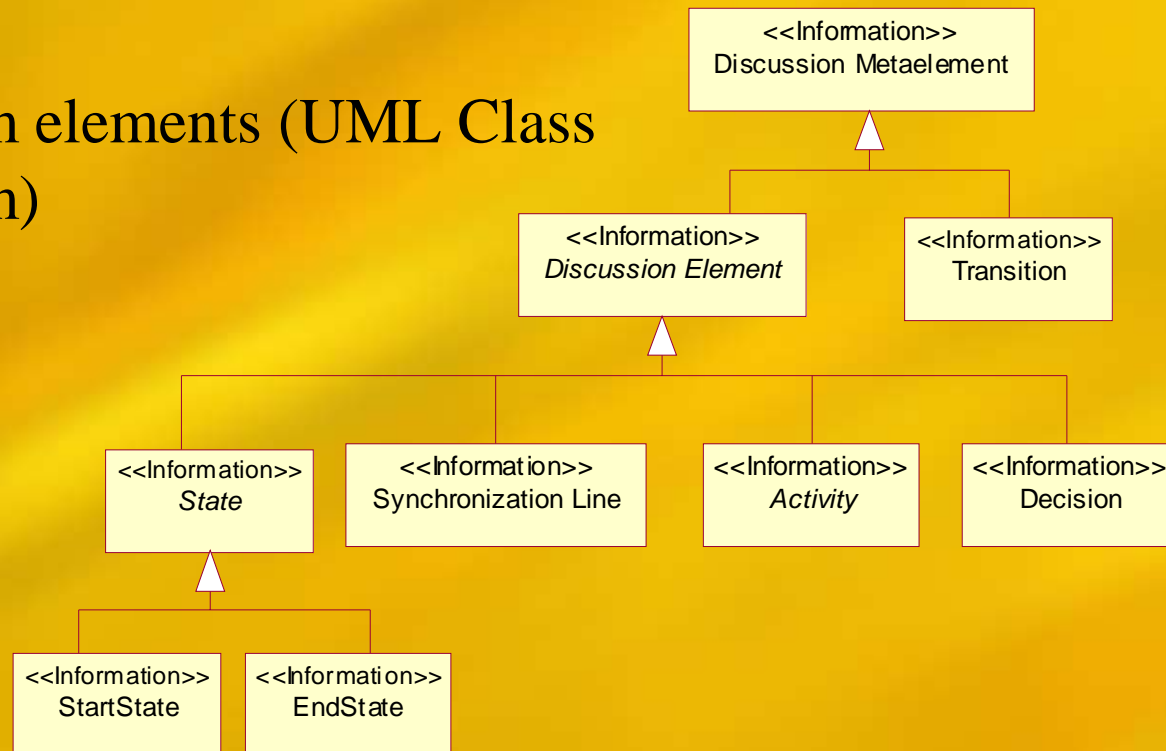 - complexity of software for discussion's web page generation etc.

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Discussion Diagram

• The diagramming technique (its language – syntax and semantics) is described using Unified Modelling Language (UML).

• The diagram elements' ***look*** is based on UML Activity Diagram.

Diagram elements (UML Class Diagram)

```
                          <<Information>>
                       Discussion Metaelement
                                 △
              ┌──────────────────┴──────────────────┐
      <<Information>>                          <<Information>>
    Discussion Element                            Transition
              △
   ┌──────────┼──────────────┬──────────────────┐
<<Information>>  <<Information>>  <<Information>>  <<Information>>
    State     Synchronization Line   Activity        Decision
     △
  ┌──┴──────┐
<<Information>>  <<Information>>
  StartState     EndState
```

Forum Virtualis Project

Discussion Diagram

Diagram elements connection (UML Class Diagram)

{XOR}

<<Information>>
Activity

<<Information>>
Decision

1

1

1

1

1

1..*   1..*   1..*

1..*

<<Information>>
StartState

<<Information>>
Transition

{XOR}

1

1..*

1..*

1..*

1..*

1

1

<<Information>>
Synchronization Line

1

<<Information>>
EndState

Forum Virtualis Project

Discussion Diagram

Discussion Elements' attributes and operations and other related information
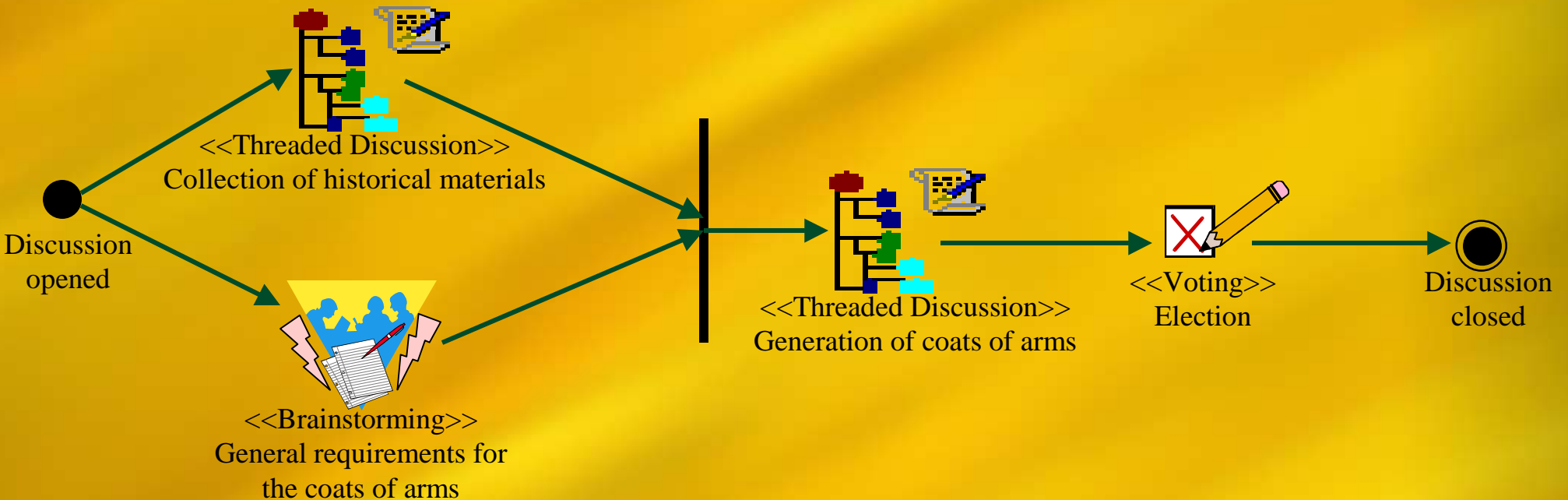
(FV HTML Documentation)

An Example: Selecting New Town's Coat of Arms

Forum Virtualis – user interface
demo

An Example: Selecting New Town's Coat of Arms

Discussion diagram

Discussion opened

<<Threaded Discussion>>
Collection of historical materials

<<Brainstorming>>
General requirements for
the coats of arms

<<Threaded Discussion>>
Generation of coats of arms

<<Voting>>
Election

Discussion closed

An Example: Selecting New Town's Coat of Arms

Forum Virtualis – threaded discussion using hypermedia documents

Conclusion

• We hope that the proposed model covers some key technologies and its functions should significantly surpass existing solutions.

• Our primary objective to obtain an open advanced experimental system is obtained.

• We also hope that it will help people to **really** solve some common problems on more efficient and natural way than with existing solutions.

• Our first area of application seems to be idealistic in the nature, but in the background, there are many more commercial applications, for example in tourism and industry.

Conclusion

• It is necessary to obtain mature solution and a group of people (*critical mass*) willing to start many processes and intrigue other people to work with them. We learned it to be *conditio sine qua non*.

• The main problem is how to initiate real serious processes with the serious participants.

Thank You!