Visualizing Expert Network via User-Interface Markup Language and ActionScript

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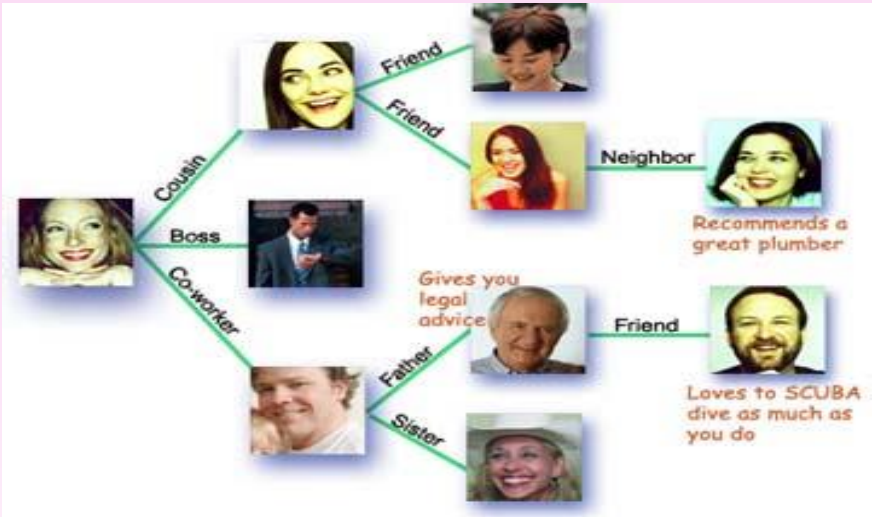
Outline

- Introduction
- Background and Related Technology
- System Framework Design
- Case Study
- Conclusions & Future Works
- Questions & Answers

Introduction

- Thailand has a large number of experts in various domains working in many different public and private organizations.
- Searching for experts in a specific domain of knowledge is difficult.
- The concepts and techniques of social networking and information visualization are adopted.
- Social network is the construction of social relationships in terms of nodes and links.

Introduction (Contd.)



- The proposed framework is based on the User-Interface Markup Language (MXML) and ActionScript.
- We designed a framework for visualizing online expert network and applied visualization techniques.

Background and Related Technology

- Flex SDK: is a free open source framework for building and maintaining expressive web applications.
- ActionScript: is the object-oriented programming (OOP) language based on ECMAScript.
- MXML: is an XML-based user interface markup language.
- Flare: is an ActionScript library for creating interactive visualizations for the Web that runs into the Adobe Flash player.

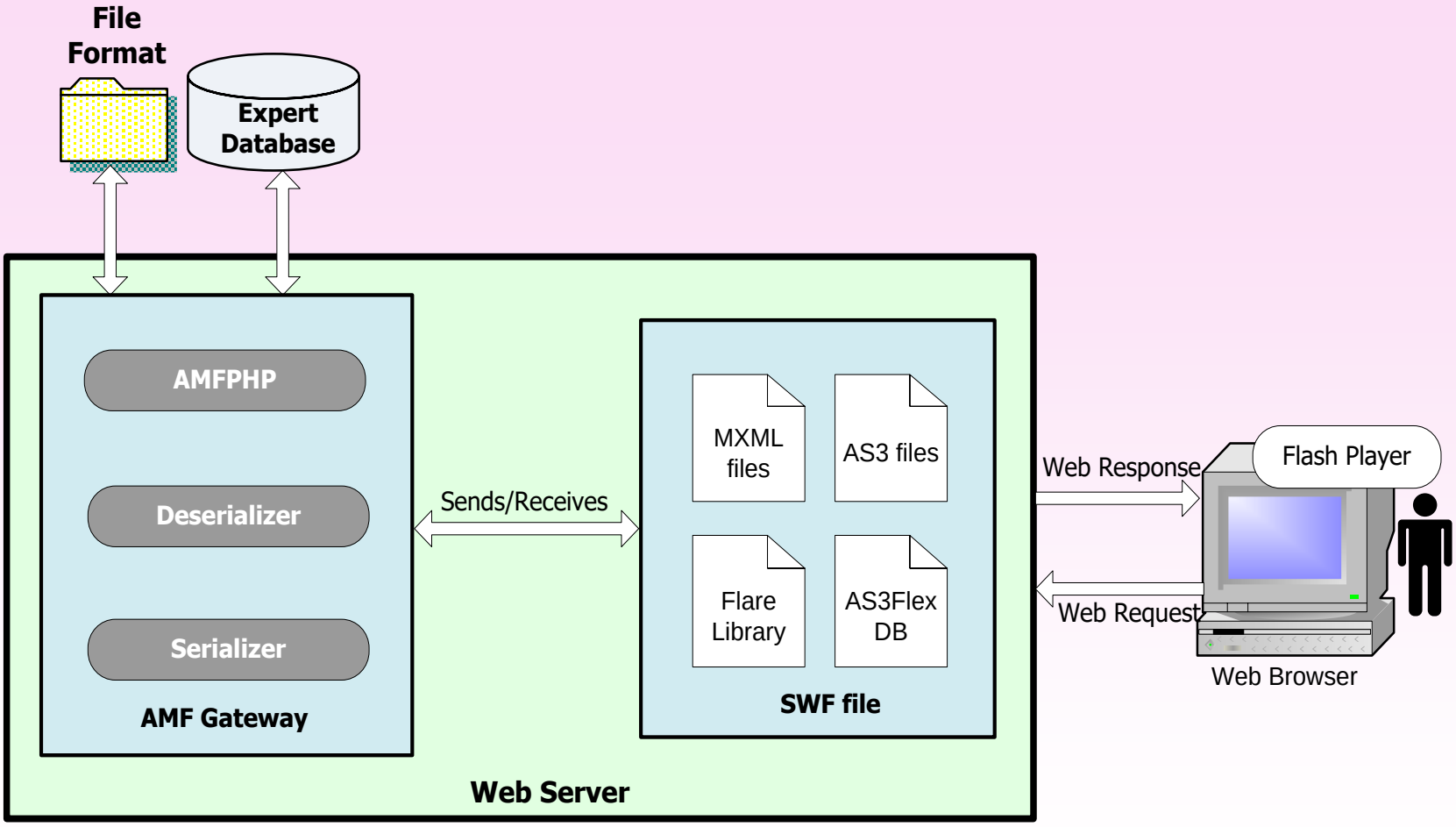
Who benefits from our work?

- R&D managers can use the system to search for a group of experts in each research area.
- Funding agency can use such system to allocate project funding more effectively by not giving the funding to any overlapping research projects.
- Anyone can search for expert who can help answer some particular questions.

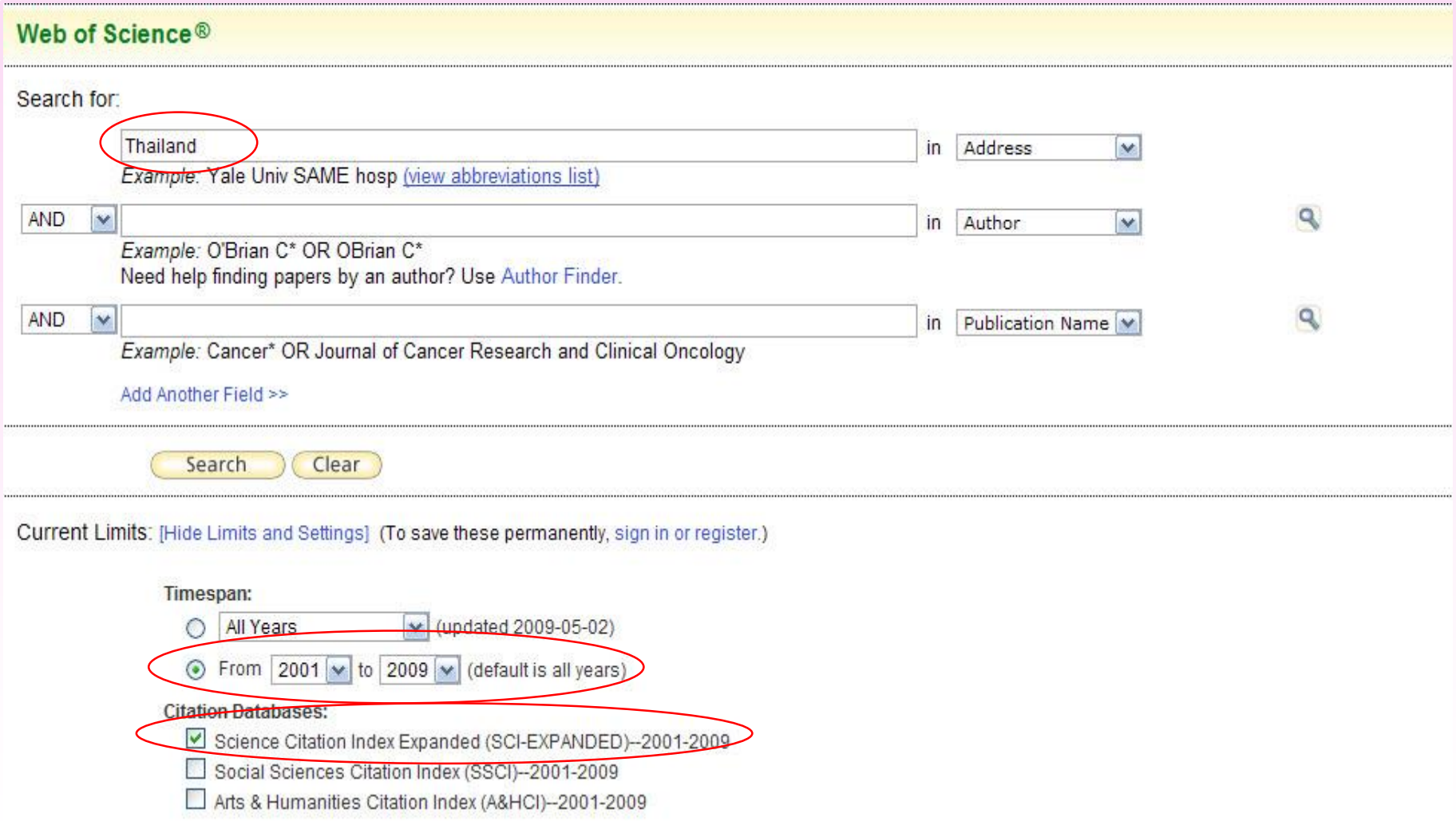
Why Flare and ActionScript?

- Flare visualization toolkit is an open-source framework.
- Flare enables people to build and customize a wide variety of interactive visualizations.
- Flare is also designed to make it easy for programmers to create new visual representations.
- Flare toolkit is to provide rich visualizations that can embed seamlessly into the web with minimal pain on the part of users.
- The release of ActionScript 3 further sealed the deal, enabling better performance and improved programming models.

System Framework Design (Contd.)



A Case Study: Constructing a Thailand's Researcher Network From Database



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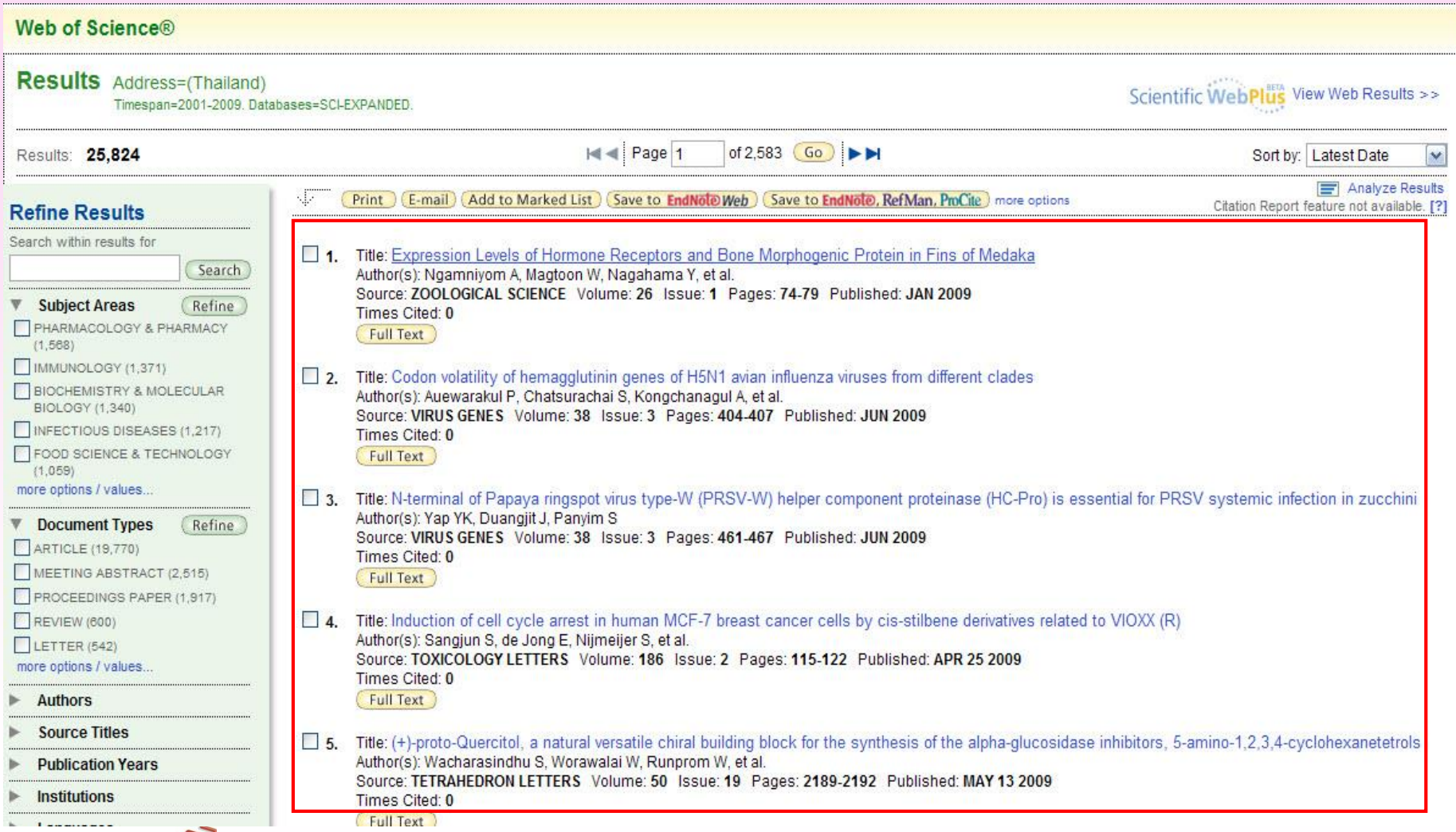

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Authors

Source Titles

Publication Years

Institutions

1. Title: Expression Levels of Hormone Receptors and Bone Morphogenic Protein in Fins of Medaka
Author(s): Ngamniyom A, Magtoon W, Nagahama Y, et al.
Source: **ZOOLOGICAL SCIENCE** Volume: **26** Issue: **1** Pages: **74-79** Published: **JAN 2009**
Times Cited: **0**
Full Text

2. Title: Codon volatility of hemagglutinin genes of H5N1 avian influenza viruses from different clades
Author(s): Auewarakul P, Chatsurachai S, Kongchanagul A, et al.
Source: **VIRUS GENES** Volume: **38** Issue: **3** Pages: **404-407** Published: **JUN 2009**
Times Cited: **0**
Full Text

3. Title: N-terminal of Papaya ringspot virus type-W (PRSV-W) helper component proteinase (HC-Pro) is essential for PRSV systemic infection in zucchini
Author(s): Yap YK, Duangjit J, Panyim S
Source: **VIRUS GENES** Volume: **38** Issue: **3** Pages: **461-467** Published: **JUN 2009**
Times Cited: **0**
Full Text

4. Title: Induction of cell cycle arrest in human MCF-7 breast cancer cells by cis-stilbene derivatives related to VIOXX (R)
Author(s): Sangjun S, de Jong E, Nijmeijer S, et al.
Source: **TOXICOLOGY LETTERS** Volume: **186** Issue: **2** Pages: **115-122** Published: **APR 25 2009**
Times Cited: **0**
Full Text

5. Title: (+)-proto-Quercitol, a natural versatile chiral building block for the synthesis of the alpha-glucosidase inhibitors, 5-amino-1,2,3,4-cyclohexanetetrols
Author(s): Wacharasindhu S, Worawalai W, Runprom W, et al.
Source: **TETRAHEDRON LETTERS** Volume: **50** Issue: **19** Pages: **2189-2192** Published: **MAY 13 2009**
Times Cited: **0**
Full Text

A Case Study: Constructing a Thailand's Researcher Network From Database (Contd.)

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AU Lampang, KN
   Chongsuvivatwong, V
   Teanpaisan, R
   Kitikoon, V
AF Lampang, Kannika Na
   Chongsuvivatwong, Virasakdi
   Teanpaisan, Rawee
   Kitikoon, Viroj
TI Concordance of antibiotic resistance and ERIC-PCR DNA fingerprint
   pattern in Escherichia coli isolated from farmer and broiler in the
   same farm
SO WORLD JOURNAL OF MICROBIOLOGY & BIOTECHNOLOGY
DT Article
DE antibiotics; broiler; Escherichia coli; farmer; resistance
ID POULTRY SLAUGHTERERS; ENTEROCOCCI; PROVINCE; ANIMALS; HUMANS; PIGS
AB The study was conducted to quantify the concordance of antibiotic
   resistance and ERIC-PCR DNA fingerprint pattern in Escherichia coli (E.
   coli) isolated from farmers and their broilers of 95 broiler farms in
   Songkhla province, Thailand. Four hundred and fifty-seven and 460 E.
   coli isolates from both groups produced 35 patterns of antibiotics
   resistance. Mono-resistance to doxycycline (23.2%) in isolates from
   farmers and multiple resistance to doxycycline, nalidixic acid,
   norfloxacin and ciprofloxacin (17.8%) were the most common finding in
   broilers. Twenty-seven farms had 44 within-farm concordant patterns of
   resistance. From simulation, the frequency of concordance was
   significantly higher than concordance by chance alone (P < 0.05). Out
   of these 44 matched sets, only four had the same DNA fingerprint
   pattern. Concordance by DNA pattern was also not associated with
   phenotypic resistance. Clonal spread is therefore not a good
   explanation of the concordance in this population. Other mechanisms
   need further analysis.
C1 Prince Songkla Univ, Fac Med, Epidemiol Unit, Hat Yai 90110, Songkhla, Thailand.
   Prince Songkla Univ, Fac Dent, Dept Stomatol, Hat Yai 90110, Songkhla, Thailand.
RP Lampang, KN, Prince Songkla Univ, Fac Med, Epidemiol Unit, Hat Yai
   90110, Songkhla, Thailand.
PY 2008
SC Biotechnology & Applied Microbiology
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A Case Study: Constructing a Thailand's Researcher Network From Database (Contd.)

- We consider two types of relationships:
  - Direct (social): The direct relationship is defined as the co-authoring degree between one researcher to others.
  - Indirect (topical): The indirect relationship is defined when two researchers have publications under the same research topics represented by controlled keywords.
- We store the relationship scores, keywords and profiles in a MySQL database.
- We design the database structure consisting of four tables.

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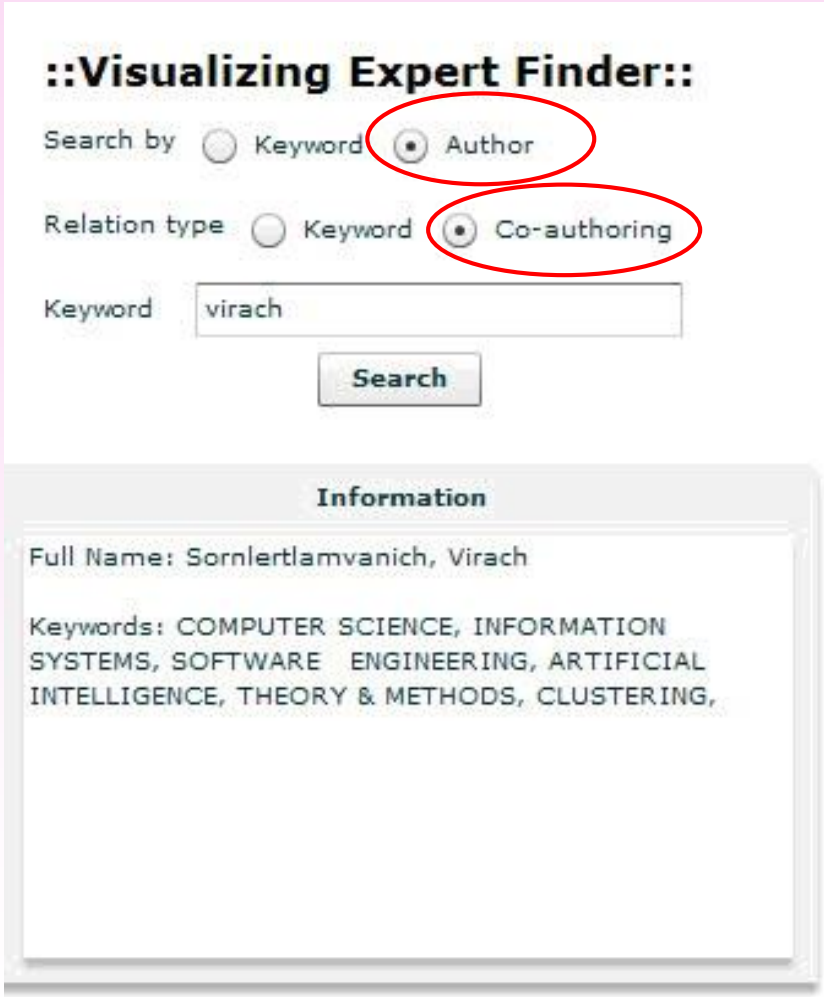
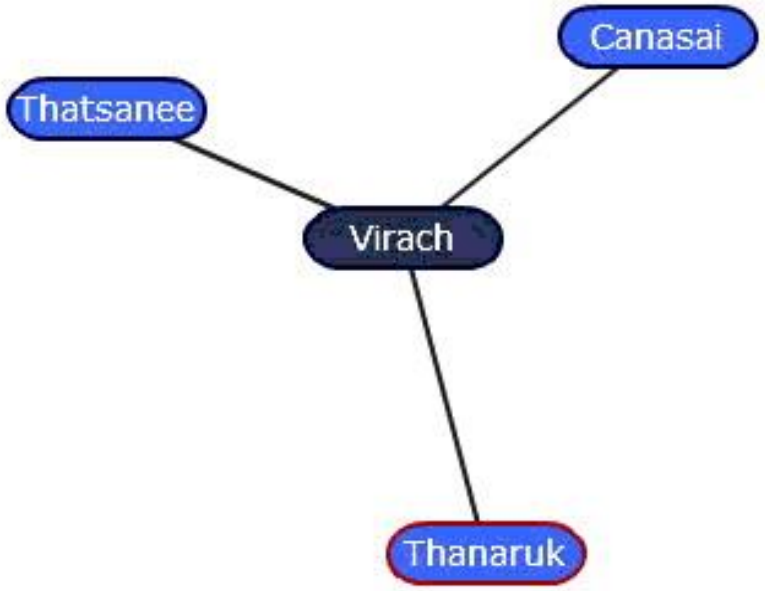


Social Relationship



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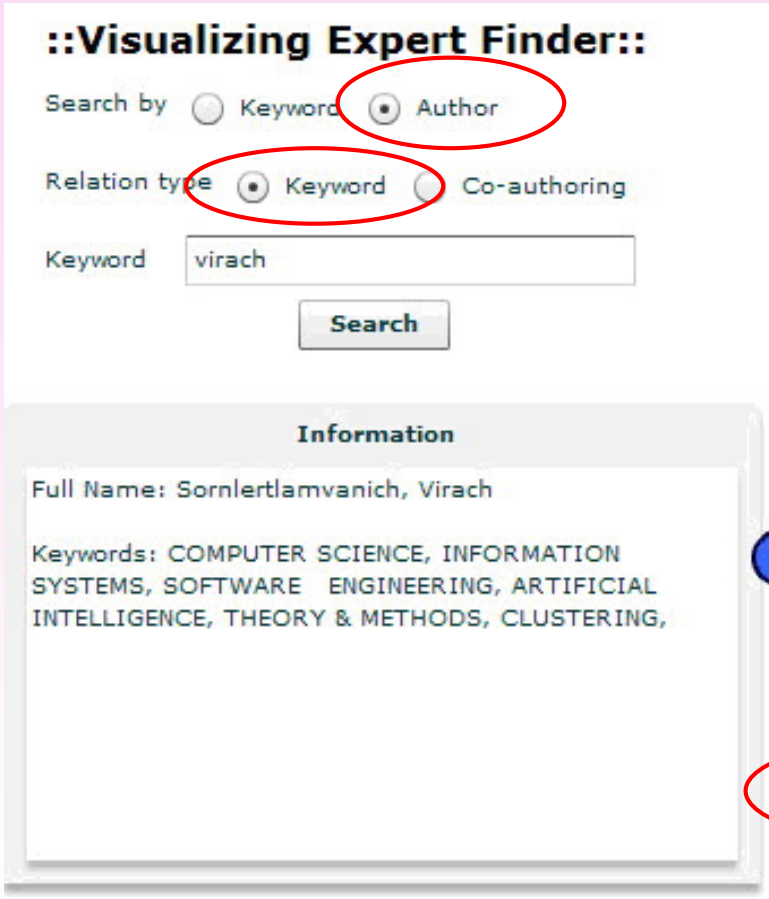

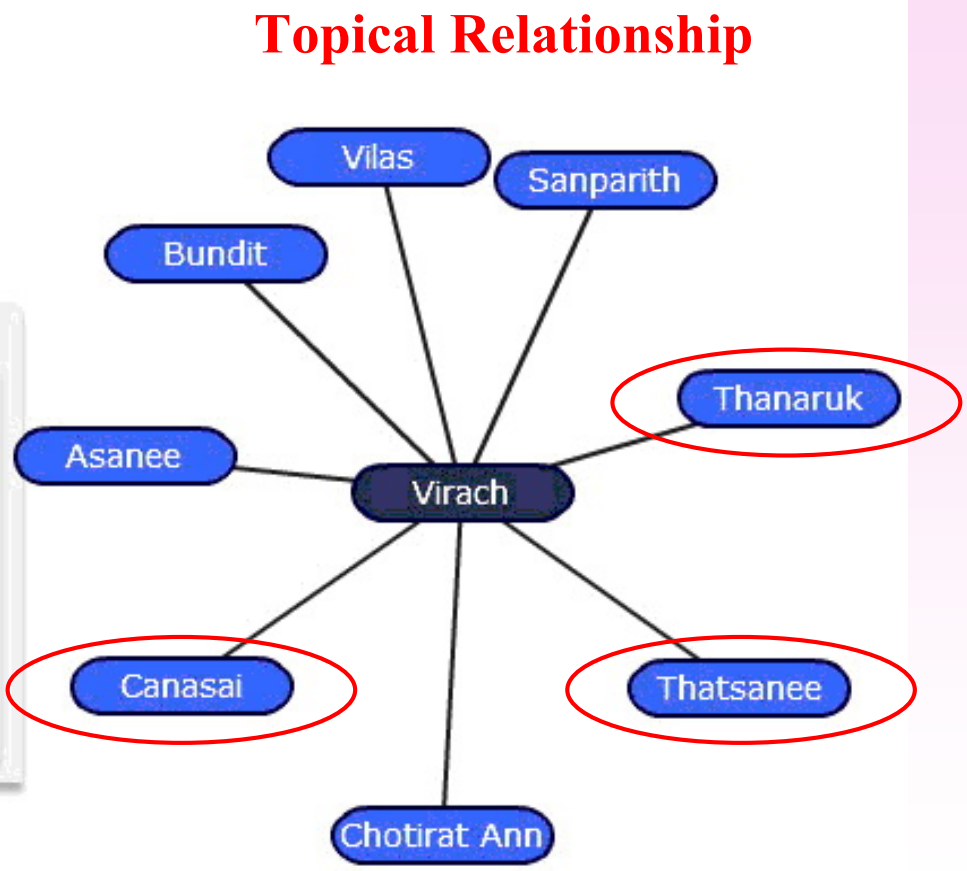

Conclusions

- We propose a framework for visualizing expert network from expert database.
  - AMF Gateway
  - Visualizing expert network on the web
- The system developed by using ActionScript, MXML and Flare library.
- We apply Force-Directed layout technique developed in our framework.
- The system support more efficient and effective expertise information searching and browsing.

Future Works

- In the future, we additionally other visualization features such as photo, tool tip, panning and zooming.
- We are interested in applying other visualization techniques to more complex system framework.

Thank you

for your attention

For more information about these and other works,

please contact santipong.thaiprayoon@nectec.or.th