

## Ontology based Orchid Knowledge Platform for Knowledge Services in Orchid Cluster

Thepchai Supnithi, Pisuth Paiboonrat, Marut  
Buranarach, Asanee Kawtrakul

National Electronics and Computer Technology Center,  
Pathumthani, Thailand  
{thepchai.supnithi,pisuth.paiboonrat,marut.buranarach,  
asanee.kawtrakul}@nectec.or.th

Suvichai Sangtien

Rajburi Orchids Cluster,  
Rajburi Thailand  
sv\_ood@hotmail.com

Setapong Lekawatana, Ath Intalak

Department of Agricultural Extension  
Ministry of Agriculture and Cooperatives,  
Nonthiburi, Thailand

setapongl@hotmail.com, ath@doae.go.th

Worapot Choptham

Faculty of Arts, Silpakorn University,  
Nakornpathom, Thailand  
worapot@su.ac.th

*Abstract*— Orchid is one of the economic crops in world market. The varieties of shape, style, color and smell of orchids attract people to create products in many ways, such as cut orchid, orchid plant, bouquet, lei, corsage, and orchid loose bloom and so on. Thailand is one of the biggest exporters in orchid market. There are a lot of processes in the chain, such as reproduction, cultivation, market trend survey and analysis, transportation, international trade standard, traceability and so on. In order to provide a smart knowledge service, we have to 1) managing knowledge efficiently in terms of sharing and reusing knowledge and 2) providing knowledge which matches to stakeholders. In this paper, we propose a general framework on ontology base orchid cluster platform for developing a user-centric model of knowledge services in orchid cluster. We give some examples on semantic search model, recommended system model and tracking and monitoring model respectively.

*knowledge service, ontology and model, orchid cluster platform*

### I. INTRODUCTION

Because of suitable climate, most orchids are grown on benches under simple saran shading. Orchid production areas in Thailand are scattered around the central region mainly Bangkok, Nonthaburi, Nakorn Prathom, Ratchaburi, Samut Sakorn, Kanchanaburi and Ayudhaya. Tropical orchids are the most important crops that cover approximately 3,500 hectares. Cut orchid production area is more than 90% of the total orchid production area and less than 10% is for potted orchid production. Contrary to the current economic crisis, growers are expanding their farm areas and sites. Dendrobium is the most dominant crop. Besides, Mokara, Oncidium, Aranthera, Aranda, Vanda,

Arachnis, Renanthera, Ascocenda, Phalaenopsis, Cattleya and Paphiopedilum are being grown as cut-flowers and potted plants. With suitable climate in combination with more than 40 years of orchid growing experience, Thailand can grow orchids at a competitive cost.

Growers prefer to get their planting material from tissue culture rather than division or stem cutting. Therefore, there are many clean cultured laboratories in Thailand producing young plants from tissue culture and seedlings of good quality at reasonable prices, not only for local supply but for export as well. New varieties are also continuously being introduced by local breeders and one could expect Dendrobium and other orchids in many new colors and shapes.

About half of the production will go to local market and the other half for export. Most Thai consider orchid as common flowers and usually used for religious purposes. Nowadays more and more orchids are valued and are used as gifts or as decorations at official or social functions.

Thailand is currently the world largest exporter of Dendrobium orchid and other tropical orchids. However, with the world economic crisis, Thai orchid also suffered, the export value dropped about 6.3% (4.6% for cut orchids and 15.5% for orchid plants) in 2009 compared to the previous year. In 2009, Thai orchid export value was 80 million US\$ accounting for 77% of all Thai floricultural products. Export of orchid flowers was 69 million US\$ and 10.8 million US\$ for orchid plants to Japan, USA, China, Italy, the Netherlands and Taiwan as major markets. Orchid products include cut flowers, loose blooms, bouquets, leis or garlands, orchid plants, seedlings and flasks, etc.