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International Commission on Irrigation and Drainage (ICID)



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Object Oriented Irrigation Management

2nd Indo Global Irrigation Summit

24-25 June 2026, New Delhi India

Object Oriented Irrigation Management

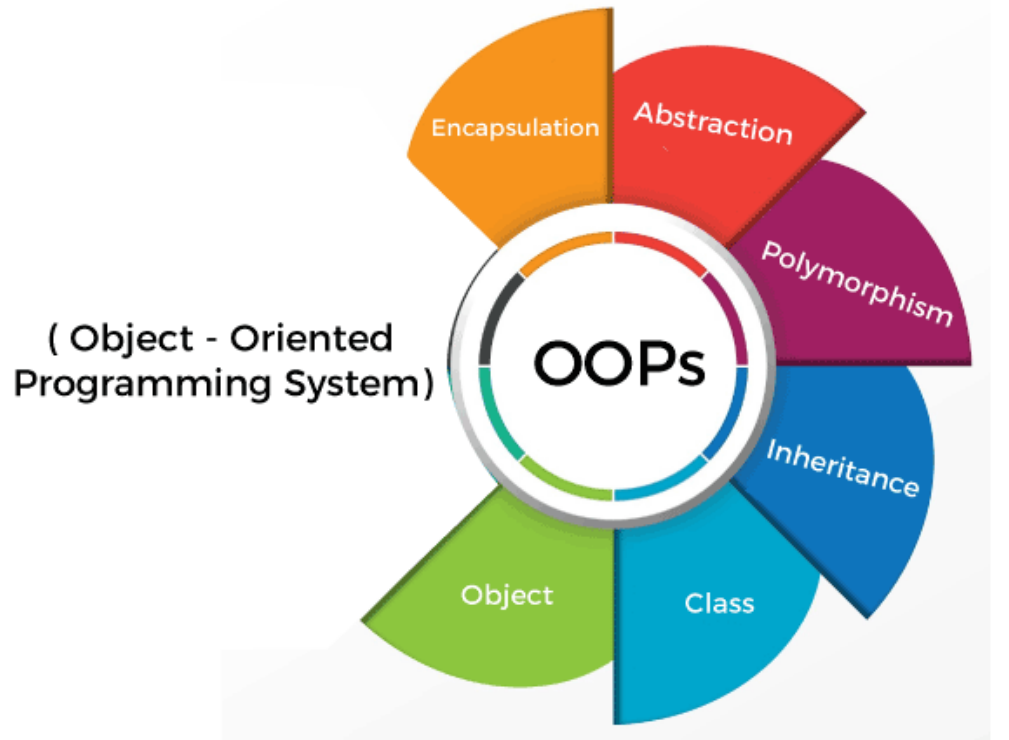
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Object Oriented Programming and Object Oriented Database Management are buzzwords in Computer Science. Yesterday's philosophy of structured and modular approaches have become antiquated.



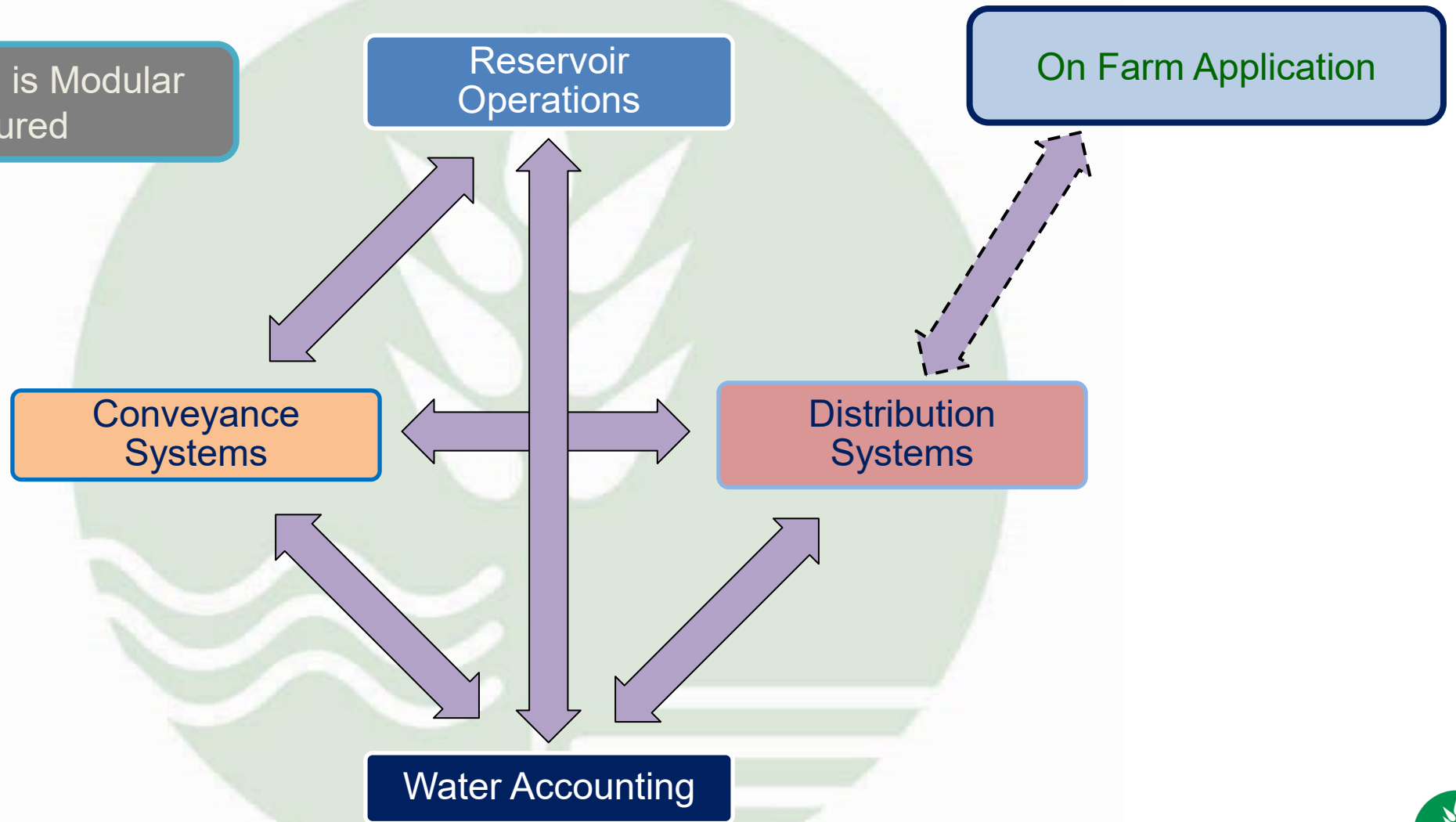
Feature	Relational Data Model (RDBMS)	Object-Oriented Data Model (OODM)
Data Structure	Organized in tabular rows and columns	Organized in self-contained objects
Data & Logic	Stores data only; logic resides in application code	Integrates data and operations (methods) together
Relationships	Uses primary keys and foreign keys	Handled natively via direct object references
Complex Media	Hard to store natively (usually uses links/BLOBs)	Seamlessly stores images, video, and multimedia
Access Speed	Slower for deeply nested data due to table joins	Extremely fast for complex navigational paths

Procedure Orientedness Vs. Object Orientedness

Object orientedness is different from modular and structured approach. The problem is divided in to various types of self content blocks which are called objects. *Interse* communication and references, mismatch or collision resolution; and, repetitive usage of procedures are minimized and thereby forward and backward integration become faster.

Procedures at times skip the objective or do not target the need of the stakeholders and hence following them might not be satisfying all.

Today's approach is Modular and Structured



Reservoir Operation

- Water conservation
- Flood modulation
- Hydropower
- Environmental use

Distribution System

- Minimization of losses
- Equitable distribution
- Rotational supply
- Demand management

On Farm Application

- Crop Water Requirement
- Water Usage
- Water Productivity
- Drainage

Conveyance System

- Minimization of losses
- Shortening response time
- Supplying water just in time
- Crossing roads and natural drains

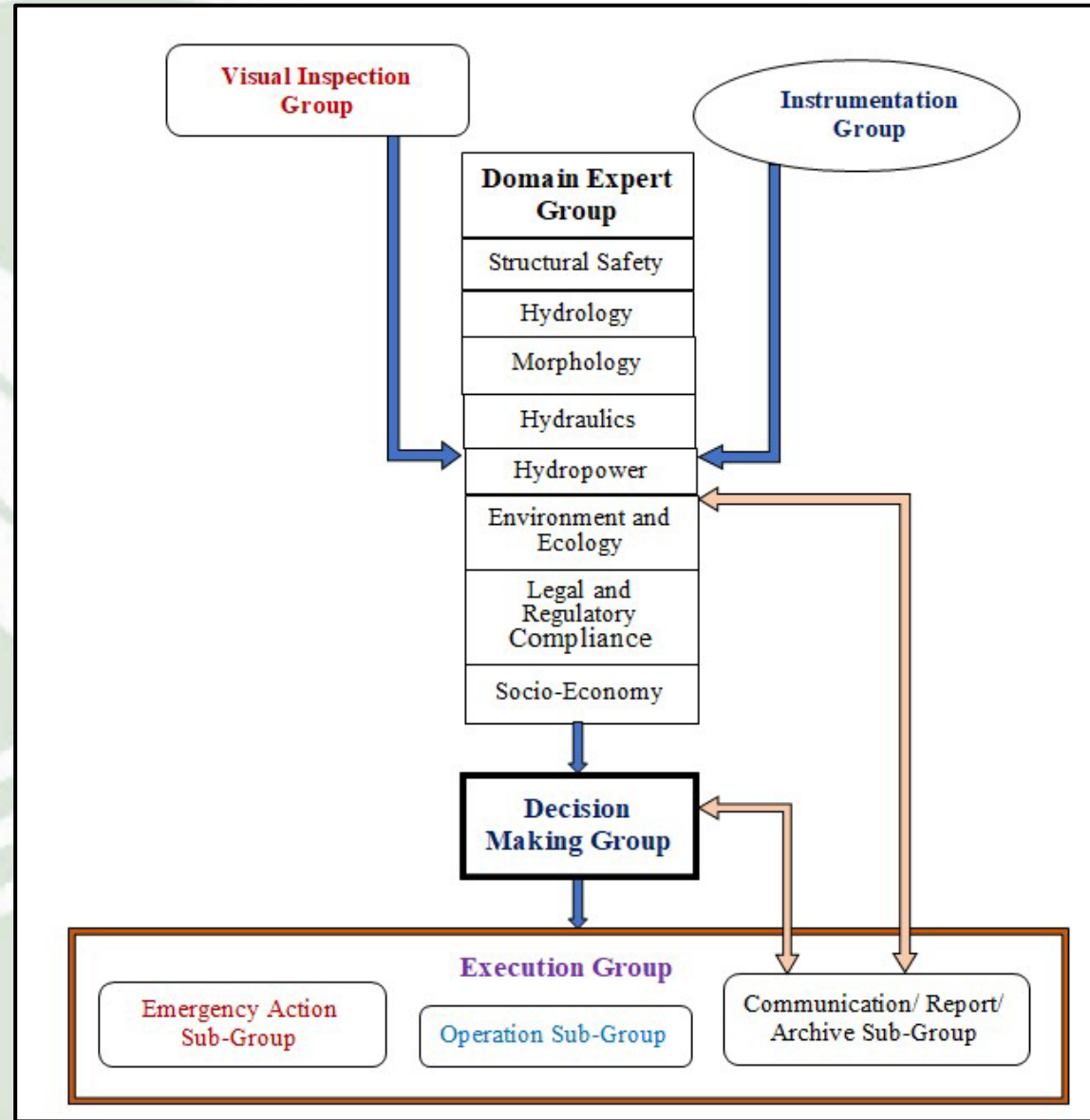
Water Accounting

- Water balance sheet
- Just in right quantity
- Decisions and policies

*Efficiency is an embedded,
all pervasive and cross-
cutting objective*

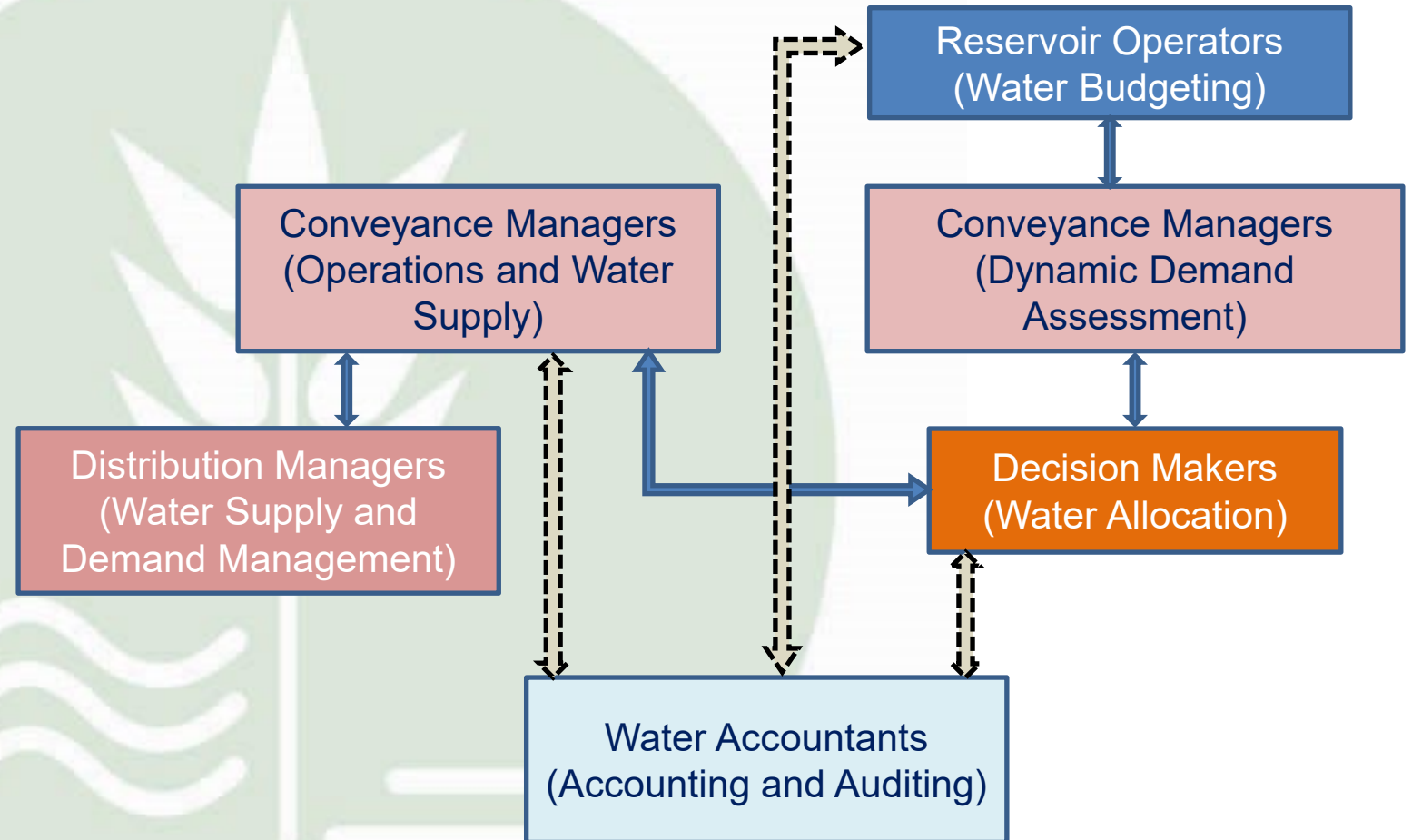
Reservoir Operation

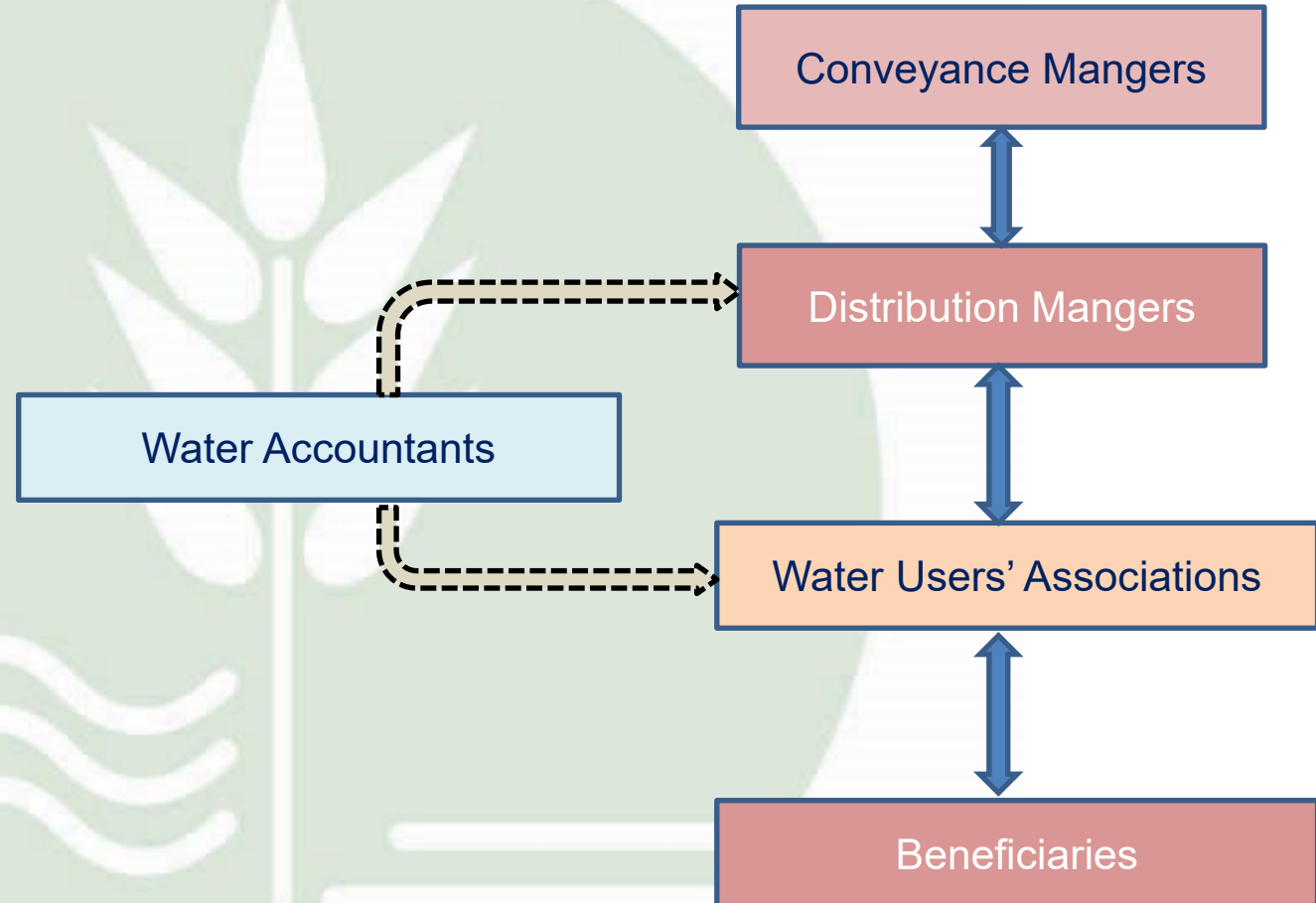
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On Farm Application

- Crop Water Requirement
- Water Usage
- Water Productivity
- Drainage

On farm activities are very important and they are in to the domain of agriculture management or on farm management. Demand management is the most critical element to be dealt with. Actual use of water is on farm and hence an exclusive system for on farm activity as an extension of Irrigation Management should be there.

Procedure Orientedness Vs. Object Orientedness

- Functional units are small and internal communication is towards the respective objectives
- Performance of each functional unit is defined and measurable
- Domain expertise is best utilized
- Communication across the functional units is limited but meaningful
- Integration of performance of all the functional units leads to overall objectives
- Decision Makers can better focus on overall objectives



Thank You

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