Deltagame

Negotiations for optimal solutions among different functions

4013.315 Architectural Engineering System Design

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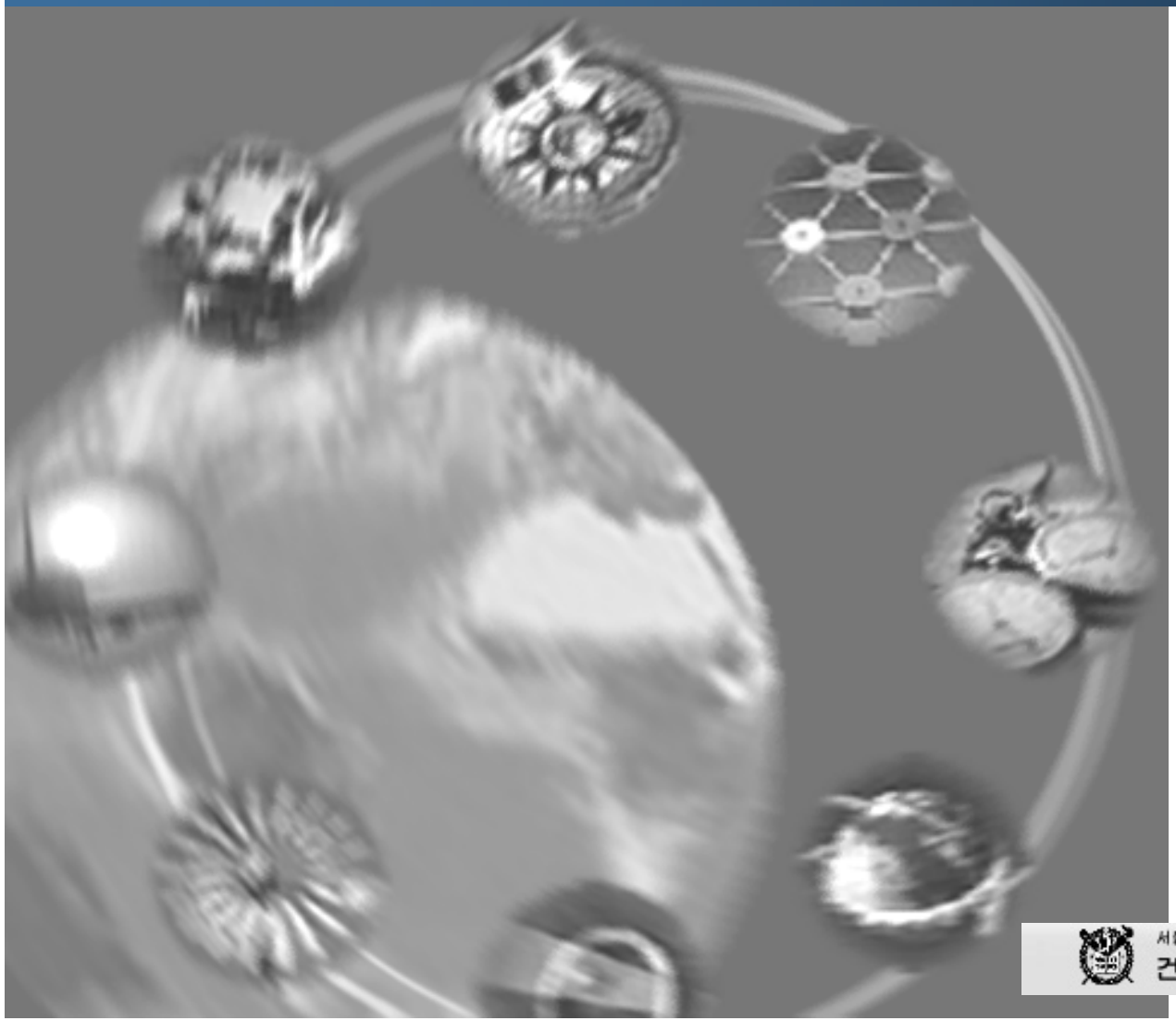

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Group/Team Work

Problems

- Science and Engineering Education Focus on the Individual's Work
- No Experience
- Product Orientation

Necessities and Advantages

- Complexity Requires Many Experts
- Education Improved
- Social Advantages
- Product Improved

Team Building and Team work

- Goal Statement
- Social Contract
- Roles
- Interaction
  - Interpersonal Relations
  - Communication/Information Exchange

Guidelines for Effective Meetings

(Partially from Bush, MIT M.Sc. Thesis, 1998)

- Meeting Organization
- Facilitator
  - Agenda
  - Keeps Rules
  - Avoids Domination
  - Keeps Time
- Record Keeper
  - Takes Notes
  - Distributes Notes
- Rotate Roles!

Beginning

- Start meetings on time and hold them in a place where the group won't be distracted or interrupted.
- Come to meetings prepared.
- Assign someone in the group to prepare an agenda before each meeting to be finalized and agreed upon in the first few minutes of the meeting.

Speaking

- In speaking, the most important thing to aim for is balance. Try to balance the input of each member.
- To maximize the group's collective wisdom, seek to hear from everyone.
- As a group, appoint a leader during each meeting to notice who is speaking and who is not and to invite the comments of those who are silent.
- Encourage each other to speak for no more than 2 minutes at a time unless a group member has a report to give.

Speaking

- Individually try to find a place where you are not monopolizing nor withdrawing from the conversation at hand.
- When you do speak, try to be honest, courteous, and to the point regarding your own work and the work and ideas of others.
- Avoid interrupting and side conversations; one conversation at a time is plenty, while three or four concurrent conversations make it impossible to go anywhere collectively.
- Stories whether about basketball games or political farce, should probably be saved for other forums.

Listening

- View listening as more important than speaking.
- Listen well enough to be able to paraphrase what is said.
- Giving/Receiving Feedback
- Give feedback to each other in non-threatening supportive ways (a good way to do this is to focus on the group goals and how a particular issue assists group objectives without attacking any group member).
- Seek feedback from each other, because it is most often useful even if disconcerting.
  Expect to disagree with each other.

Listening

- Do not personalize disagreement; instead, try to learn from it.
- Acknowledge as a group that wisdom and information can come from many different sources: facts, feelings, hunches, opinions, ideas, mistakes, and even silence.
- Seek to maximize the information you obtain from each other in your meetings through asking questions

Decision-making

- Be careful with the decision-making process. Once a decision has been made, it is very difficult and painful to backtrack.

- Be patient with the process of shaping consensus; make sure everyone agrees with a decision before moving on. One member's disagreement is a liability to group effectiveness.

- Make sure you hear and address all sides of an issue.

Decision-making

- If necessary, go through several iterations of analyzing alternatives, eliminating the most obvious, re-analyzing, eliminating, etc.

- If the decision-making process is not handled with care, a decision will probably have to be rethought at a later date after unneeded headache and work.

Ending

- End meetings on time.
- Make significant progress towards the goal of a meeting before ending.
- Whenever these two objectives conflict, be sure to discuss why significant progress was not achieved and whether to continue or meet another time.
- Summarize what the meeting accomplished.
- Set the date and time of your next meeting, the possible agenda, and any necessary preparations or tasks.

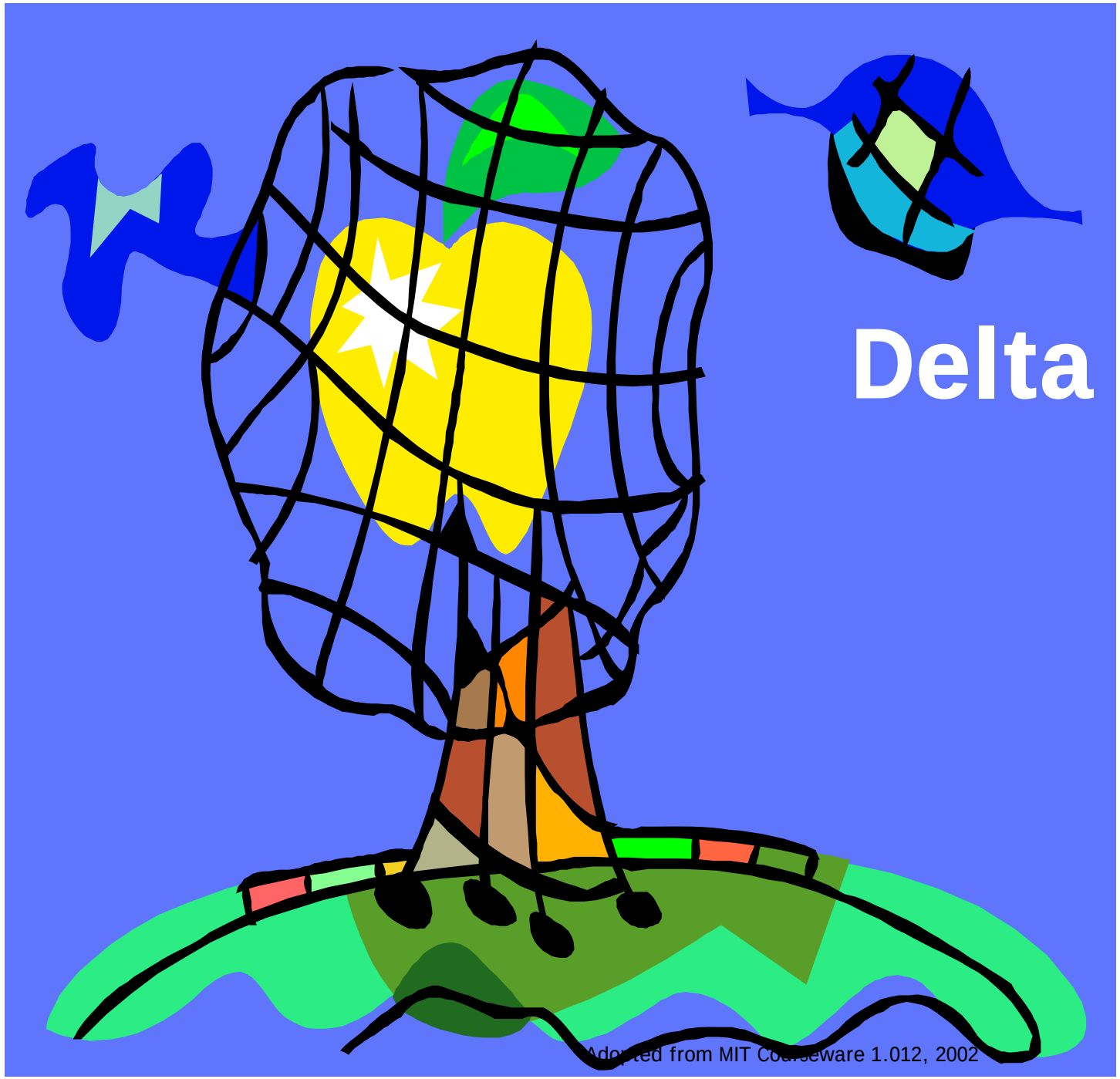
Indicators of Successful Teamwork in Industry *(Hensey, 1992)*

- Obtaining the opinions and involvement of other group members in issues that concern them before making final decisions.
- Being willing to help team members even when inconvenient or requires extra effort.
- Voluntarily offering relevant experiences, ideas, and findings to team members.
- Making timely contribution to someone else's action plan or project when requested.
- Acknowledging a colleague's contribution to a project when working with a client or senior manager, sharing the credit.
- Being non-defensive and receptive to the suggestions, ideas, opinions, and needs of colleagues; making effort to understand before criticizing.
- Considering impact your plans and actions will have on others.
- Being unwilling to criticize third party who is not present, not gossiping.
- Coming prepared to present or participate when you have a role to play in meetings.
- Expressing appreciation for teamwork extended to you and your people that was helpful.
- Identifying and helping to pick up loose ends even though they may not be in your area of responsibility.
- Keeping people advised of changes and developments and new information on a task or project.
- Being supportive of team's objectives once they are set, rather than sabotaging, fault-finding, or being negative behind the scenes.
- Pitching in when the whole team needs help in meeting a deadline or solving a problem, even if it's "not your job".
- Trusting the team to develop consensus on an issue, even if it takes a little more time.

- **Not all Groups are Teams: How to Tell the Difference**

- Katzenbach, Jon R., and Douglas K. Smith. "The Discipline of Teams." Harvard Business Review (1993).

WORKING GROUP	TEAM
Strong, Clearly Focused Leader	Shared Leadership Roles
Individual Accountability	Individual and Mutual Accountability
The Group's Purpose is the Same as the Broader Organizational Mission	Specific Team Purpose that the Team itself Delivers
Individual Work-products	Collective Work-products
Runs Efficient Meetings	Encourages Open-ended Discussion and Active Problem-solving Meetings
Measures its Effectiveness Indirectly by its Influence on Others	Measures Performance Directly by Assessing Collective Work-products
Discusses, Decides, and Delegates	Discusses, Decides, and Does Real Work Together



Delta Game

- Congratulations! You are now a member of an expert design team.

- Your collective task will be to design a new residence suitable for inhabitants of the imaginary *Deltoid plane*.

- Each team member will contribute different expertise to the project, and each has different design responsibilities to fulfill.

Life on DeltaP

- **A plane**, not a planet, so designing in two-dimensional rather than three-dimensional space.

- No z axis and unfamiliar relations between the x and y axes (a right angle on DeltaP measures 60° or $\pi/3$ radians)

- All sides of an equilateral triangle form lines considered perpendicular to all others.

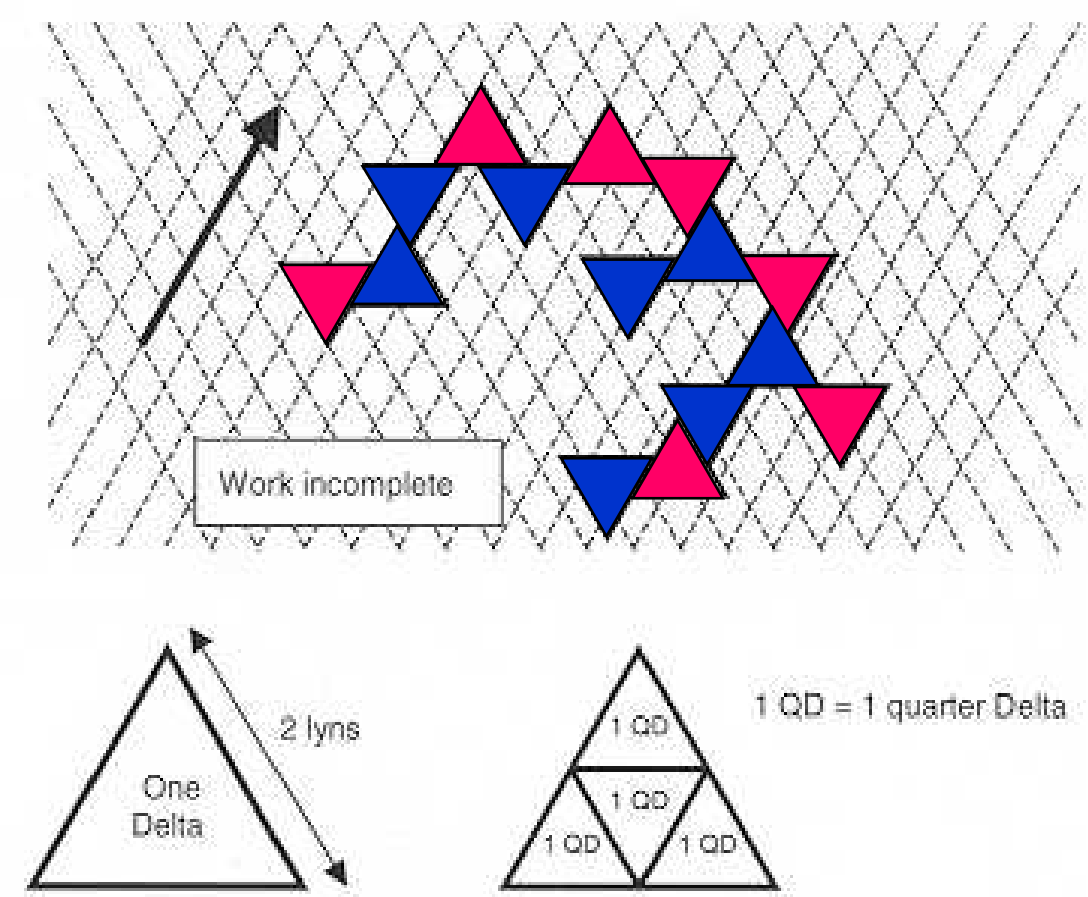
- No such thing as a "circle" on DeltaP, nor even the concept of continuity.

- Residents construct their artifacts strictly with discrete triangular forms.

- Your team will design the residence by assembling into a cluster, the most prized building materials on DeltaP, equilateral triangular components called "deltas."

Delta Specifications

- Come in red and blue versions
- Always measure 2 lyns per side.
- Four "quarter-deltas", QDs, triangular units of area measure with sides of 1 lyn, fit within a delta.



Measurements on DeltaP

MEASUREMENT	UNIT OF MEASUREMENT	SYMBOL
Time	Wex	wx
Distance	Lyn	ln
Area	Quarter-Delta	QD
Heat	Deltan Thermal Unit	DTU
Temperature	Degrees Nin	°Nn
Currency	Zwig	!

- All of DeltaP's units of measure share the divisibility and extensibility conventions of the metric system; in the measure of time, for example, there are both microwex (μwx) and megawex (Mwx).
- In relation to the attention- and life-spans of Deltans, these units are roughly equivalent to seconds and years, respectively, here on Earth.

Building Components

- Delatas have more complex functional and aesthetic characteristics than their simple form and dimensions would suggest.

- Conduct heat among themselves, radiate heat to outer space, melt if too hot, and grow if too cool.

- Red deltas produce heat.

- Two different kinds of cement are needed to join them together.

- Different colors and different quantities of deltas cost different amounts of money per delta, and can be assembled in clusters that are either exceedingly ugly or very attractive to the Deltans.

Team Meeting

The Design Task

Designing a new residential cluster

Understanding the Client

- The newer mode of segmenting interior space
- Two-equal-zone tradition
- Privacy of nooks and crannies
- Must be connected (i.e. no interior wall cut the space into completely separate spaces)
- Must be only one entrance/exit
- Color sensitive blue

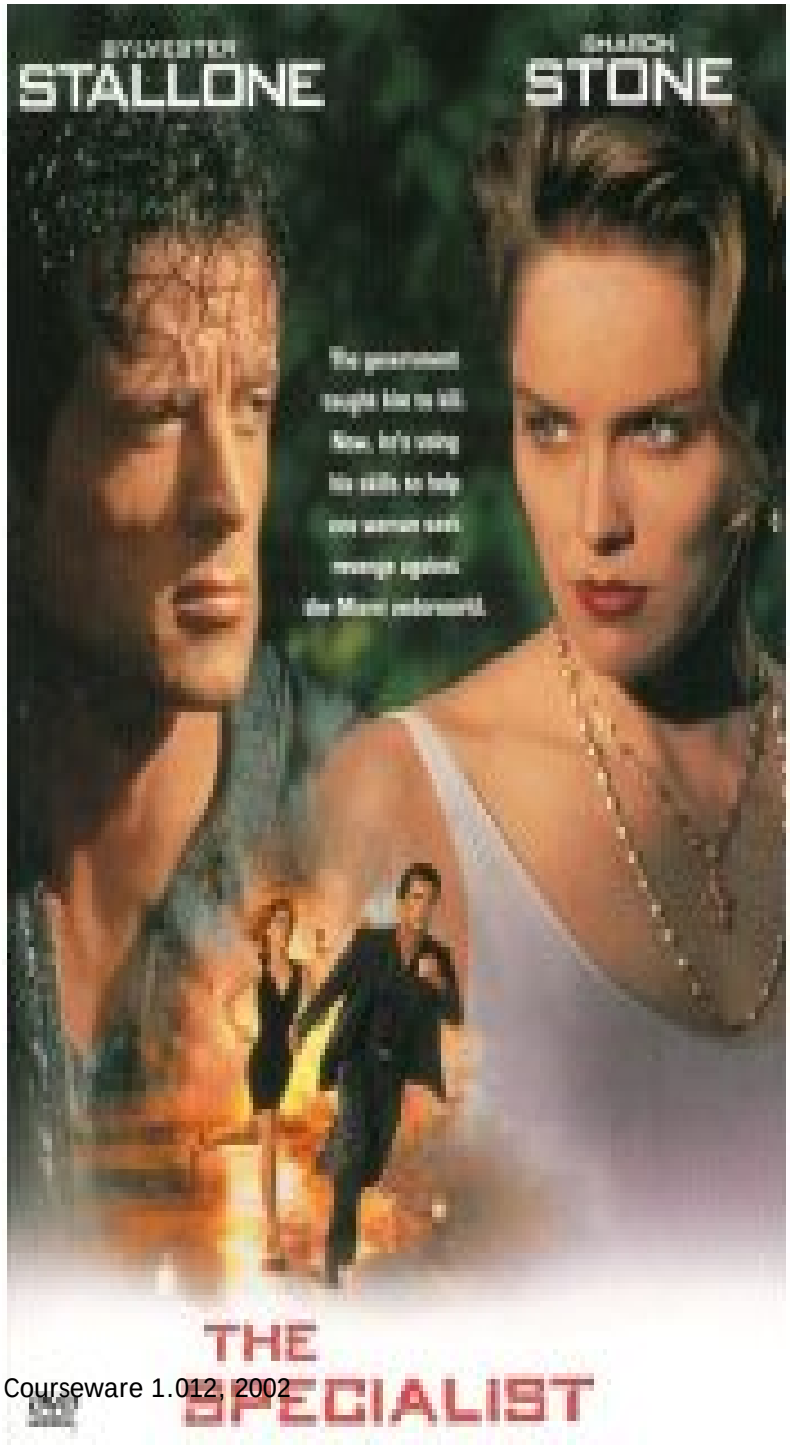
Design Specifications

Functional Internal Area	**100 QD**
Maximum Cool Deltas (% Total)	**70%**
Average Internal Temperature Range	**55-65 °Nn**
Individual Delta Temperature Range	**20-85 °Nn**
Overhead Factor -K	**1.2**
Total Budget	**!1400.00**

Specialist Meeting

Familiarize yourself with these specifications. Then, you should be expert in your role before your team begins the design phase.

Refer to the handout.



Performance Assessment Criteria

Degree of satisfying their role in each group's task

		A	B	C
Project Manager	Time (Shortest Construction Duration)	20%	30%	50%
	Cost	Within the budget	0 - 10% over	10%+ over
Thermal Engineer	AIT	Within the range	0 - 10% over	10%+ over
	IDT			
	Maximum Cool Deltas			
Architect	Satisfying Functions	Perfect	Minor defects	Major defects
	Layout (best)	20%	30%	50%

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