Software Engineering Group Project

COMP2043.GRP

Session 03:
Group Work

Acknowledgements

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- Thank you to (amongst others):
  - Dr Julie Greensmith

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Overview

- **Theory behind group work and teams**
  - Managing vs Leading
  - Team factors
  - Motivation and Morale
- **Team Composition**
  - Understanding personalities
  - Two different ways of looking at teams

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Learning Outcomes

- Understand the structure of teams
- Appreciate the differences between management and leadership
- Understand why conflict arises in teams
- Be able to identify different roles
- Appreciate the intricacies of working in a team in a university context

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TEAMWORK

Not so great if you're the hippo

4 Major Management Activities

- Planning and Estimating
    - budgeting and scheduling
- Measuring and Controlling
    - requirements, productivity and progress
- **Communicating and Coordinating**
    - motivating, coaching, educating and delegating
- Managing risk

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Teamwork is a vital part of the communicating and coordinating activity

- Team = group of individuals working cooperatively towards common goals
- A group of people who work together is not a team by default
  - a team has a shared vision and shared product goals
  - team members help one another
- This never happens spontaneously

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Team Factors

- Effective Management and Leadership
- Respect
  - for each other, for managers, for the project, …
- Communication skills
  - openness and transparency
- Good mixture of skills and environment
- Willingness to participate
- Having some fun together

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Team Evolution

1. Forming
2. Storming
3. Norming
4. Re-Forming
5. Performing

(Everard, Morris and Wilson, 2004, p. 170)
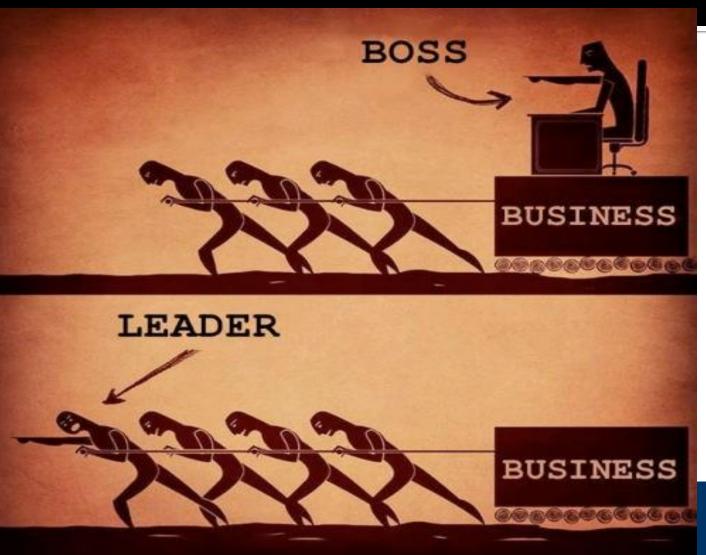
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Stages in Team Development

FORMING (Ritual sniffing)	STORMING (Infighting)	NORMING (Experimenting)	RE-FORMING (Effectiveness)	PERFORMING (Maturity & Excellence)

TEAM DEVELOPMENT →

FORMING (Ritual sniffing)	STORMING (Infighting)	NORMING (Experimenting)	RE-FORMING (Effectiveness)	PERFORMING (Maturity & Excellence)
*Unclear objectives	*Lack of unity	*Question performance	*Change/re-affirm goals & obj.	*Leadership according to situation
*Central authority	*Lack of method	*Review goals & objectives	*Re-structure	*Flexibility
*Conforming	*Relationships significant	*Review team & individual performance	*Change/confirm roles	*Openness
*Caution	*Cliques	*Open up risky issues	*Improve working methods	*Effective boundary management
*Feelings hidden	*Strength & weaknesses known	*Question assumptions & commitment	*Build on strengths	*Individual & team needs compatible
*Anxiety	*Leadership questioned	*Leadership discussed	*Resolve weaknesses	*Risk-taking
*Poor listening	*Tension, anger, cynicism, scapegoats	*Deal with animosities	*Develop team	*Pride
*Little care for others	*Confusion	*Greater clarity	*Willingness to experiment	*Excitement
*Initial pairing	*Failure	*Relief	*Better listening	*Learning
*Weaknesses covered up	*Hidden agendas		*Involvement	*Achievement
*Enthusiasm vs wait and see	*Disillusion			*Trust
	*Team's needs emerge			

Management vs Leadership

Management vs Leadership

- Management involves
  - planning and estimating
  - collecting, analysing, evaluating product data
  - charting, controlling and reporting on progress
    - GANTT, PERT, CPA
  - identifying and mitigating risk

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Management vs Leadership

- Leadership involves
  - Communicating with team members
  - Coordinating work activities
    - deciding collectively who does what
  - Boosting morale
    - setting achievable goals
    - making sure the team's environment is healthy
  - Management of human relations

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A Boss   vs   A Leader

- drives workers
- rules by authority
- inspires fear
- says "I"
- assigns blame
- knows how it's done
- manipulator
- takes credit
- says "Go"

- coaches workers
- rules by goodwill
- gives enthusiasm
- says "we"
- fixes problems
- shows how it's done
- develops people
- shares credit
- says "Let's Go!"

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Not everyone is good at everything

- Good managers are not always good leaders
- Good leaders are not always good managers
- Management is analytical and leadership is about understanding people

Attributes of Good Leadership

- Listens carefully
- Accepts responsibility
- Delegates fairly and consistently
- Enhances communication
- Says "thanks" when it's warranted
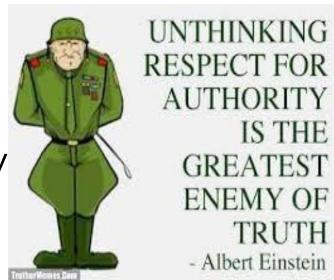- Maintains enthusiasm
- Resolves conflicts

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How will you improve your leadership skills?

LEADERSHIP

IS ALLOWING OTHERS TO LEAD

Lori Lafargue Photography

Respect and trust make it work

- Respect:
  - must be earned
  - be competent and have integrity
  - have concern for others
- Trust:
  - Must also be earned
  - honesty, sincerity, and follow through

UNTHINKING RESPECT FOR AUTHORITY IS THE GREATEST ENEMY OF TRUTH
- Albert Einstein

Teamicide*

- Things go wrong; teams can self-destruct
- Usually because of overzealous management or breeding of apathy
- Can frequently happen when members' goals are not respected
- Will happen if communication breaks down

*Demarco and Lister (1999)

Overcoming Teamicide

Defensive management	Trust your team, give them freedom to make mistakes
Mindless bureaucracy	Avoid being overly concerned with procedure
Unrealistic deadlines	Constantly monitor progress and replan
Physical separation	Provide opportunity for casual interactions
Time fragmentation	Limit number of projects assigned at a time
Clique control	Encourage dynamic interaction
Quality reduction	Encourage continuous learning, professional development
Excessive overtime	Can ask for one week, no more

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Motivation and Morale

- Easiest starting place to get a handle of leadership and management
- Motivation is to satisfy the psychological needs of the individual
- Workplace motivations are different to university group work motivation
- Understand what factors 'kill' your own motivation
- Morale is the manifestation of motivation

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Motivation Equation

$$Motivation = \frac{Expectancy \times Value}{Impulsiveness \times Delay}$$

Accounts for every major finding on procrastination, and draws upon our best current theories of motivation.

Reward (Expectancy X Value) +

Decrease the **certainty** or the **size** of a task's reward - its expectancy or its value - and you are unlikely to pursue its completion with any vigor.

Time (Impulsiveness X Delay) +

Increase the **delay** for the task's reward and our susceptibility to delay - **impulsiveness** - and motivation dips.

The 'Fire' Factor

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People need to

- believe that what they are doing is important
- have a sense of achievement
- receive recognition for their contribution
- use a number of different skills
- have well-defined tasks
- get the opportunity to grow and develop
- have some control and autonomy
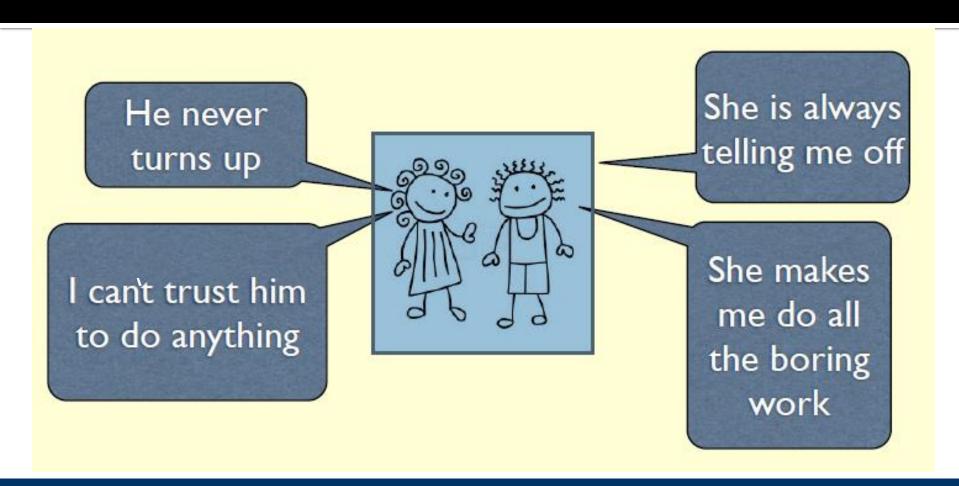- work in a non-threatening and nurturing environment

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Specifically for software engineers

- Technically competent leaders/managers
- Autonomy in problem solving
- Recognition for achievements (quality)
- Communicate in different ways
- Chance to try out new technology
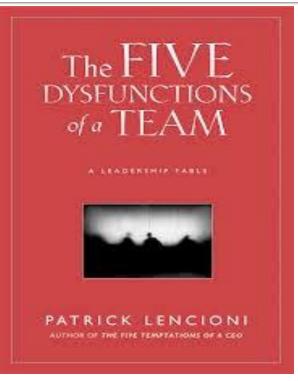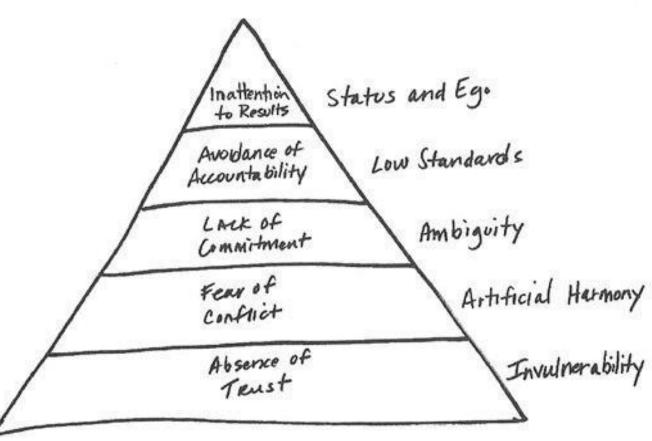- Have specialist equipment to carry out work

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When things go wrong

Five dysfunctions

Why do people get upset?

- Disappointed that someone or something has not lived up to their expectation
  - Thoughts: "She said she would have this done, why did she lie to me?"
  - Emotions: frustration, anger, upset, hopelessness
  - Behaviours: shouting, demanding, disengaging

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Can't vs Won't

- People fail to live up to expectations either because they can't or won't, … or both
  - Can't:
    - lack of training, ability, experience, confidence, resources, time
  - Won't:
    - no reward, psychological payoff, poor motivation, playing mind games, feeling bullied or in an unsafe environment

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Personality Types & Team Roles

Team Role		Contribution	Allowable Weaknesses
Plant		Creative, imaginative, free-thinking. Generates ideas and solves difficult problems.	Ignores incidentals. Too preoccupied to communicate effectively.
Resource Investigator		Outgoing, enthusiastic, communicative. Explores opportunities and develops contacts.	Over-optimistic. Loses interest once initial enthusiasm has passed.
Co-ordinator		Mature, confident, identifies talent. Clarifies goals. Delegates effectively.	Can be seen as manipulative. Offloads own share of the work.
Shaper		Challenging, dynamic, thrives on pressure. Has the drive and courage to overcome obstacles.	Prone to provocation. Offends peoples feelings.
Monitor Evaluator		Sober, strategic and discerning. Sees all options and judges accurately.	Lacks drive and ability to inspire others. Can be overly critical.
Teamworker		Co-operative, perceptive and diplomatic. Listens and averts friction.	Indecisive in crunch situations. Avoids confrontation.
Implementer		Practical, reliable, efficient. Turns ideas into actions and organises work that needs to be done.	Somewhat inflexible. Slow to respond to new possibilities.
Completer Finisher		Painstaking, conscientious, anxious. Searches out errors. Polishes and perfects.	Inclined to worry unduly. Reluctant to delegate.
Specialist		Single-minded, self-starting, dedicated. Provides knowledge and skills in rare supply.	Contributes only on a narrow front. Dwells on technicalities.

Belbin, 1981

Personality Types & Team Roles

Personality Types & Team Roles

STAR TREK

Character	Team Role(s)	Explanation
Spock	Monitor Evaluator	Logical and impartial.
Captain Kirk	Resource Investigator Plant	A pioneer. Outgoing and unorthodox.
Captain Pike	Coordinator	Mature, calm and confident. Encourages Kirk to reach his potential
Uhura	Specialist Teamworker	Provides knowledge in rare supply. Co-operative and diplomatic.
Bones (Dr. McCoy)	Implementer	Disciplined and set in his ways.
Sulu	Shaper Resource Investigator	Action-oriented. Extroverted and communicative.
Chekov	Specialist Resource Investigator	Math-whiz. Enthusiastic and impulsive.
Nero	Shaper	Aggressive, challenging, thrives under pressure.
Scott ("Scotty" the Engineer)	Specialist	Knowledgeable, self-starting, and dedicated.

Myers Briggs Indicators

- Four Dimensions of Personality Traits
  - extroversion -> introversion
  - sensing -> intuiting
  - thinking -> feeling
  - judging -> perceiving
- Based on the psychology of Carl Jung

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ISTJ Doing what should be done	**ISFJ** A high sense of duty	**INFJ** An inspiration to others	**INTJ** Everything has room for improvement
ISTP Ready to try anything once	**ISFP** Sees much but shares little	**INFP** Performing noble service to aid society	**INTP** A love of problem solving
ESTP The ultimate realists	**ESFP** You only go around once in life	**ENFP** Giving life an extra squeeze	**ENTP** One exciting challenge after another
ESTJ Life's administrators	**ESFJ** Hosts and hostesses of the world	**ENFJ** Smooth talking persuader	**ENTJ** Life's natural leaders

ESFJ
Kick ass right or not at all.

INFP
When it's all good, 24/7.

ESTP
What's fun without wrecking some property?

INTJ
So, how's that "normal" intelligence treating you?

ISFJ
Free hugs for EVERYONE!!!

ENFJ
Join me.

ISTP
Future plans: become god of all ninjas.

ENTJ
Believe.
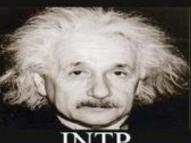
ESTJ
Cause I rule the fucking universe, that's why.

INFJ
It's how you spell "Justice."

ESFP
Well, how else to say it...

Giggidy-giggidy-goo!

INTP
Algebra, huh? Sounds gay.

ISTJ
Nonchalantly side-stepping your bullshit since the dawn of time.

ENFP
Sup.

ISFP
When not trying to be cool is cool

ENTP
Poke holes in logic. Make it funny. Win.

J-P ~ Management Style

- Judging-Perceiving (J-P) scale most closely related to management style

- Judging:
  - like clear goals, monitor progress carefully, motivated by deliverables and achievement
  - less adaptable, 'nagging', limiting creativity

- Perceiving:
  - Open to change of plan, allows autonomy, plans for spontaneity, regularly seeks feedback
  - Lack of outright planning requires the team to trust the perceptive leader

Roles in a 5- or 6-person team

- Most group projects have 5-6 members:
  - Project manager: 'Shaper' and 'Coordinator'
  - Technical lead: 'Plant' and 'Monitor'
  - Researcher: 'Specialist' and 'Resource Investigator'
  - Implementer: 'Team worker' and 'implementer'
  - Testing: 'Shaper' and 'Completer Finisher'
  - Documentation: 'Team worker' and 'Monitor'

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Pays to understand these roles within your team early

- Effective delegation
- Avoid too much conflict or worse, disengagement
- Make sure that all members are acting in a role which they are happy to complete
- A happy team is a productive team

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Homework

- Understand your Myers Briggs personality type
- Identify your Belbin team role
- Think about how you might structure your team based on the best abilities and the weaknesses of team members

http://www.humanmetrics.com/cgi-win/jtypes2.asp

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Summary

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  - Team factors
  - Motivation and Morale
- Team Composition
  - Understanding personalities
  - Two different ways of looking at teams

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