Human Factors and Teamwork

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Flight Operations

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An Example

Presented at International Meeting of Intensive Care in Brussels: Stephan Marsch, University of Basel

Scenario One "Reality"

One physician stays with patient taking the history. A witnessed cardiac arrest occurs after 2 minutes

After the onset of cardiac arrest, two further physicians are summoned to help

Scenario Two "All Present"

All 3 stay with the patient taking the history. A cardiac arrest occurs after 2 minutes

After the onset of cardiac arrest, the pre-existing team performs cardiopulmonary resuscitation

Study Conclusions

- Teams that were able to form prior to the cardiac arrest performed significantly better than teams that had to form during the cardiac arrest

- The process of teambuilding is associated with a significant delay in crucial measures in cardiopulmonary resuscitation

An Observed "Marsch" Scenario

- The single physician present called for assistance after witnessing the cardiac arrest
- The two further physicians attended
- No one took charge
- Two physicians fully absorbed in the intervention
- Patient was ignored while physicians studied the monitors
- The patient was put at risk by actions of the physicians
- Participants reported their own performance as adequate

An Aviation Example

- Explosive engine failure during climb, well handled by flight crew

- Information sought from cabin crew about the engine and airframe

- Management and briefing of passengers managed through the ISD

- Pilots assessed threat to the aircraft as worse then originally thought

- Decision to "Brace" the passengers for landing not adequately communicated

- Most crew and all passengers surprised by "Brace" call on landing

Summary

- Teams Perform Better in an Environment Where:
    - Plans are Briefed
    - Team Members are able to suggest and challenge

- Vital to take time to set Team Environment

- Lack of a Plan and Delegation of Roles will hinder the competent functioning of even the best team

Human Factors and Teamwork

- Definition of Teamwork
- Forming Teams
- Challenges
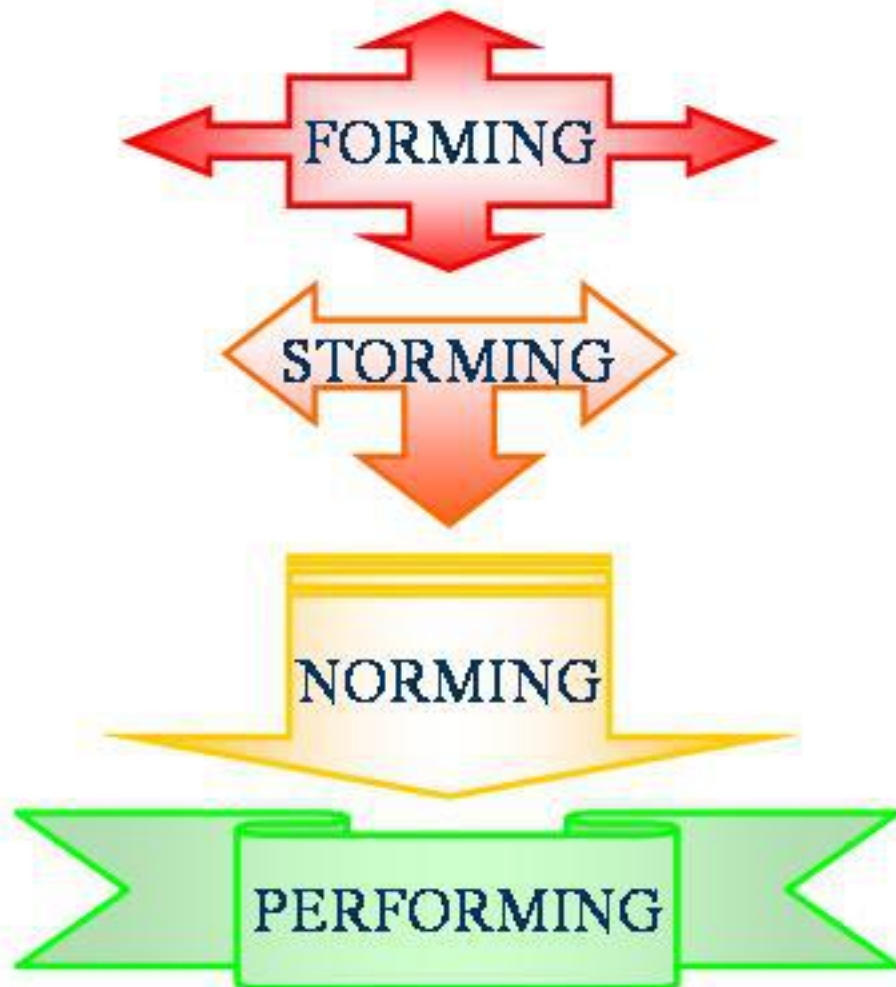- Authority Gradient
- Risks
- Benefits
- NASA Research
- Examples

Human Factors and Teamwork

- **DEFINITION OF TEAMWORK**
  "Combined Effort; Organized Co-operation"

- **SUCCESSFUL TEAMS**
  All Blacks

  Silver Ferns

  Americas Cup

  Apollo 13

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Forming Teams

- Classical Theory

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      ▲
  ◄ FORMING ►
      ▼

  ◄ STORMING ►
      ▼

   NORMING
      ▼

  PERFORMING
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- Requires time
- Assumes stable team membership
- Assumes clear team structure
- Assumes well defined roles
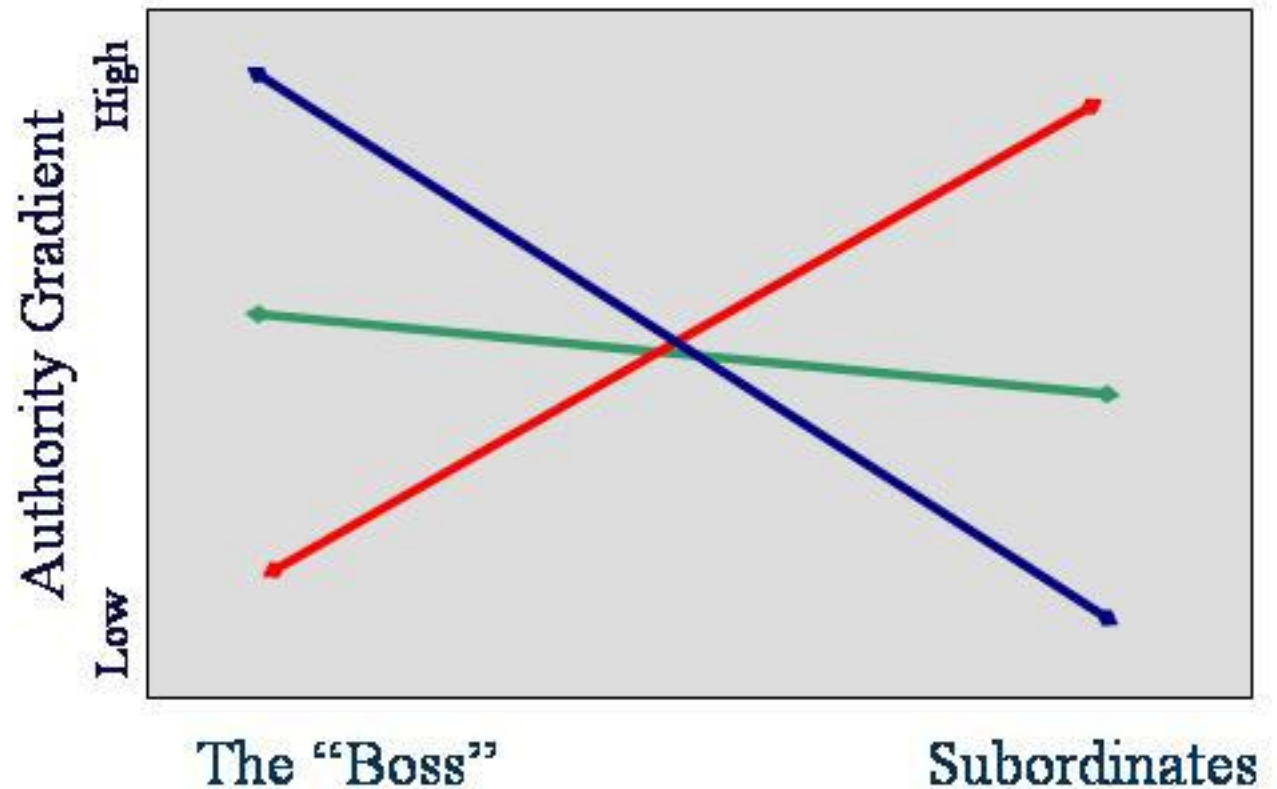
Challenges to Teams in Aviation

- Transient Crew Members
- Situation (Game Plan)
    - Normal
    - Anticipated
    - Unusual
    - Emergency

- Who Has Control?

Authority Gradient

Subordinate perception of the authority that the Boss holds over them

- Legal Authority
- Status
- Power
- Experience

Risks to Good Teamwork

- Time
- Communications
- Knowledge
- Team Leader Styles
- Team Member Styles
- "Group Think"
- Who Has Control?

Benefits of Good Teamwork

- Collective Outcome is Greater than the Sum of the Individual Member skills

- Sharing Workload

- Addition of Expertise

- Range of Options and Knowledge

NASA Recommendations

- The Most Critical Behaviour for the Team Leader is:
  - BRIEFINGS

- The Most Critical Behaviors for Team Members are:
  - INQUIRY
  - ADVOCACY
  - ASSERTION