

# How NASA builds teams - Mission critical soft skills for scientists, engineers and project teams

This is the title of a book by Charles Pellerin (2009), who is a former Director of NASA's Astrophysics Division where he led the team that repaired the Hubble Space Telescope. It describes a team-building process that is "proven, quantitative and requires only a fraction of the time and resources of traditional training methods."

A simple tool was developed to analyse team and individual performance. It was inspired by Carl Jung's theory of personality development published in 1905, where he described four functional types.

*"This book is an extraordinary guide to building effective teams to solve technical problems. The insights reveal a deep understanding of how technical people interact and can be motivated to work more effectively."*

*Dr Len Fisk, Head of Space Science, NASA, 1985-92*

NASA's Stephen Johnson wrote, "Frequently we find that the failure effects and proximate cause (of space mishaps) are technical, but the root causes and contributing factors are social or psychological."

So Pellerin's model starts from the premise that social context (ie relating to the interactions of people) drives behaviour and perceptions; flawed social contexts had been the primary problem in the Hubble Telescope mirror failure - "NASA's management of its contractor had been so hostile that they would not report technical problems if they could rationalise them".

His model is based on a two-by-two matrix and emphasises the social context rather than the individual's personality (cf Jung). Thus the basis of his approach is that each of the four quadrants which describe the

social context must be addressed for effective leadership to occur - the balance, also referred to by Jung, is the important point to address.

In one dimension is 'How we make decisions (emotion or logic)' and in the other - 'How we gather information to make decisions (sensing and intuition)'. Each quadrant contains two behaviours:

**Cultivating** - caring deeply about other people:

- ★ Express authentic appreciation
- ★ Address shared interests

**Including** - emotional experiences - deepest from relationships with other people:

- ★ Appropriately include others
- ★ Keep all your agreements

**Directing** - organising and directing others:

- ★ Avoid blaming and complaining
- ★ Clarify roles, accountability and authority

**Visioning** - thinking about possible futures:

- ★ Express reality-based optimism
- ★ Be 100% committed

Working in all four dimensions is more important than these specific behaviours.

Perhaps surprisingly, limiting team assessments to the smallest number of important behaviors maximizes accuracy. Eight are assessed because he wants adequate coverage of all four Dimensions and two behaviors per Dimension does this.

Note that their eight-behavior assessment methodology using 10 questions is in stark contrast to the 93 questions in the North American MBTI assessment (88 in the European version). Thus his assessments may take only 15 minutes each.

The Team Development Assessments (based on a minimum of five team members) are benchmarked against other data in

their database. The results show performance against peers for each behaviour. These assessments were

repeated at regular intervals. Results showed striking improvements at all levels of performance but particularly for those in the lowest quintile.

*"Great projects demand great leadership. The 4-D process in this book has tools, attitudes and habits that will help make you a great project leader. Its really for any group that is tackling a challenging project."*

*Brad Parkinson, chief architect of the Global Positioning System.*

Although based on NASA experience and adopted by NASA's Academy for Program/Project and Engineering Leadership, this is not just for scientists and engineers. The global challenges of global warming, nuclear proliferation, hunger and disease require solutions by teams from all disciplines - the way forward is via projects and programmes.

*"By teaching us how to understand our customers' mindset and then to authentically shape our team's offering in response, Pellerin helped us win three major competitive proposals worth \$9 billion. His 4-D approach helps team members achieve superior results - and in the process live richer and more compassionate lives."*

*Greg Davidson, Northrop Grumman Space Technology*