KSAK Motorflygkonferens 2024

Hur kan vi bli bättre i cockpit och vad kan jag göra mer av?

Lars Sveding, 5 oktober 2024

Glad to be here!

- John ”Gucci” Foley
- Flying is not dangerous, it is unforgiving!

Human Factors

- Egen vetenskap - mänskliga faktorn konstigt använd i media
- Multidisciplinary field (se nästa bild) - fel spak vid intaxning (40-talet)
- Fysiologi och psykologi samt ergonomi (förutsättningar och begränsningar)
- Överlappningen med Safety Science (Three Mile Island/Harrisburg 1979)
- Tenerife 1977 (KLM/Pan Am), Portland 1978 (United)
- Behaviorism - första kognitiva revolutionen (input - output)
- Information processing - andra kognitiva revolutionen (opening the lid)
- Joint cognitive system of work - tredje kognitiva revolutionen (interaction/co-ordination)

Crew Resource Management

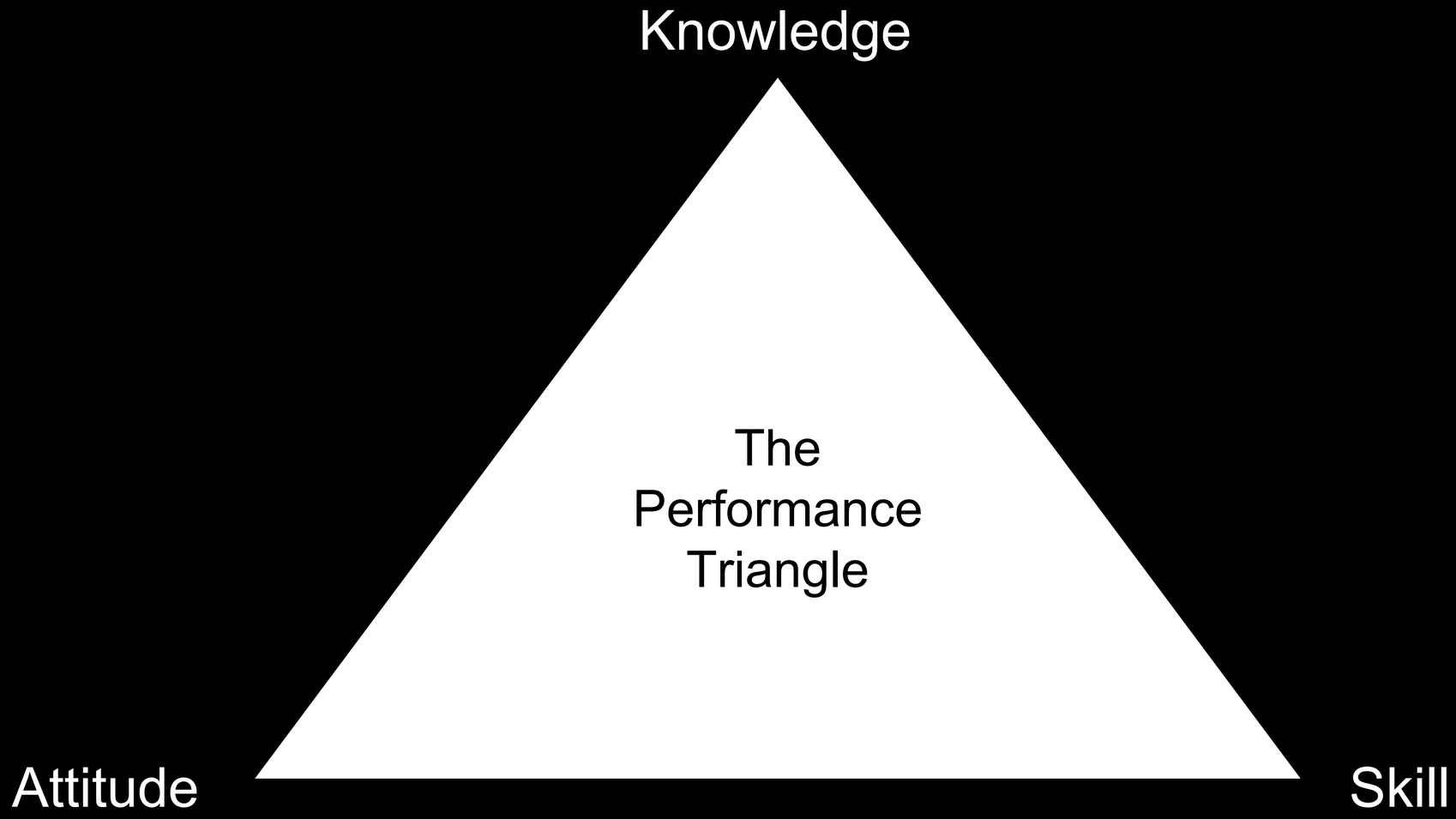
- Cockpit…, Crew…, Team…, Company…
- The effective utilization of all available resources applied to achieve safe and efficient operations
- Resources - team members, airplane systems, supporting facilities and persons
- Emphasis on non-technical aspects of team performance

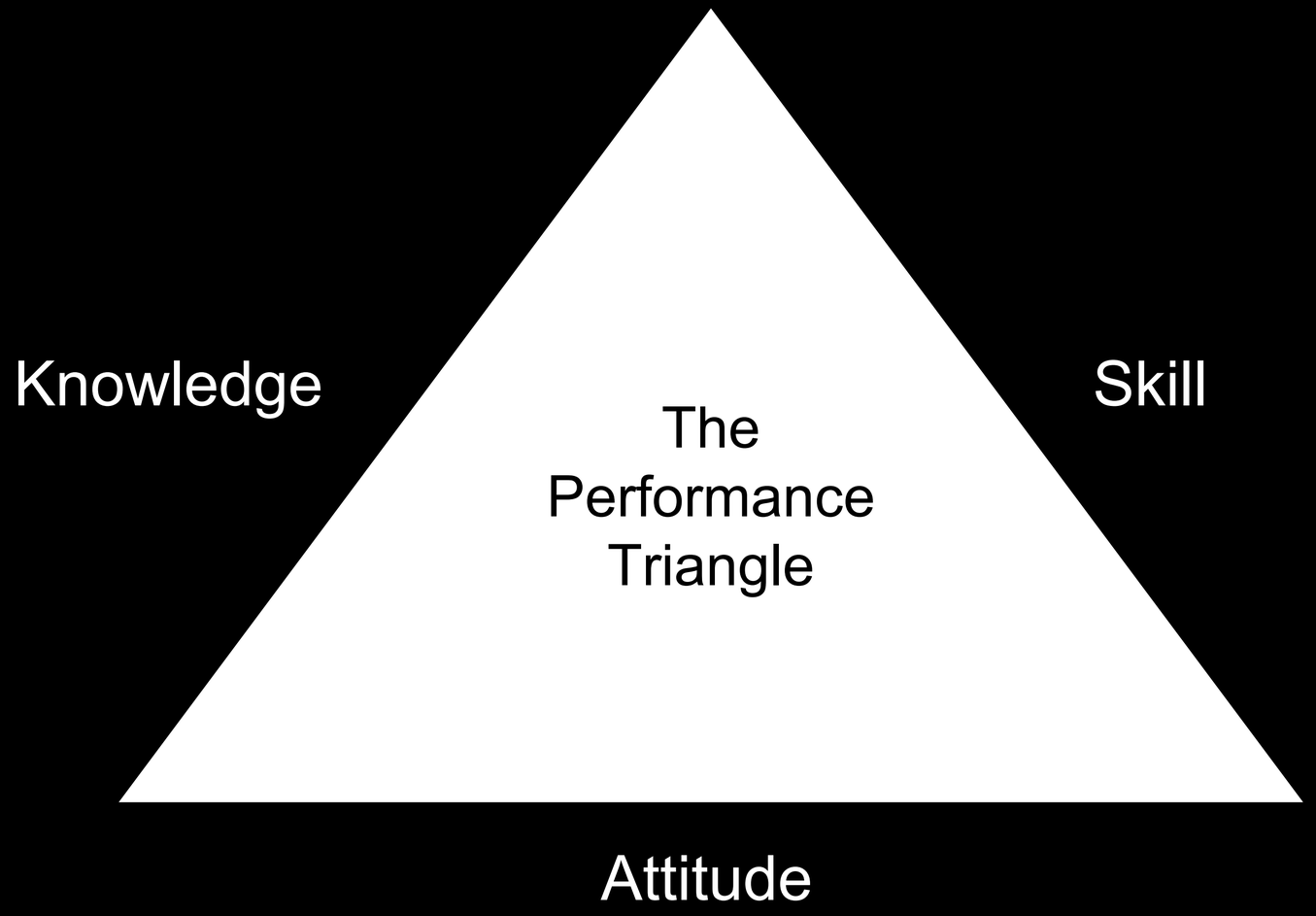
Pilot Core Competencies

- Situational Awareness
- Leadership and teamwork
- Effective Communication
- Workload Management
- Problem Solving and Decision Making
- Flight Path Management - Automation
- Flight Path Management - Manual control
- Application of Procedures
- Knowledge

Värt att veta

- Startle and surprise
- Upsets - onormala lägen
- UAS - Undesired aircraft states
- CFIT - Controlled Flight Into Terrain
- LOC-I - Loss of Control in Flight
- TEM - Threat and Error Management


Knowledge
The
Performance
Triangle
Attitude
Skill


Knowledge
Skill
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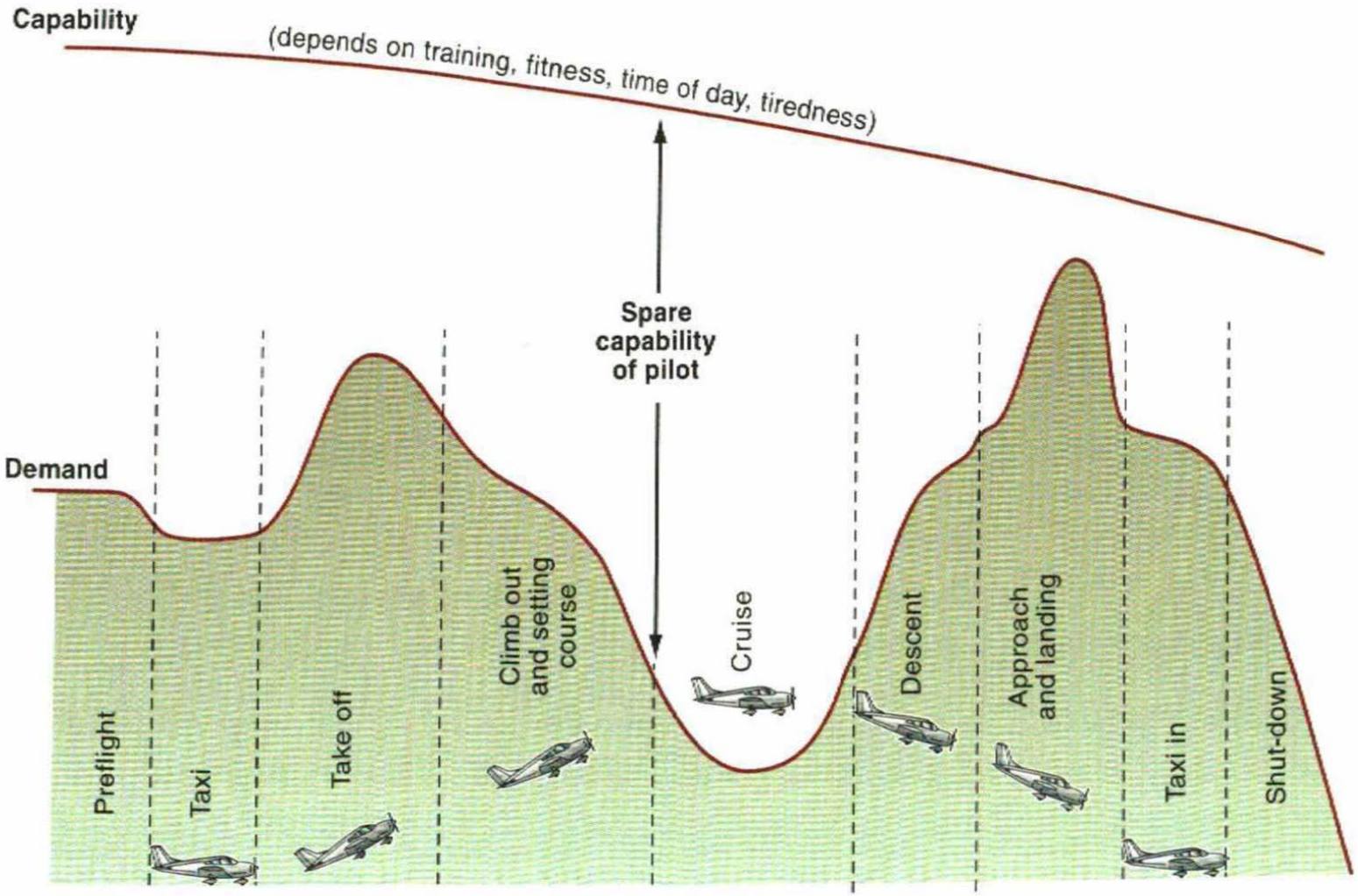
Värt att fundera på

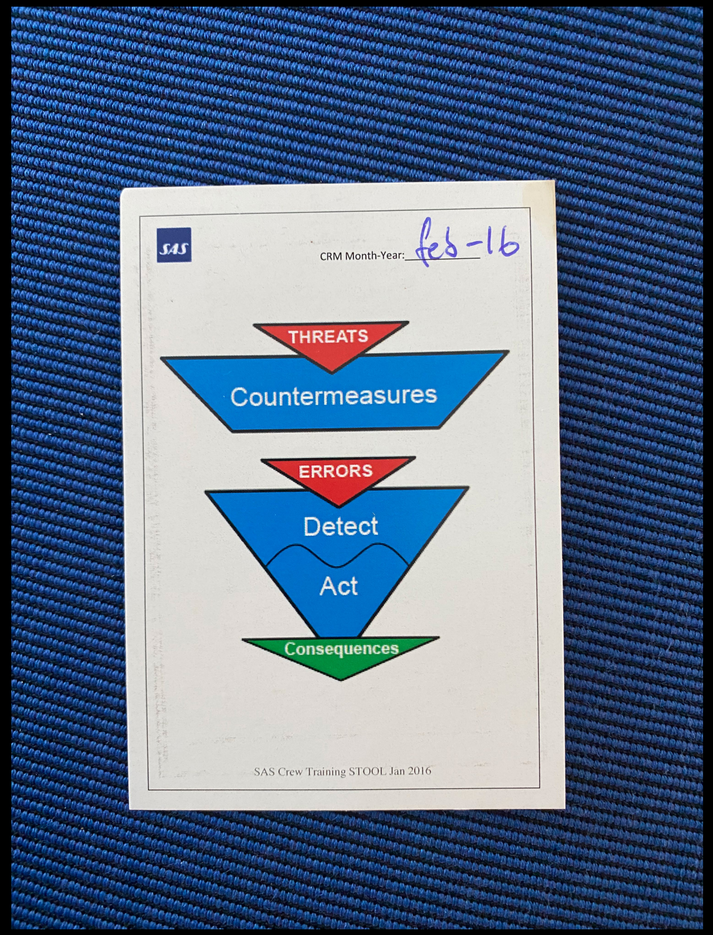
- Är det piloten, miljön, eller materialet som är den svagaste länken?
- Trafikvarv med lokala avvikelser…
- Flygplatser och flygfält…
- PPR…
- Stall…

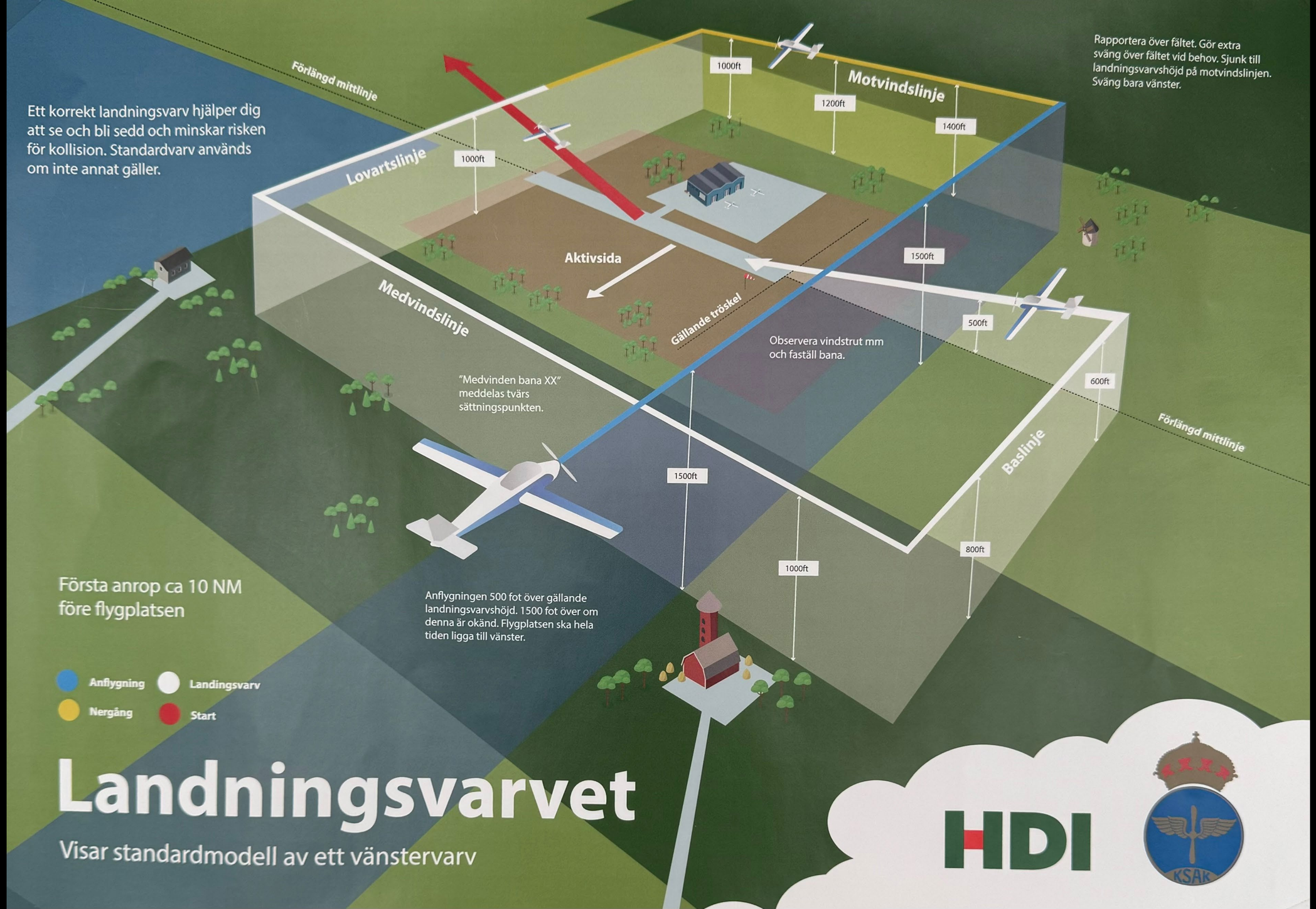
Reservkapacitet



Att göra!

- Håll mittlinjen samt korrekt höjd/kurs/fart
- Trimma och slappna av - ryggstöd?
- Tänk efter före - TEM/Briefing/tänk högt
- Kunskap - POH/supplement/regler
- Landa på korta fält (aircraft handling)
- Cockpit routines - trigger/flow/checklist
- Stay visible/look out-peek in/radio com.




Ett korrekt landningsvarv hjälper dig att se och bli sedd och minskar risken för kollision. Standardvarv används om inte annat gäller.
Förlängd mittlinje
Lovartslinje
1000ft
Motvindslinje
1200ft
1400ft
Rapportera över fältet. Gör extra sväng över fältet vid behov. Sjunk till landningsvarvshöjd på motvindslinjen. Sväng bara vänster.
Aktivsida
1500ft
Medvindslinje
Gällande tröskel
500ft
Observera vindstrut mm och faställ bana.
"Medvinden bana XX" meddelas tvärs sättningspunkten.
600ft
Förlängd mittlinje
Baslinje
1500ft
800ft
1000ft
Anflygningen 500 fot över gällande landningsvarvshöjd. 1500 fot över om denna är okänd. Flygplatsen ska hela tiden ligga till vänster.
Första anrop ca 10 NM före flygplatsen
Anflygning
Landingsvarv
Nergång
Start
Landningsvarvet
Visar standardmodell av ett vänstervarv
HDI
KSAK

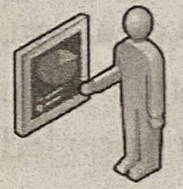
Tänkvärt

- Det perfekta är det godas fiende
- Slö och slapp men inte likgiltig
- Prepared for the unexpected
- A plan is nothing - planning is everything
- Option generation - time critical or not
- If faced with an emergency landning, fly the thing as far as possible into the crash
- Heuristics - upptäcka, finna, hitta, se en lösning, tumregler, intuition

Safety Immaturity Model ©

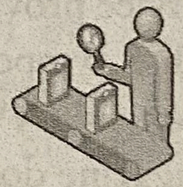
"Keep the mushrooms in the dark and feed them lots of shit".

Increasing nonsense

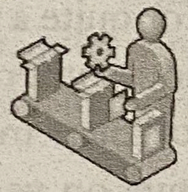


We improve culture and behaviour with a funny cartoon figure

Culture and behaviour starts with holding the railing



Consultants improve our culture and behaviour



Culture and behaviour are important because they help winning tenders

Walking the talk improves our culture and behaviour

Decreasing credibility

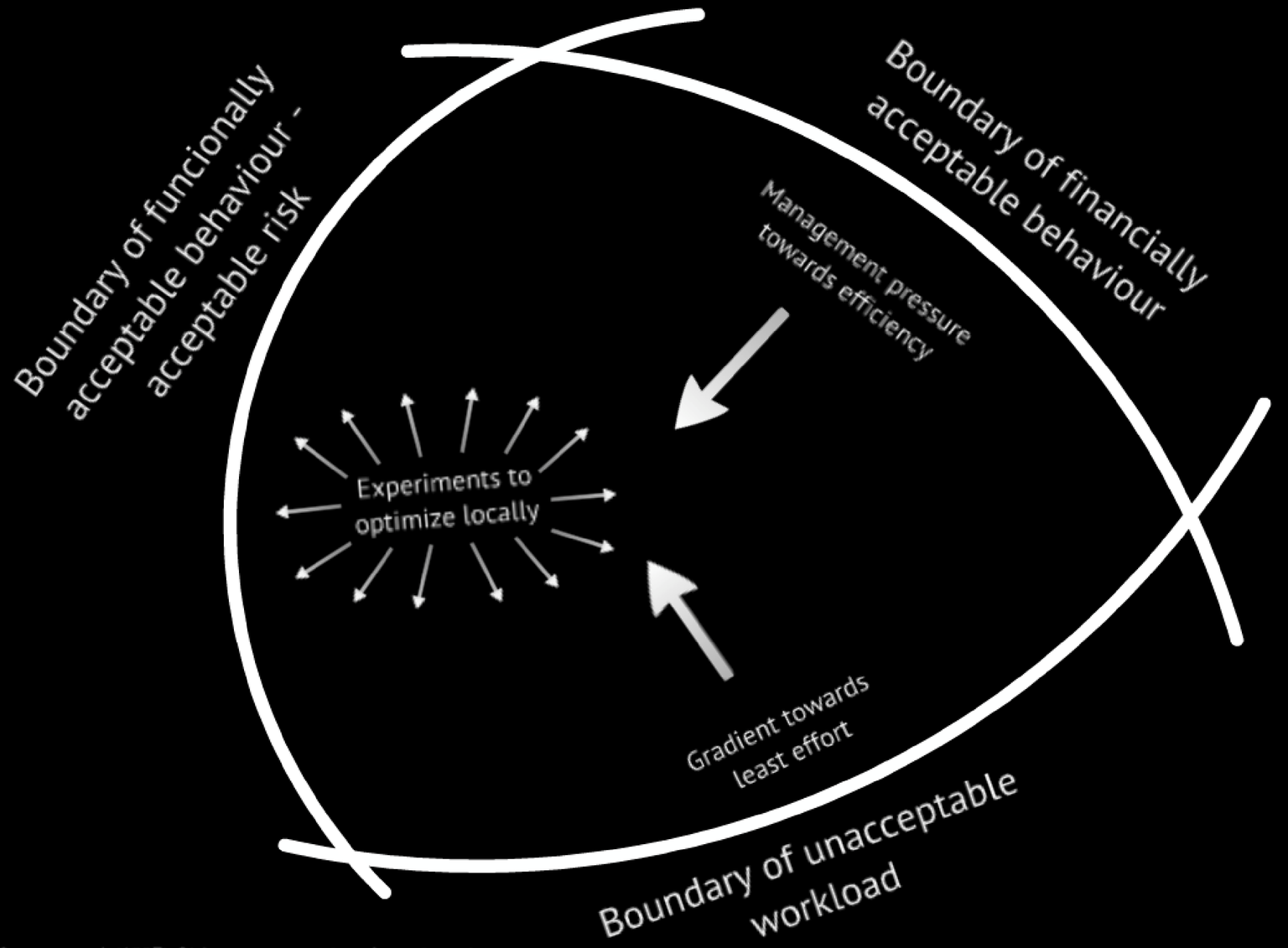
Table 1 Disciplines frequently involved in Human Factors activities[1]

Discipline	Definition	Specific area of interest	Typical area of application
Psychology	The science of mind and behaviour.	Sensory characteristics, perceptual laws, learning principles, information processing, motivation, emotion, research methods, psychomotor skills, human errors.	Display requirements and design, control systems design, allocation of function, training system requirements and methods, selection methods, effects of emotional and environmental stress on performance, simulation requirements.
Engineering	Applying the properties of matter and the sources of energy in nature to the uses of man.	Hydraulics, mechanical, structural, electrical, electronic, and aerodynamics design, systems analysis, simulation, optics.	Design of displays, design of controls, design of control systems, design of complex systems, design of optical systems, simulator design.
Human physiology	Deals with the processes, activities and phenomena characteristic of living matter, particularly appropriate to healthy or normal functioning.	Cell structure and chemistry, organ structure and chemistry, interaction of the various body constituents to promote health and function, functions and requirements of body systems.	Environmental systems, diet and nutrition, effects of environmental factors (heat, cold, hypoxia), establishment of environmental requirements.
Medicine	The science and art of preventing, alleviating or curing disease and injuries.	Effects of various forces, radiation, chemical and disease agents; appropriate preventive methods of protecting health and well-being.	Toxicology of smoke, chemicals, impact protection, maintenance of health.
Sociology	The study of the development, structure and function of human groups	Small and large groups or "teams"; crew composition; behaviour of passengers in emergency situations.	Crew selection, passenger safety.
Anthropometry	Study of human body sizes and muscle strength.	Anatomy, biodynamics, kinesiology.	Ground support equipment, access door size for maintenance, work station layout (reach, range of adjustment of seats, etc.)

1. Other disciplines with representatives actively engaged in Human Factors activities include education, physics, biochemistry, mathematics, biology, industrial design and operations research.

Jens Rasmussen

- Forskare på Risö I Danmark
- All decision are right when you take them
- Local rationality
- 1997 - Risk management in a dynamic society
- 2005 - Going solid
- Richard Cook - Resilience in Complex Adaptive Systems
- Scott A. Snook - Friendly Fire



Rasmussen, J. (1997). Risk management in a dynamic society: A modelling problem. Safety Science, 27(2-3), 183-213.

Golden rules

Taktisk nivå

- Fortsätt flyg!
- Safe trajectory
- Safe altitude
- Communicate

Golden Rules

Strategisk nivå

- GEPARD (Airbus)
- Var - Vad - Vart (LIN)
- Position 1 vs Position 2
- Don´t be busy, don´t be smart, always have a reason