



Navigating the Future of Flight:

AI & Psychometrics in Pilot Selection & Recruitment: A Collaborative Model for Sustaining Quality Pilot Supply.



The APC Ecosystem

Connecting Airlines, ATOs, and Members

The APC Ecosystem is a network that unites airlines, flight training organisations, and graduate pilots with a shared vision of advancing aviation careers.

APC Members

20,000+	Freemium Members
4,800	Pilots in Training
4,100	Qualified Pilots

Airline Partners



APC's commitment is to foster a robust network that:

- Facilitates the professional growth of pilots
- Bridges the gap between their training and airline employment
- Rewards high-quality ATOs
- Delivers safe & efficient pilots to airlines



Aleksandra Kapela

- Aviation Psychologist
- MSc in Occupational Psychology
- Human Factors Specialist
- Ground School Instructor
- Works with individuals, flight schools, airlines, operators
- Pilot suitability, personality, well-being, mental health

Symbiotics Limited

- Over 25 years' experience of providing assessment and selection
- Training and consultancy services in over 130 locations
- Spread through 80 countries, across 5 continents
- Specialised in the aviation industry



Recruitment & Training Challenges in Aviation

**The Complexity of
Aviation Roles**

**Regulatory and Safety
Considerations**

**Rapid Technological
Advancements**

**The Global
Talent Pool**

**High
Training Costs**

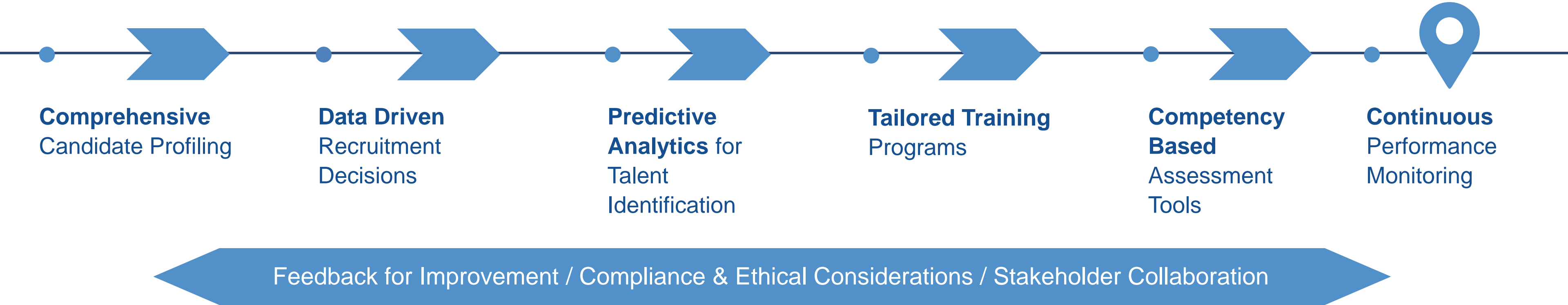
Solutions:

- Focus on personalised, evidence-based training, supported by advancements in AI and data analytics
- Leveraging data, technology, and new methodologies to identify, select, and train individuals

Data Driven Recruitment and Training Platform

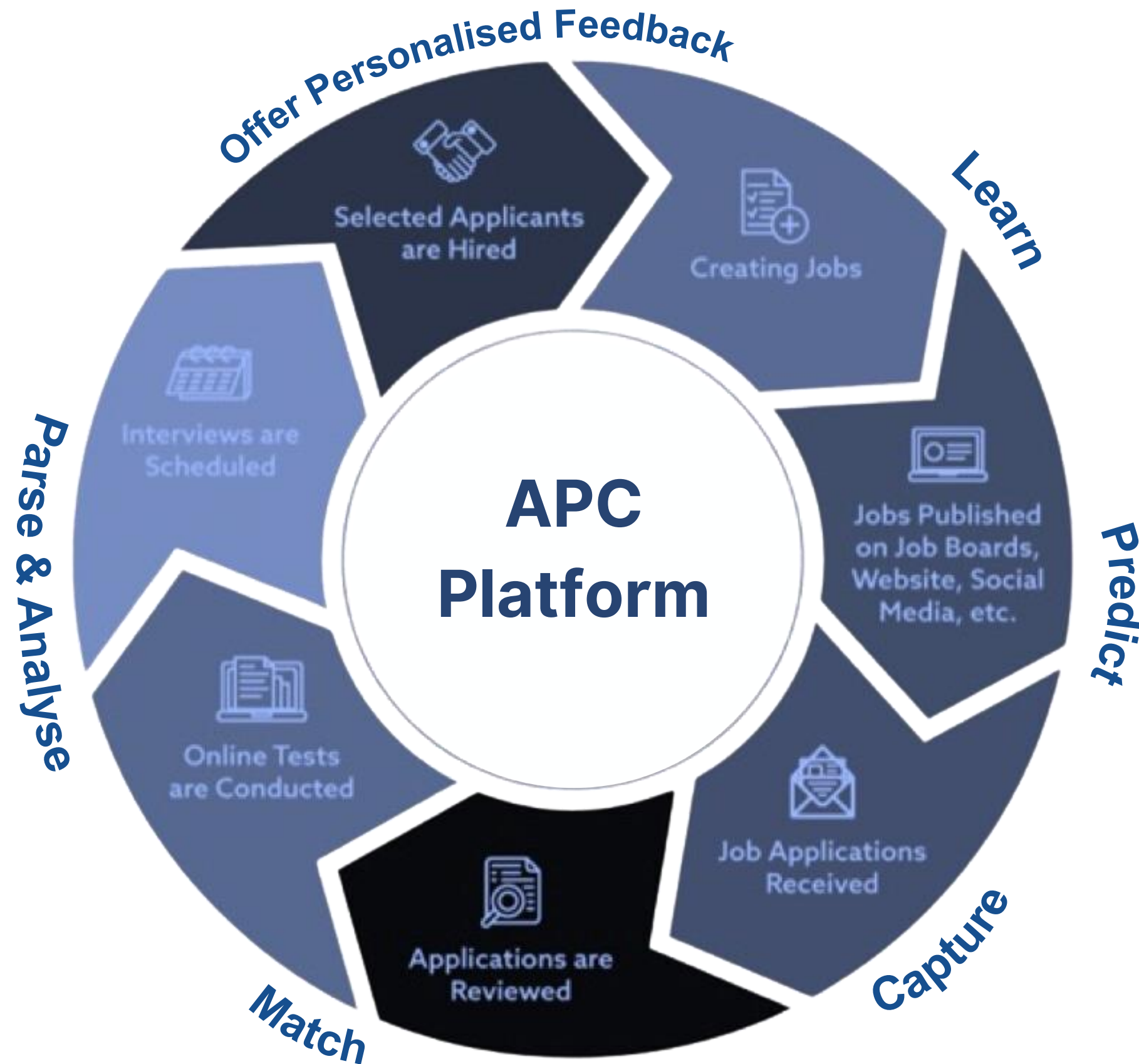
Data Driven Recruitment Process

Technology Platform (Roadmap & Integration)



Applicant Training System

2023
1,500,000
Applications



Symbiotics
Optimum
Avianca Pilot
Profile

1,776
Candidates

Filtered by APC
Platform, based on
Avianca
Requirements

- Letter informing selected applicants included in next step

750+
Candidates

Online Interview &
English Language
Assessment

- Letters informing applicants of available slots for interview
- Conducted by experienced airline pilots and training captains
- Administered through platform
- **3 data points recorded in platform**

620
Candidates

Symbiotics digital
optimum profile
Psychometric
Assessment &
Knowledge Test

- Cognitive - assessing mental processes of perception, memory, and reasoning
- FAST - A multitasking, workload management test
- APQ - A Personality questionnaire
- Focused on "Avianca Optimum Digital Pilot Profile"
- **35 data points recorded in platform**

553
Candidates

180
Recommended
for A320 TR

Competency based
simulator assessment
- King Air 200/350 in
Bogotá

- Conducted by APC SMEs
- **11 data points recorded in platform**

360
Candidates

180
Candidates
Selected

49 Data Points Analysed with AI



SYMBIOTICS

Symbiotics Profiling Process

Combining Proven & Innovative
Technical Solutions

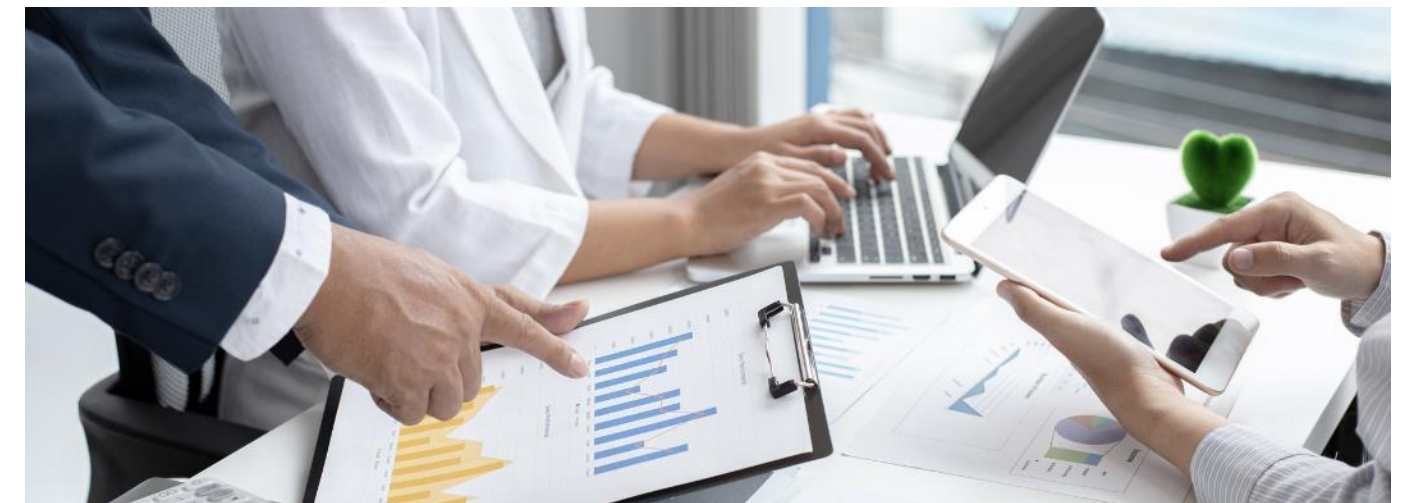
SYMBIOTICS LTD

WHAT IS PROFILING?

High-standard research process to understand the company's culture and requirements for aircrew in the future.

Involves creating and analysing: Job Description, Organisational Culture, Skills and Attributes of the role, training syllabus and challenges against the backdrop of the national educational standards and culture of the airline and its requirements.

The information analysed and mapped against the 64 ADAPT behavioural profiles along with any key competencies, attributes, attitudes and skills that will inform the selection process.



PROFILING DNA

- Personality
- Competencies
- Attitudes
- Abilities
- Motivation
- Expectations
- Culture



- Attributes valued by airline
- Attributes not tolerated by airline
- Organisational Culture
- Assessment Criteria
- Training Culture
- Desirable Behaviours
- Regional cultural, educational & economical aspects

PROFILING ELEMENTS



Issuing Questionnaires and Questions



Carrying out interviews/focus group sessions



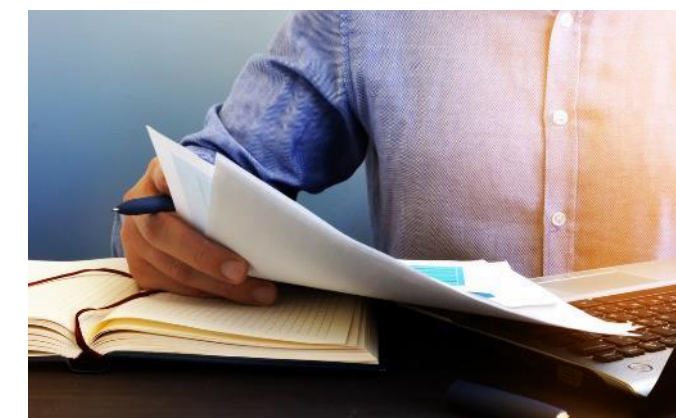
Analysing questionnaire responses and data from interviews



Researching the regional culture, educational standards, and lifestyle



Analysis of the results and production of an Organisational profile and the preferred Role Attitude



The delivery of a Profile Report



Altering algorithms in the PQ report generation to map scores to the agreed profile

RECRUITMENT SUCCESS

Profiling ensures that the right people are identified who will not only complete training but also:

- ✓ Be more efficient and contribute to the safety
- ✓ Be a good employee, who provides sufficient length of service to maximise Return on Investment
- ✓ Thrive in the company culture and enable change

MORE SATISFIED BEING IN THE COMPANY

=

MORE EFFICIENT, WILL STAY LONGER



Avianca Symbiotics Profile



TC4a

TP4a

TC2a

IC4a

TC4b

TC4d

- Analytical Prowess
- Structured Problem-Solving
- Thoughtful Team Collaboration
- Safety-Conscious
- Practical Skill Development
- Resilient
- Effective Communication
- Professional Dedication
- Adaptability
- Excellence in Execution

Avianca Symbiotics Profile (Selection)

Avianca

SYMBIOTICS

IC4a

TC2a

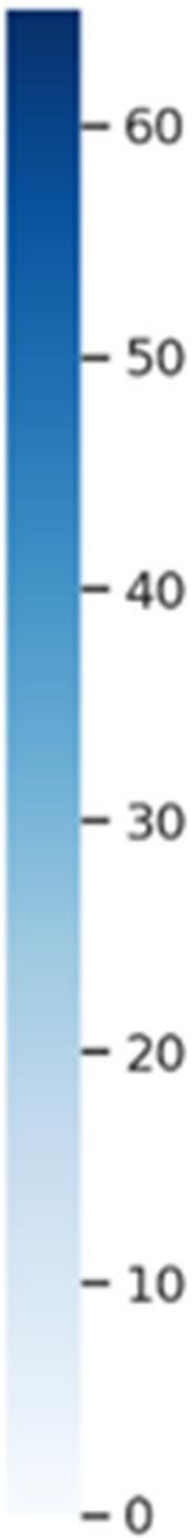
TC4a

TC4b

TC4d

TP4a

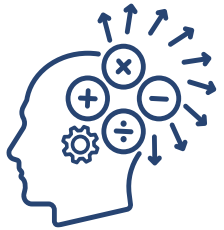
		Recommendation by Silhouette Type	
Silhouette		NO	YES
	IC3A	1	0
	IC4A	4	4
	IC4B	1	0
	IC4D	1	0
	IP3B	1	0
	IP4A	1	0
	IP4B	1	0
	TC2A	1	6
	TC3A	5	0
	TC3D	1	0
	TC4A	53	65
	TC4B	0	1
	TC4D	13	16
	TP1A	1	0
	TP2A	1	0
	TP2B	2	0
	TP3A	3	0
	TP4A	28	29
	TP4B	3	0
	TP4D	7	0
		NO	YES
		Recommended	



Avianca Symbiotics Profile Consequences



Ideal pilots combine analytical thinking, structured problem-solving, and collaborative teamwork



They apply a high level of responsibility and focus on safety, with natural analytical skills



The development of practical skills may enquire patience and occurs best in structured learning environments



Training should enhance practical skills, resilience, and communication to ensure pilots perform well under pressure and in teams, with a consistent emphasis on safety

Psychometric Assessment & Simulation Evaluation Prediction

Symbiotics Optimum Digital Pilot Profile

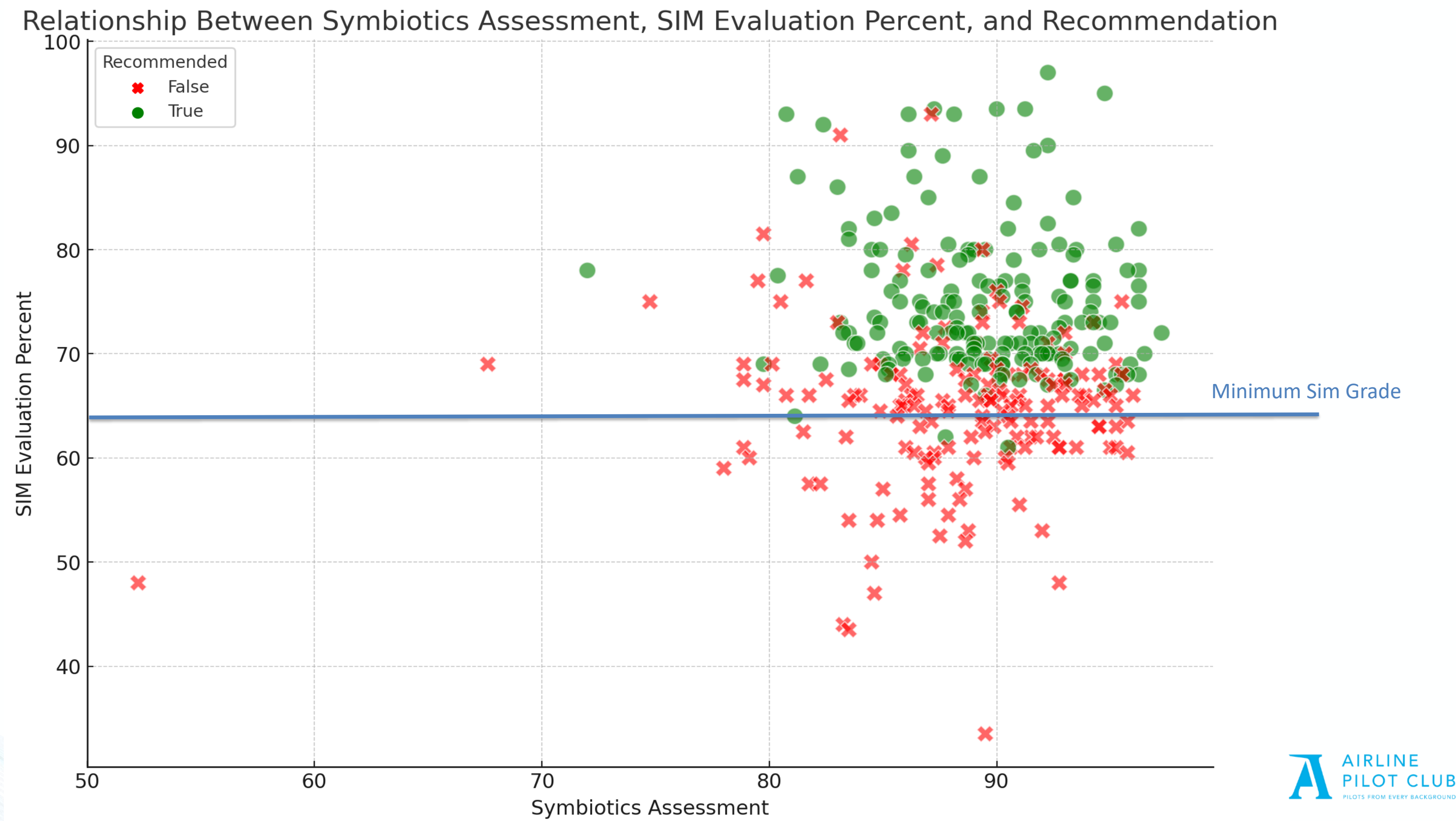
Top Candidates

Candidate details:				Personality					Academic		Cognitive										FAST							
Number	Licence Code	Assessment Date	Overall	Silhouette	Safety Culture	Personal	Character	Cultural Fit	Cognitive (%)	Column1	Column2	Verbal (%)	Column3	SRR (%)	Column4	PSA (%)	Column5	WM (%)	Column6	Abstract (%)	Column7	Overall8	Overall Value (Out of 20)	Physical	Cognitive	Sit. Aware.	Learning	Performance
A51485	M78M-FACM-5W7G-BVEP-UXCB	10/14/2023		TC4a					98		100		100	100	90		100	100				17						
A48141	S32N-SBUL-TFCT-MHJG-9V7C	9/22/2023		TC4a					98		100		100	100	90		100	100				15						
A49652	TKMX-HNK6-XLEX-VE4J-AW9A	9/20/2023		TC4a					97		100		100	100	85		100	100				19						
A47312	54SL-NHPC-VY39-R3C8-WCKK	9/5/2023		TP4a					97		100		100	100	85		100	100				18						
A49398	682P-J5YB-QLR9-HJYH-88WT	9/15/2023		TC4a					97		100		100	100	85		100	100				18						
A51468	HYPF-CDPV-7GQU-TQEA-YF5Q	10/14/2023		TP4a					97		100		100	100	85		100	100				18						
A49519	MZBF-ZFDH-6ZRQ-XZMP-EV9F	9/16/2023		TC4a					97		100		100	100	85		100	100				18						
A47839	4JBF-UV48-SP35-X294-DJGM	10/6/2023		TC4d					97		100		100	100	85		100	100				17						
A49458	JYE7-GMRN-B5W8-6H8U-RPUW	9/16/2023		TC4a					97		100		100	100	85		100	100				17						
A49411	MBH6-KRWG-2K43-K7GV-DQNH	9/16/2023		TC4a					97		100		100	100	85		100	100				17						
A53358	RQ8Q-USKL-N9HD-XQ7D-TXXM	11/15/2023		TC4d					97		100		100	100	85		100	100				17						
A49578	UFBV-NDQY-65Z6-J6HQ-LBBW	10/1/2023		TC4a					97		100		100	100	85		100	100				17						
A48610	YLQ8-8PS3-LDMC-48VJ-MDYL	10/9/2023		TP4a					97		100		100	100	85		100	100				17						
A50112	76NJ-VSEM-PNWN-8JGM-7FXE	9/30/2023		TP3a					97		100		100	100	85		100	100				16						
A51613	8MVK-N8TE-VLJP-VBCY-3AB9	10/18/2023		TC4a					97		100		100	100	85		100	100				16						
A40460	AD2F-AW9D-57Z2-BY6N-LC4F	10/2/2023		TP4a					97		100		100	100	85		100	100				16						
A50601	M7VZ-82LC-UJHJ-QX5Q-3VJD	10/5/2023		TP4d					97		100		100	100	85		100	100				16						
A50155	MZBE-GF5Q-FBYA-CJBC-WYJF	9/28/2023		TC4d					97		100		100	100	85		100	100				16						
A47843	PL8L-8GEU-2RGX-DFS8-CG4F	9/8/2023		TP4a					97		100		100	100	85		100	100				16						
A47605	ZVMB-JTLM-3ZSM-TMZ2-SP3J	9/15/2023		TC4a					97		100		100	100	85		100	100				16						
A51175	Q9RQ-W26H-64RN-WWUC-8X4X	10/10/2023		TC4a					97		100		100	100	85		100	100				15						
A51626	SERT-AYL3-33Q6-N2QF-77NC	10/18/2023		TC4a					97		100		100	100	85		100	100				15						
A47699	7UP9-8HB2-UH8C-UB9F-ZJZ5	9/28/2023		TC4a					97		100		100	100	85		100	100				14						
A49006	L52U-32DU-M48W-5V9Z-TW5H	9/9/2023		TC4a					97		100		100	100	85		100	100				14						
A51543	ZBVT-2785-LA36-DBCQ-X5EY	10/15/2023		TC4d					97		100		100	100	85		100	100				14						
A40312	ZE6H-HVLP-LZJJ-9YQ9-W955	9/26/2023		TP4a					97		100		100	100	85		100	100				14						
A50048	5TZE-4KWL-K8LD-XNW5-BJ4P	9/26/2023		TC4a					97		100		100	100	85		100	100				13						
A48716	6XVC-6399-TMRQ-X75U-E5J3	9/8/2023		TC4a					97		100		100	100	85		100	100				13						
A40502	AENE-DVXM-WGDE-SFED-KRM4	9/30/2023		IP3a					96		100		100	100	80		100	100				18						
A50149	EA7B-VS4K-UL85-5MSP-SFNR	10/10/2023		TC4a					96		100		100	100	80		100	100				17						
A50953	FEAM-V58K-5S4D-XUKX-73HE	10/7/2023		TP4d					96		100		100	100	80		100	100				16						
A49024	NXNJ-D35M-UMFD-36SX-FRGP	9/7/2023		TC4a					96		100		100	100	80		100	100				16						
A51812	UANW-F3ZQ-SGFV-V4PV-JLYC	10/20/2023		TC4a					96		100		100	100	80		100	100				16						
A53252	C9KW-RTSC-VFGJ-3PHK-Z4KS	11/12/2023		TP4d					96		100		100	100	80		100	100				15						
A51690	HS4D-4BXR-JCKA-398H-QNY5	10/17/2023		TP4d					96		100		100	100	80		100	100				15						
A50403	DV5F-ECJ6-C2CU-6JN3-2YRL	10/3/2023		TC4a					95		100		100	100	77		100	100				18						
A52699	HMDH-X229-G4A5-PGXQ-LBTV	11/1/2023		TP4a					96		100		100	100	80		100	100				14						
A50924	E2XN-XXNK-4TZA-BNCP-R2UD	10/9/2023		TC4d					96		100		100	100	80		100	100				13						
A56326	H3KR-FBR4-KBTZ-EC2X-L9UA	1/31/2024		TP4a					95		100		100	100	77		100	100				17						
A50653	3QY5-HUAQ-TCZW-TTDF-QPX3	10/5/2023		TP4a					95		100		100	100	77		100	100				16						
A49668	6T7T-4G2H-6347-8WET-JHH5	9/20/2023		TC4d					95		100		100	100	77		100	100				16						
A50782	Y6F2-LMLW-VVEK-SBWN-LYPD	10/6/2023		TP4a					95		100		100	100	77		100	100				16						
A47714	C2MY-AJEZ-W6GH-XL75-DHGJ	10/21/2023		TP3a					95		100		100	100	75		100	100				17						
A47644	GQFK-JWQH-K7V5-5KSG-MG97	10/2/2023		TC1d					95		100		100	100	77		100	100				15						

Bottom Candidates

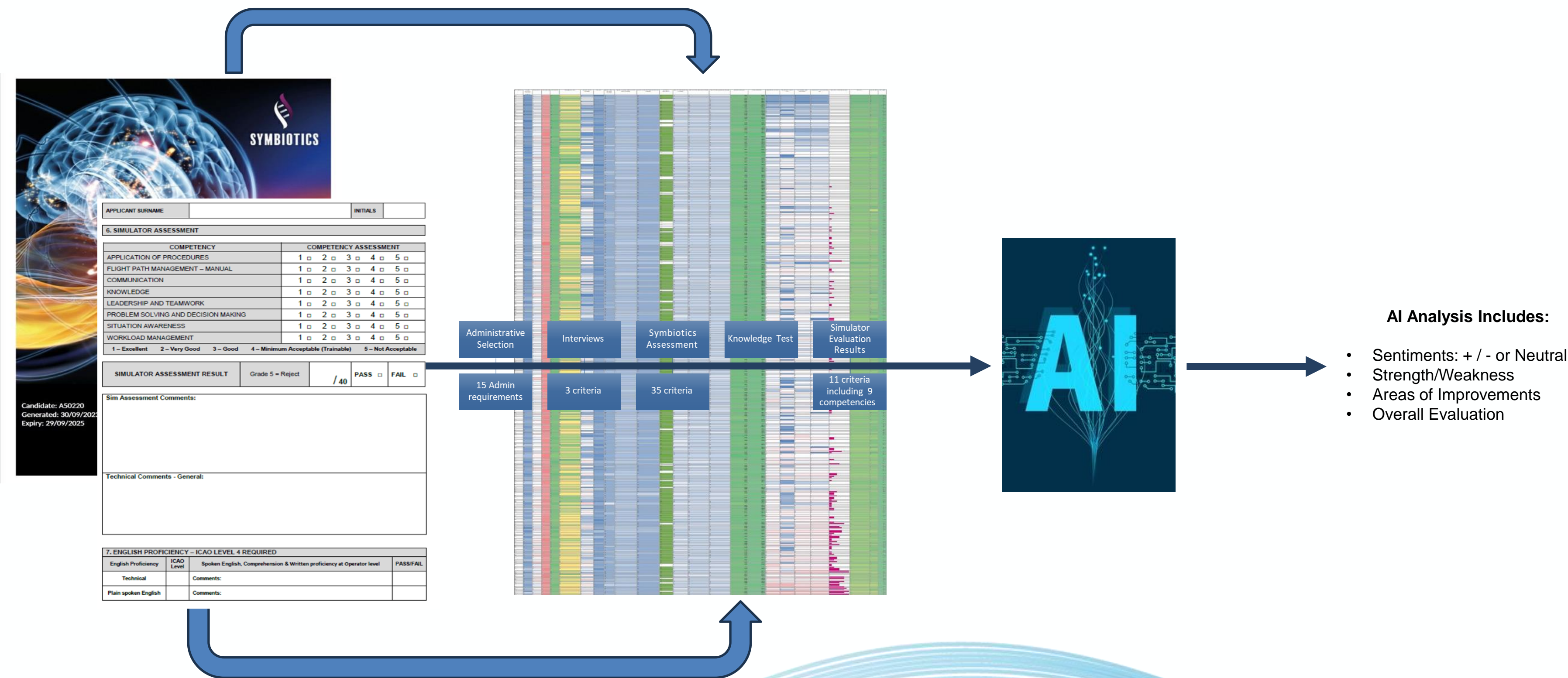
Candidate details:			Personality						Academic		Cognitive										FAST						
Number	Licence Code	Assessment Date	Overall	Silhouette	Safety Culture	Personal	Character	Cultural Fit	Cognitive (%)	Column1	Column2	Column3	SRR (%)	Column4	PSA (%)	Column5	WM (%)	Column6	Abstract (%)	Column7	Overall8	Overall Value (Out of 20)	Physical	Cognitive	Sit. Aware.	Learning	Performance
A50037	C4DG-DGVK-SHEG-BUGU-8W3G	9/26/2023		TC4c					70		67		100		17		67		100		11						
A50862	CRCJ-XSMX-D8N7-NWCE-JV4F	10/6/2023		TC4a					76		83		83		67		65		100		8						
A51635	8HE9-G59E-SJZ8-NPMG-5JDE	10/18/2023		TC4a					74		50		83		83		77		83		14						
A48761	JFQK-8X2F-AKJ8-UXJA-WWJQ	9/6/2023		IC4d					74		83		67		83		64		67		10						
A48851	KL5Z-F99K-8LDN-LZ2J-CFDQ	9/5/2023		TC4a					74		50		83		67		77		100		13						
A48760	L83E-CCWD-LXZP-YQLK-YKTR	9/5/2023		TP4d					71		83		100		17		80		83		14						
A51271	CCAR-9F88-M38X-PA52-PXK8	10/11/2023		IC4a					74		50		67		83		72		100		16						
A50202	DNES-YK52-K95H-ZKVS-VPR8	9/29/2023		TP2d					73		100		83		50		75		67		14						
A48905	SATP-DEUY-ARHB-49TJ-2G2V	9/6/2023		TP4a					74		100		83		33		62		100		9						
A49439	SWJR-JXXP-G9JT-G57U-VD72	9/14/2023		TC4a					72		67		83		67		62		83		11						
A48034	HXZA-4KR7-QXZB-CM3D-F76L	9/29/2023		TC4a					75		100		83		67		75		67		10						
A47865	XIHZ-JWPP-82XJ-9VWJ-GCTR	9/27/2023		TP1a					73		100		100		50		75		67		12						
A49447	T49U-V46T-JNIC-PJY2-FXQV	10/1/2023		TP2a					74		83		50		50		70		100		13						
A54948	TEUQ-V5QP-SWSU-M8GC-J4FU	1/22/2024		IC4a					74		100		83		67		70		67		12						
A49521	F2QM-YYMB-DJE2-HFYK-9H6H	9/16/2023		TC4a					72		83		83		33		85		83		16						
A50109	SPFA-RKH3-MF3K-48QV-P4QK	9/27/2023		TC4d					72		67		83		67		69		83		14						
A49012	8GAT-EJV2-NQWJ-7WFY-7JUJ	9/6/2023		TC2a					73		100		50		50		80		67		13						
A48188	ZJ4N-E2VL-Q552-FXL9-LEBU	10/1/2023		TP4a					71		83		67		17		80		100		15						
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A52439	45UJ-6YSN-2AQV-K3D8-CTD3	11/4/2023		IP2b					71		83		83		50		80		67		12						
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A47585	D4K7-4L7N-DQ3E-93TL-Q4G4	10/3/2023		TC4a					71		100		83		33		72		83		13						
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A40376	4GSA-2MKH-HCMT-7B9L-AMVD	10/3/2023		TC3a					72		67		67		83		85		67		9						
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A51412	ARK7-X9FX-684U-RNW7-46RB	10/29/2023		TP4b					70		83		50		50		65		83		8						
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A49378	MG5T-SLNB-RXNR-VLBY-AXPQ	9/14/2023		TP4d					64		100		83		50		52		50		10						
A50350	6AJ2-GATC-52EC-W2XU-6V35	10/2/2023		TC1a					60		83		83		83		52		0		13						
A47834	JAJJ-6K9V-4A9E-DBBT-XDVZ	10/7/2023		IC4a					63		100		67		33		47		67		13						
A49491	HQQ7-M673-QDQA-JSDQ-UXFS	9/16/2023		TC4a					61		17		83		67		72		83		14						
A49665	CA66-TFRL-DYDW-3KBM-KL9Q	9/21/2023		TC4a					63		83		83		33		59		83		9						
A50305	AMAA-CXW6-VEK9-582K-VYGD	10/4/2023		IP4a					59		67		100		17		54		83		15						
A49749	DWAT-8TVN-75QA-7WYD-BEZ7	9/21/2023		IC2a					58		83		100		50		75		0		11						

Relationship between Symbiotics & Simulator Eval Results



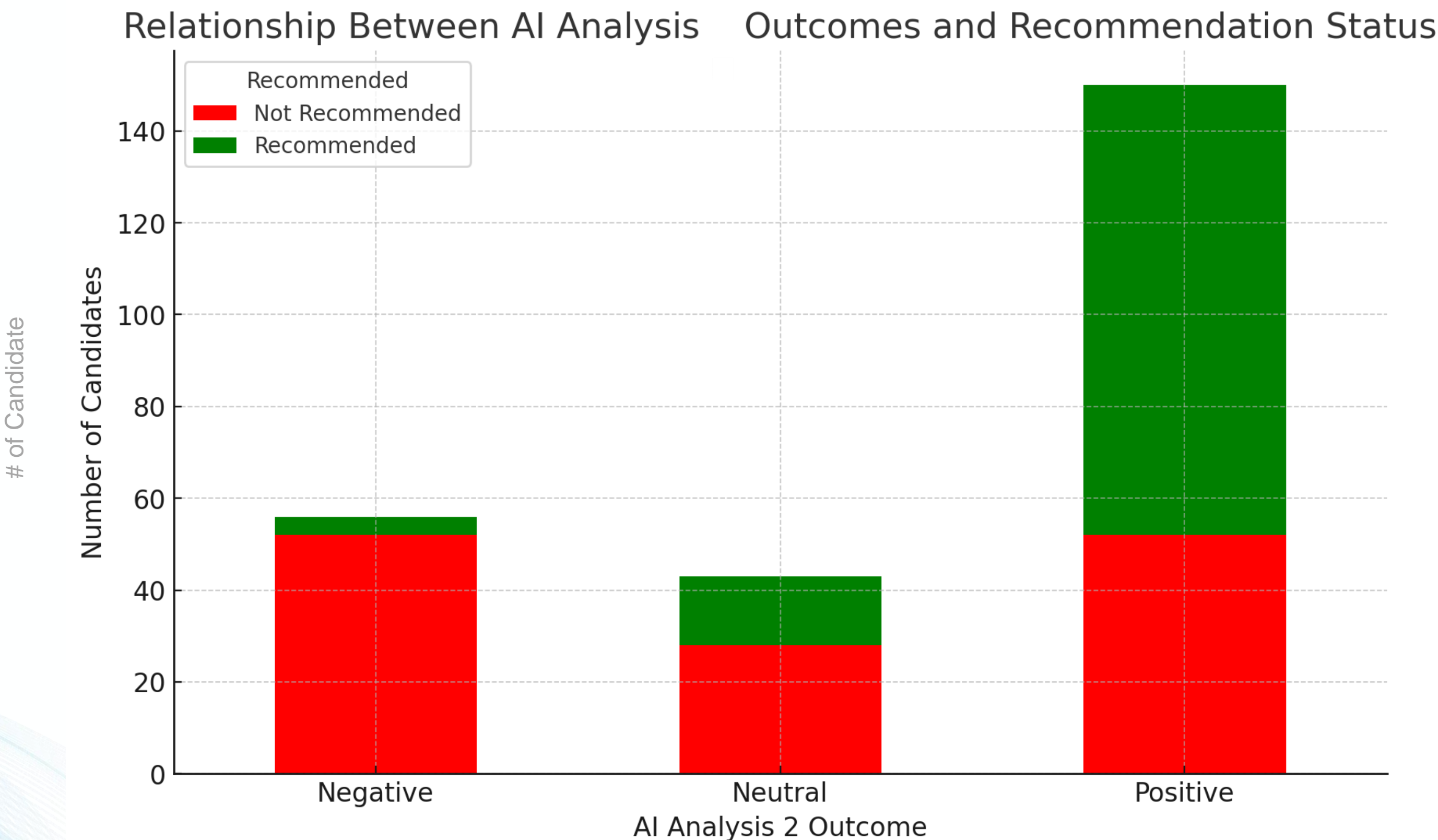
AI Analysis of Psychometric Assessment & Simulation Evaluation Prediction

APC AI EBT/PEBT Optimisation Suite



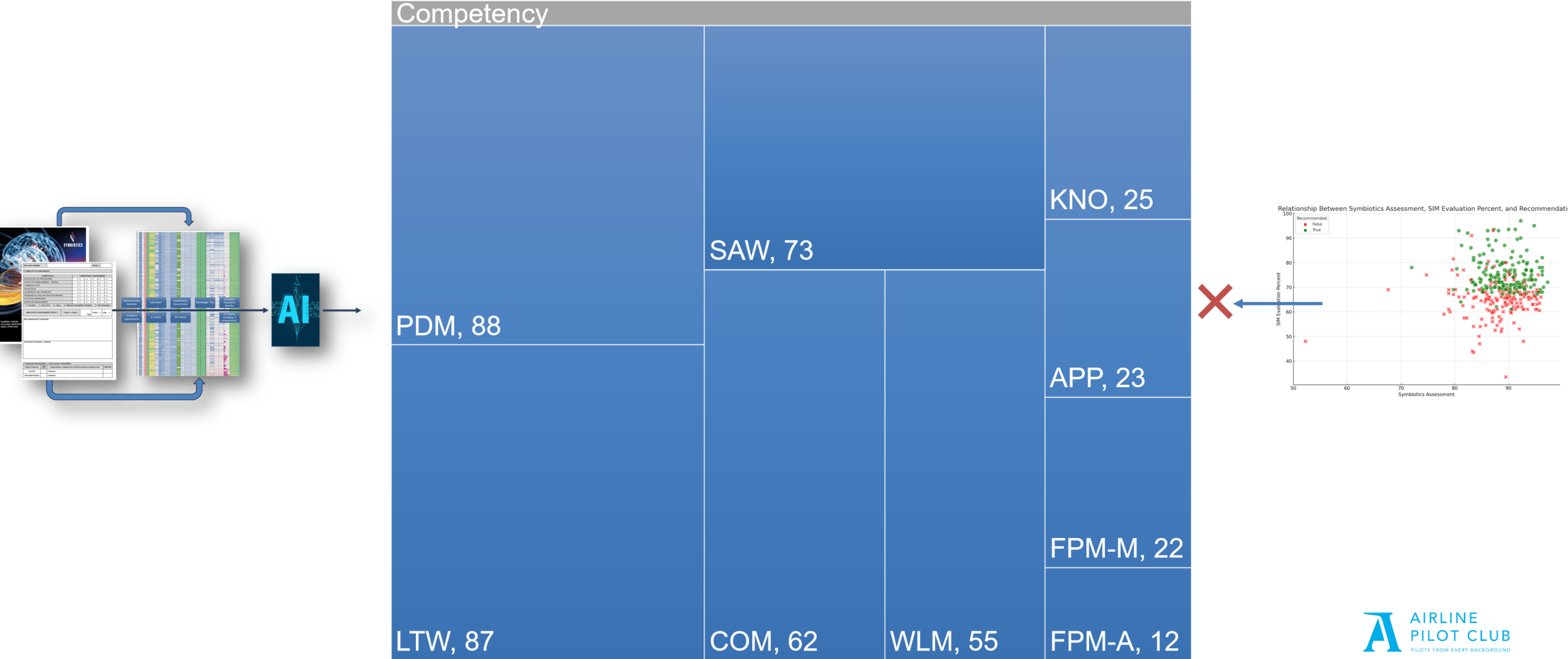
APC AI EBT/PEBT Optimization Suite

Accuracy of AI Results: Sentiment Analysis



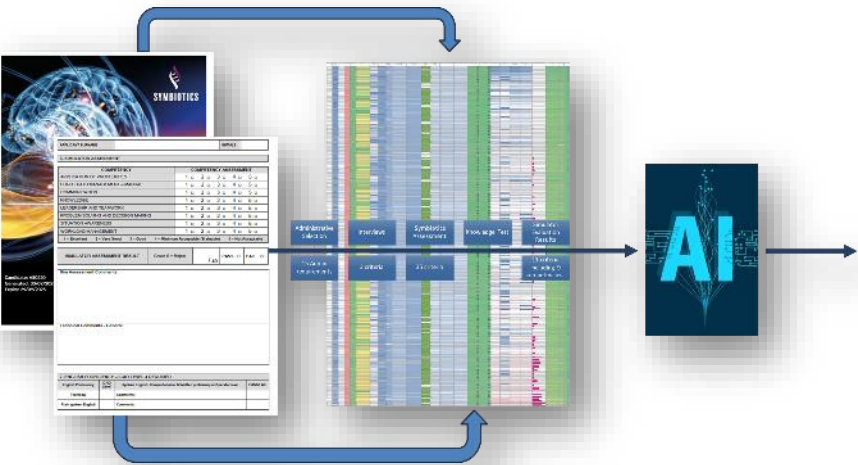
APC EBT/PEBT Optimization Suite

Application: Candidates Challenges



APC EBT/PEBT Optimization Suite

Application: Daniel's Reports



AI Report	
Strength	Weakness
<p>Cognitive Abilities: Daniel demonstrates high cognitive abilities, with perfect scores in Numerical, Verbal Reasoning, and Working Memory. His Spatial Reasoning is also outstanding. These skills are crucial for effective problem-solving and decision-making under pressure.</p> <p>Learning and Adaptability: He shows a reasonable ability to learn and adapt, which is vital for continuous improvement and dealing with unexpected situations.</p> <p>Technical Skills: High performance in technical skills, indicated by his scores in abstract reasoning and spatial reasoning, suggests a strong foundation for understanding complex aviation systems and procedures.</p> <p>Teamwork and Leadership: His personality profile suggests that he is capable of working well in a team environment and possesses leadership qualities, including assertiveness and the ability to lead by example.</p>	<p>Perceptual Speed & Accuracy: Although he scored perfectly in the score percentage, his overall percentage and reaction time band indicate areas for improvement, which are important for tasks requiring quick and accurate responses.</p> <p>Situation Awareness in SIM Evaluation: The SIM evaluation comments indicate a need to improve situational awareness, a critical competency for pilots to monitor and understand the aircraft's environment and operational status.</p> <p>Stress and Pressure Management: His performance may degrade under pressure or complex situations, pointing to a need for further development in resilience and coping mechanisms.</p> <p>Communication: Non-standard phrases were used in ATC communications, highlighting a need for improvement in aviation-specific communication skills.</p>
NEUTRAL	
<p>The evaluated SIM performance showcased both positive and negative aspects. The candidate exhibited good flight set up, briefing and management of the EHSI failure. However, during the visual join, the candidate's focus on selective radial scan led to flying above ground level at 500ft and a considerable distance from the runway. Additionally, usage of non-standard phrases in ATC communication added to the flight workload. The candidate's performance as a Pilot Flying demonstrated good leadership skills and teamwork.</p>	

<p>Strengths:</p> <ul style="list-style-type: none">• Exceptional in numerical, verbal, and spatial reasoning.• Demonstrates good adaptability and learning capabilities.• Strong technical acumen with a solid understanding of complex aviation systems.• Shows potential in teamwork and possesses leadership traits.
<p>Areas for Improvement:</p> <ul style="list-style-type: none">• Improve response times and accuracy in fast-paced scenarios.• Enhance situational awareness during simulations to better assess environmental and operational factors.• Develop stronger stress management skills for high-pressure situations.• Refine aviation communication techniques, ensuring the use of standard phraseology.
<p>Overall Evaluation:</p> <ul style="list-style-type: none">• Daniel has shown a balanced mix of technical prowess and leadership potential.• He needs to focus on specific areas to fine-tune his performance, particularly under stress and in following standard operational protocols.• Further training should be tailored to address these areas, with a focus on practical applications and communication skills.

APC EBT/PEBT Optimization Suite

Application: Daniel's Challenges



SITUATIONAL AWARENESS:

Enhancing His Ability To Maintain Awareness Of The Operational Environment, Especially Under Stress Or When Faced With Unexpected Events.



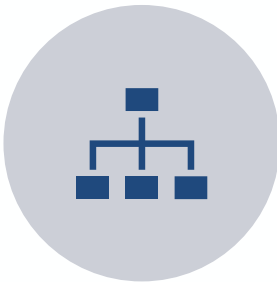
DECISION MAKING AND PROBLEM SOLVING:

Further Developing His Ability To Make Timely And Effective Decisions, Particularly When Information May Be Incomplete Or Rapidly Changing.



COMMUNICATION:

Improving Aviation-specific Communication Skills, Including Standard Phraseology And Clarity In ATC Communications.



WORKLOAD MANAGEMENT:

Developing Strategies To Manage Workload Effectively, Especially In Complex Or High-pressure Situations.

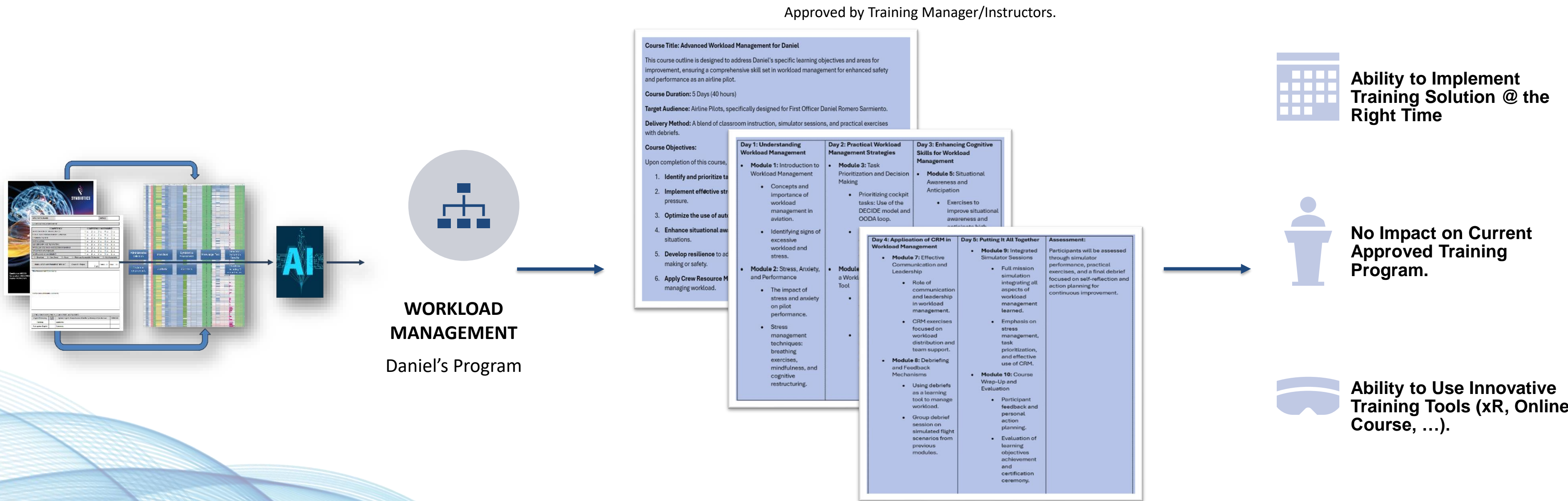


TEAMWORK AND LEADERSHIP:

While Already A Strength, Continuing To Develop These Skills Will Be Beneficial, Focusing On Effective Collaboration And Leadership Within The Cockpit And With Ground Operations.

APC EBT/PEBT Optimization Suite

Application: Daniel's Homework Plan to Improve WLM



The Outcome of the Avianca Pilot Profile

“ ———

Across the entire recruitment campaign, 49 data points were produced and analysed with APC’s applicant tracking platform and AI. A heat map was created which highlighted high-standard candidates at the top and those with competency development issues towards the bottom.

This process clearly identified who should be recommended to the Airline with the likelihood of having a **successful, safe, and efficient career.**

“Client Satisfaction”, pg. 6,

Smart Recruitment: Combining Proven and Technical Solutions Report

A AIRLINE
PILOT CLUB
PILOTS FROM EVERY BACKGROUND


SYMBIOTICS

Smart Recruitment
Combining Proven &
Innovative Technical Solutions



Conclusion

The Vision behind integrating AI in aviation recruitment and training

- **Enhancing Precision** in Candidate Selection
- **Predictive Analysis** for Future Performance
- **Personalised** and **Adaptive** Training
- **Continuous** Improvement and Learning
- **Meeting** Regulatory and Safety Standards
- **Integrating** a Global Workforce and **Supporting** Inclusivity
- **Sustainability** and **Scalability**

Thank you!