Training for Remote Queued Service Observing at CFHT

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CFHT Observing Milestones

- First light: 1979
- Classical Observing: 1979 -
  - Telescope Operator
  - visiting astronomer(s)
- First Queued Service Observations: 29 Jan 2001
  - Observing Assistant
  - Service Observer
- >95% QSO mode: 01 Feb 2008
- First Remote Queued Service Observations: 8 Feb 2011
  - remote observer

From Classical to Remote QSO

Classical	QSO	Remote QSO
4 Telescope operators • Telescope operation • Dome and shutter operation • Guider operation • Weather assessment	4 Observing Assistants • Telescope operation • Dome and shutter operation • Guider operation • Weather assessment	4 Remote Observers • Telescope operation • Dome and shutter operation • Guider operation • Weather assessment • Instrument control • Data acquisition • Observation choice
Visiting astronomer • Instrument control • Data acquisition • Guider operation • Target choice	4 Service Observers • Instrument control • Data acquisition • Guider operation • Observation choice	

OAP

From QSO to Remote QSO

1. Nobody at CFHT knew both jobs (OA+SO)
   - Training needed!
2. From 8 to 4 positions
   - Competition to get the job

First: define the job description

- A clear job description is essential to design a training program
- A clear job description helps potential candidates decide if they want to take the training or not
- A clear job description helps at the end to see if the goal was reached or not

Second: define the goal

Train candidates

to become Remote Observers

capable of operating all systems related to observing (dome, shutter, telescope, windscreen, instruments, guiders, etc.) and perform observations appropriate for the current sky conditions and the scientific priorities,

under minimal supervision

Second: define the goal

Train **candidates**

to become Remote Observers

capable of operating all systems related to observing (dome, shutter, telescope, windscreen, instruments, guiders, etc.) and perform observations appropriate for the current sky conditions and the scientific priorities,

under minimal supervision

Third: look at the pool of Candidates

- Candidates with BSc in Astronomy (or even MSc) or a related field
- Candidates with no or little familiarity with operating a telescope; candidates with years of experience
- Candidates with no or little experience with observing; candidates with some experience; candidates with years of experience

Pool of Candidates

- Candidates with BSc in Astronomy (or even MSc) or a related field
- Candidates with no or little familiarity with operating a telescope; candidates with years of experience
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Challenging!

Pool of Candidates

- Candidates with BSc in Astronomy (or even MSc) or a related field
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Opportunity to get creative!

Fourth: Design the Training Plan

- Requirements:
  - Thorough, cover all topics
  - Fair to all candidates (e.g. access to all 3 instruments)
  - Flexible, adaptable, expandable
  - Allow progress tracking
  - Define criteria for moving forward; evaluation, assessment
  - Put in context of a competition
  - Certification deadline end of 2010

Who provided the training?

- As many people as we could enroll!
  - 4 Service Observers and 4 Observing Assistants
  - 3 Instrument specialists
  - QSO specialists: 7 Queue Coordinators
  - Telescope/TCS specialists
  - Summit facility specialists
  - +

Learning Methods

- Lectures or formal presentations
- Tours, “show-and-tell” (summit, Waimea)
- Self-study with or without take-home exams
- Quizzes, tests or questions sent by email
- Homework
- Coaching/mentoring with “experts”
- Individual sessions, group sessions
- Answering questions
- Practice, practice, practice!

Design

- Start July 2008
- Definition of the RO job description
- Design of the training
  - Training with 3 levels
  - Each levels made of modules
- Start of training Jan 2009

Training in 3 Levels

- Beginner
  - Passive modules with transfer of knowledge
- Intermediate
  - Active “hands-on” modules, practicing
- Advanced
  - Gaining experience

Beginner Modules

- 3 self-study and homework modules for each instrument
- 3 modules to review of each semester's programs, with homework and quiz to return promptly
- 3 lectures on photometry (VIS, IR) and polarimetry, with take-home exam
- 3 modules on the basics of QSO observing for each instrument, with assessment

Beginner Modules

- 1 module: summit tour
- 1 module: telescope startup/shutdown procedures
- 1 module: basics of TCS
- 1 module: basics of telescope operation
- 1 module: safety training on Cryogenics

Assessment Form

The following points should be covered during the session:

- [ ] 1. How the session is started (login/password)
- [ ] 2. Opening the Q tools- OT, logbook, Qprep
- [ ] 3. Checking disk space
- [ ] 4. wircam_startup/Night directories
- [ ] 5. Opening ds9wircam
- [ ] 6. Explain why you arrange your windows the way you do
- [ ] 7. Explain how to load and review the Qs
- [ ] 8. Opening skyprobe
- [ ] 9. Explain what each window does
- [ ] 10. Explain each button in the Q tools does
- [ ] 11. Discuss which buttons are most commonly used
- [ ] 12. Explain why one would need to close the Qtools and how to do it for each
- [ ] 13. Explain the differences between the active and pending Qs including what to have in the pending
- [ ] 14. Explain how to load a Q into the active tool
- [ ] 15. Explain how to make an OG active. Include how to pause the Q and select a new OG.
- [ ] 16. Demonstrate how to abort and explain aborting procedures
- [ ] 17. Show the command lines in the OT, how to modify commands, circumstances where modifying is necessary.
- [ ] 18. Ask the RO to explain a few of the command lines in the OT (basic understanding of what they do)
- [ ] 19. Discuss the various features of ds9megacam.
- [ ] 20. Discuss which features you most commonly use and why.
- [ ] 21. Demonstrate taking flats with an explanation of why you selected the filters. Discuss the constant exposure time and how it differs from MegaCam.
- [ ] 22. Explain your decision making process. Which Q are you starting with and why? When will you change and why?
- [ ] 23. Explain grades and comments

Assessment Form

Did the RO understand the all start up procedures and requirements, and the reasoning involved?

	1	2	3	4	5	
Demonstrated no understanding	○	○	○	○	○	Completely followed processes and understood concepts involved

RO paid attention to material being covered

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

RO asked appropriate questions

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

RO discussed and presented points demonstrating understanding

	1	2	3	4	5	
Not at all	○	○	○	○	○	Excellent understanding

RO showed interest in what was presented

	1	2	3	4	5	
Not at all	○	○	○	○	○	Very interested

The RO was prepared for the evening

	1	2	3	4	5	
Not at all	○	○	○	○	○	Very prepared

Which aspect did the RO seem to understand the most?

Which aspect did the RO seem to understand the least?

The grade is not always what matters

	Test #1	Test #2	Test #3	Test #4	Test #5
Candidate #1	93%	89%	98%	100%	72%
Candidate #2	100%	100%	98%	100%	89%
Candidate #3	96%	92%	94%	100%	75%
Candidate #4	91%	86%	96%	100%	89%
Candidate #5	87%	93%	90%	100%	98%
Candidate #6	96%	92%	82%	100%	88%

No SO or OA had ever been trained so thoroughly!

Intermediate I

- Learning with experienced person
- 3 people at the summit (Aug→mid-Oct 2009):
  - OA, OA in training, SO
  - SO, SO in training, OA
- Schedule issues:
  - Very difficult to make
  - Very heavy on summit staff
- Continue with 2 people only (mid-Nov to Feb 1st), switching roles: OA + SO

Intermediate II

- Started Feb 2010
- 2 people at the summit: RO + Summit Assistant
- SuA provide advice at night, and feedback
- … getting closer to the deadline…
- Intermediate II solo: started June 1st, SuA NOT allowed to provide advice at night ("You are a fly on the wall.")

RO Assessment

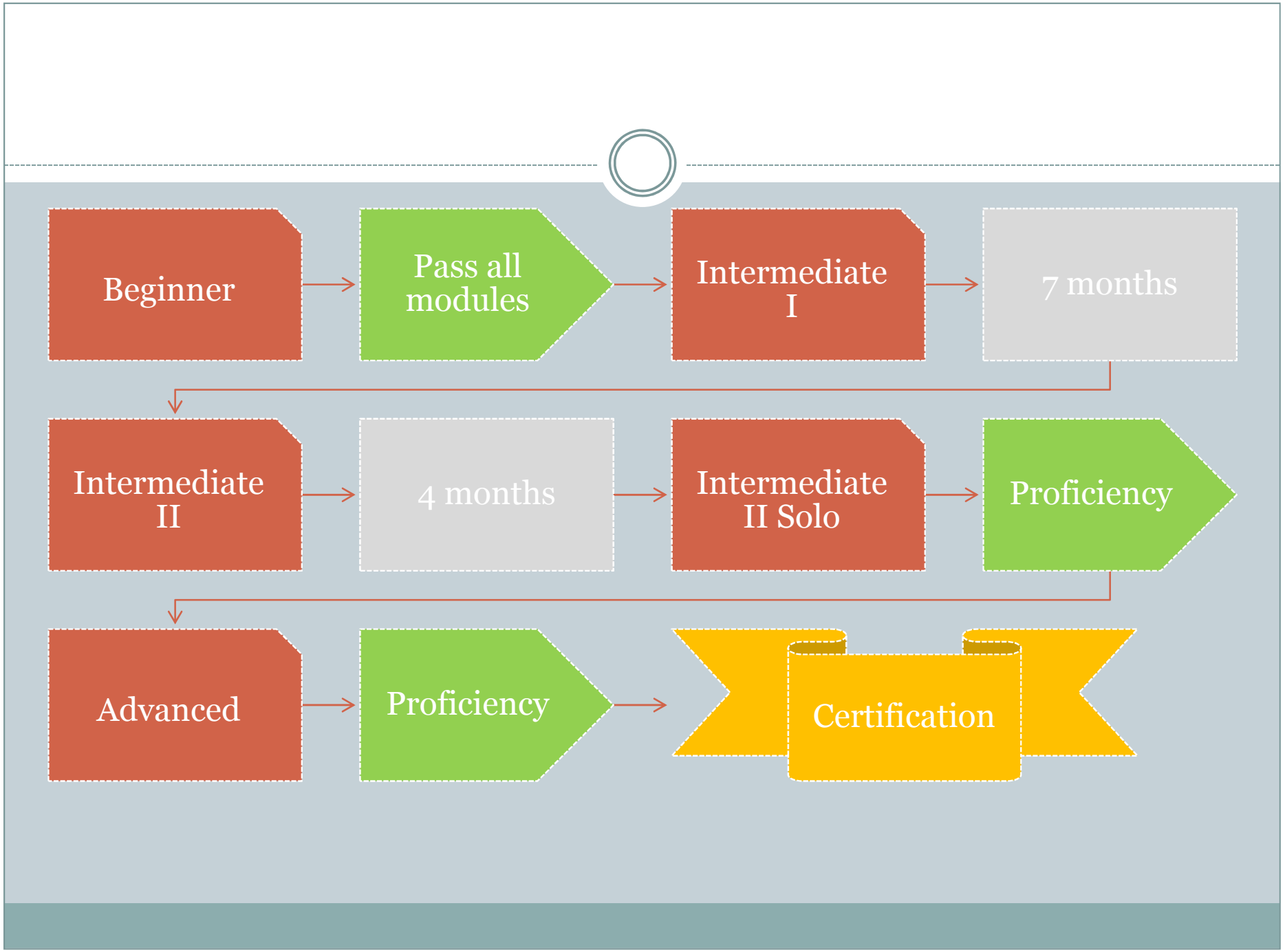
- RO prepared for shift? For night?
- Every exposure graded? Correctly?
- Comments for exposure? Enough? Correct?
- Weather log entries every 2hrs?
- Time accounting log accurate?
- Night started on time?
- Observations fit conditions?
- Flats taken? Enough? Correct ones?
- Phone calls appropriate?
- Obslog?
- (40 bullet points)

Feedback

- Feedback:
  - Underline what's done correctly
  - Point out mistakes
  - List strengths and weaknesses
  - Provide tools, ideas, for improvements
- Trends or tendencies (big picture)
- Feedback given at various times:
  - After some shifts/as needed
  - Feb 1st (after ~6 months)
  - June (Feb-Mar-Apr period)

Advanced Level

- Demonstrated capability to observe with minimal supervision
- Proficiency (“quality of having great facility and competence”)


Beginner
Pass all modules
Intermediate I
7 months
Intermediate II
4 months
Intermediate II Solo
Proficiency
Advanced
Proficiency
Certification

Remote Observer Certification

- Requirement: Advanced level
- Reliable performance, proficiency
- Necessary but not sufficient to be hired as Remote Observer

RO Training, Hiring and Transition

- 2 of the 8 candidates decline the opportunity to train and be hired as a RO
- The first 2 ROs were certified mid-September 2010
- Job opened (internally only) at end of September
- The 4 best candidates were hired Jan 1st, 2011
  - RO Certification
  - Other skills
  - Enthousiasm, interest
- RO started Feb 7 2011
- Until ~June 2011, we still retain the services of the 2 other candidates in case we need to observe from the summit and need 2 people

Impact on Efficiency

- Engineering time had been set aside to allow for training:
  - Mentoring while observing
  - More idle time
  - Slower execution
  - Mistakes
- Little time was lost on the sky
- Some non-optimal decisions were made (wrong choice of program)
- Weather was excellent (lucky!)

Conclusions

1. Job description
2. Goal
3. Pool of candidates
4. Design the training
5. Track progress, give feedback
6. Allow for lower efficiency
7. Now Observing Remotely