

NatMEG

The Swedish National Facility for Magnetoencephalography

EUROPEAN BIOIMAGING FACILITY SURVEY REPORT

NatMEG (www.natmeg.se)

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Description

This report describes the results of a survey undertaken by NatMEG (the Swedish national facility for magnetoencephalography; www.natmeg.se), performed under the auspices of Swedish Bioimaging. Swedish Bioimaging is a national infrastructure formed in 2010 for the biological and medical imaging field, and has served as an umbrella organization for three nationally commissioned medical imaging facilities: PET-MR at Uppsala University, MEG at Karolinska Institutet and ultra-high-field MRI (from here on abbreviated '7T') at Lund University. For more information about Swedish Bioimaging, please see visit www.bioimaging.se.

Survey background

The three Swedish national imaging facilities (MEG, 7T MRI, PET-MR) are all fairly new and their user base and establishment for applications in research and clinical applications is not complete. They are also in various phases of adoption, for which reason it could be expected that operating models for such facilities are varying.

The aim of the survey was to understand the operating environments and operating models of such imaging facilities within a European context, as well as the circumstances under which the facilities have been installed. Possibly even the survey could shed a little light on how to facilitate adoption and progress further. The survey was done as an academic project, with no business agenda.

Citation

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Jaakko Lyytinen & Daniel Lundqvist (2017). European Bioimaging Facility Survey Report. NatMEG, Department of Clinical Neuroscience, Karolinska Institutet, ISBN 978-91-7676-850-1.

Method

A web-based survey was sent to imaging laboratory directors of the three modalities in Europe, intending to cover all such facilities currently operating in Europe. The contacted persons were located using both existing personal contacts and various open directories. The number of initial contacts made per modality were: PET-MR 47, MEG 46, and 7T 29.

Data

The data collection took place from May to August 2017, and produced responses from 7 different countries for PET-MR, 11 countries for MEG, and 10 countries for 7T. The represented countries were: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, and UK. The number of responses received were: PET-MR n=9; (response rate) 19%, MEG n=21; 46%, 7T n=15; 52%.

A few responses were incomplete, most commonly regarding the possibly more complicated or sensitive business-related questions towards the end of questionnaire. Therefore, the number of answers decreases slightly towards the end. A few responses were also disregarded, as those suggested that the answers pertain to multiple modalities put together, while modality specific answers were the intended goal.

Contents

The first pages contain a quick summary list of the survey questions, and a summary of typical answers.

On subsequent pages the responses are presented question by question. The final pages contain general discussion and conclusions from the survey. In appendix pages at the end, the answers from the Swedish facilities are presented side by side with the typical answers summary

Survey questions, quick list

shortened texts,

complete question texts presented on the page titles for each individual question

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Survey questions, the typical* answer summary

*mode value or mean value

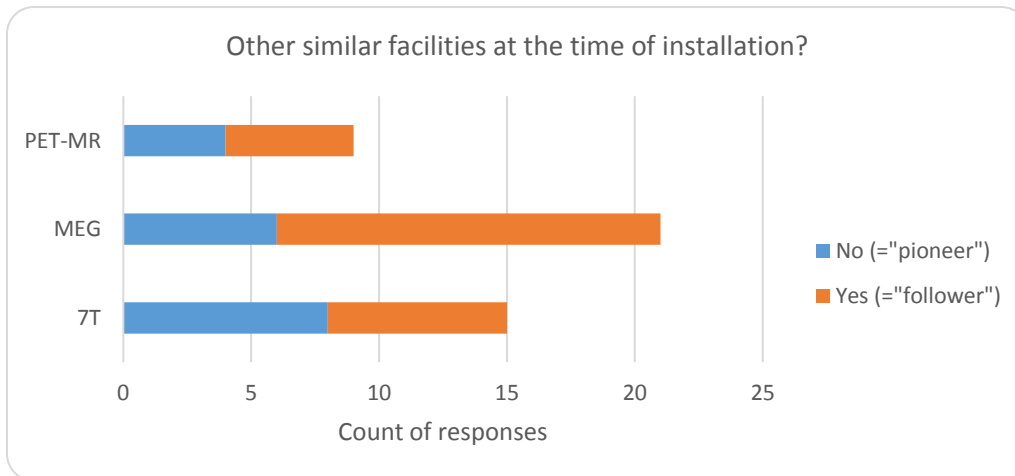
	MEG	7T	PET-MR
Q2 Opening year of facility	2006	2011	2014
Q3 Existence of prior peer facilities	Yes	No	Yes
Q4 Peers today in same country	Yes	Yes	Yes
Q5 Distance to nearest peer	100 - 300 km	100 - 300 km	> 300 km
Q6a Local expertise about modality prior to installation	Limited	Broad	Broad
Q6b National expertise about modality prior to installation	Comprehensive	Limited	Limited
Q7a Local expertise about modality today	Comprehensive	Comprehensive	Comprehensive
Q7b National expertise about modality today	Comprehensive	Comprehensive	Comprehensive
Q8 National mission	Yes	Yes	No
Q9 European mission	No	No	No
Q10 User origin			
Local users	Majority	Majority	Majority
National users	Some	Some	Some
European users	Some	Some	Some
International users	Some	Some	None
Q11 Users' fields of operation			
Basic research	Majority	Majority	None
Clinical research	Several	Several	Majority
Clinical applications	Some	Some	Some
Method development	Some	Several	Some
Instrumentation	None	Some	Some
Q12 Access & pricing based on origin			
Local users	Cost	Cost	Cost
National users	Cost	Cost	Cost
European users	Cost	Cost	Cost
International users	Cost	Cost	Cost
Q13 Usage offerings and pricing			
Independent use	Cost	Cost	Not offered
Assisted use	Cost	Cost	Not offered
Full service	Cost	Cost	Cost
Q14 Support offerings and pricing			
Technical support	Free	Free	Free
Scientific support	Free	Free	Free
Analysis support	Free	Cost / Free	Cost / Free / Not offered

	MEG	7T	PET-MR
Q15 Training offerings and pricing			
Usage training	Free	Free	Not offered
Operating certification	Not offered	Free	Not offered
Theoretical training	Free	Free / Not offered	Not offered
Data analysis training	Free	Not offered	Not offered
Q16 Use cost / hr	300 €	700 €	200 €
Q17 Support cost / hr	0 €	150 €	200 €
Q18 Reimbursements	No	No	No
Q19 Scientific contribution guidelines	Yes	Yes	No
Q20 Facility installation funding	National infrastructure investment	Local investment	National infrastructure investment
Q21 Facility availability (days)	300 - 365	300 - 365	200 - 300
Q22 Utilisation rate	60 - 80%	60 - 80%	80 - 100%
Q23 Number of subjects	100 - 200	> 300	200+
Q24 Number of patients	50 - 100	0	> 300
Q25 Operating budget		1 000 k€*	1 000 k€*
with national mission	400 k€		
without national mission	200 k€		
Q26 Maintenance budget	150 k€	400 k€	250 k€
Q27 Usage income		50 k€*	500 k€*
with national mission	225 k€		
without national mission	100 k€		

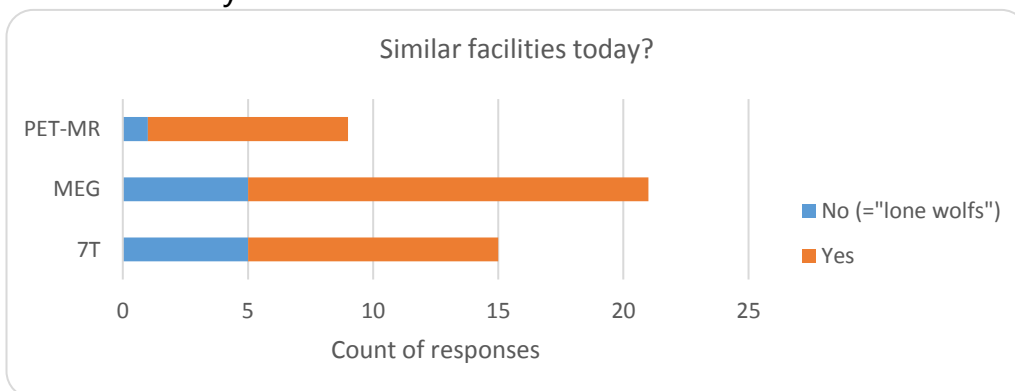
* Number of answers insufficient for meaningful split.

Q1 What is the imaging modality of your facility?

vs Q3 When your facility was opened, did similar facilities exist in the same country?



vs Q4 And today, do similar facilities exist in the same country?



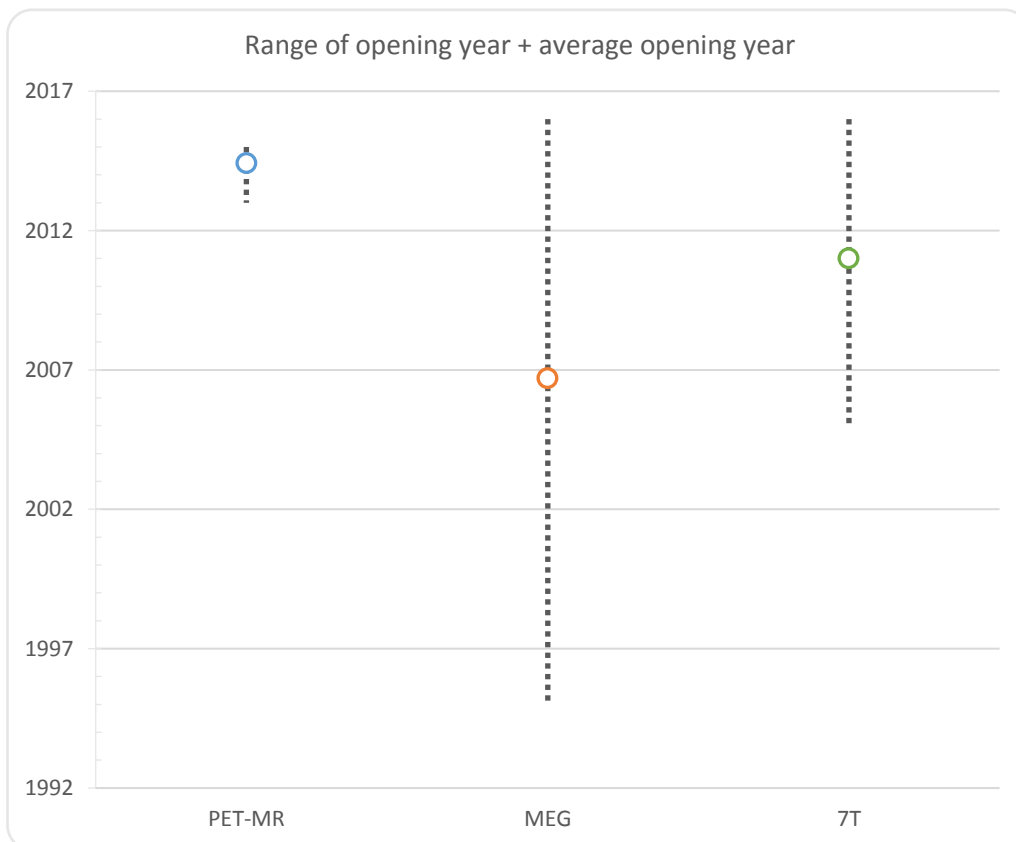
The survey started with establishing the respondent's modality which is the key dimension. Nearly all questions are handled with a split along the modality. Another encompassing dimension is the presence of similar facilities, both at the time of installation and today, which are combined in the diagrams above.

With the phrase "similar facility" a facility having the same imaging modality is intended, and further on, such are synonymously also called "peers" for short.

The phrasing regarding "When -- facility was opened, did -- exist" will be shortened to "prior to installation" or even "prior" further on.

One of the original starting points for the survey was an interest in whether the presence of peer sites would affect the operations of the facilities, either via higher expertise levels, or via higher national interest and better national utilization of the expensive equipment. This assumption will be revisited alongside further questions. The MEG modality could be interpreted to have the lowest speed of adoption, interpreted from there being nearly the same amount of "lone wolfs" today as "pioneers". This even despite the MEG installations being earliest in time (ref. Q2 Opening year). This may also be associated with lower utilization rates (ref. Q22), that translate into fewer new installations.

Q2 When was the facility opened?

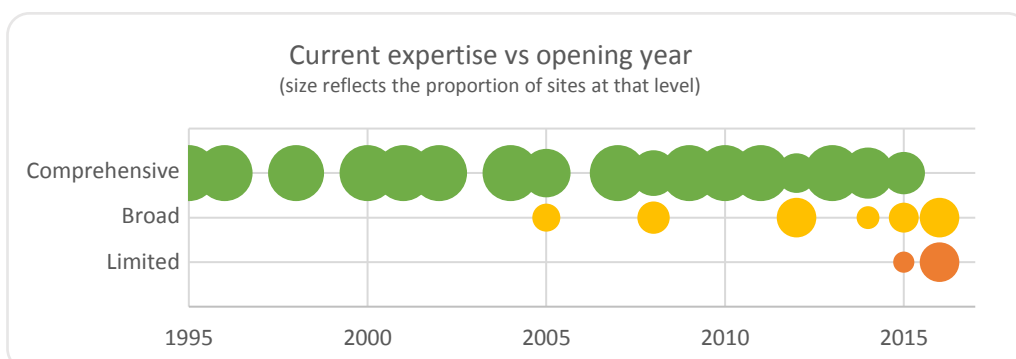


The answers here reflect also the differing age of the underlying technologies. As a consequence, one could expect the different modality facilities to have accrued significantly different amount of operating experience. Operating experience may of course be affected by the nature of underlying technology too, for example, whether the technology is more or less evolutionary vs. revolutionary, or a hybrid of existing technologies.

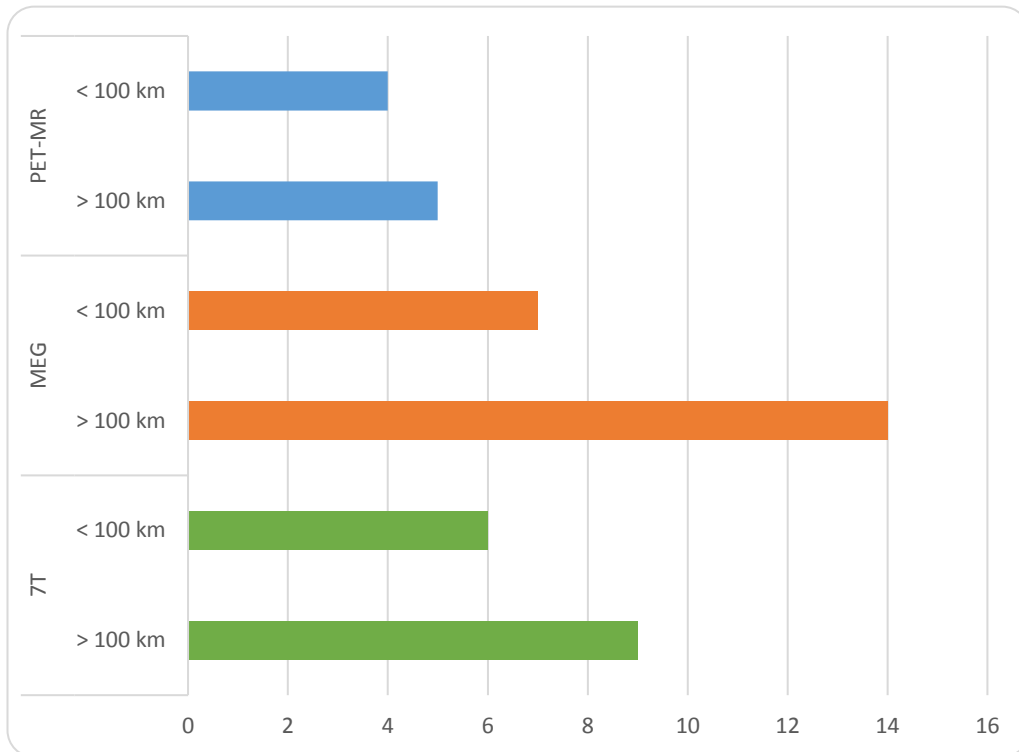
A preliminary assumption about the effect of opening year (or rather the length of operations) was that facilities with longer history would have a) higher expertise, and b) more established operating methods.

The a-part is visualized in the graph below. From this, one can estimate two-three years of operations is needed until attainment of comprehensive expertise.

The b-part was not successfully investigated in this survey.



Q5 What is, roughly, the distance to the nearest similar facility (within or across borders)?



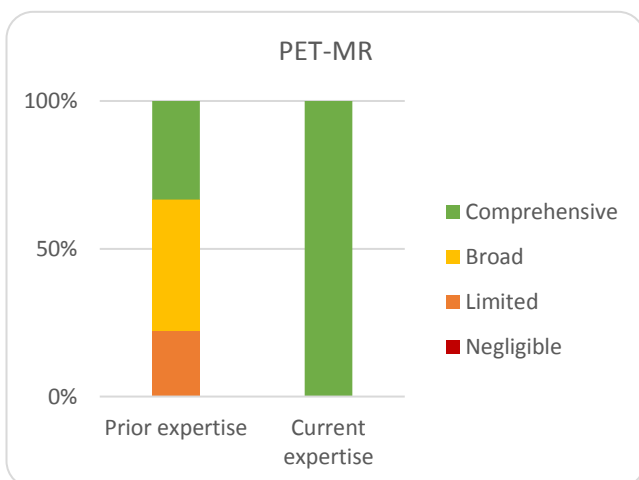
Proximity to the nearest similar facility here has been grouped to roughly a 50-50 splitting level, "near" (< 100 km) and "distant" (> 100km).

Subdivision of other questions along this dimension did not yield noteworthy results, although that was originally anticipated.

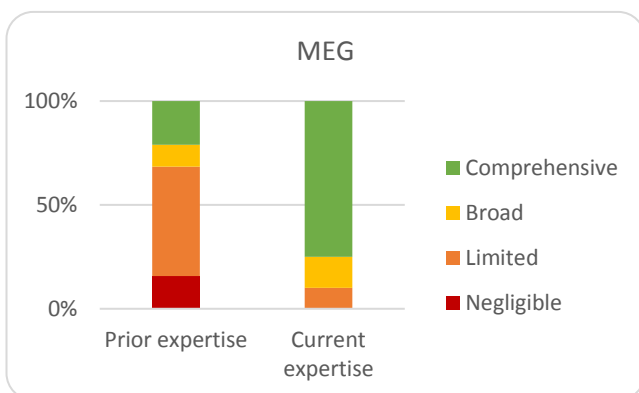
Q6a What was the *local* level of expertise about your imaging modality prior to the installation?

vs Q7a expertise today

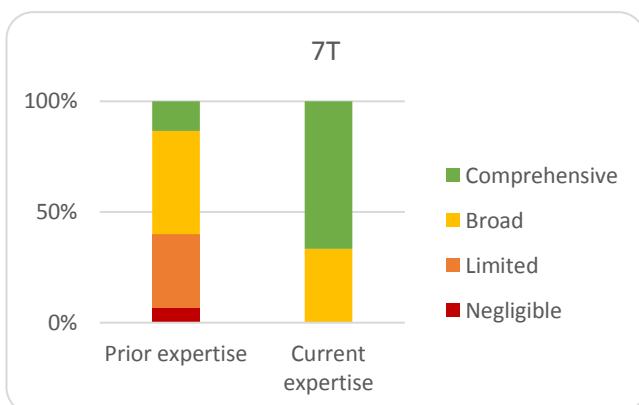
Word *local* in this question refers to the host institution, university or hospital.



As for PET-MR, comprehensive expertise has been acquired despite the sites having only an average establishment year of 2015. This is possibly assisted by nearly full capacity use of the facilities (ref. Q22) and assumedly clearer clinical protocols (ref. Q11).



MEG facilities, on the other hand, can be seen to have had significantly more modest starting levels of expertise compared to the other modalities.

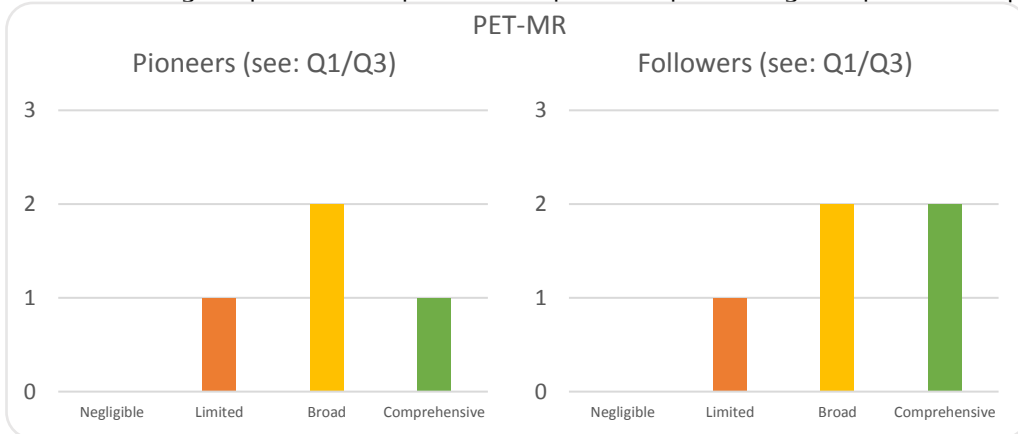


Across all modalities, the expertise has accrued comfortably and confidence levels are high.

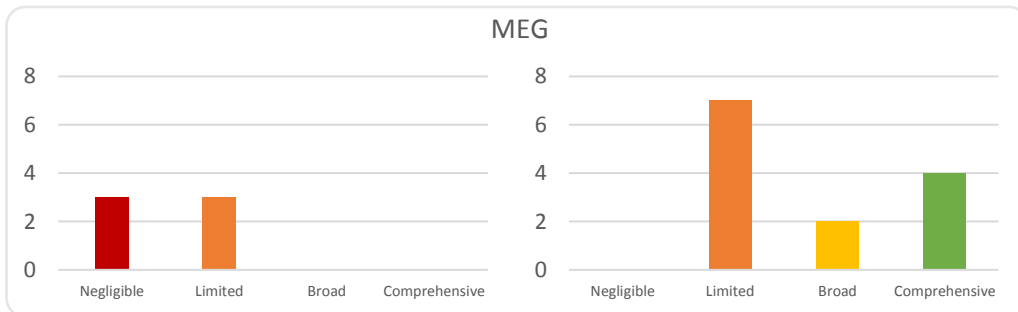
It was interesting to notice that sometimes, albeit very rarely, such imaging facilities are established with negligible prior expertise.

Q6a (cont) What was the *local* level of expertise about your imaging modality prior to the installation? vs Q3 peers at the time of installation

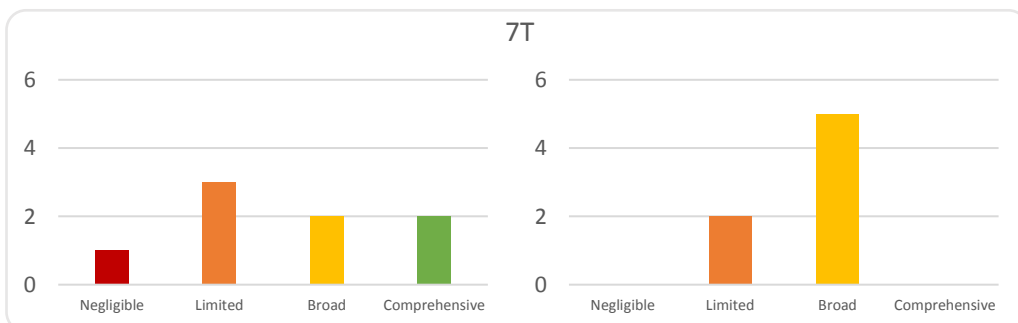
Now examining the prior local expertise from previous question against presence of peers.



PET-MR facilities had starting expertise levels across the scale and fully irregardless of presence of peer sites (which were expected to be existing sources of knowledge).



The result from the previous page (MEG facilities' modest prior expertise) is clearly explained by the pioneer vs follower status; pioneer MEG sites in a country started clearly with low expertise.

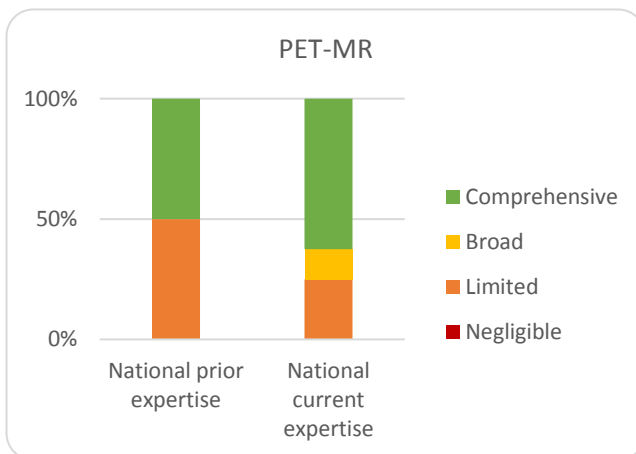


Pioneer 7T facilities had wildly varying expertise to start with, which result is left without interpretation, but the followers started predominantly from a broad level, conveying here some support for the learning effect assumption for followers. That follower facilities are founded by people having gathered knowledge in other facilities.

Q6b What was *nationally* the level of expertise about your imaging modality prior to the installation?

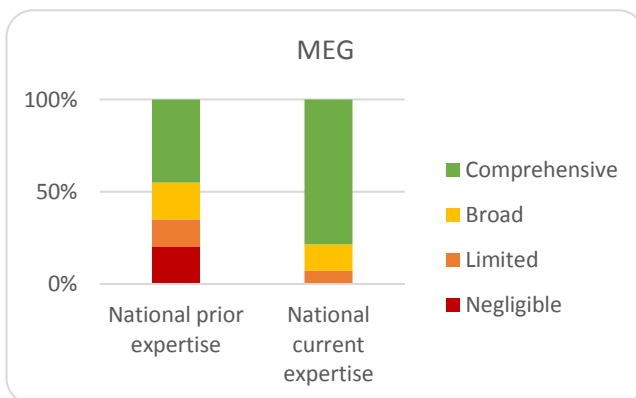
vs Q7b expertise today

This question was presented in the same context with the question about the local expertise, suggesting to the responder a ready comparison between local knowledge and knowledge otherwise nationally.

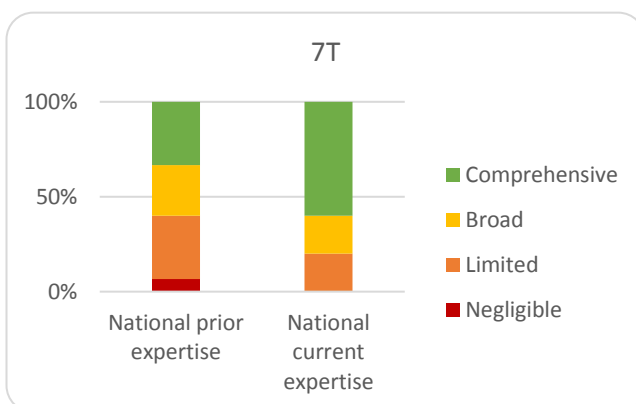


National expertise levels as for PET-MR were, and are still today weaker than local levels (ref. Q6a/Q7a). This may be an expected circumstance for a high-end, new modality about which the knowledge is likely to be spatially concentrated. In such a case spreading knowledge nationally probably

requires determined effort. In the context of this survey, this can be related to ambitions of a nationally commissioned centre for facilitating the spreading.



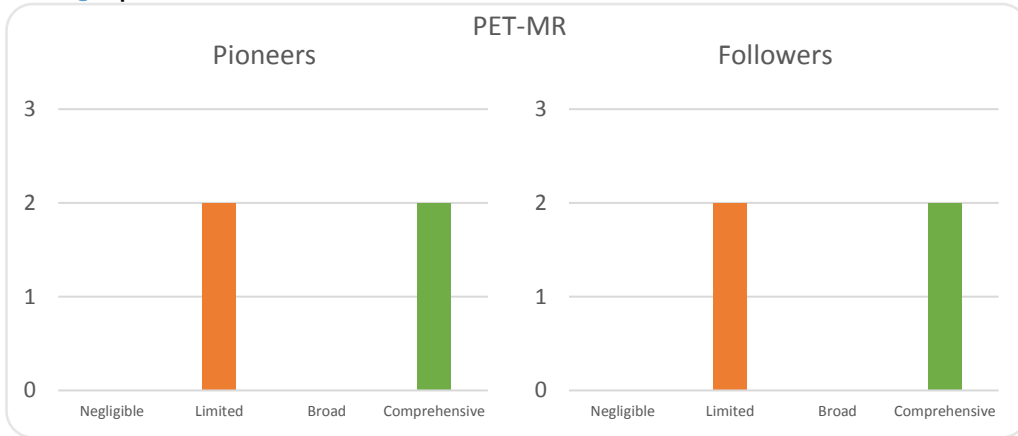
MEG sites have nearly exact same national expertise today as local expertise today (p. 9), this for example contrasted with discussion in the above paragraph about PET-MR.



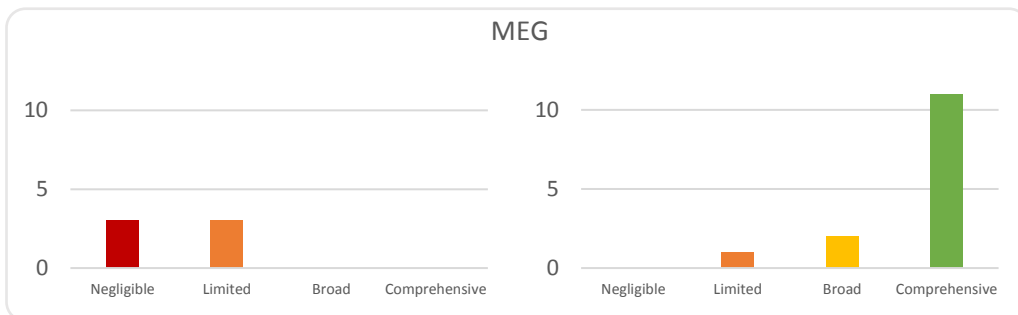
National expertise levels as for 7T indicate some knowledge accumulation over time, although overall remaining slightly lower than local expertise levels.

Q6b (cont) What was *nationally* the level of expertise about your imaging modality prior to the installation?

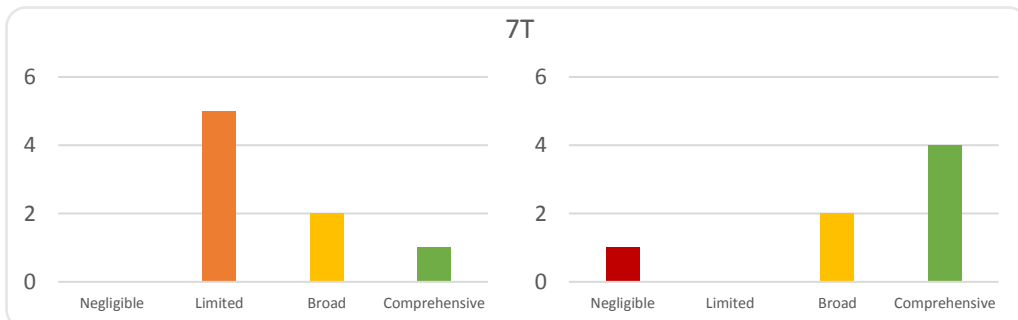
vs Q3 peers at the time of installation



As for PET-MR, the presence of peer sites did not explain any of starting expertise variation.

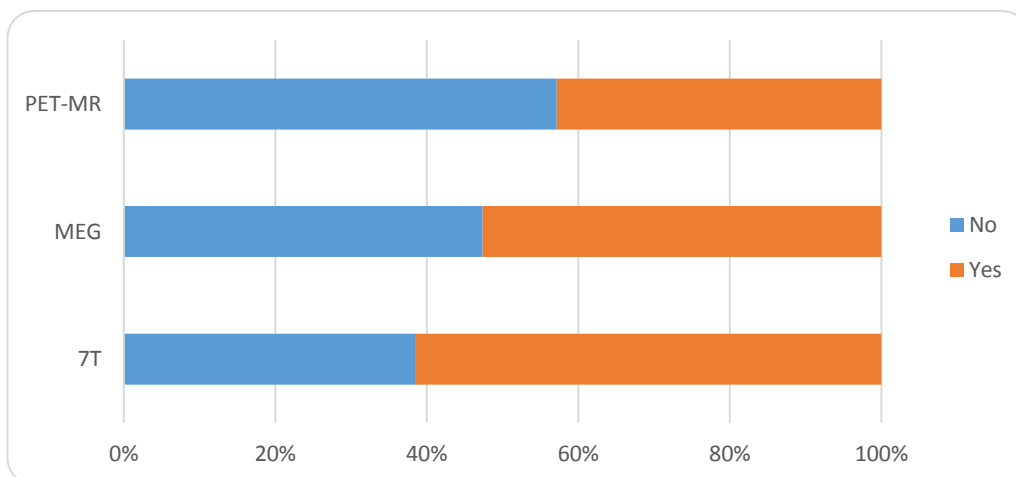


With MEG, again here as in Q6a (p. 10), the pioneers assessed also the national level very modestly. But now the followers appreciated greatly the national knowledge. This is in contrast to local expertise levels for MEG followers (p. 10) which were typically at 'limited' level. In other words, the MEG followers saw themselves often as learners from the more experienced groups elsewhere in a nation.



As to 7T, roughly the same results as for MEG (above), except not quite as polarised values.

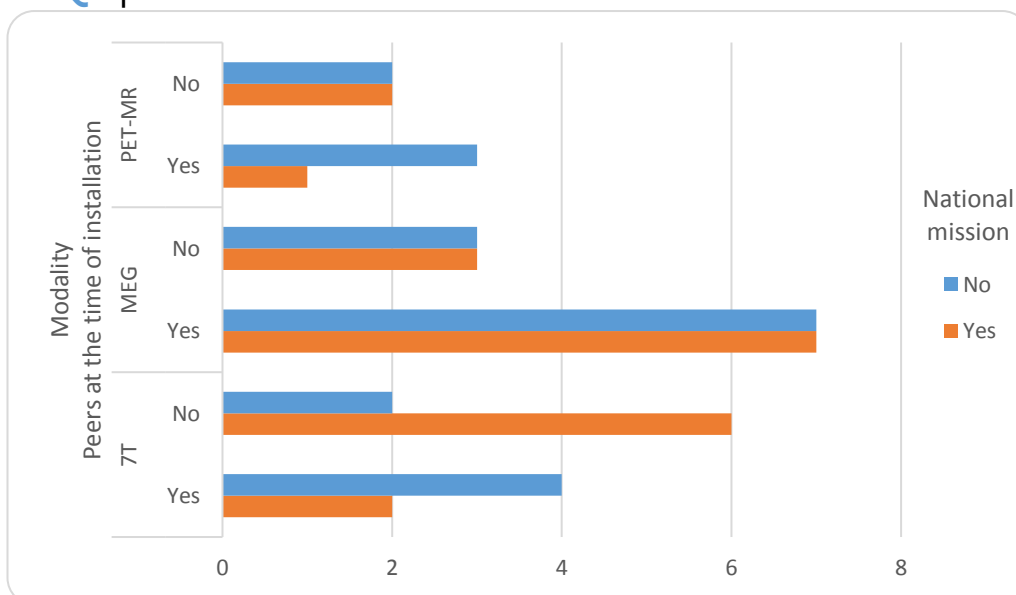
Q8 Does the facility have an explicit mission to function as a national facility?



National missions are commonly occurring. Their exact contents was not surveyed, but some split between externally given missions vs internally expressed aspirations was seen.

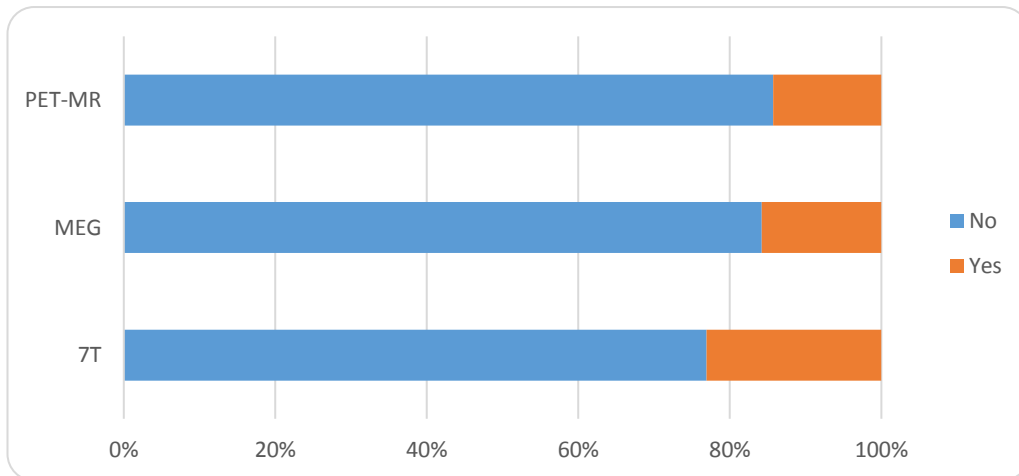
This characteristic is the chief dimension used to split other answers into subgroups.

vs Q3 peers at the time of installation



Surprisingly, the pioneer sites (= 'No' categories in the left axis labels) in a country were *not* any likelier to have been given a national mission, except possibly to some extent as for 7T.

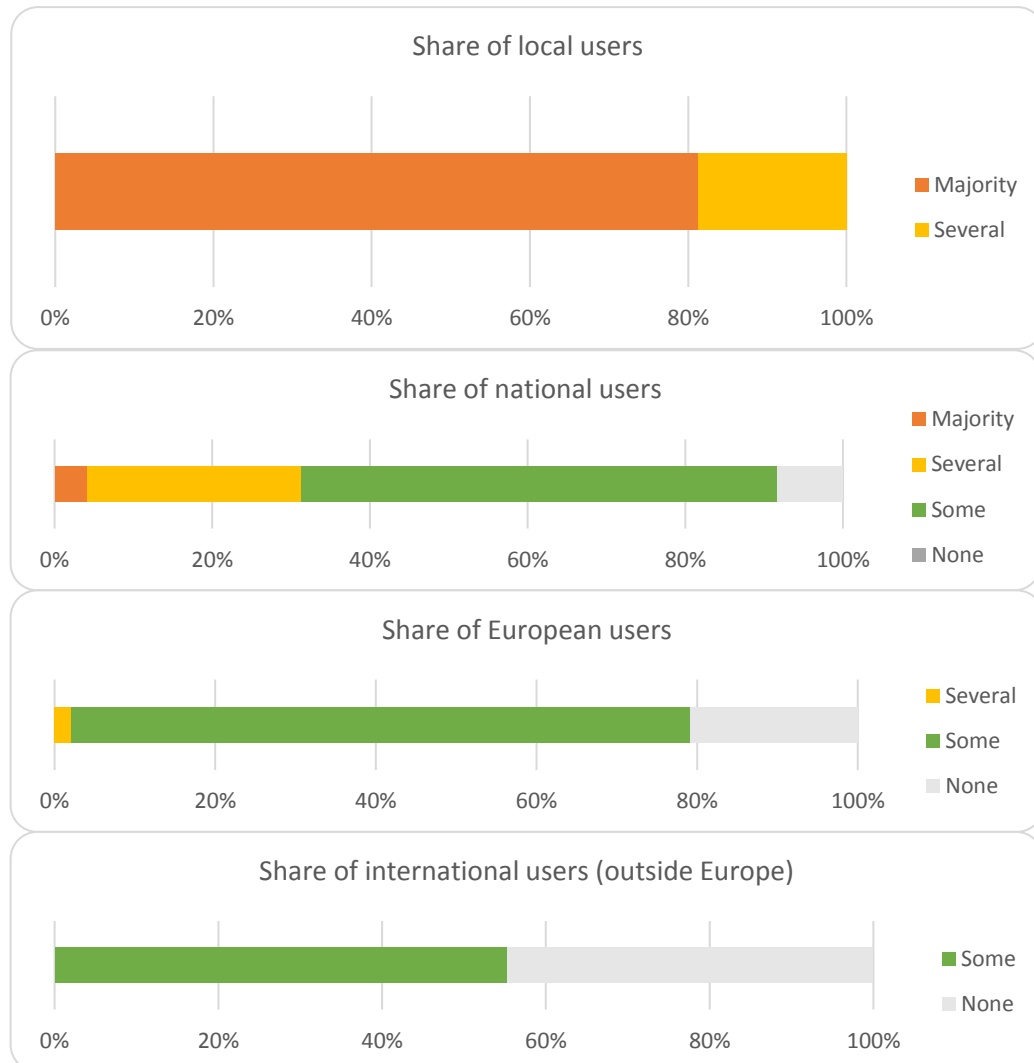
Q9 Does the facility have an explicit mission to function as a European facility?



Explicit European co-operation missions seem not be a widely occurring arrangement yet.

Other modalities that were excluded from this survey are suspected to be more active in such arrangements. This result was in line with prior expectation of the circumstances.

Q10 Where do your users come from? (consider the Principal Investigators only)

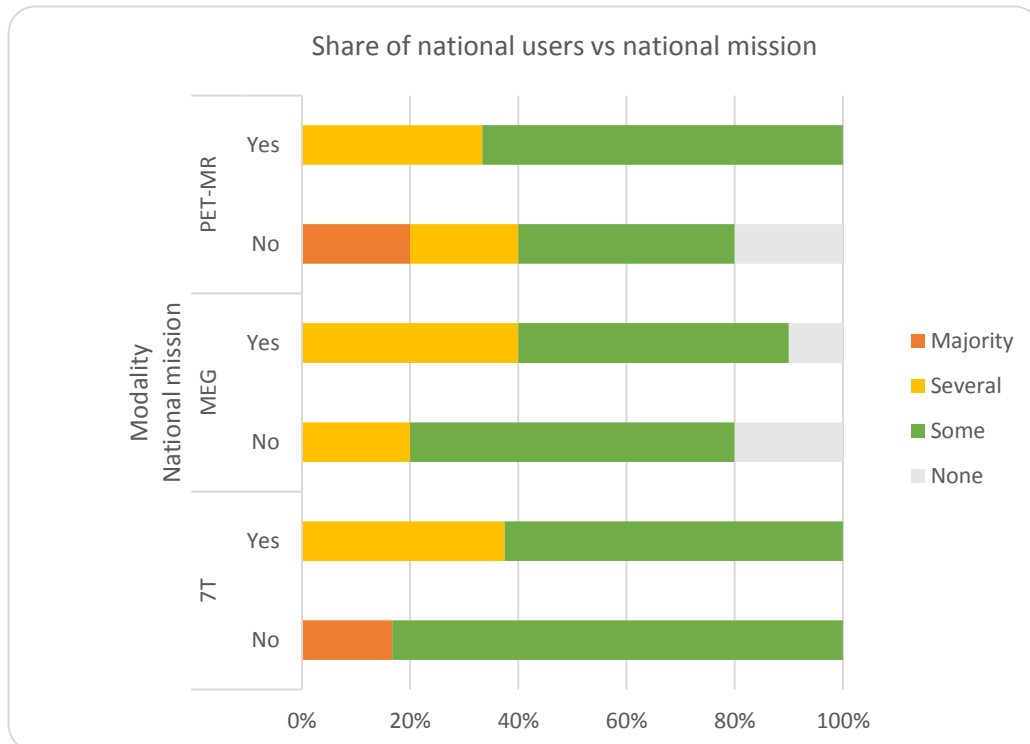


The three modalities have been grouped together here because the distributions were essentially the same for each.

The results here were strongly consistent with expectations. A strong local user group is nearly inevitable, and fully understandable.

However, one could speculate to what extent a strong pocket of local users can be, and must be, a facilitator for national adoption.

Q10 (cont.) Where do your users come from? vs Q8 National mission



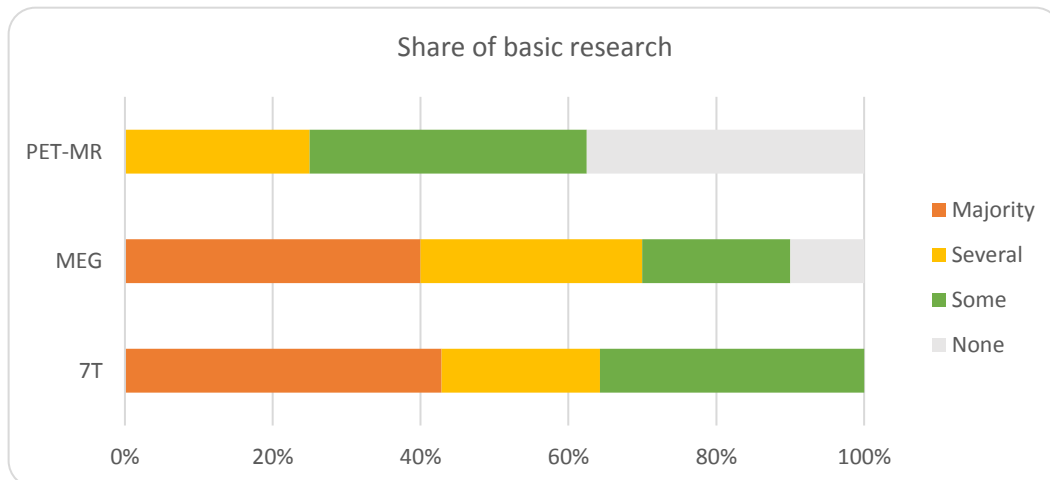
It would be reasonable to assume that a nationally commissioned site would attract a larger share of national users, probably at the expense of local users, compared to a non-commissioned site. But this assumption is not clearly supported by the answers, except possibly to a little extent as to MEG sites. The majorities of national users occurring for some PET-MR and 7T sites are driven by some other factor than a national mission.

A suggested interpretation for this is that use of new technologies/modalities does not spread automatically within a country, but rather requires an effort to spread the awareness and knowledge. It could be that this is achieved best via strong enough local groups, causing natural adoption only over time.

In the end, it is probably secondary whether the users are nationals or locals as long as equipment utilization rate is high, and usage overall efficient.

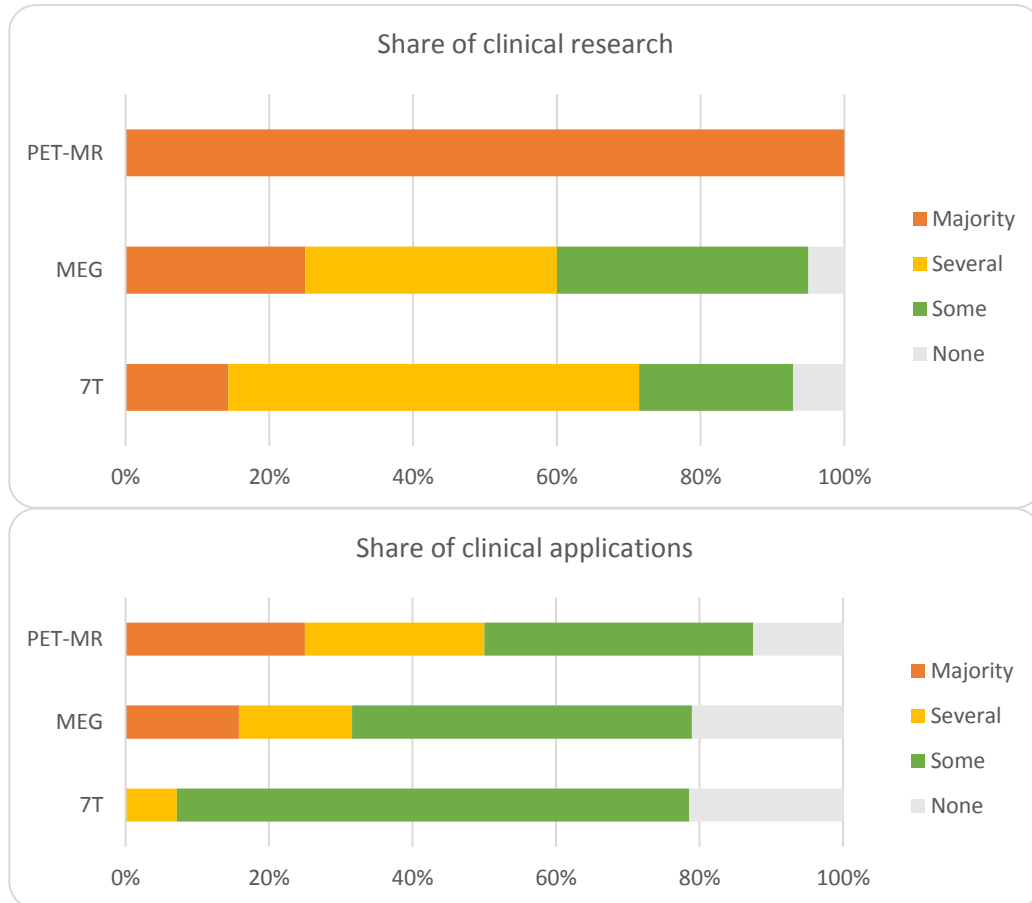
Q11 Within which fields are the users engaged? (consider PIs only)

The respondents were requested to estimate what share of their users are engaged in various fields of activity.



The first diagram here summarizes what share of facility use is comprised of basic research users. The results for other fields/domains are on the following pages. PET-MR differs strongly from other modalities having no site at all predominantly involved in basic research and, furthermore, many sites doing no basic research at all. Overall, large variety exists over how extensive basic research use is, as it can vary from large majorities to only some users. This suggests some specialization takes

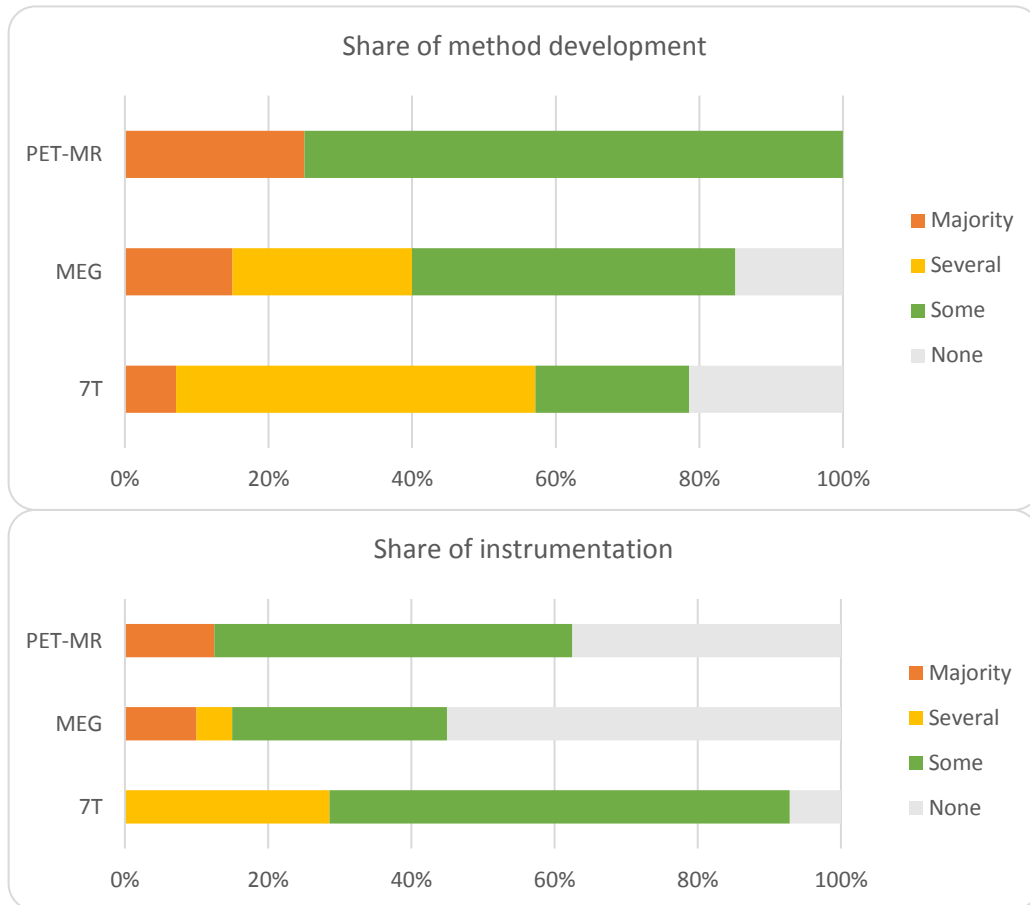
Q11 (cont.) Within which fields are the users engaged?



Judging from the results, PET-MR is significantly more clinically oriented than other modalities, and 7T being furthest away from clinicality.

Again, large variety exists in the share of clinical usage, ranging across whole spectrum, from sites with majority of clinical users to no clinical users at all.

Q11 (cont.) Within which fields are the users engaged?

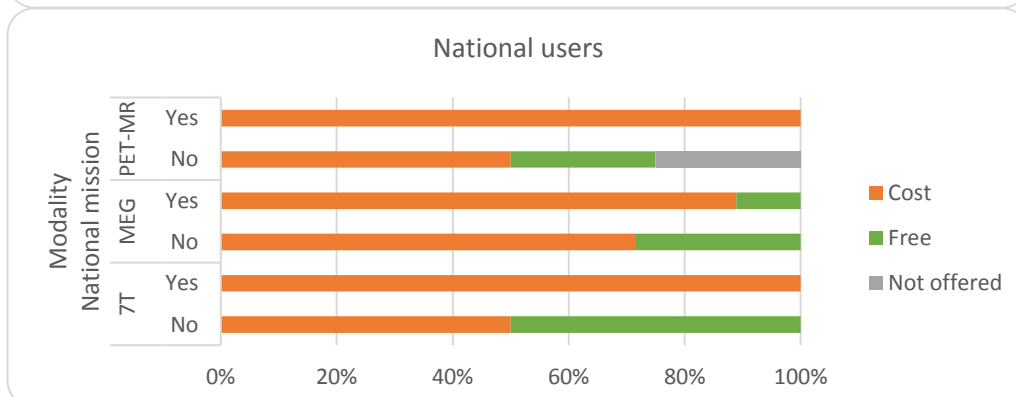
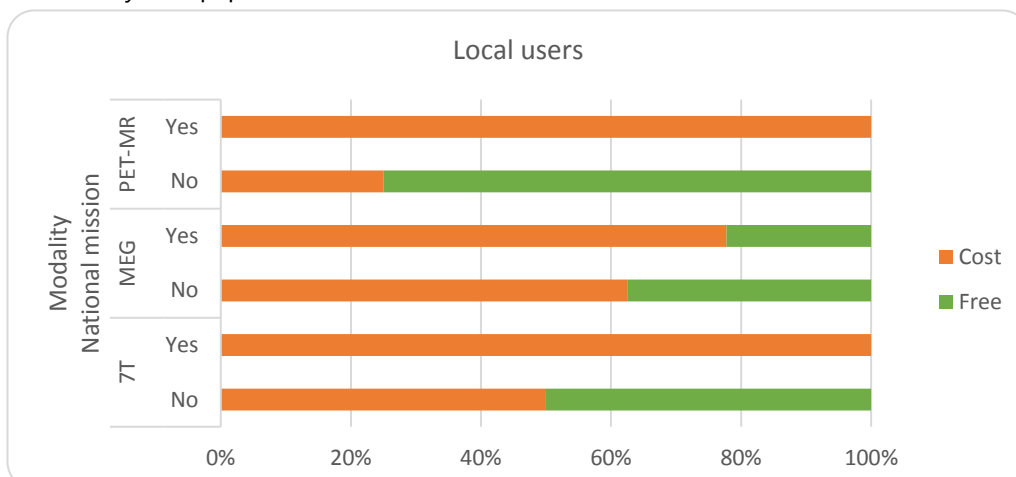


The results for these two fields of activity likely reflect the different technological maturity of the modalities.

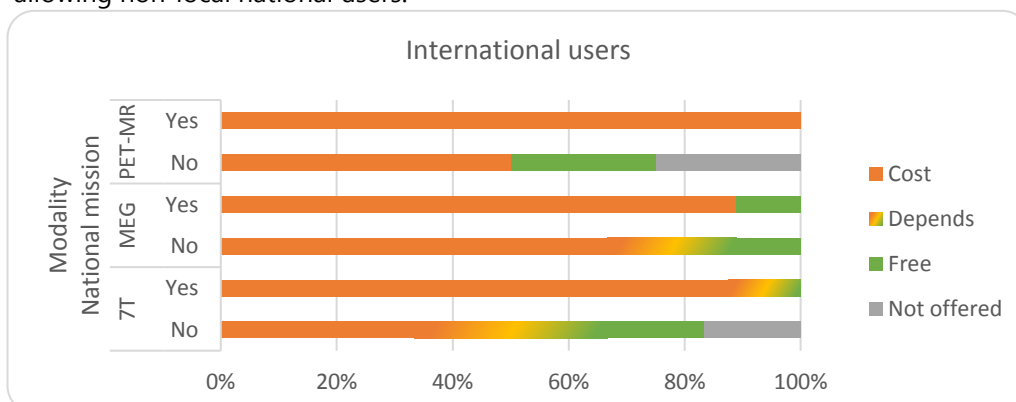
Q12 Do you offer facility access to PIs from these user categories?

vs Q8 National mission

For clarification, the following questions (Q12-Q15) investigate priced vs free availability of equipment use, and various associated services.



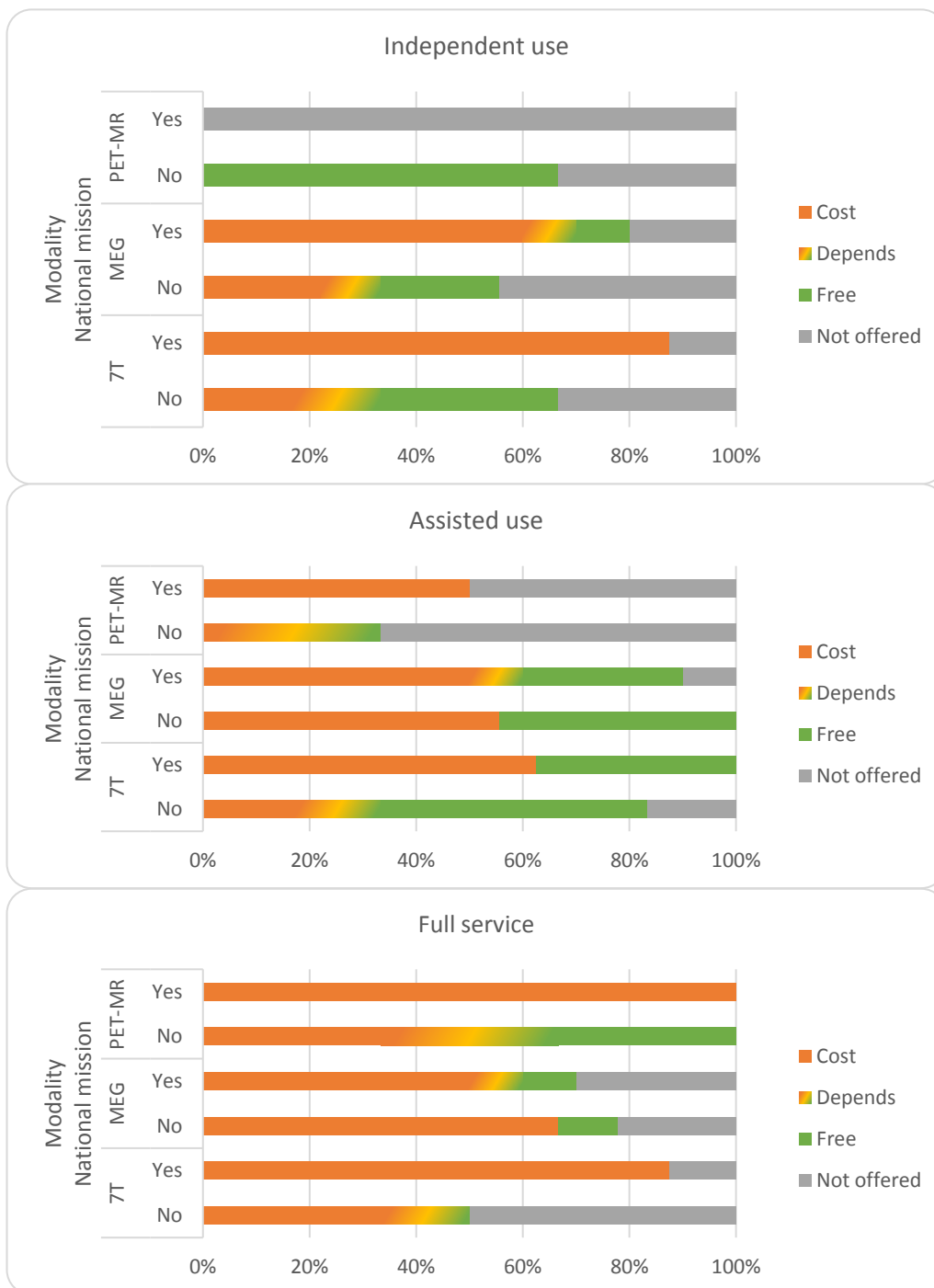
At nationally commissioned facilities, also local users are more likely to pay for access. This is hinting at aiming for non-preferential treatment of all users. Even a small portion of PET-MR sites, naturally without a national mission, go as far as not even allowing non-local national users.



As is visible across all modalities in these diagrams, the nationally commissioned facilities charge all users more frequently. This is hypothesized to result from more thought-out business plans altogether. What effect this has on the efficiency of local groups (them having to pay more in such cases) is then another discussion.

Q13 Are different levels of service offered for using the equipment?

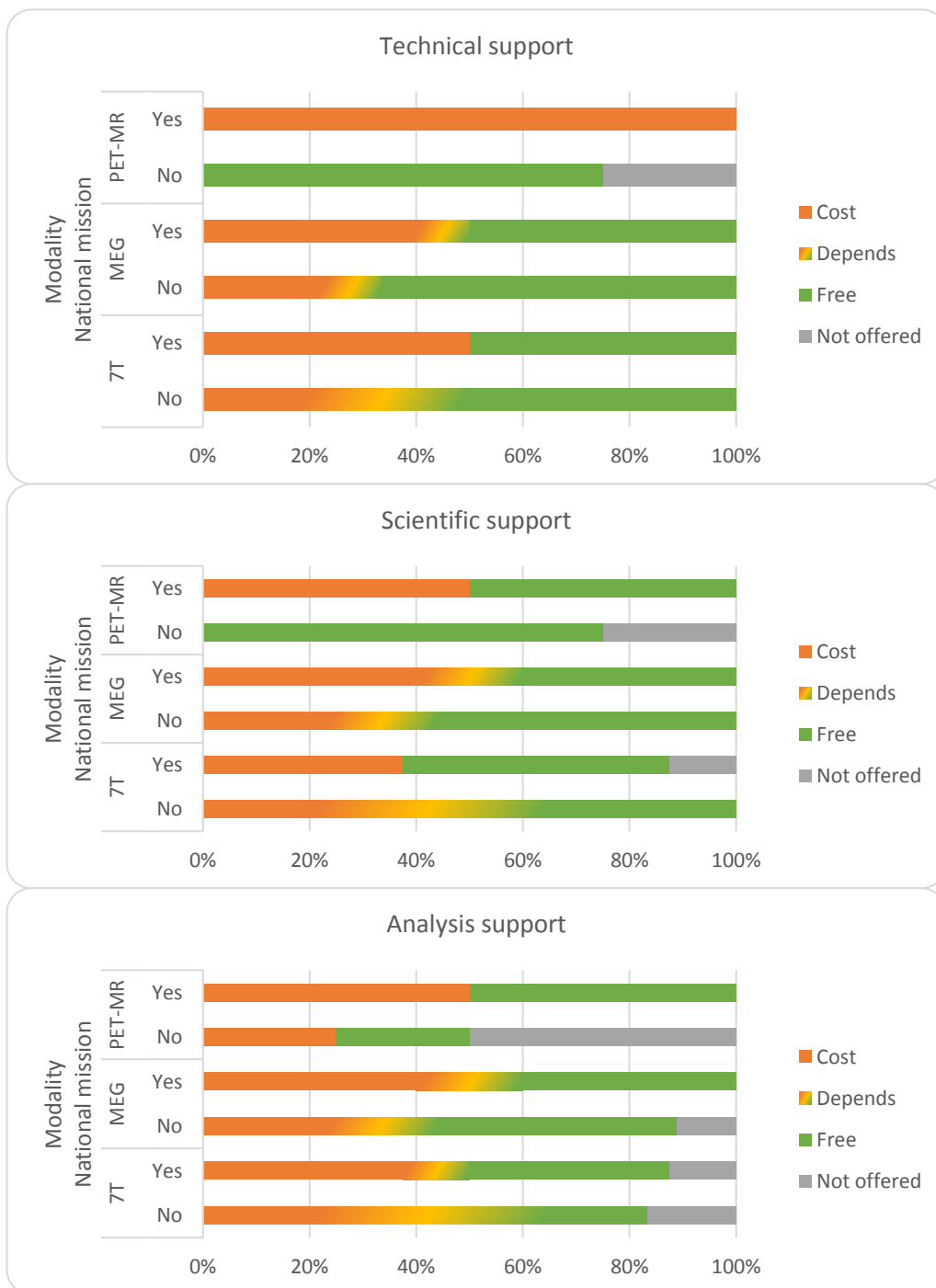
vs Q8 National mission



Assisted use seems to be the most often offered level of equipment operating service, except as to PET-MR where full service clearly is the dominating modus operandi. Surprisingly extensively this assisted use is provided for free (although possibly included in the hourly price).

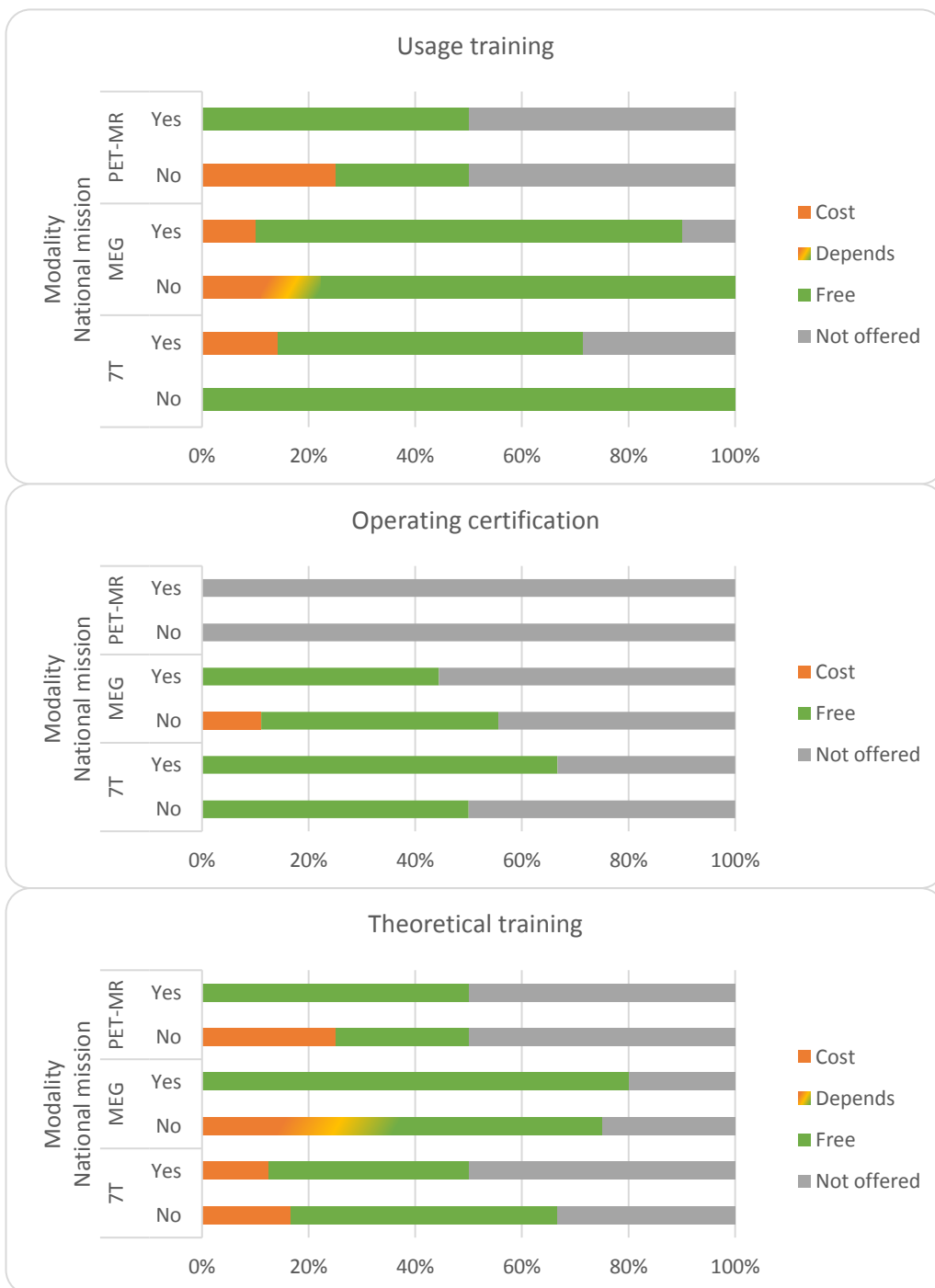
Nationally commissioned sites, overall, offer slightly wider range of equipment operating modes. But a clearer effect than that, is that these services are then offered for a price rather than free.

Q14 Do you offer these types of support to the users?
vs **Q8 National mission**



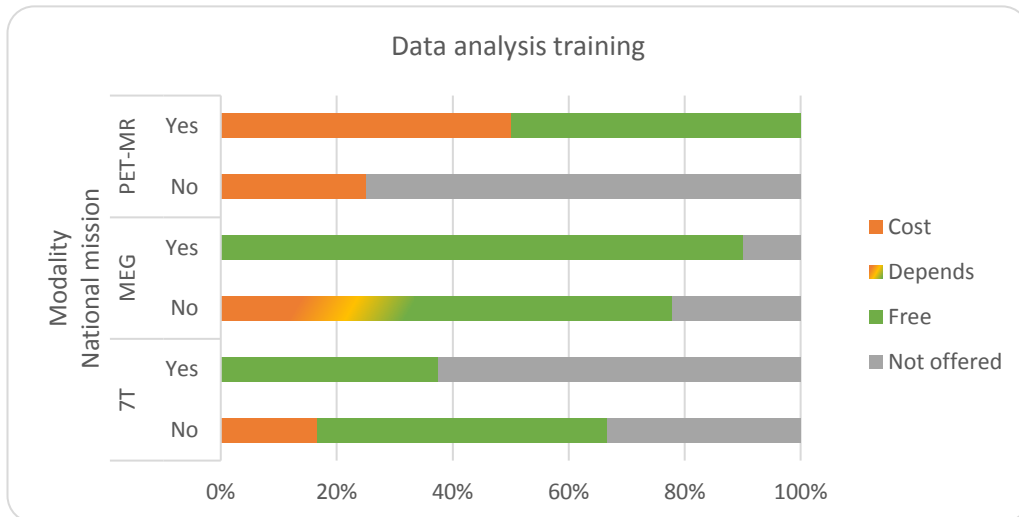
Nationally commissioned sites do provide slightly more comprehensive assortment of services to users. A noteworthy aspect with these three support varieties for MEG and 7T is that the cost vs free split is nearly 50-50.

Q15 Do you offer training to the users?
 vs **Q8 National mission**



(one further related diagram and interpretations on next page)

Q15 (cont.) Do you offer training to the users? vs Q8 National mission

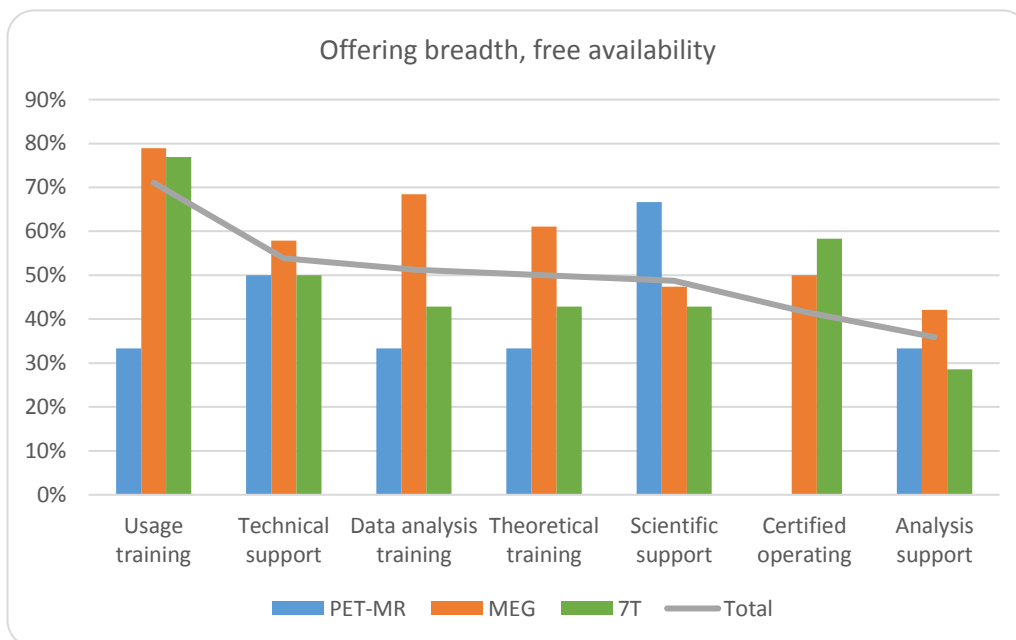


All training offerings turn out to be significantly less available than support services (ref. previous question Q14). However when available, these are usually available for free.

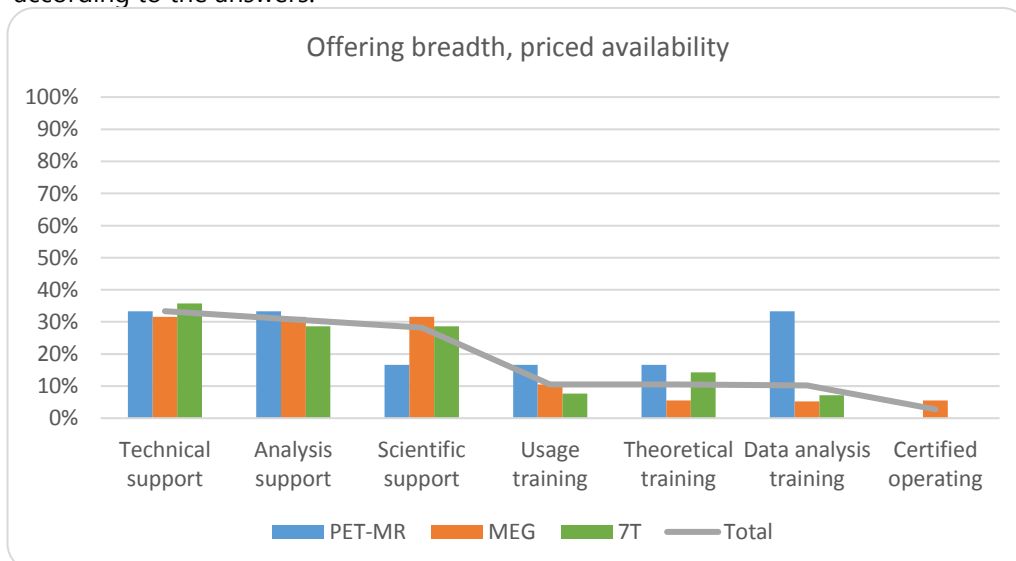
Usage training is both predominantly available and usually free, which is probably a good thing for technology adoption purposes, but raises question of how that is resourced.

Judging from these diagrams, in many cases the national mission sites offer the training services more often for free (usage training, PET-MR; theoretical training, PET-MR & MEG; data analysis training, MEG & 7T) while equipment usage was more often priced by them. This might possibly be related to technology adoption spreading ambitions.

Summarizing diagrams for Q13-Q15

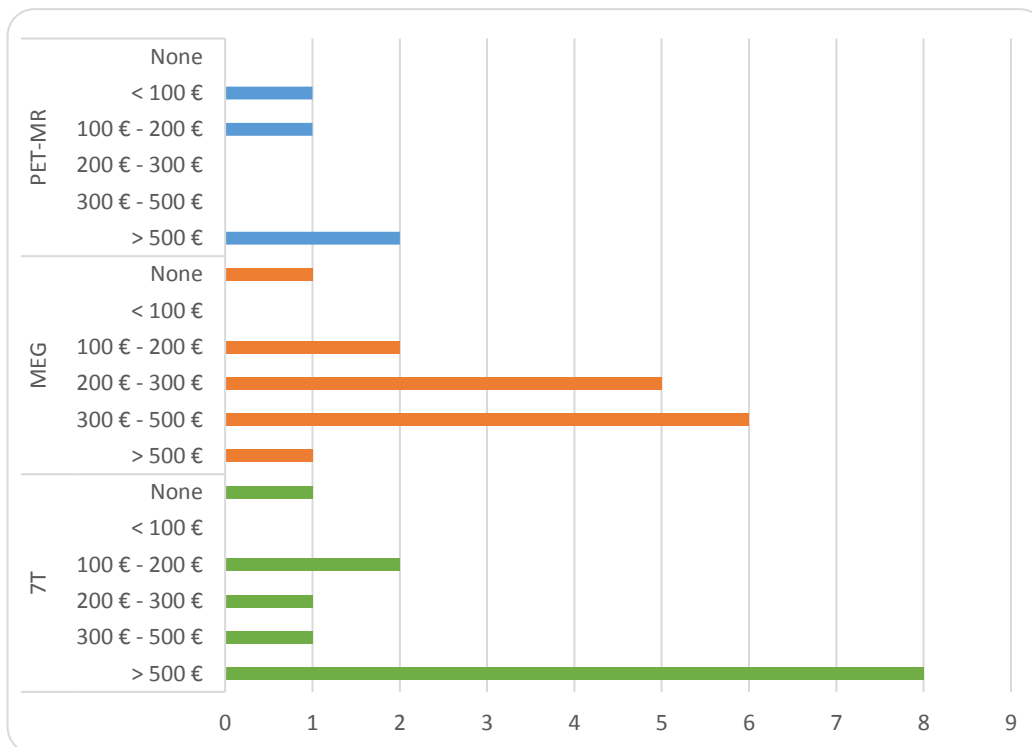


This diagram summarizes free availability of different offerings, both in total availability and broken down by modality, finally ordered into a decreasing total availability. Clearly some modality specific idiosyncracies in availability are seen. Considering that, roughly speaking, half of all facilities do offer nearly all these services for free and then the other half not for free, this creates a widely varying field for end users. Understandably, oftentimes the services availability is also negotiable according to the answers.



For comparison with the previous, presented here is a summary of priced availability, similarly ordered into a decreasing total availability (note different horizontal order from above!).

Q16 What is the hourly cost of the use of the facility for a user? (specify the highest charged price if different prices are employed, but the price without any extra services included)

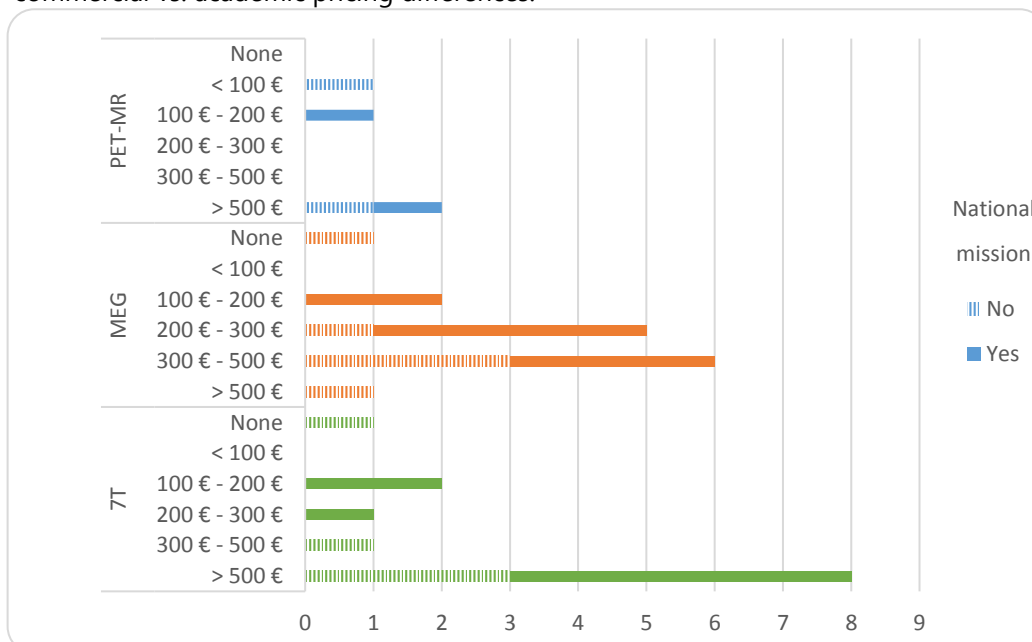


Mean values: PET-MR 200 €, MEG 300 €, 7T 700 €

PET-MR modality had only few answers.

Overall, considerable variety exists in hourly price. One could even say that the price can be almost anything.

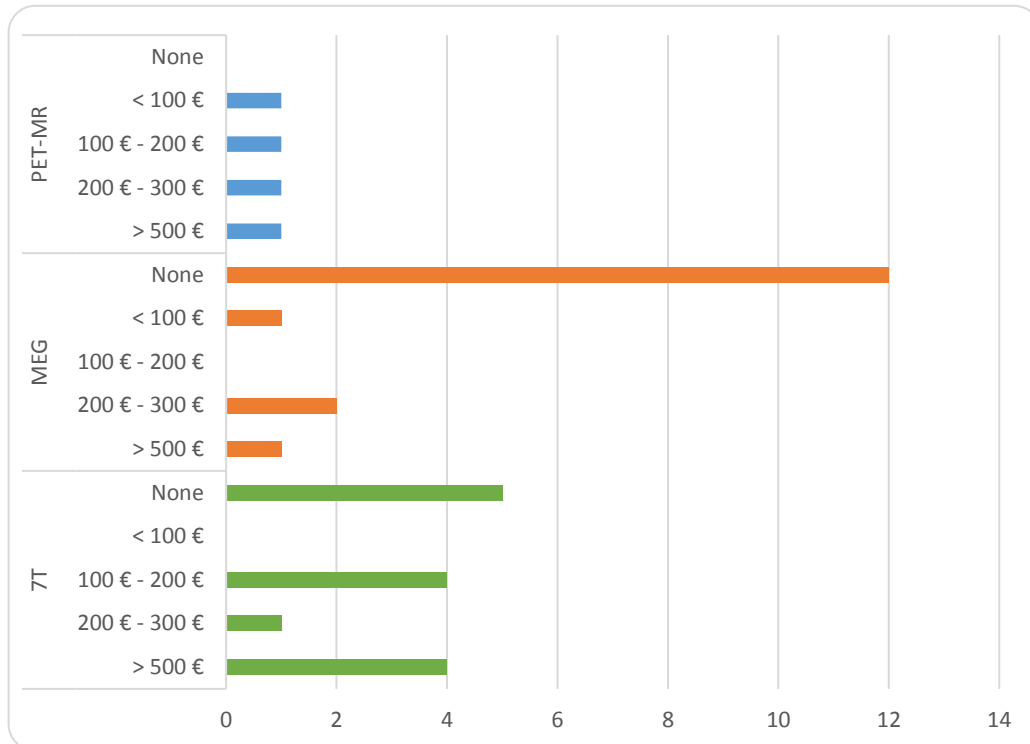
In addition, variety of 'Other' answers existed which were elaborated with e.g. commercial vs. academic pricing differences.



As to national mission's effect, for MEG it can be seen that it brings an hourly cost effect of about -100€, for PET-MR and 7T the result is inconclusive.

Q17 What is the hourly cost of facility support for a user?

(specify the highest charged price if different prices are employed)

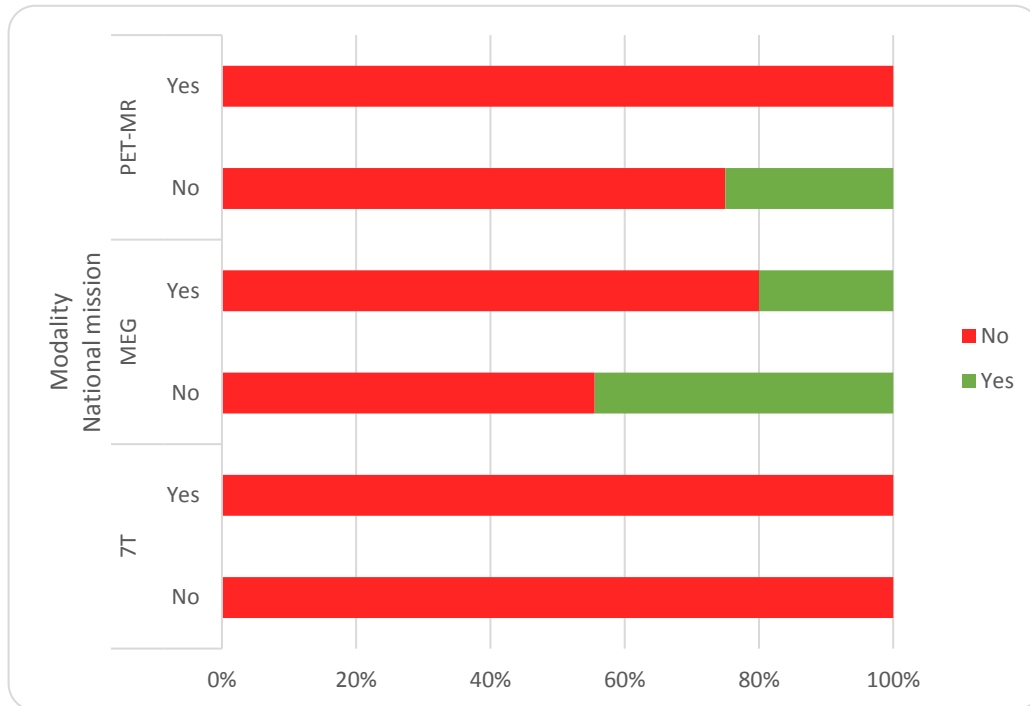


Mean values: PET-MR 200 €, MEG 0 €, 7T 150 €

7T sites are somewhat polarized between 0 € and > 500 €

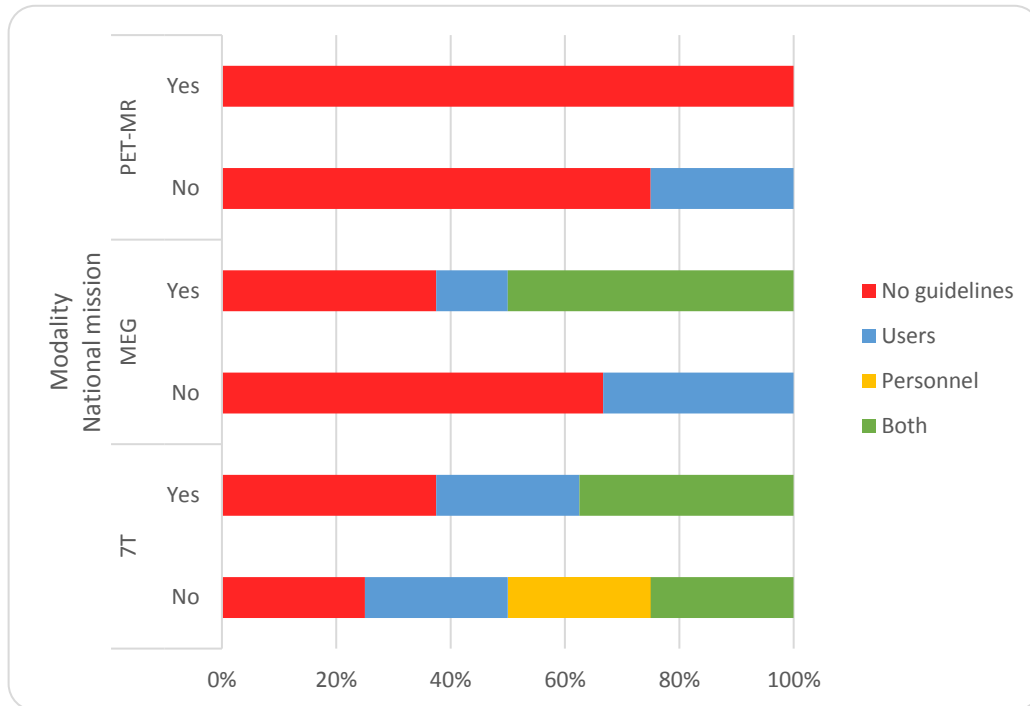
MEG facilities differ clearly from others in that they predominantly do not lay support costs upon users.

Q18 Is there a reimbursement coupled to the use of your equipment for specific clinical conditions?



The lack of reimbursement policies is more evidence for 7T use not being clinical yet. This fact may also underlie in the Q16 hourly cost figures.

Q19 Are guidelines applied to acknowledge contributions that have been made during facility access, such as Vancouver guidelines?

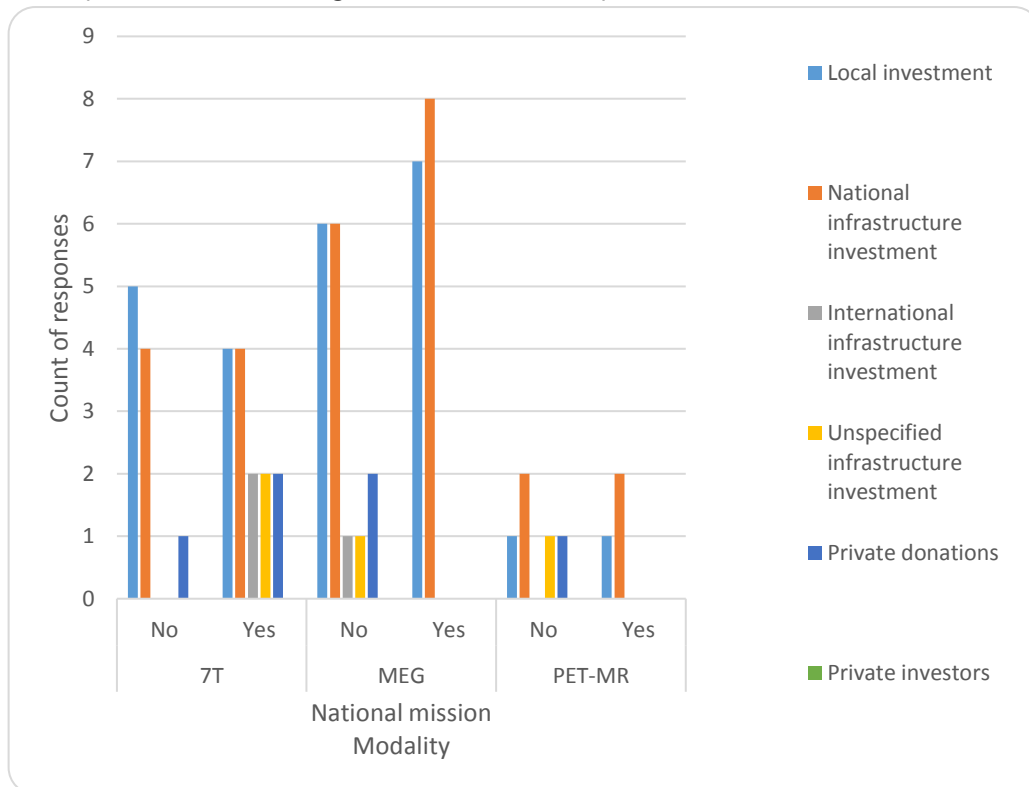


Despite PET-MR facilities having strong emphasis in clinical activities (ref. Q11), they are surprisingly not utilizing contribution guideline protocols to large extent, at least not explicitly.

It could be envisioned that nationally commissioned sites would more rigorously apply scientific contribution guidelines (via larger share of collaboration efforts, and hypothesized more explicit business plans). This was supported within the MEG modality, not so much within the other modalities.

Q20 How was the installation of the facility funded? vs Q8 National mission

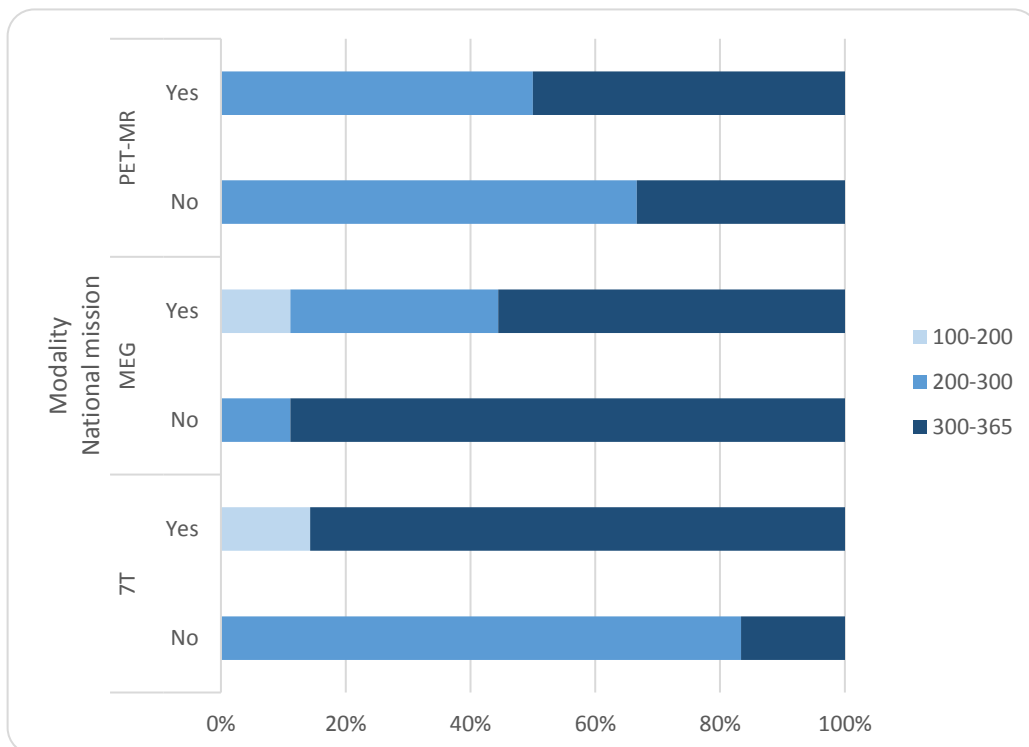
Multiple sources of funding were allowed in the question.



Somewhat surprisingly, a national mission seemed not have had a clear-cut effect on the funding source. On the other hand, 7T sites with a national mission used a larger variety of funding sources than those without a national mission. But the opposite was the case for MEG. Yet the two most common funding sources are the same for both modalities, even in equal number of occurrences irregardless of national mission. The relative size of actual funding received from different the sources was not investigated in the survey, something where differences could have possibly been found.

Q21 For approximately how many days per year is the facility open for use?

vs Q8 National mission

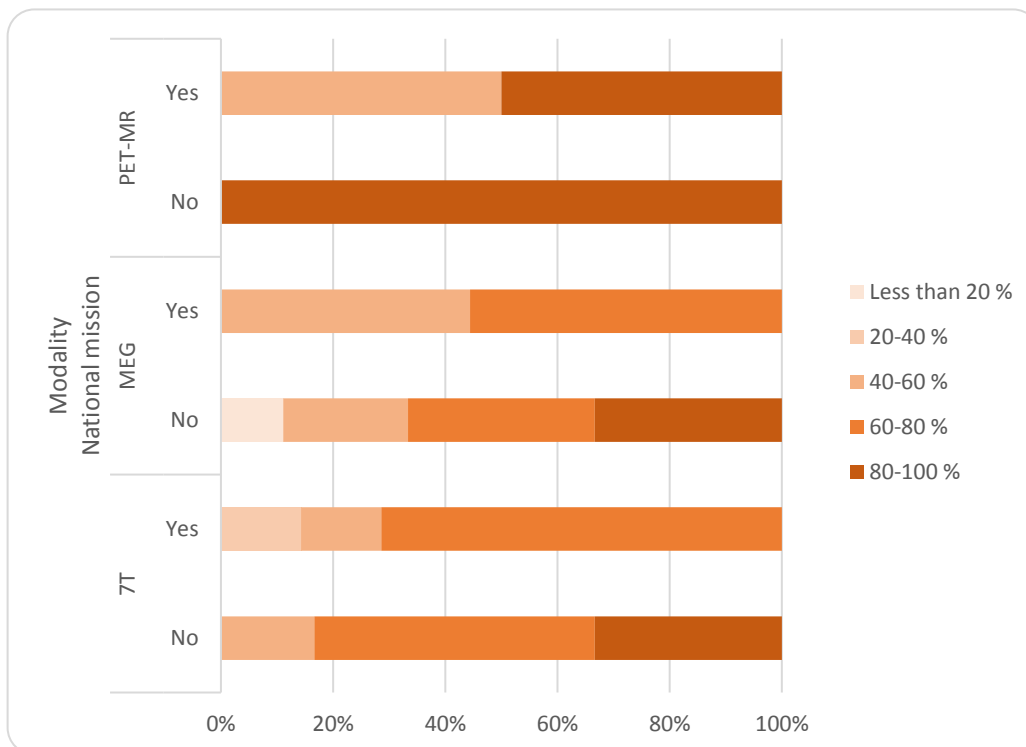


Overall, not many facilities have trouble achieving nearly full availability. Reasons for less than full availability were not investigated in this survey.

Only for the 7T modality are the nationally commissioned sites on average significantly more open than the non-commissioned sites.

Q22 What is (approximately) the utilisation rate of the facility?

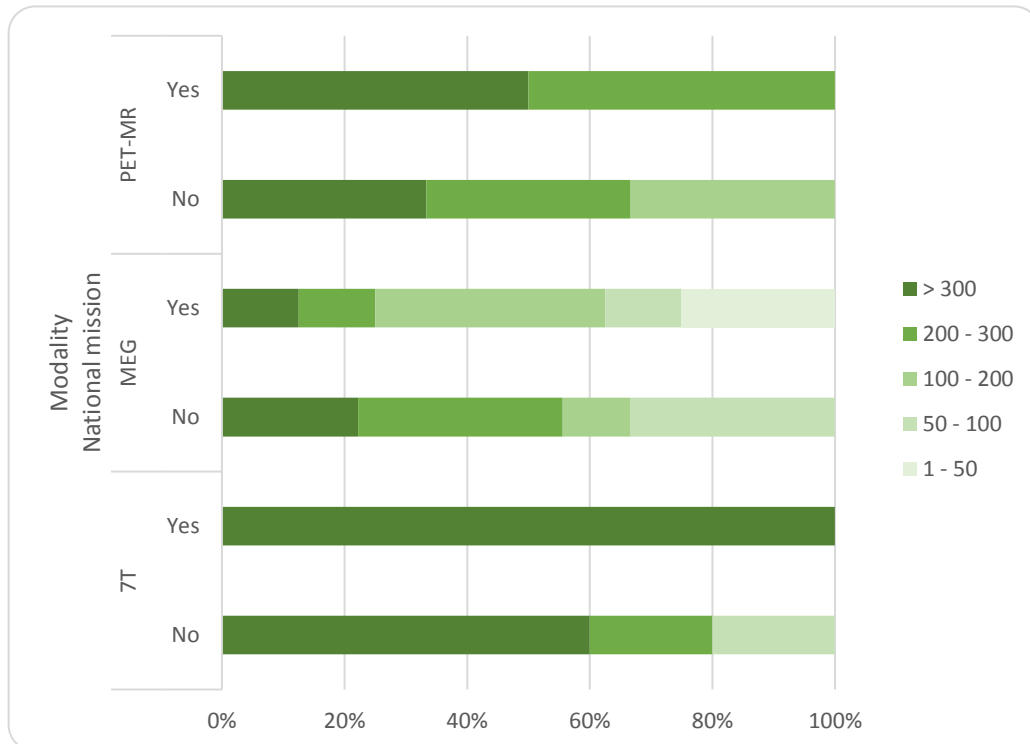
vs Q8 National mission



It is seen here that the PET-MR facilities are operating very near capacity, while many of the low utilization rate facilities (< 60%) are MEG facilities.

Surprisingly, across all modalities, higher utilisation rates are observed where no national mission exists. This is interpreted supporting an assumption that it is easier to push adoption of a new modality locally. Possibly even the hurdles to initiate imaging undertakings are just lower locally as opposed to a national facility.

Q23 Approximately how many subjects are examined in a year? (with the pertaining imaging modality) vs Q8 National mission



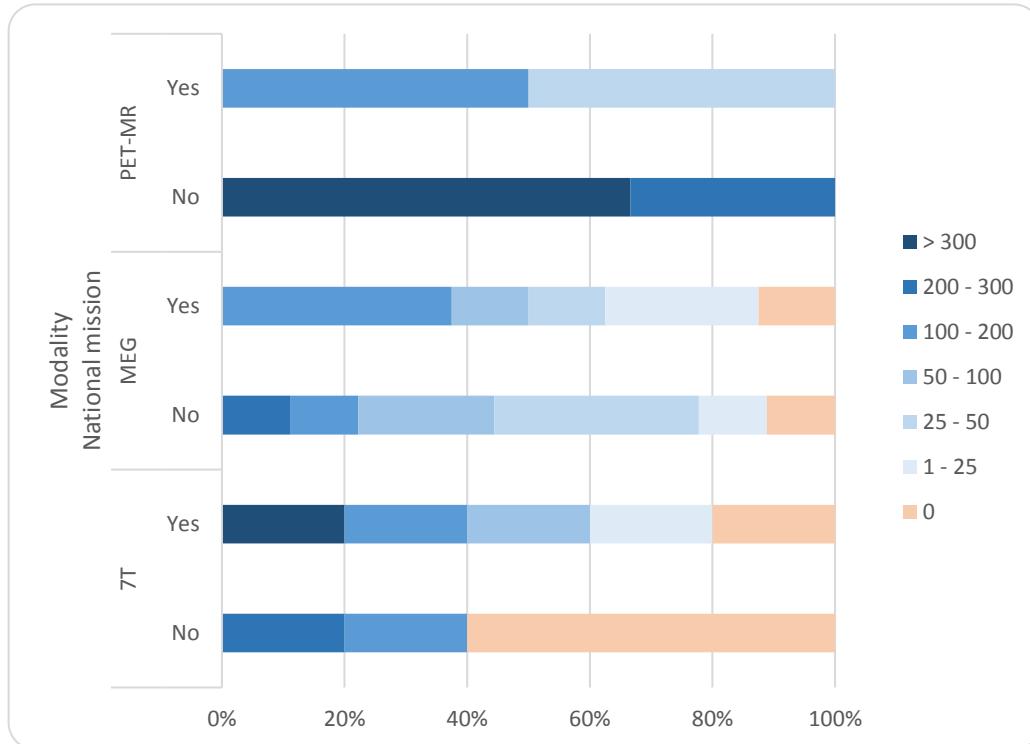
The 7T modality has clearly the highest throughput. An envisioned contributing reason is that 7T scans may be faster to execute and thus inherently allow a larger throughput. The subject amounts of MEG facilities are widely varying, and as such, also reflected in utilization rate variety (ref. Q22).

Facilities with national mission have slightly higher amount of subjects, except possibly as to MEG.

Outside of what is shown in above diagram, one could not see higher subject throughputs correlated with older sites, so an assumption of learning effect for the operations efficiency fine-tuning was not supported.

Q24 Approximately how many patients are examined in a year?

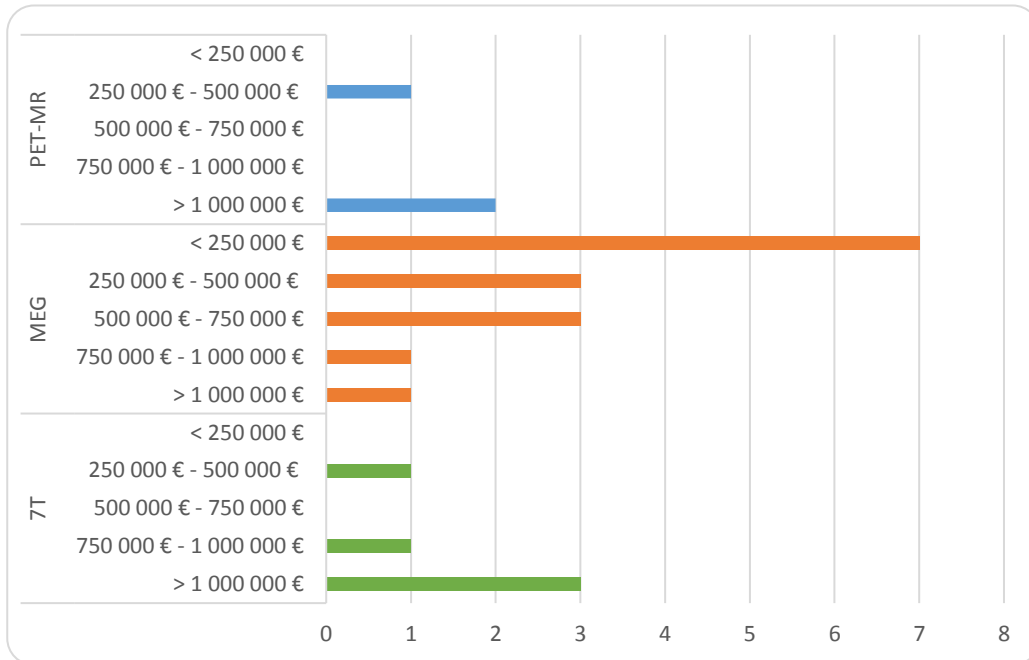
vs Q8 National mission



PET-MR facilities are most clinical clearly, which was also directly reported in Q11 as most common users' domain.

The effect from a national mission is mostly indiscernible here. On the other hand, PET-MRs with a national mission have clearly lower patient throughput, while 7Ts with a national mission do have patients much more often.

Q25 What is the annual operating budget of the facility?

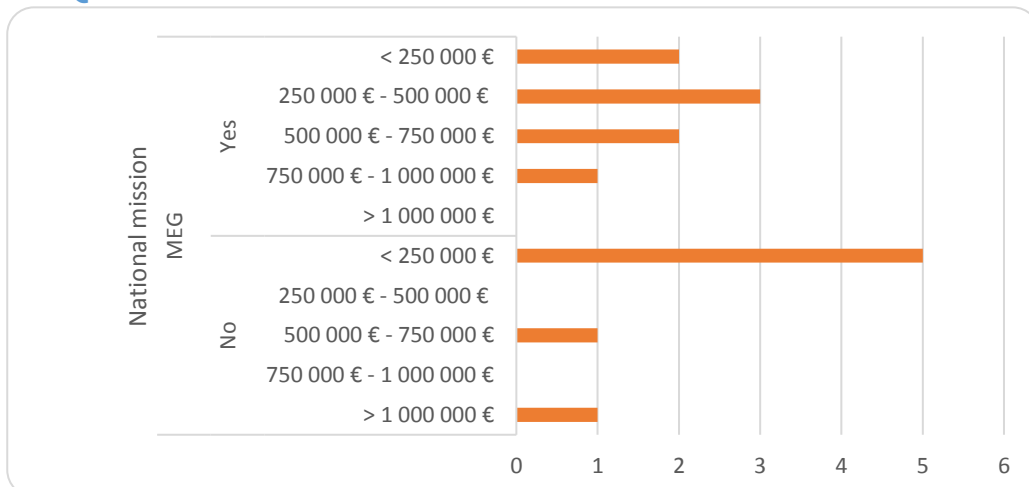


The answers to this question are meant to represent the budget pertaining to the one imaging modality alone. For PET-MR modality there were only very few answers.

Estimated mean values: PET-MR 1 000 000 €, MEG 300 000 €, 7T 1 000 000 €

Obtaining a rough estimate of the budget, and what effect a national mission has on the budget, was the intended goal of this question, not a business analysis.

vs Q8 National mission



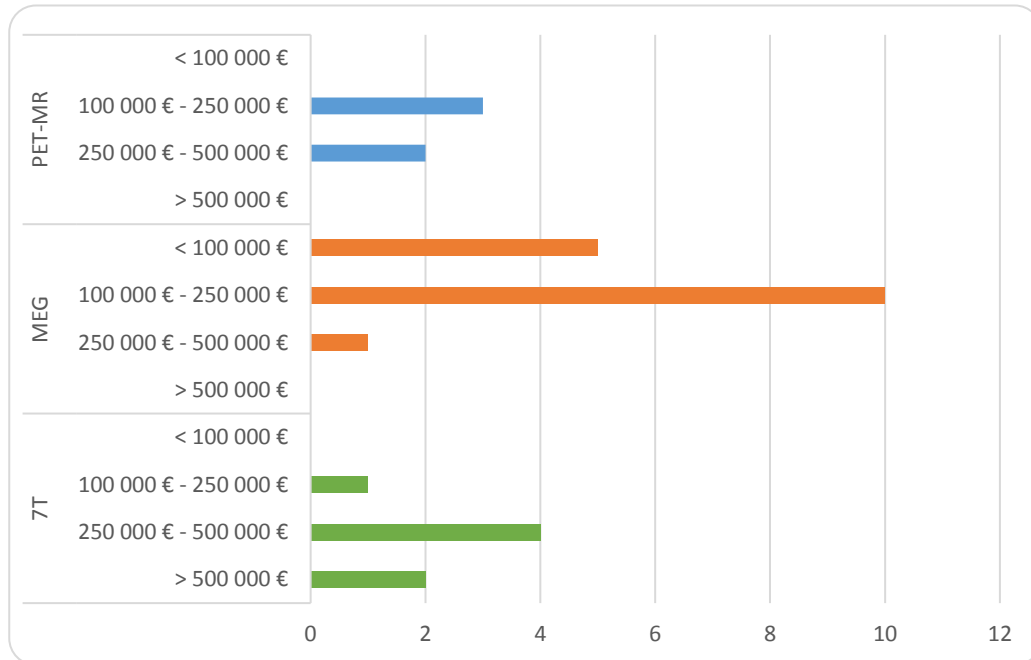
For MEG modality, which had sufficiently large number of answers, the operating budget answers are here broken down along national mission.

Estimated mean values with this split:

MEG with national mission 400 000 €

MEG without national mission 200 000 €

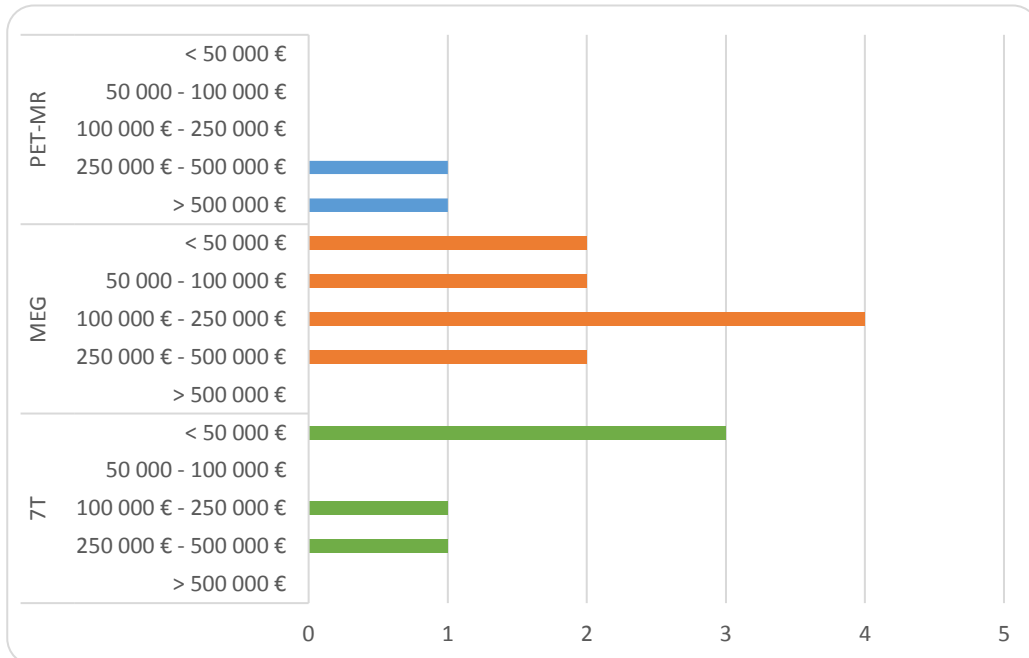
Q26 What are the annual maintenance costs of the facility?



Estimated mean values: PET-MR 250 000 €, MEG 150 000 €, 7T 400 000 €

In the context of this survey, the maintenance cost levels are meaningful when juxtaposed with total operating budget and/or use income.

Q27 What is the annual income from use fees of the facility?

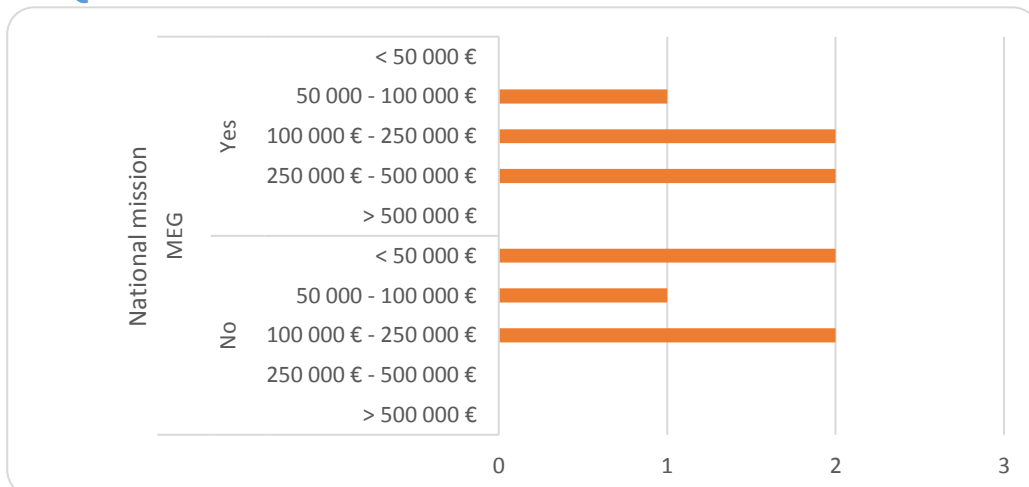


Estimated mean values: PET-MR 500 000 €, MEG 125 000 €, 7T 50 000 €

PET-MRs have clearly higher incomes. This is likely due to higher number of patients examined (ref. Q24).

A noteworthy juxtaposition is that 7T lab incomes are usually low despite high operating costs (ref. Q25).

vs Q8 National mission



As to the MEG modality, which had meaningfully enough answers in Q27, the answers are here broken down along national mission.

Estimated mean values:

MEG with national mission 225 000 €

MEG without national mission 100 000 €

Conclusions

A key perspective for this survey was that of a facility *with* a national mission, as compared to those without such a mission.

The investigated three modalities, while sharing the nature of a high-end imaging modality, each seem to have their own historical/technical idiosyncracies affecting both adoption and the operating models.

From a monetary perspective, a national mission seems to bring along a larger budget (double), probably corresponding also to larger amount of staff, and via that a possibility for a wider service offering.

Nationally commissioned facilities, on the other hand, also gain a larger income from users (double), seemingly because they offer more comprehensive services to users, and also more often charge users for these services.

Looking at the service offering assortment, it seems that a more clinical nature of operations (as is often the case with PET-MR) allows a tighter set of offerings to suffice. Training offerings are then also clearly less available than more direct equipment support offerings.

The wide range of price points and negotiable components in pricing is interpreted to suggest a widely varying operating modes, likely shaping up from local circumstances.

Somewhat counterintuitive, there is on average a better utilization of equipment in labs without a national mission. Whether this is due to stronger local operations, better local awareness about equipment or a faster set up of research programs is difficult to say. It is also possible that the demand for the equipment preceded the equipment investment decision in such cases to a larger extent than cases where national mission drove the investment decision.

While the utilization rate in facilities without a national mission is comparatively higher than at those with national missions, support ambitions differ in the opposite direction.

Facilities with national missions then provide a wider range of services, together with an increased staffing, jointly indicating more comprehensive ambitions in supporting, teaching and facilitating nationwide adoption of the method.

Appendix:

The typical answer summary vs Swedish answers

	MEG	MEG Sweden	PET-MR	PET-MR Sweden ¹	7T ²
Q2 Opening year of facility	2006	2013	2014	2014	
Q3 Existence of prior peer facilities	Yes	No	Yes	No Yes	
Q4 Peers today in same country	Yes	No	Yes	Yes	
Q5 Distance to nearest peer	100-300km	> 300 km	> 300 km	> 300 km	
Q6a Local expertise about modality prior to installation	Limited	Negligible	Broad	Compreh. Broad	
Q6b National expertise about modality prior to installation	Compreh.	Limited	Limited	Compreh. Unknown	
Q7a Local expertise about modality today	Compreh.	Compreh.	Compreh.	Compreh.	
Q7b National expertise about modality today	Compreh.	Broad	Compreh.	Compreh. Unknown	
Q8 National mission	Yes	Yes	No	Yes No	
Q9 European mission	No	No	No	No	
Q10 User origin					
Local users	Majority	Several	Majority	Majority	
National users	Some	Several	Some	Some	
European users	Some	Some	Some	None	
International users	Some	None	None	None	
Q11 Users' fields of operation					
Basic research	Majority	Several	None	Some None	
Clinical research	Several	Several	Majority	Several Majority	
Clinical applications	Some	Some	Some	Majority Several	
Method development	Some	Some	Some	Some None	
Instrumentation	None	Some	Some	None	
Q12 Access & pricing based on origin					
Local users	Cost	Cost	Cost	Cost Free	
National users	Cost	Cost	Cost	Cost Not off.	
European users	Cost	Cost	Cost	Not off.	
International users	Cost	Cost	Cost	Not off.	
Q13 Usage offerings and pricing					
Independent use	Cost	Cost	Not off.	Not off. Free	
Assisted use	Cost	Free	Not off.	Not off. Free	
Full service	Cost	Not off.	Cost	Not off. Free	
Q14 Support offerings and pricing					
Technical support	Free	Free	Free	Cost Not off.	
Scientific support	Free	Free	Free	Free Not off.	
Analysis support	Free	Free	Cost / Free / Not off.	Cost Not off.	

¹) Two answers.

²) No 7T answer for Sweden available.

	MEG	MEG Sweden	PET-MR	PET-MR Sweden
Q15 Training offerings and pricing				
Usage training	Free	Free	Not off.	Not off.
Operating certification	Not off.	Free	Not off.	Not off.
Theoretical training	Free	Free	Not off.	Not off.
Data analysis training	Free	Free	Not off.	Cost Not off.
Q16 Use cost / hr	300 €	100-200 €	200 €	100-200 € Depends
Q17 Support cost / hr	0 €	0 €	200 €	200-300 € Depends
Q18 Reimbursements	No	Yes	No	No
Q19 Scientific contribution guidelines	Yes	Yes	No	No
Q20 Facility installation funding	National infrastr. investment	National infrastr. investment	National infrastr. investment	Nat'l inf. Local inv.+Other
Q21 Facility availability (days)	300 - 365	200 - 300	200 - 300	300-365 200-300
Q22 Utilisation rate	60 - 80%	40 - 60%	80 - 100%	80 - 100%
Q23 Number of subjects	100 - 200	50 - 100	200+	200-300 100-200
Q24 Number of patients	50 - 100	25 - 50	> 300	100-200 >300
Q25 Operating budget		250 - 500k€	1 000 k€*	>1 000 k€
with national mission	400 k€			
without national mission	200 k€			
Q26 Maintenance budget	150 k€	< 100 k€	250 k€	250- 100- 500k€ 250k€
Q27 Usage income		50 - 100 k€	500 k€*	>500 k€
with national mission	225 k€			
without national mission	100 k€			

*) Number of answers insufficient for meaningful split.