

# Workflowanalyse und Ontologien für endoskopische NNH-Chirurgie

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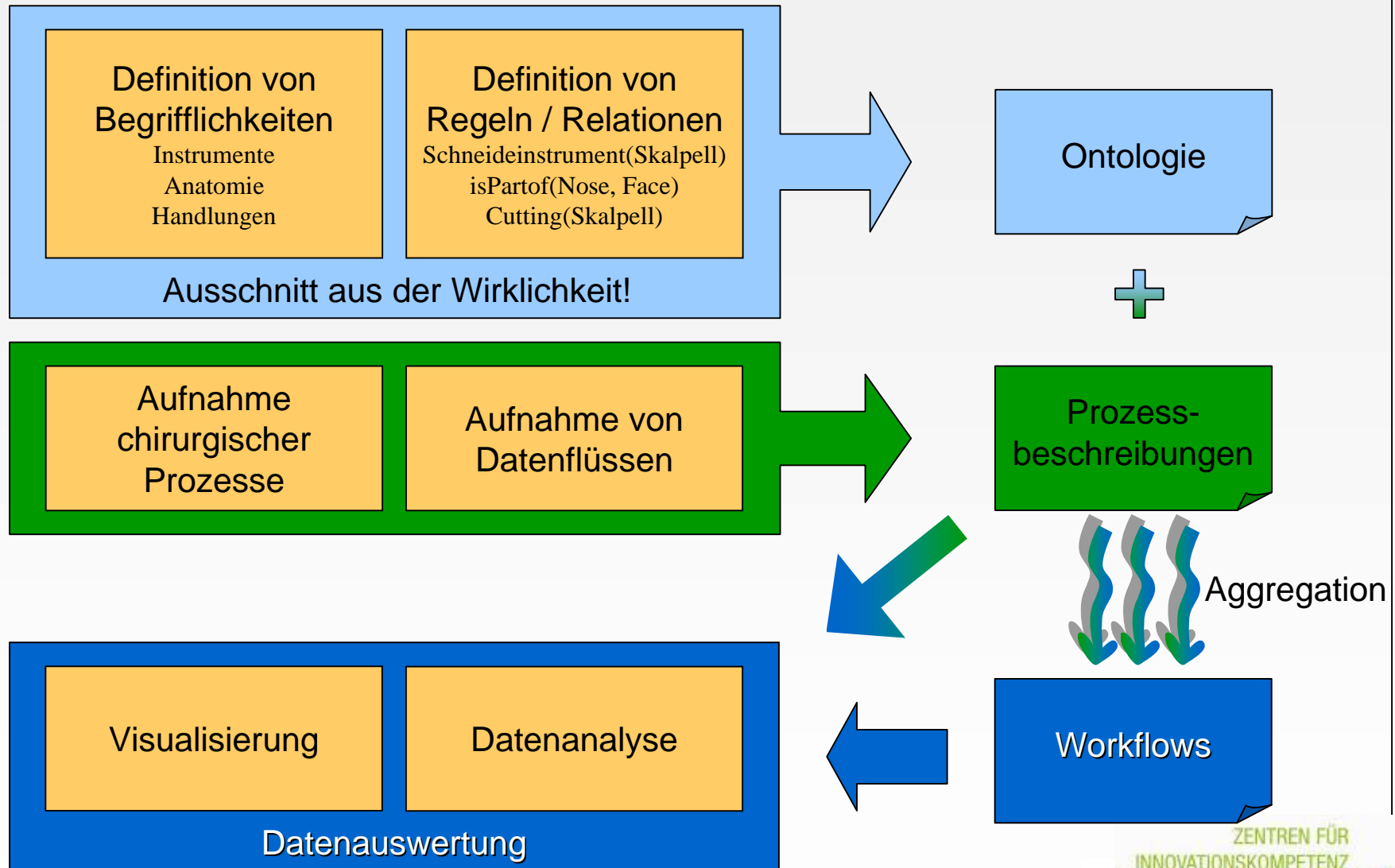
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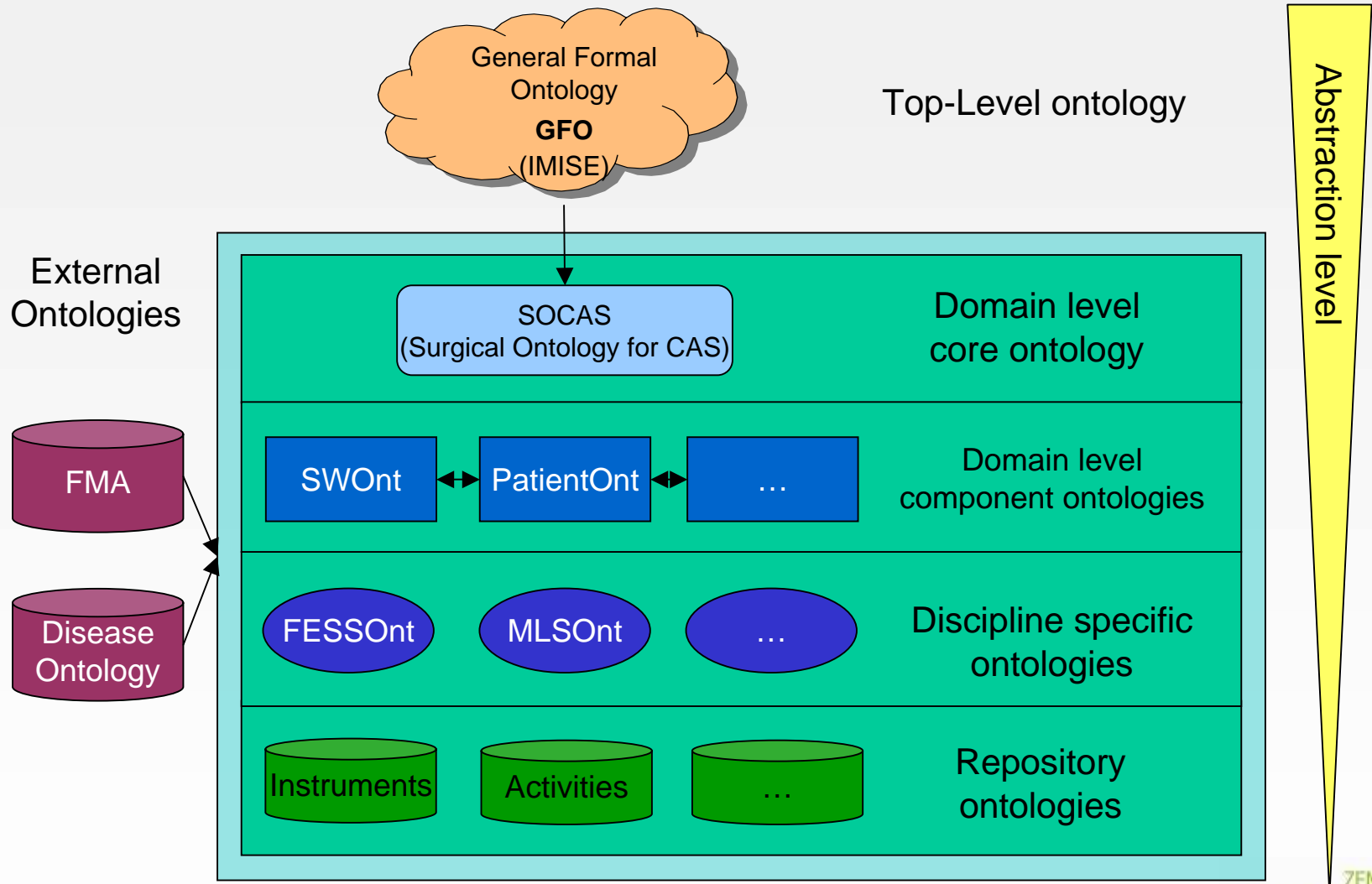
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- Zunehmende Technisierung des chirurgischen Arbeitsplatzes bisher ohne valide Analyse des Ist-Zustands  
→ Viele technische Entwicklungen sind nicht bedarfsorientiert
- Analyse der chirurgischen Prozesse erlaubt
  - Evaluation der aktuellen OP-Strategien
  - Abschätzung von Entwicklungspotential
  - Evaluation von neuem Instrumentarium
- Eingesetzt in zur Analyse von NNH-Eingriffen:  
Functional Endoscopic Sinus Surgery (FESS)





# Struktur der Ontologien

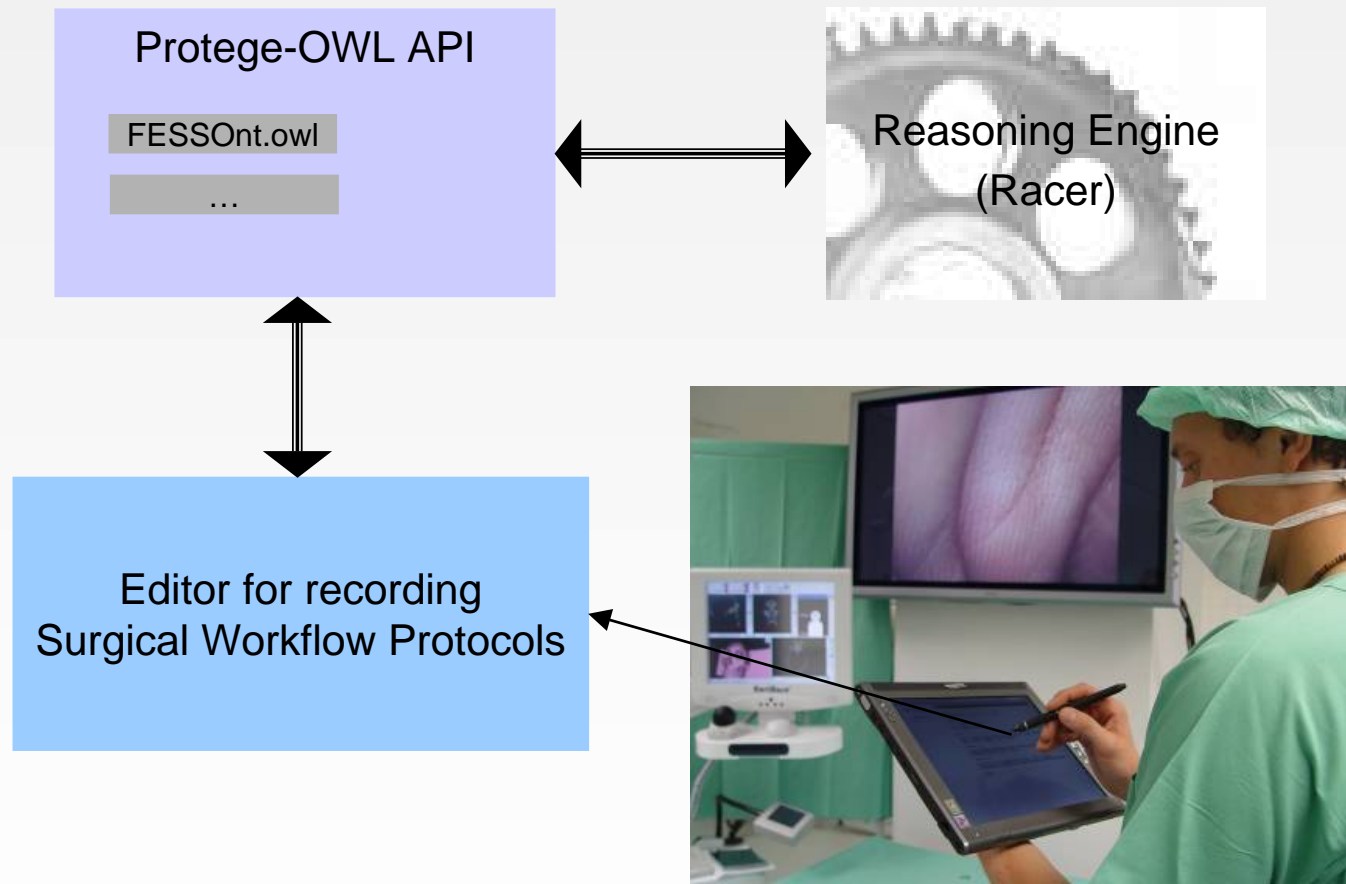


## Enthält Information über

- Instrumente die bei der FESS genutzt werden
- durchgeführte Aktivitäten (Verben)
- Anatomische und pathologische Strukturen
- ...

- Instrument = Everything that can\_be\_used\_to cut OR hold
- CuttingInstrument = Instrument AND Everything that can\_be\_used\_to cut
- HoldingInstrument = Instrument AND Everything that can\_be\_used\_to hold
- Clamp → Everything that can\_be\_used\_to hold
- Forceps → Everything that can\_be\_used\_to hold
- Knife → Everything that can\_be\_used\_to cut
- Scissors → Everything that can\_be\_used\_to cut
- Pliers → Everything that can\_be\_used\_to (cut AND hold)

- Instrument
  - CuttingInstrument
    - Knife
    - Scissors
    - Pliers
  - HoldingInstrument
    - Clamp
    - Forceps
    - Pliers
- Action
  - Cut
  - Hold



## Aufnahme im OP durch geschulte Personen mittels Tablet-PC

- Aktivitäten des Chirurgen
- Aktivitäten der OP-Schwester
- Blickrichtung des Chirurgen
- Status der genutzten Instrumente (insbesondere Navigated Control)
- Außergewöhnliche Ereignisse
- Entscheidungen des Chirurgen
- Kommentare / Anmerkungen

## Nutzung für

- FESS konventionell
- FESS navigiert
- FESS Spül-Saug Endoskop
- FESS Navigated Control



New... Open... Save... Close Options...

Activities Events States Relations

Start Delete Activity

**Time**

Starttime  
00:06:16  
+ - + -

Stoptime  
Stop

**Participants**

surgeon  
left hand right hand

scrub nurse  
scrub nurse

insert	remove	place	align	set
focus	fix	grasp	keep away	clean
suck	dissect	excise	coagulate	open
stop bleeding	cut	irrigate	injection	local anesthesia
change	press	turn on / off		

Keep this setting for the next task

retractor	bite-splint	Hirnwatte	optic 30Â°	optic 0Â°
scissors	sickle-knife	exhauster	exhauster, angled	forceps
tweezers	Freer	alligator forceps / Blakesley	Blakesley, straight	Blakesley, angled
punch	syringe	spoon, sharp	clamp	cotton drill
bipo	nose-speculum	conchotom	double-spoon	shaver
shaver as pointer	navigation	camera	navistar - bitesplint	navistar-shaver
tamponades				

Keep this setting for the next task

face	forehead	eyes	nose	cheek
cavitas nasi	left nostril	right nostril	septum nasi	choanen
conchae nasalis sup	conchae nasalis med	conchae nasalis inf	sinus frontalis	cell. ethmoid. ant.
cell. ethmoid. medii	cell. ethmoidal. post.	sinus sphenoidalis	sinus maxilaris	cranial basis

Keep this setting for the next task

**Notes**

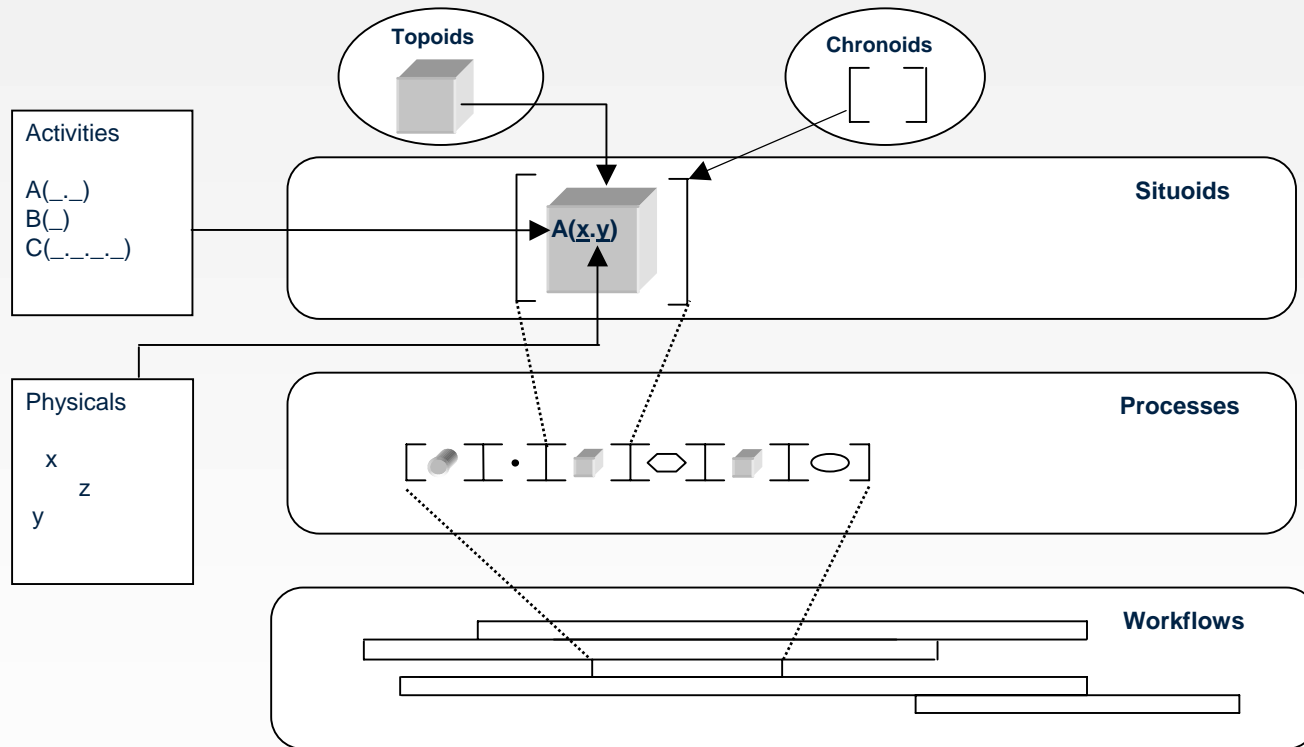
Stop running tasks    Ok    Apply    Cancel

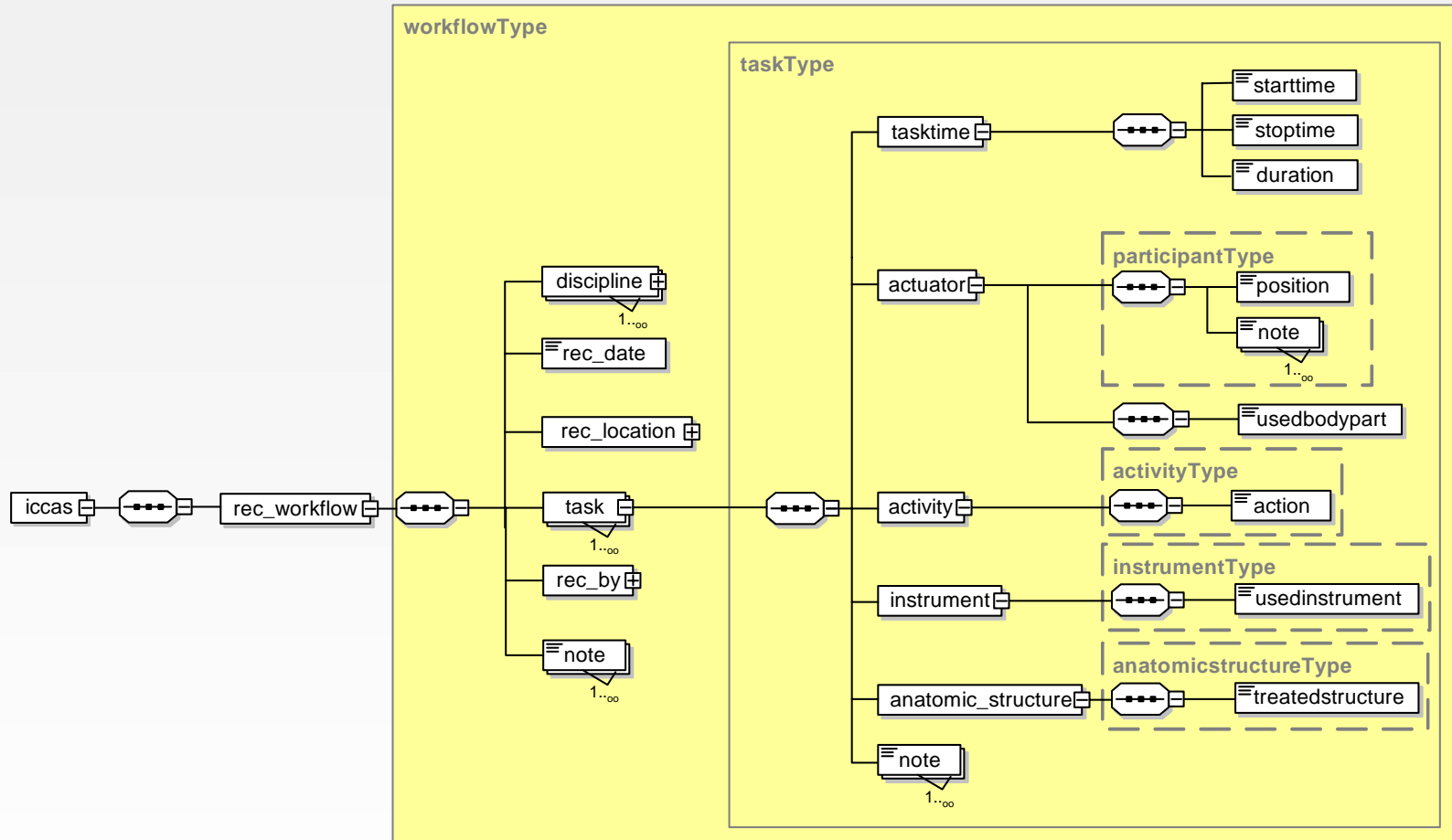
surgeon	left hand					
	right hand					
scrub nurse	scrub nurse					
	not assigned					
	View Surgeon					

Show Rejected Tasks

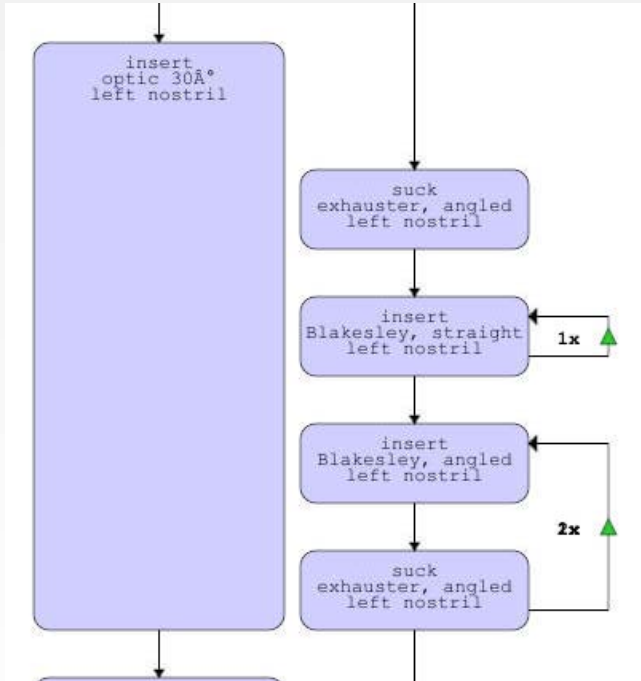
00:00:00    00:01:00    00:02:00    00:03:00    00:04:00    00:05:00    00:06:00



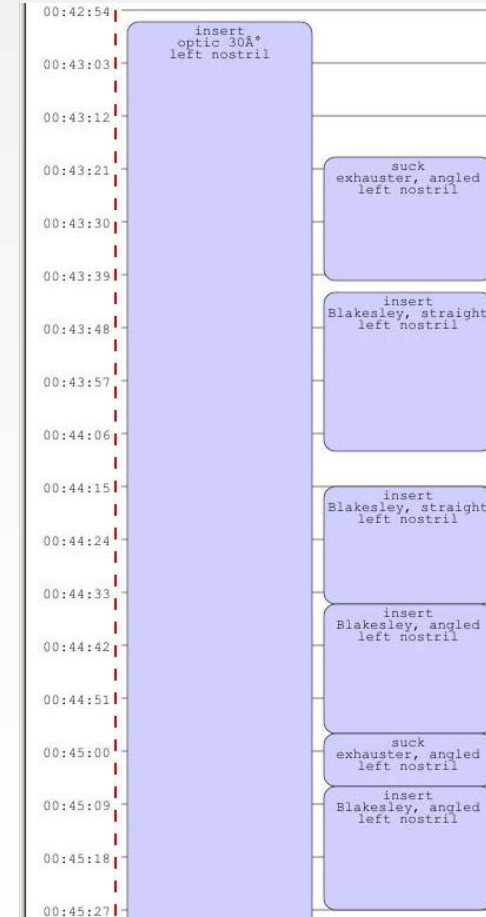




## Aufgabenorientierte Darstellung



## Zeitorientierte Darstellung



# Reporting (Auszug)


 innovation center
   
 computer assisted surgery

## OP Information

starttime 21.02.2006 08:03:07  
 stoptime 21.02.2006 08:57:16  
 oplength 00:54:08  
 productivetime -1:17:23  
 paused time 00:00:49  
 average tasktime  
 taskcount  
 activitycount  
 diagnoses  
 therapies  
 country  
 city  
 institution  
 building  
 operatingtheatre


 innovation center
   
 computer assisted surgery

## actuator information

surgeon  
 name Fickweiler  
 oa  
 clinicaldegree  
 actors  
 23x left hand  
 60x right hand  
 taskcount 80  
 acttime 00:44:56  
 structures  
 instruments  
 1x forehead  
 1x tamponades  
 1x navistar  
 16x optic DA  
 2x tweezers  
 28x exhaust  
 1x syringe  
 1x retractor  
 14x Blakesley  
 7x Blakesley  
 1x sickle-knife  
 3x optic 30A  
 47x insert  
 1x place  
 1x align  
 2x remove  
 27x suck  
 1x injection  
 1x dissect  
 average acttime 00:00:33

Handlung/ Ereignis	1. OP	2. OP	3. OP	4. OP	5. OP	6. OP	7. OP	8. OP	9. OP	10. OP
Verwendung des Shavers als Shaver	785s 18	625s 24	375s 9	855s 26	550s 18	660s 14	430s 8	345s 8	296s 12	454s 16
Verwendung des Shavers als Pointer	240s 12	40s 3	50s 1	510s 24	210s 7	125s 5	340s 7	65s 4	24s 3	104s 8
Verwendung des Shavers als Sauger	110s 4	170s 14	30s 1	210s 10	105s 7	20s 2	0	20s 2	78s 6	67s 16
Abweichung des registr. Shavers von einer eindeutigen Intraop. Landmarke Operateur kontrolliert den Sitz der Biss- schiene Entfernung der Bisschiene Kalibrierung des Shavers Justierungen am Shaver	0 0	0 0	0 0	1 1	- mehrere	0 0	0 0	1 1	0 0	0 0
	15s 1	15s 2	0	0	0	0	20s 1	15s 1	10s 1	1s 1
	5s	5s	20s	10s	5s	5s	2s	2s	10s	7s
	0	0	0	0	30s 1	0	0	0	0	0
	0	0	1	0	0	0	20s 1	0	0	0

## Herzlichen Dank für Ihre Aufmerksamkeit!

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