

Glossary

V. 4.3

For an introduction into the topic of **Artificial Pancreas Systems** (“Looping”), see:

- <https://github.com/danamlewis/artificialpancreasbook/>
- and <https://androidaps.readthedocs.io/en/latest/Resources/clinician-guide-to-AndroidAPS.html#for-clinicians-a-general-introduction-and-guide-to-aps>.
- Overview over all DIY loops <https://www.diabettech.com/user-resources/hcp-loop-guide/>

For a resource on key topics like ISF, meal management etc. see the pdf collection in the HCL branch of: <https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings>

The parallel default branch with a “**FCL-e-book**” <https://github.com/bernie4375/FCL-potential-autoISF-research-> is for advanced users.

Term	Description	related	more details @
AAPS	AAPS is the name of an Open Source (aka “DIY”) looping app: On Android phones, Bluetooth connected with an insulin pump and a CGM , it provides an Artificial Pancreas System Broadest choice of pumps and CGMs of any looping option	Android Studio: iAPS, Trio iOS Loop	https://androidaps.readthedocs.io/en/latest/introduction.html#what-is-android-aps-aaps
AAPS Client	AAPS <u>can be monitored and controlled remotely</u> via the AAPSClient app and optionally via the associated Wear app running on Android Wear watches		https://androidaps.readthedocs.io/en/latest/GettingStarted/FAQ.html#configuring-and-using-the-aapsclient-remote-app
acceleration	mathematical analysis of the bg development can reveal earliest signs of a bg rise (highly relevant in -> FCL w/autoISF ; -> parabola fit). Growing bg deltas are a simpler way of detecting acceleration but with a ~ 10-20 minutes relative delay. A de-celerating rise indicates a bg peak will soon be reached.		https://github.com/gazelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Quick_Guide.pdf FCL-e-book , section 4.2
Activity Monitor	feature of some loop systems that allow adaptation of loop aggressiveness with ~ past hour data from the phone’s (or watch’) motion monitor (evtl also heart rate).	aggressiveness	FCL-e-book , section 5.1.5
aggressiveness of the loop	more aggressive loop settings will deliver more insulin, often via a lowered temporary ISF being applied to a needed correction, or also via a temp. lowered bg target . A more aggressive loop helps fight temp. insulin resistance (e.g. after fatty meals).	resistance sensitivity	FCL-e-book , section 5

	Conversely, e.g. in an exercise context, higher ISF and higher temp.glucose target help deal with increased insulin sensitivity .		
AIMI	dev variant of AAPS involving simple Meal Announcement (MA) that might be stretched into a FCL		FCL-e-book 13.3.2; https://discord.gg/tPDQzS3Bq3
algorithm	the algorithm is a set of calculations and plausibility/safety checks the loop goes through every 5 minutes (upon receipt of a new CGM value), to define what to do, notably in terms of more insulin delivery for control of bg (to bring it to target)	control; oref; insulin kinetics	https://openaps.readthedocs.io/en/latest/docs/While%20You%20Wait%20For%20Gear/Understand-determine-basal.html#understanding-the-basic-logic-written-version
AMA	advanced meal assist - algorithm to handle carbs via % TBR (without SMBs)	SMB	Wiki - AMA
Android Studio	(free) developer software needed to complete and maintain your personal copy of AAPS (for iAPS and iOS Loop: see Xcode)	Github	https://androidaps.readthedocs.io/en/latest/Installing-AndroidAPS/troubleshooting_androidstudio.html#troubleshooting-android-studio
Anubis	DIY re-engineered transmitter for Dexcom G6 CGM ; lasts unlimited (evtl. battery change); will not shut down sensor at 10.0 days (as factory transmitters do). For more info: „Followers of Anubis“ Facebook group	G6 G6 x 2	https://docs.google.com/forms/d/e/1FAIpQLSdGtAmwqkBUaMVbBPENF_eRBSz7ZMcCz-3CjLxwc4TC6_RH5w/viewform
apk	software installation file (Android application package)		Wiki - Building APK
APS	Artificial Pancreas System . Semi-automatic insulin delivery system that, coupled with a CGM , can regulate bg to target. Besides DIY systems (OpenAPS, AAPS, iAPS and iOS Loop) that pioneered this area, there is an increasing number of commercial systems now available	AAPS; iAPS; iOS Loop CGM	https://iaps.readthedocs.io/en/latest/resources/alternative.html#comparison-table-of-automated-insulin-delivery-systems ; https://github.com/danamlewis/artificialpancreasbook/
Artificial Pancreas System (APS)	a system which works to automatically keep blood sugar levels within healthy limits: by detecting glucose levels , using these values to do calculations , and then delivering the (predicted) right amount of insulin to the body. It repeats the calculation, every few minutes, 24/7.		https://androidaps.readthedocs.io/en/latest/introduction.html#what-is-an-artificial-pancreas-system
autoISF	oref SMB+UAM, with very sharp adaptation of ISF to glucose “behavior” (acceleration, delta, level, stuck-at-high).	FCL	https://github.com/gazelle/autoISF/blob/A3.2.0.4

	<p>Ideal for FCL but difficult to set up (initial “tuning”).</p> <p>Useful also in HCL (tuning then different)</p> <p>autoISF is available only in dev variants of</p> <ol style="list-style-type: none"> 1. AAPS 2. iAPS 3. Trio 		<p>ai3.0.1/autoISF3.0.1 Quick Guide.pdf</p> <ol style="list-style-type: none"> 1. https://github.com/T-ob-i-a-s/AndroidAPS/ 2. https://github.com/mountntrcg/iAPS 3. https://github.com/mountntrcg/Trio <p>FCL-e-book</p>
<p>Automation</p> <p>(Feature integrated in AAPS; other loops may need 3rd party software; or “middleware”)</p>	<ol style="list-style-type: none"> 1. analyze patterns in YOUR data, (at times, geo-locations, or bg and iob patterns that point to a problem ...) where you want your loop act differently: carve out Conditions that describe the situations 2. Define Actions (loop settings for different aggressiveness) for x minutes <p>Specifically in AAPS: User Action Automations enable -> DIY cockpit</p>	<p>Automated aggressiveness modulation</p> <p>DIY cockpit</p> <p>middleware (iOS)</p>	<p>https://androidaps.readthedocs.io/en/latest/Usage/Automation.html#automation</p> <p>https://androidaps.readthedocs.io/en/latest/Usage/automationwithapp.html#automation-with-third-party-android-automate-app</p>
<p>Autosens</p>	<p>calculation of sensitivity to insulin as a result of exercise, hormones etc. in the past 8 – 24 hrs, and automatic % adjustment (within selected min and max borders) of basal, ISF and (if selected) bg targets. ((Note, if Autotune is also selected, the result from Autosens will be used to adjust the profile, rather than temp. moderating key profile parameters))</p>	<p>iob delta</p> <p>Autotune</p>	<p>DIABETTECH - Autosens</p> <p>https://openaps.readthedocs.io/en/latest/docs/Customize-Iterate/autosens.html?highlight=Open-APS%20Autosens#notes-about-autosensitivity</p>
<p>Autotune</p>	<p>Autotune can be used to get suggestions how to tune profile basal; it gives also one 24h average IC and ISF suggestion.</p> <p>Controversial; not for use with dynamicISF, autoISF:</p>	<p>Autosens</p>	<p>https://androidaps.readthedocs.io/en/latest/Usage/autotune.html#how-to-use-autotune-plugin-dev-only</p> <p>https://iaps.readthedocs.io/en/main/settings/configuration/autotune.html#autotune</p>
<p>average delta</p>	<p>see delta (long or short avg. delta bg)</p>	.	
<p>basal rate</p>	<p>the basal rate defined in the profile (that you give to your loop to work with) is the amount of hourly insulin to maintain BG at a stable level, in absence of -> disturbances</p>	<p>IC / ISF</p> <p>profile</p> <p>disturbance</p>	
<p>bg</p>	<p>blood glucose: the tissue glucose that all CGMs measure reflects the blood glucose, with a couple of minutes of delay. (This, plus the minutes of spacing between</p>	<p>control (sluggishness)</p>	

	CGM values, adds to the “sluggishness” of getting our bg regulated by the loop).	Libre 3	
bg_delta	see delta		
bg source	the blood glucose source is the source where your bg values come from. They come from a CGM system which you wear through some kind of integration software like BYODA , xDrip+	CGM / FGM	Wiki - BG source
BMI	body mass index		
Boost	dev variant of AAPS involving simple Meal Announcement (MA) that can be stretched into a FCL		Fcl-e-book 13.3.1; https://discord.gg/nYC4T9PgCR
BYODA	Build Your Own Dexcom App - a special way to generate your own Dexcom App for reading out the transmitters and pass smoothened bg values on for looping (- e.g. direct into AAPS, or via xDrip+ , while retaining the option to use Clarity® as your doc office may want you to use)	xDrip+	Dexcom G6 https://docs.google.com/forms/d/e/1FAIpQLScD76G0Y-BIL4tZljaFkjlwuqhT83QlFM5v6ZEF07gCU98iJQ/viewform
Calculator	HCL systems (and pump therapy in general) come with bolus calculators for suggesting bolus size for meals. Not important for advanced loopers (SMB+UAM)		
calibration (of CGM)	if your symptoms disagree with what the CGM shows: test with your blood glucose meter; calibration is one (but not always the best) option then	CGM	https://navid200.github.io/xDrip/docs/Calibration.html
carb absorption	<p>1) foods with slower absorption are easier to manage with insulin</p> <p>2) 30 g/h seems a max (heavy eaters: do not bolus for more g than digested while your bolus goes strong!)</p> <p>3) for oref systems the min5mCarbImpact defines the lower border of plausibility.</p> <p>4) oref loops calculate delta cob from bg delta and iob delta (using ISF and IC)</p> <p>5) note that drugs, e.g. Ozempic® or comorbidities, e.g. gastroparesis have profound effects (inform yourself about implications re. carb abs. corridor).</p>	cob; iob iob delta; eCarbs; FPU; insulin kinetics	https://androidaps.readthedocs.io/en/latest/Usage/FullClosedLoop.html#meal-related-limitations https://github.com/danamlewis/artificialpancreasbook/blob/master/8.-tips-and-tricks-for-real-life-with-an-aps.md#heres-the-detailed-explanation-of-what-we-learned
carb ratio	we use the term IC factor for this	IC	

CGM	continuous glucose monitor (Dexcom, Libre, and other systems)	bg source G7, 6...; Libre 3	https://www.diabettech.com/cgm/six-of-the-best-digging-further-into-the-statistics/
circadian (sensitivity, basal rate, ISF...)	basal need, IC and ISF vary over 24 hours according to a „circadian“ pattern of varying sensitivity to insulin. Improper profile settings will “use up and waste” some of the loop system’s capability to correct for disturbances.	disturbance	Section 5. in “ISF determ...pdf” : https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings
Closed Loop	closed-loop systems make automatic adjustments to basal delivery (TBR), without needing user-approval, based on an algorithm ; some also can automatically bolus (SMB)	Open Loop	https://androidaps.readthedocs.io/en/latest/Resources/clinician-guide-to-AndroidAPS.html#for-clinicians-a-general-introduction-and-guide-to-aaps ; Wiki closed loop
clinician support of DIY systems	the references given demonstrate increasing consensus to support DIY solutions as suitable for their patients		https://androidaps.readthedocs.io/en/latest/introduction.html#support-for-diy-looping-by-other-clinicians
cob (g)	carbs on board is the amount of carbohydrates currently available for digestion (“that still needs iob ”).	carb absorption; iob	https://androidaps.readthedocs.io/en/latest/Usage/COB-calculation.html#how-does-aaps-calculate-the-cob-value
connectivity	numerous options for Bluetooth or WLAN connected devices. Additional open-source software and platforms (which are not shown in reference, e.g. Automate!, or Android Auto) can also be integrated.		https://androidaps.readthedocs.io/en/latest/introduction.html#what-is-the-connectivity-of-the-aaps-system
control of bg (sluggishness)	balancing carb absorption with insulin activity is a very difficult „sluggish“ control problem - very much like boating. See slides 11-19 in “Meal Mgt....pdf”.	carb absorption; insulin kinetics; bg	“Meal Mgt....pdf” in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings
delivery ratio	portion of insulin required that gets delivered by the loop via SMB or TBR; fixed at 50% in AAPS Master. Note that going towards 100% would be very unsafe at CGM jumps! It is better to wait another 5 minutes to confirm the bg trend, for getting again 50% of what <i>then</i> is required (=of what <i>was</i> held back, plus of “ <i>newly developed</i> need”)	insulin required	https://androidaps.readthedocs.io/en/latest/Usage/FullClosedLoop.html#enabling-boosted-smbs-safety FCL-e-book section 2.3
delta All 3 delta categories show in the top section of the	<u>delta</u> bg =d5=in past 5 minutes: important anchor point for loop calculations (see e.g.. in SMB tab of AAPS) = bg(0m)-bg(-5m) <u>short avg delta</u> = d15=avg. of <i>last 3</i> deltas	iob delta	

AAPS main screen	$= (bg(0m) - bg(-15m))/3$ <p><u>long avg.delta</u>=d45 is the average delta between 15 and 45 minutes back</p> $= (bg(-15m) - bg(-45m))/6$		
dev	<p>dev version of Master = software in pre-Master-release testing,</p> <p>dev variants have different, often extra, features to Master = still in development, insufficiently tested for broader release</p>	autoISF; Boost; and many others	
Dexcom	CGM, see G7, G6		
DIA (hours)	duration of insulin action	insulin kinetics	<p><u>Wiki insulin types</u> <u>DIABETTECH - DIA</u></p> <p>Insulin_DIA...pdf" in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings</p>
disturbance	Factors like meals and exercise (and ~40 others) disturb the smooth operation that would be possible with a well set basal profile. The set ISF , or a temp. activated exercise mode may enable the loop to automatically manage the disturbance. In other cases, a %profile switch or other measures may be needed.	<p>ISF;</p> <p>exercise mode;</p> <p>%profile switch</p>	<p>https://diatribe.org/poster-now-available-42-factors-affect-blood-glucose</p> <p>FCL-e-book, section 5.2</p>
DIY cockpit	<p>term used for * having all buttons to “tweak” loop aggressiveness on the main screen of the closed loop phone * using tools like “user action Automations” in AAPS to construct extra buttons for this purpose</p> <p>These can be programmed to show only in pre-defined times, or geo-locations ...</p>		FCL-e-book , section 5.2.2
Dual Hormone Loop	“Double closed loop” featuring insulin AND glucagon (in development): the glucagon component not only helps stay out of hypos. It enables a more aggressive treatment for preventing, or reducing, high glucose values, as well		FCL-e-book 13.6
dynamic carb absorption	every 5 minutes, AAPS and iAPS figure out carb absorption from bg delta , insulin activity consumed, and other data => looping without carb inputs possible	UAM	Section 1.2 in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings/blob/HCL--settings-main-repo-(pdf)/IC%20(carb%20ratio)_V.3.1.pdf
dynamic carb ratio	automatic adaptation of IC to bg level and to past day(s) TDD (not useful in advanced oref looping/FCL)	iAPS	https://discord.gg/gGKXW5uX3m

dynamicISF	automatic adaptation of ISF to bg level and to past day(s) TDD; tuneable. Note: Autosens min/max defines how far from profileISF dynISF is allowed to go (Caution: Can make life easier but can be inferior to using a well tuned profile ISF + being proactive with manual %profile switches)	sigmoid	https://androidaps.readthedocs.io/en/latest/Usage/DynamicISF.html#dynamicisf-dynisf
dynamic iobTH	iob threshold above which no more SMBs are given varies with the set exercise target (feature of exercise mode in autoISF)	iobTH exercise	FCL-e-book section 6.1.3
dynamic bg target	your loop probably allows you to generally select “ sensitivity raises bg target” and “ resistance lowers bg target”. (Caution: Can lead to rollercoasters , especially if your carb settings and daily inputs are not spot-on (=> skewed Autosens !))		
EatingSoon TT (mg/dl) or (mmol/L)	Concept going back to looping pioneer Dana Lewis: to set a very low temp. bg target ~ 1 h before meals, so the loop gets a low bg starting point, and also some pos. iob at meal start	pre-bolus	https://github.com/danamlaw/artificialpancreasbook/blob/master/8.-tips-and-tricks-for-real-life-with-aps.md#how-to-do-eating-soon-mode
EatingNow	dev variant of AAPS involving simple Meal Announcement (MA) that might be stretched into a FCL		FCL-e-book 13.3.3; https://discord.gg/XqhnPRChEP
eCarbs	"extended carbs" - Carbs split up over several hours; consider also effects from fat/protein here. extended boluses you might know from regular pump therapy do not make much sense when looping	FPU SMB	https://androidaps.readthedocs.io/en/latest/Usage/Extended-Carbs.html#what-are-ecarbs-and-when-are-they-useful eCarbs use case
Emulator	program to analyze AAPS logfiles , including what-if analysis Note: iAPS has some on-board analytic capabilities	log files	https://github.com/autoisf/what-if
exercise mode	a loop mode which limits how high iob will/can go (any combination of: raising glucose target, lowering profile basal , elevating ISF , limiting iob)	TT %profile switch; dynamic iobTH	https://androidaps.readthedocs.io/en/latest/Usage/making-sport-with-AAPS.html#cycling FCL-e-book , section 6
extended bolus	frequently desired by looping beginners “to fight high bg”, this contradicts the very idea of looping: the algo must receive the inputs to manage bg (tuning). Boli (also the initial meal bolus in HCL) disturb the	eCarbs	https://androidaps.readthedocs.io/en/latest/Usage/Extended-Carbs.html#extended-bolus-and-why-they-won-t-work-in-closed-loop-environment

	workings of the loop (that shuts off for a while via zero-temping)		
FCL-e-book	Series of pdfs about FCL , with case studies (autoISF focused, but all other methods are presented and referenced)	FCL	https://github.com/bernie4375/FCL-potential-autoISF-research-
FPU (g)	<p>Fat-Protein-Units, converted into g carb equivalent</p> <p>Rather than worrying too much about conversion factors for FPU (controversy see slide 30 in 2nd link ->) ...</p> <p>... oref loopers should rather see to it that their loop can deal well with temporary (!) insulin resistance from fatty acid receptor blockages (3rd link)</p> <p>Note that autoISF has the “dura_ISF” component to deal with plateaus of high bg.</p>	eCarbs	<p>https://iaps.readthedocs.io/en/latest/settings/services/fat-protein.html#fat-and-protein-conversion ;</p> <p>slide 30 in: “Meal Mgt..pdf” in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-setting</p> <p>https://androidaps.readthedocs.io/en/latest/Usage/FullClosedLoop.html#stagnation-at-high-bg-values</p>
FCL: Full Closed Loop	Mode of closed looping <u>without</u> the user giving any boli, and without carb inputs. Depending on lifestyle and %TIR expectation, can run fully hands-off, or require a few button pushes at special disturbances , like heavier exercise. Setting up (personalized tuning) is difficult!	<p>Hybrid Closed Loop (HCL)</p> <p>UAM</p>	<p>https://androidaps.readthedocs.io/en/latest/Usage/FullClosedLoop.html;</p> <p>FCL-e-book see: https://github.com/bernie4375/FCL-potential-autoISF-research-</p>
G7, G6, ONE, G5	abbreviation for Dexcom sensor/transmitter CGM systems	BYODA	Wiki - BG source
G6 x 2 (overlapping)	method to get un-interrupted CGM values	Anubis; xDrip Variant	FCL-e-book : Case study 1.5
git	git in our context here is the tool to mainly download the AAPS sources from Github for the build process. It's version-control system for tracking changes in computer files and coordinating work on those files especially for teams. -> necessary for apk updates		Wiki - update APK
GitHub	<p>web-based hosting service for version control using Git</p> <p>-> storage of source code, and of related documentation for: 1.) AAPS 2.a) iAPS 2.b) iOS Loop</p> <p>Note: dev variants are on other Github pages, see e.g. @ autoISF</p>	<p>1.Android Studio;</p> <p>2.Xcode</p>	<p>1. GitHub AndroidAPS;</p> <p>2.a. Github_build_iAPS.yml</p> <p>2.b. https://loopkit.github.io/loopdocs/gh-actions/gh-first-time/</p>
glucose target	corrections by the loop aim at that bg value set in the profile (for each hour of the day); depending on nature of	TT	

	disturbances, and properly set ISF, that value should be gradually reached over the course of 2-4 hours.		
HCL: Hybrid Closed Loop	The usual mode of looping, with the user initiating a meal bolus (and making other frequent inputs, notably re. carbs). This is really a compromise owed to slow insulins in-capable of dealing with rapid carb absorption	calculator; extended bolus; FCL	https://androidaps.readthedocs.io/en/latest/introduction.html#what-does-hybrid-closed-loop-mean
iAPS	<p>oref loop (like AAPS, but) for i-phone Caution: iAPS is a “alpha” early dev variant with little testing and incomplete docu (and not fully Open Source). Weekly stream of new features and bugfixes, but not safe unless you constantly stay informed (Discord and Facebook groups disagree on details!)</p> <p>A safer route is to use Trio (Master expected to launch in Q3/2024)</p> <p>Building (iAPS or Trio) requires Apple developer licence (\$ 100/year), and Xcode.</p>	<p>AAPS</p> <p>Trio</p> <p>Xcode</p>	<p>https://discord.gg/JVXwG7gS</p> <p>https://www.facebook.com/groups/1351938092206709</p> <p>https://iaps.readthedocs.io/en/latest/;</p>
IC (carb ratio) (g/U)	factor (g/U) describing how many grams of carb are covered by one unit of insulin	ISF	IC determ.....pdf” in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings
individualized tuning	<p>DIY loops are not self-learning but require “tuning” to find proper <u>individual settings</u>, 1) for Meal Management HCL: AAPS Objectives; meal management FCL: dial in your settings (incl. Automations) so the loop is enabled to mimic your successful HCL Meal Management (notably, similar insulin activity curve, going up a bit later, but very steep....) 2) finding individual temporary settings to <u>adapt loop aggressiveness for other disturbances</u> e.g. exercise</p> <p>Note 1: Tuning must follow a certain sequence (to avoid instability from counter-balanced multiple errors). Resist the temptation to just play around on the many “buttons” offered!</p> <p>Note 2: Learn not to interfere, make your loop – over time – fit to manage automatically</p>	<p>Objectives;</p> <p>Meal management;</p> <p>FCL tuning</p>	<p>HCL guidance in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings</p> <p>FCL-e-book in: https://github.com/bernie4375/FCL-potential-autoISF-research-</p> <p>other disturbances (than meals, see “42 factors..pdf” @HCL guidance), see e.g. sections 5 and 6 in FCL-e-book: https://github.com/bernie4375/FCL-potential-autoISF-research-</p>

insulin activity (U/5 min)	part of iob that will become active in the upcoming 5 minutes (above profile basal supply => figure can be negative also)	insulin kinetics: blue curve	
insulin kinetics	AAPS insulin tab shows two curves: The <u>pink curve</u> starts at 1.0 (100%) and goes down to 0 (0%) when the DIA is over. It shows iob left, at any time. The <u>blue curve</u> shows how the activity goes: Practically nothing (!) for a bunch of minutes, then rapidly going high, and then slowly fading out over the DIA period (with a maximum at time-to-peak). For its calculations, AAPS adds these blue curves up for all boli, SMBs and TBRs profile basal -> <u>thin yellow “activity” curve</u> you can see in your AAPS glucose screen!	control of bg (slug-gishness)	<p>“Insulin_DIA...pdf” in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings</p> <p>“The artificial pancreas...pdf” in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings/blob/FCL-w/autoISF/The%20Artificial%20Pancreas%20and%20Meal%20Control.pdf</p>
insulin required (U)	Key parameter in theoref loop algo: From how bg , iob and cob resp. carb deviations develop (-> predictions), need for more insulin is calculated.	<p>predictions</p> <p>delivery rate</p>	https://openaps.readthedocs.io/en/latest/docs/While%20You%20Wait%20For%20Gear/Understand-determine-basal.html?highlight=insulin%20required#blending-relevant-predictions
iob (U)	insulin on board; units of insulin (above basal need) <u>currently available to become (within the remainder of its DIA) active</u> in your body (to deal with un-absorbed carbs, or with other disturbances)	insulin activity	https://androidaps.readthedocs.io/en/latest/Getting-Started/Screenshots.html#section-d-iob-cob-br-and-as
iob delta (U)	insulin consumed = (1) delta bg / ISF = used for bg correction (2) the rest of the delta iob, multiplied with IC, is the grams of carbs absorbed. (3) if (2) results in <u>implausible carb absorption</u> , then IC and ISF are adapted “to force a plausible fit”; and the adapted insulin sensitivity is then reflected in <u>Autosens \neq 100%</u>	<p>carb abs. 2), 3)</p> <p>min5m_carb.impact</p>	
iobTH (U) <i>or</i> iobTH% (% of maxIOB)	iob threshold (set below maxIOB); at iob > iobTH, the loop will give no more boli (SMB) but only TBR	iob; maxIOB; SMB	https://androidaps.readthedocs.io/de/latest/Usage/FullClosedLoop.html#iob-threshold
iOS Loop	<p>easy DIY loop to set up on i-phone;</p> <p>algorithm requires precise carb inputs at all meals (<u>no</u> UAM or FCL);</p> <p>very limited choices of pumps</p>	i-phone loops with the algorithm as in AAPS: Trio; or iAPS	<p>https://loopkit.github.io/loopdocs/</p> <p>https://www.loopandlearn.org/starting-loop/</p> <p>https://loopkit.github.io/loopdocs/fags/algorithm-fags/#more-algorithm-information</p>

ISF (mg/dl)/U or (mmol/L)/U	insulin sensitivity factor = the expected decrease in bg as a result of one unit of insulin; most important parameter in oref loops	IC	ISF determ...pdf' in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings
LGS	Low Glucose Suspend AAPS will reduce basal if bg is dropping. But if bg is rising then it will only increase basal if the iob is negative (from a previous LGS), otherwise basal rates will remain the same as your selected profile. You may temporarily experience spikes following treated hypos without the ability to increase basal on the rebound.	objective 6	https://wiki.aaps.app/en/latest/Usage/completing-the-objectives.html#objective-6-starting-to-close-the-loop-with-low-glucose-suspend
Libre 3	CGM ; also Libre2 (alternatives to Dexcom CGMs)	CGM bg	https://www.diabettech.com/cgm/battle-royale-freestyle-libre-3-and-dexcom-g7-face-off-the-results/ ;
Libre 3 1 minute	First option to run a 1-minute CGM - which could bridge a few minutes of “sluggish” delay in looping. This is particularly of interest in no-bolussing FCL (see 2 nd reference ->).	bg; control (sluggishness)	https://github.com/Nightscout/xDrip/releases/tag/2023.02.15 https://github.com/gazelle/autolSF
log files	record of all AAPS actions (useful for troubleshooting and debugging)		Wiki - log files
MA	see: Meal Announcement		
Master	Master is the latest official release, the software that should be used. Note that it is advisable to tune profile in Master before adding more features.	dev; vanilla	
maxIOB	safety feature: maximum total iob the loop can't go over. (can be limited by set patient type!)		https://androidaps.readthedocs.io/en/latest/Usage/Open-APS-features.html#maximum-total-iob-openaps-cant-go-over-openaps-max-iob
MDI	multiple daily injections: option to manage your t1d with an insulin pen (and bg measurements or CGM). An option you should resort to in case components of your loop system are unreliable (pump, occlusion , erratic CGM, instable Bluetooth)		https://androidaps.readthedocs.io/en/latest/introduction.html#how-does-aaps-compare-to-mdi-and-open-looping
Meal Announcement (MA)	MA is a closed looping mode between HCL and FCL : In contrast to HCL, no carbs are counted with an attempt to give a suitable meal bolus. But in contrast to FCL, some form of meal announcement		

	must be made, usually by giving a small pre-bolus .		
Meal Management	Juggling (for every meal!) the differing carb and insulin absorption characteristics, so bg stays in range, is a tough, if at all possible, mission. Big effort should go into individualized tuning of the loop system, and into defining bolus strategies	EatingSoo nTT; pre-bolus	„Meal Mgt.Basics.pdf“ and „IC determ..pdf“ in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings
middleware	custom algorithm add-ons (notably in iAPS that does <u>not</u> have the Automation feature of AAPS)	Automations	https://github.com/macconnellk/RoboSurfer/tree/main Middleware code for iAPS https://discord.gg/3JWQRzfyB2
min_5m_carb impact	safety feature (oref): default carb decay at times when dynamic carb absorption does not reasonably work out based on your bg reactions	iob delta; carb absorption	„min5m_CI ...xls“ in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings Wiki - config builder
negative iob	iob is defined as insulin on board above (profile) basal need: If a correction was driven by a too aggressive ISF , too much iob might have been given around time of bg peak, and the loop goes into zero-temping . Neg.iob can occur (and can self-resolve, too). Too high set <i>profile</i> basal can be behind neg.iob. Likewise, if you forget to keep <i>temp.%profile</i> reduced after a day of exercise, your basal is <i>temporarily</i> too high, and neg.iob is likely. Tipp: For easy spotting of neg.iob phases you can use an extra graph on the bottom of your AAPS main screen; define IOB (not ABS!) as the first parameter		
Nightscout (NS)	open source project to access and report CGM and related data. Convenient options (10be, NS pro) that host your large amount of data come with monthly cost. - Except for a brief initial period, it is not required that AAPS loopers are using NS.	Nightscout Reporter	Nightscout Hosted services: https://nightscout.github.io/#nightscout-as-a-service
Nightscout Reporter	free tool provided by a fellow looper to generate great PDF reports from your Nightscout data, e.g. for meetings with your diabetes team.	Nightscout	Nightscout Reporter NS Reporter @ Facebook
NS Client	part of AAPS to connect to your Nightscout site; important also for remote monitoring and control (parent/kid)	remote control	Wiki - NS Client
Objectives	learning program within AAPS guiding you step by step from open to closed loop		Wiki - objectives
occlusion	insulin the pump releases is not fully delivered in the body => persistent very		„Occlusion..pdf“ in:

	high bg despite (fake) high iob – dangerous, must be avoided!		https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings
OpenAPS	open artificial pancreas system: runs on small computers (i.e. Raspberry Pi) AAPS and iAPS use many of the OpenAPS features		OpenAPS docs
Open Loop	system will only <u>suggest</u> adjustments which have to be confirmed manually in the application	Closed Loop	Wiki - config builder
Open Source	philosophy to openly share product (especially, software) development without profit orientation, and not operating in narrow frameworks like mandated by e.g. regulations on medical products, (Alternatively, the prefix “DIY” is often used)	Github clinician support	
oref	the key algorithm behind OpenAPS, AAPS and iAPS. In SMB+UAM setting it enables looping without any carb inputs	dynamic carb absorption ;	Wiki - sensitivity detection
parabola fit	mathematical method used in autoISF for 1) improved smoothing and predicting of bg 2) early detection of -> acceleration	acceleration smoothing	See last page before attachments in https://github.com/gazelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/DRAFT%20-%20Guide%20to%20VDF%20Files%20for%20the%20AAPS%20Emulator.pdf
peak time or time-to-peak (minutes)	time to maximum effect of insulin given: shorter is better for looping, but also exposes bad tuning and can be unsafe (hypos!) for looping beginners	insulin kinetics	Wiki - config builder Insulin_DIA...pdf’ in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings
pre-bolus	any meal containing rapid carbs will push bg high faster than insulin could become strongly active (nearing peak-time) to control this. Hence bolussing a number of minutes before meal start can be a good idea.	Meal Mgt. Eating SoonTT	„Meal Management Basics.pdf” (p. 18-19) in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings
predictions	predictions for bg in the future, based on several different calculations; eventualBG uses traditional bolus calculator math.	insulinReq u.	Wiki - prediction lines https://openaps.readthedocs.io/en/latest/docs/While%20You%20Wait%20For%20Gear/Understand-determine-

	<p>IOBpredBGs predicts only an eventual BG value, once all insulin activity takes effect.</p> <p>ZTpredBGs what will happen in the “worst likely case,” if observed carb absorption suddenly ceases, and a zero-temp is applied until BG begins rising at/above target.</p> <p>COBpredBGs is calculated based on observed deviations since carb entry, assuming that carbs would continue to be digested/absorbed at a configurable minimum rate.</p> <p>UAMPredBGs Once deviations have peaked UAM calculations assume that the deviations will continue decreasing at that same rate until they reach zero. If they’re decreasing, but too slowly, it assumes they’ll decrease linearly to zero over 3 hours</p> <p>Note: loops look into predictions, not just on present bg, for decisions (see SMB tab in AAPS)</p>		basal.html#understanding-the-purple-prediction-lines
profile	<p>basic treatment settings (basal rate, DIA, IC, ISF, bg target)</p> <p>AAPS v3 only supports local profiles but Nightscout profiles can be copied (synchronized) to AAPS</p>		Wiki - profile
profile switch (% other than 100)	<p>temporary (= assigned with a duration) change of profile used <u>reflecting percentual increase/decrease of insulin sensitivity</u> (e.g. <<100% in an exercise context)</p>		https://androidaps.readthedocs.io/en/latest/Usage/Profiles.html#profile-switch
remote control	<p>DIY looping systems come with options for parents to remotely control their young kids’ loops, e.g. via secure SMS commands</p>	NS Client	https://androidaps.readthedocs.io/en/latest/introduction.html#remote-control
resistance	<p>above-normal insulin need, e.g. reduced sensitivity to insulin after a fatty meal</p>	FPU sensitivity	
roller coaster	<p>term to describe bg curves that go steep down, then up, then down again ... often a result of too aggressive ISF; dynamic settings (ISF, bg target etc) can also increase the tendency towards r.c.</p>	ISF; dynamic ISF, bg ...	

sensitivity	below-normal insulin need, e.g. after exercise that makes you temp. more insulin sensitive	exercise resistance	
sensitivity adaptation	Rather than invariably using average sensitivity data as set in the profile, loops may be capable of: 1) ->sensitivity detection -> Autosens 2) inferring sensitivity change based on bg or TDD -> dynamic ISF 3) inferring sensitivity from bg curve characteristics (-> autoISF)		
sensitivity detection	calculation of sensitivity to insulin (based on deviations that cannot be “explained” by carb absorption) as a result of exercise, hormones etc.	Autosens	DIABETTECH - Autosens
sensor noise	unstable CGM readings leading to "jumping" values	CGM smoothing	Wiki - sensor noise
sigmoid	uses profile ISF and adjusts it “in S-curve shape” with glucose level above target, and TDD . Can turn out more aggressive than standard dynamicISF if Autosens min/max is set wide open => not recommended for iAPS beginners	dynamic ISF	https://www.desmos.com/calculator/s9jxdmqhh8
SMB	small bolus given by the loop (advanced feature for faster bg adjustment vs TBR); max size restricted via setting minutes of profile basal (30 .. 120). Note that small size is a precaution for beginners against wrong ISF or bad CGM. Try to “open up” when tuning. Zero basal right after a SMB is expected.	TBR UAM iobTH	Wiki - SMB Wiki – AMA to SMB
SMB delivery ratio	defines which % (default 50 or 60%) of the calculated insulinRequ. shall be given now vs. waiting 5 more minutes, (and then again same % of what then is open, which includes the portion that had to wait). Caution: Using >75% not recommended as it does not provide room for CGM jitter, and reduces flexibility around SMB/TBR sizing to pull back on insulin delivery when required.		FCL-e-book section 2.3
SMB range extention	Bolus sizes the loop can give are severely restricted in HCL (usually to max 2x hourly basal). This factor multiplies to magnify “allowed” SMB size in FCL .		FCL-e-book section 2.1
smoothing	CGM systems deliver raw bg values that can be too “jumpy” to use. The loop system and/or intermediate app that captures the transmitter signals offer options to smooth the values into a “realistic” bg curve.	CGM parabola fit	https://androidaps.readthedocs.io/en/latest/Usage/Smoothing-Blood-Glucose-Data.html#smoothing-blood-glucose-data https://www.diabettech.com/cgm/back-smoothing-

	Smoother is safer (may be needed), but it slows the loop's treatment of bg rises		or-not-back-smoothing-is-that-the-question/
TBR (% of profile basal)	temporary basal rate (given as % of profile basal). Note that <i>elevated</i> TBRs regulate bg far slower <i>down</i> than SMBs .	SMB	
TDD (U)	total daily insulin dose (bolus + basal per day) Note that occlusions can produce very noticeable false high TDD values!	dynamic ISF; occlusion	
TIR (%)	% of time bg is in a 70 – 180 mg/dl (3.9 – 10 mmol/L) range.		
Trio	oref loop like AAPS but for i-phone -> Trio (or iAPS). Currently (June 2024) in beta-testing; launch expected in Q3/2024 Building requires Apple developer licence (\$ 100/year), and Xcode.	Xcode iAPS AAPS	What is Trio? — Trio 0.0.1 documentation 8 https://discord.gg/Rr37aAzWz9 https://www.facebook.com/groups/diytrio
Tsunami	dev variant of AAPS involving simple Meal Announcement (MA) that might be stretched into a FCL		FCL-e-book 13.3.4; https://discord.gg/veRKcgwVUT
TT (mg/dl) or (mmol/L)	temporary target: temporary increase /decrease of bg target (range) e.g. for exercise/for “eating soon”		Wiki - temp targets
TT (or target) even / odd	some looping softwares offer to set different behaviors (SMBs allowed /blocked), with setting even/odd numbered TT (or also profile target)	SMB	
tuning	see: individualized tuning		
UAM	Un-Announced Meals - Detection of significant increase in bg levels due to meals (but also adrenaline or other influences), and attempt to adjust this with SMBs. Carb inputs are optional.	dyn.carb absorption SMB FCL	Wiki - SMB Why no carb inputs needed see section 1.2.2 in „IC (carb ratio)..pdf” in: https://github.com/bernie4375/HCL-Meal-Mgt.-ISF-and-IC-settings
UTZ, CET	time zones: The AAPS loop data are generally recorded in UTZ time (universal Greenwich time). Your AAPS screen will show your Smartphone time zone, like central European daylight saving time (CET DST).	logfiles	Wiki DST
vanilla	term often used for Master version. Advice is not to make use of extras (“bells and whistles”) before the basics are tuned in right. Reason: Errors can be balanced with counter-errors => instable system)	Master	

virtual pump	option to try AAPS functions without a pump connected	Open Loop	
_weight (-) e.g. bgAccel_ISF_weight	tuning factors used in autoISF to adapt ISF according to developing glucose curve	autoISF	FCL-e-book , section 4
wiki	readthedocs (docs, one for each DIY app of your looping system)		
Xcode	developer software (free, but \$ 100/y developer licence) needed to complete and maintain your personal copy of iAPS (or iOS Loop) For AAPS, see Android Studio		https://loopkit.github.io/loopdocs/gh-actions/gh-first-time/
xDrip+	open source software to read CGM transmitters and pass (if desired, smoothened) values on for looping	BYODA	https://navid200.github.io/xDrip/docs/FAQ_page.html https://jamorham.github.io/#xdrip-plus https://navid200.github.io/xDrip/docs/Installation_page.html
xDrip Variant	Enables up to 4 parallel xDrip instances on smartphone	G6 x 2 (overlapping)	https://navid200.github.io/xDrip/docs/Variants.html FCL-e-book: Case studies 1.5 and 5.3
zero-temp(ing)	temporary basal rate with 0% (no basal insulin delivery); often seen after a bolus was given: Moving some basal (from baseline need, as defined in profile) <i>into the bolus</i> or <i>SMB</i> provides for fastest correction; in turn, basal supply is reduced until safe to continue		