

# ut\_console

## User Manual

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# Introduction

This Mod is aimed at Mod Developers to Test functionality and confirm values that usually need a Script change or a dedicated script to get. Additionally it might turn out to also be a useful Cheat Mod, but that is not the primary goal, so be careful when used as such. This Mod is versatile and powerful, and can mess up many things in a Savegame.

## Enabling the Chatwindow / Console

The Chatwindow/Console is usually not bound to any Key. So you first have to assign one to it. You can find it under

Settings => Controls => General Controls => Toggle Chat Window (7th from the bottom)  
(Note to self: check what „Focus Chat Window Input“ does - 6th from bottom)

Usually the [ ^ ] Key is used for that purpose.

## Egosofts official Chatwindow Commands

Just as side note there are some useful Commands by Egosoft you can Input here too:

|                           |  |
|---------------------------|--|
| /refreshmd                | Reloads the MD Scripts   |
| /refreshai                | Reloads the AI Scripts   |
| /reloadui                 | Reloads the UI / lua scripts   |
| /exportlogbook <filename> | Save logbook as file in personal folder (must have .txt ending)                    |
| /thereshallbewings        | Unlocks the advanced behavior tab (you only need to do this once on each Computer) |
| /aicompat check           | Check AI script compatibility using in-game aicompat.xml                           |
| /aicompat pcheck          | Check AI script compatibility using personal aicompat.xml                          |
| /aicompat check           | Generate new aicompat.xml in personal folder                                       |

Less relevant Commands for Modding, but might still be relevant:

|                                 |   |
|---------------------------------|---|
| /chat!c <message>               | Send chat message (no online feature using that yet)                |
| /whisper!w <username> <message> | Send direct chat message to user (no online feature using that yet) |
| /dumpholo                       | Dump holomap camera data  |
| /dumpmouse                      | Dump mouse data   |
| /dumpconv                       | Dump conversation system data                                       |

(Might not work/be available in X4; needs testing)

|                  |   |
|------------------|---|
| /lua <luascript> | This executes the given lua command in the Detail Monitor environment |
|------------------|---|

## Using the Commands of this Mod

Since the usual prefix Char for Commands ( / ) is already taken by Egosofts internal Commands and there is an error printed to the Log if it is used by this Mod I deciddd to use a different Letter for my Commands, namely it is [ & ] (Ampersand) as Prefix. You can change this in Letter in the t/0001.xml if you want. Just remember that you did when referring to this explanation.

# Command Overview

Currently the following commands are implemented: (currently working on a a detailed explanation)

## &eval

Evaluating one or more Expressions

Usage:                &eval \$exp\_1 \$exp\_2 ...

example call:        &eval pobject.cluster.debugname pobject.pilot.debugname

output:               **&eval pobject.cluster.debugname pobject.pilot.debugname**  
pobject.cluster.debugname => Həlikvəh's Choice (AYX-867) [0x32dd6]  
pobject.pilot.debugname => Yəhənis Həbəlisos Tumulis X (VPR-008) [0x36542]

Setting a Value at the end of a Property Chain/Expression:

&setval \$exp\_set \$exp\_get1 \$exp\_get2

Instantly teleporting an Object into another Space or near another Object:

&warp \$exp\_object \$exp\_destination

Spawning a Ship for and generating a Report about it for Ship Modding Purposes:

&checkship \$macro\_id\_or\_exp crewskill.<number> paintcycletime.<number> ware.paintjob\_#1 ware.paintjob\_#2 ....

Destroying an arbitrary Object (requires additional confirmation; will attempt to bypass protections):

&destroy \$exp\_object noexplosion

Reading a Text from the Text DB

&readtext \$Page\_id \$t\_id <output\_method>

Ingame Help Command (depracted):

&help <topic>

Copying an existing Object (WIP; not working yet):

&copyobject (unsure about Syntax)

Print all UI events that happen to the Console (except 'Frame\_Advanced' and 'chatwindow\_opened'):

&watchui <stop>

Print all Events that happen for a certain Object (not all implemented yet; only complete if the watched object is the event.object):

&watch\_event\_object \$exp\_object|stop

Enable/Disable additional internal Output:

&debugmode

Do certain Actions on Cues (can be used to force or re-start missions; be careful, can break stuff):

&cue <action> \$exp\_cue \$exp\_param

Unlock certain commands that are considered dangerous (description marked in red above):

&unlock

Color Explanation:

Commands and their Calls:

Actions that can be dangerous to continuing use of Savegames (will mark the Player Characters name with a red # )

Optional Parameter that can be omitted if not needed

Optional Parameter that can be omitted or repeated if wanted

Output to the Console:

**Repeat of the Command (safe Commands)**

**Repeat of the Command (non-safe Commands)**

Standard Output

Debug Output (usually hidden)

Help/Info Output

# Expression Syntax Explanation

Expressions in this Console are used as Input for most Commands, and are very similar to the Expressions in the Scripting Languages (aiscript and md) since they are based on them, though there are some differences and peculiarities which will be pointed out. For example ut\_console does not use { } (curly brackets) at all, but some properties require it internally.

Basically it is a Chain of Properties separated by dots ( . ), starting with a Root property and with each step you get a certain property of the previous result.

Additionally some commands might take their own „Root Properties“ to differ between different types of input values. This has nothing to do with the property chain though, it is just to differ between possible input values. They might start with a property chain from the second step onwards if applicable, but often just take a single value here.

## Object References

Objects can be referenced with many methods. This can happen at the start of a property chain, or even in the middle of it if it makes sense in context. Possible ways to reference Objects are: These references are only valid in my Console and do not apply to the xml scripting languages.

|                    |   |
|--------------------|---|
| ABC-123            | Its idcode. Note that i consider the idcode non-unique, but its easy to use. Will always use the first match, but additionally output an error to the Console if other matches are found. |
| 0x1234 (hex id)    | Its Object identifier, that is unique within a game session. Note that its not persistent over sessions.  |
| 12345 (decimal id) | (might change when loading a game) Can be entered in any supported numeric form.  |
| \$console_var      | If you set a console Var before you can use it as Object reference if it contains an Object.  |
| ptarget            | player target   |
| gtarget            | guidance target   |
| atarget            | player autopilot target   |
| pcontainer         | player container (ship or station)  |
| pobject            |   |
| htargets           | Holomap Targets (Not yet used by any command)   |
| mapobjects         | Holomap Visible Objects (Not yet used by any command)   |

## Root Properties

The following Start Properties are available: (most of them are taken directly from the xml scripting languages unless indicated otherwise)

|                                       |  |
|---------------------------------------|--|
| Object references                     | see above for explanation (ut_console only)  |
| \$console_var                         | If you set a console Var before you can access it as root property (ut_console only)   |
| null                                  | simply a null if you need it   |
| true                                  | actually numeric 1   |
| false                                 | numeric 0 in this case   |
| component.<number><br>object.<number> | The Component/object referenced by the following numeric identifier. Use this if the autodetect fails, or if you want to start an expression chain with such an object. (ut_console omits the {} ) |
| gameparam.<param>                     | Reading from the game params (Startup params?) - not sure yet what this is..   |
| param.<groupname>.<paramname>         | reading scriptparams data from libraries/parameters.xml  |
| macro.<macroid>                       | getting a macro via its id as starting point   |
| md.<scriptname>.<cuename>             | getting an MD cue via its Script and Cuename. Can be used further for remote var reading   |
| mdvar.\$varname                       | getting an MD var via its name. Equal function to md.\$varname in the game scripts.  |
| global.\$varname                      | getting a global var by its name   |
| faction.<factionname>                 | getting a faction by its name  |
| tag.<tagname>                         | getting a tag by its name. Will never fail since the tag is created if it doesnt exist yet.  |
| ware.<warename>                       | getting a ware by its name   |
| R.<number>                            | getting the result of a previous expression in the same command (as in Repeat X; must be supported by each command individually)   |

Following here are more root properties, but i consider them less useful for use in this Console, so i will save myself the explanation. Also they are largely untested and might not work.

|                         |                             |   |                               |
|-------------------------|-----------------------------|---|-------------------------------|
| position.<x>.<y>.<z>    | vector.<x>.<y>.<z>          | rotation.<yaw>.<pitch>.<roll>           | readtext.<pageid>.<tid>       |
| stat.<statname>         | userdata.<userdataentry>    | userdataassigned.<userdataentry>        | terraforming.<entries .....>  |
| lookup.<category>       | assignment.<assignment>     | controlpost.<controlpost>               | entityrole.<entityrole>       |
| entitytype.<entitytype> | notification.<type>         | race.<race>                             | unlock.<type>                 |
| warebasket.<id>         | waregroup.<id>              | attention.<level>                       | relationchangereason.<reason> |
| killmethod.<method>     | unitcategory.<category>     | deployablecategory.<category>           | command.<command>             |
| commandaction.<action>  | activity.<activity>         | skilltype.<skill>                       | controlposition.<position>    |
| formationshape.<shape>  | level.<level>               | alertlevel.<level>                      | roompopulationtype.<type>     |
| purpose.<purpose>       | controlpaneltype.<type>     | signalleaktype.<type>                   | boardingbehaviour.<behaviour> |
| boardingphase.<phase>   | blacklisttype.<type>        | blacklistgroup.<group>                  | waretransport.<waretransport> |
| orderstate.<state>      | moodlevel.<level>           | weaponmode.<mode>                       | dronemode.<mode>              |
| dockstate.<state>       | shiptype.<type>             | stationtype.<type>                      | roomtype.<type>               |
| regiongroup.<group>     | flightbehaviour.<behaviour> | flightcontrolmodel.<flightcontrolmodel> | objective.<objective>         |
| missiontype.<type>      | missiongroup.<group>        | cuestate.<group>                        | quota.<quota>                 |

# Standard Properties

The following properties can be evaluated on each step. These here are entirely based on what is available in the scriptproperties.html but especially the Properties with Pseudo Data Types/using two steps at once are often not yet implemented. Please refer to said the scriptproperties.html to know what is available for a certain data type/at a certain point in the chain and also what each property is. The Order chosen in this rundown should mostly match the order of an *unsorted* scriptproperties.html (because this groups related properties nicely)

|                                 |                          |                                   |                              |                                |                        |                          |
|---------------------------------|--------------------------|-----------------------------------|------------------------------|--------------------------------|------------------------|--------------------------|
| exists                          | isoperational            | iswreck                           | isconstruction               | issurfaceelement               | canbeattacked          | extension                |
| isextensionpersonal             | class                    | realclass                         | state                        | macro                          | group                  | tag                      |
| container                       | controllable             | defensibleobject                  | ship                         | station                        | cluster                | sector                   |
| zone                            | room                     | module                            | canbelivestreamed            | isinternallystored             | generationseed         | seed                     |
| name                            | rawname                  | knownname                         | hasbeenrenamed               | debugname                      | position               | rotation                 |
| velocity                        | speed                    | relvelocity                       | relspeed                     | attention                      | size                   | length                   |
| height                          | width                    | owner                             | coverowner                   | trueowner                      | isplayerowned          | isownerless              |
| isknown                         | isrelationchangedisabled | wares                             | revealedpercentage           | scannedlevel                   | gravitarfactor         | secrecylevel             |
| isactive                        | isphysicsready           | canbedismantled                   | isfunctiona                  | ishackabl                      | isindestructible       | ishacked                 |
| ishullunrepairable              | isrepairable             | isinvulnerable                    | isshieldunrepairable         | ismodular                      | hull                   | maxhull                  |
| hullpercentage                  | shield                   | maxshield                         | shieldpercentage             | drop                           | canclaimownership      | hasstorage               |
| modulesets                      | makerraces               | primarypurpose                    | ismilitary                   | threatscore                    | lastattacker           | lastattacktime           |
| isinliveview                    | currenttradarrange       | maxradarrange                     | formationleader              | currentformationwingmen        |                        | idcode                   |
| isformationleader               | isformationwingman       | iscommandeerable                  | iscommandeered               | isgodobject                    | isgodobjectentry       | godentry                 |
| isgodshipentry                  | isgodstationentry        | isgodproductionentry              | isgamestartgodentry          |                                | isrespawnablegodobject |                          |
| godentryname                    | godentrytags             | ismassstraffic                    | ishighwaytraffic             | istemptraffice                 | iszonechangedepending  |                          |
| numwaypoints                    | region                   | ission                            | missioncue                   | suspicious                     | isradarvisible         |                          |
| canbepickedup                   | canbetowed               | tugship                           | throttle                     | value                          | buildresourcevalue     | repairprice              |
| numsignalteakslots              | scuttleeffect            | isonlineobject                    | isvisitor                    | isvisitormissionobject         | venture                | venturename              |
| massstrafficstartobject         | massstrafficendobject    | hasenginemod                      | haspaintmod                  | isunit                         | isdeployable           | unitcategory             |
| deployablecategory              | formationshape           | formationradius                   | isformationrolling           | isformationrollmembers         |                        | formationmaxshipsperline |
| isinhazardousregion             | isatnavigableposition    |                                   | accesslicence                | accessrestricted               | canberecycled          |                          |
| dismantlingobject               | salvagedclaims           | isdatavault                       | islandmark                   | isfriendfoe                    | friendlist             | foelist                  |
| target                          | isarmed                  | safetydistance                    | pilot                        | assignedpilot                  | apilot                 | assignedapilot           |
| defencenpc                      | tradenpc                 | tradecomputer                     | engineer                     | shiptrader                     | shadyguy               | roleentities             |
| isnpcassignmentrestricted       |                          | order                             | nextorder                    | defaultorder                   | orders                 | buildorders              |
| tradeorders                     | hasorderloop             | commander                         | toplevelcommander            | assignment                     | commanderentity        |                          |
| activesubordinategroupids       |                          | subordinates                      | subordinategroupdockoverride |                                | subordinategroupid     |                          |
| subordinategroupprotectedsector |                          | subordinategroupprotectedposition |                              | subordinategroupreinforcefleet |                        |                          |
| subordinategroupresupplyaffleet |                          | subordinategroupattackonsight     |                              | allsubordinates                | allcommanders          | controlroom              |
| haswalkableroom                 | canhavedynamicinterior   |                                   | hasscanner                   | longrange                      | maxscanlevel           | combinedskill            |
| iscapturable                    | boardingoperation        | boardingoperations                | boardingbehaviour            | allmarinesdispatched           |                        | boardingresistance       |
| baseboardingresistance          |                          | boardingstrength                  | constructionsequence         | defencedronemode               |                        | loadoutlevel             |
| rawloadoutlevel                 | minloadoutlevel          | loadoutvariation                  | loadout                      | hasarmeddefencedrones          |                        | hasarmedminingdrones     |
| hasarmedtransportdrones         |                          | miningdronemode                   | transportdronemode           | isenemylockingon               | ismissileincoming      | hasweaponmod             |
| hasshieldmod                    | productions              | storagemodules                    | buildmodules                 | processingmodules              | dockareas              | piers                    |
| habitationmodules               | welfaremodules           | defencemodules                    | connectionmodules            | buildmodule                    | buildprocessor         | buildprocessors          |
| freebuildprocessor              | freebuildprocessors      | dismantletarget                   | isdismantlingassignedobject  | claimedsalvage                 | haswaveprotection      |                          |
| hasmassstraffic                 | buildingmodule           | buildingprocessor                 | build                        | buildanchor                    | canbuildships          | canequipships            |
| cansupplyships                  | hasplannedconstruction   |                                   | cargo                        | products                       | research               | dockingenabled           |
| originalproduct                 | resources                | supplyresources                   | tradewares                   | buyprices                      | sellprices             | buildbuyprices           |
| buildsellprices                 | waretransport            | productionmoney                   | wantedmoney                  | istraderrestricted             |                        | hasradesubscription      |
| haspermanenttradesubscription   |                          | supplies                          | supplyorders                 | money                          | hasownaccount          | isaccountholder          |
| minbudget                       | maxbudget                | buildpricefactor                  | tradewaremoney               | spawntime                      | type                   | typename                 |
| numfreeactorslots               | actors                   | assigneddock                      | docksize                     | dock                           | dockslot               | hidecargochance          |
| maxspeed                        | maxyawspeed              | maxpitchspeed                     | maxrollspeed                 | speedlimit                     | canenterhighway        | parkedat                 |
| pickedupobject                  | regiondamageprotection   | job                               | jobname                      | isjobship                      | isrequestedjobship     | jobexpired               |
| jobcommander                    | jobmainsector            | jobmainzone                       | encounterid                  | isencountership                | constructionmodule     | warebasket               |
| isdeployedconstructionvessel    | iscapitalship            | islaser tower                     | environment                  | cantowobjects                  | towedobject            | hasshipmod               |
| canbeclaimed                    | issupplyship             | movementrefobject                 | oxygenpercentage             | oxygen timer remaining         |                        | buildstorage             |
| takesregiondamage               | oxygenempty              | oxygenlow                         | istradestation               | isshipyard                     | isequipmentdock        | isdefencestation         |
| canhavebuildstorage             |                          | ishedquarters                     | isfactionheadquarters        |                                | isplannedshipyard      | splannedwharf            |
| isrecyclingfacility             | ispiratebase             | isplanneddefencestation           | isplannedrecyclingfacility   | isscheduledfordeconstruction   |                        |                          |
| isplannedequipmentdock          |                          | istransitiondestination           | istransitions source         | launcher                       |                        | destination              |
| isguided                        | destinations             | entryhighway                      | exithighway                  | waitingship                    | highway                | entry                    |
| exit                            | isaccelerator            | ispartiallyunlocked               | isunlocked                   | isadvanced                     | currentyield           | maxyield                 |
| sequence                        | islocked                 | isdroppedcontainer                | blueprints                   | base                           | ispersistent           | isprivate                |
| rarity                          | unbundle                 | isbuilding                        | buildmacros                  | constructingcomponents         |                        | constructingmodule       |
| rooms                           | isbusy                   |                                   |                              | iswaitingforconstructionvessel | iswaitingforresources  |                          |
| requiresconstructionvessel      |                          | mayrequireconstructionvessel      |                              | elapsedtime                    | elapsedstep time       | step time                |
| iswaitingforstorage             | constructionvessel       | constructionvesseldeployed        |                              |                                |                        |                          |

|                               |                          |                                |                      |                           |                             |                  |
|-------------------------------|--------------------------|--------------------------------|----------------------|---------------------------|-----------------------------|------------------|
| totaltime                     | canabortbuild            | queuedbuild                    | currentslotresources | stepresources             | laststepresources           |                  |
| neededslotresources           | neededsequenceresources  |                                | recycled             | isventuremodule           | venturedocks                | ventureships     |
| numpierdocks                  | isproducing              | ispaused                       | ispausedmanually     | furnacestartpos           | requireditems               | iswalkable       |
| dockarea                      | walkablemodule           | dynamicinterior                | freemissionactorslot | slotcontext               | assignedship                | pier             |
| docked                        | external                 | isstorage                      | isdockingallowed     | isunitdockingallowed      | isundockingallowed          |                  |
| isunitundockingallowed        |                          | todockpos                      | launchpos            | dockstate                 | isbuildingallowed           | istradingallowed |
| isplayeronly                  | isventureonly            | ventureplatform                | hasentrypos          | entrypos                  | hasexitpos                  | exitpos          |
| economy                       | security                 | sunlight                       | god                  | jobs                      | isexclusiveforextensionjobs | factionlogic     |
| locationtags                  | allocationtags           | yieldthresholds                | representatives      | isnormalcluster           | ispresentation              | systemid         |
| planets                       | averagedistanceoflockbox | averagemaxyield                | iscontested          | contestingfactions        | hasgravidarobscuringregion  |                  |
| hasazardousregion             | containsthewave          | waveprotectionresources        |                      | policefaction             | typicallockboxmacro         | coreposition     |
| coresize                      | adjacentzones            | haspriority                    | istempzone           | isnormalzone              | islocalhighway              | issuperhighway   |
| isdisabled                    | origin                   | junctions                      | entryjumpgate        | exitjumpgate              | closespointtoplayer         | customhandler    |
| controlpost                   | role                     | roleobject                     | titleoverride        | iconoverride              | occupationname              | icon             |
| race                          | page                     | isfemale                       | isavatar             | iscommable                | ismissionactor              |                  |
| isremotecomable               | iscontrorentity          | isintransit                    | istransferscheduled  | istemporary               | ishidden                    | podarrivaltime   |
| roomslot                      | floortags                | iswalking                      | slowwalkspeed        | walkspeed                 | runspeed                    | isspeaking       |
| isinspeakrange                | lastspeaktime            | experienceprogress             | neededexperience     | controlled                | assignedcontrolled          | spacesuit        |
| spacesuilmacro                | inventory                | stock                          | shouldinformplayer   | shouldwarnplayer          | istradecomputer             | isshadyguy       |
| isindependent                 | tradesvisible            | facecutscene                   | npctemplate          | targetslot                | currentchair                | hasclothingmod   |
| hasool                        | isinconversation         | isreadytofire                  | mode                 | isrepairing               | ismining                    | iscombat         |
| barrelposition                | component                | tags                           | group                | offset                    | staticoffset                | staticrotation   |
| controlposition               | available                | buyer                          | seller               | isbuyoffer                | isselloffer                 | isoffer          |
| isorder                       | ware                     | amount                         | desiredamount        | offeramountt              | transferredamount           | minamoun         |
| destroyedamount               | volume                   | offervolume                    | minvolume            | price                     | unitprice                   | minprice         |
| relativeprice                 | quantityfactor           | hasdynamicprice                | stocklevel           | bundle                    | tradeoffer                  | buyfree          |
| sellfree                      | iswareexchange           | isshiptoship                   | iscrewexchange       | isbuyerpassive            | issellerpassive             | iscancelled      |
| isshipbuild                   | isrecycleshipbuild       | isexpansion                    | isupgrade            | issoftwareonlyupgrade     |                             | isrestock        |
| isshipmodification            | isprocessing             | buildobject                    | construction         | faction                   | time                        | consumables      |
| boardee                       | attackers                | approachingpods                | boardingphase        | boardingapproachthreshold | boardinginsertionthreshold  |                  |
| description                   | minrelation              | precursor                      | issellable           | count                     | list                        | random           |
| id                            | script                   | canplayercancel                | isinfinite           | isinloop                  | isoverride                  | isrunning        |
| trade                         | operation                | requiredskill                  | clone                | last                      | randominrange               | min              |
| max                           | average                  | x y                            | z yaw                | pitch roll                | inverse                     | forward          |
| right                         | up                       | shortname                      | prefixname           | spacename                 | homespacename               | primaryrace      |
| knowntoplayer                 | defaultpolicefaction     | coalition                      | teamname             | customteamname            | isrelationlocked            | licences         |
| heldlicences                  | isaggressive             | iseconomic                     | ispolice             | isprotective              | willclaimspace              | representative   |
| headquarters                  | doesresupply             | averageprice                   | maxprice             | pricerange                | transporttag                | isinventory      |
| isammo                        | iscargo                  | iscrafting                     | isvolatile           | isgift                    | israre                      | isdropallowed    |
| isresearchable                | illegal                  | objectmacro                    | objectcount          | software                  | isweaponmod                 | isenginemod      |
| isshieldmod                   | isshipmod                | isequipmentmod                 | equipmentmodquality  |                           | ispaintmod                  | paintmodquality  |
| isclothingmod                 | clothingmodquality       | isprocessed                    | table                | free                      | capacity                    | purposemacro     |
| purpose                       | docksizes                | productionvolume               | consumptionvolume    | cargocapacity             | allowedowners               | allowedwares     |
| maxrelation                   | enemy                    | active                         | version              | static                    | staticbase                  | namespace        |
| library                       | isinstance               | hasmissionoffer                | hasmission           | hasguidance               | offerlocations              | missiontype      |
| missionendtime                | objective                | objectiveendtime               | actor                | isnumeric                 | isstring                    | female           |
| pluralname                    | tag                      | hirable                        | tiers                | skilltypes                | maxmk                       | age              |
| occupiedship                  | platform                 | entity                         | galaxy               | computer                  | activity                    | autopilottarget  |
| conversation                  | conversationactor        | hasactiveemission              | activeemissiontype   | activeemissionwaypoint    | hasacceptedonlinemission    |                  |
| isincontrolposition           | scanlevel                | debug                          | isscreenshotmode     | screenshotmode            | ismapeditoractive           |                  |
| isinfullscreen                | isinfullscreen           | isinfullscreenmenu             | isvrversion          | isvrmode                  | chardensity                 | modulename       |
| moduledescription             | speakpriority            | flightassist                   | isdockuiactive       | hasemergencyeject         | isemergencyejectactive      |                  |
| shouldplayertaxiwaitforplayer |                          | shouldplayershipswaitforplayer |                      | isonline                  | canactivateliveview         |                  |
| recommendedmodule             |                          | isgameover                     | index                | element                   | key                         | null             |
| integer                       | largeint                 | float                          | angle                | hitpoints                 | largefloat                  | cue              |
| keyword                       | xmlkeyword               | componentstate                 | killmethod           | relationchangereason      |                             | flightbehaviour  |
| flightcontrolmodel            | entitytype               | entityrole                     | skilltype            | missiongroup              | level                       | alertlevel       |
| command                       | commandaction            | roompopulationtype             | purpose              | controlpaneltypes         | signalleaktype              | blacklisttype    |
| blacklistgroup                | moodlevel                | orderstate                     | datatype             | cuestate                  | notification                | string           |
| componentslot                 | licence                  | vector                         | quadrant             | unlock                    | weaponmode                  | dronemode        |
| shiptype                      | stationtype              | roomtype                       | regiongroup          | none                      | down                        | left             |
| front                         | back                     | param                          | param2               | param3                    |                             |                  |

# Special Properties

These Properties are not part of the original Property Chain Syntax, but they emulate other functions of the Scripting Language that might be useful. Namely Type conversions and such stuff.

- `$variable` Internal Call: `$currentStep.{ $nextStep }`  
=> if the current result is a a Cue, Entity or Table wit will read a Variable off them (Cue Variable, Entity Blackboard Var, Table Value from a Key) - baisscally the same syntax as with `global.$variable` or `mdvar.$variable`
- `<number>` Internal Call: `$currentStep.{ $nextStep }`  
=> If the current result is a Group, List or Table it will result in the numeric nth Entry of it (1-based). In case of Tables it obviously needs to have the respective numeric key  
  
(Note: For tables other Keys than Numeric or String are not supported properly yet; planned is a workaround-y way of using Console Vars, but details have to be ironed out yet)
- `rl rt rg rb rc` Internal Call: `$currentStep.{ $nextStep }`  
=> as in 'readlist','readtable','readgroup','readblackboard' or 'readcue' enforces the previous behavior in case it doesnt work automatically, with the next Value in the Chain being the Var/Key Name
- `comp` Internal call: `$CurrentStep == $NextStep`  
=> compare hack (temporary); compares the current result of the Chain with the next single Step (useful for eg chekcing against an object reference); makes the result boolean.
- `cv:i` => convert to integer Internal call: `($CurrentStep)i`
- `cv:f` => convert to float Internal call: `($CurrentStep)f`
- `cv:component` Internal call: `component.{ $CurrentStep }`  
=> convert to component - turns a number into an object if possible. This should usually happen automatically by each command if an Object expected, but you can enforce it with this
- `typeof` => results in the datatype of the current Property Internal Call: `typeof $CurrentStep`
- `distanceTo` Internal Call: `$CurrentStep.distanceTo.{ $NextStep }`  
=> results in the Distance between the current Object and the following Object. Next Object must be a single location Step. (like a direct Object reference)



# The following Stuff are just additional Tips and have nothing to do with my mod itself:

## Using scriptproperties.html locally (and some additions)

How to get an Apache Server set up to view scriptproperties and jobeditor (sidestepping CORS):  
(i know it is overkill for this, but im more familiar with it than other methods)

- Download and install XAMPP from <https://www.apachefriends.org/de/index.html>  
(NOTE: Install to C:/XAMPP or similar, since the Program needs to write to its own Folder, which windows restricts in program files)  
Minimum Installation is sufficient.
- After the Setup ran you should find yourself in the XAMPP control panel.  
In the Line with Apache click on [Config] -> Browse Apache  
Then go in the folder config -> extra and open httpd-vhosts.conf for edit
- Add this Section at the end of the File and point it to your extracted Game Files:

```
<VirtualHost *:80>
    DocumentRoot "C:/xampp/htdocs"
    ServerName localhost
    Alias /x4mod "C:/X4_extracted"
    <Directory "C:/X4_extracted">
        Options Indexes FollowSymLinks Includes ExecCGI
        AllowOverride All
        Order allow,deny
        Allow from all
        Require all granted
    </Directory>
</VirtualHost>
```

(Edit both of the C:/X4\_Extracted to point to your extracted game files)  
Save and close the File.

- back in the XAMPP Control Center click the box left of Apache to set it up as Service (so it starts with Windows), and then click [Start] to the right of it to start the Webserver and open localhost/x4mod
- in a Browser to confirm it is working. You can open the jobeditor.html and scriptproperties.html from here.

Also you can reference the xsd files without having them to move around, just add this to your ai/md files in the root node:

```
<mdscript name= ..... xsi:noNamespaceSchemaLocation="http://localhost/x4mod/libraries/md.xsd" >
<aiscript name= ..... xsi:noNamespaceSchemaLocation="http://localhost/x4mod/libraries/aiscripts.xsd" >
```

## Useful additional Tricks to improve the reference files

Show a full list of Vanilla Macros and also print their respective File Path as Description:

- libraries/scriptproperties.xml - replace the `<keyword name="macro">` section:

```
<keyword name="macro" description="Macro lookup">
  <property name="{&#106;macroname&#106;}" result="Macro" type="macro" />
  <import source=" ../index/macros.xml" select="/index/entry">
    <property name="@name" result="@value" type="macro" />
  </import>
  <import source=" ../extensions/ego_dlc_split/index/macros.xml" select="/index/entry">
    <property name="@name" result="@value" type="macro" />
  </import>
  <import source=" ../extensions/ego_dlc_terran/index/macros.xml" select="/index/entry">
    <property name="@name" result="@value" type="macro" />
  </import>
  <import source=" ../extensions/ego_dlc_pirate/index/macros.xml" select="/index/entry">
    <property name="@name" result="@value" type="macro" />
  </import>
  <import source=" ../extensions/ego_dlc_boron/index/macros.xml" select="/index/entry">
    <property name="@name" result="@value" type="macro" />
  </import>
  <import source=" ../extensions/ego_dlc_timelines/index/macros.xml" select="/index/entry">
    <property name="@name" result="@value" type="macro" />
  </import>
</keyword>
```

Show Script Param Values in Scriptproperties:

three changes needed:

- libraries/scriptproperties.xml- replace the `<keyword name="param">` section:

```
<keyword name="param" description="Access to script parameters in parameters.xml">
  <property name="{&#106;categoryname&#106;.&#106;paramname&#106;}" result="Script parameter" />
  <import source="parameters.xml" select="/parameters/scriptparams/category/param">
    <property name=" ../@name" subname="@name" result="@value" type="string" />
  </import>
</keyword>
```

- libraries/scriptproperties.xsl - replace the `<xsl:template match="property">` section:

```
<xsl:template match="property">
  <tr>
    <td width="20%" class="property">
      <span class="propertyname">
        <xsl:value-of select="@name" />
        <xsl:if test="@subname">
          <xsl:text>.</xsl:text>
          <xsl:value-of select="@subname" />
        </xsl:if>
      </span>
    </td>
    <td width="10%" class="property">
      <xsl:if test="@type">
        <xsl:apply-templates select="@type" mode="datatypeeref" />
      </xsl:if>
    </td>
    <td class="property">
      <xsl:if test="@result">
        <span class="comment">
          <xsl:value-of select="@result" />
        </span>
      </xsl:if>
    </td>
  </tr>
</xsl:template>
```

- scriptproperties.html- replace the *function importExternalProperties()* function:

```
function importExternalProperties() {
    var loadedfiles = new Object(); // Store loaded files here, so we don't import the same file twice
    var textdbdef = evaluateXPath(xmlDoc.documentElement, "/*/textdb");
    if (textdbdef && textdbdef.length) {
        var textdbfilename = textdbdef[0].getAttribute("source");
        if (textdbfilename) {
            textdbDoc = loadXMLFile(textdbfilename);
        }
    }
    var foundnodes = evaluateXPath(xmlDoc.documentElement, "/*/keyword/import/property");
    for (var i = 0; i < foundnodes.length; ++i) {
        var propertynode = foundnodes[i];
        var importnode = propertynode.parentNode;
        var keywordnode = importnode.parentNode;
        var sourcefile = importnode.getAttribute("source");
        var selectexp = importnode.getAttribute("select");
        var nameexp = propertynode.getAttribute("name");
        var subnameexp = propertynode.getAttribute("subname"); // Add this line to get the subname expression
        var resultexp = propertynode.getAttribute("result");
        var type = propertynode.getAttribute("type");
        var ignoreprefix = propertynode.getAttribute("ignoreprefix");
        if (sourcefile && selectexp && nameexp) {
            var importedxml = loadedfiles[sourcefile];
            if (!importedxml) {
                importedxml = loadXMLFile(sourcefile);
                loadedfiles[sourcefile] = importedxml;
            }
            if (importedxml) {
                var importedtypes = evaluateXPath(importedxml.documentElement, selectexp);
                for (var j = 0; j < importedtypes.length; ++j) {
                    var curtype = importedtypes[j];
                    var namenodes = evaluateXPath(curtype, nameexp);
                    var subnamenodes = evaluateXPath(curtype, subnameexp); // Add this line to get the subname nodes
                    if (namenodes && namenodes.length > 0 && (namenodes[0].data || namenodes[0].nodeValue)) {
                        var newproperty = xmlDoc.createElement("property");
                        // Set property name
                        var name = String(namenodes[0].data || namenodes[0].nodeValue);
                        if (ignoreprefix && (ignoreprefix == "1" || ignoreprefix == "true") && name.lastIndexOf(".") > 0) {
                            name = name.substr(name.lastIndexOf(".") + 1);
                        }
                        newproperty.setAttribute("name", name);
                        // Set property subname
                        if (subnamenodes && subnamenodes.length > 0 && (subnamenodes[0].data || subnamenodes[0].nodeValue)) {
                            var subname = String(subnamenodes[0].data || subnamenodes[0].nodeValue);
                            newproperty.setAttribute("subname", subname);
                        }
                        // Set property result (either from text node or attribute value)
                        if (resultexp) {
                            var resultnodes = evaluateXPath(curtype, resultexp);
                            if (resultnodes && resultnodes.length > 0) {
                                newproperty.setAttribute("result", convertFormatString(resultnodes[0].data || resultnodes[0].nodeValue));
                            }
                        }
                        // Set property type
                        if (type) {
                            newproperty.setAttribute("type", type);
                        }
                        keywordnode.appendChild(newproperty);
                    }
                }
            }
        }
    }
}
```

## Show Masstraffic Jobs in Jobeditor

- libraries/editor.xml :  
Replace this:  

```
<table id="jobs" name="Jobs">  
  <file name="jobs.xml" select="/jobs/job[ship and not(masstraffic)]" />  
</table>
```

  
change to:  

```
<table id="jobs" name="Jobs">  
  <file name="jobs.xml" select="/jobs/job" />  
</table>
```

## Add a Column for Loadout Levels in the Jobeditor

- libraries/editor.xml – Add this at the end of the `<column group name="Ship" base="ship">` section:  

```
<column value="loadout/level/@min" name="Loadout Min" type="float" />  
<column value="loadout/level/@max" name="Loadout Max" type="float" />
```