Format work at LLNL

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- β Delayed γ's From Fission

- LLNL Processing Code Status

- Reverse Translation (i.e. back to ENDF!)

- XENDL Status

- A Format Question: Q values for isomers
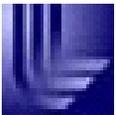
β Delayed γ's From Fission

- Format nearly approved 2004 CSEWG meeting
  - only minor change needed, applied at last meeting
  - list of ENDF-102 changes submitted

- Data for γ's from ^{239}Pu(n,f) for thermal, fission spectrum and high-energy neutrons being prepared for ENDF/B-VII

- Other isotopes possible once formatting code tested

Status of LLNL Processing Codes

prepro2004
linear/sigma1/recent

heat to 300K, expand MF2
(Red Cullen)

fete

translate to ENDL
to release 12/2005

endep

compute energy
depositions
rewritten in C++,
to release 12/2005

mcfgen/ndfgen

grouping, binary formatting
(legacy code, want to retire)

mcapm/libndf

code interface,
active development

User Codes (e.g. Mercury/AMTRAN)
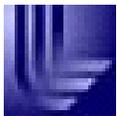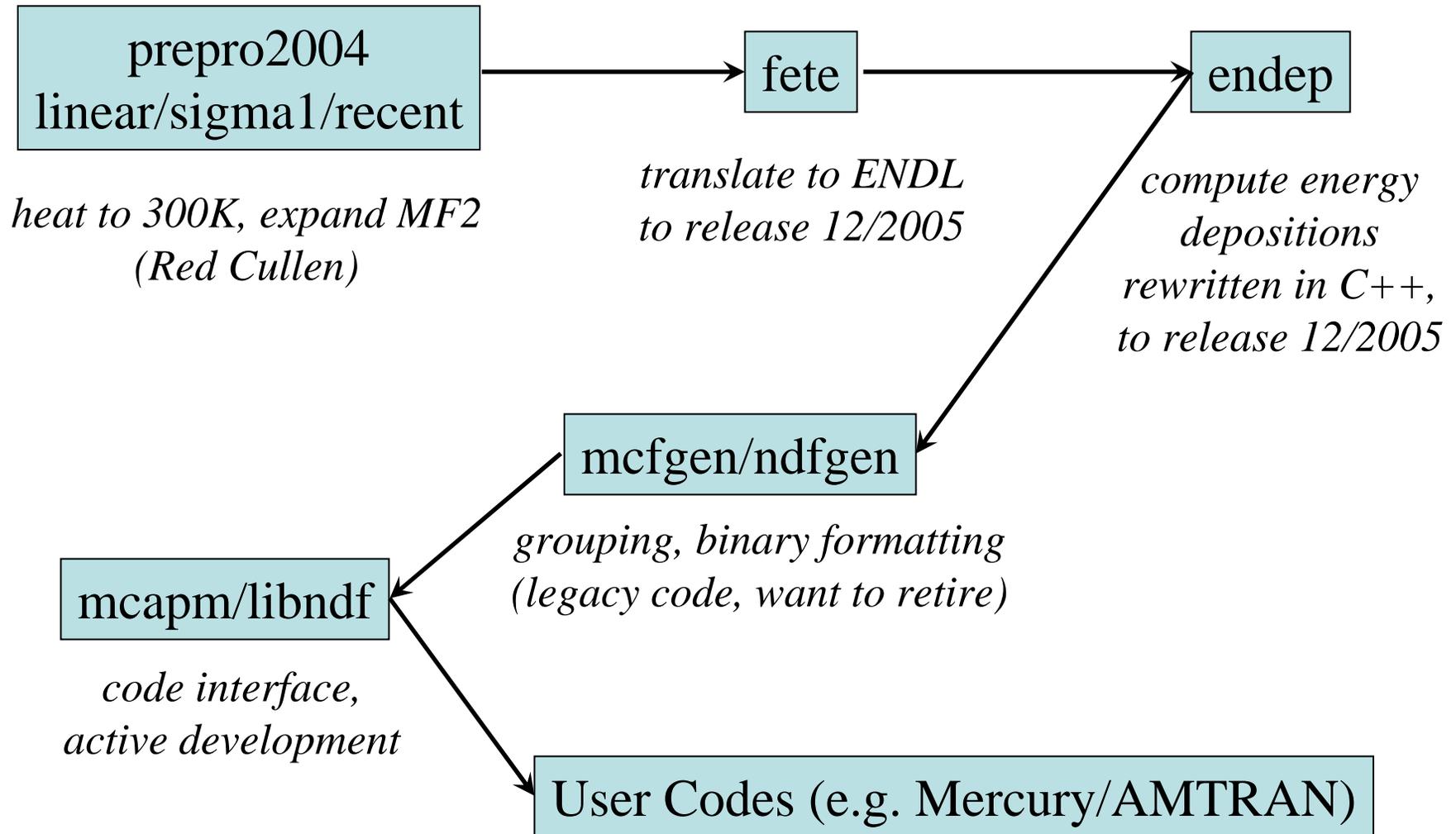
Reverse Translation (i.e. back to ENDF!)

- endl2endf is new Python code we use to assemble ENDF evaluations

- Can translate ENDL formatted LLNL data back to ENDF format
  - MF=1, MT=451,460; MF=3; MF=9,10; MF=12
  - To do: MF=4, 5, 6, 13, 14, 15

- Can swap full MF/MT's from one evaluation into another

- Performs many formatting tasks previously done by STANEF, DICTIN, ENDRES
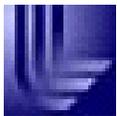
XENDL Status

- Translation from XENDL to legacy ENDL (and back) demonstrated

- Redesigning core basis structures to support multiple data efforts
  - General: matrices, vectors, bibliography entries, etc.
  - Physics: nuclei, excitation levels, particles, etc.

- Want to begin coordination with other efforts (e.g. EXFOR, ENSDF, NJOY)

- Accepted for publication, NIMB

Format Question: Q values for isomers

QM	Mass-difference Q value (eV): defined as the mass of the target and projectile minus the mass of the residual nucleus in the ground state and masses of all other reaction products; that is, for $a+A\rightarrow b+c+...+B$, $QM=[(m_a+m_A)-(m_b+m_c+...+m_B)](9.315016\times10^8)$ if the masses are in amu. (See paragraph 3.3.2).
QI	Reaction Q value for the (lowest energy) state defined by the given MT value in a simple two-body reaction or a breakup reaction. Defined as QM for the ground state of the residual nucleus (or intermediate system before breakup) minus the energy of the excited level in this system. Use QI=QM for reactions with no intermediate states in the residual nucleus and without complex breakup (LR=0). (See paragraph 3.3.2.)

Interpretation not consistent

			NuDat Values			ENDF File			
Reaction	Target	Library	Q Value (MeV)	Ethreshold (MeV)	Elevel (MeV)	QM (MeV)	QI (MeV)	Ethreshold (MeV)	ELIS (MeV)
(n,n')	242Am	ENDF/B-VII			0	0	-0.041	0.042838	0
MT=51		JENDL-3.3			0	0	-0.041	0.042838	0
(n,2n)	242Am	ENDF/B-VII	-5.53764	5.560523	0	-5.538	-5.538	5.560688	0
MT=16		JENDL-3.3			0	-5.539	-5.539	5.56208	0
(n,n')	242mAm	ENDF/B-VII			0.0486	0.0486	0.0486	1.00E-11	0.0486
MT=51		JENDL-3.3			0.0486	0.0486	0.0486	1.00E-11	0.0486
(n,2n)	242mAm	ENDF/B-VII	-5.48904		0.0486	-5.49	-5.49	5.51E+00	0.0486
MT=16		JENDL-3.3			0.0486	-5.539	-5.539	5.56E+00	0.0486

- JENDL includes E_{level} in Q for ^{242m}Am(n,2n), ENDF/B-VII doesn't

- Neither includes E_{level} in Q's for (n,n')

- Need to clarify point in ENDF-102