

People Power

Academic + Private Collaboration for Better Electric Motors

Condor Week
May 2012
Brooklin Gore





Dynasty? U of W Repeats as National Cyber Defense Champ.

- Government Computer News (04/25/12) William Jackson

She notes that teamwork helped the Washington team win the competition.

“The most important component was how they interact with each other,”

Kadenko says.

“They already had the knowledge ... but you can’t teach how to get along with somebody.”





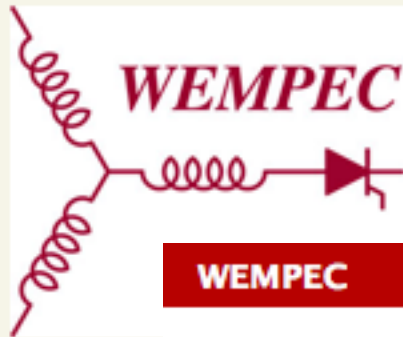
WEMPEC

Wisconsin Electric Machines and Power Electronics Consortium

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WELCOME



WEMPEC

WEMPEC is an internationally renowned engineering research group located at the University of Wisconsin-Madison. With the support of our 80+ corporate sponsors, our team of professors, graduate students, and international scholars work together to research and develop the newest technologies in power electronics, actuators, sensors, drives, motion control, and drive applications.

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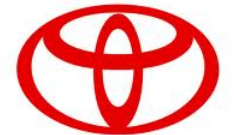


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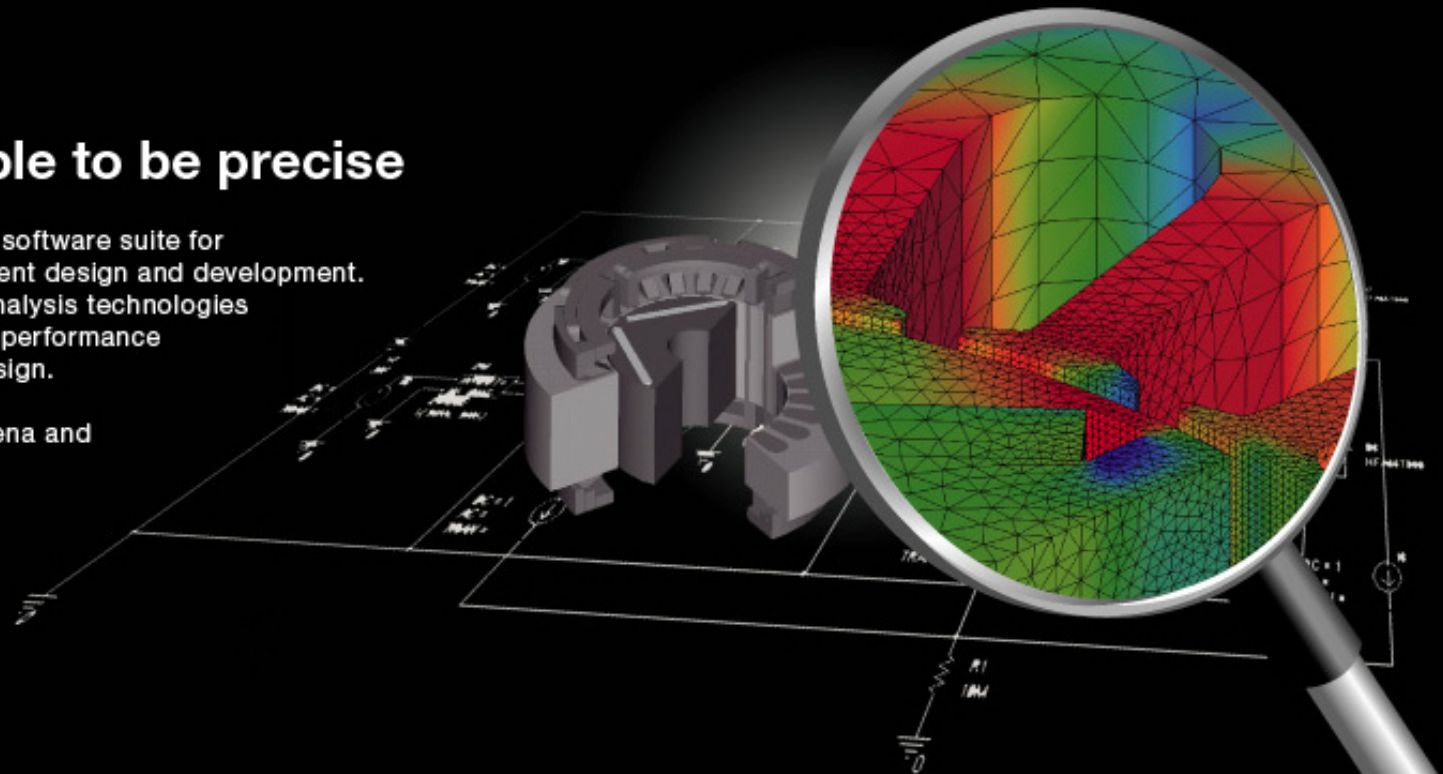
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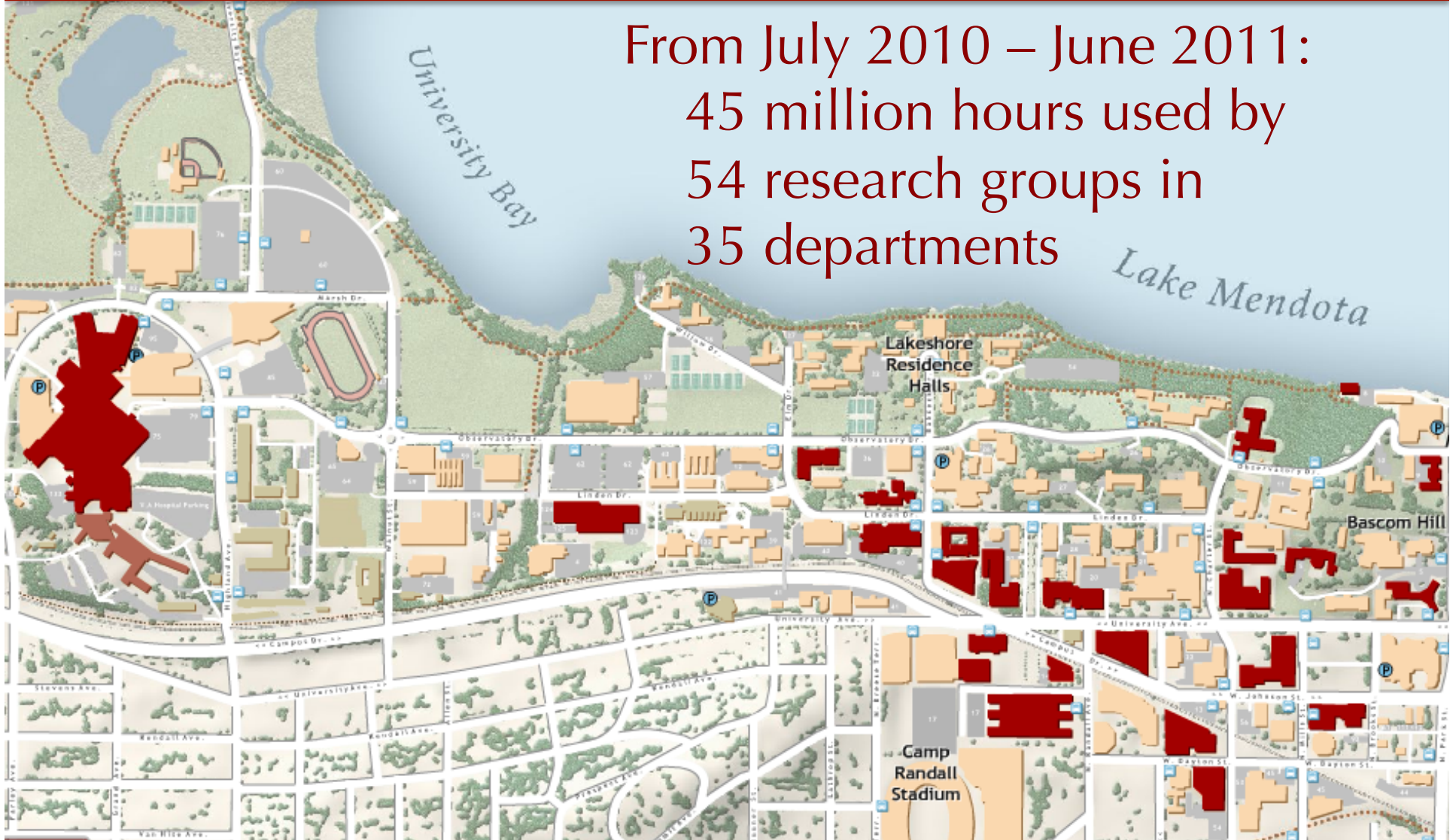
JMAG is a comprehensive software suite for electromechanical equipment design and development. Powerful simulation and analysis technologies provide a new standard in performance and quality for product design.

Capture complex phenomena and gain valuable insights.





From July 2010 – June 2011:
45 million hours used by
54 research groups in
35 departments



Accomplishments:

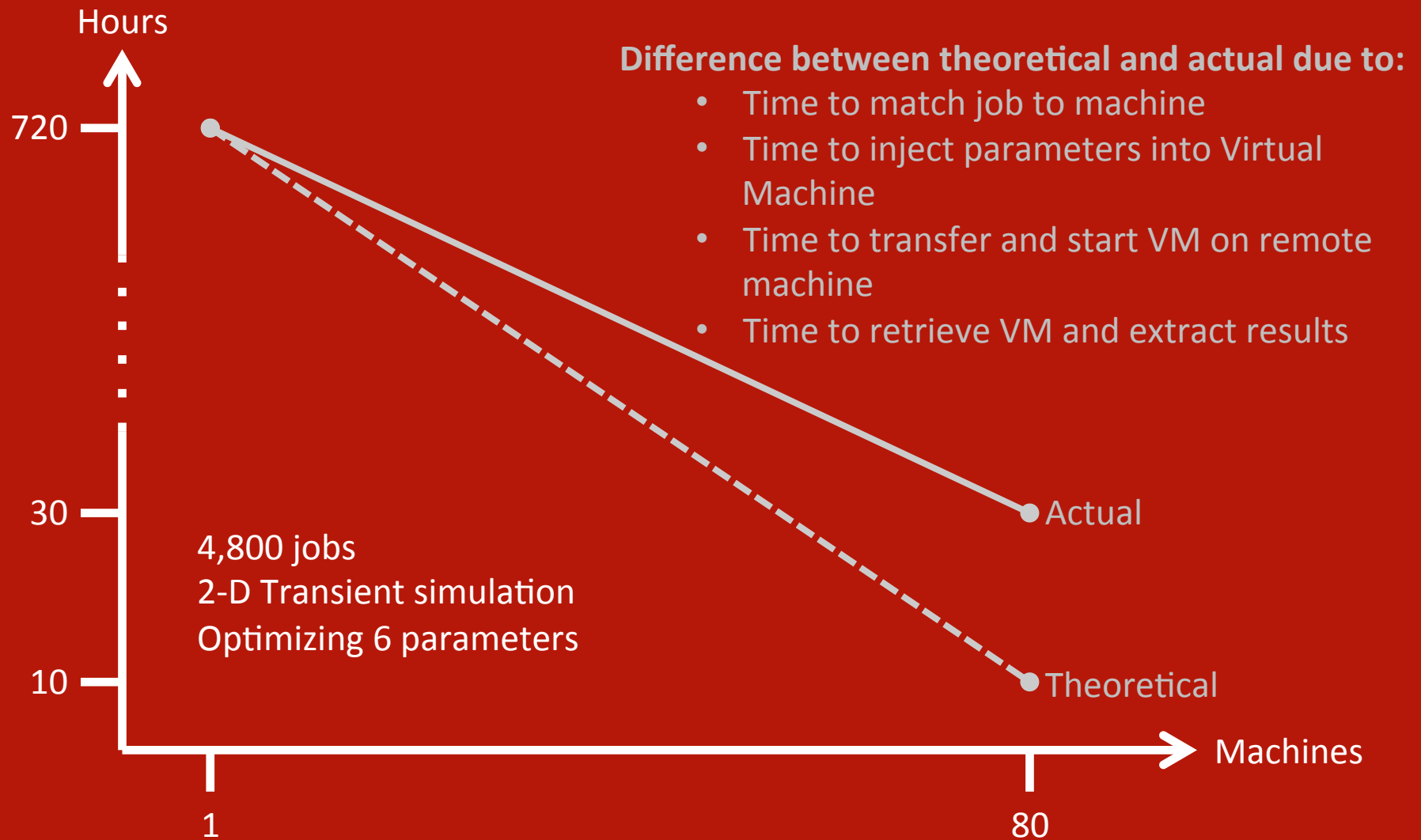
- JMAG enabled 100 Windows licenses for the WEMPEC
- CHTC Staff worked with JMAG to get Windows App running via VM on Linux servers and inject parameters and extract data between runs.
- WEMPEC researchers developed evolutionary algorithm to marshal optimization
- Optimization now runs in ~24 hours
- Presented results at 2011 JMAG Users Conference.

Next Steps:

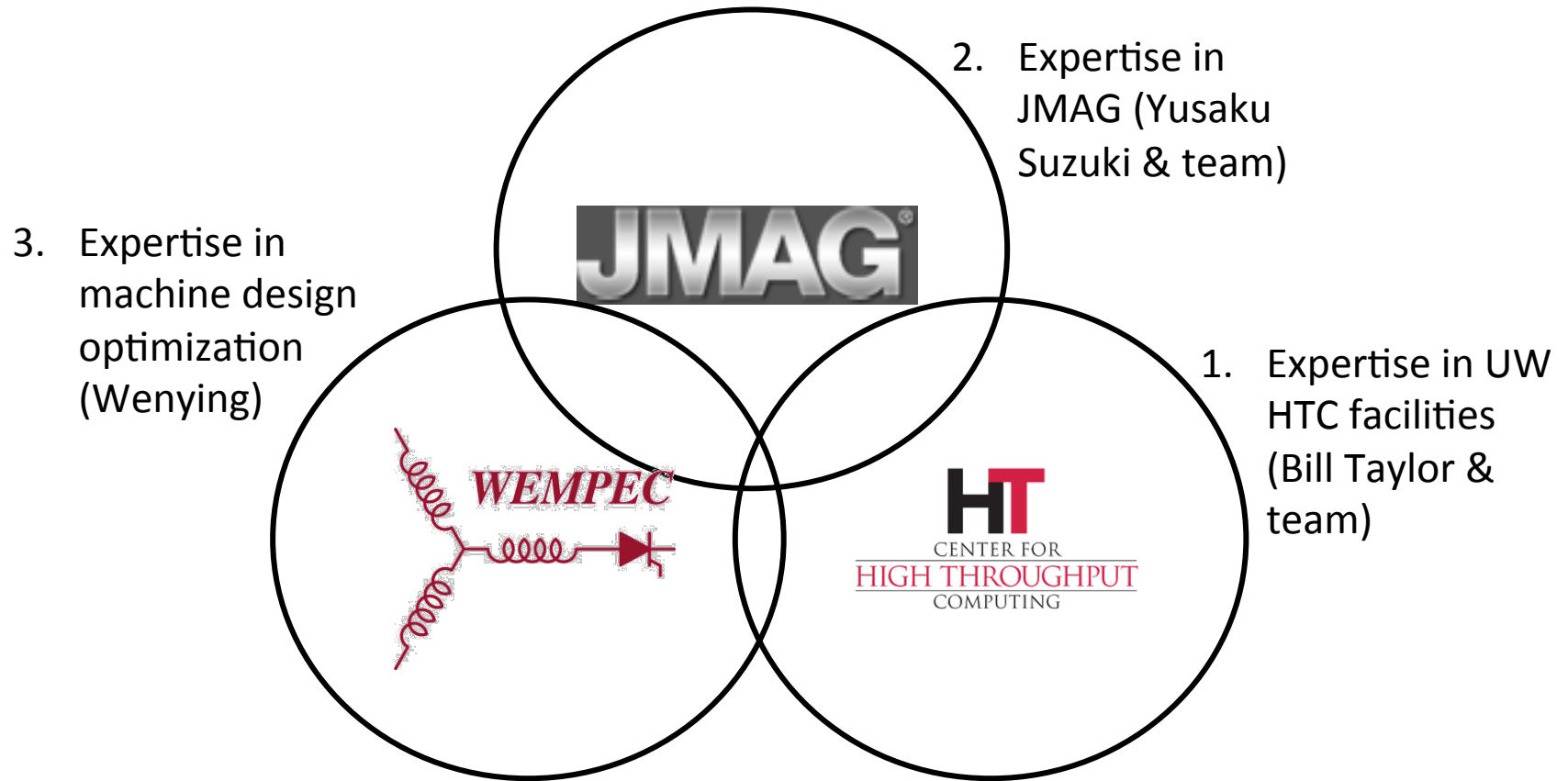
- CHTC work with JMAG to enable Linux version of solver
- CHTC to continue driving speedup toward theoretical
- WEMPEC to enable multi-physics optimizations considering not just E-M, but also thermal, structural and acoustic



HTC Theoretical vs. Actual Optimization Speedup



One of the most important factors that has enabled success in this project has been the availability of three critical elements:



Our progress would not have been possible if any one of the three components had been missing. We feel very fortunate to have this wonderful opportunity to work together.

-- Thomas Jahns, Co-Director, WEMPEC



Thank You. Questions?

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for Better Electric Motors

